Intergovernmental Oceanographic Commission

(Five years of work)

Unesco 1966
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Most countries of the world either border on the sea or have maritime interests. Even those countries having no coastline are concerned, as the sea affects weather, provides avenues for international trade, and abounds in exploitable resources. In many countries, however, oceanographic research is insufficiently developed and, due to lack of adequately-trained personnel and co-ordinated research activities, the potential for utilization of the ocean's resources is never realized.

While for a long time there has existed a great number of international organizations dealing either with regional or applied oceanographic problems, by the end of the preceding decade no single organization was taking full responsibility for international co-ordination of oceanographic research in the widest possible sense, with a view to repairing the situation just described. But the need was in the air...

That is why the modest proposition to engage in "the joint operation by interested Member States of international research and training vessels for exploring the oceans more systematically than hitherto, for stimulating efforts in this direction, and for training specialized research personnel" formulated in 1958 by the tenth General Conference of Unesco, developed later into a large and dynamic enterprise which came into being in 1960 as the Intergovernmental Oceanographic Commission.

INTERNATIONAL EXPEDITIONS

So far there have been three large-scale international expeditions(2) co-ordinated by the IOC:

(a) International Indian Ocean Expedition (1959-1965)
23 participating countries (14 of which ship-operating), 40 research vessels, 180 research cruises of varying duration and complexity.

(b) International Co-operative Investigations of the Tropical Atlantic (1963-1964)
Three stages ("EQUALANT I, II and III"), eight countries, 13 ships, 36 research cruises.

(c) Co-operative Study of the Kuroshio and Adjacent Regions of the Pacific (First stage: July 1965; Second stage: January 1966)
Eight countries, 36 research vessels, 36 cruises.

(1) Preparatory meeting for the Intergovernmental Conference on Oceanographic Research (INCOR), Paris, Unesco. March 1960.
(2) More detailed accounts are given further on in the booklet.
Altogether there have been approximately 250 scientific cruises with a very wide geographical coverage. Surely the number of cruises which one international research vessel might have carried out during the same five years could not stand comparison with the scope of work accomplished through the IOC's co-ordination of national efforts. Nor could it match the latter in terms of geographical coverage.

Unesco spends $50,000 to $80,000 annually on the Secretariat of the Commission, relevant meetings and publications, while the total national funds involved in co-operative field investigations amount to something like $10 to $20 million each year. It is left to Unesco to contribute towards preparing and publishing atlases and data reports based on the observations made and to issue "Collected Reprints" of scientific papers, as is already being done for the IIOE(1).

No doubt one may attach a certain moral value to an international oceanographic vessel which, by visiting the ports of various developing countries, would bring to them a positive example of international co-operation. But the activities of the Intergovernmental Oceanographic Commission have provided more such examples. The Indian Ocean Biological Centre, organized in Cochin, India, through agreement between Unesco and the Indian Government, is one of these. Staffed with Indian scientists, supervised by an International Coordinator, and equipped with scientific instrumentation supplied by Unesco, this Centre maintains the first international collection of zooplankton open to all marine biologists of the world to study. The way this collection is being compiled is particularly instructive: Ships of countries participating in the Indian Ocean Expedition contribute to the Centre parts of their plankton collections taken with a specially-designed standard net. This, in a way,

reflects the general procedure governing today's international oceanographic co-operation. Countries contribute their share of oceanographic observations to world data centres - which have been working since the IGY - through which data become available to the oceanographic community.

DATA EXCHANGE

Efficient organizing of data exchange was particularly important for the success of the co-operative expeditions. But the Commission went further in requesting member governments to consider whether they could make available to the oceanographic community the data resulting from their national research activities non-related to the co-operative programmes. Governments were called on to declare open certain parts or the whole of their national programmes for free use of results by scientists of other countries. This decision called for revision of the rules governing international exchange of oceanographic data as established at the time of the International Geophysical Year. So a new set of rules reflecting the new situation was prepared. This also prompted publishing by UNESCO of the quarterly newsletter "International Marine Science" (prepared jointly with FAO). In accordance with the above set of rules "declared" national programmes consist of lists of research cruises, either planned for a certain period of time ahead or already implemented in the past, and/or lists of other national oceanographic activities resulting or expected to result in oceanographic data specified in the agreed list. Such "declared" national programmes are communicated to the IOC Secretariat with a statement of declaration and in the format employed by the "International Marine Science". Data resulting from such "declared" programmes are then exchanged in accordance with provisions of the guide established by the IOC.

Agreement to exchange information and data on the national programmes so declared is an entirely new form of co-operation between the Commission's member governments.

CO-OPERATION BETWEEN MEMBERS OF THE COMMISSION

Organization of this co-operation is, technically, not an easy task. Even with all the willingness of governments to co-operate, the interests of individual scientists and the programmes of various institutions involved are very often so conflicting that to arrive at a co-ordinated scientific programme is sometimes a long and arduous process. The experience of the Commission has shown that unless an international expedition is planned as a co-operative venture from the very beginning its further co-ordination cannot be very efficient.

There are, however, certain aspects of work where smooth co-operation is more easily achieved. Building up of the IOBC plankton collection is one...
example. It has also become current procedure with international expeditions that the governments of participating and bordering countries grant to the research vessels engaged in such operations special port and customs facilities, e.g. exempting taxes, reducing charges and providing free services where possible. This alone tends to reduce the usually high cost of oceanographic work, not counting the much greater profit from the pooling of efforts in pursuit of a common goal.

This pooling of efforts is profitable for other reasons besides a simply arithmetical one. It goes without saying that ten ships in a given area can accomplish ten times more work in a given period of time, or can accomplish a particular scientific task ten times quicker than one ship. But some scientific investigations cannot be accomplished successfully other than in a very short time and it follows that if their geographical scale is large they are then outside the possibilities of a country having only one or two research ships. A co-operative effort by a number of countries is the only way to accomplish such investigations. Thus the effect of pooling of efforts is not simply arithmetical but also scientific in that it permits study of such scientific problems as can only be studied through a multi-ship synoptic approach.

The significance of this co-operation does not stop with sharing amongst participating countries the information and data obtained. As soon as knowledge is accumulated various areas of application of this knowledge become evident and also become objects of national attention.

FURTHER ADVANTAGES TO BE GAINED FROM CO-OPERATION AND MUTUAL ASSISTANCE

One of the major preoccupations of the Commission is to make all its activities interesting and useful to its members so as to provide as much help as possible in the development of their national oceanographic programmes. In this the Commission’s work has already been of value to a number of countries who have seized the numerous opportunities offered to build up the national element in their oceanographic research. For example, the national oceanographic programmes of both the United States and the USSR were considerably strengthened to meet the demands of the new large-scale co-operative expeditions of the IOC. The Government of India is developing, on the basis of its participation in the International Indian Ocean Expedition, its own National Oceanographic Institute. The Federal Republic of Germany acquired for the International Indian Ocean Expedition a new modern research vessel "METEOR".

Numerous countries have established a national oceanographic data centre.

These are, of course, merely a few examples of the "by-products" of international co-operation. Their scale and impact depend very much on the degree of voluntary involvement of each member. The Commission therefore is constantly seeking ways and means by which this involvement — so beneficial for the countries themselves — may be further increased. To conduct this search the Commission created its Working Group on Mutual Assistance.
Planning of this Group's work was facilitated by the fact that, on the initiative of IOC members, numerous examples of mutual assistance already took place during recent years. The Government of Canada, for example, offered a number of tide gauges for installation by interested member countries. Applications for these tide-gauges were collected by the Secretariat and examined by the Permanent Service for Mean Sea Level. Tide gauges were then shipped to those countries whose requests were approved and subsequently installed. Brazil, Japan, USSR, U.S.A. and other countries offered places aboard their research vessels participating in cooperative expeditions to scientists and students of other countries.

However, the Commission went further and collected national reports on the actual status and needs for development of oceanography in every country. These reports were analysed by an expert invited by the Commission. The Working Group will study this analysis and associated proposals and will, it is hoped, come up with a plan for concerted actions in the domain of mutual assistance. It is natural that this search brings IOC's activities into close relation with the oceanographic programme of Unesco and related programmes of other international agencies more specifically devoted to various aspects of technical assistance.

CO-OPERATION BETWEEN INTERNATIONAL BODIES

From the very outset the Intergovernmental Oceanographic Commission established close working relations with such United Nations agencies as FAO, whose primary interest lies in fishery resources of the ocean, with WMO, whose emphasis is on...
weather forecast, with IMCO, whose competence lies in the field of navigation and maritime safety, and with IAEA and WHO, whose responsibilities embrace various aspects of marine pollution, etc.

Co-operation with regional oceanographic organizations is one of the important elements of the Commission's work. Only by correlation of IOC's responsibilities with regional initiatives and activities of such organizations as the International Council for the Exploration of the Sea, the International Commission for the Scientific Exploration of the Mediterranean, the International Commission for the North West Atlantic Fisheries, etc., can adequate coverage of the World Ocean, both geographically and subject-wise, be ensured.

Through its close work with other agencies of the United Nations system and other international organizations, the Commission became a useful mechanism for solving, at intergovernmental level, such problems of scientific development as were too complicated to hope to resolve previously for any one scientific institution or any one government acting independently.

One of the problems of international character successfully resolved through co-operation between international agencies was the reaching of agreement on the marking of oceanographic buoy stations in the ocean for easy identification and safety purposes. Similarly successful co-operation is now developing in the field of co-ordinated sea level observations in the open ocean, in seeking radio frequencies for oceanographers' use, in studying air-sea interaction, and in countering the menace of marine pollution. To co-ordinate application of the increasing abundance of knowledge of the ocean and its further international exploration, a sensible division of responsibility among existing international organizations is a most essential prerequisite. For this purpose, the ACC Sub-Committee on Oceanography was created within the United Nations system and has been functioning now for four years.

The Commission is also aware of the great complexity of the existing system of international organizations dealing with marine sciences. It is natural that because of this complexity quite a number of oceanographers have to serve in several capacities in a number of different international organizations, which leads both to over-burden of work and very often duplication of effort. On the one hand this situation occurs because oceanographers are in general not numerous in the world, but on the other hand because, so far, no steps have been undertaken to rationalize the existing system of international bodies. It may happen that the IOC, jointly with other organizations, will look into the matter.

There is also a system of scientific advisory bodies which help the Intergovernmental Oceanographic Commission to act with authority on scientific matters.

ADVISORY BODIES TO THE COMMISSION

These are two: the Scientific Committee on Oceanic Research of ICSU (also advisory body to Unesco), and the Advisory Committee on Marine Resources Research of FAO (also advisory body to FAO).

SCOR was initiator of the International Indian Ocean Expedition as well as organizer of the First International Oceanographic Congress (New York, 1959). The interrelationship of the activities of SCOR on the one hand, and of the IOC and Unesco on the other, is much more complex than simply giving and taking of advice. SCOR, being non-governmental and having close contacts with a great many working scientists, represents an active unit where actual international scientific co-operation develops. It happens frequently that useful ideas and suggestions coming through IOC channels from governments cannot be implemented any other way but through SCOR and its working groups. Thus very important work on intercomparison and standardization of methods and techniques in oceanography, originally inspired by the IOC, is now being carried out by a number of groups of scientists selected and supported mainly by SCOR.

The ACMRR is a considerably more recent institution, created to ensure that fisheries interests are taken into account when basic studies of the ocean are planned by governments associated with the IOC. One particularly important product of IOC's co-operation with its advisory bodies was the preparation and publishing of the "Draft of a General Scientific Framework for World Ocean Study" (1). This document was conceived "as a basis for developing various national, regional and world-wide international programmes for ocean investigations" (2). The draft was prepared through collaboration of several groups of authors associated with both SCOR and ACMRR and, after being published in all four languages of the IOC, was discussed and revised by the joint working group composed of all interested organizations. Finally the document developed into a very broad survey of the actual state and perspectives of future development of marine science. It was found to be of use to the research worker, the teacher of post-graduate students and, of course, to students themselves.

CONCLUSION

Summarizing what is written above, one may recapitulate the Commission's aims as stimulation of national interest in oceanography, development of oceanographic research, both national and cooperative, and, finally, learning more about the


ocean, the processes and resources therein. These are the main reasons for such intensive international co-operation in oceanography as is presently going on. But there is one more thought which probably every oceanographer would like to interject into any consideration of international marine science, namely, that scientific knowledge, economic and other gains forthcoming from man's mastery of the ocean, may be no less impressive than those from the mastery of outer space. The keys to many cosmological problems, particularly those of the earth's origin and evolution, lie in and beneath the oceanic abysses.

While, on the face of it, the work of the Intergovernmental Oceanographic Commission appears to progress in a rather matter-of-fact and routine way, certainly less spectacularly than the recent, rather limited, efforts of the International Geophysical Year, it is to be hoped that one day the scientific results of the Commission's work will receive their due share of public interest and attention.
PART II

INTERNATIONAL EXPEDITIONS

THE INTERNATIONAL INDIAN OCEAN EXPEDITION
1959-1965

Inception. The idea for a large-scale oceanographic study of the entire Indian Ocean was first considered in 1957. At that time the Scientific Committee on Oceanic Research (SCOR) assumed the task of developing a co-ordinated study of the Indian Ocean. Various working groups were formed and many ideas were put forward. Initially, a synoptic survey was suggested, but later an exploratory programme was adopted which allowed individual scientists to carry out their own specialized programmes of interest.

The Scientific Committee on Oceanic Research appointed Mr. Robert Snider (U.S.A.) as its IIOE Co-ordinator. In the initial stages of the expedition, Mr. Snider visited many countries, stimulated interest and helped with the developing of plans for participation. As the cruises progressed he produced composite track charts of completed and anticipated cruises. The following is a list of countries participating in the expedition:

Countries participating:
Ship-operating countries: Australia, France, Germany (Fed. Rep.), India, Indonesia, Japan, Pakistan, Portugal, Republic of South Africa, Thailand, USSR, United Kingdom, United States of America.
Other participants: Burma, Ceylon, China, Ethiopia, Israel, Italy, Malagasy Republic, Federation of Malaya, Mauritius, Sudan.

IOC Co-ordination. The expedition evolved into a large international enterprise and, in late 1960, Unesco agreed to co-sponsor the expedition. At the same time, the Intergovernmental Oceanographic Commission and the Office of Oceanography were established within the framework of Unesco. Under Unesco, special customs facilities and courtesies were arranged for ships and personnel of the expedition. The expedition co-ordination was assumed by the IOC Secretary. This co-ordination is carried on through various working groups and through the IOC Information Paper issued by Unesco. Plans of activities are supplied by participants usually through National Co-ordinators for IOE.

The advisory rôle on aspects of the expedition remained with SCOR and, to carry out this responsibility, SCOR appointed a small group of scientific disciplinary experts concerned with the expedition. They were:
Professor J. Krey (Germany): phytoplankton, zooplankton, primary production, pigments; Professor L.A. Zenkevich (USSR): benthos, mid-water and deep fauna;
Professor P. Tchernia (France): dynamic and circulation chemistry.

In addition, Dr. R.L. Fisher was requested to consider geological and geophysical aspects of the expedition. The task of these experts was to review and evaluate the IIOE programmes in their respective fields and to advise on future studies.

International centres. An important outcome of the expedition has been the formation of the first international sorting station for zooplankton samples. This was developed on the advice of the IIOE biological working group of SCOR. Following an agreement between Unesco and the Indian Government, the station known as the Indian Ocean Biological Centre was established in 1963 at Ernakulam, South India. Dr. V. Hansen (Denmark) was appointed by Unesco as its first international curator. Dr. Brinton (U.S.A.) took over this responsibility in 1965. A consultative committee of IOBC, which is nominated by Unesco, meets periodically and advises on a general outline of the work to be carried out at the centre. Participants send plankton samples collected with a standard IIOE net to the centre where they are sorted for later analysis by local and international experts.

The international meteorological programme of the expedition was worked out at a meeting convened by SCOR and IOC in the middle of 1961.
programme was facilitated by the establishment of the International Meteorological Centre which was set up at Bombay under a United Nations Special Fund Project, with the World Meteorological Organization (WMO) as executing agency for the project. Dr. C. Ramage (U.S.A.) was appointed as International Scientific Co-ordinator for Meteorology with headquarters at IMC Bombay. Of special interest were investigations into the general atmospheric circulation related to the monsoons and the energy exchange between ocean and atmosphere. These called for the use of aeroplane and field buoy observations.

For advice, evaluation and co-ordination of the fisheries aspects of IIOE, the IOC Secretary appointed a subject leader for the fisheries oceanography. Mr. D. N. F. Hall (Zanzibar) \(^{(1)}\) was selected for this post. He completed his work by the end of 1964.

**Co-ordination in field.** Past international co-operative work in oceanography has shown that some differences exist between data obtained by different countries, due to variations in instruments and techniques. To eliminate these difficulties and to make observations in the Indian Ocean comparable and reliable, international standardization and inter-calibration tests were conducted by participating scientists from different countries.

The first two such tests were carried out in Honolulu: 4 to 9 September 1961, for nutrient chemistry and primary production; and Perth: 2 to 9 August 1962, for chemistry, zooplankton sampling and primary production.

In addition reference stations were established at fifteen locations throughout the Indian Ocean where the participating ships should, whenever possible, make oceanographic measurements that could be used for intercomparisons of methods as well as provide information on seasonal changes at these established positions. Co-ordinated field work of the expedition terminated on 31 December 1965.

**Results.** The magnitude of the IIOE in terms of personnel, ships, money and countries involved makes it the greatest oceanographic endeavour to date.

An important feature of the IIOE is that it has provided participation in educational opportunities for international scientists on the ships of countries other than their own. The expedition has stimulated interest in marine science in many countries. Unesco has also assisted by providing equipment and educational opportunities. The IIOE has also had the effect of further developing national organizations, with the result that they are better able to deal with international oceanographic problems.

The analysis and reporting of data collected from 1959 through 1965 will continue for many years. It is planned that copies of the data collected in connexion with the IIOE will be deposited in the two World Data Centres for Oceanography (Washington and Moscow) and that eventually a number of atlases will be compiled based on all data \(^{(2)}\).

This programme, planned and carried out by individuals, institutions and countries but involving wide international co-ordination and co-operation, will undoubtedly contribute valuable scientific knowledge of the Indian Ocean.

To facilitate access to this knowledge Unesco publishes the Collected Reprints of the IIOE, three volumes of which have already been printed and the fourth is presently being prepared.

**REFERENCES**


\(^{(1)}\) Presently with the Ministry of Overseas Development, United Kingdom.

\(^{(2)}\) Work on these atlases has already started.
Some of the cruises of the International Indian Ocean Expedition, 1959-1965
THE INTERNATIONAL CO-OPERATIVE INVESTIGATIONS OF THE TROPICAL ATLANTIC
1963-1964

Plans and schedules for the International Co-operative Investigations of the Tropical Atlantic (ICITA) were formulated by participants in an IOC working group meeting held in Washington, D.C. during June 1962. The ICITA, as approved by the Bureau of the IOC, consisted of a mid-winter (EQUALANT I) and a mid-summer (EQUALANT II) multiple-vessel survey of the tropical Atlantic, 18°N to 18°S latitudes, coasts of Africa to South America.

Fourteen vessels of seven nations (Argentina, Brazil, Republic of Congo (Brazzaville), Nigeria, Republic of Ivory Coast, U.S.A., and USSR) participated during EQUALANT I (February-April, 1963, figures 1 and 2). Eleven vessels from eight nations (Argentina, Brazil, Republic of Congo (Brazzaville), Republic of Ivory Coast, Nigeria, Spain, U.S.A. and USSR) participated in EQUALANT II (August-September 1963, figures 3 and 4). In addition to those from the operating activities, scientists from Germany, England and Venezuela, as well as from various federal, university, and private organizations of the U.S.A., participated aboard several of the above-mentioned vessels.

EQUALANT III (February-March 1964), proposed by members of the International Co-ordination Group (ICG) for the ICITA (July 1963) and approved by the Bureau and Consultative Council of the IOC, involved work from eight vessels of six nations (Republic of Congo (Brazzaville), Ghana, Republic of Ivory Coast, Spain, U.S.A. and USSR). Direct current measurements, accompanied by oceanographic and marine biological observations, were made in an area between the latitudes 10°N and 10°S, from 30°W to the coast of Africa (figure 5).

Observations and samples collected from each vessel (EQUALANTS I and II), in an essentially standard manner, included meteorological, chemical and physical (temperature, salinity, oxygen and inorganic phosphate), marine biological (measurements of microbimass and rate of primary productivity by the C-14 technique in samples from depths equivalent to 100%, 70%, 50%, 20% and 1% of incident radiation and zooplankton tows) and, from vessels adequately equipped, bathymetric and other geophysical data.

The data reports for EQUALANT I and II, compiled and prepared by the National Oceanographic Data Center (NODC), were printed by the U.S. Coast and Geodetic Survey and U.S. Naval Oceanographic Office, respectively, and were distributed in 1964.
ICITA EQUAALANT II
-BIOLOGICAL STATIONS-

NOTE: SAMPLES ARE INDICATED AS
□ BLANK (PLANKTON)
■ FILLED (C-14)
□ BOTH (PLANKTON AND C-14)

DATA NOT YET RECEIVED:
1 BRACUI
2 PILLSBURY
3 LOMONOSOV
4 MALASPINA
ICITA EQUALANT I
- OCEANOGRAPHIC STATIONS -
(CONTINUES TO 10° SOUTH)

STA. POS. SUBJECT TO CHANGE

- PILLSBURY
- REINE POKOU
- SAKUMO
- OMBANGO
- POSSIBLE
- GAPONIMO
- ZVEZDA
EQUATORIAL III data report, compiled and prepared by NODC, is being printed by the Argentina Hydrographic Service.

A proposal for the ICTTA Atlas, prepared by NODC and the International Co-ordinator, was discussed by the International Co-ordination Group in June 1964 and the final plan was adopted by the Ad Hoc Editorial Board at its meeting in Washington in February. This plan consists of (a) drafting all the base maps and base sections by NODC (U.S.A.) and the printing of these maps and sections by the Argentina Hydrographic Service; (b) plotting and drawing of all station curves by the NODC (with financial assistance from SCOR); (c) pre-plotting of the data on base maps and sections by the Argentine Hydrographic Service. Sections will be divided between interested institutions which will accomplish it under the guidance of the Chief Editor, Dr. F. Fuglister (U.S.A.).

The International Co-ordination Group, meanwhile, will continue to function in order to ensure exchange of information on any oceanographic work being carried out in the tropical Atlantic.

THE CO-OPERATIVE STUDY OF THE KUROSHIO AND ADJACENT REGION (CSK), 1965 ONWARDS

The idea of a co-operative study of the Kuroshio and its adjacent region was conceived at the Second Regional Meeting of Marine Science Experts in South East Asia, organized by Unesco in Manila in 1962. Consequently the Intergovernmental Oceanographic Commission (IOC), at its second session, instructed its Secretary to convene a meeting of marine science experts on the Kuroshio region in order to formulate basic plans for the co-operative study. The meeting was held in Tokyo from 29 to 31 October 1963 and one day was devoted to a symposium on the Kuroshio, co-sponsored by Unesco and the Oceanographic Society of Japan, with Dr. Kozo Yoshida, Professor of Oceanography at the University of Tokyo as convenor. The purpose of the symposium was to review existing knowledge on the Kuroshio.

The report of the meeting of marine science experts on the Kuroshio region, which presented a basic outline for the co-operative study was adopted at the third session of the Commission in June 1964. The Co-operative Study of the Kuroshio and its Adjacent Region (CSK) thus became one of the official programmes of the Commission. Its resolution III-5 commended this programme to its Member States for their active participation. An international co-ordination group was established in order to co-ordinate national efforts into a well-organized plan. Dr. Kiyoo Wadati (Japan) was appointed International Co-ordinator of the CSK.

The Kuroshio, whose name in Japanese means "black current", has been intensively studied off the coast of Japan, but very little is known about it further south or west. Its cycle of behaviour in time has not yet been properly determined. Thus the CSK programme set forth three basic investigation targets:

- synoptic and multi-disciplinary surveys of the whole Kuroshio system at least twice a year;
- studies of the frequency and extent of the Kuroshio's short-term fluctuations;
- studies of its seasonal variations.

Oceanographers decided to learn the time and space scales of Kuroshio's variations and to study their effect on weather in the Far East. To learn more about the changes in the current is also very important for fisheries.

Responding to the appeal of the IOC, forty research vessels from seven countries carried out the expedition's first phase which lasted from July 1965 through to February 1966, and consisted of two synoptic surveys, summer and winter, supplemented by more frequent or continuous observations in key areas.

In 1965 and 1966 twenty-seven of the participating ships came from Japan, three each from the Soviet Union, the United States and the Republic of Korea, two from the Philippines and one each from the Republic of China and Hong Kong. Unesco provided ten "shipboard" fellowships to scientists from participating countries in order to enable them to take part in the expedition.

The preliminary results of the first synoptic surveys of CSK in the summer of 1965 were reported to the Commission at its fourth session in November 1965. Current information on the CSK is promulgated through the CSK Newsletter.

The finding of the area of the Kuroshio's origin was announced in September 1965 by a Japanese survey group after a 75-day cruise aboard the Takuyo, one of 27 Japanese research vessels in the first phase of the study.

The "TAKUYO" team found that the northern half of the 600 mile wide north equatorial current turned north to become the Kuroshio between 13 and 15 degrees N. latitude when it reached the eastern coast of Luzon Island in the Philippines.

Measurements of the Kuroshio's depth were made by the "ATLANTIS II" of the Woods Hole Oceanographic Institution in the United States and showed it to be confined to the upper layers of the Pacific above a depth of 2,000 m. These studies were carried out with neutrally buoyant floats that can be set to drift at a given depth where their "pings" are followed by sonar apparatus aboard a research ship.

(2) CSK Newsletter Nos. 1 to 7, - Co-operative Study of the Kuroshio and Adjacent Regions. Published by: Japanese Oceanographic Data Center, Hydrographic Division, Maritime Safety Agency, Tokyo, Japan, under the sponsorship of IOC and Unesco.
The "ULIANA GROMOVA", a Soviet vessel, was one of several ships that carried out this research programme despite a September typhoon which generated waves 18 metres high.

During this summer phase, research vessels ran transects over an area ranging 1,000 miles into the Pacific and running from Luzon Straits in the south to northern Japan. The same area is now being covered during winter months to determine seasonal variations.

The Kuroshio study has a strong fisheries focus because this is one of the regions where fisheries industries are highly developed and important, the peoples in the region relying for their protein food on marine products. The fisheries aspect of CSK is therefore developed in close co-operation with the FAO and the IPFC since its early stage of planning. Dr. John Marr of the Honolulu laboratory of the United States Bureau of Commercial Fisheries was appointed as its assistant international co-ordinator for fisheries. One of the study's long-term goals is an explanation of variations in fish stocks and for this purpose the close co-operation of IPFC is envisaged.

Knowledge obtained during the first phase of the CSK is expected to serve as an essential guide to launch more concentrated and elaborated plans for the second phase of the CSK. The emphasis will be put on the studies of variations of the Kuroshio and their effects on fisheries and meteorological phenomena in the region. More attention will be devoted to geological and geophysical studies. The recent meeting of the International Co-ordination Group, which was held in Tokyo in August this year, discussed the future programme of the CSK.
PART III

LIST OF IOC WORKING AND CO-ORDINATION GROUPS; THEIR MEETINGS, MEMBERSHIP AND TERMS OF REFERENCE

THE WORKING GROUP ON FIXED OCEANOGRAPHIC STATIONS

1st Meeting: Paris, 6-10 August 1962

Members:

U.S.A. Dr. W.S. Richardson (Chairman) U.S.S.R. Mr. N.P. Goptarev
Federal Republic of Germany Dr. J. Joseph (Rapporteur) USSR Mr. P.D. Barabolya
Norway Dr. J. Eggvin
United Kingdom Lt. Cdr. D.P.D. Scott
Belgium Prof. G. Capart
France Dr. J. Gonella, Mr. J. Morhange

Observers:

IAEA Mr. G.W.C. Tait
IMCO Mr. R. Grosclaude
IMCO Mr. T.S. Busha
WMO Mr. J.A. Van Duijnen Montijn

(For Report see Doc. UNESCO/NS/180, Annex V)

2nd Meeting: Paris, 18 February-3 March 1966

Members present:

Federal Republic of Germany Dr. G. Tomczak
France Mr. J. Gonella (Prof. H. Lacombe)
Norway Dr. J. Eggvin
United Kingdom Capt. G.P. Britton, Lt. Cdr. D.P.D. Scott (Rapporteur)

Members:

Belgium Prof. G. Capart
Federal Republic of Germany Capt. K.H. Hille
Norway Dr. J. Eggvin
United Kingdom Mr. R. Wilson
U.S.A. Mr. J. Snodgrass
U.S.S.R. Dr. N.N. Syssoev

Observers:

ITU Mr. F. Dellamula
WMO Mr. H. Ribault

(For Report see Doc. UNESCO/NS/180, Annex IV)
2nd Meeting: Paris, 2-6 September 1963

Members:

Belgium
Mr. L. Dufour,
Mr. R. Tastenoy
Canada
Mr. R. O. Hewitt,
(Rapporteur)
Chile
Mr. Q. Rivera,
China
Mr. Wei-Ning Li
Cuba
Mrs. M. Frayde
(Franchise)
France
Mr. J. Bes
Mr. Delaporte
Mr. H. Ribault
Federal Republic
of Germany
Mr. K. H. Hille,
Mr. H. Piper
India
Mr. M. V. Pai
Italy
Mr. Diego Bottari
Mr. Angelo Petti
Monaco
S. Exc. Solamito
Mr. Vaissiere
Netherlands
Mr. D. J. van Dorrninck,
Mr. Arne Bøe
Philippines
Mr. Dominador C. Canlas
United Kingdom
Mr. R. Bowers
Mr. R. Wilson
U.S.A.
Mr. J. M. Snodgrass,
(Chairman)
Mr. S. M. Myers,
USSR
Mr. N. P. Goptarev
Mr. J. S. Aterov

Observers:

ITU/IFRB
Mr. F. Dellamula
WMO
Dr. G. Weiss
IMCO
Mr. G. Dente
ICS(1)
Mr. R. G. Swallow
ICAO
Mr. J. P. Palencia
CIRM(2)
Mr. J. D. Parker
Col. Raro

(for Report see Doc. UNESCO/IoC/III-12)

Extraordinary Meeting: Geneva, 1-3 September 1965

Members and representatives:

France
Prof. P. Tchernia
Mr. P. Chaspoul
Mr. P. Villat
Mr. J. Bes
Federal Republic
of Germany
Dr. Marienfeld
Mr. K. H. Hilie
Mr. H. Barth
Japan
Mr. F. Tadokoro
Norway
Mr. J. Bes
United Kingdom
Mr. R. Wilson
U.S.A.
Mr. J. M. Snodgrass

U.S.A.
Mr. W. E. Denny
Mr. S. M. Myers
USSR
Dr. N. P. Goptarev
Mr. F. Dellamula
ICAO
Mr. P. Oomen
WMO
Mr. P. Rogers
Dr. G. K. Weiss
Mr. S. R. Barbagallo
IMCO
Capt. Z. N. Sdougos
IOG
Dr. A. Y. Takenouti

Observers:

CIRM
Col. J. D. Parker
ICS
Capt. R. G. Swallow

(for Report see Doc. IOC/IV-19 or Doc. UNESCO/NS/203, Annex VI)

IOC WORKING GROUP ON OCEANOGRAPHIC DATA EXCHANGE

1st Meeting: held at the National Oceanographic Data Center, Washington, 7-10 August 1962

Members and representatives:

World Data Centre A
Dr. W. C. Jacobs
Advisers: Mr. W. L. Sullivan, Jr.
Mr. T. S. Austin, Mr. J. E. Woolhiser

World Data Centre B
Commodore K. P. Ryzhkov
Adviser: Lt. Cdr. V. G. Dyakin

World Meteorological Organization
Dr. P. H. Kurschenreuter

Scientific Committee on Oceanic Research
Dr. R. Revelle

International Hydrographic Bureau
R. Adm. E. C. Stephan

Permanent Service for Mean Sea Level
Dr. J. R. Rossiter

International Council for the Exploration of the Sea
Dr. J. W. Smad

Intergovernmental Oceanographic Commission/Unesco
Dr. W. S. Wooster (Chairman)

(1) International Chamber of Shipping
(2) Comité International Radio-Maritime.
Observers:

U.S.A.: Mr. R.Y. Dow, NAS; Mr. H.W. Dubach, NODC-WDC-A; Mr. H.H. Eckles, BCF; Dr. P.J. Hart, NAS; Dr. D.F. Leipper, TEXAS A & M; Dr. A. Maxwell, ONR; Mr. R.V. Ochinero, NODC; Mr. B.S. Richmond, WDC-A; Mr. R.W. Taber, NODC; Mr. R.C. Vetter, NAS; Mr. W.G. Watt, HYDRO; Mr. T. Winterfield, NODC.

(for Report see Doc. UNESCO/NS/180, Annex VI)


Members and representatives:

<table>
<thead>
<tr>
<th>United Kingdom</th>
<th>Dr. John B. Tait (Chairman)</th>
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<tr>
<td>Brazil</td>
<td>Captain Paulo de Castro</td>
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<td>Moreira da Silva</td>
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<td>Lt. Roberto Fernandez</td>
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<td>Canada</td>
<td>Mr. C.D. Sauer</td>
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<td>China</td>
<td>Mr. Wi-Ning Li</td>
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<td>Cuba</td>
<td>Dr. M. Frayde</td>
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<td>France</td>
<td>Prof. H. Lacombe</td>
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<td>Prof. P. Tchernia</td>
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<td>Federal Republic of Germany</td>
<td>Prof. Dr. J. Krey</td>
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<td>Dr. Tomczak</td>
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<td>India</td>
<td>Dr. N.K. Panikkar</td>
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<td>Mr. R. Jayaraman</td>
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<td>Israel</td>
<td>Mr. D. Ariel</td>
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<td>Japan</td>
<td>Dr. M. Uda</td>
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<td>Korea</td>
<td>Mr. Soong Soo Lee</td>
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<td>Morocco</td>
<td>Mr. El Bacha</td>
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<td>Mr. Collignon</td>
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<td>Netherlands</td>
<td>Mr. J.A. van Duijnen Montijn</td>
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<td>Pakistan</td>
<td>Cdr. S.R. Islam</td>
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<td>Spain</td>
<td>Prof. N. Menendez</td>
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<td>Switzerland</td>
<td>Dr. K. Mongold-Wirz</td>
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<td>United Kingdom</td>
<td>Mr. R.I. Currie</td>
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<td>Mr. G.W. Andison</td>
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<td>U.S.A.</td>
<td>Dr. W.S. Wooster (Rapporteur)</td>
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<td>Dr. E. Chin</td>
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<td>Dr. J. Lyman</td>
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<td>Dr. D.W. Pritchard</td>
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<td>Mr. J.F. Spin</td>
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<td>USSR</td>
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<td>World Data Centre A</td>
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<td>WMO</td>
<td>Mr. J.A. van Duijnen Montijn</td>
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<td>IHB</td>
<td>Vice-Admiral A. Viglieri</td>
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<td>ICES</td>
<td>Dr. J.B. Tait</td>
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<td>SCOR</td>
<td>Dr. G.F. Humphrey</td>
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<td>Unesco (IOC)</td>
<td>Dr. K.N. Fedorov</td>
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<td>Dr. E.C. Lafond</td>
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<td>Dr. A.Y. Takenouti</td>
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<td>Dr. T.R. Parsons</td>
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Observers:

IMC Prof. C.S. Ramage
IOBC Mr. V. Hansen
IPFC Dr. N.K. Panikkar
FAO Dr. V.E. Brock
IAPO Dr. Eyries

Participants present on Thursday, 30 January 1964 (morning meeting)

Mr. G.W. Andson
Mr. R.I. Currie
Cdr. S.R. Islam
Prof. H. Lacombe
Prof. N. Menendez
Mr. J.A. van Duijnen Montijn
Dr. N.K. Panikkar
Dr. D.W. Pritchard
Lt. R.F. Rodrigues
Cdr. K.P. Ryzhkov
Capt. Paulo de Castro Moreira da Silva
Dr. R. Serene
Dr. J.B. Tait
Dr. Tomczak
Dr. W.S. Wooster

and members of the Secretariat

(for Report see Doc. UNESCO/NS/191, Annex X)

3rd Meeting: Copenhagen, 31 March-2 April 1966

Members:

Canada Mr. C.D. Sauer
Denmark Dr. Vagn Hausen
Federal Republic of Germany Dr. G. Tomczak
Finland Prof. I. Hela
France Mr. Ch. Allain
Israel Dr. O.H. Oren
Italy Mr. A. Barlaam
Mr. S. di Santillo
Japan Dr. T. Matsuzaki
Monaco Comm. L. Grinda
Netherlands Dr. R. Dorrestein
Norway Mr. R. Ljøen
Poland Prof. F. Pautsch
Spain Prof. N. Menendez
Sweden Mr. A. Svensson
Thailand Mr. Phaibul Nayanetr
Turkey Capt. Naziz Ilıcak
Lt. Cdr. Sevket Gücüber
United Kingdom Mr. A.J. Lee
Mr. G.W. Andison
U.S.A. Dr. J.B. Tait (Chairman)
Dr. H.B. Stewart
Dr. B. Ketchum
Mr. A. Bargeski(1)
UK USSR Comm. K.P. Ryzhkov(2)

(1) Also WDC-A
(2) Also WDC-B
International Council for the Exploration of the Sea (ICES)
International Hydrograph Bureau (IHB)
Permanent Service for Mean Sea Level (PSMSL)
Observers:

United Nations
FAO
International Council of Scientific Unions (ICSU)
SCOR
International Council for the Scientific Exploration of the Mediterranean (ICSFM)
International Commission for the Northwest Atlantic Fisheries (ICNAF)
Permanent International Association of Navigational Congresses (PIANC)

UNESCO (IOC)
Australia
Canada
China
France

International Commission for the Northwest Atlantic Fisheries (ICNAF)
Permanent International Association of Navigational Congresses (PIANC)

International Co-ordination Group for the International Indian Ocean Expedition

1st Meeting: Paris, 22-24 January 1964

Members and representatives:

Unesco (IOC)
Australia
Canada
China
France

International Co-ordinator
Dr. K. N. Fedorov (Chairman)
Dr. G. F. Humphrey (1), also representing SCOR
Mr. C. D. Sauer
Mr. Wi-Ning Li
Prof. P. Tchernia (1), disciplinary expert of SCOR (physical oceanography)

Federal Republic of Germany

India
Japan
Madagascar
Thailand
United Kingdom

U.S.A.

Cdr. S.R. Islam (1)
Capt. J.K. Mallory
Capt. V. Sarindu (1)
Mr. G.E. Hemmen (1)
(Rapporteur)
Mr. R.I. Currie
Dr. J. Lyman (1)
Dr. Edward Chin
Dr. R.L. Fisher, disciplinary expert of SCOR (marine geology)
Dr. W.C. Jacobs
Dr. J. A. Knauss
Mr. J. F. Splain
Dr. W.S. Wooster
Dr. A.R. Miller
Prof. P.L. Bezrukov (1)
Commendore K.P. Ryzhkov
Prof. C.S. Ramage – Director, Meteorological Programme
Mr. V. Hansen
Mr. J.A. van Duijnen Montijn

Secretariat:

Unesco (IOC)

Australia
Canada
China
France

Mr. Keh-Ming Chao
Dr. P. Tchernia (1), disciplinary expert of SCOR (physical oceanography)
Mr. E. Pouchpadass
Dr. N. Panikkar (1)

Dr. D. Bader (1)

Dr. R. Fisher, disciplinary expert of SCOR (marine geology)

(1) National co-ordinators.
U.S.A. Prof. C Ramage, Director, Meteorological Programme
USSR Prof. L. Zenkevich, displinmary expert of SCOR (benthos)

Observers:
IOBC Mr. R. Glover
Dr. Vagn Hansen (retired curator of the IOBC)
FAO/ACMRR Dr. M. Ruivo

Secretariat:
Unesco/IOC Dr. A. Takenouti
Dr. G. Hempel

INTERNATIONAL CO-OPERATIVE INVESTIGATIONS OF THE TROPICAL ATLANTIC

Members:
Brazil Cmdr. Paulo de Castro
Moreira da Silva
Canada Dr. W. M. Cameron
Chile Cmdr. A. F. Walbaum
France Dr. de Lignac
Prof. A. T. Monod - also representing CCTA/CSA
Federal Republic of Germany Mr. W. Koehler
Morocco Mr. Abdeslam Tadlaoui
Spain Capt. Carlos Pardo
Uruguay Lieut. Mario Bolivar
Capt. Homer Murdoch
U.S.A. Mr. T. S Austin
Dr. W. C. Jacobs
Dr. J. Lyman
Dr. H. B. Stewart, Jr.
Mr. R. C. Wilson
USSR Prof. V. G. Kort
Lieut. Y. M. Mezenin
Lt.Cmdr. Lev Vtorygin

Observers:
China Mr. You Yu Bao
Korea Mr. Sang Moon Chang
Sierra Leone Mr. H. E. Tucker
FAO Dr. D. B. Finn

In addition 40 advisers, observers and guests from the U.S.A. were present at the meeting.

(for Report see Doc. UNESCO/IOC/INF-21).

INTERNATIONAL CO-ORDINATION GROUP FOR ICITA

1st Meeting: Paris, 19 September 1962

Members:
U.S.A. Dr. V. Brock, Chairman, International Co-ordinator
Argentina Capt. L. Capurro
United Kingdom Dr. A. J. Lee
Brazil Cdr. P. Moreira da Silva
Ivory Coast Dr. P. Rancurel
USSR Comm. K. P. Ryzhkov

Observers:
IOC Dr. W. M. Cameron
USA R. Adm. H. Arnold Karo
Dr. H. B. Stewart, Jr.
Dr. A. E. Maxwell
Dr. W. M. Chapman
Argentina Mr. R. Snider
Dr. C. Ramage
FAO Dr. M. Ruivo
WMO Dr. K. Langlo

SECRETARIAT:
IOC/Unesco Dr. W. S. Wooster
Dr. Y. Takenouti
Dr. T. R. Parsons
Dr. L. Howell-Rivero

FOR Report see Doc. UNESCO/NS/180, Annex III

2nd Meeting: Paris, 2-4 July 1963

Members:
U.S.A. Mr. T. S. Austin, Chairman, International Co-ordinator
Mr. W. C. Jacobs
Mr. W. L. Sullivan, Jr.
Brazil Cmdr. Paulo de Castro
Moreira da Silva
Spain Mr. N. Menendez
Argentina Mr. L. R. A. Capurro
United Kingdom Mr. P. G. W. Jones
Federal Republic of Germany Mr. J. Krey
USSR Mr. Kolesnikov
Ivory Coast Mr. P. Rancurel
France Mr. E. Postel
Mr. M. Delais
Mr. Poinsard
Congo (Brazzaville) Mr. G. R. Berit
Mr. J. P. Troades

Observers:
CCTA/CSA Mr. F. Williams
FAO Mr. Miroslav Zei
Mr. Mario Ruivo
Secretariat:

Unesco
Mr. Warren S. Wooster
Mr. A.Y. Takenouti
Mr. D. Behrman

(for Report see Doc. UNESCO/NS/89D)

3rd Meeting: Paris, 12-13 June 1964

Members:

U.S.A.  Mr. T S. Austin, Chairman, International Co-ordinator ICITA
Argentina  Capt. L.R.A. Capurro
Brazil  Capt. Moreira da Silva
Federal Republic of Germany  Dr. A. Kotthaus
France  Dr. E. Hagmeier
Prof. J. Krey
Congo (Brazzaville)  Mr. M.G.R. Berrit
Ivory Coast  Mr. Kaul-Meledie
Mr. M.P. Rancurel
Poland  Prof. S. Szymborski
Spain  Mr. E. Seco Serrano
Mr. F. Luzano Cabu
U.S.A.  Dr. W.M. Chapman
Ukrainian SSR  Prof. A.G. Kolesnikov
USSR  Dr. I.P. Kucherov
Dr. A.P. Metalnikov

Observers:

WMO  Mr. J.A.van Duijnen Montign
FAO  Prof. M. Zei
Dr. M. Ruivo
ICSEM  Mr. J. Dardignac
Nigeria  Mr. F. Dardignac
United Arab Republic Dr. M. Hassan

Secretariat:

Unesco/IOC  Dr. K.N. Fedorov

(for Report see Doc. UNESCO/NS/191, Annex V)

EDITORIAL COMMITTEE ON ICITA ATLAS

1st Meeting: Washington

Participants:

Dr. K.N. Fedorov, Secretary, IOC
Captain L. Capurro, Argentina
Dr. P.G. Rancurel, Republic of Ivory Coast
Mr. F. Fuglister, U.S.A.
Mr. Thomas S. Austin, International Co-ordinator
Dr. W.C. Jacobs, Director, NODC
Mr. Wm. Sullivan, Department of State, U.S.A.

Mr. H. Coulter, Interpreter, Department of State
Mr. Rene Cuzon du Rest, Interpreter, NODC
Mr. Milan Kravanja, Interpreter, Bureau of Commercial Fisheries
Mr. A. Bargeski, NODC

(for Report see Doc. UNESCO/IOC/IV-14)

WORKING GROUP ON CO-OPERATIVE INVESTIGATIONS OF VARIABILITY IN THE OCEAN

1st Meeting: Paris, 2 and 5 November 1965

Members:

Canada  Dr. Cedric Mann
Federal Republic of Germany  Dr. Weidemann (not present)
France  Prof. H. Lacombe
Norway  Dr. L. Midttun (nominated by ICES)
Poland  Prof. F. Pautsch
United Kingdom  Dr.A. Lee (also nominated by ICNAF)
U.S.A.  Dr. A. Maxwell
Dr. W. Wooster, Chairman
Dr. H. Stewart, Jr.
USSR  Prof. V.G. Kort

Observers:

IAPO  Prof. I. Hela
ICES  Dr. J. Lyman (not present)
ICNAF  Dr. L. Midttun
Dr. A. Lee
WMO  Dr. C. Morales
SCOR  Prof. V.G. Kort
Prof. T. Braarud

Invited consultants:

Dr. J. Tait (United Kingdom)
Dr. H. Mosby (Norway)
Dr. R. Stewart (Canada)

Other participants:

Prof. P. Tchernia (France)
Dr. W.H. Cameron (Canada)
Dr. N. Campbell (Canada)
Capt. Moreira da Silva (Brazil)
Mr. L. Day (Exec.Secretary, ICNAF)

Secretariat:

Dr. K.N. Fedorov, Secretary, IOC
Dr. R.P.VonHerzen, Assistant Secretary, IOC

(for Report see Doc. UNESCO/NS/203, Annex III)
INTERNATIONAL CO-ORDINATION GROUP FOR
THE CO-OPERATIVE STUDY OF THE KUROSHIO
AND ADJACENT REGIONS (CSK)

1st Meeting: Manila, 8-11 February 1965

Members:

China
Professor Chu Tsu-You(1)
Dr. K. Wadati(1)
Mr. M. Uda
Mr. J. Masuzawa
Mr. R. Marumo

Japan
Mr. Hi Soo Han(1)
Mr. Kwang Yoon Hahn

Korea
Captain C. Legaspi(1)
Dr. D. Canlas
Mr. I. Ronquillo
Dr. E. Tan
Mrs. P. Borja
Mr. P. Esquires
Mr. M. Manansala
Mr. C. Santos
Mr. J. Lirios
Mr. C. Arafiles
Mr. G. Armea
Professor T. Megia
Cdr. A. Ventura
Mr. A. Mines

Philippines

United Kingdom
(Hong Kong)
Mr. J.D. Bromhall(1)

USSR
Professor A.M. Muromtsev(1)
Dr. K.K. Musaov

U.S.A.
Dr. T. Ino(2)
Prof. K. Sugawara
Prof. M. Uda
Prof. S. Motoda
Dr. D. Shoji
Prof. R. Marumo
Dr. J. Masuzawa
Prof. Y. Ogura
Prof. Y. Sasaki
Prof. H. Irie
Prof. T. Takahashi
Dr. K. Tanii
Dr. T. Matsuzaki
Dr. H. Futl
Mr. M. Ogata
Mr. A. Niwa
Mr. M. Yamanaka
Mr. Y. Nakamura
Mr. Han Hak Soo(1)

United Kingdom
(Hong Kong)
Mr. J.D. Bromhall(1)

USSR
Adm. A.I. Rasokho
Prof. A.M. Muromtsev(1)
Dr. N. Parin

U.S.A.
Dr. J.C. Marx(1)
Dr. J. Lyman(1)
Dr. W.V. Burt
Capt. T.K. Treadwell

Viet-Nam
Dr. Nguyen-Hai(1)

Representatives:

IOC/UNESCO
Dr. A.Y. Takenouti
FAO
Dr. M. Ruiyo
Dr. K. Holt
IAPO
Capt. T.K. Treadwell

(1) National Co-ordinators
(2) Assistant National Co-ordinators
Representatives:

IOC/UNESCO
- Dr. A.Y. Takenouti
- Prof. J. Krey
- Dr. Tham-Ah-Kow

FAO
- Mr. H. Rosa Jr.
- Dr. I. Yamanaka

WMO
- Mr. A. Imazato

ECAFE
- Dr. C.Y. Li

(for Report see Doc. CSK/ICG-III/INF.4)

WORKING GROUP ON MUTUAL ASSISTANCE

1st Meeting: Paris, Unesco, 14-17 June 1966

Members:

Argentina
- Not represented

Australia
- Dr. G.F. Humphrey (Chairman)

Federal Republic of Germany
- Dr. A.H. Meyl

France
- Professor H. Lacombe

Ghana
- Not represented

India
- Dr. N.K. Panikkar

Ivory Coast
- Mr. Kaul-Meledje

Japan
- Not represented

Mexico
- Not represented

Philippines
- Not represented

Spain
- Prof. N. Menendez

Thailand
- Not represented

United Arab Republic
- Dr. M. Hassan

United Kingdom
- Dr. J.R. Rossiter

U.S.A.
- Dr. A.E. Maxwell

USSR
- Dr. I.E. Wallen

Venezuela
- Dr. R.J. Hurley

Observers and representatives:

Chile
- Dr. H.L. Barrales

Dominican Republic
- Dr. M. Pastoriza

Ecuador
- Dr. D. Paredes-Pena

Italy
- Prof. M. Picotti

Mr. A. Barlaam

Monaco
- Commander L. Grinda

Tunisia
- Dr. A. Azouz

IAPO/IUGG/PSMSL
- Dr. J.R. Rossiter

ICSEM
- Dr. Charles Allain

TERM OF REFERENCE

IOC WORKING GROUPS

Name of group | Terms of reference | Remarks
---|---|---
Working Group on Communications | *The study and establishment of oceanographic radio communication requirements and the submission of its initial report in time for approval, adoption and presentation by the Commission and its member governments to the next study session of the Administrative Radio Conference. | Established by res. I-6
Working Group on Ocean Data Stations | *To study the existing network of fixed stations and the need to extend it (types, number, locations, kinds of observations and their spacing in time) and to prepare proposals for meeting this need. | Established by res. I-7. Originally named Working Group on Fixed Oceanographic Stations
Working Group on Oceanographic Data Exchange | *Facilitating the exchange of oceanographic data; standardization of forms for reporting and coding data; encouragement of the preparation of data catalogues; assistance to development of national oceanographic data centres. | Established by res. I-9
Working Group on Mutual Assistance | 1. Encourage sister-relationships between universities and government agencies in advanced countries on the one hand and developing countries on the other. | Established by res. XIII-15. Terms of reference were revised by res. IV-8
<table>
<thead>
<tr>
<th>Name of group</th>
<th>Terms of reference</th>
<th>Remarks</th>
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<tr>
<td>Working Group on Variability of the Ocean</td>
<td>2. Obtain and arrange for dissemination of information on the availability of reliable, easily-operated and relatively inexpensive oceanographic instruments and on standard methods and procedures.</td>
<td>Established by the Bureau at its fourth session as pursuant of decision of the IOC-III. The res. IV-7 resolves to call the second meeting in September 1966</td>
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<td>4. Help Member States to obtain needed financial and technical assistance for development of marine sciences.</td>
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<td>5. Arrange for places on research vessels for the training of marine scientists and technicians of developing countries.</td>
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<td>6. Encourage regional collaboration between institutions working in neighbouring areas.</td>
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<td>7. Work out details relating to selection, operation and responsibilities of visiting experts and committees.</td>
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<td>8. Consider the desirability of stimulating the holding of regional symposia to discuss problems and exchange ideas relative to the development of national oceanographic programmes.</td>
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<td>9. Consider means of assisting in the procurement of essential equipment requiring foreign currency.</td>
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<td>10. Consider what actions should be taken to encourage governments to recognize the importance of oceanography for their own countries.</td>
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<td>11. Consider the most appropriate means by which the Technical Assistance and Special Fund financing within the United Nations system may be utilized for mutual assistance.</td>
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<td>1. Status of analysis of existing time series</td>
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<td>2. Criteria for choice of section location; review of oceanographic knowledge, evaluation of climate and weather, sea and swell, and tides.</td>
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<td>3. Design of experiment; parameters to be measured, methods, sampling, frequency in time and space, and associated meteorological observations.</td>
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<td>4. Problems of standardization and intercalibration.</td>
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<td>5. Data processing, analysis, interpretation and publication of results.</td>
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<td>6. Resources and facilities which might be available.</td>
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| Working Group on Ocean-Atmosphere Interaction     | 1. To evaluate the results of scientific investigations of air-sea interaction in order to ascertain their applicability to intergovernmental programmes of joint action.  
2. To consider the instrumental and operational problems involved in the development of such programmes.  
3. To consider the ways in which intergovernmental action could strengthen the forecasting of sea surface conditions, and facilitate the exploitation of marine food resources.  
4. To recommend appropriate programmes of intergovernmental action to the Commission, to WMO, and to other international bodies concerned. | Established by res. IV-1     |
| Working Group on Marine Pollution                 | *To report to the fifth session how the Commission can further the national and international studies of relevant oceanographic processes and to consider further the documents on marine pollution submitted at the fourth session.                                               | Established by res. IV-10    |
| Working Group on Follow-up of ICITA and GTS       | *To study how to ensure the most complete application of the results of ICITA and GTS and to develop co-operative research programmes to investigate any gaps in knowledge as a result of ICITA and GTS.                     |                              |
| International Co-ordination Group for the         | General and scientific co-ordination of the Expedition.                                                                                                                                                            | Established by res. II-3     |
| International Indian Ocean Expedition (IIOE)       |                                                                                                                                                                                                                 |                              |
| Co-operative Study of the Kuroshio and Adjacent Region (CSK) |                                                                                                                                                                                                                 |                              |
| International Co-ordination Group for Tsunami Warning System | *To effect liaison among participating Members; to promote exchange of information on developments of observing methods and of techniques of tsunami forecasting; to effect liaison with other interested organizations; and to provide advice on the operation of the International Tsunami Information Centre. |                              |

* Terms of reference are edited from the resolution concerned.
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Article 1

1. An Intergovernmental Oceanographic Commission, hereafter called the Commission, shall be established within the United Nations Educational, Scientific and Cultural Organization.

2. The purpose of the Commission shall be 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 2

1. Membership of the Commission shall be open to all Member States of the United Nations Educational, Scientific and Cultural Organization, the Food and Agriculture Organization, the United Nations and other agencies of the United Nations system which are willing to participate in oceanographic programmes that require concerted action by them.

2. Member States of the above-mentioned organizations shall acquire membership of the Commission by notifying the executive head of one of the organizations to which they belong that they are willing to participate in oceanographic programmes which require concerted action. Any such notice received by the executive head of an organization other than the United Nations Educational, Scientific and Cultural Organization shall be transmitted to the Director-General of the latter.

3. Any member of the Commission may withdraw from it by giving notice of its intention to do so to the Director-General of the United Nations Educational, Scientific and Cultural Organization or to the executive head of one of the organizations mentioned in paragraph 1 above of which the said State is a member, who shall transmit such notice to the Director-General of the United Nations Educational, Scientific and Cultural Organization. Such notice shall take effect at the end of the first session of the Commission which follows the date on which notice has been given or, if notice has been given during the course of a session of the Commission, at the end of that session.

Article 3

1. The Commission shall be convened, as a rule, every two years, except that other intervals between sessions may be determined by the Commission.

2. Each Member State shall have one vote and may send at its own expense such representative advisers and experts as are required to the session of the Commission.

3. The Commission shall determine its own rules of procedure and voting.

Article 4

1. The Commission shall consider and recommend international programmes for oceanographic investigation, together with the necessary steps for their execution which call for concerted action by its members. The Commission shall review the results of scientific investigation and define the basic problems requiring international co-operation.

2. The Commission shall also recommend, in accordance with the international programmes of oceanographic investigation referred to in paragraph 1 above, the nature, forms and methods of exchange of oceanographic data through world data centres, specialized data centres, and by other means.

Article 5

1. The Commission may create, for the examination and execution of specific projects, committees composed of members interested in such projects.

2. The Commission may delegate to any such
provided, under the authority of the Director-General, of the United Nations Educational, Scientific and Cultural Organization, by the Department of Natural Sciences of that Organization, which shall make available to the Commission such personnel and material as are necessary for its work. The Secretariat shall be headed by the Director of the Unesco Office of Oceanography. Members of the staff of the Food and Agriculture Organization and other interested organizations listed in Article 2, paragraph 1 above, may be added to this personnel by agreement with these organizations.

2. The Secretariat shall be responsible for servicing the meetings of the Commission.

3. The Secretariat shall ensure the day-to-day co-ordination of the international programmes of oceanographic investigations recommended by the Commission; it shall also fix the date of the next session of the Commission, under instructions from the Bureau, and take the necessary steps for the convening of the session.

4. The Secretariat shall collect from the Member States of the Commission and from various international organizations concerned, suggestions for international programmes of oceanographic investigation and shall prepare them for consideration by the Commission.

5. In addition to its duties for the Commission, the Secretariat shall co-operate actively with the Secretariats of the Food and Agriculture Organization, the World Meteorological Organization (WMO) and other agencies mentioned in Article 2, paragraph 1 above, which are engaged on the study of the oceans.

Article 8

1. The Secretariat of the Commission shall be provided, under the authority of the Director-General of the United Nations Educational, Scientific and Cultural Organization and shall request the Director-General of this Organization to transmit copies of these reports to all other interested organizations mentioned in Article 2, paragraph 1 above.


SPECIAL PUBLICATIONS

IOOE INFORMATION PAPERS, Nos. 1 to 17, 1962-1966, continuing, English only. Published by Unesco, 4 to 6 issues a year.

CSK NEWSLETTER - CO-OPERATIVE STUDY OF THE KURESHIO AND ADJACENT REGIONS. Published by: Japanese Oceanographic Data Center, Hydrographic Division, Maritime Safety Agency, Tokyo, Japan, under the sponsorship of IOC and Unesco. Available Nos. 1, 2, 3, 4, 5, 6, 7, ... 1965-1966. Continuing, 4-5 issues a year.


INTERNATIONAL INDIAN OCEAN EXPLORATION - SCOR-UNESCO CHEMICAL INTERCALIBRATION TESTS. Results of 2nd series, R.S. Vityaz, 2-9 August 1962, Australia, by D.J. Rochford.

REPORT OF SCOR-UNESCO WORKING GROUP 17 ON THE DETERMINATION OF PHOTOSYNTHETIC PIGMENTS, WHICH MET ON 4-6 JUNE 1964, AT UNESCO, PARIS, SYDNEY, 1964.
