



WORLD OCEAN COUNCIL

The International Business Alliance for Corporate Ocean Responsibility

International Ocean Science and Industry Partnership Platform

A Global Portal for Coordinating Scientific Community Collaboration With Ocean Industries in Collecting Oceanic and Atmospheric Information

A World Ocean Council Concept Paper (version: 15 July 2011)

EXECUTIVE SUMMARY

The International Ocean Science and Industry Partnership Platform (the “Platform”) is proposed as a major new initiative and opportunity for “ocean positive” industry leadership in contributing to the long term understanding, health and management of the ocean. The Platform will facilitate scientific community collaboration with ocean industries in collecting data that: a) contributes to describing the status, trends and variability of ocean and atmosphere conditions and b) improves the understanding, modeling and forecasting of ocean ecosystems, resources, weather, climate variability and climate change. The Platform will serve as a portal to ensure that scientific community interaction with shipping and other ocean industries is coordinated, efficient, cost effective and is integrated into national and international observing and science programs.

While the need to better document and monitor the ocean has never been greater, government and scientific institutions have limited facilities and resources to collect oceanic and atmospheric data. Improved and expanded information will contribute to improved modeling of weather, ocean conditions and climate change and will support responsible use of ocean space and resources – all with clear benefits for science, governments, society, and business.

Shipping, offshore oil and gas and other ocean industries, e.g. ferries, fisheries, aquaculture, offshore wind, and others, operate thousands of vessels and platforms. These provide tremendous potential for cost effectively collecting ocean and atmosphere data. Efforts to put instruments on “ships and platforms of opportunity” have yielded important data and experience, but these have been limited in numbers of vessels, area covered and timespan due to the lack of an overall system to foster, plan and coordinate the strategic use of industry platforms for science and observations. A comprehensive structure and process is needed to organize industry partnerships with science to scale up the level of data collecting from ships and platforms of opportunity and expand the spatial and temporal extent of observations.

The World Ocean Council (WOC) - the international, cross-sectoral industry leadership alliance on ocean sustainability - is uniquely positioned to establish the International Ocean Science and Industry Partnership Platform. The Platform will be developed in close collaboration with the national and international ocean science community. An initial workshop is proposed for late 2011 to bring together representatives of the key parties and develop the initial roadmap and workplan for moving forward.

Vision: Leadership companies from a range of ocean industries are collaborating with the scientific community in the systematic, regular, sustained and integrated collection and reporting of standardized ocean and atmospheric data for input to operational and scientific programs that improve the safety and sustainability of commercial activities at sea and contribute to maintaining and improving ocean health.

Goal: To establish a platform/portal that facilitates and coordinates efficient, cost effective scientific and ocean observing community collaboration with shipping and other ocean industries in the collecting of ocean and atmospheric information.

The Problem: Insufficient Data for Understanding the Ocean and Climate Change

The need for improved understanding of the physical, biogeochemical and ecosystem properties of the ocean, marine meteorology and ocean-atmosphere interactions has never been greater.

The drivers for this include the need to: better understand and model the ocean's role in climate change; document how the marine environment is responding to climate change, e.g. increased storm frequency and intensity, ocean acidification; address the impacts on marine ecosystems, biodiversity and resources of the increased use of marine space and resources by a growing number and kind of commercial activities; ensure ocean ecosystems maintain their optimal capacity to sequester "blue carbon".

Shipping and other ocean industries are exposed to increased risk and uncertainty from changes in ocean conditions and climate and the limits to our ability to accurately model and predict these changes. The lack of data for much of the ocean, especially in the high seas and the open ocean atmosphere, contributes to this risk, especially as the effects of climate change become more evident.

Data is lacking due to the limits to ocean science programs and their resources available to collect information at the scale, frequency and intensity required to significantly improve ocean understanding. There are only a limited number of oceanographic vessels, which are expensive to operate and can only ensure partial coverage of the 70% of the earth that is ocean. Observations from scientific vessels have been augmented in recent years by an array of moored, mobile and temporary data gathering instruments. Oceanic and atmospheric data feed into an increasingly well-organized network of national and international ocean/atmosphere science programs. However, the extent of the unknowns, growing ocean use and impacts, and changes to global climate far outweigh the ability of current observations to adequately understand, predict and protect the future of the ocean.

Expanding the scope and scale of ocean and atmosphere observations is essential to improved understanding, modeling and predicting of the ocean and climate. This will in turn reduce risks to ocean industries posed by changing conditions. Government and scientific institutions and budgets will not be expanding in the near term to fill this need. The presence of growing numbers of ships and platforms in the marine environment present a unique opportunity to cost effectively scale up data collection and a compelling case for ocean industries to expand their involvement in ocean observations.

The Opportunity: Engaging Industry Ships and Platforms in Data Collection

Ocean industries are active in much of the global ocean with fixed and mobile assets that create an enormous potential to respond to the need for more ocean observations. There are currently more than 50,000 merchant vessels (cargo, tanker, bulker, cruise) and 8,000 offshore oil and gas rigs, as well as ferries, fishing vessels, a growing number of offshore wind and wave energy platforms and aquaculture facilities, one million kilometers of submarine cable and upcoming seabed mining and carbon sequestration operations.

The opportunity to use commercial vessels and platforms to collect oceanic and atmospheric data has been developed in a limited manner to date. These include the Ship of Opportunity Program (SOOP) (oceanic data collection from merchant ships), Voluntary Observer Ships (VOS) (atmospheric data collection from merchant ships), Ferry Box program (ocean data collected by ferries in Europe), and SeaKeepers program (ocean data collected by megayachts). There have also been several projects by individual shipping lines and oil companies to collect data from vessels or platforms in partnership with specific government or scientific institutions.

These important efforts to use ships and platforms of opportunity have generated valuable data. They have also accumulated critical experience in understanding what it takes to engage companies in ocean observations, develop the working relationships between commercial and scientific entities, install and maintain instruments, train seafarers, and, ultimately, collect and report data. Vessel and platform operators have been receptive to having ocean and atmosphere observing instrumentation on board. They see this as providing a service that provides feedback for their own benefit and only require that the equipment makes no demands on costs, insurance, time, people or operations.

Unfortunately, there are limitations to these programs. There have been significant difficulties in creating sustained, long term observations, e.g. due to companies being bought and sold, ships getting reassigned to different routes, lack of understanding and support at senior corporate levels for participation in voluntary observation programs, etc. Where there have been specific, one-off data collection partnerships between companies and scientific institutions, these sometimes miss the opportunity to ensure the information can contribute to globally standardized data systems and analysis. On a broader scale, the programs to date have mainly focused only on merchant ships, and on oil platforms to a limited extent, but have not included other kinds of observation platforms, such as fishing vessels, offshore wind farms, aquaculture facilities, etc.

The scientists involved in international ocean observation programs recently concluded that: “Limited progress has been made towards designing an integrated and global ocean observing system that would meet the needs of physical oceanographers, bio-geochemists and climate scientists and the policy makers charged with responding to the challenges of global change; biologists and ecologists and the natural resource and biodiversity managers charged with responding to degradation of habitats and ecosystem services; and maritime industries.”

There is tremendous potential for ocean industry leadership in advancing the regular, sustained collection of standardized oceanographic and atmospheric data for input to scientific programs. However, effective use of industry ships and platforms requires a coordinated approach.

The Proposal: A Platform for Coordinating Ocean Industry and Science Collaboration

A structure and process is needed to facilitate and coordinate the collaboration between the scientific community and ocean companies in expanding the level of data collection from ships and platforms of opportunity over the long term.

With the advent of the WOC - the international, cross-sectoral industry leadership alliance on ocean sustainability - there is now an organization that is uniquely positioned to catalyze the role of business in addressing a range of priority ocean needs and opportunities. One of these priorities is developing a system to coordinate interaction with the scientific community to collaborate in expanding and improving data collection by ocean industries.

The WOC proposes to develop the International Ocean Science and Industry Partnership Platform (the “Platform”).

The WOC has undertaken exploratory discussions with a number of key national and international ocean and atmospheric observing programs, all of whom have shown strong interest in the proposed WOC efforts. Leadership companies from a range of ocean industries have encouraged the WOC to develop a portal for coordinating scientific community involvement in data collection from vessels and platforms.

The WOC proposes to bring together industry, science and government representatives to develop a shared understanding of the need and opportunity for the Platform - and develop the roadmap and

workplan for moving forward with the program. An initial workshop is proposed for late 2011 to begin to design of the Platform structure and process and develop the roadmap for moving forward (Appendix 1).

A large-scale integrated multi-industry effort to advance the role of ships and platforms in collecting data must employ standardized procedures, technologies and instrumentation. Collaboration will facilitate the development of sensors and instrumentation appropriate for harsh marine conditions and rigors of routine operation on commercial vessels and platforms, and also ensure easy installation, removal and servicing. Overall, the Platform can create synergies and economies of scale in developing the technology, operational practices and institutional arrangements, both within key sectors, such as shipping and offshore oil and gas, and across the wider range of ocean industries.

Within the framework of broad scale needs and opportunities for improved data collection by industry it will be very important to develop a phased approach. This will enable leadership companies to focus on specific, implementable activities that deliver short term outputs, e.g. demonstrating the ability to form the partnership for one ship to install and operate with instrumentation collecting and reporting basic oceanographic data and then scaling this up to more kinds of data and/or more vessels.

It is critical to learn from and build on the existing ships of opportunity programs and to work with and through existing national and international organizations that collect, transmit, store and analyze oceanographic and atmospheric information. In particular, WOC will coordinate with the relevant programs at the World Meteorological Organization (WMO), the Intergovernmental Oceanographic Commission (IOC) of Unesco, especially the Global Ocean Observing System (GOOS), and the OceanScope working group of the Scientific Committee on Ocean Research (SCOR). The Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM) - Ship Observations Team (SOT) provides an encompassing international science coordination structure for the vessels of opportunity programs. The WOC has developed a good working relationship with JCOMM.

The Benefits: The Platform's Value for Industry, Science, Governments and the Ocean

The business value of the Platform include: improved information for ocean condition observations, nowcasts, forecasts and hindcasts; improved predictability of, and reduced risk from, extreme events that impact ships and platforms; improved weather information and resulting savings from ship routing, fuel efficiencies, etc.; reputational benefits from contributing to "ocean positive" efforts to document and monitor the marine environment; opportunities for educational and promotional outreach to stakeholders and the public; increased leverage and opportunities to shape ocean science and policy; participation in the development of emerging new observational technologies; increased data on the physical and biological environment in which commercial activities are taking place; standardized data on environmental conditions and impacts, e.g. air and water emissions; data-driven input to corporate policies and practices; an increased and improved science basis for interaction with stakeholders on marine environmental issues.

The Platform's benefits to science and governments (including navies) include: the ability to collect oceanic and atmospheric data on a significantly expanded spatial and temporal scale; the collection of data over longer time series and/or along repeated routes; the observation of ocean and atmosphere conditions in ways and places impossible to get by other means; the opportunity to fill major gaps in data and understanding; a highly cost effective means of data collection; increasing the global scope, scale and perspective of ocean data and understanding; improving and expanding the partnership and common ground between science, government and industry.

A comprehensive system of oceanic and atmospheric observations and monitoring will also provide input to international conventions and treaties, including: United Nations Convention on the Law of the Sea (UNCLOS); United Nations Framework Convention on Climate Change (UNFCCC); Convention on Biological Diversity (CBD); International Maritime Organization (IMO) Marine Pollution treaties (MARPOL).

The Way Forward: Industry Leadership

The International Ocean Science and Industry Partnership Platform is proposed as a bold new initiative that will link the commitment of leadership ocean companies to improving ocean science and health with the scientific community (academic and government) that collects ocean and atmospheric data for better understanding the ocean and climate.

The Platform initiative provides an opportunity for key companies in the ocean business community to provide leadership in creating an “ocean positive” program to increase the data used to improve the safety and sustainability of commercial activities at sea and contribute to maintaining and improving ocean health.

The WOC will provide the organizing capacity and secretariat to work with those companies ready to engage in this unprecedented leadership opportunity, and to develop the working relations with government agencies, intergovernmental organizations, academic institutions and other key partners.

Appendix 1

International Ocean Science and Industry Partnership Platform: Design/Roadmap Workshop

Purpose

To bring together industry, science, government and intergovernmental representatives to develop a shared understanding of the need and opportunity for the Platform, design the Platform structure and process and develop the roadmap and workplan for moving forward with the program.

The workshop will develop the institutional framework necessary to achieve the Platform vision and goal.

Outputs

- Initial Platform framework structure and process
- Platform roadmap and workplan
- Next steps identified, including potential pilot/demonstration projects

Participants

The workshop will bring together 25-30 representatives from:

- Key shipping and oil and gas companies and associations
- Interested companies from additional sectors: e.g. ferry, offshore wind, seabed mining, fisheries
- International and national oceanographic organizations
- International and national metrological organizations
- Marine technology companies and associations
- Information technology companies
- Key navies, if possible

Special efforts will be made to ensure that the workshop involves companies with experience in ships/platforms of opportunity, or similar efforts, from shipping, ferry, oil and gas, marine technology

Process

The WOC Executive Director will lead and coordinate the overall process:

- Identify key shipping and oil and gas companies, key international and national oceanographic and metrological organizations, key marine technology and information technology companies to approach for participation in Steering Committee
- Work with Steering Committee to develop detailed agenda and identify ideal participants
- Contact identified workshop participants
- Announce the workshop widely in order to identify potential additional participants directly relevant to workshop purpose and outputs
- Work with Steering Committee to develop initial framework for the system, identify existing information, and develop background papers for the workshop

Timing, Duration, Location

- 12-13 December 2011; Unesco IOC, Paris

Appendix 2

Considerations for the International Ocean Science and Industry Partnership Platform

Networking, Integration and Institutional Relationships

- Frameworks for collaboration between industry and the marine research community
- Frameworks for collaboration among companies and between industry sectors
- Integration with existing ocean observing programs
- Standardization of policies and procedures

Scientific Program Requirements

- Scientific needs for ocean observation parameters
- Preferred or need locations for observations
- Priority marine routes for sustained ocean observation
- Development and implementation of observational programs

Platforms

- Industries and kinds of activities/facilities appropriate for observation programs
- Vessel and platform types suitable for sustained observation efforts

Technology and Instrumentation

- Technologies that can enhance vessel or platform capability for ocean observations
- Priority instrument needs to meet future requirements

Communications Procedures, Hardware and Software

- Information and advisory links with the scientific and government communities
- Managing communications, data transfer, distribution, handling, and archiving
- On-board data transfer and archiving to central vessel/platform facility
- Ship-to-shore communications and real time transmission of data for post-processing and distribution
- Shore-to-ship communications for supervision of shipboard data systems, system performance analyses and corrective action as required
- Hardware reliability and software robustness to provide unattended operation over periods of months to years

Spatial Access

- EEZ issues, including data ownership, release and sharing