



Euro-Argo status

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and Euro-Argo partners

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Euro-Argo: A new European Research Infrastructure



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Outline

- Euro-Argo and its preparatory phase project
- The future long-term organisation of Euro-Argo
- Euro-Argo float deployment plans
- Euro-Argo views on the long-term evolution of Argo



Euro Argo Preparatory Phase (January 2008- December 2010)

FP7 project. New European research infrastructure
(ESFRI roadmap)



Objectives :

- Undertake the work needed to ensure that Europe will be able to:
 - Deploy, maintain and operate an array of 800 floats. This will require Europe to deploy 250 floats per annum worldwide.
 - Provide a world-class service to the research (climate) and operational oceanography (GMES Marine Core Service) communities.

Main expected outcomes :

- Agreement for long term (10-20 years) operation of Euro-Argo (financial, governance, organisation, technical). Member States and GMES.

[see http://www.euro-argo.eu/](http://www.euro-argo.eu/)



Euro-Argo : A new European research infrastructure

European contribution to a global ocean observatory

- A significant component of the global Argo array of 3.000 floats in operations
- Requires strong international and European cooperation
- Proposal : Europe establishes an infrastructure for $\frac{1}{4}$ of the global array
 - o Requirement (as of today) : 250 floats per year including regional enhancements (Nordic seas, Mediterranean&Black seas) (about 50 floats per year for regional enhancements)

Dual use : research and operational oceanography (GMES)



Euro Argo Preparatory Phase partnership

12 countries, 15 partners

- France: IFREMER (representing the multi-agency Coriolis project) + SHOM
- Germany: BSH + Konsortium Deutsche Meeresforschung (KDM)
- UK: Met Office and NERC.
- Netherlands: KNMI
- Spain: IEO
- Italy: OGS
- Ireland: Marine Institute
- Norway: IMR
- Portugal: FCCUL
- Greece: HCMR
- Bulgaria: USOF
- Poland: IOPAS



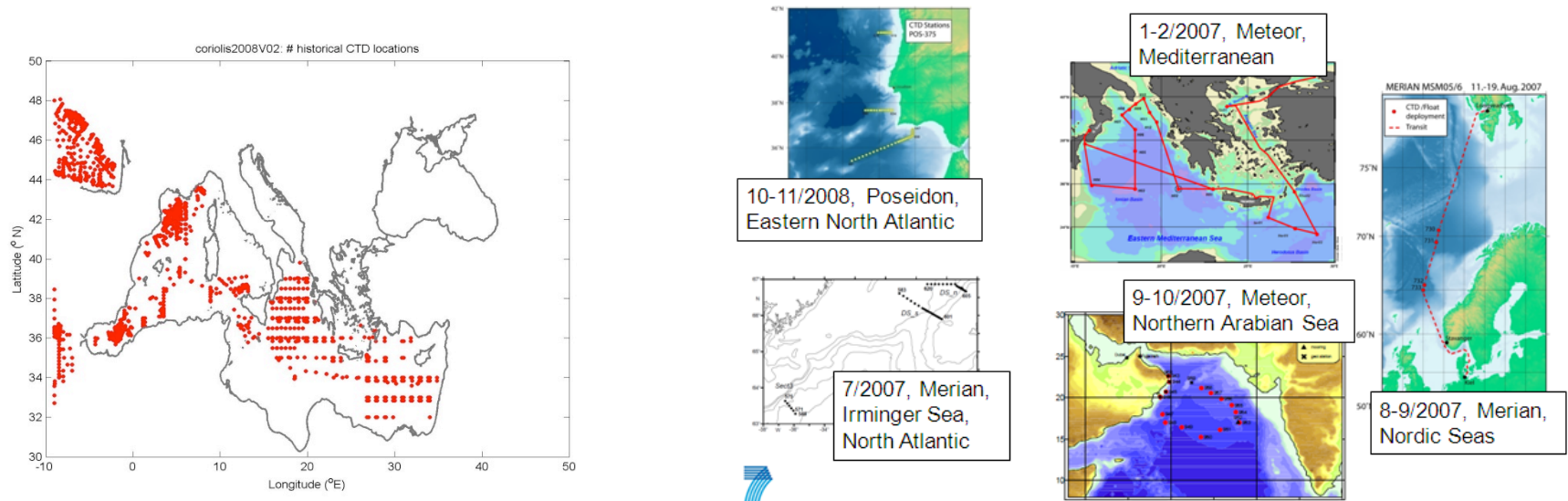
Euro-Argo PP progress (see www.euro-argo.eu)

- Develop/consolidate long term national plans for Euro-Argo and attract new countries.
- Links with GMES Marine Core Service - MyOcean project.
- Work on the development of a long term EC funding through GMES and DG Research.
- Several reports on infrastructure description, costs, float technology, deployment issues, data processing issues and improvements, impact of Argo data.
- Technical developments and improvements of the Argo data system.
- Float technology tests : Arvor-Iridium, Argos3, Sea Ice and O2 sensors
- Strengthening the user community in Europe (user meetings)
- Education and capacity building (educational WWW site, training)
- Definition and agreement on the future governance and legal structure



Data Management activities within Euro-Argo

- Argo regional activities: Mainly In Med Sea and Nordic seas with North Atlantic ARC: Enhancing CTD Data Base and DMQC of orphan floats

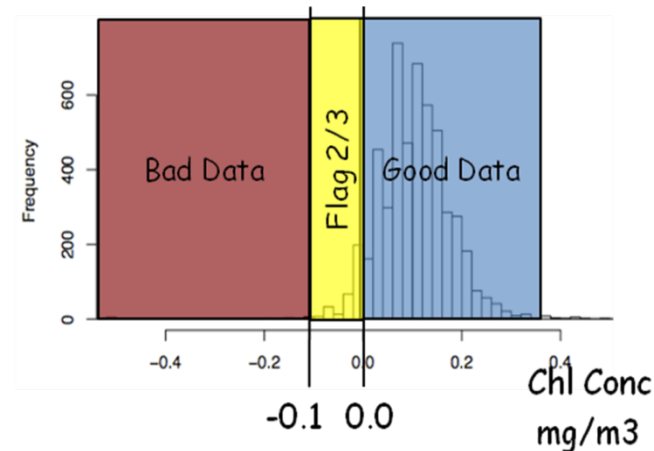
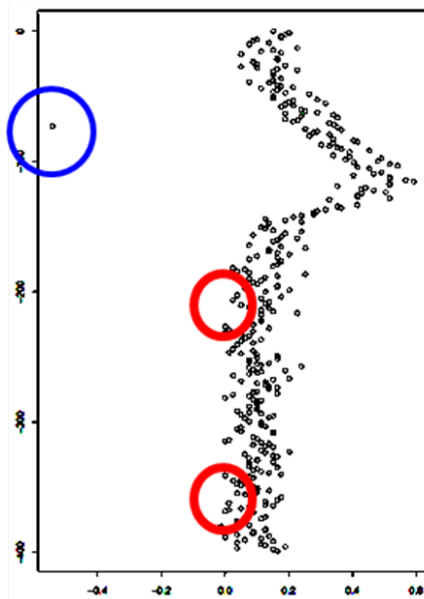


- News tools to monitor the array performance (now tested on Provor fleet) and for deployment planning (Matlab tool that takes into account float distribution, age, ocean variability and bathymetry and allow us to test the impact of planned deployments...)



Data Management activities within Euro-Argo

- Real time QC on biogeochemical Data by adapting when necessary the T:1 RT test

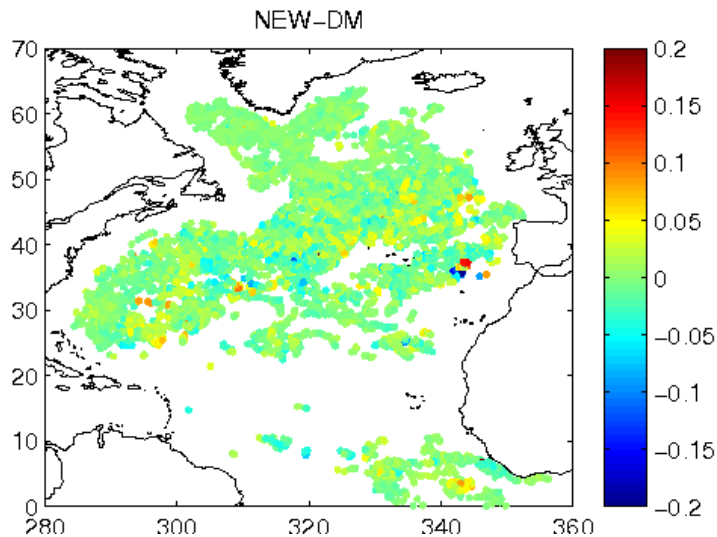


The Global range test for Chl profile. As Chl data can be slightly negative automatic test should only flag as bad the point circle in blue in left figure and not the red ones. The proposed test considers that measurement less than 0.1mg/m3 are bad, and data between 0.1 and 0 should be handle with caution



Data Management activities within Euro-Argo

- Improving consistency of the dataset
 - detect sensor drift not detected by real-time automated procedures, with a delay shorter than the delay mode processing. Systematic comparison with



The method allows detection of some suspicious DM profiles. Some are Gyroscope floats that have been reprocessed by Coriolis

- Use GODAE-QC database to analyze feedback from model and detect outliers in Argo dataset



Sampling strategy for the Mediterranean Sea, the Black Sea and Nordic seas (Poulain et al., 2009 - Quadfasel, 2010)

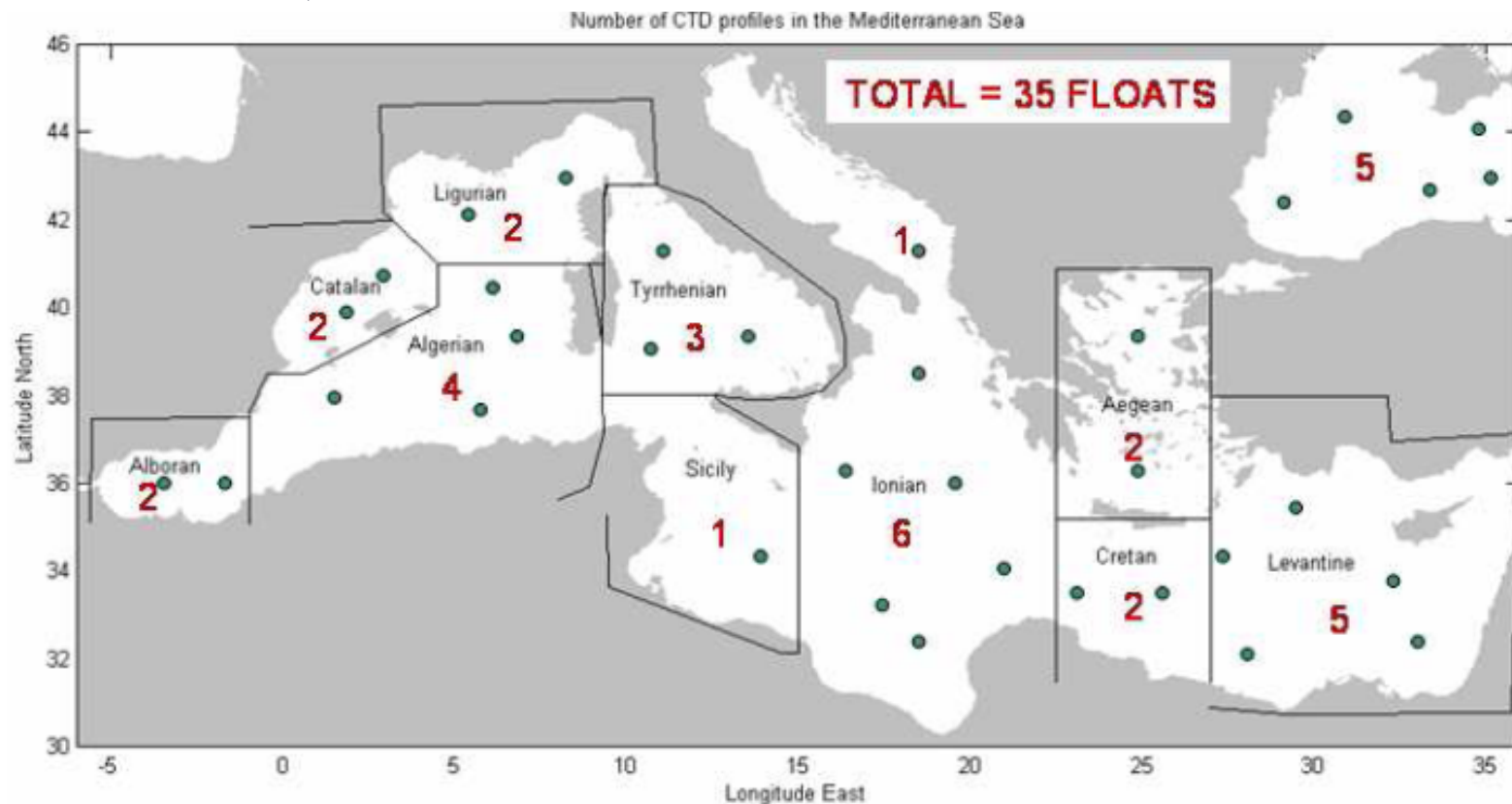
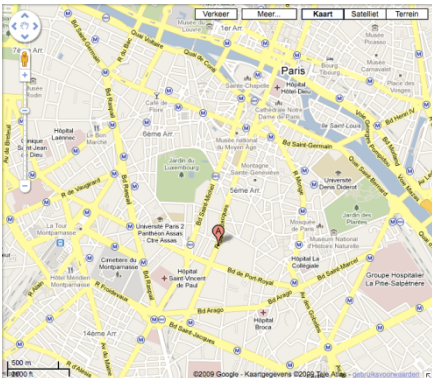


Figure 23. Proposed minimum distribution of the float array in the Mediterranean and Black Seas for the continuation of the Argo project. Numbers indicate the quantity of proposed floats in the sub-basins.



Euro-Argo user workshops

- Southampton NOCS 26-26 June 2008
63 attendees – 9 countries
(Bulgaria, Faroe Islands, France, Germany, Greece, Ireland, Italy, Poland, UK)
- Trieste OGS – 15-16 June 2009
(+ Training day)
50 attendees – 11 countries
(Bulgaria, France, Germany, Greece, Italy, Norway, Poland, Slovenia, Portugal, UK)
- Paris, Institut Océanographique
- 17-18 June 2010





Euro-Argo Capacity building & training

➤ Mediterranean Sea

Euro-Argo is continuously encouraging participation of several Eastern Mediterranean countries, such as Cyprus and Israel. Two Argo floats were deployed from sailing boat Tara in the Eastern Mediterranean in December 2009 with the help of oceanographers from Cyprus. Cyprus has expressed interest to join Euro-Argo.

➤ Black Sea

A Euro-Argo Black Sea meeting was organized in Varna (Bulgaria) on 7-8 December 2009, including a full day of talks and discussions and a day onboard R/V Akademik to deploy the first Euro-Argo float in the southwestern Black Sea.

Representatives from Turkey, Bulgaria, Romania, Ukraine, Russia, the Black Sea Commission, took part in these activities. The Bulgaria ministry of science was represented.

Bulgaria has started a BulArgo program and is willing to become a full member of the future Euro-Argo ERIC with a long term commitment for 3 floats/year.



Euro-Argo WP6 : Capacity building & training

➤ Black Sea Deployment of a Provor float (Kaliakra) on 8 Dec 2009

Новините за деня

- България
- По Света
- Политика
- Култура
- Полиция
- Институции
- Икономика
- Общество
- Поискайте от кмета
- Денят започва**
- В кадър
- Българската Коледа
- Големият избор

09.12.2009 / 10:50

Агробуят ще помогне да се наблюдават процесите в океана и моретата, които заобикалят Европа

00:04:20 / 00:09:14

Екологичната катастрофа, която вещае промяната на климата и глобалното затопляне, вече е един от основните приоритети на Европейския съюз. Затова бе създадена и програмата ЕВРО-АРГО. С нея се наблюдават процесите в океана и моретата, които заобикалят Европа. Вчера в Черно море слусна първия такъв

Поискайте от кмета!

**Поставете
Вашите въпроси тук!**

Още от Денят започва

- ▶ Министър Нанев посети болницата в Ардино
- ▶ Кой трови Стара Загора с азотен диоксид
- ▶ Трайчо Трайков за европейския интерес за инвестиции у нас
- ▶ По-силно ли ще стане правителството след промените в екипа
- ▶ Блокадата на границата с Гърция
- ▶ Славчо Велков: Талибаните са обречени на успех

Educational WWW site

Site map

Teachers

Explore the Ocean with Argo





Euro-Argo float deployment plans



Deployed European floats

	2002	2003	2004	2005	2006	2007	2008	2009	2010
France	7	34	85	90	65	32	85	34	95
UK	38	38	47	28	26	33	29	20	40
Germany	14	25	45	75	35	35	66	33	72
Ireland		2					4	4	
Norway	3	6			2				4
Netherlands			3	4	4	4	5	4	8
Spain		7	2	4	1				28
Italy									2
Greece									1
Portugal									
Poland								2	2
Bulgaria									2
Finland									1
Europe (EC)	70	4	15	7	3	8			
TOTAL	132	116	197	208	136	112	189	97	255



	2011-2013 Total	2011-2013 Global - Core	2011-2013 Regional	2013-2020 Total	2013-2020 Global - Core	2013-2020 Regional
France*	65	65		65	65	
UK	40	40		40	40	
Germany	70	50	20	70	50	20
Ireland				0		
Norway	8	8		8	8	
Netherlands	8	8		8	8	
Spain	10	5	5	10	5	5
Italy	10	5	5	10	5	5
Greece	5		5	5		5
Portugal						
Poland	2	2		2	2	
Bulgaria	3		3	3		3
Finland						
Europe (EC)				100	75	25
TOTAL - (almost) Firm	198	170	28	158	130	28
TOTAL - Maximum	221	183	38	321	258	63

* + 50 floats from research proposal / Bio-Argo (H. Claustre)



Euro-Argo long-term organization



Purpose of Euro-Argo long-term infrastructure

- ☐ Manage and supervise operation of the Research Infrastructure (RI),
- ☐ Organize float procurement,
- ☐ Coordinate float deployments in the world ocean,
- ☐ Monitor array performance and operations,
- ☐ Decide on evolutions (array design, technology, data systems),
- ☐ Facilitate access to users, develop new data sets and products
- ☐ Conduct R&D activities at European level
- ☐ Interfaces with users and user requirements (research, GMES)
- ☐ Link with, and integrate into, international structure.



Organisation of the Euro-Argo RI

The RI will comprise :

- ☐ A central facility (Central RI)
- ☐ Distributed national facilities (as of today but with coordination via the C-RI)
- ☐ Floats will be procured through the C-RI and through national facilities

The Central RI will be a European legal entity (Euro-Argo ERIC)

Plays the coordination role and participates actively in the programme :

- ✓ Float procurement, deployments, array monitoring
- ✓ Expertise on all aspects of the programme

It hosts the :

- ✓ Programme Manager
- ✓ the RI Office
- ✓ Logistics coordinator and facilities : technical support, storage, testing, shipping, etc
- ✓ 2 people from 2011 – 4 to 5 people from 2013.



Status

- Full members : Germany, UK, France, Italy, Netherlands, Bulgaria
- Observers : Spain, Greece, Ireland, Bulgaria, Poland, Portugal

Norway and Spain may become full members (decision in 2010)

- Contribution of different countries defined:
 - Float procurement (global, regional)
 - Deployment capabilities
 - Contribution to the data processing system :
 - GDAC, DAC, North Atlantic (incl. Med and Black Seas) and South Atlantic ARCs, delayed mode QC
 - Contribution to the international structure
- Hosting institution : proposal from France (Ifremer)



Main remaining milestones

- *Send an official application for the Euro-Argo ERIC (May 2010) (statutes, technical&scientific description, budget plans have been validated at institute level) => validation at ministerial and EC levels in 2010*
- *Setting up of the ERIC : early 2011*
- *European funding: several calls foreseen from 2011 to 2012. Will help us to consolidate the structure and international links (not for float procurement). Main long term GMES funding for floats (part of an operational funding line) is expected from 2013.*



Euro-Argo and the evolution of the Core Argo program

Strong requirement for marginal seas: Mediterranean sea, Black Sea and Nordic seas. Euro-Argo requirements have been defined. Implementation is on going.

Important research activities in high latitude regions (on going)

Strong interest (and good maturity) of the European research community and GMES (operational oceanography) for extension to biogeochemical variables : Oxygen, Chl-a. This needs to be organized at international level.

Improve resolution at the surface (SST, SSS) needed (on going) (minor issue)

Deeper measurements : needed - a longer term issue (technology evolution)

We now need to define and agree at international level on the extension of the Argo program. What is our target ? Euro-Argo \Leftrightarrow 25% of the global effort

Euro-Argo needs to answer requirements from the research and operational oceanography community in Europe. The extension of the Argo program will help us to ensure a long term sustainability.



Conclusion

Euro-Argo and the long term sustainability of Argo

The very objective of Euro-Argo PP is to ensure long term European contributions to Argo.

We are setting up a new European legal structure (intergovernmental) that provides strong visibility and will allow European countries to consolidate and improve their contribution to Argo international.

This will facilitate the access to long term European funding (GMES).



End



Extras



Funding issues

Euro-Argo refined estimation of costs/year

Category	Unit cost (k€)	Number	Cost (k€)
Float procurement			
Global (assumes standard Argo float)	14	200	2800
Regional (assumes enhanced floats)	17	50	850
Operations			
Telecommunications	0.4	800	320
Personnel () for management/coordination	100	5	500
Personnel () for technical/logistic support	100	6	600
Misc (e.g. freighting)	0.2	250	50
Equipment and consumables			50
Dedicated ship time			300
Data management			
Personnel ()	100	19	1900
Equipment, other			100
Euro-Argo central infrastructure (CI)			
Personnel () for management/coordination	100	2	200
Personnel () for technical/logistic support	100	3	300
Missions (users workshops, board, council), equipment, etc.			100
International infrastructure support			
Support to Argo Information Centre			40
Support for Argo Project Office/Director			30
Total			8140

****Includes extra staff for processing, operation and coordination***



Funding issues

Estimation of Euro Argo cost is about 8.2 Meuros/year (250 floats+ 35 FTE/y). Based on planned Member States contributions (4-5 Meuros/year), a direct EC funding (through GMES) of about **3.3 Meuros/year focused on activities of European relevance** is needed.

Category	Member States	EC	TOTAL
Float procurement			
Global	1400	1400	2800
Regional	850		850
Operations			
Telecommunications	160	160	320
Personnel for management/coordination	500		500
Personnel for technical/logistic support	600		600
Misc (e.g. freighting)	50		50
Equipment and consumables	50		50
Dedicated ship time		300	300
Data management (part of GMES Marine Core Service)			
Personnel	950	950	1900
Equipment, other	50	50	100
Euro-Argo central infrastructure (CI)			
Personnel for management/coordination	200		200
Personnel for technical/logistic support		300	300
Missions (users workshops, board, council), equipment, etc	50	50	100
International infrastructure support			
Support to Argo Information Centre		40	40
Support for Argo Project Office/Director		30	30
Total without MCS	3850	2280	6140
Total with MCS	4860	3280	8140