Office of Naval Research International Liaison Office

Ocean Science and Engineering Newsletter 2

Report on the

4th Meeting of the Ad Hoc IOCARIBE-GOOS Advisory Group [Intergovernmental Oceanographic Commission (IOC) Sub-commission for the Caribbean and Adjacent Regions], 21-23 February 2002, Vera Cruz, Mexico.

And

Mexico's General Directorate of Education in Science and Technology of the Sea (DECyTM)

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These reports summarize global activities of S&T Associate Directors of the Office of Naval Research International Field Offices (ONRIFO). The complete listing of newsletters and reports are available under the authors' by-line on the ONRIFO homepage: http://www.ehis.navy.mil/ http://www.ehis.navy.mil/onrnews.htm or ONRIFO-Asia homepage: http://www.onr.navy.mil/onrasia/, or by email to respective authors.

Contents:

Key Words: The Global Ocean Observing System (GOOS); oceanography; Caribbean; oceans; atmospheric forecasting; UNESCO.

I. Summary

The fourth session of the *ad hoc* Advisory Group for IOCARIBE-GOOS (Global Ocean Observing System) took place in Vera Cruz, Mexico. The host and local organizer of the meeting was Mexico's General Directorate of Education in Science and Technology of

the Sea (DECyTM), described in Section IV. The meeting was supported in part by ONRIFO's Conference Support Program (CSP).

The main purpose of the meeting was to complete the draft chapters of *"The Case for IOCARIBE-GOOS",* which is the strategic plan for IOCARIBE-GOOS, for presentation to the IOCARIBE meeting, which was to follow immediately the *ad hoc* Advisory Group meeting.

The aim of Caribbean GOOS is to promote the technical implementation of GOOS in the Wider Caribbean Region to meet the specific economic, social and environmental needs of the Wider Caribbean coastal and island States. The main priority areas to be taken into account when drafting the final proposal of the regional specific objectives were: tourism, fisheries, agriculture, coastal population, maritime safety, marine pollution, hurricanes and weather forecasting, tsunamis and storm surges, and marine biological diversity.

Much of the meeting consisted of discussions of the *"The Case for IOCARIBE-GOOS,"* as noted, but there were also presentations on related topics. The U.S. Office of Naval Research (ONR) discussed the mission and modus operandi of the ONR International Field Office, provided some examples of the ocean forecast models of the Naval Research Laboratory, and briefly mentioned the Naval Oceanographic Office's international Hydrographic Cooperation Program. There was also a presentation on the Pacific GOOS Strategic Plan.

II. Brief Background (IOC/GOOS)

The Intergovernmental Oceanographic Commission (IOC) of UNESCO

The Intergovernmental Oceanographic Commission (IOC) of UNESCO was founded in 1960 on basis of the recognition that

> *"the oceans, covering some seventy percent of the earth's surface, exert a profound influence on mankind and even on all forms of life on Earth... In order to properly interpret the full value of the oceans to mankind, they must be studied from many points of view. While pioneering research and new ideas usually come from individuals and small groups, many aspects of oceanic investigations present far too formidable a task to be undertaken by any one nation or even a few nations."*

To understand the significant effect of the oceans on both global environmental changes and sustainable development, it is essential to understand and be capable of predicting the global and regional ocean conditions and the interaction with the atmosphere, biosphere and land. This requires a firm commitment to oceanographic research, systematic ocean observations, technology development and transfer, and related education and training. The Intergovernmental Oceanographic Commission plans to play a pivotal role in meeting these needs.

The **objectives** of the work of the IOC have focused on promoting marine scientific investigations and related ocean services, in order to enhance understanding of the nature and resources of the oceans.

In meeting these challenges, the IOC focuses on four major themes:

- develop, promote and facilitate international oceanographic research programs to improve the understanding of critical global and regional ocean processes and their relationship to the sustainable development and stewardship of ocean resources;
- ensure effective planning, establishment and co-ordination of an operational global ocean observing system to provide the information needed for oceanic and atmospheric forecasting, for oceans and coastal zone management by coastal nations, and for global environmental change research;
- provide international leadership for education and training programs and technical assistance essential for systematic observations of the global ocean and its coastal zone and related research; and
- ensure that ocean data and information obtained through research, observation and monitoring are efficiently handled and made widely available.

The IOC is composed of its 128 **Member States**, an **Assembly**, an **Executive Council** and a **Secretariat**. The Secretariat is based in Paris, France. Additionally the IOC has a number of **Subsidiary Bodies**.

Further information on IOC can be found at the IOC web site: http://ioc.unesco.org/iocweb/default.htm from which the preceding was adapted.

The Global Ocean Observing System (GOOS)

The Global Ocean Observing System **(**GOOS) was created by the IOC Assembly in 1991 in response to the desire of many nations to improve management of seas and oceans, and to improve climate forecasts, for both of which it is necessary to establish observations dealing with physical, chemical and biological aspects of the ocean in an integrated way. Agenda 21 specifically calls for GOOS to be developed to meet the needs of coastal states for sustainable development of seas and oceans.

The primary objectives of GOOS are:

- to specify the marine observational data needed on a continuing basis to meet the needs of the world community of users of the oceanic environment;
- to develop and implement an internationally coordinated strategy for the gathering, acquisition and exchange of these data;
- to facilitate the development of uses and products of these data, and encourage and widen their application in use and protection of the marine environment;
- to facilitate means by which less-developed nations can increase their capacity to acquire and use marine data according to the GOOS framework;

- to coordinate the ongoing operations of GOOS and ensure its integration within wider global observational and environmental management strategies.

GOOS provides information on the present and future states of seas and oceans and their living resources, and the role of the oceans in climate change. Direct potential beneficiaries of GOOS will include the managers of coastal defenses, ports and harbors, fishing and fish farming, shipping, offshore industry, and recreation. Indirect beneficiaries, through climate forecasting based on ocean observations, will include the suppliers on land of food, energy, water and medical supplies (e.g. for epidemics of malaria like those associated with El Nino events).

GOOS is part of an Integrated Global Observing Strategy (IGOS) in which the UN agencies [UNESCO and its IOC; The World Meterological Organization (WMO), the United Nations Environment Program (UNEP), and the Food and Agricultural Organization of the UN (FAO)] are working together and with the International Council for Science (Unions) (ICSU) and the satellite agencies (via the Committee on Earth Observation Satellites - CEOS). In that context, the GOOS forms the ocean component of GCOS (the Global Climate Observing System) and the marine coastal component of the GTOS (the Global Terrestrial Observing System). GOOS itself is sponsored by the IOC of UNESCO, WMO, UNEP and ICSU.

GOOS Regional Groups

It was considered natural and desirable that the development of GOOS should proceed through the formation of regional alliances, composed of nations or of national agencies. The national unit itself may consist of contributions from a variety of government agencies, research laboratories, universities, industries, and non-governmental organizations. The scientific rationale for the designation of GOOS regions and their boundaries is the need to monitor, model, and predict seawater bodies that can be treated as physical or biological units. The fundamental goal of GOOS regional development is "…to provide scientific, technical, and logistic collaboration in a sea area, where separate endeavors by individual states would be less effective and efficient, or even impossible." This may be accomplished by grouping "…those nations that are geographical neighbors, and have common political, commercial, or social interests." This should also have the positive effect of "…reducing the administrative complexity of trying to administer/coordinate programs in each nation (120 say) from a head office in Paris or Geneva." However, it also was recognized that the development of regional units is fraught with the potential for overlap with other existing regional organizations, duplication of effort, inefficient use of resources, and conflicts. Therefore, it was agreed that there must be a policy for regional GOOS development.

Existing and planned regional GOOS groupings

There are a number of regional GOOS groupings in existence; these range in development from new to well developed and operational. In addition, there are

conceptual and nascent groups, some of which will come into formal existence. **NEAR-GOOS** and **EuroGOOS** exist and have several years of experience. **MedGOOS**, **Black Sea GOOS**, **GOOS-Africa,** and **IOCARIBE GOOS** were created more recently, but have been formally recognized by IOC and have held their first meetings. There is also interest in an **Indian Ocean GOOS**, a **Pacific GOOS**, a **South Pacific GOOS,** a **Southeast Asia GOOS (SEAGOOS),** and an **ARCTIC GOOS.**

- **NEAR (North East Asian)-GOOS** is part of the IOC's regional sub-commission for the western Pacific (WESTPAC), and maps onto the North West Pacific Action Plan of the UNEP regional seas program.

- **MedGOOS** maps onto the IOC's integrated Mediterranean program, which includes activities like MedGLOSS, and onto the Mediterranean Action Plan of the UNEP regional seas program.

- **Black Sea GOOS** maps onto the IOC's Black Sea Regional Committee and UNEP's Black Sea Environmental Program.

- **IOCARIBE-GOOS** is part of the IOC's sub-commission for the Caribbean (IOCARIBE), and maps onto UNEP's Caribbean Environment program.

- **EuroGOOS** has five main regional activities:

(i) Baltic GOOS (BOOS), which maps onto the Helsinki Commission (HELCOM), which pre-dates UNEP's regional seas program;
(ii) a Mediterranean task force, which contributes to but is independent from MedGOOS;
(iii) an Arctic task force;
(iv) a northwest shelf task force, covering the North Sea and adjacent areas, which maps onto the Oslo/Paris Commission (OSPARCOM), which pre-dates UNEP's regional seas program;
(v) an Atlantic regional task force.

- **GOOS-Africa** is charged with aiding development in the regions of the Mediterranean Sea, Red Sea, Indian Ocean, and Atlantic.

- **Southeast Pacific GOOS**. The nations on the west coast of South America are developing collaborative programs within the framework of plans for the coastal elements of GOOS. Their design includes a set of nested scales, entirely consistent with GOOS strategy. No official regional proposal yet exists, but this activity likely will continue to develop.

Naturally, a number of the regional GOOS overlap in purview the same body of seawater. For example, EuroGOOS, Mediterranean GOOS, and Africa GOOS share interests in the Mediterranean Sea. Moreover, a coastal state may belong to more than one region. For

that reason, it is necessary that distinct lines of responsibility and clear lines of coordination be established.

Further information on IOC can be found at the IOC web site:
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III. The 4th Meeting of the Ad Hoc IOCARIBE-GOOS Advisory Group

The fourth session of the *ad hoc* Advisory Group for IOCARIBE-GOOS took place in Vera Cruz, Mexico. The host and local organizer of the meeting was Mexico's General Directorate of Education in Science and Technology of the Sea (DECyTM), described in Section IV.

The main purpose of the meeting was to complete the draft chapters of *"The Case for IOCARIBE-GOOS",* which is the strategic plan for IOCARIBE-GOOS, for presentation to the IOCARIBE meeting, which was to follow immediately the *ad hoc* Advisory Group meeting.

The aim of Caribbean GOOS is to promote the technical implementation of GOOS in the Wider Caribbean Region on all the appropriate spatial and temporal scales, as required, to meet the specific economic, social and environmental needs of the Wider Caribbean coastal and island States. While the general objectives for Caribbean GOOS were to be the same as those for global GOOS, Caribbean GOOS should have, in addition to these generalized objectives, a set of specific objectives relevant to the region to satisfy the fundamental needs and priorities of sustainable development of the region. The main priority areas to be taken into account when drafting the final proposal of the regional specific objectives were the following: tourism, fisheries, agriculture, coastal population, maritime safety, marine pollution, hurricanes and weather forecasting, tsunamis and storm surges, and marine biological diversity.

Much of the meeting consisted of discussions of the *"The Case for IOCARIBE-GOOS,"* as noted, but there were also presentations on related topics. The U.S. Office of Naval Research (ONR) discussed the mission and modus operandi of the ONR International Field Office, provided some examples of the ocean forecast models of the Naval Research Laboratory, and briefly mentioned the Naval Oceanographic Office's international Hydrographic Cooperation Program. There was also a presentation on the Pacific GOOS Strategic Plan.

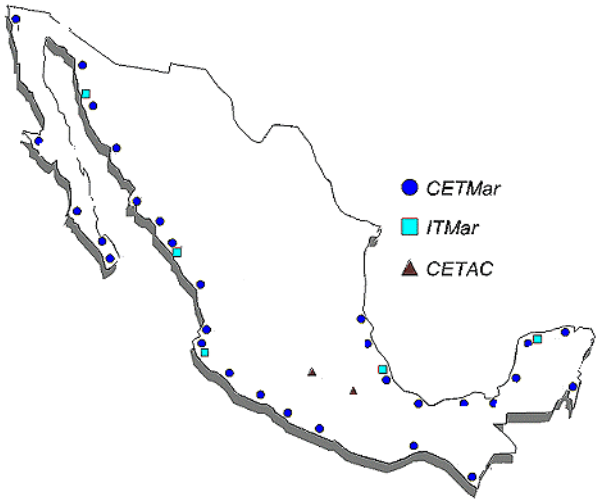
IV. Mexico's General Directorate of Education in Science and Technology of the Sea [Dirección General De Educación En Ciencia Y Tecnología Del Mar (DECyTM)]

Mexico's General Directorate of Education in Science and Technology of the Sea (DECyTM) was created to serve the needs of the professional and technical personnel engaged in the exploration, exploitation, conservation, cultivation and administration of Mexico's marine resources. DECyTM basic objective is to prepare specialists to

contribute to the knowledge, transformation, and sustainable use of the Mexico's salt and fresh-water resources, including its seas, lakes, lagoons, and rivers.

DECyTM consists of a system of educational facilities located at 38 branches in the littoral areas of Mexico and two in the central regions, as shown in the figure. Of these, 30 are Centers of Marine Technology Studies (CETMAR), two are Centers of Technology for Continental Waters Investigations (CETAC), and five are Institutes of Marine Technology (ITMAR). DECyTM maintains a flotilla of 39 ships of various types, including, 22 trawlers, 6 fishing boats and10 sports vessels.

Locations of the branches of Mexico's "General Directorate of Education in Science and Technology of the Sea"



V. Assessment

ONRIFO support for the IOCARIBE-GOOS meeting is a tacit recognition of the large area of common interest in ocean S&T that exists between ONR and the IOC-GOOS projects, albeit with differing objectives. IOC's present and future plans to increase its involvement with Latin America could complement ONR's efforts in this region of the world. In particular, with approval for the establishment in Chile of a regional ONRIFO Latin America office now having being granted, continued, if not enhanced, cooperation between ONR and IOC is recommended.

Although this was a rather short workshop, with narrowly defined objectives, it did provide an opportunity to witness the clear commitment of the Caribbean nations to the effective utilization of their marine resources, as well as their willingness, in principle, to engage in international collaboration to achieve this goal. It appears that each nation has a particular focus, and potential contribution, in this effort. Mexico's General Directorate of Education in Science and Technology of the Sea (DECyTM) seems particularly well-poised to contribute to its country's goals in Marine S&T.

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