

# Medium to Long-term needs for Research Vessels supporting Ocean Observing System: Challenges & Opportunities in a framework of European & International Cooperation

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# THE EUROPEAN FRAMEWORK

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



Long term needs and commitments can be expected from the ERIC, funded by the member countries for one or two decades

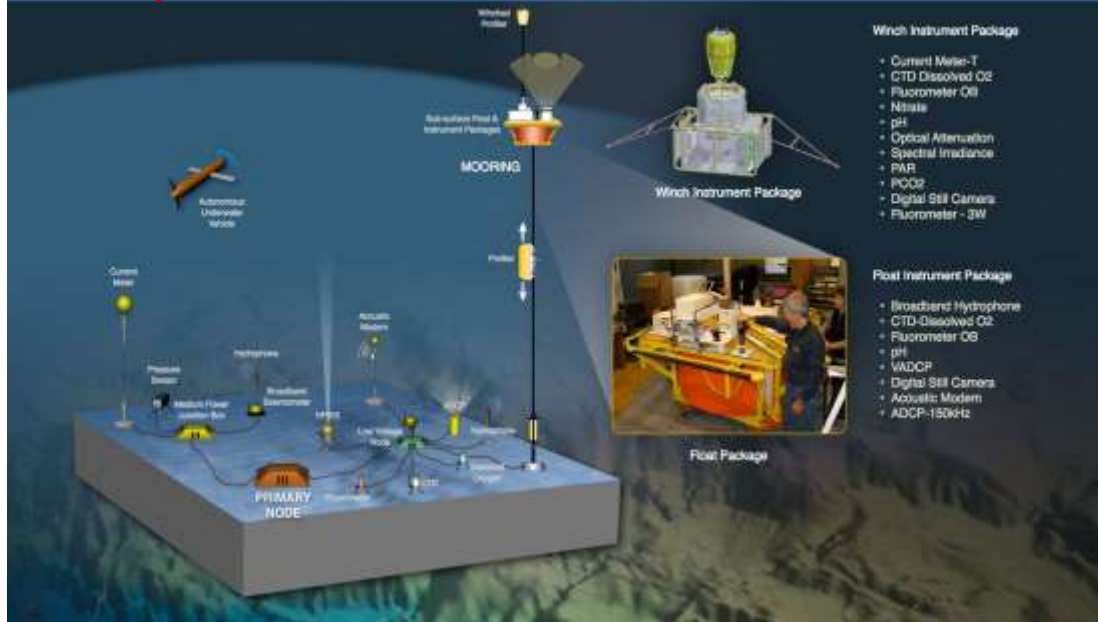
What are the wishes of Marine RIs towards the Oceanographic RV's?

What EU level of cooperation and coordination is needed ?

At Spanish National level we propose promptly the establishment of **Spanish EMSO Consortium** integrating CSIC Marine Institutes, IEO, Universities and other Marine autonomic centers under CSIC leadership

# Framework European Seas

Activity: ALREADY STARTED



Some research infrastructures already have plans or preliminary views

**EuroARGO ERIC** - ARGO profiling floats  
**ICOS** - Integrated Carbon Observation System  
**JERICO/JERICONEXT** – Ferry box systems seldom on Research Vessels

Other RI's can benefit from voluntary ships including Research Vessels

**SIOS** – Svalbard Integrated Earth Observing System

**EMSO ERIC** – almost finalized the process to be a legal entity

**FixO3** – includes moorings in addition to EMSO sites and some CO<sub>2</sub> measurements contributing to ICOS



# 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-  
Rhodes-2016

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

Proposal to ERVO and  
issue of a working plan

## Research Vessels

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

## Open discussion

- Feasibility
- Opportunities
- Cooperation
- Countries
- Regional seas

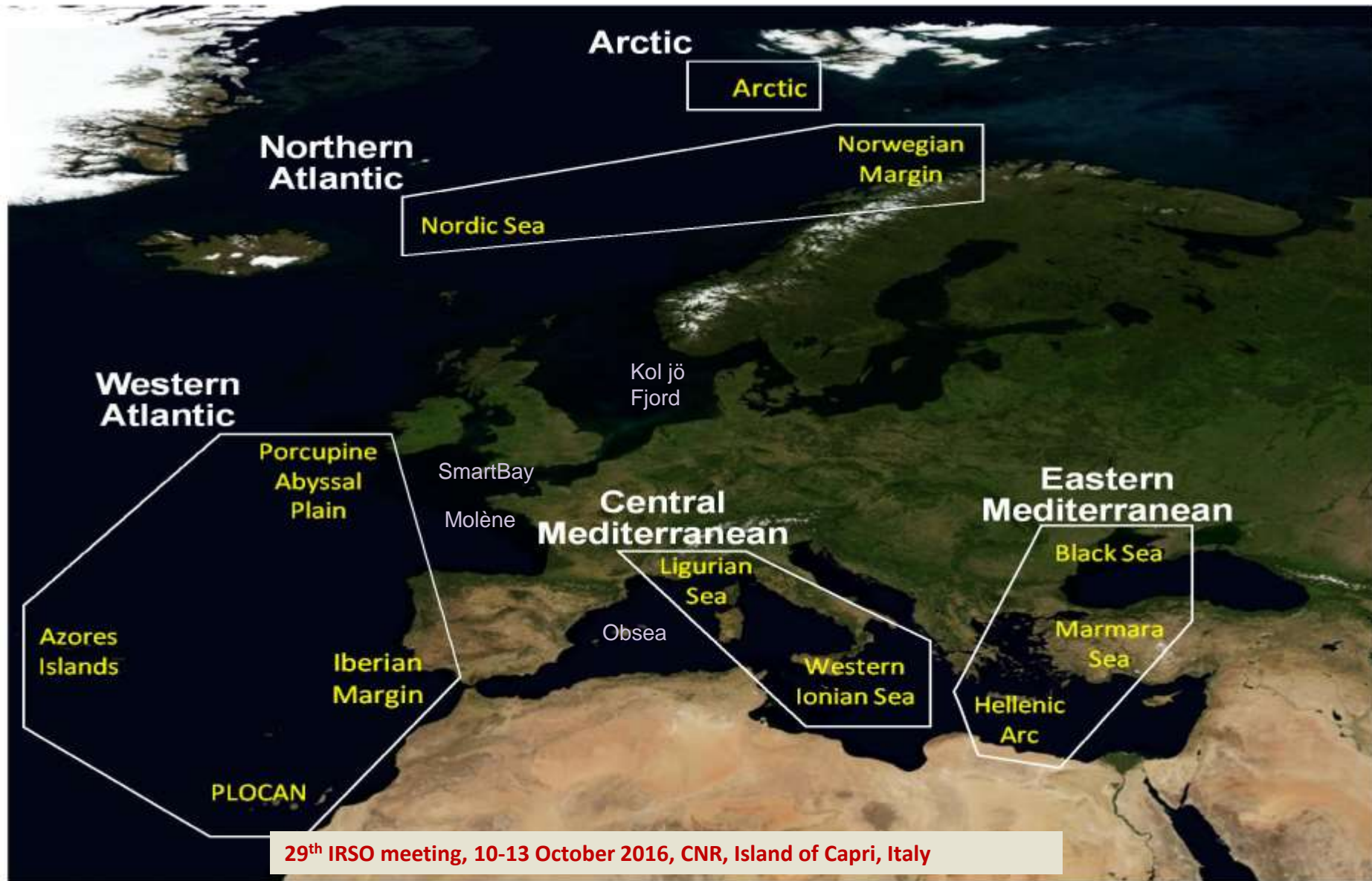
## Possible RV's Actions

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



# THE NETWORK : EMSO-ERIC

## EMSO ERIC Regional Nodes; 11 nodes & 4 test sites



29<sup>th</sup> IRSO meeting, 10-13 October 2016, CNR, Island of Capri, Italy

# International Dimension

**Ocean Networks Canada**

**DONET Japan**



**ECSSOS China**

**MACHO Taiwan**

**OOI United States**

**IMOS Australia**

# Major International Initiatives

## Europe/Global

-  **Cross collaborations with:**
  - other ESFRI RIs, like: ECCSEL, EMBRC, EPOS, KM3NeT and SIOS
  - established or incoming ERICs, such as EURO-ARGO, ICOS and LIFEWATCH
  - new entry 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., **FixO<sub>3</sub>**, **MARsite**, **INDIGO**, ATLANTOS, NEXOS, JERICO-NEXT, **EMSODEV**)**
-  **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)**



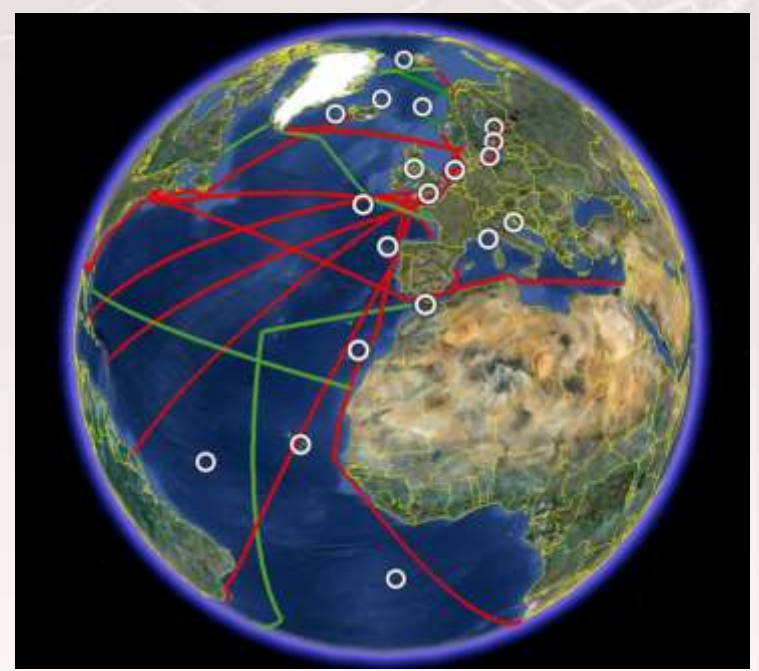
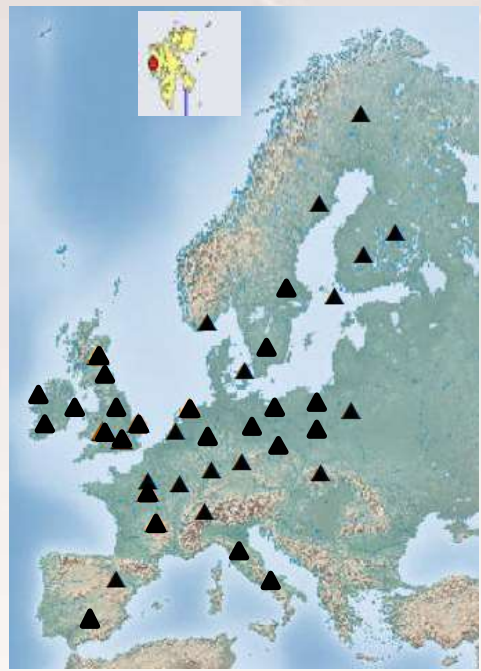
# The potential ICOS STATION RI NETWORK

(from Trulls Johannessen)

Atmosphere

Ecosystems

Oceans



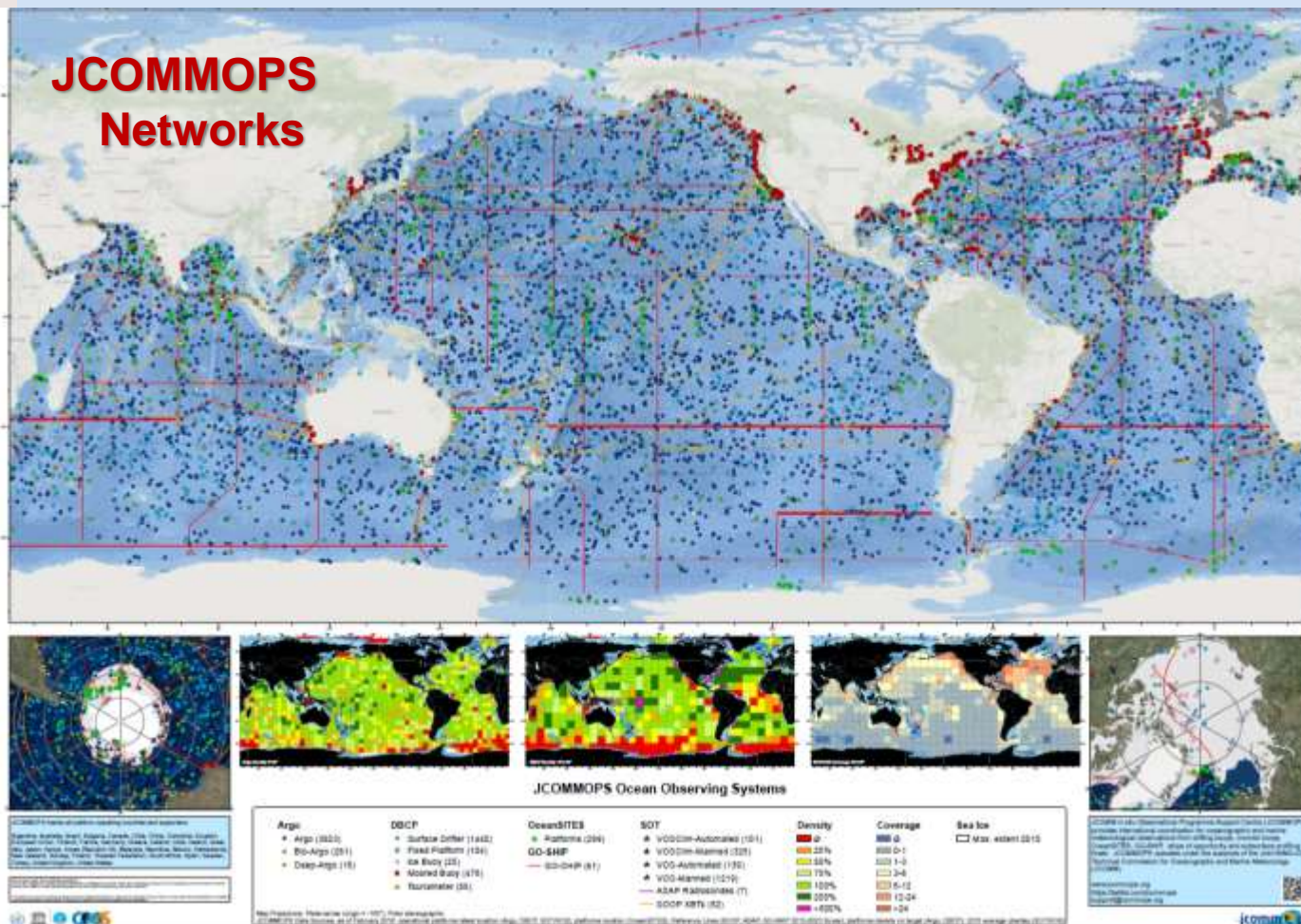
**ICOS Marine needs are expressed through IOCCP at international level. It needs a focus on European requirements**



# JCOMMOPS (IOC-UNESCO/WMO):

A coordination and support center for all sustained elements of the GOOS  
(floats, drifters, ship of opportunity, ship lines, moorings, etc.)

- 10 000 ocean observing platforms monitored in real-time
- (floats, drifters, moorings, ships, tsunameters, etc.)



Monitors and analyzes networks performance

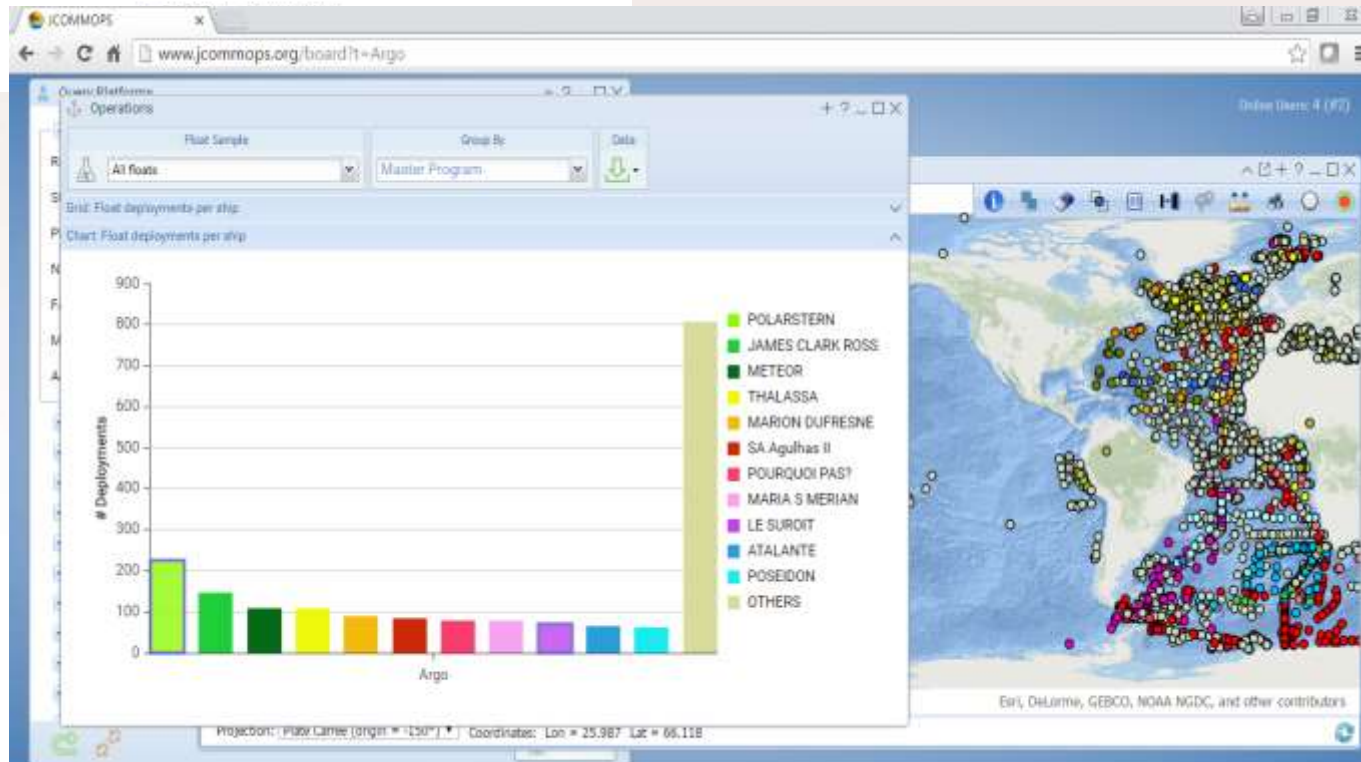
Website:

- Central gateway for platforms registration, planning, cruise plans
- Allows reporting on Member States and all partners contributions
- E.g. Ships used (through unique identifiers)

# EUROARCO ERIC, ARGO, JCOMMOPS.ORG



- 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



# EU Research Vessels Capacities for Unmanned Submarine Vehicles

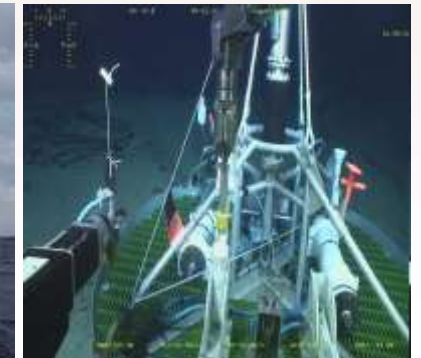
LEGEND												
	Proven deployment on RV											
	Possible deployment of ROV with minor modifications											
	Cannot deploy ROV, e.g. RV not available or no D.P.											
			ROV									
RVs	Country	Length	Holland 3000m	Quest 4000m	Victor 6000 6000m	Isis 6500m	IEO 2000m	Aglantha 2000m	Max Rover 2000m	Kiel 6000 6000m	ROV Phoca	MeBo
Marion Dufresne	France	120.50 m										
OGS-Explora	Italy	72.63 m										
Mare Nigrum	Romania	82.20 m										
James Clark Ross	United Kingdom	99.04 m										
Hesperides	Spain	82.50 m										
Italica	Italy	130.00 m										
NRP "Almirante Gago Coutinho"	Portugal	68.20 m										
Ernest Shackleton	United Kingdom	80.00 m										
Tridens	Netherlands	73.54 m										
Beautemps-Beaupré	France	80.64 m										
Miguel Oliver	Spain	70.00 m										
Cornide de Saavedra	Spain	66.70 m										
Le Suroit	France	56.34 m										
Urania	Italy	61.30 m										
Dr. Fridtjof Nansen	Norway	56.80 m										
Jan Mayen	Norway	63.80 m										
Johan Hjort	Norway	64.40 m										
Akademik	Bulgaria	55.50 m										



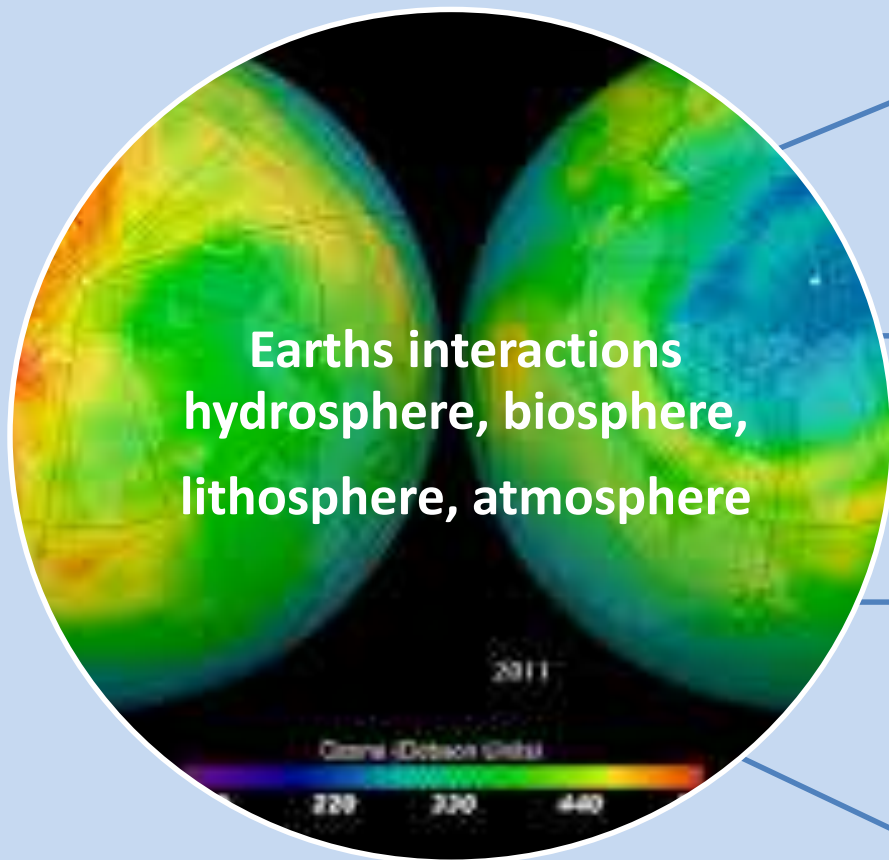
# ACCESS TO RESEARCH VESSELS

*Aiming to implement physical access to oceanographic vessels*

- **Strategy of European Fleets** provided by EUROFLEETS 2 in FEG meeting Paris 2 May 2016.
- Include it in the implementation plans of other RIs such as EMSO ERIC,
- Next year, ENVRIPLUS will propose some quantitative request from all RIs



## Facilitating the *Blue Economy*



Connecting scientific outcomes  
to stake holders and policy makers



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

**Gràcies**  
**Gracias**  
**Thanks**

