



United Nations  
Educational, Scientific and  
Cultural Organization



Intergovernmental  
Oceanographic  
Commission

**Workshop Report No. 263**

## Report of International Coastal Atlas Network Workshop 6:

### Expanding Participation in Coastal Web Atlas Development and Use

University of Victoria, British Columbia, Canada

16 – 17 June 2013

UNESCO 2014



University of Victoria  
IOC Workshop Report No. 263  
British Columbia, 16<sup>th</sup>-17<sup>th</sup> June 2013  
English

### **ACKNOWLEDGEMENTS**

Thanks to all the authors cited in the text that provided inputs for this report and to Alfonso Pagá at the CMRC who helped with the layout and formatting. The ICAN Steering Group also provided valuable comments on the report. A special thanks to Rosaline Canessa and her team at the University of Victoria for a great job in hosting ICAN 6. Without them there would be no report!

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For bibliographic purposes this document should be cited as follows:

Dwyer, N.<sup>1</sup>, Kopke, K.<sup>1</sup>, 2014. *Report of International Coastal Atlas Network Workshop 6: Expanding Participation in Coastal Web Atlas Development and Use*, University of Victoria, British Columbia, Canada, 17-18 June 2013, IOC Workshop Report No. 263, (English)

Available online at <[http://ican.science.oregonstate.edu/ican6\\_final\\_rpt](http://ican.science.oregonstate.edu/ican6_final_rpt)>.



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**University of Victoria  
British Columbia, Canada**



More information can be found on the workshop web site:  
<http://ican.science.oregonstate.edu/ican6>

*This workshop was supported by Esri, with additional support from UNESCO IOC IODE.*



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## ACRONYMS

ACMA	African Coastal & Marine Atlas
AGOL	ArcGIS On-Line
API	Application Programming Interface
ASCII	American Standard Code for Information Interchange
ASCLME	Agulhas and Somali Current Large Marine Ecosystems
BODC	British Oceanographic Data Centre
CIS	Coastal Information System
CMA	Caribbean Marine Atlas
CMRC	Coastal and Marine Research Centre
CMSP	Coastal and Marine Spatial Planning
COIN	Coastal and Ocean Information Network
CoP	Community of Practice
CPPS	Comisión Permanente del Pacífico Sur
CSIR	Council for Scientific & Industrial Research, South Africa
CSV	Comma Separated Values
CSW	Catalogue Services for the Web
CWA	Coastal Web Atlas
CZCP	Coastal Zone Community of Practice
CZIS	Coastal Zone Information System
DBMS	Database Management System
EC	European Commission
EEA	European Environment Agency
EEZ	Exclusive Economic Zone
EO	Earth Observation
ESRI	Environmental Systems Research Institute
EU	European Union
EUCC	European Union for Coastal Conservation
FP7	Framework Programme 7 (EU)
FUST	Flanders UNESCO Science Trust
GCMD	Global Change Master Directory
GEO	Group on Earth Observations (coordinator of GEOSS)
GEOSS	Global Earth Observation System of Systems
GIS	Geographic Information System
GOOS	Global Ocean Observing System
GPS	Global Positioning System
GTOS	Global Terrestrial Observing System
HAB	Harmful Algae Bloom
HTML	HyperText Markup Language
ICAM	Integrated Coastal Area Management
ICAN	International coastal Atlas Network
ICT	Information and Communications Technology
ICZM	Integrated Coastal Zone Management
IGOS	Integrated Global Observing Strategy
IHP	International Hydrological Programme
IMS	Internet Map Server
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IODE	International Oceanographic Data and information Exchange
ISO	International Organization for Standardization (derived from the Greek "isos," meaning "equal")
ISSN	International Standard Serial Number
JCOMM	Joint Technical Commission on Oceanography and Marine Meteorology (WMO and IOC)
JNCC	Joint Nature Conservation Committee
KML	Keyhole Markup Language (Google Earth)
LME	large Marine Ecosystem

LMS	Learning Management System
MIDA	Marine Irish Digital Atlas
MPA	Marine Protected Area
MSDI	Marine Spatial Data Infrastructure
MSFD	Marine Strategy Framework Directive
MSP	Maritime Spatial Planning
MSP	Marine Spatial Planning
NASA	National Aeronautics and Space Administration (U.S.)
NDG	NERC Data Grid
NERC	Natural Environment Research Council (U.K.)
NETMAR	Open Service <b>Network</b> for <b>Marine</b> Environmental Data
NGO	Non-Governmental Organization
NOAA	National Oceanic and Atmospheric Administration (U.S.)
NODC	National Oceanographic Data Centre (UNESCO IOC IODE)
NRC	National Reference Centre (EIONET)
NSDI	National Spatial Data Infrastructure
NSF	National Science Foundation
OBIS	Ocean Biogeographic Information System
OCA	Oregon Coastal Atlas
OCMP	Oregon Coastal management Program
ODIN	Ocean Data and Information Network (UNESCO IOC IODE)
OGC	Open Geospatial Consortium
OS	Open Source
OSU	Oregon State University
OTN	Ocean Tracking Network
PEGASO	People for Ecosystem Based Governance in Assessing Sustainable Development of Ocean and Coast
QA/QC	Quality Assessment/Quality Control
RDF	Resource Description Framework
SDI	Spatial Data Infrastructure
SPINCAM	Southeast Pacific Data and Information Network in Support to Integrated Coastal Area Management
SST	Sea Surface Temperature
SWS	Semantic Web Service
UCC	University College Cork
UNEP	United Nations Environment Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
US/USA	United States or United States of America
USGS	United States Geological Survey
VLIZ	Vlaams Instituut Voor de Zee (Flanders Marine Institute)
VST	Virtual Stakeholder Table
WC3	World Wide Web Consortium
WCA	Washington Coastal Atlas
WCMC	World Conservation Monitoring Centre
WCS	Web Coverage Service
WFS	Web Feature Service
WHC	World Heritage Convention
WMS	Web Map Service
XML	eXtensible Markup Language

## EXECUTIVE SUMMARY

From June 16<sup>th</sup> to 17<sup>th</sup>, 2013, the International Coastal Atlas Network (ICAN) held a workshop on “Expanding Participation in Coastal Web Atlas Development and Use”, at the University of Victoria, British Columbia, Canada. The workshop (aka “ICAN 6”) engaged 29 participants from 9 countries, representing 22 organizations and multiple areas of scientific and technical expertise. This meeting was a follow-up to the successful 2011 workshop on “Coastal Atlases as Engines for Coastal & Marine Spatial Planning” (aka “ICAN 5”) held in Oostende, Belgium, as well as workshops in 2009, 2008, 2007 and 2006.

ICAN 6 provided an opportunity to discuss how the ICAN community could take advantage of now being an IODE project, to share its knowledge and aid capacity building among IOC member states in relation to coastal and marine data management. Moreover, ICAN has seen its membership grow in the last two years and given its extensive membership along the North and South American Pacific coasts it was a great opportunity to hear about atlas developments in those regions.

Key activities at the workshop included:

- **exploring the opportunities for ICAN in an IODE context and how to build synergies with other IOC projects**; the activities of the Ocean Biogeographic Information System (OBIS) project of the IOC were presented as well as IOC’s ICAM programme which highlighted how data management tools developed within ICAN can contribute to the goals of ICAM. Beyond the IOC, activities within the Group on Earth Observations’ (GEO) Coastal Zone Community of Practise (CZCP) are very relevant to ICAN, in particular the objective to develop a global coastal zone information system (CZIS). ICAN can help inform the development of such a CZIS.
- **discussion of coastal atlas training needs and how ICAN members can contribute**; in particular the training requirements of the African Coastal and Marine Atlas, and the Caribbean Marine Atlas were discussed. An overview of IODE training activities was presented and linkages on training between ICAN and ICAM related projects (e.g. SPINCAM II) were discussed. ICAN should also take advantage of the OceanTeacher platform developed by IODE.
- **Atlas Stories – presentations from Atlas developers and users from North and South American Pacific coasts and beyond**; the ICAN 6 Atlas Stories focused on CWA development around the Western Pacific Rim presenting new activities as well as updating the network on recent upgrades to previously discussed CWAs. The session started with the South American SPINCAM project which is developing atlases across five countries, followed by updates on the Oregon Coastal Atlas and the Washington State Coastal Atlas. Workshop participants also learned about Canada’s CanCoast and ShoreZone and the session concluded with the introduction to SmartAtlas through the African Coastal & Marine Atlas experience.
- **a small “workshop within a workshop” for atlas technical developers on how to become a new node in the ICAN interoperability portal, version 3**; The latest version has multilingual search capability, semantic search and the ability to connect directly to map services and display the results in a map. It was agreed that the current interface will be upgraded to HTML5 in the coming period.
- **a small “workshop within a workshop” focussing on Volunteered Geographical Information (VGI) and its implications for coastal atlases**; within the EEA, systems have been developed using both crowdsourcing and citizen science approaches. SeaSketch is a software platform intended as an end-to-end mapping solution for marine spatial planning, which allows anyone, regardless of their technical abilities, to sketch prospective management plans and receive analytical feedback on the consequences of their designs. The Marine Regions project aims to develop a standard for georeferenced marine names and there is potential to link it to the ICAN portal. Esri is introducing the concept of a “living Atlas” which is delivered via ArcGIS Online (AGOL). ICAN members can take advantage of this concept by using it to leverage their existing Atlas holdings or by using the platform to build a new Atlas quickly.
- **development of an ICAN work plan for the period 2013-2015**; this included plans for developing a communications strategy, a handbook on how atlas developers and users can interact and building synergies with other IOC and non-IOC projects. It also looked at developing a coastal atlas training plan.



At its core ICAN supports atlas development and interoperability approaches, therefore the Technical Committee presented its plans for developments in the next two years.



**Follow the sign to find out more about ICAN 6**

The workshop concluded with the first face-to-face meeting of the new Steering Group, which was put in place after ICAN became an IODE project. This meeting saw two new members join the SG and leaders for the various work plan elements were appointed.

Since ICAN 6 there have been developments in relation to the work plan. A revised plan and associated budget request was submitted to the IODE Officers meeting held in March 2014. As IODE has a limited budget and a number of projects to support, not all work plan items will receive funding, however the funding allocated will be of significant assistance to maintain ICAN and help progress its work. ICAN is now on a sound footing as part of the IODE family of projects, although members should continue to seek funding from other sources to advance the key technical activities. This ambitious work plan will require the commitment of all members to ensure that it can be implemented. A priority for 2014 is the redevelopment of the web site in order to make it easier to navigate and more responsive to user needs. Interoperability remains a core activity of ICAN and the technical committee has proposed a number of activities to progress further the developments in this area. A key technical concept which emerged at ICAN 6 was that of an "atlas-in-a-box". The idea is that a new atlas developer can get started quickly on implementing and publishing a CWA with a minimal amount of technical/programming knowledge. The committee intends to scope the feasibility of such a development based on potential solutions such as SmartAtlas and ArcGIS Online.

We would like to thank Rosaline Canessa and her team at the University of Victoria for their warm welcome and excellent hosting of ICAN-6 and we look forward to seeing you at the **7<sup>th</sup> International workshop** (aka ICAN 7) which will be hosted by CSIR at Stellenbosch in South Africa from **April 20<sup>th</sup> to 21<sup>st</sup> 2015**, just before CoastGIS 2015.



## 1. INTRODUCTION

The International Coastal Atlas Network (ICAN) has developed from a meeting of an informal group of organisations that shared common interests in 2006 to a formalised project under the International Oceanographic Data and Information Exchange (IODE) programme of the UN's Intergovernmental Oceanographic Commission (IOC). The Network aims to be a global reference for the development of coastal web atlases (CWAs), which we define as: "...collections of digital maps and datasets with supplementary tables, illustrations, and information that systematically illustrate the coast, oftentimes with cartographic and decision support tools, all of which are accessible via the Internet." (O'Dea et al., 2007, Trans-Atlantic Workshop Report)

**The long-term strategic goal** of ICAN is to encourage and help facilitate the development of digital atlases of the global coast based on the principle of distributed, high-quality data and information. These atlases can be local, regional, national and international in scale. This can be achieved by sharing knowledge and experience among atlas developers in order to find common solutions for coastal web atlas development whilst ensuring maximum relevance and added value for the users.

The ICAN community met for the 6<sup>th</sup> International Coastal Atlas Network workshop with the theme of "Expanding Participation in Coastal Web Atlas Development and Use", at the University of Victoria, British Columbia, Canada from the 16<sup>th</sup> to 17<sup>th</sup> June 2013, in advance of the CoastGIS 2013 conference. This workshop followed on 2011's successful workshop held at UNESCO IOC/IODE headquarters in Oostende, Belgium, in 2011 (Dwyer et al., 2012), as well as four previous workshops held in 2006 in Cork Ireland (O'Dea et al., 2007), 2007 in Oregon USA (Wright et al., 2007), 2008 in Copenhagen Denmark (Dwyer and Wright, 2008) and 2009 in Trieste, Italy (Wright et al., 2010).

ICAN 6 provided an opportunity to discuss how the ICAN community could take advantage of now being an IODE project to share its knowledge and aid capacity building among IOC member states in relation to coastal and marine data management. Moreover, ICAN has seen its membership grow in the last two years and given its extensive membership along the North and South American Pacific coasts it was a great opportunity to hear about atlas developments in those regions.

Key activities of the workshop included:

- exploring the opportunities for ICAN in an IODE context and how to build synergies with other IOC projects;
- discussion of coastal atlas training needs and how ICAN members can contribute;
- Atlas Stories – presentations from Atlas developers and users from North and South American Pacific coasts and beyond;
- a small "workshop within a workshop" for atlas technical developers on how to become a new node in the ICAN interoperability demonstrator, version 3;
- a small "workshop within a workshop" focussing on Volunteered Geographical Information (VGI) and its implications for coastal atlases;
- development of an ICAN work plan for the period 2013-2015.

This report presents a synthesis of the presentations and discussions which took place at the workshop as well as the work plan which will be the focus of activities for the period 2013-2015.

Activities are foreseen in regard to internal and external communications of ICAN, training, technical developments and interactions with users. A new ICAN website will be unveiled in 2014 and we look forward to feedback from the community. The Caribbean Marine Atlas (CMA) and the African Coastal and Marine Atlas (ACMA) are looking to the next phases of development and both have actively sought contributions from ICAN members to help them with these plans. The SPINCAM community was represented for the first time at an ICAN event and look forward to engaging with existing ICAN members in terms of training and capacity building.

In order to improve coordination of training activities it was agreed at the Steering Group meeting in Victoria to establish a training committee and Alejandro Iglesias subsequently accepted to chair this committee. After actively co-chairing ICAN for a number of years Roger Longhorn stepped down from the role, but is continuing to be active within the Steering Group. Marcia Berman of the Virginia Institute of Marine Science took over as co-chair of ICAN. Marcia has been part of ICAN since the first meeting in Cork in 2006 and brings a lot of experience in terms of user interaction and usage of CWAs. She has also been very active in training activities with the CMA and the ACMA as well as outreach activities.

We would like to thank Rosaline Canessa and her team in the Department of Geography at the University of Victoria for their hospitality whilst hosting the workshop and we look forward to meeting the full ICAN community again at ICAN 7 in South Africa on **April 20-21 2015**.



**Some ICAN 6 participants enjoying a break in proceedings**

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## 2. THE IODE CONTEXT FOR ICAN

March 2013 was a key milestone in the development of ICAN. At the Twenty-second Session of the Intergovernmental Oceanographic Commission's (IOC) Committee on International Oceanographic Data and Information Exchange (IODE) in Ensenada, Mexico, ICAN was accepted as an official IODE project. Dawn Wright represented the Network at the meeting and presented the history and activities of ICAN to the Commission and outlined the plans for the following two years. This acceptance was formal recognition of the valuable role that the Network plays in promoting the development and use of coastal atlases around the world. Moreover it raises the profile of ICAN and helps us extend our global reach. IODE has been a key supporter of ICAN for a number of years, so we were delighted that Peter Pissierssens was able to attend ICAN 6, meet many of the ICAN members and present the activities of IODE.

### 2.1. What it means to be an IODE Project

*Peter Pissierssens (IODE, Belgium)*

The Intergovernmental Oceanographic Commission (IOC) of UNESCO was established in 1960. It is the only UN organization that deals with only the oceans in its mandate. IOC promotes marine science in all ocean basins and deals with science, services, observations, data exchange and capacity development. The International Oceanographic Data and Information Exchange (IODE) programme is almost as old as the IOC and was established in 1961. IODE aims to facilitate and promote the discovery, exchange of, and access to, marine data and information including metadata, products and information in real-time, near real time and delayed mode, through the use of international standards, and in compliance with the IOC Oceanographic Data Exchange Policy for the ocean research and observation community and other stakeholders. IODE further encourages the long term archival, preservation, documentation, management and services of all marine data, data products, and information. IODE also aims at developing or using existing best practices for the discovery, management, exchange of, and access to marine data and information, including international standards, quality control and appropriate information technology.

IODE assists Member States to acquire the necessary capacity to manage marine research and observation data and information and become partners in the IODE network, and supports international scientific and operational marine programmes, including the Framework for Ocean Observing for the benefit of a wide range of users. Over the past 50+ years the IODE has developed into a global network of 80 National Oceanographic Data Centres (NODCs) (Figure 1). It also established a network of marine librarians and since 2010 it coordinates the Ocean Biogeographic Information System (OBIS).

IODE is governed by the IODE Committee which is composed of the heads of the NODCs. The IODE Committee, at its 22<sup>nd</sup> session in 2013, agreed to adopt the International Coastal Atlas Network (ICAN) as an IODE project. Under IODE, ICAN will be managed by an IODE Steering Group, initially composed of members of the former ICAN Steering Group and Management Working Group, the project coordinators of the Caribbean Marine Atlas and African Marine Atlas, as well as representatives from other regions.



**Figure 1:** IODE National Oceanographic Data Centres are established in over 80 countries worldwide. It is expected that ICAN will collaborate with existing IOC programmes and IODE projects. This includes OBIS, mentioned above but also the Marine Spatial Planning (MSP), Harmful Algal Bloom (HAB) and Integrated Coastal Area Management (ICAM) programmes. In addition there are initiatives with a focus on coral reef monitoring, global marine assessment and tsunami warning. All of these projects and initiatives require data management systems and the expertise available within ICAN can contribute to their advancement.

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### 3. COASTAL ATLAS TRAINING NEEDS AND OPPORTUNITIES

A key goal of ICAN is to contribute to national and regional training initiatives on coastal and marine data and metadata management and atlas development. This is also in line with IODE activities on capacity building. In order to understand better the specific needs of the community a number of presentations were made on this topic. Lucy Scott presented the specific training needs in relation to the African Coastal and Marine Atlas. This project has been running for over eight years, so has identified very specific gaps. The Caribbean Marine Atlas project is younger, but as phase 2 of the project is being conceived, it was timely to hear about the training needs from Ramon Roach. Alejandro Iglesias gave an overview of the training needs of the IOC ICAM programme, especially in relation to the SPINCAM project, which is described in more detail in section 5.1. Finally Peter Pissierssens gave an IODE perspective on training, which helped understanding of how ICAN can fit in with existing initiatives. Based on these presentations and on discussion during the meeting, some key training activities were identified and elaborated on in the Work Plan description in section 8.



### 3.1. The African Coastal and Marine Atlas

*Lucy Scott (ASCLME, South Africa)*

The African Coastal and Marine Atlas (<http://www.africanmarineatlas.org/>) is a continental-scale online resource of public-domain geospatial data for Africa, developed by participants from 16 African countries and several international partners. The project, running since 2006, has seen the development of a continental scale atlas, a metadata portal, a data clearinghouse and the ongoing development of national and Large Marine Ecosystem (LME) scale atlases. Some of the successes and challenges faced in developing the African atlases were discussed, with a focus on training needs and opportunities. Some key recommendations made (which were based on a brief survey from ACMA participants in advance of ICAN 6) as to how the ICAN community can assist ACMA developments included:

- Contribute to national and regional training initiatives on coastal and marine data and metadata management and CWA development;
- Providing expertise to training courses that run in parallel to CWA development (with support from IODE/OceanTeacher), particularly for GIS and CWA development modules;
- Volunteers to peer review content of national and regional CWAs in Africa;
- ICAN members could provide technical advice or recommendations for improvement of the ACMA as a whole;
- Best practices in terms of formats and software in designing the ACMA
- Involve representatives of user communities to help in tailoring CWAs to their information needs.
- ICAN members could share their lessons learned about interacting with stakeholders – including users of atlases, as well as providers of data
- Experiences developing offline (hardcopy, DVD) atlases would be welcome
  - Hardcopy: review of content
  - Offline data: technical and content recommendations
- Foster closer links to OBIS (could be facilitated by IODE rather than ICAN, but is a crosscutting link for all atlases).



**Participants in the African Coastal and Marine Atlas project**

In order to progress these activities, specific actions would need to be drawn up by the ACMA community and active engagement of other ICAN members sought in order to ensure their delivery.

### 3.2. The Caribbean Marine Atlas Project

*Ramon Roach (Coastal Zone Management Unit, Barbados)*

The terms of reference for the development of a pilot Caribbean Marine Atlas involving a small number of island states, were first consolidated in 2007 and the subsequent project will finish at the end of 2013. A proposal for CMA 2 was submitted in the Autumn of 2013. Capacity building was an important activity during the project and regional marine data management representatives, selected by their respective states,

participated in several IODE training courses between 2008 and 2012 funded by the Flanders UNESCO Science Trust (FUST). Courses and course topics included: Ocean Data Management, Data Mining, Database Management, Mapserver, OpenLayers, Geoserver and GeoNetwork

In addition to training courses, the CMA project also facilitated several national stakeholder meetings in order to directly engage potential national atlas stakeholders and determine their specific form and functionality requirements.

As of the first quarter of 2013, the CMA project has produced:

- The main CMA website: <http://www.caribbeanmarineatlas.net>
- A CMA web map server (Geoserver): <http://geoserver.caribbeanmarineatlas.org>
- A Metadata catalogue for CMA data (GeoNetwork): <http://geonetwork.caribbeanmarineatlas.org>
- A mapping application for the regional atlas: <http://atlas.caribbeanmarineatlas.org>.
- Prototype national atlases mapping applications
  - Barbados – <http://barbados.caribbeanmarineatlas.org>
  - Cuba – <http://cuba.caribbeanmarineatlas.org>
  - Dominica – <http://dominica.caribbeanmarineatlas.org>
  - Jamaica – <http://jamaica.caribbeanmarineatlas.org>
  - Trinidad and Tobago – <http://tnt.caribbeanmarineatlas.org>

Furthermore over the course of the project, eleven regional data managers received data management and web-based atlas development training. The network of national coordinators has improved communication among Caribbean marine/ coastal management agencies. Various regional coastal zone and marine management institutions have been made aware of the marine atlas concept. Furthermore, the CMA has been requested to participate in Caribbean Large Marine Ecosystem project activities and invited to give technical support to the Caribbean Sea Commission.

A number of needs have been identified by the stakeholders and the developers namely:

#### **Priority Stakeholder Needs**

- Additional data collection capacity
- Additional data management capacity
- Easy data and information search, visualization and download
- Transparent, well-defined data sharing policy
- Policy-relevant applications for spatial data/information
- Economic valuation of the benefits of participating in a coastal/marine atlas programme



**Stakeholder workshop for the Caribbean Marine atlas**



**Priority Developer Needs**

- Capacity development in web coding standards
- Application development support (functionality)
- Data management and preparation support
- Ability to automate some data management tasks
- Data sharing and distribution policy development

Based on these needs and the wider experience gained during the CMA project, there are a number of questions which we can pose which collaboration with the wider ICAN community can help us answer should the CMA -2 proposal be successful. These questions cover two areas:

**Stakeholder Re-Examination**

- Is our stakeholder scope too narrow (regionally, nationally)?
- What other services can atlases provide and to which audiences?
- How do you address the needs of multiple stakeholders (technologically, administratively)?
- How do you maintain stakeholder interest in atlas projects?

**Best Practice Guidance**

- Design considerations in atlas applications to enable advanced functionality (dataset search, etc.), code samples
- Automation of data integration for continuously updated datasets (e.g. NOAA earthquake database, SST data)
- Data use and dissemination agreement development for use with data providers/stakeholders
- Spatial data QA/QC best practices

**3.3. Integrated Coastal Area Management (ICAM) and related projects**

*Julian Barbière, Alejandro Iglesias-Campos (IOC-UNESCO, France)*

IOC-UNESCO recognizes the need for specific technical and thematic training for the ICAM related projects (e.g. SPINCAM II) that could benefit from the experience of the ICAN members developing their own coastal and marine atlases. In this regard, a strong capacity building process and training will continue to assist the SPINCAM II national teams, and will be a priority area for the second phase of the project, especially in those topics related to data and information analysis, management and sustainable maintenance, data and information web visualization (web atlas development), metadata management and data harmonization from different sources, as well as thematic contents and web atlas functionalities.

**3.4. IODE Training Activities**

*Peter Pissierssens (IODE, Belgium)*

Training and capacity development have been core components of the IODE programme since the beginning in 1961. This was essential given the lack of formal academic degrees or even curricula in oceanographic data management. In many cases data managers started as either ocean researchers or IT specialists. Since 1997 IODE has started documenting ocean data and information management practices, first in 1997 as the "IODE Resource Kit" on CD-ROM and, since 2001 as the "OceanTeacher" web site. This was followed in 2009 by the creation of the OceanTeacher Academy project. This project aims at building high quality and up-to-date expertise in oceanographic data and information management and exchange in new NODCs, marine information centres and related facilities, and keeping staff in these bodies up-to-date with the latest methodological and technical developments. OceanTeacher also creates awareness of the importance of oceanographic data management and marine information management with university students (marine environmental studies) to ensure that they will contribute quality data to

data centres during their future career. The OceanTeacher learning management system (LMS) has three components: the course management system, the digital library, and the training video library. So far all courses have been organized at the IOC Project Office for IODE, Oostende, Belgium. This facility was established in 2005 as the IODE Secretariat with substantial support from the Government of Flanders. Between 2009 and 2012 more than 700 students from 120 countries received training there. Gender balance is a priority for IODE's training programme. The next phase of OceanTeacher will involve the establishment of Regional Training Centres in various regions. These will serve regional and local needs, be self-driven make use of local expertise, deal with multiple thematic areas and also provide courses in locally relevant languages. By using advanced video conferencing tools the OceanTeacher Global Academy will also allow students in one region to attend courses in another region in real-time. ICAN was invited to actively make use of the OceanTeacher Global Academy for its training activities.

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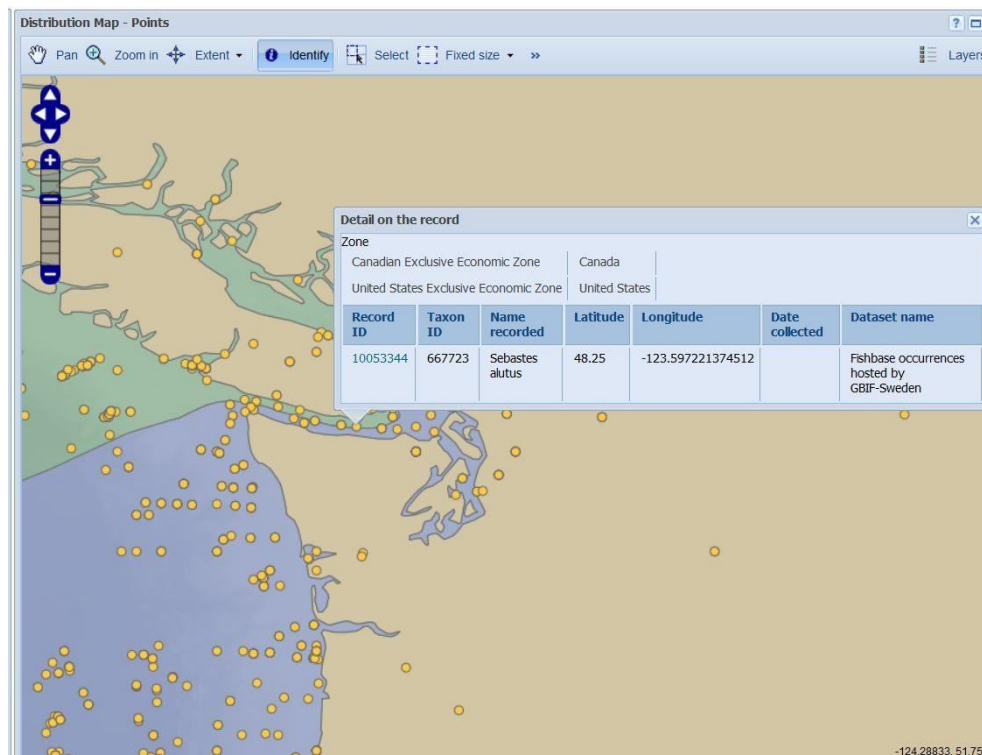
## 4. Building Synergies with IOC Projects & Related Initiatives

ICAN does not exist in a vacuum. Given the breadth and depth of experience and skills of its membership it can contribute to related initiatives but it can also learn from other projects and programmes. The objective of this session was to explore in the first instance, how ICAN could collaborate and interact with other IOC projects, but also to look beyond the IOC family to see where collaboration could be possible. Bob Branton presented on the Ocean Biogeographic Information System (OBIS) project of the IOC and also gave us an insight into the Ocean Tracking Network which provides information on where marine animals go and what they do. Alejandro Iglesias presented the International Coastal Area Management (ICAM) programme of the IOC and highlighted how data management tools developed within ICAN can contribute to the goals of ICAM. Beyond the IOC, activities within the Group on Earth Observations' (GEO) Coastal Zone Community of Practise (CZCP) are very relevant to ICAN, in particular the objective to develop a global coastal zone information system. Hans-Peter Plag provided an overview of the CZCP and discussed in more detail the coastal zone information system. He highlighted how the experience within ICAN could be valuable in helping the CZCP define the scope of their information systems and noted opportunities for knowledge and technology transfer. Peter Pissierssens concluded the session by reiterating his support for closer collaboration between IOC projects and made some practical suggestions as to how this could be progressed.

### 4.1. The Ocean Biogeographic Information System (OBIS)

*Bob Branton (Dalhousie University, Halifax, Canada)*

The Ocean Biogeographic Information System (OBIS - <http://www.iobis.org>) strives to document the ocean's diversity, distribution and abundance of life. Created by the Census of Marine Life, OBIS is now an IOC project within the IODE programme. OBIS allows users to search marine species datasets from all of the world's oceans. With its evolving OBIS database repository, users can identify biodiversity hotspots and large-scale ecological patterns, analyse distributions of species over time and space, and plot species' locations with temperature, salinity, and depth. Typical use scenarios include questions like: 'What organisms have been found or observed here?' and 'Where has this organism been found or observed?' Results are given as interactive maps, tabular reports and downloadable data files in a variety of formats, including: CSV (Excel ready), WMS (image), WFS (xml), and KML (GoogleEarth ready). Underlying OBIS is an international network consisting of 17 regional nodes (data assembly centres) engaged in the development of tools and products and offering services (including capacity building) for data-science and science-policy activities on a local, regional and global scale. OBIS currently contains 35.5 million records on 146,496 species from 1,130 sources worldwide. A discovery metadata portal resulting from collaboration between OBIS and the US National Aeronautics and Space Administration (NASA) Global Change Master Directory (GCMD) can be found at <http://gcmd.gsfc.nasa.gov/KeywordSearch/Home.do?Portal=OBIS&MetadataType=0>.



**Figure 2:** Screen shot from the OBIS mapper (<http://iobis.org/mapper/>)

Using OBIS maps, one easily sees that although more data is available from coastal areas than from open waters, less is known about smaller animals than larger ones and on the southern hemisphere than on the northern. Given that OBIS is an open-access database with data from every corner of the world, any provider (individual, institution, or otherwise) can upload to the server and contribute to the global maps OBIS seeks to expand.

OBIS is of global relevance as it is an evolving strategic alliance of people and organizations sharing a vision to make marine biogeographic data, from all over the world, freely available over the Internet. OBIS is increasingly picked-up by the scientific community with papers using OBIS data appearing on a weekly basis (80 publications in 2012) and 50,000 people visiting the data portal in 2012 (35% are returning visitors).

A relevant related activity is the Ocean Tracking Network (OTN - <http://oceantack.org>), a global scale OBIS contributor, providing knowledge on where animals go and what they do. Questions driving OTN research include: How might ocean warming affect animal behaviour? Will some species flourish while others die? Might some migrate to where the ocean is cooler? What is impact on fishery management plans?

A similarity between ICAN and OBIS is that both are repositories of coastal and marine data that can be accessed via searchable web-enabled applications. OBIS obviously has a strong biological focus whereas ICAN handles a wide range of thematic areas. Another similarity is related to outreach and capacity building: ICAN has plans to develop and utilise a range of communications tools to ensure information sharing within the ICAN community itself and to reach out, attract new members and inform potential users of the benefits of CWAs. OBIS has plans to produce an IOC Manual and Guides for OBIS nodes that will include the definition of OBIS nodes, the terms of reference and procedure to establish nodes, standards and best practices (OBIS handbook) and a section on quality assurance, criteria and evaluation of OBIS nodes.

## 4.2. The Integrated Coastal Area Management (ICAM) Programme

*Alejandro Iglesias-Campos (IOC-UNESCO, France)*

The ICAM programme was established by the IOC in 1997 with the objective to assist IOC Member States in their efforts to build marine scientific and technical capabilities in the field of ICAM and to ensure that scientific requirements are integrated into national and regional ICAM programmes and plans. Recognizing the need to promote ICAM at the regional and national levels, and in response to the needs identified by IOC Regional Subsidiary bodies (RSBs), the programme has been successful in attracting extra-budgetary resources for implementing a number of projects mostly at the regional level, and in transferring and applying some of the global methodologies (Indicators, Marine Spatial Planning) through the development and implementation of field projects.

Since 2010, joint actions with the World Heritage Marine Programme have been developed. The World Heritage Convention (WHC) provides an internationally recognized status for outstanding marine areas and sites, whilst IOC brings its expertise on the ecosystem-based approach through sound ocean science, monitoring and the application of area-based management tools for these unique WHC sites.

Collaboration with the International Hydrological Programme (IHP) of UNESCO has continued building on the joint IOC-IHP guidelines on Submarine Groundwater Discharges in the marine environment (IOC Manuals and Guides), and is now focusing on assessment of trans-boundary ecosystems and coastal aquifers management. Cooperation has also been established with a number of UN and non-UN entities, as well as with technical thematic networks, including ICAN and other networks at regional scale such as SPINCAM, CMA, African Coastal Atlas, etc.

IOC has endorsed ecosystem and area-based management approaches such as Marine Protected Areas (MPA) and Large Marine Ecosystems (LME) that together with the emergence of new tools such as Marine Spatial Planning, in which IOC has been the international leader in defining the conceptual approach and documenting good practice, provide opportunities for supporting multi-scale and nested ocean governance. Therefore IOC needs to address these multi-scale management tools in a coherent and consistent way to assist Member States effectively, by increasing collective capacity to respond to change and challenges in coastal and marine environments through further development of science based management tools such as Integrated Coastal Area Management, Marine Spatial Planning, and Large Marine Ecosystem Approach; building on IOC's and UNESCO's other coastal programmes in developing Member States' capacity for the application of ecosystem-based management tools; and promoting the integration of climate change adaptation and coastal hazards preparedness into the application of area-based management approaches, based on users' needs.

ICAN has already initiated collaboration with ICAM, in particular through capacity building efforts within the SPINCAM network. Training in coastal atlas development and data interoperability is planned as well as technical assistance through the evaluation by the SPINCAM community of SmartAtlas as a platform for the development of a regional atlas. Further collaboration will be developed based on an analysis of the needs of the community.



**Andrus Meiner (EEA), Andy Sherin (COIN- Atlantic) and Alejandro Iglesias-Campos (UNESCO – IOC) at ICAN 6**

### **4.3. GEO Coastal Zone Community of Practise**

*Hans-Peter Plag & Paul DiGiacomo (United States)*

In 2005, the Group on Earth Observations (GEO) was established with the mandate to implement the *10 Year Implementation Plan for the Global Earth Observation System of Systems (GEOSS)*. For the linkage to users of Earth Observations, GEO utilizes the concept of Communities of Practice (CoP). One of these CoPs is the Coastal Zone Community of Practice (CZCP, <http://www.czcp.org>), which developed out of the Coastal Theme of the Integrated Global Observing Strategy Partnership (IGOS-P). The CZCP supports GEO in its goal to provide timely observations informing decisions concerning the coastal zone. High priorities for the CZCP related to GEOSS are improved forecasts of sea-level rise and the associated increase in frequency and extent of coastal inundation, which may be exacerbated by an increase in the frequency of extreme weather, as well as changes in water quality and ecosystem health and productivity. The main motivation is the notion that the sustainable development of the coastal zone is one of the front lines in humanity's sustainability crisis. The CZCP brings together experts in an effort to support integrated coastal zone management through utilization of EOs and derived products. The CZCP focuses both on research and practical applications related to coastal zone management.

One of the main activities of the CZCP has been a series of regional workshops entitled “GEOSS Support for Decision-Making in the Coastal Zone: Managing and Mitigating the Impacts of Human Activities and Natural Hazards in the Coastal Zone”. Some of the key outcomes and conclusions from these workshops include: the importance of understanding and linking to decision makers; the importance of capacity retention in addition to capacity building; the necessity to bridge the gap between science and governance and that many stakeholders have information needs that are not met. In regards to capacity building it was suggested to plan in terms of (1) capacity retention: prevent existing infrastructure, individuals, and know-how from disappearing; (2) capacity sustainability: the need for institutional and infrastructure longevity; and (3) capacity empowerment: the need to make enhanced use of capacities that already exist. Concerning information needs the CZCP recommended the establishment of a Coastal Zone Information System (CZIS).

Other CZCP activities include building on the legacy of the IGOS-P Coastal Theme report; populating the GEOSS user requirements registry; support for relevant GEO Work Plan tasks (GEO, 2014); working with and helping to implement the Global Ocean Observing System (GOOS), the Global Terrestrial Observing System (GTOS) and

other observing systems related to coastal zones; facilitating data sharing and access; building of capacity; and addressing of funding issues. In terms of capacity building, the CZCP focuses on the use of cyber-infrastructure. The development of a concept for a Coastal Zone Information System is in progress, and this system will compile information on the environmental, social and economic state of the coastal zone; provide access to science, technology, and innovation knowledge; include a crowd-sourcing tool; contribute to the democratizing of data, information and knowledge; develop a virtual stakeholder table (VST) in support of deliberative governance; aim for disaster risk reduction; and help to increase resilience and adaptive capabilities. An important question is to what extent the CZIS can be related to and/or coordinated with ICAN.

In subsequent discussions it was agreed that much of the work of ICAN would be of value to CZCP's objective to build a CZIS and that dialogue should remain open between both organisations. CZCP will probably organise a workshop in 2014 to progress its thinking in relation to the CZIS and ICAN should be represented at that workshop. ICAN members may also choose to join the CZCP and contribute their know-how and expertise to the group. To do this check out: [http://www.czcp.org/you\\_and\\_the\\_CZCP/](http://www.czcp.org/you_and_the_CZCP/).

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## 5. ATLAS STORIES – WESTERN PACIFIC RIM AND BEYOND

The ICAN 6 Atlas Stories focused on CWA development around the Western Pacific Rim presenting new activities as well as updating the Network on recent upgrades to previously discussed CWAs. The session was chaired by Andrus Meiner from the EEA, who introduced the variety of projects and activities starting off with the South American SPINCAM, followed by updates on the Oregon Coastal Atlas and the Washington State Coastal Atlas. Workshop participants also learned about Canada's CanCoast and ShoreZone and the session concluded with the introduction to SmartAtlas through the African Coastal & Marine Atlas experience.

### 5.1. SPINCAM I (Southeast Pacific Data and Information Network in Support to Integrated Coastal Area Management)

*Alejandro Iglesias-Campos (UNESCO – IOC), Julian Barbière (UNESCO – IOC) and Fernando Félix (CPPS)*

SPINCAM was developed to establish and support an integrated coastal area management (ICAM) indicator framework at national and regional level in the countries of the Southeast Pacific region (Chile, Colombia, Ecuador, Panama and Peru). Funded by the Flemish Government of Belgium the project commenced in 2008 and is coordinated by the IOC-UNESCO and CPPS.

One of the goals of the project was to build information systems at national and regional level to support the development of indicators, their spatial representation, and the dissemination of ICAM resources and experiences, including the communication format and strategy. Part of this process includes a custom-built spatial data infrastructure and a Coastal Web Atlas (CWA) at each national level. These CWAs will provide the stakeholders with information on the sustainability of existing and future coastal management practices and development. A regional CWA is also being developed in order to provide an integrated view across the region.

In discussion with the ICAN 6 participants interest focused on how to measure the biodiversity and the coastal management plan indicators. As both are still in development, the IBEMAR network – the IberoAmerican Congress on Integrated Coastal Management as well as the European FP7 funded project PEGASO (<http://www.pegasoproject.eu/>) were suggested as useful resources that could, for example, provide valuable information towards the development of indicators as well as link with other SPINCAM activities. In addition plans for a focussed training activity for SPINCAM technical members by ICAN participants during the SPINCAM Steering Committee meeting in December 2013 were discussed.





## SPINCAM Atlas

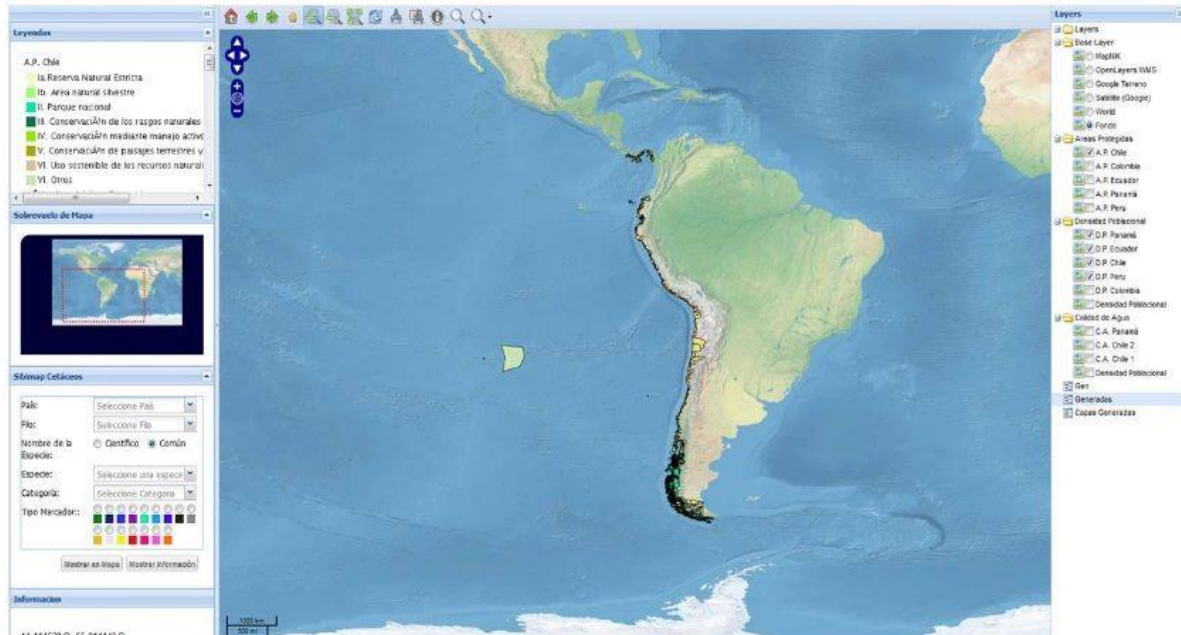


Figure 3: Screen shot of SPINCAM Atlas

### 5.2. Oregon Coastal Atlas

*Tanya Haddad (Oregon Coastal Management Program, USA)*

The Oregon Coastal Atlas is well known throughout the ICAN community and has undergone a number of significant changes since the project launched in 2001. Most recently this CWA, which shares data, information and analytical tools with decision makers and stakeholders of the Oregon coast, was upgraded to Atlas version 3.0. The new developments include a focus on exposing data archives via services to cater for the emerging data needs of the Oregon Coastal Atlas user community and an upcoming new map interface.

The Q/A session with ICAN 6 participants highlighted the importance of standards, especially in terms of upgrading a CWA or switching to another technology. The Oregon Coastal Atlas interface will be upgraded via Geomoose, which complies with open source standards and was specifically developed for planners and decision makers. Meeting open source standards allows access and connectivity to other projects that also comply with these standards such as the ICAN portal, Spatial Data Library and the Oregon Data Network. Furthermore standard compliance will facilitate easy plug-in components with Joomla, which for example could simplify a straightforward transfer from Geonetwork to another CSW metadata server. The next steps for the Oregon Coastal Atlas will focus on regional activity, such as the West Coast Governors Alliance Regional Data Framework to enable connection with official State data portals with the long term vision to also connect to university labs and other coastal atlases, which strongly links to the work and research undertaken by the ICAN tech team through the ICAN portal. A more detailed presentation of recent upgrades to the Oregon Coastal Atlas can be found in the proceedings of CoastGIS 2013 (Haddad et al., 2013).

### 5.3. Washington State Coastal Atlas

Liz O'Dea (Washington State Department of Ecology, USA)

The Washington Coastal Atlas has existed in various forms over the last ten years. Recent Atlas redesign was looking for a more intuitive web application that allows quicker access to information and contains a number of new and upgraded tools. The re-launch of the Atlas took place in December 2012 and included updated technology from ArcIMS to ArcGIS Server with JavaScript API and a redesigned interface that maximises the map and improves usability.

The team employed a design technique termed progressive disclosure, which provides the information the user needs but also reveals information the user may want to know. This was achieved through a number of new features such as extendable and collapsible content information, small information panels and drill down tools, which allow the user access to more detailed information from one window. The content of the Atlas is also interconnected allowing access to complimentary information, which enriches the user experience and introduces specific tools to other parts of the Atlas. New tools introduced to the CWA enhance the Shoreline photo viewer allowing search and zoom, access to photos from multiple years and comparison of these images, navigation along the coast, viewing larger images, downloading images and an e-mail link. Future developments of the Atlas will focus on new tools and the upgrade of existing features e.g. introduction of spill response planning and watershed characterisation but also on sharing the code among tools and other agency applications. Adding more data on lakes and oceans is envisioned as well as the development of a flexible home page with quick links and highlights of hot topics.

The Atlas is using web standards and discussion with ICAN 6 participants highlighted again the importance of making sure standards are met to enable data and information integration into bigger systems. The regional CWAs may have developed independently and may look and feel different, however shared standards will ensure that problems can be addressed across borders. As the Washington Coastal Atlas is using an Esri product, the discussion also addressed Hybrid approaches to integration between open source and Proprietary software and emphasised that feeding data into shared metadata structures focusing on metadata, people and activities and not on the software is more important, again linking to the research undertaken via the ICAN tech team through the ICAN portal. A more detailed presentation of the Washington Coastal Atlas can be found in the proceedings of CoastGIS 2013 (O' Dea et al., 2013).

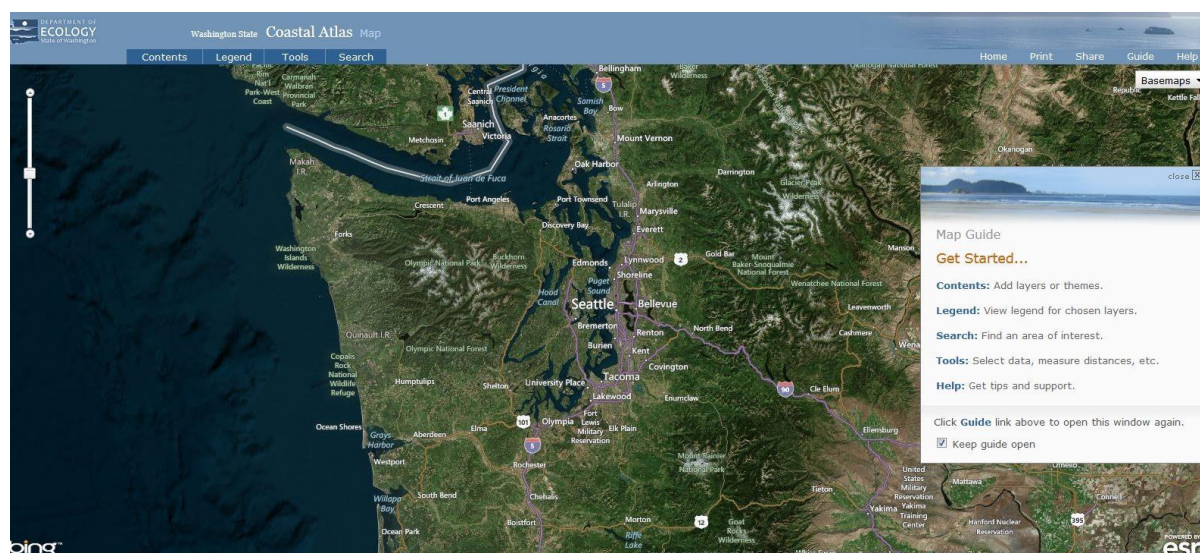


Figure 4: Screen shot of the Washington State Coastal Atlas (<https://fortress.wa.gov/ecy/coastalatlus/tools/Map.aspx>)



#### 5.4. CanCoast: A National-scale Framework for Characterizing Canada's Marine Coasts

*Andy Sherin on behalf of Chelsea Smith (Geological Survey of Canada)*

CanCoast was developed to assist adaptation planning for Canada's coastal zones and to contribute to a national assessment of coastal vulnerability to climate change. CanCoast to date contains a National scale digital database on a 1:50,000 scale and holds several digital coastal datasets related to topographic relief, bedrock geology, surface materials, landforms, sea level trends, tidal range, wave height and erosion. CanCoast currently exists as an ArcGIS file, which for example visualises a calculated Sensitivity Index for the Canadian coast and the resource will be updated with various relevant data sets for example incorporating socio-economic information to allow further climate change risk analysis.

CanCoast is distributed to interested groups such as the Coastal and Ocean Information Network (COIN) Atlantic, the Emergency Pre-SCAT Assessment for Arctic Coastal Environments (eSPACE) and the Oceans and Ecosystems Division - Fisheries and Oceans Canada. At the moment CanCoast is available upon request but a future publication to a web-based interface is planned through the Natural Resources Canada website. A more detailed presentation of CanCoast is available in the proceedings of CoastGIS 2013 (Smith et al., 2013).

#### 5.5. ShoreZone in Alaska and British Columbia

*Maeva Gauthier (Coastal & Ocean Resources, Canada)*

ShoreZone is a coastal habitat mapping programme that has been applied in Oregon, Washington, British Columbia and Alaska for the past 30 years. ShoreZone has to date established a rigorous geospatial database, which covers over 100 000 km of coastline. The most recent ShoreZone survey in Alaska was on St. Lawrence Island, off Western Alaska. Oblique imagery is collected at low tide by helicopter and all photos are georeferenced while the geomorphology and the biology is mapped. Attributes include eelgrass presence, environmental sensitivity index, oil residency index, exposure, sediment texture, geomorphology, man-made features, etc. Data is posted online in various ways depending on the State or the Province.

ShoreZone Alaska has been leading the way in terms of web-posting the information and making it available to the public through a partnership with NOAA. NOAA has been using the Flex Site to post photos, video captures (one frame per second), and simple queries of the mapped data: <http://alaskafisheries.noaa.gov/shorezone/>. They are currently upgrading the platform to stream HD videos along with the photos. Interesting developments for online applications allowing posting videos, photos, and mapped data include the Cook Inlet Response Tool from the Cook Inlet RCAC and the Alaska Ocean Observing System: <http://www.aos.org/cook-inlet-response-tool/>. The tool is intended to aid disaster responders and provides mapped data and real-time data along with the ShoreZone imagery. Challenges for ShoreZone include standardisation of data posting platforms between States or Provinces, data management, and keeping up with technology changes e.g. HTML5 availability across platforms.

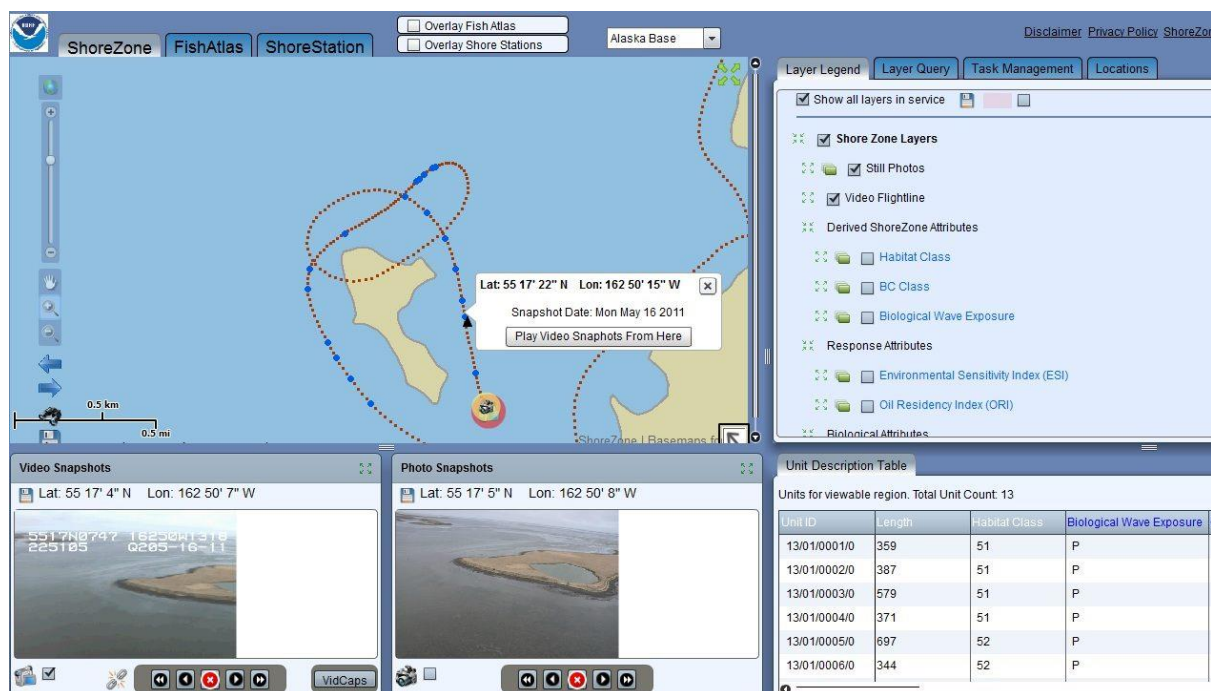


Figure 5: Screen shot of Alaska ShoreZone (<http://alaskafisheries.noaa.gov/mapping/szflex/>)

## 5.6. African Coastal & Marine Atlas Experience with SmartAtlas

*Yassine Lassoued (Coastal and Marine Research Centre, Ireland)*

The African Coastal & Marine Atlas (ACMA) is supported through IODE's ODINAFRICA project and aims to improve access to data and increase capacity to use that data through National workshops, regional programmes and training. Furthermore, the Atlas benefits from an editorial team, creates and processes data and held a series of workshops to build the ACMA. ICAN supports the ODINAFRICA project and CMRC has licenced the "Marine Irish Digital Atlas (MIDA) engine" to the ODINAFRICA partners.

The "MIDA engine" licence is free and training on how to deploy and populate an Atlas was provided by the CMRC as part of IODE workshops, which resulted in the successful deployment of the ACMA with the "MIDA engine". As part of this process CMRC received funding from IODE under ODINAFRICA to develop SmartAtlas to upgrade features employed in the original MIDA and introduce new functions, by using the latest open source technology solutions, complying with standards and making SmartAtlas reusable and customisable. CMRC is now in the process of upgrading their original MIDA via Smart Atlas, which is freely available from <http://smartatlas.ucc.ie/downloads>.

## 6. ADDING YOUR ATLAS TO THE ICAN PORTAL

The Technical Committee conducted a meeting followed by a workshop which focussed on recent developments to the ICAN portal and how new atlases can connect

Yassine Lassoued gave an overview of the status of the portal and the progress made in the last two years. Vocabularies are now stored at the NERC vocabulary server, and the portal web interface is hosted at UCC. Yassine demonstrated how this new interface works, presenting the multilingual search capability, the semantic search, and some of the advanced features, including connecting directly to map services and displaying them in the map (<http://ican2.ucc.ie/atlas/>).

The current interface is flex-based and is very disconnectable from the server side. In the next two year work period the committee anticipates shifting it to HTML5. Submission of comments is welcome. As a follow-up to the workshop minor revisions will be applied to the current version of the prototype. Major revisions will be recorded and handled in the new HTML5 version

Tanya Haddad gave a presentation on the two paths that users can take to register any Atlas with the ICAN global registry.

David Hart presented on the steps that Wisconsin Coastal Atlas took on the road to registering with the ICAN project.



**Liz O’Dea (Washington State Department of Ecology), Tanya Haddad (Oregon Coastal Management Program) and Prof. Dawn Wright (Esri and Oregon State University)**

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## 7. DATA INTEGRATION PLATFORMS (INCLUDING VGI)

Many of the CWAs developed within the ICAN community have been primarily developed by institutions which have gathered their own or other organisations data and prepared them for presentation through their CWAs. However in recent years the Internet has become much more of a two way flow of information and data. The general public now contributes as much if not more data and information as so called “authoritative” sources. Applications such as Wikipedia, Wikimapia, Flickr, OpenStreetMap and the overall concept of web mashups are examples of this. Indeed, as remarked by Hans-Peter Plag during this session datasets such as the global soil database have been improved by a global community in a way that is better than what scientists could do themselves. These developments are also being felt by those developing coastal information systems and this mini-workshop offered the opportunity to present examples where data come from a multitude of sources including citizens. The term Volunteered Geographic information (VGI) was coined by geographer Michael F. Goodchild who, in exploring the world of user-generated content on the web, noted that

*“a remarkable phenomenon ... has become evident in recent months: the widespread engagement of large numbers of private citizens, often with little in the way of formal qualifications, in the creation of geographic information, a function that for centuries has been reserved to official agencies. They are largely untrained and their actions are almost always voluntary, and the results may or may not be accurate. But, collectively, they represent a dramatic innovation that will certainly have profound impacts on geographic information systems (GIS) and more generally on the discipline of geography and its relationship to the general public. I term this volunteered geographic information (VGI), a special case of the more general Web phenomenon of user-generated content ...”* (Goodchild 2008).

### 7.1. European Environment Agency – A View on Mapping

*Andrus Meiner (European Environment Agency, Denmark)*

Growing environmental pressures require the development of data registers and a move towards integrated monitoring of the environment. Building distributed network services to support a wide range of users is a priority for many national and international actors. Ongoing technical development of computing devices is supporting this trend as well as allowing the expansion to mobile GIS.

The integration of satellite, modelled and data from in-situ observations helps in the provision of public services as was noted at the Eye on Earth summit in Abu Dhabi December 12, 2011. The core idea of a data and service market is that it allows the creation of drag and drop intelligent maps provided as web services and the manipulation of maps on a common on-line GIS platform. Different communities can therefore increase their cooperation on the basis of mobile platforms for environmental monitoring. Integrating observations from citizen scientists and the general public allows stronger citizen engagement and this is further facilitated by social media.

The Eye on Earth approach, that is used by e.g. UNEP Live platform (<http://www.uneplive.org>) is aiming to offer a range of functions, such as the ability to explore existing map services – gallery, map discovery; sharing - making your own observations with available apps and sharing them – air and beach water ratings, noise measurements, species siting, marine litter counts; creating your own maps using online map services – online account login, free map ‘mashups’, maps design and sharing as a new map service.



**Figure 6:** Thematic display from UNEPLive

In March 2013, the first Eye on Earth User Conference took place in Dublin, Ireland. In the Dublin Statement, which was produced as a result of the discussions, the participants expressed their intention to develop the Eye on Earth Network and identified the following goal:

*To facilitate the sharing of environmental, societal and economic data and information, provided by the diversity of knowledge communities, to support sustainable development.*

EEA has been working on environmental applications (watches) in which either crowdsourcing or citizen science is used to generate data. In this context, the EEA has been using a definition of citizen science offered by Rick Bonney from the Cornell laboratory of Ornithology, US:

*'Organized research in which members of the public—who may or may not be trained in science—gather or analyze data'*

In order to contextualise the concepts of citizen engagement (crowdsourcing and citizen science) employed by the EEA watches, the overview by Sui et al, (2012) is useful. The most advanced EEA's citizen science application (i.e. using citizens as basic interpreters) is Marine LitterWatch ([http://www.eea.europa.eu/themes/coast\\_sea/marine-litterwatch](http://www.eea.europa.eu/themes/coast_sea/marine-litterwatch)). On the other hand, WaterWatch (for bathing water quality) and NoiseWatch are based on crowdsourcing (i.e. citizens as sensors).

The EEA's focus is on enhancing its work and effectiveness with existing networks and communities. This includes for example supporting the development of a European citizen science network based on existing and fledgling networks at national level.

Furthermore, the EEA engages in citizen science based watches that reflect and reinforce EU political priorities e.g. Marine LitterWatch aligns with the requirements of the Marine Strategy Framework Directive.

In a reflection on the success of the watches in terms of keeping people engaged beyond the novelty stage Andrus suggested that the citizen science watches have more impact because of more interaction with experts in the field. Crowdsourcing watches would work better at local level, where interest can be maintained. Quality Control is a challenge. For the crowdsourcing watches there is none, however for the citizen science applications participants commit to following a set of protocols when submitting data.

## 7.2. SeaSketch

*Will McLintock (University of California Santa Barbara, USA)*

SeaSketch ([www.seasketch.org](http://www.seasketch.org)) is a software service launched in October 2012, intended as an end-to-end mapping solution for marine spatial planning. Building on our experience with developing MarineMap ([www.marinemap.org](http://www.marinemap.org)) for Marine Protected Area (MPA) planning in California, we developed SeaSketch to reflect “geodesign” principles where anyone, regardless of their technical abilities, may sketch prospective management plans and receive analytical feedback on the consequences of their designs. Project administrators access SeaSketch via a web-based interface to (a) define the geographical scope of the project, (b) create users and groups with specific permissions, (c) add map layers, (d) create “sketch classes” or plan elements for each type of management tool (e.g., MPAs, aquaculture sites, energy sites, transportation zones, etc.), (e) associate sketch classes with analytical scripts, (f) create discussion forums that are dynamically tied to maps, and (g) define and launch geospatial surveys to collect information about the distribution of resources and human activities.

SeaSketch is currently being used for marine spatial planning in the Hauraki Gulf of New Zealand, the Galapagos Islands, the United Kingdom, Australia, the Mediterranean Sea, Coastal United States, the Great Lakes, and Barbuda.

The survey tools in SeaSketch allow project administrators very quickly to design spatial surveys to collect information from a wide audience (i.e., crowd sourcing) or experts (i.e., targeted groups). Survey tools are currently being used to collect information on the distribution of fishing activities in Barbuda and the distribution of marine mammal sightings in New Zealand. A further discussion of SeaSketch can be found in the CoastGIS 2013 proceedings (Paul, 2013).

In discussion it was clarified that Seasketch is available for free for educational institutions and students when used for research purposes, but that there is a licencing cost when used by commercial organisations. As of June 2013 fifteen groups are licenced to use SeaSketch and there are over 100 educational projects. SeaSketch does not purport to be a Coastal Atlas, but would see itself as a product that can consume CWA data, as its usage is generally project based. Seasketch is constantly being developed and new functionality added in the context of one project is made available to others. For example the survey tool functionality was funded by New Zealand Conservation. Upcoming functionality includes trade off analysis based on biological-ecological trade off models for ecosystem services and cumulative impact analysis.





**Lucy Scott (ASCLME – Project) and Simon Claus (VLIZ) in discussion at coffee break**

### 7.3. Marine Regions *Simon Claus (Flanders marine Institute- VLIZ, Belgium)*

Marine Regions is a project that aims to develop a standard for georeferenced marine names (Claus et al, 2014). This is a web based service that also has the potential to link with the ICAN Portal. Geographic Information Systems have become indispensable tools in managing and displaying marine data. However, a unique georeferenced standard of marine place names and areas is not available, hampering several marine geographic applications, such as the linking of these locations to databases for data integration. In order to improve the current situation, “Marine Regions” defines a standard, hierarchical list of geographic names, linked to information and maps of the geographic location of these names and is freely available at <http://www.marineregions.org>. The objectives of Marine Regions are to improve access and clarity of the different geographic marine names such as seas, sandbanks, ridges and bays and to display the boundaries of marine biogeographic or managerial marine areas. As a user or developer ICAN member atlases can use the Marine Gazetteer web services to feed their atlases with the Marine Gazetteer standardized list of georeferenced marine place names and marine areas. Furthermore the services could be linked to the ICAN Interoperability Portal. All the web services are available and described at <http://www.marineregions.org/gazetteer.php?p=webservices>

In follow up discussions it was clarified that the EEZs are measured from Baselines rather than coastlines. Furthermore, the project would like to collaborate with those developing Extended Continental Shelf boundaries, so as not to duplicate effort and would also like to include territorial seas, although this can be a somewhat contentious issue! The UNEP WCMC has a Planet Ocean database which stores the boundaries of Marine Protected Areas. Marine Regions is aware of this database, but again does not want to duplicate it. Multiple names for the same region can be supported within Marine Regions, but the region itself has a unique digital identifier in the database.

### 7.4. The Esri Living Atlas Concept

*Dawn Wright (ESRI, USA)*

#### **The Esri Living Atlas**

Esri is introducing the concept of a “living Atlas” which is delivered via ArcGIS Online (AGOL), a cloud based platform, available through [www.arcgis.com](http://www.arcgis.com). ICAN members can take advantage of this concept by using it to leverage their existing Atlas holdings thereby reaching a wider audience or by using the platform to build a new Atlas quickly, without having to worry about building their own Atlas IT infrastructure.

Over the last few years, Esri and their users have been actively assembling and sharing a rich collection of geospatial content and are publishing this via ArcGIS Online. Today, this represents one million items of

geospatial data, including imagery, basemaps, and map layers on hundreds of topics such as demographics, boundaries, elevation, soils, and climate. This content is organized under 3 major themes for describing the planet: People, Earth, and Life. These maps and layers are published by Esri itself and thousands of other organizations around the world. Increasingly, the information published in these maps is dynamic and in addition, a new class of real-time services, including traffic, weather, earthquakes, stream flows, and others are being made available by both Esri users and partners.

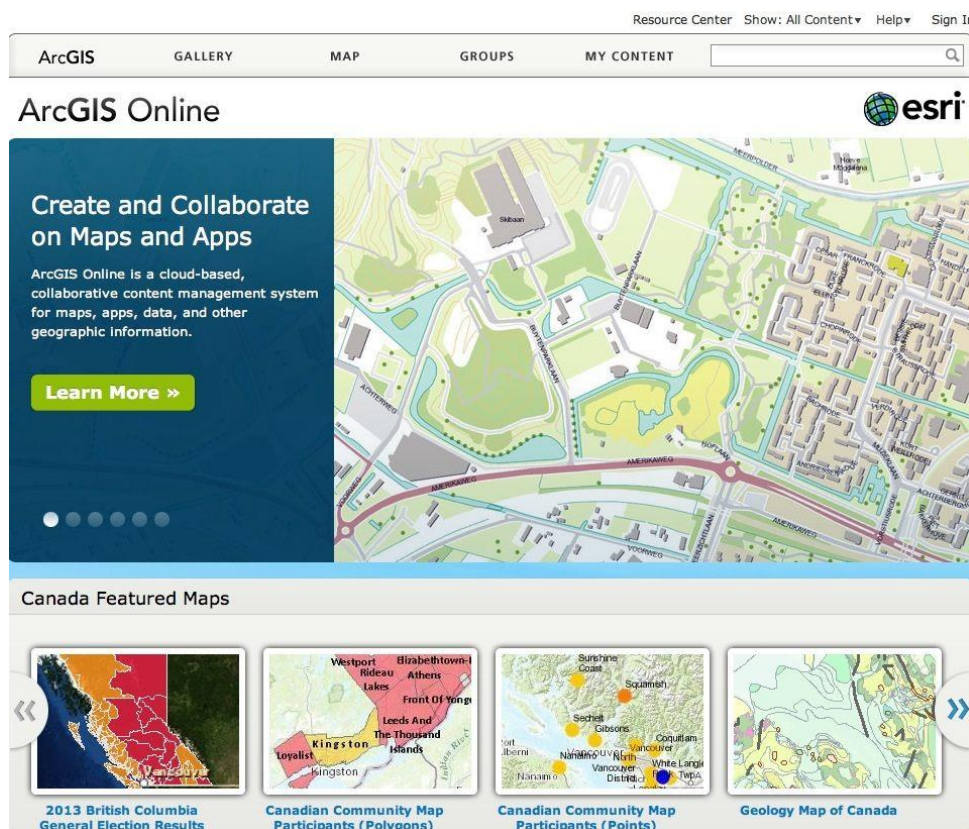


Figure 7: ArcGIS Online is curated by Esri and a global community of participants

Conceptually, this collection of maps and layers represents a large and growing atlas of the world. Like a traditional atlas, this online collection includes both reference maps and thematic maps on many topics. However, unlike a traditional atlas, this collection of maps and layers is continually growing and evolving as new maps are added and existing maps are updated. These maps and layers, as well as a range of GIS tools, are "ready-to-use" in a wide variety of GIS applications as well as apps of all kinds. As a result, this online platform is now serving billions of maps per month and rapidly growing in the variety of maps that are available and applications that use them. Esri intends to continue building and curating the maps in this "living atlas of the world" and invites Esri users and partners to work with them on this community effort.

From a practical development point of view, the user has complete control and can store data, maps, and apps on Esri's cloud (where Esri provides all admin, backups, and security), or their own private clouds. AGOL for Organizations could be considered as an "Atlas in a Box" because everything that is needed is there in a package for the user already. This can be used by ICAN members to develop their own atlases from scratch or can be used to leverage layers from existing atlases. In this fashion it works as a shop window and can be used to attract users back to the original atlas site. AGOL for Organizations requires licencing, but it may already be included in any Esri site licence your university or agency has already set up or it may be possible to add it for a small additional fee.



Esri is also engaging with the open source community and a number of its products such as Geoportal Server, ArcGIS editor for Open StreetMap, and its Flex Viewer are open source. More information on Esri's open source initiatives can be found at <http://blogs.esri.com/esri/arcgis/2013/02/04/going-open-source-with-esri/>

## Story Maps

Story maps are open-source apps that can be used to combine coastal web atlas content with multimedia content to tell geography-based stories about coastal issues. Story map apps provide a framework and user experience that accommodate various forms of storytelling. For instance, the "Swipe" app enables users to easily compare two related thematic maps or images by moving a swipe tool back and forth across the screen. The "Map Tour" app presents a series of geo-tagged photographs together with an interactive map, facilitating place-based narratives such as walking tours. Esri publishes a continuing series of story maps on a variety of topics at

<http://storymaps.esri.com>. The site includes a gallery of storytelling apps or templates, and a showcase for story maps produced by a rapidly-growing community of storytellers. Story map apps are also available via this gallery and GitHub. This site offers a repository of source code for the story map templates. Users can download an app and host it on their own server or that of a third-party provider.

A user can go from a story map to a story ATLAS, to accommodate much more content than can be contained in a single web page or series of web pages. One can also publish an e-book (the reverse of going from a hardcopy atlas to a coastal web atlas: going from a coastal web-atlas to an e-book, or back to hardcopy if desired). One example is an iBook. iBook is an iOS ( iPhone and iPad ) application that can be used to view interactive books published using the iBook Author ( A Mac only application that can be downloaded for free on the Mac App store ). iBooks can have interactive elements like gallery of images, videos, reviews, 3D models and any kind of HTML5 widget embedded. One example which demonstrated the capabilities very well is the Traveller's Atlas of Mexico available at <http://esriurl.com/6437>

## 8. ICAN WORK PLAN (2013-2015)

The ICAN SG presented an outline work plan to IODE in advance of the IODE XXII meeting held in March 2013. This workshop provided an opportunity to review the plan and update it. Discussions took place under a number of topics and specific activities to be progressed up to 2015 were identified.

### 8.1. Strategy

Ned Dwyer presented the overall strategy of ICAN, including its goals and objectives. He also outlined the areas of strategic activity for ICAN which include: communications, training and capacity building, atlas interoperability and standards development, coastal atlas best practise, interacting with users and engagement with other relevant projects. He also clarified the new governance structure now that ICAN is an IODE project. There is an overall Steering Group which devises the strategy and guides the various activities. This Group is currently comprised of sixteen members representing various geographical areas. In addition a number of Committees can be formed for specific purposes. At the moment there is a technical committee, a communications committee and a training committee. The SG members and various committee leads are listed in Appendix A.

During the discussions it was highlighted that representation from the Asia/Australasia area is low. Contacts have been made with some groups in India, but so far these have not led to concrete engagement. It was said that the IODE ICAM activity could be useful in helping to engage groups in these regions. Also members should look to various technical conferences that may not be exclusively coastal in nature as a way of attracting new partners.

The need to source funding to support ICAN activities was discussed. All members should look for opportunities at national and international level where specific aspects of the ICAN work plan could be progressed. The Belmont Forum was mentioned as one organisation that is a potential funding source.

## 8.2. Communications Plan including Website Migration

Andy Sherin led the discussions on the communications plan. In regard to communications ICAN has three goals (1) raise its profile; (2) encourage communication among existing members and (3) increase ICAN membership. We need to carefully define our audience in order to tailor the message and target them with appropriate communications. Atlas developers, users and funders were seen as the primary audiences. One of the key messages to communicate is that there is an expert community in ICAN that can provide mentorship and formal/informal support to atlas developers and users. Also it is important to create a sense of belonging among members in order to enable them to ask for help and go about their job better. Part of our communications strategy should be to highlight the possibilities and utility of atlases as well as showing examples of what an atlas can do.

Elements of the communications plan include (1) the web site (2) newsletters (3) mailing lists. The utility of an ICAN information repository was discussed. This could be a place to store all presentations and publications made by ICAN members. The necessity to reach out to ICAN members who do not have English as a first language was also raised as was the role of social media. Although social media can be useful it needs to be managed carefully and takes a certain amount of effort. It was thought that those who are already using Twitter could easily retweet information and short news items for example.



**Kathrin Kopke (CMRC) leads discussions at the workshop**

Oregon State University (OSU) has maintained the ICAN website up to now. This will now be migrated to an IODE server, although we should maintain the <http://icoastalatlases.net> domain name. Some discussion ensued on the good and bad points of the existing site and how the new one could be improved. OSU will archive the current site, so its content will be available for the future. In terms of the new site it should be made shallower and easier to navigate, as there are too many branches in the current one. We should elevate visibility for current activities. A scrolling gallery of atlases would be useful so it is clear it is an Atlas network! Showcase interesting things people do with atlases. Include a map or atlas that points to all the atlases in the network. Include a calendar feature and an easy to use search feature.

In terms of news items it was felt that a web newsletter would be preferable to a pdf. News clips can reduce the burden on the compiler and speed up communications. The current ACZICS newsletter could be a useful model. The newsletter could also have news clips in addition to the longer items.

Todd Hallenback shared a communications planner with the Communications Committee which can be used to help devise an appropriate ICAN Communications Strategy.

### 8.3. User Interactions

CWAs are only of value when used! However, it can be difficult for developers and atlas custodians to access detailed information on usage. Nevertheless, some in the ICAN community have been very successful at engaging users through the full cycle from atlas conception to development, implementation and use. It would be extremely valuable to capture this information and make the methodology and stories available to the wider ICAN community. This could be done via a guide or handbook. In order to ascertain interest in such a guide, Kathrin Kopke created and circulated a questionnaire containing four short questions relating to potential content and willingness of workshop participants to contribute to an ICAN user interaction guide. The questionnaire intended to scope the interest of the ICAN community to produce such a publication and tried to establish what techniques CWA developers have used to engage their potential audiences and how CWA hosts interact with their user community. Questionnaire results and subsequent discussion at ICAN 6 confirmed the interest and willingness of the ICAN community to actively contribute to an ICAN user interaction guide but did not capture specific techniques used by individual CWA developers and hosts.

Subsequent discussion centred on how to establish potential chapter titles. A decision was taken to develop a provisional table of contents for circulation to the ICAN SG group for comment and amendment. The guide is envisioned to include a literature review element and user interaction stories from the ICAN community to illustrate successful techniques for user engagement. A set of recommendations and examples with explanations of what worked well and what did not is foreseen. Such a guide should be of use for both new CWA developers as well as established CWA hosts. Additional discussion also indicated interest to use data collated by individual network members on their CWA user community to illustrate aspects of the guide.

### 8.4. Building Synergies

Following on the formal presentations on Day 1 of related relevant activities in other IOC and non-IOC projects, discussions ensued on how practical steps could be taken to strengthen further engagement and synergies between projects. As Alejandro Iglesias is part of IOC-ICAM and a member of the ICAN Steering Group, he believed that he was well positioned to help build collaboration between these two projects. The SPINCAM project conducted within ICAM is one such area in which collaboration can begin immediately.

Peter Pissierssens suggested identifying when and where IOC governing body meetings of programmes such as GOOS (Global Ocean Observing System) take place. An ICAN representative could endeavour to attend these meeting and promote the use of atlases and the capacity available within ICAN. It is also necessary to attract the attention of funders in order to progress ICAN technical developments. Peter also underlined the fact that decision makers often need local data and that ICAN should demonstrate how data at appropriate local scales are or can be made available via coastal atlases and can be presented in easy to visualise and understand ways. Atlases are more than data repositories.

### 8.5. Coastal Atlas Training Needs

Based on the formal presentations on Day 1 and ensuing discussions around training a number of recommendations were made:

- Develop an online repository of training resources organised by topic on the ICAN website. Include links and connection to relevant Ocean Teacher material where necessary.
- Put a training section in each newsletter – either a new resource/tool, a need, or a training experience (testimonial)

- Investigate if and how the “training of trainers” concept might work for ICAN
- Establish an ICAN training committee to manage training activities.

## 8.6. Technical Developments

Liz O’ Dea presented the work plan discussions held during the technical workshops. It was presented as a series of enhancements and new proposed activities. Enhancements focused primarily on the interoperability portal (<http://ican.ucc.ie>) on cookbooks (<http://ican.science.oregonstate.edu/en/node/615>) as well as vocabularies. New activities included work on new software packages such as an “atlas-in-a-box”, outreach and training and improving the methods for collecting feedback on technical developments and products.

A table of proposed technical activities for the period 2013 -2015 is presented in Annex IV.



**Yassine Lassoued (CMRC) and Ramon Roach (Coastal Zone Management Unit) take time out for some discussions**

## 8.7. Work Plan Update (2014 – 2015)

Following on ICAN-6 and in advance of the IODE Officers meeting held in January 2014, a revised work plan for the period 2014-2015 was submitted. The table below describes the activities to be carried out.

**Table 1:** ICAN work plan for 2014-2015

Task	Description	Deadline
Communications activities	Develop a comprehensive communications plan addressing internal communications between ICAN members and external communications to other projects and a wider public. This will build on current elements which include a comprehensive web site and a quarterly newsletter, in addition to presentations at conferences. A new website will be developed for which resources are requested. A prototype template is available at: <a href="http://ican.iode.org/">http://ican.iode.org/</a> . This will be populated in Q1 of 2014.	March 2014 for 1 <sup>st</sup> version of new ICAN website; Communications plan final version March 2014
Interoperability Developments	An atlas interoperability demonstrator has been completed and demonstrated at ICAN 6 in June 2013. The next steps include adding additional nodes to this and determining what further development is necessary to turn the demonstrator into an operational system. Moreover, training in its use will be provided. The method of training provision will need to be determined.	A roadmap for developing an operational system – March 2014
Other technical developments	Options for other technical developments of interest to ICAN members were identified during ICAN 6. These are described under eight headings (appendix D). Work is ongoing on progressing these. Financial support is required to progress the Atlas-in-a-Box concept.	Activities are ongoing. Atlas-in-a-Box Scoping Study, December 2014
Training activities	ICAN members already carry out hands-on training for the African Marine Atlas the Caribbean Marine Atlas and the SPINCAM community and have developed a comprehensive peer-reviewed Handbook to help atlas developers. The use of OceanTeacher and the Ocean Teacher Academy will be used for training delivery in collaboration with the IOC IODE Project Office. The training needs of member networks and atlases such as SPINCAM, AMA and CMA are being taken into account to devise a “living” training plan.	Training activities are ongoing in support of regional and national atlas development efforts.
Guide on interacting with Users	The ICAN members have vast experience with their atlas user communities. However, this knowledge is dispersed among the community. A Best Practice Guide will be developed on how atlas developers can engage with their user communities through conception, development, implementation, operation and revision of their atlases. Financial support is requested for the editing, compiling and publishing of this handbook.	March 2014 for Table of Contents; September 2014 to deliver the draft guide. January 2015 completed guide
Technical cookbooks/guides and inventory	A number of ‘cookbooks’ or technical manuals have been prepared for atlas developers. Feedback is being solicited on the utility of these cookbooks and updated versions will be generated. Crossovers between cookbook development and training activities will be identified. Establish location, mechanism and governance for updating cookbooks. An updated CWA inventory will be developed as a resource to assist atlas developers. Funding is requested to support this initiative.	June 2014 for a updated cookbooks December 2014 for updated CWA inventory

A Review and Compilation of Data Sharing Agreements and Licensure	The proposed activity will develop a guide based on a broad set of examples of data sharing agreements, disclaimers, and licenses along with their appropriate uses from the larger ICAN community. Funding is required to support the compilation and editing of the guide.	April 2015 a draft guide for discussion at ICAN 7; September 2015 for a completed guide
Links to other IOC projects and programs of relevance outside IOC	Identify and network with other relevant IOC projects and programmes (e.g. Integrated Coastal Area Management (ICAM), Ocean Biogeographic Information System (OBIS), Marine Spatial Planning (MSP), Harmful Algal Blooms (HAB)) and determine synergies and potential collaborative activities with these activities and related external programs such as the GEOSS Coastal Zone Community of Practice (CZCP). Financial support is requested to support travel by ICAN SG members to relevant meetings	Ongoing. Resources are required to support networking
Identify Funding Opportunities	In order to progress technical tasks of the work plan significant resources are required primarily to cover salaries of the developers. National and International funding mechanisms will be kept under constant review to identify appropriate programs to which ICAN could apply to fund specific elements of its work plan.	ongoing
Increase membership	New organizations will be encouraged to join ICAN to benefit from existing member knowledge and resources as well as bring new perspectives. Potential members from Asia/Australasia will be targeted as that region is currently poorly represented. [The target is to add at least 4 organizations to the network per annum.]	ongoing
ICAN Workshops	Open workshops of the full ICAN community have taken place over recent years. ICAN-7 will take place in South Africa in April 2015. Funding is requested to support the organization of this open workshop, held in conjunction with the International CoastGIS conference.	April 2015

This work plan and the associated financial request were considered by the IODE Officers. Funding was allocated to support expert travel related to networking activities, organisation of and some travel to ICAN 7 and editing, compiling and publishing a guide on user interaction. Resources to support other activities will have to be found externally. A full report of the Officers' meeting is available at [http://iode.org/index.php?option=com\\_oe&task=viewDocumentRecord&docID=12650](http://iode.org/index.php?option=com_oe&task=viewDocumentRecord&docID=12650)





Members of the ICAN Steering Group at ICAN 6 (from left to right: Prof Dawn Wright (ESRI and OSU), Ramon Roach (Coastal Zone Management Unit, Barbados), Liz O’Dea (Department of Ecology, Washington State), Ned Dwyer (CMRC), Lucy Scott (ACLME), Andrus Meiner (EEA), Kathrin Kopke (CMRC), Alejandro Iglesias-Campos (UNESCO – IOC) and Andy Sherin (COIN Atlantic)

## 9. CONCLUSION AND FUTURE DIRECTIONS

This was the first time that an ICAN workshop was held in Canada and it was strongly supported by the participation of a number of Canadian institutions. A major focus was on the western Pacific Ocean rim and coastal information systems covering much of the coast from Alaska to Chile were presented. Another key topic was that of data integration systems including volunteered geographic information. The presentations made and the discussion demonstrated how information systems are becoming more open and flexible with data and information being provided from multiple sources. These approaches can be very effective in capturing information from a multitude of stakeholders and can be useful in gathering data when limited resources restrict what can be achieved by public bodies. However it raises challenges in terms of data management, quality control, sustainability and legal issues.

Version 3 of the ICAN web portal (<http://ican2.ucc.ie/atlas/>) was launched at the workshop. This portal allows a user to search across multiple coastal atlases using simple keywords. This “simple” searching is enabled by a sophisticated technical solution which uses ontologies to facilitate semantic interoperability. During the workshop a demonstration on how to connect an atlas to the portal took place. Further enhancements to the portal are foreseen by the technical committee. Promoting interoperability is one of the key aims of ICAN. Nevertheless challenges remain in communicating and demonstrating the benefits of interoperability to the wider ICAN community. In order to communicate effectively, easy to understand, non-technical language will need to be used along with practical examples of the benefits. This should be one goal of the communications committee which is revising the communications plan as of spring 2014.

Other key outcomes of ICAN 6 included:

- a strong demonstration of support from IODE headquarters and an encouragement to engage and collaborate with other IOC activities. Links were made with the IOC ICAM initiative and ICAN is now contributing to training and capacity building within the SPINCAM project.
- an exchange of information between the GEO CZCP and ICAN. ICAN will support the CZCP in its goal to develop a global coastal information system and offer its expertise in the scoping of such an initiative.
- the establishment of an ICAN Training Committee with the goal of developing and implementing a realistic training plan. In the first instance this will build on the support already offered to the CMA and ACMA projects and will also engage with the OceanTeacher initiative of the IODE.

ICAN has developed an ambitious work plan for the period 2014-2015. It will require the commitment of all members to ensure that it can be implemented. A priority for 2014 is the redevelopment of the web site in order to make it easier to navigate and more responsive to user needs. Interoperability remains a core activity of ICAN and the technical committee has proposed a number of activities to progress further the developments in this area. A key technical concept which emerged at ICAN 6 was that of an “atlas-in-a-box”. The idea is that a new atlas developer can get started quickly on implementing and publishing a CWA with a minimal amount of technical/programming knowledge. The committee intends to scope the feasibility of such a development based on potential solutions such as SmartAtlas and ArcGIS Online



The 7<sup>th</sup> international workshop (aka ICAN 7) will be held at CSIR offices in Stellenbosch, South Africa on **April 20-21 2015**, just before the CoastGIS 2015 conference. The objectives of ICAN 7 will be determined over the coming months, however capacity building and training will be a strong focus as well as exploring how an atlas can be built to be interoperable. Other themes that may be addressed include atlas applications in the developing world and best practise in relation to data usage and data sharing agreements.



## 10. REFERENCES

All web URLs last accessed 14 April 2014.

Claus, S., De Hauwere, N., Vanhoorne, B., Deckers, P., Souza Dias, F., Hernandez, F. and Mees, J. 2014. *Marine Regions: Towards a global standard for georeferenced marine names and boundaries*. Mar. Geod. Advance online. [hdl.handle.net/10.1080/01490419.2014.902881](http://hdl.handle.net/10.1080/01490419.2014.902881)

Dwyer, N.<sup>1</sup>, Kopke, K.<sup>1</sup>, Berman, M.<sup>2</sup>, Belpaeme, K.<sup>3</sup>, O’Dea, L.<sup>4</sup>, Haddad, T.<sup>5</sup> and Wright, D.J.<sup>6</sup> 2012. *Report of International Coastal Atlas Network Workshop 5: Coastal Atlases as Engines for Coastal and Marine Spatial Planning*, UNESCO IOC IODE Headquarters, Oostende, Belgium, 31 August – 2 September 2011. Available online at <[http://ican.science.oregonstate.edu/ican5\\_final\\_rpt](http://ican.science.oregonstate.edu/ican5_final_rpt)>

Dwyer, N. and Wright, D.J., 2008. *Report of International Coastal Atlas Network Workshop 3 on Federated Coastal Atlases: Building on the Interoperable Approach*, European Environment Agency, Copenhagen, Denmark, 65 pp. [http://ican.science.oregonstate.edu/ican3\\_final\\_rpt](http://ican.science.oregonstate.edu/ican3_final_rpt)

Group on Earth Observations (GEO), 2014, *GEO 2012-2015 Work Plan, Revision 3* [https://www.earthobservations.org/geoss\\_imp.php](https://www.earthobservations.org/geoss_imp.php)

Haddad, T.C., Lanier, A.S., and Hallenback, T.R., 2013. *Upgrading the Oregon Coastal Atlas for regional data discovery*, proceedings of CoastGIS Conference 2013, Monitoring and adapting to Change on the Coast, the 11<sup>th</sup> International Symposium for GIS and Computer Cartography for Coastal Zone Management, Victoria, British Columbia, Canada 18-21 June 2013. <http://coinatlantic.ca/coastgis2013/docs/proceedings.pdf>

O’Dea, L., Veeck, D., Whitaker, E., et al. 2013. *Washington Coastal Atlas: Creating a simple user interface for complex uses*, proceedings of CoastGIS Conference 2013, Monitoring and adapting to Change on the Coast, the 11<sup>th</sup> International Symposium for GIS and Computer Cartography for Coastal Zone Management, Victoria, British Columbia, Canada 18-21 June 2013. <http://coinatlantic.ca/coastgis2013/docs/proceedings.pdf>

O’Dea, L., Cummins, V., Wright, D., Dwyer, N. and Ameztoy, I., 2007. *Report on Coastal Mapping and Informatics Trans-Atlantic Workshop 1: Potentials and Limitations of Coastal Web Atlases*. University College Cork, Coastal & Marine Resources Centre, Cork, Ireland, 75 pp. [http://workshop1.science.oregonstate.edu/final\\_rpt](http://workshop1.science.oregonstate.edu/final_rpt)

Paul, E., 2013. *Designing for our oceans: GeoDesign, science and marine spatial planning*, proceedings of CoastGIS Conference 2013, Monitoring and adapting to Change on the Coast, the 11<sup>th</sup> International Symposium for GIS and Computer Cartography for Coastal Zone Management, Victoria, British Columbia, Canada 18-21 June 2013. <http://coinatlantic.ca/coastgis2013/docs/proceedings.pdf>

Smith, C.D., Manson, G.K., Couture, N.J., et al., 2013. *CanCoast: A National-scale Framework for Characterising Canada’s Marine Coasts*, proceedings of CoastGIS Conference 2013, Monitoring and adapting to Change on the Coast, the 11<sup>th</sup> International Symposium for GIS and Computer Cartography for Coastal Zone Management, Victoria, British Columbia, Canada 18-21 June 2013. <http://coinatlantic.ca/coastgis2013/docs/proceedings.pdf>

Sui, D.Z., Elwood, S. and M.F. Goodchild (eds.), 2012. *Crowdsourcing Geographic Knowledge*. Berlin: Springer

Wright, D.J., Dwyer, E., and Cummins, V. (eds.), 2011. *Coastal Informatics: Web Atlas Design and Implementation*, Hershey, PA, USA, IGI-Global. <http://ican.science.oregonstate.edu/handbook>

Wright, D.J., Dwyer, N., Kopke, K., and O’Dea, L., 2010. *Report of International Coastal Atlas Network Workshop 4: Formalizing the Network, Engaging the Mediterranean*, UNESCO International Centre for Theoretical Physics, Trieste, Italy, 16-20 November 2009. Available online at [http://ican.science.oregonstate.edu/ican4\\_final\\_rpt](http://ican.science.oregonstate.edu/ican4_final_rpt)

Wright, D., Watson, S., Bermudez, L., Cummins, V., Dwyer, N., O’Dea, L., Nyerges, T., Benoit, G., Berman, M., Helly, J., and Uhel, R., 2007. *Report on Coastal Mapping and Informatics Trans-Atlantic Workshop 2: Coastal Atlas Interoperability*. Oregon State University, Corvallis, Oregon, USA, 43 pp. [http://workshop1.science.oregonstate.edu/final\\_rpt2](http://workshop1.science.oregonstate.edu/final_rpt2)

## Annex I

### ICAN Steering Group and Committees

Membership of the Steering Group and Committees is open to any ICAN member and is revised from time to time.

#### ICAN Steering Group

Name	Affiliation	Email
Marcia Berman	VIMS, USA (co-chair)	<a href="mailto:Marcia@vims.edu">Marcia@vims.edu</a>
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**Annex II**  
**Workshop Programme, 16-17 June 2013**

University of Victoria, BC, Canada	
“Expanding Participation in Coastal Web Atlas Development and Use”	
Time	Day 1 - Sunday, 16 June 2013 ICAN as an IODE Project and Atlas Stories Room: Cornett A120
8:30-9:00a	<b>Registration</b>
	Social Sciences & Mathematics Building, Lower Foyer see <a href="#">map</a> for location
9:00-9:15a	<b>Welcome and Workshop Objectives</b>
	Welcome Address, Rosaline Canessa, Department of Geography, uVIC <a href="#">Workshop Objectives &amp; Agenda</a> , Ned Dwyer, ICAN Chair
9:15-09:30a	<b>The IODE Context for ICAN</b>
	<a href="#">What it means to be an IODE project: Practical considerations</a> Peter Pissierssens, IODE
09:30-10:30a	<b>Coastal Atlas Training Needs and Opportunities</b> Chair: Kathrin Kopke, CMRC, Ireland
	<a href="#">IODE Training and Ocean Teacher</a> , Peter Pissierssens, IODE <a href="#">African Coastal &amp; Marine Atlas (ACMA)</a> , Lucy Scott, ASCLME, South Africa <a href="#">ICAM and Related Training Needs</a> , Alejandro Iglesias-Campos, IOC Paris <a href="#">Caribbean Marine Atlas (CMA)</a> , Ramon Roach, CZMU, Barbados
10:30-11:00a	<b>Coffee Break</b> <b>(SSM Lower Foyer, sponsored by Esri)</b>
	<b>Atlas Showcase</b>
	Display your own leaflets and brochures, and demonstrate atlases during the break
11:00-12:00a	<b>Building Synergies with IOC projects &amp; related Initiatives</b> Chair: Ned Dwyer, ICAN Chair
	IODE Strategy for Project Collaboration Peter, Pissierssens, IODE

	<p align="center"><a href="#">Integrated Coastal Area Management Programme (ICAM)</a> Alejandro Iglesias-Campos, IOC Paris</p> <p align="center"><a href="#">Ocean Biogeographic Information System (OBIS)</a> Robert Branton, Dalhousie University</p>
	<p align="center"><a href="#">GEO Coastal Zone Community of Practice</a> Hans-Peter Plag, GEO CZCP</p>
12:00-1:30p	<b>Lunch (on your own)</b>
1:30-3:30p	<p align="center"><b>Atlas Stories - The Western Pacific Rim and Beyond</b> Chair: Andrus Meiner, EEA, Denmark</p>
	<p align="center"><b>Presentations from Western Pacific Rim Atlases</b> <a href="#">SPINCAM, South America</a> (Alejando Iglesias-Campos) <a href="#">Oregon Coastal Atlas</a> (Tanya Haddad), <a href="#">Washington State Coastal Atlas</a> (Liz O'Dea), <a href="#">CanCoast, Canada</a> (Andy Sherin for Chelsea Smith), <a href="#">ShoreZone in Alaska and British Columbia</a> (Maeva Gauthier), <a href="#">African Coastal &amp; Marine Atlas Experience with SmartAtlas</a> (Y. Lassoued)</p>
3:30-4:00p	<b>Coffee Break (SSM Lower Foyer, sponsored by Esri)</b>
4:00 - 4:30p	<p align="center"><b>Approval of IODE-ICAN Steering Group and Selection of Sub-committees</b> Chair: Ned Dwyer, ICAN Chair</p>
	<p align="center"><a href="#">Approve SG and appoint any additional members</a>; set up any required committees (technical committee, communications committee)</p>
4:30 - 5:30p	<p align="center"><b>Overview of ICAN Workplan (2013-2015)</b> Chair: Dawn Wright, Esri</p>
	<p align="center">Brief presentation of <a href="#">overall ICAN strategy</a> (N. Dwyer) and work plan elements including <a href="#">communications plan</a> (Andy Sherin), <a href="#">training activities</a> (Ned Dwyer), <a href="#">user interaction</a> (Kathrin Kopke), <a href="#">technical developments</a> (Liz O' Dea)</p>
5:30-5:45p	Concluding Discussions
6:00-7:00p	<b>Networking Event (sponsored by Esri)</b> Social Sciences & Mathematics Building, Lower Foyer
<b>Time</b>	<b>Day 2 - Monday, 17 June 2013 Distributed Atlases and Data Integration Platforms (Including VGI) Room: Cornett A120</b>
9:00 - 9:30a	<b>Registration</b>
	Social Sciences & Mathematics Building, Lower Foyer see <a href="#">map</a> for location
8:30 -	<b>ICAN Technical Committee Meeting (Room A128)</b>



10:00a	<a href="#">Agenda</a>
10:00-12:30a	<p><b>Mini Workshop 1 (Room A128)</b>  <b>Adding your Atlas to the International Web Atlas Portal</b>  Chair: Liz O' Dea, Washington State Dept. of Ecology</p> <p>Demonstration of the International Web Atlas <a href="#">Portal Version 3</a>, (Yassine Lassoued, CMRC)  Connecting to the Portal in 4 easy steps, (Tanya Haddad, OCMP)  Demonstration of connection for the Wisconsin Coastal Atlas, (David Hart, UWSG, Yassine Lassoued, CMRC):  Preparing the atlas, mechanics of connection steps,  searching Wisconsin data, and viewing data in the map</p>
9:30 - 12:30a	<p><b>Mini Workshop 2 (Room A120)</b>  <b>Data Integration Platforms (including VGI)</b>  Chair: Ned Dwyer, ICAN Chair</p> <p>Coastal atlases with content from numerous sources, including volunteered geographical information:  <a href="#">EEA Eye on Earth</a> (Andrus Meiner, EEA) <b>[large file]</b>  <a href="#">SeaSketch</a> (Will McClintock, UCSB)  <a href="#">MarineRegions.org</a> (Simon Claus, VLIZ)  <a href="#">Esri Living Atlas</a> (Dawn Wright, Esri)</p>
10:30-11:00a	<p><b>Coffee Break</b>  <b>(SSM Lower Foyer, sponsored by Esri)</b></p>
	<b>Atlas Showcase</b>
	Display your own leaflets and brochures, and demonstrate atlases during the break
11:00-12:30a	<b>Mini Workshops (continued)</b>
12:30-2:00p	<p><b>Lunch</b>  <b>(on your own)</b></p>
2:00-2:45p	<b>Feedback from Workshops</b>
	<p>Mini workshop 1 - Liz O' Dea  Mini workshop 2 - Ned Dwyer</p>
2:45 - 3:30p	<p><b>Roundtable Discussions on Key Work Plan Activities and Scoping of any Additional Activities.</b>  Communications Plan and Website Migration (Andy Sherin)  User Interactions (Kathrin Kopke)  Building Synergies (Ned Dwyer, Alejandro Iglesias)  Coastal Atlas Training Needs (Kathrin Kopke)  <a href="#">Technical Developments</a> (Liz O' Dea)</p>
3:30-4:00p	<p><b>Coffee Break</b>  <b>(SSM Lower Foyer, sponsored by Esri)</b></p>
4:00 - 4:45p	<p><b>Roundtable Discussions on Key Work Plan Activities and Scoping of any Additional Activities (continued)</b></p>

4:45-5:15p	<b>Concluding Remarks</b>
5:30-6:30p	<b>Meeting of IODE ICAN SG</b> Chair: Ned Dwyer, ICAN Chair
	Formal Meeting of SG ( <a href="#">Minutes</a> )

### Annex III Participant List

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**Annex IV  
Technical Committee Goals (2013-2015)**

<b>Component</b>	<b>Type</b>	<b>Goal</b>
<b>IODE Transition</b>		
	Migration	Make plan to consolidate ICAN assets within IODE (need admin access)
	Migration	Assist with web site migration (Drupal to Joomla)
	New	Establish ICAN projects version control system environment
<b>Portal</b>		
	Enhancement	Make enhancements to v3 of portal
	Enhancement	Enable getFeatureInfo
	Enhancement	Add feature to see connected atlases and enable users to choose which atlases to search (in v4)
	Enhancement	Conduct design assessment for new version of portal and plug-in CSW client (Get user input)
	Enhancement	Find funding for redevelopment (IODE? Belmont Forum? EarthCube? RCN?)
	Enhancement	Build new portal in HTML 5 according to design assessment results
	Enhancement	Research and select mapping interface
	Enhancement	Conduct workshops with atlases to connect them to the portal using cookbooks
	New	Use case for decision makers demonstrating utility of the Portal - in CMA or AMA, or linking to OTN, OBIS
	Enhancement	Explore integration of MarineRegions.org into Portal AOI interface
<b>Cookbooks</b>		
	Enhancement	Establish location, mechanism and governance for updating cookbooks
<b>Vocabularies</b>		
	Rollover	Develop a governance strategy for vocabulary
	Rollover	Establish collaboration space for vocabulary work - listserv
	Rollover	Develop new vocabulary content (water quality, marine spatial planning, climate adaptation, others - need feedback coastal flooding, coastal infrastructure)
	Rollover	Add vocabularies to portal
	New	Examine existing IODE projects involving vocabularies for ICAN synergies, if any (SeaVox only IODE; SeaDataNet, others)
<b>Widgets</b>		
	New	Conduct design assessment for plug-in CSW client (see above)
	New	Build plug-in CSW client - subset of v5 HTML 5 work
	New	Documentation for plug-in CSW client
<b>Package</b>		
	New	Scope feasibility of Atlas-in-a-box project (follow-up to Smart Atlas)
	New	Survey existing open source communities for Atlas-in-a-box models (SOS, Cloud-based, ArcGIS.com)

	New	Define Atlas-in-a-box components (unify with Portal v4 development)
	New	Build Atlas-in-a-box
Outreach		
	New	Examine course potential for OceanTeacher
	New	Take advantage of opportunities of recording presentations and workshops
	New	Host and record webinar version of Connecting an Atlas Workshop
Feedback		
	New	Establish more formal structure for feedback (for all tech products -- from tech team and users)
	New	Collect feedback from a wider network of people (partner with outreach committee)
	New	Structure feedback for non-tech users



## Annex V Access to Presentation Files, Notes, Photos, Links

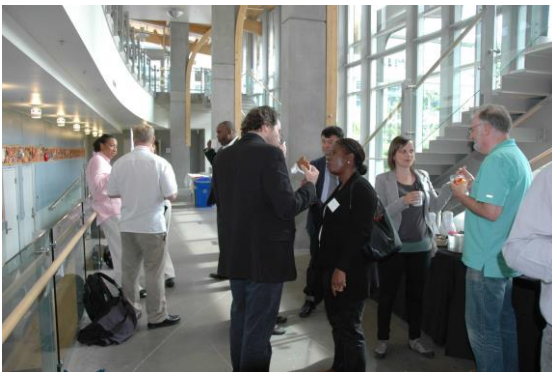
This workshop report has an accompanying web site at <http://ican.science.oregonstate.edu/ican6> from which the reader may download all PowerPoint files presented at the workshop, as well as working papers and prior reports, breakout group notes, photographs, and links to related web sites.



ICAN 6 session about to start



Catching up with old friends



ICAN folk at a well-deserved break in between sessions



Discussion groups at ICAN 6



Members of the ICAN SG coming together for a final meeting of the ICAN 6 workshop



Discussion at ICAN 6

All photos in this report either by Liz O'Dea or Lucy Scott.

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