

Biocean :Taxon-based System for deep-sea benthic ecological studies

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The deep-sea covers 65% of the Earth's surface and remains, for the major part, unexplored. It is characterized by a near-freezing temperature, extraordinarily high pressure and low food availability. Despite such harsh environmental conditions, the deep sea harbours very high levels of biodiversity. The Biocean database was designed to gather the extremely large volume of data collected from different deep-sea ecosystem studies conducted by Ifremer's department "Environment Profond".

Ecological studies are focused on the structure of benthic communities and their spatial and temporal variations. Our group deals with four types of ecosystems : (1) Benthic sedimentary ecosystems which depend on energetic contribution from photosynthetic production in euphotic layers. (2) Deep-sea hydrothermal ecosystems on oceanic ridges which are based on chemosynthetic bacterial production. Life in this habitat is very original, luxuriant and adapted to a toxic and unstable environment. (3) Ecosystems associated to cold seeps on continental margins which are based on chemosynthetic production around methane-rich fluids. Those ecosystems are characterized by a high biomass. (4) Deep coral reefs have been discovered on carbonate mounds on the Irish continental margin. Active mound genesis is due to intense coral growth.

Biocean was first of all a system designed for the management of successive identifications of our faunal samples collated during deep-sea cruises. As requested by the scientists, the original biological database has been extended to include associated deep-sea environmental variables in a standardized form.

The Biocean database contains data covering 30 years of French deep sea oceanographic research. Metadata for each cruise are available on the web site <http://www.ifremer.fr/biocean/>. They are displayed as cruise log and dive log. Biogeographic data are available through Ocean Biogeographic Information System portal (<http://www.iobis.org>), European Register of Marine Species portal (<http://www.marbef.org/data/erms.php>) ,and Global Biodiversity Information System (<http://www.gbif.org/>).