

**Intergovernmental Oceanographic Commission**  
*Reports of Meetings of Experts and Equivalent Bodies*



**IOC-IUCN-NOAA**  
**Consultative Meeting on Large**  
**Marine Ecosystems (LMEs)**

**Sixth Session**

Paris, France

29–30 March 2004

**Electronic copy only**

**UNESCO**

**Intergovernmental Oceanographic Commission**  
*Reports of Meetings of Experts and Equivalent Bodies*

**IOC-IUCN-NOAA  
Consultative Meeting on Large  
Marine Ecosystems (LMEs)**

**Sixth Session**

Paris, France

29–30 March 2004

**UNESCO 2005**

IOC-IUCN-NOAA/LME-VI/3  
Paris, December 2004  
English only

**Abstract**

The Sixth Consultative Committee Meeting on Large Marine Ecosystems (LMEs) was held from 23 to 30 March 2004. The Consultation was convened by the Intergovernmental Oceanographic Commission (IOC) of UNESCO, the US Department of Commerce's National Oceanic and Atmospheric Administration (NOAA), and the World Conservation Union (IUCN). It was sponsored by IUCN and hosted by IOC at the United Nations Educational, Scientific, and Cultural Organization (UNESCO) Headquarters, Paris, France. The meeting was co-chaired by IOC Executive Secretary, Dr Patricio Bernal and Dr Kenneth Sherman of NOAA-NMFS. The agenda and a list of attendees are given in Annexes I and I.

## TABLE OF CONTENTS

	Page
<b>1. INTRODUCTION.....</b>	<b>1</b>
<b>2. REPORTS ON THE PLANNING AND IMPLEMENTATION OF LARGE MARINE ECOSYSTEM ASSESSMENTS AND MANAGEMENT PROJECTS....</b>	<b>2</b>
2.1 BENGUELA CURRENT LME .....	2
2.2 YELLOW SEA LME .....	3
2.3 CANARY CURRENT LME.....	3
2.4 GUINEA CURRENT LME .....	3
2.5 SOMALI CURRENT/ AGULHAS CURRENT LMEs .....	4
2.6 THE BALTIC SEA LME.....	4
2.7 BAY OF BENGAL LME (BOBLME) .....	5
2.8 GULF OF MEXICO LME .....	5
2.9 PACIFIC CENTRAL AMERICAN LME .....	5
2.10 CARIBBEAN LME .....	6
2.11 HUMBOLDT CURRENT LME .....	6
2.12 EUROPEAN LMES .....	6
2.13 ARCTIC LMEs .....	7
<b>3. ACTIVITIES AND ACCOMPLISHMENTS DURING 2003.....</b>	<b>7</b>
3.1. MULTI-MEDIA INFORMATION NETWORKS.....	7
3.2 WORLD MAP UPDATES CONTINUE .....	7
3.3 INTER-AGENCY COLLABORATION .....	7
3.4 ECOPATH MODEL APPLICATIONS.....	8
3.5 COST BENEFIT ANALYSES .....	8
3.6 MARINE PROTECTED AREAS .....	8
3.7 INTERAGENCY LINKAGE ON BENGUELA PROJECT .....	8
3.8 NITROGEN FLUX ESTIMATES .....	8
3.9 WHITE WATER TO BLUE WATER.....	8
<b>4. GLOBAL ENVIRONMENT FACILITY (GEF) .....</b>	<b>9</b>
<b>5. THE HUMAN DIMENSIONS OF LMEs (SOCIOECONOMICS AND GOVERNANCE MODULES) .....</b>	<b>9</b>

<b>6.</b>	<b>GOOS</b> .....	<b>9</b>
<b>7.</b>	<b>UNIDO</b> .....	<b>10</b>
<b>8.</b>	<b>IUCN – THE WORLD CONSERVATION UNION</b> .....	<b>10</b>
<b>9.</b>	<b>IW:LEARN</b> .....	<b>10</b>
<b>10.</b>	<b>UN ATLAS OF THE OCEANS</b> .....	<b>11</b>
<b>11.</b>	<b>GEF CORAL REEF TARGETED RESEARCH</b> .....	<b>11</b>
<b>12.</b>	<b>GLOBAL EARTH OBSERVATIONS SYSTEM (GEOS)</b> .....	<b>11</b>
<b>13.</b>	<b>LME PROGRAMME OFFICE REPORT</b> .....	<b>12</b>
13.1	PROJECT DEVELOPMENT .....	12
13.2	BIOMASS YIELDS AND CATCH STATISTICS .....	12
13.3	DESIGNATION AND MODIFICATION OF LME BOUNDARIES .....	12
13.4	GLOBAL INTERNATIONAL WATERS ASSESSMENT (GIWA).....	12
13.5	OUTREACH .....	13
13.6	MEETINGS AND WORKSHOPS .....	13
13.7	LME WEBSITE WORK AND VOLUME PREPARATIONS .....	13

## **ANNEXES**

- I. AGENDA**
- II. LIST OF PARTICIPANTS**
- III. LIST OF ACRONYMS**

## PREFACE

The Sixth Consultative Committee Meeting on Large Marine Ecosystems (LMEs) was held from 29 to 30 March 2004. The consultation was convened by the Intergovernmental Oceanographic Commission (IOC), the US Department of Commerce's National Oceanic and Atmospheric Administration (NOAA), and the World Conservation Union (IUCN). It was sponsored by IUCN, and hosted by IOC at UNESCO headquarters, Paris, France. The meeting was co-chaired by IOC Executive Secretary, Dr Patricio Bernal, Dr Kenneth Sherman of NOAA and Dr Carl Gustav Lundin, of IUCN. The meeting agenda is given in Annex I, and a list of attendees is given in Annex II.

## 1. INTRODUCTION

Dr Bernal called the meeting to order at 0900 on Monday, 29 March, and welcomed the 28 participants to UNESCO. He spoke to the Committee about the continuing interest on the part of IOC in the development and implementation of the science-based LME programme and the generous funding support of the Global Environment Facility to developing countries in Africa, Asia, Eastern Europe and Latin America using the International Waters focal area for improving conditions in their respective coastal regions.

Dr Sherman reported that the combined efforts of the World Conservation Union (IUCN), the Intergovernmental Oceanographic Commission (IOC), and the National Oceanic and Atmospheric Administration (NOAA) in partnership with the Global Environment Facility (GEF) and UN agencies (UNDP, UNEP, and UNIDO) resulted in considerable progress since the last meeting held in March 2003. Seventy countries are involved in funded projects, and 51 countries are involved in developing GEF projects. A total of 121 countries are receiving GEF, donor and national grant financing at a sum of \$650 million. Dr. Sherman also reported on the successes at the regional White Water to Blue Water Partnerships Conference, in Miami, Florida, where over 800 participants were engaged in four days of workshops and breakout sessions focused on Integrated Watershed Management, Ecosystem-Based Management, Marine Transportation, and Sustainable Tourism. One of the partnership initiatives now in the planning stages is the GEF supported Caribbean Sea Large Marine Ecosystem Project, which is focused on the sustainable management of shared living marine resources of the Caribbean Sea LME and adjacent areas. The Gulf of Mexico LME project concept proposal has received GEF approval for an \$8.0 M project and the Caribbean Sea LME concept proposal was approved for funding at a \$9.0 M level. Dr Sherman discussed how the projects will be using new marine technologies as well as incorporating *in situ* observations with remotely sensed satellite observations to provide a three dimensional view of the coastal ocean to better understand productivity in the LMEs. He also led a discussion on emerging partnerships and stakeholder involvement (mining, oil and gas, fisheries, tourism) in many of the ongoing GEF-LME projects.

Dr Lundin reported that the World Conservation Union is very committed to moving forward the implementation of LME projects in developing countries in partnership with IOC and NOAA and detailed the superb relationship that has existed over the past 15 years between the organizations. He provided the Committee with a status report on IUCN activities focused toward the World Parks Congress held in Durban, South Africa in September 2003, and the upcoming 3rd IUCN World Conservation Congress in November 2004 in Bangkok, Thailand. Dr Lundin introduced two new staff to the IUCN Marine Program, Ms Kirsten Martin, with IUCN in Gland, and Ms Kristen Sherwood of IUCN, Washington, DC. Both were welcomed by the panel.

## **2. REPORTS ON THE PLANNING AND IMPLEMENTATION OF LARGE MARINE ECOSYSTEM ASSESSMENTS AND MANAGEMENT PROJECTS**

The Committee welcomed a series of presentations on the status of LME planning and implementation for projects around the globe.

### **2.1 BENGUELA CURRENT LME**

Dr Michael O'Toole presented the Committee with a briefing on the successful implementation of the Benguela Current LME (BCLME) project and the status of the Strategic Action Programme (SAP) being initiated during this phase of the project. The SAP phase is to be funded at a level of \$33 million. Of this amount, \$15 million is to be financed by the GEF, to cover "incremental costs" over five years. The matching funds of \$18 million represent donor assistance, as well as baseline commitments to the project in personnel and facilities made available by Angola, Namibia, and South Africa, the three participating BCLME border countries. UNDP is the implementing agency and UNOPS is the executing agency. The full title of the Strategic Action Programme is entitled "Integrated Management, Sustainable Development and Protection of the Benguela Current Large Marine Ecosystem (BCLME)" and is available at <http://www.bclme.org/news/index.htm>.

Transboundary issues are focused on the uniquely high productivity of the ecosystem and the serious shortcomings in realizing the full socioeconomic potential because of the decline in commercial fish stocks, harmful algal blooms, habitat destruction and alteration, deterioration in water quality, and less than optimal industrial practices in offshore oil production, diamond mining, and fishing practices, particularly in relation to resource allocation between industrial and artisanal fishermen. Identified root causes to be addressed and corrected through the activities of the project include: inadequate planning at all levels, insufficient public and stakeholder involvement, poor legal frame work, a complex and variable ecosystem, and inadequate capacity building and training.

The BCLME Programme will concentrate project activities on the ecosystem's productivity and fisheries, and the effects of environmental variability, seabed mining, oil and gas exploration, coastal zone management, and ecosystem health on the long-term sustainability of the resources and environments important to the economies of the bordering countries of Angola, Namibia, and South Africa. The principal country ministries serving as stewards of the environment and natural resources in each of the three countries signed and adopted the Benguela Current LME Strategic Action Program. They additionally established an organization under the terms of the Law of the Sea (UNCLOS), entitled The BCLME Programme, complete with 10 Principles to be followed, and 7 new Institutional Arrangements to carry the BCLME Programme forward. The key instrument for Programme implementation is the Interim Benguela Current Commission (IBCC). It was established to strengthen regional cooperation and be fully supported by a Programme Coordinating Unit (PCU) and subsidiary bodies, such as Activity Centres and Advisory Groups. The IBCC will become a fully functional Benguela Current Commission (BCC) with a supporting Secretariat within a period of five years. Five Advisory Groups will support the IBCC: (1) Advisory Group on Fisheries and Living Resources, (2) Advisory Group on Marine Environmental Variability and Ecosystem Health, (3) Advisory Group on Marine Pollution, (4) Advisory Group on Legal Affairs and Maritime Law, and (5) Advisory Group on Information and Data Exchange. Significant progress is being made in several key project areas – Living Marine Resources, Environmental Variability, and Biodiversity – with 52 funded projects now in place. The BCLME is engaged in cooperative efforts with BENEFIT, SEAFO, IDYLE, and IW:LEARN.

## 2.2 YELLOW SEA LME

Professor Qisheng Tang reported that China and Korea are now cooperating in the implementation of the 5-year \$25 million GEF project for the Yellow Sea LME. The project is based on a Transboundary Diagnostic Analysis (TDA) conducted jointly by scientists and marine policy experts from both countries. The key components of the project will include joint surveys and assessments of the fish and fisheries of the Yellow Sea LME, assessments of the carrying capacity, pollution, and health of the ecosystem. Special attention is to be focused on the socio-economic benefits to be realized from improvements to the environment and sustainable development and management of the goods and services provided by fisheries, mariculture, and other ecosystem resources for the densely populated coastal urban centres located along both the Korean and Chinese coasts of the LME.

Professor Tang also described changes observed over several decades in the Yellow Sea, Bohai Sea, and East China Sea associated with a climate regime shift as well as fishing pressures. He noted that management of fisheries and mariculture is critical and that water quality is key to maintaining both biodiversity as well as biomass. In his presentation, Professor Tang described how zooplankton biomass had declined over the years, and how the anchovy has become the dominant species of fish in the YSLME, consistent with the Pauly-Christensen thesis of 'Fishing down the Food Chain'. He stressed the complementarity among the more basic science-oriented GLOBEC studies and the applied surveys and assessments being made during YSLME implementation to support joint Chinese and Korean management practices.

## 2.3 CANARY CURRENT LME

Dr Ndiaga Gueye provided a status report on the Canary Current LME Project and was pleased to inform the Committee that progress is being made in this PDF-B phase with a planning document presently under review and soon to be signed off by representatives of the seven participating coastal countries bordering the LME on the northwest Africa coast, including Morocco, Mauritania, Senegal, Gambia, Cape Verde, Guinea-Bissau, and Guinea. The countries are working with FAO and UNEP on finalizing the terms of the project. A project coordinator is being recruited by FAO, the Executing Agency. The UNEP will serve as the Implementing Agency.

Funding for the planning phase is at \$626,000, of which \$340,000 is being supported by the GEF. Co-financing of \$286,000 is provided through in-kind support of UNEP, Country governments, FAO, UNIDO, and NOAA. During the planning phase emphasis will be on preparation of a Transboundary Diagnostic Analysis to identify the principal shared problems and their root causes, as well as national, regional, and transboundary priorities. Fish and fisheries are one transboundary issue critical to the food security for the people inhabiting the region, particularly in Senegal and Mauritania, and will be a major focus of the project. Other components that are part of the Strategic Action Programme (SAP) include development of pilot demonstration activities as part of the SAP implementation efforts, building capacity for effective management of the Canary Current LME, developing regulatory frameworks, and establishing regional coordinating mechanisms to control and better manage the resources on the Canary Current LME.

## 2.4 GUINEA CURRENT LME

Dr Chika Ukwe advised the Committee that the PDF-B for the second phase of the Guinea Current LME project was completed in June 2003 with the Full Project approved for \$55.8 M. GEF support will be \$20.8 M and co-financing will be \$35M US. Implementing agencies will be UNDP and UNEP. UNIDO will be the executing agency. The project is to be extended over the entire



spatial dimension of the Guinea Current LME and will include participation of 10 additional countries, including Sierra Leone, São Tomé and Príncipe, Liberia, Equatorial Guinea, Guinea, Guinea-Bissau, Gabon, Democratic Republic of the Congo, Congo, and Angola, as well as the six original countries of Benin, Cameroon, Côte D'Ivoire, Ghana, Nigeria, and Togo. UNIDO is arranging for industrial stakeholder participation in this GEF project. The petroleum and gas producing companies operating along the coasts of the Guinea Current are expected to play an important role in co-financing the project. In addition to fish surveys and assessments, reduction of pollution, and increased capacity building, Phase 2 of the Project will emphasize mangrove rehabilitation activities, as these are nursery areas for populations of important shrimp and fishery resources of the GCLME. The Norwegian and Guinea Governments have identified research vessels that will be made available for carrying out transboundary fisheries, oceanography, and productivity surveys.

## 2.5 SOMALI CURRENT/ AGULHAS CURRENT LMEs

The lead UN agencies for the Agulhas and Somali Current LME projects are the World Bank, UNEP and the UNDP. The PDF Block B for the offshore component of the project is being executed by the World Bank and the PDF-B for the coastal component is being executed by UNDP, with scientific and technological assistance for both efforts being provided by NOAA. The PDF-B executed by the UNDP is entitled "Ecosystem Assessments of the Agulhas and Somali Current Large Marine Ecosystems." It is to integrate a three-component approach that will include an offshore fisheries assessment activity to be executed by the World Bank, and the Agulhas and Somali Current LME projects to be executed by UNDP, and a nearshore coastal assessment activity to be executed by UNEP in partnership with IUCN. Fisheries, and pollution and ecosystem health in relation to food security and regional economic development are prime concerns of the participating countries. Shoreline erosion and reduction of stress on coral reefs will be considered as part of habitat restoration. Tanzania is prepared to carry out systematic assessments, in collaboration with Kenyan marine specialists, of marine resources and establish an adaptive management framework in support of the long-term sustainability of transboundary marine resources of the Somali Current LME. Comoros, France (Reunion and Mayotte), Kenya, Madagascar, Mozambique, Seychelles, South Africa, and Tanzania are the countries represented in these GEF LME projects.

## 2.6 THE BALTIC SEA LME

Dr Jan Thulin, Project Coordinator on behalf of ICES (<http://www.ices.dk/>), reported on activities for the Baltic Sea Regional Project and noted that the project funded at \$12 M moved into its second year of funding. The project is introducing ecosystem-based assessment and management practices to the emerging democratic countries in the eastern Baltic region including Estonia, Latvia, Lithuania, Poland, and Russia. After developing the TDA and SAP during the first phase of the program, the project is now in a 5-year activity period wherein the LME modules - productivity, fish and fisheries, pollution and ecosystem health, socio-economics, and governance - are being operationalized in accordance with cooperative and integrated surveys and assessments of nearshore and Baltic-proper resources and environment. Activities are focused on eutrophication, contaminants, overfishing, climatic regime changes, and invasive species. The ICES is providing scientific and coordination expertise to the project while the International Baltic Sea Fisheries Commission (IBSFC) will be responsible for preparation and evaluation of fish stock assessments, and HELCOM ([www.helcom.fi](http://www.helcom.fi)) will focus on activities to reduce pollution-induced stress on the Baltic Sea LME. Several advisory committees and steering groups are being formed for ecosystems, the environment, and fisheries. There will be national laboratories in all 9 Baltic countries as well as Coordination Centres and Lead Laboratories in each of the recipient countries. Coordination Centres will be established for productivity, fish/fisheries, ecosystem health, ecosystem modelling, GIS, and socio-economics. Lead Laboratories will be established for open sea

surveys, biodiversity, coastal fish monitoring, ships of opportunity, biological monitoring, zooplankton, invasive species, histopathology, age and growth studies, and salmon restoration.

## 2.7 BAY OF BENGAL LME (BOBLME)

Dr Derek Staples briefed the committee on activities associated with the BOBLME as Dr Philomene Verlaan was unable to attend. Dr Staples is familiar with ecosystem-based management and the LME approach, having recently been associated with the National Oceans Office in Australia and involved in regional planning and coordinating mechanisms involving sustainable monitoring and evaluation. Dr Staples provided the Committee with historical information on the region stating that 25% of the World's population is located in this region that is heavily dependent on fishing, and has a high poverty level. Planning for the project has been ongoing for several years with a GEF PDF-B grant awarded in 1998. FAO is the executing agency. There have been slowdowns, however, concerns have been corrected, and the project is now moving forward. A TDA is expected by late 2004 and will focus on root causes associated with living marine resources, illegal fishing, point and non-point source pollution, critical habitats (especially mangroves & coral reefs), and sustainable fisheries management. The TDA report is planned for submission to the GEF Council on February 2005. A second regional workshop will be held in September 2004, and a Project Brief is planned for 2005.

The eight participating countries include Bangladesh, India, Indonesia, Malaysia, Maldives, Myanmar, Sri Lanka and Thailand. The PDF Block B Phase of the BOBLME Programme is hosted by the Government of India. Support for the project is high among the participating members, as the countries have recognized the need for comprehensive, integrated coastal and near shore management. Additional information on the BOBLME Project can be obtained from their website at <http://www.fao.org/fi/boblme/website>.

## 2.8 GULF OF MEXICO LME

Mr Pablo Huidobro of UNIDO briefed the Committee on Gulf of Mexico LME Project activities. A PDF Block B is moving forward with UNIDO as the Executing Agency and UNDP as the Implementing Agency. The Project is presently planning for GEF funding near \$8 million, and co-financing of approximately \$10 million. Countries participating in the Gulf of Mexico LME Project are Cuba, Mexico, and the United States. During the PDF-B phase, a transboundary diagnostic analysis will be conducted which will focus on habitat loss, management of living resources, and land based sources of pollution, plus their relationship to climatic regime shifts and vulnerability to storm events. These concerns will be prioritised in the Strategic Action Programme, and lead to building capacity and initiation of government and institutional arrangements for implementing region-wide efforts addressing the critical ecosystem problems in the Gulf of Mexico LME.

## 2.9 PACIFIC CENTRAL AMERICAN LME

Dr Daniel Lluch-Belda presented background information and an update on the Pacific Central American LME project. The Project was initiated by IOCARIBE in 1999 during its sixth assembly in San Jose, Costa Rica. A Steering Committee was assembled with members from the United States, Mexico and Costa Rica. Their purpose was to prepare a PDF-B grant proposal signed off by the participating countries. UNIDO was contacted to act as the Executing Agency. In 2001 a draft Concept paper was submitted to GEF for PDF-B grant funding however low availability of GEF grant funding froze the project. During IOCARIBE VII in Veracruz, Mexico in 2001, a UNEP representative recommended that the project proposal be considered as an IOC contribution to the development of an action plan for the protection and sustainable development of

the coastal and marine environment of the Northeast Pacific. The Assembly supported the UNEP recommendation, and moved to submit a PDF-Block A proposal in 2002 with the intention of further defining the scope and reach of the project. Additional partners and stakeholders have been identified. The project received initial funding, and in 2003 the Mexican Government hosted a workshop of experts to further define the scope and reach of the Pacific Central American Coastal LME project.

## 2.10 CARIBBEAN LME

Dr Robin Mahon briefed the Committee on recent project activities in the Caribbean LME. A Concept Paper prepared by UNDP in cooperation with IOCARIBE has been approved by the GEF for pipeline entry and PDF-B funding is expected. The full project is estimated at \$19 million – GEF financing of \$9 million and \$10 million in country financing. A total of 33 countries, island states and other possessions have expressed interest. UNDP will serve as the Implementing Agency and IOCARIBE the Executing Agency. The objectives of the Caribbean LME Project are to identify, analyse, and prioritise the transboundary issues, root causes, and actions required to achieve sustainable management of the shared living marine resources in the Caribbean Sea LME, to improve the shared knowledge base so that the sustainable use and management of transboundary resources will be possible, to implement legal, policy, and institutional reforms regionally and nationally to achieve sustainable management of transboundary resources, and to develop an institutional and procedural approach to LME monitoring, evaluation, and reporting for management decision-making.

## 2.11 HUMBOLDT CURRENT LME

Dr Rodolfo Serra presented information to the Committee on actions relating to the Humboldt Current LME. A PDF Block-B grant has been awarded and the TDA is being completed. It is focused on root causes associated with exploited fishery resources, biodiversity threats, deterioration of the coastal zone, and ecosystem variability. A preliminary Strategic Action Programme for sustained integrated management of the Humboldt Current LME resources was completed at the end of 2003 and is now under review by the Governments of Peru and Chile. UNDP is the implementing agency for this project and UNIDO under the direction of Mr. Pablo Huidobro is the executing agency. IFOP and IMARPE are also involved with the execution of this project and both Peru and Chile are enthusiastic about collaborating on this project.

## 2.12 EUROPEAN LMES

Dr Jacqueline McGlade, Executive Director of the European Environmental Agency, presented information on the European Environmental Agency and interest expressed by the Agency for considering the use of the LME approach. The EEA has advertised for proposals to examine the application and suitability of the LME approach for all European coastal countries and its coastal waters. The EU is now moving forward with marine assessments and is using an integrated approach to investigate conditions focused on water quality, climate change, sea level rise, eutrophication and pollution, and overfishing. Coastal GOOS will play a major role in establishing monitoring platforms with similar instrument packages. Collection of data and information across the entire European Community will be streamlined. Key environmental indicators have been identified and data is now being collected of these parameters to establish time series and baseline conditions for monitoring and management purposes. Establishment of information networks like EIONET and similar websites will reach out to over 300 institutions, will be multilingual, and will strive towards transparent information management. The main products will be broad integrated assessments, indicator based reports, specific issue reports, best practices, and frameworks, guidelines, and databases. Key concerns being investigated now on European

marine waters include the condition of LMEs in relation to nutrients, pesticides, and heavy metals; how much water is available to consider in assessments of runoff, and drainage performance; and are trends in water use getting better or worse.

### 2.13 ARCTIC LMEs

Dr Gennady Matishov briefed the Committee on research activities in the Arctic Large Marine Ecosystems with special emphasis on the Barents Sea LME. A discussion of the physical oceanographic condition was provided to better understand the biological processes in the ecosystem. Most of the living marine resources have declined over the years due to increased fishing pressure. Only recently has legislation been put in place to help rebuild the stocks. Polar bear and hooded seal populations have decreased significantly. Invasive species such as the Kamchatka crab are causing stress on ecosystem stability. Oil and gas exploration continues to expand and is evidenced in concentrations of increased levels of aromatic hydrocarbons in the ecosystem. Agricultural and industrial runoff is a significant concern in the Barents Sea as it is in most of the Arctic region. More emphasis is now being focused on these areas as well as a better understanding of the effects of radioactive contamination from weapons testing, dumping of wastes, and other sources associated with the uptake of these materials in marine mammals, polar bears and some fish species. Steps are being taken to better understand the pathways of persistent organic pollutants in marine ecosystems and to reduce contaminant inputs into the Arctic region. Other stabilization approaches include the restoration of environmental monitoring systems, better management over commercial fish species, governmental control over the introduction of invasive species, and the rebuilding of commercial finfish and shellfish stocks.

## 3. ACTIVITIES AND ACCOMPLISHMENTS DURING 2003

This section briefly summarizes activities and project accomplishments made since the LME Consultative Committee Meeting in March 2003:

### 3.1. MULTI-MEDIA INFORMATION NETWORKS

NOAA, IUCN, and IOC continue to use multi-media technologies via project websites to help inform the international marine environmental and resource institutions and networks of LME project activities. The UN Atlas of the Oceans (<http://www.oceansatlas.org>) project is Office to inform the international community of LME project activities. It is the intent of this collaboration to have illustrated descriptions of all 64 LMEs on the UN Atlas of the Oceans website.

### 3.2 WORLD MAP UPDATES CONTINUE

IUCN and NOAA, in collaboration with the University of Rhode Island continue to update the "Large Marine Ecosystems of the World and Linked Watersheds" map which is available in electronic format on the LME website (<http://www.lme.noaa.gov/>). The map is GIS compatible, and provides LME boundaries, shape files, and bathymetry and elevation information for export to other systems. New maps for the United States and Arctic Large Marine Ecosystems are also available on the NOAA LME website.

### 3.3 INTER-AGENCY COLLABORATION

Collaboration with marine scientists from the University of British Columbia Fisheries Center Sea Around Us Project is continuing with synthesized FAO fish catch statistics for each LME. This information is available on their website (<http://saup.fisheries.ubc.ca/lme/lme.asp>). Additionally, a

new FAO report titled *Trends in oceanic captures and clustering of large marine ecosystems* (Garibaldi and Limongelli, 2003) has been issued and is available from the FAO Fishery Department and the NOAA LME Programme Office.

### 3.4 ECOPATH MODEL APPLICATIONS

ECOPATH/ECOSIM modelling and similar “carrying capacity” modelling efforts are being carried out by Dr Villy Christensen and his colleagues at the University of British Columbia under a GEF mid-size grant that will provide training at several LME project locations around the globe so that capacity building is achieved, and this technology can be shared and transferred within the LME network and that models are available for all 64 LMEs.

### 3.5 COST BENEFIT ANALYSES

Economic valuations, benefit-cost methodologies, and approaches for consideration of the human dimensions of LME projects continue in collaboration with faculty and staff at the University of Rhode Island and the Woods Hole Oceanographic Institution.

### 3.6 MARINE PROTECTED AREAS

IUCN, NOAA, and IOC participated in the World Parks Congress in Durban, South Africa in September 2003. An LME session that focused on Marine Protected Areas and regional activities was convened with significant contributions from LME projects in Africa, Asia, Latin America and Eastern Europe.

### 3.7 INTERAGENCY LINKAGE ON BENGUELA PROJECT

Collaboration between the BCLME and Humboldt Current LME projects are continuing and are focused on upwelling, climatic regimes, and the high biological production of both LMEs. Several other organizations and activities continue to enhance the scientific credibility of the work output by the LME projects. Meetings have been arranged by the GTZ between scientists participating in the Benguela and the Humboldt Current LME projects. One report entitled “Long-term dynamics of the Benguela and Humboldt Current Upwelling Ecosystems—a comparison from the ecosystem perspective” is available from Dr Jeurgén Alheit, Baltic Sea Research Institute, Rostock, Germany [juergen.alheit@io-warnemuende.de].

### 3.8 NITROGEN FLUX ESTIMATES

Dr Sybil Seitzinger, Rutgers University, and her colleagues will be collaborating with IOC to develop nitrogen flux estimates of all 64 LMEs projected out to the year 2050. This project is funded by the GEF and is part of a Mid-size proposal grant containing several components.

### 3.9 WHITE WATER TO BLUE WATER

The US Government in collaboration with Caribbean island nations held a major summit called the White Water to Blue Water Partnership Initiative, in mid-March 2004 in Miami where thematic sessions on integrated watershed management, marine ecosystems-based management, sustainable tourism, and marine transportation were addressed. A large and diverse group of marine experts had the opportunity to contribute to improving environmental conditions in the wider Caribbean region, and to work towards promoting better-managed and productive ecosystems to support sustainable economies and livelihoods.

#### **4. GLOBAL ENVIRONMENT FACILITY (GEF)**

Dr Sara Graslund, of the Global Environment Facility, Washington, DC, presented information on GEF's International Waters strategic planning objective for years 2003–2006 and provided background material on developing the strategic priorities. Proposed strategic priorities involve a shift to implementation of agreed reforms and investments stemming from the World Summit on Sustainable Development (WSSD). Priorities noted in the WSSD Plan of Implementation (PIO) relate to pollution reduction, basin management, and marine fisheries concerns that are critical to transboundary projects in these focal areas. The GEF will assist in achieving many of the WSSD targets set at the Johannesburg Summit based on guidance in the GEF Operational Strategy, objectives OP8-10, GEF contributions to the WSSD and the POI/WSSD targets. Specific internal targets are to, by 2006, catalyse a strategic partnership with African coastal nations, implementing agencies, and global development partners aimed at reversing the depletion of fisheries resources in the Large Marine Ecosystems of Sub-Saharan Africa as a contribution to WSSD POI sustainable fisheries target, and to expand capacity building work in addressing transboundary concerns related to water scarcity/ competing water uses and fisheries depletion. An additional focal area is the South-to-South sharing of experiences, learning, technology transfer, and filling gaps in understanding transboundary water systems. This South-to-South structured learning contributes to the success of GEF's capacity building work in International Waters and contributes to the WSSD POI "implementation of sustainable fisheries" target by 2015.

#### **5. THE HUMAN DIMENSIONS OF LMEs (SOCIOECONOMICS AND GOVERNANCE MODULES)**

Dr Timothy Hennessey of the University of Rhode Island Department of Marine Affairs briefed the Committee on the role and influence of governance and socio-economics at multiple LME scales. His presentation focused on capacity building and training, regional collaboration, policy development and harmonization, institutional design, co-financing, stakeholder participation, and the twelve human dimensions of LMEs which is based on the NOAA Technical Memorandum (TM) "A Framework for Monitoring and Assessing Socio-economics and Governance of Large Marine Ecosystems", available at <http://na.nefsc.noaa.gov/lme/publications.htm>. The NOAA TM examines the socio-economic and governance considerations of LMEs using the case study method. Work continues on the preparation of an LME volume on the human dimensions of LMEs to be edited by Drs J Sutinen and T. Hennessey of the University of Rhode Island, and will be available in late 2004.

#### **6. GOOS**

Dr Thorkild Aarup of IOC, Mr Justin Ahanhanzo of IOC, and Dr Ned Cyr of NOAA, provided information on the Global Ocean Observing System (GOOS) activities on global and regional scales. Dr Aarup briefed the Committee on the work of the GOOS Coastal Ocean Observations Panel (COOP) and the Climate Panel. He discussed the core parameters being collected as part of Ocean Observations and how the physical, biological and chemical data and information collected within each LME Project would contribute to the GOOS.

Mr Ahanhanzo briefed the Committee on GOOS Africa and activities centred on the Regional Ocean Observing Forecasting System, a project focused on integrating sea level records for monitoring coastal zones and global change, satellite remote sensing data for monitoring the marine and coastal environment, and modelling and forecasting based on *in situ* and satellite data.

Additionally GOOS Africa is concerned with effective involvement of stakeholders, and industry and business partnerships.

Dr Cyr presented information on the Ocean Ecology Observing System (OEOS) and the emphasis on Living Marine Resources. He also discussed the nested hierarchy and how this particular sector fits into the US IOOS, the Integrated Ocean Observing System which is part of GOOS, and how several regional observing systems are being developed around the United States, with an example of the Pacific Coastal Observing System which will serve the coastal region of the United States west coast.

Regional LME monitoring and assessment projects, such as the Guinea Current LME, Yellow Sea LME, Humboldt Current LME, and Baltic Sea LME provide opportunities to extend GOOS to developing countries. GOOS/IOC will work closely with the LME programme to ensure the complementarity of regional efforts.

## **7. UNIDO**

Mr Pablo Huidobro provided the Committee with a profile of the contributions made by the United Nations Industrial Development Organization (UNIDO) on LME projects, specifically planning for the Gulf of Mexico LME Project, the Block-B planning phase for the Humboldt Current LME project, and ongoing work with the Pacific Central American Coastal LME Block B planning phase. UNIDO's experience gained as an Executing Agency of the pilot phase of the GEF/UNDP financed Gulf of Guinea LME Project has prepared the Agency to support future GEF/LME projects in Asia, Africa, and Latin America. He described efforts with UNDP and the World Bank that are ongoing for planning and implementation of the second phase of the Guinea Current LME project. Persistent Organic Pollutants (POPs) were also discussed with special emphasis on activities in the Arctic Ocean and Barents Sea LMEs. In these LMEs, scientific research is being conducted on marine mammals as indicators for chronic POP conditions.

## **8. IUCN – THE WORLD CONSERVATION UNION**

IUCN is continuing to support work being done on the relationship between LMEs and Marine Protected Areas (MPAs). Carl Lundin, IUCN Marine Coordinator, noted that work was continuing on the use of protected areas within the LME scale for fisheries management and conservation, and that a special session of the 3rd World Conservation Congress being held in Bangkok, Thailand in December 2004 would be dedicated to LMEs and MPAs. The five LME modules provide an appropriate analytical framework for the establishment of a network of MPAs within an ecosystem, covering a full range of management objectives. This includes management measures for productivity, socio-economic benefits, and governance (e.g., conflict mitigation through transboundary protected areas), as well as biological diversity. Under the analytical framework of an LME, MPAs provide not only representative samples of habitats, but protection for ecological processes (e.g., recruitment of species; maintenance of hydrological cycles). IUCN will continue to emphasize ecosystem based management and assessment activities in 2005–2008 as attention is focused on fisheries sustainability and aquaculture with the development of regional networks, identification of key indicators, and improved governance actions.

## **9. IW:LEARN**

Ms Kristin Sherwood of IUCN briefed the Committee on IW:LEARN partnerships. IW:LEARN's mission is to build an Internet-based "global knowledge community" to protect,

restore and sustain the world's aquifers, great lakes and river basins, coastal zones, seas, ecosystems, and oceans. Sponsored by the Global Environment Facility (GEF) and its United Nations and World Bank partners, IW:LEARN specifically builds capacity among transboundary water resource projects worldwide. IW:LEARN is partnering with NOAA and IUCN on a mid-size proposal funded by the GEF to develop electronic learning modules focused on LME projects and activities. Exchange of information within the LME Network is of prime concern, and will be accomplished through information sharing, structured distance learning, conferences, testing, and partnerships.

## **10. UN ATLAS OF THE OCEANS**

Dr Frances Michaelis briefed the Committee on the collaboration between the UN Atlas of the Oceans and the Large Marine Ecosystem projects, and how this collaboration will help inform the international community of LME project activities. Development of the UN Atlas of the Oceans (<http://www.oceansatlas.org/>) was initially funded by the UN Foundation with major contributions from NOAA and the UN Agencies having mandates in the oceans and coastal zones. The Atlas has been managed by the FAO on behalf of the UN agencies. It is a web-based information system designed for use by policy makers who need to become familiar with ocean issues, and by scientists, students, and resource managers who need access to underlying databases and approaches to sustainability. The Atlas is fully indexed and searchable, and presently serves 2,000 users per day. Collaboration with the LME projects will provide an illustrated description of all 64 LMEs, with a link to the NOAA LME website (<http://www.lme.noaa.gov/>) where more detailed information can be found.

## **11. GEF CORAL REEF TARGETED RESEARCH**

Mr Ole Vestergaard, of IOC, briefed the Committee on worldwide coral reef activities. The GEF supported "Targeted Research on Coral Reefs" project aims to conduct specific, targeted research to fill critically important information gaps in the fundamental understanding of coral reef ecosystems so that management and policy interventions can be strengthened. The purpose of the Targeted Research project is to test specific hypotheses related to major human and natural factors threatening coral reef health by targeting the most important gaps in applied scientific understanding related to the resilience and vulnerability of coral reef ecosystems; develop and refine rigorous protocols capable of examining specific factors concerning coral reef health, and to differentiate climate-related factors from anthropogenic ones across appropriate scales in space and time. One of the many outcomes will be to assist the Global Environment Facility in prioritising its allocation of resources for the conservation of coral reefs as global repositories of marine biodiversity and important transboundary marine ecosystems vulnerable to the impacts of Climate Change. Total cost of the project is \$22 M of which GEF is contributing financing is \$11.7 M. The World Bank serves as the Implementing Agency and the IOC of UNESCO and the University of Queensland serve as a joint Executing Agency. Further details at <http://www.gefcoral.org>.

## **12. GLOBAL EARTH OBSERVATIONS SYSTEM (GEOS)**

Dr Ralph Rayner, of Fugro GEOS Limited, discussed his company's role in GEOS and the collaboration established for dissemination of observational data and delivery of value added products to global customers. His partnership with several offshore oil companies has allowed the company to expand and provide a large array of instrumentation for collection, monitoring, and assessment of environmental variables that can be supplemented and combined with numerical



modelling, satellite remote sensing, and *in situ* data for use in “ocean forecasting” within the Large Marine Ecosystems. Fugro GEOS Limited is presently participating in SEAWATCH and GOOS activities, and looks forward to working with the LME Network in GEF projects planned or in progress.

### **13. LME PROGRAMME OFFICE REPORT**

#### **13.1 PROJECT DEVELOPMENT**

The LME Programme Office continues to provide scientific and technical assistance to coastal countries with developing economies in Asia, Africa, Latin America, and Eastern Europe who seek GEF funding for “country-driven” LME projects. During 2003, the LME Programme Office provided scientific and technical assistance for project development in collaboration with developing countries and IUCN, IOC, UNIDO, UNDP, UNEP, FAO, and the GEF. Among the high priority LMEs designated for country-driven project initiation were the Humboldt Current in Latin America; the Guinea Current and Canary Current in West Africa; the Agulhas Current and Somali Current in East Africa; and the Gulf of Mexico and Caribbean Sea LMEs in North America. The Office continued to work with coastal countries in Latin America to advance the Pacific Central American Coastal LME project, as well as in Asia to advance the Yellow Sea and Bay of Bengal projects from the Transboundary Diagnostic Analysis planning phases to the implementation of Strategic Action Programmes.

#### **13.2 BIOMASS YIELDS AND CATCH STATISTICS**

Activities to advance ecological studies within the LMEs are continuing. Among the challenges are refinements to the application of ecological criteria leading to a better understanding of the carrying capacity of LMEs in relation to fishery biomass yields. The LME Programme Office is continuing collaboration with Dr Daniel Pauly and his colleagues at the University of British Columbia Fisheries Center on scientific activities concerning ecosystem based management approaches to fisheries sustainability and understanding the global impact of depleted fish stocks. The Programme Office is also working with FAO to advance decade-long time series of LME fish catch statistics through 2002.

#### **13.3 DESIGNATION AND MODIFICATION OF LME BOUNDARIES**

The Committee approved the modification of the Benguela Current LME boundary to include the spawning region of the Agulhas Bank at the southern tip of South Africa, and shifting of the Caribbean Sea LME boundary eastward to include all the island states on the eastern side of the LME.

#### **13.4 GLOBAL INTERNATIONAL WATERS ASSESSMENT (GIWA)**

Dr Sherry Heileman provided highlights of ongoing GIWA activities, with emphasis on assessment of the world’s Large Marine Ecosystems combining the GIWA methodology with the LME modular approach (productivity, fish and fisheries, pollution and ecosystem health, socioeconomics, and governance) focused on transboundary issues relating to the marine environment. Strategic assessments will be developed for pollution, fresh water input, habitat, exploitation, and climate change for the 66 GIWA sub-areas and 50 LMEs.

### 13.5 OUTREACH

Activities continue with the IOC and IUCN in outreach efforts to LME contacts in Asia, Africa, North America, Latin America, and Europe. The LME network has been provided with brochures and documents describing the modular assessment approach suggested for implementation in GEF-supported LME projects. A brochure was prepared for the White Water to Blue Water (WW2BW) Conference in Miami, Florida, 22–26 March 2004 a part of the World Summit on Sustainable Development Partnership Initiative. The LME Programme Office also had an exhibit on display called “Restoration of the Worlds’ Large Marine Ecosystems” which generated much public interest and follow on discussions.

### 13.6 MEETINGS AND WORKSHOPS

Meetings, consultations, workshops, and symposia continued through 2003 and 2004 as a useful means for exchanging views and planning projects on the application of the LME approach to resource assessment and management actions. Advisory actions included LME Productivity workshops on the Baltic Sea LME in Latvia; Remote Sensing and Capacity Building Consultation Meetings on the Benguela Current LME in South Africa, Namibia, and Angola; a workshop with senior representatives from Chile and Peru on the Humboldt Current LME; Steering Committee meetings of the GIWA in Sweden; and Steering Committee meetings in Malaysia for the East Asian Seas Congress. Additional advisory actions included planning meetings for LME projects in Mexico for the Gulf of Mexico project, in Vienna for the Guinea Current project, and in Thailand for the Bay of Bengal project. Consultations were held at the UN in New York with UNIDO and with IOC and IUCN at UNESCO, Paris, at the 5th Annual LME Consultative Committee Meeting. LME sessions were conducted during the IUCN-sponsored World Parks Congress in Durban, South Africa in September 2003, and at the “Industrial Fisheries, Food Security, and Sustainability of Large Marine Ecosystems” Conference in Vienna in August 2003 with UNIDO hosting the conference. Planning activities for the World Fisheries Congress in Vancouver in May 2004 and the World Conservation Congress in November 2004 are underway.

### 13.7 LME WEBSITE WORK AND VOLUME PREPARATIONS

The LME website (<http://www.lme.noaa.gov>) continues to serve as a means for providing a modular assessment-based approach to understanding ecosystem-wide changes in productivity, fish and fisheries, pollution and ecosystem health, socio-economics, and governance issues of LMEs across the globe. The website serves to connect users with regionally based programs, and provides links to governmental and NGO information relevant to each LME project. The LME website was just updated with new information received from the Projects and is in process of receiving a thorough review of the content to provide information on key indicators for assessing changing states of LMEs. Christopher Damon of the University of Rhode Island continues to work with CDR Peter Celone to update and produce new maps or images of the “Large Marine Ecosystems of the World.” The third version map includes LME linked watersheds. Additionally an Arctic LME image and a LMEs of the United States image have also been produced and are available on the website. Advancement of applications of the Internet Map Server continues with collection and assembly of data layers (temperature, salinity, chlorophyll, primary productivity estimates) for the Northeast US Continental Shelf LME with plans to expand to other LME projects worldwide.

Editorial work continues on LME volumes. The volume, *Large Marine Ecosystems of the World: Trends in Exploitation, Protection and Research*, co-edited by Professor G. Hempel and Dr K. Sherman, was published by Elsevier in early October 2003 in the new Elsevier Science LME series. This is being followed by a volume on Sustaining Large Marine Ecosystems: *The human dimension*, edited by T. Hennessey and J. Sutinen of the University of Rhode Island. The volume,

to be published in 2004, will be the 13th in the LME series. A listing of the LME volumes, chapters and authors is given on the LME Website <http://www.lme.noaa.gov/>.

ANNEX I

AGENDA

IOC/IUCN/NOAA 6th LME Consultative Meeting  
UNESCO/IOC  
Paris France  
29 – 30 March 2004  
**Co-Chairs: P. Bernal/C.Lundin**

Monday, 29 March

TIME	TOPIC	LEADER
0900	Greetings IOC	P. Bernal
	Update on LME Activity*	K. Sherman/C. Lundin
	GEF, Operational Strategy for 2004-2008	S. Graslund
1000	GIWA and LME Assessments	S. Heileman
	UNIDO Activities	P. Huidobro
	Europe and LME Activities	J. McGlade
11:30	Discussion	
1200	Lunch	
1400	GOOS and LMEsEuroGOOS, GOOSAfrica, OEOS-NOAA	T. Aarup, J. Ahanhanzo, N. Cyr
	Benguela Current LME Update	M. O'Toole
	Canary Current LME Update	N. Gueye
1530	Guinea Current LME Update	C. Ukwe
	Agulhas-Somali Current LME Update	K. Sherman
	GEOS and LME Assessments	R. Rayner
	UN Ocean Atlas and LMEs	Q. Tang
	UN Ocean Atlas and LMEs	F. Michaelis
1700	Discussion	
1730	Adjourn	

Tuesday 30 March

TIME	TOPIC	LEADER
0900	North Atlantic LMEs and ICES	H.R. Skjoldal
	Polar LMEs	G. Matishov
	NOAA LME Programme Office Activities	P. Celone
1000	Baltic LME/ICES Update	J. Thulin
	Bay of Bengal LME Update	D. Staples
	Gulf of Mexico/Pacific Central American LME Update	P. HuidobroD. LLuch-Belda
	Ecosystem Management in Practice: Implementation with regard to world targets (World Conservation Congress 2004)	C. Lundin
1130	Discussion	
1230	Lunch	

\* Principal activities since the 5th meeting  
What practical implications were found  
The IW:LEARN Project

<b>TIME</b>	<b>TOPIC</b>	<b>LEADER</b>
1400	Coral Reefs, GEF and LME interaction	O. Vestergaard
	Benguela-Humboldt LME Collaboration	J. Alheit
	Humboldt Current LME Update	R. Serra
1500	Caribbean LME and WW2BW Update	R. Mahon
	Human Dimensions/Socioeconomics/Governance and Scaling Perspectives	T. Hennessey
1600	Ecosystem Indicators**	K. Sherman
	LME Round Table Review and Planning Session 2004-2006	Committee
1700	Adjourn	

---

\*\* Indicators of changing ecosystem conditions and recovery

ANNEX II

**LIST OF PARTICIPANTS**

Dr. Thorkild Aarup  
IOC/UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: 33 1 45 68 40 19  
Fax: 33 1 45 68 58 13 (or 12)  
E-Mail: t.aarup@unesco.org

Dr. Juergen Alheit  
Institut fur Ostseeforschung Warnemunde  
Seestrass 15  
D-18119 Rostock  
GERMANY  
Tel: (038) 5197-0  
E-Mail: juergen.alheit@io-warnemuende.de

Mr. Justin Ahanhanzo  
IOC/UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: 33 1 45 68 36 41  
Fax: 33 1 45 68 58 12  
E-Mail: j.ahanhanzo@unesco.org

Dr. Patricio Bernal  
Executive Secretary  
IOC/UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: 33 1 45 68 39 83  
Fax: 33 1 45 68 58 12  
E-Mail: p.bernal@unesco.org

Cmdr. Peter Celone  
USDOC/NOAA/NMFS  
Narragansett Laboratory  
28 Tarzwell Drive  
Narragansett, R1 02882-1199  
USA  
Tel: (401) 782-3288  
Fax: (401) 782-3201  
E-Mail: peter.j.celone@noaa.gov

Dr. Ned Cyr  
USDOC/NOAA/NMFS Headquarters  
Bldg. SSMC3, Rm. 12555  
1315 East-West Highway  
Silver Spring, MD 20910-3282  
USA

Tel: (301) 713-2363 ext. 159  
Fax: (301) 713-1875  
E-Mail: Ned.Cyr@noaa.gov

Mr Serge M. Garcia  
Directeur  
Division des ressources halieutiques et  
de l'environnement  
Département des pêches  
Organisation des Nations Unies pour  
l'Alimentation et l'Agriculture  
Pièce NF-505  
Viale delle Terme di Caracalla  
01100 Rome  
ITALY  
Tel: (39) 0657051  
Fax: (39) 0657053152  
E-mail: s.garcia@fao.org

Dr. Sarah Graslund  
Advisor, International Waters  
GEF Secretariat  
World Bank  
1818 H Street N.W., Rm. G-6035  
Washington, DC 20433  
USA  
Tel: (202) 473-1077  
Fax: (202) 522-3240  
E-Mail: mailto:sgraslund@thegef.org

Dr. Ndiaga Gueye  
Directeur de l'Océanographie et  
Des Pêches Maritimes  
1, rue Joris  
BP 289  
Dakar  
SENEGAL  
Tel: 221 821 6578  
Fax: 221 821 4758  
E-Mail: dopm@metissacana.sn

Dr. Sherry Heileman  
31, rue Robert de Flers  
75015 Paris  
FRANCE  
Tel: 33 1 40 59 08 34  
E-Mail: sh.heileman@yahoo.com

Dr. Timothy M. Hennessey  
Professor, Political Science  
University of Rhode Island  
Washburn Hall

Kingston, R1 02881  
JAMAICA  
Tel: 1 (401) 874-4052  
Fax: 1 (401) 874-4072  
E-Mail: hennessey@uri.edu

Mr. Pablo Huidobro  
Senior Technical Advisor  
Vienna International Centre  
PO Box 300, Room D 1218  
A-1400 Vienna  
AUSTRIA  
Tel: 43 1 26026 3068  
Fax: 43 1 26026 6819  
E-Mail: p.huidobro@unido.org

Dr. Daniel Lluch-Belda  
Depto. De Pesquerias, CICIMAR  
Centro Interdisciplinario de Ciencias Marinas,  
IPN  
Av. IPN s/n, Col Palo de Santa Rita  
Ap Postal 592  
La Paz, BCS 23096  
MEXICO  
E-Mail: dlluch@ipn.mx

Dr. Carl Gustaf Lundin  
IUCN-The World Conservation Union  
Rue Mauverney 28  
1196 Gland  
SWITZERLAND  
Tel: 41-22-999-0001  
E-Mail: cgl@iucn.org

Dr. Gennady G. Matishov  
Director, Murmansk Marine Biological Institute  
(MMBI)  
Russian Academy of Sciences  
17, Vladimirskaia St.  
Murmansk, 183010  
RUSSIA  
Tel: +7(8152)56-52-35  
Fax: 47-789-10-288  
E-Mail: mmbi@online.ru

Prof. Jacqueline McGlade  
Executive Director  
European Environmental Agency  
Kongens Nytorv 6  
DK-1050  
Copenhagen K.  
DENMARK  
Tel: 45 3336 7100  
Fax: 45 3336 7199  
E-Mail: jacqueline.mcglade@eea.eu.int

Dr. Robin Mahon  
Centre for Resource Management and  
Environmental Studies (CERMES)  
University of the West Indies, Cave Hill  
St. Michael  
BARBADOS  
Tel: 246-417-4570  
Fax: 246-424-4204  
E-Mail: RMAHON@caribsurf.com

Dr. Vladimir Mamaev  
Senior Programme Officer  
International Waters  
UNEP/DGEF. Div. Of GEF Coordination  
UN Avenue Gigiri  
PO Box 30552  
Nairobi  
KENYA  
Tel: 254-20624607  
Fax: 254-20624041  
E-Mail: Vladimir.Mamaev@unep.org

Dr. Frances B. Michaelis  
Editor, UN Atlas of the Oceans  
PFEL, Southwest Fisheries Service Center  
National Marine Fisheries Service, NOAA  
1352 Lighthouse Avenue  
Pacific Grove, CA 93950-2097  
USA  
Tel: 1 (831) 658-3201  
Fax: 1 (831) 648-8440  
E-Mail: Frances.Michaelis@noaa.gov  
Website: <http://www.oceansatlas.org>

Dr. Mick O'Toole  
Chief Technical Advisor  
Programme Co-ordination Unit  
Corner of Sam Nujuma and Nelson  
Mandela Avenue  
Hidas Centre – 1st floor – Room 15  
PO Box 40728  
Ausspannplatz- Windhoek  
NAMIBIA  
Tel: +264-61-246448  
Fax: +264-61-246803  
E-Mail: otoole@bclme.un.na

Ralph Rayner  
Fugro GEOS Limited  
Gemini House  
Hargreaves Road, Swindon  
Wiltshire SN2 5AZ  
UNITED KINGDOM  
Tel: 1793 462400 (direct)  
1793 725766 (switchboard)  
Fax: 1793 706604  
E-Mail: rayner@geos.com

Dr. Rodolfo Serra  
Instituto de Fomento Pesquero, IFOP  
Casilla 8-V  
Valparaiso  
CHILE  
Tel: 56-32 217817/2630/3178  
Fax: 56-32 213178  
E-Mail: rserra@ifop.cl

Dr. Kenneth Sherman  
USDOC/NOAA/NMFS  
Narragansett Laboratory  
28 Tarzwell Drive  
Narragansett, R1 02882  
USA  
Tel: 1 (401) 782-3211  
Fax: 1 (401) 782-3201  
E-Mail: Kenneth.Sherman@noaa.gov

Dr. Derek Staples  
Senior Fishery Officer  
FAO Regional Office for Asia and the Pacific  
(RAP)  
Maliwan Mansion  
39 Phra Atit Road  
Bangkok 10200  
THAILAND  
Tel: (66-02) 697-4119  
Fax: (66-02) 697-4445  
E-mail: derek.staples@fao.org

Dr. Qisheng Tang  
Yellow Sea Fisheries Research Institute  
106 Nanjing Road  
Quigdao 266071  
CHINA  
Tel: 0086 532 583 6200  
Fax: 0086 532 581 1514  
E-Mail: ysfri@public.qd.sd.cn

Dr. Jan Thulin  
ICES  
Palaegade 2-4  
1261 Copenhagen K  
DENMARK  
Tel: +45 33 154225  
Fax: +45 33 934215  
E-Mail: jan@ices.dk

Mr. Chika Ukwe  
Industrial Development Officer  
Cleaner Production and Environmental  
Management Branch  
Sectoral Support and Environmental  
Sustainability Division  
UNIDO  
Vienna International Centre  
PO Box 300  
A-1400 Vienna  
AUSTRIA  
Tel: (43-1) 26026- 3465  
Fax: (43-1) 26026-6819  
E-Mail: c.ukwe@unido.org

Dr. Umit Unluata  
Head of Ocean Sciences Section  
Intergovernmental Oceanographic Commission  
UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: (33-1) 45 68 40 08  
Fax: (33-1) 45 68 58 12  
E-Mail: u.unluata@unesco.org

Mr. Ole Vestergaard  
Intergovernmental Oceanographic Commission  
UNESCO  
1, rue Miollis  
75015 Paris Cedex 15  
FRANCE  
Tel: (33 1) 45 68 40 68  
Fax: (33 1) 45 68 58 12  
E-Mail: o.vestergaard@unesco.org



ANNEX III

**LIST OF ACRONYMS**

<b>ACC SOCA</b>	U.N. Administrative Committee on Coordination's Subcommittee on Oceans and Coastal Areas
<b>BENEFIT</b>	Benguela Environment Fisheries Interaction and Training Program
<b>BOBLME</b>	Bay of Bengal Marge Marine Ecosystem
<b>BCC</b>	Benguela Current Commission
<b>BCLME</b>	Benguela Current Large Marine Ecosystem
<b>CBD</b>	Convention on Biological Diversity
<b>CBOs</b>	Community Based Organisations
<b>CCAMLR</b>	Commission for the Convention of Antarctic Marine Living Resources
<b>COOP</b>	Coastal Ocean Observation Panel
<b>ECOPATH/ECOSIM</b>	Mass-Balance Food Web Modelling Using "ECOSIM"
<b>ENVIFISH</b>	Environmental Conditions and Fluctuations in recruitment and Distribution of Small Pelagic Fish Stocks
<b>FAO</b>	Food and Agriculture Organization (UN)
<b>FSA</b>	Fish Stock Agreement
<b>GCLME</b>	Guinea Current Large Marine Ecosystem
<b>GEF</b>	Global Environment Facility
<b>GPA</b>	Global Programme of Action for the Protection of the Marine Environment
<b>GESAMP</b>	Group of Experts on the Scientific Aspects of Marine Pollution
<b>GIWA</b>	Global International Waters Assessment
<b>GLOBEC</b>	Global Ocean Ecosystem Dynamic
<b>GOOS</b>	Global Ocean Observing System (IOC-WMO-UNEP-ICSU)
<b>GTZ</b>	Deutsche Gesellschaft für Technische Zusammenarbeit
<b>HELCOM</b>	Helsinki Commission
<b>IBCC</b>	Interim Benguela Current Commission
<b>IBSFC</b>	International Baltic Sea Fisheries Commission
<b>ICES</b>	International Council for the Exploration of the Sea
<b>ICM</b>	Integrated Coastal Management
<b>IDYLE</b>	Interactions and Spatial Dynamics of Renewable Resources in Upwelling Ecosystems
<b>IFOP</b>	Instituto de Fomento Pesquero
<b>IMARPE</b>	Instituto del Mar del Peru
<b>IUCN</b>	World Conservation Union
<b>IW:LEARN</b>	International Waters Learn
<b>JCP</b>	Baltic Joint Comprehensive Environmental Action Programme
<b>LME</b>	Large Marine Ecosystem
<b>LMR</b>	Living Marine Resources Module
<b>MHLC</b>	Multilateral High Level Conferences on South Pacific Tuna Fisheries
<b>MPA</b>	Marine Protected Areas
<b>NGO</b>	Non-governmental Organization
<b>NOAA-NMFS</b>	National Oceanographic and Atmospheric Administration; National Marine Fisheries Service
<b>ONRIFO</b>	Office of the Naval Research International Field Office
<b>ONR</b>	Office of Naval Research, US
<b>OSPAR Com.</b>	The Oslo and Paris Commission (for the Protection of the Marine Environment of the North-East Atlantic)

<b>PCU</b>	Programme Coordinating Unit
<b>PDF-B</b>	Project Development Facility, Phase B Planning Grant
<b>PEMSEA</b>	Partnership for Environmental Management of the Seas of East Asia
<b>POPs</b>	Persistent Organic Pollutants
<b>ROOFS</b>	Regional Ocean Observing Forecasting System
<b>SAP</b>	Strategic Action Programme
<b>SEAFO</b>	South East Atlantic Fisheries Organisation
<b>SEA-WATCH</b>	Buoy System for Physical, Chemical and Biological marine
<b>SIDS</b>	Small Islands Development States
<b>SPACC</b>	Small Pelagic Fishes and Climate Change (GLOBEC)
<b>TDA</b>	Transboundary Diagnostic Analysis
<b>UNCED</b>	United Nations Conference on Environment and Development
<b>UNCLOS</b>	United Nations Convention on the Law of the Sea
<b>UNDP</b>	United Nations Development Programme
<b>UNEP</b>	United Nations Environment Programme
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>UNIDO</b>	United Nations Industrial Development Organization
<b>VIBES</b>	Viability of Exploited Pelagic Fish Resources in the Benguela Ecosystems in relation to the Environment and Spatial Aspects
<b>WSSD</b>	World Summit on Sustainable Development, Johannesburg, South Africa, 2002
<b>YSLME</b>	Yellow Sea Large Marine Ecosystem

In this Series, entitled

**Reports of Meetings of Experts and Equivalent Bodies**, which was initiated in 1984 and which is published in English only, unless otherwise specified, the reports of the following meetings have already been issued:

1. Third Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans
2. Fourth Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans S. Fourth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño' (**Also printed in Spanish**)
4. First Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
5. First Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
6. First Session of the Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
7. First Session of the Joint CCOP(SOPAC)-IOC Working Group on South Pacific Tectonics and Resources
8. First Session of the IODE Group of Experts on Marine Information Management
9. Tenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies in East Asian Tectonics and Resources
10. Sixth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
11. First Session of the IOC Consultative Group on Ocean Mapping (**Also printed in French and Spanish**)
12. Joint 100-WMO Meeting for Implementation of IGOSS XBT Ships-of-Opportunity Programmes
13. Second Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
14. Third Session of the Group of Experts on Format Development
15. Eleventh Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
16. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
17. Seventh Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
18. Second Session of the IOC Group of Experts on Effects of Pollutants
19. Primera Reunión del Comité Editorial de la COI para la Carta Batimétrica Internacional del Mar Caribe y Parte del Océano Pacífico frente a Centroamérica (**Spanish only**)
20. Third Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
21. Twelfth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
22. Second Session of the IODE Group of Experts on Marine Information Management
23. First Session of the IOC Group of Experts on Marine Geology and Geophysics in the Western Pacific
24. Second Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources (**Also printed in French and Spanish**)
25. Third Session of the IOC Group of Experts on Effects of Pollutants
26. Eighth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
27. Eleventh Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (**Also printed in French**)
28. Second Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
29. First Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
30. First Session of the IOCARIBE Group of Experts on Recruitment in Tropical Coastal Demersal Communities (**Also printed in Spanish**)
31. Second IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
32. Thirteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asia Tectonics and Resources
33. Second Session of the IOC Task Team on the Global Sea-Level Observing System
34. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
35. Fourth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
36. First Consultative Meeting on RNODCs and Climate Data Services
37. Second Joint IOC-WMO Meeting of Experts on IGOSS-IODE Data Flow
38. Fourth Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
39. Fourth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
40. Fourteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
41. Third Session of the IOC Consultative Group on Ocean Mapping
42. Sixth Session of the Joint IOC-WMO-CCPS Working Group on the Investigations of 'El Niño' (**Also printed in Spanish**)
43. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
44. Third Session of the IOC-UN(OALOS) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
45. Ninth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
46. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
47. Cancelled
48. Twelfth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
49. Fifteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
50. Third Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
51. First Session of the IOC Group of Experts on the Global Sea-Level Observing System
52. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean
53. First Session of the IOC Editorial Board for the International Chart of the Central Eastern Atlantic (**Also printed in French**)
54. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (**Also printed in Spanish**)
55. Fifth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
56. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
57. First Meeting of the IOC *ad hoc* Group of Experts on Ocean Mapping in the WESTPAC Area
58. Fourth Session of the IOC Consultative Group on Ocean Mapping

59. Second Session of the IOC-WMO/IGOSS Group of Experts on Operations and Technical Applications
60. Second Session of the IOC Group of Experts on the Global Sea-Level Observing System
61. UNEP-IOC-WMO Meeting of Experts on Long-Term Global Monitoring System of Coastal and Near-Shore Phenomena Related to Climate Change
62. Third Session of the IOC-FAO Group of Experts on the Programme of Ocean Science in Relation to Living Resources
63. Second Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
64. Joint Meeting of the Group of Experts on Pollutants and the Group of Experts on Methods, Standards and Inter-calibration
65. First Meeting of the Working Group on Oceanographic Co-operation in the ROPME Sea Area
66. Fifth Session of the Editorial Board for the International Bathymetric and its Geological/Geophysical Series
67. Thirteenth Session of the IOC-IHO Joint Guiding Committee for the General Bathymetric Chart of the Oceans **(Also printed in French)**
68. International Meeting of Scientific and Technical Experts on Climate Change and Oceans
69. UNEP-IOC-WMO-IUCN Meeting of Experts on a Long-Term Global Monitoring System
70. Fourth Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
71. ROPME-IOC Meeting of the Steering Committee on Oceanographic Co-operation in the ROPME Sea Area
72. Seventh Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño' **(Spanish only)**
73. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico **(Also printed in Spanish)**
74. UNEP-IOC-ASPEI Global Task Team on the Implications of Climate Change on Coral Reefs
75. Third Session of the IODE Group of Experts on Marine Information Management
76. Fifth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
77. ROPME-IOC Meeting of the Steering Committee for the Integrated Project Plan for the Coastal and Marine Environment of the ROPME Sea Area
78. Third Session of the IOC Group of Experts on the Global Sea-level Observing System
79. Third Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
80. Fourteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
81. Fifth Joint IOG-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
82. Second Meeting of the UNEP-IOC-ASPEI Global Task Team on the Implications of climate Change on Coral Reefs
83. Seventh Session of the JSC Ocean Observing System Development Panel
84. Fourth Session of the IODE Group of Experts on Marine Information Management
85. Sixth Session of the IOC Editorial Board for the International Bathymetric chart of the Mediterranean and its Geological/Geophysical Series
86. Fourth Session of the Joint IOC-JGOFS Panel on Carbon Dioxide
87. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Pacific
88. Eighth Session of the JSC Ocean Observing System Development Panel
89. Ninth Session of the JSC Ocean Observing System Development Panel
90. Sixth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
91. First Session of the IOC-FAO Group of Experts on OSLR for the IOCINCWIO Region
92. Fifth Session of the Joint IOC-JGOFS CO<sub>2</sub> Advisory Panel Meeting
93. Tenth Session of the JSC Ocean Observing System Development Panel
94. First Session of the Joint CMM-IGOSS-IODE Sub-group on Ocean Satellites and Remote Sensing
95. Third Session of the IOC Editorial Board for the International Chart of the Western Indian Ocean
96. Fourth Session of the IOC Group of Experts on the Global Sea Level Observing System
97. Joint Meeting of GEMSI and GEEP Core Groups
98. First Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
99. Second International Meeting of Scientific and Technical Experts on Climate Change and the Oceans
100. First Meeting of the Officers of the Editorial Board for the International Bathymetric Chart of the Western Pacific
101. Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
102. Second Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
103. Fifteenth Session of the Joint IOC-IHO Committee for the General Bathymetric Chart of the Oceans
104. Fifth Session of the IOC Consultative Group on Ocean Mapping
105. Fifth Session of the IODE Group of Experts on Marine Information Management
106. IOC-NOAA *Ad hoc* Consultation on Marine Biodiversity
107. Sixth Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
108. Third Session of the Health of the Oceans (HOTO) Panel of the Joint Scientific and Technical Committee for GLOSS
109. Second Session of the Strategy Subcommittee (SSC) of the IOC-WMO-UNEP Intergovernmental Committee for the Global Ocean Observing System
110. Third Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
111. First Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate
112. Sixth Session of the Joint IOC-JGOFS CO<sub>2</sub> Advisory Panel Meeting
113. First Meeting of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS)
114. Eighth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of "El Niño" **(Spanish only)**
115. Second Session of the IOC Editorial Board of the International Bathymetric Chart of the Central Eastern Atlantic **(Also printed in French)**
116. Tenth Session of the Officers Committee for the Joint IOC-IHO General Bathymetric Chart of the Oceans (GEBCO), USA, 1996
117. IOC Group of Experts on the Global Sea Level Observing System (GLOSS), Fifth Session, USA, 1997
118. Joint Scientific Technical Committee for Global Ocean Observing System (J-GOOS), Fourth Session, USA, 1997
119. First Session of the Joint 100-WMO IGOSS Ship-of-Opportunity Programme Implementation Panel, South Africa, 1997
120. Report of Ocean Climate Time-Series Workshop, Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate, USA, 1997

121. IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional Global Ocean Observing System (NEAR-GOOS), Second Session, Thailand, 1997
122. First Session of the IOC-IUCN-NOAA *Ad hoc* Consultative Meeting on Large Marine Ecosystems (LME), France, 1997
123. Second Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), South Africa, 1997
124. Sixth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico, Colombia, 1996 **(also printed in Spanish)**
125. Seventh Session of the IODE Group of Experts on Technical Aspects of Data Exchange, Ireland, 1997
126. IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), First Session, France, 1997
127. Second Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 1998
128. Sixth Session of the IOC Consultative Group on Ocean Mapping (CGOM), Monaco, 1997
129. Sixth Session of the Tropical Atmosphere - Ocean Array (TAO) Implementation Panel, United Kingdom, 1997
130. First Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), France, 1998
131. Fourth Session of the Health of the Oceans (HOTO) Panel of the Global Ocean Observing System (GOOS), Singapore, 1997
132. Sixteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), United Kingdom, 1997
133. First Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), France, 1998
134. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (IOC/EB-IBCWIOW3), South Africa, 1997
135. Third Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), France, 1998
136. Seventh Session of the Joint IOC-JGOFS CO2 Advisory Panel Meeting, Germany, 1997
137. Implementation of Global Ocean Observations for GOOS/GCOS, First Session, Australia, 1998
138. Implementation of Global Ocean Observations for GOOS/GCOS, Second Session, France, 1998
139. Second Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Brazil, 1998
140. Third Session of IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS), China, 1998
141. Ninth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño', Ecuador, 1998 **(Spanish only)**
142. Seventh Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series, Croatia, 1998
143. Seventh Session of the Tropical Atmosphere-Ocean Array (TAO) Implementation Panel, Abidjan, Côte d'Ivoire, 1998
144. Sixth Session of the IODE Group of Experts on Marine Information Management (GEMIM), USA, 1999
145. Second Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), China, 1999
146. Third Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Ghana, 1999
147. Fourth Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC); Fourth Session of the WCRP CLIVAR Upper Ocean Panel (UOP); Special Joint Session of OOPC and UOP, USA, 1999
148. Second Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), France, 1999
149. Eighth Session of the Joint IOC-JGOFS CO2 Advisory Panel Meeting, Japan, 1999
150. Fourth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Japan, 1999
151. Seventh Session of the IOC Consultative Group on Ocean Mapping (CGOM), Monaco, 1999
152. Sixth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 1999
153. Seventeenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), Canada, 1999
154. Comité Editorial de la COI para la Carta Batimétrica Internacional del Mar Caribe y el Golfo de Mexico (IBCCA), Septima Reunión, Mexico, 1998  
IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA), Seventh Session, Mexico, 1998
155. Initial Global Ocean Observing System (GOOS) Commitments Meeting, IOC-WMO-UNEP-ICSU/Impl-III/3, France, 1999
156. First Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, Venezuela, 1999 **(also printed in Spanish and French)**
157. Fourth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), China, 1999
158. Eighth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series, Russian Federation, 1999
159. Third Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), Chile, 1999
160. Fourth Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS). Hawaii, 2000
161. Eighth Session of the IODE Group of Experts on Technical Aspects of Data Exchange, USA, 2000
162. Third Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 2000
163. Fifth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Poland, 2000
164. Third Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), France, 2000
165. Second Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, Cuba, 2000 **(also printed in Spanish and French)**
166. First Session of the Coastal Ocean Observations Panel, Costa Rica, 2000
167. First GOOS Users' Forum, 2000
168. Seventh Session of the Group of Experts on the Global Sea Level Observing System, Honolulu, 2001
169. First Session of the Advisory Body of Experts on the Law of the Sea (ABE-LOS), France, 2001 **(also printed in French)**
170. Fourth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, Chile, 2001
171. First Session of the IOC-SCOR Ocean CO<sub>2</sub> Advisory Panel, France, 2000
172. Fifth Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Norway, 2000 **(electronic copy only)**
173. Third Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, USA, 2001 **(also printed in Spanish and French)**
174. Second Session of the Coastal Ocean Observations Panel and GOOS Users' Forum, Italy, 2001
175. Second Session of the Black Sea GOOS Workshop, Georgia, 2001
176. Fifth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Republic of Korea, 2000

177. Second Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Morocco, 2002 (**also printed in French**)
178. Sixth Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Australia, 2001 (**electronic copy only**)
179. *Cancelled*
180. Second Session of the IOC-SCOR Ocean CO<sub>2</sub> Advisory Panel, Honolulu, Hawaii, U.S.A, 2002 (**electronic copy only**)
181. IOC Workshop on the Establishment of SEAGOOS in the Wider Southeast Asian Region, Seoul, Republic of Korea, 2001 (SEAGOOS preparatory workshop) (**electronic copy only**)
182. First Session of the IODE Steering Group for the Resource Kit, USA, 19–21 March 2001
183. Fourth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), France, 2002
184. Seventh Session of the IODE Group of Experts on Marine Information Management (GEMIM), France, 2002 (**electronic copy only**)
185. Sixth Session of IOC/WESTPAC Coordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS), Republic of Korea, 2001 (**electronic copy only**)
186. First Session of the Global Ocean Observing System (GOOS) Capacity Building Panel, Switzerland, 2002 (**electronic copy only**)
187. Fourth Session of the ad hoc Advisory Group for IOCARIBE-GOOS, 2002, Mexico (**also printed in French and Spanish**)
188. Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (IBCWIO), Mauritius, 2000
189. Third session of the Editorial Board for the International Bathymetric Chart of the Western Pacific, China, 2000
190. Third Session of the Coastal Ocean Observations Panel and GOOS Users' Forum, Vietnam, 2002
191. Eighth Session of the IOC Consultative Group on Ocean Mapping, Russian Federation, 2001
192. Third Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Lisbon, 2003 (**also printed in French**)
193. Extraordinary Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño', Chile, 1999 (**Spanish only; electronic copy only**)
194. Fifth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, France, 2002
195. Sixth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, South Africa, 2003
196. Fourth Session of the Coastal Ocean Observations Panel, South Africa, 2002 (**electronic copy only**)
197. First Session of the JCOMM/IODE Expert Team On Data Management Practices, Belgium, 2003 (*also JCOMM Meeting Report No. 25*)
198. Fifth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2003
199. Ninth Session of the IOC Consultative Group on Ocean Mapping, Monaco, 2003 (**Recommendations in English, French, Russian and Spanish included**)
200. Eighth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 2003 (**electronic copy only**)
201. Fourth Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Greece, 2004 (**also printed in French**)
202. Sixth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2004 (**electronic copy only**)