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The Newsletter of the International Coastal Atlas Network

UNESCO Intergovernmental Oceanographic Commission provisionally accepts ICAN as an official IODE Project

The International Coastal Atlas Network (ICAN) has been accepted provisionally by the UNESCO Intergovernmental Oceanographic Commission (IOC) as an official IODE (International Oceanographic Data and Information Exchange) Project, at the recent IODE Officers Meeting, held between 30 January and 2 February 2012. An official announcement will follow, from IOC IODE, as soon as the formal paperwork has been completed. ICAN already supports two major regional coastal or marine atlas projects of IOC, the African Marine Atlas and the Caribbean Marine Atlas projects.

ICAN 6

The sixth international workshop for the International Coastal Atlas Network will be held in conjunction with CoastGIS 2013 in June 2013 on the campus of the University of Victoria in Victoria British Columbia, Canada. Stay tuned for details.

Dawn Wright receives AAG Award.

ICAN co-chair and Esri chief scientist Dawn J. Wright, has received the Association of American Geographers (AAG) Presidential Achievement Award. Presented at the AAG annual meeting on February 28, 2012. The award recognizes Wright's outstanding work as a scientist, researcher, author, and advocate for marine conservation and for her contributions to geographic science.

"Dawn Wright is a researcher of exceptional achievement whose work highlights the remarkable breadth and diversity of contemporary geography," said AAG president Audrey L. Kobayashi. "Wright's work to build geospatial technology standards for ocean mapping has enabled the scientific community to share information and collaborate on research projects. She has championed geographic information systems for marine research that are laying the groundwork for more sustainable ocean resources policies. The AAG Presidential Achievement Award affirms the benefit her efforts have brought to geographic science."

Dawn is a founding member and Co-chair of the International Coastal Atlas Network. As chief scientist, Wright leads Esri's natural sciences efforts and drives the company's ocean and science initiatives. She is also a professor of geography and oceanography at Oregon State University, a fellow of the American Association for the Advancement of Science, and a fellow of Stanford University's Aldo Leopold Leadership Program in science communication.

"Dr. Wright's strong background in geographic information science and expertise in GIS [geographic information systems] have enabled her to bring greater perspective to scientists throughout the world who map and analyze terrains, ecosystems, and habitats," said Jack Dangermond, Esri president, "The AAG has been a force in promoting technology for geographic science. By honoring a capable scientist who is also skilled in geospatial systems affirms the association's commitment to a community that is expanding its approaches to research and analysis."

Congratulations Dawn! The members of ICAN always knew you were special.

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ICAN Technicalities

Activities of the ICAN Technical Team

Roy Lowry (rkl@bodc.ac.uk) and Adam Leadbetter (alead@bodc.ac.uk), BODC, Liverpool, UK, Declan Dunne (d.dunne@cmrc.ie) and Yassine Lassoued (y.lassoued@cmrc.ie) , CMRC, Cork, Ireland, Tanya Haddad (Tanya.haddad@state.or.us), Oregon Coastal Atlas Project, USA, Liz O'Dea (liz.odea@ecy.wa.gov) State of Washington Department of Ecology, USA

The development of ICAN semantics began with the assembly of a Coastal Erosion ontology to support semantically-enabled atlas layer discovery following the workshop at Corvallis in 2007. Semantically-enabled, or 'smart', discovery is where terms supplied by the search client are used to locate metadata that has been marked up using different but semantically related terms. A much quoted example is a search that returns datasets tagged 'rainfall' for a search term of 'precipitation'.

This work was based on strategies and technologies provided by the Marine Metadata Interoperability (MMI) initiative. The strategy adopted was to take local vocabularies and ontologies, convert them into Web Ontology Language(OWL) classes using tools like Protégé or TopBraid Composer and then map them to a global ontology, again comprising OWL classes, using the MMI VINE tool.

Some initial work, the conversion of local vocabularies from the Irish MIDA and Oregon coastal atlases into OWL, was completed but very little mapping work was done subsequently. The possibility was mooted that the OWL-based approach, particularly some of the tools, created a technological barrier that people were unwilling to surmount. Consequently, in the NETMAR project (see below) an approach was taken where tools such as Microsoft Excel were used to assemble the local vocabularies and the mappings as a series of spreadsheets. These were then imported into an Oracle database and exported by a Java software layer (the NERC Vocabulary Server or NVS) as a thesaurus conforming to the W3C Simple Knowledge Organisation System (SKOS) standard.

As a part of this work, the mapping between the Oregon Coastal Atlas and the ICAN Coastal Erosion Global Atlas was completed as shown in Figure 1. The resulting thesaurus is available as a SKOS document from the NVS at the URL http://vocab.nerc.ac.uk/scheme/ICANCOERO. The response returned by the vocabulary server is a SKOS document encoded in RDF-XML. However, a stylesheet has been included to facilitate human browsing of the resource. Hard-

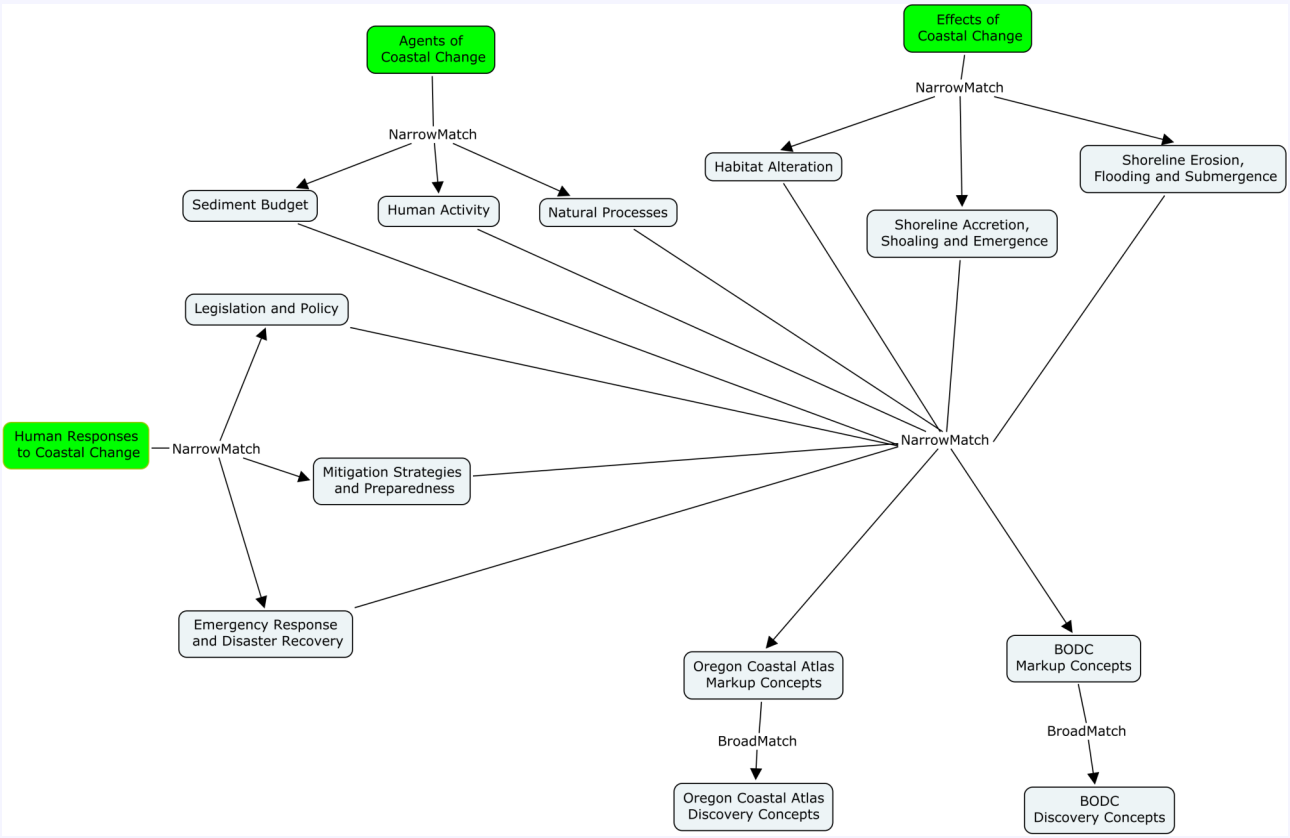


Figure 1. ICAN Coastal Erosion Mapping

core XML addicts can get their fix through 'View Source'. Further work to incorporate the MIDA vocabulary and some terms from the Wisconsin Coastal Atlas are planned for late spring and early summer of 2012. If anybody has other coastal erosion semantic resources they would like to be mapped in please contact either of the authors at BODC.

Following requests from the ICAN community at the ICAN 5 workshop, a draft ICAN Water Quality Global Thesaurus has been developed as shown in Figure 2.

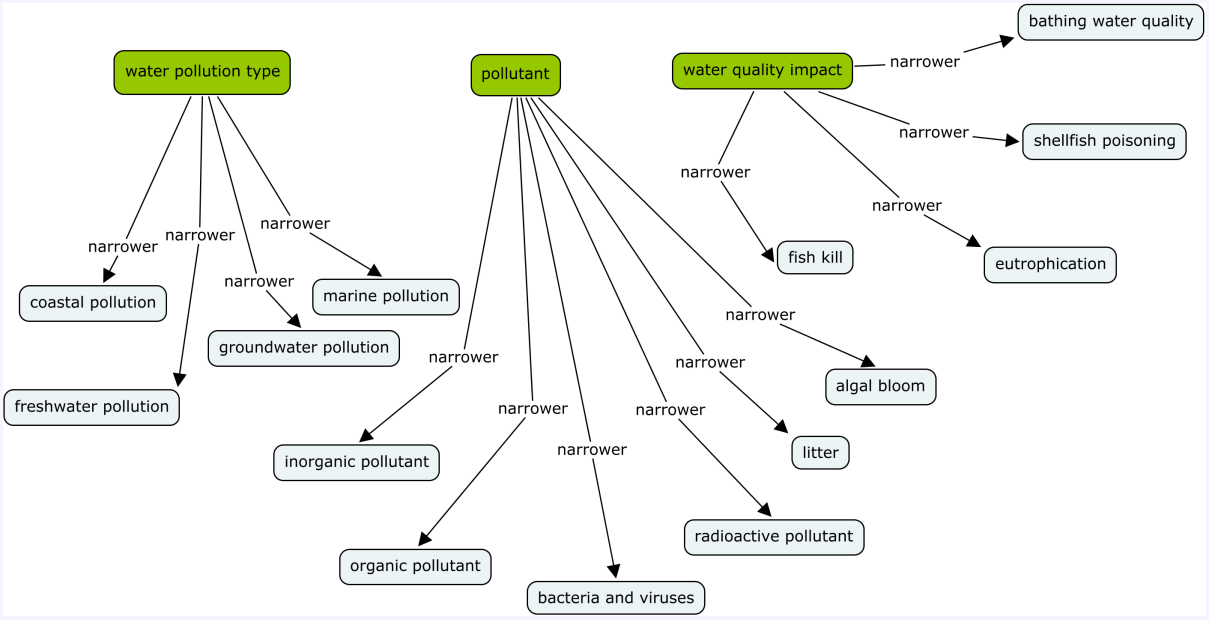


Figure 2. ICAN Water Quality Global Thesaurus

We would like to develop this into a full semantic discovery resource. However, we need local water quality vocabularies or ontologies for us to map. If anybody has these available, please get in touch with BODC. We would also like to hear from anybody interested in working with us to develop semantic resources for Marine Spatial Planning or Climate Risks.

ICAN Cookbooks

Following the ICAN workshop in Copenhagen in 2008, it was decided to provide technical training for costal web atlas developers in the form of cookbooks, especially for people who are starting a new atlas. While the "Coastal Informatics: Web Atlas Design and Implementation" handbook published by IGI-Global in 2011 covers the more theoretical aspects of costal web atlas development, the cookbooks are targeted to contain more practical step-by-step instructions. Consequently, the NETMAR project has produced cookbooks to contribute to this technical training material.

These are:

Understanding Semantics.

This cookbook provides a tutorial for those who wish to further investigate and make use of semantic web technologies. For data to be fully understood in a distributed system, they must be labelled (or "marked up") accordingly. Either the label used throughout the system must use a common set of phrases, or there must be a means of translating between the phrases used at different points of the system. The aim of the cookbook is to provide consistent phrases and to define the relationships in a formal manner, resulting in what is often called a "knowledge organization system".

In 1999 Tim Berners-Lee wrote "If HTML and the [World Wide] Web made all the online documents look like one huge book, [semantics] will make all the data in the world look like one huge database." The ICAN Understanding Semantics cookbook now provides a tutorial for those who wish to investigate and make use of these technologies, aimed specifically at members of the ICAN community.

Understanding Metadata.

This cookbook provides a tutorial for those who wish to better understand metadata. Geospatial metadata is "data about data". It contains information that documents the basic characteristics of a geospatial data resource. It can also document basic characteristics of geospatial applications or services. Metadata falls into broad categories where it answers the "what, why, when, who, where and how" questions about the resource.

Establishing a CSW metadata catalogue with GeoNetwork opensource.

This cookbook provides a tutorial for those who wish to better understand CSW (Catalog Services for the Web) metadata catalogues. It also contains initial pointers to establishing a CSW server using GeoNetwork opensource. A metadata catalogue stores and publishes collections or sets of metadata records describing data, services, and related information resources. Standards are required to enable interoperable searching of distributed metadata catalogues between organisations. This is achieved using the CSW standard.

Connecting your Atlas.

This cookbook provides a step-by-step guide explaining how to connect a local atlas as a node in the ICAN Prototype and NETMAR Demonstrator. It is a prototype atlas mediator which provides a common interface for accessing distributed local atlases, such as MIDA (Marine Irish Digital Atlas), OCA (Oregon Coastal Atlas), and Washington Coastal Atlas (WCA). It uses a knowledge organization system (KOS) to improve data discovery by exploiting the semantics of keywords and allowing users to search data by "meaning" rather than by "mere keywords."

The four cookbooks are available in a single PDF file that is currently located at http://netmar.nersc.no/sites/netmar.nersc.no/files/NETMAR_D7.9.1_ICAN_Semantic_Cookbooks.pdf. The NETMAR team plan to update these cookbooks by June 2012. Please get in touch with CMRC if you wish to give us feedback.

ICAN Prototype and NETMAR Demonstrator

The ICAN Prototype and NETMAR Demonstrator provides a graphical user interface which aims to allow users to search data by meaning rather than by mere keywords. Using the ICAN semantic resources it will enable distributed search across local atlases, such as MIDA (Marine Irish Digital Atlas), OCA (Oregon Coastal Atlas), and Washington Coastal Atlas (WCA). The smart search and discovery client currently supports three features: ontology browsing, dataset smart search, and metadata visualisation. Data visualisation and data download are planned.

The search and discovery client helps the user find relevant datasets by allowing him to browse the ontology terms to find suitable search criteria. The ontology browser lists the defined themes, and by clicking on any one of them, their definition is shown along with related terms. From here, the user can inspect any of the related terms by clicking on them, or move on to searching by entering a keyword in the search field. For example, entering "temperature" will search the ontology for any semantically related terms, and display these with definitions inside the browser. When a user has found a suitable search term, he can enter it in the search field at the top of the Ontology Browser window. This will start the dataset smart search application. The search client will present a summary of all datasets matching the criteria, and the user can then click on any of the found datasets to get a full metadata listing for it.

The smart search and discovery client relies on two services: a semantic web service (SWS) and a CSW (Catalogue Service for the Web) mediator (CSWM), as shown in Figure 3. The semantic web service (SWS) provides a high-level interface for retrieving knowledge from the NETMAR ontologies. On top of the catalogue services, a CSW Mediator is responsible for handling metadata semantics and allows data discovery based on semantics.

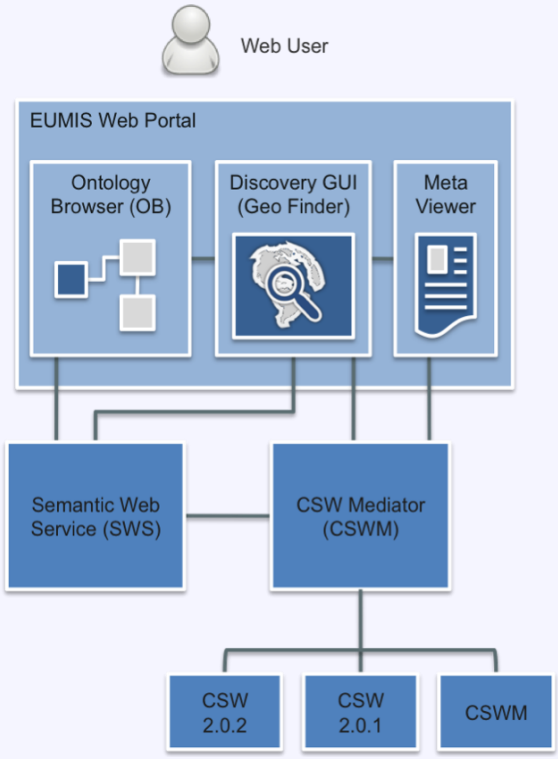


Figure 3. Smart search client components and services

A test version of the NETMAR Demonstrator is currently located at http://netmar.ucc.ie/discovery/. Please get in touch with CMRC if you wish to connect your atlas to the demonstrator or give feedback.

NETMAR

The Open Service NETwork for MARine Environmental Data is a 3-year project funded by the European Union under its FP7 programme that started in February 2010. The objective is prototype portal development using Liferay technology incorporating tools such as a viewer, semantic resource browser, CSW semantically-mediated search and WPS chain editor as portlets. ICAN was one of four demonstration pilots selected for the project. The work described above would not have been possible without the NETMAR funding.

Overview of the Caribbean Marine Atlas 2012

Introduction

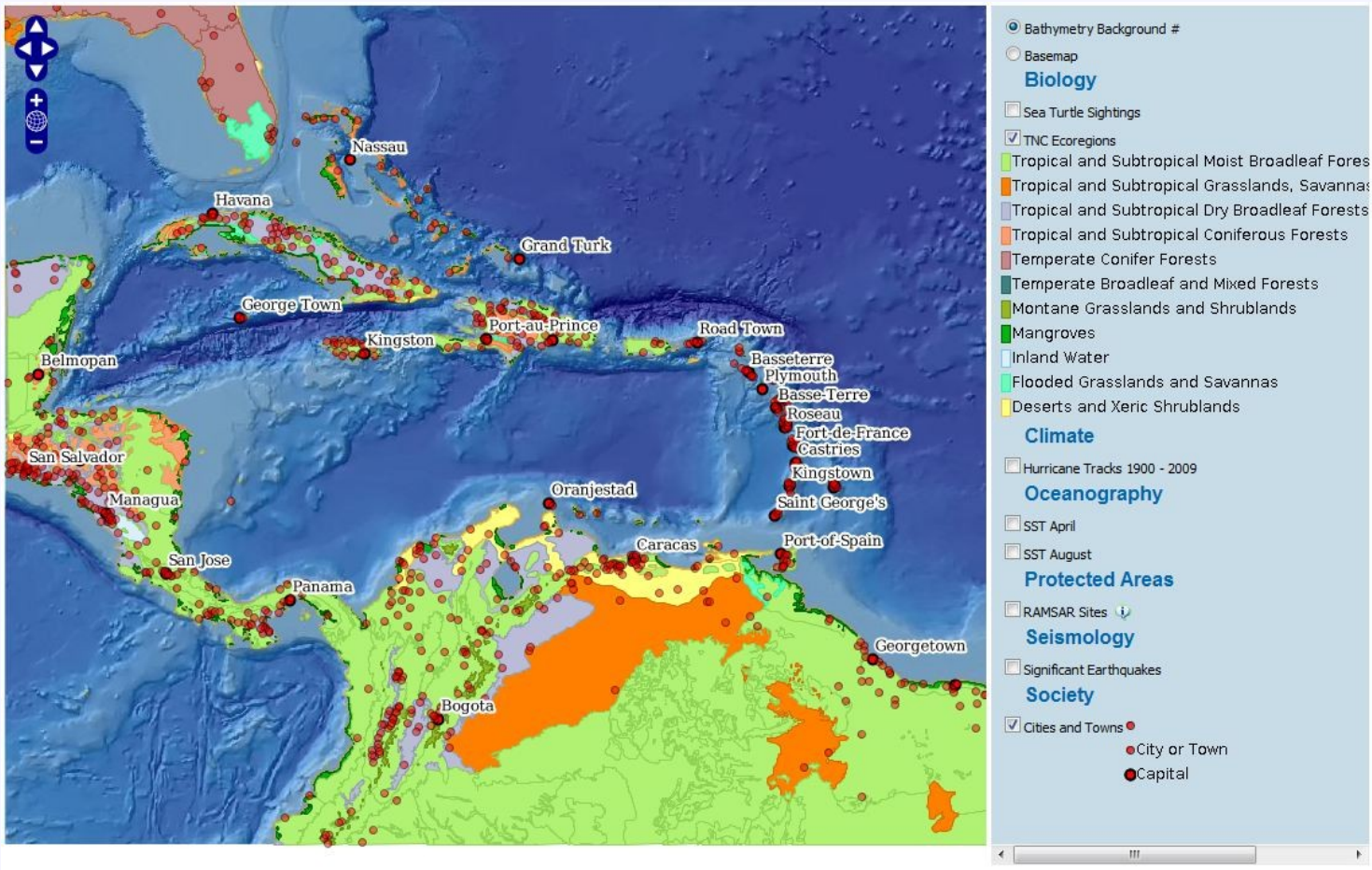
The Caribbean Marine Atlas (CMA) is a regional project involving several countries within the Wider Caribbean Basin in a joint effort to promote sound decision-making through access to high-quality coastal and marine spatial information. The purpose of the CMA is to identify, collect and organize available spatial datasets into an atlas of environmental themes for the Caribbean region. The project is currently under the sponsorship of the Intergovernmental Oceanographic Commission's (IOC) International Oceanographic Data and Information Exchange (IODE) and Integrated Coastal Area Management (ICAM) Programmes. The embodiment of the goal of the project is an online mapping and data management application available to environmental managers and other users both within and outside of the Wider Caribbean Region.

In addition, using the skills obtained through the capacity building component of the CMA project, participating countries are in the process of developing national marine atlases based on the structure and functionality of the regional atlas but focused on the national coastal/marine area management priorities of the respective states. Thus the CMA will, through its products and services available at the national level, directly contribute to the sustainable development and integrated management of marine and coastal areas in the region.

All programme activities under the project have been developed and conducted with the above factors as their *raison d'être*. As a result the CMA programme has the potential to be one of the most significant recent advancements in coastal area management through the development of tools and processes which promote actual fact-based decision making.

Accomplishments

The CMA project is currently in its second phase which began in late 2009 and has already achieved many of its primary goals. These include capacity building within the sphere of marine data management, the production of developer and user resource materials for CMA technologies, and the development of a basic web-based mapping application. Specific achievements and/or activities under these project areas are outlined below.



Capacity Building

A network of Caribbean data managers benefitted from IODE training courses in ocean data management, data mining and web atlas development conducted during phase 1 of the

CMA.

Specific training was given for atlas developers via the CMA Training Course on PostgreSQL, PostGIS and OpenLayers for Web-Based Atlas Development in Bridgetown, Barbados in April of 2011.

The development of web-based mapping applications has resulted in the exposure to and growing familiarity with several coding languages (Javascript, PHP, HTML, XML) and software platforms (GeoServer, GeoNetwork).

Development of Resource Materials

The main CMA website www.caribbeanmarineatlas.net is host to information on all of the training courses, planning meetings and national stakeholder meetings conducted as part of the CMA project

A user manual for the mapping application has been developed and is also available on the main site

Resource materials directly related to national atlas development efforts and other developer-specific materials are available in a section of the main website not open to the general public.

Mapping Application Development

The CMA mapping application has been constructed from three components:

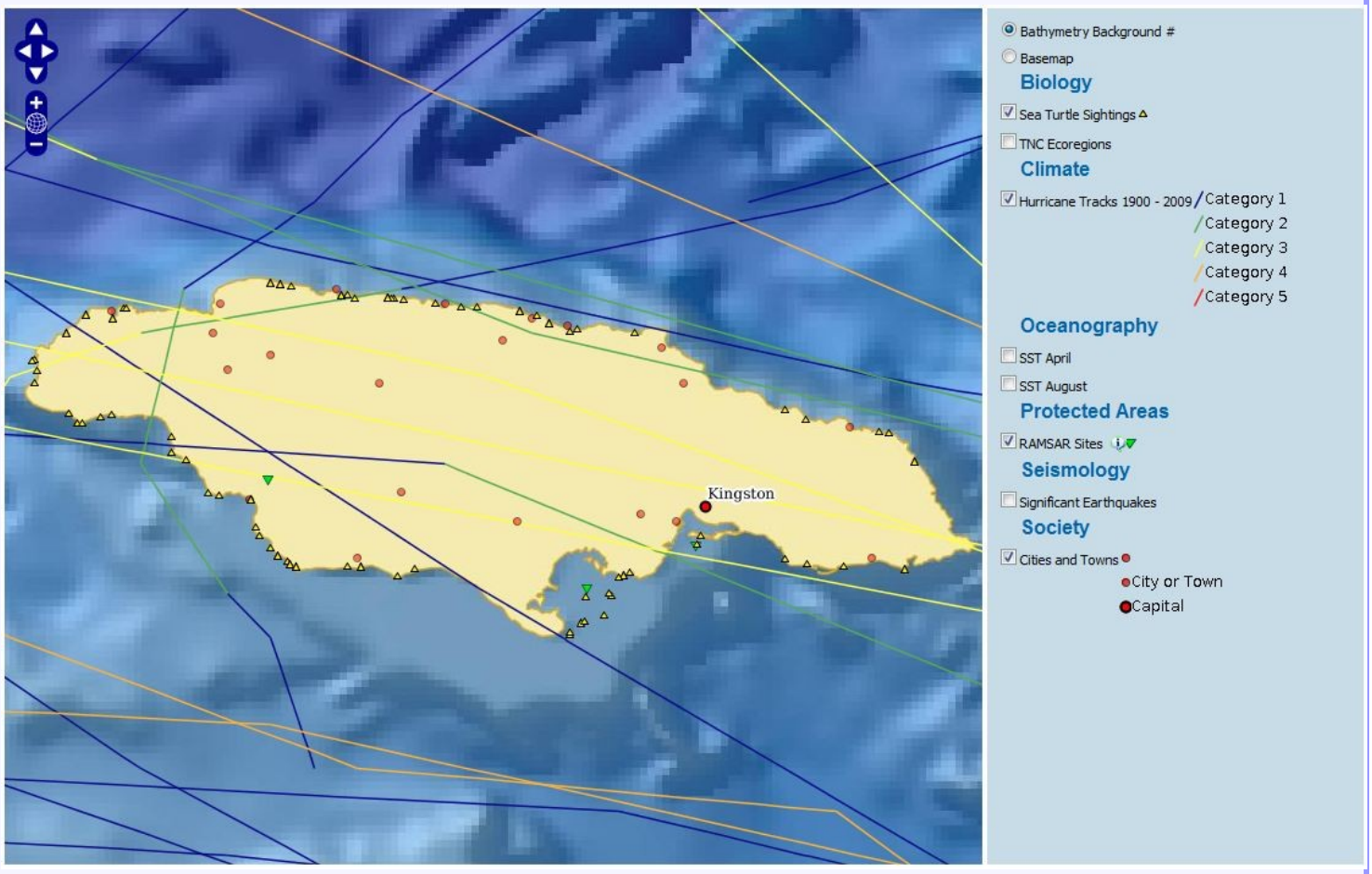
The web map server (**GeoServer**) http://geonetwork.iode.org/geoserver/web/ hosts the data available under the CMA project (and other IODE projects), publishes the data as a web map service (WMS) for use by the CMA mapping application, but also for any interested party.

The metadata catalog for CMA data (**GeoNetwork**) http://geonetwork.iode.org/geonetworkCMA/srv/en/main.home hosts the metadata information associated with published CMA datasets, allows users to search for datasets (and any other spatially enabled content) by geographic area.

The mapping application user interface (accessible via the **Map Page** tab on the main CMA site) allows users basic GIS control over available spatial datasets including query functionality, legends and links to metadata records.

Current Status of the CMA Project

There are several activities relating to the development of both the regional atlas and national atlases are currently being conducted, including:



The development of a code template for national atlases,

Improving the functionality of the regional

atlas,

Formatting and uploading additional datasets, and

Data gathering for national atlas development projects.

Future of the project

Between 2012 and 2013, several activities are expected to be completed to fulfill the goals of the CMA project, these include:

The rollout of several national coastal/marine atlases based on the CMA,

Additional national stakeholder meetings,

The improvement of functionality for both national and regional atlases,

Atlas user and developer training,

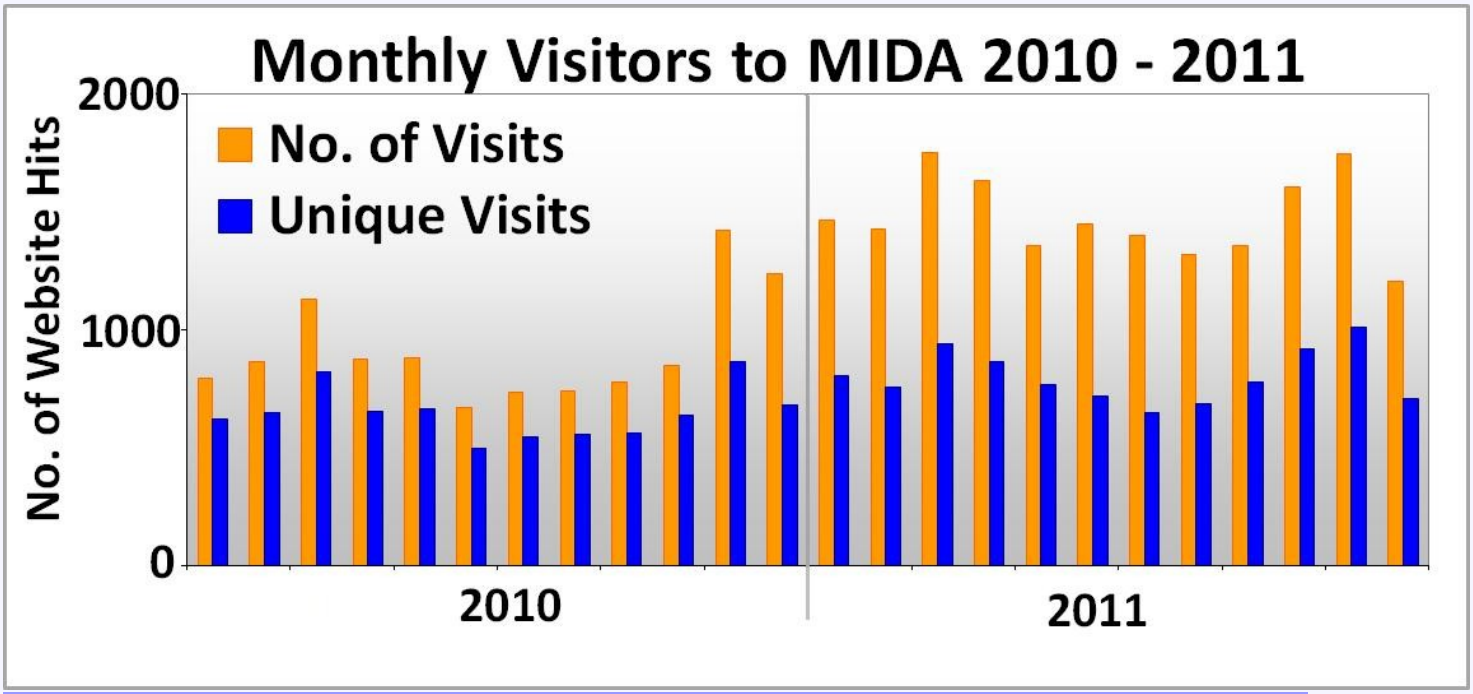
National-level atlas promotion, and

The development of an atlas sustainability strategy.

The Marine Irish Digital Atlas goes from strength to strength

The Marine Irish Digital Atlas (http://mida.ucc.ie) launched in 2005 is still increasing its user base. The figure shows how the total number of visits and the number of unique visitors increased into 2011. This is due to the ongoing effort of the MIDA team to ensure that the data in the atlas is up-to-date and that new data layers are being constantly added. This is in no small part due to the work of Ivan Portugues Molla and Hector Barco both of whom contributed to MIDA under funding from the EU's Leonardo da Vinci programme, which offers graduates the possibility to get relevant work experience outside of their home country in another EU State.

A sunnier climate eventually called Iban and Hector back home to Spain and while we miss them greatly, we are delighted to welcome David Roig Cervera, who started a MIDA internship under the European Socrates Erasmus programme in March 2012. This year is shaping up to be equally exciting as Coastal and Marine Research Centre, University College Cork, Ireland (CMRC) received funding from IODE for a MIDA facelift and technology upgrade, and subsequent transfer of this technology package to ODINAFRICA. The ODINAFRICA-IV project will use this technology for Coastal Web Atlas development and upgrade in many coastal countries of Africa contributing to the African Marine Atlas.



How to become a member of ICAN

Membership in ICAN is open to all interested parties who agree to the mission and objectives of ICAN, including organizations with an operational coastal web atlas, as well as individuals or organizations hoping to design and build a coastal web atlas in the future. To get access to the membership form found at http://icoastalatlas.net/member_signup send an e-mail to Dawn Wright or Ned Dwyer.

Maryland's Coastal Atlas Undergoes Face-lift and Rolls Out New Tools for Informing Coastal Planning and Decision-Making

Maryland's Chesapeake & Coastal Service (CCS) is improving the State's ability to access coastal data and tools that will help inform decision-making about coastal management with Maryland's Coastal Atlas. This online mapping and planning tool, developed to allow users to visually analyze and explore data for coastal and ocean planning activities, has recently undergone a number of exciting updates and enhancements that are slated for launch in March 2012.

Originally launched in June of 2008, the Coastal Atlas represented a significant overhaul from the *Maryland Shoreline Online* mapping portal supported by the Department of Natural Resources' Chesapeake & Coastal Service (CCS). Sparked by Governor O'Malley's enthusiasm for GIS technology as a tool for improved transparency, accountability, and communication, the Coastal Atlas was developed shortly after the roll out of Maryland iMap – a centralized collection of the most commonly used Maryland data layers, tools and services hosted in an ESRI ArcGIS Server environment. Maryland iMap makes these layers, representing the best data available to the public for free, accessible as web services so state and local governments don't have to store or host data while ensuring the layers look the same across all state mapping applications. Following the lead of the earliest Maryland iMap applications (like GreenPrint, AgPrint and StateStat), the Coastal Atlas was developed using ArcGIS Server and Adobe Flex technology allowing state and local officials to access the data/web services they want to display.

From October 2010 through March 2012, through funding from Maryland's Coastal Zone Management grant and with the help of developers/programmers at Towson University's Center for GIS and Maryland Environmental Service, CCS staff has worked to enhance the functionality and utility of the Coastal Atlas. A major overhaul to the Atlas's three mapping applications (Ocean, Shorelines, and Estuaries) has allowed the addition of new tools that enhance the user experience and allow for easier modification to include future enhancements.

The most noticeable enhancements to the Coastal Atlas are to the overall look and feel. The Atlas applications were updated to the FlexViewer 2.5 template and a uniform user interface was created for all three applications (see photo). The new interface allows for better organization of tools and icons clearing up valuable map space, contributing to an overall better experience. Other enhancements worth highlighting include: the creation of the Add Mapservice widget, which allows users to import custom mapservices as well as import, from pre-defined lists, any layer from the other Atlas applications; addition of the eDraw widget (developed by Robert Scheitlin) allowing users to choose the size, color, font and emphasis of text labels for drawings as well as the ability to save and load these drawings for future sessions; a revamp of the existing Identify tool that allows the user to choose between identifying from all layers or from a specific layer - increasing the ability of the end-user to select only pertinent information while decreasing the "clutter" of the old Identify results; creation of a new CBNERR Sites widget to display location and links to basic information on Chesapeake Bay National Estuarine Research Reserve Sites; creation of a new CELCP widget to display location and basic information about sites acquired through the Coastal and Estuarine Land Conservation Program (property name, year established, acreage, project type); development of an "Offshore Wind Roses" widget which displays a small image of a wind rose diagram and link to larger image; and the adaptation of an "Elevation Profiles" widget (developed by Mark Deaton) that was modified to show bathymetric profiles along user selected paths of either a straight line, polyline, or freehand line.

The remainder of the updates and enhancements were of the general housekeeping variety, taking advantage of the FlexViewer 2.5 template and new user interface to more intelligently organize tools, icons, and buttons in the available mapping space and to optimize the overall user experience. Examples include:

Developed a Splash Screen to display dis-

Utilized the Export Map widget (developed by Robert Scheitlin) to replace the existing Print widget. This widget allows the user to export a map to .jpg file, which can be used in presentations or documents, instead of just printing it;

Updated the "About" window to include information about our program and to include contact information and links to important websites; and

Revised and created custom geoprocessing widgets that automatically turns a specific layer we wanted to highlight on and off when the widget is opened or closed and allows the user to view information about them.

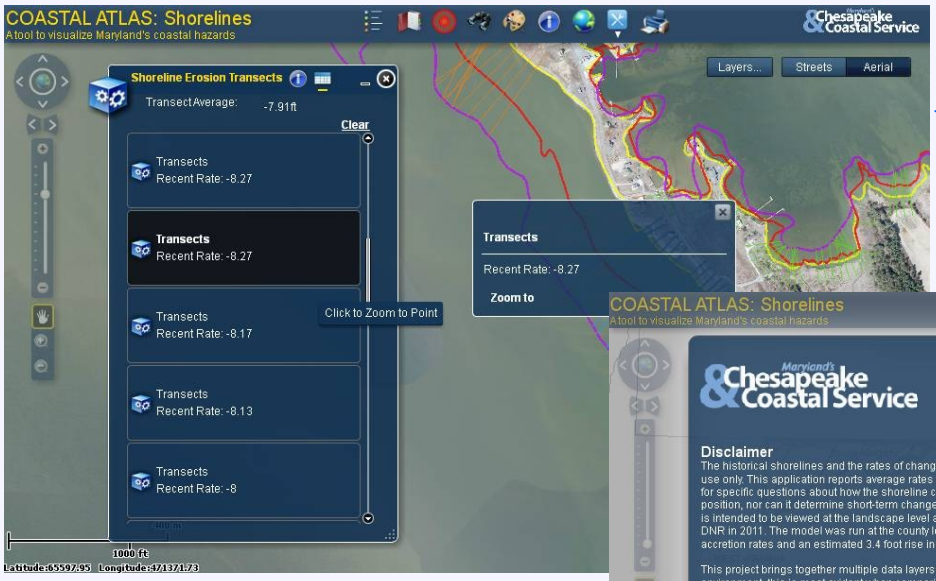
claimer information when each mapper is opened;

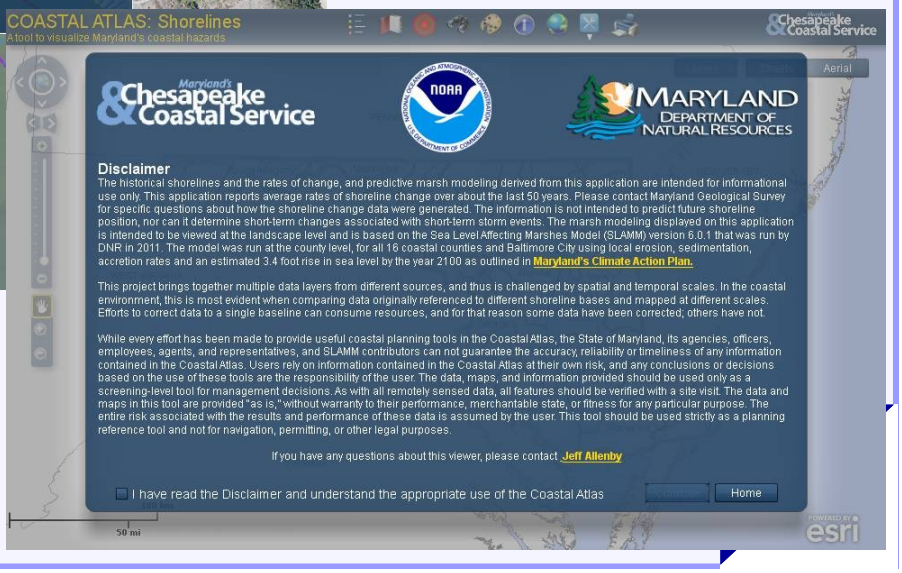
Removed the Layer List widget and replaced it with the "Layers…" button next to the Map Switcher. Also incorporated increased functionality to adjust layer transparency, move each layer forward or backward in the map, and access metadata;

Created a consistent user interface for all three mappers where the widget icons are all the same, in the same location, with the same instructions;

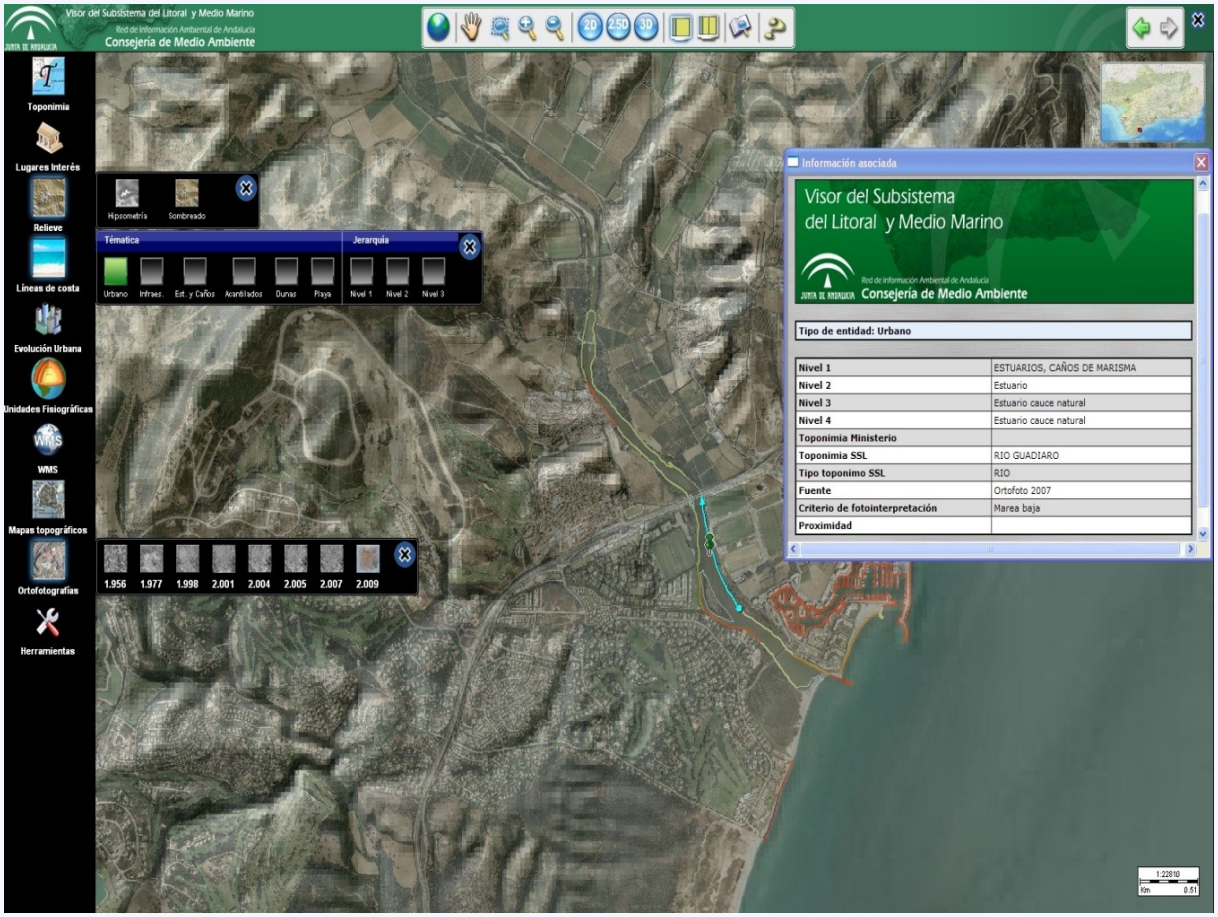
In addition to the Atlas face-lift, CCS has created a more comprehensive Coastal Atlas Training Manual that reflects the recent updates and enhancements and includes detailed instructions on how to use the mapping tools as well as some practice exercises and common applications. To supplement the training manual, a Coastal Atlas Training Video has also been produced for those who prefer click-by-click instruction from a narrated video.

For more information on Maryland's Coastal Atlas visit http://dnr.maryland.gov/ccp/coastalatlas/index.asp or contact Jeff Allenby with Maryland's Chesapeake & Coastal Service at jallenby@dnr.state.md.us. Those interested in learning more about Maryland iMap and other mapping tools developed by the State should visit: http://www.imap.maryland.gov/portal/.





Placed all custom geoprocessing tools in a drop-down menu located in the widget tray to clean up the user interface as well as to allow for a consistent user experience between applications despite the geoprocessing widgets being unique to each mapper.



Coastal and Marine Information System of Andalusia (Spain)
Environmental Information Network of Andalusia

Preparing a new atlas interface to be online soon!

The Environmental Information Network of Andalusia (REDIAM) will publish during 2012 a new coastal and marine atlas in Spanish and English with new functionalities and new contents. The new atlas interface will make easier all kind of search by citizens and technician using the Coastal and Marine Information System of Andalusia in their daily work.

Looking for new projects with our Portuguese colleagues!

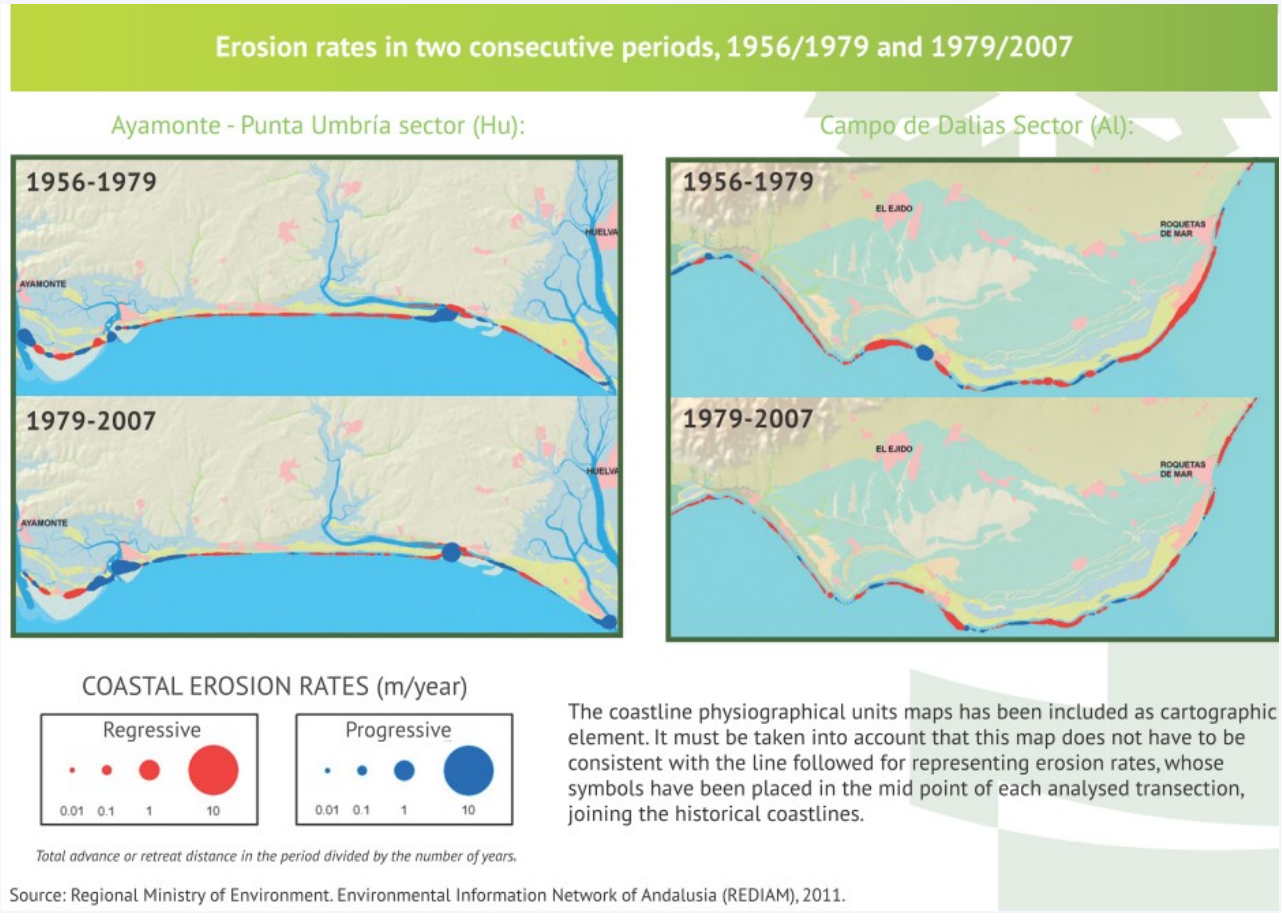
The Portuguese Geographical Institute and the Environmental Information Network of Andalusia (Spain) together with other partners from the Mediterranean have applied to the European Neighborhood Policy Instrument Call with the AgoraMedGIS Project to promote the sustainable and integrated planning and management of marine and coastal zones in the Mediterranean Basin, making available universal access to data and geographic information and improve knowledge, the sharing of information and articulation between stakeholders.

AgoraMedGIS - Marine and Coastal Mediterranean Basin Information System, is based on the "Ágora" concept, symbol of ancient Greece direct democracy. "Ágora" was the place where the citizens use to meet and share and discuss ideas and issues that were important to all. In this sense, the tool that will be developed by the partners allows the searching for multidisciplinary information that exists about a certain place, enabling the user to filter it accordingly to his own interest or focus, or selecting data by project type, activity or thematic area and related to the Mediterranean Basin in general or to specific zones. AgoraMedGIS will transform the entire Mediterranean basin in a small village in the domain of data.

Erosion rates 1956 – 2007 in our sandy beaches!

The erosion rates constitute a very valuable indicator for understanding coastal dynamics and its effects produced by river regulations (mainly by damming them) and the construction of coastal infrastructures.

In this sense, negative erosion rates (regressive coast) show more vulnerability; and positive erosion rates (progressive coast) show less vulnerability. After calculating the erosion rates for the entire Andalusian coast during the periods 1956-1979 and 1979-2007, some stretches have been chosen and validated as being of special interest due to the intensity in coastal dynamics: the coast of Huelva, the



beaches/barrier of the mouth of the San Pedro river, Velez river delta, Guadalfeo river mouth, Adra-Albuñol and Huarea rivers, as well as the coast of Campo de Dalias.

The first sector, located between the Huelva cities of Ayamonte and Punta Umbría, is characterised by having to highly changing zones at the mouth of the Guadiana and at the end of the Flecha de El Rompido and Flecha de Punta Umbría. In the sector between Mazagón and the mouth of the Guadalquivir river there is the beach and moving dunes complex of the Doñana National Park, one of the most characteristic examples of coastal progradation in Andalusia. On the other hand, the mouth of the Guadalquivir river is the most active stretch in this sector, reaching the positive rates of 10 m/year in the period 1956-1979 and up to 19 m/year in the period 1979-2007. In the province of Cadiz, in the beaches/ barrier of the mouth of the San Pedro river, it is worth remarking that the building of an industrial and port area altered completely the dynamics of the zone, which went from positive rates in the period 1956-1979 to erosion rates of up to -16 m/year in the period 1979-2007.

In the Mediterranean coast, at the mouth of the Velez and Guadalfeo rivers, there are two cases of deltas formed previously to the built-up of river mouth channels, which results in a general regression in almost all the stretches of both sectors.

The delta of Albuñol and Huarea rivers is different to the previous example, as the channelling of the mouth took place after 1956, and it does not have dams. For this reason an important progradation is shown in the first period.

The case of the Adra river, in the province of Almeria, is a "double delta" resulting from the artificial deviation of the original bed before 1956, which results, except in the oriental sector between 1956 and 1979, in negative rates in both periods. Finally, the case of the Campo de Dalias sector is highly singular, mainly because it is a stretch that receives no direct sedimentation from important river beds or watercourses. This, together with the urban growth of the 70's, with the construction of ports and with the extraction of sand for greenhouses, has contributed to the fact the coast is, in both periods, mostly erosive.

Alejandro Iglesias Campos
Government of Andulsia / Regional Ministry of the Environment

aiglesia@agenciamedioambienteyaqua.es

The NC COHAZ Decision Portal Conveys Critical Data and Useful Mapping Products

The coast of North Carolina is at risk to a diversity of hazards (e.g., storm surge, sea-level rise), and these hazards potentially can have major consequences (financial and otherwise) for people who live, work, and recreate in impacted areas. There has been much research conducted on coastal hazards affecting North Carolina and their ramification, but information is scattered and often hard to track down. Also, it is typically not in a form suitable for public consumption. To improve on these issues, a team of researchers from the departments of Geological Sciences and Geography at East Carolina University (ECU) has worked with others at ECU and around the state to develop a web-based information site on coastal hazards and related research; it is called the North Carolina COastal HAZards (NC COHAZ) Decision Portal. At the site (http://www.coastal.geology.ecu.edu/NCCOHAZ/), a variety of information on coastal hazards in the state (particularly the northeastern portion) has been coalesced.

Visitors to the web portal are welcomed by a colorful banner at the top of the web page (Figure 1). On the main entrance page, "news bytes" are regularly updated using an integrated blog; these short pieces communicate interesting hazard-related stories or information and usually feature a photograph, map or video. The "Maps and Visualizations" page provides links to a variety of tools and products on topics such as current hazards, shoreline erosion and inlet-opening potential (Figure 2). Several user-friendly mapping tools have been created to allow researchers, managers and the public to explore maps of immediate or potential hazards (e.g., sites of flooding, strong winds, large waves). The approach used for presentation and validity of some of the tools can be argued (e.g., erosion projections). Nevertheless, the creators believe it is better to have this information out and available where it can be considered, rather than hidden in hard-to-find journals or difficult-to-obtain reports.

Please take some time to visit the NC COHAZ Decision Portal. The developers have a variety of ideas on

Figure 1: The banner from the NCCOHAZ Decision Portal. At left is a montage of coastal hazard images which is explained on the web site: http://www.coastal.geology.ecu.edu/NCCOHAZ/.

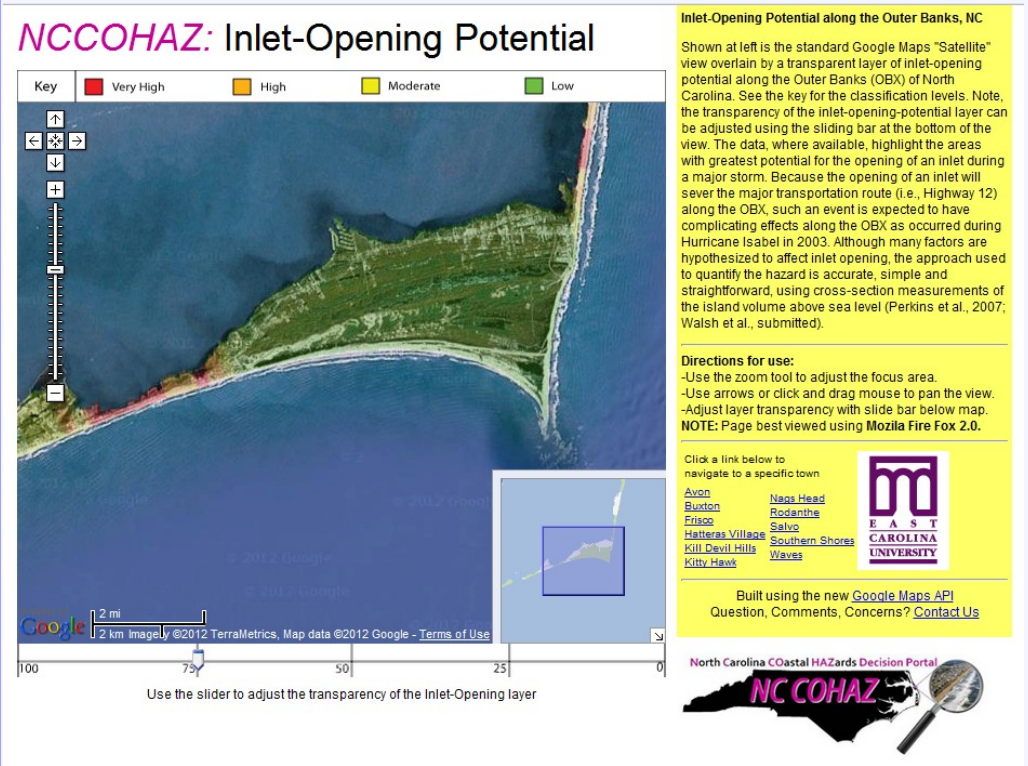


Figure 2: An example NCCOHAZ tool available to the public. This Google Maps API-based tool is designed to allow anyone to view the risk of inlet-opening potential along the Outer Banks. These GIS data also were provided to FEMA prior to the landfall of Hurricane Irene, and as predicted two of the four very-high-risk areas experienced island breaches.

how to expand the site, such as plans for a more formal marine atlas. But, if you have any suggestions or thoughts on information contained on the site or data you would like to see added, etc., do not hesitate to contact J.P. Walsh, walshj@ecu.edu, (252) 328-5431. Feedback of any kind is appreciated. Hopefully, this site will improve communication and information on coastal data exchange around the state and beyond. Ultimately, the goal of NC COHAZ is to help mitigate the effects of coastal hazards on the citizens of North Carolina, and this can only be accomplished through better sharing of knowledge, data and ideas.

J.P. Walsh[1,2], Reide Corbett[1,2] and Tom Allen[1]
[1]East Carolina Univesity
[2]UNC Coastal Studies Institute

Meteorological drought in the Digital Climatic Atlas of Mexico

The new version of the Digital Climatic Atlas of Mexico (DCAM) includes the meteorological drought thematic using advanced technological tools and new methodologies for the cartographic processes that include the quality control of the data and the display of interactive maps in the Internet.

With the aim of generate and integrate in version 2.0 of the DCAM the cartographic displays of continental basic climatic variables (temperature and precipitation), bioclimatic parameters, extreme climatology and meteorological drought periods in Mexico, the data of over 5,200 meteorological stations were processed from the daily climate databases (1902-2011) of the Mexican Weather Service (abbreviated to SMN in Spanish) of the National Commission of Water (CONAGUA). This was done as part of a joint project between the SMN and the Informatics Unit for Atmospheric and Environmental Sciences (UNIATMOS) of the Center for Atmospheric Sciences (CCA) of the National Autonomous University of Mexico (UNAM).

The drought in Mexico

The meteorological drought is an atmospheric phenomenon that occurs when the precipitation in a region, and during a determined period, is lower than the reference average established from measurements in a typical 30-year period. If the decrease of the precipitation is severe and goes on for extended periods, then the type of drought that impacts agriculture and hydrology is generated, which is characterized by the negative effects on the economic sector of the region or directly to people in the affected communities. The drought in Mexico is one of the natural phenomena that more severely affects the economy, since large cultivated areas and livestock are lost when it happens.

The main cause of the drought is the lack of rain; however, there are factors that contribute to generate it such as changes of the general circulation of the ocean-atmosphere system related to alterations in the sea surface temperature, to changes in the atmospheric pressure and to increases in the carbon dioxide concentrations, among others. The Drought Fascicle by García F., Fuentes O. y Matías L. G., (2002), published by the National Center for Disaster Prevention (CENAPRED) of the Mexican Government, incorporates a historic review of the droughts that occurred in Mexico, including the months and places where it happened. The drought periods which are registered and documented in this publication are: 1998-2000, 1993-1996, 1970-1978, 1960-1964 and 1948-1954.

From the daily climatic data base of the SMN, that includes information for the period 1902-2011, and according to the methodology described in the DCAM documents (http://atlasclimatico.unam.mx/atlas/uniatmos.html) on the processing of climatic surface maps, and the quality control of the continental climatic information and its validation, the

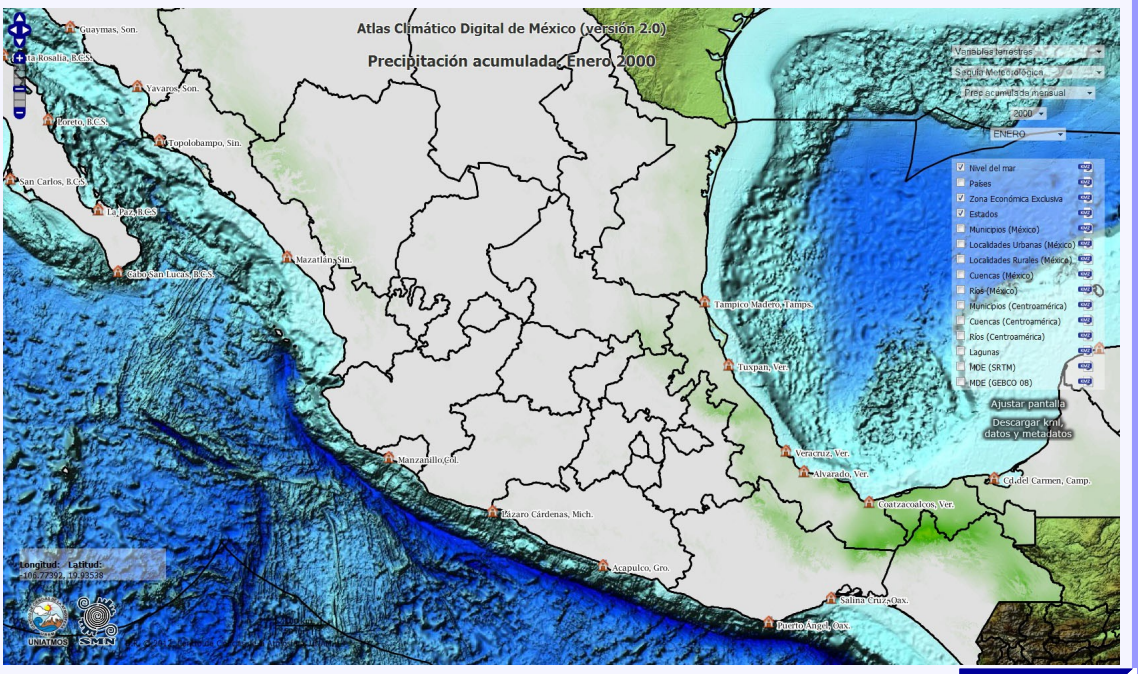


Figure 1. Monthly accumulated precipitation in January 2000

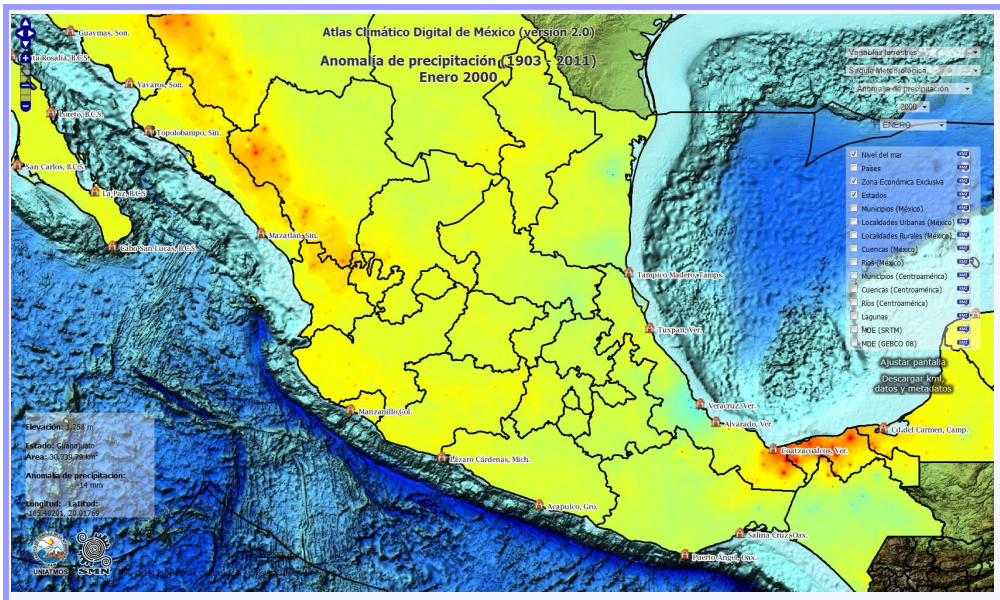


Figure 2. Anomaly of precipitation in January 2000

monthly accumulated precipitation (see figure 1) was calculated for the Mexican Republic corresponding to the months impacted by drought that are reported in the above mentioned publication, as well as its respective anomaly, which is the difference between the accumulated precipitation during a given month, for example, January 2000, and the average accumulated precipitation of all the Januaries of the period 1902-2011 (see figure 2).

Afterwards, the obtained anomaly was normalized and a monthly map of the percentage of accumulated precipitation with respect to the average of the reference period 1902-2011 was created (see figure 3). In this map, it is possible to consult the rain percentage that have occurred above (positive) or below (negative) the historic average in any location, so that the meteorological drought may be visualized, quantified and evaluated in all the states and municipalities of Mexico.

Currently, there are 213 maps of meteorological drought processed. These maps were generated at a very high spatial resolution (926 m), taking into account the topographic effect. The information is available through the "Map server", "Maps online", "KML, data and metadata" and "WMS Service" options of the DCAM (see figure 4). (http://uniatmos.atmosfera.unam.mx).

Marine, coastal and continental climatology

The DCAM provides users with inter-institutional information on climate, extreme climatology, climate change, droughts and bioclimatic parameters for the continental zone; also, sea surface temperature, chlorophyll-a concentration, climatological surface winds, absolute dynamic topography, sea level anomaly and geostrophic velocity over the ocean, as well as sea level in the coastal zone.

Additionally, the DCAM is a platform that allows to display and visualize the maps in an interactive mode, and offers decision-makers the quantitative elements to submit proposals that contribute to design new policies towards the reduction of vulnerability and the increase of adaptation capabilities to face the climate change and disasters linked to natural hazards in different geographic regions, as well as in the costal, agricultural and hydraulic sectors.

The "Map Server" component of the DCAM allows the visualization of thematic maps with different approaches. Specific information may be requested regarding the cartographic compositions displayed, and it is even possible to combine the thematic display of any map with reference information such as municipal, state and national boundaries, as well as hydrologic basins, rivers and lakes of Mexico and Central America. Urban and rural localities, as well as the Exclusive Economic Zone of Mexico and the countries lo-

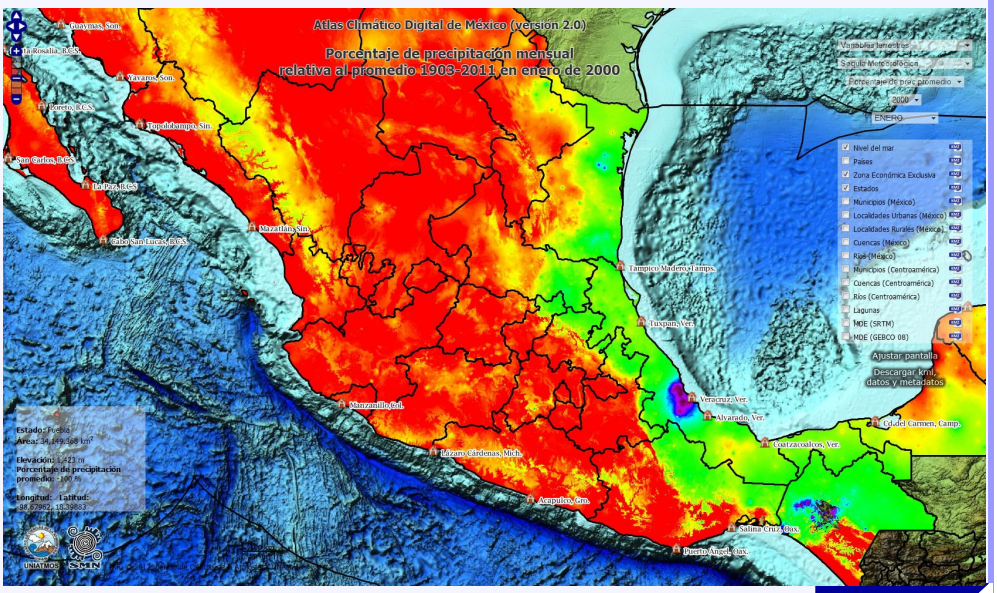


Figure 3. Percentage of monthly accumulated precipitation in January 2000, with respect to the average of the 1903-2011period.

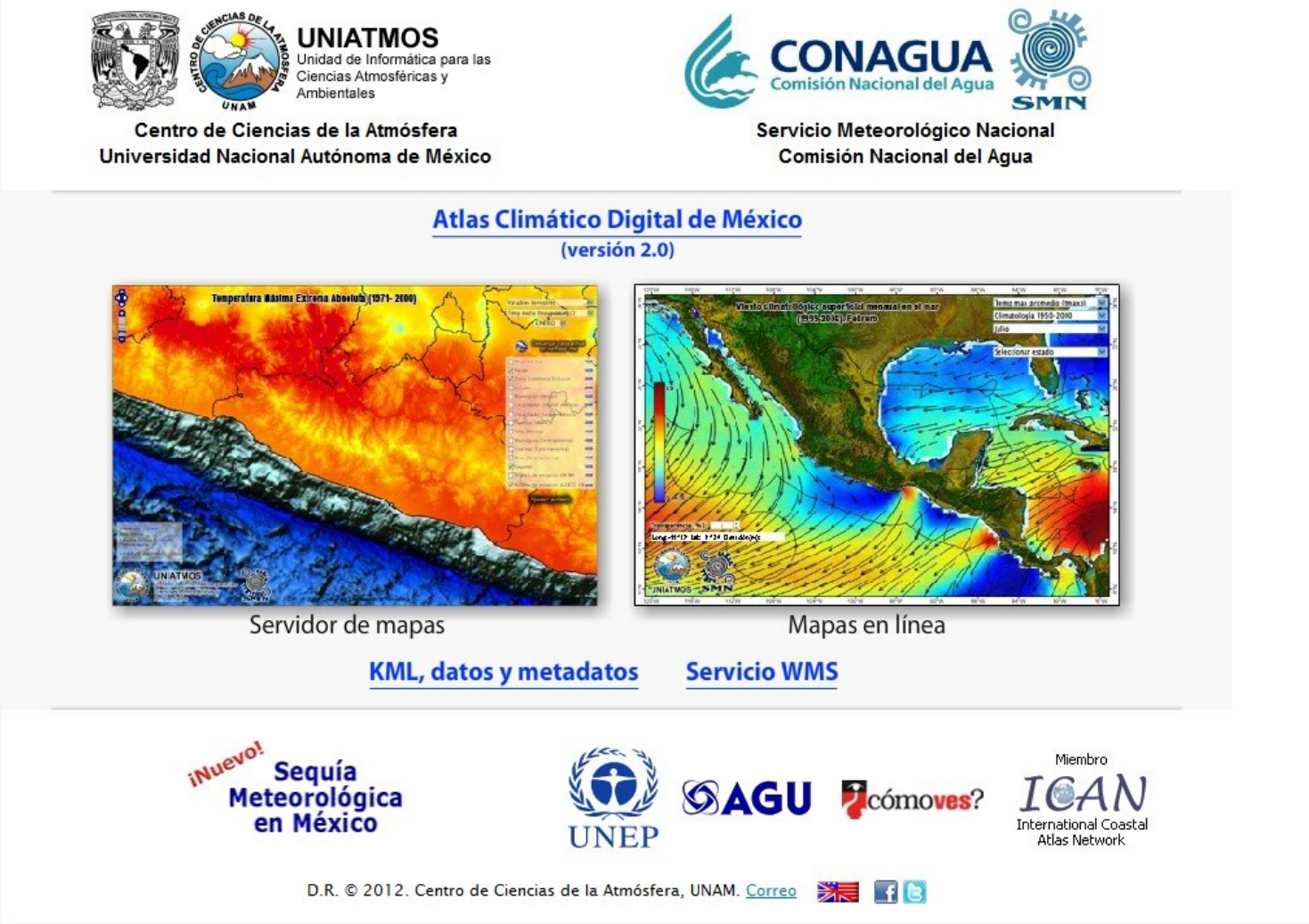


Figure 4: "Map server", "Maps online", "KML, data and metadata" and "WMS Service" components of the DCAM

cated in the geographic area covered by the Atlas may also be incorporated. The Digital Elevation Models Shuttle Radar Topography Mission (SRTM) and *General Bathymetric Chart of the Oceans (GEBCO)* serve as topographic and bathymetric base for the above process.

The "Maps online" option allows a faster visualization of integrated maps and also to obtaining climatic information in any geographic location, to compare thematic layers in a clear and quick way, and to do transparencies of the thematic layers with the topography, which, in this case, comes from data of the Advanced Spaceborne Thermal Emission and Reflection Radiometer *(ASTER)*.

The maps of the DCAM may be consulted in KML (Keyhole Markup Language) format, to be displayed and complemented with all facilities of the Google Earth system. Also, the data and metadata of the thematic maps may be downloaded freely and at no cost. Finally, the maps can also be accessed through the "WMS Service" (Web Map Service).

*Agustín Fernández Eguiarte**
*Rosario Romero Centeno**
*Jorge Zavala Hidalgo**
**Centro de Ciencias de la Atmósfera*
Universidad Nacional Autónoma de México

COINAtlantic Training held in Atlantic Canada

The Atlantic [Canada] Coastal Zone Information Steering Committee in collaboration with the Southern Gulf of St. Lawrence Coalition on Sustainability is holding day long COINAtlantic Training Sessions called "*Mapping Made Easy*" that introduces basic GIS concepts, the principles of the Coastal and Ocean Information Network (COIN) Atlantic Chain of Information Access and hands on exercises with the two web-based COINAtlantic tools, the GeoContent Generator and the Search Utility. Two sessions have already been held in Truro, Nova Scotia and Fredericton, New Brunswick. Additional sessions are planned in the spring in St. John's, Newfoundland and Labrador, Rimouski, Quebec and Shipiggan, New Brunswick. For more information visit www.coinatlantic.ca

Florida Atlas Programs Bring Water to the Web

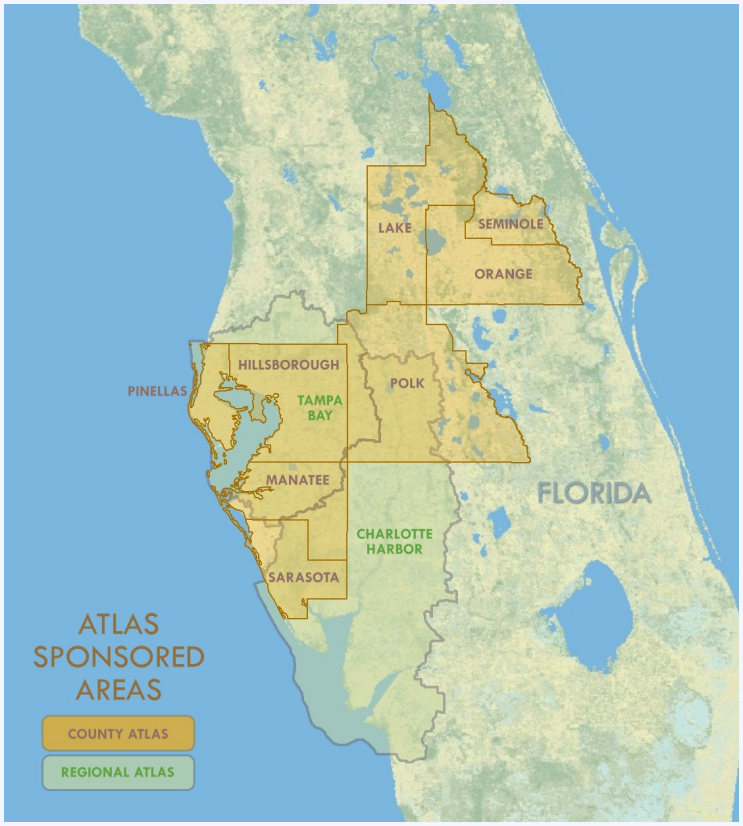
The goal of this innovative web-based tool is to help the public understand our natural waters and to be a one-stop data warehouse for water managers. Using Geographic Information Systems (GIS), active web pages and web-enabled database management systems, the Water Atlas websites are designed to provide citizens, scientists, resource managers, and educators with water quality, hydrologic and ecologic data. In addition, they provide information about local conservation efforts, volunteer and recreational opportunities, and a library of scientific and educational materials on water-resource issues.

What is the Water Atlas?

The Water Atlas program is a collection of websites created and administered by the Florida Center for Community Design and Research at the University of South Florida in Tampa. Originally created as an atlas of Hillsborough County lakes in 1997, it has expanded both geographically and functionally, now including eight county Atlases the Tampa Bay Estuary Atlas, and the Charlotte Harbor Estuary Atlas. In addition to lakes, it also contains water quality and hydrologic data for other types of waterbodies, including ponds, rivers/streams, bays, estuaries and inshore marine waters, as well as the watersheds that bind them together.

The mission of the program is to "provide a comprehensive information resource that helps citizens, scientists and resource managers make informed decisions concerning our vital water resources." It does this by providing a spatially-organized view of water resource data. It has information from over 225 different data sets that is available to the public in multiple formats. It attempts to give that data meaning by providing "Learn More" articles that tell users how samples are collected and how to interpret them. Atlas users can display data in tabular form, graphically in tables and graphs, or their geographic context via interactive mapping applications. Researchers can download data for further analysis. Agencies can use the data to demonstrate compliance with federal and state stormwater regulations. Water resource managers can create water quality reports and maps to respond to constituents' questions.

Public engagement is vital, giving citizens easy access to data amassed by government agencies using taxpayer funds. Citizens need not be mere consumers of Atlas content; volunteer monitors serve an essential role by submitting water quality samples, reporting on wildlife sightings, organizing group activities, reporting polluters, and sharing photos and history. Sponsoring organizations (counties, cities and regional agencies) use the Atlas for outreach, making available informational materials and posting notices on the Atlas events calendar. Recreational users can find information on waterbody location, size, depth, water quality, amenities, weather, and even fishing reports. A searchable Digital Library makes available environmental assessments, management plans, technical reports, research, historic information and links to other websites. Teachers can utilize the Curriculum component for exercises and explore links to external sites with water-related lesson plans and classroom projects.



Each Water Atlas is customizable by its sponsoring organization(s), and most contain resource pages for volunteer initiatives or other special-interest topics. These include Adopt-A-Pond, Macroinvertebrate Monitoring, Stormwater Education, Watershed Excursion, Habitat Restoration Mapping, Lake Management, Spring Resources, Stream Waterwatch, Seagrass Monitoring, Oral History, and Neighborhood Stewardship programs.

The Editor's Keyboard

It has been a great pleasure putting together this first issue of the *ICAN Newsletter*. We have a great article from the Technical Team who continue to do great groundbreaking work. We have updates from one of the founding members of ICAN, the Marine Irish Digital Atlas and from new ICAN members like the one above from the Florida Water Atlas.

My day job is the Director of the Atlantic [Canada] Coastal Information Steering Committee (ACZISC) Secretariat. The ACZISC is the home of COINAtlantic an initiative to make more information accessible on the internet to support coastal and ocean management in Atlantic Canada. **Deadline for the next newsletter is September 7.** Send articles to a.sherin@dal.ca Andy Sherin

ABOUT THE NETWORK

ICAN is an informal group of organizations who have been meeting since the first ICAN workshop held in Cork Ireland in 2006 to scope and implement data interoperability approaches to coastal web atlases (CWAs). The **mission/strategic aim** of ICAN is to share experiences and to find common solutions to CWA development while ensuring maximum relevance and added value for the end users. Operational interoperability at the global-level is the long term vision. ICAN strives to increase awareness among strategic users like policy makers and resource managers of the opportunities that exist for increased coastal and marine data sharing. ICAN seeks forge international collaborations of value, optimizing regional governance in coastal zone management. A major goal is to help build a functioning digital atlas of the worldwide coast based on the principle of shared distributed information based on interoperable locally-maintained CWAs as the premier source of spatial information about coastal zones throughout the world. CWAs provide a basis for rationally-informed discussion, debate and negotiation of sustainable management policies for our societies, nations and people throughout the world. CWAs have tremendous potential to be relevant globally and contribute to **global spatial data infrastructures, marine spatial planning** and related projects.

A Message from the ICAN Co-Chairs: A New Era for ICAN

This first newsletter is being published just as ICAN starts a new and exciting chapter in its development. ICAN has applied to the International Oceanographic Commission (IOC) to become a project within the International Oceanographic Data and Information Exchange (IODE) programme, and has been provisionally accepted. IODE has been a great advocate for ICAN and an active member of the Network over recent years. This new relationship will give ICAN a higher international profile than it has had and there is potential for enhanced global reach. Moreover, being represented by an International entity allows ICAN to join with other organisations and networks, compete for funding and become a full project partner. There is also the potential for funding for certain activities from within IODE itself.

As an IODE project ICAN can share its knowledge and aid capacity building among IOC members in relation to approaches for the exchange of coastal and marine data and information. Moreover it can assist with promoting the implementation of International data standards with regard to coastal and marine data management and exchange. ICAN can enhance networking among members to spread best practise, in the first instance within the African Marine Atlas (AMA) and the Caribbean Marine atlas (CMA), but in the future to other IODE related initiatives.

The most recent ICAN workshop was hosted at the IODE headquarters in Oostende, Belgium in September 2011. It was attended by over 40 participants and we were pleased to see a number of new faces as well as those who have become familiar to us over the last six years. There were great presentations on recent atlas developments, lively discussions on how coastal web atlases can support marine spatial planning, the launch of the new Belgian coastal atlas and a celebration of the publication of the Coastal Atlas Handbook. A full workshop report will be available soon.

Over the coming weeks and months the current ICAN working groups will be reconstituted as a steering group within the IODE ICAN project and will devise an updated work plan. ICAN has come a long way since the first workshop on transatlantic atlases held in Cork in 2006. We look forward to further expansion of the Network and consolidation of its relevance to coastal web atlas developers and users.

We would like to thank Andy Sherin, as one of our newest members, for offering to compile and edit this ICAN newsletter. We believe it is a great way for you to inform the community of the latest developments with your coastal atlas and likewise find out what is going on in other CWA communities around the world.

Ned Dwyer,
Coastal & Marine Research Centre
University College Cork
Ireland

Dawn Wright
Environmental Systems Research Institute &
Oregon State University, USA