European Ocean Observing network: FP7 EuroSITES project.

Richard Lampitt, Kate Larkin and the EuroSITES Consortium

Partner institutes:
1. NERC-NOCS (coordinator); 2. UiB; 3. HCMR; 4. OGS; 5. CNR-ISSIA; 6. IFM-GEOMAR; 7. UNIABN; 8. CNRS; 9. IFREMER; 10. Océanopolis-SOPAB; 11. ICCM; 12. INDP; 13. ULPGC.

In order to monitor and understand the marine system we need to make sustained multidisciplinary observations at appropriate temporal resolution.

Importance of episodic events

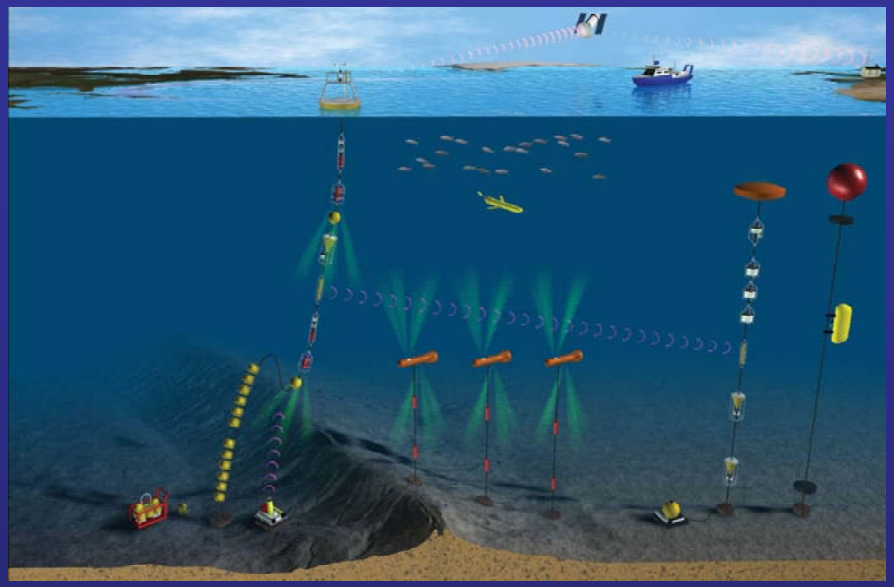
Operational and research

1. Introduction to EuroSITES
2. What is the current status (data collection)?
3. What is the current status (data management)?
4. How are the data being used?
5. What are the demands for the future?

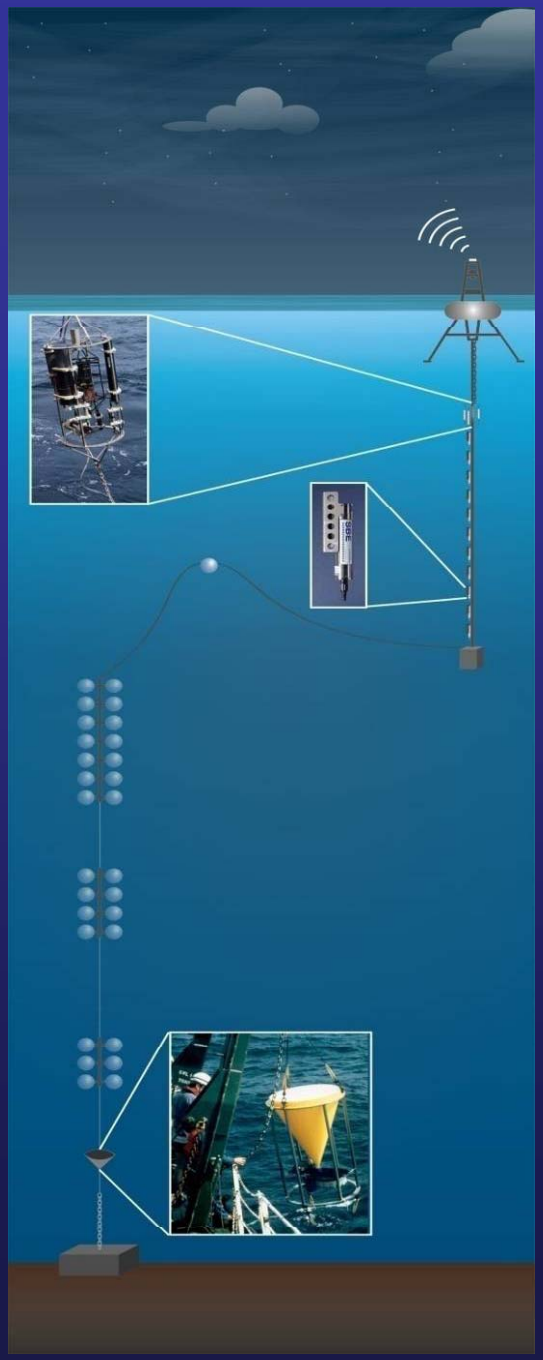
1. Satellite remote sensing
2. Gliders
3. Floats
4. Ships of Opportunity
5. Research cruises
6. Eulerian observatories
7. Computational models

All approaches have strengths and weaknesses

Unique strengths of Eulerian Observatories



1. Sensors which are large or power-hungry
2. Real-time sub-surface data supply
3. Repeated site-specific sample collection (Water, biota, particles)
4. High frequency, un-aliased data, such as for reference data.
5. Deep ocean location (below maximum depth of floats and gliders)



EuroSITES integrates and enhances the 9 existing deep ocean (>1000m) fixed point observatories.

EuroSITES
European Ocean Observatory Network

- EU FP7 Collaborative Project
- 3 years: April 1st 2008 – March 31st 2011
- Coordination: NOC, UK
- 13 partners (8 countries)
- International Oversight Committee
- Open ocean (>1000m)
- Full depth, *in situ*: Ocean interior, seafloor and subseafloor

www.eurosites.info

Dual function of funding:

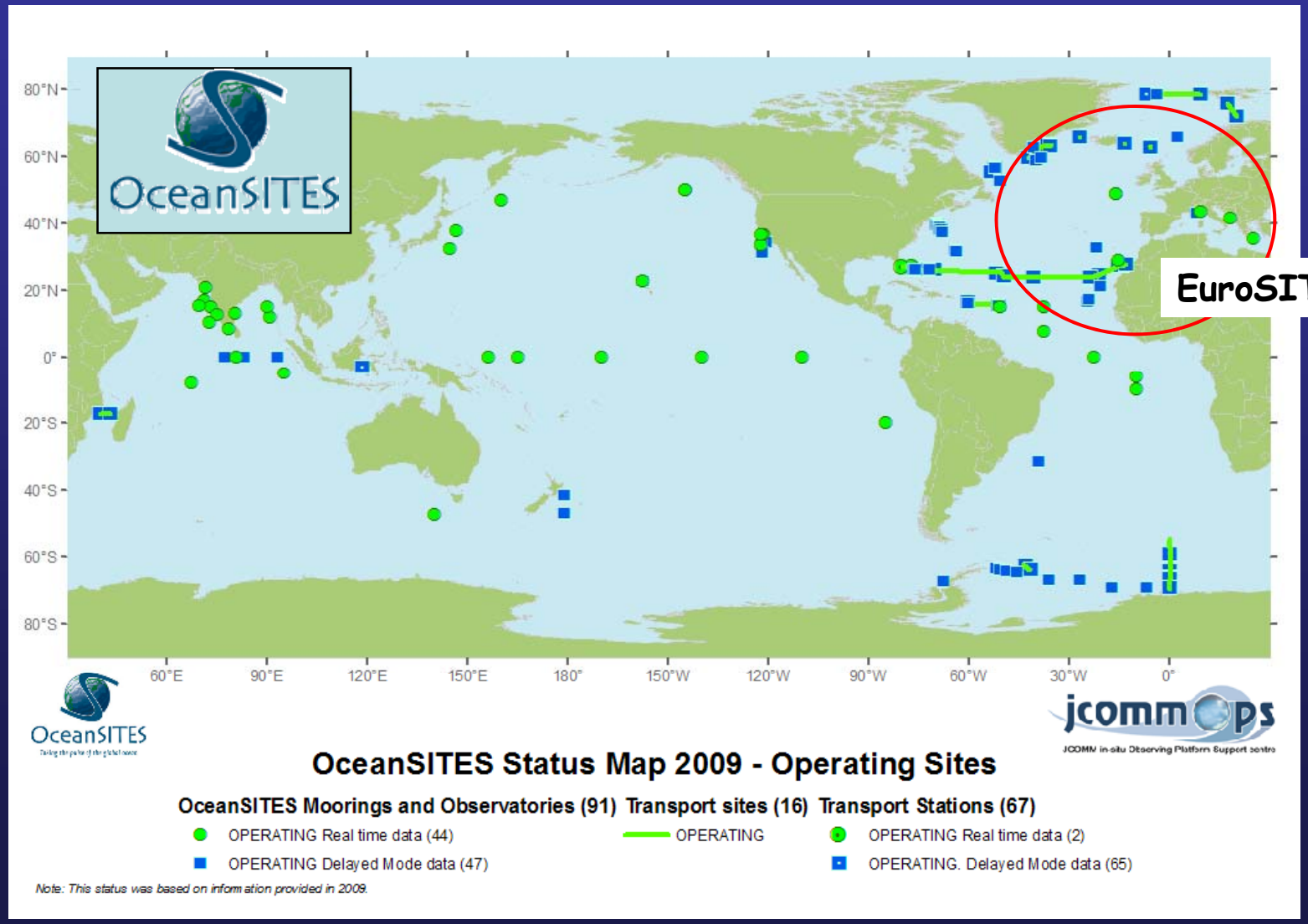
1: **Observatory support**

- Staff
- Equipment

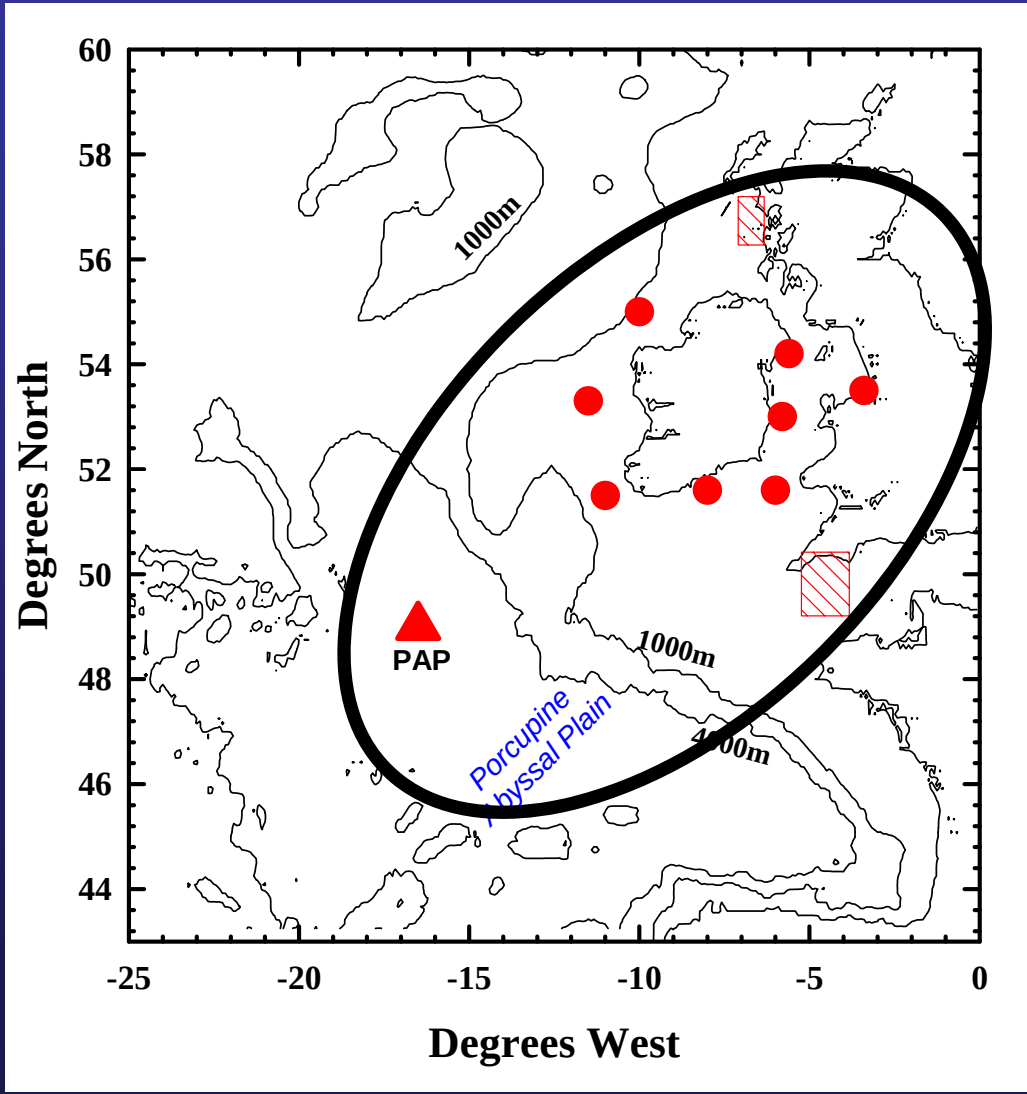
2: **Glue**

- Efficiency of operation
- Enhanced national funding
- Outreach & knowledge transfer
- Effectiveness

OceanSITES: Global network.
An essential component of GOOS.



Links to shelf networks



The Western Shelf Observatory

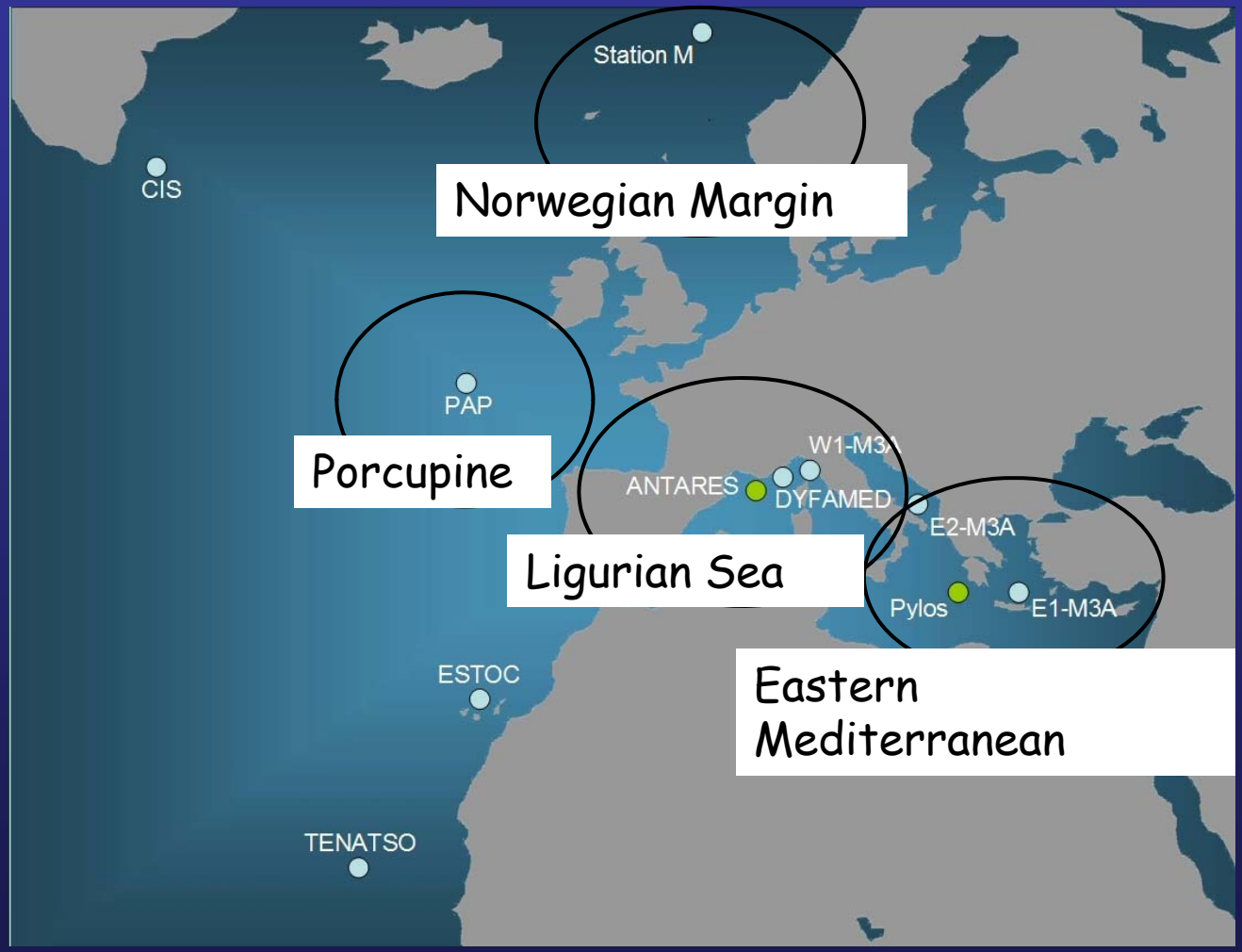
http://www.noc.soton.ac.uk/pap/

Links to shelf networks

The UK Met Office ODAS buoy array

From May 2010 this includes PAP ★

Regional, collaborative science



EuroSITES and ESONET/EMSO: 4 Common regions

Connection to international ocean observation initiatives

Connection to other international initiatives

EuroSITES

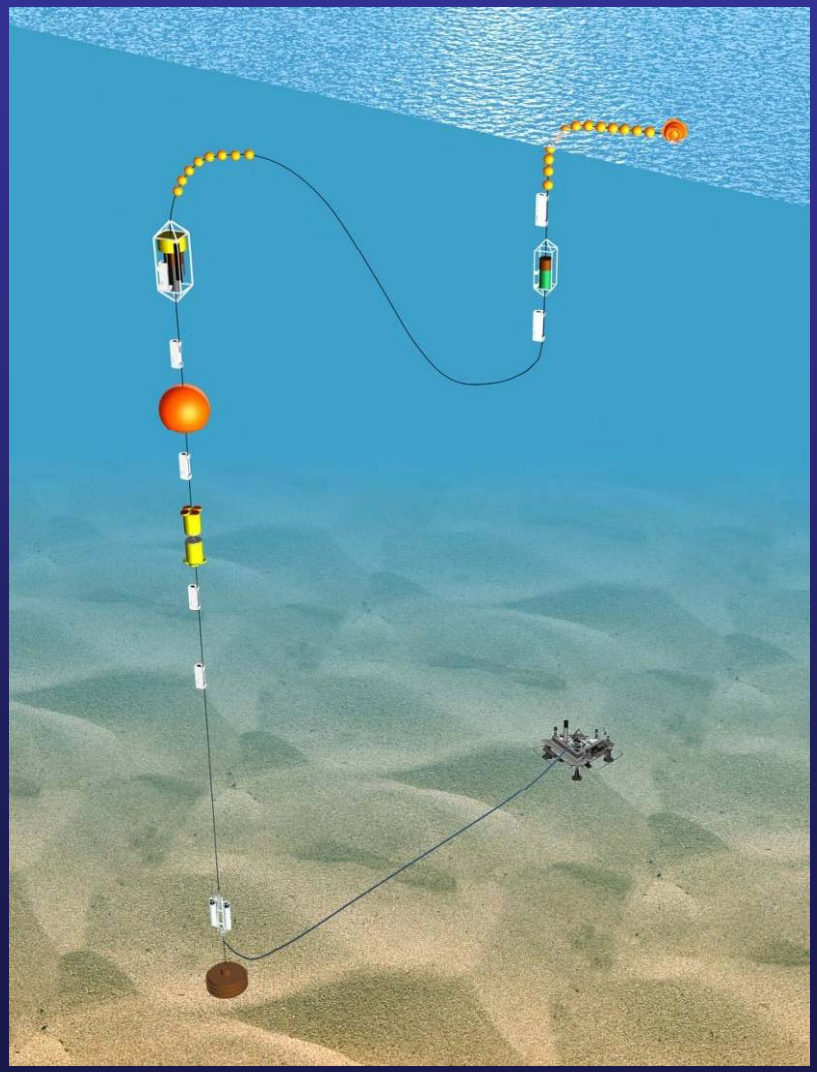
OCEAN OBSERVATORIES INITIATIVE

Ocean Observatories Initiative

5 of the EuroSITES oversight committee are key players in OOI

1. Introduction to EuroSITES
2. What is the current status (data collection)?
3. What is the current status (data management)?
4. How are the data being used?
5. What are the demands for the future?

Multidisciplinary time-series
Vertical coverage: Surface to seafloor



- Temperature
- Salinity
- Currents
- Nutrients
- Chl-a
- CO_2
- O_2
- Particle flux
- Benthic components

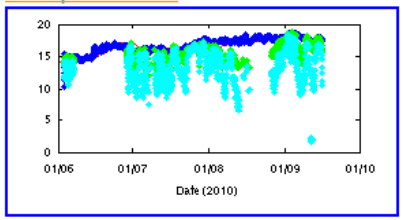
Real-Time Telemetry

Porcupine Abyssal Plain (PAP)

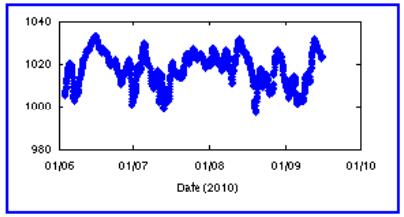
Meteorology

Wednesday 15th September 2010 1945h UTC

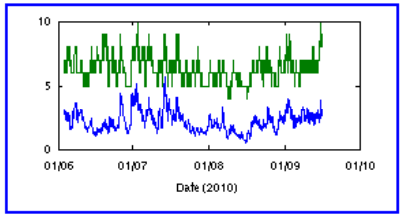
Temperatures



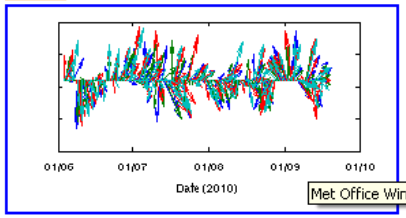
Air Pressure



Waves

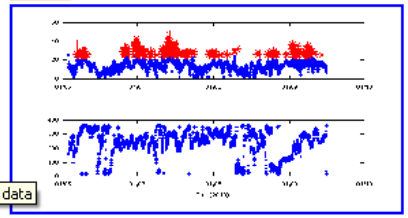


Wind

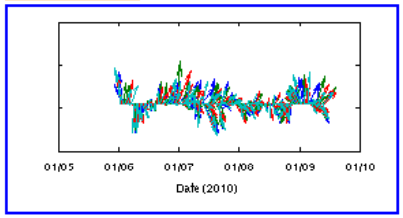


Met Office Wind data

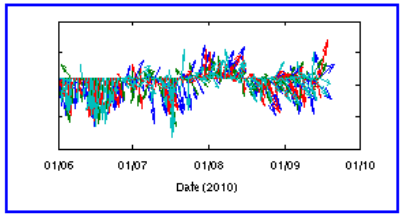
Wind



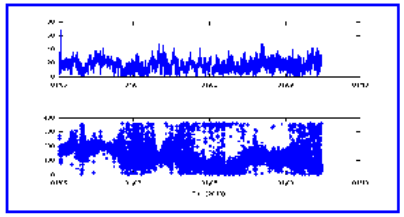
NCEP Wind



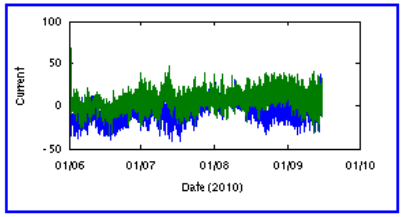
Current



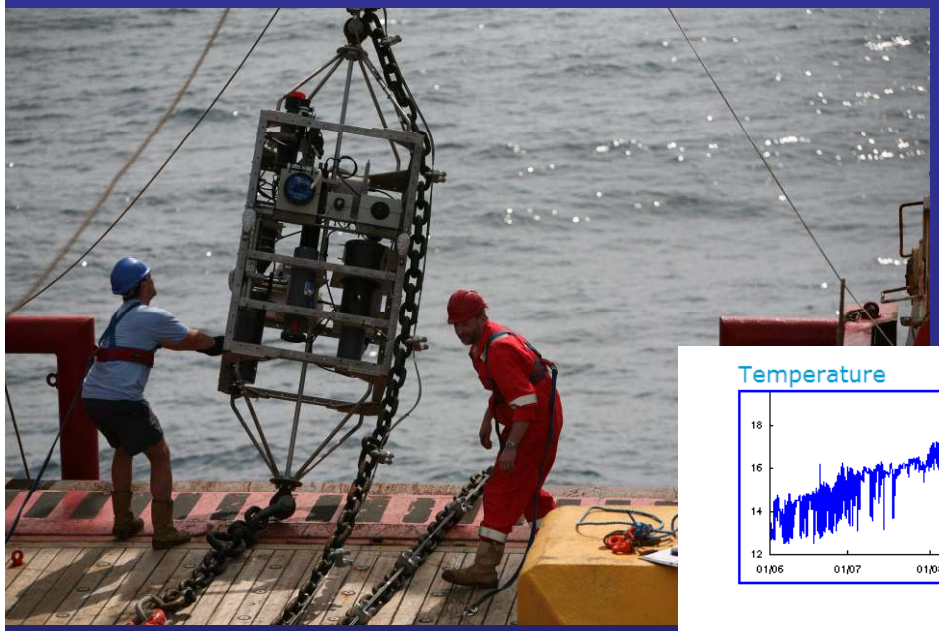
Current



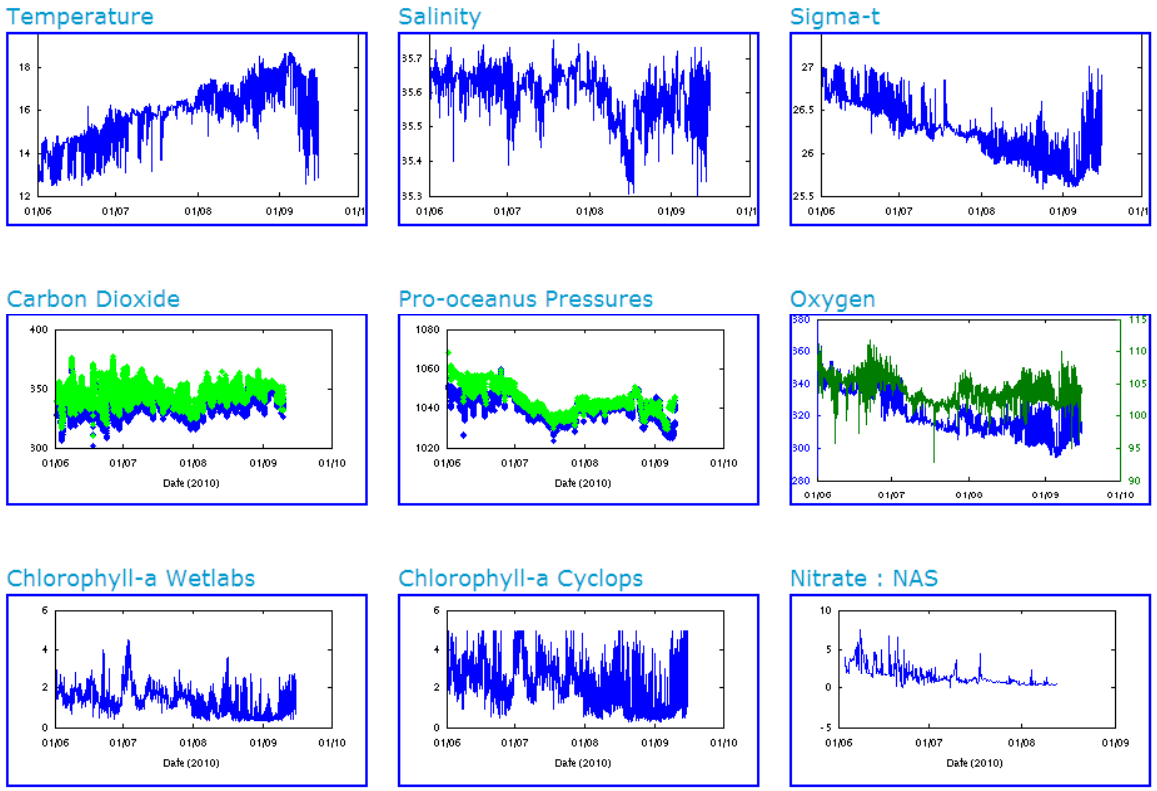
Current



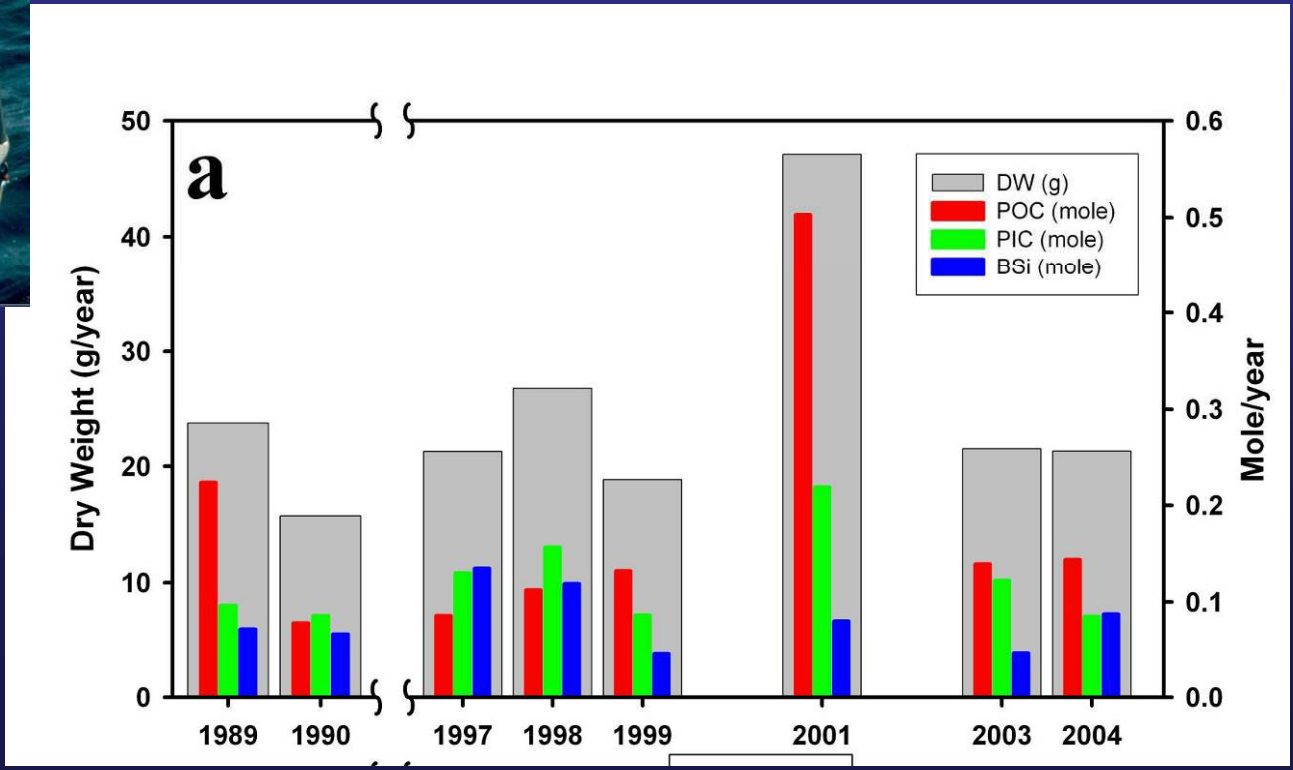
Upper Ocean biogeochemistry



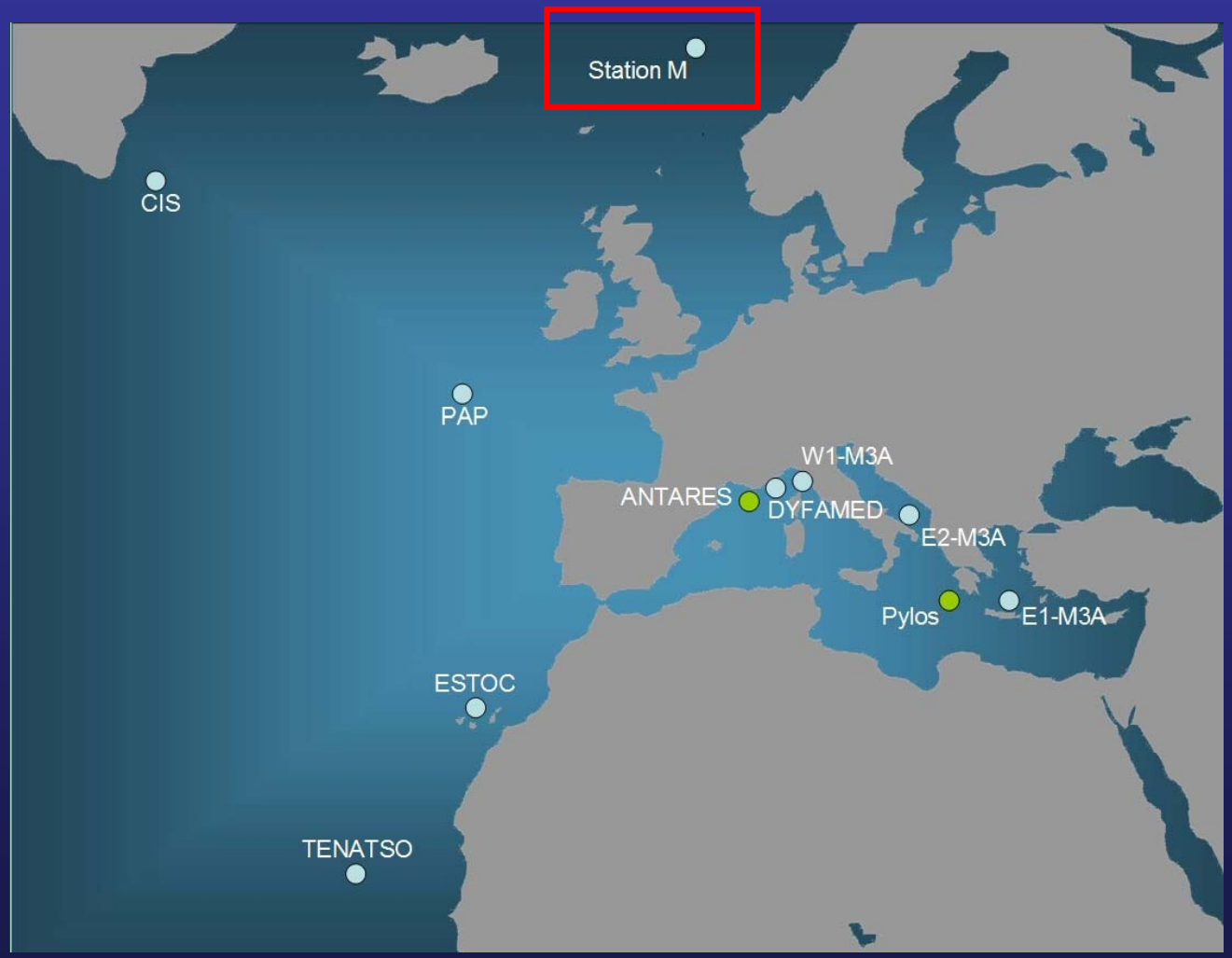
Wednesday 15th September 2010 1945h UTC



Downward particle flux at 3000m depth

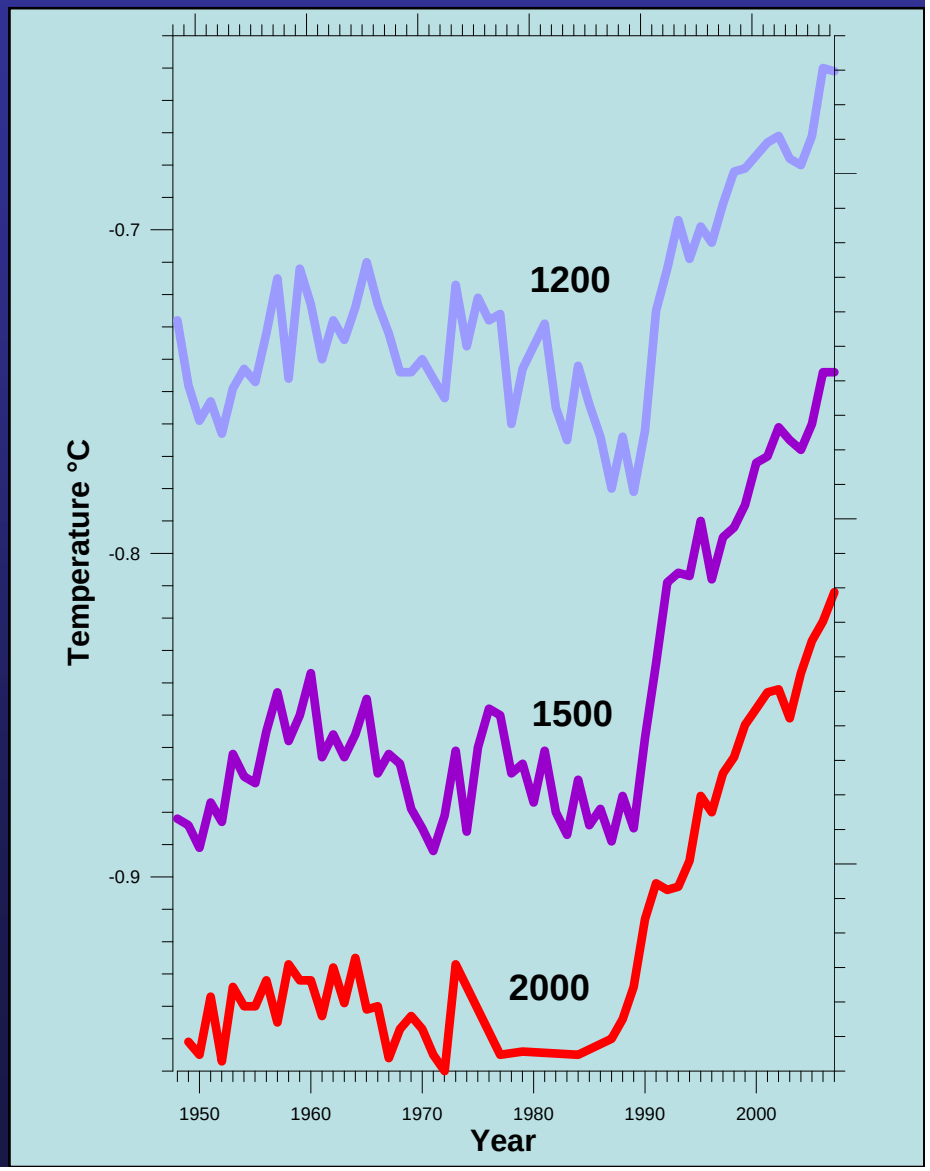


Station M, Norwegian Sea



Station Mike

Dramatic deep water temperature increase



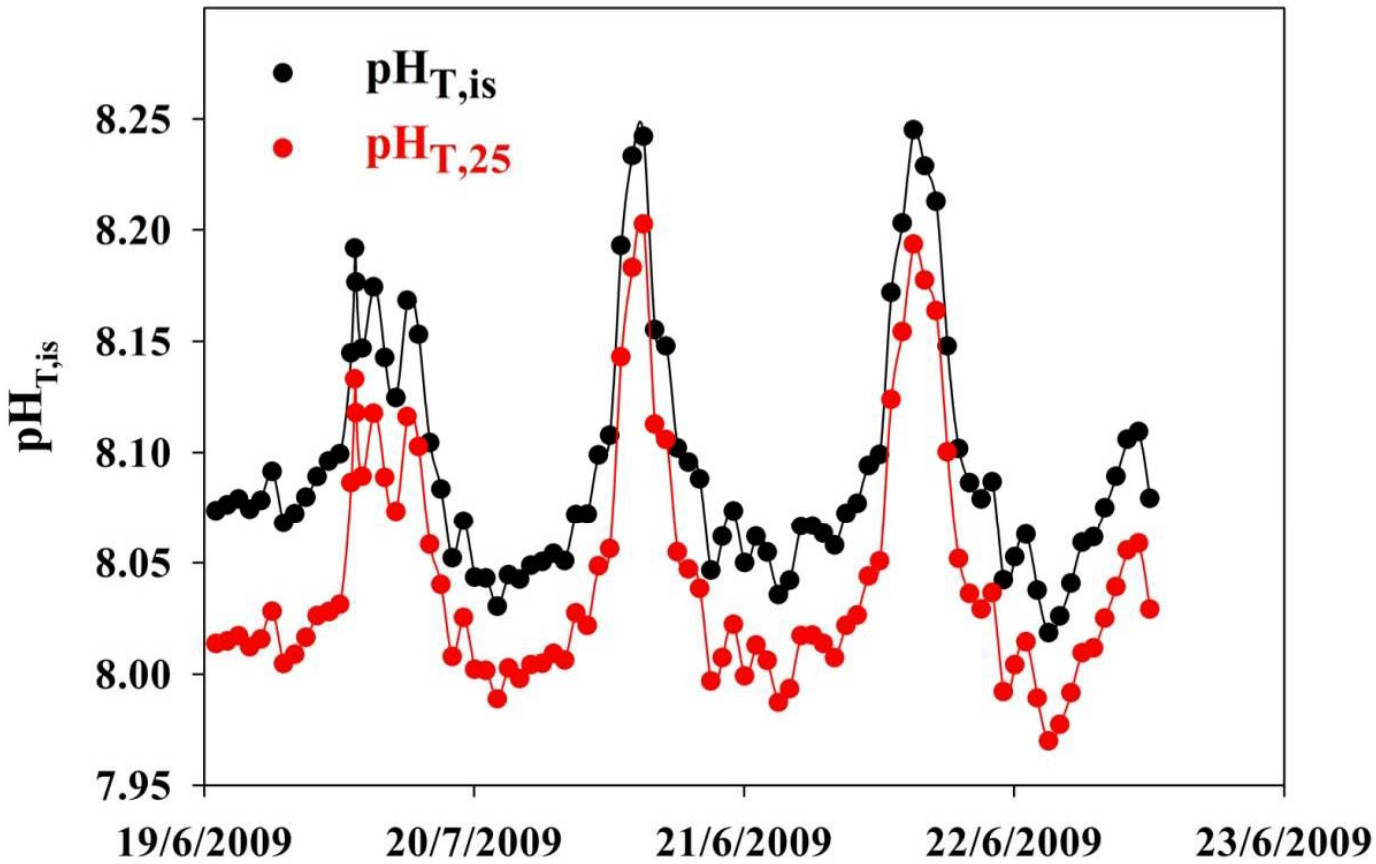
ESTOC


Station M
CIS
PAP
W1-M3A
ANTARES
DYFAMED
E2-M3A
Pylos
E1-M3A
ESTOC
TENATSO

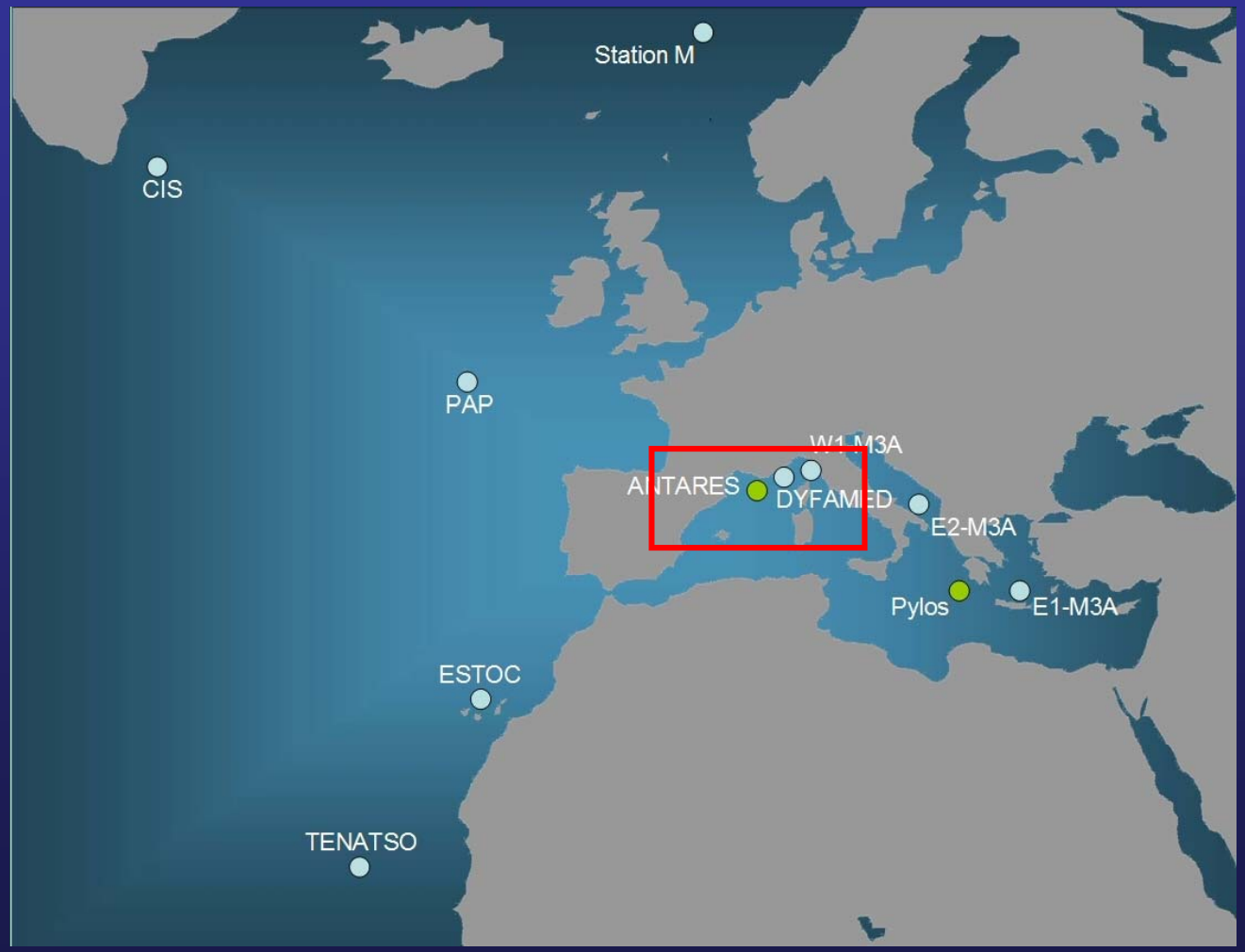
Ocean acidification

-autonomous pH time-series sensor

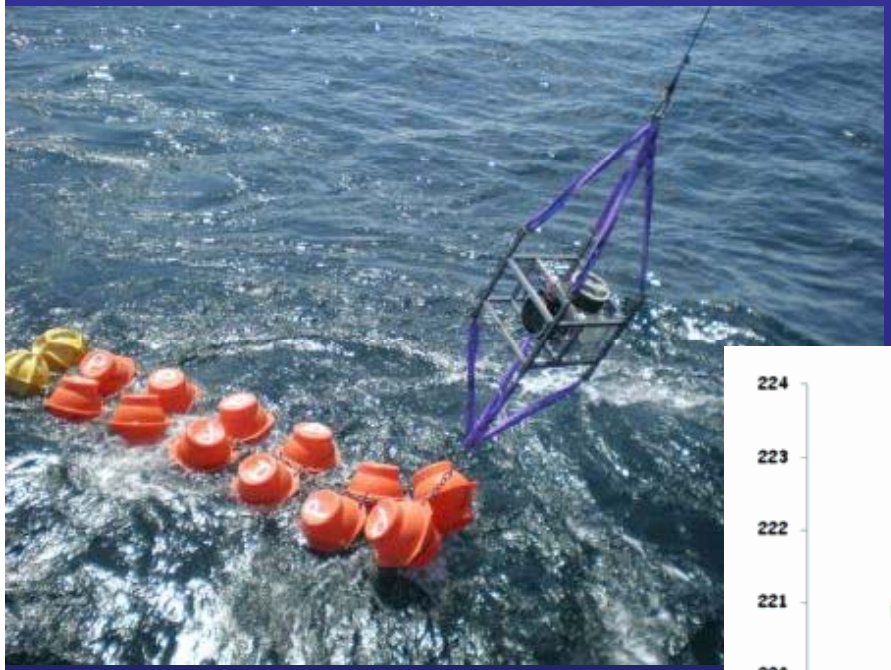
- Links with EPOCA and CARBOOCEAN

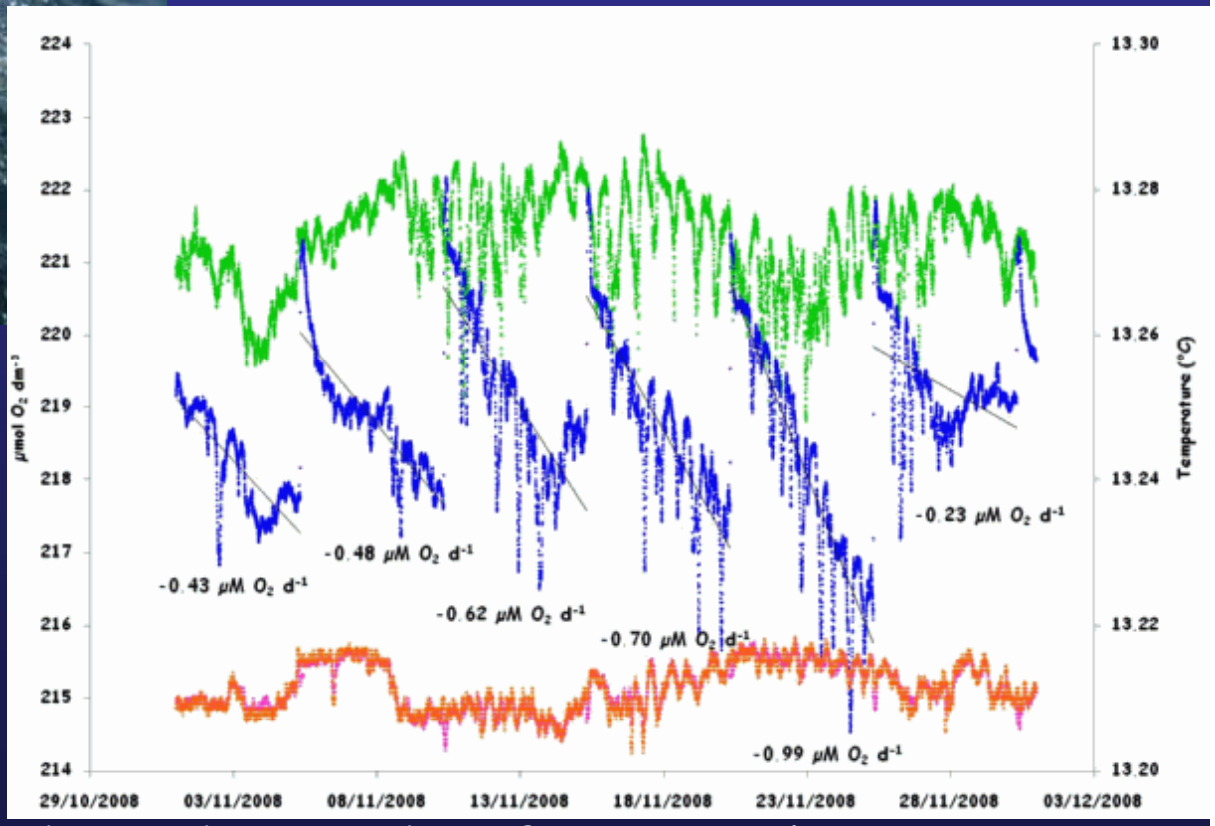


Western Mediterranean



Deep ocean oxygen consumption
- *in situ* measurement





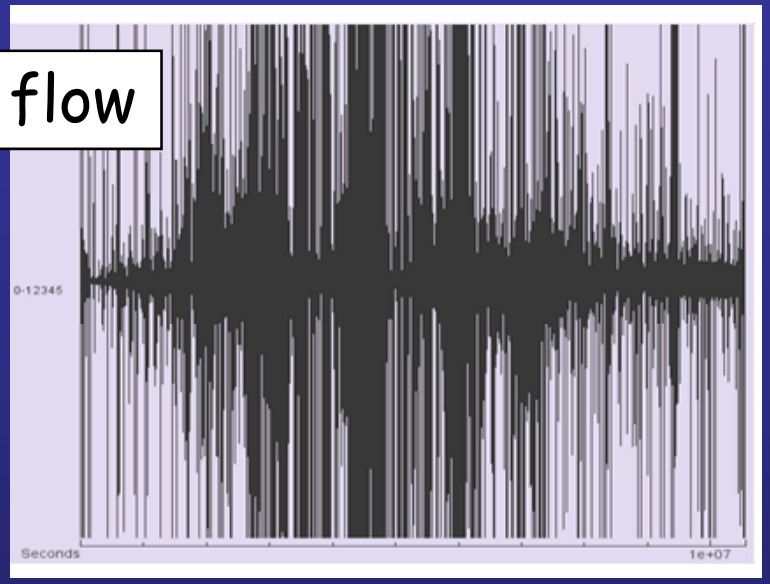
O_2 concentration inside and outside of IODA chamber

Eastern Mediterranean

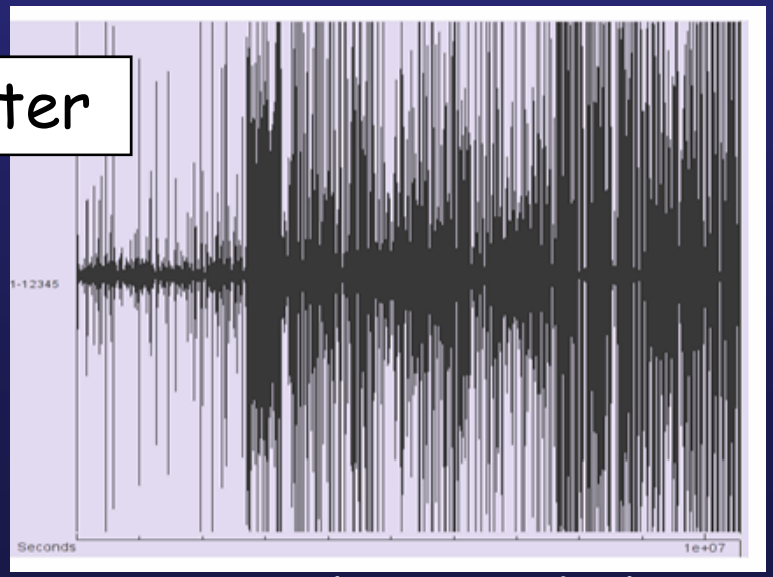
Earthquake and subsurface fluid migration

-ESONET-EMSO: Eastern Mediterranean node

Pore water flow

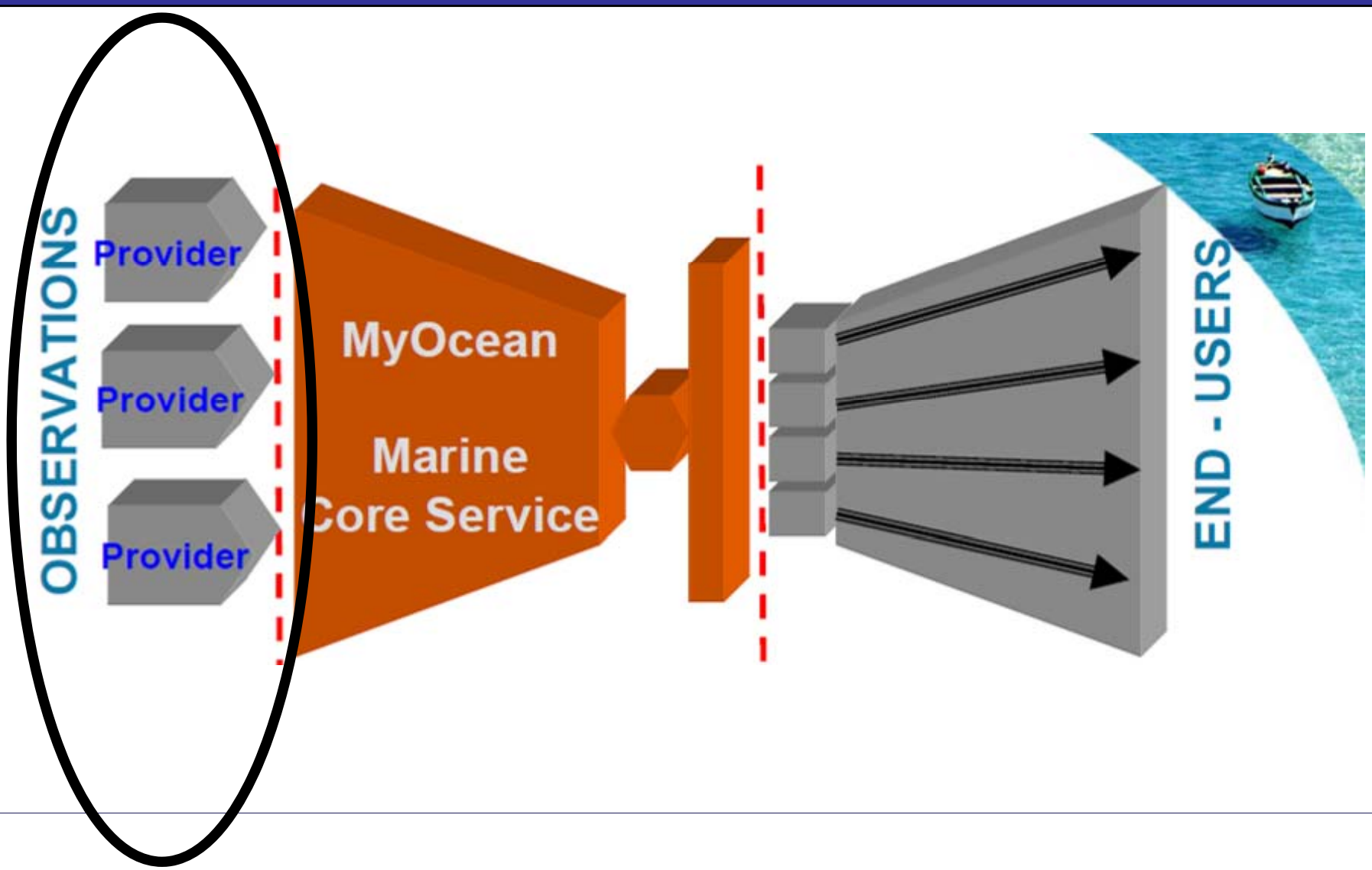


seismometer

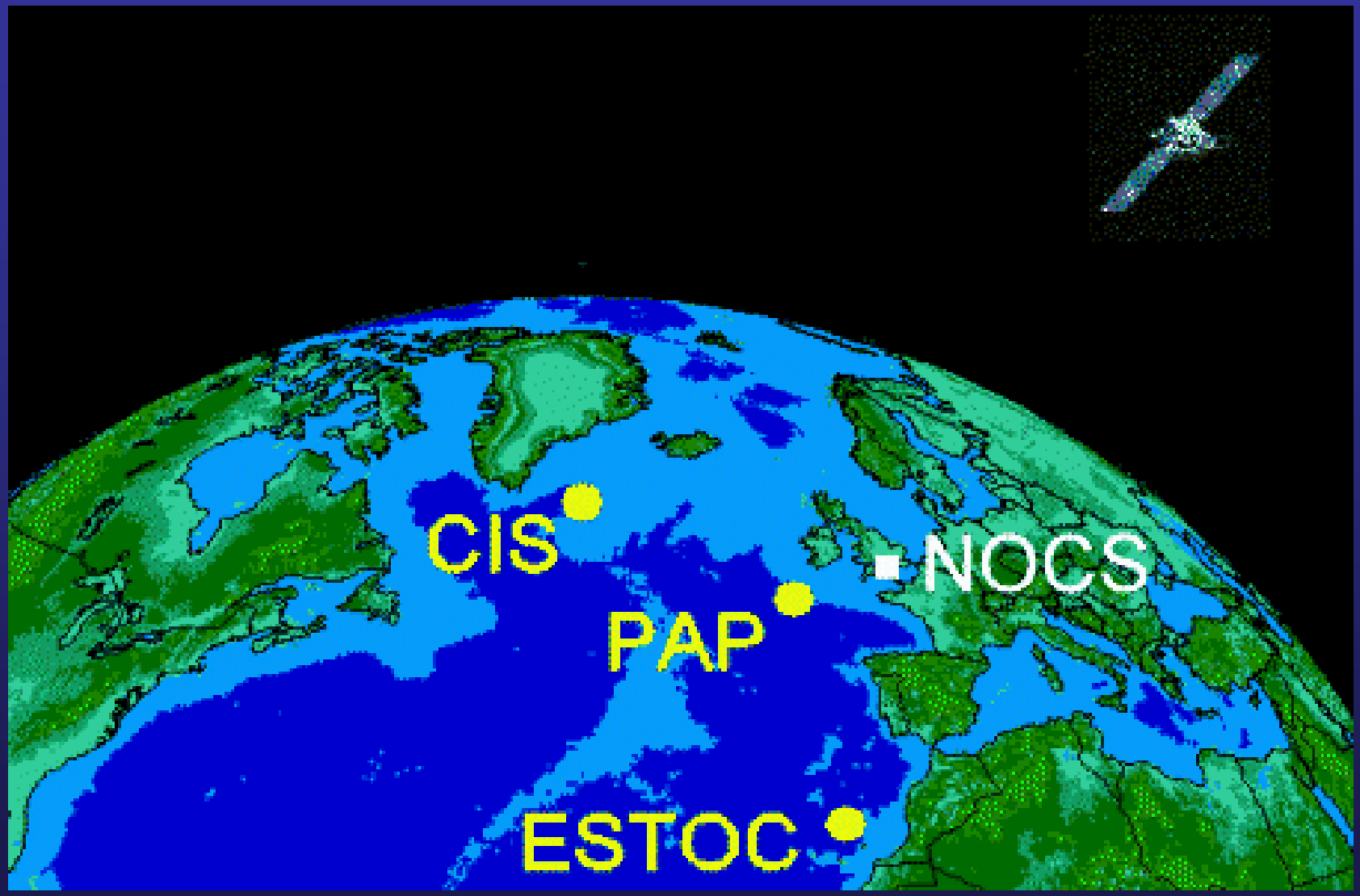


Time (4 months)

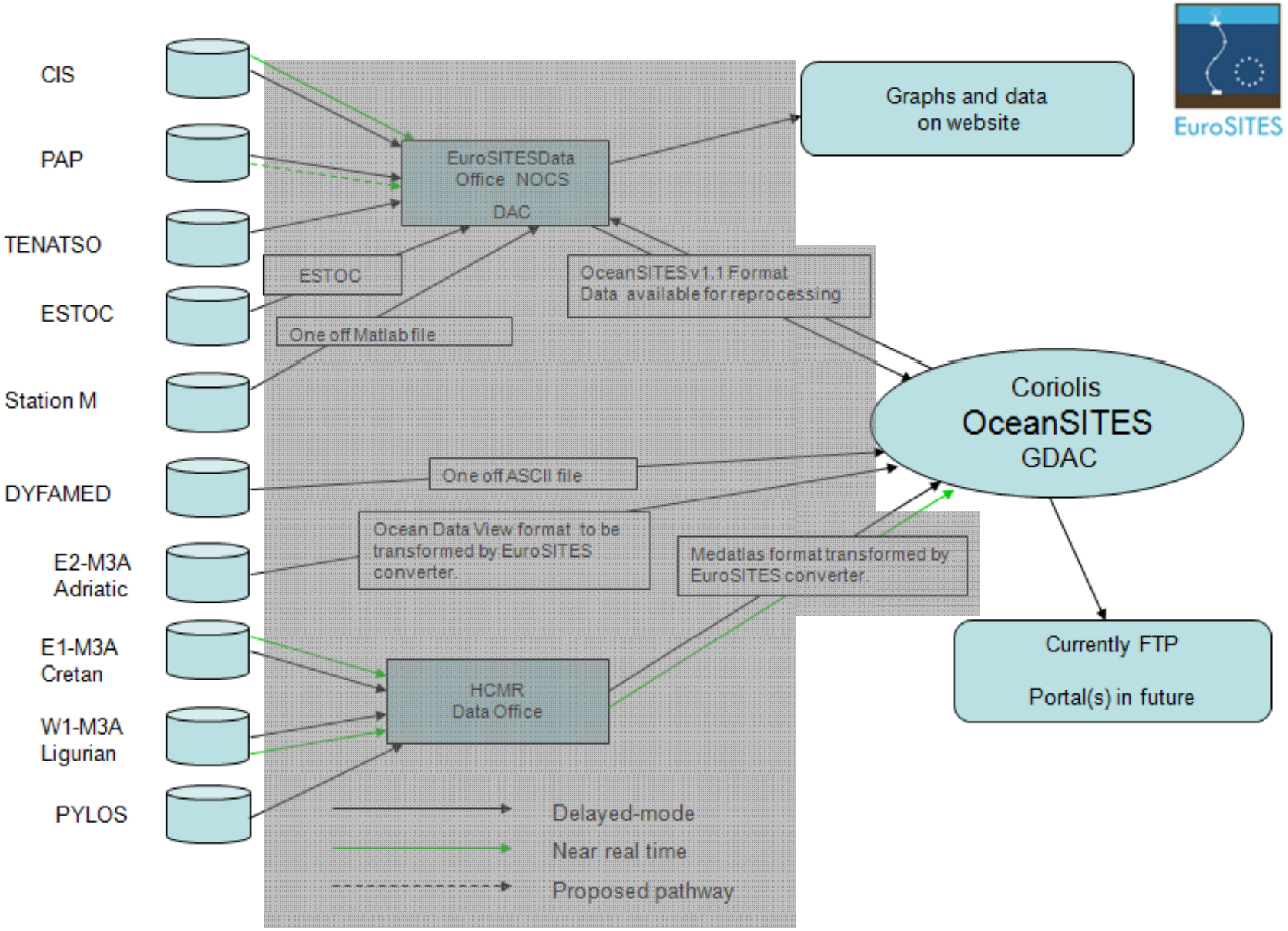
1. Introduction to EuroSITES
2. What is the current status (data collection)?
3. What is the current status (data management)?
4. How are the data being used?
5. What are the demands for the future?



The vision of MyOcean



Real-time and delayed-mode



Data Processing

Data:

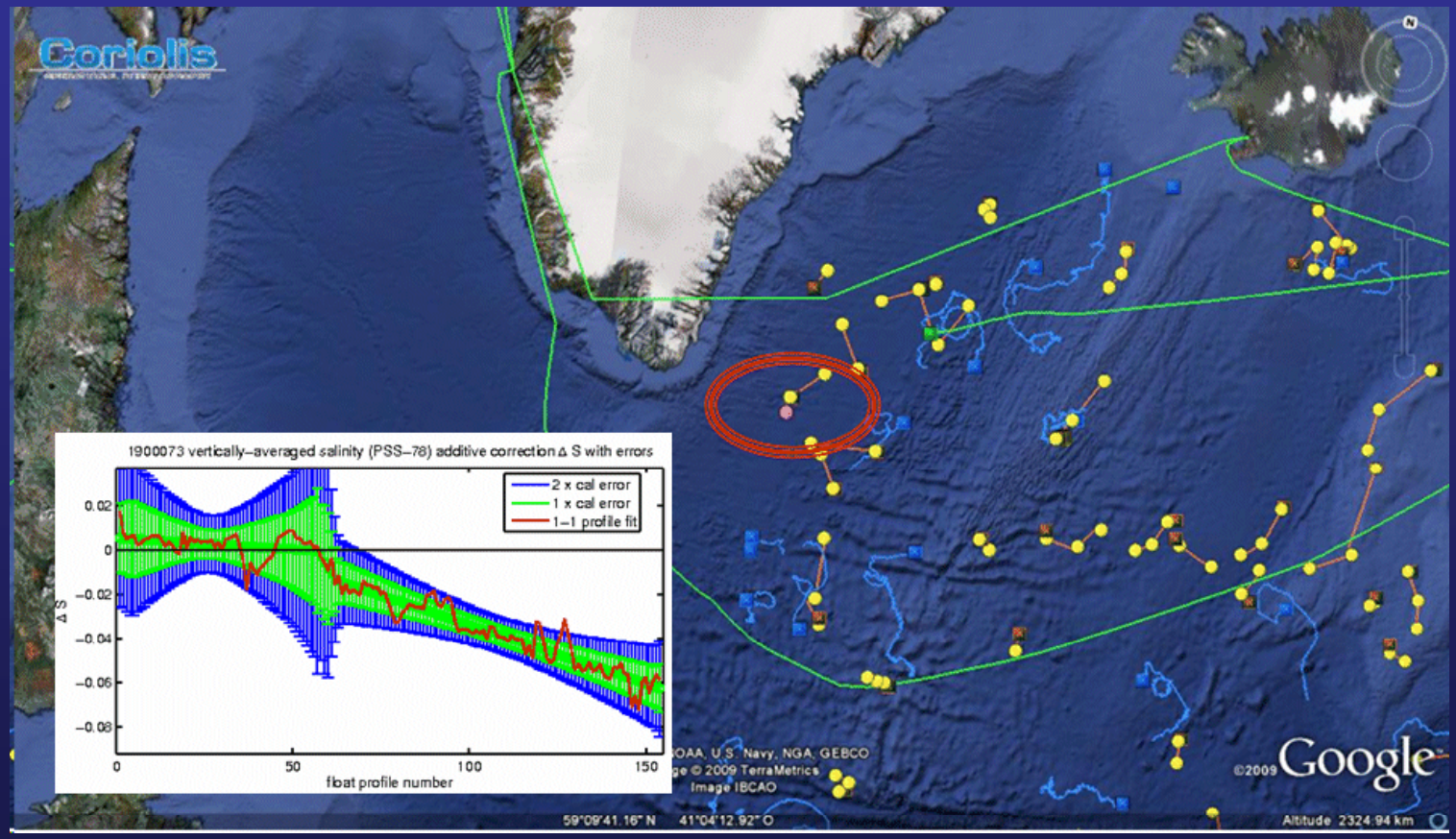
- freely available to all immediately after collection and QC (Website, ftp & GTS)
- Associated metadata
- Using internationally agreed protocols and formats

1. Introduction to EuroSITES
2. What is the current status (data collection)?
3. What is the current status (data management)?
4. How are the data being used?
5. What are the demands for the future?

EuroSITES: essential reference stations

Calibration for Euro-Argo http://www.euro-argo.eu/

e.g. salinity: CIS as a reference station



CLIVAR connection through CCHDO

-CTD time-series: contribution to deep water reference station datasets

EuroSITES is registered to sub-task AR-09-03c
'Global Ocean Observing System'
(led by GOOS, POGO, IEEE)

Data provider to MyOcean

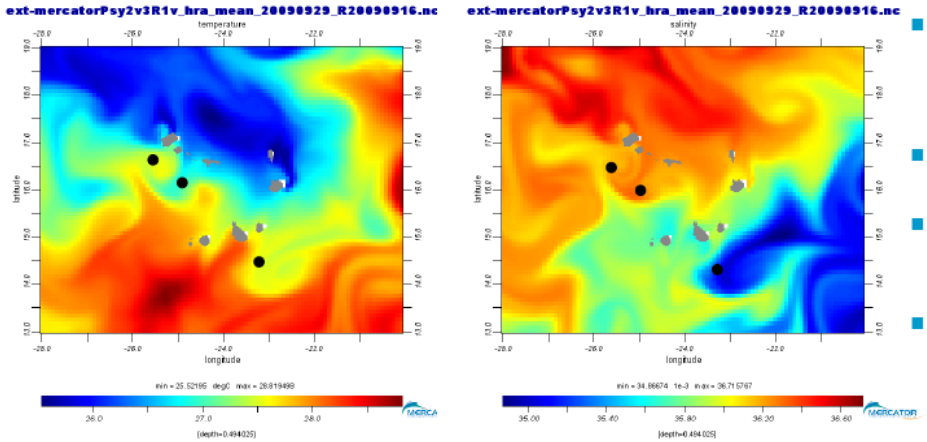
e.g. Marine Resources. Cape Verde physical variables

http://www.oceanobs09.net/plenary/files/Bahurel_CoreServices_5Aa_vfinal.pdf

Cape Verde

Fishery management

Marine Core Service



- Temperature (left) and Salinity(right) fronts
- 16-21 Septembre 2009
- Based on Mercator Ocean outputs
- Impacts on traditional **Fisheries areas (black dots)**

- Ocean circulation model for the Cape Verde islands area
- Better understanding of Larvae drift trajectories
- Evolution towards an Information Centre to support local and sustainable fisheries

courtesy:
Anibal Medina
(Fisheries Nat.Inst, Cape Verde)

Slide from Pierre Bahurel:

Venice 25/9/09

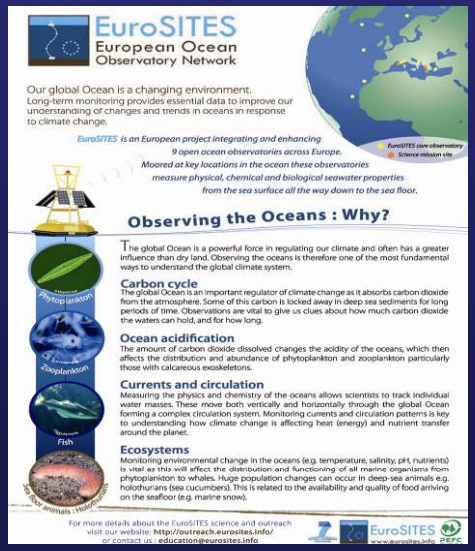
Connection to modelling initiatives and communities such as met offices.

EuroSITES dissemination:

Outreach and Knowledge Transfer

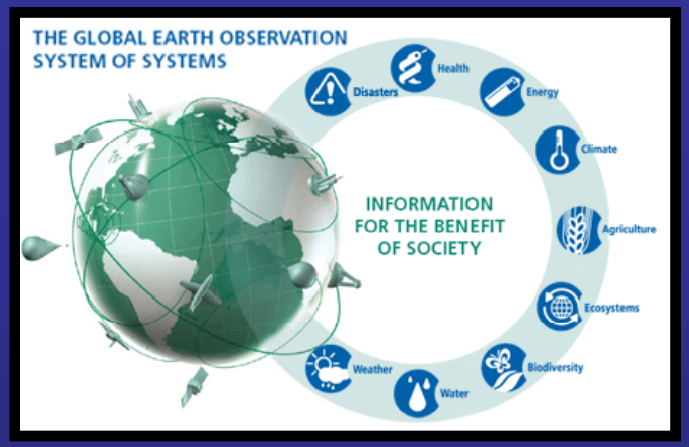
- Website
- Fact Sheets
- On-line Cruise diaries
- Film

www.outreach.eurosites.info



1. Introduction to EuroSITES
2. What is the current status (data collection)?
3. What is the current status (data management)?
4. How are the data being used?
5. What are the demands for the future?

Global Ocean Observing System



SeaDataNet

EMODNET
The European Marine Observation and Data Network

INSPIRE - Infrastructure for Spatial Information in Europe

Global Monitoring for Environment and Security

myOcean

European Environment Agency

European Environment Agency

GMES In-Situ Coordination

http://gisc.ew.eea.europa.eu/

Objective of GISC:

To stimulate open access to in-situ data for operational GMES.

Principle activities:

- Engage networks and stakeholders
- Evaluate in-situ requirements
- Determine approaches to sustainable solutions
- Undertake case studies and quick-wins

Dual function of funding:

1: **Observatory support**

- Staff
- Equipment

2: **Glue**

- Efficiency of operation
- Enhanced national funding
- Outreach & knowledge transfer
- Effectiveness

EuroSITES ends in March 2011

The Future

EMODNET
The European Marine Observation and Data Network

Urgent requirement to develop a coordinated and sustained network from the lower atmosphere to the seafloor.

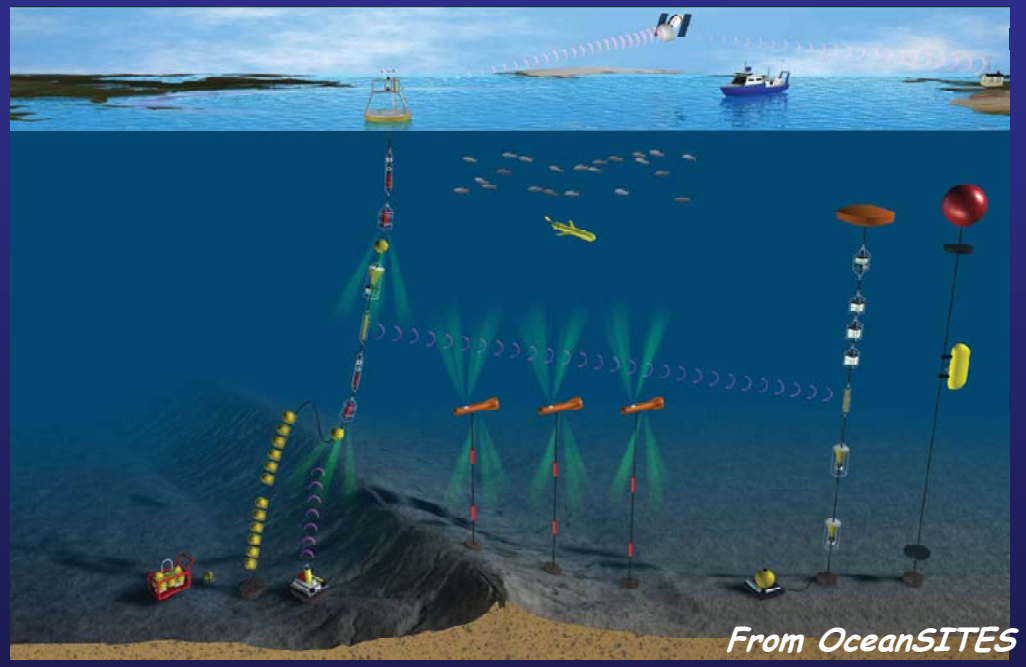
The "Sustained Open Ocean Frontier Initiative"

Requirement to expand the EMSO PP in order to develop an integrated lower atmosphere, water column and seafloor observatory ESFRI proposal.

Thank you

Coordinator: Richard Lampitt: rsl@noc.soton.ac.uk
Project manager: Kate Larkin: kel1@noc.soton.ac.uk

EuroSITES
www.eurosites.info



www.eurosites.info