

International Hydrographic Organization Marine Spatial Data Infrastructure Forum  
***MSDI: More than Hydrography, Better Decisions from Better Data***

Tuesday, February 4, 2014  
Silver Spring Civic Center, 1 Veterans Place, Silver Spring, MD

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0830 - 0900 *Meet and Greet*

0900 – 0915 *Introductions*

0915 – 0945 Don Ventura, Fugro Pelagos Inc.  
***Intelligent Exploitation of the Blue Economy - A Hydrographic Perspective***

0945 – 1015 Robert Gagorian, Consortium for Ocean Leadership (did not show up)  
***Science Requirements for Marine Spatial Planning***

1015 – 1045 James Rapaport, CARIS  
***Data Discovery***

1045 – 1100 *Break*

1100 – 1130 Sandra Whitehouse, Ocean Conservancy  
***Smart-Ocean Planning to Protect the Health of our Oceans***

1130 – 1200 Jonathan Andrechik, White House Office of Science and Technology Policy  
***The U.S. National Ocean Policy – A Data Perspective***

1200 – 1330 *Lunch*

1330 – 1400 Matthew McGregor, Geoscience Australia  
***MSDI as a Tool to Support Domestic and International Georegulatory and Maritime Boundary Frameworks***

1400 – 1430 Christine Taylor, US The Bureau of Ocean Energy Management  
***Marine Cadastre Project***

1430 – 1500 Rafael Ponce, Esri  
***ArcGIS: Charting new value for your data***

1500 – 1515 *Break*

1515 – 1545 Josie Quintrell, IOOS Association  
***U.S. Integrated Ocean Observing System***

1545 – 1615 Gerhard Kuska, MARACOOS  
***Serving Marine-Related Users in the Mid-Atlantic through Ocean Observing and Forecasting***

1615 – 1645 George Percivall, Open Geospatial Consortium  
***OGC Interoperability Program***

1645 – 1700 Jacqueline Barone, US National Geospatial-Intelligence Agency Maritime Safety Office (did not show up)  
***Rating Datasets for Confidence Reporting, Transparency, and Improved Products***

1700 *Discussion*

## Speakers

*Don Ventura*

### **Intelligent Exploitation of the Blue Economy - A Hydrographic Perspective**

**Abstract:**

How does one intelligently exploit the Blue Economy to benefit one's nation, one's company, one's agency, or oneself? From a hydrographic perspective, economic benefits derived through maritime trade are only really benefits when they arrive on land: at market. The success of vessel trade relies upon safe navigation and sustainable, resilient shore-side infrastructure. Not for the first time is it therefore emphasized that the land-sea interface is a critical component of any successful interaction between the Blue Economy and the terrestrial market which it serves. Land and sea data supporting the maritime activity upon which a Blue Economy is built have however, up until very recently, always been dealt with as separate entities, by separate agencies and industries, on distinct geodetic reference frames.

This presentation will emphasize the importance of a holistic capture of marine and terrestrial terrain and the important additional data layers necessary to support successful, enduring maritime trade. A multi-faceted approach to data collection can be conducted to create a homogenous dataset which can be exploited by a greater number of stakeholders than can the mere sum of the component marine and terrestrial parts. These stakeholders include not only the traditional end data users but an increasing number of marginal stakeholder entities and other data managers.

**Biography:**

Don Ventura is a Charge IHO Category A Surveyor with Fugro and has been engaged in hydrography for over 30 years. His experience includes 22-years of service as a hydrographic surveyor in the British Royal Navy, 3 years exchange with the US Navy at NAVOCEANO, 3 years employed with SAIC and over 7 years with Fugro Pelagos Incorporated.

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*Robert Gagosian*

### **Science Requirements for Marine Spatial Planning**

**Abstract:**

Marine Spatial Planning (MSP) is a future-oriented, adaptive, science-based tool that requires fundamental understanding of physical, biogeochemical and ecological patterns and processes and human interactions in the ocean; the ability to observe and measure these characteristics; and finally the capability to forecast these conditions. Successful management of the marine environment needs to be based on the best available science and will require continual information gathering to establish baselines, monitor ecosystems, and evaluate the efficacy of marine spatial plans. These tasks are essential to wisely plan for sustainable resource use into the future.

White paper can be found at: <http://oceanleadership.org/wp-content/uploads/2009/11/MarineSpatialPlanning.pdf>

**Biography:**

In November of 2007, Robert B. Gagosian was appointed the first President/CEO of the Consortium for Ocean Leadership, which was formed by the merger of the Consortium for Oceanographic Research and Education (CORE) and the Joint Oceanographic Institutions (JOI). As President, Gagosian oversees the management of major research and education programs, accounting for roughly \$250 million. Gagosian also coordinates the community's advocacy efforts, articulating to policy makers the importance of ocean research and education to the nation.

Previously, Gagosian served as Director of the Woods Hole Oceanographic Institution (WHOI), a position he held from 1994 until 2006, following a distinguished career as a marine geochemist that

included five years as Chairman of the Chemistry Department, six years as WHOI Director of Research and two as Senior Associate Director.

More details can be found at: <http://staffdirectory.oceanleadership.org/bob-gagosian>

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*James Rapaport*  
**Data Discovery**

Abstract:

Data discovery is to the operation of an SDI. It is usually prominent in SDI definitions, for example, "The SDI provides a basis for spatial data discovery, evaluation, and application for users and providers within all levels of government, the commercial sector, the non-profit sector, academia and by citizens in general." (The SDI Cookbook)

The talk will have one theme: data discovery. It will be explored by looking at two distinct approaches to searching. The first approach is the data discovery process underpinned by geospatial industry standards. We will see how CARIS is aiming to support the process by innovative uses of industry standards. The use of such standards can be mandated by SDI policies.

One of the criticisms leveled at SDI is that it ignores a fundamental component infrastructure: the internet. But there's evidence that this is not quite true. The second approach is the representation of data in ways that allow it to be searched by common web tools. Examples of where this is happening will be shown and initiatives that allow data structure to be threaded back into formats that are aimed at presentation will be discussed.

The talk will conclude by considering that the two approaches are actually two sides of the same coin. They can be applied in parallel with benefits accruing because data may be found more easily.

Biography:

Following graduation in 1997 with an MSc in Applied Remote Sensing, James has held a range of technical and analytical positions. James held a range of short-term positions before joining Atkins, an engineering consultancy, in 2000. He spent 7 years with Atkins working on a huge variety of projects. During his time with Atkins, James was seconded to the UKHO for 18 months where he contributed to the implementation of standards. James joined SeaZone in 2007, a UK company specializing in the development of marine mapping, re-purposing hydrographic data. James continued his involvement with standardization, contributing to the development of UK metadata standards and implementing software supporting the creation of metadata. James moved to Canada and joined CARIS in 2012.

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*Sandra Whitehouse*  
**Smart-Ocean Planning to Protect the Health of our Oceans**

Abstract:

Comprehensive, smart-ocean planning is designed to protect the health of our ocean while supporting opportunities for sustainable and productive uses of ocean resources. It enables the best available science to be used for management decisions, helps agencies coordinate their efforts and empowers stakeholders to determine the future of their ocean spaces.

While smart-ocean planning has been in used in European countries (such as Belgium, Great Britain and Norway) for over a decade, it is relatively new in the United States. It was recommended on a regional basis as part of the National Ocean Policy in 2010. Currently, two of the nine regions defined by this policy have started the planning process and several others are taking some preliminary steps.

One of the most critical elements of smart-ocean planning is the collection, evaluation and dissemination of data. As of January 2014, three of the regions have launched data portals. Hydrographic information is an essential data layer. Although the hydrographic data is not uniform,

current or complete, there are some exciting new collection technologies that will facilitate improvement to this important aspect of our scientific understanding of our oceans.

**Biography:**

Dr. Sandra Whitehouse is a consultant who serves as the Senior Policy Advisor for Ocean Conservancy. She currently focuses on the coastal and marine spatial planning and ocean acidification programs. A longtime environmental advocate and policy advisor who uses her expertise in marine science to help shape environmental initiatives in Rhode Island and on the federal level, Dr. Whitehouse has worked as an environmental consultant for the past 15 years, providing research, analysis, and advice on environmental policy issues to clients including the Rhode Island General Assembly, the Coastal States Stewardship Foundation and the Ocean Conservancy. Her past work includes serving as the chair of Rhode Island's Coastal Resources Management Council and she has served on the boards of a number of non profit organizations including Save the Bay, the Nature Conservancy's Rhode Island chapter, the Metcalf Institute for Marine and Environmental Reporting, the Aquidneck Island Land Trust, Grow Smart Rhode Island, and the University of Rhode Island's Marine Advisory Council. She is currently a member of the Advisory Board for the Consortium for Ocean Leadership. Dr. Whitehouse holds a B.S. from Yale and a Ph.D. in biological oceanography from the Graduate School of Oceanography at the University of Rhode Island. She lives in Rhode Island and Washington, D.C. with her husband and has two children.

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*Jonathan Andrechik*

**The U.S. National Ocean Policy – A Data Perspective**

**Abstract:**

The United States is in the process of implementing its first-ever National Ocean Policy, which President Obama established by Executive Order in 2010. A key component of the Policy is a requirement for Federal agencies to conduct regional marine planning together with interested states and federally-recognized tribes, whose participation is voluntary. Four planning regions across the United States – the Northeast, Mid-Atlantic, Caribbean, and Pacific Islands – have officially established regional planning bodies (RPBs), and conversations about marine planning are progressing in other regions. To support the planning efforts across the country, Federal agencies are working to make many types of data, including hydrographic data, discoverable, accessible, and usable to the marine planning community. This presentation will highlight interagency efforts underway to provide data to the marine planning community, through both a national and regional data portals.

**Biography:**

Jonathan Andrechik is an active duty U.S. Coast Guard officer on detail to the White House Office of Science and Technology Policy (OSTP). As a Policy Analyst at OSTP, he works with Federal agencies; state, local, and tribal government officials; and a variety of stakeholders to implement the U.S. National Ocean Policy.

Jonathan has served in the Coast Guard for nearly 14 years in a variety of field and staff assignments across the United States, acquiring expertise in ocean policy, marine navigation, search and rescue, spill response, contingency planning, incident management, law enforcement, and oceanography. While assigned to the Coast Guard's International Training Division, he completed Spanish language immersion training in Guatemala and conducted training missions with foreign maritime services in Panama, El Salvador, Ecuador, Guyana, the Bahamas, Denmark, Latvia, Lithuania, Kenya, and Papua New Guinea.

Jonathan holds a Master of Science degree in Oceanography from the University of California at San Diego (Scripps Institution of Oceanography) and a Bachelor of Science degree in Marine and Environmental Sciences from the U.S. Coast Guard Academy. He currently serves as the U.S. Coast Guard representative to the Interagency Ocean Observation Committee's Data Management and Communications Steering Team.

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Matthew McGregor

***MSDI as a Tool to Support Domestic and International Georegulatory and Maritime Boundary Frameworks***

Abstract:

An MSDI is a different thing to different people, it may facilitate access to datasets, it can be a common portal for different scientific disciplines or it can be a web application for the public to gain marine specific information. These data streams are often integrated into Marine Spatial Planning (MSP) tools to support scientific or ecosystem-based decision making. A precondition of any activity in the marine domain is an understanding of the domestic and international georegulatory framework of the area in question. The most effective way to provide advice on these complex frameworks is to ensure it is delivered in the same manner as other marine spatial data; digitally as a component of an MSDI. To be effective georegulatory datasets must be authoritative, that is, legally precise and fit for purpose. MSDI can provide the infrastructure required for digital georegulation because it encompasses the data structures, standards, logical consistency, and disciplined metadata practices critical to support this specialist information.

In this presentation I will discuss Australia's ongoing development of a digital online marine cadastre and MSDI's role in supporting it. Also covered is the use of data standards developed under the IHO S-100 universal data model as a means of sharing data between MSDI and MSP platforms domestically and internationally. For example the new S-121 Maritime Limits and Zones Exchange Product Specification specifically designed to be compatible with both MSDI and online MSP platforms, and as a deposition format for maritime boundary information as required under the United Nations Convention on the Law of the Sea. I will also explore a future role for MSDI as the primary delivery mechanism for marine georegulatory information as non-traditional uses and regulation of the marine space increase in number and complexity. Finally, I will examine the potential role of the IHO as the agency best suited to lead the establishment of international catalogues for sharing relevant marine-domain-critical data between Member States.

Biography:

Matthew is a senior maritime boundaries adviser at Geoscience Australia (GA), an Australian Government agency within the Department of Industry. Matthew's section in GA is responsible for the realization of Australia's domestic and international maritime boundaries and zones, providing advice and inter-agency coordination on spatial and technical matters relating to georegulation in the marine domain, and the development of the policy, practices and platform for an entirely digital Australian marine cadastre/register.

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*Christine Taylor*

**Marine Cadastre Project**

Abstract:

The MarineCadastre.gov project is a web based integrated marine information system that provides authoritative and regularly updated ocean information, including offshore boundaries, infrastructure, ocean uses, habitat distribution data, energy potential, and other data sets important to large regional ocean planning efforts. Data is provided as immediate viewable map data, downloadable GIS formatted data, and as map services. Most data is available directly from the authoritative source, or is updated regularly from the source(s). MarineCadastre.gov was created to comply with Section 388 of the Energy Policy Act of 2005 and is also providing the geospatial framework needed for the broader ocean planning initiative called for in the president's National Ocean Policy.

MarineCadastre.gov has three primary focus areas: Web map viewers and ocean planning tools; spatial data registry; and technical support and regional capacity building.

Biography:

Christine Taylor is a Geographer with The Bureau of Ocean Energy Management where she focuses on mapping projects related to offshore leasing for renewable and traditional energy. She co-leads the MarineCadastr.gov project with NOAA partners. Christine participates in a number of interagency working groups aimed at promoting GIS data sharing. Prior to her employment with BOEM Christine was the GIS Coordinator for NOAA's National Marine Sanctuary Program. She has 20+ years of experience working as a GIS professional and holds a MS in Environmental Sciences from Johns Hopkins University and a BS in Geography from Towson University.

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*Rafael Ponce & Geoffrey Gomez*  
**ArcGIS: Charting new value for your data**

Abstract:

Hydrographic data is the foundation to build a maritime data management system, in the framework of a Marine Spatial Data Infrastructure for broader use. Visionary organizations are already evolving their traditional roles and jumping into the "Big Data" ship and connecting to the World through web services. The use of Hydrographic Data is evolving for good.

Biography:

Rafael Ponce is a Cat. A Hydrographer and MsSc. from the University of Southern Mississippi, former Deputy Director of Hydrography and Cartography, and Captain of a hydrographic ship in the Mexican Hydrographic Office. He retired from the Mexican Navy after 24 years of service and became the Global International Maritime Business Development Manager at Esri since 2007.

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*Josie Quintrell*  
**U.S. Integrated Ocean Observing System**

Abstract:

The U.S. Integrated Ocean Observing System (US IOOS) is a national program dedicated to meeting the nations need for information on our oceans, coasts and Great Lakes. This is achieved by a partnership between 17 Federal agencies, 11 regional systems and industry that together collect, deliver and use coastal information. IOOS is an end-to-end system, that aims integrate observations, model output and state-of the-art data management technique to provide information to those who need it. IOOS is working with a variety of needs from safe and efficient marine navigation, ecology and fisheries, hazards and climate trends. This talk will provide an overview of the program and the types of needs that existing for observing and hydrographic information.

Biography:

Josie Quintrell is the Director of the IOOS Association, a non-profit organization dedicated to enhancing coastal observing for the benefit of society. Prior to her work with the IOOS Association, she was C.O.O. for the Gulf of Maine Ocean Observing System (GoMOOS) and a marine policy specialist for the Maine Coastal Program. She has a Masters in Regional Planning from Cornell University and a B.A. in Biology from Colby College. She lives in Maine with her husband and two children.

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*Gerhard F. Kuska*  
**Serving Marine-Related Users in the Mid-Atlantic through Ocean Observing and Forecasting**

Abstract:

The Mid-Atlantic Bight extends 1,000 kilometers from Cape Cod to Cape Hatteras. The Mid-Atlantic region for the U.S. Integrated Ocean Observing System (IOOS) mirrors the geographic boundaries of the

Mid-Atlantic Bight and encompasses ten states (Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina) and the District of Columbia, five major urban ports and estuaries (including the largest estuary in the United States—the Chesapeake Bay), and a wide continental shelf cut by multiple, deep shelf-break canyons. The region supports 76 million inhabitants (about ¼ of the U.S. population), ¼ of U.S. maritime commerce, the largest naval base in the world (located at Naval Station Norfolk), and both commercial and recreational fisheries. It also faces challenges from a century of industrialization, a growing coastal population, ongoing threats from tropical storms and nor'easters, climatic-scale warming trends, and growing demands on the nation's most congested electrical power grid.

The Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS) represents the next generation in ocean observing and forecasting. MARACOOS partners conduct both basic and applied research. But it is MARACOOS' applied science that has resulted in practical solutions to some of the society's most pressing challenges. Through the implementation of its mission, "To seek, discover, share, and apply knowledge and understanding of our coastal ocean", MARACOOS is applying the region's expertise to help save lives and livelihoods, and maintain the quality of life in the Mid-Atlantic Region.

MARACOOS partners have experienced important successes in serving the various stakeholder communities over the past 8 years. Can MARACOOS partners, observations and models present a collaborative opportunity with the hydrographic sector and MSDI?

#### Biography:

Dr. Gerhard Kuska is the Executive Director of the Mid-Atlantic Regional Association Coastal Ocean Observing System (MARACOOS), an association of academic, governmental, and private organizations from Cape Cod, Massachusetts to Cape Hatteras, North Carolina (part of the U.S. Integrated Ocean Observing System) that contributes to better decision-making through the advanced collection and dissemination of ocean and coastal data and information products—including in support of maritime safety and resiliency, water quality, offshore energy, ecological decision support, and coastal inundation. He is also a Senior Fellow in Integrated Marine Policy at the University of Delaware, a Steering Committee Member of the Global Forum on Oceans, Coasts, and Islands, a member of the Board and Executive Committee for the IOOS Association, a Member of the Dean's Advisory Council in the University of Delaware's College of Earth, Ocean, and Environment, a U.S. licensed Customhouse Broker, and President and CEO of Ocean Strategies LLC—an ocean management consulting firm that provides strategic advice and services to public, private, academic, and international entities on a broad array of issues.

Dr. Kuska has served over the past 3 decades in a variety of positions and organizations in the US, Europe, and the Middle East, and continues to serve in advisory board capacities around the world. From 2008 until 2010, he served as Senior Advisor for the Maritime Strategy to the Government of Abu Dhabi in the United Arab Emirates and oversaw the successful development of an integrated strategy for their marine and coastal areas, bringing together defense, security, mobility, safety, economic development, and environment and natural resource conservation under a new governance structure. From 2006 to 2008, Dr. Kuska served as Associate Director of the White House Council on Environmental Quality and Director of Ocean and Coastal Policy in the Executive Office of the President, where he advised the President on a broad array of ocean, coastal, and maritime issues, and oversaw the implementation of the President's Ocean Action Plan and several high-profile initiatives, including the largest marine protected area in the world at the time. From 2004 to 2006, he worked for the National Oceanic and Atmospheric Administration (NOAA) as a Senior Policy Analyst for strategic planning and intra- and inter-agency coordination. From 2002 to 2004, he served on the staff of the U.S. Commission on Ocean Policy, where he advised the commissioners on governance issues and contributed to the drafting of the Commission's landmark report. Prior to this time, Dr. Kuska worked on ocean and coastal issues for U.S. Senators Ron Wyden (D-Oregon) and William V. Roth, Jr. (R-Delaware). He also advised UNESCO's Intergovernmental Oceanographic Commission, and conducted research in academia and environmental services work in the private sector. During a decade in the cargo logistics industry, Dr. Kuska served as a senior executive with two global logistics corporations (Panalpina Group and DB Schenker Group), including as Vice President and Deputy Director at the global headquarters in Europe, overseeing marketing and operations in 64 countries.

Dr. Kuska completed his undergraduate work at the University of Delaware and Augsburg Universitaet (Germany), and received his Ph.D. in Marine Studies from the University of Delaware. He lives in Lewes, Delaware with his wife and two daughters.

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*George Percivall*  
**OGC Interoperability Program**

Abstract:

Increasingly, decision-making must share and make effective use of interdisciplinary data sources, models, and processes. Non-interoperability impedes sharing of data and computing resources. Standards from the Open Geospatial Consortium (OGC) and other organizations are the basis for successfully deploying a seamless, distributed information infrastructure for geospatial information. Collaborative development of the standards has proven to be effective in providing the needed interoperability in many communities.

Collaborative development is key to consensus adoption and wide use of information technology standards. The OGC Interoperability Program is a unique program in the world of standards development by which researchers; software developers; and funding agencies work collaboratively to develop specifications for consideration as consensus standards. The OGC Interoperability Program conducts initiatives, such as testbeds, that create specifications, running code implementations and demonstrations of why the specifications are useful. The specifications are then considered by the OGC Standards Program for vetting and voting as consensus standards adoption and maintenance.

Of particular relevance to collaboration between IHO and OGC is a current OGC project to develop a Common Operating Picture (COP) for oil spill response. The COP project is in support of OGP and IPIECA who are developing recommended practices for oil spills after the Deepwater Horizon spill in the Gulf of Mexico.

Biography:

George Percivall serves as Chief Engineer of the Open Geospatial Consortium (OGC). He is responsible for OGC's Interoperability Program and Compliance Program. His roles include articulating OGC standards as a coherent architecture, as well as addressing implications of technology and market trends on the OGC baseline.

Prior to joining OGC, Mr. Percivall was Chief Engineer with Hughes Aircraft for NASA's Earth Observing System Data and Information System; Principal engineer for NASA's Digital Earth Office; and represented NASA in OGC and ISO. He was a systems engineer on development of weather satellites at Hughes Aircraft and commercial vehicles at General Motors. He holds a BS in Engineering Physics and an MS in Electrical Engineering from the University of Illinois - Urbana.

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Jacqueline Barone  
***Rating Datasets for Confidence Reporting, Transparency, and Improved Products***

Abstract:

Ratings for datasets would greatly increase the confidence of the information provided to our customer base. Consistent feedback with increased use would better help NGA improve products and determine where gaps may or have occurred. The users are given better confidence of the materials that are being provided, which help with intended use instead of blind faith that the datasets and products delivered are of good quality.

At the same time, information must be tightly controlled in regards to initial and consequent ratings. Allowing users to self-identify lever of expertise can be subjective and skew results. There must also be a regimented approach to determining errant feedback to understand the user's perspective and not have carte blanche to delete all errant entries to portray a confident dataset. Determination also needs

to be made on how to use customer feedback. Since the information received could be subjective, how the information is to be processed and value found is still unknown.

In regards to information for nautical charts, some regions have older datasets which are still valid. Multiple points must be taken into account when determining final rating criteria and rating of specific areas. Subject matter expertise is paramount in being able to determine credibility to the datasets.