Intergovernmental Oceanographic Commission (IOC)

Contribution by UNESCO/IOC to the Report of the Secretary General to the 59th Session of the General Assembly on Oceans and the Law of the Sea

February 2004

CONTRIBUTION BY UNESCO/IOC TO THE REPORT OF THE UN SECRETARY GENERAL TO THE 59TH SESSION OF THE GENERAL ASSEMBLY ON "OCEANS AND THE LAW OF THE SEA"

MANDATE:
The 31st General Conference of UNESCO authorized the Director-General (a) to implement the corresponding plan of action in order to: (i) improve scientific knowledge and understanding of oceanic and coastal processes with a view to assisting UNESCO Member States in the design and implementation of sustainable policies for the ocean and coastal zones, through the organization and coordination of major scientific programmes, responding to the mandate of UNCLOS, UNCED/Agenda 21 and the Global Conventions of Climate Change and Biodiversity and regional conventions, and by reinforcing the capacity of developing countries particularly by targeting sub-Saharan Africa in the framework of the African Process and Programmes in the development of scientific mechanisms for an ecosystem approach; (ii) organize the collection of ocean and coastal observations, the modelling and the production of forecasts needed for the management and sustainable development of the open and coastal ocean, particularly by implementing the Global Ocean Observing System and its related pilot projects and regional components, and by increasing the capacities and participation and full involvement of developing countries; (iii) further developing the International Oceanographic Data and Information Exchange (IODE) system through the establishment of new national oceanographic data and information exchange facilities, the creation of needed capacities, particularly in developing countries, and the provision of access by a wide community of users to current ocean data and information in accordance with the existing United Nations Conventions and UNESCO's approach on data and information; (iv) to intensify the follow-up to the Pan African Conference on Sustainable Integrated Coastal Management (PACSICOM);

GLOBAL RESULT 1 **International cooperation and coordination of programmes is promoted in research, services and capacity-building, in order to learn more about the nature and resources of the ocean and coastal areas**

In December 2003, IOC signed a Memorandum of Understanding with the Minister of Environment of Kenya that is responsible for hosting the Coastal and Marine Unit of the NEPAD Environment Initiative (COSMAR/NEPAD). IOC will provide technical and financial support to COSMAR/NEPAD with a view to develop an operational communication strategy and information –sharing tools in order for COSMAR to act as a clearing-house mechanism for African countries in need of technical assistance for the

use Observation Systems for the integrated management of their environment, provided that the participation of developing nations grows up as the process develops.

Main Line of Action 1: Reducing scientific uncertainties about coastal and global ocean processes in the context of marine ecosystems

DESCRIPTION: IOC has been addressing, through its Ocean Science Programme, critical scientific uncertainties in relation to the management and sustainable use of the marine environment and the ocean's role in global change by facilitating, promoting and coordinating appropriate research and related capacity-building activities. New perspectives in marine environmental protection require new integrated approaches in research as well as management. An interdisciplinary science approach involving the understanding of coupled chemical, biological, physical, global and coastal ocean processes in an ecosystem context is now essential. The major challenge is the development of scientific mechanisms for an ecosystem approach to the management of marine and coastal environments, including fisheries. As an integral part of this challenge, there is an urgent need to develop robust, useful indicators of the health of ocean ecosystems.

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RESULT: **Research, monitoring and assessment for improved understanding of the responses of the marine ecosystem to global change are facilitated**

A significant progress has been achieved on linking physical indices to pelagic fish stocks. A GEF Targeted Research programme on climate change impacts on coral reef ecosystems was initiated jointly with the World Bank. Significant progress was achieved in developing indicators for the health of benthic communities. A programme was initiated through TTR with a specific focus on the complex systems such as cold seeps, hydrothermal vents. Understanding of the factors regulating the dynamics of HABs in the context of physical and chemical forcing, ecosystem dynamics and

elements of the observing system; · Expanded regional GOOS programmes tied closely to UNEP regional programmes; · Improved approach to ocean data management.

RESULT: **The Global Ocean Data Assimilation Experiment (GODAE), and the Argo expanded project to use profiling floats for a first-time global collection of upper ocean thermal and salinity data, through projects in all oceans**

The Global Ocean Data Assimilation Experiment is designed to test the ability of the community to integrate in situ and remotely sensed ocean data and assimilate them into advanced numerical models to accurately represent the behaviour and present state of the ocean at a fine scale, and to forecast its future behaviour globally. One key element of GODAE is the Argo profiling float programme, which will seed the ocean with 3000 profiling floats to measure the temperature and salinity of the upper 2000 metres of the ocean and transmit the data back to base by satellite, as the basis for the first ever truly global monitoring of subsurface ocean properties. These data are essential to improve ocean and climate forecasts.

Achievements in 2003 The largest GODAE pilot project is the Argo project to seed the ocean with 3000 profiling floats that will all be operational during the period 2003-2005. Argo will provide the first ever global coverage of the temperature and salinity of the upper ocean, which is badly needed to improve numerical models and forecasts of the

RESULT: **Fully tested GODAE models ready to assimilate Argo data between 2003-2005**

See also result 1. GODAE models are being developed for example through the French MERCATOR project

Achievements in 2003

New components of GOOS are being tested through pilot projects. One of these is the Global Ocean Data Assimilation Experiment (GODAE), which is developing new models of ocean circulation, creating new ways of integrating remotely sensed (satellite) and ocean in situ data, and assimilating these data into those models. Progress with GODAE can be monitored, and GODAE products can be accessed through the US GODAE Server operated by the U.S. Navy in Monterey, California (http://www.usgodae.fnmoc.navy.mil/), and through the French MERCATOR project 3

Brazil, Oct 20-29;
CLIMAR-II and Brussels 150th Celebration Conference, Brussels,. Nov 17-20;

RESULT: **Effective functioning of the newly formed regional GOOS bodies**

There are a number of GOOS regional bodies with specific interests in a common body of water. The GOOS Project office works with them to ensure that they can function effectively and are developing according to GOOS Principles so as to

Main Line of Action 3: To further develop and strengthen the IODE system as a global mechanism to ensure open and full access to ocean data and management of relevant information for all

DESCRIPTION: The IOC's International Oceanographic Data and Information Exchange (IODE) was established in 1961 to enhance marine research, exploitation and development by facilitating the exchange of oceanographic data and information between participating Member States and by meeting the needs of users for data and information products. Over the past 40 years the IODE system has developed into a worldwide network of over 60 Designated National Agencies, National Oceanographic Data Centres,

projects such as GODAR, GTSPP, ASFA, GLODIR, SSSL.

Achievements in 2003

The MEDI metadata directory is a global inventory of data holdings held in the IOC Member States and agencies. During the year, training in the use and installation of the MEDI metadata authoring tool was provided to data centres participating in the ODINAFRICA project, the ODINCARSA project and for the Black Sea and Caspian Sea countries. The MEDI software was installed in data centres in Africa, South and Central America and Caspian Sea region. During the year, a total of 177 dataset descriptions were submitted by member states to the MEDI metadata repository, which is hosted by IOC/IODE at <http://ioc.unesco.org/medi/>.

The EU MarineXML project, 'Marine XML: A Pre-standardization Development for Marine Data Interoperability Using XML', officially commenced in February 2003. The project has the aim to align the development of a MML with other related standards and demonstrate a prototype MML in a test-bed environment. Crucially this project will also provide a mechanism for the on-going development of the standard when the project completes in 24 months time. Given the large number of existing standards, the immediate aims of the project are to model how these standards inter-related with each other and with the requirements of the marine community such that the basis for a XML specification can be realised. IOC, through the IODE programme is responsible for the disseminate the developments and findings of MarineXML to interested stakeholders and organizations, development an Exploitation Plan for identified exploitable project deliverables, and to ensure the post-project development and standardization of a MML

The Second Session of the ICES-IOC Study Group on the Development of Marine Data Exchange Systems using XML (SGXML) was held in Gothenburg, Sweden from 26-27 May 2003. The Group developed a set of Action Items for the intersessional period that focus on three areas of interest: (i) Metadata Investigation, (ii) Parameter Dictionaries, and (iii) Point Data Investigation. The Group also developed a Vision for SGXML: The ICES-IOC SGXML will utilize or establish international standards to promote the seamless exchange of data from distributed data sources, by using a single parameter dictionary, well-defined and explicitly tagged metadata, and a common XML data structure, packaging all content and providing to the client datasets and software tools that are platform independent or web enabled.

Details of both these Marine XML initiatives are available on the Marine XML community portal web site hosted by IOC at <http://www.marinexml.net>.

RESULT: **IODE: Ocean data and information capacity building to ensure access for all**

It includes: - Establishment and strengthening of additional oceanographic data and information centres, especially in developing countries- Training of oceanographic data and information managers, especially in developing countries through specialized group training activities or individual travel/study grants (internships)- Development of 'Ocean Data and Information Networks' (ODIN) in the different regions, following the successful model already being implemented in Africa within the framework of the ODINAFRICA project (2000-2004). - Provision of internet access to oceanographic data and information centres in developing countries- Comprehensive CD-ROM and Internet based 'IODE OceanTeacher' as a training tool and self-training support system for Oceanographic data and information management capacity building- Additional National Oceanographic Data Centres, especially in developing countries, with trained staff, required equipment and Internet access

Achievements in 2003

The following training courses were held as part of the ODINAFRICA-II program for ocean data management: (a) A special remedial workshop was held in Accra, Ghana from 14-18 April 2003, and was attended by seven students from six countries (Bénin,

parity with the other students; (c) The ODINAFRICA-II Training Course in Marine Data Management was held in Maputo, Mozambique between 11 and 22 August 2003, and was organised by the Instituto Nacional de Hidrografia e Navegaçao (INAHINA). Ten students attended the workshop from marine institutions and universities in Mozambique; (d) The third and final ODINAFRICA-II Training Course in Marine Data Management was held in Brussels, Belgium between 1 and 5 September 2003, and was attended by 13 data managers from National Oceanographic Data Centres in Africa. The data management aspects of the implementation of the ODINAFRICA-II project were reviewed in order to identify the successes and failures and to consider actions to be taken to progress the implementation of the third phase of ODINAFRICA. More information on ODINAFRICA can be obtained from the Web site <http://www.odinafrica.net> (hosted by IOC/IODE).

RESULT:

USA would provide training in marine cartography in the beginning of 2004.
Head Department of Navigation and Oceanography of Russian Navy published the Geological Geophysical Atlas of the Pacific Ocean (GAPA). Therefore more the 20 years work has been accomplished.

RESULT: **ITSU/IDNDR: Tsunami warning system development**

- Further strengthening of the tsunami warning system in the Pacific to become effective for the Pacific, as well as local tsunamis.- Development of new tsunami warning systems in other regions based on the experience gained in the Pacific.- Continuation of co-operation with IUGG and ICSU, as well as with ISDR in the area of tsunami mitigation.- Improve capabilities of Member States in the tsunami preparedness.

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