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Agenda Item: 8.1

IOC-WMO-UNEP-ICSU/GSSC-IX/17
Paris, February 2006
English only

**INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION** (of UNESCO)

**WORLD METEOROLOGICAL ORGANIZATION**

**UNITED NATIONS ENVIRONMENT PROGRAMME**

**INTERNATIONAL COUNCIL FOR SCIENCE**

**Ninth Session of the Global Ocean Observing System Scientific Steering Committee (GSSC-IX)**
Paris, France, 6 – 8 March 2006

# Developing Capacity to develop and use Operational Products and Services to address societal needs in Developing Countries: Enhancing the Contribution from IOC Capacity-building

IOC Capacity-building Section

*This note provides background information for the discussion of the Capacity-building item. It contains certain recommendations from preliminary exchanges between GOOS and IOC Capacity-building. Guidance from the GSSC is sought particularly for the organization of the upcoming workshop on operational products and tools in East Africa.*

## CURRENT IOC CAPACITY-BUILDING ACTIVITIES FOR OPERATIONAL PRODUCTS AND SERVICES

The 23rd Assembly of IOC instructs the Capacity-building Section to "give high priority to the use of GOOS components to address regional concerns" (Resolutions XXIII-10 and XXIII-11).

***IOC's approach is "self-driven" Capacity-development as approved by the Assembly***. In this frame directors of institutes play a key role. They will be informed of existing products in GOOS, remote-sensing and GIS, and the choice of which operational products to develop in priority for their region, as well as training focus, should be left to them whenever possible.

***IOC is developing capacity for operational oceanography in the Adriatic Sea*** through the coordination of ADRICOSM. Through this project, countries across the Adriatic Sea will strengthen their capacity to use and provide near-real time observations for operational forecasting. IOC's role includes ensuring that capacity developed in countries on the Eastern Adriatic is self-sustainable, and that this project interfaces effectively with GOOS and other IOC activities such as IODE.

***IOC is developing capacity to collect and use high-resolution near-shore bathymetric data for strengthening coastal resilience to ocean-based extreme events*** in the Indian Ocean (COAST-MAP-IO project). Through this the Capacity-building Section is contributing to the development of a multi-hazard warning and mitigation system, a high-priority for many developing countries, which should become an important component of GOOS.

***IOC Capacity-building received funding for workshops that can make a strong contribution to the wider use of GOOS*** products and services. This financial support from the Swedish International Development Agency (SIDA) is not focused on operational products per se, but on another important IOC Assembly instruction on leadership, team-building and proposal writing workshops. However, the project does include training on GIS, remote-sensing and operational products and services, and should be implemented in ways that will *strengthen the capacity needed to develop and apply GOOS products and services to societal needs in developing countries*.

## UPCOMING WORKSHOP ON OPERATIONAL PRODUCTS AND TOOLS IN EAST AFRICA

***IOC is seeking guidance and partnership in preparing this workshop to be held in East Africa in the coming months.*** These workshops on "Operational Products and Tools" are seen as a key in the contribution of IOC Capacity-building Section to the development and use of operational products and services in the developing world. *IOC is planning to conduct the first such workshop in the next few months in East Africa*.

***Coastal models are seen as an excellent tool in interfacing societal needs in the developing world and GOOS*** as well as Geographical Information Systems and Remote Sensing, all tools that the 23rd IOC Assembly instructed the Capacity-building section to conduct training for. Coastal models and GIS can play a key role in transforming existing data-streams from satellite observations into operational products and services. With coastal models, which can be run on computing capacity available in developing countries, marine scientists are empowered to provide science-based answers to specific questions of decision-makers, and present their results more vividly. *Hence an important component of this workshop should be training in the use of these models in combination with existing data-streams*.

***Similar and follow-up workshops are also planned in this and other IOC regions.*** These will provide excellent opportunities to strengthen the links between GOOS, particularly GRAs, and IOC capacity development activities in the developing world. Plans should be discussed for allowing GRAs to take the lead in organizing follow-up exercises. Since coastal marine issues are usually important for developing countries, IOC will seek guidance particularly from the coastal GOOS community.

***Preliminary outline of the workshop***

An initial outline of the workshop is proposed here for discussion. In addition to changes following discussion at the GSSC-9 meeting, this outline should be updated after discussions with directors of marine science institutes in East Africa during a visit in the region immediately prior to the GSSC meeting, from 20 February to 3 March 2006, as well as with input received from LMEs in the region, GOOS Africa, and government agencies responsible for the coastal zone planning and resource management.

1. Two groups of oceanographers, not exceeding 20 per group, are selected to attend two-weeks training courses. The scientists will be selected from nominations by their directors for training in coastal modeling, and training in remote sensing and GIS.

2. The workshops will begin with a half-day awareness program on the variety and types of operational products suitable for addressing selected priority regional needs. This presentation should focus on a small group of products and/or services that were selected prior to the workshop for their applicability to coastal modeling and decision-making in the regional context. *This group could include existing products and services that can be developed from available data streams in the region*. Advice from the GOOS community and in particular the COOS group is especially needed for this item.

3. The two groups of trainees then separate for one week during which one group receives training in coastal modeling and the other group is trained in GIS applications.

4. At the end of Week 1, the groups reconvene for a joint day session where the tools learnt during the week are discussed in a joint session and a refresher lecture is given on the finer details of selected GOOS products.

5. Week 2 continues the training for the modeling group, while the other group receives training in processing remote sensing data.

6. At the end of Week 2, the groups reconvene for a joint day session. At this joint session, there would be a greater level of appreciation of selecting available operational products and/or developing them from available data with recently acquired skills.

7. The joint sessions end with a wrap-up set of lectures on the science that underpins solutions to local needs.

8. It is being considered to back-to-back this workshop with a professionally conducted proposal-writing workshop that will involve at least some of the trainees in drafting proposals for funding.

**SOCIETAL NEEDS IN EAST AFRICA: IDENTIFYING AND DEVELOPING SUITABLE OPERATIONAL PRODUCTS**

The program described herein would greatly benefit from discussing priority marine issues in the region and the type of GOOS products that are available or could be developed to help address these issues. Various programs and bodies have identified a number of such priorities: some are provided below *in the hope that a number of exiting and/or rapidly developable GOOS products applicable to these issues will be proposed during the meeting.*

***The New Partnership for Africa Development (NEPAD)*** Environment Programme, Coastal and Marine Sub-theme, identifies a number of key issues that include:

- coastal erosion
- management of key ecosystems and habitats
- pollution, sustainable use of living resources
- tourism

***GOOS experts have put forward the following priorities*** in preliminary discussions of the marine-related priorities in the region:

- exposure to waterborne pathogens from sewage
- coastal erosion and flooding
- coastal mariculture

***Consultations with regional experts by IOC have identified the following as high priorities*** during the formulation of the initial implementation plan for IOC Capacity-building:

- Water and sediment analysis
- Models for coastal management systems
- Coastal zone vulnerability indices and mapping
- Applications of remote sensing (ocean circulation, living resources, water quality, coastal erosion, forecasting ocean weather/climate)
- Exchange programs – regionally and inter-regionally of students and lecturers

Other urgent and critical needs identified in this process were:

- Development of teaching curriculum, methods and tools
- Short-term fellowships to attend training, ship-board and conferences
- Scholarships for long-term training at MSc and PhD levels
- Applications of GIS to Coastal Management
- Strengthening teaching and research infrastructure
- Data and Information management
- Installation and upgrade of coastal observing systems
- Workshops on Sea-level data analysis and interpretation
- Monitoring and assessment of Harmful Algal Blooms

**SOME STEPS FORWARD PROPOSED FOR DISCUSSION**

The steps outlined below include the input received from preliminary exchanges between IOC Capacity-building and GOOS experts. Guidance is requested from GSSC, IGOOS and other relevant expertise before they are finalized.

***1. Select a small number of products and/or services*** for their applicability to coastal modeling addressing societal needs in the Western Indian Ocean. This choice will be based on the input from:

a) African directors of institutes, collected during visits on-site and subsequent regular communication

b) findings from previous GOOS efforts, in particular as reported in the Implementation Strategy for the Coastal Module of GOOS, the Integrated Strategic Design Plan for the Coastal Observations Module of GOOS, and the report of the PACSICOM/GOOSAFRICA workshop

c) discussion at the GSSC-9 meeting and in subsequent exchanges with the GOOS community, including I-GOOS and GRAs, and with LME programs in the region

Depending on whether the desired products are already available or are to be developed, the training would focus on either using these products, or developing them from existing data and models.

***2. Invite decision-makers to, and involve them in the preparation*** of, the workshop. Directors of institute as well as relevant government advisers and decision-makers will be encouraged to attend. As essential users of GOOS products, their guidance shall be requested on confirming/identifying most useful applications

***3. Closely Involve I-GOOS, GRAs, LMEs*** and other existing regional bodies and programs in the organization, conduction, and follow-up of this workshop. These bodies will be solicited for their endorsement and for help in attracting complementary funding.

***4. Pursue efforts at assessing existing infrastructure and capacity*** in the region, continue survey of related work, and adjust workshops content and location accordingly. An assessment of existing capacity was instructed by the last IOC Assembly, and the Capacity-building section has initiated this effort with visits of marine research institutes in East and Southern Africa.

***5. Define guidelines for the choice of workshop participants*** in terms of minimal qualifications, field of specialization, seniority. The choice of workshop participants should be left to directors of institutes, but IOC and GSSC should provide these guidelines. At present it is envisaged that the workshop should primarily aim for an audience of the oceanographers most competent in the use of coastal models, GIS, and remote-sensing data.

***6. Plans for sustaining the process should be discussed.*** In particular, steps for GRAs to take a prominent role in follow-up workshops should be outlined. An essential follow-up activity would be the formulation of proposals to funding agencies for pilot projects involving the development of the operational products that were identified in step 1 above. The IOC Capacity-building Section is planning to organizing professionally conducted proposal-writing workshops that would be an excellent opportunity to develop and seek support for such pilot projects.