

Meetings & Workshops

The revival of the deep sea in OBIS

Ward Appeltans*, Pieter Provoost, Greg Reed, Leen Vandepitte, Maria Baker, Nicholas Higgs, Timothy O'Hara, Franziska Althaus, Diva Amon, Meri Bilan, Magdalena Blazewicz, Catherine Borremans, Jill Bourque, Stefan Brager, Abbie Chapman, Amber Cobley, Marina Cunha, Thomas Dahlgren, Andrew Davies, Fabio De Leo, Matt Dornback, Tammy Horton, Jeroen Ingels, Severine Martini, Doreen Mcveigh, Christopher Olson, Andrea Polanco, Ana Ramos, Etienne Rastoin, Ascensão Ravara, Torben Riehl, Christopher Roterman, Sidi Mohamed Mohamed Moctar

*Contact: w.appeltans@unesco.org

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33 participants from 16 countries (Australia, Belgium, Canada, Colombia, Ecuador, France, Germany, Jamaica, Mauritania, Norway, Poland, Portugal, Spain, Trinidad and Tobago, United Kingdom and United States) attended the first International OBIS-INDEEP training workshop on 25-28 October 2016 at the UNESCO-IOC project office for IODE in Oostende (Belgium). The participants represented 20 different deep-sea programmes and data systems (see list below).



Figure 1. Group picture, including Tammy Horton on Skype.

The meeting brought together deep-sea biologists and data managers and created the momentum to build an international alliance of young scientists with a common vision to provide open access to deep-sea biodiversity data and enhance our understanding of the deep-ocean ecosystem in order to better inform ocean governance and management.

The group called for:

- The establishment of a data-sharing platform, built on the Ocean Biogeographic Information System (OBIS; www.iobis.org), with the aim to provide a single integrated access point to high-quality data and information on the

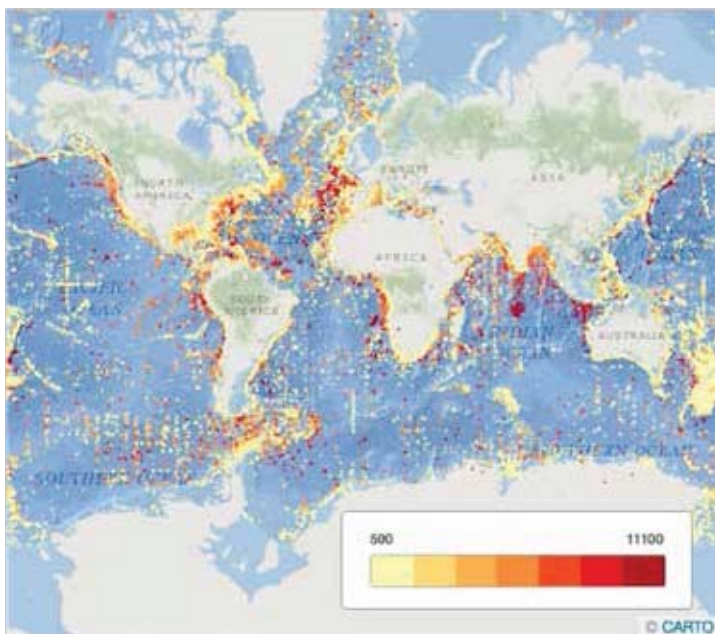
diversity, abundance and distribution of all deep-sea organisms and their ecosystem properties, including habitat and environmental characteristics.

- The promotion of guidelines and best practices in data management and to make these principles common practice through training the next generation of deep-sea scientists.
- The deposition of all primary biodiversity data in open-access archives and data integrators such as OBIS as a mandatory condition for publicly funded research, which should also apply for scientific publications, as is common practice for DNA sequences in GenBank.

In order to ensure the highest quality of data, the group recommended that each dataset be reviewed by an expert before it is put in the public domain and published through OBIS. An automatically generated dataset report providing summary statistics on data quality could assist this process.

The participants were trained in OBIS data standards and best practices in quality assurance (e.g. WoRMS and LifeWatch tools) and data publishing as well as in data access and analytical and visualization tools using the R OBIS package and GIS software (see <http://iobis.org/manual>). All the training material, including video presentations, are available on Ocean Teacher: <http://bit.ly/2eFr06r>.

The further development of a deep-sea OBIS node and data portal is a shared responsibility of this group and the wider deep-sea scientific community. The success will depend on the dedication of a few people, backed with extra resources such as a full-time data manager. The sharing of new data will be encouraged through a biennial review paper on the status of deep-sea data in OBIS and all new data contributors will be invited to join this effort.

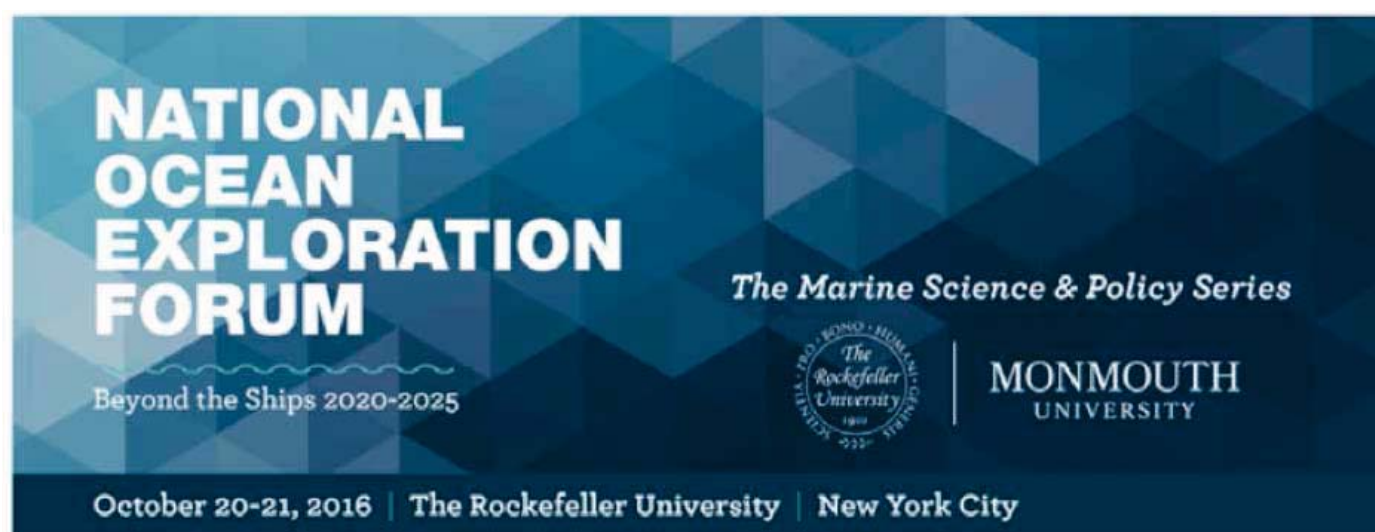


As a baseline this map shows all 158,000 unique positions with species occurrence records currently in OBIS between 500 and 10897m depth. Online at <http://bit.ly/2eG4BWU>

The participants represented the following data systems and programmes:

- Southern Tasmanian seamounts surveys and the Western Australian Voyages of Discovery in Australia (CSIRO)
- Abyssal fauna from the the Clarion-Clipperton Zone (CCZ) via the ABYSSLINE (ABYSSal baseLINE) project
- Data from European Horizon 2020 projects such as [SponGES](<http://www.deepseasponges.org/>) and [ATLAS](<http://www.eu-atlas.org/>)
- Benthic invertebrates of Icelandic waters from the international [BIOICE and IceAGE projects](<http://www.iceage-project.org>)
- Nematode genera abundance from Portuguese canyons from [HERMES](<http://www.eu-hermes.net/>) and [HERMIONE](<http://www.eu-hermione.net/>) EU projects

- Deep-Sea Benthic Ecological Database managed by [SISMER](<http://en.data.ifremer.fr/>) of IFREMER
- Benthic macrofaunal communities associated with cold-water coral and seep habitats in the Gulf of Mexico and western Atlantic from [USGS DISCOVRE](<https://www.usgs.gov/centers/wetland-and-aquatic-research-center-warc/science-topics/discover>)
- National Database of Deep-Sea Corals and Sponges of [NOAA's Deep Sea Coral Research and Technology Program](<http://www.habitat.noaa.gov/protection/corals/deepseacorals.html>)
- Hydrothermal vent data from the [sFDvent functional trait database](<https://www.idiv.de/?id=423>) and ChEssbase, including recent hydrothermal vent expeditions from the East Scotia Ridge.
- Deep-sea biodiversity data from the Atlantic and Mediterranean European margin, deposited in the Biological Research Collection of Universidade de Aveiro
- Ocean Networks Canada (ONC)'s regional observatory, formerly called [NEPTUNE observatory](<http://www.oceannetworks.ca/installations/observatories/neptune-ne-pacific>).
- Data from [MBARI's video annotation and reference (VAR) system](<http://www.mbari.org/products/research-software/video-annotation-and-reference-system-vars/>)
- SYNDEEP and [SeaMountsOnline](<http://seamounts.sdsc.edu/>) from the Scripps Institution of Oceanography
- Deep-sea fishes from the Caribbean region (INVEMAR)
- Mega- and macrobenthos from Northwest Africa of the [EcoAfrik database](<http://www.ecoafrik.es/>) of the Instituto Espanol de Oceanografia
- Selection of deep-sea sponges and echinoderms from the Galapagos Islands. Charles Darwin Foundation (<http://www.darwinfoundation.org/datazone/>) and Ocean Exploration Trust (<http://www.oceanexplorationtrust.org/>) 2015 joint expedition.
- Oceanographic and biological data from the Gulf of Mexico and Western Atlantic Margin Seep Connectivity ([SEEP-C](<https://cmast.ncsu.edu/seepc/>)) Project and recent expedition in the North Atlantic Continental Margin off the coast of New England.
- Macrostylidae of the KuramBio and Vema-TRANSIT project at the Centre for Natural History, University of Hamburg
- Benthic biodiversity of the continental shelf and slope of Mauritania
- Deep-sea benthic biodiversity data from the modern Discovery Collections at the National Oceanography Centre, Southampton.



Robert Ballard, Jesse Ausubel and around 100 other leading figures in marine science met in October to compare thoughts on the future of marine exploration at the 2016 National Ocean Exploration Forum, “Beyond the Ships: 2020-2025,” hosted in New York by The Rockefeller University in partnership with Monmouth University. The Forum