

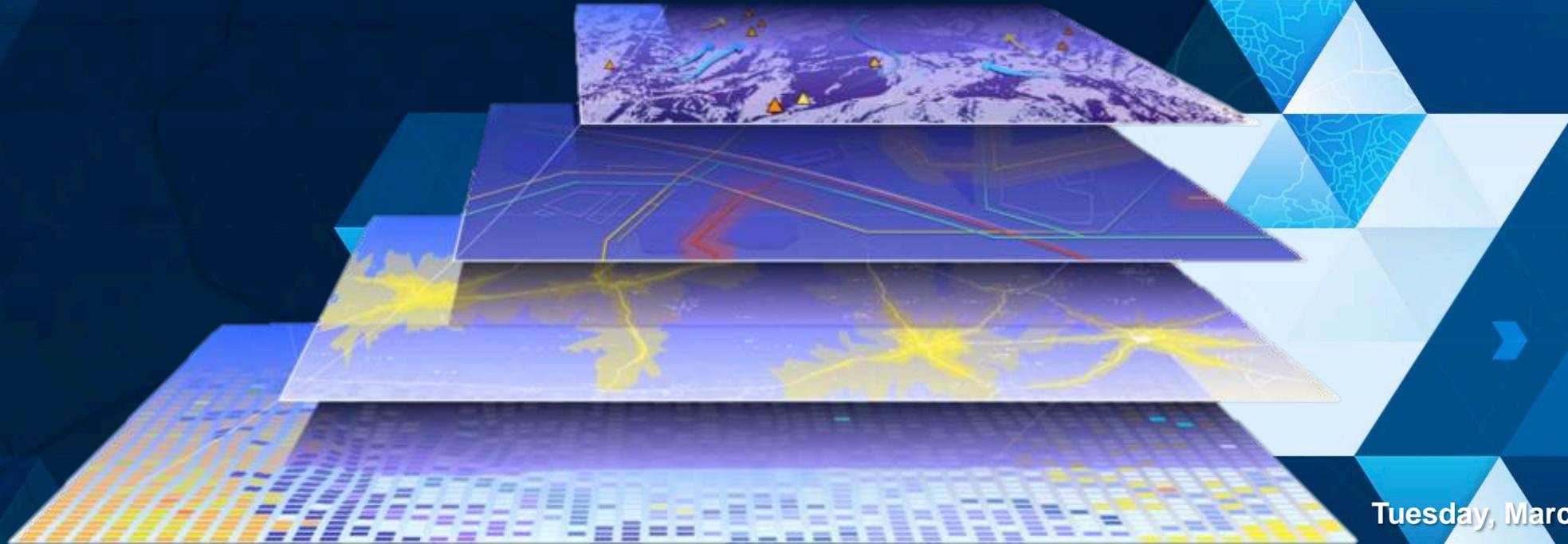


MSDI Open Forum
Building a Maritime Spatial Data Infrastructure
“Are the principles at odds with strategies for delivery?”



Geospatial Information Developments beyond Europe

Rafael Ponce
Global Maritime Business Development Manager, Esri Inc.

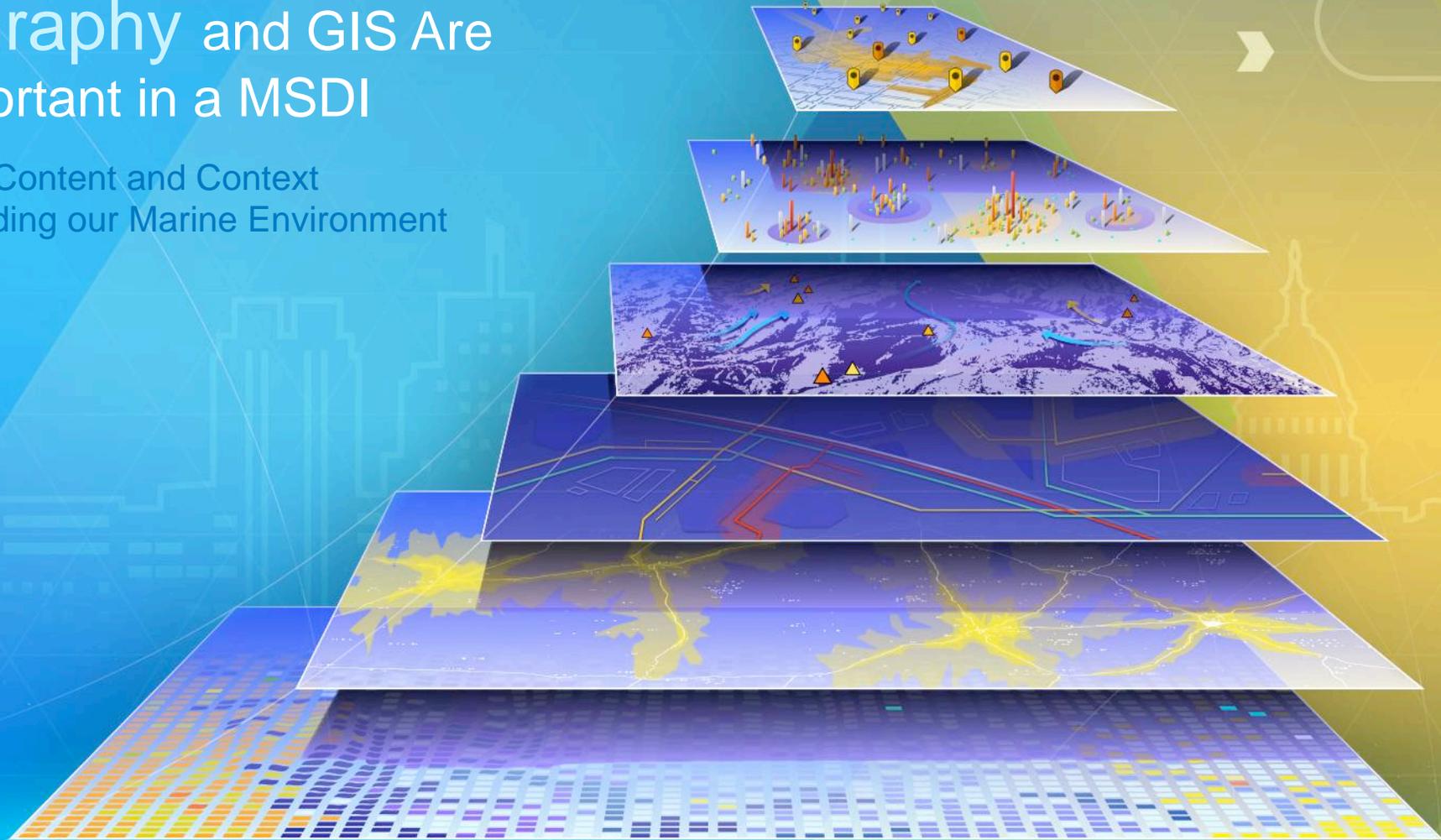


Tuesday, March 3rd 2015



Hydrography and GIS Are Very Important in a MSDI

Providing the Content and Context for Understanding our Marine Environment



GIS Is Integrating Hydrography into Everything We Do

Changing the Way We Think and Act



*Bringing Together Data, Technology, and People . . .
. . . Creating a Framework for Solving Complex Problems*

Interoperability

Ensuring Data and System Interoperability

Standards



Industry Formats and Models



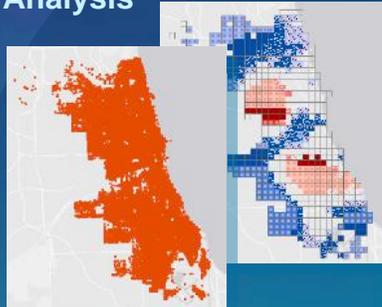
Providing an Open Platform

Spatial Analysis

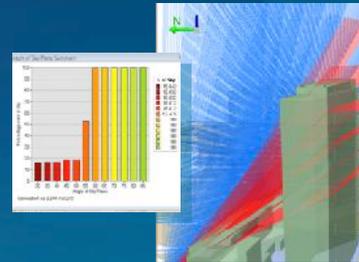
Supporting Demands for
Better Understanding

Desktop

Space-Time
Pattern Analysis



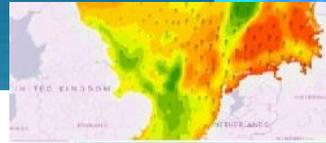
3D Analysis



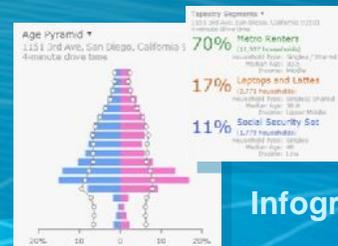
Flow Visualization



Improved Modeling



Multidimensional Data



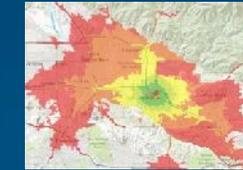
Infographics

Big Data



Online

Aggregation



Terrain Analysis



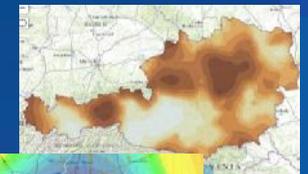
Find Similar



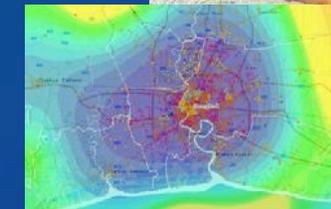
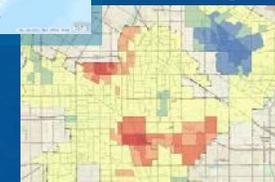
Route Planning



Interpolation



Hot Spots



For better decision making

Imagery

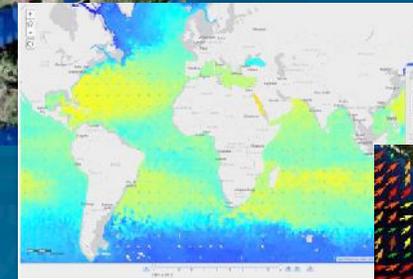
Managing, Analyzing, and Serving Intelligent Imagery

- Scientific Formats (HDF, GRIB, NetCDF)
- Segmentation and Classification Tools
- Visualization and Analytics

Impervious Surface



Multi-dimensional Data



Dynamic Products



Full Motion Video

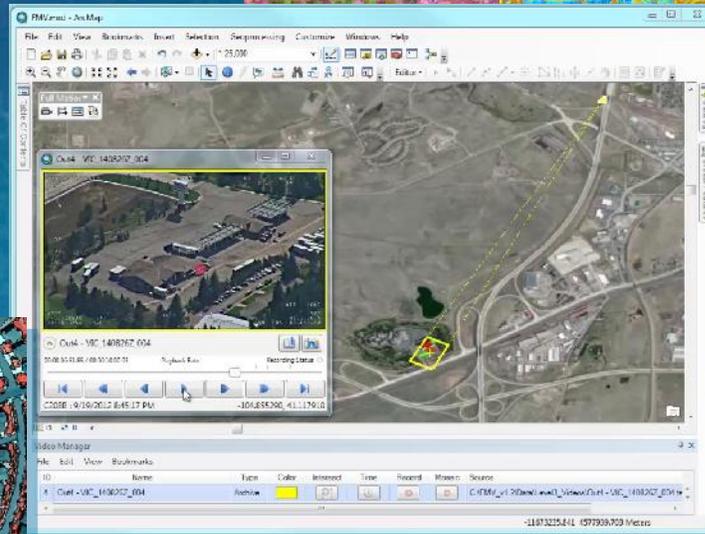
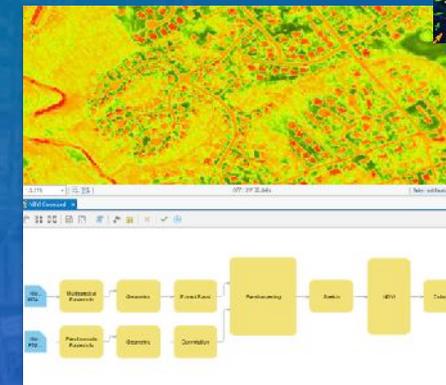


Image Segmentation



On-the-Fly Modeler



Advanced Visualization

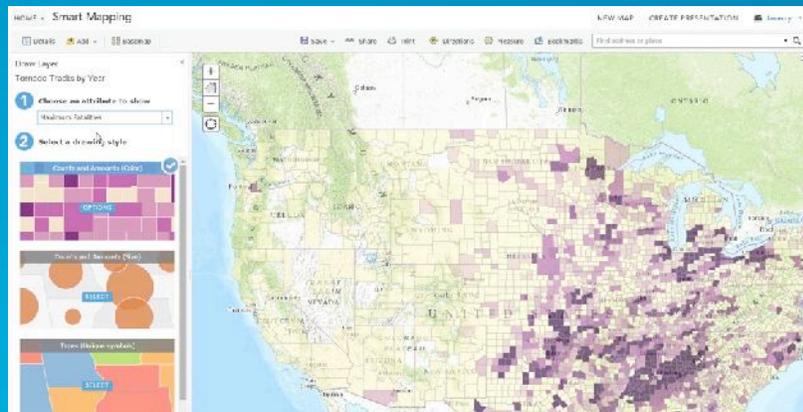


Single Scenes . . .
. . . and Massive Collections

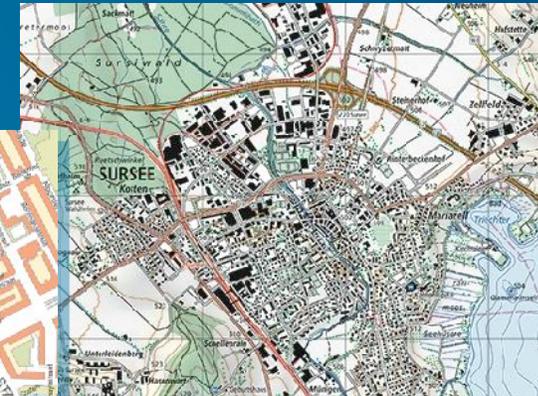
Mapping and Visualization

Advanced Tools
for 2D and 3D

Smart Mapping



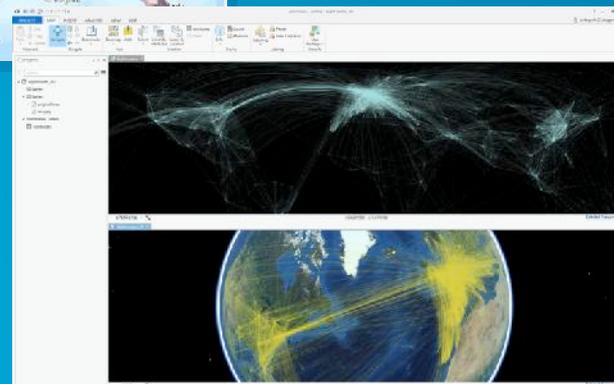
Whole Earth
Visualization



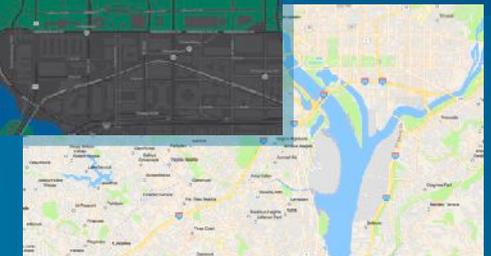
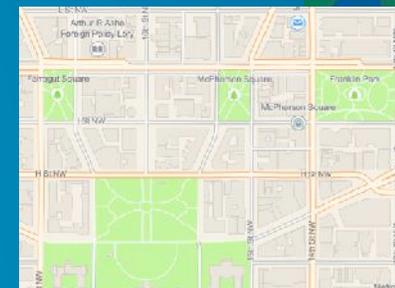
Advanced Cartography



Mobile Devices



Vector Tiles



Real-Time

Supporting Geographic Monitoring and Alerting

Arctic Shipping and Sea Ice



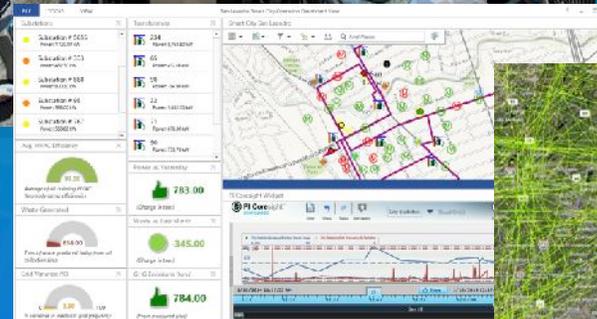
exactEarth

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- ! Many Sensors
- ! Stream Service
- ! Spatial Analysis



PG&E



OSIsoft Integration

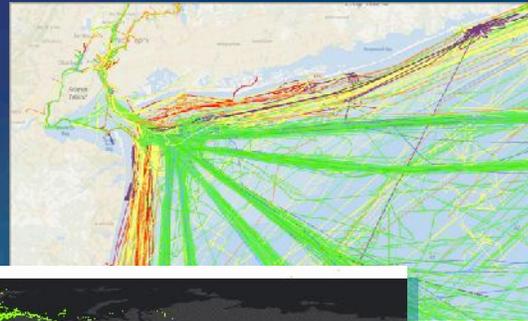


Big Data

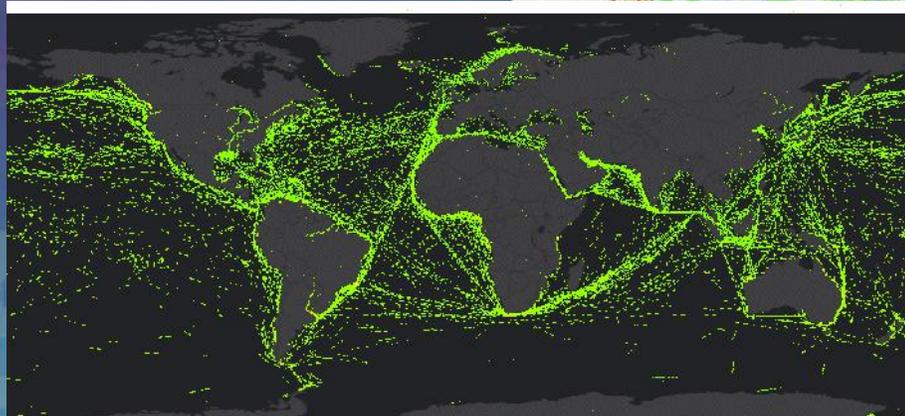
BIG Data

GIS Analysis and
Visualization of Massive Data

NYC Ship Tracks



AIS Ship Movements



Dec 31, 2011 1:00:00 PM - Jan 1, 2012 1:00:00 PM

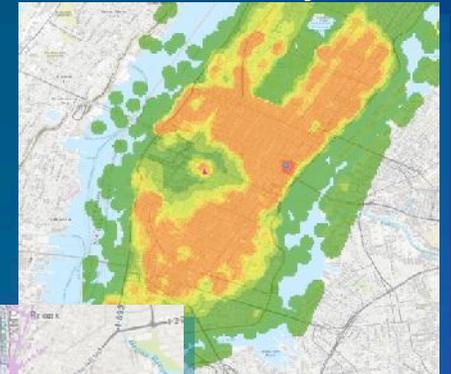
Includes material © 2015 exactEarth, Ltd. All Rights Reserved.



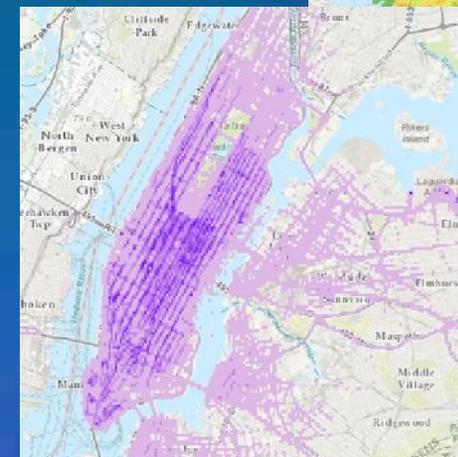
NYC Taxi Saturday Night



NYC Taxi Density



NYC Taxi 2013



Apps



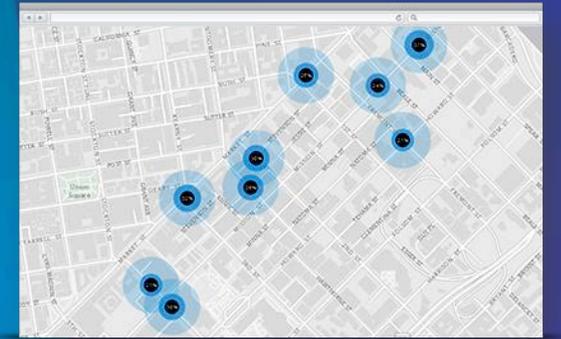
ANDROID



iOS / MAC



WINDOWS

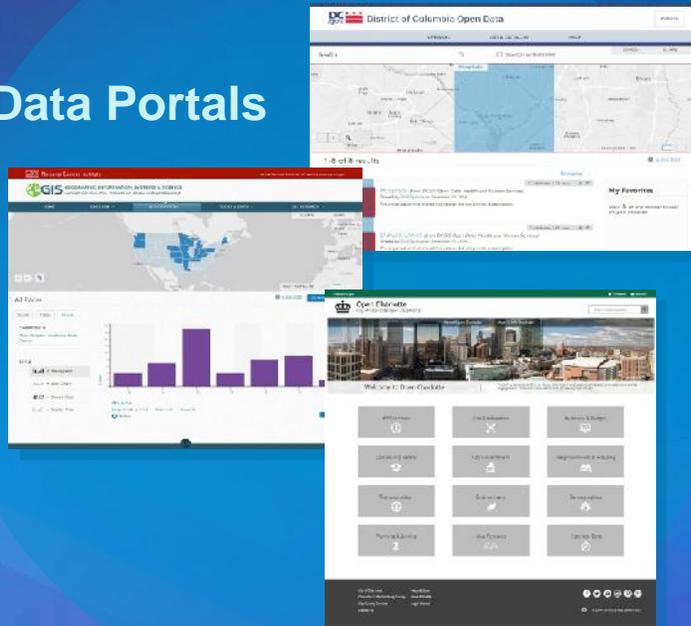


WEB BROWSERS

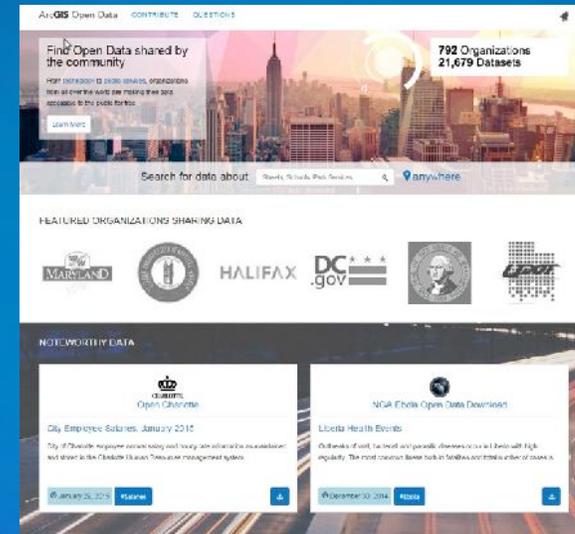
Open Data

Integrated Workflows to Share
Geospatial and Tabular Data

Open Data Portals



Portal for All Open Data



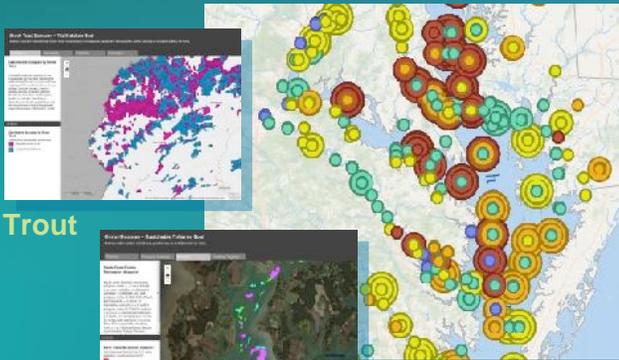
OpenData.ArcGIS.com

*Powering Thousands of Open Data Sites . . .
. . . Enabling Open Data Everywhere*

How MSDIs support GI today?

Monitoring and Managing Natural Resources

Managing the Chesapeake Bay



Trout

Oxygen

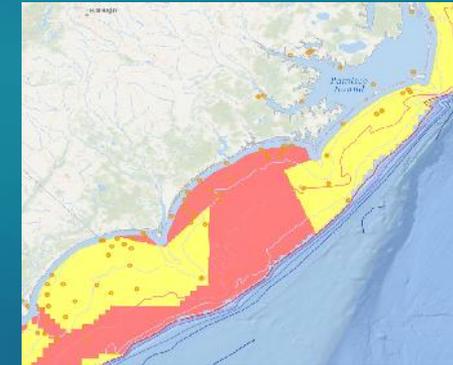
Oyster Restoration

Environmental Sensitivity Assessment



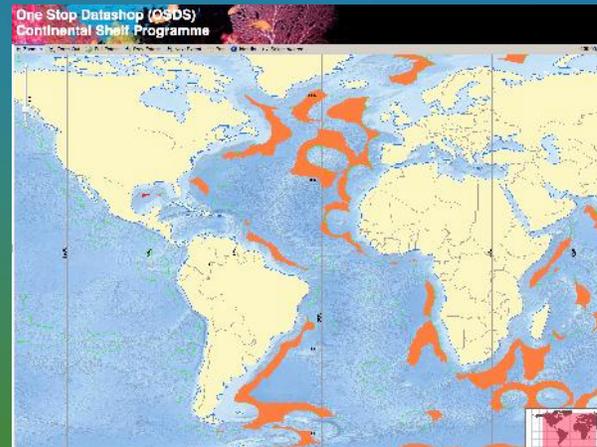
UNEP, US Virgin Islands

North Carolina Offshore Renewable Energy Planning



US Marine Cadastre

Continental Shelf Programme



GRID Arenal

Coral Reef Watch



UNEP, US Virgin Islands

Transportation Management

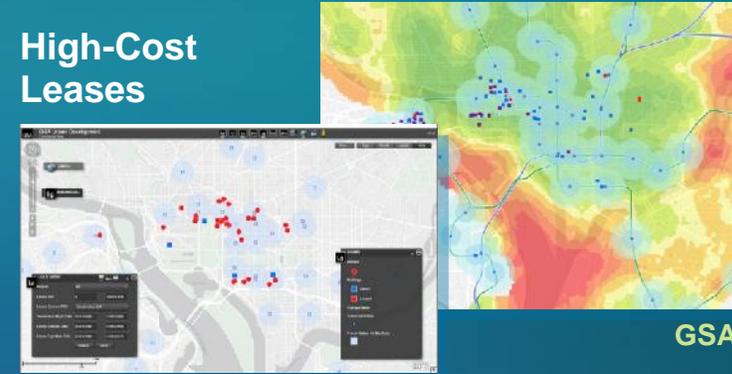
Public Transportation Advocacy



Facility Planning and Management

Asset Management

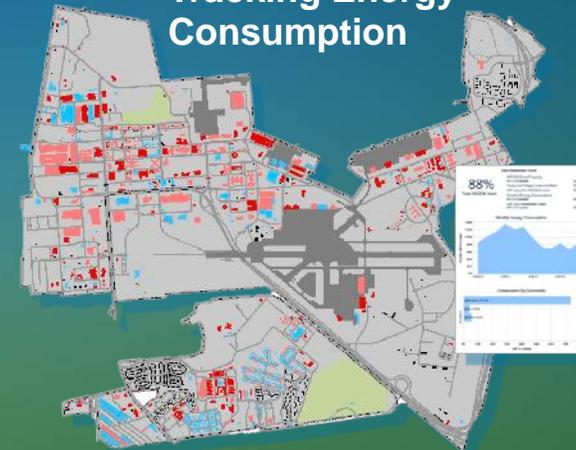
High-Cost Leases



Arctic Shipping



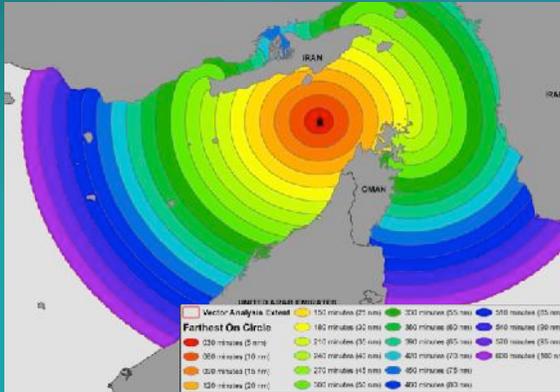
Tracking Energy Consumption



Norfolk Naval Station, Norfolk, VA

Defense and National Security

Vessel Reach by Time



Public Safety

Preparing for and Responding to Disasters

Border Protection Portal



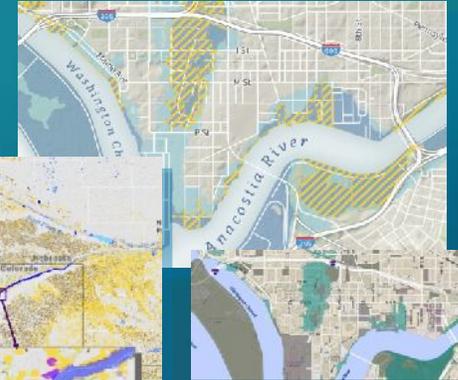
CBP, DHS

NFL Security



Seattle PD

Floodplain Management



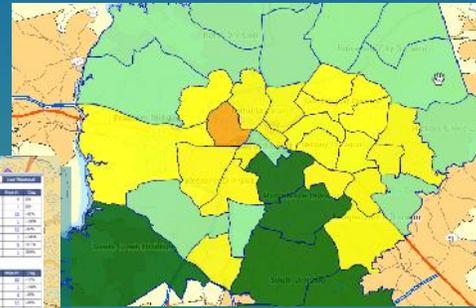
DC GIS, Washington, DC

Flooding



USDA, Colorado

Crime Prediction Map



Charlotte –
Mecklenburg Police Dept.

Operations Dashboard—AWARE



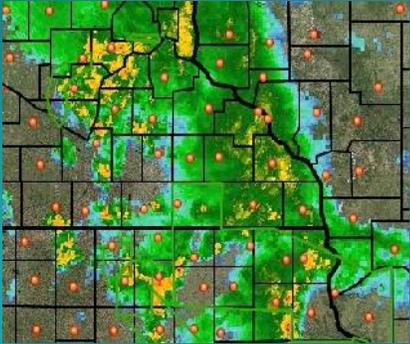
Washington, DC

COMPSTAT Reporting



Preparing for and Responding to Disasters

Extreme Weather



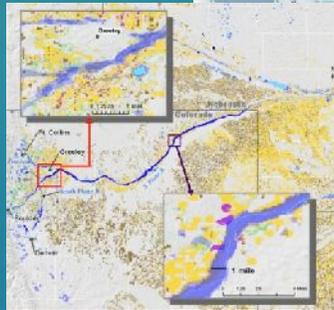
USDA, Upper Midwest

Floodplain Management



DC GIS, Washington, DC

Flooding



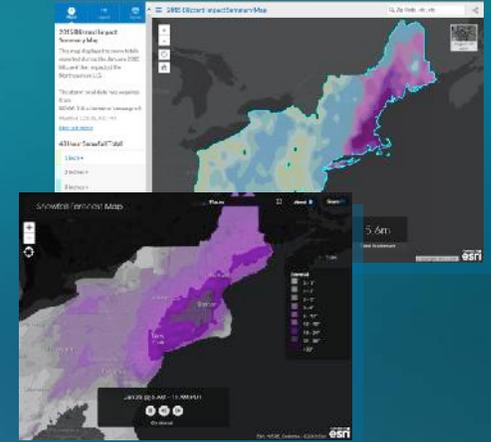
USDA, Colorado

Winter Weather Operations



Georgia

Blizzard Impacts



Northeast US

CAPSTONE Earthquake Exercise



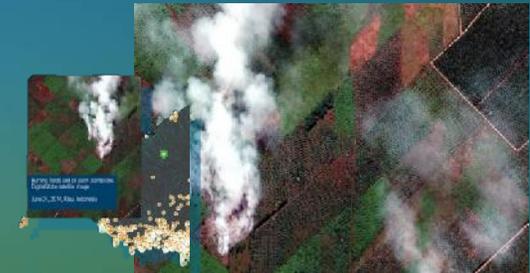
DHS—State of Missouri



Monitoring Air Quality



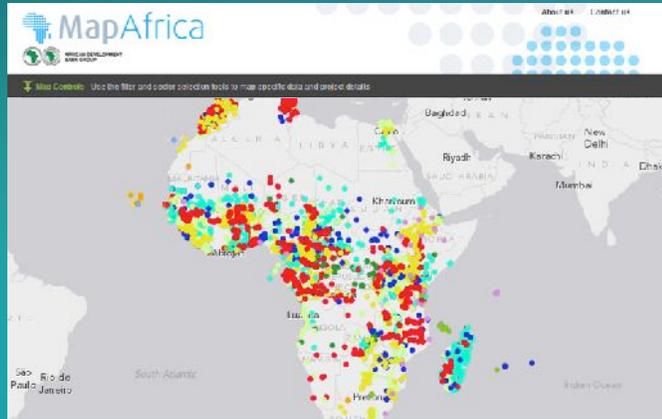
Southeast Asia



Global Forest Watch

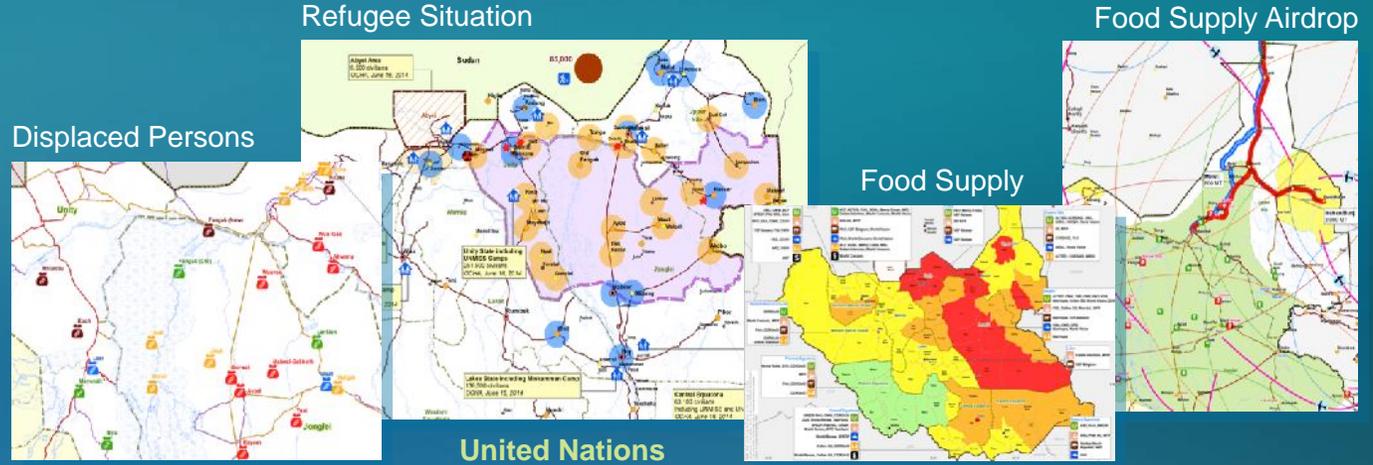
Supporting Humanitarian Missions and International Development

Economic Development



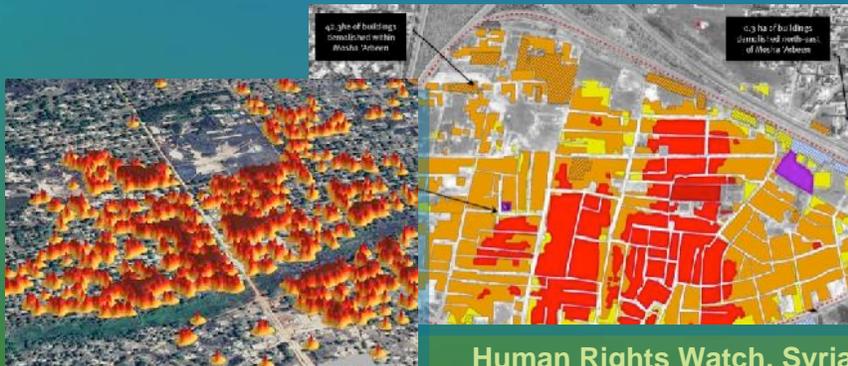
AirData, Africa

South Sudan Humanitarian Operations



United Nations

Social and Ethnic Violence



Central African Republic

Human Rights Watch, Syria

Ebola Epidemic



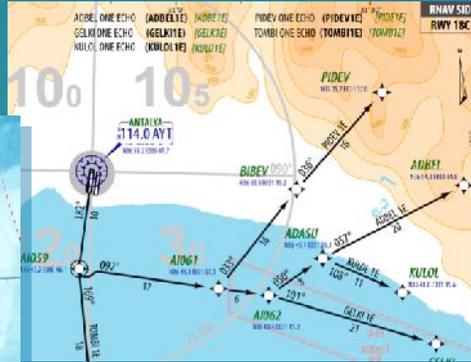
USAID, West Africa

Cartography

Aeronautical Charts



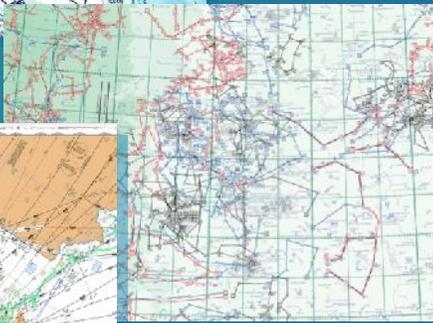
Honduras



Turkey

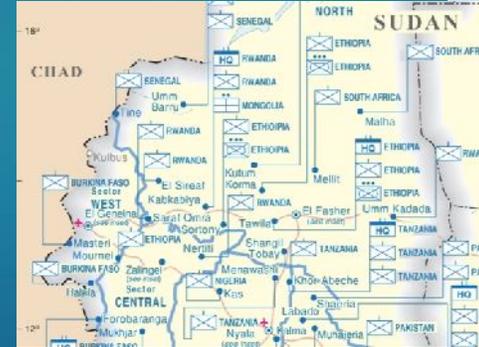


FAA



NGA

Military Cartography

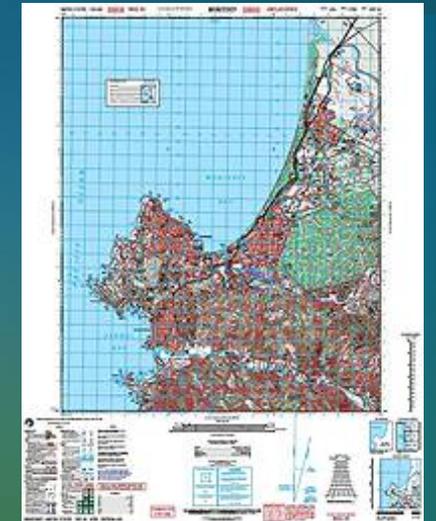


UN Peacekeeping



NATO

Topographic Mapping



MGCP Agencies & Partners

Nautical Charts



NOAA

Portals for Geospatial Content Management / Access



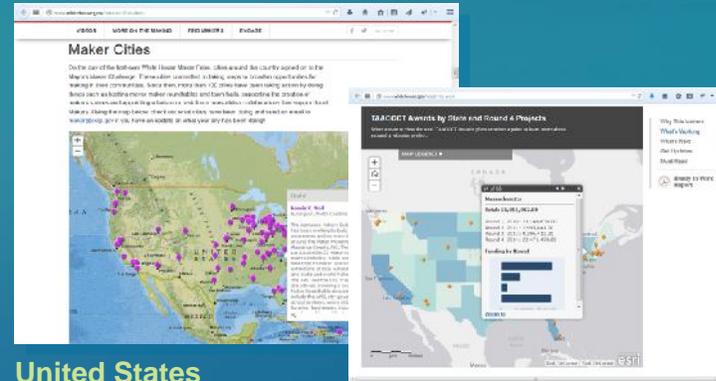
Open Data and Citizen Engagement

MapED



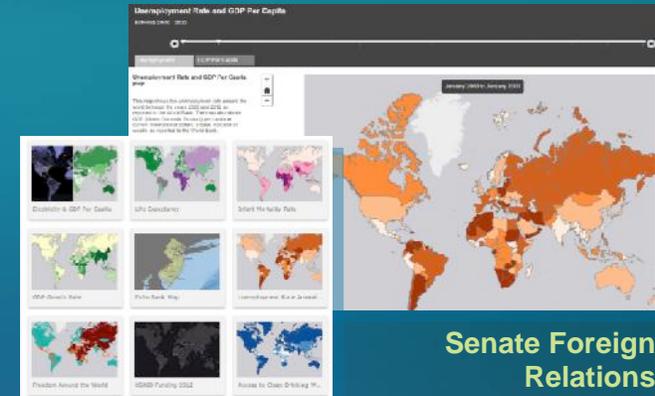
NCES, Chicago, IL

White House Maps



United States

Congressional Policy Assessment



Senate Foreign Relations

Federal Portals



United States

State Portal



Maryland

International Portals



AirData, Philippines

AirData, Indonesia

Data Sharing

The key for success



[DATA](#) [TOPICS](#) - [IMPACT](#) [APPLICATIONS](#) [DEVELOPERS](#) [CONTACT](#)

The home of the U.S. Government's open data

Here you will find data, tools, and resources to conduct research, develop web and mobile applications, design data visualizations, and more.

GET STARTED

SEARCH OVER 138,201 DATASETS

Credit Card Complaints



BROWSE TOPICS



Agriculture



Business



Climate



Consumer



Ecosystems



Education



Energy



Finance



Health



Local
Government



Manufacturing



Ocean



Public Safety



Science &
Research

Data Sharing

The key for success

GeoSUR La Red Geoespacial de América Latina y el Caribe

HOME SEARCH FOR DATA REGIONAL MAP VIEWER NEWS CONTACT US

GEOSERVICES

- Map Viewers
- WMS Services
- WFS Services
- CSW Services
- Topographic Service
- Hydro-Electric Potential Assessments
- Flood mapping in near-real-time

Map of the Month

The Mexican Ministry of Energy has developed this map viewer showcasing the National Inventory for Renewable Energy, providing access to national maps on geothermal, wind, biomass, ocean and solar energy sources. The data includes existing energy sources as well as potential resources not yet exploited. The inventory is a collaborative effort of more than 10 Mexican agencies.

LATEST NEWS

- GeoSUR announces the publication of numbers 5 and 6 of the Newsletter
- Publication of the fourth edition of the GeoSUR newsletter
- GeoSUR Award 2014
- GeoSUR presentation at the JIIDE Meeting in Lisbon

WELCOME TO GEOSUR

The GeoSUR Portal provides an entry point to spatial data published by Latin American and Caribbean agencies. The data may be consulted directly by means of partner map services, a **regional map viewer** contained in this portal or through various metadata services.

Most of the spatial information available in this portal is available in map services operated by participating agencies in a decentralized fashion. These services are owned by spatial data producers from the region. These institutions register their various geoservices and their metadata with the portal in order to make them available to the public. No special skills or special software is required to use the portal; it is free and open to the public.

The GeoSUR Program is led by CAF – the Latin American Development Bank and PAIGH the Pan American Institute of Geography and History. The Portal was developed with the technical support of the U.S. Geological Survey (USGS).

GEOSUR PROGRAM

- About the Program
- Technical Assistance
- Participants
- GeoSUR's Library
- Frequently Asked Questions
- GeoSUR Blog
- Available Data

Data Sharing

The key for success

The screenshot shows the IOOS website homepage. At the top, the IOOS logo is displayed with the text 'INTEGRATED OCEAN OBSERVING SYSTEM'. To the right of the logo are navigation links for 'GLOBAL', 'NATIONAL', and 'REGIONAL', along with a search bar. Below the logo is a main navigation menu with links for 'Home', 'IOOS In Action', 'About', 'Data', 'Observing Systems', 'Modelling', 'Themes', 'Education', and 'Communications'. The main content area features a large photo of four people on a boat, with the caption 'IOOS® Northwest Region Hosts Hands-on Workshop for Educators'. Below this is a section titled 'U.S. IOOS®, Integrated Ocean Observing System' with a brief description of its purpose. To the right is a 'News and Announcements' section with several news items, including 'New York Harbor added to Surface Current Web Product', 'IOOS Supports Safe Ship Navigation', and 'IOOS Celebrates 10 Years of Ocean Observing'. At the bottom, there are several featured content boxes: 'Observing Partnerships and Plans' (with sub-links for Global, National, and Regional), 'U.S. IOOS Data and Assets', 'IOOS Works: Themes', 'Glidors and Glider Asset Map', 'High Frequency Radars and Global Network', 'Observation Apps and Mobile Websites', and 'Smart Devices'. A footer section at the bottom right mentions 'Improving our understanding of Ocean Acidification'.

IOOS® INTEGRATED OCEAN OBSERVING SYSTEM

GLOBAL NATIONAL REGIONAL

Home IOOS In Action About Data Observing Systems Modelling Themes Education Communications

News and Announcements

- [New York Harbor added to Surface Current Web Product](#)
- [IOOS Supports Safe Ship Navigation](#)
- [A Year of Highlights at the NERACOO's Annual Meeting](#)
- [An Interview with NOAA Fisheries Scientist Jeffrey Polovina](#)
- [IOOS Celebrates 10 Years of Ocean Observing](#)
- [IOOS Ocean Enterprise Study Highlighted at Blue Tech & Blue Economy Summit](#)
- [Report Shows a Significant Blue Economy in Mississippi](#)
- [U.S. IOOS Director Expanding Partnerships for Ocean Observing and HF Radar in Europe](#)
- [U.S. IOOS and IOOS RAs Featured at GEO 11th Plenary](#)
- [Phase 1 Report for the U.S. IOOS Ocean Enterprise Released](#)
- [IOOS Pacific Regions Launch Ocean Acidification Data Portal](#)
- [San Pedro South Buoy Deployment](#)
- [IOOS supports NOAA's 2014 Atlantic Hurricane Outlook through related research \(pdf\) and Predicting Severe Weather](#)
- [The U.S. IOOS Data Management and Communication \(DMAC\) core services: fifth QARTOD manual - 05/2014](#)
- [The U.S. IOOS Summit Report, published by the Interagency Ocean Observation Committee \(IOOC\) - 09/2013](#)
- [U.S. Integrated Ocean Observing System \(U.S. IOOS®\) 2013 Report to Congress \(pdf\), 06/2013](#)
- [Improving our understanding of Ocean Acidification](#)

U.S. IOOS®, Integrated Ocean Observing System

U.S. IOOS is a vital tool for tracking, predicting, managing, and adapting to changes in our ocean, coastal and Great Lakes environment.

U.S. IOOS delivers the data and information needed, so that decision-makers can take action to improve **safety**, enhance the **economy**, and protect the **environment**.

Observing Partnerships and Plans

- Global
- National
- Regional

U.S. IOOS Data and Assets

IOOS Works: Themes

Glidors and Glider Asset Map

Where are the Gliders Today?

High Frequency Radars and Global Network

Observation Apps and Mobile Websites

Smart Devices

So,

Are the principles at odds with strategies for delivery?

There are examples telling otherwise

But

There is a risk to be left out

Bi-directional communication

Lots of free data

User groups working together

Private and Public sectors

Services

HOs not engaged

Too focus on products

Moving slowly

The MSDI WG . . .

. . . Can be the link with these user communities

Provide guidance to HOs

- . . . On how to be part of their national SDI
- . . . On how to promote their data assets
- . . . On how to build a Marine SDI
- . . . On promoting data sharing
- . . . On taking advantage of S-100

Realizing the Vision of Shared Geospatial Knowledge . . .

. . . Will Require new paradigms

Creating an Infrastructure For a Sustainable Future

Thank you



Understanding our world.

Rafael Ponce
rponce@esri.com