

EMSO: the European-scale network of fixed seafloor and water-column observatories

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on behalf of the EMSO Consortium

EMSO, a Research Infrastructure of the ESFRI Roadmap, is the European network of fixed seafloor and water column observatories constituting a distributed infrastructure for long-term monitoring of environmental processes

In the EC-FP7 EMSO Preparatory Phase (12 countries) started in 2008 for 4 years with the aim to design and create the legal entity in charge of managing the infrastructure

A large European users community has been gathered around ESONET-NoE (2007-2011, www.esonet-emso.org/) which has been providing many inputs to the shaping of EMSO

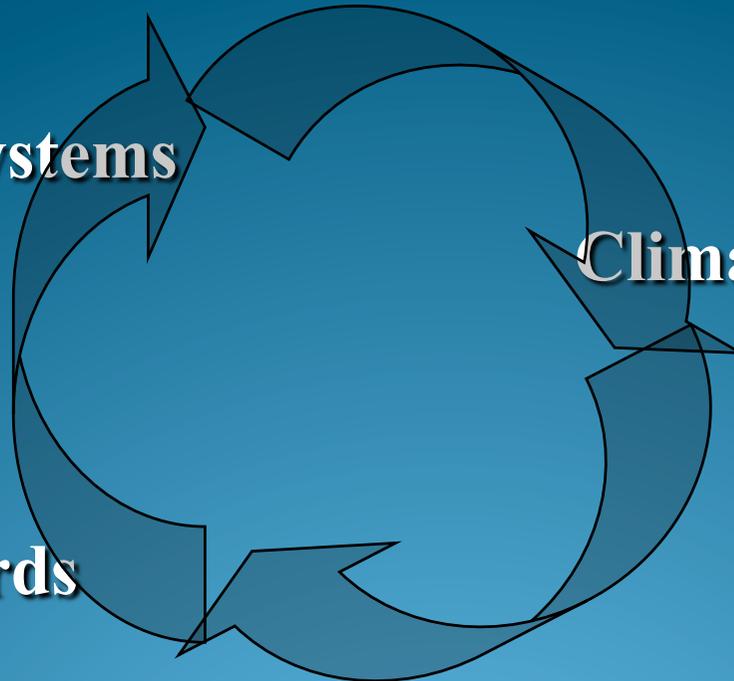


**EMSO is a Marine Research Infrastructure:
permanent, large-scale, deep-sea laboratory to
observe and study**

Marine Ecosystems

Climate Change

Geo-Hazards



Ostend Declaration

The European marine and maritime research community stands ready to provide knowledge, services and support to the European Union and its Member and Associated States, recognising that

“The Seas and Oceans are one of the Grand Challenges for the 21st Century”.

Addressing the Seas and Oceans Grand Challenge

The EurOCEAN 2010 Conference identified priority marine and maritime research challenges and opportunities in areas such as food, global environmental change, energy, marine biotechnology, maritime transport and marine spatial planning, including seabed mapping. The Conference delivered an unequivocal message on the societal and economic benefits Europe derives from the seas and oceans and of the crucial role that research and technology must play in addressing the Seas and Oceans Grand Challenge.

The European marine science and technology community, building on existing achievements and initiatives, is ready to address this challenge in partnership with industry and the public sector, and call upon the European Union and its Member and Associated States to facilitate this response by delivering the following proactive and integrating actions:

1. Joint Programming

Develop an integrating framework, combining the assets of European programmes with those of Member States, to address the Grand Challenge of the Seas and Oceans, including the identification and delivery of critical marine research infrastructures. The Joint Programming Initiative on “Healthy and Productive Seas and Oceans” has the appropriate scale of integration and should be actively supported by the European Commission and Member States.

2. European Ocean Observing System

Support the development of a truly integrated and sustainably funded “European Ocean Observing System” to (i) re-establish Europe’s global leading role in marine science and technology; (ii) respond to societal needs by supporting major policy initiatives such as the Integrated Maritime Policy and the Marine Strategy Framework Directive; and (iii) support European contributions to global observing systems. This could be achieved through better coordination of national capabilities with appropriate new investments, in coordination with relevant initiatives (e.g. ESFRI, EMODNET, GMES) and the engagement of end-users.

3. Research to Knowledge

Establish appropriate mechanisms to keep under review current marine and maritime research programmes and projects with a view to enhancing their impact by (i) exploiting the results of this research; and (ii) identifying existing and emerging gaps. This should be supported by a repository for the reports and findings of national and EU marine and maritime research projects, programmes and initiatives, with capacity for archiving, translating, analysing, reporting and developing integrated knowledge products to facilitate policy development, decision making, management actions, innovation, education and public awareness.

**EMSO is component of
the European Ocean
Observing System
(EOOS)**

EMSO-Preparatory Phase Partnership

INGV - Istituto Nazionale di Geofisica e Vulcanologia (Italy) Co-ordinator

IFREMER - Institut Français de Recherche pour l'exploitation de la MER (France)

NOCS - National Oceanography Centre Southampton (United Kingdom)

KDM - Konsortium Deutsche Meeresforschung e.V. (Germany)

NIOZ - Stichting Koninklijk Nederlands Instituut voor Zeeonderzoek (The Netherlands)

UTM-CSIC - Unidad de Tecnología Marina - Consejo Superior de Investigaciones Científicas (Spain)

ITU - Istanbul Teknik Universitesi (Turkey)

UiT - University of Tromsø (Norway)

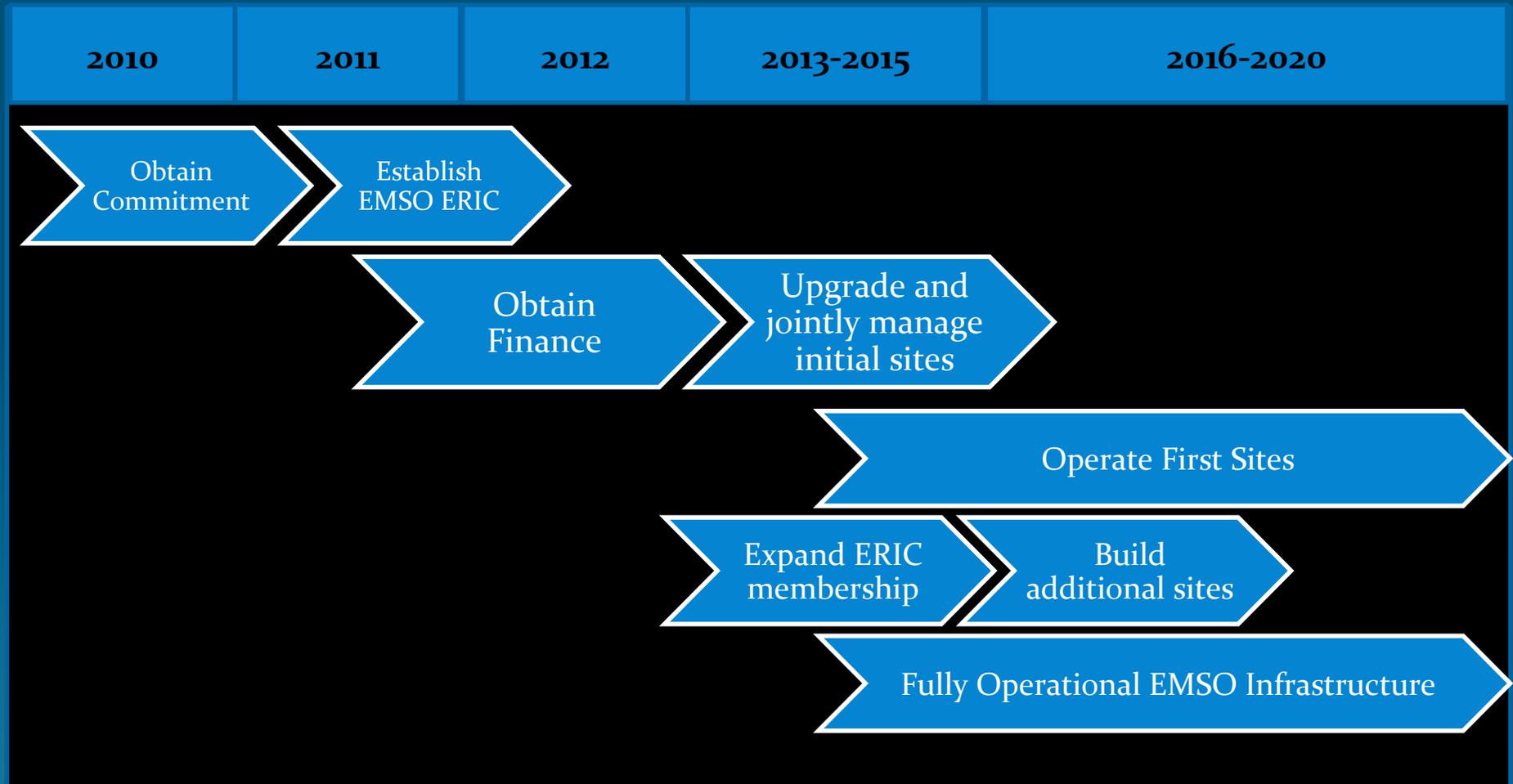
HCMR - Hellenic Centre for Marine Research (Greece)

IMI - Irish Marine Institute (Ireland)

UGOT - Goteborgs Universitet (Sweden)

FFCUL - Fundação da Faculdade de Ciências da Universidade de Lisboa (Portugal)

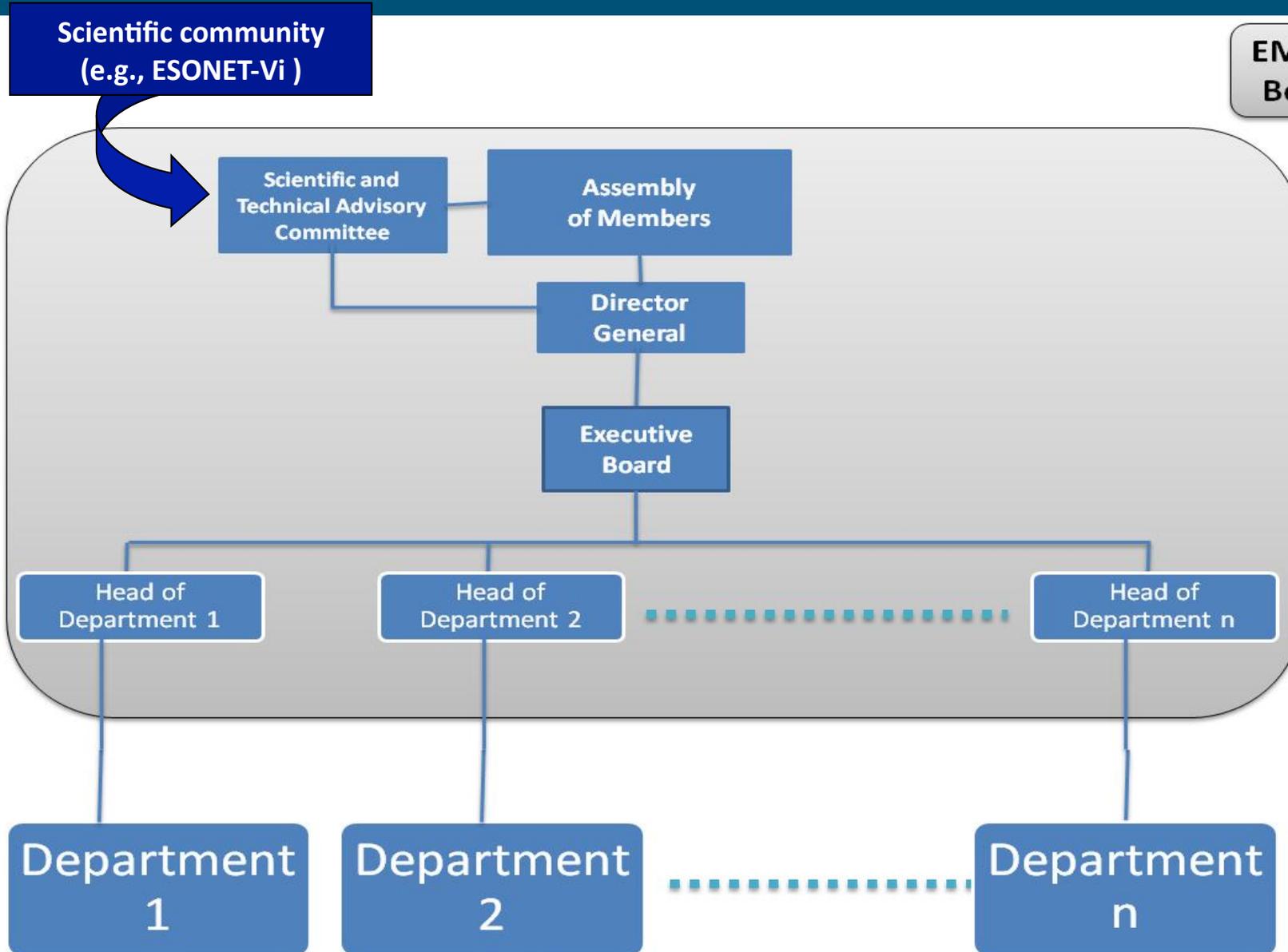
EMSO Timeline



The legal organisation

- **The ERIC is the legal form accepted by the funding agencies and the community (ESF Strasbourg - 1st Funding Agencies meeting, February 2010)**
- **Waiting for the finalisation of the ERIC, MoU among the Countries (full members & observers) participating to EMSO-ERIC**
- **EMSO-ERIC statutes at the final version and is under discussion with the Funding Agencies for their comments. It must be officially presented for final acceptance & signature**
- **Legal work also covers model agreements for sites with already-existing facilities**

Governance



EMSO-ERIC
Boundary

EMSO-ERIC mission (Statute)

EMSO-ERIC will coordinate and facilitate access to open ocean fixed point observatory infrastructures according to selection criteria defined by the participating members. The EMSO-ERIC will be the central point of contact for observatory initiatives in other part of the world to set up and promote cooperation in this field

EMSO-ERIC will also integrate research, training, and information dissemination activities on ocean observatories in Europe and to enable scientists and other stakeholders to make efficient use of a future network of ocean observatories around Europe. EMSO-ERIC will consist of contributing member states and observer member states and shall ensure maximum benefit by coordinating and focusing the use of the commonly available infrastructure resources

EMSO-ERIC aims at integrating the existing open ocean fixed point sub-sea observatories (hereafter referred to as Infrastructures) around Europe, help coordinate their extensions, and in the planning and deployment of new ones. The mission is also to facilitate the operation of the Infrastructures, ensure the continuity and quality of measurement time series acquisition and a reliable and user-oriented data management

Interest Currently expressed by Member States

- **EMSO is presently in the Roadmap of the following Countries:**
 - **Italy, France, Germany, Ireland*, Spain, Sweden, Greece, UK, Norway**
 - * “A” rating assigned to EMSO in terms of potential investment
 - **The Prime Ministry of Turkey State Planning Organization (DPT) is considering EMSO to include in the roadmap**
- **Countries interested to participate to the ERIC since the beginning:**
 - **Full members: Italy, France, Germany, UK, Turkey, Spain, Greece**
 - **Observer members: Ireland, Norway**

EMSO-ERIC central management have to be light, agile, not too costly and will act as a coordinating body, facilitating and coordinating access to observatories

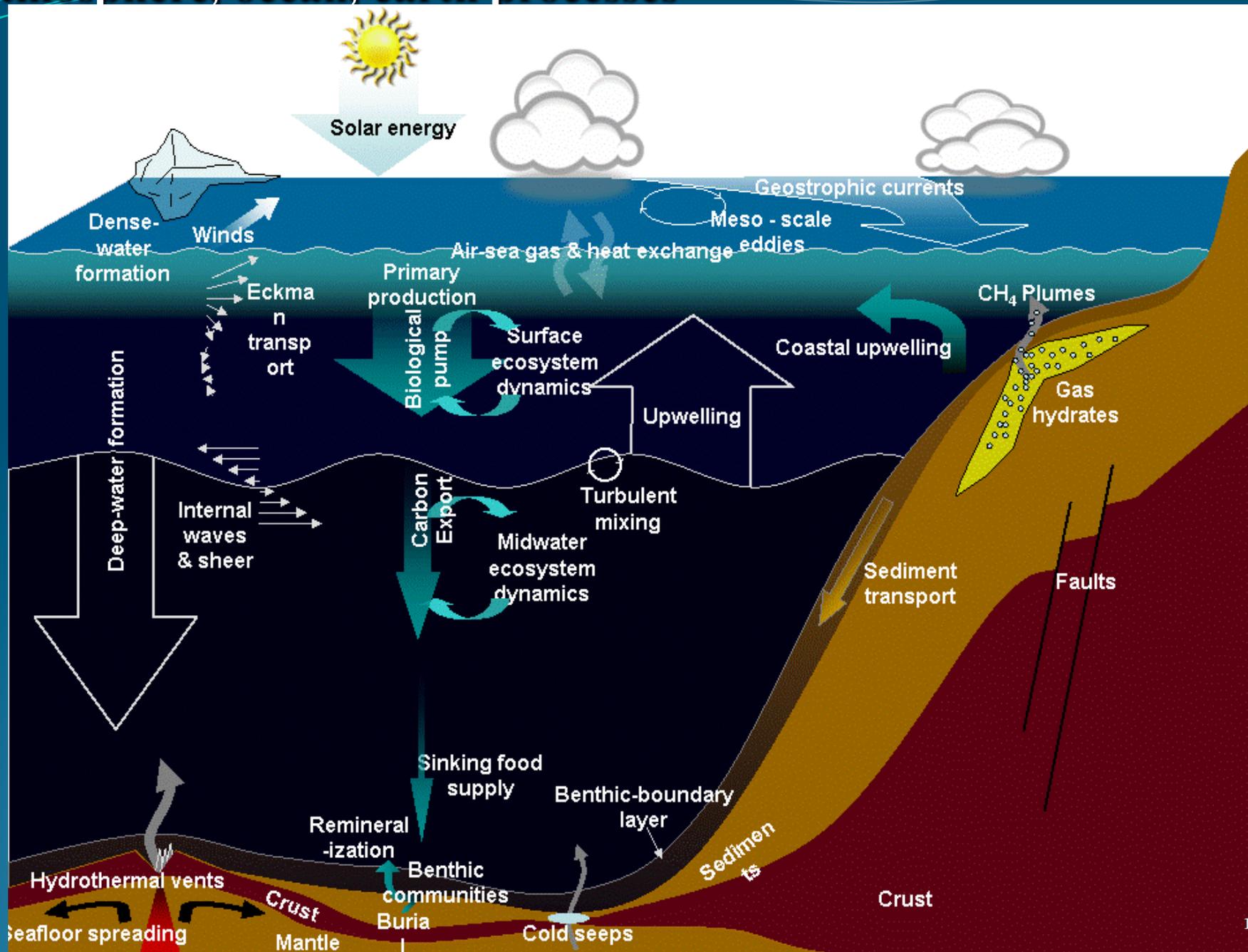
Ownership does not have to be an issue

Envisioned 2 phases:

- **Phase 1-Start-up** (2-3 years). Small structure (~200-300 K€ per year in average), with part-time personnel implementing the needed functionalities
- **Phase 2-Regime**. Still small structure, with full-time and part-time staff, full functionalities. Personnel seconded from participating research institution will facilitate the contribution in-kind to the secretariat costs

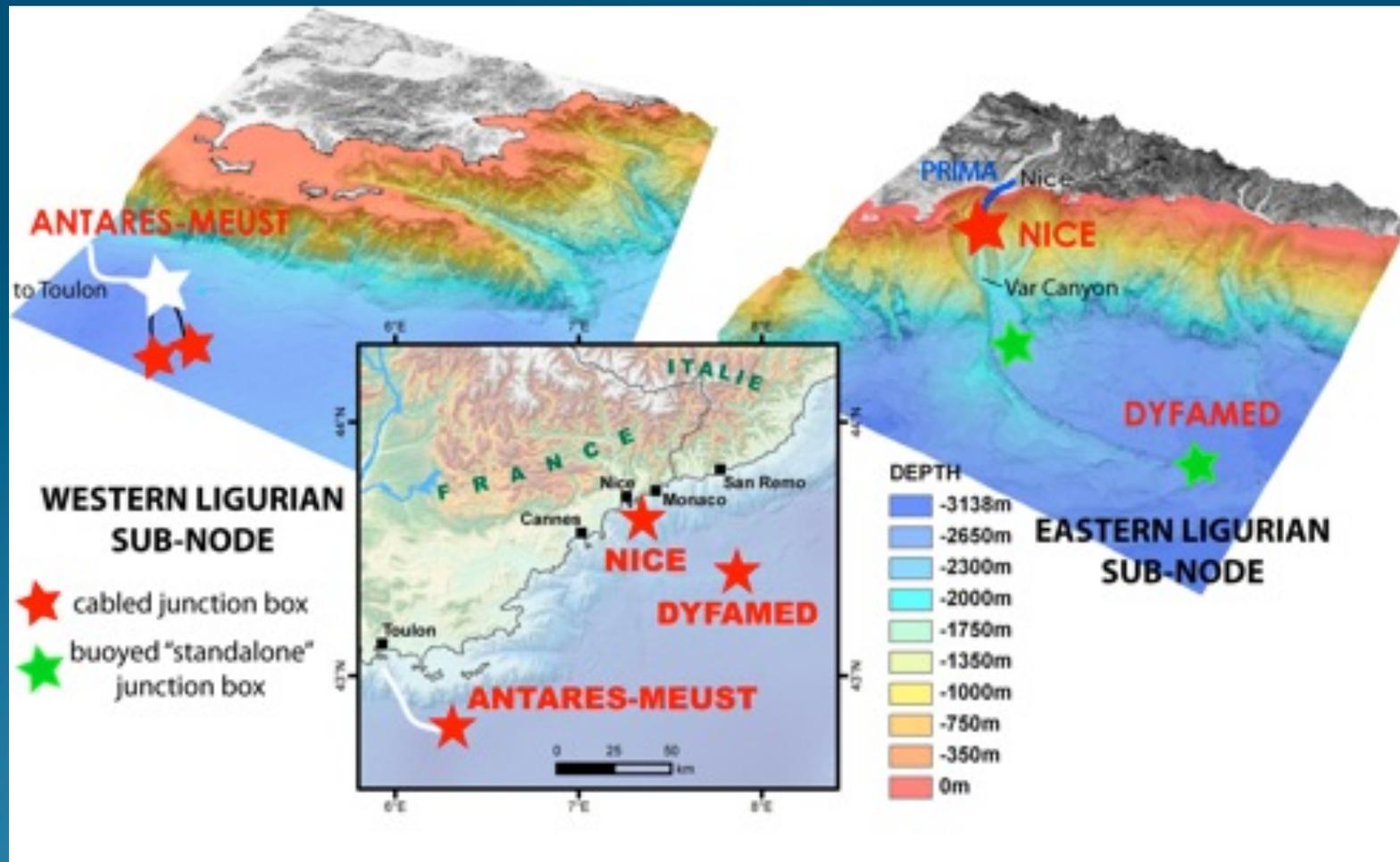
Italian Research Ministry supports EMSO-ERIC also through dedicated funding

Unravelling the complexity: interactions between atmosphere, ocean, earth processes

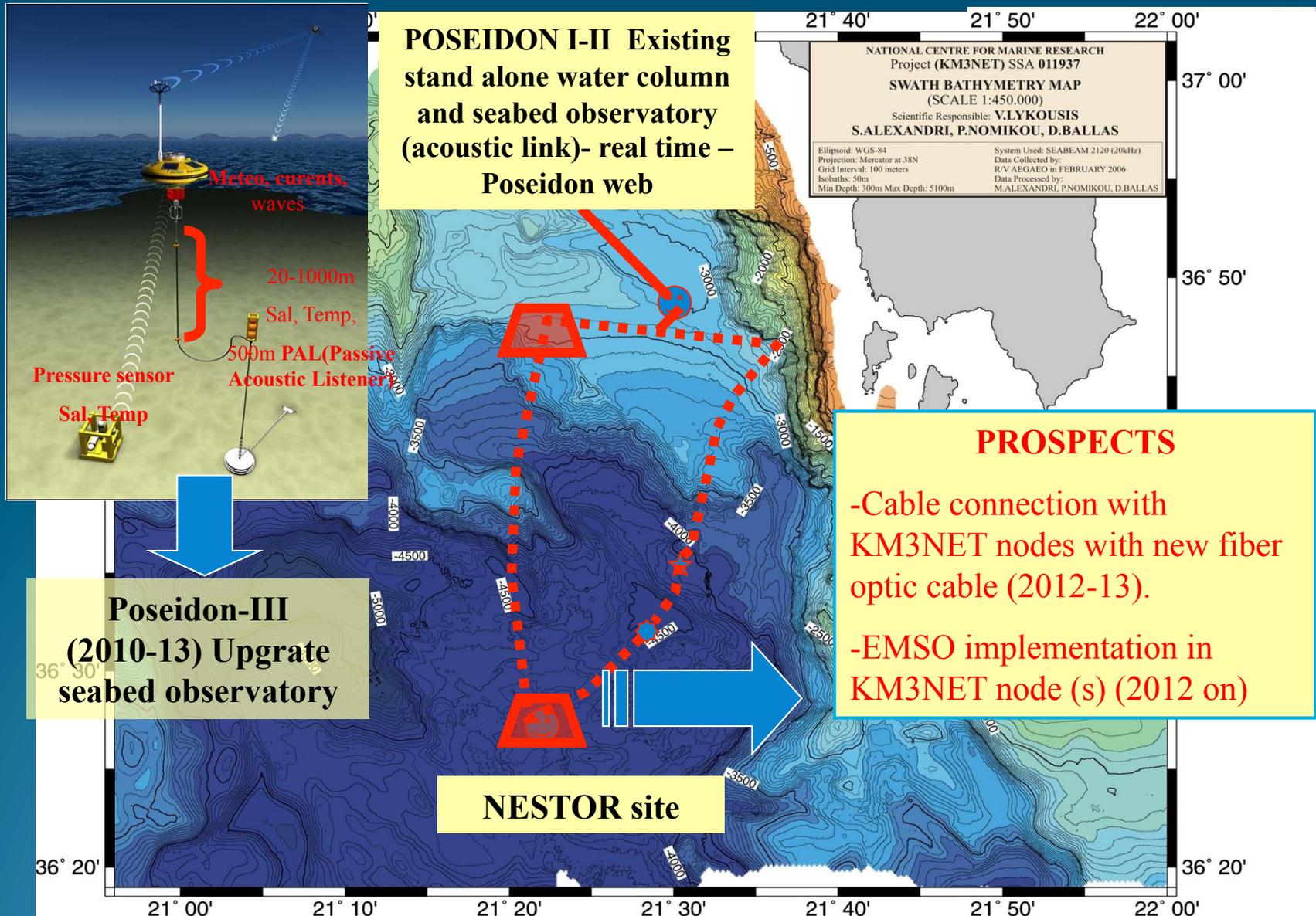




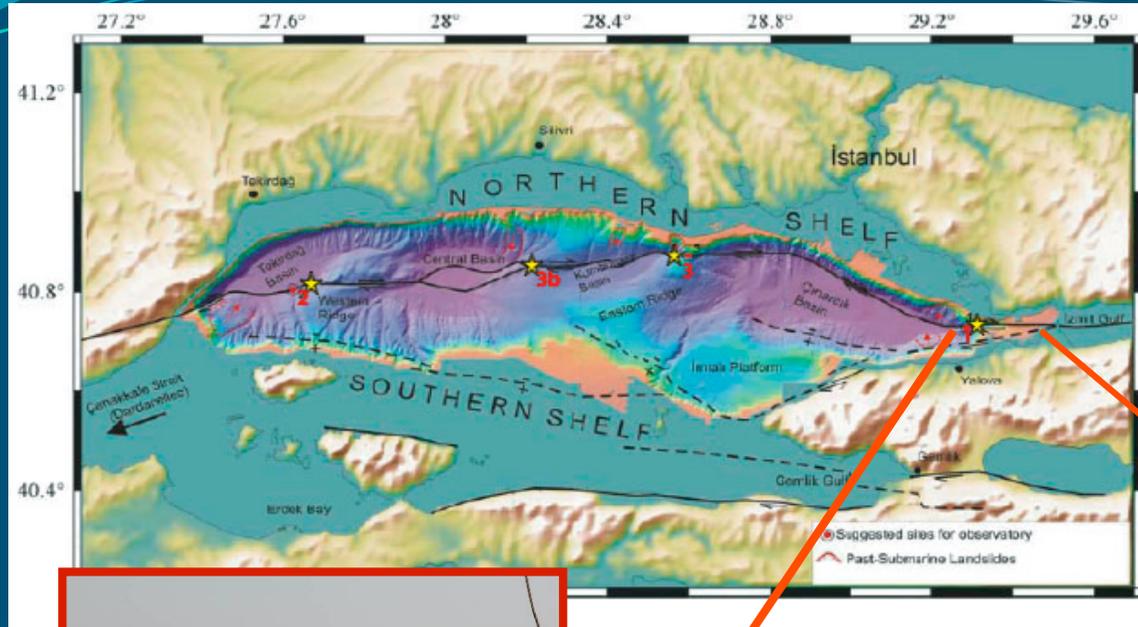
Ligurian Sea



Hellenic site

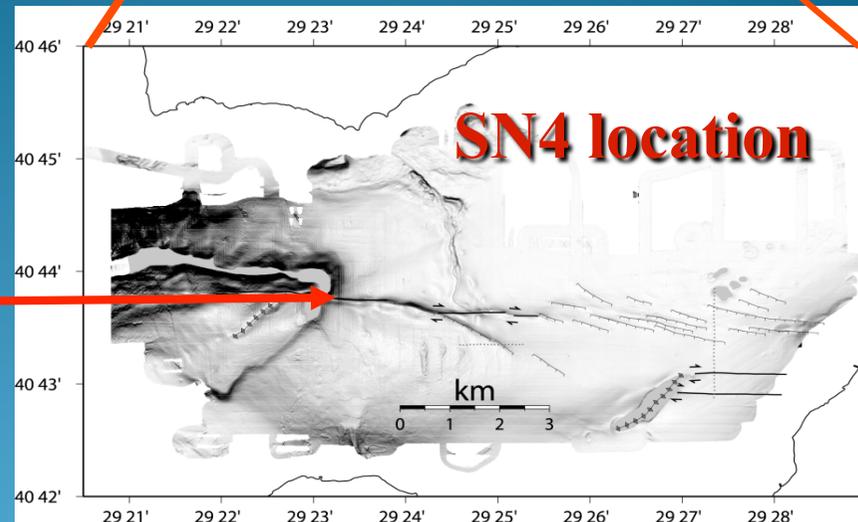


Marmara Sea



Partners: Turkey, Italy,
France

eastern part of the sea
at the westernmost
end of the fault
rupture caused by the
1999 İzmit
earthquake.

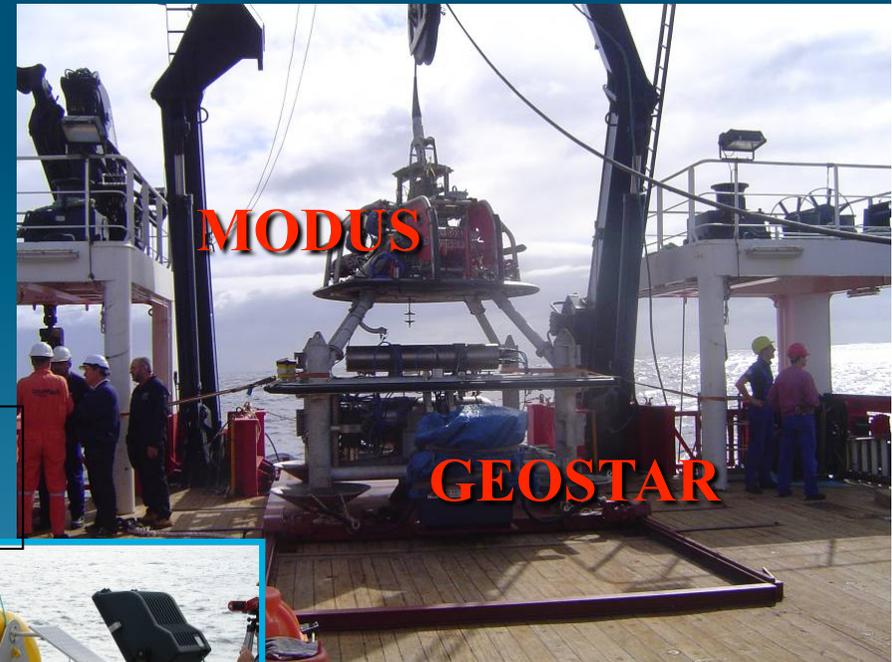


Main goals: Relationship between Seismicity & Gas seepage

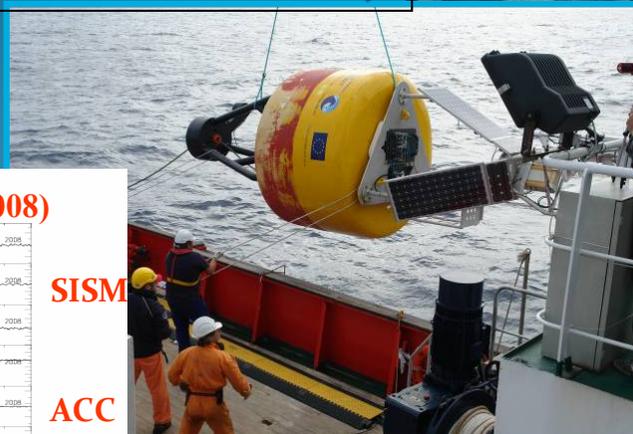
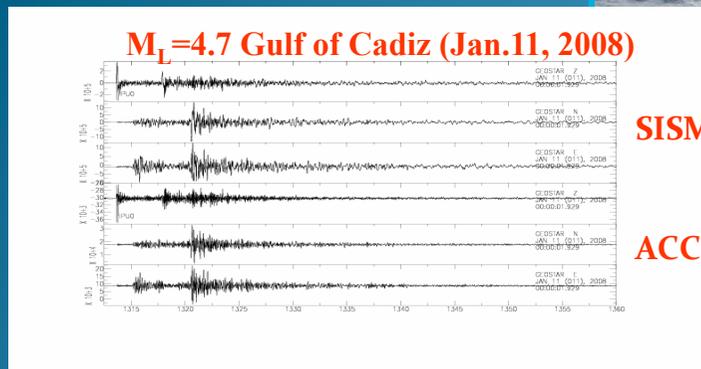
Iberian Margin

Acoustically linked observatory

Partners: Portugal,
Spain, Italy, Germany,
France, Morocco



EC-NEAREST (exp. Aug.'07-Aug.'08)
EC-ESONET-LIDO-DM (exp. Nov.'09-June'11)



Main goals: Geo-Hazards & Bio-acoustics

Western Ionian Sea (offshore Catania)

Main goals: Geo-hazards (e.g., tsunami detection) & Bio-acoustics (mammal tracking). Test site for Underwater Neutrino Telescope

- 2005 Real-time data transmission
- 2008 Recovery for refurbishment
- 2011 **Re-deployment**

Shore Station
Catania harbour



ROV (operative 4000 m)



Web

20 km

5 km

5 km

SN1



Geo-hazard
and bio-
acoustic
module



NEMO JB



Bio-
acoustic
module

> 2000 m w.d.



Synergy between the 2 ESFRI infrastructures: KM3NeT & EMSO

