



Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions

Third Session

Panama City, Panama
12–14 March 2008

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IOC/ICG-CARIBE EWS-III/3
Panama, March 2008
English only¹

¹ An Executive Summary of this report is available in French, Spanish and Russian as a separate document (IOC/ICG-CARIBE EWS-III/3s).

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Executive Summary

The Third Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS III) was held in Panama City, Panama, from 12 to 14 March 2008. The session was attended by nearly 70 participants from 13 countries in the Caribbean Region and six regional organizations.

The ICG reviewed the progress made during the intersessional period, noted reports and recommendations from its Working Groups and adopted the CARIBE EWS Implementation Plan (ICG/CARIBE EWS-III/13), as a permanent tool for monitoring the establishment and performance of the CARIBE EWS. ICG received progress reports on training activities as well as on the process of nominations of Tsunami Warning Focal Points (TWFP) and Tsunami National Contacts (TNC): to date 23 out of 29 countries have already made either complete (19) or partial (4) formal nominations.

The ICG agreed to convene a meeting of experts on preparedness, readiness and resilience at the community level for tsunami and other coastal hazards in Panama, in July 2008 with the support of IOC/UNESCO, USAID/OFDA and UN/ISDR in collaboration with other partners. This experts meeting is expected to produce a compilation of best practices.

The ICG endorsed the definition of a core network of seismic stations and **accepted** the definition of a core network of sea level stations for tsunami monitoring, as described and listed by its Working Group 1 on Monitoring and Detection Systems and Warning Guidance.

The ICG agreed that data from the core network of seismic stations will be freely and openly available to the national, regional and tsunami warning centres for the timely production of tsunami and other early warning information.

The ICG further agreed to instruct its Working Group 1 to identify and present the technical, logistical and administrative requirements of a Regional Tsunami Warning Centre, taking into account the discussions at ICG-III and considering the work and documentation provided for other Tsunami Warning Systems on defining these operational requirements. Working Group 1 shall report to ICG Officers no later than 30 June 2008 for subsequent submission by the Secretariat to Member States for their comments in view of establishing a Caribbean Tsunami Warning Centre in the region at least by 2010.

The ICG decided to hold its Fourth session in March 2009 and recommended to accept the offer from France to host it in Martinique. **It further agreed** to target March 2010 for its Fifth Session with Cuba considering hosting it. The ICG extended its deep appreciation to the Government of Panama, the Vice-President and Administrator of the Maritime Authority of Panama (AMP), and the Director for Ports and the personnel of AMP for the excellent host arrangements for its Third Session.

The ICG elected Lorna Iniss (Barbados) as Chairperson and confirmed Israel Matos (USA) and Gustavo Malavé (Venezuela) as Vice-Chairs for 2008–2009. Based on the reports of the working groups and the discussions at the plenary sessions, the **ICG adopted** six Recommendations.

Résumé exécutif

La Troisième session du Groupe intergouvernemental de coordination d'alerte aux tsunamis et aux autres risques côtiers dans la mer des Caraïbes et les régions adjacentes (ICG/CARIBE EWS III) s'est tenue dans la ville de Panama (Panama), du 12 au 14 mars 2008. Cette réunion a rassemblé près de 70 participants venus de 13 pays de la région des Caraïbes ainsi que de six organisations régionales.

Le GIC a passé en revue les progrès accomplis pendant l'intersession, a pris note des rapports et recommandations de ses groupes de travail et a adopté le Plan de réalisation du CARIBE EWS (ICG/CARIBE EWS III/13) en tant qu'outil permanent de suivi de l'établissement et de la performance du CARIBE EWS. Le GIC a reçu des rapports intérimaires sur les activités de formation ainsi que sur le processus de nomination des points focaux pour l'alerte aux tsunamis (TWFP) et des points de contacts nationaux pour les tsunamis (TNC) : à ce jour, 23 pays sur 29 ont déjà procédé à des nominations officielles, soit complètes (19), soit partielles (4).

Le GIC est convenu de convoquer en juillet 2008 à Panama une réunion d'experts sur la préparation, la disponibilité opérationnelle et la résilience au niveau communautaire face aux tsunamis et autres risques côtiers, avec le soutien de la Commission océanographique de l'UNESCO, de l'USAID/OFDA et de la SIPC, en collaboration avec d'autres partenaires. Un recueil des meilleures pratiques devrait être produit à cette occasion.

Le GIC a approuvé la définition d'un réseau de base de stations sismiques et a accepté la définition d'un réseau de base de stations d'observation du niveau de la mer pour assurer la surveillance des tsunamis, conformément aux indications données et aux listes établies par son Groupe de travail 1 sur les systèmes de surveillance et de détection et les conseils en matière d'alerte.

Le GIC est convenu que les données provenant du réseau de base de stations sismiques seraient à la disposition libre et gratuite des centres nationaux et régionaux et des centres d'alerte aux tsunamis en vue de la production en temps voulu d'informations pour les alertes rapides aux tsunamis et autres phénomènes.

Le GIC est en outre convenu de charger son Groupe de travail 1 de déterminer et de présenter les besoins techniques, logistiques et administratifs d'un centre régional d'alerte aux tsunamis, en tenant compte des délibérations de la troisième réunion du GIC et en étudiant les travaux et la documentation relatifs à la définition de ces exigences opérationnelles fournis pour d'autres systèmes d'alerte aux tsunamis. Le Groupe de travail 1 fera rapport au bureau du GIC d'ici juin 2008 au plus tard, afin que la question soit ultérieurement soumise aux États membres par le Secrétariat pour recueillir leurs observations sur la création d'un centre d'alerte aux tsunamis dans les Caraïbes au plus tard d'ici à 2010.

Le GIC a décidé de tenir sa quatrième session en mars 2009 et a recommandé d'accepter l'offre de la France de l'accueillir à la Martinique. Il est également convenu de viser le mois de mars 2010 pour sa cinquième session, Cuba envisageant d'en être l'hôte. Le GIC a adressé ses profonds remerciements au Gouvernement du Panama, au vice-président et à l'administrateur de l'Autorité maritime de Panama (AMP) et au directeur des ports ainsi qu'au personnel de l'AMP pour l'excellente organisation de sa troisième session.

Le GIC a élu Mme Lorna Iniss (Barbades) à sa présidence et a confirmé MM. Israël Matos (États-Unis d'Amérique) et Gustavo Malavé (Venezuela) aux postes de vice-présidents pour 2008-2009. Sur la base des rapports des groupes de travail et des discussions en séance plénière, le GIC a adopté six Recommandations.

Resumen dispositivo

La tercera reunión del Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y otras Amenazas Costeras en el Caribe y Regiones Adyacentes (ICG/CARIBE EWS III) tuvo lugar del 12 al 14 de marzo de 2008 en la ciudad de Panamá (Panamá). Asistieron a la reunión alrededor de 70 participantes de 13 países de la región del Caribe y seis organizaciones regionales.

El ICG examinó los avances realizados durante el periodo entre reuniones, tomó nota de los informes y las recomendaciones de sus Grupos de Trabajo y aprobó el Plan de Implantación del CARIBE EWS (ICG/CARIBE EWS-III/13) en calidad de instrumento permanente para seguir el establecimiento y el funcionamiento del CARIBE EWS. El ICG recibió informes sobre los progresos realizados en las actividades de formación así como sobre el proceso de designación de puntos focales de alerta contra los tsunamis (TWFP) y contactos nacionales sobre tsunamis (TNC): hasta la fecha 23 de 29 países han hecho designaciones oficiales completas (19) o parciales (4).

El ICG acordó convocar en Panamá, en julio de 2008, una reunión de expertos sobre preparación, capacidad operacional y recuperación a nivel comunitario en caso de tsunami y otras amenazas costeras con el apoyo de la COI de la UNESCO, la Oficina de Asistencia para Casos de Desastre en el Extranjero del Organismo de los Estados Unidos para el Desarrollo Internacional (USAID/OFDA) y la Estrategia Internacional de Reducción de Desastres (EIRD) de las Naciones Unidas en colaboración con otros copartícipes. Se espera que de esta reunión de expertos dimane una recopilación de prácticas idóneas.

El ICG hizo suya la definición de una red central de estaciones sísmicas y **aceptó** la definición de una red central de estaciones de mediciones del nivel del mar para la vigilancia de los tsunamis, tal y como se describen y enumeran en el informe de su Grupo de Trabajo 1 sobre sistemas de vigilancia y detección y orientaciones sobre alertas.

El ICG acordó que los datos procedentes de la red central de estaciones sísmicas estarían libre y gratuitamente a disposición de los centros nacionales y regionales de alerta contra los tsunamis para la producción oportuna de información sobre los tsunamis y otras alertas tempranas.

El ICG convino asimismo en encargar a su Grupo de Trabajo 1 que definiera y presentara los requisitos técnicos, logísticos y administrativos de un Centro Regional de Alerta contra los Tsunamis, teniendo en cuenta las deliberaciones de la tercera reunión del ICG y tomando en consideración la labor realizada y la documentación proporcionada por otros sistemas de alerta contra los tsunamis para definir esas necesidades operacionales. El Grupo de Trabajo 1 presentará su informe a la Mesa del ICG antes del 30 de junio de 2008 para que la Secretaría lo someta ulteriormente a los Estados Miembros a fin de recabar sus comentarios con miras a establecer en la región un centro de alerta contra los tsunamis en el Caribe a más tardar en 2010.

El ICG decidió celebrar su cuarta reunión en marzo de 2009 y recomendó que se aceptara la propuesta de Francia de organizarla en Martinica. **Convino asimismo** en fijar marzo de 2010 para su quinta reunión y tomó nota de que Cuba consideraba la posibilidad de acogerla. El ICG manifestó su profundo reconocimiento al Gobierno de Panamá, al Vicepresidente y Administrador de la Autoridad Marítima de Panamá (AMP), al Director de Puertos y al personal de la AMP por la excelente organización logística de esta tercera reunión.

El ICG eligió presidenta a la Sra. Lorna Inniss (Barbados) y confirmó a los Sres. Israel Matos (Estados Unidos de América) y Gustavo Malavé (República Bolivariana de Venezuela)

en sus cargos de Vicepresidentes para 2008-2009. Sobre la base de los informes presentados por los Grupos de Trabajo y las deliberaciones de las sesiones plenarias, el **ICG aprobó** seis Recomendaciones.

Рабочее резюме

Третья сессия Межправительственной координационной группы по Системе предупреждения о цунами и опасности других бедствий в прибрежных районах Карибского бассейна и прилегающих регионов (МКГ/КАРИБ-СРП-III) состоялась в г. Панаме, Панама, 12-14 марта 2008 г. На встречу прибыли почти 70 участников от 13 стран Карибского региона и шести региональных организаций.

МКГ осуществила обзор работы, проделанной в межсессионный период, приняла к сведению доклады и рекомендации своих рабочих групп и приняла План осуществления КАРИБ-СРП (ICG/CARIBE EWS-III/13) в качестве постоянного инструмента мониторинга создания и деятельности КАРИБ-СРП. МКГ получила доклады о ходе проведения мероприятий по подготовке кадров и о процессе номинации координаторов по предупреждению о цунами (КПЦ) и национальных контактов по цунами (НКЦ): на сегодняшний день 23 страны из 29 стран уже представили полные (19) или частичные (4) официальные номинации.

МКГ пришла к договоренности о созыве совещания экспертов по вопросам подготовки, готовности и способности общин противостоять цунами и другим бедствиям в прибрежных районах Панамы. Задачей этого совещания, которое должно пройти в июле 2008 г. при поддержке со стороны МОК/ЮНЕСКО, ЮСЭЙД/OFDA и ООН/МСУОБ в сотрудничестве с другими партнерами, является выявление передовой практики в этой области.

МКГ одобрила определение основной сети сейсмических станций и приняла определение основной сети станций по наблюдению за уровнем моря для мониторинга цунами в соответствии с их характеристикой и перечнем, представленными Рабочей группой 1 по системе мониторинга и обнаружения и руководящим принципам для оповещения.

МКГ согласилась с тем, что данные основной сети сейсмических станций будут бесплатными и открытыми для национальных и региональных центров и центров предупреждения о цунами в интересах своевременной подготовки ранних предупреждений о цунами и других опасностях.

МКГ также согласилась поручить своей Рабочей группе 1 выявить и представить технические, организационные и административные потребности регионального центра предупреждения о цунами с учетом дискуссий, состоявшихся в ходе МКГ-III, а также мероприятий и документов, разработанных для других систем предупреждения о цунами и касающихся определения их оперативных потребностей. Рабочая группа 1 представит должностным лицам МКГ не позднее 30 июня 2008 г. свой доклад, который будет затем препровожден секретариатом государствам-членам для их замечаний на предмет создания Карибского центра предупреждения о цунами в регионе не позднее, чем к 2010 г.

МКГ постановила провести свою четвертую сессию в марте 2009 г. и рекомендовала принять предложение Франции организовать ее в Мартинике. Группа также согласилась наметить проведение своей пятой сессии на март 2010 г., причем правительство Кубы рассмотрит вопрос ее организации у себя в стране. МКГ выразила свою признательность правительству Панамы, вице-президенту и администратору Морского органа Панамы (МОП), а также директору портовой службы и сотрудникам МОП за прекрасную организацию третьей сессии МКГ.

МКГ избрала г-жу Лорну Инисс (Барбадос) своим председателем и подтвердила г-на Израэля Мейтоса (США) и г-на Густаво Малаве (Венесуэла) в должности заместителя председателя на 2008-2009 гг. На основе докладов рабочих групп и дискуссий в рамках пленарных заседаний **МКГ приняла** шесть рекомендаций.

1. WELCOME AND OPENING

- 1 The Third Session of the IOC Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-III) was held at the Centro de Capacitación Ascario Arosemena del Canal de Panama in Panama City, Panama, 12–14 March 2007.
- 2 The Session was opened on Monday 12 March 2008 under the Chairmanship of Dr Paul Saunders, Chairman of the ICG/CARIBE EWS.
- 3 Mr Peter Koltermann, Head of the Tsunami Unit of the Intergovernmental Oceanographic Commission of UNESCO, welcomed all participating delegations, organizations, observers and personalities invited to the Opening Ceremony. He kindly thanked the Government of Panama on behalf of Mr Patricio Bernal, IOC Executive Secretary, who was unable to attend the Session, for hosting the Third Session of the IOC Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-III) and for supporting activities related to disaster mitigation.
- 4 During his intervention Mr Koltermann emphasized the vulnerability of poorer countries to natural hazards and the responsibility of all nations to be prepared for and to protect the most vulnerable communities from natural disasters. He reiterated that the structure of the CARIBE EWS includes the reinforcement of national and local capabilities at the same time as setting the regional network for monitoring and delivering of warnings. He reminded the participants of the importance of having complete nominations for all Member States in the region for their national tsunami warning focal points (TWFP's) for delivery of tsunami information and warnings.
- 5 Dr Paul Saunders (Trinidad & Tobago) welcomed participants to the Third Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning Systems for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-III) on behalf of the ICG Officers, the Vice-Chairpersons and the Chairpersons of the four Working Groups. He also welcomed new permanent observers to the ICG, UN/ISDR, CDERA and the Seismic Research Unit of the University of the West Indies.
- 6 Dr Saunders referred to the Martinique earthquake of November 2007, and reminded the participants how vulnerable this region is to geological events that can trigger tsunamis and other hazards, especially the Small Island Developing States. Therefore, he emphasized the importance of continuing on-going initiatives to keep this issue as an international focus and prepare Member States to face all hazards.
- 7 He took the opportunity to congratulate those Member States who have appointed National Tsunami Warning Focal Points (TWFP) and Tsunami National Contacts (TNC). This action clearly signals the commitment of governments to appropriately assign the necessary attention to this issue. However, there is much more to be done than just naming these contact points. Nevertheless, Governments need to take it to the next level and design and implement national mechanisms and plans that will translate tsunami warnings to actions at the relevant levels. He indicated that Member States must continue to ensure capacity building for preparedness, readiness and resilience of local and central government to enhance and facilitate information dissemination and resource allocation.
- 8 He recalled that the IPCC report of 2007 reminded the world that the realities of Climate Change are here and upon us. Therefore, when dealing with tsunami awareness and planning, it is necessary to recall in the name of this ICG, i.e. Tsunamis and Other Coastal Hazards. So

sea rise and storm surges should not be forgotten as we forge ahead, adopting the all-hazards approach.

- 9 He urged all Member states to integrate the ICG strategies into their national disaster risk reduction programmes. The Comprehensive Disaster Management (CDM) approach by the Caribbean Disaster Emergency Response Agency, CDERA, must be followed. They have been implementing this “all inclusive approach” since 2001.
- 10 Finally he thanked the chairpersons of the Working Groups for their continued commitment and effort and especially thanked the Government of Panama and the planning committee for hosting the ICG Session.
- 11 Mr Fernando Solórzano, Administrator of the Panama Maritime Authority, gave a warm welcome to participating delegations, organizations, and observers of the Session and expressed his gratitude on behalf of the Government of Panama for having the opportunity to host this Session.
- 12 In his intervention, Mr Solórzano, stressed the increasing involvement and support received from governments for national disaster reduction measures and the implementation of a comprehensive multi-hazards systems like the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions.
- 13 He recognized all the efforts made by the IOC and participating governments on the establishment of the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions and stressed that the existence of an early warning system alone does not constitute disaster preparedness and mitigation. It is necessary to increase coordinating efforts between governments, NGOs and private sector agencies.
- 14 He emphasized the importance of the Session and hoped that decisions and recommendations adopted during this ICG would lead to concrete actions for strengthening the Regional Tsunami Warning Centre in the Caribbean. He wished all participants a fruitful meeting, thanked the local organising committee and welcomed participants to Panama City.

2. ORGANIZATION OF THE SESSION

2.1 ADOPTION OF AGENDA

- 15 The Chairman introduced this agenda item and presented the preliminary Agenda for the meeting prepared by the IOC Secretariat taking into account recommendations and guidelines given at the ICG/CARIBE EWS-II (Cumana, Venezuela, 12–14 March 2007), as well as following IOC Rules of Procedures.
- 16 The Agenda of the Session was adopted and is available in Annex I. The List of Participants is available in Annex IV to this report.

2.2 DESIGNATION OF THE RAPPOREUR

- 17 The Group was requested to consider the need to nominate two Rapporteurs for the Session. One for English and one for Spanish.
- 18 The Chairman informed the Session that as per established practices for subsidiary bodies there is not a line by line approval of the report but only for Decisions and Recommendations. The Chairman stated that USA nominated Mr William E. Linzey to act as the English-language Rapporteur for the Session and Venezuela nominated Mr Eric Chichaco from Panama as Spanish-language Rapporteur.

19 **The ICG approved** the proposals and thanked the USA and Panama for providing the Rapporteurs.

2.3 CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION

20 The Chairman introduced the List of Documents, available as Doc. ICG/CARIBE EWS-III/4 Prov (Annex III).

21 The Chairman then introduced the Timetable, available as Doc. ICG/CARIBE EWS-III/1 Prov. Add Rev. 1. He further informed the Plenary that the Timetable was prepared by the Secretariat in coordination with the ICG Officers. The Chairman indicated that nearly all the documents have been made available through the website <http://ioc3.unesco.org/cartws/icg-iii>, both in English and Spanish, with only a limited number of printed copies available for distribution. Printed copies in English and Spanish of the report of the Second Session of ICG/CARIBE EWS-II were distributed to all Delegations.

22 The Chairman reminded the Session that the deadline for nominations for the upcoming election of Chairperson and two Vice-chairpersons of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS) for the term 2008–2009 was 12 March at 18h00. He further recommended using the provided forms.

23 **The ICG approved** the Timetable.

24 **The ICG approved** the establishment of four intrasessional open-ended Committees with the following composition:

- *Elections Committee*. Participating countries: Cuba (Chair), United States, and Venezuela
- *Recommendations Committee*. Participating countries: Barbados (Chair), United States, and Venezuela
- *Budget Committee*. Participating countries: United States (Chair) and Venezuela.
- *Caribbean Implementation Plan Committee*. Participating countries: Bahamas, Barbados, Bermuda, Colombia, Costa Rica, Cuba, France, Nicaragua, Turks and Caicos, United States (Chair), Venezuela, CDERA and SRU.

3. REPORT ON INTERSESSIONAL ACTIVITIES

3.1 IOC EXECUTIVE SECRETARY'S REPORT

25 The Head of the IOC Tsunami Unit, Mr Peter Koltermann, presented the IOC Executive Secretary's Report on behalf of Dr Patricio Bernal, Executive Secretary of the IOC and Assistant Director-General of UNESCO. He reported on the results of the 24th Assembly of IOC and 34th General conference of UNESCO that have given extraordinary support for the tsunami programme through a unique increase in the IOC's budget in view of overall constraints put by Member States on the UNESCO budget. Subsequently each of the four Tsunami Warning Systems (TWSs) of IOC, including the ICG/CARIBE EWS, now has a regular, albeit small, budget.

26 He also reported that in the intersessional period the Secretariat was able to negotiate a few important collaborations. With INMARSAT an agreement was reached to provide, at no cost, free air time for transmitting sea-level data in real-time to the appropriate centres. Although focused on the Indian Ocean, some of this could be used on a test of concept base in the other systems. A number of the required BGAN terminals were also donated by a private company to

UNESCO/IOC, and will be installed when the tide gauges identified by the relevant Working Groups are being serviced. With CTBTO the agreement to make their IMS seismic data available to Tsunami Warning Centres is well practiced now. UNESCO/IOC has here the role to confirm that a national Tsunami Warning Centre has been nominated by a Member State of UNESCO/IOC. CTBTO then will make the necessary technical arrangements. This has important bearing on how the seismic network will be organized in the Caribbean to ensure full and adequate availability of the data to the system. In addition CTBTO has started to add to its programme of regional workshops contributions of IOC to inform about the possibilities, technical requirements and administrative arrangements for tsunami purposes.

27 Mr Koltermann explained that the IOC Secretariat is developing a transition strategy for its tsunami programme. Part of it is the transfer of the regional Secretariats from Paris headquarters into their respective regions. Another is the establishment of Tsunami Information Centres for each system, also in each region. Existing concepts and arrangements, which are available from the Secretariat, although in need of financial support, should be ready when funds become available. The CARIBE EWS is the Member States' Warning System, and it should be run from within the region.

28 France and the United States requested some clarification regarding the use and access to the CTBTO data. It was stressed the need to use seismic data from primary network systems having the possibility to access to secondary data as well. United States supported an action to review concerns regarding access to data region-wide.

3.2 ICG/CARIBE EWS CHAIRMAN'S REPORT

29 Dr Paul Saunders, Chairman of ICG/CARIBE EWS introduced this agenda item reporting activities developed in the intersessional period. Resulting from the ICG/CARIBE EWS-II, there were several recommendations and action areas to be followed up.

30 He referred to the earthquake of Martinique in November 2007. This earthquake with 7.3 Mw in magnitude was one of the stronger events of recent times, and only the fourth magnitude 7 and over event recorded in the Eastern Caribbean. It created much distress throughout the region as it was felt as far north as Puerto Rico and as far south as Guyana and Suriname. There was damage recorded on several islands, and two deaths. In Barbados, it was the first event ever felt for the majority of the population, and created much panic.

31 The event highlighted the need for on-going public education, as many people were fearful of tsunamis following the major event. This highlights the growing need for the proposed Caribbean Tsunami Information Centre as well as improved national public education programmes.

32 Regarding working groups the Chairman informed the Session that specific terms of reference for them were established and approved by the ICG. In December 2007, all four Working Groups met intersessionally in Cartagena, Colombia. The meeting was very successful and the results of each Working Group will be discussed in further detail during this Session.

33 He informed the ICG that the Secretariat invited some of our regional partners to become permanent observers of the ICG. These were the Caribbean Disaster Emergency Response Agency (CDERA), the Seismic Research Unit of the University of the West Indies, and the United Nations International Secretariat for Disaster Reduction (UN/ISDR). These agencies all accepted and were in attendance during the Session.

34 Regarding regional collaboration, the Chairman informed the Session on the involvement of the World Meteorological Organization's Region IV Hurricane Committee on ICG activities. They have also invited participation of the ICG/CARIBE EWS at their annual meeting

to be held in April 2008. He thanked the Hurricane Committee for this effort and confirmed that the ICG will be represented at their meeting.

35 Following with the implementation of Recommendation ICG/CARIBE EWS II.4., a Regional Workshop on the Caribbean Tsunami Warning System for National Tsunami Warning Focal Points was convened in Trinidad from 25 June to 30 June 2007. The six-day training drew 31 participants from across the region. The meeting was sponsored by the Disaster Risk Reduction Centre of the UWI, USAID/OFDA, USGS, UNDP and UNESCO/IOC.

36 The Draft Implementation Plan was produced and is tabled for discussion at this session. The plan speaks to a phased implementation of the warning system.

37 The ICG/CARIBE EWS was represented at the 22nd Session of the ICG/PTWS from 17 to 20 September 2007 in Guayaquil, Ecuador by Mr Gustavo Malavé, ICG/CARIBE EWS Vice-Chairman.

38 A significant highlight of the intersessional period has been the continued interim warning system started in 2005 relying exclusively on seismic data. The interim warning service is provided by NOAA's Richard H. Hagemeyer Pacific Tsunami Warning Center (PTWC) located in Hawaii and hosted by the National Weather Service, United States of America. Countries have received on a regular basis the warnings sent out by the centre.

39 He further summarized expectations for the CARIBE EWS: (i) Real time seismic data sharing, (ii) A decentralized CARIBE EWS; (iii) Funding to be sought for the CTIC to provide continuity to the Tsunami Hazard Warning Systems (THWS) CDERA project after 2009; (iv) Completion of listing of TWFP and TNC, to have all Member States name their focal points; and, (v) Establishment of the Permanent Secretariat.

40 In his closing remarks the Chairman congratulated the Officers and Chairpersons of the Working Groups for their commitment to the process and for the work achieved to date and urged Member States to follow suit and utilize the scientific data to aid the public education programmes, with the purpose of having "communities tsunami ready".

3.3 ICG/CARIBE EWS SECRETARIAT REPORT

41 The Technical Secretary for ICG/CARIBE EWS of the IOC Tsunami Unit, Mr Bernardo Aliaga, reported on matters relevant to the establishment and implementation of the system. He referred to Documents ICG/CARIBE EWS-III/7 ICG/CARIBE EWS Secretariat's report (English/Spanish) and ICG/CARIBE EWS-III/8, ICG/CARIBE EWS-II Recommendations Status Report (English/Spanish).

42 He presented a progress report on training activities as well as on the process of nominations of Tsunami Warning Focal Points (TWFP) and Tsunami National Contacts (TNC). With respect to the status of nominations of Tsunami Warning Focal Points, he reported that to date 23 out of 29 countries have already made either complete (19) or partial (4) formal nominations and referred to Document ICG/CARIBE EWS-III/Inf.1 List of Caribbean National Contacts.

43 Cuba expressed its commitment in working towards the development of the CARIBE EWS by the appointment of a TWFP and TNC and congratulated the IOC for its work.

44 Barbados requested clarification on the present status of the Communications Plan and expressed its concern about having some problems in receiving warnings. The Technical Secretary informed the Session that the Communications Plan was approved at ICG/CARIBE EWS-II and endorsed by the 24th IOC Assembly; regarding warnings the Secretariat clarified that "Tsunami Information Statements" for large earthquakes that may

cause concern but do not have significant tsunamigenic potential, and “Tsunami Watch Messages” for large potentially tsunamigenic earthquakes as well as for confirmed teletsunamis are sent by PTWC, as the interim service provider, to the designated TWFP. PTWC conducts communications tests approximately four times per year to verify that communications links to designated TWFP are functioning properly.

45 Venezuela confirmed that the Tsunami Scientific Symposium will be held in October 2008 in conjunction with the 10th Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE) and, as the host country, it has been working on the logistical aspects for facilitating this event.

46 The United States thanked the ICG Officers for their excellent work and following with the implementation of Recommendation ICG/CARIBE EWS-II.6, invited participants to attend the Sea Level Workshop to be held in Puerto Rico from 23 to 27 June 2008 at the Mayaguez University, Mayaguez.

47 Colombia informed the Session that significant progress has been made for the development and implementation of the warning system for its Pacific and Caribbean coasts. Considering the nature of this special warning system which comprises two coasts, Colombia expressed its willingness to share its experience and lessons learned to support the development of other countries’ systems.

48 **The ICG/CARIBE EWS urged** Member States to design and implement national mechanisms to promote governments’ commitment for integrating ICG strategies into national disaster risk reduction platforms.

3.4 REPORTS FROM UN AND NON-UN AGENCIES

49 UN and non UN agencies were invited to participate in the meeting, some in their Permanent Observer status. The Chairman offered the floor to Mr Richie Robertson, Seismic Research Unit of the University of West Indies (SRU/UWI), Mr Julio Garcia, Latin-American and Caribbean Office of the Secretariat for the International Strategy for Disaster Reduction (ISDR) and Ms Alison Brome, Caribbean Disaster Emergency Response Agency (CDERA).

50 Mr Richie Robertson, Director of SRU/UWI, reported that SRU has been providing contributing territories with accurate and up-to-date information about earthquakes and volcanic activity for more than fifty years. He reminded the Session that SRU provides for monitoring, research outreach and education. He delivered the recommendations of the 2nd Meeting of Regional Seismic Network, 25–29 February 2008, Trinidad, and described SRU’s future plans, which include continued upgrade of their seismograph network to fully digital networks with at least one VSAT real-time station in each of the islands in their Area of Responsibility.

51 He referred as well to the acquisition of new equipment for satellite telemetry and accelerometers and the adoption of GSM stations using standards of USGS.

52 Mr Julio Garcia, Communications Officer of the Latin-American and Caribbean Office of the Secretariat for the International Strategy for Disaster Reduction (ISDR) addressed the session and referred to the Global Platform for Disaster Reductions and its recent meeting in June 2007 in Geneva, Switzerland.

53 He described main ISDR actions that focus on supporting countries in their efforts of: (i) risk reduction; (ii) development of knowledge or identification the risk; (iii) building understanding through outreach campaigns; (iv) reduction of the risk; and (v) preparedness and ability to act. He reminded the Session of the importance of improvement of early warning systems and mentioned the role of the ISDR Platform for Early Warning.

- 54 Ms Alison Brome, Technical Coordinator for the Project "Empowering Coastal Communities to Prepare for and Respond to Tsunamis and Coastal Hazards" (short name: TWS), of the Caribbean Disaster Emergency Response Agency (CDERA) reported that CDERA's adopted Comprehensive Disaster Management (CDM) approach is the management of all hazards, through all phases of the disaster management cycle —prevention and mitigation, preparedness, response, recovery and rehabilitation, by all peoples, public and private sectors, all segments of civil society and the general population in hazard prone areas. CDM involves risk reduction & management and integration of vulnerability assessment into the development planning process. TWS is meant to support the establishment and operation of the Tsunami and Coastal Hazards Warning System for the Caribbean and Adjacent Regions which is currently being coordinated through the Intergovernmental Oceanographic Commission/Intergovernmental Coordination Group (IOC/ICG) and is a two-year project supported by USAID/OFDA.
- 55 A question was raised by Mr Koltermann of the IOC Tsunami Unit regarding possible links of CDERA with the ICG initiatives and mandates. Ms Brome informed that links are wide and varied. The CDERA project as presented could be a pilot project of the ICG process.
- 56 It was suggested that the CDERA project should be used as a pilot project for selected Member States and to focus on preparation and mitigation efforts due to the low frequency of tsunami.
- 57 Barbados reminded the Session of the importance of continuing design of a down stream strategy for tools and models for implementation at the local level including web-based alerts and dissemination of protocols.
- 58 Mr Hugo Hidalgo, Representative of the World Meteorological Organization (WMO) and Mr Mark Guishard, Director of the Bermuda Weather Service and also representing WMO Region IV Hurricanes Committee, reported on main WMO activities regionally. They reported mainly on standards and protocols of the GTS systems used for the Caribbean Region.
- 59 The integration of the system to the EWS and management has a two-way GTS tested for real-time transmissions with a point to point of approximately 2-minute intervals. The GTS also gathers deep water ocean data and includes GTS seismic data and waves measurements from earthquakes.
- 60 The United States formulated a question dealing with the GTS access to seismic data. Mr Hidalgo responded that the problem is to transmit seismic data over narrow band width. Currently, due to band width limitations seismic data is not transmitted through GTS, only seismic products (i.e. magnitude and location of a seismic event). The new system WIS being promoted by the WMO would incorporate this functionality based on the new requirements.

3.5 STATUS OF OTHER ICGS

- 61 The Head of the Tsunami Unit reported to the Plenary on the status of the activities of the other ICGs as well as the Jakarta Tsunami Information Centre (JTIC), and the ITIC/Hawaii. He noted that the Tsunami Unit is entirely funded by extra-budgetary resources. He explained that the Unit provides and has access to a wide variety of expertise in seismology, oceanography, communication and telecommunication, warning centre operations, computing and programming, intergovernmental support and general management. Its offices draw on local and regional knowledge and make it available to all Intergovernmental Coordination Groups and their Working Groups.
- 62 He reminded the Plenary that the IOC of UNESCO was established in 1960 and has successfully coordinated the Pacific Tsunami Warning System (PTWS, previously ITSU) for the Pacific Ocean since 1968. After the Sumatra tsunami on 26 December 2004, the IOC received

the mandate to help all UNESCO Member States of the Indian Ocean rim to establish their own Tsunami Early Warning System (IOTWS).

63 At the same time IOC began coordinating the establishment of similar Early Warning Systems (EWS) for tsunami and other ocean-related hazards in the Caribbean (CARIBE EWS) and the Mediterranean and Northeast Atlantic Ocean and connected Seas (NEAMTWS).

64 Immediate interim coverage for tsunami warnings, advisory systems have been established under the aegis of the IOC of UNESCO, in cooperation with the Pacific Tsunami Warning Center (PTWC) from the USA, and also with the Japan Meteorological Agency (JMA) from Japan for the Indian Ocean. PTWC provides the same service for the Caribbean Sea and adjacent regions.

65 Mr Koltermann emphasized that the Tsunami Warning Systems (TWS's), are owned and operated by Member States, and collect, distribute and interpret continuously all available seismic and sea-level data for the existence and propagation of a tsunami. They issue timely and clear warnings for their area of operation and exchange these data and information with other national and international centres. Complementary and sustained activities in tsunami hazard risk assessment, tsunami warning training, emergency response, and preparedness are part of the comprehensive tsunami mitigation programmes that extend the TWS's as end-to-end systems.

66 Mr Koltermann informed the Session that the next ICG meeting will be the Fifth Session of the ICG/IOTWS-V held in Kuala Lumpur, 8–10 April 2008. The Pacific Tsunami Warning and Mitigation System (PTWS) held its 23rd meeting in Guayaquil, Ecuador, 17–21 September 2007. The next meeting of Working Group on Tsunamis and Other Hazards related to Sea Level Warning and Mitigation Systems (TOWS-WG) will be held in Paris in April of 2008.

67 **The ICG agreed** that the Chair would coordinate participation of ICG/CARIBE EWS at the TOWS meeting in Paris.

68 The United States expressed concern about how the ICGs are applying performance measures in their work and if this is uniform through all ICGs.

69 Mr Koltermann clarified that the inputs from ICG/CARIBE EWS-III will be submitted to the 41st IOC Executive Council for endorsement and a report to Member States is provided at the level of governing bodies. Harmonization of performance measure occurs at this level.

70 The United States proposed implementing biennium strategy performance indicators to be used in the tsunami programme.

3.6 NATIONAL PROGRESS REPORTS

71 The Chairman informed the Session that to date only four countries submitted their national reports in advance to the ICG as follows: Colombia, France, Nicaragua and Venezuela.

72 During this agenda item short presentations were made by countries mainly reflecting actions and status of their national tsunami and other coastal hazards warning systems. Venezuela, Colombia, Panama, Nicaragua, the USA, France and Barbados made presentations to the ICG.

73 The complete presentation of all reports of intersessional activity is at <http://ioc3.unesco.org/cartws/icg-iii>.

3.7 INTERIM ADVISORY SERVICES REPORT (PTWC)

74 This agenda item was presented by Mr Bill Proenza from the NOAA National Weather Service. He introduced a review on main issues and activities of the NOAA Richard H. Hagemeyer Pacific Tsunami Warning Center (PTWC) including Interim Operational Tsunami Warning Services provided to the ICG/CARIBE EWS.

75 Reference was made to Doc. ICG/CARIBE EWS-II/11 Communications Plan for the Interim Tsunami Advisory Information Service to the Caribbean Sea and Adjacent Regions.

76 Referring to the importance of knowing precisely when the warning was received, Mr Proenza informed the Session about programmed drills and communications plans being scheduled to increase awareness. Two communications tests will be programmed per year. The last test was performed in December 2007. Proper announcements will be made in advance regarding planned dates for the test.

77 **The ICG thanked** the interim services and support provided by the Pacific Tsunami Warning Center to the ICG/CARIBE EWS.

4. WORKING GROUP PROGRESS REPORTS

4.1 WORKING GROUP 1 PROGRESS REPORT: MONITORING AND DETECTION SYSTEMS, WARNING GUIDANCE

78 This agenda item was introduced by Ms Christa Von Hillebrandt-Andrade (USA), Chairperson of Working Group 1. She referred to Document ICG/CARIBE EWS-III/9, *Working Group 1: Monitoring and Detection Systems, Warning Guidance*. Working Group 1 submitted the following recommendations to the ICG/CARIBE EWS-III:

- Establish a Regional Tsunami Warning Centre in the Caribbean for the Initial CARIBE EWS. The Working Group considers that the RTWC candidate(s) include, but are not limited to: the US in Puerto Rico, FUNVISIS (Venezuela), Seismic Research Unit (Trinidad & Tobago).
- Minimum requirements for seismic station specifications serving tsunami monitoring purposes need to be defined.
- Earthworm and Seiscomp (seed link), which are currently used in the region, be used for seismic data exchange.
- The ICG define a core network of sea-level stations based on the most likely sources that will generate regional and Caribbean wide tsunamis.
- Sea level data be made available through the GTS, which is available to all IOC countries.
- Existing tools like those developed by the WCATWC and the Sea-Level Stations website (www.sealevelstations.org) to monitor and display the regional sea-level data be used by the Caribbean Tsunami Warning Centre(s) EWS to display the availability of sea-level data.
- Minimum requirements for station specification be based on the needs of the EWS, tsunamis, weather and climate change and should adhere to GLOSS standards as defined in IOC Manuals and Guides, 14 vol. IV, *Manual on Sea-Level Measurements and Interpretation for Sea Level—An update to 2006* and the *Implementation Plan for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas (NEAMTWS), 2007–2011* (IOC Technical Series, 73). In addition to the hardware and software

requirements, it is important to establish the human resources needed to operate the sea-level stations.

- The WG reaffirms the need for a consortium or mechanism that will engage the sea-level network operators and monitor the state of health of the sea-level network in the Caribbean.
- Establishment of a maintenance and training programme for sustainable monitoring network stations. Yearly workshops should be held for sea-level and seismic station operators.
- Member States establish local or National Tsunami Warning Centres.

79 **The ICG endorsed** the definition of a core network of seismic stations and **accepted** the definition of a core network of sea-level stations for tsunami monitoring, as described and listed by its Working Group 1 on Monitoring and Detection Systems and Warning Guidance. Several of WG 1 recommendations were adopted in the ICG/CARIBE EWS Implementation Plan, IOC Technical Series, 78 (see item 6 below).

80 **The ICG instructed** its Working Group 1 to identify and present the technical, logistical and administrative requirements of a Regional Tsunami Warning Centre, taking into account the discussions at ICG-III and considering the work and documentation provided for other Tsunami Warning Systems on defining these operational requirements. Working Group 1 shall report to ICG Officers no later than 30 June 2008 for subsequent submission by the Secretariat to Member States for their comments in view of establishing a Caribbean Tsunami Warning Centre in the region at least by 2010.

81 **The ICG approved** [Recommendation ICG/CARIBE EWS-III.1.](#)

4.2 WORKING GROUP 2 PROGRESS REPORT: HAZARD ASSESSMENT

82 This agenda item was introduced by Mr Aurelio Mercado (USA), Chairman of Working Group 2. He referred to Document ICG/CARIBE EWS-III/10 Working Group 2 Hazard Assessment. Working Group 2 submitted the following recommendations to the ICG/CARIBE EWS-III:

- To develop capabilities for modelling tsunami events through a Workshop on ComMit (NOAA's MOST model) before the end of 2008, establishing an inventory of professional human resources available in the region (e.g. storm surge and/or tsunami modellers), and building an Inventory of existing bathymetry and topography data for modelling.
- To improve and expand seismic and non-seismic tsunami sources modelling taking advantage of the ongoing modelling efforts for seismic and non-seismic sources by Norwegian Geotechnical Institute/University of West Indies, Université des Antilles et de la Guyane, FUNVISIS and the University of Puerto Rico at Mayaguez.
- To expand Natural Hazards Courses to include tsunami physics, by developing an Inventory of natural hazards and existing mechanics/physics/applied mathematics courses in different locations and countries in the region and by developing a Tsunami Physics Course including seismic and non-seismic sources.
- To integrate Tsunami Warning Systems with existing and planned coastal hazard mitigation and preparedness systems, i.e. the WMO Hurricane Committee, WMO/Norwegian Meteorological Institute initiatives for the Caribbean, Association of Caribbean Universities and Research Institutes (UNICA).

83 **The ICG requested** the IOC Executive Secretary to assist in developing capabilities for modelling tsunami events through the hosting of a Workshop on ComMit (NOAA's MOST model) before the end of 2008.

84 **The ICG agreed** to improve and expand tsunami modelling for seismic and non-seismic sources, collaborating with the ongoing modelling efforts by Norwegian Geotechnical Institute/University of the West Indies, University of Antilles Guyane, Venezuelan Foundation for Seismological Research (FUNVISIS), Instituto Nicaraguense de Estudios Territoriales (INETER) and the University of Puerto Rico at Mayaguez. Several of WG 2 recommendations were adopted in the ICG/CARIBE EWS Implementation Plan (see item 6 below).

85 **The ICG approved** [Recommendation ICG/CARIBE EWS-III.2.](#)

4.3 WORKING GROUP 3 PROGRESS REPORT:
WARNING, DISSEMINATION AND COMMUNICATION

86 This agenda item was introduced by Ms Yauli Oyon (Venezuela), Chairperson of Working Group 3. She referred to Document ICG/CARIBE EWS-III/11 Working Group 3: Warning, Dissemination and Communication. Working Group 3 submitted the following recommendations to the ICG/CARIBE EWS-III:

- When a local, regional or basin-wide watch is issued, and the Member State is mentioned in the watch list, and the travel time is less than 40 minutes, then the Tsunami Warning Focal Point should act autonomously and issue an evacuation message such as: "evacuation of coastal area is required.", and inform the designated national authority. If the nation is in the watch list and the tsunami travel time to the nations' coastline is greater than 40 minutes additional options are available: (a) Consult that nation's tsunami experts; (b) Consult nations near the epicentre for tsunami observations; (c) Wait for supplemental bulletins from the regional centre that contain tsunami observations or a statement that no tsunami was observed. If none of the above are available and the travel time has decreased to 40 minutes, then an evacuation should be ordered by the designated national authority.
- The Tsunami Warning Focal Point should issue a simple message to the designated national authority such as "evacuation is required immediately" or "no evacuation is required". After a few minutes of sending this message to the designated national authority another message should be sent by the Tsunami Warning Focal Point to the designated national authority; giving the parameters of the earthquake and the reason for the suggested action of "evacuation required" or "evacuation not required".
- Each country has to define protocols to disseminate the messages between focal point, designated national authority and communities, and govern cooperation between the designated national authority and the media.
- Each country should maintain at least two methods of communication, such as EMWIN and GTS so as to assure receipt of messages from the regional warning centre in a timely fashion.
- The regional centre should be required to issue regular communication tests.
- Public education is required so that populations in low lying coastal areas understand the warning signs indicative of a possible tsunami threat.
- These protocols should be followed also in case of meteorological threats.

87 **The ICG recognized** the urgent need to establish protocols for warning, dissemination and communication for the tsunami and other coastal hazard warning System for the Caribbean

Sea and Adjacent Regions. Several of WG 3 recommendations were adopted in the ICG/CARIBE EWS Implementation Plan (see item 6 below).

88 **The ICG approved** [Recommendation ICG/CARIBE EWS-III.3](#).

4.4 WORKING GROUP 4 PROGRESS REPORT:
PREPAREDNESS, READINESS AND RESILIENCE

89 This agenda item was introduced by Ms Julie Leonard (USA), Chairperson of Working Group 4. She referred to Document ICG/CARIBE EWS-III/12 Working Group IV: Preparedness, Readiness and Resilience. Working Group 4 submitted the following recommendations to the ICG/CARIBE EWS-III:

- Request IOC Secretariat and/or ICG/CARIBE EWS to support/locate funding for Central and South America Member States, as well as Haiti, the Dominican Republic and Cuba, for conducting SOP (Standard Operating Procedures) workshops. Some financial support may also be needed to send representatives from these adjacent areas as observers to CDERA SOP workshops.
- Request the IOC Assembly to consider designating an annual Tsunami Awareness Day/Week by region or country.
- Encourage each Member State to designate a city or community to become a Tsunami Ready model community (example Mayaguez, Puerto Rico).
- Request confirmation from the Government of Barbados as to its position regarding the status of its offer to host CTIC. NOTE: the plenary might wish to decide to deal with this recommendation under agenda item 5.2 while requesting technical background from the Working Group at this point.
- Request confirmation from the Government of Venezuela as to its position regarding the status of its offer to support CTIC functions, in particular to disseminate products and services in Spanish.

90 **The ICG agreed** to convene a meeting of experts on preparedness, readiness and resilience at the community level for tsunami and other coastal hazards in Panama, in July 2008 with the support of IOC/UNESCO, USAID/OFDA and UN/ISDR in collaboration with other partners. Several of WG 4 recommendations were adopted in the ICG/CARIBE EWS Implementation Plan (see item 6 below).

91 **The ICG requested** Member States and Secretariat to support/locate funding to send representatives from Central and South America Member States, as well as Haiti, the Dominican Republic and Cuba, as observers to CDERA Standard Operating Procedures (SOP) workshops.

92 **The ICG approved** [Recommendation ICG/CARIBE EWS-III.4](#).

5. POLICY MATTERS

5.1 ESTABLISHMENT OF A CARIBBEAN TSUNAMI WARNING CENTRE

93 The Chairman introduced this agenda item recalling Recommendations ICG/CARIBE EWS-II.3 and ICG/CARIBE EWS-II.12 by which the ICG decided to establish a Caribbean Tsunami Warning Centre (CTWC) and actively planned to take over the full responsibility for the system with a CTWC established in the region at least by 2010.

94 During the debate it was apparent that the potential hosting institutions and Member States needed clearer guidance from the ICG in terms of technical and administrative requirements for taking a decision. Therefore, and following a proposal from the Chairman and Vice-Chairpersons, **the ICG decided** to postpone a decision on this matter until the 4th Session of the ICG and requested its Working Group 1 to submit a document outlining those requirements, as per [Recommendation ICG/CARIBE EWS-III.1](#).

5.2 ESTABLISHMENT OF A CARIBBEAN TSUNAMI INFORMATION CENTRE (CTIC)

95 This agenda item was introduced by the ICG/CARIBE EWS Technical Secretary. He referred to Document ICG/CARIBE EWS-II/12, *A Caribbean Tsunami Information Centre: Roles and Functions for the Implementation of an Effective Tsunami and Coastal Hazards Warning and Mitigation System*.

96 He reminded the Session that according to Recommendation ICG/CARIBE EWS-II.8 the Group recommended the establishment of a Caribbean Tsunami Information Centre with clear and agreed roles and responsibilities, staffing requirements and commitments by Member States for its sustainability.

97 **The ICG acknowledged with thanks** that Barbados and Venezuela have agreed to consider jointly operating the Caribbean Tsunami Information Centre (CTIC) as a bi-lingual, multi-hazard depository and supplier of information and outreach material on tsunami and other coastal hazards, with Barbados and Venezuela providing English and Spanish language services and capacity-building activities, in their respective languages.

98 **The ICG invited** the governments of Barbados and Venezuela to define jointly the terms of reference of the future Caribbean Tsunami Information Centre and submit it to ICG-IV.

99 **The ICG approved** [Recommendation ICG/CARIBE EWS-III.5](#).

5.3 SECRETARIAT TO ICG/CARIBE EWS

100 The Chairman informed the Session that through Recommendation ICG/CARIBE EWS-II.9, the ICG instructed the IOC Executive Secretary to seek ways and means to secure funds for the establishment of a permanent ICG/CARIBE EWS technical secretariat; It further instructed the IOC Executive Secretary to open a special IOC "CARIBE EWS" Subsidiary Special Account to allow Member States and organizations to provide funds for the establishment of a permanent ICG/CARIBE EWS Technical Secretariat. It also urged Member States and international and regional organizations to provide voluntary contributions to the IOC "CARIBE EWS" Subsidiary Special Account in order to assist the Commission in the effective provision of secretariat services for the assessment, planning and implementation of the regional early warning and mitigation system.

101 The Head of the IOC Tsunami Unit reported on the existing arrangements for the servicing of the ICG/CARIBE EWS and commented on the proposed options for the establishment of a Permanent Secretariat in the region.

102 Venezuela reiterated its offer of providing a Caribbean Tsunami Information Centre. The proposed centre is 40% completed and counts with approved financial resources for its operation.

103 Barbados has been providing interim services hosting the CDERA/USAID project. Permanent establishment of the Caribbean Tsunami Information Centre has been held up due to recent changes occurring within the government.

104 **The ICG urged** Member States to provide funds to the IOC Special Account considering that a minimum of two countries' contribution/investments is required for its establishment.

6. **ADOPTION OF THE CARIBE EWS IMPLEMENTATION PLAN**

105 This agenda item was introduced by the ICG/CARIBE EWS Technical Secretary. He referred to document ICG/CARIBE EWS-III/13, *CARIBE EWS Implementation Plan*. He indicated that this document was prepared with inputs provided by the four Working Groups of the ICG.

106 An intrasessional group composed by delegates from the Bahamas, Barbados, Bermuda, Colombia, Costa Rica, Cuba, France, Nicaragua, Turks and Caicos, United States (Chairmanship), Venezuela, CDERA and SRU, revised the draft text prepared by the Secretariat and proposed changes and improvements to it.

107 **The ICG adopted** the "CARIBE EWS Implementation Plan" as a permanent tool for monitoring the establishment and performance of the CARIBE EWS.

108 **The ICG recommended** updating the CARIBE EWS Implementation Plan in order to better assess the implementation rate and performance measures.

7. **PROGRAMME AND BUDGET FOR 2008–2009**

109 Mr Israel Matos, ICG Vice-Chairman introduced this agenda item. He explained to the Session corresponding budget lines showing no allocations from the IOC (UNESCO) Regular Programme Budget. He noted that in the extrabudgetary line US\$ 400,000 is proposed to support the establishment of the permanent Secretariat.

110 Member States noted the need for funding and maintenance for the CARIBE EWS.

111 **The ICG requested** Member States to indicate to the Secretariat the funding they make available to their own national TWSS and to contribute to the operation of the CARIBE EWS,

112 **The ICG urged** the IOC Secretariat to seek financial resources to implement the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, noting that IOC has allocated US\$ 32,000 to the ICG/CARIBE EWS to support activities of the interim Secretariat.

113 **The ICG approved** [Recommendation ICG/CARIBE EWS-III.6.](#)

8. **NEXT SESSION**

8.1 CONFIRMATION OF DATE AND PLACE OF ICG/CARIBE EWS-IV

114 **The ICG decided** to hold its Fourth Session in March 2009 and recommended accepting the offer from France to host it in Martinique.

115 **The ICG extended its deep appreciation** to the Government of Panama, the Vice President and Administrator of the Maritime Authority of Panama (AMP), and the Director for Ports and the personnel of AMP for the excellent host arrangements for its Third Session.

8.2 TARGET DATE FOR ICG/CARIBE EWS-V

- 116 **The ICG agreed**, as a target date for the Fifth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards System for the Caribbean and Adjacent regions, March 2010 with the offer, subject to Government's approval, from Cuba to host it. Further confirmation on Cuba's offer will be sent in due course.

9. ELECTIONS OF OFFICERS

- 117 The Technical Secretary of the Intrasessional Elections Commission Mr Cesar Toro, also IOCARIBE Secretary, introduced this Agenda Item. He informed attending delegates that elections should follow the established IOC Rules of Procedure and briefly reviewed procedure to be followed.

- 118 The ICG was requested to elect one (1) Chairperson and two (2) Vice-chairpersons to act as Officers of the IOC Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions for the two-year intersessional period (2008–2009).

- 119 **The ICG noted** that there was only one candidate for each of the three positions to be filled. Including the position of Chairperson. Dr Lorna Inniss (Barbados) was **elected** by acclamation as Chairperson. Mr Israel Matos (USA) and Mr Gustavo Malavé (Venezuela) were **re-elected** as Vice-Chairmen of the ICG/CARIBE EWS for 2008–2009.

10. ANY OTHER BUSINESS

- 120 No other business was proposed.

11. ADOPTION OF DECISIONS AND RECOMMENDATIONS

- 121 Based on the reports of the Four Working groups and the discussions at the plenary sessions, the ICG adopted six Recommendations.

- 122 Complete text of adopted recommendations is given in Annex II.

12. CLOSURE

- 123 The Third Session of the IOC Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions was closed at 18:00 hrs at the Centro de Capacitacion Ascanio Arosemena del Canal de Panama in Panama City, Panama, on Friday, 14 March 2008.

- 124 The ICG/CARIBE EWS Chairman extended his deep appreciation to the Government of Panama, the Vice President and Administrator of the Maritime Authority of Panama (AMP), and the Director for Ports and the personnel of AMP for the excellent host arrangements for its Third Session. He also thanked the Delegates and Representatives for their active participation in the session and extended his appreciation to the local organizing committee.

ANNEX I

AGENDA

1. WELCOME AND OPENING

- 1.1. MR PETER KOLTERMANN, HEAD OF THE TSUNAMI COORDINATION UNIT, UNESCO'S INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
- 1.2. MR PAUL SANDERS, CHIEF EXECUTIVE OFFICER, OFFICE OF DISASTER PREPAREDNESS & MANAGEMENT ODPM- TRINIDAD AND TOBAGO: ICG/CARIBE EWS CHAIR
- 1.3. WELCOME ADDRESS BY FERNANDO SOLORZANO, SECOND VICE-PRESIDENT OF THE REPUBLIC AND ADMINISTRATOR OF THE PANAMA MARITIME AUTHORITY

2. ORGANIZATION OF THE SESSION

- 2.1 ADOPTION OF AGENDA
- 2.2 DESIGNATION OF THE RAPPORTEUR
- 2.3 CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION

3. REPORT ON INTERSESSIONAL ACTIVITIES

- 3.1 IOC EXECUTIVE SECRETARY'S REPORT
- 3.2 ICG CHAIRMAN'S REPORT
- 3.3 ICG SECRETARIAT'S REPORT
- 3.4 REPORTS FROM UN AND NON UN AGENCIES
- 3.5 STATUS OF OTHER ICGs
- 3.6 NATIONAL PROGRESS REPORTS
- 3.7 INTERIM ADVISORY SERVICES REPORT (PTWC)

4. WORKING GROUP PROGRESS REPORTS

- 4.1 WORKING GROUP 1 PROGRESS REPORT: MONITORING AND DETECTION SYSTEMS, WARNING GUIDANCE
- 4.2 WORKING GROUP 2 PROGRESS REPORT: HAZARD ASSESSMENT
- 4.3 WORKING GROUP 3 PROGRESS REPORT: WARNING, DISSEMINATION AND COMMUNICATION
- 4.4 WORKING GROUP 4 PROGRESS REPORT: PREPAREDNESS, READINESS AND RESILIENCE

5. POLICY MATTERS

- 5.1 ESTABLISHMENT OF A CARIBBEAN TSUNAMI WARNING CENTER
- 5.2 S ESTABLISHMENT OF A CARIBBEAN TSUNAMI INFORMATION CENTER
- 5.3 SECRETARIAT TO ICG/CARIBE EWS

6. ADOPTION OF THE CARIBE EWS IMPLEMENTATION PLAN

7. PROGRAMME AND BUDGET FOR 2008–2009

8. NEXT SESSION

- 5.1 CONFIRMATION OF DATE AND PLACE OF ICG/CARIBE EWS-IV
- 5.2 TARGET DATE FOR ICG/ CARIBE EWS-V

9. ELECTIONS OF OFFICERS

10. ANY OTHER BUSINESS

11. ADOPTION OF DECISIONS AND RECOMMENDATIONS

12. CLOSURE

ANNEX II

RECOMMENDATIONS

Recommendation ICG/CARIBE EWS III.1

REGIONAL TSUNAMI WARNING CENTRE

The Intergovernmental Coordinating Group for the establishment of Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions,

Having considered the Report of Working Group 1 on Monitoring and Detection Systems and Warning Guidance (ICG/CARIBE EWS-III/9),

Recalling the ICG/CARIBE EWS II Report, Recommendation ICG/CARIBE EWS II.3 and 12, and IOC Resolutions XXIII-13 and XXIV-13,

Noting the guidance provided by the ICG/CARIBE EWS III for the establishment of a Regional Tsunami Warning Centre,

Acknowledging the interim services provided by the Pacific Tsunami Warning Center (PTWC) to the Caribbean and Adjacent Regions,

Endorses the definition of a core network of seismic stations which meets the technical and operational requirements of a Regional Tsunami Warning System as defined in section 3.1.2 'Seismic measurements' of the ICG/CARIBE EWS Implementation Plan (ICG/CARIBE EWS-III/13);

Agrees that data from the core network of seismic stations will be freely and openly available to the national, regional and tsunami warning centres for the timely production of tsunami and other early warning information. The data transmission protocols for these stations need to be compatible with the systems of the Tsunami Warning Centres;

Accepts the definition of a core network of sea level stations as defined in section 3.1.3 'Sea level measurements' of the ICG/CARIBE EWS Implementation Plan;

Supports the IOCARIBE/GOOS-GCOS Partnership for a Multi-Use Sea Level Observation Network for the Caribbean region;

Urges Member States to support the seismic and sea level network operators responsible for the maintenance of the core seismic and sea level networks to guarantee their sustainability;

Instructs Working Group 1 to identify and present the technical, logistical and administrative requirements of a Regional Tsunami Warning Centre, taking into account the discussions at ICG-III and considering the work and documentation provided for other Tsunami Warning Systems on defining these operational requirements;

Further instructs Working Group 1 to report to ICG Officers no later than 30 June 2008 for subsequent submission by the Secretariat to Member States for their comments;

Further agrees that ICG-IV will consider the report of the Working Group 1 in light of the ICG's goal to establish the Regional Tsunami Warning Centre by 2010.

Recommendation ICG/CARIBE EWS III.2

HAZARD ASSESSMENT

The Intergovernmental Coordinating Group for the establishment of Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions,

Having considered the report of Working Group 2 on Hazard Assessment (ICG/CARIBE EWS-III/10),

Recognizing the urgent need to quantify the tsunami hazard in the Caribbean and Adjacent Regions,

Recalling the ICG/CARIBE EWS II Report and IOC Resolution XXIV-13,

Considering the limited professional resources in the Caribbean region to conduct tsunami and other coastal hazards modelling in support of ICG objectives,

Acknowledging the ongoing collaboration with interested international modelling efforts and regional stakeholder institutions,

Calls on the IOC Executive Secretary to assist in developing capabilities for modelling tsunami events through the hosting of a Workshop on ComMit (NOAA's MOST model) before end of 2008;

Welcomes the inventory of Working Group 2 on professional human resources available in the region (e.g. storm surge and/or tsunami modellers);

Recommends the IOC Secretariat to build a regional inventory of existing bathymetry and topography data for modelling,

Decides to improve and expand tsunami modelling for seismic and non-seismic sources, collaborating with the ongoing modelling efforts by Norwegian Geotechnical Institute/University of the West Indies, University of Antilles Guyane, Venezuelan Foundation for Seismological Research (FUNVISIS), Instituto Nicaraguense de Estudios Territoriales (INETER) and the University of Puerto Rico at Mayaguez;

Recommends to integrate the ICG's hazard assessment efforts with those of existing and planned coastal hazard mitigation and preparedness systems, e.g. the WMO Hurricane Committee, WMO/Norwegian Meteorological Institute initiatives for the Caribbean, Association of Caribbean Universities and Research Institutes (UNICA), and other appropriate institutions;

Further Recommends that universities in the region further develop Natural Hazards Courses by including tsunami and other coastal hazards physics, as detailed in Section 3.2 'Hazard Assessment' of the ICG/CARIBE EWS Implementation Plan (ICG/CARIBE EWS-III/13).

Financial Implications: None

Recommendation ICG/CARIBE EWS III.3

WARNING, DISSEMINATION AND COMMUNICATION

The Intergovernmental Coordination Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions,

Having considered the report of Working Group 3 on Warning, Dissemination and Communication (ICG/CARIBE EWS-III/11),

Recalling the Report of ICG/CARIBE EWS II and Recommendation ICG/CARIBE EWS II.3,

Recognizing the urgent need to establish protocols for warning, dissemination and communication for the Tsunami and other Coastal Hazard Warning System for the Caribbean Sea and Adjacent Regions,

Recommends Member States to develop and implement:

1. protocols for warning, dissemination and communication of tsunami warning messages according to Chapter I.1. of the Working Group 3 Report, and
2. public education programmes to disseminate those protocols.

Financial implications: None

Recommendation ICG/CARIBE EWS III.4

PREPAREDNESS, READINESS AND RESILIENCE

The Intergovernmental Coordinating Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions,

Having considered the report of Working Group 4 on Preparedness, Readiness and Resilience (ICG/CARIBE EWS-III/12),

Taking into account the Hyogo Framework of Action-HFA,

Agrees to convene a meeting of experts on preparedness, readiness and resilience at the community level for tsunami and other coastal hazards in Panama, in July 2008 with the support of IOC/UNESCO, USAID/OFDA and UN/ISDR in collaboration with other partners,

Requests Member States and IOC Secretariat to support/locate funding to send representatives from Central and South America Member States, as well as Haiti, the Dominican Republic and Cuba, as observers to CDERA Standard Operating Procedures (SOP) workshops;

Further requests Member States and IOC Secretariat to support/locate funding for Central and South America countries Member States, as well as Haiti, the Dominican Republic and Cuba, for conducting SOP workshops;

Recommends the Officers, working in conjunction with Working Group 4 and International Tsunami Information Center (ITIC), to prepare a proposal for consideration at IOCARIBE-X to designate an annual regional Tsunami and Other Coastal Hazards Awareness Day/Week;

Further recommends each Member State to designate a city or community to implement a community-based tsunami and other coastal hazards early warning system, taking into account the lessons learned in some Member States, such as the U.S. TsunamiReady model, or the Nicaraguan community tsunami warning system in Masachapa;

Decides that during the ICG-IV a session be set aside for presenting regional experiences in community-based tsunami and other coastal hazard early warning systems;

Decides further to establish a Caribbean Tsunami Information web site to be hosted by the IOC and developed in collaboration with the Caribbean Disaster Emergency Response Agency (CDERA).

Financial Implications: None

Recommendation ICG/CARIBE EWS III.5

CARIBBEAN TSUNAMI INFORMATION CENTRE

The Intergovernmental Coordination Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions,

Recalling, the ICG/CARIBE EWS II Report and Recommendation ICG/CARIBE EWS II.8,

Appreciates the initiative of Barbados to host the interim Caribbean Tsunami Information Centre;

Welcomes the offer of Venezuela to co-host a Caribbean Tsunami Information Centre;

Noting that Barbados and Venezuela have agreed to consider jointly operating the Caribbean Tsunami Information Centre (CTIC) as a bilingual, multi-hazard depository and supplier of information and outreach material on tsunami and other coastal hazards, with Barbados and Venezuela providing English and Spanish language services and capacity building activities, in their respective languages,

Invites the governments of Barbados and Venezuela to define jointly the terms of reference of the future Caribbean Tsunami Information Centre and submit it to ICG-IV.

Financial Implications: None

Recommendation ICG/CARIBE EWS III.6

CARIBE EWS BUDGET FOR THE BIENNIUM (2008–2009)

The Intergovernmental Coordination Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions,

Recognizing the establishment of a Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions,

Noting the need for continuous funding for building and maintaining the CARIBE EWS,

Recalling the decisions and results of ICG/CARIBEEWS II Report, Recommendation ICG/CARIBE EWS II.10 and IOC Resolutions XXIII.13 and XXIV.13,

Emphasizing the need for a multi-hazards approach in order to use other available systems and financial sources,

Acknowledging that Member States and other UN bodies and organizations are willing to assist in the establishment of a Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions,

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

Calls on the recommendations of the second Session of the ICG in Cumana, Venezuela, along with its action plan;

Recommends to update the UNESCO/IOC Implementation Plan for the establishment of the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions in order to better assess the implementation rate and performance measures;

Invites Member States to indicate the funding they make available to their own national TWSs and to contribute to the operation of the CARIBE EWS;

Urges the IOC Secretariat to seek financial resources to implement the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, noting that IOC has allocated US\$ 32,000 to ICG/CARIBE EWS to support activities of the interim Secretariat.

Financial Implication: in US\$

ITEM	Regular Budget	Extra Budgetary		
		Not available	Available	Needed Estimate
Capacity Building	000	50,000	15,000	65,000
Comm. & Equipment	000	925,000	625,000	1,550,000
Data collection & Mapping	000		20,000	20,000
Administration	000			000
Outreach Education	000		110,000	110,000
Permanent Secretariat	000	400,000		400,000
TOTAL	000	1,375,000	770,000	2,145,000

ANNEX III

LIST OF DOCUMENTS

Working documents	Title
ICG/CARIBE EWS-III/1 Prov. Rev 1	Provisional Agenda (English only)
ICG/CARIBE EWS-III/1 Prov. Add. Rev. 2	Provisional Timetable (English only)
ICG/CARIBE EWS-III/2 Prov.	Provisional annotated agenda (English/Spanish)
ICG/CARIBE EWS-III/3	Draft Summary Report (to be prepared during the session)
ICG/CARIBE EWS-III/4	Provisional List of Documents (this document) (English only)
ICG/CARIBE EWS-III/5	IOC Executive Secretary's Report (English only)
ICG/CARIBE EWS-III/6	Chairman's Report (English/Spanish)
ICG/CARIBE EWS-III/7	ICG CARIBE EWS Secretariat's report (English/Spanish)
ICG/CARIBE EWS-III/8	ICG CARIBE EWS-II Recommendations Status Report (English/Spanish)
ICG/CARIBE EWS-III/9	Working Group I: Monitoring and Detection Systems, Warning Guidance (English/Spanish)
ICG/CARIBE EWS-III/10	Working Group II Hazard Assessment (English/Spanish)
ICG/CARIBE EWS-III/11	Working Group III: Warning, Dissemination and Communication (English/Spanish)
ICG/CARIBE EWS-III/12	Working Group IV: Preparedness, Readiness and Resilience (English/Spanish)
ICG/CARIBE EWS-III/13	CARIBE EWS Implementation Plan (English only)
ICG/CARIBE EWS-III/14	National Report Format (English only)
Information Documents	Title
--	Information for participants (venue, hotels, airport,bus) (see website)
ICG/CARIBE EWS-III/Inf. 1	List of Caribbean National Contacts updated 18 February 2008 (not posted in the website)
ICG/CARIBE EWS-II/Inf. 1	IOC Assembly Resolution XXIII-13 (English/Spanish)
ICG/CARIBE EWS-II/3	Summary Report of the Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-II) (English and Spanish)
IOC/CL 2250	Letter of Invitation to ICG/CARIBE EWS-III (English/Spanish/French)
ICG/CARIBE EWS-II/11	Communications Plan for the Interim Tsunami Advisory Information Service to the Caribbean Sea and Adjacent Regions (English/Spanish)
ICG/CARIBE EWS-II/12	A Caribbean Tsunami Information Center: Roles and Functions for the Implementation of an Effective Tsunami and Coastal Hazards Warning and Mitigation System (English only)

ANNEX IV

LIST OF PARTICIPANTS

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ANNEX V

LIST OF ACRONYMS

CDERA	Caribbean Disaster Emergency Response Agency
CEPREDENAC	Central American Coordination Center for Disaster Prevention
CTIC	Caribbean Tsunami Information Center
CTWC	Caribbean Tsunami Warning Center
DART	Deep-Ocean Assessment and Reporting of Tsunami
FDSN	Federation of Digital Broad-band Seismograph Networks
FEMA	Federal Emergency Management Agency
GLOSS	Global sea level Observing System
GOOS	Global Ocean Observing System
GPS	Global Positioning System
GTS	Global Telecommunication System
ICG	Intergovernmental Coordination Group
ICG/CARIBE EWS	Intergovernmental Coordination Group for the Caribbean Tsunami Warning System
ICG/IOTWS	Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning & Mitigation System
INETER	Instituto Nicaraguense de Estudios Territoriales
IOC	Intergovernmental Oceanographic Commission (of UNESCO)
IOCARIBE	IOC Sub-Commission for the Caribbean and Adjacent Regions
ISDR	International Strategy for Disaster Reduction
ITIC	International Tsunami Information Centre
JCOMM	Joint WMO/IOC Technical Commission for Oceanography and Marine Meteorology
NGO	Non-Governmental Organizations
NMHS	National Meteorological and Hydrological Services
NOAA	National Oceanographic Atmospheric Administration (USA)
NWS	National Weather Service
PRSN	Puerto Rico Seismic Network
PTWC	Pacific Tsunami Warning System
SOP	Standard Operating Procedures Workshops
SRU	Seismic Research Unit
TCHGE	Tsunami and Coastal Hazards Group of Experts

TNC	Tsunami National Contact
TWS	Tsunami Warning System
TWFP	Tsunami Warning Focal Point
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific & Cultural Organization
UNGA	United Nations General Assembly
USGS	United States Geological Survey
UWI	University of the West Indies
WCDR	World Conference on Disaster Reduction
WMO	World Meteorological Organization

In this Series	Languages
Reports of Governing and Major Subsidiary Bodies , which was initiated at the beginning of 1984, the reports of the following meetings have already been issued:	
1. Eleventh Session of the Working Committee on international Oceanographic Data Exchange	E, F, S, R
2. Seventeenth Session of the Executive Council	E, F, S, R, Ar
3. Fourth Session of the Working Committee for Training, Education and Mutual Assistance	E, F, S, R
4. Fifth Session of the Working Committee for the Global Investigation of Pollution in the Marine Environment	E, F, S, R
5. First Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions	E, F, S
6. Third Session of the <i>ad hoc</i> Task team to Study the Implications, for the Commission, of the UN Convention on the Law of the Sea and the New Ocean Regime	E, F, S, R
7. First Session of the Programme Group on Ocean Processes and Climate	E, F, S, R
8. Eighteenth Session of the Executive Council	E, F, S, R, Ar
9. Thirteenth Session of the Assembly	E, F, S, R, Ar
10. Tenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific	
11. Nineteenth Session of the Executive Council, Paris, 1986	E, F, S, R, Ar
12. Sixth Session of the IOC Scientific Committee for the Global Investigation of Pollution in the Marine Environment	E, F, S
13. Twelfth Session of the IOC Working Committee on International Oceanographic Data Exchange	E, F, S, R
14. Second Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, Havana, 1986	E, F, S
15. First Session of the IOC Regional Committee for the Central Eastern Atlantic, Praia, 1987	E, F, S
16. Second Session of the IOC Programme Group on Ocean Processes and Climate	E, F, S
17. Twentieth Session of the Executive Council, Paris, 1987	E, F, S, R, Ar
18. Fourteenth Session of the Assembly, Paris, 1987	E, F, S, R, Ar
19. Fifth Session of the IOC Regional Committee for the Southern Ocean	E, F, S, R
20. Eleventh Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Beijing, 1987	E, F, S, R
21. Second Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Arusha, 1987	E, F
22. Fourth Session of the IOC Regional Committee for the Western Pacific, Bangkok, 1987	E only
23. Twenty-first Session of the Executive Council, Paris, 1988	E, F, S, R
24. Twenty-second Session of the Executive Council, Paris, 1989	E, F, S, R
25. Fifteenth Session of the Assembly, Paris, 1989	E, F, S, R
26. Third Session of the IOC Committee on Ocean Processes and Climate, Paris, 1989	E, F, S, R
27. Twelfth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Novosibirski, 1989	E, F, S, R
28. Third Session of the Sub-Commission for the Caribbean and Adjacent Regions, Caracas, 1989	E, S
29. First Session of the IOC Sub-Commission for the Western Pacific, Hangzhou, 1990	E only
30. Fifth Session of the IOC Regional Committee for the Western Pacific, Hangzhou, 1990	E only
31. Twenty-third Session of the Executive Council, Paris, 1990	E, F, S, R
32. Thirteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, New York, 1990	E only
33. Seventh Session of the IOC Committee for the Global Investigation of Pollution in the Marine Environment, Paris, 1991	E, F, S, R
34. Fifth Session of the IOC Committee for Training, Education and Mutual Assistance in Marine Sciences, Paris, 1991	E, F, S, R
35. Fourth Session of the IOC Committee on Ocean Processes and Climate, Paris, 1991	E, F, S, R
36. Twenty-fourth Session of the Executive Council, Paris, 1991	E, F, S, R
37. Sixteenth Session of the Assembly, Paris, 1991	E, F, S, R, Ar
38. Thirteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Baja California, 1991	E, F, S, R
39. Second Session of the IOC-WMO Intergovernmental WOCE Panel, Paris, 1992	E only
40. Twenty-fifth Session of the Executive Council, Paris, 1992	E, F, S, R
41. Fifth Session of the IOC Committee on Ocean Processes and Climate, Paris, 1992	E, F, S, R
42. Second Session of the IOC Regional Committee for the Central Eastern Atlantic, Lagos, 1990	E, F
43. First Session of the Joint IOC-UNEP Intergovernmental Panel for the Global Investigation of Pollution in the Marine Environment, Paris, 1992	E, F, S, R
44. First Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1992	E, F, S
45. Fourteenth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Paris, 1992	E, F, S, R
46. Third Session of the IOC Regional Committee for the Co-operative Investigation in the North and Central Western Indian Ocean, Vascoas, 1992	E, F
47. Second Session of the IOC Sub-Commission for the Western Pacific, Bangkok, 1993	E only
48. Fourth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions, Veracruz, 1992	E, S
49. Third Session of the IOC Regional Committee for the Central Eastern Atlantic, Dakar, 1993	E, F
50. First Session of the IOC Committee for the Global Ocean Observing System, Paris, 1993	E, F, S, R
51. Twenty-sixth Session of the Executive Council, Paris, 1993	E, F, S, R
52. Seventeenth Session of the Assembly, Paris, 1993	E, F, S, R
53. Fourteenth Session of the International Co-ordination Group for the Tsunami Warning System in the Pacific, Tokyo, 1993	E, F, S, R
54. Second Session of the IOC-FAO Intergovernmental Panel on Harmful Algal Blooms, Paris, 1993	E, F, S
55. Twenty-seventh Session of the Executive Council, Paris, 1994	E, F, S, R
56. First Planning Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Melbourne, 1994	E, F, S, R
57. Eighth Session of the IOC-UNEP-IMO Committee for the Global Investigation of Pollution in the Marine Environment, San José, Costa Rica, 1994	E, F, S
58. Twenty-eighth Session of the Executive Council, Paris, 1995	E, F, S, R
59. Eighteenth Session of the Assembly, Paris, 1995	E, F, S, R
60. Second Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, 1995	E, F, S, R

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

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