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INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of Unesco)

REPORT OF THE ADVISORY BODIES
TO THE THIRTEENTH SESSION OF THE ASSEMBLY

5 AVR. 1985

(SC-85/MS/25)

REPORT ON ACMRR ACTIVITIES 1981-84

The work of the ACMRR related entirely to the IOC-FAO programme on Ocean Science in Relation to Living Resources.

Since 1981 the Committee has, under the Chairmanship of Professor Gotthilf Hempel, taken an active part in the development of the IOC-FAO programme of Ocean Science in Relation to Living Resources.

The SCOR-ACMRR Working Group 67 on Oceanography, Marine Ecology and Living Resources, which is co-sponsored by FAO and IOC, met in Beaufort, N.C., 15-20 June 1981 and in Paris 20-24 April 1982. It was set up to develop a comprehensive scientific programme plan and project proposals aimed at understanding the marine ecosystems, in support of fisheries research and development sponsored by FAO. The Group's Report is published in Annex VIII of ICSU-SCOR Proceedings, vol. 18 (1982): 57-67.

The recommendations of this Group included a proposal for an International Recruitment Experiment within the proposed IOC Programme on Ocean Science in Relation to Living Resources. These and other recommendations were taken up at a Workshop on IREP Component of the IOC Programme on Ocean Science in Relation to Living Resources (OSLR), held in Halifax, Nova Scotia, 26-30 September 1983, which was co-sponsored by FAO and IOC to formulate a set of objectives and a strategy for practical research projects to implement IREP. The results of the workshop were published in the IOC Workshop Report No. 33, in 1983.

An ACMRR ad hoc Consultation on the IOC Proposals on IREP was held in Bremerhaven, Germany, Federal Republic, 28-29 February 1984, to provide advice to FAO on the possibilities of joining the IOC Programme on OSLR/IREP.

The First Session of the Guiding Group of Experts on OSLR, co-sponsored by IOC and FAO in response to resolution XII-1 of the IOC Assembly, was held in Paris, to plan jointly the development of the OSLR Programme (Summary Report, Doc. IOC-FAO/GGE-OSLR-I/3).

ACMRR experts participated in an Expert Consultation on the Sardine/Anchovy Recruitment Project (SARP) held in La Jolla, California, 5-9 November 1984, to define operational elements for the SARP Project in the Eastern Pacific. The meeting was co-sponsored by FAO and IOC, and hosted by the Southwest Fisheries Center (NMFS/NOAA).

The ACMRR will next meet from 21 to 24 May 1985 in Rome.

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REPORT ON ECOR ACTIVITIES 1981-84

1 WORKING GROUPS

1.1 Introduction

Following the Fourth ECOR General Assembly, held in April 1981, the Council established a number of international Working Groups on the following subjects. The first three were:

- (i) Engineering Applications of Drifting Buoys
- (ii) Ocean Energy
- (iii) Codes of Practice;

followed by:

- (iv) Marine Environment
- (v) Offshore Collisions.

The activity of each Working Group is summarised below.

1.2 Engineering Applications of Drifting Buoys

Initiated in response to a request from IOC, this Working Group was co-ordinated by US ECOR. Its work started with a meeting involving international professionals associated with ocean engineering and industry at the Joint Oceanographic Assembly held in Halifax, Nova Scotia in August 1982. In the following month, a joint IOC/SCOR/ECOR Informal Consultative Meeting on Drifting Buoy Programmes was held in Sidney, British Columbia. Subsequently, an Interim Report 'Engineering Applications of Drifting Buoys' was prepared for consideration by IOC at its Twelfth Assembly, held in Paris in November 1982. The document was also circulated to ECOR Adhering Bodies for review and comment prior to its finalisation. US-ECOR activity concluded with submission of the finalised report to IOC.

Subsequently, ECOR was invited to become involved in the IGOSS programme to 'prepare a report on an appropriate cost-effective mechanism for co-ordinating oceanographic/meteorological drifting buoy activities'. However, on the basis that both the US and Canada were already committed to activity in this area and there was, therefore, no need for ECOR involvement to proceed, the invitation was declined.

1.3 Ocean Energy

The initiative for this activity arose at the United Nations Nairobi meeting on New and Renewable Sources of Energy where ECOR's impartial views were sought on economic aspects and full-scale, pilot-plant trials. It was arranged that the report of the Working Group, co-ordinated by Japanese ECOR, should form the basis of the technical session of the ECOR Fifth General Assembly. A draft report on the subject was prepared, based on material available in Japan, and to supplement this, details on particular topics, such as OTEC, Salinity Gradient, Salt Ponds, Tides, Current, Biomass, etc, were sought from specific ECOR national Adhering Bodies. The amended document was then distributed to all Adhering Bodies for their consideration and review prior to discussion of the document at the Fifth General Assembly, held in Buenos Aires in October 1984.

1.4 Codes of Practice

This Working Group, co-ordinated by UK and German ECOR, produced a draft report for possible publication in conjunction with the papers from Workshop 2 of the Fourth General Assembly, which had covered the subject. However, concern by some Adhering Bodies about the extreme sensitivity of the subject led to the abandonment by Council of this Working Group activity.

1.5 Marine Environment

This Working Group was formed by the British Committee and initially considered that dumping operations and mineral recovery were topics warranting attention. After discussions with IMO, attention was re-directed to consider the removal of oil and gas installations at the end of their useful lives. Council concluded that this subject had specific national considerations for some ECOR members and the British Committee were encouraged to proceed with their study within a national Working Group. This is progressing, involving liaison with IMO and preparation of a Technical Note for all ECOR members is expected during the first half of 1985.

1.6 Offshore Collisions

Norwegian ECOR have co-ordinated this Working Group which has input from Germany, The Netherlands, USA, UK and Norway. The result of international meetings on the subject has been the preparation of an interim report which identifies current research related to offshore collisions and highlights outstanding problems and potential research areas, which is to be circulated to ECOR members early in 1985. The intention is to regularly update the report.

1.7 Probability-based Code Development

Finally, a Working Group on Probability-based Code Development was recently proposed by Dutch ECOR. Interest to date has not been sufficient to warrant establishment of a Working Group, but the subject is considered a potential area for ECOR to study in the future.

2 ECOR INVOLVEMENT IN TEMA (IOC Working Committee on Training, Education and Mutual Assistance)

A major contribution by ECOR to international affairs has been made through its involvement in the Working Committee on Training, Education and Mutual Assistance (TEMA) of the IOC. ECOR was represented at the UNESCO/IOC/ECOR Workshop on Advanced University Curricula in Ocean Engineering and Related Fields held in Paris in October 1982, by Dr A Richards, who chaired the Workshop, and by Professor J Caldwell. Professor Caldwell's comprehensive report, distributed to ECOR members, was additionally used in what amounted to a successful outcome of the activity - publication of the UNESCO Report No 25 entitled 'Ocean Engineering Teaching at the University Level'.

A further report, on global survey of existing facilities, is in preparation. The Workshop was one of a series aimed at providing guidelines for the establishment or reinforcement of teaching and training in marine related fields at different education levels; the report includes discussions on necessary and desirable requirements for introducing advanced ocean engineering curricula in terms of human resources, physical facilities and teaching aids. It further gives recommendations for the strengthening of ocean engineering education in general.

Regarding ocean engineering curricula, ECOR has offered information to IMO, involved in the recent establishment of the World Maritime University, and to the Open University in the UK.

Also in this area of activity, ECOR was represented at the Council of Europe Meeting on Oceanography held in Strasbourg in June 1983.

3 LINKS WITH IMO (International Maritime Organisation)

ECOR is fortunate to have been reinstated as a non-governmental observer to IMO (formerly IMCO) in 1982. This occurred at a time of reorganisation within IMO associated with a broadening of interest to now consider all aspects of floating structures, including transportation, safety, diving equipment, etc. While recognising that the structure of IMO and the number of organisations involved is such that inclusion on a 'non-governmental' observer basis creates no direct benefit, attendance at their meetings is seen as useful in order to solicit ideas for input and co-operation. Attendance is generally undertaken, on ECOR's behalf, by members of the British Committee.

4 ECOR INVOLVEMENT IN CCOP (Committee for Co-Ordination of Joint Prospecting for Mineral Resources in Asian Offshore Areas)

Norwegian ECOR has continued to be responsible for administration of the CCOP Data Storage Project. Projects undertaken within the Programme include:

- (i) Evaluation of Present and Future Software and Hardware needs in support of Petroleum Data for the CCOP/EA region;
- (ii) Evaluation of Present and Future Needs for the Acquisition, Organisation and Training related to Geological and Geophysical Data Handling in the CCOP region;
- (iii) Outline of Data Needs for Petroleum Basin Analysis Studies in the CCOP region;
- (iv) Organisation and Execution of a 3-day Seminar for Upper Management on Organisational Impacts of Petroleum Data Systems;
- (v) Final conclusions from the project results in the 'Petroleum Data Management' Programme for the period August 1980 to December 1983.

Contracted bodies to conduct these projects included Det norske Veritas, International Institute for Resource Development (IIRD), International Union of Geological Sciences (IUGS) and SINTEF-Geologisk Institutt.

5 ECOR INVOLVEMENT IN INTERNATIONAL MEETINGS

ECOR were represented at the 18th International Conference on Coastal Engineering held in November 1982 in Cape Town, the Joint Oceanographic Assembly (as co-sponsor) held in August 1982 in Halifax, the World Dredging Congress, held in April 1983 in Singapore, Oceans '83, held in August 1983 in San Francisco, and the Cost-43 Seminar, held in June 1983 in Reading.

ECOR was also represented at the IOC Assemblies held in November 1982 and February 1984.

6 MEMBERSHIP

Canada joined ECOR in 1983; the United States withdrew at the end of 1984, and Brazil joined following the Fifth General Assembly. Active recruitment is currently in abeyance until the outcome of discussion on ECOR's future is known.

7 THE FUTURE OF ECOR

At the ECOR Council Meeting held in San Francisco in August 1983, it was agreed that it was opportune to conduct a thoughtful and comprehensive review of ECOR's activities and usefulness to both its own members, and to external organisations. Ad ad hoc Working Group was formed to make the study, with an attitude of constructive optimism as it was recognised that there is a need to maintain a voice for the engineering community.

The report of the Working Group, given due consideration by the ECOR Officers, was subsequently the major item for discussion at the Business Session of the Fifth General Assembly. The Officers recommended a continuation of ECOR, 'with suitable functional, organisational and financial changes to ensure a revitalisation of ECOR and its steady growth...'. The members present at the Business Session then passed the following resolution:

"This assembly accepts recommendation 4.3 of the Officers' Report on the Future Aims & Activities of ECOR of July 1984 with the proviso that the Officers develop with members, and also with the help of whatever paid external technical assistance they deem appropriate (to the extent that funds permit), a proposed programme of work for ECOR internationally, and that they present that proposed programme to members within 9 months of this meeting; further, that, after review of that proposal by members at a Council meeting to be held within 12 months of this meeting, a final decision is made at that meeting on whether to go forward with that programme or whether, after all, to dissolve ECOR."

8 ELECTION OF OFFICERS

At the Fifth General Assembly, Officers were elected for a three year term 1984-86. Those appointed were:

President	Prof Ascensio Lara (Argentina)
Vice-President	Prof Dr-Ing Konstantin Kokkinowrachos (Germany)
Past-President	Ron Goodfellow (UK)
Secretary	Roger Venables (UK)
Treasurer	Dr Jacques Linssen (Netherlands)

SCIENTIFIC COMMITTEE ON OCEANIC RESEARCH

Report to

Thirteenth Session of the IOC Assembly

This report covers the period since the Twelfth Session of the Assembly and will briefly review SCOR activities in those fields relevant to the interests of the Commission.

SCOR was represented at the 12th Session of the IOC Assembly by its President and Executive Secretary. At the request of the IOC, SCOR had been heavily involved in the production of three major reports which were presented to the Assembly. The first of these, "Ocean Science for the Year 2000" was introduced by the late Professor Simpson. It was subsequently revised on the basis of comments made at the Assembly and of others received by SCOR, and has been published and distributed. This document is expected to be used in the near future in establishing priorities for the Commission's programmes and in revising and updating LEPOR.

Professor R. Barber, Chairman of the SCOR/ACMRR WG 67, presented the report of his group which proposed a major programme on Ocean Science in Relation to Living Resources and suggested that this programme begin with an international recruitment study (now known as IREP). The Assembly adopted this programme and Resolution XII-1 called for the establishment of a Guiding Group of Experts to develop OSLR and especially IREP. Since late 1982, two workshops related to OSLR have been held; these were discussed at length at the 17th Session of the IOC Executive Council. The Guiding Group of Experts has been formed and has held its first meeting. SCOR's nominee to the group, Dr. A. Bakun was elected Chairman and SCOR is presently seeking an additional member for the group. The Guiding Group has recommended a Sardine Anchovy Recruitment Project (SARP) as a pilot study for IREP. The need for strengthening appropriate links with SCOR, especially with WG 73 (Ecological Theory in Relation to Biological Oceanography), has been noted by the Guiding Group. SCOR looks forward to close cooperation with IOC in the further development of IREP and of the OSLR Programme in general.

At the 12th Assembly the President of SCOR also presented a report which he had written in collaboration with many colleagues in the field of marine geology and which contained a proposal for an IOC programme on Ocean Science in Relation to Non-Living Resources. This proposal was adopted by the Assembly and Resolution XII-2 called for the establishment of a Guiding Group of Experts to develop the OSNLR programme. SCOR has nominated Professor S. Calvert to this group and will be pleased to participate in the elaboration of this programme as appropriate.

The IOC programme in Ocean Dynamics and Climate was the subject of detailed discussion at both the 12th Assembly and the 17th

Executive Council meeting and will receive considerable attention at this meeting. The activities of the Joint SCOR/IOC Committee on Climatic Changes and the Ocean have been documented in two issues of "SCOR Proceedings" and in a large number of CCCO and WCP reports. On the basis of extensive reports to SCOR, the scientific programme of CCCO has been endorsed by both the 25th Executive Committee Meeting (1983) and the XVII General Meeting of SCOR (1984). The President and Executive Secretary of SCOR participated in the 6th Session of CCCO, and SCOR will also be represented at the first meeting of the Programme Group on Ocean Processes and Climate which was established by Resolution EC-XVII.2. These are indications of the very high priority which SCOR places on the CCCO programme which seems certain to provide a major focus for marine science for at least the next decade. Since the 12th Assembly consultations have taken place between representatives of ICSU, UNESCO, SCOR and IOC as to appropriate mechanisms for the operation of CCCO and its Secretariat. These concluded with the acceptance, by ICSU and UNESCO, of a set of "Principles Governing Co-operation between UNESCO and ICSU on the Development of the Oceanographic Component of the World Climate Research Programme, Through the IOC and SCOR". SCOR and IOC have signed a Memorandum of Understanding establishing operational arrangements for CCCO. These documents were presented at the 17th Session of the Executive Council. At the XVII General Meeting of SCOR it was noted that the provision of adequate scientific staff will be vital to the continuing success of the CCCO programme. SCOR wishes to communicate this concern to IOC as a co-sponsor of CCCO, and requests the Commission to place a high priority on this matter in order that the momentum achieved during the last two years be maintained.

In March 1983, members of SCOR WG 74 (General Circulation of the Southern Ocean) participated in the 4th Session of the IOC Programme Group for the Southern Oceans. The working group had held its first meeting shortly before the PG/SOC meeting and its members were therefore able to be of considerable assistance to PG/SOC in the recommendation of priorities for its scientific activities. WG 74 held its second meeting in Kiel in May 1984 and this was immediately followed by a joint meeting of WG 74, representatives of PG/SOC and the Chairman of SCOR WG 54 (Southern Ocean Ecosystems and Their Living Resources). The goal of this "Meeting of Experts on Oceanography Related to the Dynamics of the Antarctic Ecosystem" was to bring physical and chemical oceanographers together with biological oceanographers to consider ways in which research programmes in the Southern Ocean could be better coordinated, especially in the context of the BIOMASS programme and of programmes which may be recommended by PG/SOC. This interaction between a SCOR working group and an IOC subsidiary body is an excellent manifestation of SCOR's role as an Advisory Body to the Commission.

WG 66 on Oceanographic Applications of Drifting Buoys has also provided IOC with advice. A report on drifting buoys was submitted to the 12th Assembly and members of WG 66 have participated in meetings of IGOSS and the ARGOS Joint Tarriff.

Agreement. The Chairman of WG 66 has been involved in the development of an agenda for a proposed WMO/SCOR meeting on technical and scientific aspects of drifting buoys and the past Chairman will represent SCOR at the forthcoming WMO/IOC Joint Preparatory Meeting on the Establishment of a Drifting Buoy Consortium. The group has responded to the request of the 17th Executive Council that it consider the use of drifters in experiments such as TOGA and WOCE and the problems of hardware development. These topics were discussed during a WG 66 meeting in late 1983 and the report of this meeting was sent to the IOC in mid-1984. The group will meet again in 1985 and will consider these issues further as well as other topics. The terms of reference of WG 66 were modified by the XVII General Meeting of SCOR and now call upon the group to assist in the development of buoy array strategies for major experiments. IOC, CCCO and WMO have been invited to seek advice from WG 66 as appropriate.

SCOR WG 56 (Equatorial Upwelling Processes) is organizing a major international symposium entitled "Vertical Motion in the Upper Equatorial Ocean and Its Effects Upon the Living Resources and the Atmosphere" which will be cosponsored by IOC and the UNESCO Division of Marine Sciences. It will take place at UNESCO in May 1985 and will bring together about 100 leading researchers in oceanography, meteorology and fisheries.

Several opportunities have arisen for discussions between representatives of SCOR and the Secretary and other staff members of IOC on areas of mutual interest. During the latest of these meetings, several SCOR working groups, in addition to those already mentioned in this report, were identified as being of special interest to IOC. These are indicated on a complete list of all active SCOR subsidiary bodies which is appended to this report. In addition to the meetings already noted, SCOR has sent representatives to meetings of IODE, GEBCO and GIPME.

The Executive Committee of SCOR has, during the past two years, been making a concerted effort to increase the involvement of scientists from developing countries in SCOR. Nine SCOR Committees (of 34) are based in developing countries and attempts are being made to increase the contributions of their scientists to SCOR activities. Funds are available which have allowed SCOR to invite active scientists from these and other developing countries to attend meetings of SCOR working groups or to participate in other meetings which may be organized or cosponsored by SCOR.

SCOR has reviewed the success of the last Joint Oceanographic Assembly which was held in Halifax in 1982, inviting comments and suggestions from all the cosponsors and SCOR Committees. These have been discussed at length by the SCOR Executive Committee and it has been agreed that another JOA should be held in 1988 or early in 1989. The Officers of SCOR were given a mandate by the XVII General Meeting to decide on the location of the next JOA, taking into account expressions of interest from SCOR Committees in two countries which were discussed at length by the General

Meeting. SCOR looks forward once again to the cooperation of IOC and the other ICSPRO agencies in the organization of another successful Joint Oceanographic Assembly.

SCOR SUBSIDIARY BODIES

(active, March 1985)

- WG 42 Pollution of the Baltic
- WG46 *River Inputs to Ocean Systems (disbanded pending completion of final report)
- WG 51 Evaluation of CTD Data (disbanded pending completion of final report)
- WG 54 *Southern Ocean Ecosystems and Their Living Resources
- WG 56 *Equatorial Upwelling Processes
- WG 61 Sedimentation Processes at Continental Margins (disbanded pending completion of final report)
- WG 65 *Coastal-Offshore Ecosystems Relationships
- WG 66 *Oceanographic Applications of Drifting Buoys
- WG 68 North Atlantic Circulation
- WG 69 *Small-scale Turbulence and Mixing in the Ocean
- WG 70 Remote Measurement of the Oceans from Satellites (disbanded pending completion of final report)
- WG 71 Particulate Biogeochemical Processes
- WG72 The Ocean as a Source and Sink for Atmospheric Constituents
- WG 73 *Ecological Theory in Relation to Biological Oceanography
- WG 74 *General Circulation of the Southern Ocean
- WG 75 Methodology for Oceanic CO₂ Measurement
- WG 76 *Ecology of the Deep Sea Floor
- WG 77 Laboratory Tests Related to Basic Physical Measurements at Sea
- WG 78 Determination of Photosynthetic Pigments in Seawater (newly established - membership incomplete)
- WG 79 Geological Variations in CO₂ and the Carbon Cycle (newly established - membership incomplete)
- WG 80 *Effects of Hydrothermal Processes in the Ocean (newly established - membership incomplete)
- WG 81 Deep Water Palaeo-oceanography (newly established - membership incomplete)
- WG 82 Polar Deep Sea Palaeoenvironments (newly established - membership incomplete)
- CCCC *SCOR/IOC Committee on Climatic Changes and the Ocean
- JPOTS SCOR/UNESCO/IAPSO/ICES Joint Panel on Oceanographic Tables and Standards
- Editorial Panel for the Ocean Modelling Newsletter

* - identified as being of special interest to IOC

Additional information on SCOR activities may be obtained in issues of "SCOR Proceedings" or from the SCOR Executive Secretary.