EuroGOOS
European Global Ocean Observing System

Gliders Task Team

Main achievements in the last years
Toward an EuroGOOS integrated strategy

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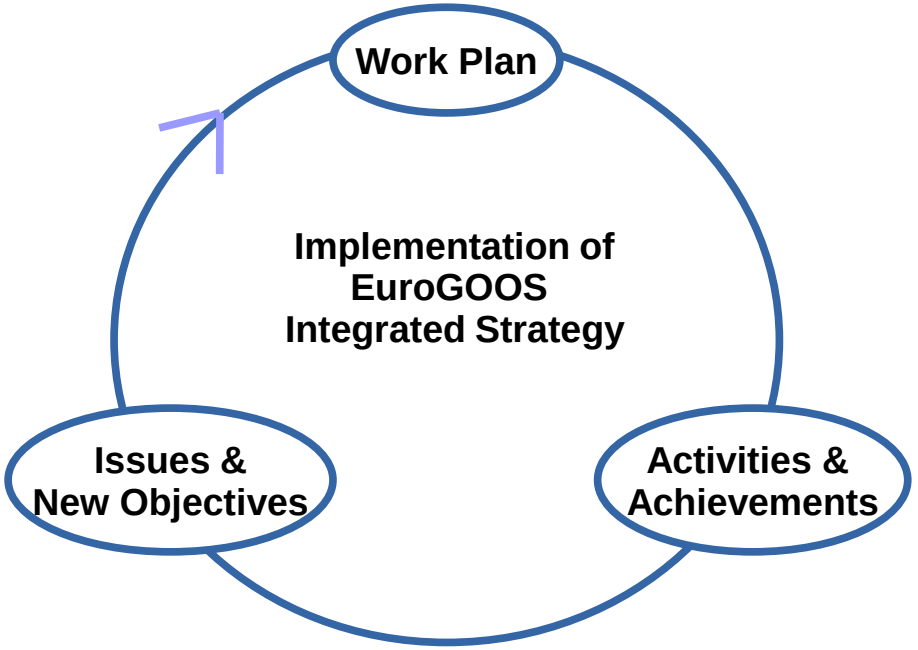
Main achievements in the last year and EuroGOOS integrated strategy

- End of the first cycle started 3 years ago
- On-going process to re-align the gliders TT activities with EuroGOOS needs.



Gliders technology and Infrastructures today

- **Present mature capabilities**

  - **200m - 1000m** ; Up to 1 year ; Maneuverable ; U ~ 25-40km/day ; a ‘dive’ in ~0.5-5h (= 1 or 2 ‘vertical’ profiles spaced by ~0.5-5km) → 300km in 10 days (~250-50 profiles)

  - **Physical, biogeochemical and … *biological sensors***

    EOVs : T, S, O2, fluo Chl-a, + average currents over the dives;

    Optical Backscatter, fluo CDOM, PAR, Nitrates, L-ADCP, ambient noise, …

  - Mature technology ; Versatile and reusable ; Widely used as research tools with other platforms

  - **Sustained glider observatories** (“Endurance lines”) established worldwide and growing

  - Several **national/regional Infrastructures/facilities** established (D, Fr, No, Sp, …)

- **Present less mature and future capabilities**

  - **down to 6000 m** ; 1 year ; 1 dive to 6000m per day

  - **Biological sensors** : (multispectral) echo-sounders, bio-imagery, ‘omics’

  - Uptake by water agencies (e.g. MSFD, MPA), industries (O&G, deep sea mining), Navies, …

  - **Specialized SMEs** for operation and services

  - Fast evolution toward **hybrid vehicles** (propelled, surface/diving)

  - Operations are similar to other long range AUVs / ASVs
    → Common infrastructures (e.g. MARS in the UK)

  - **European 6000m glider and new sensors**
    H2020 BRIDGES (prototype by end 2018)

The end of a cycle – The first EuroGOOS glider TT

- Officially created in March 2015 – Become fully operational by the end of 2015
  - Outcome of **GROOM** FP7 project (2011 - 2014) and of ESF Cost action **EGO** (2010-2014)

- Members :
  - Pierre Testor (CNRS, France)
  - Daniel Hayes (OC-UCY, Cyprus)
  - Johannes Karstensen (GEOMAR, Germany)
  - Simon Ruiz (IMEDEA, Spain)
  - Elena Mauri (OGS, Italy)
  - Peter Haugan (UiB, Norway)
  - Agnieszka Beszczynska-Moeller (MOPAN, Poland)
  - Mark Inall (SAMS, UK)
  - Victor Turpin (CNRS, France)

The end of a cycle - Achievements of the TT

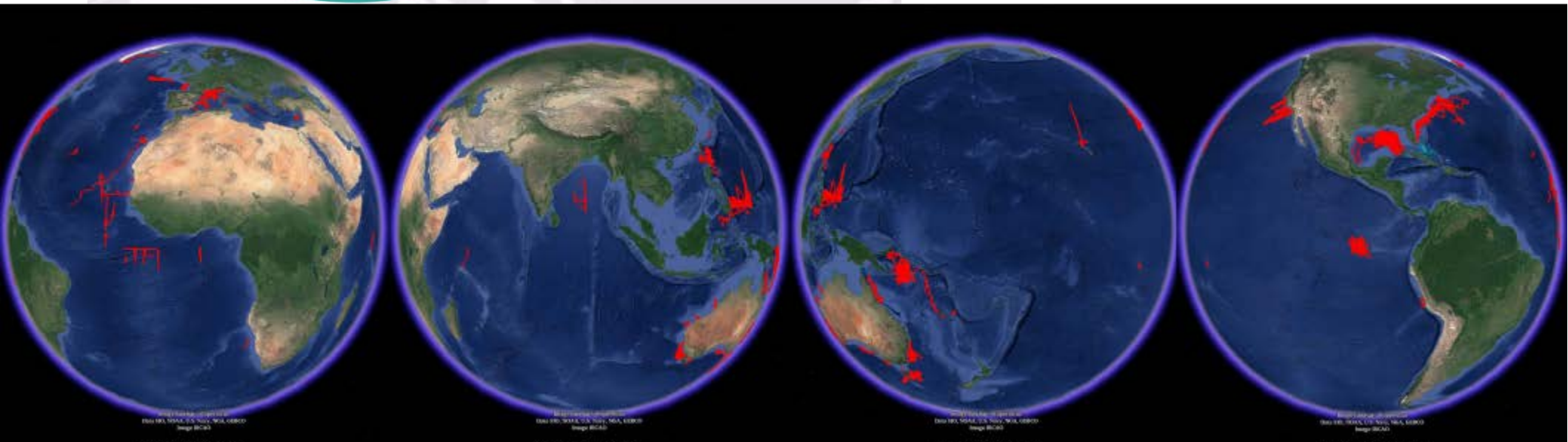
- **OceanGliders : Glider associated program of the GOOS**
  http://www.oceangliders.org/

Develop a global-scale program for ocean boundary currents - D. Rudnick

Develop a global-scale program for enhanced ocean observations to support forecasts of storms/hurricanes, air-sea interactions - S. Glenn

Develop a global-scale program for convective zones - P. Testor

Develop policies and procedures for the collection, processing and management of glider data - D. Hayes



The end of a cycle – Achievements of the TT

- **G7 Science and Technology Cooperation: The Future of the Ocean**

  ➔ Action 1 : Support the development of a global initiative for an enhanced, global, sustained sea and ocean observing system

  Experts recommend the development of a G7 strategy for extending observations focused on the following priorities:

  - Bio-Geochemical Argo (BGC-Argo)
  - Deep Argo
  - **Gliders in polar and boundary regions**
  - Underway data (e.g. climate relevant data and CPR)
  - Sensor development (particularly biological/biogeochemical sensors)
  - Augmented observatories (to allow deeper investigation of marine biology)
  - GLOSS sea level network
  - Research vessels (including GO-SHIP)

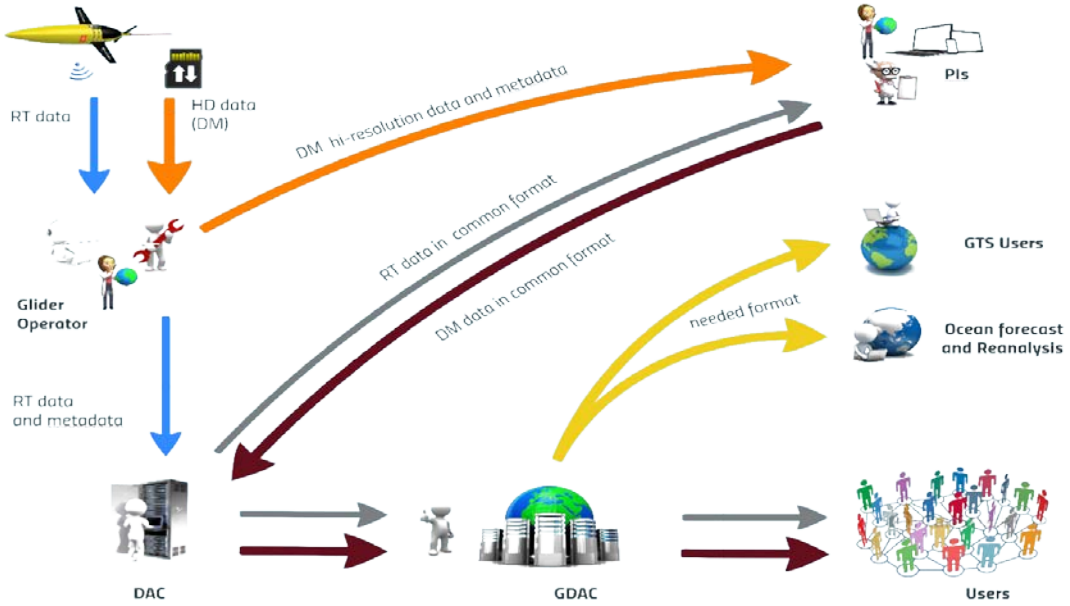
- **What we did (Dec. 2017) :**

  - Establish a G7 Ocean Working Group (Canada, D, Fr, It, UK, USA)
  - Produce 2 years plans (focus on coordination in the framework of GOOS)
  - *Produce 5 years plans (focus on "Endurance lines" including polar regions ~250)*

The end of a cycle - Achievements of the TT

- **Data Management**

1 - Real Time Data Management : built on the existing (EuroARGO, CORIOLIS, BODC)
→ access EU “data” infrastructures and services (EMODNet, Copernicus)



2 - We identify the need to map raw glider vocabulary to GOOS EOVs to make the data management scheme fully operational and integrated in the international standards.

3 - On going work of the data management task team ...

- Develop and share community Tools : Online piloting tools, online data and metadata management tools, mission planning tools (including navigation risks)
- Delayed mode data quality control (including “DOIzation” of DM datasets)
- …

The end of a cycle – Issues faced by the TT

→ Balance between present "Bottom-Up" and "Top-Down" approaches

- Define New Targets for a better integration of gliders in the EuroGOOS Strategy
- Alignment with EuroGOOS integrated strategy through strongest connection with ROOSes and WGs

1 – Connection with ROOSes

- Quickly engage with new glider teams to join ROOSes
  - HCMR, FMI, Univ. of Gothenbourg, IOLR (Israel), Marine Institute, …
- Design a more consistent **multiplatform** approach (Gliders can fill gaps) ?

2 - Contribute to WGs

- Technology Plan WG : Integration of new platforms and sensors in the network
- Data Management, Exchange and Quality WG
  - Real Time and Delayed mode Data Management
  - Integrate new sensor technology and best practices at the global scale
  - High priority in a number of applications : Oxygen, chl-a fluorescence, Turbidity, CDOM fluorescence, Nitrate
- Others WGs

Align the gliders TT activities with EuroGOOS needs

Renew membership and ToR

- EuroGOOS glider data management team has been renewed. It is composed of :

  - Coordination body representative : Victor Turpin (EGO), Patrick Gorringe (EuroGOOS), Dan Hayes (OceanGliders), Emma Heslop (GOOS)
  - GDAC : Thierry Carval (Coriolis)
  - European DACs : Terry Hannant (Norvegian Ocean Data Center), Justin Buck (BODC), Mark Hebden (BODC), Miguel Llorens (SOCIB)
  - Data integrators : Antonio Novellino (EMODNET), Guizeppe Manzella (EMODNET).

- EuroGOOS gliders Task Team will be renew by the end of June based on recommendation of the present TT

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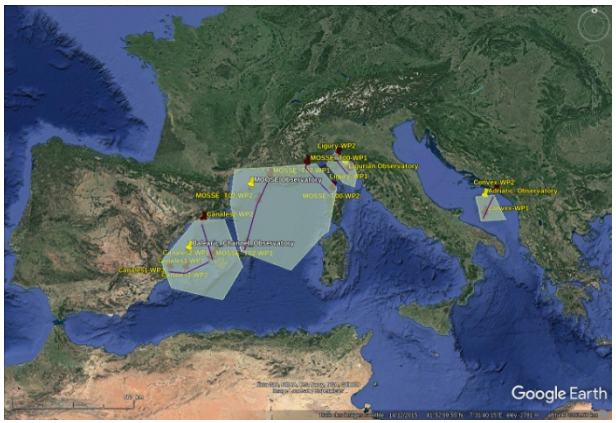
- The new Gliders Task Team will be in charge to establish new the ToR focusing on 4 themes :

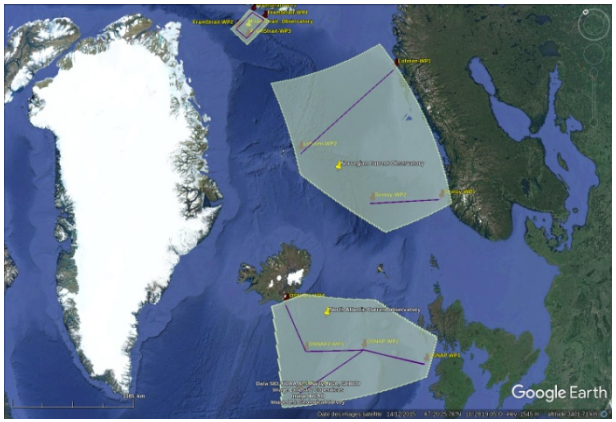
  - International Coordination
  - Data Management
  - Promoting and success stories
  - Sustainability of observations

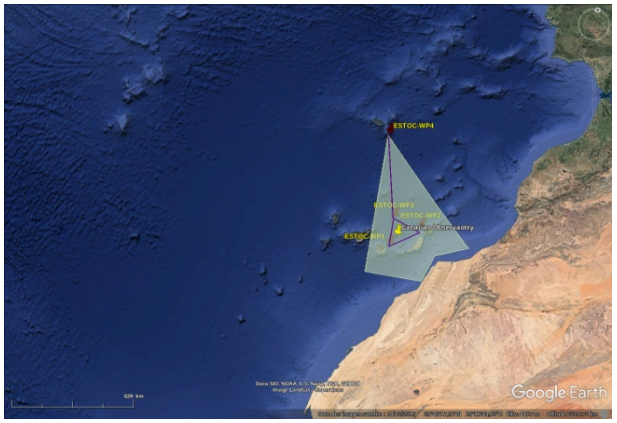
New cycle, new teams, new objectives...

First actions of the new gliders TT to address EuroGOOS priorities :

I) Use case on sustainability







European glider repeated sections and observatories

II) Data Management

Organization of the EuroGOOS glider data management meeting in Genova with the support of EMODNET, EuroGOOS and OceanGliders.

« *It will focus on technical and strategic issues related to the EGO format and real time/delayed mode - physical/BioGeoChemical gliders data management and will try to address compatibility issues with IOOS and IMOS glider data formats in a more global context.* »

Registration and more information here :
https://www.ego-network.org/dokuwiki/doku.php?id=public:egodmmeeting:september2018

New cycle, new teams, new objectives...

First actions of the new gliders TT to address EuroGOOS priorities :

III) Best practices

Aggregation of the standards documentation and tools on best practices, data management, quality control has been initiated at the global level.

IV) Sustainability of observations

Need for EuroGOOS to have inputs on sustainability of glider observations

A cost analysis has been made during GROOM (FP7 project). As a first step of this priority action, it has been updated during the network cost analysis exercises done by EuroGOOS recently.


Thank you !