

Intergovernmental Oceanographic Commission
Reports of Governing and Major Subsidiary Bodies



IOC Sub-Commission for the Caribbean and Adjacent Regions

Fifth Session

Christ Church, Barbados

11-15 December 1995

UNESCO

IOC/SC-IOCARIBE-V/3
Paris, 5 July 1996
English and Spanish only

For reasons of budgetary constraints, Annexes III to X have to remain untranslated and appear in English in the Spanish text.

TABLE OF CONTENTS

SUMMARY REPORT

1.	OPENING	1
2.	ADMINISTRATIVE ARRANGEMENTS	1
2.1	ADOPTION OF THE AGENDA	1
2.2	DESIGNATION OF RAPPORTEUR FOR THE SESSION	1
2.3	CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION	1
3.	INTERSESSIONAL ACTIVITIES	2
4.	EVALUATION	2
5.	OCEAN SCIENCES	4
5.1	OCEAN PROCESSES AND CLIMATE (OPC)	4
5.2	MARINE POLLUTION RESEARCH, MONITORING AND ABATEMENT - REGIONAL COMPONENT OF GIPME-MARPOLMON: THE JOINT 5 IOC-UNEP CEPPOL PROGRAMME	
5.3	REGIONAL COMPONENT OF THE IOC-UN DOALOS PROGRAMME ON OCEAN SCIENCE IN RELATION TO NON-LIVING RESOURCES (OSNLR)	7
5.4	REGIONAL COMPONENT OF THE IOC-FAO PROGRAMME ON OCEAN SCIENCE IN RELATION TO LIVING RESOURCES (OSLR)	8
5.5	INTERNATIONAL BATHYMETRIC CHART OF THE CARIBBEAN SEA AND THE GULF OF MEXICO	9
6.	OCEAN SERVICES	10
6.1	REGIONAL COMPONENT OF THE GLOBAL SEA-LEVEL OBSERVING SYSTEM (GLOSS)	10
6.2	REGIONAL COMPONENTS OF THE IOC-WMO-UNEP-ICSU GLOBAL OCEAN OBSERVING SYSTEM (GOOS) AND WMO-IOC-UNEP-ICSU GLOBAL CLIMATE OBSERVING SYSTEM (GCOS)	11
6.3	INTERNATIONAL OCEANOGRAPHIC DATA EXCHANGE (IODE)	11
7.	CAPACITY BUILDING WITH TRAINING, EDUCATION AND MUTUAL ASSISTANCE (TEMA) AS SUPPORT FOR THE SUBCOMMISSION'S PROGRAMMES AND SERVICES	12
8.	FOLLOW-UP TO 1992 UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT, CHAPTER 17 OF AGENDA 21	13
8.1	INTEGRATED COASTAL ZONE MANAGEMENT AND SMALL ISLAND DEVELOPING STATES	13
8.2	INTERNATIONAL YEAR OF THE OCEAN	14

9.	MARINE INFORMATION MANAGEMENT	15
10.	IOCARIBE AND UNCLOS IMPLEMENTATION	16
11.	CO-OPERATION WITH OTHER ORGANIZATIONS	16
11.1	COOPERATION WITH UNEP REGIONAL SEAS ACTION PLAN FOR THE CARIBBEAN ENVIRONMENTAL PROGRAMME	17
11.2	COOPERATION WITH THE INTERNATIONAL MARITIME ORGANIZATION	17
11.3	COOPERATION WITH THE ASSOCIATION OF THE STATE OIL CORPORATION OF LATIN AMERICA AND THE CARIBBEAN (ARPEL)	18
11.4	COOPERATION WITH OTHER PROGRAMMES	18
12.	IOCARIBE STRATEGY AND ACTION PLAN	20
13.	ELECTION OF OFFICERS	21
14.	ADOPTION OF THE DRAFT SUMMARY REPORT AND RECOMMENDATION	21
15.	DATES AND PLACE OF THE SIXTH SESSION OF THE SUB-COMMISSION	21
16.	CLOSURE	21

ANNEXES

I.	Agenda
II.	Recommendations
III.	List of Participants
IV.	Address by the Ministry of Health and the Environment, Barbados
V.	IOCARIBE Action Plan, 1996-1998
VI.	Framework Strategy for on-going IOCARIBE Involvement on ICZM
VII.	Report of the Drafting Group on OSLR
VIII.	The IOCARIBE Symposium
IX.	The IOCARIBE Award
X.	List of Acronyms and Abbreviations

1. OPENING

1 The meeting was opened by the IOCARIBE Chairman, Dr Hernán Perez-Nieto, at 10:00 hrs, 11 December 1995 at Dover Convention Centre, Christ Church, Barbados.

2 Mrs Atheline Haynes, Permanent Secretary, Ministry of Health and Environment from the Government of Barbados, welcomed the participants.

3 The Honourable Minister Ms H. Elizabeth Thompson, Ministry of Health and Environment welcomed the Delegates on behalf of the Government of Barbados. She highlighted the importance of the meeting.

4 The Opening Speech of Ms Elizabeth Thompson, is given in Annex IV.

5 Dr Gunnar Kullenberg, IOC Executive Secretary, thanked the Government of Barbados for hosting the meeting. He welcomed Delegates of Member States and participating Organizations, and reminded them that the meeting was also commemorating the 20th Anniversary of the creation of the IOC Association for the Caribbean and Adjacent Regions - IOCARIBE.

6 Dr H. Pérez-Nieto, welcomed the participants and declared officially open the Fifth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions.

7 The List of Participants is given in Annex III.

2. ADMINISTRATIVE ARRANGEMENTS

2.1 ADOPTION OF THE AGENDA

8 The Provisional Agenda for the Session (Doc. SC-IOCARIBE-V/1 prov.) was presented to the Sub-Commission for approval.

9 The Agenda, as adopted, is given in Annex I.

2.2 DESIGNATION OF RAPPORTEUR FOR THE SESSION

10 Dr. Leonard Nurse, Head of the Delegation from Barbados, was nominated and elected Rapporteur for the Session.

2.3 CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION

5 The Acting Secretary for IOCARIBE and Technical Secretary for the Session, Mr Rafael Steer-Ruiz, introduced the administrative arrangements and presented the Provisional Timetable (Document SC-IOCARIBE-V/1 prov.) and the Provisional List of Documents (Document SC-IOCARIBE-V/4 prov.) for the Session.

12 He introduced the Document Information & Guidelines to participants (Document SC-IOCARIBE-IV/Inf. 1) and explained some local arrangements.

13 He informed as well that the Session was going to be working mostly in Plenary and also *ad hoc* Sessional Working Groups, as required.

3. REPORT ON PROGRAMME IMPLEMENTATION, RESOURCES AND INTERSESSIONAL ACTIVITIES

14 Mr Stefan Andersson, IOC Consultant, introduced this agenda item and provided a detailed summary on developments and actions achieved by the Sub-Commission since its Fourth Session (Veracruz, Mexico, 2-7 December 1992). He presented Document SC-IOCARIBE-V/6 : Report on Intersessional Activities to the Session. This document also presents the state of implementation of the Recommendations of SC-IOCARIBE-IV. They are implemented to about 70%.

15 Since the last Session of IOCARIBE several programme elements have been duly implemented and progress has occurred in many areas.

16 The programme and projects have generally followed the decisions taken at the IOCARIBE-IV Session in Veracruz and the recommendations contained in the IOCARIBE Revised Medium-Term Plan, elaborated jointly by the Secretariat and officers in accordance with the decisions taken at the SC-IOCARIBE-IV. However, certain new actions have been undertaken as new opportunities have arisen.

17 He emphasized that, in addition to the programme development, co-operation with other bodies has been extensive, in particular with UNEP, but also with IMO, World Bank via GEF and certain NGOs.

18 Mr Stefan Andersson stressed that most of these actions have been achieved thanks to the joint efforts by Member States, Focal Points, Officers of the Sub-Commission, as well as the Secretariat.

19 He provided an approximate estimate of funds invested in IOCARIBE during the intersessional period 1992-1995 and presented document SC-IOCARIBE-V/7 prov.: Funds Allocated to IOCARIBE 1993-1995.

20 Some Delegates from Member States brought forward questions on outstanding Recommendations approved in previous IOCARIBE Sessions. The Executive Secretary IOC informed that Recommendations which have not been fully implemented are retained.

4. EVALUATION

21 The IOC Acting Secretary for IOCARIBE and IOC Consultant, Mr Rafael Steer-Ruiz, introduced this agenda item and the document SC-IOCARIBE-V/8 prov. He explained to the Session how this evaluation was originated by UNESCO and why IOC decided to implement it on its Sub-Commission IOCARIBE. The methodology used for the evaluation was also introduced, which is included in the Annex 1 to the Evaluation Report.

22 During 1995 IOCARIBE carried out the Evaluation with the aim of providing an opportunity to make choices, learn from experience and provide explanations, in light of achievements made since the establishment of IOCARIBE in 1982 and taking into account the expectations of the Member States and participating organizations. The efficiency of programme implementation by the IOC as well as IOCARIBE Secretariats has also been considered in order to introduce managerial improvements, as well as to advise on any changes in programme design that may lead to enhanced response to/from Member States.

23 In the presentation of the Evaluation Report, the IOC Consultant explained how the information was collected and analyzed by the evaluation team and the regional Secretariat. The way the team worked by telephone, fax and mail was stressed. Mr Steer-Ruiz also underlined the contributions provided by other experts whose support was much appreciated.

- 24 The evaluations should not only judge the past but lead to action and seek remedies for the future. The Report does not only highlight the positive impact of IOCARIBE in the region through the years, but also pinpoints the weaknesses and shortcomings in a constructive manner. They are presented in the Discussion chapter, at the end of the Evaluation Report, in a format leading to remedial actions.
- 25 After its presentation the Evaluation Report was subject to an animated discussion by delegates.
- 26 Considering the area covered by the Evaluation, the Delegates from Mexico and Cuba stressed the importance to re-define the geographical area by IOCARIBE and also to include the Pacific Coast of Inter-Tropical America within the term "adjacent regions" commonly used to define the Caribbean and Adjacent Regions area.
- 27 The importance of this Evaluation was highlighted by many delegates. Some stressed the applicability of this exercise to other programmes of IOC, or other regional subsidiary bodies. According to several delegations the recommendations from the Evaluation will be a turning point for IOCARIBE. They should be used to obtain strengthened political support from the Governments, as not only the traditional actors (scientists) must continue to be involved.
- 28 Another important issue, demonstrated in the Evaluation and stressed by delegates, was the urgent need to clarify the role of the regional Secretariat, the need for increased efficiency, and the requirement to restructure the scientific programmes including self-evaluation mechanisms. The need for new and well defined functions for IOCARIBE Officers proposed by the Evaluation was supported by some delegates.
- 29 Co-operation with other organizations in the region was a key issue leading to optimization of resources. At the national level, the creation of National Oceanographic Commissions, or equivalent mechanisms suitable for each case, was encouraged, as well as the appointing of National Focal Points by the appropriate level in Governments.
- 30 Delegates noted that all measures suggested in the Evaluation Report will only be efficiently implemented according to the extent that Member States assume their commitment to the organization.
- 31 However, in considering the shortcomings addressed in the Report, the economic situation of countries in the region should be taken into account as a limiting factor for participation. It was also noted that local needs may not have been properly reflected in the Sub-Commission's programmes. Another shortcoming underlined by delegates is the *ad hoc* nature of some activities and appointments which make management reactive instead of proactive.
- 32 **The Sub-Commission endorsed** the Evaluation Report and recognized the efforts undertaken by the Consultant and the Evaluation Team in producing this useful document. The Evaluation Report is considered as a good instrument to determine where the Sub-Commission will go from here. **The Session recommended** that the Report should be subject to detailed analysis by Member States and that observations should be presented to the IOCARIBE Secretariat for incorporation as an Addendum to the Evaluation Report before presentation to the IOC Executive Council and Assembly.
- 33 **The Sub-Commission approved** two recommendations regarding this agenda item in particular, dealing with the on-going operations and future of the Sub-Commission, as well as defining the limits for the IOCARIBE Region.
- 34 **The Sub-Commission approved** Recommendations SC-IOCARIBE-V.1 and SC-IOCARIBE-V.2.

5. OCEAN SCIENCES

5.1 OCEAN PROCESSES AND CLIMATE (OPC)

35 The item was introduced by Prof George A. Maul, IOCARIBE Vice-Chairman and Chairperson of the OPC Group of Experts.

36 Prof Maul stressed three central GE/OPC accomplishments since SC-IOCARIBE-IV: (i) publication by the joint IOC-UNEP Task Team on Implication of Climatic Change in the Wider Caribbean Region of a 389 page book, entitled “Climatic Change in the Intra-Americas Seas”. Hundreds of copies have been sold and/or distributed to individuals and libraries; (ii) The GE/OPC held a major international and global workshop on Small Island Oceanography in relation to Sustainable Economic Developmental, (IOC Workshop Report No.97) hosted by the Government of France in Martinique. A book of collected papers from the workshop entitled “Small Island Oceanography” is being edited for publication; and (iii) a Chapman Conference on the Circulation of the Intra-Americas Sea (IOC Workshop Report No.111) was held in Puerto Rico which was organized by the American Geophysical Union (AGU). Over 80 participants from the region and Europe attended, presenting more than 50 original scientific papers in oceanography and meteorology; other such meetings are planned annually.

37 Several key issues were identified and discussed. Regarding (i) above, funds to translate “Climatic Change in the Intra-Americas Sea” to Spanish have not been obtained. UNAM was willing to translate the entire volume into Spanish and print 1000 copies, but the necessary US\$12,000 could not be identified. Concerning (ii), the volume on “Small Island Oceanography” has been given a 400 page limitation by the publisher (AGU), which is 20% less than the full text.

38 Suggestions to resolve the problem of publication included: (i) finding another publisher, (ii) removing those chapters least related to oceanography, and (iii) paying AGU for the extra pages; Dr Maul will seek a solution. The Executive Secretary IOC also suggested that the book could be published through IOC-UNESCO.

39 Finally, with respect to the Chapman Conference, this is one of a series of meetings that will continue quasi-annually; greater participation is proposed through coordination with OSLR, OSNLR and CEPPOL activities, especially issues related to highly migratory and straddling species in marine fisheries.

40 The linkage between the OPC proposal and the Caribbean Planning for Adaptation to Climate Change OAS-GEF project on climate change was highlighted.

41 Also CMO and Meteo-France expressed the need for cooperation with IOCARIBE and invited the Sub-Commission to actively participate in the forthcoming Hurricane Committee Meeting. The CMO representative especially expressed a desire to access data on sea surface temperature. **The Sub-Commission took note and thanked** CMO for this invitation.

5.2 MARINE POLLUTION RESEARCH, MONITORING AND ABATEMENT - REGIONAL COMPONENT OF GIPME-MARPOLMON: THE JOINT IOC-UNEP CEPPOL PROGRAMME

42 This agenda item was introduced by Mr Stefan Andersson, IOC Consultant, referring to the recent developments within the CEPPOL Programme.

43 The IOC-UNEP Marine Pollution Assessment and Control Programme has continued its implementation these last three years, which contributes considerably to the activities proposed in Chapter 17 of Agenda 21 (UNCED) as well as the Convention on Biodiversity.

44 IOCARIBE has been particularly supporting and managing the components related to Marine Debris, Oil, Eutrophication as well as Pesticides in the CEPPOL Programme. The results obtained through the CEPPOL Programme as well as through the International Mussel Watch Programme can

be used to assist in finding solutions to the problems associated with land based activities in Integrated Coastal Management, and the associated follow-up to the Washington D.C. Conference in October 1995. Some of the results were presented here.

45 Mr Andersson stated that thanks to the financial support from SIDA-SAREC and US-NOAA, US-EPA, IOCARIBE has been able to facilitate the development of the Marine Debris, Oil Pollution, Pesticide and Eutrophication components.

46 In April 1994 a CEPPOL Symposium was convened in San Jose, Costa Rica, to synthesize the results obtained so far by the programme. This was held in conjunction with the Second Meeting of the CEPPOL Group of Experts which was convened to decide upon the programme activities for the forthcoming three years.

47 **The Sub-Commission expressed** its concern that the CEPPOL Co-ordinator position remains vacant and urged IOCARIBE to continue with the programme development that falls under its mandate to the extent possible.

49 In accordance with the CEPPOL Programme, IOCARIBE organized the Third Marine Debris Workshop in Nassau, Bahamas, 11-14 January 1994, which focussed on Land Based Sources of Marine Pollution. 126 participants from 24 countries reviewed and finalized the Marine Debris/Solid Waste Management Action Plan for the Caribbean and Adjacent Regions. This Action Plan is now operational, and 50% of the proposed Action Items are practically implemented, and the remaining are gradually being implemented.

50 IOCARIBE organized the Fourth Marine Debris/Waste Management Workshop in La Romana, Dominican Republic, 21-24 August 1995, focussing on "educating the educators". During this workshop the Action Plan was reviewed and amended.

51 IOCARIBE, together with the Center for Marine Conservation (CMC), has developed a strategy for conducting a Marine Debris Outreach Campaign and is presently carrying out a Region Wide Public Awareness Campaign. IOCARIBE is also taking an active part in the Caribbean and Adjacent Regions Beach Cleanup Campaign. IOCARIBE is also a partner in the IMO-GEF project on Wider Caribbean Initiative for Ship Generated Waste (WCISW).

52 Mr Andersson informed that IOCARIBE has signed a Letter of Agreement with the Gulf of Mexico Programme for support of the Marine Debris Programme, which also includes partnership in the Coastal Information Exchange Bulletin.

53 **The Sub-Commission endorsed** the Marine Debris/Waste Management Action Plan **and expressed** its satisfaction with the development of this programme.

54 **The Sub-Commission stressed** in particular the support that it received through the MERP Programme of N.M.F.S. of NOAA and expressed its concern over the withdrawal of the MERP Programme.

55 The outcome of the Project developed within the Framework of Cooperation between IOCARIBE-ARPEL was presented, especially the result of the project on coastal current patterns and modeling transport of surface borne oil pollutants, carried out by IMA, Trinidad & Tobago. The project established to produce a fingerprinting Data Bank of Crude Oil, created at the IMA, was highlighted. Crudes from several parts of the Caribbean are being analyzed. It was noted that those programme activities on Marine Debris and Oil Pollution owe their success to the extensive collaboration with other organizations both Governmental and Non-Governmental, including private industry.

56 Mr Stefan Andersson informed that the first phase of the pilot studies on the impacts of the use of pesticides in the region has been completed and that a second phase is being initiated. Also the project on the characterization of the rate of nitrification, denitrification and nitrogen fixation at representative stations is being expanded in the region. **The Sub-Commission expressed** the need to

synthesize the results obtained through the Marine Pollution, Research Control and Abatement Programme and proposed an overview presentation on the status of Marine Pollution in the Region. This should also be horizontally linked to the other programmes of IOCARIBE to assess what has been undertaken and to present it in an integrated and interpreted way.

57 The CARICOM representative, Dr Cesare F. Granger, advised that CARICOM saw no divide between policy and science. He urged the Sub-Commission to adopt a practical approach to marine pollution control so that the scientific results could be applied easily by the end-users for problem solving. It was emphasized that CARICOM was not seeking to compete with, but rather complement the work of other organizations.

58 The IMO representative Dr Mr Raymond Seebald, expressed the need for continuous work on Marine Debris Monitoring as well as the need for Macro Circulation Models for prediction of the fate of oil spills.

59 A Working Group was established in this regard. The Cuban Delegate offered to host in La Havana a Workshop-Seminar on Research Methodology in Heavily Polluted Coastal Areas.

60 Both the Cuban and Mexican delegations informed the meeting about their activities related to Marine Pollution. Cuba invited the Sub-Commission to participate in the Workshop Seminar on Research Methodology in Heavily Polluted Coastal Areas.

61 **The Sub-Commission thanked** Cuba for its kind offer.

62 The meeting was informed that the Island Resources Foundation was keen to cooperate with IOCARIBE. The IRF stressed the importance of the marine debris programme and pointed out that it should not be regarded as peripheral to coastal management. The Foundation further advised that information such as the geographic distribution, sources and sinks of marine debris had important policy implications, and should be included in the Action Plan.

63 **The Sub-Commission stressed** that the Secretariat should continue with the programmed activities of CEPPOL.

64 Delegates were invited to present their recommendations on this issue. The Secretariat has compiled them in a single Recommendation.

65 **The Sub-Commission adopted** Recommendation SC-IOCARIBE-V.3.

5.3 REGIONAL COMPONENT OF THE IOC-UN (DOALOS) PROGRAMME ON OCEAN SCIENCE IN RELATION TO NON-LIVING RESOURCES (OSNLR)

66 The Chairman of the Sub-Commission, Dr Hernán Pérez-Nieto, introduced this agenda item recalling this component as an IOC Cooperative programme implemented by the Division for Oceanographic Affairs and the Law of the Sea (UN-DOALOS), whose main element is the project entitled "Global Change and Coastal Land-Loss: Management and Decision Making in support of a sustainable development in the Caribbean and Adjacent Regions".

67 Within this framework the following activities among others, were carried out; some of them with support of UNEP/CEP Programme through the Joint Project "Study of Ecological and Socio-Economic Implications of Climate Change and Establishment of a Regional Monitoring Network".

- (i) IOC/IOCARIBE-PNUMA Workshop on Monitoring and Control of Coastal Changes in the Caribbean Coastal Zone, Port of Spain, 21-30 July 1993.
- (ii) IOCARIBE *ad hoc* Experts Meeting on Technical and Cartographic Methodology for Caribbean Critical Coastal Areas, Isla Margarita, Venezuela, 17-21 May 1994.

- (iii) IOCARIBE Workshop on Integrated Coastal Area Management in Small Island Developing States - ICAM/SIDS, Barbados, 8 December 1995.

68 The Meeting was also informed that during the Isla Margarita Workshop it was decided to organize a Workshop on "Integrated Management and Sustainable Development of Coastal Areas and their Resources", taking into account these areas. **The Sub-Commission took note** that due to the lack of funds this activity was not implemented yet.

69 **The Sub-Commission endorsed** the documents presented and amended the content as required.

70 **The Sub-Commission urged** for the establishment of the Steering Group of Experts on OSNLR following Recommendation SC-IOCARIBE-IV.3.

71 The Brazilian delegate informed the Sub-Commission about the intention of her country to develop joint studies in coastal erosion and carbonatic sedimentation, and proposed a meeting to discuss these matters among others.

72 Dr Hernán Pérez-Nieto presented to the Session the Draft Version of the Summary Report of the IOCARIBE Workshop on Integrated Coastal Zone Management held also in Christ Church, Barbados, immediately before the Fifth Session of IOCARIBE. He mentioned that the primary objective of this Workshop was to provide to the Fifth Session a Framework Strategy for On-going IOCARIBE Involvement in Integrated Coastal Zone Management.

73 **The Sub-Commission recognized** a positive output from the Seminar, and emphasized that despite the group was small, participants were familiar with their CZM field.

74 **The Sub-Commission endorsed** the Summary Report of the IOCARIBE Workshop on Integrated Coastal Zone Management in SIDS, with some additions.

5.4 REGIONAL COMPONENT OF THE IOC-FAO PROGRAMME ON OCEAN SCIENCE IN RELATION TO LIVING RESOURCES (OSLR)

75 Mr Fred Berry introduced this agenda item by referring to the recent development of the programme activities.

76 Mr Berry highlighted the outcome of the IOCARIBE Workshop on Fisheries Oceanography on Highly Migratory and Straddling Species, held in Miami, 2-4 March 1995.

77 An *ad hoc* Drafting Group was established to further develop and expand the eight project proposals dealing with Fishery Oceanography of Highly Migratory Species; Tropical Demersal Recruitment Process (TRODERP); Coral Reef Research; Harmful Algal Blooms (HAB); Caribbean Large Marine Ecosystems (LME); WATS; Ecotourism Research and Marine Biodiversity within the OSLR Programme.

78 A brief presentation of the projects as well as proposed activities for the *ad hoc* Drafting Group on OSLR are stipulated in the report of the Drafting Group, included as Annex VII.

79 **The Sub-Commission noted** that the OSLR Programme is of high priority in the region and requested the Secretariat to take necessary actions to encourage and support this programme.

80 The Delegate from Venezuela delivered to the Sub-Commission the Final Report in English and Spanish versions of the IOC Seminar-Workshop on Red Tide and Mortality of Marine Organisms in the IOCARIBE Region, held in Cumaná, Venezuela, 16-19 September 1992. **The Sub-Commission thanked** the delegate from Venezuela for this contribution.

81 Dr Bradford Brown, from the U.S. Delegation, introduced a resolution promoting the submission of a LME proposal to GEF for the Caribbean and Adjacent Regions. He also proposed that IOCARIBE be part and support the International Coral Reef Initiative ICRI.

82 **The Sub-Commission adopted Recommendation SC-IOCARIBE-V.4.**

5.5 INTERNATIONAL BATHYMETRIC CHART OF THE CARIBBEAN SEA AND THE GULF OF MEXICO

83 The IOC Acting Secretary for IOCARIBE introduced the subject in the absence of the Chairman of the IBCCA Editorial Board, Ing. Juan Lobo (Mexico). He mentioned that, during the intersessional period, the Editorial Board had its Fifth Meeting in San José, Costa Rica, November 1994, and the Second Meeting of the Officers of the Board in December 1993 in Boulder, Colorado, USA. Both were very positive as established in the reports of the meetings.

84 The Acting Secretary also recalled that IBCCA is one of several regional bathymetric charts that are being produced under the GEBCO programme of IOC. IBCCA is considered one of the successful regional programmes and making steady progress. Sheets 1.04 and 1.09 are published and available. Others such as sheets 1.01 and 1.03 were duly completed by the U.S.A., sheets 1.07 and 1.08 as well as sheets 1.05. and 1.06 were also completed by Mexico and are ready for review. Only two sheets, 1.10 and 1.16 are not under the responsibility of any country. France and The Netherlands have both been invited to consider taking on the responsibility, but no formal agreement has been reached with either country.

85 The offer by the Hydrographic Institute of Cuba to digitize the whole series has been reviewed and it has been decided that in the future each country should, if possible, submit their material in digitized (scanned) form. Venezuela has already done this for sheets 1.14 and 1.15.

86 The possibility of incorporating an analysis of geophysical and geological information taking as a base the IBCCA data-bases and cartography was discussed. Participating members are analyzing the available information before recommending this activity.

87 **The Sub-Commission expressed its satisfaction** with the progress made, **and encouraged** the Editorial Board to continue its work, taking into consideration the most recent developments in cartographic technology, particularly to include information from satellite altimetry and Side Scan Sonar data where applicable. The use of Geographic Information System (GIS) technology should also be considered simultaneously with the digitizing process.

6. OCEAN SERVICES

6.1 REGIONAL COMPONENT OF THE GLOBAL SEA-LEVEL OBSERVING SYSTEM (GLOSS)

88 The Chairman of the IOCARIBE Group of Experts on Ocean Processes and Climate and GLOSS Co-ordinator, Prof George Maul, introduced this Agenda Item. He explained GLOSS (Global Sea Level Observing System) is an IOC programme, which has been in existence since 1985.

89 Prof Maul noted that Regional GLOSS reports have been written in 1989, 1990, 1992 and 1995, and distributed widely to more than 50 sea level contacts in the region. The 1995 Regional GLOSS Report was distributed at this Session, which included the recommendations of the GE/OPC of placing new tide gauges at Georgetown, Guyana; Kingston, Jamaica; Cop du Mole, Haiti; Havana, Cuba; Fort George, Belize; and Isla de Providencia Colombia (in this order of priority).

90 He then brought to the Sub-Commission's attention the OAS/GEF/WB/CARICOM proposal "Caribbean: Planning for Adaption to Climate Change", which has a significant Sea Level component for 11 CARICOM nations.

91 Prof Maul then offered copies of a technical paper to be published in "Marine Geodesy Journal" entitled "State-of-the-Art Sea Level and Meteorological Monitoring Systems in the Intra-Americas Sea" by D. M. Martin, J. L. Chapin, and G. A. Maul. These new-generation sea level

systems are capable of being part of a tsunami warning network, which Prof Maul proposed for the region as part of the IOC Global Tsunami Warning System. This consideration fully corresponds to the International Decade for Natural Disaster Reduction (1990-1999) IDNDR objectives. Although a severe tsunami (seismic sea wave) has not been observed in the region for a century, with the explosive population growth in the coastal zone and recent volcanic activity in Montserrat and the submarine volcano Kick-em-Jenny, attention must be paid to the dangers of this phenomenon.

92 The discussion following Prof Maul's presentation included a proposal to establish an *ad hoc* Committee to develop a regional response to the tsunami threat. To improve the observation necessary for tsunami warning includes modernizing numerous sea level gauges to include digital sampling and GOES transmission of data in real-time. The need for three regional data banks, one in each of an English, Spanish, and French speaking country, was proposed with free Internet access for all nations and Member States.

93 Prof Maul noted the sad history of tide gauge failures at the completion of the Inter-American Geodetic Survey in Central America, 1967, and urged the creation of an Endowment Trust Fund to ensure continuation of observation and training in sea level/tsunami networking.

94 Finally, the **Sub-Commission asked** Prof G. Maul to accept the responsibility to act as liaison person between IOCARIBE and the OAS/GEF/WB/CARICOM Programme. Prof Maul accepted the responsibility.

95 An *ad hoc* drafting group drafted a recommendation, paying particular attention to the threat of tsunamis in the region.

96 **The Sub-Commission approved** Recommendation SC-IOCARIBE-V.5 (also related to Item 5.1).

6.2 REGIONAL COMPONENTS OF THE IOC-WMO-UNEP-ICSU GLOBAL OCEAN OBSERVING SYSTEM (GOOS) AND WMO-IOC-UNEP-ICSU GLOBAL CLIMATE OBSERVING SYSTEM (GCOS)

97 The Chairman of the IOCARIBE Group of Experts on Ocean Processes and Climate, Prof George Maul, introduced this agenda item by presenting a brief overview of developments of and IOC's participation in the Global Climate Observing System (WMO-IOC-UNEP-ICSU) GCOS.

98 Prof Maul also highlighted the main 5 modules of GOOS: (i) climate prediction; (ii) coastal zone management, protection, and development; (iii) monitoring and assessment of living marine resources; (iv) assessment and prediction of the health of the ocean; and (v) improved ocean services.

99 Prof Maul showed relationships to IOCARIBE problem areas within each of the five GOOS Modules, and urged National Focal Points (senior individuals in Member States) to be identified and charged with developing a Regional GOOS network and even perhaps a Committee.

100 Dr Gunnar Kullenberg, Executive Secretary IOC, strongly supported the development of a Regional GOOS with direct links to both the Global GOOS and the IOCARIBE Secretariat.

101 **The Sub-Commission took note and supported** this initiative.

6.3 INTERNATIONAL OCEANOGRAPHIC DATA EXCHANGE (IODE)

102 The IOC Acting Secretary for IOCARIBE presented this Item, giving consideration to the intersessional report, the report on IOCARIBE Evaluation and the recommendations and proposals of the Training Course on Management of Marine Data in Microcomputers (Cartagena, November 1993).

103 The IODE programme in the region has been oriented mainly towards establishing national oceanographic data centres, and providing necessary training. However, technical assistance to provide equipment and training to the less developed countries has only been possible in some cases, and more as a way of supporting specific needs of national projects. As one of these activities, a training course on Marine Data Management was held in Cartagena, with the participation of sixteen experts from the region.

104 **The Sub-Commission took note** of the state of this programme and **expressed its concern** with the low level of activities since the programme which is a very important element for processing and supplying information.

105 **The Sub-Commission was informed** that some remedial actions are proposed in the IOCARIBE Evaluation Report, reviewed in Agenda Item 4.

7. CAPACITY BUILDING WITH TRAINING, EDUCATION AND MUTUAL ASSISTANCE (TEMA) AS SUPPORT FOR THE SUBCOMMISSION'S PROGRAMMES AND SERVICES

106 This item was presented by Dr Hernán Pérez-Nieto, Chairman of IOCARIBE and Vice-Chairman of the TEMA Committee. He pointed out that during the IOCARIBE-V debate, it was clearly demonstrated that TEMA was an element that horizontally links all of the programmes in marine scientific research and oceanographic services.

107 **The Sub-Commission recognized** the valuable contribution of the 1994 SIDS Conference held in Barbados and **acknowledged** the possibilities for linkages, at appropriate levels, between the SIDS Programme of Action (POA) and IOCARIBE Medium Term Strategy and Action Plan; particularly in respect of:

- (i) Capacity Building (TEMA)
- (ii) Integrated Coastal Zone Management (ICZM); and
- (iii) Marine Information Management (MIM).

108 Dr Hernán Pérez-Nieto pointed out that both the Action Plan and the Implementation Strategy are fundamentally the result of the combination of texts passed during the TEMA-V Session (Paris, 1991) and the *ad Hoc* Group of Experts Workshop on TEMA Strategy (Paris, 1995).

109 He noted the importance of clearly defining the concepts of training, education, institutional mechanisms and arrangements, equipment, physical infrastructure for research and development and public awareness at all levels, to include decision makers, planners, politicians and the public in general.

110 He suggested that the Action Plan should be duly revised and completed by an *ad hoc* Group of Experts for prompt implementation and similarly the strategy for its implementation should be completed.

111 The main priority areas to be developed include:

- (i) Establishing a balance between the TEMA components, in as much as, unfortunately, short-term training has been given far too much priority to the detriment of formal education and public awareness.
- (ii) The strengthening of coordination and cooperation among institutions as well as within each institution on a local, regional sub-regional and global level.

112 The specific priority areas include the following:

- (i) The preparation of a National Marine Science Profile in each country (PNCM).

- (ii) The establishment or strengthening, as appropriate, of the National Organizational Structure for oceanographic coordination including the designation of National Focal Points for IOCARIBE-TEMA.
- (iii) The formation and execution of technical assistance projects.
- (iv) Training of human resources either collectively or individually.
- (v) Efforts to ensure the continuity of training opportunities both in developed and developing countries.

113 **The Sub-Commission adopted** the Draft Action Plan and Strategy for IOCARIBE-TEMA **and accepted** the proposal for creating a Group of Experts for IOCARIBE-TEMA.

114 Dr Hernán Pérez-Nieto from Venezuela was designated provisionally as *ad hoc* Chairman of the IOCARIBE-TEMA Group of Experts.

115 The Brazilian Delegate informed the Sub-Commission about the IOC Circular Letter No. 1468 related to the establishment of a TEMA Group of Experts for Capacity Building. She informed the action taken by the ASOS (Upper Southwest Atlantic) programme, jointly developed by Brazil, Argentina and Uruguay, in order to assure a sub-regional representation: a joint letter was sent to the Executive Secretary IOC, calling attention to the necessity of that one of the candidates individually indicated by each of the three Member States be selected. She suggested that the IOCARIBE Sub-Commission indicated a candidate in a consensus, to be the representative of the group. Following the Brazilian Delegate's suggestion, the Sub-Commission elected Dr Hernán Pérez-Nieto as the regional focal point for the TEMA Group of Experts for Capacity Building.

116 She also informed that a Workshop on Integrated Coastal Zone Management, organized by the Universidade do Estado do Rio de Janeiro by request of the Ministry of Environment, will be held during the first semester of 1996 in Rio de Janeiro. One of the objectives of this Workshop is to involve countries from the Caribbean and Adjacent Regions.

117 Finally, the Brazilian Delegate informed the Sub-Commission that a special Meeting of the SBPC - Brazilian Society for the Progress of Science will be held 1-4 May 1996 in Florianópolis, Brazil, with the theme "Coastal Ecosystems: from its Knowledge, to its Management".

118 **The Sub-Commission thanked** the delegate of Brazil for this valuable information and **recognized** the importance of the participation of Brazil once more in the IOCARIBE activities.

119 **The Sub-Commission approved** Recommendation SC-IOCARIBE-V.6.

8. FOLLOW-UP TO 1992 UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT, CHAPTER 17 OF AGENDA 21

8.1 INTEGRATED COASTAL ZONE MANAGEMENT AND SMALL ISLAND DEVELOPING STATES

120 This agenda item was introduced by Dr Malcolm Hendry referring to the SIDS Seminar, convened prior to the SC-IOCARIBE-V. The prime objective of the SIDS/ICAM seminar was to provide a Framework Strategy for on-going IOCARIBE involvement in Integrated Coastal Zone Management which will build on the traditional role of IOC/IOCARIBE in Ocean Sciences.

121 **The Sub-Commission noted** the UNESCO's Environment and Development in Coastal Regions and in Small Islands Programme (CSI) and suggested that linkages should be established.

122 **The Sub-Commission stressed** that CZM planning is of the utmost important for the region and that many of the Member States need training and capacity building in oceanography in relation to CZM.

123 The delegate of Brazil offered to link the experience attained by the experts on CZM in Brazil to the IOCARIBE Member States.

124 **The Sub-Commission endorsed** the Strategic Framework and recommended that every possible effort should be made to avoid duplication of activities, and that the Secretariat pursue the development of the Strategy as proposed in the Workshop Report.

125 The Framework Strategy for On-going IOCARIBE Involvement on Integrated Coastal Zone Management is attached as Annex VI to this Report.

8.2 INTERNATIONAL YEAR OF THE OCEAN

126 The Acting IOCARIBE Secretary introduced this item by referring to Document XVIII/2 Annex 4 of IOC Assembly. He introduced to the Sub-Commission documents SC-IOCARIBE-V/8 prov., Annexes 1 and 2, prepared by the regional Secretariat and entitled respectively: Annex 1: The IOCARIBE Symposium, and Annex 2: The IOCARIBE Award. Both documents included proposals for improving the visibility of IOCARIBE in the region associated to the International Year of the Ocean.

127 The IOCARIBE Symposium would promote the exchange of information and transfer of knowledge, keeping people up-to-date with activities within the region. The Symposium would be organized under the sponsorship of IOCARIBE, but would rely on the collaboration of other organizations. It would also be a forum for the exhibition of technology, and will have an educational aspect in the form of a "Youth Festival".

128 The last regional Symposium organized under similar circumstances was in 1976, Caracas (Venezuela). A regular Symposium would be of great benefit to the region, with the first to be held in late 1997 or early 1998, and subsequently every three or four years, synchronized but not coincident with the IOCARIBE Intergovernmental Session.

129 **The Sub-Commission approved** the organization of an IOCARIBE Regional Symposium to coincide with the celebrations of the United Nations' Year of the Ocean in 1998. **The Sub-Commission adopted** the document "The IOCARIBE Symposium" with modifications, included as Annex VIII to this Report.

130 A Steering Group of Experts should be appointed for over-viewing the planning and scientific contents of the event. At least one of the newly elected Officers of the Sub-Commission should be associated with the Steering Group for the Symposium.

131 The delegate from Cuba offered to host the Symposium, given the conditions were favorable and that it could be made to coincide with the Vith Congress on Marine Sciences to be held in La Havana, Cuba during 1997. The Sub-Commission thanked the offer from Cuba and charged the Secretariat to follow up this proposal.

132 **The Sub-Commission approved** Recommendation SC-IOCARIBE-V.7.

133 The Acting Secretary for IOCARIBE introduced also a proposal to create "The IOCARIBE Award". The success of IOCARIBE's activities has been due to the dedicated work of individuals over the years. This recognition will help to maintain enthusiasm to contribute to regional activities. The IOCARIBE Award ceremony could be held regularly during the IOCARIBE Symposium, ensuring maximum visibility and impact.

134 Some delegates proposed to create categories for the Award to include and encourage young scientists below a predetermined age, as well as senior scientists, and/or other collaborators.

135 The Acting Secretary for IOCARIBE proposed to adopt the icon of a pre-columbian flying fish symbolizing the IOCARIBE philosophy of "elevated thoughts and wet hands". It will also be an homage to the host of this Session, the Government of Barbados, where the flying fish is a national symbol.

136 **The Sub-Commission adopted** the document "The IOCARIBE Award" with some modifications, attached as Annex IX to this Report.

9. MARINE INFORMATION MANAGEMENT

137 The IOC Acting Secretary for IOCARIBE introduced this agenda item reviewing the activities currently carried out in the region by the Sub-Commission. The main input was drawn from the situation reflected in the Evaluation Report.

138 Stress was put in the problems found by the Consultant and the Evaluation Team in searching for useable information on the past activities and programmes of the Sub-Commission. To partially remedy this lack of information, the regional Secretariat for IOCARIBE has established some new data-bases namely: IOCARIBE "Yellow Pages" containing information on regional institutions and experts and their subjects of expertise, IOCARIBE publications, National Focal Points, and new mailing lists.

139 However it was stressed that the Secretariat does not have all the information on existing data-bases or other systems in the region, which undermines its capability for networking regional scientists, experts and institutions.

140 Some delegates expressed their concern about the lack of capacity to handle information and to co-ordinate information centres in the region. Even if Internet may be the most efficient way for communicating, the situation in the region shows that many scientists and experts do not have access to it yet, specially in less developed countries. Therefore telefax is the more common and widespread mean of communication. It is also useful for transmission of data and products for real time information such as that for hurricanes. Regular mail can still be used for the exchange of documents and "gray literature".

141 The Executive Secretary of IOC raised questions about the ability of the Sub-Commission to connect to other existing networks and link to other activities related to information exchange. He also pointed out the need for the Sub-Commission to develop a regional Caribbean Atlas including marine information which could be a useful and not very expensive product.

142 **The Sub-Commission acknowledged** the effort made by the regional Secretariat and **supported** the creation of data-bases such as "Yellow Pages" in magnetic media and easy to up-date. The use of Internet should continue to be gradually pursued and spread throughout the region.

143 **The Sub-Commission endorsed** the implementation of a Marine Information Management System as proposed by the Evaluation Report, as a strategic programme for strengthening its networking capacity.

144 The **IOCARIBE News** was presented by Mr Fred Berry, Assistant Acting Secretary for IOCARIBE and Chief Editor of the Newsletter. He reported on the achievements and problems found during its publication and distribution, which is funded by the NOAA-SEFC in Miami, USA. Over 1500 names were introduced in a data-base for the mailing list, not only from the region but outside the region.

145 **The Sub-Commission noted with satisfaction** the excellent product supplied by the IOCARIBE News under its new format, **acknowledged** the support provided by NOAA-SEFC for publication and distribution of IOCARIBE Newsletter and **encouraged** its continuation.

146 A new element under consideration, the Caribbean Event Alert Switchboard (CEAS), was introduced to the meeting. Consideration by delegates about the importance of such a mechanism

included observations on the costs for keeping operational a permanent system like this, and how present constraints on secretarial staff could impair its feasibility.

10. IOCARIBE AND UNCLOS IMPLEMENTATION

147 This Agenda item was introduced by the IOC Acting Secretary for IOCARIBE. He stressed that IOC is playing an important role in supporting efforts of Member State relevant to the UNCLOS implementation and informed the delegates of the IOC progress on the subject.

148 The Executive Secretary of IOC explained to the delegates how IOC is keeping track of the LOS development, pointing out that most of the activities are being developed upon request from the UN as the major leading agency. He also stated that representation from the different regions is being included in several task teams being organized in the system.

149 The Chairman pointed out that it may be necessary to consult the different Governments in order to send nominations of appropriate experts in LOS. The Vice-Chairman pointed out the importance of the co-operation of regional bodies of the different UN Agencies.

150 **The Sub-Commission reaffirmed**, with regard to its contribution to the implementation of UNCLOS, that IOCARIBE must follow the general guidelines established by IOC at the global level, while seeking for new opportunities at the regional level where the Sub-Commission could play a role. Those opportunities may be related to promoting harmonization of national regulations for marine scientific research within the framework of the Convention.

11. CO-OPERATION WITH OTHER ORGANIZATIONS

151 Mr Stefan Andersson gave a general introduction to this Agenda Item by highlighting in particular the co-operation with UNEP, IMO, ARPEL, the World Bank and several NGOs.

152 He further stressed that IOCARIBE is constantly seeking partnership in order to reach out to the right congregation for spreading and sharing information, building up products with other organizations that will benefit from the scientific input from IOCARIBE.

153 This is in accordance with the UNCED Recommendations that UN Agencies should co-operate and work together at the regional level.

154 **The Sub-Commission noted with satisfaction** the high number of Governmental and Non-Governmental Organizations present at this Session.

11.1 COOPERATION WITH UNEP REGIONAL SEAS ACTION PLAN FOR THE CARIBBEAN ENVIRONMENT PROGRAMME

155 Mr Stefan Andersson informed how during the last few years the close co-operation between IOC and UNEP has been maintained at the regional level. The joint IOC-UNEP Marine Pollution Programme (CEPPOL) has successfully continued and several projects have been undertaken in this regard.

156 IOCARIBE and UNEP CAR/RCU are also cooperating within the OPC Programme of IOCARIBE and the IPID Programme of CAR/RCU through the project entitled "Global Climate Change - Establishment of a Regional Monitoring Network".

157 The joint IOC-UNEP/CEPPOL Programmes and the joint IOC-UNEP Task Team on Climate Change are examples of results achieved through UN Agency co-operation. The Sub-Commission regrets that UNEP/RCU could not be represented at this meeting.

11.2 COOPERATION WITH THE INTERNATIONAL MARITIME ORGANIZATION

158 Mr Stefan Andersson reviewed the co-operation with the IMO at the regional level, including the newly established IMO Remedial Programme.

159 He noted that the co-operation between IOCARIBE and IMO has been strengthened during the last several years, especially in the programme areas related to Marine Debris and Oil Pollution. Many of the actions pertaining to the IOCARIBE Marine Debris/Waste Management Action Plan were being jointly implemented. It was stressed that such collaboration should continue.

160 The IMO Representative, Dr Ray Seebald, presented an overview of main initiatives to be carried out in partnership with IOC. He emphasized the need to deliver courses for "On Scene Coordinators" for oil spills. Also the "Train the Trainers" programme and informed the Sub-Commission about a Spanish speaking Conference with especial emphasis on capacity building with respect to oil spill clean up, to be organized in November 1996.

161 He also emphasized that IMO will continue to sponsor several activities within the Marine Pollution Component, among others:

- (i) Education with respect to marine debris.
- (ii) Workshops on Marine Debris as follow-up of the Marine Debris Action Plan
- (iii) Scientific Monitoring of Marine Debris to determine source and fate of debris.
- (iv) Circulation Macro Patterns with respect to prediction for oil spills.

162 Moreover, IOCARIBE is a partner of the IMO-GEF Project on Wider Caribbean Initiative for Ship-generated Waste (WCISW).

163 In addition the need for co-operation in regard to oil spill contingency plans and prediction of the fate of spills (ocean currents forecasting) were highlighted.

164 He kindly invited IOCARIBE to convene the Fifth Marine Debris Workshop in Curacao. **The Sub-Commission took note** of this invitation.

11.3 COOPERATION WITH THE ASSOCIATION OF THE STATE OIL CORPORATION OF LATIN AMERICA AND THE CARIBBEAN (ARPEL)

165 As part of the agreement between IOCARIBE and ARPEL on the project "the development of an integrated oil pollution assessment and control programme", a part of the CEPPOL programme under Activity IV, Mr Andersson informed that IOCARIBE and ARPEL have been sponsoring the development of a circulation model of the Gulf of Paria. ARPEL has also actively participated in the workshops related to marine debris.

11.4 COOPERATION WITH OTHER PROGRAMMES

167 The representative from UNESCO (Trinidad & Tobago) and Science and Technology Advisor for the Caribbean, Dr Winthrop Wiltshire, informed the Sub-Commission of the UNESCO Caribbean Sea Project (CSP) which is a very important initiative sponsored by UNESCO in the Caribbean. CSP was inaugurated in 1994 within the framework of the UNESCO Associated Schools Project with the objective of promoting the protection and preservation of the Caribbean Sea among the youth. Project activities foreseen include a knowledge, attitudes and values survey among students and parents on issues relating to the Caribbean Sea. Resources are being sought to supplement those provided by UNESCO. The Associated Schools Project would also benefit from being a partner in the proposed IOCARIBE Symposium and Youth Festival.

168 In addition he informed the Sub-Commission that UNESCO has been providing some support for the operations of the Caribbean Community Ocean Sciences Network, CCOSNET which was established by the Caribbean ministers responsible for Science and Technology with the Institute of Marine Affairs as the coordinating institution.

- 169 UNESCO has been supporting as well a programme on Beach Stability Research in the Eastern Caribbean. The latest study in the series was documented in a report on beach stability in Dominica by Dr Gillian Cambers.
- 170 In response to the Programme of Action for Small Island Developing States, UNESCO has initiated a Project on Environment and Development in Coastal Zones and Small Island (CSI) for the 1996-97 biennium. This project is intended to be intersectorial in nature, and is expected to operate in an experimental mode through pilot projects and case studies taking into full consideration other relevant initiatives.
- 171 The Delegate from ROSTLAC, Dr Sylvia Méndez, urged that cooperation should be strong in both the administrative and economic aspects, in order to facilitate the strengthening of capacity building in Latin America. This cooperation can be sought between countries sharing common interests in marine science issues.
- 172 Regarding the OSNLR programme in particular, she invited the Sub-Commission to take part in the marine geology and beach erosion workshop and preparatory meetings to be held in Brazil in the coming year with participation of Brazilian Institutions as well as some Caribbean Institutions. These meeting will be focussed mainly on coastal erosion and carbonatic sedimentation. Regarding the HAB programme, greater collaboration must be sought especially spreading interaction of the IOC-FANSA Group of Experts in South America, to promote upgrading of the monitoring systems for toxicity and plankton in the Caribbean and Adjacent Regions.
- 173 She highlighted the importance of the recently created "IOCARIBE Yellow Pages" database for the Caribbean and Adjacent Areas which comprises basic information on regional experts and their subjects of expertise and informed the Sub-Commission about ROSTLAC interest to include all Latin American countries in this data base. It was stressed the need to maintain close cooperation between IOCARIBE and ROSTLAC and develop a standardized methodology to carry out this initiative.
- 174 **The Sub-Commission acknowledged** with thanks and **endorsed** this initiative.
- 175 The OAS representative, Dr Jan C. Vermeiren, informed the session of the developments with regards to the GEF funded project on "Climate Change/Sea Level Rise Adaptation" in which OAS is the executing agency.
- 176 IOCARIBE has been invited to participate in the preparatory phase that is presently being undertaken. The need for IOCARIBE data on OPC-GLOSS will be needed. The linkage to IPCC work was noted.
- 177 The representative from CARICOM, Dr Cesare F. Granger, introduced his organization and referred to the on-going coastal water quality observations. The 13 Member States have common service operation through UWI/CEHI/IMA etc. The representative expressed interest in associating and expending its services through the IOCARIBE Network.
- 178 He also stressed that IOCARIBE should initiate the process to have its work placed on the agenda for the Interministerial Meeting on Science in Technology to be convened in Cartagena in February 1996.
- 179 **The Sub-Commission took note** of this proposal and **instructed** the Secretariat to take proper steps.
- 180 The Delegate from Belize brought up to the Sub-Commission the need to strengthening cooperative relationships between the Secretariat and the Association of Caribbean States (ACS).
- 181 The CMO/CMI representative, Dr Frank Farnum, introduced his organization which serves 16 countries in the English-speaking Caribbean, by informing the session of the on-going projects

related to ocean/atmosphere linkage. Collaboration is sought with IOCARIBE in relation to OPC programme, in particular the data on sea surface temperature, which would be useful for the CMO.

182 The WMO representative Dr Victor Larrier, confirmed the on-going cooperation between IOC and WMO and that it needs to be reflected at the regional level through IOCARIBE. There is also a need for use of the IGOSS results and association with the regional GOOS development.

183 The Delegate from St. Lucia, Dr Sarah George, informed the Session about the activities and centers of the Organization of Eastern Caribbean States (OECS), particularly as regards the Coastal Resources Management Initiative (CRMI) which was developed to help OECS Member States to address the critical and fundamental issues of managing their natural resources in general, and coastal resources in particular. She urged IOCARIBE to assist in establishing a communication network for the small islands. The Secretariat noted that the IOC experience from RECOSCIX in East Africa could be drawn upon.

184 The Delegate from France, Dr Christian Colin, suggested that IOCARIBE be invited to participate in the forthcoming meeting of the Hurricane Committee. **The Sub-Commission noted** the need for further collaboration between the two organization **and recommended** that the Secretariat and Officers help ensure that the programmes are properly linked.

12. IOCARIBE STRATEGY AND ACTION PLAN

185 The Acting Secretary for IOCARIBE introduced the document SC-IOCARIBE-V/9 prov.: IOCARIBE Medium Term Strategy and Action Plan. This document is a follow-up and a consequence on the findings of the Evaluation Report, and stems from the global IOC Strategy and Action Plan. Major regional issues are taken into consideration as well as the need to deliver attractive products and services for the Member States and end-users.

186 It contains a set of basic "strategic principles" and "strategic programmes" to achieve the regional objectives of IOCARIBE. Also a number of short-term actions is proposed based entirely on the results of the Evaluation.

187 The Delegate of Venezuela, Dr Hernán Pérez-Nieto, noted the need to consider the production of up-dated national surveys containing names and training of marine science professionals, academics and research institutions as well as on-going projects under the responsibility of each National Focal Point (NFP) and to be included among the short term actions as a priority.

188 After the discussion of the document **the Sub-Commission decided** to separate the Strategy from the short-term Action Plan. The IOCARIBE Strategy should build on that of the IOC and should be reviewed by Member States before approval. The Action Plan should be endorsed by the IOC Executive Council.

189 Delegates acknowledged the need for a higher degree of commitment by Member States and supported seeking a higher level intergovernmental instrument such as an inter-Ministerial "memorandum of understanding" as proposed in the Draft Medium Term Strategy. In this direction the **Sub-Commission took note** of the coming Inter-American Summit of Ministers of Science and Technology and **instructed** the regional Secretary to make effort to initiate the aforementioned process.

190 The Delegation from Barbados submitted a draft recommendation for approval of the Strategy.

191 **The Sub-Commission endorsed** the short-term Action Plan and a summary table of actions to be implemented, including the related financial obligations and requirements, is attached in Annex V to this Summary Report.

13. ELECTIONS OF OFFICERS

192 The Acting Secretary for IOCARIBE introduced this item explaining the rules and procedures established by the IOC regulations on the elections of the Officers of IOCARIBE. He also introduced the Document SC-IOCARIBE-V/10 prov.: Functions and Responsibilities of Officers of IOCARIBE, prepared by the Secretariat based on the decisions taken during Consultations and Programme Review with Chairman IOCARIBE and Secretariat held in Cartagena de Indias, April 1995, (Document SC-IOCARIBE-V/Inf. 2).

193 **The Sub-Commission endorsed** the document presented.

194 **The Sub-Commission unanimously elected** Dr Bradford Brown from U.S.A. as new Chairman for IOCARIBE.

195 Following decisions taken during the prior Session of the Sub-Commission of having three Vice-Chairmen, Dr Leonard Nurse from Barbados, Dr Marco Polo Bernal from Mexico and Captain Sigifredo Velandia from Colombia were elected as new Vice-Chairmen of the IOCARIBE Sub-Commission.

14. ADOPTION OF THE DRAFT SUMMARY REPORT AND RECOMMENDATIONS

196 **The Sub-Commission adopted** the Summary Report and Recommendations from the Fifth Session, as reviewed during this Agenda Item.

15. DATE AND PLACE OF THE SIXTH SESSION OF THE SUB-COMMISSION

197 The Delegate from Costa Rica offered his country to host the Sixth Session of the Sub-Commission. **The Sub-Commission acknowledged** this offer with appreciation **and accepted it**.

198 **The Sub-Commission recommended** as possible dates the end of 1998 to precede the Nineteenth Session of the IOC Assembly.

16. CLOSURE

199 The Chairman, on behalf of the Sub-Commission and of the delegations, thanked the Government of Barbados, the local organizing committee of Barbados headed by Ms Atheline Haynes, Permanent Secretary of the Ministry of Health and the Environment of Barbados, and the Secretariat and the local staff for the excellent facilities and support provided for this meeting as well as for the preceding IOCARIBE Workshop on Integrated Coastal Zone Management.

200 The Session was closed at 16:30, Friday 15 December 1995.

ANNEX I

AGENDA

- 1. OPENING**
- 2. ADMINISTRATIVE ARRANGEMENTS**
 - 2.1 ADOPTION OF THE AGENDA
 - 2.2 DESIGNATION OF RAPPORTEUR FOR THE SESSION
 - 2.3 CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION
- 3. INTERSESSIONAL ACTIVITIES**
- 4. EVALUATION**
- 5. OCEAN SCIENCES**
 - 5.1 OCEAN PROCESSES AND CLIMATE (OPC)
 - 5.2 MARINE POLLUTION RESEARCH, MONITORING AND ABATEMENT
- REGIONAL COMPONENT OF GIPME-MARPOLMON: THE JOINT

IOC-UNEP CEPPOL PROGRAMME
 - 5.3 REGIONAL COMPONENT OF THE IOC-UN DOALOS PROGRAMME ON

OCEAN SCIENCE IN RELATION TO NON-LIVING
RESOURCES (OSNLR)
 - 5.4 REGIONAL COMPONENT OF THE IOC-FAO PROGRAMME
ON OCEAN SCIENCE IN RELATION TO LIVING RESOURCES (OSLR)
 - 5.5 INTERNATIONAL BATHYMETRIC CHART OF THE CARIBBEAN
SEA AND THE GULF OF MEXICO
- 6. OCEAN SERVICES**
 - 6.1 REGIONAL COMPONENT OF THE GLOBAL SEA-LEVEL
OBSERVING SYSTEM (GLOSS)
 - 6.2 REGIONAL COMPONENTS OF THE IOC-WMO-UNEP-ICSU
GLOBAL OCEAN OBSERVING SYSTEM (GOOS) AND
WMO-IOC-UNEP-ICSU GLOBAL CLIMATE OBSERVING
SYSTEM (GCOS)
 - 6.3 INTERNATIONAL OCEANOGRAPHIC DATA
EXCHANGE (IODE)
- 7. CAPACITY BUILDING WITH TRAINING, EDUCATION AND MUTUAL
ASSISTANCE (TEMA) AS SUPPORT FOR THE SUBCOMMISSION'S PROGRAMMES
AND SERVICES**
- 8. FOLLOW-UP TO 1992 UNITED NATIONS CONFERENCE ON
ENVIRONMENT AND DEVELOPMENT,
CHAPTER 17 OF AGENDA 21**
 - 8.1 INTEGRATED COASTAL ZONE MANAGEMENT AND SMALL
ISLAND DEVELOPING STATES
 - 8.2 INTERNATIONAL YEAR OF THE OCEAN
- 9. MARINE INFORMATION MANAGEMENT**

10. IOCARIBE AND UNCLOS IMPLEMENTATION

11. CO-OPERATION WITH OTHER ORGANIZATIONS

- 11.1 COOPERATION WITH UNEP REGIONAL SEAS ACTION PLAN
FOR THE CARIBBEAN ENVIRONMENTAL PROGRAMME
- 11.2 COOPERATION WITH THE INTERNATIONAL MARITIME ORGANIZATION
- 11.3 COOPERATION WITH THE ASSOCIATION OF THE STATE OIL
CORPORATION OF LATIN AMERICA AND THE CARIBBEAN (ARPEL)
- 11.4 COOPERATION WITH OTHER PROGRAMMES

12. IOCARIBE STRATEGY AND ACTION PLAN

13. ELECTION OF OFFICERS

14. ADOPTION OF THE DRAFT SUMMARY REPORT AND RECOMMENDATION

15. DATES AND PLACE OF THE SIXTH SESSION OF THE SUB-COMMISSION

16. CLOSURE

ANNEX II

RECOMMENDATIONS

Recommendation SC-IOCARIBE-V.1 **ON-GOING OPERATIONS OF THE IOC SUB-COMMISSION FOR THE CARIBBEAN AND** **ADJACENT REGIONS**

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

Recognizing

- (i) the role and responsibilities of IOCARIBE within the Caribbean and Adjacent Regions,
- (ii) the extreme importance of the programme of reform, restructuring, and reinforcement already begun and reported in the Report on IOCARIBE Evaluation (Document SC-IOCARIBE-V/9 prov.); and,
- (iii) the need to implement short-term actions necessary to preserve the institution and to facilitate the completion of the new IOCARIBE Medium Term Strategy,

Endorsed the short term Action Plan presented by the IOCARIBE Secretariat, (subject to availability of funds);

Unanimously endorsed the continuation and reinforcement of IOCARIBE;

Requests the Executive Secretary IOC to report this unequivocal support for IOCARIBE to the Executive Council of the IOC, and to the IOC Assembly; and,

Recommends that:

- (i) the newly elected officers of the Sub-Commission, working with the IOCARIBE Secretariat, pursue the programme of reform, restructuring, and reinforcement identified in the Report on IOCARIBE Evaluation in further consultation with Member States over the next six months and to report to the Twenty-ninth Session of the IOC Executive Council (September 1996);
- (ii) the newly elected officers, working with the IOCARIBE Secretariat, implement the short-term priority actions necessary to facilitate the completion of the new IOCARIBE Medium Term Strategy and to gradually implement the Action Plan agreed to by IOCARIBE-V, subject to availability of funds;
- (iii) the circulation of the Medium Term Strategy for a three-month "comment period". After amending the document to incorporate such comments, the Secretariat is authorized to forward the document for endorsement by IOCARIBE Member States. Such endorsements should occur no later than three months prior to the next meeting of the IOC Assembly in mid-1997, to ensure the incorporation of the IOCARIBE Medium Term Strategy on the agenda of that session.

Urged all Member States and all States and Territories in the Caribbean and Adjacent Regions to fully support this effort to reform, restructure and reinforce IOCARIBE.

Recommendation SC-IOCARIBE-V.2 **IOCARIBE REGION**

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

Recognizing the role and responsibility of IOCARIBE in the Caribbean and Adjacent Regions,

Taking into account the proposal that "The region (geographical area of each regional Sub-Commission) shall be determined by the Commission, given due regard to the views of the Member States concerned, particularly those of the region being considered for regional sub-commissions states",

Pointing out that at least six Member States of the IOCARIBE Sub-Commission (Colombia, Panamá, Costa Rica, Nicaragua, Guatemala and Mexico) have considerable shorelines on the Pacific Coast,

Recommends that the elected Officers and the IOCARIBE Secretariat make a proposal to the IOC Assembly to define in a very precise manner the geographical area covered by the Sub-Commission which is understood by the use of the term "adjacent regions";

Requests the inclusion of the Pacific Coast of the Inter-Tropical Americas and Brazil.

Recommendation SC-IOCARIBE-V.3 MARINE POLLUTION RESEARCH AND MONITORING

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

Part A

Recognizing

- (i) the need to develop a general synthesis or characterization of coastal and marine water quality conditions in the Caribbean and Adjacent Regions,
- (ii) the large number of uncatalogued water quality studies and environmental state reports which have been conducted throughout the Region,
- (iii) the need to coordinate the collection of information about environmental conditions in the region with other regional and international groups,

Considering

- (i) the successful implementation of the CEPPOL Programme and the related identification of Land based Sources of Marine Pollution in the Region,
- (ii) the implications of effects of land based activities, not only on the quality of coastal waters, but on the degradation of marine ecosystems of common benefit, affecting their biodiversity and destroying the corals that help to form the basic component of beaches, which are the main tourist attraction in the region,
- (iii) the lack or paucity of adequate urban and industrial waste disposal or treatment systems, in most of the coastal cities of the Caribbean and Adjacent Regions, and the impact which this situation has on the quality of life and on health,
- (iv) the experiences in the Region and on-going research on the diagnostic and environmental control of heavily polluted coastal ecosystems,

Endorsed the IOC-NOAA-EPA-Sea Grant-IMO Third and Fourth Marine Debris Workshops and the Marine Debris Action Plan for the Caribbean and Adjacent Regions;

Recommends:

- (i) that the on-going work of monitoring levels of marine pollution including water quality, be conducted by regional, sub-regional and national institutions supported by the TEMA Programme of IOCARIBE;

- (ii) to codify this work in a comprehensive catalogue (or meta-data base) of national and regional marine pollution, including marine debris, studies and surveys, annotated to indicate Marine Environmental Status, the general water quality, data requirements, and areas included in the study, in co-operation with INFOTERRA, the CEPNET project of the UNEP/RCU, integrated Coastal Zone Management programmes, and the UNDP-GEF-supported project information management models;
- (iii) to produce a series of national and regional maps of coastal and marine water quality as assessed or interpreted from the studies in the catalog;
- (iv) to open and immediately disseminate the data and the results of this study using environmental information management initiatives mentioned above;

Requests the IOCARIBE Member States to support the project activities at the national level, including coordination with national focal points of INFOTERRA and other groups;

Further requests IOC and IOCARIBE to make all efforts to secure additional funding for these elements of the Marine Pollution Programme for the 1996-97 biennium;

Urges all IOCARIBE Member States to fully support the Marine Debris Solid Waste Management Action Plan for the Caribbean and Adjacent Regions;

Further recommends:

- (i) support for the action plans for the reduction or elimination of land based sources of pollution;
- (ii) the establishment of a working agreement with the WHO-PAHO for human resource training in matters related to the disposal and treatment of urban and industrial wastes;
- (iii) participation in the creation or improvement of mechanisms which regulate diagnostic processes and the evaluation of the environmental impact of human actions which result in marine pollution by land-based sources of pollution;
- (iv) the promotion of the use of coastal studies for the benefit of research and management of the effects of the land-based sources of pollution on the ocean.

Part B

Noting the establishment of the International Maritime Organization (IMO) Regional Marine Pollution Emergency Information and Training Center-Caribbean (REMPEITC-CARIB) by the Contracting Parties of the Cartagena Convention in Curacao, Netherlands Antilles,

Recognizing the value of working closely with the IMO REMPEITC-Carib both as a partner in meeting the needs of Contracting Partners and as an end user of IOC studies in furthering its goals of increasing the Capacity of Contracting States to prevent, prepare and respond to Pollution incidents in the region,

Urges the IOCARIBE Group of Experts on Ocean Processes and Climate facilitate the development of a predictive model on the Circulation Patterns of the Caribbean and Adjacent Regions with special attention to surface movement of oil for the purpose of assisting Member States in contingency planning and in coordinating and responding to Major Marine Pollution incidents in the Region;

Further noting that the Caribbean and Adjacent Regions have been designated a “Special Area” with respect to Annex V of MARPOL 73/78,

Considering the lack of comprehensive measures by Contracting States to ensure that vessels plying these waters are complying with the existing laws and regulations designed to improve the water quality,

Taking into account the Global Plan on action for activities on Land Based Sources and Marine Sources and its regional application,

Recommends:

- (i) that IOC through IOCARIBE assess existing measures in the area and then develop standards for monitoring Marine Debris (Land Based and Marine Sources) and for Sewage, taking into account the global Plan of Action for LBS;
- (ii) the IOCARIBE Group of Experts on Marine Pollution Research and Monitoring, with revised composition as required, meet annually at national expenses or at the expenses of IOCARIBE to evaluate the data and issue a comprehensive report on the health of the Caribbean alluding to the success or lack of success of remedial efforts within the Caribbean and Adjacent Regions;
- (iii) that the Sub-Commission invites UNEP to cooperate and co-sponsor this activity.

**Recommendation SC-IOCARIBE-V.4
IOCARIBE RESOLUTION SUPPORTING A CARIBBEAN LME
MONITORING AND ASSESSMENT PROGRAMME**

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

Part A

Noting that the Intergovernmental Oceanographic Commission (IOC) supports and endorses the Large Marine Ecosystem (LME) concept for marine monitoring, assessment and resource management,

Considering that the health of the Caribbean Sea LME has declined in recent years, with a variety of causal factors implicated, including over-fishing, loss of habitat and eutrophication, and that the ecosystem is poorly understood,

Noting the interest of the Global Environment Facility (GEF) in funding LME monitoring and assessment programmes around the world, most notably in the Gulf of Guinea and Yellow Sea,

Resolves to develop a proposal for submission to the GEF to fund a project formulation for a LME monitoring and assessment programme for the Caribbean and Adjacent Regions, in conjunction with member countries and other relevant regional organizations.

Part B

Considering that Resolution XVIII-12 endorsed the International Coral Reef Initiative (ICRI) Call To Action and Framework for Action and established a Global Coral Reef Monitoring Network,

Recalling that the ICRI Call to Action places a priority on coastal area management, capacity building, research and monitoring, and review,

Noting that CARICOMP (Caribbean Coastal Marine Productivity) is affiliated with UNESCO through the Project on Environment and Development on Coastal Regions and Small Islands and is an established network of 25 marine laboratories, parks, and reserves in 16 countries with a Data Management Center at the University of the West Indies in Kingston,

Further noting that CARICOMP has been conducting synoptic, standardized monitoring of coastal ecosystems including coral reefs since 1990 in order to provide information critical to management,

Taking into account that human disturbance and global climate change have been identified as having a major impact on the observations of regional coral reef decline;

Considering that a regional ICRI Consultation on Coastal Management for the Tropical Americas was held at Montego Bay, Jamaica, 5-8 July 1995, which identified research and monitoring of coral reef ecosystems as a priority,

Recognizing that the CARICOMP network constitutes a model for the regional development of the IOC-UNEP-WMO-IUCN Global Coral Reef Monitoring Network (GCRMN) which is based upon monitoring activities within global sub-regions,

Recommends that:

- (i) IOCARIBE support the implementation of ICRI and its Call to Action in the Caribbean and Adjacent Regions;
- (ii) IOCARIBE endorse the critical role of CARICOMP in providing synoptic standardized monitoring of coastal ecosystems;
- (iii) IOCARIBE work in concert with CARICOMP and the IOC-GOOS support office and others to develop GCRMN in the IOCARIBE region;

Urges the respective governments to support the activities of the existing CARICOMP monitoring sites in the context of the GCRMN and expand the network of sites where appropriate;

Encourages wide participation of the region in the 8th International Coral Reef Symposium in Panama in 1996, and requests the IOC to facilitate regional participation.

Part C

Noting that IOCARIBE has addressed Harmful Algal Bloom (HAB) problems individually, sometimes with only limited resources and training,

Further noting that the goal is to examine trends of HAB incidence, the mechanisms underlying its formation, the possible linkages to human activities and global change phenomena with the ultimate objective to develop common strategies to reverse the trend, manage effective resources and mitigate impacts,

Recommends that IOCARIBE develop a regional HAB programme as a component of the Global IOC OSLR-HAB Programme and support a coordinated effort to find solutions to these problems.

Recommendation SC-IOCARIBE-V.5
OCEAN PROCESSES AND CLIMATE CHANGE

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

Part A

Being aware of the importance of distributing information and knowledge gathered by IOCARIBE scientists and experts,

Recognizing the desirability of translating into Spanish the book “Climatic Change in the Intra-Americas Sea” by the joint IOC-UNEP Task Team,

Taking into account the publication in its entirety of the book “Small Island Oceanography” as output from the IOC Workshop on Small Island Oceanography in relation to Sustainable Economic Development and Coastal Area Management of Small Island Developing States,

Recommends that IOC/IOCARIBE acquire and allot funds necessary (ca. US\$20,000) for these two important scholastic efforts to be completed before the end of 1996.

Part B

Noting the region's history of coastal destruction and human suffering from seismic sea waves (tsunami), and recognizing recent unexpected volcanic/seismic activity on Monsterrat and the submarine volcano "Kick 'Em Jenny" as well as other active fault systems,

Recognizing the great increase in population in our coastal areas, the geometric increase in capital invested in near coastal areas;

Appreciating the existence of IOC's Pacific Tsunami Warning Center,

Recommends:

- (i) that IOCARIBE convene a small (ca. 12 person) Expert Consultation within the next three months, hosted by the University of the Virgin Islands for the purpose of Programme Development to include education, monitoring, forecasting, communications and mitigation of the tsunami hazard in the Caribbean and Adjacent Regions; and
- (ii) send invitations to the Director, TWC and to a regional expert in Volcanology/Seismology and an expert in tsunami wave propagation, and including representatives of funding agencies, CDERA, IGOs and NGOs, Regional GLOSS, and the press.

Part C

Noting that sea level and climate change is a globally recognized environmental problem, and in recognition of the many ancillary applications in economics, geography, cartography, oceanography, sociology, meteorology, and Earth System Science and Engineering,

Appreciating the existing IOC Programme in the Global Sea Level Observing System (GLOSS), and the Regional GLOSS progress since 1986 in establishing new or updated instruments in Aruba, Bahamas, Barbados, Brazil, Colombia, Costa Rica, Cuba, French Antilles, Guiana, Guatemala, Guyana, Mexico, Panama, Trinidad & Tobago, United States of America, and Venezuela,

Recommends continued Regional-GLOSS development as recommended by the IOCARIBE Group of Experts in Ocean Processes and Climate to establish as funds permit "next-generation" sea level/weather observatories at (in order of priority) Kingston, (Jamaica); Cap de Mole, (Haiti); Havana, (Cuba); Fort George, (Belize); and Isla de Providencia, (Colombia); and,

Urges the programme development by the OAS-GEF-WB-CARICOM to include and support the Regional GLOSS in their work.

Recommendation SC-IOCARIBE-V.6 ACTION PLAN AND STRATEGY FOR TEMA-IOCARIBE

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

Considering that UNCED, in Chapters 36 and 37, but especially in Chapter 17 (on oceans, coasts and living resources) of Agenda 21, highlight the need to assist developing countries to improve their human, material and financial resources so as to upgrade the management of their natural resources in marine and coastal areas in the framework of sustainable development,

Recalling the United Nations Convention on the Law of the Sea, in force since 16 November 1994, also recommends helping developing countries to strengthen their capacity for adequate research, exploitation and protection of their natural coastal and marine renewable and non-renewable resources,

Also recalling that IOC established in 1973 the Committee for Training, Education and Mutual Assistance in Marine Matters (TEMA),

Taking into consideration the Recommendation of the Five Sessions of the TEMA Committee and in particular the TEMA-V Session on TEMA Plan and Strategy adapted to the actual situation and needs of the IOCARIBE Region,

Taking into account the Recommendations on TEMA from previous meetings of the Sub-Commission in particular the Recommendation SC-IOCARIBE-IV.7 related to strengthening the Action Plan,

Bearing in mind the suggestions of the *ad hoc* Meeting of Experts on Strategy for IOC which took place at the IOC Headquarters in March 1995, and based on Resolution XVII-15 related to the need to increase the countries' capacity in marine science, services, observations and training of human resources- TEMA,

Endorses the recommendations of the Action Plan and Strategy for IOCARIBE-TEMA contained in the Draft Document for the Action Plan and Strategy for IOCARIBE-TEMA submitted for the consideration of the IOCARIBE-V Session;

Decides to create a Group of Experts for IOCARIBE-TEMA comprising existing Group of Experts' Chairmen, Project Leaders or their designates, thus ensuring that TEMA is part of other programmes, and the "ex-officio" members of the Group (specialists in training, education and mutual assistance). This Group will work in close cooperation with the IOCARIBE Secretariat and the representatives of other regional governmental and non-governmental bodies competent in TEMA matters. The Group of Experts should carry out the following tasks:

- (i) revise and finalize the Draft Action Plan and IOCARIBE TEMA Strategy and prepare a revised version that will include the observations and suggestions of the IOCARIBE-V Session,
- (ii) establish or extend, as appropriate, coordinated cooperation on TEMA matters with other Governmental and Non-Governmental International Organizations with similar interests. Extend this cooperation to competent national bodies through the National Focal Points or their equivalents for TEMA,
- (iii) organize an IOCARIBE-TEMA Network with the National Focal Points,
- (iv) offer assistance to Member States of the Sub-Commission for creating National Marine Sciences Country Profiles,
- (v) also offer assistance to Member States of the Sub-Commission in establishing or strengthening, as appropriate, the national structure of coordination for oceanographic matters,
- (vi) offer technical help to the Member States of IOCARIBE as regards the GEF proposals and other potential sources of funding, including donors as well as develop a financial management strategy and other forms of support,
- (vii) produce a list of training opportunities for human resources both short term (apprenticeships and possible training on research vessels) as well as medium and long term in specialized training centers;

Instructs the IOCARIBE Secretariat to take the necessary steps to facilitate information exchange by normal post, e-mail and telephone conferencing to revise the proposal and to prepare a meeting;

Further instructs the IOCARIBE Secretary, bearing in mind the availability of funds, to organize a meeting of the IOCARIBE-TEMA Group of Experts to prepare, taking into account the results of the IOC-TEMA Group of Experts for Capacity Building, the final version of the Action Plan on IOCARIBE-TEMA Strategy to be presented as part of the IOCARIBE Medium Term Strategy to the IOC Governing Bodies.

Recommendation SC-IOCARIBE-V.7. INTERNATIONAL YEAR OF THE OCEAN

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

Recalling Resolution XVIII-3 on the "UN Year of the Ocean 1998" passed by the Seventeenth Session of the Assembly and the preparatory activities,

Recalling also Cuba's offer at the Eighteenth Session of the Assembly to organize a regional activity or Symposium to coincide with the VI Marine Sciences Congress to take place in La Havana, 1997, or early 1998,

Taking into account that the IOCARIBE Strategy and the Medium Term Plan of the Sub-Commission recommends the organization of an IOCARIBE Symposium to allow Member States of IOCARIBE to keep abreast of regional activities,

Recommends:

- (i) to acknowledge and thanks the offer of Cuba to host the regional Symposium in La Havana;
- (ii) that the IOCARIBE Secretariat set up the necessary coordinating mechanisms with the competent authorities, including the National Oceanographic Committee of Cuba, UNEP, WMO, IMO, FAO and other relevant IGOs and NGOs, in order to determine the most suitable place and date for the regional Symposium and advising the Member States of the relevant measures and decisions which the project may adopt or create;
- (iii) to IOC and IOCARIBE to take the necessary steps to obtain adequate additional funding to allow both experienced and young scientists of the region as well as selected participants to attend the IOCARIBE Symposium;
- (iv) that at least one IOCARIBE Officer take part of the Scientific Steering Committee, to decide on the coverage and scientific content of the Symposium. The Committee may include other appropriate scientists and experts from the region.

ANNEX III/ANEXO III

LIST OF PARTICIPANTS/LISTA DE PARTICIPANTES

**I. IOCARIBE OFFICERS/
MESA DE IOCARIBE**

Dr Hernán Pérez-Nieto
Presidente Comisión
Nacional de Oceanología CNO
Avenida Principal Cortijos
de Lourdes, Apartdo Postal 70.617
Los Ruices
Edificio Maploca
Caracas, VENEZUELA
Tel: (58) (2) 9876846/(582) 2393145
Fax: (58) (2) 9854868/(589) 2393145

(Chairman/Presidente)
(also Head of the Venezuelan Delegation)

Prof George A. Maul
Professor of Oceanography and Director
Division of Marine &
Environmental Systems
Florida Institute of Technology
150 West University Boulevard
Melbourne, FL 32901-6988
UNITED STATES OF AMERICA
Tel: (407) 768-8000
Fax: (407) 984-8461
E-Mail: gmaul @ marine.fit.edu

(Vice-Chairman/
Vicepresidente)

Mr Guillermo García
Presidente
Comité Oceanográfico Nacional
Calle 1ra y 60 Miramar
La Habana, Cuba
Tel: (537) 331-442
Fax: (537) 331-442

(Vice-Chairman/
Vicepresidente)

**II PARTICIPANTS FROM MEMBER STATES/
PARTICIPANTES DE LOS ESTADOS MIEMBROS**

BAHAMAS

Head of Delegation/Jefe de Delegación

Colin Higgs
Director of Fisheries
Department of Fisheries
P.O. Box N-3028
Nassau
BAHAMAS
Tel: (809) 393-1777; 393-1014/5
Fax: (809) 393-0238

BARBADOS

Head of Delegation/Jefe de Delegacion

Dr Leonard Nurse (Rapporteur/Relator)
Coastal Management Unit
Oistins Government Complex
Oistins
Christ Church
BARBADOS
Tel: (809) 428-5945/34/30
Fax: (809) 428-6023
E-Mail: LNURSE @ CARIBSURF.COM

Mr Richard Alleyne
Harbour Master
Barbados Port Authority
University Row
Bridgetown
St. Michael
BARBADOS
Tel: (809) 436-6883
FAX: (809) 429-5348

Mr Robert Bascom
Coastal Management Unit
Oistins Government Complex
Oistins
Christ Church
BARBADOS
Tel: (809) 428-5930/34
Fax: (809) 428-6023
E-Mail: Bascom-R @ Caribsurf.com

Mr Leo Brewster
Coastal Management Unit
Oistins Government Complex
Oistins
Christ Church
BARBADOS
Tel: (809) 428-5930/34
Fax: (809) 428-6023
E-Mail: Leo.ccpu @ Caribsurf.com

Mr Yuri Chakalall
Coastal Management Unit
Oistins Government Complex
Oistins
Christ Church
BARBADOS
Tel: (809) 428-5934/30
Fax: (809) 428-6023
E-Mail: Coastal @ Caribsurf.com

Mrs. Atheline Haynes
Permanent Secretary (Environment)
Ministry of Health and the Environment
Sir Frank Walcott Building
Culloden Road
St. Michael
BARBADOS
Tel: (809) 431-7680
Fax: (809) 437-8859

Dr Malcolm Hendry
Marine Resource and Environmental
Management Programme (MAREMP)
University of the West Indies
Cave Hill
Box 64
Bridgetown
BARBADOS
Tel: (809) 425-1310 Ext. 705/711
Fax: (809) 425-1327

Ms Vernese Inniss
Ministry of Health and the Environment
Sir Frank Walcott Building
Culloden Road
St. Michael
BARBADOS
Tel: (809) 431-7680/7683
Fax: (809) 437-8859

Dr Patrick McConney
Chief Fisheries Officer
Ministry of Agriculture and Rural Development
Near Hincks Street
Bridgetown
BARBADOS
Tel: (809) 426-3745
Fax: (809) 436-9068

Mr David Williams
Ministry of Foreign Affairs, Tourism
and International Transport
#1 Culloden Road
St. Michael
BARBADOS
Tel: (809) 436-2990
Fax: (809) 429-6652

John R.A. Wilson
Environment Division
Ministry of Health and the Environment
Sir Frank Walcott Building
Culloden Road
Christ Church
BARBADOS
Tel: (809) 431-7685
Fax: (809) 437-8859

Dr Robin Mahon
Fisheries & Environmental Consulting
48 Sunset Crest
St. James
BARBADOS
Tel: (809) 432-7415
Fax: (809) 432-7415
E-Mail: R. Mahon @ Caribsurf.com

Observer

BELIZE

Mr K. Mustafa Touré
Development External Relations Officer
University College of Belize
P.O. Box 990
University Drive, Westlandivar
Belize City,
BELIZE
Tel: (501) 232732
Fax: (501) 230255
E-Mail: Toure@UCB.EDU.BZ

Observer

BRAZIL

Head of Delegation/Jefe de Delegación

Ms Marília Giovanetti de Albuquerque
Ministry of Science & Technology -
Divisão de Ciências do Mar
Esplanada dos Ministerios
Bloco E, Sala 398
70.067900 Brasilia D.F.
BRAZIL
Tel: 55 61-317-7715/317.7993
Fax: 55 61-317-7991/317.7858
E-Mail: Marilia @ RCT.MCT. GOV.BR

COLOMBIA

Head of Delegation/Jefe de Delegación

Ms Patricia Eugenia Alvarez-Jiménez
Embassy of Colombia in Barbados
Segundo Secretario Encargada De Las Funciones Consulares
Embajada de Colombia en Barbados
"Rosemary" Dayrells Road,
Rockley,
Christ Church
P.O. Box 37W
BARBADOS
Tel: (809) 428-6821
Fax: (809) 429-6830

COSTA RICA

Head of Delegation/Jefe de Delegación

Dr Manuel M. Murillo
Director Asuntos Internacionales y
Cooperación
Universidad de Costa Rica
Ciudad Universitaria Rodrigo Facio
San José, COSTA RICA
Tel: 506-207-5080
Fax: 506-225-5822
E. Mail:COAIUCR @ Cariari.cr.ac/MMurillo
@ Cariari.Cr. Ac

CUBA

Head of Delegation/Jefe de Delegación

Mr Guillermo García-Montero
Presidente
Comité Oceanográfico Nacional
Calle 1a y 60, Miramar
La Habana,
CUBA
Tel: (537) 331442
Fax: (537) 331442

Dr Manuel Alepuz
Director General
Centro de Ingeniería y Manejo
Ambiental de Bahías y Costas (CIMAB)
Apartado Postal 17029
La Habana 1700
CUBA
Tel: (537) 621558
Fax: (537) 338250
E-Mail: iitransp @ ceniai.cu

FRANCE/FRANCIA

Head of Delegation/Jefe de Delegación

Dr Christian Colin
Representant ORSTOM en Guyane
Directeur du centre ORSTOM de Cayenne
BP 165-97323 Cayenne Cedex
FRENCH GUYANA
Tel: (594) 299250
Fax: (594) 319855
E-Mail: Colin @ Cayenne.Orstom.fr

Mr Alain Soulan
Directeur de Meteo France Antilles-Guyane
BP 645
97262 Fort-de-France Cedex
FRANCE
Tel: (596) 63.33.65
Fax: (596) 63. 33.55

MEXICO

Head of the Delegation/Jefe de Delegación

Mr Marco Polo Bernal Yarahuan
Dr. Jimenez 47
Col. Doctores
cp 06720
MEXICO
Tel: 525 761 3783
Fax: 525 578 5643

Mr Oscar M. Ramirez-Flores
SEMARNAP - INP
Chilpancingo #70
Col. Condesa
Mexico, D.F.
Tel: (525) 2861149
Fax: (525) 2111141

Mr Mario Jaime Vargas
Doctor Jimenez No. 47
Col. Doctores
C.P. 06720
Mexico, D.F.
Tel: 578 5721/578 5617/578 5747
Fax: 578 5643

Mr Alfredo Lizarraga-Díaz
Dr Jimenez No. 47
Col. Doctores
06720
MEXICO D.F.
Tel: 52-5-5785617
Fax: 52-5-5785643

Mr Arturo P. Sierra-Beltrán
Unidad de Patología Marina
CIBNOR
Apartado Post 128
CP 23000
La Paz, B.C.S.
MEXICO
Tel: 52 112 5-36-33 Ext. 756
Fax: 52 112 2-05-98
E-Mail: asierra @ cibnor.conacyt.mx

SAINT LUCIA/SANTA LUCIA

Head of the Delegation/Jefe de Delegación

Ms Sarah George
Department of Fisheries
Ministry of Agriculture
Castries
ST. LUCIA
Tel: (809) 452 3987
Fax: (809) 452 3853

TRINIDAD AND TOBAGO

Head of the Delegation/Jefe de Delegación

Dr Judith Gobin
Institute of Marine Affairs
Hilltop Lane
Chaguaramas
P.O. Box 3160
Carenage Post Office
Trinidad & Tobago
Tel: 634-4292/3/4
Fax: 634-4433
E. Mail: gobi @ IMA.Gov.TT

Mr Peter Bacon
Department of Zoology
University of the West Indies
TRINIDAD
Tel: (809) 662-2002
Fax: (809) 645-7132

UNITED KINGDOM

Head of the Delegation/Jefe de Delegación

Dr David Cronan
Marine Mineral Resources Programme
Department of Geology
Royal School of Mines
Prince Consort Road
London, SW7 2BP
ENGLAND
Tel: (441) 171 589-5111
Fax: (441) 171 594-6464

**UNITED STATES OF AMERICA/
ESTADOS UNIDOS DE AMERICA**

Head of the Delegation/Jefe de Delegación

Dr Bradford E. Brown
NOAA Southeast Fisheries Center, NMFS
75 Virginia Beach Drive
Miami Fl.
U.S.A. 33149
Tel: 305 361 4284
Fax: 305 361 4219
E-Mail: Brown @ Semi3.Sefsc.NOAA.Gov

Mr Roy Watlington
University of The Virgin Islands
P.O. Box 302321
St. Thomas
Virgin Islands
U.S.A. 00803
Tel: (809) 693 1028
Fax: (809) 693 1025
E-Mail: rwatlin @ uvi.edu

Mr Alex Wypyszinski
717 Beaver Dam Road
Point Pleasant
NJ 08742
U.S.A.
Tel: (908) 892-4038
Fax: (908) 295--0577
E-Mail: Alexwyp@AOL.COM

Dr Vance P. Vicente
Málaga 8-40
Urb. Torrimar
Guaynabo
P.R. Zip. 00966
Tel: (809) 781-6503
Fax: (809) 725-8164

Mrs Patricia Berry
6450
S.W. 81st Street
Miami
Florida
Tel: 667-4036

Observer

VENEZUELA

Head of Delegation/Jefe de Delegación

Dr Hernán Pérez-Nieto - Also Chairman/También Presidente IOCARIBE
Presidente Comisión
Nacional de Oceanología (CNO)
Avenida Principal Cortijos
de Lourdes
Apartado Postal 70.617
Los Ruices, Edificio Maploca
Caracas, VENEZUELA
Tel: (58) (2) 9876846; (58-2) 2393145
Fax: (58) (2) 9854868; (58-2) 2393145

Mr José Ramón Delgado-Padrón
Ministerio de Relaciones Exteriores
Dirección General de Fronteras
Torre MRE, Piso 13
Carmelitas Caracas 1010,
VENEZUELA
Tel: (582) 8620332
Fax: (582) 819372

III. REPRESENTATIVES OF ORGANIZATIONS/ REPRESENTANTES DE ORGANIZACIONES

CARIBBEAN METEOROLOGICAL ORGANIZATION (CMO)

Mr Frank Farnum
Caribbean Meteorological Institute (CMI)
P.O. Box 130,
Bridgetown,
BARBADOS
Tel: (809) 425-1362/425-1363/425-1365
Fax: (809) 424-4733
E-Mail: Fafarnum @ inaccs.com.bb

ORGANIZATION OF AMERICAN STATES

Mr Jan C. Vermeiren
1889 F. St. N.W.
Washington
D.C. 20006
U.S.A.
Tel: 202-458 3595
Fax: 202-458-3560
E. Mail: Vermeiren_Jan @ oas.org

Mr Wendell R. Godin
Director
Office of the OAS General Secretariat
in Barbados
Tel: (809) 426-1564/5
Fax: (809) 427-5038

CARICOM

Mr Cesare F. Granger
Programme Manager - Sustainable Development
Caribbean Community Secretariat
Bank of Guyana Building
P.O. Box 10827
Georgetown
Guyana
Tel: 592 - 269281/8
Fax: 592 - 267816; 592 - 257341

**INTERNATIONAL MARITIME ORGANIZATION/
ORGANIZACION MARITIMA INTERNACIONAL**

Mr Raymond Seebald
REMPEITC-Carib
Pletterijweg z/m
Willemstad
Curacao, Netherlands Antilles
Tel: 5999-611421
Fax: 5999-612964
E-Mail: Raymond@aol.com

ISLAND RESOURCES FOUNDATION

Mr Edward Towle
6296 Estate Nazareth #11
St. Thomas
U.S. VIRGIN ISLANDS 00802

Mr Bruce Potter
1718 "P" Street N.W.
Suite T-A
Washington, D.C. 200036
Tel: 202-265-9712
Fax: 202-232-0748
E-Mail: irf @ irf.org

**UNITED NATIONS EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION (UNESCO)
ORGANIZACION DES NACIONES UNIDOS PARA LA EDUCACION, CIENCIA Y CULTURA**

Dr Winthrop Wiltshire
UNESCO Representative (Southern Caribbean) &
Science and Technology Advisor for the Caribbean
UNESCO Port of Spain
P.O. Box 812
Port-of-Spain
TRINIDAD AND TOBAGO
Tel: (809) 622 0536
Fax: (809) 628 4827

**REGIONAL OFFICE FOR SCIENCE AND TECHNOLOGY FOR LATIN
AMERICA AND THE CARIBBEAN/OFICINA REGIONAL DE CIENCIA Y
TECNOLOGIA PARA AMERICA LATINA Y EL CARIBE (UNESCO)**

Ms Silvia Méndez
IOC/MRI Consultant
Av. Brasil 2697
P.O. Box 859
11000 Montevideo
URUGUAY
Tel: 598-2-772023
Fax: 598-2-772140
E-Mail: UHMSM @ UNESCO.ORG

**UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)/
PROGRAMA DE LAS NACIONES UNIDAS PARA EL DESARROLLO (PNUD)**

Dr Marjorie Thorpe
Resident Representative/Representante Residente
UNDP Bridgetown,
BARBADOS

**WORLD METEOROLOGICAL ORGANIZATION (WMO)/
ORGANIZACION METEREOLÓGICA MUNDIAL (OMM)**

Mr Victor Larrier
Barbados Meteorological Services
Grantley Adams International Airport
Christ Church
BARBADOS
Tel: (809) 428-9834
Fax: (809) 428-1676

IV. IOC SECRETARIAT/SECRETARIADO DE LA COI

Dr Gunnar Kullenberg
Executive Secretary IOC/Secretario Ejecutivo de la COI
Intergovernmental Oceanographic Commission (UNESCO)
1, Rue Miollis, Cedex 15
75732, Paris,
FRANCE
Tel: (331) 45683983
Fax: (331) 40569316

**V. IOC SUB-COMMISSION FOR THE CARIBBEAN AND ADJACENT REGIONS
(IOCARIBE)\SUBCOMISION DE LA COI PARA EL CARIBE Y REGIONES
ADYACENTES (IOCARIBE)**

Mr Rafael Steer-Ruiz
IOC Acting Secretary for IOCARIBE/Secretario Interino
de la COI para IOCARIBE
Casa del Marqués de Valdehoyos
Calle de la Factoría, Centro
P.O. Box 1108/Apartado Aéreo 1108
Cartagena de Indias,
COLOMBIA
Tel: (575) 6646399
Fax: (575) 6600407

Mr Fred Berry
IOC Assistant Acting Secretary for IOCARIBE/
Secretario Asistente de la COI para IOCARIBE
NOAA, U.S. Department of Commerce
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, FL 33149
Tel: (305) 361-4200, 667-4036
Fax: (305) 361-4219

Mr Stefan Andersson
IOC/MRI Consultant/Consultor de la COI
Intergovernmental Oceanographic Commission
UNESCO
1, Rue Miollis, Cedex 15
75732, Paris,
FRANCE
Tel: 33-1 45683905
Fax: 33-1 40569316

Ms Patricia Wills
IOCARIBE Secretarie
Casa del Marqués de Valdehoyos
Calle de la Factoría, Centro
P.O. Box 1108/Apartado Aéreo 1108
Cartagena de Indias,
COLOMBIA
Tel: (575) 6646399
Fax: (575) 6600407

ANNEX IV

**ADDRESS BY THE HONOURABLE H. ELIZABETH THOMPSON,
MINISTER OF HEALTH AND THE ENVIRONMENT,
TO THE FIFTH SESSION OF THE IOC
SUB-COMMISSION FOR THE CARIBBEAN
AND ADJACENT REGIONS (IOCARIBE),
DOVER CONVENTION CENTRE,
BARBADOS.**

Mr Master of Ceremonies, Dr Kullenberg, Secretary of the Intergovernmental Oceanographic Commission, the Chairman, Vice-Chairs and Executive Members of IOCARIBE, UNESCO, Representatives of International organizations, Delegates, specially invited Guests, Ladies and Gentlemen:

Hermanos, amigos bienvenidos a Barbados.

Permit me to begin by offering a warm welcome to all of you, on behalf of the Government and people of Barbados, and congratulate you on the observance of the twentieth anniversary of the sub-commission and particularly in this season of peace and goodwill. It is my hope that this Fifth Session of IOCARIBE will be a meaningful and rewarding exercise, as you seek to chart a new course aimed at ensuring the sustainable use and management of the region's coastal and marine resources. The Government of Barbados is pleased to host this important meeting. As the Minister under whose portfolio coastal and oceanographic matters fall, I naturally have high expectations of this meeting. I therefore wish to assure you that I will be following your deliberations closely, and look forward to receiving the 1996-98 Scientific Action Plan, which is expected to emerge from this Session.

This session of IOCARIBE could not have come at a more opportune time. As elsewhere, the resources of the Caribbean Sea and adjacent regions have suffered from decades of over exploitation, contamination from various land-based activities and management practices that have neither been scientific nor sustainable. The disappearance of the region's most productive coral communities, seagrass meadows, mangroves and their associated ecosystems, is largely attributable to man-induced stresses. Non-living resources, such as our beaches and precious marine sediments, which are equally critical to the region's economic and social development, are similarly threatened. It is against this background that my Government enthusiastically supports the programmes of the Intergovernmental Oceanographic Commission, whose work has made a significant contribution to the international effort to arrest these negative trends.

Here in Barbados, as in many other countries, we have not always been good stewards of our coastal and marine resources. During the last three decades or so, healthy fringing coral reefs have been lost on our west and south coasts, severe beach erosion has become noticeable at many locations and we have eliminated practically all of our remaining coastal wetlands. In addition, all four species of marine turtles found in our coastal waters are now on the endangered list. Moreover, there is grave doubt as to whether the edible, white sea urchin, a national delicacy (known locally as 'sea egg'), will ever again constitute a commercially viable fishery.

It is for these very reasons that this Administration has systematically embarked upon its own phased programme of action, aimed at reversing these and other undesirable consequences. The first phase was the 1983-84 Pre-Feasibility and Diagnostic Coastal Conservation Study, which provided an inventory of coastal and marine resources, and set about the task of collecting vital oceanographic, geomorphological and ecological data. This information was then used to characterize and assess the most pressing coastal problems which the island was experiencing. The results of this work clearly indicated a need for a detailed Feasibility and Pre-Investment Project to better quantify the magnitude of these changes, and to establish cause and effect relationships, with scientific validity. This second phase which began in 1991 and was completed earlier this year, focused on the following primary components:

- (i) An intensive, scientific study of the various processes and phenomena which interact to shape the coastal and marine systems;
- (ii) Modelling, design construction and monitoring of a number of pilot projects, to determine their viability and cost-effectiveness as coastal protection and enhancement mechanisms, in the context of our circumstances;
- (iii) The preparation of a Coastal Management Plan for the island's west and south coasts, setting out the broad policy, range of measures and procedures necessary to ensure the sustainable use of our coastal zone;
- (iv) An institutional strengthening programme, which evaluated existing resources and mechanisms for coastal management, including legislation.

I am pleased to report that as a result of the recommendations arising from this project the Coastal Conservation Project Unit will be restructured and its resources enhanced, to become the new Coastal Management Unit. The legal requirements for giving effect to these changes have already been approved by Parliament. In addition, comprehensive Coastal Management and Marine Pollution Control Bills (the passage of which will introduce a regime of preservation and protection for our coastal areas) are currently being finalized.

The next major phase of our programme is scheduled to commence early in 1996, with a focus on the north, east and south-east coasts. At the end of this two-year project, a management plan for the entire windward coast will be produced, and will be integrated with the current west and south coast plan.

Government's coastal and marine conservation efforts are not being pursued in a vacuum, but are supported by the simultaneous implementation of a planned programme of sewage and waste water management. This thrust is informed by the view that our coastal management efforts, however well conceived and executed, cannot be completely successful, unless efficient sewage and waste water management is practiced. Such an approach also recognizes the universal truth that a substantial percentage of all marine pollution is derived from land-based sources. Thus the sewerage of Bridgetown which is already completed, the installation of the South Coast system scheduled to commence early 1996 and the planned West Coast sewerage programme (now in its feasibility stage) will also contribute immensely to the protection of our vital marine resources (in 1996 we will be embarking on an environmental management project which will concentrate on our terrestrial area and out of which I expect to have recommendations for the legislative and institutional arrangements needed to achieve an integrated approach to environmental management).

I am pleased to note that the Intergovernmental Oceanographic Commission has consistently adopted a pragmatic approach to its work, focusing on training, capacity building, the upgrading of skills in field procedures and applied research. Against a background of dwindling research and development funds, international and intergovernmental agencies must seek to maximize the returns from every dollar spent, with a view to finding viable solutions to pressing problems in our sub-region.

Moreover, it is heartening to note that over the years in the pursuit of these goals, you have forged meaningful links with other scientific bodies. The many projects jointly designed, funded and executed with agencies such as the United Nations Environment Programme (UNEP), World Meteorological Organization (WMO) and the International Maritime Organization (IMO), to give just but a few examples, have ensured that there is no duplication of effort, while maximizing output from available resources. I urge you to continue on this path, thus building on the substantial gains that you have already recorded in the area of coastal and ocean resources management. Barbados, like many of our neighbours in the region, has benefitted enormously from many of your training programmes. One such example is the IOC-UNEP joint 'Marine Pollution Assessment and Control Programme', which has assisted this country in shaping its policies for the monitoring and abatement of contamination from petroleum, and in the preparation of an oil spill contingency plan. Similarly, Barbadian scientists have received training under the programme 'Ocean Science in Relation to Living Resources', specifically in relation to the control of harmful algal blooms.

Within recent years, this country has also participated in workshops on marine data acquisition, including remote sensing for ocean and coastal resources management. Your proposed research projects on the ecology and behaviour of highly migratory and straddling species, marine turtles, growth rates of corals, ecotourism potential and marine biodiversity, are all relevant to the entire sub-region, and are worthy of the support of member states.

IOCARIBE's ongoing efforts in the production of a comprehensive bathymetric chart of the region, should also be highly commended. Such a detailed, up-to-date chart of the region's submarine topography has been lacking for some time, so that this initiative will certainly fill a large void. It is my information that when the chart is completed, it will improve navigational safety in the sub-region, assist member states to better define their offshore and nearshore environments, provide a more accurate basis for the zoning of marine activities, and provide an opportunity for improved coastal engineering design. In short, the bathymetric chart will be an instrument with multiple practical applications.

This Government endorses such initiatives and pledges its continued support for the activities of IOCARIBE, as long as the new Action Plan is tailored to meet the specific needs of the sub-region, and focuses on problem-solving. Incidentally Mr Master of Ceremonies, it may interest you to know that as a signal of further interest in these programmes, the Coastal Management Unit will soon be deploying a second tide gauge, as part of my Government's contribution to the regional component of the Global Sea-level Observing System (GLOSS), which is being coordinated by IOCARIBE. It is my understanding that the GLOSS initiative is very dear to the heart of Dr Kullenberg, the Chairman of IOC. We therefore wish to assure him that Barbados intends to remain part of the regional sea-level monitoring network, and pledges to continue submitting data to the Permanent Service for Mean Sea Level, on a regular basis.

On behalf of the Government and people of Barbados, I wish you well in your ongoing and future programmes, and sincerely hope that this week's meeting will be a successful one.

Finally, while I note that there is a full agenda, I hope that you will find some time to mix pleasure with work. I therefore invite you to visit our local attractions, to find the time for and enjoy those few social and cultural events. For while your primary mission is to contribute to the success of the meeting, I anticipate that you would also wish to take back fond memories of this country with you. Your work is with the water. Let me urge you, however, to savour the full benefits which the water has to offer. I commend to you therefore, the therapeutic qualities of our lovely beaches and the seafood delicacies prepared by our excellent cook. Our water can yield for you titillation of your intellect and satisfaction of the palate and senses.

Amigos Muchas Gracias, Ladies and Gentlemen, I thank you.

Hermanos, bienvenidos a Barbados.

ANNEX V

IOCARIBE ACTION PLAN 1996-1998

1. INTRODUCTION

The Evaluation of IOCARIBE in 1995 was meant to focus on the activities implemented by the Sub-Commission, and address the issues of the relevance, the efficiency and the impact of the Organization. Its purpose was to improve programme implementation as well as design. Evaluation is an integral part of the management cycle, and should not only judge the past but lead to action and seek remedies for the future.

As was shown in the Report on IOCARIBE Evaluation¹, the positive impact of the Sub-Commission in the region as a whole has been notable, but only those Member States which participated benefitted from that impact. Therefore, the Evaluation provides a series of recommendations which, if applied, should bring the Sub-Commission to an appropriate operational level to better fulfill its goals.

Immediate implementation of short term remedial action recommended by the IOCARIBE Evaluation 1995 is a *sine qua non* condition for any further development of the Sub-Commission. It is important to note that the actions recommended are all viable within the current terms of reference and regulations of IOC and IOCARIBE. Most of them do not require additional funds to those already anticipated or approved for the regular operation of the Sub-Commission.

2. SHORT TERM REMEDIAL ACTIONS

2.1 ACTIONS RELATED TO THE REGIONAL SECRETARIAT

2.1.1 Minimum core staff

The IOCARIBE Secretariat requires a minimum core of a senior UNESCO-IOC staff member as regional Secretary, and an additional junior consultant or professional staff member
Costs: None additional to those already foreseen for the regular operation of the regional Secretariat. Source: Regular budget IOC/UNESCO.

2.1.2 Associated experts

The IOCARIBE Secretariat requires a number of "seconded experts" to assist in the coordination of IOCARIBE programmes. Their number and qualifications will depend on the programmes being implemented, and vice versa. **Costs: Variable. Estimated and included in the management costs of each scientific programme and service. Source: Member States, funding agencies and donors.**

2.1.3 Officers Board

A description of new functions and responsibilities for the Officers of the Sub-Commission is approved. Officers should meet at least once a year during the intersessional period. **Costs: Approximately US\$5.000 once a year for traveling expenses.**

2.1.4 Running expenses

A timely allocation of funds for the Secretariat running expenses is essential for smooth operation at the regional office. **Costs: None additional, unless allocations are untimely.**

2.1.5 IOCARIBE Trust Fund

To meet the needs of IOCARIBE programmes and to foster contributions from Member States and funding agencies, IOC could consider two options: a new procedure in IOC Trust Fund, where fund allocation and accounting is region specific; or an independent regional Trust Fund. Each of them must be coupled with greater administrative decentralization to the regional Secretariat. **Costs: None additional. Revenue: Saving expenses; increased contributions; Member States would be encouraged to contribute to the regional fund, and some potential donors are actually waiting for this action.**

2.1.6 Regional Secretariat functions

IOCARIBE regional Secretariat should have the appropriate flexibility and autonomy as a component of the organization, within the main general policy of IOC, to stimulate and respond to regional initiatives and better fulfill the expectations of Member States. Sharing of responsibilities between IOCARIBE and IOC Secretariat should be better delineated. **Costs: None additional. Revenue: More efficiency and better representation of IOC in the region.**

2.2 ACTIONS RELATED TO MEMBER STATES AND OTHER ORGANIZATIONS

2.2.1 Membership

Membership in IOCARIBE should include a commitment to carry out activities and make financial and/or other voluntary contributions to the Sub-Commission's programmes, regardless of size and amount. Member States will be asked to carefully consider and approve at a higher level their commitment to international collaboration in marine scientific research, observations and capacity building in the region. **Costs: None additional.**

2.2.2 National Focal Points

National Focal Points (NFP) should be formally appointed by a high government authority in Member States. The most appropriate NFP is the Chairman or Head of a National Oceanographic Commission. IOCARIBE must start a crusade to encourage and assist Member States in the establishing of National Oceanographic Commissions or equivalent internal coordinating structure. **Costs: None additional.**

2.2.3 Local Focal Points

Member States with capitals out of the region should appoint a Local Focal Point (LFP) for each dependent Territory in the region, and Territories should have the opportunity to be involved regardless of the participation of the mother State. The central NFP will be kept informed of all contacts by IOCARIBE's regional Secretariat with the Local Focal Points. **Costs: None additional.**

2.2.4 Focal Points Network

A network of NFP's and LFP's for IOCARIBE should be established in the region. Initially the operation of such network should be based on the use of telecommunications. **Costs: Communications increase. Source: Operation budget of Secretariat and NFP's offices.**

2.2.5 Indicators

A system to provide feed-back to Member States on their own participation and growth must be established in IOCARIBE, based on indicators of scientific activities and capacity building. This system will begin to exist as soon as an efficient Marine Information Management System (MIM) is in operation in the region and scientific indicators are adopted. Until then, IOCARIBE News may be used as the vector. **Costs: Included in MIM system.**

2.2.6 Extra-regional States

IOCARIBE Secretariat should initiate a reach-out campaign to encourage the participation of developed extra-regional Member States of IOC in the activities and programme of the Sub-Commission. Mutual advantages will have to be demonstrated under the principle of "partnership". **Costs: Communications increase.**

2.2.7 Non-Governmental Organizations

IOCARIBE Secretariat should identify relevant Non-Governmental Organizations (NGO) and increase collaboration with them in the region. Because of its inter-governmental nature IOCARIBE is well placed to act as an "umbrella" organization in marine science and technology, complementing its relative advantages with the "grass root" level of NGO's. To achieve this the regional Secretariat must be given a higher level of delegated autonomy. **Costs: Communications and travel increase.**

2.2.8 End-users, industry and policy-makers

IOCARIBE should increase dialogue, share information and cooperate with end users, industry and policy makers. End users may include other regional Organizations. IOCARIBE ought to launch a marketing campaign of its products, such as: knowledge, information, science, technology, capacity building, marine policy planning and networking capacity. This will reinforce the role of IOCARIBE as an intermediary and translator between producers and users of knowledge in the region. To initiate this action the regional Secretariat will need a clear delegation of autonomy and some commitment capacity. **Costs: Communications and travel increase.**

2.3 ACTIONS RELATED TO REGIONAL PROGRAMMES

The actions in this section are not referred to any particular traditional IOCARIBE programme (OPC, OSLR, MPRM, GLOSS, etc.). but to all of them, and essentially aimed to improve the programme's management practice in the Sub-Commission.

The fundamental proposition is that traditional programmes make a "strategic stop" to reassess their achievements, goals and terms of reference before moving ahead, under better planning and managing conditions. Some programmes will require a new formulation. Some may decide their objectives have been fulfilled and thus be closed, partially or totally...

It is a prerequisite for these activities that actions related to the Regional Secretariat and Member States described in the two previous sections are implemented.

2.3.1 National and Regional Initiatives

While continuing to pursue implementation of regional components of IOC global programmes, IOCARIBE should give attention to regional initiatives. Relevant national projects should be strengthened and connected to regional programmes. This action will also benefit from the establishment of the Marine Information Management system. **Costs: Included in MIM system.**

2.3.2 Project Steering Groups and Project Leaders

IOCARIBE should apply the existing structure of Project Steering Groups with a designated Project Leader for implementation and coordination of programmes. The IOCARIBE Secretariat must initiate the process of rearranging the regional Groups of Experts; seeking to delegate greater responsibility (outsourcing) to the experts and institutions in the region. **Costs: Communications and travel increase.**

2.3.3 Membership in Groups of Experts

Define a set of criteria for qualifications, recruitment and participation of experts in the Groups of Experts and Project Steering Groups. Individuals will be selected bearing in mind their level of expertise and commitment required to become qualified as an "IOCARIBE Expert". **Costs: None additional.**

2.3.4 Programmes Funding

Funds, including coordination costs, should be identified before the approval of programmes or projects by governing bodies. Sourcing and raising funds should be the responsibility of the Project Leader and the Secretariat, with collaboration from the Project Steering Group. Procedures must be determined for this process. **Costs: None additional.**

2.3.5 Evaluation and Indicators

On-going evaluation procedures must be an integral part in the formulation of all regional programmes and projects. Indicators, impact determination and measurable results should be established before programmes are approved. The Marine Information Management (MIM) system is essential for providing indicators for this purpose. **Costs: None additional.**

2.4. MEDIUM TERM PROGRAMMES

The IOCARIBE Evaluation recommended 3 major activities to be carried out in the medium term, directed to facilitate the management of the traditional scientific and service programmes and to improve the impact of IOCARIBE in the region. They should not be mistaken as traditional programmes. They are essentially cross-sectorial, multi-disciplinary and policy-oriented, underlying traditional scientific research programmes and observation services, impelling them toward success.

The implementation of these three "strategic programmes" will require a planning phase to be carried out during 1996. Identification of financial resources should be accomplished during this phase. They are:

2.4.1 Member States' National Policy on Marine Sciences

IOCARIBE should establish a programme to assist Member States in developing the capacity to formulate national plans and policies, to meet their real needs in marine science.

2.4.2 Regional TEMA Strategy

Capacity building should be present in and above all activities of the Sub-Commission. Each regional programme must meet specific TEMA requirements which should be defined by a comprehensive regional IOCARIBE-TEMA Strategy.

2.4.3 Marine Information Management network

IOCARIBE must establish a regional Marine Information Management (MIM) network to improve information flows between its elements. The network will provide indicators on knowledge and capacity building. The regional Secretariat would perform as the central node and as scientific information broker in the region.

3. OTHER SHORT TERM ACTIONS

3.1 ANALYSIS OF THE REGION

A comprehensive analysis of the region (not only the Sub-Commission) should be made under the sponsorship of IOCARIBE including socio-economics and policy-making issues. One of its components should be a cost/benefit analysis of marine science and technology capacity (or the lack of it) for Member States.

A synthesis of the products from IOCARIBE scientific programmes should be compiled, to provide a real picture of the available knowledge, needs and capacities on marine science and technology. A diagnosis should be made by the reorganized Groups of Experts.

The analysis of the region in terms of marine related issues, jointly with outputs from the IOCARIBE Symposium, will be a major contribution to the International Year of the Oceans, and could origin a wider form of regional participation in EXPO 98, such as publications, displays, videos, and different kinds of documents. But most important, the diagnosis will provide a realistic baseline reference for future regional policy and for planning IOCARIBE activities and programmes.

Time: To be completed before the Symposium. Cost: US\$40.000.

3.2. CONSOLIDATION OF INTERCOMMUNICATION NETWORK.

Intercommunication network must be consolidated. The improvement of information flows and communication will cut down the need for expensive meetings. Meetings will only be called when essential for the advancement of previous work done through the network, and when funds are available. **Cost: None initially. Expansion costs as demand growths will be determined for subsequent years.**

3.3 IOCARIBE NEWSLETTER

The most important communication and public awareness vehicle already existing in the IOCARIBE system is the Newsletter, under its fresh format (since 1994). This instrument should continue to exist by all means, and actions must be taken to ensure proper support is given for its uninterrupted editing, publication and distribution. **Costs: None immediately. Additional support may be necessary to guarantee future regular production.**

3.4 IOC-XIX ASSEMBLY (JUNE 1997).

Early results and indicators from short-term actions and programmes should be available for presentation to the IOC Assembly. Likewise, facts on the new functional autonomy of IOC and its reflections at the regional level would be analyzed. Additional measures requiring endorsement by the Assembly and action by IOC Secretariat must be prepared.

3.5 INTERNATIONAL YEAR OF THE OCEANS AND EXPO-98

Preparation for the region's participation in Year of the Ocean and EXPO 98. A detailed action plan for this purpose must be drawn.

SUMMARY IOCARIBE ACTION PLAN 1996-1998					
---	--	--	--	--	--

SECRETARIAT:					
PROGRAMME ACTIVITY	PRIORITY	ESTIM. COST	PARTICI- PANTS	IMPLEMEN TATION	RELATION TO
Minimum core staff, (regular operation of Secretariat)	HIGH	P-5 & P-3	UNESCO & IOC Secretary	Early 1996	
Seconded Experts: programmes coordination	HIGH	Included in programmes budget.	Member States & Donors	Early 1996	
Establish a Regional Trust Fund or Accounting	HIGH	No extra	IOC Secretary	Early 1996	
Responsibilities and functions of Regional Secretariat	HIGH	No extra	IOC Secretary	Early 1996	
Collaboration with NGO's	HIGH	Communic. & Travel	Regional Secretariat & NFP's	Permanent	
Officers Meeting	HIGH	\$5.000	Officers & Secretariat	Fall 1996	
Officers Meeting	HIGH	\$5.000	Officers & Secretariat	Spring 1997	IOC Assembly
IOCARIBE Newsletter	HIGH	Undeterm.	Secretariat	Permanent	
IOCARIBE-VI Session	Middle	\$30.000	Member States	Spring 1998	
IOCARIBE Symposium	Middle	\$50.000	All Member States.	Late 1997 / early 1998	
Marine Information Management network	HIGH	\$20.000/yr	Secretariat	Starts early 1996	

MEMBER STATES:					
PROGRAMME ACTIVITY	PRIORITY	ESTIM. COST	PARTICI- PANTS	IMPLEMEN TATION	RELATION TO
Re-confirmation and appointment of NFP's / Networking	HIGH	Communic..	Member States	Early 1996	
Campaign for creation of NOC's or equivalent structure	HIGH	Communic. & Travel costs.	Regional Secretariat	Mid-1996	
Reach-out for New Member States	HIGH	Communic. & Travel	Regional Secretariat	Permanent	
Inter-Ministerial meeting	HIGH	Communic. & Travel.	Officers & Secretariat.	March 1996.	
National Marine Science Policies & Profiles	HIGH	\$15.000/yr	Secretariat & Member States	Starts early 1996	
SCIENCE & SERVICE PROGRAMMES:					
PROGRAMME ACTIVITY	PRIORITY	ESTIM. COST	PARTICI- PANTS	IMPLEMEN TATION	RELATION TO
Define qualifications criteria for recruitment of Groups of Experts & Programme Leader	Middle	None	Officers & Secretariat	Early 1996	
Confirm/designate Programme Leaders	HIGH	No extra cost.	Officers & Project leaders	Early 1996.	
Reorganize regional Steering Groups of Experts	HIGH	No extra cost.	Experts and Project leaders	Early 1996	
Synthesis & analysis of the results of traditional IOCARIBE Programmes	HIGH	\$40.000	Groups of Experts	Late 1996	CSD-SIDS UNCED
Guidelines for programme formulation and evaluation	Middle	No extra cost.	Officers	Mid-1996	
IOCARIBE- TEMA Strategy	HIGH	\$10.000/yr.	TEMA Experts	Early 1997	IOC Group of Experts TEMA

ANNEX VI

FRAMEWORK STRATEGY FOR ON-GOING IOCARIBE INVOLVEMENT ON ICZM

Christ Church, Barbados, 8 December 1995

SUMMARY REPORT

1. STATEMENT OF OBJECTIVES

The primary objective was to provide to IOCARIBE-V a Framework Strategy for Ongoing IOCARIBE Involvement in Integrated Coastal Zone Management. The development of such a strategy is consistent with a number of initiatives in this field with which IOC/IOCARIBE has been involved in the past, including CARIPOL/CEPPOL, the Marine Debris Action Plan, Ocean Processes and Climate, Ocean Science and Non-Living Resources, the IOC-UNEP Task Team on Climate Change, the Martinique Workshop on Small Island Oceanography, and the Barbados GIS workshop held at the Small Island Developing States (SIDS) Conference in Barbados in 1994, taking account of UNCED and of the Action Plan for SIDS that was developed at the Barbados Conference.

The framework strategy provides the basis for consolidation of IOC/IOCARIBE activity in CZM matters into a consistent and coordinated policy for future programme development in the Caribbean. It also assists in the re-focusing of the Secretariat's activities and programming following the IOCARIBE review process which is presently being completed.

The Framework Strategy is based on the traditional role of IOC/IOCARIBE in ocean science and management. This includes facilitating the collection and dissemination of oceanographic information, of providing opportunity for collaborative work programmes amongst the many institutions involved with the science and management of the Caribbean coastal areas, and of providing opportunities for training and mutual assistance. These fundamental activities are more important than ever with the increased emphasis now being placed on management of the region's coastal areas.

2. OPENING OF THE WORKSHOP

The Acting Secretary of IOCARIBE, Mr Rafael Steer-Ruiz, welcomed participants to the Workshop.

Mr Steer reiterated the objective of the meeting, which was to evaluate IOC/IOCARIBE regional programmes in areas of direct relevance to coastal management, and to reinforce the IOCARIBE approach in this area through provision of a framework strategy for continued involvement in this field. Mr Steer noted that the working group was smaller than had been anticipated. Financial and logistical constraints had been partially responsible, and the Acting Secretary noted that several participants from Central and Southern America who had agreed to come had unfortunately been unable to attend the meeting at the last minute. Dr Malcolm Hendry noted that although the group was small, participants were very familiar with the field of CZM and that it would be possible to focus this experience toward the expected output of the meeting.

Dr Hendry was appointed Chairperson for the meeting.

3. TECHNICAL PRESENTATIONS

Mr Steer reviewed the extensive involvement of IOC/IOCARIBE in oceanographic research, monitoring, training and support, especially in those areas of relevance to CZM. The purpose of IOCARIBE was briefly mentioned, in order to constrain the discussions for the meeting. This mission statement is:

“Promote and coordinate marine scientific research and associated oceanic services and systematic observations, to improve the knowledge about the marine and coastal areas in the region, its environment and its resources through the concerted actions of its member states”.

Mr Steer reflected on the long history of IOC/IOCARIBE in a range of programme areas of relevance to coastal management. There were some notable successes in this regard. These included *inter alia* the following programmes:

- (i) Ocean Processes and Climate. Successful initiatives include the joint IOC-UNEP Task Team on the Implications of Climate Change in the wider Caribbean Region.
- (ii) Integrated Management and Sustainable Development of Coastal Areas. Activities here included the Martinique Workshop on Small Island Oceanography in Relation to Sustainable Economic Development and Coastal Area Management of Small Island Developing States.
- (iii) Marine pollution, Research and Monitoring. This includes the successful joint IOC-UNEP Programme and its predecessor CARIPOL.
- (iv) Ocean Science in Relation to Non-Living Resources. Under this programme, a project on “Global Change and Coastal Land Loss Management Implications” was implemented with a first phase training programme.
- (v) In addition, the IOC ocean services activities function in several areas included GOOS (Global Ocean Observing System); GLOSS (Global Sea-Level Observing System) and IODE (International Oceanographic Data Exchange).

Finally, much emphasis in all IOCARIBE activities had been placed in TEMA (Training, Education and Mutual Assistance).

Dr Malcolm Hendry discussed development of a database that satisfied the requirements of a basic CZM programme, especially in island states. There were scarce regional resources for oceanographic research; a tendency to undertake single-discipline research and research that was perceived to be esoteric, but which could help to inform the larger environmental pictures; and problems adapting regional or sub-regional scale measurement, monitoring and modelling to local scale requirements of CZM. The Barbados model for integrated CZM, which included many years of database development through fundamental research as well as routine monitoring in production of a comprehensive coastal management framework, was cited as an example of how critical basic scientific information can be in informing the larger CZM picture.

Dr Edward Towle explained a number of critical issues related to the development of the database for CZM, and especially how this reached those with the greatest need for information. The question of who collects data, how it is done, and the effective use of focal points for dissemination was raised. The need to broaden this information network, through incorporation of NGO's, was discussed, as they continue to be important in a range of CZM activities. The problem of “over-programming” in CZM-related activities also provided additional constraints on the effectiveness of decision-makers when faced with large volumes of information.

A Caribbean Coastal area and marine ecosystem synthesis was proposed, based on existing data, as a mechanism that would identify critical areas for management; data weaknesses; patterns and associations, and provide a framework for upgrade or design of efficient monitoring programmes and applied research.

Dr Leonard Nurse noted that, in determining the requirements of an oceanographic monitoring/research programme in CZM, the starting point was identification of what was to be managed. There was also need for a body of reliable data, readily convertible to useable information, for decision-making. The existence of substantial information in a variety of databases in most countries was highlighted, and a mechanism to assist retrieval of this data needed to be developed. IOC/IOCARIBE had a major role to play in influencing the collection and quality control of oceanographic data, and in facilitating dissemination of information. A 3-tiered model of information needs in CZM was defined relating to (i) operational (ii) command/control and (iii) strategic management requirement.

Dr. Gillian Cambers reported on the progress of the COSALC project, which had implemented a programme of baseline monitoring of shoreline changes in a number of Eastern Caribbean Islands. In most cases, these countries do not have a substantial research capacity. Working through Government agencies, a time-series of information has been developed which is proving to be very useful in several areas. These include determination that hurricanes appear to have provided threshold events, following which beach areas have not fully recovered even after several years. Care in designing the programme; involvement of several local agencies; the simplicity of the techniques to be used; regular checking of data accuracy and provision of reports, plus consideration of the time constraints of local agencies are all critical elements in programme planning.

Dr David Cronan indicated that there was very little information available on non-living resources of shelf and shoreline areas in the Caribbean, but much concern on the potential exploitation of these resources and impacts on coastal stability. By analogy with geological settings in other parts of the world for which there was a greater degree of scientific understanding, it was noted that the potential existed for identification of aggregates, material for construction, and some metalliferous deposits in shallow water areas in a number of Caribbean Islands.

Dr Ben Mieremet described the existing and on-going efforts regionally and internationally in living resources monitoring with special reference to the International Coral Reef Initiative (ICRI). This initiative is global, with regional components, one of these being the Caribbean. Careful thought was being placed on planning this activity, to take account of the needs for monitoring and of several established programmes such as CARICOMP within the region, and of the IOC-GOOS programme area. It was noted the IOC has given full endorsement to the ICRI project.

Case study presentations highlighted several aspects of CZM as they relate to practical issues of project development and implementation. Mr Leslie Walling pointed out that at the site-specific scale of marine park management in Montego Bay, communication and dialogue with constituent stakeholders was the most critical ingredient, but that this could and should be better informed by access to scientific information on cause and effect relationships in coastal environments.

Dr Alain Soulan reported that in the French Caribbean substantial efforts were underway in modeling and prediction of impacts from storm events, and indicated a desire that these aspects of scientific research be shared with the rest of the region, and incorporated in the IOCARIBE framework.

Dr Hernan Perez-Nieto reported that a project planning and implementation framework was presently being developed for approaches to comprehensive coastal area management in Venezuela.

4. DISCUSSION

The well-focussed presentations of participants allowed for the recognition of a number of key elements which form the basis of the strategy.

The workshop recognized that the recommendations should be based on the mandate of IOCARIBE, and should adhere to the recognized and well-established framework for IOC activity in ocean science. This involved research and monitoring in ocean sciences; provision of ocean services; and training, education and mutual assistance (TEMA).

Sustainable development inherently requires some ability to forecast the effects of development and management options. Such forecasting abilities can only be based on a scientifically obtained data and related modelling. It was also recognized that the approach to be adopted must be pragmatic, and should stress the coordination and facilitation role that was traditionally a strength of the Secretariat. The strategy should build upon successes and strengths of on-going programmes, and avoid the duplication of responsibilities and mandates of other institutions. The workshop recognized that IOC/IOCARIBE had a critical role to play in facilitating research, training, capacity building and information exchange on oceans and coastal areas.

The existence of a growing number of regional and local initiatives in coastal management through activities of international organizations, development banks, Governments and non-Governmental Organizations, made it even more important that capacity be enhanced for the collection, management and dissemination of oceanographic information of relevance to coastal zone management.

IOC/IOCARIBE contributions address the oceanographic component of research and monitoring and interpretation of the resulting information base. It was therefore necessary to insure appropriate linkages with those programmes and projects that took responsibility for other aspects of CZM, such as identification and measurement of terrestrial impacts.

It was also recognized that opportunity must be created to allow for incorporation of regional and sub-regional monitoring and modelling at a scale that was directly relevant to the localized and frequently site-specific requirements of day-to-day coastal management. The need for appropriate and timely dialogue with users was stressed. Consequently, activities are closely oriented towards identifying and servicing the needs of end-users of oceanographic information.

The framework is presented in the following table:

STRATEGIC FRAMEWORK FOR ONGOING IOCARIBE INVOLVEMENT IN SUPPORT OF
INTEGRATED COASTAL ZONE MANAGEMENT

<u>STRATEGY</u>	<u>ACTIVITY</u>
<p>1. Facilitate the collection of oceanographic data directly relevant to CZM issues, and create capacity for data generation in countries with limited research capacity.</p>	<p>1.1 BASELINE REQUIREMENTS -NEEDS AND CAPACITY ASSESSMENT</p> <p>(i) Determine critical CZM issues, programmes and scales for which data are required at (I) regional and (ii) local level.</p> <p>(ii) Evaluate those existing IOC and non-IOC programmes/parts of programmes which may contribute information to critical CZM needs.</p> <p>(iii) Assess the capacity for research and monitoring in member countries with emphasis on identification of areas where capacity-building through TEMA may be most required.</p> <p>(iv) Analyze the successes/constraints of existing monitoring and data collecting programmes in countries without a formal research framework, to allow for definition of appropriate approaches to capacity building.</p> <p>1.2. CAPACITY BUILDING</p> <p>(i) Provide mechanisms that will allow countries to reassemble existing, fragmented, databases on oceanography, coastal processes and coastal management.</p> <p>(ii) Facilitate the strengthening and expansion of monitoring and research programmes that focus on basic information relevant to CZM needs at appropriate scales.</p> <p>(iii) Sustain and enhance training and support mechanism for countries who need critical CZM data under 1.2a and 1.2b.</p> <p>(iv) Provide encouragement to researchers and institutions both from within and outside of the region to assist with the generation of information that informs critical CZM requirements, through collaboration and counterpart involvement throughout the region.</p> <p>1.3. RESEARCH AND DATA COLLECTION</p> <p>(i) Ensure appropriate standards and Quality Assurance/Quality Control on data collection.</p> <p>(ii) Provide mechanisms which allow for linkage between regional research and modelling, and local scale research and modelling of ocean and coastal processes.</p> <p>(iii) Facilitate local CZM case studies which combine regional scale modelling and local data collection needs with management requirements at a nested scale.</p>

<u>STRATEGY</u>	<u>ACTIVITY</u>
<p>2. Provide for the effective management of ocean and coastal science information, its interpretation, and its dissemination in a form which is relevant to the site-specific nature of CZM.</p>	<p>2.1 CREATE A USER GROUP CONSTITUENCY</p> <p>(i) Determine the most effective local (country) mechanism to assist the IOC/IOCARIBE Focal Points in creating an efficient flow of information through the creation of multiple linkages with key groups of users and CZM activists.</p> <p>(ii) Provide training for CZM data users and CZM decision-makers in the applications of CZM information to decision-making.</p> <p>2.2 INFORMATION MANAGEMENT AND DISSEMINATION</p> <p>(i) Identify those internal and external data sources and information bases that are applicable to CZM issues in the region.</p> <p>(ii) Provide a coordinating mechanism that will link the users of ocean and coastal information with internal and external sources of this information, recognizing the requirements at different levels of programme development and implementation..</p> <p>(iii) Provide a mechanism for effective dialogue between organizations, institutions and stakeholders who have programmes/interests in CZM information.</p> <p>(iv) Create mechanism which will allow for on-going incorporation of applicable general models and scientific understanding to solution of local scale problems.</p> <p>(v) Disseminate information from local scale case studies of CZM through the inter-group network (2.2b)</p> <p>(vi) Provide system which allows for the evaluation of the use of information provided to, or which is available to CZM managers.</p> <p>2.3 STRENGTHENING OF INTER-AGENCY LINKAGES</p> <p>(i) Coordinate and facilitate linkages between local, regional and global research and monitoring programmes and projects.</p> <p>(ii) Coordinate, and establish as appropriate linkages between IOC/IOCARIBE activities on data collection and management and those agencies responsible for evaluating land-based issues in coastal zone management.</p> <p>(iii) Facilitate of inter-agency framework for programme planning and information dissemination in CZM.</p> <p>(iv) Strengthen and promote the inter-agency mechanism for inter-regional scientific activities.</p>

5. IMPLEMENTATION OF THE STRATEGY

The output of this workshop is organized under two main strategy areas, relating to (i) the generation of appropriate data for CZM requirements, and (ii) the effective dissemination of this information. These reinforce existing IOCARIBE objectives.

To support these, a series of activities have been identified under specific headings which themselves provide objectives for programme planning. The activities are sequential, in that certain priorities are identified, which can be implemented early on, in several cases without the need for extensive funding.

This strategy will be further elaborated by the Secretariat, to place it in a planning framework suitable for implementation.

During this subsequent phase emphasis will be placed on:

- (i) Developing the framework in a manner consistent with the new strategic and programme thrust being generated within IOCARIBE.
- (ii) Providing a suitable activity sequence for implementation.
- (iii) Identification of the resources inside and outside the Secretariat required to develop and implement each phase.
- (iv) Allow for ongoing work in those areas in which activity is already taking place, but to provide opportunity for revision of these activities in response to evolving approaches.
- (v) Identifying requirements within the Secretariat for managing the implementation of the framework and assessing the effectiveness of the framework.

ANNEX VII

REPORT OF THE DRAFTING GROUP ON OSLR

A Drafting Group on OSLR was formed with the Chairmanship of Mrs Sarah George, from St. Lucia. The group reviewed the state of development of the eight OSLR proposals and their current development.

1. **Fishery Oceanography of Highly Migratory and Straddling Species.** Planning began in 1994 that resulted in a Workshop in Miami, Florida supported by the South-East Fisheries Science Center. This project had been recommended by Bradford Brown at the Fourth Session of the IOCARIBE Sub-Commission. The workshop had 61 participants, including fishery biologists, fishery officers, oceanographers, and other professionals representing most of the states of the Greater Caribbean. A Draft Report on this workshop was distributed at IOCARIBE-V. The second project workshop is tentatively planned for 1997.
2. **Tropical Demersal Recruitment Processes (TRODERP).** The research began in 1980, but was inactive in IOCARIBE during the period of 1993-95, except for a meeting at Campeche in late 1995. A renewal was planned with Alejandro Yañez-Arancibia. The work will commence with a select small workshop during 1996. A directed investigation during 1994-95 was made with consultation of many scientists in the region to estimate what specific research projects IOCARIBE needs to investigate and promote that will be practical and possible to pursue and that will better serve the interest and needs of our constituents, for consideration to IOCARIBE-V are listed below.
3. **Coral Reef Research.** Study and protection of coral reefs and their included flora and fauna is belatedly receiving strong increasing international attention with a small *ad hoc* working group. IOCARIBE proposes to scope potential actions on and support for the International Coral Reef Monitoring Network and participation in the International Coral Reef Symposium in Panama during mid-1996.
4. **Harmful Algal Blooms.** The international interest and efforts towards HAB warrants action by an IOCARIBE project working group on behalf of the Greater Caribbean. possibly the IOCARIBE Group could later sponsor research efforts on the companion issues of Eutrophication and Ciguatera significant interest was expressed in the HAB project with pro-term leadership shared by Arturo Sierra-Beltrán, Mexico with the new plans to invite interest and action early in 1996.
5. **Caribbean Large Marine Ecosystems (LME).** The concept for monitoring and assessing and resource management in the Caribbean was received as a proposed resolution from Bradford Brown, USA . Action will be taken early in 1996 to frame and facilitate this project.
6. **Western Atlantic (and Caribbean) Sea Turtle Research and Conservation (WATS III) and WATS II** (1983, 1987) were two extremely successful IOCARIBE sponsored efforts. The planned project will be presented to the annual meeting (Feb 96) on Sea Turtle Conservation and Research in Hilton Head, South Carolina by Fred Berry. The intent is to coordinate efforts throughout the region and to support extant programmes.
7. **Ecotourism Research.** Tourism related to the Environment, Ecology, Conservation, and Biodiversity has been, and will continue to be increasing dramatically. As the tourism pressure increases, we expect the environment to further degrade for a while. Then, we expect our efforts on protection to take over and start to protect the nature that remains. We need to start the research necessary to determinate the most effective ways of meshing tourism with environmental protection and enhancement. In the meantime, we have reports of ecotourism ventures harming the animals and areas that they are displaying, acting without rational guidelines for conservation. The Project Leader is Peter Bacon, Trinidad.

8. **Marine Biodiversity.** Establish a Programme to integrate the Caribbean Region to help expedite and augment the IOC Programme on Biodiversity. Assemble best data available and to be generated to advise regional States on scientific and technical aspects of the conservation and the sustainable use of marine and coastal biodiversity. Assist Caribbean States in efforts to compile inventories of their marine flora and fauna, building on existing data basis, containing among other things structured species descriptions and figures, ecological information and distribution, and ecological information and distribution, and economical importance.

DISCUSSION of the eight Project proposals was extensive and rewarding -- not surprising because the projected Programme represents a real resurgence in living research projects for IOCARIBE.

Bradford Brown, USA, introduced resolutions supporting IOCARIBE's participation in LME and Coral Reef Initiative. Arturo Sierra-Beltran, Mexico, introduced a resolution supporting HAB.

Guillermo García Montero, Cuba, proposed to we establish an *ad hoc* Group of Experts, to be known as a Promotional Group. Chairman Hernán Pérez-Nieto appointed seven participants to this group. The List of experts and their contact points are attached including three other experts who joined the group later.

The promotional group plans are grouped as follows: to conduct business within the group from January to March 1996 by fax and telephone. To form a Regional Group of Experts for the OSLR Programme to draft and disperse a letter to all NFPs, requesting that each NFP recommend or appoint a candidate of their country to the OSLR Drafting Group in the Promotional Phase. For candidates, the Programme wants scientists who are familiar with management and the living resource activities of their country. When formed, the Programme GOEs will frame and begin promotion for the Group.

The first efforts of the group will be to look for other OSLR programmes and study mechanisms to link them, to stimulate national groups to participate in the regional programme, and to look at any national and institutional problems so as to identify common regional problems. Also, to make all interest aware that it is the intent of IOCARIBE to complement other programmes, to encourage and support, and assist them and of course not to compete with or in anyway detract from other programmes.

Schedule for the OSLR *ad hoc* Promotional Group:

- (i) Memo from Berry to members of the group, with a draft letter to all NFPs requesting their candidates before 25 December.
- (ii) Replies, comments, suggestions to George and/or Berry by 7 January.
- (iii) Correlation of comments by George and Berry, addition of any other decisions or ideas, and fax memo to all other GOEs by 15 January.
- (iv) Replies ex GOEs to George by 31 January.
- (v) Form letter for NFPs to Secretariat Steer for faxing to NFPs by 7 February.
- (vi) Replies from NFPs faxed to George and Berry as they are received by Secretary. Second request to NFPs by 7 March.
- (vii) Report on results to date to all GOEs by George and Berry by 7 March.
- (viii) Hopeful to form functional GOE for Programme with guidelines and instructions by 31 March.

The final comment at the first meeting of the OSLR Promotional Group was: "Make all this actually happen".

Prior to and after the *ad hoc* Promotional Group's meeting plans were made to start efforts to develop three of the OSLR Projects during the first two months of 1996:

- (i) Harmful Algal Blooms (Arturo Sierra-Beltrán).
- (ii) Ecotourism Research (Peter Bacon).
- (iii) Sea Turtle Research and Protection (Fred Berry).

The IOCARIBE Secretary sincerely thanked the Delegates, Officers and participants at IOCARIBE-V, for their input to this Programme.

In addition, to assist IOCARIBE's support by recommendation of small and medium-sized research proposals to possible funding sources, the following first two proposals were distributed:

- (i) Ultra-Light Aircraft Survey of coast of Suriname, by Henri Reichart.
- (ii) Ecological Effects of Petroleum Seepage in Coastal Environment of Trinidad, by J.B.R. Agard.

MEMBERS OF THE IOCARIBE DRAFTING GROUP ON OSLR

Sarah George (Leader)
Department of Fisheries
Ministry of Agriculture
Castries
ST. LUCIA
Tel: (809) 452 3987
Fax: (809) 452 3853

Dr. Bradford E. Brown
NOAA Southeast Fisheries Center, NMFS
75 Virginia Beach Drive
Miami FL
U.S.A. 33149
Tel: 305 361 4284
Fax: 305 361 4219
E-Mail: Brown @ Semi3.Sefsc.NOAA.Gov

Mr. Guillermo García
Presidente
Comité Oceanográfico Nacional
Calle Ira y 60 Miramar
La Habana, Cuba
Tel: (537) 331-442
Fax: (537) 331-442

Dr. Manuel M. Murillo
Director Asuntos Internacionales y
Cooperación
Universidad de Costa Rica
Ciudad Universitaria Rodrigo Facio
San José, COSTA RICA
Tel: 506-207-5080
Fax: 506-225-5822
E. Mail: COAIUCR @ Cariari.cr.ac/MMurillo

Arturo P. Sierra-Beltrán
Unidad de Patología Marina
CIBNOR
Apartado Post 128
CP 23000
La Paz, B.C.S.
MEXICO
Tel: 52 112 5-36-33 Ext. 756
Fax: 52 112 2-05-98
E-Mail: asierra @ cibnor.conacyt.mx

Mr. Roy Watlington
University of The Virgin Islands
P.O. Box 302321
St. Thomas
Virgin Islands
U.S.A. 00803
Tel: (809) 693 1028
Fax: (809) 693 1025
E-Mail: rwatlin @ uvi.edu

Mr. Fred Berry
IOC Assistant Acting Secretary for IOCARIBE/
Secretario Asistente de la COI para IOCARIBE
NOAA, U.S. Department of Commerce
Southeast Fisheries Science Center
75 Virginia Beach Drive
Miami, FL 33149
Tel: (305) 361-4200, 667-4036
Fax: (305) 361-4219

Ms. Silvia Méndez
IOC/MRI Consultant
Av. Brasil 2697
P.O. Box 859
11000 Montevideo
URUGUAY
Tel: 598-2-772023
Fax: 598-2-772140
E-Mail: UHMSM @ UNESCO.ORG

ANNEX VIII

THE IOCARIBE SYMPOSIUM

1. INTRODUCTION

The Caribbean region needs an event which will regularly bring together all the interested parties in marine scientific research and related services. A scientific Symposium, which will promote the exchange of information and transfer of knowledge and keep people up-to-date with activities within their region. It will stimulate debate, identify priority issues for marine research and will raise the profile of marine science and technology as a key instrument for the socio-economic development of the region.

IOCARIBE is in a favorable position, as the marine scientific research coordinator in the region, to organize this regional Symposium. The Symposium should seek to become “the” scientific event in the region, like a regional “Joint Oceanographic Assembly”. The event will be sponsored by IOCARIBE but would also rely on the collaboration of other organizations.

In addition to the presentation of scientific research the Symposium will be a forum for the exhibition of technology, the work of regional and international NGOs, industry, and the role of IOCARIBE and other governmental organizations. The Symposium will also have an educational aspect for young people in the region in the form of a “Youth Festival”, getting them involved through art, culture, environmental awareness, interactive displays and workshops. In this way the Symposium will be an important and attractive public event.

2. PRIMARY OBJECTIVES.

- . To present and review the current state of knowledge of marine sciences in the region
- . To identify the important issues in the region related to the marine environment
- . To improve understanding of marine living and non living resources for their sustainable use and effective management for economic and social development
- . To identify the role of marine scientific research in the economic and social development of the region
- . To bring regional and extra-regional scientists, policy makers, educators, industrialists and other groups into close contact to each other and to stimulate their interaction within and across disciplines
- . To develop the competence of the regional marine science community.

3. SECONDARY OBJECTIVES

- . To measure and assess the output and results of IOCARIBE programmes
- . To provide a venue for the presentation of latest technologies and ideas, and to ensure the dissemination of information to students and the public through seminars and “How To” workshops pitched at the right level
- . To be a venue for the marketing of IOCARIBE as an organization and its “products” to end users.

4. TOPICS

Topics for the presentations would generally come under the general headings of the IOCARIBE programmes and services, although some of these may be grouped together and new topics could be added as required. The Symposium must enable cross-disciplinary participation.

4.1 TOPICS FOR SCIENTIFIC PAPERS

Some of the topics could be, among others relevant to the interests of countries in the region:

Ocean Processes and Climate
Ocean Sciences in Relation to Living Resources
Ocean Sciences in Relation to Non Living Resources
Science and technology for Integrated Coastal Zone Management
Science and technology for sustainable development
Marine sciences policy-making.
Marine Pollution Research and Monitoring

4.2 SERVICES FOR DEMONSTRATION AND EXHIBITIONS

The International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
Oceanographic Observation Systems including GLOSS, IGOSS and IODE
Marine Information Management
Training, Education and Mutual Assistance - Capacity building
Others as required, along with demonstrations and exhibitions from Intergovernmental and Non-Governmental Organizations, institutions and industry, including research vessels and equipment.

5. PRESENTATIONS

Keynote speakers must be without exception a leading figure in the field.
Presentations will be primarily in three forms:

- (i) Scientific papers
- (ii) "How To" workshops - where participants can learn special skills and have hands-on experience
- (iii) Exhibits

6. SCHEDULE

6.1 TIME

The Symposium will require at least one and a half year for preparation. The first Symposium should be held at the end of 1997 or early 1998. The results of the Symposium would be the region's contribution to EXPO Lisbon 1998 and the Year of the Oceans.

The first call for abstracts for scientific papers and workshops will be no later than one year before the Symposium. The call for exhibits will be no later than nine months before the Symposium and the number will depend on the space available.

6.2 FREQUENCY

A regular Symposium would be of great benefit to the region. After the First Symposium, the event should become recurrent every 3 to 4 years, in phase but not coincident with the IOCARIBE Intergovernmental Sessions.

6.3 VENUE

Offers from Member States to host the event are welcome. The Symposium could be held in a different place on each occasion.

6.4 COSTS

The Symposium will aim to be self-sufficient through contributions from sponsors, grants and fees. Participants should meet their own costs, although Member States would be encouraged to support their national experts. IOCARIBE and other sponsoring organizations may seek grants for groups of participants, invited speakers etc. and particularly for students from the region. Exhibitors would reimburse for the space they use.

Some extra costs to the regional Secretariat for temporary additional staff during preparation and running of the event would be met by IOC. This would include the cost of simultaneous interpretation as is the case for other meetings of the Sub-Commission.

7. ORGANIZATION

The Symposium is a project in its own right and thus should be managed as such.. A Steering Group should be appointed with responsibility for the scientific contents of the Symposium. This would ensure that appropriately skilled individuals are recruited, in addition to IOCARIBE Groups of Experts contributions to its scientific and technical contents.

The IOCARIBE Secretariat would coordinate the organization of the Symposium. The Secretariat may sub-contract or delegate as necessary, to increase efficiency and facilitate implementation.

The IOCARIBE Secretariat should use the network of National Focal Points to identify potential participants and to promote the Symposium. NFPs would be in charge of generating interest in their country. The Secretariat would use the Marine Information Management system to identify experts in the region to call for participants and presentations.

8. OUTCOME OF THE SYMPOSIUM

Assessing the state of marine scientific research in the IOCARIBE region will be the mayor output of the Symposium. To identify the key products a post Symposium analysis would be required, carried out by the Groups of Experts and Programme Leaders. The aim would be to guide future IOCARIBE activities.

The results of the Symposium will be an important contribution from IOC to the 1998 International Year of the Oceans. At EXPO Lisbon 98 it will provide material to highlight the greater Caribbean as well as IOC's activities in the region.

Public awareness on marine and coastal zone issues would be another important output of the Symposium. It will have an important educational role in the region, aimed particularly at young people. The IOCARIBE Award will be delivered during the Symposium.

Proceedings of the Symposium will be published providing abstracts and scientific papers, and a CD-ROM series could be initiated.

ANNEX IX

THE IOCARIBE AWARD

IOCARIBE has promoted and lead marine scientific research in the Caribbean region for twenty years. The success of IOCARIBE's activities has been due to the dedicated and conscientious work of individuals throughout the region and from outside the region. Without the commitment of these individuals over the years, IOCARIBE would not have been as successful. Recognition should be made to them who contributed to meet regional problems through marine scientific research, policy-making and capacity building.

This recognition will help to maintain continued enthusiasm to contribute to regional work through IOCARIBE. It would also help to strengthen the relationship between the regional organization and the region's individuals.

Who can propose candidates

Candidates can be proposed by anyone or any organization in the region.

Who makes the selection

An Award Committee should be appointed to select the individuals who would receive the Award. The Committee must consist of individuals with substantial experience of IOCARIBE's work in the region.

The first *ad hoc* Award Committee should consist of three former Chairmen of the IOCARIBE Sub-Commission and/or Association. Subsequent Committees should include a limited number of previous Award winners. This will ensure the impartial judgment of distinguished members of the region.

The selected candidates

The award winners will either have made a significant contribution to solving regional problems through marine scientific research, services and capacity building, or will have made a significant contribution to the fulfillment of IOCARIBE's objectives through their enthusiastic and energetic work in the Sub-Commission.

The selection should take place in preparation for the IOCARIBE Symposium, every 3 to 4 years. The maximum number of award winners will be four. However, the first selection could award a higher number of individuals taking into consideration the elapsed twenty years.

The event

The Award ceremony will be during the IOCARIBE Symposium. It would ensure the prestige of the Award by being presented amongst the active marine related community of the region. It would also support the aim of the IOCARIBE Symposium.

The Award

The Award will be a replica pre-Columbian winged fish, same icon used to commemorate the Twentieth anniversary of IOCARIBE, "*of mythical significance because of its power over two elements: water and air*" (San Agustin culture, 100 BC-500 AC, Gold Museum, Bogota, Colombia).

ANNEX X

**LIST OF ACRONYMS AND ABBREVIATIONS/
LISTA DE ACRONIMOS Y ABREVIATURAS**

ACS	Association of Caribbean States
AGU	American Geophysical Union
ARPEL	Association of State Oil Corporations for Latin America and the Caribbean/Asociación Recíproca Petrolera Estatal Latinoamericana
CCOSNET	Caribbean Community Ocean Sciences Network
CAR/RCU	Caribbean Regional Co-ordinating Unit (UNEP)
CARICOM	Caribbean Community/Comunidad del Caribe
CARIPOL	Marine Pollution Monitoring Programme/Programa de Vigilancia de la Contaminación Marina en el Caribe
CEAS	Caribbean Event Alert Switchboard/Conmutador de Alerta de Eventos en el Caribe
CEHI	Caribbean Environmental Health Institute
CMC	Center for Marine Conservation/Centro para la Conservación Marina
CMI	Caribbean Metereological Institute/Instituto Metereológico del Caribe
CMO	Caribbean Metereological Organization/Organización Metereológica del Caribe
CEPPOL	Joint IOC-UNEP Marine Pollution Assessment Control Programme for the Wider Caribbean/Programa Conjunto COI-PNUMA sobre Evaluación y Control de la Contaminación Marina en la región del Gran Caribe
CRMI	Coastal Resources Management Initiative
CSI	UNESCO's Environment and Development in Coastal Regions and in Small Islands Programme
CSP	UNESCO's Caribbean Sea Project
CZM	Coastal Zone Management
EPA	Environmental Protection Agency (USA)/Agencia de Protección Ambiental de los Estados Unidos
GE/OPC	Group of Experts on Ocean Processes and Climate/Grupo de Expertos sobre Procesos Oceánicos y Clima
FAO	Food and Agriculture Organization of the United Nations/Organización de las Naciones Unidas para la Agricultura y la Alimentación
FANSA	IOC Working Group for Harmful Algal Blooms in Southamerica/ Grupo de Trabajo de la COI sobre Floraciones Algales Nocivas en Sudamerica
GCOS	Global Climate Observing System/Sistema Mundial de Observación del Clima

GEBCO	General Bathymetric Chart of the Oceans/Mapa Batimétrico General de los Océanos
GEF	Global Environmental Facility/Facilidad Mundial para el Medio Ambiente
GIPME	Global Investigation of Pollution in the Marine Environment/Investigación Mundial de la Contaminación en el Medio Marino
GIS	Geographic Information System/Sistema de Información Geográfica
GOES	Geostationary Operational Environmental Satellite/Satélite Geoestacionario Operacional de Estudio del Medio Ambiente
GOOS	Global Ocean Observing System/Sistema Mundial de Observaciones Oceánicas
GLOSS	Global Sea Level Observing System/Sistema Mundial de Observación del Nivel del Mar
HAB	Harmful Algal Blooms/Floraciones de Algas Nocivas
IBCCA	International Bathymetric Chart for the Caribbean Sea and the Gulf of Mexico/ Carta Batimétrica Internacional del Mar Caribe y Golfo de México
ICRI	International Coral Reef Initiative
ICSU	International Council of Scientific Unions/Consejo Internacional de Uniones Científicas
IDNDR	International Decade for Natural Disaster Reduction
IOC	Intergovernmental Oceanographic Commission/Comisión Oceanográfica Intergubernamental
IOCARIBE	IOC Sub-Commission for the Caribbean and Adjacent Regions/Subcomisión de la COI para el Caribe y Regiones Adyacentes
ICZM	Integrated Coastal Zone Management/Gestión Integrada de las Zonas Costeras
IMA	Institute of Marine Affairs
IMO/OMI	International Maritime Organization/Organización Marítima Internacional
ICAM	Integrated Coastal Areas Management/Manejo Integral de Zonas Costeras
IODE	International Oceanographic Data and Information Exchange/Intercambio Internacional de Datos e Información Oceanográficos
IPCC	Intergovernmental Panel on Climate Change/Grupo Intergubernamental de Expertos sobre los Cambios Climáticos
IREP	International Recruitment Programme/Programa Internacional de Reclutamiento
IRF	Island Resources Foundation
LME	Large Marine Ecosystems/Grandes Ecosistemas Marinos

LOS	Law of the Sea/Derecho del Mar
MARPOL	International Convention for the Prevention of Pollution from Ships/Convenio Internacional para prevenir la Contaminación por los Buques
MARPOLMON	Marine Pollution Monitoring System/Sistema de Vigilancia de la Contaminación del Mar
MIM	Marine Information Management/Gestión de la Información Marina
NFP	National Focal Points/Puntos Focales Nacionales
NMFS	National Marine Fisheries Service/Servicio Nacional de Pesquerías Marinas (NOAA)
NOAA	National Oceanic and Atmospheric Administration /Administración Nacional Oceánica y Atmosférica (USA)
NGOs	Non Governmental Organizations/Organizaciones No Gubernamentales
OECD	Organization for Economic Co-operation and Development/Organización de Cooperación y Desarrollo Económico
OAS/OEA	Organization of American States/Organización de Estados Americanos
OPC	Ocean Processes and Climate/Procesos Oceánicos y Clima
OSLR	Ocean Sciences in Relation to Living Resources/Ciencia Oceánica en relación a los Recursos Vivos
OSNLR	Ocean Sciences in Relation to Non-Living Resources/Ciencia Oceánica en relación a los Recursos No Vivos
RECOSCIX	Regional Co-operation in Scientific Information Exchange/Cooperación Regional en el Intercambio de Información Científica
ROSTLAC	Regional Office for Science and Technology for Latin America and the Caribbean/Oficina Regional de Ciencia y Tecnología para América Latina y el Caribe (UNESCO)
SAREC	Swedish Agency for Research Co-operation with Developing Countries/Agencia Gubernamental Sueca de Cooperación Científica con los países en Desarrollo
SBPC	Brazilian Society for the Progress of Science
SIDA/ASDI	Swedish International Development Authority/Autoridad Sueca para el Desarrollo Internacional
SIDS	Small Islands Developing States/Pequeños Estados Insulares en Desarrollo
TEMA	Training, Education and Mutual Assistance/Capacitación, Educación y Asistencia Mutua
TRODERP	Tropical Demersal Recruitment Project/Proyecto de Repoblación de Comunidades Demersales Tropicales
UN	United Nations/Naciones Unidas

UNAM	Universidad Nacional Autónoma de Mexico
UN/DOALOS	United Nations Division for Ocean Affairs and Law of the Sea/División de las Naciones Unidas de Asuntos Oceánicos y del Derecho del Mar
UNCLOS	United Nations Convention on the Law of the Sea/Convención de las Naciones Unidas sobre el Derecho del Mar
UNCED/ CNUMAD	United Nations Conference on Environment and Development/ Conferencia de las Naciones Unidas para el Medio Ambiente y el Desarrollo
UNESCO	United Nations Educational, Scientific and Cultural Organization/Organización de las Naciones Unidas para la Educación la Ciencia y la Cultura
UNDP/PNUD	United Nations Development Programme/Programa de las Naciones Unidas para el Desarrollo
UNEP/PNUMA	United Nations Environment Programme/Programa de las Naciones Unidas para el Medio Ambiente
UWI	University of the West Indies
WATS	Western Atlantic Turtle Symposium
WCISW	Wider Caribbean Initiative for Ship Generated Wastes/Iniciativa del Area del Gran Caribe sobre Desechos Generados por Barcos
WB	World Bank/Banco Mundial
WMO/OMM	World Metereological Organization/Organización Metereológica Mundial