EG13.09

25 February 2013

Outline of GRA Information

Name of GRA: EuroGOOS

A. BASIC INFORMATION

1. Principal Goals of the GRA (Please outline):

EuroGOOS is an association of national governmental agencies and research organisations, founded in 1994, committed to European-scale operational oceanography. EuroGOOS has 34 members, providing operational oceanographic services and carrying out marine research, from 17 European countries.

EuroGOOS has decided its transformation from the existing informal association into a body with legal personality with a view to increasing its efficiency and improving its representation of members' views. The annual meeting of 2012 agreed to create a new EuroGOOS International Non-Profit Organisation, under Belgian Law. 13 EuroGOOS members have already signed the founding declaration, and the new organisation, officially known as EuroGOOS AISBL (Association Internationale Sans but Lucratif), is currently under incorporation.

The following priorities are intended to steer the work of EuroGOOS and its members:

- EuroGOOS shall act as the authoritative and competent expert voice of operational oceanography in all European activities
- Take the lead in representing and promoting operational marine services in Europe
- Improve the observing system for operational oceanography in Europe, and its contribution to global systems
- Encourage links between member state national systems and setting up of downstream services
- Contribute to the further development of GOOS, in particular by taking a leading role in advancing Coastal GOOS
- Promote EuroGOOS at a high level for members' countries and European organisations
- Promote and foster the necessary research and technological developments for operational oceanography, and their implementation in operational systems
- Work towards involving all European coastal states, through their operational oceanographic institutions, in EuroGOOS work

2. Who is affiliated with the GRA?

- ***Countries (Please list):***

  Belgium, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Poland, Portugal, Spain, Sweden, United Kingdom

- ***National/Federal Agencies per Country (Please list):***

N	Country	Institute
1	Belgium	Agency for Maritime Services and Coast
2	Belgium	Management Unit of the North Sea Mathematical Models
3	Cyprus	Cyprus Oceanography Center
4	Denmark	Danish Meteorological Institute, Oceanographic Section
5	Denmark	Royal Danish Administration of Navigation & Hydrography, Oceanographic Department
6	Estonia	Marine Systems Institute at Tallinn University of Technology
7	Finland	Finnish Meteorological Institute
8	France	IFREMER
9	France	MERCATOR OCEAN
10	France	METEO-FRANCE
11	Germany	Federal Maritime and Hydrographic Agency
12	Germany	Helmholtz-Zentrum Geesthacht Centre for Materials and Coastal Research
13	Greece	Hellenic Centre for Marine Research, Institute of Oceanography
14	Ireland	Marine Institute
15	Italy	CNR, Consiglio Nazionale delle Ricerche
16	Italy	ENEA Centro Ricerche Casaccia – Roma
17	Italy	Istituto Nazionale di Geofisica e Vulcanologia – INGV, Sede di Bologna
18	Italy	OGS (Istituto Nazionale di Oceanografia e di Geofisica Sperimentale), Department of Oceanography
19	Netherlands	Deltares
20	Netherlands	Royal Netherlands Meteorological Institute
21	Netherlands	Rijkswaterstaat Waterdienst
22	Norway	Institute of Marine Research
23	Norway	Nansen Environmental and Remote Sensing Center
24	Norway	Norwegian Meteorological Institute
25	Poland	Institute of Meteorology and Water Management, Maritime Branch in Gdynia (IMWM MB)
26	Poland	Institute of Oceanology, Polish Academy of Sciences (IO PAS)
27	Poland	Maritime Institute in Gdansk (MIG) - Department of Operational Oceanography
28	Portugal	IHPT, Hydrographic Institute

29	Spain	IEO/Spanish Oceanographic Institute
30	Spain	Puertos del Estado. Physical Environment Department
31	Sweden	Swedish Meteorological and Hydrological Institute
32	United Kingdom	Met Office
33	United Kingdom	Natural Environment Research Council
34	United Kingdom	Centre for Environment, Fisheries and Aquaculture Science, Lowestoft Laboratory

- ***Consortia for Thematic Functions (Please list – includes GRA collaborative working groups or consortia):***
  - Data Management, Exchange and Quality Working. Group (DATA-MEQ)
  - Science Advisory Working Group (E-SAWG)
  - Technology Plan Working Group (TPWG)
  - Coastal and Shelf Seas Modelling Working Group (COSMO-WG)
  - Product Working Group (EPWG)
  - EuroGOOS - ECOMF Strategic Partnership Working Group (towards a European Centre for Ocean Modelling and Forecasting)
  - MoU between EuroGOOS and Black Sea GOOS

  Every working group works under its own specific terms of reference

- ***International and Regional Associations – Comprised of Countries, State, Local and Indigenous Governments, Academia, Industry, and NGOs (Please list):***

  - **BOOS**, The Baltic Operational Oceanographic System 's vision is to improve the safety and efficiency of maritime transport and marine operations, to enable the sustainable exploitation and management of Baltic Sea resources (fisheries), to support safe and efficient offshore energy activities, to mitigate the effects of environmental hazards and pollution crisis, to contribute to ocean climate variability studies and seasonal climate prediction and to federate the resources and expertise of diverse institutes, agencies, and companies in the public and private sector. www.boos.org

  - **NOOS**, The North West European Shelves Operational Oceanographic System is an operational oceanography organization. NOOS is operated by partners from the 9 countries bordering the extended North Sea and European North West Shelf: Belgium, Denmark, France, Germany, Ireland, Netherlands, Norway, Sweden, and the UK. The partners collaborate to develop and implement ocean observing and prediction systems for the NWS area, with delivery of real time operational data products and services. http://noos.cc

  - **Arctic ROOS**, The Arctic Regional Ocean Observing System has been established by a group of 14 member institutions from 9 European countries working actively with ocean observation and modelling systems for the Arctic Ocean and adjacent seas. Arctic ROOS promotes, develops and maintains operational monitoring and forecasting of ocean

circulation, water masses, ocean surface conditions, and sea ice and biological/chemical constituents. One of the goals of Arctic ROOS is to contribute to the legacy of IPY, maintaining cost-effective and useful observing systems after the end of IPY. http://arctic-roos.org/

- **IBI-ROOS**, The goal of Ireland-Biscay-Iberia Regional Operational Oceanographic System is to set up an operational oceanography organization operated by participating partners from the 5 countries bordering the Iberian-Biscay-Irish maritime area (France, Ireland, Portugal, Spain and UK), collaborating to develop and implement ocean observing systems for the IBI-ROOS area, with delivery of real time operational data products and services. http://www.ibi-roos.eu/

- **MONGOOS**, Mediterranean Oceanography Network for the Global Ocean Observing System works to consolidate the operational observational/modelling system in the Mediterranean and to demonstrate the usage of the marine environmental prediction system for integrated management of Open Ocean and coastal marine areas. http://www.moon-oceanforecasting.eu/

- **BLACK SEA GOOS** (not yet an official ROOS): the Black Sea Global Ocean Observing System contributes to international planning and implementation of the GOOS and promotes it at national, regional and global level. Black Sea GOOS identifies regional priorities for operational oceanography and develops capacity of the regional countries for a better understanding of the Black Sea ecosystem and assesses the economic and social benefits achieved by operational oceanography. http://www.ims.metu.edu.tr/black_sea_goos/

Strong cooperation within these regions, enabling the involvement of many more regional partners and countries, forms the basis of EuroGOOS work, and is combined with high-level representation at European Marine forums.

- ***Sources of external support (Please list the Country and associated Donor Agencies):***

  The running costs of EuroGOOS (including the running cost of the Secretariat Office) are shared by the Members, through membership contributions. The Organisation may also attract external funding from international or EU bodies, institutions or Organisations, for example through participation in projects funded by the European Commission.

3. Governance and Management:

a. *What are the governing bodies of the GRA? (Please describe – include details of the GRA Coordinator, Chair, and Steering Committee Members, etc).*

The activities of the Organisation are managed by the Executive Directors Board, although some organisational decisions require confirmation by the Annual Members Meetings. The Executive Directors Board is currently chaired by Prof. Dr. Dr. Peter Ehlers.

A Secretary General has been appointed to work full-time for the organization. Tasks include managing the Secretariat Office, implementing policy and decisions, external representation, and maintaining contact with other major European programs. The Secretary General from 1 January 2013 is Dr. Kostas Nittis.

b. Please list the Agencies directly involved in the Governance of the GRA:

All members are involved in the Governance of EuroGOOS through the Annual Meeting. Member institutes are listed in section2.

c. Please list Management meetings, dates and supporting documentation if possible:

The Executive Directors Board meets about 4 times a year. The next Board meeting is planned in conjunction with the European Maritime Day activities in Valetta, Malta on 21-22 May.

The first General Meeting of the members of the newly established EuroGOOS AISBL is planned for November 2013. Relevant documentation is available from the Documents section of the EuroGOOS web page (http://www.eurogoos.org/)

4. What documents guide the GRA? (Please list Titles and Date of most recent updated version, and html access if possible)

http://www.eurogoos.org/documents/eurogoos/html_page/eg09_05eurogoos_strategy5.pdf

Internal Rules of EuroGOOS AISBL (draft prepared, to be confirmed at the General Meeting)

5. Communications:

a. Is there a GRA Website and if so, what is it, and who is primary contact for web site support?

www.eurogoos.org
Primary contact: Patrick Gorringe, EuroGOOS Office, Patrick.gorringe@eurogoos.eu

b. Does it have links to other websites?

Yes

c. Does it link to the IOC HQ website and vice versa?

No

d. Is there a GRA Newsletter and if so, how is it distributed, how often and to whom in the GRA?

Not at this stage.

e. Are the newsletters distributed to:

	Yes or No	If Yes, how? (eg email?)
Other GRAs?		
IOC Head Office?		
The GOOS SC Chair?		
The GOOS Steering Committee Members?		

B. SOCIETAL GOALS AND OBSERVING REQUIREMENTS

6. Chart of priority areas and sustained observing requirements – Please complete the Table and add as many columns required for the types of observation technologies used in your GRA.

	Societal Benefit Areas and/or Phenomena of Interest	How mature is the expression of the requirement [low/medium/ high]?	Types of Observation Technologies Operating in the GRA											Capacity Building
			Argo Floats	Ships of Opportunity	Buoys	Ocean Gliders	Water Level Network	Drifters	Ocean Radar HF Radar	Animal Tagging & Monitoring	Water Quality Gauges	Satellite Remote Sensing	Ocean Acidification Sensors	
	Weather and Climate Change	High	**X**	**X**	**X**	**X**	**X**	**X**	**X**	**X**		**X**	**X**	
	Marine Operations	High	X	X	X	X	X	X	X			X		
	Natural Hazards	High	X	X	X	X	X	X	X			X		
	National Security	Medium	X	X	X	X	X	X	X			X		
	Public Health Risk	Low	X	X	X	X	X	X	X			X		
	Healthy Coastal Ecosystems	Medium	X	X	X	X	X	X	X			X		
Country Lead	*(e.g. – which Country is predominantly leading the observing activity)*													

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			Argo Floats	Ships of Opportunity	Buoys	Ocean Gliders	Water Level Network	Drifters	Ocean Radar HF Radar	Animal Tagging & Monitoring	Water Quality Gauges	Satellite Remote Sensing	Ocean Acidification Sensors	
	Sustain Living Marine Resources	Medium	X	X								X		
	Loss of Benthic Habitats & Ecological Buffers to Coastal Inundation	Low												
	Eutrophication & Hypoxia	Medium		X	X							X		
	Toxic Phytoplankton	Medium/High (depending on region)		X	X							X		
	Food Security	Low												
	Ocean Acidification	Medium										X	X	
Country Lead	*(e.g. – which Country is predominantly leading the observing activity)*													

C. OBSERVATIONAL ARRANGEMENTS AND CAPACITY

7a. What is the estimated overall 'readiness level' [eg 100% = Ready to use and/or already in full use, 50% = Partly Ready to use, and 0% = Nonexistent] of the GRAs' observation network and capacity:

65%

7b. Describe the rational for your assessment of 'readiness level' (no more than 500 words):

Within the EuroGOOS region there are numerous operational networks and monitoring systems. The maturity of these systems varies depending on region. Even if these systems work with full capacity Europe as a whole is strongly under sampled. The under sampling rate varies with region.

D. DATA MANAGEMENT ARRANGEMENTS AND CAPACITY

8a. Does the GRA have a Data Management Portal that is accessible to the GRA stakeholders? If so, please describe, and include links to sites where data can be retrieved.

Every ROOS, Regional Oceanographic Operational System has its own data portal where data is visualized in real time. These data portals are run by dedicated data centres responsible for the collection of data in the respective region.

- BOOS data portal: http://www.boos.org/index.php?id=158
- NOOS data portal: http://www.noos.cc/index.php?id=17
- Arctic ROOS: http://arctic-roos.org/observations
- IBI-ROOS data portal: http://projets.ifremer.fr/Access-to-data
- MONGOOS: http://www.moon-oceanforecasting.eu/index.php?option=com_content&task=view&id=17&Itemid=38
- Black Sea: Work in progress

There is a coordinated approach to strengthen the regional data portals through EuroGOOS, the MyOcean project, SeaDataNet project and EMODnet Physics project. Data from the different ROOSs are displayed and made available to download on pan- European scale on the EMODnet Physics website: http://www.emodnet-physics.eu/

8b. What is the estimated overall 'readiness level' [eg 100% = Ready to use and/or already in full use, 50% = Partly Ready to use, and 0% = Nonexistent] of the GRAs Data Management Portal:

100%

E. INFORMATION GENERATION ARRANGEMENT AND CAPACITY

9. Modeling Capacity – Describe the operational modeling capacity in your GRA (no more than 500 words):

There is a great variety and numerous operational models running within the EuroGOOS region ranging from Global to local scale. Here listed are the primary models used on basin scale/region

BOOS

Model name	Institute	Country	Resolution	Web site
BSHcmod	BSH	Germany	1.8 km, and 10 km	http://www.bsh.de/en/Marine_data/Forecasts/Prediction_models/index.jsp
HBM	DMI	Denmark		http://ocean.dmi.dk/models/hbm.uk.php
HIROMB	SMHI	Sweden		http://www.hiromb.org/
NEMO	SMHI	Sweden		

NOOS

NWSmod				http://www.myocean.eu/
BSHcmod	BSH	Germany	1.8 km, and 10 km	http://www.bsh.de/en/Marine_data/Forecasts/Prediction_models/index.jsp
HBM	DMI	Denmark		http://ocean.dmi.dk/models/hbm.uk.php
POLCOMS	Metoffice	UK		http://www.ncof.co.uk/Coastal-Seas-Model-Description.html

Arctic ROOS

TOPAZ	NERSC	Norway		http://topaz.nersc.no.

IBI-ROOS

NEMO	Mercator/ Puertos del Estado	France/Spain		http://www.myocean.eu
PCOMS	MARETEC	Portugal	5,6 Km	http://forecast.maretec.org/
ROMS	Marine Institute	Ireland	2 Km	http://www.marine.ie/home/services/operational/oceanography.

MONGOOS

MFS	INGV	Italy	5-7 Km	http://gnoo.bo.ingv.it/mfs
OGS-OPATM	OGS	Italy	10-12 Km	http://posedon.ogs.trieste.it/cgi-bin/opaopech/mersea
PAM	Mercator	France	6-8 Km	http://www.mercator-ocean.fr
POSEIDON	HCMR	Greece	8-10 Km	http://www.poseidon.hcmr.gr

F. DEVELOPING CAPACITY TO DELIVER

10. Capacity Building (Does the GRA have a Capacity Building Strategy and if so, is it implemented effectively across the entire GRA Region? Please describe (and include whether donor assistance is used and/or required).

11. Gaps – Identify gap areas

Some general aspects from all EuroGOOS regions are:

- Sustainability of the existing observational system is one of the key challenges for the region
- Ability to provide stable long time series for monitoring climate variability needs to be improved and secured
- The European waters are generally under-sampled in regards to in-situ observations, in particular the Arctic area where the major part of the observatory is conducted in annual or biannual cruises
- Strong need for observational data for forecasting models concerning freshwater input from rivers
- Need for establishment of additionally fixed platforms in certain sea areas with real time measurements throughout the water column for temperature, salinity, waves, currents, oxygen, nutrients, fluorescence and meteorological parameters
- The existing Ferrybox and SOOP network should be expanded in order to have meteorological information in all sea basins
- A need of reliable real time data transmission from research vessels
- General lack of biochemical near real time observations
- In the Black Sea the main focus for monitoring the status of the marine environment is laid on collecting data from in particular coastal stations and through scientific cruises. However these cruises have decreased dramatically in recent years. Most coastal stations don't provide real time data and much of the data has a restricted access. There is a severe lack of physical and biogeochemical observations in the open sea.

12. 3 Top success stories – (Optional. See Success Story Template).

Success story provided in separate file.

GOOS Regional Associations: Success Story

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MyOcean: implementing the Copernicus/GMES Marine Service

Name of GOOS-RA: EuroGOOS

Name of Program/Agency/Regional Association/Partner: MyOcean. Lead partner: Mercator Ocean, France. Consortium of 61 partners from 29 countries.

Country/Location: Global and European Regional Seas.

Length of Program or Project (if applicable): MyOcean: 2009-2011, MyOcean2:2012–2014

(1) Project, Product or Observing activity description – Identify the issue or need this activity addresses (1-2 paragraphs)**:**

The main objective of the MyOcean is to deliver and operate a rigorous, robust and sustainable Ocean Monitoring and Forecasting system of the Copernicus/GMES Marine Service (OMF/GMS) to users for all marine applications : maritime safety, marine resources, marine and coastal environment and climate, seasonal and weather forecasting.

In the period from April 2012 to September 2014, MyOcean2 will ensure a controlled continuation and extension of the services and systems already implemented in MyOcean, a previous EU-funded project (April 2009- March 2012) that has advanced the pre-operational marine service capabilities by conducting the necessary research and development. To enable the move to full operations as of 2014, MyOcean2 is targeting the prototype operations, and developing the necessary management and coordination environment to provide Copernicus/GMES users with continuous access to the Copernicus/GMES service products, as well as the interfaces necessary to benefit from independent R&D activities. MyOcean2 produces and delivers services based on the common-denominator ocean state variables that are required to help meet the needs for information of those responsible for environmental and civil security policy making, assessment and implementation.

The MyOcean2 marine service consists of the following activities:

Data acquisition from the ground segment of the space-based observation systems and in situ networks;

Acquisition of atmospheric forcing data (winds, temperatures, fluxes) from National Meteorological Services and ECMWF;

Compilation of these data into quality-controlled datasets at Thematic Data Assembly Centres (sea surface temperature, ocean colour, sea level, sea ice, surface winds and fluxes, and in-situ data) suitable for the generation of more extensive data sets for subsequent use, analytical products and assimilation by ocean models.

Running numerical ocean models in near real time to assimilate thematic data and generate analyses and forecasts to an agreed and generally perpetually repeating cycle. The monitoring and Forecasting Centres operate regional (Arctic, Baltic, North West shelf, Irish-Bay of Biscay and Iberian Coast, Mediterranean Sea and Black Sea) and global models. The centres will also operate offline to produce reanalysis /hindcasts.

Preparation and delivery of products suitable for external service provision.

Preparation phase to a fully operational service as from 2014 end.

(2) User Community: Who cares and benefits from products?

The project targets primarily the intermediate users, i.e. national or international providers of downstream marine services. It addresses, however, the whole range of users such as European and International Institutes (EEA, EMSA), National Marine and Weather services, Policy implementing bodies (OSPAR, ICES etc.) as well as commercial companies (SMEs) and the public in general. The users are clustered in four areas of benefit: “Marine Safety”, “Marine Resources”, “Marine and coastal environment”, “Climate and weather forecasting”. Today (January 2013) MyOcean has more than 1750 registered users.

(3) Process – Describe the process that was used to establish the activity**:**

MyOcean is the evolution of a large number of collaborative projects funded by EU and ESA that have brought together over the past 10 years the national capacities on operational oceanography in Europe (Mersea, Marcoast, BOSS4GMES, Polarview). It now implements the Marine Service of the Copernicus/GMES program that also has components/services for Atmosphere, Emergency, Land, Security and Climate (http://copernicus.eu).

(4) Outcomes/Results

Management outcome/decision that results from the activity; and (or)

Development of dynamic management tools: Applications to support or inform decision-making (preferably in real-time and in predictive mode)

MyOcean infrastructure is composed by 46 distributed interconnected systems, with 300 technical interfaces and involves more than 350peple. However all products are available through 1 Products Catalogue, 1 Service Desk and under a single (open and free) Data Policy. All products are available for download and dynamic visualization through a single web page (www.myocean.eu). This core service support a large number of downstream applications developed by users (see for example http://www.myocean.eu/web/88-downstream-use-cases.php) for the 4 identified areas of benefit. Among others the service have been used is response to the Fukushima disaster (2011) and the Costa Concordia accident (2012).

(5) Describe the costs and/or resources required and the return on investment achieved:

MyOcean represents an investment of 11 MEuro per year as contribution from the European Union. This cost does not include major infrastructures used (super-computing) or the cost for in-situ and remote sensing observations. The real total cost has been estimated around 30MEuro / yr.

(6) Value added from advances in technology (i.e. sensors, assessment tools, models, or process):

MyOcean has helped harmonize and co-develop various modelling and data assimilation as well as data processing and management tools across Europe. Both projects have separate RTD components for improvement of existing systems or develop new tools that would improve the Marine Service. Relevant publications are available at http://www.myocean.eu/web/55-scientific-publications.php

(7) Gaps, challenges and needs for improved outcomes – Include lessons learned:

Based on a compilation of User assessments in 2011 the following gaps / needs have been identified and are now addressed by MyOcean2:

Need for higher temporal and spatial resolution products for new applications (ice, oil drift forecasts, coastal applications, fisheries)

Request for longer hindcasts & reanalysis

New products for catalogue: atmospheric forcing fields; waves; eddy viscosity

Inclusion of value added products (e.g. fronts detection) should be explored

Better documentation on products (data source, quality etc.) and service (e.g. download instructions)

Explore various delivery mechanisms (ftp push), aggregation etc.; problems with large data files

Registration process to be simplified

Web portal to become simpler; user friendly; also for catalogue – products discovery

However the main challenge for MyOcean is now the issue of sustainability and future governance beyond 2014. The main partners of MyOcean are preparing a new legal entity (an Economic Interest Grouping) entitled “ECOMF - European Centre for Monitoring and Forecasting” that will take over the production of the Marine Service after 2014.

(8) Provide a quote from a participant or user:

"MyOcean has raised our awareness of the usefulness of operational data in other words having a fast turnover of data to better assess and predict the status and variability of the marine ecosystems… The worldwide information that MyOcean offers is also important to us because we provide development aid in areas for which we have not much information of our own about the marine environment, for instance in Africa...", Einar Svendsen, IMR, Norway

See http://www.myocean.eu/web/80-marine-resources-user-feedback.php for more user testimonies.