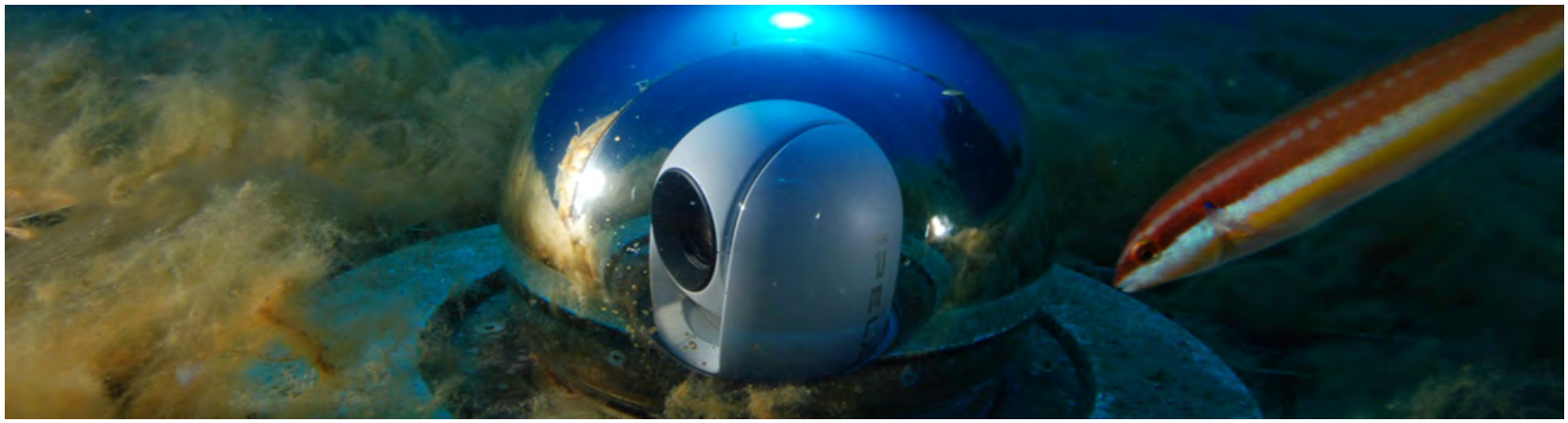
european multidisciplinary seafloor and water-column observatory development

emsodev

19th ERVO

EMSO-ERIC
European-scale distributed Research Infrastructure of seafloor & water-column

European Ocean Observing System (EOOS)



Dañobeitia, Juanjo (CSIC/EMSO)

19th ERVO meeting, 12-14 June 2017, Helsinki, Finland

European Seas Framework

Activity: ALREADY STARTED

Some Research Infrastructures already started and have plans or preliminary views

EMSO ERIC – New European research infrastructure to provide key data on the sea and climate change

ICOS–Integrated Carbon Observation System European Research Infrastructure Consortium

EURO-ARGO Integrated Global ocean observing infrastructure reporting subsurface ocean properties to a wide range of users

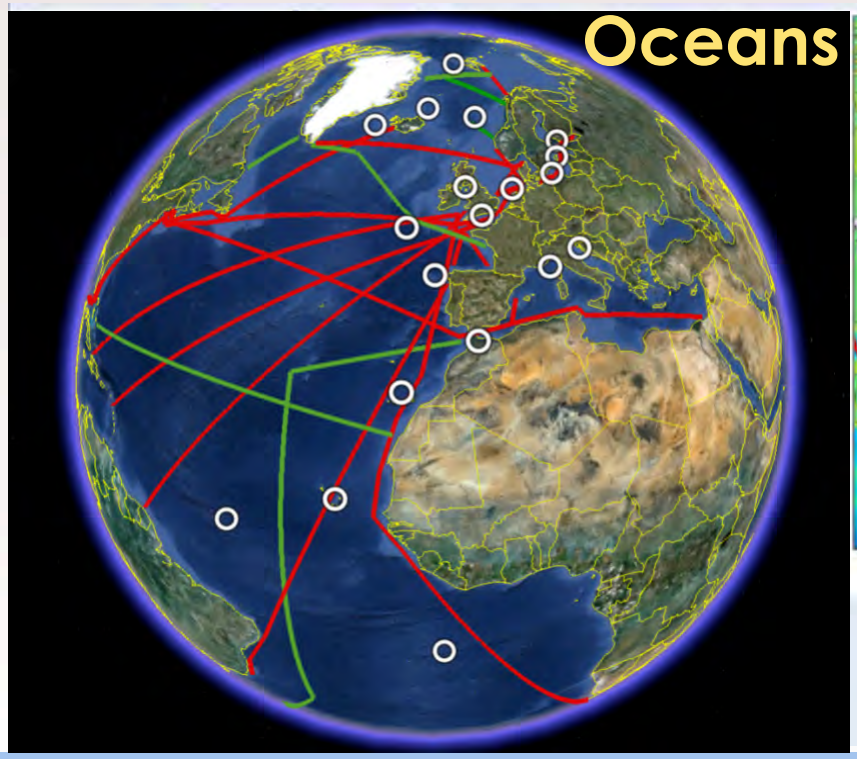
ENVRIPLUS includes all the **Environment Research Infrastructures** (RI) supported by European Commission.

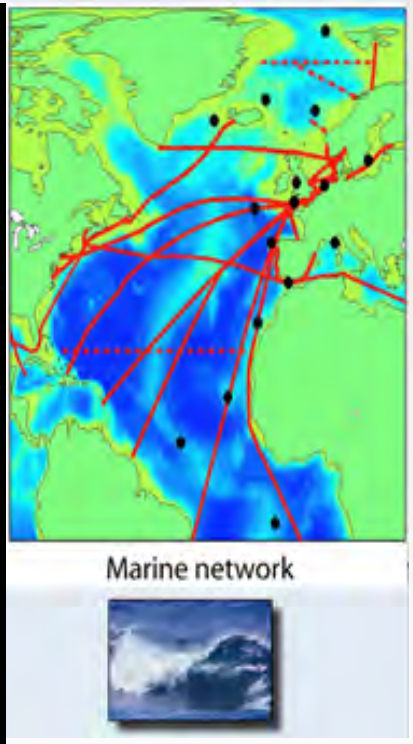
EMSO is a large-scale distributed European RI, strategically placed.
Consisting of seabed and water column observation nodes whose essential scientific objective is to observe in real time, and in the long term, environmental processes related to the interaction between the geosphere, the biosphere and the hydrosphere.

These infrastructures require, in the medium and long term, significant technological needs and commitments of their members that involve the participation of European oceanographic vessels

The ICOS STATION RI NETWORK

ICOS RI has more than 100 measurement stations in twelve European countries. These stations measure greenhouse gas concentrations in the atmosphere and fluxes over the terrestrial **and marine ecosystems**.

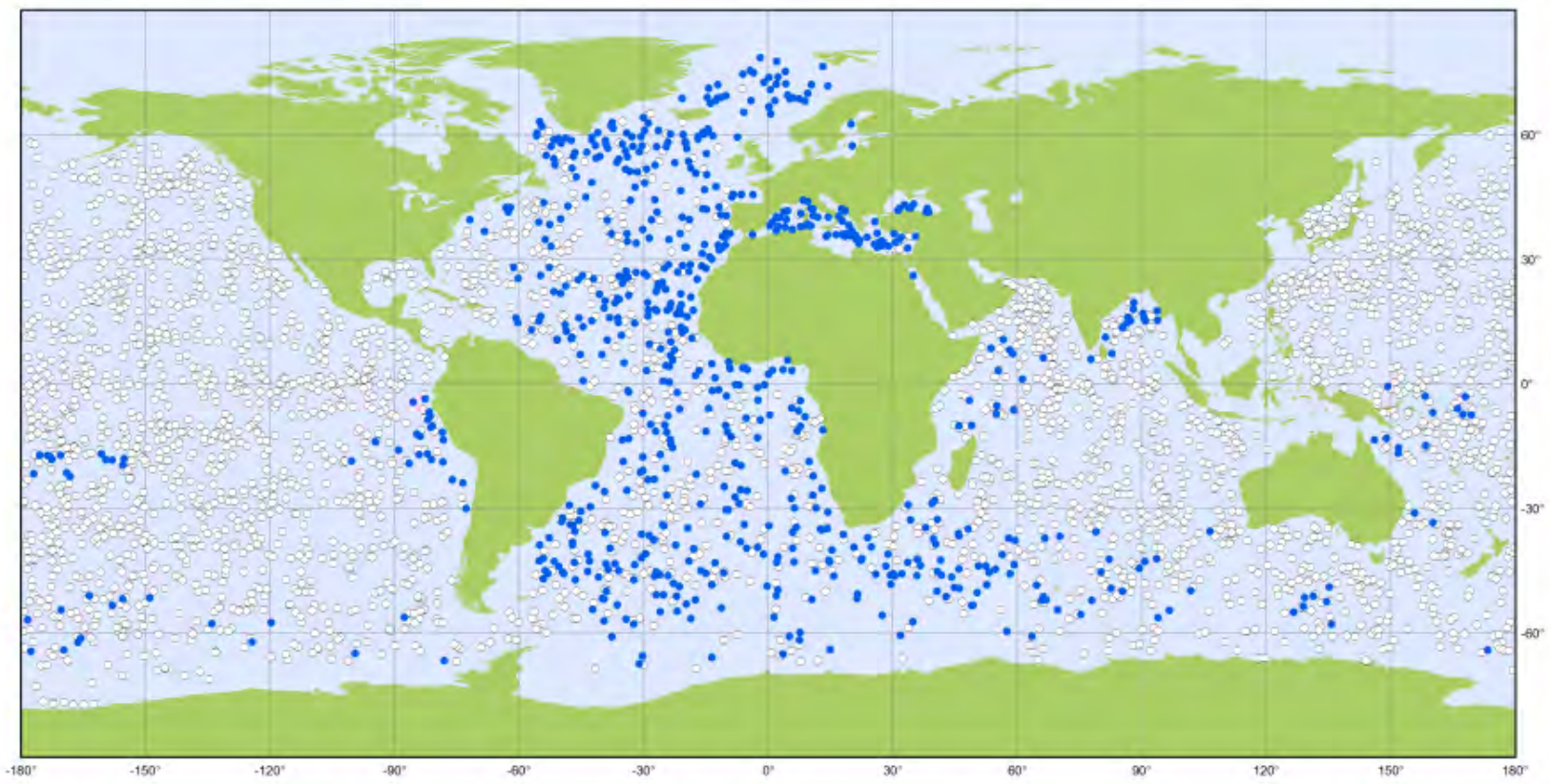




Studying the ocean and its capacity to absorb carbon dioxide and heat help scientists to better understand our changing climate

ICOS Marine needs are expressed through International Ocean Carbon Coordination Project (IOCCP) at international level. It needs a focus on European requirements

EUROARGO ERIC



- **Encourages the sharing of cruise** plans in advance (research, industry, sailing, NGOs, etc.)
- **Need European partners** to release this information for R/V in advance (3-6 months)
- **Optimization of opportunities, Visibility for all partners**
- **Ships crucial: common denominator** of all obs. systems

jcommops.org

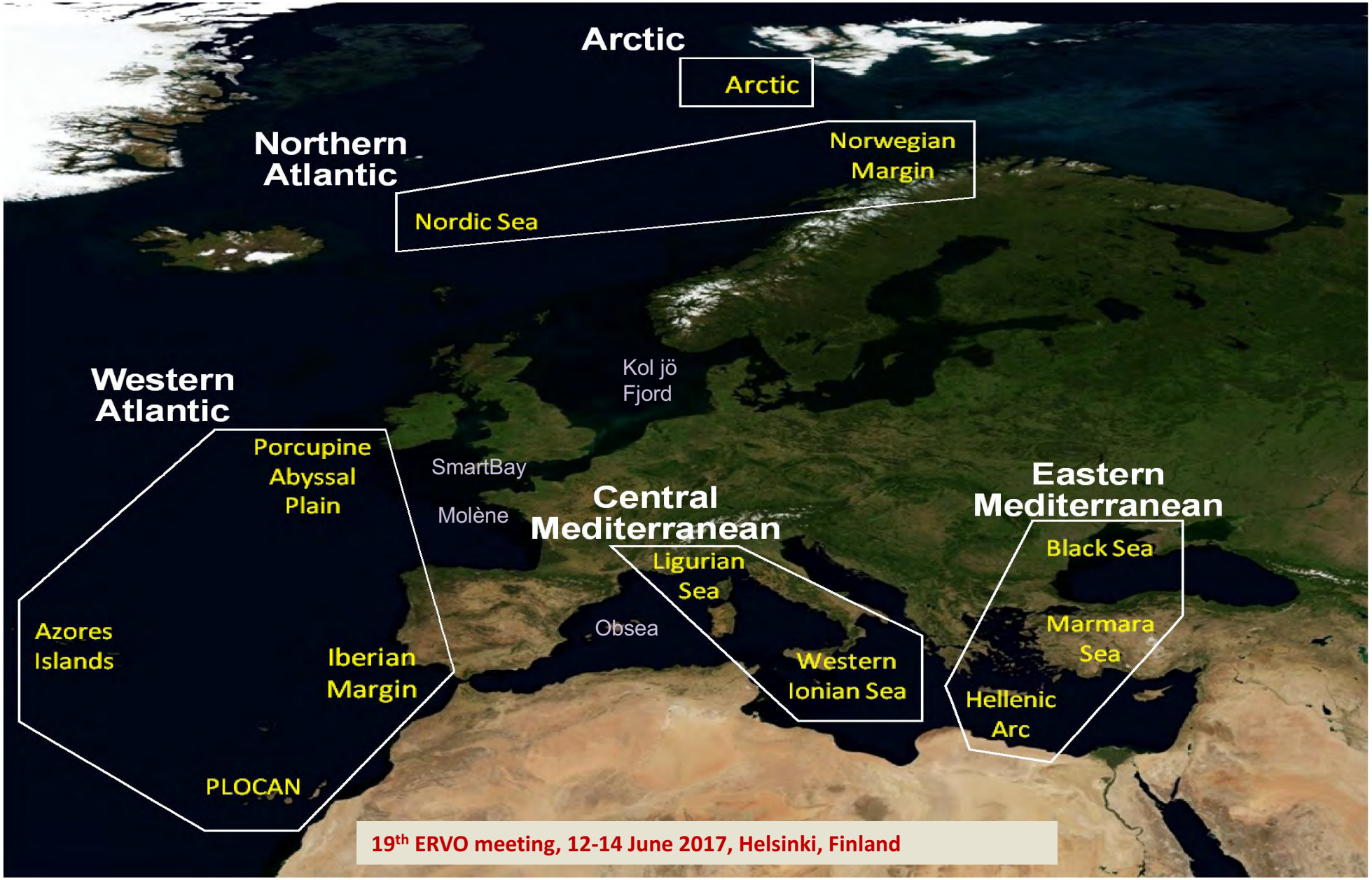
ERIC

19th ERVO meeting, 12-14 June 2017, Helsinki, Finland

THE NETWORK : EMSO-ERIC

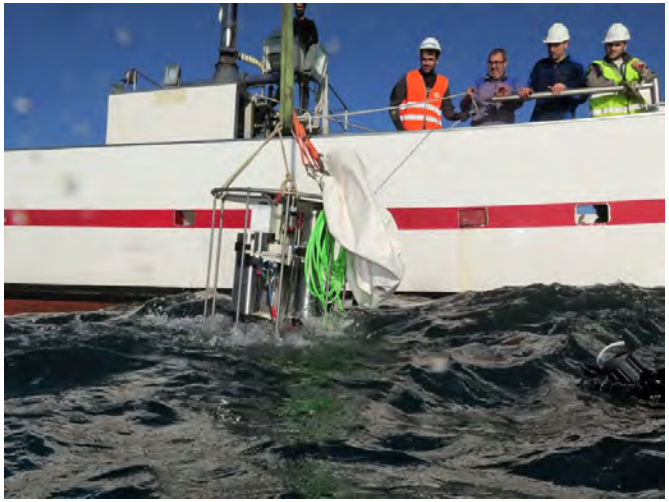
european multidisciplinary seafloor & water column observatory | emso

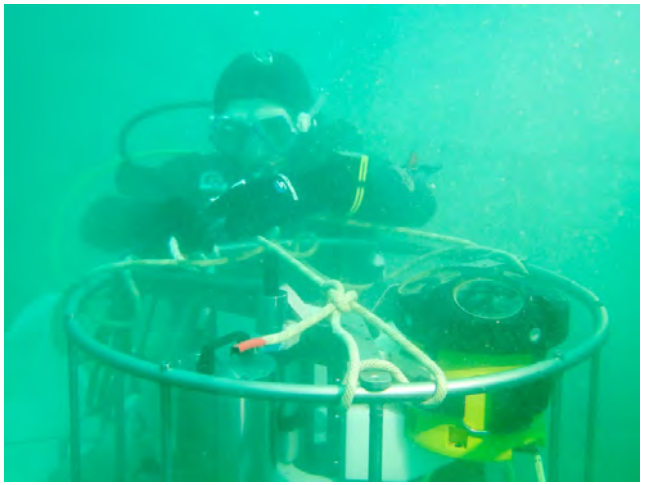
EMSO ERIC Regional Nodes; 11 nodes & 4 test sites



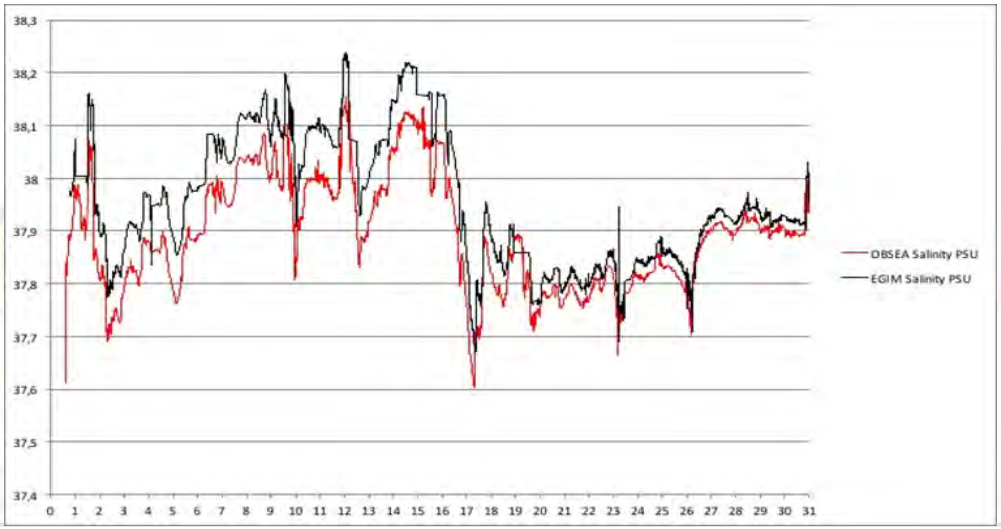
EGIM-Ifremer sensor module

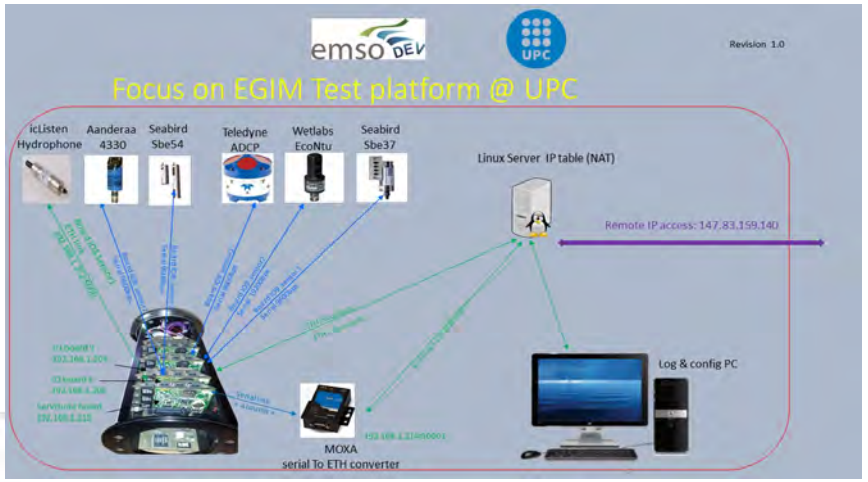
The EGIM is generic sensor module designed to record up to seven physical parameters (temperature, conductivity, pressure, dissolved O2, turbidity, currents, and passive acoustics)





Deployment EGIM-Ifremer at OBSEA site





EGIM and OBSEA salinity records testing

*Broad-band OBS and buoy deployment at **OBSEA EMSO site***
On 8th June 2017

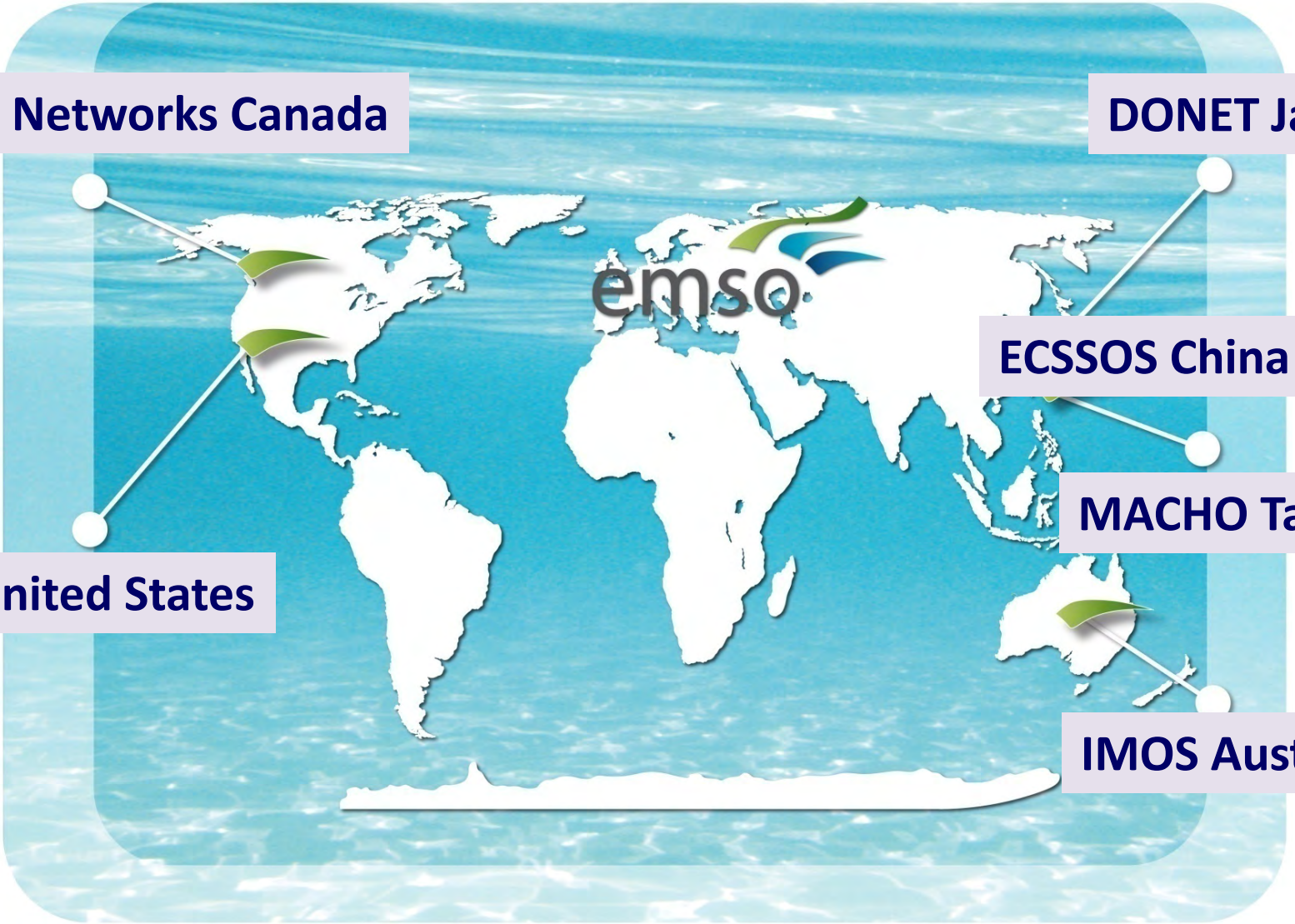
Meteorological & Communication buoy

Deflated balloon, OBS and ballast

Bloated balloon, connected to buoys-OBS and ballast

International Dimension

european multidisciplinary seafloor & water column observatory



Major International Initiatives

Europe/Global

- Cross collaborations with:
  - established ERICs, such as EURO-ARGO, ICOS and LIFEWATCH
  - other ESFRI RIs, like: ECCSEL, EMBRC, EPOS, KM3NeT and SIOS
  - new entries in the ESFRI Roadmap 2016, like: ACTRIS, DANUBIUS RI
- Cooperation with all Environmental RIs in the EU project ENVRIplus
- Participation in many EU projects (e.g., FixO3, MARsite, INDIGO, ATLANTOS, NEXOS, JERICO-NEXT, EMSODEV,EMSO-link)
- Links with other EU initiatives (e.g., EUROFLEETS-2, SeaDataNet, EMODnet)
- Contacts and exchanges with sister research infrastructure initiatives (COOPplus):
  - ONC - Ocean Networks Canada (Canada)
  - OOI - Ocean Observatories Initiative (USA)
  - DONET - Dense Ocean floor Network for Earthquakes & Tsunamis (Japan)
  - IMOS - Integrated Marine Observing System (Australia)
  - ECSSOS - East China Sea Seafloor Observation System (China)
  - MACHO - MArine Cable Hosted Observatory (Taiwan)
- Cooperation and co-investment with industry (e.g., oil & gas, renewable energy, deep-sea mining, fisheries)

Cooperation access to Research Vessels

How do we organize a systematic implementation access to oceanographic vessels ?

Strategy of European Fleets by EUROFLEETS-3?

Presentation to ERVO-2016 Uupdated IRSO-2016

Specifications by EMSO/FixO3, EuroARGO,EMBRC, SIOS, ICOS, KM3Net,…

Proposal to ERVO and issue of a working plan

Open discussion

- Feasibility
- Opportunities
- Cooperation
- Countries
- Regional seas

Research Vessels

- Technical capacities
- Services (installation, replacement, maintenances, cruises/interoperability equipment (ROV's, AUV's, Gliders, etc.)
- Periodicity-time constraints
- EU regional seas
- Sites, profiler and surface moorings

Possible RV´s Actions

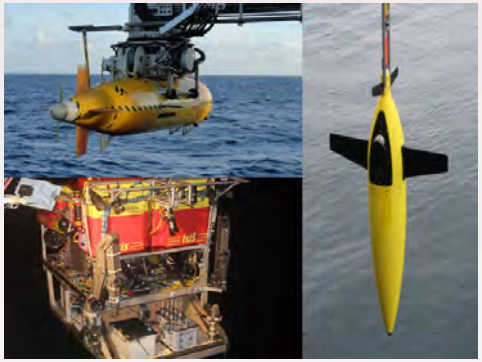
- Technology cruises
- Joint science cruises
- Opportunity of ships transit
- Pool of equipment
- Underway data
- Bartering
- Best practices and training

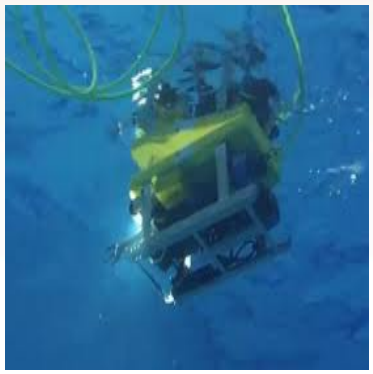
european multidisciplinary seafloor & water-column observatory emso

ACCESS TO RESEARCH VESSELS

Aiming to implement physical access to oceanographic vessels

- **Propose a long-term strategy of action in the EOOS of the European fleets ideally provided by EUROFLEETS 3 and supported by ERVO ?**
- **Include it in the implementation plans of other RIs such as EMSO ERIC,**
- **ENVRIPLUS will propose some quantitative request from all RIs**



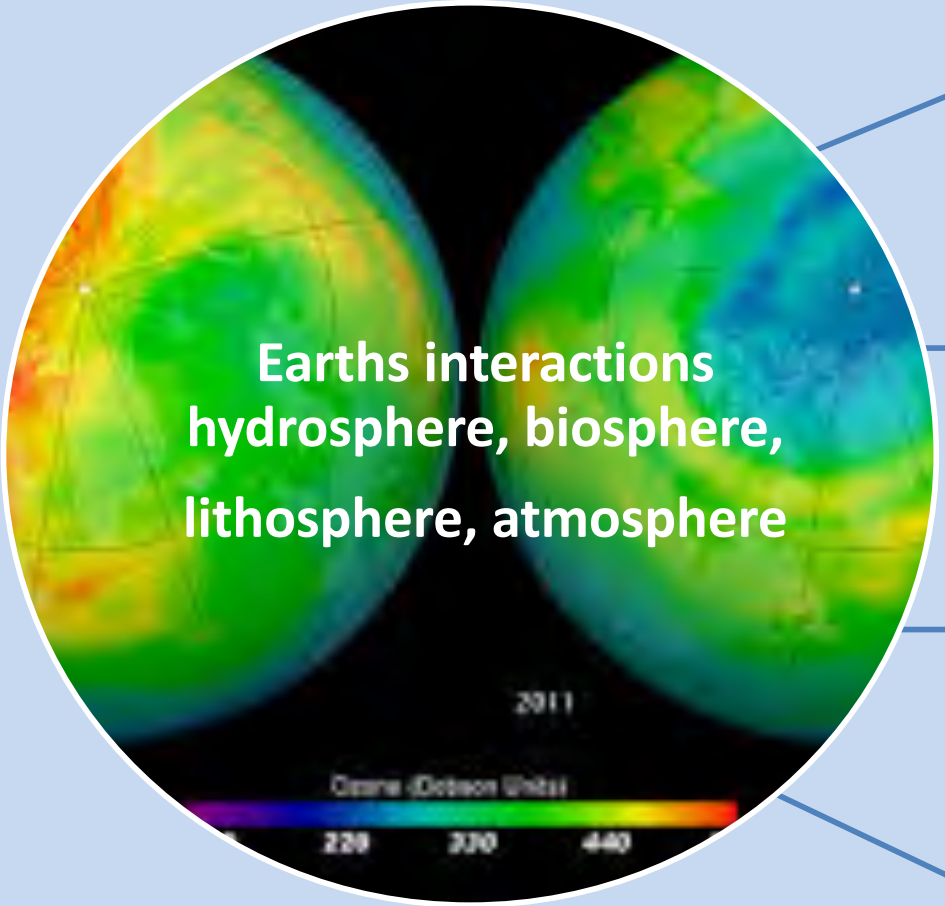


european multidisciplinary seafloor & water-column observatory emso

Scientific & Societal demand for
Environmental Marine Research Infrastructures

european multidisciplinary seafloor & water column observatory
emso

Facilitating the *Blue Economy*



Geohazard and early warning for earthquakes ,tsunamis, gas-hydrates release,

Interactions between ecosystems , biodiversity, biogeochemistry physic and climate for e.g. understanding present and past climate changes?

Impact of exploration and extraction of natural resources and living resources

Observation on how Natural and Anthropogenic changes

Connecting scientific outcomes to stake holders and policy makers

Thanks you for attention

The EMSODEV project (no. 676555) is supported by DG Research and Innovation of the European Commission under the Research Infrastructures Programme of the H2020