Selected Bibliography and Internet Resources

Further Reading

The "undersea world of GIS" currently enjoys a constant stream of publications that follow the latest developments in this dynamic new field. Some of the earliest papers (late 1980s, early 1990s) were published almost exclusively in oceanographic or earth science journals, but recent works appear more frequently in specialty GIS journals. The first complete book about ocean GIS was published by Taylor & Francis in late 1999, with a second printing appearing in 2000. In addition to perusing the sources below, a good starting point is the "Library" section of the ESRI Virtual Campus, at *campus.esri.com*. Included there is an online annotated bibliography containing thousands of references to GIS-related journal articles, as well as a "Technical Reports" link to complete texts of hundreds of conference papers and technical reports. And finally, visitors to the ESRI Virtual Campus may enjoy the excellent virtual course by Genevieve Healy, *Integrating Marine Science GIS into a K-12 Classroom*.

Books and Workbooks

Wright, D.J., and D.J. Bartlett (eds.), 2000. *Marine and Coastal Geographical Information Systems*, Research Monographs in GIS Series, Taylor & Francis, London, 320 pp., *dusk.geo.orst.edu/book*.
Launched as a project to mark the United Nations International Year of the Ocean (1998), and supported by the International Geographical Union's Commission on Coastal Systems, this book covers the fundamental issues of representation and data modeling, applications, and institutional issues for marine and coastal GIS, including commentaries on the reliability of data retrieved by various mapping and sampling instruments, and guidelines for avoiding common mistakes in applying GIS to marine and coastal data.

Convis, C.L., Jr. (ed.), 2001. *Conservation Geography: Case Studies in GIS, Computer Mapping, and Activism*, ESRI Press, Redlands, California, 219 pp.
An impressive compilation of the recent work by scores of nonprofit organizations and conservation groups worldwide who are apply GIS to a host of environmental problems and conservation issues. There is a section entitled *Marine Geography*, compiled and introduced by Joe Breman of ESRI's Marine Conservation Program, and featuring the work of Florida's Dolphin Ecology Project, the International Marinelife Alliance, Canada's Bay of Fundy Resource Centre, the USGS Glacier Bay Field Station in Alaska, the Puget Sound Esutary Habitat Program, the Marine Conservation Biology Institute, Los Angeles County's Stream Team, the Center for

Mzrine Conservation, The Surfrider Foundation, the New England Aquarium, the Oceanic Resource Foundation, Woods Hole Oceanographic Institution, and the FGDC Marine and Coastal Spatial Data Subcommittee. A second volume is forthcoming.

Earle, S.A., in press. *The National Geographic Atlas of the Ocean*, National Geographic Society, Washington, D.C. (due out Fall 2001).
National Geographic Society Explorer-in-Residence Dr. Sylvia Earle follows up her highly successful books *Wild Ocean: America's Park Under the Sea* and *Dive: My Adventures in the Deep Frontier* with this offering, the first collection of oceanographic maps, images, and information ever published by the Society. Dr. Earle developed the atlas in cooperation with NOAA, NASA, and the U.S. Navy. Accompanying the book is a geography skill and standards guide for secondary school teachers that includes a section on GIS.

Fisher, W.L. and F. J. Rahel, in press. *Geographic Information Systems in Fisheries*, American Fisheries Society, Bethesda, Maryland (due out late 2002).
This book will discuss challenges of using GIS in aquatic environments and presents applications of GIS for freshwater and marine fisheries.

Lang, L., 1998. *Managing Natural Resources with GIS*, ESRI Press, Redlands, California, 132 pp.
Presents several case studies of real organizations using GIS to address pressing issues in natural resource management, including coastal protection.

St Martin, K. (ed.), 1993. *Explorations in Geographic Information Systems Technology, Volume 3: Applications in Coastal Zone Research and Management*, Clark Labs for Cartographic Technology and Analysis, Worcester, Massachusetts and United Nations Institute for Training and Research (UNITAR), Geneva, Switzerland.
This is an Idrisi/UNITAR workbook with training exercises on coastal applications of GIS.

Valavanis, V. D., in press, *Geographic Information Systems in Oceanography and Fisheries,* Taylor & Francis, London, UK (due out March-April, 2002).
This book will present a summary of GIS concepts applied to fisheries and physical oceanography with major sections focusing on marine GIS applications for cephalopod resources in European seas and the SW Atlantic. Also included will be programming codes and subroutines for the applications described.

Journals
Although there is still no single journal devoted entirely to ocean GIS, *Marine Geodesy* has perhaps come the closest, having offered three special issues on marine and coastal GIS in 1995, 1997, and 1999 (vol. 18, no. 3; vol. 20, nos. 2-3; and vol.22, no. 2). *Marine Geodesy* is published by Taylor & Francis, and is searchable at *www.tandf.co.uk/journals/tf/01490419.html*. Other journals that often cover marine and coastal applications of GIS include:

Computers, Environment & Urban Systems, published by Elsevier, is searchable at *www.elsevier.com/inca/publications/store/3/0/4*.

Computers and Geosciences, published by Elsevier, is searchable at
www.elsevier.nl/locate/cgonline.

GEOWorld (formerly *GISWorld*), *GEOEurope*, and *GEOAsia Pacific*, are glossy trade
journals published by Adams Business Media, and available at
www.gw.geoplace.com/gw,
www.gw.geoplace.com/ge, and
www.gw.geoplace.com/asiapac.

Geospatial Solutions (formerly *GeoInfo Systems*) is another glossy trade journal,
published by Advanstar Communications, Inc., and available at:
www.geoinfosystems.com.

Integrated Coastal Zone Management, published by ICG Publishing Ltd., is searchable at
www.iczm.org.

International Journal of Geographical Information Science, the premiere academic
journal in the fields of GIS and GISci and published by Taylor & Francis, is searchable at
www.tandf.co.uk/journals/tf/13658816.html.

Journal of Coastal Research, published by the Coastal Education and Research
Foundation, Inc., is searchable at
www.cerf-jcr.com.

The Professional Geographer, published by the Association of American Geographers,
carried a special issue on "Ocean Space" in 1999 (vol. 51, no. 3). More information on
the journal may be found at *www.aag.org*.

Sea Technology, published by Compass Publications, is a leading glossy trade journal of
ocean engineering, design, equipment, and services. It is searchable at:
www.sea-technology.com.

Surveying and Land Information Systems, published by the American Congress on
Surveying and Mapping, carried a special issue on coastal GIS in 1998 (vol. 58, no. 3). It
is searchable at:
www.acsm.net/publist.html.

Transactions in GIS, published by Blackwell Publishers, is searchable at
www.blackwellpublishers.co.uk/journals/tgis.

Conferences and Proceedings

Happily, there are now several conferences devoted entirely to coastal GIS. The deep
ocean (marine) community is much smaller and tends to present research results either at

oceanography conferences, or at vendor user conferences with special sessions on ocean research and management.

American Geophysical Union (AGU), Fall or Spring Meetings, held annually in San Francisco and Boston respectively, *www.agu.org/meetings*.
These meetings have had occasional papers or posters involving marine/coastal GIS. The AGU is one of the world's largest scientific societies for specialists in earth, ocean, atmospheric, and planetary sciences. Proceedings from the AGU are published as *Eos, Transactions of the American Geophysical Union*. The society also co-sponsors, with the American Society of Limnology and Oceanography, the Ocean Sciences Meeting, held annually at different sites.

Caris GIS User Conferences, New Orleans, Louisiana, *www.caris.com*.
In the early 1990s, Caris GIS was the first commercial marine GIS package to be broadly released in North America, and continues to enjoy success, particularly within the Canadian hydrographic community. Proceedings of these conferences are available on CD-ROM from Caris.

Coastal GeoTools, NOAA Coastal Services Center, Charleston, South Carolina, *www.csc.noaa.gov/GeoTools*.
The Coastal GeoTools conference series began in 1999 and will be held biennually in Charleston. The event is designed to help coastal resource managers make better use of spatial technology, particularly GIS, the Internet, remote sensing imagery, metadata, and GPS. Proceedings of these conferences are available from the web site above or on CD-ROM.

Coastal Zone Canada, held at different sites annually by the Coastal Zone Canada Association, *www.dal.ca/aczisc/czca-azcc*.

Coastal Zone (U.S.), held at different sites biennially, *www.csc.noaa.gov/cz2001*.
This event is now the largest meeting of coastal resource managers in the world.

CoastGIS, an international symposium held at different sites in various years, *www.coastgis.org*.
Halifax, Canada, was the site for the 2001 symposium, which built on the successes of previous gatherings in Cork, Ireland; Aberdeen, Scotland; and Brest, France.

ESRI User Conference: Coastal, Ocean, and Marine Resources Track, held annually in San Diego, California, *www.esri.com*.

PACON (PAcific CONgress on Marine Science and Technology), held at different sites annually, *www.hawaii.edu/pacon*.
PACON 2001 was held in San Francisco and featured a session on marine and coastal GIS within the "Ocean Science and Technology" track.

OCEANS, held at different sites annually by the IEEE Oceanic Engineering Society and the Marine Technology Society, *www.mtsociety.org/conferences/index.cfm*.

Web Sites

Many of the references above include accompanying web sites, but the following sites provide a wealth of additional resources in terms of data, publications, case studies, and tools:

Annotated Bibliography of Coastal GIS (updated every two years)
www3.csc.noaa.gov/gisprojects/biblio

ArcGIS Marine Data Model
dusk.geo.orst.edu/djl/arcgis

Davey Jones Locker
dusk.geo.orst.edu/djl/links.html
A fairly complete listing of web sites focused on marine/coastal GIS, as well as seafloor (seabed) mapping and visualization, updated almost daily. At the time this book went to press, there were over 70 links to marine/coastal GIS resources and nearly 80 to seafloor mapping sites.

ESRI Marine Conservation Page
www.esri.com/conservation/links/marine1.html
Seven pages of useful, annotated links to sites of interest for ocean mapping/GIS, ocean GIS scholarly papers and ESRI conference proceedings, and public ocean conservation and GIS data for download.

Florida Marine Research Institute (FMRI) GIS and Mapping
www.floridamarine.org/features/category_main.asp?id=1153
FMRI was selected from more than 60,000 organizations worldwide to receive a 2000 Special Achievement Award in GIS from ESRI, for their effective use of GIS in marine conservation.

FMRI's Statewide Ocean Resource Inventory (SORI)
ocean.fmri.usf.edu/ims/sori

Oceansp@ce
www.oceanspace.net
This site is now among the world's largest online newsletters of marine science and ocean technology, including many job listings and announcements pertinent to marine/coastal GIS.

Nautical Data International, Inc.
www.ndi.nf.ca
The company specializes in the production and distribution of digital hydrographic and other data products to serve the needs of GIS users.

NOAA NOS Office of Coast Survey, Electronic Navigational Charts
chartmaker.ncd.noaa.gov/ocs/enc/vector1.htm

NOAA Pacific Marine Environmental Laboratory Visualizations Page
www.pmel.noaa.gov/visualization

SEA-GIS Listserv, one of the world's largest listservs for discussion of marine and coastal GIS issues, data, employment, etc.
listserv.heanet.ie/sea-gis.html

Sylvia Earle at the 1999 ESRI Special Ocean Exhibition
www.esri.com/news/arcuser/1099/deepness.html

Some Ocean GIS Data Sites
The URLs for these sites may change in the future, but one may always do a search for the titles below on any major Internet search engine, such as Yahoo, Altavista, Google, etc.

Central Coast Joint Data Committee (California)
www.centralcoastdata.org

Cook Inlet Information Management & Monitoring System (Alaska)
info.dec.state.ak.us/ciimms

CoastBase, "the European Virtual Coastal and Marine Data Warehouse"
www.coastbase.org

Delaware Spatial Data Clearinghouse
gis.smith.udel.edu/fgdc2/clearinghouse

Dynamic Estuary Management Information System (DEMIS, Oregon)
www.lcd.state.or.us/coast/demis/core.htm

Fagatele Bay National Marine Sanctuary (American Samoa) GIS Data
dusk.geo.orst.edu/djl/samoa

Federal Geographic Data Committee (FGDC) National Geospatial Data Clearinghouse
130.11.52.184

Geography Network
www.geographynetwork.com

Gulf of Mexico GIS and Internet Map Server (USGS)
sheba.er.usgs.gov/gulf

InfoRain (Pacific coast data from Ecotrust)
www.inforain.org

National Geophysical Data Center's NOAA Server
www.ngdc.noaa.gov/NOAAServer

NOAA Coastal Services Center
www3.csc.noaa.gov/CSCweb/tempProdCat.asp

NOAA Coastal Services Center Clearinghouse
clearinghouse.csc.noaa.gov/NOAA_CSCgateway.html

NOAA CoastWatch Satellite Data
cwatchwc.ucsd.edu/data.html

NOAA Nautical Charts
anchor.ncd.noaa.gov/noaa/noaa.html

NOAA NOS Mapfinder
mapfinder.nos.noaa.gov

NOAA's Ocean Resources Conservation & Assessment (ORCA)
cammp.nos.noaa.gov/spo/prodlist.taf?alltype=3

NOAA Pacific Marine Environmental Lab, Vents Program (data from the Juan de Fuca
Ridge, 300 miles off the Oregon/Washington coast)
newport.pmel.noaa.gov/gis/data.html

Ocean Planning Information System (OPIS, southeast U.S.)
www.csc.noaa.gov/opis

Olympic Peninsula Clearinghouse (Washington)
cathedral.cfr.washington.edu/~chouse

Oregon Coast Geospatial Clearinghouse (Oregon)
buccaneer.geo.orst.edu

Protected Areas GIS (PAGIS, National Marine Sanctuaries and National Estuarine
Research Reserves)
www.csc.noaa.gov/pagis

Statewide Ocean Resource Inventory (Florida Marine Research Institute)
ocean.fmri.usf.edu/ims/sori

Teale Geographic Library (California)
www.gislab.teale.ca.gov/wwwgis /dataview.html

USGS EarthExplorer
earthexplorer.usgs.gov

USGS National Mapping Geospatial Data Clearinghouse
mapping.usgs.gov/nsdi

Wisconsin Coastal Clearinghouse
www.lic.wisc.edu/coastgis