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Reports of Governing and Major Subsidiary Bodies

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1. OPENING

1 On behalf of the Local Organizing Committee, Dr Hong-Rhyong Yoo welcomed the delegates from the Member States and representatives from various intergovernmental and non-governmental agencies. He subsequently invited Prof. Keisuke Taira, Chairman of WESTPAC, to address the meeting. Prof. Taira called the Fourth Session of the Sub-Commission to order at 10.00 a.m. on Monday, 22 March 1999, in Seoul, Republic of Korea. He extended a warm welcome to all the participants and thanked the Republic of Korea, the Local Organizing Committee and the WESTPAC Secretariat.

2 Prof. Taira emphasized the role of the IOC as the sole body within the UN framework responsible for the oceans. He said that oceanography covers many sciences and reviewed the early development of the science of oceanography through to the present times, where extensive use is made of satellite technology and computers. He went on to describe the establishment of the Global Ocean Observing System and in particular its regional component in the WESTPAC region, NEAR-GOOS, that has seen a rapid development since its inception in 1993.

3 Prof. Taira further elaborated on the establishment of the Sub-Commission in 1989 with its main task of developing and coordinating the required regional marine scientific research programmes, ocean observations and services based on the priority interests of the Member States in the region and to implement the programmes and activities of the IOC in the regional context. He concluded by stating that the role of the sciences of the oceans will become more and more significant as we move into the twenty-first century.

4 In his turn, Dr Patricio Bernal, Executive Secretary IOC, on behalf of the IOC and Federico Mayor, the Director-General of UNESCO, thanked the Republic of Korea, MOMAF and KORDI for hosting the meeting and extended special thanks to the Local Organizing Committee for their excellent organization of this event. He commented on the need to further progress the actions of the IOC following the International Year of the Ocean celebrated in 1998. During that year, IOC was involved in more than 120 conferences and seminars dedicated to the Year of the Ocean, as well as over 40 training courses. The Year of the Ocean reached millions of people with a message of respect for the ocean.

5 He further mentioned that over the last years, IOC has been able to bring ocean issues to the attention of the governments and society, but commented that we still have to provide the answers to these issues, a task incumbent on the scientific community. IOC is currently at the forefront of global climate change research and the establishment of a permanent global oceanographic observing system for monitoring global change in the oceans. He went on to describe the human impact on the earth's surface, of which the oceans cover more than 70% and the natural life support systems. Climate change poses a challenge and will require a scientific basis for the forecasting of the rate of change and the impact of the changes. There is a need of data of high quality on a global basis.

6 Dr Bernal further explained that the IOC represents both the scientific communities and civil societies of Member States. He noted the significant progress made in GOOS over the last ten years and highlighted the importance of NEAR-GOOS as a system for gathering and disseminating useful data. NEAR-GOOS has been a significant step in the implementation of GOOS.

7 With reference to the approach of the next millennium, Dr Bernal focused on the challenges for the Sub-Commission to discuss at this Session. He commented that most of the work of IOC is done at the regional level and therefore he emphasized the need to coordinate the efforts of Member States. WESTPAC needs to increase its capacity to strengthen regional activities, and in doing so it must pay attention to the contributions of different sciences. In order to address sustainable development we have to move from single-disciplinary thinking to cross-disciplinary thinking. The challenge for the future lies in a good interaction between the different sciences since answers require an integrated approach that can meet societal needs. In that regard it is also necessary to define the regional priorities.

8 Mr Lee Gap-sook, representative of the Government of the Republic of Korea, and Director-General of MOMAF, then extended a warm welcome to all the participants. He stated that he was sure that the Sub-Commission would achieve considerable progress and contribute to the protection of the precious oceans and seas of the Western Pacific region.

9 The Sub-Commission started in 1989 and has since then established many programmes among which NEAR-GOOS and a number of ICAM-related activities. WESTPAC is one of the most active and most productive of the regional bodies. He noted the need for an intergovernmental body such as WESTPAC in order to connect people over common goals, and also referred to the need of the many islands in the region to benefit from cooperative actions.

10 He furthers expressed that the Government of Korea wishes to continue to be an active member of WESTPAC. He expected that by the year 2010, the marine science capability of Korea would match that of the most developed countries. He concluded his address by thanking the Local Organizing Committee and the Secretariat for the planning and organization of this event.

11 Mr Geoffrey Holland, Chairman of IOC, concluded the round of opening addresses. He emphasized that the ocean is a global commons, threatened by global change. Global problems need global solutions. But global programmes are best implemented by regional organizations and through a decentralized approach such as WESTPAC. He further commented that it is difficult to attract governmental recognition alluding to the fact that scientists are not overly effective in acquiring attention, which is, in part, due to the differences of perspective held by the two communities. The *1998 International Year of the Ocean*'s goal is to promote governmental awareness – a first step -. The next century will show that more attention will have to be given to the oceans if the environment that supports us is to be preserved.

12 Mr Holland further noted that WESTPAC can set an example for other regional bodies to follow. Participants are to consider new ways to strengthen WESTPAC and other regional bodies. By posing the question how to approach governments in the marketing of marine science, Mr Holland emphasized the fact that governments are interested in benefits, for instance in terms of the prediction of storm surges or the prevention of pollution that affect coastal communities, or in terms of the increasing returns from ocean activities.

2. ADMINISTRATION

2.1 ADOPTION OF THE AGENDA

13 Mr Maarten Kuijper, associate expert, IOC Regional Secretariat for WESTPAC, apologized for the unfortunate and unavoidable absence of Dr Shigeki Mitsumoto, head of the office, IOC Regional Secretariat for WESTPAC, and announced that he would assist the Chairman on behalf of the Secretariat as the Technical Secretary to the meeting. He subsequently introduced the agenda item referring to document IOC/SC-WESTPAC-IV/1 prov., the Provisional Agenda. The Sub-Commission adopted the Agenda, attached as Annex I.

2.2 DESIGNATION OF RAPPORTEUR FOR THE SESSION

14 The Sub-Commission accepted the proposal of China, seconded by Viet Nam to designate Dr Marita Bradshaw, Australia to serve as Rapporteur for the Session.

2.3 CONDUCT OF THE SESSION

15 The Provisional Timetable (Document IOC/SC-WESTPAC-IV/1 Add. Prov.) and the Provisional List of Documents (Document IOC/SC-WESTPAC-IV/4 Prov.) was introduced by the Technical Secretary.

16 Dr Hong-Rhyong Yoo subsequently provided additional information on the availability of rooms for side-meetings and further explained the information contained in the Information sheet for participants (Document IOC/SC-WESTPAC-IV/Inf. 1).

3. REPORT ON INTERSESSIONAL ACTIVITIES AND PROGRAMME EVALUATION

3.1 INTERSESSIONAL REPORT

3.1.1 Regional WESTPAC Projects and Activities

17 The Executive Secretary introduced the agenda item referring to Document IOC/SC-WESTPAC-IV/6, IOC Executive Secretary's Report on Intersessional Activities. He reported to the Sub-Commission that all the recommendations of the last Session of the Sub-Commission, and subsequently adopted by the Twenty-ninth Executive Council as its resolution EC-XXIX.5 had been fully or partially implemented.

18 He reviewed the recommendations and implementation of the Third WESTPAC Session that were adopted by the Twenty-ninth IOC Executive Council. He reported to the Sub-Commission that the Fourth WESTPAC Scientific Symposium was successfully held in Okinawa, Japan, on 2-7 February 1998, and that the proceedings were available. With regard to the implementation of the work plan he referred to the report to be given by the Technical Secretary, Project-leaders and Programme Coordinators. He noted the support of Member States as evidenced through the active participation in the coordination and implementation of ongoing and new national and international programmes in the region. He particularly noted those concerned with monsoonal oceanic and atmospheric circulation, such as the Pacific to Indian Ocean throughflow and the Asian-Australian Monsoon System Study. With regard to the implementation of NEAR-GOOS, he highlighted the significant progress made and called it one of the most successful programmes of GOOS.

19 With regard to the Recommendation SC-WESTPAC-III.5 pertaining to the International Coral Reef Initiative, he commented that the Global Coral Reef Monitoring Network has made significant progress with nodes being established in several regions of the world. He reported to the Sub-Commission the results of various ICRI meetings, and referred to the recently published *Status of Coral Reefs of the World 1998.*

20 Mr Kuijper then reported briefly on the implementation of the work plan and referred to the more elaborate reports to be given by the Project-leaders and Programme Coordinators of each of the projects identified under Agenda Item 4.

3.1.2 Regional Components of the IOC Global Programmes

21 The Chairman, Prof. Taira, introduced this agenda item and made reference to the Report on Intersessional Activities.

22 Mr Kuijper then provided details of the implementation of regional components of IOC global programmes. He left the programmes on IODE, IBCWP and NEAR-GOOS, to be covered under the presentations of relevant Project-leaders under Agenda Item 4.

23 Referring to Document IOC/SC-WESTPAC-IV/Inf.4 provided to the Sub-Commission, he then provided information on the status of the SEACAMP proposal that is a joint effort of WMO and IOC/WESTPAC. The current status is that following two meetings, a revised version has been prepared, that is currently being reviewed by the ASEAN Secretariat prior to its submission to the next meeting of the ASEAN Sub-Committee on Meteorology and Geophysics, scheduled to be held in July 1999, in Brunei Darussalam.

24 He further elaborated on the progress made with regard to the South East Asia GOOS (SEA-GOOS). Although SEA-GOOS is gathering momentum in the region, still no progress has been

made toward the formal establishment of SEA-GOOS. He noted the need for a draft resolution on SEA-GOOS for submission to the General Conference of UNESCO in order to acquire the required funds for an inception phase and concluded that more commitment is needed from Member States in this respect.

25 He also reported on the developments of the GIPME programme, co-sponsored by IOC, UNEP and IMO with additional support from IAEA through its Marine Environmental Laboratory in Monaco. Through its participation in the GESAMP Working Group on Marine Environmental Assessments, IOC has continued to contribute to a global assessment of the state of the marine environment from the perspective of land-based activities for the purposes of the GPA-LBA.

26 Mr Kuijper further discussed the status of the Health of the Ocean Module, referring to the blueprints that were developed for the WESTPAC region and that were reviewed during the meeting of the HOTO Panel in Singapore in 1997. He further mentioned a proposal for the development of a system for the rapid assessment of marine pollutants, currently being developed by Dr Depledge and colleagues from the University of Plymouth, to be implemented in Brazil.

27 He then reported on the achievements made under the Northwestern Pacific Action Plan, NOWPAP, one of the Regional Seas Programmes of UNEP. IOC/WESTPAC was the implementing agency for two of the five priority projects identified under phase I of the Action Plan. As a result, two proposals were developed, one for the establishment of a Comprehensive Database and Information Management System, and one for the establishment of a Collaborative Regional Monitoring Programme. Excerpts of these proposals have been given for consideration to the Sub-Commission as Documents IOC/SC-WESTPAC-IV/Inf. 7 and 8 respectively.

28 Lastly, Mr Kuijper mentioned the many activities carried out under the ICAM programme of IOC and made particular reference to the Dalian Workshop held with support from the State Oceanic Administration of China, the two Training Courses that were conducted by KOICA-KORDI in the Republic of Korea and the Workshop co-organized with the Korea Maritime Institute. He briefly mentioned the SOPAC-IOC Conference on Benthic Habitats held in New Caledonia, 1997, and the Third International Seagrass Biology Workshop held in the Philippines, 1998.

3.1.3 Fourth IOC/WESTPAC Scientific Symposium

29 The Chairman, Prof. Taira introduced the agenda item and invited Prof. Makoto Terazaki of the University of Tokyo to make a short presentation on the achievements.

30 Prof. Terazaki reported to the Sub-Commission that the Proceedings were already published and distributed to the participants of the present Session. He presented an overview of the Symposium that was divided into four different sessions concerning physical oceanography, geology, ecology, and chemistry. There were six workshops held in conjunction with the Symposium, on numerical modeling of the Gulf of Thailand, NEAR-GOOS, Remote Sensing applications for ICAM, SEA-GOOS, ICAM and OSNLR. 67 Participants from 12 countries outside Japan, and some 120 people from Japan and 6 people from IOC attended the Symposium. A total of 80 presentations were given during the Symposium. Prof. Terazaki also showed a financial statement.

3.1.4 Operation of IOC Regional Secretariat for WESTPAC

31 The Chairman, Prof. Taira introduced the agenda item and invited the Technical Secretary to report on the status of the Regional Secretariat.

32 Mr Kuijper thanked the Government of Thailand for their continuous support in running the Secretariat with the assistance of secretarial staff, professional staff and others. He further reported that the Regional Secretariat has strengthened the relationship with the UNESCO Principal Regional Office for Asia and the Pacific in Bangkok. Some staff changes have taken place over the last intersessional period. Dr Shigeki Mitsumoto from Japan was appointed in the new P-4 post that was

referred to during the Third Session of the Sub-Commission. Dr Mitsumoto started working in April 1997. Mr Maarten Kuijper, an associate expert supported by the Netherlands Government subsequently started his work in July 1997. Mr. Jiang Yihang left the office in September 1998. The IOC has made an effort of ensuring the proper transfer of responsibilities. The liaison officer in IOC Paris has also changed from Mr Haiqing Li, Dr Hong-Rhyong Yoo to Ms Rimi Nakano. All of them are from the WESTPAC region.

33 The Sub-Commission expressed his appreciation for the governments that have supported the Secretariat. The Chairman invited the Sub-Commission to comment on the information provided.

34 Mr Jiang Yihang, representative of UNEP, expressed his many thanks to the Sub-Commission for extending an invitation to participate to his organization, and added that he wished to emphasize that NOWPAP involves five countries, namely China, the Democratic Republic of Korea, Japan, the Republic of Korea and the Russian Federation.

35 He further commended the input provided by IOC/WESTPAC in the elaboration of the Transboundary Diagnostic Analysis of the South China Sea. A comprehensive proposal was prepared on the basis of this TDA that subsequently has been submitted to the GEF Council for approval. He hopes that the successful cooperation between the two organizations continues.

36 Prof. Taira expressed on behalf of the Sub-Commission his thanks to Mr Jiang Yihang for the long-term service to the WESTPAC Sub-Commission in his former capacity of Assistant Secretary IOC.

3.1.5 Programme and Budget Status

37 Dr Bernal reported that the activities listed in the previous work plan were funded mainly by Member States and channeled through trust funds. He noted with satisfaction that the number of activities has increased. However, a precise system to show the leverage capacity of IOC and WESTPAC is needed, a system that further allows for an adequate feedback to the Member States to report on the impact of the various activities. It is particularly difficult to show the 'in-kind' contribution of Member States that often constitutes a considerable part of the total cost of an activity.

38 He further mentioned that the personnel cost of one permanent post is borne by UNESCO and that additional support is provided by the Governments of the Netherlands and Japan for their respective Associate Experts, Mr Maarten Kuijper and Ms Rimi Nakano.

39 Dr Bernal concluded that there is a need to keep track of expenditures, with emphasis on the resources spent on a particular activity.

40 Prof. Taira agreed with the statement made by Dr Bernal and remarked that a new era has started with Dr Bernal as the new Executive Secretary of IOC.

3.2 EVALUATION OF EXISTING PROGRAMMES

41 The Chairman, Prof. Taira, introduced this agenda item. He stated the need to evaluate existing projects before new ones are proposed. The Okinawa Symposium in February 1998 offered an opportunity to review the progress of many projects. A case in point was the Ocean Dynamics and Climate sub-programme led by Prof. Su Jilan that appeared dormant for the last intersessional period, even though elements of the project were incorporated in and continued under other programmes and projects of the Sub-Commission.

42 In the ensuing discussion delegates of various countries expressed the need for reporting on Intersessional activities. Emphasis was put on priority setting, as well as the need for information on the budgetary status of project and the sources of funding.

4. PREVIEW ON PROGRAMME AND PROJECTS FOR 1996-1998, AND PLAN FOR 1999-2001

43 Prof. Taira invited each project-leader to review the development of their respective programmes or projects. Presenters were requested to be brief and to focus on an introduction, objectives, past achievements and future plans.

4.1 MARINE SCIENCE AND APPLICATIONS

4.1.1 OSLR

44 Prof. Yasuwo Fukuyo, the project-leader of the WESTPAC Harmful Algal Blooms (HAB) Programme reported on the project. He emphasized the importance of the WESTPAC HAB Programme as a programme addressing the needs of society. People die because of toxic algae. WESTPAC/HAB aims at providing capacity building for Member States in order to prepare these countries in the field of harmful algae. A series of annual training courses is conducted with the generous support of the Government of Japan. Apart from training, WESTPAC/HAB produces reference materials, and documentation, channeled to interested parties through an active network in the region. The future plan includes further courses, the participation in different forums to discuss and evaluate WESTPAC/HAB, the production and dissemination of reference materials and relevant documentation and networking.

4.1.2 OSNLR

45 Prof. Hideo Kagami presented a short account of the Intersessional activities. The future plan is to continue cooperation with CCOP through a possible co-sponsoring of the Fourth Asian Marine Geology Conference to be held in October 1999, Qingdao, People's Republic of China. Under UNCLOS, there is a further need to study the bathymetry and geology of continental shelves, and Prof. Kagami, further expressed the wish to have a well-defined role of the OSNLR programme in contributing to ICAM.

46 Dr Marita Bradshaw, focused her presentation on Paleogeographic Mapping. The objectives of the project are to compile paleogeographic, paleo-oceanographic & paleoclimatic information for the entire Western Pacific, from pole to pole, for critical times in the past, for the purpose of resource and environmental studies. The plan for future activities includes (i) a final compilation workshop for the Holocene Optimum in September 1999; (ii) the publication of maps in hard copy and CD mapping of the other time slices; (iii) paleogeographic maps of other Quaternary episodes; (iv) paleogeographic maps of older time slices – Late Miocene- resource; and (v) to further develop Holocene coverage.

4.1.3 Marine Pollution Research and Monitoring

Atmospheric Inputs

47 Prof. Mitsuo Uematsu reviewed the progress of the East Asia Network for Environmental Monitoring (EANET), a project closely related to but independent from the IOC/WESTPAC Atmospheric Inputs Project. EANET has the goals to assess transport and chemical transformations of air pollutants over the East Asian continent and the northwestern Pacific Ocean and to determine the depositions of primary and secondary pollutants (sulfate, nitrate, organics) in the East Asian region.

48 Dr Jing Zhang, Project-leader of the Atmospheric Inputs Project informed the Sub-Commission that in June 1998, a workshop was held in Qingdao, China to discuss Atmospheric Inputs in light of the GPA-LBA. The workshop led to a number of recommendations to the IOC. The future plan of the project concentrated on the development of an inventory of the observation and monitoring activities of atmospheric input of pollutants in the WESTPAC region, inter-calibration exercises, a training course and the exchange for young scientists in the region, and the

establishment of a regional activity centre, which serves as a medium of exchange, training, inter-calibration and clearing house for the Atmospheric Input Project.

Mussel Watch

49 Dr Monthip Tabucanon in her capacity of Project-leader reported the progress in the Asian Pacific Mussel Watch Programme. A questionnaire was sent out to inventory the capabilities of WESTPAC countries in regard to Mussel Watch. Subsequently, a two-week training workshop was organized by ERTC in March 1998, in Thailand, co-sponsored by the IOC and the UNU, that brought together a number of scientists active in the field of Mussel Watch in their respective countries. Training was provided and experiences were exchanged. The participants formulated a plan for the follow-up of the Asian Pacific Mussel Watch Programme. The future plan includes subsequent training workshops on various topics, inter-comparison exercises, QA/QC control and active coordination and networking. She further produced an outline for another workshop to be held in December, 1999.

50 Dr Bernal, Executive Secretary IOC, suggested that the Mussel Watch Programme might greatly benefit from the assistance of the IAEA Marine Environmental Laboratory based in Monaco of which the IOC is one of the sponsors. The laboratory might contribute Standard Reference Materials to the project. He offered his help in contacting the Director of the Monaco Laboratory. Dr Tabucanon replied that the contribution of free SRM's is indeed helpful but that there is also a need for certain laboratories to have their own capability of producing standards. She also suggested the need for a specimen bank of chemicals. Ms Wandee Chineswasdi from Thailand stressed the need for setting up a good network of laboratories.

River Inputs

51 Prof. Manuwadi Hungspreugs, Project-leader of the River Input Project presented a short overview emphasizing the close relationship between the River Inputs project and the Gulf of Thailand project. Members of both projects participated in an EU-funded 'CUU-LONG project on the Mekong Delta'. Two research studies are currently carried out under the river inputs project with the participation of Thai and Vietnamese scientists. It is suggested to fully integrate the River Inputs project into the Gulf of Thailand project.

4.1.4 Ocean Dynamics and Climate

52 Dr Roger Lukas, Programme Coordinator for ODC reported that ODC consists of three components which are ODC-1: Banding of Porities Corals as a Components of Ocean Climate Studies (discontinued), ODC-2: Ocean Dynamics in the Northwest Pacific and ODC-3: Continental Shelf Circulation. All of these have a relation to both basic research programmes (e.g. CLIVAR) and operational programmes (e.g. GOOS). The objectives of ODC-2 are (i) the development of WESTPAC regional ocean modeling capability for support of resource management; (ii) the development of WESTPAC regional coupled ocean-atmosphere-land system models to support regional climate prediction; (iii) to involve WESTPAC scientists in the planning of regional aspects of future global programmes e.g. CLIVAR; (iv) to develop linkages between ODC-2 and other related regional programmes of IOC; and (v) to develop linkage between Pacific western boundary current studies with marginal seas and continental shelf studies.

53 He then provided an introduction to the various ongoing and future activities relevant to WESTPAC, those being: firstly, process studies such as CREAMS (during 1997-2002), ARLINDO and TOCS (Tropical Ocean Climate Studies), second, sustained observations: Kuroshio monitoring (e.g. Asuka Line, TOLEX), ENSO Observing System (e.g. TRITON/TAO), NEAR-GOOS, and Gulf of Thailand SEAWATCH. He also presented the future programme of ODC which involves the participation in (i) Process Studies in Kuroshio Extension Study (KES), NEC Bifurcation Study (proposal under development); (ii) Sustained Observations in Argo/GODAE and Time Series Stations (e.g. KNOT, Taiwan station); and (iii) the Pacific Basin-wide Extended Climate Study (PBECS).

54 He further recommended that there should be better coordination and integration of ODC activities with other WESTPAC projects (e.g. River Inputs, Gulf of Thailand), and to hold a Monsoon Oceanography Workshop previously endorsed by WESTPAC-III in conjunction with CLIVAR Monsoon Panel Meeting, and coordinate with Indian Ocean Sub-programme of IOC on overlapping scientific issues such as monsoon oceanography and Indonesian throughflow.

55 Prof. John Simpson from the United Kingdom expressed strong support for the proposed Monsoon Oceanography Workshop and indicated that the scope of the meeting should include the response of shallow tropical seas to monsoonal forcing.

56 Prof. Su Jilan continued with an explanation of the continental shelf circulation project. The idea was to develop models for shallow seas in the region, and 6 seas were identified. One of these seas is currently subject of the Gulf of Thailand Cooperative Study that encompasses elements of the continental shelf circulation project.

57 With respect to the future plans, Prof. Su Jilan proposed to hold a NEAR-GOOS/ODC-3 workshop to develop predictive skill for physical oceanography, building on an optimal boundary plan, a monitoring plan, a research plan for circulation, a coastal GODAE, and model development.

58 Prof. Su Jilan further provided some background information on the COASTS programme. A meeting was convened in January 1999 to discuss the progress of COASTS. It is now planned to hold a major symposium that will focus on the linkages between the physical, chemical, biological and geological marine sciences in support of integrated coastal area management. The proceedings of the Symposium will be published in two separate volumes of *The Sea*.

59 In response to the presentation by Prof. Su Jilan, Prof. Yu Zhouwen, Chairman of the NEAR-GOOS Coordinating Committee expressed his interest in the proposal made and supports the idea of the NEAR-GOOS workshop. Prof. Fukuyo pointed out the parallels that can be drawn with GEOHAB. He emphasized the need for information on continental shelf circulation in order to understand the dynamics of harmful algae populations.

4.1.5 Programme on Marine Science and Observation Inputs to ICAM

Remote Sensing Applications for Integrated Coastal Area Management

60 The Project-leader, Dr Huang Weigen presented the programme that was approved in the Third Session of the Sub-Commission with nine countries participating. Two activities have been carried out in this project, the circulation of a questionnaire and a workshop on the Remote Sensing Applications for ICAM' held in Okinawa, February 1998. Dr. Huang Weigen then stated the future plan for the programme that includes the organization of a workshop enabling participants to exchange experiences on two subjects: (i) remote sensing of coastline change; (ii) and remote sensing of coastal habitats. He further expressed the wish to produce maps.

Gulf of Thailand Cooperative Study

61 Dr Anond Snidvongs, Project-leader, provided the Sub-Commission with a synthesis of the achievements made and future plans under the Gulf of Thailand Collaborative Study. The project builds on existing projects and was first approved by the Third Session of the WESTPAC Sub-Commission. The objectives of the project are (i) to integrate multidisciplinary scientific data and information for sustainable management of coastal areas and offshore waters of the Gulf of Thailand; and (ii) to bridge the gap between scientific discoveries and policy formulation. The activities carried out in the first phase of the project (1996-1999) include a meeting that identified gaps of knowledge relevant to the Gulf of Thailand and on the basis of which a science plan was formulated, regional workshops on an Operational Data and Information System, a regional workshop on Mathematical Modeling of Oceanographic Processes, the development of several on-line databases and a website, a discussion group that operates *via* email, the production of two CD-

ROMs with data, and a series of *ad hoc* meetings among project members. Moreover, the project has facilitated short-term training, and opportunities for visiting scientists or experts of international standing.

62 He commented further on the contribution of the project to various related programmes, most notably the activities and events organized by CIDA-sponsored SEAPOL, three UNEP meetings for the development of a Transboundary Diagnostic Analysis and Strategic Action Plan for the South China Sea, the European Union funded CUU-LONG project, meetings and workshops of SEA START-RC/APN, AIT, SEAFDEC, and JGOFS/LOICZ. The active networking between the Gulf of Thailand Collaborative Study and all other relevant programmes has provided for ample cross-fertilization.

63 He emphasized that the Gulf of Thailand project has greatly benefited from the facilities, support and opportunities provided by SEASTART, SEAPOL and UNEP-EAS/RCU, and the continued support provided by the countries surrounding the Gulf. He expressed his wish to have this support acknowledged by the Sub-Commission.

64 With regard to the future plans, Dr Snidvongs, stated that all the activities under the framework of the project must be financially sustained by regional and national funding. He continued by saying that contributions from the IOC and other donors are of course important for the initial phase and capacity building but they will not provide the main resources of the project in the long run. He therefore stressed the need for all the products and services resulting from the project to be useful and practical.

65 Among the activities proposed for the next phase, he mentioned the maintenance of the integrated data and information system, two cruises across the mouth of the Gulf of Thailand, the development of an integrated regional model and expert group meetings.

66 In view of the IGBP's SEA START Regional Centre's and SEAPOL's generous support and involvement so far in the Gulf of Thailand project, the Sub-Commission recommends that the Executive Secretary IOC be instructed to investigate a formal understanding between the WESTPAC Sub-Commission and IGBP's SEA START RC and SEAPOL covering cooperation on this study.

67 **The Sub-Commission adopted** Recommendation SC-WESTPAC-IV.1.

4.2 GLOBAL OCEAN OBSERVING SYSTEMS

NEAR-GOOS

68 Prof. Yu Zhouwen highlighted the past achievements of NEAR-GOOS by referring to the meetings held by the Coordinating Committee, the Intergovernmental Agreement on Data Exchange, the establishment of a sustained operational database for both real-time and delayed mode in China and Japan, and developments thereof in the Russian Federation and the Republic of Korea. He further stated that two training courses were held with the support of the Japan Oceanographic Data Centre (JODC). A noted achievement has been the increase in the number of data users and data contributors to the system.

69 He further elaborated on the future plans, that include the expansion of the database, to have more users, to hold a conference and workshop, training courses and data quality control, and the possible collaboration with other programmes in the region such as NOWPAP and NEAR-HOTO.

70 In light of his former involvement in NEAR-GOOS, Mr. Jiang considered the enhanced cooperation among agencies at the national and international level as one of the major achievements of NEAR-GOOS.

4.3 OCEAN SERVICES

International Bathymetric Chart in WESTPAC (IBCWP)

71 First Admiral Mohd Rasip bin Hassan reported on the development of the International Bathymetric Chart for the Western Pacific (IBCWP). The first meeting was held in China in 1990 with the objective of publishing a 1:1,000,000 chart. The First Session of the Editorial Board was held in 1993 and elaborated on the specifications and a mechanism for the programme. In 1994, another officers' meeting was held in Bali, Indonesia. The main activity carried out under the IBCWP during the last Intersessional period was the Second Session of its editorial board, held in Bangkok, December 1996. The meeting discussed the progress of the national and regional activities related to IBCWP. The participating countries, 12 in total, have, over the last couple of years advanced the completion of several of the maps. He further added the need of a Third Session of the Editorial Board in order to approve completed charts. A training workshop is also requested.

72 In response to a question from Prof. Dinh Van Uu from Viet Nam concerning the need for a meeting to review the sheets so far completed, the Admiral suggested that it is vital to proceed and that a goodwill in the exchange of data will facilitate the project. He further added that Viet Nam is one of the more active participating countries.

International Oceanographic Data and Information Exchange (IODE)

73 Mr. Goro Matsuura presented the regional programme of the International Oceanographic Data Exchange (IODE). He mentioned the series of NEAR-GOOS Data Management courses that is conducted through the JODC and further noted the need for a revitalization of the IODE network. In that regard, he proposed a new project (see Recommendation SC-WESTPAC-IV.2). An International IODE-WESTPAC Conference is scheduled to be held in Langkawi, Malaysia in November 1999.

74 **The Sub-Commission appreciated** the proposed activity and **adopted** *Recommendation SC-WESTPAC-IV.2*.

4.4 MEETING THE NEEDS OF OCEAN-RELATED CONVENTIONS AND PROGRAMMES

75 Dr Bernal, Executive Secretary IOC stressed the need for the Commission to restructure its programme for the purpose of (i) removing scientific uncertainty and (ii) to service the global conventions. Over the past 30 years, the IOC programme has been very much science-driven, and it has been difficult to interact at the national level. Although the conventions call for coordination among the different sectors, it has not been effective given that science and environment often correspond to different institutions. The lack of coordination at the national level is reflected at the international level, so different agencies deal with different issues. In that regard, IOC is not recognized as a part of the mechanism needed to provide environmental solutions. IOC needs to be upgraded to better fit global and national demands.

76 IOC is currently task manager within the framework of the ACC Sub-Committee for Oceans and Coastal Areas of the UN Commission for Sustainable Development. The discussion among the various agencies involved focuses on the improvement of coordination among agencies, with emphasis on a redirection of the programmes to put the programmes into the framework of conventions. Conventions are supported by the political will of Member States. Funds become available if the IOC has a part in the implementation of these conventions.

77 In response to the question from Prof. Taira with regard to what conventions would be relevant to IOC, he replied that it is not just the major conventions (Framework Convention on Climate Change, Convention on Biodiversity, Montreal Protocol) to which the IOC could respond, but also the smaller ones, such as those under the UNEP Regional Seas Programme.

78 Prof. Taira invited comments from the floor with regard to the presentations given under Agenda Item 4.

79 Dr Bernal referred to OSLR, and reported to the meeting that in accordance with Resolution EC-XXXI.2, he is to convene a meeting of appropriate experts to review the OSLR Programme with the objectives of specifying the role, to examine the linkage with the regional bodies, to further examine its links to other related IOC programmes and activities and to identify scientific research needed in new areas, for instance the introduction of alien species with ballast water. The meeting will take place this year.

80 Prof. Fukuyo commented on the many relationships between the HAB programme and biodiversity, ballast water and referred to this as an example of the role of the HAB programme to address management and societal issues.

81 In response to the question raised by Prof. Taira whether other regional subsidiary bodies have a similarly active programme on OSLR as in WESTPAC, Dr Bernal replied that only HAB is active in all regions. Again, he stressed the need to continually revise and review activities to see if what we do is relevant to living resources. OSLR has been in place for over 20 years, and the programme may have to be changed.

82 The Sub-Commission appreciated the achievements under the WESTPAC HAB programme and looked forward to further developments.

83 Dr McEwan raised the question whether the current headings of the programme areas, OSLR, OSNLR, etc., are appropriate given that some projects listed under such headings can no longer be defined as such. For instance, HAB clearly has relations with many other disciplines. He suggested that it would help if the projects were recast in the context of the conventions in order to acquire the recognition of governments.

84 Mr Holland agreed with the need to reorganize the programmes, and suggested that in fact the HAB-OSLR component is closely associated with the Health of the Ocean, whilst physical changes in the ocean that affect fish stocks are important to fisheries management.

85 Prof. Fukuyo reiterated his earlier statement that HAB addresses societal issues. People die from eating poisoned seafood, and the management aspect is therefore very important. Moreover, the data used in HAB could be used in the context of the Health of the Ocean.

86 Mr Li Jingguang commented on the serious problem of HAB in China. There were about 30 serious red tide events recorded last year and there is a need to continue training courses.

87 In view of the discussion of the long-term strategy plan, Prof. Su Jilan stated that HAB is a good model where societal concerns are translated into scientific questions. He identified a phased approach from the need to understand the species, its biology, then moving towards prediction, which requires an understanding of physical oceanography and biochemistry (elements of GEOHAB). For the elimination of the root causes behind HAB, one has to look at Integrated Coastal Area Management. Therefore, in fact HAB spans over a whole lot of issues.

88 In relation to Ocean Dynamics, Mr Kuijper briefed the Sub-Commission on a proposal submitted to the Asian Pacific Network (APN) that calls for a small workshop among ocean climate experts in order to discuss the relevance of their research to policy-making.

89 Prof. Lukas stated that the Argo/GODAE proposal implies a global activity that needs to be implemented regionally and this provides opportunities for WESTPAC. He further expressed that other measurements are needed besides Argo floats to achieve the objectives of GODAE and PBECS.

90 Prof. Taira stated that it is very important to have the support from every country in developing such a proposal. He also commented on the WESTPAC region as a key area for El Niño-related studies.

91 Dr McEwan referring to Prof. Su Jilan's proposal for NEAR-GOOS emphasized the importance of product delivery. The Sub-Commission endorsed the proposal.

92 First Admiral Mohd Rasip bin Hassan considered that a data exchange programme should be part of a global programme and that methodologies should be standardized. He invited the Sub-Commission to give proper recognition to the need for a conference as proposed by Mr Matsuura (IODE).

93 Prof. Manuwadi commented that several of the proposed projects, in particular Mussel Watch, HAB and those proposed under marine pollution are intimately linked and therefore an effort should be made to integrate those projects.

94 Dr Bernal commented that within the IOC an attempt has been made to realign some of the programmes resulting in a new functional division that corresponds to three sections, those being (i) Ocean Science Programmes; (ii) Ocean Services Programmes; and (iii) Ocean Operational Observing Systems relevant to GOOS. This reflects the scope of work of the IOC ranging from science to services to operations.

95 Mr Jiang Yihang wished to draw the attention of the Sub-Commission on the Global Plan of Action for the Protection of the Marine Environment from Land-based Sources (GPA-LBA) and its relation to the WESTPAC atmospheric inputs project. UNEP was represented at the workshop organized under the project. The outcomes of the workshop were fully taken into consideration in the development of a Proposal for NOWPAP/3, on the 'Establishment of a collaborative, regional monitoring programme'. The proposal will be discussed and hopefully approved by the Fourth Intergovernmental Meeting for NOWPAP scheduled to take place in April 1999.

96 UNEP has also formulated a regional action plan for the GPA-LBA and is interested in further cooperation with WESTPAC in this regard. UNEP is interested in further cooperation with IOC/WESTPAC on this project, as it is an important way to study and understand the source and path of pollutants to the marine environment.

97 Dr Bernal stated that most of the presentations listed specific activities that should be clearly identified. He suggested that these activities to be included in the proposed workplan and submitted in the form of a recommendation to the IOC Assembly.

98 Mr. Kuijper added that in addition to an endorsement of the proposed workplan under Agenda Item 8.2, the Sub-Commission is also invited to endorse the Executive Secretary's Report on Intersessional Activities.

99 Written comments with suggested changes to the Executive Secretary's Report on Intersessional Activities were received by the Secretariat from Viet Nam, the Republic of Korea and UNEP. Viet Nam wished to add that they are in fact a signatory of the Ocean Charter whilst the Republic of Korea proposed some corrections with regard to the ICAM- related workshop jointly organized with the Korea Maritime Institute.

100 In relation to the section on the Gulf of Thailand project, UNEP commented that it would be appropriate if the contribution from UNEP could be mentioned in the document. UNEP has cooperated with the project through the preparation of the Transboundary Diagnostic Analysis and Strategic Action Programme for the South China Sea. UNEP has expressed its interest in possible cooperation with the Gulf of Thailand Cooperative Study in relation to its proposal on the South China Sea. It was further noted that Dr Anond Snidvongs, Project-leader of the Gulf of Thailand project has participated in the preparation of the proposal.

101 The representative from UNEP, Mr Jiang Yihang further noted that the cooperation between NEAR-GOOS and NOWPAP was more than just discussed as indicated in the document. As implementing agency of NOWPAP, IOC was invited to prepare the project proposals for NOWPAP/1 and /3, and during the fact finding missions, most NEAR-GOOS databases were visited. The function of NEAR-GOOS has been included in relevant parts of the project proposals.

102 **The Sub-Commission took note** of the information provided and **adopted** the Executive Secretary's Report on Intersessional Activities, subject to the revisions suggested.

5. RECENT DEVELOPMENTS WITHIN UNESCO OF IMPORTANCE FOR IOC AND WESTPAC

103 Prof. Taira introduced the agenda item and referred to Dr Bernal for the information.

104 Dr Bernal foresaw an opportunity to improve the design of programmes at the regional level. The progress made in the implementation of Agenda 21, Chapter 17 is under review, and hopefully the outcome is an improved mechanism to report on the status of the ocean. He also expected annual reporting to the Assembly of IOC on the follow-up to the Law of the Sea.

105 He further stated that 1999 is a year of streamlining the organization. In that regard, he took UNEP as an example. The restructuring process has led to an increase of the ceiling of the budget by 20 percent, a clear signal to support restructuring. UNEP concentrates on policy and management. IOC can complement in function, but in the past the interaction has proven unsuccessful because of a competition for the same resources between UN agencies.

106 He added that IOC needs to be complementary to other agencies. FAO, IMO, WMO, IAEA, World Bank, UNEP, UNDP, UNESCO-IOC, etc. sit together in the ACC Sub-Committee. IOC holds currently the Secretariat of that Sub-Committee. A lot of information becomes available through that mechanism. An example of the cooperation is the *Atlas of the Ocean*, launched during the International Year of the Ocean for which funding is received from the Turner Foundation. The *Atlas* will be a dynamic system to provide advice to managers.

107 Further to the need for streamlining, Dr Bernal highlighted the latest developments with regard to the *ad hoc* Study Group on IOC Development, Operations, Structure and Statutes (DOSS-2). He mentioned that the final report of the study group has been endorsed by the Executive Council at its Thirty-first session, November 1998, and will be submitted for final approval to the next Assembly. In this regard, he invited all the Member States to review the document and submit comments for input in the Assembly in June.

108 Dr McEwan commented that with regard to the redesign of UNEP there is a risk of duplication brought about by the revitalization of the organization. That might lead to a situation where UNEP is in direct competition with WESTPAC.

109 Dr Bernal replied that the system has a difficulty. National governments are sectoral and so is the UN. After 1992, a new paradigm emerged – sustainable development, that called for cross-sectoral activities. Despite the fact that the UN is suffering from a chronic shortage of funds, it has obtained a new mandate and more responsibility. So competition could be there. The Committee has to moderate this tendency. UNEP does not have an ocean priority, so it is possible to cooperate. The UN system is still undergoing reform.

6. COOPERATION WITH OTHER ORGANIZATIONS

6.1 ORGANIZATIONS AND PROGRAMMES OF THE UN SYSTEM

6.1.1 UNEP

110 Mr Yihang Jiang, UNEP representative, introduced the on-going activities of the UNEP East Asian Seas Regional Coordinating Unit (UNEP-EAS/RCU), in particular the GEF proposal on the South China Sea. He briefed the Sub-Commission on the Transboundary Diagnostic Analysis and the Strategic Action Programme for the South China Sea, prepared under the GEF. The proposed activities address (i) the loss of marine habitats; (ii) marine pollution, in particular land-based pollution; and (iii) over exploitation of fishery resource. IOC/WESTPAC has been actively involved in the process.

111 He also informed the Sub-Commission on the Regional Action Plan for GPA/LBA and the long-term plan of the EAS/RCU, UNEP.

6.1.2 WMO

112 Dr Tokunosuke Fujitani, the representative of WMO, thanked the Sub-Commission for the invitation to the Session. There has been high level cooperation between WMO and IOC in areas of mutual interest, including, in particular, joint sponsorship of bodies and programmes such as IGOSS, DBCP, GOOS, GCOS, WCRP and the joint effort in the follow-up to UNCED. Dr Fujitani expressed WMO's willingness to enhance cooperation, at regional as well as global levels, and assured the Sub-Commission of the support of WMO in its projects of interest to WMO. As examples of cooperation, he mentioned the planned Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM), NEAR-GOOS and SEACAMP.

113 Dr Bernal also emphasized the importance of JCOMM as a merger of two UN Agency bodies, an action which has to be endorsed by both the WMO Congress and the IOC Assembly.

114 **The Sub-Commission expressed** its support to JCOMM and **recommended** that each delegate indicate this support to his or her national representatives of WMO and IOC.

6.1.3 UNU

115 Dr Zafar Adeel, Academic Programme Officer of the United Nations University introduced the UNU programme as a think-tank for the UN on pressing global issues with a focus on networking development; training and capacity building; and knowledge dissemination. UNU has an activity on coastal issues and provides funds for the Mussel Watch Programme.

6.2 REGIONAL ORGANIZATIONS / PROGRAMMES AND OTHERS

6.2.1 ASEAN-Canada Marine Science Programme Phase II (CPMS-II)

116 The activities and achievements of CPMS-II were introduced by Mr Ong Kah Sin, ASEAN Project Coordinator. CPMS-II was originally launched in 1991 as a 5-year programme, and extended for 2 years in 1996 with the objective to upgrade ASEAN marine science capabilities through cooperative endeavors jointly undertaken by participating ASEAN countries and Canada. Many activities have been successfully undertaken in numerous countries. These have resulted in achievements in many areas and thereby contributed towards sustainable development and management of the marine environment in ASEAN. After the success of CPMS-II, the foundations established suggested recommendations including (i) the need for continued cooperation; (ii) the follow-up to CPMS-II activities; (iii) ensuring closer ASEAN cooperation in marine science; and (iv) organizing and coordinating marine science training activities.

117 Prof. Fukuyo expressed, on behalf of the WESTPAC HAB group, appreciation for the past cooperation with CPMS-II and hoped that there will be an opportunity for future stages.

6.2.2 PICES

118 Dr Hyung Tack Huh, Senior Research Fellow of KORDI, provided the session with information on PICES. PICES was established in 1992 to promote and coordinate marine scientific

research and to upgrade knowledge on the environment and resources of the North Pacific Ocean. He indicated that PICES shares common interests with WESTPAC and wished to improve the interaction and cooperation with WESTPAC.

6.2.3 JECSS and PAMS

119 Prof. Tetsuo Yanagi, Kyusyu University informed the session that JECSS has been expanded to include PAMS. He presented topographical charts of the sea surface in the Japan/East Sea that demonstrated clearly the progression of warm and cold eddies. This method can be applied to other areas of WESTPAC.

6.2.4 CREAMS-II

120 Dr Kuh Kim provided information about CREAMS. CREAMS was an international programme taking place during 1993-1997, to understand the circulation and water mass structure in the Japan/East Sea. Its continuation from 1998 to 2000 as CREAMS-II has been approved.

6.2.5 Others, including NGOs

121 The information about START was provided by Dr Anond Snidvongs. Although START Regional Centre at Chulalongkorn University, Thailand is playing an important role for the Gulf of Thailand Programme, there is no formal agreement between START and IOC/WESTPAC. He indicated that START wishes to see this contribution recognized by WESTPAC.

7. TEMA

122 Dr Bernal reported to the Sub-Commission on recent developments of the IOC TEMA strategy. TEMA should spread across all different programmes to facilitate implementation of projects. It needs to be an integrated element of all projects, rather than a separated project. Following to this strategy, the structure of IOC Secretariat has been changed. He invited the Member States to cooperate with this strategy.

SCIENTIFIC SEMINAR

(1) Capacity Building in Oceanography in the WESTPAC Region

123 The Second Vice-Chairman, Dr Hyung Tack Huh, chaired the first theme of the Scientific Seminar.

124 Prof. Manuwadi Hungspreugs presented a discussion paper on the need for improving graduate training in oceanography in the region. Most countries in South East Asia are well developed in fisheries, but adequately trained personnel in physical oceanography, chemical oceanography and biological oceanography are generally lacking. She pointed out that a regional approach is needed to solve the problems. She introduced a successful example of developing a regional graduate school from South America and drew the Sub-Commission's attention to the possibility of having a school of excellence for marine science in the region with the Philippines, Malaysia and Thailand as possible host.

125 Dr Huh invited Dr Anugerah Nontji of Indonesia, Prof. Miguel Fortes of the Philippines and Prof. Dinh Van Uu of Viet Nam to elaborate on the policy situation and problems of capacity building of their respective countries. Their commentaries are available upon request from the Secretariat.

126 As a result of the discussion on the need for higher education in oceanography, **the Sub-Commission adopted** Recommendation SC-WESTPAC-IV.3.

(2) GOOS-related Projects

127 Prof. Taira chaired the second theme of the Scientific Symposium.

128 Prof. Zhouwen Yu, the chairman of the NEAR-GOOS Coordinating Committee made a keynote speech. He provided the Sub-Commission with detailed information on the NEAR-GOOS databases and added some personal suggestions to further improve the NEAR-GOOS system.

129 Dr Fujitani from JMA and Mr Matsuura from the JODC, the operating agencies of the NEAR-GOOS Regional Real Time Database and Regional Delayed Mode Database respectively, and Ms Rimi Nakano, from the GOOS Project Office added comments on NEAR-GOOS.

130 Prof. Taira invited First Admiral Mohd Rasip bin Hassan to share information on SEA-GOOS. During the Fourth WESTPAC Symposium in Okinawa in February 1998, there was a discussion on how to develop SEA-GOOS using NEAR-GOOS as a model. If considerable support can be provided, the launch of a delayed mode database is relatively easy. Real time database may be developed later.

131 Mr Kuijper suggested that SEA-GOOS might follow a similar approach as attempted for NEAR-GOOS during its inception. Accordingly, one of the participating countries would be expected to submit a proposal to the UNESCO General Conference with the request for an extra budget allocation from UNESCO. Other countries would support the resolution. The Philippines, Malaysia, Viet Nam, Indonesia, and Thailand earlier already indicated their interest in SEA-GOOS. Out of them, one Member State has to take a leading role to submit a draft resolution to the UNESCO General Conference, which will be held from 26 October to 17 November 1999, and support from several Member States is also needed. The interested countries agreed to work towards the submission of a resolution in consultation with the Secretariat.

132 Dr McEwan from Australia introduced Pacific-GOOS, another regional pilot programme of GOOS. He outlined the main recommendations from a workshop jointly organized by SOPAC and IOC in 1998.

133 As Chairman of the Intergovernmental Committee for GOOS, Dr McEwan also introduced the recent developments in GOOS at a global level. He especially reminded the delegates that a resolution seeking the endorsement of Member States to the concept and principle of GOOS will be presented and that the GOOS commitments meeting will be held during the session of the Assembly seeking for the commitments from the agencies.

134 The Chairman invited the Sub-Commission to lend its support and express its commitment to the development of the Global Ocean Observing System. **The Sub-Commission adopted** the Recommendation SC-WESTPAC-IV.4.

135 Dr McEwan further informed the Sub-Commission that a new regional office of IOC might be established in Perth, Australia primarily focused on GOOS-related matters.

136 Mr Yihang Jiang outlined the proposal for NOWPAP activities for the second phase of the implementation. In particular, he introduced the NOWPAP/1 and NOWPAP/3 projects, which are closely related to IOC/WESTPAC activities. He informed the meeting that the proposals were prepared with the IOC as implementing agency. He further informed the Sub-Commission about the actions identified in the proposals. Potential cooperation with IOC is also included in the project proposals.

137 Prof. Taira invited Dr Jing Zhang in his capacity as a member of the HOTO Panel to present the views of the *ad hoc* sessional working group on HOTO (Health of the Ocean) in the WESTPAC region. In his turn, Dr Jing Zhang referred to the Second Panel Meeting of HOTO that was held in October 1997 in Singapore, where the panel members suggested the initiation of HOTO pilot projects within the framework of GOOS. It was proposed to have a pilot project in both Northeast

Asia (NEAR-HOTO) and Southeast Asia (SEA-HOTO) region, and blueprints for the pilot projects in the two areas were elaborated.

138 He proposed to have a regional HOTO expert group that would elaborate concrete workplans for the implementation of HOTO in the region. Due consideration was given to the development of a suite of indicator organisms and bioassays that might be used for the rapid assessment of marine pollution. The regional group of experts would follow the developments elsewhere and if needed convene a workshop to discuss the preferred implementation of HOTO in the region.

139 Prof. Fukuyo, Dr Adeel, and Dr Sangbok D. Hahn proposed the cooperation of HOTO with HAB, Mussel Watch and NEAR-GOOS, respectively.

140 Dr. McEwan mentioned that if a regional HOTO programme can be implemented, it will be the first system to be studied and followed by HOTO at a global level. He supported the link between NEAR-GOOS and NEAR-HOTO and recommended the Sub-Commission to pursue collaboration. He also supported the proposal by Dr. Jing Zhang for an inception workshop and subsequent research into the development of indicator organisms and bioassays for pollution monitoring.

141 Dr Akira Harashima introduced the idea of employing ships-of-opportunity for the measurement of relevant chemical and biochemical parameters and indicated the possibility for Phosphorus and Nitrogen as indicators. These measurements could provide input to the HOTO.

142 Prof. John Simpson gave a presentation on the effect of freshwater run-off on the ocean environment. In some regions this influence was highly significant and he termed these regions ROFI's or Regions of Freshwater Influence. In the particular case of the Gulf of Thailand the effect was enhanced by the absence of a Coriolis force, the presence of large rivers with high monsoon discharge and a shallow sea. An initial study has indicated that there is a strong haline stratification in parts of the Gulf following the annual pulse of freshwater input. This vertical structure is eroded by tidal and wind stirring (whose contributions are approximately equal) over a period of several months. Marked and consistent spatial structures indicate the presence of frontal structures. The research was assisted by the availability of several years of compiled data available at the Gulf of Thailand Data Centre. The next steps were to produce a computer model of the area and validate it with both archived and field data. Dr Simpson stated that such a model would be extremely useful in addressing the environmental and management problems in the Gulf.

(3) IOC and Integrated Coastal Area Management

143 The First Vice-Chairperson, Prof. Manuwadi Hungspreugs, chaired this part of the Scientific Symposium of the Session.

144 Mr Kuijper presented an overview of the strategy of IOC in support of Integrated Coastal Area Management. It is based on an expert consultation held prior to the Thirty-first Session of the IOC Executive Council, November 1998, and the latter adopted the proposal after review. The IOC's perspective on its role in integrated coastal area management is that of seeking to fulfil one of UNESCO's basic mandates: to serve as a forum for the exchange of ideas and information that will provide decision makers with the factual scientific basis and other arguments upon which to establish relevant policy and legislation.

145 He emphasized that the objectives of the programme are to address coastal zone problems through activities of more cooperative, coordinated and interdisciplinary nature, and to ensure good coordination among existing IOC efforts related to the coastal zone. Five programme areas are identified under the proposed strategy: (i) Interdisciplinary Studies of Coastal Processes for ICAM; (ii) Marine Scientific and Technological Information System for ICAM; (iii) Methodology Development in support of ICAM; (iv) Coastal Monitoring System for ICAM and lastly, (v) Training and Education and Mutual Assistance (TEMA) in Marine Sciences for ICAM. The IOC

strategy on ICAM evolved from a series of discussions, workshops and activities carried out in different parts of the world.

146 The first commentator, Prof. Fortes from the Philippines, stressed the need for ICAM focusing on the problems that demand an integrated approach. He further stressed the need for adaptive management practices remarking on the fact that the problems only increase in magnitude if they are not dealt with in a timely manner. He agreed with the well-defined role of IOC in the context of ICAM, but argued that there are some aspects of ICAM that are inadequately reflected in the strategy, most notably, the need for public awareness, education, and reaching out to the governments. He further suggested that IOC needs to be more effective in coordinating with others in ICAM. The commentator has prepared a paper that is available upon request from the WESTPAC Secretariat.

147 Dr Huang Weigen took the perspective of science application, and commented on the possible use of remote sensing technology as a tool in addressing coastal erosion and coastal habitat change.

148 Dr Jihyun Lee from the Republic of Korea welcomed IOC's recent developments in ICAM. She referred to the International Workshop on Coastal Management organized by the Korea Maritime Institute in the Republic of Korea and co-sponsored by IOC and MOMAF. Her perspective on the role of IOC/WESTPAC is that of making sure that the marine sciences feed into policy and decision making. But she questioned, whether the WESTPAC Sub-Commission wants to expand its activities in the long-term in the area of ICAM, and if so, whether the Sub-Commission wants to begin a forum to work with people from other fields of ICAM, hence integration in the real sense of the word, and whether the Sub-Commission wants to re-examine and assess present activities related to the coastal zone to enhance its applicability to coastal policy making.

149 Mr Kuijper summarized the various comments made and reiterated the daunting challenge for the IOC in this field. IOC will have to follow a step by step approach and forge alliances between science and policy-making, but the mechanisms to do so are not clear yet.

150 A discussion ensued where various speakers commented on the need of ICAM and the possible role of the IOC therein. Dr Somsak Boromthanarat stated the need for priority management, in particular with regard to the coordination among different sectors of government. A management approach following a policy cycle is needed to provide a practical approach to ICAM that allows for adequate consultation with stakeholders. Mr Anant Saraya wished to see a more explicit role for IOC in the transfer of information to policy-makers. In that regard, he stressed the need for conferences and meetings.

151 Mr Holland stated that the IOC can not take charge of ICAM given its limited capacity. It can however contribute in addressing the monitoring requirements necessary for the implementation of conventions and agreements. Therefore IOC must complement many other organizations.

152 Prof. Fukuyo stated the importance of HAB as an integral component of ICAM. HAB is already involved in the management and the education of policy-makers. Mr Jiang Yihang commented on the possible conflict that may arise because of the differences in time requirements for science on the one hand and project development on the other hand.

153 Prof. Su Jilan noted the need to re-examine the possible input of social scientists to the Gulf of Thailand Project, to which Prof. Taira replied that IOC is essentially an Oceanographic Commission and therefore its role is necessarily limited.

8. PROGRAMME AND BUDGET

8.1 LONG-TERM STRATEGY PLAN

154 Prof. Taira introduced this agenda item and stressed the importance of the foreseen discussion.

155 Mr Kuijper made a short presentation on the Long-term Strategy Plan (Document IOC/SC-WESTPAC-IV/8. prov.) that was provided to the Sub-Commission for review. He highlighted the need for a strategy against a number of issues and constraints that the Sub-Commission faces. A vision and a mission statement were presented followed by several considerations as to how to improve functioning of the Sub-Commission.

156 Following this introduction, a discussion ensued. Dr McEwan commented that the strategy was well written. He suggested adding the problem of visibility as one of the underlying issues. How to raise the profile of marine science that is largely invisible to governments, international and national agencies.

157 The Delegate from China, Mr Li Jingguang reinforced the points made in the Strategy Plan. He emphasized the need for restructuring to avoid overlap, a need for good coordination. Coastal management is a case in point with many organizations active in this field. WESTPAC should take a leading role in coordinating programmes and increasing efficiency.

158 He added that scientific programmes need to be more user-focused, for the purpose of the sustainable development of the marine environment and its resources, with emphasis on the economic, environmental and social benefits, and through target driven projects. Priorities need to be well defined. The suggestion is to concentrate the resources in a few key projects in such areas as coastal zone management, marine environmental pollution protection and disaster reduction. As for the Secretariat, the delegate expressed his concern that the Secretariat is understaffed and underfunded in order to operate effectively.

159 Dr Adeel from UNU saw a function for WESTPAC as an information warehouse using the focal points for national dissemination.

160 Upon the question raised by First Admiral Mohd Rasip bin Hassan regarding a decentralization mechanism, Mr Kuijper replied that funding from Paris is channeled through many different channels, which makes it sometimes difficult to carry out activities in the field. Dr Bernal added that in an ideal organization allocations would be made at the beginning of a programme, but that in UNESCO the allocations normally come every six months. This year, IOC received for the first time a full one-year funding. In the past it constituted only six months. A decentralization mechanism is needed to improve this situation, as allocations can be very unpredictable.

161 Mr Holland suggested putting aside the problems of administration and concentrating first on the long-term strategy. Even if the budget of IOC would double, it is still very tiny in terms of government budgets. He stressed the importance of finding out their needs, needs that feed into science. HAB is successful since the need is obvious. How to relate programmes to the economic needs of governments that typically focus on a short term? Long-term plans are important in particular if they can link up to the issues of concern to politicians. There is a need for a policy group to make sure that the issues are aligned and relevant to Member States.

162 Mr Jiang Yihang commented that policy goes hand in hand with implementation. Besides he wished to inform the Sub-Commission that from his past experience, he knew that decentralized funding was tried before in 1995 but could not be sustained. He also emphasized the need to align the strategy of WESTPAC to that of the IOC.

163 Dr Bernal explained that UNESCO is trying to give IOC more visibility and a stable long-term platform. But he added that this has a cost. IOC has been successful in getting an incompressible budget, exclusive to IOC. Such a policy upsets other divisions of UNESCO and creates tension.

164 Prof. Fortes from the Philippines remarked that from his perspective two issues pose the greatest barrier to scientific development, the issue of lack of linkage with the private sector, and the fact that the region cannot rely on an adequate indigenous capacity.

165 Dr McEwan stated the need to define actions. He proposed to set up a policy group with the responsibility of making a tabulation of national needs as priorities, for the review of needs in the context of current programmes and new ones, for priority setting for funding, based on an analysis of impact, feasibility, and capture of benefit, and further to come up with detailed plans, staffing and budget requirements.

166 Dr Thurston expressed his appreciation for the report, and especially endorsed the need for coordination. WESTPAC should take advantage of large international programmes.

167 Following the discussion, the **Sub-Commission agreed on** forming an *ad hoc* working group that would further discuss the Long-term Strategy Plan. It was suggested that as a first step the general idea of the strategy be endorsed by the Sub-Commission, whilst the concrete actions that would follow need further elaboration.

168 Dr Bernal concluded that the strategy defined by the Sub-Commission should interface between the regional priorities as identified by the WESTPAC Member States' on the one side and the global mandates linked to conventions on the other side. GOOS is a good example of Member States needs meeting global needs, or where a top-down and bottom-up approach are used simultaneously.

8.2 PROGRAMME AND BUDGET FOR 1999-2001: WESTPAC ACTION PLAN

169 Delegates were invited to examine a table prepared by the Secretariat on the Programme and Budget for 1999-2001 (Document. IOC/SC-WESTPAC-IV/7). This table was prepared following the discussions of the respective agenda items during the meeting and reflected the input from each Project-leader. It identifies actions to be taken under each project with a clear statement of objectives, date and place, financial allocation, funding sources and participating countries.

170 During the revision of the table, there was a discussion on HOTO. One delegate indicated that the Sub-Commission does not need to have a regional HOTO project since HOTO is a global programme. One of the representatives of the *ad hoc* sessional working group on HOTO, Dr Jing Zhang explained that the HOTO Panel has identified the overall concept, but, that for implementation, the activities need to be carried out at a regional level.

171 The possibility that HOTO could be integrated with other programmes such as HAB and Mussel Watch was also discussed. Mr Holland suggested that a generalization of the original activity is justified given the fact that a specification of the objectives of the proposed workshop might not be met at this stage.

172 **The Sub-Commission considered** the proposed actions and **adopted** the table with amendments. This table is presented as an appendix to Recommendation SC-WESTPAC-IV.5.

8.3 WORKING MECHANISMS

173 The Sessional Working Group on the Fifth Symposium proposed to have the Symposium organized in the year 2001. A tentative outline for the Symposium is provided in Annex VI. **The Sub-Commission adopted** Recommendation SC-WESTPAC-IV.6.

174 Dr McEwan reported on the work of the Sessional Working Group on the Long-term Strategy Plan. It was agreed upon that the draft document presented to the Sub-Commission (IOC/SC-WESTPAC-IV/8 prov.) provided a suitable general format for the Strategic Plan. It was further agreed that the underlying issues in section 1.2 of the Long Term Strategy Plan needed to be supplemented by statements concerning: (i) the difficulties of internal coordination between agencies

and organizations within the Member States; and (ii) the low visibility of WESTPAC and IOC programmes at both international and national levels.

175 The working group further revised the vision statement as follows: *"a region where through the concerted efforts of WESTPAC Member States, the development of marine science and ocean-related atmospheric science and observation is systematically and effectively contributing to its sustainable development and responsible stewardship"*.

176 The working group further supports the mission statement that reads as follows: *"The Sub-Commission will promote and co-ordinate programmes that demonstrate and enhance the value of marine scientific research and systematic observations of the ocean in resolving the needs of society as expressed and agreed upon by Member States"*.

177 **The Sub-Commission decided** that the members of the Working Group should continue to work intersessionally on the Long-term strategy by e-mail correspondence. Others are invited to join the discussion. The Chairman should report the final version of the strategy to the Twentieth Session of the IOC Assembly.

178 **The Sub-Commission took note** of the findings of the working group and **adopted** Recommendation SC-WESTPAC-IV.7. The revised draft of the Long-term Strategy Plan that will enable the working group to continue its deliberations is attached as Annex VII.

8.4 REGIONAL SECRETARIAT

179 The function of the Regional Secretariat was covered under the discussion on the long-term strategy and will be continued by the Chairman as part of the activity under the intersessional group.

9. ELECTIONS

180 The Chairman invited nominations for Chairperson, first and second Vice-Chairpersons in that order noting that officers can serve for two terms. The delegate of China nominated Prof. Keisuke Taira of Japan for the post of Chairman. The nomination was seconded by the Delegate of the United States and unanimously supported. Prof. Taira was therefore elected Chairman by acclamation.

181 The Delegate of Indonesia nominated Prof. Manuwadi Hungspreugs of Thailand to be the First Vice-Chairperson. The nomination was seconded by the Delegate of Japan and unanimously supported. Prof. Manuwadi Hungspreugs was therefore elected by acclamation.

182 The Delegate of the Philippines nominated Dr Hyung Tack Huh of the Republic of Korea to be the Second Vice-Chairperson. The nomination was seconded by the Delegate of Australia and unanimously supported. Dr Huh was therefore elected by acclamation.

10. DATE AND PLACE OF THE NEXT SESSION

183 The Sub-Commission proposed that the next session should be held in Perth in 2002 subject to an IOC regional office being established there and pending decision of the government. **The Sub-Commission adopted** Recommendation SC-WESTPAC-IV. 8.

11. ADOPTION OF THE REPORT AND RECOMMENDATIONS

184 The Sub-Commission reviewed the draft report and adopted it, together with the recommendations attached as Annex II.

12. CLOSURE

185 The Chairman expressed his great appreciation to all delegates, and the Rapporteur for their cooperation in the conduct of the Session. He thanked the Government of the Republic of Korea and the Local Organizing Committee for their generous support to the Session.

186 The Sub-Commission expressed appreciation to the host country for the excellent arrangements ensuring the success of the Session.

187 The Chairman closed the Fourth Session of the IOC Sub-Commission for WESTPAC at noon on 26 March 1999.

ANNEX I

AGENDA

1. OPENING

2. ADMINISTRATION

2.1 ADOPTION OF THE AGENDA
2.2 DESIGNATION OF THE RAPPORTEUR
2.3 CONDUCT OF THE SESSION

3. REPORT OF THE EXECUTIVE SECRETARY ON INTERSESSIONAL ACTIVITIES AND PROGRAMME EVALUATION

3.1 REPORT ON INTERSESSIONAL ACTIVITIES
3.2 EVALUATION OF EXISTING WESTPAC PROGRAMMES AND PROJECTS

4. REVIEW OF PROGRAMMES AND PROJECTS FOR 1996-1998 AND PLAN FOR 1999-2001

4.1 MARINE SCIENCE AND APPLICATIONS
4.2 GLOBAL OCEAN OBSERVING SYSTEMS
4.3 OCEAN SERVICES
4.4 MEETING THE NEEDS OF OCEAN-RELATED CONVENTIONS AND PROGRAMMES

5. RECENT DEVELOPMENTS WITHIN UNESCO OF IMPORTANCE TO IOC AND WESTPAC

6. COOPERATION WITH OTHER ORGANIZATIONS

6.1 ORGANIZATIONS AND PROGRAMMES OF THE UN-SYSTEM
6.2 REGIONAL ORGANIZATIONS / PROGRAMMES AND OTHERS

7. TEMA

8. PROGRAMME AND BUDGET

8.1 WESTPAC LONG-TERM STRATEGY
8.2 PROGRAMME AND BUDGET FOR 1998-2001: WESTPAC ACTION PLAN
8.3 WORKING MECHANISMS
8.4 REGIONAL SECRETARIAT

9. ELECTIONS

10. DATE AND PLACE OF THE NEXT SESSION

11. ADOPTION OF THE REPORT AND RECOMMENDATIONS

12. CLOSURE

ANNEX II

RECOMMENDATIONS

Recommendation SC-WESTPAC-IV. 1

INTERNATIONAL COOPERATIVE STUDY ON THE GULF OF THAILAND (GoT)

The IOC Sub-Commission for the Western Pacific,

Noting the great interest being shown by the countries of the region in the unique oceanographic processes taking place in the Gulf of Thailand,

Noting further the benefits that can result from a predictive model of this region in terms of the water quality and the sustainable development of its resources,

Recognizing the importance of cooperation of scientists from the region and from other interested countries in developing and validating an operational model,

Recommends a co-ordinating committee be established comprising members from each of the participating countries and appropriate experts;

Recommends further that the Gulf of Thailand Data and Information Centre be supported with close Cupertino with SEASTART RC;

Bearing in mind the interest of SEASTART and SEAPOL in the region,

Requests that the Executive Secretary IOC be instructed to investigate a formal understanding between WESTPAC and SEASTART and SEAPOL covering cooperation on this study;

Having considered the need for capacity building in the participating countries in the region in terms of equipment, human resources, training and materials,

Recommends that the project seeks the cooperation with, and integrates the expertise of other WESTPAC programmes and projects;

Recommends further that the IOC and the WESTPAC Secretariat office give increased support to the study, especially for logistic and publications support.

Recommendation SC-WESTPAC-IV. 2

INTERNATIONAL CONFERENCE FOR THE IODE-WESTPAC 1999, ICIWP '99

The IOC Sub-Commission for the Western Pacific,

Recalling its decision to enhance the activities of the IODE system in the WESTPAC region and to better align them with the needs of users of marine research in the region,

Noting that the ICIWP '99 is scheduled to take place in Malaysia in early November 1999,

Bearing in mind that ICIWP '99 is intended as an important vehicle for the development of a WESTPAC Action Plan for IODE activities in the region,

Noting further that the First official announcement of the ICIWP '99 will be issued in early April 1999,

Recommends that Member States seek the cooperation and participation of their relevant national organization in ICIWP '99.

Recommendation SC-WESTPAC-IV. 3

REGIONAL GRADUATE SCHOOL OF OCEANOGRAPHY

The IOC Sub-Commission for the Western Pacific,

Recognizing the urgent need to provide high quality training in specialized fields of oceanography still lacking in the WESTPAC region,

Noting that there is an existing good example of such a school of excellence in South America at university of Concepción, Chile which started in 1992,

Resolves that WESTPAC Member States should support further steps towards setting up such a graduate school of excellence by upgrading one of the existing schools of oceanography in the region;

Instructs the Executive Secretary IOC to bring opportunities to the attention of WESTPAC Member States.

Recommendation SC-WESTPAC-IV. 4

GLOBAL OCEAN OBSERVING SYSTEM

The IOC Sub-Commission for the Western Pacific,

Recognizing that the successful implementation of GOOS both globally and in the WESTPAC region depends on the widest interest, support and participation of Member States and their relevant marine organizations,

Noting the intention announced at the Thirty-first Session of the IOC Executive Council to present a Resolution to the Twentieth Session of the IOC Assembly seeking the endorsement of Member States to the concept and principles of GOOS as described in Document IOC/INF-1091,

Taking into account Resolution EC-XXXI.10 which **urges** Member States to aid in the implementation of GOOS and **instructs** the Executive Secretary IOC to establish an intersessional group to prepare recommendations concerning sources and levels of funding and the acquisition of extrabudgetary funds to the GOOS programme,

Noting further Resolution EC-XXXI.13 endorsing a proposal for the creation of a joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (J-COMM), to be presented at the Twentieth IOC Assembly,

Recalling that the fourth session of the Intergovernmental Commission for GOOS (I-GOOS) will be held on 23-25 June, immediately preceding the twentieth session of IOC Assembly,

Recalling further that during the sessional period of the twentieth session of IOC Assembly the non-governmental First GOOS Commitments Meeting will be held with the intention of encouraging national agencies and organizations to indicate elements of their activities that might be conducted under the GOOS framework,

Urges Member States:

(i) to participate actively in the above-mentioned meetings;
(ii) to support the above-mentioned resolutions at the Assembly concerning the concept and principles of GOOS;
(iii) to indicate present and future commitments of effort to GOOS and regional GOOS programmes, especially NEAR-GOOS;
(iv) to participate in GOOS-related global programmes (e.g. Global Ocean Data Assimilation Experiment);

(v) to support a resolution to be presented to the Twentieth Assembly of the IOC for the creation of the Joint Commission for Oceanography and Marine Meteorology.

Recommendation SC-WESTPAC-IV. 5 (*see Appendix)

THE WORK PROGRAMME OF THE SUB-COMMISSION AND THE BUDGET ESTIMATE FOR 1999-2002

The IOC Sub-Commission for the Western Pacific,

Having reviewed the implementation of the programme that took place during the intersessional period,

Noting the activities and priorities identified of the Fourth Session,

Acknowledging the importance of the IOC Regional Secretariat for WESTPAC for the success of the programme,

Expresses its appreciation to the Government of Thailand for the continued support of the Secretariat;

Invites other governments to provide resources directly or in-kind to support the Bangkok Office;

Decides to adopt the Programme of Work and its regional cooperation over the period 1999-2002 as indicated in the Table annexed to this Recommendation (*);

Urges cooperation and co-ordination with other global and regional organizations, both in and adjacent to the WESTPAC region;

Further urges Member States of the region to participate in and actively support the implementation of the proposed programme;

Requests the IOC and other organizations co-operating with the Sub-Commission to allocate the necessary resources and to assist with obtaining extrabudgetary funds from governmental and donor agencies.

Recommendation SC-WESTPAC-IV. 6

INTERNATIONAL WESTPAC SYMPOSIUM

The IOC Sub-Commission for the Western Pacific,

Recalling its decision of its First Session that a major multi-disciplinary symposium should become a principal intersessional activity of the Sub-Commission,

Having reviewed the output and results of the Fourth IOC/WESTPAC Scientific Symposium on the Role of Ocean Sciences for Sustainable Development, Okinawa, Japan, 2-7 February 1998,

Expressing its great appreciation to the Government of Japan for having hosted it,

Having formulated its programme for the period 1999-2002,

Bearing in mind the need for presentation and exchange of scientific results in an interdisciplinary forum,

Noting the presentations made at the Scientific Seminar during this Session of the Sub-Commission,

Recognizing the success of the previous symposia,

Accepts with appreciation the consideration of the Government of the Republic of Korea to act as host of the Symposium subject to a final decision being made;

Recommends that the Fifth IOC/WESTPAC Symposium be organized in 2000, or 2001;

Further recommends that regional and global co-operating international organizations be invited to support and participate in the Symposium;

Recommends the establishment of an interim scientific planning committee to formulate a detailed proposal for the scope, contents and structure of the Symposium, under the chairmanship of the Chairman of the Sub-Commission.

Recommendation SC-WESTPAC-IV. 7

LONG TERM STRATEGY

The IOC Sub-Commission for the Western Pacific,

Recalling the decision taken by the Sub-Commission at its Third Session to formulate a long-term strategy,

Receiving with appreciation the document prepared by the Secretariat "Long-Term Strategy Plan" IOC/SC-WESTPAC-IV/8 prov.,

Taking into account the comments by Member States and the Report of the Sessional Group set up under the Chairman,

Decides that the document IOC/WESTPAC-IV/8 as amended provides a suitable format for the Strategic Plan;

Further decides that the sessional group will continue to refine the document, working by correspondence in particular with regard to the actions required to prepare the Sub-Commission for the future;

Invites the Chairman of WESTPAC to report to the Twentieth Session of the Assembly on the progress made.

Recommendation SC-WESTPAC-IV. 8

DATES AND PLACE OF NEXT SESSION

The IOC Sub-Commission for the Western Pacific,

Bearing in mind the need for a sufficient period of time between sessions of the Sub-Commission to allow a reasonable implementation of its programmes,

Recalling the decision of its First Session to have a three-year time period between its regular sessions,

Decides that its next session shall be in 2002, tentatively in Perth, Australia, subject to the endorsement by the relevant authorities;

Requests its officers, in consultation with the Executive Secretary IOC, to decide on further arrangements for the Fifth Session including as required as regards place and exact dates.

Project	Activities			Funding required	Participation	Remark
	Action	Objectives	Date and Place			
OSLR WESTPAC- HAB	Two training courses on Monitoring of PSP Plankton and Shellfish Toxicity	To train a cadre of WESTPAC scientists capable of assessing HAB	2000 and 2001	US$ 20,000 Japanese Trust Fund	10 participants per course from WESTPAC countries	
	Expert missions	Assist WESTPAC scientists in the organization of local activities	1999 - 2001	Funding procured by project leader, additional funding to be evaluated from case to case	WESTPAC countries	
	Publication and distribution of reference materials	Produce and disseminate materials that enhance capability of studying identification of harmful algae related event	1999 - 2001	Funding procured by project leader	WESTPAC countries	
	Seminar on 'Future Research Direction on HAB in WESTPAC'	Review and discussion of past research efforts and formulation of future research activities and cooperation	February 2000 (in conjunction with 9th International Conference on Harmful Algal Blooms, Tasmania, Australia)	US$ 20,000 Funded by IOC and Japanese Trust Fund	WESTPAC countries	
IP-HAB	APEC-IOC Workshop on HAB	Forum for HAB scientists	May 1999, Manila, Philippines	Funding required to facilitate participation of WESTPAC scientists	WESTPAC countries	Activity organized through IOC-HAB centre in Copenhagen
OSNLR Paleogeographic map	Workshop on the Paleogeographic Map for the Holocene Optimum	Final compilation of data and subsequent publishing of map	1999, possibly in conjunction with 4th Asian Marine Geology Conference	US$ 20,000 requested from IOC	Most WESTPAC countries CCOP as partner agency	Originally planned for 1998
OSNLR Tectonics and its impact on the coastal zone (TICZ)	Participate in the Eastern Asia Natural Hazard Mapping Project	Faciltate the participation of WESTPAC scientists in the EANHP	1999	US$ 6,000 (Extrabudgetary)	Most WESTPAC countries CCOP as partner agency	
	Feasibility studies on the preparedness of the definition of the continental shelf along active margins	Conduct studies in order to delineate continental shelves	1999-2001	No cost, cost to be borne by participating countries-	WESTPAC	
	OSNLR input to ICAM and C-GOOS	Ensure effective input of the OSNLR in ICAM related projects and programmes	1999-2001	No cost	WESTPAC	In coordination with IOC Paris
	Facilitate participation to the Fourth Asian Marine Geology Conference	Hold a one day seminar in conjunction with the Conference	October 1999, Qingdao, China	No cost (cost sharing with paleogeographic map)	Most WESTPAC countries CCOP as partner agency	

Project	Activities			Funding required	Participation	Remark
	Action	Objectives	Date and Place			
Marine Pollution Research and Monitoring River inputs	Participate in study on theinput of selected trace elements, nutrients and mercury in the Chao Phraya Estuary and Saigon Dong Nai River System	Facilitate the participation of local scientists and scientists from neighbouring countries (GoT)	1999	US$8,000	Gulf of Thailand countries	
	Participate in SCOPE project on Land-Ocean Nutrient Fluxes (focus on silicate)	Facilitate the participation of local scientists and scientists from neighbouring countries	1999-2000	-	SCOPE countries	In preparation
Marine Pollution Research and Monitoring Mussel Watch	Two week annual training workshop	To provide training related to the relevant analytical procedures	1999-2001 The first workshop will tentatively be held in December 1999 in Thailand.	IOC: US$ 30,000 UNU: US$15,000 ERTC: in kind	WESTPAC countries	
	Intercalibration exercise	To provide standard reference materials to be analyzed. To compare the result against those provided by the reference laboratory.	1999 - 2001	US$ 7,500 funded by IOC and US$5,000 from UNU	WESTPAC countries	US$5,000 from UNU for provision of CRMs, collaboration with Ehime University as reference.laboratory.
	Data compilation and Dissemination		1999-2001	No cost		
	Programme coordination		1999-2001	No cost		ERTC will serve as the programme coordination unit
	National Training Programmes	To urge participants to develop their own training programme. To help towards establishing sustainable monitoring programmes within the participating countries.	1999-2001	-	WESTPAC countries	
Marine Pollution Research and Monitoring Atmospheric Inputs	Inventory on observation and monitoring activities of atmospheric input in the WESTPAC region	To establish a network in WESTPAC for data exchange and training	1999	No cost	WESTPAC countries	In accordance with the recommendations of the Qingdao workshop
	Intercalibration exercise of dissolved and particulate concentrations for selected substances	To compare the methodology of sampling and analysis	1999-2001	US$ 5,000 IOC mainly	WESTPAC countries	In collaboration with ACE-Asia
	Training course and exchange of young scientists in the region	Harmonization of methodologies and techniques and sharing of instruments	1999-2001	US$ 15,000 IOC mainly	WESTPAC countries	

Project	Activities			Funding required	Participation	Remark
	Action	Objectives	Date and Place			
Marine Pollution Research and Monitoring Atmospheric Inputs cont'd	Support to a 'Regional Activity Centre' (NOWPAP/3)	To serve as a medium of exchange, training, intercalibration and clearing house in the field of Atmospheric Input		-	NOWPAP countries	Upon approval by Intergovernmental Meeting of NOWPAP
	Workshop or seminar in conjunction with IGAC Conference	To facilitate participation of WESTPAC scientists and discuss atmospheric inputs	2000, Bangkok	US$ 15,000 Funded by IOC	WESTPAC countries	In collaboration with IGBP-IGAC
ODC	Participation in GODAE	Facilitate + Contribution + Networking		-	WESTPAC countries	
	Participation in CLIVAR	Facilitate + Contribution + Networking		-	WESTPAC countries	
	Participation in CREAMS-II	Facilitate + Contribution + Networking		-	CREAMS countries	
	Participation in PBECS	Facilitate + Contribution + Networking		-	WESTPAC countries	In planning
ODC	Monsoon Oceanography Workshop	Assess understanding and models of (i) ocean-atmosphere interaction and (ii) response of shallow seas to monsoonal forcing. Develop strategy for development and integration.	November 1999 Thailand	US$ 20,000 From IOC	WESTPAC countries	The date should be set to precede the CLIVAR Asian-Australian Monsoon System Panel Mtg.
ODC and Gulf of Thailand joint activity	Regional workshop on mathematical modelling and forecast	To exchange views and experiences among established experts To train young scientists	Hanoi, 2000	US$ 20,000 from IOC US$ 20,000 from Vietnam	WESTPAC countries	As many as possible established scientists should be invited including from non-WESTPAC countries Contact person: Prof. Dinh Van Uu
Gulf of Thailand Collaborative Study	Two international cruises across the mouth of the Gulf of Thailand	1.obtain T and S boundary condition 2.obtain tidal and residual current profile 3.agreement on methods 4.training	June 1999 January 2000	US$ 25,000 per cruise From IOC	Cambodia, Malaysia, Thailand, Vietnam	Additional cost for vessel operation will come from contribution from participating countries, such as Malaysian Government for the June 1999 cruise.
	Integrated Regional Modeling	1. research centre 2. promote research 3. annual working group meeting/workshop 4. capacity building		US$ 10,000 per year for coordination and integration US$ 15,000 per year for working group From IOC	Gulf of Thailand countries	

Project	Activities			Funding required	Participation	Remark
	Action	Objectives	Date and Place			
Gulf of Thailand Collaborative Study Cont'd	Data and information system	1.oceanographic data archive 2. discussion group and expert network 3.utilize SEA START RC/GOIN real-time remote sensing resources 4.data provider 5.subregional data node in SEAGOOS 6.training	1999-2003 SEA START RC Bangkok	US$ 10,000 per year for operation From IOC	Gulf of Thailand countries	
	Annual coordinating committee meeting	Discuss the progress made under the project		US$ 10,000 per year from IOC	Gulf of Thailand countries	
	Equipment capacity building	1. acquire CTD 2.acquire ADCP		US$ 200,000 From extra budgetary Private Sector	Gulf of Thailand countries	
Remote Sensing for ICAM	Research projects on (i) coastline change mapping and (ii) coastal habitats	Integrate research efforts across the region	1999	No cost	WESTPAC countries	
	Facilitate access to data from remote sensing receiving stations	To exchange data and to help regional scientists to apply to agencies for satellite data	1999-2000	No cost	WESTPAC countries	
	Workshop on coastal change and coastal habitats in the WESTPAC region	To exchange experiences and discuss research; To link up to policy makers and achieve better understanding how to use R.S. data in the decision making stage.	2000	US$ 25,000	WESTPAC countries	
NEAR-GOOS	NEAR-GOOS CC Meeting	Annual meeting to discuss progress	1999 – 2001, in NEARGOOS countries by rotation	US 20,000 per annum	NEARGOOS countries	
	NEAR-GOOS training course on data management	Annual training course to train NEARGOOS operators and individuals from other interested countries	1999 – 2001 JODC, Japan	Japanese Trust Fund	NEARGOOS countries	
	NEARGOOS brochure focused on users		1999-2000	US$ 15,000	NEARGOOS countries	
	Workshops on database management (including QA/QC)	To discuss and improve the management of the databases of NEARGOOS among experts of the region	1999-2001	US$ 20,000 (20 participants, 4 days workshop)	NEARGOOS countries and other countries	

Project	Activities			Funding required	Participation	Remark
	Action	Objectives	Date and Place			
NEAR-GOOS Cont'd	Regional workshop on ocean environment forecasting	To assess the present and future need for and present capability in ocean environment forecasting To strengthen collaboration in oceanographic forecasting	1999 -2000, Thailand	US$ 30,000	NEARGOOS countries or WESTPAC at large	Could be associated with on-going programmes in the region (ODC-NEAR-GOOS)
SEACAMP	Conform proposal once funding approved					
SEA-GOOS	Comprehensive survey of user capabilities and requirements			No cost		Joint effort of WESTPAC Secretariat and Focal points
	Regional technical workshop on SEAGOOS	To formulate a strategic plan for SEAGOOS	2000	US$ 30,000		Upon securing financial support from extrabudgetary sources
	National workshops on SEAGOOS	To identify gaps of knowledge, to discuss the recovering of historic or shelved data, to discuss national data policies, QA/QC, capacity building needs and infrastructure needs		Cost to be borne by each of the SEAGOOS participating countries		
	Establishment of working groups	To discuss and resolve pending issues both at the national and regional level		No cost		Joint effort of WESTPAC Secretariat and Focal points
	2nd Regional technical workshop	To discuss the outcome of national workshops and to formulate an implementation plan	2001	US$ 30,000		
	Decision-makers meeting on SEAGOOS	To endorse a common data policy in support of SEA-GOOS		US$ 15,000 (participants to come at their own govt's expense)		
	Establish National GOOS Co-ordinating Committees	To ensure continuation and supervision of SEAGOOS at the national level		No cost		
GOOS-HOTO	Inception workshop for the implementation of a regional HOTO component	To discuss a concrete implementation plan for a regional HOTO strategy	2000	US$ 20,000 from IOC	WESTPAC countries	Possibly in collaboration with Mussel Watch Programme and HAB
	Establish a regional HOTO expert groups that includes members of the International Panel of HOTO			No cost		

Project	Activities			Funding required	Participation	Remark
	Action	Objectives	Date and Place			
GOOS-HOTO Cont'd	Develop proposals for HOTO implementation in WESTPAC region			No cost		
GCRMN	Establishment of national working groups on coral reef monitoring			No cost		
	Carry out sustained national monitoring programmes for coral reefs			No cost		
	In-country training on GCRMN coral reef monitoring			Cost to be borne by respective countries		
IODE	Conduct training course on NEARGOOS data management (see NEARGOOS)					
	Regional Conference on International Oceanographic Data and Information Exchange in the WESTPAC region	To promote the establishment of NODC's Centres in WESTPAC countries	Autumn 1999, Malaysia	IOC: US$ 15,000 Others: STA, JICA, MIRC (Japan)	WESTPAC countries about 100 participants	
ICAM	Establish regional WESTPAC ICAM Group of Experts	To co-ordinate and promote ICAM related activities throughout the region		No cost		In collaboration with Focal Points and other agencies
	National Science – Policy Workshops	To facilitate a mode of understanding between policy makers and scientists		US$ 35,000 per workshop		In collaboration with CSMP (Univ. of Delaware)
	Coastal City Workshop	To discuss ocean-related issues and science of concern to the urban development of large cities	Hangzhou, September 1999	US$ 90,000 from IOC and SOA		In collaboration with SOA
	Methodology development in support of ICAM	To produce guidelines, manuals and other relevant documents or models that address specific issues at the regional level		US$ 45,000 per guideline or manual		In collaboration with IOC HQ
IBCWP	Organize Third Meeting of the Editorial Board	To discuss measures to ensure wider participation Ensure more frequent and regular meetings Revise and report on the Ocean Mapping Activities in the Region Revise the Project Development Plan	1999/2000, Bangkok	US$ 15,000 –20,000 funded by IOC	Australia, China, Japan, Malaysia, Korea, Russia, USA, Vietnam and Philippines. SOPAC New Zealand, France and Indonesia (under consideration)	Tienjin, China (if agreed)

Project	Activities			Funding required	Participation	Remark
	Action	Objectives	Date and Place			
IBCWP Cont'd	Quality Control Workshop and Training Programme	To train WESTPAC participants in Ocean Mapping including QA/QC	1999/2000, Boulder, USA or other regional data centers	US$25,000-30,000 from IOC	Most WESTPAC countries and SOPAC	Requires assistance of US government or related data centres
Cooperation with other Agencies **UNEP/COBSEA**	Participation in UNEP/GEF South China Sea Project	Conform proposal				
UNEP/NOWPAP Phase II	Conform proposal once funding approved					
GEF/UNDP/IMO	Networking with GEF/UNDP/IMO project on the protection of the East Asian Seas	Participation in regional task forces / groups of experts to be developed under the proposed project	1999 – 2001			At the request of the project coordinators (PDMO, Manila)
Public awareness and information	Publication of Newsletters	To network among the scientists of the region and beyond	1999 - 2001	US$ 2,000 per annum		Using a network of contributors of marine news contributors in each of the WESTPAC countries
5th WESTPAC Scientific Symposium	Organization of Symposium	To provide a forum for scientists of the region to present scientific papers	2000-2001	US$ 200,000	WESTPAC countries	
	Publication of proceedings		2000	US$ 25,000	WESTPAC countries	
WESTPAC V Session	Preparation		2002	US$ 35,000		
Regional Secretariat	Operation cost		1999 - 2001	US$ 40,000 per annum		Includes staff mission travel and running cost

ANNEX III

ADDRESSES

A. Opening Address by Prof. Keisuke Taira Chairman of WESTPAC

Distinguished guests, Ladies and Gentlemen,

It is my great honour to declare the official opening of the Fourth Assembly of WESTPAC, that is to say, the Sub-Commission for the Western Pacific, of the United Nations Education, Science, and Culture Organization / Intergovernmental Oceanographic Commission.

First of all, on behalf of WESTPAC, I wish to express our sincere thanks to the Government of the Republic of Korea, the Local Organizing Committee, IOC, and the WESTPAC Secretariat, for their contribution to hold this assembly.

Among the United Nations organizations, IOC is the sole body dedicated to oceanography. The natural sciences of the ocean cover many disciplines such as physical, chemical, geological, geophysical, biological, and fisheries oceanography. The terminology of oceanography was borne to describe the scientific results obtained during the around-the-world Expedition of *the Challenger* in 1872-1876.

In 1898, Bijerknes showed the relation between current velocity and the distribution of water density. In 1904, Ekman showed the relation of the surface velocity to the wind based on the observation during the Norwegian North Polar Expedition in 1893-1896 by Nansen. Many expeditions were made, and routine observations to monitor the ocean were also started in the first half of the 20th Century. Physical oceanography has changed greatly by the use of satellites and computers, both came into full use in the latter half of the century. Oceans are measured from space, and the data from satellites, ships, and buoys are transmitted in a real time mode. Super computers facilitate the numerical forecasting of the ocean.

IOC is dedicated to the establishment of the Global Ocean Observing System in response to UNCED, the United Nations Conference on Environment and Development in 1992. WESTPAC subsequently declared to carry out NEAR-GOOS, North East Asian Regional GOOS in WESTPAC-III in Tokyo in 1996. NEAR-GOOS is the first pilot project for operational oceanography in the world under the umbrella of the GOOS. You will receive a report of the rapid development of NEAR-GOOS in this session.

The WESTPAC was established in 1989, and the four major objectives are to:

(i) develop, promote and facilitate international oceanographic research programmes that aim to improve our understanding of critical processes in the global and regional oceans and their relationship to sustainable development and management of coastal and marine resources;

(ii) ensure effective planning for the establishment and co-ordination of operational components of a global ocean observing system to provide data and information;

(iii) provide coordination for education and training programmes and technical assistance for marine research and observations, especially in developing countries;

(iv) ensure efficient and widespread sharing of data, information and knowledge obtained from research, observation and monitoring of ocean to meet the needs of operational agencies, scientists, decision-makers, industries, and the general public.

In order to meet the objectives, the WESTPAC Sub-Commission conducts the following activities:

(i) Scientific Programmes and Projects;

(ii) International WESTPAC Symposium;
(iii) Regional implementation of global programmes and projects of IOC;
(iv) Co-operative implementation and co-ordination of programmes and projects with other organizations in the region;
(v) Survey and stimulation of the interests and requirements of the Member States;
(vi) Publication of WESTPAC Newsletters and information delivery through electronic media, such as Internet, to the member states.

In my short talk, I have reviewed formation and development of oceanography in the 20th Century. Oceanography is expected to play an important role in the development of human activities in the ocean in the 21st Century. The ocean, and its importance for future use, covers 70 % of the earth's surface. I believe that the contributions of WESTPAC are most essential for the oceanography in the region, and I hope that significant progress can be achieved in this session, the last assembly of the 20th Century.

Thank you very much for your kind attention.

B. Address by Mr Lee Gap-sook
Director-General, Marine Policy Bureau, MOMAF

Distinguished:
Dr Bernal, Executive Secretary of IOC,
Mr Holland, Chairman of IOC,
Professor Taira, Chairman of IOC/WESTPAC,

Honored guests, ladies and gentlemen:

It is my country's great pleasure to host this conference in Seoul. And on behalf of the Ministry of Maritime affairs and Fisheries, it is my privilege to welcome you.

Indeed, with anticipated participation from all the guests, I am sure that this conference will achieve fruitful progress in our shared goals of understanding and safeguarding our precious oceans and seas in the Western Pacific region.

As you all know, the Intergovernmental Oceanographic Commission formed the predecessor of the current Sub-Commission for the Western Pacific in 1979 with the aim to address the issues of our oceans and seas in the region.

Since then, IOC/WESTPAC has taken deliberate strides in pursuing the challenges through many cooperative regional endeavors such as establishing NEAR-GOOS, conducting research on harmful algae, active involvement in Integrated Coastal Management projects, and becoming one of the most active and productive sub-commission among all IOC commissions.

Our understanding of ocean agenda is constantly evolving, and different attitude and perspective about our oceans are being established for each nation.

Because of distinct and common needs of each state and a complex web that exists between international and domestic policies, a cooperative and proficient intergovernmental agency is needed more than ever to consolidate and connect our common goals of peaceful and prosperous development, and maintaining a sustainable and healthy environment for our next generation.

Through the concerted action of IOC members, many cooperative studies have already been facilitated and promoted.

Its recent concerted efforts include the Global Ocean Observing System, ocean mapping, ocean science in relation to living and non-living resources, marine pollution research and monitoring and related programmes, integrated coastal management, climate change and prediction, coastal and small island management, and many other global and regional ocean programmes to assist and promote marine scientific investigations and related ocean services for its members by collective endeavor of its members.

As our world community becomes smaller and our neighbors become nearer, intergovernmental agencies such as IOC will be expanded and become more significant as a foundation for the regional States to come together and share mutual efforts and vision.

With many islands and islets and a high population density, services to the West Pacific region are especially needed for cooperative and coordinated actions for many ocean services and programmes.

IOC/WESTPAC has now become an integral part of our marine scientific investigations and related ocean services, and active participation from Member States is vital and necessary to continue and accomplish diverse programmes and projects critical to our region.

Fully understanding the objective of IOC/WESTPAC, the Government of the Republic of Korea has been and continues to be an active participant in WESTPAC, and we look forward to Korea's active participation in this Seoul Session and other future activities of IOC/WESTPAC.

Honored guests, ladies and gentlemen!

Korea is striving that by 2010, our marine science and technology level will match those of scientifically and technologically advanced countries. Moreover, Korea hopes to contribute more and become a better participant in all areas of ocean sciences and services for the IOC/WESTPAC.

Lastly, I would like to extend my special thanks to the organizing committee members from IOC/WESTPAC and local organizing members for their hard work in planning and organizing this meeting.

Once again, thank you for giving me this opportunity to partake in welcoming all of you, and let your thoughts and experiences about the West Pacific region flow freely during the conference, to learn and to remember that we are an inseparable part of one region. I am sure not only our benevolent ocean will benefit from the conference but also ourselves will be better served.

This reminds me of a little quotation by R.W Emerson. I quote, "*it is one of the most beautiful compensations of life that no man can sincerely try to help another without helping himself*" unquote. Borrowing from what Emerson said, each nation can grow and prosper only with cooperation and collaboration among nations in this global community.

I wish all of you a pleasant stay in Korea and hope for your success in your endeavor.

Thank you.

ANNEX IV

LIST OF DOCUMENTS

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IOC/SC-WESTPAC-IV/4.prov	PROVISIONAL LIST OF DOCUMENTS
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IOC/SC-WESTPAC-IV/6	EXECUTIVE SECRETARY'S REPORT ON INTERSESSIONAL ACTIVITIES
IOC/SC-WESTPAC-IV/7.prov	DRAFT PROGRAMME & BUDGET FOR 1999-2001
IOC/SC-WESTPAC-IV/8.prov	LONG-TERM STRATEGY PLAN

Information Documents

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IOC/SC-WESTPAC-IV/inf.2	Proposal to APN (Asia-Pacific Network for Global Change Research)
IOC/SC-WESTPAC-IV/inf.3 (SEA-GOOS)	South East Asia Global Ocean Observing System
IOC/SC-WESTPAC-IV/inf.4	Southeast Asian Center for Atmospheric and Marine Prediction (SEACAMP)
IOC/SC-WESTPAC-IV/inf.5	Regional Blueprint and Pilot Project for the Northeast Asian Region (NEAR-HOTO)
IOC/SC-WESTPAC-IV/inf.6	Regional Blueprint and Pilot Project for the Southeast Asian Seas (SEA-HOTO)
IOC/SC-WESTPAC-IV/inf.7	Establishment of a Comprehensive Database and Information Management System (NOWPAP/1): Project Proposal for Phase-II
IOC/SC-WESTPAC-IV/inf.8	Establishment of a Collaborative Regional Monitoring Programme (NOWPAP/3): Project Proposal for Phase-II
IOC/SC-WESTPAC-IV/inf.9	Recommendation for Follow-up on the IOC/WESTPAC-UNU-ERTC Mussel Watch Training Workshop

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ANNEX VI

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Advancing Ocean Sciences for the 21st Century

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Prof. Roger Lukas
Dr. Angus McEwan
Dr. Victor Akulichev
First Admiral Mohd Rasip bin Hassan
Prof. Dang Ngoc Thanh
Prof. Miguel Fortes
Dr. Sang-Kyung Byun

(ii) Local Organizing Committee

Dr. Hong-Rhyong Yoo
Korea Ocean Research and Development Institute

(iii) Budget and Finance Committee

Prof. Keisuke Taira
Executive Secretary IOC
IOC Regional Secretariat for WESTPAC

SYMPOSIUM STRUCTURE

1. Keynote speeches

Five or six keynote speakers will be invited

2. Call for papers

Ocean science in relation to living marine resources
Ocean science in relation to non-living marine resources
Ocean dynamics and climate
Ocean services/GOOS
Ocean policy

3. Workshops on WESTPAC programmes and projects

ANNEX VII

LONG-TERM STRATEGY PLAN

Note: The following version of the Long-term Strategy Plan is the version as amended by the Sessional Working Group during the Fourth Session of the WESTPAC Sub-Commission. With respect to section three therein, it was agreed to further elaborate on the actions required in an Intersessional manner. The version that follows therefore only represents a starting point for further discussion.

1. INTRODUCTION

1.1 THE NEED FOR A LONG-TERM STRATEGY PLAN

Practical and effective operation of the WESTPAC Sub-Commission requires a long-term strategy to prepare for the years to come. This inevitable need was acknowledged during the last WESTPAC Session held in Japan. Prompted by long-term preparations made by the IOC proper[1] and a similar exercise by the Sub-Commission for the Caribbean, the WESTPAC Sub-Commission is ready to manifest itself.

The need for a strategy for WESTPAC should not be seen solely from the point of view of its mother organization. The Sub-Commission has since its establishment in 1989 put much effort in establishing itself. In doing so, it followed largely the main thrusts of the IOC global programme. The Sub-Commission's activities corresponded to broad categories such as living resources, non-living resources, ocean dynamics and climate, and marine pollution. But much has changed since then. It has become increasingly apparent that as an organization, WESTPAC is at a crossroads facing many options and opportunities, but facing the dilemma of which direction it should take.

1.2 THE UNDERLYING ISSUES

Some of the issues that have led to the need for a new strategy are as follows:

(i) **The large number of proficient organizations and agencies** that are active in the field of marine science and observation at both the national and international level. Many of us find ourselves engaged not only in some WESTPAC activity but also in a number of activities co-ordinated by other agencies or organizations. This diversity in agencies and concomitant degree of overlap has helped greatly in dissipating the level of funding and national commitment available to IOC/WESTPAC.

(ii) **A change in the marine science agenda** of each of the countries involved. The member countries have different needs and each country responds to them differently. Sea-level rise may be considered as a prime concern for low-lying States, but may not be a problem for another country. Fundamental science and related capacity building, although a permanent necessity *per se*, are no longer high on the agenda. Science is more and more driven by societal priorities. The need to regulate economic growth to make it sustainable calls for a new type of scientific research, one that is sharply focused on outputs for management. This has produced a concurrent shift of emphasis from open ocean marine research towards the coastal zone, where human impacts are more evident and immediate, and timely political response is more likely to be positively rewarded.

(iii) **A different attitude of donor countries in sponsoring science.** Fewer donors are interested in funding science through multilateral agencies. Donors increasingly privilege bilateral agreements, and to work with smaller, cost-efficient and easily accountable organizations. The priority of donor agencies has changed and they are now concentrating their scarcer resources into the lesser developed among the

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[1] including the IOC Medium Term Strategy presented as Annex VI in the report of the Eighteenth Session of the IOC Assembly and the deliberations by the IOC *ad hoc* study group on IOC Development, Operations, Structure and Statutes (DOSS-2) as reported to the Thirty-first Session of the IOC Executive Council.

developing countries. Emerging economies such as those in the WESTPAC region do no longer qualify for support.

(iv) **A different perspective on the role of marine science.** In recent years, in particular as a response to UNCED in 1992, emphasis is put on the possible contribution of science to sustainable development. Interdisciplinarity, intersectoriality and integrated management have become key elements in that respect. Despite the fact that much of marine science is by definition interdisciplinary, providing the foundation of modern environmental science, the issues that it tries to address are not recognized as environmental issues. Such environmental issues are dealt with by appropriate environmental institutions at the national, regional and global scale.

(v) **New and ever advancing technological and scientific developments**. The face of marine science itself has changed. It has differentiated into a great many specializations, each of which requiring years of education. Forecasting, observation and analytical capabilities have greatly improved, based on advanced and sophisticated technologies and know-how which mastery requires significant and long-term investments. The classical gap between developing and developed countries, may cause a division among WESTPAC Member States, between the have and have-not. Although material investments are oftentimes readily made, it is in the related capacity building and underpinning science where the deficiencies become most evident. A possible solution is the establishment of regional centres as a cost-effective means of pooling resources in high technology areas.

(vi) **The gap between marine science and decision-making**. This gap is evident when one looks at the poor use of available, sound marine scientific knowledge in policy-making, the slow pace or even absence of any sign of institutionalizing marine scientific research, enabling the use of this knowledge in support of national legislation and management practices. Science has failed in its effort of becoming a social institution, legitimized and recognized by government and administrative decision-makers. Scientists are not succeeding in getting their message across to policy-makers and to the citizen. Recognizing the intricate relationships which exist between science and policy and acknowledging the gap between those two groups, WESTPAC should develop effective strategies and governing frameworks to convince policy makers to consider the science in their decision making processes and *vice versa.*

(vii) The fast evolution of the **institutional frameworks and agreements** under which the IOC operates. Major frameworks for IOC actions are provided by UNCLOS and the follow-up of UNCED. Other relevant conventions include the UN-FCCC and the Convention on Biological Diversity. As an integral part of UNESCO, decisions by the General Conference of UNESCO and its Executive Board also concern the IOC.

(viii) **Difficulties of internal co-ordination between agencies and organizations within the Member States**. Marine science and the application thereof ultimately constitute areas of necessary interaction between the many sectors involved. The typical sectoral approach followed by national agencies and organizations readily leads to a situation of inadequate co-ordination at the national level in matters that demand input from different sectors or disciplines. This is further aggravated by the fact that within a single country multiple marine science-related agencies and institutes may exist that have overlapping mandates.

(ix) The impact of IOC/WESTPAC's activities is relatively small and **fairly invisible** to governments, other international agencies and institutions. Governments are unaware of the relevance of IOC/WESTPAC's programmes in addressing their national concerns.

To meet the challenges posed by these developments and constraints, basic components of the strategies identified henceforth will be the mechanisms of the Sub-Commission in the elaboration and implementation of programmes approved by Member States that appropriately respond to these challenges.

2. VISION, MISSION AND OBJECTIVES

2.1 THE CHALLENGE

The overall challenge facing the Sub-Commission is, acting as an intergovernmental body and based on the priority interests of its Member States, to reposition itself in the centre of the marine scientific community of the Western Pacific region with the objective of promoting, developing and co-ordinating marine scientific research programmes, ocean services, TEMA and capacity building. The IOC/WESTPAC Sub-Commission has to find its own niche where it can be competitive and has comparative advantages to succeed. In addition, the position must provide the Sub-Commission with the ability to optimally use the limited resources and efficiently function within its given capacity. These entails the development of a realistic vision of what we intend to achieve, and a long-term direction and mission statement that can lead us to the realization of that vision.

2.2 WESTPAC VISION

> A region where through the concerted efforts of WESTPAC Member States, the development of marine and ocean-related atmospheric science and observation is systematically and effectively contributing to its sustainable development and responsible stewardship.

2.3 WESTPAC SUB-COMMISSION'S MISSION

> The Sub-Commission will promote and co-ordinate programmes that demonstrate and enhance the value of marine scientific research and systematic observations of the ocean in resolving the needs of society as expressed and agreed upon by Member States.

2.4 LONG-TERM DIRECTION

The long-term direction of the IOC/WESTPAC Sub-Commission focuses on the following four major objectives:

(i) Develop, promote and facilitate **international oceanographic research programmes** that aim to improve our understanding of critical global and regional ocean processes and their relationship to sustainable development and management of coastal and marine resources;

(ii) Ensure effective planning for the establishment and co-ordination of operational regional components of a **global ocean observing system** to provide the information needed for:

a) ocean and atmospheric forecasting;
b) ocean and coastal zone management by coastal nations;
c) research into global environmental change;

(i) Provide international leadership in the development of **educational and training programmes and technical assistance** essential for marine research and systematic observations of the ocean and its coastal zone, especially in developing countries;

(ii) Ensure **efficient and widespread sharing of ocean data, knowledge and information** obtained from research, observation and monitoring with emphasis on the proper interpretation and management thereof to meet the information needs of governments, industry, science and the general public.

These objectives reflect the overall goal of UNESCO and IOC *(viz.* 'IOC Medium Term Strategy'), and do not conflict with the original objectives as presented and discussed during the '1st Session of the IOC Sub-Commission for the Western Pacific' in Hangzhou, PRC, 5-9 February 1990 [Annex IV of the Report].

By not deviating from IOC's overall scope of work, the Sub-Commission ensures adequate scientific backing from its headquarters in Paris. The WESTPAC Secretariat, although seemingly autonomous, cannot fulfil its task without being able to relate to the IOC's extensive network of contacts. Networking among its members and beyond, between scientific institutions and the user community, among scientists, policy-makers, national committees, industry and the general public will be the true and proven strength of IOC/WESTPAC. A networking capacity does not just build on interconnecting computers but that unites the people of the region.

The workplan discussed and agreed upon by each Session of the Sub-Commission must embody these four objectives. The strategy discussed above shall provide for a framework for the projects and activities to be implemented, and for the projects to be realistic and constructive, coherent and systematic, projects that demonstrate the value of the Sub-Commission to the region.

It should however be recognized that strategies evolve and that the current strategy may have to be changed in accordance with the decisions of the Assembly in regard to the recommendations of the IOC *ad hoc* study group on IOC Development, Operations, Structure and Statutes (DOSS-2) as reported to the Thirty-first Session of the IOC Executive Council in November 1998.

The ultimate test for the Sub-Commission as a viable and necessary organization, depends on the Member States accepting responsibility to continuously promote, develop and expand WESTPAC, not only during three yearly sessions, but through an adequate commitment, response and networking function.

3. IMPLICATIONS FOR THE SUB-COMMISSION AND ITS SECRETARY

The subsequent realization of the objectives, as laid out in the strategy has certain implications for the Sub-Commission and its Secretariat.

In terms of its merit to individual Member States. There is no room for a self-seeking attitude. Nonetheless, the Sub-Commission has an obligation to serve its Member States through activities that benefit the Sub-Commission as a whole. This benefit is not always made explicit. The Sub-Commission through its Secretariat will discuss possible actions and plans that would enlarge the role and influence of the Sub-Commission in the region.

Action required from the Session: Discuss actions that might help to improve the image of the Sub-Commission that can be pursued during the ensuing intersessional period.

In terms of programmeme definition and implementation. The Sub-Commission must depart from its current practice of implementing a series of *ad hoc* activities that have little or no impact (read: visibility and usefulness) for the region as a whole. Firstly, the activities of WESTPAC should be driven by the demands set by society, as expressed by its Member States, and they should reflect the common interest of the Region as a whole. Secondly, respecting the right of Member States to propose different options, there is a collective duty of all States to **set priorities** of what the Sub-Commission is to do. The preservation of consensus cannot override this fundamental responsibility of Member States. Thirdly, there is a need for a **systematic** and **coherent** approach to programme design, for which, as under the HAB capacity building programme and the NEAR-GOOS, it is foreseen a long-term, comparatively advantageous role for the IOC/WESTPAC Sub-Commission and its Secretariat. Fourthly, projects and programmes should follow universally accepted standards and practices of good management, accordingly, they should have well-defined objectives, pre-defined timeframes, and clearly identified accomplishments, against which they can be continuously evaluated through appropriate mechanisms.

In addressing priorities, there will be instances when a new programme or collaborative activity is perceived as being of the highest importance or where the availability of funds simply requires a redefinition of the original plan. Therefore, programme definition should be **flexible** in order to allow the Sub-Commission to carry out revised or new activities that are beneficial to the Sub-Commission.

Action required from the Session: Define the priorities for the Sub-Commission and work out a set of guidelines for the definition of objectives and evaluation mechanisms for the WESTPAC programme and project activities. [see also: Annex V of the 'Report of the 3rd Session of IOC/WESTPAC', 26 February – 1 March 1996, Tokyo]

In terms of its internal functioning. The Sub-Commission must introduce substantial and detailed reforms to procure a **streamlined** regional structure well adapted for implementing the operational programme approved by Member States. The sessions will be made more effective, using different mechanisms for intersessional consultation and **improved communication**. The Sub-Commission should further improve its principal functions through a higher degree of commitment from Member States with emphasis on the role of the national focal points or subsidiary national committees (for instance, national GOOS committees). Member States must realize that it is up to Member States to implement the actual programmes and to supply the political will and financial support for the actions to happen.

Action required from the Session: Identify and elaborate methods to improve the functioning of the Sub-Commission, including a discussion on the sustainable financial procurement. Revise and redefine if necessary the role of the Secretariat, chair and vice-chairs, project leaders, programme coordinators, Member States, and national focal points. [see also: 'Annex VIII of the Report of the 16th Session of the IOC General Assembly', 7-21 March, 1991, Paris].

In terms of its Secretariat: The Secretariat has neither the capacity nor the responsibility to carry out programmes. The role of the Secretariat is to facilitate and co-ordinate the programmes and efforts of the Member States, to provide information, organize necessary meetings, and to generally monitor the work of the Sub-Commission. The WESTPAC Secretariat should improve its communication to both IOC Headquarters and Member States. A decentralization mechanism, in terms of budget and administration, should be used to ensure proper regional commitments and their functions.

Action required from the Session: Consider means to facilitate and improve the work of the Secretariat through an appropriate decentralization mechanism and/or through the secondment of staff or the provision of other services to the Sub-Commission [see also Annex V of Report of the 2nd Session of the IOC/Sub-Commission for the Western Pacific, 25-29 January 1993, Bangkok]. Provide guidelines for the proper supervision of the Secretariat by the chairperson and vice-chairpersons.

In terms of linkages with other agencies: The Sub-Commission can greatly benefit from activities that are co-financed or co-organized with other agencies. The WESTPAC Secretariat should acquire a reputation of logical partner in many marine science related programmes. Such cooperation should not proceed at the cost of the main work of the Sub-Commission as defined in its workplan.

Action required from the Session: Identify and prioritize resources for the Secretariat or representatives from Member States to participate in strategic meetings of relevant agencies.

ANNEX VIII

LIST OF ACRONYMS

ACC	Administrative Committee on Co-ordination (UN)
AIT	Asian Institute of Technology
APN	Asian Pacific Network for Global Change Research
Argo	Array for Real-time Geostropic Oceanography (CLIVAR-GODAE)
ARLINDO	Arus Lintas Indonen (Study of the Indonesian Ocean Circulation and Mixing)
ASEAN	Association of South East Asian Nations
CCOP	Co-ordinating Committee for Coastal and Offshore Geoscience Programme in East and South East Asia
CIDA	Canadian International Development Agency
CLIVAR	Climate Variability and Predictability
COASTS	Programme on Coastal Ocean Advanced Science and Technology Study
CPMS-II	ASEAN-Canada Marine Science Programme-Phase II
CREAMS	Circulation Research of the East Asian Marginal Seas
DBCP	Data Buoy Cooperation Panel
DOSS-2	Study Group on IOC Development, Operations, Structure and Statutes
EANET	East Asia Network for Environmental Monitoring
ENSO	El Niño and the Southern Oscillation (An Ocean/ Atmospheric Interaction Study)
ERTC	Environment Research and Training Centre Thailand
EU	European Union
FAO	Food and Agriculture Organization (UN)
GCOS	Global Climate Observing System
GEF	Global Environment Facility
GEOHAB	Global Ecology of Harmful Algal Blooms
GESAMP	IMO-FAO-UNESCO-WMO-WHO-IAEA-UN-UNEP Joint Group of Experts on the Scientific Aspects of Marine Environment Protection
GIPME	Global Investigation of Pollution in the Marine Environment
GODAE	Global Ocean Data Assimilation Experiment
GOOS	Global Ocean Observing System
GPA-LBA	Global Plan of Action for the Protection of the Marine Environment from Land-based Sources
HAB	Harmful Algal Blooms
HOTO	Health of the Ocean (module of GOOS)
IAEA	International Atomic Energy Agency
IBCWP	International Bathymetric Chart of the Western Pacific
ICAM	Integrated Coastal Areas Management
ICRI	International Coral Reef Initiative
IGBP	International Geosphere-Biosphere Programme
IGOS	Integrated Global Observing Strategy
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission (UNESCO)
IODE	International Oceanographic Data and Information Exchange
JCOMM	Joint Technical Commission for Oceanography and Marine Meteorology (IOC-WMO)
JECSS	Japan and East China Seas Study
JGOFS	Joint Global Ocean Flux Study (IGBP)
JODC	Japan Oceanographic Data Centre
KES	Kuroshio Extension Study
KOICA	Korea International Cooperation Agency
KORDI	Korea Ocean Research and Development Institute
LOICZ	Land-Ocean Interactions in the Coastal Zone
MOMAF	Korean Ministry of Maritime Affairs and Fisheries
NEAR-GOOS	North-East Asian Regional GOOS

NEC	North Equatorial Current
NOWPAP	Northwestern Pacific Action Plan
ODC	Ocean Dynamics and Climate
OSLR	Ocean Science in Living Resources
OSNLR	Ocean Science and Non-Living Resources
PBECS	Pacific Basin-wide Extended Climate Study
PICES	North Pacific Marine Science Organization
QA/QC	Quality Assurance/Quality Control
SARCS	Southeast Asia Regional Committee for START
SEA START/RC	Southeast Asia Regional Centre START (SARCS)
SEACAMP	South East Asia Centre for Atmospheric and Marine Prediction
SEAFDEC	Southeast Asian Fisheries Development Centre
SEA-GOOS	South East Asian GOOS
SEAPOL	South-East Asian Programme in Ocean Law
START	Global Change System for Analysis, Research and Training
SOPAC	South Pacific Applied Geoscience Commission
TAO	Tropical Atmospheric Ocean
TDA	Transboundary Diagnostic Analysis
TEMA	Training and Education and Mutual Assistance
TOCS	Tropical Ocean Climate Studies
TRITON	TRIangle Trans Ocean buoy Network)
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programmeme
UNEP-EAS/RCU	UNEP East Asian Seas Regional Co-ordinating Unit
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNU	United Nations University
WCRP	World Climate Research Programme
WESTPAC	IOC Sub-Commission for the Western Pacific
WMO	World Meteorological Organization

In this Series

Languages

Reports of Governing and Major Subsidiary Bodies, which was initiated at the beginning of 1984, the reports of the following meetings have already been issued:

1.	Eleventh Session of the Working Committee on international Oceanographic Data Exchange	E, F, S, R
2.	Seventeenth Session of the Executive Council	E, F, S, R, Ar
3.	Fourth Session of the Working Committee for Training, Education and Mutual Assistance	E, F, S, R
4.	Fifth Session of the Working Committee for the Global Investigation of Pollution in the Marine Environment	E, F, S, R
5.	First Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions	E, F, S
6.	Third Session of the *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	E, F, S, R
7.	First Session of the Programme Group on Ocean Processes and Climate	E, F, S, R
8.	Eighteenth Session of the Executive Council	E, F, S, R, Ar
9.	Thirteenth Session of the Assembly	E, F, S, R, Ar
10.	Tenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific	
11.	Nineteenth Session of the Executive Council, Paris, 1986	E, F, S, R, Ar
12.	Sixth Session of the IOC Scientific Committee for the Global Investigation of Pollution in the Marine Environment	E, F, S
13.	Twelfth Session of the IOC Working Committee on International Oceanographic Data Exchange	E, F, S, R
14.	Second Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, Havana, 1986	E, F, S
15.	First Session of the IOC Regional Committee for the Central Eastern Atlantic, Praia, 1987	E, F, S
16.	Second Session of the IOC Programme Group on Ocean Processes and Climate	E, F, S
17.	Twentieth Session of the Executive Council, Paris, 1987	E, F, S, R, Ar
18.	Fourteenth Session of the Assembly, Paris, 1987	E, F, S, R, Ar
19.	Fifth Session of the IOC Regional Committee for the Southern Ocean	E, F, S, R
20.	Eleventh Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Beijing, 1987	E, F, S, R
21.	Second Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Arusha, 1987	E, F
22.	Fourth Session of the IOC Regional Committee for the Western Pacific, Bangkok, 1987	English only
23.	Twenty-first Session of the Executive Council, Paris, 1988	E, F, S, R
24.	Twenty-second Session of the Executive Council, Paris, 1989	E, F, S, R
25.	Fifteenth Session of the Assembly, Paris, 1989	E, F, S, R
26.	Third Session of the IOC Committee on Ocean Processes and Climate, Paris, 1989	E, F, S, R
27.	Twelfth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Novosibirski, 1989	E, F, S, R
28.	Third Session of the Sub-Commission for the Caribbean and Adjacent Regions, Caracas, 1989	E, S
29.	First Session of the IOC Sub-Commission for the Western Pacific, Hangzhou, 1990	English only
30.	Fifth Session of the IOC Regional Committee for the Western Pacific, Hangzhou, 1990	English only
31.	Twenty-third Session of the Executive Council, Paris, 1990	E, F, S, R
32.	Thirteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, New York, 1990	English only
33.	Seventh Session of the IOC Committee for the Global Investigation of Pollution in the Marine Environment, Paris, 1991	E, F, S, R
34.	Fifth Session of the IOC Committee for Training, Education and Mutual Assistance in Marine Sciences, Paris, 1991	E, F, S, R
35.	Fourth Session of the IOC Committee on Ocean Processes and Climate, Paris, 1991	E, F, S, R
36.	Twenty-fourth Session of the Executive Council, Paris, 1991	E, F, S, R
37.	Sixteenth Session of the Assembly, Paris, 1991	E, F, S, R, Ar
38.	Thirteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Baja California, 1991	E, F, S, R
39.	Second Session of the IOC-WMO Intergovernmental WOCE Panel, Paris, 1992	English only
40.	Twenty-fifth Session of the Executive Council, Paris, 1992	E, F, S, R
41.	Fifth Session of the IOC Committee on Ocean Processes and Climate, Paris, 1992	E, F, S, R
42.	Second Session of the IOC Regional Committee for the Central Eastern Atlantic, Lagos, 1990	E, F
43.	First Session of the Joint IOC-UNEP Intergovernmental Panel for the Global Investigation of Pollution in the Marine Environment, Paris, 1992	E, F, S, R
44.	First Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1992	E, F, S
45.	Fourteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Paris, 1992	E, F, S, R
46.	Third Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Vascoas, 1992	E, F
47.	Second Session of the IOC Sub-Commission for the Western Pacific, Bangkok, 1993	English only
48.	Fourth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, Veracruz, 1992	E, S
49.	Third Session of the IOC Regional Committee for the Central Eastern Atlantic, Dakar, 1993	E, F
50.	First Session of the IOC Committee for the Global Ocean Observing System, Paris, 1993	E, F, S, R
51.	Twenty-sixth Session of the Executive Council, Paris, 1993	E, F, S, R
52.	Seventeenth Session of the Assembly, Paris, 1993	E, F, S, R
53.	Fourteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Tokyo, 1993	E, F, S, R
54.	Second Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1993	E, F, S
55.	Twenty-seventh Session of the Executive Council, Paris, 1994	E, F, S, R
56.	First Planning Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Melbourne, 1994	E, F, S, R
57.	Eighth Session of the IOC-UNEP-IMO Committee for the Global Investigation of Pollution in the Marine Environment, San José, Costa Rica, 1994	E, F, S
58.	Twenty-eighth Session of the Executive Council, Paris, 1995	E, F, S, R
59.	Eighteenth Session of the Assembly, Paris, 1995	E, F, S, R
60.	Second Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1995	E, F, S, R

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61.	Third Session of the IOC-WMO Intergovernmental WOCE Panel, Paris, 1995	E only
62.	Fifteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Papetee, 1995	E, F, S, R
63.	Third Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1995	E, F, S
64.	Fifteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange	E, F, S, R
65.	Second Planning Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1995	English only
66.	Third Session of the IOC Sub-Commission for the Western Pacific, Tokyo, 1996	English only
67.	Fifth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, Christ Church, 1995	E, S
68.	Intergovernmental Meeting on the IOC Black Sea Regional Programme in Marine Sciences and Services	E, R
69.	Fourth Session of the IOC Regional Committee for the Central Eastern Atlantic, Las Palmas, 1995	E, F, S
70.	Twenty-ninth Session of the Executive Council, Paris, 1996	E, F, S, R
71.	Sixth Session for the IOC Regional Committee for the Southern Ocean and the First Southern Ocean Forum, Bremerhaven, 1996	E, F, S, R
72.	IOC Black Sea Regional Committee, First Session, Varna, 1996	E, R
73.	IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Fourth Session, Mombasa, 1997	E, F
74.	Nineteenth Session of the Assembly, Paris, 1997	E, F, S, R
75.	Third Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1997	E, F, S, R
76.	Thirtieth Session of the Executive Council, Paris, 1997	E, F, S, R
77.	Second Session of the IOC Regional Committee for the Central Indian Ocean, Goa, 1996	E only
78.	Sixteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Lima, 1997	E, F, S, R
79.	Thirty-first Session of the Executive Council, Paris, 1998	E, F, S, R
80.	Thirty-second Session of the Executive Council, Paris, 1999	E, F, S, R
81.	Second Session of the IOC Black Sea Regional Committee, Istanbul, 1999	English only
82.	Twentieth Session of the Assembly, Paris, 1999	E, F, S, R
83.	Fourth Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1999	E, F, S, R
84.	Seventeenth Session of the International Coordination Group for the Tsunami Warning System in the Pacific, Seoul, 1999	E, F, S, R
85.	Fourth Session of the IOC Sub-Commission for the Western Pacific, Seoul, 1999	English only