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Action ES0904:
European Gliding Observatories Network (EGO)

ESSEM

Participating countries: BE, CY, DE, ES, FI, FR, GR, IE, IL, IS, IT, NO, PL, PT, SE, UK

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http://www.ego-network.org/dokuwiki/doku.php?id=public:cost

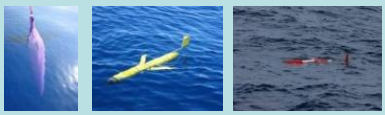

Figure 1: 3 operational gliders (seaglider, slocum, spray)

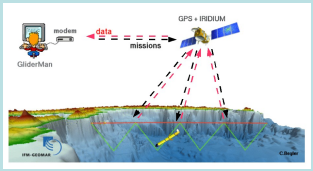

Figure 2: functionning principle of a glider.

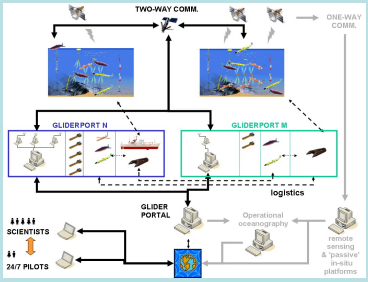

Figure 3: conceptual diagram describing a possible research infrastructure

Objectives:

- Promote the use of gliders for marine research and operational oceanography.
- Coordinate international efforts on gliders at **scientific**, **technological** and **organizational** levels.
- Develop innovative approaches in terms of sampling strategies and measured parameters.
- Help glider teams to develop and contribute to the worldwide efforts made for the global ocean observation (physical and biogeochemical).
- Favor scientific experiments through international collaboration.
- Develop tools and procedures for a cost-efficient use of gliders and allowing ambitious sampling strategies.

WG1: Support for glider deployments and data dissemination

This WG will undertake general tasks to make the glider integrated in the GOOS, such as (1) the definition of operating data flow system, with agreed protocols, to deliver all of the glider network's data in NRT and delayed mode integrating glider data into the ARGO Data Management Systems, (2) the definition of an international infrastructure (steering team, technical coordinators, data managers, etc) to develop the community consensus, to oversee the planning and implementation of the network and its data system, (3) assessing the legal conditions needed for flying gliders in the national waters or EEZ waters of Action's participant countries or non participants countries.

WG2: Glider vehicle, sensors, and "gliderports" infrastructures

Investigations on the technical developments possible for the existing platforms (engines, hulls, embedded energy, other hardware and on-board software) as well as fully new gliding vehicles is the first task of this WG. Even if the Action includes the few European early stage projects that are now developing new glider platforms, the Action will be mainly active as available scientific and technical expertise and in assessing the usefulness and implementation of these new developments for the updated gliders or new gliding vehicles as measuring oceanic platforms. Some of these developments could be pointed as recommendations for the members – in particular the main "gliderports" (see below) where the technical skills are available – to conduct specific actions.

The second task concerns an accurate survey concerning existing oceanographic sensors (physical, bio-optical, active/passive acoustics, video) applicable for gliders will also be performed. The "sensor" activities will focus on recommendations, based on experience gathered by partners of COST Actions and available literature, for use of particular sets of sensors, with their energy consumption and advice on how to achieve best performance on gliders. Results of several ongoing R&D "sensor" projects by the partners will be also investigated.

The last objective of this WG is the development of "gliderports". Main "gliderports" are selected sites with the technical staff and relevant infrastructure needed for complete preparation, maintenance (including sensor calibration) and evolution (in particular for adaptation of new sensors in the scientific payload) of large fleets of gliders can be achieved. This also includes a logistic chain for shipping of the instruments, spares and refurbishment developed in close relation with the companies. These main "gliderports" will also include the computing facilities to host the "ground segment" for piloting as described in WG3. In order to help operations at sea all over the world, a network of worldwide local supports or "secondary gliderports" where the basic expertise for glider safe deployment/recovery/first maintenance is available, will be developed. It is likely that several partnerships with marine institutions of developing countries will be developed, which implies a training support activity that could be partly supported by the Action.

WG3: Piloting gliders and artificial intelligence

The control of the gliders via the Internet from all over the world through the main "gliderport" piloting infrastructure is essential and requires manpower. This WG coordinates efforts to develop easy and ergonomic access to piloting facilities, auto-pilot systems, flight control systems, automated fault diagnosis and environment information systems (e.g. maps of bathymetry, sea surface temperature, ocean color, currents). To integrate more groups and institutions, it is essential to allow the widest access to these facilities. A set of existing software interfaces, including those provided by the manufacturers, will be integrated in a peer to peer structure where distributed services can interact. Interoperability of the existing glider types will be guarantied. Automation to ease the final decision-making by the human pilots will be central in this WG.

WG4: Networks, links with the other observing systems and OSSEs

Gliders have been designed as low-cost platforms to improve the ocean observing systems. The question "how gliders can be optimally combined with other observing systems" is posed. The answer needs to be provided by a global community consensus. By using OSSEs and "network design" methodologies to assess the feasibility and optimality of the possible configurations, the objective of this working group will be to give objective elements to answer this question and develop consensus.

WG5: High resolution 4D oceanic measurements by gliders and process studies

This WG will focus on the way to conduct fields operations with fleets of gliders to gather detailed and accurate 4D oceanic data sets related to different specific research requirements. Of particular interest here are the large trans-oceanic sections (such as in the above mentioned RAPID section) or boundary current sections (often referred as "Endurance lines") for large scale or regional budgets as well as the investigation of mesoscale and submesoscale phenomena in specific areas. This task will use the piloting facilities developed by WG3, including adaptive sampling techniques together with associated data analysis tools. Part of this work will be done in cooperation with thecommunity of operational modelling that will provide both the forecasts to assess the distribution of glider over the sections or shape of the fleet to cover as well as the modelling platforms themselves in order to perform detailed post processing of the collected data.

Main Achievements since starting date 1st October 2010:

- 1st Symposium of the Action in Las Palmas EGO2011 ~130 participants. MC meeting and all Working Groups meetings. ~130 participants. (EU Countries + USA, Canada, Australia, South Africa, Egypt, Mexico).
- "FP7 Infrastructures" project accepted. GROOM, Gliders for Research, Ocean Observation and Management (19 partners), will start in October 2011.
- International fleet experiment (Germany/France) in 2011: about 10 gliders currently operating in the Tropical Atlantic.
- Involvement of 7 new partners since the beginning in July 2010. South Africa, Australia, Egypt, have already expressed their interest to join the Action.

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