

7 **Executive Summary and Certification**

8 [1] This document is a self study of the Geography and Geology Graduate Programs, both
9 housed in the Department of Geosciences, at Oregon State University. While these two programs
10 maintain distinct disciplinary identities, the programs’ faculties, curricula, and facilities overlap,
11 as do the reviewers of this document, and this self study document has primarily been prepared
12 by a single faculty member. Rather than prepare two documents that are substantially identical,
13 we have elected to prepare a single document that identifies both common and distinct
14 characteristics. Another factor complicating the distinction between programs is the prominent
15 role of the interdisciplinary Water Resources Graduate Program (WRGP) in the Department of
16 Geosciences. Currently, graduate students in the Department are roughly evenly split among the
17 Geology, Geography, and Water Resources Graduate Programs, and graduate students in the last
18 are integral to the identity of the programs and the productivity of their faculty. *AARON*

19 [2] In signing this document, I indicate that all graduate faculty members within the Geo
20 Program have had an opportunity to participate in the development of this self-study and review
21 the final document.

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23 Stephen Lancaster, Geosciences Assessment Coordinator Date
24 Associate Professor

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26 Dawn Wright, Director, Geography Program Date
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29 Andrew Meigs, Director, Geology Program Date

30 Associate Professor

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32 Aaron Wolf, Chair, Department of Geosciences Date

33 Professor

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231		

231 **1. Introduction and Context**

232 [3] This section should answer the question, “Why do you offer the program?” AARON

233 **1.1 Brief History of the Geography and Geology Programs in the Department of**
234 **Geosciences**

235 *1.1.1 Department of Geosciences*

236 [4] The Department of Geosciences has its origins in the 1989 merger of two formerly
237 separate departments. The Department of Geology was moved to Corvallis from the University
238 of Oregon in 1932, and the Department of Geography (Natural Resources at the time) developed
239 locally, offered its first B.S. degree in 1952, and grew to offer its first Ph.D. in 1970. The separate
240 departments shared Wilkinson Hall since the time construction was completed in 1972.

241 [5] The Department of Geosciences was created at a time of general budget uncertainty and
242 accompanying campus reorganization. In many ways, it was a “shotgun” marriage as the
243 alternative may have been elimination of either, or both, departments. Although they shared the
244 same building, they had distinctly different histories. The Geology Department was solely
245 administered through the College of Science. The Geography Department reported to the College
246 of Liberal Arts (2/3 of the budget, but no degrees) and the College of Science (1/3 of its budget
247 and all of its degrees) with an additional component of Land Use Extension administered through
248 the College of Agriculture. When the Department of Geosciences was created, the new unit was
249 established in the College of Science, although the Extension connection to Agriculture
250 remained. In 1992, the elimination of the Department of General Science brought 0.5 FTE to
251 Geosciences as the other 0.5 FTE was moved to the Department of History. In 1996, the
252 connection to Agriculture was eliminated when the Land Use Extension position was vacated

253 through a faculty retirement.

254 [6] The merger has been successful despite the initial trauma of associated faculty losses and
255 curriculum restructuring. The Department has developed a common consensus around the
256 purpose for the new unit, as shown by the regular development of long-range plans in 1993,
257 2000, 2004, and 2010, which have been used to guide new developments. Each of the pre-
258 existing graduate programs in Geology and Geography have maintained their viability and
259 distinct identity. We consider it a healthy sign that the lines between the two sets of faculty have
260 been blurred: some classes are taken by students in both programs; some faculty advise students
261 in either program; members of both sets also advise students in the interdisciplinary Water
262 Resources Graduate Program and have served on that program's executive committee. Still,
263 differences in philosophy between the two sets persist, and while the Department is a friendly
264 place overall, these differences do lead to some tension between the two groups of faculty.

265 [7] In our most recent history, the University has undergone a reorganization into a new
266 divisional structure. This structure put the neighboring College of Oceanographic and
267 Atmospheric Sciences (COAS) and Geosciences into different divisions, a situation that has
268 driven the collective faculties to plan a merger. As of July, 2011, the Department of Geosciences
269 will cease to exist and join COAS to become part of the new College of Earth, Oceanic, and
270 Atmospheric Sciences.

271 *1.1.2 Geography Program*

272 [8] The Geography Program was officially established in 1989 upon the merger of the
273 Geology and Geography Departments. At the time it was specifically mandated to offer
274 curriculum and research in the areas of physical and resource geography as a complement to the

275 human- and cultural-geography focus of the University of Oregon. Soon after this merger the
276 new department implemented a five-year plan by hiring a new chair from the outside and
277 building on subject areas that linked the two halves of the department (namely volcanic
278 studies/natural hazards, paleoclimatology/climatology, geographic information science, earth and
279 natural resources, geomorphology, and structure/active tectonics). On the Geography side faculty
280 were hired with expertise in geographic information science and water resources (Table 1.)
281 Undergraduate and graduate curricula were revised in both programs, and at the undergraduate
282 level a new Geosciences Core was developed to serve all bachelor degrees. With implementation
283 of its long-range plan of 1993 and with the guidance of the chair, Sherman Bloomer, the
284 Geography Program contributed significantly to an increased number of student credit hours
285 taught, as well as an increased number and amount of grants and awards, and the expansion of
286 the Terra Cognita GIS and Spatial Analysis Laboratory
287 (http://www.geo.orst.edu/Terra_Cognita_Lab), and the development of the Digital Earth teaching
288 classroom (http://www.geo.orst.edu/Student_Labs#210), all despite a decrease in faculty after
289 the merger (**Error! Reference source not found.**). The Geography faculty has declined by 4.0
290 FTE (36%) since 1986-87, even with the opportunistic addition of Campana, whose tenure
291 “reverted” to Geosciences when he left the Directorship of the Institute for Water and
292 Watersheds. One tenure track faculty search is underway for Geography, so Geography FTE
293 would increase to 8.0 if this search is successful.

294 [9] At present, the Geography Program, fosters, promotes, undertakes, and publishes high
295 quality research in **physical geography, resource geography, and geographic information**
296 **science** (Figure 1) that is relevant to citizens and scientists of Oregon, the nation, and the
297 international community. These three areas are further amplified in the department themes of

298 *Surface Earth Processes and History* (hydrology, geomorphology, surface processes, climate),
 299 and *Human Interaction with the Earth* (Earth and water resource policy and management,
 300 geographic information science, ecosystem informatics).

301 [10] The Geography Program fills a key teaching and advising role at OSU by offering not
 302 only MS, MA, and PhD degrees in Geography, but also leading the interdisciplinary graduate
 303 degree program in Water Resources, the graduate certificate programs in Geographic
 304 Information Science and Water Conflict & Transformation, and serving major roles in the
 305 Environmental Sciences and Marine Resource Management graduate degrees, as well as several
 306 graduate minors. With regard to research, it is closely aligned with the activities of the Institute
 307 of Natural Resources, the H.J. Andrews Long-Term Ecological Research & Experimental Forest,
 308 the Institute for Water and Watersheds, the Oregon Climate Change Research Institute, Oregon
 309 Sea Grant, and the rural-sustainability-related activities of the Rural Studies Program. And
 310 faculty continue to engage with local, state and federal agencies and to work collaboratively on
 311 research and extension activities with the private sector and NGOs.

312 Table 1. Geosciences Faculty and Staff since 1986.

	1986-87	1989-90	1993-94	2000-01	2003-4	2006-7	2009-10
Geography	Frenkel	Frenkel	Jackson	Jackson	Jackson#	Gosnell	Gosnell
tenure-	Jackson	Jackson	Jones	Jones	Jones	Jones	Jones
track	Kale	Kale	Kimerling	Kimerling	Kimerling	Kimerling	Becker
faculty	Kimerling	Kimerling	Matzke	Matzke	Becker	Becker	Nolin
	Maresh	Maresh(0.22)	Muckleston	Rosenfeld	Nolin	Nolin	Wolf
	Matzke	Matzke	Nolan	Wolf	Wolf	Wolf	Wright
	Muckleston	Muckleston	Pease	Wright	Wright	Wright	Campana#
	Nolan	Nolan	Rosenfeld	Doel (0.5)	Doel (0.5)	Doel (0.5)	
	Northam	Northam	Wolf				
	Pease	Pease	Wright				
	Rosenfeld	Rosenfeld					
Total	11	10.22	10	7.5	7.5	7.5	7.0
Geology	Boucot	Clark	Clark	(Bloomer)*	Nielsen*	Nielsen*	Nielsen
tenure-	Dasch	Dasch	Dilles(0.75)	Clark	Clark	Clark	Clark
track	Field	Dilles(0.75)	Field	Dilles(0.75)	Dilles(0.75)	Dilles(0.75)	Dilles (0.75)
faculty	Grunder	Field	Grunder(0.75)	Grunder(0.75)	Grunder(0.75)	Grunder(0.75)	Grunder (0.75)
	Johnson	Grunder(0.75)	Johnson	Haggerty	Haggerty	Haggerty	Haggerty
	Lawrence	Johnson	Lawrence	Lawrence#	Lillie	De Silva	De Silva
	Lillie	Lawrence	Lillie	Lillie	Meigs	Lillie	Lillie#
	Niem	Lillie	Nielsen(0.15)	Meigs	(Brook=F'04)	Meigs	Meigs
	Oles	Niem	Niem	Nielsen(0.33)	Lancaster	Brook	Brook

	Taylor Yeats	Taylor Yeats	Taylor Yeats Morris (0.5)		Kent (0.5) Wildenschild (.325)	Lancaster Kent (0.6)	Lancaster Kent
Total	11	10.5	10.15	7.83	9.325	10.1	10.5
Senior instructors				Cook Gaston (0.5)	Cook (1)	Cook (1)	Cook (1)
Total Faculty	22	20.72	20.15	16.83	17.825	18.6	18.5
Instructors Distance Ed --term appt						Kahn, etc Kaplan (0.425) Keller	Kahn, Becker, Yalcin (0.425)
Permanent support staff	Belden VanGeest Harding Prucha Baarstadt Lightfoot (0.25)	Prucha Belden VanGeest Raynor Dalton Baarstadt(.5)	Belden VanGeest Logan Baarstadt(.5)	Peterson VanGeest Logan White(0.5)	Peterson VanGeest Logan Myers Anderson (0.5)	Peterson VanGeest Logan Myers Anderson (0.5)	Peterson Schulte Freeman (0.5) Myers
Total	5.25	5.5	3.5	3.5	4.5	4.5	3.5
Total staff	27.25	26.22	23.45	20.33	21.825	23.1	21.6
Total GTA support (FTE)	5.11	6.22	9.54	7.59	12.9	9.93	9.97
Student credit hours (SCH)	not available	12,800	18,402	19,369	22,337	20,900	20,473 (2008)
New Grant \$	not available	286,444	897,885	1,166,731 (1999-2000)	3,200,000 ⁺⁺	2,700,000	3,715,000 (2008)
Grant \$/Total Staff		\$10,925	\$38,289	\$57,390	\$146,621 ⁺⁺	\$145,000	\$205,000 (2008)
SCH/Total Staff		488	785	953	1023	904	948

* These faculty have administrative duties that affect teaching and other department functions
#These faculty likely to retire in the next 10 years

313

314 1.1.3 Geology Program

315 [11] As with the Geography Program, the Geology program was established upon formation of
316 the Geosciences Department 1989. Tenure-track faculty responsible for the graduate program
317 included 11 FTE in 1986-1987 prior to the merger, dipped to 7.83 in 2000-2001, and has
318 recovered to 10.1 presently (Table 1). Each new member of the graduate faculty of the past
319 decade has been a hire-of-opportunity (Brook, Provost's initiative, de Silva and Lancaster,
320 diversity initiatives; Wildenschild, spousal hire now in College of Engineering). Department
321 Head from 1997 through 2007 came from the Geology program, with the exception of the period

322 in which Bloomer served as Interim Dean of the College of Science, when Matzke (Geography)
323 served as Interim Chair. Bloomer ostensibly left the department when he assumed the permanent
324 position as Dean.

325 [12] Expertise of the Geology faculty fall under two umbrellas – Solid Earth processes and
326 history (Volcanology, igneous petrology, and economic geology (VIPER) and active tectonics
327 and earthquake geology) and Surface Earth processes and history (Earth system history,
328 hydrogeology and hydrology, geomorphology and surface processes, and climate and
329 biogeochemical cycles). Approximately five members of the Geology faculty identify
330 themselves with VIPER, 2 identify with hydrogeology, hydrology, and/or geomorphology, 2
331 identify with climate and biogeochemical cycles, and 1 with active tectonics and earthquake
332 geology. Each of groups has strong ties through research and teaching with the College of
333 Oceanic and Atmospheric Sciences, the Department of Crop and Soil Sciences in the College of
334 Agriculture, the U.S. Geological Survey, the U.S. Forest Service Geomorphology Research Lab,
335 and other partners on campus and in state and federal offices housed on campus or in Corvallis.

336 [13] The Geology Program plays a key teaching and advising role at OSU by offering MS
337 and PhD degrees in Geology. Geology faculty contribute to interdisciplinary graduate degree
338 program in Water Resources as well as several graduate minors. Research activities include
339 participation with the H.J. Andrews Long-Term Ecological Research & Experimental Forest, the
340 Institute for Water and Watersheds, the Oregon Climate Change Research Institute, Oregon Sea
341 Grant, the Watershed Processes group, and the PALEOVAR climate variability research
342 initiative. Faculty regularly engage local, state and federal agencies and private sector and NGOs
343 in collaborative research and outreach activities.

344 **1.2 Mission Statement**

345 [14] Explain how the program mission relates to the college and university missions. Indicate
 346 the unique role of the program within Oregon and beyond.

347 The mission of the Department of Geosciences is to understand and teach the history, processes,
 348 and human dimensions of the earth surface, solid earth, and earth systems. The department has
 349 three core areas: Solid Earth History and Processes, Surface Earth History and Processes, and
 350 Human Interaction with the Earth.

351 The department offers graduate degrees in Geology (MS, PhD) and Geography (MS, PhD).
 352 Faculty also advise students in the Colleges of Oceanic and Atmospheric Sciences, Agriculture,
 353 Engineering, and Forestry, in the Earth Sciences and Marine Resource Management graduate
 354 degrees, in the Water Resources Graduate Program (MS and PhD), In 2009(?) the Department
 355 had 82 graduate majors. Our department’s mission falls squarely within the ‘**Advancing the
 356 Science of Sustainable Earth Ecosystems**’, one of OSU’s three signature areas of distinction of
 357 the 2009-2013 University Strategic plan (<http://oregonstate.edu/leadership/strategicplan/>).
 358 Departmental faculty regularly inform the university, state, and media on issues relating to
 359 climate change, earthquakes, volcanoes, and coastal hazards, and water resources issues. An
 360 overview of the Department’s role in the university is presented in Table 2 below.

361 Table 2. Departmental Initiatives & Links to COS and OSU

Entity	Details	Geosciences connections
OSU Strategic Plan (11-30-08 draft)	Signature area of excellence: Understanding and Sustaining Earth Ecosystems – “healthy planet”. Improving the understanding and sustainability of the earth ecosystems upon which all life depends, and do so in ways that can lead to enhanced impact on public policy decisions related to climate change, food security and safety, renewable energy production, and economic vitality based on sustainable natural resources.	The Geosciences Department is central to this signature area. Some aspects of our department are probably more critical than others to this signature area.
	Increase faculty capacity in signature areas and improve faculty strength through coordinated faculty	Continue to be both thoughtful and flexible in our hiring and take advantage of

	hiring.	opportunities in areas viewed broadly by OSU to be strategic.
	Increase total grants and contracts to expand the impact of research on scholarship and the creative work of faculty, and enhance partnerships with the business and corporate sector, other universities and associations, and non-profit and non-governmental organizations. Increase revenues from research grants and contracts, technology transfer, and commercialization activities.	Our grants income has increased significantly in recent years. We need to continue to emphasize this.
	Raise the profile of graduate education at OSU through repositioning of existing programs and introducing targeted new programs to support OSU's three areas of excellence.	We will need to consider this if we revise our graduate program.
	Increase OSU's visibility and presence regionally – especially in the Portland metropolitan area and Central Oregon – nationally, and internationally.	Geosciences has important connections to Central Oregon. Probably, we could do more in this area. We have significant activity internationally.
	Increase participation and success of students from under-represented U.S. minorities and international students, and equalize six-year graduation rates for all student cohorts.	Bring in more minority and international students.
COS Strategic Plan (4/27/04)	The College is developing further the programs focused around earth dynamics and resources.	This is what we do.
	To provide outstanding graduate education in all COS programs;	Graduate programs
	To engage in basic and applied research to advance the frontiers of scientific and technical knowledge, and to preserve and advance the health, environment, and economic welfare of the citizens of Oregon and the nation;	Research programs
	To improve the quality of education and technical training in science and mathematics by working with community colleges, schools, and state and regional agencies.	Lillie's free-choice learning; our work on various issues important to Oregon. Outreach activities in grants.
Eco-Informatics IGERT	http://ecoinformatics.oregonstate.edu/	Jones is the PI; several of our students are in the program; several faculty are involved.
Institute for Water & Watersheds	http://water.oregonstate.edu/	Campana is on our faculty. Several faculty are involved. Haggerty helped write the initiative. Wolf is on advisory board.
Water Resources Graduate Program	http://oregonstate.edu/gradwater/	Key sources of students for Geosciences. Several faculty and students are part of the program. Haggerty helped write proposal and is currently Associate director; several other contributed as well. Nolin served as Associate Director of Water Resources Science; Lancaster serves as Associate Director of Water Resources Engineering; Santelmann is Director.
Marine Resource Management	http://www.coas.oregonstate.edu/index.cfm?fuseaction=content.display&pageID=12	Wright advises in the program.
GIScience	http://www.geo.oregonstate.edu/ucgis/	Wright heads the GIScience Certificate Program. Nolin and Kimerling are involved in OSU GIScience as educators and advisors.
HJ Andrews LTER & Exp. Forest	http://andrewsforest.oregonstate.edu/	Several faculty involved at the HJA. Several students do research there.

		Jones is co-PI on NSF grant.
Rural Studies Program	http://ruralstudies.oregonstate.edu/program.htm	Gosnell was hired via the initiative and is involved.
Oregon Climate Change Research Institute	http://oregonstate.edu/groups/geco/pages/OCCRI.html	Clark chaired the hiring committee for the OCCRI Director. Nolin is on the Science Advisory Board.
COAS		Various connections – many of our faculty have extensive collaborations with COAS faculty.
Oregon Space Grant	http://spacegrant.oregonstate.edu/	de Silva is Associate Director

362

363 1.3 Goals

364 [15] Longer-term goals include the following, which are reflective of the department’s most
 365 recent long-range plan:

- 366 • Increase faculty capacity in signature areas and improve faculty strength through
 367 coordinated faculty hiring.
- 368 • Increase total grants and contracts to expand the impact of research on scholarship and
 369 the creative work of faculty, and enhance partnerships with the business and corporate
 370 sector, other universities and associations, and non-profit and non-governmental
 371 organizations.
- 372 • Raise the profile of Geosciences graduate education at OSU through repositioning of
 373 existing programs and introducing targeted new programs to support OSU’s three areas
 374 of excellence.
- 375 • Attract the best students to OSU’s Geography and Geology graduate programs by
 376 providing competitive assistantships, scholarships and fellowships. In addition we strive
 377 to promote academic excellence, cultural-, age-, and gender-diversity, and a strong sense
 378 of community among faculty and students.
- 379 • Increase participation and success of students from under-represented U.S. minorities and
 380 international students, and equalize six-year graduation rates for all student cohorts.

- 381 • Increase access to innovative, relevant educational programs through non-traditional
382 delivery modes that serve place-bound students, address targeted business needs, and
383 promote lifelong learning.

384 **1.4 Current Challenges and Issues**

385 *1.4.1 Departmental Challenges*

386 [16] As we compile this self-study, the department is on the threshold of yet another merger. A
387 plan to form a new college, the College of the Earth, Oceans, and Atmosphere, comprised of the
388 Department of Geosciences and the College of Oceanic and Atmospheric Sciences (COAS), is
389 moving forward. Barring any unforeseen impediments, the plan is to complete the merger and
390 form the new college beginning in July 2011. Thus, this review takes place at an odd time. We
391 look back in order to seek advice for the future, but the future does not bear much resemblance to
392 the past. All of our graduate degrees will be carried over into the new college, but the
393 department will effectively be disbanded and reorganized according to disciplinary groups. As
394 with our colleagues from COAS, we struggle with identifying the best parts of our graduate
395 programs and to find ways to carry those over into the new unit. Examples of other challenges
396 to the department arising because of the merger include: (1) how to stay connected with our
397 Alumni base and our Board of Advisors, (2) how and whether to maintain the programs once the
398 department ceases to exist, and (3) how to maintain strong graduate (and undergraduate) major
399 programs in an era where the university prioritizes service and large enrollment courses.

400 [17] Graduate student experience represents an on-going concern of the department. Graduate
401 students play two roles in the department, in that they deliver courses and enrich the intellectual
402 atmosphere. They are the lifeblood of an integrated research and teaching program. We see a

403 linkage between graduate student experience, support, education, and productivity. Teaching
404 assistants, for example, play a central role in the educational experience in the lab- and
405 recitation-based courses. Their salaries are low now and low in comparison with graduate
406 students in COAS; equity demands that TA salaries must rise after the merger such that all
407 graduate students receive comparable pay. The current support level for TAs and RAs impacts
408 our ability to attract top graduate students because the TA is one recruitment tool. Moreover, the
409 limited TA resources (see below) result, in some cases, in labs that are monstrously large, which
410 require considerable effort by the TA while diluting the educational impact of the lab. From the
411 perspective of graduate student education, the university-wide shift towards requiring class size
412 minimums negatively impacts graduate-only courses, which are inherently small. Attracting the
413 highest quality students requires providing the best possible graduate education and experience,
414 of which rigorous, graduate-only courses are one piece. Continuing to improve the graduate
415 program in the face of budgetary and resource limitations challenges the department.

416 [18] If the promotion and tenure files put forth by the department this year are successful, there
417 will be no tenure-track Assistant Professors and two tenured Associate Professors in each
418 program. The department is top heavy, which is a direct reflection of the infrequent hiring into
419 the tenure-track ranks of the last 10 years. The aging demographic of the faculty is problematic
420 for both programs.

421 [19] Financial dependence on income generated through participation with the OSU Extended
422 Campus represents both a benefit and a challenge to the department.. In the face of ever-
423 shrinking state budgets in 2004, OSU as a campus was motivated to invest heavily in distance
424 education by way of a new unit, the OSU Extended Campus (e-campus), ascribing to the tenet of
425 the Institute for Higher Education Policy that “distance learning can be quality learning.”

426 Geosciences responded in turn with the development of a large number of undergraduate
427 Extended Campus courses, recognizing not only the financial potential of distance education, but
428 also how it may contribute to the promotion and growth of existing and new programs. The
429 department as a whole was very successful at the outset in its distance education program,
430 generating approximately \$250,000 in FY2006. This financial success has continued to the point
431 that our distance education offerings pay for themselves, providing some much needed support
432 for basic departmental functions, as well as the lion's share of dollars needed to **fund our on-**
433 **campus graduate teaching assistants** (we do not receive nearly enough funding from the
434 College of Science to cover the teaching assistantships required for the courses we offer). Our
435 hope was to generate enough revenue to fund up to two tenure-track positions for the department,
436 the first by 2005 and the second by 2007. However, we succeeded only in obtaining one non-
437 tenure track position which exists within the Geology Program, and this is only partially covered
438 by Geosciences distance education revenue. We intend to continue with our efforts in this area
439 with the development of new courses, graduate certificates in Geographic Information Science
440 and Water Conflict & Transformation, and a Geography minor, all offered through Extended
441 Campus, but we do not expect to fund future tenure-track faculty positions with this revenue.

442 *1.4.2 Challenges for the Geography Program*

443 [20] The most pressing challenge confronting the program is that of staffing. With
444 implementation of its long-range plan of 1993 and with the guidance of the chair, Sherman
445 Bloomer, the Geography Program contributed significantly to an increased number of student
446 credit hours taught, as well as an increased number and amount of grants and awards, despite a
447 decrease in faculty after the merger (Table 1). However, both sides of the department have
448 struggled to fill significant gaps in faculty numbers (and as a result in curricula), the Geography

449 Program to a greater extent than the Geology Program. In the early 2000s the Geography
450 Program found itself unable to fulfill both undergraduate and graduate curricular requirements in
451 regional and resource geography, putting the viability of the program at risk. The hires in 2003 of
452 a tenure-track faculty member (Larry Becker) and non-tenure track instructors (Kahn, Cook)
453 eased the crisis (Table 1). Our staffing is still too small to comfortably accomplish all that we
454 need to. The Geography Program is at 7.0 FTE (really 6.0 FTE as at least one faculty member
455 has been on sabbatical annually for the last few years), as compared to 10.0 FTE for the Geology
456 Program. At 6.0-7.0 FTE we attempt to cover curricular needs, conduct high-quality research
457 and service, and compete for graduate students with Geography at other universities with faculty
458 FTE levels that are 2-3 times greater.

459 *1.4.3 Challenges for the Geology Program*

460 [21] Whereas it is easy to compile a laundry list of challenges facing the Geology Program, a
461 recurrent and seemingly intractable issue is teaching and research lab space (true for the
462 Geography program as well). As outlined below, university allocation of research space to the
463 department is only 50% of that mandated by OSU's own metrics. Recent addition of lab space
464 for research has come at the expense of lab space for teaching. We reallocated because of the
465 success and needs of one of our faculty members, needs that were not being adequately
466 addressed at higher levels in the university. As the result of this change, for example, roughly
467 800 ft² of teaching lab space was lost and the loss was compensated for by changing and
468 increasing the use of one of the few other teaching labs in the building.

469 [22] A major future issue for Geology program concerns how graduate degrees in Geology
470 will evolve given the merger of COAS and Geosciences. We envision four alternative scenarios,

471 or variants of these. One is the *status quo*: we continue to offer the existing MS and PhD
472 Geology degrees with the current curriculum, but in the new college. There will also be unified
473 Ocean, Earth, and Atmospheric Science degrees offered with multiple options, one being “solid
474 earth” (marine geology and geophysics renamed). The Geology degree will compete with this
475 OEAS-solid earth degree in some sense. A second option is a hybrid model, where we still offer
476 MS and PhD degrees in Geology, but we work to meld the curricula somewhat, sharing a
477 significant number of elective courses with OEAS, for example. A third option would be to
478 further incorporate Geology degrees in to the new OEAS degree structure, making Geology an
479 option like the new undergraduate degree options created for the unified OEAS degree. In this
480 scenario all graduate students in the new college would take the same core courses (so the
481 biologists, physical oceanographers, chemical oceanographers, geological oceanographers,
482 geologists would all be in the same core courses), but students who formerly would have been
483 Geology graduate students might take a specific set of electives, unique from the “solid earth”
484 students. The fourth scenario is that we abandon the Geology degrees completely, and go with
485 the new CEOAS structure. Geology students become part of the group that participates in the
486 solid earth option.

487 [23] Which of these options would be best? Taking advantage of the efficiencies the merger
488 offers would demand abandoning at least option 1. Going all the way to option four risks the
489 loss of the identity of pure geology. Option 3 makes perhaps the most sense. Since COAS has
490 not traditionally offered an MS, but Geology has, how to deal with the MS would remain as an
491 issue.

492

493 **1.5 Review Goals – Note from Andrew – I think these should be tied to the Challenges**
494 **above and then reprised at the end where we have to evaluate our self-study.**

495 [24] As a department with faculty having connections and contributions across the University,
496 we have lost some of the ability to sensibly prioritize the many things we do, including major
497 participation in the Water Resources Graduate Program (the Director and two Associate
498 Directors of which are Geosciences faculty members), participation in other programs, and
499 several certificate programs.

500 [25] As we join a new and different college, is it still worth the effort of maintaining distinct
501 disciplinary programs in Geology and Geography?

502 [26] What is the strategy for attracting the best graduate students and providing a work/pay
503 environment that is consistent with the department mission to provide the courses and other
504 resources to train graduate students?

505 [27] What strategy should we employ to increase the amount of space allocated from the
506 College and University for teaching and research labs? If we continue to convert teaching labs to
507 research lab space, how can we continue to teach high-quality labs with ever-decreasing lab
508 sapce?

509 [28] Our faculty is thinning in Geography to the point where it is becoming difficult to sustain
510 the graduate program. In the department as a whole, the rate at which we are promoting faculty
511 to the senior ranks is dramatically outpacing the addition of new assistant professors. Whereas
512 every long-range plan has included staffing plans and hiring priorities, we have been virtually
513 unable to use those plans to strategically replace retiring faculty, to steadily fill the assistant
514 professorial ranks, and to maintain faculty FTE levels. What strategy do we employ to insure the

515 viability of our degrees, and the diversity of our faculty (in race, gender, age, and seniority)?

516 [29] As a result of the program review, the faculty hopes to receive constructive suggestions
517 for improvement, and concrete guidance on some directions to take in the future (i.e., “What
518 direction should we take for the future, especially in light of modest-to-dwindling financial
519 resources?”). We also ask the review panel for suggestions that will help us develop the strengths
520 of our program (i.e., “How can we get even better?”). In addition, we ask: “How can we turn the
521 results of this program review to our best advantage when approaching alumni and donors?”
522 Finally, we are particularly interested in feedback that will help to facilitate and inform the
523 impending merger with COAS.

524 **2. Program Description**

525 [30] [Some more distinctions between programs with section-intro text here?]

526 [31] The Department of Geosciences comprises Geology and Geography graduate programs,
527 plus major participation in the Water Resources Graduate Program, some Environmental
528 Sciences, and the Marine resource Management Program. Master’s and PhD degree programs in
529 Geology and Geography are maintained. Graduate certificate programs are also supported.
530 Training of future scientists, professionals, and educators forms the basis of our graduate
531 curriculum. Teacher training takes the form of Teacher Assistantships and mentoring of the
532 TAs. Faculty engage in a diverse spectrum of Departmental, College, and University service
533 duties. Numerous contributions to the profession in terms of leadership positions on major
534 panels, editorships and assistant editorships, and through participation and leadership of
535 professional societies. Departmental faculty engage the public, politicians, and the business
536 community through outreach lectures, seminars, K-12 speaking engagements, working with

537 Federal agencies, local science events, interviews with media, alumni events, and a host of other
538 outreach opportunities. The Geology and Geography programs operate independently in terms
539 of curriculum development, student progress assesment, and degree requirements. We act as a
540 single entity in TA assignments, admissions, faculty hiring priorities, and other decision-making
541 as it pertains to maintainence of the graduate programs.

542 **2.1 Students**

543 *2.1.1 Admissions Selectivity*

544 [32] Average entering GPAs and quantitative GRE scores of admitted and matriculated
545 students for the last 5 years and comparisons to peer institutions (see section on outcomes,
546 below) are summarized in Table 3, and all quantitative measures are shown in detail for the
547 Geography, Geology, and Water Resources Programs in Table 4, Table 5, and Table 6,
548 respectively. For the Geography and Water Resources students, GPAs of matriculated students
549 are slightly lower than for admitted students, which is expected if the best students are more
550 likely to have more offers and are therefore less likely to accept OSU's offer. Curiously, the
551 average GPA of matriculating students is somewhat higher than that of admitted students for the
552 Geology Program. Quantitative GRE scores of matriculating students are lower that for admitted
553 in all 3 programs, but the difference is only significant for the Geography Program. Matriculating
554 GRE scores are lower than for peer institutions, and the difference for Geology is substantial. All
555 quantitative measures are greater for the Water Resources Graduate Program than for the
556 Geography and Geology Programs. The 3 programs apparently vary in their selectivity, and the
557 difference between Geography and Geology Programs is real in this respect: Geography
558 generally gets fewer applications and matriculates more students. Over the period shown,

559 Geology applicants have almost never been admitted without also offering financial aid, but the
 560 policy in the Geography Program has been less consistent in this regard.

561 [33] Students entering the 3 programs are classified and counted by degree sought, gender,
 562 ethnicity, and residency in Table 7, Table 8, and Table 9. We have no data for honors and awards
 563 received by applicants, but honors and awards for current and recent students are detailed in later
 564 sections.

565 Table 3. Summary of student quantitative measures and comparison to peers*

	Admitted		Matriculated		Applicant- matriculation ratio	Peers Quant GRE
	GPA	Quant. GRE	GPA	Quant. GRE		
Geography	3.52	666	3.48	636	5.82	656
Geology	3.49	653	3.57	651	10.7	736
Water Resources	3.73	716	3.69	713	4.00 [#]	Not avail.

566 *See section on outcomes, below.

567 [#]Number reflects only those applicants reviewed by Geosciences faculty (a subset reflecting some preliminary screening) and
 568 those matriculating in Geosciences.

569 Table 4. Applicant characteristics for Geography Graduate Program

ACADEMIC YEAR		2005	2006	2007	2008	2009
Number of Applicants		55	66	48	60	49
Admitted		35	28	19	14	12
Gender	Male	21	18	8	9	1
	Female	14	10	11	11	11
Citizenship	Domestic	32	25	17	12	11
	International	3	3	2	2	1
Degree	Master's	26	16	16	12	9
	PhD	9	12	3	8	3
Average GPA		3.50	3.42	3.58	3.60	3.50
Average GRE (verbal) (*only percentage was available)		73%*	546	589	560	578
Average GRE (quantitative)		62%*	645	671	700	648
Average GRE (analytical/analytical writing)		62%*	4.5/715	4.5/755	4.5/655	4.4
Average TOEFL					93 iBT	89 iBT
Rejected		12	31	29	40	37
Gender	Male	7	15	18	26	16
	Female	5	16	12	14	21
Citizenship	Domestic	7	16	21	29	24
	International	5	15	8	11	13
Degree	Master's	8	26	24	26	20
	PhD	4	5	5	14	17
Average GPA		3.47	3.44	3.42	3.38	3.42
Average GRE (verbal) (*only percentage was available)		70%*	543	498	490	476
Average GRE (quantitative)		63%*	642	668	660	665
Average GRE (analytical/analytical writing)		54%*	4.5/490	4.1/620	3.0/390	4.1
Average TOEFL – (94 iBT/453 PBT) (88 iBT/123 CBT)					94/453	88/123
Withdrew		0	6	0	0	10
Refused Offer		16	15	8	8	7

ACADEMIC YEAR		2005	2006	2007	2008	2009
Gender	Male	8	9	2	2	0
	Female	8	6	6	6	7
Citizenship	Domestic	13	13	8	6	7
	International	3	2	0	2	0
Degree	Master's	13	9	8	2	4
	PhD	3	6	0	6	3
Average GPA		3.58	3.50	3.69	3.70	3.64
Average GRE (verbal) -- *only percentage was available		70%*	535	628	614	649
Average GRE (quantitative)		63%*	622	705	738	691
Average GRE (analytical/analytical writing)		63%*	4.7/780	5.0	4.6	4.7
Average TOEFL					93 iBT	
Matriculated		17	13	8	12	5
Gender	Male	12	9	4	7	1
	Female	5	4	4	5	4
Citizenship	Domestic	17	12	7	12	4
	International	0	1	1	0	1
Degree	Master's	11	7	5	10	5
	PhD	9	6	3	2	0
Average GPA		3.45	3.55	3.51	3.55	3.32
Average GRE (verbal) (*only percentage was available)		78%*	525	579	560	478
Average GRE (quantitative)		59%*	616	641	700	586
Average GRE (analytical/analytical writing)		60%*	4.8	4.4	4.5/655	3.9
Average TOEFL						89 iBT

570

571 Table 5. Applicant characteristics for Geology Graduate Program

ACADEMIC YEAR		2005	2006	2007	2008	2009
Number of Applicants		74	79	78	81	87
Admitted		38	19	38	26	12
Gender	Male	25	9	20	10	8
	Female	13	10	18	16	4
Citizenship	Domestic	35	19	35	26	10
	International	3	0	3	0	2
Degree	Master's	25	14	15	13	7
	PhD	13	5	16	13	5
Average GPA		3.27	3.65	3.53	3.47	3.52
Average GRE (verbal)		495	561	553	547	526
Average GRE (quantitative)		631	674	678	628	653
Average GRE (analytical/analytical writing)		4.3/624	5.0/450	4.6/640	4.3	4.3/750
Average TOEFL		618				90 iBT
Rejected		28	52	40	54	73
Gender	Male	13	24	23	32	41
	Female	15	28	17	22	32
Citizenship	Domestic	24	52	39	49	64
	International	4	0	1	5	9
Degree	Master's	21	25	31	42	56
	PhD	7	8	9	12	17
Average GPA		3.29	3.32	3.30	3.39	3.34
Average GRE (verbal)		525	525	496	538	509
Average GRE (quantitative)		638	657	622	671	672
Average GRE (analytical/analytical writing)		4.5/710	4.5/740	5.0	4.2	3.9
Average TOEFL **97 iBT/273 CBT/548 PBT - ^84.2 iBT/105 CBT/247 PBT		555 PBT			**	^
Withdraw		0	8	0	0	10
Application/Refused Offer		5	11	30	17	5

ACADEMIC YEAR		2005	2006	2007	2008	2009
Gender	Male	3	4	15	6	3
	Female	2	7	15	11	2
Citizenship	Domestic	5	11	28	16	4
	International	0	0	2	1	1
Degree	Master's	4	8	16	7	3
	PhD	1	3	14	10	2
Average GPA		3.66	3.69	3.54	3.49	3.32
Average GRE (verbal)		548	573	554	548	518
Average GRE (quantitative)		672	711	683	617	652
Average GRE (analytical/analytical writing)		5.0	5.2	4.6	4.4	4.4
Average TOEFL		0			603 PBT	80 iBT
Matriculated		6	8	8	9	7
Gender	Male	3	5	5	4	5
	Female	3	3	3	5	2
Citizenship	Domestic	6	8	7	9	6
	International	0	0	1	0	1
Degree	Master's	3	6	4	6	4
	PhD	3	2	4	3	3
Average GPA		3.66	3.56	3.52	3.43	3.67
Average GRE (verbal)		555	541	548	546	531
Average GRE (quantitative)		677	616	659	649	653
Average GRE (analytical/analytical writing)		4.7/780	4.6/450	4.7/640	4.1	4.3/750
Average TOEFL		0				100 iBT

572

573 Table 6. Applicant characteristics for Water Resources Graduate Program

ACADEMIC YEAR		2005	2006	2007	2008	2009
Number of Applicants		5	21	25	27	12
Admitted		4	13	4	11	7
Gender	Male	2	7	2	6	3
	Female	2	6	2	5	4
Citizenship	Domestic	4	12	4	9	7
	International	0	1	0	2	0
Degree	Master's	4	10	3	10	6
	PhD	0	3	1	1	1
Average GPA		3.90	3.69	3.66	3.71	3.69
Average GRE (verbal)		610	565	610	485	630
Average GRE (quantitative)		730	675	718	740	717
Average GRE (analytical/analytical writing)		4.5	4.5/605	4.8/640	4.0	4.75/610
Average TOEFL						
Rejected		1	8	21	16	5
Gender	Male	1	4	11	10	5
	Female	0	4	10	6	0
Citizenship	Domestic	1	8	21	16	4
	International	0	0	0	0	1
Degree	Master's	1	8	20	7	4
	PhD	0	0	1	3	1
Average GPA		0	3.47	3.58	3.46	3.46
Average GRE (verbal)		0	543	537	605	470
Average GRE (quantitative)		0	687	672	685	544
Average GRE (analytical/analytical writing)		0	4.4	4.4/655	4.0	3.5
Average TOEFL						65 iBT
Withdraw		0	0	0	0	0
Application/Refused Offer		0	1	0	7	4
Gender	Male	0	1	0	3	3

ACADEMIC YEAR		2005	2006	2007	2008	2009
	Female	0	0	0	4	1
Citizenship	Domestic	0	1	0	6	4
	International	0	0	0	1	0
Degree	Master's	0	0	0	7	3
	PhD	0	1	0	0	1
Average GPA		0	3.93	0	3.72	3.81
Average GRE (verbal)		0	600	0	530	600
Average GRE (quantitative)		0	720	0	750	723
Average GRE (analytical/analytical writing)		0	6.0	0	4.0	5.2/610
Average TOEFL		0	NA	NA	105 iBT	NA
Matriculated		4	12	4	4	3
Gender	Male	2	6	2	3	2
	Female	2	6	2	1	1
Citizenship	Domestic	4	11	4	3	3
	International	0	1	0	1	0
Degree	Master's	4	10	3	3	3
	PhD	0	2	1	1	0
Average GPA		3.90	3.67	3.66	3.68	3.52
Average GRE (verbal)		610	562	610	470	670
Average GRE (quantitative)		730	671	718	737	710
Average GRE (analytical/analytical writing)		4.5	4.4	4.8/640	4.0	4.3
Average TOEFL		NA	NA	NA	77 iBT	NA

574

575 Table 7. Matriculating student characteristics for Geography Graduate Program

Fall Term	Gender		Residency			American Indian – Alaskan Native	Asian – Pacific Islander	Black	Hispanic	White	Unknown	Total
	Female	Male	Resident	Non-Resident	International							
2005	5	12	na	na	0			1	1	15		17
2006	4	9	3	9	1			1		12		13
2007	4	4	na	7	1				1	7		8
2008	5	7	na	na	0					12		12
2009	4	1	na	na	1			1		3	1	5

576

577 Table 8. Matriculating student characteristics for Geology Graduate Program

Fall Term	Gender		Residency			American Indian – Alaskan Native	Asian – Pacific Islander	Black	Hispanic	White	Unknown	Total
	Female	Male	Resident	Non-Resident	International							
2005	3	3	na	na	0					6		6
2006	3	5	1	7	0					8		8
2007	3	5	1	6	1		1			7		8
2008	5	4	na	na	0		1			8		9
2009	2	5	na	na	1			1		6		7

578

579 Table 9. Matriculating student characteristics for Water Resources Graduate Prog.

Fall Term	Gender		Residency			American Indian – Alaskan Native	Asian – Pacific Islander	Black	Hispanic	White	Unknown	Total
	Female	Male	Resident	Non-Resident	International							
2005	2	2			0					2	2	4
2006	6	6			1	1	1			9		12
2007	2	2	1	3	0		1			3		4
2008	1	3								1	2	3
2009	1	2								1	2	3

580

581 *2.1.2 Diversity Recruitment Strategies*

582 [34] To establish a pipeline of qualified students from under-represented groups to enter
583 graduate school in the Geosciences, we are: (1) working with Oregon Community Colleges and
584 OSU minority-population focused programs (CAMP – College Assistance Migrant Farm
585 Program, EOP - Educational Opportunities Program, and SSS - Student Support Services); (2)
586 forming partnerships to recruit students from minority serving institutions for Native Americans,
587 Hispanic, and African American students (e.g., our NSF-funded Increasing Diversity in Earth
588 Sciences (IDES) research mentorship program (<http://ides.science.oregonstate.edu>); (3) using
589 minority-serving recruitment devices, including the Western Name Exchange, the California
590 Forum for Diversity; and (4) proposing sessions at minority professional societies, including the
591 Society for the Advancement of Chicanos and Native Americans in Science (SACNAS).
592 Geoscience faculty actively develop and maintain an international presence, to meet OSU
593 strategic plan goals of responding to globalization by increasing the numbers of international
594 students. As such, departmental faculty and graduate students in have current projects in the
595 Middle East (Israel, Palestine, South America (Argentina, Chile, Peru), Africa (Eritrea, Ivory

596 Coast, Mali), Asia (Pakistan and India), and Europe (Greenland, Ireland, Belgium, and
597 Denmark). The department has been successful in obtaining OSU Laurels Block Grants,
598 administered annually by the OSU Graduate School and awarded to select graduate programs
599 proposing innovative and/or successful methods for enhancing the diversity and quality of their
600 graduate student populations.

601 [35] The department seeks to increase efforts to recruit more of the REU (Research Experience
602 for Undergraduates) students who participate in temporary research projects at OSU. Geography
603 faculty members encounter highly capable undergraduates in our roles as co-organizers of the
604 Ecosystem Informatics Summer Institute and Hatfield Marine Science REU, as well as in REU
605 supplemental awards associated with ongoing NSF grants. We need to make a more coordinated
606 effort to expose REU students to faculty, graduate students, and graduate study opportunities,
607 and we have Laurels awards as incentives to encourage them to join our graduate programs.

608 [36] The department uses six metrics, in assessing the effect of our recruitment and retention
609 goals: (1) percent domestic minority, new and continuing students; (2) percent international, new
610 and continuing students (we also seek to track national origin statistics of graduate students); (3)
611 student quality (i.e., average GPA, new and continuing students, and average GRE, incoming
612 students only); (4) recruitment (number of new students who accept Laurels block grant awards
613 and the percent change of first year students from prior year, including those who have
614 participated in REU programs at OSU; (5) retention (number and percent of students retained
615 and attrition rates, and the percent changes from last year; and (6) average time to degree.
616 Finally, the OSU Geography Program is a pilot program in the new ALIGNED project of the
617 Association of American Geographers (AAG). ALIGNED (Addressing Locally-tailored
618 Information Infrastructure & Geoscience Needs for Enhancing Diversity) is a 3-year, NSF-

619 funded seeking to “align the needs of university departments and underrepresented students by
620 drawing upon the intellectual wealth of the discipline to inform and transform ways in which
621 departments envision and realize their own goals to enhance diversity”
622 (<http://www.aag.org/diversity>). The project will design and test an innovative toolkit that
623 combines a spatial decision support system prototype and an online clearinghouse of materials
624 for increasing diversity in higher education. As one of seven participating pilot departments (or
625 Geography program within hybrid/blended departments), OSU Geography is assisting with
626 piloting the design and development of the toolkit and other resources that will be produced as
627 part of the project. Through this partnership we are gaining access to valuable strategies for
628 successful diversity initiatives (Table X. or Appendix X. File: 2.2ALIGNED_strategies.xls).

629 2.1.3 Admissions

630 [37] Program admissions follow similar processes/process/procedures. Evaluation of each
631 applicant for fall admission and financial support includes the same information (GRE, GPA,
632 transcripts, personal statement, and letters of recommendation. Each applicant’s file is routed to
633 an appropriate faculty member after initial screening by a member of the Graduate Committee.
634 Three or more faculty evaluate a given file. Faculty members rank each candidate on the basis of
635 their academic record, their GRE scores, their letter of interest, and the 3 letters of
636 recommendation. At a program meeting, the applicants to a given program or to a faculty
637 member in a given program for the Water Resources applicants, are ranked on the basis of the
638 internal review. A discussion ensues in which sources of support (TA, RA, Laurels, other) are
639 identified for the “1st round” offers. In the event that a 1st round offer is refused, a list of potential
640 2nd round applicants is identified. At a second meeting of the combined programs, the list from
641 each program is compiled and a final decision of acceptances in the 1st round is made by the

642 faculty. Whereas we strive to admit only funded students, no hard and fast rule applies and a few
643 unfunded students are admitted each year.

644 [38] Our departmental and personal webpage is the dominant form of recruitment
645 (<http://www.geo.oregonstate.edu/>), although we do approach diversity candidates when we learn
646 of their names and through OSU sources.

647 2.1.4 *Financial Support*

648 [39] Fellowships and scholarships awarded and selection process (Table C). *Table currently*
649 *with Dawn, then to Mary, then to Andrew. [2/3/11 - Dawn has finished and passed this on to*
650 *Mary.]*

651 [40] Funding sources and types for Geography are shown in Table 10, and for Geology in
652 Table 11. As a general rule both programs strive to fully fund graduate students, and students are
653 admitted when funding for at least 2 years is reasonably certain, whether from internal or
654 external sources. At their own discretion, faculty members may decide to admit students without
655 full funding assured at the time of admission.

656 [41] Geosciences graduate students are funded through a combination of Graduate Teaching
657 Assistantships (GTAs), Graduate Research Assistantships (GRAs), and other sources often
658 combining Department and non-Department funds. GTAs and GRAs, at levels of 0.2 FTE and
659 above include both stipend and tuition waiver. Tuition funds for GTAs are provided by non-
660 Departmental funds, but tuition for GRAs must come from grant funds, except in the case of
661 special cooperative agreements, e.g., with the U.S.D.A. Forest Service.

Table 10. Geography graduate student support

662

Student	Major prof.	Funding source	Appoint-ment type	Major	Graduation Year
Geography 1	Becker	Ford Family Foundation, Oregon	Scholar	Geography	~
Geography 2	Becker	Dept. instruction	Scholar	Geography	~
Geography 3	Becker	Laurels	Scholar	Geography	~
Geography 4	Becker	Dept. instruction	GTA	Geography	2010
Geography 5	Becker	Dept. instruction	GTA	Geography	2008
Geography 6	Becker	Fulbright	Scholar	Geography	2008
Geography 7	Becker	Dept. instruction	GTA	Geography	2007
Geography 8	Becker	Dept. instruction	GTA	Geography	2007
Geography 9	Becker	Oregon Military Dept.	GRA	Geography	2007
Geography 10	Gosnell	USDA - Natl Riparian Service Team	GTA/ GRA	Geography	2010
Geography 11	Gosnell	World Bank	GTA/ GRA	Geography	2010
Geography 12	Gosnell	full time job		Geography	2010
Geography 13	Gosnell	Dept. instruction	GTA	Geography	2008
Geography 14	Gosnell	Dept. instruction	GTA	Geography	~
Geography 15	Gosnell	USDA - Natl Institute of Food and Ag	GRA	WRPM	~
Geography 16	Gosnell	USDA - Western Wildland Env'tl Threat Assessmt Ctr	GRA/ GTA	Geography	~
Geography 17	Jarvis	Private Donation		WRS	2011
Geography 18	Jones	US Forest Service		Geography	2008
Geography 19	Jones	Dept. instruction	GTA	Geography	2007
Geography 20	Jones	Dept. instruction	GTA	Geography	~
Geography 21	Jones	Dept. instruction	GTA	Geography	2007
Geography 22	Jones	Dept. instruction	GTA	WRS/ Botany	2010
Geography 23	Jones	Dept. instruction	GTA	Geography	~
Geography 24	Jones	Dept. instruction	TA	Geography	~
Geography 25	Jones	NSF IGERT	fellowship	Geography	~
Geography 26	Jones	-	-	Geography	~
Geography 27	Jones	Dept. instruction	GTA	Geography	2010
Geography 28	Jones	Dept. instruction	GTA	Geography	2010
Geography 29	Jones	Dept. instruction	GTA	Geography	~
Geography 30	Jones	-	-	WRE	2009
Geography 31	Jones	Dept. instruction	GTA	Geography	2007
Geography 32	Jones	Dept. instruction	GTA	Geography	~
Geography 33	Jones	USGS-NEHRP	GRA	Geography	2006
Geography 33	Jones	NSF IGERT	fellowship	Geography	2009
Geography 34	Jones	Dept. instruction	GTA	Geography	~
Geography 35	Jones	Dept. instruction		Geography	2008
Geography 36	Jones	NSF IGERT	fellowship	Geography/ Forest Sci.	2010
Geography 37	Jones	Dept. instruction	GTA	Geography	~
Geography 38	Nolin	COAS	GTA	WRS	~
Geography 39	Nolin	NSF	GRA	Geography	~
Geography 40	Nolin	Dept. instruction	GTA	Geography	~
Geography 41	Nolin	NASA	GRA	WRS	~
Geography 42	Nolin	NSF, NASA, Oregon Laurels	GRA	WRS	~
Geography 43	Nolin	Dept. instruction	GTA, GRA	Geography	2009
Geography 44	Nolin/ Grant	Dept. instruction, USFS, US-NPS, EPA	GTA, internship	WRE	2008
Geography 45	Nolin	Dept. instruction	GTA	Geography	2009
Geography 46	Nolin	Dept. instruction, Bonneville Power Administration	GTA, internship	Geography	2009

Student	Major prof.	Funding source	Appoint-ment type	Major	Graduation Year	
Geography	47	Nolin	Dept. instruction, GSA, Mazamas, AAG-Mountain Specialty Group	GTA, grants	WRS	2009
Geography	48	Nolin	Dept. instruction NASA	GTA, GRA	Geography	2008
Geography	49	Nolin	Dept. instruction, NASA	GTA, GRA	Geography	2007
Geography	50	Nolin	Dept. instruction NASA, OSU Aquaculture Fellowship	GTA, GRA	Geography	2007
Geography	51	Nolin	Dept. instruction, NASA	GTA, GRA	Geography	2006
Geography	52	Nolin	Dept. instruction, NASA	GTA, GRA	Geography	2005
Geography	53	Wolf	Laurels/ Dept. instruction	GRA/ GTA	WRMP	2006
Geography	54	Wolf	Dept. instruction and AREC funding	GRA/ GTA	Geography/ Agr. Econ.	2006
Geography	55	Wolf	Laurels/ Dept. instruction	GRA/ GTA	WRMP	2008
Geography	56	Wolf	NSF, Dept. instruction	GRA/ GTA	Geography	2008
Geography	57	Wolf	Dept. instruction NSF	GRA/ GTA	WRMP	2009
Geography	58	Wolf	Military		Geography	2010
Geography	59	Wolf	Military		Geography	2010
Geography	60	Wolf	USAID	GRA/ GTA	Geography	2010
Geography	61	Wolf	Dept. instruction	GTA	Geography	2006
Geography	62	Wolf	Dept. instruction	GTA	Geography	2007
Geography	63	Wolf	Dept. instruction	GTA	Geography	2010
Geography	64	Wolf	Support from his work.		Geography	2010
Geography	65	Wright	self-funded, NACSE, OSU EECS	self-funded	Geography	~
Geography	66	Wright	Laurels/ Dept. instruction	GTA	Geography	~
Geography	67	Wright	Dept. instruction	campus GIS asst'ship	Geography	~
Geography	68	Wright	GRA	GRA	Geography	~
Geography	69	Wright	Laurels/ GRA	GRA	Geography	~
Geography	70	Wright	self-funded, full-time employee of EPA	self-funded	Geography	2010

685
686 [42] To be clear, grant and contract budgets must be written to explicitly include funds for
687 graduate student tuition, although OSU does not charge indirect costs (overhead) on tuition
688 funds. This is perhaps a small point, but this OSU policy inflates our proposal budgets relative to
689 some peer institutions, even those with higher indirect cost rates and larger GRA stipends, and
690 exerts a downward pressure on our own stipends. The effect is to simultaneously reduce our
691 competitiveness in both the awarding of grants and the attracting of highly qualified graduate
692 students.

Table 11. Geology graduate student support

Student	Major professor	Funding source	Appoint-ment type	Major	Graduation Year
Geology 1	Brook	Dept. Instruction	GTA	Geology	2006
Geology 2	Brook	NSF OPP/ NASA Fellowship	GRA	Geology	~
Geology 3	Brook	NSF OPP/ NASA Fellowship	GRA	Geology	~
Geology 4	Brook	NSF OPP/ NSF Graduate Fellowship	GRA and Fellow	Geology	~
Geology 5	Clark	NSF	GRA	Geology	2006
Geology 6	Clark/ Hostettler	NSF	GRA	Geology	2008
Geology 7	Clark	NSF	GRA	Geology	2008
Geology 8	Clark	NSF	GRA	Geology	2010
Geology 9	Clark	NSF	GRA	Geology	~
Geology 10	Clark/ Hostettler	NSF	GRA	Geology	~
Geology 11	Clark	NSF	GRA	Geography	~
Geology 12	de Silva	NASA Space Grant	GRA	Geography	2010
Geology 13	de Silva	NASA EPSCoR/ Dept. Instruction	GRA/ GTA	Geology	2010
Geology 14	de Silva	NSF Petrology and Geochemistry	GRA	Geology	~
Geology 15	de Silva/ Tepley	OSU COS	GRA/ GTA	Geology	~
Geology 16	de Silva	Dept. Instruction/ NSF	GTA/ GRA	Geology	~
Geology 17	de Silva	NSF Continental Dynamics	GRA	Geology	~
Geology 18	de Silva	Dept. Instruction/ NSF	GTA/ GRA	Geology	~
Geology 19	de Silva	NSF Continental Dynamics/ Laurels	GRA	Geology	~
Geology 20	Dilles/ Kent	Oregon Laurels/ Barrick Gold Corporation/ Newmont Mining Corporation	Scholar	Geology	~
Geology 21	Dilles/ Meigs	DOE/ Ormat grant	GRA/ DOE	Geology	~
Geology 22	Dilles	mining company	stipend & tuition	Geology	~
Geology 23	Dilles	Mining company & USGS grant	GRA	Geology	~
Geology 24	Dilles	Dept Instruction, 2 terms Oregon Laurels	GTA-2 years	Geology	~
Geology 25	Dilles	Dept instruction, USGS MRERP	USGS GRA / GTA	Geology	2008
Geology 26	de Silva/ Grunder	Malaysian Geological Survey/ NSF	scholar	Geology	2009
Geology 27	Grunder	Dept. Instruction/ NSF Petrology	GTA/ GRA	Geology	2009
Geology 28	Grunder	NSF Petrology	GRA	Geology	2009
Geology 29	Grunder	Dept Instruction/ NSF Tectonics & CDP	GTA/ GRA	Geology	2007
Geology 30	Grunder	Dept Instruction/ NSF Petrology	GTA/ GRA	Geology	2005
Geology 31	Dilles/	Newport Mining	scholar	Geology	2005
Geology 32	Grunder	Dept Instruction/ NSF Petrology	GTA/ GRA	Geology	2005
Geology 33	Grunder	Dept Instruction/ NSF Petrology	GTA/ GRA	Geology	~
Geology 34	Grunder	Dept Instruction/ NSF CDP	GTA/ GRA	Geology	~
Geology 35	Grunder	Dept Instruction/ NSF CDP	GTA/ GRA	Geology	~
Geology 36	Grunder	Dept Instruction/ NSF Petrology	GTA/ GRA	Geology	~
Geology 37	Haggerty	NSF Hydrology	GTA/ GRA	WRE	~
Geology 38	Haggerty	NSF IGERT/ NSF Hydrology	GRA	WRS	~
Geology 39	Haggerty	NSF Hydrology	GTA/ GRA	WRS	~
Geology 40	Haggerty	self	none	Env. Sci.	2010
Geology 41	Haggerty	US Forest Service + Fulbright Scholar	GRA	WRS	~
Geology 42	Haggerty	Portland General Electric	GRA/ GTA	WRS	2007
Geology 43	Haggerty/ Grant	Oregon Water Resources Dept	GRA	Geology	2007

693

	Student	Major professor	Funding source	Appoint-ment type	Major	Graduation Year
Geology	44	Haggerty	EPA	GRA	Env. Eng.	2007
Geology	45	Haggerty	US Forest Service + NSF	GRA	Civil Eng.	2006
Geology	46	Haggerty	USGS-IWW/ Dept. Instruction	GTA	WRS	2006
Geology	47	Haggerty	EPA	GRA	Geology	2006
Geology	48	Haggerty	NSF	GRA	WRS	~
Geology	49	Haggerty	self	none	WRS	~
Geology	50	Kent/ Nielsen	Dept. Istruction/ NSF-EAR	GTA/ GRA	Geology	2006
Geology	51	Kent	Laurels/ Dept. Instruction	GTA/ GRA	Geology	2006
Geology	52	Kent	Dept. Instruction	GTA	Geology	2006
Geology	53	Kent/	NSF-OCE/ Dept. Instruction	GRA/ GTA	Geology	2010
Geology	54	Kent	NSF-EAR, NSF-OCE	GRA	Geology	~
Geology	55	Kent	Dept. Instruction/ NSF-EAR	GTA/ GRA	Geology	~
Geology	56	Kent	Dept. Instruction/ NSF-OCE	GTA/ GRA	Geology	~
Geology	57	Kent	Dept. Instruction, NSF-EAR	GTA/ GRA	Geology	~
Geology	58	Kent	Laurels, Self, NSF-OCE	GRA	Geology	~
Geology	59	Lancaster/ Haggerty	Oregon DEQ	GRA	Env. Eng.	2006
Geology	60	Lancaster/ Grant	NSF Fellowship/ Dept. instruction	Fellow/ GTA	Geology	2006
Geology	61	Lancaster	Dept. Instruction/ NSF Geomorphology	GTA/ GRA	Geology	2007
Geology	62	Lancaster/ Haggerty	IWW Minority Scholarship/ NSF Hydrology	Scholar/ GRA	WRS	~
Geology	63	Lancaster	NSF IGERT/ NSF Geomorphology	Fellow/ GRA	WRE	~
Geology	64	Lancaster	USGS-IWW/ Dept. Instruction	GRA/ GTA	WRE	~
Geology	65	Lancaster	Oregon Laurels	Scholar	Geology	~
Geology	66	Lancaster	Self-funded		Geography	~
Geology	67	Lillie	National Park Service/ Dept Instruction	Ranger/ GTA	Geology	~
Geology	68	Lillie	National Park Service/ Dept Instruction	Ranger/ GTA	Geology	2010
Geology	69	Lillie	National Park Service/ Dept Instruction	Ranger/ GTA	Geology	2008
Geology	70	Lillie	NPS/ Coop. Ecosys. Studies Unit/ Dept Instruc.	Ranger/ GRA/ GTA	Geology	2006
Geology	71	Meigs	Geosciences	GTA	Geology	~
Geology	72	Meigs	Geosciences	GTA	Geology	~
Geology	73	Meigs	NSF	GRA/ GTA	Geology	~
Geology	74	Meigs	NSF	GRA/ Laurels	Geology	~
Geology	75	Meigs	USGS-EdMap, Laurles	Hourly	Geology	2011
Geology	76	Meigs	NSF	GRA	Geology	2009
Geology	77	Meigs	NSF	GRA	Geology	2009
Geology	78	Grunder	NSF	GRA	Geology	2007
Geology	79	Meigs	NSF	GRA	Geology	2007
Geology	80	Meigs	NSF	GRA	Geology	2006
Geology	81	Nielsen	NSF	GTA/ GRA	Geology	2008
Geology	82	Nielsen	NSF	GTA/ GRA	Geology	~
Geology	83	Nielsen	NSF	GTA/ GRA	Geology	~
Geology	84	Ruggiero	EPA/ OR Sea Grant	GRA	OCE	2010
Geology	85	Ruggiero	OR Sea Grant	GRA	MRM	~
Geology	86	Ruggiero	NOAA Climate Program Office	GRA	MRM	~
Geology	87	Ruggiero	Dept. Instruction	GTA	Geology	~
Geology	88	Ruggiero	NOAA	GRA	MGG	~

741 [43] For incoming students, faculty of each program, Geology and Geography, or both
742 programs together meet to discuss qualifications based on the results of the application review
743 process (described above) and any personal interactions with applicants. Applicants are
744 ultimately ranked for the awarding of GTAs according to their qualifications, the willingness of
745 specific faculty members to serve as major professor, and equitable distribution among faculty
746 members. Since the beginning of the Water Resources Graduate Program (WRGP), WRGP
747 applicants have been given equal consideration for GTAs in the same pool as the Geography and
748 Geology applicants. Individual applicants' qualifications for teaching subject matter of either
749 program are one factor in the consideration of applicants. Standard "first-round" offers to
750 Geology applicants (and Water Resources applicants to be advised by Geology faculty) have
751 been at the 0.4 FTE level and included a small fellowship (Taubeneck Fellowship, amount
752 depending on endowment income and yearly contributions, especially by Emeritus Professor Bill
753 Taubeneck). Geography (and Water Resources associated with Geography faculty) applicants
754 have until the past year been offered GTAs at the 0.3 FTE level, but last year the Geography
755 applicants were offered GTAs at the 0.4 FTE level in order to bring them to parity with Geology
756 GTAs. GTAs are generally made with the expectation of providing 2 years of full funding
757 (stipend and tuition) for M.S. students and 3 years for Ph.D. students. Students who have
758 exhausted GTA, GRA, or other funds but are making good progress toward completion of their
759 degrees are often awarded GTAs by assent of other faculty before deciding on offers to new
760 students, although this has not always been the case, and it was not unusual for a program to cut
761 off funding to an existing student in favor of an offer to a new student. Each program has
762 developed their own policies, and those policies have evolved over recent years away from
763 favoring new students to favoring existing students. Occasionally GTAs are offered to students

764 from programs other than Geology, Geography, and Water Resources on a term-by-term basis
765 when teaching needs cannot be met by students in these programs. In such cases, first priority is
766 given to students advised by Geosciences faculty, e.g., in the Environmental Sciences Graduate
767 Program.

768 [44] Faculty members with grant funds or specially allocated GTAs choose the applicants to
769 whom they will make GRA or special GTA offers, as long as the applicants have been found
770 acceptable for admission by the application review process and general assent. In a few cases, we
771 have been successful in finding funding for incoming students through grants to faculty members
772 in other departments in cases where those faculty members have been unable to find students of
773 their own. Likewise, faculty in Geosciences sometimes offer GRAs to students from other
774 programs for similar reasons. The large number of students funded in Geosciences by GTAs
775 provides a population of well-qualified students that can take advantage of such opportunities as
776 they arise.

777 [45] The programs also typically have access to some amount of Oregon Laurels Scholarship
778 funds awarded to each program by OSU. In recent years, these funds have been specially
779 targeted toward increasing the number of students from under-represented groups, such as under-
780 represented minorities, women, and first-generation college graduates. As the Laurels funds
781 cover only tuition, the viability of offers including Laurels requires funds for stipends, typically
782 from grants to individual faculty members. As a department, we have also been successful in
783 obtaining targeted scholarships and fellowships, such as OSU's Pipeline Fellowship and the
784 Institute for Water and Watershed's Minority and Excellence Fellowship. These fellowships
785 typically award only one year of funding, and the Geology and Geography Programs have
786 typically committed to provide funding for the second year.

787 [46] Given that we try to fully fund every student, our relative success, based on alumni/ae
 788 surveys (for which more detailed results are presented in a later section) is addressed here: (1)
 789 For what percentages of their times to degree completion did students receive a stipend and/or a
 790 tuition waiver/scholarship? (2) What percentage of respondents had stipends and/or tuition for
 791 100% of their times to degree? The answers according to alumni/ae surveys, conducted for
 792 purposes of this self study, are shown in Table 12. Note that students were explicitly asked about
 793 GTAs and GRAs and not about times they might have received other funding, such as
 794 fellowships or military sponsorship.

795 Table 12. Summary of each program's history of graduate student funding*

	Average percentage of time with TA or RA stipend		Average percentage of time with tuition waiver		Percentage of respondents with stipend for 100% of time		Percentage of respondents with tuition waiver for 100% of time		Number of respondents	
	Since 2005	All	Since 2005	All	Since 2005	All	Since 2005	All	Since 2005	All
Geography	65%	76%	59%	62%	40%	47%	47%	50%	15	37
Geology	93%	65%	96%	50%	40%	28%	60%	24%	5	25

796 *Figures are based on exit surveys completed by Geosciences alumni/ae in December, 2010 to January, 2011. Respondents' years
 797 of graduation included the ranges 1979-2010 for Geography and 1962-2007 for Geology.

798 2.2 Geography Curriculum

799 2.2.1 Geography Courses

800 [47] There are 25 regular courses offered as part of the Geography Graduate Program, 4 of
 801 which are held in common with the Geology Program, and 14 (56%) of which are offered with
 802 an undergraduate version (slash courses). All Geoscience graduate courses with their learning
 803 outcomes and the schedule of course offerings are shown in appendix Table A - 1 and Table A -
 804 1.

805 2.2.2 *Geography Requirements*

806 [48] The Geography graduate program requires that students have the following or equivalent
807 courses in their background: Basic Physical Geography (e.g., GEO 201), Introduction to
808 Statistical Methods (e.g., ST 351), Environmental Conservation and Sustainability (e.g., GEO
809 300), and Cartography (e.g., GEO 360). Doctoral students must enter the program with
810 coursework equivalent to a Master degree in Geography (or they may pursue a Master degree
811 here, write a thesis, and continue on directly to the Ph.D.). Exit requirements from the program
812 include a graduate-level field course (e.g., GEO 548, Field Research in Geomorphology and
813 Landscape Ecology); at least one graduate course in physical geography (e.g., Applied
814 Climatology, Applied Geomorphology, Advanced Landscape Ecology, Snow Hydrology, etc.);
815 at least one graduate course in resource geography (e.g., Geography of Resource Use, Land Use
816 in the American West, Water Resources Management, etc.); either GEO 544, Remote Sensing or
817 GEO 565, Digital Image Processing; either GEO 565, Geographic Information Systems and
818 Science or GEO 580, Advanced Applications of GIS in the Geosciences; and at least one
819 graduate course in Statistics (e.g., ST 511, Methods of Data Analysis or GEO 541, Spatio-
820 Temporal Variation in Ecology and Earth Science).

821 [49] All graduate students must complete three terms of GEO 507, Seminar: Geographic
822 Research, GEO 515, History and Philosophy of Geography, and GEO 518, Geoscience
823 Communication. In addition, GEO 534, Field Geography of Oregon, offered 2 weeks before the
824 start of fall-term classes, is highly recommended, especially as a way for new students to form a
825 cohesive community among themselves. All Master-degree students must complete either a
826 thesis (with standard thesis defense) or a final 25-page research paper (oral exam that normally
827 covers coursework). All doctoral students must submit and publicly defend a dissertation

828 proposal *before* moving on to preliminary/qualifying exams. Both the M.A. and Ph.D. in
829 Geography have a foreign language requirement.

830 [50] And finally, the Geography Program requires that all graduate students complete two of
831 three professional experience requirements: (1) a Master or Doctoral research proposal (usually
832 accomplished in GEO 518); (2) a public presentation of research at a professional meeting or
833 department seminar; and (3) a research grant proposal, submitted to an agency for funding.

834 2.2.3 *Geography Seminar Series*

835 [51] Every fall the Geography Seminar consists of regular and courtesy OSU Geography
836 faculty so that the students may become more fully acquainted with each faculty member's
837 research, teaching, and possible project opportunities for students. In the winter and spring
838 Geography seminars consist of invited speakers or at times both Geography and Geology
839 programs have hosted a combined Geosciences seminar on selected themes (e.g.,
840 geovisualization, global climate change, alumni perspectives/career information, etc.), Schedules
841 and a sample syllabus of the seminar series for the past 3 years is included in the appendix
842 (9.1.2).

843 **2.3 Geology Curriculum**

844 2.3.1 *Geology Courses*

845 [52] There are 24 regular courses offered as part of the Geology Graduate Program, 3 of which
846 are cross-listed from and primarily taught by faculty from other departments, 4 of which are held
847 in common with the Geography Program, and 11 (46%) of which are offered with an
848 undergraduate version (slash courses). All Geoscience graduate courses are listed with their

849 learning outcomes in appendix Table A - 1, and the schedule of course offerings for the past 5
 850 years in Table A - 1.

851 *2.3.2 Geology Requirements*

852 [53] The Geology Program has straight-forward requirements of its Master's and Doctoral
 853 graduate students. All students must complete a NSF-style research proposal, which is typically
 854 an outgrowth of the proposal written in Geo 518 'Geoscience Communication'. This proposal is
 855 read and approved by the student's committee and circulated to the Geology faculty for
 856 information. All students must make a presentation at the departmental graduate student
 857 symposium, GeoDay, where they give a professional 12 minute presentation on their research. In
 858 order to encourage breadth amongst our students, all students must take one class from each of
 859 three categories (Table 13). In addition, all students must formally enroll for at least 3 terms of
 860 Geo 507 'Seminar'.

861 Table 13. Geology distribution course requirements

1. Petrology/Geochemistry/Ore Deposits (choose from below)
a. GEO 512 – Igneous Petrology
b. GEO 527 – Volcanology
c. GEO530 – Geochemistry
d. GEO540 – Economic Geology
e. GEO597 – Field Mapping of Ore Deposits
f. GEO633 – Geochronology and Isotope Geology
2. Structural Geology/Geophysics/Tectonics (choose from below)
a. GEO536 – Structural and Neotectonic Field Methods
b. GEO537 – Tectonic Geomorphology

c. GEO561 – Geology of Earthquakes
d. GEO563 – Geophysics and Tectonics
3. Stratigraphy/Surficial Geology/Hydrogeology (choose from below)
a. GEO514 – Groundwater Hydraulics
b. GEO532 – Applied Geomorphology
c. GEO533 – Coastal Geomorphology
d. GEO548 – Field Research in Geomorphology and Landscape Ecology
e. GEO581 – Glacial Geology
f. GEO582 – Geomorphology of Forests and Streams
g. GEO586 – Quaternary Paleoclimatology
h. GEO588 – Quaternary Stratigraphy of North America
i. GEO589 – Role of Fluids in Geologic Process

862
863 [54] Whereas both MS and PhD candidates defend their thesis or dissertation during a one-
864 hour public presentation followed by a one-hour closed door session with their committee, only
865 PhD students are required to take oral and written proficiency exams. Four written exams, two
866 major (3 hours each) and two minor (1.5 hours each) are administered by the Program Head.
867 Topics covered by the exam are mutually agreed upon by the student and their advisor and/or
868 committee. Exam topics are chosen from the following list: geochemistry , geomorphology,
869 geophysics , hydrogeology, igneous petrology , paleoclimatology, mineral deposits , quaternary
870 geology, sedimentary petrology , sedimentary geology/stratigraphy, structural geology ,
871 tectonics, and volcanology. The individual exam is graded by the faculty member that wrote the
872 test. Following successful completion of the written exams, the student must pass an oral exam.

873 Typically the oral exam begins with a short presentation by the student on their research to date.
874 For the remainder of the 2 hours, the committee takes turn posing lines of questioning aimed at
875 establishing the breadth and depth of the student's knowledge.

876 [55] The Geology program invites speakers to fill their fall and spring seminar series.
877 Responsibility for the series rotates alphabetically through the Geology faculty. Very limited
878 financial resources are available to support the travel expenses for 1 to 3 speakers per term.

879 **2.4 Geosciences Opportunities**

880 [56] Graduate majors may earn up to 6 hours academic credit by enrolling in GEO 510,
881 Internship. Cooperating agencies or business are expected to give interns an opportunity to
882 participate as broadly as possible in the activities and responsibilities of the organization. Ideally,
883 the intern will be assigned one or more projects that can be completed in one quarter. Grading for
884 the internship is pass/no pass, as based in part on comments from the intern's workplace
885 supervisor. Full information is available at http://geo.oregonstate.edu/Internship_Information.

886 [57] Departmental faculty, graduate students, and undergraduate students participate in a broad
887 range of community events. We have had hands-on earth science booths and events at Da Vinci
888 Days, a Corvallis celebration of engineering and the arts held each summer, Discovery Days, a
889 multi-day science expo for local grade and middle schools. Faculty and students frequently make
890 guest presentations at local schools, social clubs, community awareness events, and for county
891 and city officials. The department's GIS Day outreach program is described in full at
892 <http://geo.oregonstate.edu/gisday>. The department has participated in many of the College of
893 Science outreach programs listed at <http://www.science.oregonstate.edu/node/35>. The
894 Department was instrumental in conceptualizing, developing, and funding a series of panels on

895 Oregon geology that were on display for two years in the rotunda of the state capitol in Salem.

896 [58] The department has a very active graduate-level distance and continuing education
897 program. Graduate Geosciences courses offered through OSU Extended Campus are listed near
898 the bottom at <http://bit.ly/ek0WFV> (7 courses) . In addition, the department offers an online
899 certificate in Geographic Information Science (<http://ecampus.oregonstate.edu/giscience>;
900 currently 44 students enrolled) and Water Conflict Management
901 (<http://ecampus.oregonstate.edu/online-degrees/graduate/water-conflict-management>); currently
902 10 students enrolled).

903 **2.5 Geosciences Policies and Procedures**

904 [59] Policy/procedures regarding academic and research integrity. Faculty and students in
905 Geosciences are held to the standards of academic and research integrity required by OSU.
906 OSU's research integrity policies specifically prohibit fabrication, falsification, and plagiarism
907 (<http://oregonstate.edu/research/ori/miscon.htm>), and require and enforce compliance in a
908 number of specific areas, such as animal care and use, animal handling health and safety,
909 chemical safety, and radiation safety (<http://oregonstate.edu/research/ori/>). OSU has outlined a
910 procedure for reporting academic dishonesty by graduate students
911 (<http://oregonstate.edu/studentconduct/documents/ADRF%2010-11%20Graduate.pdf>).

912 [60] The graduate student handbook is included as an appendix. *Stacey or Andrew has,*
913 *Stephen will get.*

914 **2.6 Personnel**

915 *2.6.1 Geography Graduate Faculty*

916 [61] Current graduate faculty FTE for Geography members who advise students is shown in
917 Table 14. Graduate faculty FTE for other members is shown in Table 15. The figures indicate
918 that some of the faculty take on graduate instruction at disproportionate levels (>0.25 FTE)
919 relative to their total FTE, which must generally accommodate undergraduate instruction,
920 research, and service. Jones has taken on a large amount of graduate instruction as the PI of the
921 Eco-Informatics IGERT program by taking on several courses devoted to the students in that
922 program. Wright has taken on a large amount of graduate instruction by teaching a large number
923 of E-Campus courses, particularly in support of the GIScience graduate certificate program.
924 Becker has a particularly small amount of graduate instructional FTE because his job description,
925 while predominantly (80%) teaching, gives him a large load of teaching large-enrollment
926 undergraduate courses.

Table 14. Graduate faculty in the Geography Program, only those advising students

Name	Position Title	Academic Year*	FTE		Students				Ph.D. Students		Total Students	
			Total	Grad. Instruc. **	Thesis		Non-		AY O	AY O	AY O	AY OS
					'06-10	S U	'06-10	S U				
Current Tenure Track Geosciences:												
Laurence Becker	Assoc. Prof.	2006	1.00	0.05	8	8	1	1	0	0	9	9
		2007	1.00	0.00								
		2008	1.00	0.05								
		2009	1.00	0.00								
		2010	1.00	0.05								
Michael Campana	Professor, Director Inst. Water & Professor	2007	0.00	0.00	1	1	1	1	0	0	2	2
		2008	0.00	0.00								
		2009	0.00	0.00								
		2010	1.00	0.10								
Hannah Gosnell	Asst. Prof.	2006	0.33	0.05	2	2	3	3	0	0	5	5
		2007	1.00	0.15								
		2008	1.00	0.10								
		2009	1.00	0.25								
		2010	1.00	0.20								
Julia Jones	Professor	2006	1.00	0.75	8	22	6	9	4	#	18	44
		2007	1.00	0.65								
		2008	1.00	0.80								
		2009	1.00	0.35								
		2010	1.00	0.40								
Anne Nolin	Asst. Prof. Assoc. Prof.	2006	1.00	0.25	11	13	1	1	1	4	13	18
		2007	1.00	0.35								
		2008	1.00	0.25								
		2009	1.00	0.30								
		2010	0.00	0.00								
Aaron Wolf	Assoc. Prof. Professor Chair	2006	1.00	0.20	5	7	3	6	5	8	13	21
		2007	1.00	0.20								
		2008	1.00	0.20								
		2009	1.00	0.25								
		2010	1.00	0.15								
Dawn Wright	Professor	2006	1.00	0.60	5	22	4	10	4	4	13	34
		2007	1.00	0.75								
		2008	0.33	0.45								
		2009	0.67	0.65								
		2010	1.00	0.85								
Research, Adjunct, Courtesy, Emeritus, Former Faculty:												
Todd Jarvis	Asst. Prof., Sr. Res.	2010	0.00	0.40	1	1	1	1	0	0	2	2
Mary Santelmann	Asst. Prof., Sr. Res.; Dir., WRGP	2006	0.50	0.00	1	4	1	9	3	4	5	17
		2007	0.50	0.05								
		2008	0.50	0.10								
		2009	0.50	0.10								
Ron Doel	Assoc. Prof.	2006	0.50	0.05	1	2	1	1	0	0	2	3
		2007	0.00	0.00								
		2008	0.50	0.15								
A. Jon Kimerling	Professor Chair Emeritus	2006	1.00	0.10	0	12	3	48	2	#	3	72
		2007	1.00	0.10								
		2008	1.00	0.00								
		2009	1.00	0.10								
		2010	0.00	0.10								
Student Totals					40	75	19	31	14	#	73	133

Table 15. Graduate faculty in the Geography Program, those not reporting advising students

Name	Position Title	Academic Year*	FTE		Students				Ph.D. Students		Total Students	
			Total	Grad. Instruc. **	Thesis		Thesis		AY O	AY O	AY OS	AY OS
					'06-10	S U	'06-10	S U				
Research, Adjunct, Courtesy, Emeritus, Former Faculty:												
S. Mark Meyers	Sr. Fac.	2006	0.00	0.05								
	Res. Asst.	2007	0.00	0.00								
		2008	0.00	0.10								
		2009	0.00	0.05								
		2010	0.00	0.00								
Katherine Hoffman	Asst. Dir., IGERT	2009	0.00	0.10								
Matthew Betts	Asst. Prof. (FES)	2009	0.00	0.20								
Jenna Tilt	Asst. Prof., Courtesy	2009	0.00	0.05								
Denis White	Res. Asst., Courtesy	2008	0.00	0.05								
Gordon Matzke	Emeritus	2006	0.00	0.10								
		2007	0.00	0.10								
Philip Jackson	Emeritus	2006	0.00	0.05								

928
929 [62] Graduate faculty to graduate student ratio since academic year (AY) 2006 is
930 approximately 0.42, calculated from the sums of total FTE and all graduate students supervised
931 during that period (including current students). When calculated as the ratio between the sum of
932 total faculty FTE and the product of the number of graduate students supervised and the average
933 time to completion of 3.6 years (from survey of alumni/ae; see below), the faculty-student ratio
934 is 0.12, or about 8 graduate students per faculty FTE. The ratio between total graduate
935 instructional FTE and the total number of graduate students supervised in the period is 0.14. Five
936 faculty members have supervised more than 8 graduate students since AY 2006; faculty
937 members Becker, Jones, Nolin, Wolf, and Wright have among them advised 66, or 78%, of the
938 total of 85 supervised in the period, averaging 13 supervisees each. For these 5 faculty, the
939 faculty-student ratio using total FTE and the average time to degree completion is 0.097, or 10
940 graduate students per faculty FTE. Actual ratios are lower because the numbers presented

941 include all students finishing in AY 2006 and later, i.e., the numbers are not weighted to
942 represent only parts of students who matriculated before AY 2006.

943 [63] Three things should be noted when viewing these statistics. First, the graduate student
944 totals are not equal to the actual number of students because students who are co-advised by two
945 faculty members have been counted twice, so the figures should be interpreted as indicative of
946 faculty effort. Second, Gordon Grant has supervised a number of graduate students comparable
947 to many full-time faculty members even though his total FTE is zero as a courtesy professor, so
948 this fact would tend to make the faculty-student ratio too small. And since his students are
949 typically co-advised by other faculty, the double-counting of these students also tend to decrease
950 the faculty-student ratio. Third, note that student numbers shown here include students in the
951 Water Resources Graduate Program and smaller numbers in the Geography and Environmental
952 Science Programs.

953 2.6.2 *Geology Graduate Faculty*

954 [64] Current tenure track graduate faculty FTE for Geology is shown in Table 16, and
955 research, courtesy, adjunct, and emeritus faculty are shown in Table 17. The figures indicate that
956 none of the faculty takes on graduate instruction at a disproportionate level (>0.25 FTE) relative
957 to total FTE, which must generally accommodate undergraduate instruction, research, and
958 service.

Table 16. Tenure track graduate faculty in the Geology Program

Name	Position Title	Academic Year*	FTE		M.S. Thesis		Students		Total Students	
			Total	Grad. Instruc.**	AY '06-10	OSU	AY '06-10	OSU	AY '06-10	OSU
Ed Brook	Assoc. Prof.	2006	1.00	0.20	1	1	3	3	4	4
		2007	1.00	0.10						
		2008	1.00	0.05						
	Professor	2009	1.00	0.20						
		2010	1.00	0.15						
Peter Clark	Professor	2006	1.00	0.05	1	12	6	11	7	23
		2007	1.00	0.10						
		2008	1.00	0.05						
		2009	1.00	0.10						
		2010	0.00	0.00						
Shan de Silva	Professor	2007	1.00	0.10	4	3	7	6	11	9
		2008	1.00	0.05						
		2009	1.00	0.15						
		2010	1.00	0.15						
John Dilles	Professor	2006	0.75	0.15	5	18	1	3	6	21
		2007	0.75	0.10						
		2008	0.75	0.10						
		2009	0.75	0.10						
		2010	0.75	0.15						
Anita Grunder	Professor	2006	0.75	0.20	5	12	3	11	8	23
		2007	0.75	0.05						
		2008	0.75	0.10						
		2009	0.25	0.00						
		2010	0.75	0.10						
Roy Haggerty	Assoc. Prof.	2006	1.00	0.20	9	18	5	6	13	24
		2007	0.00	0.00						
		2008	1.00	0.20						
		2009	1.00	0.10						
	Professor	2010	1.00	0.10						
Adam Kent	Asst. Prof.	2006	0.60	0.05	6	7	5	5	11	12
		2007	0.60	0.10						
	Assoc. Prof.	2008	1.00	0.20						
		2009	1.00	0.05						
2010	1.00	0.10								
Stephen Lancaster	Asst. Prof.	2006	1.00	0.20	5	8	3	3	8	11
		2007	1.00	0.05						
	Assoc. Prof.	2008	1.00	0.25						
		2009	0.33	0.05						
		2010	1.00	0.20						
Robert Lillie	Professor	2006	1.00	0.00	3	18	0	0	3	18
		2007	1.00	0.05						
		2008	1.00	0.05						
		2009	1.00	0.05						
		2010	1.00	0.00						
Andrew Meigs	Assoc. Prof.	2006	0.00	0.00	7	14	4	5	11	19
		2007	1.00	0.15						
		2008	1.00	0.15						
		2009	1.00	0.15						
		2010	1.00	0.10						
Roger Nielsen	Professor, Chair	2006	1.00	0.10	3	6	2	5	5	11
		2007	1.00	0.10						
		2008	1.00	0.10						
	Professor	2009	1.00	0.15						
		2010	1.00	0.20						

Table 17. Graduate faculty in the Geology Program, research, adjunct, courtesy, and emeritus faculty with student totals for all graduate faculty

Name	Position Title	Academic Year*	FTE		M.S. Thesis		Students		Total Students	
			Total	Grad. Instruc.**	AY '06-10	OSU	AY '06-10	OSU	AY '06-10	OSU
Research, Adjunct, Courtesy, Emeritus:										
Peter Ruggiero	Asst. Prof., Sr. Res.	2007	0.15	0.10	4	4	1	1	5	5
		2008	0.15	0.20						
		2009	0.15	0.10						
		2010	0.15	0.15						
Gordon Grant	Professor (Courtesy)	2006	0.00	0.00	4	12	4	5	8	17
		2007	0.00	0.00						
		2008	0.00	0.00						
		2009	0.00	0.05						
		2010	0.00	0.00						
Anthony Koppers	Assoc. Prof. (COAS)	2010	1.00	0.10						
Robert Harris	Assoc. Prof. (COAS)	2007	1.00	0.05						
		2008	1.00	0.00						
		2009	1.00	0.05						
		2010	1.00	0.05						
Kaplan Yalcin	Program Director	2009	0.00	0.05						
Robert Yeats	Emeritus	2007	0.00	0.10						
		2008	0.00	0.10						
		2009	0.00	0.10						
David Graham	Professor (COAS)	2006	0.00	0.10						
		2007	0.00	0.00						
		2008	0.00	0.10						
Student Totals					57	133	44	64	100	197

960
961 [65] Graduate faculty to graduate student ratio since academic year (AY) 2006 is
962 approximately 0.47, calculated from the sums of total FTE and all graduate students supervised
963 during that period (including current students). When calculated as the ratio between the sum of
964 total faculty FTE and the product of the number of graduate students supervised and the average
965 time to completion of 3.8 years (from survey of alumni/ae; see below), the faculty-student ratio
966 is 0.12, or about 8 graduate students per faculty FTE. The ratio between total graduate
967 instructional FTE and the total number of graduate students supervised in the period is 0.071.
968 Four faculty members have supervised more than 8 graduate students since AY 2006; faculty
969 members de Silva, Haggerty, Kent, and Meigs have among them advised 46, or 46%, of the total
970 of 100 supervised in the period, averaging 12 supervisees each. For these 4 faculty, the faculty-

971 student ratio using total FTE and the average time to degree completion is 0.093, or 11 graduate
972 students per faculty FTE. Actual ratios are lower because the numbers presented include all
973 students finishing in AY 2006 and later, i.e., the numbers are not weighted to represent only parts
974 of students who matriculated before AY 2006.

975 [66] Three things should be noted when viewing these statistics. First, the graduate student
976 totals are not equal to the actual number of students because students who are co-advised by two
977 faculty members have been counted twice, so the figures should be interpreted as indicative of
978 faculty effort. Second, Gordon Grant has supervised a number of graduate students comparable
979 to many full-time faculty members even though his total FTE is zero as a courtesy professor, so
980 this fact would tend to make the faculty-student ratio too small. And since his students are
981 typically co-advised by other faculty, the double-counting of these students also tend to decrease
982 the faculty-student ratio. Third, note that student numbers shown here include students in the
983 Water Resources Graduate Program and smaller numbers in the Geography and Environmental
984 Science Programs.

985 2.6.3 *Geosciences Support Staff*

986 [67] The administrative support staff seek adequate personnel to accomplish their
987 responsibilities with fewer interruptions, and help with advising and e-campus scheduling for our
988 department program coordinator. The office has an office manager, a student affairs coordinator,
989 a department program coordinator, and a receptionist who also assists with purchasing. The
990 receptionist/purchasing duties are currently 50% of this position, and the other 50% is devoted to
991 supporting the Environmental Science undergraduate program.

992 **2.7 Facilities and Budget**

993 *2.7.1 Geography Library Holdings and Services*

994 [68] The geography graduate program, offered through the Department of Geosciences,
995 includes both doctor of philosophy (Ph.D.) and masters degrees (M.A. and M.S.). As identified
996 on the Department website the areas of concentration are resource geography, physical
997 geography, geographic information science, and ecosystem informatics.

998 [69] This review of the OSU Libraries collections and services provides an evaluation of the
999 current graduate geography program, focusing on the needs of students in the program as well as
1000 the faculty teaching and directing the work of the students, with an emphasis on the areas listed
1001 above. A short section on the collections and services relative to undergraduates is included at
1002 the end.

1003 [70] This evaluation is being done concurrently with a review for the geology program.

1004 Collections

1005 **Monographs**

1006 [71] The evaluation of the book collection includes several parts:

- 1007 1. a comparison of the OSU Libraries holdings against selected peer institutions¹
1008 2. a snapshot of the age of the collection
1009 3. access provided by the OSU Libraries to electronic, regional, and international
1010 collections

- 1011 1. *OSU Libraries Collection compared to peers*

1012 [72] Selected subject headings primarily representing the areas of concentration and other sub-

¹ Peer institutions identified by program faculty: Ohio State University, SUNY Buffalo, University of Arizona

1013 disciplines in the geography program are show below in Table 18. They are compared with the
 1014 peer institutions' library holdings for the same subject areas. The subject areas are based on the
 1015 Library of Congress Subject Headings and selected to match as closely as possible to the areas of
 1016 concentration. Since monographs are often cataloged with multiple subject headings the
 1017 categories in Table 18 overlap to an extent with one another.

1018 [73] Overall OSU Libraries geography collection lacks in several areas when compared with
 1019 peer institution libraries. Areas of strength where OSU's collection is below 60% of average
 1020 include Geography (general), human geography, physical geography, and fairs a little better in
 1021 the areas of land use, and water supply. The number of books available on geographic
 1022 information systems is on par with the peer institution collections. Coverage of the areas that are
 1023 lacking would be improved if geography is added to OSU Libraries purchase on demand profile
 1024 for electronic books (described in the next section) and if the approval profile for print books is
 1025 adjusted to bring in more geography titles.

1026
 1027 Table 18. OSU collection shown by number of titles held in selected Library of
 1028 Congress Subject Headings compared to peers

Subject Heading	OSU	Ohio State	SUNY Buffalo	Univ. Arizona	Median Size	OSU Compared to Median	Average Size	OSU Compared to Average
Ecosystem Management	571	226	350	407	379	150.9%	389	147.0%
Geographic Information Systems	700	784	616	732	716	97.8%	708	98.9%
Geography	3,767	10,497	5,378	8,403	6,891	54.7%	7,011	53.7%
Human Geography	599	1,326	929	1,223	1,076	55.7%	1,019	58.8%
Land Use	2,267	2,482	3,246	3,419	2,864	79.2%	2,854	79.4%
Physical Geography	420	1,465	529	918	724	58.1%	833	50.4%
Water Supply	2,131	2,319	2,683	3,429	2,501	85.2%	2,641	80.7%

1029
 1030 2. *Age of the collection supporting geography*

1031 [74] Another factor to consider is the age of the collection. This is highly subjective since it

1032 only looks within the OSU collection and is not compared to the collection as whole or to peer
 1033 collections. Geography as it is offered at OSU is also difficult to map to specific call number
 1034 ranges. Many other areas not reflected below support geography, such as collections in history,
 1035 economics, and political science.

1036 [75] The call number range which reflects much of the physical geography collection is an
 1037 aging collection (Table 19). This part of the collection includes geomorphology and hydrology
 1038 which are covered in the geology review. The section of the collection that covers cartography is
 1039 older as well. The age of the collection could be due to publishing patterns, types of materials
 1040 published, etc., as well as selection criteria changing over the years.

1041 [76] Faculty in all areas of Geosciences are encouraged to recommend titles to the librarian.

1042 Table 19. Age of OSU Libraries Geography collection

Call Number Range	Total	2001-2011	%	1991-2000	%	1981-1990	%	Pre-1981	%
G1-922 Geography (general, all)	3,944	745	18.9%	508	12.9%	626	15.9%	2,065	52.4%
G70.212 Geographic Information Systems	245	181	73.9%	64	26.1%	0	0.0%	0	0.0%
GA1-1776 Mathematical geography. Cartography	532	61	11.5%	112	21.1%	132	24.8%	227	42.7%
GB3-5030 Physical Geography (all)	2,866	464	16.2%	592	20.7%	649	22.6%	1,161	40.5%
GF1-900 Human Ecology/ Anthropogeography (supporting subject areas)	1,113	285	25.6%	291	26.1%	228	20.5%	309	27.8%

1043
 1044 *3. Access beyond traditional, in-house collections*

1045 [77] Students and faculty have access to the circulating collections of 36 regional libraries
 1046 including University of Oregon, Portland State University, University of Washington, and
 1047 Washington State University through our membership in the Orbis Cascades Alliance. Books
 1048 requested through the Summit catalog arrive within 3-5 business days.

1049 [78] OSU Libraries have been expanding access to electronic books (ebooks). The Libraries

1050 have done this through acquisition or subscription of targeted collections such as the Springer
1051 Earth Sciences collections 2004-2010, and selected reference titles such as the CRC Handbook
1052 of Chemistry and Physics and the Encyclopedia of Geography (Sage, 2010). These digital
1053 scholarly resources help students and faculty access important content anytime, and from
1054 anywhere. The Geosciences Librarian also selects individual electronic books for inclusion in
1055 the collection as appropriate.

1056 [79] Additional options for providing access to electronic books include the OSU Libraries and
1057 Orbis Cascades Alliance recent commitment to a “patron driven acquisitions” model. This
1058 means that students and faculty can discover ebooks that we don’t own via the OSU Libraries
1059 and Alliance catalogs. Once the book has been accessed three times, an automatic purchase
1060 occurs (a seamless process for the user). Currently, only selected subject areas are covered under
1061 this model. Neither geology or geography are included in the profile at this time but can be
1062 added.

1063 [80] Finally, access to much of the world’s collection of research materials is made available
1064 via Interlibrary Loan. The Interlibrary Loan staff request materials from libraries around the
1065 country and internationally on behalf of students and faculty.

1066 **Journals**

1067 [81] The Libraries budget is flat (and is expected to remain so) and cuts in to the journal
1068 collection in recent years reflect this. Unlike most book purchases, journals and databases
1069 require a commitment of funds yearly, and inflation is usually from 4 to 8 per cent.

1070 [82] Evaluation of our collection has never been more important, and one metric used is
1071 Journal Citation Reports (JCR) impact factor (IF). Other data are used as well when the

1072 Libraries make decisions about journal collections. Demand, local citation and publishing
 1073 patterns, as well as cost per search or per download are examples of the information reviewed to
 1074 make decisions. JCR is used in this evaluation.

1075 [83] Table 20 and Table 21 show the top ten journals by impact factor in two categories
 1076 relevant to geography along with the Libraries holdings. This is neither a comprehensive analysis
 1077 of the Libraries collections nor of the geography journals published, but is a sample of both using
 1078 a familiar metric. Table 20 addresses the physical sciences aspects of geography (and overlaps
 1079 with the geology evaluation somewhat), while Table 21 data covers social sciences geography
 1080 titles.

1081 [84] Nearly half of the 20 titles listed below are not currently available in the Libraries
 1082 collection, three of them are fairly recent cancellations which suggest their use was low, or they
 1083 were in less demand than other titles at the time of the cancellation. However, the six titles that
 1084 we have never had an online subscription to may need a closer look. Three are covered to an
 1085 extent in the database Academic Search Premier, but three are not. This snapshot does not
 1086 provide a complete picture of our collection and support for geography, but it does suggest a
 1087 closer look needs to be undertaken.

1088 Table 20. Top 10 Journals as Ranked by Journal Citation Reports Impact Factor
 1089 with OSU Libraries Holdings – JCR category **GEOGRAPHY, PHYSICAL (JCR**
 1090 **SCIENCE CITATION INDEX)**

Rank by IF	Journal Title (JCR abbreviation)	Impact Factor	OSU Libraries Holdings
1	GLOBAL ECOL BIOGEOGR	5.913	2002-2006 in print; 1999-present online
2	QUATERNARY SCI REV	4.245	1982-2005 in print; 2006-2009 online
3	J BIOGEOGR	4.087	2002-2006 in print; 1974-present online
4	LANDSCAPE ECOL	3.293	1987-2004 in print; 1997-present online
5	GLOBAL PLANET CHANGE	3.272	1993-2005 in print;

			1995-present online
6	BOREAS	2.813	1987-1991 in print; no online subscription*
7	QUATERNARY RES	2.675	1970-2005 in print; no online subscription
8	PALAEOGEOGR PALAEOCL	2.646	1965-2006 in print; 1995-present online
9	HOLOCENE	2.481	No subscription*
10	ISPRS J PHOTOGRAMM	2.308	1989-2005 in print; 2006-2009 online

1091

1092 Table 21. Top 10 Journals as Ranked by Journal Citation Reports Impact Factor

1093 with OSU Libraries Holdings – JCR category **GEOGRAPHY (JCR SOCIAL**

1094 **SCIENCES CITATION INDEX)**

Rank	Journal Title (JCR abbreviation)	Impact Factor	OSU Libraries Holdings
1	J ECON GEOGR	3.937	No Holdings
2	PROG HUM GEOG	3.59	1983-1996 in print; no online subscription*
3	ECON GEOGR	3.452	No subscription*
4	T I BRIT GEOGR	3.413	1946-1996 in print; 1965-2004 online*
5	GLOBAL ENVIRON CHANG	3.34	no print; 1995-present online
6	ANN ASSOC AM GEOGR	2.568	1911-2006 in print; 1997-present online *
7	APPL GEOGR	2.324	1981-2005 in print; 1995-present online
8	POLIT GEOGR	2.267	1992-1993 in print; no online subscription
9	LANDSCAPE URBAN PLAN	2.17	1986-1991 in print; 1995-present online
10	ENVIRON PLANN D	1.784	1983-present in print; 2005-present online

1095

1096 *Additional online access through Academic Search Premier

1097

1098 [85] In addition to the journals in JCR disciplinary categories above, the Libraries maintain

1099 online subscriptions to *Nature*, *Science*, and the *Proceedings of the National Academy of*

1100 *Sciences*, all of which are important to supporting science curriculum and research across

1101 campus.

1102 **Databases**

1103 [86] Databases supporting graduate -level research and above in Geography specifically

1104 include:

- 1105 • Environmental Sciences and Pollution Management (includes Water Resources
- 1106 Abstracts)

- 1107 • Geobase (access may discontinue after 6/30/11 due to vendor changes)
- 1108 • GeoRef
- 1109 • Web of Science

1110 [87] Each of the databases listed above are databases of abstracts which provide professional
 1111 indexing to the materials included. Full text is linked from within the databases. When full text
 1112 is not available, researchers can opt to request materials via Interlibrary Loan/Scan and Deliver
 1113 service.

1114 [88] Access to Academic Search Premier also clearly helps provide geography content as
 1115 expanded access to six of the 20 titles in Table 20 and Table 21.

1116 OSU Libraries Services

1117 [89] A few services that benefit faculty and students in the Geology and Geography programs
 1118 include:

- 1119 • Interlibrary Loans
- 1120 • Scan and Deliver (print collection digital access)
- 1121 • Laptop and locker checkout
- 1122 • Study rooms, research carrels, and presentation practice rooms (Student Media Services)
- 1123 • Access to The Valley Library 24/5 (continuous hours from mid-day Sundays until Friday
 1124 evening during the term)
- 1125 • General reference and
 1126 consulting services
- 1127 • *Isearch* and general
 1128 academic databases

1129 [90] The Libraries use a subject
 1130 librarian model giving each
 1131 department and program a
 1132 designated contact. The subject
 1133 librarian for Geosciences, Andrea
 1134

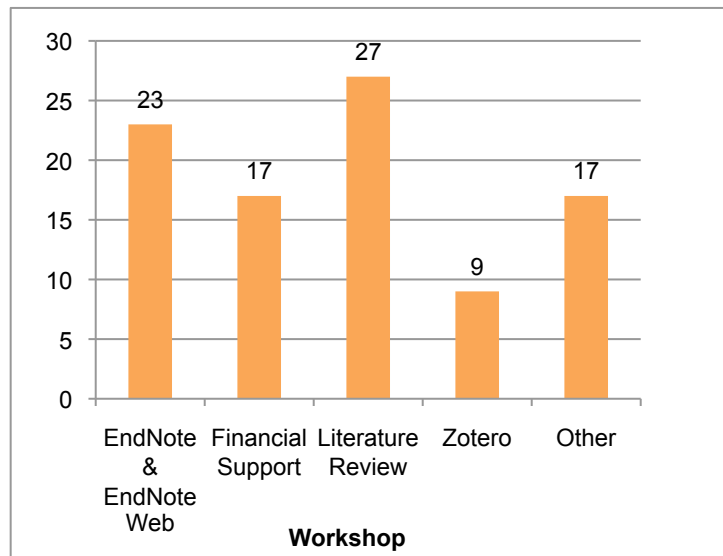


Figure 1. Geosciences graduate student enrollment in library workshops winter 2007–winter 2010.

1135 Wirth, assists students with research tools and strategies –emphasizing library and other
1136 information resources. The subject librarian is also responsible for selecting materials for the
1137 collections that support geography.

1138 [91] In addition to the service provided by the subject librarian, the Libraries offer a variety of
1139 workshops each term including training on bibliographic management software (EndNote,
1140 Zotero), a literature review workshop, grant writing, and other research management topics of
1141 interest to graduate students. *Since winter term 2007, 93 Geosciences students have enrolled in*
1142 *library workshops* (about 5% of the total enrollment in the workshops; Figure 1). In addition, the
1143 subject librarian gives a brief library presentation at the annual new graduate student orientation.

1144 ScholarsArchive@OSU

1145 [92] The Libraries support faculty and student scholars in the geography program through
1146 tailored services such as access to the institutional repository, ScholarsArchive@OSU
1147 (<http://ir.library.oregonstate.edu/dspace/>), which houses current graduate student research and
1148 makes it available to anyone with an internet connection. ScholarsArchive is also available to
1149 faculty who wish to make their research discoverable, accessible, and freely available.

1150 Collections and Services Supporting Undergraduates in the Geography Program

1151 [93] Undergraduates benefit from the collections described above. Of particular relevance are
1152 the print and electronic book collections which support undergraduate curriculum. Also, the
1153 Libraries subscribe to several general academic research databases appropriate for most
1154 undergraduate research and provide immediate full text access to many journals, newspapers,
1155 and magazines. These are Academic Search Premier from EBSCO (noted above as an important
1156 supplementary geography database) and Academic OneFile (Gale).

1157 [94] All of the services described above (with the exception of the graduate student and faculty
1158 workshops) are available to undergraduates as well. Many undergraduates benefit, for example,
1159 from having walk up, chat, and text reference available to them for help with their questions
1160 about finding and accessing library resources.

1161 Summary

1162 [95] Despite the challenges of rising costs of collections and shrinking budgets, the OSU
1163 Libraries are committed to providing access to resources to that ensure faculty and students have
1164 access to the information they need. When taken in combination with the services and expanded
1165 access opportunities described above, the OSU Libraries collections support the geography
1166 graduate program, but could be improved upon with better funding for ongoing commitments
1167 such as journals. A closer look at the journal collection is needed to carefully indentify where the
1168 gaps are.

1169 2.7.2 *Geology Library Holdings and Services*

1170 [96] The geology graduate program, offered through the Department of Geosciences, includes
1171 both doctor of philosophy (Ph.D.) and masters degrees (M.A. and M.S.). As identified on the
1172 Department website the major areas of concentration are volcanology, petrology,
1173 geomorphology, hydrology and paleoclimatology.

1174 [97] This review of the OSU Libraries collections and services provides an evaluation of the
1175 current graduate geology program, focusing on the needs of students in the program as well as
1176 the faculty teaching and directing the work of the students, with an emphasis on the areas of
1177 concentration outlined above. A short section on the collections and services relative to
1178 undergraduates is included at the end.

1179 [98] This evaluation is being done concurrently with a review for the geography program.

1180 Collections

1181 **Monographs**

1182 [99] The evaluation of the book collection includes several parts:

1183 1. a comparison of the OSU Libraries holdings against selected peer institutions²

1184 2. a snapshot of the age of the collection

1185 3. access provided by the OSU Libraries to electronic, regional, and international

1186 collections

1187 1. *OSU Libraries Collection compared to peers*

1188 [100] Selected subject headings primarily representing the areas of strength and other sub-

1189 disciplines in geology program are show below in Table 22. They are compared with the peer

1190 institutions' library holdings for the same subject areas. The subject areas are based on the

1191 Library of Congress Subject Headings and selected to match as closely as possible to the areas of

1192 focus. Since monographs are often cataloged with multiple subject headings the categories in

1193 Table 22 overlap to an extent with one another.

1194 [101] Overall OSU Libraries collections compares fairly well with its peer libraries. Areas of

1195 strength where OSU's collection is below 90% of average are Hydrology and Petrology

1196 (highlighted below). These areas can be improved upon with strategic use of the funds allocated

1197 to Geosciences.

² Peer institutions identified by program faculty: University of California Santa Barbara, University of Oregon, Northwestern University

1198 Table 22. OSU collection shown by number of titles held in selected Library of
 1199 Congress Subject Headings compared to peers

Subject Heading	OSU	UO	UCSB	North-western	Median Size	OSU Compared to Median	Average Size	OSU Compared to Average
Geology (all)	7,580	7,381	12,154	9,140	8,360	90.7%	9,064	83.6%
Geology, Stratigraphic	1,935	1,817	3,198	2,273	2,104	92.0%	2,306	83.9%
Geology, Structural	692	540	830	830	629	110.0%	723	95.7%
Geomorphology	479	494	607	441	487	98.5%	505	94.8%
Hydrology	1,135	716	1,725	1,991	1,204	94.3%	1,392	81.6%
Paleoclimatology	244	264	282	207	254	96.1%	249	97.9%
Paleontology	1,764	2,916	2,416	2,268	2,342	75.3%	2,341	75.4%
Petrology	396	483	632	584	534	74.2%	524	75.6%
Volcanology; Volcanism; Volcanoes	500	422	608	481	491	101.9%	503	99.5%

1200
 1201 *2. Age of the collection supporting geology*

1202 [102] Another factor to consider is the age of the collection (Table 23). This is highly
 1203 subjective since it only looks within the OSU collection and is not compared to the collection as
 1204 whole or to peer collections.

1205 [103] However, relative to one another, it is clear that fewer new titles have been purchased in
 1206 some areas of focus than in others. In this case Petrology and Geomorphology are examples
 1207 (highlighted below). This could be due to publishing patterns, types of materials published, etc.,
 1208 as well as selection of materials for the collection. This can be remedied in part by adjusting the
 1209 libraries monographs approval profile to better match these subject areas. In addition, faculty in
 1210 all areas of Geosciences are encouraged to recommend titles to the librarian.

1211 Table 23. Age of OSU Libraries Geology collection

Call Number Range	Total	2001-2011	%	1991-2000	%	1981-1990	%	Pre-1981	%
QE1-996.5 Geology (all)	13,798	3,106	22.5%	2,262	16.4%	3,349	24.3%	5,081	36.8%
QE420-499 Petrology	692	78	11.3%	97	14.0%	223	32.2%	294	42.5%
QE521-545 Volcanoes and earthquakes	642	142	22.1%	112	17.4%	164	25.5%	224	34.9%
QE601-613.5 Structural	217	35	16.1%	40	18.4%	70	32.3%	72	33.2%

geology									
GB400-649 Geomorphology	911	120	13.2%	169	18.6%	234	25.7%	388	42.6%
GB651-2998 Hydrology	1,647	310	18.8%	380	23.1%	360	21.9%	597	36.2%
GB5000-5030 Natural disasters	83	28	33.7%	27	32.5%	12	14.5%	16	19.3%

1212

1213 3. *Access beyond traditional, in-house collections*

1214 [104] Students and faculty have access to the circulating collections of 36 regional libraries

1215 including University of Oregon, Portland State University, University of Washington, and

1216 Washington State University through our membership in the Orbis Cascades Alliance. Books

1217 requested through the Summit catalog arrive within 3-5 business days.

1218 [105] OSU Libraries have also been expanding access to electronic books (ebooks). The

1219 Libraries have done this through acquisition or subscription of targeted collections such as the

1220 Springer Earth Sciences collections 2004-2010 and the Lyell collection which includes the

1221 Geological Society of London “Special Publications” series as well as their journals. These

1222 digital scholarly resources help students and faculty access important content anytime, and from

1223 anywhere. The Geosciences Librarian also selects individual electronic books for inclusion in

1224 the collection as appropriate.

1225 [106] Additional options for providing access to electronic books include the OSU Libraries

1226 and Orbis Cascades Alliance recent commitment to a “patron driven acquisitions” model. This

1227 means that students and faculty can discover ebooks that we don’t own via the OSU Libraries

1228 and Alliance catalogs. Once the book has been accessed three times, an automatic purchase

1229 occurs (a seamless process for the user). Currently, only selected subject areas are covered under

1230 this model. Neither geology or geography are included in the profile at this time but can be added

1231 in the future.

1232 [107] Finally, access to much of the world's collection of research materials is made available
1233 via Interlibrary Loan. The Interlibrary Loan staff request materials from libraries around the
1234 country and internationally on behalf of students and faculty.

1235 **Journals**

1236 [108] The Libraries budget is flat (and is expected to remain so) and cuts in to the journal
1237 collection in recent years reflect this. Unlike most book purchases, journals and databases
1238 require a commitment of funds yearly, and inflation is usually from 4 to 8 per cent.

1239 [109] Evaluation of our collection has never been more important, and one metric used is
1240 Journal Citation Reports (JCR) impact factor (IF). Other data are used as well when the
1241 Libraries make decisions about journal collections. Demand, local citation and publishing
1242 patterns, as well as cost per search or per download are examples of the information reviewed to
1243 make decisions. JCR is used in this evaluation. Table 24, Table 25, and Table 26 show the top
1244 ten journals by impact factor in several categories relevant to geology along with the Libraries
1245 holdings. This is neither a comprehensive analysis of the Libraries collections nor of the geology
1246 journals published, but is a sample of both using a familiar metric.

1247 [110] Approximately two-thirds of the titles listed below are available directly and
1248 immediately online from the Libraries collection. The remaining third are either titles the
1249 Libraries have never subscribed to (e.g. *Permafrost and Periglacial Processes*) or titles that have
1250 been cancelled in recent years (e.g. *Earth-Science Reviews*). Although, this is not ideal, the
1251 Libraries have been able to add access to titles such as *Nature Geoscience*, through the strategic
1252 cancellation of low-use titles. Titles not available through the Libraries directly are available
1253 through Interlibrary Loan.

1254 Table 24. Top 10 Journals as Ranked by Journal Citation Reports Impact Factor
 1255 with OSU Libraries Holdings – JCR category **GEOLOGY**

Rank by IF	Journal Title (JCR abbreviation)	Impact Factor	OSU Libraries Holdings
1	GEOLOGY	4.368	1973-present in print; 1973-present online
2	J METAMORPH GEOL	4.157	1986-2002 in print; 2003-2009 online*
3	J GEOL	2.711	1893-2006 in print; 1997-present online
4	GEOMORPHOLOGY	2.119	1998-2005 in print; 1995-present online
5	SEDIMENTOLOGY	2.114	1962-2006 in print; 2007-2009 online*
6	ORE GEOL REV	2.089	1986-2005 in print; 1995-present online
7	J SEDIMENT RES	2.008	1996-2007 in print; 1937-present online
8	SEDIMENT GEOL	1.957	1967-2005 in print; 2006-2009 online
9	INT GEOL REV	1.888	1959-1980 in print; none online
10	2.7.2.1.1.1.1.1 PERMAFROST PERIGLAC	1.87	No holdings

1256 Table 25. Top 10 Journals as Ranked by Journal Citation Reports Impact Factor
 1257 with OSU Libraries Holdings – JCR category **GEOSCIENCES,**
 1258 **MULTIDISCIPLINARY**
 1259

Rank	Journal Title (JCR abbreviation)	Impact Factor	OSU Libraries Holdings
1	NAT GEOSCI	8.108	none in print; 2008-present online
2	ANNU REV EARTH PL SC	7.581	1973-2006 in print; 2006-present online
3	EARTH-SCI REV	6.942	1966-2005 in print; 2006-2009 online
4	GONDWANA RES	4.605	no holdings
5	GLOBAL BIOGEOCHEM CY	4.294	1987-2007 in print; 1987-present online
6	QUATERNARY SCI REV	4.245	1982-2005 in print; 2006-2009 online
7	GEOTEXT GEOMEMBRANES	4.039	1984-2005 in print; 1995-present online
8	PALEOCEANOGRAPHY	3.644	1986-2008 in print; 1986-present online
9	PRECAMBRIAN RES	3.574	1983-1992 in print; 1995-present online
10	J GEOL SOC LONDON	3.297	1971-2009 in print; 1971-present online

1260 Table 26. Top 10 Journals as Ranked by Journal Citation Reports Impact Factor
 1261 with OSU Libraries Holdings – JCR category **GEOCHEMISTRY &**
 1262 **GEOPHYSICS**
 1263

Rank	Journal Title (JCR abbreviation)	Impact Factor	OSU Libraries Holdings
------	----------------------------------	---------------	------------------------

1	REV GEOPHYS	2.7.2.1.1.2	8.021	2.8 1985-2007 in print; 1985-present online
2	2.8.1.1.1.1 GEOCHIM COSMOCHIM AC	2.8.1.1.1.2	4.385	2.8.1.1.1.3 1950-2005 in print; 1995-present online
3	2.8.1.1.1.4 EARTH PLANET SC LETT	2.8.1.1.1.5	4.062	2.8.1.1.1.6 1966-2005 in print; 2.8.1.1.1.7 1995-present online
2.8.1.1.1.8	4 2.8.1.1.1.9 J PETROL	2.8.1.1.1.10	3.738	2.8.1.1.1.11 1960-2006 in print; 2.8.1.1.1.12 1996-present online
2.8.1.1.1.13	5 2.8.1.1.1.14 ELEMENTS	2.8.1.1.1.15	3.597	2.8.1.1.1.16 2005-2010 in print; 2.8.1.1.1.17 2005-present online
2.8.1.1.1.18	6 2.8.1.1.1.19 LITHOS	2.8.1.1.1.20	3.537	2.8.1.1.1.21 1968-2005 in print; 2.8.1.1.1.22 1995-present online
2.8.1.1.1.23	7 2.8.1.1.1.24 CONTRIB MINERAL PETR	2.8.1.1.1.25	3.497	2.8.1.1.1.26 1966-2005 in print; 2.8.1.1.1.27 1997-present online
2.8.1.1.1.28	8 2.8.1.1.1.29 CHEM GEOL	2.8.1.1.1.30	3.407	2.8.1.1.1.31 1966-2005 in print; 2.8.1.1.1.32 1995-present online
2.8.1.1.1.33	9 2.8.1.1.1.34 TECTONICS	2.8.1.1.1.35	3.287	2.8.1.1.1.36 1982-2007 in print; 1982-present online
10	2.8.1.1.1.37 METEORIT PLANET SCI	3.253		2.8.1.1.1.38 no holdings

1264 *Additional online access through Academic Search Premier

1265 [111] In addition to the journals in JCR disciplinary categories above, the Libraries maintain
1266 online subscriptions to *Nature*, *Science*, and the *Proceedings of the National Academy of*
1267 *Sciences*, all of which are important to supporting science curriculum and research across
1268 campus.

1269 Databases

1270 [112] Databases supporting graduate -level research and above in Geology specifically
1271 include:

- 1272 • Environmental Sciences and Pollution Management (includes Water Resources
1273 Abstracts)

1274 • GeoRef
1275 • Web of Science
1276
1277 [113] Each of the databases listed above are databases of abstracts which provide professional
1278 indexing to the materials included. Full text is linked from within the databases. When full text
1279 is not available, researchers can opt to request materials via Interlibrary Loan/Scan and Deliver
1280 service.

1281 OSU Libraries Services

1282 [114] A few services that benefit faculty and students in the Geology and Geography programs
1283 include:

- 1284 • Interlibrary Loans
- 1285 • Scan and Deliver (print collection digital access)
- 1286 • Laptop and Locker checkout
- 1287 • Study rooms, research carrels, and presentation practice rooms (Student Media Services)
- 1288 • Access to The Valley Library 24/5 (continuous hours from mid-day Sundays until Friday
1289 evening during the term)
- 1290 • General reference and consulting services
- 1291 • *Isearch* and general academic databases

1292 [115] The Libraries use a subject librarian model giving each department and program a
1293 designated contact. The subject librarian for Geosciences, Andrea Wirth, assists students with
1294 research tools and strategies –emphasizing library and other information resources. The subject
1295 librarian is also responsible for selecting materials for the collections that support geology.

1296 [116] In addition to the service provided by the subject librarian, the Libraries offer a variety
1297 of workshops each term including training on bibliographic management software (EndNote,
1298 Zotero), a literature review workshop, grant writing, and other research management topics of
1299 interest to graduate students. *Since winter term 2007, 93 Geosciences students have enrolled in*
1300 *library workshops* (about 5% of the total enrollment in the workshops; Figure 1). In addition, the

1301 subject librarian gives a brief library presentation at the annual new graduate student orientation.

1302 ScholarsArchive@OSU

1303 [117] The Libraries support faculty and student scholars in the geology program through
1304 tailored services such as access to the institutional repository, ScholarsArchive@OSU
1305 (<http://ir.library.oregonstate.edu/dspace/>), which houses current graduate student research and
1306 makes it available to anyone with an internet connection. ScholarsArchive is also available to
1307 faculty who wish to make their research discoverable, accessible, and freely available.

1308 Collections and Services Supporting *Undergraduates* in the Geology Program

1309 [118] Undergraduates benefit from the collections described above. Of particular relevance
1310 are the print and electronic book collections which support undergraduate curriculum. Also, the
1311 Libraries subscribe to several general academic research databases appropriate for most
1312 undergraduate research and provide immediate full text access to many journals, newspapers,
1313 and magazines. These are Academic Search Premier (EBSCO) and Academic OneFile (Gale).

1314 [119] All of the services described above (with the exception of the graduate student and
1315 faculty workshops) are available to undergraduates as well. Many undergraduates benefit, for
1316 example, from having walk up, chat, and text reference available to them for help with their
1317 questions about finding and accessing library resources.

1318 Summary

1319 [120] Despite the challenges of rising costs of collections and shrinking budgets, the OSU
1320 Libraries are committed to providing access to resources to that ensure faculty and students have
1321 access to the information they need. When taken in combination with the services and expanded
1322 access opportunities described above, the OSU Libraries collections support the geology

1323 graduate program.

1324 2.8.2 *Space, Equipment and Facilities*

1325 [121] Department facilities are primarily housed in Wilkinson Hall and Dawes House, with a
1326 small amount of storage space in the Women's Center basement, and a few offices in Cordley
1327 Hall. Office, laboratory, research space, and sample storage space is at a premium. Condition of
1328 research and teaching spaces is average to below average; some spaces have been renovated
1329 appropriately over the last 10 years to support teaching and research activities, others remain
1330 inadequate. The primary space problem is lack of space for research facilities, storage, and
1331 sample archive. Office space is essentially 100% occupied, and labs are being shared,
1332 sometimes with incompatible uses. A report on departmental space issues completed in 2005
1333 identified problems at that time and suggested how much additional space would be required to
1334 provide sufficient room for departmental activities. A request to the Dean of COS for additional
1335 space was made, but no action was taken despite the results of the COS Space Planning Task
1336 Force's report (Table 27–Table 29) showing that, by the COS's own space allocation model, the
1337 Department of Geosciences should be allowed twice the research space it has actually been
1338 allocated, an under-allocation of research space surpassed only by the Biology Program, which is
1339 administered directly by the College of Science rather than an academic department and
1340 therefore without any tenure track faculty (Table 28). This severe shortage of research space has
1341 forced us to convert teaching labs to research labs at great cost to the Department, in terms of
1342 both dollars and sacrificed teaching facilities. In addition to space needs for existing programs,
1343 anticipated new faculty hires in the next several years will require additional office and
1344 laboratory space.

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Table 27. Total allocated space in the College of Science. (Space Planning Task Force, 16 January 2006).

Unit	Total Space	% College Total
Chemistry	89485	21.0%
Botany	69514	16.3%
Zoology	58618	13.8%
Microbiology	44497	10.5%
Physics	44619	10.5%
Geosciences	34705	8.2%
Biochem/Biophys	32838	7.7%
Mathematics	13651	3.2%
Biology Program	11095	2.6%
Statistics	10426	2.5%
Dean	8941	2.1%
SMCS Education	7553	1.8%

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Table 28. Allocated and Allowed Research Space in the College of Science (Space Planning Task Force, 16 January 2006).

Unit	Allocated Research Space	Allowed Research Space	Difference as % of allocated space
Chemistry	35098	29635	15.52%
Microbiology	22123	10425	52.88%
Statistics	356	200	43.8%
Zoology	31728	28855	9.1%
Biochem/Biophys	18828	20215	-7.4%
Physics	16299	19540	-19.9%
SMCS Education	464	630	-35.6%
Botany	32683	47155	-44.3%
Geosciences	9563	19194	-100.7%
Biology Program	685	2765	-303.7%
Dean	0	0	
Mathematics	0	0	NA

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Table 29. Allocated and Allowed Office Space in the College of Science (Space Planning Task Force, 16 January 2006).

Unit	Allocated Office Space	Allowed Office Space	Difference as % of allocated space
SMCS Education	4091	1273	68.9%
Microbiology	8554	5672	33.7%
Biology Program	2493	2041	18.1%
Physics	9772	8569	12.3%
Zoology	16158	15210	5.9%
Chemistry	18198	18291	-0.5%
Biochem/Biophys	7708	8062	-4.6%
Geosciences	10285	11879	-15.5%
Botany	17534	21432	-22.3%
Mathematics	9079	12926	-42.4%
Dean	4954	7826	-58.0%
Statistics	8532	15618	-83.1%

1354

1355 [122] Shared departmental equipment and laboratories (not including individual research labs)

1356 include rock sample preparation equipment and labs, mineral separation equipment and
 1357 laboratory, an X-ray diffraction laboratory, chemical preparation lab for cosmogenic isotopes
 1358 and other wet chemistry, computers and peripherals in student computing laboratories,
 1359 classrooms, and teaching labs, and a variety of equipment and samples for teaching laboratories,
 1360 including a petrographic microscope laboratory. The Terra Cognita computing laboratory is a
 1361 departmental facility that maintains workstations, printers, and large format plotters, and is
 1362 operated on a fee-for-service basis. The department participates in the Keck Plasma Laboratory
 1363 and Electron Microprobe Laboratory, both housed in COAS, also operated on fee-for-service
 1364 basis. Costs of equipment and maintenance are substantial (Table 30).

1365 Table 30. Facilities and associated necessary expenditures

Description	Annual Cost	One-Time Capital Cost
Student computing upgrades	\$5,000	
New department printers	\$2,000	\$8,000
Petrographic microscopes annual maintenance and other petrology teaching	\$5,000	
New binocular microscopes		\$10,000
Supplies and maintenance for intro laboratory teaching	\$10,000	\$10,000
Petrographic microscope upgrades		\$17,000
Projector/microscope for rock thin sections		\$10,000
New rock saw and other rock prep equipment	\$2,000	\$10,000
Digital microscope and imaging		\$10,000
Disk mill repair		\$5,000
Renovation to rock prep room		\$20,000
X-Ray Diffraction upgrade and operating expenses	\$3,000	\$10,000
Research microscopes maintenance and upgrades	\$500	\$3,000
Main office remodel, other public space and bathroom upgrades for Wilkinson		\$50,000
Ultra-pure water system maintenance	\$3000	
Office maintenance and painting	\$3,000	
Rock and other sample archive (labor, shelving)	\$2,000	\$10,000
Misc. HVAC, plumbing, and other costs	\$15,000	
Lab renovation – 004		\$200,000-\$250,000
Balance service	\$2,000	
Classroom renovation – 106		\$20,000
Research lab renovation – TBA		\$100,000
Research lab renovation – TBA		\$150,000
Classroom/seminar room renovation		\$50,000
Classroom/seminar room renovation		\$30,000
Classroom IT upgrades	\$5,000	
Research/Teaching Technician	\$70,000	

1366

1367 [123] Maintenance and upgrade of department facilities and equipment is generally done on an
1368 *ad hoc* basis, with a varying combination of departmental funds, external research funds, and
1369 university funds (for example Research Equipment Reserve Fund (RERF) or Technology
1370 Resource Fee (TRF) funds).

1371 [124] The faculty recognize that the following actions need to be accomplished in the near
1372 term:

- 1373 1. *Determine current, high priority space needs* by surveying the faculty and staff, and
1374 develop a realistic 5-year plan to satisfy the most pressing needs. If the existing space in
1375 Wilkinson Hall is not sufficient, request new space from the University.
- 1376 2. *Initiate planning for new Geosciences building.*
- 1377 3. *Identify key equipment and laboratory facility maintenance issues and upgrade needs* and
1378 develop 5-year plan for funding and funding requests to address these needs.

1379 2.8.3 *Financial resources available to support the program*

1380 [125] Department of Geosciences revenue comes from five primary sources:

- 1381 1. External grants and contracts to individual faculty members;
- 1382 2. State (so-called E&G) and tuition funds allocated by the Dean;
- 1383 3. Research incentive funds, or so-called “returned overhead,” which is proportional to
1384 overhead returned to the College of Science from external grants and allocated to
1385 Geosciences by the Dean;
- 1386 4. Income from E-campus teaching and summer courses;
- 1387 5. Foundation funds, both annual giving and income on endowments; and
- 1388 6. Lab and field trip fees.

1389 [126] A budget summary (not including foundation funds and faculty grants and contracts)
 1390 from fiscal year 2010 is shown in Table 31, which shows that E&G and tuition funds are
 1391 generally sufficient to cover faculty and staff salaries (9 mo. for most faculty members), fringe
 1392 benefits, and tuition waivers and health insurance subsidies (negotiated by the graduate
 1393 assistants' labor union) for graduate teaching assistants (GTAs). All other departmental expenses
 1394 must be covered by the remaining sources of funds. These expenses include teaching
 1395 assistantships, department funded research assistantships, and non-tenure track instructors, as
 1396 well as a myriad of other costs, including maintenance of research and teaching facilities, office
 1397 supplies and main office operation, and a variety of one-time costs. **Yearly foundation funds are**
 1398 **on the order of \$10,000 and are used for scholarships, awards, and field trips. Some money from**
 1399 **modest surpluses has been reserved for use as start-up funds for anticipated faculty hires in**
 1400 **geovisualization, Earth history, and structural geology/tectonics, but generally operating**
 1401 **surpluses are returned to the College.**

1402 Table 31. Fiscal year 2010³ budget summary.

Category	Budget	Expenses	Transfers
Faculty & staff salaries and pay	1,709,771	1,878,757	
Fringe benefits	692,483	691,639	
Grad tuition & insurance	324,612	324,612	
GTA salaries & student pay	21,647	324,304	
Services, supplies, travel, & misc.		107,310	
E-Campus & summer school			351,464
Returned overhead equivalent			201,026
Lab/class fees			50,979
Misc. income & adjustments			9,491
Totals	2,748,512	3,326,623	612,959
Balances		(578,111)	34,849

1403 [127] All revenue sources are included in the historical trends of finances shown in Figure 1–
 1404 Figure 5. These graphs show the following:
 1405

^{3 3} July 1, 2009 to June 30, 2010, similar to the academic year.

- 1406 1. As of 2005, faculty grants and contracts provided revenue greater than any other source
1407 and approximately equal to all other sources combined (Figure 1, Figure 2).
- 1408 2. E&G and tuition funds have generally declined in real-dollar terms since 1990, but “total
1409 education” funds, which include E&G, tuition, e-campus, endowment, lab fees, and
1410 summer school income, have generally increased after 2000 (Figure 1, Figure 2).
- 1411 3. Returned overhead and endowment income have increased since 1990, but have
1412 increased at a greater rate since 2004 (Figure 3).
- 1413 4. E-campus revenue, which was non-existent before 2004, has since then grown more
1414 quickly than either returned overhead or endowment income to become the fourth largest
1415 revenue source, after grants and contracts, tuition, and E&G (Figure 1, Figure 3).
- 1416 5. The National Science Foundation (NSF) was the major and dominant source
1417 (approximately 2/3) of external grants and contracts for the period FY 2004-08 (Figure
1418 4).
- 1419 6. Research in the areas of (a) ecology, (b) climate, (c) volcanology, igneous petrology, and
1420 economic geology (VIPER), and (d) water (e.g., surface, subsurface, and snow
1421 hydrology; water policy) comprised 83% of external grants and contracts in the period
1422 FY 2004-2008, and six different research areas (the four above plus geomorphology and
1423 remote sensing) each drew approximately \$1 million or more in that period (Figure 5).

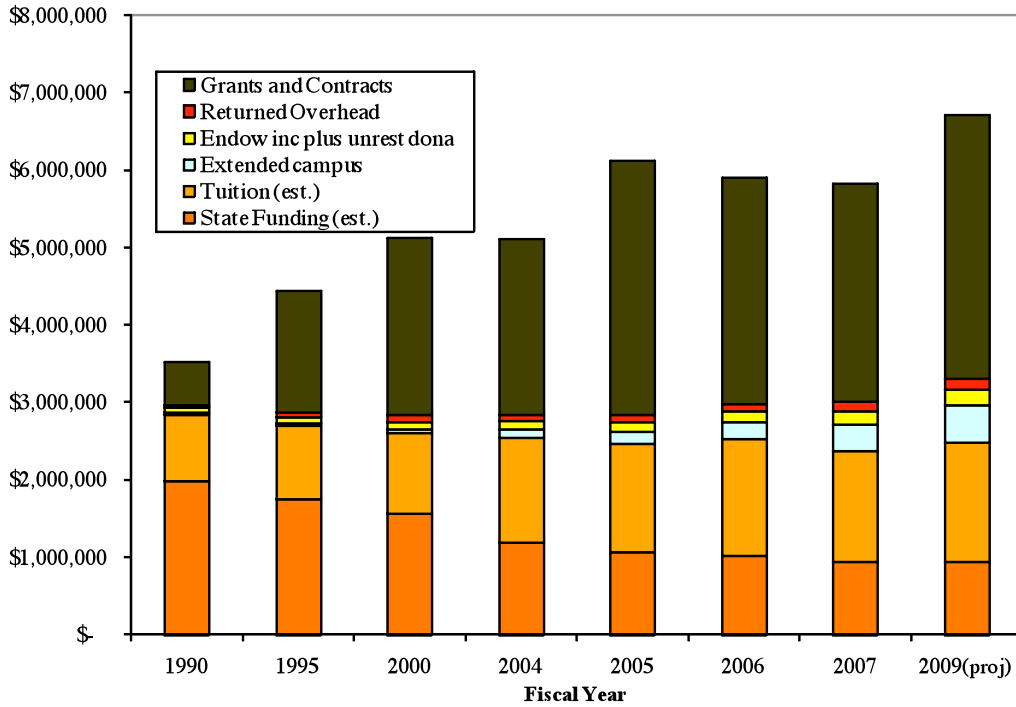


Figure 1. Revenue trend for Geosciences in 2009 dollars.

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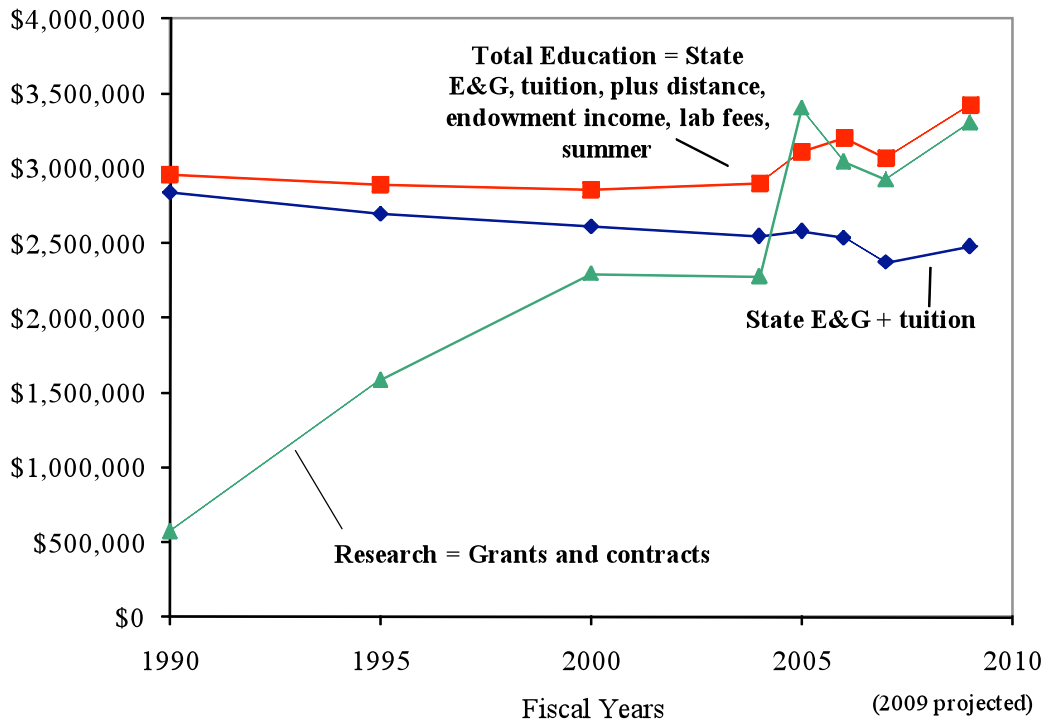
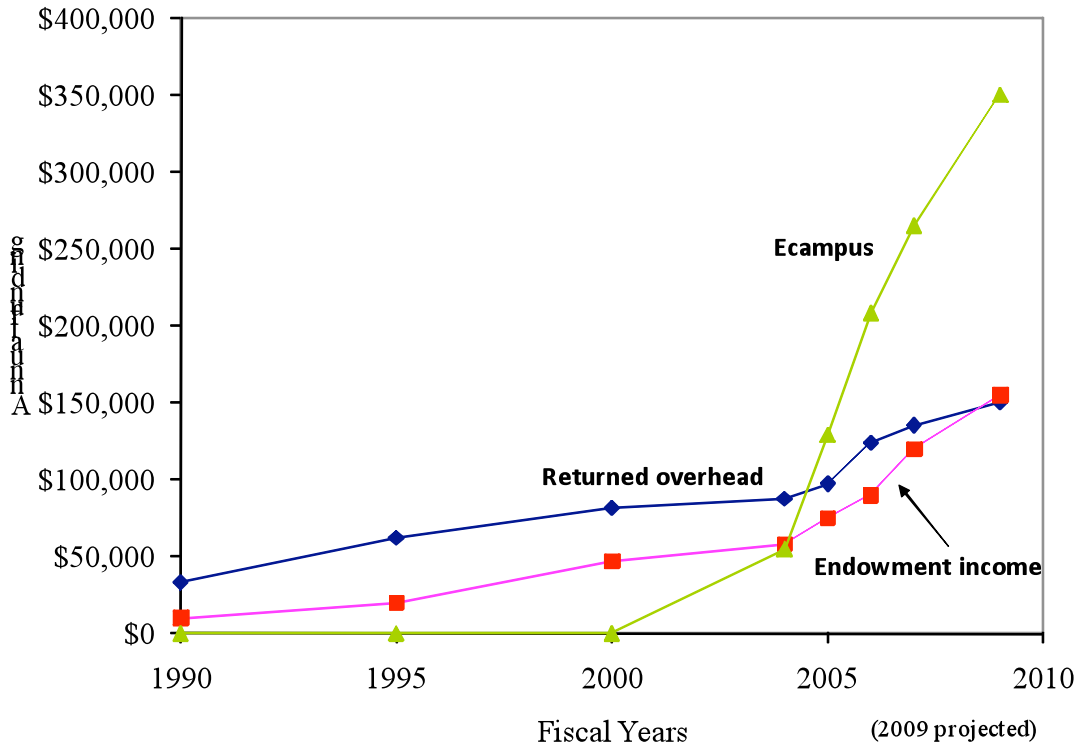


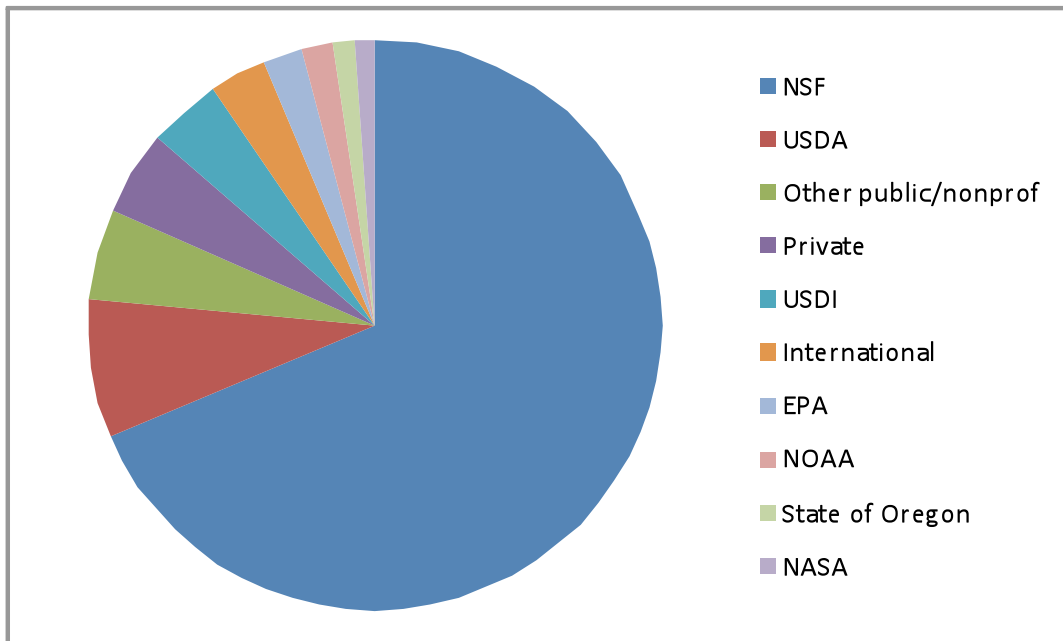
Figure 2. Education vs. research revenue to Geosciences in 2009 dollars.

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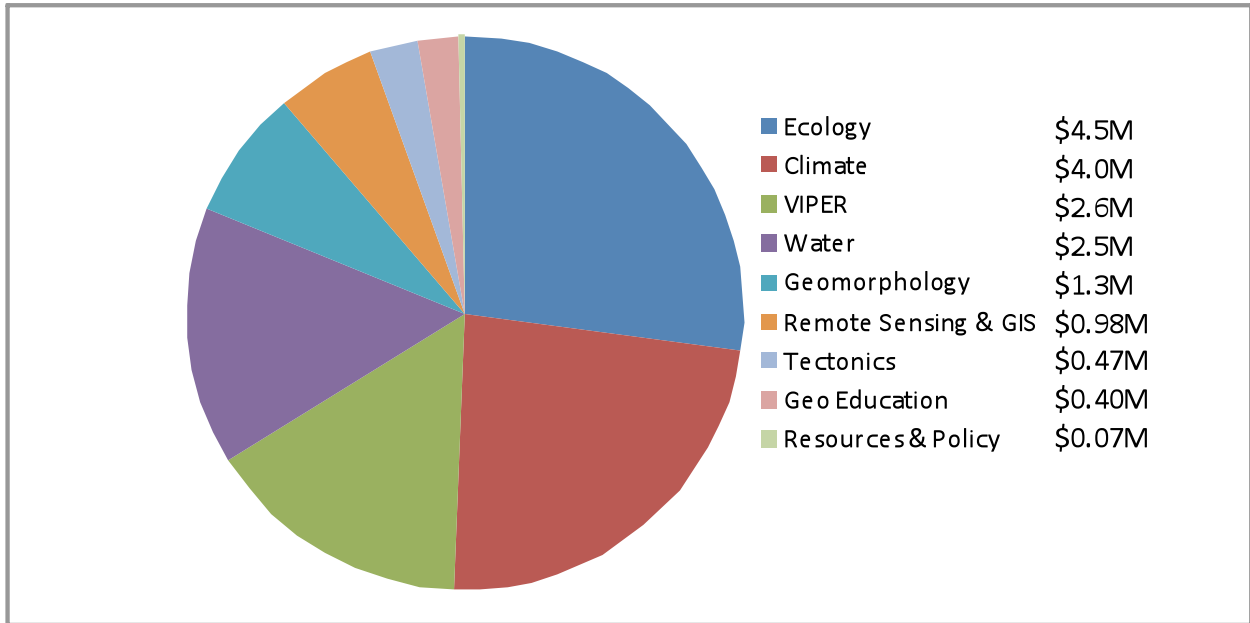
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Figure 3. Revenue returned to the Geosciences operating funds in 2009 dollars.



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Figure 4. All extramural funding to Geosciences, FY04-FY08. Total = \$16.4M. USDA = Dept. of Agriculture including Forest Service. USDI = Dept. of the Interior including National Park Service and USGS.



1434 **Figure 5.** Extramural funding to Geosciences, FY04-FY08, by research topic. Total = \$16.4M.
 1435

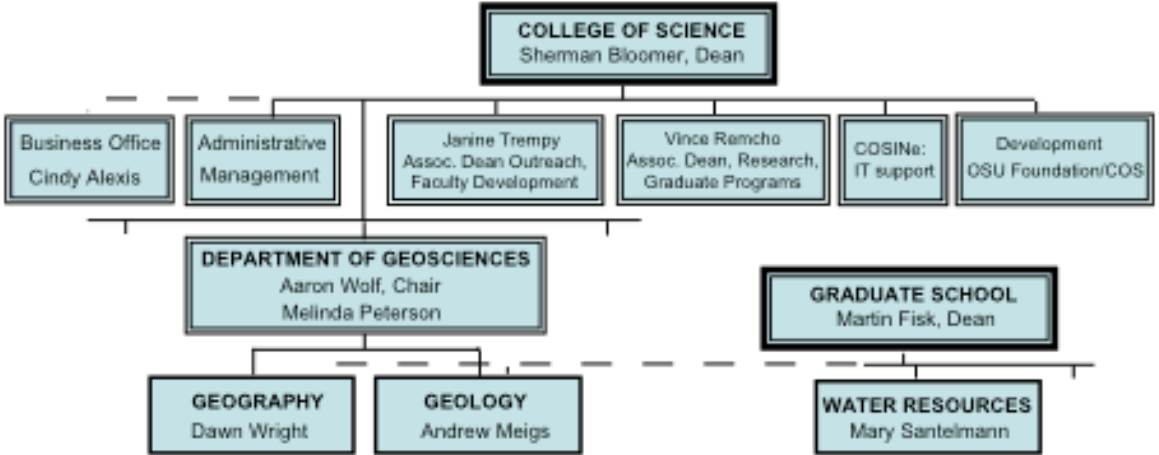
1436 [128] Given declining resources there are always heavy demands on the departmental budget,
 1437 and few easy solutions. Over the next 5 years departmental financial planning will focus on
 1438 maintaining and increasing existing income streams, examining the effectiveness of current
 1439 spending, and ensuring key functions and costs are supported. To maintain and increase income
 1440 streams the following general strategies should be implemented:

- 1441 1. *Maintain healthy e-campus teaching*, but be cautious in investing further because we are
 1442 heavily leveraged in this area already.
- 1443 2. Maintain externally funded research as a high priority.
- 1444 3. Ensure that specialties of new faculty hires are in areas of research that traditionally
 1445 garner significant external research funds, and that position descriptions include
 1446 successful extramural funding and evidence of potential future success.
- 1447 4. *Examine and retool the current fundraising plan* in careful, close collaboration with the
 1448 OSU Foundation. The plan should be realistic and forward thinking, consider our needs

- 1449 and the fundraising environment, and enable and engage the foundation staff to
1450 aggressively seek funds on our behalf.
- 1451 5. Develop an annual report to the faculty on departmental finances.
 - 1452 6. Develop plans to support start up costs for new faculty.
 - 1453 7. Develop plans for large infrastructure proposals to funding agencies or foundations.
 - 1454 8. Review how returned overhead and other department level research funds are spent,
1455 present a summary to the faculty, and adjust if needed.

1456 **2.9 Organizational Support**

1457 [129] The organizational support structure is currently in flux, but is represented to a near
1458 approximation in Figure 6. The College of Science (COS) has recently been incorporated within
1459 the Division of Arts and Sciences, and the business office is now part of the Arts and Sciences
1460 Business Center, which is not under direct control of the Dean (hence the dashed line in Figure
1461 6). The Department of Geosciences, as stated above, is soon to merge with the College of
1462 Oceanic and Atmospheric Sciences (COAS) to form a new College of Earth, Oceanic, and
1463 Atmospheric Sciences (EOAS). COAS was recently incorporated into the new Division of Earth
1464 System Sciences, and the new EOAS will presumably be part of the latter division, but funding
1465 and some oversight of Geosciences programs will remain with COS.



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1467 **Figure 6.** Organizational chart for programs in the Department of Geosciences.

1468 **3. Productivity**

1469 [130] This section should answer, “How well do you do what you do?”

1470 **3.1 Student Performance**

1471 [131] Student honors and awards at OSU are shown in (Table F). *Andrew and Dawn to do.*

1472 Time to degree and attrition data are shown in . (Table G) *Stacey finishing this.*

1473 [132] Detailed descriptions and accomplishments of some Geography (9.4) and Geology (9.5)

1474 students are included in the appendix.

1475 **3.2 Faculty Performance**

1476 [133] Data summarizing grants and contracts, publications, scholarly presentations, awards

1477 and honors, professional service and leadership activities for each faculty member, and impact

1478 factors are shown in . Averages shown are weighted by research FTE because faculty have a

1479 range of job descriptions. Graduate student advising and thesis loads for faculty members are

1480 shown in . Data detailing performance of individual faculty for the period since 2005, inclusive,

1481 are shown below, where graduate student authors are shown in bold-faced type inclusive (all

- 1482 awards, honors, and professional leadership activities are shown). Complete curriculum vitae for
1483 all faculty are included as supplementary information.
- 1484 [134] Faculty honors and awards.

Table 32. Geology faculty awards, honors, and distinguished service

Name, title	Grad. instruc. since year	Since 2005...				
		Awards, honors	No. awards, honors	Journal editorships	Book & special issue editorships	Other major service
Edward Brook, Prof.	1996	Aldo Leopold Leadership Fellow, Harris Basic Research	2	AE Climate of the Past Discussions; AE Quat. Sci. Rev.	Ice Core Submissions, Encyc. Quat. Sci.	Co-Chair Intl. Partner. In Ice Core Sci.
Peter Clark, Prof.	1984	Easterbrook Distinguished Scientist Award, Geological Society of America; F.A. Gilfillan Memorial Award for Distinguished Scholarship in Science, OSU; The Leverhulme Trust Visiting Professorship, University of Edinburgh; Fellow, AGU	4	AE Journal of Climate; AE Quat. Sci. Rev.	Abrupt Climate Change. A report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research	Coordinating Lead Author, U.S. Climate Change Science Program, "Abrupt Climate Change"; Coordinating Lead Author, IPCC AR5
Shanaka de Silva, Prof.	2006	None	0	1) Ed. Board Jour. Volcanol. Geotherm. Res.	Large Silicic Magmatic Systems - Vol 167, No 1-4 Jour. Volcanol. Geotherm. Res.	1) NSF PIRE Reverse site visit Panel 2008 2) NASA EPSCoR Fellow 3) AGU VGP Nominations Committee 2008
John Dilles, Prof.	1987		0	AE, Economic Geology	Econ Geol, Helgeson Issue	Chair, Minerals & Energy, APLU
Anita Grunder, Prof.	1986	Carter Grad award, Horne award for sustained excellence, AWG National teacher of year 2009	3	Assoc editor, Geology, JVGR and JGR	JVGR issue on welding	VP of International Assoc of Volcanology, Secretary of AGU-VGP division, Exec Comm IAVCEI
Roy Haggerty, Prof.	1996	Carter Grad Teaching, Hollis Dole Prof., Geoclub Outstanding Faculty Member	3	AE Water Resour. Res.		NSF Hydrologic Sciences Panel; Water Resour. Sci. WRGP
Adam Kent, Assoc. Prof.	2002	Carter Grad Teaching Award, Consortium for Ocean Leadership Distinguished Lecturer	2		1	MSA councillor
Stephen Lancaster, Assoc. Prof.	2001		0	AE J. Geophys. Res. - Earth Surf.		Assoc. Dir., Water Resources Engineering
Robert J. Lillie, Prof.	1984	National Park Service Award for outstanding contributions in engaging National Park staff and visitors in Geoscience	1			Education and Outreach Manager for the NSF EarthScope Program

Name, title	Grad. instruc. since year	Since 2005...				
		Awards, honors	No. awards, honors	Journal editorships	Book & special issue editorships	Other major service
Andrew Meigs, Assoc. Prof.	1998		0	AE, Lithosphere		Program Director, Geology
Roger Nielsen, Prof.	1982					Chair, Faculty Senate, P&T; Provost Task Force on Distance Education; Chair, OSU Research Council; University Post-Tenure Review Task Force; University Space Committee; Department Chair
Peter Ruggiero, Asst. Prof (Sr. Res.)	2006		0			Member, AGU Sediment and Landscape Dynamics Technical Committee

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Table 33. Geography faculty awards, honors, and distinguished service

Name, title	Grad. instruc. since year	Since 2005...				
		Awards, honors	No. awards, honors	Journal editorships	Book & special issue editorships	Other major service
Laurence Becker, Assoc. Prof.	1995	Carter Grad Teaching	1			
Hannah Gosnell, Asst. Prof.	2006	Universities Council on Water Resources, American Assoc of University Women	2	AE J. of Rural Social Sciences		Chair, Rural Geography Specialty Group, Association of American Geographers
Todd Jarvis, Asst. Prof. (Sr. Res.)	2007	Williamson Water Prize	1	AE Ground Water		Assoc. Dir., Institute for Water & Watersheds
Julia Jones, Prof.	1993			Ecology, Ecol Monographs, Ecol Applic, Hydrological Processes		Director, Ecosystem Informatics IGERT: co-Chair, NAS Committee on hydrologic effects of forest management
Anne Nolin, Assoc. Prof.	2003	Erskine Fellow, Landolt et Cie Chair in Sustainable Futures, 2 NASA Achievement Awards	4	AE Water Resources Research; AE Journal of Hydrometeorology	Remote Sensing of Environment, Annals of Glaciology, International Workshop on Multiangular Measurements and Modeling	National Academy of Sciences-Space Studies Board/Committee on Earth Sciences; Assoc. Dir. Water Resources Science
Mary Santelmann, Assoc. Prof. (Sr. Res.)	1992	US-IALE Award for service as Treasurer	1		1	Community and Diversity Mentoring group

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Name, title	Grad. instruc. since year	Since 2005...				
		Awards, honors	No. awards, honors	Journal editorships	Book & special issue editorships	Other major service
Aaron Wolf, Prof.	1993	Named "Working Class Hero," by Miller-McCune Magazine, January/February 2009. Awarded the OSU Milton Harris Award in Basic Research, 2008. Inducted as Fellow, International Water Resources Association, which recognizes, "exceptional professional skills and service to society and to the mission of the IWRA." April 2006.	3	ASSOCIATE EDITOR, World Water Policy		Six advisory boards and councils for global research initiatives; chair since 2009
Dawn Wright, Prof.	1995	AAAS Fellow, Aldo Leopold Leadership Fellow, Harris Basic Research, CASE/Carnegie Prof of the Year, Fulbright, UCSB Distinguished Alumni, UCSB Commencement Address	7	Editorial board member for 6 journals (Int J GISci, AAG Annals, Prof Geog, Trans GIS, J Coastal Conserv, Geog Compass)	PNAS Special Feature, Prof Geog. Special Issue, Marine Geodesy Special Issues (2), Mar & Coastal GIS, Undersea w/GIS, Place Matters,	Geography Program Dir, GIScience Certificate Program Dir, NRC Ocean Studies Board, AAG National Councilor, UCGIS National Research Chair, NRC Stdg Comm on Geophys & Env Data

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Table 34. Geology faculty publications, scholarly presentations, grants, and contracts

Name, title	Career...		Since 2005 (inclusive)...								
	h-index	Avg. cit. per pub.	h-index	Avg. cit. per pub.	Peer-rev. pubs.		No. other pubs.	No. stud. auth.	No. schol. pres.	Grants & contracts total	Largest funding source
					No.	1st-auth.					
Edward Brook, Prof.	27	40.2	12	11.2	38	8	2	33	~30-40	\$12,553,296	NSF - Off. Polar Prog's
Peter Clark, Prof.	39	48.0	12	18.0	40	5	7	20		\$1,590,347	NSF-Paleoclimate Program
Shanaka de Silva, Prof.	20	24.1	3	2.3	14	8	3	7	30	\$4,524,434	NASA Space Grant
John Dilles, Prof.	18	13.0	5	12.5	10	0	2	4	~25	\$457,000	NSF-EAR, (&Industry)
Anita Grunder, Prof.	13	12.9	5	4.0	12	1	2	14	26	\$4,397,200	NSF CDP
Roy Haggerty, Prof.	18	30.8	6	9.4	16	2	1	14	21	\$2,155,885	NSF - Hydrology
Adam Kent, Assoc. Prof.	16	15.4	9	8.5	31	8	2	23	19	\$3,322,995	NSF-Earth Sciences & Ocean Sciences
Stephen Lancaster, Assoc. Prof.	7	15.7	4	3.3	9	4	2	6	21	\$1,911,531	NSF - Geomorph.
Robert J. Lillie, Prof.	16	40.2	0	0.0	1	1	5	4	32	\$1,856,510	NFS-EarthScope
Andrew Meigs, Assoc. Prof.	11	30.3	5	5.6	10	6	5	6	21	\$966,229	NSF-Tectonics
Roger Nielsen, Prof.	25	28.0	3	7.2	6	0	0	6	12	\$1,623,219	NSF - Marine G&G
Peter Ruggiero, Asst. Prof (Sr. Res.)	8	13.0	2	1.0	13	4	15	0	37	\$2,741,162	NOAA - Climate Program Office

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[137]

Table 35. Geography faculty publications, scholarly presentations, grants, and contracts

Name, title	Career...		Since 2005 (inclusive)...								
	h-index	Avg. cit. per pub.	h-index	Avg. cit. per pub.	Peer-rev. pubs.		No. other pubs.	No. stud. auth.	No. schol. pres.	Grants & contracts total	Largest funding source
					No.	1st-auth.					
Laurence Becker, Assoc. Prof.					2	2	1		12	\$161,553	NSF - Geog.
Hannah Gosnell, Asst. Prof.	5	13.5			17	11	0	4	48	\$1,459,600	USDA - Natl Institute of Food and Ag Private
Todd Jarvis, Asst. Prof. (Sr. Res.)					3	3	4	0	23	\$260,000	
Julia Jones, Prof.	20	43.4	3	2.0	14	5	9	6	21	\$8,805,580	NSF-Long-term ecological research
Anne Nolin, Assoc. Prof.	12	23.4	2	4.0	16	7	2	3	38	\$2,971,233	NASA
Mary Santelmann, Assoc. Prof. (Sr. Res.)	9	21.1	3	3.5	6	5	9	7	7	\$215,601	NSF Hydro
Aaron Wolf, Prof.	11	20.8	7	12.5	32	12	4	26	83	\$1,875,792	US Bureau of Reclamation
Dawn Wright, Prof.	8	23.2	2	2.5	34	16	29	11	95	\$3,087,432	NSF - OEDG

1512 [138] Scholarly presentations, publications, exhibits, performances, citations, invited talks, etc.

1513 Identify graduate student co-authors in bold/caps.

1514 [139] Grants and contracts.

1515 [140] Graduate student advising and thesis load per faculty member (Table E).

1516 [141] Professional service and leadership.

1517 [142]

1518 [143] **GEOGRAPHY:**

1519 In my prior version I had just summarized selected Geography faculty honors, awards, and
1520 service in this way:

- 1521 • Wright selected as a Leopold Leadership Fellow, 2011, Woods Institute for the
1522 Environment, Stanford University.
- 1523 • Nolin holds the Landolt et Cie Chair for Sustainable Futures, Federal Institute of
1524 Technology, Lausanne, Switzerland.
- 1525 • Kimerling (now emeritus) and Becker (Larry) hold OSU Carter Awards for Outstanding
1526 and Inspirational Teaching in Science. Wright is a 2-time finalist
- 1527 • Kimerling, Wright, and Wolf hold OSU Milton Harris Awards in Basic Research.
- 1528 • Kahn (instructor) awarded the 2007 Vice-Provost and Directors Award for Outstanding
1529 Achievement in On-line Teaching Innovation.
- 1530 • Meyers holds an OSU Outstanding Faculty Research Assistant Award.
- 1531 • Wright named 2007 U.S. Professor of the Year for the State of Oregon by the
1532 CASE/Carnegie Foundation and is a AAAS Fellow.

- 1533 • Wolf featured on stage at the kickoff launch event for the \$6 million Campaign for OSU,
1534 October 2007.
- 1535 • Wolf and Wright featured on Capital Campaign and general OSU Advancement banners.
- 1536 • Gosnell invited to follow OSU President Ray on evening program of 2008 President's
1537 Weekend (OSU alumni fundraising event) in Sunriver, and helped lead a tour around
1538 Bend for the alumni during the day.
- 1539 • Gosnell recently helped Anne Ruggiero recruit a donor (a wealthy zoology alum from the
1540 Bay Area), who has since donated \$30,000 to the Geography program to hire grad
1541 students for work in "rural sustainability" in the American West.
- 1542 • Nolin featured in the 2006 OSU President's Report.
- 1543 Selected Geography professional service and leadership:
- 1544 • Campana, Jones, Nolin, and Wright currently serving on various committees for the
1545 National Academy of Science (and Wright serves also on the National Ocean Studies
1546 Board).
- 1547 • Nolin serving on the American Geophysical Union Council and as Focus Group Chair of
1548 Cryosphere Sciences.
- 1549 • Nolin serving on various NASA committees and as an expert reviewer for reports of the
1550 Intergovernmental Panel on Climate Change (IPCC).
- 1551 • Jones consistently serves on NSF review panels and is a longstanding co-PI of the H.J.
1552 Andrews Experimental Forest, one of 26 U.S. Long Term Ecological Research (LTER)
1553 network sites.
- 1554 • Wright chaired National Research Committee of the 80+-member University Consortium
1555 for Geographic Information Science (UCGIS).

1556 • Wolf serves as consultant to the U.S. Department of State, the U.S. Agency for
1557 International Development, and the World Bank

1558 [144] **GEOLOGY:**

1559 **4. Outcomes**

1560 [145] This section should answer the question, “What difference does it make whether you do
1561 what you do or not? How do you know?”

1562 **4.1 Professional Viability of Graduates**

1563 [146] Theses/dissertations (Table H).

Table 36. Geography graduate student thesis titles

Student	Major professor	Degree	Major	Graduation Year	Thesis Title
Selkowitz	Nolin	MS	Geography	2005	Measurement, modeling, and remote sensing of snow cover in areas of heterogeneous vegetation
Punke	Jones	PhD	Geography	2006	Paleoenvironmental reconstruction of an active margin coast from the Pleistocene to the present : examples from southwestern Oregon
Tuladhar	Nolin	MS	Geography	2006	Comparison of MODIS Binary and Fractional Snow Cover Mapping Techniques in the Himalayan Region, Nepal
Geren	Wolf	MS	Water Resources	2006	"Predicting Sediment Delivery from Small Catchments in the Western Cascades of Oregon."
Boehlert	Wolf	MS	Geography/ Agr. Economics	2006	Irrigated Agriculture, Energy, and Endangered Species in the Upper Klamath Basin: Evaluating Trade-Offs and Interconnections."
Jarvis	Wolf	PhD	Geography	2006	"Transboundary Groundwater: Geopolitical Consequence, Commons Sense, and the Law of the Hidden Sea."
Bernard	Becker	MS	Geography	2007	Determining relative benefits to communities from urban and agricultural land use change in Napa County, California
Wade	Becker	MS	Geography	2007	Evaluation of deforestation in the Rio Platano Biosphere Reserve, Honduras
Anderson	Becker	MS	Geography	2007	Change detection of land cover in a meadow landscape, the "Ranches" Meadow, Silver Falls State Park, Oregon
Arthur	Jones	MS	Geography	2007	Thirty-five years of forest succession in southwest Oregon: Vegetation response to three distinct logging treatments
Dailey	Jones	MS	Geography	2007	Meadow Classification in the Willamette National Forest and Conifer Encroachment Patterns in the Chucksney-Grasshopper Meadow Complex, Western Cascade Range, Oregon.
Perry	Jones	MS	Geography	2007	Do Vigorous Young Forests Reduce Streamflow? Results from up to 54 Years of Streamflow Records in Eight Paired-watershed Experiments in the H. J. Andrews and South Umpqua Experimental Forests.
Friedel	Nolin	MS	Geography	2007	Development and Application of a Mathematical Transformation for MISR Data for the Study of Vegetation Change
Bosley	Nolin	MS	Geography	2007	Mapping vegetation density and water inundation in a recovering wetland : the Mesopotamian Marshlands
Bakker	Wolf	PhD	Geography	2007	"Transboundary River Floods: Vulnerability of Continents, International River Basins and Countries."
Loynes	Becker	MS	Geography	2008	Land trusts in the New West: Conserving and responding to local geographies?
Ndzeitze	Becker	MS	Geography	2008	Detecting changes in a wetland: Using multi-spectral and temporal Landsat in the Upper Noun Valley Drainage Basin, Cameroon
Straus	Gosnell	MS	Geography	2008	Incorporating an "Environment and Society" Geography Curriculum into Field-Based Environmental Education at The Mountain Institute, West Virginia.
Copeland	Nolin/ Grant	MS	WRE	2008	Geomorphology of initiation sites at recent periglacial debris flows on Mt. Rainier

Student	Major professor	Degree	Major	Graduation Year	Thesis Title
Medley	Nolin	MS	Geography	2008	A Method for Remotely Monitoring Glaciers with Regional Application to the Pacific Northwest
Odom	Wolf	MS	Water Resources Management & Policy	2008	"Institutional Capacity Building through Land and Water Stewardship Integration- An Analysis of Source Water Protection in Corvallis, Oregon."
McNally	Wolf	MS	Geography	2008	"A Collaborative Potential Assessment of Project Atmospheric Brown Clouds."
Murphy	Jones	MS	Water Res Eng	2009	Stream Channel Stability and Sensitivity to Landscape History and Land Use Changes in Kelley Creek, Portland, Oregon
Rice	Jones	PhD	Geography	2009	Forest-Meadow Dynamics in the Central Western Oregon Cascades: Topographic, Biotic, and Environmental Change Effects
Ellinger	Nolin	MS	Geography	2009	Mapping interannual changes in glacier area on Mt. Hood and Mt. Rainier: Implications for Debris Flows
Parker	Nolin	MS	Geography	2009	Meteorological conditions associated with rain-related periglacial debris flows on Mount Hood, Oregon and Mount Rainier, Washington
Brown	Nolin	MS	Geography	2009	Understanding the Impact of Climate Change on Snowpack Extent and Measurement in the Columbia River Basin and Nested Sub Basins
Lin	Wolf	MS	Water Resources Management	2009	"Water's Role in a Sense of Place in the Nu River Valley."
Duncan	Gosnell	MS	Geography	2010	The Effects of Alternative Future Development Scenarios on Ecological Patterns and Social-Ecological Resilience in Central Oregon
Baker	Gosnell	MS	Geography	2010	A Spatial Assessment of Conservation Opportunities in the Willamette River Floodplain Between Corvallis and Albany, Oregon
Frentess	Jones	MS	Water Res Sci/ Botany	2010	Stream nitrate, chloride, and SUVA response to land use during winter baseflow conditions in sub-basins of the Willamette River, Oregon
Moore	Jones	MS	Geography	2010	Trends in streamflow from oldgrowth forested watersheds in the western Cascades
Tepley	Jones	PhD	Geography/ Forest Science	2010	Age Structure, Developmental Pathways, and Fire Regime Characterization of Douglas-fir/ Western Hemlock Forests in the Central Western Cascades of Oregon
Iyob	Wolf	PhD	Geography	2010	"Resilience and Adaptability of Transboundary Rivers: The Principle of Equitable Distribution of Benefits and the Institutional Capacity of the Nile Basin."
Zentner	Wolf	PhD	Geography	2010	"Assessing the Design of International Water Supply and Hydropower Arrangements for Managing Certain Climate Change Scenarios."
Reusser	Wright	PhD	Geography	2010	Biogeography of Nonindigenous Species: From Description to Prediction
Holderman	Jarvis	Joint JD/MS	Water Resources	2011	Little Green Baby Steps: Transforming Modern Power Production through Microscale Hydropower

Table 37. Geology graduate student theses

Student	Major professor	Degree	Major	Graduation Year	Thesis Title
Schmidt	Grunder	PhD	Geology	2005	Deep crustal and mantle inputs to North Sister Volcano, central Oregon Cascades
Longo	Dilles/	PhD	Geology	2005	Evolution of volcanism and hydrothermal activity in the
Klemetti	Grunder	PhD	Geology	2005	Constraining the magmatic evolution of the Andean arc at 21°S using the volcanic and petrologic history of Volcan Aucanquilcha, Central Volcanic Zone, northern Chile
Goehring	Brook	MS	Geology	2006	¹⁰ Be Exposure ages of erratic boulders in southern Norway and implications for the history of the Fennoscandian Ice
Carlson	Clark	PhD	Geology	2006	Dynamics of the Laurentide Ice Sheet
LaNier	Haggerty	MS	Civil	2006	Changes in hyporheic exchange flow following experimental
Mutti	Haggerty	MS	Water Resources	2006	Nitrate Transport through the Vadose Zone of the Southern Willamette Valley Groundwater Management Area
Craner	Haggerty	MS	Geology	2006	Flow and Transport Model of the Southern Willamette Valley Groundwater Management Area
Rowe	Kent/ Nielsen	PhD	Geology	2006	The Role of Subduction Fluids in Generating Compositionally Diverse Basalts in the Cascadia Subduction Zone.
Oxford	Kent	MS	Geology	2006	Early Oligocene Intrusions in the Central Coast Range of Oregon: Petrography, Geochemistry, Geochronology, and Implications for the Tertiary Magmatic Evolution of the Cascadia Forearc
Darr	Kent	MS	Geology	2006	Magma Chamber Processes Over the Past 475,000 Years at Mount Hood, Oregon: Insights From Crystal Zoning and Crystal Size Distribution Studies
Jefferson	Lancaster/ Grant	PhD	Geology	2006	Hydrology and geomorphic evolution of basaltic landscapes, High Cascades, Oregon
Truitt	Lillie	MS	Geology	2006	Interpreting a Weird and Scenic Landscape to Park Visitors: Tectonic and Volcanic Processes of Craters of the Moon
Schultz	Meigs	MS	Geology	2006	Can growth strata identify individual paleoearthquakes and characterize fold kinematics?: A case study from the La Laja
Scarberry	Grunder	PhD	Geology	2007	Extension and Volcanism: Tectonic Development of the Northwestern Basin and Range Province in Southeastern Oregon
Burkholder	Haggerty	MS	Water Resources Science	2007	Influence of Hyporheic Flow and Geomorphology on Temperature of a Large, Gravel Bed River, Clackamas River, Oregon, USA
Woody	Haggerty/ Grant	MS	Geology	2007	A Preliminary Assessment of Hydrogeologic Suitability for Aquifer Storage and Recovery in Oregon
Bryenton	Haggerty	MS	Environmental Engineering	2007	Role of Hyporheic Flow on Temperature in Alcoves on the Willamette River
Underwood	Lancaster	MS	Geology	2007	Sediment transfer and storage in headwater basins of the Oregon Coast Range: Transit times from ¹⁴ C dated deposits
Scarberry	Grunder	PhD	Geology	2007	Extension and volcanism : tectonic development of the northwestern margin of the Basin and Range Province in southern Oregon
Schiffman	Meigs	MS	Geology	2007	Seismotectonics in the eastern Precordillera, San Juan, Argentina: Reconciling earthquakes and structural geology in
Anslow	Clark/ Hostetler	PhD	Geology	2008	Modeling and Dating Glacier Fluctuations and Their Relation to Pacific Ocean Climate
Ersek	Clark	PhD	Geology	2008	Past Climate Variability in Southwestern Oregon and Relationships with Regional and Hemispheric Climate

Student	Major professor	Degree	Major	Graduation Year	Thesis Title
Lee	Dilles	PhD	Geology	2008	Genesis Of The El Salvador Porphyry-Copper Deposit, Chile and Distribution Of Epithermal Alteration At Lassen Peak, California
Dunham	Lillie	MS	Geology	2008	Interpreting Geology in Yosemite National Park, California: A Monument to Strong Granite, Powerful Glaciers, and the Perseverance of Life
Hatfield	Nielsen	MS	Geology	2008	Snow Peak, OR: Late Miocene to Early Pliocene Volcanism in the Central Cascadia Forearc
Manggon	de Silva/ Grunder	MS	Geology	2009	Development of Continental Magmatic Systems: Insights from Amphibole Geochemistry of the Altiplano-Puna Volcanic Complex, Central Andes.
Giles	Grunder	MS	Geology	2009	Dynamics of a long-lived magmatic system as indicated by variations in amphibole composition and textures in dacites
Iademarco	Grunder	MS	Geology	2009	Volcanism and Faulting along the northern margin of Oregon's High Lava Plains: Hampton Butte to Dry Mountain
Milliard	Meigs	MS	Geology	2009	Two-stage opening of the northwestern Basin and Range in Eastern Oregon: Evidence from the Miocene Crane Basin
Trench	Meigs	MS	Geology	2009	The Termination of the Basin and Range Province into a Clockwise Rotating Region of Transtension and Volcanism, Central Oregon
Shakun	Clark	PhD	Geology	2010	Analyzing Large Paleoclimate Datasets: Implications for Past and Future Climate Change
Peckyno	de Silva	MS	Geography	2010	Lava Flow Lobation and Margin Analysis
Harpel	de Silva	Ph.D	Geology	2010	Stratigraphy, Sedimentology, and Eruptive Dynamics of the 2-ka eruption of Misti Volcano, Southern Peru.
Weinsteiger	Kent/ Nielsen	PhD	Geology	2010	The origin of mid-ocean ridge basalts: insights from trace element contents in anorthite, anorthite-hosted-melt inclusions, and ocean core complexes
Kenworthy	Lillie	MS	Geology	2010	Changing Landscape, Climate, and Life During the Age of Mammals: Interpreting Paleontology, Evolving Ecosystems, and Climate Change in the Cenozoic Fossil Parks
Mull	Ruggiero	MS	Ocean and Coastal Engineering	2010	Coastal Sand Dunes in the U.S. Pacific Northwest: Regional Variability in Foredune Geomorphology and Associated Physical Vulnerability to Hazards
Johnson	Meigs	MS	Geology	2011	Structure and timing of growth of range-bounding anticlines, Tygh Valley, OR

1567 [150]

Table 38. Geography graduate student placement

Student	Major prof.	Deg.	Major	Graduation Year	Placement at time of degree	Current placement	
Geography	1	Nolin	MS	Geography	2005	Environmental Scientist, SAIC	Res. Geog. USGS AK Sci. Ctr.
Geography	2	Wolf	MS	Wat. Res. Mgmt. Pol.	2006	OR Dept. of Transportation	US Army Corps of Engineers
Geography	3	Wolf	MS	Geography/ Agr. Econ.	2006	Private law firm.	
Geography	4	Jones	PhD	Geography	2006	Geoarcheology consultant, Portland, OR	
Geography	5	Nolin	MS	Geography	2006	GIS Analyst, City of Kissimmee, FL	
Geography	6	Wolf	PhD	Geography	2006	OSU Assistant Professor	
Geography	7	Wolf	PhD	Geography	2007	UNESCO-IHE Water Ed. Ctr.	PBL Netherlands Env. Assmt. Ag.
Geography	8	Becker	MS	Geography	2007	Douglas Co. Plan. Dept., Roseburg, OR	Lane Co. Trans. Plan. & Traffic Dept., Eugene, OR
Geography	9	Becker	MS	Geography	2007	Manager, Portfolio Credit Risk at T-Mobile, Seattle, Washington	
Geography	10	Becker	MS	Geography	2007	Oregon Military Dept., Salem, OR; Installations Div.,	
Geography	11	Jones	MS	Geography	2007	BLM	Consulting
Geography	12	Jones	MS	Geography	2007	Columbia River Commission	
Geography	13	Jones	MS	Geography	2007	energy consulting	
Geography	14	Nolin	MS	Geography	2007	GIS Consultant	
Geography	15	Nolin	MS	Geography	2007	Geographic specialist, Central Platte Natural Resources District	
Geography	16	Becker	MS	Geography	2008	Green River Valley Land Trust, Pinedale, Wyoming; Stewardship	
Geography	17	Becker	MS	Geography	2008	OSU PhD prog., Rangeland Ecol. Mgmt.	
Geography	18	Gosnell	MS	Geography	2008	Elderhostel, North. Arizona U.	Bio. Sci. Tech., Grand Can. N.P.
Geography	19	Jones	MS	Geography	2008	US Forest Service	
Geography	20	Jones	MS	Geography	2008	US Forest Service	
Geography	21	Nolin/Grant	MS	Wat. Res. Eng.	2008	EPA	
Geography	22	Nolin	MS	Geography	2008	PhD candidate at Univ. of Washington	
Geography	23	Wolf	MS	Wat. Res. M.P.	2008	Bolt Law School	
Geography	24	Wolf	MS	Geography	2008	UCSB PhD Program	
Geography	25	Wolf	MS	Wat. Res. M.P.	2009	Took time to travel.	Yoga instructor.
Geography	26	Nolin	MS	Geography	2009	Environmental consulting firm	Instructor, Community College
Geography	27	Nolin	MS	Geography	2009	Nat'l Geographic Soc., intern	writer, OSU, NY Times
Geography	28	Nolin	MS	Wat. Res. Sci.	2009	PhD program	Asst. Prof., UNC, Charlotte
Geography	29	Jones	MS	Wat. Res.	2009	intern, Portland	
Geography	30	Jones	PhD	Geography	2009	Oregon Dept Forestry	US Forest Service
Geography	31	Nolin	MS	Geography	2009	Watershed Sciences, Inc.	
Geography	32	Gosnell	MS	Geography	2010	Mediator, Meridian Institute	
Geography	33	Gosnell	MS	Geography	2010	Consultant, World Bank	
Geography	34	Gosnell	MS	Geography	2010	Stewardship Prog. Mgr, Greenbelt Land Trust	
Geography	35	Jones	MS	Wat. Res. Sci./ Botany	2010	PhD, Luxembourg	
Geography	36	Jones	MS	Geography	2010	USGS	
Geography	37	Jones	MS	Geography	2010	PhD program	
Geography	38	Jones	PhD	Geography/ Forest Sci.	2010	postdoc, U Colorado	
Geography	39	Wolf	MS	Geography	2010	Instructor, West Point	
Geography	40	Wolf	MS	Geography	2010	Instructor, West Point	
Geography	41	Wolf	MS	Geography	2010	OSU SeaGrant	
Geography	42	Wolf	PhD	Geography	2010	Instructor, University of New Hampshire	
Geography	43	Wolf	PhD	Geography	2010	Analyst, Defense Intelligence Agency	
Geography	44	Wright	PhD	Geography	2010	Research Geographer, USGS, HMSC	

Table 39. Geology graduate student placement

Student	Major professor	Deg.	Major	Graduation Year	Placement at time of degree	Current placement
Geology 1	Grunder	PhD	Geology	2005	none	Asst. Prof, Brock Univ.
Geology 2	Dilles/ Grunder	PhD	Geology	2005	Newport Mining Co.	Mineral Exploration Consultant
Geology 3	Grunder	PhD	Geology	2005	none	Asst. Prof, Denison College
Geology 4	Brook	MS	Geology	2006	PhD Prog. Columbia Univ.	NOAA Postdoc. Fellow, Penn. State
Geology 5	Clark	PhD	Geology	2006	Postdoc, Woods Hole Oc.. Inst.	Asst. Prof., U.. Wisconsin-Madison
Geology 6	Haggerty	MS	Civil Eng.	2006	CH2M Hill	
Geology 7	Haggerty	MS	Wat. Res. Sci.	2006	Pacific Groundwater Group	
Geology 8	Haggerty	MS	Geology	2006	Hoefler Consulting Group	
Geology 9	Kent/ Nielsen	PhD	Geology	2006	Post-doctoral fellow, U Texas	Research Professor, Washington State University
Geology 10	Kent	MS	Geology	2006	Research Assistant, Oregon State University	Lecturer, University of Western Oregon
Geology 11	Lancaster/ Haggerty	MS	Civil Eng.	2006	Design Engineer, Kennedy/ Jenks Consultants	
Geology 12	Lancaster/ Grant	PhD	Geology	2006	Fac. Research Assoc., OSU	Asst. Prof., Univ. North Carolina, Charlotte
Geology 13	Lillie	MS	Geology	2006	U. S. Forest Service - Mt. St. Helens Nat'l Volcanic Monmt.	Unknown
Geology 14	Meigs	MS	Geology	2006	Staff Scientist Los Alamos Naitonal Lab	
Geology 15	Grunder	PhD	Geology	2007	none	Asst.Prof, Colorado State
Geology 16	Haggerty	MS	Wat. Res. Sci.	2007	Geoengineers, Portland	
Geology 17	Haggerty/ Grant	MS	Geology	2007	Oregon Water Resources Dept	
Geology 18	Haggerty	MS	Civil Eng.	2007	unknown	National Park Service
Geology 19	Grunder	PhD	Geology	2007	Asst. Prof. CSU Fort Collins	
Geology 20	Meigs	MS	Geology	2007	PhD Student, CU - Boulder	
Geology 21	Lillie	MS	Geology	2008	Nat'l Park Svc., Yosemite N.P.	U.S. Fish & Wildlife Svc., Tualatin R. N.W.R.
Geology 22	Clark	PhD	Geology	2008	Post-doc, Univ. British Columbia	
Geology 23	Clark	PhD	Geology	2008	Marie Curie Fellowship, Oxford University	
Geology 24	Nielsen	MS	Geology	2008	Horizon Well Logging	
Geology 25	de Silva/ Grunder	MS	Geology	2009	Malaysian Geological Survey	
Geology 26	Grunder	MS	Geology	2009	none	Institute for Applied Ecology
Geology 27	Grunder	MS	Geology	2009	retired	OSU research associate
Geology 28	Meigs	MS	Geology	2009	US Navy	
Geology 29	Meigs	MS	Geology	2009	Stillwater Sciences	
Geology 30	Clark	PhD	Geology	2010	NOAA Climate and Global Change Postdoctoral Fellowship, Woods Hole Oceanographic Inst.	
Geology 31	de Silva	MS	Geography	2010	Jet Propulsion Lab	Self-Employed/ Musician
Geology 32	de Silva	Ph.D	Geology	2010	Post-doc Earth Observatory of Singapore	
Geology 33	Kent/ Nielsen	PhD	Geology	2010	Visiting Assistant Professor, Westfield State College	Asst. Prof., Eastern Connecticut State Univ.
Geology 34	Lillie	MS	Geology	2010	National Park Service -Geological Resources Division	
Geology 35	Ruggiero	MS	Ocean & Coastal Eng.	2010	Fac. Research Assoc., OSU	3 offers from coastal eng. cos.

- 1570 [153] % employed at time of degree (Table I). *Will have, sort of.*
- 1571 [154] % positions directly related to degree.
- 1572 [155] Types of position, employment sectors.
- 1573 [156] % who pass licensre/certification/professional exams and comparison to national
- 1574 statistics.

1575 **4.2 Satisfaction**

1576 *4.2.1 Survey of Current Students*

1577 [157] Of current students, 16 completed the survey (attached), which was sent out via email as

1578 an electronic form that was sent via email to the Geosciences Office Director. Forms were

1579 “detached” from the emails and given to the Assessment Coordinator for tabulation and analysis.

1580 Of the 16 completed forms, 5 were completed by majors in Geology, 5 in Geography, 5 in

1581 “Other” (e.g., Water Resources Graduate Program), and 1 unspecified. The results from the

1582 different categories are combined here because of the small numbers in each of those categories.

1583 **Table 40. Results of Survey of Current Graduate Students in Geosciences**

Question	Disagree strongly	2	3	4	Agree strongly	N/A
1. The research facilities that are available to me for my graduate research meet my needs.	0	1	1	6	8	0
2. Support equipment (such as computers) needed for my research is available to me.	0	1	4	6	4	1
3. I have adequate access at OSU to facilities and equipment needed for my graduate work.	0	1	0	9	6	0
4. The quality and availability of graduate student office space is adequate for my needs.	0	5	2	1	6	2
5. OSU library resources available to me are adequate for my needs.	0	0	1	5	10	0
6. The program offers an adequate selection of graduate courses, sufficient for timely completion of a full graduate program.	0	1	4	6	5	0
7. Graduate courses are taught at an appropriate graduate level and are of sufficient rigor.	0	1	0	8	7	0
8. The graduate teaching by program faculty is of appropriate quality.	0	2	1	4	9	0
9. Graduate courses in other fields, needed to support my program or	0	0	0	6	8	2

	minor, are sufficiently available from other OSU departments.						
10.	Graduate program examinations are administered fairly.	0	0	1	4	6	5
11.	Program seminars are adequate to keep me informed of developments in my field.	0	0	5	6	4	1
12.	The initial advising I received when I entered the program was an adequate orientation.	0	1	4	7	4	0
13.	I have a mailbox or another appropriate form of communication with program faculty and graduate students.	0	0	0	4	12	0
14.	I have adequate access to my major professor.	0	0	3	3	10	0
15.	I am receiving the research and professional development guidance I need.	1	0	1	8	5	0
16.	I am satisfied with the professional interaction with and advising by my major professor.	1	0	0	5	10	0
17.	I am treated as a respected contributor to the research program in which I am involved.	0	1	1	1	11	2
18.	I have been given an opportunity to be engaged in significant research for my thesis.	0	0	0	4	12	0
19.	If I decided to change my major professor, the program mechanism for doing so is suitable.	1	1	0	0	6	8
20.	The treatment in this program of graduate students in the following categories is equitable and appropriate consideration is given to their distinctive needs:						
	a. domestic minority students	0	0	0	3	6	7
	b. women students	0	1	0	3	6	6
	c. international students	0	0	0	4	6	6
	d. students with special needs/disabilities	1	0	0	2	4	9
21.	The program informs me of adequate opportunities for professional development and contacts outside OSU, such as attendance at professional meetings.	0	0	1	4	11	0
22.	Graduate teaching or research assistantship stipends in this program are adequate.	1	6	5	4	0	0
23.	The program offers adequate opportunity for its graduate students to gain teaching experience.	0	0	5	4	6	1
24.	Of those graduate teaching assistantships under central program control, assignments are made equitably, based on established criteria.	0	2	2	2	2	8
25.	Graduate program policies are clearly defined and readily available to me in a current handbook.	0	0	1	6	8	1
26.	Graduate program policies clearly identify petition and appeals procedures available to me.	0	1	3	4	5	3
27.	There is a well-established mechanism for regular graduate student participation in program decisions affecting students, whenever this is appropriate.	0	1	1	7	6	1

1584 [158]

1585 [159] The results of the current student survey generally show favorable impressions by the
1586 students. In particular, library resources (no. 5), graduate teaching (no. 8 above), having a
1587 mailbox (no. 13), access to and interaction with major professors (nos. 14 and 16), ability to do
1588 meaningful research in an atmosphere of mutual respect (nos. 17 and 18), and availability of
1589 professional development opportunities (no. 21) are especially highly rated. Students have less
1590 favorable attitudes toward the availability of support equipment (mainly computers, no. 2),
1591 student office space (no. 4), graduate course availability (no. 6), program and departmental

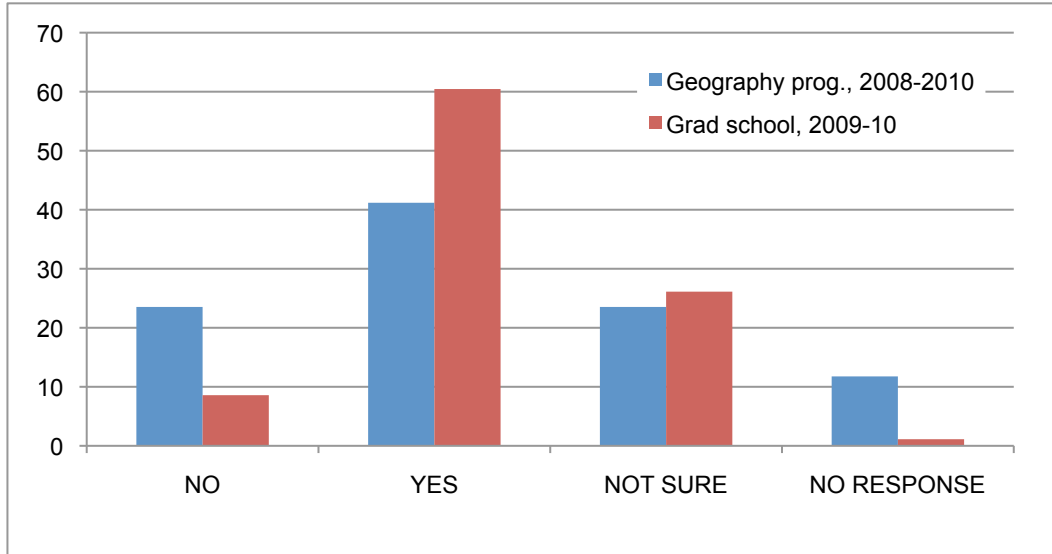
1592 seminars (no. 11), incoming advising and orientation (no. 12), graduate stipends (no. 22), and
1593 teaching opportunities (no. 23), all of which received 5 or more responses of 3 (neutral) or less
1594 on the “agreement” scale. Of these, none of the respondents strongly agree that graduate stipends
1595 are adequate. From these ratings and some of the written comments, it is apparent that a
1596 significant number of teaching assistants feel they are overworked and underpaid in cramped
1597 quarters doing tasks that are often unrelated to their expertise. It is also troubling to note that one
1598 respondent appears particularly disgruntled with respect to the faculty in general and his/her
1599 advisor in particular.

1600 *4.2.2 Exit Surveys of Students*

1601 [160] The full results of the Advanced Degree Recipient Exit Survey for the years 2008-10 are
1602 attached as an appendix. Selected results are compared to the entire graduate school’s results for
1603 2009-10.

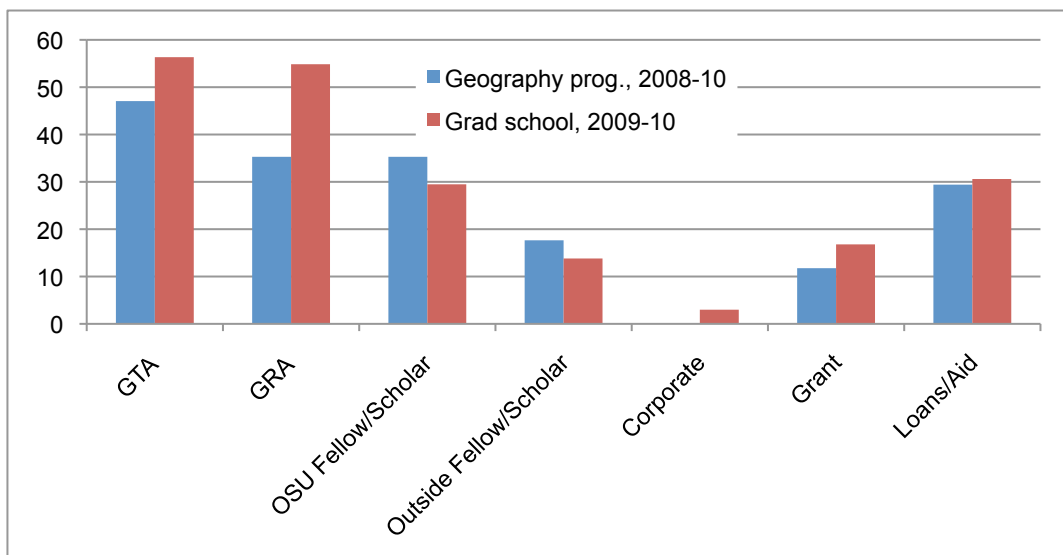
1604 Geography:

1605 [161] Geography Program exit surveys are based on the responses of 17 students graduating in
1606 the years 2008-10. Comparison Graduate School responses are based on 268 students graduating
1607 in 2009-10.



1608 [162]

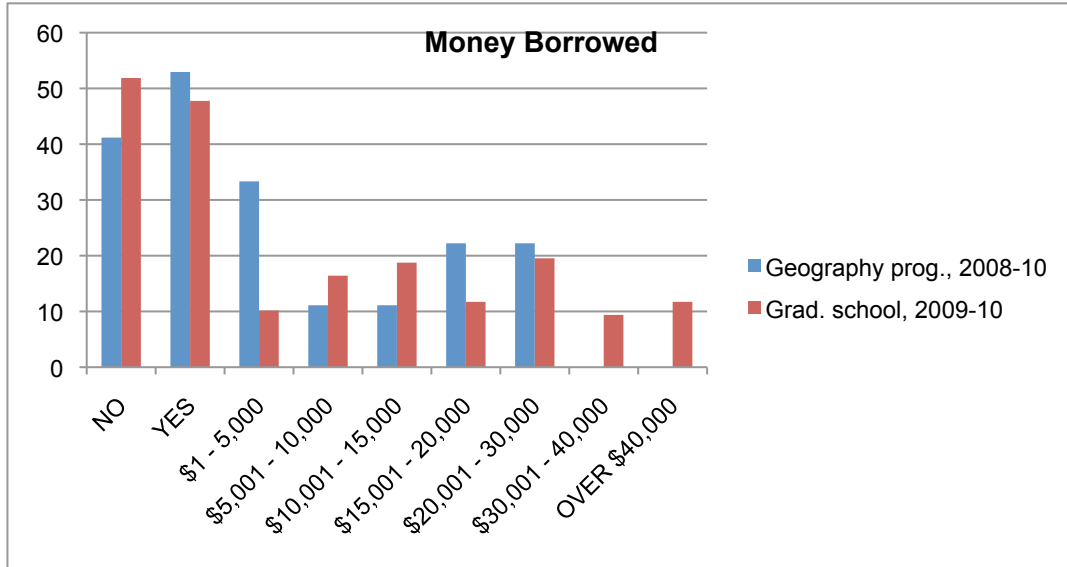
1609 **Figure 7.** Responses of graduating Geography students to the question of whether funding was
 1610 distributed fairly in the program and compared to the responses from all Graduate School
 1611 students.



1612 [163]

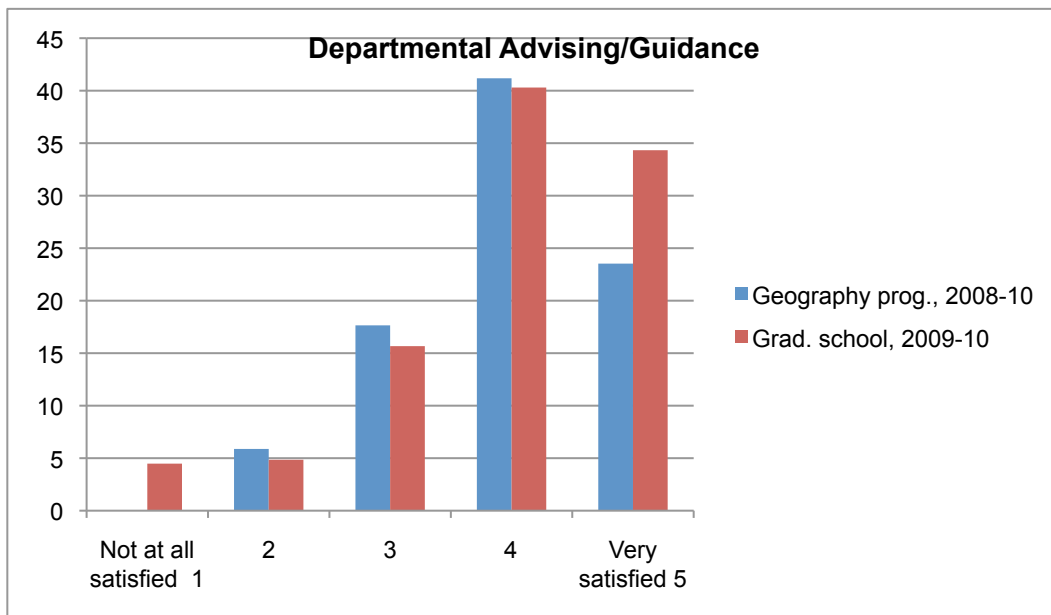
1613 **Figure 8.** Responses of graduating Geography students when asked for their sources of funding
 1614 and compared to the responses from all Graduate School students.

1615 [164]

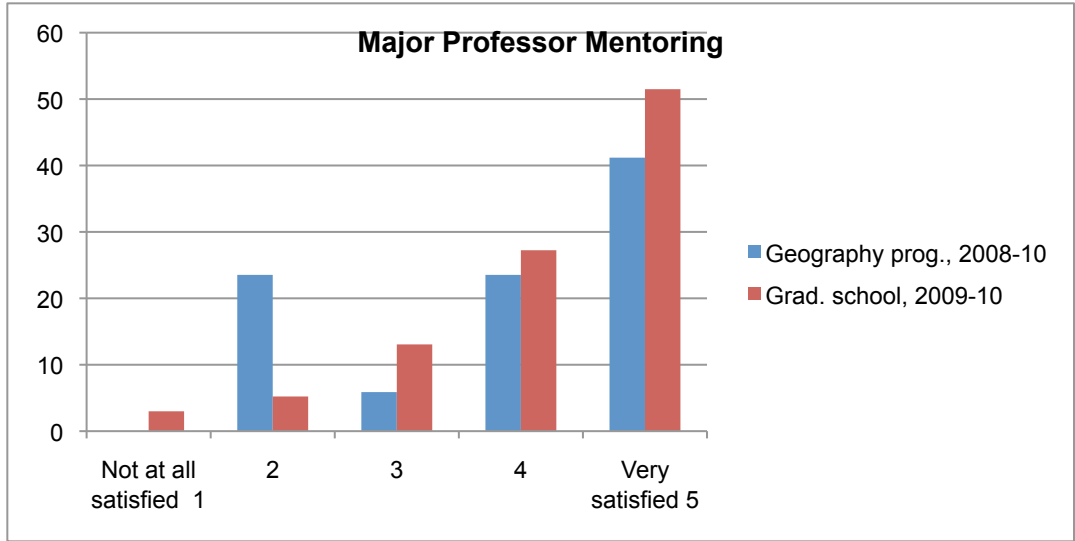


1616 [165]

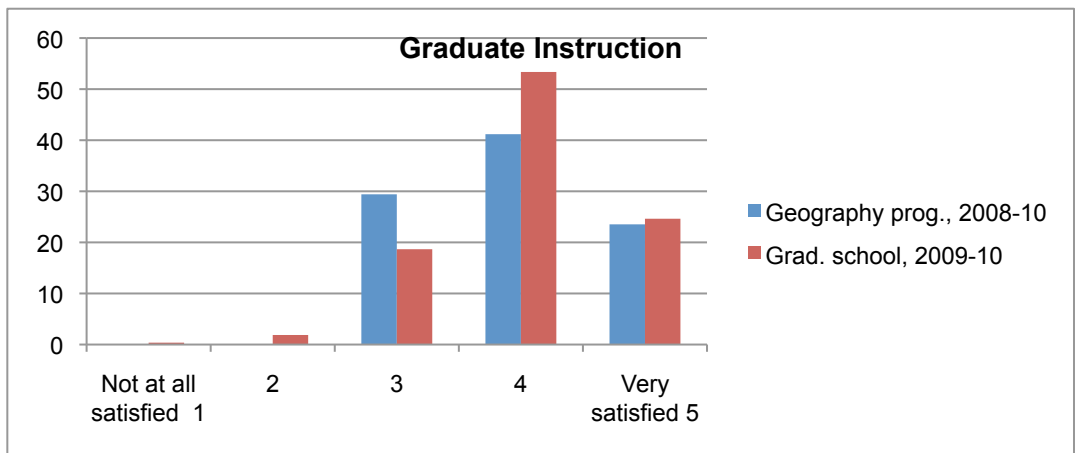
1617 **Figure 9.** Responses of graduating Geography students when asked whether they borrowed
 1618 money during school, how much, and compared to the responses from all Graduate School
 1619 students.



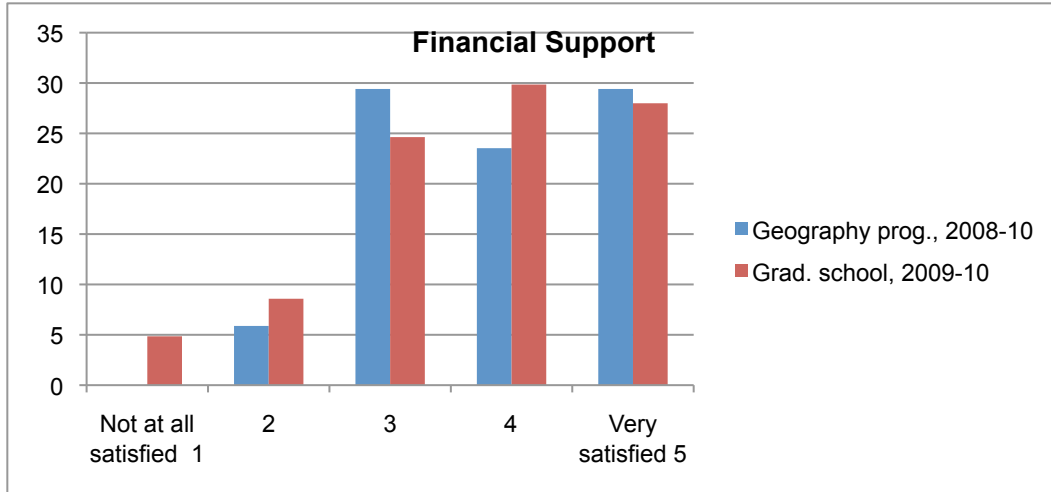
1620 **Figure 10.** Responses of graduating Geography students when asked whether they were satisfied
 1621 with the quality of departmental advising and guidance and compared to the responses from all
 1622 Graduate School students.
 1623



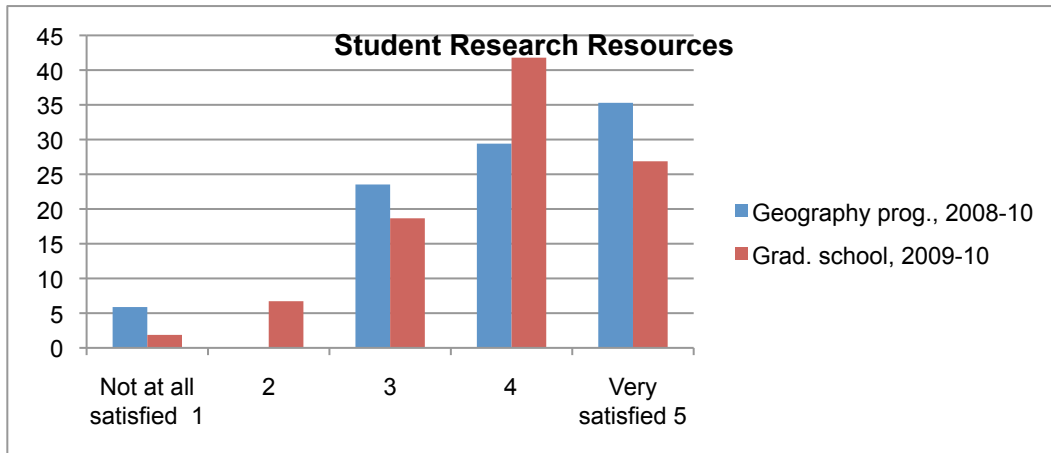
1624
 1625 **Figure 11.** Responses of graduating Geography students when asked whether they were satisfied
 1626 with the quality of mentoring by their major professors and compared to the responses from all
 1627 Graduate School students.



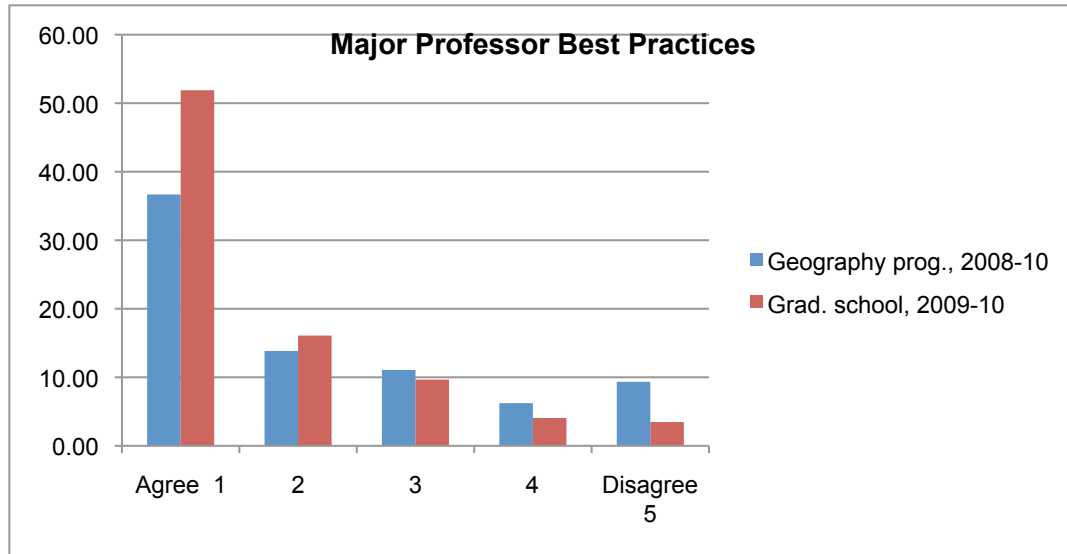
1628
 1629 **Figure 12.** Responses of graduating Geography students when asked whether they were satisfied
 1630 with the quality of graduate instruction in the department and compared to the responses from all
 1631 Graduate School students.



1632
 1633 **Figure 13.** Responses of graduating Geography students when asked whether they were satisfied
 1634 with the level of financial support provided by the department and compared to the responses
 1635 from all Graduate School students.



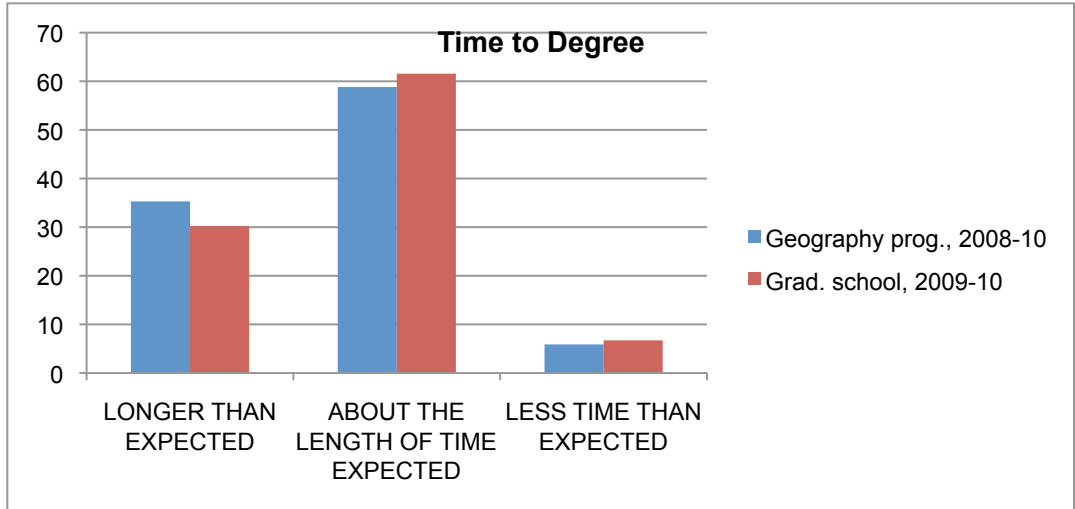
1636
 1637 **Figure 14.** Responses of graduating Geography students when asked whether they were satisfied
 1638 with the resources available for their research in the department and compared to the responses
 1639 from all Graduate School students.



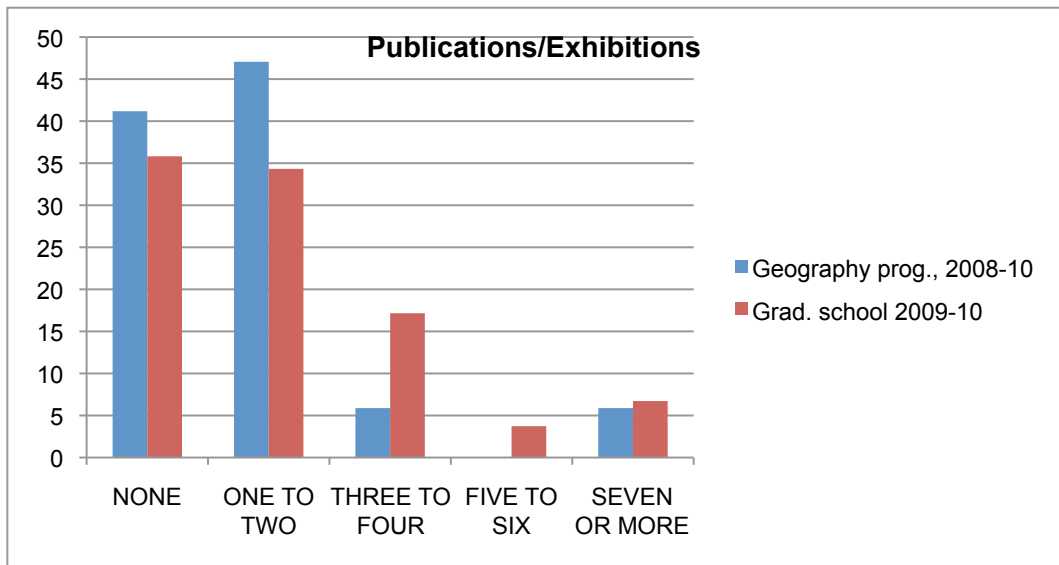
1640
 1641 **Figure 15.** Responses of graduating Geography students when asked whether their major
 1642 professors performed particular activities, including being available for advising, meeting
 1643 regularly to discuss research, was easy to approach, was knowledgeable about formal degree
 1644 requirements, was interested in the student’s goals and projects, provided constructive criticism
 1645 of student work, returned work in a timely manner, helped in the search for professional
 1646 employment, assisted in obtaining funding, explained graduate school survival strategies,
 1647 maintained good relations with other committee members, encouraged and supported the
 1648 student’s research ideas, helped prepare for the final oral exam, helped with applications to more
 1649 advanced degree programs, encouraged publication and presentation of student work, assisted in
 1650 preparation of work for publication and presentation, and provided guidance regarding
 1651 internships, and compared to the responses from all Graduate School students.



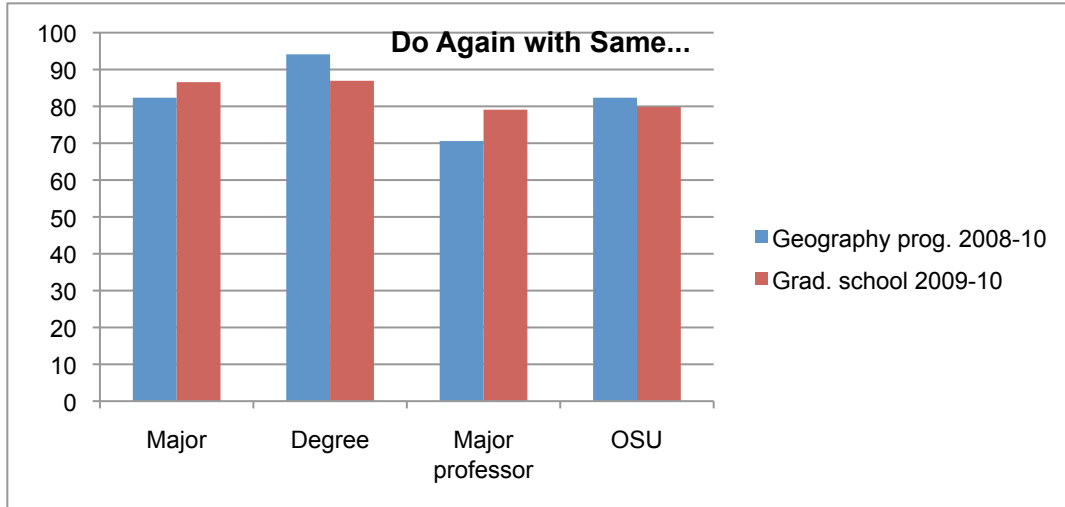
1652
 1653 **Figure 16.** Responses of graduating Geography students when asked whether they were satisfied
 1654 with their major professor’s availability for guidance with respect to a number of activities,
 1655 including selection of thesis or dissertation topic, preparation for qualifying exams, thesis or
 1656 dissertation proposal writing, thesis or dissertation research, thesis or dissertation writing, and
 1657 preparation for the final oral exam, and compared to the responses from all Graduate School
 1658 students.



1659
 1660 **Figure 17.** Responses of graduating Geography students when asked whether the durations of
 1661 their degree programs met their expectations and compared to the responses from all Graduate
 1662 School students.



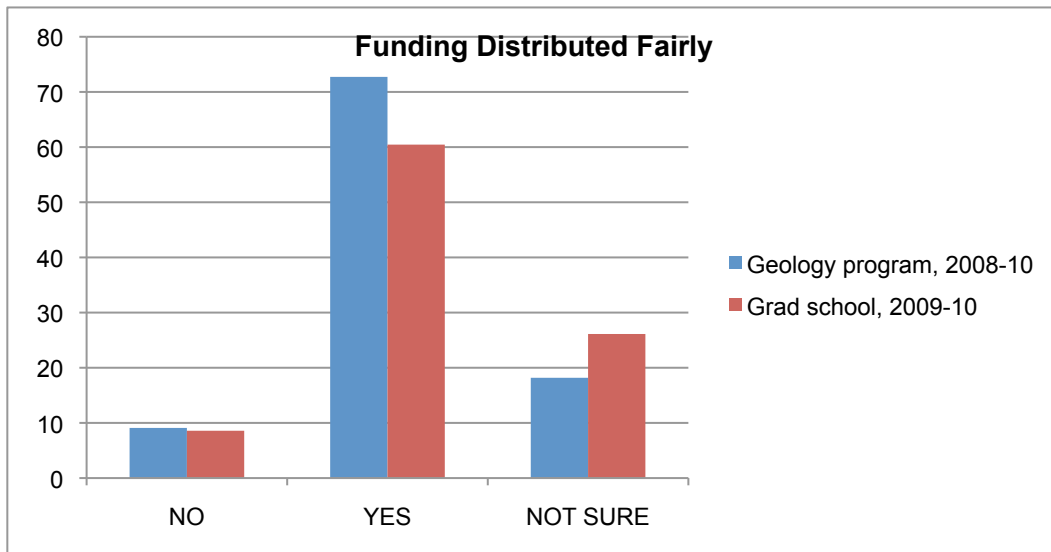
1663
 1664 **Figure 18.** Responses of graduating Geography students when asked how many scholarly works
 1665 resulted from their studies and compared to the responses from all Graduate School students.



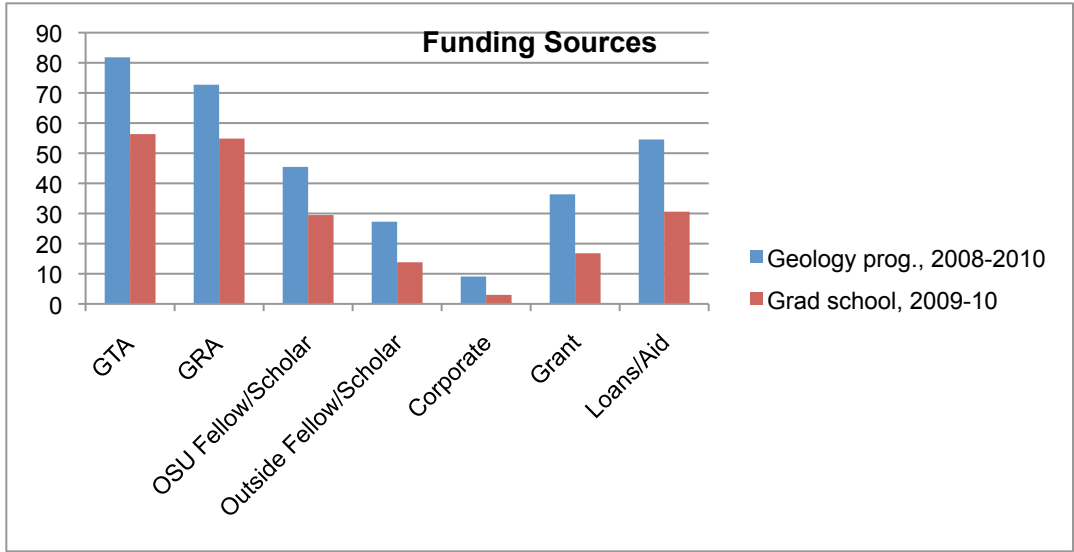
1666
 1667 **Figure 19.** Percentage of “yes” responses by graduating Geography students when asked
 1668 whether they would repeat various aspects of their programs if they had to start again and
 1669 compared to the responses from all Graduate School students.

1670 [166]

1671 Geology

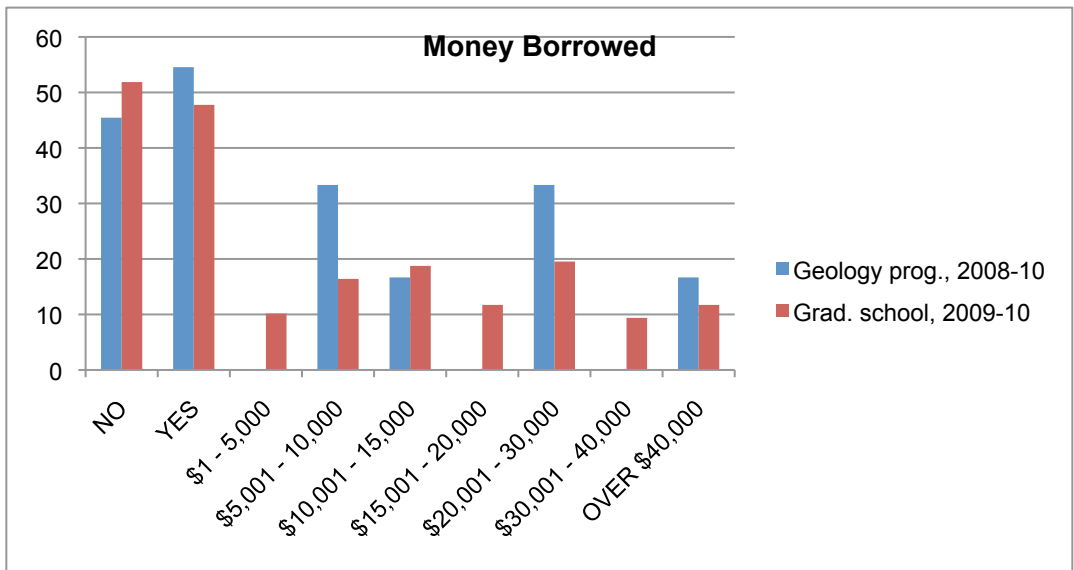


1672
 1673 **Figure 20.** Responses of graduating Geology students to the question of whether funding was
 1674 distributed fairly in the program and compared to the responses from all Graduate School
 1675 students.



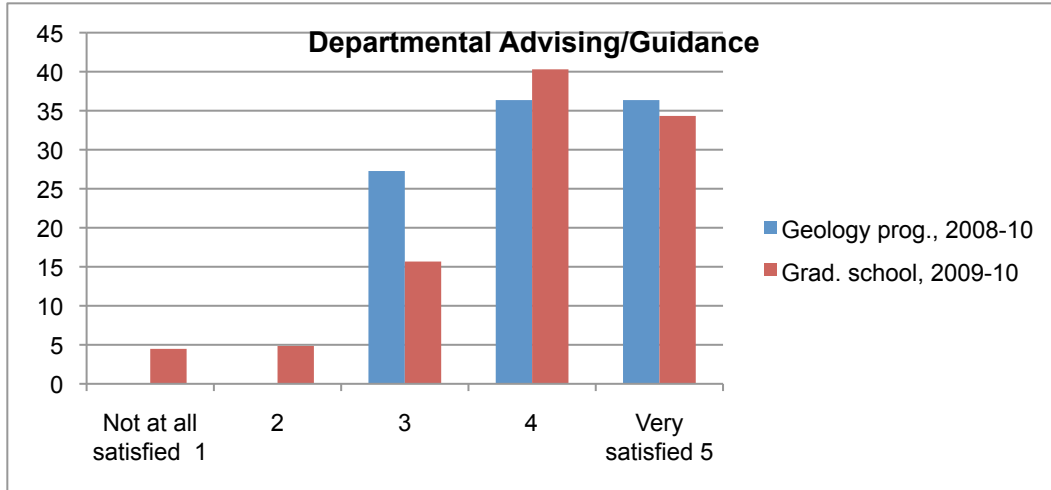
1676
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Figure 21. Responses of graduating Geology students when asked for their sources of funding and compared to the responses from all Graduate School students.

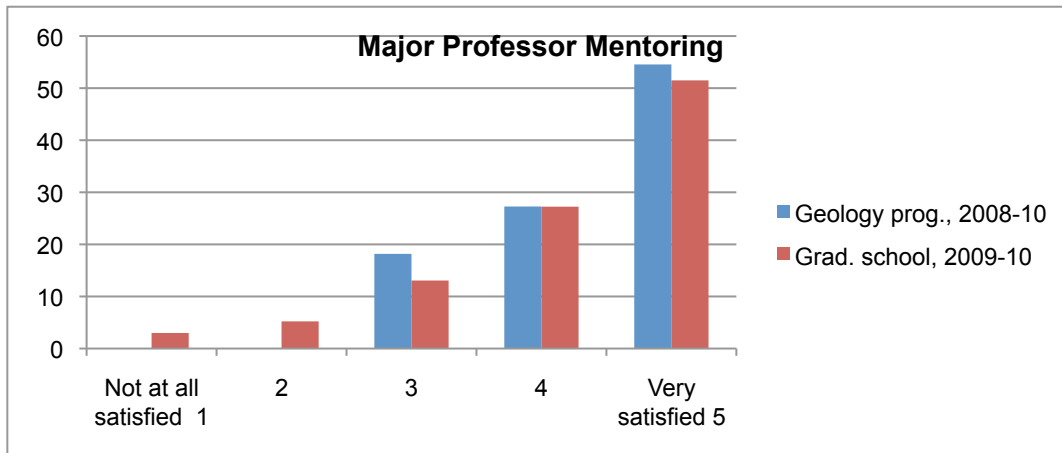


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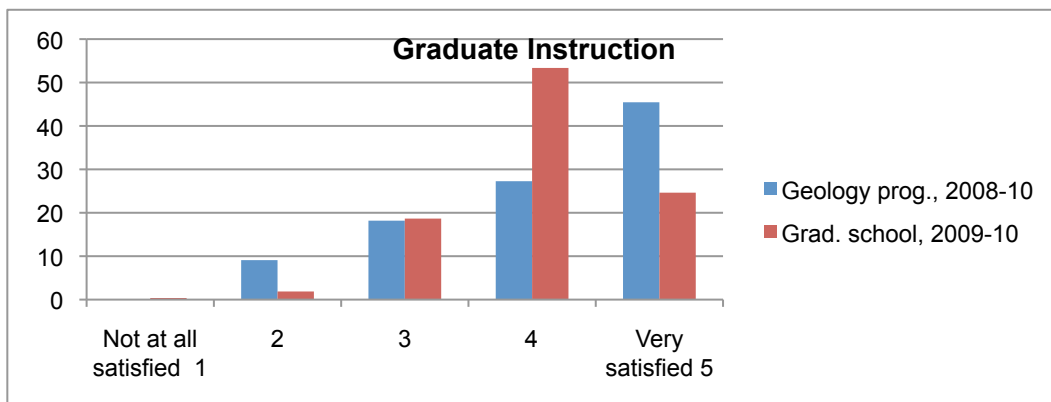
Figure 22. Responses of graduating Geology students when asked for their sources of funding and compared to the responses from all Graduate School students.



1682
 1683 **Figure 23.** Responses of graduating Geology students when asked whether they were satisfied
 1684 with the quality of departmental advising and guidance and compared to the responses from all
 1685 Graduate School students.

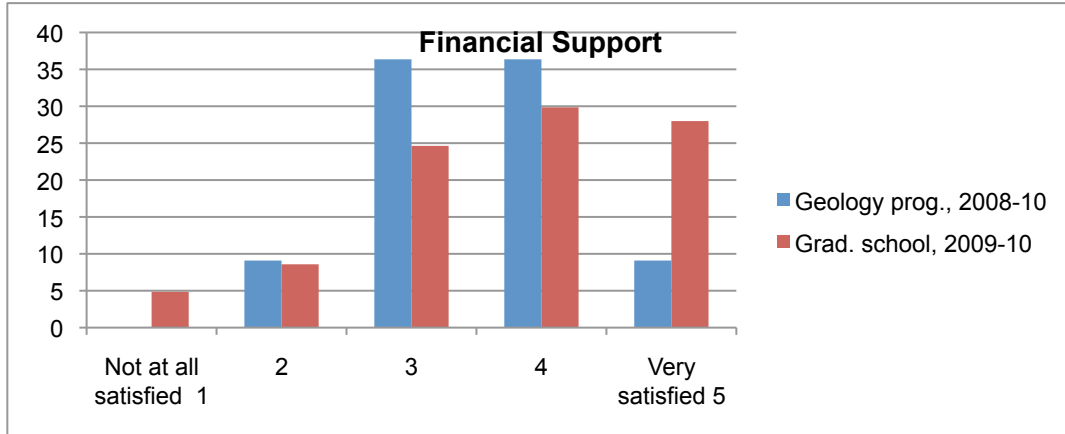


1686
 1687 **Figure 24.** Responses of graduating Geology students when asked whether they were satisfied
 1688 with the quality of mentoring by their major professors and compared to the responses from all
 1689 Graduate School students.

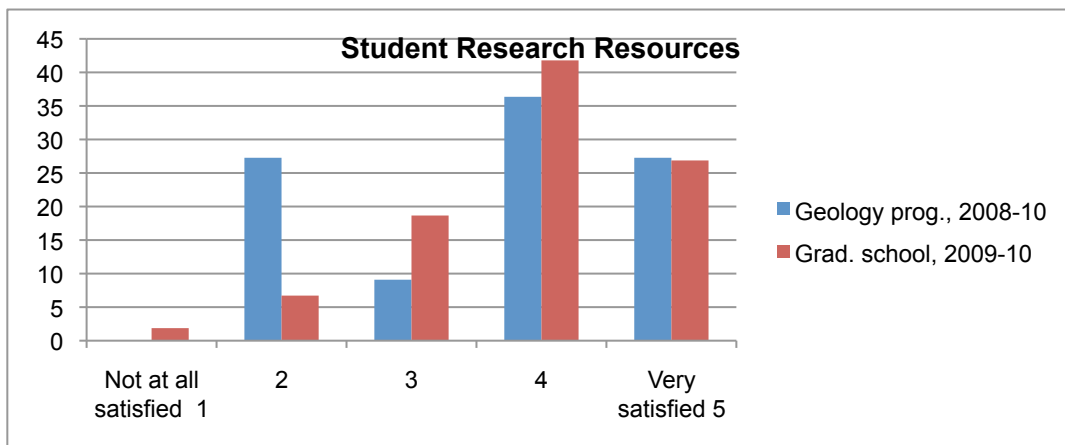


1690
 1691 **Figure 25.** Responses of graduating Geology students when asked whether they were satisfied
 1692 with the quality of graduate instruction in the department and compared to the responses from all

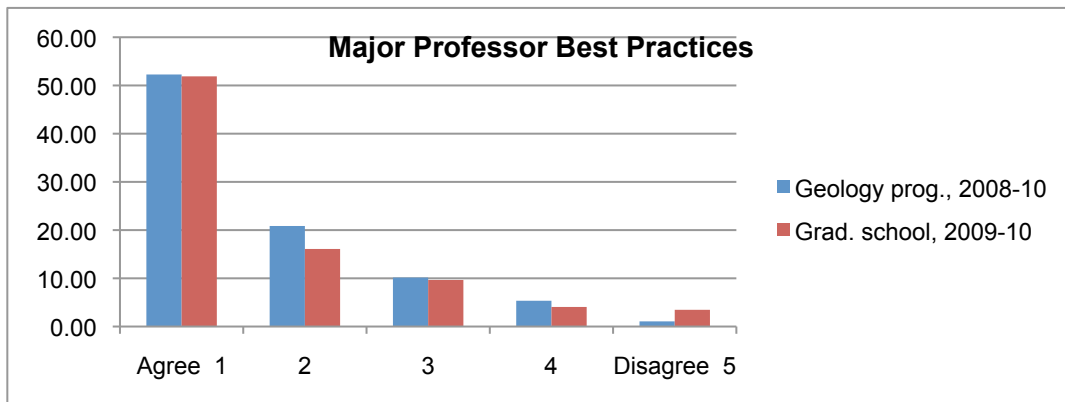
1693 Graduate School students.



1694
1695 **Figure 26.** Responses of graduating Geology students when asked whether they were satisfied
1696 with the level of financial support provided by the department and compared to the responses
1697 from all Graduate School students.



1698
1699 **Figure 27.** Responses of graduating Geology students when asked whether they were satisfied
1700 with the resources available for their research in the department and compared to the responses
1701 from all Graduate School students.

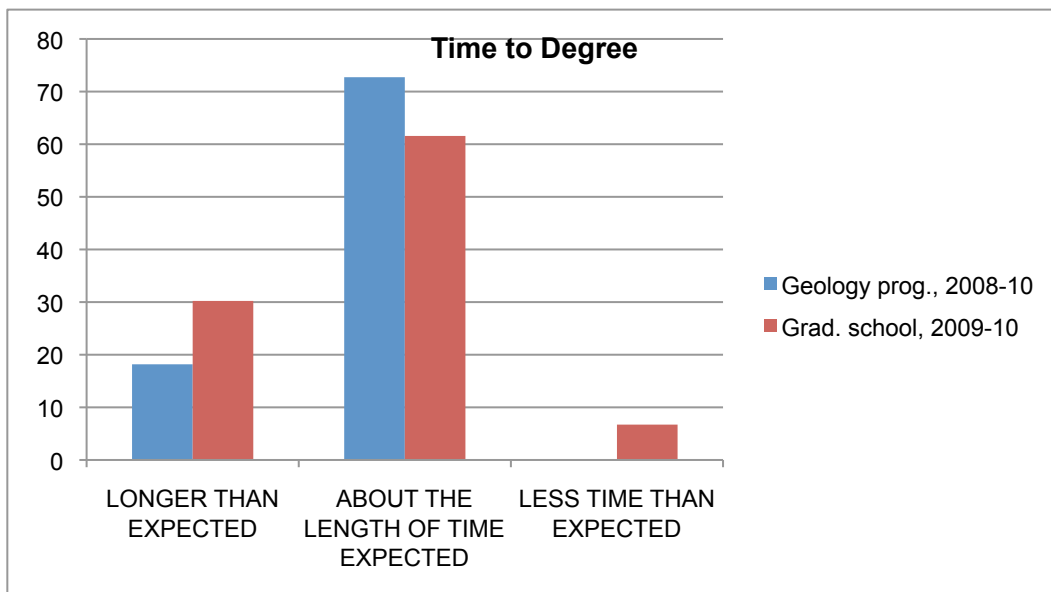


1702
1703 **Figure 28.** Responses of graduating Geology students when asked whether their major
1704 professors performed particular activities, including being available for advising, meeting

1705 regularly to discuss research, was easy to approach, was knowledgeable about formal degree
 1706 requirements, was interested in the student's goals and projects, provided constructive criticism
 1707 of student work, returned work in a timely manner, helped in the search for professional
 1708 employment, assisted in obtaining funding, explained graduate school survival strategies,
 1709 maintained good relations with other committee members, encouraged and supported the
 1710 student's research ideas, helped prepare for the final oral exam, helped with applications to more
 1711 advanced degree programs, encouraged publication and presentation of student work, assisted in
 1712 preparation of work for publication and presentation, and provided guidance regarding
 1713 internships, and compared to the responses from all Graduate School students.

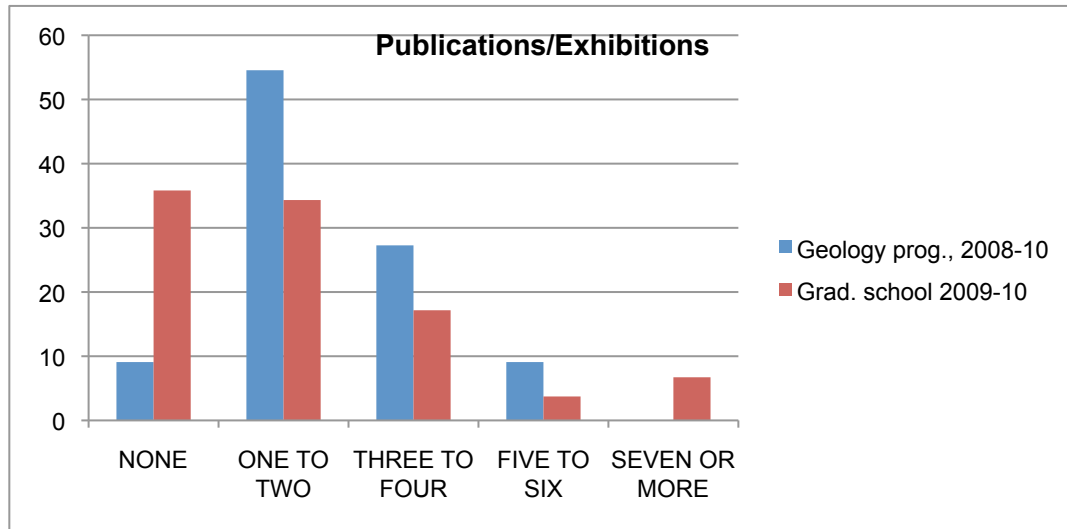


1714
 1715 **Figure 29.** Responses of graduating Geology students when asked whether they were satisfied
 1716 with their major professor's availability for guidance with respect to a number of activities,
 1717 including selection of thesis or dissertation topic, preparation for qualifying exams, thesis or
 1718 dissertation proposal writing, thesis or dissertation research, thesis or dissertation writing, and
 1719 preparation for the final oral exam, and compared to the responses from all Graduate School
 1720 students.

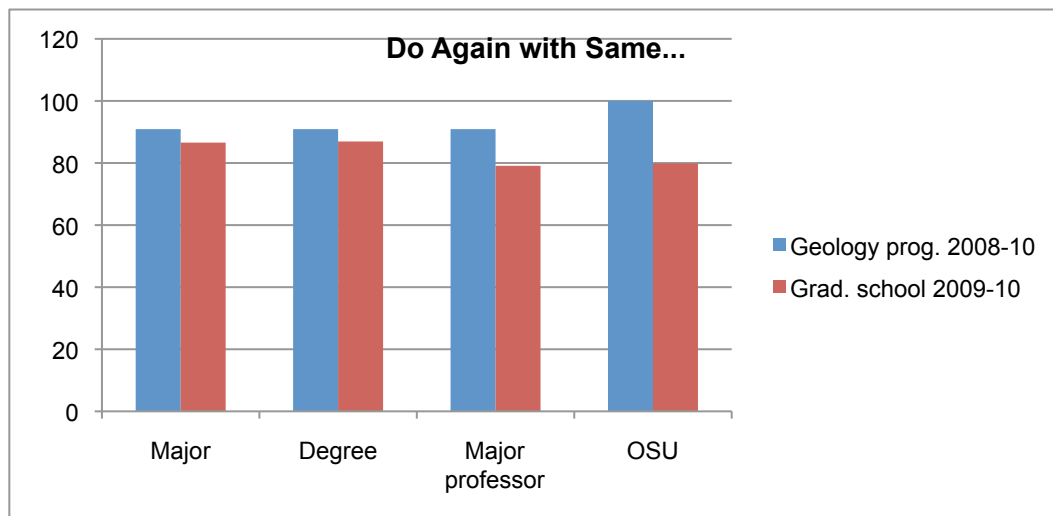


1721
 1722 **Figure 30.** Responses of graduating Geology students when asked whether the durations of their

1723 degree programs met their expectations and compared to the responses from all Graduate School
 1724 students.



1725 **Figure 31.** Responses of graduating Geology students when asked how many scholarly works
 1726 resulted from their studies and compared to the responses from all Graduate School
 1727 students.



1728 **Figure 32.** Percentage of “yes” responses by graduating Geology students when asked whether
 1729 they would repeat various aspects of their programs if they had to start again and compared to
 1730 the responses from all Graduate School students.
 1731

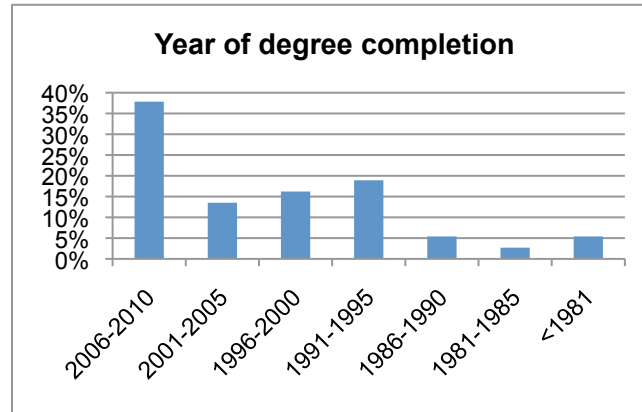
1732 *4.2.3 Survey of Geography Alumni/ae*

1733 [167] Surveys were sent to alumni/ae of both programs in December. We received 37

1734 responses from Geography Program alumni/ae, including 28 M.S. recipients and 14 Ph.D.

1735 recipients (4 respondents received both degrees from OSU), 14 (38%) concentrating in Resource

1736 Geography, 11 (30%) in GIScience, 10 (27%) in Physical Geography, and 2 (5%) respondents
1737 with unspecified concentration. Years of degree completion are shown in Figure 33.



1738
1739 **Figure 33.** Histogram of year of degree completion for Geography alumni/ae survey
1740 respondents.

1741 [168] The top reasons given for pursuing a graduate degree were to gain expertise in the field
1742 (24% weight), to gain credibility in their professions (19%), and for flexibility in job options
1743 (16%). Gaining research skills (9%), the prestige of an advanced degree (8%), and acquiring an
1744 academic position (8%) were other reasons cited by a significant proportion of respondents. Most
1745 respondents finished their degrees in the time they expected (76%), vs. 19% who took much
1746 longer than expected and 5% who took less time.

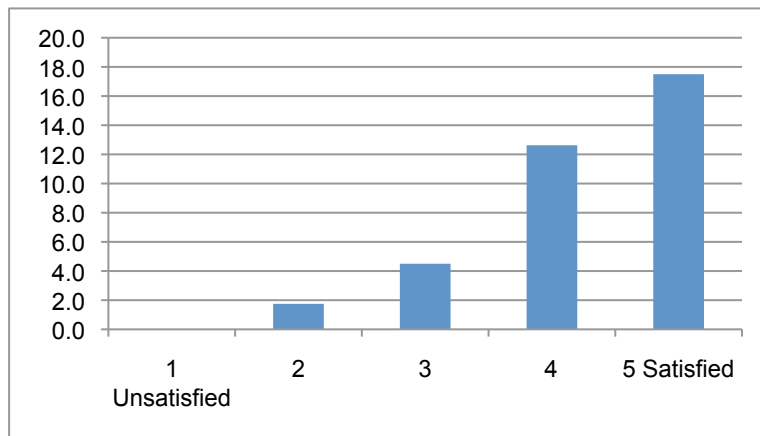
1747 [169] Responses regarding satisfaction with their graduate programs are shown in Table 41.
1748 The averages of the satisfaction ratings are shown in Figure 34. Respondents had the greatest
1749 satisfaction with mentoring by their major professors, and Departmental advising/guidance and
1750 overall satisfaction level also received high satisfaction ratings. The greatest number of
1751 responses were in the most satisfied category, but overall quality of graduate instruction,
1752 diversity and availability of course offerings, resources available for student research had more
1753 responses in the next lower satisfaction category.

1754

Table 41. Geography alumni/ae responses regarding satisfaction.

Degree of satisfaction:	Unsatisfied			Satisfied		6 N/A
	1	2	3	4	5	
Departmental advising/guidance	0	1	6	10	20	0
Major professor mentoring	0	2	2	9	23	1
Overall quality of graduate instruction	0	2	4	16	15	0
Diversity and availability of graduate course offerings	0	2	6	15	14	0
Professional relationship with graduate committee	0	2	3	14	17	1
Level of financial support	0	2	6	9	18	2
Resources available for student research	0	2	7	14	13	0
Overall satisfaction level	0	1	2	14	20	0

1755 [170]



1756 [171]

1757 **Figure 34.** Histogram of averages of satisfaction responses of Geography alumni/ae shown in
1758 Table 41.

1759 **4.3 Rankings/Ratings**

1760 *4.3.1 NRC, US News, disciplinary rankings, etc., and comparison to peers.*

1761 [172] OSU ranked 4th in the number of papers in environment/ecology for the period 2005-

1762 2009 among U.S. institutions, according to ScienceWatch of Thomson Reuters. This ranking

1763 looks at the number of papers published in academic journals over a five-year period. Others in

1764 the top 5 include UC Davis, UC Berkeley, U. Florida, and Colorado State, in decreasing rank

1765 order (Sci-Bytes, week of December 26, 2010, www.sciencewatch.com). This ranking includes

1766 activities of other departments such as Forest Science.

1767 [173] In the field of Geosciences, OSU ranked 6th in “relative citation impact,” defined as
1768 average-citations-per-paper score for the five-year period compared, on a percentage basis,
1769 against the world impact average in each field, among U.S. universities that published at least
1770 300 papers in the period 2001-2005. OSU ranked behind Harvard, Georgia Tech., U. Maryland-
1771 Baltimore, U. Washington, and Princeton, and ahead of U. Maryland-College Park, MIT, U.
1772 Miami, and Woods Hole (ScienceWatch, <http://archive.sciencewatch.com>, January/February
1773 2007).

1774 [174] In the field of Geology/Geosciences, OSU ranked 9th in citation impact among U.S.
1775 institutions that published at least 400 papers in the period 1996-2007 with an impact score of
1776 11.6 citations per paper, according to ScienceWatch (<http://archive.sciencewatch.com>,
1777 July/August 2007).

1778 [175] In the field of Geosciences, OSU ranked 25th in total citations (11,605) and 17th in
1779 citation impact (12.0 citations per paper) among U.S. institutions publishing at least 500 papers
1780 in the period 1991-2001 (ScienceWatch, <http://archive.sciencewatch.com>, November/December
1781 2001).

1782 [176] OSU Geology ranked 21st in the number of geosciences Ph.D.’s granted to teaching
1783 faculty at U.S. universities, according to the American Geological Institute (*Geotimes*, May
1784 2003).

1785 [177] The recent study of research-doctorate programs by the National Academy of Sciences
1786 provides relative rankings of Geology programs nationwide based on statistics and surveys
1787 assessing the period 2000-2006. Among 140 doctoral programs in Earth Sciences, the Geology
1788 Program had a “Reputational” (R) rank spread of 25-55 (5th and 95th percentile of probability of

1789 rank, respectively), based on surveys of faculty in the field, and a “Statistical” (S) rank spread of
1790 34-87, based on weights on statistics determined by faculty surveys. The Geology Program’s
1791 average R rank (average of 5th and 95th percentiles) was 40, which ranked 38th among the 140
1792 programs studied and 26th among geology programs (including, e.g., geosciences, earth and
1793 planetary sciences, and geological sciences but not, e.g., geophysics, soil science, and
1794 environmental science). This ranking puts OSU Geology just behind the geology programs of U.
1795 Southern California, U. California-Santa Barbara, and U. Illinois at Urbana-Champaign, and just
1796 ahead of the geology programs of U. Wisconsin-Madison, Rensselaer Polytechnic Inst., and U.
1797 Texas at Austin. In comparison, U. Oregon’s Geological Sciences program had an average R
1798 rank of 92. OSU Geology’s S rank was 61, which ranked 56th among the 140 programs studied
1799 and 38th among geology programs. This ranking puts OSU Geology just behind the geology
1800 programs of U. Rochester, Cornell, and Northwestern, and just ahead of the geology programs of
1801 U. South Carolina Columbia, Virginia Tech., and U. Missouri-Columbia, and U. Oregon’s
1802 average S rank was 51. Other ranking ranges were 27-94 for “Research,” 4-27 for “Student
1803 Support and Outcomes,” and 115-129 for “Diversity.” The complete set of statistics for OSU
1804 Geology and several of its peers are shown in .

1805 [178] The recent study of research-doctorate programs by the National Academy of Sciences
1806 provides relative rankings of Geography programs nationwide based on statistics and surveys
1807 assessing the period 2000-2006. Among 49 doctoral programs in Geography, OSU’s Geography
1808 Program had a “Reputational” (R) rank spread of 15-38 (5th and 95th percentile of probability of
1809 rank, respectively), based on surveys of faculty in the field, and a “Statistical” (S) rank spread of
1810 11-36, based on weights on statistics determined by faculty surveys. The Geography Program’s
1811 average R rank (average of 5th and 95th percentiles) was 27, which ranked 25th among the 49

1812 programs studied. This ranking puts OSU Geography just behind the geography programs of U.
1813 California-Davis, San Diego State-UC Santa Barbara, and U. Georgia, and just ahead of the
1814 geography programs of U. Kansas, U. Utah, and U. South Carolina Columbia. In comparison, U.
1815 Oregon's Geography program had an average R rank of 15. OSU Geography's S rank was 24,
1816 which ranked 23rd among the 49 programs studied. This ranking puts OSU Geography just
1817 behind the geography programs of U. Southern California, SUNY-Buffalo, and U. Idaho, and
1818 just ahead of the geography programs of U. Georgia, U. Tennessee, and U. North Carolina at
1819 Chapel Hill, and U. Oregon's average S rank was 12. Other ranking ranges were 9-30 for
1820 "Research," 6-37 for "Student Support and Outcomes," and 9-29 for "Diversity." **{Geography**
1821 **and Geology faculty numbers in the NRC data are way too high. OSU Geography has only**
1822 **7 tenure-track FTE, not 18.35. Geology has only 10 FTE (?), not 18.15! So this emphasizes**
1823 **that both programs are doing way more with less, and competing with programs that have**
1824 **two or three times the number of tenure-track FTE.}**

1825

1825
1826

Table 42. National Academy report summary results for OSU's Geology Program and comparison of with programs at peer institutions⁴

	OSU	UIUC	UCSB	USC	UW-Mad.	RPI	UT
Control	Public	Public	Public	Private	Public	Private	Public
Program Size Quartile	2	3	4	4	3	1	4
R Rankings: 5th Percentile	25	22	24	24	28	15	25
R Rankings: 95th Percentile	55	48	47	52	59	74	65
R Rankings: Avg. of 5th & 95th Pctiles	40	35	35.5	38	43.5	44.5	45
S Rankings: 5th Percentile	34	18	36	29	18	13	57
S Rankings: 95th Percentile	87	52	80	74	59	46	102
S Rankings: Avg. of 5th & 95th Pctiles	60.5	35	58	51.5	38.5	29.5	79.5
Research Activity: 5th Percentile	27	24	33	28	13	13	52
Research Activity: 95th Percentile	94	72	85	77	53	45	116
Student Support & Outcomes: 5th Pctile	4	13	16	14	23	15	73
Student Support & Outcomes: 95th Pctile	77	77	72	76	91	96	110
Diversity: 5th Percentile	115	51	70	54	30	3	98
Diversity: 95th Percentile	129	93	111	96	72	25	123
AvAvg. Number of Publications (2000-2006) per Allocated Faculty, 2006	1.0 (1.8)	1.75	1.51	1.95	2.31	1.95	1.17
AvAvg. Citations per Publication	2.81	2.18	2.27	2.59	2.50	3.26	1.87
PercentPct of Faculty with Grants, 2006	92.1%	86.4%	82.1%	72.5%	90.5%	86.4%	79.6%
Awards per Allocated Faculty Member, 2006	0	1.07	0.78	0.47	0.28	0.37	0.30
Percent of First Year Students with Full Financial Support, Fall 2005	100.0%	100.0%	100.0%	100.0%	95.0%	100.0%	72.2%
Avg. Completion PercentagePct: <=6 Yrs	40.0%	30.8%	39.4%	33.0%	44.8%	33.3%	56.5%
Median Time to Degree (Full- and Part-Time Graduates), 2006	5.00	5.75	5.30	5.00	5.99	5.00	5.50
Non-Asian Minority Students, % of Total Domestic, Fall 2005	6.7%	0%	4.0%	10.4%	0%	0%	4.4%
Female Students, % of Total Students, Fall 2005	25.0%	31.8%	41.0%	45.0%	45.5%	100.0%	32.1%
International Students, % of Total Students, Fall 2005	6.3%	68.2%	12.8%	20.0%	12.1%	40.0%	33.0%
Avg. No. Ph.D.s Grad., 2002-06	2.40	2.60	4.00	5.20	5.20	1.80	10.80
Percent of Interdisciplinary Faculty, 2006	26.9%	22.7%	3.7%	0%	0%	40.0%	25.4%
Avg. Quant. GRE Scores, 2004-06	666	798	728	731	710	746	702
Total Faculty, 2006	26	22	27	26	16	10	63
Number of Allocated Faculty, 2006	18.15 ⁵	14.20	23.91	25.50	13.05	4.78	51.87
Avg. Ann. 1st Yr. Enrollm't, 2002-06	3.60	4.40	8.40	10.40	8.40	2.00	15.80
Pct. of Students with Research Assistantships, Fall 2005	40.0%	54.5%	20.5%	22.0%	32.3%	40.0%	31.1%
Pct. of Students with Teaching Assistantships, Fall 2005	20.0%	22.7%	28.2%	47.5%	38.7%	40.0%	32.1%

⁴ UIUC = University of Illinois at Urbana-Champaign; UCSB = University of California at Santa Barbara; USC = University of Southern California; UW-Mad. = University of Wisconsin at Madison; RPI = Rensselaer Polytechnic Institute; UT = University of Texas at Austin

⁵ Actual number of Geology Program faculty FTE in 2006-07 was 10.1.

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1829

Table 43. National Academy report summary results for OSU's Geography Program and comparison of with programs at peer institutions⁶

	OSU	Georgia	SDSU-UCSB	UCD	KU	Utah	USC-Col.
Control	Public	Public	Public	Public	Public	Public	Public
Program Size Quartile	1	3	2	3	3	1	3
R Rankings: 5th Percentile	15	15	16	14	15	15	19
R Rankings: 95th Percentile	38	35	35	39	42	42	40
R Rankings: Avg. of 5th & 95th Pctiles	26.5	25	25.5	26.5	28.5	28.5	29.5
S Rankings: 5th Percentile	11	16	20	10	22	33	7
S Rankings: 95th Percentile	36	33	41	30	44	48	19
S Rankings: Avg. of 5th & 95th Pctiles	23.5	24.5	30.5	20	33	40.5	13
Research Activity: 5th Percentile	9	21	13	9	11	16	10
Research Activity: 95th Percentile	30	40	38	32	33	44	33
Student Support & Outcomes: 5th Pctile	6	6	17	10	15	42	1
Student Support & Outcomes: 95th Pctile	37	18	37	33	33	48	5
Diversity: 5th Percentile	9	17	21	3	49	23	6
Diversity: 95th Percentile	29	36	36	13	49	38	20
Avg. Number of Publications (2000-2006) per Allocated Faculty, 2006	0.39 (0.95)	0.76	0.78	0.52	0.62	0.45	0.59
Average Citations per Publication	2.22	1.06	1.14	1.35	1.05	0.78	0.94
Pct. of Faculty with Grants, 2006	80.0%	46.0%	54.3%	77.8%	74.3%	77.6%	85.6%
Awards per Allocated Faculty Member, 2006	0.07 (0.2)	0	0.11	0.52	0.43	0	0.42
Percent of First Year Students with Full Financial Support, Fall 2005	100.0%	100.0%	100.0%	62.5%	71.4%	100.0%	100.0%
Avg. Completion Pct.: <=6 Yrs	46.7%	45.9%	35.7%	51.1%	43.8%	20.0%	67.6%
Median Time to Degree (Full- and Part-Time Graduates), 2006	5.50	4.34	6.00	4.33	6.30	9.00	3.50
Non-Asian Minority Students, % of Total Domestic, Fall 2005	8.3%	0%	10.5%	16.0%	0%	7.1%	9.1%
Female Students, % of Total Students, Fall 2005	57.1%	36.4%	34.6%	59.0%	15.2%	27.3%	47.1%
International Students, % of Total Students, Fall 2005	14.3%	45.5%	26.9%	15.4%	15.2%	36.4%	35.3%
Avg. No. Ph.D.s Grad., 2002-06	3.00	5.60	2.80	4.00	4.80	2.40	4.20
Pct. Interdisciplinary Faculty, 2006	44.7%	4.3%	0%	19.1%	13.6%	0%	0%
Avg. Quant. GRE Scores, 2004-06	583	672	719	591	625	701	627
Total Faculty, 2006	38	23	18	47	22	12	16
Number of Allocated Faculty, 2006	18.35 ⁷	19.97	17.50	22.71	19.89	11.93	15.87
Avg. Ann. 1st Yr. Enrollm't, 2002-06	3.80	7.20	4.60	10.40	5.80	2.60	7.20
Pct. of Students with Research Assistantships, Fall 2005	9.1%	3.2%	56.0%	14.3%	35.0%	25.0%	18.5%
Pct. of Students with Teaching Assistantships, Fall 2005	27.3%	6.0%	24.0%	2.9%	45.0%	20.0%	70.4%

1830 [179]

⁶ Georgia = University of Georgia; SDSU-UCSB = San Diego State University-University of California at Santa Barbara; UCD = University of California at Davis; KU = University of Kansas; Utah = University of Utah; USC-Col. = University of South Carolina at Columbia

⁷ Actual number of Geography Program faculty FTE in 2006-07 was 7.5.

1831 [180]

1832 [181] Disciplinary accreditation and other reports.

1833 **5. Trends and Forecasts – *Aaron writes this section***

1834 [182] This section should answer the question, “Do your students, faculty, university, or
1835 disciplinary trends demand that you do something different?”

1836 **5.1 Current trends**

1837 [183] Body text.

1838 **5.2 Implications for Program Quality**

1839 [184] Body text.

1840 **6. Summary**

1841 [185] This section should answer the question, “What have we learned from the program
1842 review process and what is our plan for moving forward?”

1843 **6.1 General Summary – *Stephen provide most of this material***

1844 [186] Body text.

1845 *6.1.1 Geography Student Satisfaction*

1846 [187] Concerns with availability of resources for research were raised in the surveys of current
1847 Geosciences graduate students () and alumni/ae (), but a greater degree of satisfaction in this
1848 category was shown in the exit survey responses (). Current students specifically identified
1849 access to computers and other facilities and equipment as problems, and their written comments

1850 bemoan the quality and quantity of computers generally available for graduate student research
1851 as opposed to teaching. Geosciences does have a particularly excellent computerized classroom
1852 (Digital Earth), and excellent research computing is available to some through access to the
1853 Terra Cognita computer lab and other computers purchased by individual faculty members with
1854 their own funds. The Department has made an effort to provide access to high-quality research
1855 computing, but the space devoted to general-access computer labs has decreased to provide
1856 graduate student office space despite the limited space available to the Department, the
1857 computers placed in the general-access labs are typically “leftovers” from Digital Earth, and
1858 maintenance of these facilities is generally poor because it is not part of anyone’s job description.

1859 [188] The quality of graduate instruction suffered from relatively lower satisfaction in the
1860 survey of current graduate students (all of Geosciences), the exit surveys of Geography students,
1861 and the Geography alumni/ae surveys. Current students gave lower satisfaction ratings
1862 specifically to the adequate rigor of material presented in graduate courses (), and some of the
1863 written comments of current and exiting students specifically noted the desire for more graduate-
1864 only courses and fewer courses combining undergraduate and graduate students (“slash”
1865 courses). Diversity and availability of graduate course offerings were highlighted as issues in the
1866 surveys of both current Geosciences students () and Geography alumni/ae (). It appears, then,
1867 that while there may be room for improvement in the classroom delivery of material by faculty,
1868 the larger problem is the availability of graduate-only courses presenting sufficiently rigorous
1869 material. Faculty’s options for addressing these issues are limited. Advanced graduate-only
1870 courses often attract insufficient enrollment, unless offered less frequently (e.g., in alternate
1871 years), as “overload,” (i.e., in addition to faculty members’ normal courseload), or both. Courses
1872 taught as overload are the most likely to be abandoned by faculty with other, more-pressing

1873 duties, and courses offered in alternate years can be offered even more infrequently when faculty
1874 go on sabbatical or other leave because departments are unlikely to hire replacement instructors
1875 to teach low-enrollment courses. Even if graduate-only courses can attract sufficient enrollment
1876 to be offered regularly and within faculty members' normal teaching load, graduate-only
1877 instruction may come at the expense of undergraduate instruction. Greater department and
1878 faculty financial resources could allow us to fund, and therefore matriculate, more students, but
1879 we would still face the problem of insufficient faculty FTE to instruct those students while also
1880 maintaining a viable and thriving undergraduate program. In an ideal world, then, the Geography
1881 Graduate Program would have more faculty FTE with the same or greater financial resources per
1882 faculty member. The fact that Geosciences is able to maintain a nationally competitive
1883 Geography Program

1884 **6.2 Self-Recommendations – *tie directly to goals, Andrew, Dawn, Aaron***

1885 [189] List recommendations for enhancing program quality based on analysis and
1886 interpretation of the self-study document.

1887 **7. Acknowledgments.**

1888 [190] Stephen Lancaster, Assoc. Prof., compiled and analyzed program data and coordinated
1889 the preparation of this report. Stacey Schulte collected primary data regarding degree recipients
1890 and assisted with preparation of current student and alumni surveys. Melinda Jensen collected
1891 surveys completed by current students and alumni. Andrea Wirth, Asst. Prof./Collection
1892 Development Librarian, prepared the summaries of library resources and services for both
1893 programs.

1894 **8. References**

1895 Author (year), Title, Journal, volume, pages.

1896

1897

1898 **9. Appendix**

9.1 Curriculum

9.1.1 Geosciences Graduate Courses

Table A - 1. Graduate courses and learning outcomes¹

Course Title	Learning Outcomes
GEO 512 Igneous Petrology* ²	<ol style="list-style-type: none"> 1. Acquire specialized language relevant to igneous petrology 2. Analyze and integrate information on concepts, <i>including advanced concepts</i>, relevant to igneous petrology 3. Retain key information on key concepts, <i>including advanced concepts</i>, relevant to igneous petrology 4. Communicate verbally, and through writing, key concepts, <i>including advanced concepts</i>, relevant to igneous petrology 5. Use knowledge acquired from assigned reading and lecture material to analyze and solve problems presented in tests and exercises, <i>including advanced problems, and to apply these skills to their own research where applicable.</i> 6. Integrate knowledge obtained from a range of sources to understand key concepts, <i>including advanced concepts</i>, relevant to igneous rocks. 7. <i>Demonstrate their ability to obtain, analyze and synthesize information relevant to igneous petrology from a range of external sources, including the geological literature.</i>
GEO/CE/BEE 514 Groundwater Hydraulics ³	<ol style="list-style-type: none"> 1. Perform mass/volume/density calculations for soils, sediments, and other porous material 1. Perform head, pressure, velocity, and flow rate calculations for fluid flow through porous materials using a variety of analytical and numerical methods 2. Demonstrate the ability to: 3. Use water level measurements to determine flow direction, hydraulic gradient, and velocity 4. Design and perform pumping tests and interpret test data 5. Design and perform slug tests and interpret test data 6. To solve standard engineering problems encountered in practice including site characterization, dewatering, well design, aquifer storage and recovery, and storm water disposal.
GEO 515 History and Philosophy of Geography ⁴	<ol style="list-style-type: none"> 1. Demonstrate an understanding of the origins and development of the discipline of geography and its subfields, including major paradigm shifts and influential scholars. 2. Acquire specialized language relevant to the history and philosophy of geography. 3. Analyze and integrate information on advanced concepts relevant to the history and philosophy of geography. 4. Retain key information on advanced concepts, relevant to the history and philosophy of geography. 5. Communicate verbally, and through writing, advanced concepts, relevant to the history and philosophy of geography. 6. Use knowledge acquired from assigned reading and lecture material to analyze and solve problems presented in class discussion, including advanced problems, and to apply these critical thinking skills to their own research where applicable. 7. Integrate knowledge obtained from a range of sources to understand key concepts,

¹ So-called slash courses (taught at the same time and place as an undergraduate 400-level course with the same name) designated with a "*" after the course title. Graduate-specific learning outcomes are italicized.

² Meets Petrology/Geochemistry/Ore Deposits requirement for Geology Program.

³ Meets Stratigraphy/Surficial Geology/Hydrogeology requirement for Geology Program.

Course Title	Learning Outcomes
	including advanced concepts, relevant to the history and philosophy of geography. 8. Demonstrate their ability to obtain, analyze and synthesize information relevant to the history and philosophy of geography from a range of external sources, including scholarly peer-reviewed journal articles and technical reports.
GEO 516 Interpretation of Geologic Maps ⁵	1. Students will be able to write short reports and prepare cross-sections and other illustrations from published geologic map data that synthesize observations into one or more hypotheses for the origin of the rocks and structures portrayed on the map. 2. Students will demonstrate via the reports, cross-sections, and oral class discussions critical thinking skills related to geologic maps.
GEO 517 Geologic Report Writing ⁶	Replaced by GEO 518
GEO 518: Geoscience Communication ⁶ (GEOL & GEOG)	1. Formulate a discipline appropriate research project related to a proposed research topic 2. Assemble and evaluate a feasible thesis project 3. Compose a well-written draft of their thesis proposal 4. Evaluate technical writing, including editing and critiquing other students' work 5. Draft an abstract to a manuscript 6. Present and evaluate a prepared professional talk 7. Actively participate in structured discussion sessions
GEO 520 Geography of Resource Use* ⁷	1. Acquire specialized language relevant to the geography of resource use. 2. Analyze and integrate information on concepts relevant to the geography of resource use, including resilience, vulnerability, adaptive cycles, thresholds, and sustainability . 3. Retain key information on key concepts relevant to the geography of resource use. 4. Communicate verbally, and through writing, key concepts relevant to the geography of resource use. 5. Use knowledge acquired from assigned reading and lecture material to analyze and solve problems presented in tests and exercises. 6. Integrate knowledge obtained from a range of sources to understand key concepts relevant to the geography of resource use. 7. <i>Acquire specialized language relevant to the geography of resource use.</i> 8. <i>Analyze and integrate information on concepts, including advanced concepts, relevant to the geography of resource use, including resilience, vulnerability, adaptive cycles, thresholds, and sustainability.</i> 9. <i>Retain key information on key concepts, including advanced concepts, relevant to the geography of resource use.</i> 10. <i>Communicate verbally, and through writing, key concepts, including advanced concepts, relevant to the geography of resource use.</i> 11. <i>Use knowledge acquired from assigned reading and lecture material to analyze and solve problems presented in tests and exercises, including advanced problems, and to apply these skills to their own research where applicable.</i> 12. <i>Integrate knowledge obtained from a range of sources to understand key concepts, including advanced concepts, relevant to the geography of resource use.</i> 13. <i>Demonstrate their ability to obtain, analyze and synthesize information relevant to the geography of resource use from a range of external sources, including scholarly peer-reviewed journal articles and technical reports.</i>
GEO 521 Humans and Their Wildlife Environment ⁶	Course previously taught by a professor who is long since emeritus. No longer offered.
GEO 522 Reconstructing Historical Landscapes ⁵	1. Effectively use historical methods to interpret the physical, ecological, social, and cultural conditions of regions within the historical past. 2. Understand the use of historical techniques to uncover the environmental conditions of particular landscapes at earlier times. 3. Develop an appreciation for environmental history; historical inquiries into material culture; the utilization of archival, narrative, photographic sources, and census data; and the history of urban regions.
GEO 523 Land Use in the American West* ⁹	1. Acquire specialized language relevant to property rights, land use problems and planning. 2. Analyze and integrate information on concepts relevant to property rights, land use problems and planning. 3. Retain key information on key concepts relevant to property rights, land use problems and planning. 4. Communicate verbally, and through writing, key concepts relevant to property rights, land use problems and planning. 5. Use knowledge acquired from assigned reading and lecture material to analyze and solve

⁴ Requirement for Geography M.S. and Ph.D.

⁵ Not offered regularly or no longer offered regularly.

⁶ Requirement for Geology M.S. and Geography M.S. and Ph.D.

⁷ Meets Resource Geography requirement for Geography Program.

Course Title	Learning Outcomes
	<p>problems presented in tests and exercises.</p> <ol style="list-style-type: none"> 6. Integrate knowledge obtained from a range of sources to understand key concepts relevant to property rights, land use problems and planning. 7. <i>Acquire specialized language relevant to property rights, land use problems and planning.</i> 8. <i>Analyze and integrate information on concepts, including advanced concepts, relevant to property rights, land use problems and planning.</i> 9. <i>Retain key information on key concepts, including advanced concepts, relevant to property rights, land use problems and planning.</i> 10. <i>Communicate verbally, and through writing, key concepts, including advanced concepts, relevant to property rights, land use problems and planning.</i> 11. <i>Use knowledge acquired from assigned reading and lecture material to analyze and solve problems presented in tests and exercises, including advanced problems, and to apply these skills to their own research where applicable.</i> 12. <i>Integrate knowledge obtained from a range of sources to understand key concepts, including advanced concepts, relevant to property rights, land use problems and planning.</i> 13. <i>Demonstrate their ability to obtain, analyze and synthesize information relevant to property rights, land use problems and planning from a range of external sources, including scholarly peer-reviewed journal articles and technical reports.</i>
GEO 524 International Water Resources Management* ⁹	<ol style="list-style-type: none"> 1. Acquire specialized language and concepts relevant to water resources in the 2. World through readings in texts and supplementary articles. 3. Develop appreciation for complexities and disciplines related to resource decision-making. 4. Demonstrate ability to obtain, analyze, synthesize, and critique information relevant to water resources from a range of external sources, including scientific literature and databases and prepare briefing notes. 5. Communicate through writing, key concepts, including advanced concepts, relevant to water resources using briefing notes. 6. Acquire skills to evaluate critically both written and online presentations of peers and professionals. 7. Develop ethical and moral guidelines for personal approach to resource use and allocation issues, and enhance joy and grace in one's life. 8. <i>Acquire exposure to current academic and applied literature representing current thinking in international water resources, and;</i> 9. <i>Synthesize in written formats existing thinking with one's own academic and professional direction to help further both the field and one's own intellect.</i>
GEO 525 International Water Resources Management* ⁹	<ol style="list-style-type: none"> 1. Acquire specialized language and concepts relevant to water resources 2. Develop appreciation for complexities and disciplines related to resource decision-making 3. Demonstrate ability to obtain, analyze, synthesize, and critique information relevant to water resources from a range of external sources, including scientific literature 4. Communicate verbally, and through writing, key concepts, including advanced concepts, relevant to water resources 5. Acquire skills to evaluate critically both written and verbal presentations of peers and professionals 6. Develop ethical and moral guidelines for personal approach to resource use and allocation issues, and enhance joy and grace in one's life 7. <i>Acquire exposure to current academic and applied literature representing current thinking in international water resources, and;</i> 8. <i>Synthesize in both oral and written formats existing thinking with one's own academic and professional direction to help further both the field and one's own intellect</i>
GEO 526 Third-World Resource Development ⁹	<ol style="list-style-type: none"> 1. To listen to differing perspectives and to thoughtfully contribute reasoned ideas regarding material presented in class. 2. To speak and write with clear and unambiguous language. 3. To question and analyze the meaning and use of terms and concepts related to third world development and resources. 4. <i>To apply development concepts to case studies.</i> 5. <i>To explain observed (or reported) phenomena with knowledge of related theory.</i> 6. <i>To propose and evaluate alternative approaches to development situations.</i>
GEO 527 Volcanology* ²	<ol style="list-style-type: none"> 1. Understand the basic physical and chemical properties of volcanic rocks through lecture, laboratory, and field experience. 2. Understand the main physical and chemical controls responsible for the spectrum of volcanic products and processes 3. Use peer-reviewed literature explore fundamental concepts in volcanology 4. Explore quantitative methodologies to model some of the key physical volcanological concepts discussed in 3 using Excel and other programs. 5. Explore a volcanological process with a qualitative and quantitative treatment by writing a research paper. 6. Introduce students to "broader impacts" through an outreach assignment – this year students will provide or improve content for VolcanoWorld.
GEO 530 Geochemistry* ²	<ol style="list-style-type: none"> 1. Acquire specialized language relevant to Geochemistry 2. Analyze and integrate information on concepts, <i>including advanced concepts</i>, relevant to Geochemistry

Course Title	Learning Outcomes
	<ol style="list-style-type: none"> 3. Retain key information on key concepts, <i>including advanced concepts</i>, relevant to Geochemistry 4. Communicate verbally, and through writing, key concepts, <i>including advanced concepts</i>, relevant to Geochemistry 5. Use knowledge acquired from assigned reading and lecture material to analyze and solve problems presented in tests and exercises, <i>including advanced problems, and to apply these skills to their own research where applicable.</i> 6. Integrate knowledge obtained from a range of sources to understand key concepts, <i>including advanced concepts</i>, relevant to the geochemistry of Earth materials. 7. <i>Demonstrate their ability to obtain, analyze and synthesize information relevant to Geochemistry from a range of external sources, including the scientific literature.</i>
GEO 532 Applied Geomorphology* ³ (GEOL & GEOG)	<ol style="list-style-type: none"> 1. Techniques for geomorphic assessment of streams in the context of their watersheds and the application of those techniques. 2. Basic knowledge of fluvial forms and processes and likely changes resulting from those processes. 3. Knowledge of fluvial restoration and mitigation methods. 4. Use of qualitative and quantitative data in writing a report in the form of a scientific paper. 5. <i>Make oral presentations of applied geomorphology concepts from the literature.</i>
GEO 533 Coastal Geomorphology ³	<ol style="list-style-type: none"> 1. Interpret the physical systems of the coastal zone. Define and distinguish between various coastal classification schemes 2. Describe the relative importance of various processes as waves propagate and transform from deep water through the surf zone to the beach 3. Understand the basic principals of linear wave theory 4. Understand non-linear wave properties derivable from linear theory 5. Understand the basic principals of the Equilibrium and Dynamic Theory of tides 6. Describe sediment properties important to sediment transport 7. Understand the basic principals of coastal sediment transport 8. Explain the importance of the bottom boundary layer to sediment transport 9. Describe the various time and space scales involved in coastal evolution 10. Interpret various coastal bed forms and forcing mechanisms 11. Explain how coastal morphology develops and changes in response to changes in coastal processes such as waves, currents and tides 12. Interpret stratigraphic record of barrier accumulation 13. Investigate and critically evaluate research advances in coastal morphodynamics. Integrate knowledge obtained from a range of sources to understand key concepts of coastal morphodynamics.
GEO 534: The Geography of Oregon (Field Research in Physical Geography)	<ol style="list-style-type: none"> 1. Acquire specialized language and concepts relevant to Oregon geography. 2. Develop appreciation for complexities and disciplines related to regional geography. Demonstrate ability to obtain, analyze, synthesize, and critique information relevant to regional geography from a range of external sources, including scientific literature. 3. Communicate verbally, and through writing, key concepts, including advanced concepts, relevant to regional geography. 4. Acquire skills to evaluate critically both written and verbal presentations of peers and professionals. 5. Develop ethical and moral guidelines for personal approach to geographic issues, and enhance joy and grace in one's life
GEO 535 Geochemical Analysis Techniques	<ol style="list-style-type: none"> 1. Design basic analytical strategies for determination of the chemical and isotopic composition of rock samples 2. Apply basic principles of laboratory safety 3. Summarize the basic physical and chemical principles behind mass spectrometric- and emission-based analysis of rock or mineral samples 4. Safely prepare rock or mineral samples for basic geochemical analysis 5. Perform analyses of solid and liquid samples by a range of plasma-based mass spectrometric and emission techniques 6. Analyze data obtained from analytical instrumentation, including rigorous determination of analytical uncertainties, and evaluation of calibration strategies and data quality 7. Critically evaluate the quality of data sets available in the scientific literature. 8. Develop an annotated bibliography of a minimum of 10 geochemical analysis papers relevant to their program of research 9. Develop a technical description of analytical techniques suitable for inclusion in scientific

Course Title	Learning Outcomes
	articles and reports
GEO 536 Structural and Neotectonic Field Methods ⁸	<ol style="list-style-type: none"> 1. Accurately locate yourself and geologic features on maps 2. Differentiate geomorphic surfaces and fault scarps 3. Utilize a variety of instruments and methods to collect data 4. Recognize and record structural data (attitudes of beds, faults, and folds) 5. Create an organized, thorough record of field observations in a field book 6. Synthesize and interpret map relationships 7. Construct geologic cross-sections that are consistent with map data 8. Develop a geologic history on the basis of field relationships
GEO 537 Tectonic Geomorphology* ⁸	<ol style="list-style-type: none"> 1. Describe geomorphic elements of drainage basins 2. Describe structural elements of orogenic belts 3. Understand principal methods of measuring exhumation 4. Deconstruct landscape evolution models 5. Quantify topographic characteristics, geomorphic processes, and geophysical properties of orogenic belts. 6. Summarize the basic properties and characteristics of continental crust 7. Evaluate scientific literature
GEO 538 Ecosystem Informatics Field Trip	<ol style="list-style-type: none"> 1. Learn the steps of the research life cycle (met w/field notes assignment). 2. Describe and apply concepts of uncertainty and scaling to research problems (met w/field notes assignment/Thursday project). 3. Gain exposure to field problems in ecosystem informatics: metapopulations and meadows, spatial disturbance, stream restoration, computer visualization, hillslope hydrology (met w/Monday field trip). 4. Gain exposure to field problems in ecosystem informatics: Airflows, climate change, carbon cycling, sensor nets, spatial metapopulation dynamics, stream restoration, automated outlier detection, urban growth patterns, species mapping (met w/Tuesday field trip). 5. Gain exposure to field problems in ecosystem informatics: Dynamics of species in landscapes; flow of water and nutrients in streams; probabilistic modeling of ecosystems and landscapes; fire history and landscape dynamics; invasive species (met w/Wednesday field trip). 6. Describe and evaluate how the steps of the research life cycle were conducted for selected problems discussed in the field (met w/field notes assignment). 7. Evaluate issues of uncertainty and scaling in climate change and apply these ideas using ecosystem informatics approaches to assess the research life cycle for a climate data point (met /w Thursday project).
GEO 540 Economic Geology* ²	<ol style="list-style-type: none"> 1. Acquire specialized words and language relevant to mineral deposits. 2. Describe the geology, mineralogy of ore minerals, associated non-ore minerals, and associated rocks for at least 15 important classes of ore deposits. 3. Retain key concepts, <i>including advanced concepts</i>, of magmatic, magmatic-hydrothermal, other hydrothermal, and surficial processes that produce concentration of ore metals and minerals. 4. Communicate through writing, and verbally, key <i>and advanced</i> concepts and data relevant to mineral deposits. 5. Analyze and integrate knowledge obtained from a range of sources (text reading, lectures, and lab observations) relevant to mineral deposits. 6. Used knowledge acquired from the assigned reading and lecture materials to analyze and solve problems presented in labs and tests. 7. Describe some human aspects of mineral deposits, including source of useful mineral materials, economics of mineral resources, and environmentally hazards of mineral extraction and processing. 8. <i>Demonstrate the ability to obtain, analyze, and synthesize information relevant to mineral deposits from a variety of external sources, including the scientific literature.</i>
GEO 541 Spatio-temporal Variation in Ecology and Earth Science ⁹	<ol style="list-style-type: none"> 1. Objectives of spatio-temporal studies in ecology and earth science 2. Concept of causation and experimentation vs. observational studies 3. Importance of designing a study around a testable hypothesis 4. Sampling designs and methods for ecological and earth science studies 5. Basic concepts of spatio-temporal process and pattern 6. Autocorrelation: why it matters, how to measure and deal with it 7. Methods for measuring spatial structure: plotting/interpolation, point patterns, geostatistics (variograms, correlograms), Mantel tests, spectral analysis, wavelet, fractals 8. Summary and comparison of methods
GEO 542/CS 519/MTH 599 Concepts in	<ol style="list-style-type: none"> 1. Natural/Ecosystem Science: Students should be able to describe and explain basic concepts and research problems in ecosystem science and physical science. 2. Computer science: Students should be able to describe and explain basic concepts and

⁸ Meets Structural Geology/Geophysics/Tectonics requirement for Geology Program.

⁹ Meets Statistics requirement for Geography Program.

Course Title	Learning Outcomes
Ecosystem Informatics	<p>techniques of computer science (especially software engineering, knowledge discovery, visualization, and data mining).</p> <ol style="list-style-type: none"> Mathematics: Students should be able to describe, explain, and reproduce basic mathematical models of either stochastic or deterministic processes. Vocabulary: Students will be able to define, list, recognize, and reproduce basic terms from computer science, mathematics, and natural/ecosystem science. Identify, describe, and explain key concepts, terminology, and problems in Ecosystem Informatics, especially those relevant to the selected problems. Use oral communication, writing, computer graphics, and other presentation skills to convey their understanding of basic methods in mathematics and computer science and how they can be applied to ecological problems addressed in this course. Review, restate, and translate concepts from one discipline to another (i.e. among computer science, ecosystem science, and mathematics), in a multidisciplinary team composed of students and faculty in ecosystem science, mathematics, and computer science.
GEO 543/CS 519/MTH 599 Applications in Ecosystem Informatics	<ol style="list-style-type: none"> Understand the theory of species' distribution and habitat selection. Understand research design, collaborative work, conceptualizing research questions. Master formulating and applying math and statistical modeling. Synthesize research results, and present them orally and in the form of a manuscript.
GEO 544 Remote Sensing of the Environment ¹⁰	<ol style="list-style-type: none"> Describe the basic physics and principles of remote sensing Summarize the differences and basic workings of various sensors that are currently in orbit Perform image analysis (using image processing software) and understand basic image analysis techniques for environmental applications of remote sensing Assess the synergies and limitations of remote sensing for environmental analysis <i>Formulate a research hypothesis related to remote sensing and image analysis</i> <i>Design and perform an image analysis research project using satellite imagery</i> <i>Analyze the imagery and draw a conclusion with respect to the hypothesis</i> <i>Communicate the research in a professional and effective manner</i>
GEO 545 Computer-Assisted Cartography*	<ol style="list-style-type: none"> Understand different number systems and digital data types. Be familiar with commonly used vector data sources. Use several vector data sources to create a moderately complex map using vector mapping software. Be familiar with commonly used raster data sources. Use several raster data sources to create a moderately complex map using raster mapping software. Understand the advantages and drawbacks of different graphic output formats used to store and transmit maps to other users. Understand the basic mathematical and data processing procedures applied in performing map projection transformations by computer. Apply these procedures in creating a map from vector data sources. Understand the raster map projection resampling procedure. Perform resampling on a raster dataset to create a map from raster data. Understand different color models and use these models to specify progressions of color when creating maps from vector and raster map data. Become familiar with the mathematical procedures used to produce layer tinting and relief shading by computer. Apply these procedures to create maps from raster and vector datasets. Understand the basic procedure used to create maps in 3D-perspective view. Be familiar with the basic principles of interactive and animated cartography, including mapping in a virtual reality environment. <i>Use several raster data sources to create a moderately complex map using raster mapping software.</i> <i>Understand the basic mathematical and data processing procedures applied in performing map projection transformations by computer. Apply these procedures in creating a map from vector data sources.</i> <i>Become familiar with the mathematical procedures used to produce layer tinting and relief shading by computer. Apply these procedures to create maps from raster and vector datasets.</i>
GEO 546 Advanced Landscape Ecology	<ol style="list-style-type: none"> Identify and define the basic terminology of landscape ecology. Describe the history, motivations, and accomplishments of landscape ecology. Identify the founders of the discipline and their main contributions. Explain the concept of scale. Describe how scale is a problem in science and management. Define hierarchy theory and explain how it is related to scale. Explain the "right" scale, and what it means to "scale up."

¹⁰ Meets Remote Sensing/Image Processing requirement for Geography Program.

Course Title	Learning Outcomes
	<ol style="list-style-type: none"> 3. Compare and contrast the various types of models used in landscape ecology. Identify and describe the steps in model development and testing. Apply spatial modeling concepts and techniques to example problems. Evaluate the effectiveness of various modeling approaches. 4. Explain and give examples of the various causes of landscape pattern. Compare and contrast abiotic, biotic, human land use, and disturbance influences on landscape pattern. Formulate and test hypotheses about interactions among these various causes of landscape pattern 5. Describe metrics for quantifying landscape pattern. Explain data sources for landscape pattern analysis. Apply metrics to sample problems. Evaluate the effectiveness of the metrics for understanding landscape pattern-process interactions. 6. Define and describe the concept of neutral model and relate it to concepts of testability and falsifiability in hypothesis-testing; create and analyze neutral models with varying neighborhood rules, habitat proportions, and autocorrelation; assess the effects of using neutral models in landscape analysis studies 7. Define disturbance, disturbance attributes, landscape equilibrium; list and explain various types of disturbances in landscapes; develop hypotheses to predict how landscape pattern influences disturbance processes, and how disturbance processes affect landscape patterns; assess disturbance-landscape interactions based on field data and examples. 8. Explain how organisms interact with landscapes; describe the interactions among spatial pattern, dispersal ability, and extinction; create and apply a simple spatially explicit population model. 9. Define ecosystem processes. Describe how ecosystem processes interact with spatially heterogeneous landscapes. Evaluate the effects of landscape position on ecosystem processes. Describe how land-water interactions influence ecosystem processes. Assess how species interactions (trophic cascades) influence ecosystem processes. 10. Explain how landscape ecology concepts and methods are applied in land, water, and resource management; give examples; compare and contrast alternative land, water, or ecosystem management strategies based on landscape ecology principles; evaluate effectiveness of alternative strategies for achieving species conservation, sustainability, and other societal goals.
GEO 547/CS 519/MTH 599 Collaborative Research in Ecosystem Informatics	<ol style="list-style-type: none"> 1. Describe and apply concepts of Bayesian statistical models 2. Describe and apply concepts of mathematical modeling using ordinary and partial differential equations 3. Select an ecosystem informatics topic, formulate analysis using Bayesian analysis and differential equations, solve model and present findings via group project, oral presentation and paper.
GEO 548 Advanced Field Research in Geomorphology and Landscape Ecology ^{3 11}	<ol style="list-style-type: none"> 1. Introductory knowledge of landscape ecology and geomorphology at a site. 2. Hydro-geomorphic processes in large and small watersheds. 3. Landscape ecology and landscape disturbance 4. Student-led sampling of carbon flows in mountain landscapes 5. Scaling ecological and geomorphic processes to landscapes. Focus on carbon flows in the landscape/large watersheds over the long term 6. develop and test landscape-scale hypotheses about the interactions among ecological and geomorphic processes
GEO 551 Environmental Site Planning* ^e	Course previously taught by an OSU Extension professor (professional planner) who retired in 2004 and position was not renewed. Course currently not offered and unlikely to be offered in the future. Demand by students and emphasis in program have changed.
GEO 552 Principles and Practices of Rural and Resource Planning* ^e	Course previously taught by an OSU Extension professor (professional planner) who retired in 2004 and position was not renewed. Course currently not offered and unlikely to be offered in the future. Demand by students and emphasis in program have changed.
GEO 553 Resource Evaluation Methods/Env Impact Statements(EIS)* ^e	<ol style="list-style-type: none"> 1. Demonstrate a basic grasp of land use planning and Oregon comprehensive planning. 2. Describe the range of issues surrounding rural land use planning 3. Develop an intellectual framework for discussing how the comprehensive planning process, detailing primary factors such as data gathering and analysis, public participation, best practices, implementation and evaluation 4. Learn new methods and tools to use in land use and comprehensive planning 5. <i>Practice and implement these new tools in a group project with a deliverable, high quality product</i> 6. <i>Synthesize knowledge and research skills gained in the course by completing writing assignments that address key issues related to land use planning.</i>
GEO 560 Multimedia	<ol style="list-style-type: none"> 1. Examine the most modern forms of mapping, specifically the creation of interactive maps, animated maps, and the use of these map forms on the Worldwide Web. 2. Understand clearly the technical and map design principles underlying the production of

¹¹ Meets Field work requirement for Geography Program.

Course Title	Learning Outcomes
Cartography* ⁵	<ul style="list-style-type: none"> multimedia maps. 3. Create interactive and animated maps for web sites and digital atlases using state-of-the-art software such as Dreamweaver and Fireworks. 4. <i>Complete a term project interactive and/or animated map related to their own research.</i>
GEO 561 Geology of Earthquakes* ⁸	<ul style="list-style-type: none"> 1. Describe the earthquake cycle. 2. Analyze evidence for past earthquakes from geologic data and strain accumulation leading up to earthquakes 3. Describe the major characteristics of plate boundaries 4. Differentiate between the major fault types on the bases of geomorphology, coseismic rupture, and relative motions of rock 5. Define the principal types of measurements and measurement techniques for describing offset 6. Relate details of fault slip rate in space and time to plate boundary evolution. 7. Evaluate scientific literature 8. Produce professional-grade scientific presentations, summaries, and research papers
GEO/GPH 563 Geophysics and Tectonics* ⁸ (GEOL)	<ul style="list-style-type: none"> 1. All students are expected to develop a quantitative understanding of tectonic processes, demonstrate how these processes affect the tectonic evolution of the oceans and continents with special attention to the crust and lithosphere. 2. Students are expected to discriminate between strong and weak arguments, evaluate potential flaws in past or current tectonic paradigms, and identify future research directions in active tectonics and geophysics. 3. Students will develop their problem solving abilities, learn how to estimate the order of magnitude of quantities, and effects. 4. Students will build the ability to ask the critical, pointed questions and articulate ideas. 5. <i>Students are expected to synthesize information from a variety of sources and formulate linkages between earth structure, tectonic and igneous processes and the student's research interests.</i>
GEO 564 Geoscience Interpretation*	<ul style="list-style-type: none"> 1. Use oral communication, writing, graphic, and other presentation skills to present geological information to different audiences in specific settings ("P" in PAIRing); 2. Understand the intellectual, social, age, and other characteristics of different audiences, as well as their varying levels of understanding geological concepts ("A"); 3. Design and present geological interpretative programs using both individual and group efforts ("I"); 4. Identify the geological characteristics of parks, museums, and other interpretative sites that are appropriate for various audiences ("R"). 5. <i>Assess the level of geological interpretation offered at a particular site on the Oregon Coast; communicate with interpretive and educational specialists employed at the site; and develop a written evaluation of how the site's geological programs and materials adhere to the principles of interpretation discussed in the class.</i>
GEO 565 Geographic Information Systems and Science* ¹²	<ul style="list-style-type: none"> 1. Synthesize and integrate concepts of GIS theory and methodology, including data models, data structures, topology, and spatial analysis. 2. Understand and articulate what geographic information science is and some of its topics and challenges. 3. Begin to articulate the role of space as a source for explanation and understanding. 4. Describe the functional basis of a GIS (i.e., how it works), including how it differs from other computerized systems, and why. 5. Consider and evaluate the benefits and shortcomings of using GIS for a variety of natural resource applications. 6. Outline the key data quality issues involved in using GIS and state the importance of metadata. 7. Demonstrate basic GIS software skills in the ArcView 9.x/10.x portion of ArcGIS, as well as basic scientific computing skills. 8. Understand and articulate what GIS analysis is, understanding also that analysis is at the crux of GIS (not just holding data, organizing data, or making maps). 9. Be able to perform a rudimentary spatial analysis in ArcView 9.x/10.x. 10. <i>More fully articulate the role of space as a source for explanation and understanding.</i> 11. <i>Synthesize and integrate information, GIS analysis results, and interpretations from the GIS/GIScience literature.</i> 12. <i>Employ written communication and computer technology skills by way of a term paper, analytical project report, or web-based annotated bibliography.</i>
GEO 566 Digital Image Processing* ¹⁰	<ul style="list-style-type: none"> 1. Acquire an understanding of remote sensing data collection, data types, image formats; 2. Demonstrate an understanding of electromagnetic radiation principles; 3. Perform radiometric correction, geometric correction, image enhancement, change detection, supervised and unsupervised classification; 4. Acquire an understanding of hyperspectral image processing techniques 5. Assess thematic map accuracy; 6. <i>Develop a digital image processing portfolio that demonstrates their knowledge of four</i>

¹² Meets Geographic Information Systems requirement for Geography Program.

Course Title	Learning Outcomes
	<i>aspects of digital image processing</i>
GEO 567 Responsible GIS Practice: Ethics for Future Geospatial Professionals (Current offered <i>only</i> via OSU Extended Campus)	<ol style="list-style-type: none"> 1. Recognize ethical implications of geospatial technologies and applications; 2. Demonstrate moral reasoning skills through methodical analyses of ethical case studies; 3. Demonstrate understanding of academic integrity policies and guidelines; 4. Conduct and report upon practitioner interviews in compliance with IRB regulations; 5. Understand the "moral ecologies" of the various institutions and organizations that make up the geospatial professions; and 6. Be inspired to talk about ethics in the classroom and, more importantly, the workplace. <p>These additional learning outcomes fall under various categories in the <i>UCGIS GIS & T Body of Knowledge</i>:</p> <p>Unit GS6 - Ethical aspects...</p> <ol style="list-style-type: none"> 7. Describe a variety of philosophical frameworks upon which codes of professional ethics may be based. 8. Discuss the ethical implications of a local government's decision to charge fees for its data. 9. Describe a scenario in which you would find it necessary to report misconduct by a colleague or friend. 10. Describe the individuals or groups to which GIS&T professionals have ethical obligations. 11. Propose a resolution to a conflict between an obligation in the GIS Code of Ethics and organizations™ proprietary interests. <p>Unit GS7 - Critical GIS...</p> <ol style="list-style-type: none"> 12. Defend or refute the argument that the "digital divide" that characterizes access to GIS&T perpetuates inequities among developed and developing nations, among socio-economic groups, and between individuals, community organizations, and public agencies and private firms. 13. Discuss the ethical implications of the use of GIS&T as a surveillance technology.
GEO 580 Advanced Applications of GIS in the Geosciences ¹²	<ol style="list-style-type: none"> 1. Synthesize and integrate concepts of GIS theory and methodology, including data models, data structures, topology, and spatial analysis. 2. More fully articulate the role of space as a source for explanation and understanding. 3. Synthesize and integrate information from the GIS/GIScience literature. 4. Demonstrate a conceptual and working knowledge of spatial analysis operations, including interpolation, transformation, spatial statistics, and estimation of error and uncertainty. 5. Design and implement a GIS analytical model; demonstrate basic understanding and use of a customized GIS data model 6. Develop a strategy to implement an effective GIS, starting with a basic scientific or decision-support question in mind, knowing something about potential problems to avoid, and realizing that all GIS projects vary in their design, configuration and operation, as well as in the amount of time needed to gather, format, and input data. 7. Employ teamwork skills in labs. 8. Demonstrate advanced GIS software skills, particularly in ArcGIS 10.x, as well as intermediate to advanced scientific computing skills. 9. Employ verbal/written communication and computer technology skills by way of poster presentations.
GEO 581 Glacial Geology ^{*3}	<ol style="list-style-type: none"> 1. Understand and describe the key features of glacier physics. 2. Identify, explain, and interpret the glacial stratigraphic and erosional record <i>in a written term paper</i>.
GEO 582 Geomorphology of Forests and Streams ³	<ol style="list-style-type: none"> 1. Knowledge of the major concepts in hillslope and fluvial geomorphology of forested landscapes. 2. Knowledge of key literature on geomorphology of forests and streams. 3. Understanding of the key approaches and techniques for research projects in geomorphology of forests and streams.
GEO 583 Snow Hydrology ^{*j}	<ol style="list-style-type: none"> 1. explain processes of snow formation in the atmosphere, snow-climate interactions, and physical mechanisms in snowpack accumulation, redistribution, and ablation; 2. explain processes relating to the internal energetics of snow; 3. summarize methods for mapping snow and modeling snowmelt; 4. perform field analyses of snowpacks. 5. synthesize the above objectives in understanding the role of snow in watershed processes. 6. <i>design a sampling scheme for snow measurements in the field</i> 7. <i>formulate a research hypothesis related to snow hydrology</i> 8. <i>design and perform a snow hydrology research project</i> 9. <i>analyze the data and draw a conclusion with respect to the hypothesis</i> 10. <i>communicate the research in a professional and effective manner</i>
GEO 585 Advanced Remote Sensing and Digital Image Processing ^{e, j}	<ol style="list-style-type: none"> 1. Explain the physics and principles of remote sensing including resolution, geometry, radiometric concepts, spatial scaling, and active remote sensing such as LiDAR and InSAR. 2. Perform field remote sensing analyses including site selection, sampling strategy, field spectroscopy, instrument setup, calibration, data collection, and data analysis. 3. Perform advanced concepts in digital image processing including texture analysis,

Course Title	Learning Outcomes
GEO 586 Quaternary Paleoclimatology* ³ (GEOL)	<p>atmospheric correction, cloud detection/masking, and lidar processing.</p> <p>4. Summarize new mission concepts and advanced technologies in remote sensing.</p> <p>1. Modern global climate patterns and their causes: Describe general circulation of atmosphere and ocean, and how those influence global patterns of temperature and rainfall.</p> <p>2. Global energy balance and control on planetary temperature: Understand and apply principles of calculating global surface temperature for a simple energy balance model given appropriate boundary conditions. <i>Investigate the use of a 1-D energy balance model in climate simulation.</i></p> <p>3. Climate modes: Describe the climate patterns associated with monsoon circulation, ENSO, NAO, PDO.</p> <p>4. Dating methods (geochronology) for paleoclimate: Describe principles of various dating methods. Apply knowledge to calculate an un-calibrated carbon-14 age and use software to calibrate a carbon-14 age. <i>Calculate U-Th ages. Calculate calibrated 14-C ages for a sediment core record and investigate means of interpolating ages as a function of depth. Investigate and synthesize research on other dating techniques.</i></p> <p>5. Climate archives ("proxy" measurements that estimate past climate elements): Describe principles of each proxy we cover. Understand advantages and limitations of each. Analyze and evaluate the use of these proxies in specific situations. <i>Investigate and synthesize research on a climate proxy.</i></p> <p>6. Climate models: Define different types of climate models, understand what their applications are, make inferences from climate model results. <i>Use a climate model to make a prediction about past or future climate.</i></p> <p>7. Approaches to studying paleoclimate problems: Synthesize knowledge to design appropriate studies to address current questions in paleoclimate research.</p>
GEO 588 Quaternary Stratigraphy of North America	<p>1. Understand key concepts of stratigraphy, including those regarded as specific to the Quaternary.</p> <p>2. Understand and describe the key factors that produce the Quaternary stratigraphic record (largely climate).</p> <p>3. Understand and describe several of the key geochronological methods used to measure time during the Quaternary.</p> <p>4. Understand the stratigraphic record of glacial and pluvial events in North America..</p>
GEO 593 Topics in Quaternary Geology* ⁵	<p>1. When taught, class is reading and discussion focused on a topical subject.</p>
GEO 597 Field Mapping of Ore Deposits* ²	<p>1. Students shall be able to record on maps a variety of geologic observations of veins, ore mineralization, hydrothermal rock alteration as well as primary rock lithology and structure.</p> <p>2. Students shall be able to synthesize field observations into a short written report that interprets the ore mineralization processes at a field sites.</p> <p>3. In addition to requirements (& outcomes) of GEO 497, students shall prepare a written report on the origin of a second field site, and therefore demonstrate more advanced synthesis skills.</p>
GEO 599 ST/ Public Participation GIS ^e	<p>The following intended learning outcomes for this course fall under various categories in the <i>UCGIS GIS & T Body of Knowledge</i>:</p> <p>1. <i>GS3 Public use of geospatial information GS3-1 Major uses of geospatial information and of land information</i> Students should be able to describe the common uses of geospatial information in governance, including ethical, security, aesthetic/scientific, and management uses.</p> <p>2. <i>GS3-3 Public participation in legislating and administering</i> Students should be able to differentiate grassroots participation and community-initiated GIS from the broader field of participatory GIS. They should be able to defend or refute the contention that grassroots participation and community-initiated GIS accentuate the development of alternative ways of conceptualizing geographic information and the adaptation of new geographic technologies</p> <p>3. <i>GS3-4 Individual, group, and societal perspectives</i> By way of group discussions and a term project of their choice, students should be able to: Propose a strategy for soliciting "local knowledge" about a given resource management issue. Describe the problem of distilling the spatial aspect of local knowledge. Explain how, and how well, local knowledge may be represented in a GIS. Exemplify a case in which local knowledge played a role in land use, coastal/ocean use, resource allocation, or other planning decisions. Speculate on how local knowledge concerning a decision to locate a controversial land use (e.g., retail megastore, strip mall, strip mine, or halfway house) may vary by community.</p> <p>4. Explain how citizen participation improves local government planning processes and outcomes.</p>
GEO 599 ST/GIS Programming ^e	<p>1. Analyze a geoprocessing task and structure it as a sequential series of steps that can be expressed in a flow diagram or as "pseudocode"</p> <p>2. Use basic programming tools (iteration and conditional statements) and Python data</p>

Course Title	Learning Outcomes
	<ul style="list-style-type: none"> structures (lists, dictionaries) to accomplish geoprocessing tasks. 3. Explain the function of existing geoprocessing scripts. 4. Write and document scripts that: <ul style="list-style-type: none"> o Run a series of geoprocessing tools on several data sets o Obtain and use information from attribute tables o Add and calculate fields in attribute tables o Create and edit geographic data sets 5. Read and write information between geographic data sets and text files
GEO 599 ST/ Geologic History of the Carbon Cycle and Atmospheric CO2	<ul style="list-style-type: none"> 1. Knowledge of the current and historical literature on important aspects of this topic; 2. Basic understanding of geological reconstructions of atmospheric CO2 and controls on atmospheric carbon dioxide; 3. The workings of the ocean and land carbon cycles; and 4. A grasp of the significant current questions in this field.
GEO 599 ST/ Computational Methods in Earth Sciences (GEOL)	<ul style="list-style-type: none"> 1. Solve quantitative problems using both Excel and Matlab 2. Translate earth science problem into computational problem 3. Demonstrate proficiency in use of Excel 4. Demonstrate basic knowledge of Matlab programming including if/then, loops, scalars, vectors, arrays 5. Calculate the area under a curve by numerical integration in Excel 6. Compute the roots of one or more equations in Excel 7. Find the roots or best solution to a mathematical problem in Excel 8. Solve a simple finite difference problem in both Matlab 9. Fit a line to data and interpret the results in Excel 10. Solve a system of linear equations (matrix solution) in Matlab
GEO 599 ST/Coastal Hazards	<ul style="list-style-type: none"> 1. Understand the complex array of coastal hazards and the associated risks they pose to rapidly expanding coastal communities. 2. Understand from multiple perspectives and solve quantitative problems covering a wide range of coastal hazards including physical processes (forcing) and coastal response (coastal change, flooding, damage to infrastructure, etc.). 3. Examine and discuss coastal management/mitigation options (assessing vulnerability, increasing community resilience, decision support tools) for dealing with the hazards. 4. Assess coastal vulnerability/resilience to various hazards by way of probabilistic vulnerability assessments.
GEO 622 Igneous Petrology	<ul style="list-style-type: none"> 1. Learn how to analyze a published data set and evaluate it for quality and self-consistency, thereby learning how to treat geochemical and petrological data when they acquire their own 2. Learn how to synthesize published work and make an effective oral and written presentation 3. Learn how to apply petrological techniques to their own data. 4. Participate in peer evaluation and so learn effective presentation. 5. Get an overview of modern petrological techniques 6. Learn about subduction zone volcanism and petrology
GEO/OC 633 Geochronology and Isotope Geology ²	<ul style="list-style-type: none"> 1. An understanding of basic principles of radioactive decay, with an ability to apply those principles to dating geological materials and processes 2. An understanding of basic principles of cosmogenic nuclide formation, with an ability to apply those principles to processes at the Earth's surface, such as weathering and climate change 4. An ability to read and understand research articles in the earth science literature that apply radioactive and cosmogenic nuclides to geological and oceanographic problems
GEO 691 Mass and Heat Transport in the Environment	<ul style="list-style-type: none"> 1. Have a relatively sophisticated (research level) understanding of basic transport phenomena – advection; diffusion; dispersion; conduction. 2. Have a working knowledge of key heat transport phenomena for streams - short-wave and long-wave radiation; convection; evaporation; conduction; sensible heat; latent heat; shading; albedo; precipitation. 3. Understand transport terms including sources; sinks; fluxes; heat/mass transfer; decay; and be able to express these mathematically. 4. Formulate a solute or heat transport problem in mathematical language. 5. Solve analytically or semi-analytically a large group of linear transport problems. 6. Produce and manipulate computer codes to solve linear transport phenomena. 7. Set up and run a heat and solute transport experiment in a stream.
GEO 694 Topics in Ore Genesis	<ul style="list-style-type: none"> 1. to identify the important components of a scientific talk, including introduction, summary of data, discussion and critique of data, and conclusions. 2. to summarize orally and with visual or hand-outs of illustrations, the scientific understanding of his or her seminar topic to a scientific audience. The student will read several scientific papers, and use these as the basis for the presentation. 3. to analyze and critique several recent research publications in the presentation. 4. to prepare an annotated bibliography of the relevant scientific literature. 5. to identify key scientific problems presented in seminars and to demonstrate this by discussing these problems during the seminars (students will be required to

Course Title	Learning Outcomes
	6. participate in discussions, and demonstrate their knowledge of the seminar topics by commenting orally).
GEO 695 Mechanics of Earthquake Faulting	<ol style="list-style-type: none"> 1. Develop a basic understand of frictional behavior of rocks 2. Define and explain the seismic cycle 3. Evaluate scientific literature 4. Produce professional-grade scientific presentations 5. Synthesize observations of fault zone structure at the crustal scale 6. Understand fault growth and scaling models
WRP 521 Water Governance and Conflict Management	<ol style="list-style-type: none"> 1. Have increased your listening skills through practice and critique; 2. Have increased your understanding of the culture and environment you “swim in” to include the power of “frames,” and multiple perspectives and scales (both geographic and temporal) on water conflict; 3. Be able to reframe water conflicts from intractable to transformable through application of different negotiation tools, and different frameworks, philosophies and perspectives; 4. Demonstrate creativity in the face of intransigence and negativity regarding water conflicts through in-class role plays; 5. Have practiced and demonstrated your skills with a wide range of conflict transformation tools through in-class exercises, and; 6. Develop ethical and moral guidelines for personal approach to resource use and allocation issues, and enhance joy and grace in one’s life (self-evaluated).

Table A - 1. Geosciences graduate course offerings, Fall 2005 – Spring 2010 (GL = Geology Program, GG = Geography Program)

Term offered	Course	Title	Instructor	Credit	Slash	U-grad enrollment	Grad enrollment	Program
Fall 2005	GEO 500	Field Trip: Yellowstone	Dilles	1	Y	4	5	GL, GG
	GEO 505 & 605	Reading and Conference	Various	1, 16	N	~	5	GL, GG
	GEO 507	Seminar/Geology Colloquium	Dilles	1	Y	1	15	GG
	GEO 507	Seminar/IGERT Colloquium	Jones	1	N	~	10	GL, GG
	GEO 512	Igneous Petrology	Kent	4	Y	4	4	GG
	GEO 534	Field Research in Physical Geography	Wolf	3	Y	1	17	GL, GG
	GEO 540	Economic Geology	Dilles	4	Y	3	5	GG
	GEO 588	Quaternary Stratigraphy of North America	Clark	3	Y	2	10	GG
	GEO 599	ST/Geology of Santia...	Kent	1	N	~	5	GG
Winter 2006	GEO 505 & 605	Reading and Conference	Various	1, 16	N	~	5	GL, GG
	GEO 507	Seminar/Field Trip	Grunder	1	Y	5	3	GL, GG
	GEO 507	Seminar/Geology	Grunder	1	Y	7	7	GG
	GEO 507	Seminar/IGERT Colloquium	Jones	1	N	~	6	GL, GG
	GEO 514	Groundwater Hydraulics	Istok (CE)	3	N	~	3	GG
	GEO 517	Geologic Report Writing	Haggerty	2	N	~	10	GG
	GEO 530	Geochemistry	Kent	3	Y	15	3	GG
	GEO 539	ST/Snow Hydrology	Nolin	3	Y	10	11	GG
	GEO 582	Geomorphology of Forests and Streams	Lancaster	3	N	~	7	GG
	GEO 599	ST/Geologic History of Ca...	Brook	4	N	~	7	GG
Spring 2006	GEO 633	Geochronology & Isotope Geology	Graham (COAS)	3	N	~	9	GG
	GEO 505 & 605	Reading and Conference	Various	1, 16	Y	1	5	GL, GG
	GEO 507	Seminar/Geosciences	Brook	1	Y	5	21	GG
	GEO 507	Seminar/Hydrology Seminar	McDonnell (FERM)	1	Y	2	2	GG
	GEO 532	Applied Geomorphology	Lancaster	3	Y	6	14	GG
	GEO 597	Field Mapping of Ore Deposits	Dilles	3	N	~	3	GG
	GEO 622	Igneous Petrology	Grunder	3	N	~	6	GG
	GEO 691	Mass & Heat Transport in the Environment	Haggerty	4	N	~	10	GG
Fall 2006	GEO 505 & 605	Reading and Conference	Various	1,16	Y	1	8	GL, GG
	GEO 507	Seminar/Geology Colloquium	Kent	1	Y	4	8	GG
	GEO 507	Seminar/IGERT Colloquium	Jones	1	N	~	10	GL, GG
	GEO 534	Field Geography of Oregon	Wolf	3	N	~	12	GL, GG
	GEO 538	IGERT Boot Camp	Jones	2	N	~	7	GL, GG
	GEO 581	Glacial Geology	Clark	4	Y	4	8	GG
	GEO 599	ST/GEO Analysis	Kent	1,16	Y	~	8	GL, GG
	GEO 694	Topics In Ore Genesis	Dilles	1,3	Y	~	7	GG
	GEO 561	Geology of Earthquakes	Meigs	3	Y	7	10	GG

Term offered	Course	Title	Instructor	Credit	Slash	U-grad enrollment	Grad enrollment	Program
Winter 2007	GEO 505 & 605	Reading and Conference	Various	1,16	N	~	12	GL, GG
	GEO 507	Seminar/Geovisualization	Wright	1	Y	11	20	GL, GG
	GEO 507	Seminar/IGERT Colloquium	Jones	1	N	~	7	GL, GG
	GEO 507	Seminar/Volcano Plutonic	de Silva	1	N	~	6	GG
	GEO 514	Groundwater Hydraulics	Istok (CE)	3	N	~	3	GG
	GEO 518	Geoscience Communication	Nielsen	3	N	~	23	GL, GG
	GEO 530	Geochemistry	Kent	3	Y	5	6	GG
	GEO 533	Coastal Geomorphology	Ruggiero	3	Y	1	9	GG
	GEO 586	Quaternary Paleoclimatology	Brook	3	Y	7	7	GG
	GEO 593	Topics In Quaternary Geology	Clark	2	N	~	1	GG
	GEO 505	Reading and Conference/The Pyrenees Trip	Meigs	1,16	Y	9	4	GG
	GEO 505	Reading and Conference/Trace Elements	Kent	1,16	N	~	3	GG
	Spring 2007	GEO 505 & 605	Reading and Conference	Various	1,16	N	~	5
GEO 507		Seminar/Geology Colloquium	Kent	1	Y	2	10	GG
GEO 507		Seminar/IGERT Colloquium	Jones	1	N	~	8	GL, GG
GEO 527		Volcanology	de Silva	4	N	~	9	GG
GEO 532		Applied Geomorphology	Lancaster	3	Y	5	8	GG
GEO 563		Geophysics and Tectonics	Harris	4	N	~	3	GG
GEO 564		Geoscience Interpretation	Lillie	4	Y	9	10	GL, GG
GEO 597		Field Mapping of Ore Deposits	Dilles	3	Y	1	3	GG
Fall 2007	GEO 505 & 605	Reading and Conference	Various	1,16	N	~	11	GL, GG
	GEO 507	Seminar/Geology Colloquium	Lancaster	1	Y	1	8	GG
	GEO 507	Seminar/IGERT Colloquium	Jones	1	N	~	9	GL, GG
	GEO 512	Igneous Petrology	Kent	4	Y	3	8	GG
	GEO 516	Interpretation of Geologic Maps	Yeats	2	N	~	5	GG
	GEO 534	Field Geography of Oregon	Wolf	3	N	~	14	GL, GG
	GEO 538	IGERT Boot Camp	Jones	2	N	~	7	GL, GG
	GEO 588	Quaternary Stratigraphy of North America	Clark	3	Y	3	3	GG
Winter 2008	GEO 505 & 605	Reading and Conference	Various	1,16	Y	1	10	GL, GG
	GEO 507	Seminar/Earthscope Views	Lillie	1	Y	3	16	GL, GG
	GEO 507	Seminar/IGERT Colloquium	Jones	1	N	~	8	GL, GG
	GEO 514	Groundwater Hydraulics	Huber (CE)	3	N	~	2	GG
	GEO 518	Proseminar: Geoscience Communication	Nielsen	3	N	~	17	GL, GG
	GEO 530	Geochemistry	Kent	3	Y	15	2	GG
	GEO 540	Economic Geology	Dilles	4	Y	8	4	GG
	GEO 582	Geomorphology of Forests and Streams	Lancaster	3	N	~	5	GG
	GEO 583	Snow Hydrology	Nolin	3	Y	11	13	GG
	GEO 633	Geochronology & Isotope Geology	Graham (COAS)	3	N	~	10	GG

Term offered	Course	Title	Instructor	Credit	Slash	U-grad enrollment	Grad enrollment	Program
Spring 2008	GEO 505 & 605	Reading and Conference	Various	1,16	Y	1	8	GL, GG
	GEO 507	Seminar/Geosciences Seminar	Becker	1	Y	8	6	GG
	GEO 507	Seminar/Geosciences Seminar	Meigs	1	Y	1	8	GG
	GEO 507	Seminar/IGERT Colloquium	Jones	1	N	~	8	GL, GG
	GEO 527	Volcanology	de Silva	4	N	~	5	GG
	GEO 532	Applied Geomorphology	Lancaster	3	Y	3	7	GG
	GEO 597	Field Mapping of Ore Deposits	Dilles	3	Y	1	1	GG
	GEO 622	Igneous Petrology	Grunder	3	N	~	8	GG
	GEO 691	Mass & Heat Transport in the Environment	Haggerty	4	N	~	6	GG
Fall 2008	GEO 505 & 605	Reading and Conference	Various	1,16	N	~	11	GL, GG
	GEO 507	Seminar/Geology Colloquium	Ruggiero	1	Y	5	10	GG
	GEO 507	Seminar/IGERT Colloquium	Jones	1	N	~	3	GL, GG
	GEO 534	Field Geography of Oregon	Wolf	3	N	~	13	GL, GG
	GEO 538	IGERT Boot Camp	Jones	2	N	~	8	GL, GG
	GEO 581	Glacial Geology	Clark	4	Y	14	12	GG
Winter 2009	GEO 505 & 605	Reading and Conference	Various	1,16	N	~	9	GL, GG
	GEO 507	Seminar/Global Climate Change	Clark	1	Y	15	30	GL, GG
	GEO 507	Seminar/IGERT Colloquium	Hoffman	1	N	~	7	GL, GG
	GEO 514	Groundwater Hydraulics	Istok (CE)	3	N	~	1	GG
	GEO 516	Interpretation of Geologic Maps	Yeats	2	N	~	6	GG
	GEO 518	Proseminar: Geoscience Communication	Haggerty	3	N	~	21	GL, GG
	GEO 530	Geochemistry	Kent	3	Y	10	4	GG
	GEO 533	Coastal Geomorphology	Ruggiero	3	Y	3	10	GG
	GEO 586	Quaternary Paleoclimatology	Brook	3	Y	16	7	GG
	GEO 599	ST/Geochemical Analysis Techniques	Kent	1,16	N	~	9	GG
Spring 2009	GEO 505 & 605	Reading and Conference	Various	1,16	N	~	8	GL, GG
	GEO 507	Seminar	Yalcin	1	Y	5	9	GL, GG
	GEO 507	Seminar/IGERT Colloquium	Hoffman	1	N	~	3	GL, GG
	GEO 518	Geoscience Communication	Nielsen	3	N	~	2	GL, GG
	GEO 532	Applied Geomorphology	Lancaster	3	N	~	9	GG
	GEO 563	Geophysics and Tectonics	Harris	4	N	~	5	GG
	GEO 564	Geoscience Interpretation	Lillie	4	Y	4	2	GL, GG
	GEO 597	Field Mapping of Ore Deposits	Dilles	3	N	~	2	GG
	GEO 599	ST/Gas Transport In Firn..	Brook	1,16	N	~	3	GG
	GEO 699	ST/Mechanics of Earthquakes	Meigs	1,16	N	~	3	GG
	GEO 561	Geology of Earthquakes	Meigs	3	Y	9	6	GG
Fall 2009	GEO 505 & 605	Reading and Conference	Various	1,16	N	~	5	GL, GG
	GEO 507	Seminar/Geology Colloquium	Brook	1	Y	4	8	GG
	GEO 507	Seminar/IGERT Colloquium	Jones	1	N	~	14	GL, GG
	GEO 512	Igneous Petrology	Nielsen	4	Y	2	7	GG
	GEO 534	Field Geography of Oregon	Wolf	3	N	~	12	GL, GG

Term offered	Course	Title	Instructor	Credit	Slash	U-grad enrollment	Grad enrollment	Program	
Winter 2010	GEO 505 & 605	Reading and Conference	Various	1,16	N	~	4	GL, GG	
	GEO 507	Seminar/Graduate Seminar	Grunder	1	N	~	5	GL, GG	
	GEO 507	Seminar/IGERT Colloquium	Jones	1	N	~	9	GL, GG	
	GEO 514	Groundwater Hydraulics	Istok (CE)	3	N	~	2	GG	
	GEO 518	Proseminar: Geoscience Communication	Nielsen	3	N	~	19	GL, GG	
	GEO 530	Geochemistry	Dilles	3	Y	18	3	GG	
	GEO 540	Economic Geology	Dilles	4	Y	4	3	GG	
	GEO 582	Geomorphology of Forests and Streams	Lancaster	3	N	~	12	GG	
	GEO 599	ST/Biogeochemistry	Brook	1,16	N	~	5	GG	
	GEO 599	ST/Planetary Geology	de Silva	1,16	Y	6	4	GG	
	GEO 633	Geochronology & Isotope Geology	Koppers (COAS)	3	N	~	10	GG	
	Spring 2010	GEO 505 & 605	Reading and Conference	Various	1,16	N	~	3	GL, GG
		GEO 507	Seminar/Geosciences Seminar	de Silva	1	Y	10	14	GG
GEO 507		Seminar/Graduate Seminar	Various	1	N	~	10	GL, GG	
GEO 507		Seminar/IGERT Colloquium	Jones	1	N	~	9	GL, GG	
GEO 527		Volcanology	de Silva	4	Y	4	7	GG	
GEO 532		Applied Geomorphology	Lancaster	3	Y	10	6	GG	
GEO 563		Geophysics and Tectonics	Harris	4	Y	17	4	GG	
GEO 597		Field Mapping of Ore Deposits	Dilles	3	Y	1	4	GG	
GEO 622		Igneous Petrology	Grunder	3	N	~	8	GG	
GEO 691		Mass & Heat Transport in the Environment	Haggerty	4	N	~	8	GG	

9.1.2 Geography Seminar Series (GEO 407/507), Fall 2007 to Spring 2010

GEO 407/507: Seminar in Geographic Research

Fall 2007 (typical fall syllabus)

Tuesdays, 4:00-5:00 p.m., Wilkinson 108

1 credit

Instructor: Dawn Wright (dawn@dusk.geo.orst.edu). Office hours TW 1:30-2:30 in Wilkinson 114)

Overview: This seminar will provide an opportunity for you to get to know several of the geography program faculty, and to hear about their current research projects and other activities. As a result of this seminar series, you may find that there is a course that you would like to take from one of these faculty members, a research direction that you'd like to pursue with them, or grad students may want to approach them about serving on your graduate committee. Please be engaged listeners, and feel free to ask questions either during or after the presentations.

IMPORTANT: In order to receive credit for this course, you **must** attend 9 out of the 10 seminars. There will be an attendance form passed out each week and on that form you **must** write down at least 1 question or comment for the speaker.

What if I have to miss more than one presentation? Please visit the speaker during one of their office hours in order to get to know a little about them and their work. Then submit to the instructor a 1-page summary of what you learned during the visit. This summary must be submitted within 2 weeks of the date that you missed the presentation.

SCHEDULE:

September 25

Dawn Wright, OSU Geosciences

Geographic Information Science at OSU: From the Treetops to the Deep Ocean Floor

October 2

Denis White, Corvallis EPA Lab & OSU Geosciences

Regional Geography Lives: Epistemologies of Alternative Approaches to Developing Ecological Regions

October 9

Julia Jones, OSU Geosciences

The Landscape Ecology of Water in the Pacific Northwest

October 16

Ron Doel, OSU Geosciences and OSU History

Reconstructing Historical Landscapes (Extending the Baselines)

October 23

Nancee Hunter, Oregon Sea Grant, OSU Hatfield Marine Science Center

Giving Kids the Power of Global Knowledge

October 30

Jon Kimerling, OSU Geosciences

Mathematics and Beauty in Map Creation

November 6

Larry Becker, OSU Geosciences

Tight Genes: Mapping African Rice and Local Community Food Sovereignty

November 13

Aaron Wolf, OSU Geosciences

Shared Water Resources: Conflict, Cooperation, and Kabbalah

November 20

Hannah Gosnell, OSU Geosciences

When Ranching is for the Birds: Drivers and Impacts of Rural Land Use Change in the American West

November 27

Anne Nolin, OSU Geosciences

Snow, Glaciers and Global Warming

GEO 407/507: Seminar in Geosciences Research

(joint between geography & geology)

Winter 2007 Syllabus

Geovisualization: A Window to Earth Surface, Structure, and System

Gilfillan Auditorium, Tuesdays, 4:00-5:00 p.m.

(Refreshments and conversation 3:45 - 4:00 p.m.)

Winter 2007 Instructor: [Dawn Wright](mailto:dawn@dusk.geo.orst.edu), dawn@dusk.geo.orst.edu, 737-1229

Sign up for this course using CRN 28265 for GEO 407 or CRN 21785 for GEO 507 (1 credit).

How to PASS GEO 407/507

The purpose of this course is to give you broader exposure to cutting-edge research in the geosciences, under the specific theme of [geovisualization](#). One of the best ways to do this, of course, is to **LISTEN**. So in order to pass the course you need to *attend at least 8 out of the 10 sessions*. Always feel free to **PARTICIPATE** by asking questions of the speaker or offering comments. Another important part of "Geosciences Research" is to "know thy speaker." Oftentimes in the "real world" of academia we challenge or inspire ourselves by reading the works of others who are publishing in a different part of our field, or in a different field altogether. We are especially prompted to do so if introduced to the person's work in a departmental seminar or at a conference. This may even lead us to a new direction of inquiry or a brand new research specialty. To give you a sense of this process, you will also need to do the following in order to pass the course:

√ **CHOOSE** one talk that is particularly interesting to you.

√ **FIND** a journal article, technical report, web site, etc. that the *speaker* has produced (more than likely it will be related to their talk). If you have difficulty locating the speaker's work in the library or on the web, go the Interlibrary Loan route. Or feel free to contact the speaker directly and ask him/her to send you a reprint. This is done all the time between academic colleagues. If nothing else, the speaker will be flattered by your continued interest in his/her work.

√ **READ** the paper, web page, etc. and then **WRITE** a one-page (single-spaced) reaction paper (i.e., critique/assessment) of the person's presentation *within the context* of their written work that you've read outside of class. So in a sense it is a reaction to both the presentation *and* the outside work. This should be more than just an impersonal abstract or review. Feel free to share your own reactions/opinions.

Here is an example of an EXCELLENT reaction paper (link to

<http://dusk.geo.orst.edu/marcia.html>)

√ **TURN IN** your paper to me before the end of the quarter. Emailing the text is fine (dawn-at-dusk.geo.orst.edu).

Schedule

The OSU Department of Geosciences, with the generous support of the OSU Foundation's [L.L. Stewart Faculty Development Fund](#), the OSU [IGERT Doctoral Program in Ecosystem Informatics](#), and [Oregon Space Grant](#), is pleased to present the following line-up of distinguished speakers:

January 9th *Dr. Mark Harrower*, Department of Geography, University of Wisconsin-Madison "Visualizing Geographic Processes and the Role of Visualization in Scientific Research" [web profile](#) | [abstract & bio](#) | [presentation slides](#) (97 Mb pdf) [demos](#) (255 Mb zip, latest version of QuickTime recommended)

January 16th *Mr. Tim Holt*, Department of Forest Science, OSU "Games Get Serious: Computer Games for Visualization and More" [bio](#) | [presentation slides](#) | [audio podcast](#) (48 Mb mp3) | [GNNViz](#) | [OSU press release](#)

January 23rd *Dr. Rob Edsall*, School of Geographical Sciences, Arizona State University "The Human Activity of Visualization: Cultural and Psychological Factors in Representation of Geographic Phenomena" [web profile](#) | [abstract](#) | [presentation slides](#) | [audio podcast](#) (90 Mb mp3)

January 30th *Dr. Mike Bailey*, OSU School of Electrical Engineering and Computer Science "3-D Scientific Visualization" [web profile](#) | [presentation slides](#) | [audio podcast](#) (56 Mb mp3)

February 6th *Dr. Mark Gahegan*, Department of Geography and GeoVISTA Center, Penn State University "Visualization, Analytics and Spatial Decision Support in the Geosciences Network (GEON)" [web profile](#) | [presentation slides](#) | [audio podcast](#) (87 Mb mp3)

February 13th *Dr. May Yuan*, College of Atmospheric & Geographic Sciences, University of Oklahoma "Temporal GIS for Meteorological Applications" [web profile](#) | [presentation w/animations](#) (6.6 Mb PPT) | [audio podcast](#) (29.3 Mb mp3, second half of talk lost due to technical glitch) [2006 workshop](#)

February 20th *Mr. Kirk Goldsberry*, doctoral candidate, Department of Geography, UC-Santa Barbara "Real-time Traffic Maps for the Internet and Mobile Devices" [web profile](#) | [presentation](#) (4.2 Mb PPS) | [audio podcast](#) (88.6 Mb mp3)

February 27th *Ms. Julie Dilleuth*, IGERT doctoral candidate in Interactive Digital Media, UC-Santa Barbara "Geovisualization of News Stories" [web profile](#) | [presentation slides](#) | [Animation 1](#) | [Animation 2](#) [audio podcast](#) (75.4 Mb mp3)

March 6th *Dr. Randy Keller*, School of Geology and Geophysics, University of Oklahoma "Constructing, Editing, and Visualizing Integrated Models of Earth Structure: A View to the Future" [web profile 1](#) | [web profile 2](#) | [presentation slides](#) (52.7 Mb pdf) [audio podcast](#) (80 Mb mp3)

March 13th *Dr. Bob Crippen*, NASA Jet Propulsion Laboratory, Pasadena, CA "NASA Shuttle Radar Topography Mission Visualization of Earth Landscapes" [web profile 1](#) | [web profile 2](#) [presentation slides](#) (WARNING! 226 Mb file! Stereo glasses helpful for many of the images) [USGS Data Access](#) | [NASA JPL STRM Information](#) | [Visualizations](#) [audio podcast](#) (85 Mb mp3)

Geography Seminar Series

Fall 2008

Date Speaker Title

September 30

Julia Jones, Oregon State University, Dept. of Geosciences
The landscape ecology of water in the Pacific Northwest

October 7

Aaron Wolf, Oregon State University, Dept. of Geosciences
Conflict and cooperation over shared waters

October 14

Denis White, US EPA, Courtesy Faculty, Oregon State University, Dept. of Geosciences
Environmental science research at EPA: a geographer's potpourri

October 21

Peter Ruggiero, Oregon State University, Dept. of Geosciences
Morphodynamics of Pacific Northwest beaches

October 28

Anne Nolin, Oregon State University, Dept. of Geosciences
Climate change impacts snow, glaciers and water resources in the Pacific Northwest

November 4

Gordon Grant, PNW Research Station, US Forest Service
Of rivers, wine and song: some interesting problems in fluvial geomorphology

November 11

Larry Becker, Oregon State University, Dept. of Geosciences
The political ecology of rice in West Africa

November 18

Cub Kahn, Oregon State University, Dept. of Geosciences
Field photo techniques: SW China and beyond

November 25

Jon Kimerling, Oregon State University, Dept. of Geosciences
Dotting the dot map--revisited

December 2

Hannah Gosnell, Oregon State University, Dept. of Geosciences
Exploring the geographies of agricultural landscape change in the American west

Geography Seminar Series
Winter 2008 Schedule unavailable

Geography Seminar Series
Spring 2008

Date Speaker Title

April 8

Peter Walker

University of Oregon, Dept. of Geography

"New vision or end of the trail? Oregon's Measures 37 and 49 as ideological process."

Friday, April 18

JunJie Wu

Oregon State University, Dept. of Agriculture & Resource Economics

"Environmental amenities and urban spatial structures."

April 29

Thomas Harvey and Martha Works, Portland State University

Dept. of Geography

"Urban growth controls and the Galactic City: redefining a nearly ubiquitous metropolitan landscape."

and

"Can the way we eat change metropolitan agriculture?"

May 6

Mike Hibbard

University of Oregon, Dept. of Planning, Public Policy and Management

"The way forward: Strategic economic development in Kake, Alaska."

May 13

Rob Ribe, University of Oregon, Director, Institute for a Sustainable Environment

"Federal landscapes of the spotted owl: Public perceptions of changing forest plans and practices with notes on rural-urban differences."

Friday, May 23

Vivek Shandas, Portland State University, Dept. of Urban Studies and Planning

"Ecological Impacts of Human Choice: Preferences for riparian vegetation and water consumption along an urban to suburban gradient."

June 3

Roger Hammer, Oregon State University, Dept. of Sociology

"Rural-to-Urban and Urban-to- Rural Migration in Oregon."

Geography Seminar Series

Fall 2009

Date Speaker Title

Oct 6 – Julia Jones, Professor, Department of Geosciences: “**Forests, Climate, and Water Supply in Cascadia and Patagonia**”

Oct 13 – Dawn Wright, Professor & Director of Geography graduate program, Department of Geosciences: “**Cracks, Creatures, and Creative GIS**”

Oct 20 – Hannah Gosnell, Assistant Professor, Department of Geosciences: “Socioecological Resiliency and Rural Communities in the American West: Challenges and Opportunities”

Oct 27 – Aaron Wolf, Professor & Chair, Department of Geosciences: “**Water Conflicts and Cooperation**”

Nov 3 – Sarah Shafer, Research Scientist, US Geological Survey: “**Modeling Vegetation Responses to Future Climate**”

Nov 10 - Larry Becker, Associate Professor, Department of Geosciences: “Are Crop Diversity and Cultural Identity Linked Among the Baoule of Central Cote d'Ivoire?”

Nov 17 – Steve Hostetler, Research Scientist, US Geological Survey: “**Dynamical Downscaling of Climate for Global Change Applications**”

Nov 24 – Stephen Lancaster, Associate Professor, Department of Geosciences: “Heat Budget in the Hyporheic Zone on the Willamette River - Implications for Aquatic Habitat”

Dec 1 – Cub Kahn, Instructor, Department of Geosciences: “**Field Photo Techniques: Southwest China and Beyond**”

Geosciences Seminar Series

Winter 2010, Spring 2010

Joint Geology/Geography Seminars

(see schedules below in Geology Section)

Geosciences Seminar Series

Winter 2011

Joint Geology/Geography Seminars focusing on Alumni

(“**Blast from the Past**”)

Date Speaker Title

January 6 – Bob Lillie, OSU Department of Geosciences

Interpretive Methods: Connecting the Public to the Geology of National Parks

5:15 PM - Informal career path discussion, Dawes House, includes pizza

January 13 – Daniel Wise, USGS, Portland (12:00 Noon in Gilfillan Auditorium)

Relating Surface-Water Nutrients in the Pacific Northwest to Watershed Attributes—An Application of the USGS SPARROW Mode

1:15 PM - Informal career path discussion, Dawes House, includes lunch

January 20 – Deborah Reusser, EPA/Hatfield Marine Science Center
Ecoinformatics: Invasive Species in Marine and Estuarine Ecosystems

5:15 PM – Informal career path discussion, Dawes House, includes pizza

January 27 – Brandon Browne, California State University, Fullerton
Quaternary Eruptions of Basalt near Mammoth Mountain: Insights into Ongoing Volcanic Unrest and Eruption Forecasting

2:30 PM – Informal career path discussion, Dawes House

February 3 – Bob Houston, DOGAMI, Portland
Oregon's Recent Drilling Activities for Coal Bed Methane in Coos County and Developing an Engineering Geothermal System at Newberry Volcano

5:15 PM – Informal career path discussion, Dawes House, includes pizza

February 10 – Janine Castro, U.S. Fish and Wildlife
From Geosciences to Stream Restoration—A Meander through the Science and Policy of Northwest Rivers

2:30 PM – Informal career path discussion, Dawes House

February 17 – Jenda Johnson, Outreach Consultant, Portland
From Geologic Interpretation to Interpreting Geology

5:15 PM – Informal career path discussion, Dawes House, includes pizza

February 24 – Ellen Bishop, Paleolands Institute
The Earth in Image and Story: Connecting the Public with the Geological Sciences

5:15 PM – Informal career path discussion, Dawes House, includes pizza

March 3 – Sharon Kelly, HDR Engineering
Adventures in Transportation Planning in Portland

5:15 PM – Informal career path discussion, Dawes House, includes refreshments

Geology Seminar, Fall 2007

27 Sept.- Stephen Lancaster, OSU

9.1.3 Geology Seminar Series (GEO 407/507), Fall 2007 to Spring 2010

Fall, 2007

27 Sept. Stephen Lancaster, Geosciences

Sediment Storage and Evacuation in Headwater Valleys at the Transition Between Debris-Flow and Fluvial Processes

- 3 Oct. - (Wed.), 8:00 pm, LaSells Stewart Center Luis Chiappe, Natural History Museum of Los Angeles County
2007 Condon Lecture: An Intimate Look at the Reproductive Behavior of Giant Dinosaurs
- 4 Oct. - ., noon Luis Chiappe, Natural History Museum of Los Angeles County
The Closest Relatives of Birds
- 4 Oct. - (4 pm) Isabelle Chambefort, OSUGeosciences
Volcanic Environment, Hydrothermal System and Tectonic History of a Late Cretaceous High-Sulfidation Epithermal Deposit, the Example of the Chelopech Gold Mine, Bulgaria. A Pluridisciplinary Study.
- 11 Oct. - Roy Haggerty, OSUGeosciences
Development of a Smart Tracer for Hydrology: Measuring Biological Activity and Water-Sediment Interaction with Resazurin
- 18 Oct.- Gordon Grant, USFS PNW Research Lab (courtesy Geosciences)
Geologically Mediated Response of Streamflow to Climate Warming in the Western US
- 25 Oct. - Jinho Ahn, OSUGeosciences
Paleoclimate Inferred from Atmospheric CO₂ Trapped in Antarctic Ice Cores
- 1 Nov. - Student poster session for Board of Advisors meeting
- 8 Nov. - Laura Pioli, University of Oregon
1943-1952 Eruption of Parícutin, Central Mexico: Separated vs. Homogenous Two-Phase Flow in Violent Strombolian Activity
- 15 Nov. - Chris Madden, OSUGeosciences
Tectonic Geomorphology and Paleoseismology of Faults in Central Panama
- 29 Nov.- Perrine Paquereau-Lebti, OSUGeosciences
Ignimbritic Volcanism in the Arequipa, Southern Peru

Geology Seminar, Spring 2007, 2008

- April 3 – Martin Streck, Portland State
“The complex assembly history of an unusual magma: High-magnesian andesite from Mt. Shasta”
- April 10 – Loren Davis, Oregon State University
“Searching for the First Americans along the eastern Pacific margin: Geoarchaeological problems and prospects”
- April 17 – Jeff Lee, Central Washington University
“The North Himalayan Gneiss Domes, Southern Tibet: A Window into Middle Crustal Processes During Continental Collision”
- April 24 - Rebecca Bendick, University of Montana
“Coseismic and postseismic displacements from the 8 October 2005 Kashmir earthquake”

May 1 – Jon Major, USGS, CVO
“Rapid fluvial response to removal of Marmot Dam, Sandy River--the first winter's results”

May 8 – Andrew Fountain – Portland State University

9.2 “Glaciers and Glacier Change of the American West”

May 15 – Terry Toedtemeier – Portland Art Museum
“Minus Tide: Photographs of inter tidal features on basalt headlands of the northern Oregon coast.”

May 22 – John Clague – Simon Fraser University and GSA Jahns Lecturer.

9.3 “The Last Great Ice Sheet in Western Canada”

May 29 – Uri ten Brink – USGS, Woods Hole, IRIS Distinguished Lecturer
“Peace and Science in the Middle East ”

June 5 – Ray Weldon – University of Oregon
“Reanalysis of the Oregon Cascadia uplift data and a new model for locking on the subduction zone”

Geology Seminar, Fall 2008

October 2 • Robert C. Witter, Oregon Dept. of Geology and Mineral Industries
Reevaluating Oregon tsunami hazards: Summary of a new Tsunami Hazard Assessment at Cannon Beach, Oregon

October 9 • Hilary F. Stockdon, US Geological Survey, St. Petersburg, Florida
Forecasting coastal morphologic response to extreme storms

October 16 • Jonathan A. Warrick, US Geological Survey, Santa Cruz, California
Dam removal on the Elwha River: The pending restoration of sediment to a river and its delta

October 23 • Guy Gelfenbaum, US Geological Survey, Menlo Park, California
Tsunami erosion and deposition: Lessons from Sumatra

October 30 • Ray E. Wells, US Geological Survey, Menlo Park, California
Deformation of Cascadia - a geological and geophysical view of interactions between subduction, simple shear, and rifting

November 6 • Curt D. Peterson, Portland State University
Net littoral drift, West Coast, USA

November 13 • George Kaminsky, Washington Dept. of Ecology
The role of the shoreface in coastal evolution: Observations from the Columbia River littoral cell

November 20 • Chris Goldfinger, Oregon State University, COAS
Cascadia great earthquakes: Riddle of the sands

November 27 • Thanksgiving Holiday, No Seminar

December 4 • Peter Ruggiero, Oregon State University
Is the intensifying wave climate of the U.S. Pacific Northwest of more concern than sea level rise?

December 11 • Dr. Stephen Sparks, Department of Earth Sciences, University of Bristol, UK
GEORGE MOORE LECTURE: The dynamics of kimberlite eruptions

Spring 2009 Geology Seminar, Fall 2009 Series

1-Oct Jun Yin OSU
Experimental investigation of the effect of transient groundwater flow on U(VI) transport

8-Oct Shan de Silva OSU
Supervolcano Forensics in the Andes

15-Oct Susan Solomon NOAA
Moore Lecture: Ozone Depletion: The Story of a Successful Global Environmental Agreement, and Its Relevance for Climate Change

22-Oct Peter Cook CSIRO Land and Water
Darcy Lecture: Environmental Tracers in Modern Hydrogeology: Reducing Uncertainty in Ground Water Flow Estimation

29-Oct Ian Madin DOGAMI
Lidar in Oregon, New data promises exciting discoveries and lots of fun

5-Nov Doug Kennett U of O Anthropology
The Younger Dryas Boundary Impact Hypothesis and North American Megafaunal Extinction

12-Nov Julia Jones OSU
Chaiten Volcano, southern Chile: eruption chronology and geomorphic, ecological, and social impacts

19-Nov Qusheng Jin U of O Geology
Groundwater Arsenic contamination in Southern Willamette Basin

26-Nov Thanksgiving No Talk

3-Dec Phil Mote OSU OCCRI
New Ways of Imagining Future Climate

Geology Seminar, Spring 2009 Evolution of Magmatic Systems at Subduction Zones

April 2 Ilya Bindeman, University of Oregon
Silicic magma genesis and eruption in glaciated areas: insights from Kamchatka, Yellowstone, and elsewhere

- April 9 Peter Lipman, U.S. Geological Survey, Menlo Park
Subduction-related magmatism in the eastern Cordillera: The Mid-Tertiary Southern Rocky Mountain Volcanic Field and associated caldera-related granitic intrusions, in comparison to the Sierra Madre Occidental and the Central Andes
- April 16 Anthony Koppers, Oregon State University, COAS
Generating today's continental crust through whole earth geochemical box modeling
- April 23 Paul Wallace, University of Oregon
The role of water in subduction zone magmatism: New insights from melt inclusions & geodynamic models for central Mexico
- April 30 Rick Conrey, Earth and Environmental Sciences, Washington State University
Propagating rift in the Cascade Range
- May 7 Mark Ghiorso, OFM Research, Inc., and Univ. of Washington
Triggering explosive volcanic eruptions
- May 14 Kathy Cashman, University of Oregon
Physical controls on shallow magma evolution: the eruption of Parícutin Volcano, Mexico, 1943-1952
- May 21 Scott Patterson, University of Southern California
Unraveling the growth and evolution of magma chambers: the Tuolumne Batholith experiment
- May 28 John Pallister, U.S. Geological Survey, Vancouver
 International crisis response, infrastructure missions and volcano science... Recent experiences from the Volcano Disaster Assistance Program (VDAP)
- June 4 Adam Kent, Oregon State University
High resolution crystal records from Mount Hood and Mount St Helens: The devils in the detail
- Fall 2009
- 1-Oct Jun Yin OSU
Experimental investigation of the effect of transient groundwater flow on U(VI) transport
- 8-Oct Shan de Silva OSU
Supervolcano Forensics in the Andes
- 15-Oct Susan Solomon NOAA
Moore Lecture: Ozone Depletion: The Story of a Successful Global Environmental Agreement, and Its Relevance for Climate Change

- 22-Oct Peter Cook CSIRO Land and Water
Darcy Lecture: Environmental Tracers in Modern Hydrogeology: Reducing Uncertainty in Ground Water Flow Estimation
- 29-Oct Ian Madin DOGAMI
Lidar in Oregon, New data promises exciting discoveries and lots of fun
- 5-Nov Doug Kennett U of O Anthropology
The Younger Dryas Boundary Impact Hypothesis and North American Megafaunal Extinction
- 12-Nov Julia Jones OSU
Chaiten Volcano, southern Chile: eruption chronology and geomorphic, ecological, and social impacts
- 19-Nov Qusheng Jin U of O Geology
Groundwater Arsenic contamination in Southern Willamette Basin
- 26-Nov Thanksgiving No Talk
- 3-Dec Phil Mote OSU OCCRI
New Ways of Imagining Future Climate

Winter 2010

Geosciences Seminar (Joint Geology and Geography) Global Climate Change: Detection, Attribution, Impacts, Adaptation, Mitigation, and Litigation

Tuesday, January 13

B.D. Santer, Lawrence Livermore National Laboratory

"How Do We Know That Human Activities Have Influenced Global Climate?"

Also: "Incorporating Model Quality Information in Detection and Attribution Studies: One Model, One Vote?"

Tuesday, January 20

David Battisti, University of Washington

"Global Warming and Global Food Production"

Also: "A New Model for Dansgaard-Oeschger Events"

Tuesday, January 27

Dan Schrag, Harvard University

Frontiers talk: "Confronting the Climate-Energy Challenge"

Also: "Geochemical Constraints on Methanogenesis, and its Role in Climate History"

Tuesday, February 3

Heather Holsinger, Pew Center on Global Climate Change

"U.S. Climate Policy: A brave new world?"

Tuesday, February 10

Bette Otto-Bleisner, National Center for Atmospheric Research

"Polar Warmth, Ice Sheet Stability and Sea-level Rise: Past Perspectives"

Also: "Modeling the Last Deglaciation: Trace-21000 simulations"

Tuesday, February 17

Roger Pielke, Jr., University of Colorado

"Uncomfortable Knowledge About Climate Policy"

Friday, February 27

Eric Rignot, NASA and University of California, Irvine

"Satellite Studies of the Contribution to Sea Level Rise from Greenland and Antarctica Ice Dynamics"

Monday, March 2

Steve Susman, Susman Godfrey LLP

"Climate Change Litigation: The Courthouse Effect"

Wednesday, March 11

Brian Fagan, University of California, Santa Barbara

"The Great Warming, or the Story of the Silent Elephant in the Room"

Spring 2010

Geosciences Seminar (Joint Geology and Geography)

Earth System Science for a Healthy Planet

April 1, 2010

Hannah Gosnell, Department of Geosciences, OSU

Peace on the River? Toward Social-Ecological Restoration in the Klamath Basin

April 8, 2010

Tuba Ozkan Haller, College of Oceanic and Atmospheric Sciences, OSU

Rip Currents in the Surf Zone

April 15, 2010

Lucy Jarosz, Department of Geography, University of Washington

Nourishing Women: Toward a Feminist Political Ecology of Community Supported Agriculture

April 22, 2010

Julie Pett -Ridge, Department of Crop and Soil Science, OSU

Impacts of Dust Deposition on Terrestrial Nutrient Cycling

April 29, 2010

Susan Carozza, Department of Public Health, OSU

GIS in Epidemiology: Agricultural Pesticides and Risk of Childhood Cancers

May 6, 2010

Nadine Barlow, Department of Physics, Northern Arizona University

Planetary Potholes--Impact Cratering on Earth and Throughout the Solar Systems

May 13, 2010

Kelly Falkner, College of Oceanic and Atmospheric Sciences, OSU

Ocean-ice Sheet Interactions in Petermann Fjord, Northern Greenland

May 20, 2010

Cynthia Gardner, Cascade Volcano Observatory, Vancouver, WA
Mt. St. Helens 30 Years On: The Legacy of the 1980 Unrest and Eruption

May 27, 2010

Patricia Gregg, Department of Geosciences, OSU
Modeling the Melting Mantle at Mid-Ocean Ridges

June 3, 2010

Sherry Cady, Department of Geology, Portland State University
Biogeochemical Interactions between Microorganisms and the Environment

9.4 Geography Graduate Student Performance

9.4.1 Jeremy Adams, MS, Geography, 2008 (Jones)

[191] Adams completed a (non-thesis) project entitled, “Soil Transport on a Forested Hillslope: Quantifying Baseline Rates of Surface Erosion, Jim’s Creek, Willamette National Forest, Oregon.” Jeremy worked for the US Forest Service during his degree and continues to work for the USFS.

9.4.2 Arthur, Aaron, M.S., Geography (Jones)

[192] Aaron , 2007 Arthur’s thesis was entitled, *Thirty-five years of forest succession in southwest Oregon: Vegetation response to three distinct logging treatments*. Aaron worked for the BLM prior to his degree and currently does environmental consulting in California.

Scholarly Presentations

Reawakening a forest harvest and streamflow experiment: Coyote Creek, Oregon. Aaron Arthur, Tim Perry, **J.A. Jones**. Association of American Geographers, San Francisco, April, 2007.

9.4.3 *Hatcher, Kendra, M.S. (Jones)*

9.4.4 *William Clark, MS, Geography, in progress (Jones)*

[193] Clark is conducting thesis research on the spatial patterns of phytophthora fungal infection of cedar in western Oregon.

9.4.5 *Michele Dailey, MS, Geography, 2007 (Jones)*

[194] Dailey's thesis was entitled *Meadow Classification in the Willamette National Forest and Conifer Encroachment Patterns in the Chucksney-Grasshopper Meadow Complex, Western Cascade Range, Oregon*. Michele currently works for the Columbia River Commission.

9.4.6 *Jay Frentress, MS, Water Resources Science, 2010 (Jones)*

[195] Frentress was advised jointly by Julia Jones and Kate Lajtha (Botany), and his thesis was entitled *Stream nitrate, chloride, and SUVA response to land use during winter baseflow conditions in sub-basins of the Willamette River, Oregon*. Jay is currently a PhD student in Luxembourg.

[196]

[197] Kendra , Geography, in progressKendra, scheduled to complete her MS thesis in 2011. Her research addresses climate and forest regeneration effects on long-term trends in streamflow forested watersheds in western Oregon, and a comparative study of long-term climate and streamflow trends from LTER sites in the US.

Scholarly Presentations

Long-term trends in climate and hydrology at LTER sites. LTER Synthesis Working Group, Hydrologic effects from ecosystem responses to climate change and land use change, Nov 4-7, 2010, Sevilleta National Wildlife Refuge

Hydrologic similarity among long-term ecological research sites: responses to climate change. **J.A. Jones**, K. Hatcher. European Geophysical Union, Vienna, 2011.

9.4.7 Steven Highland, Ph.D., Geography, in progress (Jones)

[198] Steven is scheduled to defend in 2011. His PhD research addresses (1) spatial patterns of Native American sites in the central western Cascades, (2) spatio temporal patterns of moth abundance in a steep forested landscape using computer visualization, and (3) moth plant interactions in montane meadows.

Scholarly Presentations

Prehistoric land use strategies, montane meadows, and the ecological implications for current meadow contraction and restoration in the western Cascades, Oregon. Association of American Geographers Annual Meeting, 2008.

Professional Service and Leadership

Session moderator, AAG, 2008.

9.4.8 Tracy Kugler, Ph.D., Geography, in progress (Jones/Santelmann)

[199] Tracy is scheduled to defend in 2011. Her PhD research addresses the evolution of urban form in US cities based on spatially explicit census data since the 1940s, and analysis using machine learning techniques. She has been supported on an NSF IGERT fellowship as part of the Ecosystem Informatics IGERT. Tracy is currently an instructor in geography at Middlebury College.

9.4.9 Michele Lizon, M.S., Geography, in progress (Jones/Wolf)

[200] Michele is scheduled to complete her project in 2011.

9.4.10 *Andrew McFadden, M.S., Geography, 2010 (Jones)*

[201] Andrew completed an MS project entitled, “The effects of stand thinning on soil erosion rates at Jim's Creek in the Willamette National Forest, Oregon.” Andrew worked for USGS and EPA and is seeking employment in Denver.

9.4.11 *Kathleen Moore, M.S., Geography, 2010 (Jones)*

[202] Kathleen completed an MS project entitled, “Trends in streamflow from oldgrowth forested watersheds in the western Cascades.” She is now working on a PhD applying remote sensing analysis to examine the spatial and temporal patterns of vegetation recovery after volcanic eruption around Mount St. Helens, Oregon and Chaiten, Chile.

Awards and Honors

Best Teaching Assistant, Geography, 2008.

Scholarly Presentations

Landscape-scale effects of the 2008 Chaiten (Chile) eruption on vegetation disturbance and regeneration from satellite image analysis. K.M. Moore, **J.A. Jones**, F.J. Swanson, C. Crisafulli. American Geophysical Union Annual Meeting, San Francisco, 2010.

Grants and Contracts

CUAHSI Travel award, \$5000.

9.4.12 *Yarrow Murphy, M.S., Water Resources Engineering, 2009 (Jones)*

[203] Yarrow completed an MS thesis entitled *Stream Channel Stability and Sensitivity to Landscape History and Land Use Changes in Kelley Creek, Portland, Oregon*. She obtained her professional engineer certification and works in stormwater management for the City of Portland.

9.4.13 *Tim Perry, MS, Geography, 2007 (Jones)*

[204] Tim completed an MS thesis entitled *Do Vigorous Young Forests Reduce Streamflow? Results from up to 54 Years of Streamflow Records in Eight Paired-watershed Experiments in the H. J. Andrews and South Umpqua Experimental Forests*. He is currently working as a consultant in energy efficiency in California.

Perry, T.A. and **J.A. Jones**. In prep. Trends in summer lowflows in regenerating forest plantations in the western Cascades, Oregon.

Scholarly Presentations

Summer lowflow deficits after two decades of forest regeneration in the western Cascades, Oregon. Tim Perry and **Julia Jones**. AGU Session H58, The Critical Role of Long-term Watershed and Ecosystem Experimental Networks in Advancing Science. AGU Fall meeting, San Francisco, 2008.

9.4.14 *Vera Pfeiffer, M.S., Geography, in progress (Jones)*

[205] Vera is completing an MS thesis in Geography. She is studying pollen transfer by hummingbirds among fragmented montane meadows in the western Cascades of Oregon. She expects to complete in 2011.

9.4.15 *Janine Rice, Ph.D., Geography, 2009 (Jones)*

[206] Janine completed a dissertation entitled *Forest-Meadow Dynamics in the Central Western Oregon Cascades: Topographic, Biotic, and Environmental Change Effects*. She was supported on an NSF IGERT fellowship as part of the Ecosystem Informatics IGERT.

Rice, J. C. Halpern, J. Antos, **J.A. Jones**. In prep. Spatial and temporal interactions among invading trees in a montane meadow, Cascade Range, Oregon.

9.4.16 *Alexis Smoluk, M.S., Geography, in progress (Jones)*

[207] Alexis is an owl biologist employed by the Forest Service. Her research involves

applying GIS and spatial analysis to examine patterns in spotted owl prey based on analysis of owl pellets collected since 1972 in the HJ Andrews Forest and the spotted owl demography study area in the central western Cascades of Oregon. She is expected to complete her degree in 2011.

9.4.17 Eric Stemmerman, M.S., Geography (Becker/Jones)

[208] Eric completed an MS project entitled, “Wildland-urban interface boundaries: the Influence of national fire plan grants on federal, state and local approaches to hazardous fuels mitigation and management.” He is currently working for the US Forest Service.

9.4.18 Alan Tepley, Ph.D., Geography and Forest Science, 2010 (Jones and Swanson)

[209] Advised by Julia Jones (for the PhD in Geosciences) and Fred Swanson (for the PhD in Forest Science), Alan completed a joint PhD in Geography and Forest Science in 2010, entitled *Age Structure, Developmental Pathways, and Fire Regime Characterization of Douglas-fir/Western Hemlock Forests in the Central Western Cascades of Oregon*. He was supported on an NSF IGERT fellowship as part of the Ecosystem Informatics IGERT. Alan is currently a postdoctoral scholar at the University of Colorado, Boulder, working with Tom Veblen and Cathy Whitlock.

Awards and Honors

USGS NAGT Summer Internship, Menlo Park, CA (supervisor Walter Mooney)

Grants and Contracts

Co-Author USGS EdMap Grant

Scholarly Presentations

Tepley, A.J., F.J. Swanson, and T.A. Spies. 2009. Topographic drivers of mixed-severity fire regime attributes in Douglas-fir forests of the central western Cascade Mountains of

Oregon. 94th Annual Meeting of the Ecological Society of America. Albuquerque, NM. August 2–7. (Presentation)

Tepley, A.J., F.J. Swanson, and T.A. Spies. 2009. Spatial variation in forest age structure and its association with topography in the central western Cascades of Oregon. 7th Annual North American Forest Ecology Workshop. Logan, UT. June 22–29. (Presentation)

Tepley, A.J. 2008. Western spruce budworm outbreak dynamics in the central western Cascades of Oregon since AD 1600. 93rd Annual Meeting of the Ecological Society of America. Milwaukee, WI. August 3–8. (Presentation)

Tepley, A.J., F.J. Swanson, and B.A. Black. 2008. Climatic influences on centennial-scale variation in the fire regime of the western Cascades of Oregon. *Ameridendro* 2008. First American Dendrochronology Conference. Vancouver, BC, Canada. June 23–28. (Poster)

Tepley, A.J. 2006. Physiographic influences on fire patterns and forest age structure in the central western Cascades of Oregon. Long-Term Ecological Research (LTER) Network, All Scientists Meeting. Estes Park, CO. September 20–23. (Poster)

Professional Service and Leadership

Graduate Representative: H.J. Andrews Experimental Forest and Long Term Ecological Research (LTER) site. January 2007 to December 2008.

9.4.19 Candice Weems, M.S., Geography, in progress (Jones)

[210] Candice matriculated in the fall of 2010 and has a background in psychology and social services in addition to environmental science and she is interested in the geography of urban attitudes toward the environment.

9.4.20 James Duncan

[211] James Duncan was a M.S. student in the Geosciences department from September 2007 through the completion of his degree in March, 2010. He received a M.S. in Geography with Dr. Hannah Gosnell as an advisor, and wrote a thesis titled “The Effects of Alternative Future Development Scenarios on Ecological Processes and Social-Ecological Resilience in Central Oregon”. He also completed the Graduate Certificate in Geographic Information Science. His research and class work focused on landscape ecology, spatial analysis, the social and ecological dimensions of natural resource management and the relationships between climate change and

transboundary water management institutions. His committee was comprised of Dr. Hannah Gosnell (Major Professor), Dr. Julia Jones, Geosciences, and Dr. John Bliss, Forest Ecosystems and Society.

Peer-Reviewed Publications

Gosnell, H., J. Kline, G. Chrostek and J. Duncan. 2010. Is Oregon's land use planning program conserving forest and farm land? A systematic review of the evidence. *Land Use Policy*, 28(1): 185-192.

De Stefano, L., J. Duncan, S. Dinar, K. Stahl, K.M. Strzepek and **A.T. Wolf**. In review. Mapping the resilience of international river basins to future climate change-induced water variability. *Journal of Peace Research*.

Duncan, J. and T. Burcsu. In revision. Impacts of future residential development on the spatial pattern of mule deer habitat in Central Oregon. *Landscape and Urban Planning*.

Scholarly Presentations

Global Distribution of Transboundary Institutional Mechanisms for Accommodating the Effects of Climate Change. Association of American Geographers Annual Meeting, Climate Change and Water Resources special session, Washington, DC, Apr. 17 2010.

Building the Skyline: Impacts of Development on the Spatial Pattern of Mule Deer Habitat in Central Oregon. Associate of Pacific Coast Geographers Annual Meeting, San Diego, CA, Oct. 1, 2009.

Professional Service and Leadership

Geography Spring Seminar Organizer, OSU Geosciences Department (Corvallis, OR), 2009.

9.4.21 Robyn Paulekas

[212] Robyn Paulekas was a M.S. student in the Geosciences department from September 2008 through completion of her degree in August 2010. She successfully completed a M.S. non-thesis in Geography under the guidance of Dr. Hannah Gosnell. She also received a minor in Water Conflict Management and Transformation. Her research paper is entitled "Fostering Social-Ecological Resilience in the Upper Klamath Basin: The National Riparian Service Team's Creeks and Communities Strategy as an Emerging Model for Government in Adaptive Co-Management". The research and class work focused on water and watershed management, land

use, human dimensions of natural resource management, and social-ecological resilience. Her committee was comprised of Dr. Hannah Gosnell (Major Professor), Dr. Aaron Wolf, Geosciences, and Dr. Gregg Walker, Communications.

Awards and Honors

Graduate Teaching Assistant of the Year, 2010

Rural Studies Program. 2009. \$500 to assist Sustainable Northwest with water resource management and participatory mapping in the Upper Klamath Basin

Geosciences Department Travel Funding Gordon Matzke Fund? 2010. (\$500)

Scholarly Presentations

Paulekas, R. *Managing for social ecological resilience: A case study in the Klamath Basin*. International Symposium on Society and Resource Management. June 6, 2010, Corpus Christi, TX.

[213]

9.5 Geology Graduate Student Performance

9.5.1 Kevin Farthing, M.S., Environmental Engineering, 2006 (Haggerty/Lancaster)

[214] Kevin Farthing received his (non-thesis) M.S. in Environmental Engineering in winter, 2006. He came under the supervision of Drs. Haggerty and Lancaster to work on a project addressing the feasibility of subsurface hyporheic injection of effluent from wastewater treatment plants on the Willamette River in order to mitigate temperature impacts on the river. After graduation, Farthing joined Kennedy/Jenks Consultants in Eugene, Oregon, as a Design Engineer. He has recently decided to return to OSU to get a Ph.D. in Nuclear Engineering.

Scholarly Presentations

Fall 2005: Monthly presentations at meetings with Oregon Department of Environmental Quality project manager.

9.5.2 Anne Jefferson, Ph.D., Geology, 2006 (Grant/Lancaster)

[215] Anne Jefferson came to OSU to work with Drs. Grant and Lancaster after completing her M.S. at U. Minnesota. At OSU, she studied the hydrology and geomorphology of the Oregon Cascades, a volcanic arc of bimodal age distribution. Her dissertation, titled *Hydrology and Geomorphologic Evolution of Basaltic Landscapes, High Cascades, Oregon*, yielded several first- and co-authored peer-reviewed publications. After a post-doctoral appointment in Geosciences (again with Grant), she accepted a tenure track Asst. Prof. position at U. North Carolina at Charlotte.

Awards and Honors

Student Research Fellowship, National Science Foundation, 2006-2009.

Peer-Reviewed Publications

Jefferson, A., **Grant, G.**, and Rose, T., 2006. Influence of volcanic history on groundwater patterns on the west slope of the Oregon High Cascades, *Water Resources Research*, Vol. 42, W12411, doi:10.1029/2005WR004812.

Jefferson, A., **Grant, G.**, and **Lewis, S.**, 2007. A river runs underneath it: geological control of spring and channel systems and management implications, Cascade Range, Oregon. In M.J. Furniss, C.F. Clifton, and K.L. Ronnenberg, eds. *Advancing the Fundamental Sciences: proceedings of the Forest Service national earth sciences conference*. PNW-GTR-689. Portland, OR: U.S.D.A. Forest Service, PNW Research Station. p391-400.

Tague, C., **Grant, G.**, Farrell, M., Choate, J., and Jefferson A. 2008. Deep groundwater mediates streamflow response to climate warming in the Oregon Cascades, *Climatic Change* 86: 189-210.

Jefferson, A., **G.E. Grant, S.L. Lewis, and S.T. Lancaster**, 2009. Coevolution of hydrology and topography on a basalt landscape in the Oregon Cascade Range, USA. *Earth Surface Processes and Landforms*, doi:10.1002/esp.1976 .

Scholarly Presentations

Jefferson, A., **Grant, G., Lewis, S.** December 10, 2007. Drainage Density: A Framework for Predicting Peak and Low Flows in Ungaged Catchments. American Geophysical Union Fall Meeting, San Francisco, CA. Published as *Eos Trans. AGU* 88 (52), Fall Meeting Suppl., Abstract H13M-07.

Jefferson, A and **Lewis, S., Grant, G.,** and Tague, C. 2006. Discharge, source areas, and water ages of spring-fed streams and implications for water management in the McKenzie River Basin. Report to Eugene Water and Electric Board, dated February 3, 2006.

Jefferson, A., **Grant, G.,** November 2, 2005. Groundwater systems of the McKenzie River watershed, Oregon High Cascades. Cooperative State Research Education and Extension Service Conference, Groundwater under the Pacific Northwest, Stevenson, WA.

Jefferson, A., **Nolin, A., Lewis, S.,** Payne, M., **Grant, G.** June 7-9, 2006. Climate variability, snowmelt distribution, and effects on streamflow in a Cascades watershed. 63rd Annual Eastern Snow Conference. Newark, Delaware.

Jefferson, A., Rose, T.P., **Grant, G.E.,** May 23, 2005. Volcanic aquifers feed large springs on the Oregon High Cascades mafic platform. American Geophysical Union Joint Assembly, New Orleans, LA. Published as Eos Trans. AGU 86 (18), Jt. Assem. Suppl., Abstract V13C-02

Grants and Contracts

Influence of Climate Change on Water Supply in the McKenzie River Basin: Analysis of Long-term and Spatial Hydrologic Data. USGS Mini Grant awarded by Center for Water and Environmental Sustainability. **Anne Nolin, Gordon Grant,** Anne Jefferson, OSU. 3/05-2/06, \$13,725.

9.5.3 *Emily Underwood, M.S., Geology, 2007 (Lancaster)*

[216] Underwood worked with Lancaster on an NSF-funded study of sediment dynamics in the Oregon Coast Range. She has apparently left the field. Her thesis resulted in one peer-reviewed publication.

Peer-Reviewed Publications

Lancaster, S.T., E.F. Underwood, and W.T. Frueh, 2010. Sediment reservoirs at mountain stream confluences: Dynamics and effects of tributaries dominated by debris flow and fluvial processes, *Geological Society of America Bulletin*, 122(11/12), 1775–1786, doi: 10.1130/B30175.1

9.5.4 *Graysen Squeoachs, M.S., Water Resources Science, in progress (Haggerty/Lancaster)*

[217] Squeoachs came to OSU to work on an NSF-funded study of the heat budget in the hyporheic zone of a large gravel-bed river with Lancaster (PI) and Haggerty (co-PI). With a SGER grant from NSF (A. Trehu of COAS, PI; Lancaster, Haggerty, and J. Selker of Bio. Eco.

Eng., co-PIs), he employed a novel use of distributed temperature sensing (DTS) in constructing subsurface temperature probes by wrapping PVC pipes with fiber optic cable. He will finish by April, 2011.

Awards and Honors

Minority and Excellence Scholarship, Institute for Water and Watersheds, 2007-08.

Oregon Laurels Scholarship, OSU.

Scholarly Presentations

Squeochs, G.M., **R. Haggerty**, and **S.T. Lancaster**, 2009. Net fluid and heat fluxes for the hyporheic zone of a gravel bar on the Willamette River, Oregon, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract H21B-0833.

Squeochs, G., **S.T. Lancaster**, **R. Haggerty**, A.M. Trehu, and J. Selker, 2008. Distributed Temperature Sensing (DTS) using optical fiber probes to constrain heat and fluid transport in the subsurface, *Eos Trans. AGU*, 89(23), Jt. Assem. Suppl., Abstract NS24A-05.

9.5.5 *W. Terry Frueh, Ph.D., Water Resources Engineering, in progress (Lancaster)*

[218] Frueh came to OSU for an Eco-Informatics IGERT fellowship and to work with Lancaster on an NSF-funded study of sediment dynamics in the Oregon Coast Range. He has successfully spearheaded extra funding for the project, both from GSA and a supplemental award from NSF.

Awards and Honors

NSF IGERT Fellowship.

GSA Student Research Award, 2008.

Peer-Reviewed Publications

Lancaster, S.T., E.F. Underwood, and W.T. Frueh, 2010. Sediment reservoirs at mountain stream confluences: Dynamics and effects of tributaries dominated by debris flow and fluvial processes, *Geological Society of America Bulletin*, 122(11/12), 1775–1786, doi: 10.1130/B30175.1

Scholarly Presentations

- Frueh, W.T., and **S.T. Lancaster**, 2010. Determining controls on sediment storage volumes and residence times on valley bottoms in steeplands: debris flow and fluvial evacuation of tributaries and their respective confluence deposits, Abstract EP33C-0786 presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.
- Frueh, W.T., and **S.T. Lancaster**, 2010. Quantifying charcoal budgets in steepland watersheds: Field measurements and modeling of coupled sediment-charcoal transport and storage in the Oregon Coast Range, *GSA Abstracts with Programs*, 42(5), 159 (Paper No. 62-10).
- Frueh, W.T., and **S.T. Lancaster**, 2009. Sediment fluxes through headwater valley floor deposits of two contiguous reaches, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract EP51B-0588.
- Frueh, W.T., S. Coyote, and **S.T. Lancaster**, 2008. Valley-Bottom Sediment Storage Volumes Determined From LiDAR-Derived Digital Elevation Models and Channel Substrate Mapping, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract H53C-1066.

Professional Service and Leadership

Officer of Hydrophiles, student chapter of American Water Resources Association.

9.5.6 *John Zunka, M.S., Water Resources Engineering, in progress (Lancaster)*

[219] Zunka came to OSU from Vanderbilt and is working on a study of a small dam removal with Lancaster and D. Tullos (Bio. Eco. Eng.) and funded by a small grant from the U.S.

Geological Survey and the Inst. for Water and Watersheds (Tullos, PI). He expects to continue at OSU and with Lancaster for his Ph.D. next academic year.

Scholarly Presentations

Zunka, J.P., D. Tullos, and **S. Lancaster**, 2009. Effects of small sediment barrier removal on geomorphic complexity and habitat diversity, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract H51G-0853.

9.5.7 *Brent Goehring, MS, Geology, 2006, Start Fall 2004-Finish Spring 2006 (Brook)*

[220] Thesis title: *¹⁰Be Exposure Ages of Erratic Boulders in Southern Norway and Implications for the History of the Fennoscandian Ice Sheet*. Goehring came to OSU from University of Washington. He studied the glacial history of southern Norway. He went on to a PhD at Columbia-LDEO and is now a NOAA Climate and Global Change Postdoc.

Peer-Reviewed Publications

Goehring, B.M., **Brook, E.J.**, Linge, H.C., and Raisbeck, G.M., 2008. Beryllium-10 Exposure ages of erratic boulders in southern Norway and implications for the history of the Fennoscandian Ice Sheet. *Quaternary Science Reviews*. 27, 320-336.

Scholarly Presentations

Goehring, B., et al., 2006, Transitions in glacial erosion under a thick Fennoscandian Ice Sheet: Evidence from cosmogenic nuclides, *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract C33A-1255.

9.5.8 *Thomas Bauska, PhD, Geology, in progress since Fall 2007 (Brook).*

[221] Bauska came to OSU from University of Chicago and has tackled one of the more difficult challenges of ice core research. He has conducted two field seasons in Antarctica and developed novel analytical techniques. Thesis topic: History of carbon dioxide and its isotopic composition from ice cores.

Awards and Honors

NASA Space Grant Fellowship

9.5.9 *Julia Rosen, PhD, Geology, in progress since Fall 2008 (Brook).*

[222] Thesis topic: Climate and greenhouse gas reconstruction from the NEEM ice core. Rosen came to OSU from Stanford and obtained an NSF Graduate Fellowship. She has conducted one season of field work in Greenland, and an extended research stay at the University of Copenhagen.

Awards and Honors

NSF Graduate Fellowship

NSF Graduate Fellowship Nordic Research Opportunity Supplement

Scholarly Presentations

Rosen, et al., 2011, New insights on the phasing of atmospheric methane and temperature change during the Last Glacial Termination from the North Greenland Eemian (NEEM) Ice Core, European Geophysical Union Annual Meeting, Vienna, Austria, 3-8 April, 2011.

Rosen, et al., 2011, New insights on the phasing of atmospheric methane and temperature change during the Last Glacial Termination from the North Greenland Eemian (NEEM) International Quaternary Association Meeting, Bern Switzerland, July 2011.

9.5.10 Logan Mitchell, PhD, Geology, in progress since Fall 2007 (Brook).

[223] Thesis topic: Holocene methane variations. Mitchell was an undergraduate at OSU before starting his graduate career. He has conducted one season of field work in Antarctica and done extensive laboratory development work.

Awards and Honors

NASA Space Grant Scholarship

Peer-Reviewed Publications

Mitchell, L., **E. Brook**, T. Sowers, and J. McConnell, in press, Multidecadal variability of atmospheric methane, 1000-1800 C.E, Journal of Geophysical Research-Biogeosciences.

Scholarly Presentations

Mitchell, L. and **E. Brook**, 2010, [Multidecadal variability of atmospheric methane and the Inter Polar Gradient: 0-1800 C.E](#), Abstract C23-D04, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.

Mitchell, L. and **E. Brook**, 2009, [New high-precision, high-resolution records of atmospheric methane from Greenland and Antarctica cores: 0-1800 A.D](#), *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract PP41B-1524

9.5.11 Wendy Kelly, MS, Geology, in progress since fall, 2008 (Lillie)

[224] Kelly's thesis project involves the development of a geology interpretive training manual for the staff of Shenandoah National Park in Virginia. Her thesis work has included work as an Interpretive Park Ranger (see below). She is on track to defend the thesis spring term, 2011.

Professional Service and Leadership

Interpretive Park Ranger, summer 2009 and 2010, Shenandoah National Park.

9.5.12 Jason Kenworthy, MS, Geology, 2010 (Lillie)

[225] Kenworthy began his thesis, titled *Changing Landscape, Climate, and Life During the Age of Mammals: Interpreting Paleontology, Evolving Ecosystems, and Climate Change in the Cenozoic Fossil Parks*, in winter of 2007. His thesis work included work as an Interpretive Park Ranger (see below). He is currently employed full time with the Geological Resources Division of the National Park Service in Denver as a Geologic Resources Inventory Report Coordinator.

Professional Service and Leadership

Interpretive Park Ranger, summer 2007 and 2008, six different units of the National Park Service: John Day Fossil Beds National Monument, Oregon; Hagerman Fossil Beds National Monument, Idaho; Fossil Butte National Monument, Wyoming; Badlands National Park, South Dakota; Agate Fossil Beds National Monument, Nebraska; Florissant Fossil Beds National Monument, Colorado.

9.5.13 Sarah Dunham (Gray), MS, Geology, 2008 (Lillie)

[226] Dunham began her work at OSU in the fall of 2005. Her thesis is titled *Interpreting geology in Yosemite National Park, California: A monument to strong granite, powerful glaciers, and the perseverance of life*. Her thesis work included work as an Interpretive Park Ranger (see below). She is currently employed full time as the Wildlife Center Coordinator at Tualatin River National Wildlife Center in Sherwood, Oregon.

Professional Service and Leadership

Interpretive Park Ranger, Yosemite National Park, summer 2006 and 2007.

9.5.14 Kimberly Truitt, MS, Geology, 2006 (Lillie)

[227] Truitt began in the fall of 2003. Her thesis is titled *Interpreting a Weird and Scenic Landscape to Park Visitors: Tectonic and Volcanic Processes of Craters of the Moon National*

Monument and Preserve, Idaho. Truitt's thesis work included service as an Interpretive Park Ranger (see below). After completing her thesis she worked as a seasonal Interpretive Ranger at Mt. St. Helens National Volcanic Monument in Washington state.

Professional Service and Leadership

Interpretive Park Ranger at Craters of the Moon National Monument in Idaho during the summers of 2004 and 2005.

9.5.15 Emily Schultz-Fellenz, Geology, MS 2006 (Meigs).

[228] Thesis : *Can growth strata identify individual paleoearthquakes and characterize fold kinematics?: A case study from the La Laja fault system, Sierra de Villicum, Argentina.* Schultz came to OSU from Los Alamos National Lab after finishing her undergraduate degree at University of Wisconsin-Oshkosh. She worked as an RA on an NSF grant. Emily returned to LANL as a research scientist after receiving her degree.

Scholarly Presentations

Schultz, E.S., Meigs, A.J., Ragona, D., Rockwell, T.K., Costa, C.H., Ahumada, E.A., Middleton, T., and Verdugo, D., 2005, Using paleoseismic investigations to test hypothesized fold growth mechanisms: a case study from the La Laja fault system, San Juan province, Argentina: EOS, Trans. Amer. Geophys. Union, Fall 2005 Abstracts with Programs.

9.5.16 Celia Schiffman, Geology, MS 2007 (Meigs).

[229] Thesis : *Seismotectonics in the eastern Precordillera, San Juan, Argentina: Reconciling earthquakes and structural geology in the vicinity of the 1944 earthquake for a new model of crustal-scale deformation* Schiffman came to OSU from Union College. She worked as an RA on an NSF grant. After leaving OSU, Celia worked for UNAVCO as an outreach specialist and is currently a PhD candidate at the University of Colorado, Boulder.

Awards and Honors

GSA Geophysics Division Student Research Award

Peer-Reviewed Publications

Meigs, A., Krugh, W.C., **Schiffman**, C., Vergés, J., and Ramos, V.A., 2006, Evidence for refolding of thin-skinned thrust sheets by active thick-skinned thrust faults in the eastern Precordillera of San Juan Province, Argentina: *Revista de la Asociación Geológica Argentina*, v. 61, p. 589-603.

Scholarly Presentations

Schiffman, C.R., and Meigs, A., 2005, Relating near-surface structure, earthquakes, and thrust faults: combining structural geology and seismology in the Eastern Precordillera, San Juan, Argentina: The Theory and Application of Fault-Related Folding in Foreland Basins Abstracts, Beijing, China.

Grants and Contracts

GSA Student Research Grant

9.5.17 *David Trench, Geology, MS 2008 (Meigs).*

[230] Thesis : *The Termination of the Basin and Range Province into a Clockwise Rotating Region of Transtension and Volcanism, Central Oregon.* Trench came to OSU from Colorado College. He worked as an RA on an NSF grant. After leaving OSU, Trench took a job with Watershed Sciences collecting and analysing LiDAR data. He also spent a year bicycling across southeast Asia.

Peer-Reviewed Publications

Meigs, A., Scarberry, K., Grunder, A., Carlson, R., Ford, M., Fouch, M., Grove, T., Hart, W.K., Iademarco, M., Jordan, B., Milliard, J., Streck, M., **Trench**, D., and Weldon, R., 2009, Geological and geophysical perspectives on the magmatic and tectonic development, High Lava Plains and northwest Basin and Range, in O'Connor, J.E., Dorsey, R.J., and Madin, I.P., eds., *Volcanoes to Vineyards: Geologic Field Trips through the Dynamic Landscape of the Pacific Northwest: Geological Society of America Field Guide 15, Volume Field Guide 15: Boulder, Geological Society of America*, p. 451-486.

Scholarly Presentations

Trench, D., and Meigs, A., 2007, The Termination Of The Northwest Basin And Range Into A Northwest Trending Extensional Fault System: *Eos Trans. AGU*, v. 88, p. T31C-0593.

9.5.18 Justin Milliard, *Geology, MS 2009 (Meigs)*.

[231] Thesis : *Two-stage opening of the northwestern Basin and Range in Eastern Oregon: Evidence from the Miocene Crane Basin*. Milliard came to OSU from the University of Montana. He worked as an RA on an NSF grant. After leaving OSU, Milliard enlisted in the Officer Training Program of the U.S. Navy.

Peer-Reviewed Publications

Meigs, A., Scarberry, K., Grunder, A., Carlson, R., Ford, M., Fouch, M., Grove, T., Hart, W.K., Iademarco, M., Jordan, B., **Milliard**, J., Streck, M., Trench, D., and Weldon, R., 2009, Geological and geophysical perspectives on the magmatic and tectonic development, High Lava Plains and northwest Basin and Range, *in* O'Connor, J.E., Dorsey, R.J., and Madin, I.P., eds., *Volcanoes to Vineyards: Geologic Field Trips through the Dynamic Landscape of the Pacific Northwest: Geological Society of America Field Guide 15, Volume Field Guide 15: Boulder, Geological Society of America*, p. 451-486.

Scholarly Presentations

Milliard, J. and Meigs, A., Middle Miocene half graben development predates widespread extension-related magmatism in the nw Basin and Range, Oregon, Geological Society of America, Abstracts with Programs, 2009 Cordilleran Section Meeting.

Milliard, J., Meigs, A., and Grunder, A., 2009, two-stage opening of the northwestern Basin and Range in eastern Oregon: Geological Society of America, Abstracts with Programs, 2009 Annual Meeting.

9.5.19 Ajeet Johnson, *Geology, MS 2011 (Meigs)*.

[232] Thesis : *Structural development of the Tygh Valley, central Oregon*. Johnson was an OSU undergraduate and stayed to complete her MS. She worked as an RA on an USGS EdMap grant, which she co-wrote with Meigs. Johnson is presently working for an oil company in Bakersfield, CA.

9.5.20 Chris Madden, *Geology, PhD in progress (Meigs)*.

[233] Thesis : *Active deformation and strain partitioning between the Himalayan thrust front in Pailan and the Kashmir Valley, India*. Madden came to OSU after 7 years as an earthquake

hazards consultant. He has actively engaged in outreach and education of both Pakistani and Indian scientists. Madden was supported as an RA by an NSF grant and by a Sasakawa Young Leaders Fellowship Fund Fellowship.

Scholarly Presentations

- Gavillot, Y., Meigs, A., Hebel, A., **Madden**, C., Yule, J.D., Malik, M., Yeats, R., and Kaericher, M., 2010, Active thrusting within the Himalayan orogenic wedge in the Kashmiri Himalaya: Seismological Society of America Annual Meeting.
- Hebel, A., C. **Madden**, M. Malik, M. Kaericher, Y. Gavillot, D. Yule, and A. Meigs, 2010, Middle Holocene surface rupture of the Reasi thrust, Kashmir, India Seismological Society of America Annual Meeting.
- Madden**, C., Trench D., Meigs A., Ahmad, S., Bhat, M. I., Yule, J. D., 2010, Late Quaternary Shortening and Earthquake Chronology of an Active Fault in the Kashmir Basin, Northwest Himalaya: Seismological Society of America Annual Meeting.
- Meigs, A., **Madden**, C., Yule, J.D., Gavillot, Y., Hebel, A., Hussain, A., Bhat, M.I., Kausar, A.B., Malik, M., Ramzan, S., Sayab, M., and Yeats, R., 2010, Distributed deformation, distributed earthquakes in the northwest Himalaya, *in* Leech, M.L., and Klemperer, S., eds., proceedings for the 25th Himalaya-Karakoram-Tibet Workshop, Volume Open-File Report 2010-1099: San Francisco, U.S.G.S., p. 2.
- Meigs, A., Yule, D., **Madden**, C., Yeats, R., Hussain, A., Sayeed, S., Latif, A., Khattak, W., Ashraf, M., Ramzan, S., and Dasti, N., 2007, Earthquake surface rupture in of the Himalayan thrust front in Pakistan: Eos Trans. AGU, v. 88.

Grants and Contracts

Sasakawa Young Leaders Fellowship Fund Fellowship

Professional Service and Leadership

Mentored Indian and Pakistani graduate students in the field.

9.5.21 Yann Gavillot, *Geology, PhD in progress (Meigs)*.

[234] Thesis : *Distributed active deformation across the Himalayan orogenic wedge, Kashmir Himalaya, India.* Gavillot came to OSU after completion of a MS at UCLA. Gavillot was supported as an RA by an NSF grant.

Summer 2009: Best student presentation, Mixed-Severity Fire Regime section of the North American Forest Ecology Workshop, Utah State University

Spring 2008: James H. Duke, Jr. Graduate Fellowship, Oregon State University

Spring 2008: College of Forestry Graduate Fellowship, Oregon State University

Spring 2007: Alfred W. Moltke Memorial Scholarship, Oregon State University

Scholarly Presentations

Gavillot, Y., Meigs, A., Hebel, A., Madden, C., Yule, J.D., Malik, M., Yeats, R., and Kaericher, M., 2010, Active thrusting within the Himalayan orogenic wedge in the Kashmiri Himalaya: Seismological Society of America Annual Meeting.

Hebel, A., C. Madden, M. Malik, M. Kaericher, Y. **Gavillot**, D. Yule, and A. Meigs, 2010, Middle Holocene surface rupture of the Reasi thrust, Kashmir, India Seismological Society of America Annual Meeting.

Meigs, A., Madden, C., Yule, J.D., **Gavillot**, Y., Hebel, A., Hussain, A., Bhat, M.I., Kausar, A.B., Malik, M., Ramzan, S., Sayab, M., and Yeats, R., 2010, Distributed deformation, distributed earthquakes in the northwest Himalaya, *in* Leech, M.L., and Klemperer, S., eds., proceedings for the 25th Himalaya-Karakoram-Tibet Workshop, Volume Open-File Report 2010-1099: San Francisco, U.S.G.S., p. 2.

Grants and Contracts

GSA Student Research Grant

AAPG Student Research Grant

9.5.22 *Eduardo Guerrero, Geology, PhD inprogress (Meigs).*

[235] Thesis : *Uplift and advection of topography associated with the Yellowstone hotspot.*

Guerrero arrived at OSU in the Fall of 2010 from a position as a science educator at the

Headlands Institute outside of San Francisco, CA. He is just starting his degree.

Professional Service and Leadership

Mentor, 'Increasing Diversity in the Earth Sciences' program in OSU Geosciences '

Mentor, Louis Stokes Alliance for Minority Participation', at OSU

9.5.23 *Nicholas Legg, Geology, MS inprogress (Meigs).*

[236] Thesis : *Initiation mechanisms and long records debris flows at Mt. Rainier National*

Park. Legg arrived at OSU in the Fall of 2010 after 3 years in the geotechnical industry. He is

just starting his degree.

9.5.24 *Darrick Boschmann, Geology, MS in progress (Dilles/Meigs).*

[237] Thesis : *Implications of the structural evolution of the Brothers fault zone for the geothermal potential of Glass Buttes, OR.* Boschmann arrived at OSU in the Fall of 2010 earning an undergraduate degree at Portland State University. Boschmann is supported as an RA y subcontract on a grant to Ormat, Inc. from the DOE. He is just starting his degree.

9.5.25 *Jeremy Craner, M.S., Geology, 2006 (Haggerty)*

[238] Craner worked on the topic of *Flow and Transport Model of the Southern Willamette Valley Groundwater Management Area*. His MS was funded by a grant from the US Environmental Protection Agency to R. Haggerty. He is now a consulting hydrogeologist employed by Hoefler Consulting in Anchorage, AK. His MS is available at <http://hdl.handle.net/1957/1553>.

Scholarly Presentations

Regional Flow Model of the Southern Willamette Valley Groundwater Management Area, Groundwater Under the Pacific Northwest Conference, Stevenson, WA, Nov. 3, 2005.

Regional Flow Model of the Southern Willamette Valley Groundwater Management Area, Groundwater Management Area meeting, Dec. 1, 2005.

Regional Flow Model of the Southern Willamette Valley Groundwater Management Area, MS presentation, winter, 2006.

2004-6 Assisted with the Southern Willamette Valley Groundwater Management Area

9.5.26 *Glenn Mutti, M.S., Water Resources Science, 2006 (Haggerty)*

[239] Mutti worked on the topic of “*Nitrate Transport through the Vadose Zone of the Southern Willamette Valley Groundwater Management Area*”. His MS was funded by a grant from the US Geological Survey to R. Haggerty. He is now a consulting hydrogeologist employed by the Pacific Groundwater Group in Seattle, WA. His MS is available at

<http://hdl.handle.net/1957/2268>.

Scholarly Presentations

Temporal and Spatial Variability of Groundwater Nitrate in the Southern Willamette Valley, Oregon, Groundwater Under the Pacific Northwest Conference, Stevenson, WA, Nov. 3, 2005.

Temporal and Spatial Variability of Groundwater Nitrate in the Southern Willamette Valley, Oregon, Groundwater Management Area meeting, Dec. 1, 2005.

Temporal and Spatial Variability of Groundwater Nitrate in the Southern Willamette Valley, Oregon, MS presentation, winter, 2006.

Professional Service and Leadership

2005 Officer, Hydrophiles water resources club.

2004-6 Assisted with the Southern Willamette Valley Groundwater Management Area

9.5.27 Justin LaNier, M.S., Civil Engineering, 2007 (Haggerty)

[240] LaNier worked on the topic of “Changes in hyporheic exchange flow following experimental large wood removal in a second order, low-gradient stream, Chichagof Island, AK”. Prior to his MS, he completed an undergraduate research thesis under Haggerty’s supervision (which was published with lead author Gooseff, one of Haggerty’s postdocs).

Following this, LaNier worked as a technician in the Haggerty lab. His MS was funded by NSF and the US Forest Service. He now works for CH2M Hill in Redding, California. His MS is available at <http://hdl.handle.net/1957/3145>.

Peer-Reviewed Publications

Wondzell, S. M., J. LaNier, **R. Haggerty**, Richard D. Woodsmith, and Richard T. Edwards, Estimating changes in hyporheic exchange flow following experimental wood removal in a small, low gradient stream using groundwater flow models, *Water Resources Research*, 45, W05406, doi:10.1029/2008WR007214, 2009.

Wondzell, S. M., J. LaNier, and **R. Haggerty**, Reliability of groundwater flow models for simulating hyporheic exchange in small mountain streams, *Journal of Hydrology*, 364, 142-151, 2009.

Gooseff, M. N., J. K. Anderson, S. M. Wondzell, J. LaNier, and **R. Haggerty**, A modeling study of hyporheic exchange pattern and the sequence, size, and spacing of stream bedforms in mountain stream networks, Oregon, USA, *Hydrological Processes*, 20, 2443–2457, 2006.

Gooseff, M. N., J. LaNier, **R. Haggerty**, and K. Kokkeler, Determining in-channel transient storage by comparing solute transport in a bedrock channel – alluvial channel sequence, Lookout Creek basin, Oregon, USA, *Water Resources Research*, 41, W06014, doi:10.1029/2004WR003513, 2005.

Scholarly Presentations

Gooseff, M. N., J. P. Zarnetske, **R. Haggerty**, J. LaNier, and S. M. Wondzell, Challenges in groundwater flow modeling to characterize hyporheic exchange, MODFLOW 2006 Conference, Colorado School of Mines, May, 2006.

LaNier, J. M., S. Wondzell, R. Woodsmith, and **R. Haggerty**, Changes in Hyporheic Exchange Flow Following Experimental Woody Debris Removal Determined by Groundwater Flow Modeling, *Eos Trans. AGU*, 86(52), Fall Meet. Suppl. Abstract H41I-03, 2005.

R. Haggerty, J. LaNier, Chelsea L. Crenshaw, S. M. Wondzell, M. Baker, and M. N. Gooseff, Discriminating among transport, reaction-rate, and substrate limitation for hyporheic nitrate retention using $^{15}\text{NO}_3^-$ additions: Preliminary results from Mack Creek, Oregon, *Eos Trans. AGU*, 86, Spring Meet. Suppl., 2005.

9.5.28 *Drew Bryenton, M.S., Environmental Engineering, 2007 (Haggerty)*

[241] Bryenton worked on the topic of “*Role of Hyporheic Flow on Temperature in Alcoves on the Willamette River*”. His MS was funded by a grant from the US Environmental Protection Agency. He is now works for the US Park Service. His MS is available at <http://hdl.handle.net/1957/7386>.

Scholarly Presentations

Bryenton, A. G., R. Haggerty, S. V. Gregory, and D. Hulse, Heat balance, sources and sinks in thermal refugia in alcoves, Willamette River, Oregon, USA, *Eos Trans. AGU*, 87(52), Fall Meet. Suppl., Abstract H13A-1353, 2006.

9.5.29 *Jennifer Woody, M.S., Geology, 2007 (Haggerty)*

[242] Woody worked on the topic of “*A Preliminary Assessment of Hydrogeologic Suitability for Aquifer Storage and Recovery (ASR) in Oregon*”. Her MS was funded by a grant from the Oregon Water Resources Department to R. Haggerty. Her study was the first of its kind in the

US and she now runs the OWRD's statewide program on ASR. Her MS is available at <http://hdl.handle.net/1957/7453>.

Awards and Honors

2006. Lance Forsythe Memorial Fellowship, awarded to a graduate student from Geosciences exhibiting breadth and independence of thought in the pursuit of their education.

Peer-Reviewed Publications

MS thesis is in preparation for submission in April, 2011 to Groundwater.

Scholarly Presentations

Woody, J., and **R. Haggerty**, Oregon Water Supply and Conservation: Methods of Hydrogeologic Assessment for Managed Underground Storage Potential, GSA, Houston, October, 2008.

Woody, J., and **R. Haggerty**, A preliminary assessment of hydrogeologic suitability for ASR in Oregon, Aquifer Storage and Recovery and Artificial Recharge in Oregon, Oregon State University, Corvallis, Feb. 28, 2008. <http://water.oregonstate.edu/asr/>

Grants and Contracts

State Inventory for Storing Surface Water in Aquifers. **R. Haggerty**, Oregon Water Resources Department. \$60,000. 7/1/05 – 1/1/08.

9.5.30 Barbara Burkholder, M.S., Water Resources Science, 2007 (Haggerty/Grant)

[243] Burkholder worked on the topic of “*Influence of Hyporheic Flow and Geomorphology on Temperature of a Large, Gravel Bed River*”. Her MS was funded by a grant from Portland General Electric and the US Forest Service to R. Haggerty. She is employed as a hydrogeologist at Geoengineers, Inc., in Portland, OR. Her MS is available at <http://hdl.handle.net/1957/7607>.

Awards and Honors

Burkholder received an award from the Water Resources Graduate Program. Details not available.

Peer-Reviewed Publications

Burkholder, B.K., G.E. Grant, **R. Haggerty**, T. Khangaonkar, and P.J. Wampler, Influence of hyporheic flow and geomorphology on temperature of a large, gravel bed river, Clackamas River, Oregon, USA, *Hydrological Processes*, 22, 941–953, 2008.

Scholarly Presentations

Burkholder, B K, **G Grant, R Haggerty**, P Wampler, T Khangaonkar, Can gravel augmentation cool a large, gravel-bed river?, Geological Society of America *Abstracts with Programs*, 41(7), p. 42.

Grant, G.E., B. Burkholder, **R. Haggerty**, and **S. Lewis**, Can gravel augmentation below dams mitigate thermal effects of reservoirs?, 26th Annual Salmonid Restoration Conference March 5 – 8, 2008, Lodi, California.

Burkholder, B.K., **G.E. Grant, R. Haggerty**, T. Khangaonkar, and P. Wampler, Influence of Hyporheic Flow and Geomorphology on Temperature in Large, Gravel-bed River, Clackamas River, Northwestern Oregon, *Eos Trans. AGU*, 88(52), Fall Meet. Suppl., Abstract H41A-0137, 2007.

Haggerty, R.; Burkholder, B. K.; **Grant, G. E.**; Jefferson, A.; Wampler, P.; Khangaonkar, T. P., Temperature influence of hyporheic geomorphology in a large, gravel-bed river: Measurements and modeling in the Clackamas River, Oregon, USA, European Geosciences Union conference Apr. 16 – 20, 2007, Vienna, Austria, published in *Geophysical Research Abstracts*, vol. 9, 05459, (SRef-ID: 1607 – 7962/gra/EGU2007-A-05459), 2007. (Invited talk).

Professional Service and Leadership

Burkholder was a leader in the Hydrophiles club, serving as president for one term.

9.5.31 Jay Zarnetske, Ph.D., Water Resources Science, in progress (Haggerty)

[244] Zarnetske is working on the topic of Denitrification in the Hyporheic Zone of Small Streams. He has positioned himself to be a leader in understanding the role of the hyporheic zone in the nitrogen cycle. He is co-advised by R. Haggerty and S. Wondzell (US Forest Service). He will finish by August, 2011.

Awards and Honors

Kenneth Williamson Water Prize, OSU (2009) - for academic excellence and leadership in water research field

Water Resources Travel Award, OSU (2009)

AAAS Gordon Conference Travel Award (2009)

OSU Featured Researcher, H₂OSU News (March 2009)

Water Resources Alumni Award, OSU (2008) - for leadership and service to water-community

AGU Annual Meeting: Outstanding Paper Award in Hydrology (twice: 2008, 2009)

Water Resources Graduate Program Meeting, OSU (twice: 2007 and 2008)

Denny Tower Research Award, Department of Geosciences, OSU (2008)

Peer-Reviewed Publications

Zarnetske, JP, **R Haggerty**, SM Wondzell, MA Baker. (*in press*). Dynamics of Nitrate Production and Removal as a Function of Residence Time in the Hyporheic Zone: A ^{15}N Tracer Study. *JGR-Biogeosciences*.

Brosten, TR, JH Bradford, JP McNamara, MG Gooseff, JP Zarnetske, WB Bowden, and ME Johnson. (2009) Estimating 3D active-layer thickness beneath arctic streams using ground-penetrating radar. *J. of Hydrology*.

Zarnetske, JP, MN Gooseff, WB Bowden, Greenwald MJ, JP McNamara, JH Bradford, and TR Brosten. (2008) Influence of morphology and permafrost dynamics on hyporheic exchange in arctic headwater streams under warming climate conditions, *Geophys. Res. Lett.*

Crook, N, A Binley, R Knight, DA Robinson, JP Zarnetske, and **R Haggerty**. (2008) Electrical resistivity imaging of the architecture of substream sediments. *Water Resour. Res.*

Payn, RA, MN Gooseff, DA Benson, OA Cirpka, JP Zarnetske, WB Bowden, JP McNamara, and JH Bradford. (2008) Comparison of instantaneous and constant-rate stream tracer experiments through non-parametric analysis of residence time distributions, *Water Resour. Res.*

Zarnetske, JP, MN Gooseff, WB Bowden, TR Brosten, JH Bradford, and JP McNamara. (2007) Transient storage as a function of geomorphology, discharge, and permafrost conditions in arctic streams, *Water Resour. Res.*

Scholarly Presentations

Zarnetske, JP, **Haggerty R**, Wondzell SM, MA Baker. (2010) Surface – Ground Water Exchange Controls on Stream Nitrate. (*invited*). NIWA, Christchurch, New Zealand.

Zarnetske, JP, **Haggerty R**, Nabelek M, Argerich A. (2009) Resazurin as a "Smart" Tracer for Investigating Hyporheic Biogeochemical Processes. GSA Fall Meeting, Portland, OR.

Zarnetske, JP, **Haggerty R**, Wondzell SM, MA Baker. (2008) Hyporheic Denitrification in an Upland Agricultural Stream: a ^{15}N Tracer Study. AGU Fall Meeting. **AGU Outstanding Student Presentation Award**

Zarnetske, JP, Gooseff MN, Bowden WB, Greenwald MJ, Brosten TR, Bradford JH, JP McNamara. (2007) Influence of morphology and permafrost dynamics on surface water - groundwater exchange in arctic headwater streams under warming thaw conditions. AGU Fall Meeting.

Zarnetske, JP, **Haggerty R**, Crook N, D Robinson. (2006) Hyporheic geophysics: D.C. resistivity imaging of valley bottom alluvium in a 3rd-order mountain stream, HJA Experimental Forest, Oregon, USA. AGU Fall Meeting.

Zarnetske, JP, Gooseff MN, Bowden WB, Brosten T, Bradford JH, JP McNamara. (2005) Relating transient Storage to varied geomorphic, discharge, and hyporheic conditions in arctic tundra streams. GSA Fall Meeting.

Zarnetske, JP, Gooseff MN, Bradford JH, McNamara JP, Bradford T, WB Bowden. (2004) Will climate change affect Hyporheic Processes in Arctic Streams? Spring Runoff Meeting, Logan, UT.

Professional Service and Leadership

Journal Reviewer: Water Resources Research, Ninth International Conference on Permafrost, JGR-Biogeosciences

Hydrophiles President: (2009-2010) & Vice President (2007-2009) - OSU chapter of the AWRA and AIH

OSU Water Resources Graduate Program Mentoring Program, Co-founder and mentor (2009 - current)

Bargaining Team Chair: OSU Coalition of Graduate Employees (2007-2009) - bargained to secure health care, pay, and work place standards on behalf of all OSU graduate employees

Co-organizer: 4th Annual Ecosystem Informatics Symposium, OSU (2009)

Conference co-convener: Special Session for the NABS/ASLO Annual Meeting, Santa Fe, NM (2010), Spring Water Seminar Series, OSU (2007-2009)

9.5.32 Ricardo González-Pinzón, Ph.D., Water Resources Engineering, in progress (Haggerty)

[245] González-Pinzón is working on the development of a metabolically-active tracer for use in quantifying stream respiration and metabolism. He began his studies in Fall, 2009 and is expected to complete his PhD by 2014.

Scholarly Presentations

Gonzalez-Pinzon, R A, **R Haggerty**, A Argerich, M Briggs, L K Lautz, D Lemke, D K Hare, 2010. Resazurin as a proxy for estimating stream respiration, *Eos Trans. AGU*, **91**(52), Abstract H21C-1056.

Argerich, A, **R Haggerty**, R A Gonzalez-Pinzon, 2010. Seasonal Variation in Phosphorus and Ammonium Uptake Related to Changes in Transient Storage Characteristics, *Eos Trans. AGU*, **91**(52), Abstract H21C-1067, 2010.

Christensen, C, R. González-Pinzón, A. Argerich, **R. Haggerty**, D. Myrold, and E. Martí, 2010. Resazurin transformation correlated to aerobic respiration in stream sediments. NABS & ASLO joint meeting 2010, Santa Fe, New Mexico.

Argerich, A., **R. Haggerty**, C. Christensen, and R. González-Pinzón, 2010. Variation in nutrient uptake related to metabolically active transient storage. NABS & ASLO joint meeting 2010, Santa Fe, New Mexico.

9.5.33 Mousa Diabat, Ph.D., Water Resources Science, in progress (Haggerty)

[246] Diabat is working with Haggerty and co-advised by S. Wondzell (US Forest Service). He has an MS from Ben Gurion University in Israel. He is working on the topic of predicting future temperatures in streams in the Intermountain West under global climate change. He is funded by the US Forest Service and US Geological Survey. He is expected to finish by 2014.

9.5.34 Tracie Jackson, Ph.D., Water Resources Science, in progress (Haggerty)

[247] Jackson's topic is a computational fluid dynamics model for calculation of water residence times of dead zones in streams. She has an MS in hydrogeology from the University of Nevada at Reno. She began her PhD in Fall, 2010 and is expected to finish by 2015.

9.5.35 Philip Neumann, Ph.D., Water Resources Science, in progress (Haggerty)

[248] Neumann is working with Haggerty on the topic of aquifer storage and recovery in the Willamette Valley under constraints of future climate, land-use and population change. He is expected to finish by 2015.

9.5.36 Anthony Coleman, M.S., Water Resources Science, in progress (Haggerty)

[249] Coleman is a new student working with Haggerty on the topic of field measurements of water residence times in dead zones in streams. He is expected to finish in 2013.

9.5.37 Dan Feuer, P.S.M., Environmental Science, 2010 (Haggerty)

[250] Feuer completed a Professional Science Masters (non-thesis).

9.5.38 *Abot Manggon, MS, Geology, 2009 (Grunder/de Silva)*

[251] Geologist with Malaysian Geological Survey: MS Thesis- Development of Continental Magmatic Systems: Insights from Amphibole Geochemistry of the Altiplano-Puna Volcanic Complex, Central Andes.

9.5.39 *Giles, Denise E. L., M.S., Geology, 2009 (Grunder)*

[252] Ecologist with Northwest Environmental firm. MS Thesis: Dynamics of a long-lived magmatic system as indicated by variations in amphibole composition and textures in dacites erupted over 11 m.y. at the Aucanquilcha Volcanic Cluster, Central Andes, Chile.

9.5.40 *Iademarco, Michael, M.S., Geology, 2009 (Grunder)*

[253] Retired and serving as research associate, OSU. MS thesis: Volcanism and Faulting along the northern margin of Oregon's High Lava Plains: Hampton Butte to Dry Mountain.

9.5.41 *Klemetti, Erik, W., Ph.D., Geology, 2005 (Grunder)*

[254] Assistant Professor, Denison University, tenure track. Ph D thesis: Constraining the magmatic evolution of the Andean arc at 21°S using the volcanic and petrologic history of Volcan Aucanquilcha, Central Volcanic Zone, northern Chile, Ph.D.

Peer-Reviewed Publications

Grunder, A.L., Klemetti, E.K., McKee, C.M., and Feeley, T.C., 2007, Eleven million years of arc volcanism at the Aucanquilcha Volcanic Cluster, northern Chilean Andes: Implications for the lifespan and emplacement of batholiths, *Journal of the Geological Society of Edinburgh. Special Volume on Origin of Granites.*

Klemetti, E.K., and **Grunder, A.L.**, 2007, Volcanic evolution of Volcán Aucanquilcha, a long-lived, monotonous dacite volcano in the Central Andes of Northern Chile., *Bulletin of Volcanology.* 70: 633-650. DOI10.1007/s00445-007-0158-x.

9.5.42 *Longo, Anthony, Ph.D., Geology, 2005 (Grunder)*

[255] Economic Geology Consultant. PhD thesis: Evolution of volcanism and hydrothermal activity in the Yanacocha Mining District, northern Peru. Co-advised with John Dilles

Peer-Reviewed Publications

Longo, A., **Dilles, J.H., Grunder, A., Duncan R.A.**, 2011 In press, Timing of Volcanism and Alteration in the Yanacocha Gold District, Peru, *Economic Geology*

Longo, B. M., **Grunder, A.L., Chuan, R. and Rossignol, A.**, 2005, SO₂ and fine aerosol dispersion from the Kilauea plume, Kau District, Hawai'i, USA, *Geology*, v. 33 p. 217-220.

9.5.43 *Scarberry, Kaleb C., Ph.D., Geology, 2007 (Grunder)*

[256] Assistant Professor, Colorado State Univ. PhD thesis: Extension and Volcanism: Tectonic Development of the Northwestern Basin and Range Province in Southeastern Oregon.

9.5.44 *Schmidt, M. E., Ph.D., Geology, 2005 (Grunder)*

[257] Assistant Professor, Brock University, Toronto. PhD thesis: Deep crustal and mantle inputs to North Sister Volcano, central Oregon Cascades

Peer-Reviewed Publications

Schmidt M. E. and **Grunder A.L.**, 2011, Deep mafic roots to arc volcanoes: mafic recharge and differentiation of basaltic andesite at North Sister Volcano, Oregon Cascades. *Journal of Petrology*

Schmidt, M.E., and **Grunder, A.L.**, and Rowe, M, 2007, Segmentation of the Cascades Arc as indicated by Sr and Nd isotopic variation among primitive basalts. *Earth and Planetary Science Letters* 266:166-181.

9.5.45 *Diana DiLeonardo, M.S., Geology, in progress (Ruggiero)*

[258] Diana started working with Ruggiero in Fall 2010 on nearshore morphological variability in the Pacific Northwest. She has yet to decide on a thesis title.

Awards and Honors

Charles A. Dana Prize Scholarship (Fall 2007)
Couper Family Scholarship (2006 -2009 academic years)
Public Speaking Competition Finalist (Spring 2007)
High School Valedictorian
Commended National Merit Scholar
AP Scholar

Scholarly Presentations

Di Leonardo, D., 2009. Characterization of grain sizes in the reservoir impoundment behind Marmot dam post-dam removal, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 133

9.5.46 Katherine Serafin, Ph.D., *Oceanography, in progress (Ruggiero)*

[259] Katy began working with Ruggiero in Fall 2010 on the impacts of climate change on coastal flood and erosion hazards. She has yet to decide on a thesis title.

Awards and Honors

Phi Beta Kappa, Delta of Connecticut Alumni Scholarship Award, (\$1,250) 2010.
Student Commencement Speaker, Connecticut College. Nominated and selected by faculty, students and staff, (2008).
Honors Study and Distinction in the Environmental Studies Department, Connecticut College, (2008).
Helen Mathieson Prize for Excellence in the Goodwin-Niering Center for Conservation Biology and Environmental Studies, Connecticut College, (\$500) (2008).
Selected Scholar: Goodwin-Niering Center for Conservation Biology and Environmental Studies, Connecticut College, (2006-2008).
Anita L. DeFrantz '74 Award for the top female athlete in graduating class, Connecticut College, (2008).
All-time 4th Place, Points and Rebounds, Connecticut College Women's Basketball, (2004-2008).

Peer-Reviewed Publications

Serafin, KA., Campbell C., and Thompson, DM., in review, A Comparison of Constrained and Unconstrained Beaches in Groton, CT. *The Northeastern Geographer. Vol. 3.*

Stockdon, HF., Doran, KS., Serafin, KA., 2010, Coastal Change on Gulf Island National Seashore during Hurricane Gustav: West Ship, East Ship, Horn, and Petit Bois Islands, U.S. Geological Survey Open-File Report 2010-1090, 18p., online only.

Doran, KS., Stockdon, HF., Plant, NG., Sallenger, AH., Guy, K., Serafin, KA., 2009, Hurricane Gustav: Observations of Coastal Change: U.S. Geological Survey Open-File Report. 2009-1279.

Doran, KS., Plant, NG., Stockdon, HF., Sallenger, AH., Serafin, KA. 2009, Hurricane Ike: Observations of Coastal Change: U.S. Geological Survey Open-File Report 2009-1061.

Scholarly Presentations

Unconstrained Beaches in Groton, CT; A study considering the impacts of seawalls on beach geomorphology. (Presented at Connecticut College for the Goodwin-Niering Center, New London, CT, May 2008).

Professional Service and Leadership

Rules Judge, Spoonbill Bowl, National Ocean Science Bowl, St. Petersburg, FL (Feb 2010).

9.5.47 Heather Baron, M.S., *Marine Resource Management, in progress (Ruggiero)*

[260] Heather began working with Ruggiero in Fall 2008 and expects to finish in Spring 2011.

She is working on assessing societal vulnerability of U.S. Pacific Northwest communities to storm-induced coastal change. She has yet to decide on a thesis title.

Awards and Honors

Selected for OSU Banner Campaign as an “actively mindful” individual, 2010

Wallace D. Lowry Scholarship for Geosciences Summer Field Camp (\$,500), 2007 Affiliate Student Award for Study Abroad - AustraLearn Scholarship (\$1,000), 2006

Who’s Who Among Students in American Universities and Colleges Award, 2005

Peer-Reviewed Publications

Baron, H.M., **P. Ruggiero**, and **N.J. Wood**. *In prep*. A probabilistic socioeconomic assessment of climate change-enhanced coastal storm hazards. To be submitted to either Natural Hazards or Global Environmental Change.

Kettenring, K.M., M.K. McCormick, H.M. Baron, and D.F. Whigham. *In revision*. Mechanisms of *Phragmites australis* invasion in the Chesapeake Bay: feedbacks among genetic diversity, nutrients, and sexual reproduction. *Journal of Applied Ecology*.

- Kettenring, K.M., M.K. McCormick, H.M. Baron, and D.F. Whigham. 2010. *Phragmites australis* (common reed) invasion in the Rhode River subestuary of the Chesapeake Bay: disentangling the effects of foliar nutrients, genetic diversity, patch size, and seed viability. *Estuaries and Coasts*, 33: 118-126.
- McCormick, M.K., K.M. Kettenring, H.M. Baron, and D.F. Whigham. 2010. Extent and reproductive mechanisms of *Phragmites australis* spread in brackish wetlands in Chesapeake Bay, Maryland (USA). *Wetlands*, 30: 67-74.
- McCormick, M.K., K.M. Kettenring, H.M. Baron, and D.F. Whigham. 2010. Spread of invasive *Phragmites australis* in estuaries with differing degrees of development: genetic patterns, Allee effects and interpretation. *Journal of Ecology*, 98: 1369-1378.

Scholarly Presentations

- Baron, H.M., **N.J. Wood**, **P. Ruggiero**, J.C. Allan, and P. Corcoran. Assessing societal vulnerability of U.S. Pacific Northwest communities to storm-induced coastal change. Proceedings of The Coastal Society's 22nd International Conference, 2010.
- Baron, H.M., **P. Ruggiero**, and E.L. Harris. Developing a probabilistic socioeconomic assessment of climate change-enhanced coastal storm hazards. American Geophysical Union Fall Meeting, San Francisco, CA, 2010.
- Baron, H.M., K.M. Kettenring, M.K. McCormick, and D.F. Whigham.. Variation in seed viability, genetic diversity, and foliar nutrients of non-native *Phragmites australis* in the Rhode River, a subestuary of the Chesapeake Bay. Society of Wetland Scientists Annual Meeting, Washington, D.C., 2008.

Professional Service and Leadership

Science and Math Investigative Learning Experiences (SMILE) High School Challenge

- Planned and taught a 50-min lesson on climate change for two groups of high school students (~50 students total), including activities; topics covered: sea level rise, storminess, impacts of waves on beaches, April 2010
- Gave short interpretive talks about whale conservation & history to 3 groups of high school students (~40-50 students total), April 2009

Salmon Bowl (Oregon's National Ocean Sciences Bowl Regional Competition), March 2010

- Prepared competition rooms and materials; helped oversee event logistics

9.5.48 Erica Harris, M.S., *Marine Resource Management, in progress (Ruggiero)*

[261] Erica began working Ruggiero in Fall 2008 and expects to finish in Winter 2011. Erica is working on developing a multi-hazard multi-scale integrated approach to coastal vulnerability analysis. She has yet to decide on a thesis title.

Scholarly Presentations

December, 2010, San Francisco, CA. American Geophysical Union Fall Meeting. Assessing coastal vulnerability in light of a changing climate: a multi-hazard, multi-timescale approach. Poster and abstract.

June, 2010, Wilmington, NC. The Coastal Society. An integrated approach for evaluating coastal vulnerability in a changing climate. Oral Presentation and abstract.

July, 2009, Boston, MA. Coastal Zone. Incorporating the impacts of climate change into coastal vulnerability assessments. Oral Presentation and abstract.

April, 2009, Pack Forest Conference Center, WA. Graduate Climate Conference. Assessing climate change impacts on coastal vulnerability to inundation and erosion. Poster and abstract.

February, 2008, Orlando, FL. ASLO Ocean Sciences Meeting. Shore-based inversion of nearshore bathymetry. Poster and abstract.

Professional Service and Leadership

Science and Mathematics Initiative for Learning Enhancement (SMILE) high school challenge, increasing wave heights and sea level rise interactive demonstration: 2010

College of Oceanic and Atmospheric Sciences 50th Anniversary and Reunion, nearshore bathymetry survey equipment presentation: 2009

9.5.49 *Jeremy Mull, M.S., Coastal and Ocean Engineering, 2010 (Ruggiero)*

[262] Jeremy began working with Ruggiero in Fall 2008, and his thesis was titled: Coastal Sand Dunes in the U.S. Pacific Northwest: Regional Variability in Foredune Geomorphology and Associated Physical Vulnerability to Hazards.

Awards and Honors

International Arctic Research Center Global Change Student Research Grant, 2007

Dr. Donald Hood Memorial Scholarship for Marine Research, 2006

Peer-Reviewed Publications

Hacker, S., Zarnetske, P., Seabloom, E., **Ruggiero, P.**, Mull, J., Gerrity, S., and Jones, C., accepted and in press. Subtle differences in two non-native congeneric beach grasses significantly affect their colonization, spread, and impact, *Oikos*.

Scholarly Presentations

- Mull, J. M., P. Ruggiero, E. Seabloom, and S. Hacker. 2010. Coastal dune geomorphology and vulnerability to flooding and erosion in the U.S. Pacific Northwest. Poster presentation, American Geophysical Union (AGU) Ocean Sciences Meeting, Portland, OR.
- Mull, J., P. Ruggiero, E. Seabloom, and S. Hacker. 2009. Coastal dune geomorphology and vulnerability to flooding and erosion in the U.S. Pacific Northwest. Oral presentation, Geological Society of America (GSA) Meeting, Portland, OR.
- Mull, J., T. Weingartner, and M. Johnson. 2008. Fluxes of salt across the Bering Sea shelf break using QuikSCAT and NCEP measurements. Poster presentation, American Geophysical Union (AGU) Ocean Sciences Meeting, Orlando, FL.
- Mull, J., T. Weingartner, and M. Johnson. 2008. Fluxes of salt across the Bering Sea shelf break using QuikSCAT and NCEP measurements. Poster presentation, Alaska Marine Science Symposium, Anchorage, AK.

9.5.50 **Anthony A. Longo** (*PhD, co-advisor with Anita L. Grunder*), 2000-2005 (*Dilles*)

[263] Longo, A.A., 2005, Evolution of volcanism and hydrothermal activity in the Yanacocha mining district, northern Perú: Unpublished Ph.D. dissertation, Oregon State University,

Corvallis, 469 p. Committee Members, **Anita Grunder, Robert Duncan (COAS), Jeffrey**

Hedenquist (consultant)

Awards and Honors

Post-doctoral scholar appointment at University of Nevada (LV & Nevada) working with Jean Cline and John Muntean, 2006-2010

Peer-Reviewed Publications

Longo, A.A., and Teal, L.B., 2005, A summary of the volcanic stratigraphy and the geochronology of magmatism and hydrothermal activity in the Yanacocha gold district, northern Peru, *in* Rhoden, H.N., Steininger, R.C., and Vikre, P.G., eds., Geological Society of Nevada Symposium 2005; Window to the World, Reno, Nevada, May 2005, Proceedings, v. 2, p. 797-808.

Longo, A.A., **Dilles, J.H., Grunder, A.L.**, and Duncan, R., in press, Issue 8, 2010, Evolution of calc-alkaline volcanism and associated hydrothermal gold deposits at Yanacocha, Perú: *Economic Geology*. v. 105, 50 p.

Muntean, John L., Cline, Jean S., Simon, Adam C., and Longo, Anthony A., 2011, Magmatic-hydrothermal origin of Nevada's Carlin-type gold deposits: *Nature Geoscience*: 23 JANUARY 2011 | DOI: 10.1038/NCEO1064 (related to post-doc).

Scholarly Presentations

Geological Society of Nevada, 2005 (see title above)

Gordon Conference on Inorganic Geochemistry: Italy, 2008.

9.5.51 Zachary Gonsior (MS, 2003-06) (Dilles)

[264] Timing and evolution of Cenozoic extensional normal faulting in the southern Tobin Range, northwestern Nevada. Unpub. OSU MS thesis, 52 page, available at:

<http://hdl.handle.net/1957/1701>, Committee members: **Andrew Meigs, Robert Yeats?**

Peer-reviewed publications

Thesis: Published as Nevada Bureau of Mines and Geology Open-File Report OF06-4 and OF06-4m <http://www.nbmng.unr.edu/dox/dox.htm#8> (unreviewed)

Gonsior, Z.J. and **Dilles, J.H.**, 2008, The Timing and Evolution of Cenozoic Extensional Normal Faulting and Magmatism in the Southern Tobin Range, Nevada: *Geosphere*, Vol. 4, Issue 4, p. 687-712

9.5.52 Greg Brennecka (MS, 2003-06), (Dilles)

[265] Origin and metal content of magmatic sulfides in Cu-Au mineralizing silicic magmas: Yerington, Nevada and Yanacocha, Peru, OSU MS thesis, 49 p. <http://hdl.handle.net/1957/2076>.

Committee Members: **Adam Kent, Anita Grunder?**

9.5.53 Robert G. Lee (Ph.D., 2004-2008) (Dilles)

[266] Genesis Of The El Salvador Porphyry-Copper Deposit, Chile and Distribution Of Epithermal Alteration At Lassen Peak, California: OSU dissertation, 322 p.

<http://hdl.handle.net/1957/9592>: Thesis Committee Members: **Adam Kent, Anita Grunder,** & Robert Harris (Grad Rep)

Awards and Honors

Student Poster, *Second Place*, Ores and Orogenesis Conference, Tucson, Arizona, 2007

Peer-Reviewed Publications

Lee, R.G., **Dilles, J.H.**, Tosdal, R.M., Wooden, J.L., and Mazdab, F.L., accepted pending revisions, Magmatic evolution of granodiorite intrusions at the El Salvador porphyry copper deposit, Chile, based on trace element composition and U/Pb age of zircons: *Economic Geology*.

Scholarly Presentations

Lee, R.G., **Dilles, J.H.**, John, D.A., and Abela, T.L., 2006, The mineralogy and origin of hydrothermally altered Quaternary volcanic rocks on the south flank of Lassen Volcanic Center, California: 25 p., final report on USGS research grant contract, February, 2006.

Lee, R. G., and **Dilles, J.H.**, 2009, Europium anomalies in zircon from granodiorite porphyry intrusions at the El Salvador porphyry copper deposit, Chile [abstr.]: *Geol. Soc. America, Annual Mtg*, Portland, OR

Lee, R., **Dilles, J.**, and Tosdal, R., 2007, Reassessing the absolute ages of porphyry copper intrusions at El Salvador, Chile using SHRIMP-RG U/Pb zircon ages [abstr.]: *Ores and Orogenesis Symposium*, Arizona Geological Society, Tucson, p.

Lee, R.G., **Dilles, J.H.**, John, D.A., and Abela, T.L., 2006, The mineralogy and origin of hydrothermally altered Quaternary volcanic rocks on the south flank of Lassen Volcanic Center, California: abstract, *Soc Econ Geol., Keystone Meeting*.

Grants and Contracts

Student travel grant, *Keystone Meeting*, 2006

Student travel grant, *Ores and Orogenesis Meeting*, 2007

Student travel grant, *Gordon Conference*, 2008

9.5.54 Federico Cernuschi (MS, Jan. 2009-Feb. 11 defense, 2011) (Dilles)

[267] *Geology of the Cretaceous Lascano-East intrusive complex; magmatic evolution and mineralization potential of the Merín basin, Uruguay. Thesis Committee: Adam Kent, Robert Harris, David Graham (Grad Rep).*

Scholarly Presentations

Cernuschi, F. and **Dilles, J.**, 2010, *Geology, geochemistry and hydrothermal alteration in rift-related igneous rocks of the Lascano area, Merin Basin, Uruguay [abstr.]: Society of Economic Geologists, Meeting, Keystone, Colorado.*

Grants and Contracts

Student travel grant, *Keystone Meeting*, 2010

9.5.55 *Abigail Stephens, (MS, 2006-) (Dilles)*

[268] Mineralogy and origin of copper mineralization in the Plumas copper belt, northern California. Committee Member (for March 5?, 2011 defense): Thesis Committee: **Adam Kent, Roger Nielsen, Rob Harris** (Grad Rep)

Grants and Contracts

Northern California Geological Society, field research grant (\$2000), 2007
Delson Bridge to Future (\$500), 2010

9.5.56 *Julia Cohen, (MS, 2009- expected, summer 2011) (Dilles)*

[269] Mica and chlorite geochemistry in the km-scale footprint of hydrothermal wall-rock alteration in the porphyry copper deposits at Yerington, Nevada. Thesis Committee: ??

Grants and Contracts

Society of Economic Geologists, field research grant (\$3000), 2010

9.5.57 *Darrick Boschmann (MS, Summer, 2010-) (Dilles)*

[270] Structural geology of the Brothers Fault Zone in the Glass Buttes area, central Oregon, and targeting of geothermal resources: co-advisors: **John Dilles and Andrew Meigs**

9.5.58 *Lucian Farmer (MS, Summer, 2010-) (Dilles)*

[271] Zircon geochemistry of late Eocene granitic rocks associated with Carlin-type and other gold deposits of northern Nevada: co-advisors: **John Dilles and Adam Kent**

9.5.59 *Matthew Loewen (Kent)*

[272] Commenced M.S. Geology in Fall 2008. Major professor is Adam Kent. Studying igneous petrology and geochemistry.

Awards and Honors

Outstanding Graduate Teaching Assistant Award Spring 2010.

Oregon Lottery Graduate Fellowship, financial support (awarded Spring 2010 for the 2010-2011 school year)

Scholarly Presentations

2010 Fall AGU Meeting Poster: "Behavior of Volatile Metals in Basaltic Systems: Insights from Kilauea Iki and Loihi Volcanoes, Hawaii."

Grants and Contracts

Oregon State University Tower Research Fund Grant

Consortium for Ocean Leadership fieldwork Grant.

Professional Service and Leadership

Coalition of Graduate Employees Bargaining Team Member 2010

Coalition of Graduate Employees Vice President of Collective Bargaining (2010-2011)

Geoscience Curriculum Committee (2009-2010)

9.5.60 Morgan Salisbury (Kent)

[273] Commenced Fall 2007, Ph.D. in progress in Geology, Major professor Adam Kent.

Studying igneous petrology and volcanology.

Peer-Reviewed Publications

Salisbury, M.J., Jicha, B., **de Silva, S.**, Singer, B., Jiménez C., Ort, M., 2011, $^{40}\text{Ar}/^{39}\text{Ar}$ chronostratigraphy of Altiplano-Puna Volcanic Complex ignimbrites reveals the development of a major magmatic province, GSA Bulletin, doi: 10.1130/B30280.1.

Salisbury, M.J., Bohron, W.A., Clynne, M.A., Ramos, F., and Hoskin, P., 2008, Multiple plagioclase crystal populations identified by crystal size distribution and in situ chemical data: Implications for timescales of magma chamber processes associated with the 1915 eruption of Lassen Peak, CA: *Journal of Petrology*, v. 49, p. 1755 - 1780.

Kent, A.J. R., Darr, C., Koleszar, A.M., Salisbury, M.J., Cooper, K.M., 2010, Preferential eruption of andesitic magmas through recharge filtering, *Nature Geosciences*, v. 3, p. 631 – 636.

Hora, J.M., Singer, B.S., Jicha, B.R., Beard, B.L., Johnson, C.M., **de Silva, S.**, and Salisbury, M., 2010, Volcanic biotite-sanidine $40\text{Ar}/39\text{Ar}$ age discordances reflect complex Ar partitioning and pre-eruption closure in biotite, *Geology*, 38, 923-926.

Scholarly Presentations

American Geophysical Union - Fall Meeting, San Francisco, CA – 2010

Salisbury, M.J., **Kent, A.**, Patton, J.R., Goldfinger, C., Surachman, Y., Udrek, U., Deep-sea ash layers reveal evidence of large Pleistocene and Holocene volcanic eruptions from Sumatra, Indonesia, *EOS Trans., AGU, Fall Meet. Suppl.*, Abstract V11D-2330 (Poster).

American Geophysical Union - Fall Meeting, San Francisco, CA – 2008

Salisbury, M., **de Silva, S.**, Jicha, B., Singer, B., Jiménez, N., Ort, M., 2008, New $40\text{Ar}/39\text{Ar}$ ages from southwest Bolivia refine the timing of APVC volcanism, *EOS Trans., AGU*, 89(53), Fall Meet. Suppl., Abstract V21C-2117 (Poster)

GSA Annual Meeting - Seattle, WA - 2003 (poster)

Salisbury, M.J., Bohron, W.A., Clynne, M.A., Constraints on the timescales and mixing dynamics of the magma recharge event associated with the 1915 eruption of Lassen Peak, California, *Geological Society of America Abstracts with Programs*, Vol. 35, No. 6, September 2003, p. 564.

Grants and Contracts

2010: GSA Graduate Student Research Grant: Volcanology and Petrology of a Tunupa volcano, Bolivia

2009: Oregon State University Tower Research Grant: Volcanology and petrology of Cora Cora volcano, Bolivia: Implications for back arc magma genesis

Professional Service and Leadership

Instructor 2009, Yakima Valley Community College, Yakima, WA, Geol 120/121 - Physical Geology

Instructor 2008-2009, Linn Benton Community College, Albany-Corvallis, OR, Geo 102 - Introductory to Geology: Earth Surface Processes, GS 106 - Principles of Earth Science

9.5.61 Michael Rowe (Kent)

[274] Commenced geology Ph.D. Fall 2001, completed Fall 2006. Major professors Adam Kent and Roger Nielsen. Studies igneous petrology and geochemistry.

Awards and Honors

USGS Kleinman Fellowship Recipient 2004

Peer-Reviewed Publications

- Rowe, M.C., **Nielsen, R.L.**, **Kent, A.J.R.**, 2009, Subduction influence on oxygen fugacity and trace and volatile elements in basalts across the Cascade volcanic arc. *Journal of Petrology*, v. 50 (1), p. 61-91.
- Rowe, M.C., Thornber, C.R., Gooding, D.J., and Pallister, J.S., 2008, Catalog of Mount St. Helens 2004-2005 Tephra Samples with Major and Trace-element Geochemistry. *U.S. Geological Survey Open File Report 2008-1131*, 8 p., with digital database.
- Thornber, C.R., Pallister, J.S., Rowe, M.C., McConnell, S., Herriott, T.M., Eckberg, A., Stokes, W.C., Johnson Cornelius, D., Conrey, R.M., Hannah, T., Taggart, J.E. Jr., Adams, M., Lamothe P.J, Budahn J.R. and Knaack, C.M., 2008, Catalog of Mount St. Helens 2004–2007 dome samples with major- and trace-element chemistry. *U.S. Geological Survey Open File Report 2008-1130*, 9 p., with digital database.
- Rowe, M.C., **Kent, A.J.R.**, Thornber, C.R. 2008. Using amphibole phenocrysts to track vapor transfer during magma crystallization and transport: An example from Mount St. Helens, Washington. *Journal of Volcanology and Geothermal Research*, v. 178, p. 593-607.
- Schmidt, M., **Grunder, A.**, Rowe, M.C. 2008. Segmentation of Sr and Nd Isotopes Along the Cascade Arc. *Earth and Planetary Science Letters*, v. 266, 166-181.
- Rowe, M.C., Thornber, C.R., and **Kent, A.J.R.**, 2008, Identification and evolution of the juvenile component in 2004–2005 Mount St. Helens ash, chap. 29 in Sherrod, D.R., Scott, W.E., and Stauffer, P.H., eds., *A volcano rekindled: the renewed eruption of Mount St. Helens, 2004–2006. U.S. Geological Survey Professional Paper 1750*, p. 629-646.
- Kent, A.J.R.**, Rowe, M.C., Thornber, C.R., and Pallister, J.S., 2008, Trace element and Pb isotope composition of plagioclase from dome samples from the 2004–2005 eruption of Mount St Helens, Washington, chap. 35 in Sherrod, D.R., Scott, W.E., and Stauffer, P.H., eds., *A volcano rekindled: the renewed eruption of Mount St. Helens, 2004–2006. U.S. Geological Survey Professional Paper 1750*, p. 809-826.
- Thornber, C.R., Pallister, J.S., Lowers, H.A., Rowe, M.C., Mandeville, C.W., and Meeker, G.P., 2008, Chemistry, mineralogy, and petrology of amphibole in Mount St. Helens 2004–2006 dacite, chap. 32 in Sherrod, D.R., Scott, W.E., and Stauffer, P.H., eds., *A volcano rekindled: the renewed eruption of Mount St. Helens, 2004–2006. U.S. Geological Survey Professional Paper 1750*, p. 727-754.
- Rowe, M.C., Wolff, J.A., Gardner, J.N., Ramos, F.C., Teasdale, R., Heikoop, C.E., 2007, Development of a continental volcanic field: petrogenesis of pre-caldera intermediate and silicic rocks and origin of the Bandelier magmas, Jemez Mountains (New Mexico, U.S.A). *Journal of Petrology*, v. 48, 2063-2091.
- Rowe, M.C., **Kent, A.J.R.**, **Nielsen, R.L.**, 2007. Determination of sulfur speciation and oxidation state of olivine hosted melt inclusions. *Chemical Geology*, v. 236, p. 303-322.

- Kent, A.J.R.**, Blundy, J., Cashman, K., Cooper, K.M., Donnelly, C., Pallister, J.S., Reagan, M., Rowe, M.C., Thornber C.R., 2007. Vapor transport prior to the October 2004 eruption of Mount St. Helens, Washington. *Geology*, v. 35, p. 231-235.
- Rowe, M.C., **Nielsen, R.L.**, **Kent, A.J.R.** 2006. Anomalously high Fe contents in rehomogenized olivine hosted melt inclusions from oxidized magmas. *American Mineralogist*, v. 91, p. 82-91.
- Wolff, J.A., Rowe, M.C., Teasdale, R., Gardner, J.N., Ramos, F.C., and Heikoop, C.E., 2005. Petrogenesis of pre-caldera mafic lavas, Jemez Mountains Volcanic Field (New Mexico, USA).

Scholarly Presentations

- Rowe, M.C., **Kent, A.J.R.**, Thornber, C.R., 2005, Petrology and geochemistry of Mt. St. Helens ash before and during continuous dome growth (abs): *Geochimica et Cosmochimica Acta*, v. 69, issue 10, supplement 1, p. A272.
- Rowe, M.C., **Nielsen, R.L.**, **Kent, A.J.**, 2004, fO₂ Determination by S k Peak Shift and Olivine- Spinel Oxygen Barometry: Implications for Mantle Wedge Heterogeneities in the Cascadia Subduction Zone, *Eos Trans. AGU*, (85) 47, Fall Meet. Suppl., V43A-1418.
- Rowe, M.C., **Nielsen, R.L.**, **Kent, A.J.**, Wallace, P.J., Donnelly-Nolan, J.M., 2003, Origins of Newberry Volcano: Central Oregon: A Cascade backarc, High Lava Plain, Basin and Range, shield volcano? *Eos Trans. AGU*, 84 (46), Fall Meet. Suppl., Abstract V32H-06.

Grants and Contracts

- Collaborative Research: Constraining the Relative Importance of Fluid Fluxes and Lithospheric Metasomatism on the Evolution of the Rio Grande Rift, New Mexico
National Science Foundation (3yrs-M. Rowe PI) \$198,216 (2008-2011)
USGS Kleinman Research Grant (2004)
Geological Society of America Student Research Grant (2003, 2004)

Professional Service and Leadership

- Proposal Reviewer: National Science Foundation (9 reviews since 2006)
Manuscript Reviewer of International Journals (11 reviews since 2006)
Convener of Symposia at International Conferences: *Mechanisms and time scales of crustal assimilation* (18th Goldschmidt, Vancouver, Canada 2008); *The Rest of the Story: Mount St. Helens 2004-2008* (American Geophysical Union Fall 2008); Multidisciplinary Studies of Cascade Volcanism and its Tectonic Setting (Geological Society of America, 2009)

9.5.62 *Jeremiah Oxford (Kent)*

[275] Commenced M.S. Geology in Fall 2003. Completed Spring 2006. Major professor Adam Kent. Studied igneous petrology and geochronology.

Scholarly Presentations

Fall AGU Meeting 2006 Age and Origin of Oregon Coast Range Intrusives

9.5.63 *Cristina Darr (Kent)*

[276] Commenced M.S. Geology in Fall 2003. Completed Spring 2006. Major professor Adam Kent. Studied igneous petrology and geochemistry.

Peer-Reviewed Publications

Kent, A.J., Darr, C., Koleszar, A.M., Salisbury, M.J., Cooper, K.M., 2010, Preferential eruption of andesitic magmas through recharge filtering, *Nature Geosciences*, v. 3, p. 631 – 636.

Scholarly Presentations

AGU Fall Meeting 2006. Crystal populations from Mount Hood andesites

9.5.64 *Alison Koleszar (Kent)*

[277] Commenced Ph.D. Geology in Fall 2008. Major professor Adam Kent. Studying igneous petrology and geochronology.

Awards and Honors

OSU Geosciences Outstanding Graduate Teaching Assistant Award (2010)

USGS Kleinman Grant for Volcano Research (2008)

Peer-Reviewed Publications

Koleszar, A.M., **Kent, A.J.R.**, Wallace, P.J., Scott, W.E. (in prep). “Controls on long-term low explosivity at Mount Hood, Oregon.” *will submit to Journal of Volcanology and Geothermal Research in early 2011.*

Kent, A.J.R., Darr, C.M., Koleszar, A.M., Salisbury, M.J., Cooper, K.M. (2010), “Preferential eruption of andesitic magmas through recharge filtering.” *Nature Geoscience*, 3, 631-636.

Scholarly Presentations

- Koleszar, A.M. March 10, 2010. Invited talk at Portland State University, Portland, OR: “Ooze or Explode? Geochemical controls on Mount Hood’s plumbing and eruptive behavior.”
- Koleszar, A.M. February 18, 2010. Invited talk at Cascades Volcano Observatory, Vancouver, WA: “Ooze or Explode? Volatile and petrologic control on Mount Hood’s plumbing and eruptive behavior.”
- Koleszar, A.M., **Kent, A.J.R.**, Cooper, K.M., Eppich, G.R. (2010). “Conditions of magma mixing as recorded in amphiboles from Mount Hood, Oregon.” *AGU 2010 Fall Meeting Abstract V43C-2387*.
- Koleszar, A.M., **Kent, A.J.R.**, Scott, W.E., Wallace, P.J., Cooper, K.M., Eppich, G.R. (2010). “Volatile concentrations, recharge, and the low explosivity of calc-alkaline andesites from Mount Hood Volcano, Oregon.” *State of the Arc Meeting 5, Greece*.
- Koleszar, A.M., **Kent, A.J.R.**, Scott, W.E., Wallace, P.J., Cooper, K.M., Eppich, G.R. (2009). “Volatile (H₂O, CO₂, S, Cl) concentrations and the low explosivity of calc-alkaline andesites from Mount Hood Volcano, Oregon.” *Geological Society of America Abstracts with Programs, 41:7*, 65. Paper No. 18-13.
- Koleszar, A.M., **Kent, A.J.R.**, Scott, W.E., Wallace, P.J. (2008). “Volatile concentrations in calc-alkaline andesites from Mount Hood Volcano, Oregon,” *Eos Trans. AGU, 89 (53)*, Fall Meet. Suppl., Abstract V21B-2099.
- Koleszar, A.M., **Kent, A.J.**, Wallace, P.J., Woodhead, J.D. (2007). “Volatile (H, C, Cl, S) Concentrations in Ocean Island Basalt Glasses from Pitcairn and the Society Islands,” *Eos Trans. AGU, 88 (52)*, Fall Meet. Suppl., Abstract DI33A-1120.

Grants and Contracts

Professional Service and Leadership

2010: NSF External Grant Reviewer: MARGINS Collaborative Research

2008-current: Science demonstration volunteer at the annual daVinci Days Arts & Science Festival

9.5.65 *Daniel Eungard (Kent)*

[278] Commenced M.S. Geology in Fall 2010. Major professor Adam Kent. Studying igneous petrology and volcanology.

9.5.66 *Christine Chan (Kent)*

[279] Commenced M.S. Geology in Fall 2010. Major professor Adam Kent. Studying igneous

petrology and geochemistry.

9.6 Geography Faculty Performance

[280]

9.6.1 Laurence Becker, Assoc. Prof., Geography

Awards and Honors

College of Science Olaf Boedtker Award for Excellence in Undergraduate Advising, 2010

Peer-Reviewed Publications

Mosley, William; Carney, Judith; and Becker, Laurence. 2010. "Neoliberal Policy, Rural Livelihoods, and Urban Food Security in West Africa: a Comparative Study of The Gambia, Côte d'Ivoire, and Mali." *Proceedings of the National Academy of Sciences (PNAS)*, 107(13): 5774-5779.

Becker, Laurence C. and N'guessan Yoboué. 2009. "Rice Producer – Processor Networks in Côte d'Ivoire." *Geographical Review*, 99(2): 164-185.

Scholarly Presentations

Guest lecturer for Masters 2 course on International Migration, Université de Poitiers, December 2010. Presented "Changing Ivorian Identity: The Role of International Migration."

Guest lecturer for Loren Chavarria and Juan Trujillo's Learning Community, "Sustento," Spanish 499, Oregon State University, May 2010. Presented "Impacts of Neoliberal Reform on Food Security in West Africa."

Invited discussant for Pauline Peters' Keynote Address, "The Social and Cultural Dimensions of AIDS: Interpreting 'Family', 'Community', and 'Sexuality' in Southern Africa," at the conference entitled "You Can't Crush a Louse with Only One Thumb: Integrating Biomedical and Sociocultural Approaches to HIV/AIDS in Africa," University of Oregon, Eugene, 3 April 2009.

Presented "West African Food Production in the Wake of Structural Adjustment : The Case of Rice in Côte d'Ivoire" at the annual meeting of the Oregon Academy of Science, Western Oregon University, Monmouth, 28 February 2009 (approx. 25 attended).

Presented "Agriculture and Food in West Africa" to the Oregon State University Academy for Lifelong Learning, a two-hour session that was part of a course for about 40 persons, January, 2008.

Presented "Watch Those Genes: Current Issues Facing African Rice" to the Friday at Noon Rotary Club of Corvallis, 5 October 2007 (approx. 70 attended).

Presented “Nous sommes ce que nous cultivons: la diversité génétique du riz africain à la base d’une adaptation environnementale et sociale” at Point Sud: Center for Research on Local Knowledge, Bamako, Mali, 14 July 2007

Presented “Conservation of African Rice (*Oryza glaberrima*) Biodiversity: Linking the Interest of Crop Breeders and Local Communities” at the Africa Rice Center, Cotonou, Benin, 3 July 2007

Presented “Agro-Biodiversity and Cultural Diversity Face Globalization: Why Grow African Rice?” at the annual meeting of the Association of American Geographers, San Francisco, 19 April, 2007

Chaired paper session “Agriculture and Food”

Presented “African Rice Research Issues” to the Wednesday Morning Rotary Club of Corvallis, January 2007 (approx. 55 attended).

Presented “Rice Commodity Chains in Côte d’Ivoire” at the Department of Geography Seminar Tea, University of Oregon, Eugene, April 2005.

Presented “Affects of Mali’s Natural Resource Management Strategies on Indigenous People” at the International Environmental Issues seminar and follow-up discussion, Forest Resources, Oregon State University, April-May 2005.

Grants and Contracts

International Migration, Contested Identities, and Agricultural Production: The Case of Côte d’Ivoire, University of Poitiers, France, 9/10-7/11, 5,700 €, Commission Permanente du Conseil Régional, Poitou-Charentes, France

Faculty development award: L.L. Stewart Faculty Development Award, 6/06, Participated in Learning Communities Institute at Evergreen State College, WA, \$845

Project title: Processes of Change in Agricultural Systems: Impacts of Interventions in Ivorian Rice Cropping Systems, 1/02-1/05, \$124,908, National Science Foundation, Geography and Regional Science & Sub-Saharan Africa Programs. Study in collaboration with the West Africa Rice Development Association, Bouaké, Côte d’Ivoire, which contributed an additional \$28,000, and the Institut National Polytechnique—Houphouët-Boigny, Yamoussoukro, Côte d’Ivoire

Professional Service and Leadership

Undergraduate Advisor, Geography Program, Department of Geosciences (9/08-present)

Director, Geography Program, Department of Geosciences (9/06-9/2009)

Advisory Committee, Dept. of Geosciences, (6/05-6/2009)

Selection Committee, International Programs: Fulbright (2008); Boren Scholarships (2007-2010)

Task Force on Graduate Teaching Certificate, College of Science (5/05-9/06)

Search Committee, Regional/Rural Economist Position. Dept. of Agricultural and Resource Economics (8/05-6/06)

Search Committee, Resource/Land-Use Planning Geographer Position, Dept. of Geosciences. (12/2004-5/2005)

Graduate Committee, Dept. of Geosciences, (9/04-6/05)

9.6.2 Michael Campana, Prof., Geography, Water Resources

Awards and Honors

Icko Iben Award, American Water Resources Association, 2009

Keith Anderson Award, Association of Ground Water Scientists and Engineers, 2005

International Excellence Award, University of New Mexico, 2003-2004

Albert J. and Mary Jane Black Professor of Hydrogeology, Department of E&PS, UNM, 2002 - 2006

Peer-Reviewed Publications

Scholarly Presentations

What Would Elvis Say? Mississippi v. Memphis and the Curious Case of the Memphis Sand Aquifer. Univ. of Utah Tanner Center Conference: Water, Conflict and Human Rights, SLC, February 2011

Mississippi v. Memphis: The Curious Case of the Memphis Sand Aquifer. Keynote address, UNESCO ISARM 2010 Pilot Course, Paris, December 2010

Hydrophilanthropy: Quo Vadis? Keynote address, Annual Meeting, Montana Section, AWRA, Helena, MT, October 2010

Do Water, Oil, and Gas Mix? The Kura-Araks Basin in the South Caucasus. USGS Oregon Water Science Center Seminar, Portland, OR, May 2010

Water Planning: Views from the Land of Enchantment and the Beaver State. Keynote address, Oklahoma Water Town Hall, Norman, OK, May 2010

Activities of the National AWRA, Keynote address, 38th Annual Meeting, Utah Section, AWRA, Salt Lake City, UT, May 2010

My Recent Life as a Foreign-Policy Tool: Transboundary Water Resources and the New 'Great Game' in the South Caucasus, The Water Institute, U. of Waterloo, Ontario, Canada, March 2010

Water and the 4Cs: Climate, Conflict, Cooperation, and Caring. Truckee River Symposium, Reno, NV, November 2009

Drilling Water Wells for Community Water Supply in Developing Countries, WaTER Conference, Norman, OK, October 2009

World Freshwater Resources and the 4Cs: Climate, Conflict, Cooperation, and Compassion, Southern Illinois University, Carbondale, IL, April 2009

Hydrophilanthropy 101: Small-Scale Water Supply Projects in Central America., Advanced Watershed Hydrology class, Southern Illinois University, Carbondale, IL April 2009

Case Study: Albuquerque “Drying Cities” Roundtable, Session 1.1.3 Local Actions: Thinking Beyond the Water Box: What Adaptations to Global and Climate Change, Fifth World Water Forum, March 2009

Is Nonrenewable Groundwater Development Inconsistent with IWRM? Session 3.4.2, Strategic Framework for Effective and Sustainable Water Resources Management and Protection, Fifth World Water Forum, March 2009

Nonrenewable ground water management, side event on The Role of the Groundwater Silent Revolution: “More Cash and Nature per Drop”, Fifth World Water Forum, March 2009

Water and Sanitation in Central America: Views from the Ivory Tower, University of Oklahoma WaTER Center Symposium, October 2008

The World’s Fresh Water Resources and the 4C’s: Climate, Conflict, Cooperation, and Caring, Columbia Gorge Community College, October 2008

From Hydrologist to Foreign-Policy Tool: South Caucasus Transnational Water Resources and the New ‘Great Game’, University of Nevada-Reno, November 2007

Conflict and Cooperation in the South Caucasus: the Kura-Araks Basin of Armenia, Azerbaijan, and Georgia (or, How I Became a Foreign Policy Tool), Oregon State University, Engineers Without Borders banquet, October 2007

Hydrohumanity: Quo Vadis?, Geological Society of America Annual Meeting, Denver, CO, October 2007

Water Resources and Climate Change: Securing the Future for the Western USA, Universidad Santo Tomás, Santiago, Chile, August 2007

Water Resources Conflict Management: Lessons from the Western USA, Universidad Santo Tomás, Copiapó, Chile, August 2007

Conflict and Cooperation in the South Caucasus: The Kura-Araks Basin of Armenia, Azerbaijan, and Georgia, The Last Drop Conference, The Hague, The Netherlands, December 2006

Oregon’s Water Resources: 20-20 Hindsight from the Year 2030, Keynote Presentation, Oregon Water Law Conference, Portland, OR, November 2006

The NATO-OSCE South Caucasus River Monitoring Project: An Overview, NATO Advanced Research Workshop, Almaty, Kazakhstan, June 2006

Department of Civil and Environmental Engineering, University of Oklahoma, November 2005 UN Day, University of New Mexico, October 2005

Dynamics of Transboundary Aquifer Management: Lessons from North America, International Symposium on Ecosystem Governance, CSIR, South Africa, October 10-13, 2005

University of New Mexico Water Forum, September 2005

Role of Science – Transboundary Water Governance as a Manifestation of a Trialogue,
Stockholm Water Symposium, Sweden, August 2005

Working With Transboundary Water Concerns, Texas A & M University, February 2005

Small-Community Water Supply in Developing Countries, UNM Civil Engineering Seminar,
January 2005

Grants and Contracts

Study of the U.S. Institute for the Environment. U.S. Department of State; \$330,000. 10/1/08 –
9/30/09.

Blue Revolution Initiative; Regional Water Governance Benchmarking in the Middle East North
Africa (MENA) Region. IRG-USAID; \$274,000. 10/1/08 – 10/31/10.

Environmental Flow Requirements for the Middle Fork and Coast Fork - Willamette River
Literature Review and Summary Report. The Nature Conservancy; \$60,000. 7/1/06-3/31/07.

Joint Venture Agreement. U.S. Forest Service; \$44,000. 10/1/05 – 9/30/06.

Development of a Master of Science degree in environmental management and engineering at
the L.N.

Gumilyov Eurasian National University, Astana, Kazakhstan. Eurasia Foundation; \$159,000;
5/1/05 –

4/30/06 (Phase I). Lead PI with three other PIs.

Hydropolitical vulnerability and resilience. Oregon State University; \$6,000; 2/1/05 – 6/30/05.

South Caucasus river monitoring. North Atlantic Treaty Organization (NATO) and Organization
for Security and Cooperation in Europe (OSCE); \$1,350,000; 10/1/02 – 12/31/08.
PI/Project Manager.

Student recruitment, retention and experiential learning in water resources. U.S. Department of
Agriculture; \$150,000; 10/1/02 – 9/30/05.

An REU site in water resources for developing countries. National Science Foundation (co-PI
with

S. Silliman, U. of Notre Dame, and Scott Tyler, U. of Nevada-Reno); \$190,000; 3/1/02-2/28/05

IGERT: Freshwater graduate studies link fundamental science with applications through
integration of ecology, hydrology and geochemistry in regions with contrasting climates.
National Science Foundation (PIs: C. Dahm, A. Ward, R. Wetzel, W. Lyons, A. Benke, et
al.); \$2,700,000; 6/1/00-5/31/05.

Professional Service and Leadership

President, American Water Resources Association, 2011

President-Elect, American Water Resources Association, 2010

President, Oregon section, American Water Resources Association, 2009 - present

Board of Directors, American Water Resources Association, 2008 - present
Director, Institute for Water and Watersheds, Oregon State University, 2006-2009.
Past Chair, Association of Ground-Water Scientists and Engineers, (AGWSE) 2004-2005.
2003-2006. Interim Director, International Rural Water Institute, University of New Mexico.
Chair, Association of Ground-Water Scientists and Engineers, (AGWSE) 2002-2003.
Board of Directors, National Ground Water Association, 2002-2005 (V-P, 2002-2003)
Board of Directors, Universities Council on Water Resources (UCOWR), 2000-2002.
Vice President of Academic Affairs, American Institute of Hydrology (AIH), 2001-2002.
Secretary-Treasurer, Association of Ground-Water Scientists and Engineers, (AGWSE) 2000-2001.
1997-2006. Director, Water Resources Program, MSC05 3110, 1 University of New Mexico
Board of Directors, Association of Ground-Water Scientists and Engineers, (AGWSE) 1997-2005.

9.6.3 *Christopher Daly, Prof. (Senior Research), Geography*

Awards and Honors

- 2010 American Institute of Biological Sciences: **Distinguished Scientist Award**, presented collectively to the LTER (Long Term Ecological Research) Network. The HJ Andrews Experimental Forest is an active participant in LTER, and Daly is PI for Climate.
- 2004 American Meteorological Society annual award: **“Outstanding Contribution to the Advance of Applied Meteorology,”** presented to Daly at the AMS National Meeting banquet, January 15, Seattle, WA.

Peer-Reviewed Publications

See curriculum vitae (attached).

Scholarly Presentations

See curriculum vitae (attached).

Grants and Contracts

See curriculum vitae (attached).

Professional Service and Leadership

- MEMBER, Search committee for Director, Sun Grant Western Region Program, 2010-2011
MEMBER, OSU President’s Delegation to China, August-September 2006.

MEMBER, Executive Committee, OSU China Working Group, 2005-2006

DIRECTOR, Sun Grant Western Region GIS Center, 2007-present

MEMBER, LTER6 Planning Group, 2007-present

EX-OFFICIO CHAIR, Applied Climatology Committee, American Meteorological Society, 2008-2009

CHAIR, Applied Climatology Committee, American Meteorological Society, 2005-2008

MEMBER, Applied Climatology Committee, American Meteorological Society, 2002-2004

PROGRAM COMMITTEE, 1st Pacific Northwest Climate Conference, 15-16 June 2010, Portland, OR

CO-PROGRAM CHAIR, 17th Conference on Applied Climatology, American Meteorological Society, August, 2008, Whistler, British Columbia, Canada

PROGRAM CHAIR, 16th Conference on Applied Climatology, American Meteorological Society, January, 2007, San Antonio, TX

CO-PROGRAM CHAIR, 15th Conference on Applied Climatology, American Meteorological Society, June, 2005, Savannah, GA

MEMBER, Climate Committee, HJ Andrews Experimental Forest Long-Term Ecological Research Site, 1992 – present

MEMBER, Western Integrated Pest Management Weather Systems Working Group, 2004-present

MEMBER, Mesoscale Analysis Committee (Analysis of Record), NOAA National Weather Service, 2004 – present

MEMBER, SNOTEL Data Quality Workgroup, USDA-NRCS, 2003-present

MEMBER, Climate Working Group, FGDC (Federal Geospatial Data Committee), 1999-present

SESSION CHAIR, Downscaling Climate and Weather Variables, 86th Annual Meeting of the American Meteorological Society, 28 January – 2 February, 2006, Atlanta, GA.

SESSION CHAIR, Data Quality and Metadata, 15th Conference on Applied Climatology, American Meteorological Society, June, 2005, Savannah, GA

9.6.4 *Hannah Gosnell, Asst. Prof., Geography*

Awards and Honors

- 2002 Honorable Mention, Universities Council on Water Resources Research Committee Award for the Outstanding Water Resources Ph.D. Dissertation in the Field of Water Policy and Socio-Economics.
- 2005 Brown-Ricketts-Udick Award. American Association of University Women, Boulder, CO Branch.

Peer-Reviewed Publications

- Mendham, E., H. Gosnell, and A. Curtis. In press. Agricultural land ownership change and natural resource management: Comparing U.S. and Australian case studies. In G. Luck (ed.), *Demographic Change in Rural Australia*. New York: Springer.
- Santelmann, M., H. Gosnell, and M. Meyers. In press. Connecting children to the land: Place-based education in the Muddy Creek Watershed, Oregon. *Journal of Geography*.
- Charnley, S., D. Diaz, and H. Gosnell. 2010. Mitigating climate change through small-scale forestry in the USA: Opportunities and challenges. *Small-Scale Forestry*. 9(4): 445-462.
- Gosnell, H., J. Kline, **J. Duncan, and G. Chrostek**. 2010. Is Oregon's land use planning program conserving forest and farm land? A systematic review of the evidence. *Land Use Policy*. DOI 10.1016/j.landusepol.2010.05.012.
- Gosnell, H. and **J. Abrams**. 2010. Amenity migration: Diverse conceptualizations of drivers, socioeconomic dimensions, and emerging challenges. *GeoJournal* DOI 10.1007/s10708-009-9295-4.
- Gosnell, H. and **E. Kelly**. 2010. Peace on the river? Social-ecological restoration and large dam removal in the Klamath Basin, Oregon, USA. *Water Alternatives* 3(2): 362-383.
- Gosnell, H. and D. Shinneman. 2010. The human landscape. In R.P. Reading, B. Miller, A.L. Masching, R. Edward, and M.K. Phillips (eds.), *Awakening Spirits: Wolves in the Southern Rockies*. Golden, CO: Fulcrum Publishing, pp. 79-100.
- Miller, B., R.P. Reading, and H. Gosnell. 2010. Public attitudes toward wolves and wolf recovery. In R.P. Reading, B. Miller, A.L. Masching, R. Edward, and M.K. Phillips (eds.), *Awakening Spirits: Wolves in the Southern Rockies*. Golden, CO: Fulcrum Publishing, pp. 103-117.
- Robbins, P., **K. Meehan**, H. Gosnell, and S. Gilbertz. 2009. Writing the New West: A critical review. *Rural Sociology* 74(3): 356-382.
- Diaz, D., S. Charnley, and H. Gosnell. 2009. *Engaging western landowners in climate change mitigation: a guide to carbon-oriented forest and range management and carbon market opportunities*. Gen. Tech. Rep. PNW-GTR-801. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 81 pp.
- Gosnell, H. 2009. Healing with Howls: Rewilding the Southern Rockies. In: P.N. Limerick, A. Cowell, and S.K. Collinge (eds.), *Remedies for a New West: Healing Landscapes, Histories, and Cultures*. Tucson, AZ: University of Arizona Press, pp. 134-152.
- Gosnell, H. and **G. Chrostek**. 2008. Goal 3: Agricultural Lands. In *The Oregon Land Use Program: An Assessment of Selected Goals*. Institute for Natural Resources, Report to Oregon Department of Land Conservation and Development, pp. 34-55.
- Gosnell, H. 2008. Revolution on the Range: The Rise of the New Ranch in the American West. (Book Review). *Rangelands* 30(5): 44.

- Gosnell, H., **J. H. Haggerty**, and P. Byorth. 2007. Ranch ownership change and new approaches to water resource management in Southwestern Montana: Implications for fisheries. *Journal of the American Water Resources Association* 43(4): 990-1003.
- Gosnell, H., **J. H. Haggerty** and W. R. Travis. 2006. Ranchland ownership change in the Greater Yellowstone Ecosystem, 1990-2001: Implications for conservation. *Society and Natural Resources* 19(8): 743-758.
- Gosnell, H., G. Preston, W. Travis. 2006. Socioeconomics: Impacts and Adaptation. In: J. Katzenberger (ed.), *Climate Change and the City of Aspen: An Assessment of Impacts and Potential Responses*. Aspen, CO: Aspen Global Change Institute, pp. 57-81.
- Gosnell, H. and W. R. Travis. 2005. Ranchland ownership dynamics in the Rocky Mountain West. *Rangeland Ecology and Management* 58: 191-198.

Scholarly Presentations

- “Engaging American Ranchers in Carbon Offset Markets: Limitations and Opportunities.” Agri-Food XVII: Conference of the Australian and New Zealand Agri-Food Research Network, Monash University, Melbourne, Australia, November 28, 2010.
- “Community Capacity and Collective Management of Riparian Commons: An Evaluation of the National Riparian Service Team’s Creeks and Communities Strategy.” North American Regional Meeting of the International Association for the Study of the Commons (IASC), Arizona State University, Phoenix, AZ, September 2010.
- “*Understanding and Enhancing Agricultural Landowners’ Role in Climate Change Mitigation.*” Third Annual National Ecosystem Markets Conference, Raleigh-Durham, NC, June 23, 2010.
- “An Exploration of Opportunities for Agricultural Landowners to Prosper from Payment for Ecosystem Services.” New Natural Resource Economy Forum, sponsored by the Institute for Policy Research & Innovation at the University of Oregon, Institute for Natural Resources at Oregon State University, and the Institute for a Sustainable Environment and the University of Oregon, Portland, OR, June 14, 2010.
- “*Identifying Factors Influencing Deforestation: Using Cross-Tabulation Matrix and Transition Probability Model.*” *Annual Meeting of the Association of American Geographers, Washington, D.C., April 2010 (with Kangping Si and M. McCune).*
- “*Opportunities, Challenges, and Limitations Related to Engaging U.S. Ranchers in Carbon Markets.*” *Annual Meeting of the Association of American Geographers, Washington, D.C., April 2010.*
- “Understanding and Enhancing the Role of Ranchers in Voluntary Carbon Markets.” Annual Meeting of the California Rangeland Conservation Coalition, January 2010.
- “An Overview of Research on Engaging Agricultural Landowners in the Voluntary Carbon Market.” Oregon Climate Change Research Institute Conference and Retreat, Corvallis, OR, June 24, 2009.

- “Adapting Private Forest and Rangeland Management to Mitigate Climate Change: Policies and Practices.” Annual Meeting of the Association of American Geographers, Las Vegas, NV, April 2009.
- “Studying Exurbia and Amenity Migration.” Annual Meeting of the Association of American Geographers, Las Vegas, NV, April 2009.
- “Adapting Private Forest and Rangeland Management to Mitigate Climate Change: Policies and Practices.” Annual Meeting of the Society for Range Management, Albuquerque, NM, January 2009.
- “‘Shift Happens’: How Native Americans and Native Fish are Changing Rural Environmental Governance in the American West.” Annual Meeting of the Association of American Geographers, Boston, MA, April 15-20, 2008.
- “Methods, Approaches, and Theory Involved in Studying Exurbia and Amenity Migration.” Annual Meeting of the Association of American Geographers, Boston, MA, April 15-20, 2008.
- “Ranchland Ownership Dynamics in the American West and Implications for Conservation.” Rural Voices for Conservation Coalition, 7th Western Annual Policy Meeting, Skamania Lodge, December 2007.
- “Engaging Rural Youth in a Geographic Evaluation of Impacts of Dam Removal on Social Sustainability in the Upper Klamath Basin, Oregon.”** Water in the Pacific Northwest: Moving Science into Policy and Action, State of Washington Water Research Center, Stevenson, WA, November 7, 2007 (with Kelley Thomas, Jason Hatch, and Lena Etuk).
- “Contingencies and Collaboration on the Gentrifying Range in the American West.” Annual Meeting of the Association of Pacific Coast Geographers, Long Beach, CA, October 17-21, 2007.
- “Uneasy Neighbors, or Partners in Multifunctionality? Ownership Heterogeneity and Transitional Moments and Spaces on Ranch Landscapes in the American West.” The Sixth Quadrennial Conference of British, Canadian, and American Rural Geographers, Spokane, WA, July 15-20, 2007.
- “Random Acts of Restoration? Towards an Assessment of the Efficacy and Viability of Water Reallocation Strategies in the Upper Klamath Basin, Oregon.” International Symposium on Society and Resource Management, Park City, UT, June 17-21, 2007.
- “Can New Ranchers Save the Old West?” International Symposium on Society and Resource Management, Park City, UT, June 17-21, 2007.
- “Western Futures, or Geographies of Hope (and Chagrin) in the New West.” Bureau of Reclamation Lands, Recreation, Cultural Resources, and Surveys Conference, Reno, NV, May 9, 2007.
- “New Approaches to Environmental Governance on Agricultural Landscapes in the American West.” Annual Meeting of the Association of American Geographers, San Francisco, CA, April 17-21, 2007.

- “Engaging Rural Youth in a Geographic Evaluation of the Impacts of Dam Removal on Sustainability in the Upper Klamath Basin, Oregon.” Annual Meeting of the Association of American Geographers, San Francisco, CA, April 17-21, 2007 (with Jason Hatch, Kelley Thomas, Lena Etuk, Kurt Peters, Lindsey Lyons).
- “When Ranching is for the Birds (and Fish): Emerging Institutions for Natural Resource Management in the Klamath Basin, Oregon.” AgriFood XIII: Annual Meeting of the Australasian Agri-Food Research Network, Dunedin, NZ, November 27-December 1, 2006.
- “Contested Waters: Amenity Migration and New Approaches to Water Resource Management in the Greater Yellowstone Ecosystem.” Annual Meeting of the Association of American Geographers, Chicago, IL, March 7-11, 2006.
- “Ranch Ownership Change and New Approaches to Water Resource Management in Southwestern Montana: Implications for Fisheries.” Annual Meeting of the American Water Resources Association, Seattle, WA, November 2005.
- “Opportunities, Challenges, and Limitations Related to Engaging American Ranchers in Carbon Offset Markets.” The Berkeley Faculty Roundtable on Environmental Services in Rangeland Production Systems, University of California, Berkeley, December 2009.
- “Ranching in the New West.” OSU Alumni Association Academy for Lifelong Learning, Corvallis, OR, April 2009.
- “When Ranching is for the Birds: Emerging Opportunities and Challenges Confronting the Rural American West.” OSU Foundation, Alumni Weekend, Sunriver Resort, OR, June 2008.
- “The Political Ecology of Ranch Ownership Change in the American West.” Political Ecology Graduate Seminar, Department of Geography, University of Oregon, Eugene, OR, March 7, 2007.
- “The Social-Ecological Effects of Agricultural Landscape Change in the High Amenity American West.” Department of Geography Colloquium, University of Oregon, Eugene, OR, November 2, 2006.
- “Water, Fish, Tribes, and Choice: A Geographic Evaluation of Endangered Species Act Implementation in the San Juan River Basin, USA.” Department of Geography, Central Washington University, Ellensburg, WA, April 2005.
- “Wolf Reintroduction in the Southern Rockies.” Environmental Studies Program, Western State College, Gunnison, CO, February 2005.
- “Ranchland Ownership Dynamics in the Greater Yellowstone Ecosystem, 1990-2001.” Department of Geography, California State University, Chico, February 2005.
- “Geographic Contributions to the Field of Rural Studies.” Guest lecture in RS 512, Introduction to Rural Studies, February 15, 2011.
- “Social-ecological Resiliency and Environmental Governance in the U.S. West.” Geography Program Fall Seminar Series, Department of Geosciences, Oregon State University, November 2, 2010.

- “Peace on the River? An Exploration of Linkages Between Social-Ecological Restoration and Indigenous Sovereignty in the Klamath Basin.” First Annual Conference on the Role of Traditional Ecological Knowledge in Ecosystem Sustainability, College of Forestry, Oregon State University, May 14, 2010.
- “Maps and Locals (MALs): A Cross-Site Comparative Study of Land Cover and Land Use Change with Spatial Analysis and Local Ecological Knowledge.” The Andrews Forest Symposium: Networks and Synthesis, April 20, 2010 (with M. McCune and D. Lach).
- “Peace on the River? Toward Social-Ecological Restoration in the Klamath Basin.” Earth System Science for a Healthy Planet Seminar Series, Department of Geosciences, Oregon State University, April 1, 2010.
- “Social-ecological Resiliency and Rural Communities in the American West: Challenges and Opportunities.” Geography Program Fall Seminar Series, Department of Geosciences, Oregon State University, October 2009.
- “Shift Happens: How Native Americans and Native Fish are Changing Rural Environmental Governance in the American West.” Forest Ecosystems and Society Seminar Series, April 8, 2009.
- “Ranchland Ownership Change in the Greater Yellowstone Ecoregion: Implications for Conservation.” Guest lecture in FOR 365, *Issues in Natural Resources Conservation*. January 20, 2009.
- “Exploring the Geographies of Agricultural Landscape Change in the American West.” Geography Program Fall Seminar Series, Department of Geosciences, Oregon State University, Corvallis, OR, December 2008.
- “Geography of Agricultural Landscape Change in the American West.” Guest lecture in GEO 329, *Geography of North America*, November 2008.
- “Engaging Rural Youth in a Geographic Evaluation of the Impacts of Dam Removal on Sustainability in the Upper Klamath Basin, Oregon.” Contemporary Rural Issues Seminar, Oregon State University, November 28, 2007.
- “Drivers and Impacts of Rural Land Use Change in the American West.” Geography Program Fall Seminar Series, Department of Geosciences, Oregon State University, Corvallis, OR, November 2007.
- “New Approaches to Environmental Governance in the Upper Klamath Basin.” Learning Through Listening: Native American Issues in Rural Oregon Seminar, Oregon State University, March 27, 2007.
- “Multidisciplinary Research Adventures in the Klamath Basin.” Social Sciences Research Roundtable, Oregon State University, Corvallis, OR, November 3, 2006.
- “The Social-Ecological Effects of Amenity Migration in the American West.” Geography Program Fall Seminar Series, Department of Geosciences, Oregon State University, Corvallis, OR, October 2006.

Grants and Contracts

- Utilities and Corporations as Ecosystem Service Buyers: Innovative Opportunities for Small and Medium-Sized Farms and Rural Communities. S. Duncan (PI), S. Lurie, **H. Gosnell**, C. Moseley, M. Nielsen-Pincus, A. Morzillo, E. White, R. Parker, A. West. USDA National Institute for Food and Agriculture. \$500,000. 6/1/11-5/31/13.
- Adaptive Co-Management of Riparian Resources: An Effective Strategy for Addressing Multiple Interacting Environmental Threats? **H. Gosnell** (PI). USDA Forest Service Western Wildland Environmental Threat Center. \$18,640. 9/30/10 – 4/30/12.
- Characterizing Land-Cover and Land-Use Change with Parcel Data Analysis: A Methodological Contribution to the ‘Maps and Locals’ NSF LTER Project. Matthew Vogt (**H. Gosnell**, advisor), Christian John Hunt Memorial Fund Undergraduate Research Award, Department of Geosciences, \$1650 + travel to Association of American Geographers Annual Meeting. 9/30/10 – 6/15/11.
- Enhancing the Capacity of Small and Medium Sized Ranch and Forestry Operations to Prosper from Payment for Ecosystem Services. **H. Gosnell** (PI), C. Moseley, M. Nielsen-Pincus, L. Gwin, J. Honey. USDA National Institute for Food and Agriculture. \$500,000. 6/1/10 – 5/31/13.
- An Evaluation of the National Riparian Service Team’s ‘Creeks and Communities’ Strategy. **H. Gosnell** (PI), L. Etuk. USDA Forest Service Pacific Northwest Research Station. \$65,000. 4/1/09 – 3/31/11.
- An Evaluation of the Effectiveness and Outcomes of the Nueces River Authority Riparian Landowner Network. **H. Gosnell** (PI). Nueces River Authority, Uvalde, TX. \$5000. 3/15/10 – 6/15/11.
- Maps and Locals: (MALs): A Cross-Site LTER Comparative Study of Land-Cover and Land-Use Change with Spatial Analysis and Local Ecological Knowledge. D. Lach (PI), **H. Gosnell**. National Science Foundation, Long Term Ecological Research Program. \$43,000. 4/1/09 – 3/31/11.
- Adapting Private Forest and Ranch Management to Mitigate Climate Change: Policies and Practices. S. Charnley and **H. Gosnell**. USDA Forest Service, Pacific Northwest Research Station. \$119,918. 4/30/08 – 4/30/12.
- Oregon Land Use Program Assessment Project. An Evaluation of Oregon’s Statewide Planning Goals and Guidelines. L. Gaines (PI), **H. Gosnell**, J. Kline, J. Good, E. Bassett. Oregon Department of Land Conservation and Development. \$100,158. 4/15/08 – 8/30/08.
- Assessing the Social Sustainability of Emerging Environmental Governance Structures and Restoration Efforts on “Off-Project” Irrigated Lands in the Upper Klamath Basin. **H. Gosnell** (PI), Gail Achterman, Denise Lach, Kurt Peters, Desiree Tullos, Lindsey Lyons, Lena Etuk, and Mark Meyers. Institute for Water and Watersheds/USGS Small Grants Program, OSU. \$32,658. 6/1/07 – 6/1/08.
- Engaging Rural Youth in a Geographic Evaluation of the Impacts of Dam Removal on Social Sustainability in the Upper Klamath Basin, Oregon. **H. Gosnell** (PI), J. Hatch, K. Thomas, L. Etuk, K. Peters, L. Lyons. MyCOE (My Community One Earth) Constellation Grant, Association of American Geographers. \$2000. 10/2006 – 4/2007.

How Does Oregon's State Land Use Planning System Affect Rural Sustainability? Collaborative, Multidisciplinary Learning in the Klamath Basin, Oregon. **H. Gosnell** (PI), Gail Achterman, William Jaeger, Denise Lach, Lindsey Lyons, and Desiree Tullos. Sustainable Rural Communities Innovative Project Fund Seed Grant, OSU. \$6000. 6/1/06 – 6/1/07.

Collaborative Learning Towards Sustainable Agricultural Landscapes in Muddy Creek Watershed, Oregon. M. Santelmann (PI), **H. Gosnell**, M. Meyers, L. Greenfield. Institute for Water and Watersheds/USGS Small Grants Program, OSU. \$44,978. 6/1/06 – 6/1/07.

Climate Change and the City of Aspen: An Assessment of Impacts and Potential Responses. **H. Gosnell**, G. Preston, W. Travis. Aspen Global Change Institute. \$20,000. 4/05 – 4/06.

Professional Service and Leadership

2009-present Advisory Committee.

2010-present Graduate Committee.

2010-present Special GEO/COAS Merger Committee.

2009-2010 Curriculum Committee.

2007-2009 Library Committee.

2007-2008 New Graduate Student TA Orientation

June 2008 Invited Panelist, Professional Development Workshop for Aspiring Academics,

Jan 2008 Assisted OSU Foundation (Anne Ruggiero) in recruiting an alumni donor, resulting in \$30,000 donation to Department.

July 2007 Department of Geosciences Representative, DaVinci Days, Corvallis, OR.

2006-present Rural Studies Program, Executive Committee.

2006-present Water Resources Graduate Program, Graduate Faculty.

2006-Present OSU Delegate (appointed) to Universities Council on Water Resources.

2008-present PI, H.J. Andrews Experimental Forest Long Term Ecological Research Program, NSF.

2008-present Natural Resources Program Advisory Committee.

April 2010 External Review Panel, Institute for Natural Resources.

June 2008 Invited Speaker and Tour Guide, OSU Advancement and OSU Foundation, OSU President's Weekend, Sunriver, OR, June 20-22, 2008.

May 2008 Invited Participant, Trillium Project, Spring Creek Project for Ideas, Nature and the Written Word.

April 2007 Invited Participant in 4 hr Media Training Program, OSU University Advancement.

August 2006 IWW/INR Representative.

April 2006 Judge, Poster Competition, “Oregon State University Symposium on The Engaged University: Building Effective University-Community Partnerships.” Sponsored by Sustainable Rural Communities Initiative.

2010-present, Editorial Board, Journal of Rural Social Sciences.

October 2009 Invited Panelist, National Science Foundation Midterm Site Review Team for the Florida Coastal Everglades (FCE) LTER Project, Miami, Florida.

June 2009 Invited Panelist, National Science Foundation, SBE/IGERT Working Group.

June 2008 Invited Panelist, National Science Foundation, SBE/IGERT Working Group.

2008-Present Elected Chair, Rural Geography Specialty Group, Association of American Geographers

2006-2007 Appointed Chair, Membership Committee, Association of Pacific Coast Geographers

April 2008 Co-organizer (with P. Hurley), special session, “Political Ecology of Rural Land Use Change in the U.S. Context,” Annual Meeting of the Association of American Geographers, Boston, MA

July 2007, Selected AAG Delegate to 6th Quadrennial Conference of British, Canadian and American Rural Geographers, Spokane, WA

April 2007, Co-organizer (with P. Hurley), series of 3 sessions, “Environmental Governance in the Rural American West,” Annual Meeting of the Association of American Geographers, San Francisco, CA

April 2006, Co-organizer (with V. Cadieux, P. Hurley, J. Haggerty), series of 4 special sessions. “Exurbanization and Amenity Migration,” Annual Meeting of the Association of American Geographers, Chicago, IL.

2008-present, Participant, Rural Voices for Conservation Coalition

April 2010, Invited Delegate, Rural Voices for Conservation Coalition

2007-2010, Advisory Council, Brainerd Foundation, Seattle, WA.

2006, Peer Review Panel, Institute for Natural Resources and Deschutes River Alliance, “Urbanization Impacts on Irrigated Lands.”

2003-2005, Board of Directors, Southern Rockies Ecosystem Project.

9.6.5 Nancee Hunter, Asst. Prof. (Courtesy)

[281] Hunter is Director of Education for Oregon Sea Grant at Oregon State University’s Hatfield Marine Science Visitor Center, Newport, OR, and has a courtesy faculty appointment in Geosciences. Some elements of her curriculum vita (attached) are highlighted below.

Awards and Honors

2009 Coastal America Partnership Award – Presidential Award

1999-2001 Gamma Theta Upsilon – International Honor Society in Geography

General Motors Volunteer Spirit Award, Arizona State University

Young Woman of the Year Award, City of Phoenix, AZ

Peer-Reviewed Publications

See curriculum vita (attached).

Scholarly Presentations

Magic Planet Installation Evaluation Findings, NOAA Office of Education (2010)

Hunter, N., Carlin-Morgan, K., and Sprenger, A.. Using the Ocean to Teach STEM. Northwest Aquatic and Marine Educators Conference. July 2010, Florence, OR.

Rowe, S., Hunter, N., Barthel, C., Stofer, K. (2010). Using Observation, Interviewing, and Reflection on Video Data to Understand Visitor Learning from Spherical Displays of Complex Visualizations. Research Report. Corvallis, OR: Oregon Sea Grant.

Engaging Students through Free-Choice Learning, Evergreen Aviation & Space Museum annual Teacher Workshop (2010)

Communicating about Ocean Science with Non-Scientists, American Geophysical Union Ocean Sciences Meeting (2010)

Geovisualizations Using USArray Data, Earthscope National Meeting (2009)

Grants and Contracts

Researcher-Teacher Partnerships: Making Global Climate Change Relevant in the Classroom (NASA Global Climate Change Education), \$331,936, Co-PI (2010)

Promoting Interaction and Evaluation: Tools for Environmental Literacy (NOAA Office of Education), \$1,023,000, Co-PI (2010)

Oregon Coast Aquatic & Marine Science Partnership (U.S. Department of Education - Math and Science Partnership), \$900,000, Senior Personnel (2009) NOTE: We received the only Oregon grant awarded in 2009.

Watershed and Invasive Species Education and Environmental Quizzes (WISE-Q) (Environmental Protection Agency), \$123,954, Co-PI (2009)

The Oregon Coastal Education Initiative - Advancing Our Understanding Through Ecosystem-Based Learning (NOAA-Bay-Watershed Education and Training B-WET Program), \$100,000, Senior Personnel (2009)

Oregon Fisheries Public Exhibit (Agricultural Research Foundation), \$20,000, Principal Investigator (2009)

Delivering Earth System Science to the Classroom (NOAA Office of Education), \$750,000, Co-PI (2008)

Learning Ocean Science through Ocean Exploration (National Marine Sanctuary Foundation), \$25,000, Principal Investigator (2008)

Visitors and Visualizations: Creating Meaningful Experiences with Global Data (NOAA Office of Education), \$100,000, Principal Investigator (2008)

Artistic Expressions of Ocean Literacy Essential Principles (NOAA - Hollings Ocean Awareness Trust Fund), \$50,000, Co-PI (2007)

Oregon Coast Quest Program (Oregon Sea Grant), \$10,000 Principal Investigator

Meltdown Giant-Screen Film and Education Outreach (National Science Foundation-Informal Science Education), \$3,000,000, Co-PI (2006)

Professional Service and Leadership

Steering Committee Member, NOAA's Pacific Northwest Bay-Watershed Education and Training Grant Program (2010 – Present)

Advisor, South Slough National Estuarine Research Reserve Education Advisory Board (2010)

Consultant, Climate Literacy and Energy Awareness Network (CLEAN) Pathway project (2010)

Member, OSU Marine Council Action Coordination Team, NOAA Fleet Relocation (2010)

Member, Otter Rock Marine Reserve Human Dimensions Community Working Group (2010)

Correspondent, Communications (Online and Newsletter) Committee, Northwest Aquatic and Marine Educators (NAME) (2010)

Planning Committee Member and Field Trip Committee Chair, Northwest Aquatic and Marine Educators (NAME) 2010 Annual Conference in Florence, Oregon (2009-2010)

Co-Chair, Ocean Literacy Action Coordination Team for the West Coast Governors Agreement on Ocean Health (2008- Present)

Chair and Executive Committee Member, Northwest Association of Networked Ocean Observing Systems (NANOOS) Education and Outreach Committee (2008-Present)

Oregon Master Naturalist Curriculum Committee Member, Oregon State University Forestry and Natural Resources Extension (2008-Present)

Prime Movers Media Advisory Board, School of Media and Public Affairs, The George Washington University, Washington DC (2005-2007)

Volunteer/Mentor, Earth Conservation Corps, Washington DC (2003-2007)

9.6.6 *William (Todd) Jarvis, Asst. Prof. (Senior Research), Geography, Water Resources*

[282] Jarvis joined Geosciences as a Ph.D. student in 2003 after a 20-year career as a

consulting groundwater hydrologist. He is currently the Associate Director of the Institute for Water and Watersheds and has had a senior research appointment with Geosciences since 2010. He is registered as an engineering geologist and water rights examiner in the state of Oregon, as well as a professional mediator and geologist in other states. He and his students work on a broad spectrum of projects related to groundwater, ranging from microhydro power generation to transboundary aquifer governance. Jarvis currently serves as an Associate Editor for the Journal of Ground Water. He teaches almost exclusively through eCampus, OSU's online teaching portal.

Awards and Honors

2006 OSU Williamson Water Prize

2006 NSF NATO Advanced Studies Institute Award

Peer-Reviewed Publications

- 2010 Jarvis, T., and A. Wolf, Managing Water Negotiations: Theory and approaches to water resources conflict and cooperation. Book Chapter in Transboundary Water Management: From Principles to Practice. (eds.) Earle, A., Jägerskog, A. & Öjendal, J. Earthscan. London.
- 2010 Jarvis, W. T., Geopolitics of Groundwater in Ostigard, T. (ed.), A History of Water Series 2, Volume 3: Water, Geopolitics and the New World Order, I.B Tauris.
- 2010 Jarvis, W.T., Water Wars, War of the Well, and Guerilla Well-fare: Ground Water. doi: 10.1111/j.1745-6584.2010.00695.x
- 2009 Lopez-Gunn, E. and W.T. Jarvis, Groundwater Governance and the Law of the Hidden Sea: Water Policy, volume 11, p. 742–762.
- 2008 Jarvis, W.T., Strategies for Groundwater Resources Conflict Resolution and Management. In Overexploitation and Contamination of Shared Groundwater Resources: Management, Biotechnological, and Political Approaches to Avoid Conflicts, (ed) C.J.G. Darnault: Springer and NATO Public Diplomacy Division, p. 393-414.
- 2008 Jarvis, T. Corporate Hydrologist and the Communications Gap: Ground Water, volume 46, No. 1, p. 1.
- 2005 Puri, S., L. Gaines, A. Wolf, and T. Jarvis, Lessons from intensively used tranboundary river basin agreements for transboundary aquifers, in Sahuquillo, A., J. Capilla, L. Martinez-Cortina, and X. Sanchez-Vila (eds.), Groundwater Intensive Use, International Association of Hydrogeologists Selected Papers No. 7, p. 137-145.

- 2005 Jarvis, T., M. Giordano, S. Puri, K. Mastumoto, and A. Wolf, 2005, International Borders, Ground Water Flow, and Hydroschizophrenia: Ground Water, volume 43, No. 5, p. 764-770.

Scholarly Presentations

- 2010 Jarvis, W.T., Peak Water Meets Peak Oil: Moving Towards Unitization of Transboundary Aquifers: International Conference on Challenges and New Directions in Transboundary Aquifers Management, UNESCO, Paris.
- 2010 Jarvis, W.T., Integrating Groundwater Boundary Matters into Transboundary Aquifer Management.: International Conference on Challenges and New Directions in Transboundary Aquifers Management, UNESCO, Paris.
- 2009 Campana, M.E., W.T. Jarvis, G. Achterman, and M. Kleibacker, Statewide Water Roundtables: Taking Oregon's Water Pulse: AWRA Annual Conference Seattle, Washington.
- 2009 Jarvis, W.T., Peak Water Meets Peak Oil: Moving Towards Unitization of Shared Groundwater: Conference on Water and Land Use in the Pacific Northwest: Integrating Communities and Watersheds, Stevenson, Washington.
- 2009 Jarvis, W.T., Integrating Groundwater Boundary Matters into Catchment Management. Research Institute for Humanity and Nature (RIHN) International symposium on water "Dilemma of Boundaries - Toward a New Concept of Catchment Area", Kyoto, Japan.
- 2009 Jarvis, W. T., Challenges in the Geopolitics of Groundwater: Fuzzy Boundaries, Multiple Dimensions and Scalability: Center for Advanced Study Workshop "The Currents of Power: Water and the New World Order", Bergen, Norway.
- 2009 Jarvis, T., Fuzzy Lines and Phantasmagorias: Ethical Considerations for Geoscientists and Engineers: AEG Intermountain Section Short Course "Geological Licensure in Utah (What You Need to Know)", Salt Lake City, Utah.
- 2008 Jarvis, T. and J.W. Jarvis, Unitization: Renewing a Well-Oiled Approach to Non-Renewable Groundwater: National Ground Water Association International Conference on Nonrenewable Ground Water Resources, Portland, Oregon.

Professional Service and Leadership

- 2010 UNESCO PCCP "Train the Trainer" Water Conflict Management Training for African Water Managers, Perugia
- 2010 Groundwater Working Group, IW:Science, Global Environment Facility (GEF), Macao & Perugia
- 2010 Scientific Advisory Committee, International Conference on Challenges and New Directions in Transboundary Aquifers Management, UNESCO, Paris
- 2010 Oregon Graywater Advisory Committee, Department of Environmental Quality
- 2009 Independent Reviewer (pro bono), Hydrogeologic Reviews for Benton County Planning Director in compliance with Benton County Subdivision Ordinance

2008- Associate Editor, Ground Water, National Ground Water Association Journal

9.6.7 *Julia Jones, Prof., Geography, Water Resources*

[283] Jones joined Geosciences as an Associate Professor in 1992. She is currently Professor in Geosciences, Director of the Ecosystem Informatics initiative and IGERT, and co-PI of the HJ Andrews Long-term Ecological Research (LTER). She and her students work to understand dynamics of streamflow, stream chemistry, and climate in steep forested landscapes modified by forest harvest, wildfire, wind, floods, and volcanic eruptions. Since 2003, Jones has directed the Ecosystem Informatics strategic initiative and NSF IGERT (Integrative Graduate Education and Research Traineeship) program at OSU, which links education and research in geosciences, ecosystem science, computer science, and mathematics. This effort has been transformative of OSU, involving the hiring of five new faculty (in Mathematics, Computer Science, and ecology); IGERT fellowship support and mentoring of 30 PhD students in twelve graduate programs on campus (ranging from math, computer science and statistics to forestry, zoology, and geosciences); creation of the Ecosystem Informatics graduate minor which was completed by these 30 and an additional half-dozen graduate students; participation of >60 undergraduates in summer REU programs; and participation of 35+ graduate faculty from five colleges at OSU. The Ecosystem Informatics program has led to funding of additional research grants linking faculty in geosciences, ecology, computer science, and mathematics. Jones currently serves as a member of the editorial board of the Ecological Society of American (*Ecology*) and of *Hydrological Processes*. Her major funding is from the National Science Foundation. She was co-chair of a National Research Council panel on forest hydrology (2006-08) and a Bullard Fellow at Harvard Forest (2004).

Awards and Honors

- 2004 Bullard Fellowship, Harvard Forest, Massachusetts.
- 1996 Editors Citation for Excellence in Manuscript Review, Soil Science Society of America Journal.
- 1987 Faculty Career Development Award, Univ. of California, Santa Barbara.
- 1986 Faculty Career Development Award, Univ. of California, Santa Barbara.
- 1984 Faculty Career Development Award, Univ. of California, Santa Barbara.
- 1980 Fellowship, Department of Geography and Environmental Engineering, The Johns Hopkins University, Baltimore MD.
- 1977 Fellowship, The Johns Hopkins School for Advanced International Studies, Bologna, Italy.

Peer-Reviewed Publications

- 2010 Jones, J. A., and R. M. Perkins. Extreme flood sensitivity to snow and forest harvest, western Cascades, Oregon, United States, *Water Resour. Res.*, 46, W12512, doi:10.1029/2009WR008632.
- 2010 Chang, H., Jones, J., Gannett, M., Tullos, D., Moradkhani, H., Vache, K., Parandvash, H., Shandas, V., Nolin, A., Fountain, A., Johnson, S., Jung, I.-W. House-Peters, L., Steele, M. and **Copeland, B.**, Chapter 3: Climate change and freshwater resources in Oregon, in Oregon Climate Impact Assessment. Dello, K.D. and Mote, P.W. (eds). College of Oceanic and Atmospheric Sciences, Oregon State University, Corvallis, OR. pp. 69-150.
- 2010 Interdisciplinary Studies of Eruption at Chaitén Volcano, Chile. J.S. Pallister, J.J. Major, T.C. Pierson, R.P. Hoblitt, J.B. Lowenstern, J.C. Eichelberger, L. Lara, H. Moreno, J. Muñoz, J.M. Castro, A. Iroumé, A. Andreoli, J. Jones, F. Swanson, C. Crisafulli. *EOS*, 91 (42) 381–392.
- 2010 Thermal-dissipation sap flow sensors may not yield consistent sap-flux estimates over multiple years. G.W. Moore, B.J. Bond, J.A. Jones, F.C. Meinzer. *Trees*, 24(1): 165-174.
- 2009 Precipitation control over inorganic nitrogen import–export budgets across watersheds: problems with interpretation and analysis. K. Lajtha and J.A. Jones. *Ecohydrology*.
- 2009 Hydrologic effects of a changing forested landscape—challenges for the hydrological sciences. J.A. Jones, G.L. Achterman, L.A. Augustine, I.F. Creed, P.F. Ffolliott, L. MacDonald, B.C. Wemple. *Hydrological Processes*, 23, 2699-2704.
- 2008 Climate variability, snow and physiographic controls on storm hydrographs in small forested basins, western Cascades, Oregon. R.M. Perkins and J.A. Jones. *Hydrological Processes*. 22, 4949–4964.
- 2008 Hydrologic Effects of a Changing Forest Landscape. Committee on Hydrologic Impacts of Forest Management, Water Science and Technology Board, Division on Earth and Life Studies (2008, 00 pp.; ISBN 0-309-12104-3).

- 2008 Landscape-scale dynamics of wood in stream networks of the western Cascades, Oregon. **Czarnomski, N.M., D.M. Dreher**, J.A. Jones and F.J. Swanson. *Canadian Journal of Forest Research*. 38: 2236–2248.
- 2008 Geochemical evidence for airborne dust additions to soils in Channel Islands National Park, California, U.S.A. D.R. Muhs, J. Budahn, D.L. Johnson, M. Reheis, J. Beann, G. Skipp, E. Fisher, and J.A. Jones. *GSA Bulletin*, v. 120; no. 1/2; p. 106–126; doi: 10.1130/B26218.1.
- 2007 Book review of “Fundamental processes in ecology - an earth systems approach, by David M. Wilkinson, Oxford University Press, 2006”. *Trends in Ecology and Evolution*, in press.
- 2006 Flood and debris flow interactions with roads promote exotic plant invasion in steep mountain streams, western Oregon. N. A. Watterson and J.A. Jones, *Geomorphology*, 78, 107-123.
- 2005 Intersite comparisons of rainfall-runoff processes, pp 1839-1854, *Encyclopedia of Hydrological Sciences* edited by Malcolm Anderson, John Wiley & Sons Ltd, Chichester, 2005.

Scholarly Presentations

- 2011 Hydrologic similarity among long-term ecological research sites: responses to climate change. European Geophysical Union, Vienna.
- 2008 Uncertainty in water from forests: hydrology of changing forest landscapes. J. Jones, G. Achterman, L. Alexander, K. Brooks, I. Creed, P. Ffolliott, L. MacDonald, B. Wemple. Session H11: Historic Hydrologic Synthesis. AGU Fall meeting, San Francisco.
- 2006 Canadian Geophysical Union, keynote address, May, Banff.
- 2005 Eco-informatics education at Oregon State University. Ecological Society of America annual meeting, Montreal, August 9.
- 2005 Climate change and feedbacks from vegetation succession: evidence from long-term ecological research sites. Julia Jones, Georgianne Moore, Kevin McGuire, American Society of Civil Engineers, Anchorage, AK, May 12.
- 2005 From soil pits to ecosystem informatics: A selective history of information technology in geography. University of Nevada-Reno, April 26.
- 2005 Stream and road network interactions in landscapes: a different way of seeing. J.A. Jones, N. Watterson, B.C. Wemple, L.A. Parendes, and F.J. Swanson. University of Nevada – Reno. April 25.

Grants and Contracts

- REU Site: EcoInformatics Summer Institute. National Science Foundation, Division of Undergraduate Education. D. Tullos, PI, J.A. Jones, co-PI. 9/2010-9/2013. \$ 296,784.

CDI-Type I: Novel machine learning models for predicting species distributions in response to climate change. National Science Foundation, Computer Science. Weng-Keen Wong, PI; M.G. Betts, J.A. Jones co-PIs. 9/30/09-9/30/12. \$ 609,505.

International planning visit: Climate change effects on streamflow from mid-latitude conifer forests – a collaboration between Oregon and Chile. National Science Foundation Office of International Science and Education. J.A. Jones, PI. 12/08-11/10.

Long-term ecological research at the H.J. Andrews Experimental Forest LTER: LTER6. National Science Foundation Division of Environmental Biology, B. Bond, PI; M.E. Harmon, S.L. Johnson, J.A. Jones, T. Spies, co-PIs. 12/08-11/14. \$5,800,000.

Summer Institute in Ecosystem Informatics. National Science Foundation Engineering Research Centers, J.A. Jones, co-PI, D. Tullos, PI, T. Dietterich, K. O'Connell, E. Thomann, co-PIs, 6/06-6/10, \$581,291.

Ecosystem Informatics at OSU: Integrating Mathematics, Computer Science/Engineering, and Ecosystem Science to study complex problems. Oregon State University, J.A. Jones, PI; B. D'Ambrosio, T. Dietterich, M. Harmon, and E. Thomann, co-PIs. 10/04-9/09. \$1,500,000.

IGERT: Ecosystem Informatics. NSF Division of Graduate Research and Education, J.A. Jones, PI; B. D'Ambrosio, T. Dietterich, M. Harmon, and E. Waymire, co-PIs. 10/03-9/11. \$3,900,000.

Long-term ecological research at the H.J. Andrews Experimental Forest LTER: LTER5. National Science Foundation Division of Environmental Biology, M. Harmon, PI; B.J. Bond, S.L. Johnson, J.A. Jones, F.J. Swanson, co-PIs). 12/02-11/08. \$4,200,000.

Professional Service and Leadership

2010 LTER Synthesis Working Group, Hydrologic effects from ecosystem responses to climate change and land use change, Nov 4-7, 2010, Seville National Wildlife Refuge.

2010 Modeling species responses to climate change and land use change: collaborations among ecologists and computer scientists. Retreat at the HJ Andrews Forest, October 21-22, 2010.

2010 Ecological dispersal from a geophysical perspective, AGU, San Francisco, December. Co-organizers: Jorge Ramirez, Ed Waymire, Mary Power.

2009 Working group, LTER All-Scientists Meeting, Estes Park, CO. September

2006-08 Co-Chair, Committee on hydrologic impacts of forest management. Water Science and Technologies Board of the National Academy of Science.

2007 Site review of Arctic Tundra Long-term Ecological Research (LTER) and Bonanza Creek LTER, June 21-28. Chaired report preparation for the Arctic Tundra LTER.

2007 Chaired LTER Ecotrends workshop on Biogeochemistry, May, Portland.

2006 Forest hydrology session, AGU, San Francisco, December. Co-organizers: Dan Moore and Charlie Luce

- 2006 Ecosystem Informatics Education workshop, LTER All-Scientists Meeting, Estes Park, Colorado, September
- 2005 LTER Coordinating Committee meeting, Key Largo, Florida (April)
- 2005-10 Annual IGERT PI meetings, Washington, DC (May)

9.6.8 A. Jonathan Kimerling, Emeritus Prof., Geography

[284] Kimerling has been a member of the Geography faculty since 1976 and chaired the Dept. Geosciences in AY 2009 before his retirement at the end of that year. He continues to teach some courses.

Awards and Honors

Phi Beta Kappa

Andrew McNally Award, for the best work on cartography published by the American Congress on Surveying and Mapping, 1980 and 1992

American Congress on Surveying and Mapping Meritorious Service Citations, 1986, 1988, and 1990.

Recipient of 1988 College of Science Loyd Carter Award for excellence in graduate teaching.

Recipient of 1996 OSU College of Science Milton Harris Award for Exceptional Achievement in Basic Research.

Fellow, American Congress on Surveying and Mapping, 1998.

OSU Alumni Association Distinguished Professor Award, 2003

Recipient of 2007 College of Science Olaf Boedtke Award for excellence in academic advising.

Peer-Reviewed Publications

Kimerling, A.J., P. Muehrcke and J. Muehrcke, Map Use, 5th ed., Madison, WI: JP Publications, 2005, 560 pp.

Kimerling, A.J., Buckley, A.R., P. Muehrcke and J. Muehrcke, Map Use, 6th ed., Redlands, CA: ESRI Press, 2009, 546pp.

Gregory, M., A.J. Kimerling, D. White and K. Sahr, "A Comparison of Intercell Metrics on Discrete Global Grid Systems", Computers, Environment and Urban Systems, 2007.

Kimerling, A.J. "Dotting the Dot Map, revisited", Cartography and Geographic Information Science, vol. 36, no. 2, 2009, pp. 165-183.

Scholarly Presentations

Grants and Contracts

Professional Service and Leadership

United States Representative to the Commission on Map Production, International Geographic Association, 1979-1988.

Director, American Cartographic Association, 1984-1986.

Head Editor of The American Cartographer, 1984-87.

Deputy Principal Delegate for the U.S. delegation to the 13th International Cartographic Conference, Morelia, Mexico, 1987.

President of the American Cartographic Association, 1989-90.

Chair, U.S. National Committee for the International Cartographic Association, 1992-96

Assistant Editor, *History of Cartography*, Volume 6: *Cartography in the 20th Century*, 2010

Member of the editorial review board of Cartographic Perspectives, 2010 - .

9.6.9 Anne Nolin, Assoc. Prof., Geography, Water Resources, Geology

[285] Nolin has been a member of the Geography faculty since 2002. Her research and teaching interests include snow hydrology; climate change impacts on snow; glaciers and ice sheets; mountain geography; western U.S. water resources; satellite remote sensing; snow melt modeling; and radiative transfer modeling. See her curriculum vitae for more detailed information.

9.6.10 Mary Santelmann, Assoc. Prof. (Sen. Research), Geography, Water Resources (Director)

[286] Santelmann first joined Geosciences as an instructor in 1992, then with a research appointment in 1994, and finally in the research professor ranks in 1996. Since 2005, she has been the Director of the Water Resources Graduate Program. In addition to her research and administrative activities, Santelmann teaches courses and advises graduate students. Her research and teaching interests include ecosystem response to human land use and management practices; use of alternative future scenarios combined with diverse evaluative approaches; environmental

and anthropogenic influences on species composition and species richness in agricultural, urban and wetland ecosystems, including effects of landscape composition and pattern on native biodiversity; and ecology and biogeochemistry of wetlands and riparian systems.

Awards and Honors

- 2004-2006 Award for service and leadership as Treasurer for the US Regional Chapter of the International Association for Landscape Ecology
- 2002-2004 Award for service as Treasurer for the US Regional Chapter of the International Association for Landscape Ecology
- 1985-1986 Dissertation Fellowship, University of Minnesota
- 1984-1986 Alexander and Lydia Anderson Award, University of Minnesota
- 1984-1985 Carolyn Crosby Award, University of Minnesota
- 1984-1985 Nature Conservancy Research Grant
- 1984-1986 Dayton-Wilkie Award, University of Minnesota
- 1979-1980 Rackham Fellowship, University of Michigan, Ann Arbor

Peer-Reviewed Publications

Scholarly Presentations

- Santelmann, M.V. 2006. Water Resources Graduate Program. Presentation to Oregon State University Deans, May 18, 2010.
- Santelmann, M.V. 2007. Invited presentation entitled, "Using Wetlands to Teach Landscape Ecology" given at workshop entitled *Constructing and Teaching a Great Course in Landscape Ecology*. U.S. Regional Symposium of the International Association for Landscape Ecology, Tucson, Arizona April 9, 2007.
- Santelmann, M.V. 2006. Workshop on "Developing land use scenarios for economic-ecological studies". December 6, 2006. Institute for Landscape Ecology and Resources Management, Justus Liebig University, Gießen, Germany.
- Santelmann, M.V. 2006. Evaluating Biodiversity in Alternative Futures. December 6, 2006. Institute for Landscape Ecology and Resources Management, Justus Liebig University, Gießen, Germany.
- Santelmann, M.V. 2006. Using Alternative Future Scenarios in Multi-objective Planning and Evaluation of Agricultural Landscapes. December 5, 2006. Institute for Landscape Ecology and Resources Management, Justus Liebig University, Gießen, Germany.

Grants and Contracts

- 2010-2012, Portland Vancouver Ultra-Ex****, NSF, \$200,000

2010-2015, Water Sustainability and Climate**** , NSF , \$4,250,000

2010-2015, Joint Venture: Climate Change Effects on Coastal Draining Streams in Oregon, USFS, \$19,000 (initial yr.)

2009-2011, Vegetation and Soil Processes in Wet Prairie Wetlands , USGS, \$9,955

2006-2007, Collaborative learning towards sustainable agricultural landscapes in Muddy Creek Watershed, Oregon., USGS and OSU Institute for Water and Watersheds, \$45,000

2003-2005, Attitudes toward water resource policy in Portland, OR.* , NSF Geography and Regional Science, \$8944

Professional Service and Leadership

Joan Iverson Nassauer, Mary V. Santelmann, and Donald Scavia, Editors. 2007. *From the Corn Belt to the Gulf: Environmental and Societal Implications of Alternative Agricultural Futures*. Resources for the Future Press: Washington D.C.

Santelmann, M.V. 2006. Programmatic impact of the IWW initiative. Presentation to Oregon State University Geosciences Board of Advisors, May 18, 2006.

Member of Executive Committee for the Oregon State University Institute for Water and Watersheds 2007-present

Participant in Workshop on Advising Doctoral Students for University Faculty and Administrators; offered by Oregon State University Graduate School Spring Term 2010.

Participant in Workshop on Suicide Prevention for University Faculty and Administrators; Suicide Gatekeeper Training February 5, 2008 offered by Oregon State University Counseling Services.

Member of the Oregon State University C2D (Committed to Diversity) Task Force. Member of the Mentoring group working to identify, coordinate, and enhance mentoring efforts at Oregon State University, and to improve efforts to mentor students, staff, and faculty from underrepresented groups.

Invited member of US EPA Working Group on Causes, Prevention, and Mitigation of Harmful Algal Blooms. *Cyanobacterial Harmful Algal Blooms (CHABs)*: and contributor to report edited by Gina Perovich, Quay Dortch, and James Goodrich. Final Report to US-Environmental Protection Agency, Fall 2006.

9.6.11 Jenna Tilt, Asst. Prof. (Courtesy)

[287] Tilt has had a courtesy appointment in Geosciences since 2009. In addition to her research activities, she teaches some courses, primarily through extended campus (e-campus) but also face-to-face. Her research interests include regional, urban and land use planning; amenity migration; urban ecology; environmental psychology; active living research; urban forestry;

forest management and aesthetics; and social sciences research methods. Some of her curriculum vita (attached) is highlighted below.

Awards and Honors

Xi Sigma Pi, National Honors Forestry Society

Grants and Contracts

Joint Venture Agreement, U.S. Forest Service, PNW Station #10-JV-11260489-046 (\$100,000).
Principle Investigator. Natural Amenities and In-Migration Influences on the Location Decisions of Rural and Non-Rural Residents with Application to Stewardship Activities to Restore Forest Health

Joint Venture Agreement, U.S. Forest Service, PNW Station #09-JV-11261985-050 (\$70,000).
Principle Investigator. Natural Amenities, In-Migration, and the Location Decisions of Exurban Residents; with Implications for Public Lands Management

9.6.12 Denis White, Faculty Research Asst. (Courtesy)

[288] While her primary position is with the U.S. Environmental Protection Agency as a Geographer, White has held a research appointment (courtesy, 1988-1992 and 1998-present) with Geosciences since her work with EPA began in 1988, and she has taught one graduate course in Geosciences. Parts of her curriculum vita (attached) are highlighted below.

Awards and Honors

- 2010. Bronze Medal for Commendable Service, "For establishing how the configuration of stream habitats in stream networks including intermittent streams impact the productivity and survivability of coho salmon in coastal watersheds," US EPA (shared with research team).
- 2003. Bronze Medal for Commendable Service, "For exceptional achievement and scientific leadership and creativity in addressing complex large scale environmental problems," US EPA (shared with research team).
- 1993. Andrew McNally Award for best paper on cartography published in 1992 by the American Congress on Surveying and Mapping (shared with A J Kimerling and W S Overton).
- 1992. Performance Incentive Program award, ManTech Environmental Technology, Inc.
- 1991. Presidential Citation for Meritorious Service, American Society for Photogrammetry and Remote Sensing.

1991. Technical Achievement Award, US EPA Environmental Research Laboratory, Corvallis, Oregon, and ManTech Environmental Technology, Inc.

Peer-Reviewed Publications

Gregory MJ, Kimerling AJ, White D, Sahr K. 2008. A comparison of intercell metrics on discrete global grid systems. *Computers, Environment and Urban Systems* 32(3):188-203.

Freemark KE, Meyers M, White D, Warman LD, Kiester AR, **Lumban-Tobing P**. 2006. Species richness and biodiversity conservation priorities in British Columbia. *Canadian Journal of Zoology* 84(1):20-31.

For non-student-authored publications, see curriculum vita (attached).

Professional Service and Leadership

2007 - 2009. Government Data and Employment Committee, Association of American Geographers.

9.6.13 Aaron Wolf, Prof., Dept. Chair, Geography, Water Resources

Awards and Honors

Peer-Reviewed Publications

Scholarly Presentations

Grants and Contracts

Professional Service and Leadership

9.7 Geology Faculty Performance

9.7.1 Edward Brook, Prof., Geology

[289] Brook joined Geosciences as an Associate Professor in 2004 and was promoted to Professor in 2008. He is a geochemist and paleoclimatologist. His research group studies quaternary climate and environmental change, primarily ice core records of climate and greenhouse gases, but also works on dating rock surfaces with cosmogenic nuclides, noble gas geochemistry, and a variety of other topics. He operates an active analytical laboratory which is

currently expanding and adding a state-of-the-art stable isotope mass spectrometer. Brook is active in international science planning and research, has served or serves on advisory boards for NSF, major scientific projects, and contractors to NSF, is lead PI on a major NSF funded international collaboration in ice core science, and has participated in the US Global Change Synthesis and Assessment project. He and his research group conduct field work in Greenland and Antarctica, and spend a lot of time in their basement laboratory. His work has been continuously funded by multiple grants from NSF, ACS, NASA, and private foundations since 1996. He currently advises 3 graduate students and one undergraduate, employs two full time technicians, and is searching for two postdocs and at least 2 new graduate students.

Awards and Honors

National Defense Science and Engineering Graduate Fellowship, 1988-1992.
NOAA Global and Climate Change Post-Doctoral Fellowship, 1993-1995.
Editor's Citation for Excellence in Reviewing, *Journal of Geophysical Research*, 2001.
Invited Participant, National Academy of Sciences Frontiers in Science Symposium, 2002.
Gary Comer Foundation Abrupt Climate Change Fellowship, 2004.
Aldo Leopold Leadership Fellowship, 2008.
Outstanding Promise in Geology Award, Duke University Department of Geology, 1985.
Bertha Morton Graduate Scholarship, University of Montana, 1987.
Geological Society of America Outstanding Research Grant Proposal, 1988.
Dean's Award for Research Excellence, WSU Vancouver, 1999.
Milton Harris Award for Basic Research, OSU College of Science, 2009

Peer-Reviewed Publications

Brook, E. and J. Severinghaus, in review, Comment on "Methane emissions from extinct Megafauna, by F. Smith, S. Elliott, and S. Lyons, *Nature Geosciences*.

Mitchell, L., E. Brook, T. Sowers, and J. McConnell, in review (revise), Multidecadal variability of atmospheric methane, 1000-1800 C.E, *Journal of Geophysical Research-Biogeosciences*.

- Brook, E., M. Kurz, and J. Curtice, 2009, Flux and size fractionation of ^3He in interplanetary dust from Antarctic ice core samples, *Earth and Planetary Science Letters* 286, 565-569.
- Brook, E., 2009, Atmospheric carbon footprints, *Nature Geosciences* 2, 170-127.
- Liu, B. L. Otto-Bliesner, F. He, E. C. Brady, R. Tomas, P. U. Clark, A. E. Carlson, J. Lynch-Stieglitz, W. Curry, E. Brook, D. Erickson, R. Jacob, J. Kutzbach, and J. Cheng, Transient Simulation of Last Deglaciation with a New Mechanism for Bølling-Allerød Warming, *Science* 325, 310-314 [DOI: 10.1126/science.1171041].
- Severinghaus, J., R. Beaudette, M. **Headly**, K. Taylor, and E. Brook, 2009, Oxygen-18 of O_2 records the impact of abrupt change on the terrestrial biosphere, *Science* 324, 5933.
- Petrenko**, V. V., A. M. Smith, E. J. Brook, D. Lowe, K. Riedel, G. Brailsford, Q. Hua, H. Schaefer, N. Reeh, R. F. Weiss, D. Etheridge and J. P. Severinghaus, 2009, $^{14}\text{CH}_4$ measurements in Greenland ice: investigating last glacial termination CH_4 sources, *Science* 324, 506-508.
- Grachev, A., E. Brook, J. Severinghaus, and N. Piasias, 2009, Relative timing and variability of atmospheric methane and GISP2 oxygen isotopes between 68 and 86 ka, *Global Biogeochemical Cycles*, 23, GB2009, doi:10.1029/2008GB003330, 2009.
- Schaefer, H., V. **Petrenko**, E. Brook, J. Severinghaus, N. Reeh, J. Melton, and L. Mitchell, 2009, Ice stratigraphy at the Pakitsoq ice margin, West Greenland, derived from gas records, *Journal of Glaciology* 55, 191.
- Ahn, J. and E. Brook, 2008, Atmospheric CO_2 and Climate on Millennial Time Scales During the Last Glacial Period, *Science* 322, DOI: 10.1126/science.1160832.
- Brook, E., 2008, Windows on the greenhouse, *Nature* 453, 291-292.
- Ahn, J. and E. Brook, 2007, Atmospheric CO_2 and climate from 65 to 30 ka B.P., *Geophysical Research Letters*, 34, L10703, doi:10.1029/2007GL029551.
- Ahn, J., **Headly**, M., Wahlen, M., Brook, E.J., Mayewski, P.A., and Taylor, K.C., 2008, CO_2 diffusion in polar ice: observations from naturally formed CO_2 spikes in the Siple Dome (Antarctica) ice core, *Journal of Glaciology* 54, 685-695.
- Grachev, A., E. Brook and J. Severinghaus, 2007, Abrupt changes in atmospheric methane at the MIS 5b- 5a transition, *Geophysical Research Letters* 34, L20703, doi:10.1029/2007GL029799.
- Petrenko**, V. J. P. Severinghaus, E.J. Brook, J. Mühle, M. Headly, C. M. Harth, H. Schaefer, N. Reeh, R. F. Weiss, D. Lowe and A. M. Smith, 2008, A novel method for obtaining very large ancient air samples for analyses of methane radiocarbon, *Journal of Glaciology*, 54, 185, 233-244.
- Petrenko**, V., A. M. Smith, G. Brailsford, K. Riedel, Q. Hua, D. Lowe, J. P. Severinghaus, V. Levchenko, T. Bromle, R. Moss, J. Mühle and E. J. Brook, 2008, A new method for analyzing ^{14}C of methane in ancient air extracted from glacial ice, *Radiocarbon*, 53-57.

- Goehring**, B.M., Brook, E.J., Linge, H.C., and Raisbeck, G.M., 2008. Beryllium-10 Exposure ages of erratic boulders in southern Norway and implications for the history of the Fennoscandian Ice Sheet. *Quaternary Science Reviews* 27, 320-336.
- Rinterknecht**, V. R., I.E. Pavlovskaya, P.U. Clark, G.M. Raisbeck, G. M., F. Yiou, and E.J. Brook, 2007, Timing of the last deglaciation in Belarus. *Boreas* 36, 307-313.
- Grachev, A., E. Brook and J. Severinghaus, 2007, Abrupt changes in atmospheric methane at the MIS 5b-5a transition, *Geophysical Research Letters* 34, L20703, doi:10.1029/2007GL029799.
- Carlson**, A., P. U. Clark, G. Raisbeck and E. Brook, 2007, Rapid Holocene deglaciation of the Labrador Sector of the Laurentide Ice Sheet, *Journal of Climate* 20, 5126-5133.
- Schmittner, A., E. Brook and J. Ahn, 2007, Impact of the ocean's overturning circulation on atmospheric CO₂, in Schmittner et al. (eds.), *Ocean Circulation: Mechanisms and Impacts*, *Geophysical Monograph Series 173*, American Geophysical Union, Washington D.C.
- Linge, H., L. Olsen, E. Brook, J. **Darter**, D. Mickelson, G. Raisbeck and F. Yiou, 2007, Cosmogenic exposure ages from Nordland, northern Norway: implications for deglaciation in a coast to inland transect, *Norwegian Journal of Geology* 87, 269-280.
- Carlson**, A., P.U. Clark, B.A. Haley, G.P. Klinkhammer, K. Simmons, E. Brook, and K. Meissner, 2007, Geochemical proxies of North American freshwater routing during the Younger Dryas, *Proceedings of the National Academy of Sciences* 104, 6556-6561.
- Ahn, J. and E. Brook, 2007, Atmospheric CO₂ and climate from 65 to 30 ka B.P., *Geophysical Research Letters* 34, L10703, doi:10.1029/2007GL029551.
- Kobashi**, T., J. Severinghaus, E. Brook, J.M. Barnola and A. Grachev, 2007, Precise timing and characterization of abrupt climate change at 8.2k B.P. from air trapped in polar ice *Quaternary Science Reviews* 26, 1212-1222.
- Harder, S., D.T. Schindell, G.A. Schmidt and E. Brook, 2007, A GCM study of CH₄ emissions during the Holocene and glacial-interglacial transitions constrained by ice core data, *Global Biogeochemical Cycles* 21, GB1011, doi:10.1029/2005GB002680, 2007.
- Nesje, A., S.O. Dahl, C. Ballantyne, H. Linge, D. McCarroll, E.J. Brook, G. Rasibeck, and F. Yiou, 2007, The surface geometry of the Last Glacial Maximum ice sheet in the Andøya Skaånland region, northern Norway, constrained by surface exposure dating and clay mineralogy, *Boreas* 36, 1-13.
- Rinterknecht**, V.R., P. U. Clark, G. M. Raisbeck, F. Yiou, A. Bitinas, E. J. Brook, L. Marks, V. Zelc's, J.-P. Lunkka, I. E. Pavlovskaya, J. A. Piotrowski and A. Raukas, 2006, The Last Deglaciation of the Southeastern Sector of the Scandinavian Ice Sheet, *Science* 311, 1449-1452.
- Fjellanger**, J., L. Sørbel, H. Linge, E. Brook, G. M. Raisbeck and F. Yiou, 2006, Glacial survival of blockfields on the Varanger Peninsula, northern Norway, *Geomorphology* 82, 255-272.

- Linge, H., E. Larsen, K. Kjaer, I. Demidov, E. Brook, G. Raisbeck and F. Yiou, 2006, Cosmogenic ^{10}Be exposure age dating across Early to Late Weichselian ice-marginal zones in northwestern Russia, *Boreas* 35, 10.1080/03009480600781909.
- Petrenko**, V. J. Severinghaus, E. Brook, N. Reeh and H. Schaefer, 2006, Gas records from the west Greenland ice margin covering the last glacial termination: a horizontal ice core, *Quaternary Science Reviews* 25, 865–875.
- Suwa**, M., J. von Fischer, M. Bender, A. Landais and E. Brook, 2006, Chronology reconstruction for the disturbed bottom section of the GISP2 and the GRIP ice cores: Implications for Termination II in Greenland, *Journal of Geophysical Research* 111, D02101.
- Brook, E., 2006, Using stable isotopes for climate reconstruction in ice cores, in Elias, S. (ed.), *Encyclopedia of Quaternary Science*, Elsevier.
- Brook, E., 2006, Correlations Between Greenland and Antarctic Ice Core Records, in Elias, S. (ed.), *Encyclopedia of Quaternary Science*, Elsevier.
- Brook, E., 2006, Overview of ice core research, in Elias, S. (ed.), *Encyclopedia of Quaternary Science*, Elsevier.
- Schaefer**, H., M. Whiticar, E. Brook, V. Petrenko, D. Ferretti and J. Severinghaus, 2006, Ice record of d^{13}C for atmospheric methane across the Younger Dryas-Pre Boreal Transition, *Science* 313, 1109-1112.
- Linge, H., E. Brook, A. Nesje, G. Raisbeck, F. Yiou, and H. Clark 2007, In situ ^{10}Be exposure ages from southeastern Norway: implications for the geometry of the Weichselian Scandinavian ice sheet, *Quaternary Science Reviews*, 25 1097-1109.
- Brook, E., 2005, Tiny Bubbles Tell All, *Science* 310, 1285-1287.
- Rinterknecht** V.R., Marks L., Piotrowski J.A., Raisbeck G.M., Yiou F., Brook E.J. and Clark P.U., 2005, Cosmogenic ^{10}Be ages on the Pomeranian Moraine, Poland, *Boreas* 34, 186.
- Brook, E., J.W.C. White, A. **Schilla**, M. Bender, B.A. Barnett, J. Severinghaus, K.C. Taylor, R.B. Alley and E.J. Steig, 2005, Timing of millennial-scale climate change at Siple Dome, West Antarctica, during the last glacial period, *Quaternary Science Reviews* 24, 1333-1343.
- Waddington, E., Conway, H., Steig, E. Alley, R., Brook, E. and White, J., 2005, Decoding the dipstick, thickness of Siple Dome, West Antarctica, at the last glacial maximum, *Geology* 33, 281-284.
- Brook, E. and E. Wolff, 2005, The future of ice core science, *EOS* 87, 39.

Grants and Contracts

- PIRE: ICE-ICS: International Collaboration and Education in Ice Core Science, NSF Partnerships in International Research and Education, 9/1/10 to 8/31/15, \$4,500,000.
- Collaborative Research: Deglaciation of the Ross Sea Embayment, constraints from Roosevelt Island, NSF Office of Polar Programs, 9/1/10 to 8/31/13, \$200,729.

Toward a Glacial-Interglacial Record of $\delta^{13}\text{C}$ of Atmospheric CO_2 from the WAIS

Divide Ice Core. Gary Comer Foundation, 6/15/08 to 6/14/10, \$50,678.

Developing a record of the stable carbon isotopic composition of atmospheric CO_2 from the LGM to the Holocene, NSF Office of Polar Programs, 1/1/09-12/31/12, \$411,238 (with A. Mix, COAS).

Collaborative Research: A "horizontal ice core" for large-volume samples of the past atmosphere, Taylor Glacier, Antarctica, NSF Office of Polar Programs, 7/1/09 to 6/30/12, \$294,755 (with J. Severinghaus, UCSD).

IPY: Collaborative Research: The NEEM Deep Ice Core. NSF OPP, 5/08-4/13, \$517,034 to OSU (collaborative effort with University of Colorado, Scripps Institution of Oceanography, Penn State University).

Atmospheric carbon dioxide and climate change: the WAIS Divide record, NSF Office of Polar Programs, 1/08-12/10, \$708, 34.

Developing a Rapid Method for Measuring Greenhouse Gases (CO_2 , CH_4 , N_2O) in Ice Cores, OSU College of Science Ventures Fund, \$10,370 (co-PI with Alexi Grachev, OSU).

Collaborative Research: Project PALEOVAR -- Past Climate Variability: Understanding Mechanisms and Interactions with the Mean State, NSF-ATM, 6/06-5/11, \$228,693 to Brook (co-Pi with P. Clark, A. Mix, A. Schmittner, N. Piasias, S. Hostetler at OSU, P. Bartlein, U of O, and Larry Edwards, Univ. of Minn. Total award to OSU=\$3,100,000.

Ice core trace gas records and abrupt climate change, Gary Comer Science and Education Foundation, 3/06-2/08, \$220,000.

Collaborative Research: Constructing an ultra-high resolution atmospheric methane record for the last 140,000 years from the WAIS Divide Ice Core, NSF Office of Polar Programs, 9/06 to 8/10, \$274,466.

Acquisition of a Noble Gas Mass Spectrometer at Oregon State University, MRI from NSF OCE, 9/06-8/08, \$611,930 (co-PI with D. Graham, J. Lupton, and R. Duncan, OSU).

REU Supplement: High Resolution Records of Atmospheric Methane in Ice Cores and Implications for Late Quaternary Climate Change, \$4,035, 4/10/05 to 4/09/06.

Collaborative Research: New insights into the Holocene methane budget from dual isotope systematics and the inter-polar gradient, NSF Office of Polar Programs, 8/15/05-8/15/08. \$149,085 to OSU, \$382,391 total (Collaboration with Todd Sowers, Penn State).

Collaborative research: Gases in firn air and shallow ice at the proposed WAIS drilling site, NSF Office of Polar Programs, 6/1/05-5/31/07. \$176,706 to WSU, ~ \$1M total (Collaboration with Todd Sowers, Penn State, Eric Saltzman, UCI, Jeff Severinghaus, UCSD, Mark Battle, Bowdoin College, and Jim White, CU).

Constraining natural changes in the methane budget through stable isotope analysis, Petroleum Research Fund of the American Chemical Society, \$80,000, 4/1/05-8/31/07.

Improving ice core records of greenhouse gas variations, Gary Comer Foundation, 8/04-7/07, \$330,000.

Developing dry extraction of ice core gases and application to millennial-scale CO₂ variability, NSF, Office of Polar Programs, 6/04-5/07, \$444,125.

Collaborative Research: Determining methane sources during the last deglaciation with large-volume air samples from Pakitsoq, West Greenland, NSF, Office of Polar Programs, 1/02–12/05, \$175,474 to WSU, \$445,000 total. (Collaboration with J. Severinghaus, Scripps Institute of Oceanography),

High-resolution records of atmospheric methane in ice cores and implications for late Quaternary climate change, NSF, Office of Polar Programs, Antarctic Glaciology Program, 1/02–12/05, \$304,701.

Professional Service and Leadership

U.S. Ice Core Working Group Chair, 2001-2002.

International Partnerships in Ice Core Sciences, Steering Committee, 2003-present.

Co-Chair, International Partnerships in Ice Core Sciences, 2005-present.

West Antarctic Ice Sheet Divide Site Ice Core Project Executive Committee, 2004-present.

Editor, Ice Core Submissions, Encyclopedia of Quaternary Sciences, 2005-2006.; 2010-2011.

Associate Editor, *Climate of the Past Discussions* (EGU Journal), 2005-present.

Associate Editor, *Quaternary Science Reviews*, 2005-2010.

Steering Committee, NSF Workshop on Paleoclimate Proxies, 2005.

Lead Author, for US Climate Change Science Program Synthesis and Assessment Product 3.4, Abrupt Climate Change, Chapter 5, Abrupt Changes in Atmospheric Methane (in review, 2007).

NSF Office of Polar Programs Advisory Committee, 2005-2008.

Ice Drilling Program Office, Senior Advisory Board, 2008-Present.

9.7.2 Peter Clark, Prof., Geology

Awards and Honors

2010 Fellow, American Geophysical Union

2009 The Leverhulme Trust Visiting Professorship, University of Edinburgh

2008 F.A. Gilfillan Memorial Award for Distinguished Scholarship in Science, Oregon State University

2007 Easterbrook Distinguished Scientist Award, Geological Society of America

2002 Milton Harris Award for Exceptional Achievement in Basic Research, Oregon State University

2001 L.L. Stewart Faculty Development Award, Oregon State University

- 1997 Gladys W. Cole Memorial Research Award, Geological Society of America
- 1997 Fellow, Geological Society of America
- 1995 Thomas T. Sugihara Young Faculty Research Award, Oregon State University
- 1991 Finalist, Carter Award, Excellence in Graduate Teaching, Oregon State University
- 1987 Silver Circle Award, Excellence in Teaching, University of Illinois

Peer-Reviewed Publications

- Rinterknecht, V.R.**, Marks, L., Piotrowski, J., Raisbeck, G.M., Yiou, F., Brook, E.J., and Clark, P.U., 2005, Cosmogenic ^{10}Be ages on the Leszno and Pomeranian moraines, Poland: *Boreas*, v. 34, p. 186-191.
- McCabe, A.M., Clark, P.U., and Clark, J., 2005, AMS ^{14}C dating of deglacial events in the Irish Sea Basin and other sectors of the British-Irish Ice Sheet: *Quaternary Science Reviews*, v. 24, p. 1673-1690.
- Bassett, S.E., Milne, G.A., Mitrovica, J.X., and Clark, P.U., 2005, Ice sheet and solid earth influences on far-field sea-level histories: *Science*, v. 309, p. 925-928.
- Vacco, D.A.**, Clark, P.U., Mix, A.C., Cheng, H., and Edwards, R.L., 2005, A speleothem record of Younger Dryas cooling from the Klamath Mountains, Oregon: *Quaternary Research*, v. 64, p. 249-256.
- Alley, R.B., Clark, P.U., Huybrechts, P., and Joughin, I., 2005, Ice-sheet and sea-level changes: *Science*, v. 310, p. 456-460.
- Rinterknecht, V.R.**, Clark, P.U., Raisbeck, G.M., Yiou, F., Bitinas, A., Brook, E.J., Marks, L., Zelčs, V., Lunkka, J.-P., Pavlovskaya I.E., Piotrowski, J.A., and Raukas, A., 2006, The last deglaciation of the southeastern sector of the Scandinavian Ice Sheet: *Science*, v. 311, p. 1449-1452.
- Meissner, K.J., and Clark, P.U., 2006, The impact of floods versus routing events on the thermohaline circulation: *Geophysical Research Letters*, v. 33, doi:10.1029/2006GL026705.
- Clark, P.U., Archer, D., Pollard, D., Blum, J.D., Rial, J.A., Brovkin, V., Mix, A.C., Pisias, N.G., and **Roy, M.**, 2006, The Middle Pleistocene transition: Characteristics, mechanisms, and implications for long-term changes in atmospheric pCO_2 : *Quaternary Science Reviews*, v. 25, p. 3150-3184.
- Rinterknecht, V.R.**, Marks, L., Piotrowski, J., Raisbeck, G.M., Yiou, F., Brook, E.J., and Clark, P.U., 2006, Cosmogenic ^{10}Be ages on the Leszno and Pomeranian moraines, Poland: Reply to Comments: *Boreas*, v. 35, p. 605-606.
- McCabe, A.M., Clark, P.U., and Clark, J., 2007, Radiocarbon constraints on the history of the western Irish Ice Sheet prior to the Last Glacial Maximum: *Geology*, v. 35, p. 147-150.
- McCabe, A.M., Clark, P.U., Smith, D.E., and Dunlop, P., 2007, A revised model for the last deglaciation of eastern Scotland: *Journal of the Geological Society of London*, v. 164, p. 313-316.

- Carlson, A.E.**, Clark, P.U., Haley, B., Klinkhammer, G.P., Simmons, K., Brook, E.J., and Meissner, K., 2007, Geochemical proxies of freshwater routing during the Younger Dryas: *Proceedings of the National Academy of Sciences*, v. 104, p. 6556-6561.
- McCabe, A.M., Clark, P.U., Clark, J., and Dunlop, P., 2007, Radiocarbon constraints on ice sheet readvance in the north Irish Sea Basin during the last deglaciation: *Quaternary Science Reviews*, v. 26, p. 1204-1211.
- Carlson, A.E.**, Jenson, J.W., and Clark, P.U., 2007, Subglacial hydrology of the James Lobe of the Laurentide Ice Sheet: *Quaternary Science Reviews*, v. 26, p. 1384-1397.
- Rinterknecht, V.R.**, Pavlovskaya, I.E., Clark, P.U., Raisbeck, G.M., Yiou, F., and Brook, E.J., 2007, Timing of the last deglaciation in Belarus: *Boreas*, v. 36, p. 307-313.
- Clark, P.U., Hostetler, S.W., Pisias, N.G., Schmittner, A., and Meissner, K.J., 2007, Mechanisms for a ~7-kyr climate and sea-level oscillation during marine isotope stage 3, in Schmittner, A., Chiang, J., and Hemming, S., Eds., *Ocean Circulation: Mechanisms and Impacts*, *American Geophysical Union, Geophysical Monograph 173*, Washington, D.C., pp. 209-246.
- Carlson, A.E.**, Clark, P.U., Raisbeck, G.M., and Brook, E.J., 2007, Rapid Holocene deglaciation of the Labrador sector of the Laurentide Ice Sheet: *Journal of Climate*, v. 20, p. 5126-5133.
- Roy, M.**, Clark, P.U., Duncan, R.A., and Hemming, S.R., 2007, Insights into the late Cenozoic configuration of the Laurentide Ice Sheet from $^{40}\text{Ar}/^{39}\text{Ar}$ dating of glacially transported minerals in midcontinent tills: *Geochemistry, Geophysics, Geosystems*, v. 8, Q09006, doi:10.1029/2006GC001572.
- McCabe, A.M., Clark, P.U., Smith, D.E., and Dunlop, P., 2007, Discussion on a revised model for the last deglaciation of eastern Scotland: *Journal of the Geological Society of London*, v. 164, p. 1261-1263.
- Sane, S., Desai, C.S., Jenson, J.W., Contractor, D.N., **Carlson, A.E.**, and Clark, P.U., 2008, Application of the Disturbed State Concept (DSC) model to two Pleistocene tills: *Quaternary Science Reviews*, v. 27, p. 267-283.
- Clark, P.U., Delworth, T.L., and Weaver, A.J., 2008, Freshwater forcing: Will history repeat itself?: *Science*, v. 320, p. 316.
- Anslow, F.S.**, Hostetler, S.W., Bidlake, W.R., and Clark, P.U., 2008, Distributed energy balance modeling of South Cascade Glacier, Washington, and assessment of model uncertainty: *Journal of Geophysical Research*, v. 113, F02019, doi:10.1029/2007JF000850,
- Rinterknecht, V.R.**, Bitinas, A., Clark, P.U., Raisbeck, G.M., Yiou, F., and Brook, E.J., 2008, Timing of the last deglaciation in Lithuania: *Boreas*, v. 37, p. 426-433.
- Carlson, A.E.**, and Clark, P.U., 2008, Rapid climate change and Arctic Ocean freshening: Comment: *Geology*, doi: 10.1130/G24786C.1.
- Clark, P.U., Weaver, A.J., Brook, E., Cook, E.R., Delworth, T.L., and Steffen, K., 2008, Executive Summary. In: *Abrupt Climate Change*. A report by the U.S. Climate Change

- Science Program and the Subcommittee on Global Change Research. U.S. Geological Survey, Reston, VA, p. 1-7.
- Clark, P.U., Weaver, A.J., Brook, E., Cook, E.R., Delworth, T.L., and Steffen, K., 2008, Introduction: Abrupt changes in the Earth's climate system. In: *Abrupt Climate Change*. A report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. U.S. Geological Survey, Reston, VA, p. 9-27.
- Steffen, K., Clark, P.U., Cogley, G., Holland, D., Marshall, S., Rignot, E., and Thomas, R., 2008, Rapid changes in glaciers and ice sheets and their impacts on sea level. In: *Abrupt Climate Change*. A report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research. U.S. Geological Survey, Reston, VA, p. 29-77.
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- Mitrovica, J.X., Gomez, N., and Clark, P.U., 2009, Enhanced sea-level rise following a collapse of the West Antarctic Ice Sheet: *Science*, v. 323, p. 753.
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- Siddall, M., Clark, P.U., Thompson, W., Waelbroeck, C., Gregory, J., Stocker, T., 2009, The sea level conundrum: Insights from paleo studies: *Eos*, v. 90, p. 72-73.
- Clark, P.U., 2009, Book review of: *Glacial Geology and Geomorphology: The Landscapes of Ireland*: *Quaternary Science Reviews*, v. 28, p. 975-976.
- Clark, P.U., 2009, Ice-sheet retreat and sea-level rise during the last deglaciation: *PAGES Newsletter*, v. 17, p. 64-66.
- Liu, Z., Otto-Bliesner, B.L., He, F., Brady, E., Tomas, R., Clark, P.U., Carlson, A.E., Lynch-Stieglitz, J., Curry, W., Brook, E., Erickson, D., Jacob, R., Kutzbach, J., and Cheng, J., 2009, Transient simulation of last deglaciation with a new mechanism for Bølling-Allerød warming: *Science*, v. 325, p. 310-314.

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- Clark, P.U., and Huybers, P., 2009, Interglacial and future sea level: *Nature*, v. 462, p. 856-857.
- PALSEA (PALeo SEA level working group), 2010, The sea-level conundrum: case studies from palaeo-archives: *Journal of Quaternary Science*, v. 25, p. 19-25.
- Gomez, N., Mitrovica, J.X., Tamisiea, M.E., and Clark, P.U., 2010, A new projection of sea-level change in response to collapse of marine sectors of the Antarctic Ice Sheet: *Geophysical Journal International*, v. 180, p. 623-634.
- Pisias, N.G., Clark, P.U., and Brook, E.J., 2010, Dominant modes of climate variability during marine isotope stage 3 (60-25 ka): *Journal of Climate*, v. 23, p. 1581-1588.
- Ersek, V.**, Mix, A.C., and Clark, P.U., 2010, Temporal variations of oxygen isotopes in rainwater from southwestern Oregon: *Journal of Geophysical Research*, v. 115, doi:10.1029/2009 JD013345.
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- Gomez, N., Mitrovica, J.X., Huybers, P., and Clark, P.U., 2010, Self stabilization of marine ice-sheet grounding lines: *Nature Geoscience*, v. 3, p. 850-853.
- Rushdi, A.I., Clark, P.U., Mix, A.C., **Ersek, V.**, Simoneit, B.R.T., Cheng, H., and Edwards, R.L., 2010, Composition and sources of lipid compounds in speleothem calcite from southwestern Oregon and their paleoenvironmental implications: *Environmental Earth Sciences*, DOI 10.1007/s12665-010-0613-4.
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- Pisias, N.G., and Clark, P.U., in press, Modes of climate variability during marine isotope stage 3 (60-25 ka): Implications for understanding future climate change: *Geoscience Canada*.

Grants and Contracts

2010-2011 National Science Foundation, \$98,700, for A workshop to develop a Science and Implementation Plan for projecting future sea-level rise from land-ice loss.

- 2010-2013 National Science Foundation, \$219,000, for Collaborative Research: Improved constraints on Holocene retreat history of the Laurentide and Scandinavian Ice Sheets from cosmogenic dating and implications for sea-level rise.
- 2008-2011 National Science Foundation, \$164,426, for Collaborative Research: Testing latest Pleistocene and Holocene glacial chronologies in the western United States with cosmogenic-nuclide and radiocarbon dating and models.
- 2008-2010 National Science Foundation, \$12,000, for Developing a cosmogenic chronology of tropical glaciation in the Peruvian Andes.
- 2006-2011 National Science Foundation, \$446,896, for Collaborative Research: Project PALEOVAR -- Past climate variability: Understanding mechanisms and. interactions with the mean state.
- 2005-2008 National Science Foundation, \$346,961, for Full-Holocene, decadal-scale isotopic paleoclimate record from speleothems, Oregon Coast Range.
- 2003-2005 National Science Foundation, \$147,364, for Testing and constitutive modeling of fine-grained tills deposited by the Laurentide Ice Sheet.
- 2003-2005 National Science Foundation, \$155,000, for Constraining late Pleistocene tropical climates by dating and modeling former glaciers.

Professional Service and Leadership

- Coordinating Lead Author, Chapter 13 (Sea Level Change), 5th Assessment Report (AR5), Intergovernmental Panel on Climate Change (IPCC).
- Coordinating Lead Author, Report to the U.S. National Science Foundation, “A Research Program for Projecting Future Sea-Level Rise from Land-Ice Loss.”
- Coordinating Lead Author and Member, Federal Advisory Committee, U.S. Climate Change Science Program, Synthesis and Assessment Product on “Abrupt Climate Change.”
- Editorial Advisory Board, *Quaternary Science Reviews*, 2006-present.
- Member, Panel on the CLIVAR/PAGES Intersection, 2004-2008.
- Associate Editor, *Journal of Climate*, 2003-present.
- Member, U.S. National Committee for International Union for Quaternary Research, 2004-2006.
- Regional Editor (North America), *Quaternary Science Reviews*, 1998 – 2005.
- Editorial Board, *Geology*, 2002-2004.
- Marine Earth System History (MESH) Steering Committee, NSF, 2003-2005.
- Associate Editor, *Geophysical Research Letters*, 1998 - 2001.
- Chair, Quaternary Geology and Geomorphology Division, Geological Society of America, 1999-2000.
- 1st Vice-Chair, Quaternary Geology and Geomorphology Division, Geological Society of America, 1998-1999.

Steering Committee, EPILOG (Environmental Processes at the Last Glacial Maximum: Land, Oceans, and Glaciers), IMAGES, 1998-2002.

2nd Vice-Chair, Quaternary Geology and Geomorphology Division, Geological Society of America, 1997-1998.

Steering Committee, Terrestrial Aspects of Earth System History, U.S. Global Change Research Program, *National Science Foundation*, 1996 - 1997.

Editorial Advisory Board, *Quaternary Science Reviews*, 1996-1997.

Editorial Board, *Geology*, 1995-1997.

Advisory Panel, Antarctic Geology and Geophysics Program, Office of Polar Programs, *National Science Foundation*, 1995-1996.

Governing Board, Water Resources Research Institute, Oregon State Univ., 1989-1991.

Associate Editor, *Journal of Sedimentary Petrology*, 1985-1988.

2010 Co-convener, *AGU* Fall Meeting, San Francisco, CA. Session: "Reconstruction and modeling of global climate evolution of the past 21,000 years."

2007 Co-convener, *AGU* Fall Meeting, San Francisco, CA. Session: "Sea level changes over the last two millions years."

2006 Co-convener, *EGU* Spring Meeting, Vienna, Austria. Session: "Evolution of Eurasian ice sheets during the last glaciation."

2005 Co-convener, *EGU* Spring Meeting, Vienna, Austria. Session: "Ice Sheet – Climate Interactions."

CCSP, 2008, *Abrupt Climate Change*. A report by the U.S. Climate Change Science Program and the Subcommittee on Global Change Research [Clark, P.U., A.J. Weaver, coordinating lead authors), E. Brook, E.R. Cook, T.L. Delworth, and K. Steffen (chapter lead authors)]. U.S. Geological Survey, Reston, VA, 244 pp.

9.7.3 *Shanaka de Silva, Prof., Geology*

Awards and Honors

Peer-Reviewed Publications

Scholarly Presentations

Grants and Contracts

Professional Service and Leadership

9.7.4 *John Dilles, Prof., Geology*

[290] Appointed as Courtesy Professor in September, 1986, and 0.75 FTE Assistant Professor January 1, 1989, he is a professor of geology with expertise in mineral resources. He and his students study the origin of porphyry copper, epithermal, and iron-oxide copper gold deposits using field, petrologic and geochemical techniques. Dilles served for 10 years on the Editorial Board of Economic Geology, and is an expert on porphyry copper deposits based on studies at Yerington and Butte, USA, and in northern Chile. His students receive internships and job placement in the minerals industry.

Awards and Honors

Society of Economic Geologists, Fellow (1987)

Geological Society of America, Fellow (1997)

NIST (Japanese Federal Grant Program) Visiting Scientist Fellowship (1996): one-month research stipend for work at the Geological Survey of Japan, Tsukuba, Japan.

Guest Professor, (January—June, 2009) appointed to ETH-Zurich, Department of Mineral Resources

Ralph Roberts Lecturer, University of Nevada-Reno (2010)

Peer-Reviewed Publications

Longo, A.A., Dilles, J.H., Grunder, A.L., and Duncan, R., in press, Issue 8, 2010, Evolution of calc-alkaline volcanism and associated hydrothermal gold deposits at Yanacocha, Perú: Economic Geology. v. 105, 50 p.

Dilles, J.H. and **Stephens, A.**, in press, Age and geology of the Jurassic Lights Creek copper district, California: An Fe-oxide copper gold association: Geological Society of Nevada, 2010 Symposium Volume, xx p.

Chambefort, I., Dilles, J.H., and Longo, A.A., accepted, in revision, Amphibole Geochemistry of the Yanacocha Volcanics, Peru: Evidence for Diverse Sources of Magmatic Volatiles Related to Gold Ores: Journal of Petrology.

Lee, R.G., Dilles, J.H., Tosdal, R.M., Wooden, J.L., and Mazdab, F.L., accepted pending revisions, Magmatic evolution of granodiorite intrusions at the El Salvador porphyry copper deposit, Chile, based on trace element composition and U/Pb age of zircons: Economic Geology.

- Chambefort, I., Dilles, J.H., and Longo, A.A., accepted 2010, Amphibole Geochemistry of the Yanacocha Volcanics, Peru: Evidence for Diverse Sources of Magmatic Volatiles Related to Gold Ores: *Journal of Petrology*.
- Dilles, J.H., 2009, A series of papers on fluid – mineral equilibrium applied to mineral deposits: A preface: *Economic Geology*, v. 104, p. xxx-yyy.
- Tosdal, R.M., Dilles, J.H., and Cooke, D.R., 2009, From source to sinks in auriferous magmatic-hydrothermal porphyry and epithermal deposits: *Elements*, v. 5, p. 289-295. doi: 10.2113/gselements.5.5.289.
- Chambefort, I., Dilles, J.H., and Kent, J.R., 2008, Anhydrite-bearing andesite and dacite as a source for sulfur in magmatic-hydrothermal mineral deposits: *Geology*, vo. 36, no. 9, p. 719-722.
- Gonsior, Z.J.** and Dilles, J.H., 2008, The Timing and Evolution of Cenozoic Extensional Normal Faulting and Magmatism in the Southern Tobin Range, Nevada: *Geosphere*, Vol. 4, Issue 4, p. 687-712
- Rusk, B., Reed, M.H., and Dilles, J.H., 2008, Fluid inclusion evidence for magmatic-hydrothermal fluid evolution in the porphyry copper-molybdenum deposit, Butte, Montana: *Economic Geology*, v. 103, p. 307-334.
- Proffett, John M., and Dilles, John H., 2008, Lower Mesozoic sedimentary and volcanic rocks of the Yerington region, Nevada, and their regional context: *in* editors, Wright, J.E., and John Shervais, J.W., eds., *Ophiolites, Arcs, and Batholiths: A Tribute to Cliff Hopson*; *Geol. Soc Amer Spec Paper* 438, p. 251-288.
- Brimhall, G.H., Dilles, J.H., and Proffett, J.M., Jr., 2006, The role of geologic mapping in modern mineral exploration: *in*, Doggett, M.D., and Parry, J.R., eds., *Special Publication 12, Society of Economic Geologists*, p. 221-241
- Rusk, Brian G., Reed, Mark H., Dilles, John H. and Kent, Adam J. R., 2006, Intensity of quartz cathodoluminescence and trace element content in quartz from the porphyry copper deposit in Butte, Montana, USA: *Amer. Mineralogist*, v. 91, . 1300-1312.
- Seedorff, E., Dilles, J.H., Proffett, J.M., Jr., Einaudi, M.T., Zurcher, L., William J. A. Stavast, W. J.A., Johnson, D.A., Barton, M.D., 2005, Porphyry-Related Deposits: Characteristics and Origin of Hypogene Features: *in* Hedenquist, J., Thompson, J.F., Richards, J., eds., *100th Anniversary Volume, Society of Economic Geologists*, p. 251-298.
- Simeone R., Dilles J. H., Padalino G. and Palomba M., 2005, Mineralogical and stable isotope studies of kaolin deposits: shallow epithermal systems of western Sardinia (Italy): *Economic Geology*, v. 100, p. 115-130.
- Field, C.W., Zhang, L., Dilles, J.H., Rye, R.O., and Reed, M.H., 2005, Sulfur and oxygen Pre-Main Stage Porphyry Cu-Mo and Late Shallow Main Stage Base Mineral Deposits, Butte District, Montana: *Chemical Geology (Robert Rye volume)*; v. 215, p. 61-93

Scholarly Presentations

- Dilles, J.H., Chambefort, I., **Lee, R.**, Longo, A., Brennecka, G., and Rusk, B., 2007, Magmas and porphyry type hydrothermal fluids, a review [abstr.]: Ores and Orogenesis Symposium, Arizona Geological Society, Tucson, p.
- Dilles, J.H., Hitzman, M., and Barton, M.D., 2007, Education in mineral resource geology in U.S. universities [abstr.]: Northwest Mining Association, Annual Meeting, Spokane, WA, p. 28.
- Dilles, J.H., Reed, M. H. Rusk, B. G., Houston, R. A., Zhang, L., Martin, M. W., Snee, L. W., Stein, H. J., Field, C. W., Kent, A. J. R., 2006, Porphyry Cu-Mo and Base Metal Lodes at Butte, Montana: A World Class Ore Deposit Produced by Millions of Years of Magmatic-Hydrothermal Activity: Inter. Mineralogical Assoc., Kobe, Japan, Congress.
- Dilles, J. H., Kent, A. J., Rusk, B.G., 2005, Isotopic evidence for the multiple sources of lead in porphyry Cu-Mo and base metal lode ores at Butte, Montana: abstr., Geol. Soc. America, Annual Mtg, Salt Lake City, UT.
- Dilles, J., 2005, Geology, geochronology, and geochemistry of porphyry Cu-Mo ores and base metal lodes at Butte, Montana: abstract, Northwest Miners Association, Annual Mtg, Spokane, WA.
- Geological Society of Nevada, May 2005, Window on the world meeting: invited presentation: overview of the geology of the Yerington porphyry copper district, Nevada
- Dilles, J. H., 2006, Geology, geochronology, and geochemistry of porphyry Cu-Mo ores and base metal lodes at Butte, Montana: Keynote Speaker, Mineral Deposits Study Group annual meeting, Imperial College, London, UK
- International Mineralogical Association, Congress, Kobe, Japan, July 2006; The geology of the porphyry Cu-Mo and base metal lode ores at Butte, Montana
- Long-lived Anhydrite-bearing Andesite and Dacite Magmatism as a Source for Sulfur in the Giant Yanacocha Magmatic-Hydrothermal Gold Deposit, Perú (May 5, 2009; U of Geneva; March 18, 2009, ETHZ)
- Magmatism & porphyry systems: El Abra--Fortuna batholith emplacement, timing, structural control (U of Geneva, May 6, 2009)
- Magmatism & porphyry systems: El Salvador porphyry emplacement & timing; magmatic processes (U of Geneva, May 6, 2009; ETHZ, February 20, 2009)
- 2005 Co-leader, 2 day field trip, Porphyry copper deposits of the Great Basin (leader, one day trip to Yerington, Nevada; 30 attendees).

Grants and Contracts

- Acquisition of a hand-held portable XRF, OSU College of Science, Fall, 2010, co-PI's Adam Kent, Anita Grunder, John Dilles, Roger Nielsen, Frank Tepley. \$40,000
- Glass Buttes Project Narrative: Merging high resolution geophysical and geochemical surveys to reduce exploration risk at Glass Buttes, Oregon: a proposal to the United States Department of Energy – Geothermal Technologies Program DE-FOA-0000109 – Topic

Area 1. Validation of Innovative Exploration Technology from Ormat Nevada, Inc".OSU Subcontract, July 1, 2010 to June 30, 2012, \$115,000

Footprints of porphyry Cu deposits: Vectors to the hydrothermal center using mineral mapping and lithogeochemistry: US Geological Survey Mineral Resource External Research Program (Jan. 1, 2010 to Dec. 31, 2010), \$30,000

Footprints of porphyry Cu deposits: Vectors to the hydrothermal center using mineral mapping and lithogeochemistry: Subcontract on \$405,000 grant to University of British Columbia from industry (Jan. 1, 2009 - May, 2011), \$60,000

Supplement to: Content and behavior of sulfur in silicic magmas and links to generation of sulfur-rich ore-forming fluids of porphyry Cu-Mo-Au deposits: National Science Foundation (EAR-0337798); (to Dec. 31, 2008), \$15,000

Geochronology and field mapping to constrain the timing and evolution of extensional normal faults in the southern Tobin Range, NW Nevada: (J.H. Dilles, PI) US Geological Survey, EDMAP program, \$10,070, April 2005 to March 2006

Improvement of microscopy for petrologic studies: Acquisition of Nomarski imaging and melt inclusion stage: (Dilles, J.H., Kent, A.D., Grunder, A.L., and Nielsen, R.L.) Hanlon challenge, Oregon State University, \$10,000; January to December, 2005

The mineralogy and origin of hydrothermally altered Quaternary volcanic rocks on the south flank of Lassen volcano, California, US Geological Survey-MRERP, August 2004 to August 2005, \$42,000

Content and behavior of sulfur in silicic magmas and links to generation of sulfur-rich ore-forming fluids of porphyry Cu-Mo-Au deposits: National Science Foundation (EAR-0337798); \$219,959, John Dilles (with Martin Streck, PSU, a separate budget), 1/1/04-6/30/07

American Barrick & Newmont mining companies (2010), \$30,000 donations to OSU Foundation towards the support of Luc Farmer's MS research program.

American Sheffield (2007); \$3,500 toward support of Abigail Stephens MS research.

Codelco-Chile (2006); \$10,000 toward U/Pb geochronology of the El Salvador district, Chile.

Professional Service and Leadership

Sept, 2005, co- Leader, departmental geology field trip to Butte, Stillwater, Yellowstone, Montana, 10 days

Mar., 2006, participant & assistant, departmental geology field trip to Mother Lode, CA, 5 days.

April, 2006, Field Mapping of Ore Deposits (with Dick Tosdal, University of British Columbia).

March, 2007, Field Mapping of Ore Deposits (with Dick Tosdal, MDRU).

March, April, 2008, Field Mapping of Ore Deposits (with Dick Tosdal, MDRU).

September, 2008, Introductory 4 day field trip for new Grad Students led with Adam Kent to SE Oregon.

June, 2009, Field Mapping of Ore Deposits (with Dick Tosdal, MDRU).
April, 2010, Field Mapping of Ore Deposits (with Dick Tosdal, MDRU).
June, 2010, Geology of ore deposits of the Great Basin, USA.
Chair of OSU Condon Lectureship Committee, 2008-present.
Dilles, J.H., 2009, special editor, A Series of Papers on Fluid-Mineral Equilibrium Applied to Mineral Deposits: Preface: Economic Geology 2009 v. 104, p. 1169-1170.
Associate Editor, Economic Geology (Bulletin of Society of Economic Geologists), 1998-2003; 2003-2008.
Co-chair and co-director of Geology Field Camp Committee, 1987 to 2006 (except 1995-96, 1998-99; 2004-05)
Student Affairs Committee, 1988 to present.
Member, Curriculum Committee, 2004-07
Yeats Endowed Chair Committee, 2004-06
Curriculum Coordinator, Departmental Assessment 2005-2007
Ad-hoc Committee on Departmental Space (2005-06)
Safety Officer (2001- present); drafted department laboratory safety policy with Adam Kent.
Faculty mentor for mid-term review of Adam Kent (2005-06)
Secretary of Mineral and Energy Section of Natural Resources Committee (2005-2007); Chair (2007-2008).
Society of Economic Geologists, Faculty Sponsor: OSU-UO student chapter, 1992-present.
Geological Society of America, campus representative, 1988 to present.
Nominator of John Proffett for Silver Medal, medalist, 2005
co-Nominator of Marco Einaudi for Gold Medal, 2006, 2007, 2008

9.7.5 *David Graham, Prof. (COAS)*

See curriculum vita (attached).

9.7.6 *Gordon Grant, Prof. (Courtesy), Geology, Water Resources*

[291] While his primary position is with the U.S.D.A. Forest Service Pacific Northwest Research Station as a Research Hydrologist, Gordon Grant has had a courtesy appointment to the Geosciences faculty, from Asst. Prof. through Prof., since 1988, and an appointment of Courtesy

Instructor to the Dept. of Geology from 1985-88. Over the time of his involvement with Geosciences and Geology, Grant has advised graduate students and taught several courses (see). Some categories of his CV are highlighted below.

Awards and Honors

American Water Resources Association, 1996, Runner-up to the Boggess Award for the best paper published in 1996 by the Journal of the American Water Resources Association, for “Watershed analysis as a framework for implementing ecosystem management” by Montgomery, Grant, Sullivan.

Japanese Science and Technology Agency Fellowship, 1997, for research on channel/debris flow interactions and travel to and in Japan.

Oregon State University, Recipient of Author Award, 2004, for “A Peculiar River”

University of Padova, Italy, 2008, Fellowship for 1-day short-course on geomorphology and hydrology of mountain streams.

Peer-Reviewed Publications

Bromley, C. Randle, T., Grant, G., Thorne, C. Physical modeling of the removal of Glines Canyon Dam and Lake Mills from the Elwha River, WA. In Moglen, G., ed., Proc. Managing Watersheds for Human and Natural Impacts: Engineering, Ecological, and Economic Challenges, ASCE, Williamsburg.

Stewart, G. and Grant, G. 2005. What can we learn from the removal of little dinky dams? In Moglen, G., ed., Proc. Managing Watersheds for Human and Natural Impacts: Engineering, Ecological, and Economic Challenges, ASCE, Williamsburg.

Jefferson, A., Grant, G., and Rose, T., 2006. Influence of volcanic history on groundwater patterns on the west slope of the Oregon High Cascades, Water Resources Research, Vol. 42, W12411, doi:10.1029/2005WR004812.

Jefferson, A., Grant, G., and Lewis, S., 2007. A river runs underneath it: geological control of spring and channel systems and management implications, Cascade Range, Oregon. In M.J. Furniss, C.F. Clifton, and K.L. Ronnenberg, eds. Advancing the Fundamental Sciences: proceedings of the Forest Service national earth sciences conference. PNW-GTR-689. Portland, OR: U.S.D.A. Forest Service, PNW Research Station. p391-400.

Tague, C., Grant, G., Farrell, M., Choate, J., and **Jefferson A.** 2008. Deep groundwater mediates streamflow response to climate warming in the Oregon Cascades, Climatic Change 86: 189-210.

Burkholder BK, Grant GE, Haggerty R, **Wampler PJ,** Khangaonkar T, 2008. Influence of Hyporheic Flow and Geomorphology on Temperature of a Large, Gravel-bed River, Clackamas River, Oregon, USA. Hydrological Processes 22(7):941-953. DOI: 10.1002/hyp.6984.

Wallick, J.R., Grant, G.E, Lancaster, S.T., Bolte J.P. and R.P. Denlinger. 2008. Patterns and controls on historical channel change in the Willamette River, Oregon USA. In Gupta A.V., ed. Large Rivers: Geomorphology and Management. John Wiley and Sons. p491-516.

Jefferson, A., G.E. Grant, S.L. Lewis, and S.T. Lancaster, 2009. Coevolution of hydrology and topography on a basalt landscape in the Oregon Cascade Range, USA. *Earth Surface Processes and Landforms*, doi:10.1002/esp.1976 .

For non-student-authored publications, see curriculum vita (attached).

Scholarly Presentations

See curriculum vita (attached).

Grants and Contracts

Discharge, source areas, and water ages of spring-fed streams and implications for water management in the McKenzie River Basin. Lead PI on continuing agreement with Eugene Water and Electric Board, 1/03-12/07. \$155,000.

Potential Effects of Gravel Augmentation on Temperature in the Clackamas River Oregon: A Targeted Literature Review for Portland General Electric. Directed study 1/05-3/05. \$3,000.

Temperature monitoring of the Sandy River funded by Bull Run Decommissioning Team, Directed study. \$5,000 1/05-12/05.

Influence of Climate Change on Water Supply in the McKenzie River Basin: Analysis of Long-term and Spatial Hydrologic Data. USGS Mini Grant awarded by Center for Water and Environmental Sustainability. Co-PI with Anne Nolin, Anne Jefferson, OSU. 3/05-2/06, \$13,725.

Forest Management effects on peak storm flows and consequent effects on stream channel morphology – science synthesis and management interpretations. Bureau of Land Management, Co-PI with Sarah Lewis, OSU 9/05-8/06, \$20,474.

Impact of Gravel Augmentation on Temperature in the Clackamas River. Portland General Electric, Co-P.I. with Roy Haggerty, OSU. 10/06 -9/08, \$194,240.

Near- and long-term effects of climate change on streamflow and water quality in the upper McKenzie River, Oregon. Lead PI on continuing agreement with Eugene Water and Electric Board, \$90,000. 1/08 to present.

Geomorphic Controls on Increasing Debris Flows at Mt Rainier National Park. National Park Service. Lead PI. 7/08-12/08. \$7,300.

Continued Monitoring after Marmot Dam Removal, Bull Run Decommissioning Team. Lead P.I. 10/08-9/10, \$16,000.

Impact of Extrafluvial Events on River Valley Evolution, Owyhee River, Oregon. National Science Foundation. Co-PI with Kyle House (Nevada Mines & Geology), Lisa Ely

(Central Washington University), Liz Safran (Lewis & Clark College), Jim O'Connor, (USGS, Portland) 6/06 to 6/09. \$350,000 (~ 1 month per year).

Climatic and Geomorphic Triggering Mechanisms of Cascadian Periglacial Debris Flows, A. Nolin (PI), S. Lancaster, and G. Grant (co-PIs). National Science Foundation, Geomorphology and Land-use Dynamics. \$350,959. 8/1/09 – 7/31/12.

Professional Service and Leadership

Associate Editor, 2004 - present, Water Resources Research, published by American Geophysical Union

Deputy Editor, 2000-2004, Water Resources Research

Co-chair, International Association of Geomorphology, Large Rivers Working Group, 2007 - present

9.7.7 Anita Grunder, Prof., Geology

[292] Dr. Grunder joined the faculty in 1986. She is a volcanologist and petrologist working on problems of crustal magmatism and the relationship of magmatism to tectonics. She collaborates extensively and is also strongly engaged in teaching and mentoring.

Awards and Honors

AWG National teaching award 2009

Horne teaching award for sustained excellence in teaching, Fall 2001

Fellowship in the Geological Society of America, 1997

Carter Award for outstanding and inspirational teaching, College of Science, Oregon State University, Fall 1989 (first woman recipient of the award)

Peer-Reviewed Publications

Schmidt M. E. and Grunder A.L., 2011, Deep mafic roots to arc volcanoes: mafic recharge and differentiation of basaltic andesite at North Sister Volcano, Oregon Cascades. *Journal of Petrology*

Longo, A., Dilles, J.H., Grunder, A., Duncan R.A., 2011 In press, Timing of Volcanism and Alteration in the Yanachocha Gold District, Peru, *Economic Geology*

Schmidt, M.E., and Grunder, A.L., and **Rowe**, M, 2007, Segmentation of the Cascades Arc as indicated by Sr and Nd isotopic variation among primitive basalts. *Earth and Planetary Science Letters* 266:166-181.

Grunder, A.L., **Klemetti**, E.K., **McKee**, C.M., and Feeley, T.C., 2007, Eleven million years of arc volcanism at the Aucanquilcha Volcanic Cluster, northern Chilean Andes: Implications for the lifespan and emplacement of batholiths, *Journal of the Geological Society of Edinburgh. Special Volume on Origin of Granites*.

Klemetti, E.K., and Grunder, A.L., 2007, Volcanic evolution of Volcán Aucanquilcha, a long-lived, monotonous dacite volcano in the Central Andes of Northern Chile., *Bulletin of Volcanology*. 70: 633-650. DOI10.1007/s00445-007-0158-x.

Streck, M.J., and Grunder, A.L., 2007, Phenocryst-poor rhyolites of bimodal, tholeiitic provinces: The Rattlesnake Tuff and implications for mush extraction models. *Bulletin of Volcanology*, DOI10.1007/s00445-007-0144-3. 70:385-401.

Longo, B. M., Grunder, A.L., Chuan, R. and Rossignol, A., 2005, SO₂ and fine aerosol dispersion from the Kilauea plume, Kau District, Hawai'i, USA , *Geology*, v. 33 p. 217-220...

Scholarly Presentations

21 or more in the last 5 years. At least 2 per year at universities, and another 2 per year at conferences, workshops and professional field trips

Grants and Contracts

participation in over 3.5 million in grants

Visiting Professorship to the Department of Mineralogy and Petrology, Federal Polytechnic Institute (ETH) Zurich, Switzerland, 35,000, With John Dilles, 1/09-6/09

Origin and processing of crustal magma: northern Chilean Andes, 250,000, Anita Grunder and Frank Tepley, 3 years, NSF- EAR- Petrology and Geochemistry, 06-09

SOTA 2007 and GSA Field Forum: support for Latin American Participation and Future Partnerships, Becky Lange, Anita Grunder, and Rosemary Hickey, \$50,000, NSF-EAR- Petrology and Geochemistry, routed through Univ. of Michigan 6/06-4/07

Deformational History Of The Margin Of The Basin And Range Province In Southern Oregon, Anita Grunder for Kaleb Scarberry, \$13,100, USGS-EdMap Program, 6/06-5/07

Extension and Volcanism during Propagation of the Northwest Margin of the Basin and Range, Southern Oregon, Anita Grunder and Andrew Meigs, \$209,998, NSF-EAR Structure and Tectonics, 7/06-6/09

Collaborative Proposal: Understanding the causes of intracontinental tectonomagmatism: a case study in the Pacific Northwest, Anita L. Grunder and Robert A. Duncan, \$400,000, with R. Carlson, T. Grove, W. Hart, M. Fouch, C. Kincaid, and D. James, N.S.F., Continental Dynamics (total 3.54 million), 9/05-8/10

Collaborative Proposal: Basaltic andesite of North Sister Volcano: A Window into deep crustal processes, \$136,000, Anita L. Grunder, and Dana Johnston (U of O) (total \$256,000) N.S.F., Earth Science, 3/03-2/05

Professional Service and Leadership

Fellow of the Geological Society of America

Secretary of the American Geophysical Union, Volcanology and Petrology Division

Vice President and life member of International Association of Volcanology and Chemistry of the Earth's Interior

Geological Society of America student grant review panel (2008, 09 and 10)

Steady stream of proposal and paper reviews for journal and the NSF as well as private and international funding organizations

9.7.8 *Roy Haggerty, Prof., Geology, Water Resources (Assoc. Dir.)*

[293] Haggerty joined Geosciences as an Assistant Professor in 1996 and he is currently the Hollis M. Dole Professor of Environmental Geology. He is a hydrogeologist and registered geologist in the state of Oregon. He and his students work to understand how streams and groundwater transport solutes and heat and how the two waters interact to influence those transports. Many of these processes involve important transformations and interactions with other parts of the earth system, including surface-water-groundwater interactions, microbiology and anthropogenic pollutants. Haggerty currently serves as an Associate Editor for Water Resources Research and as Associate Director of the Water Resources Graduate Program for Water Resource Science. His major funding is from the National Science Foundation, and the US Department of Energy. He has been a visiting scientist with CSIC in Spain and at the Royal Institute of Technology in Stockholm, Sweden.

Awards and Honors

Hollis M. Dole Professor of Environmental Geology, 2010, Dept. of Geosciences, Oregon State University.

Visiting scientist fellowship, 2006-7, Ministerio de Educación y Ciencia, Blanes, Spain.

Lloyd Carter Award for Outstanding Graduate Teaching, 2010, OSU College of Science.

Outstanding Faculty Member Award, 2008, OSU Geosciences Club, OSU.

Peer-Reviewed Publications

Yin, J., R. Haggerty, D. L. Stoliker, D. B. Kent, J. D. Istok, J. Greskowiak, and J. M. Zachara (2011), Transient groundwater chemistry 1 near a river: Effects on U(VI) transport in laboratory column experiments, *Water Resour. Res.*, in press.

Argerich, A., E. Martí, F. Sabater, M. Ribot, and R. Haggerty (2011, in press), Influence of transient storage on stream nutrient uptake based on substrata manipulation, *Aquatic Sciences*.

Zarnetske, J. P., R. Haggerty, S. M. Wondzell, and M. A. Baker (2011, in press), Dynamics of Nitrate Production and Removal as a Function of Residence Time in the Hyporheic Zone, *J. Geophys. Res. - Biogeosciences*.

Haggerty, R., E. Martí, **A. Argerich**, D. von Schiller, and N. B. Grimm (2009), Resazurin as a “smart” tracer for quantifying metabolically active transient storage in stream ecosystems, *J. Geophys. Res. – Biogeosciences*, doi:10.1029/2008JG000942.

Wondzell, S. M., **J. LaNier**, R. Haggerty, Richard D. Woodsmith, and Richard T. Edwards, Estimating changes in hyporheic exchange flow following experimental wood removal in a small, low gradient stream using groundwater flow models, *Water Resources Research*, 45, W05406, doi:10.1029/2008WR007214, 2009.

Wondzell, S. M., **J. LaNier**, and R. Haggerty, Reliability of groundwater flow models for simulating hyporheic exchange in small mountain streams, *Journal of Hydrology*, 364, 142-151, 2009.

Haggerty, R., E. Martí, and **A. Argerich**, Development of a "smart" tracer for the assessment of microbiological activity and sediment-water interaction in natural waters: The resazurin-resorufin system, *Water Resources Research*, 44, W00D01, doi:10.1029/2007WR006670, 2008.

Burkholder, B. K., G. E. Grant, R. Haggerty, T. Khangaonkar, and P. J. Wampler (2008), Influence of Hyporheic Flow and Geomorphology on Temperature of a Large, Gravel Bed River, Clackamas River, Oregon, USA, *Hydrological Processes*, 22, 941–953.

Cardenas, M. B., J. L. Wilson, and R. Haggerty, Residence time of bedform-driven hyporheic exchange, *Advances in Water Resources*, 31, 10.1016/j.advwatres.2008.07.006, 1382-1386, 2008.

Crook, N., A. Binley, R. Knight, D.A. Robinson, **J. Zarnetske**, and R. Haggerty, Electrical resistivity imaging of the architecture of sub-stream sediments, *Water Resources Research*, 44, W00D13, doi:10.1029/2008WR0, 2008.

McDonnell, J.J., M. Sivapalan, K. Vaché, S. Dunn, G. Grant, R. Haggerty, C. Hinz, R. Hooper, J. Kirchner, M.L. Roderick, J. Selker, and M. Weiler, Moving beyond heterogeneity and process complexity: A new vision for watershed hydrology, *Water Resources Research*, 43, W07301, doi:10.1029/2006WR005467, 2007.

- Gooseff, M. N., J. K. Anderson, S. M. Wondzell, J. LaNier, and R. Haggerty,** A modeling study of hyporheic exchange pattern and the sequence, size, and spacing of stream bedforms in mountain stream networks, Oregon, USA, *Hydrological Processes*, 20, 2443–2457, 2006.
- Rodriguez, J.M., E. A. Thomann, E. C. Waymire, R. Haggerty and B. Wood,** A generalized Taylor-Aris formula and skew diffusion, *SIAM Journal of Multiscale Modelling and Simulation*, 5(3), 786 – 801, 2006.
- Anderson, J. K., S. M. Wondzell, M. N. Gooseff, and R. Haggerty,** Patterns in stream longitudinal profiles and implications for hyporheic exchange flow, *Hydrological Processes*, 19, 2931 – 2949, 2005.
- Gooseff, M. N., J. LaNier, R. Haggerty, and K. Kokkeler,** Determining in-channel transient storage by comparing solute transport in a bedrock channel – alluvial channel sequence, Lookout Creek basin, Oregon, USA, *Water Resources Research*, 41, W06014, doi:10.1029/2004WR003513, 2005.

Scholarly Presentations

- 2010 UC Santa Cruz Dept. of Geology. Resazurin as a reactive tracer.
CUAHSI. Groundwater – surface water interactions.
- 2009 UC Berkeley Catchment Symposium. Resazurin as a smart tracer for metabolically active transient storage.
Royal Institute of Technology, Resazurin as a smart tracer for metabolically active transient storage.
- 2007 Universitat Politècnica de Catalunya, Barcelona, Spain, Desarrollo de un trazador inteligente: Resultados preliminares.
- 2006 CSIC, Blanes, Spain. Rieras grandes, acuíferos pequeños, y la zona hiporreica: Las interacciones entre el agua subterránea y el agua superficial en Oregón, EEUU.
- 2006 University of Nevada at Reno. The role of the hyporheic zone in solute transport and the nitrogen cycle in streams
Colorado School of Mines, Golden, Colorado. The role of the hyporheic zone in solute transport and the nitrogen cycle in streams” Colorado School of Mines, Golden, Colorado.
Stanford University, Stanford, Calif. The role of the hyporheic zone in solute transport and the nitrogen cycle in streams” Stanford University.

Grants and Contracts

- Anticipating water scarcity and informing integrative water system response in the Pacific Northwest, (National Science Foundation), \$4,344,919, co-PI (2010).
- Surface transient storage in dead zones: Residence times from stream morphology, velocity and CFD modeling, (National Science Foundation), \$416,936, PI (2010).

Geoelectrical measurement of multi-scale mass transfer parameters, (US Dept. of Energy), \$157,558, PI (2009). Total project approx. \$1.1M among 4 institutions.

A Metabolically Active Transient Storage Model for Predicting Nutrient Retention in Streams, (National Science Foundation), \$417,064, PI (2009).

Extension of Multirate Transport Code STAMMT-L to Include Radionuclide Decay Chains, (Sandia National Laboratory), \$47,500, PI (2008).

Multi-Scale Mass Transfer Processes Controlling Natural Attenuation and Engineered Remediation: An IFC Focused on Hanford's 300 Area Uranium Plume, (USDOE/Pacific Northwest National Laboratories) \$616,000, PI (2008).

Impact of Gravel Augmentation on Temperature in the Clackamas River, (US Forest Service Coop Agreement, funding from Portland General Electric), \$149,239, PI (2006)..

Heat Budget in the Hyporheic Zone of a Large, Gravel-Bed River, S. Lancaster (PI) and Roy Haggerty, (National Science Foundation) \$73,695, co-PI (2006).

State Inventory for Storing Surface Water in Aquifers, (Oregon Water Resources Department), \$60,000, PI (2005).

Investigation of the Temperature Impact of Hyporheic Flow, (Oregon Dept. of Environmental Quality), \$61,000, co-PI (2005).

Harnessing the hydrologic disturbance regime: sustaining multiple benefits in large river floodplains in the Pacific Northwest, (Environmental Protection Agency), \$280,000, co-PI (2005).

Determining Spatial and Temporal Variability of Groundwater Nitrate in the Southern Willamette Valley, OR, (US Geological Survey), \$15,000, (2005).

Professional Service and Leadership

2003-6, 9-present. Water Resources Science (WRGP Associate Director).

2001-6, 9-present. Water Resources Research Associate Editor.

2008-present. National Science Foundation Hydrologic Sciences panel.

2009. US Department of Energy EMSP panel.

9.7.9 Robert Harris, Assoc. Prof. (COAS)

[294] Has taught graduate courses that are co-listed in Geosciences (see). See curriculum vita (attached).

9.7.10 Jonathan Istok, Prof. (CE)

[295] Istok regularly teaches Groundwater Hydraulics, which is co-listed in Geosciences. His

curriculum vita is attached.

9.7.11 Adam Kent, Assoc. Prof., Geology

[296] Kent joined the Geosciences faculty with a research appointment in 2002 and as tenure track faculty in 2004. He is currently an Associate Professor. Kent and his students work on topics in igneous petrology and high temperature geochemistry with an emphasis on understanding the generation and evolution of magmas. Kent also maintains analytical facilities shared between the Department of Geosciences and the College of Oceanic and Atmospheric Sciences and plays a leadership role in providing analytical facilities for use by faculty, students and others across the earth and ocean sciences, serving on the operating committee for the W.M. Keck Collaboratory for Plasma Mass Spectrometry. Kent receives the majority of his funding from National Science Foundation. Kent has been a visiting scientist at the University of Aarhus, Denmark.

Awards and Honors

- 1987. Australasian Institute of Mining and Metallurgy Award for second year geology
- 1988 Guy Kolocsaï Prize for Geochemistry, Western Mining Corporation Prize for Ore Deposit Geology, CRA Exploration Award for Geological Mapping, Reverend E.N. McKie Award for Natural Sciences, Australasian Institute of Mining and Metallurgy Award for Third Year Geology
- 1989 University of New England University Medal
- 1990 Thomas Jaeger Ph.D. Research Scholarship, The Australian National University
- 2008-2009 Consortium for Ocean Leadership *Distinguished Lecturer*
- 2008 College of Science, Oregon State University, *Lloyd Carter award for Outstanding and Inspirational Graduate Teaching*

Peer-Reviewed Publications

- Wildenschild, D., Hopmans, J.W., Rivers, M.L. And Kent, A.J.R. (2005) Quantitative Analysis of Flow Processes in a Sand Using Synchrotron-based X-ray Microtomography. *Vadose Zone Journal* 4, 112-126

- Kent, A.J.R. And C.A. Ungerer (2005). Production Of Barium And Light Rare Earth Element Oxides During LA-ICP-MS Microanalysis. *J. Anal. At. Spectrom.* 20, 1256-1262.
- Rowe, M.C.**, Nielsen, R.L. & Kent, A.J.R. (2006) Artificially High Fe Contents In Rehomogenized Olivine Hosted Melt Inclusions From Oxidized Magmas. *American Mineralogist*, 91, 82-91.
- Jochum, K.P., Stoll, B. Herwig, K., Willbold, M., Amini, M., Hofmann, A.W., Aarburg, S., Abouchami, W., Alard, O., Bouman, C., Becker, St., Brätz, H., De Bruin, D., Canil, D., Cornell, D., Dalpé, D., Danyushevsky, L.V., Dücking, M., Groschopf, N., Günther, D., Guillong, M., De Hoog, C-J, Höfer, H, Horz, K., Jacob, D., Kasemann, S.A., Kent, A.J.R., Klemm, R., Lahaye, Y., Latkoczy, C., Ludwig, T., Mason, P., Meixner, A., Misawa, K., Nash, B.P., Pfänder, J., Premo, W.R., Raczek, I., Rosner, M., Stracke, A., Sun, W., Tiepolo, M., Vannucci, R., Vennemann, T., Wayne, D., Woodhead, J.D. And Zack, T. (2006) MPI-DING Reference Glasses for In-Situ Microanalysis: New Reference Values for Element Concentrations and Isotope Ratios. *Geochemistry, Geophysics, Geosystems* 7, Q02008, DOI:10.1029/2005GC001060.
- Jerram, D.A. & Kent, A.J.R. (2006) An Overview of Modern Trends in Petrography: Textural and Microanalysis of Igneous Rocks (Editorial). *Journal of Volcanology and Geothermal Research* 154, vii-ix.
- Kohut, E.J.**, Stern, R.J., Kent, A.J.R., Nielsen, R.L., Bloomer, S.H., & Leybourne, M. (2006) The Origins Of High-Mg Lavas In The Mariana Arc: Evidence From Olivine-Hosted Melt Inclusions. *Contributions To Mineralogy And Petrology*, 152, 201-221.
- Kent, A.J.R. And Ungerer, C.A. (2006) Analysis Of Light Lithophile Elements (Li, Be, B) By Laser Ablation Icp-Ms: Comparison Between Magnetic Sector And Quadrupole Icp-Ms. *American Mineralogist*, 91, 1401-1411.
- Rusk, B. G.**, Reed, M.H., Dilles, J.H. And Kent, A.J.R. (2006) Intensity Of Quartz Cathodoluminescence And Trace Element Content In Quartz From The Porphyry Copper Deposit In Butte, Montana. *American Mineralogist*, 91, 1300-1312.
- Rowe, M.C.**, Kent, A.J.R. And Nielsen, R.L. (2007) Determination Of Sulfur Speciation And Oxidation State In Olivine Hosted Melt Inclusions. *Chemical Geology*, 236, 303-322.
- Kent, A.J.R., Blundy, J., Cashman, K. Cooper, K., Donnelly, C., Pallister, J.S., Reagan, M., Rowe, M.C. & Thornber, C.R. (2007) Vapor Transport Prior To The October 2004 Eruption Of Mount St. Helens, Washington: Insight From Li And 210pb Systematics. *Geology*, 35, 231-234.
- Lipschutz, M.E., Wolf, S.F., Culp, F.B. And Kent, A.J.R. (2007) Geochemical And Cosmochemical Materials. *Analytical Chemistry*, 79, 4249-4274.
- Mathez, E.A. And Kent, A.J.R. (2007) Variable Initial Pb Isotopic Compositions Of Rocks Associated With The Ug2 Chromitite, Eastern Bushveld Complex. *Geochimica Et Cosmochimica Acta* 71, 5514-5527.
- Shaw, J.E.**, Baker, J.A., Kent, A.J.R., Ibrahim, K.M. And Menzies, M.A. (2007) Chemical And Isotopic Character Of Arabian Lithospheric Mantle – A Source For Intraplate Volcanism? *Journal Of Petrology*, 48, 1495-1512.

- Johnson, E.R.**, Wallace, P.J., Cashman, K.V., Granados, H.D., And Kent A.J.R. (2008) Magmatic Volatile Contents And Degassing-Induced Crystallization At Volcán Jorullo, Mexico: Implications For Melt Evolution And The Plumbing Systems Of Monogenetic Vol-Canoes. *Earth And Planetary Science Letters*, 269, 477-486.
- Ukstins Peate, I.A., Kent, A.J.R., Baker, J.A. And Menzies, M.A. (2008) Extreme Geochemical Heterogeneity In Afro-Arabian Oligocene Tephros: Preserving Fractional Crystallization And Mafic Recharge Processes In A Large-Volume Silicic Magma Chamber. *Lithos*, 102, 260-278.
- Kent, A.J.R. (2008) Lead Isotope Homogeneity Of Nist 610 And 612 Glasses: Insights From Laser Ablation Multicollector Icp-Ms (La-Mc-Icp-Ms) Analysis. *Geostandards And Geoanalytical Research*, 32, 129-147.
- Kent, A.J.R. (2008) In-Situ Analysis Of Pb Isotope Ratios Using Laser Ablation Mc-Icp-Ms: Controls On Precision And Accuracy And Comparison Between Faraday Cup And Ion Counting Sys-Tems. *J. Anal. At. Spectrom.* 23, 968-975.
- Chambefort, I., Dilles, J.H. And Kent, A.J.R. (2008) Andydrate-Bearing Andesite And Dacite As A Source For Sulfur In Magmatic-Hydrothermal Mineral Deposits. *Geology*, 36, 719-722.
- Vigouroux, N.**, Wallace, P.J. And Kent, A.J.R. (2008) Volatiles In High-K Magmas From The Western Trans-Mexican Volcanic Belt: Evidence For Fluid-Flux Melting And Extreme En-Richment Of The Mantle Wedge By Subduction Processes. *Journal Of Petrology*, 49, 1589-1618. Doi:10.1093/Petrology/Egn039
- Rowe, M.C.**, Kent, A.J.R. And Thornber, C.R. (2008) Using Amphibole Phenocrysts To Track Vapor Transfer During Magma Crystallization And Transport: An Example From Mount St. Helens, Washington. *Journal Of Volcanology And Geothermal Research*, 178, 593-607.
- Kent, A.J.R. (2008) Melt Inclusions In Basaltic And Associated Volcanic Rocks. *Reviews In Mineralogy And Geochemistry*, 69, 173-231.
- Kent, A.J.R., **Rowe, M.C.**, Pallister, J., Thornber, C.R. (2008) Trace Element And Pb-Isotope Compositions Of Plagioclase From 2004-2005 Eruption Of Mount St Helens, Washington. In Sherrod, D.R., Scott, W.E., And Stauffer, P.H., Eds., *A Volcano Rekindled; The Renewed Eruption Of Mount St. Helens, 2004–2006: Chapter 35*, U.S. Geological Survey Professional Paper 1750.
- Peate, D.W., Falkeena, L., And Kent, A.J.R. (2009) Origin Of Pb Isotope Variations In Hydrogenetic Fe-Mn Crusts From The Izu-Bonin Fore-Arc, *Chemical Geology*, 258, 288-298.
- Miller, J.A. & Kent, A.J.R. (2009) The Determination Of Maternal Run Time In Juvenile Chinook Salmon (*Oncorhynchus Tshawytscha*) Based On Sr/Ca And $^{87}\text{sr}/^{86}\text{sr}$ Within Otolith Cores. *Fish-Eries Research*, 95, 373-378.
- Peate, D.W., Baker, J.A. Jakobsson, S.P., Waight, T.E. Kent A.J.R. And Grassineau, V. (2009) Historic Magmatism On The Reykjanes Peninsula, Iceland: A Snap-Shot Of Melt

- Generation At A Ridge Segment, *Contributions To Mineralogy And Petrology*, 157, 359-382.
- Rowe, M.C., Kent, A.J.R. And Nielsen, R.L. (2009) Across Arc Variation In Basaltic Fo₂: Influence Of A Subduction Component In The Cascadia Subduction. *Journal Of Petrology*, 50, 61-91.
- Kayzar, T.M.**, Cooper, K.M., Reagan, M.K. & Kent, A.J.R. (2009) Gas Transport Model For The Magmatic System At Mount Pinatubo, Philippines: Insights From (210pb)/(226ra). *Journal Of Volcanology And Geothermal Research*, 181, 124-140.
- Rowe, M.C.**, Thornber, C.R. And Kent, A.J.R. (2008) Geochemistry Of 2004-2005 Mt. St. Helens Ash: Identification And Evolution Of The Juvenile Component. In Sherrrod, D.R., Scott, W.E., And Stauffer, P.H., Eds., *A Volcano Rekindled; The Renewed Eruption Of Mount St. Helens, 2004–2006: Chapter 29*, U.S. Geological Survey Professional Paper 1750.
- Layne, G.D., Kent, A.J.R. & Bach, W. (2009) $\Delta 37\text{cl}$ Systematics Of A Back-Arc Spreading System: The Lau Basin. *Geology*, 37, 427-430.
- Johnson, E.R.**, Wallace, P.J., Delgado Granados, H., Kent, A.J.R., Bindeman, I.N. & Donegan, C.S. (2009) The Origin Of H₂O-Rich Subduction Components Beneath The Michoacán-Guanajuato Volcanic Field, Mexico: Insights From Magmatic Volatile Contents, Oxygen Isotopes, And 2-D Thermal Models For The Subducted Slab And Mantle Wedge. *Journal Of Petrology*, 60, 1729-1764.
- Jakobsen, J.K., Tegner, C., Brooks, C.K., Kent, A.J.R., Leshner, C.E., Nielsen, T.F.D., And Wiedenbeck, M. (2010) Parental Magma Of The Skaergaard Intrusion: Constraints From Melt Inclusions In Primitive Troctolite Autoliths And Fg-1 Dykes. *Contributions To Mineralogy And Petrology*, 159, 61-79.
- Tollstrup, D.** Gill, J.B., Kent, A.J.R., Prinkey, D., Williams, R., Tamura, A. & Ishizuka, O. (2010) Across-Arc Geochemical Trends In The Izu-Bonin Arc: Contributions From The Subducting Slab, Revisited. *Geochemistry Geophysics Geosystems*, 11, Q01x10, Doi: 10.1029/2009gc002847.
- Kent, A.J.R., **Darr, C.**, **Koleszar, A.K.**, **Salisbury, M.J.** & Cooper, K.M. (2010) Preferential Eruption Of Andesite Magmas Through Recharge Filtering. *Nature Geoscience*, Doi: 10.1038/Ngeo924.
- Ruscitto, D.M.**, Wallace, P.J., Johnson, E.R. Kent, A.J.R. & Bindeman, I.N. (2010) Volatile Contents Of Mafic Magmas From Cinder Cones In The Central Oregon High Cascades: Implications For Magma Formation And Mantle Conditions In A Hot Arc, *Earth And Planetary Science Letters*, 298, 153–161.
- Kimura, J-I., Kent A.J.R., Rowe, M.C., Katakuse, M., Nakano, F., Hacker, B. R., Van Keken, P.E., Kawabata, H. And Stern, R.J. (2010), Origin Of Cross-Chain Geo-Chemical Variation In Quaternary Lavas From The Northern Izu Arc: Using A Quantitative Mass Balance Approach To Identify Mantle Sources And Mantle Wedge Processes, *Geochem. Geophys. Geo-Syst.*, 11, Q10011, Doi:10.1029/2010gc003050.

Ruscitto, D., Wallace, P.J., & Kent, A.J.R. Revisiting The Compositions And Volatile Contents Of Olivine-Hosted Melt Inclusions From The Mount Shasta Region: Implications For The Formation Of High-Mg Andesites. (In Press, Cmp).

Adams, D., Nielsen, R.L. Kent, A.J.R. & Tepley, F.J. Origin Of Minor And Trace Element Compositional Diversity In Melt Inclusions: Evidence From Anorthitic Feldspar Phenocrysts From The Juan De Fuca Ridge (In Review Ggg).

Miller, J. A., Butler, V. L., Simenstad, C. A., Backus, D. H., & Kent, A. J. R. Life History Variation In Upper Columbia River Chinook Salmon (*Oncorhynchus Tshawytscha*): A Comparison Using Modern And ~500 Year-Old Archaeological Otoliths (In Review Canadian Journal Of Fisheries And Aquatic Sciences).

Scholarly Presentations

June 2005 15th Annual Goldschmidt Geochemistry Meeting, Moscow, Idaho “Trace element analysis of recent dome products from Mount St Helens”

August 2006 16th Annual Goldschmidt Geochemistry Meeting, Melbourne, Australia “Volatiles and mantle melting in the Izu arc and back-arc”

November 2006 Washington State University “Magma dynamics in Continental Flood Basalts”

April 2007 American Museum of Natural History “Magma dynamics in Continental Flood Basalts”

August 2007 Woods Hole Oceanographic Institution “Melt inclusions from heterogeneous mantle, Baffin Island, Canada”

November 2007 “Li mobility in magmatic rocks”. Geological Survey of New Zealand Annual Conference, Tauranga, 2007.

October 2008 Central Michigan University “Understanding oceanic magmatism through silicate melt inclusions” (Consortium for Ocean Leadership Distinguished Lecturer)

October 2008 Michigan State University “Understanding oceanic magmatism through silicate melt inclusions” (Consortium for Ocean Leadership Distinguished Lecturer)

November 2008 University of Nevada at Las Vegas “Understanding oceanic magmatism through silicate melt inclusions” (Consortium for Ocean Leadership Distinguished Lecturer)

November 2008 University of Maryland “Understanding oceanic magmatism through silicate melt inclusions” (Consortium for Ocean Leadership Distinguished Lecturer)

December 2008 Boston University “Understanding oceanic magmatism through silicate melt inclusions” (Consortium for Ocean Leadership Distinguished Lecturer)

April 2009 Virginia Tech “Understanding oceanic magmatism through silicate melt inclusions” (Consortium for Ocean Leadership Distinguished Lecturer)

April 2009 University of Wisconsin, Milwaukee “Understanding oceanic magmatism through silicate melt inclusions” (Consortium for Ocean Leadership Distinguished Lecturer)

May 2009 “Understanding oceanic magmatism through silicate melt inclusions” Portland State University

June 2009 Presenter EDSM Workshop, Davos Switzerland.

September 2009 Mineralogical Society MAPT Conference, Edinburgh “The mixed up life of boring volcanoes (as revealed by combined textural and micro-chemical analysis)”

October 2009 University of Barcelona “The mixed up lives of boring andesites”

November 2009 University of Aarhus, Denmark “Understanding oceanic magmatism through silicate melt inclusions”

December 2009 University of Copenhagen “Preferential eruption of andesites via recharge filtering”

March 2010 University of New England, Australia “Magma genesis at Mount Hood, Oregon”

May 2010 Australian National University “Preferential eruption of andesites via recharge filtering”

October 2010 Oregon State University “Preferential eruption of andesites via recharge filtering”

November 2010 Oregon State University “Using melt inclusions to study the origin of picritic magmas”

June 2011 KEYNOTE IUGG General Assembly, Melbourne Australia 2011 “Crystal ages in magmas: What do they mean?”

Grants and Contracts

National Science Foundation OCE \$132,665 7/2003 – 6/2006. Melt inclusions in Izu Arc lavas: Examining slab-derived contributions to intra-oceanic arc magmas and the role of volatiles in the subduction factory (sole PI)

National Science Foundation MRI-EAR \$539,785 7/2003 – 6/2005 Collaborative Research: Acquisition of an electron microprobe for Oregon State University with remote access facilities for Portland State University (PI with co-PI R. Nielsen, OSU and M. Streck, PSU)

Oregon State University RERF \$23,000 2004 Acquisition of a Computer-Controlled Microdrill Assembly for Micro-Scale Sampling of Solid Materials for Studies in the Oceanographic, Geochemical, Geological, and Other Sciences (co-PI with D. Graham, G. Klinkhammer & J. McManus, OSU)

Oregon State University GRF \$9439 2004 Development of standards for LA-ICP-MS analysis of carbonates and sulfides (sole PI)

National Science Foundation MRI-OCE \$295,848 1/2006 – 12/2007 Acquisition of mass spectrometers for studies in the Ocean Sciences (with G. Klinkhammer, A. Mix, B. Hales and J. McManus, OSU)

Alaska Yukon Sustainable Salmon Initiative \$30,964 1/2006 – 1/2007 Use of otolith microchemistry to study straying and metapopulation dynamics in Norton Sound Salmon Populations: Pilot study to determine utility (with E. Volk Washington State Fisheries and Wildlife, and C. Zimmerman, USGS)

National Science Foundation EAR \$260,892 1/2004-12/2007 Collaborative Research: The parent magma array for arc and back arc magmas in continental margins: constraints from melt inclusion studies in the Oregon High Cascades (PI with R. Nielsen, OSU and P. Wallace UO) co-PI

National Science Foundation EAR \$121,212 1/05-12/2007 Collaborative Research: Using melt inclusions to unravel lithospheric mantle and crustal contributions to Gondwana flood basalts and to determine pre-eruptive volatile contents (co-PI with D. Peate and I. Ukstins-Peate, Univ. Iowa)

National Science Foundation OCE \$192,230 2/2005 – 1/2007 Evaluating the Relationship Between Melt Inclusions and Host for high Anorthite Feldspars: Prevalence and Significance of Trace element Diversity in MORB Feldspar (co-PI with R. Nielsen, OSU)

National Science Foundation OCE \$27,786 4/2005 – 3/2007 Collaborative Research: Cl-isotope systematics of back-arc spreading systems: Insights into geochemical cycling of volatile elements between crust, hydrosphere and mantle (PI with G. Layne and W. Bach, WHOI)

National Science Foundation EAR \$98,509 Collaborative research: The volatile contents of komatiite magmas (with Erik Hauri, CIW)

National Science Foundation EAR \$184,439 Collaborative Research: Timescales of crystal residence and magma mixing at Mount Hood, Oregon. (with K. Cooper, U. Calif. Davis)

National Science Foundation EAR \$357,425 MORB Construction Processes: Plutonic to Volcanic Connections in Plagioclase Ultraphyric Basalts (PUBs) (with Frank Tepley, Roger Nielsen)

National Science Foundation EAR \$125,440 Collaborative Research: Tectonic links, magma fluxes, and single mineral geochemistry in plutonic magmatic systems from 5-30 km depth, Cascades core, Washington (with Robert Miller & Jonathan Miller SDSU, Sam Bowring MIT, Scott Patterson USC).

National Science Foundation OCE \$293,716 Environmental Impacts of Caribbean Plateau Volcanism: Timing and Composition of Magmatic Activity Related to Ocean Anoxic Event 2 (with R. Duncan).

National Science Foundation EAR-IF \$399,613 Acquisition of laser ablation and quadrupole ICP-MS instrumentation for study of high-resolution records in Earth materials at Oregon State University (with G. Klinkhammer, J. Miller and P. Clark).

National Science Foundation OCE \$104,718 (subcontract from Wood Hole Oceanographic Institute) Collaborative Research: Cl-isotope systematics of back-arc spreading systems: Insights into geochemical cycling of volatile elements between crust, hydrosphere and mantle

Oregon State University Provost's Equipment Acquisition Proposal \$85,274: Acquisition of a Quadrupole ICP-MS for Research and Training in the Earth, Ocean, Fisheries and other Sciences at Oregon State University (with G. Klinkhammer, J. Miller, P. Clark, A. Ungerer, B Haley, and K, Falkner)

Oregon State University Provost's Equipment Acquisition Proposal \$40,000: Acquisition of a handheld XRF unit for field and laboratory instruction in the Geosciences (with A. Grunder, J. Dilles, A. Meigs, A. Kent, S. de Silva, R. Nielsen)

Professional Service and Leadership

- 2004-2005 Program committee for 2005 Goldschmidt Conference in Moscow, Idaho
- 2004-2006 Guest Editor Journal of Volcanology and Geothermal Research special issue
“*Advances in Petrography and Microanalysis in Igneous Petrology*”
- 2006 AGU Fall meeting special session co-convener
- 2008 Goldschmidt meeting session coordinator
- 2008 AGU Fall meeting special session co-convener
- 2009 Goldschmidt meeting session coordinator
- 2010 AGU Fall Meeting special session co-convener

9.7.12 Stephen Lancaster, Assoc. Prof., Geology, Water Resources (Assoc. Dir.), Geography

[297] Lancaster joined Geosciences as a post-doctoral researcher in 1998 and was brought on as tenure track faculty in 2001 through an OSU Faculty Diversity Initiative. Lancaster currently serves as the Associate Director of the Water Resources Graduate Program for Water Resource Engineering. While his formal training is in hydrology, his research and teaching is primarily focused on geomorphology, and his specific interests include geomorphic landscape evolution modeling; debris flows in forested landscapes; landscape evolution of soil-mantled, forested, debris flow-scoured steepplands; sediment dynamics and storage at the transition between debris flow and fluvial transport processes; morphodynamics of meandering and braided rivers; heat and water flow in the hyporheic zone; effects of geomorphic and hydrological processes on aquatic habitat; and the effects of climate change on geomorphic and hydrologic processes.

Awards and Honors

- 1996 Outstanding Student Paper Award, Hydrology Section, American Geophysical Union, Spring Meeting
- 2005 L.L. Stewart Faculty Development Award, OSU

1998 GE Fund Junior Faculty Coupon, Massachusetts Institute of Technology

Peer-Reviewed Publications

- Tucker, G.E., **S.W. McCoy**, A.C. Whittaker, G.P. Roberts, S.T. Lancaster, and R. Phillips, 2011. Geomorphic significance of post-glacial bedrock scarps on normal-fault footwalls, *Journal of Geophysical Research*, in press.
- Lancaster, S.T., **E.F. Underwood**, and **W.T. Frueh**, 2010. Sediment reservoirs at mountain stream confluences: Dynamics and effects of tributaries dominated by debris flow and fluvial processes, *Geological Society of America Bulletin*, 122(11/12), 1775–1786, doi: 10.1130/B30175.1
- Jefferson, A.**, G.E. Grant, S.L. Lewis, and S.T. Lancaster, 2009. Coevolution of hydrology and topography on a basalt landscape in the Oregon Cascade Range, USA. *Earth Surface Processes and Landforms*, doi:10.1002/esp.1976 .
- Lancaster, S.T., 2008. Evolution of sediment accommodation space in steady-state bedrock-incising valleys subject to episodic aggradation, *Journal of Geophysical Research*, 113, F04002, doi:10.1029/2007JF000938.
- Wallick, J.R.**, G.E. Grant, S.T. Lancaster, J.P. Bolte, and R.P. Denlinger, 2007. Patterns and controls on historical change in a large river, Willamette River, Oregon USA, in *Large Rivers: Geomorphology and Management*, edited by A. Gupta. Wiley, pp. 491-516, John Wiley & Sons, Ltd., Hoboken.
- Lancaster, S.T., and **N.E. Casebeer**, 2007. Sediment storage and evacuation in headwater valleys at the transition between debris-flow and fluvial processes. *Geology*, 35(11), 1027-1030, doi:10.1130/G239365A.1.
- Clevis, Q., G. Tucker, G. Lock, S. Lancaster, N. Gasparini, A. Desitter, and R. Bras, 2006b. Geoarchaeological simulation of meandering river deposits and settlement distributions: A three-dimensional approach. *Geoarchaeology: An International Journal*, 21(8), 843-874, doi:10.1002/gea.20142.
- Lancaster, S.T., and G.E. Grant, 2006a. Debris dams and the relief of headwater streams, *Geomorphology*, 82, 84-97, doi:10.1016/j.geomorph.2005.08.020. (special issue: The Hydrology and Geomorphology of Bedrock Rivers, edited by P.A. Carling).
- Wallick, J.R.**, S.T. Lancaster, and J.P. Bolte, 2006. Determination of bank erodibility for natural and anthropogenic bank materials using a model of lateral migration and observed erosion along the Willamette River, Oregon, USA, *River Research and Applications*, 22(6), 631-649, doi:10.1002/rra.925.
- Clevis, Q., G.E. Tucker, S.T. Lancaster, A. Desitter, N. Gasparini, and G. Lock, 2006a. A simple algorithm for the mapping of TIN data onto a static grid; applied to the stratigraphic simulation of river meandering deposits, *Computers and Geosciences*, 32(6), 749-766, doi:10.1016/j.cageo.2005.05.012.

Scholarly Presentations

- Lancaster, S.T., G.E. Grant, G.E. Tucker, **W.T. Frueh**, **S.W. McCoy**, and A.C. Whittaker, Episodicity and geologic timescales: Implications of debris flows for landscape evolution, *GSA Abstracts with Programs*, 42(5), 385 (Paper No. 156-8). *INVITED*.
- Lancaster, S.T., **E.F. Underwood**, and **W.T. Frueh**, 2009. Sediment reservoirs at mountain stream confluences: Dynamics and effects of tributaries dominated by debris flow and fluvial processes, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract EP53E-08.
- Lancaster, S.T., 2008. Evolution of Sediment Accommodation Space in Steady-State Bedrock-Incising Valleys Subject to Episodic Aggradation, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract H43F-1078.
- Lancaster, S.T., and **N.E. Casebeer**, 2006. Debris-flow deposition, valley storage, and fluvial evacuation in headwater valleys, *Eos Trans. AGU*, 87, Fall Meet. Suppl., Abstract NG43D-1174.
- Lancaster, S.T., and G.E. Grant, 2005. Coalescing debris-fill complexes in headwater valleys of the Oregon Coast Range, *Eos Trans. AGU*, 86(47), Fall Meet Suppl., Abstract H51H-01.
- “Why the river wild? Hyporheic flow and stream temperature.” Geography Seminar, OSU, November, 2009.
- “Why the river wild? Hyporheic flow and stream temperature.” USGS Oregon Water Science Center, November, 2009.
- “In search of steady state: Episodic aggradation, sediment evacuation, and bedrock incision in headwater valleys of active orogens.” USGS Oregon Water Science Center, November, 2008.
- “In search of steady state: Episodic aggradation, sediment evacuation, and bedrock incision in headwater valleys of active orogens.” School of Engineering, U. Newcastle, Australia, October, 2008.
- “Width adjustment to sediment supply in bedrock-incising valleys subject to episodic aggradation: Multiple numerical simulations over geologic time,” Applied Math Seminar, OSU, November, 2007.
- “Sediment storage and evacuation in headwater valleys at the transition between debris-flow and fluvial processes,” Geomorphology Brown Bag Seminar, OSU, October, 2007.
- “Sediment storage and evacuation in headwater valleys at the transition between debris-flow and fluvial processes,” Geology Seminar, OSU, September, 2007.
- “Why the river wild?” meeting on thermal pollution credit trading sponsored by the Willamette Partnership, OSU, June, 2006.
- “Hyporheic cooling?” meeting on Willamette Marketplace, a thermal pollution credit trading sponsored by the Willamette Partnership, OSU, April, 2006.
- “Headwater streams as low-pass filters: Characteristics and sensitivities inferred from data, network analysis, and distributed numerical modeling,” Eco-Informatics IGERT Colloquium, OSU, January, 2006.

- “Coalescing debris-fill complexes in headwater valleys of the Oregon Coast Range,” Oregon Headwater Streams Conference, Oregon Headwaters Research Consortium, OSU, November, 2005.
- “Landscape evolution: A modeler’s perspective,” Geomorphology Brown Bag Seminar, OSU, October, 2005.
- “A landscape model for geomorphic assessment of forest practices,” web-based teleconference hosted by the National Council for Air and Stream Improvement, Inc., September, 2005.
- “Debris dams and the relief of headwater streams,” Departmental Seminar, Dept. Geological Sciences, Central Washington University, Ellensburg, WA, February, 2005.
- “Sediment storage in a headwater valley of the Oregon Coast Range: Erosion rates and styles, and capacitance of the valley floor,” Geomorphology Brown Bag Seminar, OSU, January, 2005.

Grants and Contracts

- Water Sustainability in the Willamette Basin, Oregon, J. McDonnell (PI), J. Bolte, B. Bond, A. Plantinga, and P. Mote (co-PIs) (S. Lancaster is Senior Personnel). National Science Foundation, Hydrological Science. \$4.3 million (\$186,211 to Lancaster). 2010–2015.
- Sediment Storage at the Transition Between Debris-Flow and Fluvial Processes (Supplemental Request), S. Lancaster (PI). National Science Foundation, Geomorphology and Land-use Dynamics. \$27,196. 6/1/10 – 5/30/11.
- Climatic and Geomorphic Triggering Mechanisms of Cascadian Periglacial Debris Flows, A. Nolin (PI), S. Lancaster, and G. Grant (co-PIs). National Science Foundation, Geomorphology and Land-use Dynamics. \$350,959. 8/1/09 – 7/31/12.
- The Influence of Sediment Deposition on the Emergence Success of Juvenile Salmonids, S. Lancaster (PI) and C. May (co-PI). USGS-IWW Small Grants Program. \$24,297. 3/1/08 – 2/28/09.
- Small Grant for Exploratory Research: Mapping the November 2006 Periglacial Debris Flows on Mount Hood and Mount Rainier, A. Nolin (PI) and S. Lancaster (co-PI). National Science Foundation, Geomorphology and Land-use Dynamics. \$18,000. 9/21/07 – 9/20/08.
- Collaborative Research: The Role of Debris Flows in Shaping Mountainous Terrain, S. Lancaster (PI; with G. Tucker). National Science Foundation, Geomorphology and Land-use Dynamics. \$107,538. 9/16/07 – 9/15/10.
- Modeling a Channel Migration Corridor for the 59-mile Segment of the Missouri National Recreation River, S. Lancaster (PI), R. Jacobson, T. Cole, R. Inglis. USDI National Park Service. \$36,200. 8/15/07 – 10/14/08.
- Sediment sources and sinks observed through LiDAR in Trask River Watershed Study Area, S. Lancaster. Watershed Research Cooperative, OSU. \$23,000. 3/1/07 – 10/1/07.
- Evaluation of optical fiber Distributed Temperature Sensors (DTS) as a tool to constrain heat and mass transport between sediments and the overlying water column, A. Trehu (PI), R.

Haggerty, S. Lancaster, and J. Selker (co-PIs). National Science Foundation (OCE – Ocean Technology & Interdisciplinary Coordination). \$19,981. 5/15/07 – 4/30/08.

Application of the CHILD model to determine the probability of wood and sediment delivery to a critical reach, S. Lancaster. National Council for Air and Stream Improvement, Inc. \$15,000. 08/15/06 – 08/14/07.

TERRESIM: A simulation system for understanding and managing the interactions between runoff, vegetation, soils and climate in a changing environment, G. Willgoose (fellowship recipient), P. Binning, S. Lancaster, M. Kirkby, and P. Bishop (partner investigators). Australian Research Council. AU \$1,484,016 (AU \$19,000 to OSU). 01/01/06 – 12/31/10.

Sediment Storage at the Transition Between Debris-Flow and Fluvial Processes, S. Lancaster. National Science Foundation, Geomorphology and Land-use Dynamics. \$289,260. 06/1/06 – 05/30/10.

Heat Budget in the Hyporheic Zone of a Large, Gravel-Bed River, S. Lancaster (PI) and R. Haggerty (co-PI). National Science Foundation, Hydrological Sciences. \$80,000. 03/16/06 – 03/15/07.

Forest Management Effects on Peak Storm Flows and Consequent Effects on Stream Channel Morphology—Science Synthesis and Management Implications, S. Lancaster. USDI Bureau of Land Management. \$20,474. 9/21/05 – 5/31/06.

Active Learning Component for Laboratories in a Medium-Enrollment, Required Course for Geosciences Majors, S. Lancaster. OSU L.L. Stewart Faculty Development Award. \$2200. Fall Term, 2005.

Investigation of the Temperature Impact of Hyporheic Flow, S. Lancaster (PI), R. Haggerty (co-PI). Oregon Department of Environmental Quality. \$61,000. 7/6/05 – 12/30/05.

Geomorphic response to changing water and sediment regimes, S. Lancaster (OSU), G. Grant (USFS). USDA Forest Service-OSU cooperative agreement. \$499,415. 7/1/2004 – 6/30/2009.

Impacts of removing Marmot Dam, S. Lancaster. Portland General Electric. \$134,000. 1/1/2002 – 12/31/2005.

Professional Service and Leadership

2009-2011 Assessment Coordinator.

2007-09 Curriculum Committee.

2007 Ad hoc Long Range Planning Committee.

2005-2010 Undergraduate Committee.

2005-2008 Head Advisor, Earth Science BS (ESBS).

2009-present Associate Director of Water Resources Engineering

2008 Native American Initiative Committee

- 2007-2008 Voices Project on Multiracial Identity.
- 2005-2007 Steering Committee, Native Americans in Science, Engineering, and Natural Resources, an NSF-sponsored program.
- 2004-present Water Resources Science, Water Resources Engineering, graduate faculty.
- 2002-2008 Faculty Advisor, OSU Chapter, American Indian Science and Engineering Society.
- 2001-present Co-founder, participant, Geomorphology “Brown-bag” Seminar.
- 2010-present Associate Editor, Journal of Geophysical Research – Earth Surface.
- 2007-present Core member, Terrestrial Working Group, Community Surface Dynamics Modeling System (CSDMS).
- Dec., 2010 Participant and organizer, field trip to stream habitat restoration sites in the Siuslaw National Forest with U.S. Forest Service managers.
- Apr., 2008 Leader and organizer, field trip to research field site in Knowles Creek, Oregon Coast Range, with state and federal managers.
- Feb., 2007 Participant, meeting with Hyporheic Cooling Research Group, OSU.
- Jan., 2007 Participant, meeting with Altrusa Club of Fayetteville, Arkansas, on greenspace preservation.
- Aug., 2006 Lobbied for greenspace preservation in Fayetteville, Arkansas.
- July, 2006 Participant, meeting with Oregon Department of Environmental Quality (DEQ) and Willamette Partnership to discuss rules governing total maximum daily loads (TMDLs) for stream temperature as part of Hyporheic Cooling Research Group; Salem, Oregon.
- June, 2006 Participant and presenter, meeting on thermal pollution credit trading sponsored by the Willamette Partnership as part of the Hyporheic Cooling Research Group; OSU.
- Apr., 2006 Participant and presenter, meeting on thermal pollution credit trading sponsored by the Willamette Partnership as part of the Hyporheic Cooling Research Group; OSU.
- Apr., 2006 Participant, meeting with McKenzie River Trust and DHI, Inc., to discuss alternatives for the Green Island (Willamette River) restoration project; Green Island, Oregon.
- Dec., 2005 Participant and organizer, meeting with DEQ, Willamette Partnership, and City of Eugene regarding results of DEQ-sponsored project; OSU.
- Oct., 2005 Participant and organizer, meeting with DEQ regarding DEQ-sponsored project; OSU.
- Aug., 2005 Participant and organizer, meeting with DEQ regarding DEQ-sponsored project; Portland, Oregon.
- Aug., 2005 Participant, public meeting with DEQ and Portland General Electric regarding stream temperature on the Clackamas River, Oregon; Portland Oregon.

May, 2005 Participant, meeting on “hyporheic cooling” with DEQ and Willamette Partnership as part of the Hyporheic Cooling Research Group; OSU.

9.7.13 Sarah Lewis, Senior Faculty Research Assistant

[298] Lewis has been with Geosciences as a Faculty Research Assistant since 2001, and was promoted to Senior Faculty Research Assistant in 2009. Parts of her curriculum vita (attached) are highlighted below.

Awards and Honors

Received the 1998 Howard Award from the Geomorphology and Quaternary Geology Division of the Geological Society of America.

Received the 1998 UVM Geology Department Graduate College Teaching Fellow of the Year Award.

Awarded MS research grants from UVM Graduate College (Summer 1998), the Geological Society of America (Spring 1998), Sigma Xi (Spring 1998), and the Vermont Geological Society (Spring 1997).

Peer-Reviewed Publications

Nolin, A.W., **Phillippe, J., Jefferson, A.**, Lewis, S.L. 2010. Present-day and Future Contributions of Glacier Melt to a Summertime Flows in a Pacific Northwest Watershed: Implications for Water Management, Water Resources Research, DOI: 10.1029/2009WR008968. 14p

Jefferson, A., Grant, G., Lancaster, S., and Lewis, S.L., 2010, Coevolution of hydrology and topography on a basalt landscape in the Oregon Cascade Range, USA, Earth Surface Processes and Landforms DOI: 10.1002/esp.1976. 14p.

Jefferson, A., Nolin, A., Lewis, S., and Tague, C., 2008. Hydrogeologic controls on streamflow sensitivity to climatic variability, Hydrological Processes 22: 4371–4385. DOI: 10.1002/hyp.7041.

Professional Service and Leadership

Administrator and organizer, Geomorphology Brownbag Seminar, OSU, 2001-present.

Administrator and organizer, Bretz Club, 2010 and 2011 meetings, H.J. Andrews Exp. For., OR.

Student Grant Proposal Reviewer, Quaternary Geology and Geomorphology Division, Geological Society of America, 2011.

9.7.14 Robert Lillie, Prof., Geology

[299] Lillie joined the Geology faculty in 1984. He teaches courses in physical geology, oceanography, tectonics, geophysics, geological writing, and public interpretation. He is author of “Parks and Plates: The Geology of Our National Parks, Monuments, and Seashores” (W. W. Norton and Company, 2005) and is a Certified Interpretive Trainer (CIT) through the National Association for Interpretation (NAI). In 2007 he became the Manager of Education and Outreach for the EarthScope Program of the National Science Foundation. Dr. Lillie has a B.S. in geology from the University of Louisiana – Lafayette, and an M.S. in geophysics from Oregon State University. He worked three years in oil exploration in the Rocky Mountains before earning a Ph.D. in geophysics from Cornell University, where he interpreted deep-crustal seismic reflection data with the COCORP project, particularly from the Ouachita Mountains of Arkansas. Dr. Lillie’s research is focused on the crustal structure and tectonic evolution of mountain ranges formed by the collision of continents, including the Himalayas in India and Pakistan and the Carpathians in Central Europe. He is also author of “Whole Earth Geophysics: An Introductory Textbook for Geologists and Geophysicists” (Prentice Hall, 1999), used in college courses in the U. S. and other countries. Since 1994 Dr. Lillie has collaborated with the National Park Service (NPS) on educating the public in geology. He has been a seasonal interpretive ranger at Crater Lake and Yellowstone national parks and John Day Fossil Beds National Monument, and he and his graduate students have written and illustrated geology-training manuals for several NPS sites.

Awards and Honors

2005 Award from the Geological Resources Division of the National Park Service for “Outstanding contributions in engaging the National Parks staff and visitors in geoscience.”

Peer-Reviewed Publications

Lillie, R. J., *Parks and Plates: The Geology of Our National Parks, Monuments, and Seashores*, New York: W. W. Norton and Company, 298 pp., 2005.

Lillie, R. J., A. Mathis, and R. Riolo, *Geology: A Living Stage of Our Past, Present, and Future*, Legacy, National Association for Interpretation, p. 8-11, January/February, 2011.

Scholarly Presentations, Exhibits, and Training Manuals

Lillie, R. J., **J. Kenworthy**, S. de Silva, E. Bishop, J. Roddey, N. Hunter, and S. Burns, *Oregon: 150 years of Statehood; 150 million years in the making*. Geology Exhibits for Oregon State Capitol Building, OSU Advancement Office and OSU College of Science, January, 2009–January, 2011.

Lillie, R. J., Fun with Food! Plate tectonics and our national parks, The Oregon Science Teacher, v. 47, 2005.

Dunham, S., and R. J. Lillie, *Interpreting Geology in Yosemite National Park, California: A Monument to Strong Granite, Powerful Glaciers, and the Perseverance of Life*, 58 pp., 2010.

Truitt, K., and R. J. Lillie, *Interpreting a Weird and Scenic Landscape to Park Visitors: Tectonic and Volcanic Processes of Craters of the Moon National Monument and Preserve, Idaho*, 38 pp., 2007.

Natoli, J. A., and R. J. Lillie, *Shake, Rattle and Roll – Awakening the Public’s Curiosity of Geology via Interpretation: A Geology Training Manual for Redwood National and State Parks, California*, 64 pp., 2006.

Lillie, R. J., S. Eriksson, and J. Taber, *EarthScope Education and Outreach: Connecting Students, Teachers, and the Public to the Dynamic Landscape of North America*, Geological Society of America, Annual Meeting, Portland, Oregon, 2009.

Lillie, R. J., Smith, R., Jackson, M., James, D., Jaworowski, C., McQuillan, P., Olds, S., Owen, D., Payne, S., Puskas, C., and Shervais, J., *EarthScope Workshop for Interpretive Professionals in the Yellowstone-Snake River Plain-Teton Region*, Teton Science Schools, Jackson, WY, Sept 9-12, 2010.

Lillie, R. J., Interpretive Methods for RESESS Interns: Communicating Your Science to Your Audience, UNAVCO, Boulder, Colorado, July 21, 2010.

Lillie, R. J., J. Aubele, S. Semken, R. Aster, H. Berglund, L. Crossey, K. Karlstrom, A. Mathis, and M. Roy, *EarthScope Workshop for Interpretive Professionals in the Colorado Plateau-Rio Grande Rift Region*, New Mexico Museum of Natural History and Science, Albuquerque, NM, Oct 26-28, 2009.

Lillie, R. J., R. de Groot, K. Springer, W. Bohon, J. Evans, C. Goddard, K. Hudnut, L. Jones, S. McGill, P. McQuillan, S. Olds, J. Redvale, and C. Walls, *EarthScope Workshop for Interpretive Professionals in the San Andreas Region*, San Bernardino County Museum, Redlands, CA, April 19-22, 2009.

- Lillie, R. J., Braunmiller, J., Hammond, W., Kreemer, C., Mathis, A., Smith, K., and Wernicke, B., *EarthScope Workshop for Interpretive Professionals in the Basin and Range Province*, University of Nevada, Reno, NV, Sept Oct 19-22, 2008.
- Lillie, R. J., R. F. Butler, C. Driedger, T. Melbourne, S. Moran, and C. Goddard, *EarthScope Workshop for Interpretive Professionals in the Cascadia Subduction Zone*, Mt. Rainier National Park Education Center, April 7-10, 2008.
- Lillie, R. J., C. Hanks, J. Begét, and J. Adleman, *Geology Training Workshop for interpretive rangers at Kenai Fjords National Park*, April 27-28, 2006.
- Lillie, R. J., C. Ormand, and C. Jennings, *Geology Training Workshop for interpretive rangers at Voyageurs National Park*, April 10-11, 2006.
- Lillie, R. J., B. Rose, and W. Loope, *Geology Training Workshop for interpretive rangers at Keweenaw National Historical Park*, April 5-6, 2006.
- Lillie, R. J., F. Pazzaglia, and J. Reese, *Geology Training Workshop for interpretive rangers at Harpers Ferry National Historical Park*, March 17-18, 2006.
- Lillie, R. J., J. Reese, and D. Byerly, *Geology Training Workshop for interpretive rangers at Great Smoky Mountains National Park*, April, 2006.
- Lillie, R. J., E. Zen, M. Toscano, J. Kenworthy, and T. H. Lillie, *Geology Training Workshop for interpretive rangers at Washington DC-area Kenai Fjords National Park Service sties*, March 7-8, 2006.
- Lillie, R. J., A. Palmer, P. Doss, R. Toomey, and R. Olson, *Geology Training Workshop for interpretive rangers at Mammoth Cave National Park*, March 1-2, 2006.
- Lillie, R. J., R. Anderson, and A. Lester, *Geology Training Workshop for interpretive rangers at Rocky Mountain National Park*, September 28-29, 2005.
- Lillie, R. J., T. Atwater, and R. Stein, *Geology Training Workshop for interpretive rangers at San Francisco Bay Area national parks*, August 30-31, 2005.
- Lillie, R. J., P. Weimer, and T. McCormick, *Geology Training Workshop for interpretive rangers at Canyonlands and Arches National Parks*, Moab, Utah, June 13-14, 2005.
- Lillie, R. J., R. Holman, A. Meigs, and N. Stilman, *Geology Training Workshop for interpretative specialists on the Oregon Coast*, OSU Hatfield Marine Science Center, Newport, Oregon, February 13-14, 2005.
- Lillie, R. J., A. Mathis, C. Goddard, and J. Braunmiller, *Earthscope Outreach to Park Rangers and Museum Educators: Connecting the Public to the Dynamic Landscape of North America*, Geological Society of America, Annual Meeting, Portland, Oregon, 2009.
- Lillie, R. J., *Using plate tectonics to engage the public on the geology of national parks*, 33rd International Geological Congress, Oslo, Norway, 2008.
- Lillie, R. J., *Engaging park and museum staffs in informal geoscience education via the EarthScope program*, 33rd International Geological Congress, Oslo, Norway, 2008.

- Lillie, R. J., C. Goddard, J. Braunmiller, and A. Trehu, *Integrating EarthScope seismic, GPS, and other active Earth observations into informal education programs in parks and museums*, American Geophysical Union, Fall Meeting, San Francisco, CA, 2008.
- Lillie, R. J., and A. M. Trehu, *EarthScope interpretation in parks and museums*, Geological Society of America Annual Meeting, Denver, Colorado, 2007.
- Lillie, R. J., *Content-driven Interpretive Workshops*, National Association for Interpretation annual meeting, Wichita, Kansas, 2007.
- Lillie, R. J., 2005, *Mingling interpretive methods with geological content in classrooms and national parks*, (Invited), Abstracts with Programs, Geological Society of America, Annual Meeting, Salt Lake City, Utah.
- Lillie, R. J., 2005, *Geology Interpretive Workshops for National Park Staffs*, Abstracts with Programs, Geological Society of America, Annual Meeting, Salt Lake City, Utah.
- Earth Science Literacy Workshop (panel to develop document for K-12 teachers, public policy makers, and other audiences, sponsored by National Science Foundation, National Geographic, and other organizations, St. Louis, MO, July 20-22, 2008.
- Episodic Tremor and Slip Workshop, U. S. Geological Survey and EarthScope, Sydney, British Columbia, Feb. 25-28, 2008.

Grants and Contracts

- Trehu, A. E, and R. J. Lillie, Planning, Products and the Public: An EarthScope National Office at Oregon State University (Supplement), National Science Foundation, 1/1/11 – 6/30/11, \$230,218.
- Trehu, A. E, and R. J. Lillie, Planning, Products and the Public: An EarthScope National Office at Oregon State University, National Science Foundation, 7/1/07 – 6/30/11, \$1,595,092.
- Lillie, R. J., Development of model geology interpretative manuals, training sessions, and geology exhibit recommendations to improve the interpretation of geologic resources in National Parks, National Park Service, Pacific Northwest Cooperative Ecosystems Studies Unit, Contract Number CA9088A0008, 6/15/04 – 7/31/06, \$31,200.
- Lillie, R. J., Oregon: 150 years of Statehood; 150 million years in the making. Geology Exhibits for Oregon State Capitol Building, OSU Advancement Office and OSU College of Science, February, 2008 – December, 2010, \$10,000.
- National Park Service, Scholarships for 17 park rangers to take OSU e-course on Geology of National Parks, 2004-2005, \$10,200.
- National Park Service, Travel funds for Geology Interpretive Workshop at Rocky Mountain National Park, September, 2005, \$1,200.
- National Park Service, Travel funds for Geology Interpretive Workshop for Bay Area National Parks, August, 2005, \$600.

Professional Service and Leadership

- EarthScope Education and Outreach Manager (2007-2011).

OSU Science and Math Learning Experience (SMILE) workshop presentations, 2008.
Organized Geoscience Department exhibits for OSU Discovery Days, 2004, 2005, 2008.
National Park Service Certification Course, Harpers Ferry, West Virginia, March 16-30, 2006.
Earned credentials as a certifier for the NPS Interpretive Development Program.
Presented Seasonal Geology Interpretative Training to Park Ranger staffs:
Crater Lake National Park, 2003, 2004, 2005
Cape Perpetua National Scenic Area, 2005.
Chair, Panel to develop geology exhibits for Yosemite National Park Visitor Center, March, 2004-present.
Presented programs on plate tectonics and Cascade Volcanoes to six high school and elementary students in Corvallis, Albany, and Salem, 2002-present.

9.7.15 Andrew Meigs, Assoc. Prof., Geology (Director)

[300] Meigs joined Geosciences as an Assistant Professor in 1998 and he is currently the Director of the Geology Program. Meigs is a structural geologist whose work focuses on the geomorphic and structural evolution of orogenic belts, patterns of active deformation in orogenic belts, and characterization of continental deformation. Meigs and students employ a variety of structural and geomorphic techniques, geochronometric and thermochronometric measurements, and field data collection in their research. Research in the past 5 years includes studies of southern Alaska, western Argentina, India and Pakistan, and the western North America Cordillera. Meigs serves as an Associate Editor for *Lithosphere* and on the Editorial Board of the *Kashmir Journal of Geology*. Funding sources for these investigations include the National Science Foundation, the USGS (EdMap, NEHRP), the USFS, the Southern California Earthquake Center, and the US Department of Energy.

Awards and Honors

2004 Loyd Carter Excellence in Graduate Teaching Award, College of Science, Oregon State University.

- 1999 Editor's Acknowledgement of Excellence in Refereeing, Quaternary Science Reviews.
- 1997-1998 Southern California Earthquake Center Postdoctoral Fellowship, California Institute of Technology.
- 1996-1997 Division of Geological and Planetary Sciences Postdoctoral Fellowship, California Institute of Technology.
- 1992-1995 Shell Fellow, University of Southern California.
- 1990-1991 Pre-Doctoral Fellow, University of Connecticut
- 1990 Summer Fellow, University of Connecticut.
- 1985 Nominated for U.S.G.S.-N.A.G.T. Summer Internship, Macalester College.
- 1985 Graduated with Honors in Geology, Macalester College.

Peer-Reviewed Publications

- Meigs, A., and Nabelek, J.L., (2010), Crustal-scale pure shear foreland deformation of western Argentina: Geophysical Research Letters, v. 37, p. 5.
- Meigs, A., **Scarberry, K.**, Grunder, A., Carlson, R., **Ford, M.**, Fouch, M., Grove, T., Hart, W.K., **Iademarco, M.**, **Jordan, B.**, **Milliard, J.**, **Streck, M.**, **Trench, D.**, and Weldon, R., (2009), Geological and geophysical perspectives on the magmatic and tectonic development, High Lava Plains and northwest Basin and Range, *in* O'Connor, J.E., Dorsey, R.J., and Madin, I.P., eds., Volcanoes to Vineyards: Geologic Field Trips through the Dynamic Landscape of the Pacific Northwest: Geological Society of America Field Guide 15, Volume Field Guide 15: Boulder, Geological Society of America, p. 451-486.
- Scarberry, K.**, Meigs, A., and Grunder, A., (2009), Faulting in a propagating continental rift: Insight from the late Miocene structural development of the Abert Rim fault, southern Oregon, USA, Tectonophysics, v. 488, no. 1-4, p. 71-86.
- Meigs, A., **Johnston, S.**, Garver, J., Spotila, J., (2008), Crustal-scale structural architecture, shortening, and exhumation of an active, eroding orogenic wedge (the Chugach/St Elias Range, southern AK), Tectonics, v. 27, TC4003, 26 p..
- Meigs, A., Cooke, M., and Marshall, S., (2008), Using vertical rock uplift patterns to infer and validate of three-dimensional fault configuration in the Los Angeles basin, Bulletin of the Seismological Society of America, v. 98, no. 1, p. 106-123.
- Vergés, J., Ramos, V. A., Meigs, A., Cristallini, E. O., and Cortes, J. M., 2007, Crustal wedging triggering recent deformation in the Andean thrust front between 31°S and 33°S: Sierras Pampeanas-Precordillera interaction: Journal of Geophysical Research, v. 112, no. B03S15, 22 p.
- Meigs, A., **Krugh, W. C.**, **Schiffman, C.**, Vergés, J., and Ramos, V. A., 2006, Evidence for refolding of thin-skinned thrust sheets by active thick-skinned thrust faults in the eastern Precordillera of San Juan Province, Argentina: Revista de la Asociación Geológica Argentina, v. 61, no. 4, p. 589-603.
- Meigs, A., **Krugh, W. C.**, Davis, K., and Bank, G., 2006, Ultra-rapid landscape response and sediment yield following glacier retreat, Icy Bay, southern Alaska: Geomorphology, v. 78,

no. 3-4, p. 207-221.

VanLaningham, S., Meigs, A., and Goldfinger, C., 2006, The effects of rock uplift and rock resistance on river morphology in a subduction zone forearc, Oregon, USA: Earth Surface Processes and Landforms, v. 31, no. 10, p. 1257-1279.

Scholarly Presentations

Distributed deformation, distributed earthquakes in the northwest Himalaya”, 25th Annual Himalayan-Karakorum-Tibet Conference, 6/7/2010,

Geologic evidence for past earthquakes on faults in the Pakistani Himalaya, Quaid-i-Azam University, Pakistan, 5/13/2010,

Geologic evidence for past earthquakes on faults in the Pakistani Himalaya, National Institute of Science and Technology, Islamabad, Pakistan, 5/12/2010,

Distributed deformation, distributed earthquakes in the northwest Himalaya, NSF Workshop on Future Directions of Research in the NW Himalaya, Islamabad, Pakistan, 5/10/2010,

Volcanic and structural setting of the High Lava Plains of the NW US, Annual Meeting of the Geological Society of America, 10/21/2009,

Overview of great earthquakes and related phenomenon on the Cascadia subduction zone, University of Massachusetts, Amherst, 5/1/2009.

Seismotectonics of the boundary between thin- and thick-skin thrust faulting in western Argentina, University of Massachusetts, Amherst, 5/1/2009.

Meigs, A., Schiffman, C., and Nabelek, J., 2009, Active Crustal-Scale Pure Shear Foreland Deformation of Western Argentina: *Seismological Research Letters*, v. 80, p. 322.

Meigs, A., 2009, Orogenic widening in the quaternary argues against climate control of deformation in the Chugach/St. Elias orogenic belt, southern Alaska: *Geological Society of America, Abstracts with Programs*, v. 2009 Annual Meeting.

Grunder, A., and **Meigs, A.**, 2009, Volcanic and structural setting of the High Lava Plains, an intracontinental transform zone in the northwestern USA: *Geological Society of America, Abstracts with Programs*, v. 2009 Annual Meeting.

Seismotectonics of western Argentina, Quaid-i-Azam University, Pakistan, 4/22/2008.

Meigs, A., Yule, D., Madden, C., Yeats, R., Hussain, A., Sayeed, S., Latif, A., Khattak, W., Ashraf, M., Ramzan, S., and Dasti, N., 2007, Earthquake surface rupture in of the Himalayan thrust front in Pakistan: *Eos Trans. AGU*, v. 88, no. 52.

Meigs, A., 2006, One segment boundary and two blind thrust systems in the northern Los Angeles basin: *Southern California Earthquake Center, Proceedings and Abstracts*, v. 2006 Annual Meeting.

Crustal-scale structural architecture, shortening, and exhumation of an active, eroding orogenic wedge (the Chugach/St Elias Range, southern Alaska, Central Washington University, 11/30/07.

Seismotectonics of the Precordillera-Pampeanas Transition Zone - A structural transition between thin- and thick-skinned thrusting in western Argentina, University of Cincinnati,

10/19/07.

Seismotectonics of the Eastern Precordillera - Implications for crustal structure and earthquake hazards, Universidad Nacional de San Juan, San Juan, Argentina, 05/17/07. (*in Spanish*)

Seismotectonics of the Eastern Precordillera - Implications for crustal structure and earthquake hazards, Universidad de Buenos Aires, Buenos Aires, Argentina, 05/15/07.

A new world order: Indonesian-scale earthquakes and tsunamis in the Pacific Northwest, Lewis and Clark College, Portland, OR, 3/20/06.

Role of Tectonics and Climate in the Topography, Denudation, and Flow of Rocks in the Chugach/St. Elias Range, Southern Alaska, University of California, Davis, Davis, CA, 2/22/06.

A new world order: Indonesian-scale earthquakes and tsunamis in the Pacific Northwest, Brigham Young University, Provo, UT, 2/9/06.

Refolding of thin-skinned thrust sheets due to active blind thrust faulting in the basement of western Argentina, Brigham Young University, Provo, UT, 2/9/06.

Grants and Contracts

Geological and geophysical investigations of the Glass Buttes geothermal prospect, Central Oregon, J. Dilles and A. Meigs (co-PI, research and student advising), Subcontract from US Department of Energy grant to Ormat, Inc., \$129,355. 4/1/10 – 6/30/2013.

Hydro-Geomorphic Response to Climate Change in the Pacific Northwest, G. Grant and A. Meigs (co-PI, student advising), US Department of Agriculture. \$116,604. 7/22/09 – 7/13/14.

New Geologic Maps of the range fronts bounding the Tygh Valley on the east slope of Mt. Hood, Oregon, A. Meigs, USGS EdMap Program, \$10,798. 9/14/09 – 9/13/10.

Fault Segmentation, Regional Shortening Rates, and Earthquake Recurrence of Blind Thick-Skinned Reverse Faults in Western Argentina, A. Meigs, National Science Foundation, \$9,503. 2/1/09 – 1/31/10.

Fault growth modeling along Oregon's active Basin and Range region, the Brother's Fault Zone, Ajeet Johnson, (A. Meigs, advisor), OSU Undergraduate Research Innovation Scholarship Creativity. \$2667. 9/07 – 6/08.

Fault growth modeling along Oregon's active Basin and Range region, the Brother's Fault Zone, Ajeet Johnson (A. Meigs, advisor), Richard Chambers Undergraduate Research Award, Department of Geosciences, \$3000. 6/07 – 9/07.

Earthquake Geology of the Pakistani Himalaya: Characterizing slip rates and recurrence of potentially devastating earthquakes, A. Meigs (PI, research and student advising) and R. Yeats, National Science Foundation. \$297,768, 1/01/07 – 12/31/10.

Extension and volcanism during propagation of the northwest Basin and Range into southeastern Oregon, A. Meigs (co-PI, research and student advising) and A. Grunder, National Science Foundation. \$209,997, 8/01/06 – 7/31/09.

Stress Changes and Interactions Associated with the 1944 San Juan, Argentina Earthquake, D. Fawcett (A. Meigs, advisor), OSU Undergraduate Research Innovation Scholarship Creativity. \$3000. 9/06 - 6/07.

Refinement of community fault model alternatives using mechanical models of deformed geologic markers, A. Meigs, Southern California Earthquake Center. \$10,000. 2/06-1/07.

Professional Service and Leadership

To the Department:

March, 2011 Co-leader (w/Anita Grunder and John Nabelek) Geoscience's GeoClub trip to Nepal, 3 weeks).

2009 – 2010 Geology Program Head. Scheduling of Geology classes for 2010/11 academic year, scheduling and chairing Geology program meetings, undergraduate and graduate student advising, administration of PhD written examinations, undergraduate graduation audits, START advising, fulfilling Chair duties as needed, and numerous other bureaucratic, administrative, and advisory duties. Co-leader (w/P. Clark and S. deSilva) of Board of Advisors trip to SW Montana, July 17 – 23, 2010.

Advisory Committee, member. Advising of departmental Chair, space committee, and ad hoc committees.

Field Camp Committee, member. Planning 2010 camp and policy advising.

2008 – 2009 Chair, Advisory Committee. Advising of departmental Chair, space committee, and ad hoc committees.

Field Camp Committee. Planning 2009 camp and policy advising

Faculty host for Dr. Mohammad Sayab, Fulbright Scholar and Assistant Professor, University of Peshawar, Pakistan.

Spring 2008 Organized visit of Dr. Mona Lisa, Quaid-i-Azam University, Pakistan to Oregon State University.

Organized visits of Dr. Martin Streck (PSU), Dr. Loren Davis (OSU), Dr. Jeff Lee (CWU), Dr. Jon Major (USGS, CVO), Dr. Ray Weldon (UO), Terry Toedtmeier (Portland Art Museum), Dr. John Clague (Simon Fraser U.), Dr. Uri ten Brink (USGS, Woods Hole), and Dr. Andrew Fountain (PSU) to department as speakers in weekly seminar series.

2007 – 2008 Field Camp Committee. Web site development, scheduling, contracting with cook, planning curriculum, soliciting applications, hiring TAs, and logistical planning.

Capital Campaign Committee, Chair. Organization of departmental fundraising priorities, white paper editing of rationale for priorities, coordination with OSU Foundation, coordination with Geosciences Board of Advisors.

June, 2007 Co-led (w/Anita Grunder) Geoscience's GeoClub trip across the Spanish Pyrenees, 2 weeks.

2006 – 2007 Field Camp Committee, Field Camp Director. Web site development, scheduling, contracting with cook, planning curriculum, soliciting applications, hiring TAs, and logistical planning.

Promotion and Tenure Committee – Coordinated Promotion and tenure file of Stephen T. Lancaster.

Yeats Chair Endowment Committee, Chair. Organization of Alumni reunion, fundraising, coordination with OSU Foundation, coordination with Geosciences Board of Advisors.

To the College:

2009-2010 College of Earth Sciences ad hoc committee, member; Presenter, 2010 COS Undergraduate Awards Day.

2004-2007 Led successful effort to endow the Yeats Professorship in Active Tectonics and Earthquake Geology (>\$500,000).

Feb., 2006 COS Dean Natural Hazards Alumni Dinner discussion panel member

To the University

2010 - Panel member URISC Undergrate Research Grant Program

2009 Member, College of Earth, Ocean, and Atmospheres planning committee

2008 Evaluation of COAS PhD Qualifying Exams.

2008 Invited participant to natural resource and hazards round table discussion with Dr. Vicki McConell, Director, Oregon Department of Geology and Mineral Industries organized by the OSU Institute for Natural Resources, Gail Achterman, Director.

To the Profession

2010 – Editorial Board, Kashmir Journal of Geology, Institute of Geology University of Azad Jammu and Kasmir, Pakistan.

2010 – Member, Nominating committee, Structure and Tectonics Division, Geological Society of America.

2009 – 2010 Past Chair, Cordilleran Section, Geological Society of America.

May, 2009 Judge for student presentations, Cordilleran Section, Geological Society of America meeting.

2008 – Associate Editor, Lithosphere, Geological Society of America.

2008 Panel member, Southern California Panel, National Earthquake Hazards Reduction Program.

2008 – 2009 Chair, Cordilleran Section, Geological Society of America.

2006 – 2007 Vice Chair, Cordilleran Section, Geological Society of America.

2007 Panel member, Southern California Panel, National Earthquake Hazards Reduction Program.

2006 Panel member, Southern California Panel, National Earthquake Hazards Reduction Program.

Reviews:

- 2009-2010 National Science Foundation (2); 'Recent Advances in Tectonics of Sedimentary Basins' book section, Blackwell Science (1); Terra Nova (1); Tectonics (2); Journal of Geophysical Research-Earth Surface (1); Lithosphere (1).
- 2008-2009 Tectonics (3); National Science Foundation (2); Nature Geoscience (2); Geology (2); Geosphere (1); Journal of Geophysical Research-Earth Surface (1); Basin Research (1); Geological Society of America Field Trip Guides (1).
- 2007-2008 European Space Agency (1); National Science Foundation (5); Basin Research (1); Book review for the Royal Geographical Society; Tectonics (2); Geological Society of America Bulletin (1); Geology (2); Nature Geoscience (1); Terra Nova (1); National Earthquake Hazards Reduction Program (4).
- 2006 – 2007 National Science Foundation (7); Tectonics (3); Seismological Research Letters (1); Tectonophysics (1); National Earthquake Hazards Reduction Program (5).

To the public

Presentation: Plate tectonic setting of the eastern Mediterranean Sea", Stanford Family Travel Greece, Turkey, and Italy trip, July, 2009.

Presentation: A new world order: Indonesian-scale earthquakes and tsunamis in the Pacific Northwest", Benton County Public Library, Corvallis, OR 4/19/07.

Fall, 2009 Ashbrook Independent School, Corvallis, Two classes taught (Plate tectonics; Earthquakes)

Fall, 2009 co-Advisor, Ashbrook Independent School Lego Robotics Team.

May, 2008 Ashbrook Independent School, Corvallis, Geography of the western margin of the Tibetan Plateau and the setting of the Sichuan earthquake.

February, 2007 Ashbrook Independent School, Corvallis, Three classes taught (Science project on meteorology and data collection)

November, 2006 Stafford Elementary School, West Linn, OR, Four classes taught Plate tectonics; Question and answer on Earth Sciences)

September, 2006 Ashbrook Independent School, Corvallis, Two classes taught (Plate tectonics; Question and answer on Earth Sciences)

9.7.16 Roger Nielsen, Prof., Geology

[301] Nielsen came to OSU with a research appointment in the College of Oceanography in 1988, entered the professor ranks in the College of Oceanic and Atmospheric Sciences in 1991, joined Geosciences with a joint COAS-GEO appointment and served as Director of the Geology Program from 2000-03, and moved to a full-time appointment with Geosciences at the beginning of his 2003-08 term as Dept. Chair. Nielsen's fields of specialization include igneous petrology,

trace element geochemistry, mineral chemistry and phase equilibria, and microanalysis techniques.

Awards and Honors

Peer-Reviewed Publications

- Rowe, M.C.**, Nielsen, R.L., A.J.R. Kent, (2009) Subduction Influence on Basaltic Oxygen Fugacity and Trace- and Volatile-Elements Across the Cascade Volcanic Arc, Journal of Petrology, 50, 61-91.
- Rowe, M.C.**, A. J. R. Kent, R. L. Nielsen, 2007, Determination of sulfur speciation and oxidation state of olivine hosted melt inclusions, Chemical Geology, 236, 303- 322.
- Kohut, E.J.**, Stern, R.J., Kent, A.J.R., Nielsen, R.L., Bloomer, S.H., and Leybourne, M, 2006, Evidence for adiabatic decompression melting in the Southern Mariana Arc from high-Mg lavas and melt inclusions Contrib. Mineral. Petrol., 152, #2, 201-221
- Rowe, M. C.**, Nielsen, R.L., and Kent., A. J.,2006, Anomalous Fe contents in rehomogenized olivine hosted melt inclusions from oxidized magmas American Mineralogist, v. 91, #1, 82-95.

Scholarly Presentations

Grants and Contracts

- MORB Construction Processes: Plutonic to Volcanic Connections in Plagioclase Ultraphyric Basalts (PUBs) (w/F. Tepley and A. Kent), NSF-MGG, 9/09-8/12, \$357,424
- Collaborative Research: Experimental Determination of Trace Element Partition Coefficients Between Anorthitic Plagioclase and MORB w/ Dana Johnston - UO), NSF-MGG, 9/09-9/11, \$268,045
- The Influence of the Simultaneous or Sequential Offering of Ecampus and Face to Face Courses, OSU Extended Campus, 10/10-9/11, \$11,000
- The Influence of the Simultaneous or Sequential Offering of Ecampus and Face to Face Courses, OSU Extended Campus, 9/09-10/10, \$9750
- Evaluating the Relationship Between Melt Inclusions and Host for high Anorthite Plagioclase: Prevalence and Significance of Trace element Diversity in MORB Plagioclase (w/A. Kent), NSF-MGG, 2/05-4/09, \$178,000
- Collaborative Research: Volatile recycling and magma genesis in a hot, dry subduction zone: A case study of the Cascade Arc (w/A. Kent and Paul Wallace UO), NSF-EAR, 2/05-1/09, \$259,000
- Acquisition of an Electron microprobe at Oregon State University with a remote operation station at Portland State University, NSF- EAR, NSF- MGG, 9/03-8/06, \$540,000

Professional Service and Leadership

GSA local organizing committee Portland 2009 meeting – 2008-9
Chair - AGU - VGP Education and Outreach Committee –2000-2002
Head Advisor for the Earth Science undergraduate program, 2009-
Earth Systems Curriculum Working Group – 2009 – 2011
Geosciences Curriculum Revision Committee – 2009
Member – College of Science Promotion and Tenure Committee, 2006, 2008
Member – College of Science – Space Committee 2004-5
Chair – Research Council – Faculty Senate 2004-5
Member – University Conflict of Interest Committee 2003-5
Member – COAS-Geosciences New Building Committee 2003-5
Member – University Space Allocation Task Force 2004-6
Member –Sustainable Rural Communities Initiative Exec Committee 2004-6
Alternate member – Research Council – Faculty Senate 2005-6
Member – University URISC Advisory Panel 2004-6
Member – Ad Hoc COS committee on undergraduate research 2006-7
Chair – Department of Geosciences 2003-8
Chair – Departmental Alumni Relations Committee 2003-8
Member – University Space Committee 2006-8
Member – University Post-Tenure Review Task Force 2007-8
Member - Earth System Science Curriculum Working Group 2007-8
Member – Faculty Senate Promotion and Tenure Committee 2005-6
Chair – Faculty Senate Promotion and Tenure Committee 2006-8
Chair – Associate Dean of Research (COS) search committee 2008
Member – Undergraduate Committee – Geosciences 2009
Member – GSA Portland 2009 local organizational committee 2008-9
Chair – Geosciences Promotion and Tenure Committee 2009-10
Geosciences Curriculum Revision Committee 2009
Member – Environ. Sciences Steering Committee (undergrad) 2009-
Member – Geosciences Alumni Committee 2009-11
Member – University Undergraduate Research Group 2009-

Curator – Geosciences – Taylor Mineral Collection 2009-
Honors College Reader 2009-11
Member – “Next Steps” Transition Committee 2009-11
Chair – Geosciences Library Committee 2010-11
Member - Earth System Science Curriculum Committee 2010-11
Member - Undergraduate Program Committee 2010-11
Head Advisor – Earth Science Program 2009-
Member - University Collections committee 2010-
Provost Task Force on Distance Education 2010-11
Faculty Senate Distance Ed Committee 2010-11

9.7.17 Peter Ruggiero, Asst. Prof. (Senior Research), Geology, Ocean Engineering

[302] Ruggiero joined Geosciences with a research appointment in 2006. In addition to his research activities, Ruggiero teaches some graduate courses and advises graduate students. While his formal training is in Coastal Engineering (nearshore processes), his research interests are now primarily focused on understanding and predicting coastal natural hazards and on problems of applied coastal geomorphology.

Awards and Honors

2005 US DOI Star Award for efforts following the 2004 Indian Ocean Tsunami
2003 US DOI Star Award for program development in Kachemak Bay, Alaska
1990 Nominated Member Chi Epsilon - National Civil Engineering Honor Society

Peer-Reviewed Publications

Komar, P.D., Allan, J.C., and Ruggiero, P., accepted and in press. Sea level variations along the US Pacific Northwest coast: tectonic and climate controls, *Journal of Coastal Research*.
Hacker, S., **Zarnetske, P.**, Seabloom, E., Ruggiero, P., **Mull, J.**, Gerrity, S., and Jones, C., accepted and in press. Subtle differences in two non-native congeneric beach grasses significantly affect their colonization, spread, and impact, *Oikos*.
Kaminsky, G.K., Ruggiero, P., Buijsman, M.C., and Gelfenbaum, G., 2010. Historical evolution of the Columbia River littoral cell, *Marine Geology*, DOI:10.1016/j.margeo.2010.02.006.

- Ruggiero, P., Buijsman, M.C., Kaminsky, G., and Gelfenbaum, G., 2010. Modeling the effect of wave climate and sediment supply variability on large-scale shoreline change, *Marine Geology*, 273, 127-140, DOI:10.1016/j.margeo.2010.02.008.
- Ruggiero, P., Komar, P.D., Allan, J.C., 2010. Increasing wave heights and extreme-value projections: the wave climate of the U.S. Pacific Northwest, *Coastal Engineering*, 57, 539-552, doi:10.1016/j.coastaleng.2009.12.005.
- Warrick, J., Rubin, D.M., Ruggiero, P., Harney, J., Draut, A., and Buscombe, D., 2009. Cobble Cam: Grain-size measurements of sand to boulder from digital photographs and autocorrelation analyses, *Earth Surface Processes and Landforms*, 34(13), 1811-1821, doi: 10.1002/esp.
- Ruggiero, P., Walstra, D.J., Gelfenbaum, G., and Ormont, M.V., 2009. Seasonal scale nearshore morphological evolution: Field observations and modeling, *Coastal Engineering*, (56) 1153-1172, DOI:10.1016/j.coastaleng.2009.09.003.
- Ruggiero, P. and List, J.H., 2009. Improving Accuracy and Statistical Reliability of Shoreline Position and Change Rate Estimates, *Journal of Coastal Research*, 25(5), 1069-1081.
- Warrick, J., George, D., Gelfenbaum, G., Ruggiero, P., Kaminsky, G.M., and Beirne, M., 2009. Beach morphology and change along the mixed grain-size delta of the dammed Elwha River, Washington, *Geomorphology*, 111, 136-148.
- Adams, P. N.**, Ruggiero, P., Schoch, G.C., and Gelfenbaum, G. 2007. Intertidal sand body migration along a megatidal coast, Kachemak Bay, Alaska, *J. Geophys. Res.*, 112, F02007, doi:10.1029/2006JF000487.
- Moore, L.J., Ruggiero, P., and List, J.H., 2006. Comparing mean high water and high water line shorelines: Should proxy-datum offsets be incorporated in shoreline change analysis? *Journal of Coastal Research*, 22(4), 894-905.
- Jaffe, B.E., Borrero, J.C., Prasetya, G.S., Peters, R., McAdoo, B., Gelfenbaum, G., Morton, R., Ruggiero, P., Higman, B., Dengler, L., Hidayat, R., Kingsley, E., Kongko, W., Lukijanto, Moore, A., Titov, V., and Yulianto, E., 2006. Northwest Sumatra and Offshore Islands Field Survey after the December 2004 Indian Ocean Tsunami, 2006. *Earthquake Spectra*, Volume 22, No. S3, pages S105–S135.
- Ruggiero, P., Kaminsky, G.M., Gelfenbaum, G., and Voigt, B., 2005. Seasonal to interannual morphodynamics along a high-energy dissipative littoral cell, *Journal of Coastal Research*, 21(3), 553-578.
- Ruggiero, P., Komar, P.D., Brown, C.A., Allan, J.C., Reusser, D.A., and Lee, H.II, in review. Impacts of climate change on Oregon's coasts and Estuaries, *chapter in OCCRI 2010 Oregon Climate Change Assessment Report the Oregon state legislature.*
- Ruggiero, P. in press. Impacts of shoreline armoring on sediment dynamics, to appear in: *Proceedings of: Puget Sound Shorelines and the Impacts of Armoring: State of the Science*, US Geological Survey Professional Paper.
- Allan, J.C., Witter, R.C., Ruggiero, P., and Hawkes, A.D., 2009. Coastal Geomorphology, hazards, and management issues along the Pacific Northwest coast of Oregon and

Washington, in O'Connor, J.E., Dorsey, R.J., and Madin, I.P., eds, Volcanoes to Vineyards: Geologic Field Trips through the dynamic landscape of the Pacific Northwest: *Geological Society of America Field Guide 15*, p. 495-519, doi: 10.1130/2009.fld015(24).

Komar, P.D., J.C. Allan and P. Ruggiero, in 2009. Wave and nearshore-process climates: Trends and variations due to Earth's changing climate, *Handbook of Coastal and Ocean Engineering*, edited by Y.C. Kim, World Scientific Publishing Co., 971-975.

Scholarly Presentations

Ruggiero, P., 2008. Impacts of climate change on coastal erosion and flood probability in the US Pacific Northwest, *Proceedings of Solutions to Coastal Disasters 2008*, Oahu, HI.

Ruggiero, P, Reid, D., Kaminsky, G, Allan, J. 2007. Assessing shoreline change trends along US Pacific Northwest beaches, *Proceedings of Coastal Zone 2007*, Portland, OR.

Ruggiero, P., Adams, P., and Warrick, J., 2007. Mixed sediment beach processes: Kachemak Bay Alaska, *Proceedings Coastal Sediments 2007*, ASCE, New Orleans, LA.

Ruggiero, P., List, J., Hanes, D., and Eshleman, J., 2006. Probabilistic shoreline change predictions, *Proceedings of the 30th International Conference on Coastal Engineering*, ASCE, San Diego, CA, 3417-3429.

Ruggiero, P., **Zarnetske, P., Mull, J.**, Hacker, S., and Seabloom, E., 2010 (submitted). Coastal foredune evolution: evidence for physical control, AGU Fall meeting, San Francisco, CA.

Ruggiero, P., J.C. Allan, P.D. Komar, N. Wood, P. Corcoran, **E. Harris, H. Baron, and J. Mull** 2010 OS, Accounting for climate change in coastal flood and erosion hazard assessments, *Eos Trans. AGU*, 91(26), Ocean Sci. Meet. Suppl., Abstract IT51C-05.

Ruggiero, P., Allan, J.C., and Komar, P.D., 2008. Is the intensifying wave climate of the U.S. Pacific Northwest of more concern than sea level rise? American Geophysical Union Fall 2008 Meeting, San Francisco, CA.

Ruggiero, P., Kaminsky, G., and Gelfenbaum, G., 2008. Morphodynamics of high energy dissipative beaches: A decade of observations in the US Pacific Northwest. Ocean Sciences Meeting 2008, Orlando, FL.

Ruggiero, P., Maddux, T., Kaminsky, G., Palmsten, M., Holman, R.A., Cox, D., 2007. Field and Laboratory Investigations of Coastal Dune Morphodynamics, American Geophysical Union Fall 2007 Meeting, San Francisco, CA.

Ruggiero, P., **Adams, P.**, and Warrick, J., 2006. Mixed sediment beach processes: Kachemak Bay, Alaska, American Geophysical Union Fall 2006 Meeting, San Francisco, CA.

Ruggiero, P., Walstra, D.J., Lesser, G., and Gelfenbaum, G., 2006. Seasonal-Scale Nearshore Morphological Evolution, *Eos Trans. AGU*, 87(36), Ocean Sci. Meet. Suppl., Abstract OS52E-03.

Ruggiero, P., Gelfenbaum, G., and Kaminsky, G., 2005. Coastal evolution in the Columbia River littoral cell, American Shore and Beach Preservation Association Annual Meeting, San Francisco, CA.

- “The role of sea level rise and increasing storminess in PNW coastal change and flood hazards,” US Army Corps of Engineers and NOAA/Pacific Climate Information System (PaCIS) Workshop on Climate Change and Variability, San Diego, CA, July, 2010..
- “The role of sea level rise and increasing storminess in PNW coastal change and flood hazards,” PNW Climate Science Conference, Portland, OR, June, 2010.
- “The Role of Climate Change and Variability in the Erosion of the U.S. West Coast: Research, Management Tools, and Outreach,” Oregon coastal managers working group meeting, Beverly Beach, OR, April, 2010.
- “Is the intensifying wave climate of the U.S. Pacific Northwest of more concern than sea level rise?”, UW Climate Impacts Group, Seattle, WA, March 2010.
- “The relative role of sea level and an intensifying wave climate in increasing coastal change and flood hazards,” Eleventh International Conference on Estuarine and Coastal Modeling, Seattle, WA, November, 2009.
- “The Role of Climate Change and Variability in the Erosion of the U.S. West Coast: Research, Management Tools, and Outreach,” Climate Adaptation Planning Information System workshop, Portland, OR August, 2009.
- “The relative role of sea level and an intensifying wave climate in increasing coastal change and flood hazards,” Oregon Climate Change Research Institute ‘mini talk’ – Corvallis, OR, June 2009
- “The Effect of Seawalls on Beaches: State of the Knowledge,” Puget Sound Shorelines and the Impacts of Armoring: State of the Science Workshop, Hood Canal, WA, May 2009.
- “Bathymetry survey assessment methodologies,” Wave amplification/safe navigation at the Mouth of the Columbia River workshop, Ilwaco, WA, April 2009.
- “The Role of Climate Change and Variability in the Erosion of the U.S. West Coast: Research, Management Tools, and Outreach,” Oregon Coastal Climate Projects Workshop, Corvallis, OR, April 2009.
- “Is the increasing wave climate of the U.S. Pacific Northwest of more concern than sea level rise?” Hatfield Marine Science Center Seminar Series, Newport, OR, February 2009.
- “Is the increasing wave climate of the U.S. Pacific Northwest of more concern than sea level rise?” OSU Geology Seminar Series, Corvallis, OR, December 2008.
- “Southern California Coastal Hazards Project: Extreme Value Analysis of Total Water Levels,” US Geological Survey Coastal Hazards Project Meeting, San Francisco, CA, December 2008.
- “Morphodynamics of Pacific Northwest Beaches: A Decade of Observations along the Columbia River littoral cell,” OSU Geography Seminar Series, Corvallis, OR, October 2008.
- “Morphological trends and flood probability of Empire Spit: Willapa Bay, Washington,” US Army Corps of Engineers, Coastal Engineering Research Board Fall meeting, Portland, OR, September 2008.

- “Morphodynamics of Pacific Northwest Beaches: A Decade of Observations along the Columbia River littoral cell,” OSU Marine Geology Seminar Series, Corvallis, OR, May 2008.
- “Mapping ‘Very Shallow’ (nearshore) Bathymetry with the Coastal Profiling System,” Oregon Seafloor Mapping Workshop, Corvallis, OR, March 2008.
- “Understanding and Predicting Coastal Change Hazards,” OSU Foundation meeting with Woodruffe Sawyer, San Francisco, CA, December 2007.
- “The Impacts of Climate Change on Coastal Hazards Along the US Pacific Northwest Coast,” Syiah Kuala University Darussalam Banda Aceh, Indonesia, November 2007.
- “Nearshore Beneficial Use Project Phase II Mouth of the Columbia River: Nearshore Bathymetry Field Data Collection and Analysis,” Sediment trends in Southwest Washington’s Nearshore Zone, A Science Policy Workshop, Ilwaco, WA, July 2007.
- “Modeling the impacts of wave climate and sediment supply variability on decadal scale shoreline changes along the Long Beach Peninsula,” trends in Southwest Washington’s Nearshore Zone, A Science Policy Workshop, Ilwaco, WA, July 2007.
- “Quantifying Errors in Shoreline Change Rates Due to Evolving Definitions of the Shoreline: Implications for California Change Rates,” OSU Nearshore Group Brownbag Seminar Series, Corvallis, OR, October 2006.
- “Climate Controls on the Processes of Erosion along the Pacific Northwest coast,” Pacific Region Integrated Climatology Information Products (PRICIP) Expert Teams Project Planning Workshop, San Francisco, CA, June 2006.
- “Understanding and Predicting Multi-Scale Coastal Change Hazards,” Oregon State University Geosciences Board of Advisors Meeting, Corvallis, OR, May 2006.
- “Quantifying Errors in Shoreline Change Rates Due to Evolving Definitions of the Shoreline: Implications for California Change Rates,” NOAA Coastal Services Center Shoreline Change Summit, Charleston, SC, May 2006.
- “Towards Understanding and Predicting Management-Scale Coastal Change,” Oregon State University Geosciences Seminar, Corvallis, OR, February 2006.
- “Coastal Sediment Budgets,” Alaska Coastal Erosion Workshop, Anchorage, AK, January 2006.
- “Intertidal Sand Wave Migration Along a Mixed- Sediment, Megatidal Coast, Kachemak Bay, Alaska,” US Geological Survey Pacific Science Center Seminar Series, Santa Cruz, CA, October 2005.
- “The Effect of Seawalls on Beaches: State of the (my) Knowledge,” USGS Puget Sound Project Meeting, Seattle, WA, March, 2005.

Grants and Contracts

- P. Ruggiero, “2010 Nearshore bathymetric data collection at Damon Point, WA”, Golder Associates, \$12,500, 7/15/10-10/31/10.

- P. Mote et al. (9 investigators), “Pacific Northwest Climate Decision Support Consortium”, NOAA RISA, (Ruggiero portion: \$35,000 of \$3,500,000), 9/1/2010-6/30/15.
- T. Ozkan-Haller and P. Ruggiero, “Nearshore Wave Predictions along the Oregon Coast”, Oregon Sea Grant, (Ruggiero’s portion \$42,919 of \$216,264), 3/1/2010 – 2/28/2012.
- P. Ruggiero, J.C. Allan, P.D., Komar, N. Wood, and P. Corcoran, “The Role of Climate Change and Variability in the Erosion of the U. S. West Coast: Research, Management Tools, and Outreach, NOAA Climate Office SARP Program, \$298,000, 07/01/08 – 06/30/10.
- E. Seabloom, S. Hacker, and P. Ruggiero, “Beach grass invasions and coastal flood protection: forecasting the effects of climate change on coastal vulnerability”, Environmental Protection Agency, (Ruggiero portion: \$156,279 of \$599,980), 07/08 – 06/11.
- S. Hacker, E. Seabloom, and P. Ruggiero, “Integrating invasion ecology and dune geomorphology to project coastal vulnerability in Oregon and Washington”, Oregon Sea Grant, (Ruggiero portion: of \$33,637 of \$179,971), 2/01/08 – 01/31/11.
- P. Ruggiero, “Impacts of climate change on coastal flood risk assessments”, Oregon Sea Grant, \$177,111, 2/1/2008 – 3/31/2011.
- D. Martin (UW), et al. (24 investigators), “Enhancing the Pacific Northwest Regional Coastal Ocean Observing System (RCOOS) of NANOOS”, NOAA, (Ruggiero portion: \$182,000 of \$6.5M), 10/01/2007 - 9/30/2011.
- P. Ruggiero, “Long term trends, variability, and extreme event characteristics of the Pacific Basin wave climatology”, East West Center, NOAA IDEA Center, \$190,000, 8/01/2007-03/31/2011. (contract renewed annually)
- P. Ruggiero, “MCR Open Coast Beach Data Collection, Analysis, and Archiving”, Washington State Department of Ecology, \$105,000, 7/1/2007 – 03/31/2011. (contract renewed annually)
- R. Holman and P. Ruggiero, “The Dynamics of Shoreline Natural Hazards”, US Geological Survey, (Ruggiero’s share \$222,514 of \$745,336), 06/01/06-05/31/11.
- P. Ruggiero, R. Holman, and J.C. Allan, “Baseline Observations and Modeling for the Reedsport Wave Energy Site”, Oregon Wave Energy Trust, (Ruggiero portion \$24,973 of \$69,000), 01/01/10 – 07/31/10.
- P. Ruggiero, “Analysis of wave transformation and runup, Coos County, OR”, DOGAMI, \$30,000, 09/09-12/09.
- T. Ozkhan-Haller et al., (6 investigators), “Baseline Observations and Modeling for the Reedsport Wave Energy Site”, Oregon Wave Energy Trust, (Ruggiero portion \$25,131 of \$164,000), 05/01/09 – 12/31/09.
- P. Ruggiero, “The purchase of a Trimble R7 Global Positioning System (GPS) Receiver to Augment Oregon State University’s Coastal Profiling System”, OSU College of Science Venture Fund, \$15,000, 03/01/09.

- Ruggiero, P., M.C. Haller, B. Menge, J. Nash, and G. Rilov, “Platform for a Physical/Biological Sampling System for the Nearshore Ocean”, Research Equipment Research Fund, Oregon State University, \$49,814 (funds not divided), 07/01/07-06/30/08.
- P. Ruggiero, “Model-Based Assessment of the Impacts of Climate Variability on the Erosion of the U.S. Pacific Northwest Coast”, Oregon Sea Grant, Program Development Grant, \$12,860, 10/01/06 – 09/31/07.
- P. Ruggiero, “Nearshore Beneficial Use Project Phase II, Mouth of the Columbia River – Nearshore Bathymetry Field Data Collection and Analysis”, Portland District, US Army Corps of Engineers, \$17,136, 6/01/06 – 9/31/06.

Professional Service and Leadership

- 2009 Invited Panelist –Mini-Symposia on Sea Level Rise, Eleventh International Conference on Estuarine and Coastal Modeling, Seattle, WA.
- 2008 Invited Participant – California Ocean Protection Council (OPC) Sea level Rise Erosion Mapping Workshop, San Francisco, CA.
- 2008 Invited Participant – US Geological Survey National Assessment Project Workshop, St. Petersburg, FL.
- 2007 Invited Participant – US Geological Survey National Assessment Project Workshop, St. Petersburg, FL.
- May, 2010 Presentation on climate change impacts on coastal hazards to Geosciences Board of Advisors, Corvallis, OR.
- May, 2010 Drafted ‘Environmental Hazards’ Position Description for Geosciences Department.
- April, 2009 Organized visit and seminar of Phil Osborne and Jessica Cote, Golder Associates, Marine Geology Seminar Speaker.
- Nov., 2009 Organized visit and seminar of Dr. Curt Peterson, Portland State University, Geology Seminar Speaker.
- Nov., 2009 Organized visit and seminar of Dr. George Kaminsky, WA. Dept. of Ecology, Geology Seminar Speaker.
- October, 2009 Organized visit and seminar of Dr. Rob Witter, Oregon Department of Geology, Geology Seminar Speaker.
- October, 2009 Organized visit and seminar of Dr. Hilary Stockdon, US Geological Survey, Geology Seminar Speaker.
- October, 2009 Organized visit and seminar of Dr. Jon Warrick, US Geological Survey, Geology Seminar Speaker.
- October, 2009 Organized visit and seminar of Dr. Guy Gelfenbaum, US Geological Survey, Geology Seminar Speaker.
- October, 2009 Organized visit and seminar of Dr. Ray Wells, US Geological Survey, Geology Seminar Speaker.

- May, 2006 Presentation on coastal hazards to Geosciences Board of Advisors, Corvallis, OR.
- Dec., 2007 Presentation on coastal hazards during OSU Foundation meeting at Woodruffe Sawyer, San Francisco, CA.
- 2010 FRA search committee (Civil Engineering, Haller)
- 2010 Author of Coastal Impacts Chapter of Oregon Climate Change Research Institute's 2010 Climate Assessment Report to Oregon State Legislature.
- 2009 Co-organizer/co-convener of 'Oregon Coastal Climate Projects Workshop,' Corvallis, OR.
- 2008 Invited participant to natural resource and hazards round table discussion with Dr. Vicki McConell, Director, Oregon Department of Geology and Mineral Industries organized by the OSU Institute for Natural Resources, Gail Achterman, Director.
- 2007 Invited Participant in 4 hr Media Training Program, OSU University Advancement. These 3 ½-hour training sessions involve 8 participants each and provide guidance on how to interact with media more successfully. Included are tips on understanding media dynamics in the modern, "24-7" news cycle, crisis communications and more.
- 2009 Co-convener and Chair, GSA Annual Meeting Special Session on Improving Coastal Hazards Risk Mitigation through Advances in Coastal Geomorphology and Morphodynamics, Portland, OR.
- 2009 Co-leader, GSA Annual Meeting Fieldtrip, Coastal Geomorphology, Hazards and Management Issues along the Pacific Northwest Coast of Oregon and Washington, Portland, OR.
- 2007 Co-convener and Chair, AGU Fall Meeting Special Session: Coastal Geomorphology and Morphodynamics, San Francisco, CA.
- 2007 Invited Session Chair, Coastal Sediments 2007, New Orleans, LA.
- 2009- Technical Advisor to 'Marine Invest' group as part of the Natural Capital Project
- 2008 -2009 Member, American Geophysical Union's Sediment and Landscape Dynamics Technical Committee
- 2005 Member, U.S. Geological Survey Research Grade Evaluation Panel
- "The role of sea level rise and an intensifying wave climate in coastal change and flood hazards," Oregon Shores Conservation Coalition 2010 meeting, Coos Bay, OR, May, 2010.
- "Understanding and Predicting Coastal Change Hazards," Garfield Elementary School Lego Robotics Club, Corvallis, OR, November 2008.

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