25 YEARS OF CO-OPERATIVE INTERNATIONAL MARINE SCIENCE

IOC celebrates its silver anniversary

In 1960, at its Eleventh General Conference and in its fourteenth year of existence, Unesco created the Intergovernmental Oceanographic Commission. As 1985 draws to a close, and in keeping with IOC's 25th anniversary, IMS Newsletter is dedicating this special eight-page section to a brief overview of the accomplishments, during this quarter century, of the IOC and of the UN organizations members of ICSPRO as a whole in the field of marine science and technology.

The article on the following page contains a brief commentary on the broad lines of IOC's mandate and philosophy in the framework of the UN system and in relation to the other UN bodies that have an interest in marine affairs and collaborate with the Commission. On page 5 begins a series of five articles on views from WMO, IMO, UN (OETB), FAO and Unesco. An article on page 8 provides a brief look at marine affairs within the UN system. Some of IOC's current activities are discussed on page 9; the section is closed on page 10 by a summary article on the events at the 13th IOC Assembly (March 1985, in Paris).

Extracts from messages to the IOC on this occasion

"...The Commission was born at the dawning of an oceanic era characterized by the systematic development of the science of the seas and oceans, and by the development of the resources they hold. It has laid the groundwork for international mechanisms for the coordination of the scientific study of the oceans and their resources and of the management of the marine environment. It has been engaged, especially over the last ten years, in augmenting the marine scientific capabilities of the developing countries by helping them to acquire the necessary infrastructure and by supporting the programmes undertaken by their scientists and technicians.

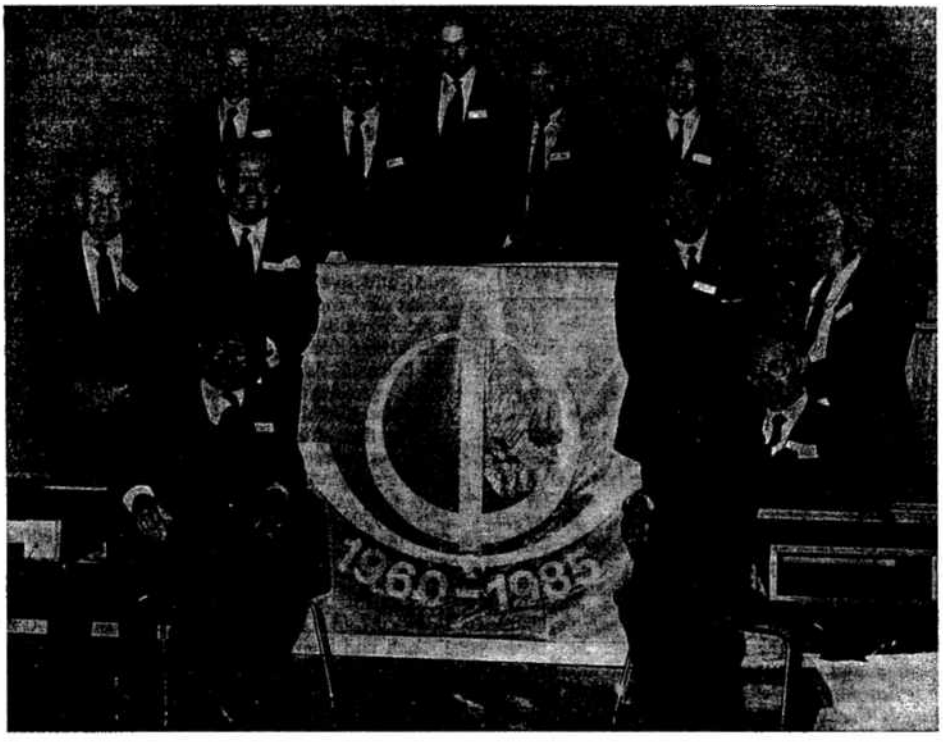
In short, IOC has become the lead organization of the United Nations system for the promotion of programmes relating to the marine sciences, the development and maintenance of ocean services and related activities of training, education and mutual assistance in this field. The work accomplished thus far by the Commission constitutes, in fact, a response to the concern expressed by Thor Heyerdahl, the eminent scientist and explorer, as he warned us that "to neglect the oceans is to neglect two thirds of the planet, to destroy the oceans is to kill the planet, and a dead planet is of no use to any nation."

— Xavier Perez de Cuellar, Secretary-General of the United Nations

"...Although the Commission was set up within the framework of Unesco, in accordance with the recommendations of the Copenhagen Conference, my predecessor, the late René Maheu, observed at the opening of the first session of the General Assembly, on 19 October 1961, that it was desirable that the Commission should co-operate closely with other institutions of the United Nations system, 'respecting their various fields of competence'... 'but working together with them to arrange meetings and other forms of useful collaboration'.

Thus, it has been the constant concern of Unesco and of its Director-General, throughout the development of the IOC and of the Organization's programmes in the marine sciences, to encourage and strengthen the most fruitful bonds of co-operation, not only with the organizations of the United Nations system, the international, governmental and non-governmental organizations and national bodies, but also with the world scientific community as a whole."

— Amadou Mahtar M'Bow, Director-General of Unesco.



The adjacent photograph was taken following the special ceremony which marked the 25th anniversary of the Commission and which opened the 13th Session of the IOC Assembly. Shown from left to right, are the following present and past IOC Chairmen and Secretaries:

Seated:

I. Ronquillo (Philippines), present Chairman; M. Ruivo (Portugal), present Secretary

Middle:

W. Wooster (USA), Secretary, 1961-63; W. Cameron (Canada), Chairman, 1962-64; W. Langeraar (Netherlands), Chairman, 1967-73; S. Holt (UK), Secretary, 1970-72

Rear:

G. Humphrey (Australia), Chairman, 1973-77; A. Ayala-Castañares (Mexico), Chairman, 1977-82; D. Scott (UK), Secretary, 1972-79; K. Fedorov (USSR), Secretary 1963-69; H. Lacombe (France), Chairman 1965-67

The Intergovernmental Oceanographic Commission: a unique mandate and status

Although the Commission depends upon Unesco for the major part of its staff, budget and administrative services, it enjoys a considerable degree of independence and operates with a high degree of autonomy. This is largely due to the fact that IOC was created to meet the needs of those countries primarily interested in the oceans and in the development of the marine sciences and related disciplines. In particular, IOC provides a framework in which these countries can co-operate multilaterally in achieving the Commission's express purpose:

"to promote scientific investigation with a view to learning more about the nature and resources of the oceans through the concerted action of its members" (Article 1 [2] of the IOC Statutes).

The members referred to above are not necessarily the Member States of Unesco, since "membership of the Commission shall be open to any Member State of any one of the organizations of the United Nations system" (Article 4 of the IOC Statutes). Several organizations of this system have a primary interest in certain aspects of the use of the oceans and their resources including the related development and management aspects. Accordingly, it was stipulated that the Commission "shall give due attention to supporting the objectives of the international organizations with which it collaborates and which may request the Commission to act, as appropriate, as an instrument for discharging certain of their responsibilities in the field of marine science" (Article 3 of the IOC Statutes, extract).

Founding of ICSPRO

The Food and Agriculture Organization of the United Nations, the World Meteorological Organization, the International Maritime Organization, and the United Nations itself, as well as Unesco, formalized this special responsibility of the Commission through the adoption, in 1969, of the Agreement on the Inter-Secretariat Committee on Scientific Programmes Relating to Oceanography (ICSPRO). Through ICSPRO these organizations harmonize their actions in marine scientific affairs and take the Commission's "requirements into account in planning and executing their own programmes" (Article 3 of the IOC Statutes, extract).

Through the ICSPRO Agreement, these organizations took "a step forward in broadening the base of the IOC, so that the Commission can fulfil its function as an effective joint specialized mechanism..."(ICSPRO Agreement, Introduction).

These two special characteristics, a potentially different membership from that of Unesco and specific support from other organizations of the UN system, make the Commission a unique body within that system, particularly since these organizations may assign staff to the IOC Secretariat or provide services (such as meeting facilities and printing of joint or special reports, or advice to the Commission at no cost thereto).

Regional investigations

The Commission's growth has been marked by a number of major developments in the marine sciences or in marine affairs in general. In its early years — the 1960s — marine science was just emerging from the setback of the Second World War. Any real advance depended upon a wider and more detailed knowledge of the oceans. This period of IOC's history was marked by the organization of major ocean expeditions, the most notable of which were the International Indian Ocean Expedition* (1959-1965, planned by the Scientific Committee on Oceanic Research, but then co-ordinated by IOC following its creation) and the International Co-operative Investigations of the Tropical Atlantic (1963-1964).

Following these expeditions were a number of other co-operative investigations which were marked by the increased involvement of developing Member States and the emergence of regionalization in the Commission's work. The most important ones were the Co-operative Investigations of the Kuroshio and Adjacent Regions (1965-1977), the Co-operative Investigations of the Caribbean and Adjacent Regions (1967-1976), and the Co-operative Investigations in the Mediterranean (1969-1979).

These essays in regional co-operation, although not uniformly successful in all the marine science disciplines, revealed various advantages which led to the evolution, in the late 1970s and early 1980s, of regional subsidiary bodies of the Commission. Originally, these bodies started as Programme Groups, one for each specific oceanic region, but the work of such bodies became more extensive, and it was felt that a more durable and formal mechanism was desirable. Thus the Commission decided to create sub-commissions as a new category of subsidiary body. The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE) was created at the Twelfth Session of the IOC Assembly (Paris, November 1982).

Major scientific programmes

At the same time, the Commission has developed all its principal scientific programmes, ocean services and the related training, education and mutual assistance. Although global in conception, they are also implemented at the regional level. The Commission has five major ocean science programmes:

- Ocean Science in Relation to Living Resources (OSLR), which is co-sponsored by FAO;
- Ocean Science in Relation to Non-Living Resources (OSNLR), which the United Nations co-sponsors through its Ocean Economics and Technology Branch (OETB);
- Ocean Mapping, some aspects of which are carried out with the International Hydrographic Organization (IHO), including: the publication of the Fifth Edition of the General Bathymetric Chart of the Oceans (GEBCO), the International Bathymetric Chart of the Mediterranean (IBCM) geophysical overlay sheets, the Geological and Geophysical Atlases of the Atlantic and Pacific, and the development of specialized ocean maps for the Caribbean, part of the Pacific Ocean off Central America, and the central eastern Atlantic;
- the Global Investigation of Pollution in the Marine Environment (GIPME), including the development of a global marine pollution monitoring system (MARPOLMON), some aspects of which are carried out with the collaboration of the United Nations Environment Programme (UNEP), and
- Ocean Dynamics and Climate, including the oceanographic component of the World Climate Research Programme (WCRP), and the development of a Global Ocean Observing System, the first element of which is a Global Sea-level Observing System based on regional networks of sea-level stations.

*The second edition of the **Marine Environmental Data Information Referral (MEDI) Catalogue**, prepared by the IOC, has been published and is being distributed to all MEDI users. For information, write to: MEDI Coordinator, IOC, Unesco, 7 Place de Fontenoy.*

Ocean services

The IOC co-ordinates three major ocean services:

- the IOC-WMO Integrated Global Ocean Services System (IGOSS), a world-wide, operational service system providing physical oceanographic data and information for various marine users
- the International Oceanographic Data Exchange (IODE) system including the Marine Environmental Data Information (MEDI) Referral System and active participation in the Joint FAO IOC-UN(OETB) Aquatic Sciences and Fisheries Information System (ASFIS) and
- the International Tsunami Warning System in the Pacific (ITSU).

The Global Ocean Observing System is an important new service being developed by the IOC.

To support its Ocean Science and Ocean Service programmes, the IOC organizes specific training education and mutual assistance in the marine sciences. To meet the aspirations of the developing countries, the Commission has adopted a Comprehensive Plan for a Major Assistance Programme to Enhance the Marine Science Capabilities of Developing Countries, and Unesco has endorsed this Plan.

None of these major advances in the role and work of the Commission would have been possible without the major support received from Unesco, as the parent body and the founder of ICSPRO, and Unesco's acceptance of the high level of autonomy required to serve objectively and effectively the interests of the Member States in the field of marine science, ocean services and the related technology, training education and mutual assistance. Nevertheless the demands of the Member States have, in recent years, grown considerably, and further efforts in these directions, not only by Unesco but also by the other collaborating ICSPRO organizations, are necessary if the IOC is to fulfil its unique role in Unesco and the UN system.

**Note:* For an account of the human dimension of the International Indian Ocean Expedition see: *Assault on the Largest Unknown*, by Daniel Behrman; Unesco, 1981. Available also in French, Russian and Spanish editions and under production in Arabic. Price: English and Russian: 60 FF; French and Spanish (with illustrations in colour) 120 FF. Write to: Commercial Services, Office of the Unesco Press, 7 Place de Fontenoy, 7570 Paris, France.

CO-OPERATION ON PROBLEMS OF THE SEA: Views from the ICSPRO Agencies

On the occasion of the 25th anniversary of the IOC, and with the goal of projecting to IMS readers an idea of the combined effort of all the co-operating United Nations organizations, which are members of ICSPRO, in joint marine scientific and technological activities over the past quarter-century, a letter was sent to officials of these organizations. Their answers provided the basis for the following articles. The questions we asked were:

a) What do you consider to be the most important dates or events (not more than five), from your organization's point of view, in co-operative international marine science and related aspects over the last 25 years?

b) When did your organization launch its programme(s) in the fields of marine science and/or technology? Describe briefly the programme(s).

c) What do you consider the most important contribution(s) of your organization?

d) With reference to marine science and technology, what do you think should be the future priorities or major goals and role(s) of your organization, using, as a horizon, the year 2000 and beyond?

World Meteorological Organization

Dr. G. K. Weiss, Director of WMO's World Weather Watch Department, in his answer to the first *IMS* question, began by tracing WMO's family tree back to over 100 years ago. In a very real sense, he wrote, the origins of WMO lie in the oceans, for the First International Meteorological Conference (Brussels, August 1853) was concerned largely with maritime meteorological problems. Some years later, and more or less as a direct consequence of this Conference, the First International Meteorological Congress met in Vienna in 1873. This in turn led to the establishment of the International Meteorological Organization, the predecessor of WMO.

As a result of this first Congress, a maritime Meteorology Conference was held in 1874 to review the results of the Brussels Conference of 1853. The 1874 Conference, which took place in London, was in effect a sub-committee of the Permanent Committee established by the 1873 Congress and, as such, may be regarded as the ancestor of WMO's present Technical Commission for Marine Meteorology (CMM). A more formal predecessor was created by IMO in 1907 in the form of its Technical Commission for Storm Warnings and Maritime Meteorology.

WMO's ongoing programmes

The Marine Meteorology Programme of WMO, for which the present-day CMM together with the Joint IOC-WMO Working Committee for the Integrated Global Ocean Services System (IGOSS) has overall responsibility, is a comprehensive programme covering all aspects of marine meteorology. In particular, it comprises eight major elements: marine meteorological services; oceanographic services in the context of IGOSS; marine climatological and related ocean data base; systems for marine and ocean observations and data collection; information exchange on marine technology and services; development of techniques for marine observation and forecasting; implementation support activities; and specialized education and training. Of these, IGOSS is developed jointly with IOC. In addition, of course, many of the WMO- sponsored research activities, particularly those in the context of the WMO-ICSU World Climate Research Programme, have substantial ocean science components. Member States' contributions to these are co-ordinated through the IOC Programme Group on Ocean Processes and Climate. Examples are the Tropical Ocean and Global Atmosphere (TOGA) Programme and the World Ocean Circulation Experiment (WOCE). The ocean science components of these activities are planned by the joint SCOR-IOC Committee on Climatic Changes and the Ocean (CCCO).

The fundamental significance of interactions between the atmosphere and the oceans, and therefore between meteorology and oceanography, has, of course, always been recognized. For this reason WMO has been vitally concerned in both encouraging and co-operating in major oceanic investigations programmes. In particular, many important co-operative ocean investigations, sponsored by IOC, took place during the 1960s in which WMO, among other agencies, was pleased to collaborate. Global ocean investigations were further stimulated by the conclusion of the ICSPRO Agreement in 1969 and by the publication of the Long-Term and Expanded Programme of Oceanic Exploration and Research (LEPOR) in 1970. The close co-operation between IOC and WMO, which had existed already, was further strengthened by the ICSPRO Agreement, through which a wide spectrum of co-operative activities have been undertaken jointly in the field of marine science and ocean services.

Direct co-operation with IOC

WMO's direct contributions to, and co-operation with IOC in, international marine science during the past 15 years have also been made through the significant marine components of the Global Atmospheric Research Programme (GARP, established in 1967) and its two major operational phases, the GARP Atlantic Tropical Experiment (GATE, 1974) and the First GARP Global Experiment (FGGE, 1979) and, more recently, the WMO-ICSU World Climate Research Programme (WCRP, established in 1979). In the field of the provision of oceanographic services to the marine community, the establishment of the joint IOC-WMO Integrated Global Ocean Services System in 1972 represents a major milestone.

Other important developments have taken place recently regarding the increasing use of drifting buoys for ocean data acquisition, in which WMO and IOC are co-operating directly with a view to facilitating the required co-ordination.

At the present time, the contributions of WMO to marine science generally may be classified in four broad areas:

- the organization and co-ordination of the real-time global collection, dissemination, archiving and processing of marine meteorological and related physical oceanographic data;
- development and co-ordination of the provision of marine meteorological and oceanographic services to the marine community;
- co-ordination of major global research programmes involving studies of atmosphere-ocean interactions on all time and space scales; and
- the development and expansion of knowledge of marine meteorology and related physical oceanography through extensive education and training activities.

From the point of view of WMO, it is likely that the coming decades will see: major co-operative marine science activities and advances in the provision of expanded oceanographic services particularly through IGOSS; co-operative oceanographic satellite observation programmes providing ocean data of unprecedented quantity and quality; co-operative ocean-atmosphere research programmes, in particular in the context of the WCRP and its TOGA and WOCE studies; and other co-operative marine investigations which develop through ICSPRO. The success of these investigations will depend on the close co-operation between the meteorological and oceanographic communities at national, regional or global levels.

ICSPRO meeting in London will review inter-agency work

IMO Headquarters is the venue for the 24th Session of the Inter-secretariat Committee on Scientific Programmes Relating to Oceanography, from 13 to 15 January 1986. In addition to reports on various activities carried out by IOC and the Member Organizations during the inter-sessional period of relevance to ICSPRO, the items on the agenda include *inter alia* :

- Follow-up on matters emanating from the 13th IOC Assembly (Paris, March 1985) of interest to ICSPRO organizations;
- Preliminary consultations will be made on the formulation of marine science components of medium-term (six-year) plans of Member Organizations and of the IOC.
- Regarding marine information management, reports will be given on results of the Ist Session of ICSPRO Information Management Officers (January 1985) and on plans to strengthen the role of the IOC Working Committee on International Oceanographic Data Exchange (IODE) in preparation for the 12th Session of the Working Committee, which will be convened in Moscow (30 September to 8 October 1986).
- Exchange of views and definition of common position regarding reports on marine-related topics being prepared for submission to ECOSOC* and the UN General Assembly. Examples of such reports are the COPA*, which is being prepared for CPC* (see article on page 8 of this issue) and the updating of LEPOR*. A revised workplan of the latter will be put before the Committee.
- A review will be made of the Committee's participation in the organization and support of the next Joint Oceanographic Assembly, to be held in Mexico in 1988.

* COPA=Cross-Organizational Programme Analysis (of the UN system).
CPC=Committee for Programme and Co-ordination (of the UN).
ECOSOC=Economic and Social Council (of the UN).
LEPOR=Long term and Expanded Programme of Oceanic Exploration and Research.

International Maritime Organization

The International Maritime Organization (IMO) is a specialized agency of the United Nations concerned with such maritime affairs as safety of life at sea and prevention and control of marine pollution from ships. For these purposes, IMO has developed new standards based on the results of international co-operative marine science and technology as contemplated in the Conventions and Protocols for which IMO is the depository or provides the secretariat. Mr A. Morozov, Director of IMO's Marine Environment Division, provided information on the following developments.

On the pollution prevention side there is the MARPOL Convention of 1973, modified by the Protocol of 1978. In 1975, IMO was designated as the competent organization responsible for secretariat duties in relation to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (the London Dumping Convention).

1969 was important for international co-operation on scientific aspects of marine pollution. In that year Unesco, FAO, WMO and IMO invited thirteen scientists from ten countries to attend the first session of the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP). Since 1969, fifteen sessions of GESAMP have been held, resulting in a number of scientific studies and reports. The sponsoring organizations are now IMO, FAO, Unesco, WMO, WHO, IAEA, UN and UNEP.

In the context of the ICSPRO Agreement, IMO has supported the work and the secretariat of the IOC and has co-operated with the IOC on the scientific aspects of the marine problems with which IMO is particularly concerned: monitoring of pollution, especially oil from ships and other maritime structures (platforms, harbours etc.); disposal and dumping of wastes from ships and development of scientific criteria for defining vulnerable marine areas. These requirements mean that IMO must have an interface with the oceanographic community, and this must be procured notably through the IOC, to ensure the development of the best possible scientific basis for the development of standards and application of regulatory criteria in the IMO areas of responsibility in respect of the marine environment.

Basic scientific research is sometimes needed to implement effectively the conventions for which IMO is responsible, and the London Dumping Convention. In such cases, the Member States of IMO Committees (e.g., Marine Environment Protection Committee, Maritime Safety Committee) and of the Consultative Meeting of Contracting Parties to the London Dumping Convention, respectively, agree which country or international body should carry out such scientific research. Frequently, the decisions are made on the basis of voluntary offers from countries or observer organizations with expertise in the field.

In some cases GESAMP has been asked to provide advice. Since 1972, GESAMP has carried out an evaluation of the hazards of harmful substances carried by ships. The results of the evaluation are reflected in requirements for discharge from chemical tankers at sea, the assignment of ship type requirements for the carriage of chemicals at sea, and the identification of 'marine pollutants' carried in packages aboard ships. GESAMP was requested to develop guidelines for the identification of particularly sensitive sea areas, and has developed preliminary criteria for the selection of waste disposal sites at sea.

The IOC Group of Experts on Effects of Pollutants (GEEP) is undertaking a study to determine scientific criteria for the definition of vulnerable areas in respect of major marine pollutants, as an input to IMO activities and other requirements.

Other important programmes related to marine science and technology were launched in 1976 and in 1980, on the evaluation of the impact of incineration at sea on the marine environment and on the development of special care techniques for the disposal at sea of contaminated dredged material, respectively. A review of the progress of work in the field of safe disposal at sea of contaminated dredged material is being made in late 1985 jointly with scientists from the Contracting Parties to the Oslo Convention.

The evaluation of effects that might arise from the disposal at sea of low-level radioactive wastes has been considered since 1984 by an IMO panel of experts selected by IAEA and by the International Council of Scientific Unions (ICSU).

Other contributions of IMO

One of the major efforts of IMO is directed towards the effective implementation of the conventions for which it is responsible, including the International Convention on the Prevention of Pollution from Ships and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter. A number of technical studies have been carried out within the framework of these conventions, and the results are applicable to regional conventions; e.g., standards for incineration of wastes at sea, the revie of the various categories of substances listed i the Conventions, the evaluation of harmful sub stances carried by ships, the development c special dumping techniques for dredged ma terial etc.

Future priorities

To mitigate the effects of increased amounts c pollutants being discharged and dumped int marine areas, particularly due to increasing popu lation and industrial development in coast areas, worldwide navigation and exploitation c deep-sea mineral resources, appropriate co-ope ative scientific and technical programmes wi have to be developed to provide a basis fo relevant convention provisions. Various proposal have been made (Report of Task Team 200 (LDC 8/4)) with regard to:

- the development of guidelines for monitorin programmes and for safe disposal practices at sea and
- the establishment of a data bank to includ information on inputs of wastes into the sea the properties of these wastes (e.g. toxicity tainting effects etc.); alternative land-based dis posal and treatment methods; baseline levels o pollutants in the sea; the state of monitorin activities and methods; and the state of inter calibration exercises.

These tasks will have to be carried out in co operation with other international organizations particularly the IOC and the members of ICSPRO

United Nations (Ocean Economics and Technology Branch)

UN: 1945-1985

When asked what events he considered to be the most important institutional events in the last 25 years, Jean-Pierre Levy, Chief of the Ocean Economics and Technology Branch (OETB) of the UN, concurred with the other officials contacted on the following points: establishment of the IOC in 1960, the adoption of LEPOR in 1968-1969, and the establishment of ICSPRO in 1969. However, he added to these events the adoption of the UN Convention on the Law of the Sea in 1982. The Convention is having a very important impact on the conduct of marine affairs by states, including marine research; this impact, as well as the greatly increased use of the oceans and their resources, has, in the last decade or more, led to the emergence of what is known as the new ocean regime. Mr Levy also pointed to the adoption by the IOC Assembly in 1982 of the Programme of Ocean Science in Relation to Non-Living Resources (OSNLR), which is co-sponsored by the UN's Department of International Economic and Social Affairs (DIESA), of which OETB is a part.

Activities dealing with technology were explicitly introduced into the Ocean Economics and Technology programme in the mid-1970s and initially focussed on the dissemination of information about the application of specific types of marine and coastal technologies to particular problems. Examples of these problems are coastal erosion and the strengthening of links between producers and users of marine technology.

More recent activities include preparations for regional expert group meetings on the acquisition of marine surveying technologies. UN(OETB) is also serving as lead agency for a project o "evaluation of technological infrastructure re quirements for coastal and marine development under the auspices of the Task Force on Scienc and Technology for Development, of the Unite Nations Administrative Committee on Co-ordina tion.

The UN(OETB), with FAO and the IOC, co sponsors ASFIS, which includes ocean technolog as an important domain in international marin science information exchange.

Regarding marine science, the UN is a co sponsor of ICSPRO, through which it co-operate with, and supports, the IOC. Its main area o co-operation with the IOC is through co-sponsor ship of the programme of Ocean Science i Relation to Non-Living Resources (OSNLR) particularly with respect to archiving and ex change of data on minerals in the sea bed.

In January 1985 the IOC-UN(OETB) Guidin Group of Experts on OSNLR identified a list o non-living resources for which more knowledg is required to ensure a more effective explorati and, eventually, rational exploitation of them The Group also made recommendations for concept and general strategy for a global IOC UN(OETB) programme in the field of marin geology and geophysics. As a background fo OSNLR, a world-wide study of sea-level changes environments and tectonics during the past millio years was also recommended.

The UN/DIESA, through OETB, is also sponsoring agency of the Group of Experts o the Scientific Aspects of Marine Pollution (GE SAMP).

Food and Agriculture Organization of the United Nations

Historical and present basis for co-operation

The annual marine catch is now averaging more than 70 million tons, with the rate of growth having levelled off during the last decade. Most of the exploited fish stocks have probably reached their biological capacity. Securing present catches and, in some cases, increasing catches can only be achieved by a constant rational management of resources.

Armin Lindquist, Director of the Fishery Resources and Environment Division of FAO's Fisheries Department, explained, among other things, how FAO's research-related programme aims to assist member countries in this area. For a number of important resources such as anchovies, sardines and herrings, fishing is not the only factor affecting stock sizes; high natural fluctuations in recruitment and in environmental parameters are sometimes of far greater importance. It is in this area of research that co-operation with IOC and other bodies within and outside the UN system is essential.

There has been a quarter century of fruitful co-operation between IOC and FAO. The International Advisory Committee on Marine Science (IACOMS) was set up by Unesco in 1955 after consultation with FAO, and FAO also participated in the preparations for the Conference on Intergovernmental Oceanographic Research, held in Copenhagen in 1960. The General Conference of Unesco approved the Statutes of the Intergovernmental Oceanographic Commission the same year and IOC held its first session in 1961.

Later, an important link emerged in the form of the Advisory Committee of Experts on Marine Resources Research (ACMRR) of FAO which, since 1962, has been an advisory body to IOC on fishery aspects of oceanography.

When IOC was created there were already several specialized agencies whose work was, and is, concerned with the sea, such as Unesco, WMO, IMO (then IMCO) and FAO. It was subsequently felt that formal relationships should be established. Therefore, the Inter-Secretariat Committee on Scientific Programmes Related to Oceanography (ICSPRO) was established in 1969, the Secretary of which is the Secretary of IOC. ACMRR and ICSPRO held meetings earlier in 1985 through which the co-operation with IOC was renewed.

Highlights of IOC-FAO co-operation

One of the greater efforts has been the elaboration of the Long-term Expanded Programme of Oceanic Exploration and Research (LEPOR) which was formulated about 15 years ago. It provided the basic philosophy in many sectors of oceanic research. Since then, there have been substantial changes in the conditions for, and the needs of, research and at the last ICSPRO meeting it was agreed to revise LEPOR. This will be an important undertaking with the participation of ICSPRO members and with advice from ACMRR. FAO is looking forward to co-operating with IOC in this field, giving perspectives beyond the year 2000.

Another field of co-operation is the Aquatic Science and Fisheries Information System (ASFIS), which is jointly sponsored by IOC, FAO and the United Nations (Ocean Economics and Technology Branch). The products are, as is well known, particularly the bibliographic data base, which is used worldwide through direct queries or through its publication *Aquatic Sciences and Fisheries Abstracts.*

The programme Ocean Science in Relation to Living Resources (OSLR) is sponsored jointly by IOC and FAO. It aims at unifying the efforts of fishery researchers with those researchers in related fields in universities and government institutes who are not primarily concerned with fisheries but are conversant with problems of the sea. The purpose is to understand the long-term fluctuations in the productivity of the oceans and especially the recruitment of pelagic stocks. The programme is just at the beginning of its work and should be considered as being an "umbrella" for numerous activities where different disciplines can meet to find answers to important fishery problems. In this context, the support given by IOC to the Expert Consultation to Examine Changes in Abundance and Species Composition of Neritic Fish Stocks in 1983, which covered a subject very closely connected to OSLR, was appreciated.

Of recent activities, one would like to mention that FAO contributed to, and participated in, the IOC workshops on Training, Education and Mutual Assistance in the Marine Sciences and that the Workshop on Improved Uses of Research Vessels was a joint exercise of IOC and FAO, with the support of the Norwegian Agency for International Development. There will be a continuation of the work of the latter meeting in the form of preparation of guidelines for the use of research vessels and a curriculum for training in this field.

There are thus numerous links between IOC and FAO, and the ongoing and planned work ensures that they will be maintained in the foreseeable future.

United Nations Educational, Scientific and Cultural Organization

Twenty-five years ago in 1960, the Unesco General Conference established the Intergovernmental Oceanographic Commission and the complementary Unesco marine science programme. This was preceeded in 1957 by the formation of the non-governmental Scientific Committee on Oceanic Research of the International Council of Scientific Unions. They are instrinsically linked.

The 25-year period has been marked by rapid scientific change. In the mid-1960s, the "theory of plate tectonics" developed largely from the then new oceanographic research and constituted a major scientific revolution — a revolution which has shaped our views of the evolution of the oceans and continents, even of other planets. During the 1970s and 1980s, the advent of extensive observation of the oceans via satellites coupled with modelling of ocean processes using computers has greatly deepened our knowledge of the ocean and influenced the scientific approach to studying the ocean. These advances have made it possible to study the interaction of the ocean and climate, which lead to the establishment of the IOC/SCOR Committee on Climatic Changes and the Ocean (CCCO), and to the development of a research programme which will dominate physical oceanography for the next decade.

Over this period, coastal marine research has blossomed as new methods and knowledge have allowed definitive experiments and new concepts to be applied to this extremely complex environment. This led in 1979 to the establishment in Unesco of the Major Inter-regional Project on Research and Training leading to the Integrated Management of Coastal Systems (COMAR — representing COastal MARine) a project dealing with coastal systems such as coral reefs, the mangrove ecosystem, coastal erosion, coastal lagoons and offshore productivity.

An interesting feature of the marine science infrastructure is that the number of marine scientists in the world doubles every five to seven years. Thus the marine scientific community is four to five times larger than it was 25 years ago. This has resulted in a marked change in the vigour of the science and how research is carried out, both nationally and globally. Over this period of time, Unesco has been deeply involved in the establishment of new marine science laboratories, in the development of marine science teaching programmes and in the formulation of marine research programmes.

During the early years, the IOC and the Unesco marine science programme were served by the Unesco Office of Oceanography. In 1972, a specific secretariat was established for the Commission, while the Office became the Division of Marine Sciences. Both programmes were given new impetus at that time, with en expanded emphasis in the Unesco programme on the promotion of marine sciences in the developing countries.

Over the years, the marine science programmes of Unesco and the IOC have developed in a cooperative and complementary fashion. Unesco has worked very closely with the UN Development Programme in projects on national marine science development and on some regional projects. Cooperative activities are also carried out especially with FAO, UNEP, the United Nations and some regional bodies. During the last decade, a significant increase in extra-budgetary resources, contributed by Unesco Member States, has allowed the establishment of new marine science centres and the construction of research vessels, particularly in the Arab States.

Of high value are the extensive cooperative activities carried out with the international non-governmental scientific organizations, mostly of the ICSU system, such as SCOR, the International Association for the Physical Sciences of the Ocean, the International Association of Biological Oceanography and the Committee on Marine Geology. Such cooperation assures the scientific credibility of the Unesco programme.

Priorities for the year 2000 can be envisaged as three-fold: (i) promotion of the global development of marine science, in close cooperation with the international non-governmental scientific organizations; (ii) advancing the marine science capability in the developing world through improving scientific quality in areas such as Asia and Latin America, while still establishing basic scientific infrastructure and personnel in areas such as Africa and island regions; and (iii) ensuring that scientific knowledge is available and used in the management of marine resources and the marine environment.

Who does what in the UN System in marine affairs?

The question in the title to this article is very often put to representatives of international organizations. The main objective of *IMS* in including the preceding articles is to present to the readers a brief overview of the varied and inter-linked programmes undertaken by the ICSPRO members in the broad field of marine affairs. Here, the term 'marine affairs' encompasses all programme activities and operational projects that deal directly with the seas and the oceans. By applying the 'salt water test', one sees that certain coastal and land-based activities are logically included, and that 'activities in marine affairs' are not limited to the programmes of the ICSPRO members.

The task of the Committee for Programme and Co-ordination (CPC) of the UN is, as its name indicates, to examine the programmes of all the organizations that are members of the UN System, to co-ordinate their activities and to reduce duplication of effort as far as possible. To assist the Committee in this work, cross-organizational programme analyses (COPAs) are made at periodic intervals on subjects of interest to the CPC. The decision to carry out a COPA on marine affairs was taken at the 21st CPC session.

The information given below is extracted from a COPA on marine affairs, which was presented to the CPC at its 23rd Session (9 May — 3 June 1983). Although the coverage of the COPA is for the biennium 1982-1983, the information contained therein still shows the general directions of the efforts of the various bodies reported on, which have not changed significantly since that period.

The statement made above that the concerns of CPC and the COPA in marine affairs are not limited to the ICSPRO Members, is supported by the following quotation: '...17 major organizational units of the United Nations itself and 11 of its specialized agencies are undertaking 456 distinct marine affairs activities, whose total cost'... (for the 1982-1983 biennium)... 'is estimated at $371.3 million. These activities vary in size and include parts of regular work programmes, technical co-operation projects and a number of large loans.' The loans were issued primarily by the World Bank and IFAD*, who reported a total of 26 loan projects at a biennal cost of $79 million.

The table (extracted from a table in the COPA document) shows the distribution of the main activities amongst the major bodies in substantive areas, with approximate expenditures.

Substantive area	*Primary emphasis*	*Secondary emphasis*	*Thousands of US$*
Fisheries	FAO, United Nations, Unesco/IOC, World Bank, IMO	United Nations, Unesco/IOC, IMO	44,431
Shipping	IMO, United Nations, World Bank, ICAO	United Nations, FAO, ITU, IMO	15,395
Research	Unesco/IOC, United Nations FAO, IMO, IAEA	United Nations, FAO, Unesco/IOC, WHO, WMO, IMO, IAEA	24,771
Ports	United Nations, IMO, ILO, World Bank	United Nations, ILO, FAO, ITU, IMO	4,656
Institutional control	United Nations, FAO, IMO	United Nations, ILO, FAO, Unesco/IOC, WHO, ITU, IMO, IAEA	24,348
Processing living products	FAO, United Nations	United Nations, FAO	5,609
Equipment	United Nations, IMO, FAO, ILO	United Nations, FAO	1,592
Legislation and regulation	United Nations, FAO, IMO	United Nations, Unesco/IOC, ILO, FAO, WHO, ITU, ICAO, IMO, IAEA	6,672
Monitoring	IAEA, Unesco/IOC, United Nations, FAO, WHO	United Nations, FAO, Unesco/IOC, WMO, IMO	5,806
Meteorology	WMO, United Nations	Unesco/IOC	2,119
Communications	ITU, IMO	United Nations, IMO	3,174
Mapping	United Nations, IMO, Unesco/IOC	United Nations, Unesco/IOC, FAO	3,055
Minerals	United Nations	United Nations, ILO, Unesco/IOC	1,639
Hydrocarbons	United Nations	United Nations, ILO, Unesco/IOC	314
Conditions of service	ILO	United Nations, ILO, FAO, ITU, IMO	3,082
Conservation	United Nations	United Nations, FAO, Unesco/IOC, IMO, IAEA	95
Health	United Nations, WHO, IAEA	United Nations, FAO, Unesco/IOC, WHO, WMO, IMO, IAEA	653
Aviation	ICAO	United Nations	69
Transfer of technology	United Nations	United Nations, FAO, WHO, WMO, IAEA, Unesco/IOC	168
Political	United Nations	United Nations	704
Navigation and safety	IMO	United Nations, ILO, FAO, ITU, ICAO, WHO, IMO	345
Offshore installations	United Nations	United Nations, ILO, IMO	47
Tourism	—	United Nations	120
Processing non-living products	United Nations	United Nations, FAO	14
	TOTAL		148 956

* Acronyms used herein which are not spelled out elsewhere in this issue of the Newsletter:
IAEA = International Atomic Energy Agency
ICAO = International Civil Aviation Organization
IFAD = International Fund for Agricultural Development
ILO = International Labour Organization
ITU = International Telecommunication Union
WHO = World Health Organization

IOC collaboration with bodies outside ICSPRO

Examples of other international bodies with which IOC co-operates are the United Nations Environment Programme (UNEP), the International Atomic Energy Agency (IAEA), the International Council for the Exploration of the Sea (ICES), the Permanent Commission for the South Pacific (CPPS) and the International Commission for the Scientific Exploration of the Mediterranean Sea (ICSEM).

UNEP-IOC collaboration was reviewed at the Interagency Meeting on the Oceans and Coastal Areas Programme (Nairobi, 5-8 November 1985). In the field of marine pollution research and monitoring, this co-operation takes place in the framework of the UNEP Regional Seas Programme, which is managed through the Programme Activity Centre for Oceans and Coastal Areas (OCA/PAC).

The GIPME* Group of Experts on Methods, Standards and Intercalibration is jointly sponsored by IOC and UNEP. This Group is active in the development of standard reference methods, consideration of availability and production of reference materials, intercalibration exercises and studies of contaminant inputs.

One UNEP-IOC project is the Co-ordinated Mediterranean Pollution Monitoring and Research Programme (MEDPOL), in which IOC processes research proposals on physical oceanographic and petroleum hydrocarbon studies. UNEP's MEDPOL Co-ordinating Unit, to which such proposals are finally submitted, is in Athens UNEP and IOC also collaborate in the West and East Africa regions as well as in the Caribbean and South East Pacific Region.

The IOC co-operates particularly with the IAEA's International Laboratory for Marine Radioactivity in Monaco on problems of reference materials and analytical standards.

ICES (a non-UN intergovernmental organization established in 1902) and the IOC collaborate on such matters as intercalibration, baseline studies and effects of pollutants on marine organisms.

* GIPME = Global Investigation of Pollution in the Marine Environment.

CURRENT ACTIVITIES INVOLVING IOC

WORKSHOP ON CENTRAL INDIAN OCEAN AND ADJACENT WATERS

The area under study at the above workshop, organized by IOC and Unesco, (Colombo, Sri Lanka, 8-13 July 1985) includes the Red Sea, the Arabian Sea, the Bay of Bengal and the Andaman Sea, as well as the Gulf (Kuwait Action Plan Region), the Gulf of Oman and the Gulf of Aden. The workshop reviewed the present state of knowledge of the area in the fields of ocean dynamics and coastal processes; ocean processes and climate; ocean observing and monitoring systems; ocean science and living resources; ocean science and non-living resources; and marine pollution and monitoring.

The workshop also supported IOC's efforts to establish a regional tide-gauge network, the use of drifting buoys and a ships-of-opportunity project on subsurface thermal structure in the region.

The workshop's proposals and recommendations will be presented to the IOC Programme Group for the Central Indian Ocean at its first session in late 1986 as a basis for the Group's programme of work.

The workshop made some recommendations regarding the eventual terms of reference of the IOC Programme Group for the Central Indian Ocean, and its geographical coverage.

The report of the workshop will appear shortly in the *IOC Workshop Series* (as number 37) and will have a supplement containing all the scientific papers and reviews presented at the workshop.

CALL FOR PAPERS — 'El Niño'

The *AGU/IOC/WMO/CPPS Chapman Conference: International Symposium on 'El Niño'* (27-31 October 1986; Guayaquil, Ecuador) is intended for physical and biological scientists, from developed and developing countries, who are involved in research on this phenomenon. The emphasis of the conference is on aspects of 'El Niño' related to the ocean-atmosphere climatic and biological impacts within the eastern Pacific region from the equator to the higher latitudes of both hemispheres. Limited travel funds are available for some of the contributors of papers selected.

Papers are solicited on: (1) large-scale physical aspects of 'El Niño'/Southern Oscillation (ENSO) and ramifications in the Eastern Pacific, (2) prediction and numerical modeling of ocean-atmosphere variability, (3) physical oceanographic processes, (4) effects on the ocean ecology at different trophic levels, (5) effects on recruitment processes and fisheries and (6) other applicable topics. Address pre-meeting abstracts (DEADLINE: 1 May 1986, see *EOS* and *ERFEN Bulletin* for details) and enquiries to Dr D. Enfield, College of Oceanography, Oregon State University, Corvallis, OR 97331, USA; Tel: (503) 754-4555. Proceedings will be published in *Journal of Geophysical Research (Oceans)*.

NEW PHASE IN POLLUTION RESEARCH AND MONITORING IS INITIATED

A new thrust in IOC's programme related to marine pollution research and monitoring began with Phase 3 of the Comprehensive Plan for the Global Investigation of Pollution in the Marine Environment (GIPME). It concerns the effects of pollutants, and helps to assess whether or not a given contaminant is in fact a pollutant.*

This new phase is based on the recommendations of the GIPME Group of Experts on Effects of Pollutants (GEEP). The group has pointed out, among other things, the urgent need for a conclusive practical evaluation of the relevance of a variety of biological procedures used by scientists for pollution assessment.

IOC plans to achieve this evaluation through a workshop on biological effects (autumn 1986 in Oslo) to be attended by scientists (biochemists, cytologists, pathologists, physiologists and population and community biologists) who are highly experienced in specific methods for measuring pollutant effects. The results should promote a more general acceptance of a set of techniques for effects measurements to be employed in national and international pollution research and monitoring programmes.

Also to be developed are scientific guidelines for identification and classification of 'vulnerable areas'. GEEP's further work should be useful in the formulation of international agreements on marine environment protection and in the national planning of coastal zone management.

Phases 1 and 2 of the Comprehensive Plan for GIPME deal principally with the development of methods and the establishment of baseline levels of contaminants.

* GESAMP definition: "Pollution: the introduction by man, directly or indirectly, of substances of energy into the marine environment (including estuaries) resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to marine activities including fishing, impairment of quality for use of sea water and reduction of amenities."

Global Sea Level Observing System

GLOSS Draft Implementation Plan is proposed by Paris meeting

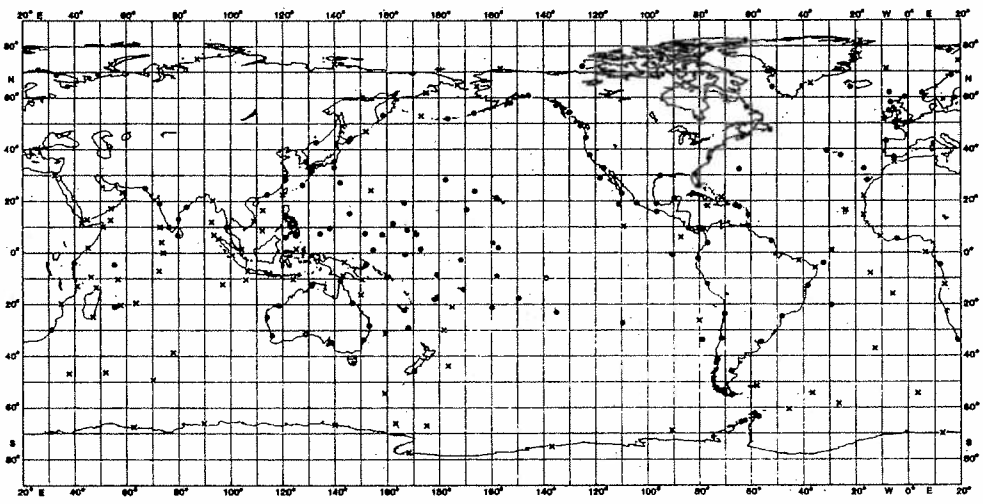
A further step was taken towards the establishment of the Global Sea Level Observing System (GLOSS) at Unesco Headquarters in Paris, 2-6 December 1985, when the IOC Task Team on GLOSS prepared a draft implementation plan for consideration by the 19th Session of the IOC Executive Council. At the December meeting, attended by experts from Australia, Brazil, France, India, USA and UK, many scientific and practical aspects were explored. The major accomplishment of the meeting was the identification of 250 sea level stations that would form the basic network of permanent sea level observing stations. Of the proposed 250 stations, 150 are already operating; in order to become part of the sea level network, they will require simply the co-operation of the Member States involved plus minor resources for data processing and transmission. The implementation of the remaining 100 stations may require assistance to the Member States concerned and, in some cases, new technology. The total network (of 250 stations) will form a system to which other networks, regional or national, may be related.

The proposal for the establishment of the Global Sea Level Observing System was adopted by the IOC at the 13th Session of its Assembly (March 1985). GLOSS is based on an international network of sea level measuring stations, co-ordinated by IOC. It will provide high quality standardized data from which sea level data products will be produced for international, regional and national research programmes.

GLOSS's main elements are: (a) a global network of permanent stations for obtaining sea level observations, (b) data collection for international exchange with unified formats and procedures, which may include IGOSS near real-time data, (c) data analysis and product preparation required for scientific and practical applications and (d) assistance and training for sea level stations both as part of GLOSS and for the improvement of national networks.

The GLOSS Implementation Plan is intended to be used as a guide for the implementation of the system. This Plan, when available, will be printed as IOC/INF-663.

An activity which already provides a contribution to GLOSS is the IGOSS Sea Level Pilot Project, wherein 22 countries provide sea level data from more than 55 stations in the Pacific Ocean to the IGOSS Specialized Oceanographic Center in Honolulu. The Project, which has been functioning since 1984, prepares and distributes monthly mean sea level anomaly charts. For more information regarding this Project, write to: Dr. Klaus Wyrtki, Department of Oceanography, University of Hawaii at Manoa, 1000 Pope Road, MSB 307, Honolulu, Hawaii 96822, USA.



Above: World map showing GLOSS network, with existing (•) and planned (×) stations.

Thirteenth Session of IOC Assembly

The Thirteenth Session of the IOC Assembly was held in Paris from 12 to 28 March 1985. The 25th Anniversary of the Commission was celebrated by a special opening ceremony attended by the Director-General of Unesco, the Secretary-General of WMO*, the Minister of Scientific Research and Technology of France, ministers and secretaries of state of other Member States, as well as many other high-ranking representatives of other UN* and non-governmental organizations. The Under-Secretary-General of the United Nations brought a message of felicitation from the Secretary-General. Five past Chairmen and four past Secretaries of the Commission were also present.

As a means of marking the 25th anniversary, the following countries indicated their intention to provide IOC Research Fellowships and other forms of training (including shipboard): Algeria, Bulgaria, Canada, Denmark, France, FRG, India, Japan, Portugal, Spain, Sweden and USA.

Science programmes

The Commission's five main science programmes and three ocean services were reviewed, with their training aspects, and the question of amending the Statutes was debated in detail.

The Assembly endorsed the recommendations of the IOC-FAO* Guiding Group of Experts on Ocean Science in Relation to Living Resources (OSLR), particularly regarding the implementation of the Sardine-Anchovy Recruitment Project (SARP) as the first element of the International Recruitment Project, initially in the eastern and south-eastern Pacific.

It also endorsed the recommendations of the IOC-UN(OETB)* Guiding Group of Experts on Ocean Science in Relation to Non-Living Resources (OSNLR), which is at an earlier stage of development than OSLR. The Group proposed priority studies of placer minerals, phosphorites, sand and gravel, especially in the coastal zone.

Mapping; climate

The preparation for four new ocean mapping projects was approved for International Bathymetric Charts of the Caribbean and the Pacific Coast off Central America, of the Central Eastern Atlantic, of the Western Indian Ocean and of the Red Sea and Gulf of Aden. The progress in the ongoing projects was noted: General Bathymetric Chart of the Ocean (GEBCO), the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans (GAPA), and the International Bathymetric Chart of the Mediterranean (IBCM).

Particular attention was paid to the role of the IOC in the co-ordination and implementation of the oceanographic component of the World Climate Research Programme (WCRP); the implementation of the Study of the Tropical Oceans and Global Atmosphere (TOGA) and the planning of the World Ocean Circulation Experiment (WOCE) were endorsed. The IOC Programme Group on Ocean Processes and Climate also provided guidance on the establishment of an Ocean Observing System in support of the WCRP and other ocean research programmes and services. The Assembly approved the establishment of a Global Sea-Level Observing System, especially through regional tide-gauge networks. On the other hand, the Assembly decided that the establishment of a proposed consortium for the implementation of drifting-buoy programmes required further study, particularly as to the relationship between such a consortium and the Commission and WMO.

Pollution; ocean services

The state of the Global Investigation of Pollution in the Marine Environment and the Marine Pollution Monitoring System and of their regional components were reviewed and a call was made for increased commitment of the Member States. The development of the scientific basis for the definition of vulnerability of marine areas will be given particular attention in the future.

To enable the IOC-WMO Integrated Global Ocean Services System (IGOSS) to meet the requirements of user needs, the Assembly approved the implementation of an Acceleration Phase for IGOSS, and urged Member States to contribute to, and make increased use of, the System.

A similar approach was taken towards the International Oceanographic Data Exchange (IODE), to adapt it to new demands of various programmes of IOC and other co-operating organizations, with increased attention to marine information management and to the needs of developing countries.

Training; mutual assistance

The Assembly approved the Summary Report and Recommendations of the Working Committee for Training, Education and Mutual Assistance (TEMA) in the Marine Sciences, particularly in respect of the implementation of the Comprehensive Plan for a Major Assistance Programme to Enhance the Marine Science Capabilities of Developing Countries. The conduct, under this Plan, of an expert mission to eight small island states (and Guyana) in the Caribbean region, to develop a sub-regional assistance project for extrabudgetary funds, was welcomed by the Assembly.

The recommendations of a workshop on the Improved Uses of Research Vessels were also recognized as being particularly useful. In the follow-up two proposals — one for the preparation of a Guide on Research Vessel Operation and Management, and one for a Training Course on Management, Operation and Use of Research Vessels and Cruise Planning — have been prepared for extrabudgetary funding.

The IOC Voluntary Assistance Programme was overhauled and renamed the Voluntary Co-operation Programme.

The implementation of IOC global programmes at the regional level and of regional co-operation was reviewed. The development of the work of the IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE) and of the Programme Group for the Western Pacific (WESTPAC) was noted.

UNCLOS implications

The recommendations of the IOC ad hoc Task Team to Study the Implications, for the Commission, of the UN Convention on the Law of the Sea and the New Ocean Regime were considered. They included proposed changes to Articles 1, 2 and 3 of the IOC Statutes, with a view to adapting the Commission to the new demands of Member States and of the world community, arising from, inter alia, the new ocean regime. The Assembly decided that all the Member States should have enough time to study these proposals carefully before they were recommended to the General Conference of Unesco for final decision as to their acceptability. The ad hoc Task Team also recommended that Member States complement the creation or strengthening of National Oceanographic Commissions or equivalent high-level co-ordinating bodies by nominating National Representatives to IOC, with a view to improving liaison between the Member States and the Secretariat. Another recommendation was to undertake in-depth studies of the IOC subsidiary bodies and the long-term stability of the resources — budgetary and human — made available to the Commission to enable it to meet the demands placed upon it.

Co-operation

The development of co-operation between the Commission and other international organizations, particularly with the members of ICSPRO*, was considered by the Assembly with a view to improving co-ordination and reducing duplication of effort.

The Delegate of the USA informed the Assembly of his country's intention to remain an active Member State of IOC. He said that the USA also intends to fulfil its obligations, including its financial responsibilities.

The officers elected are: Chairman: Prof. Inocencio Ronquillo (Philippines); First Vice-Chairman: Ms. Marie-Annic Martin-Sané (France); Second Vice-Chairman: Dr. José Antonio Galavis Seidel (Venezuela); Third Vice-Chairman: Dr. Klaus Voigt (GDR) and Fourth Vice-Chairman: Mr. Samuel Allela (Kenya).

* FAO = Food and Agriculture Organization of the United Nations.
ICSPRO = Intersecretariat Committee on Scientific Programmes Relating to Oceanography.
IOC = Intergovernmental Oceanographic Commission.
UN(OETB) = United Nations (Ocean Economics and Technology Branch).
WMO = World Meteorological Organization.

Call for contributions on time-series of ocean-data

Since its inception, the World Climate Research Programme has stimulated the development of strategies to address the observational requirements of long-term experiments. Their objective is to obtain high-quality data sets against which climate prediction models can be tested. Designers of ocean monitoring programmes must rely heavily on the experience of those who have already successfully conducted field observational programmes yielding long-term, time-series data.

The routine nature of time-series measurements often precludes their appearing in publications other than data reports. Too often these are lost to posterity. Yet, it is widely recognized that such data, along with the experiences of those who have attempted to analyze and interpret the data constitute a valuable resource to the WCRP. Accordingly, the Intergovernmental Oceanographic Commission began publishing a *Technical Series* in 1983 devoted entirely to articles based on *Time Series of Ocean Measurements* (the title of the publication). The series provides a means for publicizing and preserving these data as well as documenting analysis methods. It also responds to the need expressed by the research community to demonstrate their importance and usefulness in understanding oceanic and atmospheric processes.

Potential contributors are invited to submit abstracts to the Secretary, IOC, 7 place de Fontenoy, 75700 Paris, France. Copies of the first two volumes are available on request from the same address.

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