

**Ocean Observing Systems and the Maritime Industry:
Building partnerships
A workshop organized under the umbrella of MARCOM+:
The Marine and Maritime Research and Technology Forum**

Brest, France, 9 October 2012

Summary Record

The workshop was held as an open event embedded in the SeaTech Week in Brest, France, on the 9 October 2012. It was organized as an event within the Framework of the Marine and Maritime Research and Technology Forum (MARCOM+). The SeaTech Week was chosen as a venue in order to attract participation from the maritime industry. However, there were competing events apparently preventing a broader involvement of the industry.

The workshop needs to be considered in a series of events, following a workshop to define the ocean observing needs for ICES (WKOI) held earlier in 2012, and in perspective with the upcoming event within the framework of the US – IOOS 13–16 November 2012. The objective of the workshop was to identify the scope of ocean observation systems, not necessarily restricted to operational services, the objects and observation technologies available, and the potential of chemical, physical and biological observing systems for the maritime industry.

Presentations were made (see Annex 1: agenda) on

- the Marine and Maritime Research and Technology Forum (MARCOM+), <http://www.marinemaritimescienceforum.eu/>;
- the FerryBox systems, in combination with other observing systems such as COSYNA;
- http://www.hzg.de/institute/coastal_research/structure/operational_systems/KOI/index.html.de;
- the SAHFOS programme with the CPR based on a long tradition of cooperation with the shipping industry, <http://www.sahfos.ac.uk/>;
- the FP7 – funded JERICO project (Joint European Research Infrastructure Network for Coastal Observatories), <http://www.jerico-fp7.eu/>;
- Ocean Scope (emerging from the SCOR/IAPSO WG 133 on ocean observation and maritime partnerships), http://www.scor-int.org/Working_Groups/wg133.htm;
- the work of ICES under WGOOFE, <http://www.ices.dk/workinggroups/ViewWorkingGroup.aspx?ID=322>;
- the World Ocean Council activities and scope for cooperation with the maritime industry (presented by the Chair), <http://www.oceancouncil.org/site/>.

Added value - The presentations demonstrated the variety of ocean observing systems in operation and the value of the data generated to establish time series of ocean and ecosystem variables and to generate the pictures and patterns of ocean change at various spatial and temporal scales. This information is invaluable to supplement (and ground truth) remote sensing information, to feed

into the oceanographical models used for hindcasting and forecasting ocean climate and to linking such information to ecosystem assessments and related models.

Research communities: instrumentation – the design, building and operation of sensors for ocean observation has brought up its very own community of researchers, both from the worlds of oceanographers, and technicians and engineers. Sensor development and practical application and trial go hand in hand. There is a clear need for new technologies to be developed, partly ongoing, for ecosystem variables, for instance using acoustic technologies. In turn, miniaturization and progress in IT has enabled the use of new platforms such as mammals for data recording. Still, the “ships of opportunity” offer the most sustainable and reliable opportunities for operational systems. The merchant navy is ready as may be other maritime industries such as the offshore wind businesses. The workshop concluded that the marine research side is ready to cooperate as well.

Research communities: modellers – the primary users of the data generated by the ocean observation instruments are the modellers, both in the physico-chemical as well as in the ecosystem modelling areas. Their data needs are across various temporal and spatial scales met with by the resolution of the instrument operation. However, there is scope for increased and improved cooperation and coordination between the two communities. The instrumentation and modelling communities are just about to leave the field of projects and turn towards operational activities.

The maritime industry – they are ready to provide the platforms for the instrumentation, as demonstrated by the FerryBox and CPR examples. It would be helpful to standardize such equipment in order to facilitate and incorporate devices for sensor instalment into the process of shipbuilding. The development, design and operation of new instruments offer research, innovation and marketing opportunities for the maritime industry, especially for SMEs (small and medium enterprises) who are much more willing to choose the chances that come along with developing new technologies. For the marine research communities, using the merchant navy and other platforms provides free access to the oceans.

Intercalibration and data availability – similar to the need for standards, there is a need for intercalibration exercises and data compatibility. There is a wealth of data repositories globally for different programmes and purposes which are accessible and free of charge; however, there is a need for searchable metadata with information on data comparability.

Start regionally – OceanScope suggests starting regionally in the North Atlantic area. Clearly there is a need for a coordinating body to facilitate the cooperation between the merchant maritime industry, the instrumentation and the “applied” science community, as to

- identify routes and operations on a continuous basis,
- lead the development, management and operation of ocean observing systems,
- help develop new science for data flow, processing, distribution, analysis and assimilation,
- capacity building,

- define, develop and certify new instrument concepts,
- understand vessel building for optimal instrument performance and reliability.

Ocean observation and forecasting offer important information and services to the maritime industry. The ability of reliably forecasting ocean climate is invaluable for offshore and deep sea operations in safe mode. Shipping, offshore energy and non-renewable resource exploitation will largely benefit from improved observations and data coverage. In turn, development of new observation technologies has great potential to spur new science and to create new job opportunities for marine scientists.

Annex 1: Workshop Agenda

Introduction and welcome

- 13:00 Adi Kellermann (ICES, Chair) – MARCOM+ and ocean observation
- 13:10 The objectives of ocean observing: a brief review of current and future ocean observing needs

The potential of commercial ships and offshore installations for the application of physical, chemical and biological sensors

- 13:10 Maik Grunwaldt (HZG) - FerryBox Activities in Europe - Status and Future Developments
- 13:30 Nicholas Owens (SAHFOS, UK) - The Continuous Plankton Recorder: providing the big picture
- 13:50 Patrick Farcy (Ifremer, France) - JERICO project plans and results
- 14:10 Tom Rossby (University of Rhode Island) - OceanScope - a proposed partnership between the ocean observing communities and the merchant marine
- 14:30 Rodney Foster (CEFAS, UK, ICES WGOOFE) – Marine Data Needs: sources and solutions
- 14:45 Paul Holthus (WOC) – The World Ocean Council: smart oceans/smart industries (presented by the Chair)
- 15:00 Health break
- 15:30 Discussion and conclusions
- 17:30 Closure

Annex 2: List of participants

- Maik Grunwald (HZG, Germany)
- Nicholas Owens (SAHFOS, UK)
- Patrick Farcy (IFREMER, France)
- Thomas Rossby (OceanScope, USA)
- Rodney Foster (CEFAS, UK)
- Bernard LeCann (CNRS, France)
- Mohamed Adjou (CNRS, France)
- Adi Kellermann (ICES, DK, Chair)
- Plus three anonymous participants (i.a. AMU-Vest, DK)