

Intergovernmental Oceanographic Commission
Reports of Governing and Major Subsidiary Bodies



IOC Sub-Commission for the Western Pacific

Seventh Session

Kota Kinabalu, Sabah, Malaysia
26–29 May 2008

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1. OPENING

- 1 The Seventh Intergovernmental Session of the IOC Sub-Commission for the Western Pacific (WESTPAC) began in the Magellan Sutera, Sutera Harbour Resort, Kota Kinabalu, Sabah, Malaysia, at 0900 on Monday, 26 May 2008. The Session was organized by the IOC Regional Secretariat for WESTPAC (WESTPAC Secretariat), and hosted by the Ministry of Science, Technology and Innovation (MOSTI) of Malaysia.
- 2 At the opening ceremony, YG BHG Dato' Abdul Hanan Alang Endut, Secretary General, MOSTI, Malaysia, welcomed delegates from various countries and international organizations and programmes to the Session. He recalled the participation of his country in the IOC Sub-Commission for the Western Pacific since its inception 1989 and the support his country has provided to it as a member state, including particularly the activities relating to the National Tsunami Early Warning System. He highlighted the impacts of the deadly 2004 tsunami in the Indian Ocean and the recent cyclone in Myanmar and Malaysia, and the need to learn from these events to come up with better approaches in preparedness and response for the years to come. Malaysia, as the host country for the Seventh WESTPAC International Scientific Symposium and the Intergovernmental Session this time, was impressed by the positive responses from the scientific community of the region towards these events and the active participation of over 300 delegates for the Symposium and more than 100 for this Session, together with more than 300 quality technical papers, presentations and posters, five strategic and focused workshops, as well as an exhibition of interesting R & D Products and technologies. The lesson learned from this gathering was the recognition of the need to provide a platform for effective communication and feedback input from participants involved in IOC/UNESCO programmes. Moreover, more attention should be given to the alarming trend of global warming and the urgent need for adaptation to climate change by present and future generations. He considered the IOC / WESTPAC meetings were a valuable platform for the gathering of both the scientific and the institutional worlds to work out together the strategies and action plans to address various oceanic and climatic concerns. He hoped the deliberations over the next four days of the Session would refine the collaborative framework for translating science for decision-making.
- 3 Dr Hyung Tack Huh □ Chairperson of the IOC Sub-Commission for the Western Pacific, congratulated the Government of Malaysia for hosting the Meeting, and the National Oceanography Directorate of Malaysia for the hard work and excellent arrangements made for the Session. He noted, in particular, that the Symposium hosted by Malaysia this time is the largest one in terms of participation in the Symposium's history. He hoped that the unflinching signs of devotion to marine science in the region, demonstrated this time, would continue to prevail towards the coming days. Despite the unsatisfactory development of WESTPAC before 2006, largely due to the reduced working funds and decreased concern of the member states, there has been a substantial progress in restructuring and refining the Sub-Commission's programmes and activities mainly initiated by the WESTPAC Secretariat led by Mr Wenxi Zhu and his colleagues in the past two years. He stressed the urgent need to increase monitoring efforts and improve the understanding of the regional seas through strengthening of science programmes, a comprehensive ocean observing system and capacity building, which underpin sustainable development. He expected that the Session would address important issues as reflected in its agenda and arrive at constructive and fruitful Resolutions and Recommendations.
- 4 On behalf of the IOC and the Director General of UNESCO, Dr Patricio Bernal, Executive Secretary IOC, thanked the Malaysian Government for hosting the meeting and extended special thanks to the local organizers for the preparations of this event. He further expressed sorrow and solidarity to the peoples and governments of Myanmar and China for the loss of life and property suffered as a consequence of Cyclone Nargis and the strong earthquake of the 12 of May in the province of Szechuan on behalf of IOC member states. IOC, ICSU and WMO have supported and are still supporting the World Climate Research

Programme. IOC will continue its work in coordinating research and observations for Climate Change. There are clear indications that some processes, critical to ascertain the speed at which Climate Change is progressing, are accelerating. We need to move to provide advice to our governments and decision makers. The inertia of the Climate System tells us that even if we were to successfully stop all emissions of CO₂ today, the average temperature of the planet would keep rising for the next twenty years. Adaptation to these changes needs to be undertaken now. This emphasizes the urgent need to develop the institutions that will carry the responsibility to provide the solutions to adapt society to climate change. We need to give this mandate to somebody in our nations. We need to learn how to transfer the data and information necessary to conduct adaptation in the field. For this we are talking for the first time of Climate Services. He expressed the hope that this Session of the WESTPAC looks into these matters, as reflected by the new medium-term strategy of IOC and the four high-level objectives defined there.

5 Following the opening remarks, YG BHG Dato' Abdul Hanan Alang Endut, presented tokens of appreciation on behalf of the Government of Malaysia to Dr Patricio Bernal and Dr Hyung Tack Huh for their support provided to the successful organization of the IOC/WESTPAC gathering in Malaysia and to the regional cooperation in marine sciences.

6 The full text of the opening remarks is attached as Annex I.

2. ADMINISTRATION

2.1 ADOPTION OF THE AGENDA

7 Mr Wenxi Zhu, Technical Secretary for the Session, introduced the Tentative Provisional Agenda (Document IOC/SC-WESTPAC-VII/1.prov) and the Provisional Annotated Agenda (Document IOC/SC-WESTPAC-VII/2.prov), and invited participants to provide comments on them.

8 **The Sub-Commission adopted** the Agenda, which is attached as Annex II to this report.

2.2 DESIGNATION OF RAPPORTEUR FOR THE SESSION

9 Dr Hyung Tack Huh Chairperson of the IOC Sub-Commission, invited the Sub-Commission to designate the Rapporteur for the Session to assist the Chairperson and the WESTPAC Secretariat in the preparation of the Draft Summary Report. The delegation of Japan proposed a delegate from the United States as the Rapporteur for the Session. This was seconded by Australia.

10 **The Sub-Commission accepted** the proposal and **welcomed** the US Delegate as Rapporteur for the Session. Ms. Jessie Huart, National Ocean Service, National Oceanic and Atmospheric Administration (NOAA), USA, took her position as the Rapporteur.

2.3 CONDUCT OF THE SESSION

11 Mr Zhu introduced the Provisional Timetable (Document IOC/SC-WESTPAC-VII/1.add.prov.) and the Provisional List of Documents (Document IOC/SC-WESTPAC-VII/4.prov.) He said that the meeting would be organised in plenary, and ad hoc Sessional Working Groups may be formed to deal with specific items arising from the discussion,

12 **The Sub-Commission reviewed and adopted** the Provisional Timetable, taking into account: (i) the adopted agenda and the important items to be discussed which may require extra time to be debated; (ii) the time likely to be required by the Sessional Working Groups before reporting to the plenary; (iii) the preparation of the Draft Summary Report. The List of

Documents, List of Participants and List of Acronyms are given in Annexes III, V and VI respectively.

13 The Sub-Commission considered the need to establish some open-ended sessional working groups to facilitate deliberation under pertinent agenda items such as the establishment of the Scientific Board, WESTPAC Project Structure (2008-2013): procedures for establishment, implementation, continuation and termination of projects, and the Workplan and Budget (2008-2010). An inquiry was made regarding the time available for the work of these groups. In response, Mr Zhu explained that the time after the Sessional meetings and the whole afternoon on Day 3 of the Session were allocated for the working groups. In this regard, he showed appreciation to the members of the working groups for their sacrifice of time for the smooth conduct of the Session.

3. REPORT ON INTERSESSIONAL ACTIVITIES AND PROGRAMME EVALUATION

3.1 REPORT ON WESTPAC INTERSESSIONAL ACTIVITIES

3.1.1 Report on WESTPAC Intersessional Activities and Budget Overview

14 Mr Zhu presented his report to the Sub-Commission (Documents IOC/SC-WESTPAC-VII/5). He referred to some major efforts in revitalizing WESTPAC, including:

- Enhancing the participation and raising support of member States through establishing efficient communications and extensive dialogue. Efficient and effective communications have been established between the Member States and the WESTPAC Secretariat; The United States of America, the Russian Federation and the Democratic People's Republic of Korea sent delegations to attend the session after long years of absence; and several member states agreed to support or intensify their support for WESTPAC activities;
- Restructuring and refining WESTPAC activities through the forming of rules of procedure and calling for new projects. To be in line with IOC's High Level Objectives with regard to natural hazard, climate change, ocean ecosystem health and sustainable coastal and ocean management policies, WESTPAC Project Structure (2008-2013): Procedures for Establishing, Implementing, Reporting and Termination of projects was finalized. Several member states have developed regional projects for submission;
- Implementing the WESTPAC Workplan through strengthening coordination with Project Leaders. The two recommendations of the Sixth Session of the IOC/WESTPAC Sub-Commission, subsequently adopted at the Twenty-third Session of the Assembly of the IOC in 2005, have been fully or partially implemented; progress has been made on the implementation of the workplan adopted at the Sixth Session, notably on the WESTPAC-HAB, Remote Sensing, NEAR-GOOS and SEAGOOS; the GODAR-WESTPAC project has been successfully completed and the ODINWESTPAC Pilot Project has been launched and partially implemented, while several other projects remained dormant for long years;
- Improving regional capabilities in marine science through initiating the "UNESCO/IOC Regional Training and Research Centres on Oceanography in the Western Pacific". A Procedure and Guideline for the above-mentioned Centres has been finalized and approved by IOC Headquarter, and the first regional Centre is expected to be established by the end of this year;
- Strengthening regional cooperation with other organizations through

conducting joint activities. One Memorandum of Understanding was signed between WESTPAC and the UNDP/GEF YSLME project, and joint activities on the Ocean Color Algorithm for the Yellow Sea are on-going; a Letter of Cooperation and a Partnership Operating Arrangement were signed with the UNDP/GEF PEMSEA Project; and a training course on Remote Sensing Data Analysis was held jointly with UNEP/NOWPAP in September 2007;

- Strengthening links with IOC Headquarters through assistance in implementing its activities. Considerable time has been spent in assisting the IOC Headquarter's activities, notably for the implementation of the Adaptive Learning in Disaster Management for Community Awareness and Resilience Project (ALDCAR), and organization of several tsunami-related workshops;
- Raising Public Awareness through circulation of publications. Two issues of E-information have been sent to 500 scientists within and outside the WESTPAC Region. Brochures and posters for the 7th International Scientific Symposium, and a poster on the key activities of WESTPAC during year 2006-2007 were also widely distributed. Email groups were established. WESTPAC Website was renewed.

15 Mr Zhu also provided a brief report on the budget overview of the Sub-Commission (Document IOC/SC-WESTPAC-VII/6). He noted that about USD100K was allocated from IOC for the last two years, while a total of USD 400K was requested from the Sub-Commission for activities. The allocated budget from IOC was barely enough for the salary of one temporary consultant and one local staff. He took this opportunity to thank several countries for their contribution to assisting the revitalization of WESTPAC, supporting WESTPAC projects, and Thailand for seconding staff to work at the WESTPAC Secretariat and providing office space.

16 Mr Zhu further emphasized the importance of planning the future of WESTPAC for the coming biennium, highlighting the need to better orient WESTPAC in the region through medium/long-term planning; further enhancing the visibility of WESTPAC through developing its unique science programme; improving WESTPAC institutional building through establishing an intersessional strategic planning body-WESTPAC Science Board; and securing funds for WESTPAC activities through gradually exploring sustainable financial mechanisms.

17 Regarding the financial situation, he encouraged Member States to take flexible actions as they consider appropriate to improve the current financial situations, e.g., seconding staff for the WESTPAC Secretariat; hosting meetings and seminars, and making donations to the IOC special account for WESTPAC activities.

18 In the context of resource mobilization for WESTPAC, Dr Patricio Bernal informed the Session of the progress made in the recruitment of a new senior staff position (P4 level) in the WESTPAC Secretariat. The application process for the position has now closed and the staff selection process from among many candidates is on-going.

19 Delegates at the Session highly commended the comprehensive report presented by the Technical Secretary which provides an adequate coverage for WESTPAC activities during the intersessional period. They congratulated the WESTPAC Secretariat, with support from IOC headquarters, for the achievements made in a short time to start a difficult process for WESTPAC to revitalize, streamline and consolidate its programmes / projects. Further, they showed appreciation for new partnership projects with interested regional programmes, and strategies of future courses of actions that would enable the WESTPAC to live up to the needs of the countries and stakeholders, in general, and the requirements of the end-users for its services, in particular. It was pointed out that the recent initiatives of

revitalization and reform undertaken by the WESTPAC Secretariat generated a positive impact on WESTPAC regional cooperation, and on the approaches of IOC and UNESCO in promoting concerted efforts among the countries. The delegates and representatives expressed the wish that the present momentum of revitalization and reform should continue; the cordial atmosphere and effective working relationship between the present WESTPAC Secretariat and member states should be maintained; and the quality service provided by the WESTPAC Secretariat that helps to regain the confidence of the countries and stakeholders should be reinforced.

20 Other salient points contained in various interventions of the delegates are summarized below:

- The WESTPAC component of global programmes on climate change should be strengthened; and linkages between this component and other related programmes, such as IGBP/WCRP/SCOR-SOLAS, should be established;
- The importance of establishing the science board should be recognized, however its terms of reference and responsibilities should be clearly defined. Moreover, the issue of improving project screening should be taken up from a much broader perspective than scientific review alone, for example, administrative, financial and other aspects should also come into the picture.
- The efforts to phase in WESTPAC project cycles with those of IOC and UNESCO, and the strengthening of the inherent interconnection between IOC programmes and its WESTPAC components deserve support.
- The unique niche for WESTPAC should be defined. In this connection, the role of WESTPAC as the regional implementing arm of IOC programmes was considered important. However, some maintained that WESTPAC should not only implement the global programme in the region, but also develop some regionally rooted projects that are regionally driven and catering for the region's needs
- The progress made in the development of NEAR-GOOS and SEAGOOS by WESTPAC was cited as an example for marine science, service and capacity building to help address environmental and resource concerns of the region; and these projects deserve further support
- An integrated approach should be adopted in developing approaches regarding natural hazards. We can not offer to develop different systems for different hazards on individual basis. For example, we need to develop as far as possible some comprehensive system that shares much of the same scientific basis and would be able to respond to address tsunamis, storm surges and other emergencies
- WESTPAC, as the result of recent efforts for revitalization and reform, is emerging as one of the regional flagships within the IOC framework and therefore deserves its proper position in IOC programme resource allocations.
- Apart from the recruitment of a senior staff member for WESTPAC, it is difficult for the IOC regular budget to allocate more funds for the region. However, a diversified resources mobilization approach should be encouraged. Opportunities are available for the countries to prioritize their needs and present their cases to the development agencies for support. WESTPAC projects can be qualified for development projects, if packaged and presented properly. Tremendous amounts of resources available to development are underused in supporting science and its application. These resources need to be further tapped.
- The development of regional training centres and related networks is needed, but we should make these centres operational and practical.

- IOC could help the region by representing it in the relevant meetings of the donor agencies and financial institutions.
- IOC/WESTPAC projects should be linked with projects concerning climate change, coastal hazards and poverty reduction, so that limited resources can be better used.
- IOC/WESTPAC projects should be effective, able to address the needs of the countries, the issues that require multilateral cooperation, and make a contribution to IOC global programmes.
- More science is needed in developing IOC/WESTPAC projects, such as monitoring the mechanisms to trigger and spread hazardous events, and to track ecosystem changes.
- Experience and lessons gained by the WESTPAC Secretariat in the early phase of the Sub-Commission are useful references in overcoming resource and staff shortage, currently encountered.

21

The Sub-commission expressed its appreciation to:

- The Government of Japan for the regular contribution from the Japan Fund in Trust, as well as the contribution of the Japan Promotion of Scientific Society to some WESTPAC activities.
- The Government of Thailand for the provision of office space and facilities for the WESTPAC Secretariat operation, as well as the secondment of four full-time administrative assistants to the WESTPAC Secretariat.
- IOC Perth Regional Programme Office for the support it has provided to the development of SEAGOOS strategic plan.
- The Chinese Government for the two-year secondment of a Technical Secretary to the WESTPAC Secretariat, and its decision to increase its financial contribution to assist the WESTPAC revitalization efforts.
- The Government of Malaysia as the host country for its contribution to the 7th IOC/WESTPAC International Scientific Symposium and the present Session.
- The Government of Indonesia for its commitment to hosting the next session of the Sub-Commission.
- The Government of Philippines for its offer in principle to host the next IOC/WESTPAC International Scientific Symposium.
- The Government of RO Korea for her offer to host the next IOC/WESTPAC International Scientific Symposium in 2011.
- The contribution made by the World Agency of Planetary Monitoring and Earthquake Risk Reduction (WAPMERR).
- The contribution made by the United Nations University (UNU).

22

The Sub-Commission endorsed the report of the Technical Secretary on WESTPAC intersessional activities and budget overview.

23

In view of the comments and suggestions made with regard to the proposed establishment of a science board, **the Sub-Commission agreed** to modify its scope of work to an advisory group for better defining the role of the mechanism to be developed. **The Sub-Commission accepted** the recommendation as attached in Annex IV: Recommendation SC-WESTPAC-VII.1.

24 The Delegation of Vietnam believed that the question on the number of experts participating in the Advisory Group would need more consideration.

3.1.2 The Seventh IOC/WESTPAC Scientific Symposium

25 Prof. Dr Nor Aieni Binti Hj Mokhtar, Chairperson of the National Organizing Committee, Secretary, National Oceanography Directorate, MOSTI, Malaysia, presented the outcomes of the Seventh IOC/WESTPAC Scientific Symposium that was successfully organized ahead of this Session in Sabah, Malaysia, 21-25 May 2008. The Symposium registered a total of 367 participants from 19 countries out of 20 member states of IOC in the region, with 113 oral presentations, 120 posters and 20 exhibition booths presented by national agencies, NGOs, industries, research and education institutions. The themes of the Symposium included the effects of climate change on the Western Pacific, coastal and offshore processes in the Western Pacific and their measurement, marine environmental forecast and data management, and marine ecosystem health. Participants highly appreciated the Symposium as a useful forum for marine scientists of the IOC/WESTPAC countries in knowledge sharing about the oceans playing a critical role in the global warming that impacts the world. The Symposium recommended a wide range of actions covering such themes as priority needs in research, monitoring, assessment, data management/services, institutional arrangements, capacity building, public awareness raising and resource mobilization.

26 **The Sub-Commission expressed their appreciation** for the achievements made by the Symposium in facilitating knowledge sharing among the member states and stakeholders. They also voiced the hope that the spirit of cooperation demonstrated during the Symposium be carried forward. It was suggested that future Symposia provide opportunities for information/knowledge sharing with regard to individual research efforts and results, and project priority and implementation concerns. It was also proposed, for future Symposia, to create and hand out awards for the best papers and good research done, and facilitate the publication of quality Symposium papers by the relevant international journals to encourage scientific work, particularly by young people.

27 Mr Zhu informed the Session of the kind offer by the Philippines to host the next Symposium subject to the confirmation of the Government of Philippines. Member states will be timely informed on the progress made in the consultation. **The Sub-Commission also noted with appreciation** another kind offer by the Government of the RO Korea to host the next symposium in 2011.

28 **The Sub-Commission accepted** a recommendation as attached in Annex IV: Recommendation SC-WESTPAC-VII.2, which requests the WESTPAC Secretariat to undertake consultation with the member states in the region regarding the time and venue of the next symposium.

3.1.3 IOC Global Programme Activities

29 Dr Patricio Bernal, Executive Secretary IOC, outlined some major IOC global programmes including ARGO, GLOSS, tsunami warning systems, capacity building and IOC regional initiatives. Argo is a global array of 3,000 free-drifting, profiling floats that measure the temperature and salinity of the upper 2000 m of the ocean. This allows, for the first time, continuous monitoring of the temperature, salinity, and velocity of the upper ocean, with all data being relayed and made publicly available on a real time basis via electronic links, thus contributing in a fundamental way to the study of the role of oceans in global changes. It will be most welcome for WESTPAC and its member states to make their own contributions to this programme. He highlighted the significant progress made in the implementation of GLOSS and tsunami warning systems in terms of networks established and put in operation, with enhanced capability in the participating countries in monitoring and data processing as a result of IOC capacity building efforts over the years. He cited some examples of regional

multilateral projects, such as, the one on the West Coast of Africa focusing on coastal erosion. They show the value of regional contributions to global climate change projects. He also stressed the importance of capacity building for the member states to develop and implement climate change adaptation programmes.

30 Delegates expressed their support to the IOC global programmes. It was suggested that coastal management, being one of the national priority issues, should be taken into consideration by the global programmes, as exemplified by Man and Biosphere (MAB) and the International Hydrological Programme (IHP). In addition, the IOC climate related programme should focus on the observation of the oceans and on the interactions of the ocean surface with the overlying atmosphere, for example, some related initiatives undertaken by the WCRP and IGBP-SOLAS. In addition, IOC global programmes should concentrate on exploring key scientific issues related to the role of ocean on climate change, including comprehensive observations and high-tech observing technology development. It was also suggested that IOC global programme should have closer linkage with some related initiatives, like CLIVAR, and SOLAS.

31 Responding to these comments, Dr Bernal clarified that the IOC has taken the initiatives and even the lead role in many cases in global air-sea interaction programmes from their onset, such as TOGA. IOC co-sponsors are the WCRP, the WMO and ICSU. IOC has been somehow perceived as losing its visibilities in initiating many of the global climate related programmes largely due to institutional barriers on both national and international levels whereby the role of oceanography communities are obscured. To regain this ground, IOC should also take on the job of assisting the countries in building up their institutional capacities. IOC should rise up to the challenges of addressing cross cutting issues on a large scale and look into the issues by asking questions not just on why it happened, but how to handle it. Dr Bernal provided his perspectives on where WESTPAC could have an impact within IOC, and recommendations such as warnings on the effects of natural hazards, including storm surges on biodiversity, and research on vulnerability of coasts to climate change.

3.1.4 Operation of the IOC Regional Secretariat for the Western Pacific

32 Mr Zhu provided background information on this agenda item. Since its establishment in November 1994, the WESTPAC Secretariat has continued to function with the generous support from the Royal Thai Government. Since October 2005, the WESTPAC Secretariat was moved into the Department of Marine and Coastal Resources (DMCR) from the National Research Council of Thailand. The WESTPAC Secretariat could also count with the UNESCO Bangkok Office, which takes care of many administrative matters.

33 Dr Miguel Fortes left the WESTPAC Secretariat in September 2006 upon the expiry of his contract. The whole WESTPAC Secretariat has been headed by Mr Wenxi Zhu, who was seconded by the National Commission of China for UNESCO from July 2006 to July 2008, with administrative and financial assistance of Ms. Nachapa Saransuth. He also extended his sincere thanks to DMCR for seconding 3-4 staff working at the WESTPAC Secretariat.

34 Dr Bernal shed light on the IOC strategies in developing its regional component for WESTPAC. IOC had the foresight to put in place a regional secretariat service, despite staff and budgetary constraints taking the opportunities offered by the UNESCO Office in Bangkok. He cited the reinstallation of a Programme Specialist on Marine Science (P4) in the WESTPAC Secretariat as an example of continued efforts of the IOC to strengthen WESTPAC.

35 Delegates took the opportunity to reiterate their appreciation for the effort made by the IOC management in reintroducing a senior staff position for WESTPAC. This was considered helpful in the smooth running of the regional programme.

3.2 RECENT DEVELOPMENTS WITHIN IOC AND UNESCO RELEVANT TO WESTPAC

36 Dr Bernal was invited to offer his insight on the opportunities available within IOC and UNESCO which WESTPAC could take for furthering its development. He advised that global programmes on climate change opens up opportunities for IOC, and WESTPAC. A new substantive planning initiative is on-going in the science component of UNESCO in Jakarta. This office intends to come up with a comprehensive framework for supporting activities concerning biodiversity, geochemistry, tsunamis, etc. WESTPAC should establish the interconnection of its programmes with this UNESCO initiative, thus expanding the basis of support for its programme implementation. In addition, the regular global assessment IOC is spearheading in collaboration with UNEP and others also offers opportunities for the organization of inputs at the regional level on a regular basis.

4. REVIEW AND EVALUATION OF PROGRAMMES AND PROJECTS FOR 2005-2008

37 Dr Huh provided a brief overview of WESTPAC project activities and called on each project leader to provide in-depth information and assessment of their respective project's status.

4.1 MARINE SCIENCE AND APPLICATIONS

4.1.1 WESTPAC Harmful Algal Bloom

38 Prof. Yasuwo Fukuyo of the Asian Natural Environmental Science Centre, the University of Tokyo, Japan, reported on the WESTPAC Harmful Algal Blooms (HAB) project. He stressed the importance of the HAB project in terms of its contribution to new knowledge regarding the interaction between environmental conditions and declining fish resources. He explained the goals of the WESTPAC-HAB Project and a series of efforts made for reaching these goals. Project progress includes strategic planning workshops, WESTPAC-HAB TTR Project implementation, publication and distribution of HAB reference materials on CD, establishment of a network of national focal points and updating of a WESTPAC-HAB membership list of scientists and managers in the region, promotion of GEOHAB activities and partnering with other concerned projects, regional networks or groups on HAB. He described the development of monitoring research on toxic benthic microalgae blooms in coastal areas affected by a tsunami. He also outlined the steps to improve and expand the project implementation in the years to come.

4.1.2 Atmospheric Inputs Study

39 Prof. Zhang Jing of the State Key Laboratory of Estuarine and Coastal Research, East China Normal University, China, briefly presented the processes of the Atmospheric Input (AI) Project development and implementation from its onset in 1993, with special emphasis on project activities during the last intersessional period. In his assessment, the project has contributed to the improvement of understanding of the processes, such as, variations of atmospheric deposition fluxes in temporal and spatial dimensions and those that govern the influence of atmospheric materials on marine photosynthesis. Data on organic forms of atmospheric materials are still limited. Trace gas species producing from marine biota and its effects can be considered as an interesting scientific issue of global biogeochemistry.

40 Further steps for the AI project were suggested on the collaboration with the projects in the WESTPAC region related to international SOLAS/IMBER/LOICZ projects under IGBP, development of a strategy/implementation plans, and involvement of scientists from other parts of WESTPAC Region. In view of the importance of capacity building, it is planned to

establish a network for research and training of young scientists on AI Study in the region. A new proposal will be developed and submitted to the next Session in 2010.

4.1.3 Biological Effects Monitoring Studies of Marine Pollution (Monitoring Biological Effects of Marine Pollution)

41 Mr Zhu informed the meeting that this project has stayed dormant for the past few years simply because the Project Leader, Dr Jae Ryoung Oh has left Korea for a post in the International Atomic Energy Agency. No progress has been reported since the Fifth Session in 2002. The Technical Secretary also invited the Sub-Commission to consider terminating this project.

4.1.4 Ocean Dynamics and Climate

42 Mr Zhu informed the meeting that no project progress has been reported from the Fifth Session in 2002. In correspondence, Project Leader, Prof. Bo Qiu expressed his desire to withdraw from the position due to limited capability in project fund raising, and recommended Dr Fangli Qiao from China to assume the leadership. In view of the current situation, the Technical Secretary invited the Sub-Commission to consider terminating this project.

4.1.5 Paleo-Currents

43 Prof. Liu Zhifei of the Laboratory of Marine Geology, Tongji University, China, speaking on behalf of the Project Leader, Prof. Wang Pinxian who was unable to attend the Session, provided some information on the Paleo-Current project. This project evolved from the previously successful WESTPAC Paleo-geographic Mapping project, and was officially established at the Fifth Session of WESTPAC in 2002. However, after the closure of its first workshop in 2004, the Project Working Group found it difficult to maintain its activities largely due to the shortage of financial support. In addition, a lack of inputs from paleo-oceanographic studies and research in other WESTPAC countries also impeded to achieve the project objectives. Given the importance of the paleo-environment and marine sediment studies for the WESTPAC region, a new approach should be adopted to keep the efforts going.

4.1.6 Ocean Ecosystem and Biodiversity

44 Dr Hugh Kirkman, Australia, presented the project report on behalf of Dr Miguel Fortes who was unable to attend the Session. The report covered the project objectives, management mechanisms, present terms of references, implementation activities, problems encountered and follow-up action required. Some delegates pointed out that the project activities presented were largely meetings, conference sessions and training workshops, most of which were undertaken outside the project framework, and should not be considered as part of the project implementation. Thus the merits of maintaining the project were questioned. Some delegates stressed the importance of biodiversity in the WESTPAC region, thus there is a need to re-establish a new project.

4.1.7 Ocean Remote Sensing

45 The project leader, Prof. Hiroshi Kawamura, presented the activities on the Ocean Remote Sensing Programme, particularly concerning projects on "New Generation Sea Surface Temperature" (NGSST) and Ocean Color (OC). He illustrated the intrinsic linkage of the ORSP with red tide studies and NEAR-GOOS. In cooperation with the Yellow Sea Large Marine Ecosystem (YSLME) and NOWPAP (North-west Pacific Action Plan), a regional OC expert group, funded by YSLME has been formed with members from China, Korea and Japan. The regional bio-optical dataset (YOC-2007 common dataset) and the Yellow/East China Sea Case-2 algorithm have been developed. The ORSP will tackle coastal habitat

remote sensing, NGSST R&D for the Southeast Asian Seas and continued cooperation with YSLME and NOWPAP.

- 46 Mr Yihang Jiang, Project Manager, UNDP/GEF Yellow Sea Project, congratulated the ORSP for the achievements it has made and pointed out the need to verify and improve the regional OC algorithm through seeking other funding sources. In his view, the most important progress of the ORSP should be viewed from the increased cooperation of coastal countries involved in the project, rather than from the improvement in the algorithm.

4.2 OPERATIONAL OBSERVING SYSTEM

4.2.1 NEAR-GOOS

- 47 Prof. Shaohua Lin, Chairperson of the NEAR-GOOS Coordinating Committee, noted that the project was successfully in its first phase, notably by establishing the NEAR-GOOS database system, included real-time and delay mode databases. The project completed its Strategic Plan for the Second phase with the objective to develop a comprehensive and sustainable ocean observing network in the regional seas and coastal areas, focusing on observations, monitoring and other activities that can not be easily implemented by countries operating independently. The Second phase will embrace a wide range of data types through pilot experiments, demonstrations and training. Useful data products will be provided to the members and contribute to the GOOS and other global programmes. The project team recognized the need to demonstrate the value of NEAR-GOOS and mobilize broad based participation. Efforts will be also made to strengthen cooperation with other regional and international programmes and projects such as NOWPAP, PICES, YSLME, GOOS, JCOMM and IODE etc.

- 48 Delegates expressed their support for the project and its future strategies, and their appreciation for the project achievements. A delegate from China informed the Session that the Government is considering further funding to support NEAR-GOOS, in view of the progress made by the project in furthering international cooperation and facilitating data collection and sharing and database development. The delegation of Japan expressed its appreciation to the efforts made by China and restated its continuous support to the NEAR-GOOS activities.

4.2.2 SEAGOOS

- 49 Dr Somkiat Khokiattiwong, Coordinator for SEAGOOS, provided a summary of the activities and results of SEAGOOS over the last intersessional period. He elaborated in particular on the joint effort made by the WESTPAC Secretariat, IOC Perth Office and the project team in laying down the project framework and strategies, as well as the preparations of the SEAGOOS strategic plan with assistance from Dr Hugh Kirkman. While the progress made is encouraging, the project team recognized that that much work still lies ahead, especially in terms of fund raising and establishing an effective project management structure which would help secure commitments, broaden participation and ensure effective project implementation.

4.3 OCEAN SERVICES

4.3.1 International Bathymetric Chart of the Western Pacific (IBCWP)

- 50 Dr Shi Shuixiang, on behalf of Prof. Hou Wenfeng, Chief Editor for the IBCWP Editorial Board, provided a report on the progress in the IBCWP programme. He noted the progress in the implementation of the IBCWP project, involving China, Japan, Philippines, RO Korea, Russia and Vietnam. The project has compiled, thus far, most of the sheets for three subregions out of the six subregions which the project intends to cover. The Editorial Board proposed to strengthen data exchange/sharing and capacity building to facilitate the

compilation of sheets. Effective approaches should be identified to address institutional issues that affect data sharing and finalization of the sheets, such as the implementation of national marine data policies, production of the final sheets for which more than one country is interested and labelling the disputed undersea features on the sheet.

51 Some delegates requested a full range of documents on the Project which will help speed up decision making at home for project participation and implementation. Some believed that the Project should help the concerned country map some specific areas where the need for accurate bathymetry is greatest. While bathymetry collection is considered among the highest priorities in many countries, ways and means of implementing it is often lacking. As data sharing proved critical in enhancing data accuracy, the IOC, as an intergovernmental mechanism, is expected to play a role in facilitating the data exchange, however effective approaches of doing this need to be identified. One way of helping data flow is capacity development, including transfer and application of new technology that enable the countries to make data products dealing with coastal inundation and hazards. Setting down the specific requirements for good bathymetry may also help remove policy barriers in information flow.

4.3.2 ODINWESTPAC Pilot Project (including GODAR-WESTPAC)

52 Mr Satoshi Sato, Former Director of the Japan Oceanographic Data Centre, recalled a series of consultations undertaken at relevant conferences and workshops that led to the formulation and implementation of a pilot project for ODINWESTPAC. Major project results include digitalization of oceanographic observation data, digitization of historical sea level data, long term oceanographic and fisheries data sets and rescued works of oceanographic investigations. However, many activities identified have not been implemented, mainly due to lack of coordination, funding and adequate attention from Member States.

53 The delegates expressed appreciation for the efforts of JODC in promoting the data exchange and development of the network. The past activities of the working group were considered as setting the stage for furthering the initiative. It was noted that, in view of several world ocean data centres and many national oceanographic data centres in the region, efforts should be made to develop operational linkages among them. The focus of promoting the networking efforts should be directed to the development of a workplan to implement the relevant resolutions already adopted by the IODE. In terms of networking of data sources, IODE was considered more effective in physical oceanography than chemical and biological oceanography. The challenge is to go beyond the stage of data exchange in delayed mode and have it real time. In this connection, IOC should confront the challenge to prevent being left behind.

54 **The Sub-Commission took note of** the information provided and requested convening a sessional working group to further discuss the future of the ODINWESTPAC project.

55 **The Sub-Commission accepted** the recommendation by the sessional working group that the workplan, as approved by IODE-XIX, should continue and the results be reported to the IODE 's next session in 2009. However, the sessional working group noted, with concern, the lack of activity by some Member States and encouraged all Member States to nominate contact points for the Pilot Project. It also encouraged other regional programmes, such as NEAR-GOOS, SEAGOOS and NOWPAP, to participate in the Pilot Project.

56 China, as represented by the National Marine Data and Information Service (NMDIS), agreed to take on the role of coordinator of the Pilot Project for ODINWESTPAC.

4.4 CAPACITY BUILDING AND PUBLIC AWARENESS

57 Mr Zhu introduced this agenda item by focusing on the newly initiated regional capacity building project on “UNESCO-IOC Regional Training and Research Centres on Oceanography in the Western Pacific”. This project would enable the countries of the region to better participate and implement IOC capacity building programmes. He emphasized the importance of the capacity building component in the WESTPAC region. He encouraged the participation of the National Oceanographic Institutes and Universities in WESTPAC that are recognized as bona fide institutions in marine scientific research and services by competent national authorities in their respective countries. These institutions will be asked to provide regular training and research opportunities to the trainees from all WESTPAC member states on a free-of-charge basis. Candidate institutes will be selected to form a Regional Network of Training and Research Centres. Officers from WESTPAC (Including the WESTPAC Secretariat) and the IOC Secretariat and other invited experts will be tasked with monitoring and evaluating the performance of the centres on a regular basis.

58 Delegates highly appreciated the initiative undertaken by the WESTPAC Secretariat and expressed their support for this initiative and their interest in participation. It was pointed out that interested institutions in a number of countries have already taken or are considering steps for involvement. However, caution was voiced on the need for carefully studying the implications of the proposal, if implemented, to enable the participating institutions to function as regional centres on a sustainable basis. Consideration should be given to making realistic requirements for the participating institutions to comply with, e.g., reducing the frequency of hosting conferences. Information was provided on the establishment in Malaysia of an International Centre for Science, Technology and Innovation for South-South Cooperation (ISTIC) under the auspices of UNESCO. This was an outcome of the Doha Plan of Action adopted by the Heads of States and Governments of Group 77 plus China. In this context, the need was recognized to develop collaboration between the proposed WESTPAC initiative and other existing international and regional training institutions and to work out appropriate modalities for doing this. It was also suggested that the focus of this WESTPAC initiative should be on networking institutions rather than setting up new training and research centres. In response, Mr Zhu clarified that the enhancement of the training centre capacities in the region is the first step which will pave the way for the networking efforts.

59 **The Sub-Commission noted** with appreciation the efforts made by the WESTPAC Secretariat in undertaking the initiative and **endorsed** this initiative.

60 **The Sub-Commission accepted** a recommendation as attached in Annex IV: Recommendation SC-WESTPAC-VII.3, which instructs the WESTPAC Secretariat to proceed on a pilot basis with the implementation of the initiative and also ensures that Member States will have an opportunity to review results and guide further development of the Network.

5. PROPOSED WESTPAC PROJECT STRUCTURE 2008-2013

61 Mr Zhu presented to the meeting on a proposal for WESTPAC Project Restructure (2008-2013): Procedures for the Establishment, Implementation, Continuation and Termination of WESTPAC Projects [IOC/SC-WESTPAC-VII/8]. This proposal was prepared in response to two recommendations made in the 5th and 6th Session in 2002 and 2005, respectively, and calling on the results of the special Consultative meeting in Hangzhou in 2007 and subsequent correspondence from the Chairperson of WESTPAC to the Executive Secretary IOC. The restructure of WESTPAC Projects follows the Four High-level Objectives of IOC adopted at its 24th Assembly (IOC XXIV-2) and aims to streamline the management process of WESTPAC projects. Moreover, the new approach intends to facilitate greater engagement in WESTPAC Activities at the national level.

62 Delegates noted, with regret, that no progress was reported to the Six Session of the Sub-Commission in 2005 regarding this subject matter, and, with appreciation, that the current WESTPAC Secretariat worked actively in putting up this proposal for the consideration of the present Session. In reviewing this proposal, attention was drawn to the need to define clearly the roles of the mechanisms to be established, such as those regarding the work programme and budget, project steering and the scientific review process. The Sub-Commission established a sessional working group to further consider this proposal and requested the group to submit the results to the plenary for decision.

63 **The Sub-Commission concluded** that the strategies for restructuring WESTPAC projects as proposed by the sessional working group is consistent with the conclusions of the Symposium; that these strategies give priority to natural hazards and the changing marine environment in the western Pacific region, harnesses the regional interests and capability of WESTPAC Member States for IOC, and contribute to the expected results for each of the high-level objectives.

64 **The Sub-Commission also concluded** that the framework for project management as recommended by the sessional working group introduces a consistent approach to project proposals and reporting, to the operation and governance of projects, and to the roles and responsibilities of Project Leaders, IOC National Focal Points and the WESTPAC Secretariat.

65 **The Sub-Commission accepted** the recommendation as attached in Annex IV: Recommendation SC-WESTPAC-VII.4.

6. REVIEW AND APPROVAL OF NEW PROJECT PROPOSALS

66 Mr Zhu briefed the meeting on the project proposals received in response to WESTPAC Circular letter IOC/ SC-WESTPAC 08/1. Dr Huh invited the new project proponents to provide background information on their proposed projects in terms of objectives, workplan, terms of references, deliverables, etc.

6.1 CORAL REEFS UNDER CLIMATE AND ANTHROPOGENIC PERTURBATIONS (WESTPAC-CORRECA)

67 Prof. Zhang Jing of the State Key Laboratory of Estuarine and Coastal Research, East China Normal University, China, China briefly presented the new project on Coral Reefs under Climate and Anthropogenic Perturbation. This project aims to: (1) understand the biogeochemical and ecological nature of coral reefs in WESTPAC in different geographic, physical and environmental settings, as well as different types of human interventions; (2) evaluate the impact of climate change and human activities on coral reefs, and (3) promote capacity building in areas related to research on coral reefs through sharing scientific knowledge and training activities, and collaboration within research networks in WESTPAC.

68 The importance of the issues to be addressed by the proposed project was stressed and interest in participation was expressed.

6.2 SCIENCE FOR OCEAN ECOSYSTEM

69 Dr Suchana Chavanich, Department of Marine Science, Chulalongkorn University, Thailand, presented the project proposal and outlined the project objectives: (1) understand and provide the scientific basis for biodiversity management by articulating the state of the science with respect to current and emerging stressors; (2) establish the effective management plan and monitoring programmes for marine biodiversity among WESTPAC country members; and (3) encourage research collaboration and exchange knowledge

among WESTPAC countries. For these objectives, the project will review the areas of biodiversity and taxonomy, disturbance and current stressors, and restoration and rehabilitation to identify research needs.

70 The project received broad support in terms of the importance that the countries accord to marine ecosystem and habitat research. However, it was suggested to sharpen the project focus on biodiversity with assistance of IOC. It was believed that this would also help strengthen biological component of IOC's programmes. Suggestions were also made to redefine the geographic focus as proposed on some important impact areas of the WESTPAC region and include key habitats, such as, mangroves. It was recognized that biodiversity is the focus of some major global programmes, e.g., those sponsored under the Convention of Biological Diversity and therefore efforts should be made to develop synergy and prevent duplication of efforts among the international programmes, including those of IOC. The importance of comparing known taxonomic species from one country with unknown species from another was stressed. In this context, the role of IOC as an intergovernmental body in marine science to facilitate the transboundary movement of specimens for the comparative studied was explored. The proposed project should look into options that would contribute to the solution of this issue.

71 In view of the comments made, the project proponent modified the proposed project from Science for Ocean Ecosystems to Coastal Marine Biodiversity and Conservation in the Western Pacific.

6.3 RESPONSE OF MARINE HAZARDS TO CLIMATE CHANGE IN THE WESTERN PACIFIC (WESTPAC-MAHAZ)

72 Dr Qiao Fangli of the First Institute of Oceanography, SOA, China proposed a new project. He emphasized the main objectives of WESTPAC-MaHaz Project were to: (1) quantify the trends of typical marine hazards, including typhoons and storm surges, sea level rise, changes to the marine ecosystem, especially HAB, in the context of global climate change, and to assess the impacts of these hazards on the marine system and human society in the western Pacific and northeast Indian Ocean areas; (2) improve the understanding of the physical processes of marine hazards and their responding mechanisms to global climate change by both dynamic analysis and numerical methods; (3) develop a predictive capacity for climate change and ocean responses, and provide scientific support to the governments to mitigate the losses caused by marine hazards; and (4) enhance international cooperation within the WESTPAC member states who wish to get involved.

73 The project proposal was well received in term of its clarity on the scientific issues to be addressed and approaches and methods to be employed. However the financial implications of project implementation were noted. It was believed that the models once developed and verified as working for the region, would be an important contribution to climate change research. It was suggested that modeling of physical process be integrated with biogeochemical processes as the project evolves. IOC Perth Office offered to help link up this WESTPAC initiative with those of the Indian Ocean for the benefit of both regions.

6.4 ENHANCING THE CAPABILITY ON OIL SPILL RESPONSE AND THE RESTORATION OF MARINE ECOSYSTEMS IN THE WESTERN PACIFIC

74 Dr Sik Huh of Korea Ocean Research & Development Institute (KORDI), RO Korea, introduced the project proposal on "Enhancing the Capability on Oil Spill Response and the Restoration of Marine Ecosystems in the Western Pacific Region." The objectives are to: (1) identify cooperative activities in the field of Oil Spill Response (OSR) and the restoration of marine ecosystems after oil exploration and transportation accidents; (2) establish an international human network; and (3) enhance capacity and public awareness in the WESTPAC countries including DPR Korea. To this end, Korea Ocean Research &

Development Institute (KORDI) in cooperation with WESTPAC will initiate one joint training activity, aiming to enhance the capability of the member states in OSR and explore effective measures to restore the ecosystems. He also conveyed the offer of his Government to host the 8th IOC/WESTPAC International Scientific Symposium in 2011.

- 75 Support was expressed for this initiative as oil spill risks are increasing in the member states of the region. Financial implications of project implementation were noted. It was suggested for the project to pay more attention to the impacts of oil spill on coastal habitats. The representative of NOWPAP identified some complementary actions that can be undertaken by NOWPAC focusing on management aspect of OSR and by WESTPAC focusing on the scientific aspects.

6.5 FLUVIAL SEDIMENT SUPPLY TO THE SOUTH CHINA SEA

- 76 Prof. Liu Zhifei of Tongji University, China gave a presentation on a new project on Fluvial Sediment Supply to the South China Sea, with the objectives of: (1) investigating fluvial sediment discharge to the South China Sea from individual rivers surrounding the South China Sea and anthropogenic influences overlapping natural trends; (2) determining sediment source and transport in the South China Sea during the geological past; and (3) studying sediment discharge to the South China Sea.

- 77 The project proposal was welcomed particularly for its intended efforts to measure sediment inputs to the South China Sea which are of interests to the littoral countries. Project attention should be given to: (1) anthropogenic impacts on sediment supply; (2) the impacts of changing sediment load on ecosystems; and (3) sediment inputs from the rivers, watersheds and other sources.

6.6 TSUNAMI WARNING SYSTEM IN SOUTH CHINA SEA (SCS-TWS)

- 78 Prof. Fujiang Yu of National Marine Environmental Forecasting Centre, China, stressed the need for the SCS-TWS to address the gap in this area. The project objectives are to: (1) establish a SCS Tsunami Warning System; (2) establish an effective tsunami warning system for countries surrounding the South China Sea, which provides tsunami warning information for all these countries; (3) promote scientific research on tsunami warning technology, and the analysis of historical tsunami events, etc.; and (4) establish data sharing mechanism which collect tsunami buoy data, seismic data and tidal gauge data from SCS countries for making timely and accurate tsunami warnings. He informed the Session that the State Oceanic Administration of China (SOA) would deploy two tsunami buoys in the South China Sea (SCS) in the first half of 2009; a quantitative Tsunami Forecast System would be set up; and a real-time tsunami warning system based on tsunameter will be developed. The proposed tsunami warning system will be extended to a multi-hazard warning system covering tsunamis, storm surges, disastrous sea waves and sea level rise in the future.

- 79 The project proposal prompted extensive discussions. Delegates expressed their appreciation for the efforts made by China to contribute to the tsunami warning in the South China Sea. The scientific and technical merits of the proposed project were also well received. However, it was stressed that the ICG-PTWS is the competent agency within the IOC framework to address issue such as the establishment of sub-regional warning systems, while WESTPAC can deal with capacity building, e.g., training, transfer of technology, which are important for the development and functioning of the warning system. Diversified interpretations were given pertaining to the decisions made by IOC governing body and the ICG-PWTS on the development of the regional component of the tsunami warning system. The need was felt for further studies on how WESTPAC as an Regional Subsidiary Body of IOC should proceed with the project as proposed.

80 **The Sub-Commission welcomed** the initiative of China for its efforts to contribute to the tsunami warning in the region, and **requested** that the Chairperson of the Sub-Commission refer the project proposal to, and seek guidance from, the ICG-PTWS, and that the project proponent modify this proposal as Marine Hazards Forecasting and Mitigation in the Western Pacific (WESTPAC-MHWM) with emphasis on capacity building, etc., in accordance with the feedback received during the Session.

6.7 WESTPAC E-BULLETIN

81 Dr Tan Chun Knee from the United Nations University briefed the meeting on the new project with the objectives to: (1) collect and disseminate updated information on emergent ocean phenomena, the outcome of marine scientific research, research activity, funding, job opportunities etc in the Western Pacific; (2) serve as a regional platform, information exchange among marine research communities, government agencies and other parties concerned in the Western Pacific; (3) raise public awareness on marine scientific research, and scientific services in the Western Pacific; (4) promote communication of IOC/WESTPAC with other ocean-related programmes and research communities; (5) encourage scientists in the region to participate in WESPACT activities.

82 The proposal attracted broad interest from the delegates. An inquiry was made concerning IOC policy towards the preparation and dissemination of newsletters by its subsidiary bodies. Dr Bernal explained that he did not recall any single IOC policy that would apply to all the circumstances in this regard, and any rule of IOC that would prevent the regional programme from taking the initiative regarding newsletters.

83 Concern was voiced on the process for reviewing new project proposals, for which the procedures for WESTPAC project development are still being worked out. It was also encouraged that WESTPAC project proposals should further address essential aspects relating to the project rationale, workplan and commitments. However, it was considered important for the Sub-Commission to maintain the momentum of country-driven WESTPAC projects which have the commitment of the countries in the region. Thus the present Session is in a position to review the new proposals rather than leaving them for the next session.

84 Having reviewed all the new project proposals as presented, **the Sub-Commission expressed its appreciation** to all project leaders for their efforts made in submitting proposals to the Session. Further, it **established** a sessional working group for in-depth review. The sessional working group recommended all project leaders to:

- 1) Initiate their activities on a pilot base.
- 2) Assign their best efforts to refine their proposals to include the following:
 - Background, purpose, and alignment with the WESTPAC High Level Objectives.
 - Clear objectives.
 - Clear outputs (tangible deliverables and products).
 - Estimates of project costs.
 - Plan of action, including a detailed schedule.
 - Nature and degree of cooperation and collaboration with WESTPAC member states, regional and international programmes, and appropriate institutions and organizations.
- 3) Provide comprehensive progress reports at WESTPAC VIII, and intersessionally, through the WESTPAC Secretariat, if appropriate.

85 **The Sub-Commission accepted** the recommendations made by the sessional working group and **instructed** the WESTPAC Secretariat to assist the project Leaders in refining the project proposals, provide guidance for progress reports, and to help identify sources of funding to support these projects.

7. CO-OPERATION WITH OTHER ORGANIZATIONS

7.1 ORGANIZATIONS AND PROGRAMMES OF THE UN SYSTEM

86 Dr Huh introduced this agenda item, inviting the representatives of the regional entities to speak on cooperation with the IOC/WESTPAC.

7.1.1 UNDP/GEF Yellow Sea Large Marine Ecosystem

87 Mr Yihang Jiang, the Project Manager of the UNDP/GEF Yellow Sea Project, informed the meeting of the progress in the implementation of the project, including preparation of the Trans-boundary Diagnostic Analysis (TDA), and Strategic Action Programme (SAP). He also informed the meeting on the formal endorsement letter received from the DPR Korea. He informed the meeting that the SAP for the Yellow Sea has been discussed, improved and agreed by the participating countries in the special meeting of the Project Steering Committee (PSC). The PSC also agreed to submit the SAP to the participating governments for final endorsement. Upon the endorsement, the project will start the preparation of necessary project documents for the second phase, i.e. implementation of the SAP. Mr Jiang informed the meeting further that co-operation with IOC/WESTPAC is important for the success of the YSLME project, and a MOU has been signed between the two bodies. Some activities have been carried out co-operatively.

88 Appreciation was expressed for the financial support provided by the YSLME to the work on ocean color (OC) which generated very useful datasets. An inquiry was made on how to maintain the dataset upon termination of YSLME which has its own project life. Mr Jiang informed the Session that the OC datasets have been archived in the China-Korea Joint Ocean Research Centre in Qingdao which are open to all interested users. YSLME will be ready for any interested entity to take over the datasets when the YSLME project life ends. He welcomed WESTPAC to participate in a forthcoming technical workshop on data management.

7.1.2 GEF/UNDP/UNOPS Partnerships in Environmental Management for the Seas of East Asia (PEMSEA)

89 Ms. Kazumi Wakita, Programme Officer, the PEMSEA Resource Facility, presented PEMSEA activities, including the transformation of PEMSEA from a programme based, into the regional implementing, mechanism, for the Sustainable Development Strategy for the Seas of East Asia (SDS-SEA). She proposed three possible cooperative activities between PEMSEA and IOC/WESTPAC: (1) co-convening workshop at the East Asian Seas Congress 2009, which will be held on 23-27 November 2009 in Manila, Philippines; (2) collaboration on the State of Coasts Report by using large-scale data and skills such as GOOS to analyze the impact of climate change; and (3) joint training on hazard management through matching the needs from local governments and data, techniques and human resources of IOC/WESTPAC. PEMSEA values collaboration with IOC/WESTPAC as PEMSEA has been moving towards a good node for linking the science with policy makers, and local implementation.

90 The delegation from Malaysia expressed their full support for the future cooperative activities, especially for the developing and conducting the Joint Training programmes. Mr Huh took the opportunity to express his appreciation for the efforts of PEMSEA in

cosponsoring a session under the 4th Global Conference on Oceans, Coasts, and Islands, April 7-11, 2008, Hanoi, Vietnam.

7.1.3 UNEP/North West Pacific Action Plan

91 Mr Norio Baba, Administrative Officer, NOWPAP, offered information on NOWPAP's activities. NOWPAP was established in 1994 by the People's Republic of China, Japan, the Republic of Korea and the Russian Federation as an integral part of the UNEP Regional Seas Programme with the overall goal of sustainable development of the Northwest Pacific. NOWPAP has implemented various activities, such as, regional cooperative measures in response to marine pollution incidents and marine litter, monitoring and assessment of Harmful Algal Blooms (HABs), assessment of contaminant inputs to the marine and coastal environment, integrated coastal zone and river basin management, development of new marine environment monitoring tools using remote sensing, and data and information sharing. The representative of NOWPAP indicated that IOC/WESTPAC is one of the most important partners for NOWPAP because NOWPAP's geographical area is a part of IOC/WESTPAC and NOWPAP member states are also members of IOC/WESTPAC. Some cooperation between IOC/WESTPAC and NOWPAP is already going on, but further cooperation and contributions by IOC/WESTPAC in relation to research and development activities, enhancing oceanographic observational data and promoting capacity building activities were requested.

92 Dr Bernal informed the Session that further opportunities for complementary actions and cooperation with NOWPAP are available, particularly in view of the demand by regular global marine assessments. Regional seas programmes have an important role to play. We need to bring together the efforts in this direction and come up with a scheme for building up synergy and generating something from which we can all benefit.

7.1.4 UNEP/Coordinating Body on the Seas of East Asia

93 Dr Srisuda Jarayabhand, Coordinator, COBSEA Secretariat, briefed the Session on the activities of the Coordinating Body on the Seas of East Asia (COBSEA). COBSEA was initiated to provide overall policy coordination of the East Asian Seas Action Plan, aiming at the Protection and Development of the Marine Environment and Coastal Areas of the East Asian Seas Region. The membership of COBSEA was extended to cover Australia, Cambodia, the People's Republic of China and the Republic of Korea. In January 2008, the 19th Meeting of COBSEA adopted a New Strategic Direction for COBSEA (2008-2012), with a focus on three thematic areas: (1) coastal and marine habitat protection and management; (2) marine- and land-based pollution; and (3) coastal and marine disaster prevention. It outlines four inter-linked strategies: information management, capacity building, strategic and emerging issues and regional coordination. Through its New Strategic Direction, COBSEA identifies IOC/WESTPAC as one of the major regional partner organizations. In implementing the strategy on information management, IOC/WESTPAC has been invited to participate in the development of EAS Environment Outlook. The objective of the EASEO is to analyze emerging issues and trends and identify options for action. The development of EASEO is a partner effort. Partner organizations were invited to participate as data providers, peer reviewers and theme contributors. The WESTPAC Secretariat has participated in the first EASEO drafting group meeting held in November 2007. The meeting discussed and agreed on the structure and overall content of the report. It was agreed that IOC/WESTPAC would participate in the peer review. The COBSEA Secretariat will continue to consult with the WESTPAC Secretariat to explore further collaboration including the development of the EAS Knowledgebase, to further enhance information exchange among IOC/WESTPAC and COBSEA member countries.

94 In view of all the presentations under Agenda 7, it was suggested for future sessions of the Sub-Commission to further extend its invitation to other international programmes /

organizations such as SOLAS, CLIVAR, PICES and ICES to broaden the basis for discussions which can help identify common linkages in marine science.

8. WESTPAC WORKPLAN AND BUDGET FOR 2008-2010

95 Mr Zhu made a presentation on the Draft WESTPAC Workplan and Budget for 2008-2010, referring to the document IOC/SC-WESTPAC-VII/10. This table was prepared following the discussions on the respective agenda items during the present Session and reflected the inputs from project leaders.

96 **The Sub-Commission noted with appreciation** the efforts made by the WESTPAC Secretariat particularly in resource mobilization since the last session of the Sub-Commission and the preparation of the draft workplan and budget for 2008-2010.

97 **The Sub-Commission accepted** a recommendation as attached in Annex IV: Recommendation SC-WESTPAC-VII.5.

9. OTHER MATTERS

98 No other matters were discussed under this Agenda Item.

10. ELECTIONS

99 Dr Huh invited nominations for the Chairperson, and the first and second Vice-Chairpersons, in that order, noting that officers can serve for two terms. The delegate of RO Korea nominated Dr Zhang Zhanhai from China for the post of Chairperson. The nomination was seconded by the Delegate from Japan and unanimously supported by the delegates. Dr Zhang Zhanhai was thus duly elected by acclamation.

100 The Delegate from China nominated Dr Yasuwo Fukuyo from Japan to be the First Vice-Chairperson. The nomination was seconded by the delegate from the USA and unanimously supported by the delegates. Dr Yasuwo Fukuyo was thus duly elected by acclamation.

101 The Delegate from Japan nominated Dr Nor Aieni Binti Hj Mokhtar from Malaysia to be the Second Vice-Chairperson. The nomination was seconded by the Delegate from China and unanimously supported by the delegates. Dr Nor Aieni Binti Hj Mokhtar was thus duly elected by acclamation.

102 Dr Zhang Zhanhai, Dr Yasuwo Fukuyo and Dr Nor Aieni Binti Hj Mokhtar, in accepting the posts to which they were elected respectively, thanked the delegates for the support they showed and confidence they placed on them in furthering the development of the IOC/WESTPAC. The three new officers elect pledged to do their best in fulfilling the responsibilities entrusted upon them, achieving the Sub-Commission's goal and serving the interests of its member states.

11. DATE AND PLACE OF THE NEXT SESSION

103 Mr Zhu introduced this Agenda Item, referring to the Document IOC/SC-WESTPAC-VII/11. He drew the attention of the meeting to the issue that WESTPAC tri-annual workplan and budget could not be taken into full considerations by the IOC assembly due to the inconsistency between the planning cycles of IOC and its WESTPAC. To overcome the issue, he proposed two options: 1) the Eighth Session of WESTPAC will still be held in three years, i.e., 2011, prior to the Twenty-sixth Session of the IOC Assembly, and afterwards the session will be held every two years; or 2) An extraordinary session could be held at the end

of 2009 or the beginning of 2010, with a view to reviewing progress and discuss some urgent matters, before taking Option 1.

104 Comments and suggestions were made on the right timing, e.g., the months of February or March, to convene the sessions of the Sub-Commission to enable the outcomes of the Sub-Commission to be fully considered by the IOC and UNESCO governing bodies.

105 **The Sub-Commission decided** that the Eighth Session of WESTPAC be held in 2010; and afterwards the session be held every two years, thus making the planning cycle of the Sub-Commission consistent with that of IOC.

106 **The Sub-Commission accepted with appreciation** the offer made by the Government of Indonesia to host the Eighth Session in the first quarter of 2010, subject to the final endorsement of the relevant authorities.

107 In view of the above, **the Sub-Commission accepted** a recommendation as attached in Annex IV: Recommendation SC-WESTPAC-VII.6.

12. ADOPTION OF REPORT AND RECOMMENDATIONS

108 Dr Huh thanked the efforts made by the Rapporteur in preparing and verifying the draft summary report, with assistance from the WESTPAC Secretariat, and called on the delegates to review page by page the draft summary report, taking into account the recommendations made during the Session of the Sub-Commission.

109 **The Sub-Commission adopted** the summary report and the recommendations contained therein, which incorporated the amendments accepted by the Sub-Commission.

13. CLOSURE

110 Dr Huh thanked all the efforts made in the effective preparation and successful conduct of the Session, particularly those of the host country and local staff, the WESTPAC Secretariat, the resource persons, the regional partners, and all the delegates. Mr Zhu appreciated the support and trusts received from the officers of the Sub-Commission, member states and other staff in the WESTPAC Secretariat, in discharging his responsibility as the Technical Secretary. Delegates expressed their gratitude for the efforts of the host country, excellent chairmanship during the Session, and the diligent work of the WESTPAC Secretariat, as well as their confidence for the future of the Sub-Commission, recognizing serious challenges ahead. They also presented tokens of appreciation for the outgoing Sub-Commission's officers and expressed their welcome and the hope for the incoming officers.

111 The Session closed at 1400, on Thursday, 29 May 2008.

ANNEX I

OPENING REMARKS

**Opening Remarks of YG BHG Dato' Abdul Hanan Alang Endut
Secretary General, Ministry of Science, Technology and Innovation (MOSTI), Malaysia**

Dr Patricio Bernal, Executive Secretary, IOC-UNESCO,
Dr Hyung Tack Huh, Chairman, IOC's Sub-Commission for the Western Pacific,
Dato' Alihan Abd Hamid, Deputy Secretary General, Ministry of Science Technology & Innovation (MOSTI),
Prof. Dr Nor Aieni Mokhtar, Secretary of National Oceanography Directorate (NOD), MOSTI, Malaysia,
Distinguished delegates especially from Japan, China, USA, Russia, Republic of Korea, Australia, Indonesia, Philippines, Thailand, Vietnam,
Members of IOC-WESTPAC Regional secretariat in Thailand, Mr Wenxi Zhu and Ms. Nachapa Saransuth,

Learned Professors, Ladies and Gentlemen,

Assalamualaikum w.b.t and a very good morning to all of you. It gives me great pleasure to welcome you all to the 7th session meeting of the IOC Sub-commission for the Western Pacific to the State of Sabah, Malaysia. I would like to take this opportunity to express my sincere thanks to Dr Patricio Bernal, Executive Director of IOC-UNESCO, I bid you 'Selamat Datang' or Welcome to Sabah, Malaysia. Thank you for honouring us by sparing precious time from your very busy schedule to be with us today. To Mr Chairman of IOC-WESTPAC, Dr Hyung Tack Huh, I wish to extend my greatest appreciation for choosing Malaysia to host this meeting, welcome back to Malaysia and we are looking forward to your direction and preside over this session.

Ladies and Gentlemen,

Since the establishment of the IOC Sub-Commission for the Western Pacific (IOC/WESTPAC) in 1989, Malaysia as one of its Member States has been supportive of its programmes in marine scientific research programmes, ocean observations and services, data and information management and capacity building programmes. On a national level, we have undertaken various programmes; among others, the National Tsunami Early Warning System.

Ladies and Gentlemen,

We have witnessed one of the deadliest natural disasters during the 2004 tsunami which killed more than 225,000 people in eleven countries. More recently, Myanmar have been hit by one of the deadliest cyclone of all time causing catastrophic destruction and at least 78,000 fatalities with a further 56,000 people still missing. The aftermath of cyclone Nargis was felt in Malaysia for four days in early May.

The Malaysian Meteorological Department reported that although the country was not directly hit by the cyclone, its movement and intensification had resulted in strong south-westerly winds over the Indian Ocean. This caused rough seas off Langkawi, Perlis, Penang and Kedah. The department issued a strong winds and rough seas warning during that period but there would be no other effects felt from the cyclone. Two cyclones have struck Malaysia over the past 35 years tropical storm Greg which hit west Sabah on Christmas in 1996 and typhoon Vamei that hit the southeast of Johor on Dec 27, 2001. What is more alarming is the question of 'Would there be more coming our way?' There are overwhelming evidences to suggest that it will. Our next question would be: 'What more needs to be done?'

Ladies and Gentlemen,

The Malaysian National Tsunami Early Warning Centre has started its operations in early 2005 to provide information on earthquake and warning on tsunami in the Indian Ocean, Pacific Ocean and South China Sea. The Centre operates on a 24-hour basis and is located at the headquarters of the Malaysian Meteorological Department. In April 2008, Malaysia has started implementing the second phase of the 'National Tsunami Early Warning System' to ensure effective monitoring and issuance of warning in the event of an earthquake and tsunami in the region. Due to be completed in 2009, the second phase will include constructions of 15 new tide gauge stations, additional 14 coastal cameras and 10 sirens to be installed.

The National Oceanography Directorate (NOD) has been participating in most IOC-UNESCO and IOC-WESTPAC programmes towards the promotion of marine scientific research with sister agencies within MOSTI (Malaysian Meteorological Department, Space Agency, MACRES, MIMA, etc.) for coordination, sponsoring, organizing and participation in meetings, conferences, seminars and workshops. The main research conducted by the universities and Research Institutes are geared towards UNESCO's Programme Priorities 1,2 and 3 in the natural sciences. Basically on the promotion of research and capacity building for the sound management of natural resources, promoting policies and strengthening human and institutional capacities in Science technology and innovation and promoting knowledge networks for disaster preparedness and mitigation and enhancing national and regional coping capacities.

NOD is a member in WG5 of Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS) and Inter-Governmental Panel on Harmful Algal Bloom (IPHAB) and also participated in meetings and trainings of Oceanographic Data and Information Exchange (IODE). The recently concluded event, the IOC-WESTPAC/UNESCO 7th Scientific Symposium, exhibitions, workshops and now the Session Meeting of IOC-WESTPAC is held here in Malaysia as pledged in the previous meetings over the last 2-3 years. We, as joint organizers are overwhelmed as to the positive responses from the scientific community in the region. The number of participants attended this event was over 300 delegates for the symposium and more than 100 for this meeting. We have seen witnessed more than 300 quality technical papers from the presentations and posters, 5 strategic and focused workshops, interesting R & D Products and technologies as exhibited.

Lessons also learned from this event is the need to provide a platform for effective communication and feedback input from participants involved in IOC/UNESCO programmes. Possibly through knowledge management network via IOC/UNESCO portal and effective use of them, Joint research programmes and activities will enable the scientists, researchers and managers to optimize, leverage on knowledge sharing, improve on communications and research on Large marine Ecosystems of the Ocean and coastal Space in a more holistic, integrated and cohesive manner.

Ladies and Gentlemen,

Global temperatures have been reported to rise. Significant portion of the planet becomes desiccated whilst other parts of the world experiences higher volume of rainfall and caused massive floods. Sea level is increasing, threatening to inundate islands and coastal areas. Fiercer storms have occurred where they have never done before. Crops fail and poor communities are forced to abandon their homes to migrate. The climate did not change over night, the signs were in front of us. Most of us choose to ignore it with the hope that it will go away. Obviously from the recent discussion in the symposium, the alarming trend, it is here to stay unless we are united and undertake drastic actions to mitigate this impending calamity. Our lives has already being made inconvenient brought upon by these natural

disasters, however, we will adapt, but will our future generations have the time to adapt? Or will there be a world for them to adapt in?

Distinguished Ladies and Gentlemen,

Over the years the IOC WESTPAC sessions have been valuable platforms for the gathering of the two worlds; the scientific world and the institutional world. Together, strategies and action plans have been developed and undertaken in its programmes to address various oceanic and climatic concerns. It is my hope that this session will achieve its objectives and I would like to restate the Malaysian Government support as a Member State and will look forward to seeing Malaysia (as evidenced by the presence of some of our key experts in the symposium and today's meeting) to play a more active role in IOCWESTPAC programmes and activities.

I wish you on behalf of the Malaysian Government a fruitful and interesting meeting. It is our hope that the deliberations over the next four (4) days will be able to refine its collaborative framework as well as make a real difference as we strive to maintain that position of translating science for decision-making. I certainly do hope that all of you will also have the opportunity to see some of the interesting places that Sabah can offer. Wa billahi taufik wal hidayah, Wassalamualaikum w.b.t. Thank You.

**Opening Remarks of Dr Hyung Tack Huh
Chairperson, IOC Sub-Commission for the Western Pacific**

Y.Bhg. Dato' Hanan Alang Endut, Secretary General, Ministry of Science, Technology and Innovation, Malaysia,
Dr Patricio Bernal, Executive Secretary of IOC and Assistant Director-General of UNESCO,
Dr Neville Smith, Vice Chairman of IOC,
Prof. Dr Nor Aieni Mokhtar, Uner-Secretary, National Oceanography Directorate of Malaysia,
Distinguished Delegates from Member States,
Representatives of International Organizations,
Ladies and Gentlemen,

It is indeed a great pleasure to meet with you and a particular honor to deliver an opening remarks at the 7th Session of the IOC Sub-Commission for the Western Pacific, held in this beautiful City of Kota Kinabalu, Sabah, Malaysia. I am very pleased to extend my warmest welcome to all of you for being here this morning. May I begin with my remarks by congratulating the Government of Malaysia for hosting the Meeting, and Prof. Dr Nor Aieni Mokhtar, Director of the National Oceanography Directorate of Malaysia for the hard work and excellent arrangements for the meeting.

Ladies and Gentlemen!

This is the first occasion for WESTPAC to hold the International Scientific Symposium and Plenary Session concurrently, and Malaysia is the first member states to sponsor these two meetings at the same time and to host the Scientific Symposium twice up to now. On behalf of WESTPAC, I'd like to express my hearty appreciation to the Malaysian government for this.

During the last five days, we have witnessed the spirit of challenges and devotion towards our oceans by the scientists in the region in particular, as there have been more than 250 scientific papers presented in the Symposium which is the largest number in the history of WESTPAC's international scientific symposium. This is an unflinching sign of our devotion in marine science in the western pacific region, and I am more than confident that the spirit will be continued to prevail towards the coming days.

It is regrettable, but true, that WESTPAC has not been operated at a satisfiable level for the last few years, largely due to greatly reduced working funds and decreased concern of the member states over the Sub-commission's programmes and activities. It is, therefore, an immediate and major task for the WESTPAC to revitalize and refine its programmes and activities through increased participation and support of the member states. Fortunately, there has been a substantial progress in initiating the restructuring and refining the Commission's programmes and activities mainly by the WESTPAC Secretariat led by Mr Wenxi Zhu in the last couple of years. This is very encouraging thing and we're very much grateful for this.

As we are all aware of, the oceans in the WESTPAC region are known as the centre of marine generic richness and habitat diversity in the world, and yet they are largely unexplored and poorly understood. However, the marine resources in this region are being degraded very rapidly in recent years, and the rates of the habitats loss and vulnerability index are also known to be very high, as they are most affected by anthropogenic stresses as well as frequent natural disasters. There is an urgent need, therefore, to increase our efforts in monitoring and understanding the regional seas through strengthening of science programmes that underpins sustainable development, and establishing a comprehensive ocean observing system and capacity building.

For the next four days, we will review and discuss the important issues such as reform of programmes and project structure in conformity with '4 High-level Objectives' of IOC (2008-2013) and new developments in ocean sciences and operational oceanography, capacity building activities, new project proposals, rescheduling of WESTPAC sessions, election of new chairman and vice-chairmen, etc. With your wisdom, knowledge and cooperation, I am confident that we will come up with very constructive and fruitful Resolutions and Recommendations at the end of this Session.

Now, I would like to conclude my remarks by commending once again for the hard work of the Local Organizing Committee and staff of the National Oceanography Directorate of Malaysia, and the WESTPAC Secretariat, Mr Wenxi Zhu and Ms. Nachapa Saransuth. Finally, I wish the 7th Session of the WESTPAC the most successful and fruitful. Thank you very much.

**Opening Remarks of Dr Patricio Bernal
Executive Secretary, Intergovernmental Oceanographic Commission (IOC), Assistant
Director General of UNESCO for IOC**

Mr Secretary General, Ministry of Science and Technology and Innovation of Malaysia,

YG BHG Dato' Abdul Hanan Alang Endut

Mr Chairman of the IOC Sub-Commission for the Western Pacific, Dr Hyung Tack Huh

Dear Colleagues, ladies and gentlemen.

In the first place, I would like to join Dr Huh thanking through you, Mr Secretary General, the Government of Malaysia, for hosting this 7th session of the WESTPAC Sub-Commission of IOC in Kota Kinabalu, Sabah, as well the hosting of the WESTPAC International Symposium last week.

I would also like to offer on behalf of the member states of IOC, my sincere expression of sorrow and solidarity to the peoples and governments of Myanmar and China for the loss of life and property suffered as a consequence of Cyclone Nargis and the strong earthquake of the 12 of May in the province of Szechuan. In the case of Cyclone Nargis, a big factor in the scale of the disaster was a storm surge that attacked the low lands of the Irrawaddy Delta. This regrettable disaster calls the attention to the importance that the IOC has been putting to highlight the risk for coastal populations and infrastructure arising from coastal hazards,

tsunamis and storm surges. In the earthquake in Szechuan, although by its location did not pose a risk of originating a tsunami, by its magnitude was very destructive, with a heavy loss of life. This tragedy highlights the importance of early warning and disaster preparedness, as shown by the very prompt mobilization of the Chinese people and authorities.

The deplorable disaster of cyclone Nargis highlights to member states of IOC an area of relevant action where international cooperation can contribute to address these challenges and help member states to develop the necessary capabilities and institutions. Despite the knowledge to forecast storm-surges does exist, this knowledge is not widely or universally available to each nation. In the aftermath of Cyclone Nargis the IOC together with ISDR and the WMO has been active in trying to provide a significant follow-up by designing and proposing actions that can start to address this problem.

During year 2007, and in the wake of the publication of the 4th Assessment Report of the International Panel of Climate Change, IPCC, the United Nations endeavor very hard to put at the top of the International Agenda the challenge of Climate Change. I am pleased to say that the UN has succeeded in doing that and after the Bali meeting of the UNFCCC the international community has engaged in negotiations aimed to define the climate change regime beyond 2012. In Climate Change the scientific community has been leading in terms of raising awareness on the problem and in conducting the fundamental research necessary to understand the process and acquire the ability to forecast it. IOC together with ICSU and WMO has supported and still support the World Climate Research Programme. There is a significant knowledge base accumulated on Climate Change that we now need to use for moving forward in adapting our societies to Climate Change. This brings along significant challenges, because we do not have in place the organizations specialized in translating the existing knowledge base into specific applications aimed at adapting cities, agriculture, in general, the economic base of countries to Climate Change.

IOC will continue its work in coordinating research and observations for Climate Change. We need to this because there still many uncertainties and new issue to address. In this context I would like to stress three points:

First, there are clear indications that some processes critical to ascertain the speed at which Climate Change is progressing are acceleration. The melting of surface ice in both polar regions is progressing much faster than expected.

Second, now that we need to move to provide advise to our governments and decision makers with respect to climate change adaptation; how to secure a coastal city from rising sea-level, for example, it is necessary to expand the knowledge and data base of climate change with information coming from the social and human science research on climate change. The measurement of vulnerability among different segments of the society, the reaction of people to adaptation measures, and the ethical implications of adopted measures are relevant aspects of the problem.

Third, the inertia of the Climate System tell us that even we would successfully stop all emissions of CO₂ today, the average temperature of the planet will keep raising the next twenty years. Adaptation to these changes needs to be undertaken now. This brings forward the urgent need to develop the institutions that will carry the responsibility to provide the solutions to adapt society to climate change. We need to give this mandate to somebody in our nations. We need to learn how to transfer the data and information necessary to conduct adaptation in the field. For this we are talking for the first time of Climate services.

Next August 2009, the Third World Climate Conference (WCC-3), organized by WMO with the cooperation from IOC and many other international organizations will take place to discuss precisely these challenges.

I hope that during this Session of WESTPAC we will have the time to look into these matters, as reflected by the new medium term strategy of IOC and the four high level objectives defined there.

Finally I would like once more express my sincere thanks to the Government of Malaysia for providing us a very warm and friendly hospitality here in Kota Kinabalu, and to the National Oceanographic Directorate for its very effective support and organization of this session of WESTPAC and of the preceding Scientific Symposium. Thank you very much.

ANNEX II

AGENDA

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2. ADMINISTRATION

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2.2 DESIGNATION OF RAPPORTEUR FOR THE SESSION

2.3 CONDUCT OF THE SESSION

3. REPORT ON INTERSESSIONAL ACTIVITIES

3.1 REPORT ON INTERSESSIONAL ACTIVITIES

3.1.1 Report on Intersessional Activities and Budget Overview

3.1.2 Seventh WESTPAC International Scientific Symposium

3.1.3 IOC Global Programme Activities

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3.2 RECENT DEVELOPMENTS WITHIN IOC, UNESCO RELEVANT TO WESTPAC

4. REVIEW AND EVALUATION OF PROGRAMMES AND PROJECTS FOR MAY 2005-MAY 2008

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- Ocean Dynamics and Climate
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- Ocean Ecosystem and Biodiversity
- Ocean Remote Sensing

4.2 OPERATIONAL OBSERVING SYSTEM

- North East Asian Regional-GOOS (NEAR-GOOS)
- South East Asia-GOOS (SEAGOOS)

4.3 OCEAN SERVICES

- International Bathymetric Chart of the Western Pacific (IBCWP)
- ODINWESTPAC Pilot Project (including GODAR-WESTPAC)

4.4 CAPACITY BUILDING AND PUBLIC AWARENESS

5. PROPOSED WESTPAC PROJECT STRUCTURE 2008-2013

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8. WESTPAC WORKPLAN AND BUDGET FOR 2008-2010

9. OTHER MATTERS

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11. DATE AND PLACE OF THE NEXT SESSION

12. ADOPTION OF REPORT AND RECOMMENDATIONS

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IOC/SC-WESTPAC-VII/1.prov.	PROVISIONAL AGENDA
IOC/SC-WESTPAC-VII/1.add.prov.	PROVISIONAL TIME TABLE
IOC/SC-WESTPAC-VII/2.prov.	PROVISIONAL ANNOTATED AGENDA
IOC/SC-WESTPAC-VII/3	DRAFT SUMMARY REPORT
IOC/SC-WESTPAC-VII/4.prov.	PROVISIONAL LIST OF DOCUMENTS
IOC/SC-WESTPAC-VII/5	SECRETARIAT'S REPORT ON INTERSESSIONAL ACTIVITIES
IOC/SC-WESTPAC-VII/6	SECRETARIAT'S REPORT ON BUDGET OVERVIEW
IOC/SC-WESTPAC-VII/7	GUIDELINES AND PROCEDURE FOR THE UNESCO/IOC REGIONAL TRAINING AND RESEARCH CENTRES
IOC/SC-WESTPAC-VII/8	PROPOSED WESTPAC PROJECT STRUCTURE (2008-2013): PROCEDURES FOR THE ESTABLISHMENT, IMPLEMENTATION, CONTINUATION AND TERMINATION OF PROJECTS
IOC/SC-WESTPAC-VII/9	NEW PROJECT PROPOSALS
IOC/SC-WESTPAC-VII/9.1	Coral Reefs under Climate and Anthropogenic Perturbations (WESTPAC-CorReCAP)
IOC/SC-WESTPAC-VII/9.2	Science for Ocean Ecosystem
IOC/SC-WESTPAC-VII/9.3	Responses of marine hazards to climate change in the Western Pacific (WESTPAC-ROSE-MaHaz)
IOC/SC-WESTPAC-VII/9.4	Fluvial sediment supply to South China Sea
IOC/SC-WESTPAC-VII/9.5	Tsunami Warning System in South China Sea (SCS-TWS)
IOC/SC-WESTPAC-VII/9.6	
IOC/SC-WESTPAC-VII/10	IOC/WESTPAC E-Bulletin DRAFT WESTPAC WORKPLAN AND BUDGET FOR 2008-2010
IOC/SC-WESTPAC-VII/11	PROPOSED OPTIONS TO RESCHEDULE WESTPAC SESSIONS

Information Documents

IOC/SC-WESTPAC-VII/ inf.1	INFORMATION ON SERVICE AVAILABLE
IOC/SC-WESTPAC-VII/ inf.2	PROVISIONAL LIST OF PARTICIPANTS

IOC/SC-WESTPAC-VII/ inf.3	PROGRESS REPORT ON WESTPAC-HAB
IOC/SC-WESTPAC-VII/ inf.4	PROGRESS REPORT ON ATMOSPHERIC INPUTS STUDY
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IOC/SC-WESTPAC-VII/ inf.6	PROGRESS REPORT ON OCEAN DYNAMIC AND CLIMATE
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IOC/SC-WESTPAC-VII/ inf.10	PROGRESS REPORT ON NORTH EAST ASIAN REGIONAL-GOOS (NEAR-GOOS)
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ANNEX IV

LIST OF RECOMMENDATIONS

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| Recommendation SC-WESTPAC-VII.2 | WESTPAC INTERNATIONAL SCIENTIFIC SYMPOSIUM |
| Recommendation SC-WESTPAC-VII.3 | UNESCO/IOC REGIONAL NETWORK OF TRAINING & RESEARCH CENTRES IN THE WESTERN PACIFIC |
| Recommendation SC-WESTPAC-VII.4 | WESTPAC STRATEGY AND PROGRAMME STRUCTURE (2008-2013) |
| Recommendation SC-WESTPAC-VII.5 | WESTPAC PROGRAMME AND BUDGET (2008-2010) |
| Recommendation SC-WESTPAC-VII.6 | CHANGES TO THE WESTPAC MEETING SCHEDULE AND DATE AND PLACE OF THE NEXT SESSION |

:

Recommendation SC-WESTPAC-VII.1

WESTPAC ADVISORY GROUP

The IOC Sub-Commission for the Western Pacific,

Recognizing that:

- (i) the Sub-Commission has been instrumental in promoting advancements in marine scientific research, raising awareness of marine issues, developing national capacities for marine science and ocean services, and fostering regional cooperation in the Western Pacific region,
- (ii) the visibility of WESTPAC, however, has been negatively impacted by the mismatch between the Sub-Commission's agreed programmes and the resources available, as well as the declining capacity of IOC to support its regional activities through its Regular Budget,

Recalling:

- (i) IOC Resolution XXIV-11 on Enhancing the role of the Commission at the Regional Level,
- (ii) the appeal to Member States to strengthen the regional role of the Commission made by IOC Resolution XXIII-6 (Regional Cooperation in Marine Science and Technology and the Role of Regional Subsidiary Bodies),
- (iii) the conclusions of documents IOC/EC-XXXVII/2 Annex 12, "Concept Paper on the Modalities of Implementation of IOC Programmes in Regions", and subsequently IOC-XXIII/2 Annex 5, "Enhancing the Effectiveness of Regional Cooperation in Marine Science and Technology and the Role of the IOC Regional Subsidiary Bodies",

Noting with appreciation the efforts that have been made to revitalize the Sub-Commission during the past two years by examining and correcting the present deficiencies, improving communications and interactions and ensuring a comprehensive programme following the IOC's High Level Objectives,

Further noting that the member states desire to establish a mechanism for providing advice to the Chairperson and the Sub-Commission, including scientific and technical review of Project Proposals submitted for adoption as WESTPAC Projects and on the development, planning and implementation of the activities of the Sub-Commission,

Decides to establish the WESTPAC Advisory Group with the Terms of Reference as given in the Annex to this Recommendation;

Requests The Member States are asked to nominate experts for the consideration of the Chairperson who, in consultation with Officers, will appoint 5 members to the Group, and provide financial and in-kind support to the work of this Group.

Annex to Recommendation SC-WESTPAC-VII.1

Terms of Reference of the WESTPAC Advisory Group

The WESTPAC Advisory Group, composed of the Officers of the Sub-Commission and up to five additional experts in relevant disciplines of marine science, has the responsibility to provide scientific and technical advice on the development, planning and implementation of the activities of the Sub-Commission.

The WESTPAC Advisory Group will:

- (i) advise the Sub-Commission through the Chairperson on all scientific and technical aspects and other matters identified by the Chairperson;
- (ii) review and assess the development, planning and implementation of the ongoing project and make necessary recommendations to the Sub-Commission accordingly;
- (iii) assist in developing and updating, as appropriate, a Scientific Strategic Plan and accompanying short- to medium-term actions plans and targets for the Sub-Commission;
- (iv) assist in developing WESTPAC programmes to be in line with IOC High-Level Objectives;
- (v) promote the support for the implementation of the Sub-Commission's activities;
- (vi) submit reports to the Sub-Commission through the Chairperson.

The Advisory Group may establish working groups as appropriate.

The Advisory Group shall be comprised scientific and technical experts selected by the officers of the Sub-Commission, taking into account balanced representation of geographical distribution of the member states, and of gender, on the basis of their personal expertise so as to provide a balanced representation of the major scientific and technical disciplines. Experts will serve in their personal capacities, not as Member State representatives. Additional experts may be consulted as needed.

One Vice-Chair of the Sub-Commission will act as the Chairperson of the Advisory Group.

The Advisory Group shall operate during intersessional periods and meet at least once a year. The WESTPAC Secretariat will provide secretariat support for the Advisory Group.

Recommendation SC-WESTPAC-VII.2

WESTPAC INTERNATIONAL SCIENTIFIC SYMPOSIUM

The IOC Sub-Commission for the Western Pacific,

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

Having reviewed the output and results of the Seventh IOC/WESTPAC International Scientific Symposium on the Natural Hazards and Changing Marine Environment in the Western Pacific, Sabah, Malaysia, 21-25 May 2008,

Expressing its great appreciation to the Government of Malaysia, through its National Oceanography Directorate, for having hosted it,

Having formulated its work plan for the period 2008-2010,

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

Recognizing the success of the previous symposia,

Notes with appreciation the kind offer of the Philippines and Republic of Korea to host the next Symposium;

Decides that the Eighth IOC/WESTPAC International Scientific Symposium be organized in 2011;

Recommends that regional and global cooperating international organization be invited to support and participate in the Symposium;

Instructs the WESTPAC Secretariat to consult with the designated national focal points from the Philippines and the Republic of Korea and, through the Chairperson, confirm the host, venue, and dates of the next WESTPAC International Scientific Symposium.

Recommendation SC-WESTPAC-VII.3

UNESCO/IOC REGIONAL NETWORK OF TRAINING AND RESEARCH CENTRES IN THE WESTERN PACIFIC

The IOC Sub-Commission for the Western Pacific,

Recalling the IOC Principles and Strategy for Capacity Building adopted at the 23rd Session of its Assembly in 2005,

Recognizing the disparity in capacity and capability among the Member States of the region, and high capability of several Member States in marine science, ocean observations and service,

Further recognizing the urgent need to provide high quality training in specialized fields of oceanography in the WESTPAC Region,

Invites member states and regional institutions, including academic institutions, to provide training and capacity building courses in support of the WESTPAC High-Level Objectives and Priority Areas working through the WESTPAC Secretariat to help create a network of training opportunities;

Endorses the UNESCO/IOC Regional Network of Training and Research Centres in the Western Pacific as appended to this recommendation;

Invites Member States to nominate and support their national oceanographic institutes willing to participate actively in the above-mentioned Network;

Instructs the WESTPAC Secretariat to begin implementation of the Regional Network of Training and Research Centres in the Western Pacific as a pilot project and to provide Member States with a report during the next Session that describes actions taken, results, obstacles, opportunities, and recommendations;

Requests the Executive Secretary IOC to facilitate the implementation of this regional capacity building activity by encouraging Member States, donors, organizations, and institutions to engage in the Regional Network.

Annex to Recommendation SC-WESTPAC-VII.3

**UNESCO/IOC REGIONAL NETWORK OF TRAINING AND RESEARCH CENTRES
IN WESTERN PACIFIC**

1. RATIONALE:

1. The Western Pacific region comprises 20 countries, encompassing roughly 140 degrees from the Andaman Sea part of Thailand to the Pacific coast of the USA and 120 degrees from the southern tip of New Zealand to the northern part of the Bering Sea. It is not only recognized as the centre of marine generic richness and diversity in the world, but also considered to play a very important role in the study of climate change.
2. With the explosive population growth, rapid economic development and significant impact of climate change, the Western Pacific is experiencing an unprecedented pressure on its coastal and marine environment and ecosystems.
3. As a regional subsidiary body of the Intergovernmental Oceanographic Commission of UNESCO, IOC Sub-Commission for the Western Pacific (hereinafter referred to as "WESTPAC") was established in 1989, aiming to promote and enhance the capacity of its member states in understanding and using the ocean sustainably.
4. This initiative for a Framework for a Regional Training and Research Network aims to serve as a prime means of capacity building through provision of training and research opportunities on marine science and service in national oceanographic institutes, universities, within their domains of focus, to all WESTPAC member states. Thus it promotes north-south and south-south cooperation as a strategy to enrich institutions. It also can be considered as a regional activity to follow up with the UNESCO-IOC Principles and Strategy for Capacity-building as endorsed by the 23rd Assembly of the IOC in Resolution XXIII-10, Paris, 21-30 June 2005.

2. WHO CAN JOIN THIS INITIATIVE?

5. National Oceanographic Institutes and Universities in WESTPAC that are recognized as bona fide institutions in marine scientific research and service by the competent national authorities in the respective countries, and are willing to provide regular training and research opportunities to the trainees from all WESTPAC member states on a free-of-charge basis.
6. Proposal for a Regional T&R Network should be endorsed by its National Focal Points and submitted to IOC through the UNESCO-IOC Regional Secretariat for WESTPAC (hereinafter referred to as "WESTPAC Secretariat") by an institution eligible to participate in this initiative.

3. HOW TO JOIN THE INITIATIVE?

7. Interested institutions should prepare and submit, through the WESTPAC Secretariat, to the Executive Secretary of IOC – under the signature of the head or his/her representative of the institution- a detailed project proposal in which objectives, activities, work plan, budget requirement, are clearly stated (see the outline in Annex 1). It is important to note that this initiative is established between UNESCO-IOC and the institution and not with the individual intellectual.

4. PROCEDURE FOR SUBMISSION:

8. UNESCO-IOC encourages a bi-partite relationship in the preparation of the proposal for a UNESCO-IOC Regional Training and Research Network. The national level team should comprise the institute /university as the responsible institution and the National IOC Focal Points. The proposal should be submitted, through the WESTPAC Secretariat, to the Executive Secretary of IOC by the Institute/University with endorsement letter of its National IOC Focal Point.
9. The annual deadline for submission of proposals is 30 April of each year.

5. ASSESSMENT AND APPROVAL OF THE PROPOSAL:

10. Once WESTPAC Secretariat receives the project proposal, a process of review and analysis is undertaken, in cooperation with relevant IOC sectors, UNESCO field office to:
 - 1 determine compliance with the guidelines and its relevance to UNESCO-IOC mandate, medium term strategy and its high-level objectives;
 - 2 assess the work plan and relevant human and financial resources provided for those training and research opportunities by the institution(s) submitting the proposal;
 - 3 assess sustainability of the project giving attention to its ability to mobilize and attract resources.
11. Activities undertaken in the work plan should include:
 1. At least one Training Course each year, offering at least 10 seats to trainees from other WESTPAC member states, who are jointly identified by his/her National IOC Focal Points and his/her director or through open advertisement in case that the National IOC Focal Points are unable to identify.
 2. At least one regional and international workshops/ seminars or meetings/conferences every two years.
Besides, it is encouraged that the work plan may include:
 3. exchange of lecturers
 4. visiting professorships
 5. postgraduate teaching program
 6. study abroad
 7. Publications

All activities should complement the relevant IOC and its WESTPAC programmes and actions approved by its Member States. Close cooperation with on-going IOC and its WESTPAC activities and programmes is of utmost importance.

12. When the project proposal has completed its cycle for evaluation, the WESTPAC Secretariat informs the institution of the results. If UNESCO-IOC accepts the proposal, then the relevant Agreement is drawn up and co-signed by the Executive Secretary of IOC and the head or its representative of the host institution.

6. RECRUITMENT AND APPOINTMENT OF PERSONNEL INVOLVED IN THIS INITIATIVE:

13. The host institution should appoint a director responsible for the implementation of this training and research centre. The appointment of a director does not necessarily entail the creation of a specific post and does not always constitute an employment opportunity. All appointments will be subject to approval by the host institutions, in consultation with WESTPAC Secretariat.

14. Criteria for the selection of a director: (i) Academic reputation- he or she should be a renown specialist in the domain(s) to be covered (ii) have the capacity and experience to promote cooperation at national, regional and international levels (iii) be willing and able to mobilize resources.

7. HOW DOES THE INITIATIVE FUNCTION?

(i) Role of the Director

15. The performance of the project depends largely on the quality of the coordination function. He or she is responsible for the programming, organization, fund-raising and promotion of training and research activities. Effective coordination will ensure better cross-border involvement in the project and ultimately improve its impact.

(ii) Reports

16. Annual progress reports are mandatory and it is the responsibility of the implementing institution to ensure that IOC receives such reports. They should not only cover the progress with both quantitative and qualitative outcomes of the activities, but also the work plan for next year.

17. The annual deadline for reporting is 10 December of each year. In case of new centre, the report should be submitted, through WESTPAC Secretariat, to IOC after the first 12 months of implementation, and every year thereafter.

(iii) Using UNESCO-IOC Logo

18. UNESCO-IOC expects that the Network participants will utilize the UNESCO-IOC logo in a coherent and consistent way, making clear the type of relationship they have with the Organization. The period of use of the Logo is limited to the period of the Agreement and any extension thereafter. All publications, papers and documents should carry the following disclaimer:

19. The authors are responsible for the choice and presentation of views contained in this ... and for opinions expressed therein, which are not necessarily those of UNESCO-IOC and do not commit the Organization.

(iv) Communication

20. UNESCO-IOC Regional Training and Research Network centres should maintain communication with the WESTPAC Secretariat for intellectual guidance, technical support and direct involvement in the planning and execution of events (meetings, conferences, publications, research).

(v) Renewal of Agreements

21. The renewal of Agreements is processed through an exchange of letters between the parties-signatories to them. Whether or not UNESCO-IOC approves the renewal of the Agreement will depend on the assessment of the Network by the UNESCO-IOC WESTPAC Secretariat for WESTPAC. The concerned institution(s) addresses the letter of request to the Executive Secretary of IOC. The Agreement is considered renewed only after receipt by the concerned institution(s) of a letter of confirmation from UNESCO-IOC signed by the Executive Secretary.

(vi) Termination clause

22. When the UNESCO-IOC Training and Research Network Centre does not fully comply with the terms of the agreement, UNESCO-IOC will exercise its right to close the Centre. Circumstances under which UNESCO-IOC will close the Centre are as follows:
- 1) No annual report over two years;
 - 2) Annual reports received by UNESCO-IOC are evaluated negatively
 - 3) The activities of the Centre are not coherent with UNESCO-IOC mandate
23. When UNESCO-IOC has taken a decision to cancel an Agreement, the host institution will receive a letter of notification from the Executive Secretary of IOC informing that closure will take place within sixty days of the written notice. It should be noted that this action does not preclude future cooperation between UNESCO-IOC and the concerned institution(s).

8. EVALUATION AND MONITORING:

24. Quality performance is of paramount importance to this initiative. The intention is for the Centres to become centres of excellence. The first level of evaluation should be the host institutions itself to ensure that the Centre is making a difference, particularly in improving capacity in developing country partners. Other forms of evaluation will be organized by UNESCO-IOC with the National Committee for IOC. Evaluation and monitoring can also take the form of consultation meetings, workshops that include partners or visits by UNESCO-IOC staff to the Network Centres.

Recommendation SC-WESTPAC-VII.4

WESTPAC STRATEGY AND PROGRAMME STRUCTURE (2008-2013)

The IOC Sub-Commission for the Western Pacific,

Recalling:

- (i) Recommendation SC-WESTPAC-VI.1 concerning the Reform of Programme and Project Structure
- (ii) The WESTPAC Consultative meeting, hosted by China in Hangzhou, and the correspondence from the Chair of WESTPAC to the Executive Secretary, on WESTPAC Programme Reform and Restructure
- (ii) The adoption at the 24th Assembly of the IOC of the Medium-term Strategy (2008-2013) and the IOC Biennial Strategy 2008–2009 (IOC Resolution XXIV-2) within which the High-Level Objectives and Expected Results of IOC are elaborated, and
- (iv) The adoption of the IOC Programme and Budget 2008–2009 through IOC Resolution XXIV-15,

Recognizing the urgent need for programme restructuring that ensure efficient and effective implementation and execution of WESTPAC projects, consistent with the High-Level Objectives of IOC,

Further recognizing the need for WESTPAC to be responsible for the governance and rules of procedures of its projects, including requirements for establishment and implementation of projects, and for monitoring and evaluating projects,

Approves the WESTPAC Strategy and Programme Structure (2008-2013) annexed to this recommendation.

Annex to Recommendation SC-WESTPAC-VII.4

WESTPAC STRATEGY AND PROGRAMME STRUCTURE (2008-2013)

Purpose

- To present the strategic priorities and structure of the programmes of IOC/WESTPAC, in the context of IOC High-level Objectives (2008-2009) and Medium-term Strategy (2008-2013);
- To provide a framework for the establishment, acceptance, continuation and termination of projects; and
- To establish the framework for developing the operational plans of IOC/WESTPAC.

Preamble

The world community faces growing challenges arising from climate variability and change, marine environmental degradation and pollution, biodiversity losses, and natural hazards. As a competent body and focal point in ocean affairs within the UN system, IOC needs to respond to these global issues. WESTPAC, as a Subsidiary body of IOC, contributes to the translation of the objectives of the global programmes and ocean services of the Commission into activities that maximize the benefit for Member States, taking into account the regional-specific perspectives and capability and the priorities indicated by WESTPAC Member States. Its work and action truly add value and capacity in line with IOC objectives and WESTPAC member needs.

Toward a Restructured Programme of Work

Regional work programmes, be they implemented through Subsidiary Bodies or other means, are a fundamental component of the IOC structure to translate the global programmes and ocean services of the Commission into activities that maximize the benefit for Member States, taking into account the regional-specific perspectives and capability and the priorities indicated by Member States. WESTPAC as a Regional Subsidiary Body of the IOC potentially offers such a component, but only if its work and action truly add value and capacity in line with IOC objectives and WESTPAC member needs.

By Resolution XXIII-6, the IOC Assembly recognized that the role of Regional Subsidiary Bodies must be made more effective and efficient by examining and correcting the present deficiencies, improving communications and interactions and ensuring a comprehensive programme of work following UNESCO's Main Lines of Action and the IOC's High-Level Objectives and lines of action.

Regional Subsidiary Bodies can also play an important role in establishing partnerships and understanding (agreements) with other UN and non-governmental regional bodies who have similar and/or overlapping interests. In the light of present UN reform, it is important that UN bodies are seen to be "acting as one", particularly at the national level.

Work (action) at the regional level takes on many forms:

- Building scientific knowledge and supporting data for

- Study key scientific issues,
- ocean and coastal management,
- decision making and policy formulation, and
- as contributions to the broader base of oceanographic data and knowledge;
- Increasing national and regional capacities in marine sciences through
 - training,
 - networking among scientists and research institutions, and
 - the mobilization of resources;
- Improving bilateral and multilateral support arrangements and governance; and
- Enhancing communication and awareness building.

The work programme can be organized in a number of different ways including

- (a) Sector/field or regional specific projects. They will be characterized by (among other things)
 - A project plan, with specified objectives, outcomes and measures of performance;
 - An agreed period for the project; and
 - Identified leaders and participants.
- (b) Work that is a contribution to an IOC programme of action. The definition of this work should include
 - Well defined objectives, which may be ongoing;
 - Governance structure (rapporteurs and/or leaders responsible for interaction with IOC programme of action);
 - A schedule of work of work for each inter-sessional period; and
 - A clear identification of the WESTPAC role and responsibility.

The following sub-sections provide more detail on the process by which projects and/or programmes of work are agreed by WESTPAC (a necessary but not always sufficient step for endorsement as part of the wider body of work within IOC), and for review by WESTPAC.

For each of the WESTPAC activities there should be a set of WESTPAC actions, at or at a level lower than the IOC lines of action, which can be endorsed by WESTPAC as part of its Programme and Budget which should also include (i) related performance indicators (deliverables); and (ii) the resource allocation.

The Structure

WESTPAC can only be useful and effective if it adds real value to the work of the Commission. The outputs of the work coordinated through WESTPAC must directly impact the lines of action of IOC and the Main Lines of Action of UNESCO. In many areas this requires coordination and agreement with other bodies of IOC such as IGOOS, JCOMM and IODE and this is explicitly recognized in the revised approach. Such interaction must be mutually supportive and beneficial.

WESTPAC has a distinctive and leading role in coordinating regional capability and developing capacity, though this role is not unique. This role is expressed through projects (region or sector/field specific) and/or identified contributions to global programmes.

The new structure attempts to balance the need for integration with the IOC Programme and responsiveness to regional needs and priorities. It is important that the stakeholders of WESTPAC clearly see actions that are relevant and have high impact. In some cases the impact might be uniquely associated with WESTPAC, in others WESTPAC may play a secondary, but still important role.

The development of regional infrastructure to support science, monitoring and assessment, management and decision making, among other purposes, is an important role for WESTPAC. Such infrastructure will usually be longer-lasting and sustainable. Partnerships, be that within IOC, within UNESCO, with other UN bodies, or with non-governmental and/or national agencies is recognized as fundamental to the future of WESTPAC. NEAR-GOOS and SEAGOOS are two examples of significant contributions to infrastructure development.

It is important that the new programme structure promotes innovation and initiative, with active review of existing work programmes, and that the sessions of WESTPAC provide an opportunity to discuss gaps and new issues. The adoption of a WESTPAC Advisory Group (Recommendation SC-WESTPAC-VII.1) is an important element of this new approach. The nomenclature used to describe elements of programme structure within IOC is not always clear. Here we use the terms:

1. WESTPAC Programme	This is the plan of work adopted by WESTPAC, either through endorsement by the IOC WESTPAC Sub-Commission or as modified through out-of-session action through the Chairperson.
2. Themes or Sub-Programmes	It has been common practice to define programme areas in the sub-Commission, but these have led to some confusion with IOC Programmes, particularly when the IOC work areas were being referred to. The new structure will use the terms Theme to describe the output areas of WESTPAC, and Sub-Programme to refer to the input. There will often be a one-to-one match, but this need not be so.
3. WESTPAC High-Level (Strategic) Objectives	These closely align with the IOC medium-term strategic objectives and High-Level Objectives, but also include regional specific aspects.
4. WESTPAC lines of Action	Like the IOC and UNESCO counterparts, these are the high-level actions against which progress and impact for IOC is delivered. They will usually be of a form that allows measurement of impact.
5. Projects/work elements	These are the modalities that WESTPAC chooses to use for organising its work. In some cases they may align directly with a Theme, in other cases a Sub-Programme area will have a number of projects and/or elements of work. The former will be described in a project plan. The latter may be contributions to a larger programme, but coordinated locally, or networks that are established to coordinate contributions.

WESTPAC High-Level Objectives

In accordance with the High-level Objectives of IOC adopted at the 24th Assembly, WESTPAC Objectives adhere to the direction and priorities set forth in the IOC Biennial Strategy, but recognize the particular interests and priorities of WESTPAC. WESTPAC contributes to the 4 IOC high-level objectives (HLOs) which are adopted herein as WESTPAC HLOs (WHLOs); WESTPAC will focus its efforts in a number of key areas (denoted as WESTPAC Priority Areas, WPAa).

- WHLO 1:** Prevention and reduction of the impacts of natural hazards
- a. Promote integrated and sustained monitoring and warning systems for coastal and oceanic natural hazards,
 - b. Develop comprehensive scientific research programmes to further understanding mechanisms of ocean natural hazards,
 - c. Promote comprehensive assessment of risk from marine natural hazards,
 - d. Educate communities at risk with respect to natural-hazard impact prevention, preparedness and mitigation measures through symposia, conferences, workshops, seminars and forums.

- WHLO 2:** Mitigation of the impacts and adaptation to climate change and variability
- a. Increase the understanding of the ocean's role in climate variability and climate change.
 - b. Contribute to the better prediction of climate through ocean observation and process studies, especially development of new generation numerical models and technology, at regional and global scales.
 - c. Increase the understanding of the impacts of climate change and variability on marine ecosystems and their living resources.

- WHLO 3:** Safeguarding the health of ocean ecosystems
- a. Actively contribute to the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socioeconomic Aspects.
 - b. Further develop the research and monitoring required for the prevention of marine environment degradation, and the maintenance of biodiversity and the sustainable use of marine habitats.
 - c. Identify and develop the capacity-building necessary for maintenance of healthy ocean ecosystems focusing on the regional needs.

- WHLO 4:** Management procedures and policies leading to the sustainability of coastal and ocean environment and resources

- a. Facilitate science related to ocean and coastal resource management.
- b. Enhance development and implementation of decision-support tools that improve integrated ocean and coastal management.
- c. Provide advice for policy development management on the marine environment.

WHLO 5: Scientific knowledge and innovation

- a. Enhance regional cooperation and involvement of the Member States through capacity-building and capability or competencies in strong scientific knowledge, training, data and information management, technology development and innovations and transfer of technology

Project Framework

Projects established within WESTPAC need to meet the following criteria:

- Have defined objectives, aligned with the WESTPAC High-Level Objectives;
- Have developed a work plan, including resources requirements;
- Have demonstrated scientific quality and expected concrete outcomes;
- Have proposed potential members of the Project Steering Committee and its Terms of Reference, and identify a Project Leader.

WESTPAC Projects may be continued—or terminated—upon the approval of the Sub-Commission.

Establishment

Member State or individual scientists (hereinafter referred to as the “proposer”) should submit new Proposals, through its National IOC Focal Point, to the WESTPAC Secretariat, at least two months prior to the Session of the Sub-Commission. In the case of a new proposal from interested organizations outside WESTPAC, it should be submitted through the Chair of WESTPAC. Upon receipt of the proposal, the Secretariat will make an initial review to ensure that all relevant information has been provided. The proposals will be sent to the WESTPAC Advisory Group for further advice, as appropriate.

The Advisory group reviews all proposals and the Chair of the Group will provide a recommendation to the Chair of the Sub-Commission. If necessary, the Chair may communicate with the proposer and relevant National IOC Focal Point for further improvement/strengthening. Revised proposals should be submitted to the Secretariat accordingly at least two weeks before the Session.

The proposer or his/her representative should present the proposal to the session of WESTPAC. The Sub-Commission will consider the proposal and budgetary

implications, taking into account the recommendation from the Advisory Group, and, as appropriate adopt the project as part of the work plan of the Sub-Commission.

Implementation and Reporting

A Project Steering Committee should be established to work closely with the WESTPAC Secretariat and to serve as a management and coordination body for the project. The Committee should be set up as soon as possible after the Sub-Commission approves the Project. The Committee, under the chairmanship of the Project Leader, is responsible for the overall implementation.

The Terms of Reference for a Project Steering Committee should include:

- i. identify the long-term needs and goals of the project in the region;
- ii. oversee and ensure efficient coordination of the project and related activities.
- iii. consider sources of funding for activities with various funding agencies;
- iv. seek, on behalf of the Sub-Commission, the cooperation with national and international projects and programmes, where relevant;
- v. harmonise actions agreed under the Sub-Commission with those of other intergovernmental groups, as appropriate;
- vi. inform both the officers of the Sub-Commission and to his/her National IOC Focal Point of the implementations of the project, at appropriate intervals, identifying these matters requiring their attention and assistance.
- vii. report its implementation and achievement to the Session of the Sub-Commission at least one month prior to the Session

Continuation or termination of a project

All Projects must be reviewed at Sessions of the Sub-Commission and, as appropriate, renewed with specific objectives and expected outputs for the next intersessional period. The Chairperson of the Sub-Commission should request the Advisory Group to provide comment on achievement based on the report from the Project and recommendation on continuation or termination of the Project.

The Advisory Group meets before the Session. The Chairperson of the Group, if necessary, may set up ad hoc working group for assessment of the achievement, in consultation with the Chairperson of the Sub-Commission.

The Sub-Commission makes decision on continuation/termination, taking into account of the report of the Project Leader together with the comment and

recommendation from the Advisory Group. The Sub-Commission may terminate a project, if one of the following conditions is observed;

- i. the Project Leader reports the objectives of the project are accomplished; or
- ii. in case of financial problem, Project Leader reports to the Sub-Commission for termination; or
- iii. the Project Leader or his/her representative could not attend the session and no progress report was submitted without any reason, or
- iv. Project Leader did not respond to the request of the WESTPAC Secretariat to report on the progress during intersessional period and few activities were carried out during intersessional period.

In case of termination, the Sub-Commission will inform the Project leaders of its decision, along with a justification, through his/her National IOC Focal Point.

Recommendation SC-WESTPAC-VII.5

WESTPAC PROGRAMME AND BUDGET FOR 2008–2010

The IOC Sub-Commission for the Western Pacific,

Noting the reports of the Technical Secretary for IOC Sub-Commission for the Western Pacific on Intersessional Activities and on the WESTPAC Work plan and Budget, contained in Documents IOC/SC-WESTPAC-VII/5, 6 and 10,

Further noting the presentation of the IOC Programme and Budget 2008–2009, through the IOC Resolution XXIV-15,

Also noting decisions taken at this Session to revise the WESTPAC Strategy and Programme Structure (2008-2013) to align with the IOC's High-Level Objectives, and

Noting with great appreciation the Royal Thai Government's continued and critical support for the WESTPAC Secretariat,

Decides that the WESTPAC Programme and Budget 2008–2010 shall be aligned with the High-Level Objectives of the WESTPAC Strategy and the priority areas detailed within that Strategy;

Adopts the Draft WESTPAC Programme and Budget 2008–2010 given in the Annex to this Recommendation;

Urges Member States:

- (i) To support any WESTPAC programme proposals which are considered at the Executive Council and Assembly,
- (ii) To continue and increase their support to WESTPAC through direct and in-kind contributions to programmes, projects, and the WESTPAC Secretariat;

Calls on the WESTPAC Secretariat to communicate the results of the 41st Executive Council meeting together with an analysis of implications for WESTPAC programmes.

Annex to Recommendation SC-WESTPAC-VII.5

Project	Activities				Funding Required	Participation	Remark
	Activities	Objectives	Expected outputs	Data and place			
WESTPAC Harmful Algae Bloom	1. HAB strategic meeting	discussion and decision of its activity plan		During 8th WESTPAC Symposium	US\$3K (raised by PL from other source)	50 from WESTPAC Member States	
	2. Establishment of regional network	dissemination of information, announcements, etc.		Intersessional	No cost	WESTPAC Member States	
	3. Provision of coordination for the Asia GEOHAB project	Establishment of AsiaGEOHAB		1 day during 3-7 November	US\$20K (WESTPAC)	70 from WESTPAC Member States	
	4. Strategic meeting for TTR project	Capacity building		1 week in each year in 2009 and 2010	US\$20K (WESTPAC) in each meeting	10 from WESTPAC Member States	
	5. HABSEA Portal	Establishment of web site for information dissemination		Intersessional	US\$20K (WESTPAC)	WESTPAC Member States	
	6. Interaction with other Projects	Activation of HAB projects		Intersessional	No cost	WESTPAC Member States	
	7. Harmful Algal Event Data-base	Information dissemination		Intersessional	No cost (through interaction with other organization)	WESTPAC Member States	

Project	Activities				Funding Required	Participation	Remark
	Activities	Objectives	Expected outputs	Data and place			
International Bathymetric Chart of the Western Pacific (IBCWP)	1. The Five Session of the Editorial Board for IBCWP	To discuss and resolve the issue encountered in the implementation of the project	Decisions and suggestions	ASAP	No cost	Members of the EB-IBCWP	
	2. Training Workshop	Technical exchange and learning	Technical training course	ASAP	No cost	Relevant technicians from WESTPAC Member States	
Northeast Asian Global Ocean Observing System (NEAR-GOOS)	1. A workshop on NEAR-GOOS products.	To collect and provide more data products and information to the users and to develop more products to improve the NEAR-GOOS services in the future.	Application of NEARGOOS promoted	Intersessional	US\$3K (WESTPAC)	WESTPAC Member States	
	2. Hold another workshop on the data quality control technology.	To enhance the capability on Data quality control,	Capacity Enhanced	Intersessional	US\$3K (WESTPAC)	WESTPAC Member States	
	3. The 2nd training course on ocean remote sensing to be held in October 2008	To improve the capability on Remote Data Analysis	Capacity Enhanced	Intersessional		WESTPAC Member States	
	4. The 13th Session of the NEAR-GOOS Coordinating Committee	To review the progress of NEAR-GOOS		Intersessional	US\$3K (WESTPAC)	Member States of NEAR-GOOS	

Project	Activities				Funding Required	Participation	Remark
	Activities	Objectives	Expected outputs	Data and place			
Southeast Asian Global Ocean Observing System (SEAGOOS)	1. The first meeting of Coordination Committee	1. To let the CC consider on the Operation Guideline and strategic Plan of SEAGOOS 2. Consider the future and the project under SEAGOOS To select Chair for the SEAGOOS	To get start and coordinate the project/activities of the SEAGOOS	February- April 2009, Bangkok	US\$20K (WESTPAC)	25 from WESTPAC Member States	
	2. Regional Workshop on Standardization of Tide Gauges and Sea Level Data in Southeast Asia (Real-Time Sea Level Observing System for SEAGOOS Region)	1. To set up a regional system to exchange observed sea level data 2. To assist some countries in the region to building capacity to observe and transmit sea level data on a real-time basis	To have the sea level network and high precision of data including data exchange in the region	September 2008 (3 days) Bangkok	US\$15K (WESTPAC)	25 from WESTPAC Member States	
	3. The Expert Meeting on development of BLUElink project for Southeast Asian sea	To develop the cooperation of WESTPAC expert with Australia Scientist on using and validation of BLUElink model for the SEA.sea	To get the prediction of SST, SSS, and sea surface currents in Southeast Asian Sea by using BLUElink model	To be fixed	US\$6K (WESTPAC)	4 from WESTPAC Member States	

Project	Activities				Funding Required	Participation	Remark
	Activities	Objectives	Expected outputs	Data and place			
Ocean Remote Sensing (ORSP)	1. Coastal Habitat Remote Sensing Project	Discussion on strategic design plan of "Coastal Habitat Remote Sensing Project"	Strategic design plan of "Coastal Habitat Remote Sensing Project"	November 2008, Bangkok	US\$1500 (JFiT)	Tentative project leader and nominated members	
	2. NGSST project	To conduct NGSST R&D for the southeast Asian Seas	Southeast Asian NGSST science and technology establishment		None		
	3. Ocean Color Project	YOC-2008 with YSLME and NOWPAP	Improvement of YOC2007 ocean color algorithms		None		
Responses of Marine Hazards to climate change in the Western Pacific (WESTPAC-MaHaz)	<ol style="list-style-type: none"> 1. Deployment of three buoys in the Indian Ocean and South China Sea; 2. One field survey in SCS and/or west Pacific 3. Running of the new generation climate model for 100 years 	To quantify the trends of some marine hazards in the context of global climate change	Development of an ocean monitoring system for the Western Pacific ; Prediction report on the trend of Tropical Cyclones	<ol style="list-style-type: none"> 1. Two buoys deployed in 2009 and. one buoy deployed in 2010 2. Tentatively in 2009 3. Tentatively at the end 	US\$4.5M required. No required financial support from WESTPAC. Project leader will coordinate the available funds.	WESTPAC Member States	

Project	Activities				Funding Required	Participation	Remark
	Activities	Objectives	Expected outputs	Data and place			
				of 2010, Qingdao			
	4. Model experiments and data analysis	To understand the physical nature of some marine hazards and their responding mechanisms to global change.	Published papers and write brief introduction documents to IOC/WESTPAC for member states sharing	4. Laboratory of all participants during 2008-2010	US\$100K required. Project leader will coordinate the available funds.	WESTPAC Member States	
	5. Refine a kind of circulation model such as POM; 6. Refine a kind of climate model such as CCSM3	To enhance the capacity to predict climate change and the ocean responses.	State-of-the-art wave-tide-circulation coupled model suitable for the Western Pacific region; New generation climate model suitable for the Western Pacific region.	5. tentatively in Qingdao during 2008-2010; 6. tentatively in Qingdao during 2008-2010;	US\$400K required. Project leader will coordinate the available funds.	WESTPAC Member States	
	7. One workshop on MaHaz 8. One training	Capacity building	Knowledge sharing among member	7. Summer 2009, TBD;	US\$20K required. Project leader will	WESTPAC Member States	

Project	Activities				Funding Required	Participation	Remark
	Activities	Objectives	Expected outputs	Data and place			
	course on new generation numerical models		states	8. Oct. 2010, Qingdao	coordinate the available funds.		
Coastal Marine Biodiversity and Conservation in the WESTPAC Region	1. 1st Workshop	To understand and provide the scientific basis for marine biodiversity management by articulating the state of the science with respect to current and emerging stressors	Publish book/report on biodiversity and current stressors on marine ecosystems in WESTPAC region	May 2009, Bangkok, Thailand	US\$10K (WESTPAC), US\$5K(CU), US\$5K(DMCR), TBN	WESTPAC Member States	Budget is needed to conduct a workshop and to publish book/report.
	2. 2nd Workshop	To establish the effective management plan and monitoring programmes for marine biodiversity among WESTPAC country members	Publish book/report on restoration and rehabilitation of marine ecosystems	February 2010, Bangkok, Thailand	US\$10K (WESTPAC), US\$5K(CU), US\$5K(DMCR), TBN	WESTPAC Member States	Budget is needed to conduct a workshop and to publish book/report.
Enhancing the Capability on Oil Spill Response and Restoration of Marine Ecosystem in	1. Training course	Raise public awareness and/or build capacity for OSR and the restoration of marine ecosystems	Capability Enhanced	2008	US\$50K (From national contribution)	Selected participants from WESTPAC Member States	

Project	Activities				Funding Required	Participation	Remark
	Activities	Objectives	Expected outputs	Data and place			
the Western Pacific	2. Training Course	Raise public awareness and/or build capacity for OSR and the restoration of marine ecosystems	Capability Enhanced	2009	US\$50K (from national contribution)	Selected participants from WESTPAC Member States	
	3. Training Course	Raise public awareness and/or build capacity for OSR and the restoration of marine ecosystems	Capability Enhanced	2010	US\$50K (from national contribution)	Selected participants from WESTPAC Member States	
Fluvial Sediment Supply to the South China Sea: Anthropogenic and Natural Aspects	1. 1st Workshop	Information Gathering	Workshop proceedings	November 2008, Shanghai	US\$10K (WESTPAC), 20K (LTJ)	30 participants from WESTPAC Member States	
	2. 2nd Workshop	Information comparison	Workshop proceedings	November 2009, Ho Chi Minh City	US\$15K (WESTPAC), US\$10K (LTJ), 5K (Others)	30 participants from WESTPAC Member States	
	3. 3rd-Workshop	Discussion and publication	Proceedings, publications, and report	November 2010, Manila	US\$15K (WESTPAC), US\$15K (LTJ), 10K (Others)	50 participants from WESTPAC Member	

Project	Activities				Funding Required	Participation	Remark
	Activities	Objectives	Expected outputs	Data and place			
						States	
Coral Reefs under Climate and Anthropogenic Perturbation (WESTPAC-CorReCAP)	1. Workshop	To form a steering group and review the status of coral reef research and develop the implementation plan	Report on coral reef knowledge in WESTPAC	Spring 2009 (presumably at Shanghai or Hainan in China)	US\$2.5K (WESTPAC), US\$5K or more from national and other funding resources	Participants from WESTPAC Member States	
	2. Workshop and Training Course	To promote capacity building through training and scientific presentations	Workshop and training course report and proceedings	Summer 2010 (Place to be determined)	US\$5K (WESTPAC), US\$10K or more from national and other funding resources	Young scientists and lecturers from WESTPAC Member States, plus a few experts from other regions	
	3. Workshop	To summarize the progress of CorReCAP and synthesize the coral reef research and propose new activity for next session term after 2011	Report of CorReCAP and joint publications	Autumn 2011 (Place to be determined)	US\$2.5K (WESTPAC), US\$5K or more from national and other funding resources	Steering Group members	

Project	Activities				Funding Required	Participation	Remark
	Activities	Objectives	Expected outputs	Data and place			
Marine Hazards Forecasting and Mitigation in the Western Pacific (WESTPAC-MHWM)	1. 1st Workshop	Capacity Building	Workshop proceedings	August 2008, Vietnam	WESTPAC, SOA, TBN	30 from WESTPAC Member States	
	2. Training Course Workshop	Capacity Building	Storm surge and tsunami numerical model	October 2009, China	WESTPAC, SOA	30 from WESTPAC Member States	
	3. Conference/3rd-Workshop	Capacity Building	Proceedings	November 2010, Japan	WESTPAC, SOA, TBN	30 from WESTPAC Member States	
IOC/WESTPAC E-Bulletin	1. Meeting of Project Members	To formulate the direction and strategies	Project Policy	June 2008, 2 Days Bangkok	US\$4K for travel and meeting expenses	4 from WESTPAC Member States	
	2. Six E-Bulletins		E-Bulletin	September 2008- May 2010	US\$300 for honoraries	WESTPAC Member States	
	3. Project Meeting and Reporting	To Evaluate the Project and Report to IOC/WESTPAC	Final Report	May 2010	US\$4K for travel and meeting expenses	4 from WESTPAC Member States	

Recommendation SC-WESTPAC-VII.6

**CHANGES TO THE WESTPAC MEETING SCHEDULE AND DATE
AND PLACE OF THE NEXT SESSION**

The IOC Sub-Commission for the Western Pacific,

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

Recalling the Recommendation SC-WESTPAC-I.3 in 1990 to have a three-year time span between its regular sessions,

Noting, however, that the planning cycle of Sub-Commission is not in line with that of IOC, which approves whole biennium Programme and Budget at the two yearly session of the Assembly with the result that it is impossible to harmonize planning and budgeting with the IOC and UNESCO and that this absence of harmonization harms WESTPAC and compromises prospects for the future,

Further noting that Resolution XXIII-6, adopted at the 23rd Session of IOC Assembly in 2005, instructs the IOC Executive Secretary to schedule the meetings of the Regional Subsidiary Bodies, where possible, to be in phase with the IOC planning cycles,

Also noting the decision of this Session to align the WESTPAC Programme and Budget to the IOC High-Level Objectives,

Decides to reschedule the period between Sessions from three years to two years beginning with the close of WESTPAC VII. Further, WESTPAC Sessions will be scheduled for the first quarter of the year so its decisions, recommendations, and reports can be forwarded to the IOC Executive Secretary in time for review and consideration by the Executive Committee; and,

Accepts with appreciation the offer by the Government of Indonesia to host the Eighth Session in the first quarter of 2010, subject to the final endorsement of the relevant authorities.

ANNEX V

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ANNEX VI

LIST OF ACRONYMS

AI	Atmospheric inputs
CLIVAR	Climate Variability and Predictability Study
COBSEA	Coordinating Body on the Seas of East Asia
CorReCA	Coral Reefs under Climate and Anthropogenic Perturbations
GEBCO	General Bathymetric Chart of the Oceans
GEF	Global Environment Facility
GEO-HAB	Global Ecology and Oceanography of Harmful Algal Blooms
GLOSS	Global Sea Level Observing System
GODAR	Global Oceanographic Data Archaeology and Rescue Project
GOOS	Global Ocean Observing System
HAB	Harmful Algal Blooms
IBCWP	International Bathymetric Chart of the Western Pacific
ICG-PTWS	IOC Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System
ICSU	International Council for Science
IGBP	International Geosphere-Biosphere Programme
IHP	International Hydrological Programme
IOC	Intergovernmental Oceanographic Commission
IODE	International Oceanographic Data and Information Exchange
JCOMM	Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology
JODC	Japan Oceanographic Data Centre (Japan)
KORDI	Korea Ocean Research and Development Institute, Ro Korea
MAB	Man and Biosphere
MaHaz	Response of Marine Hazards to Climate Change in the Western Pacific
MHWM	Marine Hazards Forecasting and Mitigation in the Western Pacific-
MOSTI	Ministry of Science, Technology and Innovation, Malaysia
NMDIS	National Marine Data and Information Service, China
NEAR-GOOS	North-East Asian Regional GOOS
NGSST	New Generation Sea Surface Temperature
NGO	Nongovernmental Organization
NOWPAP	UNEP North-West Pacific Action Plan
OC	Ocean Color
ORSP	Ocean remote sensing project

PEMSEA	Partnerships in Environmental Management for the Seas of East Asia
PICES	North Pacific Marine Science Organization
SCS-TWS	Tsunami Warning System in South China Sea
SCOR	Scientific Committee on Oceanic Research
SEAGOOS	Southeast Asian Global Ocean Observing System
SOLAS	IGBP's Surface Ocean Lower Atmosphere Study
SOA	State Oceanic Administration, China
TOGA	Tropical Oceans and Global Atmosphere
UNESCO	United Nations Educational, Scientific and Cultural Organization
WCRP	World Climate Research Programme
WESTPAC	IOC Sub-Commission for the Western Pacific (WESTPAC)
WHLO _s	WESTPAC High-Level Objectives
WMO	World Meteorological Organization
YSLME	The UNDP/GEP Yellow Sea Large Marine Ecosystem Project

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

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

61.	Third Session of the IOC-WMO Intergovernmental WOCE Panel, Paris, 1995	E only
62.	Fifteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Papete, 1995	E, F, S, R
63.	Third Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1995	E, F, S
64.	Fifteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange	E, F, S, R
65.	Second Planning Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1995	E only
66.	Third Session of the IOC Sub-Commission for the Western Pacific, Tokyo, 1996	E only
67.	Fifth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, Christ Church, 1995	E, S
68.	Intergovernmental Meeting on the IOC Black Sea Regional Programme in Marine Sciences and Services	E, R
69.	Fourth Session of the IOC Regional Committee for the Central Eastern Atlantic, Las Palmas, 1995	E, F, S
70.	Twenty-ninth Session of the Executive Council, Paris, 1996	E, F, S, R
71.	Sixth Session for the IOC Regional Committee for the Southern Ocean and the First Southern Ocean Forum, Bremerhaven, 1996	E, F, S,
72.	IOC Black Sea Regional Committee, First Session, Varna, 1996	E, R
73.	IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Fourth Session, Mombasa, 1997	E, F
74.	Nineteenth Session of the Assembly, Paris, 1997	E, F, S, R
75.	Third Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1997	E, F, S, R
76.	Thirtieth Session of the Executive Council, Paris, 1997	E, F, S, R
77.	Second Session of the IOC Regional Committee for the Central Indian Ocean, Goa, 1996	E only
78.	Sixteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Lima, 1997	E, F, S, R
79.	Thirty-first Session of the Executive Council, Paris, 1998	E, F, S, R
80.	Thirty-second Session of the Executive Council, Paris, 1999	E, F, S, R
81.	Second Session of the IOC Black Sea Regional Committee, Istanbul, 1999	E only
82.	Twentieth Session of the Assembly, Paris, 1999	E, F, S, R
83.	Fourth Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1999	E, F, S, R
84.	Seventeenth Session of the International Coordination Group for the Tsunami Warning System in the Pacific, Seoul, 1999	E, F, S, R
85.	Fourth Session of the IOC Sub-Commission for the Western Pacific, Seoul, 1999	E only
86.	Thirty-third Session of the Executive Council, Paris, 2000	E, F, S, R
87.	Thirty-fourth Session of the Executive Council, Paris, 2001	E, F, S, R
88.	Extraordinary Session of the Executive Council, Paris, 2001	E, F, S, R
89.	Sixth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, San José, 1999	E only
90.	Twenty-first Session of the Assembly, Paris, 2001	E, F, S, R
91.	Thirty-fifth Session of the Executive Council, Paris, 2002	E, F, S, R
92.	Sixteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Lisbon, 2000	E, F, S, R
93.	Eighteenth Session of the International Coordination Group for the Tsunami Warning System in the Pacific, Cartagena, 2001	E, F, S, R
94.	Fifth Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 2001	E, F, S, R
95.	Seventh Session of the IOC Sub-commission for the Caribbean and Adjacent Regions (IOCARIBE), Mexico, 2002	E, S
96.	Fifth Session of the IOC Sub-Commission for the Western Pacific, Australia, 2002	E only
97.	Thirty-sixth Session of the Executive Council, Paris, 2003	E, F, S, R
98.	Twenty-second Session of the Assembly, Paris, 2003	E, F, S, R
99.	Fifth Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Kenya, 2002 (* Executive Summary available separately in E, F, S & R)	E*
100.	Sixth Session of the IOC Intergovernmental Panel on Harmful Algal Blooms, St. Petersburg (USA), 2002 (* Executive Summary available separately in E, F, S & R)	E*
101.	Seventeenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Paris, 2003 (* Executive Summary available separately in E, F, S & R)	E*
102.	Sixth Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 2003 (* Executive Summary available separately in E, F, S & R)	E*
103.	Nineteenth Session of the International Coordination Group for the Tsunami Warning System in the Pacific, Wellington, New Zealand, 2003 (* Executive Summary available separately in E, F, S & R)	E*
104.	Third Session of the IOC Regional Committee for the Central Indian Ocean, Tehran, Islamic Republic of Iran, 21-23 February 2000	E only
105.	Thirty-seventh Session of the Executive Council, Paris, 2004	E, F, S, R
106.	Seventh Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 2005 (* Executive Summary available separately in E, F, S & R); and Extraordinary Session, Paris, 20 June 2005	E*
107.	First Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), Perth, Australia, 3-5 August 2005	E only
108.	Twentieth Session of the Intergovernmental Coordination Group for the Tsunami Warning System in the Pacific, Viña del Mar, Chile, 3-7 October 2005 (* Executive Summary available separately in E, F, S & R)	E*
109.	Twenty-Third Session of the Assembly, Paris, 21-30 June 2005	E, F, S, R
110.	First Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS), Rome, Italy, 21-22 November 2005	E only
111.	Eighth Session of the IOC Sub-commission for the Caribbean and Adjacent Regions (IOCARIBE), Recife, Brazil, 14-17 April 2004 (* Executive Summary available separately in E, F, S & R)	E*
112.	First Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions (ICG/CARIBE-EWS), Bridgetown, Barbados, 10-12 January 2006	E only
113.	Ninth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE), Cartagena de Indias, Colombia, 19-22 April 2006 (* Executive Summary available separately in E, F, S & R)	E S*

114.	Second Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), Hyderabad, India, 14–16 December 2005	E only
115.	Second Session of the WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology, Halifax, Canada, 19–27 September 2005 (Abridged final report with resolutions and recommendations)	E, F, R, S
116.	Sixth Session of the IOC Regional Committee for the Western Indian Ocean (IOCWIO), Maputo, Mozambique, 2–4 November 2005 (* Executive Summary available separately in E, F, S & R)	E*
117.	Fourth Session of the IOC Regional Committee for the Central Indian Ocean, Colombo, Sri Lanka 8–10 December 2005 (* Executive Summary available separately in E, F, S & R)	E*
118.	Thirty-eighth Session of the Executive Council, Paris, 20 June 2005 (Electronic copy only)	E, F, R, S
119.	Thirty-ninth Session of the Executive Council, Paris, 21–28 June 2006	E, F, R, S
120.	Third Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), Bali, Indonesia, 31 July–2 August 2006 (*Executive Summary available separately in E,F,S & R)	E*
121.	Second Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS), Nice, France, 22–24 May 2006	E only
122.	Seventh Session of the IOC Intergovernmental Panel on Harmful Algal Blooms, Paris, France, 16–18 March 2005 (* Executive Summary available separately in E, F, S & R)	E*
123.	Fourth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-IV), Mombasa, Kenya, 30 February-2 March 2007 (* Executive Summary available separately in E, F, S & R)	E*
124.	Nineteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Trieste, Italy, 12–16 March 2007 (* Executive Summary available separately in E, F, S & R)	E*
125.	Third Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, Bonn, Germany, 7–9 February 2007 (* Executive Summary available separately in E, F, S & R)	E*
126.	Second Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Cumaná, Venezuela, 15–19 January 2007 (* Executive Summary available separately in E, F, S & R)	E*
127.	Twenty-first Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System, Melbourne, Australia, 3–5 May 2006 (* Executive Summary available separately in E, F, S & R)	E*
128.	Twenty-fourth Session of the Assembly, Paris, 19–28 June 2007	E, F, S, R
129.	Fourth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, Lisbon, Portugal, 21–23 November 2007 (* Executive Summary available separately in E, F, S & R)	E*
130.	Twenty-second Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System, Guayaquil, Ecuador, 17–21 September 2007 (* Executive Summary available in E, F, S & R included)	E*
131.	Forty-first Session of the Executive Council, Paris, 24 June–1 July 2008	E, F, R, S
132.	Third Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Panama City, Panama, 12–14 March 2008 (* Executive Summary available separately in E, F, S & R)	E*
133.	Eighth Session of the IOC Intergovernmental Panel on Harmful Algal Blooms, Paris, France, 17–20 April 2007 (* Executive Summary available separately in E, F, S & R)	E*
134.	Twenty-third Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System, Apia, Samoa, 16–18 February 2009 (*Executive Summary available separately in E, F, S & R)	E*
135.	Twentieth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Beijing, China, 4–8 May 2009 (*Executive Summary available separately in E, F, S & R)	E*
136.	Tenth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE), Puerto La Cruz, Bolivarian Republic of Venezuela, 22–25 October 2008 (*Executive Summary available separately in E, F, S & R)	E, S*
137.	Seventh Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-VII), Sabah, Malaysia, 26–29 May 2008 (*Executive Summary available separately in E, F, S & R)	E*