**CONTEXT**

**MOCCA** (2015-2020)
Monitoring the Oceans and Climate Change with Argo

**Euro-Argo**: a European Research Infrastructure

**Consortium for Observing the Oceans** (11 countries)

**Objectives of Euro-Argo in monitoring the oceans**:
- Deploy about 250 floats per year to contribute to the Argo core mission including regional enhancements and maintain an array of 1000 floats active at any time (1/4 of the global array)
- Prepare and contribute to the extensions of Argo (e.g. marginal seas, biogeochemistry, deep ocean, polar regions)
- Ensure that all data are processed and delivered to users in real time

**BUT**: European funds are needed to complement national funds

**3 EU projects are on-going**:
- DG Research H2020 AtlanOS and DG-MARE MOCCA
- European Council: (2015) for RETRO
- Directorate General of Maritime Affairs and Fisheries (DG MARE)

**MOCCA**

In 2015 the Executive Agency for Small and Medium-sized Enterprises (EASME) funded the MOCCA project (Grant Agreement EASME/EMFF/2015/1.2.1.1/SIE/00024) for 5 years. With 5 M€ (20% co-funded by Euro-Argo members) this allows Euro-Argo to buy 150 new T/S floats in 2016-2017, to ensure their deployments and to organise the real-time and delayed-mode processing of the data.

**MOCCA floats description**:
- 150 T/S Core Argo floats
- NKE Instrumentation ARVOR (130 iridium and 20 Argos) including 30 floats co-financed by partners (Germany, Italy, Netherlands, Poland)

**Current status**:
- All floats purchased and tested in Ifremer test tank
- 87 deployed in 2016-2017
- 63 to be deployed in 2017-2018
- RT processing started in 2016-2017 (Ifremer & BODC)
- DMQC processing will start in 2018

**NEW OBSERVING STRATEGIES**

MOCCA floats benefit from new technological functionalities such as iridium bi-directional satellite link and enhanced software that allows:
- Higher vertical sampling resolution (up to 1000 CTD points in one cast)
- Shorter surface time to transmit the data, reducing wind drift and risk of collision
- Reprogramming of float mission parameters while at sea, in order to change the float cycle behaviour or meet specific scientific interests

**Example of new Argo measuring strategies during RETRO**

**COORDINATION OF DEPLOYMENT PLAN**

**Elaboration of deployment is plan based on**:
- Recommendations from the “Strategy for evolution of Argo in Europe” document
- National plans / scientific campaigns
- Other international deployment plans
- Argo array density / age maps (JCOMMOPS)
- Cruises of opportunities from partners and others

**MOCCA** target deployment areas:
- Southern Ocean: low density in Argo network
- Marginal Seas enhancement (Nordic, Black, Baltic and Mediterranean Seas)
- Gaps in Argo array from target densities

**CONCLUSIONS**

- Euro-Argo is ready to manage the European contribution to Argo
- Within MOCCA the Euro-Argo ERIC demonstrates its operational capabilities
- The Euro-Argo ERIC will continue to work with EC to sustain such funding to complement the national contributions and allow the development of the extensions of Argo to BGC and deep ocean monitoring

**MONITORING THE EUROPEAN FLEET**

**Acceptance tests**

- MOCCA floats were tested in the Ifremer tank before their shipment to deployment locations. Main float components (satellite data transmission, hydraulic behaviour, intercomparison between CTD measurements) were checked and some problems were detected (e.g. Kistler pressure sensor, preventing faulty floats to be deployed).

**At-see monitoring tools**

- Ifremer is monitoring all the Argo floats within the Mediterranean Sea. Users and applications:
  - Ocean and climate research
  - Operational oceanography (Copernicus Marine Service)

**Users and applications**

- European Research Infrastructure

- Ensure that
- and DG MARE

- Recommendations from the
- 87 deployed in 2016
- 63 to be deployed in 2017
- Reprogramming of float mission parameters (up to 1000 CTD points in one cast!)
- New at-sea observing strategies including regional enhancements (Nordic, Black, Baltic and Mediterranean Seas)
- Gaps in Argo array from target densities

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