9th MedGOOS Assembly
18th March 2009, Cyprus

Report from the Chair
Kostas Nittis
Key activities - events 2008

✓ GRA Forum – GRC
✓ Maritime Policy: Follow up of the Aberdeen declaration. Marine Research Partnership
✓ GEO Process – CZCP workshop
✓ Other events: MB Forum; MarinERA coastal observatories workshop; MarinERA joint call for the Med

(in addition to the MOON activities discussed the previous 2 days)
The 4th GRA Forum
GRA Forum: a platform to share experience and promote interaction between GRAs – organized every 2 years

2008 forum: Participation 12 GRA; I-GOOS; PI CO; IOC Chairman and Secretary; GOOS office; WMO …

Linked to SA ministerial conference on climate change & impact on marine ecosystems

Main topics:
1. Update on progress of GRAs
2. Building the GOOS Coastal Network (GCN) – PI CO
3. Collaboration with LMEs
4. Data & information exchange between GRA
1st GOOS Regional Forum, Athens, Greece, 2002
2nd GOOS Regional Forum, Nadi, Fiji, 2004
3rd GOOS Regional Forum, Cape Town, S. Africa, 2006
4th GRA Forum, Guayaquil, Ecuador, November, 2008
The XXXIInd IOC Assembly instructed the I-GOOS Committee to support the activities of the GOOS Regional Alliances (GRAs) with the following wording:

‘..it may prove appropriate for the Forum to evolve into a more advanced mechanism...to strengthen the interaction between and the collective ability of GRA’s to contribute to the... of the system’.

Based on this recommendation, the 3rd GRAs Forum (2006), recognized the need for:

• a unified voice for global coordination, and
• a mechanism to promote exchange of information and technologies,

in order to improve national, regional and global marine environmental services as a major contribution to the Global Ocean Observing System.

Supported the creation of the GOOS Regional Council (GRC) to support the activities of the GOOS Regional Alliances (GRAs).
The GRC will:

1. Identify the most appropriate means to address the collective needs of GRAs, and **represent the interests of GRAs** within the I-GOOS;

2. Provide **advice to I-GOOS** and serve as a conduit for actions and recommendations from I-GOOS to the GRAs;

3. Co-ordinate among the Regional Alliances in order to increase **sharing of experiences** and technological know-how for the regional implementation of GOOS;

4. Establish **priorities** for implementing the GOOS Coastal Network;

5. Enable **interoperability** among the Regional Ocean Observing Systems (ROOS);

6. Organize **GOOS Regional Fora** with the support of the GOOS Project Office of IOC/UNESCO. These meetings should discuss, among other things, the scientific and technological advances relevant to operational oceanography;

7. Advise I-GOOS on consideration of candidatures for recognition as new regional alliances;

8. Coordinate assessment of performance of ROOS with assistance from GSSC.
Presentation to the 4th GRF
GOOS development in the Mediterranean Sea: MedGOOS & MOON activities and plans

Kostas Nittis, HCMR (Greece)
MedGOOS Chair
The operational oceanography community in the Med

**MedGOOS** is the GOOS-GRA, an association founded to provide a concerted approach to the planning and implementation of an operational ocean monitoring system for the benefit of all coastal states in the region. Association of 19 institutions from 16 countries. Secretariat in Malta.

The Mediterranean Operational Oceanography Network (MOON) is the evolution of the Mediterranean Task Team of EuroGOOS. It brings together marine research centres from the region to contribute to the planning and implementation of the operational ocean observing and forecasting system in the Mediterranean, promoting the development and optimization of the scientific base, the technology and the information system for operational oceanography.

**Strategy and Implementation Plans:** Pinardi and Flemming, 1998, Pinardi et al., 2006
Development strategy

✓ Multi-national collaborative efforts
  ✓ to build the basin scale monitoring and forecasting system
  ✓ networking & capacity building component
  ✓ mainly funded by EU research framework programs

✓ National developments
  ✓ mainly focusing on EEZ systems
  ✓ also contributing to basin scale
  ✓ partial coordination by MedGOOS-MOON
The basin scale system
Components of the Mediterranean m/f system

In situ data

Mediterranean Thematic Centers

H/D, Ecosystem, Wave Models

R/S data

World-wide Data Dissemination Center

GTS WMO

GRA Forum - IV, November 2008
MFSTEP OGCM
OPA 8.1
1/16° x 1/16° horizontal grid, vertical levels (1.5-5000m)
49 islands

Basin Scale Modeling - Forecasting

Ocean model data code | Field description | Units
---|---|---
M-B-1 or M-S-1 | Temperature field | degrees Centigrade
M-B-2 or M-S-2 | Salinity field | PSU
M-B-3 or M-S-3 | Density field | Kg/m³
M-B-4 or M-S-4 | Zonal velocity component field | m/sec
M-B-5 or M-S-5 | Meridional velocity component field | m/sec
M-B-6 or M-S-6 | Vertical velocity component | m/sec
M-B-7 or M-S-7 | Sea level field | m
M-B-8 or M-S-8 | Zonal Wind stress component field | N/m²
M-B-9 or M-S-9 | Meridional Wind stress component field | N/m²
M-B-10 or M-S-10 | Downward radiative heat flux field | W/m²
MFSTEP sub-regional and shelf systems

MFS supports sub-regional (3 km) and shelf models (1 km) nesting: weekly forecasts are produced for ALL the sub-regional models and some shelf models.

Sub-regional models at 3 km

Shelf models at 1.5 km

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Other operational products

Wave forecasting: 1/20o

H/D forecasting: 1/10o

Ecosystem forecasting: 1/10o
Daily satellite SST interpolated in RT on model grid (one day delay)

XBT VOS high resolution system (12 nm along track and full profile transmission, few hours delay)

20 ARGO floats deployed from VOS (few hours delay)

Multiparametric buoys in: Ligurian Sea, Adriatic Sea and Cretan Sea (few hours delay)

Open ocean monitoring by gliders (few hours delay)

Scatterometer DAILY winds analysis, 1/2x1/2 (one week delay)

JASON-1, GFO, ENVISAT, T/P Sea Level Anomalies (few days delay)

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The M3A Network of moored reference stations

- MFSPP (1998-2001)
- MFSTEP (2003-2005)
- MERSEA (2004-2008)
- EuroSITES (2008-2010)

Contribution to OceanSITES
Reference station E1-M3A

**Parameter** | **Depths measured (m)** | **Sensor(s) used**
--- | --- | ---
Wind speed/dir., | Surface | Young 04106
Air Pressure, | Surface | Vaisala PTB 220A
Air temperature, | Surface | Omega
Wave Height | Surface | Fugro OCEANOR Wavesense
Pyranometer PSP, | Surface | Eppley
Radiometer PIR, | Surface | Vaisala HMP 45A
Relative humidity, | Surface | Young 50203
Precipitation sensor, | Surface | Satlantic ocr-507-r10w
Radiance | Surface | Satlantic ocr-507-ricsw
Irradiance | Surface | Aanderaa 3919A
SST, SSS surface, | Surface (1m) | Nortek Aquadopp 400 kHz
Temperature | 20, 50, 75, 100m 250, 400, 600, 1000m | Seabird 16plus-IMP C-T Seabird 37-IM C-T
Salinity | 20, 50, 75, 100 250, 400, 600, 1000m | Seabird 16plus-IMP C-T Seabird 37-IM C-T
Pressure | 250m | Seabird 37-IM C-T-P
Turbidity | 20, 50, 75, 100m | Wetlabs flntus-rt
Dissolved Oxygen | 20, 50, 75, 100m | SBE 43
Chl-a | 20, 50, 75, 100m | Wetlabs flntus-rt
PAR | 20, 50, 75, 100m | Licor LI-193
M3A Measurements

12 June 2000

21 June 2000

GRA Forum – IV, November 2008
MedARGO Program

Mediterranean & Black Sea Argo Center

✓ Component of the North Atlantic Argo Regional Center
  ✓ Coordination of float deployments in Med and BS
  ✓ Production and distribution of Med/BS Argo products and services

✓ Delayed Mode Operator
  ✓ Delayed-mode processing specific to Med/BS Argo data
**Mediterranean Deployments per year**

2000: 3 (NAVO) = 3
2001: 4 (NAVO) = 4
2002: 9 (NAVO) = 9
2003: 4 (MFSTEP) + 9 (NAVO) = 13
2004: 15 (MFSTEP) + 3 (NAVO) = 18
2005: 3 (France) + 1 (Spain) + 7 (MFSTEP) + 1 (NAVO) + 2 (US/GR) = 14
2006: 7 (France) + 1 (MFSTEP) + 2 (US/GR) = 10
2007: 4 (France) = 4
2008: 8 (France) = 8 (+ 4 Spain in November)

**TOTAL:** 83 FLOATS ...... more than 6000 CTD profiles
27 MFSTEP + 1 SPAIN + 22 FRANCE + 29 NAVO + 4 US/GREECE = **83 Floats**

**20 floats still active on 16/09/2008 (2 US/GREECE, 2 NAVO, 3 MFSTEP, 13 FRANCE)**

63 non-active floats (including 12 stranded units, out of which **6 were recovered**)

*GRA Forum – IV, November 2008*
The Mediterranean VOS Program
Technology

- Sippican system
- Industrial computer

XBT Probes

GRA Forum – IV, November 2008
VOS data examples
MFS-VOS (XBT) in the Mediterranean

GRA Forum – IV, November 2008
Coastal and deep gliders

Coastal glider and deep prototype

GRA Forum – IV, November 2008
National Systems
Currents in the North West Mediterranean basin

Wave forecast from global to local scales
Spain (Puertos del Estado, IEO, CEAB)

Repeated transects
Italy + Croatia, Montenegro, Slovenia

Adricosm Project
Greece: POSEIDON
Cyprus (CYCOFOS)

ALERMO models at 3 km

CYCOFOS models at 1.5 km and 600 m
Applications - Users

✓ Safety (waves-navigation, objects drift – SAR, mainly national services)
✓ Pollution – oil spill (national authorities, UNEP/REMPEC, EMSA)
✓ Eutrophication (UNEP/MAP/ Medpol)
✓ Contribution to TWS
✓ Contribution to EEA assessment reports (climate change)

✓ MoU with UNEP/MAP (monthly Bulletin for MS)
✓ In preparation: MoU with REMPEC
✓ Service to EMSA trough national authorities & GMES MCS
Perspectives
Future priorities

- Sustain the basin scale system
- Improve it for deep sea observations; including new technologies such as PAL
- Increase the bio-chemical component: improve ecosystem forecasts; more bio-chemical observations.
- New services towards an ecosystem approach to management of resources (fisheries and aquaculture)
- Improve coordination for the coastal component. Include coastal observations into the basin scale data management system. Contribute to more real time sea level observations.
EU / Policy developments

- **GMES / Kopernikus** (EU – ESA Initiative), European contribution to GEO
  
  Expected to provide sustained services (global / regional seas) after 2012

- **Marine Strategy** (marine assessments, EMMA process, EEA)
  
  Possibly contribute to development of additional coastal observations

- **Maritime Policy** (… EMODN: European Marine Observations and Data Network)
  
  Could lead to sustained marine (core) observations
  
  Possible activity to promote the Maritime Policy to non-EU countries

GRA Forum – IV, November 2008
Large infrastructure opportunities

**EuroARGO**

- A new European research infrastructure (ESFRI)
- *European contribution to* the global Argo array of 3,000 floats
- Proposal: Europe establishes an infrastructure for $\frac{1}{4}$, i.e. 800 floats in operation
- Requirement: 250 floats per year including regional enhancements (Nordic seas, **Mediterranean**) (about 50 floats per year for regional enhancements)

**EMSO (follow up of ESONET)**

- European Network of SeaFloor Observatories (cabled)
- 1-2 sites in the **Mediterranean** Sea
- Preparatory phase
Conclusions

✓ A coherent community has been formed in the Med (10 years of cooperation)
✓ The basin scale system has been developed well – sustainability of observations is still an issue
✓ Kopernikus (GEOSS) and EMODNet could provide the framework for long term sustained systems (outside / independent of short term research programs)
✓ National systems are being build – mixture of operational & research funding; they will be the main contribution to GCN – need for additional coordination
✓ However, not much progress in the southern coast
✓ Collaboration with UNEP/MAP is growing; could be a facilitator for capacity building in the south
✓ On track, but still a long way to go …
Back to GRA Forum ..
Action Items of the IV GRA Forum:

1. **We establish the GOOS Regional Council today**, with the volunteers [MedGOOS, EuroGOOS, GOOS Africa, Black Sea GOOS, US GOOS, PI GOOS] acting as a core group. MedGOOS and EuroGOOS will take joint responsibility to coordinate the process. The other GRAs can join as soon as they have agreement, preferably within two months (by Jan 31, 2009).

2. The GRC Terms of Reference will be reviewed by the GRC and adapted to the new framework.

3. Engage the GEO/GEOSS process - Make it clear that GOOS is the ocean component of GEOSS.

4. Facilitate awareness and communication between GRA and LME programmes.

5. Initiate contact between co-located GRAs and LME projects where it is not already occurring.

6. Transfer lessons learned from GOOS Africa and Benguela LME for collaboration into other regions.
Action Items of the IV GRA Forum:

7. GOSIC to develop a Web-Forum for communications.
8. GOSIC requests GRAs to examine their individual GRA pages and verify.
9. Further develop the GOSIC web portal to be organized by regions and targeted at end product users. For GOSIC to consider.
10. GRC secretariat task to keep up to date web portal information on GRAs.
11. Develop a newsletter with information about GRA activities on a regular basis. Based on inputs to the GRA Web-Forum (see 7).
12. Individual GRAs to investigate how the USGOOS Data Management Architecture might be applied.
13. GRC to coordinate with the GRAs a common implementation plan based on the previously approved Coastal GOOS Implementation Strategy.
14. GRC should help to establish centers of capability, such as the modeling centers. (Example of specialized responsibilities of institutions in the Australian OS.)
Action Items of the IV GRA Forum:

15. **GRAs to review the recommendations contained in GOOS Report #148 and provide guidance to PICO concerning their priorities.**

16. **GRAs gather information on projects and programmes occurring in their coastal waters which would be of benefit to GOOS and would contribute to GEOSS societal benefits.**

17. **GRC to propose standard reporting procedures to the GRAs.**
Maritime Policy: The Aberdeen + process
MRP development

- For the organization of the Aberdeen EurOCEAN’07 conference a big number of marine research networks worked together.
- Following the success (Aberdeen declaration) and in response to the needs of the Maritime Policy / DG Mare the networks met again in April 08 and formed the Aberdeen+ group.
- A task force was selected to examine and propose mechanisms of collaboration towards forming the Marine Research Partnership. Members: ICES, MB, CI ESM, EuroGOOS/ MedGOOS, Waterborne, ETAP, MARS, EFARO. The “Venice Platform” (coastal community of practitioners) was added afterwards.
- A proposal was submitted for a SSA to test mechanisms for a sustained partnership: MARCOM+.
Proposed work

EuroGOOS / MedGOOS Role:
Chairing the IDDIAAS Panel,
Co-chairing the Research Infrastructure Panel
GEO Process - Med Workshop
GEO developments - Med workshop

✓ Until recently there was no clear / visible marine component of GEO apart of CZCP

✓ GOOS and PICO are now recognized as main contributors / coordinators of the marine component. Efforts are made to include the GRA coordination as a GEO activity in the recent work plan 2009 – 2011

✓ CZCP organized the workshop “Observing System Requirements for Managing and Mitigating the Impacts of Human Activities and Coastal Inundation in the Mediterranean Region”, June 9-13, 2008 in Athens. H.D., N.P. and K.N. were in the organizing committee

✓ The workshop brought together the GOOS/marine science community and the CZCP (practitioners) community

✓ Useful exercise since there was not much knowledge on the developments of GOOS in Med / Europe

Need a more active engagement with GEO
Contribution to other events
Other events 2008

- Preparation / Session chairing of the 1st Marine Board Forum on: “Marine Data Challenges: From Observations to Information”
- Promotion / Preparation of the 3rd MARINERA INFRASTRUCTURE WORKSHOP: «Towards a long-term and sustained European network of coastal observatories»
- Preparation / contribution to the: “1st MarinERA Joint Call: Regional Drivers of Ecosystem Change”, >5M€, 2 Regions: Channel & Mediterranean Sea. Greece, Spain and Portugal contribution to the Med Sea
- Preparation of the Al-Bahri proposal outline
- New MedGOOS Web Page
Conclusions

- Development of the coastal module of GOOS main priority for near future. Increased collaboration with other GRAs through GRC. Establishment of priorities / targets / milestones is needed.
- Stronger contribution to GEO.
- Contribution to MRP development at European level. Need to maintain visibility and promote the goals of O.O. Use the momentum of Maritime Policy (ref. contribution to Maritime Day, Rome, May 09).
- Continue effort for stronger engagement of members. Esp for the Al-Bahri proposal.
- In close collaboration with MOON & EuroGOOS.