

**Intergovernmental Oceanographic Commission**  
*Reports of Governing and Major Subsidiary Bodies*



**Forty-first Session  
of the Executive Council**

Paris, 24 June–1 July 2008

**UNESCO**

**Intergovernmental Oceanographic Commission**  
*Reports of Governing and Major Subsidiary Bodies*

# **Forty-first Session of the Executive Council**

Paris, 24 June–1 July 2008

**UNESCO 2008**

IOC/EC-XLI/3  
Paris, 29 July 2008  
Original: English

## TABLE OF CONTENTS

page

<b>1.</b>	<b>OPENING .....</b>	<b>1</b>
<b>2.</b>	<b>ORGANIZATION OF THE SESSION .....</b>	<b>3</b>
2.1	ADOPTION OF THE AGENDA .....	3
2.2	DESIGNATION OF THE RAPPORTEUR .....	3
2.3	ESTABLISHMENT OF INTRASESSIONAL COMMITTEES .....	3
2.4	INTRODUCTION OF TIMETABLE AND DOCUMENTATION.....	4
2.5	ROGER REVELLE MEMORIAL LECTURES.....	4
<b>3.</b>	<b>DEVELOPMENTS SINCE THE 24TH SESSION OF THE IOC ASSEMBLY .....</b>	<b>5</b>
3.1	REPORT BY THE CHAIRMAN ON INTERSESSIONAL ACTIVITIES	5
3.2	REPORT BY THE EXECUTIVE SECRETARY ON PROGRAMME AND BUDGET IMPLEMENTATION	5
<b>4.</b>	<b>PROGRAMME MATTERS REQUIRING DECISIONS BY THE EXECUTIVE COUNCIL .....</b>	<b>8</b>
4.1	GENERAL POLICY AND COORDINATION .....	8
4.1.1	Working Group on the Future of the IOC.....	8
4.1.2	The Fiftieth Anniversary of the Intergovernmental Oceanographic Commission of UNESCO .....	10
4.1.3	IOC Biennial Strategy and Operating Plan for 2008–2009 .....	13
4.1.4	Report on the Global Earth Observation System of Systems (GEOSS) Implementation .....	14
4.1.5	Follow-up of the Seventh Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-VII).....	16
4.1.6	Relations with Other Marine-Related Programmes of UNESCO .....	17
4.1.7	Relations with the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP) .....	19
4.1.8	General Bathymetric Chart of the Oceans (GEBCO).....	20
4.2	UN CONVENTIONS AND AGREEMENTS .....	21
4.2.1	IOC and the United Nations Convention on the Law of the Sea (UNCLOS) .....	21
4.2.2	Follow-up of the Eighth Session of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS VIII).....	22
4.2.3	IOC and the United Nations Framework Convention on Climate Change (UNFCCC).....	24
4.2.4	IOC and the Convention on Biological Diversity (CBD).....	25

4.3	ADDRESSING THE IMPACTS OF CLIMATE CHANGE AND VARIABILITY, INCLUDING SEA LEVEL RISE [MLA 2.1] .....	26
4.3.1	IOC Participation in the International Polar Year 2007–2008, and the International Year of Planet Earth 2007–2009 .....	26
4.3.2	Report on WMO–IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) Programme Implementation .....	27
4.3.3	Report on Global Ocean Observing System (GOOS) Programme Implementation .....	29
4.3.4	Interaction with the WMO–ICSU–IOC World Climate Research Programme (WCRP) .....	32
4.3.5	Report on the IMO London Convention Scientific Group Meeting on Ocean Iron Fertilization .....	33
4.4	SAFEGUARDING MARINE ECOSYSTEM HEALTH AND INTEGRATED MANAGEMENT [MLA 2.2] .....	35
4.4.1	Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-Economic Aspects.....	35
4.4.2	Interaction with the Census of Marine Life (CoML) and Other Research Programmes on Marine Biodiversity .....	36
4.4.3	Integrated Coastal Research .....	37
4.5	CAPACITY-BUILDING, DATA AND INFORMATION SERVICES AND PROCEDURES FOR MARINE SCIENTIFIC RESEARCH [MLA 2.3] .....	38
4.5.1	Report on the International Oceanographic Data and Information Exchange (IODE) Programme.....	38
4.5.2	Report on Implementation of the IOC Capacity-Development Activities .....	41
4.6	MITIGATING THE IMPACTS OF TSUNAMIS AND OTHER MARINE HAZARDS [MLA 3.1] .....	42
4.6.1	Follow-up of the Fifth Session of the IOC Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS) .....	42
4.6.2	Follow-up of the Fourth Session of the IOC Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS) .....	44
4.6.3	Follow-up of the Third Session of the IOC Intergovernmental Coordination Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS).....	46
4.6.4	Follow-up of the Twenty-Second Session of the IOC Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the Pacific (ICG/PTWS).....	47
4.6.5	Follow-up of the First Meeting of the Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems (TOWS-WG) .....	49

<b>5.</b>	<b>ADMINISTRATION AND MANAGEMENT .....</b>	<b>51</b>
5.1	MAIN LINES OF ACTION FOR THE DRAFT PROGRAMME AND BUDGET FOR 2010–2011 .....	51
5.2	DATES AND PLACES OF THE FORTY-SECOND AND FORTY-THIRD SESSIONS OF THE EXECUTIVE COUNCIL .....	56
5.3	RECRUITMENT OF THE IOC EXECUTIVE SECRETARY .....	56
<b>6.</b>	<b>ADOPTION OF THE SUMMARY REPORT AND RESOLUTIONS .....</b>	<b>58</b>
<b>7.</b>	<b>CLOSURE.....</b>	<b>58</b>

## **ANNEXES**

I.	AGENDA
II.	ADOPTED RESOLUTIONS AND DECISIONS
III.	ADDRESSES
A.	Opening address by Mr Koïchiro Matsuura, Director-General of the United Nations Educational, Scientific and Cultural Organization (UNESCO)
B.	Statement by Lic. Javier A. Valladares, Chairman of the Intergovernmental Oceanographic Commission of UNESCO
C.	Canadian statement in response to the report by the Executive Secretary on Programme and Budget implementation by Dr Wendy Watson-Wright, Assistant Deputy Minister, Fisheries and Oceans
IV.	THE ROGER REVELLE LECTURES, 2008: IMPACT OF CLIMATE CHANGE ON THE MARINE ENVIRONMENT
V.	TERMS OF REFERENCE OF AN IOC INTERSESSIONAL FINANCIAL ADVISORY GROUP
VI.	REPORT OF THE CHAIRMAN OF THE RESOLUTIONS COMMITTEE
VII.	LIST OF DOCUMENTS
VIII.	LIST OF PARTICIPANTS
IX.	LIST OF ACRONYMS

## 1. OPENING

1 The Chairman, Lic. Javier A. Valladares, opened the 41st Session of the IOC Executive Council at 09.35 a.m. on Tuesday 25 June 2008.

2 The Chairman invited the Director-General of UNESCO, Koïchiro Matsuura, to address the IOC Executive Council.

3 The full text of the Director-General's intervention is in Annex III-A.

4 Mr Matsuura highlighted the fact that the Working Group on the Future of IOC agreed that the future of IOC should unquestionably remain, and be reinforced, within UNESCO. UNESCO's Member States, at the last UNESCO General Conference (UNESCO, 16 October–3 November 2007) expressed unanimous support for IOC and decided to increase its resources for the 2008–2009 biennium by US\$500,000.

5 The Director-General noted the growing collaboration between IOC and such international programmes as the Man and Biosphere (MAB) and the International Hydrological Programme (IHP) in the fields of marine biodiversity and the sustainable management of coastal aquifers.

6 He was pleased to see that the Executive Council would examine, during the present session, the interaction between IOC and other UNESCO marine-related activities, including the Marine Programme of the World Heritage Centre and the Secretariat of the Convention on the Protection of Underwater Cultural Heritage.

7 UNESCO's Executive Board at its 177th Session (1–11 October 2007) approved a draft strategy for action on climate change, which includes the broader educational, cultural and social aspects of global climate change. IOC's work is clearly pivotal to UNESCO's climate-change strategy. The Assistant Director-General and Executive Secretary of the IOC, Patricio Bernal, leads the Intersectoral Platform on Climate Change, which will ensure the effective implementation of UNESCO's action on climate change.

8 The Director-General highlighted IOC's support to the World Climate Research Programme and its input to the work of the Intergovernmental Panel on Climate Change. He also recalled that the IOC, by coordinating the regular, real-time gathering of ocean data through the Global Ocean Observing System, performs an essential function under the United Nations Framework Convention on Climate Change and the Kyoto Protocol.

9 Four years after the Indian Ocean tsunami, much progress has been made: with IOC's support, and a great deal of hard work and investment, Member States have now established tsunami warning systems in all four oceans – a remarkable and truly collective achievement. A plan has been agreed for the Indian Ocean Tsunami Warning and Mitigation System to take over full responsibility by 2011, thus replacing the interim advisory service currently provided by the Pacific Tsunami Warning Centre in Hawaii and the Japanese Meteorological Agency in Tokyo. The tsunami off Sumatra in September 2007 was the first live test of the Indian Ocean System.

10 Last December, IOC signed an agreement with INMARSAT to further upgrade the Indian Ocean system through a broadband global area network transmission service for 50 sea-level stations.

11 The Director-General was particularly pleased to note that the European component of IOC's Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas was recognized in December 2007 by the European Union's Council of Home and Justice Ministers as the European Tsunami Warning System,

covering all ocean-related hazards. He also welcomed the progress in the development of tsunami warning systems in the other major oceans.

- 12 Last year, when the UN General Assembly confirmed the IOC's mandate for establishing and co-coordinating tsunami warning systems, it also re-affirmed the view that Member States should responsively interact with each other through nominating tsunami national contacts. National leadership and ownership are paramount to the success of any early warning system.
- 13 UNESCO is pursuing several measures to strengthen IOC's regional delivery, backed by UNESCO's efforts to strengthen national capacity in the ocean sciences. The Director-General is working with the Executive Secretary of IOC to ensure the most effective synergy between IOC's decentralized network and UNESCO Field Units.
- 14 The Director-General noted UNESCO's increased support to IOC Regional Committees, to ensure greater overall institutional and programmatic coherence and to enhance IOC's regional presence, particularly in Africa.
- 15 IOC's efforts to develop capacity have in many cases made it easier to improve the delivery of more specific interventions. For example, training on how to develop inundation maps for marine-related hazards, saw twelve countries participate, including seven African states bordering the Indian Ocean.
- 16 The IOC has worked alongside institutes to develop their modelling capabilities so that they can provide the science to underpin policies for safe and sustainable development in their respective national coastal zones.
- 17 The Director-General highlighted one particularly urgent aspect of IOC's country-level action. Following resolutions of the UN General Assembly and UNESCO, IOC, in cooperation with UNEP and the UN Division for Ocean Affairs and the Law of the Sea (DOALOS), is assisting Member States in the exercise of their rights and responsibilities to determine the outer limits of their continental shelf under the United Nations Convention on the Law of the Sea.
- 18 The Director-General informed the Executive Council that IOC is a source of great pride for UNESCO, and while UNESCO is doing much to support the IOC programme in terms of financial and human resources, there are obvious limitations to the support that can be provided from the regular budget. Extrabudgetary funding will therefore remain vital, if IOC is to fulfil the high expectations of its Member States.
- 19 The Director-General wished the participants a very fruitful meeting and looked forward to hearing the conclusions and the recommendations of this Executive Council, especially as concerns the proposals for celebrating, here in Paris and worldwide, the 50th anniversary of the Commission in 2010.
- 20 The Chairman then asked the participants to stand in silence for one minute as a mark of respect to distinguished individuals who have collaborated with the Commission and have passed away during the past year: Tom Winterfeld (USA, 1923–2008), oceanographer and past Chairman of IODE (1979 and 1981); Edward D. Goldberg (USA, 1921–2008), marine chemist and professor, author of an IOC book titled Health of the Ocean; Professor Carlo Morelli (Italy, 1917–2007), a prominent contributor to the IOC Ocean Mapping Programme and the General Bathymetric Chart of the Oceans (GEBCO), formerly Chief Editor and Chairman of the International Bathymetric Chart of the Mediterranean Sea (IBCM) and Head of the Italian Delegation to the IOC; Professor Dr Friedrich Schott (Germany, 1939–2008), of the Leibniz Institute of Marine Sciences, contributor and leader in such international programmes as WOCE, CLIVAR, GOOS SC and OOPC; Mike Fasham (United



Kingdom, 1942–2008), Peter Killworth (United Kingdom); Fernando “Raúl” Colomb (Argentina, 1939–2008).

## 2. ORGANIZATION OF THE SESSION

### 2.1 ADOPTION OF THE AGENDA

21 The Executive Secretary introduced this item. All agenda items decided by the Assembly at its 24<sup>th</sup> Session, in June 2007, and by the Executive Council at its 39th Session, in 2006, were included. The Provisional Agenda was prepared to reflect the IOC Biennial Strategy 2008–2009.

22 The Executive Secretary proposed, in accordance with Rule of Procedure 21.2c, the addition of a new agenda item 4.4.3, “Integrated Coastal Research”.

23 **The Executive Council accepted** this proposal and **adopted** the Revised Provisional Agenda thus revised. The adopted Agenda is in Annex I hereto.

### 2.2 DESIGNATION OF THE RAPPORTEUR

24 The Chairman invited nominations for Rapporteur. Argentina proposed Helen Joseph (Canada); Canada agreed. The proposal of Argentina was seconded by several delegations.

25 **The Executive Council designated** Helen Joseph (Canada) Rapporteur for the present session, to assist the Chairman and the Executive Secretary in the preparation of the Draft Summary Report. **It thanked** Helen Joseph for her acceptance of this task.

### 2.3 ESTABLISHMENT OF INTRASESSIONAL COMMITTEES

26 **The Executive Council decided** to constitute the following statutory and open-ended sessional committees:

- Resolutions Committee: the Chairman invited Member States to indicate their wish to participate in the Resolutions Committee. The composition of this Committee was: Argentina, Australia, Brazil, Canada, China, Cuba, Egypt, France, Germany, India, Japan, Korea (Republic of), Norway, Russian Federation, Tunisia, United Kingdom, United States of America, Venezuela.

27 Australia then proposed that Peter Haugan (Norway) chair this Committee. Norway agreed to this proposal.

- Financial Committee, under the chairmanship of Neville Smith (Australia), Vice-Chairman responsible for financial matters: the Chairman invited Member States to express their wish to participate in the Financial Committee. The composition of this Committee was: Argentina, Australia, Belgium, Brazil, Canada, China, France, India, Japan, Korea (Republic of), Portugal, Russian Federation, South Africa, United Kingdom, United States of America.

28 The Chairman reminded the Executive Council that the Financial Committee is required to screen all Draft Resolutions and Decisions on the ground of their potential financial implications for the Commission.

29 He also invited the Executive Council to constitute open-ended ad hoc sessional working/drafting groups, as needed:

- On the Preliminary Plan and Schedule of Initiatives for the 50<sup>th</sup> Anniversary of the Commission (item 4.1.2; IOC/EC-XLI/2 Annex 3), under the Chairmanship of Professor David Pugh (United Kingdom), past Chairman of IOC.

30 The composition of this Working Group was: Argentina, Brazil, Canada, China, Cuba, France, Greece, Japan, Korea (Republic of), Portugal, Russian Federation, United Kingdom, United States of America. Professor Pugh accepted the nomination; he also reminded the Executive Council that this Group should also be open to Representatives of organizations co-operating with the Commission, since the celebration was not limited to the IOC alone.

- On the Future of IOC (item 4.1.1), under the Chairmanship of Vice-Chairwoman Dr Savithri Narayanan (Canada). Dr Narayanan accepted the nomination.

31 **The Executive Council decided** to establish the proposed sessional Working Group but to allow Member States to declare their participation in the light of the discussion under agenda item 4.1.1.

## 2.4 INTRODUCTION OF TIMETABLE AND DOCUMENTATION

32 The Executive Secretary introduced this item. He briefly reviewed the list of Working Documents. He called the attention of the Executive Council to some important aspects of the revised Provisional Timetable, particularly the timing of the Roger Revelle Memorial Lectures and the possibility of a Draft Resolution from the Financial Committee after the normal deadline for DRs. He informed the Council of the timing of meetings of the two statutory Committees and of the sessional Working Group on the 50th Anniversary of the IOC.

33 He informed the Council that the plenary will be in session on the morning of Saturday 28 June; and that the deadline for the submission of Draft Resolutions (other than any submitted by the Financial Committee, as noted above) was Friday 27 June, 5.30 p.m.

34 The Executive Secretary also reminded the Executive Council of the fact that the Executive Council's Decisions and Resolutions (both reached in unanimity in plenary) were equally binding in terms of implementation.

35 India (on IOTWS) and Indonesia (on the World Ocean Conference 2009) both offered to make presentations during the present session, with the agreement of the Council and the Secretariat.

36 The Chairman requested Member States to limit their interventions in plenary to three minutes each, if possible, and called on presenters to limit their presentations each to ten minutes, also if possible.

37 **The Executive Council agreed** to these proposals and adopted the revised Provisional Timetable.

## 2.5 ROGER REVELLE MEMORIAL LECTURES

38 The Chairman introduced this item. In deciding the theme of the Revelle Memorial Lectures, the IOC Officers wished to give high visibility to the impact of climate change on the marine environment and coastal zones. Three lecturers were invited to address this subject, each from a different perspective.

39 Ms Nadia Pinardi, Associate Professor at the Laboratorio di Simulazioni Numeriche del Clima e degli Ecosistemi Marini, Italy (SINCEM), addressed "Operational oceanography: the present system and the future challenges."

40 Dr Robert J. Nicholls, Professor of Coastal Engineering at the School of Civil Engineering and the Environment, Southampton, United Kingdom, addressed "Adaptation frameworks for climate change and sea-level-rise impacts on the coastal zone."

41 Dr Cecilie Mauritzen, Director, Climate Division at the Norwegian Meteorological Institute, addressed "Arctic observations: meeting the needs of operational ocean forecasting, climate monitoring and all time-scales in between."

42 Each presentation was followed by an open debate moderated by the Head of the IOC Ocean Observations and Services Section, Dr Keith Alverson. On this occasion, the Chairman presented the lecturers with the IOC Roger Revelle Medal.

### 3. DEVELOPMENTS SINCE THE 24TH SESSION OF THE IOC ASSEMBLY

#### 3.1 REPORT BY THE CHAIRMAN ON INTERSESSIONAL ACTIVITIES

43 The Chairman's full report is in Annex III-B.

44 **The Executive Council thanked** the Chairman for his report.

#### 3.2 REPORT BY THE EXECUTIVE SECRETARY ON PROGRAMME AND BUDGET IMPLEMENTATION

45 The Executive Secretary introduced this item. At the 34<sup>th</sup> General Conference of UNESCO (Paris, 16 October–3 November 2007) there was unanimously strong support for the Commission that, after adopting corrective actions to increase the proposed budget, allows the Commission to maintain approximately the same budget allocation for the activities specified in the previous biennium, as requested by the Assembly at its 24<sup>th</sup> Session (Paris, 19–28 June 2007). The final adopted appropriation for 2008–2009, inclusive of indirect programme costs, is slightly less than 5% more than for the biennium 2006–2007. The General Conference also encouraged the Director-General to look for ways to reinforce the IOC budget through an additional allocation. The Executive Secretary emphasized the fact that it will not be possible to rely on such flexibility in the budgetary process of UNESCO in the long term and that the Member States of IOC must pay careful attention to the full planning and budget cycle and closely coordinate with their representatives to UNESCO.

46 The Executive Secretary also reminded the Executive Council that the Commission has today 9 permanent professional staff (financed under the staff allocation from the regular budget), while 30 professional staff are covered by extrabudgetary sources; this situation therefore requires a significant additional effort on the part of the Secretariat to secure a constant flow of extrabudgetary resources and is unstable by nature.

47 The Executive Secretary emphasized the importance of the effort by the United Nations system to put climate change at the top of the international agenda. The Secretary-General of the United Nations has recognized the role of IOC and the WMO in leading the action of the UN system on the Science Monitoring Assessment and early warning on climate change especially to address, and adapt to, climate change. He noted the significant contribution of IOC and its programmes, notably through the GOOS Climate Module, to the goals of the United Nations Framework Convention on Climate Change. IOC is also engaged in implementing a project on adaptation to climate change, and its impact on coastal erosion, in West Africa. A similar project is under consideration for western Central Africa.

48 The Director-General has entrusted the Executive Secretary with the responsibility of leading the UNESCO Intersectoral Platform on Climate Change.

49 In the context of tsunami warning systems, IOC signed an agreement with INMARSAT, a leading provider of global mobile satellite communications, to further upgrade

the Indian Ocean Tsunami Warning and Mitigation System through a broadband global area network (BGAN) transmission service for 50 sea-level stations. In other regions the coordination of regional systems for tsunami warning and mitigation also made progress, as in the north-eastern Atlantic and the Mediterranean. The architecture of a regional system of tsunami watch centres is under development in the Caribbean, including the creation of a real-time data-sharing system for existing seismic monitoring networks agreed at the 3<sup>rd</sup> Session of the ICG/CARIBE-EWS (Panama City, 12–14 March 2008).

- 50 The Executive Secretary also referred to the role of IOC programmes in the context of safeguarding marine ecosystems, and in support of the goals of the Convention on Biological Diversity. The international scientific programme Census of Marine Life will end in 2010 and IOC may need to help to ensure the preservation of some of the data services generated by the programme.
- 51 The Executive Secretary then recalled IOC's role in coordinating, with UNEP, the Assessment of Assessments phase of the Regular Process for the Global Reporting and Assessment of the State of the Marine Environment, based on relevant regional assessments. The final report of the Assessment of Assessments Group of Experts will be submitted to the UN General Assembly in 2009.
- 52 The Executive Secretary also reminded the Executive Council of IOC's engagement in the One-UN process, with participation in some of the pilot countries (Pakistan, Cape Verde, and Uruguay).
- 53 For 2008–2009, the high-level objectives and actions of the IOC Medium-Term Strategy have been fully incorporated into the UNESCO Programme and Budget (34 C/5).
- 54 The Assistant Deputy Minister for Fisheries and Oceans, Dr Wendy Watson-Wright (Canada), addressed the Executive Council. She expressed Canada's appreciation to the Executive Secretary for his report and his responsiveness to the requests from the Member States for a better articulation of IOC priorities within the IOC budget.
- 55 While UNESCO has initiated regional consultations with National Commissions for UNESCO on the preparation of the Draft Programme and Budget for 2010–2011 (Draft C/5), Dr Wendy Watson-Wright urged the IOC Member State delegates present to develop a clear, concise position statement on the 35 C/5 that the Member States can use to input to the national exercise. This will help to raise unified support in UNESCO. The full text of Dr Watson-Wright's address is in Annex III-C to this report.
- 56 Several Member States (Argentina, Australia, Brazil, China, Cuba, Germany, India, Japan, Portugal, UK, and the USA) emphasized the good execution of the programme and work plans based on the Medium-Term Strategy 2008–2013; they expressed satisfaction with the timeliness, quality and accessibility of the documentation for the present session, noting also that reporting on the many results achieved by the IOC is crucial to its visibility within UNESCO and beyond and hence to its support. Australia stressed the need to improve the SISTER report to allow better assessment of results. Different programmes report with very different levels of detail, producing an overall picture that is skewed.
- 57 Many Member States underlined the need to support IOC within UNESCO to ensure more stable and long-term funding. Member States expressed their desire that IOC foster its cooperation with other components of UNESCO, especially the IHP and MAB, as well as with other agencies of the United Nations system. The relevance of IOC leadership of the UNESCO Intersectoral Platform on Climate Change was underlined; and the UK requested that more information be provided on the implications of IOC involvement. Australia and Brazil stressed the importance, in this context, of careful prioritization of activities.

- 58 Some Member States expressed the need for a stronger IOC connection with the major international scientific programmes dealing with the oceans.
- 59 Several Member States noted the need to consolidate or reinforce the budget allocation for IOC within the UNESCO Programme of Work and Budget; the USA advocated a specific reference to IOC in the relevant resolution of the UNESCO General Conference. Several Member States called for an increase in the mobilization of extrabudgetary resources. China pledged an increase in its contribution to the IOC. Germany indicated its intention to continue its contribution to the IOC.
- 60 The Chairman and the Executive Secretary responded to the comments of Member States. The Chairman insisted on the role of the Officers, working as a team trying to address the requests of Member States. He encouraged Member States to participate actively in the work of the Commission and to make their messages to the Commission as clear as possible. He also stressed the importance of collaboration in the field of capacity-building; he looked forward to active IOC participation in the meeting on Coordination on Capacity Development Actions of IHO, IOC and IMO, to take place 14–15 October 2008 at UNESCO, Paris, France.
- 61 The Executive Secretary pointed out the distinction between the work to be done by the Secretariat and that to be done by the Member States, with their respective resources. He welcomed the statement by Dr Watson-Wright (Canada's Assistant Deputy-Minister for Fisheries and Oceans) and her particular reference to the work of IOC on biodiversity issues.
- 62 With respect to the UK's concerns about IOC's leading role in the UNESCO Intersectoral Platform on Climate Change, he emphasized that IOC's current contribution, mainly in the fields of climate science and ocean observation, will benefit from inputs from other UNESCO sectors, such as Education and Human Sciences, in order to consider the human components of climate change, its impact on communities at risk, and the response of these communities, as well as addressing ethical aspects through the work of The World Commission on the Ethics of Scientific Knowledge and Technology (COMEST). Supporting marine sciences and marine observations will remain the main core of this leadership, but with a view to developing other pilot projects on adaptation to climate change, to ensure that climate-related knowledge is made available and properly used by society.
- 63 The Executive Secretary took note of Australia's remarks regarding WMO taking the lead in modelling activities in the climate-change field. He pointed out that there is a very relevant role to be played by IOC in improving the work of regional groups, work that is already being supported by the International Centre for Theoretical Physics (ICTP).
- 64 With respect to the USA's point on the identification of a specific IOC budget within UNESCO, the Executive Secretary insisted on the need to coordinate the actions and decisions by the Member State delegations to the IOC assembly and to the UNESCO General Conference.
- 65 The Executive Secretary expressed his strong agreement with Cuba's statement insisting on a reactivation of the Commission's links to the marine research community, nationally and internationally. He also agreed with Japan's suggestion to strengthen IOC's intersectoral work within UNESCO, particularly in the framework of climate change.
- 66 The Representative of the International Hydrographic Organization highlighted the existing co-operative activities being carried out by IOC and IHO under the current Memorandum of Understanding, especially on capacity-building. He recalled that the IHO–IMO–IOC Meeting on Capacity-Building (Monaco, 15–16 October 2007) focussed on the definition and scope of capacity-building in the IOC and IHO, the scope of their activities, modalities and means of implementation, and areas of common interest. These include:

organization of training courses, exchange of information and communication on tsunamis and other marine hazards, particularly the COAST–MAP–IO Project, which is providing technical assistance to the countries of the Indian Ocean for the development of inundation maps. A similar meeting is expected to be held on 14–15 October 2008 in Paris, as noted above.

67           **The Executive Council thanked** the Executive Secretary for his report.

#### **4.       PROGRAMME MATTERS REQUIRING DECISIONS BY THE EXECUTIVE COUNCIL**

##### **4.1     GENERAL POLICY AND COORDINATION**

##### **4.1.1   Working Group on the Future of the IOC**

68           The Co-chairperson of the Working Group on the Future of the IOC, Dr Savi Narayanan (Canada), introduced this item. At its meeting (Paris, France, 19–20 February 2008) the Working Group confirmed that the current IOC mandate, as stated in its Statutes (Article 2), as amended in 1999, is appropriate and, with its current Medium-Term Strategy, provides a positive starting point for assessing long-term trends that may affect the IOC, constituting a flexible institutional mechanism enabling the IOC to adapt to emerging trends in oceanography and to respond to Member States' priorities in a timely manner. It also agreed that, at this stage, the future of IOC should be based on the premise that the IOC will remain, and should be reinforced, as a body with functional autonomy within UNESCO. The Working Group recommended that the IOC should look for an enhanced role within UNESCO in terms of intersectoral cooperation, based on its strong technical expertise in ocean sciences, ocean services and capacity-development. It did not reach any consensus on options for a more independent IOC, outside UNESCO.

69           Dr Narayanan introduced a list of short-term actions produced by the Working Group and reported on the consultations conducted by the IOC Chairman with IOC partners to ascertain their views on what role IOC should play to contribute to the effective coordination of ocean affairs in the relevant intergovernmental fora and on how IOC could be reinforced in order to carry out its mission more effectively.

70           Several Member States expressed their general agreement with the recommendations of the Working Group and commended Dr Narayanan's leadership.

71           **The Executive Council agreed** on the need to raise IOC's visibility within Member States, within UNESCO and within the UN system. **It also approved** two proposals made by the Working Group: holding a Ministerial Round Table on "Oceans and the IOC" at the 35th UNESCO General Conference; and organizing a ministerial-level meeting or a UN Conference in the medium term, perhaps as early as 2010, as part of the IOC's 50<sup>th</sup> anniversary commemoration.

72           Several Member States strongly supported the Working Group's proposal to seek a clear identification of IOC's budget in the corresponding appropriation resolution of the UNESCO General Conference and in full recognition of the governance agreed by the IOC Assembly at its 24<sup>th</sup> Session.

73           **The Executive Council agreed** that the IOC should explore the possibility of obtaining its budget from the UNESCO General Conference as a "financial allocation."

74           The USA proposed the creation of a special budget line and reporting framework for the IOC that could be approved by the UNESCO Executive Board at its 181<sup>st</sup> Session (14–30

April 2009) that would be consistent with the special organizational structure already afforded the IOC.

- 75 Spain supported the proposal made by the USA at the meeting of the Working Group on the Future of the IOC, to explore options to access private-sector funding sources through partnerships.
- 76 Japan reported on its experience in raising the visibility of IOC's programmes nationally through the establishment of a National Advisory Body for relations with IOC that has enabled efficient communications with academic research centres, universities, and governmental organizations.
- 77 Thailand and Sri Lanka supported a more decentralized approach to IOC's programmes, with more visibility at regional fora and strategic partnerships with existing regional organizations.
- 78 Madagascar, speaking on behalf of the African Group, stated that IOC should reinforce its support to African countries, particularly with respect to submissions on continental-shelf extensions to be presented to the UN Commission on the Limits of the Continental Shelf (CLCS).
- 79 To reinforce IOC within UNESCO, Canada and India proposed the establishment of a task team to explore ways and means of securing a separate, stable regular budget for IOC.
- 80 China, the Russian Federation and Argentina proposed exploring a modification of the IOC Statutes, or other mechanisms, to strengthen IOC's status within UNESCO, considering that, under the present administrative and financial arrangements, IOC is not able to carry out some of the tasks being assigned to it, in particular, tasks on climate-change issues and operational observing systems. China also suggested that the Working Group continue to study the possibility of formulating a Convention for IOC, which could be treated as a possible long-term objective of IOC. In connection with the possibility of modifying the Statutes, the Russian Federation and Ukraine believed it was necessary to reconsider the number of seats on the Executive Council for Electoral Group II, bearing in mind that Electoral Group II is underrepresented at present. They requested that this matter be included as an agenda item for the IOC Assembly at its 25<sup>th</sup> Session.
- 81 Portugal considered that the immediate objective is to improve arrangements within UNESCO and to initiate a process aimed at enhancing the interaction with the other agencies in ICSPRO.
- 82 Cuba expressed similar views and concerns, in particular with respect to resources made available to the Commission. France also indicated that a more complete assessment is needed with respect to the role of, and the means available to, IOC in the field of operational oceanography, with a view to avoiding duplication and inefficiency among IOC subsidiary bodies and with other UN specialized agencies that do play an important role in coordinating operational observing systems.
- 83 Norway underlined the need for IOC to recognize its intergovernmental character and that it must act as a broker rather than a doer. In Norway's view the future of IOC depends on good internal coordination of ocean matters in the Member States.
- 84 Some Member States supported the idea of maintaining the present Working Group on the Future of the IOC, but with a modified mandate, until the 25<sup>th</sup> Session of the Assembly; this would have the added benefit of maintaining the visibility and interest of national counterparts high on their agendas.

85 Other Member States stated that the Working Group has met its Terms of Reference by presenting the report before the Executive Council at the present session.

86 The Representative of POGO considered that there is a need to get interested parties together (not just in the UN) to reduce duplication and identify priorities. POGO is concerned with the lack of visibility of the IOC, although it is ideally positioned to promote the importance of oceans. POGO is willing and eager to work with IOC.

87 The Chairwoman of the sessional Working Group<sup>1</sup> on the Future of the IOC, Dr Savi Narayanan, briefly reviewed the Group's conclusions. The Group prepared a Draft Resolution, the key provisions of which were: (i) to investigate possible financial and administrative mechanisms to strengthen IOC as a body within UNESCO, with particular attention to IOC's contribution to intersectoral and interdisciplinary cooperation; (ii) to organize a consultation with the Member States by the Chairman of IOC; (iii) to request the Executive Secretary to identify and analyse current agreements with partner organizations, highlight Member States' obligations with respect to the work of the Commission, explore possibilities for an IOC presence in the work of the UN General Assembly, and keep Member States informed of relevant activities; (iv) to call on Member States to: promote "The Oceans and Intergovernmental Cooperation" as the theme for a Ministerial Round Table at the 36<sup>th</sup> UNESCO General Conference, in 2011; explore innovative ways to make full use of Article 10 of the IOC Statutes; collaborate closely with the Chairman and Officers and contribute to the intersessional analysis of financial and administrative mechanisms that would lead to a more efficient and effective IOC; promote the role of IOC in the UN system; and support the strengthened delivery of IOC programmes at the regional level through the UNESCO network of decentralized units and through the increased collaboration with other UN organizations with a regional presence.

88 **The Executive Council adopted [Resolution EC-XLI.1](#).**

#### **4.1.2 The Fiftieth Anniversary of the Intergovernmental Oceanographic Commission of UNESCO**

89 The Past Chairman, Prof. David Pugh, introduced this item. He presented a list of initiatives, proposed to Member States to celebrate the 50<sup>th</sup> anniversary of the IOC, based on the theme "Half a century of ocean science and service." The celebrations should be used to raise the visibility of the IOC and its projects today and its plans for the "Future of IOC", and should not just focus on the achievements of the past. Anniversary events can be used to make the international community and its leaders aware of the enormous contribution IOC can make in the future, by showcasing the breadth and depth of IOC activities and building awareness of the advances in oceanography and related sciences.

90 There is a need to conceive the celebration of the 50<sup>th</sup> anniversary of the IOC as a series of events devoted to "Half a Century of Ocean Science and Services: One Planet, One Ocean." The celebrations should start with the 42<sup>nd</sup> Session of the Executive Council, possibly to be held in New York at the United Nations headquarters, and end with the 26<sup>th</sup> Session of the IOC Assembly, to be held in October 2011 in conjunction with the 36<sup>th</sup> General Conference of UNESCO. The programme of events should not be limited to the celebration of the past, but linked to the work on the Future of IOC. Each Member State and organization instrumental in the creation of the Commission and collaborating with it today should be engaged and provide its contribution to the celebrations. In particular, a series of regional ocean conferences could precede a final conference to be held in Paris. To steer the organization of the celebrations, a Guiding Group, comprising past Officers of the

---

<sup>1</sup> Argentina, Australia, Belgium, Brazil, Canada, China, Cuba, Finland, France, Germany, India, Japan, Korea (Republic of), POGO, Portugal, Russian Federation, Tunisia, UK, USA participated in the Group.



Commission and other influential people linked to the history of the Commission is being set up.

- 91 Among the proposed activities are:
- (i) The publication of a book on “The History of the Intergovernmental Oceanographic Commission”, translated into the Commission’s four official languages, with contributions from marine scientists familiar with that history
  - (ii) The holding, if possible, of a special session of the Executive Council at the United Nations headquarters in New York
  - (iii) A celebrative conference, in collaboration with UNESCO, to be held in Paris
  - (iv) Exhibitions on the subject of oceanography, to be held in Paris and elsewhere in the world
  - (v) The production of short media messages on the importance of the oceans
  - (vi) The adaptation of IOC policy briefs (e.g. on oceans and carbon, sea level) for the general public
  - (vii) Design of a 50<sup>th</sup> anniversary IOC logo to be used on web sites, letterhead etc. for the years prior to the anniversary
  - (viii) The use of the IOC website to announce initiatives already funded as contributions to the anniversary (e.g. activities for the International Year of Planet Earth – IYPE)
  - (ix) The production of IOC promotional materials (e.g., neckties, ballpoint pens and lapel pins) featuring the anniversary IOC logo.
- 92 Several Member States agreed that IOC’s strength in policy development, education and capacity-building should receive visibility equivalent to their great importance in ocean affairs.
- 93 China suggested that IOC should prepare a declaration to be announced at the Ministerial Round Table on “Oceans and the IOC”, in 2011, so as to further reinforce IOC’s mandate and strengthen its leading role in ocean affairs and its visibility to the international community.
- 94 Some Member States suggested that an International Year of the Ocean, or a World Ocean Day would bring international attention to the IOC. The IOC should also use the occasion of its 50<sup>th</sup> anniversary to reinforce its mandate for the next 50 years. The statutes and objectives under which IOC was founded should be re-examined and reaffirmed.
- 95 A large number of Member States expressed their support for the proposed activities to celebrate the 50<sup>th</sup> anniversary, and several suggested additional actions to be included in the programme of activities: Belgium proposed the preparation of a publication detailing the achievements of IOC in raising the capacity of Member States in ocean sciences and targeting policy-makers; Japan emphasized the need to raise the visibility of IOC at the national and international levels, and at UNESCO and the UN. Japan and Turkey proposed the organization of an IOC Day during the General Conference of UNESCO. Madagascar, Spain and Indonesia proposed the idea to declare 2011 the International Year of the Ocean. China proposed the organization of an International Ocean Policy Conference to be held in 2010, in China. The Republic of Korea suggested that a World Ocean Conference, with participation in the Yeosu Ocean Expo 2012, could provide a good opportunity to bring together scientists and a considerable number of ministers and thus greatly help to raise the visibility of IOC during its 50<sup>th</sup> anniversary year. The Republic of Korea hoped that its financial support to IOC could be linked to the proposed World Ocean Conference, and pledged US\$100,000 for the organization of it.

- 96 Numerous Member States suggested that regional activities and national anniversaries could be connected to the 50<sup>th</sup> anniversary of IOC. Several examples were given: Cuba – ColacMarCuba 2009, the Latin American Marine Science Congress (26–30 October 2009); Turkey – 100<sup>th</sup> Anniversary of the Hydrographic Office, and a Hydrography Day; the Russian Federation – the Hydrometeorological University of St. Petersburg Conference on the theme of “50 Years of Capacity-Building in Marine Sciences”; the Republic of Korea – the Yeosu Expo 2012 (as noted above); Argentina – 2010, the 200<sup>th</sup> Anniversary of the Independence of Argentina; Colombia – 2010, a tall-ship event (planned); India – a regional workshop on tsunami warning in connection with the inauguration of the Indian Ocean Tsunami Warning System; Sri Lanka – conferences at the national level and also regionally through IOCINDIO; China – the organization of a Global Ocean Policy Conference, in 2010, in China; Indonesia – the World Ocean Conference, in Indonesia (11–15 May 2009); Turkey – the organization of a photographic competition leading to an exhibition at UNESCO, as well as an award for senior researchers and scientists (idea supported by Spain).
- 97 Various Member States suggested co-operation with the media to raise the general public's awareness of the work of IOC. Portugal particularly recommended working with European televisions.
- 98 Concerning the proposed book, Peru recommended that its scope include marine activities undertaken by UNESCO even before the creation of IOC. The UK suggested that part of the book be also forward-looking.
- 99 Several Member States recommended the holding of a Special Session of the Executive Council in New York in 2010, either in conjunction with a meeting of the Informal Consultative Process or as a Special Session of the General Assembly focusing on oceans.
- 100 Many Member States expressed support for an IOC-sponsored Marine Prize; and suggested that such a prize should be a continuing tradition for the future.
- 101 Member States, while giving a universal affirmation of the proposals, also emphasized that the IOC 50<sup>th</sup> anniversary activities cannot be carried out without tangible support and that this should not be at the expense of time or resources of other IOC programmes.
- 102 **The Executive Council welcomed** the numerous suggestions for the programme of activities for the celebration of the 50<sup>th</sup> anniversary of the IOC. **It called on** the Executive Secretary, in collaboration with David Pugh, to prepare a revised programme for circulation to Member States and co-operating organizations.
- 103 **The Executive Council called on** the Executive Secretary to prepare, in consultation with the Officers, a Draft Resolution on the 50<sup>th</sup> anniversary of IOC for the consideration of and adoption by the 35<sup>th</sup> General Conference of UNESCO, in 2009.
- 104 **The Executive Council adopted** [Resolution EC-XLI.2](#).
- 105 Prof. David Pugh (Past Chairman of IOC) reported on the conclusions of the sessional Working Group on the Preliminary Plan and Schedule of Initiatives for the 50<sup>th</sup> anniversary of the Commission. The logo will be available shortly, and will be made available in digital form, for all interested participants to use. Celebrations can begin now, with the logo being used on programmes of events. The Working Group specifically recommended the following activities:
- The 43rd IOC Executive Council, in 2010, should be held at the UN headquarters in New York and, if possible, be associated with the Informal

Consultative Process (ICP), and with a theme related to ocean science and policy;

- Regional ocean science conferences and a global ocean conference, perhaps in Paris and involving the IOC, the UN and other partner organizations;
- The 26<sup>th</sup> Session of the IOC Assembly, in 2011, should be held in association with the UNESCO 36<sup>th</sup> General Conference, and if possible, the General Conference should include an Ocean Day, with a ministerial round table on ocean affairs, exhibitions and key speakers;
- The publication of a book on the first 50 years of IOC, guided by a geographically balanced advisory editorial board, and including a CD containing key documents and publications; and
- The creation of a central web-based calendar and portal to all anniversary events.

106        Generic activities will include preparation of flags, badges, calendars, a photographic competition, medals and prizes for eminent oceanographers and young people. These will require offers of leadership, extrabudgetary resources from Member States and other sources. Member States are also asked to provide support for the Secretariat work, and for publicity and outreach activities. Finally, all Member States, the IOC and its Subsidiary Bodies are encouraged to plan celebratory events and to keep the Executive Secretary informed as these plans evolve.

#### **4.1.3 IOC Biennial Strategy and Operating Plan for 2008–2009**

107        The Executive Secretary introduced this item. He informed the Council that he had decided to withdraw the working document on the Guidelines for Subsidiary Bodies (IOC/EC-XLI/2 Annex 6), since it required further work.

108        Several Member States (Argentina, Australia, Belgium, Japan, Tunisia) supported the Draft Operating Plan. Other Member States recommended improvements to the draft.

109        Australia, the Republic of Korea and the Russian Federation noted the need to enhance the previous work on monitoring and evaluation and performance indicators; Russia also stressed the need to clarify the status of the GOOS Arctic Regional Alliance (ArcticGOOS). Japan recommended paying attention to regional priorities in the organization of the Operating Plan. The United Kingdom, the Dominican Republic and Tunisia supported attention to the priorities of Africa.

110        Concerning the proposals for the UNESCO Additional Programme of targeted/projected extrabudgetary activities, Belgium recommended paying strong attention to the result-based approach for mainstreaming IOC priorities into the programme. The Republic of Korea and India noted overlaps in some of the project proposals annexed to the Draft Operating Plan and recommended the necessary improvements.

111        Some Member States also raised questions about the capability of IOC to implement extrabudgetary projects for a total \$55 million.

112        Regarding the report on the status of Subsidiary Bodies, several Member States noted that this provided valuable information on the contribution of subsidiary bodies to achievement of the High-level Objectives of the Medium-Term Strategy 2008–2013. They supported the idea that the Assembly, ideally every four years, should undertake a review of the terms of reference and necessity of all Subsidiary Bodies. Argentina noted that the Guidelines for Subsidiary Bodies could be prepared in time for consideration by the Assembly at its 25th Session, in 2009.

113 In response to the comments by the Member States, the Executive Secretary explained that the series of project proposals for the Additional Programme constituted a portfolio that will require negotiations with potential donors on individual proposals. He confirmed that a GOOS Arctic Regional Alliance has not been approved, but actions in the polar regions are included in IOC's work on ocean observations. Concerning the review of Subsidiary Bodies, he suggested the identification of a short list of deliverables against which Member States could assess the performance and cost-effectiveness of these bodies and make decisions on their continuation. He also noted the overlap in the scope of regional bodies, which would require harmonization of their work.

114 **The Executive Council requested** the sessional Programme and Budget (Financial) Committee to examine the draft Operating Plan in the light of the comments received and report back to plenary. [see item 5.1]

#### **4.1.4 Report on the Global Earth Observation System of Systems (GEOSS) Implementation**

115 The Director of the GEO Secretariat, Dr José Achache, introduced this item. He stressed that, from the beginning of the GEO process, the IOC has committed itself to contributing to the GEOSS through GOOS for the ocean and coastal components of the Global Climate Change programme. GEO was created in 2005 as a network of all existing earth observing systems. The main goal of GEO is to bring together all these systems with a view to achieving nine (9) Societal Benefits identified by the GEO members. Although, the ocean is not highlighted in the GEOSS Implementation Plan as one of the nine societal benefits, the important role and place of the ocean is embedded in most of them. The interest in GEOSS of national governments and participating institutions has increased from 30 countries at the creation of GEOSS up to 77 countries, the European Union and 51 participating institutions, at present. The purpose of GEOSS is to ensure a coordination that facilitates the building up of the System of Systems, with the necessary tools for services, to answer societal needs in decision-making, including for the UN organizations and national governments.

116 The 2007 GEO Cape Town Ministerial Summit (Cape Town, South Africa, 30 November 2007) adopted the Cape Town Declaration, which stressed the need for increased international cooperation and data sharing. GOOS, with its regional component in Africa (GOOS-Africa), participated in the Conference. The GEO achievements were included in a book titled *The Full Picture*, including the papers on GOOS and its regional achievements. The Argo Float Project is an excellent contribution to GEO, although it started well before the establishment of GEO. The adoption of data-sharing principles was a major achievement of the Cape Town Conference.

117 Major tangible achievements include a global portal with a single point of entrance with calibration and validation tools, the GEONETCast System for data dissemination, the ChloroGIN integrating *in situ* and satellite-remote-sensing observation networks for chlorophyll; the Sea-Surface Temperature project assembles information from four different satellites; the SAFARI project focuses on the area of agriculture. There are local websites such as SERVIR ([www.servir.net](http://www.servir.net)) developed for Latin America and the Caribbean that is being extended to Africa. Coastal Zone Community of Practices (CZCP) is a key concept for developing the best practices for coastal observations and monitoring. The first CZCP meeting was organized recently in Athens with focus on the experiences from the Mediterranean region. An important outcome of the collaboration between IOC and GEO led to the establishment of a GEO Working Group to support the IOC efforts in establishing the tsunami early warning systems. This Working Group has achieved its objectives and has been disbanded.

- 118 Mr Achache informed the Executive Council that the GEO is cooperating with WMO on activities related to river discharges; water quality and the water cycle.
- 119 Further areas for investigation include new possibilities for commercial constellations and multi-spectral imagery. Major challenges and tasks ahead of GEOSS consist of ensuring the continuity and sustainability of the observation systems in the future. Mr Achache therefore invited the Executive Council to contribute to the execution of the GEO Implementation Plan.
- 120 The Chairman invited Admiral Conrad Lautenbacher Jr, Assistant Secretary of Commerce and NOAA Administrator (USA), to address the Executive Council in his capacity as one of the Co-Chairpersons of GEO. Admiral Lautenbacher called the attention of the Executive Council to the fact that the world is entering a new era in which the observational data that are collected, and the resulting information for decision-makers, must receive increased prominence to benefit the people of all nations. There is today enormous potential and value that remain untapped; and it is the collective responsibility of Member States to attract the support and attention of policy-makers around the world. This presentation was articulated around four key points:
- 1 - IOC Leadership and Vision
  - 2 - GEO/GEOSS November 2007 Cape Town Ministerial Summit
  - 3 - Observing Systems and Climate
  - 4 - Coordinated, Comprehensive and Sustained Observing Systems.
- 121 The recent successes in building the Global Earth Observation System of Systems (GEOSS) were possible only because of IOC leadership within GEO and direct involvement in formulating and completing many of GEO's work plan tasks. IOC has demonstrated the importance of ocean observations through GOOS, the tsunami early warning systems, and biodiversity networks. Consequently, the future success of GEO will also depend critically upon IOC leadership and involvement. The goal is to access the right information in the right format, at the right time, for the right people, to make the right decisions.
- 122 Admiral Lautenbacher also stressed the way in which ocean observing systems and other Earth observation systems are contributing to the invaluable understanding of climate change – especially at the poles. He emphasized the importance of sustained, comprehensive and coordinated observing systems to improve local, regional, and global understanding of the planet.
- 123 He reminded the Executive Council that GEO is not a separate organization: it is the joint efforts of international organizations, including the United Nations, and Member States. There is an incredible value in advertising and working together: without the Intergovernmental Oceanographic Commission of UNESCO, there would be no space for international ocean research, studies and progress. GOOS is a tangible result of investment in ocean knowledge and understanding.
- 124 In his capacity as a representative of an IOC Member State, Admiral Lautenbacher confirmed that, through GEO and the collective efforts to realize a Global Earth Observation System of Systems, his country aims to build upon and to support the successes of IOC in these areas.
- 125 **The Executive Council welcomed** the two presentations on GEOSS.

#### 4.1.5 Follow-up of the Seventh Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-VII)

- 126 Professor Hyung Tack Huh (Republic of Korea), Former Chairman of the IOC Sub-Commission for the Western Pacific (WESTPAC), introduced this agenda item. WESTPAC has made considerable progress during the intersessional period in revitalizing itself to meet the IOC's High-level Objectives, mainly through: (i) enhancing the participation and raising the support of Member States, by establishing efficient communications and extensive interactions; (ii) restructuring and refining WESTPAC projects, by reformulating the WESTPAC rules of procedure and by initiating new regional projects; (iii) implementing the WESTPAC Work Plan (2006–2008), by strengthening coordination with Project Leaders; (iv) enhancing the regional capability by initiating a regional capacity-building initiative through the UNESCO/IOC Regional Network of Training and Research Centres on Oceanography in the Western Pacific; (v) strengthening regional cooperation with other regional/international organizations, by conducting joint activities of mutual interest.
- 127 The 7<sup>th</sup> WESTPAC International Scientific Symposium (Sabah, Malaysia, 21–25 May 2008) was aimed at orienting the regional marine scientific activities around the IOC High-level Objective; the Symposium was recognized as the largest gathering in the history of the WESTPAC Symposiums, and demonstrated its role as the regional platform for sharing marine scientific knowledge, stimulating new ideas and imparting experience and lessons gained from WESTPAC project implementation. Dr Huh thanked the Government of Malaysia for having hosted the 7<sup>th</sup> Symposium.
- 128 The major outcomes of the 7<sup>th</sup> Session of the IOC Sub-Commission for WESTPAC (Sabah, Malaysia, 26–29 May 2008) were: (i) the adoption of the WESTPAC Strategy and Programme Structure (2008–2013) to better reflect the priority of IOC and region-specific objectives; (ii) the decision to establish a WESTPAC Advisory Group to provide scientific and technical advice on the development, planning and implementation of WESTPAC activities; (iii) the fostering of new regional country-driven projects, contributing to the IOC High-Level Objectives in the context of the region; (iv) endorsement of the new regional capacity-building initiative through the IOC/UNESCO Regional Network of Training and Research Centres on Oceanography in the Western Pacific; (v) rescheduling of the WESTPAC sessions to be in phase with the IOC planning cycle.
- 129 Professor Huh expressed his deep appreciation of the strong support of the Member States, particularly Thailand, Malaysia and China, for their contribution to WESTPAC and its Secretariat, and of several regional experts, notably Dr Neville Smith (Australia) for his overall guidance and inspiration, Dr Hugh Kirkman (Australia), Nick D'Adamo (Australia), and Dr Somkiat Khokiattiwong (Thailand), for their efforts in the development of SEAGOOS. He commended Mr Wenxi Zhu (China) for his excellent work as Acting Head of the WESTPAC Secretariat, in initiating the revitalization of WESTPAC.
- 130 **The Executive Council noted with satisfaction and acknowledged** the significant progress made in restructuring and revitalizing WESTPAC and the changes in the strategic approach and alignment with IOC. **It thanked** Professor Hyung Tack Huh for his good work as Chairman of WESTPAC, and the newly elected Officers, Dr Zhang Zhanhai (China), Dr Yasuwo Fukuyo (Japan) and Dr Nor Aieni Hj Mokhtar (Malaysia) for accepting the leadership in this new phase; **it also thanked** Mr Wenxi Zhu, Acting Head of the WESTPAC Secretariat, for the efforts that were made in a short time to start the process of revitalizing WESTPAC.
- 131 **The Executive Council expressed** its special appreciation to: the Government of Thailand, for its continued hosting of the WESTPAC Secretariat and the provision of local staff; the Government of China, for seconding Mr Wenxi Zhu as Acting Head of the WESTPAC Secretariat since July 2006 and for its contribution to the IOC Special Account for

WESTPAC activities; and the Government of Japan, for its continuous support for WESTPAC activities through the Japan Fund-in-Trust.

132       **The Executive Council thanked** the Government of Malaysia for its generosity and excellent organization of the 7<sup>th</sup> WESTPAC International Scientific Symposium and the 7<sup>th</sup> Session of the WESTPAC in Sabah, Malaysia, from 21 to 29 May 2008.

133       **The Executive Council also expressed** its strong wish that the present momentum of revitalization should continue, and that progress to date should be further reinforced, with the aim of making significant contributions to the global programmes of IOC. **It requested** the Executive Secretary to pay special attention to ensure that the role of Regional Subsidiary Bodies in the implementation of IOC global programmes be better reflected in the Operating Plan of the Commission and strengthened accordingly.

134       **The Executive Council also requested** the Executive Secretary to share the lessons learned during the successful revitalization of WESTPAC with other Regional Subsidiary Bodies of IOC, as a reference for their own strategic analysis and restructuring.

135       **The Executive Council welcomed** the concrete commitment by Member States to a revitalized WESTPAC, as a viable and effective vehicle for regional cooperation. **It particularly welcomed** the decision of the Government of China to increase its annual financial contribution from US\$ 20,000 to US\$ 60,000, and the decision of the Government of the Republic of Korea to contribute US\$ 50,000 to enhance the regional capability in oil-spill response and in the restoration of marine ecosystems. It appreciated the willingness of China, the Republic of Korea, and Malaysia to join the regional capacity-building initiative through the UNESCO/IOC Regional Network of Training and Research Centres on Oceanography in the Western Pacific.

136       **The Executive Council appreciated and welcomed** the decision of UNESCO to provide a post for the Head of the WESTPAC Secretariat at the UNESCO Regional Office in Bangkok.

137       **The Executive Council also expressed** its gratitude to the Governments of the Philippines and the Republic of Korea for their kind offers to host the 8<sup>th</sup> International Scientific Symposium of WESTPAC, in 2011, and to the Government of Indonesia for its kind offer to host the 8<sup>th</sup> Session of the Sub-Commission for WESTPAC, in 2010.

138       **The Executive Council adopted** [Resolution EC-XLI.3](#).

#### **4.1.6 Relations with Other Marine-Related Programmes of UNESCO**

139       On behalf of the Director of the UNESCO Division of Ecological and Earth Sciences for Sustainable Development (EES), Mr Salvatore Arico presented the activities of the Man and the Biosphere Programme (MAB), which deals with biodiversity and the ecosystem approach, and especially the world network of biosphere reserves and their contribution to conservation of biodiversity, sustainable development, and research and monitoring. The Madrid Action Plan adopted by the 20th Session of the International Co-ordinating Council (ICC) places biosphere reserves at the interface between conservation and the sustainable use of biodiversity, "mitigation of climate change" and the adaptation of human populations and the enhancement of human well-being. The current co-operation between IOC and MAB includes: (i) the development, through a Group of Experts, of ecological criteria and a biogeographical classification system for marine areas; (ii) the application of marine spatial planning approaches to the management of a biosphere reserve and of World Heritage sites in Viet Nam; (iii) the organization of scientific cooperation with the marine component of Diversitas, the international programme on biodiversity; (iv) the creation of a Global Federation of Marine Biodiversity Stations and Sites; and (v) preparatory work on the

organization of the World Conference on Marine Biodiversity, to be held in Valencia, Spain, in 2008. He encouraged the IOC to continue its collaboration with EES, to foster international science activities directed at policy development.

140 The Deputy Director of the UNESCO World Heritage Centre (WHC), Mr Kishore Rao, presented the World Heritage Marine Programme, aimed at using the World Heritage Convention to conserve outstanding marine areas. The Marine Programme has been developed since 2002, with support from the IUCN's World Commission for Protected Areas (WCPA). Following a Workshop on Marine Biodiversity, organized by the World Heritage Centre in 2002 in Vietnam, several marine World Heritage sites were established. Current activities include the Eastern Tropical Pacific Seascape project, focusing on the Galápagos Islands (Ecuador), Cocos Island (Costa Rica), Malpelo (Colombia) and Coiba (Panama) and aimed at exploring serial and transboundary World Heritage opportunities. To foster the establishment and management of World Heritage marine sites, the World Heritage Centre has organized regional training workshops and meetings in the Caribbean and the Pacific and is developing business plans for the management of the Aldabra and Tubattaha Reefs. Collaboration is ongoing with other UNESCO sectors, NGOs, and Member States, in support of marine site nomination and conservation and to promote networking among marine World Heritage sites. Recent cooperation with IOC focuses on the preparation of a dedicated session of the biennial Status of Coral Reefs of the World Report, sponsored by IOC, on coral reefs in World Heritage sites.

141 Ms Ulrike Koschtial, of the UNESCO Section of Museums and Cultural Objects, presented the UNESCO Convention on the Protection of the Underwater Cultural Heritage, adopted on 2 November 2001 by the UNESCO General Conference. The Convention is intended to enable States to effectively protect and preserve their underwater cultural heritage. It is expected that the Convention will enter into force in the coming months. The Convention is specific to underwater cultural heritage. For its purposes the term "underwater cultural heritage" is used to mean "all traces of human existence having a cultural, historical or archaeological character which have been partially or totally under water, periodically or continuously, for at least 100 years..." (Art. 1 para. 1(a)). The Convention sets a high standard for the protection of underwater cultural heritage, with a view to preventing its being looted or destroyed. Marine scientific research and knowledge exchange in respect of this heritage plays a key role in the application of the Convention and in the recently developed discipline of underwater archaeology. The contribution of the IOC may be relevant in matters related to information exchange in the context of the Convention's international cooperation mechanism, the monitoring of environmental conditions, issues of conservation and recovery, conduct of research and related authorizations, and the transfer of marine technology, such as geophysics and engineering sciences applied to underwater archaeology. Potential cooperation with IOC could be aimed at the elaboration of operational guidelines for the conduct of marine scientific research to study and protect underwater cultural heritage and the development of activities to support the implementation of the Convention (e.g. creation of a data base for information exchange, inventorization and control of sites, capacity-building, research, creation of category-2 centres).

142 The cooperative activities undertaken by IOC with the marine-related programmes of UNESCO address the recommendations of the Review Committee that reviewed UNESCO Major Programmes II (Natural Sciences) and III (Social and Human Sciences), notably, Recommendation 3 (Strengthening interdisciplinary and intersectoral activities) and Recommendation 5 (International science programmes: towards better coordination and synergy); they can also assist in providing coordinated UNESCO contributions to such United Nations processes and mechanisms as the Informal Consultative Process (ICP) on Oceans and the Law of the Sea, and the UN-Oceans network.



- 143 The Executive Council thanked the speakers for their presentations; it endorsed the collaboration between IOC and the marine-related programmes of UNESCO as a contribution to intersectoral and interdisciplinary cooperation.

#### **4.1.7 Relations with the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)**

- 144 The Acting Head of the Ocean Sciences Section, Mr J. Barbière, introduced this item. The new GESAMP mechanism is framed by an updated draft Memorandum of Understanding (MoU) and Rules of Procedures amongst the co-sponsors (document IOC/INF-1248). After final editing, in June 2008, the MoU will be sent to the Heads of each sponsoring organization for signature.
- 145 IOC is not currently leading in any GESAMP Working Group, although GESAMP is contributing to the Assessment of Assessments which is co-led by IOC and UNEP.
- 146 Mr Barbière reflected recent concern over potential areas of duplication between GESAMP and the Commission, and GESAMP's apparent autonomy, as exemplified by a recently published GESAMP statement on ocean fertilization.
- 147 The newly elected Chairman of GESAMP, Mr Tim Bowmer, provided a short overview of GESAMP's current status and activities. GESAMP was established in 1969 as a group of independent experts to give scientific advice to the cosponsors at their request. At present, it is jointly sponsored by eight United Nations Specialized Agencies with responsibilities relating to the marine environment. GESAMP consists of 25 to 30 experts, drawn from a wide range of relevant disciplines, covering topics related to biodiversity; studies and assessments are usually carried out by dedicated working groups. The GESAMP work programme includes the provision, upon request, of: synthesized results of regional and thematic assessments and scientific studies to support global assessments of the marine environment; scientific and technical guidance on the design and execution of marine environmental assessments; scientific reviews, analyses, and advice on specific topics relevant to the condition of the marine environment, its investigation, protection, and/or management. GESAMP, at the invitation of the lead agencies, is also participating fully in the Assessment of Assessments as the initial step to the establishment of a Regular Process for Global Reporting and Assessment of the State of the Marine Environment.
- 148 GESAMP has undergone extensive reorganization following an independent, in-depth review in 2001. A GESAMP Office, currently hosted by IMO, is presently responsible for general administration on behalf of all the sponsoring organizations. The Group's activities have been significantly revitalized after receiving substantial financial support from Sida (Swedish International Development Cooperation Agency). GESAMP Sessions have been reinstated on an annual basis.
- 149 The GESAMP Chairman also informed the Executive Council that, at its 35th Session (Accra, May 2008), the Executive Committee of GESAMP discussed the procedure for addressing requests from other sources than the current cosponsors of GESAMP. The Executive Committee agreed that GESAMP should discuss if and how they are able to address such requests. The Executive Committee would then approve such requests by correspondence in accordance with the GESAMP Rules of Procedure. Mr Bowmer invited the Commission to sign the Draft MoU, so as not to lose momentum in the revitalization of GESAMP.
- 150 Several Member States welcomed the revitalized role of GESAMP as a source of independent scientific advice to the UN and its agencies dealing with the marine environment, as well as GESAMP's concrete contribution to the Assessment of Assessments work led by IOC and UNEP.

151 Some Member States expressed their concerns over GESAMP statements on specific issues without GESAMP having received from its cosponsors a valid request to provide an opinion on a given subject.

152 Member States recognized the importance of delivering a clear and consistent message on marine environmental issues to IOC Member States and to society at large. However it is also important that such messages be delivered in a consistent manner. The circumstances in which GESAMP could be allowed to make unilateral public statements should be agreed upon and clarified. IOC should also take steps to ensure that urgent requests from external parties to GESAMP are handled in a timely manner.

153 The Executive Council, having considered the new GESAMP Strategic Vision and the actions taken by GESAMP as a Group of Experts cosponsored by eight UN bodies, emphasized the fundamental nature of GESAMP as a scientific advisory body to its cosponsors and to the IOC.

154 **The Executive Council also called on** the cosponsors of GESAMP to establish a rational mechanism for coordination between GESAMP and its sponsoring agencies including IOC, so as to improve GESAMP's governance and to ensure that GESAMP's status is clear and subsidiary to that of its cosponsors and of the IOC.

155 **The Executive Council believed** that the cosponsors should ensure that the objectives of Member States are reflected in the work programme of GESAMP through co-operation between the GESAMP Executive Committee and the cosponsors' Technical Secretaries for GESAMP.

#### **4.1.8 General Bathymetric Chart of the Oceans (GEBCO)**

156 The Chairman of the GEBCO Guiding Committee, Mr David Monahan, introduced this item. The GEBCO Terms of Reference and Rules of Procedure approved in 1991 were found to be in need of revision so as to allow the GEBCO Guiding Committee to meet the challenges generated by new cartographic technologies and approaches. Pursuant to Resolution EC-XXXVII.5, the International Hydrographic Bureau and the GEBCO Guiding Committee, with the support of the IOC Secretariat, carefully modified the existing GEBCO Terms of References and Rules of Procedure which were approved by the member countries of the International Hydrographic Organization in 2008. Since GEBCO is a Joint IHO–IOC programme, the revised GEBCO Terms of Reference and Rules of Procedure must be submitted to an IOC Governing Body for consideration and approval.

157 Several Member States made positive comments on the new Terms of Reference and Rules of Procedure of the GEBCO Guiding Committee and its Sub-Committees. Some Member States reported on relevant achievements in their respective regions. The Russian Federation highlighted the importance of GEBCO for the successful development of other IOC programmes and called for strengthening the Commission's financial support to GEBCO. The Republic of Korea considered paragraph 2.10 of the SCUFN Terms of Reference and Rules of Procedure not to be necessary. China expressed its willingness to join SCUFN.

158 The Representative of the IHO explained the procedure followed to reach the final texts of the new Terms of Reference and Rules of Procedure, and informed the Council that the IHO Member States approved these texts in March 2008. He also stressed that the expected effectiveness and efficiency of GEBCO are in direct relation to the support provided by the two cosponsoring organizations, IOC and IHO.

159 **The Executive Council considered** the revised Terms of Reference and Rules of Procedure, for the GEBCO Guiding Committee, as well as those for its Technical Sub-

Committees on Undersea Features Names (SCUFN) and on Ocean Mapping (TSCOM). **The Executive Council approved** the revised Terms of Reference and Rules of Procedure for the GEBCO Guiding Committee and its two Sub-Committees.

## 4.2 UN CONVENTIONS AND AGREEMENTS

### 4.2.1 IOC and the United Nations Convention on the Law of the Sea (UNCLOS)

- 160 The Executive Secretary introduced this item. The progress achieved in the Law of the Sea intersessional activities during 2007–2008 are reported in Information Document IOC/INF-1245. He introduced two European Commission publications resulting from EU Actions SI2.455289 and SI2.455302: (i) Procedure for the Application of Article 247 of UNCLOS by IOC; and (ii) National Ocean Policy: basic texts from Australia, Brazil, Canada, China, Colombia, Japan, Norway, Portugal, Russian Federation and the United States of America.
- 161 Japan expressed its appreciation of the Executive Secretary's presentation and of the pertinent IOC publications on Procedures for the Application of Article 247 of UNCLOS by the IOC and on National Ocean Policy. However Brazil and Japan informed the Executive Council that their respective basic texts (in English) were not, at present, official translations of the original into English.
- 162 The Executive Secretary also presented the new contents of the IOC/ABE-LOS web site, notably the data base to promote the *IOC Criteria and Guidelines on Transfer of Marine Technology* and the compilation of *National Legislations on Marine Scientific Research and National Ocean Policies*.
- 163 **The Executive Council thanked** the European Union for its support and expressed its appreciation of the Information Document IOC/INF-1245, which reports the Commission's activities in the field of Law of the Sea.
- 164 At the request of Argentina, the Executive Secretary explained that the promotion of capacity-building activities linked to the Law of the Sea would be focused in existing international standardized procedures for undertaking marine scientific research in waters under national jurisdiction, referring particularly to the UN Guide (*Marine Scientific Research: a Guide to the Implementation of Relevant Provisions of UNCLOS*) which is being updated by UN/OLA/DOALOS in close cooperation with IOC.
- 165 The United Kingdom stressed the importance of IOC taking the lead in the debate on developments in legal affairs, marine science and policy, and on bringing together policy-makers and scientists. It suggested that workshops or other activities could be organized by IOC.
- 166 The Russian Federation stated that, in accordance with Article 3.c of the IOC Statutes, the IOC Rules of Procedure should be amended to highlight the Commission's role in Law of the Sea, to add that "IOC is the competent international body in the field of marine science". It added that IOC should deal with legal frameworks for marine scientific research matters not already covered in international instruments, particularly UNCLOS.
- 167 In response to requests from Brazil and Kenya, the Executive Secretary briefly explained the role of IOC in relation to Article 76 of UNCLOS taking into account the mandate given by Decision 16, Part II of the 179th Session of the Executive Board of UNESCO. He pointed out that, even if IOC is not in a position to finance or collect new geological or geophysical data for any location, it is co-operating with UNEP/GRID-Arendal and UN/OLA/DOALOS, to the best of its capabilities, to assist Member States in discharging their responsibilities under the Convention. This assistance includes raising awareness,

training to undertake a desk-top study, and facilitating access to existing publicly available geological or geophysical data.

- 168 The Executive Secretary welcomed the Decision of the 18th Meeting of the States Parties to the UN Convention on the Law of the Sea (New York, 12–20 June 2008) with regard to the deadline of May 2009, for most of the States Parties to UNCLOS, for submitting information relative to the outer limits of the continental shelf beyond 200 nautical miles. This Decision states that the time period referred to in Article 4 of Annex II to the Convention and the Decision contained in SPLOS/72, paragraph (a), may be satisfied by transmitting to the Secretary-General of the UN preliminary information indicating the outer limits of the continental shelf beyond 200 nautical miles and a description of the status of preparation and intended date of making a submission in accordance with the requirements of Article 76 of the Convention.

#### **4.2.2 Follow-up of the Eighth Session of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS VIII)**

- 169 The Chairman of the IOC Advisory Body of Experts on the Law of the Sea, Mr Elie Jarmache, introduced this item. He informed the Executive Council of the progress made at the 8th Session of the IOC Advisory Body of Experts on the Law of the Sea, particularly regarding the mandate it received on the “IOC legal framework within the context of UNCLOS which is applicable to the collection of oceanographic data” and brought to the attention of the Executive Council the need to discuss unresolved political matters concerning the “Draft Guidelines for the implementation of Resolution XX-6 of the Assembly regarding the deployment of floats in the high seas within the framework of the Argo programme”, particularly Article 5-bis of these Draft Guidelines.

- 170 **The Executive Council thanked** the Chairman of the Advisory Body, the Coordinator of the sub-group on the IOC Legal Framework for the Collection of Oceanographic Data within the Context of UNCLOS, Professor Kari Hakapää, and the IOC Secretariat, for their hard work; it also welcomed the very substantial progress achieved.

- 171 Argentina stated that the notification referred to in the Draft Guidelines shall be made to all parties in the dispute, in accordance with the international practice and international law reflected in the UN Convention on the Law of the Sea.

- 172 Peru and China supported the view expressed by Argentina; China further indicated that the notification to all parties in a dispute would reduce the potential concerns of coastal States in the implementation of the Argo Programme. Peru reminded the Executive Council that its member of ABE-LOS had already pointed out that the Draft Guidelines on the deployment of floats in the high seas within the framework of the Argo programme should include a safeguard article in which a dispute on the delimitation of maritime zones is mentioned and which should be taken into account in the notification procedure now being established.

- 173 Greece stated that it accepted the second sentence of paragraph 5-bis of the Guidelines in a spirit of compromise, as a general disclaimer clause, but it restated its strong opposition to the originally proposed third sentence (not retained) providing for notification to all parties in a dispute, on the basis that there is no such obligation in UNCLOS, either in the provisions dealing with maritime delimitation or in Part XIII dealing with marine scientific research. Greece further recalled that the mandate of ABE-LOS is to determine the IOC legal framework for the collection of oceanographic data within the context of UNCLOS, and not to create new rules and practices.

- 174 The United Kingdom supported the views expressed by Greece.

- 175 Turkey supported the consensus on retaining the second sentence in brackets of Article 5-bis of the Draft Guidelines; it insisted that “the notification referred to in the Guidelines should be made to all Parties to a dispute” be recorded in the present Summary Report.
- 176 Canada expressed its concern that the proposed Guidelines may impose undue burden on the implementers of the Argo Project, and proposed that protocols for the implementation of these Guidelines be developed. Canada suggested that the Argo team work with the implementers of national Argo programmes, the coastal States and the IOC to develop these protocols, implement them, evaluate them for their impact on the implementers and data users, and report to the IOC Governing Body on the practicality of the Guidelines.
- 177 The Russian Federation agreed with the Draft Guidelines, but considered that the collection of data by Argo floats falls under marine scientific research. The Russian Federation believed that the collection of oceanographic data through automatic instruments should be developed in the framework of an international convention or a similar instrument.
- 178 The United States of America expressed its concern about whether the proposed Guidelines would be practicable for the users and implementers of the Argo project and that special attention should be given to how the Guidelines will be implemented to ensure that the flow of data to operational centres for forecasting purposes would not be adversely impacted. The United States believed that the Guidelines should not place disproportionate burdens on the staffing and budgets of implementers. It suggested that IOC, coastal States and national Argo programmes develop procedures addressing the Guidelines that would have minimal impact on implementers and data users. The United States proposed that IOC/ABE-LOS should suspend further work on this item pending the evaluation of the Draft Guidelines and reconsideration of them by the IOC Governing Bodies.
- 179 India also stressed the need for, and the importance of, developing protocols for the practical implementation of the Draft Guidelines, as proposed by the USA, within the framework UNCLOS.
- 180 The United Kingdom recalled document IOC/ABE-LOS VIII/INF-01 *United Kingdom discussion paper on suggested topics of work to be undertaken by the IOC/ABE-LOS*, and pointed out that the aim of the paper was to stimulate discussion on emerging issues that IOC/ABE-LOS, subject to IOC Governing Body approval, might undertake in its future activities.
- 181 Argentina also noted that the issue of marine genetic resources beyond areas of national jurisdiction has to be treated by the appropriate fora with direct competence in Law of the Sea issues. Argentina recalled that this issue is being discussed by the “UN ad hoc open-ended informal working group to study issues relating to the conservation and sustainable use of marine biological diversity beyond areas of national jurisdiction” established by the UN General Assembly, and requested that this be taken into account by IOC which should only work on this matter when requested to do so by the meeting of States Parties to UNCLOS.
- 182 Japan congratulated the IOC/ABE-LOS on reaching a conclusion on procedures for the collection of oceanographic data and on producing the Draft Guidelines for the implementation of Resolution XX-6 of the Assembly regarding the deployment of profiling floats in the high seas within the framework of the Argo programme. It considered that, as specified in the Draft Guidelines, it is an appropriate duty for IOC to assist scientific research and operational communities in the smooth implementation of marine scientific research, particularly the Argo Project, which is clearly providing valuable oceanographic data. Japan hoped that the procedure will be fully implemented. Regarding the effort to update the UN

Guide (*Marine Scientific Research: a Guide to the Implementation of Relevant Provisions of UNCLOS*), Japan welcomed the initiative of UN/OLA/DOALOS to update the Guide since it was published in 1991, and declared itself ready to co-operate with DOALOS in this initiative.

- 183        Following intensive discussion of Article 5-bis of the Draft Guidelines, **the Executive Council decided** only to retain the second sentence in brackets and remove the first and third sentences from the original text of Article 5-bis of the Draft Guidelines. The retained second sentence reads:

*No action or activity taken on the basis of these Guidelines shall be interpreted or considered as prejudicing the positions of States Parties to a land or maritime sovereignty dispute or to a dispute concerning the delimitation of maritime areas.*

- 184        **The Executive Council thanked** Belgium, the European Union, France, Greece, the United Kingdom and the United States for the financial support received by the Secretariat for the IOC's Law of the Sea activities, and particularly for the organization and conduct of the 8th Session of IOC/ABE-LOS.

- 185        **The Executive Council accepted** the Report of IOC/ABE-LOS VIII and **adopted** the *Guidelines for the Implementation of Resolution XX-6 of the IOC Assembly Regarding the Deployment of Profiling Floats in the High Seas within the Framework of the Argo Programme*.

- 186        **The Executive Council requested** the IOC Advisory Body of Experts on the Law of the Sea continue its work until accomplishing the mandate already given it by the Governing Bodies and to present its results to the 25<sup>th</sup> Session of the Assembly.

- 187        **The Executive Council thanked** Colombia for its offer to host the 9<sup>th</sup> Session of IOC/ABE-LOS.

- 188        **The Executive Council adopted** [Resolution EC-XLI.4](#).

#### **4.2.3 IOC and the United Nations Framework Convention on Climate Change (UNFCCC)**

- 189        The Representative of the United Nations Framework Convention on Climate Change (UNFCCC) Adaptation, Technology and Science Programme, Mr Youssef Nassef, introduced this item. He outlined the overall objectives of the UNFCCC and of its Nairobi Work Programme on impacts, vulnerability and adaptation to climate change. The UNFCCC's ultimate objective is to prevent dangerous human interference with the climate system, thus allowing ecosystems to adapt naturally to climate change and enabling economic development to proceed in a sustainable manner. Its work in helping the Parties to the UNFCCC to take action to adapt to climate change focuses on actions to help develop: a future architecture for adaptation, mitigation, technology, and finance; implementation of national adaptation programmes of action; and identification of the scientific, technological and methodological issues in adaptation to climate change.

- 190        Mr Nassef noted that IOC's adopted High-Level Objectives were very relevant to UNFCCC objectives. The IOC has submitted two action pledges to the UNFCCC's Nairobi Work Programme: for sea-level monitoring and prediction through GOOS, and for the IOC-led UNDP-GEF project on Adaptation to Climate Change: Responding to Coastline Change in its Human Dimensions in West Africa through Integrated Coastal Area Management (ACCC). Mr Nassef encouraged the IOC Member States and Secretariat to continue their constructive participation in UNFCCC activities, more details of which can be found at its website <http://unfccc.int/>.

191 The Executive Secretary reported that the action pledges made to the UNFCCC were for activities entirely within the programme of work and priorities set by IOC Member States. They were also a way to integrate the work across the UN system in climate change under the leadership of the UNFCCC.

192 **The Executive Council welcomed** the contribution of IOC programmes to achieving the objectives of the UNFCCC, and IOC's intention to continue its close cooperation with the UNFCCC Secretariat.

#### 4.2.4 IOC and the Convention on Biological Diversity (CBD)

193 The Executive Secretary presented this item. He briefly reviewed the IOC contributions to the achievement of the goals of the Convention on Biological Diversity (CBD) and its Programme of Work on Marine and Coastal Biodiversity (2004–2010). Some of IOC's contributions were made in cooperation with other components of UNESCO and within the UN-Oceans mechanism. The principal areas were: Integrated Marine and Coastal Area Management (IMCAM); Marine and Coastal Living Resources, especially coral reefs; Marine and Coastal Protected Areas; and Invasive Alien Species. Additional contributions concerned the conservation and sustainable use of deep-seabed genetic resources beyond national jurisdiction, as well as the identification of gaps in legal instruments, guidelines and procedures.

194 Canada recommended that Member States engage in a discussion at the appropriate level with a view to ensuring that IOC's scientific contribution is recognized in CBD for the development of its marine component. Japan stressed that IOC is the most appropriate body to discuss marine scientific issues, including marine genetic resources, in international fora. IOC could also play a role in providing the scientific base and coordination for the establishment and implementation of marine scientific research in marine protected areas in the high seas. Argentina encouraged IOC to work on the issue of marine genetic resources in the context of the UN ad hoc open-ended informal working group charged with studying issues relating to the conservation and sustainable use of marine biological diversity outside areas of national jurisdiction. Sri Lanka supported the cooperation between IOC and the Secretariat of the CBD concerning marine living resources. Germany and Tunisia underlined the importance of reporting on the IOC contribution to the CBD and recommended an assessment of its influence through performance indicators, calling on Member States to support activities through voluntary contributions.

195 The Executive Secretary explained that IOC activities dealing with marine biodiversity are based on the availability of resources; these activities are also part of UN coordination (e.g. the UN-Oceans task force on marine protected areas led by the CBD Secretariat). There are many areas to which IOC can contribute and this may require scoping activities, as international conventions can operate by convening technical teams directly, but may choose to ask IOC to undertake specific tasks.

196 **The Executive Council underlined** the importance of ensuring proper co-ordination between IOC Secretariat and the Secretariat of the CBD, taking into account IOC's competence and priorities.

4.3 ADDRESSING THE IMPACTS OF CLIMATE CHANGE AND VARIABILITY,  
INCLUDING SEA LEVEL RISE [MLA 2.1]

**4.3.1 IOC Participation in the International Polar Year 2007–2008,  
and the International Year of Planet Earth 2007–2009**

- 197 The Director of the GOOS Project Office, Keith Alverson, introduced this item, on behalf of the Director of the IPY International Programme Office, David Carlson, who was unable to attend the present session.
- 198 Keith Alverson focussed on the legacy of the IPY, under three main headings.
- 199 Opportunity and Urgency. About 1.2 billion US\$ were spent on IPY science over the past two years, comprising about 400 million US\$ (from 14 countries) for new science projects, and 800 million US\$ for existing projects. However, society will continue to need to carry out excellent science programmes in the polar regions for many years to come. Sustaining this polar science funding is an important aspect of the IPY legacy. Other important aspects are: the development of observation networks, data management; polar environmental assessment; related political cooperation; future researchers; and an informed public. An assessment of IPY funding has shown that science has been substantially funded whereas observation networks, future researchers, political cooperation, and an informed public have been only partially funded, since they take longer to develop and require sustained long-term funding. IPY data management and environmental assessment have not been adequately funded; nor have they received serious attention, so far. The challenge and urgency of sustaining these aspects of the IPY legacy will become much more apparent when the busy backdrop of IPY has gone.
- 200 An Informed Public. Partners in the IPY around the world organized polar information for teachers, including the production of flyers, telling what happens, where and when in the polar regions. During the IPY Science Days, teachers organized activities in their local classrooms covering the wide range of IPY science topics. A network of teachers and young researchers helped to translate the flyers into 20 languages. The Network launched a virtual balloon, to share its activities with the rest of the world. All of this depended entirely on local enthusiastic volunteers, supported by international coordination from the IPY International Programme Office and from corporate sponsors.
- 201 Future Researchers. There are various networks or groups of young researchers, including “Permafrost” – Young Researchers Network, and national Young Researchers’ Networks (in the United Kingdom, Sweden, New Zealand, China). This new generation of polar researchers is multidisciplinary, international and in pursuit of excellence in research and of the development of outreach networks; they view education and outreach as essential and mutual aspects of their science careers. More partners to develop teacher information networks are required.
- 202 Upcoming IPY events and plans include the following: SCAR/IASC Open Science Conference (8–11 July 2008), IPY ‘Conclusion’ Event (Geneva, 25 February 2009); IPY Day at the 31<sup>st</sup> Antarctic Treaty Consultative Meeting (Baltimore, April 2009, proposed); Polar Youth Forum (April, 2009, proposed); Oslo Science Conference (June, 2010); the closure of the IPY International Programme Office (October 2009).
- 203 A key IPY Education, Outreach, Communication (EOC) recommendation is for continuing international coordination in the fields of polar research and environmental monitoring.
- 204 The Director of the GOOS Project Office not only highlighted the successful results of the IPY, but he also drew the attention of the Executive Council to the area where more



efforts are needed to strengthen the results achieved. Particular efforts are needed to raise the interest of Member States to develop archive data and monitoring systems. He concluded that the IPY deals with polar science with global impacts that should therefore be sustained.

205 Several Member States (Canada, Argentina, Spain, Republic of Korea, Russian Federation, India) commended the success of the IPY, particularly emphasizing the unprecedented increase in the quantity and quality of research in the polar regions. They also recommended that the IOC encourage interaction between the Technical Committee for IODE and the new World Data Centre in the archiving and exchange of polar research and environmental assessment data. IOC should also play a major role in the Antarctic Treaty Consultative Meeting (ATCM), particularly in the development of a Southern Ocean Observing System, under GOOS. The Member States declared their keenness to participate in this programme. They also recognized that sea-level rise driven by global warming is a key aspect of polar research, but better comprehensive ocean models are required. They considered that the best way to show the benefit of investment in polar science is through local effects.

206 India informed the Executive Council of its strong interest in participating in this initiative, with an expedition to the Arctic. India hosted the 30<sup>th</sup> ATCM (New Delhi, 30 April–11 May 2007).

207 The Russian Federation informed the Council that the outcomes of the IPY will be examined in St. Petersburg at the IASC–SCAR Open Science Conference (8–11 July 2008).

208 The Representative of the International Ocean Institute (IOI) informed the Council that, at the Global Forum on Oceans and Coasts (Hanoi, Viet Nam, 7–11 April 2008), there was a recommendation to make 8 June at UN level a UN International Ocean Day. The date should be noted for future planning and to avoid conflicts.

209 At the suggestion of the Chairman, the **Executive Council decided** that consideration of the legacy of the IPY would be put on the Provisional Agenda of the 25<sup>th</sup> Session of the IOC Assembly.

#### **4.3.2 Report on WMO–IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) Programme Implementation**

210 The Co-President of the WMO–IOC Technical Commission for Oceanography and Marine Meteorology (JCOMM), Peter Dexter, introduced this item. The core business of JCOMM is conducted within its Observations, Services, and Data Management Programme Areas, in which, JCOMM has made progress in the past year, as well as in a number of key cross-cutting issues and by direct involvement in activities within the broader IOC–WMO context. JCOMM has also worked to align its implementation and operating plans with the strategic objectives and expected results of IOC and WMO.

211 JCOMM has developed the rationale, structure and methodology for preparing a virtual (web-based) *Handbook on Standards and Best Practices*; this will: (i) provide an easy access reference book and guide to all the existing material relating to standards and best practices prepared under JCOMM and its predecessors, covering observations, data management and services; (ii) allow for the identification of gaps in such material; and (iii) facilitate input to the WMO Quality Management Framework (QMF) and ISO accreditation.

212 JCOMM is very appreciative of its close co-operation with IODE and GOOS, including in the implementation of a Pilot Project for WMO/WIGOS and in the development of new standards and best practices in ocean data management.

- 213 JCOMM has provided support for the IPY and its legacy, including the integrated Arctic Ocean Observing System (iAOOS), and for the proposed Southern Ocean Observing System (SOOS). Progress has been made on the establishment of an Observing Programme Support Centre, building on the existing highly regarded JCOMMOPS. Five institutions have been short-listed and a recommendation is expected by the end of the year for joint decision by IOC and WMO. JCOMM organized a Scientific and Technical Symposium on Storm Surges, hosted by the Korean Government (Seoul, Republic of Korea, 2–6 October 2007). Significant joint work was carried out with IODE on end-to-end data management, an ocean data portal and the development of oceanographic data management and exchange standards.
- 214 JCOMM is also implementing an Expert Team on Operational Ocean Forecast Systems (OOFs) as a way of moving the results of GODAE research into the operational environment, and has entered into discussions with the Argo Steering Team to bring Argo, which has now become an effectively operational programme, formally under the JCOMM umbrella. JCOMM activities continue to be carried out, as required, through partnership with IODE and GOOS.
- 215 The Co-President noted that the regular budget support in both the WMO and IOC Secretariats is inadequate to allow JCOMM to complete the work within its mandate and that human resources also remains an issue, owing to the difficulty of attracting volunteers to undertake Commission work and seconded staff to the Secretariats.
- 216 The Chairman invited the WMO, as IOC's cosponsor of JCOMM, to speak first on this issue.
- 217 The Representative of WMO briefly reviewed the discussions on JCOMM at the WMO Executive Council (Geneva, 18–27 June 2008). WMO has considered, and recommends, the commissioning of a review on the future role and structure of JCOMM and on the terms of reference and working mechanisms of JCOMM. As a joint subsidiary body of WMO and IOC, the proposed review of JCOMM should also be undertaken jointly by the cosponsoring agencies. However, taking into account the fact that regular budget resources are not at present available in the WMO budget to support the study, it will need to be financed by extrabudgetary contributions from the Member States. WMO agreed to go forward with the review in close collaboration with IOC on condition that the IOC Executive Council also agrees to it and that Member States make extrabudgetary resources available for this purpose.
- 218 Member States noted the excellent achievements of JCOMM, which have transformed it into the main implementing mechanism for operational oceanography, and that it had begun to adjust its work programme with a view to aligning its deliverables and programme implementation plans to the appropriate expected results from the IOC and WMO strategic plans. Several Member States drew particular attention to the success of the First JCOMM Scientific/Technical Symposium on Storm Surges hosted by the Republic of Korea (Seoul, 2–6 October 2007).
- 219 Member States agreed that the work programme of JCOMM, within its current Terms of Reference, was expanding, with substantial effort required in such emerging areas as: operational ocean services; physical components of coastal GOOS implementation; multi-hazard marine warning systems; climate change and climate-change adaptation in coastal areas.
- 220 Member States supported the ongoing work on the creation of an Observations Programme Support Centre (OPSC), so as to expand on the success of JCOMMOPS.

- 221 Member States supported the proposed review of JCOMM, considering it timely at this stage in the Joint Commission's lifetime. They noted that: (i) the review process should reside in, and be carried out by, the Governing Bodies of the two co-sponsoring organizations of JCOMM, and not by JCOMM itself; (ii) the review should reflect the views of IOC Member States and WMO Members; (iii) that carrying out such a review would require extrabudgetary support.
- 222 Some Member States expressed the opinion that, although the initial design target of 3,000 Argo floats has been achieved and some countries are migrating the financing of the Argo Programme from research to operational budgets, they will not consider it an operational system until there is a workable plan to sustain it. Other Member States noted that, in many Member States, Argo continues to be funded out of research and development budgets, and that clear signs of Argo moving into an operational mode could help to ameliorate this situation.
- 223 Canada encouraged JCOMM to be a key contributor to the 50<sup>th</sup> anniversary celebrations of IOC in 2010.
- 224 The United Kingdom expressed its concern over the fact that access to Publication 47 of WMO, and some other WMO publications relevant to JCOMM, was restricted to WMO Members. Publication 47 contains listings of Voluntary Observing Systems and is therefore of critical interest to IOC Member States. Although the United Kingdom has dealt with this issue through internal national-level communications, this may not be true for all Member States, therefore the United Kingdom strongly recommended that, as a matter of principle, all IOC Members States should have access to JCOMM-relevant WMO publications and all WMO Member States should have access to JCOMM-relevant IOC publications.
- 225 In response, the Co-President JCOMM informed the Executive Council that the Secretary-General of WMO had been informed on the issue, and that it was now being appropriately addressed in WMO.
- 226 Tunisia requested further information on how JCOMM capacity-building events are decided, so as to ensure they do not overlap with other such efforts within the IOC and WMO.
- 227 **The Executive Council called on** Member States to: (i) commit sufficient national resources, both direct and in-kind, to allow the full implementation of approved JCOMM activities; (ii) commit sufficient resources and staff to the WMO–IOC JCOMM Secretariat through extrabudgetary contributions and staff secondments, including those in support of the upcoming review of JCOMM.
- 228 **The Executive Council expressed** its continued support for the role and programme activities of JCOMM and appreciated a similar statement of support made by the Executive Council of WMO at its 60<sup>th</sup> Session (Geneva, 18–27 June 2008).
- 229 **The Executive Council instructed** the Executive Secretary to arrange a review of JCOMM, in close coordination and collaboration with WMO, noting that a similar decision had been approved by the WMO Executive Council at its 60<sup>th</sup> Session.

#### **4.3.3 Report on Global Ocean Observing System (GOOS) Programme Implementation**

- 230 The Chairman of the Intergovernmental Committee for GOOS, Mr François Gérard, introduced this item. He reported on the results and recommendations of the 8<sup>th</sup> Session of the I-GOOS (Paris, 13–16 June 2007), of the 11<sup>th</sup> Session of the GOOS Scientific Steering Committee (Paris, 8–10 April 2008), and of the 4<sup>th</sup> Session of the I-GOOS Board (Paris, 11 April 2008).

- 231 During the 2006–2007 biennium the 3,000<sup>th</sup> Argo float was deployed in support of GOOS and (as of January 2008) thus completing 58% of the open-ocean observing system planned for completion by 2012. Therefore, the initial goals of GOOS are being met, but at a slower rate than originally planned, and timely completion of the 2012 target goals now appears difficult to achieve. The goal of identifying and committing sustained funding for the system has not been achieved.
- 232 The IOC Assembly, at its 24<sup>th</sup> Session (Paris, 19–28 June 2007), emphasized the fact that the current funding mechanisms for GOOS, using short-term research programme funding and indefinitely extended pilot projects, will not create the sustained observation system needed to reach GOOS's 2012 operational goals, nor fulfil the mandate for an operational ocean observing system set forth in the UNESCO/IOC Medium-Term Strategy 2008–2013.
- 233 Also during the 2006–2007 biennium and to date, the I-GOOS Board emphasized the importance of developing the Coastal Module of GOOS.
- 234 I-GOOS VIII recognized two new GOOS Regional Alliances (OCEATLAN and GRASP), bringing the number of GRAs to twelve (EuroGOOS, MedGOOS, Black Sea GOOS, NEAR GOOS, Pacific Islands GOOS, Indian Ocean GOOS, IOCARIBE GOOS, GOOS-Africa, US GOOS, SEA GOOS, OCEATLAN, and GRASP). The I-GOOS Board supported the establishment of an Arctic GOOS Regional Alliance through I-GOOS's involvement with the EuroGOOS Arctic Regional Ocean Observing System and the Sustained Arctic Observing Network Initiating Group (SAON-IG); the Board also supported the emergence of the SOOS as a way to an Antarctic GOOS Regional Alliance.
- 235 The GOOS Scientific Steering Committee was reorganized so as to enable the creation of a Panel on the Implementation of Coastal Observations (PICO).
- 236 In September 2008 the SCOR–IAPSO Scientific Working Group 127 on Thermodynamics and Equation of State of Seawater will complete its work and a peer-reviewed update to the thermodynamic potential of standard seawater will be available to the oceanographic community for the first time since the currently used UNESCO standard (Fofonoff and Millard, UNESCO 1983: *Algorithms for computation of fundamental properties of seawater*, UNESCO Technical Papers in Marine Science, 44) was universally adopted. The 25<sup>th</sup> Session of the IOC Assembly in 2009 will provide an opportunity to renew IOC's role as an international standard-setting body for oceanography, and for its 137 Member States to formally resolve to adopt the new standard.
- 237 Numerous Member States expressed their support for the growth of the GOOS Coastal Module through strengthening of the GOOS Regional Alliances, the co-ordination with the IOC Regional Subsidiary Bodies and/or IOC decentralized offices, and the interaction among them. Examples of collaboration among GRAs mediated through the regional bodies (NEARGOOS and SEAGOOS, through WESTPAC; GRASP, OCEATLAN through the IOC Programme Office in Rio de Janeiro, and IOCARIBE GOOS through IOCARIBE) underlined the point. The development of priority regional projects provide GRAs and Member States with convincing arguments for the sustained support of the GOOS and tsunami warning systems with which they are successfully eliciting national support to achieve GOOS goals.
- 238 Tunisia noted that the most active GRAs have the advantage of financial and resource support from a few of their own participating Member States. GRAs composed mainly of developing countries lack this advantage and require more outside help from IOC or other sources. The Executive Secretary, in response, pointed out that support for GOOS-Africa was the largest element of the GPO budget.

- 239 Brazil noted that GOOS, as the leader of the GEO Task group CL-06-06, should actively maintain communication with GEOSS about GRA activities of interest to the GEO coastal community of practice. Brazil also noted the valuable role that the IOC Regional Office in Rio de Janeiro plays as a Secretariat for the OCEATLAN GRA and interactions with GRASP, IOCARIBE and GOOS-Africa.
- 240 Several Member States agreed that GOOS should become engaged with the Southern Ocean Observing System, supporting the Sustained Arctic Observing Network (SAON) and Arctic ROOS, with a view to creating sustained polar observing systems that will grow out of the successful International Polar Year activities. Some Member States urged caution so as to ensure that the formation of the Southern Ocean Observing System would be developed in close coordination with the Antarctic Treaty.
- 241 Argentina, with respect to the creation of an Antarctic GOOS Regional Alliance, expressly reserved its position and informed the Executive Council that Argentina is undertaking consultations with other interested parties and recalled the existence of the Antarctic Treaty System which should be taken into account when this theme is being discussed.
- 242 The Russian Federation stressed that successful functioning of GOOS will depend on the availability of appropriate mechanisms ensuring long-term financial and material support for global observations by Member States. The Russian Federation supports the GOOS Regional Implementation Strategy, actively participates in the Black Sea GOOS, BOOS and NEAR-GOOS, and is prepared to support the Southern Ocean Observing System (SOOS).
- 243 Concerning creation of a GOOS Regional Alliance for the Arctic, the Russian Federation noted that particularly severe climatic conditions, the presence of the ice cover during a significant part of a year, the growing human impact, and increased vulnerability of marine ecosystems require a complex approach to the development of observing systems in the region that would take into account the specific priorities of the coastal States. Therefore the Russian Federation reserved its position with respect to the Arctic-GOOS and considered it necessary to undertake an careful additional study of this issue, which would lead to a consensus by all countries with marine borders in the Arctic.
- 244 The Russian Federation and other Member States expressed concern that coastal pollution issues have not received appropriate emphasis in the Coastal Module of GOOS and urged that GRAs and the Coastal Module implement a more comprehensive approach to pollution observations.
- 245 Member States strongly supported presenting the Resolution concerning the SCOR-IAPSO Scientific Working Group 127 on Thermodynamics and Equation of State of Seawater, to the 25<sup>th</sup> Session of the Assembly for its adoption as a universal standard.
- 246 Several Member States were satisfied with developments under the GOOS Scientific Steering Committee, including the creation of the Panel for Integrated Coastal Observations and the appointment of Ralph Rayner as the new Chairperson of the GOOS Scientific Steering Committee, who brings a marine industry perspective to the Committee.
- 247 Member States reported successful meetings of GRAs. The 4<sup>th</sup> Session of OCEATLAN (Rio de Janeiro, 26–28 May 2008) recommended expanded coastal and open-ocean observation networks along the coasts of Argentina, Brazil (including its oceanic islands) and Uruguay, and promoted collaboration between OCEATLAN and the IBSA Ocean Alliance (India–Brazil–South Africa). Ecuador and the Representative of CPPS reported on the GRASP conference, which emphasized cooperation between Member States and between GRAs and made plans for the global GRAs' Forum to be held in Guayaquil, Ecuador, 25–27 November 2008 back to back with the global meeting of UNEP's Regional

Seas Programmes and Conventions, followed by a Regional Ministerial Meeting on the Impacts of Climate Change on the Oceans, being organized by CPPS with the support of IOC and WMO.

248        **The Executive Council considered and accepted** the report on GOOS Implementation and **welcomed** the ongoing support of WMO, ICSU and UNEP to GOOS. **It urged** Member States to support coastal and regional activities through increased extrabudgetary funding, so as to ensure effective action by the GOOS Regional Alliances and the IOC Secretariat, with a view to achieving the IOC goals for GOOS.

249        **The Executive Council reaffirmed** IOC's commitment to the work on thermodynamics and the equation of state of seawater **and instructed** the Executive Secretary to work with the SCOR-IAPSO Scientific Working Group 127 with a view to presenting to the Assembly, at its 25<sup>th</sup> Session, the new Equation of State of Seawater, and to inviting the Assembly to adopt a Resolution formally adopting this new standard.

#### **4.3.4 Interaction with the WMO-ICSU-IOC World Climate Research Programme (WCRP)**

250        The Director of the WMO-IOC-ICSU World Climate Research Programme (WCRP), Dr Ghassem Asrar, introduced this item. The mission of the WCRP in recent years has expanded, with the objective of supporting climate-related decision-making and planning for adaptation to the impact of climate change. This can be achieved through the development of scientific research to improve climate predictions and our understanding of the human influence on climate, and through work with appropriate partner organizations. Ocean science is central to WCRP activities, which support the achievement of IOC's High-Level Objectives and the objectives of the IOC-led UNESCO Intersectoral Platform on Climate Change. Recent achievements of particular interest to the IOC include: completion of the atlases from the World Ocean Circulation Experiment (WOCE); observations and research under the IPY; focussed activities on seasonal prediction and decadal climate modelling; identification of gaps in observations and research on climate change and on adaptation to, and mitigation of, the impacts of climate change, based on the IPCC Fourth Assessment Report; and capacity-building activities focussed on the effective use of climate science. The WCRP would like to strengthen mechanisms for consultation on user needs related to the climate and oceans. Dr Asrar invited IOC Member States to provide input to the WCRP based on their respective interests and priorities. He expressed his appreciation for the continued IOC sponsorship and support in recent years and emphasized that stable IOC support is key to the WCRP's ability to deliver on its commitment to IOC.

251        Dr Neville Smith, in his capacity as a member of the ongoing ICSU-WMO-IOC-IGFA Review of the WCRP, outlined the conduct of the review, which was scheduled to publish its findings in January 2009. He invited the Executive Council to respond to a number of specific questions for the review process.

252        The Assembly, at its 24<sup>th</sup> Session (Paris, 19–28 June 2007), reaffirmed its commitment to continue as a cosponsor of the WCRP, and requested the Executive Secretary to maintain a strong level of involvement in the provision of scientific guidance to the WCRP. It called on the Executive Secretary to continue support at the level of US\$ 125,000 per annum, ideally through Regular Budget, and to report to the Executive Council, at its 41<sup>st</sup> Session, on the specific measures, within the operational plans for the Secretariat, to meet this commitment. These specific measures were treated under Agenda Item 5.1.

253        **The Executive Council requested** the IOC Vice-Chairman for Ocean Science, Dr Chérif Sammari, to synthesize the Council's input to the WCRP Review.

254        **The Executive Council invited** the Executive Secretary to make the draft Report on the WCRP Review available to Member States under an IOC Circular Letter. It welcomed commitments from the Australia, Canada and the United Kingdom to provide comment on the draft Report, for consolidation later by the Secretariat.

255        **The Executive Council requested** the Assembly, at its 25<sup>th</sup> session, in June 2009, to assess the outcomes of the WCRP Review in terms of their implications for the Commission.

#### **4.3.5 Report on the IMO London Convention Scientific Group Meeting on Ocean Iron Fertilization**

256        IOC Programme Specialist in the Ocean Sciences Section, Dr Maria Hood, introduced this item.

257        The IOC Assembly, at its 21<sup>st</sup> session (Paris, 3–13 July 2001), noted that the issue of ocean CO<sub>2</sub> sequestration was important for the IOC, but it cautioned about the implications of direct involvement of the IOC in matters that might be counter to the International Maritime Organization's Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972) and its 1996 Protocol (also known as the "London Convention") without further discussion among the Member States. The Assembly at its 21<sup>st</sup> Session agreed that the IOC should continue monitoring developments in ocean CO<sub>2</sub> sequestration and maintain a watching brief on the environmental and scientific implications for Member States. Subsequent meetings of the IOC Governing Bodies have confirmed this mandate.

258        On 5 February 2008, the Scientific Groups of the London Convention requested scientific and technical input from the IOC on the issue of ocean iron fertilization aimed at sequestering atmospheric CO<sub>2</sub>, to be presented at the 31<sup>st</sup> Session of the London Convention Scientific Groups (Guayaquil, Ecuador, 19–23 May 2008).

259        Under the authority of the IOC Executive Secretary, an ad hoc Consultative Group of Experts (category VI) on Ocean Fertilization was set up to advise the Executive Secretary to respond to this request. The Group was formed by selecting a limited number of leading scientists active in the IOC–SCOR International Ocean Carbon Coordination Project, which has a mandate to provide scientific advice on ocean carbon sequestration. This Group developed a statement in response to a series of scientific and technical questions posed by the London Convention Scientific Groups (document IOC/INF–1247), which was accepted by the Executive Secretary, who decided to transmit it to the IMO as the input of the IOC Consultative Group of Experts. The Chairman of the Consultative Group of Experts, Dr Ken Caldeira, attended the 31<sup>st</sup> Session of the London Convention Scientific Groups as an observer. The members of the ad hoc Consultative Group of Experts served in their personal capacity as experts, and the input provided to the IMO does not constitute an intergovernmental statement of the IOC.

260        This input was considered by the Working Group on Ocean Fertilization of the London Convention Scientific Groups to determine the implications for the protection of the marine environment from the effects of ocean fertilization and to provide a scientific and technical basis for evaluating iron-fertilization activities. The decision adopted in Guayaquil was, inter alia, that the London Convention Scientific Groups' Statement of Concern Regarding Iron Fertilization of the Oceans to Sequester CO<sub>2</sub> (November 2007) remained valid, that it is important to have scientific and technical expertise included in the delegations to the London Convention when ocean fertilization is discussed further at the next sessions of the Governing Bodies, and that better coordination is needed among the UN organizations, programmes and agencies, whose areas of competence implicate them with this issue.

261        The 9<sup>th</sup> Conference of the Parties to the Convention on Biological Diversity (CBD; Bonn, Germany, 19–30 May 2008) adopted a decision concerning ocean fertilization

activities, referring to the on-going legal and scientific analyses being carried out by the IMO London Convention. This statement urges governments to ensure that ocean fertilization activities do not take place until there is an adequate scientific basis on which to justify them, with the exception of small-scale research studies in coastal waters. The decision also called for a global transparent and effective control and regulatory mechanism for ocean fertilization activities.

262 The United States of America expressed its concern that the CBD decision is a de facto moratorium that will limit further research. The United Kingdom shared USA's concern. While fully supporting the intention of the recent CBD decision, the UK doubted whether the key scientific questions could be satisfactorily addressed using ocean-fertilization experiments at small scales in coastal waters. Based on present scientific knowledge, open-ocean experiments at a scale of 200 km by 200 km appear to be needed if mitigation issues are to be addressed; such experiments should take place only when they have been subject to rigorous environmental impact assessment and are part of a legitimate scientific endeavour.

263 The IOC ad hoc Consultative Group of Experts on Ocean Fertilization was consulted by the Executive Secretary to respond to this decision. The Consultative Group drafted an addendum to their original submission to the IMO London Convention (document IOC/INF-1247), expressing concern about the limitation of experiments to the coastal zone, which may impede legitimate research activities in the high seas, as well as the lack of distinction between legitimate ocean research activities and those proposed to sequester CO<sub>2</sub> that may fall under the proposed global regulatory mechanism. This addendum was submitted by the Executive Secretary to the London Convention Secretariat and was circulated to the Chairpersons of the London Convention Governing Bodies, Scientific Groups, Working Group on Ocean Fertilization, and the Secretariat of the CBD.

264 Subsequent consultations among the Secretariats of the IOC, IMO and CBD highlighted common goals of ensuring that appropriate scientific and technical expertise is available for decision-makers at intergovernmental meetings, and ensuring better coordination among the UN organizations, agencies, and programmes dealing with this issue. The IOC was invited by the Secretariat of the IMO London Convention to submit a statement and participate in the IMO 30<sup>th</sup> Consultative Meeting of the Contracting Parties to the London Convention and the 3<sup>rd</sup> Meeting of the Contracting Parties to the 1996 Protocol (London, UK, 27–31 October 2008). The CBD Secretariat proposed the establishment of an inter-secretariat mechanism among the IMO, IOC, UNEP and CBD to compile and synthesize scientific information on potential impacts from ocean fertilization, for consideration at the 10<sup>th</sup> Conference of the Parties to the CBD. The Secretariats propose that this issue be dealt with by UN-Oceans to determine a way forward for coordination on this issue.

265 The Member States noted the Report of the IOC ad hoc Consultative Group of Experts on Ocean Fertilization, and agreed that proposals to use ocean fertilization to sequester carbon in the ocean are cause for concern. They agreed that there is insufficient understanding of the potential impacts of such activities on the marine ecosystem, and that a precautionary approach is appropriate until safeguards can be established.

266 Several Member States expressed concern about the way in which the IOC ad hoc Consultative Group of Experts on Ocean Fertilization was constituted, without communication or consultation with Member States. Some Member States called for an update to the IOC Manual with specific reference to the procedures for implementation of activities that require a rapid response by the IOC.

267 **The Executive Council took note** of the proposal of the CBD Secretariat to discuss the development of coordination between the IMO, IOC, UNEP and CBD to compile and



synthesize scientific information on potential impacts from ocean fertilization for the consideration at the 10<sup>th</sup> Conference of the Parties to the CBD.

268        **The Executive Council agreed** that the IOC should participate in the scientific synthesis activity through the IOC–SCOR International Ocean Carbon Coordination Project.

269        **The Executive Council also recognized** the important contribution of the SCOR Working Group 131 that is synthesizing the results of the previous international iron fertilization experiments, **and encouraged** close collaboration with SCOR in the development of the synthesis for the CBD.

270        **The Executive Council requested** the Executive Secretary to disseminate the results of this scientific synthesis to Member States, under a Circular Letter, as an information document.

271        Concerning the participation of the IOC at the 30<sup>th</sup> Consultative Meeting of the Contracting Parties to the London Convention and the 3<sup>rd</sup> Meeting of the Contracting Parties to the 1996 Protocol (London, 27–31 October 2008), **the Executive Council recalled** the responsibilities assumed by the Commission under the watching brief established with SCOR in 2001 to address the issue. However the Member States did not wish to pursue the development of a new independent IOC group or statement at this time outside the coordination that it is envisaged to establish.

272        **The Executive Council recognized** the importance of IOC's responsibility in ocean iron-fertilization issues and **urged** the Executive Secretary to seek additional opportunities to help resolve the scientific uncertainties with respect to this issue.

273        To contribute to the intergovernmental dialogue on ocean fertilization taking place in several UN Conventions, **the Executive Council requested** the Executive Secretary to initiate a dialogue with the Secretariats of the IMO London Convention, the CBD and other relevant UN organizations, agencies, and programmes about developing a mechanism to facilitate interagency coordination and coordinated scientific/technical advice on ocean fertilization issues, and to report on this item, including draft Terms of Reference for such activity, at the next session of the IOC Assembly.

#### 4.4    SAFEGUARDING MARINE ECOSYSTEM HEALTH AND INTEGRATED MANAGEMENT [MLA 2.2]

##### 4.4.1   **Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-Economic Aspects**

274        The Acting Head of Ocean Sciences, Mr Julian Barbière, introduced this item. Document IOC/INF-1252 (*Progress Report on the Implementation of the Assessment of Assessments*) was presented at the 9<sup>th</sup> Meeting of the UN Informal Consultative Process on Oceans and Law of the Sea (UN, New York, 24–28 June 2008). He recalled IOC's commitment to playing an active role in the establishment of the Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-Economic Aspects (UNGA Resolution 60/30 Regular Process) and the steps taken by the Commission in this respect.

275        Pursuant to UN Resolution 60/30, IOC and UNEP have jointly initiated the Assessment of Assessments (AoA), which is being implemented in collaboration with other UN agencies and institutions, such as FAO, IMO, WMO and the International Seabed Authority (ISA).

276        Four meetings of the AoA Group of Experts were organized during the period 2007–2008, and two additional meetings are scheduled, leading to a peer-reviewed report on the

AoA (in June 2009) to be submitted to the Ad Hoc Steering Committee, for transmission to the UN General Assembly in the autumn of 2009.

277 A detailed outline of the AoA Report is given in document IOC/INF-1252. Member States' comments to the Lead Agencies are solicited.

278 UNGA Resolution 62/215 (December 2007), on Oceans and the Law of the Sea, included decisions on the Regular Process (Chapter XII) and, among other things, invited Member States, the Global Environment Facility and other interested parties to contribute financially to the Assessment of Assessments, taking into account the work plan and budget approved by the Ad Hoc Steering Group, in order to complete the Assessment of Assessments within the specified period. So far, financial support from some Member States (Belgium, Canada, The Netherlands, Norway, Sweden, Republic of Korea, United Kingdom and the United States of America) has been received by both IOC and UNEP. However, only one third of the resources needed have been committed and the two Lead Agencies have estimated that an amount of US\$ 755,000 is still needed to complete the activities of the AoA, leading to the finalization and submission of the final report to the UN General Assembly in 2009. These resources are urgently needed, in particular to cover the Group of Experts' meetings, the peer-review process and the cost of translation and publication. To meet their agreed obligations in this respect, IOC and UNEP are fully dependent on extrabudgetary contributions which make this fundamental activity uncertain. Both organizations are working hard to mobilize the financial and human resources necessary, in line with UNGA Resolution 60/30 which states that the AoA should "*be financed through voluntary contributions and other resources available to participating organizations and bodies, and invites Member States in a position to do so to make contributions.*"

279 **The Executive Council stressed** the view that the Assessment of Assessments and the Regular Process provided a unique opportunity to improve the stewardship of oceans. **The Executive Council appreciated** the lead role assigned to IOC and UNEP, and the spirit of cooperation established with other concerned UN agencies, such as FAO, IMO and WMO.

280 **The Executive Council acknowledged** the problem of the insufficient financial resources facing the Secretariat, which may ultimately affect the comprehensiveness and the delivery of the Assessment of Assessments Report. **However, it noted** that the IOC has made a contribution, but there is a shortfall that needs to be addressed. **The Executive Council therefore urged** Member States to contribute financially to the Assessment of Assessments in a timely manner.

281 The Chairman informed the Executive Council that a letter jointly signed by the UNEP Executive Director and the IOC Executive Secretary has been sent out in order to alert Member States to the present shortfall in financial resources.

#### **4.4.2 Interaction with the Census of Marine Life (CoML) and Other Research Programmes on Marine Biodiversity**

282 The Executive Secretary introduced this item. The Census of Marine Life (CoML) is a 10-year scientific initiative to assess and explain the diversity, distribution and abundance of life in the oceans. The Census will deliver its final report in October 2010. Building on Resolution XXIII-3 (Census of Marine Life), the Commission has strengthened its collaboration, mainly through GOOS, IODE and HAB, with two of the major programmatic elements of the Census: the Ocean Tracking Network (OTN), affiliated as a GOOS pilot project; and the Ocean Biogeographic Information System (OBIS), the information and data component of the Census. On behalf of the OBIS Governing Board, the Executive Secretary outlined the Governing Board's viewpoints on the future of OBIS.

283 With the foreseen termination of the CoML in 2010, it is important, for the benefit of the international community, to give continuity to some of its core projects, such as OBIS and OTN. The IOC Executive Secretary, at the first meeting of the OBIS Governing Board (Rome, 28–29 April 2008), offered to provide an institutional framework for the continuation of OBIS, either through the development of a partnership or a dedicated extrabudgetary project that would allow for the institutional hosting of OBIS, possibly at the IODE Project Office in Ostend or at another location to be identified. The OBIS Governing Board welcomed the offer, but recommended that this partnership should be further elaborated and a business model be presented to the IOC Assembly for consideration at its 25<sup>th</sup> Session, in 2009.

284 Other marine biodiversity initiatives of concern to the Commission are, in particular, the revitalized linkages with DIVERSITAS – a programme on integrated biodiversity science – co-sponsored by UNESCO, ICSU, IUBS and SCOPE, which has established a new marine diversity component addressing: marine microbial biodiversity; marine coastal biodiversity; conservation and sustainable use of marine biodiversity in areas beyond national jurisdiction; and the Diversitas Marine Crosscutting Network.

285 The Expert Group on Global Open Oceans and Deep Seabed (GOODS), co-sponsored by IOC, UNESCO, IUCN, Mexico, Canada, and Australia, has worked on the development of a comprehensive biogeographic classification of open-ocean and deep-seabed areas beyond national jurisdiction. The GOODS Report (peer-reviewed) has been submitted to the Conference of the Parties of the CBD.

286 **The Executive Council recognized** the importance and value of CoML, the particular value of the OBIS component as a global repository for marine biological data, and the potential of a second phase of OBIS to expand data in this vital repository and to improve the interface for global access and exchange of marine biological data. **The Executive Council considered** OBIS a highly attractive future component or partner of IODE, **and welcomed** the wish of the OBIS Governing Board to investigate different scenarios for a close affiliation between IOC and OBIS, or the adoption of OBIS by the IOC. **It requested** the Executive Secretary and the IOC Data and Information Management Advisory Group to work together with the OBIS Secretariat to develop a document for submission to the 25<sup>th</sup> Session of the IOC Assembly, in 2009. **The Executive Council considered** that the document should describe possible scenarios for collaboration between IOC and OBIS, concentrating on the possibility of the creation of an IOC–OBIS Programme and an IOC–OBIS Programme Office. It should, for different scenarios, investigate consequences for both IOC and OBIS, and should contain estimates of budgetary implications, and involve consultations, as appropriate, with potential donors and/or host organizations.

#### 4.4.3 Integrated Coastal Research

287 The IOC Ocean Science Section Programme Specialist, Henrik Enevoldsen, introduced this item. Referring to: (i) the oral report on the first meeting of the Advisory Group for the Ocean Sciences Section (OSS), presented to the 39<sup>th</sup> Session of the IOC Executive Council (Paris, 21–28 June 2006); and (ii) Resolution XXIV-5 on Ocean Sciences Programme priorities in the light of the IOC Medium-Term Strategy 2008–2013 and the decision therein to develop integrated coastal research on direct human influences on coastal-ocean functioning and ecosystem health, as well as marine modelling as a cross-cutting element, the OSS and the committees established under Global NEWS and GEOHAB have developed an outline for an intersection of several IOC programmes under the theme: Coastal Eutrophication: Linking Nutrient Sources to Coastal Ecosystem Effects and Management (document IOC/INF-1249).

288 Although there are several IOC activities (GlobalNEWS, GEOHAB, ICAM, GOOS, LME) that currently address the issue, they are, at present, not linked or integrated. While each of these programmes has independent missions and goals, their intersection would

help to advance our understanding of both current and predicted impacts of nutrient loads in watersheds on coastal water quality, ecosystem function, and policy response.

289       The goal of the intersection of these programmes is to develop quantitative relationships between nutrient sources and controlling factors in watersheds and their effects on coastal systems, and then apply these quantitative relationships to inform development and implementation of policies to improve coastal water quality. This integrative activity would facilitate science-based solutions to coastal eutrophication for countries around the world, by contributing to greatly enhanced knowledge base, a modelling framework, and the development of a self-sustaining community of model users in developed and developing countries who use the models to attribute sources of nitrogen (N) and phosphorus (P) within watersheds, to quantify past and potential future export of N and P to the coastal zone, and to develop estimates of the relative effectiveness of eventual policy decisions on coastal water quality at regional to international scales.

290       **The Executive Council welcomed** the initiative as a follow-up to the recommendations of the Advisory Group for the Ocean Sciences Section.

291       **The Executive Council encouraged** the further development of a work plan and elaboration of funding requirements through a dialogue between the Secretariat, GlobalNEWS, the GEOHAB SSC and interested Member States and agencies, with a view to identifying funding for the proposed initial workshop and to present the work plan and funding strategy to the 25<sup>th</sup> Session of the IOC Assembly, in 2009.

#### 4.5   CAPACITY-BUILDING, DATA AND INFORMATION SERVICES AND PROCEDURES FOR MARINE SCIENTIFIC RESEARCH [MLA 2.3]

##### 4.5.1 **Report on the International Oceanographic Data and Information Exchange (IODE) Programme**

292       The Co-Chairman of IODE, Mr Greg Reed, introduced this item. The objective of the First IODE–JCOMM Forum on Oceanographic Data Management and Exchange Standards (IOC Project Office for IODE, Ostend, 21–25 January 2008) was to reach a general agreement on and a commitment to adopting key standards related to ocean data management, so as to facilitate exchange between oceanographic institutions. Standards discussed at the Forum included: (i) metadata; (ii) ontology resources; (iii) data and time; (iv) latitude and longitude; (v) country codes; (vi) platforms; (vii) quality control; and (viii) vocabularies. The Forum agreed that the process to adopt and formally publish proposed standards should include exposure to the wider community for comment. An ad hoc Steering Team was established to manage and implement the agreed work plan. The Forum recommended that the task of continuing the development of standards and managing the standards process should be assigned to the IODE–JCOMM ETDMP.

293       The IOC Strategic Plan for Oceanographic Data and Information Management (2008–2011), adopted by the IOC Assembly at its 24th Session (Paris, 19–28 June 2007), established an IOC Data and Information Management Advisory Group to provide the governance required to implement the Strategy. The 1<sup>st</sup> Session of the Data and Information Management Advisory Group is planned for the third quarter of 2008.

294       IODE now actively participates as a partner in the WMO Integrated Global Observing System (WIGOS) Pilot Project for JCOMM. The aim of this Pilot Project is to promote and develop integration of marine and other appropriate observations into the WIGOS through three core deliverables: (i) integration of instrument best practices; (ii) development of interoperable arrangements between the ocean data systems and the WMO Information System (WIS); and (iii) the integration of quality-management systems. Achieving the full interoperability of the IODE Ocean Data Portal (ODP) and the WIS will be addressed by the

Pilot Project. Interoperability will guarantee access to ocean data by the meteorological, hydrological and climate research and operational community and access to meteorological, hydrological and climate data by the oceanographic research and operational community. Development of standards and their wide acceptance within the meteorological and oceanographic communities is also an important activity that will be addressed by the Pilot Project, and this links naturally with the development of the IODE–JCOMM standards process. A Joint Steering Group for the IODE Ocean Data Portal (ODP) and the WIGOS Pilot Project for JCOMM has been established and will meet in September 2008.

295 Venezuela considered that IODE should strengthen the support provided by the Oceanographic Data Centres, specifically with respect to standardization, data quality and the accreditation of the services offered by these Centres, so that the data-management teams can be in a position to identify their weaknesses and thus improve their work procedures. Venezuela is willing to participate in the Working Group to develop proposals for fundamental standards in the quality of data and information management.

296 The IODE continues to implement the Ocean Data and Information Network (ODIN) strategy. The ODINAFRICA-III project concludes in 2008 and a proposal for the next phase is in preparation and will be submitted for funding later this year. This new phase of the Project will focus on networking activities and the development of regional products, such as common catalogues and directories integrating global standards and controlled vocabularies, to provide access to available marine data and data products for Africa.

297 Two marine atlas projects are in progress. The African Marine Atlas ([www.africanmarineatlas.net](http://www.africanmarineatlas.net)) integrates geo-referenced data sets available in the public domain, with multidisciplinary data sets developed and maintained by the African NODCs.

298 The United States of America welcomed the data Atlases and ODIN-Africa initiatives and encouraged identification of and support for the follow-up Forum on Oceanographic Data Management and Exchange Standards.

299 The Caribbean Marine Atlas Pilot Project ([www.caribbeanmarineatlas.net/](http://www.caribbeanmarineatlas.net/)), a joint initiative of nine countries in the Caribbean region (Barbados, Cuba, Dominica, Grenada, Guyana, Jamaica, Saint Lucia, Trinidad and Tobago, Turks and Caicos Islands) will identify, collect and organize available geo-spatial data sets into an atlas of environmental themes for the Caribbean region, as a support service to the sustainable development and integrated management of marine and coastal areas in the region. The Pilot Project has a scheduled duration of 14 months (October 2007–December 2008).

300 Venezuela welcomed the initiative to produce the Caribbean Atlas and considered that, as a Caribbean country itself, the inclusion of Venezuela will contribute significantly to the achievement of the objectives of this Atlas.

301 Japan recalled that WESTPAC-VII had assigned high priority to the ODINWESTPAC Pilot Project and it thanked the Government of China for accepting the responsibility of coordinating the implementation of the Pilot Project. Referring further to the importance for IODE of addressing biochemical data management and related quality control, Japan offered to contribute a JODC Publication on this topic.

302 China restated its Government's offer to host the 20<sup>th</sup> Session of the IOC Committee on IODE, in Tianjin, China, in April or May 2009.

303 **The Executive Council welcomed and accepted this kind offer.**

- 304 Sri Lanka, while expressing satisfaction with the establishment of the ODIN-CINDIO project in 2004, noted the lack of action during the past year, and called on IOC/IODE and IOCINDIO Member States to re-invigorate the project.
- 305 The Representative of the International Ocean Institute (IOI) described the Institute's cooperation with IOC and its IODE as an encouraging example of the implementation of the UNGA decision on cooperation between governmental and non-governmental organizations. He expressed IOI's appreciation of IODE's support for the development of the IOI and the IOI OceanLearn web sites. He also referred to the Joint IODE–IOI Training Course on GIS and Remote Sensing (2006), which had received high praise. He invited IOC/IODE to continue its close cooperation with the IOI and to develop a work plan for the coming years.
- 306 **The Executive Council welcomed** the development of the Ocean Data Portal technology, as well as the success of the IODE Training Course on an End-to-End Data Management (E2EDM) Prototype System (IODE Project Office, Ostend, Belgium, 22–25 October 2007), and called on the participants in this Course to implement the acquired expertise.
- 307 **The Executive Council**, referring to the observations made during the discussion on IPY at the present session (Agenda Item 4.3.1), **noted** some of the difficulties in establishing close cooperation between IODE and IPY, and **called on** their respective Secretariats to further investigate the potential for greater involvement of IODE in the management and long-term archival of IPY data, possibly through the Southern Oceans Observing System (SOOS) and the cooperation with CoML/OBIS.
- 308 **The Executive Council strongly welcomed** the close collaboration between IOC/IODE and WMO through the WIGOS Pilot Project for JCOMM. **It also highlighted** the important role of IOC in GEOSS **and called on** IODE to exercise this role also at the level of data and information management, in particular through its current initiatives on data management standards.
- 309 **The Executive Council thanked** the Government of the United States of America and the Government of Flanders (Belgium) for their support to the IODE–JCOMM Forum on Oceanographic Data Management and Exchange Standards (IOC Project Office for IODE, Ostend, Belgium, 21–25 January 2008). **The Executive Council called on** all IOC Member States to actively participate in the Ocean Data Standard Pilot Project (ODS) by providing experts and financial support to enable a follow-up Forum.
- 310 The Chairman of I-GOOS, Dr François Gérard, expressed his appreciation of the Ocean Data Standards Pilot Project; the pooling of efforts in this regard was in line with the GOOS efforts to develop operational oceanography.
- 311 **The Executive Council considered** the IOC Strategic Plan for Oceanographic Data and Information Management as a new milestone in the history of IOC **and welcomed** the establishment of the IOC Data and Information Management Advisory Group. **It noted** that the Group would serve two purposes: (i) to guide IODE towards the development of integrated data management and multi-disciplinary data bases; and (ii) to provide a link between IODE and other organizations, including science groups.
- 312 **The Executive Council requested** the Executive Secretary, in future, in the preparation of the operational plan for each project IOC undertakes and which has an impact on data or information, to identify a specific budget allocation, along with a clear description of the expected outcomes from IODE.
- 313 **The Executive Council expressed** its appreciation of the continued support by the Government of Flanders to the IOC Project Office for IODE in Ostend, Belgium, noting that

this facility had already increased the effectiveness, visibility and impact of IODE considerably. **It called on** the regional Government of Flanders (Belgium) and IOC Member States to continue supporting this facility.

- 314        **The Executive Council called on** IODE to play an active role in the 50<sup>th</sup> Anniversary celebrations of IOC **and identified** the 20<sup>th</sup> Session of the IOC Technical Committee for IODE as a suitable occasion.

#### 4.5.2 Report on Implementation of the IOC Capacity-Development Activities

- 315        The IOCARIBE Chairman, Dr Guillermo Garcia Montero, introduced this item. Extrabudgetary funding from SIDA enabled implementation of the first phase of the Capacity-development Programme, pursuant to Resolutions XXIII-10 and XXIII-11. However, this funding will end in December 2008; therefore, implementation of the second phase is significantly endangered.

- 316        To strengthen national institutes, as the way by which Member States could improve governance in their coastal spaces, three institutional levels have been addressed in concerned institutions: (i) the directors; (ii) project managers; and (iii) bench-level scientists, through, respectively, the organization of workshops on advanced leadership, proposal writing, and training on decision-support tools and team-work.

- 317        Self-financed attendance at workshops has proven an important performance indicator of the ownership and relevance in which the strategy of self-driven capacity-development is held in the Member States. All advantage gained by the programme to date would, however, be lost if such effort ceased before the introduction of the necessary subsequent stages.

- 318        The Executive Secretary proposed initiating a second phase comprising: (i) identification of a number of the most responsive institutes and working with them; (ii) ensuring that the appropriate ministries are engaged and committed to supporting and relying on their institutes to provide a sound scientific basis for dealing with important national marine issues; (iii) assisting institutes in raising the awareness of coastal communities, with a view to providing useful science-based services for sustainable development; (iv) fostering regional science associations to catalyse research and dissemination of its results; (v) identification of mechanisms that will, where possible, foster local human-resource trainers, so that regular leadership training can be made regionally available; (vi) assisting institutes of higher learning, using, as a guideline, the UNESCO initiative of engaging with industry, and acting as incubators of responsible and independent entities for applied research; and (vii) increasing the depth and spread of training in the use of: decision-support tools for modelling; geographical information systems; and remote sensing.

- 319        Tunisia enquired about initiatives aimed at assessing the performance of capacity-development activities. Madagascar enquired about whether the UNESCO-wide priority assigned to Africa was reflected in the capacity-development activities of the IOC.

- 320        The Secretariat explained that Africa was a real priority, since the majority of capacity-building workshops had been conducted in Africa.

- 321        Mauritius commended the courses on leadership and their usefulness to scientists-turned-directors, and considered that the taught skills were critical and needed to be made locally available.

- 322        Tunisia and Indonesia suggested that support for young researchers, in the form of travel and study grants, was a useful way to develop capacity. India, on the other hand,

323 The Secretariat explained that reductions in the Regular Programme Budget resulted in a drop in the IOC Travel Grants programme.

324 The Republic of Korea noted the importance of capacity-development, and informed the Executive Council of its existing and future cooperative activities in the marine field, with support for WESTPAC to carry out an oil-spill-related project, and for opening up new opportunities in Latin America.

325 China restated its intention to support capacity-development, particularly in the WESTPAC region, and commended those Member States that had contributed to the support for capacity-development activities. China also informed the Executive Council of the strong support that WESTPAC Member States had given to the plan for a Regional Network and Training and Research Centre.

326 China and Portugal encouraged the involvement of the Regional Subsidiary Bodies in capacity-development work, taking into account the different characteristics of different regions. Portugal informed the Executive Council of its intention to work with Portuguese-speaking countries in capacity-development.

327 Australia mentioned the successful SEREAD project (Scientific Educational Resources and Experience Associated with the Development of Argo) for schoolchildren in the Pacific, being implemented through PIGOOS, and the potential of using the Australian Bluelink ocean forecast system as a capacity-development tool in the region. Australia also indicated that funding for capacity-development activities in adaptation to climate change would be available under a new Australian government initiative in the southwest Pacific, and that new collaborative opportunities might arise with this.

328 The Russian Federation expressed its support for capacity-development and cooperation, to which it actively contributes through joint programmes in the UNITWIN and Education for Sustainable Development, of UNESCO.

329 **The Executive Council concluded** that it was important and necessary to continue the capacity-development efforts and launch a second phase along the lines spelt out in the presentation, as proposed by the Executive Secretary, **and called on** Member States to provide the extra-budgetary support for its implementation.

#### 4.6 MITIGATING THE IMPACTS OF TSUNAMIS AND OTHER MARINE HAZARDS [MLA 3.1]

##### 4.6.1 Follow-up of the Fifth Session of the IOC Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS)

330 The Chairman of the IOC International Co-ordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), Dr Jan Sopaheluwakan, introduced this item. By Resolution XXIII-12, the IOC Assembly created an Indian Ocean Tsunami Warning and Mitigation System (IOTWS) and established an Intergovernmental Coordination Group (ICG) for this System. As a primary subsidiary body of the IOC, the ICG is required to report on its work to a Governing Body.

331 The main outcome of the 5<sup>th</sup> Session of the ICG (Putrajaya, Malaysia, 8–10 April 2008) was the adoption of the Working Group 5 Task Team's Implementation Plan for an interoperable network of Regional Tsunami Watch Providers (RTWP) for the Indian Ocean. The ICG welcomed the willingness of Australia, India, Indonesia, Iran, Malaysia, Thailand



and the Asian Disaster Preparedness Centre (ADPC) to commence the transition to becoming RTWPs, with India ready to begin the process in June 2008, followed by Australia in July 2008, Indonesia in November 2008, and the others according to the RTWP Implementation Plan. The transition from the interim advisory service currently provided by the Japan Meteorological Agency (JMA) and the Pacific Tsunami Warning Center (PTWC) in Hawaii is expected to be completed by the end of 2010.

332 Dr Sopaheluwakan summarized the intersessional activities of the ICG; they included training courses and workshops on inundation modelling, hazard and risk assessment, and coastal community resilience. He also noted the assessment undertaken by the Secretariat on the performance of the IOTWS following the 12 September 2007 Sumatra earthquake and tsunami, and outlined the programme of activities planned prior to the 6<sup>th</sup> Session of the ICG, to be held in Thailand in April 2009.

333 The ICG made six Recommendations to the Executive Council for consideration at the present Session: (i) to establish an ad hoc Task Team to provide a detailed plan for the proposed Indian Ocean 2009 Exercise; (ii) to request potential RTWPs to assist in designing training material required by National Tsunami Warning Centres (NTWC) and to conduct training in observational seismology; (iii) to request IOTWS Member States to consider long-term financial and in-kind support to ensure the sustainability of sea-level instrumentation networks and their maintenance; (iv) to hold an Indian Ocean tsunami-modelling symposium at the end of 2009 or in early 2010; (v) to adopt the RTWP Implementation Plan of Working Group 5; and (vi) to request the IOC Executive Secretary to open an IOC IOTWS Subsidiary Special Account to allow Member States and international and other organizations to provide funds in order to assist the ICG in the effective provision of secretariat services for the assessment, planning and implementation of the regional early warning and mitigation system; and (vii) to urge the IOC Executive Secretary to look for additional financial resources to assist the ICG in implementing the IOTWS.

334 India noted that it was ready to offer RTWP Service Level 2 and expressed concern that the transition period lasting up to the end of 2010 seemed too long. The Secretariat commented that this timeline had been agreed by the ICG after extensive discussion by the Working Group 5 Task Team. India was also concerned that, after three years, the Tsunami Warning Focal Point (TWFP) data base was still incomplete. The Secretariat requested all IOTWS Member States to update their TWFP contact information through the official channels.

335 Indonesia thanked the IOC and the Governments of Germany, Japan, China and the USA, as well the ICG/IOTWS, for their continuous support for the development of the Indonesian Tsunami Early Warning System (InaTEWS). Indonesia provided a status report on the development of Ina-TEWS, including the installation of earthquake and tsunami detection equipment, and the progress being made in public education and community preparedness. It informed the Executive Council that it now has the capability to produce tsunami warnings within five minutes after an earthquake. Indonesia also informed the Executive Council that it will be officially launching the Indonesian Tsunami Early Warning System on 11 November 2008. Member States of IOTWS, ASEAN countries, UNESCO, UNDP, other UN organizations, WMO and all supporting partners are invited to participate in the launching, which will be honoured by the presence of the President of the Republic of Indonesia.

336 Madagascar enquired whether the ICG Working Groups were thematic or subregional in focus and noted that more training and workshops in the East Africa region would be appreciated.

337 The Secretariat confirmed that the Working Groups are organized by subject and that all ICG Member States are welcome to nominate members to any of these Working Groups.

The Secretariat also confirmed that several training courses and workshops are being planned for East Africa.

338 Japan expressed its appreciation of the advances made by the ICG/IOTWS, and supported the decisions and recommendations it made at its 5<sup>th</sup> Session. Japan congratulated India on starting operation as an RTWP and looked forward to other RTWPs starting operation. Japan confirmed that it is pleased to continue providing an interim advisory service until the transition to the RTWP service is complete. Japan also emphasized the importance of properly maintaining operational tsunami warning systems, and mentioned its expectation of steady effort by those involved.

339 France noted that the concept of an interoperable network of RTWP partners could be used in other regions. It was also pleased to see the introduction of Indian Ocean exercises, as these are important for testing the system.

340 Australia welcomed the adoption of the RTWP Implementation Plan by the ICG and the intentions of India, Indonesia, Iran, Malaysia, Thailand and the ADPC to join Australia in implementing and demonstrating RTWP capability in shadow mode to the Interim Advisory Service during the transition period. Australia will begin exchanging earthquake information with other RTWPs from July 2008 and more specific, regional-threat information will become available in 2009. Australia thanked the United States of America and Japan for continuing to provide Interim Advisory Services until 2010. Australia supported plans for undertaking an Indian Ocean warning desktop exercise in late 2008 and an end-to-end exercise in late 2009. Australia requested IOC to find ways to support attendance at Working Group meetings for developing nations and requested the Secretariat to confirm Working Group memberships, so as to assist Working Group Chairpersons to coordinate and organize intersessional activities.

341 The United States of America endorsed the report of the Indian Ocean Tsunami Warning and Mitigation System and highlighted the significance of the RTWP Implementation Plan presented in the report. The United States noted that it has been providing interim advisory services to the Indian Ocean region in partnership with the Japan Meteorological Agency since the Indian Ocean tsunami of December 2004. As the RTWP network develops, it is critical that there be a clear understanding of how it operates, and that there be an orderly transition from the Interim Advisory Services provided by NOAA and JMA. The United States applauded India as the first Member State to begin the process of becoming an RTWP and also applauded Australia and Indonesia for their intention to join this process soon.

342 **The Executive Council expressed** the IOC's appreciation to the Government of Malaysia for having hosted the 5<sup>th</sup> Session of the ICG/IOTWS.

343 **The Executive Council accepted** the Executive Summary of the report of ICG/IOTWS-V and the Recommendations it contains. The Council's action on IOTWS is reported in paragraph 404 (Resolution EC-XLI.6).

#### **4.6.2 Follow-up of the Fourth Session of the IOC Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS)**

344 The Chairman of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS), Professor Stefano Tinti, introduced this item. Under its Terms of Reference (Resolution XXIII-14), ICG/NEAMTWS should report to the Assembly or to the Executive Council on behalf of the Assembly.

- 345 Professor Tinti reminded the Executive Council of the different activities being carried out in the context of the ICG/NEAMTWS, including its working group composition and its general structure.
- 346 The Intergovernmental Coordination Group, at its 4<sup>th</sup> Session (Lisbon, Portugal, 21–23 November 2007), welcomed the initiative of the Working Group on Seismic and Geophysical Measurements, and that of Germany, to provide all available real-time seismic data as well as the SeisComp3 software to Regional Tsunami Watch Centres (RTWC); several countries were already testing this software. The EU Council of Ministers has recognized the ICG/NEAMTWS's leadership role in the development of the European Tsunami Warning System. There is, however, a need to improve the mutual access to existing seismic and sea-level stations, especially on the North African coast, but there is insufficient funding available to undertake all the required actions.
- 347 The IOC/GLOSS sea-level station monitoring facility will be used as the initial visualization tool for real-time sea-level data. Comparing the seismic network and the sea-level network in the NEAM region, Professor Tinti stressed the fact that the latter is still far from meeting the requirements of a Tsunami Warning System.
- 348 The establishment of an ad hoc Task Team on the RTWC architecture was one of the main outcomes of ICG/NEAMTWS-IV. At present there are several candidates to host an RTWC in the NEAM region, and the Task Team will be requested to scrutinize these proposals. Options for a regional Tsunami Information Centre should also be investigated.
- 349 The 5<sup>th</sup> Session of the ICG/NEAMTWS will be held in Athens in November 2008.
- 350 Tunisia welcomed the report on ICG/NEAMTWS-IV. Regarding the lack of access to data in certain regions, it suggested the organization of a meeting to raise awareness among the concerned countries.
- 351 Germany expressed its appreciation of the work undertaken by the ICG/NEAMTWS and emphasized the need to consolidate the co-operation between IOC and the International Strategy for Disaster Reduction (ISDR). Germany reaffirmed its willingness to continue supporting the NEAMTWS system, particularly the functions of the NEAMTWS Secretariat when it is established in the region in accordance with IOC decisions.
- 352 France restated its commitment to the building of the NEAMTWS system. It emphasized the importance of creating a Tsunami Warning Regional Centre based on innovative solutions. It underscored its view that the ongoing cooperation with the European Commission is of great importance and should be encouraged.
- 353 Portugal expressed its satisfaction with having hosted the 4<sup>th</sup> Session of the ICG/NEAMTWS in Lisbon in November 2007. It looked forward to a more rapid development and trusted that the Task Team would be helpful in this process, but believed that it should have a clearer agenda. Further efforts should be made to provide the reports in a timely manner and it suggested that the Working Groups should meet independently of the ICG meetings. Portugal also stressed the importance of the collaboration with the European Commission.
- 354 The Head of the Tsunami Unit of IOC fully agreed with the concern expressed by Member States regarding the need to improve the seismic and sea-level network, especially on the North African coast, and to enhance the availability and exchange of existing tide-gauge data. He welcomed the suggestion to separate Working Group meetings from ICG meetings, to ensure more efficient and timely work.

355        **The Executive Council accepted** the Decisions and Recommendations of the ICG/NEAMTWS arising from its 4<sup>th</sup> Session **and encouraged** the ICG to continue its effort to ensure a timely implementation of the NEAMTWS. The Council's action on NEAMTWS is reported in paragraph 404 (Resolution EC-XLI.6).

**4.6.3 Follow-up of the Third Session of the IOC Intergovernmental Coordination Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS)**

356        The newly elected Chairperson of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS), Dr Lorna Inniss (Barbados), introduced this item. The Intergovernmental Coordination Group, at its 3<sup>rd</sup> Session (ICG/CARIBE EWS-III; Panama City, Panama, 12–14 March 2008), accepted a proposal by its Working Group 1 on Monitoring and Detection Systems and Warning Guidance to establish a core network of seismic stations and a core network of sea-level stations for tsunami-monitoring purposes. Data from the core network of seismic stations will be freely and openly available to the national, regional and tsunami warning centres for the timely production of tsunami and other early-warning information, taking into account the two main languages spoken in the region, especially for communication and warning dissemination. However, the ICG noted gaps in the sea-level network and agreed that contributions from Member States and other donors are required to cover these gaps. She thanked the Government of Norway for funding a pilot project on training in tsunami modelling.

357        The ICG decided to produce a compilation of best practices on preparedness, readiness and resilience at the community level, for tsunami and other coastal hazards; to this end it will organize a meeting of experts planned for Panama in August 2008, with the support of IOC/UNESCO, USAID/OFDA and UN/ISDR.

358        The ICG instructed its Working Group 1 to identify and present the technical, logistical and administrative requirements of a Regional Tsunami Warning Centre, taking into account the discussions at ICG/CARIBE EWS-III and the documentation provided for other Tsunami Warning Systems defining these operational requirements. It also requested the Executive Secretary to submit it to Member States for their comments, with a view to establishing a Caribbean Tsunami Warning Centre in the region at least by 2010.

359        The ICG welcomed the kind offer of France to host its 4<sup>th</sup> Session, in March 2009, and decided to target March 2010 for the 5<sup>th</sup> Session, bearing in mind the interest expressed by Cuba in hosting that session.

360        Several Member States highlighted the inter-sessional work done in the region.

361        Highlighting the need for a reinforced tsunami monitoring network in the region, the United States commended the deployment of new seismic monitoring stations being implemented by the Seismic Research Unit (SRU) of the University of West Indies, the Puerto Rico Seismic Network (PRSN) and the United States Geological Service (USGS). The USA urged Member States and the IOC Secretariat to complete the process of designating National Tsunami Contacts and Tsunami Warning Focal Points. The Dominican Republic referred to the importance of protocols and community-based response plans and reported that it had recently approved a Warning Information System (Sistema de Información de Alerta) under the Emergency Operations Centre (Centro de Operaciones de Emergencia – COE) that will deliver tsunami and hurricane warnings at community level. France confirmed its offer to host ICG/CARIBE EWS-IV in March 2009 in Martinique, France.

362 Dr Inniss highlighted the active involvement of countries with the ICG/CARIBE EWS in the region particularly that of small islands. She stated that the ICG/CARIBE EWS is eager to learn from other ICGs and hopes to have closer collaboration among them, for example on lessons learnt after events.

363 **The Executive Council accepted** the Report of the ICG/CARIBE EWS-III, thanked the Chairperson of ICG/CARIBE EWS for her presentation and congratulated her on the leadership she had provided.

364 The Council's action on CARIBE EWS is reported in paragraph 404 (Resolution EC-XLI.6).

#### **4.6.4 Follow-up of the Twenty-Second Session of the IOC Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the Pacific (ICG/PTWS)**

365 The Acting Chairman of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS), Mr Giorgio de la Torre (Ecuador), introduced this item.

366 The Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS), at its 22<sup>nd</sup> Session (Guayaquil, Ecuador, 17–21 September 2007), reviewed progress in the intersessional period in the areas of: seismological and sea-level monitoring and evaluation; hazard identification; emergency management and resilience; interoperability of warning systems; and subregionally in the southwest Pacific and on the Pacific coast of Central America. It reaffirmed its view that each Member State has the responsibility to issue warnings within its respective territories and to accept a commitment to open, free and unrestricted sharing of real-time observational data relevant to tsunami warning as a fundamental condition for a successful system.

367 It made recommendations on:

- (i) development of the final PTWS Medium-Term Strategy, the PTWS Implementation Plan for 2008–2009, the PTWS Activities Funding Strategy and the ITIC Work Plan
- (ii) finalization of a PTWS Operational Users Guide
- (iii) continued interim tsunami advisory information service for the South China Sea provided for the region by the Pacific Tsunami Warning Centre and the Northwest Pacific Tsunami Advisory Centre
- (iv) the establishment or continuation of eight Working Groups: on (a) sea-level measurements, data collection and exchange; (b) interoperability of regional, subregional and national tsunami warning and mitigation systems in the Pacific, (c–e) subregional working groups for tsunami warning and mitigation development (Central American Pacific coast, southeast and southwest Pacific); (f) Pacific Emergency Communications; (g) rapid near-field recognition of tsunamigenic earthquakes and associated tsunamis; and (h) Exercise Pacific Wave '08
- (v) improved strategic planning and budgeting
- (vi) rapid near-field recognition of tsunamigenic earthquakes and associated tsunamis
- (vii) implementation of Exercise Pacific Wave '08.

368 The ICG also decided to urgently: promote the establishment and maintenance of tsunami warning centres in the region; improve the capabilities of the seismic and sea-level

monitoring networks; provide standard operational system-description documents; and increase support to Member States that have not yet sufficient capacity to develop tsunami warning and mitigation systems.

369 The ICG decided to improve: sea-level measurements, data collection and exchange; interoperability of regional, subregional and national tsunami warning and mitigation systems in the Pacific; and Pacific emergency communications.

370 The ICG recommended that the IOC Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG) organize a sea-level design and implementation workshop in 2008, involving similar working groups from the other ICGs. It also requested the IOC to convene a scientific-technical conference in 2008 to review the state of the art of detecting near-field earthquakes and possible tsunamis.

371 The ICG also endorsed the recommendations of the 6<sup>th</sup> International Workshop on Tsunami Mitigation: New Insights in Tsunami Research, Preparedness, Warning and Mitigation (Guayaquil, Ecuador, 14 September 2007), co-organized by the IOC and the ICG/PTWS, the IUGG Tsunami Commission, and the host institution, INOCAR (Ecuador).

372 The ICG decided to organize its 23<sup>rd</sup> Session, in 2009, and accepted the offer of Samoa to host it. The ICG also accepted the offer of Japan to host the 24<sup>th</sup> Session, in 2011.

373 The ICG recommended that the Executive Council, at its 41<sup>st</sup> Session, formally authorize the interim tsunami advisory service provided for the South China Sea, on the understanding that this service will be reviewed after a tsunami warning system for the South China Sea has been established by the Member States of the region.

374 The Acting Chairman ICG/PTWS also reported on the newly established SE Pacific PTWS subregional Group and the Group's planned activities (point iv.e above).

375 Chile confirmed its continued support to the system, especially by strengthening the instrumentation network and thus contributing to the SE Pacific PTWS subregional Group and the PTWS itself.

376 Colombia, given its geographical situation, confirmed its active participation and contribution to the PTWS and to the CARIBE EWS.

377 France stressed its continued commitment to the PTWS by, for example, significantly contributing to the instrumentation networks and the production of capacity-building material.

378 Australia recalled that the PTWS is the oldest and most experienced system, but stressed that there is still a need for improvement. Australia also reported on its support to and active involvement in the Pacific Wave Exercise '08. It deplored the fact that the report of ICG/PTWS-XXII has not been published yet.

379 Japan thanked Ecuador for having hosted the 22<sup>nd</sup> Session of the ICG/PTWS. Japan also pointed out the important roles of the PTWC and JMA in the PTWS and explicitly requested approval from the Executive Council of the Interim Tsunami Advisory Service in the South China Sea within the framework of the ICG/PTWS, as outlined at ICG/PTWS-XXII.

380 The United States of America endorsed the PTWS oral report and applauded the progress made by Member States in refining the PTWS to meet subregional needs. The United States is also happy to provide an Interim Advisory Service in the area of the South China Sea, in partnership with the JMA, at the invitation of the Executive Council. The United States expressed its concern over the unwieldy number of PTWS Working Groups and called on the Executive Secretary to increase support to the ICG/PTWS.

381 The Russian Federation supported the Recommendations of the ICG/PTWS Working Groups and stressed the importance of creating subregional groups. Based on the experience with the recent earthquakes in 2006 and 2007 near the Kuril Islands, the Russian Federation has developed a plan to strengthen the instrumentation networks in the northeast Pacific, including evacuation routes. It also stressed the importance of cutting-edge science in improving operational warning systems.

382 China fully supported the Recommendations of the 22<sup>nd</sup> Session of the ICG/PTWS and especially the Recommendation on enhancing the capability of the subregional tsunami warning and other ocean hazards mitigation systems. It thanked the PWTC and the JMA for the continuous interim tsunami advisory information service to the South China Sea. China also emphasized the importance of strengthening the capacity of the regional countries in establishing and sustaining the operation of a warning system warning for tsunami and other marine hazards in the South China Sea. China reported an increased effort to develop an effective tsunami warning system in the South China Sea as soon as possible, by means of sufficient budgetary and technical preparation. China expected to work in co-operating with regional countries within the framework of the ICG/PTWS, and requested the IOC and WESTPAC, as well as the ICG/PTWS, to actively promote the progress in constructing a warning system for tsunamis and other marine hazards in the South China Sea.

383 Indonesia, recalling its tsunami-prone geographical situation, facing two oceans, stressed its continuing active role in both IOTWS and PTWS.

384 The Head of the Tsunami Unit, Mr Peter Koltermann, stressed the important role of ITIC in the work of the PTWS, but also in assisting other regions and Tsunami Information Centres in capacity-building and outreach.

385 **The Executive Council thanked** the Vice-Chairman of the ICG/PTWS for his presentation. It stressed the view that an end-to-end warning system will only work with active participation by Member States.

386 The Council's action on PTWS is reported in paragraph 404 (Resolution EC-XLI.6).

#### **4.6.5 Follow-up of the First Meeting of the Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems (TOWS-WG)**

387 The Co-Chairman of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Dr Neville Smith (IOC Vice-Chairman), introduced this item. He reported the conclusions of the First Meeting of the Working Group (Paris, 3–4 April 2008).

388 The TOWS-WG reviewed the GOHWMS Draft Framework Document (IOC-XXIV/2 Annex 10) on a global tsunami and other ocean-related hazards early warning system, and approved a final version (IOC/TOWS-WG-I/3, Annex IV) to be submitted to the Executive Council.

389 The TOWS-WG noted some potential inefficiency in the governance and mode of operation of the ICGs responsible for the development of tsunami warning systems; it considered that there should be a number of standing items on each ICG agenda.

390 The TOWS-WG came to the following principal conclusions:

- (i) It should be charged with streamlining and rationalizing the input from the ICGs to the Governing Bodies, so as to harmonize the work of the Commission and introduce consistency; however, the ICGs should be invited to introduce items, as appropriate, and would remain accountable and responsible for work programmes and associated reports.

- (ii) There is a general concern that the creation of Working Groups under each ICG, all dealing with similar matters and often calling on the same capability for advice and input, is not fully efficient; moreover, where Working Groups are working in similar areas, such as standards, the terms of reference are often sufficiently different as to lead to different outputs and outcomes, making the task of harmonization and integration more difficult.
- (iii) It may be timely to consolidate and transition (or share) work with other Subsidiary Bodies of IOC in a number of areas (science, observation and services).
- (iv) A global “core” network of sea-level tide gauges for tsunami and ocean hazard purposes should be defined by JCOMM/GLOSS in close coordination with the owner ICGs, building on the GLOSS core network for climate, wherever possible.
- (v) The tsunamimeter Partnership should transition to an Action Group under the JCOMM/DBCP, to exploit synergies and to encourage a global role.
- (vi) The IOC should give additional attention to the issue of high-resolution bathymetric data.

391 The Working Group committed itself to undertaking intersessional work in a number of areas, including: (i) exchange of seismic data; (ii) adoption of standards and guidelines; (iii) outstanding telecommunication issues; (iv) testing the feasibility of ICSU involvement in coastal-hazard studies; and (v) assisting the relevant subsidiary bodies to “act as one” in interactions with IOC's partners, including ISDR and WMO.

392 The United Kingdom acknowledged the strong efforts of the Working Group, but indicated that there remains a risk of duplication of the work of other groups in this field, especially for hazard assessment and the IOC's Integrated Coastal Area Management programme (ICAM).

393 The United States of America endorsed the Recommendations made by the Working Group; it highlighted the need for: (i) standards for sea-level and seismic networks, (ii) harmonizing operations among ICGs; and (iii) facilitating information exchange to improve interoperability. The United States encouraged the TOWS-WG and the IOC Secretariat to develop common performance measures and called on the Executive Council to adopt the TOWS-WG Recommendations.

394 India supported the findings and the Recommendations of the TOWS-WG, but pointed out that the Working Group should look more intensively into mainstreaming coastal inundation modelling.

395 Australia welcomed the need for increased coordination and fully supported the Working Group's Recommendations; it noted the potential for a stronger co-ordinating role for JCOMM, through DBCP, GLOSS and JCOMMOPS, on a number of issues cross-cutting the ICGs, such as sea-level measurements and data-flow monitoring.

396 The Russian Federation stressed the need to focus more on standardizing hazard risk assessment and data-exchange formats. Data exchange and coordination with other bodies are key assets for the successful establishment of tsunami and other coastal hazards warning systems.

397 Portugal urged Member States and ICGs to harmonize the work of the various groups, as appropriate, to optimize the operationality of warning systems. Responding to the Australian intervention, it pointed out that JCOMM is a just a coordinating body cosponsored



by IOC and WMO and therefore has no autonomous or independent function in this process, as both UN agencies are already represented.

398 Japan supported the Recommendations of TOWS-WG, admitting that there were issues common to the ICGs that would be beneficial and efficient for TOWS-WG to deal with. Japan also stressed the regional differences among ICGs around the globe and pointed out that geographical, geological and various other differences should not be overlooked during the proposed harmonization.

399 Canada offered its assistance in improving the unified tsunami website.

400 The Representative of the ISDR reported on the Hyogo Framework of Action and IOC's role within the process. The 2004 Sumatra earthquake and subsequent devastating tsunami triggered the UN Flash Appeal in which IOC has been a key partner, by strengthening Member States' capacity to provide instrumentation networks and capacity-building. ISDR will continue to support IOC and its regional ICGs for tsunami warning systems in their efforts to establish effective end-to-end tsunami and other ocean hazards warning systems.

401 Dr Neville Smith confirmed that, although issues like bathymetry, data exchange formats and inundation modelling are already addressed in the TOWS-WG report, they will be followed up more intensively. The TOWS-WG is very well aware of the importance of regional differences among the ICGs and the related ownership issues and therefore does not intend to intervene in the exercise of their authority.

402 The Representative of the IHO stressed the importance of bathymetry for hazard assessment and modelling, as well as capacity-building, and raised IHO's concern that not all ICG reports stress the issue.

403 **The Executive Council requested** the Executive Secretary to consider liaison with IHO with regard to the precise bathymetric needs required for tsunami modelling and prediction.

404 **The Executive Council adopted** [Resolution EC-XLI.6](#), incorporating actions in respect of all four ICGs and of the TOWS-WG.

## 5. ADMINISTRATION AND MANAGEMENT

### 5.1 MAIN LINES OF ACTION FOR THE DRAFT PROGRAMME AND BUDGET FOR 2010–2011

405 The Chairman of the statutory sessional Programme and Budget (Financial) Committee, Dr Neville Smith, introduced this item.

406 The Programme and Budget Committee considered the Executive Secretary's report on the execution of the Programme and Budget 2006–2007 (documents IOC/EC-XLI/2 Annexes 1 and 2 and Addendums). The Committee concluded that the Programme and Budget 2006–2007 had been executed consistent with the agreed programme and budget documents IOC-XXIII/15, and IOC/EC-XXXIX/10.

407 The Programme and Budget Committee addressed a number of issues arising from the Executive Council's consideration of the Commission's Draft Operating Plan for 2008–2009 (agenda item 4.1.3).

408 The Committee recalled that IOC Resolution XXIV-15 aligned the IOC budget with priorities identified in the Biennial Strategy 2008–2009 (IOC Resolution XXIV-2), consistent

with the results-based approach adopted by UNESCO. The Operating Plan intended to show the flow of Regular Budget and Extrabudgetary resources down to the level of activities and projects.

- 409 The Committee recognized the considerable progress in this area, but also accepted that a number of Member States desired even greater transparency, particularly in terms of the principles that underpin the relative balance between Regular Budget and Extrabudgetary resources. The intention is to better inform Member States of the logic and the assumptions behind the distribution reflected in the Plan, not to micro-manage the budget.
- 410 The Committee noted that GEBCO is included in the priorities associated with High-level Objective 1 and the action "Developing guidelines for coastal hazards and ICAM and coastal mapping", but had been overlooked in the organization chart.
- 411 The Committee noted that there had been no formalization of an Arctic GOOS Regional Alliance, so the reference to this entity, as well as SOOS, should be removed from Figure 3 in IOC/EC-XLI/2 Annex 4. Further, in document IOC/EC-XLI/2 Annex 5, the Committee noted the need to clearly distinguish some GRAs from IOC Subsidiary Bodies.
- 412 The Committee noted that the Executive Secretary has re-confirmed the intention to continue contributing funds to the World Climate Research Programme, as decided by the Assembly at its 24th Session.
- 413 The Committee recognized the concerns of a number of Member States with respect to Priority Africa. In the current Operating Plan, this is addressed in the section on Subsidiary Bodies and in the analysis of funds among regions and global actions. However, the Committee agreed that a more explicit and visible attribution of actions to UNESCO Priority Africa should be provided.
- 414 **The Executive Council requested** the Executive Secretary to revise the Operating Plan taking into account the issues raised in the foregoing paragraphs by the Programme and Budget Committee.
- 415 The Programme and Budget Committee noted a number of proposed activities in the Plan of Action for the 50th Anniversary of the IOC (agenda item 4.1.2; documents IOC/EC-XLI/2 Annex 3 and Draft Resolution EC-XLI.(4.1.2)) require some support from the budget. While the two priorities "Facilitating intergovernmental coordination on oceans and coasts" and "Coordinating IOC activities and liaising with UNESCO, Member States and the UN system" are relevant to the execution of this Plan of Action, some members of the Committee believed that additional authority may be required via a decision of the Executive Council.
- 416 The Committee was briefed on the discussions of the sessional Working Group on the Future of IOC requesting Officers of the IOC, with the assistance of the IOC Executive Secretary, to consult with the Director-General of UNESCO concerning financial and administrative mechanisms and an enhanced role in intersectoral mechanisms. The Committee supported that approach and noted its importance in terms of the future Programme and Budget.
- 417 A number of Member States also raised the question of the extent of leveraging by Regular Budget funds of extrabudgetary resources, and the inability of the budget process to recognize contributions that are managed by IOC and explicitly contribute, in terms of their input, to the achievement of expected results of IOC Programmes, when these contributions do not enter the UNESCO/IOC budgetary flow and are subject to financial management provided by partner organizations. The Committee believed that the Executive Secretary should examine this issue.

418 Several Member States sought further clarification on the additional allocations provided to IOC in the Draft 34 C/5 2<sup>nd</sup> version (USD 200,000) and the adopted 34 C/5 (USD 500,000). These allocations were directed, pursuant to IOC Resolution XXIV-15, to reinforcing activities dealing with:

- (i) additional investment in the area of climate change and impacts and adaptation strategies for coastal regions, specifically for the benefit of Africa, Small Island Developing States and Least-Developed Countries:
  - Enhanced staff support for the coordination of GOOS-Africa,
  - Revitalization of IOCEA and IOCWIO,
  - Coordination of the Adaptation to Climate Change in Coastal Zones Project,
  - Reinforcement of GLOSS.
- (ii) additional support for the response to the risks posed by tsunamis, and specifically within actions associated with HLO 1 action (a):
  - Support to the Tsunami Unit, the Intergovernmental Coordination Groups for Tsunami Early Warning and Mitigation Systems (ICGs), and the Working Group on Tsunamis and Other Ocean Hazards Warning and Mitigation Systems (TOWS-WG).
- (iii) new support to provide additional actions in the prevention and mitigation of natural hazards and, in particular, to extend the level of activity, across all lines of IOC:
  - Development of coastal and ocean mapping and guidelines for ICAM and on marine hazards.
- (iv) the global reporting process for assessment of the marine environment:
  - Support to the Group of Experts for the Assessment of the Assessment.

419 In addition, pursuant to IOC Resolution XXIV-5 (Ocean Sciences Programme Priorities), new activities were created on marine modelling and ocean acidification.

420 The Programme and Budget Committee examined the response to UNESCO Priority Africa. In addressing UNESCO Priority Africa, IOC took into consideration the relevance of its action to well-defined continental priorities, such as the NEPAD Action Plan, Programme Area 4, and the Science and Technology Plan of the African Union. Activities foreseen in the biennium 2008–2009 include:

- Monitoring and observations: Enhanced staff support for the coordination of GOOS-Africa; installation of three new GLOSS sea-level stations (Angola, Namibia, Tanzania);
- Ocean data and information management: ODINAFRICA III under completion (strengthening of national oceanographic data centres, further development of the African Marine Atlas and enhanced services); ODINAFRICA IV in planning phase (coastal observation networks, development of products and services related to coastal area management, disasters, 25 countries involved);
- Capacity-development: Final workshop for marine science directors (Maputo, April 2008); workshop on project proposal-writing in IOCEA region, targeting coastal erosion (July 2008); project proposal for a decision-support tool (coastal modelling) in East Africa, Tanzania (IOCWIO Region); support to the IOC UNESCO Chair in Marine Sciences and Oceanography at the Eduardo Mondlane University;

- Adaptation to climate change: Implementation of the Adaptation to Climate in Coastal Zones (ACCC) Project in Cape Verde, Gambia, Guinea, Guinea-Bissau, Mauritania, Senegal (GEF/UNDP project, 2008-2011); project proposal being developed for a similar intervention (coastal erosion) in western Central Africa at the request of Angola, Cameroon, Congo, and Gabon;
- Tsunami early warning system and other marine hazards: Continuing the coordination of the Indian Ocean Tsunami Warning System (IOTWS); development of inundation maps for Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Tanzania (COAST-MAP-IO project);
- IOC Regional Committees: Revitalization of IOCEA (Central and Eastern Atlantic) and IOCWIO (Western Indian Ocean);
- UNCLOS Awareness-raising and assistance for desktop studies for the establishment of limits for the extended continental shelf, within the mandate of IOC.

421 Moreover, the IOC Secretariat is engaging in a process of harmonization of its activities in Africa to improve synergies and impacts.

422 The Programme and Budget Committee considered the Executive Secretary's statement concerning the intention to submit to the Assembly, at its 25th Session, a report on the status of primary and secondary Subsidiary Bodies and proposals for their optimization, with reference to Rule of Procedure 24, paragraph 1 ("... the Assembly can review terms of reference and continuing requirements for each of these bodies and make changes and decisions as necessary."). The Committee believed this was good discipline and encouraged regular review as a way of improving the performance of Subsidiary Bodies and their impact on IOC planning and implementation. The Committee also recalled the direction provided by IOC-XXIV/2, requesting all IOC Subsidiary Bodies, Sub-Commissions and other bodies responsible for the implementation of the Biennial Strategy of the IOC to monitor and evaluate progress against the Expected Results and Performance Indicators relevant to their plans, including their targets of action.

423 Several Member States emphasized again the importance of effectively using and supporting IOC's regional Subsidiary Bodies and decentralized Offices in the implementation of both global and regional elements of the Commission's Programme, and stressed that this should be taken into account in the revision of the Operating Plan.

424 The Executive Council, recognizing the importance of the 50<sup>th</sup> Anniversary celebrations and the limited ability of the budget agreed at the 24<sup>th</sup> Session of the Assembly to absorb costs of the actions agreed in IOC [Resolution EC-XLI.2](#), requested the Executive Secretary to: (i) develop a budget for the 50<sup>th</sup> Anniversary project, in line with the actions agreed at the present session of the Executive Council; and (ii) identify extrabudgetary resources needed for the project and enhanced IOC Secretariat support, as appropriate. **The Executive Council invited** Member States to contribute to this important activity.

425 Regarding extrabudgetary resources and financial support for IOC Programme activities that do not enter the UNESCO/IOC budgetary flow, the **Executive Council requested** the Executive Secretary to: (i) provide guidance within the revised Operating Plan on the principles that govern the balance between Regular Budget and Extrabudgetary allocations; and (ii) determine a method to include, in the Report on Budget Execution to be presented at the 25th Session of the Assembly, the IOC contributions that are managed by IOC and explicitly contribute, in terms of their input, to the achievement of the expected results of the IOC programme, but do not enter UNESCO/IOC budgetary flow and are subject to financial management by partner organizations.

- 426        **The Executive Council reconfirmed** the direction provided by the Assembly at its 24th Session to seek harmonized and consistent format for reports from all Subsidiary Bodies, to contribute to the review of the terms of reference of these Bodies and to assist the Assembly in making any necessary changes.
- 427        The Programme and Budget Committee considered the implications of the schedule of preparation of the UNESCO Programme and Budget (Appendix to IOC/EC-XLI/2 Annex 10). The Committee understands that the Director-General of UNESCO will communicate Preliminary Proposals to the Chairpersons of UNESCO Commissions in August–September for their consideration and response. Further, there is an issue of establishing a mechanism to provide input and response to the Draft 35 C/5.
- 428        The Committee concluded that a device, such as an Intersessional Financial Advisory Committee, may be needed, taking full account of Article 10. The Committee emphasized the advisory nature of the proposed Intersessional Financial Advisory Committee and that its intersessional operation would need to be harmonized with the formal requirement to constitute a Financial Committee during sessions of a Governing Body (Rule of Procedure 12). The Committee believes this could be achieved by convening a meeting of the intersessional Programme and Budget (Financial) Committee immediately prior to sessions of the Executive Council and the Assembly.
- 429        According to the Terms of Reference provided in Annex A to the Committee's report (in Annex V to the present report), the intersessional Programme and Budget (Financial) Committee would have a core membership defined to facilitate appropriate and adequate participation in the activities of the Committee, and which is representative of the IOC Electoral Groups.
- 430        France and Portugal supported the establishment of an Intersessional Financial Advisory Committee, in the light of the functional autonomy of the IOC, but noted the need to clarify issues pertaining to the composition and nomination of the Committee. The Russian Federation also supported the idea, but echoed France's view on the issue of the core composition of the Committee.
- 431        **The Executive Council decided** to establish an intersessional Financial Advisory Group with the Terms of Reference in Annex V to the present Report. The composition of this Group is Argentina, Australia, Brazil, Canada, China, France, Japan, Korea (Republic of), UK and USA.
- 432        The Programme and Budget Committee also considered strategic proposals raised in plenary and by members of the Committee. The tragedy in Myanmar suggests that coastal hazards, inundation and vulnerability will need to be accorded even greater emphasis in the IOC Biennial Strategy for 2010–2011. Biodiversity issues were also raised under a number of items, including consideration of the follow-up of the Census of Marine Life. The Committee agreed that this increased emphasis should be reflected in the draft Biennial Strategy for 2010–2011. The profile of IOC actions for the Arctic could also be raised. Actions arising from the discussions on the Future of IOC and on the 50th Anniversary celebrations also need to be included in the Biennial Strategy. Otherwise, the Committee believed that the Biennial Strategy 2008–2009 provided an appropriate basis for the 2010–2011 Biennial Strategy, consistent with the Medium-Term Strategy developed by the Executive Council at its 39<sup>th</sup> Session (Resolution EC-XXXIX.1).
- 433        **The Executive Council adopted** [Resolution EC-XLI.5](#), including the draft Biennial Strategy for 2010–2011 appended to it.

## 5.2 DATES AND PLACES OF THE FORTY-SECOND AND FORTY-THIRD SESSIONS OF THE EXECUTIVE COUNCIL

434 The Executive Council considered the date of the 42nd Session of the Executive Council (15 June 2009), acting as Steering Committee of the 25<sup>th</sup> Assembly (starting on 16 June 2009), proposed by the Assembly at its 24<sup>th</sup> Session. The Executive Secretary noted the conflict, for the third consecutive year, with the tentative dates of the 10<sup>th</sup> Meeting of the Informal Consultative Process (ICP) (15–19 June 2009), should the continuation of the ICP be confirmed by the UN General Assembly this year. On this basis, and considering that the next Executive Council, at its 42<sup>nd</sup> Session, will also need to address “in camera” the nomination of the next Executive Secretary and consider the findings and recommendations of the Working Group on the Future of the IOC, **the Executive Council decided** that the 42<sup>nd</sup> Session of the Executive Council will be held in Paris on Monday 22 June 2009; the 25<sup>th</sup> Session of the Assembly will therefore be held from Tuesday 23 June to Friday 3 July 2009, with the possibility of an extra half day on Saturday 4 July. As considered by the sessional Working Group on the 50<sup>th</sup> Anniversary and in plenary, the 43<sup>rd</sup> Session of the Executive Council should be held in New York, possibly in conjunction with the 11<sup>th</sup> Meeting of the ICP. Pending the confirmation of this meeting and its dates, as well as information about the possibility to hold the Executive Council session in New York, the Executive Council tentatively set the dates of its 43<sup>rd</sup> Session from 9 to 16 June 2010.

## 5.3 RECRUITMENT OF THE IOC EXECUTIVE SECRETARY

435 The Executive Secretary introduced this item. He recalled the procedure for the nomination of the Executive Secretary and the calendar set by the Executive Council at its 40<sup>th</sup> session (Paris, 18 June 2007), the draft terms of reference and the post announcement. He suggested that the post announcement be advanced to early November 2008 instead of December 2008 as presently envisaged.

436 Canada recalled the excellence of the Executive Secretaries who have led the Secretariat of the Commission in the last 50 years and noted the importance of the successful identification of the person. It regretted that the current Executive Secretary will leave, especially when it happens at the beginning of the year in which the Commission wants to showcase its successes in the light of the celebrations of the 50<sup>th</sup> Anniversary, and in conjunction with the departure of the current Director-General of UNESCO. It underlined the importance of avoiding a gap between the incumbent and the new Executive Secretary, although an interim solution may become necessary. It supported the idea of a post announcement in November or before. Canada expressed the wish to take more time to comment on the draft terms of reference and post announcement, as well as on the preliminary list of candidates that will be announced at the next session of the Executive Council.

437 Portugal agreed with Canada and appreciated the fact that the current Director-General of UNESCO would give the next Director-General the opportunity to choose the new incumbent. As Canada, Portugal would have liked to see the terms of reference before. It considers that the terms of reference presented to the Executive Council are not adequate and that a small *ad hoc* group, possibly formed by the Officers, should review them.

438 Tunisia and the United States supported the idea of a small *ad hoc* group to examine the terms of reference. The United States requested a clarification as to whether the qualifications for the post of Executive Secretary are to be decided by the Director-General of UNESCO or by the Commission.

439 The United Kingdom recalled the discussion held by the Officers and encouraged Member States to find good candidates within their borders.

440 The Executive Secretary informed the Council that the contribution of the Commission should be to refining the qualifications, since it is possible to propose a revised version to the Director-General who has the authority to approve them. The role of the Executive Secretary is defined by Article 8 of the Statutes, but the formulation of the duties could be reconsidered, without burdening the function of the Executive Secretary with excessive tasks, however. Concerning the respective roles of the Director-General and the Commission in the selection of a candidate, the Executive Secretary recalled the issues raised by the External Auditor from Canada in 2000 in terms of such a role, as well as of the possibility of electing the Executive Secretary rather than a nomination. He recommended that the Executive Council form a small ad hoc group, consisting of the present and past Officers of the Commission to review the terms of reference for the post.

441 **The Executive Council decided** to form the proposed *ad hoc* group and **requested** it to review the terms of reference for the post of Executive Secretary during this session.

442 **The Executive Council**, taking into account IOC/EC-XLI/Inf.3 and the attached draft post announcement (SC-079), considering the comments by Member States, and the critical importance to the Commission of the choice of the Executive Secretary, **requested** the Executive Secretary, to ensure that any revision of the post announcement take into account the following concerns:

- (i) The title of the post announcement should specify that it is for the post of "Executive Secretary of the Intergovernmental Oceanographic Commission".
- (ii) The "Main Responsibilities" section should be shortened and amended to reflect more adequately the roles and responsibilities of the Executive Secretary, as specified in the Statutes and the Rules of Procedure of the Commission, and should underline the authority of the Executive Secretary, under the guidance of the Chairperson and Officers of the Commission and of its Governing Bodies. The section should also emphasize the importance of cooperative work with other sectors and programmes of UNESCO and with other intergovernmental and international organizations dealing with ocean affairs.
- (iii) The "Qualifications and Experience" section should reflect the broad nature of ocean issues, so as to allow applications from appropriate candidates from both the natural and social scientific disciplines. The language skills should recognize the two working languages of the secretariat in UNESCO (English and French).
- (iv) The "Competences" section should include the ability to conduct high-level negotiations at an international level on behalf of the IOC and, as appropriate, on ocean-related matters, as the ocean arm of UNESCO.
- (v) Recruitment should be conducted in accordance with the UNESCO Constitution, UNESCO Staff Regulations and the IOC Statutes, and paramount consideration should be given to securing the highest standards of integrity, efficiency and technical competence. In the recruitment process in UNESCO, candidates can be individuals, governmental candidates or UN-system staff-members. It should be made clear that if an applicant has the support of his/her government, this would obviously influence the Executive Council in the selection process. It should also be made clear that governmental applications may be forwarded to UNESCO following established procedures.

443 A revised draft should be consulted with the Chairman and Officers of the Commission as soon as possible and the final document prepared by September 2008.

444        **The Executive Council recognized** that the post announcement must be circulated to the IOC Member States not later than the beginning of November 2008, at the same time that it is publicly announced through international specialized journals, in order to allow adequate time for the selection procedure.

445        **The Executive Council expressed** its regret that the appointment of the new Executive Secretary may be delayed, owing to internal decisions in UNESCO, leading to a potential hiatus in the occupancy of the post just at the commencement of the Commission's 50<sup>th</sup> anniversary celebrations. The Executive Council invited the Executive Secretary and the Director-General to revisit the process of transfer of responsibility between the incoming and the outgoing Executive Secretary with a view to guaranteeing that adequate arrangements for this transfer are in place.

## 6.        **ADOPTION OF THE SUMMARY REPORT AND RESOLUTIONS**

446        **The Executive Council adopted** the Summary Report of its 41<sup>st</sup> Session, including the Resolutions therein.

## 7.        **CLOSURE**

447        The Chairman presented an IOC Certificate of Appreciation to Ingénieur Général André Roubertou, for his contribution to IOC-IHO/GEBCO Project and successful development of the International Bathymetric Chart of the Central Eastern Atlantic.

448        The Chairman then thanked the participants for their excellent co-operation in the debates and the interpreters for their essential services.

449        Canada, on behalf of the Member States, congratulated the Chairman on his skilful conduct of the session, which enabled the Executive Council to complete its agenda with minutes to spare.

450        The Chairman closed the 41<sup>st</sup> Session of the Executive Council at 16:58 on Tuesday 1 July 2008.



## 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 ROGER REVELLE MEMORIAL LECTURES

#### 3. DEVELOPMENTS SINCE THE 24<sup>th</sup> SESSION OF THE IOC ASSEMBLY

- 3.1 REPORT BY THE CHAIRMAN ON INTERSESSIONAL ACTIVITIES
- 3.2 REPORT BY THE EXECUTIVE SECRETARY ON PROGRAMME AND BUDGET IMPLEMENTATION

#### 4. PROGRAMME MATTERS REQUIRING DECISIONS BY THE EXECUTIVE COUNCIL

##### 4.1 GENERAL POLICY AND COORDINATION

- 4.1.1 Working Group on the Future of the IOC
- 4.1.2 The Fiftieth Anniversary of the Intergovernmental Oceanographic Commission of UNESCO
- 4.1.3 IOC Biennial Strategy and Operating Plan for 2008–2009
- 4.1.4 Report on the Global Earth Observation System of Systems (GEOSS) Implementation
- 4.1.5 Follow-up of the Seventh Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-VII)
- 4.1.6 Relations with Other Marine-Related Programmes of UNESCO
- 4.1.7 Relations with the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)
- 4.1.8 General Bathymetric Chart of the Oceans (GEBCO)

##### 4.2 UN CONVENTIONS AND AGREEMENTS

- 4.2.1 IOC and the United Nations Convention on the Law of the Sea (UNCLOS)
- 4.2.2 Follow-up of the Eighth Session of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS VIII)
- 4.2.3 IOC and the United Nations Framework Convention on Climate Change (UNFCCC)
- 4.2.4 IOC and the Convention on Biological Diversity (CBD)

##### 4.3 ADDRESSING THE IMPACTS OF CLIMATE CHANGE AND VARIABILITY, INCLUDING SEA LEVEL RISE [MLA 2.1]

- 4.3.1 IOC Participation in the International Polar Year 2007–2008, and the International Year of Planet Earth 2007–2009

- 4.3.2 Report on WMO–IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) Programme Implementation
- 4.3.3 Report on Global Ocean Observing System (GOOS) Programme Implementation
- 4.3.4 Interaction with the WMO–ICSU–IOC World Climate Research Programme (WCRP)
- 4.3.5 Report on the IMO London Convention Scientific Group Meeting on Ocean Iron Fertilization
- 4.4 SAFEGUARDING MARINE ECOSYSTEM HEALTH AND INTEGRATED MANAGEMENT [MLA 2.2]
  - 4.4.1 Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-Economic Aspects
  - 4.4.2 Interaction with the Census of Marine Life (CoML) and Other Research Programmes on Marine Biodiversity
  - 4.4.3 Integrated Coastal Research
- 4.5 CAPACITY-BUILDING, DATA AND INFORMATION SERVICES AND PROCEDURES FOR MARINE SCIENTIFIC RESEARCH [MLA 2.3]
  - 4.5.1 Report on the International Oceanographic Data and Information Exchange (IODE) Programme
  - 4.5.2 Report on Implementation of the IOC Capacity-Development Activities
- 4.6 MITIGATING THE IMPACTS OF TSUNAMIS AND OTHER MARINE HAZARDS [MLA 3.1]
  - 4.6.1 Follow-up of the Fifth Session of the IOC Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS)
  - 4.6.2 Follow-up of the Fourth Session of the IOC Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS)
  - 4.6.3 Follow-up of the Third Session of the IOC Intergovernmental Coordination Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS)
  - 4.6.4 Follow-up of the Twenty-Second Session of the IOC Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the Pacific (ICG/PTWS)
  - 4.6.5 Follow-up of the First Meeting of the Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems (TOWS-WG)
- 5. ADMINISTRATION AND MANAGEMENT**
  - 5.1 MAIN LINES OF ACTION FOR THE DRAFT PROGRAMME AND BUDGET FOR 2010–2011
  - 5.2 DATES AND PLACES OF THE FORTY-SECOND AND FORTY-THIRD SESSIONS OF THE EXECUTIVE COUNCIL
  - 5.3 RECRUITMENT OF THE IOC EXECUTIVE SECRETARY
- 6. ADOPTION OF THE SUMMARY REPORT AND RESOLUTIONS**
- 7. CLOSURE**

ANNEX II

**ADOPTED RESOLUTIONS**

<b>No.</b>	<b>Agenda Item</b>	<b>Title of Resolutions</b>	<b>Page</b>
<b>1</b>	4.1.1	The Future of IOC	<a href="#">2</a>
<b>2</b>	4.1.2	The Fiftieth Anniversary of the Intergovernmental Oceanographic Commission of UNESCO	<a href="#">3</a>
<b>3</b>	4.1.5	Seventh Session of the IOC Sub-Commission for the Western Pacific (WESTPAC VII)	<a href="#">5</a>
<b>4</b>	4.2.2	Guidelines for the implementation of Resolution XX-6 of the IOC Assembly regarding the deployment of profiling floats in the high seas within the framework of the ARGO Programme	<a href="#">6</a>
<b>5</b>	5.1	Preparation of the IOC Draft Programme and Budget for 2010–2011	<a href="#">9</a>
<b>6</b>	4.6	IOC Intergovernmental Coordination Groups (ICG) for Tsunami Warning and Mitigation Systems for the Pacific Ocean (PTWS), the Indian Ocean (IOTWS), North-Eastern Atlantic, Mediterranean and connected seas (NEAMTWS) and Caribbean and Adjacent Regions (CARIBE-EWS)	<a href="#">13</a>

Resolution EC-XLI.1

**THE FUTURE OF IOC**

The Executive Council,

**Recalling** Resolution XXIV-1 (*Working Group on the Future of IOC*) and the subsequent work plan established by the Officers of the Commission and distributed to all Member States,

**Noting with appreciation** the Report of the meeting of the open-ended Working Group on the Future of the IOC, held in Paris on 19–20 February 2008, and the recommendations contained therein,

**Acknowledging** that the current IOC mandate as identified in the IOC Statutes, Art. 2.1, is flexible and appropriate and that the present Medium-Term Strategy provides an appropriate framework enabling the IOC to adapt to emerging trends in oceanography and respond to Member States and international cooperation priorities in a timely manner,

**Noting** the benefit of increasing the visibility of the Commission and the effectiveness of using the 50<sup>th</sup> Anniversary of the Commission for this purpose,

**Recognizing** the importance of the Regional Subsidiary Bodies and IOC decentralized offices to the implementation of the programmes of the Commission for both global and regional priorities,

**Concludes** that, for the foreseeable future, the IOC should be reinforced within UNESCO, and **recommends** the Assembly to reaffirm IOC's commitment to UNESCO and reinforce its position as a UN specialized body dealing with oceans and marine science and as the competent international organization, as stated in UNCLOS;

**Concludes further** that additional clarification on the present financial and administrative situation of the Commission within UNESCO is required before the IOC Assembly in 2009;

**Requests** the Chairman of the IOC, jointly with the other Officers and with the assistance of the IOC Executive Secretary and the Director-General of UNESCO, to investigate:

- (i) financial and administrative mechanisms that would lead to a more efficient and effective IOC, as a body with functional autonomy within UNESCO, including any legal implications, and
- (ii) an enhanced role for the IOC in terms of intersectoral cooperation within UNESCO and the UN system, particularly the agencies cosponsoring ICSPRO, including the allocation of additional finances and resources;

**Further requests** the Chairman of the IOC to consult with Member States as needed, keep them informed on the progress of the investigations and report to the IOC Assembly in 2009;

**Requests also** the Executive Secretary to:

- (i) identify agreements with partner organizations, particularly those signatories of the ICSPRO agreement, and circulate to Member States a brief analysis of each, for the consideration of Member States at the IOC Assembly in 2009
- (ii) send a Circular Letter to all Member States highlighting their responsibilities as stated under Article 4 B.5 of the IOC Statutes, including the specification of the national coordinating body for liaison with the Commission, and also exploring what actions

could be taken to strengthen the implementation of, and to increase the national benefits from, IOC programmes and priorities

- (iii) investigate possibilities for an IOC presence at the UN General Assembly to promote programmes and activities of IOC within global and regional ocean issues, and
- (iv) keep Member States informed on the related activities and initiatives undertaken by the Commission;

**Calls upon** the Member States to:

- (i) promote “The Oceans and Intergovernmental Cooperation” as the theme for the Ministerial Round Table at the UNESCO General Conference in 2011, through their respective Permanent Delegations to UNESCO, their National Commissions for UNESCO and the National Co-ordination Bodies for IOC,
- (ii) explore innovative ways to make full use of Article 10 of the IOC Statutes, so as to enhance its capacity and the stability of the resources allocated to the IOC. These efforts may include opportunities for assessments, contributions to the IOC Special Account, discussions with national funding agencies, national and international foundations and agencies, potential support from industry, as well as other appropriate arrangements
- (iii) collaborate closely with the Chairman and Officers and contribute to the intersessional analysis of financial and administrative mechanisms that would lead to a more efficient and effective IOC
- (iv) promote the role of the IOC through their interventions and support at relevant organizations of the UN system and through the UNESCO strategic planning and budgetary process
- (v) support the strengthened delivery of IOC programmes at the regional level through the UNESCO network of decentralized field offices and the increased collaboration with other relevant UN organizations with a regional presence;

**Decides** to include in the agenda and timetable of the 42<sup>nd</sup> Session of the Executive Council an adequate time for preparation of the item on the Future of the IOC at the 25<sup>th</sup> Session of the IOC Assembly.

Resolution EC-XLI.2

**THE FIFTIETH ANNIVERSARY  
OF THE INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION OF UNESCO**

The Executive Council,

**Recalling** 11 C/Resolution 2.31 on the *Promotion of studies and research relating to marine science* adopted by the General Conference of UNESCO at its 11<sup>th</sup> session, in conformity with the recommendation of the Intergovernmental Conference on Oceanic Research (Copenhagen, 11–16 July 1960),

**Underlining** the significance of the 50<sup>th</sup> anniversary of the Intergovernmental Oceanographic Commission of UNESCO as an occasion to take stock of advances in marine sciences and

related international cooperation, at the global, regional and national levels, and plans for future directions in this area,

**Emphasizing** that IOC is an intergovernmental commission with functional autonomy within UNESCO and has a role in promoting and facilitating international cooperation and coordinating programmes in research, services and capacity-building, at the global and regional levels, in order to learn more about the nature and resources of the ocean and coastal areas,

**Adopts** the *Outline of the Indicative IOC Plan of Action* for the commemoration of the 50<sup>th</sup> anniversary of IOC annexed to the present Resolution;

**Requests** the Executive Secretary to take the appropriate steps to implement the IOC Plan of Action for the 50<sup>th</sup> anniversary in cooperation with UNESCO and other UN organizations;

**Invites** Member States and other appropriate bodies and organizations cooperating with the Commission, to contribute to the commemoration of the 50<sup>th</sup> anniversary of the IOC, and to inform the Executive Secretary, so that a full list of activities can be maintained;

**Calls upon** the Director-General of UNESCO to consider allocating targeted financial resources to IOC in the draft programme and budget for 2010–2011 (Draft 35 C/5) to support the Plan of Action for the 50<sup>th</sup> anniversary, and in particular, to organize a global ocean conference and actions associated with the 36<sup>th</sup> General Conference of UNESCO, in 2011;

**Requests** the Executive Secretary to establish a dedicated account for the commemoration of the 50th anniversary of the IOC to be financed by extrabudgetary contributions;

**Invites** Member States and other potential donors to consider making extrabudgetary contributions in this regard.

#### Annex to Resolution EC-XLI.2

##### **Outline of the Indicative IOC Plan of Action**

- The 43<sup>rd</sup> Session of the IOC Executive Council, in 2010, to be held at the UN headquarters in New York and, if possible, be associated with the Informal Consultative Process (ICP), and with a theme related to ocean science and policy;
- Regional science conferences and a global ocean conference, perhaps in Paris and involving the IOC, the UN and other partner organizations;
- The 26<sup>th</sup> Session of the IOC Assembly, in 2011, should be held in association with the UNESCO 36<sup>th</sup> General Conference, and if possible, the General Conference should include an Ocean Day, with a ministerial round table on ocean affairs, exhibitions and key speakers;
- The publication of a book on the first 50 years of IOC, guided by a geographically-balanced advisory editorial board, and including a CD containing key documents and publications;
- The creation of a central web-based calendar and portal to all anniversary events; and
- Generic activities including preparation of flags, badges, calendars, a photographic competition, medals and prizes for eminent oceanographers and young people.

Resolution IOC/EC-XLI.3

**SEVENTH SESSION OF THE IOC SUB-COMMISSION  
FOR THE WESTERN PACIFIC (WESTPAC-VII)**

The Executive Council,

**Considering** the efforts and progress made in revitalizing the WESTPAC, mainly including: enhancing participation and raising support of Member States; the strategic restructuring of the WESTPAC programme and the initiation of new regional activities contributing to the High-Level Objectives and the Operational Plan of IOC; strengthening regional cooperation with other organizations; raising public awareness; and the implementation of the WESTPAC-VI programme in the period 2006–2008,

**Appreciating** the support provided by Member States, donors and other organizations during the inter-sessional period,

**Noting with satisfaction** the performance of the IOC Regional Secretariat for WESTPAC in facilitating and co-ordinating the revitalization process of WESTPAC, and the collaboration initiated with other organizations and programmes, such as UNDP/GEF Yellow Sea Large Marine Ecosystem (YSLME), UNEP/Northwest Pacific Action Plan (NOWPAP) and UNDP/GEF Partnerships in Environmental Management for the Seas of East Asia (PEMSEA),

**Recognizing** that available funds in the Operational Plan of IOC for 2008–2009 are limited for the full-scale implementation of the WESTPAC Programme and Budget (2008–2009),

**Noting** that the planning cycle of the Sub-Commission has not been in line with that of IOC,

**Expresses its appreciation to:**

- (i) the Government of Thailand for having hosted the IOC Regional Secretariat for WESTPAC and its continuous support for WESTPAC since the establishment of the Secretariat in Bangkok in 1994; the Government of China for seconding one professional to the Secretariat for two years and its contribution to IOC Special Account for WESTPAC activities; and the Government of Japan for its continuous support for WESTPAC activities through the Japan Fund-in-Trust
- (ii) the Government of Malaysia for having hosted the 7<sup>th</sup> International Scientific Symposium and the 7<sup>th</sup> Session of the WESTPAC in Kota Kinabalu, Sabah, Malaysia, respectively during 21–25 May 2008 and 26–29 May 2008
- (iii) the Governments of the Philippines and the Republic of Korea for their kind offer to host the next International Scientific Symposium of WESTPAC in 2011, and the Government of Indonesia for the kind offer to host the next session of WESTPAC in 2010, and
- (iv) other Member States for their in-kind contribution to WESTPAC activities;

**Endorses** the WESTPAC-VII Executive Summary and the set of Recommendations therein, including the WESTPAC Strategy and Programme Structure (2008–2013), the WESTPAC Advisory Group, changes to the WESTPAC meeting schedule and date and place of the next session, and the WESTPAC Programme and Budget for 2008–2009;

**Requests** the IOC Executive Secretary and Member States of WESTPAC to implement the WESTPAC-VII Recommendations in the light of the present and future budgetary possibilities of the Commission;

**Encourages** Member States and donor agencies:

- (i) to participate actively and to provide extrabudgetary funds and other means of support in order to implement the WESTPAC projects
- (ii) to support and strengthen, through financial and other means, the regional initiative on capacity building of the “UNESCO/IOC Regional Network of Training and Research Centres on Oceanography in the Western Pacific”, and
- (iii) to provide additional resources and second technical staff to the IOC Regional Secretariat for WESTPAC in order to reinforce its operations;

**Invites** other international and regional organizations, programmes, and projects to continue and/or renew their commitments to, and partnerships with, WESTPAC.

Resolution EC-XLI.4

**GUIDELINES FOR THE IMPLEMENTATION OF RESOLUTION XX-6  
OF THE IOC ASSEMBLY REGARDING THE DEPLOYMENT OF PROFILING FLOATS  
IN THE HIGH SEAS WITHIN THE FRAMEWORK  
OF THE Argo PROGRAMME**

The Executive Council,

**Recalling** IOC Resolution XX-6 on *The Argo Project*,

**Considering** that:

- (i) a full array of more than 3,000 Argo profiling floats has been deployed in the world ocean and the Argo Project is now working and should be sustained in the future as the Argo Programme
- (ii) the Argo Information Centre was established by the IOC Secretariat, in close cooperation with WMO, in 2001 to fulfil the requirements of Resolution XX-6 and provides international technical coordination for the Argo programme, and is a component of JCOMMOPS which provides coordination, *inter alia*, for float programmes
- (iii) an Argo Focal Point must be designated by each Member State, pursuant to Joint IOC–WMO Circular Letter JCOMM No. 00-2 of 7 February 2000, to receive information,

**Recalling further** that IOC Resolution XX-6, *inter alia*:

- (i) concluded that concerned coastal States must be informed in advance, through appropriate channels, of all deployments of profiling floats which might drift into waters under their jurisdiction, indicating the exact locations of such deployments, and
- (ii) instructed the IOC Executive Secretary to inform Member States of float locations and how to access float data,



**Acknowledging** the work of the Argo Information Centre to facilitate the deployment of Argo profiling floats, to inform Member States, as appropriate, of planned and actual deployments, and to facilitate dissemination of identification and location of deployments and float data,

**Emphasizing** the desirability of cooperation and collaboration among Argo implementers and competent institutions of coastal States,

**Recognizing** the need to ensure that implementers and coastal States should be able to operate in a practical and effective manner,

**Expresses its appreciation** to the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS) for the work undertaken to date in providing advice on the legal framework within the context of the UN Convention on the Law of the Sea (hereinafter UNCLOS) which is applicable to the collection of oceanographic data by specific means;

**Confirms** that the Argo Programme shall be fully consistent with UNCLOS;

**Adopts** the *Guidelines for the Implementation of Resolution XX-6 of the IOC Assembly Regarding the Deployment of Profiling Floats in the High Seas within the Framework of the Argo Programme*, given in annex to the present Resolution;

**Confirms further** that the Guidelines shall be applied in the context of, and in a manner consistent with, UNCLOS and without prejudice to the sovereign rights of the coastal States over their continental shelf and exclusive economic zone;

**Requests** the Executive Secretary:

- (i) to actively promote and disseminate the Guidelines among IOC Member States,
- (ii) to take necessary action to develop practical, routine procedures with Member States and the relevant bodies, to implement the Guidelines;

**Further requests** IOC/ABE-LOS to continue its work on the legal framework within the context of UNCLOS that is applicable to the collection of oceanographic data by other specific means;

**Invites** Member States to report to the IOC Assembly at its 25<sup>th</sup> Session, in 2009, on the implementation of these Guidelines

#### Annex to Resolution EC-XLI.4

### **Guidelines for the Implementation of Resolution XX-6 of the IOC Assembly Regarding the Deployment of Profiling Floats in the High Seas within the Framework of the Argo Programme**

The IOC Member States recall and confirm the validity of Resolution XX-6, in particular the following elements of the Resolution:

- The Argo Project is an important contribution to the operational ocean observing system of GOOS and GCOS, as well as a major contribution to CLIVAR and other scientific research programmes.
- There is a need to ensure that Member States gain maximum benefit from the data of the Argo project in real-time and at longer time-scales, and that they have the possibility to participate in and contribute to the project.

- Concerned coastal States must be informed in advance, through appropriate channels, of all deployments of profiling floats that might drift into waters under their jurisdiction.

For the purposes of implementing Resolution XX-6 regarding the deployment of Argo floats in the high seas that may enter the Exclusive Economic Zone (EEZ), IOC Member States should follow these Guidelines and promote awareness of them among interested institutions:

1. In accordance with Resolution XX-6, an IOC Member State must be informed in advance, through appropriate channels, of the deployment in the high seas of any float within the framework of the Argo Programme (hereinafter, Argo Programme float) that may enter its EEZ. In implementing this provision, the Executive Secretary of IOC will invite all IOC Member States to state at any time, if they so desire and by written note addressed to him, that they wish to be notified of the deployment in the high seas of all Argo Programme floats that may enter their respective EEZs. The Executive Secretary of IOC will immediately communicate such written note to IOC Member States.
2. A governmental, non-governmental or private entity designated as responsible for Argo Programme floats deployed in the high seas (hereinafter, the implementer) will transmit through the Argo Information Centre to the Argo Focal Points designated by the IOC Member States the following information:
  - type and number of floats planned to be deployed
  - dates and geo-coordinates of locations where floats are to be deployed in the high seas
  - contact information of the implementer
  - parameters and variables to be collected by sensors
  - other information that the implementer might consider of interest.
3. Whenever an Argo Programme float deployed in the high seas drifts into the EEZ of an IOC Member State that has requested the notification referred to in paragraph 1, the implementer of the said Argo Programme float will notify the Argo Focal Point of the IOC Member State, by transmitting to it, reasonably in advance of the expected entry of the float into the EEZ, the following information:
  - type of float deployed
  - date and geo-coordinates of location where the float was deployed in the high seas
  - date and geo-coordinates of latest location of the float
  - contact information of the implementer
  - parameters and variables being collected by sensors
  - other information that the implementer might consider of interest
  - other Argo Programme float information that the coastal State might consider of interest, as specified in the original notification.

Upon the request of the responsible IOC Member State, and with the express agreement of the coastal State that has requested the notification referred to in paragraph 1, the Argo Information Centre can undertake the notification on behalf of the implementer.

4. All the data obtained by the Argo Programme floats, once they enter the EEZ, will be made freely available by the implementer, with the exception of data of direct significance for the exploration and exploitation of natural resources, whether living or non-living, which, to protect its sovereign rights and jurisdiction in its EEZ, the IOC Member State into whose EEZ the float enters formally requires the implementer not to be distributed. The aforementioned IOC Member State is encouraged, when possible, to determine a time limit for this request.
5. The guidelines set forth in paragraphs 1, 3 and 4 apply *mutatis mutandis* to an Argo Programme float deployed in the high seas and drifting into the EEZ of an IOC Member State from the EEZ of another IOC Member State.
6. No action or activity taken on the basis of these Guidelines shall be interpreted or considered as prejudicing the positions of States Parties to a land or maritime sovereignty dispute or to a dispute concerning the delimitation of maritime areas.
7. For the purpose of an effective application of these Guidelines, including, in particular, the notification to be provided by the implementer:
  - a. the charts and lists of geographical coordinates of points, specifying the geodetic datum, duly publicized and deposited by IOC Member States with the Secretary-General of the United Nations will be used, or
  - b. when such information is not available, the IOC Member States are encouraged to provide the relevant information to the Secretary-General of the United Nations, to the IOC or to the implementer, as appropriate.

#### Resolution EC-XLI.5

### **PREPARATION OF THE IOC DRAFT PROGRAMME AND BUDGET FOR 2010–2011**

The Executive Council,

**Noting** Articles 1.2, 10.1 and 10.4 of the IOC Statutes relating to financial and other resources,

**Stressing** the unique role of the IOC as the competent international organization dealing with ocean science, services and capacity-building at global and regional levels, and also acting as the ocean arm of UNESCO,

**Recalling** the emphasis placed by the United Nations General Assembly Resolution 62/215 on the role of IOC in ocean affairs, especially concerning the monitoring and forecasting of climate change and variability and in the establishment and operation of tsunami warning systems, the establishment of a Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-economic Aspects, and the implementation of Parts XIII and XIV of the United Nations Convention on the Law of the Sea,

**Noting** with appreciation the decision taken by the General Conference of UNESCO at its 34<sup>th</sup> Session to increase the resources available to IOC for the biennium 2008–2009, with

particular emphasis on actions related to tsunami and natural hazards, actions related to the impacts of, and adaptation to, climate change in coastal zones, especially for the benefit of Africa and Least-Developed Countries, and to the UN Regular Process for Global Reporting and Assessment of the Marine Environment,

**Confirming** that the budget for 2006–2007 has been executed in accordance with the approved Programme and Budget 2006–2007;

**Recalling** IOC Resolution XXIV-15 “IOC Programme and Budget for 2008–2009” and the budget allocation table contained therein,

**Recalling also** the strategic framework provided by the IOC Medium-Term Strategy 2008–2013,

**Welcoming** the Draft Strategic Agreement between UNESCO and UNDP that recognizes the expertise and role of IOC in ocean science, observations and capacity-building in the implementation of development-oriented projects,

**Having examined** document IOC/EC-XLI/2 Annex 10 on the Preparation of the Programme and Budget for 2010–2011,

**Confirms** that the IOC Programme and Budget for 2010–2011 will be developed consistent with the IOC Medium-term Strategy 2008–2013 and the IOC Draft Biennial Strategy 2010–2011, as annexed to the present Resolution;

**Agrees** that, in the preparation of the Draft IOC Programme and Budget 2010–2011, particular attention be given to problem-based multidisciplinary activities to maximize synergies among IOC Programmes and between these Programmes and other marine-related activities in UNESCO, especially on the issues of adaptation to climate change impacts and sea-level rise, conservation and sustainable use of marine biodiversity, and hazard mitigation in the coastal zone, especially in large centres of population, with emphasis on the scientific basis;

**Also agrees** that strengthened delivery of IOC programmes at the regional level can be achieved through the support from the UNESCO network of decentralized units and increased collaboration with other UN organizations with a regional presence;

**Encourages** Member States to continue to advocate the importance of IOC to the Director-General and the Governing Bodies of UNESCO, focusing in particular on the value that IOC provides to UNESCO and to the economic and social wellbeing of people all over the world;

**Invites** the Director-General of UNESCO and **requests** the Governing Bodies of UNESCO to ensure that resources allocated to the IOC in the draft 35 C/5 be clearly identified and maintained at least at the level of the 34 C/5 approved, and reinforced, to the extent possible, to ensure an enhanced contribution to the accomplishment of the Medium-Term Strategy defined in 34 C/4, with an emphasis on interdisciplinary and intersectoral cooperation;

**Expresses** its strong view against any decrease of budget appropriations allocated to IOC due to transfer of funds to other parts of the UNESCO budget;

**Further invites** the Director-General of UNESCO to consider consolidation of all IOC activities into a single Main Line of Action entitled “Oceans and coastal zones: fostering intergovernmental cooperation and improving ocean governance through science, observations and services, and capacity-building, including an early warning system framework encompassing extreme events of climate change and tsunamis”;

**Also invites** the Director-General of UNESCO to consider further reinforcement of IOC professional staff to enhance the role of IOC in intersectoral cooperation within UNESCO;

**Requests** the Executive Secretary to:

- (i) Prepare a draft Programme and Budget for 2010–2011 to be submitted at the 25<sup>th</sup> Session of the Assembly
- (ii) Identify agreements and modalities for enhanced cooperation with partner organizations dealing with ocean affairs, for effective implementation of actions and support to Member States at the regional and national level;

**Decides** that the IOC Governing Bodies should undertake a periodic review of the consistency and effectiveness of the contribution of Subsidiary Bodies to the IOC Biennial Strategy;

**Invites** the Chairperson of the IOC to forward to the Director-General of UNESCO this Resolution along with IOC's answer to questions 13 and 21 of the questionnaire on the preparation of the UNESCO Draft Programme and Budget for 2010–2011 (35 C/5);

**Urges** Member States of the IOC (including through their Permanent Delegations to UNESCO) to support the reinforcement of the IOC within UNESCO Draft 35 C/5.

#### Annex to Resolution EC-XLI.5

#### **Biennial Strategy 2010–2011**

IOC Resolution EC-XXXIX.1 and the text annexed to that Resolution provided the basis for the IOC Medium-Term Strategy 2008–2013,

The Strategic Programme Objectives of the Draft Medium-Term Strategy of UNESCO 2008–2013 give full consideration to the IOC Medium-term Strategy and High-Level Objectives, in particular through Biennial sectoral priority 1: Promoting research and technical capacity-building for the sound management of natural resources and for disaster preparedness and mitigation.

#### **HIGH-LEVEL OBJECTIVES**

Responding to its mission in this context and guided by the strategic thrusts, described above, of the IOC Medium-Term Strategy, and noting the role of IOC as the competent body and focal point for ocean matters in the UN system, responding concretely in its mandated areas of activity to the Johannesburg Plan of Action, the UN Millennium Development Goals, and acting in conformity with international law, including relevant UN Conventions, and with UN General Assembly Resolutions, the IOC, through its Medium-Term Strategy 2008–2013 and Biennial Strategy for 2010–2011, will address the following High-Level Objectives:

#### ***High-level objective 1 – Prevention and reduction of the impacts of natural hazards***

Recognizing the IOC's role, for over four decades, of co-ordinating the Pacific Tsunami Warning System, the United Nations has mandated the IOC as the lead agency for coordinating the planning and implementation of tsunami early warning and mitigation systems. Following the rapid progress in installing the Indian Ocean Tsunami Early Warning and Mitigation System, the IOC has expanded its action to other regions (north-eastern Atlantic and Mediterranean; Caribbean) and is contributing to the development of a global system for addressing multiple marine hazards, thus supporting the overall objective of

contributing to disaster preparedness, mitigation and recovery. Particular attention is being focused on coastal inundation in the wake of the 2008 Myanmar storm-surge tragedy.

#### **Actions**

1a. Promote integrated and sustained monitoring and warning systems for coastal and oceanic natural hazards, in close coordination with other relevant intergovernmental organizations, where appropriate, using enhanced coastal and ocean networks, including education and training activities.

1b. Educate communities at risk with respect to natural hazards impact prevention, preparedness and mitigation measures.

#### ***High-level objective 2 – Mitigation of the impacts of and adaptation to climate change and variability***

IOC will continue its role as an intergovernmental advocate, coordinator, and partner in international scientific research to improve the understanding of the Earth System, by contributing to the improvement of prediction of climate and its effects on marine ecosystems and resources through sustained ocean observation and process studies at regional and global scales and by contributing to the development of science applications to mitigate the effects of climate change, including sea-level rise. Specific attention will be given to mitigating the impacts of issues associated with climate change in the Arctic, within the scope of IOC expertise.

#### **Actions**

2a. Increase the understanding of the ocean's role in climate variability and climate change.

2b. Contribute to the better prediction of climate through ocean observations and process studies, at regional and global scales.

2c. Increase the understanding of the impacts of climate change and variability on marine ecosystems and their living resources.

#### ***IOC High-level objective 3 – Safeguarding the health of ocean ecosystems***

IOC will leverage the science and capacity to monitor and safeguard the health of ocean ecosystems and services, by addressing the conservation and sustainable management of coastal resources and marine biodiversity. In this regard, IOC will continue harmonizing its capacity-development activities according to long-term capacity-development principles that improve the ability of Member States to apply sound scientific methods to the sustainable management of their resources.

#### **Actions**

3a. Actively contribute to the "Regular Process for Global Reporting and Assessment of the State of the Marine Environment, including Socio-economic Aspects".

3b. Further develop the research and monitoring required for the prevention of marine environment degradation, and the maintenance of biodiversity and the sustainable use of marine habitats.

3c. Identify and develop the capacity-building necessary for maintenance of healthy ocean ecosystems focusing on the regional needs.

***IOC High-level objective 4 – Management procedures and policies leading to the sustainability of coastal and ocean environment and resources***

IOC will assist Member States, at their request, in the management of their marine and coastal environment, focusing on regional needs and building national capabilities, by translating research results into management approaches and wise practices, through spatial and other planning approaches demonstrated through pilot projects in target regions, by providing the necessary training and assistance to implement them and by strengthening IOC Regional Subsidiary Bodies to fully ensure the regional implementation of the IOC Medium-Term Strategy 2008–2013. A number of specific actions arising from the consideration of the Future of IOC and the celebration of the 50<sup>th</sup> anniversary of IOC will be undertaken to strengthen the operation of the IOC and its governance and to raise awareness of, and involvement in, IOC's programme of action.

**Actions**

4a. Enhance regional cooperation and involvement of the Member States through capacity-building and transfer of technology and measures to strengthen the capabilities of the IOC Regional Subsidiary Bodies and IOC decentralized offices.

4b. Facilitate science related to ocean and coastal resource management.

4c. Enhance development and implementation of decision-support tools that improve integrated ocean and coastal management.

Resolution EC-XLI.6

**IOC INTERGOVERNMENTAL COORDINATION GROUPS (ICG) FOR TSUNAMI WARNING AND MITIGATION SYSTEMS FOR THE PACIFIC OCEAN (PTWS), THE INDIAN OCEAN (IOTWS), NORTH-EASTERN ATLANTIC, MEDITERRANEAN AND CONNECTED SEAS (NEAMTWS), AND CARIBBEAN AND ADJACENT REGIONS (CARIBE EWS)**

The Executive Council,

**Recalling** IOC Resolutions XXIII-12, XXIII-13, XXIII-14 and EC-XXXIX-8, which established the Intergovernmental Coordination Groups and decided that the IOC shall provide the Secretariat support for these ICGs: the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS), the Tsunami Early Warning and Mitigation System in the North-eastern Atlantic, Mediterranean and Connected Seas (ICG/NEAMTWS), and the Pacific Tsunami Warning System (ICG/PTWS),

**Further recalling:**

- (i) IOC Resolution XXIV-14, establishing the Working Group on Tsunamis and other Ocean Hazards Warning and Mitigation Systems (TOWS-WG)

- (ii) IOC Resolution XXIV-13, instructing the IOC Executive Secretary to prepare draft common requirements for regional centres in close co-operation with the ICGs,

**Reaffirming:**

- (i) that the IOTWS, CARIBE-EWS, NEAMTWS and PTWS will be coordinated networks of national systems and capacities and will be part of global early warning systems for ocean-related hazards
- (ii) that Member States have responsibilities to issue warnings within their respective territories, and
- (iii) the IOC commitment to the free and unrestricted exchange of tsunami-relevant real-time observational data in accordance with the UNESCO/IOC Oceanographic Data Exchange Policy and without prejudice to the sovereignty of Member States,

**Noting** paragraph 112 of the United Nations General Assembly Resolution A/61/222,

**Acknowledging** with appreciation the ongoing and dedicated financial and other support provided by Member States and other donors to the operation of the Tsunami Co-ordination Unit,

**Having considered:**

- (i) the Executive Summary of the 22<sup>nd</sup> Session of the ICG/PTWS (ICG/PTWS-XXII/3s)
- (ii) the Report of the 4<sup>th</sup> Session of the ICG/NEAMTWS (ICG/NEAMTWS-IV/3)
- (iii) the Executive Summary of the 3<sup>rd</sup> Session of the ICG/CARIBE-EWS (ICG/CARIBE-EWS-III/3s)
- (iv) the Executive Summary of the 5<sup>th</sup> Session of the ICG/IOTWS (ICG/IOTWS-V/3s)
- (v) the Executive Summary of the 1<sup>st</sup> Session of the Working Group on Tsunamis and other Ocean Hazards Warning and Mitigation Systems (TOWS-WG)

**Endorses** the reports and **requests** the Executive Secretary to support the implementation of the actions contained therein, as appropriate;

**Adopts** the Global Ocean-related Hazards Warning and Mitigation System Framework document (Annex IV of the report IOC/TOWS-WG-I/3);

**Expresses** its gratitude to:

- (i) the Government of Ecuador for having hosted the 22<sup>nd</sup> Session of the ICG/PTWS in Guayaquil, 17–21 September 2007
- (ii) the Government of Portugal for having hosted the 4<sup>th</sup> Session of the ICG/NEAMTWS in Lisbon, 21–23 November 2007
- (iii) the Government of Panama for having hosted the 3<sup>rd</sup> Session of the ICG/CARIBE-EWS in Panama City, 12–14 March 2008
- (iv) the Government of Malaysia for having hosted the 5<sup>th</sup> Session of the ICG/IOTWS in Putrajaya, 4–8 April 2008,



**Expresses** its appreciation to NOAA and JMA for providing Interim Tsunami Advisory Information Service for the Indian Ocean, and **encourages** them to continue to provide this information;

**Endorses** with appreciation the Interim Tsunami Advisory Information Service for the South China Sea provided by the Pacific Tsunami Warning Centre (PTWC), the West Coast Alaska Tsunami Warning Center (WCATWC) and Northwest Pacific Tsunami Advisory Center (NWPTAC);

**Encourages** the Member States around the South China Sea and other regional seas, as appropriate, to actively promote the development, establishment and sustained operation of national and sub-regional Tsunami Warning and Mitigation Systems within the framework of ICGs;

**Welcomes** the generous offers of:

- (i) the Government of Samoa to host the 23<sup>rd</sup> Session of the ICG/PTWS, in February 2009
- (ii) the Government of Greece to host the 5<sup>th</sup> Session of the ICG/NEAMTWS, in November 2008
- (iii) the Government of France to host the 4<sup>th</sup> Session of the ICG/CARIBE-EWS in Martinique, in March 2009
- (iv) the Government of Thailand to host the 6<sup>th</sup> Session of the ICG/IOTWS, in April 2009;

**Reaffirms** the need for common requirements for regional tsunami advisory and watch providers centres of the Tsunami Warning and Mitigation Systems, while recognizing that different ocean regions have certain characteristics that are unique and that require specialized approaches;

**Underlining** the important role of the TOWS-WG, as defined in its Terms of Reference, to further the IOC Strategic Plan,

**Noting** the need to harmonize regional ICG structures to create efficiency and facilitate exchange of knowledge and information among the ICGs,

**Requests:**

- (i) the ICG Chairpersons to work with the Member States and the TOWS Working Group towards developing harmonized working group structures that map easily across ICGs and provide a foundation for inter-operability and **further requests** the ICGs and other subsidiary bodies identified in the TOWS report to consider carefully the report recommendations and respond, as appropriate, at the next meeting of the TOWS-WG
- (ii) the Executive Secretary to prepare, in consultation with the Co-Chairpersons of the TOWS-WG and the ICG Chairpersons, a strategy and plan to support implementation of the Global Ocean-related Hazards Warning and Mitigation System Framework and TOWS-WG recommendations, to be provided to the TOWS-WG at least one month in advance of its next meeting
- (iii) GLOSS to compile a global core sea level network for tsunami and other ocean-related hazards, building on the requirements of the ICGs, and coastal GOOS sea level measurement and reporting requirements; further building on the existing GLOSS core network for climate wherever possible; and taking into account broad

requirements for prediction, detection, and post-hazard assessments, with initial priority given to the Caribbean region and the North African coast of the Mediterranean

(iv) TOWS-WG:

- (a) to identify, in close cooperation with the Chairpersons of the ICGs, common practices and procedures used by each ICG's tsunami advisory and warning centres, in order to promote interoperability, with a view to preparing recommendations for IOC principles, criteria, and procedures for ocean-related hazards warning and mitigation systems
- (b) to prepare a detailed report on the implementation of the actions and recommendations specified in the present Resolution, as well as on progress in the harmonization of regional tsunami warning and mitigation systems, for consideration by the Assembly in 2009;

**Recommends** to the Assembly to continue the TOWS-WG for the further intersessional period, with the same mandate and membership.

## ANNEX III

### ADDRESSES

#### A. Opening address

**by Mr Koïchiro Matsuura**

**Director-General of the United Nations Educational, Scientific and Cultural Organization  
(UNESCO)**

24 June 2008

Mr President,

Ladies and Gentlemen,

It is my great honour to open this 41<sup>st</sup> session of the Executive Council of the Intergovernmental Oceanographic Commission of UNESCO.

You have a very full agenda before you and many important topics to cover. Let me offer a few observations on some of the key issues under discussion.

As you know, the Working Group on the Future of the IOC met in Paris this February to identify options for enhancing IOC's status and role. I am pleased to note that the Working Group agreed that the future of IOC should unquestionably remain, and be reinforced, within UNESCO. This is something I feel very strongly about, as do UNESCO's Member States, who at last year's General Conference expressed unanimous support for IOC and decided to increase its resources for the 2008–2009 biennium by US\$ 500,000. I took immediate steps to allocate this additional funding, so that it could be taken into account in the preparation of workplans at the very start of the new biennium.

One important consideration, as we look ahead, is how to strengthen the Commission's role within UNESCO in terms of intersectoral and interdisciplinary cooperation, drawing on IOC's strong technical expertise in the ocean sciences, ocean services and capacity development.

This has already been reinforced in the current biennial programme and budget (the 34 C/5) and the medium term strategy for 2008–2013 (the 34 C/4). I think, for example, of the growing collaboration between IOC and international programmes such as the Man and Biosphere (MAB) and the International Hydrological Programme (IHP) in the fields of marine biodiversity and the sustainable management of coastal aquifers.

We should look at ways to extend such collaboration further in the future. In this regard, I am pleased to see that the Executive Council will be examining this week the interaction between IOC and other UNESCO marine-related activities, including the Marine Programme of the World Heritage Centre and the Secretariat of the Convention on the Protection of Underwater Cultural Heritage.

Multidisciplinarity is indeed one of UNESCO's great assets in addressing complex scientific and societal issues in the field of the environment, including those related to climate change.

In April this year, UNESCO's Executive Board approved a draft strategy for action on climate change, which highlights how the Organization can contribute to global efforts to meet this pressing challenge. The strategy draws on the Organization's longstanding work in advancing climate science and observations, as well as our expertise in mitigation and adaptation. It also focuses on the valuable role that a multi-sectoral Organization like UNESCO can play in addressing the broader educational, cultural and social aspects of global climate change.

These human dimensions are important, in particular as societies grapple with the challenge of learning to live with the impacts of global warming.

IOC's work is clearly pivotal to UNESCO's climate change strategy. The Assistant Director-General of the IOC Secretariat, Patricio Bernal, is the Executive Secretary of the Intersectoral Task Force on Climate Change, which I chair and which leads UNESCO's strategic thinking on this issue. I have also asked Mr Bernal to lead the Intersectoral Platform on Climate Change, which will be instrumental in ensuring the effective implementation of UNESCO's action on climate change.

IOC has contributed significantly to building, and constantly improving, the global knowledge base on climate change, underscoring the key role that oceans play in regulating climate. Here, I should highlight in particular IOC's support to the World Climate Research Programme and its input to the work of the Intergovernmental Panel on Climate Change.

Furthermore, IOC, by coordinating the regular, real-time gathering of ocean data through the Global Ocean Observing System, performs an essential function under the United Nations Framework Convention on Climate Change and the Kyoto Protocol.

You will hear more on this tomorrow from Mr Youssef Nassef from the Secretariat of the Convention. Climate change and the marine environment is also the subject of this year's extended Roger Revelle Lecture Series, and I very much look forward to the results of the debate.

Excellencies, Ladies and Gentlemen,

Let me now turn to another core activity of IOC.

Four years after the Indian Ocean tsunami, much progress has been made. With IOC's support, and a great deal of hard work and investment, Member States have now established tsunami warning systems in all four oceans. This is a remarkable and truly collective achievement.

For the Indian Ocean, a plan has been agreed for the Indian Ocean Tsunami Warning and Mitigation System to take over full responsibility by 2011. This will replace the interim advisory service currently provided by the Pacific Tsunami Warning Centre in Hawaii and the Japanese Meteorological Agency in Tokyo.

The tsunami off Sumatra last September was the first live test of the Indian Ocean System. The responses and analyses by 25 Member States of the warnings issued by the interim advisory service have provided detailed insights into performance, helping to identify gaps and suggest remedies.

The Indian Ocean tsunami highlighted again the need for national governments, and their populations, to be aware of and prepared for the threat of natural ocean-related hazards. This starts with having in place sustained sea level and seismic observation systems. It also requires agreed and common standards for providing advisory and warning information, as well as national tsunami centres that have the operational capacity to receive warnings 24 hours a day, 7 days a week, and of disseminating these warnings to the relevant authorities and the general public.

A comprehensive approach is imperative in preparing people for emergency situations, as the tropical cyclone Narghis in Myanmar and the Sichuan earthquake in China have shown. Recent disasters tragically underscore the need to develop fully functional end-to-end warning systems, which include timely and dedicated measures to enhance communication, awareness and preparedness at all levels in Member States. This is vital in order to save people's lives and livelihoods in the event of a disaster.

Last December, IOC signed an agreement with INMARSAT, the leading provider of global mobile satellite communications, to further upgrade the Indian Ocean system through a broadband global area network transmission service for 50 sea-level stations. These stations will now be able to transmit data every 15 minutes via meteorological satellites, helping to carry warning information much more quickly to coastal populations at risk.

The tsunami warning systems for other regions are also developing fast and effectively. In particular, I am pleased to note that the European component of IOC's North-East Atlantic and Mediterranean and Connected Seas Tsunami Warning System was recognized by the European Union's Council of Home and Justice Ministers in December 2007 as the European Tsunami Warning System, covering all ocean-related hazards.

IOC's work on tsunamis has high impact and visibility worldwide. It demonstrates the role that intergovernmental organizations, like UNESCO, can play in providing operational support to Member States on a regional scale, as well as the importance of international cooperation in responding to ocean hazards. Experience shows that effective tsunami warning systems cannot be achieved by individual countries operating alone.

IOC's experience also highlights the need for UN-led work at the international level to be supported and followed up by countries, if it is to be truly sustainable.

Indeed, when the UN General Assembly last year confirmed the IOC's mandate for establishing and co-coordinating tsunami warning systems, it also re-affirmed that Member States should responsively interact with each other through nominating tsunami national contacts. National leadership and ownership are paramount to the success of any early warning system.

Excellencies, Ladies and Gentlemen,

In this regard, I would like to turn to several measures being taken to strengthen IOC's regional delivery, including our efforts to strengthen national capacity in the ocean sciences. Here, I am working with the Executive Secretary of IOC to ensure the most effective synergy between IOC's decentralized network and UNESCO Field Units.

In the current biennium, IOC will be reinforced through the provision of one additional permanent post for the Head of the Secretariat for the IOC Sub-Commission for the Western Pacific at the UNESCO Regional Office in Bangkok, Thailand, with expected effect from the autumn.

Increased support is also being extended to IOC Regional Committees, ensuring greater overall institutional and programmatic coherence and enhancing IOC's regional presence, in particular in Africa, which is a top priority for UNESCO. Through its Cluster Offices in Accra, Nairobi and Doha, UNESCO is also providing administrative assistance to the IOC Regional Committees for, respectively, the Central Eastern Atlantic, the Western Indian Ocean, and the Northern Indian Ocean. Similar arrangements have been made for the IOC Sub-Commission for the Caribbean through the UNESCO Regional Office in Kingston, Jamaica.

This strengthened regional presence is enabling IOC to reinforce its support to capacity-building in Member States, again with a specific focus on Africa.

At the level of state-funded marine science institutes, professional workshops have engaged participants at three levels – directors to become more effective leaders; project managers to write better proposals; and project scientists to gain more tailored training.

Between January 2007 and today, leaders from more than 65 institutes in 35 countries have attended these workshops, covering virtually all sub-Saharan coastal nations. This training has

in many cases made it easier to improve the delivery of more specific interventions. A specific case has been the training to develop inundation maps for marine related hazards, in which twelve countries have participated including seven African states bordering the Indian Ocean.

Through the Ocean Data and Information Network for Africa (ODINAFRICA) project, IOC is assisting Member States to improve the management of coastal and marine resources by enhancing oceanographic data flows and strengthening national capacities to analyse and interpret them. In modelling, IOC has worked alongside institutes to develop their capabilities so that they can provide the science to underpin policies for safe and sustainable development in the coastal zones of their countries.

Initiatives of special note include the large-scale funding secured for projects to address coastal erosion and the impacts of climate change, which are being conducted in West Africa and are under preparation for Central Africa. Similarly, collaboration is also under way with countries bordering the Red Sea and the Gulf of Aden, for the management of their large marine ecosystem and the monitoring of coastal zones.

There is one final aspect of IOC's country-level action that I would like to highlight, and which is of particular urgency. Following resolutions of the UN General Assembly and UNESCO, IOC, in cooperation with UNEP and the UN Division for Ocean Affairs and the Law of the Sea (DOALOS), is assisting Member States in exercising their rights and responsibilities to determine the outer limits of their continental shelf under the Law of the Sea Convention.

So far, very few Member States have submitted their claims to the Commission. However, I am pleased to say that a number of Africa countries that are actively involved in preparing their submissions will share their experiences with you later this week. This includes Gabon, Ghana, Kenya, Madagascar, Mauritius, Nigeria and South Africa. I hope that their example will encourage other Member States to expedite their submissions and secure their access to a major source of mineral resources.

The deadline for making claims has been set for 13 May 2009. However, last week the 18th meeting of the States Parties to the Law of the Sea Convention decided that this condition could be satisfied by Member States transmitting to the Secretary-General a preliminary submission. This would provide information indicative of the outer limits of the continental shelf beyond 200 nautical miles and a description of the status of preparation and intended date of making a submission in accordance with the requirements of article 76 of the Convention. Countries can then provide a complete submission on the date most favourable to them.  
Excellencies, Ladies and Gentlemen,

IOC is a source of great pride for UNESCO, and we are doing much to support the programme in terms of financial and human resources. However, there are obvious limitations to the support that can be provided from the regular budget. Extrabudgetary funding is therefore, and will remain, vital if IOC is to fulfil the high expectations of its Member States.

As you may know, in order to address priorities for funding from bilateral and multilateral donors in a more strategic way, UNESCO has developed an "Additional programme of targeted/projected extrabudgetary activities". IOC has prepared a number of proposals for extrabudgetary funding under this programme. Therefore, I would like to invite Member States to consider their voluntary contributions from this broader perspective, rather than at the level of small fragmented projects.

Excellencies, Ladies and Gentlemen,

To conclude, let me wish you a very fruitful meeting. I look forward to hearing about your discussions and to receiving the recommendations of this Executive Council. I am particularly interested to hear your proposals for activities to celebrate, here in Paris and worldwide, the first 50 years of the Commission in 2010. This will be an occasion to take stock of the great achievements of the Commission, but also to look forward to the challenges ahead. Today, more than ever, we measure the importance of IOC's contribution to achieving safe and sustainable development. Let us therefore be bold in our vision for this important anniversary, and together set the stage for another 50 years of scientific excellence and leadership.

Thank you very much.

(Source: DG/2008/053)

B. Statement

**by Lic. Javier A. Valladares,  
Chairman of the Intergovernmental Oceanographic Commission of UNESCO**

24 June 2008

Ladies and Gentlemen,

For the first time as the Intergovernmental Oceanographic Commission's new Chairman, it is my pleasure to summarize the events during this intersessional period. Although it is now the twenty-first century, how difficult it is still to exchange ideas at a distance, especially when these ideas get coloured with the passion we all share for the ocean sciences.

During this intersessional period, I participated in the First JCOMM Scientific and Technical Symposium on Storm Surges in Seoul, Republic of Korea. I had the opportunity to see the remarkable enthusiasm of this group of oceanographers and meteorologists, as well as the commitment of our partners at the World Meteorological Organization. During the meeting in Seoul, participants agreed on recommendations and actions to be undertaken in relation to research and development on short- and long-term storm surge prediction, the transition from research to operations, storm-surge-related data management and observations, as well as capacity-building and outreach, including the 'JCOMM Guide to Storm Surge Forecasting' and its effective linkage to ICAM hazard guidelines.

The need for interdisciplinary cooperation and international coordination was stressed and it was further recommended that JCOMM foster a forum for enhanced and rapid exchange of information and ideas on surge modelling among existing and future national efforts. The importance of developing risk assessments and providing related expert recommendations to UNESCO/IOC, the World Meteorological Organization and national agencies was also recognized.

Regarding forecasts, the Seoul meeting highlighted the need to further develop fully coupled basin/coastal/tide/wave/atmosphere models and programmes for continuous improvement, including coupled hydrological, hydraulical and surge models for inundation. The meteorological research community was also addressed concerning the requirement for fully coupled models to improve numerical weather predictions for tropical cyclones, extra-tropical storms and winds in coastal areas.

I then had the great pleasure of visiting the Republic of Korea again to participate in the World Ocean Forum in Bussan. There, I verified how important it is for Member States to be fully committed to ocean issues. I hope the attitude and the interest that Korea demonstrates in ocean issues extends to other regions.

As usual, towards the end of 2007, another IOC Officers meeting took place in order to follow up on the most outstanding topics in the organization. At this meeting we decided to modify the way topics are presented and distributed in our plenary meetings with the aim of making them more comprehensible, more related to our adopted main lines of action and easier to supervise. This is a decision we now put forward to you, the Member States, for your consideration.

Special attention was also given during the IOC Officers meeting to the celebration of the 50<sup>th</sup> anniversary of our Commission, approving some initiatives subject, of course, to the final agreement of this Executive Council, as follows:

- To confirm a Publishing Committee to publish a historical summary of our Commission.



- To present before this Executive Council an outline of conferences and events to be held during 2009 and 2010 (a point that will receive more in-depth treatment later at this meeting).

Another point with these celebrations is that of the ties and pins that we will make available very soon.

Also during this period I had the occasion of participating in the meeting of the Working Group on the Future of the IOC, chaired intelligently by Dr Savi Narayanan, our Vice-Chairperson for Group I, and on which she will be reporting to this session of the Executive Council.

What a great opportunity it was to have participated in this meeting. It was clear that we not only had a problem, we also had different interpretations of it. However, having certain management tools on the meeting table, such as the questionnaire drawn up by ACTIS, along with the experience of delegates who have been involved with the IOC for many years, and the reports of similar groups previously summoned (e.g. DOSS), the Working Group searched for acceptable solutions.

I really did believe there was a will amongst Member States to form a stronger bond through an agreement on data and information or, more simply, to increase the hierarchy of our current situation as a specialized organization in marine scientific research. We had a questionnaire that supported an initiative in this sense, but clearly during the meeting no agreement was reached as to the “why” or the cost/benefit it demands.

But on this topic I believe we should continue discussions.

Therefore this Working Group has enriched all those who participated and allowed us to find an acceptable solution for the coming years.

I also attended the Fourth Conference on Oceans, Coasts and Islands in Hanoi, Viet Nam. The Conference focused on ecosystem-based management and integrated coastal and ocean management to implement the targets set by the World Summit on Sustainable Development.

During this Executive Council we will discuss a document for ABE-LOS that will require our best abilities to manage political matters.

I had the opportunity to join a meeting of the Permanent Commission for the South Pacific (CPPS) in Guayaquil, Ecuador and share views with stakeholders of the Southeastern Pacific, followed by the Fourth Meeting of the Regional Alliance in Oceanography for the Upper Southwest and Tropical Atlantic (OCEATLAN), held in Rio de Janeiro, Brazil, back-to-back with the twelfth International South Atlantic Buoy Programme biannual meeting, both sponsored by the Rio GOOS Office.

I am also looking forward to representing the Commission at the 50<sup>th</sup> anniversary symposium of the Scientific Committee on Oceanic Research (SCOR), in October 2008.

I would like to end my statement by extending my grief to the people of China, Myanmar and Philippines who have lost their families, their homes and their livelihoods following recent tragic events there. Only a few years have passed since the terrible tsunami of December 2004, and in the wake of such momentous events there are always questions. How did this happen? What are the implications? What should we do? Such questions, indeed, are further reminders of the importance of early warning systems and the value and significance of increased and more precise forecasting.

C. Canadian statement  
in response to the report by the Executive Secretary  
on Programme and Budget implementation  
**by Dr Wendy Watson-Wright,**  
**Assistant Deputy Minister, Fisheries and Oceans Canada**

24 June 2008

Good morning ladies and gentleman.

It is a real pleasure to express my appreciation to the Executive Secretary, Dr. Patricio Bernal for his report on the programme and budget of the Commission, and his responsiveness to the requests from the Member States for better articulation of how IOC priorities are linked to its budget.

50th Anniversary

In Canada's view, IOC has much to be proud of. The IOC's role in global ocean sciences and services has clearly been recognized by the international community.

The IOC has provided leadership and a forum for international coordination and cooperation in ocean science and services over the past fifty years "to promote scientific investigation with a view to learning more about the nature and resources of the oceans through the concerted action of its members". IOC's leadership in the Tsunami Warning Systems developments, Assessments of Assessments, the Year of the Ocean, and many other programmes and activities have had very positive impacts on all facets of oceanography around the world. IOC had the wisdom and the foresight to recognize the importance of data management, and established IODE to provide a forum to help safeguard global ocean databases for current and future generations, and provide access to them in a timely manner. The Ocean Data and Information Network, or ODIN, is a natural blend of IODE and IOC's capacity-building programmes and has helped many nations in Africa, the Caribbean and other regions of the world.

IOC has served the international community well and deserves to celebrate its achievements. The upcoming 50<sup>th</sup> Anniversary of IOC provides us with an excellent opportunity to celebrate IOC's contributions, to enhance the visibility of IOC among the scientific community as well as policy-makers and industrial partners. It also provides a natural milestone to reflect, plan and prioritize IOC's programmes and chart its course for the future.

Canada will be proud to participate in the planning and celebrations to mark the 50<sup>th</sup> Anniversary of IOC as well as to help guide it towards a bright future.

Observations

Given that oceans cover 70% of the globe, we are really 'Planet Ocean' more than we are Planet Earth, and these oceans are undergoing significant change and variability. Clearly, a global approach will be necessary to understand and predict these changes and to develop mitigation strategies. Recognizing the need for intergovernmental coordination in marine science, Canada has invested considerable effort to help design and implement the Global Ocean Observing System. Canada was and still is a major contributor to GOOS, and has made significant contributions to the implementation of, for example, the Argo pilot programme. The Argo programme has demonstrated that the global community can come together to launch an innovative programme of this type. This programme has met its design goals, having deployed the 3000<sup>th</sup> float in 2007 and is in my opinion, no longer a pilot but a fully operational programme. Canada is fully committed to this programme and will continue to provide its strong support, both at the national and international levels.

Canada strongly believes that JCOMM is the right mechanism to support the implementation of the GOOS. The excellent collaboration between JCOMM and IODE is particularly noteworthy, and has created a much needed synergy in data management. Canada will continue to provide strong support to JCOMM and IODE and would like to see a clear commitment on the level of effort and budget for these programs in the IOC programme and budget.

#### New technologies

Observing the oceans, particularly in remote areas such as the Arctic, is expensive and challenging. We are at a critical period where many innovative technologies are available for piloting or under development. Canada has undertaken a number of key programmes, which will result in significantly enhancing our observational capabilities and revolutionize the real-time collection of *in situ* data. One such programme is the Ocean Tracking Network, an international programme headquartered at Dalhousie University in Halifax, Nova Scotia, and will utilize leading-edge "made-in-Canada" technology. The network will establish "listening curtains" which will track the movement and behaviour of diverse marine species – salmon to turtles to whales – in 14 ocean regions covering the entire planet. Another innovative programme is the underwater observatory of the VENUS and NEPTUNE programmes headquartered at the University of Victoria on Canada's west coast. This network of instrumentation has so far laid over 800 km of electro-optic cable in the Pacific Ocean. We are also investigating the feasibility of applying the Unmanned Underwater Vehicles for bathymetric and water-column surveys, especially in the high Arctic. These automated methods of data collection, supplemented by synoptic-scale remote sensing and satellite capabilities will result in comprehensive data sets available for scientists, engineers and policy-makers, in a way never before possible.

Canada urges IOC to lead the development of long-term strategies for establishing data collection standards, for data management, and for the delivery of products and services associated with these technologies. Of course, Canada is quite willing to assist in this process.

#### Arctic

Today the Arctic has become one of Canada's highest priorities.

Nowhere is the evidence of climate change more apparent than in the Arctic. As a result, we need to better understand how the Arctic is changing, to assess the pending impacts and develop adaptation strategies. Increased national and international commitment to sustained and coordinated observing systems in the circumpolar Arctic is essential to achieving this.

Not only is climate change immensely important in the Arctic, but what happens in the Arctic has impacts on the rest of the world. These climatic effects have very observable impacts on fish habitats and migration patterns due to ocean temperature changes, while ocean acidification is affecting bio-diversity and fish stocks.

So what is Canada doing in the Arctic? The Sustained Arctic Observing Network, for example, is one effort to address cross-cutting issues such as biodiversity of the Arctic, climate change, contaminants, human health, natural resources, and sustainable communities. The data from this network should form an essential contribution to IOC observations in the northern oceans.

The Government of Canada has recently announced commitments to our Arctic Ocean region, including a new polar class icebreaker with superior icebreaking capabilities. In addition, Canada has announced plans for establishing a High Arctic Research Station that will serve the world in advancing all sciences, including ocean science, in the Arctic.

#### Tsunami

Our oceans offer great opportunities, yet at the same time great challenges.

The importance of increasing our understanding of the oceans is reinforced when faced with the devastating effects of tsunamis and rapid sea-level rises, as observed with the catastrophic tsunami in the Indian Ocean and more recently with the Myanmar storm surges. I am encouraged by the attention and funding now being addressed to tsunami warning in this area and elsewhere in the world.

#### Future of IOC

Canada strongly believes that IOC is on the right track and it has lots to offer. In Canada's opinion, the IOC has still considerable flexibilities within UNESCO. IOC needs to take advantage of every flexibility it has and every opportunity that is available to enhance its visibility and programme delivery. It clearly needs to increase its recognition within the UN system and enhance collaboration with other global organizations. Many of you may be aware that UNESCO has initiated Regional Consultations with National Commissions for UNESCO on the Preparation of the Draft Programme and Budget for 2010–2011 (Draft 35 C/5). I urge the representatives here to develop a clear, concise position statement on the 35 C/5 that the Member States can use to input to the national exercise. This will help to raise unified support in UNESCO.

Once again, I wish to congratulate the IOC for its excellent contribution to the ocean science and services, and I welcome the opportunity to be part of its 50<sup>th</sup> anniversary.

Thank you for the opportunity to say a few words today and I look forward to the outcome of this Executive Committee Session.

ANNEX IV

**THE ROGER REVELLE LECTURES, 2008**  
**Impact of Climate Change on the Marine Environment**

A. The Operational Oceanographic Service for sustainable development  
and management of marine resources:  
a unified approach

Nadia Pinardi

Dept. of Environmental Sciences, University of Bologna,  
and *Istituto Nazionale di Geofisica e Vulcanologia* (INGV), Bologna, Italy

**Summary**—Operational oceanography nowadays embraces the frontier research for ocean monitoring and forecasting, as operational meteorology did in the 1950s and it is continuing to do so today. From the 1990s onwards, the availability of reliable and real-time satellite and in situ data, together with advanced hydrodynamical numerical models, has allowed the development of a system that monitors in an integrated way the ocean variability and forecasts into the future.

The present day monitoring and forecasting systems for the ocean were designed in a prototypical way in the 1980s in limited areas of the ocean, where it was possible to collect synoptic data sets for model initialization purposes. The advent of satellite altimetry, the accurate reconstruction of sea-surface temperature distributions from satellites, and autonomous vehicles for the collection of in situ data, started the development of a global approach to operational oceanography that has been coordinated by the IOC's GOOS programme over the past fifteen years.

Today, operational oceanography systems make available a set of basic, generic services based upon common-denominator ocean state variables that are required to help meet the needs for information of those responsible for marine environment management and protection, civil and military security at sea, monitoring of climate variability and change. It is the science-based approach to the needs for ocean information from our society, organized as a meteorological office for the marine environment.

The initial Operational Oceanographic Service (OOS) is being designed at high resolution because oceans are dominated by mesoscale phenomena, but also because the users are near the coasts where high resolution is needed to describe the processes. The OOS in fact has designed and implemented a scheme that refines the resolution and the processes, from the open-ocean areas to the coasts. The development of modelling techniques for nested and nesting models, two-way coupling between models and multi-model approaches has progressed very rapidly in recent years and these research results form the basis of the OOS.

Another important advance in knowledge that has positively impacted our capability to develop the initial OOS is the development of data assimilation tools to estimate as accurately as possible the initial state of the ocean. Data assimilation in oceanography is challenging because of the model high resolution that makes the flow very nonlinear and the coastal constraint that modifies the correlation between state variables. Data assimilation methods are increasingly used for marine biogeochemical models and data analysis; they are used to quantify uncertainty in the forecasts.

Applications based upon the generic products of the OOS cover real-time emergency management at sea to respond to oil spills, ecosystem modelling for the best estimation and forecast of primary producers' biomass, planning of investments based on realistic scenarios of land-based pollution sources.

Dr Pinardi showed several examples of operational products provided by the Mediterranean Operational Oceanography Network (MOON) project in the Mediterranean. She also outlined the operational services planned in the EU-funded project MyOcean, which will start shortly. The future issues in operational oceanography concentrate on the integration of waves and currents, climate extension of the predictions, uncertainty estimation with ensemble methods, applications for maritime transport safety, ecosystem management, sustainable fisheries and integrated coastal-zone management.

**Professor Nadia Pinardi** holds a Ph.D. in Physical Oceanography from Harvard University, MA, USA, and she is now associate professor of Oceanography at Bologna University, Italy. Her interests range from ocean numerical modelling to data assimilation, numerical modelling of the marine ecosystem and physical-biological interactions. She has written more than eighty papers in peer reviewed journals on a wide range of subjects. The latest topic of her research is the understanding of uncertainties in ocean field estimation and ensemble forecasting with distributed computing networks.

She has coordinated, since the mid-1990s, the development and implementation of the Mediterranean Operational Oceanography Network which is now the European service for ocean monitoring and forecasting. She is a member of the European Environment Agency Scientific Steering Committee and of the European Research Council for Earth Sciences. She was awarded the European Geophysical Union (EGU) Fridtjof Nansen Medal 2007 for Oceanography.

B. Arctic Observations:  
meeting the needs of operational ocean forecasting, climate monitoring  
and all the time-scales in between...

Cecilie Mauritzen

Director, Climate Division, Norwegian Meteorological Institute  
PB 43 Blindern, 0313 Oslo, Norway

**Summary**—Arctic ocean and ice observation was discussed in the context of meeting the needs for precise and accurate climate monitoring, and at the same time: fast (real-time) transfer for initializing operational forecasting. A range of monitoring activities in the Arctic during the International Polar Year was presented, as well as their initial usage. Some experiences gained from 100+ years of atmospheric climatological data quality control and banking were also discussed.

*Question: Do not see scientific interest in Arctic but political. Will that help to sustain the observing system?*

C.M.: A: economic needs are a driver, but economy is bad for nature. So we had better argue for multiple users, and supporters.

*Q.: How optimistic are you to put an observing system into the Arctic?*

C.M.: We need those data to describe the climate; I am more worried about the climate change than about sustainability.

*Q.: most predictability comes from the tropical zone. How much would you attribute to the Arctic?*

C.M.: I personally see more year-to-year changes in the Arctic and do not believe in an Arctic aspect on those time-scales.

**Dr Cecilie Mauritzen** is an oceanographer who specializes in large-scale ocean circulation and its role in earth's climate. She got her Master's degree at the University of Bergen and her Ph.D. is from MIT in Boston (formally: the Massachusetts Institute of Technology/Woods Hole Institution Joint Program in Oceanography), and she has since worked as an oceanographer in the USA, in France, and, since 2002, at the Norwegian Meteorological Institute.

She was a lead author of the IPCC Fourth Assessment report, which was published in 2007. Since its publication she has involved herself actively in communicating the climate issue to the lay public. Scientifically, she is presently leading or involved in four international Arctic projects during the International Polar Year.

## C. Impacts and Responses to Sea-Level Rise

Robert J. Nicholls

Professor of Coastal Engineering, Director of Research, Module Coordinator: Energy and Coasts, School of Civil Engineering and the Environment and Tyndall Centre for Climate Change, University of Southampton, United Kingdom

**Summary**—Sea-level rise is widely seen as a major threat to low-lying coastal areas around the globe. What is not always appreciated is that large populations already live below high tide, including, for example, 10 million people in the Netherlands and 4 million people in Japan. Globally, more than 200 million people live in areas at risk of coastal flooding. Many of these exposed populations depend on artificial flood defences and drainage – Hurricane 'Katrina' reminds us of what happens if those defences fail. While it is widely accepted that sea-level rise is a threat, the actual consequences of sea-level rise remain uncertain and contested. Pessimists tend to focus on possible high rises in sea level and events like 'Katrina', and view our ability to adapt as being limited; they see an alarming future, with widespread human displacement from coastal areas. Optimists tend to focus on lower rises in sea level, stress humanity's ability to adapt (as exemplified by the Dutch and the Japanese) and wonder what all the fuss is about. This talk will focus on understanding the threat and the different views of its importance. It includes consideration of the impacts of rising sea level on coastal areas, as well as the types of responses that might be implemented. These are divided into 'mitigation' (reducing greenhouse gas emissions and hence climate change, via climate policy) and 'adaptation' (reducing the impacts of sea-level rise via coastal management policy). The talk will emphasize that understanding the impacts of sea-level rise crosses many disciplines and embraces natural sciences, social science and engineering.

**Dr Robert J. Nicholls** is Professor of Coastal Engineering, Deputy Head of School (Research) and Co-Director of the University-wide Centre for Coastal Processes, Engineering and Management. His main technical areas of interest are long-term coastal engineering and

management, especially the issues of coastal impacts and adaptation to climate change, with an emphasis on sea-level rise. Particular interests include:

1. Coastal implications of climate change: impacts and responses.
2. Integrated assessment of coastal areas
3. Large-scale coastal morphological behaviour
4. Soft coastal engineering
5. Shoreline management

Currently, he is Programme Leader of the coastal research theme in Phase II of the Tyndall Centre for Climate Change Research and is contributing to the OECD study of "Climate Impacts for Port Cities" "(main report)", NERC QUEST Programme "Global Scale Impacts Study" and he will conduct the coastal assessments in the EU-funded "Climate Costs". He is also contributing to the EA/DEFRA Research project on Coastal Geomorphology.

He participated in the influential and widely cited DEFRA-funded "Fast Track" assessments as the coastal expert, led the SURVAS Project, which reviewed vulnerability of coastal zones around the world from 1999 to 2001. He was a lead investigator on the DINAS-COAST Project, which led to the development of the DIVA tool for sub-national to global vulnerability assessment. He has also provided expertise to national assessments such as the Office of Science and Technology Foresight Flood and Coastal Defence Assessment and the supplementary Pitt Review (published 2008), and international assessments such as the GEF-funded 'Caribbean: Planning for Adaptation to global Climate Change', as well as the United Nations Framework Convention on Climate Change (see below).

He was lead author of chapters in four reports of the Intergovernmental Panel for Climate Change (IPCC) (which was awarded the Nobel Peace Prize in 2007): Second Assessment Report (1996); the Regional Assessment (1998); the Special Report on Technology Transfer (2000); and the Third Assessment Report (2001), and has just finished as the convening lead author for the "Coastal Systems and Low-Lying Areas" chapter in the IPCC 4th assessment (published 2007).

He is an Associate Editor of the Journal of Coastal Research and ICE Civil Engineering. He is author of more than 100 journal papers and book chapters (with 24 journal papers published since 2000).

His Teaching involves undergraduate and postgraduate contributions to both the Civil Engineering and Environmental Science Programmes, most particularly the M.Sc. Engineering in the Coastal Environment. He also leads the University of Southampton involvement in the Erasmus Mundus M.Sc. Coastal and Marine Engineering and Management (CoMEM), which is lead by Delft University of Technology and also involves NTNU (Trondheim), UPC (Barcelona) and City University (London).



## ANNEX V

### TERMS OF REFERENCE OF AN IOC INTERSESSIONAL FINANCIAL ADVISORY GROUP

#### Purpose

To provide advice from IOC Member States to the Chairperson of IOC and to the Assembly and the Executive Council in a transparent and objective fashion on:

- (a) The affordability, sustainability and implementation of the results-based management;
- (b) Financial matters of the Commission;

#### Term

The Financial Advisory Group will be constituted at each Session of the IOC Governing Body and operate for the following intersessional period.

#### Functions

- (a) To advise on the adequacy of the linkage between the results-based management and the IOC Biennial Strategy;
- (b) To advise on preliminary proposals from the Director-General of UNESCO for strategy and draft budgets provided by UNESCO;
- (c) To advise on the adequacy of regular and extrabudgetary resource allocations against expected results; and
- (d) To advise on the overall IOC budget level, taking into account issues of affordability and sustainability.

#### Composition

- (a) An Officer of the Commission serves as chairperson;
- (b) Core membership includes the Chairperson of the Commission and two Officers, selected by the Chairperson;
- (c) Open to all IOC Member States; however, the Executive Council and Assembly, as appropriate, may request the participation of Member States as part of the core membership.

#### Working arrangements

- (a) The Financial Advisory Group will conduct the majority of its business by electronic means;
- (b) If appropriate, the Chairperson may convene a meeting in time, and for a long enough period, to prepare a report prior to the commencement of a session of the Assembly or the Executive Council;
- (c) The Financial Advisory Group will provide a report on all its activities to subsequent sessions of the Assembly and Executive Council, as appropriate;
- (d) Relevant documents should be made available before the Financial Advisory Group meeting, in due time; and

- (e) The Financial Advisory Group should follow procedures for IOC Subsidiary Bodies, seeking to formulate its conclusions and recommendations through consensus.

## ANNEX VI

### REPORT OF THE CHAIRMAN OF THE RESOLUTIONS COMMITTEE

Peter M. Haugan (Norway)

The Resolutions Committee met several times during the present session of the Executive Council to review Draft Resolutions (DRs). I would like to thank the many delegates who contributed their time to the work of the committee. I would also like to thank Ms Aurora Mateos of the IOC Secretariat for assisting with amendments, providing documentation and final preparation of the DRs for translation. The compressed time schedule of the Executive Council (EC) is challenging for all and demands flexibility, in particular for the work of the Resolutions Committee. The tireless efforts of delegates and the secretariat to handle our technical tasks in a practical and efficient manner under these conditions is highly appreciated.

In the IOC Rules of Procedure (IOC/INF-1166), Rule 42, dealing with draft resolutions, is still under revision. Section 9 on Resolutions in the IOC Manual (IOC/INF-785; from 1989) is outdated. The document IOC/EC-XLI/2 Annex 11 entitled *Second Draft Revised Guidelines for the Preparation and Consideration of Draft Resolutions* was prepared and brought to the attention of the EC in advance of the present session. At its first meeting, the Resolutions Committee agreed to consider the guidelines in that document, not as binding, but in an experimental and exploratory fashion with the aim to test their applicability. On the basis of the experience from the work with DRs for this EC, a contribution may be made to the development of a consolidated set of guidelines for future use. The Draft Guidelines encompass many valuable intentions, but it is not clear whether Member States (MSs) would agree to every detail. In cases where the draft guidelines would restrict the formulation of DRs relative to the Rules of Procedure, we have not applied the detailed paragraphs of the draft guidelines as absolute conditions, but rather examined the guiding principles and their applicability in view of the Rules of Procedure.

Based on the experience gained, further discussion of the Draft Guidelines may be needed in the section on allowable sources of DRs as well as the submission procedure. As an example of a practical aspect related to this, we know that the deadline for submission of DRs is tight. It may be helpful for the timely and efficient consideration of DRs if, during the session of the governing body at the closing of each agenda item, it is made clear whether a DR will be submitted, and who will take the lead in working out the DR, in order that contact can be made with the chairperson of the Resolutions Committee as early as possible. In some cases, it may be most appropriate that the Executive Secretary prepares and submits DRs, but in general it will be appreciated if Member States take the lead in drafting work and indicate that they will do so. Also, as pointed out in reports from my predecessor during previous sessions of governing bodies, advance indication of which agenda items are expected to generate DRs would be helpful to MSs, although it is realized that this can not always be foreseen until the debate in the session has been completed.

Specific suggestions for modifications of other sections of the Draft Guidelines have also emerged. Rather than going through details or opening a debate on the Draft Guidelines here, we will transmit suggestions to the Executive Secretary. Mr Chair, I suggest that the Executive Secretary takes steps to further develop these Guidelines, in a process that allows input from Member States, aiming to present guidelines for adoption in a separate agenda item in a future session of a governing body of the IOC. Finalizing the work towards a formally accepted set of revised guidelines, would not only ease the technical work with resolutions in future, but more importantly ensure consistent practice concerning the final form of resolutions, and, by gaining efficiency, leave more time for substantial discussions during sessions of the governing bodies.

The fact that we are in a state of transition means that some technical aspects of draft resolutions, e.g. the preferred use of certain words, have changed over time. Also the intention to keep the initial preambular section to a minimum may be interpreted differently over time, and needs in this and other respects may be different for different topical areas. I ask you all to keep such aspects in mind when adopting the DRs.

I would like to thank all the Member States who have taken part in preparing and submitting DRs for their hard and good work. Several Member States submitted a common DR on the Intergovernmental Coordination Groups for Tsunami Warning and Mitigation Systems, rather than 4 or 5 separate DRs, as has been the practice in the past. This development is in line with the intention, also underlying the Draft Guidelines, to move towards fewer and shorter resolutions. As before, we have had great benefit from the presence of drafters and relevant members of the secretariat for each DR in our meetings to ensure that suggested editorial changes do not alter substantive content.

Finally, Mr Chair, during the adoption of the DRs, I would be pleased to answer any question that may arise concerning changes made by the Resolutions Committee. In a few cases I will also be able to intervene to introduce clarifications to the text that arose after the DR was submitted for translation.

## ANNEX VII

## LIST OF DOCUMENTS

Document Code	Title	Agenda Items	Languages available
<b>WORKING DOCUMENTS</b>			
IOC/EC-XLI/1 Prov.	Provisional Agenda	2.1	E F R S
IOC/EC-XLI/1 Add. Prov. Rev.3	Third Revised Provisional Timetable	2.4	E only
IOC/EC-XLI/2	Action Paper	All	E F R S
IOC/EC-XLI/2 Add.	Action Paper – Addendum: Integrated Coastal Research	--	E F R S
IOC/EC-XLI/2 Annex 1	Report by the IOC Executive Secretary on Programme Implementation	3.2	E F R S
IOC/EC-XLI/2 Annex 1 Add.1	Sister Follow-up Qualitative Report for the IOC	3.2	E only
IOC/EC-XLI/2 Annex 1 Add.2	Implementation of IOC Governing Body Resolutions	3.2	E only
IOC/EC-XLI/2 Annex 2 Rev.	Revised Report on Budget Execution 2006–2007 and Anticipated Funding for 2008	3.2	E F R S
IOC/EC-XLI/2 Annex 3	Fiftieth Anniversary of the IOC: Preliminary Plan and Schedule of Initiatives	4.1.2	E F R S
IOC/EC-XLI/2 Annex 4	Draft IOC Operating Plan for 2008–2009	4.1.3	E F R S
IOC/EC-XLI/2 Annex 5	Report by the IOC Executive Secretary on the Status of IOC Subsidiary Bodies	4.1.3	E F R S
IOC/EC-XLI/2 Annex 6	Draft Rules of Procedure applying to IOC Subsidiary Bodies [CANCELLED]	4.1.3	--
IOC/EC-XLI/2 Annex 7	Relations with Marine-related Programmes of UNESCO	4.1.6	E F R S
IOC/EC-XLI/2 Annex 8	Terms of Reference and Rules of Procedure of the Technical Sub-committee on Ocean Mapping (TSCOM), Sub-committee on Undersea Features Names (SCUFN) and Joint IHO–IOC GEBCO Guiding Committee	4.1.8	E F R S
IOC/EC-XLI/2 Annex 9	IOC contribution to the programme of work on marine and coastal biodiversity of the Convention on Biological Diversity	4.2.4	E F R S
IOC/EC-XLI/2 Annex 10	Preparation of the Draft Programme and Budget for 2010–2011	5.1	E F R S
IOC/EC-XLI/2 Annex 11	Second Draft Guidelines for the Preparation and Consideration of Draft Resolutions	6.	E F R S
IOC/EC-XLI/3 Prov.	Draft Summary Report (issued during the Session in 4 parts)	6.	E F R S
IOC/EC-XLI/4 Prov. Rev.	Revised Provisional List of Documents	2.4	E F R S

Document Code	Title	Agenda Items	Languages available
IOC/EC-XLI/5 Prov.	Provisional List of Participants ( <i>issued during the Session</i> )	--	E/F/R/S
<b>REPORTS OF IOC AND CO-OPERATING BODIES REQUIRING ACTION</b>			
IOC-XXIV/3	Report of the Twenty-fourth Session of the IOC Assembly, Paris, 19–28 June 2007 ( <i>Report of the 40<sup>th</sup> Executive Council included</i> )	All	E F R S
IOC/EC-XXXIX/3	Report of the 39th Session of the IOC Executive Council, Paris, 21–28 June 2006	All	E F R S
IOC Annual Report No. 14	IOC Annual Report, 2007	3.2	E only
IOC/FUTURE-I/3	Report of the First Session of the Working Group on the Future of the IOC	4.1.1	E [Ex. Sum. in F, R, S]
IOC/SC-WESTPAC-VII/3s	Executive Summary of the Seventh Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-VII), Sabah, Malaysia, 26–29 May 2008	4.1.5	E F R S
IOC/ABE-LOS VIII/3	Report of the Eighth Session of the IOC Advisory Body of Experts on the Law of the Sea, UNESCO, Paris, 21–25 April 2008	4.2.2	E/F
ICG/IOTWS-V/3s	Executive Summary of the Fifth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-V), Putrajaya, Malaysia, 8–10 April 2008	4.6.1	E [Ex. Sum. in F, R, S]
ICG/NEAMTWS-IV/3s	Executive Summary of the Fourth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS-IV), Lisbon, Portugal, 21–23 November 2007	4.6.2	E [Ex. Sum. in F, R, S]
ICG/CARIBE-EWS III/3s	Executive Summary of the Third Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions (ICG/CARIBE EWS-III), Panama City, Panama, 12–14 March 2008	4.6.3	E [Ex. Sum. in F, R, S]
ICG/PTWS-XXII/3s	Executive Summary of the Twenty-second Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System, Guayaquil, Ecuador, 17–21 September 2007	4.6.4	Ex. Sum. in E, F, R, S
IOC/TOWS-WG-I/3	Report of the First meeting of the Working Group on Tsunamis and Other Ocean Hazards Warning and Mitigation Systems (TOWS-WG); UNESCO; Paris, 3–4 April 2008	4.6.5	E [Ex. Sum. in F, R, S]

Document Code	Title	Agenda Items	Languages available
<b>INFORMATION AND OTHER REFERENCE DOCUMENTS</b>			
IOC/EC-XLI/Inf.2	Roger Revelle Memorial lectures, 2008: Impact of Climate Change on the Marine Environment. Presentation and Abstracts	2.5	E only
IOC/INF-1252	Progress Report on the Implementation of the Assessment of Assessments (AoA)	3.2	E only
IOC/EC-XLI/Inf.1 (version 3.0)	Statements from Partner Organizations on the Future of IOC	4.1.1	E only
IOC/Future-I comments Japan	Final comments by Japan on the Report of the first meeting of the Working Group on the Future of the IOC (Draft)	4.1.1	E only
IOC/Future-I comments Portugal	Final comments by Portugal on the Report of the first meeting of the Working Group on the Future of the IOC (Draft)	4.1.1	E only
GEO Report (ISBN 978-92-990047-2-2)	The first 100 steps to GEOSS <a href="http://www.earthobservations.org/documents/the_first_100_steps_to_geoss.pdf">http://www.earthobservations.org/documents/the_first_100_steps_to_geoss.pdf</a>	4.1.4	E only
GEO Report (ISBN 978-92-990047-0-8)	The Full Picture <a href="http://www.earthobservations.org/documents/the_full_picture.pdf">http://www.earthobservations.org/documents/the_full_picture.pdf</a>	4.1.4	E only
IMO Publication (ISBN-92-801-4193-7)	The New GESAMP: Science for Sustainable Oceans: A Strategic Vision for the IMO/FAO/UNESCO-IOC/WMO/IAEA/UN/UNEP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection	4.1.7	E only
IOC/INF-1248	(Draft) updated Memorandum of Understanding of the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP)	4.1.7	E only
GESAMP Report and Studies, 77	Report of the 34th Session of GESAMP, Paris, 8–11 May 2007	4.1.7	E [Ex. Sum. in F, R, S]
IOC/INF-1245	IOC and UNCLOS: Progress Report by the Secretariat on the Law of the Sea (2007–2008)	4.2.1	E only
IOC/INF-1251	Draft Strategy on Capacity-development for Delineation of the Outer Limits of the Continental Shelves of African Coastal States	4.2.1	E only
IOC Technical Series, 75 (Law of the Sea Dossier 1)	National Ocean Policy—The basic texts from Australia, Brazil, Canada, China, Colombia, Japan, Norway, Portugal, Russian Federation, United States of America	4.2.1	E only

Document Code	Title	Agenda Items	Languages available
IOC/INF-1222	Procedure for the Application of Article 247 of the United Nations Convention on the Law of the Sea by the Intergovernmental Oceanographic Commission of UNESCO	4.2.1	E/F
WMO/TD No. 1364	The scope of science for the International Polar Year 2007–2008	4.3.1	E only
WMO Bulletin 56 (4) October 2007, 270-283	Observing the polar oceans during the International Polar Year and beyond (Summerhayes et al.)	4.3.1	E only
WMO/TD No. 1405	IGOS Cryosphere Theme Report 2007	4.3.1	E only
GOOS Report 166	The Southern Ocean Observing System (SOOS) Interim Report	4.3.1	E only
IOC-WMO-UNEP/I-GOOS Board-III/3 (GOOS report 163)	Report of the Third Session of the Executive Board of the IOC-WMO-UNEP Intergovernmental Committee for the Global Ocean Observing System, Paris, 12 and 16 June 2007	4.3.3	E only
IOC-WMO-UNEP/I-GOOS Board-IV/3 (GOOS report 167)	Report of the Fourth Session of the Executive Board of the IOC-WMO-UNEP Intergovernmental Committee for the Global Ocean Observing System; Paris, 11 April 2008	4.3.3	E only
IOC-WMO-ICSU/I-GOOS-VIII/3 (GOOS report 165)	Report of the Eighth Session of the IOC Intergovernmental Committee for the Global Ocean Observing System, Paris, 13–16 June 2007	4.3.3	E [Ex. Sum. in F, R, S]
IOC/INF-1247	Report on the IMO London Convention Scientific Group Meeting on Ocean Fertilization	4.3.5	E only
United Nations Document GRAME/GOE/3/2	Report of the Third Meeting of the Group of Experts for the Start-up Phase, Assessment of Assessments of the Regular Process for the Global Reporting and Assessment of the State of the Marine Environment, including Socio- Economic Aspects, Copenhagen, Denmark 15–17 April 2008	4.4.1	E only
United Nations Document A/RES/62/215	Resolution 62/215 of the General Assembly on Oceans and Law of the Sea	4.4.1	E F R S
United Nations Document A/RES/60/30	UNGA Resolution on Oceans and the Law of the Sea	4.4.1	E F R S
IOC/INF-1250	Interaction with the Census of Marine Life (CoML) and Other Research Programmes on Marine Biodiversity	4.4.2	E only
IOC/INF-1249	Coastal Eutrophication: Linking Nutrient Sources to Coastal Ecosystem Effects and Management – The intersection of several UNESCO-IOC Programmes Related to Nutrients	4.4.3	E only



Document Code	Title	Agenda Items	Languages available
IOC/INF-1145	IODE Officers Meeting Summary Report	4.5.1	E only
IOC/INF-1211	IOC Principles and Strategy for Capacity-building	4.5.2	E only
IOC/INF-1212	Implementation Plan for IOC Capacity-building	4.5.2	E only
IOC Technical Series, 77	12 September 2007 Indian Ocean Tsunami Event – Post-Event Assessment of IOTWS Performance	4.6.1	E only
IOC Technical Series 71 (updated online)	Indian Ocean Tsunami Warning and Mitigation System, IOTWS. Implementation Plan, March 2007	4.6.1	E only
IOC Technical Series 73 (updated online)	Implementation Plan for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas (NEAMTWS), 2007–2011	4.6.2	E only
IOC Technical Series 78 (updated online)	Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions—Implementation Plan 2008	4.6.3	E only
IOC/EC-XLI/Inf.3	Recruitment of the Executive Secretary: job announcement (SC-079), Duties and Responsibilities attached to the post, Proposed Clarifications for Consultations with the Director-General on the Appointment of the Executive Secretary IOC (IOC/EC-XXXIX/2 Annex 5)	5.3	E only
IOC/EC-XLI/Inf.4	Aide Memoire World Ocean Conference 2009	--	E only

---

ANNEX VIII

LIST OF PARTICIPANTS

**I. OFFICERS OF THE COMMISSION/  
BUREAU DE LA COI/  
MESA DE LA COI**

*Chairperson*

Lic. Javier VALLADARES  
Dirección de Relaciones Internacionales  
Ministerio de Ciencia, Tecnología e Innovación  
Productiva  
Av. Córdoba 831 Piso 4  
C1054AAH Buenos Aires  
ARGENTINA  
Tel: +54 11 5113 9820  
Fax: +54 11 4312 7203  
E-mail: [javieravalladares@yahoo.com](mailto:javieravalladares@yahoo.com)

*Vice-Chairperson*

Mr Neville SMITH  
Deputy Director (Research & Systems)  
Bureau of Meteorology  
700, Collins St., G.P.O. Box 1289  
Melbourne VIC 3008  
AUSTRALIA  
Tel: +61 3 9669 4444  
Fax: +61 3 9669 4558  
E-mail: [n.smith@bom.gov.au](mailto:n.smith@bom.gov.au); [csr@bom.gov.au](mailto:csr@bom.gov.au)  
**(Also: Chairperson of the sessional Financial Committee; Co-chairperson of the Working Group on Tsunamis and Other Hazards Related to Sea Level Warning and Mitigation Systems)**

*Vice-Chairperson*

Ms Savithri NARAYANAN  
Dominion Hydrographer/Director-General  
Ocean Sciences – Canadian Hydrographic Service  
Fisheries & Oceans Canada  
615 Booth Street, Suite 311  
Ottawa, Ontario K1A 0E6  
CANADA  
Tel: +1 613 995 4413  
Fax: +1 613 947 4369  
E-mail: [savithri.narayanan@dfo-mpo.gc.ca](mailto:savithri.narayanan@dfo-mpo.gc.ca)  
**(Also Chairperson of the sessional Working Group on the Future of IOC)**

*Vice-Chairperson*

Mr Nikolai MIKHAILOV  
Head, Oceanographic Data Centre  
Russian Federal Service for Hydrometeorology &  
Environmental Monitoring  
All-Russia Research Institute of  
Hydrometeorological Information – WDC  
6 Korolev Street,  
Obninsk, Kaluga Region  
RUSSIAN FEDERATION 249035  
Tel: +7 484 397 4907  
Fax: +7 495 255 2225  
E-mail: [nodc@meteo.ru](mailto:nodc@meteo.ru)

*Vice-Chairperson*

Mr Julián Augusto REYNA MORENO  
Capitán de Navío  
Comisión Colombiana del Océano  
Carrera 54 No. 26-50, Piso 4 CAN  
Bogotá D.C.  
COLOMBIA  
Tel: +57 1 222 04 49/36/21  
Fax: +57 1 222 0416  
E-mail: [oceano@cco.gov.co](mailto:oceano@cco.gov.co)

*Vice-Chairperson*

Prof. Chérif SAMMARI  
Head of the Marine Environment Laboratory  
Institut national des Sciences et Technologies de  
la Mer  
28, rue 2 mars 1934  
2025 Salammbô–Tunis  
TUNISIA  
Tel: +216 1 730 420/7127 7735  
Fax: +216 1 732 622  
E-mail: [cherif.sammari@instm.rnrt.tn](mailto:cherif.sammari@instm.rnrt.tn)

*Past Chairperson*

Prof. David T. PUGH  
Marine Science Advisor  
3 Deeside Court, Dee Hills Park  
Chester CH3 5AU  
UNITED KINGDOM  
Tel: +44 (0)23 8059 6611; +44 (0)12 4434 6454  
Fax: +44 (0)1703 596 395  
E-mail: [d.pugh@mac.com](mailto:d.pugh@mac.com)  
**(Also Chairperson of the sessional Working Group on the Preliminary Plan and Schedule of Initiatives for the 50<sup>th</sup> Anniversary of IOC)**

**II. MEMBER STATES OF THE IOC  
EXECUTIVE COUNCIL/ETATS MEMBRES DU  
CONSEIL EXECUTIF DE LA COI/ESTADOS  
MIEMBROS DEL CONSEJO EJECUTIVO DE  
LA COI**

**Argentina/Argentine/Argentina**

*Head of Delegation*

H. E. Mr Miguel Angel ESTRELLA  
Ambassador Extraordinary and Plenipotentiary,  
Permanent Delegate  
Permanent Delegation of Argentina to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 1.45.68.34.38  
Fax: +33 1 43 06 60 35  
E-mail: [dl.argentina@unesco.org](mailto:dl.argentina@unesco.org)

*Representatives*

Mr Miguel Angel HILDMANN  
Minister & Deputy Permanent Delegate  
Permanent Delegation of Argentina to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15, FRANCE  
Tel: +33 1 4568 3436  
Fax: +33 1 4306 6035  
E-mail: [ma.hildmann@unesco.org](mailto:ma.hildmann@unesco.org)

Mr José Luís FERNANDEZ VALONI  
First Secretary  
Permanent Delegation of Argentina to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 1 4568 3437/38  
Fax: +33 1 4306 6035  
E-mail: [jl.fernandez@unesco.org](mailto:jl.fernandez@unesco.org)

Ms Josefina BUNGE  
Secretario de Embajada  
Dirección general de consejería legal  
Ministerio de Relaciones Exteriores, Comercio  
Internacional y Culto  
Esmeralda 1212, Piso 15  
C1007ABR Buenos Aires  
Tel: +54 11 4819 8008  
Fax: +54 11 4819 8009  
E-mail: [jfb@mrecic.gov.ar](mailto:jfb@mrecic.gov.ar)

Lic. Ariel TROISI  
Jefe Departamento Oceanografía  
Av. Montes de Oca 2124  
C1270ABV Buenos Aires  
Tel: +54 11 4303 2240  
Fax: +54 11 4303 2240  
E-mail: [atroisi@hidro.gov.ar](mailto:atroisi@hidro.gov.ar)

**Australia/Australie/Australia**

*Head of Delegation*

Mr Neville SMITH  
Deputy Director (Research & Systems)  
Bureau of Meteorology  
700, Collins St., G.P.O. Box 1289  
Melbourne VIC 3008  
Tel: +61 3 9669 4444  
Fax: +61 3 9669 4558  
E-mail: [n.smith@bom.gov.au](mailto:n.smith@bom.gov.au)  
**(Also Vice-Chairperson IOC)**

*Alternate*

Mr Peter DEXTER  
Ocean Services Section  
Bureau of Meteorology, GPO Box 1289  
Melbourne VIC 3001  
Tel: +61 3 9669 4870  
Fax: +61 3 9669 4695  
E-mail: [p.dexter@bom.gov.au](mailto:p.dexter@bom.gov.au)  
**(Also representing JCOMM)**

*Advisor*

Ms Anne SIWICKI  
Permanent Delegation of Australia to UNESCO  
4 rue Jean Rey  
75015 Paris  
FRANCE  
Tel: +33 1 40 59 33 44  
Fax: +33 1 40 59 33 53  
E-mail: [anne.siwicki@dfat.gov.au](mailto:anne.siwicki@dfat.gov.au)

**Belgium/Belgique/Bélgica**

*Head of Delegation*

Mr Rudy HERMAN  
IOC/UNESCO Representative for Belgium  
Member of Flanders UNESCO Commission  
Dept. of Economy, Science & Innovation  
Policy Support and Academic Policy  
Koning Albert II-laan 35 bus 10  
1030 Brussels  
Tel: +32 2 553 6001  
E-mail: [rudy.herman@ewi.vlaanderen.be](mailto:rudy.herman@ewi.vlaanderen.be)

**Brazil/Brésil/Brasil**

*Head of Delegation*

Mr Flavio Luiz GIACOMMAZZI  
Advisor, Secretariat of the Interministerial  
Commission on Sea Research  
Esplanada dos Ministerios, BL N Anexo B  
Brasília D.F.  
Tel: +55 61 3429 1337  
E-mail: [flavio@secirm.mar.mil.br](mailto:flavio@secirm.mar.mil.br)

*Alternate*

Mr Luiz Fernando PALMER FONSECA  
Director of Hydrography & Navigation (DHN)  
Ponta da Armação, Niteroi  
24048 900 Rio de Janeiro  
Tel: +55 21 2189 3001  
E-mail: [palmer@dhnmil.br](mailto:palmer@dhnmil.br)

*Representatives*

Ms Cordelia MACHADO  
Biodiversity, Ocean & Atlantic Coordinator  
Ministry of Science & Technology  
Esplanada dos Ministerios, BI E  
Brasilia DF 71 070 090  
Tel: + 55 61 3317 7854  
Fax: +55 61 3317 7766  
E-mail: [mmachado@mct.gov.br](mailto:mmachado@mct.gov.br)

Ms Daniela ARRUDA BENJAMIN  
Permanent Delegation of Brazil to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Fax: +33 (0)1 4783 2840  
E-mail: [dl.brasil@unesco.org](mailto:dl.brasil@unesco.org)

**Canada/Canada/Canadá**

*Head of Delegation*

Ms Wendy WATSON-WRIGHT  
Assistant Deputy Minister, Science  
Dept. of Fisheries & Oceans Canada  
200 Kent St., Ottawa  
Ontario K1A 0E6  
Tel: +1 613 990 5123  
Fax: +1 613 990 5113  
E-mail: [wendy.watson-wright@dfo-mpo.gc.ca](mailto:wendy.watson-wright@dfo-mpo.gc.ca)

*Alternate*

Ms Savithri NARAYANAN  
Dominion Hydrographer  
Director-General, Ocean Sciences  
Canadian Hydrographic Service  
Fisheries & Oceans Canada  
615 Booth St., Suite 311  
Ottawa  
Ontario K1A 0E6  
Tel: +1 613 995 4413  
Fax: +1 613 947 4369  
E-mail: [savithri.narayanan@dfo-mpo.gc.ca](mailto:savithri.narayanan@dfo-mpo.gc.ca)  
**(Also Vice-Chairperson IOC)**

*Representatives*

Ms Helen C. JOSEPH  
Director, Oceanography & Climate Branch  
Direction de l'océanographie et du climat  
Ocean Sciences–Canadian Hydrographic Service  
Sciences océaniques–Service hydrographique du  
Canada  
615 Booth St., pièce 336A  
Ottawa  
Ontario K1A 0E6,  
Tel: +1 613 990 6930  
Fax: +1 613 990 6131  
E-mail: [Helen.joseph@dfo-mpo.gc.ca](mailto:Helen.joseph@dfo-mpo.gc.ca)  
**(Also Rapporteur for the Session)**

Ms Camille MAGEAU  
Director, Ocean Policy & Planning Branch  
200 Kent St.  
Ottawa  
Ontario K1A 0E6  
Tel: +1 613 991 1285  
Fax: +1 613 993 6414  
E-mail: [Camille.mageau@dfo-mpo.gc.ca](mailto:Camille.mageau@dfo-mpo.gc.ca)

Mr Denis LEFAIVRE  
Manager, Modélisation & Operational  
Oceanography Division  
Maurice Lamontagne Institute  
Canadian Hydrographic Service  
850, route de la Mer, P.O. Box 100  
Mont-Joli  
Québec G5H 3Z4  
Tel: +1 418 775 0502  
Fax: +1 418 775 0654  
E-mail: [denis.lefaivre@dfo-mpo.gc.ca](mailto:denis.lefaivre@dfo-mpo.gc.ca)

Ms Dominique LEVASSEUR  
Senior Programme Officer  
Permanent Delegation of Canada to UNESCO  
5, rue de Constantine  
Paris 75007  
FRANCE  
Tel: +33 (0)1 4443 2573  
Fax: +33 (0)1 4443 2579  
E-mail: [Dominique.levasseur@international.gc.ca](mailto:Dominique.levasseur@international.gc.ca)

Mr Val SWAIL  
Chief, Climate Data & Analysis Section  
Environment Canada  
4905 Dufferin St.  
Toronto  
Ontario M3H 5T4  
Tel: +1 416 739 4347  
Fax: +1 416 739 5700  
E-mail: [val.swail@ec.gc.ca](mailto:val.swail@ec.gc.ca)

*Advisor*

Mr Geoffrey HOLLAND  
1267 Gabriola Drive  
Parksville  
B.C. V9P 2T5  
Tel/Fax: +1 250 954 1343  
E-mail: [holland@2weassociates.com](mailto:holland@2weassociates.com);  
[hollandg@shaw.ca](mailto:hollandg@shaw.ca)

**Chile/Chili/Chile**

*Head of Delegation*

Mr Cristián SORO  
Director, Servicio Hidrográfico de la Armada y  
Punto Focal Nacional de la IOC  
Errazuriz 252 Playa Ancha  
Valparaíso  
Tel: +56 32 226 6502  
Fax: +56 32 226 6542  
E-mail: [director@shoa.cl](mailto:director@shoa.cl)

*Alternate*

Mr Andres ENRIQUEZ  
Head of the Dept. of Oceanography  
Servicio Hidrográfico y Oceanográfico de la  
Armada  
Errazuriz 254, Playa Ancha  
CP 237-0168 Valparaíso  
Tel: 56 32 226 6540  
Fax: 56 32 226 6542  
E-mail: [aenriquez@shoa.cl](mailto:aenriquez@shoa.cl)

*Representatives*

Mr Christian STREETER  
Permanent Delegation of Chile to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 45 68 29 50  
Fax: +33 (0)1 47 34 16 51  
E-mail: [dl.chili@unesco.org](mailto:dl.chili@unesco.org)

Sr. F. MINGRAM LOPEZ  
Capitán de Navío, Director  
Servicio Hidrográfico y Oceanográfico de la  
Armada (SHOA)  
Errazuriz 254 Playa Ancha 324  
Valparaíso  
Tel: +56 32 266 502  
Fax: +56 32 266 542

**China/Chine/China**

*Head of Delegation*

Mr Zhang ZHANHAI  
Director-General, Dept. of International  
Cooperation  
State Oceanic Administration  
1, Fuxingmenwai Ave  
Beijing 100860  
Tel: +86 10 6806 0086  
Fax: +86 10 5802 4627  
E-mail: [zhangzhanhai@pric.gov.cn](mailto:zhangzhanhai@pric.gov.cn)  
**(Also Chairperson of WESTPAC)**

*Alternate*

Mr Ya Feng YANG  
Programme Officer  
Division of International Organizations  
State Oceanic Administration  
1, Fuxingmenwai Ave  
Beijing 100860  
Tel: +86 10 6804 8051  
Fax: +86 10 6804 8051  
E-mail: [yyf@soa.gov.cn](mailto:yyf@soa.gov.cn)

*Representatives*

Mr Zhenghao CHI  
State Oceanic Administration  
1, Fuxingmenwai Ave  
Beijing 100860  
Tel: +86 10 6804 7637  
Fax: +86 10 6804 7644  
E-mail: [yb@soa.gov.cn](mailto:yb@soa.gov.cn)

Ms Shao Hua LIN  
Director-General, Professor  
National Marine Data & Information Service  
State Oceanic Administration  
93 Liuwei Rd., Hedong District  
Tianjin 300171  
Tel: +86 22 2401 0803  
Fax: +86 22 2401 0926  
E-mail: [shlin@mail.nmdis.gov.cn](mailto:shlin@mail.nmdis.gov.cn)

Mr Wei WU  
National Marine Environment Forecasting Centre  
State Oceanic Administration  
8 Dahuisi, Haidan District  
Beijing 100081  
Tel: +86 10 6217 3615  
Fax: +86 10 6217 3620

Prof. Quan WEN  
National Marine Environmental Monitoring Centre  
State Oceanic Administration  
42 Linghe Street, Shahekou District  
Dalian  
Liaoning 116023  
Tel: +86 411 8478 2522  
Fax: +86 411 8478 3277  
E-mail: [qwen@nmemc.gov.cn](mailto:qwen@nmemc.gov.cn)

**Colombia/Colombie/Colombia**

*Head of Delegation*

Mr Julián Augusto REYNA MORENO  
Capitán de Navío  
Comisión Colombiana del Océano  
Carrera 54 No. 26-50, Piso 4 CAN  
Bogotá D.C.  
Tel: +57 1 222 0449/36/21  
Fax: +57 1 222 0416  
E-mail: [oceano@cco.gov.co](mailto:oceano@cco.gov.co)  
**(Also Vice-Chairperson IOC)**  
**Cuba/Cuba/Cuba**

*Head of Delegation*

Mr Guillermo GARCIA MONTERO  
Director, Acuario Nacional de Cuba  
Presidente Comité Oceanográfico Nacional de Cuba  
Ave. 1ª y Calle 60, Miramar, Playa  
La Habana  
Tel: +537 203 6401-06  
Fax: +537 209 2737  
E-mail: [guillermog@acuarionacional.cu](mailto:guillermog@acuarionacional.cu)  
**(Also Chairperson of IOCARIBE)**

**Dominican Republic/République  
Dominicaine/República Dominicana**

*Head of Delegation*

Ms Elsa DOMINGUEZ BRITO  
Ministre Conseillère  
Délégation Permanente de la République  
Dominicaine auprès de l'UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2708  
Fax: +33 (0)1 4273 2466  
E-mail: [e.dominguez-brito@unesco.org](mailto:e.dominguez-brito@unesco.org)

**Ecuador/Ecuator/Ecuador**

*Head of Delegation*

Mr Giorgio DE LA TORRE  
Research Scientist  
Oceanographic Institute of the Ecuadorian Navy,  
INOCAR  
Av. 25 de Julio – Base Naval Sur  
Guayaquil  
Tel: +593 4 248 1300  
Fax: +593 4 248 5165  
E-mail: [gdtorre@inocar.mil.ec](mailto:gdtorre@inocar.mil.ec)  
**(Also Acting Chairperson of ICG/PTWS)**

*Representatives*

Cmdr. Mario PROAÑO SILVA  
Director, Instituto Oceanográfico de la Armada del Ecuador  
Av. de la Marina - Base Naval Sur  
P.O. Box 5940  
Guayaquil  
Tel: +593 4 248 1100/1847  
Fax: +593 4 248 5165  
E-mail: [director@inocar.mil.ec](mailto:director@inocar.mil.ec)

Mr Gonzalo PEREIRA PUCHY  
Secretary-General, CPPS  
Permanent Commission for the South Pacific  
Complejo Alban Borja  
Edif. Classic, 2<sup>ndo</sup> Piso  
Guayaquil  
Tel: +593 4 221 1202/222 1203  
Fax: +593 4 222 1201  
E-mail: [gpereira@cpps-int.org](mailto:gpereira@cpps-int.org)

**Egypt/Egypte/Egipto**

*Head of Delegation*

Prof. Mohamed SAID  
National Institute of Oceanography & Fisheries  
(NIOF)  
8, Dr Abdel-Hamid Abo Haif, El-Shatby  
Alexandria 21111  
Tel: +20 3 2377 9117  
Fax: +20 3 480 1174  
E-mail: [mamsaid2@hotmail.com](mailto:mamsaid2@hotmail.com)

*Alternate*

Prof. Aida Botros TADROS  
Acting, Head of Marine Environmental Division  
National Institute of Oceanography & Fisheries,  
Kayt Bay  
Alexandria  
Tel: +20 3 480 1553  
Fax: +20 3 480 1174  
E-mail: [bt\\_aida@yahoo.com](mailto:bt_aida@yahoo.com)

*Advisor*

Mr Mohamed ECZAHABY  
Permanent Delegation of Egypt to UNESCO  
1 rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 45 68 33 09  
E-mail: [zahabiyg@yahoo.com](mailto:zahabiyg@yahoo.com)



**France/France/Francia**

*Head of Delegation*

Mr François GÉRARD  
Ministère de l'Ecologie, de l'Energie, du  
Développement Durable  
et de l'Aménagement du Territoire (MEEDDAT)  
CGPC-S2, Tour Pascal B  
92055 La Défense Cedex  
Tel: +33 (0)1 4081 2388  
E-mail: [francois.gerard@developpement-durable.gouv.fr](mailto:francois.gerard@developpement-durable.gouv.fr)  
(also Chairperson of I-GOOS )

*Alternate*

Mme Hélène SEKUTOWICZ-LE BRIGANT  
Délégation Permanente de la France auprès de  
l'UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
Tel: +33 (0)1 4568 3503  
Fax: +33 (0)1 5369 9949  
E-mail: [helene.sekutowicz@diplomatie.gouv.fr](mailto:helene.sekutowicz@diplomatie.gouv.fr)  
*Representatives*

Mme Claudiane CHEVALIER  
Direction des Relations Internationales  
Institut français de recherche pour l'exploitation  
de la mer  
Technopolis 40  
155, rue Jean-Jacques Rousseau  
92138 Issy-les-Moulineaux  
Tel: +33 (0)1 4648 2182  
Fax: +33 (0)1 4648 2188

M. Frontero BERNARD  
Conseiller pour les Sciences  
Commission nationale française pour l'UNESCO  
75007 Paris  
Tel: +33 (0)1 5369 3996  
Fax: +33 (0)1 5369 3223  
E-mail: [Bernard.frontero@diplomatie.gouv.fr](mailto:Bernard.frontero@diplomatie.gouv.fr)

M. Elie JARMACHE  
Chargé de Mission  
Secrétariat Général de la Mer  
16 bd Raspail  
75007 Paris  
Tel: +33 (0)1 5363 4158  
Fax: +33 (0)1 5363 4178  
E-mail: [elie.jarmache@pm.gouv.fr](mailto:elie.jarmache@pm.gouv.fr)  
(Also Chairperson of IOC/ABE-LOS)

*Advisors*

Mr Serge ALLAIN  
Service Hydrographique Océanographique de la  
Marine, SHOM  
13 rue du Chatellier  
Brest Armées 29240  
Tel: +33 (0)1 4665 5084  
E-mail: [dspre-rex@shom.fr](mailto:dspre-rex@shom.fr)

M. René FEUNTEUN  
Direction de la Prévention des Pollutions et des  
Risques  
Sous-direction de la Prévention des Risques  
Majeurs  
Ministère de l'Ecologie, de l'Energie, du  
Développement Durable et de l'Aménagement du  
Territoire (MEEDDAT)  
20 av. de Ségur  
75007 Paris  
Tel: +33 (0)1 4219 1563  
Fax: +33 (0)1 4219 1479  
E-mail: [rene.feunteun@ecologie.gouv.fr](mailto:rene.feunteun@ecologie.gouv.fr)

**Germany/Allemagne/Alemania**

*Head of Delegation*

Prof. Mr Peter EHLERS  
President, Federal Maritime & Hydrographic  
Agency  
Bernhard-Nocht Strasse 78  
20359 Hamburg  
Tel: +49 (0)40 3190 1000  
Fax: +49 (0)40 3190 1004  
E-mail: [peter.ehlers@bsh.de](mailto:peter.ehlers@bsh.de)

*Alternate*

Ms Anna VON GYLDENFELDT  
Federal Maritime & Hydrographic Agency  
Bernhard-Nocht Strasse 78  
20359 Hamburg  
Tel: +49 (0)40 3190 3111  
Fax: +49 (0)40 3190 5032  
E-mail: [anna.gyldenfeldt@bsh.de](mailto:anna.gyldenfeldt@bsh.de)

*Representative*

Mr Reinhard ZÖLLNER  
German Weather Forecast  
Bernhard-Nocht Strasse 76  
20359 Hamburg  
Tel: +49 (0)40 6690 1400  
Fax: +49 (0)40 6690 1499  
E-mail: [reinhard.zoellner@dwd.de](mailto:reinhard.zoellner@dwd.de)

**Ghana/Ghana/Ghana**

Not Represented

**Greece/Grèce/Grecia**

*Head of Delegation*

Mr Efsthios Th. BALOPOULOS  
Director, Institute of Oceanography  
Hellenic Centre for Marine Research  
46.7-km, Athinon-Sounio Ave.  
Anavyssos  
19013 Attica  
Tel: +30 22910 76452  
Fax: +30 22910 76347  
E-mail: [efsthios.balopoulos@ath.hcmr.gr](mailto:efsthios.balopoulos@ath.hcmr.gr)

*Alternate*

Ms Fanny VOUTSINO  
Head of the Chemical Dept.  
Hellenic Centre for Marine Research  
46.7-km Athinon-Sounio Ave  
Anavyssos  
Attica 19013  
Tel: +30 22910 76366  
Fax: +30 22910 76347  
E-mail: [fvouts@ath.hcmr.gr](mailto:fvouts@ath.hcmr.gr)

*Representatives*

Mr Alexander THEOCHARIS  
Research Director  
Hellenic Centre for Marine Research  
46.7-km Athinon-Sounio Ave  
P.O. Box 712  
Anavyssos  
Attiki 19013  
Tel: +30 22910 76329  
Fax: +30 22910 76323  
E-mail: [alekos@ath.hcmr.gr](mailto:alekos@ath.hcmr.gr)

Ms Anastasia STRATI  
Expert Counsellor, MFA  
3 Akademias St.  
Athens  
Tel: +30 21036 82138  
Fax: +30 21036 82239  
E-mail: [astrati@mfa.gr](mailto:astrati@mfa.gr)

**India/Inde/India**

*Head of Delegation*

H.E. Ms Bhaswati Mukherjee  
Ambassador, Permanent Delegate  
Permanent Delegation of India to UNESCO  
Maison de l'UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2988  
Fax: +33 (0)1 4734 5188  
E-mail: [dl.india@unesco.org](mailto:dl.india@unesco.org)

*Alternate*

Mr Birender Singh YADAV  
First Secretary  
Permanent Delegation of India to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE

*Representatives*

Dr Somasundar KROTHAPALLI  
Programme Director  
Ministry of Earth Sciences  
Lodhi Rd.  
New Delhi 110003  
Tel: +91 11 2430 6831  
Fax: +91 11 2436 2644  
E-mail: [somadod@gmail.com](mailto:somadod@gmail.com)

Dr Shailesh NAYAK  
Director, Indian National Centre for Ocean  
Information Services  
"Ocean Valley", P.B. 21, IDA, Jeedimetla P.O.  
Hyderabad 500055  
Tel: +91 40 2389 5000  
Fax: +91 40 2389 5001  
E-mail: [director@incois.gov.in](mailto:director@incois.gov.in)  
*Advisor*

Mr Jair TORRES  
Permanent Delegation of India to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2999  
E-mail: [j.torres@unesco.org](mailto:j.torres@unesco.org)

**Indonesia/Indonésie/Indonesia**

*Head of Delegation*

Mr Hery HARJONO  
Deputy Chairman, Earth Sciences  
Indonesian Institute of Sciences  
Jl. Gatot Subroto  
Jakarta 12710  
Tel: +62 21 528 1850  
Fax: +62 21 526 0804  
E-mail: [hery.harjono@lipi.go.id](mailto:hery.harjono@lipi.go.id)

*Alternate*

Mr Sinyo H. SARUNDAJANG  
Governor, North Sulawesi Province  
Jl. 17 Agustus 69  
Manado  
North Sulawesi 95119  
Tel: +62 431 865 559  
Fax: +62 431 865 919  
E-mail: [sulut@sulut.go.id](mailto:sulut@sulut.go.id)

*Representatives*

Dr Noldy TUERAH  
Executive Secretary  
World Ocean Conference 2009 Secretariat  
BAPPEDA Office, 2<sup>nd</sup> Floor  
Jl. 17 Agustus 73  
Manado  
North Sulawesi 95119  
Tel: +62 431 816 152  
Fax: +62 431 861 394  
E-mail: [info@woc2009.org](mailto:info@woc2009.org)



Dr Gellwynn JUSUF  
Advisor to Minister of Marine Affairs & Fisheries  
Jl. Medan Merdeka Timur 16  
Jakarta 10110, DKI  
Tel: +62 21 6471 1538  
Fax: +62 21 6471 1483  
E-mail: [gellwynn@cbn.net.id](mailto:gellwynn@cbn.net.id)

Mr Asep D. MUHAMMAD  
Secretary  
Agency for Marine & Fisheries Research  
Ministry of Marine Affairs & Fisheries  
Jl. Pasir Putih I, Ancol Timur  
Jakarta Utara 14430  
Tel: +62 21 6471 1583  
Fax: +62 21 6471 1438  
E-mail: [admdelp@yahoo.com](mailto:admdelp@yahoo.com)  
Dr Gabriel Tonny WAGEY  
Senior Scientist  
Ministry of Marine Affairs & Fisheries  
Jl. Pasir Putih I, Ancol Timur  
Jakarta 14430  
Tel: +62 21 6471 1583 ext. 4103  
Fax: +62 21 6471 1438  
E-mail: [t.wagey@fisheries.ubc.ca](mailto:t.wagey@fisheries.ubc.ca)

Mr Jan SOPAHELUWAKAN  
Deputy Chairman, Scientific Services  
Indonesian Institute of Sciences, LIPI  
(Lembaga Ilmu Pengetahuan Indonesia)  
Jl. Gatot Subroto 10  
Jakarta 12710  
Tel: +62 21 525 5179  
Fax: +62 21 529 7313  
E-mail: [jans@lipi.go.id](mailto:jans@lipi.go.id)  
**(Also Chairperson of ICG/IOTWS)**

Mr FAUZI  
Meteorological & Geophysical Agency  
Head of Earthquake Engineering & Tsunami  
Division  
Jl. Angkasa I/2, Kemayoran  
Jakarta 10720  
Tel: +62 21 424 6321 ext. 331  
Fax: +62 21 654 6316  
E-mail: [fauzi@bmg.go.id](mailto:fauzi@bmg.go.id)

Mr DINDIN  
Permanent Delegation of the Republic of  
Indonesia to UNESCO  
Maison de l'UNESCO, M1.24  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2972  
Fax: +33 (0)1 4566 0237  
E-mail: [del.indonesia@unesco.org](mailto:del.indonesia@unesco.org)

**Iran, Islamic Republic of/République Islamique  
d'Iran/Irán, República Islámica del**

*Head of Delegation*

Mr Yadollah PARMOUN  
Permanent Delegation of Iran to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3300  
E-mail: [yadollahparmoun@yahoo.com](mailto:yadollahparmoun@yahoo.com)

**Japan/Japon/Japón**

*Head of Delegation*

Dr Toshio YAMAGATA  
Vice Dean & Professor  
Dept. of Earth & Planetary Science  
Graduate School of Science  
University of Tokyo  
7-3-1 Hongo, Bunkyo-ku  
Tokyo 113-0033  
Tel: +81 3 5841 4297  
Fax: +81 3 5841 8791  
E-mail: [yamagata@eps.s.u-tokyo.ac.jp](mailto:yamagata@eps.s.u-tokyo.ac.jp)

*Alternate*

Dr Yasuwo FUKUYO  
University of Tokyo  
Asian Natural Environmental Science Centre  
1-1-1, Yayoi, Bunkyo-ku  
Tokyo 113-8657  
Tel: +81 3 5841 2782  
Fax: +81 3 5841 8040  
E-mail: [ufukuyo@mail.ecc.u-tokyo.ac.jp](mailto:ufukuyo@mail.ecc.u-tokyo.ac.jp)

*Representatives*

Dr Yutaka MICHIDA  
Prof., International Coastal Research Centre  
Ocean Research Institute  
University of Tokyo  
Akahama 2-106-1  
Otsuchi  
Iwate 028-1102  
Tel: +81 193 425 611  
Fax: +81 193 423 715  
E-mail: [ymichida@ori.u-tokyo.ac.jp](mailto:ymichida@ori.u-tokyo.ac.jp)

Dr Mitsuo UEMATSU  
Professor, Director  
Centre for International Cooperation  
Ocean Research Institute  
University of Tokyo  
1-15-1 Minamidai, Nakano-ku  
Tokyo 164-8639  
Tel/Fax: +81 3 5351 6533  
E-mail: [uematsu@ori.u-tokyo.ac.jp](mailto:uematsu@ori.u-tokyo.ac.jp)

Dr Kazuhiro KITAZAWA  
Special Assistant to the Minister  
Japan Agency for Marine-Earth Science &  
Technology (JAMSTEC)  
2-15 Natsushima-cho  
Yokosuka 237-0061  
Tel: +81 46 867 9191  
Fax: +81 46 867 9195  
E-mail: [kitazawa@jamstec.go.jp](mailto:kitazawa@jamstec.go.jp)

Mr Daisuke KUBOIKE  
Unit Chief, Ministry of Education, Culture, Sports,  
Science & Technology  
3-2-2 Kasumigaseki, Chiyoda-ku  
Tokyo 100-8959  
Tel: +81 3 6734 4146  
Fax: +81 3 6734 4147  
E-mail: [kuboike@mext.go.jp](mailto:kuboike@mext.go.jp)

Ms Eriko HIMATA  
Program Specialist  
Ministry of Education, Culture, Sports, Science &  
Technology  
3-2-2 Kasumigaseki, Chiyoda-ku  
Tokyo 100-8959  
Tel: +81 3 6734 2557  
Fax: +81 3 6734 3679  
E-mail: [himata@mext.go.jp](mailto:himata@mext.go.jp)

Mr Yohei HASEGAWA  
Senior Coordinator for International Earthquake  
Tsunami Information  
Japan Meteorological Agency  
1-3-4 Ote-machi, Chiyoda-ku  
Tokyo 100-8122  
Tel: +81 3 3284 1743  
Fax: +81 3 3215 2963  
E-mail: [yhasegawa@met.kishou.go.jp](mailto:yhasegawa@met.kishou.go.jp)

Mr Yasushi TAKATSUKI  
Head of Buoy Robot Unit, Marine Division  
Japan Meteorological Agency  
1-3-4 Otemachi, Chiyoda-ku  
Tokyo 100-8122  
Tel: +81 3 3212 8341 ext. 5149  
Fax: +81 3 3211 6908  
E-mail: [y\\_takatsuki@met.kishou.go.jp](mailto:y_takatsuki@met.kishou.go.jp)

Mr Osamu MIYAKI  
Administrative Staff  
International Affairs Division, Planning Dept.  
Japan Agency for Marine-Earth Science &  
Technology (JAMSTEC)  
2-15 Natsushima-cho  
Yokosuka 237-0061  
Tel: +81 46 867 9228  
Fax: +81 46 867 9195  
E-mail: [miyakio@jamstec.go.jp](mailto:miyakio@jamstec.go.jp)

Ms Suzuka SAKASHITA  
First Secretary  
Permanent Delegation of Japan to UNESCO  
148, rue de l'Université  
75007 Paris  
FRANCE  
Tel: +33 (0)1 5359 2716  
Fax: +33 (0)1 5359 2727  
E-mail: [deljpn.pro@unesco.org](mailto:deljpn.pro@unesco.org)

### **Kenya/Kenya/Kenia**

#### *Head of Delegation*

Mr Johnson KAZUNGU  
Kenya Marine & Fisheries Research Institute  
P.O. Box 81651, Code 80100  
Mombasa  
Tel: +254 41 475 151/7  
Fax: +254 41 475 157  
E-mail: [jkazungu@kmfri.co.ke](mailto:jkazungu@kmfri.co.ke)

#### *Alternate*

Mr John Paul OLUOCH  
Senior Research Assistant  
Permanent Delegation of Kenya to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 45 68 32 81  
E-mail: [jp.oluoch@unesco.org](mailto:jp.oluoch@unesco.org)

### **Madagascar/Madagascar/Madagascar**

#### *Head of Delegation*

Dr Faneva RANDRIANANDRAINANA  
Science Advisor  
40, rue du Général Foy  
75008 Paris  
FRANCE  
Tel: +33 (0)1 4293 3477  
Fax: +33 (0)1 4522 2289  
E-mail: [faneva@hotmail.com](mailto:faneva@hotmail.com)

### **Mauritius/Maurice/Mauricio**

#### *Head of Delegation*

Mr Seeballuck SURESH CHUNDRE  
Secretary to Cabinet & Head of Civil Service  
Chairperson National Disaster Committee  
Port Louis  
Tel: +230 201 2850  
Fax: +230 208 6642

*Alternate*

Dr Mitrasen BHIKAJEE  
Director, Mauritius Oceanography Institute  
France Centre, Victoria Avenue  
Quatre Bornes  
Tel: +230 427 4432  
Fax: +230 427 4433  
E-mail: [bhikajee@moi.intnet.mu](mailto:bhikajee@moi.intnet.mu)

**Nigeria/Nigeria/Nigeria**

*Head of Delegation*

Mr Olajide AYINLA  
Nigerian Institute for Oceanography & Marine  
Research  
3 Wilmot Point Rd., Victoria Island  
Lagos P.M.B. 12729  
Tel: +234 1 802 32 61  
Fax: +234 1 261 95 17  
E-mail: [jideayinla@yahoo.com](mailto:jideayinla@yahoo.com)

*Representative*

Mr Young NWAFOR  
Permanent Delegation of the Federal Republic of  
Nigeria to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2727  
Fax: +33 (0)1 4567 5941  
E-mail: [dl.nigeria@unesco.org](mailto:dl.nigeria@unesco.org)

**Norway/Norvège/Noruega**

*Head of Delegation*

Mr Peter HAUGAN  
Director, Geophysical Institute  
University of Bergen  
Allegaten 70  
N-5007 Bergen  
Tel: +47 5558 2678  
Fax: +47 5558 9883  
E-mail: [peter.haugan@gfi.uib.no](mailto:peter.haugan@gfi.uib.no)  
**(Also Chairperson of the Resolutions  
Committee)**

*Alternate*

Mr Alf VESTRHEIM  
First Secretary  
Permanent Delegation of Norway to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3435  
Fax: +33 (0)1 4567 9203  
E-mail: [a.vestrheim@unesco.org](mailto:a.vestrheim@unesco.org)

**Peru/Pérou/Perú**

*Head of Delegation*

Capitán Juan Carlos MONTENEGRO  
Subdirector  
Avenida Gamarra No. 500  
Chucuito, Callao  
Lima 80  
Tel: +51 1 613 6745  
Fax: +51 1 613 6759  
E-mail: [jcmontenegro@dhn.mil.pe](mailto:jcmontenegro@dhn.mil.pe)

*Alternate*

Capitán Rodolfo SABLICH LUNA VICTORIA  
Head, Technical Office  
Avenida Gamarra No. 500  
Chucuito, Callao  
Lima 80  
Tel: +51 1 613 6746  
Fax: +51 1 613 6759  
E-mail: [rsabllich@dhn.mil.pe](mailto:rsabllich@dhn.mil.pe)

*Representative*

Capt. Rafael ZEGARRA  
Naval Attaché of the Peruvian Embassy in France  
Avenida Gamarra 500  
Chucuito, Callao  
Lima 80  
Tel: +51 1 613 6746  
Fax: +51 1 613 6759  
E-mail: [agrenafr@yahoo.com](mailto:agrenafr@yahoo.com)

*Advisors*

Mr Alfredo PICASSO  
Permanent Delegation of Peru to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel/Fax: +33 (0)1 4527 6342  
E-mail: [a.picasso@club-internet.fr](mailto:a.picasso@club-internet.fr)

Mr Mario BUSTAMANTE  
Permanent Delegation of Peru to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2933  
Fax: +33 (0)1 4568 2920  
E-mail: [m.bustamante@unesco.org](mailto:m.bustamante@unesco.org)

**Portugal/Portugal/Portugal**

*Head of Delegation*

Prof. Mario RUIVO  
Chairman, Portuguese Committee for IOC  
Av. Infante Santo 42, 4<sup>th</sup> Floor  
1350-179 Lisbon  
Tel: +351 21 390 4330  
Fax: +351 21 395 2212  
E-mail: [cointersec.presid@fct.mctes.pt](mailto:cointersec.presid@fct.mctes.pt)

*Representative*

Ms Teresa SALADO  
Permanent Delegation of Portugal to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3054  
Fax: +33 (0)1 4567 8293  
E-mail: [t.salado@unesco.org](mailto:t.salado@unesco.org)

**Republic of Korea/République de  
Corée/República de Corea**

*Head of Delegation*

Mr Doan JEONG  
Director, Ministry of Land, Transport and  
Maritime Affairs  
88, Gwanmun-ro  
Gawcheon 427-712  
Gyeonggi-do  
Tel: +82 2 2110 8452  
Fax: +82 2 502 0341  
E-mail: [doan@mltm.go.kr](mailto:doan@mltm.go.kr)

*Alternate*

Dr Jang-Won SEO  
Senior Research Scientist  
National Institute of Meteorological Research  
Global Environment System Research Lab.  
45, Gisangcheong-gil, Dongjak-gu  
Seoul 156-720  
Tel: +82 2 6712 0351  
Fax: +82 2 841 2787  
E-mail: [jwseo@kma.go.kr](mailto:jwseo@kma.go.kr)

*Representatives*

Ms Jeong Hwa KIM  
Deputy Director  
Ministry of Land, Transport & Maritime Affairs  
88, Gwanmun-ro  
Gawcheon 427-712  
Gyeonggi-do  
Tel: +82 2 2110 8458  
Fax: +82 2 502 0341  
E-mail: [goodpo@mltm.go.kr](mailto:goodpo@mltm.go.kr)

Dr Chae Ho LIM  
Deputy Director  
National Oceanographic Research Institute  
195 Seohae-ro, Jung-gu  
Incheon 400-800  
Tel: +82 32 880 0450  
Fax: +82 32 885 3905  
E-mail: [limch92@mltm.go.kr](mailto:limch92@mltm.go.kr)

Mr Chung-mo JUNG  
The Organizing Committee for the Expo 2012  
Yeosu Korea  
110-793, 4F, 75 Yulgokno  
Jongno-gu, Seoul  
Tel: +82 2 740 4705  
Fax: +82 2 740 4789  
E-mail: [jcm0929@mltm.go.kr](mailto:jcm0929@mltm.go.kr)

Mr Gong-Gu BACK  
Assistant Director  
National Oceanographic Research Institute  
195 Seohae-ro, Jung-gu  
Incheon 400-800  
Tel: +82 32 885 5062  
Fax: +82 32 885 3088  
E-mail: [jcm0929@mltm.go.kr](mailto:jcm0929@mltm.go.kr)

Dr Kyu Kui JUNG  
Marine Environment Team  
South Sea Fisheries Research Institute  
347, Anpo-ro, Hwayang Institute  
Yeosu  
Jellanam-do 556-823  
Tel: +82 61 690 8952  
Fax: +82 61 686 1588  
E-mail: [kjung@nfrdi.re.kr](mailto:kjung@nfrdi.re.kr)

Dr Sang-Kyung BYUN  
Principal Researcher  
Korea Ocean Research & Development Institute  
Marine Environment Research Dept.  
Ansan P.O. Box 29  
Seoul 425-600  
Tel: +82 31 400 6127  
Fax: +81 31 408 5829  
E-mail: [skbyun@kordi.re.kr](mailto:skbyun@kordi.re.kr)

Dr Sik HUH  
Head of International Cooperation Div.  
Korea Ocean Research & Development Institute  
Ansan 29  
Seoul 425-600  
Tel: +82 31 400 7750  
Fax: +82 31 406 6925  
E-mail: [sikhuh@kordi.re.kr](mailto:sikhuh@kordi.re.kr)

Mr Hyun Mook LIM  
Head of Science Team  
Korean National Commission for UNESCO  
P.O. Box Central 64  
Seoul 100-022  
Tel: +82 2 755 3014  
Fax: +82 2 755 7477  
E-mail: [hmlim@unesco.or.kr](mailto:hmlim@unesco.or.kr)

Mr Kyungjin KIM  
Senior Researcher  
Korea Ocean Research & Development Institute  
Ansan 29  
Seoul 425-600  
Tel: +82 31 400 7752  
Fax: +82 31 406 6925  
E-mail: [kjkim@kordi.re.kr](mailto:kjkim@kordi.re.kr)

Ms Hyo-Jin CHOI  
Korea Oceanographic Commission Secretariat  
Korea Ocean Research & Development Institute  
Ansan, P.O. Box 29  
Seoul 425-600  
Tel: +82 31 400 7755  
Fax: +82 31 406 6925  
E-mail: [choih@kordi.re.kr](mailto:choih@kordi.re.kr)

Prof. Hyohyun SUNG  
Ewha Womens' University  
Dept. of Social Studies  
Seoul 120-750  
Tel: +82 10 6235 2668  
Fax: + 82 2 3277 2659  
E-mail: [hhsung@ewha.ac.kr](mailto:hhsung@ewha.ac.kr)

Dr Hyung Tak HUH  
Fellow, Agriculture/Fisheries Sciences Div.  
Senior Scientist Emeritus  
Korean Ocean Research & Development Institute  
(KORDI)  
National Coordinator, UNDP/GEF YSLME Project  
Korean Academy of Science & Technology  
12-41 Bangbae-dong, Seocho-gu  
Seoul 137-060  
Tel: +82 2 534 5059  
Fax: +82 31 408 5934  
E-mail: [hthuh@kordi.re.kr](mailto:hthuh@kordi.re.kr)  
**(Also representing WESTPAC)**

**Russian Federation/Fédération de  
Russie/Federación de Rusia**

*Head of Delegation*

Mr Alexander FROLOV  
Head Deputy  
Federal Service for Hydrometeorology &  
Environmental Monitoring (Roshydromet)  
12 Novovagan'kovsky Street  
Moscow 123995  
Tel: +7 495 252 0313  
Fax: +7 495 255 2269/2216  
E-mail: [afrolov@mecom.ru](mailto:afrolov@mecom.ru)

*Alternate*

Prof. Dr Anatoly KOLODKIN  
Judge, UN International Tribunal for the Law of the  
Sea  
Scientific-Expert Counsel to the Chairman of the  
Council of the Federation  
Scientific Counsel to the Minister of International  
Affairs  
President, Russian Associations of International  
Law & Maritime Law  
3 B. Koptevsky Prospekt  
Moscow 125319  
Tel: +7 495 151 7588  
Fax: +7 495 152 0916/151 7588  
E-mail: [kolodin@smniip.ru](mailto:kolodin@smniip.ru)

*Representatives*

Mr Vitaly I. SYCHEV  
Chief UNESCO Chair in Remote Sensing &  
Modelling in Oceanography  
98, Malookhtinsky Prospekt  
St. Petersburg 195196  
Tel: +7 812 224 3061  
Fax: +7 812 444 6090  
E-mail: [vsychev@bk.ru](mailto:vsychev@bk.ru)

Mr Robert NIGMATULIN  
Director, Russian Academy of Sciences  
36, Nakhimovsky Ave.  
Moscow 117997  
Tel: +7 495 124 5996  
Fax: +7 495 124 5983  
E-mail: [nigmar@ocean.ru](mailto:nigmar@ocean.ru)

Mr Sergey SHAPOVALOV  
Director, Centre for Coordination of Ocean  
Research  
Russian Academy of Sciences  
36 Nakhimovsky Ave.  
Moscow 117997  
Tel: +7 495 124 5981  
Fax: +7 495 124 5983  
E-mail: [smschap@ocean.ru](mailto:smschap@ocean.ru)

Mr Vladimir KOMCHATOV  
Director, State Oceanographic Institute  
6, Kropotkinskiy Prospekt  
Moscow 119034  
Tel/Fax: +7 495 246 7288  
E-mail: [adm@soi.msk.ru](mailto:adm@soi.msk.ru)

Mr Nikolai MIKHAILOV  
Head, Oceanographic Data Centre  
Russian Federal Service for Hydrometeorology &  
Environmental Monitoring  
All-Russia Research Institute of  
Hydrometeorological Information – WDC  
6 Korolev Street  
Obninsk  
Kaluga Region 249035  
Tel: +7 484 397 4907  
Fax: +7 095 255 2225  
E-mail: [nodc@meteo.ru](mailto:nodc@meteo.ru)  
(Also Vice-Chairperson IOC)

#### **South Africa/Afrique du Sud/Africa del Sur**

##### *Head of Delegation*

Mr Ashley JOHNSON  
Marine & Coastal Management  
P.O. Box X2, Roggebaai  
Cape Town 8012  
Tel: +27 21 402 3260  
Fax: +27 21 425 6976  
E-mail: [ajohnson@deat.gov.za](mailto:ajohnson@deat.gov.za)

##### *Alternate*

Ms Marisa KASHORTE  
Policy Advisor, Fedsure Building  
Cnr Van Der Walt & Pretorius St.  
Pretoria 0001  
Tel: +27 12 310 3971  
Fax: +27 12 320 5216

#### **Spain/Espagne/España**

##### *Head of Delegation*

Mr Luís VALDES  
Director, Centro Oceanográfico de Gijón  
Instituto Español de Oceanografía  
Gijón  
Asturias 33212  
Tel: +34 985 308 672  
Fax: +34 985 326 277  
E-mail: [luis.valdes@gl.leo.es](mailto:luis.valdes@gl.leo.es)

##### *Representative*

Mr Gregorio PARRILLA BARRERA  
Jefe Area Medio Marino  
Instituto Español de Oceanografía  
Avenida de Brasil 31  
Madrid 28020  
Tel: +34 91 347 3608  
Fax: +34 91 413 5597  
E-mail: [gregorio.parrilla@md.ieu.es](mailto:gregorio.parrilla@md.ieu.es)

#### **Sri Lanka**

##### *Head of Delegation*

Mr Karunadasa HAPUTANTRI  
Chairman, National Aquatic Resources Research  
& Development Agency  
Crow Island, Mattakuliya  
Colombo 15  
Tel: +941 252 1881  
Fax: +941 252 1881  
E-mail: [chairman@nara.ac.lk](mailto:chairman@nara.ac.lk)

##### *Representative*

Dr Kamal TENNAKOON  
Senior Research Officer  
National Aquatic Resources Research &  
Development Agency  
Crow Island, Mattakuliya  
Colombo 15  
Tel: +941 252 1008  
Fax: +941 252 1932  
E-mail: [tkdkamal@nara.ac.lk](mailto:tkdkamal@nara.ac.lk);  
[tkdamal@hotmail.com](mailto:tkdamal@hotmail.com)

#### **Thailand/Thailande/Tailandia**

##### *Head of Delegation*

Dr Cherdchinda CHOTIYAPUTTA  
Marine Resources Management Specialist  
Dept. of Marine & Coastal Resources  
92 Phaholyothin Rd, Samsennai  
Phayathai  
Bangkok 10400  
Tel/Fax: +66 2 298 2659  
E-mail: [cherdchc@dmcr.go.th](mailto:cherdchc@dmcr.go.th);  
[cherdchc@yahoo.com](mailto:cherdchc@yahoo.com)

##### *Alternate*

Dr Somkiat KHOKIATTIWONG  
SEA GOOS Chair  
Phuket Marine Biological Centre  
Thailand Department of Marine Coastal Resources  
51 Sakdhidate Rd, P.O. Box 60  
Phuket 83000  
Tel: + 66 76 391 128  
Fax: + 66 76 391 127  
E-mail: [somkiat@e-mail.in.th](mailto:somkiat@e-mail.in.th);  
[skkokiattiwong@gmail.com](mailto:skkokiattiwong@gmail.com)

##### *Representatives*

Mr Mickmin CHARUCHINDA  
Director, Eastern Marine & Coastal Resources  
Research Centre  
309 Moo 1 Tambon Paknamprasae  
Klaeng District  
Rayong 21170  
Tel: +66 38 661 693  
Fax: +66 38 661 694  
E-mail: [mickmin\\_charunchinda@yahoo.com](mailto:mickmin_charunchinda@yahoo.com)



Ms Saowalak WINYOONUNTAKUL  
Chief, Foreign Affairs Group  
Department of Marine & Coastal Resources  
92, Phaholyothin Rd, Samsennoi  
Phayathai  
Bangkok 10400  
Tel: +66 2 298 2588  
Fax: +66 2 298 2592  
E-mail: [foreign@dmcr.go.th](mailto:foreign@dmcr.go.th)

**Tunisia/Tunisie/Túnez**

*Head of Delegation*

Prof. Chérif SAMMARI  
Head of the Marine Environment Laboratory  
Institut national des Sciences et Technologies de  
la Mer  
28, rue 2 mars 1934  
2025 Salammbô-Tunis  
Tel: +216 1 730 420/7127 7735  
Fax: +216 1 732 622  
E-mail: [cherif.sammari@instm.rnrt.tn](mailto:cherif.sammari@instm.rnrt.tn)  
(Also Vice-Chairperson IOC)

**Turkey/Turquie/Turquía**

*Head of Delegation*

Rear Adm. Mustafa IPTES  
Director, Office of Navigation, Hydrography &  
Oceanography  
34805 Çubuklu  
Tel: +90 (0)216 425 89 26  
Fax: +90 (0)216 331 05 25  
E-mail: [director@shodb.gov.tr](mailto:director@shodb.gov.tr);  
[miptes@hotmail.com](mailto:miptes@hotmail.com)

*Advisors*

Captain Erhan GEZGIN  
Chief of Oceanography Division  
Office of Navigation, Hydrography &  
Oceanography  
34805 Çubuklu, Istanbul  
Tel: +90 (0)216 322 2580 (ext. 3300)  
Fax: +90 (0)216 331 05 25  
E-mail: [erhan@shodb.gov.tr](mailto:erhan@shodb.gov.tr)

Ms Esra CANKORUR  
First Counselor  
Permanent Delegation of Turkey to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2715  
E-mail: [e.cankorur@unesco.org](mailto:e.cankorur@unesco.org);  
[dl.turquie@unesco.org](mailto:dl.turquie@unesco.org)

Mr Sencer YÖNDEM  
Second Secretary  
Permanent Delegation of Turkey to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
E-mail: [s.yondem@unesco.org](mailto:s.yondem@unesco.org);  
[dl.turquie@unesco.org](mailto:dl.turquie@unesco.org)

Mr Dilek EDIGER TÜBITAK  
Marine Research Centre  
Senior Researcher  
Chemistry & Environment Institute  
P.O. Box 21  
41470 Gebze – Kocaeli  
Tel: +90 (0)262 677 2975  
Fax: +90 (0)262 641 2309  
E-mail: [dilek.ediger@mam.gov.tr](mailto:dilek.ediger@mam.gov.tr)

**Ukraine/Ukraine/Ucrania**

*Head of Delegation*

Prof. Valery EREMEEV  
Director General, Oceanological Centre  
Ukrainian National Academy of Sciences  
2, Nakhimov Ave  
Sevastopol  
Crimea 99011  
Tel: +380 692 544 110  
Fax: +380 692 544 110  
E-mail: [eremeev@alpha.mhi.iuf.net](mailto:eremeev@alpha.mhi.iuf.net);  
[director@ibss.iuf.net](mailto:director@ibss.iuf.net)

**United Kingdom of Great Britain &  
Northern Ireland/Royaume-Uni de Grande  
Bretagne et d'Irlande du Nord/Reino  
Unido de Gran Bretaña e Irlanda del Norte**

*Head of Delegation*

Mr Trevor GUYMER  
c/o National Oceanography Centre  
European Way  
Southampton SO14 3ZH  
Tel: +44 (0)23 8059 6789  
Fax: +44 (0)23 8059 6204  
E-mail: [thg@noc.soton.ac.uk](mailto:thg@noc.soton.ac.uk)

*Alternate*

Mr David PALMER  
c/o National Oceanography Centre  
Old Orchard, The Streat Ubley  
Bristol  
Somerset BS40 6PJ  
Tel: +44 (0)1761 462 449  
E-mail: [davepalmer\\_x@yahoo.co.uk](mailto:davepalmer_x@yahoo.co.uk)

*Representatives*

Prof. David T. PUGH  
Marine Science Advisor  
3 Deeside Court, Dee Hills Park  
Chester CH3 5AU  
Tel: +44 (0)23 8059 6611; +44 (0)12 4434 6454  
Fax: +44 (0)1703 596 395  
E-mail: [d.pugh@mac.com](mailto:d.pugh@mac.com)  
**(Past Chairperson IOC)**

Dr Lesley RICKARDS  
Permanent Service for Mean Sea Level (PSMSL)  
British Oceanographic Data Centre (BODC)  
6, Brownlow St.  
Liverpool L3 5DA  
Tel: +44 (0)151 795 4897  
Fax: +44 (0)151 795 4912  
E-mail: [ljr@bodc.ac.uk](mailto:ljr@bodc.ac.uk)

Mr Stephen HALL  
Manager Stakeholder Relations  
National Oceanography Centre  
Southampton SO14 3ZH  
Tel: +44 (0)23 8059 6435  
Fax: +44 (0)23 8059 6204  
E-mail: [sph@noc.soton.ac.uk](mailto:sph@noc.soton.ac.uk)

Mr Roland ROGERS  
Resource Manager NMEP  
National Oceanography Centre  
Southampton SO14 3ZH  
Tel: +44 (0)23 8059 6314  
E-mail: [rxr@noc.soton.ac.uk](mailto:rxr@noc.soton.ac.uk)

*Advisor*

Mr Russell ARTHURTON  
Coastal Geoscience  
5a Church Lane, Grimston  
Melton Mowbray  
Leics. LE14 3BY  
Tel: +44 (0)1664 810 024  
E-mail: [r.arthurton@talktalk.net](mailto:r.arthurton@talktalk.net)

**United Republic of Tanzania/République-Unie  
de Tanzanie/República Unida de Tanzania**

*Head of Delegation*

Mr Alfonse DUBI  
Director  
Institute of Marine Sciences  
University of Dar es Salaam  
Mizingani Rd  
P.O. Box 668  
Zanzibar  
Tel: +255 54 223 2128  
Fax: +255 54 223 3050  
E-mail: [dubi@ims.udsm.ac.tz](mailto:dubi@ims.udsm.ac.tz)

*Alternate*

Prof. Mohammed S. SHEYA  
Deputy Permanent Delegate  
Permanent Delegation of Tanzania to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2731/5370 6366  
Fax: +33 (0)1 4566 0914/4755 0546  
E-mail: [dl.mssheya@hotmail.com](mailto:dl.mssheya@hotmail.com);  
[dl.tanzanie@unesco.org](mailto:dl.tanzanie@unesco.org)

**United States of America/Etats-Unis  
d'Amérique/Estados Unidos de América**

*Head of Delegation*

Mr John H. DUNNIGAN  
Assistant Administrator for Ocean Services and  
Coastal Zone Management  
US Department of Commerce  
National Oceanic & Atmospheric Administration  
National Ocean Service  
N, SSMC4, Room 13632  
Silver Spring, MD 20910  
Tel: +1 301 713 3074  
Fax: +1 301 713 4269  
Email: [jack.dunnigan@noaa.gov](mailto:jack.dunnigan@noaa.gov)

*Alternate*

Mr Gustavo BISBAL  
Foreign Affairs Officer  
U.S. Dept. of State  
2201 C St. NW, HST 2665  
Washington D.C. 20520  
Tel: +1 202 647 6927  
Fax: +1 202 647 1106  
E-mail: [bisbalga@state.gov](mailto:bisbalga@state.gov)

*Representatives*

Mr David MCKINNIE  
American Embassy, Jakarta Science Fellow  
National Oceanic & Atmospheric Administration  
(NOAA)  
Jl. Medan Merdeka Selatan 5  
Jakarta 10110  
INDONESIA  
Tel: +62 21 3435 9073  
Fax: +62 21 3435 9977  
E-mail: [mckinnied@state.gov](mailto:mckinnied@state.gov);  
[david.mckinnie@noaa.gov](mailto:david.mckinnie@noaa.gov)

Mr William LEITH  
Associate Program Coordinator  
U.S. Geological Survey  
905 National Center  
Reston, VA 20192  
Tel: +1 703 648 4000  
Fax: +1 703 648 6717  
E-mail: [wleith@usgs.gov](mailto:wleith@usgs.gov)



Mr Stephen R. PIOTROWICZ  
National Oceanic & Atmospheric Administration,  
OCEAN US  
1100 Wayne Ave, Suite 1210  
Silver Spring, MD 20910  
Tel: +1 301 427 2493  
E-mail: [steve.piotrowicz@noaa.gov](mailto:steve.piotrowicz@noaa.gov)

Ms Heather ALLEN  
International Affairs Specialist  
Washington D.C. 20230  
Tel: +1 202 482 6196  
Fax: +1 202 482 4307  
E-mail: [heather.allen@noaa.gov](mailto:heather.allen@noaa.gov)

Mr Ned CYR  
Chief, Marine Ecosystems System  
NOAA Fisheries  
1315 East-West Highway  
Silver Spring, MD 20910  
Tel: +1 301 713 2363  
Fax: +1 301 713 1875  
E-mail: [ned.cyr@noaa.gov](mailto:ned.cyr@noaa.gov)

Mr Terry L. SCHAEFER  
Program Manager  
International Activities Office  
U.S. Department of Commerce  
National Oceanic & Atmospheric Administration  
Oceanic & Atmospheric Research  
1315 East-West Highway, Rm. 11359  
Silver Spring, MD 20910  
Tel: +1 301 734 1187  
Fax: +1 301 713 1459  
E-mail: [terry.schaefer@noaa.gov](mailto:terry.schaefer@noaa.gov)

Mr Arthur E. PATERSON  
International Affairs Specialist  
U.S. Dept. of Commerce  
National Oceanic & Atmospheric Administration  
(NOAA)  
1315 East-West Highway #5627  
Silver Spring, MD 20910  
Tel: +1 301 713 3078 ext. 217  
Fax: +1 301 713 4263  
E-mail: [arthur.e.paterson@noaa.gov](mailto:arthur.e.paterson@noaa.gov)

**Venezuela (Bolivarian Republic of)/Venezuela  
(République bolivarienne du)/Venezuela  
(República Bolivariana de)**

*Head of Delegation*

Mr Luís PIBERNAT  
Capitán de Fregata  
Naval Officer & Physical Oceanographer  
Dirección de Hydrografía y Navegación  
Observatorio Naval Cagigal  
23 de Enero  
Caracas 1010A  
Tel: +58 212 115 1745  
E-mail: [luispibernata@gmail.com](mailto:luispibernata@gmail.com)

*Alternate*

Ms Lee GALINDO  
Asesor del Proyecto METOC  
Dirección de Hydrografía y Navegación  
Observatorio Naval Cagigal  
23 de Enero  
Caracas 1010A  
Tel: +58 212 607 3844  
E-mail: [akamaikai@gmail.com](mailto:akamaikai@gmail.com)

*Representatives*

Mr Iván José AVILA BELLOSO  
Minister Counsellor  
Permanent Delegation of Venezuela to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE

Mr Julián OCHOA  
Permanent Delegation of Venezuela to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2532/33/34  
Fax: +33 (0)1 4734 2893  
E-mail: [venezuela.dl2@unesco.org](mailto:venezuela.dl2@unesco.org)

Mr Antonio QUINTERO  
Instituto Oceanográfico de Venezuela  
Av. Universidad Cerro Colorado IOV-UDO  
Cumaná  
Sucre 6013  
Tel: +58 93 400 2240  
Fax: +58 2 93 452 0308  
E-mail: [aquinter@sucre.udo.edu.ve](mailto:aquinter@sucre.udo.edu.ve)

Ms Gloria ROMERO  
Head, National Seismological Service  
Head, Venezuelan Foundation for Seismological  
Research  
Caracas 1070, D.F.  
Tel: +58 212 257 5153  
Fax: +58 212 257 9860  
E-mail: [gromero@funvisis.gob.ve](mailto:gromero@funvisis.gob.ve)

**III. OBSERVERS FROM NON-MEMBER STATES OF THE IOC EXECUTIVE COUNCIL/  
OBSERVATEURS D'ETATS NON-MEMBRES  
DU CONSEIL EXECUTIF DE LA COI/  
OBSERVADORES DE PAISES NO MIEMBROS  
DEL CONSEJO EJECUTIVO DE LA COI**

**Bangladesh/Bangladesh/Bangladesh**

*Head of Delegation*

Mr Abdul Motaleb SARKER  
Embassy of Bangladesh  
39, rue Erlanger  
75016 Paris  
FRANCE  
Tel: +33 (0)1 4651 9033  
E-mail: [bangembpar@yahoo.com](mailto:bangembpar@yahoo.com)

**Barbados/Barbade/Barbados**

*Head of Delegation*

Ms Lorna V. INNIS  
Coastal Zone Management Unit  
Bay Street  
St. Michael  
Tel: +246 228 5950/1/2  
Fax: +246 228 5956  
E-mail: [linniss@coastal.gov.bb](mailto:linniss@coastal.gov.bb)  
(Also Vice-Chairperson of IOC/ARIBE and  
Chairperson of ICG/CARIBE EWS)

**Bulgaria/Bulgarie/Bulgarie**

*Head of Delegation*

Ms Svezlana MANOILOVA  
Permanent Delegation of the Republic of Bulgaria  
to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3399  
Fax: +33 (0)1 4783 3452  
E-mail: [dl.rep-bulgarie@unesco.org](mailto:dl.rep-bulgarie@unesco.org)

**Cameroon/Cameroun/Camerún**

*Head of Delegation*

Mr Pierre Richard NJIKE NGAHA  
Chef de Cellule de suivi au Secrétariat Général  
du Ministère de la Recherche Scientifique et de  
l'Innovation  
B.P. 1457  
Yaoundé  
Tel: +237 222 2945/223 5467  
E-mail: [pr.njike@yahoo.fr](mailto:pr.njike@yahoo.fr)

**Costa Rica/Costa Rica/Costa Rica**

Ms Montserrat VARGAS  
Permanent Delegation of Costa Rica to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2576  
Fax: +33 (0)1 4273 1645  
E-mail: [dl.costa-rica@unesco.org](mailto:dl.costa-rica@unesco.org)

**Côte d'Ivoire/Côte d'Ivoire/Côte d'Ivoire**

*Head of Delegation*

Mr Marcel KOUASSI AKA  
Centre de Recherches Océanologiques  
29, rue des Pêcheurs  
B.P. 18  
Abidjan  
Tel: +225 2135 6448  
E-mail: [kouassi12@hotmail.com](mailto:kouassi12@hotmail.com)

*Advisor*

Mr Loukou KOUAME  
Délégation permanente de Côte d'Ivoire auprès de  
l'UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
E-mail: [k\\_loukoun@yahoo.fr](mailto:k_loukoun@yahoo.fr);  
[l.kouame@unesco.org](mailto:l.kouame@unesco.org)

**Czech Republic/République Tchèque/  
República Checa**

*Head of Delegation*

Ms Michaela ANDRESOVÁ  
Third Secretary  
Permanent Delegation of the Czech Republic to  
UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3535  
Fax: +33 (0)1 4273 2180  
E-mail: [unesco.paris@embassy.mzv.cz](mailto:unesco.paris@embassy.mzv.cz)

**Democratic People's Republic of Korea/  
République Populaire Démocratique de  
Corée/República Popular Democrática de  
Corea**

*Head of Delegation*

Mr Sok Chol HAN  
Deputy Permanent Delegate  
Permanent Delegation of the Democratic  
People's Republic of Korea to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2564  
Fax: +33 (0)1 4568 2563  
E-mail: [dl.dprkorea@unesco.org](mailto:dl.dprkorea@unesco.org)

*Alternate*

Mr Ri JANG GON  
Deputy Permanent Delegate  
Permanent Delegation of the Democratic  
People's Republic of Korea to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2564  
Fax: +33 (0)1 4568 2563  
E-mail: [dl.dprkorea@unesco.org](mailto:dl.dprkorea@unesco.org)

**El Salvador/Salvador/El Salvador**

*Head of Delegation*

Ms Nanette VIAUD DESROCHES  
Conseillère-déléguée adjointe  
Permanent Delegation of El Salvador to  
UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3419  
Fax: +33 (0)1 4734 4186  
E-mail: [dl.el-salvador@unesco.org](mailto:dl.el-salvador@unesco.org)

**Finland/Finlande/Finlandia**

*Head of Delegation*

Dr Tapani STIPA  
Head of Group  
Finnish Institute of Marine Research  
Erik Palménin aukio 1  
P.O. Box 2  
00560 Helsinki  
Tel: +358 9 505 8090  
Fax: +358 9 830 0453  
E-mail: [tapani.stipa@fimr.fi](mailto:tapani.stipa@fimr.fi)

*Alternate*

Ms Pia HILLO  
Deputy Permanent Delegate  
Minister-Counsellor  
Permanent Delegation of Finland to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3432  
Fax: +33 (0)1 4306 1902  
E-mail: [pia.hillo@formin.fi](mailto:pia.hillo@formin.fi)

*Representative*

Mr Liisamari HERALA  
Permanent Delegation of Finland to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3433  
Fax: +33 (0)1 4306 1902  
E-mail: [dl.finlande@unesco.org](mailto:dl.finlande@unesco.org)

**Italy/Italie/Italia**

*Head of Delegation*

S. Exc. Monsieur Giuseppe MOSCATO  
Ambassadeur,  
Délégué permanent  
Délégation permanente de l'Italie auprès de  
l'UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3141  
Fax: +33 (0)1 4566 4178  
E-mail: [dl.italia@unesco.org](mailto:dl.italia@unesco.org)

*Alternate*

Ms Cristina CARENZA  
Délégation permanente de l'Italie auprès de  
l'UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE

*Representatives*

Prof. Stefano TINTI  
Department of Physics  
University of Bologna  
Viale Carlo Berti Pichat 8  
I-40127 Bologna  
Tel. +39 051 209 5025  
Fax +39 051 209 5058  
Email: [stefano.tinti@unibo.it](mailto:stefano.tinti@unibo.it)  
(Also Chairperson of ICG/NEAMTWS)

Mr Giovanni SCEPI  
Ministry of Environment of Italy  
Via Cristoforo Colombo 44  
Rome  
Tel: +39 065 722 3433  
E-mail: [scepi.giovanni@minambiente.it](mailto:scepi.giovanni@minambiente.it)

Prof. Ezio BUSSOLETTI  
Conseiller scientifique  
Délégation permanente de l'Italie auprès de l'UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3141/3121  
Fax: +33 (0)1 4566 4178  
E-mail: [e.bussoletti@unesco.org](mailto:e.bussoletti@unesco.org)

Mr. Severo MASTRONARDI  
Délégation permanente de l'Italie auprès de l'UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3141  
E-mail: [s.mastronardi@unesco.org](mailto:s.mastronardi@unesco.org)

Mr Antonio NAVARRA  
Director CMCC  
Viale Aldo Moro 44  
40127 Bologna  
Tel: +39 051 378 2616  
Fax: +39 051 378 2655  
E-mail: [navarra@bo.iugv.it](mailto:navarra@bo.iugv.it)

#### **Kuwait/Koweit/Kuwait**

##### *Head of Delegation*

Mr Abdul Razzak AL-NAFISI  
Ambassador, Permanent Delegate  
Permanent Delegation of Kuwait to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2669  
Fax: +33 (0)1 4568 9305  
E-mail: [dlo.koweit@unesco.org](mailto:dlo.koweit@unesco.org)

##### *Alternates*

Mr Mohammed AL-SHATTI  
Permanent Delegation of Kuwait to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2669  
Fax: +33 (0)1 4568 9305  
E-mail: [dlo.koweit@unesco.org](mailto:dlo.koweit@unesco.org)

Mr Taleb AL-BAGHLI  
Délégué permanent adjoint  
Permanent Delegation of Kuwait to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 2669  
Fax: +33 (0)1 4568 9305  
E-mail: [dlo.koweit@unesco.org](mailto:dlo.koweit@unesco.org)

Prof. Redha AL-HASAN  
Dean of Faculty of Science  
Kuwait University, Faculty of Science  
P.O. Box 5969  
13060 Safat  
Tel: +965 484 5098  
Fax: +965 483 6127  
E-mail: [redha49@gmail.com](mailto:redha49@gmail.com)

#### **Malaysia/Malaisie/Malasia**

##### *Head of Delegation*

Prof. Dr Nor Aieni Binti Haji MOKHTAR  
Director/Under Secretary  
Ministry of Science, Technology & Innovation  
Level 6, Block C4, Complex C  
Federal Government Administrative Centre  
62662 Putrajaya  
Tel: +60 3 8889 3006  
Fax: +60 3 8889 3005  
E-mail: [noraieni@mosti.gov.my](mailto:noraieni@mosti.gov.my)

##### *Alternate*

Cdr. Mohd Khalis Haji JAAFAR  
Head of Oceanography & Meteorology Division  
National Hydrographic Centre  
Bandar Armada Putra, Pulau Indah  
42009 Pelabuhan Klang  
Selangor Darul Ehsan  
Tel: +60 3 3169 4400  
Fax: +60 3 3101 4400

#### **Mexico/Mexique/México**

##### *Head of Delegation*

H.E. Mr Homero ARIDJIS FUENTES  
Ambassador Extraordinary and Plenipotentiary,  
Permanent Delegate  
Permanent Delegation of Mexico to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3355  
Fax: +33 (0)1 4734 9245  
E-mail: [dl.mexique@unesco.org](mailto:dl.mexique@unesco.org)

*Alternate*

Biólogo Francisco BRIZUELA VENEGAS  
Director General de Educación en Ciencias y  
Tecnología del Mar  
Viaducto Miguel Alemán 806, piso 1  
Col. Nápoles, Del. Benito Juárez  
Mexico D.F. 03810  
Tel: +52 55 785 763/768  
Fax: +52 55 785 643  
E-mail: [brizuela@sep.gob.mx](mailto:brizuela@sep.gob.mx)

*Representative*

Mr Ismael MADRIGAL MONARREZ  
Responsable del sector de Ciencias/Scientific  
Adviser  
Delegación Permanente de la México ante la  
UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3487  
E-mail: [i.madrigal@unesco.org](mailto:i.madrigal@unesco.org)

**Myanmar/Myanmar/Myanmar**

*Head of Delegation*

Ms Nwe Nwe YEE  
Minister-Counsellor  
Embassy of the Union of Myanmar  
Permanent Delegation of the Union of Myanmar  
to UNESCO  
60 rue de Courcelles  
75008 Paris  
FRANCE  
Tel: +33 (0)1 5688 1590  
Fax: +33 (0)1 4562 1330  
E-mail: [me-paris@wanadoo.fr](mailto:me-paris@wanadoo.fr)

**Philippines/Philippines/Filipinas**

*Head of Delegation*

Mr Rolu P. ENCARNACION  
Chairman, National Committee on Marine  
Sciences  
Chief of Weather Services  
UNESCO National Commission of the Philippines  
Roxas Blvd., Posay City  
Metro-Manila 1300  
Tel: +63 2 834 3447  
Fax: +63 2 831 8873  
E-mail: [roluph@yahoo.com](mailto:roluph@yahoo.com)

**Saudi Arabia/Arabie Saoudite/Arabia Saudita**

*Head of Delegation*

Dr Assad AL-THUKAIR  
Associate Professor  
Coordinator of the Environmental Master  
Programme  
King Fahd University of Petroleum & Minerals  
P.O. 157  
Dhahran 31261  
Tel: +966 3 860 3827  
Fax: +966 3 860 4277  
E-mail: [thukair@kfupm.edu.sa](mailto:thukair@kfupm.edu.sa)  
**(Also Vice-Chairperson of IOCINDIO)**

**Senegal/Sénégal/Senegal**

*Head of Delegation*

Mr Moussa BAKHAYOKHO  
Conseiller Technique du Ministre de l'Economie  
Maritime, des Transports Maritimes, de la Pêche et  
de la Pisciculture  
B.P. 36006  
Dakar  
Tel: +221 33 849 7314  
Fax: +221 33 823 8720  
E-mail: [bakhayok@yahoo.fr](mailto:bakhayok@yahoo.fr)

*Alternate*

Mr Mouhamed KONATE  
Délégation permanente du Sénégal auprès de  
l'UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3390/92  
Fax: +33 (0)1 4306 1055  
E-mail: [dl.senegal@unesco.org](mailto:dl.senegal@unesco.org)

*Advisor*

Mr Ameth Pape GUEYE  
Délégation permanente du Sénégal auprès de  
l'UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3390/92  
Fax: +33 (0)1 4306 1055  
E-mail: [dl.senegal@unesco.org](mailto:dl.senegal@unesco.org)

**Serbia/Serbie/Serbia**

*Head of Delegation*

Mrs Tatjana PANAJOTOVIC-CVETKOVIC  
First Secretary,  
Chargé d'Affaires a.i.  
Permanent Delegation of the Republic of Serbia  
to UNESCO  
1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: +33 (0)1 4568 3337  
Fax: +33 (0)1 4056 3059  
E-mail: [dl.serbie@unesco.org](mailto:dl.serbie@unesco.org)

**Sweden/Suède/Suecia**

*Head of Delegation*

Mr Hans DAHLIN  
Director, Swedish Meteorological & Hydrological  
Institute (SMHI)  
European Global Ocean Observing System  
(EuroGOOS)  
SE-601 76 Norrköping  
Tel: 46 11 495 8300/8305  
Fax: 46 11 495 8001  
E-mail: [hans.dahlin@smhi.se](mailto:hans.dahlin@smhi.se)  
(Also representing EuroGOOS)

**Viet Nam/Viet Nam/Viet Nam**

*Head of Delegation*

Mr Tac An NGUYEN  
Chairman, Vietnam National IOC Committee  
Institute of Oceanography  
01 Cau Da  
Nha Trang City  
Tel: +84 5859 0109  
Fax: +84 5859 0034  
E-mail: [nguyentacan45@yahoo.com](mailto:nguyentacan45@yahoo.com)

*Alternate*

Mr Khoa Son NGUYEN  
Vice-Président,  
Académie Vietnamienne des Sciences et de la  
technologie  
18 Hoang Quoc Viet Rd., Cau Giay  
Hanoi  
Tel: +84 4756 1723  
Fax: +84 4756 8171  
E-mail: [nkson@vast.ac.vn](mailto:nkson@vast.ac.vn)

*Representatives*

Ms Thi Hong Phuc NGUYEN  
Member of Khanh Hoa Association of Marine  
Science & Technology  
01 Cau Da  
Nha Trang  
Tel: +84 5859 0109  
Fax: +84 5859 0034

Mr Van Hung TRAN  
Deputy-Director  
Vietnamese Academy of Science & Technology  
18 Hoang Quoc Viet Rd., Cau Giay  
Hanoi  
Tel: +84 4756 3108  
Fax: +84 4756 2765  
E-mail: [tvhung@hctt.vast.ac.vn](mailto:tvhung@hctt.vast.ac.vn);  
[hungto@vast.ac.vn](mailto:hungto@vast.ac.vn)

**IV. REPRESENTATIVES & OBSERVERS  
OF ORGANIZATIONS/REPRESENTANTS ET  
OBSERVATEURS D'ORGANISATIONS/  
REPRESENTANTES Y OBSERVADORES DE  
ORGANIZACIONES**

**A – ICSPRO Agencies**

**United Nations Environment Programme/  
Programme des Nations Unies pour  
l'environnement/Programa de las Naciones  
Unidas para el Medio Ambiente (UNEP)**

Mr Nelson ANDRADE COLMENARES  
Coordinator, UNEP-CAR/RCU  
14-20 Port Royal St.  
Kingston  
JAMAICA  
Tel: +1 876 922 9267/68/69  
Fax: +1 876 922 9292  
E-mail: [nac@cep.unep.org](mailto:nac@cep.unep.org)

Mr Yannick C. BEAUDOIN  
Geoscientist  
UNEP Shelf Programme  
UNEP/GRID–Arendal  
The UN House  
Teaterplassen 3  
P.O. Box 183  
4802 Arendal  
NORWAY  
Tel: +47 9542 9247  
Fax: +47 3703 5050  
E-mail: [yannick.beaudoin@grida.no](mailto:yannick.beaudoin@grida.no)



**United Nations Educational, Scientific and Cultural Organization/Organisation des Nations Unies pour l'éducation, la science et la culture/Organización de las Naciones Unidas para la Educación, la Ciencia y la Cultura (UNESCO)**

Mr Koïchiro MATSUURA  
Director-General  
Tel: 33 (0)1 4568 1311  
E-mail: [matsuura@unesco.org](mailto:matsuura@unesco.org)

Mr Salvatore Arico  
Programme Specialist  
Ecological Sciences and Biodiversity Section (SC/EES/ESB)  
Tel: +33 (0)1 4568 4090  
Email: [s.arico@unesco.org](mailto:s.arico@unesco.org)

Ms Ulrike Koschtial  
Associate Expert  
Section of Museums and Cultural Objects (CLT/CIH/MCO)  
Tel: +33 (0)1 4568 4406

Mr Kishore Rao  
Deputy Director  
World Heritage Centre (CLT/WHC)  
Tel: +33 (0)1 4568 1559

United Nations Educational, Scientific and Cultural Organization (UNESCO)  
7, Place de Fontenoy  
75352 Paris 07 SP  
FRANCE

**World Meteorological Organization/Organisation Météorologique Mondiale/Organización Meteorológica Mundial (WMO)**

Mr Edgard CABRERA  
Chief, Ocean Affairs Division  
Weather & Disaster Risk Reduction Services Dept.  
7bis, avenue de la Paix  
Case Postale 2300  
CH-1211 Genève 2  
SWITZERLAND  
Tel: +41 22 730 8237  
Fax: +41 22 730 8128  
E-mail: [ecabrera@wmo.int](mailto:ecabrera@wmo.int)

**B – Other Intergovernmental Organizations**

**Permanent Commission for the South Pacific/Commission permanente du Pacifique Sud/Comisión Permanente del Pacífico Sur (CPPS)**

Mr Gonzalo PEREIRA PUCHY  
Secretary-General, CPPS  
Permanent Commission for the South Pacific  
Complejo Alban Borja  
Edif. Classic, 2<sup>nd</sup> Floor  
Guayaquil  
ECUADOR  
Tel: +593 4 222 1202/3  
Fax: +593 4 222 1201  
E-mail: [gpereira@cpps-int.org](mailto:gpereira@cpps-int.org)

**International Hydrographic Organization/Organisation hydrographique internationale/Organización Hidrográfica Internacional)**

Mr Hugo GORZIGLIA  
Captain, Chilean Navy  
Director, International Hydrographic Bureau  
4 Quai Antoine 1<sup>er</sup> (B.P. 445)  
MC 98011 Monaco Cedex  
MONACO  
Tel: 337 9310 8100  
Fax: 337 9310 8140  
E-mail: [hgorziglia@ihb.mc](mailto:hgorziglia@ihb.mc)

**North Pacific Marine Science Organization/Organisation des sciences de la mer pour le Pacifique Nord/Organización del Pacífico Norte para las Ciencias del Mar (PICES)**

Mr Alexander S. BYCHKOV  
Executive Secretary, PICES  
c/o Institute of Ocean Sciences  
P.O. Box 6000  
9680 W. Saanich Road  
Sidney  
B.C. V8L 4B2  
CANADA  
Tel: +1 250 363 6364  
Fax: +1 250 363 6827  
E-mail: [bychkov@pices.int](mailto:bychkov@pices.int)

**United Nations International Strategy for  
Disaster Reduction - Platform for the  
Promotion of Early Warning/Stratégie  
internationale de prévention des  
catastrophes/Estrategia Internacional de  
Reducción de Desastres (UN/ISDR)**

Ms Stefanie DANNENMANN  
Programme Officer  
53113 Bonn  
GERMANY  
Tel: +49 228 815 0304  
Fax: +49 228 815 0399  
E-mail: [dannenmann@un.org](mailto:dannenmann@un.org)

**C – Non-Governmental Organizations**

**Commission of the History of Oceanography**

Mr Selim MORCOS  
28204 Kenton Lane  
Santa Clarita CA 91350  
USA  
Tel: +1 661 296 1034  
Fax: +1 661 296 1034  
E-mail: [selimmorx@aol.com](mailto:selimmorx@aol.com)

**Group on Earth Observations/Groupe sur  
l'observation de la Terre/Grupo sobre las  
Observaciones de la Tierra**

Vice Admiral Conrad LAUTENBACHER Jr., U.S.  
Navy (Ret.)  
Co-Chair GEO  
Undersecretary for Oceans & Atmosphere  
Administrator of NOAA  
US Dept. of Commerce, Room 5128  
14th Street & Constitution Ave NW  
Washington D.C. 20230  
USA  
Tel: +1 202 482 3436  
Fax: +1 202 408 9674  
E-mail: [conrad.lautenbacher@noaa.gov](mailto:conrad.lautenbacher@noaa.gov)

Prof. José ACHACHE  
Director, GEO Secretariat  
7 bis Avenue de la Paix  
Case Postale 2300  
1211 Geneva  
SWITZERLAND  
Tel: +41 22 730 8580  
Fax: +41 22 730 8520  
E-mail: [janache@geosec.org](mailto:janache@geosec.org)

**Institute of Marine Engineering, Science &  
Technology (IMAREST)**

Ms Bev MACKENZIE  
Institute of Marine Engineering, Science &  
Technology  
88, Coleman St.  
London EC2R 5BJ  
UNITED KINGDOM  
Tel: +44 (0)20 7382 2628  
Fax: +44 (0)20 7382 2670  
E-mail: [bev.mackenzie@imarest.org](mailto:bev.mackenzie@imarest.org)

**International Ocean Institute/ Institut  
international de l'océan/Instituto Oceánico  
Internacional (IOI)**

Mr Cherdsak VIRAPAT  
Executive Director  
P.O. Box 3  
Gzira GZR 1000  
MALTA  
Tel: +356 21 346 529  
Fax: +356 21 346 502  
E-mail: [ioihq@ioihq.org.mt](mailto:ioihq@ioihq.org.mt)

Mr Iouri OLIOUNINE  
Executive Director, Ret.  
P.O. Box 3, Gzira GZR 1000  
MALTA  
Tel: +356 21 346 529  
Fax: +356 21 346 502  
E-mail: [ioihq@ioihq.org.mt](mailto:ioihq@ioihq.org.mt)

Mr Noel J. BROWN  
President & CEO  
Friends of the United Nations  
789 Oeneke Ridge  
New Canaan CT 06840  
USA  
Tel: +1 203 966 7842  
Fax: +1 203 966 2305  
E-mail: [noelbrown@aol.com](mailto:noelbrown@aol.com)



**D – Advisory Bodies**

**Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection/Groupe mixte d'experts chargé d'étudier les aspects scientifiques de la protection de l'environnement marin/Grupo Mixto de Expertos sobre los Aspectos Científicos de la Protección del Medio Marino (GESAMP)**

Mr Tim BOWMER  
Senior Account Manager  
TNO Quality of Life  
Utrechtseweg 48  
P.O. Box 360  
3700 AJ Zeist  
THE NETHERLANDS  
Tel: +31 30 694 4645  
Fax: +31 30 694 4099  
E-mail: [tim.bowmer@tno.nl](mailto:tim.bowmer@tno.nl)

**Scientific Committee on Problems of the Environment/Comité scientifique sur les problèmes de l'environnement/Comité Científico sobre los Problemas del Medio Ambiente (SCOPE)**

Ms Véronique PLOCQ FICHELET  
Executive Director  
5, rue Auguste Vacquerie  
75016 Paris  
FRANCE  
Tel: +33 (0)1 4525 0498  
Fax: +33 (0)1 4288 1466  
E-mail: [vpf@icsu-scope.org](mailto:vpf@icsu-scope.org)

**Scientific Committee on Oceanic Research/Comité scientifique de la recherche océanique/Comité Científico de Investigaciones Oceánicas (SCOR)**

Mr Bjorn SUNDBY  
President, SCOR  
University of Quebec, Rimouski, & McGill  
University Earth & Planetary Sciences  
3450 University St.  
Montreal QC H3A 2A7  
CANADA  
Tel: +1 514 398 4883  
Fax: +1 514 398 4680  
E-mail: [bjorn.sundby@mcgill.ca](mailto:bjorn.sundby@mcgill.ca)

Mr Edward R. URBAN  
Executive Director, SCOR  
College of Marine & Earth Studies  
Robinson Hall, University of Delaware  
Newark DE 19716  
USA  
Tel: +1 302 831 7013  
Fax: +1 302 831 7012  
E-mail: [ed.urban@scor-int.org](mailto:ed.urban@scor-int.org)

**E<sub>A</sub> – IOC Primary Subsidiary Bodies (regional and technical)**

**IOC Advisory Body of Experts on the Law of the Sea/Organe consultatif d'experts sur le droit de la mer/Organo Consultivo de Expertos sobre el Derecho del Mar (IOC/ABE-LOS)**

M. Elie JARMACHE  
Chargé de Mission  
Secrétariat Général de la Mer  
16 bd. Raspail  
75007 Paris  
FRANCE  
Tel: 33 (0)1 5363 4158  
Fax: 33 (0)1 5363 4178  
E-mail: [elie.jarmache@pm.gouv.fr](mailto:elie.jarmache@pm.gouv.fr)  
*(Also representing France)*

**Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System/Groupe intergouvernemental de coordination du Système d'alerte aux tsunamis et de mitigation dans l'océan Indien/Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y Atenuación de sus Efectos en el Océano Índico (ICG/IOTWS)**

Mr Jan SOPAHELUWAKAN  
Chairman, ICG/IOTWS  
Deputy Chairman, Scientific Services  
Indonesian Institute of Sciences, LIPI  
(Lembaga Ilmu Pengetahuan Indonesia)  
Jl. Gatot Subroto 10  
Jakarta 12710  
Tel: +62 21 525 5179  
Fax: +62 21 529 7313  
E-mail: [jans@lipi.go.id](mailto:jans@lipi.go.id)  
*(Also representing Indonesia)*

**Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas/Groupe intergouvernemental de coordination du Système d'alerte rapide aux tsunamis et de mitigation dans l'Atlantique du Nord-Est, la Méditerranée et les mers adjacentes/Grupo Intergubernamental de Coordinación del Sistema de Alerta Temprana contra los Tsunamis y Atenuación de sus Efectos en el Atlántico Nororiental y el Mediterráneo y Mares Adyacentes (ICG/NEAMTWS)**

Prof. Stefano Tinti  
Chairman, ICG/NEAMTWS  
Department of Physics  
University of Bologna  
Viale Carlo Berti Pichat 8  
I-40127 Bologna  
Tel: +39 051 209 5025  
Fax: +39 051 209 5058  
Email: [stefano.tinti@unibo.it](mailto:stefano.tinti@unibo.it)  
*(Also representing Italy)*

**Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions/Groupe intergouvernemental de coordination du Système d'alerte aux tsunamis et aux autres risques côtiers dans la mer des Caraïbes et les régions adjacentes/Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y otras Amenazas Costeras en el Caribe y Regiones Adyacentes (ICG/CARIBE-EWS)**

Ms Lorna V. INNIS  
Coastal Zone Management Unit  
Bay Street  
St. Michael  
BARBADOS  
Tel: +246 228 5950/1/2  
Fax: +246 228 5956  
E-mail: [linniss@coastal.gov.bb](mailto:linniss@coastal.gov.bb)  
*(Also representing Barbados)*

**Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System/Groupe intergouvernemental de coordination du Système d'alerte aux tsunamis et de mitigation dans le Pacifique/Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y Atenuación de sus Efectos en el Pacífico (ICG/PTWS)**

Mr Giorgio DE LA TORRE  
Research Scientist  
Oceanographic Institute of the Ecuadorian Navy  
(INOCAR)  
Av. 25 de Julio – Base Naval Sur  
Guayaquil  
ECUADOR  
Tel: +593 4 248 1300  
Fax: +593 4 248 5165  
E-mail: [gdtorre@inocar.mil.ec](mailto:gdtorre@inocar.mil.ec)  
*(Also Acting Chairperson of ICG/PTWS)*

**Intergovernmental Committee for the Global Ocean Observing System/Comité intergouvernemental pour le Système mondial d'observation de l'océan/Comité Intergubernamental para el Sistema Mundial de Observación de los Océanos (I-GOOS)**

Mr François GÉRARD  
Ministère de l'Ecologie, de l'Energie, du Développement Durable et de l'Aménagement du Territoire (MEEDDAT)  
CGPC-S2, Tour Pascal B  
92055 La Défense Cedex  
Tel: +33 (0)1 4081 2388  
E-mail: [francois.gerard@developpement-durable.gouv.fr](mailto:francois.gerard@developpement-durable.gouv.fr)  
*(Also representing France)*

**IOC Committee on International Oceanographic Data and Information Exchange/ Echange international des données et de l'information océanographiques/Intercambio Internacional de Datos e Información Oceanográficos (IODE)**

Mr Greg REED  
Co-Chairperson  
Australian Ocean Data Centre Joint Facility  
Fleet Headquarters  
Wylde Street Building 89, Garden Island  
Potts Point NSW 2011  
AUSTRALIA  
Tel: +61 2 9359 3141  
Fax: +61 2 9359 3120  
E-mail: [greg@aodc.gov.au](mailto:greg@aodc.gov.au)

**Joint IOC–WMO Technical Commission for Oceanography & Marine Meteorology/Commission technique mixte d'océanographie et de météorologie maritime/Comisión Técnica Mixta sobre Oceanografía y Meteorología Marina (JCOMM)**

Mr Jean-Louis FELLOUS  
Co-President/Programme Coordinator  
Executive Director, Committee on Space Research (COSPAR)  
c/o CNES  
2 place Maurice-Quentin  
75039 Paris Cedex 01  
FRANCE  
Tel: +33 (0)1 4476 7510  
Fax: +33 (0)1 4476 7437

Mr Peter DEXTER  
Co-president  
Ocean Services Section  
Bureau of Meteorology, GPO Box 1289  
Melbourne VIC 3001  
AUSTRALIA  
Tel: +61 39 669 4870  
Fax: +61 39 669 4695  
E-mail: [p.dexter@bom.gov.au](mailto:p.dexter@bom.gov.au)  
*(Also representing Australia)*

**IOC Sub-Commission for the Western Pacific (WESTPAC)**

Mr Zhang ZHANHAI  
Director-General  
Dept. of International Cooperation  
State Oceanic Administration  
1 Fuxingmenwai Ave  
Beijing 100860  
CHINA  
Tel: +86 10 6806 0086  
Fax: +86 10 5802 4627  
E-mail: [zhangzhanhai@pric.gov.cn](mailto:zhangzhanhai@pric.gov.cn)  
*(Also Chairperson of WESTPAC)*

Mr Hyung Tack HUH  
Past Chairman  
Fellow, Agriculture/Fisheries Sciences Div.  
Senior Scientist Emeritus  
Korean Ocean Research & Development Institute (KORDI)  
National Coordinator, UNDP/GEF YSLME Project  
Korean Academy of Science & Technology  
12-41 Bangbae-dong, Seocho-gu  
Seoul 137-060  
REPUBLIC OF KOREA  
Tel: +82 31 400 6201  
Tel: +82 2 534 5054 (home)  
Fax: +82 31 408 5934  
E-mail: [hthuh@kordi.re.kr](mailto:hthuh@kordi.re.kr)  
*(Also representing the Republic of Korea)*

**E<sub>B</sub> – IOC Secondary Subsidiary Bodies**

**General Bathymetric Chart of the Oceans/Carte générale bathymétrique des océans/Mapa Batimétrico General de los Océanos (IHO–IOC/GEBCO)**

Mr David MONAHAN  
Chairman, GEBCO Guiding Committee  
Center for Coastal & Ocean Mapping  
University of New Hampshire  
Chase Ocean Engineering Lab.  
24 Colovos Road  
Durham NH 03824  
USA  
Tel: +1 603 862 3755  
Fax: +1 603 862 0839  
E-mail: [monahand@ccom.unh.edu](mailto:monahand@ccom.unh.edu)

**Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems/Groupe de travail sur les systèmes d'alerte aux tsunamis et aux autres aléas liés au niveau de la mer, et de mitigation/Grupo de Trabajo sobre Sistemas de Alerta contra Tsunamis y Otros Peligros Relacionados con el Nivel del Mar y Atenuación de sus Efectos (TOWS-WG)**

Mr Neville SMITH  
Co-chairman, TOWS-WG  
Deputy Director (Research & Systems)  
Bureau of Meteorology  
700, Collins St., G.P.O. Box 1289  
Melbourne VIC 3008  
AUSTRALIA  
Tel: +61 3 9669 4444  
Fax: +61 3 9669 4558  
E-mail: [n.smith@bom.gov.au](mailto:n.smith@bom.gov.au); [csr@bom.gov.au](mailto:csr@bom.gov.au)  
*(Also Vice-Chairperson IOC)*

**Working Group on the Future of IOC/Groupe de travail sur l'avenir de la COI/Grupo de Trabajo sobre el Futuro de la COI**

Ms Savithri NARAYANAN  
Dominion Hydrographer  
Director-General Oceans Sciences  
Canadian Hydrographic Service  
Fisheries & Oceans Canada  
615 Booth Street, Suite 311  
Ottawa  
Ontario K1A 0E6  
CANADA  
Tel: +1 613 995 4413  
Fax: +1 613 947 4369  
E-mail: [savithri.narayanan@dfo-mpo.gc.ca](mailto:savithri.narayanan@dfo-mpo.gc.ca)  
*(Also IOC Vice-chairperson)*

**Sessional Working Group on the Preliminary Plan and Schedule of Initiatives for the 50th Anniversary of the IOC/Groupe de travail ad hoc sur les plan et calendrier d'initiatives préliminaires pour le 50e anniversaire de la COI/Grupo de Trabajo con el Plan y el Calendario Preliminares de Iniciativas par la Celebración del Cincuentenario de la COI**

Prof. David T. PUGH  
Chairman  
Marine Science Adviser  
3 Deeside Court, Dee Hills Park  
Chester CH3 5AU  
UNITED KINGDOM  
Tel: +44 (0)23 8059 6611; +44 (0)12 4434 6454  
Fax: +44 (0)1703 596 395  
E-mail: [d.pugh@mac.com](mailto:d.pugh@mac.com)

**F – International Programmes**

**European Global Ocean Observing System/Composante régionale du GOOS pour l'Europe/Componente Regional del GOOS para Europa (EuroGOOS)**

Mr Hans DAHLIN  
Director, Swedish Meteorological & Hydrological Institute (SMHI)  
European Global Ocean Observing System (EuroGOOS)  
SE-601 76 Norrköping  
SWEDEN  
Tel: +46 11 495 8300/8305  
Fax: +46 11 495 8001  
E-mail: [hans.dahlin@smhi.se](mailto:hans.dahlin@smhi.se)  
(Also representing Sweden)

**International Polar Year/Année polaire internationale/Año Polar Internacional (IPY)**

Mr David CARLSON  
Director  
International Programme Office  
British Antarctic Survey  
High Cross, Madingley Rd.  
Cambridge CB3 0ET  
UNITED KINGDOM  
Tel: +44 (0)1223 221 618  
Fax: +44 (0)1223 221 270  
E-mail: [ipy2@bas.ac.uk](mailto:ipy2@bas.ac.uk)

**Partnership for Observation of the Global Oceans/Partenariat pour l'observation de l'océan mondial/Colaboración para la Observación de los Océanos Mundiales (POGO)**

Prof. Howard ROE  
Retired Director  
Barton Mere, Barton Court Av.  
New Milton  
Hants BH25 7HD  
UNITED KINGDOM  
Tel: +44 (0)1425 622 092

**United Nations Framework Convention on Climate Change/Convention-cadre des Nations Unies sur les changements climatiques/Convención Marco de las Naciones Unidas sobre el Cambio Climático (UNFCCC)**

Mr Youssef NASSEF  
Manager, Adaptation, UNFCCC Secretariat  
Martin-Luther-King-Str. 8  
Bonn  
GERMANY 53175  
Tel: +49 228 815 1416  
E-mail: [ynassef@unfccc.int](mailto:ynassef@unfccc.int)

**World Climate Research Programme/Programme mondial de recherche sur le climat/Programa Mundial de Investigaciones Climáticas (WCRP)**

Mr Ghassem R. ASRAR  
Director, WCRP, c/o WMO  
7bis, Avenue de la Paix  
1202 Geneva  
SWITZERLAND  
Tel: +41 22 730 8246  
Fax: +41 22 730 8036  
E-mail: [gasrar@wmo.int](mailto:gasrar@wmo.int)

Mr Vladimir RYABININ  
Senior Scientific Officer, WCRP  
c/o WMO  
7bis, Avenue de la Paix  
1211 Geneva  
SWITZERLAND  
Tel: +41 22 730 8486  
Fax: +41 22 730 8036  
E-mail: [vryabinin@wmo.int](mailto:vryabinin@wmo.int)

**WCRP – Climate Variability and  
Predictability/Variabilité et prévisions  
climatiques/Variabilidad y Predictibilidad del  
Clima (CLIVAR)**

Mr Howard CATTLE  
Director, International CLIVAR Project Office  
National Oceanography Centre  
Empress Dock  
Southampton SO14 3ZH  
UNITED KINGDOM  
Tel: +44 (0)23 8059 6208  
Fax: +44 (0)23 8059 6204  
E-mail: [hyc@noc.soton.ac.uk](mailto:hyc@noc.soton.ac.uk)

**World Ocean Network (WON)**

Mr Manuel CIRA  
International Secretariat Coordinator  
WON Secretariat  
c/o NAUSICAA, Centre de la Mer  
Boulevard Sainte-Beuve, BP 189  
62203 Boulogne-sur-Mer Cedex  
FRANCE  
Tel: + 33 (0)3 2130 9993  
Fax: + 33 (0)3 2130 9394  
E-mail: [info@worldoceannetwork.org](mailto:info@worldoceannetwork.org)

Mr Paul VAN DER SANDE  
Executive Director, WON – EUAC  
Eugen Fuhylan 34  
B-2000 Antwerp  
BELGIUM  
Tel: +31 224 1008  
E-mail: [pcyper@scarlet.be](mailto:pcyper@scarlet.be)

**G – Others**

**Environmental Systems Research Institute  
Inc. (ESRI)**

Mr Emanuele GENNAI  
Global Account Executive  
Europe, Middle east, Africa (EMEA) Group  
5–7 Route du Cordon  
1260 Nyon  
SWITZERLAND  
Tel: +41 22 365 6900  
Fax: +41 22 365 6911  
E-mail: [egennai@esri.com](mailto:egennai@esri.com)

**V – LECTURERS**

**A – Roger Revelle Memorial Lecturers**

Ms Cecilie MAURITZEN  
Norwegian Meteorological Institute  
P.O. Box 43, Blindern  
N-0313 Oslo  
NORWAY  
Tel: +47 2296 3186  
Fax: +47 7796 3050  
E-mail: [c.mauritzen@met.no](mailto:c.mauritzen@met.no)

Mr Robert J. Nicholls  
Professor of Coastal Engineering  
School of Civil Engineering and the Environment  
Room 5029 Lanchester Building  
University of Southampton  
Southampton SO17 1BJ  
UNITED KINGDOM  
Tel: +44 (0)23 8059 4139  
Fax: +44 (0)23 8067 7519  
E-mail: [r.j.nicholls@soton.ac.uk](mailto:r.j.nicholls@soton.ac.uk)

Prof. Nadia PINARDI  
Department of Environmental Sciences  
Via S. Alberto 167  
48100 Ravenna  
ITALY  
Tel: +39 0544 937 332  
Fax: +39 0544 937 324  
E-mail: [n.pinardi@sincem.unibo.it](mailto:n.pinardi@sincem.unibo.it)

**VI. SECRETARIAT/SECRETARIAT/  
SECRETARIA**

**A – At Headquarters**

1, rue Miollis  
75732 Paris Cedex 15  
FRANCE  
Tel: 33 (0)1 4568 1000/4568 3983  
Fax: 33 (0)1 4568 5812/10  
Tlx: 20446 PARISCbl: UNESCO PARIS/740057  
IOCS UC  
E-mail: [initial.familyname@unesco.org](mailto:initial.familyname@unesco.org)

**Executive Secretary**

Mr Patricio BERNAL

**Executive Secretary's Office**

Mr Stefano BELFIORE  
Ms Réjane HERVE-SMADJA  
Ms Aurora Mateos  
Ms Silvia SERMENO  
Ms Ksenia YVINEC

**Editor**

Mr Ray C. GRIFFITHS

**Documentation Office**

Mr Patrice BONED

**Tsunami Unit**

Mr Bernardo ALIAGA  
Ms Forest COLLINS  
Mr Peter KOLTERMANN (Head)  
Ms Belén MARTIN-MIGUEZ  
Ms Banday NZOMINI  
Mr Dimitri TRAVIN  
Mr Ulrich WOLF  
Mr Masahiro YAMAMOTO

**Ocean Sciences Section**

Mr Julian BARBIÈRE (Acting Head)  
Ms Virginie BONNET  
Ms Nuria Fernandez  
Ms Maria HOOD  
Ms Christiane LE CONAN

**Ocean Observation and Services Section**

Mr Thorkild AARUP  
Mr Justin AHANHANZO  
Mr Keith ALVERSON (Head)  
Ms Laurence FERRY  
Mr Albert FISCHER  
Ms Irène GAZAGNE  
Mr Tom GROSS  
Ms Simonetta HAOND  
Ms Ho Hien LAM  
Mr Adrien VANNIER

**Capacity-Building Section**

Mr Joannes BERQUE  
Mr Ehrlich DESA (Head)  
Ms Barbara LWANGA

**B– IOC Staff away from Headquarters**

Mr Nick D'ADAMO  
Head, Perth Regional Programme Office  
c/o Bureau of Meteorology  
5<sup>th</sup> Floor  
1100 Hay St.  
P.O. Box 1370  
West Perth WA 6005  
AUSTRALIA  
Tel: +61 8 9226 2899  
Fax: +61 8 9263 0599  
E-mail: [nick.adamo@bom.gov.au](mailto:nick.adamo@bom.gov.au)

Mr Tony ELLIOT  
Head, ICG/IOTWS Secretariat  
c/o Bureau of Meteorology  
1100 Hay St.  
P.O. Box 1370  
West Perth WA 6872  
AUSTRALIA  
Tel: +61 8 9226 0191  
Fax: +61 8 9263 2211  
E-mail: [t.elliott@unesco.org](mailto:t.elliott@unesco.org)

Mr Henrik ENEVOLDSEN  
Programme Specialist, Technical Secretary,  
IPHAB  
Harmful Algae Bloom Programme  
IOC Science & Communication Centre on Harmful  
Algae  
University of Copenhagen  
Oster Farimagsgade 2 D  
1353 Copenhagen K  
DENMARK  
Tel: +45 3313 4446  
Fax: +45 3313 4447  
E-mail: [h.enevoldsen@unesco.org](mailto:h.enevoldsen@unesco.org)  
<http://ioc-unesco.org/hab>

Mr Peter PISSIERSSENS  
Head, IOC Project Office for IODE  
Wandelaarkaai 7  
8400 Ostend  
BELGIUM  
Tel: +32 59 340 158  
Fax: +32 59 340 152  
E-mail: [p.pissierssens@unesco.org](mailto:p.pissierssens@unesco.org)

Ms Janice ROMAGUERA TROTTE  
Head, IOC Rio de Janeiro Regional Office  
Diretoria de Hidrografia e Navegação  
Rua Barão de Jaceguay s/no  
Ponta da Armação, Niterói  
Rio de Janeiro  
24048-900 BRAZIL  
Tel: +55 21 2189 3013  
Fax: +55 21 2189 3088  
E-mail: [janice.trotte@terra.com.br](mailto:janice.trotte@terra.com.br)  
[Janice@dhn.mar.mil.br](mailto:Janice@dhn.mar.mil.br)

Mr Cesar TORO  
IOC Secretary for IOCARIBE  
Sub-Commission for the Caribbean & Adjacent  
Regions  
Calle de la Factoria 36-57  
Casa del Marques de Valdehoyos  
A. A. 1108  
Cartagena de Indias  
COLOMBIA  
Tel: +57 5 664 6399  
Fax: +57 5 660 0407  
E-mail: [c.toro@unesco.org](mailto:c.toro@unesco.org)

Mr Wenxi ZHU  
Project Expert  
IOC Regional Secretariat for WESTPAC  
c/o Dept. of Marine & Coastal Resources  
92 Phaholyothin Rd, Samsennai  
Bangkok 10400  
THAILAND  
Tel: 66 2 298 2637/142  
Fax: 66 2 298 6313  
E-mail: [z.wenxi@unescobkk.org](mailto:z.wenxi@unescobkk.org)



## ANNEX IX

### LIST OF ACRONYMS

ABE-LOS	Advisory Body of Experts on the Law of the Sea (IOC)
ACCC	Adaptation to Climate Change: Responding to Coastline Change in its Human Dimensions in West Africa through Integrated Coastal Area Management
ADPC	Asian Disaster Preparedness Centre
AoA	Assessment of Assessments
ArcticGOOS	Arctic GOOS Regional Alliance
ASEAN	Association of South-East Asian Nations
ATCM	Antarctic Treaty Consultative Meeting
BGAN	broadband global area network
BlackSeaGOOS	Black Sea GOOS Regional Alliance
BOOS	Baltic Operational Oceanographic System (Baltic GOOS)
CARIBE-EWS	Tsunami and Other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions (IOC)
CBD	Convention on Biodiversity
CD	Capacity development
CLCS	Commission on the Limits of the Continental Shelf (UN)
CLIVAR	Climate Variability and Prediction (WMO)
COE	Centro de Operaciones de Emergencia [Emergency Operations Centre]
COMEST	The World Commission on the Ethics of Scientific Knowledge and Technology (UNESCO)
CoML	Census of Marine Life
CPPS	Comisión Permanente del Pacífico Sur [Permanent Commission for the South Pacific]
CZCP	Coastal Zone Community of Practices (GEO)
DART	Deep-ocean Assessment and Reporting of Tsunamis
DBCP	Data Buoy Co-operating Panel (IOC–WMO)
DOALOS	Division for Ocean Affairs and the Law of the Sea (UN)
E2EDM	End-to-end data management (IODE)
EES	Division of Ecological and Earth Sciences for Sustainable Development (UNESCO)
EEZ	Exclusive Economic Zone (UNCLOS)
EOC	Education, Outreach, Communication (IPY)
ETDMP	Expert Team on Data Mngm Practices (JCOMM–IODE)
EuroGOOS	European Global Ocean Observing System
FAO	Food and Agriculture Organization of the United Nations

GCOS	Global Climate Observing System (WMO–ICSU–IOC–UNEP)
GEBCO	General Bathymetric Chart of the Oceans (IOC–IHO)
GEF	Global Environment Facility (UNDP)
GEO	Group on Earth Observation
GEOHAB	Global Ecology and Oceanography of Harmful Algal Blooms (SCOR–IOC)
GEONET	New Zealand seismological network
GEOSS	Group on Earth Observation System of Systems (GEO)
GESAMP	Group of Experts on Scientific Aspects of Marine Environmental Protection (IMO–FAO–UNESCO/IOC–WMO–WHO–IAEA–UN–UNEP)
GIS	Geographic Information System
GlobalNEWS	Global Nutrient Export from Watersheds (IOC)
GLOSS	Global Sea Level Observing System (IOC)
GODAE	Global Ocean Data Assimilation Experiment (GOOS)
GOHWMS	Global Ocean-related Hazards Warning and Mitigation System (IOC)
GOODS	Global Open Oceans and Deep Seabed (IOC–UNESCO–IUCN–Mexico–Canada–Australia Expert Group)
GOOS	Global Ocean Observing System (IOC–WMO)
GOOS-Africa	GOOS Regional Alliance for Africa
GPO	GOOS Project Office (IOC)
GRA	GOOS Regional Alliance
GRASP	GOOS Regional Alliance for the Southeast Pacific
HAB	Harmful Algal Blooms (IOC)
HLO	High-level Objective (UNESCO budgetary term)
iAOOS	integrated Arctic Ocean Observing System
IAPSO	International Association for the Physical Sciences of the Ocean
IASC	Inter-Agency Standing Committee (UN)
IBCM	International Bathymetric chart of the Mediterranean (GEBCO)
IBSA	India–Brazil–South Africa (southern hemisphere co-operation)
ICAM	Integrated Coastal Area Management (IOC)
ICC	International Co-ordinating Council (MAB)
ICG	Intergovernmental Co-ordination Group (IOC)
ICP	Informal Consultative Process (UN)
ICSPRO	Intersecretariat Committee on Scientific Programmes Relating to Oceanography
ICTP	International Centre for Theoretical Physics
ICSU	International Council for Science
IGFA	International Group of Funding Agencies for Global Change Research
I-GOOS	Intergovernmental Committee for GOOS (IOC–WMO–UNEP)



IHO	International Hydrological Organization
IHP	International Hydrological Programme (UNESCO–IHO)
IMCAM	Integrated Marine and Coastal Area Management
IMO	International Maritime Organization (UN)
Ina-TEWS	Indonesian Tsunami Early Warning System
INMARSAT	International maritime satellite telecommunications company
INOCAR	Instituto Oceanográfico de la Armada (Ecuador)
IOC	Intergovernmental Oceanographic Commission (UNESCO)
IOCEA	IOC Regional Committee for the Central Eastern Atlantic
IOCINDIO	IOC Regional Committee for the Central Indian Ocean
IOCWIO	IOC Regional Committee for the Western Indian Ocean
IODE	International Oceanographic Data and Information Exchange (IOC)
IOI	International Ocean Institute
IOTWS	Indian Ocean Tsunami Warning and Mitigation System
IPY	International Polar Year
ISA	International Seabed Authority (UN)
ISDR	International Strategy for Disaster Reduction (UN)
ISO	International Organization for Standardization
IUBS	International Union of Biological Sciences
IUCN	World Conservation Union [formerly known as International Union for Conservation of Nature and Natural Resources]
IUGG	International Union for Geodesy and Geophysics
JCOMM	Joint Commission on Oceanography and Marine Meteorology (WMO–IOC)
JCOMMOPS	JCOMM Observing Platform Support
JMA	Japan Meteorological Agency
JODC	Japan Oceanographic Data Centre
LME	Large Marine Ecosystem
MAB	Man and the Biosphere programme (UNESCO)
MedGOOS	Mediterranean GOOS Regional Alliance
MLA	Main Line of Action (UNESCO budgetary term)
MoU	Memorandum of Understanding
NEAMTWS	Tsunami Early Warning System in the Northeastern Atlantic and the Mediterranean and Connected Seas (IOC)
NEPAD	New Partnership for Africa's Development
NGO	Non-governmental organization
NOAA	National Oceanic and Atmospheric Administration (USA)
NODC	National Oceanographic Data Centre (IODE)
NOWPAP	Northwest Pacific Action Plan (UNEP)

NTWC	National Tsunami Warning Centre
NWPTAC	Northwest Pacific Tsunami Advisory Center
OBIS	Ocean Biogeographic Information System (CoML)
OCEATLAN	GOOS Regional Alliance for the Upper Southwest and Tropical Atlantic Ocean
ODIN	Oceanographic Data and Information Network (IODE)
ODP	Ocean Data Portal (IODE)
ODS	Ocean Data Standard (IODE–JCOMM)
OFDA	Office of Foreign Disaster Assistance (USA)
OLA/DOALOS	Office of Legal Affairs/Division of Ocean Affairs and the Law of the Sea (UN)
OOFS	Operational Ocean Forecast Systems (JCOMM)
OOPC	Ocean Observations Panel for Climate (GCOS–GOOS–WMO)
OPSC	Observations Programme Support Centre (JCOMM)
OSS	Operational Oceanographic Service (Italy)
OTN	Ocean Tracking Network (CoML)
PEMSEA	Partnerships in Environmental Management for the Seas of East Asia
PICO	Panel on Integrated Coastal Observation (GCOS)
PIGOOS	Pacific Islands GOOS Regional Alliance
POGO	Partnership for Observation of the Global Oceans
PRSN	Puerto Rico Seismic Network
PTWC	Pacific Tsunami Warning Center (USA)
PTWS	Pacific Tsunami Warning and Mitigation System (IOC)
QMF	Quality Management Framework (WMO)
ROOS	Regional Ocean Observing System
RTWC	Regional Tsunami Watch Centre (IOC)
RTWP	Regional Tsunami Watch Provider (IOC)
SAFARI	Meteorological satellite (NASA, USA)
SC	Steering Committee
SAON-IG	Sustained Arctic Observing Network Initiating Group (GOOS)
SCAR	Scientific Committee on Antarctic Research (ICSU)
SCOPE	Scientific Committee on Problems of the Environment (ICSU)
SCOR	Scientific Committee on Oceanic Research (ICSU)
SCUFN	Technical Sub-Committee on Undersea Features Names (GEBCO)
SEAGOOS	South-East Asian GOOS
SERead	Scientific Educational Resources and Experience Associated with the Development of Argo (UNESCO)
SERVIR	Internet website developed for Latin America and the Caribbean

SIDA	Swedish International Development Cooperation Agency
SINCEM	Simulazioni Numeriche del Clima e degli Ecosistemi Marini (Italy)
SISTER	System of Information on Strategies, Tasks and the Evaluation of Results (UNESCO budgetary term)
SOOS	Southern Ocean Observing System
SRU	Seismic Research Unit (University of the West Indies)
SSC	Scientific Steering Committee (HAB)
TOWS	Tsunami and Other Hazards Related to Sea-Level Warning and Mitigation System (IOC)
TSCOM	Technical Sub-Committee on Ocean Mapping (GEBCO)
TWFP	Tsunami Warning Focal Point (IOC)
UN	United Nations
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNGA	United Nations General Assembly
UNITWIN	University Twinning and Networking (UNESCO)
USAID	United States Agency for International Development
USGOOS	United States GOOS
USGS	United States Geological Survey
WCATWC	West Coast Alaska Tsunami Warning Center
WCPA	World Commission for Protected Areas (IUCN)
WCRP	World Climate Research Programme (WMO–IOC–ICSU)
WESTPAC	Western Pacific (IOC Sub-Commission)
WG	Working Group
WHC	World Heritage Centre (UNESCO)
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System
WMO	World Meteorological Organization (UN)
WOCE	World Ocean circulation Experiment (WCRP)
YSLME	Yellow Sea Large Marine Ecosystem

In this Series	Languages
<b>Reports of Governing and Major Subsidiary Bodies</b> , which was initiated at the beginning of 1984, the reports of the following meetings have already been issued:	
1. Eleventh Session of the Working Committee on international Oceanographic Data Exchange	E, F, S, R
2. Seventeenth Session of the Executive Council	E, F, S, R, Ar
3. Fourth Session of the Working Committee for Training, Education and Mutual Assistance	E, F, S, R
4. Fifth Session of the Working Committee for the Global Investigation of Pollution in the Marine Environment	E, F, S, R
5. First Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions	E, F, S
6. Third Session of the <i>ad hoc</i> Task team to Study the Implications, for the Commission, of the UN Convention on the Law of the Sea and the New Ocean Regime	E, F, S, R
7. First Session of the Programme Group on Ocean Processes and Climate	E, F, S, R
8. Eighteenth Session of the Executive Council	E, F, S, R, Ar
9. Thirteenth Session of the Assembly	E, F, S, R, Ar
10. Tenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific	
11. Nineteenth Session of the Executive Council, Paris, 1986	E, F, S, R, Ar
12. Sixth Session of the IOC Scientific Committee for the Global Investigation of Pollution in the Marine Environment	E, F, S
13. Twelfth Session of the IOC Working Committee on International Oceanographic Data Exchange	E, F, S, R
14. Second Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, Havana, 1986	E, F, S
15. First Session of the IOC Regional Committee for the Central Eastern Atlantic, Praia, 1987	E, F, S
16. Second Session of the IOC Programme Group on Ocean Processes and Climate	E, F, S
17. Twentieth Session of the Executive Council, Paris, 1987	E, F, S, R, Ar
18. Fourteenth Session of the Assembly, Paris, 1987	E, F, S, R, Ar
19. Fifth Session of the IOC Regional Committee for the Southern Ocean	E, F, S, R
20. Eleventh Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Beijing, 1987	E, F, S, R
21. Second Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Arusha, 1987	E, F
22. Fourth Session of the IOC Regional Committee for the Western Pacific, Bangkok, 1987	E only
23. Twenty-first Session of the Executive Council, Paris, 1988	E, F, S, R
24. Twenty-second Session of the Executive Council, Paris, 1989	E, F, S, R
25. Fifteenth Session of the Assembly, Paris, 1989	E, F, S, R
26. Third Session of the IOC Committee on Ocean Processes and Climate, Paris, 1989	E, F, S, R
27. Twelfth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Novosibirski, 1989	E, F, S, R
28. Third Session of the Sub-Commission for the Caribbean and Adjacent Regions, Caracas, 1989	E, S
29. First Session of the IOC Sub-Commission for the Western Pacific, Hangzhou, 1990	E only
30. Fifth Session of the IOC Regional Committee for the Western Pacific, Hangzhou, 1990	E only
31. Twenty-third Session of the Executive Council, Paris, 1990	E, F, S, R
32. Thirteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, New York, 1990	E only
33. Seventh Session of the IOC Committee for the Global Investigation of Pollution in the Marine Environment, Paris, 1991	E, F, S, R
34. Fifth Session of the IOC Committee for Training, Education and Mutual Assistance in Marine Sciences, Paris, 1991	E, F, S, R
35. Fourth Session of the IOC Committee on Ocean Processes and Climate, Paris, 1991	E, F, S, R
36. Twenty-fourth Session of the Executive Council, Paris, 1991	E, F, S, R
37. Sixteenth Session of the Assembly, Paris, 1991	E, F, S, R, Ar
38. Thirteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Baja California, 1991	E, F, S, R
39. Second Session of the IOC-WMO Intergovernmental WOCE Panel, Paris, 1992	E only
40. Twenty-fifth Session of the Executive Council, Paris, 1992	E, F, S, R
41. Fifth Session of the IOC Committee on Ocean Processes and Climate, Paris, 1992	E, F, S, R
42. Second Session of the IOC Regional Committee for the Central Eastern Atlantic, Lagos, 1990	E, F
43. First Session of the Joint IOC-UNEP Intergovernmental Panel for the Global Investigation of Pollution in the Marine Environment, Paris, 1992	E, F, S, R
44. First Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1992	E, F, S
45. Fourteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Paris, 1992	E, F, S, R
46. Third Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Vascoas, 1992	E, F
47. Second Session of the IOC Sub-Commission for the Western Pacific, Bangkok, 1993	E only
48. Fourth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, Veracruz, 1992	E, S
49. Third Session of the IOC Regional Committee for the Central Eastern Atlantic, Dakar, 1993	E, F
50. First Session of the IOC Committee for the Global Ocean Observing System, Paris, 1993	E, F, S, R
51. Twenty-sixth Session of the Executive Council, Paris, 1993	E, F, S, R
52. Seventeenth Session of the Assembly, Paris, 1993	E, F, S, R
53. Fourteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Tokyo, 1993	E, F, S, R
54. Second Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1993	E, F, S
55. Twenty-seventh Session of the Executive Council, Paris, 1994	E, F, S, R
56. First Planning Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Melbourne, 1994	E, F, S, R
57. Eighth Session of the IOC-UNEP-IMO Committee for the Global Investigation of Pollution in the Marine Environment, San José, Costa Rica, 1994	E, F, S
58. Twenty-eighth Session of the Executive Council, Paris, 1995	E, F, S, R
59. Eighteenth Session of the Assembly, Paris, 1995	E, F, S, R
60. Second Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1995	E, F, S, R

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

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