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

# IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE)

## Ninth Session

Cartagena de Indias, Colombia,
19–22 April 2006

**UNESCO**

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[*] Translated into Spanish. An executive summary is also available in French, Spanish and Russian on http://unesdoc.unesco.org

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## 1. OPENING

*1* Mr Marco Polo Bernal-Yarahuan (Mexico), Chairman of IOCARIBE, opened the Ninth Intergovernmental Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions at 09:00 hrs on Wednesday 19 April 2006, in the Hotel Caribe, Cartagena de Indias, Colombia.

*2* Mr Yesid Castro, Director of Multilateral Economic, Social and Environmental affairs at the Colombian Ministry of Foreign Affairs welcomed participants on behalf of the Government of Colombia. He conveyed his best wishes to the IOCARIBE Sub-Commission on the 20th anniversary of the initial establishment of the Secretariat of the Sub-Commission in the Casa del Marquez de Valdehoyos in the city of Cartagena de Indias.

*3* He referred to the activities of CICAR (the Cooperative Investigations of the Caribbean and Adjacent Regions was created in 1968), which was replaced in 1975 by the IOCARIBE Association, and which became a Sub-commission of the Intergovernmental Oceanographic Commission (IOC) of UNESCO for the Caribbean and Adjacent Regions in 1982.

*4* Mr Castro recognized the importance of IOCARIBE in promoting sustainable use of our seas for the benefit and security of coastal populations through the implementation of the IOCARIBE Scientific Plan. He also pointed out the importance of capacity building for marine sciences and ocean services which had been one of the main objectives of CICAR.

*5* On behalf of Michel Jarraud, Secretary-General of the World Meteorological Organization (WMO), Mr Edgard Cabrera, Chief Ocean Affairs, expressed his gratitude to the Government of Colombia for supporting WMO and its programmes, particularly its activities related to disaster reduction. Special mention was made of the WMO/IOC Joint Technical Commission for Oceanography and Marine Meteorology. JCOMM which was established in 1999 to coordinate marine meteorological and oceanographic services worldwide and their supporting observational, data management and capacity building programmes.

*6* Since the establishment of JCOMM, several natural disasters have occurred which had implications for the Commission. In particular 2005 witnessed disasters that ranged from one of the most intense and large tropical cyclone seasons in the Atlantic and Pacific Oceans, to severe flooding in several parts of the Caribbean region and Asia. Fortunately WMO's global system of warnings of extreme weather events was instrumental in reducing the loss in life and property.

*7* The involvement in and support for natural disaster reduction and the implementation of a comprehensive global multi-hazards warning system (including tsunamis and storm surges) have become high priority on the ocean international agenda. WMO and IOC play an active role through their JCOMM and its plan of action using the commission expertise in services (e.g. storm surges and waves), observing systems (sea level, ocean data buoys), and warning dissemination mechanisms (marine meteorological warning services).

*8* The IOC (UNESCO) Secretary for IOCARIBE then conveyed a message from Dr Patricio Bernal, IOC Executive Secretary and Assistant Director-General of UNESCO, to the session. In his message Dr Bernal reminded the Session that IOCARIBE was the first of the IOC regional subsidiary bodies and this fact reflected the strength and will of the region to be actively involved in important marine issues that affect the region at a global level. The extremely positive response to the call of the IOC Assembly to set up an Intergovernmental Coordination Group for Tsunami and other Coastal Hazards Warning System in the region is a perfect example of this vitality. However, the diminishing financial resources of the IOC of UNESCO,

requires that IOCARIBE considers during this session, innovative ideas to secure firm and long-term commitments from Member States to the IOCARIBE process.

*9* The Chairman of IOCARIBE thanked the Government of Colombia for hosting the session. He delivered to Mr Castro a Diploma by which IOC formally recognizes the contribution of the Colombian Government and the Colombian Ocean Commission (CCO) for their valuable contribution to the development of marine sciences and the protection of the environment in the region and especially by their support to the work of IOCARIBE. He informed Mr Castro of IOC's intention to formally recognize the contribution of the Colombian Government to marine sciences in the region and its continuous support to the work of the Sub-Commission.

*10* The Secretary of the Colombian Ocean Commission (CCO), Commander Julian Reyna, received the IOC Certificate of Appreciation from the IOC (UNESCO) Secretary for IOCARIBE, in recognition of the support provided to the IOC (UNESCO) Sub-commission for the Caribbean and Adjacent regions (IOCARIBE) 1986 to 2000 – clear and unselfish commitment of the Government of Colombia in support of the goals of UNESCO/IOC in research and development of ocean sciences and services for the benefit of Member States in the region.

*11* The full texts of the statements are included as Annex III.

## 2. ADMINISTRATIVE ARRANGEMENTS

### 2.1 ADOPTION OF THE AGENDA

*12* The IOC (UNESCO) Secretary of IOCARIBE introduced this item reminding the Session that the agenda could be modified even after its adoption as provided for by Rule of Procedure 10(2).

*13* He reminded Member State representatives that the formal and final deadline to inform the Secretary for IOCARIBE of nominations to the IOCARIBE Board of Officers is Thursday 20 April 2006, at 18:00 hrs. Similarly, the deadline for submission of Draft Recommendations was Friday 21 April, at 13.00 hrs.

*14* **The Sub-Commission adopted** the Agenda without changes as in Annex I.

### 2.2 DESIGNATION OF THE RAPPORTEUR FOR THE SESSION

*15* The Chairman invited the Session to designate two Rapporteurs for the present Session to assist the Chairman and the IOC (UNESCO) Secretary for IOCARIBE in the preparation of the Draft Summary Report.

*16* Colombia proposed Ms Mery Lozano to be the Rapporteur for the Spanish text and the United States of America proposed Ms Alexandra Curtis to be the Rapporteur for the English text.

*17* **The Sub-Commission accepted** the proposals and **welcomed** Ms Lozano and Curtis as the Rapporteurs for the present session.

### 2.3 CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION

*18* The IOC (UNESCO) Secretary for IOCARIBE introduced the documentation and mentioned the Action Paper (IOC/SC-IOCARIBE-IX/2) to be the guide document for the Session.

*19* He also provided guidance for drafting the recommendations and summary report for which a template for Draft recommendations was prepared (document IOC/SC-IOCARIBE-IX/Inf.4). He also stressed the importance of timely delivery to the secretariat of a short summary of presentations by their authors.

*20* He invited the Session to adopt the Provisional Timetable taking into account: (i) any Session decision to include supplementary items; (ii) the time likely to be required by the session working groups to report in plenary; (iii) the preparation of the Draft Summary Report in English and Recommendations in English and Spanish; and (iv) the need to benefit from interpretation. A half a day off was scheduled on Friday 21 April to facilitate the preparation of the Draft Summary Report in English and the Draft Recommendations in Spanish and English by the Secretariat.

*21* **The Sub-Commission adopted** the provisional timetable.

*22* **The Sub-Commission established** a sessional committee to work on specific questions that will require decisions by the Sub-Commission, as follows:

(i) Technical Review Committee for Recommendations (Agenda Item 9) chaired by Mr Guillermo Garcia (Cuba) and open-ended.

*23* The List of Documents is given in Annex IV, the List of Participants in Annex VII and the List of Acronyms in Annex VIII.

## 3. REPORT OF THE IOCARIBE SECRETARY ON INTERSESSIONAL ACTIVITIES

### 3.1 PROGRESS REPORT ON PROGRAMME AND BUDGET

*24* The IOC (UNESCO) Secretary for IOCARIBE introduced this item. He informed the Sesssion that a draft of the IOCARIBE Strategic Science Plan was distributed by mail to the Ad hoc Regional Group of Experts and to the Officers of the Sub-Commission for their comments. The final Draft of the IOCARIBE Strategic Science was submitted for its consideration and approval to the Officers of the Sub-Commission, at its regular meeting held in Mexico City, Mexico on 20–22 December 2006.

*25* The Caribbean Large Marine Ecosystem CLME Project PDF-B proposal underwent a series of reviews by UN agencies, and was distributed to countries for review and endorsement in May 2004. By July 1st, 2005, enough country endorsements had been obtained for submission of the revised PDF-B proposal to GEF and it was finally approved by the GEF on 5 August 2005. To date, 22 countries have endorsed the PDF-B with Colombia, Suriname and Venezuela remaining. The project will support the involvement of 25 GEF-eligible countries from the Wider Caribbean Region. The level of funding committed by GEF for the PDF-B phase is US$ 700,000 to which is being added US$ 200,000 of co-financing from the region. For the full project, GEF has indicated that it will consider funding to the level of US$ 9 M contingent on a minimum of at least a similar level of co-financing.

*26* The Implementing Agency for this project is UNDP, while the Executing Agency is IOC of UNESCO's through its Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE).

*27* Members of the White Water to Blue Water (WW2BW) Steering Committee (SC) met in Panama on 6 and 7 December 2005 to discuss a future strategy for the partnership. While in Panama the group developed several planning documents for review by the SC including a draft strategy statement, a proposed structure for the partnership, and a communications plan.

*28* The structure of WW2BW, the Strategic Plan and the Strategic Communications Plan were finalized and adopted. This meeting would address the Terms of Reference for the Executive Committee and potential members.

*29* Following the Workshop for the Formulation of a Draft Project on Integrated Coastal Management (ICM) in Latin America and the Caribbean (LAC), held in Cartagena in 2003, the preliminary objectives of a regional project were defined by the workshop participants.

*30* In January 2006 a virtual meeting was held with the participation of ODINCARSA data managers from Barbados, Saint Lucia, Dominica and Trinidad & Tobago.

*31* As conclusion of this virtual meeting a working group was activated to draft a proposal for implementing a Regional Data Centre for the Caribbean Islands. It was concluded that there is a clear need for developing the Caribbean Chapter of ODINCARSA by considering its particular sub-regional characteristics and realities.

*32* During IOCARIBE-VIII (Recife, Brazil, 14–17 April 2004) the Sub-Commission, while recognising the difficulties in raising the necessary funds for the Intra-Americas Sea Tsunami Warning System (IAS TWS) full implementation, reaffirmed the need to continue the development of such a system and requested the Tsunami Regional Expert Group to prioritise education and mitigation issues in continuing its work.

*33* IOC (UNESCO) hosted the "International Conference for the Development of a Tsunami and Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions in Mexico City, Mexico from 1 to 3 June 2005. In line with the recommendations of the Communiqué adopted at this international conference, the 23rd session of the IOC Assembly adopted IOC Resolution XXIII-13, by which it decided to establish an Intergovernmental Coordination Group (ICG) for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (IOC Resolution XXIII-13). The ICG met in Barbados from 10 to12 January, 2006.

*34* The Secretariat urged Member States to answer UNESCO Director-General's letter and designate their 24x7 focal point.

*35* Although the IOCARIBE-GOOS Steering Committee has developed a Strategic Plan and has met to discuss implementation activities, there remains no IOCARIBE-GOOS Implementation Plan, nor the resources to develop and carry out such a plan.

*36* Particular interest represents the IOCARIBE active involvement with a series of regional and UN organisations such as UNDP/GEF, IOCARIBE, UNEP, FAO, CARICOM CRFM, OSPESCA, OLDEPESCA, UWI that have been developed within the Caribbean LME project.

*37* He further reported on the present budgetary situation of the Sub-Commission. By decision of the IOC Assembly XXIII the budget approved by the Executive Council was

overruled and the funding for project and programme activities of the Sub-Commission was significantly reduced. Despite a tight financial situation, the Secretariat was able to hire part-time, two general services people and three professionals with extrabudgetary resources for secretarial support, accounting, web site development and maintenance, computing hardware and software and intranet establishment, development and maintenance, and for editing of the *IOCARIBE Newsletter*.

*38* After a long effort, the Sub-commission and the Secretariat secured funding for two major programmes: the Caribbean Large Marine Ecosystem and the "Know-Why Network."

*39* For the CLME an amount of US$ 913,000 that includes US$ 700,000 from GEF and US$ 213,000 match funds provided by participating Member States. The implementation started on 1sr April 2006 and is planned for the next 18 months. The "Know-Why-Network" also secured its funding for the next 18 months (US$ 218,000), and activities started in last quarter of 2005.

*40* **The Sub-commission congratulated** the Secretary on his report and **commended** Colombia for its sustained support of IOCARIBE over twenty years.

*41* Cuba emphasized the need to seek international funding opportunities such as the LME projects, and exhorted Member States to make a strong showing for the IOC Executive Secretary representative this week, so that IOCARIBE is properly included in the IOC budget.

*42* Venezuela suggested that the primary problem with funding for IOCARIBE lies in missed opportunities, and suggested that countries share information on the resources that they have at their disposal, so that they might be used more effectively.

*43* Colombia added that support for IOCARIBE should be divided among States appropriately, with each contributing according to their strengths.

*44* **The Sub-Commission commended** the members of the Board for their active role in fund raising. **It also stressed** the need to search for new options of financing, and **suggested** in particular to explore further the mechanisms of the banks and financial institutions in the region.

## 4. POLICY ISSUES

### 4.1 IOCARIBE STRATEGIC SCIENCE PLAN AND RELATED SERVICES FOR 2006–2015

*45* Mr Guillermo Garcia, IOCARIBE Vice-Chairman, introduced this agenda item and presented a brief review of the implementation of the IOCARIBE Medium Term Strategy 1999–2003. This Document was approved by the SC-IOCARIBE-VI Session (San José, Costa Rica, April 1999) and was also endorsed as well by the 21st Session of the IOC Assembly (Paris, July, 2001).

*46* The IOCARIBE Medium Term Strategic Science Plan 2006–2015 takes into consideration the document *"Annotated Outline for the Scientific Plan"* as a result of the First Workshop to formulate the Scientific Plan (Veracruz, Mexico, 1–3 December 1999); the document "*Framework for the IOCARIBE Strategic Science Plan and Related Services 2001–2010"* prepared during the IOCARIBE Ad-hoc Group of Experts Workshop to formulate the Strategic Science Plan 2001–2010 (Manzanillo, Colima, Mexico, 14–16 November 2001); the document *"IOC Ocean Sciences Section: Perspectives and Expected Results"* (IOC/INF-1206,

2005) and Recommendations adopted by Member States during the VI, VII, and VIIIth Sessions of the IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE) (San Jose, Costa Rica, 26–29 April 1999; Veracruz, Mexico, 25–28 February 2002 and Recife, Brazil, 14–17 April 2004).

*47* The objectives of the IOCARIBE Medium Term Strategic Science Plan are to:

- Support strategic planning of IOCARIBE Member States in relation to the development of its marine sciences, oceanic observations and associated services;
- Facilitate a coherent management of regional programmes related to the marine-coastal environment and its resources;
- Strengthen the scientific basis supporting regional programmes.

*48* The Main Lines of Action of the Plan are: Oceans and Climate, Ocean Ecosystem Science, Marine Science for Integrated Coastal Area Management, and Extreme and Dangerous Natural Events.

*49* **The Sub-Commission approved** the IOCARIBE Medium Term Strategic Science Plan 2006–2015, and **adopted** Recommendation SC/IOCARIBE-IX.1 in view of its endorsement by the IOC Executive Council at its 39th Session in June 2006.

## 5. REGIONAL PROJECTS

### 5.1 OCEAN SCIENCES SECTION

#### 5.1.1 Caribbean Large Marine Ecosystem (CLME)

*50* Mr Robin Mahon, Regional Project Coordinator of the Caribbean Large Marine Ecosystem (CLME), introduced this item.

*51* The overall objective of the project is the sustainable management of the shared living marine resources of the Caribbean LME and adjacent areas through an integrated management approach that will meet the World Summit on Sustainable Development (WSSD) target for sustainable fisheries.

*52* Preparation of the Caribbean Large Marine Ecosystem Project, titled “Sustainable Management of the Shared Living Marine Resources of the Caribbean Large Marine Ecosystem (CLME) and Adjacent Regions”, began with a PDF-A grant for a workshop in September 2001. The proposal underwent a series of reviews by UN agencies and was accepted into the GEF pipeline in March 2003. The proposal for funding to develop the full project (PDF-B funding) was submitted to UNDP in December 2003. It was distributed to countries for review and endorsement in May 2004. By July 1st, 2005, enough country endorsements had been obtained for submission of the revised PDF-B proposal to the GEF. This was approved by GEF on August 2005. To datem 22 countries have endorsed the PDF-B with Colombia, Mexico, Suriname, Grenada and Venezuela remaining.

*53* The PDF-B phase will last approximately 18 months. Its purpose is to conduct a Transboundary Diagnostic Analysis (TDA) for the region and prepare a preliminary Strategic Action Plan (SAP) to be addressed in the Full Project. This is according to standard GEF processes for project development.

*54* Preparations to implement the PDF-B have been proceeding steadily since approval was obtained. A Technical Secretariat will be located at the Centre for Resource Management and Environmental Studies (CERMES), University of the West Indies, Cave Hill Campus, Barbados, where the Regional Project Coordinator will have oversight of activities. Administrative functions will be carried out at the IOCARIBE Secretariat in Cartagena, Colombia. There are two positions in the Technical Secretariat: Project Manager and Assistant to the Manager. The position of Project Manager was advertised and a candidate was selected in November 2005. The Project Manager took up the post on 1st April 2006. The position of Assistant was filled at the beginning of March 2006. The unanticipated need for a MoU between UNESCO and the Government of Barbados for establishment of the Technical Secretariat at UWI resulted in a delay of several months while the MoU was being reviewed and signed.

*55* In order to promote linkages among primary intergovernmental and supporting agencies, an Interagency Consultation was held on 3 and 4 April 2006 in Panama City, funded largely by NOAA. The consultation was attended by UNDP/GEF, IOCARIBE, UNEP, FAO, CARICOM CRFM, OSPESCA, OLDEPESCA, UWI, NOAA and Project Staff. Its purpose was to develop the draft plan for PDF-B implementation to be reviewed by the countries. The consultation identified the need for supplementary funding to allow for a greater degree of interaction among stakeholders, and a request for the funds needed was formulated and sent to the GEF.

*56* The important role that IOCARIBE Focal Points can play was emphasized. Implementing the above process for 25 countries will require good internal communication at the national level as well as effective operation of the national interministerial committees which, it is hoped, will include the full range of stakeholders.

*57* **The Sub-commission joined** Mr Mahon in urging countries to participate in the CLME's PDF-B phase activities now ramping up.

*58* The U.S.A. thanked Mr Brown for helping to bring the CLME into existence, and looked forward to working with IOCARIBE on the input of science to sustainable management.

*59* Barbados also reiterated the need for the remaining four countries to sign the PDF-B approval letter. Mr Mahon confirmed that the invitations to each country to set up the ministerial committees would include suggestions for appropriate participants. He also mentioned the informal interagency meeting earlier in April 2006 in Panama, and thanked the U.S.A. and NOAA for funding.

*60* In response to a question from Brazil, Mr Mahon further clarified that CLME will work with the GEF focal points in local environmental facilities as well as UNEP and WECAFC focal points. The Chairman suggested that IOCARIBE submit a request to the IOC Executive Council to approve the UWI office for the CLME. The U.S.A. seconded this motion.

*61* **The Sub-Commission endorsed** the Memorandum of Understanding for the establishment of the PDF-B project office in Barbados and **adopted** Recommendation SC/IOCARIBE-IX.3 in view of its endorsement by the 39th Session of the IOC Executive Council in June 2006.

### 5.1.2 Pacific Central American Large Marine Ecosystem Project

*62* Mr Bradford Brown, IOCARIBE Vice-Chairman, introduced this item. The main objective of this project is the monitoring and assessment of the Pacific Coast of Central American LME and its resources. The IOCARIBE Technical Leader is Mr Daniel Lluch of

Mexico. A PDF-B GEF proposal has been prepared by UNEP and UNIDO and will be submitted to the Global Environment Facility (GEF) when funding possibilities are available. IOCARIBE has previously committed to work to build country support through its focal points, to be completed prior to SC/IOCARIBE-IX in 2008. The timing of implementation of that action is likely to be needed prior to SC/IOCARIBE-X in 2008.

### 5.1.3 Gulf of Mexico Large Marine Ecosystem Project

*63* Mr Bradford Brown, IOCARIBE Vice-Chairman, introduced this item. The PDF-B for the Gulf of Mexico LME has been awarded. The Project Leader is Mr Geraldo Gold of Mexico. The first Steering Committee was held in January 2006 and the project initiated. IOCARIBE had previously noted the importance of linkages between the Caribbean LME and the GOMLME. Now that both projects have begun, it is important that that recommendation be implemented and the Project Leader for the CLME attend GOMLME Steering Committee and other appropriate meetings. The GOMLME should be invited to CLME Steering Committee Meetings and other activities as appropriate. In interactions with the GOMLME, IOCARIBE should ensure a working relationship with IOCARIBE-GOOS.

*64* The Sub-Commission had previously noted that IOC provides a forum funded externally for scientific review of LME Projects on a worldwide basis and agreed to work towards providing a similar regional mechanism. When all three regional LMEs are underway IOCARIBE should seek external funds to conduct such an external scientific review. Regional meetings would be able to have a broader impact with regard to IOCARIBE area attendees and provide a valuable enhancement to the worldwide IOC forum.

*65* **The Sub-commission adopted** Recommendation SC/IOCARIBE-IX.2 on Large Marine Ecosystem projects.

### 5.1.4 Harmful Algal Blooms (HAB-ANCA)

*66* The IOC (UNESCO) Secretary for IOCARIBE introduced this item.

*67* He presented a review of the work of the Working Group on Harmful Algae in the Caribbean and Adjacent Regions (HAB-ANCA) and a summary of main events that occurred in the region since its third Session held at the Instituto Nacional de Investigaciones Agrícolas (INIA) in Cumaná – Venezuela from 16 to 18 July 2003.

*68* At that meeting the Group decided to strategically focus its Action Plan on the implementation of three main activities: 1. Capacity building, 2. Research/Monitoring, and 3. Communication. Due to the drastic changes made to the IOC Budget, the Regular Programme funds approved for ANCA were not available and the activities accomplished were the result of some Member States, national institutions and individuals support. IOCARIBE made contacts with Germany representatives to IOC and with the Marine Sciences Coordination ("Meereskundliche Querschnittsaufgaben") of the German Federal Maritime and Hydrographic Agency in Hamburg. For exploring ways of cooperation, a draft proposal was prepared and sent for their consideration. As a major achievement of the ANCA Group should be reported publication of the Journal *Biologia Tropical* dedicated to Harmful Algal Blooms in the Caribbean.

*69* Mexico, Panama and Costa Rica were represented at the IOC-UNESCO Web-based Learning course for South and Central America on Identification of Harmful Algae conducted by the Intergovernmental Oceanographic Commission (IOC) in Sao Pablo, Brazil, 16–27 May 2005.

*70* The Fourth Meeting of the ANCA-IOCARIBE HAB Working Group should take place in 2006.

*71* Mexico expressed concern that the drastic reduction in funding for the ANCA programme might be deleterious to the programme, and called on countries to find creative ways to support it, as Mexico has done through research centres, for example. Furthermore Mexico would support a proposal to review the way finance is approved for different groups of experts.

*72* **The Sub-Commission stressed** the importance of the project considering the frequent algal bloom events in coastal waters.

*73* Colombia noted that on a research cruise in February 2006, they observed a red tide 3 km in length near the border with Panama. Venezuela said that red tides occur in their waters with relative frequency and have caused deaths. They suggested inclusion of a recommendation in support of this programme, which was supported by Trinidad and Tobago.

*74* Trinidad and Tobago, though recognizing the need for sustained capacity building from HAB-ANCA, stressed also the importance of receiving help in the field of monitoring techniques.

*75* The Chairman suggested that renewal funding for the programme be requested from IOC.

*76* **The Sub-Commission adopted** Recommendation SC/IOCARIBE-IX.4.

### 5.1.5 White Water to Blue Water Initiative (WW2BW)

*77* The IOC (UNESCO) Secretary for IOCARIBE also Member of the WW2BW Steering Committee, presented this agenda item.

*78* During the Meeting in Panama on6 and 7 December 2005, members of the White Water to Blue Water (WW2BW) Steering Committee (SC) discussed a strategy for the partnership. The group developed several planning documents for review by the SC including a draft strategy statement, a proposed structure for the partnership, and a communications plan. During the meeting the WW2BW Strategic Plan and the Strategic Communication Plan for 2006–2009 were finalized and adopted. Also composition and Terms of Reference for the WW2BW Steering Committee was discussed.

*79* Mr Brown, as Vice-Chairman, commented on the CLME linkage to WW2BW, saying that the CLME will provide the framework within which WW2BW makes sense. Colombia expressed their support for continuing the work of WW2BW initiative.

### 5.1.6 Integrated Coastal Area Management (ICAM): MIC-LAC Project

*80* Ms Lorna Inniss, IOCARIBE Vice-Chairperson introduced this item and presented an overview on recent development of the ICAM project.

*81* Following the Workshop for the Formulation of a Draft Project on Integrated Coastal Management (ICM) in Latin America and the Caribbean (LAC), held in Cartagena in 2003, the preliminary objectives of a regional project were defined by the workshop participants. These included the improvement of existing ICM capacities in Latin America and the Caribbean through:

- Expansion of the ICM conceptual resources, methodological and policy database available to institutions, projects and programmes and other actors involved in ICM in Latin America and the Caribbean;
- Assessment of existing policy and coastal research capacity in countries of the region;
- Dissemination and status of existing initiatives, both nationally and internationally;
- Development and application of action-oriented approaches (proactive, preventive, etc.) to coastal policy and management in different countries; and
- Establishment of mechanisms for effective communication of scientific research results to decision-makers in the region.

*82* Whilst originally conceived as a project to be financed by extra-budgetary resources, these resources did not materialize and the project as a whole was not developed. However, some of the preliminary activities identified by the Cartagena workshop have been or are being implemented individually.

*83* These include the establishment in 2004 of a dedicated web site on ICM in Spanish and English (http://ioc3.unesco.org/icam-lac) providing national and regional information on existing initiatives as well as information resources on capacity building, science and technology, and governance issues.

*84* In order to exchange and share the basic ideas for an Integrated Coastal Management (ICM) Project in Latin America and the Caribbean among key players a Workshop “Tools for Integrated Coastal Zone Management (ICM) in Latin America and the Caribbean (LAC)” was held at the Hotel Atlante Plaza, Recife, Brazil, 12 and 13 April 2004.

*85* The main objective of the meeting was to build a regional project on Integrated Coastal Management (ICM) based on the concepts of cooperating networks, exchange of experiences and capacity building. This would enhance management of coastal resources and gain regional visibility for the debate on this theme.

*86* A regional ocean and coastal policy assessment will also be conducted in 2006, jointly with the Global Forum on Oceans, Coasts and Islands. This study will complement the regional baseline capacity Building Assessments that are being implemented by the IOC Capacity Building Section.

*87* Building on the results of these two regional assessments, it is proposed that the draft project proposal (LAC-ICAM) be re-activated and that resources be identified by the sub-commission for the preparation phase of the project.

*88* Ms Inniss informed the meeting that the Government of Barbados is exploring the possibility of assisting the Secretariat with the ICAM project, by boosting its human resource capacity to fulfil the requirements of this project. She also urged Member States to contribute to this very important project in any way possible, to achieve national objectives.

*89* Barbados confirmed this programme is a priority for the region and they are considering supporting ICAM-LAC with human resources from their own national programme. Barbados also said they would want to draw on the resources of the Tsunami Warning System in support of ICAM-LAC to the extent possible. Other Member States supported the proposal by Barbados and the ICAM-LAC programme.

*90* Colombia invited support from countries with more developed programmes in integrated coastal area management, by means of an expert to review and evaluate the integration of the institutes in charge of projects in coastal management in Colombia.

*91* Venezuela underlined the importance of regulating coastal settlement and development, and recommended that other countries in the region follow suit in passing a body of national marine legislation, for which they are now seeking support for implementation.

*92* Panama expressed support but cautioned against raising only short-term funding to support the programme, since long-term programmes need to be developed.

*93* The Dominican Republic felt there would be some aspects of the project that could be modified or prioritised.

*94* Mexico suggested formulating a recommendation to encapsulate the continuing interest in this programme.

*95* **The Sub-Commission adopted** Recommendation SC/IOCARIBE-IX.5.

## 5.2 OCEAN OBSERVATION AND SERVICES

### 5.2.1 Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions. IOC Intergovernmental Coordination Group

*96* Mr Israel Matos, Vice-Chairman of the IOC Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions introduced this agenda item to the Session.

*97* Tsunamis, unlike hurricanes, have a time scale of minutes and hours. Therefore, Member States, Emergency/Disaster Management, and the population at large, need to understand and respond appropriately to the natural signs and to the warnings issued by national and regional Tsunami Warning Centres. In order to address these challenges and considering the high risk and vulnerability of the region IOC/UNESCO decided to establish an Intergovernmental Coordination Group (ICG) for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (IOC Res. XXIII-13).

*98* Following the implementation of the aforementioned Resolution, IOC/UNESCO, jointly with WMO and ISDR convened the First Session of the Intergovernmental Coordination Group for Tsunami and other Coastal Hazard Warning System for the Caribbean Sea and Adjacent Regions (ICG/CARIBE-EWS) in Bridgetown Barbados from 10 to 12 January 2006. During the deliberations, the concept of an integrated warning system was considered, looking into the specific aspect of an effective end-to-end system in a multi-hazard framework. The following working groups were established each with a chair and vice-chairs, to discuss and provide recommendations:

Working Group 1. Tsunami and coastal inundation hazard risk assessment and research;

Working Group 2. Monitoring and detection systems and Warning Guidance;

Working Group 3. Warning dissemination and Communication;

Working Group 4. Preparedness, readiness and resilience.

*99* The ICG adopted the recommendations of the working groups. The ICG also elected a Chair (Trinidad and Tobago) and two Vice-Chairs (Venezuela and USA) who were charged with following up these recommendations together with the Chairs and Vice-Chairs of the working groups and the IOC Secretariat. The draft action plan was developed with 16 action items.

*100* During the IOCARIBE meeting the IOC/ICG Vice-Chairs and some working group Vice-Chairs along with the Secretariat met and came up with 22 recommendations (six action items were added to the original recommendations) that are outlined in IOC/SC-IOCARIBE-IX/INF-7 as the Action Plan. During the IOCARIBE meeting it was recommended and agreed that the recommendation of WG4 regarding the certification of at least one NOAA TsunamiReady community in each of the MS be added as an action item.

*101* The IOC/ICG Action Plan will be the guide document for future activities of the ICG/CARIBE-EWS, and Member States are invited to assist in the implementation. There were also additional general recommendations of particular relevance to the group. One of them is the designation of National Focal Points that will serve as the point of contact, not only for the receipt and response to the potential warnings, but also for the implementation of recommended actions at the national level. Another important recommendation has to do with the national assessments of capabilities, readiness, education and resilience, in order for the IOC/ICG to have a clear picture of the needs of the Member States and of the region as a whole. The Member States were also requested to look into the possibility of providing human and financial assistance to ICG Secretariat in this endeavour.

*102* The action plan of the first session of the IOC Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions is given in Annex V.

*103* As regards tsunamis and other ocean-related hazards, the WMO Representative reported that WMO's Global Telecommunications System (GTS) interconnecting the National Meteorological and Hydrological Services (NMHSs) of its Members holds potential for the timely and reliable exchange of related warnings and messages among the appropriate organizations. In fact, the Tsunami Warning System in the Pacific Ocean already utilizes the GTS for the exchange of such warnings. WMO is actively joining forces to ensure contributions to the development of the global Tsunami Warning System (TWS) within a multi-hazard framework.

*104* The GTS in WMO Region IV (North America, Central America and the Caribbean) is implemented via two-way satellite-based telecommunication services through the International Satellite Communications System (ISCS) operated by the National Weather Service of the USA. The ISCS was upgraded to IP based operation in 2004 and new terminal workstations installed at NMCs. The Region IV GTS Diagram was presented and is attached to the report as Annex VI.

*105* Emergency Managers Weather Information Network (EMWIN) receivers complement the ISCS system, as integrated elements, for a cost-effective implementation at meteorological offices of small islands.

*106* Ms Christa von Hillebrandt-Andrade, Vice-Chairperson of the ICG/CARIBE-EWS, reminded the session of the action item from the Barbados meeting that each country have a tsunami-ready community, recommending that this should be added as an action plan item for this meeting. She added that transitioning in Puerto Rico from training on warning and hazards to appointing people to a tsunami-ready team made a positive difference in the attitudes taken by programme participants. She also added that much has been learned about developing tsunami-

warning systems in different countries, and the people involved in these efforts should work jointly with every other programme in IOCARIBE, which should be reflected in the resources column for each of these programmes.

*107* Several Member States, supported by UNEP urged that any resolutions on this agenda item should refer to a multi-hazard system. The Chairman added that the proposal to extend the tsunami warning system to all coastal threats had already been approved at the last session of the IOC Executive Council. The Secretary expressed that a multi-purpose system is necessary, since requirements for any system will extend beyond one variable with one use. He said the main problem now is not "what" —a multi-purpose system is the recommended way to go— but "how".

*108* The USA added that the requirements for tsunamis and hurricanes will be different, most of all in terms of the amount of time available to respond after a warning, so as a result the alert systems for the two hazards will have to be somewhat different, which will need to be incorporated into an effective multi-purpose warning system. They would be glad to share the procedures they use on the Pacific coast in response to a tsunami. WMO mentioned that unfortunately an upcoming meeting on warning systems in Geneva in May 2006 conflicts with a meeting in the Mediterranean.

*109* Cuba offered its venue for the Spanish-speaking workshop, suggesting that costs would be reduced if the Leadership workshop was held back-to-back with the MARCUBA VII Marine Science Congress scheduled in Havana from 4 to 8 December 2006. This will also bring the opportunity to facilitate the attendance of a larger number of marine science leaders at MARCUBA, then facilitating mutual knowledge and communication among them.

*110* Some Member States expressed support for the importance of in-country preparation as highlighted by Ms von Hillebrandt-Andrade, including public outreach and classroom education, so that focal points can be effective. Mexico referred to the importance of strengthening the curricula of primary and secondary schools by adding a subject dealing with management of natural disasters with special emphasis on tsunamis and hurricanes, so young students can learn how to address properly and understand the risk of natural disasters.

*111* UNEP said they would like to work with the small island States in particular to find opportunities to coordinate or collaborate with groups doing training.

*112* Panama said the attitude in their country is that they will be spared from major disasters; therefore they will highlight two cities on the Caribbean that were affected by past tsunami events in order to change this mindset.

*113* Panama also asked IOCARIBE to address a request to high levels in their government to sign the letter and review the plans, so that they will commence work on the programme.

*114* Barbados urged that the recommendations from this meeting include the establishment and development of the Regional Tsunami Information Centre.

*115* Colombia announced that their authorities had been very concerned about the lack of Colombian seismic stations in a map of Caribbean seismic stations shown at the January 2006 ICG session. As a result, four seismic sensors will be installed by end of yea and two oceanographic buoys were installed one each off the Caribbean and Pacific coasts, whose data could be accessed by interested parties and organizations through their National Maritime Authority.

*116* Finally, Colombia emphasized the importance of proactive measures, particularly disaster response drills for communities at risk.

*117* The WMO presented a slide on their network of communications technology in the wider Caribbean region and on the Emergency Managers Weather Information Network (EMWIN). WMO said they are willing to collaborate with IOCARIBE on the outcomes of this session.

*118* Mr Brown cautioned that everything presented at this session must be considered in the light of the budget presented. He emphasized the importance of recognizing the need to support the core administrative functions of IOCARIBE, and not just individual projects.

*119* Ms Von Hillebrandt-Andrade wrapped up discussions by acknowledging the comments and stating that progress is being made in understanding the problem after almost 15 years, including the importance of integrating with other programmes. She mentioned that NOAA's Tsunami-Ready program only certifies a community if it has already been certified as storm-ready, so this process incorporates preparations for both types of disasters. She said she would make available a DVD on the Puerto Rico Tsunami-Ready program, which is not only bilingual but also includes a translation to sign language.

*120* **The Sub-Commission adopted** Recommendation SC-IOCARIBE-IX.6.

### 5.2.2 Oceanographic Data and Information Exchange (IODE)/Ocean Data and Information Network for the Caribbean and South America (ODINCARSA)

*121* Ms Lorna Inniss, IOCARIBE Vice-Chairperson, introduced this agenda item by providing a regional overview on recent developments of the International Oceanographic Data and Information Exchange (IODE) Programme. The IOC Executive Council at its 35th Session, decided to establish a Task Team on the Development of a Unified Comprehensive IOC Strategic Plan for Oceanographic Data and Information Management. This task team was requested to:

(i) carry out an assessment of data and data-product requirements of existing oceanography and marine meteorology programme/project, and evaluate whether these are currently met by the various groups of IODE data centres;

(ii) take into consideration existing data management plans such as the GOOS data management plan and relevant WMO data management plans;

(iii) draft an IOC Strategic Plan for Oceanographic Data and Information Management, taking into consideration the requirements of the plan in the framework of JCOMM;

(iv) submit a report on progress to the IOC Assembly.

*122* A new IOC Project Office for IODE was established in Ostend, Belgium with the contribution of the Government of Flanders and was inaugurated in April 2005,. The project office will give to the IODE community the opportunity to implement all the IODE projects, products and services, identify partners and new donors which can continue supporting the implementation of projects.

*123* Ms Inniss also introduced the Ocean Data and Information Network for the Caribbean and South America (ODINCARSA). Established in 2001, ODINCARSA is one of the major programmes of the Sub-Commission. Its original objective was to develop a regional cooperative

network for the management and exchange of oceanographic data and information for IOCARIBE and South America regions.

*124* Ms Inniss highlighted the complexity of implementing this programme in the region, mainly as a result of the diverse capacities among Member States to collect, use, and manage marine and coastal data and information, and reflected that continental countries of the wider Caribbean region have progressed satisfactorily in the establishment and maintenance of their data and information management institutions. All countries of the region have benefited from the training workshops of ODINCARSA, and the island States have a cadre of trained Marine Data Managers and Marine Information Managers. However, in other areas of capacity building, the progress has been slow, with limited funding to set up data collection and analysis programmes, or equipment to archive historical data.

*125* Considering the wide-ranging potential benefits of the IODE programme to ICAM, GOOS, CARIBE-EWS and other projects of the Sub-Commission, Ms Inniss urged Member States to support the regional programme and assist in capacity building efforts, so that the asymmetry in capacity is addressed.

*126* Mr Ehrlich Desa, Head of the IOC Capacity Building Section, said that all aspects of data centres will have to be reconsidered in light of the coming wave of information from monitoring stations. How will the data flow be channelled? Who will use the data? In what format does it need to be? And so on —all these questions must be taken into account.

*127* Barbados agreed that the programme must go beyond considerations of integration and wide dissemination of data, and there are concerns about resources which must go beyond funding, to cover hardware for example. The IOC (UNESCO) Secretary for IOCARIBE said this programme presents specific challenges that need to be solved. The proposed data centre should handle information that is important for large numbers of users, including not only real-time data but also historical information, which have different requirements. Each Caribbean sub-region has different demands and shortcomings, and the existing asymmetry in scientific development must be resolved as part of the capacity-building programme.

*128* The Chairman pointed out that soon a working group will be formed, so this is an appropriate time for members to review the roadmap proposal and submit comments for revision.

*129* **The Sub-Commission adopted** Recommendation SC/IOCARIBE-IX.7.

### 5.2.3 International Bathymetric Chart for the Caribbean and the Gulf of Mexico (IBCCA)

*130* The IOC (UNESCO) Secretary for IOCARIBE introduced this item.

*131* The IBCCA project has been successfully accomplishing its editorial work. Over 90% of the compilation sheets have been completed and only two areas for compilation remain incomplete. IBCCA elaborated several products among which are geophysical charts.

*132* The ninth meeting of the IBCCA Editorial Committee will be held at IOC (UNESCO) Sub-commission IOCARIBE Secretariat in Cartagena, Colombia from 24 to 26 May 2006. More information on data, charts and other products might be found at the web site: http://www.ngdc.noaa.gov/mgg/ibcca.

*133* Mexico asked for clarification on the proposed alternative to sharing the data as required. The Secretary explained that IBCCA responds to tasks in providing information. He suggested that specific proposals making such data requests (e.g. GLOSS, GOOS) make that request in a recommendation on each topic, included in financial implications, to ensure success.

*134* The Chairman added that in the context of the organization's history, the request must be made at the recommendation level as suggested, because IBCCA does not currently have the data in hand that are needed to respond to these requests.

*135* **The Sub-Commission adopted** Recommendation SC/IOCARIBE-IX.8.

### 5.2.4 Global Ocean Observing System (GOOS): IOCARIBE-GOOS

*136* Mr Douglas Wilson, IOCARIBE-GOOS Co-Chairman, introduced this item.

*137* The mandate to establish a Global Ocean Observing System (GOOS) was formally articulated and ratified in 1992 as part of *Agenda 21*, as a tool to enable effective management of the marine environment and sustainable utilization of its natural resources. The design and implementation of GOOS is sponsored by the UN agencies IOC, UNEP, and WMO, and ICSU. GOOS is being developed as two overlapping and complementary modules by the Ocean Observations Panel for Climate (OOPC) and the Panel on Observations of the Coastal Oceans (POCO). The Coastal GOOS plan utilizes National GOOS Programmes and GOOS Regional Alliances as primary means for identifying user groups, specifying data and information requirements, and refining data products. This process was initiated within the IOCARIBE region in 1999 at the First GOOS Users Forum in Costa Rica. At the subsequent IOCARIBE-VI Session, an ad hoc group of experts was assembled and tasked with developing a regional observing system for the wider Caribbean, including the development of a strategic plan for the design and implementation of the system. At IOCARIBE-VII in 2002, the Strategic Plan for IOCARIBE-GOOS was submitted to and endorsed by the Member States of IOCARIBE, and IOCARIBE-GOOS was accepted as a GOOS Regional Alliance by I-GOOS. The Strategic Plan has been published as GOOS Report No.115 (IOC/INF-1170). IOCARIBE-VII also recommended the formation of an IOCARIBE-GOOS Steering Committee and defined their terms of reference, including implementation activities. IOCARIBE-GOOS has been involved in implementation activities focused on: Initial Observing System and Pilot Projects; Assessment; Capacity Building; Programme Development and Coordination.

*138* At IOCARIBE-VIII, IOCARIBE-GOOS was directed to work with the IOCARIBE Tsunami Group of Experts in a joint programme to rehabilitate the Sea Level Observing System in the Caribbean Region. A graduate student was funded (through WW2BW) to conduct an assessment of the existing Sea Level network resources in the IOCARIBE region and prioritise components of a Caribbean Sea Level Network for tsunami warning purposes. Results were presented to the GLOSS IX Group of Experts meeting in February 2005 and were an important contribution to the IOCARIBE tsunami workshops in June 2005 (Mexico City) and January 2006 (Barbados). At the First Session of the International Coordination Group for Caribbean Tsunami and Coastal Hazards Warning System, January 2006, in Barbados, IOCARIBE-GOOS was selected to lead Working Group 2 for Sea Level Network development. It is recommended that IOCARIBE-GOOS adopt the formation of a Sea Level Network for the Caribbean as a Pilot Project, using related activities to also promote initial observing system development, assessment, and observing system capacity building. In particular IOCARIBE-GOOS should use this opportunity to build links to IOC activities associated with GLOSS, JCOMM, WMO, and IODE.

*139* Although the Steering Committee has developed a Strategic Plan and has met to discuss implementation activities, there remains no IOCARIBE-GOOS Implementation Plan, nor the resources to develop and carry out such a plan. During the intersessional period, new mechanisms have emerged to support GOOS activities at a regional level. Within IOC and I-GOOS, there are new capacity-building programmes and support for GOOS Regional Alliances through the GOOS Regional Forum. Within the hemisphere, there are emerging GOOS partnerships through South American Regional Alliances (e.g., GRASP), US GOOS Programs, and a proposed North American GOOS Regional Alliance. The Group on Earth Observations (GEO) links all of these; there is a proposed Earth Observations Partnership of the Americas (EOPA) that would coordinate the Global Earth Observation System of Systems (GEOSS) activities in the hemisphere. It is recommended that IOCARIBE-GOOS work with these programmes to complete an implementation plan before IOCARIBE-X. This will promote the present goal of advancing Programme Development and Coordination, as well as strengthen National GOOS efforts and strengthen ties to regional programmes.

*140* IOCARIBE-GOOS will remain active collaborators and participants in Caribbean LME, White Water to Blue Water, GLOSS, JCOMM, Capacity Building activities (e.g. involvement in Leadership workshops), and IODE/ODINCARSA.

*141* To coordinate these activities as well as the Sea Level network and implementation plan development, IOCARIBE-GOOS will continue to seek support for a dedicated staff position.

*142* The proposed intersessional milestones:

- June 2006 —Organizational meeting of Sea Level Network Pilot Programme, to support ICG/CARIBE-EWS Working Group 2;
- Summer 2006 —Meeting of EOPA, GRASP, US, Mexico, Canada, and IOCARIBE-GOOS Steering & Implementation Committee members to discuss joint planning for IOCARIBE-GOOS within larger Americas GOOS framework; tasking of IOCARIBE-GOOS Implementation working group;
- November 2006 —GOOS Regional Forum, South Africa— Complete and Present Draft Implementation plan for IOCARIBE-GOOS;
- December 2006 —Second Session of ICG/CARIBE-EWS; WG-2 report by IOCARIBE-GOOS to include update on planned and implemented new sea level installations, programme to maintain and utilize system;
- By End of 2007 —Final Implementation Plan for IOCARIBE-GOOS Functional, Sustainable Sea Level Network for Caribbean.

*143* It is estimated that a basic implementation of IOCARIBE-GOOS in the region —just enough to maintain a simple sea level operational network to support data exchange and national GOOS development— would be around US$ 1 M/year.

*144* Nicaragua said that after hurricane Mitch, they had stations installed within the framework of the RONMAC project that worked for a year, but then failed. Now that they want to reactivate the network, it is more difficult than starting from scratch because they already had a negative experience, and they lack the budget to maintain sensors. They asked whether IOCARIBE-GOOS might be able to provide advice on procuring functional equipment and on in-country collaborations between institutions to spread the financial burden. They will install one station by this September on the Caribbean side.

*145* Mr Wilson responded that non-functional equipment also represents an opportunity to start anew and develop a uniform, standardized system. He also cautioned that sustainable equipment costs much more than the cheaper models.

*146* **The Sub-Commission adopted** Recommendation SC-IOCARIBE-IX.9.

### 5.2.5 Global Sea Level Observing System, GLOSS

*147* Mr Wilson, IOCARIBE-GOOS co-Chairman, introduced this item.

*148* GLOSS has identified 21 of its 270 'core' sea level stations in the IOCARIBE region. Of these, seven are operating and reporting in real time. For long-term support, the widest possible user base is the best possible insurance. Gauges need to serve uses including tsunami warning, tidal analysis and prediction, storm surge monitoring, calibration of satellite altimeters, studies of short-term climate variations, and measuring sea level change. At present there is no long-term plan to maintain precise satellite altimetry beyond the end of the current decade. There will probably be altimeters, but not necessarily what we have now. Tide gauges will still be required for altimeter calibration, for observing local variations that the altimeters do not resolve, and for providing the long-term context for the altimeters. Precise and regular levelling to the benchmarks is essential for all of the applications, with the possible exception of tsunami warning. Without this the gauges will not be used, or supported, by the larger community. Continuous GPS is also desirable. High frequency (at least hourly) data should be provided in near-real-time (at least monthly). The GLOSS Fast Delivery Data Centre is ready to help with this. GLOSS can provide technical advice on a large range of issues ranging from gauge sitting and operation, maintenance of levels including continuous GPS, instrumentation options, and data processing and archiving. If it is deemed desirable, GLOSS is willing to seek funding to assist with gauge installation and maintenance via a travelling technician.

*149* He ended by requesting IOCARIBE members to think about the following question that he may soon pose to them: if GOOS will install US$ 75,000 worth equipment, what will each country be willing to provide in return, as for example some technician time?

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

*150* Mr Ehrlich Desa, Head of Capacity-building Section, presented this item relating to new mechanisms to strengthen the capacity of Member States within the context of the implementation of the IOC Principles and Strategy in response to the 23rd Assembly of IOC Resolutions XXIII-10 and XXIII-11. The initial implementation involved a series of 11 workshops that could begin thanks to a grant from the Swedish International Development Agency. The other important task given to the Secretariat was to carry out an assessment of marine science capacity of each region.

*151* In this context, the missions conducted in the region in early 2004, one by the IOC Executive Secretary and the other by the IOCARIBE Chairman gave a preliminary idea on the available infrastructure, manpower resources, and the impact of several long-term bilateral programmes. These initial assessments need to be enhanced and updated, so that a baseline is established by which capacity developing interventions are assessed so that best effective practices are identified and supported. To make such an "Assessment product" useful to a wide spectrum of users ranging from policy-makers to funding agencies, it should be based on

quantitative methods where possible. Whilst a Consultative Group on Capacity Development had been formed to advise on this issue, it was important that as many inputs as possible from Member States themselves were available.

*152* Professionals from IOC would be visiting various countries in the region to follow-up this process, and to make such visits most productive, advance preparation was necessary through discussions on the parameters for the assessment report. To further assist in this process, IOC will engage two post-graduate students to work in the region and expects to augment these manpower resources by pursuing a request for SIDA support for one Associated Expert to engage with the regional capacity development process.

*153* Mr Desa requested (i) guidance from IOCARIBE members on the format for the Assessment reports; and (ii) one contact per Member State who will interact with the secretariat on marine science development issues.

## 6.1 FIRST IOC LEADERSHIP WORKSHOP FOR HEADS OF MARINE SCIENCES INSTITUTES OF THE CARIBBEAN AND ADJACENT REGIONS

*154* Mr Ehrlich Desa, Head of Capacity-building Section, introduced this item. Recommendation SC-IOCARIBE-VI.10 was taken into consideration by IOC Assembly Resolutions XXIII-10 an XXIII-11, and the schedule of a series of 11 workshops over a three-year period, starting with the First IOC Leadership workshop for Heads of Marine Science Institutes of the Caribbean and Adjacent Regions scheduled during 15–19 May 2006, in Kingston, Jamaica.

*155* The three-year programme in the IOCARIBE region will be spread over three phases, and has been largely possible due to grants from the Swedish International Development Agency, SIDA, and a starter grant from the USA.

1. Phase 1 will strengthen institutes by conducting three workshops that empower networks of directors with Leadership skills; supporting networks of scientists with three Proposal-writing skills workshops; and building scientific teams to collaborate on funded projects through three team-building workshops.

2. Phase 2 will raise awareness through two Decision Support System workshops that deliver visible local benefits based on science, use existing data and operational products where possible, and create openings for research & education.

3. Phase 3 will enrol civil society to support Capacity-building for science research and operational systems and through this process engage in good governance. IOC will work with several sections of society during this phase, and will forge new partnerships for social sciences, management, public information & legal matters.

*156* These series of workshops are specifically meant to strengthen the networking between the marine science institutes within Member States in a manner that will transfer skills to heads of marine science institutes and their scientists, to lead, seek funds, and collaborate in regional and sub-regional activities.

*157* Mr Desa emphasised the responses expected from IOCARIBE members. These were to comment on (i) the scope of the outlined activities; and (ii) ways of implementing the programme, that were beyond the available extra-budgetary funding, by partnering with the IOC and IOCARIBE Secretariats in approaching regional and international funding agencies.

*158* The Chairman then opened the floor for discussion for both Capacity development items.

*159* USA urged the IOC to convince sponsors to provide the resources for simultaneous translation for the proposed workshops as disasters do not recognize language barriers, and further that all opportunities should be taken to forge unity in the region without allowing language to be a barrier.

*160* Colombia asked whether the plan was the same for English and Spanish-speaking workshops, and Mr Desa clarified that the scheme was the same for all languages and would be as broad based as possible.

*161* Cuba offered its venue for the Spanish-speaking workshop, suggesting that costs would be reduced if the Leadership Workshop was held back-to-back with the MARCUBA-VII Marine Science Congress scheduled in Havana on 4–8 December 2006. This will also bring the opportunity to facilitate the attendance of a larger number of marine science leaders at MARCUBA, then facilitating mutual knowledge and communication among them.

*162* IOCARIBE-GOOS informed that they would be interested in collaborating with the workshop proposed on training tools of Remote Sensing, GIS, and coastal models that used GOOS data and products. Additionally, the GOOS regional association composed of Puerto Rico and the U.S. Virgin Islands have funding for activities that included working with other Caribbean countries, and they could be invited to the workshops as well, on their own budget.

*163* In response to a query from UNEP, Mr Desa explained that Phase III of the implementation phase would engage civil society to support capacity-building for scientific research, and that IOC would be seeking partners with UNESCO sectors, sister UN organisations, and Community based organisations.

*164* CLME said it was greatly encouraged to see the developments, and looked forward to aligning CLME and IOCARIBE Capacity-building initiatives, which activity would possibly count towards the necessary co-financing as required by GEF. Mr Desa clarified that based on the instructions from the last IOC Assembly, capacity developing needs to be emplaced within a large, ongoing, well-funded project such as the LME, and not be a stand-alone activity.

*165* **The Sub-Commission adopted** Recommendation SC-IOCARIBE-IX.10.

## 7. INSTITUTIONAL AND LEGAL FRAMEWORK

### 7.1 STATUS OF COOPERATION WITH OTHER ORGANIZATIONS

*166* The Chairman introduced this item.

*167* Mr Nelson Andrade Colmenares, UNEP Regional Coordinator, introduced to the session the Regional Network on Marine Science and Technology known in the region as the “The Know-why Network”. This initiative is supported by the regional office of UNEP/CAR/RCU based in Kingston, Jamaica, IOCARIBE and Regional Action Centres in Cuba (CIMAB) and Trinidad and Tobago (IMA), INVEMAR and the Universidad del Oriente in Venezuela as collaborating agencies.

*168* The main objective is to improve the knowledge and capacity building of the Member States of the Wider Caribbean countries in implementing the Protocol for the Protection of the

Marine Environment from Land-based Sources (LBS) and increase knowledge about the state of the coastal and marine environment.

*169* He also mentioned the specific objectives of the project and emphasized the need to assist countries with Geographic Information Systems (GIS) and developing methodologies and guidelines for assessing the state of the marine waters specifically to those classified as category I and category II according to standards described in the FTCM protocol annexes.

*170* Finally, he referred to the fact that there is an action plan for the implementation of these activities during 2006–2008 and UNEP/CAR/RCU would report to the Executive Council of IOC (UNESCO) in June 2006 about the results of the project. He highlighted the close cooperation with IOCARIBE and acknowledged with thanks the funds received from the Swedish International Development Agency (SIDA) which allow the financial support of this project within the framework of the White Water to Blue Water Initiative (WW2BW).

*171* In response to a question from Mexico, Mr Nelson Andrade Colmenares clarified that the water quality projects are aiming to employ standardized methodologies within the framework of the LBS Protocol negotiated by the governments.

*172* The WMO Representative, Mr Edgard Cabrera, Chief Ocean Affairs WMO, reported on the status of the WMO/IOC Joint Technical Commission for Oceanography and Marine Meteorology —JCOMM— and highlighted that the strategy for making JCOMM a reality will be through continuing and enhancing collaboration between WMO and IOC.

*173* Coordination and collaboration have been established with the other key agencies of the UN system, and in particular the Intergovernmental Oceanographic Commission (IOC) of UNESCO, and ISDR, in ensuring that WMO's telecommunication system and operational infrastructure through the NMHSs are available to accelerate operational aspects of the TWS in the Indian Ocean and other ocean basins at risk, as is the case in the Mediterranean and Caribbean seas. WMO's activities had also been focused on assessing needs for warning capacity and educational and public out reach needs of the NMHSs within a multi-hazard approach, marine warnings and capacities related to utilization of satellites.

*174* The involvement in and support for natural disaster reduction and the implementation of a comprehensive global multi-hazard warning system (including tsunamis and storm surges), have became high priority on the international ocean agenda. WMO and IOC play an active role providing the necessary support to JCOMM to enable the implementation of its plan of action using the existing JCOMM expertise in services (e.g. storm surges and waves), observing systems (sea level, ocean data buoys), and warning dissemination mechanisms (marine meteorological warning services), through the GTS.

*175* In this sense the main topics of discussion for further collaboration with IOCARIBE are:

- Enhancing early warnings system (EWS) for ocean related hazards (including tsunamis and storm surges), particularly related to observational aspects, data standardization and information exchange and telecommunications (GTS, and in future WIS) for the tsunami-observing network, and storm surge modelling and forecasting;
- Further development of oceanographic products and services;
- Enhanced involvement in and support for natural disaster reduction and marine multi-hazard warning systems;

- Greater involvement of smaller maritime countries, in particular, in the work of the Commission, in support to the WMO Marine Meteorology and Oceanography Programme.

*176* Mr Mario Palacios, Scientific Director of the Permanent Commission for the South-East Pacific (CPPS), presented a background on CPPS as an international coordination organism for the marine affairs for Colombia, Chile, Ecuador and Peru with special emphasis on the origin and development of the Regional Study of the Phenomenon known as 'El Niño', ERFÉN. He highlighted existing joint cooperation between IOC and WMO through the Joint Working Group for the Investigation of "El Niño" Phenomena.

*177* As agreed during the Tenth Session of the Joint Working Group for the Investigations of "El Niño" Phenomena, IOC-WMO-CPPS/El Niño, the report of activities emphasized the coincidence present among the three entities and the countries from the two regions regarding interests and objectives and the significant progress achieved in terms of continuity and consolidation through the Joint Oceanographic Cruises, Data Base and the *Monthly Climatic Alert Newsletter*.

*178* He referred as well to other establishment of the Regional Alliance of GOOS for the South Pacific, GRASP, and other cooperation mechanisms with international entities for the benefit of the development of operational oceanography including of course the necessary and special joint efforts made by the International Research Centre on El Niño (CIIFEN).

*179* Finally he stressed that the CPPS envisions for the future a closer and fruitful cooperative relationship between IOC and WMO through the strengthening of the Joint Working Group IOC-CPPS-WMO for the Investigations of El Niño Phenomena which will coordinate in a very efficient way this work based under clear and precise terms of reference for obtaining operative results.

*180* Ms Lorna Inniss, IOCARIBE Vice-Chairperson, informed the Session on the development of two Memorandums of Cooperation between the Sub-Commission and two agencies of the Caribbean Community (CARICOM) to promote scientific research in the Caribbean —Caribbean Regional Fisheries Mechanism (CRFM) and Caribbean Disaster Emergency Response Agency (CDERA). The Secretariat is already collaborating with CRFM in the areas of fisheries management, and with CDERA in the area of other coastal hazards.

*181* Ms Inniss also presented to the Session the recent activities towards cooperation with the International Maritime Organization (IMO) and their Marine Environment Protection Committee (MEPC). As all the Member States of the Sub-Commission are members of IMO, it is feasible that collaboration between the two agencies should occur.

*182* The implementation of the Ballast Water Convention is just beginning in the IOCARIBE region. A workshop was held in Puerto La Cruz, Venezuela, in February 2006 with the kind cooperation of UNEP CAR/RCU office in Kingston, and seven countries of the Sub-Commission —Bahamas, Cuba, Panama, the Netherlands Antilles, Trinidad and Tobago, Suriname, and Venezuela. The meeting explored the steps to effectively cooperate in the development of processes to prevent ballast water-mediated marine bio-invasions in accordance with the International Convention for the Control and Management of Ships' Ballast Water and Sediments. Through the pursuit of a Memorandum of Cooperation with IMO, the Sub-Commission proposes to facilitate the process leading to integrated regional control of ballast water discharges and related impacts.

*183* Venezuela said ballast water is a serious problem for them. Some species that used not to occur in their waters are abundant now. Some of those species being grown as protein sources may bring more harm than benefits

*184* The Dominican Republic said fishery management is a regional issue, therefore if IOCARIBE collaborates with CARICOM, it may help clarify relations and issues between the countries within and outside CARICOM in a setting where all can participate. Thus, they commended the progress presented.

*185* Venezuela then added two comments to the day's proceedings. As one of the founders of IOCARIBE, they noted with interest the participation of representatives of other UN organizations, and they suggested that IOCARIBE look for some way of involving FAO, particularly with reference to their expertise on fisheries in the region. Additionally, it would be useful to have participation by the International Hydrographic Organization, since they are responsible for shallow-water bathymetric charts. Also, the participation from experts related with the United Nations Convention for the Law of the Sea (UNCLOS) particularly the Experts working in the Law of the Sea (IOC/ABE-LOS), could contribute as well. The possibility of incorporating other agencies as the Economic Commission for Latin America (CEPAL), the Organization of American States (OAS) and the Association of Caribbean States (ACS) for developing activities related with fisheries, management of natural resources in general and natural disasters for the marine and coastal areas was also suggested by Venezuela.

*186* **The sub-Commission acknowledged** progress towards the development of a Ballast Water Management Programme for the Caribbean and adjacent regions and **encouraged** the Secretariat to pursue efforts leading to a signed Memorandum of Cooperation with the International Maritime Organization (IMO) and with the Caribbean Community.

*187* **The Sub-Commission adopted** Recommendation SC-IOCARIBE-IX.11.

## 8. ADMINISTRATION AND MANAGEMENT

### 8.1 DRAFT PROGRAMME AND BUDGET 2006–2008

*188* The Chairman introduced this Item. He presented to the Session Document SC-IOCARIBE-IX/2 Annex 2 *"Draft Programme and Budget 2006–2008"*.

*189* The IOC (UNESCO) Secretary for IOCARIBE noted that the proposed budget reflects the new focus of IOCARIBE on GOOS and tsunami systems. He added that for the first time in IOCARIBE's history, it has two programmes with secured budgets over the two-year intersessional period.

*190* Mexico made several points: (i) that this IOCARIBE session must carefully review what has been requested for each programme to be sure that we are defining what is necessary to achieve the modest objectives we are proposing for ourselves, and that we must make sure to get the necessary budget too; (ii) that representatives must work within their countries to collaborate or contribute to the extra-budgetary column; and (iii) that IOCARIBE must define our position for defending this budget to the Commission, in other words we must also define what will happen if we do not secure the necessary funds.

*191* The Chairman added that project support is small and decreasing in the budget, with resources focused on ever-growing salaries. The Sub-Commission will need to make significant

efforts to secure the needed budgets, including focusing heavily on fund-raising over the next two years.

*192* The IOC (UNESCO) Secretary for IOCARIBE added that IOCARIBE has a strong case for funding from IOC, because for each dollar requested from IOC, IOCARIBE is providing ten dollars.

*193* **The Sub-Commission approved** the draft budget and **adopted** Recommendation SC/IOCARIBE-IX.13.

*194* Cuba made an intervention on another point, to suggest that the IOCARIBE Manual needs updating and revision, since it has been the same since 1994. He pointed out that the Manual has never been formally approved by the Sub-Commission.

*195* **The Sub-Commission adopted** Recommendation SC-IOCARIBE-IX.12.

8.2 ELECTIONS OF THE BOARD OF OFFICERS OF THE SUB-COMMISSION

*196* The Chairperson of the Nominations Committee introduced this item. The Committee worked in conformity with the technical arrangements for the elections of the Officers of the Sub-Commission as lay down in Appendix I of the Rules of Procedure. The list of nominations received was distributed.

*197* The Chairman then explained the provision for geographic balance and the Member State groups, and also clarified that a person is elected, not a Member State. He then noted that Ms Lorna Inniss would be entering her third consecutive term as Vice-Chairperson, although only two terms are allowed according to the Manual. He added that board members must fund their own attendance at meetings because there is no provision for them in the budget, so it is also essential that the candidates have their country's support. He then explained that for Ms Inniss to be eligible for a third term, at least two thirds of the Member States in attendance at the session must approve an exception from the rules.

*198* Cuba, referring to the manual, made three comments:

(i) The only groupings for Member States are those approved in the UN system, e.g. "Western Group" or "Latin American Group". IOC considers this particular issue in its Manual and Rules of Procedure. However, the Sub-Commission has no sub-regional grouping officially approved, and it may not be decided upon without the official decision of Member States on what constitutes a geographically balanced grouping.

(ii) The requirement that Member States should fund the participation of their nationals on the meetings of the Board of Officers does not apply to IOC and therefore should not be applied to its Sub-Commission. This means that the organization should cover participation expenses of its officers on activities performing their duties as such and/or when representing the organization. The Organization must take into account that a contrary rule to this statement would sensibly limit the possibilities of participation on the Board of nationals of those Member States with less financial capacity. Nevertheless, it should be advisable that Member States would financially contribute to their nationals' participation up to their possibilities. For ensuring this, the Secretariat of the Sub-Commission should make provision of necessary funds in the budget of the organization.

(iii) This matter must be dealt with in a pragmatic manner. Member States must consider whether it is appropriate to have a delegate from the Antilles region on the Board. They must either eliminate the mentioned rule for this session, or suspend the relevant part of the elections rules.

*199* The U.S.A. suggested that the Session unanimously approve the suspension of the voting rule to permit full consideration of Ms Inniss for the role of a Vice-Chairperson representing her region. Members widely supported this move, and the Chairman declared the rule waived.

*200* Brazil and Venezuela also supported Cuba's point about requiring support from IOC for Board members in the future as paramount. The Chairman said that this proposal should be considered since it is a critical one for the IOCARIBE Sub-Commission.

*201* The Chairman then said the next step would be voting among two candidates from one region for one of the positions of vice chair.

*202* Cuba objected, stating that the regulations state we must vote on the chair, and that the election is not by groups. Lacking an officially adopted manual, IOCARIBE must adhere to the IOC by-laws, and thus have an election for three Vice-Chairpersons among four candidates. Also, the Chairperson must be elected first. The Secretary concurred, and elections proceeded.

### 8.2.1 Election of the Chairperson of the Sub-Commission

*203* **The Sub-Commission noted** that there was only one candidate for the position of Chairperson. Mr Guillermo Garcia Montero (Cuba) was elected by acclamation.

### 8.2.2 Election of Vice-Chairpersons of the Sub-Commission

*204* **The Sub-Commission noted** that there were four candidates whereas the number of Vice-Chairpersons to be elected was three. Therefore, a vote had to take place.

*205* The Dominican Republic, U.S.A., and Colombia volunteered to serve on the election committee and were appointed. The Secretary explained the procedures for vote counting.

*206* Venezuela further clarified that it is possible to vote only for one candidate, just not more than three.

*207* After one ballot the following candidates were elected:

- Ms Lorna Innis (Barbados)
- Mr Clement Lewsley (United States of America.)
- Mr Hernán Pérez-Nieto (Venezuela)

*208* The Secretary congratulated the newly elected officials and then thanked the current Chairman, Mr Marco Polo Bernal Yarahuan, and expressed his deep gratitude to Vice-Chairman Mr Bradford Brown for his many years of service.

## 8.3 DATES AND PLACE OF THE TENTH SESSION OF THE SUB-COMMISSION

*209* Venezuela kindly offered to host the Tenth Session of the Sub-Commission in Venezuela. The Session would take place during the second half (September or October) of 2008. **The Sub-**

**Commission acknowledged** these offer with appreciation and **accepted** the invitation of Venezuela.

## 9. ADOPTION OF THE DRAFT SUMMARY REPORT AND RECOMMENDATIONS

*210* **The Sub-Commission adopted** the Summary Report and thirteen (13) Recommendations.

*211* The complete text of approved Recommendations is included in Annex II.

## 10. CLOSURE

*212* The IOCARIBE Chairman thanked the Government of Colombia and the Ministry of Foreign Affairs of Colombia for hosting the meeting. He gave his warmest appreciation to the Colombian Ocean Commission as the coordination body of the Local Organizing Committee and National Focal Point for Colombia for the excellent facilities provided for the organization of the Session.

*213* The IOC (UNESCO) IOCARIBE Secretary Mr Toro granted certificates of appreciation to the staff of the Sub-Commission for their involvement and dedication to the development of the Sub-Commission since the initial establishment of the Secretariat in Cartagena. A special award was also given to Mr Bradford Brown and Mr Marco Polo Bernal for their remarkable contribution to the work of the Sub-Commission.

*214* The Ninth Intergovernmental Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions was closed at 13:00 hrs on Saturday 22 April 2006.

ANNEX I

# AGENDA

**1. OPENING**

**2. ADMINISTRATIVE ARRANGEMENTS**

2.1 ADOPTION OF THE AGENDA

2.2 DESIGNATION OF THE RAPPORTEUR FOR THE SESSION

2.3 CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION

**3. REPORT OF THE IOCARIBE SECRETARY ON INTERSESSIONAL ACTIVITIES**

3.1 PROGRESS REPORT ON PROGRAMME AND BUDGET

**4. POLICY ISSUES**

4.1 IOCARIBE STRATEGIC SCIENCE PLAN and related services for 2006-2016
[Rec. XXI-14; Rec. SC-IOCARIBE-VI.10, 11; Rec. SC-IOCARIBE-VIII.1]

**5. REGIONAL PROJECTS**

5.1 OCEAN SCIENCES

**5.1.1 Caribbean Large Marine Ecosystem (CLME)**
[Rec. SC-IOCARIBE-VI.5; Rec. SC-IOCARIBE-VIII.2]

**5.1.2 Pacific Central American Large Marine Ecosystem Project**
[Res. EC-XXXV.5 Rec. SC-IOCARIBE-VII.4; Rec. SC-IOCARIBE-VIII.2]

**5.1.3 Gulf of Mexico Large Marine Ecosystem Project**
[Res. EC-XXXV.5 Rec. SC-IOCARIBE-VII.4]

**5.1.4 Harmful Algal Blooms (HAB-ANCA)**
[Rec. SC-IOCARIBE-VI.8. SC-IOCARIBE-VIII.3]

**5.1.5 White Water to Blue Water Initiative (WW2BW)**
[Rec. SC-IOCARIBE-VIII.4]

**5.1.6 Integrated Coastal Area Management (ICAM): MIC-LAC Project**
[Rec. SC-IOCARIBE-VIII.5]

5.2 OCEAN OBSERVATION AND SERVICES

**5.2.1 Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions. IOC Intergovernmental Coordination Group**
[Res. EC-XXXV.5; Rec. SC-IOCARIBE-VII.5 Rec. SC-IOCARIBE-VIII.8; Res. IOC-XXIII.13]

**5.2.2 Oceanographic Data and Information Exchange (IODE)/Ocean Data and Information Network for the Caribbean and South America (ODINCARSA)**
[Res. EC-XXXV.6; Rep. SC-IOCARIBE-VII, Item 6.3.1.2, para. 143,144]

**5.2.3 International Bathymetric Chart for the Caribbean and the Gulf of Mexico (IBCCA)**
[Rep. SC-IOCARIBE-VII Item 6.3.2.1, para. 154,156,158; Rec. SC-IOCARIBE-VI.9]

**5.2.4 Global Ocean Observing System (GOOS): IOCARIBE-GOOS**
[Res. EC-XXXV.5]

**5.2.5 Global Sea Level Observing System GLOSS**

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

6.1 FIRST IOC LEADERSHIP WORKSHOP FOR HEADS OF MARINE SCIENCES INSTITUTES OF THE CARIBBEAN AND ADJACENT REGIONS

**7. INSTITUTIONAL AND LEGAL FRAMEWORK**

7.1 STATUS OF COOPERATION WITH OTHER ORGANIZATIONS

**8. ADMINISTRATION AND MANAGEMENT**

8.1 DRAFT PROGRAMME AND BUDGET 2006–2008
[Res. XXI-13; Rec. XXI Item 6.1 Para. 418; Res. EC-XXXV-8]

8.2 ELECTIONS OF THE BOARD OF OFFICERS OF THE SUB-COMMISSION
[Rules of procedure no.25(3) and Appendix]

**8.2.1 Election of the Chairperson of the Sub-Commission**

**8.2.2 Election of Vice-Chairpersons of the Sub-Commission**

8.3. DATES AND PLACE OF THE TENTH SESSION OF THE SUB-COMMISSION

**10. ADOPTION OF THE DRAFT SUMMARY REPORT AND RECOMMENDATIONS**

**11. CLOSURE**

ANNEX II

# RECOMMENDATIONS

Recommendation SC-IOCARIBE-IX.1

## THE IOCARIBE MEDIUM TERM STRATEGIC SCIENCE PLAN (2006–2015)

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

**Having considered** Recommendation SC-IOCARIBE-VIII.1, "Finalization of the IOCARIBE Strategic Science Plan" approved at the Eighth Session of the Sub-commission (Recife, April 2004),

**Noting with satisfaction** that the above-mentioned Medium Term Strategic Science Plan was distributed in time to be considered by all Member States,

**Bearing in mind** the importance of making it available to all Member States, to all marine and coastal sciences and services institutions in the IOCARIBE region, and also to the general public as a means of obtaining guidance in developing its programmes and projects in the short, medium and long terms,

**Approves** the IOCARIBE Medium Term Strategic Science Plan (2006–2015);

**Recognizes** the work done by the IOC Secretary for IOCARIBE in catalysing the processes that finalized the Strategic Plan;

**Requests** the IOC (UNESCO) to publish the Strategic Plan as soon as possible;

**Instructs** the IOC Secretary for IOCARIBE to distribute an official printed copy of the Plan to IOCARIBE Focal Points and marine and coastal sciences and services institutions in the IOCARIBE region;

**Further instructs** the IOC Secretary for IOCARIBE to publish the approved IOCARIBE Medium Term Strategic Science Plan (2006-2015) on the IOCARIBE Web Site by 30 May 2006 and inform the marine science and services regional communities of this event.

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Financial implications: none

Recommendation SC-IOCARIBE-IX.2

## LARGE MARINE ECOSYSTEMS

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

**Recognizing** the progress towards implementation of LME GEF Projects in the IOCARIBE Region,

**Recalling** that IOC has a role to scientifically review LME efforts ocean-wide, and in fulfilling that function, periodically hosts review meetings involving representatives of LME Projects and LME experts,

**Emphasizing** that there are significant similarities among LME Projects within the IOCARIBE region,

**Bearing in mind** that regional meetings can have greater regional attendance and thus contribute value in addition to that of the international LME meeting,

**Recommends** that IOCARIBE facilitates such a scientific review for LME projects in its region and seeks extra-budgetary funds for this purpose.

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Financial implications: in US$ 60,000 (extra-budgetary sources)

Recommendation SC-IOCARIBE-IX.3

## ENDORSEMENT OF THE MEMORANDUM OF UNDERSTANDING ESTABLISHING THE IOCARIBE CLME TECHNICAL PROJECT MANAGEMENT OFFICE AT THE UNIVERSITY OF THE WEST INDIES, BARBADOS

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

**Recognizing** that IOC (UNESCO)/IOCARIBE is the implementing agency for the GEF CLME Project,

**Acknowledging** that an MOU has been developed to establish a technical Project Office at the University of the West Indies in Barbados;

**Calls on** IOC (UNESCO) to endorse the MoU between the Commission and the Government of Barbados to establish the CLME technical Project Office at the Centre for Resource Management and Environmental Studies (CERMES) of the University of the West Indies, Barbados.

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Financial implications: none

Recommendation SC-IOCARIBE-IX.4

## IOC WORKING GROUP ON HARMFUL ALGA BLOOMS IN THE CARIBBEAN AND ADJACENT REGIONS (HAB-ANCA)

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

**Recalling** Recommendation SC-IOCARIBE-VIII.3 of the 8th Session of IOCARIBE, Recife, Brazil in April 2004 approving the Plan of Action for 2004–2006,

**Recognizing** the important advances made by the HAB-ANCA Working Group and the impact it has had in preventing disasters from harmful algal blooms in Caribbean and Adjacent Regions,

**Bearing in mind** the effort and resources that the Member States of IOCARIBE have contributed in supporting the HAB-ANCA Working Group,

**Considering** that no Regular Programme budget was allocated by IOC to this Working Group for the biennium 2006–2007,

**Emphasizing** that the lack of resources to implement the Action Plan 2004–2006 poses the risk that the Programme does not respond adequately to address potential threats represented by harmful algal blooms and may even lose its present momentum,

**Reiterates** the necessity to have adequate financial resources to implement the Action Plan approved by Recommendation SC-IOCARIBE-VIII.3;

**Urges** Member States of IOCARIBE to continuing supporting the HAB-ANCA Working Group, and seek necessary extra-budgetary resources;

**Instructs** IOC (UNESCO) Secretary for IOCARIBE to assist Member States in their search for necessary extra-budgetary resources.

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Financial Implications:

US$ 50,000 Regular Programme.
US$ 100,000 Extra-budgetary sources.

| Item | Regular Programme | Extra Budgetary |
|---|---|---|
| Capacity Building | 10,000 | 25,000 |
| Research/Monitoring | 30,000 | 50,000 |
| Communication | 10,000 | 25,000 |
| **TOTAL:** | **50,000** | **100,000** |

Recommendation SC-IOCARIBE-IX.5

## INTEGRATED COASTAL AREA MANAGEMENT FOR LATIN AMERICA AND THE CARIBBEAN (LAC-ICAM)

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

**Recalling** the:

(i) Goals of Chapter 17 of *Agenda 21* regarding sustainable development of coastal zones,

(ii) Inclusion of Integrated Coastal Area Management (ICAM) as one of the priorities of IOC/UNESCO,

(iii) Recommendation SC-IOCARIBE-VIII.5 on Integrated Coastal Area Management ICAM-LAC Project,

**Acknowledging** the:

(i) Important role to be played by ICAM in ocean management at the regional level,

(ii) Efforts of several Latin American and Caribbean (LAC) countries to carry out ICM activities and formulate appropriate policies,

(iii) Need to establish an Integrated Coastal Area Management Project that deals with oceanographic, meteorological and seismic coastal threats among its objectives,

**Taking into account** the conclusions of the workshop that took place in Cartagena, Colombia, in 2003 for drafting a project of an Integrated Coastal Management in Latin America and the Caribbean, and the workshop "Tools for Integrated Coastal Area Management (ICAM) in Latin America and the Caribbean" held in Recife, (Brazil) in April 2004,

**Urges** IOCARIBE Member States to:

(i) Reinforce the ICAM Project by hiring a project coordinator to:

- Evaluate new technologies on integrated coastal zone management;
- Establish a data base that includes all institutions, programmes, projects and stakeholders involved in Coastal Zone Management in the IOCARIBE area;
- Evaluate existing capacities in relation to the existing policies and legal framework for the integrated coastal zone management;
- Propose capacity building mechanisms for decision makers involved in this area;
- Conduct technical visits to Member States to evaluate existing capacity;
- Organize a general workshop to identify sources of information, establish priorities, and formulate a Plan of Action that is both proactive and preventive for coastal policies of Member States; and
- Prepare a final report;

(ii) Support the first phase of the IOC project at the national level with the purpose of obtaining funds for its execution;

**Instructs** the IOC (UNESCO) Secretary for IOCARIBE to explore possible means for obtaining necessary funds.

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Financial Implications:

US$ 155,000 as given below:

| Item | Regular Programme | Extrabudgetary sources |
|---|---|---|
| Regional coordinator salary | 5,000 | 40,000 |
| Travel to Member Status and reports | 10,000 | 40,000 |
| Final Workshop | 10,000 | 50,000 |
| **TOTAL** | **US$ 25,000** | **US$ 130,000** |

Recommendation SC-IOCARIBE-IX.6

**TSUNAMI AND OTHER COASTAL HAZARDS WARNING SYSTEM FOR THE CARIBBEAN SEA AND ADJACENT REGIONS**

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

**Recognizing** the need for a Tsunami and Other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions,

**Recalling** the outcomes of the following:

- Intra–Americas Seas Tsunami Warning System Project Proposal,
- Strategic Plan for IOCARIBE–GOOS,
- World Conference on Disaster Reduction (WCDR) Kobe, Japan,
- UNESCO/IOC call for a Global TWS within Global Earth Observing System of Systems,
- International Conference for the development of a Caribbean TWS —Mexico City, 1–3 June 2005,
- 23rd Session of the IOC (UNESCO) Assembly, Resolution XXIII-13,
- First Meeting of the IOC Intergovernmental Coordinating Group for the establishment of a Tsunami and Other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Barbados, 10–12 January 2006,

**Considering** that tsunamis, different from hurricanes, have a time scale of minutes and hours and that Emergency/Disaster Management agencies, and the populations at large, need to understand and respond appropriately to natural signs and/or warnings issued by a regional and national Tsunami Warning Centres,

**Considering further** the IOC (UNESCO) decision to establish an Intergovernmental Coordination Group (ICG) for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS) because of the high risk and vulnerability of the region,

**Emphasizing** the need for a multi-hazard approach that utilises other available systems and financial resources,

**Acknowledging** that other UN bodies and organizations are willing to assist in the establishment of a Tsunami Warning Centre for the Caribbean and Adjacent Regions,

**Bearing in mind** that almost all Member States have a communication system (GTS/EMWIN) at their National Meteorological and Hydrological Services that can be used as the backbone of a communication system for tsunami warnings,

**Recalls** the recommendations of the First Session of the ICG in Barbados along with its action plan, including the call for the establishment of a Regional Tsunami Warning Centre in the Caribbean Region,

**Recommends** approval of the ICG action plan for the establishment of the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions that was developed in Barbados, reviewed in Cartagena, Colombia and presented as document IOC/SC-IOCARIBE-IX/INF-7) and given in Annex V of the Summary Report;

**Urges** Member States to seek financial resources to implement the Tsunami and Other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions.

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Financial Implications: in US$:

| Item | Regular Budget | Extra Budgetary Sources |
|---|---|---|
| Capacity Building | 40,000 | 500,000 |
| Comm. & Equipment | 25,000 | 2,500,000 |
| Data collection & Mapping | 40,000 | 4,780,000 |
| Administration | 35,000 | 120,000 |
| Outreach Education | 10,000 | 100,000 |
| **TOTAL** | **150,000** | **8,000,000** |

Recommendation SC-IOCARIBE-IX.7

## OCEAN DATA AND INFORMATION NETWORK FOR THE CARIBBEAN AND SOUTH AMERICAN REGIONS (ODINCARSA)

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

**Recalling** Recommendation IOCARIBE VIII.6 adopted by the Eighth Session of IOCARIBE,

**Acknowledging**:

(i) The benefits likely to be derived from the establishment of a solid mechanism for improving integration of ODINCARSA into IOC programmes including TWS, LME in addition to GOOS, TEMA, and ICAM,

(ii) Acknowledge the diverse achievements and activities related to this programme, constituting the ODINCARSA pilot project, during the last biennium,

**Recommends** IOC Member States in the IOCARIBE region to include ODINCARSA training activities as part of the operative plans for CARIBE-EWS in addition to IOCARIBE-GOOS, TEMA, and ICAM-LAC;

**Urges** IOC Member States in the IOCARIBE region to:

(i) Approve the roadmap for the establishment of National Oceanographic Data Centres in the Caribbean sub-region of ODINCARSA;

(ii) Continue supporting the enhancement of the ODINCARSA network;

(iii) Facilitate engagement at the national level the programmes of ODINCARSA, as appropriate;

(iv) Identify counterpart contributions and governmental political and technical commitments in order to ensure the sustainability of national and regional data and information management systems;

(v) Ensure that ocean data and information management (infrastructure, services and products) serve well-defined national and regional science and management priorities;

**Instructs** the IOC Secretary for IOCARIBE to implement the activities of the IODE Task Team at the regional level and provide particular guidance regarding its future work in the Caribbean.

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Financial Implications:

US$ 50,000 from IOC Regular Programme

US$ 40,000 from extra budgetary sources

Recommendation SC-IOCARIBE-IX.8

## INTERNATIONAL BATHYMETRIC CHART OF THE CARIBBEAN SEA AND ADJACENT REGIONS (IBCCA)

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

**Considering** the conclusions of:

(i) The International Conference for the Establishment of a Tsunami and Coastal Hazards Warning System for the Caribbean and Adjacent Regions held in Mexico City, 1–3 June 2005),

(ii) The First Session of the IOC Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions held (ICG/CARIBE-EWS-I/3) in Barbados, 10–12 January 2006,

iii. Round Table of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions held on 18 April 2006 in Cartagena de Indias, Colombia,

**Considering also** that new information needs have emerged relating to the International Bathymetric Chart of the Caribbean Sea and Adjacent Regions and the proposed goals of the ICG/CARIBE-EWS Groups,

**Considering further** that the IBCCA Working Group neither has sufficient resources to complete the Bathymetric Chart of the Caribbean and Sea and the Gulf of Mexico (IBCCA) nor to collect new information,

**Recommends** that ICG/CARIBE-EWS and IBCCA Working Groups carry out the necessary coordination actions, to define the new information needs for bathymetric data;

**Instructs** the IOCARIBE Secretariat to assist Member States in seeking funds to support the ICG/CARIBE-EWS and IBCCA Groups in identifying new information needs for bathymetric data;

**Urges** the Member States of IOCARIBE to contribute extra-budgetary financial assistance to carry out the activities of the ICG/CARIBE-EWS and IBCCA Groups.

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Financial implications: US$ 5,000 (Extra-budgetary sources)

Recommendation SC-IOCARIBE-IX.9

## FOLLOW-UP AND DEVELOPMENT OF THE IOCARIBE-GOOS PROGRAMME

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

**Recalling** Recommendation SC-IOCARIBE-VIII.9 approved by the IOCARIBE Sub-Commission in Recife, Brazil, April 2004,

**Convinced** of the importance of marine information systems, services and products to support sustainable social and economic development, welfare, and safety, through systematic observations and associated research on coasts and seas in the IOCARIBE region,

**Reiterates** the need to implement properly Recommendation SC-IOCARIBE-VIII.9 and the IOCARIBE-GOOS Action Plan;

**Endorses** the Report of the Officers of the IOCARIBE-GOOS Steering Committee, 2004–2006;

**Decides** to convene a meeting of the IOCARIBE-GOOS Steering Committee, through the IOC Secretary for IOCARIBE, to review the Action Plan and draft an Implementation Plan before IOCARIBE X;

**Decides also** to support the following activities:

(i) Identifying funding for a Technical Secretary for IOCARIBE-GOOS at the IOCARIBE Office in Cartagena, colombia;

(ii) Forming a Sea Level Network for the Caribbean as a Pilot Project;

(iii) Continuing the activities in the coastal observation/modelling Pilot Project;

(iv) Continuing its participation in the PDF-B planning process for the Caribbean Large Marine Ecosystem (LME) project;

(v) Maintaining and developing better cooperation with other related national and regional programmes and organizations with complementary missions;

**Reiterates** its requests to the IOCARIBE Member States to continue supporting the development of national GOOS mechanisms and programmes, and their participation in the IOCARIBE-GOOS Regional Alliance;

**Urges** the Member States to support IOCARIBE-GOOS with necessary funds (both from the IOC Regular Programme and from extra-budgetary sources) to develop the Action Plan of the Steering Committee.

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Financial implications: US$ 1,770,000

Regular Programme: 40,000
Extrabudgetary sources: 1,730,000

Recommendation SC-IOCARIBE-IX.10

## CAPACITY BUILDING IN MARINE SCIENCES, SERVICES AND OBSERVATIONS

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

**Recalling** that the IOC Assembly, at its 23rd Session, through Resolutions XXIII-10 and XXIII-11, instructed the Executive Secretary to conduct regional assessments of existing capacities to undertake marine scientific research and operational oceanography; pursue and secure new sources of funding and human resources support for capacity-building; and implement the work programme through workshops on innovative leadership, team-building and drafting of regional project proposals,

**Recognizing** the progress in capacity development activities, in obtaining new sources of funding and human resources support for capacity developing activities,

**Considering** that:

(i) the instruction to conduct regional assessments of existing capacities for marine scientific research and operational oceanography would form an important asset for a wider variety of uses in addition to serving as a baseline on which to assess the progress of capacity development,

(ii) an important facet of self-driven capacity development hinges on adequate funds being available to support heads of marine science institutes and provide the framework for team-building workshops to be conducted,

**Bearing in mind** that in this context the various LME projects are major regional projects within the IOCARIBE region,

**Recommends**:

(i) to Member States of IOCARIBE to facilitate the conduct of regional assessments by identifying a focal point, who will engage actively with the IOC and IOCARIBE secretariats;

(ii) to assist regional marine science leaders in identifying capacity development issues within the context of LME projects of the IOCARIBE region and formulate these into proposals in collaboration with IOC and IOCARIBE secretariats for submission to international funding agencies.

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Financial implications: none

Recommendation SC-IOCARIBE-IX.11

## STATUS OF COOPERATION WITH OTHER ORGANIZATIONS: COLLABORATION OF IOCARIBE WITH THE CARIBBEAN COMMUNITY (CARICOM)

The IOC Sub-Commission for thee Caribbean and Adjacent Regions (IOCARIBE),

**Recalling**:

(i) The outcomes of the International Meeting to Review the Implementation of the Barbados Programme of Action for the Sustainable Development of Small Island Developing States,

(ii) That the Caribbean Disaster Emergency Response Agency (CDERA) has been tasked by the CARICOM heads of government to assist in the delivery of a tsunami warning system for the Eastern Caribbean States,

**Acknowledging**:

(i) That many IOCARIBE Member States are also members of CARICOM,

(ii) The significant advances in fisheries management made by the Caribbean Regional Fisheries Mechanism (CRFM), to the benefit of IOCARIBE Small Island States,

(iii) That IOCARIBE is currently developing a Tsunami Warning System with support from IOC-UNESCO,

**Urges** the IOCARIBE Member States who are also CARICOM members to establish within-state interactions between IOCARIBE focal points and those for CDERA and CRFM of CARICOM;

**Instructs** the IOC Secretary for IOCARIBE to pursue Memoranda of Cooperation with CRFM and CDERA to facilitate the exploration of areas of potential collaboration and accelerate the fulfilment of goals related to fisheries management and coastal hazard preparedness and mitigation.

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Financial implications: none

Recommendation SC-IOCARIBE-IX.12

## THE IOCARIBE MANUAL

The IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE),

**Bearing in mind** that the current IOCARIBE Manual was established more that ten years ago,

**Considering** the progress of development of the Sub-Commission over this period of time and the experience gained in the application of the IOCARIBE Manual,

**Recognizing** the increasing support that the IOCARIBE programmes and activities is receiving from its Member States during this ten-year period,

**Noting** that the content of the Manual need to be completed,

**Decides** to review and complete a new Draft IOCARIBE Manual before IOCARIBE-X;

**Instructs** the IOC Secretary for IOCARIBE to:

(i) seek the best way to develop this commend, ensuring that its content satisfy all Sub-Commission missions, duties, rules and procedures, and Member States obligations and rights, among other issues;

(ii) distribute the Draft IOCARIBE Manual among all national focal points for their consideration at latest six months before the Tenth Session of IOCARIBE scheduled late 2008;

**Requests** Member States to send their opinions and considerations at least two months before IOCARIBE-X, with the purpose to prepare a final Draft of the Manual for their final consideration and approval at that session.

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Financial implications: none

Recommendation SC-IOCARIBE-IX.13

**PROGRAMME AND BUDGET FOR 2006–2008**

The IOC Sub-Commission for thee Caribbean and Adjacent Regions (IOCARIBE),

**Having considered** the report of the IOC Secretary for IOCARIBE on Programme and Budget 2006–2008,

**Recognizing with satisfaction** the effective work done by the IOCARIBE Secretariat in developing regional programmes and activities under present financial restrictions,

**Recognizing also** with appreciation the continuous support of the Government of Colombia to the IOCARIBE Regional Office in Cartagena, since its creation in 1986,

**Noting with concern** that the current biennial budget approved for the Sub-Commission shows no financial resources from the IOC (UNESCO) Regular Programme,

**Approves** the Draft Biennial 2006–2008 IOCARIBE Programme and Budget, as annexed to this Recommendation;

**Instructs** the IOC Secretary for IOCARIBE to submit to the IOC Executive Secretary the approved biennial 2006–2008 IOCARIBE Programme and Budget, and to distribute it to all IOCARIBE Member States after approval by the 39th IOC Executive Council.

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Financial implications: *see annex.*

Annex to Recommendation SC-IOCARIBE-IX.13

**Draft Biennial 2006–2008 IOCARIBE Programme and Budget**

*In US$*

| **PROGRAMME** | **RP** | **APPROVED** | **EXB** | **SECURED** |
|---|---|---|---|---|
| **Activity** | | | | |
| Science Plan | 5.000 | | 0 | 0 |
| CLME | 2.000 | | 1.033.000 | 913.000 |
| LME Evaluation | 0 | | 60.000 | 0 |
| CLME MoU | 0 | | 0 | 0 |

| PROGRAMME | RP | APPROVED | EXB | SECURED |
|---|---|---|---|---|
| ANCA | 50.000 | | 100.000 | 0 |
| WW2BW (Know-why Network) | 3.000 | | 218.000 | 218.000 |
| ICAM | 25.000 | | 130.000 | 0 |
| ODINCARSA | 50.000 | | 40.000 | 0 |
| IBCCA | 5.000 | | 5.000 | 0 |
| Tsunami & Coastal Hazards | 150.000 | | 8.000.000 | 2.500.000 |
| IOCARIBE GOOS | 40.000 | | 1.730.000 | 0 |
| Capacity building | 25.000 | | 130.000 | 0 |
| LAC-Science | 2.500 | | 5.000 | 0 |
| Conference | 3.000 | | 0 | 0 |
| MoU CARICOM | 0 | | 0 | 0 |
| **TOTAL** | **360.500** | | **11.451.000** | **3.631.000** |
| | | | | |
| **Percentage** | | | | **31,71%** |

**IOCARIBE SECRETARIAT**
*In US$*

| PROGRAMME | RP | APPROVED | EXB | SECURED |
|---|---|---|---|---|
| **Activity** | | | | |
| Human resources | 35.000 | | 120.000 | |
| Missions | 5.000 | | 40.000 | |
| Board Meetings | 3.000 | | 6.000 | |
| **TOTAL** | **43.000** | | **166.000** | |

**Please note**: In accordance with paragraph 2 of Article 1 of IOC Statutes, the budget of the Commission is adopted by its Assembly and the General Conference of UNESCO. In consequence Recommendation SC-IOCARIBE-IX.13 shall be considered when preparing the draft Programme and Budget of UNESCO for 2008–2009 (doc. Draft 34 C/5).

The budget for the current biennium (doc. 33 C/5 for 2006–2007) has already been adopted by the General Conference of UNESCO and it does contain resources from Regular Programme (RP) for IOCARIBE Secretariat and activities.

ANNEX III

# STATEMENTS AND ADDRESSES

## Opening Statement

**by Mr Yesid Fernando Castro Forero**,
Director Ministerio de Relaciones Exteriores, Dirección de Asuntos Económicos Sociales y Ambientales Multilaterales

(19 April 2006)

Doctor Marco Polo Bernal, Presidente de IOCARIBE,
Doctor Patricio Bernal, Secretario Ejecutivo de la Comisión Oceanográfica Intergubernamental de la UNESCO,
Señor Capitán de navío Julian Augusto Reyna, Secretario Ejecutivo de la Comisión Colombiana del Océano,

Distinguidos delegados de (países)
Señores representantes de (las organizaciones regionales) Comisión Permanente del Pacífico Sur, de la Organización Meteorológica Mundial,
Señores invitados especiales,

En nombre del Gobierno de Colombia tengo el honor de darles la más cordial bienvenida a Cartagena de Indias para dar cumplimiento a esta IX Reunión de IOCARIBE.

Los esfuerzos de cooperación internacional para el desarrollo de actividades científicas marinas tiene ya una larga historia en nuestra región. Viene a nuestra memoria el precursor de IOCARIBE, el CICAR, programa de investigaciones cooperativas coordinado por la Comisión Oceanográfica Intergubernamental de la UNESCO, cuyo objetivo fue entender los océanos y sus procesos sistémicos en la región del Gran Caribe. La experiencia con el CICAR condujo en 1975 a la creación de la Asociación IOCARIBE. Posteriormente, en 1982, fue creada IOCARIBE, como una subcomisión de la Comisión Oceanográfica Intergubernamental de la UNESCO para el Caribe y las Regiones Adyacentes, cuyo propósito principal es desarrollar los programas globales de la COI en esta región. Colombia es la sede permanente de este organismo desde hace 20 años. Esta reunión constituye una ocasión muy propicia para celebrar este aniversario.

Durante estos cuatro días de trabajo la Subcomisión tratará asuntos de la mayor importancia para el aprovechamiento sostenible de nuestros mares y para el bienestar y seguridad de nuestras poblaciones costeras.

Quiero destacar, en primer lugar, la propuesta relativa al Plan Regional Estratégico de Ciencias para IOCARIBE 2006 – 2016, el cual, como se menciona en el documento de acción de esta reunión, persigue tres objetivos principales: En primer lugar, ayudar a los países miembros a planificar estratégicamente el desarrollo de sus ciencias marinas, la observación de los océanos y el desarrollo de servicios basados en el conocimiento científico. En segundo lugar, facilitar el manejo coherente de los programas regionales relacionados con el medio ambiente marino y costero y sus recursos. En tercer lugar, fortalecer las bases científicas de los programas regionales.

Otro tema de la mayor importancia es el relacionado con el manejo integrado de las zonas costeras, el cual requiere articular los planes y programas de los diferentes organismos técnicos y administrativos nacionales, para desarrollar de manera sostenible los ambientes costeros, evitar los problemas generados por la sobrepoblación desordenada de las costas y la explotación irracional de los recursos, y prevenir o minimizar los efectos de fenómenos naturales como los tsunamis, los huracanes y el ascenso del nivel del mar.

También se ocupará esta reunión del tema del manejo de datos oceanográficos. Esta ha sido una preocupación de largo tiempo de IOCARIBE, en cuya solución se ha avanzado paulatinamente en las diferentes reuniones, con lo cual se facilita la transferencia ágil de información científica oceánica entre los países miembros, y el desarrollo de los proyectos regionales de investigación oceanográfica.

Debemos destacar también el tema del programa de apoyo para la construcción de capacidades en ciencias marinas, servicios y observaciones. La importancia del desarrollo de capacidades ha sido reconocido desde la época del CICAR como una condición necesaria para alcanzar los objetivos de los programas de investigación científica y para lograr un desarrollo duradero y auto sostenido de las ciencias marinas en la región.

En esta reunión también se analizará el estado de implementación de los proyectos de investigación sobre los Grandes Ecosistemas Marinos para el Caribe, el Golfo de México y el Pacífico Centroamericano. Las conclusiones de esta evaluación aportarán sin duda importantes orientaciones para asegurar la continuidad y el éxito de esos proyectos.

Esperamos que esta reunión concluya con los mejores resultados en todos los temas de la agenda propuesta, para beneficio de nuestros pueblos y especialmente de las poblaciones costeras. Y que, como en ocasiones anteriores, esta reunión sirva para estrechar aún más los vínculos de cooperación entre todos los organismos internacionales que se ocupan de los temas del mar desde diferentes perspectivas y especialidades.

Deseamos finalmente, que nuestros visitantes tengan una muy grata estadía en Cartagena, La Heroica. Que puedan disfrutar del calor amable de su gente, del ambiente caribeño de sus playas, de noche, por supuesto. También, que puedan disfrutar de la belleza incomparable de la ciudad vieja, con sus murallas, sus balcones y sus calles evocadoras de la época colonial de nuestro países.

## Statement

**by E. Cabrera on behalf of M. Jarraud,**
Secretary-General World Meteorological Organization

(19 April 2006)

Ladies and Gentlemen,

On behalf of the Secretary General of the World Meteorological Organization (WMO) and my own, I wish to express our appreciation for the invitation to address the IXth Intergovernmental Session of the IOC Sub-Commission for the Caribbean and adjacent Regions (IOCARIBE). I am grateful to the Government of Colombia for hosting this Session in the beautiful and historic city of Cartagena de Indias, and for its support to WMO and its Programmes, particularly to its activities related to disaster reduction.

The Marine Meteorology and Oceanography Programme is by nature an important component of the WMO's basic crosscutting programmes, achieving the relationship between WMO and IOC quite natural.

The WMO/IOC Joint Technical Commission for Oceanography and Marine Meteorology (JCOMM) was established in 1999 to coordinate worldwide marine meteorological and oceanographic services and their supporting observational, data management and capacity building programmes. JCOMM is one concrete sign of cooperation between oceanographers and meteorologists. Their cooperation in the taking and transformation of raw data on the coupled atmosphere-ocean system spans many international, regional and national efforts.

JCOMM has a long-term, far-reaching and innovative vision to benefit the global community in the coordination, regulation and management of a fully integrated global marine system that uses state-of-the-art technologies and capabilities. It is responsive to the evolving needs of users of marine data and products and enhances the national capacity of all maritime countries.

The strategy for making this vision a reality will be through continuing and enhancing collaboration between WMO and IOC.

Since the establishment of JCOMM, several events that have implications for the Commission have taken place. The last two years had already been marked by natural disasters with considerable loss of life and socio-economic impacts. Particularly in the year 2005, such disasters ranged from one of the most intense and large tropical cyclone seasons in the Atlantic and Pacific Oceans, to severe flooding in several parts of Caribbean region and Asia. Were it not for WMO's global system of warnings of extreme weather events, the loss in life and property would have been even higher.

As regards tsunamis and other ocean-related hazards, the WMO's Global Telecommunications System (GTS) interconnecting the National Meteorological and Hydrological Services (NMHSs) of its Members holds tremendous potential for the timely and reliable exchange of related warnings and messages among the appropriate organizations. In fact, the Tsunami Warning System in the Pacific Ocean already utilizes the WMO GTS for the exchange of such warnings. WMO is actively joining forces to ensure contributions to the development of the global Tsunami Warning System (TWS) within a multi-hazard framework.

Coordination and collaboration have been established with the other key agencies of the UN system, and in particular the Intergovernmental Oceanographic Commission (IOC) of UNESCO, and ISDR, in ensuring that WMO’s telecommunication system and operational infrastructure through the NMHSs are available to accelerate operational aspects of the TWS in the Indian Ocean and in the other ocean basis at risk, as it is the case in the Mediterranean and Caribbean seas. WMO’s activities had also been focused on assessing needs for warning capacity and educational and public out reach needs of the NMHSs within a multi-hazard approach, marine warnings and capacities related to utilization of satellites.

The involvement in and support for natural disaster reduction and the implementation of a comprehensive global multi-hazard warning system (including tsunamis and storm surges), have became high priority on the international ocean agenda. WMO and IOC play an active role providing the necessary support to JCOMM to enable the implementation of its plan of action using the existing JCOMM expertise in services (e.g. storm surges and waves), observing systems

(sea level, ocean data buoys), and warning dissemination mechanisms (marine meteorological warning services).

It is not the first time that WMO supports activities beyond the strict domain of weather, climate and water, nor has its realm been exclusive to natural disasters. Safety at sea has been a primary driver for internationally coordinated marine observations since the foundation of the World Meteorological Organization. Over the past two decades the demand has steadily grown for expanding marine observation systems to support other applications such as the initialization of increasingly sophisticated and longer range weather forecast systems, coastal area management, optimization of commercial fishing activities, ship routing, off-shore resource exploration and development, pollution prevention and clean-up; and most recently, climate modelling and prediction.

Climate variability and change affect sea level, coastal fisheries, open ocean fisheries, coastal erosion, carbon uptake, and risk assessment for a large number of sectors, including tourism, shipping and oil. The oceans constitute a major component of the fully coupled climate system and it is crucial that the necessary oceanographic observations and research are carried out as part of a single, coordinated and collaborative international climate research programme. Substantial progress has been made in the implementation the observing networks since the establishment of the Commission with total composite *in situ* ocean system achieved a significant milestone in February 2005 by surpassing the 50% completion mark. Improving our observations, understanding, modeling and prediction of climate variability and change is no less important or challenging now than it was a decade ago.

A new composite observing system is fundamental to meteorology, but it is also necessary in order to meet the demands of sustainable development in the 21st century. The Global Earth Observation System of Systems (GEOSS) will be an opportunity to provide additional benefits to many societal and economic areas worldwide and with its unique operational system, WMO has been a very active participant in this process, and is well placed to play a leading role therein.

At the moment, it is timely to reflect on progress over the past, the challenges that lie ahead and establish a strategy for future collaboration between WMO and IOC. I am confident that this meeting will address the discussion for further collaboration with the IOC Sub-Commission for the Caribbean and adjacent Regions (IOCARIBE) on:

- Enhancing early warnings system (EWS) for ocean related hazards (including tsunamis and storm surges), particularly related to observational aspects, data standardization and information exchange and telecommunications (GTS, and in future WIS) for the tsunami-observing network, and storm surge modelling and forecasting;
- Improving capacity building and training activities for strengthening the capacities of the designated NMHSs for tsunami warning systems;
- Supporting of JCOMM priority issues for the next four years and their implementation especially in the:
- Further development of oceanographic products and services,
- Enhanced involvement in and support for natural disaster reduction and marine multi-hazard warning systems;
- Active engagement with the GOOS community in the implementation of the GOOS Coastal Implementation Plan;

- Greater involvement of smaller maritime countries, in particular, in the work of the Commission, in support to the WMO Marine Meteorology and Oceanography Programme;
- Engagement with the private sector in support of the implementation of the JCOMM work programme and of operational oceanography in general.

Before closing, I wish to thank you again for your invitation. Your presence speaks of your deep commitment to the work of the IOC Sub-Commission for the Caribbean and adjacent Regions (IOCARIBE). I wish to assure you of WMO's pledge to continue working together with all our Members and partners towards a safer world and to reducing the magnitude of natural disasters in the future.

Message

**From Dr Patricio A. Bernal,**
Executive Secretary of the Intergovernmental Oceanographic Commission of UNESCO

(19 April 2006)

Dear Delegates,

IOCARIBE is the oldest of the IOC regional bodies reflecting the strength and the will of the region to be actively involved in the important marine issues that affect them at a global stage. The accumulated experience of the region shows that it has done well in translating the necessary elements of the relevant global programmes of the Commission into the realities dictated by the main issues that affect the region. IOCARIBE is a functioning dynamic body of which the IOC can be justly proud of, and which the Commission now requires again its experience to show the way in adapting the programmes of the Commission in the coming planning cycle leading to a new Medium Term strategy of six years and the new Programme and Budget for the biennium 2008–2009.

The region has seen times of great vibrancy and some times in the doldrums. The times of vibrancy resulted in active participation in the IOC global efforts in assessing marine pollution, and monitoring programmes for instance. Strong capacity building programmes were implemented in cooperation with other agencies and programmes of the United Nations, most notably with UNEP's Regional Seas programmes. The times of relative inactivity can be largely attributed to periods when the Commission was unable to provide resources and sometimes even basic support to its Sub-Commission. Major changes in the modalities of funding multilateral organizations have taken place in the last two decades. Unfortunately the severe funding constraints that affect our work can very easily turn upon us and deprive us of these essential resources. But all these changes also have forced us to adapt to new environment.

Our present times are challenging, but in summary have been good for the Sub-Commission. We have been able to support the basic work of the Sub-Commission despite diminishing regular budgets of the IOC. More and more IOCARIBE has turned towards its members for direct support of the regional secretariat. More and more the Secretariat has endeavoured to seek funding to projects of the Sub-Commission from international, multilateral donors. And our decisions have brought many positive results. The dynamism and visibility of IOCARIBE owes much to the present set-up of the regional office structure, and in particular to

the fact of having a permanent Secretary. These two factors —sufficient funding and competent manpower— are the happy combination that keep the programme alive and serving the region.

It would be unrealistic however to expect that this fortunate situation can always continue. Reforms and ever tighter management is taking away much of the central support that we have been able to provide to date, and this IXth Session of the IOCARIBE Sub-Commission should be the time and the forum where your deep and considered reflections give rise to innovative ideas on how to secure firm long-term commitments from Member States to the IOCARIBE process of which we are today justifiably proud.

But there remain other challenges as well besides the securing of serious long-term commitments of support. These challenges, ironically, given the process that leads to the discussion of the IOC Budget and Programme, are the complement of the successful experiences of the region that I mentioned in the beginning. The question is namely: how can the region, using all the many skills available to it, ensure that regional expressions of its priorities are reflected into global programmes sponsored by the Commission? Put another way: how can the region express its maturity through wisely identifying its real priorities so that its roots can be found in global programmes, and if this not the case then to express them with sufficient clarity and logic to take on the mantle of the global programmes?

In my view, this is a challenge that is well within the collective capability of the region. You have great diversity, vitality and enthusiasm. There are many functional institutes and you are able to make available sufficient resources when the need is felt. The best demonstration of this fact in recent times was the extremely positive response to the call of the IOC Assembly to set up an Intergovernmental Coordination Group in the region to lead the establishment of a Tsunami Warning System that the region has seen as more appropriately being a Coastal Inundation Warning System. The ICG will be a lead programme in the region channelling many existing resources and the work of many local and regional institutions, and will attract many other resources and bring with it a high visibility to IOCARIBE. It is an opportunity that IOCARIBE cannot afford to allow to go untapped.

I am hopeful that IOCARIBE can rise to the twin challenges that I have outlined —the need for long-term resources commitment to the IOCARIBE process, and the need to wisely identify regional needs out of global programs in a manner that produces a useful integrated regional programme.

The Region has institutions dealing with the priority issues that affect it, like the existing emergency and preparedness networks operating for natural disasters.

We expect a fast move forward in the Tsunami work; precisely because the region is far from starting from zero, and the political will has managed to put in tension all these resources.

In the case of the Large Marine Ecosystem Project, we are at the end of a slow and sometimes frustrating process to obtain the approval of the second phase of a multi-nation proposal, of which the IOCARIBE secretariat will be its implementing agency.

The true challenge lies in harmonizing the rest of the agenda of the Sub-Commission with this leading examples.

These are my brief thoughts in this occasion. I could not end my remarks, without expressing the Intergovernmental Oceanographic Commission’s recognition to the long and

sustained support of the Colombian Government to the work of IOCARIBE. The presence support of Her Excellency, Dona Carolina Barco, Minister of Foreign Affairs of Colombia and of His Excellency Don Juan Manuel Santos, Vice-President of the Republic and President of the National Ocean Commission of Colombia, our official focal point, underline the importance that the Government of Colombia gives to the development and full use of the maritime spaces under its national jurisdiction. In these efforts the IOC and UNESCO stand ready to assist Colombia in the development of the necessary capabilities and infrastructures needed.

I wish you a very fruitful and successful meeting. We expect a useful and practical series of recommendations from you; as well as your expression of continued support to the work of IOCARIBE.

Muchas Gracias.

Message

**From Mr Francois Gérard,**
Chairman of the IOC-WMO-UNEP Intergovernmental Committee
for Global Ocean Observing System (I-GOOS)

Dear Delegates,

I am really sorry for the unavailability of GOOS officers during your meeting celebrating the 20th anniversary of the Caribbean subcommittee for IOC.

I have therefore asked Dr Cesar Toro to convey to you the best wishes from the I-GOOS board and its understanding of the development of GOOS regional alliances in relation with IOC regional subsidiary bodies.

I will therefore focus on the need to fill the gap between the global approach of ocean observation and the regional vision, which is the key of further GOOS development.

IOC is the UN organisation in charge of Ocean Science and Ocean observing systems. The 23rd session of IOC Assembly has tasked I-GOOS with linking with the user communities for planning an evaluation of ocean observing system. I-GOOS gets scientific and technical advice from the GOOS Scientific Steering Committee. But it has also to link these advices to those of Regional Alliances, like IOCARIBE-GOOS, recognised now as basic partners for GOOS implementation and user linking.

Therefore, I-GOOS is responsible, through IOC, of meeting the world community requirements involving the global ocean (UN convention on Climate change, The Millennium objectives, the ISDR plans, etc.), and the coastal seas (communities at risks, coastal ecosystems, coastal management).

This imposes seeking the ways to link Global with Regional scale all around the World Ocean. More precisely: how to develop a “community of practices” within the coastal within a global observing system?

Within the last two years, the responsibility of I-GOOS has been reinforced by four events: the establishment of the Global Earth Observation Systems of Systems (GEOSS), the lead taken by IOC on tsunami warning systems, the adoption of new terms of reference by the 23rd Assembly, and the endorsement of the "implementation strategy for the Coastal Module of GOOS".

The I-GOOS board and the GSSC have therefore built upon these events do define and implement the development of the GOOS community for 2006 and 2007. It is what I will summarise now.

The third Earth Observation Summit, held in Brussels, 16 February 2005, has defined GEOSS as a system to implement a global earth observation strategy aimed at building a comprehensive - filling the gaps -, not redundant - identifying commonalities - observation system meeting the requirements of nine societal themes for sustainable development.

The implementation of GEOSS has started in early 2006. GOOS is definitely one of its initial components. An "Ocean United" group has been established, associating I-GOOS, JCOMM and POGO, for a coherent answer to the GEOSS demands. "Ocean United" has taken the lead of tasks in relation to the oceans. Therefore, GOOS is in a position to act as a relay of groups like yours towards GEOSS, for what concerns the long-term sustainability of open ocean and coastal observing systems.

It is expected that GEOSS will help develop and propose economic models and policies to ensure that systems, up to now built upon research programmes and research funds, be moved to long term sustainable operations. Another task, linked with the previous, is to organise the dialogue with the users and policy makers, able to raise the necessary support. A third one is to define a capacity building strategy to ensure that developing countries are not only users of systems developed by others, but also implementers, in order to build a global property of these systems.

This is the background for the development of GOOS at global and regional level for contributing directly to five upon the nine societal benefit areas of GEOSS.

"Understanding, assessing, predicting, adapting to climate variability and change"; together with "Improving weather information, forecasting and warnings" addresses the global module of GOOS, which is now near 80% completion, and has to be completed to reach long term sustainability. This is the first task for GOOS within the GEOSS, and the regional alliances have a role to play in it.

"Reducing loss of life and property from natural and man-induced disasters"; "Improving water resources management" and "Improving management and protection of ecosystems" describe the real challenge of GOOS for the coming years: the development of the coastal module of GOOS, through the Global network of regional alliances.

GOOS Regional Alliances have a role to play in that process. It is the reason why the priority for I-GOOS and GSSC is to organise the network of GRAs within the IOC framework, as a "community of practices" working towards a sustainable observing system within the coastal area.

The last I-GOOS meeting has approved the "implementation strategy for the coastal module of the GOOS", prepared by the expert group chaired by Tom Malone. It is therefore the

cornerstone of the process leading to the third GOOS forum, organised from 14 to 17 November 2006 in Cape Town by GOOS-Africa.

The GSSC and I-GOOS board, having met in March 2006, have initiated the process for the preparation of the forum. It is expected that GRA representatives be the key players of this forum, bringing experiences, successes and questions around the following questions: (i) how to organise the GRAs network under the IOC legal framework? (ii) how to implement the COOP strategy along the guidelines contained in the COOP report? (iii) how to fill the gap between global GOOS and coastal GOOS? (iv) identify synergies with the LME projects to support the GRA development within the GEOSS framework ?

Answering these questions is a challenge, but is mandatory for the whole GOOS community. The reason is simple and obvious: we have to demonstrate that all GOOS components are working coherently to implement and sustain one of the key elements of GEOSS. But I am confident that, it will enable us to prepare a proposal for the next I-GOOS session in 2007, for adoption by the 24th IOC Assembly.

IOC Circular Letter 2184 announcing the Forum has been issued beginning of April. An organising committee has been established, associating, around the I-GOOS board and the local organiser, representative of all GRAs, amongst them IOCARIBE-GOOS. All GRAs will be associated to the preparation of the Forum. I am therefore expecting interesting exchanges based on the first draft programme which has been recently circulated to the organising committee.

This is the message I got from the IOC Assembly and the last GOOS meetings. Building upon the work already performed under the leadership of the previous I-GOOS board, mainly since the 1st GOOS Forum, we can ascertain the regional foundations of the GOOS.

I wish you success in your debates and hope to see some of you at the next GOOS forum, in 2006.

Thanks for your attention.

ANNEX IV

# LIST OF DOCUMENTS

## WORKING DOCUMENTS

| Document code | Title | Agenda Item | Language |
|---|---|---|---|
| IOC/SC-IOCARIBE-IX/1 Prov. Rev. | Provisional Agenda | 2.1 | E, S |
| IOC/SC-IOCARIBE-IX/1 Add. Prov. | Provisional Timetable | 2.3 | E/S |
| IOC/SC-IOCARIBE-IX/2 | Action Paper | 2.3 | E, S |
| IOC/SC-IOCARIBE-IX/2 Annex 1 | Report by the IOCARIBE-UNESCO Secretary on Programme Implementation | 3. | E |
| IOC/SC-IOCARIBE-IX/2 Annex 2 | Progress Report on Budget Execution | 3.1<br>8.1 | E |
| IOC/SC-IOCARIBE-IX/3 Prov. | Summary Report *(this document)* | 9. | E, S |
| IOC/SC-IOCARIBE-IX/4 Prov. | Provisional List of Documents | 2.3 | E |
| IOC/SC-IOCARIBE-IX/5 Prov. | Provisional List of Participants | 2.3 | E/S |
| IOC/SC-IOCARIBE-IX/6 Prov. | IOCARIBE Medium Term Strategic Science Plan (2006–2015) | 4.1 | E, S |
| IOC/SC-IOCARIBE-VIII/3 | Eighth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions (Recife, Brazil, 14–17 April 2004) | 3.1 | E<br>(Ex. Sum-in Spanish) |

## INFORMATION DOCUMENTS

| Document code | Title | Agenda Item | Language |
|---|---|---|---|
| IOC/SC-IOCARIBE-IX/Inf 1. | Information and Guidelines to participants | 2.1 | E, S |
| IOC/SC-IOCARIBE-IX/Inf. 2 | List of IOCARIBE National Focal Points | -- | E/S |
| IOC/SC-IOCARIBE-IX/Inf. 3 | IOCARIBE Manual | -- | E/S/F/R |
| IOC/SC-IOCARIBE-IX/Inf. 4 | IOCARIBE Draft recommendation template | -- | E, S |
| IOC/INF-1166 | IOC Rules of Procedure | 2.3 | E/F/R/S |

## OTHER REFERENCE DOCUMENTS

| Document code | Title | Agenda Item | Language |
|---|---|---|---|
| IOC-XXIII/3 | Twenty-third Session of the IOC Assembly (Paris, France, 21-30 June 2005) | -- | E, S |
| IOC/EC-XXXVII/3 | Summary Report of the Thirty-Seventh Session of the IOC Executive Council, Paris, 23–29 June 2004 | -- | E, S |

| Document code | Title | Agenda Item | Language |
|---|---|---|---|
| SC-IOCARIBE-VIII/6 Prov. | Provisional Framework of the IOCARIBE Strategic Science Plan and Related Services for IOCARIBE, 2001–2010 | 4.1 | E |
| IOC/INF-1043 | Report on IOCARIBE Evaluation, September 1996 | 4.1 | E |
| IOC/INF-1130 | The IOCARIBE Medium Term Strategy: 1999 – 2003 | 4.1 | E |
| GEFSEC Project Tracking System Approval Letter | Project clearance/approval for Project: Sustainable Management of the Shared Living Marine Resources of the Caribbean Large Marine Ecosystem (CLME) and Adjacent Regions | 5.1.1 | E |
| IOCARIBE/CLME PDF-B | Sustainable Management of the Shared Living Marine Resources of the Caribbean Large Marine Ecosystem (CLME) and Adjacent Regions PDF-B Proposal | 5.1.1 | E |
| IOC Report of Meetings of Experts and Equivalent Bodies | IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Sixth Session, Paris, France, 29-30 March 2004 | 5.1.2 | E |
| IOC/ANCA-IOCARIBE-III/3s | Executive Summary of the Third Session of the ANCA-IOCARIBE Working Group on Harmful Algal Blooms (Cumaná, Venezuela, 16–18 de Julio, 2003) | 5.1.4 | E |
| IOCARIBE/INF-4 | White Water to Blue Water Initiative (WW2BW) Strategic Plan for 2006-2009 | 5.1.5 | E |
| IOC Workshop Report 189 | Workshop for the Formulation of a Draft Project on Integrated Coastal Management (ICM) in Latin America and the Caribbean (LAC), Cartagena, Colombia, 23–25 October 2003 | 5.1.6 | E, S |
| IOCARIBE/INF-6 | Taller de Trabajo sobre Herramientas para el Manejo Costero Integrado en America Latina y el Caribe [Tools for Integrated Coastal Zone Management (ICM) in Latin America and the Caribbean (LAC)], Recife, Brasil, 12–13 Abril 2004 | 5.1.6 | S |
| UNESCO Document 4500022583 | Water Quality Criteria in Latin America and the Caribbean—Outputs of the IOC/ CIDA Marine Science Planning Workshop to prepare a Concept Paper Proposal for Water Quality Criteria for Latin America and the Caribbean (Veracruz, Mexico, 16–18 December, 2004) | 5.1.6 | E |
| ICG/CARIBE-EWS-I/3 | First Session of the IOC Inter-governmental Co-ordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Bridgetown, Barbados, 10–12 January 2006 | 5.2.1 | E |

| Document code | Title | Agenda Item | Language |
|---|---|---|---|
| IOC/SC-IOCARIBE-IX/INF-7 | Action plan of the first session of the IOC Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions | 5.2.1 | E |
| IOC Workshop Report 199 | Summary Report of the International Conference for the Establishment of a Tsunami and Coastal Hazard Warning System for the Caribbean and Adjacent Regions, Mexico City, 1-3 June 2005 | 5.2.1 | E |
| IOC Workshop Report 196 | International Coordination Meeting for the Development of a Tsunami Warning and Mitigation System for the Indian Ocean within a Global Framework UNESCO Headquarters, France, 3–8 March 2005 | 5.2.1 | E |
| IOC Resolution XXIII-13 (*in IOC-XXIII/3 above*) | IOC 23rd Assembly, Res. XXIII-13 and Annex I (International Conference for the Development of a Tsunami and Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Mexico DF, 1-3 June, 2005); Annex II (Terms of Reference for the Intergovern-mental Coordination Group fro the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions) | 5.2.1 | E, S |
| IOC/INF-1174 | An Intra-Americas Sea Tsunami Warning System Project Proposal | 5.2.1 | E |
| IOC/IODE-XVII/35 | IOC Strategic Plan for Oceanographic Data and Information Management | 5.2.2 | E |
| IOC/IOCARIBE/INF-5 | Roadmap for the establishment of National Oceanographic Data Centres in the Caribbean Sub region of ODINCARSA | 5.2.2 | E |
| IOC/EB-IBCCA-VIII/3 | Comité editorial de la COI para la Carta batimetrica internacional del mar Caribe Y Golfo de México (IBCCA), Octava reunion, Boulder, Colorado, EE.UU., 3 al 5 de marzo de 2003 | 5.2.3 | S |
| IOC/INF-1170 | The Strategic Plan for IOCARIBE-GOOS | 5.2.4 | E, S |
| GOOS Report No.134 | Meeting for Establishing the GOOS Regional Alliance for the Southeast Pacific (GRASP) (Cartagena, 30-31 May 2003) | 5.2.4 | E, S |
| GOOS Report No. 135 | First Meeting of the IOCARIBE-GOOS Steering Committee (New Orleans, USA, June 2 – 3, 2003) | 5.2.4 | E |
| IOCARIBE GOOS Conference Presentations | IOCARIBE-GOOS at TOS / OI Americas 03 “The Second Conference on A Regional Ocean Observing System for The Caribbean Sea and Gulf of Mexico” June 4, 2003, New Orleans USA http://www.iocaribegoos.org/OIA03SessionAgenda.htm | 5.2.4 | E |

| **Document code** | **Title** | **Agenda Item** | **Language** |
|---|---|---|---|
| GOOS Report No. 141 | IOC Group of Experts on the Global Sea Level Observing System (GLOSS), Eighth Session, Paris, France, 13-17 October 2003) | 5.2.5 | E |

ANNEX V

**ACTION PLAN**

of the First Session of the IOC Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Bridgetown, Barbados, January 10-12, 2006

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| 1 | 1.1 Free and open exchange of bathymetry data must be guaranteed in compliance with IOC principles for IODE between MS and assemble and share information for modelling purposes. | ICG<br>MS<br>IOCARIBE Secretariat | ICG /<br>WMO<br>OAS<br>WG1<br>A. Mercado<br>H. Perez Nieto<br>J. Simmons | On-going | Should be included in Assessment Visits (Refer to 11.3) | | |
| | 1.2 Collect adequate bathymetric and topographic information, and other critical infrastructure databases necessary for tsunami, storm surge and storm wave's inundation numerical modelling and risk evaluation. | ICG<br>WGs Co-chairs | MS<br>IOC, IOCARIBE (IBCCA, Jose Luis Frias)<br>IHO<br>OAS<br>GOOS<br>WMO | On-going | 1:1,000,000 is the scale of the IOCARIBE (IBBCA) project | | |
| | 1.3 Define the resolution of the bathymetry needed to carry out the modelling. | WG1 | Aurelio Mercado<br>Hernan Perez Nieto<br>Modesto Ortiz | Draft: 15.05.06<br>Final:<br>30.05.06 | | | |

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| 2 | 2.1 The IOC secretariat is asked to send a follow up letters to member states to provide 24/7 national contact point before the next session. | IOC | IOC Secretariat<br>C. Toro<br>U. Wolf | 30.03.06 | DONE | | |
| | 2.2 IOCARIBE will send the chairs of ICG the list of IOC and IOCARIBE national focal points. | IOCARIBE Secretariat | | 25.04.06 | | | |
| | 2.3 ICG will send a letter to followup the designation of the national 24/7 focal points referring to 2.1 and UNESCO Director General's letter of Nov. 2005. | ICG Board<br>G. Malave<br>I. Matos<br>P. Saunders | IOCARIBE Secretariat | 30.04.06 | | | |
| 3 | 3.1 Establish scientific/technical working groups in each member state, and ensure their participation on the ICG working groups as well as other ICG-related workshops and training courses. | MS<br>ICG | WGs Co-Chairs<br>C. Toro<br>U. Wolf<br>L. Kong | Before the next session | | | |

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| | 3.2 Develop decision-tree protocols that give clear guidelines for action to be taken when bulletins and products are issued. (These protocols should address issues such as national legislation and legal authority.). Examples of existing guidelines and protocols should be provided to the MS. | PTWC<br>ICG<br>National Focal Points | WG2<br>WG3<br>WG4<br>PTWC / ITIC<br>R. Watlington<br>R. Robertson | | | | |
| | Provide the following publications to each 24/7 Focal Point:<br>Caribbean Tsunami Hazard (Mercado-Irizarry and Liu, 2006. World Scientific Press) to each 24/7 Focal Point.<br>History of Caribbean Tsunamis (O'Loughlin and Landers, Elsevier Press)<br>CD Historical Tsunami Database (Gusiakov, 2005) | IOC Secretariat | IOC Secretariat | 2nd Session ICG | | | |
| 4 | 4.1 Integrate the ICG strategies into individual country's disaster risk reduction programme. | MS<br>ICG | ICG-Board<br>WG4<br>Caribbean Development Bank | | | | Caribbean Development Bank<br>IADB<br>Trust Funds<br>IADB |

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| 5 | Communication Systems between Tsunami Warning Centers and National Focal Points<br>5.1 National needs for necessary updates and maintenance of Global Telecommunications System (GTS) will be investigated. | WMO | IOC<br>WMO<br>WG3<br>R. Watlington<br>R. Robertson | 10.06 | | | WMO |
| | 5.2 Sorting priorities of warnings for all kinds of coastal hazards in terms of the issuance/broadcast should be investigated. | ICG<br>WG3<br>Bill Proenza | WGs Co-chairs | 30.04.06 | | | |

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| | 5.3 Compare the various communication systems available, including EMWIN, for the rapid warning/alerting and information dissemination in the Caribbean, including technical specifications, speed, capabilities, bandwidth and cost.<br><br>Comment: The aim would be to effectively and efficiently enable MS to make better informed decisions based on their applying the latest information to their operational requirements and other factors. To avoid single point failure, backup systems are needed, (i.e. redundancy) to be built into all levels of the communication system (i.e. contacts, technology and organisations). | ICG<br>WG3 | Bill Proenza<br>WGs Co-Chairs | Preliminary report of findings by 30 .04.06 | | | USNWS |
| 6 | 6.1 Create a consolidated Caribbean catalogue of tsunamis and other hazards, which lead to coastal flooding and their sources. | ICG<br>WG1 | Co-Chairs<br>WG1<br>A. Mercado<br>H. Perez N.<br>NGDC | 2008 | | | NSF |

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| | 6.2 Provide references of reports, peer reviewed literature, contact points of tsunami and other coastal inundation events and surveys. | ICG<br>WG1<br>WG2<br>Caribbean Tsunami Information Centers | ITIC<br>WGs Co-chairs<br>C. Toro<br>U. Wolf<br>L. Kong | Within one year of the event. | | | |
| 7 | 7.1 To write a proposal and convene a workshop of Caribbean geophysics and geology experts to:provide a list of of past and potential tsunamigenic events with their source parameters, (earthquakes: location, length, strike,, slip, rake,, dip; landslides: volume, speed; volcanic eruptions). | ICG<br>WG1 | IOC<br>A. Mercado<br>H. Perez<br><br>J. Simmons | Write Proposal: 30.05.06<br>Workshop: Fall 2006<br>Report: Within 2 months of the workshop | | | USGS<br>Bolivar Proyect<br>Geoprico<br>NSF<br>Sea Grant<br>NOAA |
| 8 | Ensure capacity building in numerical modelling (tsunamis, storm surges, wind-waves), risk assessment and GIS capabilities.<br><br>8.1Hold regional training workshops. | ICG<br>WG1 | WG1<br>GOOS<br>PMEL<br>CICESE | No later than early 2007. | | | |
| | 8.2 Prepare coastal inundation maps for the whole region. | MS | WG1<br>PMEL<br>CICESE | 2009 | | | |

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| | 8.3 Prepare storm surge atlases for the member states based on the Saffir-Simpson scale and build capacity in member states on its real-time application.<br>. | WMO<br>IOC<br>WG1 | GOOS<br>WG1<br>Aurelio Mercado | 2009 | | | WMO |
| 9. | Ensure capacity building for preparedness, readiness, and resilience of local (community aspects) and central government (broader policy aspects) to enhance and facilitate information dissemination and resource allocation. Prepare evacuation maps. Certify at least one Tsunami Ready Community in each MS. | MS<br>WG4 | WG4<br>ITIC<br>Regional Tsunami Information Centres | Ongoing | | | |
| 10 | Update existing coastal inundation and evacuation maps. | MS<br>WMO<br>IOC | WG1<br>WG4<br>IOC<br>WMO | Every 5 years | | | Member States |
| 11 | 11.1 IOCARIBE secretariat and USAID assist CDERA in the evaluation of the existing assessments undertaken by CDERA and others | IOC<br>CDERA<br>USAID | WG3<br>Lorna Inniss<br>Israel Matos | 31.01.06 | | | |

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| | 11.2 Based on the outcome of this evaluation the IOC/WMO/ISDR country assessment questionnaire for the Indian Ocean will be customized for use in the Caribbean region | ICG<br>I. Matos | ITIC<br>Regional Tsunami Information Centres<br>CAPRADE<br>WG3<br>IOC<br>WMO | 19.04.2006 | | | |
| | 11.3 Visits to each country will be organized by an appropriate group on official requests by MS IOC secretariat in collaboration with WMO and ISDR. | ICG<br>IOC<br>MS | MS<br>IOC<br>WMO | First subnet: 30. 10 2006 | | | |
| 12 | Urge member states, , to prepare and submit national and regional proposals to ISDR and others related to the implementation of a regional tsunami warning system including funding for a full-time coordinator. | ICG Board<br>MS | WGs Co-chairs<br>IOC<br>WMO<br>ISDR | Ongoing<br>Full time coordinator: 20.05.06 | | | |
| 13 | Conduct a meeting of seismic station operators in the Caribbean. The objectives will be to develop consensus on seismic data exchange protocols, discuss communication issues, identify training requirements, establish meta data and data formats, determine station characteristics and discuss the establishment of virtual seismic networks. | ICG<br>WG2<br>Seismic Research Unit, Trinidad<br>PRSN | USAID | 31.03.2006 | | | |

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| 14 | It is anticipated that up to 38 new seismic stations can be incorporated into the tsunami warning system. In addition to the USGS stations, priority will be given to stations in Venezuela, Colombia, Mexico, Trinidad & Tobago and Cuba. | Puerto Rico Seismic Network<br>Local and Regional Seismic Networks<br>ICG<br>WG2 | Pto. Rico<br>ICG<br>WG2 | 31.12.2006 | | | |
| 15 | 15.1 Conduct a meeting of Caribbean sea level network parties to determine standards of accuracy, data transmission, sustainability for network components and maintenance, a prioritised list of system upgrades, communication protocols, data dissemination methods, training and capacity building. | ICG<br>WG2<br>GOOS<br>GLOSS | IOC<br>WMO<br>D. Wilson<br>GLOSS<br>IODE | 20.06.2006 | | $25,000 | NOAA<br>MS<br>IOC<br>USSD |
| | 15.2 Prior to that meeting, the WG will produce a preparatory document including an assessment of present capabilities, relevant existing standards, and model-based guidance on travel times from major tsunamagenic regions (maps or software tools). | WG2 | WG2<br>WG1<br>PTWC<br>ITIC | 31.05.2006 | | | |

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| 16 | Develop proposals to support alternatives to present low-bandwidth communications for higher data rates and local use for seismic, sea level and meteorological applications. | WG2 | WG2<br>WMO<br>Satellite Comm. Providers | 31.05.2006 | | | CIDA |
| 17 | It is anticipated that by December 2006 the system will have at least 10 additional sea level instruments operating in appropriate locations for the warning system providing real-time data to a system wide common data center and distributed to forecast centers. | ICG<br>IOCB-GOOS<br>WG2<br>Puerto Rico | PTWC<br>ITIC<br>IOC | 31.12.2006 | | | |
| 18 | 18.1 PTWC in consultation with the regional and national centers will prepare a draft Communications Plan for the Caribbean. Further refinement, including locations of forecast points, criteria for warnings, language and format of the communications, and delivery methods will be undertaken by this workgroup. | ICG<br>PTWC<br>WG2 | IOC<br>WMO<br>ITIC | 19.04.2006 | | | |

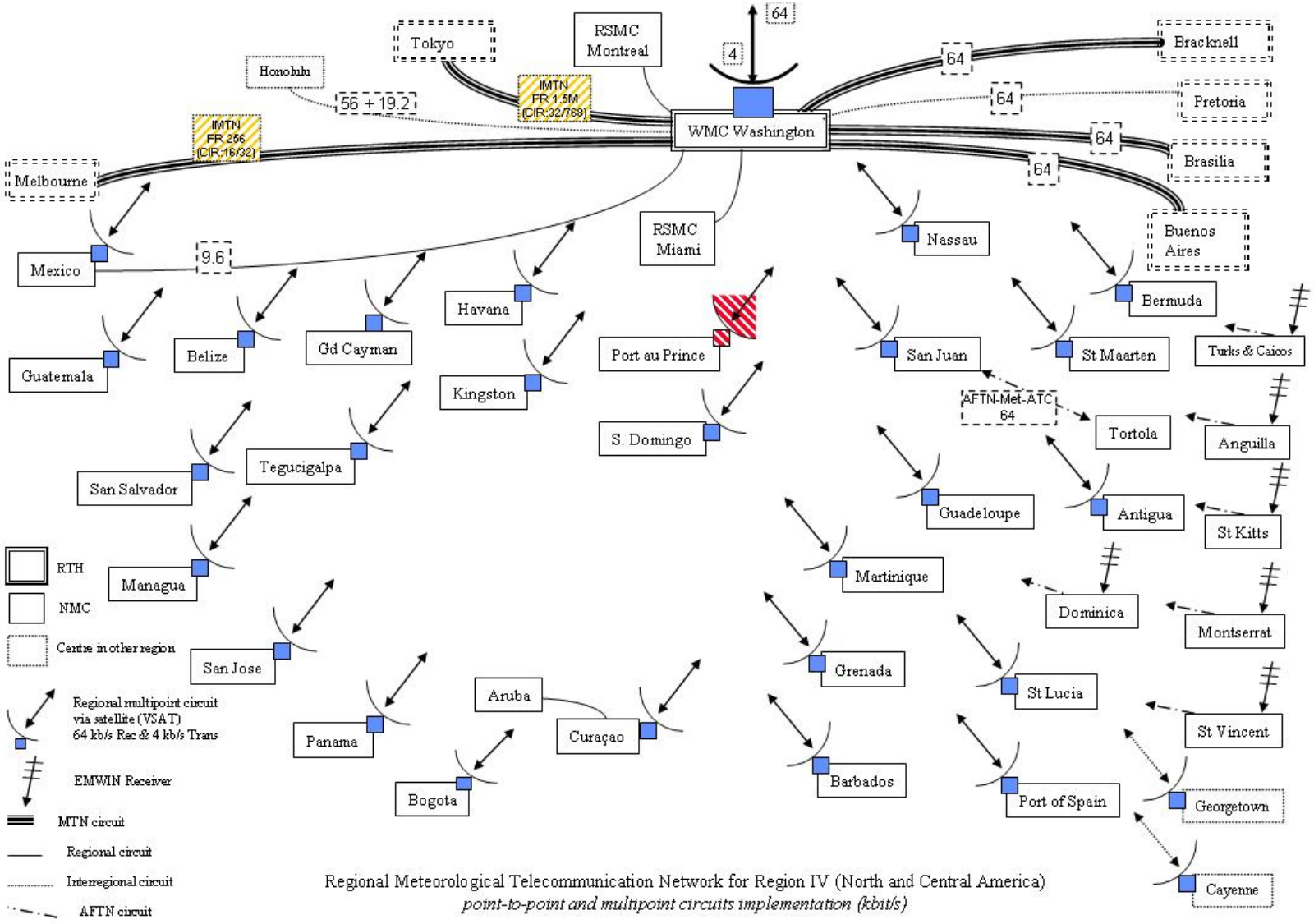
| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| | 18.2 The Puerto Rico Seismic Network will prepare a comparative report on local, regional and international earthquake location and dissemination practices. | PRSN | PTWC<br>USGS<br>WCATWC<br>National and Regional Seismic Networks | | | | |
| | 18.3 The volcano observatories in the Caribbean should inform PTWC and the regional tsunami-warning center of heightened volcanic activity. | PTWC<br>Volcano Observatories<br>PRSN | IOC<br>WMO<br>Volcano Ash Center (VAC)<br>ICAO (International Civil Aviation Organization) | 10.06 | | | |
| | 18.4 Prepare and place on the ICG-Caribbean website an inventory of broad band and sea level stations in the region. | Pto. Rico<br>WG2<br>IOCARIBE-GOOS | Pto. Rico<br>Regional and Local Seismic Networks. | 15.03.2006 | | | |
| 19 | 19.1 Perform and distribute a preliminary cost/benefit analysis of a Regional Tsunami Warning System, including preparedness, readiness, and resilience. | ICG<br>WG4<br>RTIC | IOC<br>ITIC<br>PTWC<br>WMO<br>Pto Rico | 15.06.06 | | | |
| | 19.2 Sensitise the media on critical issues related to disaster management and emergency warning systems (EWS). | ICG<br>WG4<br>RTIC | IOC<br>ITIC<br>PTWC<br>WMO<br>Pto Rico | On-going | | | |

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| | 19.3 Investigate opportunities to work with particular sectors such as tourism on EWS and preparedness. | ICG<br>WG4<br>RTIC | IOC<br>ITIC<br>PTWC<br>WMO<br>Pto Rico | Tourism:<br>25.04.06<br>On-going | | | |
| | 19.4 Make use of non-traditional methods of delivering "the message" such as calypsos and make use of local knowledge. | ICG<br>WG4<br>RTIC | IOC<br>ITIC<br>PTWC<br>WMO<br>Pto Rico | On-going | | | |
| 20 | 20.1To host an interim Regional Tsunami Information Centre (RTIC) for the Caribbean and Adjacent Regions until such time as the permanent Information Centre may be set up. | Governments of<br>Barbados<br>And Venezuela | ICG<br>ITIC<br>PTWC<br>Pto Rico<br>WG4 | July 31.2006 | | | |
| | 20.2 The RTIC would provide services for all member states in the region, and be willing to receive staffing and other contributions of support from member states. | ICG<br>MS | RTIC<br>WG4 | On-going | | | |
| 21 | Follow-up with Venezuela on its offer to support the monitoring component of the region or sub-region. | Government of<br>Venezuela<br>WG2 | WG2<br>WG4<br>ITIC<br>PTWC<br>Pto. Rico | July 31.2006 | | | |

| No | TASKS | Responsible | Resources | Deadline | Comment | Financial Resources | Potential of Financial Resources |
|---|---|---|---|---|---|---|---|
| 22 | Investigate potential sources of funding for action items. | ICG Board and Co-Chairs | IOCARIBE Secretariat | 15.06.06 Ongoing | | | |
| | References:<br>ICG- Board<br>Trinidad & Tobago- Paul Saunders<br>USA – Israel Matos<br>Venezuela – Gustavo Malave<br>MS – Member States<br>WGs - Intersessional Working Groups<br>WG1- Working Group 1<br>WG2 - Working Group 2<br>WG3 - Working Group 3<br>WG4 - Working Group 4<br>Puerto Rico – Regional Support Centre in Puerto Rico<br>PTWC – Pacific Tsunami Warning Centre<br>ITIC - IOC Tsunami Information Centre<br>IOC – Intergovernmental Oceanographic Commission of UNESCO<br>WMO – World Meteorological Organisation<br>ISDR – UN International Strategy for Disaster Reduction | | | | | | |

ANNEX VI

# THE GLOBAL TELECOMMUNICATIONS SYSTEM (GTS) OF WMO IN REGION IV (NORTH AMERICA, CENTRAL AMERICA AND THE CARIBBEAN)




Regional Meteorological Telecommunication Network for Region IV (North and Central America)
*point-to-point and multipoint circuits implementation (kbit/s)*

ANNEX VII

# LIST OF PARTICIPANTS

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ANNEX VIII

## LIST OF ACRONYMS

| | |
|---|---|
| **ABE-LOS** (IOC/_) | Advisory Body of Experts on the Law of the Sea [IOC] |
| **ACS** | Association of Caribbean States |
| **CAPRADE** | The Andean Committee for Disaster Prevention and Assistance |
| **CARIBE-EWS** | Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions |
| **CARICOM** | Caribbean Community |
| **CCO** | Colombian Ocean Commission |
| **CDERA** | Caribbean Disaster Emergency Response Agency |
| **CEPAL** | Economic Commission for Latin America |
| **CERMES** | Centre for Resource Management and Environmental Studies [Barbados] |
| **CICAR** | Cooperative Investigations of the Caribbean and Adjacent Regions |
| **CIIFEN** | International Centre for the El Niño Investigations |
| **CIMAB** | Centro de Ingeniería y Manejo Ambiental de Bahías y Zonas Costeras [Cuba] |
| **CLME** | Caribbean Large Marine Ecosystem |
| **CPPS** | Permanent Commission for the South Pacific |
| **CRFM** | Caribbean Regional Fisheries Mechanism |
| **DVD** | Digital Versatil Disk |
| **EMWIN** | Emergency Managers Weather Information Network |
| **EOPA** | Earth Observations Partnership of the Americas |
| **ERFEN** | Regional Study of the Phenomenon known as 'El Niño' |
| **EWS** | Early Warning System |
| **FAO** | UN Food and Agricultural Organization |
| **GEF** | Global Environmental Facility |
| **GEO** | Group on Earth Observations |
| **GEOSS** | Global Earth Observation System of Systems |
| **GIS** | Geographic Information Systems |
| **GLOSS** | Global Sea-Level Observing System [IOC] |
| **GOMLME** | Large Marine Ecosystem for the Gulf of Mexico |
| **GOOS** | Global Ocean Observing System [IOC-WMO-UNEP-ICSU] |
| **GRASP** | GOOS Regional Alliance for the South East Pacific |
| **GTS** | Global Telecommunication System |
| **HAB-ANCA** | Harmful Algal Blooms for the Caribbean |
| **IBCCA** | International Bathymetric Chart for the Caribbean and the Golf of Mexico |
| **ICAM** | Integrated Coastal Area Management |
| **ICAO** | International Civil Aviation Organization |
| **ICG** | Intergovernmental Coordination Group [IOC of UNESCO] |
| **ICM** | Integrated Coastal Management |
| **ICM-LAC** | Integrated Coastal Management for Latin America and the Caribbean |
| **ICSU** | International Council for Science |
| **I-GOOS** | Intergovernmental Committee for GOOS [IOC-WMO-UNEP] |
| **IHO** | International Hydrographic Organization |

| | |
|---|---|
| **IMA** | Institute of Marine Affairs (Trinidad & Tobago) |
| **IMO** | International Maritime Organization [UN] |
| **INIA** | Instituto Nacional de Investigaciones Agrícolas [Venezuela] |
| **INVEMAR** | Instituto de Investigaciones Marinas y Costeras [Colombia] |
| **IOC** | Intergovernmental Oceanographic Commission [UNESCO] |
| **IOCARIBE** | IOC (UNESCO) Sub-Commission for the Caribbean and Adjacent Regions |
| **IODE** | Oceanographic Data and Information Exchange [IOC of UNESCO] |
| **ISDR** | International Strategy for Disaster Reduction [UN] |
| **ITIC** | International Tsunami Information Centre [IOC of UNESCO] |
| **JCOMM** | Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology |
| **LAC** | Latin America and the Caribbean |
| **LBS** | Protocol for the Protection of the Marine Environment from Land-based Sources |
| **MEPC** | Marine Environment Protection Committee |
| **MoU** | Memorandum of Understanding |
| **NMHS** | National Meteorological and Hydrological Service |
| **NOAA** | National Oceanic and Atmospheric Administration [USA] |
| **OAS** | Organization of American States |
| **ODINCARSA** | Ocean Data and Information Network for the IOCARIBE and South America Regions [IOC of UNESCO] |
| **OLDEPESCA** | Organización Latinoamericana para el Desarrollo Pesquero |
| **OOPC** | Ocean Observations Panel for Climate |
| **OSPESCA** | Plan Regional de Pesca y Acuicultura Continental (Nicaragua) |
| **POCO** | Panel on Observations of the Coastal Ocean |
| **PTWC** | Pacific Tsunami Warning Center |
| **RONMAC** | Water Level Observation Network for Latin America |
| **SAP** | Strategic Action Plan |
| **SC** | Steering Committee |
| **SIDA** | Swedish International Development Agency |
| **TDA** | Transboundary Diagnostic Analysis |
| **TWS** | Tsunami Warning System |
| **UN** | United Nations |
| **UNCLOS** | United Nations Convention for the Law of the Sea |
| **UNDP** | United Nations Development Programme |
| **UNEP** | United Nations Environment Programme |
| **UNEP/CAR/RCU** | UNEP Regional Coordination Unit for the Caribbean |
| **UNESCO** | United Nations Educational, Scientific and Cultural Organization |
| **USAID** | United States Agency for International Development |
| **USGS** | United States Geological Survey |
| **UWI** | University of the West Indies [Barbados] |
| **WCATWC** | West Coast and Alaska Tsunami Warning Center |
| **WG** | Working Group |
| **WMO** | World Meteorological Organization [UN] |
| **WSSD** | World Summit on Sustainable Development |
| **WW2BW** | White Water to Blue Water |

In this Series *Languages*

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

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| **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 |
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| **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 |
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| **39.** | Second Session of the IOC-WMO Intergovernmental WOCE Panel, Paris, 1992 | E only |
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| **54.** | Second Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1993 | E, F, S |
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| **56.** | First Planning Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Melbourne, 1994 | E, F, S, R |
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| **69.** | Fourth Session of the IOC Regional Committee for the Central Eastern Atlantic, Las Palmas, 1995 | E, F, S |
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| **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 |
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| **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* |