The glider component of the integrated Global Ocean Observing System
www.oceangliders.org

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OceanGliders, the glider component of GOOS

- The OceanGliders program brings marine scientists deploying gliders from all over the world to observe on the long term physical, biogeochemical, biological ocean processes and phenomena. It allows active coordination and strengthening of the worldwide glider activity.
  It contributes to the present international efforts for Ocean Observation for Climate, Ocean Health and Real Time Services

- Our goal is to : monitor the global glider activity, share the requirements, efforts and scientific knowledge needed for gliders data collection and support the dissemination of glider data in global databases, in real-time and delayed mode.

OceanGliders recommend to :

1. develop a global operational program of underwater gliders to address key ocean observing challenges.

2. develop a global data management system to ensure the effective sharing and use of data from underwater gliders.

3. consider three key areas of ocean observation: Ocean Boundary Currents, Storms, and Water Transformation.

4. develop an implementation plan for a sustained Boundary Ocean Observing Network to meet the societal needs of improving ocean observation.

OceanGliders, data management

- The OceanGliders addresses a limited number of scientific issues that need a coordinated effort around appropriate EOVs (Essential Ocean Variables) with existing national and regional glider data centers to harmonize data management on a global scale.
- The OceanGliders Data Management Task Team (OGDMTT) develops a strategy and implementation plan for international coordination and governance. We build a strong interoperability of ocean glider data and metadata regardless of the location of data center or model of glider used.
  - Merge near real time (NRT) and delayed mode (DM) data streams,
  - Harmonize quality assurance and control (QA and QC)
  - Address biogeochemical data handling (aligned with BGC-Argo)
  - Standardize formats and protocols, web services - API.
- Significant efforts have already been made in national and regional data centers, such as Ocean Gliders Canada , Australian National Facility for Ocean Gliders (ANFOG), US National Glider Network (NGN), IOOS National Glider Data Assembly Center, and Everyone’s Gliding Observatory (EGO).

OceanGlider Task Team ongoing activity

- Propose unified data format to facilitate sharing and collaboration
- Harmonize three existing standards (US, EU, AU) with minimum impact for historical data, but flexible and stable enough for long-term usability.
- Match as closely as possible BGC-Argo floats and OceanSITES moorings data management
- Join us on https://github.com/OceanGlidersCommunity/OG-format-user-manual

OceanGlider Task Team ongoing activity

EGO contribution for a common NetCDF-CF file format to manage glider metadata and observations, organized by deployment

- *EGO gliders NetCDF format reference manual version 1.5*
  http://doi.org/10.13155/34980

- *EGO gliders Quality Control on time series and profiles data*
  http://doi.org/10.13155/51485

- *EGO gliders data processing chain*
  http://doi.org/10.17882/45402

- *EGO gliders NetCDF file format checker*
  http://doi.org/10.17882/45538

DAC glider real-time data processing
DAC : data assembly centre

OceanGlider real-time quality controls

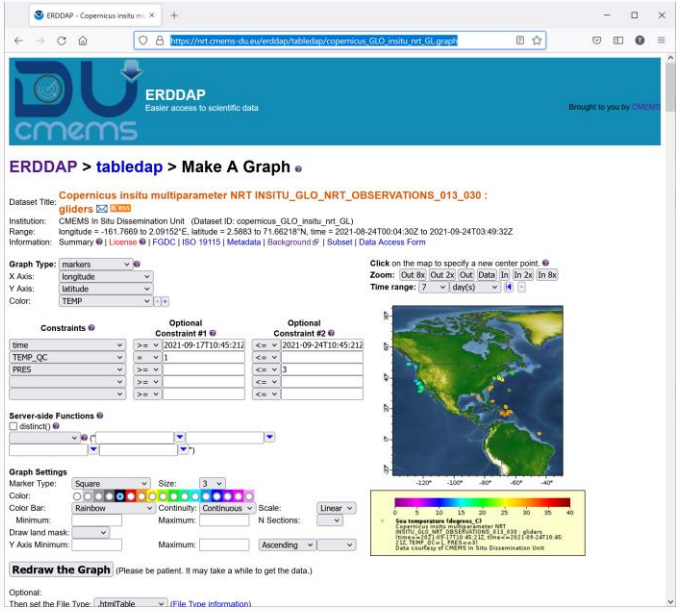
- *EGO gliders Quality Control on time series and profiles data*
  http://doi.org/10.13155/51485

- The quality control procedures on real-time data are limited and automatic.
  At the present time, real-time tests are defined for the following parameters:
  - JULD/TIME,
  - LATITUDE, LONGITUDE,
  - PRES, TEMP, PSAL, CNDC,
  - DOXY, TEMP_DOXY,
  - CHLA,
  - BBP
- QC of other parameters should be set to 0 (no QC was performed).

OceanGliders GDAC prototype

- A prototype for OceanGliders GDAC (Global Data Assembly Centre) available at:
  - https://nrt.cmems-du.eu/erddap
  - http://www.ifremer.fr/co/ego/ego/v2

- A directory per glider, a sub-directory per deployment
- Each deployment contains
  - The NetCDF trajectory data and metadata file
  - The deployment JSON file (used for data processing)
  - A directory of all vertical profiles
    - One NetCDF file per profile, extracted from NetCDF data file (descending and ascending phases)



Data citation, credit to scientists

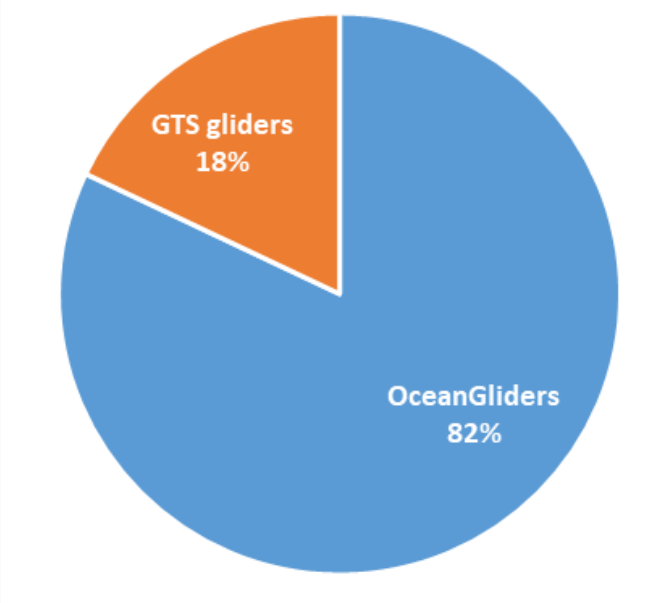
- Work underway within OceanGliders
  - Assign a DOI for each deployment
  - Manage DOIs of DOIs to group a series of deployments
    - Network level
    - Science process
  - Use ORCID to give credit to PIs and contributors

- Examples
  - Tintin in Greenland http://doi.org/10.17882/51473
  - Tintin & Moose http://doi.org/10.17882/51472

Copernicus Marine glider profiles (from OceanGliders and GTS)

- EU Copernicus Marine service aggregates vertical profiles from OceanGliders and WMO GTS
- Today : 2,3 million ocean vertical profiles from 423 gliders (82% from OceanGliders)

Glider data on 24/09/2021 (Copernicus Marine)		
provider	nb gliders	nb profiles
OceanGliders	347	2 112 961
GTS gliders	76	187 880
Total	**423**	**2 300 841**



A few maps : 2 million profiles from 400 gliders in September 2021 (OceanGlider, GTS)

Source: Copernicus Marine service