

Esri Ocean GIS Forum 2013

November 5 – 7, 2013 | Redlands, CA



A Hero's Journey Across the Ocean

Dawn Wright, Ph.D., GISP

Esri Chief Scientist



We all agree that there are MANY challenges facing the oceans. GIS technology has long provided effective solutions to similar problems on **land**. But our mission is to take what we've learned on land and apply GIS more effectively to the oceans.

Esri Ocean GIS History



In 1989 Esri designed and developed the prototype of an ArcInfo-based solution for recording the movement of marine spills. This application, eventually moved to ArcView GIS, became the Marine Spill Analysis System (MSAS). A number of government agencies and consulting firms adopted MSAS.

Starting in 1989, Charles Convis made Esri conservation GIS grants for ocean conservation mapping and marine species protection programs to the groups below. Our relationships with many of these groups has continued to this present day. Also we're starting a new AGOL grant program and some of the first marine ones are the South American cetacean folks. The IUCN has recently added thousands of species range maps, including many marine species, to AGOL under the "IUCN Red List Range Maps" group.

Esri Ocean GIS History



1999

Ocean science community
Digital Nautical Chart for NIMA
Navigation Ship's System for NIMA
Hydrographic Information System for Finland
and Sweden
Dr. Sylvia Earle
Keynote Speaker at Esri UC

2007

2009

ESRI Ocean GIS Special Exhibition at the 1999 Esri UC, with Sylvia Earle as keynote speaker and a special area of the Map Gallery that many of us old timers participated in with maps and demos.

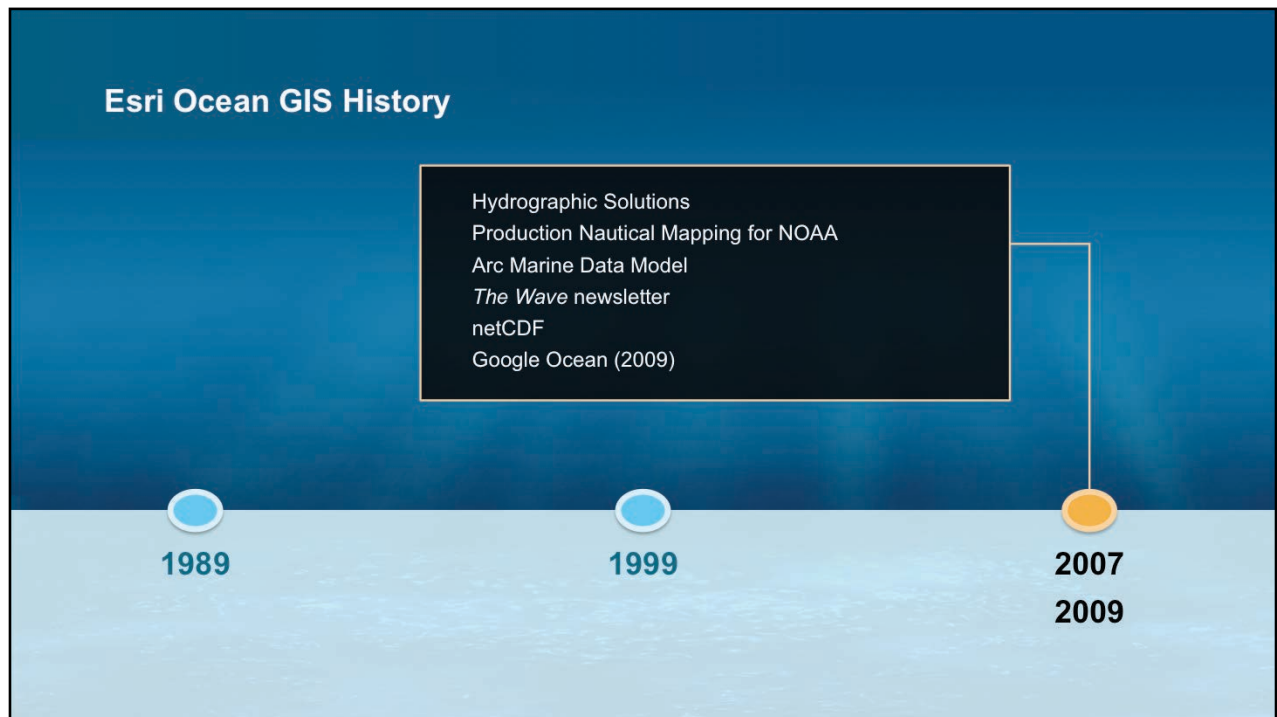
During that decade Esri's ocean GIS efforts were mainly in charting and navigation, helping to develop:

- The Digital Nautical Chart (DNC) for the National Imagery and Mapping Agency (NIMA)
- a Navigation Ship's System project for NIMA
- A hydrographic information system (HIS) for the Maritime Administrations of Finland and Sweden

In addition Esri developed the National Ocean Service Map finder for NOAA and a data model for the Minerals Mgmt Service (now BOEM)

Jim Ciarrocca and Joe Breman were standouts in interfacing with and supporting the ocean SCIENCE community

Esri Ocean GIS History



Oceans team members at this time included the following (and all but two are still with Esri:

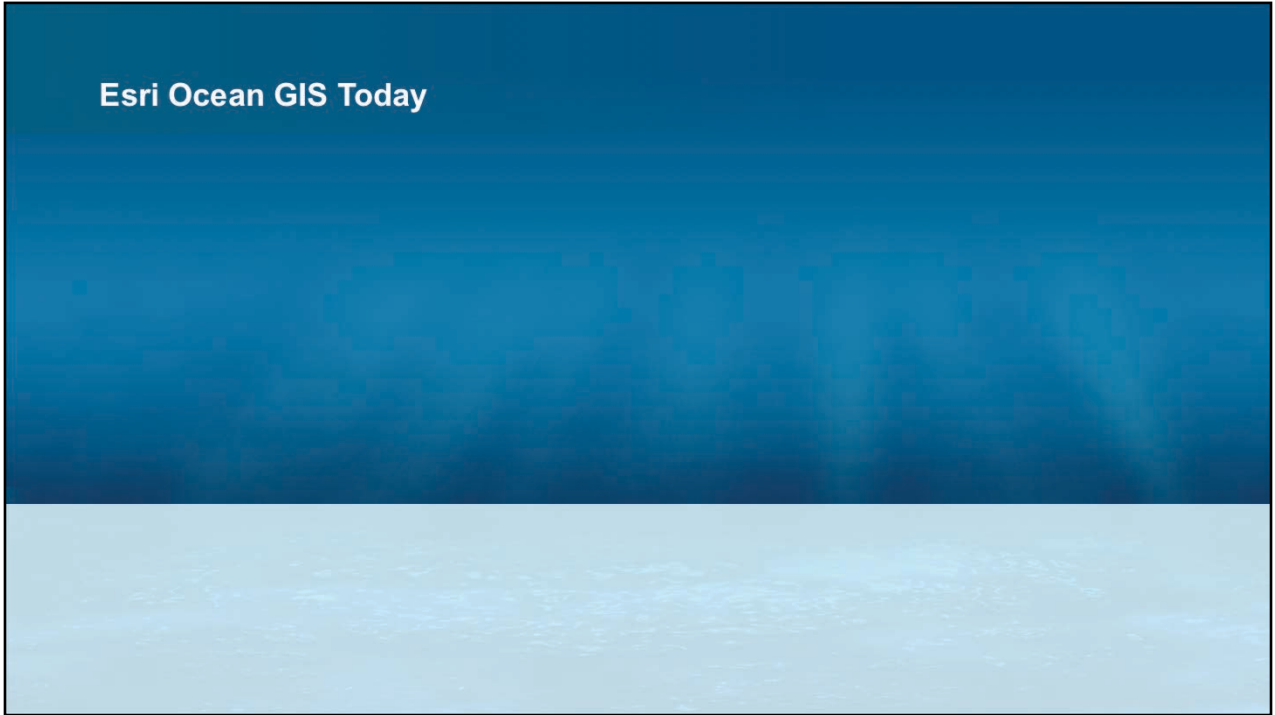
Katsura Matsuda - Marine Data Model - products team
Jeff Donze - NOAA Account Manager & Earth Observation Alliance rep
Geoff Wade - Natural Resources Industry Sector Marketing
Steve Snow – Industry Solutions – Hydrographic solutions
Brian Cross & Tim Kearns - Hydrographic Services / Solutions
Dick Lawrence - Professional Services (Environmental Projects)
Dan Zimble - Technical Marketing, Sciences team, ESRI Federal
Jeanne Foust - Data Interoperability and Open standards

Esri Ocean GIS History



These were our main partners in 2007

Esri Ocean GIS Today



Ocean GIS Initiative

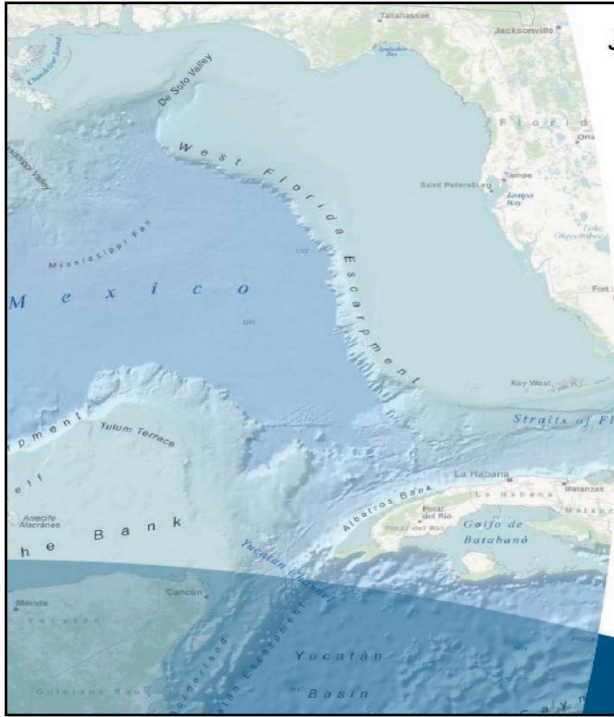


We are at a historic juncture here at Esri with a formal ocean GIS initiative, fully launched in 2012.

Ocean GIS Initiative

Chief Scientist
Project Managers
Software Engineers
Product Engineers
Account Managers
Industry Solutions Managers
Distributors
Federal Science Team
YOU

Our virtual team has grown from 10 to nearly 40.



July 2013, *Second Edition*

The Ocean GIS Initiative

Esri's Commitment to Understanding Our Oceans

esriurl.com/oceanebook



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esriurl.com/oceanebook

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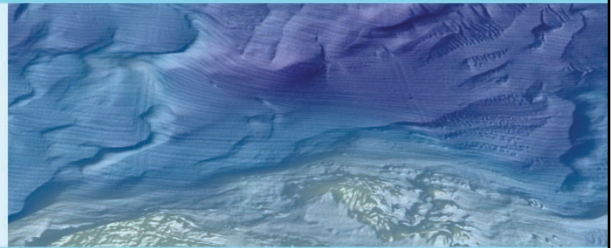
- 18 World Ocean Council
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21 STRATEGIC GOALS

- 21 Grow the Ocean Basemap
- 21 Build a More Integrated Elevation Service
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- 23 Develop Vertical, Time-Dependent Data Transformations
- 23 Improve Support for Multidimensional Data and Analyses
- 24 Support Ocean Numerical Models

Technical Teasers

ArcGIS for Maritime: Bathymetry
Store, discover, model and manage
bathymetric data.



Additional Raster Formats Supported!

→New GMT Grid to BAG Tool ←

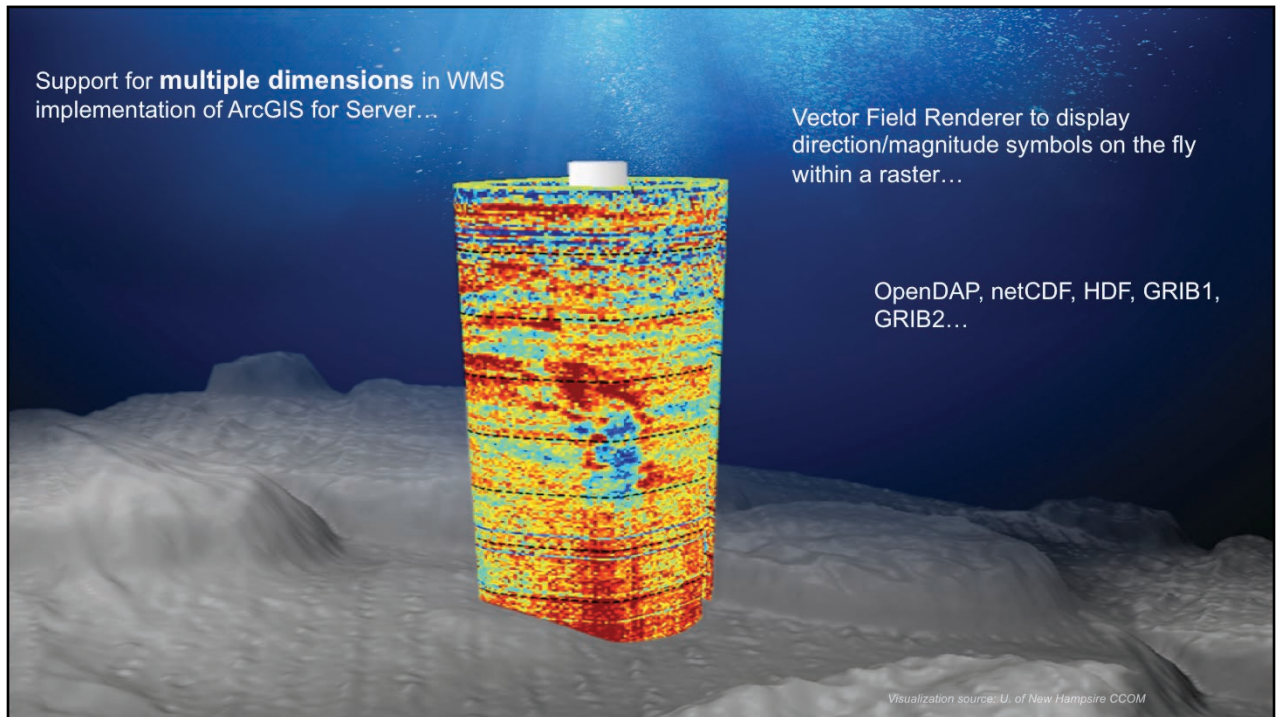
esriurl.com/maritime or esriurl.com/ocnres

Mosaic to BAG

QPS Grid to BAG

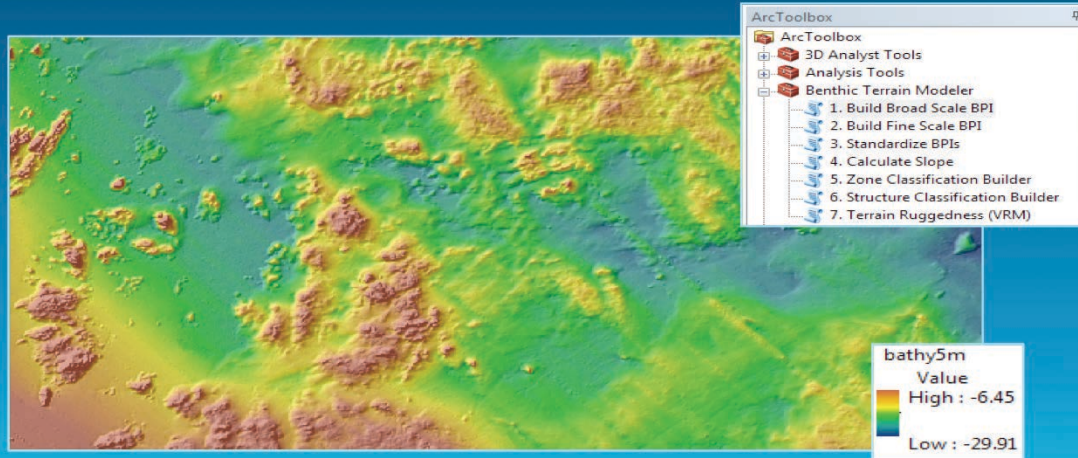
Fledermaus v6 DTM to BAG

System for the management, discovery and [composite modeling](#) of bathymetric [data & metadata](#).



GRIB = Gridded Information in Binary Form
GRIB is a WMO format for gridded data used by meteorological centers for storing and exchanging meteorological charts and other patterns of wind, sea state, temperature, etc. In other words, GRIB files are computer generated forecast files.

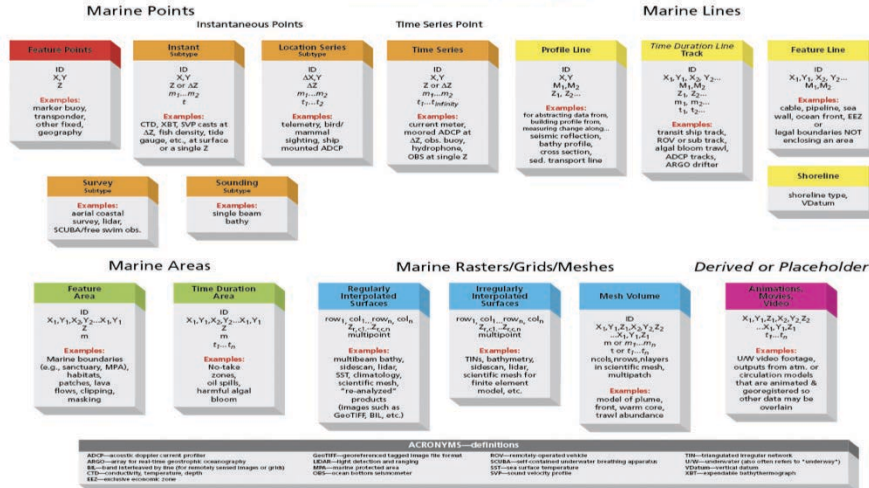
Benthic Terrain Modeler



A major revision of BTM to make it compatible with ArcGIS 10.x, the provision of Arc toolboxes for specific functions, a Python add-in so that all code (including model parameters and settings) is easier to edit and manage, a simple interface that recreates the full "wizard" experience of the previous release, and a much improved Excel-based classification dictionary reader. The rugosity function has also been updated to a new "vector ruggedness" measure of terrain. In the future, certain functions will be ported to web geoprocessing services deployed as REST endpoints.

Arc Marine Data Model

Common Marine Data Types



Fully Support the Model | dusk.geo.orst.edu/djl/arcgis

Given the apparent demand for the model in the ocean community, Esri will fully supporting the model as a community-based information model/template. The Maritime Team has upgraded the model for use with ArcGIS 10 and has used it for a few demos in combination with the ArcGIS Nautical Solution. But with the development of ArcGIS for Maritime--Bathymetry in 10.1 there is great potential for further leveraging Arc Marine. An initial starting point is discussion with the Raster Team to review how to leverage the mosaic dataset in places where the raster catalog is currently being used, but there is much more to update. A new plan should be developed to implement the data model into a Esri geodatabase (**including the ability to use a file rather than just a personal geodatabase**), and best practices to define the web service platform. It should be newly validated against use cases, cartographic and user requirements. The tutorial should also be updated to incorporate a broader range of ocean datasets and possible workflows with the model. Some have sought to combine Arc Marine with Arc Hydro, Arc Hydro Groundwater, and other data models, which should also be investigated further.



Oceans

esriurl.com/ocnres

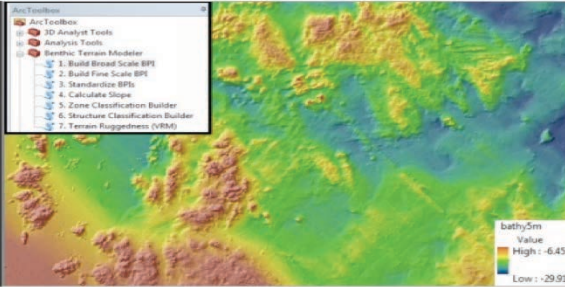
Communities

Esri is taking GIS to a new depth...

Benthic Terrain Modeler

The Benthic Terrain Modeler is a set of geoprocessing tools to analyze benthic terrain for the purposes of classifying surficial seafloor characteristics.

[Read more...](#)



Quick Links

I'm interested in...

- [Ocean Basemap](#)
- [Benthic Terrain Modeler](#)
- [ArcGIS for Maritime Bathymetry](#)
- [Ocean Use Planning and Coastal Protection](#)
- [Integrated Ocean Observing System \(IOOS\)](#)

Featured Sites

- [Ecosystem-Based Management Tools Network](#)
- [Duke Marine Geospatial Ecology Tools \(MGET\)](#)
- [Davey Jones Locker](#)
- [Arc Marine Data Model](#)
- [International Coastal Atlas Network](#)
- [Global Ocean Scientific Data and Models \(DTU Space\)](#)
- [MyOcean Analysis & Forecasting](#)

Gallery

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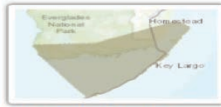
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A global map of Accessibility



Critical Habitat of Delta Smelt and Chinook Salmon



USA Critical Habitat American Crocodile



USA Critical Habitat Desert Tortoise



USA Critical Habitat Sockeye Salmon

Recent Blog Posts

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[Esri and the Science Community](#) (07/06/2013)

Shawn Otto, CEO and cofounder of ScienceDebate.org recently pointed out: "We are poised over the next 40 years to create as much new knowledge as we have in the past 400 years. At the same time, our major unresolved policy ... [Continue reading →](#)

[Invitation to participate in an Esri software Usability Study at the User Conference](#) (06/21/2013)

The Esri development team would like to invite you to participate in a moderated and recorded usability study of a new application for GIS professionals currently under development. Who we're looking for... Existing ArcGIS for Desktop users ArcGIS Online and App ... [Continue reading →](#)

[How is GIS Meeting the Needs of Ocean \(and other\) Sciences? Plus, Minus, Interesting...](#) (05/29/2013)

Among the most important activities at the Esri Oceans Summit (November 7–8, 2012; see prior blog post 1 and prior prior blog post 2) were the breakout groups, where participants were called upon to identify major barriers to the use ... [Continue reading →](#)

[Introducing the Multidimension Supplemental tools](#) (05/24/2013)

The Multidimension Supplemental toolbox Version 1.1 is a collection of nine tools that extend the functionality of the core tools of the Multidimension toolbox. These tools can be used as-is or you can modify them to handle specific use cases. The following ... [Continue reading →](#)

Featured Videos

[More Videos ▶](#)



Esri Chief Scientist Dr. Dawn Wright introduces the Ocean GIS Initiative. [⌵](#)



Dr. Sylvia Earle talks about the role of GIS in ocean conservation. [⌵](#)

Spatial Sampling in the Ocean: A Modest Proposal

by Dawn Wight on May 7, 2013



At the Esri Oceans Summit there were several "halfway conversations" about a lack of spatial sampling tools in ArcGIS and how this had led people to use Hawth's Tools (now Geospatial Modelling Environment) and other approaches in order to perform ... [Continue reading →](#)

Posted in [Analysis & Geoprocessing](#), [Oceans & Maritime](#), [Spatial Statistics](#) | Tagged [Analysis & Geoprocessing](#), [ArcGIS 10](#), [ArcGIS Desktop](#), [marine science and conservation](#), [ocean](#), [Resource Centers](#), [sampling](#), [Spatial Analysis](#) | [Leave a comment](#)

esriurl.com/ocnres

Stay Connected with the Oceans & Maritime Communities with an RSS Feed

by Dawn Wight on May 5, 2013

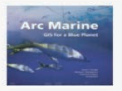


As you know, Esri is seeking to serve user communities across many application domains by way of the ArcGIS Resource Center. The Oceans community therein is THE place to connect in order to keep up with the latest and greatest ... [Continue reading →](#)

Posted in [Oceans & Maritime](#) | Tagged [ArcGIS for Maritime: Bathymetry](#), [ArcGIS for Maritime: Charting](#), [marine science and conservation](#), [ocean](#), [Resource Centers](#), [user community](#) | [Leave a comment](#)

Setting a New Course for the Arc Marine Data Model

by Dawn Wight on April 3, 2013



On April 2, 2013, an informal working group of twenty-five (including four Esri staffers) participated in a 1.5-hour webinar to discuss the development of a new, improved version of the Arc Marine Data Model (also known as the "Marine Data ... [Continue reading →](#)

Posted in [Analysis & Geoprocessing](#), [Hydro](#), [Oceans & Maritime](#) | Tagged [ArcGIS 10](#), [data](#), [Data Model](#), [marine science and conservation](#), [ocean](#), [open source](#) | [Leave a comment](#)

New updates to the Ocean Basemap

by ArcGIS Content Team on March 29, 2013



2013's first update to the Ocean Basemap (Ocean_Basemap) map service includes a few new areas of higher

Esri and the Science Community

The history and future of the ArcGIS SDKs for .NET

Community Maps Participants have improved our maps in Romania, Singapore, and North America

Leveraging NDVI to calculate other indices in Image Analysis window

ArcGIS 3.4 for Flex Released

Tags

.NET Announcement ArcGIS.com
ArcGIS 10 ArcGIS
Content ArcGIS Data Reviewer
ArcGIS Desktop ArcGIS
Methods ArcGIS Mobile ArcGIS
Online ArcGIS
Server ArcMap bao-only Best
Practices Business Analyst Desktop
Business Analyst Online Cartographic
Design Community Maps data
demographic data Editing Esri Data
Explorer Desktop Flex Geodatabase
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water

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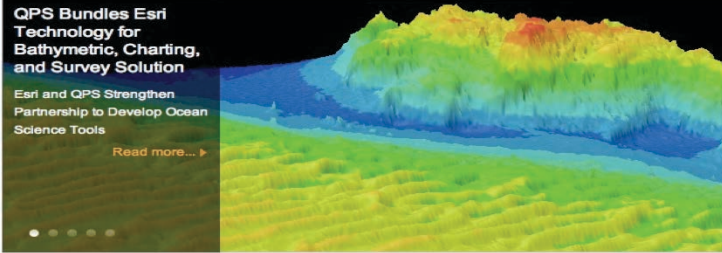
Archives

ArcGIS for Maritime

esriurl.com/maritime

Communities

Esri is taking GIS to a new depth...



QPS Bundles Esri Technology for Bathymetric, Charting, and Survey Solution

Esri and QPS Strengthen Partnership to Develop Ocean Science Tools

[Read more...](#)

Quick Links

I'm intested in...

- [What's new in ArcGIS for Maritime: Charting](#)
- [Viewing S-57 data](#)
- [Ocean Basemap](#)
- [ArcGIS for Maritime](#)
- [Ocean Use Planning and Coastal Protection](#)
- [Maritime Operations](#)

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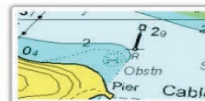
Nautical Chart Finishing 10.1



Getting Started With NOAA S-58 Checks



Fix NAME and DSNM for ArcGIS for Maritime: Charting 10.1



Exploring Paper Chart Production in ArcGIS for Maritime: Charting 10.1



Exploring ENC Production in ArcGIS for Maritime: Charting 10.1

GIS for Exploration, Ecosystems, Energy, and Climate Change

Registration Open



Esri Ocean GIS Forum
November 5-7, 2013 | Redlands, California

The [Esri Ocean GIS Forum](#) is about you and the work you do for marine and coast environments. Meet ocean professionals who will share their experiences using GIS for ocean research, protection, and planning. Talk with GIS experts about how to put your project on the fast track to success.

The Ocean GIS Initiative



This free e-book details Esri's Ocean GIS Initiative, including our commitment to and strategic plans for ocean science, resource management, and conservation. [Read the e-book](#) (PDF)

Twitter

Tweets [Follow @EsriOceans](#)

Drew Stephens @EsriOceans 7h
REDLANDS: Noted oceanographer to give keynote address [ow.ly/qu6Te](#) #OceanGISForum

Drew Stephens @EsriOceans 10h
Keynote Dr. Gallo - Beyond Titanic: Exploration, Understanding, and Mgmt of Neptune's Realm [ow.ly/qTOXe](#)

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Follow us [@EsriOceans!](#)

VIDEO Proceedings – media.esri.com/seminars/oceans/



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2012 Esri Oceans Summit

On November 7-8, 2012, Esri held the first and only Esri Oceans Summit in Redlands, California. This was an invitation-only, high-level strategy workshop attended by intermediate to advanced ocean GIS analysts and developers, including many long-time users of Esri software. More than 50 attendees triumphed over agency travel restrictions, budget cuts, busy schedules, the aftermath of Hurricane Sandy, and other obstacles in order to attend. They came ready to discuss with more than 40 Esri employees the various GIS functional requirements for ocean science, justification for and validation of such approaches, use cases, and the like. Much of the Summit was recorded, and the videos are collected in this e-book.



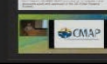
VIDEO Proceedings – media.esri.com/seminars/oceans/



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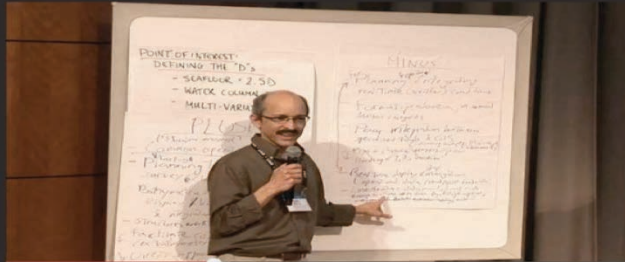
Esri president Jack Dangermond and Esri's chief scientist Prof. Dawn Wright welcome attendees to the 2012 Esri Oceans Summit.





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Report on the Data Acquisition/Data Distribution breakout session at the 2012 Esri Oceans Summit.



Contribute a Chapter to a New Esri Press Book, *Ocean Solutions, Earth Solutions*

Society needs solutions from policy makers that are underpinned by good, digestible science. Therefore, Esri Press invites you to submit your work to be considered for inclusion in a forthcoming book about use-inspired ocean science and realistic solutions for the oceans and thus the earth. This volume will be largely based on presentations at the **Esri Ocean GIS Forum**, and it will preserve good scholarship and encourage best practices. It will also serve the greater goal of reaching government decision makers, resource managers, and ocean/coastal GIS science researchers and practitioners. You may also submit geospatial data with your chapter, which will be assigned its own DOI, as well as Python scripts, geoprocessing workflows published as packages or services, static map packages, desktop extensions, mobile apps, and other supplementary material. Esri story maps are highly encouraged. All chapters will be peer reviewed.

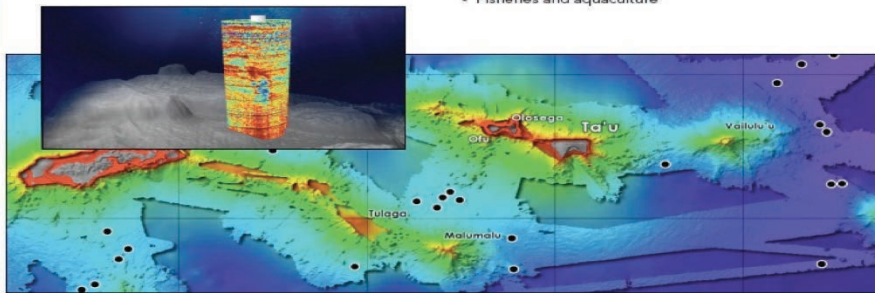
The submission deadline is March 17, 2014.

Submissions should be focused on topics, such as how to

- Effectively plan the exploration and discovery of the undiscovered parts of our planet.
- Better avoid ocean disasters and engineer rescues, thus ensuring ocean safety.
- Geodesign the ocean, including managing and mitigating conflict among multiple simultaneous uses of the ocean.
- Sustainably extract energy, food, and other services from the ocean.

We encourage submissions from the following ocean and coastal sectors:

- Research and exploration
- Ecosystems and environment
- Coastal protection and marine spatial planning
- Fisheries and aquaculture



Treasure Chest of Links on the Hero's Journey

esriurl.com/oceanebook

esriurl.com/ocnres

esriurl.com/maritime

esriurl.com/oceans

media.esri.com/seminars/oceans/

esriurl.com/pmi

One call to action is to please stay with us via these many resources.

Thank You

Dawn Wright
dwright@esri.com

Twitter: @deepseadawn
@EsriOceans



So I hope this lends some context to the very important discussions that we are now going to have. But first a coffee break

