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Reports of Governing and Major Subsidiary Bodies

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* Report translated into French, Spanish and Russian. For reason of budgetary constraints, Annexes III, IV, V and VIII remain in English only

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1. OPENING

1 The Chairperson, Mr. Su Jilan, opened the 21st Session of the IOC Assembly at 10.00 a.m. on Tuesday, 3 July 2001 at the UNESCO Headquarters, Paris.

2 **The Assembly received** and **noted** with appreciation statements by the Chairman of IOC, Professor Su Jilan and from the Deputy Director-General of UNESCO, Mr. Marcio Barbosa. These statements as well as the keynote speech delivered by the Director-General, Mr. Koïchiro Matsuura later during the session are presented in Annex III.

3 The Chairman called on the participants to stand in silence for one minute as a mark of respect for distinguished individuals who had collaborated with the Commission and had passed away since the 20th session. Special reference was made to Dr. George Grice (USA), Dr. Robert Knecht (USA), Dr. Michael Mullin (USA), Dr. Fred Berry (USA), Dr. Mia Tegner (USA), and Dr. Hans Ulrich Roll (Germany) (former 1st Vice-Chairman).

2. ORGANIZATION OF THE SESSION

2.1 ADOPTION OF THE AGENDA

4 **The Assembly adopted** the Agenda as given in Annex I.

2.2 DESIGNATION OF THE RAPPORTEUR

5 **The Assembly** gratefully **accepted** the offer by Greece to provide the Rapporteur. A. Theocharis was appointed to assist the Chairman and the Executive Secretary in the preparation of the Session Summary Report.

2.3 ESTABLISHMENT OF INTRASESSIONAL COMMITTEES

6 **The Assembly noted** that under Rule of Procedure No. 12(2), the Executive Council, acting as the Steering Committee for the Assembly, had appointed a Nominations Committee for the Assembly with the following composition: Poland (Chair), Argentina, France, Ghana, Japan, Republic of Korea, and Sweden.

7 As proposed by the Executive Council, **the Assembly accepted** the establishment of a Technical Review Committee for Resolutions with the following composition: Brazil (Chair), Canada, Chile, China, Costa Rica, Egypt, France, Japan, Nigeria, Russian Federation, USA.

8 The Chairperson announced that additional open-ended committees would work intrasessionally: (i) on the revision of the IOC Rules of Procedure, chaired by Prof. M. Murillo (Costa Rica), and composed initially of representatives of Brazil, China, Colombia, Cuba, France, Kenya, Norway, Portugal and USA; and (ii) on Programme and Budget, chaired by the First Vice-Chairman, Mr. D. Pugh (United Kingdom) initially composed of representatives from Australia, Canada, China, France, India, Nigeria, and Portugal. **The Assembly also decided** to establish intrasessional working groups to develop an IOC statement for the World Summit on Sustainable Development (Rio+10). **The Assembly noted** that these committees would be open-ended and would meet at times to be announced.

9 **The Assembly noted** the Chairman's request that in order to make the plenary meeting as efficient and effective as possible given the time constraint, the Chairpersons of Regional Bodies should arrange intrasessional meetings to debate regional priorities and agree on the decisions that needed to be addressed by the Assembly under Agenda sub-item 5.4.

2.4 INTRODUCTION OF TIMETABLE AND DOCUMENTATION

10 The IOC Executive Secretary introduced the documentation, noting that the main change is the presentation of the Action Paper. In this occasion, an effort has been made to produce a consolidated document that incorporates all the necessary information to adopt the decisions or include all the pertinent references to ancillary documents. Furthermore, the Action Paper contains draft texts proposed for adoption as the final report of the Assembly and some draft resolutions. **The Assembly adopted** the Revised Provisional Timetable (Document IOC-XXI/1 Add. prov. rev.2). The list of documents is given in Annex VII, the List of Participants in Annex VIII and the List of Acronyms in Annex IX.

2.5 BRUUN AND PANIKKAR MEMORIAL LECTURES

11 Mr. Ralph Rayner from the Fugro Global Environmental & Ocean Sciences (Fugro GEOS) office in Swindon (U.K.) was the invited speaker for the Anton Bruun Memorial Lecture. The topic of his paper was "*Operational Oceanography – a perspective from the private sector"*. Professor Luis Pinheiro of the Aveiro University in Portugal presented the N.K. Panikkar Memorial Lecture on "*Geosphere-Biosphere and the TTR[1] Research on the Atlantic Continental Margins"*. The Bruun Memorial Lecture is given in Annex IV.

3. REPORT OF THE EXECUTIVE SECRETARY ON INTERSESSIONAL ACTIVITIES

12 The IOC Executive Secretary, Dr. P. Bernal, presented his report on activities since the Twentieth Session of the Assembly (1999) and the Thirty-third Session of the Executive Council (2000), referring to the report on Programme Execution (July 2000 – June 2001) and the document on Implementation of IOC Governing Bodies Resolutions (Document IOC Annual Report, No. 7 Addendum).

13 The Executive Secretary focused his presentation on the major policy developments affecting the Commission, noting that the elements related to programme implementation will be reported under the relevant agenda items.

14 Dr. Bernal recalled that the Commission on Sustainable Development at its Seventh Session recommended that the UN General Assembly *"consider ways and means of enhancing the effectiveness of its annual debate on oceans and the law of the sea"* (CSD Decision 7/1. Oceans and Seas, 1999; Document E/1999/29, Section I. C). Subsequently, the UN General Assembly adopted resolution 54/33 of 24 November 1999, establishing a United Nations Open-ended Informal Consultative Process (hereafter refered to as the "Consultative Process") in order to facilitate the annual review by the General Assembly of developments in ocean affairs, by suggesting particular issues to be considered by the Secretary-General's Report on Oceans and the Law of the Sea, and by emphasizing areas where coordination and cooperation at the intergovernmental and inter-agency levels should be enhanced. The first Consultative Process meeting was held in New York from 29 May - 2 June 2000, and was attended by the Chairman and the Executive Secretary of IOC. The report of this first meeting was adopted by the UN General Assembly, which recommended that the second meeting of the Consultative Process should address the issues of ocean sciences, marine technology transfer and capacity building for developing countries, as well as piracy.

15 At the second meeting of the Consultative Process (New York, 7-11 May 2001) IOC was highly visible thanks to the participation of the IOC Chairman, Prof. Su Jilan, 1st Vice-Chair, Dr. D. Pugh, the Head of the Ocean Science Section, Dr. U. Unluata, as well as the IOC Executive Secretary. In particular, IOC was invited to report on the status of Ocean Science and ways and means that IOC can contribute to the building of capacity and technological transfer in developing countries through

[1] Training-through-research programme.

its regional mechanisms. In his capacity of Chairman of the ACC-SOCA, the Executive Secretary was also invited to report on UN agencies' coordination of ocean affairs.

16 Dr. Bernal provided information on the decisions adopted by the UNEP Council, in particular Resolution XXI/13 calling for the establishment of a global assessment of the state of the marine environment and for the active participation of IOC, as well as other UN bodies, such as CBD, and the Regional Seas Convention Secretariat. This resolution was endorsed by the Consultative Process in May 2001 and will be reviewed by the UN General Assembly at its next session in October 2001.

17 Dr. Bernal also referred to UNEP Resolution XXI/28 calling for closer cooperation between the UNEP Regional Seas Convention Secretariat and FAO Fisheries Commissions in the development of ecosystem-based approaches to fisheries management and inviting IOC through GOOS to participate in this initiative. These two recent developments illustrate clearly the role of IOC as a coordinating body for ocean science and services and as the focal point for oceans within the UN system.

18 The Executive Secretary informed the delegates about the crucial process leading to the World Summit on Sustainable Development (WSSD), now scheduled for the first week of September 2002, in Johannesburg, South Africa. He recalled that in the last 10 years, since the Rio Earth Summit, the global context and international agenda have changed. Eradication of poverty has become a priority issue in the international agenda, while environmental concerns have now been institutionalized in the programmes of action of international agencies as well as Member States. The role of IOC in this process needs to be better defined if the Commission is to have an impact on the agenda and outcomes of the Summit. He emphasized that guidance from Member States is required in the preparation for the Summit. IOC has already taken a leadership role in this preparatory process by deciding to convene a Global Conference on 'Oceans and Coasts at Rio+10', to take place in Paris from 3-7 December 2001. This Conference is being organized jointly by IOC, NGOs, several international agencies and programmes, as well as with the support of IOC Member States. The Executive Secretary encouraged Member States to fully engage in the process leading to the Summit.

19 **The Assembly expressed** its satisfaction with the report presented by the Executive Secretary and congratulated the Chairman and the Executive Secretary for their active role during the Consultative Process meetings which contributed to a higher visibility of IOC within the UN System.

20 A few Member States presented reports of their national activities related to the different programmes of the Commission. The Chairman invited Member States to submit these to the Secretariat in order to be distributed as required.

21 Several Member States expressed concern that many documents were not available in due time in English and that they were not available in other languages.

22 In response the Executive Secretary reminded the Assembly that the Commission is operating on very scarce resources, both financial and human, in the context of the 'zero' nominal growth budget of UNESCO, which affected the allocation of resources to the IOC. The Secretariat had endeavoured to provide the working documents in advance in the four working languages, but shortages of human resources have made it difficult to achieve this in a timely manner.

23 Taking into account the concern of Member States and the response of the Executive Secretary **the Assembly strongly reaffirmed** that the timely distribution of the working documents in four languages is a prerequisite of a successful work of the IOC Governing Bodies

24 **The Assembly adopted** Resolution XXI-1.

3.1 PROGRESS REPORT ON THE PROGRAMME AND BUDGET EXECUTION

25 In introducing this item, the IOC Executive Secretary, assisted by Mrs. Xenia Yvinec, administrative Assistant for Financial and Personnel matters, referred to Document IOC-XXI/2 Annex 1, which contains an overview of the current status of revenue and expenditure from the IOC Regular Programme and the IOC Trust Fund special account, as of the 1st of January 2000 until March 2001. An update was provided for the period between March and July 2001.

26 Following this presentation, Dr. P. Bernal provided information on staffing and the current financial and budgetary situation of the Commission, drawing the Assembly's attention to the budgetary constraints faced by IOC in this biennium due to the cuts imposed on it by Resolution 30 C/1 of the UNESCO General Conference. In this context, he emphasized the ever-growing importance of extra budgetary resources for successful programme implementation. He demonstrated that in all main lines of action, with the exception of TEMA and Regions, expenditure from extra budgetary sources is at least two, and sometimes three times above that from the Regular Programme.

27 In the debate that followed, **the Assembly noted** with appreciation the accurate and clear report and the informative way in which it was presented. During the ensuing discussion, **the Assembly noted** with regret the 16% cut in the Regular Programme allocation for the present biennium and **expressed** the hope that such cuts will not be repeated in the future. **The Assembly also expressed** interest in having more information in the future on staffing and related expenditure and on budget trend analysis. These proposals will be taken into account in the progress report on budget execution to be presented at the next session.

28 **The Assembly established** a sessional working group chaired by the United Kingdom (Dr. D. Pugh) for Agenda items 3.1 and 3.2, with a view to preparing a draft resolution on the IOC Programme and Budget for 2002-2003.

3.2 INTRODUCTION TO THE DRAFT 31 C/5 PROGRAMME AND BUDGET FOR 2002-2003

29 The IOC Executive Secretary introduced this item, provided a brief overview of Document IOC-XXI/2 Annex 2 on the draft IOC Programme and Budget for 2002-2003, and referred to the recommendations of the UNESCO Executive Board on the UNESCO Draft Programme and Budget for 2002-2003 (referred to as the 31 C/5) that are relevant to IOC. He informed the Assembly that a new format was used for drafting the IOC documents on Programme and Budget, which provides more details at the action levels, is more result-oriented, and should ultimately increase accountability and transparency. Following approval of the Programme and Budget of the Commission by the IOC Assembly, the 31 C/5 containing the funds to be appropriated by the General Conference of UNESCO will be submitted for approval.

30 Following the reform process set up by the Director-General, an incentive for the development of inter-sectorial projects has been established through the provision of a budget allocation of $12,000,000. All sectors and divisions were invited to submit proposals to be funded under this allocation. IOC submitted seven projects developed together with other sectors and divisions of UNESCO. Following a competitive selection process, three were approved for implementation in the next biennium. This brings new resources into IOC programmes.

31 Finally, he recalled that in the 31 C/5 document, IOC is one of the two programmes in the Science Sector (together with the International Hydrological Programme (IHP), which was identified as a priority area in the UNESCO Medium-Term Strategy, referred to as the 31 C/4), which is benefiting from an overall budget increase, recovering its programme and staff allocation at a level slightly higher than that of 29 C/5 (1998-1999).

32 **The Assembly expressed** its satisfaction with the presentation of the 31 C/5 document and **congratulated** the Chairman and the Executive Secretary for their efforts in restoring the

Commission's budget. **The Assembly thanked** the Director-General of UNESCO for strengthening the Commission within the Organization.

33 **The Assembly expressed** concern about the double governance that the Commission is faced with. While the Assembly adopts the Programme and Budget of the Commission in accordance with the IOC Statutes, the UNESCO General Conference can still over-rule the decisions of the Assembly particularly with regard to the Programme and Budget allocation. The principle of functional autonomy granted to IOC by the 24th General Conference of UNESCO in 1988 should be respected.

34 An open-ended sessional Working Group on Financial Matters chaired by the First Vice-Chairman of the Commission was requested to discuss the 31 C/5 proposal in more details under Agenda item 2.3.

4. POLICY ISSUES

4.1 DRAFT 31 C/4 MEDIUM-TERM STRATEGY OF UNESCO (2002-2007)

35 The IOC Executive Secretary introduced this item by referring to the Document Draft 31 C/4, Medium-Term Strategy of UNESCO (2002-2007).

36 Following the 160th session of the Executive Board of UNESCO, the Secretariat was requested to prepare the Organization's draft Medium-Term Strategy for 2002-2007 (document 31 C/4) and the draft Programme and Budget for 2002-2003 (document 31 C/5). The Executive Secretary noted that the 31 C/4 includes the strategic objectives of IOC for the next six years, whilst the 31 C/5 presents an action-oriented framework for achievement of progress towards these objectives during the next biennium. This framework will be redefined after the first biennium, thus providing the flexibility for revision to the programme in the course of the six-year period.

37 Document 31 C/4 aims to be a flexible general policy document, presenting the main strategic thrust, strategic objectives by field of competence, and expected outcomes of the Organization's action for the six-year period 2002-2007. It is intended to provide a built-in link to monitoring and evaluation, so as to facilitate the establishment of a results-based programming system.

38 The Medium-Term Strategy has as its unifying theme: UNESCO - Contributing to peace and human development in an era of globalization through education, science, culture and communication. So as to enhance interdisciplinary work within UNESCO, the Medium-Term Strategy identifies two cross-cutting themes, namely (i) eradication of poverty, especially extreme poverty, and (ii) the contribution of the new information and communication technologies to the development of education, science, culture and the construction of a knowledge society. The Strategy provides a more focused mandate for UNESCO.

39 The Executive Secretary spelled out the different strategic objectives identified for the UNESCO Science Sector and IOC in particular. He noted that IOC was one of the only two UNESCO programmes to be recognized as a 'Flagship' Programme for the Organization.

40 Finally, he emphasized the necessity to strike a balance between the mandate of IOC and its role as a specialized mechanism for ocean science and services coordination, and the need to fulfil UNESCO's requirement as an organization with several broader mandates.

41 **The Assembly expressed** its satisfaction with the Medium-Term Strategy document and in particular with the 'Flagship' status granted by UNESCO to IOC to recognize its role in ocean science and services.

4.2 UN CONVENTIONS AND AGREEMENTS

4.2.1 UNCLOS and Open-ended Process of Consultations on Oceans

42 (i) Mr. Elie Jarmache, the Chairperson of the First Meeting of the Advisory Body of Experts on the Law of the Sea (ABE-LOS I) introduced this item. He reported on the main results of the ABE-LOS I held in Paris from 11 to 13 June 2001.

43 After recalling IOC Resolution XIX-19 on establishing the ABE-LOS with its specific terms of reference, he informed the Assembly that ABE-LOS I was attended by 29 Member States and 5 Representatives of institutions as Observers.

44 ABE-LOS I discussed UNCLOS provisions both pertaining to its Part XIV (Development and Transfer of Marine Technology) in general and Article 271 (Guidelines, criteria and standards) in particular, and its Part XIII (Marine Scientific Research), with particular emphasis on Article 246 (Marine scientific research in the EEZ and on the continental shelf), Article 247 (Marine scientific research projects undertaken by or under the auspices of international organizations) and Article 251 (General criteria and guidelines).

45 Part XIV of UNCLOS has been considered as the first priority due to the IOC's leading role in the development of guidelines, criteria and standards for the transfer of marine technology in accordance with Article 271 of UNCLOS. ABE-LOS I discussed the IOC's possible role as a clearinghouse mechanism with the purpose of meeting the needs of suppliers and recipients of marine technology. It was recognized that the document IOC/INF-1054 (Draft IOC Principles on Transfer of Marine Technology) is a good starting point for discussion under this item and should be redrafted. ABE-LOS recommended the establishment of a Sub-group to redraft the document IOC/INF-1054 (Draft IOC Principles on Transfer of Marine Technology) in close cooperation with DOALOS.

46 Mr. Jarmache informed the Assembly that ABE-LOS also discussed the question of the establishment and functioning of the Regional Centres suggested by UNCLOS. ABE-LOS suggested that regional bodies and regional cooperation should be strengthened using existing IOC regional mechanisms.

47 He then informed the Assembly about the discussions undertaken on Part XIII of UNCLOS concerning the marine scientific research regime. In regard to Article 251, two positions emerged from the ABE-LOS Meeting, one making a link between Article 251 and the regime of consent as stated by Article 246 paragraph 5 (a), and one making a link between Article 251 and Article 248 (Duty to provide information to the Coastal State). ABE-LOS I collected and analysed scientific information on the practices of States in the area of Marine Science Research and transfer of Marine Technology in order to establish general criteria and guidelines to assist States in ascertaining the nature and implications of marine scientific research. With regard to Article 246, ABE-LOS I discussed the link between this Article and Articles 248 and 249 of UNCLOS. The ABE-LOS Meeting recognized that the "consent regime" has been generally functioning in accordance with the provisions of UNCLOS. It was agreed that this issue be incorporated as an agenda item for the next ABE-LOS Meeting foreseen for April 2002. With regard to Article 247, ABE-LOS I discussed the possibility of developing guidelines for its implementation. It was agreed that IOC should initiate the establishment of an internal procedure for appropriate and effective application of this Article.

48 He underlined that the ABE-LOS meeting recognized the need to cooperate closely with the UN/DOALOS.

49 Finally, the Chairperson invited the Assembly to adopt the three recommendations of ABE-LOS I for its future work.

50 Mrs. Dienaba Beye, Technical Secretary for UNCLOS, informed the Assembly that the next meeting of UN Consultative Process (3rd) and 12th Meeting of States Parties (MSP) will be held in

May 2002. She also informed that the 11th Meeting of the MSP decided that in case of a State Party for which the Convention entered into force before 13 May 1999, the ten-year period for the submission of the request to the continental shelf limits was taken to have commenced on 13 May 1999, taking into account the adoption of the CLCS Scientific and Technical Guidelines on 13 May 1999.

51 The Assembly's attention was drawn to the low participation of Member States in the work of the Advisory Body of Experts and in ABE-LOS I. **The Assembly therefore requested** the Executive Secretary to take measures to encourage the participation of more Member States in future meetings.

52 Attention was drawn to the need for ABE-LOS to base its work on document IOC/INF-1035 (Summary Report of the First Session of the Open-ended Intersessional Working Group on IOC's Possible Role in Relation to the UNCLOS).

53 With regard to the legal implications of "the Argo Project", delegates considered that more work was needed to clarify the situation of Argo, as an ODAS, in relation to the articles of UNCLOS.

54 **The Assembly thanked** the Chairman of the ABE-LOS I for his excellent chairmanship of the ABE-LOS Meeting. **The Assembly requested** that the complete report of the ABE-LOS I Meeting be available well in advance of the next ABE-LOS Meeting.

55 **The Assembly noted** with appreciation the progress made in the ABE-LOS work and **adopted** Resolution XXI-2.

56 (ii) The IOC Executive Secretary introduced the item referring to the results of the Intersessional Intergovernmental Working Group on the second meeting of the United Nations Consultative Process, which met in Lisbon during 29-30 March 2001 (Resolution EC-XXXIII.16). The purpose of the Working Group meeting was to ensure adequate input of IOC Member States to the discussions at the 2nd session of the Consultative Process. The Executive Secretary brought the conclusions of the Working Group to the attention of Member States by Circular Letter No. 1689 rev., inviting them to participate actively in the deliberations of the second meeting of the Consultative Process in New York. The conclusions are summarized in Document IOC/INF-1156.

57 The Executive Secretary then summarized the deliberations from the second meeting of the Consultative Process, which was held at the United Nations Headquarters from 7 to 11 May 2001. The Chairman of the Commission, Professor Su Jilan, the first Vice-Chairman, Dr. David Pugh, the Head of the Ocean Science Section of IOC, Dr. Umit Unluata, and the Executive Secretary represented the Commission at the meeting.

58 The discussions were organized around the following areas: (i) Marine science and the development and transfer of marine technology, including capacity-building; and (ii) Coordination and cooperation in combating piracy and armed robbery at sea. The Assembly was informed that the Consultative Process is a one-week high-level forum to facilitate the annual review by the General Assembly of ocean affairs, and is not a decision-making process. The draft report of the work of the Consultative Process at its second meeting was brought to the attention of the Assembly. The Executive Secretary pointed out the issues to be suggested and the elements to be proposed by the Consultative Process to the UN General Assembly during its 56th session to be held in October 2001 and briefed the Assembly on those that referred to IOC.

59 **The Assembly noted** with satisfaction the steps taken by the Executive Secretary to ensure adequate inputs to the discussions at the second meeting of the Consultative Process, and **welcomed** the IOC's leadership at it. **The Assembly acknowledged** that the meeting had increased IOC's visibility within the UN System and among the various international organizations, including NGOs. **The Assembly also noted** that IOC has been responding to many of the issues raised at the second meeting of the Consultative Process and **asked** that IOC make its activities fully visible at the third meeting in 2002. **The Assembly further requested** that, in addition to its programmes and activities,

IOC would also fully make visible at that meeting of the Consultative Process the difficulties encountered in addressing relevant issues in oceans and coastal areas and in the implementation of IOC programmes, including budgetary constraints and limitations in human resources. **The Assembly emphasized** the need for holding an Intersessional Intergovernmental Working Group prior to the third meeting of the Consultative Process to ensure adequate inputs. It is most likely that the third meeting will have capacity building and regional approach in ocean management as areas of focus. **The Assembly stressed** that the Member States of IOC should ensure effective inputs to the upcoming discussions on Oceans and Law of the Sea at the 56th session of the UN General Assembly in October by taking into account the recommendations of the 2nd meeting of the Consultative Process. **The Assembly agreed** that the report of the Intersessional Intergovernmental Working Group on the second meeting of the Consultative Process that was held in Lisbon on 29-30 March 2001 should be published as an IOC report in the series "Reports of Meetings of Experts and Equivalent Bodies."

4.2.2 Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA-LBA): Intergovernmental Review Process

60 The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA) was adopted by 108 governments, and the European Commission, in Washington D.C. in 1995. Ms. Veerle Vandeweerd of the GPA Coordination Office in The Hague, representing UNEP, informed the Assembly of the progress achieved in the implementation of the GPA and on its ongoing Intergovernmental Review Process. She highlighted the close collaboration developed by IOC and UNEP in support of the GPA, in particular the inclusion of the ICAM web-site into the GPA clearinghouse mechanism, the IOC sponsorship of the Danish Hydraulic Institute project under Integrated Coastal Area and River Basin Management programme, the participation of the IOC/ICAM programme in the GPA 2001 Intergovernmental Review in Montreal, and the Global Conference on "Oceans and Coasts at Rio+10". She further recalled the interactions between IOC and GPA under the coordination efforts of the ACC Subcommittee on Oceans and Coastal Areas. Future collaborative efforts will involve (i) those as called for by the UN Consultative Process and other international fora, (ii) activities addressed in the GPA work programme (2002-2006), (iii) global assessments of the state of the marine environment, physical alteration and destruction of habitats, and (iv) discussions on the enhanced environmental governance for the World Summit on Sustainable Development.

61 Ms. Vandeweerd also briefed the Assembly on plans for the 2001 Intergovernmental Review Meeting on 26-30 November 2001 in Montreal Canada. The focus of the meeting includes ocean governance in the framework of the GPA, financing the GPA, and the GPA 2002-2006 work-programme.

62 **The Assembly expressed** its appreciation for the comprehensive presentation given by Ms. Vandeweerd. **The Assembly noted** with satisfaction the growing cooperation between IOC/ICAM and the GPA, and **recommended** that cooperation should also be extended to other programmes of the Commission, as appropriate, noting that the GPA provides a broad platform for joint action at the regional level with the different subsidiary bodies of the Commission.

4.2.3 UNEP Regional Seas Programme

63 Mr. Ellik Adler, from the UNEP Regional Seas Programme Office of the Division of Environmental Conventions in Nairobi, representing UNEP, informed the Assembly about new developments in the UNEP Regional Seas Programme, and about the growing development of cooperation between UNEP and IOC. These efforts involve, among other things, working with FAO and IOC towards the establishment of a worldwide ecosystem-based approach to fisheries management. UNEP is already engaged with the WESTPAC Secretariat in developing activities under the North-West Pacific Action Plan (NOWPAP), and with the GOOS Project Office in relating GOOS efforts to the Regional Seas Programme, especially in the Caribbean and the Mediterranean. It would be desirable to extend these efforts, for instance into south-east Asia and the north-east Pacific. UNEP and IOC continue to cooperate on the Global Coral Reef Monitoring Network (GCRMN), and have

agreed to work closely together to examine the feasibility of establishing a regular process for a global assessment of the marine environment. He recommended ways of extending and strengthening cooperation, for example by means of a Memorandum of Understanding.

64 Mr. Adler noted that GOOS provided a potential tool for the achievement of the objectives of the Regional Seas Programme. In that context the UNEP Governing Council had endorsed a resolution in favour of a closer relationship between UNEP's Regional Seas Programme and GOOS. He noted that a Recommendation endorsing strengthening of the relationship between GOOS and the Regional Seas Programme had been adopted by the 5th session of I-GOOS (Paris, 28-30 June 2001).

65 **The Assembly congratulated** Mr. Adler on his comprehensive presentation, and strongly **supported** the development of a closer link between IOC and UNEP's Regional Seas Programme, especially through GOOS. Such a relationship would help to ensure, *inter alia*, that activities carried out under the GOOS programme did not duplicate those already carried out under the Regional Seas Programme. **The Assembly noted** that relationships were already developing between GOOS and the Regional Seas programmes, especially in the Mediterranean (via MedGOOS), the North-East Asian region (via NEAR-GOOS), and in Africa (via GOOS-AFRICA as a follow-up to the PACSICOM meeting in Maputo in July 1998).

66 In the context of the growing link between UNEP and FAO to address the issue of an ecosystem-based fisheries management, SCOR informed the Assembly that a new IOC-SCOR expert group would be seeking to develop quantitative ecosystem indicators for fisheries management, in part as an aid in determining how fisheries affect the environment. SCOR expressed its willingness to take forward the proposed developments.

67 **The Assembly accepted** that relationships between UNEP and the IOC covered a wide range of collaborative activities, but **recognized** that it was important to make the best complementary use of the Regional Seas Programme and the GOOS Observing System achievements to improve the efficiency and effectiveness of both activities. Other arrangements could be developed as appropriate to cover other areas of UNEP-IOC interaction, if necessary, in the future. As noted by the Executive Secretary, the development of this relationship reflected the fact that the evolving cooperation across the UN System was manifesting itself primarily at the sub-programme level, where there was a close match or complementarities between activities, as in the case of GOOS (especially the regional GOOS programmes) and UNEP's Regional Seas Programme. Regarding the possible joint use of UNEP's Regional Activity Centres by GOOS and the Regional Seas Programme, Mr. Adler noted that at this stage it was intended that the two partners should explore the feasibility and practicability of this option before any financial commitments would be considered.

68 **The Assembly instructed** the Executive Secretary to facilitate close cooperation between GOOS and the Regional Seas Programme, especially in the context of Coastal GOOS, and in the regional GOOS programmes, including efforts to build capacity at the regional level. The Executive Secretary was also requested to develop further collaboration between GOOS and the UNEP Regional Seas Programme through mutual implementation of the following activities: (i) enhancing mutual awareness, exposure, and knowledge of activities; (ii) developing a Memorandum of Understanding as a formal instrument to enhance cooperation between the two programmes; (iii) coordinating projects of mutual interest to prevent duplication; (iv) developing further cooperation especially in the Mediterranean, Caribbean, and western Pacific regions, with high priority being given to the NOWPAP-NEAR-GOOS area, to east and west Africa (under the Nairobi and Abidjan Conventions), to the south-eastern Pacific, and to UNEP's South Asia region if possible; (v) examining the possibilities for establishment of joint Regional Activity Centres; (vi) providing GOOS input to the UNEP-FAO initiative on Ecosystem-based Management of Fisheries; (vii) ensuring that GOOS contributes towards UNEP's feasibility study of a Global Ocean Assessment process for the marine and coastal environment; and (viii) continuing to inform each other's governing bodies on progress made on mutual work and cooperation.

4.2.4 FAO Regional Fisheries Organizations and Agreements

69 The IOC Executive Secretary reported on the last meeting of the FAO Regional Fisheries Organizations where the paper prepared by UNEP and FAO to jointly address the development of ecosystem-based fisheries management was considered. FAO Regional Fisheries Organizations and UNEP Regional Seas conventions agreed in principle to continue working jointly in this area and the last Consultative Process recommended that in this effort they should be joined by the regional programmes of IOC. An extract of the last Regional Fisheries Organizations meeting in Rome was made available as Document FAO Fisheries Report No.645.

70 **The Assembly noted** with satisfaction the cooperation developing between IOC, FAO and UNEP in matters related to ecosystem-based fisheries management.

4.2.5 Conventions on Biological Diversity: Marine and Coastal Biodiversity

71 Mr. Ole Vestergaard, Programme Specialist from the Ocean Science Section drew the attention of the Assembly to two study groups that aim to develop indicators of biological diversity: (i) the ad hoc Study Group on Benthic Indicators and (ii) the newly established IOC Study Group on Coral Bleaching and Related Indicators of Coral Reef Health. The activities of those two groups will be reported under the GIPME and OSLR agenda items. These two efforts address the call by the Convention of Biological Diversity (CBD) for development of indicators of biological diversity and indicators for monitoring and determination of ecological and socio-economic impacts of coral bleaching, and coral reef degradation under their programme of work on marine and coastal biological diversity (UNEP/CBD/SBSTTA/6/4).

72 The Executive Secretary of CBD has recently invited IOC to contribute to the development of a work plan on coral degradation and destruction, and to the implementation of a specific work plan on coral bleaching, which IOC assisted to develop. The Study Group on Coral Bleaching is well placed to contribute to these activities. Furthermore, the Executive Secretary of CBD has invited IOC to contribute to the development of methodologies and identification of pilot studies for scientific assessments, which relate to the development of rapid assessment methods for marine and coastal biological diversity. The work of the ad hoc Study Group on Benthic Indicators on the development of indicators of coastal benthic communities will enable IOC to make a useful contribution. The ICES-IMO-IOC Working Group on Ballast Water, which is addressing the issue of impacts of invasive alien species on biological diversity, may also contribute to the programme of work on marine and coastal biological diversity of the CBD.

73 The work of the Study Group on Coral Bleaching and Related Indicators of Coral Reef Health should also help development of the World Bank proposal for a targeted research programme on corals. Contact between the World Bank and the Study Group has been established. Most recently the World Bank has offered to co-sponsor, jointly with IOC and Centre of Marine Studies, University of Queensland, Australia, the next meeting of the Study Group**.** Cooperation has been explored with the Man and Biosphere (MAB) programme of UNESCO on the possibility of testing some of the approaches identified by the two study groups in selected coastal Marine Biosphere Reserves under MAB, as appropriate.

74 **The Assembly noted** with satisfaction the cooperation with CBD and the World Bank and **instructed** the Executive Secretary to further facilitate the development of indicators of biological diversity in cooperation with the Convention of Biological Diversity. Given their importance as sites to monitor long-term changes in ecosystem structure and biodiversity, **the Assembly recommended** that more marine and coastal sites be established under the world network of biosphere reserves of MAB.

4.2.6 United Nations Framework Convention on Climate Change and Other Conventions

75 IOC's relationships with the UN Framework Convention on Climate Change (UN-FCCC) are addressed through Agenda item 5.2.4 (GCOS).

4.3 AGENDA 21 AND THE 2002 WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT

4.3.1 World Summit on Sustainable Development, Johannesburg, 2002

76 The IOC Executive Secretary introduced this agenda item by referring to document IOC-XXI/Inf.4. He recalled the decisions of the UN General Assembly and Commission on Sustainable Development, which led to the organization of the World Summit on Sustainable Development in Johannesburg, in 2002, ten years after the UN Conference on Environment and Development in Rio de Janeiro. He then presented a brief overview of the preparatory process, pointing out the bottom-up approach adopted, through the organization of national and regional consultations.

77 He invited the Assembly to formulate a strong coordinated statement on behalf of the Commission and its Member States to be carried forward to the World Summit. **The Assembly recommended** that additional pathways be explored for delivering such a message, possibly through the IOC regional constituencies, or through UNESCO's participation as member of the Preparatory Committee of the World Summit on Sustainable Development.

78 The Delegate of South Africa provided an update on the preparation of the Johannesburg Summit, and stressed the opportunities that such an event represents to South Africa and Africa as a whole, especially in the context of the Africa Millennium Recovery Programme.

79 **The Assembly Adopted** Resolution XXI-3 concerning the preparation of a statement for the World Summit On Sustainable Development.

4.3.2 Conference on 'Oceans and Coasts' at Rio+10', Paris, Dec. 2001

80 Mr. Julian Barbière, Programme Specialist from the Ocean Science Section, reported on the latest developments concerning the organization of the Global Conference on 'Oceans and Coasts' at Rio+10: assessing progress, addressing continuing and new challenges', to be held at UNESCO headquarters in Paris on 3-7 December 2001. This Conference is intended to provide an overall assessment of progress achieved on oceans and coasts since the Earth Summit, and to provide input to the discussions by governments which will take place in September 2002 when Heads of States and governments around the world will converge at the World Summit on Sustainable Development (Rio+10) in Johannesburg, South Africa. The World Summit will assess progress made in the implementation of all aspects of the world agenda on environment and development agreed to at the 1992 Earth Summit, as well as in the harmonization of the major ocean-related agreements (e.g. UN-Conventions on the Law of the Sea, Biodiversity, Climate Change, Small Islands).

81 The Global Conference on "Oceans and Coasts" will identify continuing, persisting challenges that need to be addressed with renewed commitment, as well as new challenges that are arising. It will examine cross-cutting issues among various ocean and coastal sectors, and consider options for concerted action on outstanding cross-sectoral issues.

82 The Conference has been stimulated by the NGOs community and is organized in collaboration with intergovernmental organizations, especially the agencies represented on the UN Administrative Committee on Coordination, Subcommittee on Oceans and Coastal Areas (ACC-SOCA), and with governmental contributions from countries with a special interest in the oceans. Conference panels will feature speakers from these three communities: NGOs, IGOs, and Governments. IOC and the Centre for the Study of Marine Policy (University of Delaware) co-chair the Conference and provide the joint Secretariat.

83 Two major conference outputs are planned:

- The publication of a 'Conference findings' volume that will summarize the findings and recommendations for each major conference topic, and which will be distributed to all government delegations involved in the World Summit for Sustainable Development and to other relevant parties.
- The publication of a book, and special issues of several international journals (such as *Ocean & Coastal Management*, *Coastal Management*, *Marine Policy*, and the *International Journal of Marine and Coastal Law*), bringing together various clusters of papers and commentaries presented at the conference.

84 The Representative of SCOR welcomed the organization of such an event and expressed the interest of SCOR in participating actively in the organization of the Conference. He recommended that the book *Oceans 2020: Science for Future Needs*, which is being produced in the context of the IOC/SCOR/SCOPE Workshop on the "State of Marine Science and its Contribution to Sustainable Development: An Assessment", held in Potsdam in 1999, should be presented at the Conference and at the World Summit on Sustainable Development.

85 **The Assembly welcomed** the initiative taken by IOC in promoting and co-organizing such an important event by offering the venue of UNESCO/IOC Headquarters in Paris. **The Assembly recognized** the need to provide a global forum on oceans and coasts to a wide range of organizations in order to deliver a stronger and more coordinated message at the World Summit on Sustainable Development in September 2002.

4.4 EXTERNAL EVALUATION FOLLOW-UP

86 The IOC Executive Secretary recalled the development of the External Evaluation Report, which was implemented during 1999-2000 with the goal of providing an objective view of the capacities and capabilities of IOC as an intergovernmental organization and a specialized mechanism for carrying out the mission assigned to IOC by the statutes. The Evaluation Report (IOC/EC-XXXIII/2 Annex 3) addressed three levels of issues: (i) the strategic positioning of IOC; (ii) its current performance/efficiency as a body with functional autonomy in UNESCO; and (iii) the quality of the management. He noted that the recommendations are at the same time insightful and pragmatic.

87 The Chair invited Dr. John Field past President of SCOR and member of the Evaluation Team to inform the Assembly on the proposals contained in the report. Dr. Field introduced the report and focussed on its recommendations.

88 The Executive Secretary then referred to Document IOC-XXI/2 Annex 3 on the Internal Follow-up of the IOC External Evaluation, which provides an overview of actions undertaken by the Secretariat to implement the recommendations contained in the IOC External Evaluation Report, and of the progress achieved, and to Document IOC-XXI/Inf.2 which contains comments by the Director-General on the External Evaluation Report, and Decision 9.1 of the 161st Session of the UNESCO Executive Board, which is relevant to the issue.

89 The Chair invited comments, noting that a detailed discussion of the External Evaluation Report took place during the 33rd Session of the Executive Council, Paris, 20-30 June 2000.

90 **The Assembly thanked** Dr. Field and other members of the Team **and noted** with satisfaction the work done by the External Evaluation Team in reviewing the IOC work and conducting a worldwide survey on the vision of IOC by different "users". **The Assembly concurred** with the decisions of the 33rd Session of the IOC Executive Council which examined the Evaluation Report carefully in 2000 and concluded *"that the preparation of the Report was most timely and the evaluation provides a unique opportunity for UNESCO to assist nations to reap the enormous benefits potentially available from marine research and operational oceanography in the 21st Century"*. (para. 55, IOC/EC-XXXIII/3).

91 **The Assembly commented** on the actions taken by the Executive Secretary in developing the plan of follow-up actions for implementing the recommendations contained in the evaluation report. **It noted** that the implementation of some of the proposed actions had already begun. **The Assembly also noted** that if the Team's recommendations were to be met in a reasonable time frame, the increased demands placed on IOC would require additional resources.

92 **The Assembly decided** that taking into account the conclusions and recommendations of the External Evaluation Report and the Medium-Term Strategy of UNESCO, the Officers of IOC and the Executive Secretary should develop a Medium-Term Strategy for the IOC, which may help the organization to meet the challenges facing the IOC in the most effective way.

93 **The Assembly stressed** that IOC Member States want to see the Commission within UNESCO, and felt that strengthening the IOC, so that it becomes the recognized UN focal point on ocean science and services within UNESCO, would give higher visibility to the IOC and to UNESCO itself.

94 **The Assembly instructed** the Executive Secretary to give high priority to the implementation of the actions specified in the plan and to regularly report on progress to the IOC Governing Bodies.

4.5 FINAL DOSS-2 REPORT: ENDORSEMENT AND ADOPTION OF THE REVISED RULES OF PROCEDURE AND GUIDANCE ON UNRESOLVED ISSUES OF ITS MANDATE

95 Prof. Su Jilan, IOC Chairman of the Commission introduced this agenda item on the first day of the session and invited the Assembly to adopt the proposed new procedure for the elections, which were to be taking place at a later date during the session. He recalled that a change in the procedure for elections was mandatory because of the changes in the statutes. He presented the Assembly with the recommendation of the IOC Executive Council at its 34th session. The Chair further recalled document IOC-XXI/2 Annex 4 on the Revised Rules of Procedure and IOC Circular letters 1682 dated 27 February, and 1688 dated 27 March 2001, which called on Member States for comments and suggestions.

96 **The Assembly approved** the recommendation of the Executive Council as the procedure to be followed for the elections of the current Session.

97 Some Members States expressed concern regarding the distribution of seats within groupings. A sessional group under the chairmanship of Mr. G. Holland (Canada) was established to look on this important matter and report the findings to the Assembly. The sessional group recommended that the interim allocation of seats to the Executive Council as proposed by the 34th session of the Executive Council under paragraph 15 (i) of its summary report be adopted for the current election process.

98 The Sessional Group also recommended a slight amendment to Rule 18.3, to read: "The above distribution of seats shall be updated when the circumstances so justify".

99 The Sessional Group expressed the wish that the allocation would remain stable for several sessions of the Assembly until experience had been gained.

100 **The Assembly agreed** with the proposals of the Sessional Group regarding Rule 18 of the revised Rules of Procedure. The **Assembly noted** that several Member States of Electoral Group II were of the opinion that their group is under-represented and should receive an additional seat in the Executive Council.

101 Prof. A. Murillo, the Chairman of DOSS-2 Group, reported on the results of the DOSS-2 final meeting, which took place in Paris from 13-16 February 2001 in accordance with the decision of the 33rd Session of the IOC Executive Council. The main objective of the meeting was to update and

adapt the Rules of Procedure to the IOC Statutes. The Group also looked at other matters, as specified by its Terms of Reference, and concluded that there is a need:

(i) to consider ways and means to enhance the recognition of the IOC and its programme activities in Member States, in intergovernmental and non-governmental organizations, and in the private sector;

(ii) to assess the feasibility of establishing the Commission under an appropriate legal instrument within UNESCO;

(iii) to propose innovative approaches for the improvement of the financial support for the Commission's programme of work, including implementation of Article 10 of the Statutes, and the need for a specific rule of procedure on this matter;

(iv) to consider ways to ensure the provision of adequate professional and technical personnel for the implementation of the Commission's global and regional programmes.

102 **The Assembly appreciated** the report given by the DOSS-2 Chair and **acknowledged** the work done by the DOSS-2 Group**. The Assembly commended** the Executive Secretary and the Secretariat Staff for the urgent action taken to inform the Member States about the proposed modifications to the Rules of Procedure.

103 Some delegations were of the view that the DOSS-2 Group identified the increasing responsibility of the IOC Member States for ensuring a stable and effective programme at global and regional levels through appropriate additional financial arrangements as foreseen in Article 10 of the Statutes of the Commission**.** Other delegations expressed the view that issues of efficiency, financing and IOC visibility needed to be addressed further. **The Assembly asked** the Executive Secretary to identify mechanisms to balance the programme and budget in order to avoid situations arising in which new programmes are proposed and adopted by the Governing Bodies without careful consideration of available resources.

104 **The Assembly further noted** that most of the tasks contained in the Terms of Reference of the DOSS-2 Group have been implemented, thanked the DOSS-2 Chairman and all members of the Group for their accomplishments, and dissolved the Group. **The Assembly agreed** with the statement contained in the DOSS-2 report that it would be desirable to make an in-depth study of the financial situation of the Commission to propose ways for improving the financial stability and effectiveness of the Commission, and established a Sessional Group under the chairmanship of Mr. S. Wilson (USA) to look at the matter and report its finding to the Assembly.

105 **The Assembly adopted** Resolution XXI-5.

106 The outcome of the discussions of the sessional group is reflected in Resolution XXI-4 adopted by the Assembly

107 At a later stage during the session, and after the Report of the Chairman of the DOSS-2 Group on the changes proposed by Member States to the revised rules of procedure, the Assembly was invited to adopt a new full text for the IOC Rules of Procedure, compatible with the current IOC Statutes. **The Assembly considered** that the Rules of Procedure reflect well the new status of the Commission and correspond to the Statutes, and **adopted** Resolution XXI-4. **The Assembly instructed** the IOC Executive Secretary to publish and distribute the adopted IOC Rules of Procedure without delay in all IOC working languages, making sure that the French, Spanish and Russian texts are identical to the English original. The new Rules of Procedure are published in the four working languages of the Commission as document IOC-INF/1166.

108 **The Assembly noted** a proposal from the Delegate of Haiti to amend Rule 42 relevant to the procedures of adopting Resolutions. **The Assembly requested** the Secretariat to examine the matter, suggest changes, if necessary, consistent with other Rules, and report to the next ordinary session of

the Executive Council taking into account comments made by the Sessional Group and Member States on this issue.

4.6 PROGRESS REPORT ON IOC OCEANOGRAPHIC DATA EXCHANGE POLICY

109 The Chairman of the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy, Dr. Angus McEwan, introduced this item. Dr McEwan informed the Assembly that the First Session of the Intergovernmental Working Group had been held in Brussels, Belgium between 29 and 31 May 2001. He explained that this had been made possible thanks to financial and in-kind support provided by the Government of Flanders and the Government of Belgium.

110 The Group had reviewed the results of the discussions held during the May 2000 ad hoc Group Meeting, the 33rd Session of the IOC Executive Council, and the 16th Session of the IOC Committee on IODE, and been informed on the status of implementation of WMO Resolutions 40 and 25 as well as on the view of ICSU on data exchange policy. Participating Member States had also been given the opportunity to inform the meeting on national policies. The Group then considered a two-tier approach (as used by WMO Resolution 40, distinguishing between 'essential' and 'additional' data), and the elements to be included in the revised policy statement.

111 After substantial discussion, the Working Group prepared a statement for presentation to the IOC Assembly (see Annex V). This is an interim statement and should be taken as a sign of the progress to date.

112 The Representative of the International Council for Science (ICSU) at the Assembly expressed his organization's concern, shared by SCOR, that changes to the existing IOC data policy may contradict the fundamental principle of "*full and open access to data and information for research and education purposes*", that is essential to the international scientific community. ICSU and SCOR therefore urged IOC to ensure that these principles would be maintained.

113 **The Assembly thanked** the Government of Flanders and the Government of Belgium for the financial and in-kind support provided for the implementation of the First Session.

114 **The Assembly congratulated** Dr. McEwan for his accurate and clear progress report, and for his commitment towards achieving the Working Group's objectives.

115 **The Assembly congratulated** the Working Group with the progress made during its First Session, but **noted** that a second Session of the Working Group would be required to achieve its goals as defined in its Terms of Reference (Resolution EC-XXXIII.4), taken into consideration the guidance provided by the current Session.

116 **The Assembly stressed** the importance of ensuring that a new IOC policy on the exchange of oceanographic data should not result in a reduction of data flow.

117 **The Assembly requested** the Working Group to consider the data requirements of the various IOC programmes in further deliberations towards a data policy statement, and to continue taking into consideration WMO Resolution 40.

118 **The Assembly urged** Member States intending to participate in the Second Session of the Working Group, to develop a national position on oceanographic data exchange policy issues during the intersessional period, and to grant national representatives serving on the Working Group, the mandate to negotiate within that position. To avoid lengthy discussions on technical matters during the Second Session, **the Assembly recommended** that the Group should discuss the issues that were of special technical concern by correspondence.

119 **The Assembly invited** Member States to volunteer to host the Second Session of the Intergovernmental Working Group to be held during the first semester of 2002.

4.7 NORMATIVE ROLE OF IOC IN SUPPORT OF OCEAN RESEARCH AND OPERATIONAL OCEANOGRAPHY

120 Dr. Maria Hood from the Ocean Science Section introduced this Agenda item. Noting the increasing importance of standards and reference materials for marine science resulting from the increase in international research and monitoring programmes, the Executive Secretary has initiated an investigation into the role the IOC could play in support of such efforts.

121 She noted that through the SCOR-IOC Ocean Carbon Advisory Panel, IOC is advocating the development of additional programmes for ocean carbon reference materials. The IOC has been invited to serve as a liaison to the Ocean Studies Board of the US National Research Council in their 18-month programme to investigate the needs, existing programmes, and best approaches for the development of future production of reference materials. The IOC has also been approached by international groups and agencies such as the International Bureau of Weights and Measures about potential collaborations for oceanographic standards. In addition, there are a number of organizations within or affiliated with IOC programmes that are already actively addressing many issues of standards, guidelines, and reference materials, such as IODE, GIPME, the Ocean Carbon Panel, and JCOMM.

122 Dr Hood remarked that a mechanism is needed for uniting on-going programmes to minimize duplication of effort and to identify gaps in meeting research, operational, and data management needs. Within the Ocean Science Section, the development of a programme on standards and reference materials for marine sciences is being discussed.

123 **The Assembly discussed** the results of this initial investigation by the Executive Secretary, **and emphasized** that the IOC could play an important role in the coordination of planning and development activities for standards and reference materials for marine science.

124 **The Assembly noted** that, as in the past, these activities should be carried out in collaboration with relevant on-going programmes and agencies including IODE, JCOMM, WMO, UNEP, ICES, ICSU, SCOR, IAEA, and IAPSO, and should include relevant training programmes.

125 **The Assembly endorsed** the participation of the IOC in international programmes for the development of standards and reference materials for marine science and **decided** that the Ocean Science Section of the IOC should take a lead in harmonizing relevant IOC activities implemented within different IOC programmes.

126 **The Assembly further decided** that the IOC Secretariat develop terms of reference and a work plan outlining financial and human resource needs to be presented to the next Executive Council.

5. IMPLEMENTATION OF IOC PROGGRAMMES

5.1 OCEAN SCIENCES

5.1.1 Ocean and Climate

127 The IOC, ICSU and WMO are co-sponsors of the World Climate Research Programme administered by WMO in Geneva. The GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC) is administered by the IOC and is the primary scientific body for providing advice on requirements for ocean data for climate and related physical ocean systems. The OOPC maintains a strong partnership with JCOMM, CLIVAR, and the ocean carbon community via the SCOR-IOC Advisory Panel on Ocean CO_2. The Global Ocean Data Assimilation Experiment (GODAE) is a proof-of-concept pilot project spawned by the OOPC, to advance the development of ocean models and implementation of the ocean observing system for the 21st century. Argo, the international global

float project, is the *in situ* backbone of the real-time global observational network to be implemented for GODAE.

128 *Ocean Observations Panel for Climate (OOPC).* Mr Arthur Alexiou, from the Ocean Science Section of the IOC Secretariat, informed the Assembly that good progress had been made in the follow-up to OceanObs'99 in implementing the initial ocean observing system for climate. Highlights were a workshop on sustainable ocean climate observations for the Indian Ocean, ocean surface reference sites, movement toward consensus on carbon system requirements and a standard, well-defined sea surface temperature (SST) product with known error bars.

129 Major OOPC action items for 2001/2002 include: (i) an international workshop to evaluate the tropical mooring arrays against global broad objectives that are not restricted to ENSO, and in the context of other observing subsystems (e.g. Argo, SOOP and VOS lines, satellites); logistics and vandalism will be considered along with objective evaluations of the moorings for validation of satellite measurements; (ii) development of the project to establish ocean surface reference sites; (iii) the first meeting of the Time-Series Stations Science group; (iv) action on data management issues; (v) follow-up action for the Indian Ocean, (vi) assisting GCOS in the preparation of a response to the request from the CoP of the UNFCCC for a 2nd Report on the Adequacy of the Observing System for Climate; and (vii) completion of the OceanObs'99 monograph.

130 *Global Ocean Data Assimilation Experiment (GODAE).* The GODAE Strategic Plan has been finalized and the preparation of a draft GODAE Development and Implementation Plan is well underway. The current development phase (until the end of 2002) will be followed by the demonstration phase (2003-2005) – a pilot operation of the end-to-end system. A new phase has been added: the consolidation phase during 2006-2007. A project science team has been approved to oversee a pilot project to develop high-resolution SST data sets and products using all available remote and *in situ* measurements.

131 *Argo, early known as Array for Real-time Geostrophic Oceanography***.** Commitments to Argo are coming along at an encouraging rate. Implementation planning workshops have been held for the Atlantic and the Pacific Oceans and one is scheduled for the Indian Ocean in Hyderabad, late July 2001. The Argo Science Team anticipates 1,500 floats in the water for the beginning of the operational phase of GODAE and a reasonable prospect for full implementation by the end of 2005. The principle scientific and political issues remain: achieving global coverage, and deployment of floats in national EEZs. A full time Argo coordinator has been attached to the office of the Data Buoy.

132 *World Climate Research Programme (WCRP).* The Director of the WCRP, Dr David Carson, provided a broad-brush description of the major activities of the WCRP. CLIVAR and WOCE are the ones with most significant involvement and dependence on ocean science. He noted that the Joint Scientific Committee of the WCRP, at JSC-22 in March 2001 stressed the importance of GODAE and the work of the OOPC to the WCRP, in particular to CLIVAR. Dr. Carson described other activities that WCRP is involved in: the Joint WCRP/SCOR Working Group on Air-Sea Fluxes, the Surface Ocean Lower Atmosphere Study (SOLAS), the Climate and Cryosphere (CliC) project, the Arctic Climate System Study (ACSYS), and the Coordinated Enhanced Observing Period (CEOP) and Global Atmospheric Boundary Layer Study of the Global Energy and Water Cycle Experiment (GEWEX). The JSC is encouraging greater interaction with the IGBP and the IHDP through joint planning and joint projects.

133 *World Ocean Circulation Experiment – Climate Variability and Predictability (WOCE-CLIVAR)***.** Dr. John Gould, the Director of the International Project Offices for CLIVAR and WOCE provided a retrospective on WOCE and the development of new break-through technologies (satellite altimetry, GPS, profiling floats) that made possible the new discoveries about the dynamics of the ocean and set the stage for CLIVAR. A new book has been published based on the results of WOCE, and publication of Atlases of the Hydrographic Programme Sections is in the works. WOCE will hold its final Conference in San Antonio Texas in November 2002. CLIVAR is much bigger and broader than WOCE. It is a coupled ocean-atmosphere programme that addresses climate phenomena on all

time scales in all parts of the globe as well as their effect on society, and this presents new and more complex challenges.

134 Dr. Gould stressed the need for an enhanced infrastructure commensurate with the new challenges. He closed with an invitation to countries to feed his office with practical problems they face that have relevance to CLIVAR activities.

135 **Ocean CO_2.** Dr. Maria Hood, from the Ocean Science Section informed the Assembly that membership for the new joint SCOR-IOC Advisory Panel on Ocean CO_2 was established shortly after the latest Executive Council (33rd session, June 2000) and the first meeting was held in September 2000. The IOC hosted and participated in the international JGOFS EC-US Ocean Carbon Cycle Science Research Workshop in September 2000 with the goal of establishing international community consensus on ocean carbon research, observation requirements and priorities. This meeting was linked with the SCOR-IOC CO_2 programme activities and the IGBP-IHDP-WCRP initiative to develop a framework for a decade of carbon cycle research.

136 In addition to pursuing its own agenda, the Panel has become actively engaged in a number of international activities, including developing an inventory of on-going ocean carbon observing programmes, developing ocean carbon observing requirements for GOOS and the IGOS Partners, and collaborating with international research programmes to integrate ocean carbon measurement strategies into programmes such as CLIVAR and the proposed GOOS Pilot Project on Time Series Stations. In addition, the Panel is maintaining a watching brief on CO_2 sequestration issues.

137 As a contribution to the IGOS Partners' effort to develop an Integrated Global Carbon Observation Theme proposal, the Panel, with the assistance of many scientists, compiled a background report outlining the science questions to be addressed by the ocean component of this initiative. The information in this report will be used in the development of the Integrated Global Carbon Observation Theme proposal. The proposal is led by the IGBP with GOOS, GTOS, and GCOS acting as lead agencies on ocean, terrestrial and atmospheric observation strategies.

138 Development of guidelines for ocean CO_2 sequestration experiments. The Executive Secretary reported on his participation in a meeting organized by the American Society of Limnology and Oceanography (ASLO) in April 2001 in Washington DC. The ocean is the largest potential reservoir to store CO_2 out of contact with the atmosphere, and there are active initiatives to massively sequester CO_2 in the deep ocean using direct injection techniques or by increasing locally the uptake of CO_2 through artificial fertilization with iron. This is an area of increasing concern, and many Member States are already actively involved in these issues. Concerns include uncertainty of the effects of these processes on the ocean ecosystem, legal issues of pollution and dumping, and exploitation of the ocean commons

139 **The Assembly thanked** the speakers and commented favourably on the above presentations and **expressed** great satisfaction with the progress in CLIVAR, GODAE, Argo, and the continued efforts of OOPC in fostering the implementation of the ocean observing system for climate. **The Assembly stressed** the importance of this work to society and **encouraged** the delegates to exhort their governments to support and strengthen the observing system, particularly those components that have a long time history.

140 **The Assembly expressed** great admiration for the achievements of WOCE. Regarding the approaching completion of WOCE, the Assembly **attributed** its unqualified success to the sustained IOC-WMO-ICSU WCRP partnership **and cited** WOCE as an outstanding example for planning, managing and executing large-scale, international ocean science programmes. In response to a query regarding availability of WOCE data sets, Dr. Gould reminded the delegates that the WOCE data sets are available on the web and on compact discs (CD's) from his office.

141 **The Assembly noted** that the issue of ocean CO_2 sequestration was important for the IOC. It urged caution about the implications of direct involvement of the IOC in matters that might invoke the

London Dumping Convention, without further discussion among the Member States. **The Assembly agreed** the IOC should continue monitoring developments in ocean CO_2 sequestration and to maintain a watching brief of the environmental and science implications by the SCOR-IOC Ocean Carbon Advisory Panel.

5.1.2 Integrated Coastal Area Management (ICAM)

142 Mr. Julian Barbière, Programme Specialist for ICAM read a statement on behalf of Dr. Yves Henocque, Chairman of the Advisory Group of Experts on ICAM, who was unable to attend the Session. The Statement summarized the main recommendations of the Second Meeting of the Group of Experts on ICAM (Paris, 15-16 May 2001) as presented in Document IOC/GE-ICAM I/3s. Some of the conclusions of the Group of Experts were that: (i) IOC/ICAM has made impressive progress since its creation in 1998, especially in view of the small resources available to the programme; the scope of the programme was found appropriate and targeted; (ii) IOC/ICAM should continue and strengthen its collaboration with the coastal module of GOOS, IODE, CSI of UNESCO, LOICZ, GCRMN, and IGU programmes; (iii) case studies, demonstrating the socio-economic benefits derived from environmental improvements, should be developed under the programme; (iv) collaboration and communication should be strengthened between IOC/ICAM and the IOC regional bodies, possibly through the designation of ICAM focal point institutions; and (v) the development of indicators for ICAM should not only focus on the managerial effectiveness of ICAM programmes, but also on the environmental effectiveness of such programmes. Indicators are also needed for investors in ICAM initiatives, hence the need to measure benefits.

143 The Programme Specialist provided an overview of IOC/ICAM activities referring particularly to the organization of the COASTS Symposium in August 2001; to the developments related to the 'Submarine Groundwater Discharges in the Coastal Zone' Project, and the cooperation established with IHP, SCOR, IAEA, and LOICZ in this area; the production of a new manual on ICAM prepared with the support of France; to the 'Indicators for ICAM' initiative proposed by the Government of Canada (in the framework of Oceans 21 Programme), and to joint activities with the Land-Ocean Interactions in the Coastal Zone (LOICZ) Programme of IGBP in Latin America, the Caribbean, and Africa; as well as cooperation with the UNEP's GPA-LBA Office.

144 The Representative of LOICZ expressed its appreciation with the collaboration that has been built with IOC in both scientific research and capacity building. He referred in particular to the Submarine Groundwater Discharges (SGD) Project, which has led to a wider cooperation, with such programmes as IGBP/LOICZ, SCOR, and intra UNESCO cooperation, for example with the International Hydrological Programme (IHP).

145 He acknowledged the current achievements and drew attention to the need for future developments addressing the human dimensions of coastal change and ocean health, which integrate the river catchments with coastal ocean processes through the LOICZ BASINS core project, and the participation of IOC/ICAM in this project at the regional scales. The BASINS core project will contribute to the development of indicators as pursued by IOC/ICAM and serve as an interface to an upcoming cross-cutting water project developed by WCRP, IHDP and IGBP. LOICZ confirmed its continuing support to the IOC/ICAM initiative, and to enhanced collaborative actions with other IOC programmes such as the coastal module of GOOS, as a mean to add value to the future developments of integrated coastal ocean research and advisory science for management issues.

146 **The Assembly welcomed** the progress achieved in the implementation of the IOC/ICAM programme.

147 **The Assembly adopted** the recommendations of the Advisory Group and **expressed** its views on follow-up actions, especially with regards to the need: (i) to develop ICAM initiatives at the regional level, making use of the IOC regional subsidiary bodies, and responding to the requirements of UNEP Regional Seas Programmes; (ii) to pursue the integration of social and human sciences in the

activities developed by the Programme, through increased intersectorial cooperation within the Natural and Social Sciences Sectors.

148 **The Assembly thanked** the Government of Canada for its proposal to host a workshop on the use of indicators for ICAM, to be organized in 2002, and **considered** this activity as a high priority of the Programme. **The Assembly also thanked** the Government of France for the support provided to drafting and publication of the Second Methodological Manual on ICAM (IOC Manuals and Guides No. 42).

5.1.3 Ocean Science in Relation to Living Resources

(i) *Harmful Algal Blooms*

149 Mr. Henrik Enevoldsen, Programme Specialist for IPHAB and Head of the IOC HAB Science and Communication Centre in Copenhagen, reported on the main achievements of the HAB Programme in the intersessional period with emphasis on capacity building activities and the joint IOC-SCOR GEOHAB Programme.

150 It was noted that the Sixth Session of the IOC Intergovernmental Panel on Harmful Algal Blooms (IPHAB-VI), initially planned to be held prior to the Twenty-first Assembly, had been postponed until second quarter 2002 in order to focus Secretariat resources on implementation of IPHAB-V decisions. It was stressed that it would be desirable if more Member States would provide their IPHAB representatives with a stronger mandate in order to fully exploit the potential strengths of the intergovernmental mechanism provided by the Intergovernmental Panel on Harmful algal Blooms (IPHAB).

151 The GEOHAB Science Plan has been published and the GEOHAB Scientific Steering Committee has started to develop the Implementation Plan. An important aspect of that Plan will be to describe how national programmes can be coordinated to meet GEOHAB objectives and to plan for multinational research activities that will transcend national efforts.

152 On behalf of the GEOHAB SSC the Programme Specialist proposed that the IOC invites LOICZ, GOOS, GLOBEC and JGOFS to participate in a Sub-Committee of SSC on quality assurance and protocols with emphasis on analysis, methods and intercomparison exercises. The Sub-Committee is suggested as a joint working group with the aim to produce a generic document on common methods.

153 The staffing of the HAB Programme includes one full-time professional, an Associate Expert seconded by Denmark half-time, and the committed staff locally hired at the IOC Science and Communication Centres in Copenhagen and Vigo, without which the Programme would be operating at a much lower level.

154 Shortly the Secretariat will initiate an external evaluation of the IOC HAB Programme and its activities. The evaluation will serve as background for IPHAB VI to plan the next years of the Programme and will also serve to meet the requirements of donors.

155 Regarding funding, the Programme continues to benefit from the earmarked extra-budgetary support from Denmark and Spain, and for WESTPAC/HAB from Japan. GEOHAB has benefited from support from the China, Japan, Finland, USA and ICSU.

156 The Delegate of China invited IOC to co-sponsor the APEC HAB Second International Conference on 'Harmful Algae Management and Mitigation' to be held in Qinqdao, China from 12-16 November 2001. **The Assembly noted** the offer and **instructed** the Executive Secretary to explore the feasibility of co-sponsoring it during the intersessional period.

157 **The Assembly agreed** that the HAB Programme is an important and relevant programme, both in relation to capacity building and to advances in HAB research aimed at improving management capabilities in Member States.

158 **The Assembly recognized** with appreciation the importance of the extra-budgetary resources that has been provided by Member States, **and welcomed** the continued support from Denmark, France, Japan, Spain, USA, and the new indication of support from Canada.

159 **The Assembly endorsed** the proposal of inviting LOICZ, GOOS, GLOBEC and JGOFS to participate in a joint working group on quality assurance and protocols under the GEOHAB SSC.

160 **The Assembly recognized** the urgent need for the establishment of an International Project Office (IPO) for GEOHAB. **The Assembly noted** with concern that GEOHAB IPO cannot become operational until the resources, or secondment, for the position of the Director of the IPO is found and that the lack of the IPO is a serious drawback for the full implementation of GEOHAB and thus for the achievement of the envisaged results. **The Assembly stressed** the need for the assistance of the Member States in the provision of extra-budgetary funding and for secondment for the GEOHAB IPO estimated as 160,000 US$/year.

(ii) *GCRMN*

161 Dr. Ned Cyr, former head of OSLR Programme introduced the Global Coral Reef Monitoring Network (GCRMN) Programme and reported on recent developments concerning the GCRMN and its South Asia Node; and the Census of Marine Life and IOC's role in its implementation.

162 **The Assembly expressed** strong support for GCRMN and Census of Marine Life activities, and **requested** the expansion of GCRMN monitoring and capacity building activities into areas where the network is not currently active.

163 Dr. Cyr further introduced two new activities: the IOC/GLOBEC ad hoc Study Group on 'Use of Environmental Indicators in the Management of Pelagic Fish Populations' and the Joint SCOR/IOC Working Group 119 on 'Quantitative Ecosystem Indicators for Fisheries Management'.

164 **The Assembly expressed** strong support for the new OSLR activities, and for the implementation of an ecosystem approach for the study and management of living marine resources. **The Assembly decided** that the IOC Secretariat work with FAO and UNEP to further this approach within the UN System.

(iii) *Coral Bleaching*

165 Mr. Ole Vestergaard, Programme Specialist from the Ocean Science Section, introduced a new activity, the ad hoc Study Group on 'Coral Bleaching and Related Indicators of Coral Reef Health', established in response to the recent decline of coral reefs due to coral bleaching. The objectives are to: (a) develop possible molecular, cellular, physiological or community indicators of coral bleaching, this includes examining potential mechanisms of reef corals for adaptation and long-term responses to large scale changes in global environmental variables, (b) demonstrate the effectiveness of the indicators through application in the field at selected sites; (c) promote the use of the indicators by the user community through dissemination of results in reports, publications, symposia, web sites or other forums.

166 The Study Group, co-chaired by Prof. Ove Hoegh-Guldberg, Australia, and by Prof. Yosi Loya, Israel, had its first meeting 9-11 April, in Paris. Central issues and techniques were discussed, critical gaps in knowledge of bleaching identified, scientific questions formulated, and future activities discussed. At the meeting the World Bank was invited to present a proposal for a targeted research programme under preparation. As some objectives of the two efforts are similar, collaboration was

discussed. Recently, the World Bank has offered to co-sponsor a workshop of the Group, jointly with IOC and Centre of Marine Studies, University of Queensland, Australia.

167 **The Assembly expressed** strong support for the timely initiation of the Coral Bleaching Study Group, **and welcomed** the cooperation with the World Bank and other institutions to mitigate the effects of coral bleaching.

5.1.4 Marine Pollution Research and Monitoring

168 Dr. Michael Bewers, Chairman of GIPME informed the Assembly about two new reports on critical issues in marine environmental protection produced by GESAMP, one of which targets the decision makers and public at large and the other targets land-based sources and activities affecting the quality and uses of the marine, coastal and associated freshwater environment. He also reported on the status of the IOC Atlantic Open Ocean Baseline Study, and a new initiative for a baseline study in the western Pacific.

169 Some Member States expressed concern that the issue of marine pollution does not appear to be a focus area in the reorganized Ocean Science section. **The Assembly noted** that it was not intended to downplay marine environmental issues in the restructuring of the Ocean Science section, as was evident from Agenda item 5.1.5.

170 **The Assembly noted** with satisfaction the publication of the GESAMP Reports, and **provided guidance** for the wide distribution of these reports to governmental agencies and environmental managers at national level.

171 **The Assembly expressed** its appreciation with the scientific results of the Atlantic Open Baseline Study and their availability in the form of open scientific literature. **The Assembly welcomed** the plans for a baseline study in the western Pacific and **instructed** the Executive Secretary to follow-up on this development in consultation with the interested Member States.

172 Mr. Ole Vestergaard, Technical Secretary from the Ocean Science Section, briefed the Assembly on the progress made by the IOC ad hoc Study Group of Benthic Indicators. Notable progress was achieved at its third meeting, held from 28 February - 3 March 2001 in Charleston, USA. Regional datasets on coastal benthos and environmental conditions were combined into a global database, and analyses identified statistically significant, relationships between the content of total organic carbon (TOC) in sediments and the benthic communities, that can be developed into a useful indicator at the global level. To increase the global application of indicators additional regional datasets should be added to the database.

173 **The Assembly noted** with satisfaction the progress made by the ad hoc Benthic Indicators Group, and **instructed** the Executive Secretary to expand the group's activities to other regions of the world where relevant biogeochemical data are available.

5.1.5 A Proposal for Restructuring the Ocean Science Programmes

174 With the approval of the IOC Assembly and the Executive Council, the IOC's Ocean Science Programmes has undergone three external reviews: the structure of the entire IOC Ocean Science Programmes, the Ocean Science in Relation to Living Resources (OSLR) Programme, and the GIPME (Global Investigation of Pollution in the Marine Environment) Programme. A proposal for restructuring the Ocean Science Programme was presented to the Assembly by the Executive Secretary. The proposal is based on the above-mentioned reviews and takes into account: (i) the IOC Statutes and the needs of the Member States, (ii) the new perspectives in ocean science requiring integrated and interdisciplinary approaches; (iii) the mandates of UNCED/*Agenda 21*, FCCC, CBD, UNCLOS, GPA-LBA, the UN Code of Conduct for Responsible Fisheries, and the needs of regional programmes and conventions; (iv) the effective collaboration with global research programmes including GLOBEC, LOICZ, JGOFS, CLIVAR and SOLAS; and (v) the complementary TEMA

activities. The main objective of the proposal is to reorganize the activities previously carried out under the OSLR, OSNLR, and GIPME Programmes along with new initiatives within the Ocean Science Programme into a new, interdisciplinary branch called *Ocean Ecosystems Science*. The Ocean Science Programme would thus have the following three interactive lines of work:

- Oceans and Climate;
- Ocean Ecosystems Science; and
- Marine Science for Integrated Coastal Area Management.

175 The proposal also states that overall scientific guidance of the Ocean Science Programme should be provided by a Scientific Advisory Group comprised of scientists drawn from the principal disciplines and associated international programmes that should meet at least biennially to review the direction, quality and alignment of activities within the Ocean Science Section.

176 **The Assembly** strongly and unanimously **supported** the principles contained in the Proposal for Restructuring the Ocean Science Programme.

177 **Several Member States expressed** concerns that the proposed structure might not adequately emphasize the important and continuing role the Ocean Science Section must play in areas of the protection of the marine environment. To address this point, **the Assembly suggested** that the Ocean Ecosystems Science programme area could be renamed Ocean Ecosystem and Marine Environmental Protection Science (OEMEPS) in order to increase the visibility of marine pollution science activities. **The Assembly also stressed** the need to address interdisciplinary research issues in the deep-sea within the OEMEPS programme area.

178 **The Assembly requested** that the IOC Secretariat submit a paper containing the Structure of the Ocean Science Programme, resulting from the application of the principles endorsed, to the next session of the Executive Council specifically outlining the Terms of Reference for the programme elements and taking into account the concerns of Member States regarding the increased visibility of programme activities on protection of the marine environment.

179 **The Assembly adopted** Resolution XXI-6.

5.2 OPERATIONAL OBSERVING SYSTEM

5.2.1 GOOS and Related Matters

180 Dr. Colin Summerhayes, Director of the GOOS Project Office, presented the Assembly with the highlights from the fourth session of the GOOS Steering Committee (Chile, 14-16 March 2001). GOOS has been streamlined by the dissolution of 6 advisory bodies, and the creation of one new one. The new Coastal Ocean Observations Panel (COOP) that integrates the former Health of the Ocean, Living Marine Resources, and Coastal Module panels of GOOS had held its first meeting (Costa Rica, 15-17 November 2000), and had begun integrating the design plans published by those panels on the GOOS web page. The published designs provide an initial contribution to the eventual GOOS Handbook requested by the 33rd IOC Executive Council. Given these changes, there is now an Open Ocean GOOS devoted mainly to weather and climate forecasting and related issues, and a Coastal GOOS with a wider remit and a broader user base. To expand user input to the GOOS design, a First GOOS Users' Forum had been held in association with COOP-I (Costa Rica, 13-14 November 2000).

181 GOOS is developing at the international level through expansion of the GOOS Initial Observing System, many elements of which would be implemented on behalf of GOOS by JCOMM. It is also developing through pilot projects like GODAE and Argo that were dealt with under Agenda item 5.1.1. In addition it is growing through the growth of regional activities. All regional GOOS bodies map well onto UNEP Regional Seas areas, which should facilitate the use of GOOS as a tool by the Regional Seas Programme as mentioned under Agenda item 4.2.3. A Memorandum of

Understanding formalizing the start of Black Sea GOOS had been signed by the Black Sea nations during the Assembly. MedGOOS had also got off to a good start with funds from the European Commission. The GOOS Steering Committee had approved the development by the GOOS Capacity Building Panel of an Implementation Plan for Capacity Building in support of GOOS. A major capacity building activity for the immediate future will be the GOOS-AFRICA workshop in Nairobi in November, which will focus on developing a proposal for submission under the African Process in 2002, for funding improvements in the tide gauge network and in access to and training in the use of remotely sensed data. Discussions on the possible development of a South East Asian GOOS will take place during the WESTPAC Scientific Symposium in Seoul in August 2001.

182 GOOS had strengthened its links with IODE and approved publication of a GOOS Data and Information Management Plan, and new initiatives to promote the development of ocean data and information management. Together with GCOS and GTOS, it had also undertaken a review of the Global Observing Systems Information Centre in Delaware (April 2001), which provided a convenient single window into GOOS metadata holdings. With the aid of extra-budgetary funding a consultant had been hired to work with the Member States who had made commitments to GOOS at the Initial GOOS Commitments Meeting (Paris, 4-5 July 1999), so as to get these commitments into the GOOS Initial Observing System. Linkages had grown with key external organizations, notably ICES, PICES and the UNEP Regional Seas Programme. ICES was assisting in the application of GOOS approaches to the development of an ecosystem-based approach to fisheries management for the North Sea, which would be the subject of a joint IOC, ICES, EuroGOOS, OSPAR workshop in Bergen in September 2001. In addition links had been strengthened with the Partnership for Observations of the Global Ocean (POGO), which brings together a number of the worlds' major oceanographic institutions including the major academic institutions, and which has developed a Fellowship Programme for capacity building in association with SCOR and the IOC. GOOS continued to develop at the national level, and a mechanism for national reporting had been established.

183 Both the level of staffing in the GOOS Project Office, and the budget for coordination of GOOS activities, including capacity building, had risen significantly since the last Assembly, mostly fuelled by extra-budgetary resources donated by a small group of Member States.

184 Dr. Angus McEwan, immediate past Chairman of the Intergovernmental Panel for GOOS (I-GOOS), presented the Executive Summary of the fifth session of I-GOOS (Paris, 28-30 June 2001), including its recommendations (IOC-WMO-UNEP/I-GOOS-V/3s). He reminded the Assembly that GOOS has a dual guidance structure-the GSC being responsible for scientific and technical advice to I-GOOS, and I-GOOS being responsible for approving plans and promoting implementation. GOOS is rapidly moving into the implementation phase. As it has done so it has become apparent that coordinating the many international, regional and national GOOS activities has become a significant challenge. I-GOOS had found that its two-yearly meetings were no longer matched to the pace of development of GOOS. It had decided to create a number of ad hoc inter-sessional groups to take specific activities forward (notably to review the structure of GOOS; to identify resources for capacity building; to raise the visibility of I-GOOS with governments; and to refine the regional policy). It had also decided to create an I-GOOS Bureau to oversee inter-sessional activities, and to hold a biennial meeting of all regional GOOS bodies in the years between I-GOOS meetings so as to encourage the regional development of GOOS and the transfer of best practice. Efficiency would be yet further improved by holding future I-GOOS meetings well before the IOC Assembly to allow Member States to take its recommendations on board in preparing for the Assembly. I-GOOS urges Member States to consider the creation of National GOOS Coordinating Committees, which could be part of National oceanographic Committees, to represent all stakeholders and to assist the national development and coordination of GOOS. I-GOOS accepted that regional alliances were extremely useful for building GOOS globally, since they addressed the needs of nations at the regional level, and brought additional Member States into GOOS.

185 Dr. McEwan then reviewed document IOC-XXI/2 Annex 7, the *Report on Structure, Mandate and Modus Operandi of GOOS*, which had been called for by the 33rd Executive Council. He reminded delegates that the document had been thoroughly reviewed by I-GOOS-V, which had suggested

numerous amendments, and noted that an ad hoc inter sessional I-GOOS working group would be appointed to consider these and to advise on ways in which the structure (and the document) could be made simpler – especially for presentation to politicians and senior government decision makers. He stressed that the complexity of GOOS at the bottom up level did not militate against success. Nor did it mean that there was a lot of duplication in the system. Streamlining was likely to evolve (as it was already in JCOMM) following the emergence of clear designs, for example from COOP. He made the case for further consideration of the structure being assigned to an independent review group as suggested in Resolution XXI-7.

186 **The Assembly** warmly **thanked** Dr. McEwan for his many years of service to GOOS, and especially for his wise management of I-GOOS during the past 4 years, during which GOOS implementation had begun. Recent remarkable progress was due in significant part to his personal contribution. **The Assembly noted** with satisfaction that in the past two years many previously non-involved developing countries have joined new regional groupings like MedGOOS, PacificGOOS and IOCARIBE-GOOS, indicating widening recognition of the value of the GOOS concept. **The Assembly emphasized** that regional development of GOOS is an important aid to capturing community and government interest. **The Assembly noted** that with the creation of national networks of buoys and tide gauges along the western coast of South America, there was a very real prospect of creating a regional GOOS for the South East Pacific, and **urged** that the IOC and the Member States work towards such a goal through the offices of the CPPS. Similar opportunities should be pursued for the western South Atlantic and the Arctic. **The Assembly** warmly **thanked** South Africa for offering to host the 6th session of the GSC in March 2003, **and welcomed** the efforts of PICES and of SOPAC to work with NEAR-GOOS, and to develop PacificGOOS respectively, and to facilitate Argo operations in the Pacific.

187 **The Assembly agreed** that the intergovernmental process is indispensable to the implementation of such a global and highly networked undertaking as GOOS, for it provides the mandates, agreements and endorsements that justify national cooperation. It also provides the means for working towards national commitments leading to obligations. To achieve these ends, I-GOOS must have higher intergovernmental visibility and be seen as the leading body. **The Assembly noted** that an increasing challenge for the future would be how to obtain the resources to organize and implement GOOS as a Flagship of the IOC, and to build the capacity of developing nations to engage in GOOS. **The Assembly urged** Member States to support the completion of the design phases of COOP and OOPC, and the subsequent implementation of those designs; to support GOOS capacity building initiatives, notably the GOOS-AFRICA workshop and its follow-up, and the development of new regional bodies such as PacificGOOS and IOCARIBE-GOOS and Black Sea GOOS. **The Assembly also urged** Member States to consider making staff available even in their home offices and on a part time basis to work as extensions of the GOOS Project Office, so as to expand the effort needed to meet the growing demands for coordination of implementation.

188 **The Assembly encouraged** Member States to use all possible means to stimulate national coordination of and involvement in GOOS activities, recognizing that while this could be done through National Oceanographic Committees it might also require the formation of National GOOS Coordinating Committees that bring together all stakeholders, as a means of engaging the wider community at the national level, including policy makers. It would be up to individual Member States to choose their own mechanism.

189 **The Assembly acknowledged** the very considerable **progress** being made in the implementation of GOOS and **endorsed** the recommendations made by I-GOOS-V. **The Assembly reviewed** the structure, mandate and *modus operandi* of GOOS and **agreed** with the proposal that it should be revised and form part of an overall review of GOOS structure as described in Resolution XXI-7. Revisions to the structure should make clear, *inter alia*, the user-driven nature of GOOS and its relation to JCOMM. In this context the Representative of WMO reminded the Assembly that JCOMM is the operational tool for GOOS, as is reflected in the Resolutions from JCOMM-I.

190 **The Assembly noted** that the existing GOOS regional activities should be well acknowledged and properly considered in the discussions of the GOOS regional policy.

191 **The Assembly adopted** Resolution XXI-7.

5.2.2 Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM)

(i) *JCOMM*

192 Dieter Khonke, past interim Co-President (oceanography) of JCOMM informed the Assembly of the main results of the first session of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (Akureyri, Iceland, 19-29 June 2001). The presentation covered all work of interest to IOC now falling directly under or coordinated by JCOMM, including brief updates on the status of actions being undertaken by JCOMM subsidiary or reporting bodies such as the Data Buoy Cooperation Panel (DBCP), the Ship-of-Opportunity Programme Implementation Panel (SOOPIP); the TAO Implementation Panel (TIP); and GLOSS. During the intersessional period the TAO, co-sponsored by CLIVAR, GOOS and GCOS, had been dissolved and replaced by a Tropical Moored Buoy Implementation Panel (TIP) having the same sponsors. The Co-President drew the attention of the Assembly to the Terms of Reference of the new Panel. The Co-President explained the development of the *in situ* Observing Platform Support Centre (JCOMMOPS) at Toulouse (France), including recruitment of the Argo Technical Coordinator.

193 **The Assembly recognized** with satisfaction the successful conclusion of the first session of JCOMM. **The Assembly acknowledged** that the joint Commission had clearly identified priorities, established a very large work programme and put in place a substructure appropriate to its work. It was now up to IOC and WMO to jointly provide for the facilities necessary to ensure the full implementation of this work programme. Relationship with the main oceanographic and/or meteorological systems/bodies (GOOS, GCOS, WWW, etc.) was provided for in the adopted JCOMM substructure; those systems/bodies had to clearly identify their needs and specifications for implementation through JCOMM.

194 **The Assembly recognized** that undertaking to have the communities of oceanographers and meteorologists working together was a major achievement but at the same time a challenge. It therefore **expressed** a word of caution as to the level of expectation raised by this "integration" of the two communities, especially when non-physical aspects are concerned.

195 **The Assembly instructed** the Executive Secretary to make sure that, budget allocations to the joint Commission be clearly identified in the IOC Programme and Budget. It was made clear that the establishment and future operation of JCOMMOPS should not lead to any resources additional to those already made available for DBCP, SOOPIP, VOS (including the network of the Port meteorological officers), Argo, etc., but rather to a better use of the latter.

196 **The Assembly noted** that because the first session of JCOMM took place in late June 2001 there had not been time to circulate the report in the four working languages of the Commission for the consideration of Member States before the Assembly met. In order to enable full consideration by Member States of the Resolutions and Recommendations proposed in the report of the first session of JCOMM, **the Assembly decided** to consider them and their implications at the proposed special session of the Executive Council in December 2001.

197 **The Assembly further noted** that, as agreed in 1999 by the IOC and WMO governing bodies, the first session of JCOMM had been held according to the WMO regulations applying to a "Constituent Body" of the organization. **It further recognized** that the implementation of that decision had led in a few cases to some problems in communicating with the oceanographic national institutions. At the request of the Assembly and Congress, the IOC and WMO Secretariats were in the process of developing some common rules and procedures that would apply to all future JCOMM

sessions and which should eliminate such problems in future. **The Assembly recommended** that an agreement be reached through a Memorandum of Understanding (MoU) rather than through modifications of existing rules of either organization. A draft of this MoU would be available for review by the IOC and WMO Executive Councils in 2002, before its submission for a final approval by the IOC Assembly and WMO Congress in 2003.

198 **The Assembly requested** that, in future, plans be devised to avoid the overlapping of the JCOMM and I-GOOS sessions.

(ii) *Global Sea-Level Observing System (GLOSS)*

199 Dr. Philip Woodworth, Chairman of the GLOSS Group of Experts reported on progress with GLOSS, focusing on the Recommendations stemming from the Seventh Meeting of the Group (26-27 April 2001, Hawaii, USA). He emphasized the need for:

- continued and strengthened support for GLOSS either through financial contributions to the IOC Trust Fund or through national/bilateral/multilateral assistance for GLOSS activities, and in particular support for maintaining/upgrading the GLOSS Core Network of tide gauges in accordance with the GLOSS Implementation Plan;
- continued and strengthened support to process and provide *in situ* sea-level data from GLOSS stations to the international data centres without delay, within the provisions of the GLOSS Implementation Plan. That Plan specifies requirements for the delivery of "fast" data to the GLOSS Fast Data Centre, and of "delivery mode" data to the GLOSS Delayed Mode Data Centre and PSMSL. Fast data are required for altimeter calibration studies and for potential assimilation into and validation of GODAE model products. Both Fast and Delayed Mode data have applications to other IOC programmes such as C-GOOS.

200 **The Assembly noted** progress with the GLOSS programme, **and endorsed** the GLOSS programme continuance as an integral part of the GOOS Initial Observing System and JCOMM.

201 **The Assembly approved** the Report of the seventh Session of the GLOSS Group of Experts (document IOC/GE-GLOSS-VII/3) and the list of actions contained therein.

202 **The Assembly requested** Member States to upgrade their tide gauge installations to modern standards, in accordance with the *IOC Manuals and Guides No. 14, Volume 3*, and to conduct measurements of land movements by means of GPS and other geodetic techniques.

203 **The Assembly urged** continued joint IOC-CIESM support of MedGLOSS **and appealed** to donor countries to support GLOSS activities in South-West Africa and in particular replacement of the GLOSS station at Lagos, Nigeria.

204 **The Assembly asked** the GLOSS Group of Experts to establish links with the IOC Intergovernmental Coordinating Group for the Tsunami Warning System in the Pacific.

5.2.3 Remote Sensing

205 Dr. Colin Summerhayes, Director of the GOOS Project Office briefed the Assembly on progress with and plans for space-based observations of the oceans. The requirements of the GOOS advisory panels had been collected and integrated with those from GCOS and GTOS by the joint GOOS-GCOS-GTOS Global Observing Systems Space Panel (GOSSP), which had subsequently been dissolved. GOOS is now linked directly to the space agencies through interactions with the Committee on Earth Observation Satellites (CEOS). As approved by Executive Council Resolution EC-XXXI.8, IOC, GOOS, CEOS and other bodies were working towards an Integrated Global Observing Strategy (IGOS), through the IGOS-Partnership. The strategy is designed to guide effective implementation of integrated global remote sensing and *in situ* observations. The Executive Secretary of IOC held the

chairmanship of the IGOS Partners for the first six months of 2001, and is now home to the IGOS Partners web-site www.igospartners.org. As noted at the 33rd IOC Executive Council, the strategy is being developed through Themes, the first one approved being the *Ocean Theme*, the description of which has now been published by NASA. GOOS is leading oversight of implementation of the Ocean Theme, aided by CEOS, who have appointed a representative to the GSC to aid in the process. Currently under development is the next IGOS Theme, on Integrated Global Carbon Observations (IGCO). As noted under Agenda item 5.1.1, IOC and the SCOR-IOC Advisory Panel on Ocean CO_2 have developed the background document outlining the requirements for *in situ* and satellite remote sensing observations for the ocean carbon component of the IGCO Theme, and are now working with others to develop the IGCO Theme. A Coral Reef Theme is now under consideration, led by UNEP. The IOC continues to act as a co-sponsor with SCOR of the International Ocean Colour Coordinating Group (IOCCG), which provides training in ocean colour measurements in developing countries. The GOOS-AFRICA workshop in Nairobi in November 2001 is designed to increase access to remote sensing data for African coastal States, and to stimulate training in the use of these data to produce products useful for policymakers. In support of this activity IOC led a successful cross-cutting proposal to UNESCO.

206 The rapid growth of operational oceanography in recent years is on the one hand stimulating a demand for the use of remotely sensed data in operational oceanographic products from the user community, and on the other hand stimulating the rapid growth in coverage of the ocean by remote sensing from satellites. Much of the provision of these new kinds of products is taking place through Meteorological Offices, which are set up to meet operational needs. Reflecting this interest, the IOC is becoming a Member with WMO in the Coordination Group for Meteorological Satellites (CGMS), which brings together a number of suppliers and users of ocean data.

207 **The Assembly noted** with approval the significant increase in the IOC's involvement in remote sensing, which was regarded as essential for building capacity in developing countries, also **noted** the impending launch of the high resolution altimeter aboard Jason as a powerful new tool for operational oceanography, and **urged** Member States to use the *Ocean Theme* document as a blueprint for future developments.

208 **The Assembly endorsed** the IOC's membership of the CGMS.

5.2.4 Global Climate Observing System (GCOS)

209 Alan Thomas, the Director of the GCOS Secretariat described briefly the latest developments in GCOS, with particular reference to the linkages with GOOS through the OOPC. Using advice from the OOPC, GCOS represents GOOS and other bodies in providing reports on the adequacy of the observing system and on the need for ocean observations to the Conference of the Parties (CoP) to the Framework Convention on Climate Change. In response to the decisions of the CoP, Parties are now preparing Action Plans detailing their contributions to observations of global climate, from which an accurate picture will emerge of what is currently being done, which will provide the basis for determining what still needs to be done. Through a decision of the 5th CoP, GCOS has developed a series of regional capacity building workshops, which are being part-funded by the Global Environment Facility (GEF). The first workshop took place in Apia, Samoa, in August 2000, and the second is scheduled for Africa in October 2001. Member States are asked to assist in planning future capacity building workshops in regions such as the Caribbean and Central America, South-east Asia, and the Indian Ocean.

210 **The Assembly noted** the GEF funding with approval, and **endorsed** the development of regional capacity building workshops. **The Assembly further noted** with satisfaction the strong collaboration between the IOC and the WMO in the development of GCOS, **recognized** the important role of GCOS in acting as the main avenue through which the partners in the "Climate Agenda" were able to bring their recommendations to the Conference of the Parties to the Framework Convention on Climate Change.

211 **The Assembly applauded** the growing efforts of GCOS in capacity building and support of these efforts by the GEF of the World Bank. **The Assembly supported** the proposal from the GCOS

Steering Committee to prepare a second Report on the 'Adequacy of the Global Climate Observing System', for the CoP, with advice from the OOPC**,** and **noted** that the advice of GCOS to the CoP had had a significant effect at the national level. **The Assembly reaffirmed** its intent to continue its support for the further planning, development and implementation of GCOS, especially through financial support of US$40,000 for the biennium for the operation of the GCOS Secretariat, **and urged** Member States to assist with the implementation of a global observing system for climate and with the building of capacity in developing countries to enable them to collect, exchange and use climate data to meet local, regional and global needs. **The Assembly would like to see** GCOS become more involved with issues involving the cryosphere and hydrosphere, and make more efforts to engage the attention of operational agencies so as to ensure that GCOS's requirements were realistic.

5.3 OCEAN SERVICES

5.3.1 Oceanographic Data and Information Management (IODE)

212 Mr. Ben Searle, Chairman of the IOC Committee on International Oceanographic Data and Information Exchange (IODE) introduced this Agenda item. He reported on the 16th Session of the Committee that was held in Lisbon, Portugal between 31 October and 8 November 2000.

213 He informed the Assembly that the 16th Session had been extremely successful, as it had addressed many issues of concern to both the scientific as well as data and information management communities. This success was also due to the considerable effort and support provided by the Portuguese hosts. The attendance of the Session by nearly 100 participants from 37 countries and a number of partner organizations clearly showed the continuing commitment by the Member States to the IODE system.

214 Mr. Searle reported that the IODE Committee had decided to move towards a distributed and cooperative method of operation for the IODE data centre structure, taking into consideration the existing data management activities of many scientific and observing systems and with the purpose of ensuring data processing, quality control and archiving according to international standards.

215 The Committee had recognized the importance of active participation of IODE, through its data centres, in the planning of marine scientific and monitoring programmes. It was recognized that researchers and operational programmes and agencies are contributors to, and users of oceanographic data and information, as well as participants in the development of data management systems. They would therefore become increasingly dependent on, and essential to the IODE data centres. In this regard the Committee expressed its concern about the many research and monitoring programmes that develop independent data and information services. The Committee therefore established a Steering Group on Establishment, Maintenance and Strengthening of Cooperation between IODE and Research and Monitoring Programmes.

216 The Committee had recommended increased attention in the IODE system for 'not routinely exchanged data' such as remotely-sensed, biological, chemical, pollution and coastal data. The Committee established an IODE Group of Experts on biological and chemical data management and exchange practices, and requested the Group to maintain close relations with GIPME, OSLR and other relevant programmes.

217 The Committee had further recommended working closely with the global observing programmes and their related management committees, and strongly endorsed collaboration with JCOMM, focusing on 'end-to-end' data management through the GTSPP and similar programmes. This high level of cooperation had now also been endorsed during JCOMM-I. IODE has been included in the JCOMM Management Committee and has representation in the Data Management Coordination Group and related Expert Teams.

218 The IODE's metadata or data directory pilot project, MEDI, was 'upgraded' to an IODE programme with its own Steering Group. MEDI is now fully compatible with the newly released ISO

standard for metadata. In view of their common goal for metadata, IOC and NASA have now joined forces: IODE with its MEDI and NASA with GCMD. MEDI is now also fully compatible with the data directory services being developed by GOSIC in support of the global observing programmes. In a further development, the MEDI software is presently being re-engineered to provide network and Internet capabilities. The Steering Group has recommended that MEDI will be utilized by the NODCs as well as by other science and regional data management facilities within the framework of the new IODE structure.

219 IODE-XVI recognized the need to lead and actively participate in the development of a data exchange protocol for marine data, based on the extensible mark-up language (XML). The development of a specification for marine XML is being undertaken by an international consortium comprising commercial companies (such as instrument manufacturers, marine environmental consultants and software developers), government agencies and international programmes. The Committee had recommended IODE to participate in this consortium, providing an opportunity to collaborate with the commercial sector in a well-structured framework supporting the management, processing and exchange of marine data.

220 The Committee noted the many IODE data products and services that were developed by IODE Data Centres and the IODE Secretariat. Following the success of the GODAR project the Committee approved the development of the World Ocean Database Project and congratulated the Secretariat with the development of the IODE web-site, GLODIR, the IODE Data and Information Portal and the related services and products.

221 Substantial efforts had been made in data and information management training and capacity building. To support, enhance and underpin its capacity building programme, IODE has developed the OceanTeacher system comprising two modules: the IODE Resource Kit and the Training Manual. The IODE Resource Kit contains a range of marine data and information management materials such as software tools, quality control and analysis strategies, training manuals and relevant IOC documents. The Training Manual is a collection of outlines, notes, examples and other documents that are used in conjunction with the Resource Kit to organize training activities such as courses in marine data and information management. The OceanTeacher system is available on CD-ROM and on-line through the URL http://oceanteacher.org. The modular structure of the OceanTeacher system allows for the organization of training courses targeted at different audiences. Specific data CDs, containing data sets relevant to the audience, are prepared for each training course. Whereas OceanTeacher is currently available in English only, the possibility of producing OceanTeacher in other languages is being investigated. Recognizing the importance of the system as a powerful and flexible capacity building tool, the IODE Committee, established a Steering Group to further develop this capability.

222 The Chairman of IODE made a special reference to regional data and information networks such as ODINAFRICA and MEDAR/MEDATLAS, and recalled that the Committee had recommended the development of additional regional networks. The Committee also acknowledged the support provided by many Member States in the organization of national and regional training courses, internships and other capacity building/TEMA activities.

223 **The Assembly expressed thanks** to the Government of Portugal for hosting the Sixteenth Session of the IODE Committee. **The Assembly noted** the interest of the Iranian Oceanographic Data Centre to become a Regional Oceanographic Data Centre for the Persian Gulf area (RNODC for the Persian Gulf).

224 The Delegate of Israel informed the Assembly of his country's recent establishment of a National Marine Data Centre and looked forward to close collaboration of this facility within IODE.

225 **The Assembly acknowledged** the support provided by Belgium to the IODE programme, especially with regard to the implementation of the ODINAFRICA, MEDI and OceanTeacher projects **and thanked** the Delegate of Belgium for his country's commitment to continue support for these activities.

226 **The Assembly welcomed** the success and progress of the IODE capacity building projects on Africa through the ODINAFRICA project. **The Assembly** strongly **endorsed** the planned development of a regional Ocean Data and Information Network for the IOCARIBE and South America regions and requested that the IOCARIBE office would be closely involved in its implementation. **The Assembly noted** with appreciation and **accepted** the kind offer of Ecuador to host the first planning workshop for the Ocean Data and Information Network for the IOCARIBE and South America regions.

227 **The Assembly invited** Member States to contribute towards the development of, and further support to, Ocean data and information regional networks in IOCINCWIO, IOCEA, IOCARIBE and the South America regions. **The Assembly further requested** reinforcement of IODE capacity building efforts in Southeast Asia.

228 **The Assembly urged** Member States to use the MEDI/GCMD metadata management system and MEDI software tool to the maximum extent possible and to promote its use to the widest possible audience.

229 **The Assembly invited** Member States to nominate data management experts to participate in IODE subsidiary bodies and to represent the IODE Programme at relevant meetings of research and monitoring programmes.

230 **The Assembly welcomed** the strong involvement of IODE in JCOMM and **called for** close collaboration between IODE and JCOMM and with other IOC scientific and monitoring programmes, such as ICAM and Coastal GOOS.

231 **The Assembly requested** Member States to ensure that IODE Data Centres are involved in the planning stage of their marine scientific and monitoring programmes providing for quality data and information management and long-term data archival.

232 **The Assembly welcomed** the actions taken by IODE to improve coverage by the IODE system of 'not routinely exchanged' data types, including marine biodiversity data, and the decision to modify the centralized IODE data centre system into a distributed structure based on the cooperation of several data providers and users.

233 **The Assembly urged** Member States to work closely with the Secretariat to promote the expertise, products and services developed by, or available at the IODE Data Centres and to assist the IOC with resources to develop and maintain these products and services.

234 **The Assembly noted** with appreciation the many important initiatives of IODE to apply new information technologies in the implementation of its activities but **called for** IODE to take into consideration that many Member States do not yet have access to such technologies. **The Assembly requested** IODE to ensure that data and information products and services are also made available through more traditional technologies as well and to make special efforts to make modern technologies available to IODE target audiences in all Member States.

235 **Noting** the limited human and financial resources available to the IODE programme, **the Assembly urged** Member States to contribute financial and/or in-kind support.

236 **The Assembly adopted** Resolution XXI-8.

5.3.2 Ocean Mapping

237 Dr. G. Giermann, Chairman of CGOM, presented the report of the IOC Consultative Group on Ocean Mapping (CGOM) adopted by the Eight Session of CGOM in St. Petersburg in May 2001 as well as the biennial Report of CGOM for the period from April 1999 to April 2001. He drew attention to the progress made in the main programme components, namely the General Bathymetric Chart of

the Oceans (GEBCO) and the regional International Bathymetric Charts (IBCs). He informed Member States on the view of the Group to consider the Ocean Mapping programme as consisting of two separate programmes: GEBCO and IBCs. Taking into account GEBCO Centenary in April 2003, he urged the Member States to provide financial support for its celebration and also underlined the importance to develop large-scale maps in selected parts of EEZs for the benefit of developing Member States. He stressed the need to include all data in the GEBCO Digital Atlas, and invited Member States to continue paying high attention to training in marine cartography for the IBC in the regions. With regard to the undersea feature names and the division of IBCWP into two parts, as mentioned in the biennial report of GGOM, **the Assembly decided** that these two issues would be further considered by the next Editorial Board of IBCWP. The Chairman forwarded the Report and Recommendations prepared by CGOM to the Assembly for consideration and adoption.

238 **The Assembly noted** with satisfaction progress achieved by the Consultative Group on Ocean Mapping (CGOM) in implementing decisions of 33rd Session of the IOC Executive Council and 20th Session of Assembly.

239 **The Assembly thanked** China, France, Russian Federation, United Kingdom and United States for the support in funds provided to the programme and **called on** other IOC Member States to follow this positive example. **The Assembly thanked also** the IOC Executive Secretary and Government of the Russian Federation for continued support to the position of Technical Assistant for Ocean Mapping.

240 **The Assembly adopted** Resolution XXI-9.

5.3.3 Tsunami Programme and the International Strategy for Disaster Reduction (ISDR)

241 Dr. F. Schindele, Chairman of the International Coordination Committee for the Tsunami Warning System in the Pacific (ICG/ITSU) reported, on the progress achieved in the implementation of the programme and presented document IOC-XXI/2 Annex 5.

242 He started his presentation by demonstrating the efficiency of the Pacific Tsunami Warning System (TWS) through its effective response to the Peruvian earthquake and tsunami of 23 June 2001.

243 Dr. F. Schindele then focused attention on the needs for the future development of the System, which can ensure that the system works perfectly to enable Member States of the Pacific to receive timely warnings. Among others, he mentioned the following actions to be taken to increase the effectiveness of the System:

(i) adapting sea level stations to meet the needs of the TWS;
(ii) enhancing awareness and training efforts;
(iii) extension of the Programme interests other areas, such as Intra-American Sea, Caribbean and Mediterranean;
(iv) facilitating support to scientific studies relevant to tsunami modelling, risk assessment, zones of inundation mapping, etc;
(v) improving warnings of local tsunamis;
(vi) creating new sub-regional centres to speed up the delivery of warning.

244 Finally, he informed the Assembly about the Eighteenth Session of the ICG/ITSU, which will be held in Cartagena, Colombia, preceded by the IOC/IUGG Workshop “Tsunami Mitigation beyond 2000”, and where many aforementioned issues will be considered.

245 **The Assembly noted** with satisfaction the progress achieved by the International Coordination Group (ICG) in implementing decisions of the 33rd Session of the IOC Executive Council. The ICG/ITSU functions effectively to ensure the safety of human lives and property, and the sustainable development of countries bordering the Pacific.

246 **The Assembly noted** that JCOMM expressed a long-term interest in tsunami services.

247 **The Assembly noted** with satisfaction the development of the ITIC homepage and progress made in preparing the tsunami Press Kit, to facilitate exchange of information.

248 **The Assembly reiterated** its view of the importance of the Tsunami Programme, which is the only one within IOC to focus fully on providing services for natural disaster mitigation. **The Assembly recommended** implementing an evaluation of the programme, with findings to be reported to the next session of the Assembly in 2003.

249 **The Assembly thanked** the Government of Colombia for hosting ITSU-XVIII and the IOC/IUGG Workshops, the Government of Chile for extending the services of the ITIC Associate Director for 2002-2003, and the Governments of Japan and the USA for assisting the Russian Federation in placing three automatic stations of the TWS along the Pacific coast.

250 **The Assembly noted** the view of the ICG/ITSU Officers regarding the trend of extending the ICG/ITSU responsibilities beyond the Pacific region, and recommended that the implications be carefully considered and the findings reported to the next Executive Council session. Meanwhile the revision of the Intra-Americas Sea project proposal should continue in cooperation with the OAS, ISDR and other interested parties. **The Assembly acknowledged** the OAS support to the project proposal, **thanked** the Member States for supporting the revision process and **requested** the Group and the IOC Regional Sub-Commission for IOCARIBE to submit their project proposal to the next session of the IOC Executive Council for approval. **The Assembly recommended** the ICG/ITSU consider a plan of action for the development of a Regional System in the Indonesian arc, where the countries are largely without adequate tsunami monitoring and warning systems.

251 **The Assembly expressed** concern that in spite of its several decisions to strengthen programme resources (funds and staff), there is still a gap in funding the activities of the programme approved by the Governing Bodies. **The Assembly was satisfied** with the efforts made by the Executive Secretary in searching for extra budgetary funds to support the programme.

252 **The Assembly thanked** Australia, Chile, France, New Zealand, Republic of Korea and USA for the support in funds provided to the programme and **expressed** the wish that other IOC Member States to join in. **The Assembly instructed** the Executive Secretary to give high priority to supporting the Tsunami programme activities as urged by the Executive Council at its 25th session, the Assembly by Resolution XVII-9 at its 17th session and later at its 19th and 20th sessions, and identified additional financial support for the programme.

253 A representative of the World Agency of Planetary Monitoring and Earthquake Risk Reduction (WAPMERR) informed the Assembly that the Agency was established by the representatives of world-leading scientific and emergency institutions from 26 countries representing the regions most exposed to natural hazards. The major goal of the agency is to reduce the impact of natural and technological disasters on human life and health, as well as property. In conclusion he stated that WAPMERR would be interested to take an active part in the implementation of the Tsunami Programme and in its extension to other areas, by providing experience, technology, and assistance in fund raising.

254 The chair then invited Mr. Salvano Briceno, Director of the United Nations Secretariat for the International Strategy for Disaster Reduction (ISDR) to address the Assembly.

255 Mr. Briceno emphasized that despite common efforts to build disaster resilient societies worldwide, the challenge is now greater and more urgent than ever. During the 1990s there was a ten-percent annual increase in the economic loss from disasters. Looking towards the future, some recent projections indicate that without aggressive disaster reduction interventions, by the year 2065, the economic cost of the impact of disasters will account for a significant proportion of the global GDP.

256 He reminded the Assembly that while disasters are as yet not entirely preventable, human action could play an important role in either increasing or decreasing vulnerability to natural hazards

and related environmental and technological phenomena. The experience of IDNDR led to a major conceptual shift in disaster management from disaster response to an emphasis on disaster reduction. The Secretariat for the ISDR seeks to bring a multi-disciplinary and multi-sectoral perspective by complementing and assisting the work of the various organizations and agencies in their areas of competence. In this perspective, the Inter-agency Task Force recently established and endorsed a Framework for Action for the Implementation of the Strategy. This document provides guidance to all entities engaged in disaster reduction for the elaboration of specific action plans.

257 The Inter-Agency Task Force includes a number of scientific organizations such as UNESCO, WMO and ICSU.

258 **The Assembly emphazised** the need to broaden the links with other organizations involved in disaster preparedness. In this regard **the Assembly welcomed** the readiness of WAPMERR to cooperate closely with the IOC and its ICG/ITSU. **The Assembly recommended** establishment of a plan of action for future collaboration.

259 **The Assembly noted** with satisfaction that the role of IOC, along with other key agencies linked to the Task Force, has been recognized recently in the report of the Secretary General of the United Nations to the General Assembly, which recommends that key UN Agencies should be associated with the Inter-Agency Task Force on a permanent basis.

260 Finally, Mr. Briceno emphazised that ISDR looks forward to working together with IOC on such important issues as El Niño, the Tsunami programme, the Storm Surge Proposal, and the work of the ACC subcommittee on Oceans and Coastal Areas.

261 **The Assembly was pleased** with the statement of the Representative of the International Strategy for Disaster Reduction Secretariat on the ISDR and the Secretariat activities in implementing the strategy, which will lead to more integrated disaster and risk reduction management. This includes the application of science and technology in the development of early warning systems, preventive measures, increased awareness of the danger, and public and private commitment, as well as the involvement of local communities.

262 **The Assembly appreciated** the intent of Mr. Briceno to strengthen the fruitful collaboration with the IOC, and **supported** his proposal to discuss at the earliest possible occasion a specific work plan for collaboration. The Executive Secretary was **instructed** to take steps to develop the plan.

263 **The Assembly considered** that it would be essential to establish a process for developing a strategy for the role of IOC in natural disaster reduction as a contribution to the International Strategy for Disaster Reduction. It was **agreed** that it would be desirable to clearly specify the needs and requirements of Member States in natural disaster preparedness and mitigation, and **the Assembly encouraged** the ICG/ITSU to bring this issue to the discussions at ITSU-XVIII.

264 **The Assembly acknowledged** the interest of the ISDR Secretariat in working closely with IOC in the context of the preparations for the WSSD, and strongly **endorsed** the cooperation between IOC and ISDR in developing a joint and coordinated position for the World Summit on Sustainable Development (WSSD) on natural disaster preparedness. **The Assembly noted** with appreciation the actions taken by the Executive Secretary in organizing consultation with ISDR to start the process. **The Assembly instructed** the Executive Secretary to continue these efforts in collaboration with other interested organizations and bodies in order to ensure that the natural disaster preparedness and mitigation issues are adequately addressed by the WSSD in Johannesburg in September 2002.

5.4 REGIONAL ACTIVITIES

5.4.1 Regional Policy Long-Term Strategy and Guidelines for the Establishment of Regional and Project Offices

265 The IOC Executive Secretary recalled that IOC has a long-standing policy of supporting the regional implementation of the Programme through the establishment of Regional Subsidiary Bodies *(Sub-Commissions and Regional Committees*). In addition, two Regional Project Offices have been established in Perth, Australia, and Mombasa, Kenya. Their role differs from the mandate of Sub-Commissions or Regional Committees. IOC Project Offices have specific terms of reference with a limited project focus and are the result of agreement between IOC and a host country. They have sunset clauses and are subject to regular evaluation. These mechanisms provide useful means to raise support for the IOC regions, allowing flexibility, and alleviating human and financial resources constraints from the Secretariat at headquarters. He emphasized that the regional project offices should not supersede the role of regional subsidiary bodies in their decision-making role and stressed the need to better define the role and nature of regional subsidiary bodies with regards to the Project Offices. The commitments of Member States to the regional subsidiary bodies as well as the role of Member States in implementing regional work plans should be addressed. Finally, he pointed out that UNESCO had engaged in a critical review of its decentralization policy, which is resulting in the establishment of multi-sectoral regional offices serving the needs of clusters of countries. As a means of maximizing resources, these UNESCO Regional Offices may provide opportunities for IOC to co-locate, within the same structures, IOC regional programme offices, serving the needs of IOC regional subsidiary bodies.

266 **The Assembly recognized** that the establishment of Regional Project Offices is an efficient mechanism to increase IOC's awareness of the needs of its Member States and to encourage commitments of governments to support these structures with a limited term.

267 **The Assembly expressed** its disappointment with the fact that a comprehensive set of Guidelines for the Establishment of Regional and Project Offices were not produced in time **and requested** that they be presented at the next ordinary session of the Executive Council.

5.4.2. IOC Regional Sub-Commission for the Western Pacific (WESTPAC)

268 The Chairman of the WESTPAC, Prof. Keisuke Taira reported on the implementation of the work plan of the WESTPAC Sub-Commission since the Fourth Session held in Seoul, Republic of Korea, March 1999. The work plan was approved by the IOC Assembly at its Twentieth Session.

269 He highlighted the progress in WESTPAC on four fronts, those being: GOOS related activities; IODE related activities; the science programme; and cooperation with other agencies. The North-east Asian Regional GOOS (NEAR-GOOS) has entered a second phase with the initiation of a strategic planning process. The South-east Asian Regional GOOS (SEA-GOOS) will start with implementation of a planning workshop to be held during the Fifth IOC/WESTPAC International Scientific Symposium in Seoul, Republic of Korea, 27-31 August 2001.

270 IODE activities were promoted in the region through a major regional conference in Malaysia in 1999 and the Gulf of Thailand Cooperative Study. WESTPAC co-sponsored or collaborated with the SEA START Regional Centre, UNESCO/CSI, the UNEP North-western Pacific Action Plan and SCOPE in a number of activities.

271 Several scientific workshops and activities were held related to harmful algal blooms (HAB), marine geology and nutrient fluxes. In this regard, Professor Taira also mentioned preparations for the aforementioned Fifth IOC/WESTPAC International Scientific Symposium.

272 **The Assembly expressed** its satisfaction with the progress achieved under WESTPAC. It **congratulated** the Chairperson for the report and **thanked** the Governments of Australia, Japan, Republic of Korea and United States of America, and PICES for financial support for specific activities and the Government of Thailand for hosting of, and secretarial support to the IOC/WESTPAC Secretariat.

273 Several Member States noted with satisfaction their participation in several IOC/WESTPAC

activities, including NEAR-GOOS, SEA-GOOS and WESTPAC/HAB. They commended the Government of the Republic of Korea for preparations of the Fifth IOC/WESTPAC International Scientific Symposium and looked forward to the participation of their scientists in this event.

274 The Delegates of Viet Nam and Indonesia expressed their interest in a programme on capacity building and institutional strengthening in the field of IODE.

275 The Delegate of the People's Republic of China suggested that IOC/WESTPAC should refocus its programme to become more in line with the global programme of activities of the IOC and further urged the IOC to ensure that the IOC/WESTPAC Secretariat functions more effectively.

276 **The Assembly further expressed** an urgent need for the IOC and its Member States to engage Pacific Island States more in the activities of IOC/WESTPAC.

5.4.3 IOC Sub-commission for the Caribbean and Adjacent Regions (IOCARIBE)

277 The Chairman informed the Assembly that, following an open recruitment exercise, Dr. Cesar Toro, a Norwegian citizen, formerly working in the private industry, had been appointed to head the IOCARIBE Secretariat as from 1 May 2001. He invited Dr. Toro to report on the implementation of the work-plan of the IOCARIBE since its Sixth Session, held in Costa Rica in April 1999.

278 Dr. Toro reported on the activities of IOCARIBE, referring to a consultative meeting with the Board of Officers, which was held in Miami from 12 to 14 June 2001. The meeting concluded that IOCARIBE VII should take place in February 2002 in Mexico. One of the main tasks to be achieved before IOCARIBE VII is the completion of the Regional Scientific Plan in accordance with Recommendation SC-IOCARIBE-VI.11. A workshop will be convened in October 2001 to draft this Plan.

279 The meeting stressed the need to implement a budget decentralisation policy, and to search for extra-budgetary financial support for experts to develop and execute Regional Programmes.

280 Since IOCARIBE VI, the ad hoc Advisory Group for IOCARIBE-GOOS had held three sessions devoted to the drafting of a strategic plan for GOOS in the IOCARIBE region, and the draft plans had been unveiled in a well-attended session of the Oceanology International Americas meeting in Miami on 5 April 2001.

281 In response to Resolution EC-XXXIII.5, the Meeting on the Intra-Americas Sea Tsunami Warning System was organized from 19-21 December 2000 in Mayaguez, Puerto Rico under the auspices of the Mayaguez Campus of the University of Puerto Rico. The meeting brought together Tsunami experts from the ICG/ITSU and the IOCARIBE Tsunami Group of Experts. The meeting formulated a plan of actions for the development of the revised version of the IAS Tsunami Warning System project proposal. The ITSU-XVIII meeting and workshop will take place in Cartagena, Colombia in October 2001.

282 The first IOCARIBE Course on Toxic Micro-algae and Toxin Analysis was held in cooperation with South America at the Centro de Investigaciones Biológicas del Noroeste, S.C. (CIBNOR), Mexico from 24 November to 10 December 2000. The objective of the course was to upgrade the participants' basic knowledge on toxic phytoplankton, including aspects of their taxonomy and distribution, the determination of phycotoxins, and the development of HAB monitoring programmes.

283 The second meeting of the IOCARIBE Working Group on HAB (IOCARIBE/ANCA), which was expected to be held in 2000, was postponed, due to IOC budget constraints. It is expected to have ANCA II during 2001.

284 The Humpback Whales Research (SC-IOCARIBE-VI.4) is in its second year of implementation, funded by United States. A workshop on this topic was held in Miami, Florida, USA in 9-11 January 2001, and led to development of a proposal for further research, which was presented to the International Whale Commission in July 2001.

285 The Central American Large Marine Ecosystem Project (SC-IOCARIBE-VI.5) is about to start. A GEF PDF-A Block Grant for this Project was approved, and a workshop is planned to be held in August 2001.

286 Improvements are required in Data and Information Management Exchange for the IOCARIBE and South American Regions. In order to define a concrete action plan to meet this need, a meeting that will involve Member States and the IODE will be convened in Ecuador in October 2001.

287 **The Assembly welcomed** Dr. Toro to the IOC Secretariat.

288 **The Assembly recognized** the continued efforts made by the Government of Colombia to support the Sub-Commission with financial contributions and by other means.

289 **The Assembly instructed** the Executive Secretary to consider the actions necessary to strengthen the work of the IOCARIBE Secretariat. **The Assembly also instructed** the Executive Secretary to explore mechanisms to coordinate the work of the Sub-Commission with that of the regional bodies of FAO and UNEP in the region, following the thrust of the discussions held in the UN General Assembly's 2nd Meeting on the Informal Consultative Process on Oceans.

5.4.4 Regional Committee for the Southern Ocean (IOCSOC)

290 Dr. Maria Hood of the Ocean Science Section introduced the Agenda item. She referred to Resolution EC-XXXIII.14 on the IOC Regional Committee for the Southern Ocean (IOCSOC), by which the Executive Council recognized that the responsibility for coordination of operational oceanographic activities in the Southern Ocean, which was one of the Terms of Reference for the IOCSOC, was now in effect subsumed within the Terms of Reference for GOOS and JCOMM. The Executive Council noted, however, that it could be important to continue the coordination of basic scientific research in the Southern Ocean at the intergovernmental level, which was the other main Term of Reference for the IOCSOC, and instructed the IOC Executive Secretary to investigate the interest of partner organizations for the convening of an ad hoc Working Group comprising representatives of IOC, SCOR, SCAR, and WMO, to consider suitable ways and means by which IOC would ensure the coordination of basic research in the Southern Ocean. Dr. Hood reminded the Assembly that the Executive Council had recommended that the IOCSOC be dissolved by the 21st Assembly.

291 Dr. Hood noted that as the first step in this process, the IOC Executive Secretary contacted the aforementioned organizations to determine their interest in convening a Group of Experts to coordinate basic research in the Southern Ocean, and all organizations responded positively. In addition, the IOC Executive Secretary contacted several key members of the research community specializing in the Southern Ocean, and found strong support for an interdisciplinary, international, intergovernmental coordinating mechanism for basic research in this region. It was proposed to establish an IOC/WMO/SCOR/SCAR Group of Experts on the Coordination of Oceanographic Research in the Southern Ocean.

292 **The Assembly agreed** that the initial investigation by the IOC Executive Secretary, carried out according to Resolution EC-XXXIII.14, showed sufficient interest by the representatives of IOC, SCOR, SCAR, and WMO and all those organizations belonging to the Antarctic Fresty system to convene the aforementioned Group of Experts, and **endorsed** the convening of this group to consider suitable ways and means by which the IOC would ensure partnership among interested organizations with a view to coordinating basic research in the Southern Ocean. **The Assembly agreed** that the formation of this Group of Experts, in which all major organizations with Southern Ocean research

interests were involved, effectively replaced the need for continuance of the IOCSOC, which was therefore dissolved.

5.4.5 Regional Committee for the Cooperative Investigation in the North and Central Western Indian Ocean (IOCINCWIO)

293 Mr. Mika Odido, Head of the IOCINCWIO Project Office, introduced this item. He provided a summary of activities implemented within the region during the period 2000-2001.

294 The first phase of the project for the development of the Ocean Data and Information Network for Africa (ODINAFRICA-I) in the IOCINCWIO region (ODINEA) was completed and a review workshop held prior to IODE-XVI in Lisbon, Portugal. The participants agreed that the ODINEA project has been able to achieve its objectives in the three years since its launch in 1997. Starting with just two National Oceanographic Data Centres (NODCs) in Kenya and South Africa at the start of the project, five new NODCs/DNAs have been established in Madagascar, Mauritius, Seychelles, Tanzania, and a subsidiary national oceanographic data centre in South Africa. The capacity of the data centres to collect, process, analyse, store and interpret various categories of data sets was strengthened through the provision of up-to-date computer equipment and peripherals, and software as well as training for data centre personnel. Email and Internet connections, provided through the project, have improved communication between the institutions, with others outside the region, and also improved access to international data and information sources. The connections have also enabled the centres to publicize their activities, services and products to a wider audience by developing web sites.

295 The training provided to the RECOSCIX-WIO staff has greatly increased the number of articles published by scientists from the region that are now included in the Aquatic Sciences and Fisheries Abstracts (ASFA) database. In this regard a regional ASFA input centre was established at the Kenya Marine and Fisheries Research Institute in Mombasa.

296 The implementation of the second phase of ODINAFRICA began in January 2001. The national data and information centres were provided with equipment and support for operational expenses and development of data and information centres as outlined during the planning workshop (IOC Workshop report 167). Thanks to the substantial training provided to the IOCINCWIO data centres between 1997 and 2000, IOCINCWIO data managers will be closely involved in the ODINAFRICA data management training programme in the IOCEA region (South-South cooperation). The ODINAFRICA Information Services Centre located at the Kenya Marine and Fisheries Research Institute, Mombasa, is providing information services for all ODINAFRICA partner countries and has developed a web site to act as an “African Ocean Portal” through which news, data and information on marine sciences in Africa can be accessed (http://odinafrica.org). This website, hosted on the IOC server, has proved very popular with many people visiting the site and downloading information from it (April 2000: 6,000 requests, May 2001: 13,000 requests).

297 Other activities in the IOCINCWIO region include: the establishment of the IOCINCWIO Project Office hosted by KMFRI in Mombasa, Kenya; the implementation of a shore-line monitoring pilot project; training courses for monitoring of marine micro algae, sea level data analysis, and remote sensing study of sea grass beds; establishment of UNESCO Chair in Marine Sciences and Oceanography at Eduardo Mondlane University, Maputo, Mozambique; provision of fellowships for short-term training courses and participation in scientific conferences; development of a Marine Species Database for Eastern Africa; publication of a guide for potentially toxic micro algae in Western Indian Ocean waters; publication of guidelines for assessment, monitoring and management of physical shoreline changes of the western Indian Ocean.

298 The development of monitoring/observation capacity remains a key area of concern. Other than sea level, few other oceanic parameters are monitored on a continuous basis in all the countries of the region, mainly due to lack of the necessary instrumentation. South Africa is the only country with a research vessel. This has made scientists in the region focus on estuaries and inshore waters. The

GOOS-Africa workshop planned for November 2001 will look at these issues, among others, and come up with proposals to address them.

299 Mr. Odido pointed out that the rate of implementation of the IOCINCWIO Work Plan has slowed down following the ending of the 10-year cooperation agreement with Sweden through which substantial extra budgetary resources were provided for implementation of activities in the period 1989-2000. The activities, that have not been implemented, include: marine pollution monitoring, marine debris study, upgrade of sea level network, and mapping of critical habitats.

300 The fifth session of IOCINCWIO is planned for the first quarter of 2002. In addition to developing the work plan for the region, this session will also be used to finalize the region's input to the Partnership Conference.

301 **The Assembly noted** with satisfaction the progress made in the development of the oceanographic data and information management in Africa in general, and in the IOCINCWIO region in particular, and **thanked** the donors, particularly the Government of Flanders, Belgium.

302 **The Assembly thanked** the Government of Kenya for its continued support to the ODINAFRICA Information Services Centre and the IOCINCWIO Project Office, and also **welcomed** the offer of South Africa to host the Marine Information Management course organized within the framework of ODINAFRICA.

303 **The Assembly thanked** the Government of Sweden for its long-term support provided to the IOCINCWIO region between 1989 and 2000, but **regretted** the termination of the support.

304 **The Assembly urged** Member States to provide substantial support through the IOC Trust Fund to maintain the momentum with regard to ocean science and services in the region.

305 **The Assembly urged** IOCINCWIO Member States and donors to ensure the success of the Partnership Conference through joint projects towards the sustainable management of the coastal areas in Africa.

5.4.6 Regional Committee for the Central Indian Ocean (IOCINDIO)

306 Mr. Julian Barbière, Technical Secretary for IOCINDIO introduced this item by reporting on the progress achieved in the implementation of IOCINDIO-III decisions since the previous session as well as future activity such as the MAMCOMP Regional Training Course, which will be organized in Abu Dhabi in October 2001 with the support of ROPME. He also reported on the establishment of an ad hoc working group on capacity building chaired by I.R. of Iran with the task to develop a capacity building strategy for the IOCINDIO region in consultation with TEMA. He referred to the support of the IOC Perth Regional Programme Office to assist the region in developing GOOS capacity building for IOCINDIO Member States.

307 Mr. William Erb reported on the role of the IOC Perth Regional Programme Office in the development of GOOS in the Indian Ocean region. The Perth Office in Australia is an activity in the Southern Hemisphere with a strong focus on Indian Ocean GOOS. It strives for greater collaboration with IOC Member States in developing GOOS by establishing linkages with marine research and operational organizations in the region, identifying user needs, creating awareness, undertaking capacity building and training, and assisting in finding resources.

308 Following the IOCINDIO-III Session in Teheran in 2000, the Perth Office funded the editing of IOCINDIO's Storm Surge Proposal for the Bay of Bengal, which is currently under review. In November 2000, eight scientific meetings were convened in Perth and coordinated by the Office. Over 800 participants were involved including those at the workshop on 'Sustained Observations of Climate in the Indian Ocean (SOCIO) chaired by Gary Meyers of CSIRO. SOCIO focused on Indian Ocean observing needs to support science and societal development. As a contribution to that meeting an

Indian Ocean Strategy paper was drafted suggesting a mechanism for organizing GOOS in the region and the paper is now posted on the GOOS web site.

309 The strategy paper remains a draft and the countries of the region must now take it further. To assist in this process the IOC Perth Office is planning a meeting in New Delhi during November 2001. It will be hosted by India's National Institute of Oceanography in Goa. The intent is to develop a group of advocates from within the region for Indian Ocean observing systems who can influence the scientific, operational and organizational planning. These must be people who understand the science and observational needs but who also control resources and are able to influence government policy.

310 The New Delhi meeting will be followed by a major workshop in early 2002, intended to implement the results of the SOCIO meeting. It will seek to put in place or improve upon Indian Ocean observing and data systems. The core group of advocates from the New Delhi meeting plus others will hopefully participate in this meeting to plan the observing systems. The workshop will be organized by the Ocean Observations Panel for Climate in cooperation with the IOC Perth Office and it will seek a large participation from within and outside the region.

311 **The Assembly noted** the progress achieved in the region, **endorsed** the Indian Ocean GOOS strategy paper and **welcomed** the organization of the proposed meetings.

312 **The Assembly acknowledged** the support provided by Australia through its Western Australian Department of Commerce and Trade and the Commonwealth Government's Bureau of Meteorology.

313 **The Assembly expressed** concern with the fact that both IOCINDIO Chairman and Vice-Chairman posts are now vacant and **noted** the readiness of the Islamic Republic of Iran to act as chairmanship of IOCINDIO for the remainder of the intersessional period. This was supported by the delegations of India and Pakistan, and **accepted** by the Assembly.

5.4.7 Regional Committee for the Central Eastern Atlantic (IOCEA)

314 Mr. Julius Wellens-Mensah, the Chairman of the IOC Regional Committee for the Central Eastern Atlantic (IOCEA) highlighted the results and subsequent activities implemented under the IOCEA-V work programme adopted by the Executive Council at its 33rd Session.

315 He recalled Resolutions EC-XXXIII.12 and EC-XXXIII.13, and reported that with the appointment of a staff member as permanent liaison for IOCEA at headquarters, communications between the Secretariat and IOCEA Member States have greatly improved.

316 As a follow-up to PACSICOM, Maputo, 1998 and the African Process, and through the joint efforts of IOC and ACOPS, a GEF Medium Size Project on Development and Protection of the Coastal and Marine Environment in sub-Saharan Africa has been launched. Five countries in the IOCEA together with six other African countries are participating in the project. It is expected that the output of this project will help the development of national and sub-regional project proposals to be presented at the Partnership Conference in South Africa in 2002 prior to the World Summit on Sustainable Development.

317 Other activities being implemented in response to Resolutions include:

(i) establishment of a regional Office for IOCEA in Lagos, Nigeria, and

(ii) organization of consultations with African regional institutions to foster and strengthen partnerships for the long-term development of oceanography and marine sciences in the IOCEA.

318 The Chairman of IOCEA then informed the Assembly of the development of the Second Phase of the ODINAFRICA programme. ODINAFRICA-II took off in January 2001. National workshops have been held in Benin, Cameroon and Togo culminating in the establishment of National

Ocean Data and Information Centres (NODCs) in those countries. Three NODCs have been identified in Guinea, Nigeria, and Morocco, bringing the number of NODCs formally established in the region to six. The ODINAFRICA-II project was presented at the Steering Committee meeting of the Gulf of Guinea LME Assessment Workshop in May 2001.

319 In the framework of the GLOSS/Sea Level Network in Africa, he reported on the offer of tide gauges from India and United Kingdom to the IOCEA region.

320 With regard to implementation of GOOS-Africa, he informed the Assembly that a project identification meeting for building up a regional Operational Observing and Monitoring systems will be held 19-23 November 2001 in Nairobi, Kenya. It is expected that the output of that meeting will be fed into the Partnership Conference in South Africa in September 2002.

321 Regarding the IOI Pacem in Maribus Conference (PIM) to be held in the IOCEA region, in Dakar, Senegal in November 2001, he stressed the need for strong cooperation between the IOI and the IOCEA Member States and the Secretariat in order to ensure that the meeting programme contributes to the implementation of the IOCEA work programme.

322 Mr. Wellens-Mensah recalled the need for developing countries, especially those in Africa, to implement Article 76 of the United Nations Convention on the Law of the Sea (UNCLOS) and requested the Executive Secretary to assist African States to develop their capacity in this context through the Trust Fund of the United Nations Division of the Law of the Sea (DOALOS), specifically earmarked for developing countries.

323 In conclusion, the IOCEA Chairman stated that, despite significant improvement in the level of implementation of activities in the region, some major activities are yet to be implemented due to lack of funds. He therefore appealed for additional resources for the full implementation of the major activities planned in the IOCEA work programme.

324 **The Assembly acknowledged** the efforts of the Executive Secretary to implement the IOCEA-V work programme, and **noted** with satisfaction the improvement of communications between the IOC Secretariat and the IOCEA Member States since the appointment of a staff member as permanent liaison for IOCEA at Headquarters.

325 **The Assembly instructed** the Executive Secretary to consult with African regional institutions in order to identify modalities for joint activities related to the priorities in the region. Among these priorities, the key areas suggested for cooperation include: coastal erosion, fisheries, pollution and capacity building.

326 **The Assembly urged** the IOC Executive Secretary to reinforce cooperation with the LME projects in the IOCEA region and to find ways and means for joint activities.

327 **The Assembly requested** the Executive Secretary to liaise with the IOI Executive Director to find ways on how the activities planned within the IOCEA-V work programme can be given due consideration in the IOI-PIM Conference programme, with the active involvement of the IOCEA Member States.

328 **The Assembly expressed** concern about the limited resources available for the implementation of the IOCEA-V work programme and **instructed** the Executive Secretary to make additional efforts to find the needed resources for a full implementation of the work programme and related activities.

329 **The Assembly welcomed** the generous offer of Nigeria to host the regional IOCEA Office and **urged** the Executive Secretary to make the requested arrangements for its quick establishment.

5.4.8 Black Sea

330 Mr. Eremeev, Chairman of the Black Sea Regional Committee (BSRC) presented the progress report of BSRC. He focused on the implementation of two pilot projects PP1 (Black Sea GOOS) and PP2 (Black Sea fluxes). The main achievements of these projects were summarized at the meeting of the BSRC officers held during the Second Black Sea GOOS Workshop in Poti, Georgia, in May 2001. The Chairman informed the Assembly that BSRC prepared a Memorandum of Understanding between Black Sea riparian countries on cooperation in the implementation of Black Sea GOOS, a Memorandum on partnerships established between Black Sea GOOS and EuroGOOS, and developed a strategic scientific plan of the projects PP1 and PP2 for 2002-2003, which were approved by the members of BSRC. He reviewed the present ecological situation in the basin, and identified gaps and needs for future Black Sea research and related services as well as the international framework for cooperation with other governmental and non-governmental organizations.

331 **The Assembly welcomed** progress achieved by the Black Sea Regional Committee and **invited** Member States to provide the necessary financial support for the implementation of its plan of actions.

332 **The Assembly noted** with satisfaction the established cooperation between Black Sea GOOS and EuroGOOS activities and **called on** Members States of the Black Sea region to join their efforts in implementing the Black Sea GOOS Memorandum of Understanding.

333 **The Assembly adopted** Resolution XXI-10.

5.4.9 Mediterranean

334 Dr. Umit Unluata, Head of the Ocean Science Section provided a progress report on the IOC activities in the Mediterranean since the 33rd Session of the Executive Council. He pointed out that IOC continues its efforts towards establishing an integrated approach to the development of research, operational oceanography and services across the Mediterranean, including MedGOOS, MedGLOSS, ICAM and data exchange under IODE. These efforts encompass a strong component in training, education and mutual assistance.

335 IOC organized, in partnership with the University of Nice-Sophia Antipolis, an advanced course on Mediterranean Integrated Coastal Area Management in Nice (France), from 4 to 15 September 2000. This bilingual French/English course was supported by the European Commission (DG-XII), UNESCO and the Provence-Alpes-Côte d'Azur Region, and also received the patronage of IGU (Oceans 21 Programme). Fifty one candidates from 20 countries participated. Twenty seven lecturers, mostly from the Mediterranean countries, acted as instructors.

336 Cooperation with the European Union continued in the implementation of the regional IOC/IODE GODAR project MEDAR/MEDATLAS. The project started in 1998, will be completed by the end of the year, by developing a comprehensive and quality checked databases of marine physical and biochemical variables. 27 IODE Data Centres participate in the project. The project will be concluded by the organization of a final workshop in Trieste, Italy, from 10 - 15 December 2001 and the publication of the observed data, gridded data, maps and related document on CD-ROM for further scientific, educational, industrial and governmental use. The Member States of the Mediterranean Sea are looking for future cooperation in marine data and information exchange through establishing an on-line approach to database and organizing networks for facilitating operational data exchange. The continuation of the project will help keep momentum gained during the implementation of the MEDAR/MEDATLAS Project, and will be based on the project results.

337 The MedGOOS community had met in Rabat in November 1999 to discuss the benefits of the implementation of GOOS in the Mediterranean region. This meeting led to the development of plans for a 'Mediterranean Network to Access and Upgrade Monitoring and Forecasting Activity in the Region' (MAMA). A proposal to the European Commission (EC) for funds for MAMA has been

successful, and the full level of funding should be announced shortly. In the meantime the EC-funded Mediterranean Forecasting System Pilot Project (MFSPP) has successfully come to the end of its first phase and funds for phase II are being sought. MedGLOSS makes a contribution to MedGOOS, and met in Haifa (15-17 May 2000) to agree on future developments to strengthen sea level observations in the region.

338 Dr. Unluata recalled that, at its 20th session, the Assembly instructed the IOC Executive Secretary to take appropriate actions for the development of a "Science Plan for the Unified Mediterranean Programme", in association with MedGOOS, GLOSS (MedGLOSS) and the Mediterranean ICAM (IOC-XX/3, Para. 337). This request is expected to be completed by December 2001.

339 The Assembly was informed that plans are underway for a follow-up in 2002 to the Conference on the Oceanography of the Eastern Mediterranean and the Black Seas held in Athens in February 1999.

340 **The Assembly expressed** its appreciation of the cooperation between the IODE Centres in meeting the MEDAR/MEDATLAS project objectives, acknowledged the role of France in providing leadership in the project implementation and thanked the European Union for financial support. **The Assembly supported** plans to make the results of the project widely available and to continue efforts in establishing a near-real time operational data and information exchange system in the region.

341 **The Assembly expressed** its appreciation for the support provided by the European Union, the University of Nice, IGU and Provence-Alpes-Côte d'Azur Region to the training course on ICAM.

342 **The Assembly noted** with thanks the information provided by the Delegate of Turkey that the second international conference on the Oceanography of the Eastern Mediterranean and the Black Seas will be held in Ankara during October 2002 and will be hosted by the Institute of Marine Sciences of the Middle East Technical University. **The Assembly was pleased to note** the support given by the Delegate of Greece for the planned conference and **encouraged** the Member States to contribute to the effort.

343 **The Assembly noted** with satisfaction the progress in IOC's efforts to develop an integrated framework for the Mediterranean ocean science, observing system and ocean services, and progress related to the development of coordinated ICAM activities, including capacity building in the region, and **reiterated** its support for the development of a unified Mediterranean science programme in accord with the decision of the 20th Assembly.

5.4.10 Caspian Sea

344 Dr. I. Oliounine, IOC Consultant, introduced this Agenda item referring to the environmental problems facing the Caspian Sea and to the actions taken by the IOC in supporting regional activities. He informed the Assembly about the cooperation between IOC and UNDP/GEF CEP in assisting a Russian research institute, Casp NIRX, to implement the Caspian Floating University project from June to September 2001 to make scientific studies in the Caspian Sea and its coastal zone. IOC is cooperating with the International Ocean Institute (IOI) in developing teaching programmes on marine disciplines for the universities of the region.

345 **The Assembly noted** the progress achieved in implementing decisions of the IOC Governing Bodies related to research, monitoring and protection of the Caspian Sea, and **welcomed** the cooperation with CEP, WMO and IOI in the region and readiness of the WAPMERR to contribute to these activities. **The Assembly concurred** with the view of the Great Rivers' 2001 Forum, held in Nijnii Novgorod, Russian Federation, from 15-18 May 2001, on the necessity of improving coordination between the international projects being implemented in the region, as well as the need to involve existing national capacities to the extent possible. **The Assembly noted** with interest information provided by the Delegate of the Russian Federation regarding the readiness of the

National Oil Company to participate and contribute to the IOC Caspian Sea activities, and recommended the Executive Secretary to explore further possible ways of cooperation.

346 The UNESCO demonstration project for the Volga-Caspian Basin was discussed under Agenda item 5.6.2.

5.4.11 Other Regions

347 Dr. I. Oliounine, IOC Consultant, introduced this Agenda item, referring to the progress achieved in the Persian Gulf and in the Baltic Sea.

348 In January 2001 a Memorandum of Understanding between IOC and ROPME was signed to strengthen cooperation on activities of common interest, taking into account the competence and the objectives for capacity building of ROPME Member States. IOC and ROPME decided on the modalities of cooperation for each activity in accordance with the agreed terms of reference.

349 ROPME has already begun preparing the organization of MAMCOMP-2001, to be hosted by the United Arab Emirates, and is willing to collaborate with IOC in convening the Coral Reef Monitoring Course in the ROPME Sea Area and in oceanographic data collection and exchange.

350 In the Baltic Sea area cooperation between the Member States has been strengthened through the activities of the IOC HAB Centre in Copenhagen, the Baltic Floating University cruises and workshops, and collaboration with the Helsinki Commission.

351 Prof. Ehlers (Germany), in his capacity as the Chairman of the Helsinki Commission, expressed interest in continuing cooperation especially within the GOOS Programme where the exchange of experiences in operational oceanography accumulated by Baltic countries could be very useful.

352 **The Assembly expressed** satisfaction with the results and **stressed** the need to continue efforts to involve the Baltic and Persian Gulf countries more deeply in IOC programme activities. An analysis of joint ROPME/IOC and IOC/Helsinki Commission activities should be undertaken to meet the needs of the countries of these regions.

5.4.12 The African Process

353 Mr. J. Barbière, Technical Secretary from the Ocean Science Section informed the Assembly of some activities, which are being implemented in Africa as follow-up actions to PACSICOM and the Cape Town Conference for the development and protection of coastal a marine environment in Sub-Saharan Africa.

354 PACSICOM and the Cape Town Conference resulted in strengthening a unified political awareness amongst African governments for the need to develop an integrated approach towards the development and preservation of coastal and marine resources. One of the main outputs of the Cape Town Conference was the recommendation to organize a Partnership Conference, which would bring African States and the donor community together with a view to seek and increase support for the development of project proposals for Sub-Saharan Africa.

355 The Advisory Committee on Protection of the Sea (ACOPS) launched a Global Environment Facility (GEF)-Medium Size Project (MSP) on “Development and Protection of the Coastal and marine environment in Sub-Saharan Africa” in September 2000. The project has the goal of helping sub-Saharan countries to achieve sustainable management of their coastal and marine environments and resources. The specific objectives of the project are to:

(i) identify areas, sites or living resources of regional and global significance that are suffering measurable degradation (i.e., hot-spots);

(ii) determine the sources/causes of this degradation and the associated scales of impact (national, regional and global) to provide a basis for calculating incremental costs at regional and extra-regional scales;

(iii) identify areas, sites and resources of regional significance that, although not currently degraded, are threatened with future degradation either because of the sensitivity of the system/body or the magnitude of the activity posing the threat;

(iv) determine, through causal chain analysis, the fundamental socio-economic causes of the damage or threat posed; and design a programme of interventions addressing problems of regional priority that may be presented to the Partnership Conference.

356 A Preparatory Committee for the organization of the Partnership Conference was subsequently established, composed of Côte d'Ivoire, Ghana, Kenya, Mozambique, Nigeria, Seychelles, and South Africa as well as international organizations such as UNEP, UNESCO-IOC, IUCN, the Organization of African Unity (OAU) and the African Ministerial Conference on Environment (AMCEN). ACOPS was designated the facilitator of this process and was assigned the task of developing a GEF project proposal. UNESCO, through its IOC, was invited to contribute as a partner in the African Process and to play a key role in the implementation of the project. IOC/UNESCO, in consultation with ACOPS, is also coordinating the work of the national teams.

357 The Global Environment Facility is providing the core funding, with co-financing from ACOPS, IOC-UNESCO, IUCN, UNEP/GPA, United Kingdom, United States of America, and the participating countries from Africa.

358 This project is also contributing to the Global International Water Assessment, as the project is using a similar methodology for the root cause analysis. The activities within the project are also a concrete example of implementation of the Abidjan and Nairobi Conventions.

359 The Technical Secretary informed the Assembly of the forthcoming meeting of the Working Group on Integrated Problem Analysis (WGIPA) that will meet in September 2001, in South Africa, and provided an overview on the advancement of the second phase of this GEF project, which deals with the development of regional and national programmes of intervention, as well as the preparation of the Partnership Conference.

360 **The Assembly noted** with satisfaction the progress achieved in developing a plan of action that responds to the needs of African countries, and in particular to the priorities identified by the PACSICOM Conference.

361 **The Assembly expressed** the need to establish an appropriate mechanism for involving in the Preparatory Process for the Partnership Conference those African countries that are not currently participating in the implementation of the GEF-MSP project.

362 **The Assembly welcomed** the increased level of activity of the IOC in Africa and the close cooperation established between IOC and in particular, ACOPS and UNEP, and **invited** other interested organizations and donor agencies to play an active role at an early stage in the preparation of project proposals to be tabled at the Partnership Conference.

363 **The Assembly congratulated** the IOC Executive Secretary and **instructed** him to continue with these efforts, and to promote and involve IOC programmes as much as possible in the development of national and regional plans of intervention, as well as to present a report to the next Executive Council on the implementation of Resolutions XX-20, XX-21 and EC-XXXIII.13.

364 In response to the intervention of some Member States highlighting the need for a more balanced geographical representation of African experts in the staff of the Secretariat, the IOC Executive Secretary explained that this issue was high on his agenda and that IOC was following the

UNESCO human resources policies and is applying the competitive recruitment principle to all new posts, taking into account the need for a balanced geographical distribution as a priority.

365 The Executive Secretary expressed its intention to strengthen communication with African Member States, and in particular the UNESCO Permanent Delegations, with a view to better inform them on the actions carried out by IOC in this high priority area.

366 **The Assembly addopted** Resolution XXI-11.

5.5 CAPACITY BUILDING IN MARINE SCIENCES, SERVICES AND OBSERVATIONS: DEVELOPMENT OF A MAJOR ASSISTANCE PROGRAMME

367 The 4th Vice-Chairperson of IOC, Mr. T. Ajayi (Nigeria), presented the conclusions and recommendations of the Sessional Working Group for TEMA. Mr. Victor Scarabino, from the Secretariat, provided information on TEMA related activities carried out during 2000 up to June 2001. The Head of the IOC Regional Programme Office in Perth, Mr. W. Erb, informed the Assembly of SEREAD (Scientific Educational Resources and Experience Associated with Deployment of Argo Floats in the Pacific), which is a capacity-building project associated with PacificGOOS and Argo. Its objective is to use the Internet to deliver educational material connected to the curriculum of secondary schools in the South Pacific. Schools will be involved in tracking Argo floats as a means of educating them about the importance of the oceans and ocean observations. SEREAD is coordinated by the International Ocean Institute at the University of the South Pacific and has several sponsors.

368 The IOC Executive Secretary noted that TEMA efforts are increasingly being focused so as to further enhance the Member States' investment in IOC programmes. He explained that because of shortage of staff it has not yet been possible to carry out actions recommended by the 20th session of the Assembly. He also confirmed that a P5 post for TEMA has been established in the 31 C/5.

369 **The Assembly noted** with concern the low visibility of TEMA in Member States and the lack of dedicated documentation on TEMA matters for the Assembly. Member States emphasized the need for written information well in advance of the meetings of IOC governing bodies, to facilitate their analysis and evaluation at the national level.

370 **The Assembly** unanimously **supported** the decision to establish a P5 professional post for TEMA and **urged** the Secretariat to expedite actions.

371 The continuation of the Floating University programme by IOC was supported by several delegations and the potential extension of its coverage to other regions, notably to the Far East and to the South-western Atlantic (Brazil), was advocated.

372 Member States expressed interest in the SEREAD programme, urging the IOC to consider its extension to other regions, notably the East Pacific and the Indian Ocean.

373 Some countries asked for longer term training programmes, for assistance in establishing Internet access, and reinforcement of the South-South cooperation.

374 Canada elaborated on the lessons learnt during its own experience on capacity-building in developing countries, and suggested that IOC explore the possibility of discharging the capacity-building component of TEMA to competent institutions in Member States (universities, technical institutions), or to competent international NGOs with the appropriate global institutional structure, maintaining policy and programme leadership within IOC.

375 The Delegate of Pakistan advocated for the need to identify national TEMA focal points within the Member States in order to facilitate the visibility of IOC in Member States.

376 **The Assembly thanked** Brazil, Ecuador, India, Japan, Korea, Malaysia, and Venezuela for their offer to provide access for other Member States to their national facilities in the effort to facilitate South-South/North-South cooperation.

5.6 COOPERATION WITH THE ICSPRO AGENCIES AND OTHER ORGANIZATIONS

5.6.1 Cooperation with ICSPRO Agencies and other UN Organizations

377 The IOC Executive Secretary briefed the Assembly on the outcomes of the 10th and 11th sessions of the ACC Subcommittee on Oceans and Coastal Areas (SOCA), which were held on 9-11 January and 3-4 May 2001. The information provided included the progress of the development of the United Nations Atlas of the Oceans; IOC's contributions to the reporting and participation by SOCA in the 10-year review and appraisal of the implementation of Agenda 21 (Rio+10); results of the review of the joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) and the future of SOCA in the light of review of the ACC machinery.

378 As regards the future of SOCA, the Executive Secretary pointed out that ACC at its October 2000 session had agreed to establish two new High-Level Committees on Programmes (HLCP) and on Management with the immediate task of reviewing the functioning of all ACC subsidiary bodies. The review is to be "zero-based", i.e., looking at what needs to be done rather than what is being done at present.

379 The HLCP requested SOCA to consider and reflect how the conclusions and approaches advocated by the HLCP could best be applied in its area of work, so as to enable the Committee to complete its review taking into due account different situations and requirements in each area.

380 SOCA welcomed the conclusions and approaches advocated by the HLCP, noting that international coordination and cooperation is of vital importance in addressing all aspects of oceans and coastal areas. The cooperation between the relevant parts of the United Nations Secretariat for the purposes of ensuring better coordination of United Nations' work on oceans and seas is thus considered imperative. The response of SOCA will be considered by the HLCP at its meeting scheduled for July 2001.

381 At its 11th Session SOCA was informed by the representative of the United Nations Environment Programme (UNEP) of decision 21/13 adopted by the Governing Council at its 21st Session on the global assessment of the marine environment. Decision GC.21/13 underlines the consensus of the Governing Council on the need for examining the feasibility of establishing a regular process for the assessment of the state of the marine environment with active involvement by governments and regional agreements. Government involvement on a continuous basis in the ongoing assessment and monitoring process was perceived as critically important. Reference was made to the success of the Intergovernmental Panel on Climate Change (IPCC) where governments are involved both in the formulation of policy relevant questions and in the review of the conclusions.

382 The decision emphasizes the need to build on existing assessment processes such as the Global Ocean Observing System (GOOS), the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), the Global International Water Assessment (GIWA), the United Nations Atlas of the Oceans and the work programme of the Jakarta Mandate on Marine and Coastal Biological Diversity of the Convention on Biological Diversity, among others.

383 The GC decision 21/13 has been distributed to the appropriate UN agencies and the secretariats of CBD and the regional seas programmes with a request for their views and suggestions about the feasibility of establishing a regular process for the assessment of the state of the marine environment. A meeting between UN agencies, the secretariats of CBD, the regional seas programmes and some governments is planned to be held in Iceland in September 2001 to further discuss the issue. A paper will then be prepared and distributed to the appropriate UN agencies and the secretariats of CBD and the regional seas programmes, summarizing the views of governments and intergovernmental and

international agencies and bodies on the feasibility of establishing a regular process for the assessment of the state of the marine environment, with a request for further views and suggestions.

384 The Subcommittee expressed its willingness to participate in the consultative process for conducting a feasibility study related to the establishment of an on-going regular assessment of the state of the marine environment. They stressed the need for participation of governments in the consultative process.

385 **The Assembly noted** the information provided and **reaffirmed** the need for a sustained inter-agency mechanism for cooperation and coordination in matters concerning oceans and coastal areas, which supplant the work in this area centralized by ACC-SOCA. **The Assembly expressed** its satisfaction with the approach taken by SOCA in relation to the consultative processes for conducting a feasibility study that is concerned with the establishment of a regular process for the assessment of the state of the marine environment with active involvement by governments and regional agreements.

5.6.2 Multidisciplinary Programmes in UNESCO

386 Tthe IOC Executive Secretary introduced this Agenda item and briefed the Assembly on the progression of UNESCO towards greater interdisciplinarity, and on the development and selection for the next UNESCO Programme and Budget, 2002 – 2003 (draft 31 C/5) of interdisciplinary and inter-sectoral cooperative projects on the two cross-cutting themes of "poverty eradication" and "information and communication technologies and the construction of a knowledge society".

387 **The Assembly welcomed** this initiative and **pointed out** that IOC was among pioneers in introducing interdisciplinarity in the formulation of project proposals, e.g. on storm surges jointly with the International Hydrological Programme (IHP) and the World Meteorological Organization (WMO), or on the tsunami programme jointly with the International Geosphere-Biosphere Programme (IGBP) and the International Union of Geodesy and Geophysics (IUGG).

388 **The Assembly noted** that the success of such joint projects depends on a common framework of coordination and monitoring of the implementation as well as to a large extent on the good will of Member States concerned with the success of the project. In this regard, **the Assembly expressed** concern at the little progress made in launching the storm surges proposal for the Northern Part of the Indian Ocean. The Representative of WMO reiterated the interest of his organization in cooperating with IOC in implementing the project and referred to the decision of the 53rd Session of the WMO Executive Council appealing to WMO Members to approve the project and forward it to funding agencies and donor countries.

389 **The Assembly acknowledged** the efforts of the pre-project manager in promoting the project and searching for funds, **thanked** India for its readiness to provide necessary facilities for the project office when established and for submitting the project to the Asian Development Bank, and **urged** Member States to give a high priority to the project in national planning and submit it to the funding agencies for support.

390 The Representative of IHP expressed full support of his programme to the project and readiness to cooperate in its implementation.

391 The Representative of the WAPMERR proposed the assistance of his organization in developing a telecommunication system to collect and exchange data, in developing a monitoring system equipped with up-to-date observation equipment, in improving the existing forecasting technologies including GS and 3-D models, and in assisting in the efforts to obtain sponsorship and funds. He pointed out that the Agency possesses effective modern information systems and is ready to make one of them, WAVELET, available for the storm surges proposal. This system provides the decision-making support for prevention, mitigation and emergency response to natural and technological disasters.

392 **The Assembly acknowledged** the good will of WAPMERR in supporting the project, and **expressed** a strong belief that the Storm Surges project would be implemented through joint and well-coordinated efforts of IOC, WMO, IHP of UNESCO and such organizations as WAPMERR and ISDR.

393 Finally, the IOC Executive Secretary informed the Assembly of the progress achieved by UNESCO in the development of a demonstration project for the Volga-Caspian Basin, within which IOC will be responsible for conducting the study of the Caspian Sea by applying an integrated well-coordinated approach. **The Assembly recognized** the leading role of the IOC within UNESCO in the Caspian Sea research and protection, and **noted** that IOC will benefit of participating with the other four Science Programmes of UNESCO formulation and implementation of the project. **The Assembly emphasized** that success in developing the project will depend above all on political will and resources to support the initiative. **The Assembly noted** in this respect that the planning process would require extra-budgetary resources as well as regular fund allocations.

394 In order to attract attention to the environmental problems facing the Caspian Sea, the Delegate of the Russian Federation suggested requesting UNESCO to declare 2002 the year of the Caspian Sea, and expressed readiness to organize seminars in the region under the title “Save a unique sea of the planet for future generations”.

5.6.3 Cooperation with the European Union

395 The IOC Executive Secretary introduced the subject and informed the Assembly of the long-standing cooperation between the IOC and European Union Marine Science and Technology Programme (MAST) in the areas of climate change, coastal area management, pollution studies, ocean monitoring and data collection and management. He then focused attention of the Assembly on the results of the IOC/European Union (MAST) Consultative meeting, which took place in Paris in March 2001. This meeting reviewed the progress achieved in implementing joint activities and identified areas of future cooperation.

396 The Chair then invited Mr. Patermann, Director RTD actions environment, DG-XII, European Commission to present information on the European Union interests in implementing and supporting marine research activities and to recommend ways on facilitating the IOC/European Union (MAST) cooperation.

397 **The Assembly acknowledged** with thanks the report provided by Mr. Patermann and **expressed** a strong belief that mutually beneficial cooperation between IOC and the European Union will be strengthened, specially through extending existing areas of cooperation to the regional activities. **The Assembly expressed** it that the European Union gives more attention to marine activities.

398 In answering the questions raised by the Member States, Mr. Patermann pointed that the Directorate General on Science of the European Union is investing in research that will be implanted through the Centres of excellence, and not on infrastructure development. He thanked the Member States and reiterated the readiness of the EU (MAST) to cooperate as IOC is considered as an important partner in many initiatives.

399 **The Assembly instructed** the Executive Secretary to continue regular consultations with the Director-General of the EU-MAST and keep the Member States regularly informed of the progress in the IOC/EU cooperation.

5.6.4 Cooperation with ICSU

400 Dr. Umit Unluata, Head of the Ocean Science Section, introduced this agenda item and briefed the Assembly on the status of cooperation with ICSU. He recalled that strong cooperation exists between ICSU and IOC in several global research programmes such as WCRP involving

CLIVAR, GOOS and GCOS, SCOPE and IGBP involving GLOBEC and LOICZ. IOC and the Scientific Committee for Oceanic Research (SCOR) are co-sponsors of GLOBEC and GEOHAB. IOC and ICSU also cooperate in the WDCs Panel. The projects implemented jointly include GODAR, GOSIC, and data policy.

401 Dr. Unluata stressed that the cooperation with ICSU/SCOR and IOC was strengthened in 2000-2001 through the co-sponsorship of SCOR/IOC CO_2 Panel, the COASTS Conference and the new SCOR/IOC Working Group 119 on 'Quantitative Ecosystem Indicators for Fisheries Management' as well as the involvement of IOC in JGOFS/LOICZ/IOC Continental Margins Task Team, the establishment of GLOBEC/IOC ad hoc Study Group on 'Use of Environmental Indices in the Management of Pelagic Fish Populations' and the planning for a GLOBEC/IOC/SPACC Synthesis and Training Office at IOC.

402 IOC, SCOR and SCOPE continue their collaboration on the production of a book ('Oceans 2020: Science for Future Needs') summarizing the results of the Potsdam Workshop of 2-8 October 1999, the publication of which will be made in early 2002.

403 Dr. Ed Urban, the Executive Director of SCOR, informed the Assembly about the recent activities of SCOR. He provided background information on a recently approved research programme called 'The Surface Ocean-Lower Atmosphere Study' (SOLAS) that is concerned with the quantitative understanding of the key biogeochemical-physical interactions and feedbacks between the ocean and the atmosphere, and how this coupled system affects and is affected by climate and environmental change. SCOR seeks IOC's support and involvement with SOLAS. SCOR is assisting the International Geosphere-Biosphere Programme (IGBP) in developing the ocean component of IGBP's Phase II. A planning committee has been formed for identifying the future of ocean research in Earth System Science. IOC is invited to contribute to the work of the planning committee. Dr. Urban provided further information on various capacity building activities of SCOR, including the development of regional graduate schools of oceanography and marine environmental sciences, in which activity IOC also participates.

404 **The Assembly was pleased to note** the enhanced cooperation between IOC and ICSU and **endorsed** the new developments concerning joint activities, in particular the SOLAS Research Programme and the work in identifying future ocean research in ESS.

5.6.5 Cooperation with the International Ocean Institute (IOI)

405 Dr. Gunnar Kullenberg, IOI Executive Director briefed the Assembly on the goals of the IOI and its activities in the areas of promoting education, training and research in enhancing the peaceful uses of ocean space and its resources, in safeguarding the ocean environment and its ecosystems, and in building mechanisms for sharing information and experiences on ocean policy and governance. **The Assembly noted** the cooperation between IOC and IOI during the last few years in such programmes as ICAM, TEMA, UNCLOS and regional activities in Asia, Africa, the Mediterranean and the Caribbean. **The Assembly expressed** satisfaction that those cooperative activities were helping to establish sustainable mechanisms for tackling social, environmental and economic issues in an integrated fashion.

406 **The Assembly considered** that the creation of the University Network project, which was presented by the IOI Executive Director, might become an important contribution to the TEMA and might be used for joint implementation of parts of TEMA activities. The University Network will help to close the gap existing today in education on ocean policy and governance.

407 **The Assembly expressed** satisfaction with the plans to have the University Network interlinked with the existing networks operated by other international and regional organizations, including IOC and COSTED. It recommended that a continuing and stable exchange of information between networks be organized and that bonds of cooperation and collaboration be established between IOI, IOC and interested regional organizations. **The Assembly welcomed** the readiness of

the universities of Maghreb countries to cooperate with IOC and IOI in strengthening training and capacity-building activities on ocean policy. **The Assembly urged** Member States to support the IOC and IOI networks, noting that robust backbone networks can provide significant benefits in meeting many different objectives. **The Assembly instructed** the Executive Secretary to consider ways of cooperation with IOI in facilitating regional network development in ocean policy and governance.

408 **The Assembly commented** on the interest of Ecuador, the I.R. of Iran and Portugal in establishing IOI Operational Centres and contributing to strengthening IOC and IOI cooperation in ocean policy.

409 **The Assembly welcomed** the progress achieved in the organization of the *Pacem in Maribus* Conference 2001 in Dakar, Senegal, organized by IOI. It recalled that *Pacem in Maribus* is an annual conference and 28 have been organized since the IOI was created. Conferences have become respected as important events proposing policy options in ocean governance and in elucidating threats to the world's ocean as well as highlighting the potential of ocean resources to sustain humankind.

410 **The Assembly recognized** that *Pacem in Maribus* (PIM) – 2001 will be helpful in strengthening the understanding of the importance of the oceans, the coasts and their resources for achieving sustainable development and benefits for African peoples.

411 **The Assembly agreed** that the IOC participation in PIM – 2001 and related activities will help to bring the IOC purpose, areas and policy to a wide African community and will be an important contribution to the UNESCO 'Priority Africa' programme. **The Assembly called on** the Member States from respective IOC Regional Bodies and on the IOC contact points in African countries to establish contacts with the Conference organizers and provide the support required. It also **recommended** that the deliberations and conclusions of the Conference be brought to the attention of the Conference on 'Oceans and Coasts at Rio + 10' to be held in December 2001 in Paris as a contribution to the World Summit Sustainable Development, and **noted** that IOI is participating in and supporting that Conference.

412 **The Assembly took note** of the participation of IOI in the UN Open-ended Informal Consultative process (see Agenda item 5.6.1) and **adopted** Resolution XXI-12.

5.6.6 Cooperation with other Organizations

413 Dr. Hyung Tack Huh, Chairman of the North Pacific Marine Science Organization (PICES), briefed the Assembly on PICES involvement in the areas related to IOC Programmes. By working closely with other international organizations, including IOC, PICES provides syntheses of regional research issues and contributes to global research programmes such as GLOBEC, CLIVAR, GEOHAB, as well as to activities related to observation systems such as GCOS, GOOS, and Argo. PICES has led the way quite successfully in revealing the linkages between the North Pacific climate variations and fluctuations in marine productivity. PICES will serve as the regional focal point for integrating North Pacific climate related research, and will continue to stimulate, integrate and coordinate national and regional efforts in key research areas. To meet this challenge, PICES will strive to enhance and strengthen its cooperation with IOC.

414 Dr. Scott Parsons, past President of the International Council for Exploration of the Sea (ICES), informed the Assembly about the ICES activities that are pertinent to those of IOC. Attention was drawn to the existing Memorandum of Understanding between ICES and IOC that should be used to strengthen and increase the existing collaboration between the two organizations.

415 The delegate of India invited the Assembly to consider the possibility of contributing to the project "Planet Earth" being developed by IUGS and IUGG to commemorate 50 years of International Geophysical collaboration

416 **The Assembly welcomed** the calls for increased and enhanced cooperation between IOC and PICES and ICES, as well as IUGG and other international organizations, such as the Permanent Commission for the South Pacific (CPPS), and **requested** the Executive Secretary to take appropriate measures to this effect.

6. ADMINISTRATION AND MANAGEMENT

6.1 PROGRAMME AND BUDGET

417 The First Vice-Chair IOC, Dr. D. Pugh (UK) introduced the Agenda item speaking as the Chairperson of the Sessional Working Group on Programme and Budget. The Group had benefited from full and open discussions on the Programme and Budget for the biennium 2002-2003, with the Executive Secretary and his staff. In these discussions several points were made for consideration in preparing and presenting future documents. These included: budget and staff trend analyses at a level of aggregation which allows comparisons; a general annex on terminology; separation of Regions and TEMA into individual line items; showing where multiple funding for staff posts is provided from; analysis of the balance between UNESCO permanent staff and the appointment of consultants; showing 'in-kind' contributions as an additional column; and breaking out the financial allocation for JCOMM separate from GOOS allocations.

418 Concerning the proposals for the Programme and Budget for 2002-2003, following consultations with the Legal Advisor to UNESCO, the Group had worked to implement Article 1 (2) of the new Statutes. The encouraging budget allocation proposed by IOC, and its designation as a flagship of UNESCO in the 31 C/4, were acknowledged. Nevertheless, this restores the IOC Regular Programme allocation only to the level it had four years ago, whereas the responsibilities and expectations had substantially increased. In this context, the recent Consultative Process meeting in New York had emphasized the important and growing role of IOC in very strong terms. There remains uncertainty about achieving the anticipated level of Trust Fund contributions of US$6,5 million, unless appropriate mechanisms are in place to undertake new fund-raising initiatives. The Assembly should authorize the Executive Council, scheduled for June 2002, to make necessary adjustments to the 2002-2003 Programme and Budget. That Executive Council should also agree on the initial Draft Programme and Budget lines for the biennium 2004-2005 (32 C/5), as an early input to the preparatory process.

419 Finally, Dr. Pugh reminded the Assembly that, concerning the financial implications of Drafted Resolutions, it will be necessary to distinguish between resources needed which are already included in the budget and those additional resources which must be sought through extrabudgetary sources.

420 In the ensuing discussion **the Assembly expressed** its appreciation of the work of the Sessional Group on Programme and Budget, and in particular of the active role played by its Chairperson Dr. David Pugh. **The Assembly noted** the excellent quality of documents prepared by the Secretariat, as well as the efficiency demonstrated by the Executive Secretary and his staff in responding to questions and concerns raised during the Group's discussions**. The Assembly supported** the suggestions made during the Group's discussions with regard to future reporting and **approved** the proposed Draft Programme and Budget 2002-2003 as contained in Document IOC-XXI/2 Annex 2.

421 **The Assembly adopted** Resolution XXI-13.

6.2 IOC PUBLIC AWARENESS AND PROMOTION EFFORTS

422 Mr. Peter Pissierssens, Head of the Ocean Services Section, introduced this Agenda item. He reported that during the intersessional period (July 1999 - June 2001), overcoming staff shortages has been a continuing issue in the domain of IOC public awareness and promotion activities. To meet the

increasing challenges of the Internet medium the IOC developed one of the first websites of UNESCO in 1995. The number and content of IOC-based web sites grew rapidly, as did the site visits. The International Year of the Ocean (IYO) web site oriented towards the general public was particularly successful, representing over 20% of the requests to the site in 1998/1999. During the period July 1999 - May 2001 the number of requests to the IOC web sites totalled 2,918,759. Of this total, 30% visited the main IOC site, 26% the IODE sites, 14% the GOOS sites and 30% the Ocean Sciences sites.

423 As from 2000, IOC cooperated with six other UN agencies (UN, FAO, IMO, WMO, UNEP and IAEA), and other partners (USA's NOAA and Russia's HDNO), in a project financed by UNFIP to develop the "UN Atlas of the Oceans". The Atlas is essentially an information system on the oceans and coastal areas, designed for use by (i) policy-makers who need to become familiar with ocean issues, (ii) scientists, students, and resource managers who need access to the underlying databases and approaches to sustainability, and (iii) the general public interested in these topics.

424 The Atlas also intends to provide the ocean industry and stakeholders with accessible and pertinent information available in UN databases on matters relevant for sustainable development of the oceans. IOC has furnished basic documents and links corresponding to several of the Atlas areas. These include ocean observing and monitoring, international oceanographic data and information exchange, living marine resources, coral reef monitoring, harmful algal blooms, integrated coastal area management, tsunami warnings, ocean mapping, and training and education. The current Atlas project should be completed by the end of 2001, although the Atlas itself is to be an ongoing activity, with regular updating by the participating agencies.

425 Between 1995 and 2000 the IOC web presence has been developed and maintained by the IOC's Ocean Services Section. Due to the departure of two full-time professional staff from that section during the same period, responsibility for web-based information services has gradually been decentralized to sections, programmes and projects. This has resulted in a total of 23 IOC sites.

426 Due to lack of a specialized staff the decentralization of the development and maintenance is uneven between the sites, with some degree of duplication and, most importantly, a lack of a common cooperative look and strategy. Some programmes and projects are poorly covered or not at all. As far as the IOC main web site is concerned, only the IOC homepage and newsroom are maintained regularly since 2000. It was noted with regret that no Member States have come forward offering either funds or staff to reinforce IOC's web-based information services, as suggested in the Nineteenth Session of the IOC Assembly.

427 With regard to printed services UNESCO/IOC published in 2000, with the additional support of external co-sponsors, the third volume in the IOC Ocean Forum series: *El Niño – Fact and Fiction.* The objectives of this publication (available in French, English and Spanish) are not only to explain, to the non-specialist and in reasonably plain language, the El Niño/La Niña phenomena and clarify their natures, but also to dispel certain misconceptions that are often evident among the non-specialist community as to their impacts on climate.

428 As part of the IOC publication series a total of 72 publications were produced during the period June 1999 to May 2001.

429 With regard to promotion activities a start was made towards an IOC brochure, but this product was not finalized. Instead, several programmes and projects prepared promotional leaflets or brochures.

430 **The Assembly expressed** its appreciation for the quality of the IOC web presence but **called for** the development of a more intuitive and friendly interface. **The Assembly regretted** that the sites were mostly available in English only and **called on** the Secretariat as well as Member States to consider ways and means to make the sites available in other languages.

431 **The Assembly stressed** the need for high quality and user-oriented public awareness and promotion services and **called for** the development of an information strategy, **noting** especially the upcoming 'World Summit on Sustainable Development'. **The Assembly recommended** that an intersessional working group should work on this matter, by email. **The Assembly invited** Member States to identify knowledgeable experts to participate in the discussions of the Group.

432 **The Assembly recommended** that the Internet should be the prime vehicle for dissemination of information by the IOC, reserving printed publications for specific cases.

433 Noting that Internet access is still a limiting factor in many developing countries, **the Assembly requested** the Secretariat to ensure that efforts should be made, possibly through cooperation with other UNESCO initiatives related to 'bridging the digital divide', to bring Internet access to developing countries, or to identify other ways to disseminate electronic products, such as CD-ROMs, to the target audiences.

434 **The Assembly stressed** the need to develop its information and public awareness products for the broadest audience possible, including decision makers, resource managers, scientists, academics and the general public including children. **The Assembly invited** Member States to provide the Secretariat with relevant products developed at the national level for inclusion in IOC web sites or related products.

435 **The Assembly welcomed** the development of regional portals, acknowledging these as an effective and rapid-response mechanism for dissemination of local information directly relevant to Member States at the grass-root, national and regional level and in the relevant languages.

436 **The Assembly welcomed** the participation of the IOC in the UN Ocean Atlas, acknowledging it as an excellent tool for the dissemination of information to decision makers, resource managers and the general public, and **recommended** the continued and active involvement of the IOC in this undertaking.

437 **The Assembly noted** with concern the lack of staff and other resources specifically dedicated to this service, and **urged** Member States to provide support to the IOC Trust Fund, to consider secondment of staff or to provide in-kind assistance to the Secretariat to ensure the continuity and quality of the product.

6.3 ELECTIONS OF THE OFFICERS OF THE COMMISSION AND MEMBERS OF THE EXECUTIVE COUNCIL

438 **The Assembly noted** the report by the Chairman of the Nominations Committee, which indicated that all the nomination forms were valid. They were forwarded to the Assembly as document IOC-XXI/NOM-WP.4.

6.3.1 Election of the Chairperson of the Commission

439 **The Assembly noted** that there was only one candidate, Professor Su Jilan from China, for the position of Chairperson, who therefore was elected by acclamation.

6.3.2 Election of the Vice-chairpersons of the Commission

440 **The Assembly noted** that there was only one candidate from within each of the five electoral groups for the positions of Vice-chairpersons, who therefore were elected by acclamation.

441 The newly elected Vice-chairpersons of the Commission are:

Dr. David Pugh	United Kingdom
Prof. Sergei Khodkin	Russian Federation

Admiral Marcos Leal	Brazil
Dr. K. Radhakrishnan	India
Dr. Thomas O. Ajayi	Nigeria

6.3.3 Election of the Members of the Executive Council

442 **The Assembly noted** that there were twelve candidates to the remaining ten Member State seats on the Executive Council for electoral group I (ref.: rule 18.2 of the newly adopted rules of procedure). A vote had therefore to take place to elect the Member States from electoral group I sitting on the Executive Council.

443 **The Assembly noted** that there was one candidate to the remaining Member State seat on the Executive Council for electoral group II. The candidate Member State was therefore declared elected.

444 **The Assembly noted** that there were nine candidates to the remaining eight Member State seats on the Executive Council for electoral group III. A vote had therefore to take place to elect the Member States from electoral group III sitting on the Executive Council.

445 **The Assembly noted** that there were seven candidates to the remaining Member State seats on the Executive Council for electoral group IV, which was the maximum number of those seats. The candidate Member States were therefore declared elected.

446 **The Assembly noted** that there were nine candidates to the remaining eight Member State seats on the Executive Council for electoral group V. A vote had therefore to take place to elect the Member States from electoral group V sitting on the Executive Council.

447 The composition of the Executive Council, as well as the list of Member States of the Commission, are given in Annex VI.

6.4 DATES AND PLACE OF THE EXTRAORDINARY SESSION AND THIRTY-FIFTH AND THIRTY-SIXTH SESSIONS OF THE EXECUTIVE COUNCIL AND TWENTY-SECOND SESSION OF THE ASSEMBLY

448 The Executive Secretary recommended and the Assembly decided to convene an extraordinary session of the Executive Council on 10-11 December 2001 in Paris.

449 The Chairman reported that the Executive Council had agreed that its ordinary 35th Session will take place in UNESCO the first two weeks of June 2002, from 4-14 June inclusive. The IOC Executive Secretary informed the Assembly that a convenient time for the next session of the Assembly at UNESCO was the two-week period commencing the 24 June and concluding on 4 July 2003.

450 **The Assembly agreed** that the 22nd Session of the Assembly will be at UNESCO from 24 June to 4 July 2003 preceded on Monday 23 June by the one-day 36th ordinary Session of the Executive Council**.**

6.5 THEMES OF THE NEXT BRUUN AND PANIKKAR MEMORIAL LECTURES

451 **The Assembly decided** that the terms for the Bruun and Panikkar lectures for the 22nd Session of the IOC Assembly will be “Energy from the Sea” and “Oceanography in Africa”, respectively.

7. ADOPTION OF RESOLUTIONS AND SUMMARY REPORT

452 **The Assembly reviewed** the draft resolutions (DRs) and the draft report. **The Assembly adopted** the resolutions and the report as herein presented.

453 Before concluding this Agenda item the Second Vice-Chairperson of the Commission, Adm. Marcos Leal in his capacity of the Chairperson of the Technical Review Committee for Resolutions thanked all participants of the Committee for their accurate, diligent and careful work performed during the past days. He further noted that it is important to have draft resolutions prepared within specific time frame to give time to the Committee Members to make a better review. He made the following suggestions, which may be taken into account while considering amendment of Article 42 of the Rules of Procedure:

(i) as far as possible, draft resolutions should be prepared and presented in advance, and submitted to Member States at the time of sending the meeting documents. After being translated into the four official languages of the Commission they will be part of the dispatch of documents by IOC;

(ii) formatting and editorial changes should be done in advance by the IOC Secretariat;

(iii) the Resolutions Committee will have a final look at the previously distributed resolutions if they have been modified;

(iv) the Resolutions Committee will review all resolutions drafted and presented during the meeting;

(v) the Resolutions Committee should be allowed to introduce modifications to the text, in consultation with one or more of the countries that have presented that specific resolution, so as to improve it or make sure that draft resolutions are consistent with the debate held in plenary; and

(vi) draft resolutions should be presented together with their related Agenda item, so that the Assembly could indicate its support or not.

8. CLOSURE

454 The Chair closed the Twenty-first Session of IOC Assembly at 13.15 on 13 July 2001.

455 He thanked all delegations, the Secretariat and those behind the scene who contributed to the success of the Session.

ANNEX I

AGENDA

1. OPENING

2. ORGANIZATION OF THE SESSION

2.1 ADOPTION OF THE AGENDA
2.2 DESIGNATION OF THE RAPPORTEUR
2.3 ESTABLISHMENT OF INTRASESSIONAL COMMITTEES
2.4 INTRODUCTION OF TIMETABLE AND DOCUMENTATION
2.5 BRUUN AND PANIKKAR MEMORIAL LECTURES

3. REPORT OF THE EXECUTIVE SECRETARY ON INTERSESSIONAL ACTIVITIES

3.1 PROGRESS REPORT ON THE PROGRAMME AND BUDGET EXECUTION
3.2 INTRODUCTION TO THE DRAFT 31 C/5 PROGRAMME AND BUDGET FOR 2002-2003

4. POLICY ISSUES

4.1 DRAFT 31 C/4 MEDIUM-TERM STRATEGY OF UNESCO (2002-2007)
4.2 UN CONVENTIONS AND AGREEMENTS
- **4.2.1 IOC and UNCLOS. Open-ended Process of Consultations**
- **4.2.2 Global Programme of Action for the Protection of the MarineEnvironment from Land-based Activities (GPA-LBA): Intergovernmental Review Process**
- **4.2.3 UNEP Regional Seas Programme**
- **4.2.4 FAO Regional Fisheries Organizations and Agreements**
- **4.2.5 Conventions on Biological Diversity: Marine and Coastal Biodiversity**
- **4.2.6 Small Islands Developing States**
- **4.2.7 United Nations Framework Convention on Climate Change and Other Conventions**

4.3 AGENDA 21 AND THE 2002 WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT
- **4.3.1 Conference on 'Oceans and Coasts at Rio+10', Paris, 3 - 7 Dec. 2001**
- **4.3.2 World Summit on Sustainable Development, Johannesburg, 2002**

4.4 EXTERNAL EVALUATION FOLLOW-UP
4.5 FINAL DOSS-2 REPORT: ENDORSEMENT AND ADOPTION OF THE REVISED RULES OF PROCEDURE AND GUIDANCE ON UNRESOLVED ISSUES OF ITS MANDATE
4.6 PROGRESS REPORT ON IOC OCEANOGRAPHIC DATA EXCHANGE POLICY
4.7 NORMATIVE ROLE OF IOC IN SUPPORT OF OCEAN RESEARCH AND OPERATIONAL OCEANOGRAPHY

5. IMPLEMENTATION OF IOC PROGRAMMES

5.1 OCEAN SCIENCES
- **5.1.1 Ocean and Climate**
- **5.1.2 Integrated Coastal Area Management (ICAM)**
- **5.1.3 Ocean Science in Relation to Living Resources**
- **5.1.4 Marine Pollution Research and Monitoring**

5.1.5. A Proposal for Restructuring the Ocean Science Programmes

5.2 OPERATIONAL OBSERVING SYSTEM

5.2.1 Global Ocean Observing System (GOOS) and Related Matters
5.2.2 Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM)
5.2.3 Remote Sensing
5.2.4 Global Climate Observing System (GCOS)

5.3 OCEAN SERVICES

5.3.1 Marine Data and Information Management
5.3.2 Ocean Mapping
5.3.3 Tsunami Programme and the International Strategy for Disaster Reduction

5.4 REGIONAL ACTIVITIES

5.4.1 Regional Policy Long-term Strategy and Guidelines for the Establishment of Regional and Project Offices
5.4.2 IOC Regional Sub-commission for the Western Pacific (WESTPAC)
5.4.3 IOC Sub-commisssion for the Caribbean and Adjacent Regions (IOCARIBE)
5.4.4 Regional Committee for the Southern Ocean (IOCSOC)
5.4.5 Regional Committee for the Cooperative Investigation in the North and Central Western Indian Ocean (IOCINCWIO)
5.4.6 Regional Committee for the Central Indian Ocean (IOCINDIO)
5.4.7 Regional Committee for the Central Eastern Atlantic (IOCEA)
5.4.8 Black Sea
5.4.9 Mediterranean
5.4.10 Caspian Sea
5.4.11 Other Regions
5.4.12 The African Process

5.5 CAPACITY BUILDING IN MARINE SCIENCES, SERVICES AND OBSERVATIONS: DEVELOPMENT OF A MAJOR ASSISTANCE PROGRAMME

5.6 COOPERATION WITH THE ICSPRO AGENCIES AND NON-GOVERNMENTAL ORGANIZATIONS

5.6.1 Cooperation with ICSPRO Agencies and Other UN Organizations
5.6.2 Multidisciplinary Programmes in UNESCO
5.6.3 Cooperation with the European Union
5.6.4 Cooperation with the International Council for Science (ICSU)
5.6.5 Cooperation with the International Ocean Institute (IOI)
5.6.6 Cooperation with other Organizations

6. ADMINISTRATION AND MANAGEMENT

6.1 APPROVAL OF PROGRAMME AND BUDGET FOR 2002-2003 (31 C/5)
6.2 IOC PUBLIC AWARENESS AND PROMOTION EFFORTS
6.3 ELECTIONS OF THE OFFICERS OF THE COMMISSION AND MEMBERS OF THE EXECUTIVE COUNCIL
6.4 DATES AND PLACE OF THE TWENTY-SECOND ASSEMBLY AND THIRTY-FIFTH AND THIRTY-SIXTH SESSIONS OF THE EXECUTIVE COUNCIL
6.5 THEMES OF THE NEXT BRUUN AND PANIKKAR MEMORIAL LECTURES

7. ADOPTION OF RESOLUTIONS AND SUMMARY REPORT

8. CLOSURE

ANNEX II

ADOPTED RESOLUTIONS

Resolution XXI-1

ADMINISTRATION AND MANAGEMENT

The Intergovernmental Oceanographic Commission,

Recalling the rules and constitutional texts of the Commission on the use of working languages and the texts and resolutions of the General Conference of UNESCO on that subject,

Being aware of the statements of Members States of the Assembly at the present session highlighting the difficulties they have experienced as a result of the increasing distribution of major working documents in a single language,

Expressing its deep concern at the harmful consequences of this growing imbalance on the effective participation of all Member States in the action of the IOC,

Instructs the IOC Executive Secretary to take the necessary measures to restore the genuinely balanced use of the working languages of the Commission and to report on that subject to the next ordinary session of the Executive Council.

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Financial implications: none

Resolution XXI-2

IOC AND UNCLOS

The Intergovernmental Oceanographic Commission,

Recalling Resolution XIX-19 of the IOC Assembly to establish an open-ended Advisory Body of Experts on the Law of the Sea (ABE-LOS) with specific terms of reference,

Bearing in mind Resolution 55/7 of the UN General Assembly, which considered as a matter of priority the issues of marine science and technology for discussion by the second meeting of the United Nations Open-ended Informal Consultative Process on oceans, as well as focused on how best to implement the many obligations of States and competent international organizations under UNCLOS, in particular Part XIII (Marine scientific research) and Part XIV (Development and transfer of marine technology),

Taking into account the outcome of the 2nd meeting of the Consultative Process,

Notes with satisfaction the progress made by ABE-LOS;

Adopts the three recommendations of the First Meeting of the Advisory Body of Experts on the Law of the Sea (ABE-LOS), as given in the Annex of this resolution;

Instructs the IOC Executive Secretary to take necessary actions for the full implementation of the ABE-LOS Recommendations.

_____

Financial implications: US$ 15.000 from Regular Programme

Annex to Resolution XXI-2

First Meeting of the Advisory Body of Experts on the Law of the Sea (ABE-LOS I)

RECOMMENDATIONS

The IOC Advisory Body of Experts on the Law of the Sea (ABE-LOS) at its first meeting (ABELOS I), having considered various provisions of the United Nations Convention on the Law of the Sea (UNCLOS), in particular the ones dealing with the development and transfer of marine technology (Part XIV of UNCLOS) and marine scientific research (Part XIII of UNCLOS), recommended the following:

1) That further work is required for the development of guidelines, criteria and standards on the transfer of marine technology, including capacity building related to marine scientific research (MSR), in accordance with Article 271 of UNCLOS on guidelines, criteria and standards, and other related provisions of Part XIV of UNCLOS. To this end, an open-ended Sub-Group of ABE-LOS should be established to re-draft, by correspondence, the document IOC/INF-1054 on "Draft IOC principles on transfer of marine technology", taking into account the debate on this issue at the first meeting of ABE-LOS. This Sub-Group should operate in close cooperation with the Division for Ocean Affairs and the Law of the Sea, Office of Legal Affairs, United Nations Secretariat (UN/DOALOS). The Chairman of this Sub-Group should be designated by the Chairman of ABE-LOS in consultation with Member States. This Sub-Group should report back to the plenary session of the second meeting of ABE-LOS (ABE-LOS II), which should meet by April 2002 in order to submit its report to the next ordinary session of the IOC Executive Council.

2) That IOC considers establishing appropriate internal procedures related to an effective and appropriate use of Article 247 of UNCLOS on marine scientific research projects undertaken by or under the auspices of international organizations. To this end, an open-ended Sub-Group of ABE-LOS should be established, which should operate by correspondence and in close cooperation with UN/DOALOS. The Chairman of this Sub-Group should be designated by the Chairman of ABE-LOS in consultation with Member States. This Sub-Group should submit a progress report to the plenary session of the second meeting of ABE-LOS (ABE-LOS II).

3) That with regard to Article 251 of UNCLOS concerning the establishment of general criteria and guidelines to assist States in ascertaining the nature and implications of MSR, the work initiated by the Secretariat through the collection and analysis of information from Member States on their practices, should be continued and completed in close cooperation with UN/DOALOS.

Resolution XXI-3

PREPARATION FOR THE 2002 WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT (WSSD)

The Intergovernmental Oceanographic Commission,

Noting that the WSSD will take place in Johannesburg, South Africa, from 2-11 September, 2002 and that the IOC and other international entities have done extensive work in developing knowledge on ocean processes, climate change and variability and their impact on marine ecosystems, and have provided guidance for the sustainable development of coastal and marine resources,

Further noting that national governments as well as communities are increasingly applying models of integrated management emphasizing sustainable development through the eco-system and precautionary approaches,

Recognizing that the progression from the Earth Summit-UNCED in 1992 to the Johannesburg WSSD in 2002 reflects the overall goal of the World Summit to reinvigorate, at the highest political level, a global commitment to sustainable development, centering around the interaction between the sustainable preservation of the environment, economic and social development and the eradication of poverty,

Recalling previous conventions and action plans and their valuable impact on IOC programmes and activities resulting from these processes, which include:

The Earth Summit-UNCED including Chapter 17 of Agenda 21, 1992
The Jakarta Mandate of the Convention on Biological Diversity, 1998
The United Nations Framework Convention on Climate Change, 1992
The United Nations Convention on the Law of the Sea, 1982
The Maputo Declaration (PACSICOM) leading to the African Process, 1995
The Programme of Action on Small Islands and Developing States, 1998,

Considering that the Global Conference on 'Oceans and Coasts' to be held in Paris on 3-7 December 2001 will provide an assessment of progress on oceans and coasts since the Earth Summit-UNCED in 1992, which will feed into Member States' preparatory processes for the WSSD,

Instructs the IOC Executive Secretary to:

(i) prepare a short declaration emphasizing the role of the ocean in the global environment and which specifically stresses:
  (a) the critical importance of the oceans in relation to sustainable development and a supporting comprehensive explanatory supplement addressing issues, challenges, problems and solutions;
  (b) the unique role of the IOC for ocean sciences and services within the UN system;
  (c) the measures by which IOC has already implemented Agenda 21 of UNCED;
  (d) the key elements of IOC programme activities related to sustainable development for the coming ten years;

(ii) consult Member States on the form and content of the above-mentioned declaration and the supporting documents;

(iii) convene an Extraordinary Session of the IOC Executive Council consecutive to the Global Conference on 'Oceans and Coasts' for the purpose of approving a final draft of the declaration and supporting documents, so as to take advantage of the Oceans and Coasts Conference;

(iv) provide Member States with drafts of the declaration and supporting documents at least sixty days in advance of the Executive Council for their comments;

Further instructs the IOC Executive Secretary to:

(i) coordinate with other UN agencies through the UN Administrative Committee on Coordination-Subcommittee on Oceans and Coastal Areas (ACC-SOCA) and IOC Member States, throughout the preparatory process for the WSSD;

(ii) encourage Member States to support IOC interests at regional preparatory meetings and that "regional platforms" adequately reflect IOC programme goals.

Urges Member States to encourage their national delegations to support the IOC objectives presented to the WSSD, and to ensure these objectives are reflected in the final declaration of the WSSD.

Financial implications: the costs of hosting the extraordinary session of the Executive Council will be minimized by holding it consecutive to the Global Conference on Oceans and Coasts as IOC secretariat staff and many IOC Member States will attend. The cost is estimated at: US$13,000.

Resolution XXI-4

IOC RULES OF PROCEDURE

The Intergovernmental Oceanographic Commission,

Noting:

(i) Decisions of the 33rd Session of the IOC Executive Council related to the revision of the IOC Rules of Procedure,

(ii) IOC Resolution XX-1 - Statutes of the Commission,

(iii) Approval of the IOC Statutes by the 30th General Conference of UNESCO,

(iv) Revised Rules of Procedure as amended by the Assembly,

Recognizing that adoption of the Rules of Procedure will provide Member States, IOC Officers and IOC Executive Secretary with the mechanism for a smooth and more efficient running of the Commission,

Adopts the proposed amendments to the IOC Rules of Procedure as contained in the Document IOC-XXI/2 Annex 4 with the changes recommended by the sessional group as they are presented in Document IOC-XXI/2 Annex 4 Add. rev.;

Instructs the IOC Executive Secretary to inform the UNESCO Director-General accordingly and to publish and circulate the final version of the Rules of Procedure by the end of 2001;

Instructs further the IOC Executive Secretary to update the existing IOC Manual.

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Financial implications: none

Resolution XXI-5

FURTHER DEVELOPMENT, CONSOLIDATION AND STRENGTHENING OF IOC

The Intergovernmental Oceanographic Commission,

Recalling IOC Resolution XVIII-1, in particular, the subjects requiring further study as listed in the Terms of Reference of the Ad hoc Study Group on Development, Operations, Structure and Statutes (DOSS-2),

Having received the final report of the DOSS-2, in the form of Document IOC/DOSS-2V/3,

Taking into account the section of Document IOC/DOSS-2V/3 referring to issues requiring further study by the IOC,

Considering the conclusions and recommendations of the External Evaluation of the IOC, conducted in 1999-2000,

Recalling further the continuous efforts of the IOC to improve its functions, structure and financing as required to exercise the Commission's *functional autonomy* within UNESCO, as specified in the terms of reference of FURES, DOSS and DOSS-2, and the recommendations made by these three study groups

aiming at an improved and more efficient internal organization of the IOC, including the need for an in-depth revision of the Statutes and Rules of Procedure,

Being aware of the enhanced recognition of the IOC in international fora and programmes, which has resulted in the co-sponsorship of the World Climate Research Programme, the Commission's role in the initiation and development of the Global Ocean Observing System (GOOS), as well as the reference to the IOC as a competent international organization in UNCLOS, and the responsibilities assigned to it by UNCED as specified in Agenda 21,

Being further aware of the new paradigm emphasizing the need for an interdisciplinary, intersectorial and inter-agency approach to ocean sciences and services and its role in the sustainable development of the world's oceans, and of the high visibility and recognition of the role of the IOC at meetings of the United Nations open-ended Informal Consultative Process on Oceans and the Law of the Sea,

Being conscious of the inadequacy of the present level of human and financial resources of the Commission for the fulfillment of its role as a competent international mechanism for ocean sciences and services, as neither the regular budget from UNESCO nor the existing sources of extra budgetary funding are expected to meet these resources requirements completely in the near future,

Thanks DOSS-2 members for completing the most important aspects of their work in a timely and efficient manner;

Instructs the IOC Executive Secretary, in consultation with the elected Officers of the IOC, to seek, as soon as possible and in a manner in which a strong response is encouraged both in depth and breadth, the views of Member States on how to further address the development, consolidation and strengthening of the Commission, with reference to the following issues:

(i) ways and means of achieving organizational efficiency in the IOC, especially in the conduct of its business;
(ii) ways and means of enhancing the recognition of the IOC and its programme activities in Member States, in intergovernmental and non-governmental organizations and in the private sector;
(iii) the desirability and feasibility of establishing the Commission under an appropriate legal instrument within UNESCO;
(iv) proposals regarding innovative approaches for the improvement of the financial support for the Commission's programme of work, including implementation of Article 10 of the Statutes, and the need for a specific rule of procedure on this matter;
(v) ways and means of ensuring the provision of adequate professional and technical personnel for the implementation of the Commission's global and regional programmes;

Directs the IOC Executive Secretary to implement any feasible initiatives arising from national responses to issue (i), especially in the conduct of IOC business and to report them to the next ordinary Session of the Executive Council;

Further instructs the IOC Executive Secretary to prepare a paper collating and summarizing these views, for presentation to the next ordinary Session of the Executive Council as a basis for consideration of means of advancing concrete proposals to address the issues and other matters which might emerge from consultation, including the creation of a special intersessional intergovernmental working group.

Financial implications: none

Resolution XXI-6

RESTRUCTURING OF THE OCEAN SCIENCE PROGRAMMES OF THE COMMISSION

The Intergovernmental Oceanographic Commission,

Recalling:

(i) the External Evaluation of the IOC made during 1999-2000 by a team of independent experts and presented to the Thirty-third Session of the IOC Executive Council in June 2000,

(ii) the request from the Twentieth Session of the Assembly to review the structure of the entire IOC science programme (para. 115),

(iii) Resolution EC-XXXI.2 on the review of the Ocean Sciences in Relation to Living Resources (OSLR) Programme,

(iv) the endorsement by the Twentieth IOC Assembly of the requirement to restructure the Global Investigation of Pollution in the Marine Environment (GIPME),

Noting the mandates of the United Nations Conference on Environment and Development/Agenda 21 (UNCED), the United Nations Framework Convention on Climate Change (UN-FCCC), the Convention on Biological Diversity (CBD), the United Nations Convention on the Law of the Sea (UNCLOS), the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA-LBA), the United Nations Code of Conduct for Responsible Fisheries, and the need to respond to regional programmes and conventions on issues of marine science,

Recognizing that new perspectives in ocean science require integrated and interdisciplinary approaches, especially the need for an increased understanding of the response of ocean ecosystems to human-induced and natural changes in the biological, chemical and physical processes in the marine environment,

Acknowledging the need for effective collaboration with other international organizations and in particular with the Scientific Committee on Oceanic Research (SCOR) and global and regional research programmes including the International Council for the Exploration of the Seas (ICES), the North Pacific Marine Science Organization (PICES), the Global Ocean Ecosystem Dynamics (GLOBEC), the Land-Ocean Interaction in the Coastal Zone (LOICZ), the Joint Global Ocean Flux Study (JGOFS), the Climate Variability and Predictability (CLIVAR) and the Surface Ocean - Lower Atmosphere (SOLAS),

Instructs the IOC Executive Secretary to restructure the Ocean Science Programmes of the Commission into three interactive lines of work consisting of Oceans and Climate, Ocean Ecosystems and Marine Environmental Protection, and Integrated Coastal Area Management;

Further instructs the IOC Executive Secretary to provide to the next ordinary Session of the Executive Council the Terms of Reference for the programme elements in the new structure.

Financial implications: none

RESOLUTION XXI-7

A REVIEW OF THE STRUCTURE OF THE GLOBAL OCEAN OBSERVING SYSTEM (GOOS)

The Intergovernmental Oceanographic Commission,

Recalling that:

(i) the mandate for GOOS was first set out formally in March 1991 by the Assembly at its sixteenth session, in Resolution XVI-8,

(ii) the Intergovernmental Committee for GOOS (I-GOOS) held its first session in February 1993,

Recognizing that periodic external reviews have been effective in assisting IOC and other sponsoring organizations to maintain the focus, efficiency and effectiveness of the programmes they support in changing times and circumstances,

Noting that:

(i) GOOS implementation began with the inauguration of the GOOS Initial Observing System in 1998,

(ii) I-GOOS at its fifth session endorsed the call made by the GOOS Steering Committee at its fourth session for a review of GOOS,

Decides that:

(i) a review of the organizational structure of GOOS, to be carried out by an external independent Review Group and should take place in 2002 as described in the Annex to this Resolution;

(ii) this review should be the first in a five-yearly cycle of such reviews by an independent group of experts;

Instructs the IOC Executive Secretary to:

(i) initiate the review process according to the terms of reference and conditions given in the Annex to this Resolution,

(ii) request the co-sponsors of GOOS, the IGOS Partners, other relevant partners and affiliated organizations to assist the Review Group.

Financial implications: US$15,000 from the Regular Budget allocation, supplemented by the IOC Trust Fund and/or extra-budgetary sources if required.

Annex to Resolution XXI-7

COMPOSITION AND SCOPE OF THE REVIEW OF GOOS

1. The Terms of Reference of the Review Group are to:

   (i) review the development and implementation of GOOS, with particular attention to its structure, mandates and *modus operandi*, the activities of its advisory panels, the development of the GOOS Initial Observing System, including its pilot projects, the regional development of GOOS and the national development of GOOS;

(ii) review the extent to which capacity-building activities in support of GOOS can benefit Member States;

(iii) present the final review report to the Assembly at its 22nd session in 2003.

2. The following conditions shall apply to the review process:

(i) the Review Group shall comprise 4 experts drawn from nominations submitted preferably from operational agencies of Member States, and from different user communities;

(ii) proposals for nominations on the Review Group should be submitted to the IOC Executive Secretary by IOC Member States and GOOS sponsors (WMO, UNEP, ICSU) and should be chosen by the Chairman of IOC in consultation with the Heads of JCOMM, GPO, I-GOOS and GSC;

(iii) the Review Group should interview, as appropriate:

(a) the GPO staff;
(b) the chairpersons of GSC, I-GOOS and the past chairperson of I-GOOS;
(c) the national contacts of the Member States of I-GOOS;
(d) the chairpersons of the key advisory panels (OOPC, COOP and the GOOS Capacity Building Panel);
(e) the supervisor of GOSIC;
(f) the chairpersons of regional GOOS bodies;
(g) the directors of the GCOS and GTOS Secretariats;
(h) the representatives (Chairs, Presidents, etc.) of the major bodies involved in GOOS implementation (JCOMM, IODE); and
(i) the representatives of national implementation agencies, of user communities, of GODAE and Argo, of SCOR, of CEOS (from the IGOS Partnership), of the academic community (chosen from the membership of POGO) and of the co-sponsors of GOOS (WMO, UNEP, FAO and ICSU);

3. The review group should address the issues identified as requiring attention by I-GOOS-V;

4. Where possible, information should be obtained/sought through questionnaires and verbal discussions/ interviews, and correspondence should be by e-mail;

5. Meetings deemed necessary to collect information or for the purpose of clarification should coincide with scheduled meetings of such representatives;

6. Meetings may be conducted in different regions if the Review Group feels it necessary;

7. The review should be produced by the Review Group and submitted in draft form by its chairperson [or his (her) nominee] to the GOOS Steering Committee at its 6th session, for comments, and to I-GOOS at its 6th session. An interim progress report should be submitted to the next ordinary session of the Executive Council, and the final report should be presented to the IOC Assembly at its 22nd session (June/July 2003).

Resolution XXI-8

INTERNATIONAL OCEANOGRAPHIC DATA AND INFORMATION EXCHANGE (IODE)

The Intergovernmental Oceanographic Commission,

Recognizing:

(i) the importance of large, long-term and high-quality global data sets for the investigation of global environmental issues,

(ii) the high interest of information products derived from oceanographic data as tools for decision making,

Acknowledging:

(i) the substantial and continuing efforts made by Member States through the establishment and maintenance of national data and information management infrastructures,

(ii) the contributions made by many Member States to implement the IODE programme, and in particular its IODE/TEMA component,

(iii) the achievements of IODE in developing high-quality products and services for various user communities,

(iv) the important role of IODE in providing quality control and long-term data archive service for global ocean data sets,

(v) the successful application by IODE of new technologies in providing services, products, and training,

(vi) the efforts made by IODE towards closer collaboration with other ocean science and services programmes and projects,

(vii) the close cooperation established between IODE and JCOMM towards the development and implementation of joint projects to meet observational data requirements of GOOS, GCOS and other programmes;

Noting with concern the lack of sufficient staff resources available to IODE at the IOC Secretariat, hampering the full development of IODE's potential,

Accepts the Summary Report of IODE-XVI, **approves** the Recommendations contained therein, **and authorizes** the Committee on IODE to

(i) establish the Marine Environmental Data Information and Referral System, (MEDI programme) and an IODE Steering Group for MEDI;

(ii) strengthen the IODE Regional Coordinators mechanism;

(iii) establish cooperation between IODE and research and monitoring programmes through the formation of a Steering Group;

(iv) establish a Group of Experts on Biological and Chemical Data Management and Exchange Practices;

(v) establish a World Ocean Database Project;

(vi) establish an IODE Resource Kit Project and its corresponding Steering Group;

(vii) participate in an XML Consortium;

(viii) implement regional data and information management networks;

(ix) establish the Underway Surface Salinity Data Archiving Pilot Project;

Urges Member States to increase their participation in international oceanographic data and information exchange through the establishment and/or maintenance of national data and information management infrastructures;

Strongly invites Member States to assist in the implementation of the IODE work plan during the biennium 2002-2003 through the provision of extra-budgetary funds and the secondment of experts to the IOC Secretariat.

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Financial implications: as presented in the Annex to this Resolution.

Annex to Resolution XXI-8

IODE Work Plan and Provisional Budgetary Implications

Notes:

- the work plan and budget concerns the biennium 2002-2003 only (activities already planned for, or implemented in 2001 are not included)
- RP req.: UNESCO Regular Programme requested
- EB req.: Extrabudgetary funds requested (IOC Trust fund or other)
- EB rec.: Extrabudgetary funds received (IOC Trust fund or other)

	2002 (USD)			**2003 (USD)**		
	RP req	EB req	EB rec	RP req	EB req	EB rec
Subsidiary body meetings						
- GEMIM	0	0	0	0	20,000	0
- GETADE	0	0	0	0	30,000	0
- GE Bio& Chem data	0	0	0	0	30,000	0
- SG-E2EDM	0	0	0	0	20,000	0
- SG MEDI	0	0	0	0	15,000	0
- SG Resource Kit	0	0	0	0	15,000	0
- SG Coop IODE-Sci&Monit.progs (email)	0	0	0	0	0	0
- SG SSST Pilot Project	5,000	0	0	0	0	0
- Officers Meeting	45,000	0	0	0	0	0
Workshops/Training Courses						
- ODINAFRICA-II	0	20,000	700,000	0	20,000	730,000
- Regional Training IOCINDIO	5,000	20,000	0	0	0	0
- Regional Training IOCINCWIO	5,000	20,000	0	0	0	0
- Regional Training Mediterranean	5,000	20,000	0	0	0	0
- Regional Training Caribbean	0	0	0	5,000	20,000	0
- Regional Training South America	0	20,000	0	0	0	0
- Regional Training ROPME	0	0	0	5,000	20,000	0

	2002 (USD)			2003 (USD)		
	RP req	EB req	EB rec	RP req	EB req	EB rec
Products and Services						
- Resource Kit (other regions)	10,000	0	0	0	10,000	0
- Marine XML	10,000	0	0	10,000	0	0
- MEDI development	5,000	0	0	5,000	0	0
- Ocean Portal and Inventory	10,000	0	0	10,000	0	0
- ILMS langage versions	5,000	0	0	0	0	0
Operational Projects						
- GODAR – World Ocean	3,000	0	0	3,000	0	0
- GODAR – WESTPAC	5,000	0	0	0	0	0
Pilot Projects						
- ODINLAC Pilot Project	0	0	0	20,000	0	0
- Sea Surface Salinity Pilot Project	1,000	0	0	1,000	0	0
Travel, coordination and policy						
- Travel and coordination	20,000	0	0	20,000	0	0
Regional Coordinators						
- Regional Coordinators support	0	27,000	0	27,000	0	0
Public Relations						
- Folders, web site	3,000	0	0	3,000	0	0
TOTALS	**137,000**	**127,000**	**700,000**	**109,000**	**200,000**	**730,000**

Resolution XXI-9

OCEAN MAPPING

The Intergovernmental Oceanographic Commission,

Recalling that ocean mapping has, since 1993, been one of the priority actions of the Commission, and that maps of the ocean floor serve as usefull base for the conduct of national,regional and global marine science programmes,

Noting with satisfaction the progress made in the implementation of the two main components of Ocean Mapping, namely the General Bathymetric Chart of the Ocean (GEBCO) and the International Bathymetric Charts (IBC), in close cooperation with the International Hydrographic Bureau (IHB) and Voluntary Hydrographic Offices,

Accepts the biennial report of the Consultative Group on Ocean Mapping (CGOM), document IOC/INF-1153, which has been submitted to the Assembly in accordance with Clause 1 of its Terms of Reference;

Adopts the Recommendations of the 8th Session of CGOM in St. Petersburg, 10-15 May 2001 with the understanding that the implementation of paragraph 5 of Recommendation CGOM-VIII.2 in relation to the International Bathymetric Chart of the Western Pacific (IBCWP), needs further consideration by the Editorial Board of IBCWP.

Decides to establish the Editorial Board for the International Bathymetric chart of the South-East Pacific (IBCSEP) in accordance with Recommendation CGOM-VIII.3, and to hold an inaugural meeting before

the end of 2001 in Valparaiso, Chile, in which terms of reference and composition of the Editorial Board will be established;

Urges Member States to continue paying high attention to training in ocean mapping and geological and geophysical data collection, in particular through courses in the regions concerned, similarly to those held in the Black Sea, in the Western Indian Ocean on board R/V *Meteor* and on land.

Financial implications:
US$80,000 from Regular Programme (US$20,000 for GEBCO Centenary included)
US$180,000 for two years (Extra-budgetary resources).

Resolution XXI-10

IOC BLACK SEA REGIONAL COMMITTEE (BSRC)

The Intergovernmental Oceanographic Commission,

Recalling:

(i) Resolution XX-18 of the IOC Assembly,

(ii) Decisions and Recommendations of the 2nd Session of the IOC Black Sea Regional Committee (BSRC),

Noting Resolution XVIII-17 on the establishment of the Black Sea Regional Programme in Marine Sciences and Services as a coordinating mechanism for the integration of scientific, organizational and managerial efforts of the countries of the region in addressing sustainable development,

Noting with satisfaction the positive evolution, during the intersessional period, of the activity of the IOC Black Sea Regional Committee, which played a catalysing role in the on-going projects as well as a role of initiator in new international multidisciplinary projects,

Considering the results of the first Black Sea GOOS Workshop held in Albena (Bulgaria, October 1999) and the second Black Sea GOOS Workshop in Poti (Georgia, May 2001), and in particular: (i) the drafting of the Strategic Design and Implementation plan for Black Sea GOOS, (ii) the establishment of the Steering Committee of Black Sea GOOS, (iii) the signature of a Memorandum of Understanding of the Black Sea GOOS, and (iv) the elaboration of a list of priority actions,

Decides:

(i) to approve the resolutions adopted by the BSRC with regard to Black Sea GOOS and its collaboration with existing activities of EuroGOOS, MedGOOS, Black Sea Environmental Programme (BSEP), and NATO Science Programmes;

(ii) to take into consideration the intersessional BSRC Report presented to the 21st Session of the IOC Assembly;

(iii) to implement the BSRC Action Plan as adopted by the Black Sea Regional Committee;

Urges:

(i) Member States of the region and relevant organizations to promote strategic programmes and projects, to provide funding and to mobilize adequate resources;

(ii) Member States of the region, funding agencies of donor-states, other governmental and non-governmental organizations to respond to the appeal of the Black Sea oceanographic community in every possible way and in particular to support the Black Sea GOOS;

(iii) Member States of the region to recognize the need to establish Black Sea GOOS national coordinating committees;

(iv) Member States of the region to consider the IOC/WMO data exchange policy and the mechanisms established by IODE and WMO for data exchange with a view to facilitating Black Sea GOOS.

Financial implications: US$70,000 (from Regular Programme)
US$337,000 (from Extra-budgetary Resources)

Resolution XXI-11

AFRICAN PRIORITIES

The Intergovernmental Oceanographic Commission,

Recalling:

(i) Resolutions XX-17, XX-20 and XX-21 of the 20th Session of the IOC Assembly respectively on IOCEA, PACSICOM and Priority Africa,

(ii) Resolutions EC-XXXIII.12 and EC-XXXIII.13 of the 33rd Session of the IOC Executive Council respectively on IOCEA and African Concerns,

Noting that initiatives have been taken for the full implementation of the above Resolutions as well as the implementation of the IOCINCWIO and IOCEA work programmes, notably the ODINAFRICA-II Project,

Also noting the arrangements in place for holding the Partnership Conference prior to the World Summit on Sustainable Development (WSSD) to be held in Johannesburg, South Africa, in September 2002,

Noting further with appreciation the significant role that the IOC is playing in the implementation of a Global Environmental Facility (GEF)-Medium Size Project (MSP) on "Development and Protection of the Coastal and Marine Environment in Sub-Saharan Africa" aimed at developing national and regional programmes for presentation at the Partnership Conference,

Recognizing the significant role of the IOC in the framework of the UNESCO cross-cutting projects related to the (i) Ocean Portals, (ii) Application of the Remote Sensing and Communications and Information Systems for Integrated Management of Ecosystems and Water Resources in Africa,

Recognizing further the needs of the countries in the region to implement Article 76 of the United Nations Convention on the Law of the Sea (UNCLOS),

Decides the following:

1- Partnership Conference

Urges African Member States to fully participate in the development of national and regional programmes and projects for presentation to the Partnership Conference;

Instructs the IOC Executive Secretary to:

(i) continue assisting African countries to develop programmes and projects for consideration at the Partnership Conference;

(ii) foster a full implementation of the following (in the context of the African Process leading to the Partnership Conference):

(a) relevant PACSICOM Workshops Recommendations, 1998;
(b) Cape Town Conference Recommendations, 1998;

Requests Member States and donors to provide support for the organization of the:

(i) GOOS-Africa workshop planned for November 2001 and its follow-up activities;

(ii) Partnership Conference and the implementation of the programmes of intervention that will be adopted at the Conference;

2- World Summit on Sustainable Development, Johannesburg, September 2002

Instructs the IOC Executive Secretary to:

(i) actively promote a knowledge-based approach towards the sustainable development of the coastal and marine environment of IOC member States, particularly of developing countries, and Africa within the framework of the United Nations Special Initiative for Africa;

(ii) facilitate the participation of the developing countries in the process leading to the WSSD, in particular, in the Global Conference on Oceans and Coasts, to be held in Paris on 3-7 December 2001, as well as the World Summit;

3- Reinforcement of the IOC Programmes in Africa through the implementation of the IOCEA and IOCINCWIO work programmes

Instructs the IOC Executive Secretary to:

(i) to actively pursue extra-budgetary resources for the full implementation of Resolutions EC-XXXIII.12 and EC-XXXIII.13 of the 33rd Session of the IOC Executive Council;

(ii) organize the 5th Session of the IOCINCWIO (IOCINCWIO-V) in early 2002;

(iii) assist African Member States without prejudice to the competence of the United Nations Commission on the Limits of the Continental Shelf in developing their capacity within the context of Article 76 of the UNCLOS through the Trust fund of the United Nations Division of Ocean Affairs and the Law of the Sea (UN-DOALOS) on training, specially earmarked for developing countries;

(iv) reinforce capacity-building initiatives in marine sciences and technology including the legal aspects towards building observations, monitoring and integrated systems for management of coastal and marine environment in Africa;

4- UNESCO cross-cutting projects

Instructs the IOC Executive Secretary to continue support for the effective implementation of the UNESCO cross-cutting projects on Ocean Portals and Remote Sensing related to Africa.

Financial implications: (US$120, 000* From Regular Programme)
(US$100,000 From Trust Fund)
(US$ 450,000 From Extra-budgetary Sources)

* US$50,000 for the IOCINCWIO-V Session.

Resolution XXI-12

COOPERATION WITH THE INTERNATIONAL OCEAN INSTITUTE (IOI)

The Intergovernmental Oceanographic Commission,

A

Noting that the IOC and the International Ocean Institute (IOI) have convergent principles and objectives which include enhancing the peaceful and sustainable use and management of oceans, coasts and their resources,

Taking into account the close cooperation between the IOC and the IOI in a wide range of issues as listed in the Memorandum of Understanding signed in 2000 and in the continuous interest in facilitating this cooperation,

Acknowledging the input made by the IOI for the promotion of education, training and research in ocean policy formulation and governance through organizing training workshops and courses and through annual *Pacem in Maribus* (PIM) Conferences which are complementary to the IOC activities in the specific areas not as yet well covered by the IOC programmes,

Realizing that the implementation of PIM 2001 in Africa would provide a useful contribution to the IOC's regional activities and would help meet the goals identified by PACSICOM and UNESCO Priority Africa Programme,

Instructs the IOC Executive Secretary to ensure close cooperation with IOI in preparing and implementing PIM 2001 in Africa and activities related to the Conference which can be of mutual benefit to both Organizations, and to nominate a contact point in the Secretariat charged with the responsibility for this task;

Encourages the Chairpersons of the IOC Regional Committees in Africa and the IOC contact points in African Member States to establish contacts with the PIM 2001 organizers and help them promote, organize and implement the Conference;

Calls upon the IOC Member States, particularly those of Africa, to contribute to and participate in PIM 2001 and other related activities to allow a wide representation of different marine related scientific and management groups in the events;

Recommends that conclusions and recommendations of the PIM 2001 African Conference be brought to the attention of the Global Conference on Oceans and Coasts also co-sponsored by IOI, to be held in December 2001 in Paris as a contribution to the World Summit of Sustainable Development preparations.

B

Considering the complementary nature of the tasks facing the IOC and the IOI in strengthening marine-related institutions in developing countries through capacity-building, the sharing and dissemination of information and the establishment of partnerships,

Noting:

(i) the need for enhancing the abilities of developing countries to use, protect and govern their own marine and coastal resources in a sustainable manner, in accordance with relevant international conventions and agreements,

(ii) that traditional methods of teaching and learning should be effectively adapted to the above need by using opportunities provided by the technological development in communications and distance-learning,

(iii) that many existing universities and research institutions are prepared to respond to new challenges and cope efficiently with the increased demands for education and training in marine affairs,

Recalling the letter of the IOI President to the Director-General of UNESCO inviting UNESCO to nominate a representative to the IOI Virtual University Board of Governors and his positive answer to this invitation,

Appreciates the initiative taken by the IOI to create the Virtual University project (IOIVU) with the mission to promote education, training and research that enhance the peaceful use, management and regulation of ocean spaces and resources as well as the protection and conservation of the marine environment;

Notes with satisfaction that the IOIVU will not compete with existing universities but supplement them by combining into one focussed mechanism a network of ocean-oriented universities with the purpose to provide a truly international and interdisciplinary curriculum in ocean governance;

Recognizes the joint efforts made by the IOC and the IOI in developing a network of education, training and research centres of expertise and excellency in ocean, coastal and marine-related affairs and governance, and other sustainable mechanisms able to respond to the social, economic and environmental needs of developing countries in an integrated fashion;

Instructs the IOC Executive Secretary to nominate an IOC Representative to the IOIVU Board of Governors in order to collaborate with the IOI in the network design, and to provide for an opportunity to share the IOC experiences and to ensure that the network responds to IOC needs.

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Financial implications: (cross-reference to Resolution XXI-11)

Resolution XXI-13

PROGRAMME AND BUDGET FOR 2002-2003

The Intergovernmental Oceanographic Commission,

Recalling Article 1 (2) and Article 10 (1) of the IOC Statutes,

Noting with appreciation the presentation of the IOC Draft Programme and Budget for 2002-2003, as contained in Document IOC-XXI/2 Annex 2,

Welcoming the designation of the IOC as a flagship of UNESCO in the 31 C/4 - Medium Term Strategy,

Recalling the unique role of the IOC as the competent intergovernmental body dealing with ocean science and as the ocean arm of UNESCO, operating through the concerted action of IOC Member States, as strengthened in the new IOC Statutes endorsed by the Thirtieth Session of the General Conference,

Recalling also the emphasis placed on the intergovernmental marine science role of the IOC at the second session of the United Nations open-ended Informal Consultative Process on Oceans in New York, 7 – 11 May, 2001,

Further recalling the recent establishment of the Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), 14 – 29 June, 2001, Iceland,

Noting that the regular funds provided by UNESCO have attracted substantial supplementary support from Member States, notably through contributions to the IOC Trust Fund,

Noting also the importance of continuing support by Member States in addressing the long-term plans of the IOC, through extra-budgetary contributions to an anticipated level of US$ 6.5 million, as projected for the 2002-2003 biennium,

Emphasizing that collective participation in ocean science and ocean services programmes, and the associated observing systems:

(i) can enhance scientific, technical and human capabilities,

(ii) contributes to the protection and sustainable development of the ocean and coastal areas,

(iii) can improve human security, support economic development and help to alleviate poverty,

Emphasizing further the importance of IOC Subsidiary bodies and the related role of TEMA in capacity-building,

Having considered the preliminary proposals regarding the structure, formulation and budgetary framework for 2002-2003 biennium (Draft UNESCO 31 C/5),

Decides that the IOC Programme and Budget for 2002-2003 should be based upon three main lines of action:

(i) Main Line of Action 1: Reducing scientific uncertainties about coastal and global ocean processes in the context of marine ecosystems;

(ii) Main Line of Action 2: To further develop, within the global ocean and global climate observing systems (GOOS and GCOS), the monitoring and forecasting capabilities needed for the management and sustainable development of the open and coastal ocean;

(iii) Main Line of Action 3: Development and strengthening of a global mechanism to ensure full and open access to ocean data and information for all;

Adopts the IOC Programme and Budget 2002-2003 as contained in Document IOC-XXI/2 Annex 2;

Requests the Thirty-first Session of the UNESCO General Conference to appropriate funds to the IOC in the amount of US$ 7,007,800 under the Regular Programme, Major Programme II (draft 31 C/5), comprising US$ 3,243,900 to programme implementation and US$ 3,763,900 to staff costs;
Urges UNESCO Member States to actively support, through their national representatives, the IOC programme proposals when the Draft 31 C/5 is being considered by the UNESCO Executive Board and the General Conference;

Also urges IOC Member States to continue and increase their support to the IOC through direct and in-kind contributions;

Authorizes the IOC Executive Council to:

(i) approve at its session scheduled for June 2002 any adjustments to the Programme and Budget that might be required in the light of resources and expenditure for 2002-2003;
(ii) identify the main lines of action for the Programme and Budget for the biennium 2004-2005 as an input to the preparation of document 32 C/5.

Financial implications: none

ANNEX III

ADDRESSES

A. Opening address by Professor Su Jilan, Chairman of the Intergovernmental Oceanographic Commission of UNESCO

3rd July 2001

Mr. Marcio Barbosa, Deputy Director General of UNESCO
Officers of the Commission,
Dr. Patricio Bernal, Assistant Director General for the IOC and its Executive Secretary
Distinguished delegates and representatives of international organizations
Ladies and Gentlemen

I would like, first, to welcome all of you to this XXIst Session of the Assembly of the Intergovernmental Oceanographic Commission. We have in front of us a very demanding Agenda and Timetable for the next 10 days from the 3rd to the 13th of July.

I shall highlight only a few items of the Agenda.

Following a recommendation of the 7th Session of the Commission on Sustainable Development, the United Nations General Assembly has established an open-ended Informal Consultative Process (ICP) on Oceans and the Law of the Sea. ICP is an annual, week-long, high-level forum designed to prepare the discussion of the Agenda Item on oceans and the Law of the Sea at the UN General Assembly, by involving a wide range of international organizations, including NGO's.

The first ICP was held in June 2000 and the second ICP in May 2001. Both fora, especially the second one, were important occasions at which the IOC presented the full range of its programmes and was clearly recognized as the focal point in Ocean Sciences for the UN system.

Through the ICP, the IOC has been requested to take the initiative in several areas of interest for the Member States of the United Nations, such as ocean technology transfer, the development of a clearinghouse for Ocean Science, and capacity building for Marine Scientific Research. Strong emphasis has been given by the participants in the ICP to the need of closer collaboration at the regional level between the regional fisheries organizations of FAO, UNEP's Regional Seas Programs and the Regional Sub-commissions and Regional Committees of the IOC.

During these two years the IOC has also occupied the Chair and provided the Secretariat of the system-wide *ACC Sub-Committee for Oceans and Coastal Areas (ACC-SOCA)*. In this function it has been able to foster increased co-operation among the different member agencies. ACC SOCA has streamlined its operation and concentrated in fewer tasks. Among them, the UN Atlas of the Ocean, an innovative project, based on modern information and communication technologies. This project attempts to package several UN data-bases, providing at the same time policy advice to a wide range of users.

Within our parent organization, UNESCO, after an exhaustive review by four different sessions of the Executive and the 30th Session of the General Conference, the IOC has clearly consolidated its position as a body with functional autonomy within UNESCO. This important phase of codification of the functional autonomy was completed with the approval of the new statutes of the Commission by the 30th General Conference (30 C/Resolutions 22) in November 1999. However full recognition of this status, will require an active role on the part of the Secretariat, as well as from Member States.

The programme and budget finally established for the IOC showed a reduction of close to 16%. Concerned with this development, the Officers of the Commission established a direct dialogue with the DG, in an effort to explain the particular status attained by the Commission. After an exchange of letters, we are glad to report to you that we have made significant progress in clarifying different issues that

affect the work of the Commission and we have seen a very positive response from the DG to some of our proposals. It is very important that in the original budgetary envelope proposed by the administration, the original ceiling of the budget for the IOC was re-established for the current biennium.

Furthermore, in the forthcoming Medium Term Strategy of UNESCO, IOC is recognized as one of the two Flagship Programmes of the organization, together with the World Heritage Centre.

During the biennium, the IOC underwent an External Evaluation that has provided a very useful external examination and insight into the workings of the Commission. Several of the recommendations made by the reviewers have given origin to management actions already implemented by the Secretariat.

The Ocean Science for Living Resources (OSLR), followed by the Science Programmes as a whole, also experienced scrutiny by other external review panels. Their recommendations have led to the re-structuring process of the Science Programmes. This re-structuring has been done with the double purpose of making them more responsive to the evolution of scientific knowledge and more adaptable to support of the Commission's own priority programs.

Finally I would like to call your attention to one important event that is being planned for 2002. This is the ten-year review of Agenda 21 at the World Summit on Sustainable Development in Johannesburg, South Africa. Together with partners from outside the UN system and with the NGO community the IOC has been very active organizing the *Conference Ocean and Coasts in Rio +10*. By choosing a focused approach on Ocean and coasts, the Conference has attracted the attention of many actors. It will be necessary that we discuss during the Assembly, the level of commitment at which Members States would like the IOC to be visible in the World Summit on Sustainable Development and the extent of IOC's preparation for this conference in Johannesburg. Johannesburg takes place in a very different context compared to UNCED in Rio de Janeiro. The priorities are different. Many lessons can be learned from ten years of trying to implement Agenda 21. New emerging pressures do exist. How we can best project the work of the Commission in this new political environment are questions that we need to address to give effective guidance to our Secretariat.

I look forward to lively debates on these and other matters on the Agenda in the next 10 days.

B. Address of Mr Marcio Barbosa, Deputy Director-General of UNESCO

3rd July 2001

Professor Su Jilan, Chairman of the IOC,
Officers of the Commission,
Distinguish Delegates,
Ladies and Gentleman,

On behalf of Mr Koichiro Matsuura Director-General of UNESCO, who could not be with us today, I would like to give you a very warm welcome to this XXIst Session of the Assembly of the Intergovernmental Oceanographic Commission of UNESCO.

The Intergovernmental Oceanographic Commission is a very important part of UNESCO. Established in 1960, last year the Commission celebrated its 40th anniversary. During these four decades the IOC has gained a well deserved international recognition and prestige, serving as a focal point for Ocean Sciences in the United Nations system.

This is not a minor achievement, because as you very well know, ocean issues are complex, require the use of many sources of knowledge and very often our societies are not aware of the opportunities and challenges that the ocean represents for them.

Reflecting this recognition, in the new Draft Medium Term Strategy of UNESCO proposed for the next six years (the 31 C/4 Document), recently endorsed by the Executive Board, the IOC is identified as a "*flagship*" programme of the whole Organization, together with the World Heritage Centre.

The United Nations Convention on the Law of the sea, has declared a vast expanse of the world oceans, *"The common heritage of humanity"*, creating new institutions to take care of this patrimony, like the International Sea-Bed Authority based in Kingston, Jamaica. However, a heritage exists, when its intrinsic value is recognized by everybody. In the oceans, as in other domains, we are far from reaching this universal awareness, and UNESCO through its IOC has an important role in helping to create it.

The Ocean, is *the largest Global Commons on the surface of the earth*. That means that it belongs to everybody, because -- as with the atmosphere – it provides us with the basic life-support system of the planet: without the ocean there will be no life on earth.

But being a *"commons"*, a "*global public good*", the appropriate jurisdiction reponsible to protect them becomes an issue. *Global commons*, in practice, do not count with the protection of the long established and proven institutions and legal regimes offered by national governments. On land the existing institutions provide a sufficient protection for the environment, or at least they provide the political accountability of governments *vis-a-vis* their citizens. On the oceans, as in the outer space -- that as you probably know, was my immediate past area of activity as head of the Brazilian Institute of Spatial Research INPE -- we lack many of the institutions that are available to regulate land activities, and we certainly lack this direct citizen involvement.

These are some of the reason why in the research, use and protection of these *Global Commons*, the international community, lead by the institutions of the United Nations system, must play a very protagonic and fundamental role.

The Ocean is source of a significant economic activity for many countries. Most of all our trade is moved through shiping lanes, 50% of the oil that fuel this new global economy in which we live, comes from offshore deposits, humankind harvest close to 100 million Tons of fish, and as FAO has carefully estimated, 27 Million more are extracted annually from the Ocean and discarded from fishing boats as "by-catch". It is estimated that in the next 20 years close to 70% of the populations of the world will live within 50 kilometers from the coast, imposing significant increased risks to the fragile coastal ecosystem. But despite these facts, the Ocean is not in the mind of the people, is not in the first lines of the agenda of political leaders.

In its recent report, published in 1998, during the International Year of the Ocean, the Independent World Commission of the Ocean, -- the Soares Commission -- proposed to conceive these huge spaces as *"trusteeships"* of humanity, involving each citizen of the world as one of the *"trustees"* of the Ocean. These are challenging new ideas, that would require the support and agreement of the international community. This is one of the many challenges that the citizens of this new XXI century will have to face.

In the meantime we use what we have, and we do what is possible.

The IOC play a very visible role in the last Informal Consultations on Oceans called by the General Assembly of the United Nations, last May in New York. This was the second of this high-level meetings, devoted to Marine Scientific Research and the transfer of Marine technology on one side and to in crease of "piracy and related crimes" on the other.

There UNESCO, through its IOC, was invited to undertake several new responsibilities in co-ordinating research and in helping with the development of capacity in marine sciences all over the world. There was a call to further improve the methods of diseminating available knowledge to governments, and to help, through the International Oceanographic Data and Information Exchange

(IODE) to serve as a depository of scientific information collected through international research programmes.

We live in a society where knowledge and information is becoming more critical to achieve progress. I understand that IODE is actively considering the ways and means by which it can better serve this global need, not only for physical data but also for geological, biological, chemical and other types of data that are in need of protection and to have an efficient system for their use. This is an extremely important area of our work.

A big part of the IOC and UNESCO visibility in New York, came from the realization by delegates in New York, of the success of many of the International Research Programmes that are supported by the IOC. The World Climate Research Project, that IOC sponsor together with the WMO, UNEP and the ICSU, the International Geosphere-Biosphere Project IGBP.

Special attention was given in New York to the development of the Global Ocean Observing System, GOOS. Together with the co-sponsoring agencies WMO, UNEP and ICSU, that recently were joined by FAO to support the development of the Coastal GOOS, IOC is undertaking the major task to build an operational observation system for the Ocean.

IOC has also helped in the development of new partnerships. The Space agencies are naturally interested in developing earth observations from space platforms. They know that this is one of the areas of their activities that have an immediate, visible impact. On the other hand the global coverage that satellites provide for many of the observations, has had profound impact on many scientific disciplines and applied field of activity, effectively changing the traditional way in which they were practiced.

I think this is the case with oceanography. The high variability of oceanic processes in space and time, that satellites have helped to visualized and measure for the first time, dramatically changed the vision that oceanographers, and everybody else, had about ocean circulation. The indirect, classical methods gave a more parsimonious picture of ocean currents. Today, very often the degree of coverage and the resolutions provided by satellites makes sometime difficult to recognize the “mean flows” of the currents, submersed under a myriad of eddies, jets and filaments of different size and of different duration.

Oceanography will never be the same after this new tools for observing the oceans were developed. Today IOC is involved in providing the counterpart of these space based observations. Under GODAE, (the Global Data Assimilation Experiment), one of the pilot projects of GOOS, Argo is being developed to deploy 3,000 free drifting floats over the world ocean. After these 3,000 floats are seeded over the oceans and start generating a continuous data stream with information on the density structure of the oceans, oceanography will never be the same again. An interesting fact is that Argo will provide a ground truthing for space observations at a scale never available before. Without doubt, this will be the most dramatic leap forward in many years in terms of observing the earth.

The new Statutes of the IOC state very clearly its Mission: “*to promote international cooperation and to coordinate programmes in research, services and capacity building, in order to learn more about the nature and resources of the ocean and coastal areas and to apply that knowledge for the improvement of management, sustainable development the protection of the marine environment and the decision making process of its Member States.”* (Art 2.1)

UNESCO is proud of been able to provide its IOC as a place to plan and co-ordinate these programmes, a place where the big challenges posed by the ocean can be addressed in order to stimulate the concerted action of its Member States and a wide range of partners inside but also outside the United Nations system.

Mr Matsuura ask me to inform you that he will attend the session of this XXst Assembly next Thrusday at 10.00 am. He certainly would not want to miss this opportunity to inform you on the progress in the reform process of UNESCO and also share with you his vision of the IOC. Let me finalize these words by wishing you a very successful Session.

Thank you very much.

C. Address by Mr Koïchiro Matsuura, Director-General of the United Nations Educational, Scientific and Cultural Organization (UNESCO)

10th July 2001

Mr. Chairman,
Distinguished Heads of Delegations,
Your Excellencies,
Ladies and Gentlemen,
Dear Colleagues and Friends,

It is a pleasure and an honour to join this distinguished Assembly and express my profound gratitude for the work you are all doing for a systematic and comprehensive study of the ocean and the coastal zones.

Unfortunately, due to other commitments I was unable to attend the Opening Ceremony. However, your Chairman and the Executive Secretary have kept me continuously informed of the progress of your deliberations.

I am fully satisfied with your achievements. I am convinced that the decisions taken by your Assembly will pave the way for the further development of IOC.

The status of IOC adopted by the 30th Session of the UNESCO General Conference in 1999 provided a unique opportunity to meet the challenge of studying the ocean, to protect the marine and coastal environment more efficiently, and to reflect on a new and more effective approach towards managing the ocean and coasts.

I have been informed by Dr. Bernal that last Tuesday the Assembly approved *ad interim* a measure destined to ensure a more equitable geographical distribution among Commission Secretariat staff, and that an open-ended group has been established to find a permanent solution. I find that these measures give an appropriate answer to some of the concerns expressed in the 30th Session of the General Conference, and I will be happy to include them in my verbal report to the coming 31th Session of the General Conference in October.

A few weeks ago, at the 161st Session of the UNESCO Executive Board, the debates revealed the great interest taken by Member States in IOC programmes. I expressed my satisfaction with the evaluation of IOC conducted by an external team of distinguished personalities. In the evaluation report, there are several important proposals about what should be done to make IOC activities stronger. I am particularly pleased to see that your Assembly has considered and agreed upon a number of follow-up activities to be undertaken in order to implement the evaluation team's recommendations. Some of the recommendations were addressed to me and to UNESCO's Governing Bodies and you may be sure that we shall find ways to respond in an appropriate manner.

Your agenda for the Assembly's session contains a number of important issues, of which I would like to mention a few.

The Intergovernmental Oceanographic Commission, as the competent body dealing with ocean science and services, has done much to create a comprehensive system of oceanic observations and to provide sustained support for global ocean science. All the well-focused research programmes of IOC are vitally needed in order to reduce the uncertainties in climate change and to furnish decision-makers with science-based advice. The success in meeting the needs of humankind in terms of information and forecasts on sea-level changes, CO2 emissions, climate warming, sea-ice extent, and other reliable indicators of climate change can only be achieved through an integrated and co-operative approach. In this regard, two developments deserve special attention and support: first, the creation of the Joint

WMO-IOC Technical Commission for Oceanography and Marine Meteorology, which brings IOC into close collaboration with the World Meteorological Organization, and, second, the process of restructuring the scientific and technical programmes that have been launched by IOC.

IOC's scientific and technical programmes are based on the reality that the ocean is not subject to the controls afforded by the jurisdiction of national boundaries and that each nation needs the same wide range of information in order to provide effective services. The policy of IOC in data and information exchange, based on the principle of free and open access, helps to meet these needs. We must spare no effort in implementing this policy.

Another important matter that has been under the consideration of the Assembly is coastal management for both economic prosperity and environmental protection. Two out of three of the world's cities of over 2.5 million inhabitants are now located in coastal regions and nearly two-thirds of the world's population live in coastal zones. To meet the challenge of protecting and conserving the coastal environment, IOC will need to strengthen its ICAM Programme. We have great expectations regarding your Global Conference on Oceans and Coasts at Rio + 10, which will identify new directions in the protection and management of the oceans and coasts.

Another important item on your agenda has been that of natural disasters. Being Japanese, I know only too well the horror of earthquakes and tsunamis, which are recurrent features of life in Japan as well as in many countries of the Pacific. IOC is co-ordinating a unique operational tsunami warning system. The achievements of the IOC Tsunami Programme are well known. Its activities have helped to save hundreds of thousands of lives and billions of dollars. However, much more should be done in earthquake forecasting, in generating a quick response to local tsunamis, and in raising public awareness of the dangers of tsunamis.

The role of IOC in regard to regional activities and capacity building has been another important item on your agenda. You may be aware that, after considerable reflection within UNESCO, I have restructured the Organization and have begun to implement the decentralization policy using a clusters approach. We had to abolish a few UNESCO field offices in order to make others stronger. It is my expectation that IOC's regional centers and programmes will work closely with UNESCO's field offices in a coherent and friendly manner. We are speaking a great deal about integration and the need for interdisciplinary projects. The best way to implement these will be through a regional approach.

The 161st Session of the UNESCO Executive Board supported the proposal of the five intergovernmental programme chairpersons on a joint undertaking in the Volga-Caspian Basin. In this regard, IOC will take the responsibility for the development of economic, legal, scientific and methodological support for decision-making in carrying out effective management of the Caspian coastal zones. I shall follow the progress of this important joint initiative with great interest.

Finally, you will be pleased to know that, in order to strengthen IOC, I am looking for ways and means of increasing support to the IOC programme. As a first step, and despite the financial constraints we have to face, I have proposed to UNESCO's governing bodies to restore in the next programme and budget the level of programme funding of the IOC as its previous level. This is, of course, not sufficient. At the same time, we need to look for extrabudgetary projects and resources as well and to increase the level of voluntary contributions from IOC Member States.

In view of the many ideas that float around the Reform of the UN system, the last thing that we would like to convey to the outside world is that in UNESCO we do not want to have and to keep the IOC as one of our flagship programmes. IOC was established here in UNESCO 41 years ago, and we intend that it remains here in UNESCO. Having said that, we continue to look for ways to permanently improve the working methods and procedures. With his permission, I would like to repeat here what I said in my letter to your Chairman, Professor Su Jilan: "I do recognize the need to clarify the links between the governing bodies of UNESCO and those of the IOC, in full compliance with the statutory framework now in place". IOC enjoys a significant level of "operational flexibility" granted by some exceptional authorities that have been delegated to the ADG for the IOC. I am ready to explore how we can improve and increase such operational flexibility. At the same time, I want to stress that the

functional autonomy that the General Conference of UNESCO gave to the IOC is, in my view, a call for an increased role, not a diminished role, for the Member States of the IOC. UNESCO as a whole has everything to gain from this.

Over the years, IOC has gradually built up its international reputation and standing to the extent that it is now seen as one of UNESCO's flagship programmes. I believe that with the ever more active commitment of its Member States, it will go from strength to strength. Your Assembly is to be congratulated for the way in which it has seriously and conscientiously reaffirmed the importance of the ocean and identified useful ways of enhancing the IOC programmes and international co-operation.

I hope you are enjoying both the Session and your stay in Paris.

ANNEX IV

THE BRUUN MEMORIAL LECTURE

Operational Oceanography – a perspective from the private sector

by Ralph Rayner*,
Managing Director of Fugro GEOS

Opening remarks
'Operational' - relating to operations, ready for action
'Oceanography' – the scientific study and description of the ocean
Chambers Dictionary, 1999

President, Distinguished Colleagues, Ladies and Gentlemen,

It is a great honour to be asked to deliver the 2001 Anton Bruun Memorial Lecture and I thank you for your kind invitation.

In giving this lecture I have the difficult task of following a succession of distinguished past speakers. In one particular respect I stand apart from them all, in that I practise the science of oceanography in a commercial environment. For most of my professional career I have been engaged in the business of applying oceanographic science to practical engineering and environmental problems for purposes of making a profit for shareholders. However, it is here that the distinction ends, since although I am responsible for a business, I remain motivated first and foremost by the science of oceanography.

In the sense of the dictionary definition, I have been practising operational oceanography for over twenty years.

Operational oceanography has frequently been compared with meteorology. In drawing such parallels, it must be remembered that the observational and modelling capacity underpinning operational meteorology has been developed over a considerable period of time and has reached a mature stage. Operational oceanography on the other hand, especially at a global scale, is still in its infancy.

In the early stages of the development of operational meteorology the role of the private sector as a provider of data products was a minor one. But in the last few decades there has been a rapid growth in private sector activity, to the extent that commercial companies dominate the provision of data products to a large and growing range of customers.

Commercial activity in the provision of operational oceanographic data products has also advanced considerably. In contrast to the activity in meteorological services, satisfying the demands of customers has preceded the development of significant public sector capability.

The creation of global operational observing and forecasting systems analogous to those in meteorology will permit considerable enhancement of existing data products and the development of many new products, some of which will undoubtedly lead to commercial opportunities.

But the commercial market is currently much smaller than that for meteorological products and, for reasons I will return to later, it is likely that this will remain the case.

First I will set the scene with a brief excursion into the historical roots of present day oceanographic science.

An historical perspective on operational oceanography
'We celebrate the past to awaken the future'
John F Kennedy, 14 August 1960

From its earliest beginnings, oceanography has been a discipline with vital practical applications and the development of marine science and technology has always been closely linked to the strategic and practical needs of government and commerce.

Although we have been attempting to predict ocean behaviour for over two thousand years, the first systematic use of marine information to create 'operational data products' on a significant scale lies within the activities of early chart makers. Their work underpinned world trade and played a key role in the outcome of conflicts between nations. Although the first hydrographic office was established in France in 1720, it was the British Admiralty Hydrographic Office, created in 1795, that became the dominant worldwide provider of nautical charts – an early example of a globalised marine information business.

The accuracy of the hydrographer's work, and the effective use of hydrographic data products, depended on navigation. But the ability to accurately navigate the world's oceans had to await the invention of a key piece of 'marine information technology', which emerged during the second half of the 18th century – the marine chronometer.

It is a common misconception that science leads to technology in a more or less linear fashion. Prior to the latter part of the 19th century this was certainly not the case. Few of the major industrial innovators between the mid-1700's and the mid-1800's were scientists. Indeed most were artisans or engineers with little or no scientific training. Their goal was not to understand how the world worked, but to make machines that worked better at a lower cost. During this period, radical innovations were not the fruit of scientific breakthroughs but of indefatigable trial and error under the guidance of experience and a craft tradition. These were men of common sense, curiosity, energy and vast ingenuity, standing on the shoulders not of scholars but of similar practical types. This was certainly the case of the inventor who solved the longitude problem.

The story of John Harrison's invention and perfection of the world's first marine chronometer is now well known through the publication and subsequent dramatisation of 'Longitude'. In this we saw how he developed the solution to the problem of determining longitude at sea, the most important scientific problem of his time, through increasing the accuracy of timekeeping. The story of his life's work, seeking to gain acceptance for his ideas, contains some interesting and important lessons about the problems of interaction that existed between academics, politicians and industry. It is my contention that these tensions still exist.

Today's hydrographic surveying and precision marine navigation businesses are all descended from these early beginnings. The key components of the marine information business now draw on a bewildering array of technologies from elaborate swathe sonars to the satellites of the Global Positioning System. By means of atomic clocks, global time is set to an accuracy Harrison would not have believed possible.

The origins of our ability to understand and predict the characteristics and behaviour of the oceans and the geology of the ocean floor have a shorter history than charting and navigation. Indeed, it was not until the late 19th century that oceanography began to emerge as a separate scientific discipline.

The United Kingdom can lay claim to a pivotal role in the establishment of oceanography not so much through the efforts of a single individual, but through collective endeavours. The pioneering three and a half year voyage of *HMS Challenger*, which sailed from Portsmouth in the late 19th Century, covered some 68,890 miles. The many years spent working up the data and samples collected during her voyage laid much of the foundation for the many strands of present day oceanographic science and continues today.

For me, of the individuals who made early contributions to oceanography in a truly heroic style, the life and work of Fridtjof Nansen stands out as exceptional. As a scientist, explorer, politician and humanitarian Nansen applied his energy and determination to making a difference, not just in science but in society as well.

It is hard to conceive the degree of determination and conviction that lay behind the voyage of the *Fram* – locking a ship into the arctic polar ice off the coast of Siberia, confident that she would move with the then unknown circumpolar current, to emerge some three years later off Spitzbergen. All this at a time when no communication was possible once a ship was out of sight of inhabited land. Nansen, and other key thinkers of the time, such as his friend and colleague Otto Sverdrup, gave us fundamental insights into how the oceans work; insights based on careful observation and analysis of data. Perhaps as important, Nansen demonstrated the need for inspiration, hard work, daring and adventure in achieving significant progress.

Another key contributor to the development of operational oceanography was Matthew Fontaine Maury. Maury's painstaking and methodical assessment of vessel logs created a better understanding of Atlantic Ocean currents, and especially the Gulf Stream. This was one of the first examples of a systematic derivation of the circulation in an ocean basin. In adding value to this existing data set, his objective was an overtly commercial one – to reduce the passage time of Atlantic crossings by taking advantage of the ocean environment. Maury was also a pioneer of early attempts to chart the deep ocean floor. Armed with a collection of a mere 200 deep water soundings hundreds of miles apart in the Atlantic, he produced the first chart of an entire ocean basin.

The voyage of the *Challenger* added many hundreds of soundings to Maury's collection. However, the business of determining ocean depth remained a tedious one. To measure the depth at a single deep water station and dredge a sample of the bottom was a long day's work, a day spent tossing on the waves and listening to the whine of a steam winch as it reeled in first the sounding line, then the dredge.

In today's world we now perform the same task using acoustic methods. These had their beginnings in underwater bell ringing. In November of 1826, a Swiss mathematician, Jean Daniel Colladon, positioned an assistant in a boat on one side of Lake Geneva. A 140 pound church bell hung from the boat a few feet below the surface. As the assistant struck the bell with a hammer and simultaneously lit a flare, Colladon sat in a boat at the other side of the lake, eight miles away, listening with a 17 foot long ear trumpet. This experiment on sound propagation through water laid the foundation for acoustic methods to probe the ocean depths. Subsequent development was then driven by pressing operational needs - to detect icebergs after the sinking of the Titanic, and to detect submarines after the sinking of the *Lusitania* during the Second World War.

The extension of acoustic techniques to map sub-surface geology was firmly rooted in the quest for academic knowledge about the formation of the ocean floor. It was the founder of the Lamont Doherty Earth Observatory, Maurice Ewing, who pioneered the use of powerful sound sources, in his case sticks of dynamite, to penetrate the buried layers of the ocean crust. His pioneering work led to the use of seismic techniques to help determine the engineering properties of the seafloor, and to prospect for offshore oil and gas.

The pioneering period of oceanography has had its full share of heroic and adventurous characters setting out on epic voyages of discovery and, along the way, unravelling many of the secrets and mysteries of the previously unfathomable oceans. Their emphasis was more on the description of the oceans and ocean processes than on long-term observation and the ability to predict future states.

In contrast, early work in the science of meteorology was firmly rooted in the need to be able to understand climate and forecast the weather. So from its earliest beginnings it was comprised of the systematic analysis of long periods of relatively routine observations. Here too there were some heroic explorers. For example, the Picards who set about voyages of exploration not only in the oceans but also in the atmosphere - at one time holding the record for both the deepest descent into the oceans and the highest ascent in the atmosphere. In the main though, meteorology was founded on the analysis and use

of routine, mostly land based, synoptic observations for which there was no parallel in early oceanography, except perhaps in the study of tides.

Meteorologists concentrated on determining the statistical basis of climate, and the principal features of atmospheric circulation. The advent of electronic communications, provided the basis to bring together global synoptic observations in near real-time. The digital computer permitted their use to support numerical simulations of the behaviour of the global atmosphere leading to today's forecasting capability. Add satellite observations and the spectacular increases in the speed of computers and you have the ingredients that have allowed present day meteorology to challenge the theoretical limits of atmospheric predictability.

Yet it is only in the last few decades that oceanography has similarly progressed towards routine, regular and continuous observation of the oceans coupled to operational rather than experimental ocean models. The objective has been to continuously monitor and forecast ocean behaviour on a global scale, in a manner analogous to meteorology. But so far we are way behind the meteorologists and lack much of the basic observing and communications infrastructure that they take for granted.

In essence operational oceanography requires a different kind of scientist compared to the early pioneers of our discipline. Largely gone are the lone, often bearded scientists of the past, with their discipline firmly based in the teamwork of seagoing oceanography.

Operational oceanography now demands a different type of teamwork. It must bring together the data from satellite observing systems and large scale automated observations at sea and permits the assimilation of these data into complex models running on some of the world's fastest computers. This is an activity that depends not only on the technologies of instrument miniaturisation, satellite sensing systems and the means to transmit, manage and analyse vast volumes of data, but also on a very different breed of oceanographers and engineers.

So what are the drivers for the World Ocean Circulation Experiment, large scale data assimilation programmes such as the Global Ocean Data Assimilation Experiment (GODAE) and ultimately the creation of a truly global capacity in long term monitoring and forecasting of the oceans?

Markets and market drivers
'Stop me and buy one!'
Advertising slogan for Wall's ice cream, coined by Cecil Rodd in 1922

Although the scientific parallels between operational meteorology and oceanography are enticing, there are important differences in the drivers for their development and the commercial markets for their respective data products.

The early drivers for operational meteorology are self-evident - understanding climate, and forecasting the weather, has always had a vital impact on human affairs. The requirement for a corresponding level of understanding of the ocean environment is a more recent invention.

Granted there have been long standing historical reasons to understand the marine environment from the standpoint of maritime trade and naval operations. However apart from the demands of submarine warfare many of the requirements in this area are more associated with marine meteorology than with oceanography.

The more recent need for comprehensive long-term monitoring and prediction of the physics, chemistry and biology of the oceans has been driven partly by the requirements of coastal management and partly the growing exploitation and sometimes conflicting or unsustainable use of ocean resources. But even these probably cannot justify an investment in global observation and forecasting of the oceans on a scale equivalent to that in operational meteorology.

There is another significant driver for the development of operational oceanography and that is the need to gain a better understanding of the role of the oceans in short and long-term climate perturbations.

Since the societal impact of such changes, whether natural or anthropogenic, is likely to be large this undoubtedly does merit significant public investment.

Improved prediction of climate change and the ability to respond to strategic concerns associated with global use of ocean resources thus form the primary justification for establishing a Global Ocean Observing System.

Putting a value on such needs is extremely difficult, since this is not a 'market' in the established commercial sense. It is clear though that the oceans provide vast benefits. In a recent study the total value of the services drawn from the marine environment was estimated at $18 trillion *per annum*. Knowing enough about the oceans to exploit these benefits in a sustainable and environmentally acceptable way increasingly requires that we manage the marine environment to the same degree as the land. Achieving this depends on the acquisition and utilisation of large volumes of marine information to support the management process. If you add to this the need to understand the pivotal role of the oceans in controlling climate then you have a very convincing argument for the investment in GOOS.

This is the argument that needs to be put to politicians for GOOS to become a reality.

Unfortunately, in the early stages of establishing a case for GOOS rather more spurious justifications were frequently proposed - based on the projected value of marketable operational data products. In my view these served only to undermine rather than strengthen the case for GOOS and created false expectations about the level of commercial opportunity.

It is necessary to take great care when evaluating and predicting the size of markets. In the case of the marine information sector there has frequently been confusion between the value of activities underpinned by marine information and the value of the primary market for marine information products and services. There has also been a tendency towards the view that if you can create a new or improved data product someone will be willing to buy it and perhaps pay a price directly related to the benefits that will accrue from it's use. In practise, the market for data and data products is a highly competitive and a highly discretionary one, where most of the potential customers are very conservative in their purchasing.

The confusion between what might be sold and what can be sold has led to gross overestimates of the commercial value of operational data products. We have seen many examples of products seeking a market as opposed to markets requiring a product. For example, and to take an example from a different field, in the early phases of the development of earth observation satellites it was predicted that sales of satellite earth observation data would reach $1,350M by 2000. Latest estimates for 2000 indicate that actual sales were of the order of $300M and most of these were sales from one part of the public sector to another. The marine information sector too has had its share of wildly optimistic projections of market size.

So what is the current volume of commercial activity in sales of operational oceanographic data products? How will it develop in the future?

Let us start with estimating the total volume of commercial activity in the marine environment in terms of expenditure by sector. This figure shows the expenditure levels associated with different marine activities. If we add to this the revenue from offshore oil and gas production, shipping revenues and naval expenditure we reach a total of approximately £700 billion or $1 trillion. This is the value of the entire world marine activities.

The value of marine information products and services that underpin this economic activity is a much smaller number estimated at about £2.7 billion or $4 billion with a projected growth, in real terms, to £5.4 billion or $8 billion by 2015. You will see from this table that this market is currently dominated by sales of survey and geophysical data products, information about the topography and geology of the oceans, rather than sales of what we would define as operational oceanographic products.

Although the fastest rates of market growth are expected in information systems, consultancy and forecasting the projected total size of the market is modest rather that spectacular.

Now lets focus on the commercial value of operational oceanographic products and compare this with the value of corresponding activity in operational meteorology.

Undoubtedly the implementation of a full ocean observing and forecasting system as envisaged in the plans for GOOS will lead to improved ocean information in support of commercial needs. However, this market is currently small, and while it can be further developed with enhanced and new products, it is unlikely to reach a scale equivalent to that of operational meteorology.

The commercial market for operational meteorological products is valued at in excess of $1 billion per annum. It comprises sales of forecast products to a very wide range of specialist customer groups such as utilities, the media, recreation, transport, commodities and trade and also includes a very large public demand for meteorological information.

In contrast, the market for marine forecast information is much smaller with total sales in the order of $70 million per annum. The reason for this large difference does not relate to the levels of maturity of the fields of operational meteorology and oceanography but to fundamental differences in need and demand for operational data products.

Commercial demands for operational oceanographic data products fall into a relatively narrow range of customer requirements. This is hardly surprising, as the bulk of commercial activity takes place on land and the human population lives on land, only venturing to sea in search of resources, to transport goods, to wage war or to spend leisure time. The principle commercial markets for operational oceanographic data products are therefore confined to the oil and gas industry, the shipping industry, the coastal management sector, fisheries and the leisure industry.

This brings me to another important issue and that is the distinction between users of operational oceanographic data and customers who operate in, or make use of the marine environment.

Users and customers
User – Person who uses
Customer – a buyer
Customise – make in such a way as to suit specified individual requirements
Chambers Dictionary, 1999

The terms user and customer are often used interchangeably, whereas strictly they have quite different meanings. A customer is someone or some organisation that purchases something. A user is someone of some organisation that makes use of something.

This distinction is critical. Customers for operational oceanography want to know how the marine environment influences their activities in terms of cost, safety and compliance with statutory obligations. They generally have no direct interest, or capability, in operational oceanography or the use of operational oceanographic information. Commercial oceanographic service providers add value to data and knowledge and customise it to meet a specific demand.

An example of this is in the installation of the ‘topside’ of a gas production facility in what is known in the oil and gas industry as a ‘floatover’. The operation of marrying this rather large and heavy installation with the submarine structure used to support it is a particularly delicate one. The organisation conducting this operation has no internal capability in operational oceanography. To cost effectively and safely complete the operation it clearly requires some highly specific help in understanding and predicting the marine environment. It would be of little use to provide the engineers responsible for this operation with a large quantity of generalised operational oceanographic data. What they require is a highly specific tailoring of the available information and the assurance that observations and forecasts are as accurate as possible.

To get this information they turn to a commercial oceanographic service provider who uses available data and knowledge to support the planning of the operation and the installation itself. This is a complex task. In the planning stage the commercial service provider must evaluate climatological information in the context of each phase of the installation operation. Working with the installation contractor, the provider must determine the statistical risk associated with different start dates for the project and differing plans for the installation operation. During the installation itself, the oceanographic provider must operate the real-time and forecast systems needed to make critical decisions about when to proceed with particular tasks. In this example, this involves real-time monitoring of the motion of the barge carrying the topside and predicting the response of the whole system to the prevailing and forecast meteorological and oceanographic conditions. Both real-time measurements and model predictions have to consider the response to long period waves of a specific critical period that, at this location, occur from more than one direction at the same time.

This example highlights the difference between a user and a customer. Users are ocean information specialists who add value to data and knowledge in the context of a particular customer's needs. Customers are rarely ocean information specialists.

Generally speaking, commercial organisations do not choose to engage in activities that are outside their core business, preferring to use specialist consultants and contractors to meet their needs.

Some further examples will serve to illustrate the types of operational products currently being purchased by customers. My examples are drawn from the oil and gas sector, as this is currently the largest customer for operational oceanographic services.

Many marine activities, and especially those of the offshore oil and gas industry, require knowledge of meteorological and oceanographic conditions if they are to be conducted safely and effectively. This requirement has led to the development of real-time metocean monitoring systems in several of the world's major offshore oil and gas basins.

This example shows the coverage of the Shell Metnet system, which acquires real-time metocean data from over twenty offshore installations in the North Sea. These data undergo rigorous quality control before being used to support a variety of offshore operations as well as providing data to support offshore weather and seastate forecasting. Supporting each requirement entails packaging the information in different ways; for example, this display provides data used to support helicopter operations.

Similar installations exist in other regions such as the South China Sea.

The data from monitoring systems of this type is used to build up data archives, which in many cases now exceed 20 years in duration. These archival data sets are used as one of the principal inputs to the derivation of statistical operating criteria and the environmental criteria used to support the design of new installations or modifications to existing structures.

In some cases these systems may cater for integrated provision of real-time data and forecasts. In this case we see an example of a typical site specific forecast product and in this a combination of measured and modelled wind and seastate information available on a customer Intranet or the Internet in real time.

In the most advanced systems, derived environmental digital libraries are also integrated to permit immediate access to environmental design and operational statistics across a range of customer organisations.

When it comes to forecasting of currents the absence of fully developed global and regional operational models requires that in some cases it is necessary to employ some clever statistical techniques. In this example of a current forecast system used in support of deepwater drilling on the European continental slope, the analysis of real-time local observations is coupled with trend analysis of long-term time histories. This provides a means of forecasting both the deterministic tidal component of the current and the likely development of the slope current and provides a forecast product sufficient for most operational needs.

A more advanced example of an operational forecast system is that being used to forecast the occurrence and impact of retroflection eddies which detach from the North Brazil current.

On this image there is a sea composite SEAWATCH image of the North Brazil Current showing a North Brazil current rim breaking away at the point of retroflection. Now the reason for interest in these eddies is that they propagate towards the Caribbean. They possibly cross areas of active exploration drilling. Some work done by David Front and Tony at Woods Hole led the foundation for the establishment of a means of forecasting these structures. These are very dynamic eddies. There are two examples of cross-sections and the one to the right hand side is actually penetrating to a depth of nearly 2,000 metres. There are also very energetic generating surface current in excess of a metre per second. If that sort of eddy crosses an active drilling site, it would cause some considerable problems because the structure used in the drilling would not be capable of operating under those conditions. What was needed was means of forecasting them. By combining air dropped drifters and satellite altimetry, and using those 2 sorts of information to build up great synoptic pictures of the eddy fields and then modelling those, we can build up a forecast product of this nature and we can project whether or not one of those eddies would cross an active drilling site.

The emerging capability in global and basin scale oceanographic forecast models offers a number of exciting opportunities. My own organisation is seeking to develop these opportunities through collaboration with a research centre active in the field of operational model development. In a joint venture between Fugro GEOS and the Nansen Environmental and Remote Sensing Center called 'Ocean Numerics' we are seeking to apply research models to practical marine information needs, initially in large-scale hindcast studies. This involves the development of nested model systems that are being used to generate long-term hindcasts of the European continental slope and more recently the shelf and slope off West Africa. Output from these hindcasts is used to support the derivation of design and operating criteria for deepwater oil and gas fields.

Of course what we really want to be able to do is to provide good quality forecasts of ‘ocean weather’. The objective of 'Ocean Numerics' is to provide the bridge between research into operational ocean forecast techniques and their use to satisfy the needs of commercial customers.

In this endeavour we are building on the work of many organisations and individuals. In particular we aim to commercially develop the outcome of a large European research initiative called Topaz.

The objective of the Topaz project is to create a pre-operational capability in basin scale oceanographic forecasting. 'Ocean Numerics' is the vehicle to then launch a fully fledged commercial forecasting service.

Within GOOS we can see how this approach might fit at a global level. This is neatly summarised in a diagram that I have borrowed from Francis Bretherton – the IGOS tree. In this diagram we see how the public and private sector might interact. The public sector provides a stream of synoptic marine observations, perhaps with private contributions, and creates global scale model outputs. The private sector adds value to meet the needs of specific customer groups.

The Future
‘Making predictions is very difficult, particularly about the future’
Nils Bohr

It is probable that private sector providers will remain the principal conduit through which improved oceanographic knowledge, information and data will be applied to the needs of commercial customers. This is because private sector providers will probably always be better able to customise information and knowledge to satisfy specialised niche demands and to marry oceanographic products with other data in such a way that they serve very specific customer needs. Because of their organisational structure, they are better at customer handholding and at specialisation. They are also better able to provide the other skills and infrastructure that inevitably accompany commercial activity.

There are some in the public sector meteorological industry who foresee that operational meteorology will become a wholly private sector activity. The arguments that they use could equally be applied to operational oceanography. But my view is that this is very unlikely to happen in either case. The strategic needs for both operational meteorology and operational oceanography are just too great to place them entirely in private hands. Equally, the infrastructure necessary to support global observations and modelling will probably never stand up to a commercial measure of return on investment.

The private sector may be able to tailor products to specific market niches more effectively than it's public sector counterparts. However, it is doubtful that the private sector will ever be in a position to support the research base needed to underpin the continual development of global operational oceanography.

With this in mind I would like to conclude by turning to the fostering of scientific progress, innovation and the development of new commercial products and services. In today's world this is a far more complex process than it was during the era of the industrial revolution. Science, technology and commerce are now intricately linked, and steered by incredibly complex political, social and cultural factors operating on a global basis.

As the frontiers of technology move ever closer to the frontiers of science, policy makers are increasingly seeking to form a direct link between scientific research and it's commercial exploitation. Policy makers, at least in some countries, are also driving large parts of the public and university research base towards behaving more like businesses. Stronger linkages between academic research and industrial exploitation are clearly desirable. However, there is a danger that a naïve and over prescriptive approach, or one which excessively blurs the functional boundaries between government, academia and industry, will impair the flow of new ideas that will underpin future wealth creation.

Central to the success of the marine information business is a strong curiosity and strategic research base with good links to industry to bring together those creating new ideas with those who understand market needs. A policy and cultural framework that encourages and fosters this process is a necessity.

In short, what is needed are links that encourage the wheels of commerce to turn.

Rather than being a linear process, the process of 'technology transfer' can be likened to a spoked wheel with all of the various participants around the rim and with the spokes representing the linkages between them. The participants include government and government policy makers, government agencies, research organisations and public and private research scientists and engineers, educators and educational establishments, industry and industrial scientists and engineers, users and customers. Unless the wheel is constructed and balanced properly, it will not move forward. Progress requires that participants have the right aims, with each fulfilling an appropriate role, and each having the correct linkages and partnerships with the others.

As we stand in the midst of the information revolution we are already seeing a rapid acceleration in the ways in which marine information is captured, distributed and utilised on a global scale. Like the early pioneers in our field, none of us has the foresight to see exactly where this process will lead us or precisely what commercial opportunities it may create but hopefully, it will lead to an improved capacity to manage and protect the marine environment and to a globally enhanced quality of life.

***Brief biography for Dr Ralph Rayner**

Following completion of a first degree in biology, and a masters degree in underwater science and technology, Dr Rayner undertook research into the physical oceanography of the Indian Ocean Chagos Archipelago leading to award of his doctorate in 1982.

His professional career started at Wimpey Laboratories Limited in 1981, where he joined a small unit working in coastal marine science. This unit later became the marine environmental sciences division of Wimpol and, in 1990, joined the newly formed Wimpey

Environmental. As a director of Wimpey Environmental Dr Rayner was responsible for the worldwide marine, freshwater, terrestrial and atmospheric consultancy businesses of the company.

In 1994 he was responsible for the formation of Global Environmental and Ocean Sciences Limited (GEOS). GEOS was acquired by the Fugro Group in 1996, and has since grown to become a world leader in the provision of oceanographic and marine meteorological consultancy services.

Throughout his career Dr Rayner has played an active part in the marine scientific community though membership of professional associations and committees, lecturing and authorship of technical and scientific papers.

He is currently a member of the Global Ocean Observing System Steering Committee, the UK NERC Coupled Ocean-Atmosphere Processes and European Climate Steering Committee, the UK Foresight Marine Panel and the Council of the Society for Underwater Technology.

His work on the Foresight Marine Panel led to the formation of the UK Marine Information Council and the European Oceanographic Industry Association, both of which he currently chairs.

ANNEX V

REPORT OF THE SESSIONAL GROUP ON TEMA

The IOC Assembly at its 21st session constituted a sessional group to examine TEMA matters in general terms, especially, as the action paper (Document IOCXXI/2) suggested that staff shortages handicapped the survey of TEMA needs recommended by the 20th Session of the Assembly, and the establishment of an External Advisory Group on TEMA.

Member States were particularly concerned that:

a) The list of documents presented to the 21st Session of the IOC Assembly did not include a position paper dedicated to TEMA, in spite of its importance;

b) Reportage of TEMA issues was lumped together inseparably with regions, and locked up and lost in the maze of documents;

c) Although TEMA and regional activities attracted as much as 17% of the budget, the actual allocation really to TEMA proper was rather inconspicuous; and,

d) That the intersessional TEMA efforts of the Commission could not be quantified and evaluated for cost-effectiveness.

The antecedents are that the 20th Session of the IOC Assembly (Document IOC-XX/3):

a) Requested for a survey of Member States, on TEMA needs on one hand, and contributions to capacity-building on the other, in order to aggregate the former into regional demands;

b) Approved the TEMA coordination mechanism consisting of - an Internal Management Group and an External Advisory Group, calling for the definition of a clear work plan and time schedule, and the co-option of the Chairperson of regional and technical subsidiary bodies into the TEMA advisory group; and,

c) Suggested that the TEMA Sessional Group should meet during its 33rd EC, taking advantage of the presence of regional bodies' chairpersons to evaluate the development of the TEMA programme.

It is also pertinent to recall that the Executive Council at its 33rd Session (Document IOC/EC-XXXIII/3) strongly supported the TEMA programme and the recommendations of the 20th Session of the Assembly *vis-à-vis* the survey of "TEMA needs" and the establishment of an External Advisory Group. The EC also requested the identification of a clear TEMA focal point in the IOC Secretariat.

The sessional group is to provide guidance on the ways and means to strengthen the TEMA Programme

Member States who attended the open-ended meeting of the group, chaired by the IOC Vice-President in charge of TEMA, included Cuba, Germany, Portugal, Canada, USA, Ghana, Netherlands, Norway, Pakistan, Iran, India, Brazil, Japan and SOPAC, as well some professionals of the IOC Secretariat, (WESTPAC, Perth, IODE, and TEMA).

The Group recalled that the External Evaluation Report:

a) Concluded that TEMA activities needed to be carefully assessed for resource use efficiency and effectiveness, and

b) Recommended the strengthening and prioritisation of IOC TEMA efforts by donor and recipient Member States.

As enumerated in Document IOC XXI/2 Annex 3 titled "Internal follow-up of the IOC external evaluation", IOC has allocated 25% of Programme and Budget to TEMA activities, and among the actions planned is recruitment for a P5 post for TEMA and fund raising (already included in 31 C/5).

The sessional group also noted the favourable comments of the Director-General of UNESCO on the Evaluation Report (Document IOC-XXI/inf.2), to the effect that "the TEMA programme will be strengthened by a professional full time position that will be open to recruitment to coordinate TEMA and Regions."

The sessional group was informed that in the early days, the demands for the Education component of TEMA were such that the programmes sum total requests exceeded the entire IOC budget. In that context, the Group learnt that TEMA benefited from 31% of the total IOC budget, once before, and that the present travails of the programme, evidenced by its sharing 17% of budget with regions, reflect IOC budgetary shortfalls, regional bodies constriction and TEMA focal point diffusion.

The sessional group requested for a split of the TEMA/Regions allocation into regions and TEMA. The TEMA sub-component is also to be further partitioned into its elements - staff salaries, staff travel, training, education and mutual assistance in order to **unmask and reveal** the **actual support for "real" TEMA.**

The breakdown made available, covering January 2000 to June 2001 (tabulation attached), suggests that

a) The sum of $ 1.527 million consisting of $ 0.479 million regular programme budget and $ 1.05 million extrabudgetary fund was expended;

b) The components were respectively $ 0.700, 0.091, 0.011, 0.583, 0.026 and 0.060 million for training, IOC workshops, IOC Chairs, IODE capacity-building for ODINAFRICA, study grants (education) and travel grants respectively as below:

$ Million	**Purpose**	**% of total**
0.700	Training	45.8
0.091	IOC Workshops	6.0
0.011	IOC Chairs	0.7
0.639	IODE capacity-building	41.8
0.026	Education (included Ph.D. study grants)	1.7
0.060	Travel grants to meetings	3.9

c) 12 trainees from 10 developing countries received individual travel or study grants;

d) Additional 500 trainees from 25 Member States participated in the Training Through Research Programme.

e) A marine education programme for Central America on primary and secondary school teachers was jointly co-developed with UNESCO Education Sector; and

f) 8 training events and other meetings with capacity-building content are planned for July-Dec. 2001.

The sessional group members were unanimous in their agreement with the crosscutting approach aligning and linking TEMA with the IOC programmes. However there was some apprehension that visibility and coordination problems might result.

A restructure of TEMA programme, prioritising IOC clearinghouse and broker functions, to catalyse and coordinate TEMA activities, was strongly advocated through appropriate linkage mechanisms.

The sessional group suggested that the elements of these mechanisms should include:

1) The appointment without further delay of a P5 full-time professional as Headquarters' TEMA contact staff and coordinator.

2) The TEMA coordinator should be energetic, enthusiastic, persuasive and sufficiently skilled to generate well articulated project proposals to attract extra budgetary support.

3) The Terms of Reference and work schedule of the TEMA coordinator should prioritise linkages with Programmes, Regional Bodies, NGOs and Member States.

4) IOC should consider franchising out components of TEMA especially human resource development activities to other organizations or NGOs, such as the IOI, when this may be appropriate or cost efficient.

5) The TEMA coordinator should organize a one day meeting prior to the Executive Council or Assembly, report on and showcase IOC's programme and regional capacity building activities. Prior to this meeting, Member States, regional bodies, subsidiary bodies and IOC programmes should provide written reports on their TEMA initiatives subdivided clearly into its Training, Education, Mutual Assistance and Capacity-building components. The TEMA coordinator is to synthesize this report and the outcome of the meeting into a clear written statement to the Executive Council or Assembly.

6) The TEMA coordinator should take into account all the TEMA related resolutions and recommendations of IOC so far, particularly the decisions of the 33rd Session of the Executive Council and the 20th Session of the Assembly. Outstanding issues predicated on the needs of Member States and aggregated intro regional plans, as appropriate, should be incorporated into the new TEMA programme blueprint and strategy documents for the approval of the IOC governing bodies.

7) The TEMA desk at Headquarters is to stimulate and source extra budgetary support in liaison with regions, as a channel for broadcasting TEMA opportunities available, tapping into the copious good will evident.

8) The TEMA Programme should actively seek, when possible, partnerships and shared costing of capacity building activities.

9) Appropriation for TEMA should be clearly identified and itemized in budget documents.

10) The sessional group concluded that sustainable protection and use of the ocean resources can only be accomplished through the concerted efforts of **ALL** countries, and that, in the long run, TEMA will be advantageous to both developing and developed Member States.

T. 0 Ajayi, Vice-Chairman of IOC, 10 July 2001

ANNEX VI

A. LIST OF MEMBER STATES OF THE IOC EXECUTIVE COUNCIL

Electoral group I

BELGIUM	GERMANY	TURKEY
CANADA	ITALY	UNITED KINGDOM (Vice-chair)
FINLAND	PORTUGAL	USA
FRANCE	SPAIN	

Electoral group II

RUSSIAN FEDERATION (Vice-chair)	UKRAINE

Electoral group III

ARGENTINA	COLOMBIA	JAMAICA
BRAZIL (Vice-chair)	COSTA RICA	MEXICO
CHILE	CUBA	PERU

Electoral group IV

AUSTRALIA	INDONESIA	PHILIPPINES
CHINA (Chair)	IRAN (Islamic Rep. of)	REPUBLIC OF KOREA
INDIA (Vice-chair)	JAPAN	VIET NAM

Electoral group V

EGYPT	MOROCCO	SENEGAL
GHANA	MOZAMBIQUE	SOUTH AFRICA
KENYA	NIGERIA (Vice-chair)	UNIT. REP. of TANZANIA

B. MEMBER STATES OF THE COMMISSION (129)

(as of 10 July 2001)

	AFGHANISTAN	(11 March	1991)
	ALBANIA	(26 January	1993)
	ALGERIA	(Jul. 1964/Nov.	1965)
	ANGOLA	(26 October	1982)
*	ARGENTINA	(Before November	1961)
*	AUSTRALIA	(Before November	1961)
	AUSTRIA	(Oct. 1962/Jun.	1964)
	AZERBAIJAN	527 January	1998)
	BAHAMAS	(29 January	1979)
	BANGLADESH	(29 October	1982)
	BARBADOS	(18 December	1985)
*	BELGIUM	(Before November	1961)
	BELIZE	(22 September	1995)
	BENIN	(23 October	1986)
*	BRAZIL	(Before November	1961)
	BULGARIA	(Oct. 1967/Dec.	1969)
	CAMEROON	(Nov. 1971/Nov.	1973)
*	CANADA	(Before November	1961)
	CAPE VERDE	(20 August	1984)
*	CHILE	(Before November	1961)
*	CHINA	(Before November	1961)
*	COLOMBIA	(Oct. 1967/Dec.	1969)
	COMOROS	(08 February	2000)
	CONGO	(Nov. 1961/Sep.	1962)
*	COSTA RICA	(28 February	1975)
	CÔTE D'IVOIRE	(Before November	1961)
	CROATIA	(24 December	1992)
*	CUBA	(Before November	1961)
	CYPRUS	(05 December	1977)
	DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	(31 October	1978)
	DENMARK	(Before November	1961)
	DOMINICA	(21 September	1999)
	DOMINICAN REPUBLIC	(Before November	1961)
	ECUADOR	(Before November	1961)
*	EGYPT	(Oct. 1969/Nov.	1971)
	EL SALVADOR	(16 February	1993)
	ERITREA	(12 November	1993)
	ESTONIA	(10 March	1992)
	ETHIOPIA	(05 March	1976)
	FIJI	(09 July	1974)
*	FINLAND	(Before November	1961)
*	FRANCE	(Before November	1961)
	GABON	(26 October	1977)
	GAMBIA	(30 August	1985)
	GEORGIA	(09 July	1993)
*	GERMANY	(Before November	1961)
*	GHANA	(Before November	1961)
	GREECE	(Oct. 1962/Jun.	1964)
	GUATEMALA	(Dec. 1965/Oct.	1967)
	GUINEA	(01 May	1982)
	GUINEA-BISSAU	(26 January	1984)
	GUYANA	(20 July	1977)
	HAITI	(23 March	1976)
	ICELAND	(Oct. 1962/Jun.	1964)
*	INDIA	(Before November	1961)
*	INDONESIA	(Oct. 1962/Jun.	1964)
*	IRAN, Islamic Republic of	(03 June	1975)
	IRAQ	(Oct. 1969/Nov.	1971)
	IRELAND	(07 November	1978)
	ISRAEL	(Before November	1961)
*	ITALY	(Before November	1961)
*	JAMAICA	(Oct. 1967/Dec.	1969)
*	JAPAN	(Before November	1961)
	JORDAN	(06 April	1975)
*	KENYA	(Nov. 1971/Nov.	1973)
	KUWAIT	(13 November	1974)
	LEBANON	(Oct. 1962/Jun.	1964)
	LIBYAN ARAB JAMAHIRIYA	(11 March	1974)
	MADAGASCAR	(Dec. 1965/Oct.	1967)
	MALAYSIA	(Jul. 1964/Nov.	1965)
	MALDIVES	(20 May	1987)
	MALTA	(Oct. 1969/Nov.	1971)
	MAURITANIA	(Before November	1961)
	MAURITIUS	(Oct. 1969/Nov.	1971)
*	MEXICO	(Before November	1961)
	MONACO	(Before November	1961)
*	MOROCCO	(Before November	1961)
*	MOZAMBIQUE	(08 April	1981)
	MYANMAR	(07 June	1988)
	NAMIBIA	(25 April	2001)
	NETHERLANDS	(Before November	1961)
	NEW ZEALAND	(Nov. 1961/Sep.	1962)
	NICARAGUA	(17 November	1977)
*	NIGERIA	(Nov. 1971/Nov.	1973)
	NORWAY	(Before November	1961)
	OMAN	(16 November	1982)
	PAKISTAN	(Before November	1961)
	PANAMA	(Oct. 1967/Sep.	1969)
*	PERU	(Dec. 1965/Oct.	1967)
*	PHILIPPINES	(Oct. 62/Jun.	1964)
	POLAND	(Before November	1961)
*	PORTUGAL	(Oct. 1969/Nov.	1971)
	QATAR	(20 July	1976)
*	REPUBLIC OF KOREA	(Before November	1961)
	ROMANIA	(Before November	1961)
*	RUSSIAN FEDERATION	(Before Nov.	1961)
	SAINT LUCIA	(14 September	1992)
	SAMOA	(10 April	1978)
	SAUDI ARABIA	(14 June	1978)
*	SENEGAL	(Oct. 1967/Sep.	1969)
	SEYCHELLES	(27 February	1979)
	SIERRA LEONE	(19 April	1974)
	SINGAPORE	(Dec. 1965/Oct.	1967)
	SLOVENIA	(16 June	1994)
	SOLOMON ISLANDS	(11 May	1982)
	SOMALIA	(10 July	1974)
*	SOUTH AFRICA	(Oct. 1967/Sep.	1969)
*	SPAIN	(Before Nov.	1961)
	SRI LANKA	(Jun. 76/Jan.	1977)
	SUDAN	(26 August	1974)
	SURINAM	(21 January	1977)
	SWEDEN	(Jul. 1964/Nov.	1965)
	SWITZERLAND	(Before Nov.	1961)
	SYRIAN ARAB REPUBLIC	(Oct.1969/Nov.	1971)
	THAILAND	(Before Nov.	1961)
	TOGO	(22 October	1975)
	TONGA	(03 January	1974)
	TRINIDAD & TOBAGO	(Oct. 1967/Sep.	1969)
	TUNISIA	(Before Nov.	1961)
*	TURKEY	(Nov. 1961/Sep.	1962)
*	UKRAINE	(Nov. 1961/Sep.	1962)
	UNITED ARAB EMIRATES	(02 June	1976)
*	UNITED KINGDOM OF GREAT BRITAIN & NORTHERN IRELAND	(Before Nov.	1961)
*	UNITED REPUBLIC OF TANZANIA	(Oct. 1967/Sep.	1969)
*	UNITED STATES OF AMERICA	(Before Nov.	1961)
	URUGUAY	(Before Nov.	1961)
	VENEZUELA	(Oct. 1962/Jun.	1964)
*	VIET NAM	(Before Nov.	1961)
	YEMEN	(22 May	1960)

MEMBERS OF THE EXECUTIVE COUNCIL ARE INDICATED WITH AN ASTERISK (*)

ANNEX VII

LIST OF DOCUMENTS

Document Code	Title	Agenda Items	Languages available
WORKING DOCUMENTS			
IOC-XXI/1 prov. rev.	Revised Provisional Agenda	2.1	E F R S
IOC-XXI/1 Add. prov. rev.	Revised Provisional Timetable	2.4	E only
IOC-XXI/2	Action Paper	--	E F R S
IOC-XXI/2 Annex 1	Progress Report on Budget Execution (2000-2001)	3.1	E F R S
IOC-XXI/2 Annex 2	Proposal on the Draft Programme and Budget 2002-2003 (*Draft 31 C/5*)	3.2 & 6.1	E F R S
IOC-XXI/2 Annex 3	Internal Follow-up of the IOC External Evaluation	4.4	E only
IOC-XXI/2 Annex 4 rev.	Revised Rules of Procedure	4.5	E F R S
IOC-XXI/2 Annex 5	Evolution of the Tsunami Programme: a Glimpse into the Future	5.3.3	E F R S
IOC-XXI/2 Annex 6	A Proposal for Restructuring the Ocean Science Section	5.1.3	E F R S
IOC-XXI/2 Annex 7	Report on Structure, Mandate and Modus Operandi of GOOS	5.2.1	E F R S
IOC-XXI/2 Annex 8	A Regional Policy for GOOS	5.2.1	E F R S
IOC-XXI/2 Annex 9	Guidelines for the establishment of IOC regional offices and project offices	5.4.1	*(cancelled)*
IOC-XXI/2 Annex 10	Pogress Report on Storm Surges Project	5.5	E F R S
IOC-XXI/2 Annex 11	IOC-IOI Co-operation – Ways to go ahead	5.6.5	E only
IOC-XXI/3 prov.	Draft Summary Report	--	E F R S
IOC-XXI/4 prov.	Provisional List of Documents	2.4	E F R S
IOC-XXI/5 prov.	Provisional List of Participants	--	E/F/S
REPORTS OF IOC AND COOPERATIVE BODIES REQUIRING ACTION			
IOC/EC-XXXIV/3	Summary Report of the Thirty-fourth session of the Executive Council, Paris, 2 July 2001	--	E F R S
IOCEA-V/3s	Report of the 5th Session of the IOC Regional Committee for the Central Eastern Atlantic (IOCEA), Dakar, 5 – 11 May 2000	5.4.7	E F
IOC/ABE-LOS-I/3s	Report of the First Meeting of the Advisory Body of Experts on the Law of the Sea (ABE-LOS), Paris, 11 – 13 June 2001 *(executive summary)*	4.2.1	E F
IOC/DOSS 2-V/3	Report of the ad hoc Study Group on IOC Development, Operations, Structure and Statutes (DOSS 2), Paris, 13 - 16 February 2001	4.5	E F R S
IOC/GE-ICAM II/3s	Report of the 2nd Meeting of the Advisory Group of Experts on Integrated Coastal Area Management (ICAM), Paris, 15-16 March2001 *(executive summary)*	5.1.2	E only

Document Code	Title	Agenda Items	Languages available
--	GEOHAB Science Plan, April 2001	5.1.3	E only
--	Outline of GEOHAB Implementation Plan	5.1.3	E only
IOC/INF-1154	Publications from the GIPME Open Ocean Baseline Study	5.1.4	E only
IOC-WMO-UNEP/ I-GOOS-V/3s	Report of the Fifth Session of the Intergovernmental Committee for the Global Ocean Observing System, Paris, June 2001 *(executive summary)*	5.2.1	E only
IOC/GE-GLOSS-VII/3*	Report of the 6th Session of the IOC Group of Experts on the Global Sea Level Observing System (GLOSS), Hawaii, 26 – 27 April 2001 *(draft)*	5.2.2	E only
IOC/IODE-XVI/3*	Report of the 16th Session of the IOC Committee on International Oceanographic Data and Information Exchange (IODE), Lisbon, 31 Oct. – 8 Nov. 2000	5.3.1	E
IOC/INF-1153	Report of the Consultative Group on Ocean Mapping (CGOM) to the 21st Assembly, May 2001	5.3.2	E only
IOC/INF-1152	Meeting of the Officers of the International Co-ordination Group for the Tsunami Warning System in the Pacific (ICG/ITSU), Honolulu, 6-9 February 2001	5.3.3	E only
IOC/INF-1161	The Joint Communication of the Chairpersons of the Five Scientific Programmes of UNESCO and the views of the Executive Board at its 161st session (May - June 2001)	5.6.2	E

INFORMATION AND OTHER REFERENCE DOCUMENTS

IOC-XX/3	Summary Report of the Twentieth Session of the IOC Assembly	--	E F R S
IOC/EC-XXXIII/3	Summary Report of the Thirty-third Session of the IOC Executive Council	--	E F R S
IOC Annual Report No. 7 Addendum	Implementation of IOC Governing Bodies Resolutions	3.	E F R S
IOC-XXI/Inf.1	Guidelines for Participants	--	E only
IOC/INF-1156	Meeting of the IOC Intersessional Intergovernmental Working Group on the 2nd session of the Open-ended Informal Consultative Process on Oceans and the Law of the Sea, Lisbon, 30 – 31 March 2001 *(summary report)*	4.2.1	E only
IOC/INF-1162*	Draft summary of discussions at the 2nd meeting of the United Nations open-ended informal consultative process on oceans and the law of the sea, New york, 7 – 11 May 2001	4.2.1	E only
IOC/INF-1148	IOC Statutes, November 1999	4.5	E/F/S/R
IOC/INF-785*	IOC Manual	4.5	E
IOC/INF-1163*	First Session of the Intergovernmental Working Group on IOC Oceanographic Data Exchange Policy, First Session, Brussels, Belgium, 29-31 May 2001	4.6	E

* One copy per delegation.

Document Code	Title	Agenda Items	Languages available
IOC/INF-1155	IOC Ocean Science Section: a Basis for Restructuring	5.1.5	E only
IOC/INF-1124*	Tsunami Warning System in the Pacific (ITSU) Master Plan	5.3.3	E F R S
IOC/ITSU-XVII/3*	Report of the 17th Session of the International Coordination Group for the Tsunami Warning System in the Pacific, Seoul, 4 – 7 Oct. 1999	5.3.3	E F R S
IGOS Bulletin, No. 4*	The Integrated Global Observing Strategy Bulletin, March 2001	5.2.	E F
--**	Status of Coral Reefs of the World, 2000	5.1.3	E only
--*	Global Ecology and Oceanography of Harmful Algal Blooms (GEOHAB) leaflet	5.1.3	E only
IOC Circular Letter 1682*	Proposed Technical Arrangements for the Elections at IOC-XXI	4.5	E F R S
--	Report of COOP-I	5.2.1	
GCOS-GOOS-WCRP/ OOPC-V/3*	5th Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Bergen, 20 –23 June 2000	5.2.1	E only
IOC-WMO-UNEP-ICSU/First GOOS User's Forum/3*	Report on 1st GOOS Users' Forum, November 2000	5.2.1	E only
	Update on the GOOS Initial Operational System	5.2.1	
IOC/WESTPAC-NEAR-GOOS-CC-V/3*	Report of 5th Session of IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Seoul, 7 – 8 December 2000	5.2.1	E only
IOC Workshop Report 173*	The Benefits of the Implementation of the Global Ocean Observing System in the Mediterranean Region, Rabat, 1 – 3 November 1999	5.2.1	E only
IOCARIBE-GOOS-II/3*	Report of the 2nd Session of ad hoc Advisory Group for IOCARIBE-GOOS, Havana, 28 Nov. – 1 Dec. 2000	5.2.1	E
IOC Workshop Report 174*	IOC-SOPAC Regional Workshop on Coastal Global Ocean Observing System for the Pacific Region, Apia, Samoa, 16 – 17 August 2000	5.2.1	E only
IOC-WMO-UNEP/I-GOOS-V/Inf.12*	Report on Status of Perth Office and programmes	5.2.1	E only
--	Report of the IOC-ICES Steering Group for GOOS, Southampton	5.2.1	E only
--	GOOS Data and Information Management Plan, Version 3	5.2.1	E only
IOC/INF-1146*	Strategic Plan for the Coastal component of GOOS	5.2.1	E only
--*	HOTO design plan	5.2.1	E only

** On request.

Document Code	Title	Agenda Items	Languages available
IOC/INF-1150	Strategic Design Plan for the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System – Tracking change in Marine Ecosystem	5.2.1	E only
IOC/INF-1157*	GOOS Status Report 2000	5.2.1	E only
GOOS News No. 10*	Global Ocean Observing System Newsletter, December 2000	5.2.1	E only
--**	Report on progress with GLOSS	5.2.3	E only
--**	The IGOS Oceans Theme Document *(draft)*	5.2.1	E only
WMO-IOC/ JCOMM TRANS-II/3**	Report of the Second transition planning meeting of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology, Paris, 14-16 June 2000	5.2.2	E only
--	Report of the GCOS Steering Committee, Beijing, 2000	5.2.5	E only
JCOMM Technical Report 11*	JCOMM Capacity Building Strategy	5.5	E only
IOC/INF-1035*	Report of the First session of the open-ended Intersessional Working Group on IOC's Possible role in the Relation to the United Nations Convention on the Law of the Sea, Paris, 13-15 May 1996	5.6.1	E F
--**	Report of the IOC- Southampton Oceanography Centre on the implementation of Art.76 of UNCLOS (*definition of continental shelf*)	5.6.1	E only

* One copy per delegation.
** On request.

ANNEX VIII

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ANNEX IX

LIST OF ACRONYMS

ABE-LOS	Advisory Body of Experts on the Law of the Sea
ACC-SOCA	Administrative Committee on Coordination – Sub-Committee on Oceans and Coastal Areas
ACOPS	Advisory Committee on Protection of the Sea
ACSYS	Arctic Climate System Study
AMCEN	African Ministerial Conference on the Environment
ANCA	Working Group on Harmful Algae in the Caribbean and Adjacent Regions /IOCARIBE/
APEC	Asia-Pacific Economic Cooperation Council
Argo	Array for Real-time Geostrophic Oceanography
ASFA	Aquatic Sciences and Fisheries Abstracts /FAO-IOC-UN/
ASLO	merican Society of Limnology and Oceanography
Black SeaGOOS	Black Sea regional GOOS
BSEP	Black Sea Environmental Programme /GEF/
BSRC	IOC Black Sea Regional Committee
CBD	Convention on Biological Diversity (Rio de Janeiro, 1992)
CEOP	Coordinated Enhanced Observing Period
CEOS	Committee on Earth Observation Satellites
CEP	Caspian Environmental Programme
CGMS	Coordination Group for Meteorological Satellites
CGOM	Consultative Group Ocean Mapping
C-GOOS	Coastal Panel of the Global Ocean Observing System /IOC-WMO-UNEP-ICSU/ ; short name: GOOS Coastal Panel
CIESM	International Commission for the Scientific Exploration of the Mediterranean Sea
CLCS	Commission on the Limits of the Continental Shelf
CliC	Climate and Cryosphere (project)
CLIVAR	Climate Variability and Predictability
COASTS	Inter-disciplinary Study of Coastal Processes Programme
COOP	Coastal Ocean Observations Panel
COP	Conference of the Parties
COSTED	Committee on Science and Technology in Developing Countries/International Biosciences Network
CPPS	Permanent Commission for the South Pacific
CSI	Coastal Regions and Small Islands Project/UNESCO
CSIRO	Commonwealth Scientific and Industrial Research Organization
CSTR	Committee of Scientific and Technical Research (OAU)
DBCP	Data Buoy Cooperation Panel
DNA	Designated National Agency /IODE/
DOALOS	Division for Ocean Affairs and the Law of the Sea (UN)
DOSS	*Ad hoc* Study Group on IOC Development, Operations, Structure and Statutes
E2EDM	End-to-end Data Management
EC	European Commission
EEZ	Exclusive Economic Zone
ENSO	El Niño and the Southern Oscillation (An Ocean/Atmosphere Interaction Study) (USA)
ESS	Electronic Scanning Sensor
EU	European Union
EuroGOOS	European GOOS
FAO	Food and Agriculture Organization (UN)
Fugro GEOS	Fugro Global Environmental and Ocean Sciences Limited
GCMD	Global Change Master Directory /GOSIC/
GCOS	Global Climate Observing System

GCRMN	Global Coral Reef Monitoring Network
GDP	Global Drifter Programme /TOGA-WOCE/
GEBCO	General Bathymetric Chart of the Oceans
GEF	Global Environment Facility
GEOHAB	Global Ecology and Oceanography of Harmful Algal Blooms
GESAMP	Group of Experts on the Scientific Aspects of Marine Pollution
GEWEX	Global Energy and Water Cycle Experiment
GE	Group of Experts
GIPME	Global Investigation of Pollution in the Marine Environment
GIWA	Global International Water Assessment
GLOBEC	Global Ocean Ecosystems Dynamics
GLOSS	Global Sea-Level Observing System
GODAE	Global Ocean Data Assimilation Experiment
GOOS	Global Ocean Observing System
GOOS-AFRICA	African Global Ocean Observing System
GOSIC	Global Observing Systems Information Centre
GPA-LBA	Global Programme of Action for the Protection of the Marine Environment from Land-based Activities
GPO	GOOS Project Office
GSC	GOOS Steering Committee
GTOS	Global Terrestrial Observing System
GTSPP	Global Temperature Salinity Profile Programme /IGOSS-IODE
HAB	Harmful Algal Blooms
HDNO	Head Department of Navigation and Oceanography
HLCP	High-Level Committees on Programme /ACC/
IAEA	International Atomic Energy Agency
IAPSO	International Association for the Physical Sciences of the Ocean (IUGG)
IASI	Intra-Americas Sea Initiative
IBC	International Bathymetric Chart
IBCEA	International Bathymetric Chart of the Central Eastern Atlantic (IOC)
IBCWIO	International Bathymetric Chart of the Western Indian Ocean
IBCWP	International Bathymetric Chart of the Western Pacific /IOC
ICAM	Integrated Coastal Area Management
ICES	International Council for the Exploration of the Sea
ICG/ITSU	International Coordination Committee for the Tsunami Warning System in the Pacific
ICSU	International Council for Science
IDNDR	International Decade for Natural Disaster Reduction (1989-1999)
IGBP	International Geosphere-Biosphere Programme (ICSU)
IGCO	Integrated Global Carbon Observations
I-GOOS	IOC-WMO-UNEP Committee for the Global Ocean Observing System ; short name: GOOS Committee
IGOS	Integrated Global Observing Strategy
IGU	International Geographical Union
IHDP	International Human Dimensions Programme (on Global Environmental Change)
IHP	International Hydrological Programme (UNESCO)
IMO	International Maritime Organization
IOC	Intergovernmental Oceanographic Commission (UNESCO)
IOCARIBE	IOC Sub-commission for the Caribbean and Adjacent Regions
IOCCG	International Ocean Colour Coordinating Group
IOCEA	IOC Regional Committee for the Central Eastern Atlantic
IOCINCWIO	IOC Regional Committee for the Cooperative Investigations in the North and Central Western Indian Ocean
IOCINDIO	IOC Regional Committee for the Central Indian Ocean
IOCSOC	IOC Regional Committee for the Southern Oceans
IODE	International Oceanographic Data and Information Exchange (IOC)
IOI	International Ocean Institute

IPCC	Intergovernmental Panel on Climate Change /UNEP-WMO/
IPHAB	IOC Intergovernmental Panel on Harmful Agal Blooms
ISA	International Seabed Authority
ISDR	International Strategy on Disaster Reduction
ITIC	International Tsunami Information Centre
IUGG	International Union of Geodesy and Geophysics (ICSU)
IUGS	International Union of Geological Sciences
JCOMM	Joint Technical Commission for Oceanography and Marine Meteorology (WMO-IOC)
JCOMMOPS	JCOMM Operations Centre
JGOFS	Joint Global Ocean Flux Study /SCOR-IOC/
JSC	Joint Scientific Committee for the WCRP /WMO-ICSU-IOC/
KMFRI	Kenya Marine & Fisheries Research Institute
LME	Large Marine Ecosystems
LOICZ	Land-Ocean InteractionS in the Coastal Zone (ICSU/IGBP)
MAB	The Man and the Biosphere Programme (UNESCO)
MAMA	Mediterranean Network to access and upgrade Monitoring and Forecasting Activity in the Region
MAMCOMP	Training Programme on Modelling and Monitoring of Coastal Marine Processes
MAP/UNEP	Mediterranean Action Plan of the United Nations Environment Programme
MAST	Marine Science and Technology Programme
MEDAR/MEDATLAS	Mediterranean Data Archaeology and Rescue/Mediterranean Hydrographic Atlas
MedGOOS	Mediterranean regional GOOS
MEDI	Marine Environmental Data Information Referral System /IOC/
MFSPP	Mediterranean Forecasting System Pilot Project /EC/
MoU	Memorandum of Understanding
NASA	National Aeronautics and Space Administration (USA)
NATO	North Atlantic Treaty Organization
NEAR-GOOS	North-East Asian Regional GOOS
NODC	National Oceanographic Data Centre /IODE/
NOWPAP	North-West Pacific Action Plan /UNEP/
OAS	Organization of American States
OAU	Organization of African Unity
ODAS	Ocean Data Acquisition System
ODINAFRICA	Ocean Data and Information Network for Africa (IOC-Flanders)
ODINEA	Ocean Data and Information Network for Eastern Africa
ODINLAC	Ocean Data and Information Network for Latin American Countries
OEMEPS	Ocean Ecosystem and Marine Environmental Protection Science /IOC/
OOPC	Ocean Observation Panel for Climate
OSLR	Ocean Science in Relation to Living Resources
OSPAR Commission	Commission established by Article 10.1 of the OSPAR Convention
OSPAR Convention	Convention for the Protection of the Marine Environment of the North-East Atlantic (1992)
PacificGOOS	Pacific regional GOOS
PACSICOM	Pan-African Conference on Sustainable Integrated Coastal Management (Maputo, Mozambique, 18-25 July 1998)
PICES	North Pacific Marine Science Organization (Pacific ICES)
PIM	International Ocean Institute; also known as: Pacem in Maribus (Peace in the Ocean)
POGO	Partnership for Observation of the Global Ocean
PSMSL	Permanent Service for Mean Sea-Level
PTWC	Pacific Tsunami Warning Centre
RAMP	Rapid Assessment of Marine Pollution
RECOSCIX-WIO	Regional Cooperation in Scientific Information Exchange for the Western Indian Ocean
RNODC	Responsible National Oceanographic Data Centre /IODE/
ROPME	Regional Organization for the Protection of the Marine Environment
RTD	Research, Technology and Development

SBSTA	Subsidiary Body for Scientific and Technological Advice (see UNFCCC)
SBSTTA	Subsidiary Body on Scientific, Technical and Technological Advice /CBD/
SCAR	Scientific Committee on Antarctic Research (ICSU)
SCOPE	Scientific Committee on Problems of the Environment (ICSU)
SCOR	Scientific Committee on Oceanic Research
SEA START	Global Change System for Analysis, Research and Training /IGBP/
SEA-GOOS	South-East Regional GOOS
SEREAD	Scientific Educational Resources and Experience with Deployment of Argo Floats in the Pacific
SOCIO	Sustained Observations of Climate in the Indian Ocean
SOLAS	International Convention for the Safety of Life at Sea /IMO 1974/; also known as: SOLAS Convention
SOOP	Ship-of-Opportunity Programme
SOOPIP	IGOSS Ship-of-Opportunity Programme Implementation Panel; short name: SOOP Implementation Panel
SOPAC	South Pacific Applied Geoscience Commission
SPACC	Small Pelagic Fish and Climate Change Group /SCOR/
SSC	Climate System Monitoring
SSG	Scientific Sub-Group
SST	Sea Surface Temperature
TAO	Tropical Atmosphere Ocean Array [co-sponsored by CLIVAR, GOOS and GCOS, had been dissolved and replaced by a Tropical Moored Buoy Implementation Panel (TIP)]
TEMA	Capacity Building in Marine Sciences, Services and Observations
TWS	Tsunami Warning System
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Convention on the Law of the Sea
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
VOS	Vessel of Opportunity; Ship-of-Opportunity
WAPMERR	World Agency of Planetary Monitoring and Earthquake Risk Reduction
WCP	World Climate Programme
WCRP	World Climate Research Programme
WESTPAC	IOC Sub-commission for the Western Pacific
WGIPA	Working Group on Integrated Problem Analysis
WMO	World Meteorological Organization
WOCE	World Ocean Circulation Experiment
XML	Marine eXtensible Markup Language