EUROPEAN RESEARCH INFRASTRUCTURE CONSORTIUM

Observing the ocean to save the earth
A NEW LARGE-SCALE MARINE RESEARCH INFRASTRUCTURE NOW AVAILABLE FOR ACCESS TO SCIENTIFIC COMMUNITIES

The European Multidisciplinary Seafloor and water column Observatory (EMSO) is a distributed research infrastructure consisting of fixed seafloor and water column observatory nodes for deep ocean observations. EMSO observatories are deployed at key sites around Europe and have long-term, high-resolution, (near)-real-time capabilities to address environmental processes such as climate change, natural hazards and marine ecosystem changes.

The EMSO European Research Infrastructure Consortium (EMSO ERIC), an intergovernmental organisation hosted by Italy, facilitates the operation and the development of state-of-the-art facilities serving a wide range of stakeholders. Countries participating in the consortium include France, Greece, Ireland, Italy, Portugal, Romania, Spain and the United Kingdom.
EMSO covers a wide range of interdisciplinary areas including biology, geology, chemistry, physics, engineering and computer science, from polar to tropical environments, down to the abyss. The data generated in EMSO, enables analysis over different space and time scales, overcoming the traditional approach of focusing on limited single data streams.

**EMSO ERIC OFFERS:**
- long-term time-series of multidisciplinary, high resolution, [near]-real-time high-quality marine data;
- power, communications, a broad range of sensors and shallow water facilities for testing new devices through interactive ocean observations and
- access to observatory-nodes for developing new experiments.

EMSO ERIC leads European technological and scientific research to improve the investigation and knowledge of climate change, ocean acidification, geohazards and the sustainable management of the marine resources.

Ruhl et al., 2011
**EMSO OCEAN OBSERVATORIES**

**EMSO facilities are high technology automated fixed platforms, powered by submarine cables or stand-alone devices.**

They are equipped with a standardised suite of sensors assembled into an EMSO Generic Instrument Module (EGIM), and with additional ‘site-specific’ sensors. The observatory design allows interdisciplinary objectives to be addressed simultaneously across temporal and spatial scales.

Time-series of measurements performed by the nodes are homogeneously managed and made accessible through the EMSO Data Portal in the EMSO ERIC webpage.

EMSO ERIC supports and ensures sustained, reliable, quality-controlled and interoperable time series data.
SENSORS AND DEVICES

GEOPHYSICS/GEOLOGY
Seismometer
Accelerometer
Hydrophone
Gravimeter
Magnetometer
Pressure sensor
Piezometer

BIOCHEMISTRY
pH, eH and alkalinity sensors
Oxygen sensor
Dissolved iron, manganese and sulphides
Methane sensor
Carbon dioxide sensor
Multispectral radiometer
Mass spectrometer
Nutrient analysers
Chlorophyll Sensor
Particle flux detector
Particle velocity sensors
Turbidity meter
Array of temperature probes
Benthic Biogeochemical Experiment System

MARINE ECOLOGY
Acoustic receiver
Plankton sampler
Water sampler
Fluorescence sensor
Time-lapse camera
Video

PHYSICAL OCEANOGRAPHY
Conductivity, Temperature vs Depth (CTD)
Acoustic Doppler Current Profiler (ADCP)
Currentmeter
Pore pressure
Carbon dioxide partial pressure (pCO₂) sensor
Thermosalinograph
FROM LOCAL OBSERVATIONS TO GLOBAL CONNECTIONS

**EMSO aims to harmonize and integrate the different research interests of several European nations.**
EMSO will be part of the upcoming European Ocean Observing System (EOOS).
This is a coordinated framework designed to align and integrate Europe’s ocean observing capacity; promote a systematic and collaborative approach to collecting information on the state and variability of our seas; and underpin sustainable management of the marine environment and its resources.

EMSO ERIC provides valuable experience in implementing external relations activities aimed at establishing links with similar subsea observatory programs around the world.
EMSO ERIC strives to transfer knowledge and practices, align strategies and encourages new developments towards a global marine research infrastructure.
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<tr>
<th>Country</th>
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<tbody>
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<td>France</td>
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<td>L’Institut Français de Recherche pour l’Exploitation de la Mer</td>
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<td>UK</td>
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