OCEAN SCIENCE
FOR A SUSTAINABLE DEVELOPMENT AGENDA

Flanders State of the Art

20th Anniversary of UNESCO-Flanders Cooperation Agreement

UNESCO United Nations Educational, Scientific and Cultural Organization · Intergovernmental Oceanographic Commission · Sustainable Development Goals

DIPS

www.iode.org/dips

Development of Information Products and Services to Support Ocean Assessments

ipbes Science and Policy for People and Nature · OBIS OCEAN BIOGEOGRAPHIC INFORMATION SYSTEM · 14 LIFE BELOW WATER

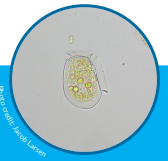


Photo credit: Jacob Larsen

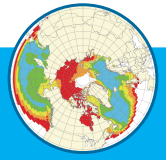
HARMFUL ALGAE

Dinophysis fortii is a cosmopolitan toxin producing harmful algae (with more than 1 000 records in OBIS globally). The HAB global monitoring watch, registered through IOC's HAEDAT system, reports 27 events of shellfish poisoning in the EU, Asia and the Americas between 2000-2017 caused by this species.

Photo credit: Alliance Loir

DETECTING BIODIVERSITY CHANGE

This unique European species of sea slug, *Polycera elegans*, is identified as potentially at risk in the Celtic Sea, based on site occupancy modelling using over a million records of 166 mollusc species from OBIS. This species was very common in the UK in the 1970s and 1980s, but has not been reported since (personal communication Bernard Picton). Thanks to this model, we can track temporal changes in biodiversity and identify possible species of concern (both potentially vulnerable, or threatened as well as increases in for example newly introduced species), which can help prioritize assessment and survey efforts.



PTEROPODS AT RISK

Pteropods, also called sea butterflies, are tiny snails living in the water column that play a critical role in various ecosystems as prey for a variety of predators, such as fish, birds and whales. There is a great concern about the potential impact of global change – and particularly ocean acidification – on these organisms as they exhibit an external shell, which is sensitive to changes in ocean chemistry. Under the pessimistic CO_2 emissions scenario, it is likely that by 2050 the chemical conditions of the water in most of the Arctic Ocean will limit the formation of pteropod shells, meaning they will not be able to thrive in most of the Arctic Ocean (red areas). OBIS currently has 100 000 observations of pteropods globally.

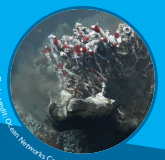
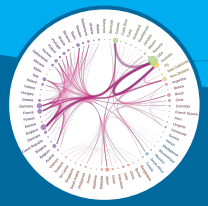


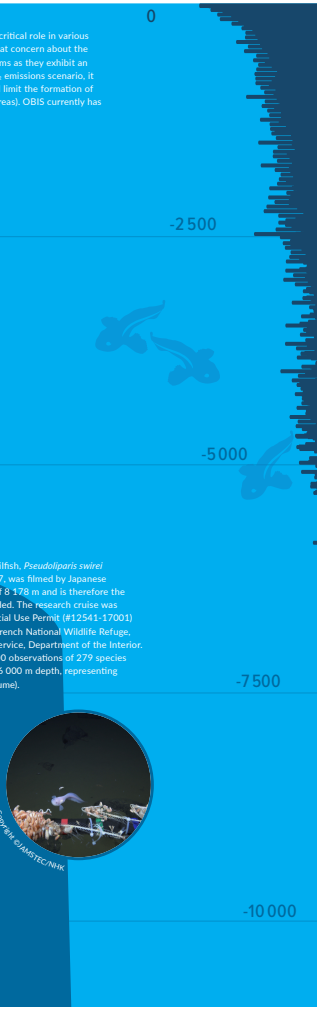
Photo credit: Ocean Networks Canada

A GARDEN OF EDEN IN THE DEEP-SEA

Deep-sea hydrothermal vents, first discovered in 1977, are typically formed along the mid-ocean ridges where two tectonic plates diverge. Despite the lack of sunlight and the presence of extreme temperatures, high pressure and toxic minerals, hydrothermal vents have a density of organisms 10 000 to 100 000 times greater than the surrounding sea floor. The image is from a 2015 expedition aboard the R/V Thomson at Main Endeavour Field at 2 192 m depth.



Based on a bibliographic study in collaboration with VLIZ, 2 700 scientists from 73 countries collaborated on > 1 000 papers citing OBIS. Through open-access to data, OBIS provides equitable access and benefits to research and enhances international collaboration.



DEEPEST FISH

This new species of snailfish, *Pseudoliparis swirei* Gerringer & Linley, 2017, was filmed by Japanese researchers at depths of 8 178 m and is therefore the deepest fish ever recorded. The research cruise was conducted under a Special Use Permit (#12541-17001) issued by the Mariana Trench National Wildlife Refuge, U.S. Fish and Wildlife Service, Department of the Interior. OBIS currently has 1 500 observations of 279 species from the hadal zone (> 6 000 m depth, representing 0.11% of the ocean volume).

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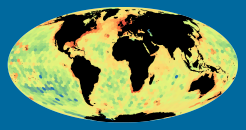
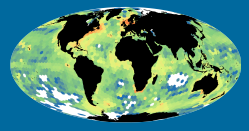
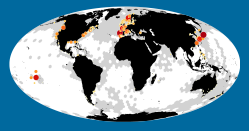
MAPS



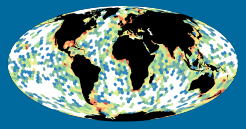
Number of records



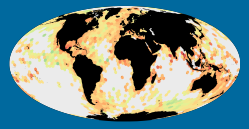
Number of threatened species



Number of harmful algal bloom events



Number of potentially extinct species



Number of potentially undiscovered species

OCEAN BIOGEOGRAPHIC INFORMATION SYSTEM

Over 50 million observations of 120 000 marine species integrated from +2 500 databases. On average, 8 600 species observations were added daily to OBIS in 2017.

PROJECT OBJECTIVE

Through DIPS, OBIS aims to develop biodiversity information to support global assessments on the state of the marine environment, as well as publish an IOC-UNESCO Global Harmful Algal Bloom Status Report on the distribution and impact of harmful algae. This project makes use of data from the Ocean Biogeographic Information System (OBIS), the Harmful Algal Event Database (HAEDAT) and the IOC-UNESCO Taxonomic Reference List of Harmful Micro Algae.