Intergovernmental Oceanographic Commission
Reports of Governing and Major Subsidiary Bodies

IOC Regional Committee for the Western Pacific

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1. OPENING

1 The Chairman of the Regional Committee, Dr. John S. Bunt, called the Committee to order at 10.00 on 22 June 1987. The Chairman invited Miss Prapasri Thanasukarn, Director of Research Projects and Co-ordination Division, National Research Council of Thailand, who was also responsible for the local secretariat arrangements, to introduce the speakers.

2 She called first on the Secretary-General of the National Research Council of Thailand, Dr. Choompol Swasdiyakorn, to address the Committee.

3 The Secretary-General warmly welcomed the participants to Bangkok and expressed his appreciation to the IOC for having accepted his country's invitation.

4 The Fourth Vice-Chairman of the IOC, Dr. Aprilani Soegiarto, on behalf of the Chairman of the Commission, Prof. Ulf Lie, and the Secretary, Dr. Mario Ruivo, expressed the thanks of the Commission to the Government of Thailand, and particularly the National Research Council, for having invited the Commission to hold the present Session in Thailand, and for the excellent facilities made available. The Fourth Vice-Chairman then briefly reviewed the evolution of WESTPAC as a regional mechanism of the Commission. He reminded the participants that the question of upgrading the Regional Committee to an IOC Sub-Commission was before the Committee at this Session; he felt that this, if backed by adequate resources and support for an IOC regional secretariat for WESTPAC, would be an important step forward in the evolution of regional co-operation in the field of marine sciences and ocean services in the western Pacific.

5 The Unesco Regional Co-ordinator for Asia and the Pacific, Mr. Makaminan Makagiansar, on behalf of the Director-General of Unesco, Mr. Amadou-Mahtar M'Bow, expressed the appreciation of Unesco to the Government of Thailand. He recalled Unesco's longstanding concern with the development of the marine sciences, and the decision by Unesco to establish the Intergovernmental Oceanographic Commission in 1960 which has proven to be well justified, since the use of the oceans has increased dramatically, under the impulse of increased maritime trade and the Third UN Conference on the Law of the Sea. Many of the tenets of the Convention on the Law of the Sea have been incorporated into State practice, and the creation, by a majority of States, of Exclusive Economic Zones has brought greatly increased interest in the exploration and exploitation of marine resources as well as greatly increased responsibilities for their rational management which calls for increased international co-operation in marine science. The Unesco Regional Co-ordinator wished the Regional Committee every success in its work.

6 The Minister of Science, Technology and Energy, of Thailand, H.E. Banyad Buntadthan, then formally welcomed the participants to Thailand. He stressed his country's deep involvement in marine affairs, and particularly in regional co-operation in the marine sciences, not only because of Thailand's maritime interests but also because of the increasing exploration

and exploitation of marine resources, whether living or non-living. The Minister expressed his hope that the work of the Committee would be crowned with success, and formally declared the Fourth Session of the Regional Committee open.

2. ADMINISTRATIVE ARRANGEMENTS

2.1 ADOPTION OF THE AGENDA

7 The Regional Committee adopted the Provisional Agenda as is. The Agenda as approved is attached as Annex I.

2.2 DESIGNATION OF THE RAPPORTEUR

8 Thailand proposed Dr. Keisuke Taira of Japan. Indonesia seconded this proposal.

9 The Regional Committee designated Dr. Taira as Rapporteur for this Session.

2.3 CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION

10 The Technical Secretary for the Session, Dr. Mazhar Haq, proposed a modus operandi for the Session, noting that certain constraints in availability of facilities required the Committee to work between 09.00 and 17.00. In the light of these constraints, the Technical Secretary reviewed the Provisional Timetable and the associated activities (a talk by the Vice-Chairman of the IOC-UN(OETB) Guiding Group of Experts on Ocean Science in Relation to Non-Living Resources, Dr. Peter Cook, and five films presented by Indonesia and The Netherlands on the SNELLIUS-II Expedition and on the marine scientific activities thereof). He also reviewed the documentation for the Session.

11 The Technical Secretary then informed the Regional Committee of the purpose of the ad hoc Informal Expert Consultations held from 17 to 19 June 1987, prior to this Session. He said the Secretary IOC, taking into account the specific areas of interest shown by the Member States of the Region, had invited a small number of concerned experts to assist in the preparation of project proposals for submission to the Regional Committee for consideration as possible WESTPAC projects. Altogether nine proposals had been prepared on various topics. He invited the Regional Committee to review these proposals, suggest improvements, where necessary, and recommend measures for their implementation.

12 The Regional Committee stated that, while it appreciated the high quality of the documentation, it was extremely concerned with the late distribution of certain key documentation, which made it very difficult for the Delegations to prepare properly for certain Agenda Items, particularly since some key documents were presented in the English version only.

3. REVIEW OF INTERSESSIONAL ACTIVITIES

3.1 REPORT OF THE SECRETARY

13 The Technical Secretary introduced the Report on intersessional activities (Document IOC/WESTPAC-IV/6). Despite a continuing shortage of staff in the Secretariat of the Commission and a limited budget as a result of analogous reductions in Unesco, which hampered the implementation of some of the Commission's programmes and activities at the global and regional levels, there has been considerable progress in certain domains largely because of initiatives taken by the Member States and their institutions in the region.

14 The salient features of activities undertaken and the results achieved during the intersessional period are briefly summarized below.

- Progress in the regional component of Ocean Dynamics and Climate, was hampered owing to a number of factors, including the general lack of trained physical oceanographers in many developing countries, which accounted for slow development of national efforts in this field. However, in other Member States, particularly in the developed ones, the activity in Ocean Dynamics and Climate reached a high level.

- Activities under OSLR progressed steadily leading to identification of topics of potential interest to the Member States and to the preparation of co-operative research study projects: one on recruitment of penaeid prawns in the Indo-Western Pacific region; and the other in phytoplankton blooms and red tides. Both these project proposals were initiated by the Task Team on OSLR in the Western Pacific and developed further in various international fora and in co-operation with interested international organizations (namely, FAO).

- The progress within OSNLR was hampered by a lack of resources and that until the WESTPAC Group of Experts on Marine Geology and Geophysics met in late 1986, there had been no specific WESTPAC OSNLR activity. The Group of Experts identified and formulated co-operative study project proposals on Sea-Level, Environments and Tectonics (SET) and the Margins of Active Plates (MAP) as recommended by the Regional Committee at its Third Session.

- The Global Investigation of Pollution in the Marine Environment (GIPME) and the Marine Pollution Monitoring System (MARPOLMON) in the region grew steadily. The Task Team on Marine Pollution Research and Monitoring met in Townsville, Australia, April 1985, and developed a work programme for the intersessional period, which focussed attention mainly on: strengthening of regional components; elaboration and introduction of methods developed particularly by the GIPME Group of Experts on Methods, Standards and Intercalibration (GEMSI); increased emphasis on the study of effects of pollutants; increased co-operation with relevant organizations and programmes in the region (notably COBSEA, SPREP and UNEP).

15 In Ocean Services, the following results during the intersessional period are noteworthy:

- Modest progress in the development of the IOC/WMO Integrated Global Ocean Services System (IGOSS), particularly following the Joint WMO-IOC IGOSS Implementation Co-ordination Meeting for the Extended Pacific Region (Costa Rica, November 1983), which identified causes as well as solutions to problems affecting the development of the programme;

- Publication of mean-sea-level anomalies;

- The development of data-handling mechanisms, notably at the IGOSS-IODE Meeting on Data Flow (Tokyo, November 1984);

- Establishment of an IGOSS Specialized Oceanographic Centre for the Pacific by Japan;

- Launching of the IGOSS Sea-Level Pilot Project for the Pacific (ISLPP) in 1984 to initiate the operational exchange of mean-sea-level (MSL) data and the preparation of MSL charts by the Specialized Oceanographic Centre in Honolulu as a contribution to the IOC Global Sea-level Observing System (GLOSS).

- The number of Member States of the region involved in GLOSS increased steadily.

- Within the framework of IODE, there has been continuing efforts to increase training of scientists and to develop National Oceanographic Data Centres (NODC) and their relationship to the Responsible National Oceanographic Centre (RNODC) for WESTPAC.

16 Co-operation with other bodies in the region, in particular with the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources (SEATAR) and the Joint CCOP(SOPAC)-IOC Working Group on South Pacific Tectonics and Resources (STAR) grew progressively; SEATAR has mainly concerned itself with the publication of the SEATAR Transects whereas STAR has undertaken several regional projects.

17 Under TEMA, co-operation between the developed and developing Member States continued to grow steadily, thereby strengthening partnership amongst them and creating conditions for further improvement in various fields of ocean science and services. During the intersessional period, 108 scientists from the WESTPAC region received training on board research vessels and in courses on various topics such as Oceanographic Data Management, Marine Pollution Research and Monitoring; Ocean Engineering and its Interface with Marine Sciences; and the Orientation Course on the Scientific Basis for Management of the Coastal Zone. In addition, support was given to a number of scientists to participate in Workshops, Symposia, etc., held in the region.

18 A number of Delegates stated that the Secretary's Report tends to focus on regional input to IOC's global programmes and that as a consequence the specific achievements of the Regional Committee did not receive sufficient emphasis. Concern was also expressed on the four-year intersessional period since the previous meeting. These Delegates urged the

Committee to not only take decisive action to adopt high priority programmes, but also to ensure that these programmes will be implemented effectively during the next intersessional period.

19 In the context of the Ocean Dynamics and Climate Programme one Delegate suggested that the slow development of the Ocean Dynamics projects in the region reflects the strong efforts made by WESTPAC Member States in developing the World Climate Research Programme, and particularly its ocean components TOGA and WOCE.

20 The Regional Committee requested that the specific observations made by Delegates be taken into account in revising the Report with a view to producing a final version.

3.2 OUTCOME OF THE SYMPOSIUM ON MARINE SCIENCE IN THE WESTERN PACIFIC: INDO-PACIFIC CONVERGENCE

21 The Chairman reported on the outcome of the Symposium, held in Townsville, Queensland, 1-6 December 1986, which had been organized by the Australian Department of Science under the aegis of IOC in support of WESTPAC, with contributions in kind and services from the Australian Institute of Marine Science, the Great Barrier Reef Marine Park Authority, the James Cook University, the Sir George Fisher Centre for Tropical Marine Science, and the Townsville City Council.

22 The main general conclusions of the Symposium (see Document IOC/INF-698) were: (i) the Indo-Pacific convergence is an exciting area scientifically; (ii) the geology and geophysics, already known to be complex, was shown to be even more complex, with micro-plate tectonics playing important local roles in volcanism, seismicity and mineralogenesis; (iii) the equatorial connection between the Pacific and Indian Oceans has enormous oceanographic and climatological consequences, the main source of the water passing from the Pacific Ocean to the Indian Ocean, and the preferred pathways, still raising controversy; (iv) quite small changes in the Pacific Ocean's sea-surface temperature have great climatic consequences; (v) upwelling is more than the classical process, sometimes playing a joint role with local bottom topography, cyclones, and reef morphology in the distribution of nutrients and of bottom sediments; (vi) the relationship between environmental variability and living resource abundance, whether harnessed or not, is still generally elusive; (vii) there is, in general, a conflict between conservation and increased use of particular resources - notably coral reefs, mangroves and sea-grass beds - and the wider need to harmonize economic, biological and social objectives in drawing up marine management strategies, whether locally or region-wide, as in the case of sea birds, marine turtles and some fish (e.g., tunas); and (viii) there is a need, in most disciplines, for long time-series observations and, in oceanography, of regular long and deep sections in certain parts of the western Pacific to allow predictive models to be improved. It is expected that the two publications, an IOC Workshop Series papers and a set of proceedings will be issued in due course.

23 The Regional Committee expressed its satisfaction with the outcome and the impact of the Symposium, noting that it had provided an exceptional opportunity for an exchange of views between scientists of the region, amongst themselves and with marine scientists from outside the region, not

only within but also among the major ocean science disciplines. It noted the various conclusions of the Symposium that were relevant to the work of the Committee.

24 The Regional Committee thanked the Government of Australia, particularly its Department of Science and other Australian institutions, for having sponsored a number of international participants as well as co-ordinating arrangements for the Symposium. The Regional Committee also thanked those Member States, notably France, Japan, the USA and organizations, especially IOC and Unesco, which had provided support for many scientists from the region to attend the Symposium.

4. OCEAN SCIENCE IN THE WESTERN PACIFIC

25 The Chairman drew the attention of the Regional Committee to the nine project proposals prepared during the ad hoc Informal Expert Consultations, held from 17 to 19 June 1987, dealing with ocean science in the western Pacific. He stressed the need for the Committee to carefully review and assign priorities to these proposals and to assure that effective arrangements are made to implement each of the projects adopted.

26 The IOC Senior Assistant Secretary, Mr. Ray C. Griffiths, explained that the responsibility for the implementation of the approved co-operative research projects rests fundamentally with the Member States. The IOC, as presently structured and funded, can assist Member States in planning, promoting and co-ordinating their work by catalyzing action amongst them and by providing a framework for intergovernmental and international co-operation. To assist the work of and the implementation of the activities of the Commission's major subsidiary bodies (e.g. Scientific, Technical, Regional Committees), there is the possibility of creating mechanisms such as Task Teams and Group of Experts to deal with specific aspects. Basically, Task Teams work by correspondence or meet at the expense of the Member States concerned, and are disbanded as soon as they have accomplished their assignments. Groups of Experts may meet at the expense of the Commission if IOC funds are available and assigned to that purpose by a governing body of the Commission.

27 However, he noted that experience had shown that Task Teams and/or Groups of Experts were better suited to carry out specific reviews, studies, appraisals or prepare plans of action etc., but were rarely in a position to provide the required regular back-up, guidance and co-ordination of the approved activities. He emphasized that this could only come from those actually interested and engaged in project implementation. A co-operative network is a system of co-operation based on the principle of partnership, self-help and concerted action amongst the interested institutions/scientists, for the purpose of planning, promoting, co-ordinating and implementing agreed projects of common interest to them. For a network to be functional and successful, the operational plan of a given project should determine the precise nature of participation by each co-operating institution/scientist and, where necessary, identify training or assistance needs to ensure effective implementation of a given project.

28 Such a mechanism requires that a small Expert Steering Group consisting of competent and active scientists committed to a given project and charged with ensuring the effectiveness of the network and the implementation of the project be created. The Members of an Expert Steering Group should have access to a particularly good system of communication (telephone, telex, telemail, etc.) and information transfer (effective mailing service; if possible, facsimile as well). Expert Steering Groups should be the "motor" for the implementation of each agreed project. Such an Expert Steering Group could be led by a Project Leader and, where there were two or more projects within a major programme (e.g., OSLR), the Project Leaders could constitute a regional Guiding Group of Experts. This Group could, in accordance with the current IOC practice, choose one of its members to be its Chairman.

29 The Senior Assistant Secretary also pointed out that the Regional Committee was expected, in accordance with IOC practice, to review during its Sessions the need to continue or disband a Group of Experts or a Task Team, or to modify or recommend changes in its Terms of Reference, if necessary to achieve its specific purposes.

30 The Chairman advised the Regional Committee to bear in mind the conceptual framework for the implementation of co-operative research projects and of regional components of Ocean Services, including Observing Systems through networks when considering the various project proposals under the following Agenda Items. He reminded the participants that these proposals had been prepared or finalized during the ad hoc informal Expert Consultations held immediately prior to the present Session.

4.1 REGIONAL COMPONENT OF OCEAN SCIENCE IN RELATION TO LIVING RESOURCES (OSLR)

31 The Chairman of the WESTPAC Task Team on Ocean Science in Relation to Living Resources in the Western Pacific, Dr. Peter Rothlisberg, presented his report on the intersessional activities. He recalled that 38 members from 12 countries had been nominated to the four Study Groups of the Task Team.

32 The Members of the Task Team carried out their work through correspondence or meetings taking advantage of the presence of members at various scientific fora (Document IOC/WESTPAC-IV/Inf. 7). This activity has culminated in the presentation of two proposals to this Session: a co-operative regional research project on Recruitment of Penaeid Prawns in the Indo-Western Pacific Region (WESTPAC-PREP), as a regional component of OSLR, and a preliminary project proposal on Toxic and Anoxic Phenomena Associated with Algal Blooms in the Western Pacific region.

33 The Chairman of the Task Team then presented a brief account of the outcome of the IOC-FAO Workshop on Recruitment in Tropical Coastal Demersal Communities, held in Ciudad del Carmen, Mexico, April 1986, (Document IOC Workshop Report No. 44), highlighting those points of most relevance to the WESTPAC region, including the potential value of comparative tropical studies of recruitment in single species and the need for a study of the relationship between environmental cycles and recruitment dynamics of tropical penaeids (e.g., Penaeus merguiensis in the Indo-Western Pacific).

34 Reporting on the outcome of the Second Session of the IOC-FAO Guiding Group of Experts on OSLR (Rome, June 1987), the Chairman of the Task Team highlighted the following points: the Group's endorsement of the preparation of a project proposal on recruitment of penaeid shrimps, the details of which would be framed at a Workshop proposed to be held by Australia in 1988; an assessment of the potential future SARP studies in the WESTPAC region and the high priority given to publication of an OSLR Newsletter.

35 With regard to the topics relating to toxic and anoxic phenomena associated with algal blooms, he said that the IOC-FAO Guiding Group of Experts on OSLR had deferred examination until its membership comprises expertise in that area and that aspect would be addressed at the IOC Workshop on International Co-operation in the Study of Ocean Blooms and Red Tides, to be held following the International Symposium on Red Tides, in Takamatsu, Japan, 10-14 November 1987.

36 Two proposals for regional research projects in the framework of OSLR were then discussed in some detail.

(i) Proposal for a Project on Recruitment of Penaeid Prawns in the Indo-Western Pacific Region

37 Dr. Rothlisberg presented the above-mentioned proposal contained in Document IOC/WESTPAC-IV/8 Annex 1(i). He informed the Regional Committee that the current plan of implementation of Phase I of this proposal is to hold a Workshop in July 1988 in Australia that would: review existing published and unpublished data sets; conduct preliminary regional comparison of the data to highlight their strengths and shortcomings; provide hands-on experience in data analysis and modelling; standardize methods for the collection of relevant environmental, biological and fishery data; and initiate planning of the operational phase (Phase II).

38 The proposal received general support from the Delegates who noted that this research project would be important not only to an understanding of the penaeid fisheries of the region but also to a better understanding of the ecology of the shallow coastal zone through long-term interdisciplinary studies. These studies would comprise interdisciplinary research including fishery science, marine biology and ecology, and physical oceanography. The potential for the Member States to co-ordinate their current individual national efforts and to compare the results was stressed. Several specific questions were raised on the aims of a training workshop proposed under Phase I of the project. Some Delegates explained that the content was still tentative until a survey of the interest and capabilities of the potential participants from the region is completed and the needs of the potential participants firmly established.

39 The Regional Committee expressed its appreciation to Dr. Peter Rothlisberg for his report on the intersessional activities. It noted with satisfaction that the proposal on Penaeid Prawns had also been approved by the IOC-FAO Group of Experts on OSLR, at its Second Session (Rome, June 1987).

40 The Regional Committee, having considered in depth the proposal on Recruitment of Penaeid Prawns in the Indo-Western Pacific Region, recognized that it is based on sound scientific research generated in the last few years in the region and strongly endorsed its implementation as a regional component of OSLR.

41 The Regional Committee called on the Member States through their institutions interested in the project to constitute a regional co-operative network of such institutions in order to facilitate project implementation.

42 The Regional Committee recognized the need to identify TEMA needs relevant to the project so that a number of developing countries in the region and their institutions and scientific communities could participate effectively in the project. It therefore strongly recommended that the Workshop on Penaeid Recruitment Project Planning, proposed to be held in Australia in July 1988, identify TEMA needs, including equipment, as well as formulate a detailed operational plan of action so as to enable its efficient implementation.

43 The Regional Committee also requested the Secretary IOC, in consultation with FAO, to take appropriate steps to explore all possible sources of national and international funding (e.g., UNDP, World Bank, aid-giving agencies) and to formulate a project proposal under the Unesco-IOC Comprehensive Plan for a Major Assistance Programme to Enhance the Marine Science Capabilities of the Developing Countries for the implementation of the project.

(ii) Proposal for a Project on Toxic and Anoxic Phenomena Associated with Algal Blooms in the WESTPAC Region

44 The Chairman then invited Professor T. Nemoto to present the project proposal on Toxic and Anoxic Phenomena Associated with Algal Blooms in the Western Pacific.

45 Professor Nemoto informed the Regional Committee that toxic and anoxic phenomena associated with red tides and algal blooms are wide-spread in the region, causing paralytic and diarrhoetic shellfish poisoning in man, and fish kills. Because of the importance of the phenomena from the scientific and socio-economic viewpoints, the problems associated with them have received considerable attention in certain countries for the past several years. The Study Group on this subject, set up by the Task Team on OSLR in the Western Pacific, periodically reviewed the scientific aspects of the problems associated with red tides and recognized the need for a regional co-operative study of this important phenomenon. He referred to the Workshop on Toxic and Anoxic Phenomenon Associated with Red Tides, held in Cronulla, Australia, in 1984, a Training Workshop on Taxonomy and Techniques for Red Tide Research, held at the Chulalongkorn University, Bangkok, Thailand, in 1985, and the plans to hold an International Symposium on Red Tides, in Takamatsu, Japan, in November 1987, as some of the steps taken to develop a regional component of OSLR through which to promote a co-operative regional study of the phenomenon. Such an OSLR programme was also endorsed by the IOC Assembly at its Thirteenth and Fourteenth Sessions. Professor Nemoto emphasized that the study of red-tide phenomena was

essentially an interdisciplinary project requiring marine biologists, fishery scientists and oceanographers who need to study a number of parameters associated with, and/or responsible for, the incidence of red tides.

46 As part of Phase I of a regional co-operative study of this phenomenon, it is proposed to take advantage of the above-mentioned International Symposium on Red Tides and the associated IOC Workshop on International Co-operation in the Study of Ocean Blooms and Red Tides, to develop a full-scale operational plan, including identification of interested institutions and/or scientists that could participate in a network; it is also expected that the IOC Workshop would give an opportunity to identify specific TEMA needs in support of the project. Professor Nemoto stressed the view that the project will rely heavily on national efforts as well as on international funding. The Secretary IOC should be requested to explore such a possibility.

47 Several Delegates spoke in favour of the project, pointing out that the phenomena are not only widespread but also complex, owing to the fact that the causative agents are often different.

48 The Regional Committee expressed its thanks to Professor Nemoto for his presentation of the proposal.

49 The Regional Committee strongly endorsed the project proposal, and invited the Member States and their interested institutions to participate effectively in the co-operative investigation of the phenomena in the region and their effects on the marine resources and the marine environment of the region.

50 The Regional Committee welcomed the offer of Japan to host the IOC Workshop on International Co-operation in the Study of Ocean Blooms and Red Tides, and the Japanese initiative in organizing the International Symposium on Red Tides, in Takamatsu, Japan, in November 1987. It called on the organizers of the Symposium and of the Workshop to include in the Agenda an item on the development of a plan of operation for the proposed project, to identify institutions and scientists interested in participating in the project with a view to establishing a co-operative network for the study of red tides, and to identify TEMA needs of participating institutions and scientists.

51 The Regional Committee also agreed to the proposal to produce a WESTPAC Newsletter on Red Tides to be issued initially through the Chairman's office and eventually by the IOC Secretariat for WESTPAC .

52 The Regional Committee recognized the importance of close collaboration between scientists involved in the prawn and red-tide projects and those involved in research projects in the framework of Ocean Dynamics and Climate (see Section 4.3), and believed that the current project proposal on Continental Shelf Circulation which is being developed under WESTPAC in parallel with the project on Recruitment of Penaeid Prawns could form an excellent basis for the interdisciplinary studies required by the latter.

53 The Regional Committee also recognized the value of a close link between the proposed workshops, one on the Penaeid Recruitment Project Planning and the other on the International Co-operation in the Study of Ocean Blooms and Red Tides, and the activities of the IOC-FAO Guiding Group of Experts on OSLR and the IOCARIBE Group of Experts on the Tropical Demersal Recruitment Project. It requested the IOC-FAO Guiding Group of Experts to encourage new initiatives on the penaeid recruitment and red-tide studies recommended by the Regional Committee at its present Session.

54 The Regional Committee also noted that potential research projects may initially involve a small number of the Member States and their institutions; it encouraged, however, a steady, even if slow, growth from a small nucleus of initial participants through the progressive involvement of other Member States in the agreed co-operative research projects.

55 The Regional Committee also identified the following topics of potential interest for future regional co-operative research studies in the framework of a regional component of OSLR: (i) IREP(SARP) - studies on Indo-western Pacific clupeoid stocks (e.g., Japanese sardines); (ii) IREP studies on squid populations in the western Pacific; (iii) IREP(TRODERP) studies on: (a) Estuary-dependent fish and eels (e.g., Lates calcarifer, Anguilla japonica); (b) Vertebrate and invertebrate resources associated with hard-bottoms (coral, limestone and artificial reefs); (c) Soft-bottom benthos (e.g., the Japanese-Thailand co-operative study of the Gulf of Thailand); (iv) The relationship between oceanic productivity and resources associated with characteristic oceanographic features of the western Pacific (e.g., western boundary currents and their associated warm-core rings, frontal zones, upwelling areas, deep basins and trenches).

56 The Regional Committee requested the IOC-FAO Guiding Group of Experts on OSLR, in consultation with WESTPAC experts, to advise on the desirability and feasibility of such studies to be undertaken in the future.

4.2 REGIONAL COMPONENT OF OCEAN SCIENCE IN RELATION TO NON-LIVING RESOURCES (OSNLR)

57 The Vice-Chairman of the IOC-UN(OETB) Guiding Group of Experts on Ocean Science in Relation to Non-Living Recources, Dr. Peter Cook, made a brief presentation of the work of the Guiding Group (Document IOC/WESTPAC-IV/Inf.13).

58 The Guiding Group, at its Second Session, held in Paris, January 1987, modified the Global OSNLR Project on Sea-level, Environments and Tectonics in the Past Million Years (SETMY) to "Sediments, Eustatic Sea-level Changes, Environments, Tectonics and Resources (SETR) which would be pursued through the regional couponents. Depending on the resources being considered, SETR has various components, such as the coastal zone as a resource itself, construction materials, placer deposits, and phosphorites. The identification and mapping of strand lines 18 000 years B.P. and 125 000 years b.p. was seen as particularly important scientifically and economically. The Guiding Group of Experts considered the understanding of tectonics at convergent and divergent plate boundaries and the occurrence of

metalliferous crusts and sedimentary sequences in marginal basins to be of great relevance to the formation of marine non-living resources. The Guiding Group also expressed strong support for the Ocean Drilling Project (ODP).

59 At its Fourteenth Session, the IOC Assembly endorsed the general thrust of the proposal of the Guiding Group of Experts as well as the establishment of a regional component and related expert groups for OSNLR, and strongly endorsed co-operation with relevant programmes such as the International Geological Correlation Programme (IGCP) and the Ocean Drilling Project (ODP).

60 Dr. Cook then reported on the development of the proposals formulated by the Group of Experts on Marine Geology and Geophysics in the Western Pacific, at its First Session (Townsville, Australia, 4-6 December 1986) for the following WESTPAC components of the OSNLR programme: (i) Sea-level, Environments and Tectonics (SET), encompassing (a) Sedimentary evolution on active margins and (b) Cenozoic reef evolution in space and time; and (ii) Margins of Active Plates (MAP), covering initially (a) Origin and evolution of microplates, (b) Back-arc tectonics, and (c) Collision tectonics. He informed the Regional Committee that the Group of Experts also recommended, with a view to stimulating implementation of the afore-mentioned research projects, the organization of Field Study Workshops (combining training and practical field work) for SET and MAP, once every two years for each project, if possible.

61 The Regional Committee expressed its thanks to Dr, Peter Cook for his report on the intersessional activities of OSNLR relevant to WESTPAC. It noted the extensive information on intersessional activities of the various IOC subsidiary bodies active in the field of marine geology and geophysics.

62 Two proposals for regional research projects in the framework of OSNLR were then discussed in some detail.

(i) Proposal for a Project on a WESTPAC Palaeogeographic Map

63 Dr. Peter Cook presented a project proposal, within the framework of SET, on a Palaeogeographic Map of the Western Pacific (Document IOC/WESTPAC/IV/8 Annex 2(i)). Explaining the usefulness of such a Map, he said that a decision would have to be made on the time slice or slices to be covered by it. The project attaches special importance to 18 000 B.P. and 125 000 B.P. which correspond to a period of low mean sea level and to one of high mean sea level, respectively. Each time slice should include, in particular, the most important sedimentological information to be based on present-day coastlines and locations.

64 The Regional Committee, taking into account the general value of palaeogeographic maps, recognized that the vast area of the western Pacific presented a certain number of practical difficulties, linked also with a wide range of national interest in such maps. The choice of time slices could be expected to vary from sub-region to sub-region so that a unified regional map might lack homogeneity in the data base and perhaps fail to be universally useful to all the Member States of the region.

65 The Regional Committee also noted that there was still no universal (or, at least, region-wide) agreement on certain criteria, such as Varl curves (related to palaeological mean sea level) and plate reconstruction methodology.

66 The Regional Committee called on the Group of Experts on Marine Geology and Geophysics in the Western Pacific, in consultation with the Vice-Chairman of the IOC-UN(OETB) Guiding Group of Experts, to review this proposal and to advise on how to proceed with this initiative.

(ii) Proposal for a Project on Margins of Active Plates (MAP)

67 The Chairman of the IOC Group of Experts in Marine Geology and Geophysics in the Western Pacific, Dr. Hideo Kagami, introduced the above-mentioned research project proposal (Document IOC/WESTPAC-IV/8 Annex 2(ii)). The main objective of the WESTPAC MAP Project is to determine the origin and evolution of microplates and to develop an adequate classification of them. The planning of this project is underway, notably through the Group of Experts on Marine Geology and Geophysics in the Western Pacific, and will be pursued through the following steps:

(a) Discussion of the Project and its co-ordination with CCOP scientists, at the next session of CCOP (November 1987), bearing in mind the need to harmonize activities with those of CCOP and of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources (SEATAR);

(b) Conduct of the First Field-Study Workshop on MAP in Papua New Guinea in August 1988;

(c) Organization of the First MAP Workshop in association with a "Symposium on Marine Geology in East Asia and the Pacific" to be held at Tonjin University, Shanghai, in September 1988, under the auspices of the Second Institute of Oceanography, the State Oceanic Administration, People's Republic of China. The Workshop, among other things, would be expected inter alia: (1) to consider the establishment of the Expert Steering Groups for each of the Sub-projects of MAP (Fore-arc slivers, Back-arc Spreading, and Collision Microplates); (2) to develop a detailed plan of activities for Phase I of the Project which will include a mid-term review workshop (or field-study workshop) and a final symposium to be held in Tokyo; and (3) to advise on the preparation of a complete bibliography which will be classified by region and/or origin of microplates.

68 The USSR Delegation proposed to organize, in support of WESTPAC, an international expedition to study hydrothermal activity and massive sulphide ores in marginal seas of the south-western Pacific. Such an expedition, if welcomed by the countries interested in the development of their underwater mineral resources, could use a Soviet research ship and submersible at the end of 1988. This could be a Soviet contribution to the project on MAP.

69 The Delegate of the United Kingdom announced that R.R.S. CHARLES DARWIN will be working in the WESTPAC region in 1988. In particular, the

GLORIA survey system would be deployed and geophysical studies would be undertaken which could contribute to the proposed MAP project. Contacts with scientists in individual countries were being developed.

70 The Regional Committee welcomed the offers of the USSR and the United Kingdom and urged the Member States of WESTPAC to take appropriate action to avail themselves of opportunities offered for the participation of scientists of the region in those activities; it also requested Member States to consider favourably requests to make available the required facilities for research ship operations in the region.

71 The Regional Committee approved the Margin of Active Plates (MAP) project proposal and endorsed the MAP Field Study Workshop in Papua New Guinea and the First MAP Workshop planned to take place in Shanghai, 1988.

72 The Chairman of the Joint CCOP-IOC Working Group on SEATAR, Dr. John Katili informed the Regional Committee that the Joint Working Group had done a lot of work over the last fifteen years. The ten SEATAR Transects (geological/geophysical transects in the East Asian region) were now almost ready for publication. There were, however, still two outstanding requirements: (i) the service of a Data Compiler to assist each Transect Co-ordinator in completing data compilation for publication, and in the preparation of supporting scientific text for each Transect; and (ii) publication, according to a uniform format. Such publication still requires substantial funding and an appropriate national institution to undertake printing and eventual distribution of printed Transects. Dr. Katili, supported by the CCOP Co-ordinator, Dr. John Ringis, appealed to the Regional Committee to assist in finding the solutions to these problems. He mentioned that the Government of The Netherlands may possibly be approached by IOC to make available an editor (Dr. Dirk Yongsma) for the publication of the transect synthesis. He also pointed out that the Joint Working Group on SEATAR needed a revised and up-to-date mandate for its future work, and invited the Regional Committee to think about such future work and provide guidance to the IOC on this matter, particularly bearing in mind the intention of the Joint Working Group to consider its future activities at its Thirteenth Session to be held in conjunction with the next session of CCOP (November 1987).

73 The IOC Senior Assistant Secretary, Mr. Ray C. Griffiths, summarized the activities accomplished by the various Study Groups of the Joint CCOP(SOPAC)-IOC Working Group on South Pacific Tectonics and Resources (STAR). He made particular reference to the following: creation of opportunities for the participation of developing country experts in the Ocean Drilling Project; compilation of data on many central Pacific sea mounts for the last 30 million years (to be published as IOC Technical Series No. 32); assessment of implementation of five major programmes on tectonics by various institutions in the region and the review of other relevant activities; compilation and syntheses of cruises in 1984-1985 and syntheses for 1986-1987, as well as a directory being prepared on Marine Geological Projects in the South Pacific; review of on-going projects and establishment of a system for standardizing the presentation of Island Drilling Projects; preparation of a STAR Workshop on Coastal and Nearshore Processes and Non-Living Resources, including identification of shallow-water bathymetry and currents and movement of suspended materials; identification of basic mapping and inventory, and monitoring of dynamic

phenomena, as two areas of application of remote sensing; and follow-up of recommendations of the CCOP(SOPAC)-IOC-IFREMER-ORSTOM Workshops on the Uses of Submersibles and Remotely Operated Vehicles in the South Pacific.

74 The Regional Committee noted with interest the progress in the activities of the Joint Working Groups on SEATAR and STAR. It recognized the importance of co-operation between the Group of Experts on Marine Geology and Geophysics in the Western Pacific and the IOC-UN(OETB) Guiding Group of Experts on OSNLR and the Joint Working Groups on SEATAR and STAR, and therefore recommended that IOC give due consideration to promoting co-operation amongst these subsidiary bodies of the Commission. It also recommended that IOC consider its representation at the next Session of CCOP, proposed to be held in November 1987, with a view to presenting its view on the future co-operation through SEATAR. The Regional Committee noted a call for financial assistance from Dr. Katili, Chairman of SEATAR, for publication of SEATAR Transects.

4.3 REGIONAL COMPONENT OF OCEAN DYNAMICS AND CLIMATE (ODC)

75 The Delegate of the United States reported that the Joint Scientific Committee (JSC) and the Committee on Climatic Changes and the Oceans (CCCO), with support from WMO, ICSU, IOC and SCOR, are actively involved in planning and implementing the World Climate Research Programme (WCRP) which includes the Study of the Tropical Ocean and Global Atmosphere (TOGA), the World Ocean Circulation Experiment (WOCE) and the International Satellite Cloud Climatology Programme (ISCCP), and may include a study of the CO_2 cycle. TOGA was initiated in 1985 and the data therefrom are being submitted to TOGA Data Centres for the preparation of TOGA products. A joint WMO-IOC Intergovernmental TOGA Board provides a forum for international consultation. The WOCE is expected to be initiated in 1990 and is being developed by the JSC-CCCO Scientific Steering Group for WOCE (SSG/WOCE). He reported that, in order to increase awareness of the WOCE programme, the Scientific Steering Group for WOCE wishes to invite the Regional Committee to co-sponsor a WOCE regional workshop in the western Pacific in 1988. The purpose of this Workshop would be to explain to scientists and representatives of funding agencies in the region WOCE scientific planning and programme objectives. He informed the Regional Committee that the first WOCE regional Workshop was held in Sao Paulo, Brazil, to which scientists from the Latin American countries were invited. He said that countries of the western Pacific and possibly those in adjacent regions would be invited to send scientists and other interested participants to such a Workshop, but funding is needed to support their attendance. The Scientific Steering Group for WOCE, with the support of the WOCE International Planning Office, would plan the Workshop.

76 Several Delegates acknowledged the value of WOCE and TOGA to the study of the ocean climate of the region, and endorsed the proposal of a Workshop to be held in the region.

77 The Delegates of Japan and China reported their involvement in the study of Kuroshio as well as in the Japan and East China Seas Study (JECSS).

78 The Regional Committee, having recognized the value of WOCE to the Ocean Dynamics and Climate Programme in the western Pacific, welcomed the

proposal of the SSG/WOCE and recommended that IOC co-sponsor the Workshop. It invited Member States to extend full support and participate in the proposed Workshop to be held in 1988 or early 1989. It also invited the Secretary IOC to seek financial support to facilitate the participation of scientists in the Workshop.

79 Three project proposals in the framework of the Ocean Dynamics and Climate Programme (ODC) were then discussed in some detail, one each under Agenda Items 4.3, 4.3.1 and 4.3.2.

Proposal for a Project on a Co-operative Research Study of the Banding of Porites Corals as a Component of Ocean Climate Studies

80 Dr. Peter Isdale of the Australian Institute of Marine Sciences presented the proposal. He described the processes whereby corals acquire signatures of past carbonate deposition bands in their skeleton which, if interpreted through analysis of sections or cores, reveal important trends in climate, river run-off, sedimentation, pollution and other human influences. Massive corals of the genus Porites are particularly well suited to such studies. The utility of such procedures is now well documented in the open scientific literature for some regions although anomalies in density bands have been observed as a function of region. The proposal recommends a study of coral behaviour on a regional basis in order to render the environmental proxy records meaningful over area and time.

81 The short-term objectives of the proposed research project include, inter alia, the study of relatively small Porites coral heads with a standardized set of parameters of environmental growth and banding (this was explained in greater detail). The long-term studies involve acquiring longer cores from ancient heads of coral in some selected locations in the WESTPAC region with a view to establishing historic records of climate change and environmental quality, spatially and temporally.

82 The desirability of initiating soon the study of small corals was also emphasized. Having this in mind, it was proposed that a Workshop be held in Townsville, Australia, in 1988, prior to the International Coral Reef Symposium, to train scientists in coral-banding analysis.

83 The Australian Institute of Marine Science offered to play a major role in initiating the project under WESTPAC.

84 The Delegates of Australia, Indonesia, The Netherlands, Thailand, USA and USSR, strongly supported the proposal. They recognized, in particular, the project as being scientifically innovative and as providing a means of assessing environmental gradients.

85 The Delegate of Thailand informed the Committee that several coral studies are already underway in his country.

86 The Delegate of USSR nominated Dr. Boris Preobrazhensky as the USSR contact point for the project.

87 The Delegate of The Netherlands proposed Dr. Bak as their contact point for this project.

88 The Regional Committee, having considered the importance of the project to the Ocean Dynamics and Climate Programme in the region, strongly endorsed the project proposal. The Regional Committee welcomed the offer of Australia, in particular the Australian Institute of Marine Science, to play a key role in initiating the project under WESTPAC. It also endorsed the holding of a Workshop (proposed for Townsville in 1988), prior to the International Coral Reef Symposium to discuss a detailed operational plan for the project, as well as to identify TEMA needs.

89 The Regional Committee requested the Secretary IOC to explore sources of financial support to facilitate the participation of scientists in the proposed Workshop. It also invited the Unesco Division of Marine Sciences to consider supporting, on a continuing basis, the activities related to this WESTPAC Programme, in view of its close relationship to the Unesco Major Project COMAR.

4.3.1. Continental Shelf Oceanography

90 The Chairman informed the Regional Committee that many activities have been undertaken in this field as a consequence of initiatives by some Member States. However, he reported that the WESTPAC Task Team on Ocean Dynamics in the Western Pacific, which had been formed to develop a plan of action, had not been able to make any appreciable progress in this respect. The Chairman of the Task Team, Dr. Ron Heath, had resigned with great regret, and future arrangements should be considered by the Regional Committee.

91 The following project proposal was then discussed in some detail.

Proposal for a Project on a Co-operative Research Study of the Continental Shelf Circulation in the Western Pacific

92 Dr. Mahunnop Bunpapong of Thailand presented the proposal (Document IOC/WESTPAC-IV/Inf. 9). The proposed co-operative research project aims at a comparative study of the physical oceanography of the shallow seas of the WESTPAC region, particularly the shallow gulfs and straits (e.g., Gulf of Tonkai, Gulf of Thailand, Strait of Malacca, Java Sea, Gulf of Carpentaria). These areas experience strong seasonal forcing from the monsoon. The scientific knowledge of the circulation of the shallow sea is fundamental to the understanding of the current pattern which influences the distribution of living resources and pollutants. Red-tide phenomena, which are the subject of another research project proposal being considered by the Regional Committee at this Session, may be linked with the continental shelf fronts.

93 The need for co-operative investigations emanates from the fact that many countries share the waters of the continental shelf, particularly in south-east Asia which is also an area of great socio-economic activity. The project proposes to hold a planning session, in conjunction with the proposed Workshop on the Recruitment of Penaeid Prawns in the Indo-Western Pacific Region (see Section 4.1 above), to identify observational studies, methods and strategies that need to be applied in the project as well as general TEMA needs in terms of shipboard training, acquisition and analysis of oceanographic data and the application of numerical models in the study of biological and marine pollution problems.

94 Many Delegates considered that the proposed Continental Shelf Circulation project deserves to be strongly supported because of its implication for other research projects being considered by this Committee, such as those on penaeid prawns, red tides and pollution monitoring.

95 The Delegate of Thailand strongly endorsed the project and offered to act as the Co-ordinator thereof.

96 The Regional Committee, having recognized the importance of the proposal to other scientific studies in the continental shelf areas, strongly endorsed it, but stressed the need to develop an operational plan including identification of the potential participating institutions/ scientists and TEMA needs, particularly in conjunction with the planning of other projects on OSLR and Marine Pollution Research and Monitoring.

4.3.2. Ocean Dynamics in the Northwest Pacific

97 The following project proposal was discussed in some detail.

Proposal for a Project on a Co-operative Research Study of Ocean Dynamics in the Northwest Pacific

98 Dr. K. Taira of the Ocean Research Institute, Japan, presented the proposal. He stressed the relevance of the project to TOGA and WOCE. The scientific objective of the project is to study circulation and exchange processes in the open sea and shelf region, air-sea interaction, monitoring of sea-level variation due to ocean tides, ocean currents and atmospheric forcing, and monitoring heat and salt transport in the north-west Pacific region. Several studies would be carried out, including sea-truth studies relevant to satellite measurements; coast-to-coast hydrographic sections; monitoring of volume transport across straits, surface salinity, and surface current velocity from ships of opportunity. In the first phase, the project includes a workshop to define the research needs, a plan of operations and implementation and a strategy to develop a co-operative network of interested institutions in the region.

99 The Chairman informed the Regional Committee of the existing Japan and East China Seas Study (JECSS), a multinational programme which is complementary to the attainment of the objectives of the WESTPAC. This, he thought, would be an important contribution to a better understanding of the oceanography of this area.

100 The Delegate of USSR supported the proposed project and informed the Regional Committee of the extensive work done by the Soviet scientists in this region which contributed to the knowledge of the ocean dynamics of the area. He suggested that the proposal needed to be improved and that the USSR scientists would be willing to participate in the revision of this project.

101 The Regional Committee agreed with the basic concept reflected in the proposal, but decided that this should be improved in consultation, through correspondence, with experts from other countries in the north-western Pacific.

4.3.3 Ocean Dynamics in the Tropical Pacific

102 The Chairman informed the Regional Committee that, since there was no specific proposal submitted under this Agenda Item, this activity needed to be reviewed during the intersessional period.

103 The Regional Committee, having noted that the WESTPAC Task Teams for Ocean Dynamics and Climate (in the north-western Pacific and in the tropical Pacific) had not been operative during the intersessional period and that much needed work within their scientific areas has been undertaken by other bodies, decided to abolish these Task Teams.

4.4 REGIONAL COMPONENT OF MARINE POLLUTION RESEARCH AND MONITORING (GIPME/MARPOLMON)

104 The Chairman informed the Committee that the Chairman of the WESTPAC Task Team on Marine Pollution Research and Monitoring in the Western Pacific, Dr. Cyril Burdon-Jones, although unable to attend the Session, had submitted a report on the Task Team's intersessional activities (Doc. IOC/WESTPAC-IV/Inf. 14). The Chairman highlighted the main achievements of the Task Team. These included: the preparation of the WESTPAC Regional Directory of Relevant Research Institution Projects: compilation of a complementary bibliography of marine pollution research and monitoring; the development of a marine pollution baseline data bank; the organization of a Workshop on Analysis of Organochlorines in Marine Biota and Sediments (Papua New Guinea, June 1986); a review of current research and monitoring; an outline of future projects on marine pollution research and monitoring; the promotion of biological effects measurements and intercalibration exercises; contributions to the WESTPAC Newsletter. The Chairman then referred to areas where the Chairman of the Task Team considered that future efforts needed to be concentrated; notably, the creation of regional co-operative networks (on river inputs, organochlorine monitoring, musselwatch, and pollutants in sediments, water and/or biota), and the need for regionally based co-ordination.

105 The Delegate of the USA, speaking on behalf of the Chairman of the IOC Scientific Committee for the Global Investigation of Pollution in the Marine Environment (GIPME), summarized the progress in the development of GIPME, particularly as it related to the western Pacific. He drew attention to a number of on-going activities: the growing cohesion between global and regional activities in this field, largely as a result of progressive collaboration between IOC and UNEP in GIPME and the UNEP Regional Seas Action Plans for East Asian Seas (through COBSEA) and the South Pacific (through SPREP); the comparable effort being made to introduce biological effects monitoring into the WESTPAC region, possibly in collaboration with COBSEA and perhaps SPREP; and to the workshops and intercalibration in the context of the Musselwatch Programme held in the WESTPAC region, which should be viewed in the global context of the current co-operation between IOC and UNEP to develop an International Musselwatch. The IOC Symposium on Status and Trends of GIPME, which preceded the Sixth Session of the Scientific Committee for GIPME, gave particular attention to regional activities.

106 Several Delegates expressed their countries' strong interest in the implementation of GIPME/MARPOLMON, especially at the regional level and

with respect to the study of river inputs of pollutants to the coastal regions and also to the study of the levels of organochlorines and toxic trace metals, particularly in biota used for human consumption. They stressed the importance of enhancing data and information exchange.

107 The Delegate of China restated the offer of his government to host an IOC Intercalibration Workshop on Sediment Monitoring with a view to developing a monitoring strategy, particularly for the WESTPAC region.

108 Two project proposals were discussed in some detail.

(i) **Proposal for a Project on the Assessment of River Inputs to the Sea in the WESTPAC Region**

109 Dr. Manuwadi Hungspreugs of Thailand presented this proposal (Document IOC/WESTPAC-IV/8 Annex 4(ii)). She explained that the concentration of dissolved substances and suspended sediments (and particle-associated materials) in rivers depends on the amount of matter accumulated in the flood plains of river systems during low discharge or drought conditions and flushed out during periods of high flow. Because the concentrations of materials of natural and human origin can vary so widely with discharge, it is important to determine the discharge/concentration relationship for rivers as well as fluxes of materials such as suspended sediments, nutrients and pollutants, to coastal seas. Established relationships would also provide a basis for evaluating the impact of future watershed modifications, such as deforestation, construction of dams and changes in agricultural land use, on sediment and nutrient supplies to coastal waters.

110 The long-term objective of the project is to contribute to strengthening the scientific basis required to enable national authorities to draw up policies and guidelines for reducing and controlling pollution of river basins. The short-term objective is to determine the pollutant load reaching the marine environment through specific river systems.

111 The Regional Committee expressed strong interest in this project proposal. It welcomed the close collaboration with COBSEA and SPREP that was anticipated in the implementation of activities dealing with WESTPAC marine pollution research and monitoring.

112 With respect to TEMA needs in support of studies of river inputs of pollutants, the Regional Committee specifically identified intercalibration of methods among laboratories and related additional training of scientists to enable their active participation in the study of river inputs in the region.

(ii) **Proposal for a Project on Monitoring Heavy Metals and Organochlorine Pesticides Using the Musselwatch Approach**

113 Mrs. Regina Prasad of Fiji presented the above-mentioned proposal (Document IOC/WESTPAC-IV/8 Annex 4(i)). She explained that bivalves often constitute a major food resource in the WESTPAC region and, being filter feeders, accumulate organochlorine pesticides and heavy metals (and other pollutants) in their tissues. The use of bivalves and other sentinel organisms as indicators of persistent cumulative pollutants in marine waters

has received considerable attention in recent years. The enhanced concentrations of pollutants found in biota compared to those found in the surrounding water column allow ease of collection and, most importantly, much easier analysis. With the setting up of the Musselwatch Programme in the western Pacific, it is hoped to establish baselines and determine trends in organochlorine-pesticide and heavy-metal pollution in the region as part of a global international effort. Another of the main aims of this project is to upgrade at least one laboratory (where one exists) in each of the participating countries for heavy-metal and organochlorine-pesticide analysis. Initially, it is proposed to carry out the project over a 2-3 year period, with a possible extension, and observations of trends. For implementation, the project needs a co-ordinating mechanism that would ensure that this activity proceeds in co-operation with other major international programmes.

114 The Delegate of China strongly supported this proposal and said that his country would be willing to play a leading role in its implementation.

115 The Delegate of the United States indicated his appreciation of the close collaboration between IOC and UNEP, especially in the WESTPAC region. He was particularly interested in the co-operative conduct of an International Musselwatch as a truly inter-regional monitoring effort. He also strongly supported the study of biological effects as a major research initiative in the region and informed the Committee that his country has recently provided financial support to the promotion of GEEP activities. The study of river inputs of pollutants is an additional area where active US participation in WESTPAC may be expected in the intersessional period. The USA would explore the possibility of supporting the proposal by China to host a Workshop following consideration of its scientific objectives.

116 The Regional Committee strongly supported this Project Proposal. However, it recognized that it was a relatively complex one and that results obtained under the proposed project would be affected by the relationship between pollutants in the sediments and in the water column in the vicinity of the sentinel organisms. Being aware that GEMSI was developing methods for the measurement of pollutants in sediments, it recognized the importance of close liaison with GEMSI and a co-ordinated development in project implementation. The Regional Committee also considered that support under TEMA would be valuable in providing related training and assistance with intercalibration exercises for participating or interested laboratories, particularly in providing expertise in the field of organochlorine analysis, which is perceived to be the weakest element at present.

117 The Regional Committee requested the Secretary IOC to explore financial support from extrabudgetary sources to assist with TEMA activities to enable participation of scientists from the developing countries in the proposed intercalibration exercise on the use of marine sediments in MARPOLMON and on the biological effects as an extension of GEEP activities to the tropical marine environments of the WESTPAC region.

118 The Regional Committee expressed its thanks to the Delegate of China for its offer to host an Intercalibration Workshop on Sediment Monitoring, and invited Member States to provide support for the participation of scientists in it.

5. OCEAN SERVICES IN THE WESTERN PACIFIC

5.1 OCEAN OBSERVING SYSTEMS

5.1.1 IGOSS Ship-of-Opportunity Programme

119 The Chairman of the WESTPAC Task Team on the Implementation of IGOSS in the Western Pacific, Cdr. Ian J. Bofinger, presented a report on the Task-Team's intersessional activities. He noted that, when considering the implementation of IGOSS in any region, there were two fundamental principles that should be taken into account. First, that IGOSS is a system through which operators and research scientists can obtain and exchange real-time and near-real-time oceanographic data. Second, the effectiveness of IGOSS within a region depends on the individual efforts of the Member States.

120 The Task Team Chairman also noted that the IGOSS Pilot Project on Sea-Level and the Ship-of-Opportunity Programme had both grown during the intersessional period. In addition, Japan had developed an IGOSS Specialized Oceanographic Centre (SOC) for the Pacific region.

121 He pointed out that one of the principal difficulties of co-ordinating the Task Team, which had to rely on correspondence, was the maintenance of a current list of IGOSS National Contacts. He asked the Member States of the Regional Committee to review the list of National Contacts in his report and to inform the Secretary IOC of any correction required. He assured Delegates that designation of an IGOSS National Contact did not imply a specific commitment to the BATHY/TESAC or Sea-Level Programmes. He suggested that perhaps a Task Team was not the appropriate mechanism for the activity envisioned and that a Regional IGOSS Co-ordinator might be a more appropriate arrangement.

122 The IOC-WMO IGOSS Co-ordinator, Mr. John Withrow, reminded the Regional Committee of the high priority placed on IGOSS by the IOC and WMO. He re-emphasized that, besides data handling, IGOSS was also developing the Ship-of-Opportunity Programme. The Sea-level and Drifting-buoy Programmes, although utilizing the IGOSS network for data exchange, are separate activities.

123 The IOC-WMO IGOSS Operations Co-ordinator, referring to the Joint IOC-WMO Meeting on the Implementation of IGOSS XBT Ship-of-Opportunity Programmes (Seattle, USA, 9-13 September 1985), stated that the present large-scale network programmes in the Pacific (NORPAX, ERFEN, EPOCS, TOGA) have provided a solid basis for the development of the most extensive programme in IGOSS. He pointed out that the Second Joint IOC-WMO Meeting on the Implementation of IGOSS XBT Ship-of-Opportunity Programmes would be held at Patricia Bay, Sidney, British Columbia, Canada, 5-8 August 1987. He urged all Member States to send representatives to the meeting.

124 The IGOSS Operations Co-ordinator then presented Document IOC/WESTPAC-IV/Inf. 3 (Regional Component of IGOSS XBT Ship-of-Opportunity Programme). He noted particularly the effort of Japan in updating its regional IGOSS product set and the effort of Drs. Warren White and Steve Pazan of the Scripps Institution of Oceanography in the implementation of the IGOSS Sub-surface Thermal Structure Pilot Project.

125 The Chairman of the IGOSS Group of Experts on Operations and Technical Analysis, Dr. Doug McLain, made a brief presentation on ship-of-opportunity sub-surface thermal data. He compared the present distribution of data with an observation distribution proposed by the Chairman of the Task Team on Ocean Dynamics in the Western Pacific, in 1981. He pointed out some of the problems associated with the collection and transmission of sub-surface thermal data and made a brief presentation on some of the uses of the data.

126 Some Delegates requested assistance under TEMA and the IOC Voluntary Co-operation Programme for their countries and their participating institutions, in the form of equipment and expert advisory missions to enable them to become active in the regional component of the System.

127 The Regional Committee expressed general satisfaction with the progress of the Ship-of-Opportunity Programme. It encouraged Member States to participate in the Joint IOC-WMO Meeting on the Implementation of IGOSS XBT Ship-of-Opportunity Programmes (Second Session) (Patricia Bay, Canada, 5-8 August 1987).

128 The Regional Committee noted with appreciation the efforts of the USSR in the submission of TESAC data, but expressed its concern that no other Member States in the region were submitting such data. It therefore urged other Member States to increase their efforts in this regard.

129 The Regional Committee also urged Member States to continue their efforts to identify sources of real-time data, mainly from research programmes, and to encourage the collectors of those data to insert them into the IGOSS System.

5.1.2 Regional Component of the IOC Global Sea-Level Observing System (GLOSS)

130 The Chairman of the IOC Task Team on GLOSS, Dr. David Pugh, presented a brief history of the programme and described the basic requirements of the System. He emphasized that high quality data required permanent tidal stations well connected to bench marks. He pointed out that there were national, regional, oceanic and global needs for sea-level data. He described the applications under each need but suggested that the Regional Committee concentrate on the oceanic and regional aspects in their present deliberations. In conclusion, the Chairman of the Task Team urged the Member States to evaluate their needs for a regional and sub-regional programmes.

131 Speaking as the Delegate of the United Kingdom, Dr. Pugh reminded the Regional Committee that the UK, through IOC, would continue to provide sea-level training courses at the Proudman Oceanographic Laboratory in Bidston and that requests for this training should be directed to the Secretary IOC.

132 The IGOSS Operations Co-ordinator then presented Document IOC/WESTPAC-IV/8 Annex 5 (WESTPAC Regional Component of the Global Sea-Level Observing System (GLOSS)). He urged Member States to review the document and to ensure that it was accurate. He also pointed out that the IGOSS Specialized Oceanographic Centre was continuing to produce its excellent

sea-level product for the Pacific. He particularly noted that the Action Paper requested the Regional Committee to consider the need for a Regional GLOSS Co-ordinator.

133 A number of Delegates expressed their countries' keen interest in participating in GLOSS, while others reported their countries' active involvement in the System.

134 The Delegate of China stated that China would continue her active participation in GLOSS programme and its implementation in WESTPAC, and making her own contribution thereto. He requested for correction of the mistake in Document IOC/WESTPAC-IV/Annex 5, WESTPAC Component of GLOSS, by adding into the document the five Chinese stations listed in GLOSS Implementation Plan, 1985-1990, Document IOC/INF-663 Rev., adopted by the Fourteenth Session of the IOC General Assembly.

135 The Delegate of the USSR expressed his government's support for the GLOSS and its intention to take part in this programme. He announced that the Soviet Union would be ready to provide to any interested country data observations from its 10 sea-level stations, including two in the WESTPAC region; namely, Petropavlovsk-Kamtchatskii and Yougno-Salkhalinsk.

136 The Regional Committee expressed its support for GLOSS and noted the presentation made by the Delegates on their countries' participation. The Regional Committee welcomed the mutual assistance under the ASEAN-Australian sea-level project that had been described at the Symposium on Marine Science in the Western Pacific: the Indo-Pacific Convergence (Townsville, 1-6 December 1986). It stressed the need for training and assistance to the scientists and personnel from interested developing countries from the region to ensure their full participation in the project.

137 The Regional Committee considered that, at present, a plan of action for the region was not sufficiently developed to justify the appointment of a WESTPAC Task Team on GLOSS to facilitate implementation and the required concerted action. Should a need arise during the intersessional period, the Regional Committee pointed out that the Chairman of the Task Team on the Implementation of IGOSS in the Western Pacific could assist with this until an adequate mechanism is developed to assist in the implementation of a regional component of GLOSS. The Regional Committee also noted that experts from some Member States would attend the GLOSS Implementation Meeting in Honolulu, 19-23 October 1987, and requested these experts to consider the possibility of developing a tide-gauge network as a regional WESTPAC component of GLOSS.

5.1.3 Other Ocean Observing Systems in the Region

138 The IGOSS Operations Co-ordinator explained that the only observing system that could be readily considered under this Agenda Item at this time was the drifting-buoy programme. The co-ordinating mechanism for the drifting-buoy programme is the WMO-IOC Drifting-Buoy Co-operation Panel (DBCP). He noted that the DBCP was a new body that had just reached full implementation with the arrival of the Drifting-Buoy Technical Co-ordinator in Toulouse, France, this month. One of the principal objectives of the DBCP will be to encourage and support the establishment of networks for regional applications. The IGOSS Operations Co-ordinator requested the

Regional Committee to consider the possibility of developing regional drifting-buoy activities in support of the relevant scientific programmes. He also asked that, should the Regional Committee endorse such activities, it consider forming an Expert Steering Group to co-ordinate those activities.

139 The Regional Committee noted that, while there were some national drifting-buoy programmes, there was still not enough interest shown by all, or at least a sufficient number of, Member States of the region to justify the formation of a co-operative programme at the regional level. However, it urged the Member States to continue to develop drifting-buoy programmes on a national and global basis with a view to developing regional activities whenever the conditions for this are ripe.

5.2 OCEANOGRAPHIC DATA AND INFORMATION MANAGEMENT SYSTEMS

5.2.1 State and Future Development of Oceanographic Data Exchange in the Region

140 The IOC Senior Assistant Secretary, Dr. Yuri Oliounine introduced a report on IODE activities in the WESTPAC region; he stressed the importance of the participation of Member States in the IODE system. As of 1 January 1987, there were six National Oceanographic Data Centres (NODCs) operated by WESTPAC Member States. These Member States and Thailand have nominated National IODE Co-ordinators. Indonesia, the People's Democratic Republic of Korea and Thailand are considering the establishment of NODCs. A few other Member States plan to establish Declared National Agencies (DNAs). He reported that two other Responsible National Oceanographic Data Centres (RNODCs) are operating now in the WESTPAC region under the auspices of the Japan Oceanographic Data Centre; namely, RNODC (IGOSS) and RNODC (MARPOLMON). Only six Member States out of nineteen participating in WESTPAC have submitted data to the RNODC. He invited other Member States from the region to consider submitting data to the RNODC (WESTPAC).

141 The use of ROSCOP forms, National Oceanographic Programmes (NOPs) and the Marine Environmental Data Information Referral System (MEDI) in the region is limited at present to a few countries. Only seven Member States of the region participated in the DNP/NOP programme; in 1985, only four Member States of the region submitted ROSCOP forms to World Data Centres (WDCs); there is also a noticeable delay in data submission to WDCs by Member States from the region.

142 An IOC Consultant, Mr. Ben Searle, Manager of the Australian Oceanographic Data Centre, who had participated in the IODE Mission to Malaysia, Indonesia, Thailand and Philippines, from 9 to 24 June 1987, then highlighted the findings of the Mission. He stressed: (i) the need for specialized training in relational database techniques, database development and the development of software to quality control, archive, and display oceanographic data; (ii) the value of establishing Designated National Agencies or NODCs and of nominating National IODE Co-ordinators; (iii) the need for development of micro-computer data-management systems and information-referral systems and the importance of interfacing this data-management approach with the existing IODE programme; (iv) the need to obtain support from Member States of WESTPAC to assist with the calibration of oceanographic instruments; (v) the importance of submitting existing data

in any form (tractcopy listing, reports or magnetic tape) to WDCs and RNODC (WESTPAC); (vi) the need to increase the level of participation in IODE activities particularly ROSCOP, MEDI and NOP announcements in order to encourage an increase of data flow in the WESTPAC region.

143 The Director of the RNODC (WESTPAC), Mr. Takumi Mori, reported to the Regional Committee that, in 1986, 82 cruises were announced as WESTPAC cruises by countries participating in the programme. The total inventory comprises data from 311 cruises. However, only six countries have made NOP announcements and data from one third of the announced cruises were submitted to the RNODC. For 1983-1985, the average number of data from hydrographic stations, bathythermographs (BTs) and Geomagneto-Electro-Kinetograph (GEK) submitted to the RNODC was about 1 100, 3 600 and 5 900, respectively, per year. The RNODC continued the publication of the RNODC-Newsletter for WESTPAC, data catalogues, reports and maps and there was a plan to publish the Newsletter twice per year instead of annually. Often, delays in the publication of Newsletters is due to the shortage of contributions from countries in the WESTPAC region. He welcomed contributions of reports and research programmes for inclusion in the Newsletter. Referring to the RNODC training activities, he mentioned that five short-term training courses on oceanographic data management had been conducted by the Centre for trainees from the developing countries in the region.

144 The Representative of Unesco (ROSTSEA) outlined efforts undertaken in the region to develop procedures governing the exchange of environmental data using microcomputer systems (Unesco Workshop on Marine Microcomputer Data-Base Development, Jakarta, 17-19 November 1986). It has been proposed that data-set descriptions compiled in a standard data dictionary be used to facilitate data exchange rather than an attempt to impose fixed external formats on data sets used with microcomputers. The resulting data dictionary is itself a data-base organized under the relational data-base model with each record corresponding to a field within the original "attribute" data set. This enables a central data-dictionary as depository to be used as a mechanism for identifying coherent data sets from contributed input and for users to undertake the exchange of data on an individual basis using identified items in a so called "virtual" data-base. Presently, the system is set up for DB-III and DB-II. Operating software that can be used to construct a standard data-dictionary from many data-base files is available from Unesco/ROSTSEA. The system, being table-driven, can be linked to the Binary Universal Form for Representation of Meteorological Data (FM 94 BUFR) or the existing IODE main-frame archival systems. A network of users has been established in the region.

145 The Delegates in general agreed that urgent measures should be taken to establish continuous and regular support to the activities of the RNODC (WESTPAC) by providing available oceanographic data.

146 The Delegate of the USSR informed the Regional Committee that his country intended to submit data collected from twenty cruises to the RNODC (WESTPAC) in 1987.

147 The Delegate of the USA informed the Committee of his country's support for the acquisition of sub-surface thermal data through TOGA which will result in the development of a sub-surface thermal data set. This effort would ensure the quality and timely handling of data sets. The

Scripps Institution of Oceanography was established as a joint environmental data analysis centre to track, acquire, quality control process and merge oceanographic data from the tropical Pacific. Involvement in an on- line inventory and data-base dissemination using the NASA SPAN network is also under consideration. Giving the example of RNODC (MARPOLMON) in the United States, which has started producing a CARIPOL data set on diskette for use on MS/DOS microcomputer-based systems, he informed the Committee that the RNODC will undertake to produce a prototype CARIPOL data set by the end of 1987 which could serve for the development of regional products of MARPOLMON.

148 The Regional Committee expressed its full support for actions aimed at strengthening the participation of Member States in the IODE System and viewed favourably the findings of the IOC Mission on IODE. It recognized the need for increasing different types of training activities, including grant of fellowships, expert advisory missions, and consultative services to help the Member States develop their capability in this field.

149 The Regional Committee urged Member States of the region to: (i) establish NODC or DNAs and appoint National IODE Co-ordinators, if they have not done so, and (ii) report results of cruises on ROSCOP forms, immediately after the completion of the cruise, as well as make NOP announcements in time. It also requested NODCs and other similar bodies to promote exchange and archiving of oceanographic data through RNODCs and WDCs (Oceanography).

150 The Regional Committee recommended that Member States give special attention to the use of micro- and mini-computers to handle oceanographic data.

151 The Regional Committee welcomed the recommendation of the Unesco Workshop on Microcomputers held in Jakarta at the end of 1986 as a valuable contribution to data management. The Regional Committee recognized the value of such an approach, but noted that any such system should be interfaced with the existing IODE system in order to facilitate data exchange on a national and regional basis.

152 The Regional Committee expressed its appreciation of the JODC's activities in oceanographic data management training, and restated the importance of their courses in training personnel from developing countries of the region; it recommended that this TEMA activity continue.

153 The Regional Committee, also recognizing that not all aspects of oceanographic data management have been covered, stressed that the future training should cover other areas such as data-base development techniques and the development of computer programmes for analyzing and displaying oceanographic data.

154 The Regional Committee called on the Director JODC and the Secretary IOC to consider the possibility of extending the duration of the training courses on oceanographic data management from two to three weeks and to apply a high standard in the selection of trainees.

155 The Regional Committee also acknowledged with thanks the offer by Thailand to host a training course on the use of micro- and mini-computers at the Asian Institute of Technology to meet the needs described above.

156 It requested the Secretary IOC to explore possible sources of funding in support of these training activities and invited Unesco, through ROSTSEA, to participate in its planning.

5.2.2 State and Future Development of Marine Information Management

157 The Senior Assistant Secretary IOC, Dr. Y. Oliounine, recalled that adequate marine information management was essential to the conduct of high-quality marine scientific research and to the effective management and development of the resources. He informed the participants of the decision of the IOC Assembly to broaden the mandate of the Technical Committee on IODE to cover marine science information management and to change the Committee's title accordingly.

158 Outlining the development of the FAO-IOC-UN(OETB) Aquatic Sciences and Fisheries Information System (ASFIS) and its bibliographic component, the Aquatic Sciences and Fisheries Abstracts (ASFA), in the region, he noted that, in addition to the established ASFA input centres in Japan and the USSR, a new input centre in China is now operational and making a significant contribution to the ASFA data base. A further input centre is being developed at the South-east Asia Fisheries Development Centre (SEAFDEC), Bangkok, within the Southeast Asian Fisheries Information System (SEAFIS), which links national fisheries information systems in the ASEAN countries: Indonesia (INFIS), Malaysia (MAFIS), the Philippines (PASFIS), and Thailand (TFIS). Two centres in the region (IMSTI, China, and International Centre for Living Aquatic Resources Management (ICLARM), Philippines) have been successful pioneers in the use of the ASFA data base on compact disk read-only memory (CD-ROM). There is indication of a strong demand in the Member States of the region for the ASFIS registers and other reference tools, particularly the Institutions Register and the International Directory of Marine Scientists.

159 The Regional Committee welcomed the preparation of national inventories of marine scientific institutions and marine scientists by some Member States of the region and recommended that these inventories be made available to all WESTPAC Member States and, if possible, be incorporated later into the relevant ASFIS registers.

160 The Regional Committee supported the Recommendation of the Technical Committee on IODE that the establishment of regional marine scientific information networks be included in the proposed MIM Strategic Plan, and restated its formal support for the use of established systems and services, such as ASFIS, MEDI and IODE, by Member States of the region to their maximum benefit and to avoid unnecessary duplication that might arise from the development of regional information systems outside the framework of IODE/MIM.

161 The Senior Assistant Secretary then briefly reported on the findings of the South Pacific Commission - University of South Pacific-Forum Fisheries Agency (SPC-USP-FFA) Fisheries Information Advisory Group Meeting which was held at the South Pacific Commission, Noumea, New

Caledonia, 23-27 March 1987. He drew attention to the development of an agreed Pacific Islands Marine Resources Information System (PIMRIS), within the framework of ASFIS, which aims at building up a range of information products and services through a regional centre and a network of national focal points, including a regional bibliographic data base, document delivery services, a question/answer information service, current awareness information and a regional directory of activities and expertise in the fields covered.

162 The Secretary-General of SEAFDEC reaffirmed the strong support of his organization for IOC activities in marine information management. He informed the Regional Committee that SEAFDEC had organized a Seminar on Fisheries Information Science in Southeast Asia, in Bangkok, in August 1982. As a follow-up to the recommendations of this Seminar, SEAFIS (Southeast Asian Fisheries Information System) was established by SEAFDEC in 1984 to collect, compile and disseminate scientific information on fisheries, aquaculture and marine science research in the region. SEAFIS also assists the Member Countries of SEAFDEC in setting up national information systems; i.e., TFIS in Thailand, PASFIS in the Philippines and MALFIS in Malaysia. SEAFDEC also co-operates with INFIS in Indonesia through the Secretariat. Preliminary arrangements were made to develop a computerized input format which is compatible with that of ASFIS and it is hoped that SEAFDEC can provide input to ASFA by 1988. He also informed the Regional Committee that, although the development of a marine information system in the region has been accelerating in recent years, there are numerous problems and constraints at the national level ranging from the great number of unpublished records to the technology required and funding. He therefore expressed SEAFDEC's willingness to co-operate with IOC in organizing a workshop on marine information management in the region.

163 The Regional Committee noted with satisfaction the activities of SEAFDEC in marine information management and recommended that the co-operation between IOC, FAO and SEAFDEC in this field be continued and extended. The Regional Committee agreed that, in the programmes of planned training exercises, detailed attention be given to the preparation of input for, and the use of the outputs of, such systems as MEDI and ASFIS so as to provide the participants with the capability to participate in, and benefit from, existing operational systems.

6. FUNCTIONING OF THE REGIONAL COMMITTEE

6.1 CRITERIA FOR SELECTION OF PROJECTS PART OF, OR RELEVANT TO, WESTPAC

164 The IOC Senior Assistant Secretary, Mr. Ray C. Griffiths, reminded the Regional Committee that, in considering the basis for the formulation of new projects, it had, at its Second Session, felt (Document IOC/WESTPAC-II/3, para. 114) that there should be two categories of projects, namely: (i) projects that had been adopted by the Regional Committee at any of its Sessions, and which could be referred to as WESTPAC projects; and (ii) other projects which serve the objectives of WESTPAC, but which could be either national, bilateral or sub-regional in origin and scale. For the first category, the procedure given in Decision WESTPAC-I.16 could be

followed, where necessary, whereas for the second category it would be better that the initiative come from the Member States concerned, although in certain cases the IOC Secretariat could provide basic guidelines. By Decision WESTPAC-I.16, at its First Session (Tokyo, 21-24 February 1979), the Committee had authorized the Chairman of WESTPAC, in consultation with the Technical Correspondents and the Secretary IOC, to take necessary action to initiate projects formulated by Workshops, Task Teams or Groups of Experts on behalf of WESTPAC, where these projects had been previously approved in principle.

165 The rapid growth, in recent years, of the number and variety of activities in marine science in the region, coupled with the particularly long intersessional period since the Third Session (Townsville, September 1983) had lead now and again to uncertainly in the denomination of activities as "WESTPAC"; or "serving the objectives of WESTPAC". This, in turn, increased the risk of making it difficult to decide, or advise the Member States, on the precise nature of a particular activity in this respect. He invited the Regional Committee to determine what criteria, if any, might be applied to either category.

166 The Chairman also asked the Committee to give him guidance on his own role in designating projects originating in the intersessional period as projects in support of WESTPAC.

167 The Regional Committee believed that some of the difficulties that had arisen were due mainly to the exceptionally long intersessional period, and that a two-year period would remove such difficulties, it agreed that the existing categories should continue to be observed. By way of reaffirmation of Decision WESTPAC-I.16, the Regional Committee charged its Chairman with the responsibility of considering any proposed activity and, in consultation with the Secretary IOC and with the Chairman of the relevant subsidiary body of the Regional Committee, deciding whether it may be designated as "serving the objectives of WESTPAC". If the Chairman so decides, he should make arrangements with the Secretary IOC to advise the Regional Committee's Member States accordingly.

168 As to criteria by which to decide the aforementioned classification, the Regional Committee believed that it was not necessary to set firm criteria, but to rely on the sound judgement of the Chairman and the IOC Secretary in this matter. It recognized that the definition of projects or activities "serving the objectives of WESTPAC" does not imply any financial obligation on the part of the Commission, unless such obligation has been accepted by a Governing Body of the Commission.

6.2 NATIONAL LIAISON ARRANGEMENTS WITH IOC AND FOR WESTPAC

169 The IOC Senior Assistant Secretary informed the Regional Committee that one of the important requirements for effective implementation of IOC programmes is the co-ordination of national activities relevant to, or part of, such programmes; another is effective liaison between the Member States (and their national institutions concerned), on the one hand, and the Secretariat of the Commission, or, indeed, the Secretariats of other organizations dealing with relevant marine affairs, or with other Member States, on the other hand.

170 He recalled that, at its Twelfth Session, the IOC Assembly by Resolution XII-8, had urged the Member States of the Commission to establish and maintain appropriate mechanisms for the formulation of national marine science policies; and to improve or establish, as required, National Oceanographic Commissions or equivalent bodies, composed, as appropriate, of representatives of interested government departments, universities and research institutions actively involved in marine science, ocean services and technology and other related aspects of ocean affairs. The main functions of such a mechanism would be to maintain liaison with international bodies responsible for ocean science, services and related technology, and to ensure effective co-ordination, at the national level, of marine scientific research; and, in this regard, to work closely with national institutions to ensure the close involvement of the scientific community and the efficient use of available resources.

171 Again, at its Thirteenth Session, the IOC Assembly stressed (Document SC/MD/79, paragraph. 490 - Summary Report) that this liaison needs strengthening, to avoid existing communication and operational difficulties resulting from, inter alia, frequent changes in the names and/or addresses of IOC Action Addressees, and a lack, in many Member States, of a national co-ordinating mechanism and of a National Representative to the Commission, in the field of marine scientific research, ocean services and related affairs.

172 The Assembly also recommended that Member States members of the marine scientific, technical and regional subsidiary bodies of the Commission designate National Focal Points for the programmes and activities being conducted by these bodies in which they intend to participate; these National Focal Points should work closely with the National Representatives referred to above and be preferably associated in an appropriate manner with the National Oceanographic Commission, if any, or with an equivalent national co-ordinating and liaison body.

173 The Regional Committee recognized the importance of good liaison between the Member States and the Secretariat. However, it believed that, with few exceptions, the situation in the Member States of the Committee was reasonably satisfactory. Nevertheless, it urged its Member States to keep under review national arrangements with a view to adapting them in the direction of greater efficiency and effectiveness in their relations with the IOC Secretariat and, if appropriate, with each other.

6.3 POSSIBLE CREATION OF AN IOC SUB-COMMISSION FOR THE WESTERN PACIFIC

174 The IOC Senior Assistant Secretary, Mr. Ray C. Griffiths, introduced this item (Document IOC/WESTPAC-IV/Inf.2). He reminded the Regional Committee that the Executive Council, at its Fifteenth Session (Paris, 1-6 March 1982), had recognized that: (i) the Member States are making increasingly great demands on the Commission with respect to the range and implementation of its programmes and the enhancement of the developing Member States' capabilities to participate in these programmes; (ii) there is a need to maximize the benefits obtained from the available funding of the Commission's activities; (iii) the present arrangements adopted by the Commission for the planning, promotion and implementation of IOC programmes at the regional level could be made more responsive to the needs of the Member States, especially developing ones. It concluded that

circumstances may arise where the regional activities of the Commission may need a status and continuity not provided for by any of the existing arrangements available to the Commission, and that it would be useful to agree upon the concept of regional Sub-Commissions and to establish such a new category of subsidiary bodies so that appropriate action can be taken by the Assembly if the need to create a particular Sub-Commission is expressed by directly concerned Member States.

175 At its Twelfth Session, the IOC Assembly decided (Document SC/MD/73, Annex V - Summary Report) that regional Sub-Commissions shall be established only by the Assembly, at the request of Member States in the region, taking into account at least the following basic conditions: an existing regional subsidiary body of the Commission has formally requested the Assembly to designate it as a regional Sub-Commission; the budget and secretariat required for the effective functioning of the proposed regional Sub-Commission will be made available; and the Member States of the region for which a regional Sub-Commission is proposed are already actively engaged in co-operative activities or have demonstrated their commitment to do so. The Assembly also adopted other general guidelines governing the functioning of IOC Sub-Commissions (Document IOC/WESTPAC-IV/Inf.2, Section 5.2 on "Sub-Commission" of the revised text of the IOC Manual).

176 The Regional Committee recognized that its activities were moving from the planning stage to an operational phase, and this would appear to warrant a change in its status. However, the Regional Committee stressed the importance it attached to having an IOC Secretariat for WESTPAC, based in the region to support the work of a Sub-Commission for the region and requested the Secretary IOC to explore such a possibility and to develop proposals to be submitted to the Fifteenth Session of the Assembly with a view to providing resources, in terms of staff as well as funding, for that purpose.

177 The IOC Senior Assistant Secretary informed the Committee that he had consulted with the Secretary on this matter. The Secretary IOC is prepared to recommend in future proposals for the Programme of Work and Budget of the Commission support for an IOC Secretariat to be located in the region to service an eventual Sub-Commission for the Western Pacific. However, he pointed out that the Commission would require an offer of a location and related facilities and support from a Member State for such a Secretariat, it being understood that a final decision on this matter will be taken by the IOC Assembly.

178 The Regional Committee recognized that a decision on any recommendation to the Assembly to create a Sub-Commission for the Western Pacific would not go before, and be acted upon by, the Assembly until March 1989, and that the First Session of the Sub-Commission could not take place until the second half of 1989, following consideration of the proposal by the Assembly at its Fifteenth Session. It therefore considered it essential that interim arrangements be made so as to create a solid basis for the work of the Sub-Commission and the future establishment of an IOC Secretariat for WESTPAC to be located in the region.

179 The Delegate of Thailand informed the Regional Committee that his government was willing to provide office space for an IOC Secretariat for the Sub-Commission.

180 The Delegate of Australia pointed out that the decisions being taken by the Regional Committee with respect not only to the creation of a Sub-Commission but also to nine proposals for research projects, called for specific interim arrangements for both an IOC Secretariat for WESTPAC and for the interim period to WESTPAC-V. He informed the Committee that his country was willing to provide interim facilities (office space, telecommunications, word processing secretarial support, etc.) for an IOC Secretariat for WESTPAC until the Sub-Commission was established, at which time the Secretariat would be moved to the location approved by the Assembly on the basis of offers made by Member States as was the case of Thailand. He also invited the IOC to establish a specific WESTPAC Trust Fund, for secretariat and other support to the Regional Committee, during the transition to a Sub-Commission, and for the Sub-Commission itself.

181 The IOC Senior Assistant Secretary welcomed the generous offers of support from the Delegates of Thailand and Australia, and expressed the willingness of the Secretary IOC to discuss with the authorities concerned the administrative and other steps that would need to be taken to ensure adequate funding and to formalize the arrangements in accordance with the established Rules and Procedure for establishing an IOC Secretariat for WESTPAC and for a Trust Fund.

182 The Regional Committee thanked Australia and Thailand for their generous offers.

183 The Regional Committee adopted Recommendation WESTPAC-IV.1.

7. ENHANCING THE MARINE SCIENCE CAPABILITIES OF DEVELOPING COUNTRIES

7.1 TEMA REQUIREMENTS IN SUPPORT OF THE APPROVED PROGRAMMES AND ACTIVITIES

184 The Technical Secretary explained that activities under TEMA during the past several years have evolved to respond to emerging needs in the marine sciences and related ocean services in the developing countries. Activities under TEMA fall into two categories: (i) assistance at the national and regional levels and linked with the ongoing programmes of the Commission; and (ii) strengthening marine scientific research capabilities under the Unesco-IOC Comprehensive Plan for a Major Assistance Programme to Enhance the Marine Science Capabilities of the Developing Countries. The latter aspect is dealt with under Agenda Item 7.2.

185 The assistance provided under TEMA covers basic training, including shipboard training, individual and group training courses in relation to, and in support of, ongoing or planned programmes of the Commission. In addition, study grants are provided to scientists to enable them to participate in scientific meetings (seminars, workshops and symposia) relating to the programmes of the Commission. Funds under TEMA generate support in cash and kind for the activities referred to above in which the donor countries are often involved in cost sharing as well as in provision of related services. This approach has contributed not only to increased opportunity for training of scientists from the developing countries of the region, but also to the promotion of closer co-operation and partnership between the interested developed and developing Member States in solving marine scientific problems of common interest to them. The

Technical Secretary particularly referred to the assistance provided by Japan and Australia to TEMA activities in support of the WESTPAC programme of work.

186 The Technical Secretary also informed the Regional Committee of other mechanisms established by the IOC to provide assistance to developing countries, notably the IOC Research Fellowship Scheme (IOC/RFS) under which a number of fellowships have been contributed by several Member States; the IOC Voluntary Co-operation Programme (IOC-VCP) under which progress has also been achieved through contributions made by some donor countries.

187 The Technical Secretary invited the Delegates to express their views on the support that their countries could provide IOC for TEMA activities in support of WESTPAC.

188 The Delegate of Australia stated that his government has been providing assistance to countries in the field of marine science and confirmed that such an assistance would continue to be provided in the future.

189 The Delegate of Japan reported that his government has, since 1981, been contributing to IOC Trust Fund in support of TEMA activities of WESTPAC and would continue to extend similar support in the future, particularly in the light of recommendations on TEMA by this Committee.

190 The Delegate of China announced his government's plans to host a workshop on marine pollution monitoring and biological effects, in which developing countries will be provided some support. He also declared his government's willingness to provide Shipboard Training Fellowships, 6-9 month fellowships to work at Chinese institutions and laboratories, and tide gauges to developing countries under the IOC-VCP.

191 The Delegate of Indonesia informed the Committee of the present collaboration between his country and the Netherlands in which a number of Indonesian scientists are currently under training or actively involved in joint research with Dutch scientists. He said that his country would be ready to consider providing support by sharing costs of hospitality including board and lodging for visiting scientists wishing to undertake joint research with Indonesian scientists.

192 The Delegate of the USSR referred to the various types of assistance being offered by his country to developing countries in marine science and related fields. These include: (i) education of marine scientists at post-graduate level; (ii) training on board USSR research vessels; (iii) provision of ship time to researching scientists on a regional basis (he cited the example of a USSR contribution of about 450 000 roubles to provide ship time for co-operative investigations by scientists in the Mozambique channel in 1987); (iv) individual training of scientists in research institutions, including the USSR National Oceanographic Data Centre; and (v) expert services in various fields, on request.

193 The Regional Committee expressed its appreciation to these Delegates for their offer of assistance in support of TEMA activities. It requested the Secretary IOC, in consultation with Member States concerned, to take appropriate steps to announce these offers of assistance and to make them available to the requesting countries.

194 The Regional Committee decided that the adjustment of TEMA activities to the requirements of the research proposals adopted by the Committee should take into account the Committee's relevant views and recommendations.

7.2 IMPLEMENTATION OF THE UNESCO-IOC COMPREHENSIVE PLAN FOR A MAJOR ASSISTANCE PROGRAMME TO ENHANCE THE MARINE SCIENCE CAPABILITIES OF DEVELOPING COUNTRIES

195 The Technical Secretary introduced the main features of the Unesco-IOC Comprehensive Plan for a Major Assistance Programme to Enhance the Marine Science Capabilities of the Developing Countries. He reminded the Regional Committee that WESTPAC-III had already endorsed the Plan.

196 The Comprehensive Plan envisages a set of strategies designed to: (i) provide an adequate basis for evaluating the needs of the developing countries in marine science and related aspects; (ii) promote effective co-ordination and utilization of available national resources so as to respond to national institutional and human needs, and to achieve national goals in marine affairs; and (iii) formulate technical assistance project proposals, at the request of Member States, for possible international funding. He drew attention to the preparation of Marine Science Country Profiles, the object of which is to reflect the state of marine science in Member States, including existing infrastructure, manpower and research projects, and the evaluation of means to respond to growing national needs.

197 He drew attention to the project proposal prepared under the Comprehensive Plan entitled Strengthening National and Regional Capability in Ocean Science and Services in Support of Ocean Development in the South-east Asian Region, which was submitted to the governments concerned and to UNDP through Unesco. The project is essentially one of preparatory phase assistance, aimed at formulating a full-scale project based on: (i) definition of objectives for the development of a programme to strengthen ocean science, ocean services and related technology as a function of national and sub-regional goals for integrated development and management of shared environment and their resources; (ii) identification of priority needs of the participating countries with a view to recommending measures for the development of a framework for the sub-region within which to establish co-operative networks in selected fields; and (iii) selection in each country of institutions which can serve as focal points to organize and to implement activities as part of the full-scale project.

198 He said that, although the project received support from the countries, the UNDP informed the IOC Secretariat that it may wish to

consider the project during the mid-term cycle of 1987-1991, subject to availability of funds.

199 Some Delegates commented that the present format of MSCPs is too complex and requires considerable effort in terms of time and funds to prepare them. Other Delegates said that, although MSCP is a very useful concept, a simpler form of presentation of information could be equally useful. The Chairman, Dr. Bunt, referred to a Chinese government directory of national marine science agencies, which he suggests might provide a useful model for WESTPAC Member States.

200 The Regional Committee, while recognizing that several project proposals presented to the Committee may possibly be considered as suitable candidates for international funding, restated its strong support for the preparation of a regional project which should include, inter alia, a sub-project on recruitment of shrimps in the WESTPAC region under the Unesco-IOC Comprehensive Plan for a Major Assistance Programme to Enhance Marine Science Capabilities of the Developing Countries, as discussed under Agenda Item 4.1, for international funding.

201 The Regional Committee requested the Secretary IOC, in consultation with FAO and Member States concerned in the region, to formulate such a proposal and to explore all possible sources of national and international funding (e.g., UNDP, World Bank, other aid-giving agencies).

8. FUTURE PROGRAMME OF WORK

8.1 PROGRAMME OF WORK 1988-89 AND EXPECTED TRENDS DURING THE MEDIUM-TERM PLAN 1990-1995

202 The IOC Senior Assistant Secretary explained that the first component of the IOC Programme of Work and Budget for 1988-89 is the IOC Regular Budget within the Draft Unesco 24 C/5 (Programme X.4) which contains the basic activities essential to maintaining the Commission's Programmes. The sum assigned for this purpose is $45 000. The second component, indicated by vertical bars in the margin of Document IOC/WESTPAC-IV/Inf. 4, contains a series of activities related essentially to global and regional programme implementation that would be carried out as a function of the resources made available through the IOC Trust Fund. The anticipated amount for WESTPAC activities is $125 000. Although the level of resources provided through Unesco can be anticipated with a relative degree of certainty, subject to decisions of the General Conference, the success of Member States' efforts to mobilize voluntary contributions is less predictable. Fluctuations in the level of resources also depend on possible readjustments in the Unesco budget during a biennium. The degree to which the entire proposed programme would be carried out would depend upon the funding made available to the Commission during 1988-89. The Senior

Assistant Secretary also reminded the Committee that a certain, but undefined portion of IOC funds assigned to global programmes (e.g., IGOSS, IODE, GIPME, etc.) would also be spent in the western Pacific region depending on the activities planned under each global programmes.

203 Some Delegates expressed disappointment with the relatively low level of funding, especially since it was not possible to determine more or less precisely the amount of funds that might be assigned to activities in the region in the context of IOC global programmes. Clarification was sought on the possibility of modifying the very general budget assigned in the 24 C/5 in the light of the decisions being taken on project activities at the present Session.

204 The IOC Senior Assistant Secretary explained that the funding assigned in the Draft 24 C/5 had been approved by the Assembly at its Fourteenth Session and that any alteration in budgetary assignations could best be effected by the Member States Delegations to the 24th General Conference of Unesco. However, minor adjustments are possible since some items have been formulated only in a general form. He drew attention to the "Guidelines for the Structure and Responsibilities of the Subsidiary Bodies of the Commission", which states that the "Secretariat support for the regional sub-Commission shall be provided by the IOC Secretariat (headquarters staff and staff outposted in the region) and by Member States" (Ref. IOC Manual; Section 5; sub-section 5.1.7).

205 The Regional Committee considered that staff be made available to support the WESTPAC programme and that such staff be located in the region to assist the Secretariat for WESTPAC, regardless of whether a Sub-Commission were established or not and to assist with the follow-up of decisions taken at the present Session and related interim activities, including preparations for the Regional Committee to meet in 1989.

206 The Regional Committee expressed concern that the funding proposed for WESTPAC activities within the Draft 24 C/5 fell short of that required for the implementation of certain activities identified at the present Session as being essential elements for laying the basis of the proposed Sub-Commission. It considered it, moreover, necessary to hold either the Fifth Session of the Regional Committee or the First Session of a new Sub-Commission in 1989, rather than 1990 as now foreseen, so as to consolidate that basis as quickly as possible. Being of the view that additional funding is required for the successful implementation of its activities, the Regional Committee strongly urged Member States to concert their efforts to draw this matter to the attention of the 24th Session of the Unesco General Conference, preferably in the form of a Draft Resolution (to be submitted before 4 August 1987).

207 In view of the shortage of funds, the Regional Committee decided to attempt to order the nine project proposals considered under Agenda Items 4 and 5, in terms of the main needs of the region and feasibility.

208 The IOC Senior Assistant Secretary explained that the method proposed to be used might not produce meaningful results since it involved matching one type of activity against another, rather than assessing independently the relative importance of each proposal in terms of national interest in each Member State.

209 The Regional Committee decided to implement preferentially the following projects:

(i) Toxic and Anoxic Phenomena in Algal Blooms in the WESTPAC Region

(ii) Regional Collaborative Programme on Recruitment of Penaeid Prawns in the Indo-Western Pacific Region

(iii) Regional Network of Specialized Laboratories to Monitor Heavy Metals and Organochlorine Pesticides Using the Musselwatch Approach

(iv) Co-operative Research Study of the Banding of Corals, as a Component of Ocean Climate Studies

(v) Assessment of River Inputs to the Sea in the WESTPAC Region

(vi) Palaeographic Map of the Western Pacific.

210 However, it also decided to encourage the implementation, by interested Member States, of the following projects:

(i) Margins of Active Plates

(ii) Co-operative Research Study of the Continental Shelf Circulation in the Western Pacific Region

(iii) Co-operative Research Study of Ocean Dynamics in the Northwest Pacific.

211 The Regional Committee considered that each co-operative project should be implemented through networks of participating institutions/experts and developed and co-ordinated by a small Expert Steering Group composed of active scientists from participating institutions and led by a Project Co-ordinator appointed by the Chairman of WESTPAC in consultation with the Secretary IOC. It requested the Chairman of WESTPAC and the Secretary to promote the establishment of the co-operative networks required for implementation of the agreed projects.

212 The Regional Committee adopted Recommendation WESTPAC-IV.2.

9. CO-OPERATION WITH RELEVANT REGIONAL ORGANIZATIONS AND PROGRAMMES

213 The Senior Assistant Secretary, introducing this Item, drew the attention of the Regional Committee to the co-operation that exists in a number of fields with the UN Organizations members of ICSPRO, and particularly with Unesco through the Division of Marine Sciences and ROSTSEA. He also informed the Committee of the close co-operation with UNEP especially in the framework of the Co-ordinating Body for the Seas of East Asia (COBSEA) and the South Pacific Regional Environment Programme (SPREP).

214 The Representative of Unesco presented a report on activities undertaken by the Unesco Division of Marine Sciences as contributions to WESTPAC objectives (Document Marinf/61). He underlined the complementary nature of activities undertaken by the Division of Marine Sciences and IOC in the field of marine science and assured the Regional Committee of the continued close co-operation of the Division of Marine Science, ROSTSEA and IOC in WESTPAC activities, particularly in microcomputer data-box development and coral coring for environmental assessment. He drew the attention of the Committee to the ongoing work in analyzing marine science curricula for the region and tabled a report on bathymetric mapping exercises and projects identified in the WESTPAC region.

215 The Regional Committee welcomed the growing co-operation between IOC and relevant Organizations in the region, particularly with UNEP and Unesco. It expressed its appreciation of the co-operation offered by the Unesco Division of Marine Sciences in the specific fields referred to above.

10. ELECTION OF CHAIRMAN AND VICE-CHAIRMAN

216 The Technical Secretary explained that, in accordance with the Rules of Procedure, the Chairman and Vice-Chairman for the Regional Committee can be eligible for election for two consecutive terms. He therefore invited the Regional Committee to consider nomination of candidates to the above-mentioned offices.

217 For Chairman, the Delegate of Thailand proposed Professor Takahisa Nemoto of Japan. This proposal was unanimously supported, and Professor Nemoto was elected by acclamation.

218 The Delegate of the USA proposed Dr. Choompol Swasdiyakorn of Thailand as Vice-Chairman. This proposal was strongly supported and Dr. Choompol Swasdiyakorn was elected by acclamation.

11. DATES AND PLACE OF FIFTH SESSION

219 The Delegate of China invited the Regional Committee to consider his government's offer to host the Fifth Session of WESTPAC in Beijing, China.

220 The Regional Committee expressed its appreciation to the government of China and welcomed this offer. With regard to the timing of the Session, it recommended that the Session be held within six months after the Fifteenth Session of the IOC Assembly scheduled to be held in March 1989.

12. ADOPTION OF SUMMARY REPORT

221 The Regional Committee was not able to complete the approval of the Draft Summary Report and the Recommendations during the Session and instructed the Secretary to prepare a complete draft, taking into account the comments made during consideration of the Draft Summary Report, and to send it to the Heads of Delegations, Representatives and Observers at the present Session as soon as possible for final comment and approval.

13. CLOSURE

222 The Regional Committee expressed its great appreciation to Dr. John Bunt for his excellent leadership as Chairman in piloting the work of the Regional Committee to a success.

223 Dr. Bunt in return expressed his thanks to the Delegates and all Member States for the co-operation they had given him in the performance of his task, and the IOC Secretariat for its collaboration.

224 The Regional Committee expressed its appreciation once again to the Government of Thailand for the excellent arrangements made for the Session. In particular it sincerely thanked the Local Organizing Committee and the Secretariat staff for their devotion and hard work during the preparation and conduct of the Session.

225 The Chairman closed the Session at approximately 1900 on 26 June 1987.

ANNEX I

AGENDA

1. Opening

2. Administrative Arrangements

   2.1 Adoption of the Agenda

   2.2 Designation of the Rapporteur

   2.3 Conduct of the Session, Timetable and Documentation

3. Review of Intersessional Activities

   3.1 Report of the Secretary

   3.2 Outcome of the Symposium on Marine Science in the Western Pacific: the Indo-Pacific Convergence

4. Ocean Sciences in the Western Pacific

   4.1 Regional Component of Ocean Science in Relation to Living Resources (OSLR)

   4.2 Regional Component of Ocean Science in Relation to Non-Living Resources (OSNLR)

   4.3 Regional Component of Ocean Dynamics and Climate (ODC)

      4.3.1 Continental Shelf Oceanography
      4.3.2 Ocean Dynamics in the Northwest Pacific
      4.3.3 Ocean Dynamics in the Tropical Pacific

   4.4 Regional Component of Marine Pollution Research and Monitoring (GIPME/MARPOLMON)

5. Ocean Services in the Western Pacific

   5.1 Ocean Observing Systems

      5.1.1 IGOSS Ship-of-Opportunity Programme
      5.1.2 Regional Component of the IOC Global Sea-level Observing System (GLOSS)
      5.1.3 Other Ocean Observing Systems in the Region

5.2 Oceanographic Data and Information Management Systems

5.2.1 State and Future Development of Oceanographic Data Exchange in the Region

5.2.2 State and Future Development of Marine Scientific Information Management

6. Functioning of the Regional Committee

6.1 Criteria for Selection of Programmes part of, or relevant to, WESTPAC

6.2 National Liaison Arrangements with IOC and for WESTPAC

6.3 Possible Creation of an IOC Sub-Commission for the Western Pacific

7. Enhancing the Marine Science Capabilities of Developing Countries

7.1 TEMA Requirements in Support of the Approved Programmes and Activities

7.2 Implementation of the UNESCO-IOC Comprehensive Plan for a Major Assistance Programme to Enhance the Marine Science Capabilities of Developing Countries

8. Future Programme of Work

8.1 Programme of Work 1988/89 and Expected Trends during the Medium-Term Plan 1990-1995

9. Co-operation with Relevant Regional Organizations and Programmes

10. Election of Chairman and Vice-Chairman

11. Dates and Place of Fifth Session

12. Adoption of Summary Report

13. Closure

ANNEX II

RECOMMENDATIONS

Recommendation WESTPAC-IV.1

CREATION OF A REGIONAL SUB-COMMISSION AND ASSOCIATED ARRANGEMENTS

The IOC Regional Committee for the Western Pacific,

A

Creation of a Sub-Commission and Timing

Recalling the decision of the IOC Assembly, at its Twelfth Session, to create a new category of IOC Subsidiary Body known as Sub-Commission,

Noting that the creation of a Sub-Commission can further the interest of, and stimulate support from, its Member States for Sub-Commission activities in marine science, ocean services and the related training, education and mutual assistance,

Having considered the need for a stronger regional mechanism in the western Pacific for planning, promotion, implementation and co-ordination of marine scientific programmes and ocean services in the region,

Recommends that the IOC Assembly establish an IOC Sub-Commission for the Western Pacific with the same acronym, WESTPAC, to replace the present Regional Committee for the Western Pacific;

Recommends to the IOC Assembly that the First Session of the Sub-Commission take place immediately following a brief Fifth and final Session of the Regional Committee;

Acknowledges with thanks the generous offer of the Government of the People's Republic of China to host the Fifth Session of the Regional Committee within six months following the Fifteenth Session of the IOC Assembly.

B

Regional Secretariat for the Sub-Commission

Recognizing the necessity for the establishment of a full-time IOC Secretariat to be located in the region to serve the Sub-Commission and to co-ordinate and promote activities of regional interest,

Noting with appreciation the generous offer by the Government of Thailand to provide office space for an IOC Secretariat to service such a Sub-Commission,

Calls on the Secretary to make the necessary arrangements with the Government of Thailand for the use of the offered space with a view to facilitating the establishment of an IOC Secretariat for the Sub-Commission for WESTPAC if the latter is approved by the Assembly.

C

Intersessional Secretariat Arrangements

Recognizing the importance of ensuring continued effective Secretariat support for the Regional Committee and its Chairman and Vice-Chairman in generally advancing the objectives of WESTPAC, and particularly in implementing projects endorsed by the Regional Committee,

Welcomes the generous offer by the Government of Australia to provide secretariat accommodation, communications and word-processing facilities for the intersessional period between the Fourth and Fifth Session of the Regional Committee;

Instructs the Secretary IOC, in consultation with the Chairman of the Regional Committee, to negotiate with the Government of Australia details of the above offer with a view to establishing a WESTPAC Trust Fund which could receive extra-budgetary contributions from IOC Member States, IOC (Paris) and other sources, from which salary and travel costs of a secretariat officer could be met beginning immediately and which could also meet the expenses of implementation of those programmes endorsed by the Regional Committee.

Recommendation WESTPAC-IV.2

STRUCTURE AND PROGRAMME OF WORK FOR THE INTERSESSIONAL PERIOD

The Regional Committee for the Western Pacific,

A

Structure of Work

Recognizing the need for:

(i) Co-ordination of scientific programmes endorsed by the Regional Committee,

(ii) Co-ordination of regional inputs to IOC global programmes,

(iii) Integration of the Regional Committee's programmes with those programmes of other Agencies active in the WESTPAC region,

(iv) Flexibility in the formulation of other programmes that might complement those programmes endorsed by the Regional Committee,

(v) Identification of a network of interested scientists in the WESTPAC region,

Requests the Chairman of the Regional Committee, after consultation with Member States, to appoint, without delay, a Programme Co-ordinator in each of the following areas:

- Ocean Science in Relation to Living Resources (OSLR)
- Ocean Science in Relation to Non-Living Resources (OSNLR)
- Marine Pollution Research and Monitoring (MPRM)
- Ocean Dynamics and Climate (ODC),

and to advise the Member States of the details immediately thereafter;

Further requests the Chairman of the Regional Committee, taking note of the decisions on its programme of work (below), to appoint for each project a Project Leader to be immediately responsible to the Programme Co-ordinator for the respective subject area for progressive implementation of the project;

B

Programme of Work

Recognizing the essentialness of a well defined and clearly focussed programme of work for the intersessional period that:

(i) addresses regional scientific problems

(ii) reflects high levels of Member State interest

(iii) has clearly identified sources of financial support, and

(iv) has identified leadership (Project Leaders),

Also recognizing the need for close co-operation between organizations active in the region,

Adopts the following as WESTPAC projects (details of which are contained in the body of the report) to commence immediately :

(i) Toxic and Anoxic Phenomena Associated with Algal Blooms in the WESTPAC region,

(ii) Recruitment of Penaeid Prawns in the Indo-Western Pacific Region,

(iii) Monitoring Heavy Metals and Organochlorine Pesticides Using the Musselwatch Approach,

(iv) Banding of Porites Corals as a Component of Ocean Climate Studies,

Requests the Secretary IOC to provide from the regular budget of IOC for the next biennium such funds as are available in support of those projects and to follow up on those extra-budgetary sources identified in the project documents.

Requests the Chairman to explore actively all avenues to enable two other research projects considered by the Regional Committee:

- Assessment of River Inputs to the Sea in the WESTPAC Region,
- WESTPAC Palaeogeographic Map

to proceed during the intersessional period, since their inclusion in the work programme would be of benefit in furthering collaboration between the Regional Committee and other bodies,

Further requests the Chairman and the Secretary IOC to seek such funds as would enable all other projects and workshops considered by the Regional Committee to be further developed during the intersessional period, especially those projects described as:

- Margins of Active Plates
- Continental Shelf Circulation in the Western Pacific
- Ocean Dynamics in the Northwest Pacific.

ANNEX III

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(same address as above)

ANNEX IV

LIST OF WORKING DOCUMENTS

Document Code	Title
IOC/WESTPAC-IV/1 prov.	Provisional Agenda
IOC/WESTPAC-IV/1 prov. Add.	Provisional Timetable
IOC/WESTPAC-IV/2	Annotated Provisional Agenda
IOC/WESTPAC-IV/2 Corr.	Corrigendum to the Annotated Provisional Agenda
IOC/WESTPAC-IV/3	Summary Report
IOC/WESTPAC-IV/4 rev.3	Revised List of Documents
IOC/WESTPAC-IV/5 prov.	Provisional List of Participants
IOC/WESTPAC-IV/6	Report on Intersessional Activities
IOC/WESTPAC-IV/7	(Cancelled, replaced by Doc. IOC/WESTPAC-IV/ Inf.4)
IOC/WESTPAC-IV/8	Action Paper
IOC/WESTPAC-IV/8 Annex 1	WESTPAC Regional Component of OSLR (i) Proposal on Regional Collaboratory Programme on Recruitment of Penaeid Prawn in the Indo-Western Pacific Region (ii) Project Proposal on Toxic and Anoxic Phenomena associated with Algal Blooms in the WESTPAC Region
IOC/WESTPAC-IV/8 Annex 2	WESTPAC Regional Component of OSNLR (i) WESTPAC Palaeogeographic Mapping Project (ii) Project Proposal on Margins of Active Plates (MAP)
IOC/WESTPAC-IV/8 Annex 3	WESTPAC Regional Component of Ocean Dynamics and Climate: Project Proposal on Porite Corals as a Component of Climate Studies

IOC/WESTPAC-IV/8 Annex 4	WESTPAC Regional Component of Marine Pollution Research and Monitoring (GIPME-MARPOLMON) (i) Proposal for a Regional Network of Specialized Laboratories to Monitor Heavy Metals and Organochlorine Pesticides Using Musselwatch Approach (ii) Project Proposal on the Assessment of River Inputs to the Sea in the WESTPAC Region (iii) Monitoring Selected Contaminents in Sediments and Water Biota other than Sentinel Organisms
IOC/WESTPAC-IV/8 Annex 5	WESTPAC Regional Component of the Global Sea-level Observing System (GLOSS)
IOC/WESTPAC-IV/8 Annex 6	(Cancelled, replaced by Doc. IOC/WESTPAC-IV/ Inf.3)
IOC/WESTPAC-IV/8 Annex 7	WESTPAC Regional Component of International Oceanographic Data Exchange (IODE)
IOC/WESTPAC-IV/8 Annex 8	Criteria for Definition of a Project of WESTPAC
IOC/WESTPAC-IV/Inf.1	Information on Arrangements and Services Available for the Session
IOC/WESTPAC-IV/Inf.2	Guidelines for the Structure and Responsibilities of the Subsidiary Bodies of the Commission
IOC/WESTPAC-IV/Inf.3	WESTPAC Regional Component of IGOSS XBT Ship-of-Opportunity Programme
IOC/WESTPAC-IV/Inf.4	Proposal on the IOC Programme of Work and Budget for 1988-89 (Extracts from Document IOC-XIV/8 Annex 5 relevant to WESTPAC)
IOC/WESTPAC-IV/Inf.5	Intersessional Report on the Integrated Global Ocean Services System (IGOSS) in the Western Pacific
IOC/WESTPAC-IV/Inf.6	Report of the Group of Experts on Marine Geology and Geophysics
IOC/WESTPAC-IV/Inf.7	Summary of Intersessional Activities of the Task Team on Ocean Sciences in Relation to Living Resources in Western Pacific

IOC/WESTPAC-IV/Inf.8	Regional Component of Ocean Dynamics and Climate: Proposal for Ocean Dynamics Studies in the Northwest Pacific
IOC/WESTPAC-IV/Inf.9	Regional Component of Ocean Dynamics and Climate: Proposal in Continental Shelf Circulation in the Pacific
IOC/WESTPAC-IV/Inf.10	Soviet WESTPAC Programme Studies: Prospects and Results
IOC/WESTPAC-IV/Inf.11	General Results of Geological and Geophysical Investigation According to the International WESTPAC. Programme in the USSR and Plans for 1987-1990 Research
IOC/WESTPAC-IV/Inf.12	National Report in Marine Scientific Activities of the People's Republic of China
IOC/WESTPAC-IV/Inf.13	Report on Intersessional Activities on Ocean Science in Relation to Non-Living Resources (OSNLR)
IOC/WESTPAC-IV/Inf.14	Report on Intersessional Activities on Marine Pollution Research and Monitoring in the WESTPAC Region.

N.B. THIS LIST IS FOR REFERENCE ONLY. NO STOCKS OF THESE DOCUMENTS ARE MAINTAINED.

ANNEX V

LIST OF ACRONYMS AND ABBREVIATIONS

ASEAN	Association of Southeast Asian Nations
ASFA	Aquatic Sciences and Fisheries Abstracts
ASFIS	Aquatic Sciences and Fisheries Information System
BATHY/TESAC	Temperature Versus Depth/Temperature Salinity Currents Versus Depth
BTs	Bathythermograph(s)
BUFR	Binary Universal Form for Records (WMO binary code FM 94)
CARIPOL	Caribbean Component of GIPME/MARPOLMON
CCCO	Joint SCOR-IOC Committee on Climatic Changes and the Ocean
CCOP	Committee for the Co-ordination of Joint Prospecting for Mineral Resources in Asian Offshore Areas
CCOP(SOPAC)	Committee for the Co-ordination of Joint Prospecting for Mineral Resources in South Pacific Offshore Areas
CD-ROM	Compact Disk Read-Only-Memory
COBSEA	Co-ordinating Body for the Seas of East Asia
COMAR	Unesco Major Interregional Project on Coastal Marine Systems
DBCP	Drifting-Buoy Co-operation Panel
DNAs	Declared National Agency(ies)
EPOCS	Equatorial Pacific Ocean Climate Studies
ERFEN	Estudio Regional del Fenomeno 'El Nino'
FAO	Food and Agriculture Organization of the United Nations
FFA	Forum Fisheries Agency
GEEP	Group of Experts on Effects of Pollutants
GEK	Geomagnetic-Electrokinetograph
GEMSI	Group of Experts on Methods, Standards and Intercalibration

GIPME	Global Investigation of Pollution in the Marine Environment
GLOSS	Global Sea-Level Observing System
ICLARM	International Centre for Living Aquatic Resources
ICSPRO	Inter-Secretariat Committee on Scientific Programmes Relating to Oceanography
ICSU	International Council of Scientific Unions
IDOE	International Decade of Ocean Exploration
IFREMER	Institut Francais de Recherche pour l'Exploitation de la Mer
IGCP	International Geological Correlation Programme
IGOSS	Integrated Global Ocean Services System
IOC	Intergovernmental Oceanographic Commission
IOCARIBE	IOC Sub-Commission for the Caribbean and Adjacent Regions
IOC/RFS	IOC Research Fellowship Scheme
IOC/VCP	IOC Voluntary Co-operation Programme
IODE	International Oceanographic Data Exchange
INFIS	Indonesian Aquatic Science and Fisheries Information System
IMSTI	Institute of Marine Scientific and Technological Information (China)
IREP(SARP)	International Recruitment Programme Sardine/Anchovy Recruitment Project
IREP(TRODERP)	International Recruitment Programme (Tropical Demersal Recruitment Project)
ISCCP	International Satellite Cloud Climatic Programme
ISLPP	IGOSS Sea-Level Pilot Project (in the Pacific)
ISTPP	IGOSS Sub-Surface Thermal Structure Pilot Project
JECSS	Japan and East China Seas Study
JODC	Japan Oceanographic Data Centre
JSC	Joint ICSU-WMO Scientific Committee for the WCRP
MAFIS	Malaysian Aquatic Science and Fisheries Information System

MAP	Margin of Active Plates
MARPOLMON	Marine Pollution Monitoring System
MEDI	Marine Environmental Data Information Referral System
MIM	Marine Information Management
MSCP	Marine Science Country Profile
MSL	Mean-Sea-Level
NASA SPAN	National Aeronautic and Space Administration - Space Physics Analysis Network
NODC	National Oceanographic Data Centre
NOP	National Oceanographic Programmes
NORPAX	North Pacific Experiment
ODC	Ocean Dynamics and Climate
ODP	Ocean Drilling Project
ORSTOM	Institut Francais de Recherche pour le Developement en Co-operation[1]
OSLR	IOC-FAO Programme on Ocean Science in Relation to Living Resources
OSNLR	IOC-UN(OETB) Programme on Ocean Science in Relation to Non-Living Resources
PASFIS	Philippines Aquatic Science and Fisheries Information System
PIMRIS	Pacific Islands Marine Resource Information System
RNODC	Responsible National Oceanographic Data Centre
ROSCOP	Report on Observation/Samples Collected by Oceanographic Programmes
ROSTSEA	Unesco Regional Office for Science and Technology for Southeast Asia

[1] previously called Office de la Recherche Scientifique et Technique Outre-Mer.

SCOR	ICSU Scientific Committee on Oceanic Research
SEAFDEC	Southeast Asia Fisheries Development Centre
SEAFIS	Southeast Asian Fisheries Information System
SEATAR	Joint CCOP-IOC Working Group on post-IDOE Studies of East Asian Tectonics and Resources
SET	Sea Level, Environments and Tectonics
SETMY	Sea Level, Environments and Tectonics in Past Million Years
SETR	Sedimentary Environment, Eustatic Sea-Level Changes, Tectonics and Resources
SOC	Specialized Oceanographic Centre (of IGOSS)
SPC	South Pacific Commission
SPREP	South Pacific Regional Environment Programme
SSG/WOCE	Scientific Steering Group for WOCE
STAR	Joint CCOP(SOPAC)-IOC Working Group on South Pacific Tectonics and Resources
TEMA	Training, Education and Mutual Assistance
TFIS	Thai Aquatic Science and Fisheries Information System
TOGA	Tropical Oceans and Global Atmosphere
UN(OETB)	UN Ocean Economics and Technology Branch
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
USP	University of South Pacific
WCRP	World Climate Research Programme
WDC	World Data Centre
WESTPAC	IOC Regional Committee for the Western Pacific
WMO	World Meteorological Organization
WOCE	World Ocean Circulation Experiment
XBT	Expendable Bathythermograph