Intergovernmental Oceanographic Commission
Reports of Governing and Major Subsidiary Bodies

Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS)

Eighth Session

Port of Spain, Trinidad and Tobago
29 April–1 May 2013

UNESCO

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IOC/ICG/CARIBE-EWS-VIII/3
Paris, 07 June 2013
English only[1]

[1]The Executive Summary is available in English, French, Spanish and Russian.

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Executive summary

The Eighth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS-VIII) was held in Port of Spain, Trinidad and Tobago, from 29 April to 1 May 2013, hosted by the Ministry of National Security through the Office of Disaster Preparedness and Management (ODPM). The meeting was attended by 56 participants from 18 Caribbean countries and 4 observer organizations (United Nations Development Programme [UNDP], Caribbean Disaster Emergency Management Agency [CDEMA], Puerto Rico Seismic Network [PRSN] and the University of the West Indies Seismic Research Centre [SRC]).

The ICG recognised the effort of Member States and Regional organizations in the installation of new stations, maintenance of existing stations, and advances in open data sharing for the advancement of the national and regional warning and research capabilities for the Caribbean and Adjacent Regions bringing up to 85% implementation of the seismic network and 44% of the sea level network plans.

The ICG recommended the development and/or enhancement of national vertical and horizontal data, as established by geodetic techniques, to improve the accuracy of mapping and modelling products related to tsunami inundation.

The ICG urged the United States of America (USA) to continue to support the phased implementation for the establishment of the Caribbean Tsunami Warning Centre (CTWC) to serve the Caribbean and Adjacent regions. It also **encouraged** the continued efforts and technical advances of Bolivarian Republic of Venezuela for the establishment of an additional Regional Tsunami Warning Centre in support of the Caribbean Tsunami Warning System.

The ICG recognised the progress made in establishing the Caribbean Tsunami Information Centre (CTIC) and **requested** the Secretariat to inform the Member States on the establishment of CTIC and request their voluntary financial and technical contributions to facilitate its functions and operations, including in-kind assistance and secondments.

The ICG approved a Tsunami Public Awareness and Education (PAE) Strategy for the Caribbean and Adjacent Regions.

The ICG decided to conduct exercises CARIBE WAVE on an annual basis leaving each Member State to define its level of participation, and **recommended** that a joint Exercise Caribe Wave/Lantex 14 takes place on 26 March 2014, with two scenarios: a hypothetical earthquake located offshore Portugal, and a submarine landslide within the Gulf of Mexico.

The ICG approved an updated version of the CARIBE-EWS Implementation Plan.

The ICG decided to reconfigure Working Group 3 at the next session and **requested** the Officers to develop new Terms of Reference for WG3 to be presented at the Ninth Session of the ICG/CARIBE-EWS. It **also decided** to rename the WG3 to “Tsunami Services” and **defined** that it will focus on the warning guidance, dissemination and communication of tsunami products.

The ICG agreed that for future sessions of the ICG/CARIBE-EWS, the National Report should include a section about the implementation of the Tsunami Public Awareness and Education Strategy for the Caribbean and Adjacent Regions.

The ICG accepted the offer from US Virgin Islands to host the Ninth Session of ICG/CARIBE-EWS in 2014.

Résumé exécutif

La huitième session du Groupe intergouvernemental de coordination du Système d'alerte aux tsunamis et autres risques côtiers dans la mer des Caraïbes et les régions adjacentes (GIC/CARIBE EWS-VIII), tenue à Port of Spain (Trinité-et-Tobago) du 29 avril au 1er mai 2013, a été accueillie par le Ministère de la sécurité nationale, par l'intermédiaire du Bureau de la préparation aux catastrophes et de leur gestion (Office of Disaster Preparedness and Management – ODPM). Y ont assisté 56 participants de 18 pays de la région et les observateurs de 4 organismes (Programme des Nations Unies pour le développement (PNUD), Agence caraïbe de gestion d'urgence des catastrophes (CDEMA), Puerto Rico Seismic Network (Réseau sismique de Puerto Rico, PRSN), Seismic Research Centre (Centre de recherches sismiques, SRC) de l'Université des Indes occidentales).

Le GIC a reconnu les efforts déployés par les États membres et les organisations régionales pour installer de nouvelles stations, entretenir les stations existantes, et faire avancer le libre partage des données afin de renforcer les capacités nationales et régionales d'alerte et de recherche pour les Caraïbes et les régions adjacentes, portant à 85 % le taux d'exécution du plan concernant le réseau sismique et à 44 % celui du plan relatif au réseau d'observation du niveau de la mer.

Le GIC a recommandé la mise en place ou l'amélioration d'un système de référence vertical et horizontal national établi au moyen de techniques géodésiques, en vue d'accroître la précision des produits de cartographie et de modélisation relatifs aux inondations provoquées par des tsunamis.

Le GIC a prié instamment les États-Unis d'Amérique de continuer d'appuyer la mise en place échelonnée d'un centre d'alerte aux tsunamis dans les Caraïbes à l'intention des Caraïbes et des régions adjacentes. Il a également encouragé les efforts constants et les avancées techniques réalisés par la République bolivarienne du Venezuela en faveur de l'établissement d'un autre centre régional d'alerte aux tsunamis à l'appui du Système d'alerte aux tsunamis dans les Caraïbes.

Le GIC a reconnu les progrès accomplis dans la mise en place du Centre d'information sur les tsunamis dans les Caraïbes (CTIC), et prié le Secrétariat d'informer les États membres de sa création et de leur demander de fournir des contributions financières et techniques volontaires, y compris des aides en nature et des détachements, en vue de faciliter l'exécution des fonctions et activités du CTIC.

Le GIC a approuvé une stratégie d'éducation et de sensibilisation du public aux tsunamis dans les Caraïbes et les régions adjacentes.

Le GIC a décidé de mener des exercices CARIBE WAVE annuels en laissant aux États membres le soin de définir le niveau de leur participation, et **recommandé** qu'un exercice conjoint CARIBE WAVE et LANTEX 14 soit réalisé le 26 mars 2014, en utilisant deux scénarios : un tremblement de terre hypothétique au large du Portugal et un glissement de terrain sous-marin dans le golfe du Mexique.

Le GIC a approuvé une version actualisée du Plan de mise en œuvre du CARIBE-EWS.

Le GIC a décidé de restructurer le Groupe de travail 3 à sa prochaine session et **demandé** au Bureau d'établir, pour ce groupe, un nouveau mandat qui sera présenté à la 9e session du GIC. Il **a également décidé** de rebaptiser le Groupe de travail 3 « Services liés aux tsunamis » et **indiqué** que celui-ci concentrerait ses efforts sur le conseil en matière d'alerte ainsi que la diffusion et la communication de produits relatifs aux tsunamis.

Le GIC a convenu que pour ses futures sessions, le Rapport national inclurait une partie traitant de la mise en œuvre de la stratégie d'éducation et de sensibilisation du public aux tsunamis dans les Caraïbes et les régions adjacentes.

Le GIC a accepté la proposition des Îles Vierges (États-Unis d'Amérique) d'accueillir la 9e session du GIC/CARIBE-EWS en 2014.

Resumen dispositivo

La Octava reunión del Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y otras Amenazas Costeras en el Caribe y Regiones Adyacentes (GIC/CARIBE-EWS-VII) celebrada en Puerto España (Trinidad y Tobago) del 29 de abril al 1º de mayo de 2013, fue acogida por el Ministerio de Seguridad Nacional, por conducto de la Oficina de preparación para casos de desastre y gestión de los mismos (Office of Disaster Preparedness and Management (ODPM)). Asistieron a ella 56 participantes de 18 países caribeños y cuatro organizaciones observadoras (el Programa de las Naciones Unidas para el Desarrollo (PNUD), el Organismo del Caribe para la Gestión de Emergencias en Casos de Desastre (CDEMA), la Red Sísmica de Puerto Rico (PRSN) y el Seismic Research Center (SRC) de la University of the West Indies.

El Grupo Intergubernamental de Coordinación (GIC) reconoció los esfuerzos realizados por los Estados Miembros y las organizaciones regionales en cuanto a la instalación de nuevas estaciones, el mantenimiento de las ya existentes y los adelantos en los intercambios de datos abiertos para fomentar las capacidades nacionales y regionales de alerta e investigación en el Caribe y Regiones Adyacentes, gracias a los cuales la tasa de ejecución del plan de la red sísmica se elevó al 85% y el de la red del nivel del mar, al 44%.

El GIC recomendó que se estableciera o perfeccionara el datum vertical y horizontal de los países por medio de técnicas geodésicas, para mejorar la precisión de los productos de la cartografía y la modelización relativos a las inundaciones provocadas por tsunamis.

El GIC instó a los Estados Unidos de América a que siguiera prestando apoyo a la implantación progresiva de un centro de alerta contra los tsunamis en el Caribe, que prestará servicios al Caribe y regiones adyacentes y alentó asimismo a la República Bolivariana de Venezuela a proseguir sus esfuerzos y avances técnicos para el establecimiento de un Centro Regional de Alerta contra los Tsunamis adicional en apoyo al Centro de Alerta contra los Tsunamis en el Caribe.

El GIC reconoció los progresos realizados en la creación del Centro de Información sobre los Tsunamis en el Caribe (CTIC) y pidió a la Secretaría que informara a los Estados Miembros sobre la misma y recabara sus contribuciones financieras y técnicas, comprendidas asistencia en especie y adscripciones, para facilitar la realización de sus funciones y actividades.

El GIC aprobó una estrategia de sensibilización y enseñanza sobre los tsunamis para el Caribe y regiones adyacentes.

El GIC decidió que el ejercicio CARIBE WAVE se realizara todos los años, dejando que cada Estado Miembro defina su nivel de participación y **recomendó** que un ejercicio conjunto CARIBE WAVE/LANTEX 2014 tenga lugar el 26 de marzo de 2014 con dos opciones: un terremoto hipotético frente a las costas de Portugal y un desprendimiento de tierras submarino en el Golfo de México.

El GIC aprobó una versión actualizada del Plan de implantación del Caribe EWS.

El GIC decidió volver a configurar el Grupo de Trabajo 3 en su próxima reunión y **pidió** a la Mesa que elaborara un nuevo mandato para ese Grupo que se presentaría a la 9ª reunión del GIC. **Decidió** asimismo cambiar el nombre del Grupo de Trabajo 3 para que pasara a llamarse “Servicios relacionados con los tsunamis” y **determinó** que se centraría en la orientación acerca de las alertas y la difusión y comunicación de productos relacionados con los tsunamis.

El GIC acordó que para sus próximas reuniones el informe nacional incluiría una sección sobre la aplicación de la estrategia de sensibilización y enseñanza sobre los tsunamis para el Caribe y regiones adyacentes.

El GIC aceptó el ofrecimiento de las Islas Vírgenes (Estados Unidos de América) de acoger la Novena reunión del GIC/CARIBE-EWS en 2014

Рабочее резюме

Восьмая сессия Межправительственной координационной группы по Системе раннего предупреждения о цунами и других опасных явлениях в прибрежных районах Карибского моря и прилегающих регионов (МКГ/КАРИБ-СРП-VIII) была проведена в Порт-оф-Спейн, Тринидад и Тобаго, с 29 апреля по 1 мая 2013 г. по приглашению Министерства национальной безопасности в лице Бюро по вопросам управления и обеспечения готовности на случай бедствий (БВУОГСБ). В совещании приняли участие 56 представителей 18 стран Карибского бассейна и четырех организаций-наблюдателей (Программы развития Организации Объединенных Наций – ПРООН, Карибское агентство по вопросам управления в случае бедствий – КАВУСБ, Пуэрториканской сейсмической сети – ПСС и Центра сейсмических исследований Вест-Индского университета – ЦСИ).

МКГ **признала** усилия государств-членов и региональных организаций по размещению новых и обслуживанию существующих станций и их достижения в деле совместного использования открытых данных в целях упрочения национального и регионального потенциала в отношении оповещений и исследований в Карибском бассейне и прилегающих регионах, что позволило реализовать планы развертывания сейсмической сети и сети наблюдения за уровнем моря, соответственно, на 85% и 44%.

МКГ **рекомендовала** развивать и/или усиливать работу по определению национальных вертикальных и горизонтальных уровней приведения, устанавливаемых с помощью геодезических методов, в целях повышения точности продуктов картирования и моделирования, касающихся затопления в результате цунами.

МКГ **настоятельно призвала** США продолжать поддерживать поэтапную деятельность по созданию Карибского центра предупреждения о цунами, обслуживающего Карибский бассейн и прилегающие регионы. Она также **приветствовала** продолжающиеся усилия и технические достижения Боливарианской Республики Венесуэлы в деле создания дополнительного регионального центра предупреждения о цунами в поддержку Карибской системы предупреждения о цунами.

МКГ **признала** прогресс, достигнутый в создании Карибского центра информации о цунами (КЦИЦ), и **просила** Секретариат информировать государства-членов об учреждении КЦИЦ и призвать их добровольно оказывать финансовую и техническую поддержку для содействия осуществлению его функций и оперативных мероприятий, включая помощь натурой и прикомандирование сотрудников.

МКГ **одобрила** Стратегию информирования общественности и образования по проблемам цунами для Карибского бассейна и прилегающих регионов.

МКГ **решила** проводить учения «Карибская волна» на ежегодной основе, предоставляя каждому государству-члену возможность определять уровень своего участия, и **рекомендовала** организовать совместные учения «Карибская волна/ЛАНТЕКС 14» 26 марта 2014 г. на основе двух сценариев: гипотетического землетрясения у побережья Португалии и подводного оползня в акватории Мексиканского залива.

МКГ **одобрила** обновленный вариант Плана развития системы КАРИБ-СРП.

МКГ **приняла решение** перестроить РГ 3 на следующей сессии и **просила** должностных лиц разработать новый круг ведения РГ 3, с тем чтобы представить его на девятой сессии МКГ. Она также **постановила** изменить название РГ 3 на «Службы

по цунами» и **определила**, что группа сосредоточит внимание на руководстве по предупреждению о цунами, а также на распространении и коммуникационном обеспечении продуктов по цунами.

МКГ **согласились** с тем, что национальные отчеты для будущих сессий МКГ должны включать раздел о реализации Стратегии информирования общественности и образования по проблемам цунами для Карибского бассейна и прилегающих регионов.

МКГ **приняла** приглашение Виргинских островов (США) провести там девятую сессию МКГ/КАРИБ-СРП в 2014 г

1. WELCOME AND OPENING OF SESSION

1 The Eighth 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-VIII) was held in Port of Spain, Trinidad and Tobago, from 29 April to 1 May 2013, hosted by the Ministry of National Security through the Office of Disaster Preparedness and Management (ODPM).

2 The Session was opened on Monday, 29 April 2013 under the Chairmanship of Ms Christa von Hillebrandt Andrade (USA), Chair of the ICG/CARIBE-EWS.

3 Mr Bernardo Aliaga, Technical Secretary of the CARIBE-EWS and representative of the Intergovernmental Oceanographic Commission (IOC), briefly addressed the meeting on behalf of Ms Wendy Watson-Wright, Assistant Director General of UNESCO and Executive Secretary of IOC. He reminded representatives of Members States the need for continued support to UNESCO and its IOC through the current difficult financial times for the organisation and indicated that thanks to several donors, including ICG/CARIBE-EWS Member States there is significant progress and funding available for specific activities in 2013.

4 Ms Christa Hillebrandt Andrade, Chair of the ICG/CARIBE-EWS, thanked the Government for agreeing to host the ICG meeting in Trinidad and Tobago. She stated that in the Caribbean tens of thousands of lives are at risk and millions of dollars are at stake because of tsunami hazards. Ms Hillebrandt recalled that over the past years IOC of the United Nations Educational, Scientific and Cultural Organization (UNESCO) has successfully provided a framework where policy makers, emergency and disaster managers, educators and researchers and warning and monitoring experts have been able to work together to advance tsunami readiness in the region. This is also because from the onset Member States realized the actions could not be addressed or accomplished with just seismologists, marine scientists, meteorologist, emergency, disaster managers or policy makers. Eight years after its establishment, there are many accomplishments for the ICG/CARIBE-EWS, of which the following highlights:

- 112 seismic stations (85% of those the ICG/CARIBE-EWS planned) contribute to the system and permit the effective location of earthquakes.
- 43 coastal and oceanic stations (39% of those the ICG/CARIBE-EWS planned) monitor sea level and permit the detection and forecasting of tsunamis.
- The Pacific Tsunami Warning Center (PTWC) and the West Coast and Alaska Tsunami Warning Center (WCATWC) provide tsunami alerts
- 30 of the 32 Member States have designated and engaged Tsunami Warning Focal Points (TWFPs) and Tsunami National Contacts (TNCs).
- To date several countries have conducted tsunami hazard assessments and evacuation maps.
- Communication tests are conducted monthly.
- Two Caribbean tsunami warning exercises have been conducted in 2011 and 2013 (IOC/2010/TS/93 Rev, and IOC/2012/TS/101 VOL.1, respectively).
- The most recent Caribbean Tsunami Warning Exercise (*Exercise Caribe Wave/Lantex 13*), conducted on 20 March 2013, had a participation rate of 94% of the Member States and Territories, with broad media coverage and almost 50,000 people participating at different levels.

- Almost all TWFPs have activation and response processes and more than half of the members have tsunami emergency response plans.
- There are many successful examples of local readiness programs, including *TsunamiReady*™ which has recognized 29 USA and non USA Caribbean communities.
- A Caribbean Tsunami Information Centre (CTIC), hosted by the Government of Barbados, has been established.

5 In the views of the Chair of the ICG/CARIBE-EWS, some of the issues that will require increased political commitment, funding and technical expertise in the near future are the consolidation and further strengthening of the geophysical and oceanographic monitoring network; the improvement of tsunami services in the region with enhanced and harmonized tsunami alert products that will provide better decision support services; further promotion of tsunami hazard assessment and mapping considering also non seismic sources like landslides and volcanic eruptions; and further quantification of the tsunami risk and identification of appropriate mitigation strategies within the Disaster Risk Reduction (DRR) framework. She also indicated the need for sustainable management and operations of the CTIC in support of and with the support of the Member States and other partners.

6 Ms Hillebrandt expressed that these are monumental tasks, especially in the light of the current very challenging fiscal situations, but in memory of the tens of thousands of lives that were lost, and livelihoods that were disrupted in the countries of the Indian Ocean, Japan, Chile and Haiti in recent years, and knowing that it is not a matter of if but when a major tsunami strikes the Caribbean shores, the ICG/CARIBE-EWS must continue to work together as a community to forge a tsunami safer Caribbean.

7 Dr Stephen Ramroop, Chief Executive Officer (CEO) of the Office of Disaster Preparedness and Management, Trinidad and Tobago, welcomed all the participants by providing a special address with emphasis on the disaster resilience concept and the components of the Hyogo Framework for Action (HFA) as an effective guide for the work of disaster risk reduction practitioners. He warmly welcomed representatives of Member States to Port of Spain and on behalf of the Government of Trinidad and Tobago declared the session open.

2. ORGANIZATION OF THE SESSION

2.1 ADOPTION OF THE AGENDA

8 The Chairperson informed the Plenary that the agenda was prepared by the Secretariat and the Officers taking into account the Recommendations and instructions given at the Seventh Session of ICG/CARIBE-EWS (IOC/ICG/CARIBE EWS-VII) held in Willemstad, Curacao, from 2 to 4 April 2012; as well as the relevant parts of Rules of Procedures of the IOC (IOC/INF/1166). She indicated that two reporting items to be provided by the Continuously Operating Caribbean Observational Network (COCONet) and the Coordination Centre for the Prevention of Natural Disasters in Central America (CEPREDENAC) are no longer scheduled, and that instead there will be a presentation given by the Caribbean Institute for Meteorology and Hydrology (CIMH).

9 The agenda **was approved** with the changes above indicated.

10 The agenda of the meeting is available in ANNEX I. The list of participants is available in ANNEX III to this report.

2.2 DESIGNATION OF THE RAPPORTEUR(S)

11 The Chairperson requested Delegates to propose candidates for Rapporteur of the meeting. As customary at the ICG/CARIBE-EWS meetings, it was requested to choose one rapporteur for each of the three languages of the meeting (English, French and Spanish).

12 The Chair informed the Session that, as per established practices for subsidiary bodies, only the Decisions and Recommendations receive line by line approval of the report.

13 United States, France and Dominican Republic were proposed as rapporteurs.

14 The **ICG approved** the proposals and thanked the United States, France and Dominican Republic for providing rapporteurs.

2.3 CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION

15 The Chairperson noted that interpretation was available in English, French and Spanish. She informed the Plenary that, in order to facilitate the proceedings of the meeting, a timetable had been prepared by the Secretariat in coordination with the Officers and the local organizing committee. At this point, she offered the floor to the local host to provide logistic details about the welcome dinner, lunches, and the logistics for working groups, plenary and secretariat. Mr Eric Mackie, on behalf of the host organizing committee, provided detailed logistic information.

16 Ms Hillebrandt indicated that, in order to enable the Working Group on the Implementation Plan to work on Tuesday morning with input from the Plenary, agenda item 6.5 on Updates to the CARIBE-EWS Implementation Plan was re-scheduled to Monday afternoon, switched with agenda item 3.7 on National Reports. This was seconded by the United States of America (USA).

17 The timetable **was approved** with the above indicated change.

18 In order to smooth the work of the session and facilitate the generation of recommendations and agreements the Plenary **decided** to set up the following intra-sessional Working Groups to address some of the major issues discussed at the meeting:

- Implementation Plan: Chair Victor Cano (Venezuela)
- Public Awareness and Education (PAE) Strategy and CTIC: Chair Dawn French (Saint Lucia)
- Enhanced PTWC Products and Tsunami Exercises: Chair Philippe Sarron (France)

3. REPORT ON INTERSESSIONAL ACTIVITIES

3.1 REPORT BY THE EXECUTIVE SECRETARY OF THE INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION (IOC)

19 The Technical Secretary for ICG/CARIBE EWS, Mr Bernardo Aliaga, presented the report of the Executive Secretary of IOC, indicating that since the last CARIBE-EWS meeting there has been steady progress for tsunami warning and mitigation systems in

all basins, with the Exercise NEAMWAVE 12 (IOC/2012/TS/103 VOL.1), the first Tsunami Warning and Communication Exercise for the North-eastern Atlantic, the Mediterranean, and Connected Seas Region, which took place on 27 and 28 November 2012, and the three candidate tsunami watch providers (CTWPs) in Mediterranean announced in August 2012. Also three tsunami service providers in the Indian Ocean have taken on full operations responsibility. The Japan Meteorological Agency (JMA) and the Pacific Tsunami Warning Center (PTWC) have stopped their provision of tsunami alerts for the Indian Ocean on 31 March 2013. The Intergovernmental Oceanographic Commission indicated its gratitude to JMA and the PTWC of the National Oceanic and Atmospheric Administration (NOAA) of USA for having provided this service for almost seven years. In the Pacific Ocean and in partnership with the International Tsunami Information Centre (ITIC) and PTWC, IOC secured funding from the United States Agency for International Development (USAID) to deliver dedicated one week training on Standard Operating Procedure (SOP) and Enhanced PTWC products in Central and South America and are working to deliver also in South China Sea and South West Pacific.

20 Mr Aliaga indicated that through extrabudgetary projects and partnerships, IOC has also maintained activities related toward awareness and preparedness including: (i) the Tsunami Information Centre for the North-Eastern Atlantic, the Mediterranean and Connected Seas (NEAMTIC) has continued to produce awareness raising products; (ii) ongoing reinforcement of sea level network in the Caribbean; (iii) Technical Assistance through the Oman Multi-Hazard Early Warning System project; (iv) two projects were funded by the Economic and Social Commission for Asia and the Pacific (ESCAP) in the Indian Ocean Tsunami Warning and Mitigation System (IOTWS) and two more by the European Commission's Humanitarian Aid Office (ECHO) in Haiti and Dominican Republic.

21 With respect to the budget situation, he indicated that the overall IOC Regular Programme (RP) budget started out at 24% of what was approved in the 2012–2013 budget. UNESCO's Director General has approved contributions from the Emergency Fund which has restored RP budget of IOC to 58% of the planned budget. With this environment, IOC has gotten staff losses (10 or 13 posts).

22 While the budget 2014–1015 is being prepared, it is unlikely that UNESCO can rely on the Emergency Fund to the same extent as in 2012, as it is not sustainable to count on continued contributions to the Emergency Fund. UNESCO will just manage to break even at the end of biennium and will have exhausted its reserves. Therefore, it will have to plan for a reduced Regular Programme budget for 2014–2017.

23 On the positive side and with the support of the Director General of UNESCO, Mr Ardito Kodijat was hired into a UNESCO Regular Programme post out of the UNESCO Jakarta Office to lead the Indian Ocean Tsunami Information Centre (IOTIC).

24 With the above elements in mind, Mr Aliaga indicated that IOC is still behind the intergovernmental arrangements for tsunami warning and mitigation in all basins, but it cannot continue to support the coordination sufficiently without support from Member States. There is a very substantial governance structure for the tsunami work. It has worked well so far but it is not sustainable without more direct Member State support for the coordination work. Steady support is particularly important for sustained systems like Global Ocean Observing System (GOOS) and Tsunami Warning Systems (TWS). They depend on long term coordination efforts that can glue the national components together. Support for such long term coordination is particularly difficult to argue for in project proposals of 2–3 year durability. Ultimately continued lack of such support is of course also a political signal that we have to consider and as a consequence it may be necessary to adjust the coordination arrangements.

25 Mr Aliaga indicated to the Plenary that Member States are all kindly asked to reflect over these matters during the meeting.

26 The ICG **noted** the report of the Executive Secretary.

3.2 REPORT BY THE CHAIRPERSON

27 The Chairperson of ICG/CARIBE-EWS, Ms Christa Hillebrandt Andrade, presented her report and expressed that she represented the Intergovernmental Coordination Group (ICG) at global and regional levels, and promoted the activities of the ICG, as well as the progress of the system, through several activities during the intersessional period.

28 She referred to the 'Third Caribbean Training Course for Operators of Sea Level Stations' held in Merida, Mexico, from 4 to 9 June 2012, organized within the framework of the Project 'Strengthening sea-level observation network and coordination activities in the Caribbean', jointly with the US National Oceanic and Atmospheric Administration (NOAA) and the National Autonomous University of Mexico (UNAM) as host institution. Thirty-seven (37) sea level station professionals participated in the training.

29 Ms Hillebrandt reported that Officers and several members of Working Groups (WGs) of the ICG/CARIBE-EWS met in Guadeloupe, France, on 21 and 22 January 2013, hosted by Mr Narcisse Zahibo, Chair of WG2 on Hazard Assessment, enabling the participants to also attend sessions of the Conference 'Caribbean Waves 2'. This meeting of Officers and members of Working Groups, held from 22 to 25 January 2013, was very useful to prepare for the ICG session.

30 She also reported that the Executive Council of the Intergovernmental Oceanographic Commission did not approve the suggestion of Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS-VII) to extend its Area of Responsibility (AoR). Argentina expressed that the consultation on this issue should be only among the countries involved and for which there is a Regional Alliance for the Upper Southwest and the Tropical Atlantic (OCEATLAN) between Argentina, Brazil and Uruguay.

31 The Chairperson reported that, on behalf of the ICG/CARIBE-EWS, she attended the Ninth 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-IX) held in Southampton, United Kingdom, from 10 to 13 September 2012. At this meeting she gave an update on the CARIBE-EWS focusing on the shared area of observational responsibility, the status of the CARIBE-EWS warning system, operational capabilities and tsunami exercises. She indicated that Member States of NEAMTWS are particularly interested in the coordination of a joint tsunami exercise.

32 Ms Hillebrandt reported also on her attendance to activities: in Dominican Republic, in Barbados with the Caribbean Institute for Meteorology and Hydrology (CIMH); the American Geophysical Union (AGU) annual meeting; the Sixth Meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG-VI) that was held on 20 and 21 February 2013 in Paris, France; and, the 'Tsunami Public Awareness and Educational (PAE) stakeholders consultation meeting' held on 19 and 20 November 2012, in Bayahibe, Dominican Republic.

33 She thanked ICG members for their support and help, and the Government of the United States of America and in particular the Tsunami Program of the US National Weather Service (NWS).

34 The ICG **noted** the report of the Chairperson.

3.3 REPORT BY THE ICG/CARIBE-EWS SECRETARIAT

35 The Technical Secretary for ICG/CARIBE-EWS, Mr Bernardo Aliaga, presented the report of the Secretariat. He focused on the status of nominations of Tsunami National Contacts (TNCs) and Tsunami Warning Focal Points (TWFPs). Mr Aliaga recalled that the list of TNCs and TWFPs is officially available at the IOC Tsunami website (password protected section) and is regularly updated. Mr Aliaga indicated that changes on contact details can be sent directly to the Secretariat of the ICG/CARIBE-EWS provided the organizations in charge remain the same. If new organisations have been nominated as TNCs or TWFPs, it should be communicated through diplomatic channels, either from the Ministry of Foreign Affairs, the National Commission for UNESCO or Permanent Delegations at UNESCO. A copy of the full list of Tsunami Warning Focal Points (TWFPs) and Tsunami National Contacts (TNCs) was distributed to the delegates and changes on contact details were registered.

36 The ICG **noted** the report of the ICG/CARIBE-EWS Secretariat.

3.4 REPORT OF THE CARIBBEAN TSUNAMI INFORMATION CENTRE (CTIC)

37 The Chairperson introduced this item by recalling Member States that the Seventh Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (IOC/ICG/CARIBE-EWS-VII) held in Willemstad, Curacao, from 2 to 4 April 2012, approved the CTIC Business Plan through Recommendation ICG/CARIBE EWS-VII.2, noting the 2012 operational budget of USD 312,500 to be provided by the Enhancing Resilience to Reduce Vulnerability in the Caribbean (ERC) Project. It also approved the Terms of Reference (ToRs) for the CTIC Board (with amendments as in Annex III of the session report of IOC/ICG/CARIBE EWS-VII/3), and strongly urged Member States to make pledges and provide direct and in-kind contributions to the execution of the CTIC Work Plan activities through memoranda of understanding, voluntary contributions to the IOC Special Account, and support for specific activities.

38 The Chair offered the floor to the representatives of Barbados and the United Nations Development Programme (UNPD) to report on the actual status of establishing CTIC, hiring the CTIC Director and funding available for activities of CTIC in 2013.

39 Barbados indicated that there has been significant progress on the establishment of CTIC from the last meeting, including through the signature of a Memorandum of Understanding (MoU) between UNESCO/IOC and the Government of Barbados, the transfer of funds from UNESCO to the Department of Emergency Management (DEM) of Barbados for the implementation of CTIC activities, and the allocation of office space for the interim Director and hopefully secondments from Member States to CTIC. She reminded the need for secondments and in-kind contributions from Member States and indicated that partnership agreements will be signed with organisations contributing to the tasks of CTIC. Barbados also reported that an advertisement has been published towards hiring a Director (a.i.) with deadline on 10 May 2013. One of the main tasks of this Director will be to secure revenue for CTIC activities.

40 UNDP expressed that the work of CTIC is funded through the ERC Project with Enhancing Resilience to Reduce Vulnerability in the Caribbean. USD $350,000 including for adaptation and tailoring of public awareness and educational materials, and that support has been provided towards the drafting of a Tsunami Public Awareness and Education Strategy, including through partial funding for the 'Tsunami Public Awareness

and Educational (PAE) stakeholders consultation meeting' held in Bayahibe, Dominican Republic, on 19 and 20 November 2012. UNDP indicated that considering the possible financial shortages for 2014–2017 in UNESCO, it would be important to add or seek, on top of the in-kind contributions, financial contributions to keep and sustain CTIC beyond 2013.

41 France, through the General Council of Martinique, indicated that is prepared to contribute to CTIC through development of public awareness and teaching materials. Towards this, they indicated that the General Council of Martinique is prepared to sign a Memorandum of Understanding with the Government of Barbados for CTIC. Barbados indicated that they are prepared to move ahead with a MoU and define more precisely the contributions of Martinique once the CTIC Director is hired.

42 The Puerto Rico Seismic Network (PRSN) indicated that, also in consultation with the Delegation of the United States of America they confirm that they are available to contribute with the work of CTIC. Venezuela indicated that they are also available to help with the Spanish version of public awareness and educational materials; also through the Working Group 4, that is as well linked to CTIC. The Seismic Research Centre (SRC) of the University of West Indies confirmed their support in the production of awareness materials for tsunami preparedness throughout the region. The Caribbean Tsunami Warning Program (CTWP) of USA also confirmed its availability to support CTIC.

43 United Kingdom indicated that full synergies from the existence of the International Tsunami Information Centre (ITIC) and other Tsunami Information Centres (TICs) need yet to be further explored.

44 Haiti indicated that CTIC is a very important initiative and requested an official note be issued to Member States seeking direct contributions to CTIC. Saint Lucia seconded this request.

45 An intrasessional Working Group met to review the proposed 2013–2014 CTIC training programme for strengthening tsunami warning. The group recommended that Standard Operating Procedures (SOPs) training be organised by geographic zone (North, Central, South Caribbean) for a maximum of 30 trainees at each training session, with invitations channelled through TNCs and TWFPs and with interpretation available.

46 The group indicated that June to November is restrictive for disaster managers to attend training sessions in the Caribbean with possibly some flexibility in June/July and November, noting that for some countries (e.g. Aruba, Bonaire, Curaçao, Venezuela, and French Departments) is not feasible in July. The group also suggested considering a session at the annual Caribbean Comprehensive Disaster Management (CDM) conference.

47 The ICG **noted** the interest of Barbados, British Virgin Islands, France, SRC, and Venezuela to host Standard Operating Procedures (SOPs) trainings organized by CTIC but was open to other candidates.

48 The ICG **adopted** Recommendation ICG/CARIBE-EWS-VIII.1

3.5 REPORTS FROM UNITED NATIONS AND NON UNITED NATIONS ORGANISATIONS

49 The United Nations Development Programme (UNDP) in Barbados and the Organization of Eastern Caribbean States (OECS) provided an overview of the Disaster Risk Reduction (DRR) projects currently operated by UNDP, specifically the Regional

Risk Reduction Initiative (R3I), Enhancing Resilience to Reduce Vulnerability in the Caribbean (ERC) project, and the Caribbean Risk Management Initiative (CRMI), Phase II; noting that UNDP remains committed to finding ways to reduce risk. It was highlighted that the organization follows a long term strategy seeking to reduce risk and advised that UNDP in Barbados and the OECS serves 10 Eastern Caribbean countries which are particularly vulnerable to a range of natural hazards. Relating specifically to the ERC project, it was noted that the project has previously supported countries to attend the ICG meeting and ways to sustain this element is important especially given the project is expected to come to an end in 2013. It was highlighted that tsunami storm surge modelling work was undertaken under the R3I project in British Virgin Islands (BVI) in an effort to assist BVI better manage its risk to coastal hazards. Additionally, two UNDP projects are on the horizon, one looking at building better alerting protocols in 3 communities to hazards including tsunami and other coastal hazards. This project is expected to start in the near future. Another project, funded by the Global Facility for Disaster Reduction and Recovery (GFDRR) looks at early warning and management of public sector risk management

50 The Puerto Rico Seismic Network (PRSN) inquired about the availability of tsunami modelling in the framework of the UNDP Regional Risk Reduction Initiative (R3I) project. UNDP indicated that there are model results for storm surges and tsunamis for some countries. Ms Hillebrandt, Chairperson, asked if there is new funding for CARIBE-EWS in the current proposals handled by UNDP. The United Nations Development Programme (UNDP) responded that there is European Commission Humanitarian Aid Department's Disaster Preparedness Programme (DIPECHO) funding for strengthening/developing Standard Operating Procedures (SOPs) of Saint Vincent and the Grenadines, Dominica and Grenada. Also, that a GFDRR project on capacity development for DRR may provide some support linked to the ICG/CARIBE-EWS mandate.

51 The Caribbean Disaster Emergency Management Agency (CDEMA) reported that, as part of its Comprehensive Disaster Management Strategy, it has implemented major initiatives aimed at reducing the vulnerability of its Participating States (PS) to hazards, including empowering coastal communities to prepare for and respond to tsunamis and other coastal hazards. These initiatives have been implemented with the support of European Development Fund (EDF), the United States Agency for International Development (USAID), the Australian Agency for International Development (AusAID), the Government of Austria (BKA) and other partners. Products which were developed as part of these initiatives included, inter alia, teacher and student workbook, public awareness strategy, pamphlet, media kit and model protocols, and SOP. The Agency has in the past year given input into the Regional Tsunami PAE strategy, participated on the Review committee for Caribbean Tsunami Information Centre (CTIC) products and continuously supported Participating States as requested in the adaptation of products and to conduct exercises. CDEMA remains committed to contributing to the work of the ICG/CARIBE-EWS and will provide necessary interim representation until an officer is identified to represent the agency.

52 The Caribbean Institute for Meteorology and Hydrology (CIMH) reported that it assists in improving and developing the meteorological and hydrological services as well as providing the awareness of the benefits of meteorology and hydrology for the economic well-being of the CIMH Member States. This is achieved through training, research, investigations, and the provision of related specialised services and advice. CIMH is involved in the areas of work of the Caribbean through support to the Monitoring atmospheric composition & climate (MACC) project, support provided to CDEMA for the Tsunami and other Coastal Hazards Warning System (TCHWS) project and quite a bit of support to Meteorological Services, including through online professional training for meteorologists. Through ERC, CIMH has been developing an integrated platform called

DWETRA that incorporates existing scenarios and modelling to support training and actual real-time operations. CIMH is trying to build marine forecasting capacities in the region in areas like storm surge, and flooding. UNDP inquired if CIMH would be able to provide some level of training on tsunami for meteorologists. CIMH indicated that, at the moment, they are delivering training on storm surges, started to use SLOSH (Sea, Lake, and Overland Surges from Hurricanes) and is trying to bring somebody in to develop marine inundation forecasting on a permanent position, full time.

53 The Puerto Rico Seismic Network (PRSN) indicated that its mission is to monitor, detect, locate, disseminate and research seismic and tsunami activity in the region of Puerto Rico and the Virgin Islands (US and British). To meet this mission, the PRSN operates a dense seismic, accelerometer, tide gauge and GPS (Global Positioning System) network of state-of-the-art instruments. As part of the regional responsibilities, the PRSN share real-time data to Tsunami Warning Centres, Regional Networks, Incorporated Research Institutions for Seismology (IRIS), and the United States Geological Survey (USGS). The PRSN is committed to help with the improve of the seismic and tsunami research and monitoring in the region, and as part of join projects, stations were installed in several countries in the Caribbean with the funds from the University of Puerto Rico at Mayagüez (UPRM), the National Oceanic and Atmospheric Administration (NOAA) and in cooperation with the University of Hawaii Sea-Level Centre (UHSLC), the United Nations Educational, Scientific and Cultural Organization (UNESCO), and the local governments. PRSN strongly supports the tsunami Lantex and the earthquake ShakeOut exercises and keeps up-to-date the earthquake and tsunami SOP's in its Area of Responsibility. The PRSN is the PI of the TsunamiReady program which helps local communities in the process to be recognized as 'TsunamiReady' by the National Weather Service (NWS). This Programme, developed by the NWS (NOAA), is designed to help cities, towns, villages, universities and other large communities in coastal areas to reduce the potential for disastrous tsunami-related consequences; with the ultimate goal to help communities at risk. This program is 75% complete in Puerto Rico. TsunamiReady has helped community leaders and emergency managers strengthen their local operations (response plans, communications and dissemination tools, education and outreach) and those communities are better prepared to save lives through better planning, education and awareness. All the materials and tsunami related tools are available for the region in the PRSN web page.

54 The Seismic Research Centre (SRC) of the University of West Indies reported that it has changed its mandate over time to respond to the needs of the community, going from hazard assessment to risk assessment. This was also keeping with the paradigm shift in the Disaster Risk Reduction (DRR) community through the Hyogo Framework of Action (HFA) disclosing that moved towards preparedness. Therefore, over the years, SRC moved into programmes that are not hazard based. SRC completed in 2012 a Caribbean Risk Atlas for Earthquake Hazards funded by the World Bank. Susceptibility of Kingston, Jamaica, to earthquake risk was provided. The European Union (EU) has also funded a project to develop earthquake risk reduction to improve operation of industrial or high hazard environment. Hospitals, industrial facilities are being investigated to see if shutdown emergency procedures can be put in place. Fifteen new broadband seismic stations will be installed by SRC with funding of the Caribbean Catastrophe Risk Insurance Facility (CCRIF).

55 The ICG **noted, and thanked** UNDP, CDEMA, CIMH, PRSN and SRC for their reports.

3.6 STATUS OF OTHER ICGs

56 Mr Bernardo Aliaga reported on the status of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), and the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS).

57 In the ICG/IOTWS there are three operational Regional Tsunami Service Providers (RTSPs) in the Indian Ocean with “exchange” products, which are disseminated to the National Tsunami Warning Centres (NTWCs) only, and public products, which are available on the public areas of the RTSP websites.

58 The RTSPs had been operational since October 2011, and the Ninth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System held in Jakarta, Indonesia, from 27 to 30 November 2012, (ICG/IOTWS-IX) reviewed the RTSPs’ performance since becoming operational and concluded that this had been satisfactory. The ICG had, therefore, requested the RTSPs to assume full operational responsibility for the Indian Ocean region on 31 March 2013, and requested the Japan Meteorological Agency (JMA) and Pacific Tsunami Warning Center (PTWC) to cease the Interim Advisory Service that they had provided since April 2005 as of the same date.

59 A project on Risk Assessment and Tsunami Exercises is being conducted by Working Groups 1 and 3 with funding from UNESCAP, and a compendium is being prepared by Working Group 3 on preparing the last mile of the Indian Ocean Tsunami Warning and Mitigation System (IOTWS).

60 The ICG had agreed to support the expansion of the Jakarta Tsunami Information Centre (JTIC) into an Indian Ocean Tsunami Information Centre (IOTIC) to serve the entire Indian Ocean region.

61 The 11 April 2012 a M8.6 earthquake event in West of North Sumatra, put many countries in the region on alert with coastal community evacuations taking place in several countries. The IOTWS had been deemed to work well, even though a major tsunami had not been generated. RTSP threat information and national warnings were issued promptly, although issues still remain with community awareness and preparedness.

62 Some important ongoing issues remain that the ICG will need to address in the coming years but the current overall status of the IOTWS is good and that the future outlook for the system is healthy.

63 At PTWS, the main recommendations from the last Twenty-fourth Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS) held in Beijing, China, from 24 to 27 May 2011 (ICG/PTWS-XXIV/3), included the approval of the experimental phase of the PTWC Enhanced products, the PTWS Exercises (PacWave 11 [IOC/2011/TS/97VOL.1.], and PacWave 13 [IOC/2013/TS/106VOL.1.]) and the development of a Sub-Regional Tsunami Warning and Mitigation System for the South China Sea Region.

64 Many of the Regional Working Groups (Central America, South America, South China Sea and South West Pacific) have met in the intersessional period as well as a number of training sessions have been performed with the support of Member States, ITIC and the Secretariat.

65 The main challenges for PTWS remain to maintain continuous and active participation of Member States, with sustained funding on national level; to enhance community preparedness embedded in national legislation; and to adapt the Tsunami Warning Systems to threats of near-field earthquakes.

66 Key milestones for ICG/PTWS in the near future, as indicated above, are: the enhanced products trial starts on April 2013, the Exercise Pacific Wave 13 was carried out from 1 to 14 May 2013, and the revision of the Medium Term Strategy (MTS) and Implementation Plan that should happen at the coming Twenty-fifth Session of the Intergovernmental Coordination Group for the Pacific Ocean Tsunami Warning and Mitigation System (ICG/PTWS-XXV) that will be held in Vladivostok, Russian Federation, from 9 to 11 September 2013.

67 The United States of America (USA) asked if the IOTWS does have a process to address the potential conflicting information between RTPSs for the same event. Mr Aliaga responded that Regional Tsunami Service Providers (RTSPs) of IOTWS do have a harmonisation process ongoing and do coordinate between themselves for every event.

68 The United States of America (USA) inquired about the availability of RTSPs messages over GTS. Mr Aliaga responded that RTSP products are not available on the Global Telecommunication System (GTS). Notification messages are sent via GTS (and fax and email) and these include the earthquake parameters but no other information. Recipients are directed to the RTSP website(s) to view the full product.

3.7 NATIONAL PROGRESS REPORTS

69 Aruba reported that it has been working on alternate sources for seismological data delivery and local warning messages delivery not via internet. It highlighted the need for better bathymetric data for modelling and also the need for more training in oceanography and seismology. Aruba reported also that they will install a secondary broadband seismometer and sea-level and sea surface temperature instrument in 2013 at the Cruise ship Harbour. Also, with the support of UNAVCO they will install a permanent GPS station on the north-west part of Aruba.

70 Barbados indicated that through the Technical Standing Committee on Coastal Hazards, the Government remains committed to expanding the National Tsunami Preparedness Programme. Over the past year, the Committee has embarked on a multifaceted approach to achieving this objective with continued improvements to the National Tsunami Warning Protocols and Standard Operating Procedures, through the installation of an additional Emergency Management Weather Information Network (EMWIN) system at the local Meteorological Office, and the enlistment of the assistance of key stakeholders with the view of expanding the National Mass Alerting System. There has also been an intensive public awareness campaign to sensitize citizens to the tsunami hazard.

71 Colombia reported that it has been developing intersessional activities to improve its level in preparedness and readiness for tsunami hazard, including an Intersectorial National Protocol, participation in 2 international exercises the last one being Exercise Caribe Wave/Lantex 13, two national exercises, 5 national coordination meetings with 17 different state organizations, actualization of the national plan, and adoption of the respective decree. Colombia has also received and installed two tide gauges from PRSN, one at Santa Marta and other one at San Andrés. It shows important advances and offers technical assistance to other regional Member States that may need it.

72 Dominican Republic reported progress in the national sea-level observing network, with 5 stations installed and reporting, including a new one in Barahona and plans for 6 more stations in the future. On seismic monitoring, the Seismological Institute of the Autonomous University of Santo Domingo (UASD) has 10 stations available. Also, under an agreement between the National Meteorological Service of Dominican Republic (ONAMET) and UNAVCO, 9 GPS stations with meteorological sensors have been installed in the country. Three tourism economy based-communities (Bayahibe, Las Terrenas, and Puerto Plata) have signed agreements with the Unidad Alerta de Tsunami of ONAMET (UATO) to develop tsunami response plans at community level including for tourism facilities.

73 Mexico indicated that a national Tsunami Warning Centre (CAT) was established on 19 September 2011, and that a National Tsunami Warning System (SINAT) was officially launched on 8 May 2012. CAT is working with a network of 107 sea level stations and seismic monitoring network operated by the National Seismological Service under National Autonomous University of Mexico (UNAM). SINAT's membership includes the Ministry of the Interior of the Mexican Federal Government (National Coordination of Civil Protection, Directorate General for Civil Protection, National Communications Centre, National Centre for Disaster Prevention), Ministry of Navy (Research and Development Directorate-General, Deputy Directorate General for Oceanography, Hydrography and Meteorology, Sección tercera del Estado Mayor General), Secretariat of Communications and Transport (Instituto Mexicano del Transporte), National Autonomous University of Mexico (National Seismological Service, National Mareographic Service), and Centro de Investigación Científica de Educación Superior de Ensenada (CICESE). Next steps for SINAT include consolidate the sea level monitoring network with up to 168 sea level stations integrated, consolidate the seismic monitoring network, consolidate the use of numerical modelling to provide inundation maps, consolidate redundant communications system, and develop a national education programme for tsunami.

74 Saint Kitts and Nevis indicated that an Orientation Exercise was held on both islands, as participation in the Exercise Caribe Wave/Lantex 13, 20 March 2013, and public education is ongoing via radio, television, internet and distribution of literature. It also reported that to strengthen monitoring, a sea level station will be installed, and the SRC will install strong motion sensors on Saint Kitts and Nevis on May 2013. Plans and SOPs will be developed.

75 Saint Lucia indicated that through the 4 members of the Technical Working Groups (1–4), it remains committed to the National Tsunami Program of Saint Lucia. Over the past year, the members have continued the education campaign, collaborated with Trinidad and Tobago and Martinique (France) on instrumentation and the aim towards the adoption of the Standard of the International Organization for Standardization (ISO) for Water Signs, of which Tsunami Signage forms part, continues and is expected to go to public comment in 2013.

76 Saint Vincent and the Grenadines reported that in November 2012, the National Emergency Management Organisation (NEMO) in collaboration with the Seismic Research Centre (SRC) of the University of the West Indies launched the Tsunami SMART programme in Saint Vincent and the Grenadines. The Tsunami SMART programme targeted teachers, coastal communities and other stakeholders to promote the understanding of tsunamis and what to do in the event of such a hazard through presentations, videos, and tsunami warning booklet adapted for Saint Vincent and the Grenadines. It is expected that two coastal communities will have early warning systems (sirens) installed by the end of 2013, and the tsunami SMART training of trainers for teachers to commence in 2013.

77 The United States of America reported that the National Tsunami Program Director of the National Weather Service of the National Oceanic and Atmospheric Administration (NOAA/NWS) will now be serving as US Tsunami National Contact for all Tsunami Warning System under the Intergovernmental Oceanographic Commission. Mr Michael Angove is the current Director of the NOAA Tsunami Program (acting).Through the NOAA/NWS Tsunami Program, the United States of America continued to provide support to the ICG/CARIBE-EWS through the PTWC interim services, sea level network maintenance provided by the Center for Operational Oceanographic Products and Services (CO-OPS) of the National Ocean Service (NOS) of NOAA, plus one new station installed in Dominican Republic and continued operations of 6 DART buoys by the NOAA National Data Buoy Center (NDBC). On seismic monitoring, the United States Geological Survey (USGS) continued to operate over 100 active seismological stations across the region and contributed with 9 new seismic stations within the region recently. NOAA's National Satellite and Information Service (NESDIS) continued to provide support for use of Direct Communications Services (DCS) for transmission of sea level and sensor data over GOES (Geostationary Operational Environmental Satellite) satellites. Through ITIC and the Caribbean Tsunami Warning Program (CTWP), USA continued to provide support to training and awareness activities in the region, included through the TsunamiReady programme that designated 9 new communities in Puerto Rico, made progress to add US Virgin Islands and is supporting UNESCO/IOC pilot project to help build TsunamiSmart communities in the region.

3.8 REPORT ON THE INTERIM ADVISORY SERVICES FROM THE PACIFIC TSUNAMI WARNING CENTER

78 Mr Michael Angove (USA) presented the Pacific Tsunami Warning Center (PTWC) report on the interim services provided to ICG/CARIBE-EWS, on behalf of Dr Chip McCreery, Director PTWC.

79 In its report, PTWC indicated that the seismic network in the region is sufficient to determine a preliminary location and magnitude within a few minutes for large earthquakes across the entire region. It provides enough redundancy so that outages of a few stations do not significantly affect performance and new/additional seismic data is incorporated as capacities allow, which is particularly welcome in those areas with less dense coverage. During the intersessional period, 7 more stations have been made available, notably by the Bolivarian Republic of Venezuela.

80 With respect to sea level monitoring network, PTWC reported that 7 more sea level stations have been added as well in the intersessional period. Coverage in North-East Caribbean is sufficient for verification and measurement of a tsunami generated in that region in advance of the tsunami striking other nearby coasts. Coverage along South and Central American coasts is improved, but still insufficient to ensure prior warning in all areas. However, coverage in the North-West Caribbean is non-existent. Therefore, a tsunami forecast generated in that region will be based on seismic analysis only and will likely not be directly observed prior to landfall.

81 Mr Angove reported that in the intersessional period PTWC responded to >500 global earthquakes, issued Observatory Messages for 339 global earthquakes and issued Caribbean Tsunami Bulletins for 2 earthquakes:

- Tsunami Information Statement on 24 May 2012, for a magnitude 6.5 earthquake in the Norwegian Sea.
- Basin-wide Tsunami Watch on 5 September 2012, for a magnitude 7.9 earthquake off the coast of Costa Rica

82 The Pacific Tsunami Warning Center continued the development of enhanced products, similar for the CARIBE-EWS and PTWS and following recommendations from TOWS Task Team 3 on Tsunami Watch Operations. PTWC also participated in the Exercise Caribe Wave/Lantex 13 and performed Communication Testing, including 12 scheduled tests and 2 unscheduled tests for which the response from TWFP is still low.

83 Dr McCreery was available via telephone to respond to questions raised by Member States.

84 Haiti requested a clarification from PTWC about the Costa Rica event, which forecasted an event in the wrong basin. Dr McCreery responded that the event took place in the Pacific Ocean but the PTWC watch staff worked over an initial localisation in the Caribbean area. When developing the first message and while the body of the message indicated already the localisation in the Caribbean, new information was available, but only 2 minutes after releasing the message the processing of the information indicated its location in the Pacific. Member States commented that this situation created panic in some countries (Haiti) but for others it was a testing exercise (Trinidad and Tobago).

85 Trinidad and Tobago inquired if the coverage of sea level observing systems in the eastern Caribbean would be sufficient to detect an event. PTWC indicated that, while there are no DART buoys in the eastern zone of the Caribbean, the level of coverage with coastal sea level stations has improved over the last year.

86 The Seismic Research Centre reported that there are 4 sea level monitoring stations operated by the Hydrographic Unit of Trinidad and Tobago with software that allows the use of GOES for transmission, but the GOES licence has expired and will not be renewed. The Vice-Chair of Working Group 1 for Sea level was requested to look into this matter.

87 Also within this agenda item Mr Angove, on behalf of Dr McCreery, presented the proposed PTWC Enhanced Products for tsunami.

88 Mr Angove recalled that the existing procedures and products have changed little since its initiation in 2006, with procedures based primarily on historical data where the initial Watch is based on earthquake magnitude, estimated time left to tsunami impact and distance from earthquake epicentre. A Watch is issued if the tsunami is likely to be of more than 1 metre at the coast and a Watch for the entire Caribbean is issued with Mw ≥ 7.9. This is very conservative for safety, but there is a risk of over-warning, it is based on text only and there is also a risk that a PTWC Watch is confused with a National Tsunami Warning Centre (NTWC) alert.

89 He then indicated that the Enhanced Procedures and Products will be based primarily on a numerical tsunami forecast with an initial forecast based on preliminary earthquake parameters (hypocentre and magnitude). Initial testing products are typically issued in less than 10 minutes which may help for the local tsunami threat. Later forecasts are constrained by computed earthquake mechanism (W-CMT) and sea level readings. Instead of alert levels, the new products will be based on 3 general threat levels: 0.3-1 metre at coast, 1-3 metres at coast, and >3 metres at coast. This will help to reduce conflict with NTWC alert levels, will still be conservative but should greatly reduce over-warning. The new products will provide estimated levels of impact, include graphical as well as text products and Google ®-maps enabled (kmz) file of forecast points to facilitate finer spatial resolution. The real-time models utilized in the new procedures can handle earthquake locations and mechanisms anywhere, and produce quick comprehensive forecasts.

90 Mr Angove then detailed the Suite of PTWC Enhanced Products for the CARIBE-EWS:

- Standard text product with WMO product ID and, for events with a tsunami threat;
- Map showing maximum forecast coastal tsunami amplitude within polygons that encompass islands or island groups or coastal segments;
- Table of forecast statistics for each polygon;
- Deep-ocean maximum forecast amplitudes map that shows the directionality of the tsunami energy;
- Map of colour-coded coastal forecast points to show the threat at a finer scale than in the polygon map;
- A kmz file to allow drilling down to individual forecast points using a tool like GoogleEarth ®.

91 Mr Angove introduced the proposed following next steps: to consider feedback from Exercise Caribe Wave/Lantex 13, secure SOP Training for Member States NTWCs and NDMOs (National Disaster Management Offices), and initiate a trial period with overlap of the existing and new products with appropriate advance announcement of the change.

92 Some Member States inquired about the inclusion of smaller islands in the polygons of the PTWC Enhanced products. Dr McCreery indicated that by using kmz files there is certainly a forecast available for every island. The caveat is however that the forecast is not using fine grids to get inundation at coastal level for every point but Green's Law. It is beyond the capabilities of PTWC to develop detailed inundation forecast for operational purposes for a given event.

93 Venezuela congratulated PTWC and expressed that the use of polygons is very useful for the Caribbean. Having better resolution for operational terms implies a trade-off between warning time and resolution. If there is more time detailed forecasted inundation is possible but for reduced time the polygon approach is very useful.

94 Antigua and Barbuda indicated that there are only a few Meteorological Offices with trained staff that are Tsunami Warning Centres and national entities that are responsible for warning the population have no specialised staff. Therefore the launching of PTWC Enhanced products requires that warning staff is trained to cover the gap between the improvement on the use of technologies and the capabilities to use them. Dr McCreery indicated that PTWC recognises that this is a big change and it would need training, therefore PTWC is committed to support capacity building activities including training in the Caribbean region.

95 Trinidad and Tobago inquired how the kmz files are distributed and if there is a potential delay for receiving them. Dr McCreery responded that the kmz files are distributed via email and may be available through a password protected website. USA indicated that none of these are official products available through the Global Telecommunication System (GTS), therefore there are options being considered for dissemination, including for PTWS products.

96 The Seismic Research Centre indicated that strong motion instruments can increase the capabilities at local level for warning systems. These could be connected to local siren system and cooperate or complement the PTWC services for locally thread communities.

97 Puerto Rico Seismic Network (PRSN) suggested using the model of the WCATWC to measure feedback and develop metrics for unannounced tests.

98 The ICG requested PTWC to study how to use the unannounced tests in 2014 to use new communication means to distribute the Enhanced Products, including through a secured website.

99 The ICG **adopted** Recommendation ICG/CARIBE-EWS-VIII.2.

3.9 REPORT OF THE CARIBBEAN TSUNAMI EXERCISE (Caribe Wave/Lantex 13)

100 This agenda item was chaired by Mr Philippe Sarron (France).

101 The Chair of the Caribe Wave/Lantex 13 Task Team, Ms Christa von Hillebrandt Andrade (USA), reported on the evaluation of the Exercise Caribe Wave/Lantex 13 (IOC/2012/TS/101 Vol.1) conducted on 20 March 2013. She recalled that this was the second regional tsunami exercise in the Caribbean, with a simulated earthquake of magnitude Mw 8.5 located to the north of Aruba, with kick off messages issued by PTWC and WCATWC.

102 Ms Hillebrandt indicated that the planning of the exercise was developed over a reasonable period of time, with a Manual (*Exercise Caribe Wave/Lantex 13: a Caribbean tsunami warning exercise*, *20 March 2013; Volume 1: Participant handbook,* IOC/2012/TS/101 Vol.1) and several webinars. The exercise was evaluated through a questionnaire containing 80 questions, using the same questions that have been used in similar exercises in the Pacific, for harmonisation purposes.

103 The metrics of the evaluation indicated progress with respect to the evaluation of the Exercise Caribe Wave 11, with 94% participation of Member States of the ICG/CARIBE-EWS, very high involvement of communities beyond TWFPs (69% of countries), and good rate of responses to the evaluation questionnaire (90%).

104 Ms Hillebrandt reported that 46 TWFPs/TNCs registered to participate and receive emails. Also, 131 Emergency Management Offices, 118 schools and universities (30,600 participants), 71 non-Emergency Management government agencies, 21 private organizations, 8 health facilities, 5 members of media, and 95 individuals and families. According to registrations, 47,952 people were to participate in the exercise, 45,526 from Puerto Rico (5th exercise for Puerto Rico).

105 The evaluation indicated that 17% of the countries that received the emails noted that they received them with slight delay; 97% of the respondents were satisfied with the planning, conduct, format and style of the exercise; and 47% of the survey respondents indicated that the exercise had media coverage.

106 With respect to the Enhanced PTWC products, 76% of the respondents indicated that the information contained in the experimental products is understandable, and 79% indicated that the information contained therein helps with the decision making.

107 Ms Hillebrandt reported that 80% of the respondents expressed that CARIBE WAVE should be conducted annually, and thanked the members of the Task Team and Member States for their contributions to a successful Caribe Wave/Lantex 13.

108 Venezuela indicated that for this exercise it tested an instantaneous chat message system to communicate with other Member States in real time. The experience was

positive; therefore Venezuela suggested encouraging the use of communications among countries for tsunami events.

109 The ICG **noted** the report of the Caribe Wave/Lantex 13 Task Team, and **extended** its mandate to assist in the preparation of the scenarios and Participants Handbook for the Caribe Wave 14.

4. PROGRESS REPORTS BY WORKING GROUPS

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

110 This agenda item was presented by Mr Miguel Palma (Venezuela) for the seismic component and Mr Sébastien Deroussi (France) for the sea level component, both on behalf of Mr Emilio Talavera (Nicaragua), Chairperson of Working Group 1.

111 Mr Palma reported that as of March 2013, 85% (112/132) of the seismic stations of the CARIBE-EWS Implementation Plan (IOC Technical Series, 73) are contributing in real time. The most significant development has been the addition of Venezuela stations, France also added some stations, and some were repaired in Dominican Republic. Based on the CARIBE-EWS Implementation Plan, the goal of data availability per station is at least 90%. According to the CTWP, for February 2013, at the Puerto Rico Seismic Network (PRSN) 67% (up from 54%) of the stations had a data availability of 90−100%, at the West Coast and Alaska Tsunami Warning Center (WCATWC) 65% (up from 55%) had a data availability of 90−100%, and for the Incorporated Research Institutions for Seismology (IRIS) 59% (up from 57%) had data availability in the range of 90−100%. Regarding data availability for the Hispaniola region, last year two stations from the Dominican Republic were reintegrated into the system, but still only 1 station from Haiti is transmitting data to the Centres. On IRIS a virtual seismic network was established to view the status of seismic data from Caribbean seismic stations being archived at the Data Management Centre. The PRSN also has a graphical online tool, which shows data from seismic stations contributing to the warning component of the system.

112 Mr Palma indicated that recent network additions (Nicaragua, Colombia, Mexico, Cayman Islands and Venezuela) have significantly reduced the detection threshold.

113 Aruba indicated that it will be adding 1 more stations in 2014. PRSN reported that the Government of Haiti installed 2 additional stations and is working on its telemetry. SRC and the Earthquake Unit, Jamaica, received a grant from the Caribbean Catastrophe Risk Insurance Facility (CCRIF) to upgrade the strong motion instrument network of the region. Fifteen accelerometers were purchased and these will be deployed during 2013. Also, another 4 strong motion station deployments are planned for Trinidad and Tobago in 2013.

114 Mr Deroussi reported that 6 new sea level stations have been added to the network in the interim period: 2 in Colombia, 1 in Panama, 1 in Barahona, Dominican Republic, 1 in Barbados, and 1 in Guadeloupe (France). Three more stations were upgraded for satellite transmission: 1 in Pointe à Pitre (Guadeloupe, France), 1 in Le Prêcheur (Martinique, France), and 1 in Îles du Salut (French Guiana).

115 The Intergovernmental Oceanographic Commission (IOC) of UNESCO jointly with the US National Oceanic and Atmospheric Administration (NOAA) and the National Mareographic Service of the National Autonomous University (UNAM), organised the 'IOC-GLOSS-IOCARIBE-CARIBE-EWS Third Caribbean Training Course for Operators

of Sea Level Stations' from 4 to 9 June 2012 in Mérida, Mexico. Mr Deroussi reported that 37 sea level station operators and researchers participated.

116 Working Group 1 reported that monthly reports on the status of the sea level and seismic stations continued to be distributed to all the members of the Working Group and key regional data partners.

117 PRSN reported that recognising the need of training on sea level monitoring UNESCO/IOC and PRSN have agreed that pending funding availability they will consider hosting sea level operators training for the region every two years. France reported that funding is available to host a seismic station operators network meeting and training.in Martinique in November 2013

118 The ICG **approved** Recommendation ICG/CARIBE-EWS-VIII.3.

4.2 WORKING GROUP 2 PROGRESS REPORT: HAZARD ASSESSMENT

119 This agenda item was introduced by Ms Valerie Clouard (France), on behalf of Mr Narcisse Zahibo (France), Chairperson of Working Group 2, Ms Paula Dunbar and Mr Aurelio Mercado.

120 Ms Clouard reported on the second edition of the International Conference 'Caribbean Waves', hosted by the University of the Antilles-Guiana in Guadeloupe, France, from 22 to 25 January 2013, that provided the opportunity for several of the Working Group members to meet. The Group reported that according to the available information, the following Member States have tsunami inundation maps for portions or the totality of their coasts: British Virgin Islands, Puerto Rico (USA), French Antilles, Barbados (for Bridgetown), Haiti (for Cape Haitian), Venezuela and Mexico.

121 Ms Clouard also indicated that an increasing number of countries have the capabilities and infrastructure to perform routine tsunami modelling: Puerto Rico (USA), French Antilles (France), Dominican Republic, Venezuela, Nicaragua, Mexico, Haiti and Aruba. However, in many of these countries, despite the existing capacity and trained staff, they lack the digital elevation models, computational infrastructure, and tsunami source information to perform tsunami modelling that meets the community standards.

122 The ICG **approved** Recommendation ICG/CARIBE-EWS-VIII.4.

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

123 The Chair reported that the current Chair of this Working Group, Ms Elizabeth Klute (UK), has indicated that due to new professional commitments she is no longer able to continue on this role. She also informed that no report has been received from this Working Group and recalled that in the proposed Draft Implementation Plan there is a proposal to change the name and Terms of Reference of this Working Group.

124 The ICG **decided** to reconfigure Working Group 3 at the next session and **requested** the Officers to develop new Terms of Reference for WG3 to be presented at the Ninth Session of the ICG/CARIBE-EWS. It **also decided** to rename the WG3 to "Tsunami Services" and defined that it will focus on the warning guidance, dissemination and communication of tsunami products.

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

125 This agenda item was introduced by Ms Kerry Hinds (Barbados), Chairperson of Working Group 4. She reported that the Group met three times in the intrasessional period: in Guadeloupe, France, on 21 and 22 January 2013; on a Joint Meeting with Working Group 2 on 22 January 2013; and through a Virtual Meeting on 26 and 27 March 2013. Through these meetings, the Group was able to develop a proposal of new Terms of Reference for the Working Group, advance the development of a Training Implementation Strategy and Schedule in particular for the remaining of 2013, and forward to the ICG/CARIBE-EWS a draft on TSUNAMI PUBLIC AWARENESS AND EDUCATION STRATEGY (see item 6.3 below).

126 With respect to the instruction of developing a strategy for promoting and implementing a community-based recognition programme for tsunami preparedness at the Eighth Session of the ICG/CARIBE-EWS (Recommendation ICG/CARIBE-EWS-VII.3), the WG4 suggested that a Task Team be established to develop a strategy document or business proposal document for a Performance Based Recognition Programme. Such a document should entail at minimum the parameters, possible metrics or performance measures, the feasibility, and potential sources of funding for the programme.

127 The Seismic Research Centre (SRC) requested information about when the Caribbean Tsunami Information Centre (CTIC) is expected to be operational and functioning. Barbados indicated that CTIC will start as soon as the CTIC Director is in place, towards July 2013.

128 Ms Hillebrandt commended the members of WG4 for using videoconference to advance work in a very efficient manner.

129 The ICG **adopted** Recommendation ICG/CARIBE-EWS-VIII.1, which includes new Terms of Reference for Working Group 4.

5. SPECIAL INVITED LECTURES: COMMUNITY-BASED TSUNAMI WARNING SYSTEM

130 Mr Gerard Metayer (Haiti), Engineer of the Service Maritime et de Navigation de Haiti (SEMANAH), presented the components of the Haitian Tsunami Warning System. He mentioned the development of hazard assessment maps for the North of Haiti, the increased capabilities for monitoring sea level and seismic activity, and the establishment of a Cellule d'Observation et d'Opérations sur les Données Maritimes (CODOMAR), with the support of the European Union through UNESCO/IOC.

131 He then referred in detail to the activities of awareness and education, with involvement of schools and the community leaders that were highlighted with the organization of a full-scale tsunami evacuation drill in Cape Haitian on 29 November 2013 with involvement of national and local institutions, including also UN operational units of the United Nations Stabilization Mission in Haiti (MINUSTAH). This exercise mobilised 1,480 persons (evacuated), 4 schools, 20 members of emergency management offices at local level (COUC/COUD/COUN), 253 persons responsible of security (Haitian National Police [PNH], Departmental Unit of Law Enforcement [UDMO], Protection Civile [DPC], United Nations Police [UNPOL], Scouts, MINUSTAH for safety at the evacuation axes), 35 persons for medical response, 89 volunteers (Scouts, Action Civique, Brigadiers DPC), 23 evaluators and 15 organizers.

132 PRSN inquired about the relationship of SEMANAH with the communities during the project. Mr Metayer responded that at the beginning of the project the reaction of the communities was not very good, but at the end a great development of awareness and a consistent group of stakeholders has been constituted in Haiti. Now the people accept the process and are very receptive to the initiatives of tsunami preparedness.

133 Mr Eric Mackie (Trinidad and Tobago) presented the Tsunami Readiness Programme in Trinidad and Tobago. He indicated that a local earthquake in excess of magnitude M6.5 at less than 100 kilometres depth in the waters adjacent to Trinidad and Tobago will likely produce a tsunami that will impact its coastal areas in 20 minutes or less.

134 Considering that little or no time will be available to issue effective warning for local tsunami threat, the strategy of Trinidad and Tobago is to develop a sustained public education programme aimed at teaching coastal communities to recognize the natural cues associated with tsunami generation and arrival, develop emergency contingency plans and exercise these plans, and respond appropriately during a tsunami threat to save lives.

135 Mr Mackie reported on current initiatives, which include that the Tsunami communication protocol recently developed under the CDEMA project has been adapted and scheduled to be reviewed in 2013; Introduction of ODPM's National Volunteer Programme, Introduction of Community Emergency Response Team (CERT) Programme, Let's Get Ready Campaign – Public Sensitization – Media, Communities Organised and Ready for Emergencies (CORE), Table-top Drills with key response agencies, community-based evacuation planning and drills, and installation of signage.

136 Grenada commented that in the Caribbean there are very large ports where dangerous materials are stored, that in case of tsunami can increase the danger and the risk of heavy pollution. Parking areas upland could be a solution to mitigate the impact of these hazardous materials. Mr Mackie indicated that because of the importance of chemical and hazardous materials in Trinidad and Tobago, a complete Plan of Management of chemical catastrophe is in place and there are coordination and cooperation plans between countries that have the same kind of risk to share materials and resources. Saint Lucia indicated that the capacity to deal with oil spills in the Caribbean is limited to events of category 1.

6. POLICY MATTERS

6.1 ESTABLISHMENT OF A CARIBBEAN TSUNAMI WARNING CENTRE (CTWC)

137 This session was chaired by Vice-Chair Ms Dawn French (Saint Lucia). The Chairperson introduced this topic recalling for Member States that according to Recommendation ICG/CARIBE-EWS-II.3, the Group decided to establish a Caribbean Tsunami Warning Centre to be located in the region. She then recalled that at the Seventh Session of the ICG/CARIBE-EWS (IOC/ICG/CARIBE-EWS-VII/3), the United States of America stated that while it continues to support phased implementation for the establishment of the Caribbean Tsunami Warning Centre at the University of Puerto Rico at Mayaguez (UPRM) to serve the Caribbean and Western Atlantic Basins, it recognizes that implementation has been slowed due to resource constraints.

138 The Chair also recalled that during the Sixth Session of the ICG/CARIBE-EWS (ICG/CARIBE-EWS-VI/3) held in Santo Domingo, Dominican Republic, from 26 to 29 April 2011, the Bolivarian Republic of Venezuela was invited to present a document defining the roles of the additional regional tsunami warning centres at the Seventh

Session of the ICG/CARIBE-EWS. At the Seventh Session, the Bolivarian Republic of Venezuela apologized for not being able to present the document and recalled the efforts concerning seismic monitoring that have been undertaken in the country.

139 The Chairperson offered the floor to the United States of America and Venezuela to report on progress made with regard to the two above tasks related to the establishment of a CTWC.

140 The United States of America indicated that the Tsunami Program of US NOAA remains committed to supporting the Caribbean Tsunami Warning Program as a key contribution towards achieving tsunami detection, warning, mitigation, and harmonization goals of ICG/CARIBE-EWS. It also indicated that NOAA is pleased to report that significant gains have been achieved here. Under the leadership of Ms Christa Von Hillebrandt-Andrade, tsunami outreach and education activities have been conducted and national protocols and standard operational procedures have been developed by many Member States. She is directly responsible for many of the local and international educational and awareness materials that been prepared, enhanced, adapted, and distributed to partners.

141 The United States of America stated that while it continues to support a phased approach toward the establishment of the Caribbean Tsunami Warning Centre at University of Puerto Rico at Mayaguez to serve the Caribbean and Western Atlantic Basins, budget constraints have forced NOAA to consider alternative end states for the CTWP facility that fully leverages—as opposed to replaces—NOAA's existing TWC capability (PTWC and WCATWC) and also the other emerging contributions from the region. USA remains fully committed to delivering an advanced tsunami detection, forecast, warning and mitigation capability across the CARIBE-EWS region.

142 Venezuela enquired if the current position of the USA implies a change in the ICG/CARIBE-EWS Implementation Plan where there is an action to 'Establish the Caribbean Tsunami Warning Centre to be collocated with the Puerto Rico Seismic Network at the University of Puerto Rico at Mayaguez'. USA responded that this matter is been discussed actively in the USA, but there is not yet a decision that can be reflected in the Implementation Plan.

143 Ms Gloria Romero (Venezuela) reported on the establishment of a National Tsunami and other Coastal Hazards Center for the Bolivarian Republic of Venezuela, which has been funded by the government at the level of USD 2.7 M. She described the three main components of the project that includes hazard assessment, observing systems, and preparedness and response elements. She indicated that the project includes promoting international cooperation for tsunami matters. She indicated that Venezuela continues to be committed to help to the establishment of CTWC and is already sharing data with several partners in the Caribbean including PRSN, and is also committed to share the data of the Venezuelan Centre with all the Caribbean Tsunami Warning Centres.

144 France expressed surprise of the delay in establishing CTWC and suggested that a revised timeline be put in place for the CTWC. USA indicated that it cannot offer a revised timeline, but with whatever solution is provided by NOAA Headquarters, the region will continue to be served by the USA Tsunami Warning Centres. Venezuela informed that their timeline is that in 3 years the Venezuelan Centre will be established.

145 Chair Ms Dawn French thanked Venezuela and USA for their efforts to establish their centres and recalled that the coming PTWC Enhanced Products will help to level up the services being provided to Caribbean Member States in the short term.

6.2 THIRD CARIBBEAN TSUNAMI EXERCISE (CARIBE WAVE 13)

146 Ms Hillebrandt Andrade recalled that the Seven Session of the ICG/CARIBE-EWS agreed through Recommendation ICG/CARIBE-EWS-VII.4 to hold CARIBE WAVE 13. The ICG also recommended that the exercise be conducted, when feasible, in partnership with the Exercise LANTEX of USA. The ICG further recommended that the exercises CARIBE WAVE be the basis and platform for testing outreach and education effectiveness at the country level.

147 An intrasessional Working Group on New PTWC Enhanced Products and Exercises presented under this agenda item its report and recommendations. The group recommended to start with an annual cycle of exercises where each Member State will be free to choose its level of participation. It also recommended maintaining twice yearly unannounced tests including PTWC enhanced products.

148 The Group suggested to maintain the current Task Team for the preparation of the scenario of Exercise CARIBE WAVE 14 but encouraged CTIC to take a progressively greater role in this activity. Two scenarios were discussed and agreed: a hypothetical earthquake located offshore Portugal, and a submarine landslide within the Gulf of Mexico, in coordination with LANTEX. In particular for the first scenario, Member States are suggested to develop evacuation drills. The Group provided target metrics for CARIBE WAVE 14. The Group also suggested that this exercise is coordinated with NEAMTWS as much as possible.

149 Antigua inquired about the starting time of the exercise. The Group responded that considering the source, the timing will be adapted by the Task Team to allow stakeholders to put in place the necessary measures.

150 Colombia suggested countries that have already participated in previous exercise to take the opportunity to move one step beyond by mobilising people through evacuation drills.

151 The ICG **adopted** Recommendation ICG/CARIBE-EWS-VIII.2.

6.3 TSUNAMI PUBLIC AWARENESS AND EDUCATION STRATEGY

152 This agenda item was introduced by the Chair of Working Group 4, Ms Kerry Hinds (Barbados), who reported on the process followed to produce the draft of the document *Tsunami Public Awareness and Education Strategy for the Caribbean and Adjacent Regions* (IOC/2013/TS/107, pending).

153 Ms Hinds indicated that the draft Tsunami Public Awareness and Education Strategy (Tsunami PAE Strategy) has been developed through extensive research, analysis and consultation, including a 'Tsunami Public Awareness and Educational (PAE) Stakeholders Consultation Meeting', which took place from 19 to 21 November 2012, in Bayahibe, Dominican Republic, with representatives of 24 countries. Furthermore, members of Working Group 4 contributed by providing technical input and guidance to the development of the draft.

154 She reported that the strategy focuses on building long-term education and awareness on how to prepare and respond to tsunamis for countries in the Caribbean and adjacent regions. It concentrates on planning and preparedness rather than providing guidelines to manage crisis communications during a disaster

155 Ms Hinds expressed that, once this strategy is validated, it is expected that a more harmonized approach to tsunami public awareness and education (taking in consideration earthquakes and other coastal hazards) will occur over time. This should translate into message standardising, increased information flow, and strengthened cooperation and fostered regional continuity amongst countries and partners

156 She indicated that 3 areas were chosen so as to generate the highest potential public awareness impact:

- Curriculum integration (Target group: Education sector),
- Specialised training (Target group: Media, teachers, first responders, PAE professionals),
- Community participation and input (Target group: Multiple stakeholders).

157 UNDP expressed its satisfaction to see the advance of this work with the support of several key stakeholders including the CTWP, SRC and others; and indicated it looks forward to improved and extended PAE tsunami tools.

158 An intrasessional Working Group reported under this agenda item. The Group agreed to forward to the Plenary the *Tsunami Public Awareness and Education Strategy for the Caribbean and Adjacent Regions* for approval and recommended that Member States actively use it to communicate with its stakeholders. The Group also suggested holding a regional workshop for PAE officers and strongly recommended translating the document into other languages at use in the Caribbean.

159 The following countries volunteered producing translated versions of the CARIBE-EWS Tsunami PAE Strategy: France, Dominican Republic and Curaçao.

160 The ICG **agreed** that for future sessions of the ICG/CARIBE-EWS, the National Report should include a section about the implementation of the *Tsunami Public Awareness and Education Strategy for the Caribbean and Adjacent Regions*.

161 The ICG **adopted** Recommendation ICG/CARIBE-EWS-VIII.1.

6.4 UPDATES TO THE COMMUNICATIONS PLAN FOR THE INTERIM TSUNAMI ADVISORY INFORMATION SERVICE TO THE CARIBBEAN SEA AND ADJACENT REGIONS

162 Chair Ms Hillebrandt recalled that the Seventh Session of the ICG/CARIBE-EWS recommended that the Communications Plan for the Interim Tsunami Advisory Information Service to the Caribbean Sea and Adjacent Regions (ICG/CARIBE-EWS Communications Plan, ICG/CARIBE EWS-II/11) be updated to reflect the current status of the sea-level and seismic stations, as well as the forecast points. She informed Member States that this task has not been completed. She expressed that assuming that the PTWC enhanced tsunami products are approved for implementation; the Communications Plan should be updated consequently.

163 The ICG **noted** that the update of the Communications Plan for the Interim Tsunami Advisory Information Service to the Caribbean Sea and Adjacent Regions (ICG/CARIBE-EWS Communications Plan, ICG/CARIBE EWS-II/11) should be postponed to take into account the development of the PTWC enhanced products.

6.5 UPDATES TO THE ICG/CARIBE-EWS IMPLEMENTATION PLAN

164 Ms Hillebrandt recalled that the Seventh Session of the ICG/CARIBE-EWS agreed to establish a Task Team to revise *ICG CARIBE-EWS Implementation Plan* (IOC Technical Series 73, draft), composed of Ms Judy Thomas (Barbados), Mr Jean Marie Saurel (France), Mr Julian DuBois (Saint Lucia), and Mr Daniel McNamara (USA).

165 Mr Jean Marie Saurel (France) introduced the updates to the draft Implementation Plan. He indicated that the review of the *ICG CARIBE-EWS Implementation Plan* was carried out by the Task Team appointed at the Seventh Session of the ICG/CARIBE-EWS, through teleconferencing supported by the CTWP. The review also benefited from inputs of current and past chairmen of the working groups. He reported that this revision brings mainly changes in the structure of the document, taking into account the great progress made in recent years, in terms of density of networks of seismic and sea level monitoring, regarding CTIC or the efforts towards improving message dissemination. This new version focuses on the last issues to be resolved in the first phase of the Implementation Plan, but especially on the second phase for a full implementation of the tsunami warning system.

166 The main updates concern the division into 5 subjects, adding an item on vulnerability, and keeping the existing subjects of risk and hazard analysis, monitoring and detection systems, tsunami services, and public education and resilience. Other updates include the changing roles of Working Group 3 and the proposed new names for the working groups.

167 With respect to WG3, in addition to his inherent duties in the development of communication and dissemination of warnings, the Task Team suggested that WG3 would be responsible for help defining the content of messages from warning centres, currently vested in WG1.

168 Mr Saurel indicated that the Implementation Plan is the framework for future actions of the ICG during the next 4 years.

169 The intrasessional Working Group on the Implementation Plan reported under this agenda item. It suggested revisiting the Terms of Reference of WG3, to be renamed as “Tsunami Services”, and to focus its work on the warning guidance, dissemination and communication of tsunami products.

170 UK recalled that NEAMTWS decided to address the issues of functions of monitoring and communications by setting up an Architecture Task Team.

171 The ICG **adopted** Recommendation ICG/CARIBE EWS-VIII.5.

7. PROGRAMME AND BUDGET FOR 2014−2015

172 This item was only informational and was introduced by the Technical Secretary who provided current information on the financial limitations that UNESCO is facing and the actions taken by the management towards stabilising the situation.

173 The ICG **noted** the report of the Secretariat.

8. NEXT SESSIONS

8.1 CONFIRMATION OF DATE AND PLACE OF THE NINTH SESSION OF THE ICG/CARIBE-EWS

174 The Chairperson recalled that at the Seventh Session of the ICG/CARIBE-EWS, Sint Maarten announced that they will consider hosting the Ninth Session. She reported that Sint Maarten has communicated to the Chair and the Secretariat that it is open to the possibility of hosting the Tenth or Eleventh Session of the ICG/CARIBE-EWS.

175 Mr William Linzey, Assistant Director of the United States Virgin Islands Territorial Emergency Management Agency (VITEMA) on behalf of the Governor John P. de Jongh, Jr., extended an invitation to the Member States to hold their Ninth Session in Saint Thomas, US Virgin Islands.

176 Dates proposed for the session are from 13 to 15 May 2014 or the week from 19 to 23 May 2014, to be coordinated with the Secretariat.

177 Venezuela indicated that visa issues needs to be addressed by the Government of USA to guarantee the participation of all countries of the Caribbean. USA responded that the local organisers will work with the State Department towards facilitating visas to representatives attending this meeting.

178 The ICG **acknowledged** these offers and **agreed** to hold the Ninth Session of the ICG/CARIBE-EWS in Saint Thomas, US Virgin Islands, from 13 to 15 May 2014.

8.2 TARGET DATE FOR ICG/CARIBE-EWS-X

179 The Chairperson introduced this item and recalled that Sint Maarten has communicated to the Chair and the Secretariat that it is open to the possibility of hosting the Tenth or Eleventh Session of the ICG/CARIBE-EWS.

180 The ICG **acknowledged** the offer of Sint Maarten and **decided** to hold its Tenth Session of the ICG/CARIBE-EWS during the second quarter of 2015.

9. ANY OTHER BUSINESS

181 There was no other business discussed at the meeting.

10. ADOPTION OF DECISIONS AND RECOMMENDATIONS

182 Based on the reports of the Working Groups and discussions at the Plenary Sessions, **the ICG adopted** 5 Recommendations.

183 The ICG elected the Chairs of the following Working Groups: For Working Group 1, Mr Jean Marie Saurel (France), and regarding Working Group 2, Mr Alberto Lopez, (USA) was elected Vice-Chair.

184 For Working Group 4, Ms Stacey Edwards, Seismic Research Centre (SRC), was elected Vice-Chair and was appointed in charge of Public Awareness. Vice-Chair of WG4, Mr Juan Salado (Dominican Republic) was requested to lead the theme of Resilience.

185 One new member was appointed to Working Group 1, Mr Victor Huerfano, Director of PRSN (USA). Four new members were invited to join Working Group 2, Dr Modesto Ortiz, from CICESE (Mexico); Dr Alberto Lopez, from the Universidad de Puerto Rico

(USA); Dr Hermann Fritz, from Georgia Institute of Technology (USA); and Dr Dailing Wang, from PTWC (USA). Four new members joined Working Group 4: Mr Wilfredo Ramos, from the Agencia Estatal de Manejo de Emergencias of Puerto Rico (USA); Mr Steve Symphor, from Conseil Générale de la Martinique (France); and Mr Ronald Jackson (or his nominate), Executive Director of CDEMA, in replacement of Mr Jeremy Collymore; and Mr John Kimbrough, from USAID (USA), in replacement of Ms Julie Leonard.

186 Five Task Teams were established by the ICG, with one year duration, as follows:

- Sea Level Network Capability
  - Victor Huerfano, PRSN, Puerto Rico, USA, (Chair);
  - Dan McNamara, USGS, USA;
  - Sébastien Deroussi, IPGP, France;
  - Stuart Weinstein, PTWC, USA;
  - Frederic Dondin, SRC, Trinidad and Tobago.
- Performance Based Tsunami Recognition Programme
  - Kerry Hinds, DEM, Barbados, (Chair);
  - Wilfredo Ramos, PREMA, USA;
  - Carolina Hincapie, PRSN, Puerto Rico, USA;
  - Juan Salado, ONAMET, Dominican Republic;
  - Gerard Metayer, SEMANAH, Haiti.
- CARIBE WAVE 14
  - Same as CARIBE WAVE/LANTEX 13;
  - CTIC.
- PTWC Enhanced Products
  - Chip McCreery, PTWC, USA, (Chair);
  - Gloria Romero, FUNVISIS, Venezuela;
  - Michael Angove, NOAA, USA;
  - Marck Oduber, DMA, Aruba;
  - France, TBD;
  - Philmore Mullin, Antigua;
  - Claudio Martinez, ONAMET, Dominican Republic.
- Warning Communication and Dissemination
  - Antonio Aguilar, FUNVISIS, Venezuela, (Chair);
  - Eric Mackie, ODPM, Trinidad and Tobago;
  - Jennifer Lewis, NOAA–liaison with NESDIS, USA;
  - Ernesto Morales, NWS Puerto Rico, USA;
  - Venantius Descartes, Meteorological Service, Saint Lucia;

- Curaçao, Meterological Department (TBD);
- Wayne Abraham, Public Seismic Network, Dominica;
- Barbados Meterological Office (TBD), Barbados;
- William Linzey, USA Virgin Islands;
- France (TBD).

11. CLOSURE OF THE SESSION

187 The ICG/CARIBE-EWS Chairperson, Ms Christa Hillebrandt Andrade, thanked the Government of Trinidad and Tobago for hosting the Session and thanked the Local Organizing Committee for the excellent facilities provided for the organization of the meeting. USA and Haiti seconded these views.

188 The Eighth Session of the IOC Intergovernmental Coordination Group for the Tsunamis and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions was closed on Wednesday, 1 May 2013 at 18.00.

ANNEX I

AGENDA

1. WELCOME AND OPENING

2. ORGANIZATION OF THE SESSION

2.1. ADOPTION OF AGENDA

2.2. DESIGNATION OF THE RAPPORTEUR (S)

2.3. CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION

3. REPORT ON INTERSESSIONAL ACTIVITIES

3.1. IOC EXECUTIVE SECRETARY'S REPORT

3.2. CHAIRPERSON'S REPORT

3.3. CARIBE-EWS SECRETARIAT REPORT

3.4. REPORT OF THE CARIBEAN TSUNAMI INFORMATION CENTER (CTIC)

3.5. REPORTS FROM UN AND NON UN ORGANISATIONS

3.6. STATUS OF OTHER ICGS

3.7. NATIONAL PROGRESS REPORTS

3.8. INTERIM ADVISORY SERVICES REPORT (PTWC)

3.9. REPORT OF CARIBE WAVE 13

4. PROGRESS REPORTS BY WORKING GROUPS

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. SPECIAL INVITED LECTURES: COMMUNITY-BASED TSUNAMI WARNING SYSTEM

6. POLICY MATTERS

6.1. ESTABLISHMENT OF A CARIBBEAN TSUNAMI WARNING CENTER (CTWC)

6.2. THIRD CARIBEAN TSUNAMI EXERCISE (CARIBE WAVE 13)

6.3. TSUNAMI PUBLIC AWARENESS AND EDUCATION STRATEGY

6.4. UPDATES TO THE CARIBE-EWS COMMUNICATION PLAN

6.5. UPDATES TO THE CARIBE-EWS IMPLEMENTATION PLAN

7. PROGRAMME AND BUDGET FOR 2014–2015

8. NEXT SESSIONS

8.1. DATES AND PLACE OF THE NINTH SESSION OF ICG/CARIBE-EWS

8.2. TARGET DATES FOR THE TENTH SESSION OF ICG/CARIBE-EWS

9. ANY OTHER BUSINESS

10. ADOPTION OF DECISIONS AND RECOMMENDATIONS

11. CLOSE OF THE SESSION

ANNEX II

ADOPTED RECOMMENDATIONS

Recommendation ICG/CARIBE-EWS-VIII.1

Public Awareness, Education and Resilience

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

Recognizing the progress made in establishing the Caribbean Tsunami Information Centre (CTIC),

Noting the effort of several Member States in raising the level of awareness of the tsunami and other coastal hazards in their respective jurisdictions;

Requests that Working Group II focus on producing operational products available for the countries so that emergency managers can determine their highest areas of risk and focus their efforts on developing early warning capacities for those areas;

Requests that Working Group 4 encourage Member States to provide the technical specifications to facilitate the production of these operational products;

Instructs Working Group 4 to establish a Task Team to develop a strategy or business proposal for a Performance Based Tsunami Recognition Programme,

Requests the Secretariat to inform the Member States on the establishment of CTIC and request their voluntary financial and technical contributions to facilitate its functions and operations, including in-kind assistance and secondments;

Approves new terms of reference for Working Group 4 as in Annex 1,

Approves the proposed Training and Implementation Strategy scheduled for 2013,

Approves the Tsunami Public Awareness and Education Strategy for the Caribbean and Adjacent Regions as amended at the session.

Financial implications: USD 130,000 (UNESCO Emergency Fund for CTIC)

ANNEX 1

Terms of Reference

Working Group 4
Preparedness, Readiness and Resilience

Purpose: To advise and recommend to the ICG strategies to enhance public awareness, education and resilience capacities and to develop the necessary recommendations, tools and procedures.

Functions:

- Identify the public awareness and education strategies and tools that the Member States can integrate into their risk reduction and emergency management programs.
- Support the development of guidelines for preparedness, response and recovery plans for communities and local governments and organisations which should include sharing of training and evacuation best practices.
- To closely cooperate with the Caribbean Tsunami Information Centre (CTIC) in carrying out its mandate and in the implementation of its program.

Recommendation ICG/CARIBE-EWS-VIII.2

CARIBE WAVE/LANTEX 14,
Communications Tests and PTWC Enhanced Products

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

Recognizing and expressing its appreciation to the Government of the United States for the interim tsunami warning guidance services provided by the Pacific Tsunami Warning Center (PTWC) to the Caribbean and Adjacent regions;

Also recognising the success of the CARIBE WAVE/LANTEX 13 in support of advancing the Caribbean Tsunami Warning System;

Furthermore recognising the usefulness of the PTWC Enhanced Products indicated by the Member States;

Decides to conduct CARIBE WAVE exercises on an annual basis leaving to each Member State to define its level of participation;

Requests PTWC to continue with the regular monthly communication tests and with yearly two unannounced tests redefining the nature and procedures of these tests;

Recommends that a joint CARIBE WAVE/LANTEX 14 exercise takes place on 26 March 2014, with two scenarios: a hypothetical earthquake located offshore Portugal, and a submarine landslide within the Gulf of Mexico;

Further recommends PTWC to include its Enhanced Products as part of the exercise and to systematically inform TWFPs about the availability of these products in their webpage or emails;

Approves the goals and objectives of this exercise as presented at the Eighth Session of the ICG/CARIBE-EWS,

Urges those Member States choosing the scenario of a hypothetical earthquake located offshore Portugal to concentrate on alerting and evacuation of the population given the relatively long tsunami travel time of the wave in this scenario;

Extends the mandate of the CARIBE WAVE/LANTEX 13 Task Team to assist in the preparation of the scenarios and Participants Handbook for the CARIBE WAVE/LANTEX 14, and **encourages** CTIC to take a progressively greater role in this activity;

Further requests the PTWC distributes to the Member States the results of the unannounced tests;

Recommends the establishment of a Task Team for the further evaluation and potential implementation of the PTWC Enhanced Products,

Invites the ICG/NEAMTWS to coordinate with ICG/CARIBE-EWS and explore its participation in CARIBE WAVE/LANTEX 14;

Financial Implications: None

Recommendation ICG/CARIBE-EWS-VIII.3

Monitoring and Detection Systems, Warning Guidance

The Intergovernmental Coordination Group for Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS),

Recognizing the effort of Member States and Regional organizations in the installation of new stations, maintenance of existing stations and advances in open data sharing for the advancement of the national and regional warning and research capabilities for the Caribbean and Adjacent Regions bringing up to 85% implementation of the seismic network and 44% of the sea level network plans;

Also recognizing the success of the Third Caribbean Training Course for Operators of Sea Level Stations held in Merida, Mexico, from 4 to 9 June 2012 for the advancement of the sea level network in the region;

Acknowledges the support of NOAA NWS Caribbean Tsunami Warning Program provides to the CARIBE-EWS and Working Group 1 (WG1), especially with the preparation and distribution of seismic and sea level status reports, and **requests** the CTWP to complement the monthly reports with monthly phone conference calls among the operators of the seismic and sea level stations in the CARIBE-EWS;

Urges seismic and sea level station and data gaps continue to be addressed in support of tsunami warning and research in accordance with CARIBE-EWS approved requirements and Implementation Plan and in addition to new stations, try to leverage other regional efforts;

Encourages enhancement of the existing seismic and sea level networks by conducting network's resilience studies and assessing the quality of metadata and real time data availability and long term archival;

Recommends that WG1 establish a Task Team to enhance the sea level network capability study determining the minimum detection time of tsunamis to coastal stations and tsunameters within the Caribbean and Adjacent Regions, and present its findings and recommendations on location of stations at ICG/CARIBE-EWS-IX;

Urges the USA to continue to support the phased implementation for the establishment of the Caribbean Tsunami Warning Centre to serve the Caribbean and Adjacent regions,

Encourages the Bolivarian Republic of Venezuela's continued efforts and technical advances for the establishment of an additional Regional Tsunami Warning Centre in support of the Caribbean Tsunami Warning System;

Also encourages other Member States to further develop their capacities and additional tsunami warning centres in support of the Caribbean Tsunami Warning System,

Endorses the efforts towards the establishment of a regional GPS data centre in support of COCONet project and other national and regional GPS efforts,

Urges the planning and execution of technical training for seismic and sea level network operators, on the proper installation, maintenance and usage of instruments, data exchange processing and analysis and metadata and quality assessment and **notes** the need for funding for such activities.

Financial implications: USD 60,000 (Extra Budgetary Contributions for Technical Training)

Recommendation ICG/CARIBE-EWS-VIII.4

Hazard Assessment

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

Recognizing the effort of several Member States to conduct tsunami inundation modelling for their coastlines.

Urges Member States, in addition to earthquake sources, integrate volcanic, subareal and submarine landslide threats into national and regional tsunami hazard and risk studies,

Requests Working Group 2 to consider mechanisms to advance tsunami hazard assessment from volcanic, submarine and subareal landslides,

Further requests Working Group 2 to develop and maintain databases of tsunamigenic sources, existing tsunami inundation maps and tsunami modelling capabilities and present annually at the ICG/CARIBE-EWS.

Continues to urge Member States to develop Digital Elevation Models appropriate for tsunami modelling as defined by Working Group 2.

Recommends the development and/or enhancement of national vertical and horizontal datum, as established by geodetic techniques, to improve the accuracy of mapping and modelling products related to tsunami inundation.

Financial implications: None

Recommendation ICG/CARIBE EWS-VIII.5

Implementation Plan

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

Decides that Working Group 3 be reconfigured at the next session, and **establish** a Task Team on Development of Guidelines for the Reception and Dissemination of Tsunami Products;

Further decides to rename the Working Group 3 (WG3) to “Tsunami Services” and that it will focus on the warning guidance, dissemination and communication of tsunami products, and request the Officers to develop new terms of reference for WG3 to be presented at the next session;

Decides the inclusion of vulnerability aspects in the Implementation Plan.Due to financial constraints, the first step must be limited to developing an awareness of vulnerability as an element of risk. In this way, the first phase of this work will identify the institutions and universities that may have the capacity to help ICG/CARIBE-EWS to develop understanding about vulnerability and what activities are required to integrate it into its current discussion of risk that will be seen at the next session.

Also decides to include in the Implementation Plan tsunami travel time maps calculated for the sea level stations network as presented in the report of Working Group 1 ;

Further decides that a section be added in the Implementation Plan devoted to Geomatics and recommend development of training courses that focus on geographical information systems (GIS) and Decision Support tools;

Recommends that every Member State identify a date they can use as a Tsunami Awareness Day to promote tsunami safety;

Approves the Implementation Plan as amended by the intra sessional Working Group.

Financial Implications: None

ANNEX III

LIST OF PARTICIPANTS

ICG/CARIBE-EWS OFFICERS

Chairperson

Ms Christa VON HILLEBRANDT-ANDRADE
Manager and Researcher
NOAA NWS Caribbean Tsunami Warning Program
Mayaguez Puerto Rico 00680
United States
Tel: 1-787-833-8433
Fax: 1-787-265-1684
Email: christa.vonh@noaa.gov

Vice-Chairpersons

Ing Victor Hugo CANO PACHECO
Presidente
Venezuelan Foundation for Seismological Research
Caracas
Distrito Capital
Venezuela
Tel: 58 (2) 04166208086
Fax: 58 2 12 2579860
Email: vcano@funvisis.gob.ve

Ms A. L. Dawn FRENCH
Director
National Emergency Management Organisation
Castries
Saint Lucia
Tel: 758-452-3802
Fax: 758-453-2152
Email: director@nemo.gov.lc

LCL Philippe SARRON
Head of the French West Indies Emergency Management Organisation.
Préfecture de Martinique
RUE VICTOR SÉVÈRE - BP 647-648
97262 FORT-DE-FRANCE
FWI
Martinique
Tel: +596 596393937
Email: philippe.sarron@martinique.pref.gouv.fr

IOC MEMBER STATES

Antigua Barbuda

Mr Philmore MULLIN
National Office of Emergency Services
American Road
St John´s
Antigua
P.O. Box 1399
Antigua Barbuda
Tel: (+1-268) 464-8456/562-2144
Fax: (+1-268) 462-4742
Email: pfmullin@gmail.com

Aruba

Mr Marck ODUBER
Director
Meteorological Service,
Aruba Sabana Berde 73-B
Aruba
Tel: +297-582-6497
Fax: +297-583-7328
Email: marck.oduber@meteo.aw

Barbados

Ms Kerry HINDS
Deputy Director
Department of Emergency Management Barbados
#30 Warrens Industrial Park
Warrens
St. Michael
Barbados
Email: kerry.hinds@barbados.gov.bb

Mr Renee EVELYN
Senior Telecommunications Officer
Telecommunications Unit
Trinity Business Centre
Country Road
St. Michael
Barbados
Tel: +2464290244
Fax: +2464290373
Email: renee.evelyn@telecoms.gov.bb

Mr Hampden LOVELL
Director
Barbados Meteorological Services
Building4
Grantley Adams Industrial Park
Christ Church
Barbados
Tel: 2464280910
Fax: 2464281676
Email: hampden.lovell@barbados.gov.bb

British Virgin Islands (UK)

Ms Carishma HICKS
Training Officer
Department of Disaster Management
#3 Wailing Road
MacNamara
Tortola
BVI
VG110
Virgin Islands British
Tel: (284) 468-4200
Fax: (284) 494-2024
Email: chicks@gov.vg

Colombia

CN Julian Augusto REYNA MORENO
Secretario Ejecutivo
Comisión Colombiana del Océano
Carretera 54 No.26-50
Edificio DIMAR 4to Piso, El CAN,
Bogotá
Colombia
Web: oceano@cco.gov.co
Tel: 57-(1) 315-8520
Fax: 51-(1) 315-8217
Email: jureyna@hotmail.com

Curacao (The Netherdlands)

Ms Pedzi GIRIGORI
Meteorological Department Curacao
Willemstad
Curacao
z/n
Netherlands Antilles
Tel: +5999 8393364
Email: pedzi.girigori@meteo.an

Dominica

M Don Arnold CORRIETTE
National Disaster Coordinator
Office of Disaster Management
Jimmit, C/o Ministery of Public Utilities,
Energy & Ports
Government Headquarters
Kennedy Avenue
Roseau
Dominica
Tel: 1 767 448 7777
Fax: 1 767 448 2883
Email: corrietted@dominica.gov.dm

Dominican Republic

Mr Claudio MARTINEZ
Meteorologist
ONAMET: Oficina Nacional de
Meteorologia
National Meteorological Service
1153 santo domingo
d.n
Dominican Republic
Tel: 1 829 779 0818
Email: cmartinez@onamet.gov.do

Sr Juan SALADO
Miembro de la Unidad de Alerta de
Tsunami
Oficina Nacional de Meteorología
(ONAMET)
1153 Santo Domingo
Santo Domingo Este
Dominican Republic
Tel: +1.809.788.1122 Ext278/279
Email: ing.jsalado@gmail.com

France

Dr Valerie CLOUARD
Directeur
Observatoire Volcanologique et
Sismologique de Martinique
Morne des Cadets
97250 Fonds Saint-Denis
French Antilles
Martinique
Tel: +596 (0)596 78 41 44
Email: clouard@ipgp.fr

Mr Sebstien DEROUSSI
Ingeneer
Observatoire Volcanologique et
Sismologique de la Guadaloupe
Le Houëlmont
97113 Gourbeyre
Guadeloupe, F.W.I

Guadeloupe
Tel: +33(0)590991147
Fax: +33(0)590991134
Email: deroussi@ipgp.fr

Mr Guillaume RAYMOND
chef du service interministériel de défense et protection civile
Préfecture de Martinique
97200 Fort de France
Martinique
Martinique
Tel: +33596393930
Fax: +33596393929
Email: guillaume.raymond@martinique.pref.gouv.fr

Mr Jean-Marie SAUREL
Observatoire Volcanologique et Sismologique de Martinique
Morne des Cadets
97250 Fonds Saint-Denis
French Antilles
Martinique
Tel: +596 (0)5 96 78 41 46
Fax: +596 (0)5 96 55 80 80
Email: saurel@ipgp.fr

Prof Stephen TAIT
Director of French Volcanologic and Seismologic Observatories
Institut de Physique du Globe de Paris
4 Place Jussieu
75252 Paris cedex 05 Paris
France
Tel: +33 6 23 57 12 04
Fax: +33 1 44 27 24 81
Email: tait@ipgp.jussieu.fr

Mr Patrick TYBURN
head of the French West Indies emergency management organisation
Préfecture de Martinique
RUE VICTOR SÉVÈRE - BP 647-648
97262 FORT-DE-FRANCE
FWI
Martinique
97200
Martinique
Tel: +596596393813
Email: patrick.tyburn@martinique.pref.gouv.fr

Mr Guillaume VOINESON
RONIM French tide gauge network manager
Service Hydrographique et Océanographique de la Marine
13 rue du Chatellier
CS 92 803
29228 Brest Cedex 2
France
Tel: 0033 2 98 22 15 89
Fax: 0033 2 98 22 08 99
Email: guillaume.voineson@shom.fr

Pr Narcisse ZAHIBO
Professor
Université des Antilles et de la Guyane
97159 Pointe-a-Pitre
Guadeloupe
Tel: +590 590 48 31 07
Fax: +590 590 48 31 05
Email: narcisse.zahibo@univ-ag.fr

Grenada

Mr Hubert WHYTE
Assistant Manager
Grenada Airports Authority (Meteorology)
Point Salines,
St. George
Grenada
Grenada
Tel: 1 473 444 4142
Fax: 1 473 444 1574
Email: hwhyte@mbiagrenada.com

Haiti

Mr Gerard METAYER
Maritime and Navigation Service of Haiti
HT 6140 Port-au-prince
HAITI
Haiti
Tel: (509) 3713-5936
Email: gerard_metayer@yahoo.fr

Mr Jean Gerald CEANT
MARITIME AND NAVIGATION SERVICE OF HAITI
2, Rue Louverture
Delmas/Port-au-Prince
West
Haiti
Tel: (509)3170-0009
Email: gerryceant@yahoo.com

Mexico

Cap. de Nav. C.G. DEM. Luis Ignacio ISLAS MARTINEZ DEPINILLOS
CAT
Eje 2 Ote. Tramo Heroíca Escuela Naval Militar Núm. 861. Col. Los Cipreses, Del. Coyoacán Distrito Federal CP. 04830
México
Tel: 52 (55) 56246500 Exts. 6320, 8555, 8554, 6325, 8592, 7665.
Email: direccion.cat@gmail.com

Mr Ricardo DE LA CRUZ
General Director of Civil Protection
National Coordination of Civil Protection
AV. Paseo de la Reforma, No. 99, Col. Tabacalera, Delegación Cuauhtémoc.
06030 MEXICO CITY
MEXICO CITY
México
Tel: 52 (55) 51280000 ext 11422
Email: limartinez@segob.gob.mx

Saint Kitts Nevis

Mr Carl HERBERT
National Disaster Coordinator
National Emergency Mnagement Agency
P.O.Box 186
Lime Kiln
Basseterre
Saint Kitts Nevis
Tel: 1-869-466-5100
Fax: 1-869-466-5310
Email: carlrock@yahoo.com

St Vincent Grenadines

Ms Michelle FORBES
Director (Ag)
National Emergency Management Organisation
Ministry of National Security
Kingstown
VC0100
St Vincent Grenadines
Tel: 784-456-2975
Fax: 784-457-1691
Email: vincymichelle@yahoo.co.uk

Trinidad and Tobago

Mr Eric MACKIE
Regional Coordinator
Office of Disaster Preparedness and Management Trinidad and Tobago
4A Orange Grove Road
Trincity
Tacarigua
Trinidad and Tobago
Tel: 1(868)640-1285
Fax: 1(868)640-8988
Email: emackie@mns.gov.tt

United Kingdom

Mr Russell ARTHURTON
Coastal Geoscience
5a Church Lane
Grimston
Melton Mowbray
Leics
LE14 3BY
United Kingdom
Tel: +44-1664-810024
Email: r.arthurton@talktalk.net

United States of America

Mr Michael ANGOVE
Director, NOAA Tsunami Program
National Weather Service/National Oceanic Atmospheric Administration
1325 East-West Highway Silver Spring
MD 20910
United States
Tel: 301-713-1858X106
Email: michael.angove@noaa.gov

Mr John KIMBROUGH
Regional Advisor, USAID/OFDA/LAC
Latin America and Caribbean regional office of the U.S. Agency for International Development's Office of U.S. Foreign Disaster Assistance
UNIT 3440, BOX 315 DPO-AA 34020-0315
United States
Tel: 1-571-527-9968
Email: jkimbrough@ofda.gov

Ms Jennifer LEWIS
International Analyst National Weather Service NOAA
NWS-NOAA Suite 11456
East West Hwy
Silver Spring MD 20109
United States

Tel: 301-713-0645x109
Email: Jennifer.Lewis@noaa.gov

Mr William LINZEY
Assistant Director
United States Virgin Islands Territorial Emergency Managment Agency
8221 Estate Nisky
St. Thomas, VI 00803 00803
United States
Tel: 1-340-774-2244
Fax: 1-340-715-6847
Email: william.linzey@vitema.vi.gov

Mr Israel MATOS
Advisor
Puerto Rico Emergency Management Agency
HC02 Box 7280 Barranquitas Puerto Rico 00794
United States
Tel: 787-208-5574
Email: matos.israel7@gmail.com

Mr Wilfredo RAMOS
Special Assistant to the Director
Puerto Rico Emergency Management Agency
San Juan Puerto Rico 00906-6597
Puerto Rico
Tel: (787) 724-0124
Email: wramos@prema.pr.gov

Mr Miguel RÍOS
Director
Puerto Rico Emergency Management Agency
San Juan PR 00918
Puerto Rico
Tel: 787-724-0124
Fax: 787_725-4244
Email: mrios@prema.pr.gov

Venezuela (Bolivarian Republic of)

Mr Antonio AGUILAR
Instructor. Programa Aula Sísmica
Venezuelan Foundation for Seismological Research
Prolongación Calle Mara El Llanito
Caracas 1070
Distrito Federal
Venezuela
Tel: +58 (212) 2575153 /2577672
Fax: +58 (212) 2579977
Email: antoniodesastres@gmail.com

Mr Miguel PALMA
Geophysics Engineer
Venezuelan Foundation for Seismological Research
Prolongación Calle Mara El Llanito
Caracas 1070
Distrito Federal
Venezuela
Tel: +582122575153
Fax: +582122579977
Email: mpalma@funvisis.gob.ve

MSc Gloria ROMERO
Head of the Seismological Department
Venezuelan Foundation for Seismological Research
Prolongación Calle Mara El Llanito
Caracas 1070
Distrito Federal
Venezuela
Tel: 58(2)122575153
Fax: 58-2122579860
Email: gromero@funvisis.gob.ve

OBSERVERS

Caribbean Disaster Emergency Management Agency

Ms Sarah LIONEL
Caribbean Disaster Emergency Management Agency
Building #1 Manor Lodge, Lodge Hill
St Michael
Barbados
Email: sarah.lionel@cdema.org

Caribbean Institute for Meteorology and Hydrology

Dr David FARRELL
Principal
Caribbean Institute for Meteorology and Hydrology
Husbands
Christ Church
Barbados
Tel: +1246-425-1362
Email: dfarrell@cimh.edu.bb

Conseil Général de la Martinique

Mr Symphor STEVE-MICHEL
Observer/Engineer
Conseil Général de la Martinique
97200 Martinique
France
France
Tel: 0596696295903
Fax: 0596596598505
Email: steve-michel.symphor@cgste.mq

Puerto Rico Seismic Network

Ms Carolina HINCAPIÉ-CÁRDENAS
Research Asisstant
Puerto Rico Seismic Network
Call Box 900
Mayaguez Puerto Rico 00681
United States
Tel: (787) 833 8433
Fax: (787) 265 1684
Email: carolina@prsn.uprm.edu

PhD Victor HUERFANO
Interim Director
Puerto Rico Seismic Network
Call Box 900
Mayaguez Puerto Rico 00681
United States
Tel: 1 787 8338433
Fax: 1 787 2651684
Email: victor@prsn.uprm.edu

Science Applications International Corporation

Mr Robert LAWSON
Director International Tsunami Buoy Program /SAIC
Science Applications International Corporation, San Diego
4025 Hancock Street, San Diego, CA
San Diego California 92110
United States
Tel: 1-858-826-1166
Fax: 1-858-826-1521
Email: lawsonra@saic.com

UNDP OECS Subregional Office

Mr Marlon CLARKE
United Nations Development Program, Barbados and the OECS
United Nations House
Marine Gardens
Hastings
Christ Church
Barbados
Email: marlon.clarke@undp.org

Mr Ian KING
Program Manager
United Nations Development Program, Barbados and the OECS
Marine Gardens, Hastings
Christ Church
Barbados
Tel: 246 467-6032
Fax: 246 429-2448
Email: ian.king@undp.org

University of the West Indies, Seismic Research Centre

Mr Lloyd LYNCH
St. Augustine
Trinidad and Tobago
Tel: 8686624659
Fax: 8686639293
Email: llynch@uwiseismic.com

Dr Frederic DONDIN
Research Fellow - Physical Volcanologist
University of the West Indies, Seismic Research Centre
St. Augustine
Trinidad and Tobago
Tel: +1(868)-662-4659
Email: fredericdondin@gmail.com

Ms Stacey EDWARDS
Education Officer
University of the West Indies, Seismic Research Centre
St. Augustine
Trinidad and Tobago
Tel: +1(868) 662-4659
Fax: +1 (868) 663-9293
Email: staceyedwards@uwiseismic.com

ANNEX IV

LIST OF DOCUMENTS

Working Documents

Agenda No.	Document title
2.1	ICG/CARIBE EWS VIII Provisional Agenda
2.3	ICG CARIBE EWS VIII_Annotated Agenda v1
2.3	ICG CARIBE EWS - VIII Timetable Rev
3.2	Minutes ICG CARIBE EWS Officers-WG meeting January 2013
3.3	ICG/CARIBE EWS TWFP/TNC status
3.4	CTIC Business Plan 2012-2016
3.4	WG IV – CTIC Meeting on Training of Tsunami Focal and Contact Points
3.4	WG IV – CTIC Meeting on Training of Tsunami Focal and Contact Points
3.4	CTIC Board Terms of Reference-approved at ICG CARIBE EWS VII
3.4	Memorandum of Understanding UNESCO IOC-BARBADOS on CTIC-signed
3.5	The ICG VIII/CARIBE EWS - THE ROLE OF THE PUERTO RICO SEISMIC NETWORK
3.5	UNDP Barbados and the OECS DRR as Key Area of Focus
3.6	The ICG VIII/CARIBE EWS - THE ROLE OF THE PUERTO RICO SEISMIC NETWORK
3.7	Tsunami National Report 2013 Saint Vincent Grenadines
3.7	National Report Dominican Republic 2013
3.7	National Report Barbados 2013
3.7	Barbados National Progress Report 2012 - 2013
3.7	INFORME NACIONAL TSUNAMI - COLOMBIA
3.7	NATIONAL REPORT Submitted by FRANCE
3.7	Republica Dominicana Oficina Nacional de Meteorología
3.7	SISTEMA NACIONAL DE ALERTA DE TSUNAMIS (SINAT) Y CENTRO DE ALERTA DE TSUNAMIS (CAT)

Working Documents

Agenda No.	Document title
3.7	National Report France 2013
3.7	National Report USA 2013 Appendix US Virgin Islands Tsunami Program
3.7	National Report CARIBE EWS British Virgin Islands
3.7	National Report CARIBE EWS Colombia
3.7	National Report CARIBE EWS Mexico
3.7	National Report CARIBE EWS Saint Lucia
3.7	National Report CARIBE EWS St Kitts & Nevis
3.7	National Report USA 2013
3.7	National Report Anguilla 2013
3.7	National Report CARIBE EWS 2013 Aruba
3.8	PTWC Enhanced Products for the CARIBE-EWS Proposal
3.8	PTWC Interim Advisory Services for the CARIBE-EWS
3.8	User's Guide. Pacific Tsunami Warning Center Enhanced Products for the CARIBE-EWS (Draft)
3.9	CARIBE WAVE/LANTEX 2013 2nd ICG CARIBE EWS Tsunami Exercise
3.9	Media Releases CARIBEWAVE2013 (Draft)
3.9	CARIBE_WAVE_2013_ReportWITHSurvey.pdf@5_l__(Draft)
4.1	FACT_SHEET_Working_Group_One_March_2013
4.1	Working Group 1 2013 Ver5
4.1	Minutes ICG CARIBE EWS Officers-WG meeting January 2013
4.2	Status Report WG1 Monitoring and Detection Systems, Warning Guidance
4.2	FACT SHEET Working Group Two_April 2013
4.2	Minutes ICG CARIBE EWS Officers-WG meeting January 2013
4.4	Status Report Working Group 4 Preparedness, Readiness and Resilience

Working Documents

Agenda No.	Document title
4.4	Status Report Working Group 4 Preparedness, Readiness and Resilience
4.4	FACT_SHEET_Working_Group_Four_July 2012
4.4	Minutes ICG CARIBE EWS Officers-WG meeting January 2013
4.4	Final Minutes of WGIV Virtual Meeting March 26 and 27 2013
5	5.1 Haiti Presentation to ICG VIII
5	Tsunami Readiness in Trinidad and Tobago
6.1	Working Group I: Technical, logistical and administrative requirements of a Regional Tsunami Warning Centre for the Caribe EWS
6.1	Gestión integral del riesgo en la región costera de Venezuela Proyecto de Implantación de un Centro de Alerta de Tsunami y Otras Amenazas Costeras para la República Bolivariana de Venezuela
6.1	Resolution XXIII-13
6.2	Joint CARIBE-Wave 2013 and LANTEX 2013 Exercise in the Western Atlantic, Caribbean and Adjacent Regions on 20 March 2013
6.2	Exercise Caribe Wave/Lantex 13. Caribbean Tsunami Warning Exercise, 20 March 2013. Volume 1: Participant Handbook.
6.2	Exercise Caribe Wave 11. A Caribbean Tsunami Warning Exercise. IOC Technical Series No. 93
6.2	TSUNAMI EXERCISE / ENHANCED PTWC PRODUCTS
6.3	Tsunami PAE Strategy
6.3	Draft TSUNAMI PUBLIC AWARENESS & EDUCATION STRATEGY For the Caribbean and Adjacent Regions
6.4	Communications Plan for the Interim Tsunami Advisory Information Service to the Caribbean Sea and Adjacant REgions
6.5	ICG CARIBE EWS Implementation Plan revised 03/2011 (Draft)
6.5	Report sessional Group Implementation Plan
6.5	CARIBE EWS ICG ORGANIZATIONAL STRUCTURE AND GOVERNANCE-Mar2013
6.5	Implementation Plan Revised (Draft)

Background Documents

Doc. No	Document title
IOC/ICG/CARIBE-EWS-VII/3	Seventh Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Willemstad, Curacao, 2 to 4 April 2012.
CL-2478	Invitation to the Eight Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-VIII), Port of Spain, Trinidad and Tobago, from 29 April to 1 May 2013.
IOC/ICG/CARIBE-EWS-VII/3s	Executive Summary of the Seventh Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Willemstad, Curacao, 2 to 4 April 2012.

ANNEX V

LIST OF ACRONYMS

AGU	American Geophysical Union
AOR	Area of Responsibility
AusAID	Australian Government Overseas Aid Program
BKA	Government of Austria
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CDEMA	Caribbean Disaster Emergency Management Agency
CDM	Caribbean Comprehensive Disaster Management
CEO	Chief Executive Officer
CEPREDENAC	Coordination Centre for the Prevention of Natural Disasters in Central America
CERT	Community Emergency Response Team
CICESE	Investigación Científica de Educación Superior de Ensenada, Mexico
CIMH	Caribbean Institute for Meteorology and Hydrology
COCONet	Continuously Operating Caribbean Observational Network
ComMIT	Community Model Interface for Tsunami
CO-OPS	Oceanographic Products and Services of NOAA
CORE	Communities Organised and Ready for Emergencies
COUC	Municipal Emergency Operations Centre (Haiti)
COUD	Departmental Emergency Operations Centre of Haiti
COUN	National Emergency Operation Centre of Haiti
CRMI	Caribbean Risk Management Initiative
CTIC	Caribbean Tsunami Information Centre
CTWP	Caribbean Tsunami Warning Programme
DART	Deep-ocean Assessment and Reporting of Tsunamis
DEM	Department of Emergency Management
DIPECHO	Disaster Preparedness of the European Commission Humanitarian Aid Department

DMC	Data Management Centre
DPC	Protection Civile de Haiti (Civil Protection of Haiti)
ECHO	European Commission's Humanitarian Aid Office
EDF	European Development Fund
EMWIN	Emergency Managers Weather Information Network of United States of America
ERC	Enhancing Resilience to Reduce Vulnerability in the Caribbean
ESCAP	Economic and Social Commission for Asia and the Pacific
EU	European Union
FUNVISIS	Fundación Venezolana de Investigaciones Sismológicas
GFDRR	Africa Caribbean Pacific - European Union Global Facility for Disaster Reduction and Recovery
GOES	Geostationary Operational Environmental Satellite (US/NOAA)
GOOS	Global Ocean Observing System ()
GTS	Global Telecommunication System
HFA	Hyogo Framework for Action
ICG	Intergovernmental Coordination Group
ICG/CARIBE-EWS	Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions
ICG/PTWS	Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System
IOC	Intergovernmental Oceanographic Commission
IOTIC	Indian Ocean Tsunami Information Centre
IOTWS	the Indian Ocean Tsunami Warning and Mitigation System
IPDG	Institut de Physique du Globe de Paris
IRIS	Incorporated Research Institutions for Seismology
ITIC	International Tsunami Information Centre
JMA	Japan Meteorological Agency
JTIC	Jakarta Tsunami Information Centre

MACC	Monitoring atmospheric composition & climate
MINUSTAH	United Nations Stabilization Mission in Haiti
MoU	Memorandum of Understanding
MTS	Medium Term Strategy
NDBC	National Data Buoy Center of NOAA
NEAMTIC	Tsunami Information Centre for the North-Eastern Atlantic, the Mediterranean and Connected Seas
NEAMTWS	Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas
NEMO	National Emergency Management Organisation
NESDIS	National Environmental Satellite, Data, and Information Service of NOAA
NOAA	National Oceanic and Atmospheric Administration of United States of America
NOS	National Ocean Service of NOAA
NTHMP	National Tsunami Hazard Mitigation Program
NWS	National Weather Service
OCEATLAN	Regional Alliance for the Upper Southwest and the Tropical Atlantic
ODPM	Office of Disaster Preparedness and Management
OECS	Organization of Eastern Caribbean States
ONAMET	Oficina Nacional de Meteorología de la República Dominicana
PAE	Public Awareness and Education
PRSN	Puerto Rico Seismic Network
PTWC	Pacific Tsunami Warning Center
R3I	Regional Risk Reduction Initiative
RTSP	Regional Tsunami Service Provider
SHOM	French Naval Hydrographic and Oceanographic Service
SINAT	Sistema Nacional de Alerta de Tsunamis of Mexico
SLOSH	Sea, Lake, and Overland Surges from Hurricanes
SOP	Standard Operating Procedure

SRC	Seismic Research Center
TBD	To be determined
TCHWS	Tsunami and other Coastal Hazards Warning System
TIC	Tsunami Information Centre
TNC	Tsunami National Contact
ToR	Terms of Reference
TOWS	Tsunamis and Other Hazards Related to Sea-level Warning and Mitigation Systems
TT	Task Team
TWFP	Tsunami Warning Focal Point
TWS	Tsunami Warning System
UASD	Autonomous University of Santo Domingo
UATO	Unidad Alerta de Tsunami of ONAMET
UHSLC	University of Hawaii Sea-Level Centre
UNAM	National Autonomous University of Mexico
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNPOL	United Nations Police
UPRM	University of Puerto Rico at Mayaguez
USAID	United States Agency for International Development
USGS	United States Geological Survey
WCATWC	West Coast and Alaska Tsunami Warning Center
WG	Working Group
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 *ad hoc* 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-Cornmission 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, Papetee, 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*

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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), Mombasa, 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*
133.	Eighth Session of the IOC Intergovernmental Panel on Harmful Algal Blooms, Paris, France, 17–20 April 2007 (* Executive Summary available separately in E, F, S & R)	E*
134.	Twenty-third Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System, Apia, Samoa, 16–18 February 2009 (*Executive Summary available separately in E, F, S & R)	E*
135.	Twentieth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Beijing, China, 4–8 May 2009 (*Executive Summary available separately in E, F, S & R)	E*
136.	Tenth Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE), Puerto La Cruz, Bolivarian Republic of Venezuela, 22–25 October 2008 (*Executive Summary available separately in E, F, S & R)	E, S*
137.	Seventh Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-VII), Sabah, Malaysia, 26–29 May 2008 (*Executive Summary available separately in E, F, S & R)	E*
138.	Ninth Session of the IOC-WMO-UNEP Committee for the Global Ocean Observing System, Paris, France, 10–12 June 2009 (* Executive Summary available separately in E, F, S & R);	E*
139.	Fifth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, Athens, Greece, 3–5 November 2008 (* Executive Summary available separately in E, F, S & R)	E*
140.	Fourth Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Fort-de-France, Martinique, France, 2–4 June 2009 (* Executive Summary available separately in E, F, S & R)	E*
141.	Twenty-fifth Session of the Assembly, Paris, 16–25 June 2009	E, F, R, S
142.	Third Session of the Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology, Marrakesh, Morocco, 4–11 November 2009	E, F, R, S
143.	Ninth Session of the IOC Intergovernmental Panel on Harmful Algal Blooms, Paris, France, 22–24 April 2009 (* Executive Summary available separately in E, F, S & R)	E*
144.	Fifth Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Managua, Nicaragua, 15–17 March 2010 (* Executive Summary available in E, F, S & R)	E*
145.	Sixth Session of the IOC Regional Committee for the Central and Eastern Atlantic Ocean, Accra, Ghana, 28–30 March 2010 (* Executive Summary available in E, F, S & R)	E*
146.	Forty-second Session of the Executive Council; Paris, 15, 19 & 20 June 2009	E, F, R, S
147.	Forty-third Session of the Executive Council; Paris, 8–16 June 2010	E, F, R, S
148.	Sixth Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, Istanbul, Turkey, 11–13 November 2009 (* Executive Summary available separately in Ar, E, F, S & R)	E*
149.	Seventh Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, Paris, France, 23–25 November 2010 (* Executive Summary available separately in Ar, E, F, S & R)	E*
150.	Sixth Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Santo Domingo, Dominican Republic, 26–29 April 2011 (* Executive Summary available in E, F, S & R)	E*

151.	Twenty-fourth Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System, Beijing, China, 24–27 May 2011 (*Executive Summary in E, F, S & R included)	E*
152.	Twenty-first Session of the IOC Committee on International Oceanographic Data and Information Exchange, Liège, Belgium, 23–26 March 2011 (*Executive Summary available separately in E, F, S & R)	E*
153.	Eighth Session of the IOC Sub-Commission for the Western Pacific (WESTPAC-VIII), Bali, Indonesia, 10–13 May 2010 (*Executive Summary available separately in E, F, S & R)	E*
154.	Tenth IOC Intergovernmental Panel on Harmful Algal Blooms, Paris, France, 12–14 April 2011 (* Executive Summary available separately in E, F, S & R)	E*
155.	Forty-fifth Session of the Executive Council, Paris, 26–28 June 2012 (* Decisions available in E, F, S & R)	E*
156.	Seventh Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean Sea and Adjacent Regions, Willemstad, Curacao, 2–4 April 2012 (*Executive Summary available in E, F, S & R)	E*
157.	Eleventh Session of the IOC Sub-Commission for the Caribbean and Adjacent Regions (IOCARIBE), Miami, USA, 17–20 May 2011 (*Executive Summary available separately in E & S)	E, S*
158.	Eight Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-VIII), Trinidad & Tobago, 29 April–1 May 2013 (*Executive Summary available in E, F, S & R)	E*