



Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG)

Fifth Meeting

Tokyo, Japan

15 February 2012

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IOC/TOWS-WG-V/3
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EXECUTIVE SUMMARY

The Fifth Meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG-V) was held in Tokyo, Japan, on 15 February 2012, at the United Nations University (UNU) under the Chairmanship of Mr Yutaka Michida (IOC Vice-chairman). The meeting evaluated progress in actions and decisions taken by the Governing Bodies, mainly through the Intergovernmental Oceanographic Commission (STATUS OF IMPLEMENTATION OF IOC RESOLUTIONS XXVI-6 AND xXVI-7). An overview of the staffing and budgetary resources for the IOC Tsunami Unit was also provided.

Sixteen experts, including the chairs of four Intergovernmental Coordination Groups (ICGs) and representatives from Member States and JCOMM (Joint Technical Commission for Oceanography and Marine Meteorology), participated in the meeting. The meeting was followed by the Japan-UNESCO-UNU International Symposium 'The Great East Japan Tsunami and Tsunami Warning Systems: Policy Perspectives, Summary Statements' ([IOC/BRO/2012/1](#)) held at UNU on 16 and 17 February 2012.

The Group **recommended** the IOC Executive Council to extend the TOWS-WG for a further intersessional period, with the same mandate and membership.

The Group **encouraged** the Inter-ICG Task Teams on Disaster Management and Preparedness and on Tsunami Watch Operations to continue their work and recommended the IOC Assembly to extend the period of work for the Inter-ICG Task Teams on Disaster Management and Preparedness, and on Tsunami Watch Operations.

The Group **noted** with regret that it has not been possible for the Inter-ICG Task Team on Hazard Assessment Related to Highest Potential Tsunami Source Areas to hold a meeting after its establishment.

The Group **proposed** to establish an Inter-ICG Task Team on Outreach and Communications Plan for the IOC Tsunami Programme.

The Group **stressed** the urgent need for Member States to contribute Extrabudgetary resources to support the work of the Group and its Task Teams.

RÉSUMÉ EXÉCUTIF

La cinquième réunion du Groupe de travail sur les systèmes d'alerte aux tsunamis et aux autres aléas liés au niveau de la mer, et de mitigation (TOWS-WG-V) s'est tenue le 15 février 2012 à Tokyo (Japon), à l'Université des Nations Unies (UNU), sous la présidence de M. Yutaka Michida (Vice-Président de la COI). Les participants à la réunion ont mesuré les progrès accomplis s'agissant des actions menées et décisions prises par les organes directeurs, notamment par le biais des résolutions de la Commission océanographique intergouvernementale (COI) STATUS OF IMPLEMENTATION OF IOC RESOLUTIONS XXVI-6 AND XXVI-7. Les effectifs et ressources budgétaires de l'Unité pour les tsunamis de la COI ont également été présentés brièvement.

Seize experts, parmi lesquels les présidents de quatre Groupes intergouvernementaux de coordination (GIC) ainsi que des représentants d'États membres et de la JCOMM (Commission technique mixte d'océanographie et de météorologie maritime), ont participé à la réunion. Celle-ci a été suivie du Colloque international Japon-UNESCO-UNU intitulé « Le grand tsunami qui a frappé l'est du Japon et les systèmes d'alerte aux tsunamis : perspectives d'action » ([IOC/BRO/2012/1](#)), qui s'est tenu à l'UNU, les 16 et 17 février 2012.

Le Groupe **a recommandé** au Conseil exécutif de la COI de reconduire le TOWS-WG pour une période intersessions supplémentaire, avec le même mandat et la même composition.

Le Groupe **a encouragé** les Équipes spéciales inter-GIC sur la gestion et la préparation en cas de catastrophe et sur les opérations de veille aux tsunamis à poursuivre leurs activités, et a recommandé à l'Assemblée de la COI de prolonger le mandat de celles-ci.

Le Groupe **a noté** avec regret que l'Équipe spéciale inter-GIC sur l'évaluation des aléas dans les régions les plus exposées au risque de tsunami n'avait pas pu se réunir depuis sa constitution.

Le Groupe **a proposé** de constituer une Équipe spéciale inter-GIC sur l'élaboration d'un plan de communication et de sensibilisation pour le Programme relatif aux tsunamis de la COI.

Le Groupe **a souligné** qu'il importait au plus haut point que les États membres fournissent des ressources extrabudgétaires afin de soutenir les activités du Groupe et de ses équipes spéciales.

RESUMEN DISPOSITIVO

La quinta reunión del Grupo de Trabajo sobre sistemas de alerta contra tsunamis y otros peligros relacionados con el nivel del mar y atenuación de sus efectos (TOWS-WG-V) se celebró el 15 de febrero de 2012 en la Universidad de las Naciones Unidas (UNU) en Tokio (Japón), bajo la presidencia del Sr. Yutaka Michida (Vicepresidente de la COI). En esta reunión se pasó revista a los avances relativos a las actividades y decisiones de los órganos rectores, particularmente en virtud de las Resoluciones de la Comisión Oceanográfica Intergubernamental (COI) STATUS OF IMPLEMENTATION OF IOC RESOLUTIONS XXVI-6 AND XXVI-7. También se presentó un panorama general de los recursos humanos y presupuestarios de la Unidad sobre tsunamis de la COI.

En la reunión participaron 16 expertos, entre ellos los presidentes de cuatro Grupos Intergubernamentales de Coordinación (GIC) y representantes de Estados Miembros y la JCOMM (Comisión Técnica Mixta sobre Oceanografía y Meteorología Marina). Tras esa reunión, los días 16 y 17 de febrero de 2012 tuvo lugar en la UNU el Simposio internacional Japón-UNESCO-UNU “El gran tsunami del Japón oriental y los sistemas de alerta contra los tsunamis: perspectivas en materia de políticas” (IOC/BRO/2012/1).

El Grupo **recomendó** al Consejo Ejecutivo de la COI que prorrogara el TOWS-WG por otro periodo entre reuniones, con igual mandato y composición.

El Grupo **alentó** a los Equipos de Trabajo entre GIC sobre la gestión de desastres y la preparación y sobre las actividades de vigilancia de tsunamis a proseguir su labor y recomendó a la Asamblea de la COI que prolongara el periodo de trabajo de dichos equipos.

El Grupo **tomó nota** con pesar de que el Equipo de Trabajo entre GIC sobre evaluación de riesgos en zonas de alto potencial tsunamigénico no había podido reunirse desde su creación.

El Grupo **propuso** que se creara un Equipo de Trabajo entre GIC sobre un plan de difusión y comunicación para el Programa sobre tsunamis de la COI.

El Grupo **subrayó** la apremiante necesidad de que los Estados Miembros respaldaran mediante recursos extrapresupuestarios la labor del Grupo y sus equipos de trabajo.

РАБОЧЕЕ РЕЗЮМЕ

Пятое совещание Рабочей группы по системам предупреждения и смягчения последствий цунами и других опасных явлений, связанных с изменением уровня моря (РГ-СПЦО-V), состоялось в Токио, Япония, 15 февраля 2012 г. в Университете Организации Объединенных Наций (УООН) под председательством г-на Юкаты Мишиды (заместителя Председателя МОК). Участники совещания оценили ход осуществления мероприятий и решений руководящих органов, главным образом, в рамках резолюций STATUS OF IMPLEMENTATION OF IOC RESOLUTIONS XXVI-6 AND XXVI-7. Был также проведен обзор людских и бюджетных ресурсов Отдела МОК (Межправительственная океанографическая комиссия) по проблемам цунами.

В совещании приняли участие шестнадцать экспертов, включая председателей четырех МКГ (Межправительственная координационная группа) и представителей государств-членов и СКОММ (Совместная техническая комиссия по океанографии и морской метеорологии). По окончании совещания 16-17 февраля 2012 г. в Университете Организации Объединенных Наций прошел международный симпозиум Япония-ЮНЕСКО-ООН «Великое цунами в Восточной Японии и системы предупреждения о цунами: политические перспективы» ([IOC/BRO/2012/1](#)).

Группа **рекомендовала** Исполнительному совету МОК продлить мандат РГ-СПЦО на следующий межсессионный период, сохраняя ее мандат и членский состав.

Группа **призвала** Общую целевую группу МКГ по предупреждению и ликвидации последствий бедствий и обеспечению готовности к ним и Общую целевую группу МКГ по наблюдению за цунами продолжать их работу и **рекомендовала** Ассамблее МОК продлить мандат Общей целевой группы МКГ по предупреждению и ликвидации последствий бедствий и обеспечению готовности к ним и Общей целевой группы МКГ по наблюдению за цунами.

Группа с сожалением **отметила**, что Общая целевая группа МКГ по оценке опасности, связанной с наиболее вероятными очагами возникновения цунами, со времени ее учреждения не смогла провести ни одного совещания.

Группа **предложила** учредить Общую целевую группу МКГ по информационно-разъяснительной деятельности и плану в области коммуникации для Программы МОК по цунами.

Группа **подчеркнула** острую необходимость предоставления внебюджетных средств государствами-членами в целях оказания поддержки деятельности Группы и ее целевых групп.

1. OPENING AND WELCOME

1.1 OPENING

1. The Chair of TOWS-WG, Prof Yutaka Michida welcomed the participants and opened the meeting of TOWS-V. He also informed that a visit to the Japan Meteorological Agency (JMA) Tsunami Warning Center had been arranged for TOWS participants in the afternoon of 15 February 2012.

1.2 ADOPTION OF THE AGENDA

2. The Agenda for this meeting was adopted as indicated in ANNEX I. During its adoption, several participants suggested that an update be provided on the staff and budget resources of the Tsunami Unit (TSU) in light of the financial difficulties that the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the Intergovernmental Oceanographic Commission (IOC) are undergoing due to the withholding of regular financial dues and voluntary contributions to UNESCO by the United States of America and Israel. Mr Thorkild Aarup, acting Head of the Tsunami Unit, agreed to provide such an oral update under the agenda item 2.1 on these matters.

1.3 WORKING ARRANGEMENTS

3. Mr Thorkild Aarup welcomed the participants on behalf of IOC/UNESCO and provided logistic details. All documents and presentations delivered at this meeting are available from the following website: http://www.ioc-tsunami.org/index.php?option=com_oe&task=viewEventRecord&eventID=1078&lang=en
4. The list of participants is provided in ANNEX II.

2. REPORTS FROM RELEVANT BODIES

2.1 REPORT FROM THE IOC BODIES

5. Chairperson of TOWS, Mr Yukata Michida, introduced this item by providing an oral report on the status of IOC budget as discussed at the last IOC Officers Meeting held in Paris on 30 January – 2 February 2012. He indicated that given the status of financial resources there were discussions about the funding available to hold the 45th IOC Executive Council. The decision of holding or not the Executive Council is pending on the opinion of Member States about the possibility of hosting the session only in one or two languages and with documentation in only one language. There were discussions also about the funding for Tsunami Unit, which given the reduced amount, has prevented of initiating the work of the recent established TOWS Inter-ICG Task Team on Hazard Assessment Related to Highest Potential Tsunami Source Areas and also the possibility of holding meetings of the existing Task Teams on Disaster Management and Preparedness and on Tsunami Watch Operations.

IOC Tsunami Unit Staff and budget situation

6. Mr Thorkild Aarup provided an overview of the staffing resources in the IOC Tsunami Unit (Table 1). The staffing resources comprise two groups: (i) one funded via UNESCO/IOC Regular Programme (RP) funds; and (ii) one funded via extrabudgetary funding (ExB).

REGULAR PROGRAMME FUNDS	
Staff	Location
Bernardo Aliaga (Programme Specialist); Silvia Sermenó (Administrative Assistant) Thorkild Aarup (Acting Head of Unit)	UNESCO/IOC Paris
Rajandra Prasad (National Officer)	Stationed at SOPAC (Fiji)
Half time National Officer (under recruitment)	UNESCO Jakarta (Indonesia) Expected to be filled in 2nd or 3rd quarter of 2012 pending approval by the UNESCO Director General
EXTRA BUDGETARY FUNDED STAFF	
Staff	Location, Source, Time period
Stefano Belfiore (Programme Specialist, half time) Francesca Santoro (Programme Specialist ½ time) Cornelia Hauke (Administrative Assistant, half time)	UNESCO/IOC Paris European Union funded NEAM Tsunami Information Center (NEAMTIC). From 1 January 2011 until 31 December 2012
Masahiro Yamamoto (Senior Programme Specialist)	UNESCO/IOC Paris Japan Funds in Trust contribution to UNESCO. 30 May 2011 – 26 May 2012. Request for extension was filed but not granted.
Tony Elliott (Programme Specialist) Jane Cuneen (Programme Specialist)	Perth, Australia Funding provided to IOC Special Account from Bureau of Meteorology until 30 June 2013.
Diana Patricia Mosquera (Programme Specialist)	UNESCO Port au Prince Office (Haiti) Funded via the EU project to UNESCO Port au Prince Office: Strengthening Haitian capacities for tsunami early warning and preparedness. Funding available until 31 December 2012.
Fauzi (Programme Specialist)	Muscat, Oman Oman Fund in Trust project with UNESCO: Oman National Multi-Hazard Early Warning System. Funding available until 31 May 2013
Alison Brome (Consultant)	Barbados Caribbean Tsunami Information Center (CTIC) Funded by UNDP Barbados Funding available until 7 November 2013

Table 1. Staffing resources in the IOC Tsunami Unit

7. Mr Aarup furthermore informed that Mr Ulrich Wolf had left the IOC/TSU when his secondment ended on 1 October 2011. Since September 2011, two administrative staff have also left due to lack of funding.
8. With respect to the budget for the IOC Tsunami Unit, he reported that UNESCO/IOC Regular Programme budget for activities has been reduced by about 78% from USD 295,000 originally planned and approved for in the UNESCO 36 C/5 program (for 2012-2013) to USD 80,000 for this biennium (2012-2013). There is a possibility that the UNESCO Director General may allocate additional emergency funding to some programmes in UNESCO and the IOC Tsunami Unit is in the list of priorities of IOC.
9. Mr Aarup summarized that it is very challenging for the IOC to keep the Tsunami Unit delivering with the current staffing available and the drastic current reduction on the activity budget. He strongly encouraged countries to contribute extra budgetary funding to TSU activities.
10. Mr Chip McCreery, as representative of the United States of America, also mentioned the funding provided by the United States of America to the International Tsunami Information Centre (ITIC) that also supports the work of IOC. He indicated that the budget of the United States of America to the Tsunami Programme is also being reduced in an amount of USD 4, 5 Million that may affect the DART (Deep-ocean Assessment and Reporting of Tsunamis Project) Buoys Programme. He indicated that ITIC is expected to continue to be funded.
11. Mr Rick Bailey, Chair of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), spoke about the status of funding of the Tsunami Programme in Australia that is also getting a reduction of 7% in its budget and 20% reduction on capital investments which will affect the deployment of instruments.

Presentation from the Joint Technical Commission for Oceanography
and Marine Meteorology (JCOMM)

12. Mr Mikhail Entel represented the co-President of JCOMM, Mr Peter Dexter. Mr Entel reported on the recommendation of the Ninth Session of JCOMM Management Committee held in Geneva, Switzerland, from 13 to 16 September 2011 to invite the IOC Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (IOC/TOWS-WG) to explore collaborate with the JCOMM Expert Team on Wind Waves and Storm Surges (ETWS) in dealing with multi-hazard forecast and warning issues. Mr Entel described some of the activities of JCOMM where the potential for such collaboration could be realized (including inundations, observations and communication systems, and multi-hazard systems).
13. The group agreed there could be potential for collaboration with the JCOMM-ETWS and to investigate in which areas such collaboration could be beneficial, and to propose a set of actions to allow such collaboration to develop.

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

14. Ms Lorna Inniss, Chairperson of the ICG/CARIBE EWS, reported that the region has made huge progress in 2011. She indicated that the major activities on monitoring have been increased on the sea-level network with funding from several sources including from Small Development Islands (SDIs) which is at 32% coverage from the core network designed by the ICG. The seismic network is at 75% completion and the pending issue is still sharing of data.

15. Ms Inniss recalled that at the last TOWS meeting there was an extensive discussion about tests for tsunami warning services. She reported that now the CARIBE EWS is proceeding with regular and non-scheduled tests since October 2011. On Hazard Assessment she indicated that Overseas Territories from European Union (EU) have received funding to develop innovative cheaper technologies to obtain local bathymetry useful for accurate inundation models. On Warning Dissemination and Communications, she reported that with support from the United States Agency for International Development (USAID), Standard Operating Procedures (SOPs) have been established in four countries and will be expanded to other countries. Anguilla (UK) became on 12 December 2012 the first non-USA certified TsunamiReady® Community in a pilot experience guided by the ICG/CARIBE EWS. Another relevant step ahead has been the ongoing process to establish the Caribbean Tsunami Information Center (CTIC), which is now in discussions by UNESCO and the Government of Barbados, also supported by the Government of Italy through the UNDP (United Nations Development Programme) Office for Organisation of Eastern Caribbean States (OECS) and Barbados.
16. Ms Inniss expressed that the ICG/CARIBE EWS has received very useful support from the Caribbean Tsunami Warning Programme (CTWP) of the United States of America and that there is a real concern on the impact of the United States of America withholding of assessed contributions to UNESCO and the continuation of its funding for the Caribbean Tsunami Warning System including towards a Caribbean Tsunami Warning Center (CTWC) in the framework of the ICG/CARIBE EWS.
17. The Group **agreed** that the TOWS-WG need a Task Team to develop a Communications and Outreach Plan for the IOC Tsunami Programme and its ICGs. Ms Lorna Inniss, Mr Gerassimos Papadopoulos, Mr Rick Bailey and Ms Irina Rafliana were tasked to develop by the end of March 2012 a Terms of Reference (ToR) to be submitted to the 45th Session of the IOC Executive Council.

Report from the Intergovernmental Coordination Group
for the Tsunami Early Warning and Mitigation System in the North-Eastern
Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS)

18. Mr Francois Schindelé, Chair of ICG/NEAMTWS, provided a brief historic summary of the intergovernmental coordination efforts for NEAMTWS. Then, he summarised the decisions and recommendations from the Eighth Session of ICG/NEAMTWS ([ICG/NEAMTWS-VIII/3s](#)) held in Santander, Spain, from 22 to 24 November 2011. These were:
- Endorsement of the revised architecture for NEAMTWS as recommended by the Task Team on the Regional Tsunami Warning System Architecture, namely that the concept of Regional Tsunami Watch Centres (RTWCs) be replaced by a Tsunami Watch Provider (TWP)/Tsunami Watch Recipient (TWRs) approach, in which TWPs disseminate information without geographical constraint and Tsunami Watch Recipients are able to receive information from one or more TWPs of their choice.
 - The re-emphasis of the urgency of having as soon as possible the NEAMTWS operating in an interim phase, in which candidate TWPs provide the level of service specified in the Interim Operational Users Guide.
 - The recognition that France, Greece, Italy, Portugal and Turkey continue to offer candidate TWP services for NEAMTWS and noting that some of them will be operating in 2012.
 - The establishment of a Steering Committee composed by the Officers and the Co-Chairs of the Working Groups and the Task Teams.
 - The decision to conduct during 2012 a Communication Test Exercise (CTE) and the NEAMWave12 Exercise.

19. As for the mandate of the Steering Committee of the ICG/NEAMTWS, then the Steering Committee shall coordinate and integrate the work of ICG/NEAMTWS in the intersessional periods, as implemented through the various Working Groups and Task Teams, including but not limited to: (i) monitor performance of the NEAMTWS; (ii) monitor implementation of decisions and recommendations of the ICG and provide strategic advice on the implementation of the NEAMTWS; (iii) identify relevant funding sources taking account of the resource implications of approved activities; (iv) facilitate implementation at the level of the ICG of relevant resolutions, decisions and recommendations of the IOC Governing Bodies and the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG); (v) develop and maintain the NEAMTWS Implementation Plan, Interim Operations Users Guide, and Development Plan; (vi) examine continuing compliance of TWP's with the adopted operational and organizational function and requirements; (vii) develop procedures for the accreditation of TWP's based on the operational and organizational functions and requirements; (viii) continue the tasks initiated by the Task Team on the Multi-hazard Approach to Coastal Inundation, that is, identifying relevant national and international activities and the scope for linkage with NEAMTWS; and (ix) liaise with the Steering Committees or equivalent structures of other ICGs.
20. The Steering Committee will mainly work by correspondence, but hold a coordination meeting prior to each ICG session. Other meetings will be held as needed. The membership of the Steering Committee will be the ICG/NEAMTWS Officers (Chair and two Vice-Chairs) and the Co-Chairs of ICG/NEAMTWS Working Groups and Task Teams.
21. Finally, Mr Schindel  also highlighted the important role of the Tsunami Information Centre (NEAMTIC) formally established at the IOC Secretariat on 1 January 2011 with the financial support of the European Commission's Humanitarian Aid & Civil Protection (ECHO). The NEAMTIC is tasked to produce multilingual awareness and educational materials on tsunami preparedness for the general public, schools, and emergency response agencies.

Report from the Intergovernmental Coordination Group
for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS)

22. Mr Rick Bailey, Chair of ICG/IOTWS, reported that the implementation of the Indian Ocean Regional Tsunami Service Provider (RTSP) system on 12 October had been the most significant event for the IOTWS in 2011. He provided a brief overview of the RTSP products and their performance to date. He noted that Performance Indicators were under review by the RTSP Task Team and would be published for the scrutiny of the Member States. He reported that the IOTWS had been conducting quarterly communications tests since March 2011 and had conducted the Exercise Indian Ocean Wave 11 (IOC/2011/TS/99) on 12 October 2011.
23. Referring to the IOTWS workplans in 2012, Mr Bailey noted that there were plans to revise 'Tsunami risk assessment and mitigation for the Indian Ocean; knowing your tsunami risk – and what to do about it' ([IOC Manual and Guides No. 52](#)), to take into account marine hazards, to prepare a draft of "Preparing Last Mile of the Indian Ocean TWS – Compilation of Some Good Practices in TWS Dissemination", and to further coordinate routine reporting of seismic station status through WG2 to highlight and identify data availability for NTWCs and RTSPs.
24. Mr Bailey noted that there should be better coordination of WAVE Exercises between ocean basins to prevent exercises happening too close together. He also noted that each RTSP had access to different sea-level data in real time and suggested that GLOSS (Global Sea-Level Observing System) should coordinate better availability and access. Mr Bailey further noted that IOC operated a website for subscribing to tsunami warnings and that this needed to be better coordinated with the ICGs. Finally, he recommended that the mandate of Jakarta Tsunami Information Centre (JTIC) should be broadened to provide a vital regional role in developing and sharing education materials, outreach, post-event survey coordination and SOP training.

Report from the Intergovernmental Coordination Group
for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS)

25. Mr Ken Gledhill, Chair of ICG/PTWS, reported that PTWS is exploring to improve the PTWC warning services by using quantitative forecast, and as part of that process the Exercise Pacific Wave 11 (IOC/2011/TS/97Vol.) tested a new set of products from PTWC. He indicated that the PTWS Steering Committee is meeting in May 2012 in Hawaii, United States of America, back to back with the ICG/PTWS PacWave11 and Enhanced Tsunami Products Task Team. He indicated that all four regional working groups are very active having held meetings in: Central America (Second Meeting of the ICG/PTWS Regional Working Group for Central America, San Salvador, El Salvador, from 28 to 30 September 2011, IOC/PTWS-WG-CA-II/3), South America ([South-East Pacific Tsunami Warning Working Group](#), (G/T ATPS) held in Santiago, Chile the 14 and 15 October 2010) and South China Sea (Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region, Sanya, China, from 12 to 14 December 2011, ICG/PTWS-WG-SCS-I/3 Rev.). Mr Schindelé indicated that France received funding from the European Union to improve the network of Southern French territories (New Caledonia) and now the data from these stations are available through GTS (Global Telecommunication System).

2.2 REPORT FROM NON IOC BODIES

26. There were no reports from non IOC bodies at this meeting.

3. REVIEW OF PROGRESS

3.1 STATUS OF IMPLEMENTATION OF IOC RESOLUTIONS XXVI-6 AND XXVI-7

27. This agenda item was introduced by Mr Thorkild Aarup, acting Head of the Tsunami Unit. He reviewed the implementation of the two resolutions. Some of the implementation actions that contribute to the implementation of XXVI-7 fall under the reporting on the four ICGs.

IOC Resolution XXVI-6

28. At the 27th Session of the Data Buoy Cooperation Panel ([DBCP-XXVII](#)) held from 26 to 30 September 2011 in Geneva, Switzerland; the Working Group on Data Buoy Vandalism reported on the activities implementing Resolution XXVI-6 taken on behalf of the IOC and WMO (World Meteorological Organization). A questionnaire designed to capture statistics on vandalism has been circulated to DBCP members and, while several members responded in great detail, the general response was disappointingly low. Future DBCP country reports will include an annex to address buoy vandalism information. Work is progressing on maps of vandalism occurrences, including an economic analysis of the complex nature of costs due to vandalism of equipment replacement, man and ship time, data loss and lost economic opportunity. The impact of piracy on buoy deployments and maintenance will be included in the studies.
29. The United Nation General Assembly (UNGA) on the Resolution A/66/L.21 on the Oceans and the Law of the Sea on December 2011 noted the Report on Ocean Data Buoy Vandalism – Incidence, Impact and Responses (WMO-IOC/DBCP Technical Document No.41.) The UNGA urged States to take necessary action to cooperate with IOC, WMO and FAO (Food and Agriculture Organization of the United Nations) to address damage to ocean data buoys.

IOC Resolution XXVI-7

30. The Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems held its Fourth Meeting on 21 and 22 March in Paris ([IOC/TOWS-WG-IV](#)). TOWS-WG has completed informed relevant Groups about: (i) the reports and recommendations to the 26th Session of the Assembly on Sea-Level for Tsunami Purposes, on Disaster Management and Preparedness, and on Tsunami Watch Operations; and (ii) the Compendium of Terms and Definitions in Coastal Disaster Risk Reduction.
31. IOC has through Mr Masahiro Yamamoto assisted with the coordination of 14 international tsunami survey teams immediately after the off-Tohoku Earthquake and Tsunami in Japan, following the request of the Japan National Commission of UNESCO.
32. TOWS-WG has considered it premature to request ICGs to carry out an analysis of the impact of data gaps on the tsunami detection, forecast, timeliness and accuracy.
33. There has been an increase in nominated Tsunami Warning Focal Points notably in the CARIBE EWS and in the NEAMTWS region, and there has been a general check and revision of the contact points.
34. Funding has been contributed directly to IOC or in kind from/via: (i) Australia towards the IOTWS secretariat; (ii) United States of America towards the development of an International Caribbean Watch Centre; (iii) the European Commission's Sixth Action Plan for Disaster Preparedness in South America Aid department towards a project on tsunami preparedness for coastal communities in Chile, Colombia, Ecuador and Peru; and (iv) The European Commission's Civil Protection for the Tsunami Information Centre for the North-eastern Atlantic, the Mediterranean and connected seas (NEAMTIC).
35. IOC has continued to facilitate the development of CTIC and, with funds provided by UNDP, a consultant has been hired to prepare a business plan for CTIC that will include (i) an annual work plan, (ii) a five year strategy; (iii) a four-year budget and fund-raising plan; (iv) a partnership strategy, (v) a communications plan, and (vi) an annual report.
36. IOC has continued to coordinate with the United Nations International Strategy for Disaster Reduction of (UN-ISDR); the IUGG (International Union of Geodesy and Geophysics) Tsunami Commission has been continued with Mr Masahiro Yamamoto attending the IUGG meeting in July 2012. The UNESCO Intergovernmental Oceanographic Commission has continued its work with the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO), facilitating the use of seismic data from the CTBTO network for national tsunami monitoring centres. Agreements have been signed with ten countries and there are five additional countries awaiting or planning to sign agreements with CTBTO.
37. The TOWS-WG Chair has attended all ICG meetings during the reporting period. IOC meetings have been announced and information has been circulated through established procedures to Chairs of ICGs, WGs and Member States.
38. Following the approval by Mr Sang-Kyung Byun, Chair of IOC, the TOWS Inter-ICG Task Team on Hazard Assessment Related to Highest Potential Tsunami Source Areas has been formed with the following members: Mr Sergio Barrientos (Chile, PTWS); Ms Laura Wallace (New Zealand, PTWS); Mr Frank Audemard (Venezuela, CARIBE EWS); Mr Uri Ten Brink (United States of America, CARIBE EWS); Ms Maria Ana Baptista (Portugal, NEAMTWS); Ms Hélène Hébert (France, NEAMTWS); Mr Phil Cummins (Australia, IOTWS); Mr Ali Al-Lazki (Oman, IOTWS); Mr Emile Okal (United States of America, IUGG Tsunami Commission); and Mr Kenji Satake (Designated Chair, Japan; IUGG Tsunami Commission). The Task Team has not been able to meet due to lack of funding.

39. The Group discussed at length about the availability of tsunami documentation through the IOC website and the access to the valuable documents created by the different ICGs, including training, manuals, scientific papers and reports of meetings. The Group **agreed** that a simple list of what is available through the website will be very useful.
40. The Group **agreed** to request the TICs to coordinate among them, for harmonized public awareness and education material with due consideration to regional aspects and language.
41. The Group also discussed the instruction in IOC Resolution XXVI-7 to develop Global Risk Assessment Guidelines utilizing those developed in IOC Manuals and Guides 52 'Tsunami risk assessment and mitigation for the Indian Ocean: knowing your tsunami risk and what to do about it' ([IOC/2009/MG/52](#)). The Group **agreed** that a consultant should be hired to develop that text.
42. Mr Chip McCreery suggested that regarding the completion of the Compendium, Task Team 3 requires a finalised document because there is continued discussion about technology. He also indicated that the gap analysis was a high priority. The Group **agreed** to task the Task Team 3 on Tsunami Watch Operations to develop Terms of Reference for data gap analysis to guide these studies by the ICGs.
43. IOC Resolution XXVI-7 instructed the TOWS-WG to develop and implement a coordinated Communications and Outreach Plan, including a focus on media education. No progress has been made on this instruction. The Group acknowledged the heightened importance of this, and proposed to establish an Inter-ICG Task Team on Communication and Outreach. The Group asked Ms Lorna Inniss, Mr Francois Schindel , Mr Rick Bailey and Ms Irina Rafliana to propose draft Terms of References for such a Task Team.

4. REPORTS OF THE INTER-ICG TASK TEAMS

4.1 INTER-ICG TASK TEAM ON DISASTER MANAGEMENT AND PREPAREDNESS

44. The report of the Task Team on Disaster Management and Preparedness was presented by its Chair Ms Irina Rafliana (Indonesia).
45. The Task Team reported its progress since the First Meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems. Inter-ICG Task Team 2 on Disaster Management and Preparedness ([IOC/TOWS-WG/TT2-I/3](#)) held in Seattle, USA, from 29 November to 1 December 2010; and the Fourth Meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems ([IOC/TOWS-WG-IV](#)) held on 20 and 21 March in Paris, France; particularly on the progress made based on the Task Team prioritized actions, which was discussed during the Inter-ICG Task Team meeting in Seattle, USA.
46. The achievements include the allocated side event at the Global Platform for Disaster Risk Reduction, on 10 May 2011. The side event was a collaborative event, themed "[Saving of Lives and Improved Coastal Risk Management through Regional Cooperation in Ocean and Marine Related Early Warning System in Asia](#)". This event was intended to be also part of familiarization of IOC/UNESCO contribution to the global risk reduction for tsunami and other hazards related to sea-level warning and mitigation system to wider audience and stakeholders. The initiative from TT2 (Task Team 2) was lead by Prof Sam Hettiarachchi, supported by Ms Julie Leonards.
47. Task Team 2, under the leadership of Ms Laura Kong and Mr David Coetzee, had developed a generic guideline on 'How to Plan, Conduct, and Evaluate Tsunami Exercises' ([IOC/2011/MG/58](#)). This document was intended to be universally applicable and available to all

ICGs. The document is undergoing peer review process and has already been translated into Spanish. A stock-take template was also developed in English, Spanish and French versions, which is easily used using the internet based Survey Monkey tool, which is intended to be filled in by Disaster Management Officials and National Tsunami Warning Centers. PTWS had currently conducted the stock-take survey using this tools and the template is available for other TWS (Tsunami Warning System) to use or adapt. This template was developed by Mr David Coetzee and Ms Laura Kong.

48. IOC/UNESCO lead the development of a draft manual on 'Standard Operating Procedures in Tsunami Warning Dissemination', which serves as a vehicle for conveying the recommendations of the Terms of Reference 4 of the Task Team 2, with the aim of establishing a "Basic Framework for Standard Operational Procedures in Tsunami Warning Dissemination"(IOC/TOWS-WG-IV, [Annex IV](#)). The draft is currently being peer reviewed.
49. Related events were discussed, such as ICG inter-sessional meetings which took up the recommendations and prioritized actions discussed at the TT2 meeting for further follow-up. Exercises within ICGs in Tsunami Warning System conducted in 2011 and 2012 were also briefly discussed: PacWave ([IOC/2011/TS/97Vol.1](#)), IOWave (IOC/2011/TS/99), CARIBE WAVE ([IOC/2010/TS/93](#)).
50. Overall, the prioritized actions were accomplished throughout 2011.
51. The Intergovernmental Coordination Group for the IOTWS conducted training in September 2011 on the Standard Operating Procedures (SOP) for warning dissemination and emergency response '[Regional Workshop on Standard Operating Procedures for Tsunami Warning and Emergency Response](#)' involving the Regional Tsunami Service Providers (RTSPs), National Tsunami Warning Centres (NTWCs), National Disaster Management Organisations (NDMOs) supported by the ICG/IOTWS Secretariat and the UNDP Asia-Pacific Regional Centre (APRC) in Jakarta, Indonesia. In addition, joint work and links across ICGs were also conducted among others, the use of the Guideline for Conducting Tsunami Exercises (How to Plan, Conduct, and Evaluate Tsunami Exercises, IOC/2011/MG/58). While products of tsunami warning information may differ, the training pointed out the importance of familiarizing with different products which at the end will be accessed by the public, to reduce confusion and to encourage proper response.
52. Through Regional Tsunami Awareness and Education Materials Workshop, hosted by JTIC UNESCO and supported by UNESCAP (Economic and Social Commission for Asia and the Pacific) on July 2011, the same case of cross collaboration among basins was accomplished during the UNESCO-UNESCAP Regional Workshop on Disaster Awareness Materials and Assessment Tools on Preparedness, where lessons from Japan, Chile, Indonesia and Philippines were exchanged, with participants mainly from the Indian Ocean countries. Lessons from the most recent tsunamis (Chile, Japan and Indonesia) were discussed and the workshop pinpointed the need to update education practitioners worldwide about less known phenomena such as tsunami-earthquakes.
53. The role of TICs was discussed. The ICGs and the IOC have endorsed the establishment of Tsunami Information Centres (TIC) to support each ICG region with information resources, for awareness and identification of capacity building activities to support the needs of countries. TICs were to engage and coordinate and/or collaborate with the relevant regional organizations. The ITIC Training Program consists of a Hawaii-based training (ITP-Hawaii), where Hawaii is used as a working example of an end-to-end system of warning, response, and preparedness for both distant and local tsunamis; and an International training (ITP-Intl), where ITIC organizes a regional or country-specific training. ICG/IOTWS recognizes the important role and support the wider role of JTIC to serve as hub in trans-regional/intra ICG/IOTWS capacity building and knowledge sharing in relation with tsunami warning system and Disaster Risk Reduction. CARIBE TIC is already established and currently working on its business plans and strategies.

54. To further familiarize the current and generic issues in tsunami awareness and preparedness, the role of UNESCO Goodwill Ambassadors was discussed. This relates to the need for TOWS communication and outreach plans, among others, through creative industry and inter-cultural dialogue through UNESCO Goodwill Ambassadors.
55. Great Japan tsunami through the symposium held in Japan ([IOC/BRO/2012](#)) concurrently with the TOWS meeting was expected to be one of the basis to reflect back on the effectiveness of approaches and policies which has been encouraged through ICGs and TOWS.

4.2 INTER-ICG TASK TEAM ON TSUNAMI WATCH OPERATIONS

56. Mr Srinivas Kumar (India), Chair of the Inter-ICG Task Team on Tsunami Watch Operations, presented the report of the Task Team. He noted that the members of the Task Team had corresponded by email, held informal meetings on the sidelines of other meetings, and held a formal meeting in Seattle, United States of America, in December 2010. An initial report had been presented at the Fourth Meeting of the Working Group on TOWS in March 2011 and each of the ICGs had now reviewed this and had ample opportunity to test new products through drill, exercises and communications tests. The report contained an extensive review of the operational systems in each ICG and recommendations for global harmonisation.
57. Mr Kumar explained that a key concern for the Task Team was the issue of Areas of Responsibility. It is important that all coastlines are covered by a warning centre and each ICG should look at their areas so that a global coverage map can be produced.
58. There are still some issues that need to be considered further for harmonisation including common terminology for levels of alert, seismic magnitude and names, and sea-level parameters and names. Standards for the format and content of warning products, public bulletins (media) and dissemination methods were also issues that were under ongoing discussion. Performance Indicators for regional warning centres also needed to be refined further.
59. Mr Kumar then referred to the issue of formal review of tsunami watch operations, noting that each ICG has a different way of doing this. There needs to be a common formal process for this. He also recommended that there should be a perpetual body to coordinate tsunami watch operations among the TWS and that this should have a more permanent status than the Task Team.
60. Mr Kumar commented on the adequacy of the present observing systems and referred to the idea of a gap study to determine this. The Terms of Reference for this study would need to be defined and the Task Team could assist with this, with input from ICG Working Groups.
61. Finally, Mr Kumar proposed that there should be a meeting of the Task Team before the end of 2012 as it is important to have face to face meetings to fast track activities.
62. Mr Bernardo Aliaga commented that the Seattle Inter-ICG Task Teams meeting had been very positive and had brought many benefits. The Group should try to explore co-funding opportunities for Inter-ICG Task Team meetings in 2012.

5. REPORT ON TSUNAMI EXERCISES

Pacific Tsunami Warning and Mitigation System (PTWS)

63. Mr Ken Gledhill, Chair ICG/PTWS, reported that 54 Member States and Territories participated at the Exercise Pacific Wave 11 which tested a new set of products from PTWC. A report would be available for the PTWS Steering Committee meeting in May 2012 in Hawaii, USA, where the Task Team on PacWave 11 will also attend.

Indian Ocean Tsunami Warning and Mitigation System (IOTWS)

64. Mr Tony Elliott, Technical Secretary for the ICG/IOTWS, reported on the Exercise IOWave11 conducted on 12 October 2011. He reported that 23 out of a total of 28 Member States had participated in the exercise. 100% of NTWCs participating had successfully accessed bulletins from the the Indian Ocean Regional Tsunami Service Providers (RTSPs), and 83% of NTWCs had conducted some form of in-house exercise. 70% of respondents had involved other agencies in the exercise, and 65% had conducted a tabletop or functional exercise. Four countries (17%) had conducted an evacuation drill, and 10 countries (43%) had engaged the media in some form.
65. Mr Elliott reported that email had been the most effective communication channel, with GTS second. Fax had been the least effective means of communication. Considering only messages received within 15 minutes of issue, GTS and fax fared worse, while email remained the most effective. The issue of slow GTS delivery will be taken up with WMO.
66. Considering web access and reporting of status, which is the basis of the RTSP product delivery, Mr Elliott reported that results had been very encouraging, with 86% of NTWCs able to access bulletins on the RTSP websites. However, only 45% had been successful in reporting results and there were many discrepancies that needed to be investigated.

Tsunami and other Coastal Hazards Warning System
for the Caribbean and Adjacent Regions (CARIBE EWS)

67. Ms Lorna Inniss, Chairperson of the ICG/CARIBE EWS, reported that the region conducted the CARIBE WAVE 11 on 23 March 2011. As reported in the previous meeting, the exercise had a lot of attention from the press and the public due to the tsunami event in Japan happening just the week before. She indicated that the full report of CARIBE WAVE 11 is available as a printed document and from the web:
[<http://unesdoc.unesco.org/images/0019/001905/190556m.pdf>].
68. The ICG prepared this exercise during one year therefore the degree of participation of Member States was very high, including at community level and the education sector, with over 180 schools performing evacuation exercises.

Tsunami Early Warning and Mitigation System
in the North-Eastern Atlantic, the Mediterranean
and Connected Seas (NEAMTWS)

69. Mr Francois Schindel  reported on the NEAMTWS Communications Exercises and informed that ICG/NEAMTWS is preparing a full NEAMWave 2012 Exercise. At the 8th Session of the Intergovernmental Coordination Group for the ICG/NEAMTWS decided that, following the success of the communication test exercise of 10 August 2011, involving 31 National Tsunami Warning Focal Points from the region, a full-scale exercise named NEAMWave12 would be conducted in the fourth quarter of 2012 to test the readiness of the system and of the Member States. All NEAMTWS Member States are encouraged to participate. NEAMWave12 will provide for a simulation exercise for the countries bordering the North-eastern Atlantic, the Mediterranean and connected seas being placed in a Tsunami Warning situation and require the Tsunami Warning Focal Point (TWFP), the National Tsunami Warning Centres (NTWC) and the Disaster Management Organizations (DMO) or Civil Protection Agencies (CPA) in each Member State to implement the procedures laid out in the NEAMTWS Interim Operational Users Guide (2012). The exercise will take place in November 2012 (date to be defined) and will run in real time. Exercise messages will be issued by the candidate Tsunami Watch Providers (TWP). A NEAMWave12 Exercise Manual is under preparation with further details on the exercise scenario and the simulated messages.

6. OTHER ISSUES

70. No other issues were discussed.

7. DATE AND PLACE OF THE NEXT MEETING

71. If the 45th IOC Executive Council decides to continue the TOWS-WG, it is proposed that the next meeting takes place at UNESCO Headquarters tentatively around March/April 2013.

8. CLOSURE OF MEETING

72. The Chairman thanked all the participants for attending the meeting and for their contributions.

ANNEX I

AGENDA

1 OPENING AND WELCOME

1.1 OPENING

1.2 ADOPTION OF AGENDA

1.3 WORKING ARRANGEMENTS

2. REPORTS FROM RELEVANT BODIES

2.1 REPORT FROM THE IOC BODIES

2.2 REPORT OF NON IOC BODIES

3. REVIEW OF PROGRESS OF IOC RESOLUTION XXVI-6 AND RESOLUTION XXVI-7

4. REPORTS OF THE INTER-ICG TASK TEAMS

4.1 INTER-ICG TASK TEAM ON DISASTER MANAGEMENT AND PREPAREDNESS

4.2 INTER-ICG TASK TEAM ON TSUNAMI WATCH OPERATIONS

4.3 INTER-ICG TASK TEAM ON HAZARD ASSESSMENT RELATED TO HIGHEST
POTENTIAL TSUNAMI SOURCE AREAS

5. REPORTS ON TSUNAMI EXERCISES

6. OTHER ISSUES

6. DATE AND PLACE OF THE NEXT MEETING

7. CLOSURE OF MEETING

ANNEX II

LIST OF PARTICIPANTS

TOWS-WG MEMBERS

CHAIR

Prof Yutaka MICHIDA University of Tokyo
Member of National Committee for IOC
Kashinoha 5-1-5, Kashiwa 277-8564
Chiba
Tel: +81 4 7136 6362
Fax: +81 4 7136 6039
Email: ymichida@aori.u-tokyo.ac.jp

ICG/CARIBE EWS

Ms Lorna INNIS
Deputy Director
Coastal Zone Management Unit
Bay Street
St Michael
Barbados
Tel: +246 228-5950
Fax: +246 228-5956
Email: linniss@coastal.gov.bb

ICG/NEAMTWS

Mr François SCHINDELE
Chair, ICG/NEAMTWS
CEA/DASE
Bruyère Le Châtel
91297 Arpajon cedex
France
Tel: (+33 1) 69 26 50 63
Fax: (+33 1) 69 26 70 85
Email: francois.schindele@cea.fr

ICG/IOTWS

Mr Rick BAILEY
Chair ICG/IOTWS
Project Director
Bureau of Meteorology, Melbourne
700 Collins Street
Docklands
GPO Box 1289
Melbourne VIC 3001
Australia
Tel: +61 3 9669 4103
Fax: +61 3 9669 4660
Email: R.Bailey@bom.gov.au

ICG/PTWS

Mr Ken GLEDHILL
Chair ICG/PTWS
GeoNet Project Director
GNS Science – Te Pu Ao
Lower Hutt P.O. Box 30-368
New Zealand
Tel: +64-4-5704848
Fax: +64-4-5704600
Email: K.Gledhill@gns.cri.nz

United States of America

Mr Charles (Chip) MCCREERY
Head of Delegation
Director PTWC
RH Hagemeyer Pacific Tsunami Warning
Center
91-270 Fort Weaver Rd, HI 96706
United States
Tel: +1 808-689-8207 x301
Fax: +1 808-689-4543
Email: charles.mccreery@noaa.gov

INVITED EXPERTS

Mr David COETZEE
Head of Delegation
Manager, Operations
Ministry of Civil Defence & Emergency
Management
PO Box 5010
Wellington, New Zealand
Tel: +64 (4) 495 68068/+64 (4) 495 6806
Fax: +64 (4) 473 9596
Email: david.coetzee@dia.govt.nz

Mr Gerassimos PAPADOPOULOS
Research Director
Institute of Geodynamics, National
Observatory of Athens
11810 Athens
Greece
Tel: +30 210 3490165
Fax: +30 210 3490165
Email: papadop@gein.noa.gr

Ms Irina Rafliana
Public Communication and Education
Program
Research Center for Oceanography
Indonesian Institute of Sciences (LIPI)
Gedung Tisna Amidjaja LIPI Lt. 2
Jalan Raden Saleh No. 43 Cikini
Jakarta Pusat 10330
Tel/Fax. +62 (0)21-3912497
HP. +62 (0)812-822-1841
Email: irina_rafliana@hotmail.com

Mr Srinivasa Kumar TUMMALA
Chairman IICG-Task Team 3 Tsunami
Watch Operations
Head, ASG & In-charge, National Tsunami
Warning Centre
Indian National Centre for Ocean
Information Services
"Ocean Valley"
P.B No.21
IDA Jeedimetla P.O
Hyderabad 500 055
India
Tel: +91 40 23895006
Fax: +91 40 23895001
Email: srinivas@incois.gov.in

JCOMM

Mr Mikhail ENTEL
Bureau of Meteorology
GPO Box 1289
Melbourne VIC 3001 Australia
Tel: +61-3-9669-4782
Fax: +61-3-9662-1222
Email: m.entel@bom.gov.au

IOC SECRETARIAT

Mr Thorkild AARUP
Head Tsunami Unit (a.i)
Technical Secretary of GLOSS
Intergovernmental Oceanographic
Commission of UNESCO
1 rue Miollis
75732 Paris cedex 15
France
Tel: +33 1 45 68 40 19

Fax: +33 1 45 68 58 12
Email : t.aarup@unesco.org

Mr Bernardo ALIAGA
Programme Specialist
IOC Tsunami Unit
Intergovernmental Oceanographic
Commission (IOC)
1 Rue Miollis
75732 Paris, France
Tel: (+33) 1 456 83 980
Fax: (+33) 1 456 85 810
Email: b.aliaga@unesco.org

Mr Tony ELLIOTT
Head of ICG/IOTWS Secretariat,
IOC Perth Regional Programme Office
c/o Bureau of Meteorology
PO Box 1370, West Perth
1100 Hay Street
Perth WA 6872
Australia
Tel: +61 8 9226 0191
Fax: +61 8 9263 2211
Email: t.elliott@unesco.org

Mr Ardito M. Kodijat
UNESCO/IOC
UNESCO Jakarta Office
Jl. Galuh II No. 5
Kebayoran Baru,
Jakarta Selatan 12110
Indonesia
Tel: +62-21 7399 818 ext. 878
Fax: +62-21 7279 6489
Email: a.kodijat@unesco.org

Mr Masahiro YAMAMOTO
Senior Advisor
Tsunami Unit of the IOC
Intergovernmental Oceanographic
Commission of UNESCO
1 rue Miollis
75732 Paris cedex 15
France
Tel: +33 1 45 68 40 60
Fax: +33 1 45 68 58 10
Email: m.yamamoto@unesco.org

ANNEX III

LIST OF ACRONYMS

APRC	Asia-Pacific Regional Centre
CARIBE EWS	Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions
CPA	Civil Protection Agencies
CTBTO	Comprehensive Nuclear-Test-Ban Treaty Organization
CTE	Communication Test Exercise
CTIC	Caribbean Tsunami Information Center
CTWP	Caribbean Tsunami Warning Programme
DART	Deep-ocean Assessment and Reporting of Tsunamis Project
DBCP	Data Buoy Cooperation Panel
DMO	Disaster Management Organizations
ETWS	Expert Team on Wind Waves and Storm Surges
EU	European Union
ExB	Extrabudgetary Funding
FAO	Food and Agriculture Organization of the United Nations
GOOS	Global Ocean Observing System
GTS	Global Telecommunication System
ICAM	Integrated Coastal Area Management Programme
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/IOTWS	Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System
ICG/NEAMTWS	Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas
ICG/PTWS	Report from the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System
IOC	Intergovernmental Oceanographic Commission
IOTWS	Indian Ocean Tsunami Warning and Mitigation System
ISDR	Un International Strategy for Disaster Reduction
ITIC	International Tsunami Information Centre
JCOMM	Joint Technical Commission for Oceanography and Marine Meteorology
JMA	Japan Meteorological Agency
JTIC	Jakarta Tsunami Information Centre

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
NTWC	National Tsunami Warning Center
NTWFP	National Tsunami Warning Focal Point
OECS	Office for Organisation of Eastern Caribbean States
PTWS	Pacific Tsunami Warning and Mitigation System (formerly ITSU)
RP	Regular Programme
RTWC	Regional Tsunami Warning Centre
SIDs	Small Development Islands ()
SOP	Standard Operating Procedure
TIC	Tsunami Information Centres ()
TOWS-WG	Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems
TSU	Tsunami Coordination Unit
TT	Task Team
TWFP	Tsunami Warning Focal Point
TWP	Tsunami Watch Provider
TWR	Tsunami Watch Recipient
TWS	Tsunami Warning System
UNDP	United Nations Development Programme
UNESCAP	Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNGA	United Nation General Assembly (
UNU	United Nations University
USAID	States Agency for International Development
WG	Working Group
WMO	World Meteorological Organization

In this Series, entitled

Reports of Meetings of Experts and Equivalent Bodies, which was initiated in 1984 and which is published in English only, unless otherwise specified, the reports of the following meetings have already been issued:

1. Third Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans
2. Fourth Meeting of the Central Editorial Board for the Geological/Geophysical Atlases of the Atlantic and Pacific Oceans S. Fourth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño' (**Also printed in Spanish**)
4. First Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
5. First Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
6. First Session of the Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
7. First Session of the Joint CCOP(SOPAC)-IOC Working Group on South Pacific Tectonics and Resources
8. First Session of the IODE Group of Experts on Marine Information Management
9. Tenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies in East Asian Tectonics and Resources
10. Sixth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
11. First Session of the IOC Consultative Group on Ocean Mapping (**Also printed in French and Spanish**)
12. Joint 100-WMO Meeting for Implementation of IGOSS XBT Ships-of-Opportunity Programmes
13. Second Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
14. Third Session of the Group of Experts on Format Development
15. Eleventh Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
16. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
17. Seventh Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
18. Second Session of the IOC Group of Experts on Effects of Pollutants
19. Primera Reunión del Comité Editorial de la COI para la Carta Batimétrica Internacional del Mar Caribe y Parte del Océano Pacífico frente a Centroamérica (**Spanish only**)
20. Third Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
21. Twelfth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of South-East Asian Tectonics and Resources
22. Second Session of the IODE Group of Experts on Marine Information Management
23. First Session of the IOC Group of Experts on Marine Geology and Geophysics in the Western Pacific
24. Second Session of the IOC-UN(OETB) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources (**Also printed in French and Spanish**)
25. Third Session of the IOC Group of Experts on Effects of Pollutants
26. Eighth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
27. Eleventh Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (**Also printed in French**)
28. Second Session of the IOC-FAO Guiding Group of Experts on the Programme of Ocean Science in Relation to Living Resources
29. First Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
30. First Session of the IOCARIBE Group of Experts on Recruitment in Tropical Coastal Demersal Communities (**Also printed in Spanish**)
31. Second IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
32. Thirteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asia Tectonics and Resources
33. Second Session of the IOC Task Team on the Global Sea-Level Observing System
34. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and Overlay Sheets
35. Fourth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
36. First Consultative Meeting on RNODCs and Climate Data Services
37. Second Joint IOC-WMO Meeting of Experts on IGOSS-IODE Data Flow
38. Fourth Session of the Joint CCOP/SOPAC-IOC Working Group on South Pacific Tectonics and Resources
39. Fourth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
40. Fourteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
41. Third Session of the IOC Consultative Group on Ocean Mapping
42. Sixth Session of the Joint IOC-WMO-CCPS Working Group on the Investigations of 'El Niño' (**Also printed in Spanish**)
43. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
44. Third Session of the IOC-UN(OALOS) Guiding Group of Experts on the Programme of Ocean Science in Relation to Non-Living Resources
45. Ninth Session of the IOC-UNEP Group of Experts on Methods, Standards and Intercalibration
46. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
47. Cancelled
48. Twelfth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
49. Fifteenth Session of the Joint CCOP-IOC Working Group on Post-IDOE Studies of East Asian Tectonics and Resources
50. Third Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
51. First Session of the IOC Group of Experts on the Global Sea-Level Observing System
52. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean
53. First Session of the IOC Editorial Board for the International Chart of the Central Eastern Atlantic (**Also printed in French**)
54. Third Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (**Also printed in Spanish**)
55. Fifth Session of the IOC-UNEP-IMO Group of Experts on Effects of Pollutants
56. Second Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean
57. First Meeting of the IOC *ad hoc* Group of Experts on Ocean Mapping in the WESTPAC Area
58. Fourth Session of the IOC Consultative Group on Ocean Mapping
59. Second Session of the IOC-WMO/IGOSS Group of Experts on Operations and Technical Applications

60. Second Session of the IOC Group of Experts on the Global Sea-Level Observing System
61. UNEP-IOC-WMO Meeting of Experts on Long-Term Global Monitoring System of Coastal and Near-Shore Phenomena Related to Climate Change
62. Third Session of the IOC-FAO Group of Experts on the Programme of Ocean Science in Relation to Living Resources
63. Second Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
64. Joint Meeting of the Group of Experts on Pollutants and the Group of Experts on Methods, Standards and Inter-calibration
65. First Meeting of the Working Group on Oceanographic Co-operation in the ROPME Sea Area
66. Fifth Session of the Editorial Board for the International Bathymetric and its Geological/Geophysical Series
67. Thirteenth Session of the IOC-IHO Joint Guiding Committee for the General Bathymetric Chart of the Oceans **(Also printed in French)**
68. International Meeting of Scientific and Technical Experts on Climate Change and Oceans
69. UNEP-IOC-WMO-IUCN Meeting of Experts on a Long-Term Global Monitoring System
70. Fourth Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
71. ROPME-IOC Meeting of the Steering Committee on Oceanographic Co-operation in the ROPME Sea Area
72. Seventh Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño' **(Spanish only)**
73. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico **(Also printed in Spanish)**
74. UNEP-IOC-ASPEI Global Task Team on the Implications of Climate Change on Coral Reefs
75. Third Session of the IODE Group of Experts on Marine Information Management
76. Fifth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
77. ROPME-IOC Meeting of the Steering Committee for the Integrated Project Plan for the Coastal and Marine Environment of the ROPME Sea Area
78. Third Session of the IOC Group of Experts on the Global Sea-level Observing System
79. Third Session of the IOC-IAEA-UNEP Group of Experts on Standards and Reference Materials
80. Fourteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans
81. Fifth Joint IOG-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
82. Second Meeting of the UNEP-IOC-ASPEI Global Task Team on the Implications of climate Change on Coral Reefs
83. Seventh Session of the JSC Ocean Observing System Development Panel
84. Fourth Session of the IODE Group of Experts on Marine Information Management
85. Sixth Session of the IOC Editorial Board for the International Bathymetric chart of the Mediterranean and its Geological/Geophysical Series
86. Fourth Session of the Joint IOC-JGOFS Panel on Carbon Dioxide
87. First Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Pacific
88. Eighth Session of the JSC Ocean Observing System Development Panel
89. Ninth Session of the JSC Ocean Observing System Development Panel
90. Sixth Session of the IODE Group of Experts on Technical Aspects of Data Exchange
91. First Session of the IOC-FAO Group of Experts on OSLR for the IOCINCWIO Region
92. Fifth Session of the Joint IOC-JGOFS CO₂ Advisory Panel Meeting
93. Tenth Session of the JSC Ocean Observing System Development Panel
94. First Session of the Joint CMM-IGOSS-IODE Sub-group on Ocean Satellites and Remote Sensing
95. Third Session of the IOC Editorial Board for the International Chart of the Western Indian Ocean
96. Fourth Session of the IOC Group of Experts on the Global Sea Level Observing System
97. Joint Meeting of GEMSI and GEEP Core Groups
98. First Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
99. Second International Meeting of Scientific and Technical Experts on Climate Change and the Oceans
100. First Meeting of the Officers of the Editorial Board for the International Bathymetric Chart of the Western Pacific
101. Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico
102. Second Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
103. Fifteenth Session of the Joint IOC-IHO Committee for the General Bathymetric Chart of the Oceans
104. Fifth Session of the IOC Consultative Group on Ocean Mapping
105. Fifth Session of the IODE Group of Experts on Marine Information Management
106. IOC-NOAA *Ad hoc* Consultation on Marine Biodiversity
107. Sixth Joint IOC-WMO Meeting for Implementation of IGOSS XBT Ship-of-Opportunity Programmes
108. Third Session of the Health of the Oceans (HOTO) Panel of the Joint Scientific and Technical Committee for GLOSS
109. Second Session of the Strategy Subcommittee (SSC) of the IOC-WMO-UNEP Intergovernmental Committee for the Global Ocean Observing System
110. Third Session of the Joint Scientific and Technical Committee for Global Ocean Observing System
111. First Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate
112. Sixth Session of the Joint IOC-JGOFS CO₂ Advisory Panel Meeting
113. First Meeting of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS)
114. Eighth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of "El Niño" **(Spanish only)**
115. Second Session of the IOC Editorial Board of the International Bathymetric Chart of the Central Eastern Atlantic **(Also printed in French)**
116. Tenth Session of the Officers Committee for the Joint IOC-IHO General Bathymetric Chart of the Oceans (GEBCO), USA, 1996
117. IOC Group of Experts on the Global Sea Level Observing System (GLOSS), Fifth Session, USA, 1997
118. Joint Scientific Technical Committee for Global Ocean Observing System (J-GOOS), Fourth Session, USA, 1997
119. First Session of the Joint 100-WMO IGOSS Ship-of-Opportunity Programme Implementation Panel, South Africa, 1997
120. Report of Ocean Climate Time-Series Workshop, Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate, USA, 1997
121. IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional Global Ocean Observing System (NEAR-GOOS), Second Session, Thailand, 1997

122. First Session of the IOC-IUCN-NOAA *Ad hoc* Consultative Meeting on Large Marine Ecosystems (LME), France, 1997
123. Second Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), South Africa, 1997
124. Sixth Session of the IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico, Colombia, 1996
(**also printed in Spanish**)
125. Seventh Session of the IODE Group of Experts on Technical Aspects of Data Exchange, Ireland, 1997
126. IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), First Session, France, 1997
127. Second Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 1998
128. Sixth Session of the IOC Consultative Group on Ocean Mapping (CGOM), Monaco, 1997
129. Sixth Session of the Tropical Atmosphere - Ocean Array (TAO) Implementation Panel, United Kingdom, 1997
130. First Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), France, 1998
131. Fourth Session of the Health of the Oceans (HOTO) Panel of the Global Ocean Observing System (GOOS), Singapore, 1997
132. Sixteenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), United Kingdom, 1997
133. First Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), France, 1998
134. Fourth Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (IOC/EB-IBCWIO-IW3), South Africa, 1997
135. Third Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), France, 1998
136. Seventh Session of the Joint IOC-JGOFS CO₂ Advisory Panel Meeting, Germany, 1997
137. Implementation of Global Ocean Observations for GOOS/GCOS, First Session, Australia, 1998
138. Implementation of Global Ocean Observations for GOOS/GCOS, Second Session, France, 1998
139. Second Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Brazil, 1998
140. Third Session of IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS), China, 1998
141. Ninth Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño', Ecuador, 1998 (**Spanish only**)
142. Seventh Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series, Croatia, 1998
143. Seventh Session of the Tropical Atmosphere-Ocean Array (TAO) Implementation Panel, Abidjan, Côte d'Ivoire, 1998
144. Sixth Session of the IODE Group of Experts on Marine Information Management (GEMIM), USA, 1999
145. Second Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), China, 1999
146. Third Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Ghana, 1999
147. Fourth Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC); Fourth Session of the WCRP CLIVAR Upper Ocean Panel (UOP); Special Joint Session of OOPC and UOP, USA, 1999
148. Second Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), France, 1999
149. Eighth Session of the Joint IOC-JGOFS CO₂ Advisory Panel Meeting, Japan, 1999
150. Fourth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Japan, 1999
151. Seventh Session of the IOC Consultative Group on Ocean Mapping (CGOM), Monaco, 1999
152. Sixth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 1999
153. Seventeenth Session of the Joint IOC-IHO Guiding Committee for the General Bathymetric Chart of the Oceans (GEBCO), Canada, 1999
154. Comité Editorial de la COI para la Carta Batimétrica Internacional del Mar Caribe y el Golfo de Mexico (IBCCA), Septima Reunión, Mexico, 1998
IOC Editorial Board for the International Bathymetric Chart of the Caribbean Sea and the Gulf of Mexico (IBCCA), Seventh Session, Mexico, 1998
155. Initial Global Ocean Observing System (GOOS) Commitments Meeting, IOC-WMO-UNEP-ICSU/Impl-III/3, France, 1999
156. First Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, Venezuela, 1999 (**also printed in Spanish and French**)
157. Fourth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), China, 1999
158. Eighth Session of the IOC Editorial Board for the International Bathymetric Chart of the Mediterranean and its Geological/Geophysical Series, Russian Federation, 1999
159. Third Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS), Chile, 1999
160. Fourth Session of the IOC-WMO-UNEP-ICSU-FAO Living Marine Resources Panel of the Global Ocean Observing System (GOOS). Hawaii, 2000
161. Eighth Session of the IODE Group of Experts on Technical Aspects of Data Exchange, USA, 2000
162. Third Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LME), France, 2000
163. Fifth Session of the IOC-WMO-UNEP-ICSU Coastal Panel of the Global Ocean Observing System (GOOS), Poland, 2000
164. Third Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System (GOOS), France, 2000
165. Second Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, Cuba, 2000 (**also printed in Spanish and French**)
166. First Session of the Coastal Ocean Observations Panel, Costa Rica, 2000
167. First GOOS Users' Forum, 2000
168. Seventh Session of the Group of Experts on the Global Sea Level Observing System, Honolulu, 2001
169. First Session of the Advisory Body of Experts on the Law of the Sea (ABE-LOS), France, 2001 (**also printed in French**)
170. Fourth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, Chile, 2001
171. First Session of the IOC-SCOR Ocean CO₂ Advisory Panel, France, 2000
172. Fifth Session of the GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Norway, 2000 (**electronic copy only**)
173. Third Session of the *ad hoc* Advisory Group for IOCARIBE-GOOS, USA, 2001 (**also printed in Spanish and French**)
174. Second Session of the Coastal Ocean Observations Panel and GOOS Users' Forum, Italy, 2001
175. Second Session of the Black Sea GOOS Workshop, Georgia, 2001
176. Fifth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), Republic of Korea, 2000
177. Second Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Morocco, 2002 (**also printed in French**)
178. Sixth Session of the Joint GCOS-GOOS-WCRP Ocean Observations Panel for Climate (OOPC), Australia, 2001 (**electronic copy only**)
179. *Cancelled*

180. Second Session of the IOC-SCOR Ocean CO₂ Advisory Panel, Honolulu, Hawaii, U.S.A, 2002 (*electronic copy only*)
181. IOC Workshop on the Establishment of SEAGOOS in the Wider Southeast Asian Region, Seoul, Republic of Korea, 2001 (SEAGOOS preparatory workshop) (*electronic copy only*)
182. First Session of the IODE Steering Group for the Resource Kit, USA, 19–21 March 2001
183. Fourth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), France, 2002
184. Seventh Session of the IODE Group of Experts on Marine Information Management (GEMIM), France, 2002 (*electronic copy only*)
185. Sixth Session of IOC/WESTPAC Coordinating Committee for the North-East Asian Regional - Global Ocean Observing System (NEAR-GOOS), Republic of Korea, 2001 (*electronic copy only*)
186. First Session of the Global Ocean Observing System (GOOS) Capacity Building Panel, Switzerland, 2002 (*electronic copy only*)
187. Fourth Session of the ad hoc Advisory Group for IOCARIBE-GOOS, 2002, Mexico (*also printed in French and Spanish*)
188. Fifth Session of the IOC Editorial Board for the International Bathymetric Chart of the Western Indian Ocean (IBCWIO), Mauritius, 2000
189. Third session of the Editorial Board for the International Bathymetric Chart of the Western Pacific, China, 2000
190. Third Session of the Coastal Ocean Observations Panel and GOOS Users' Forum, Vietnam, 2002
191. Eighth Session of the IOC Consultative Group on Ocean Mapping, Russian Federation, 2001
192. Third Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Lisbon, 2003 (*also printed in French*)
193. Extraordinary Session of the Joint IOC-WMO-CPPS Working Group on the Investigations of 'El Niño', Chile, 1999 (*Spanish only; electronic copy only*)
194. Fifth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, France, 2002
195. Sixth Session of the IOC-WMO-UNEP-ICSU Steering Committee of the Global Ocean Observing System, South Africa, 2003
196. Fourth Session of the Coastal Ocean Observations Panel, South Africa, 2002 (*electronic copy only*)
197. First Session of the JCOMM/IODE Expert Team On Data Management Practices, Belgium, 2003 (*also JCOMM Meeting Report No. 25*)
198. Fifth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2003
199. Ninth Session of the IOC Consultative Group on Ocean Mapping, Monaco, 2003 (*Recommendations in English, French, Russian and Spanish included*)
200. Eighth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 2003 (*electronic copy only*)
201. Fourth Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Greece, 2004 (*also printed in French*)
202. Sixth Session of the IOC-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2004 (*electronic copy only*)
203. Fifth Session of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Argentina, 2005 (*also printed in French*)
204. Ninth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), France, 2005 (*electronic copy only*)
205. Eighth Session of the IOC/WESTPAC Co-ordinating Committee for the North-East Asian Regional – Global Ocean Observing System (NEAR-GOOS), China, 2003 (*electronic copy only*)
206. Sixth Meeting of the Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Spain, 2006 (*also printed in French*)
207. Third Session of the Regional Forum of the Global Ocean Observing System, South Africa, 2006 (*electronic copy only*)
208. Seventh Session of the IOC-UNEP-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2005 (*electronic copy only*)
209. Eighth Session of the IOC-UNEP-IUCN-NOAA Consultative Meeting on Large Marine Ecosystems (LMEs), Paris, 2006 (*electronic copy only*)
210. Seventh Meeting of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Gabon, 2007 (*bilingual English/French*)
211. First Meeting of the IOC Working Group on the Future of IOC, Paris, 2008 (*Executive Summary in English, French, Russian and Spanish included*)
212. First meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Paris, 3–4 April 2008 (*Executive Summary in English, French, Russian and Spanish included*)
213. First Session of the Panel for Integrated Coastal Observation (PICO-I), Paris, 10–11 April 2008 (*electronic copy only*)
214. Tenth Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), Paris, 6–8 June 2007 (*electronic copy only*)
215. Eighth Meeting of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Paris, 21–25 April 2008 (*bilingual English/French*)
216. Fourth Session of the Global Ocean Observing System (GOOS) Regional Alliances Forum (GRF), Guayaquil, Ecuador, 25–27 November 2008 (*electronic copy only*)
217. Second Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Paris, 27 March 2009 (*Executive Summary in English, French, Russian and Spanish included*)
218. Ninth Meeting of the IOC Advisory Body of Experts on the Law of the Sea (IOC/ABE-LOS), Paris, 30 March–3 April 2009 (*bilingual English/French*)
219. First Session of the IOC-SCOR International Ocean Carbon Coordination Project (IOCCP) Scientific Steering Group (also IOCCP Reports, 3), Broomfield, Colorado, U.S.A., 1 October 2005 (*electronic copy only*)
220. Second Session of the IOC-SCOR International Ocean Carbon Coordination Project (IOCCP) Scientific Steering Group (also IOCCP Reports, 6), Paris, France, 20 April 2007 (*electronic copy only*)
221. Third Session of the IOC-SCOR International Ocean Carbon Coordination Project (IOCCP) Scientific Steering Group (also IOCCP Reports, 10), Villefranche-sur-mer, France, 3–4 October 2008 (*electronic copy only*)
222. Fourth Session of the IOC-SCOR International Ocean Carbon Coordination Project (IOCCP) Scientific Steering Group (also IOCCP Reports, 15), Jena, Germany, 14 September 2009 (*electronic copy only*)
223. First Meeting of the joint IOC-ICES Study Group on Nutrient Standards (SGONS) (also IOCCP Reports, 20), Paris, France, 23–24 March 2010 (*Executive Summary in E, F, R, S included*)
224. Third Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Lisbon, Portugal, 5–6 May 2010 (*Executive Summary in English, French, Russian and Spanish included*)
225. Eleventh Session of the IOC Group of Experts on the Global Sea level Observing System (GLOSS), Paris, 13–15 May 2009 (*electronic copy only*)
226. Second Session of the Panel for Integrated Coastal Observation (PICO-II), Paris, 24–26 February 2009 (*electronic copy only*)
227. First meeting of the Task Team on Seismic Data Exchange in the South West Pacific of the ICG/PTWS Regional Working Group for the Southwest Pacific, Port Vila, Vanuatu, 19–20 October 2009 (*electronic copy only*)
228. Fourth Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Paris, France, 20–21 March 2011 (*Executive Summary in English, French, Russian and Spanish included*)
229. Second Session of the IODE Steering Group for Ocean Teacher (SG-OT), Miami, Florida, 11–15 April 2011
230. First Meeting of the Inter-ICG Task Team 1 on Sea Level Monitoring for Tsunami (Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Seattle, USA, 29 November–1 December 2010

231. First Meeting of the Inter-ICG Task Team 2 on Disaster Management and Preparedness (Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Seattle, USA, 29 November–1 December 2010
232. First Meeting of the Inter-ICG Task Team 3 on Tsunami Watch Operations (Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Seattle, USA, 29 November–1 December 2010
233. Primera Reunión del Grupo de Trabajo Regional para América Central del Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y Atenuación de sus Efectos en el Pacífico (ICG/PTWS), Managua (Nicaragua) del 4 al 6 de noviembre de 2009 (**Resumen dispositivo en español e inglés**)
234. Segunda Reunión del Grupo de Trabajo Regional para América Central del Grupo Intergubernamental de Coordinación del Sistema de Alerta contra los Tsunamis y Atenuación de sus Efectos en el Pacífico (ICG/PTWS), San Salvador (El Salvador) del 28 al 30 de septiembre de 2011 (**Resumen dispositivo en español e inglés**)
235. First Session of the Joint IODE-JCOMM Steering Group for the Global Temperature-Salinity Profile Programme (SG-GTSPP), 16–20 April 2012, Ostend, Belgium
236. Ad hoc Session of the Joint JCOMM-IODE Steering Group for the Ocean Data Standards Pilot Project (SG-ODSPP), 23–25 April 2012, Ostend, Belgium
237. First Meeting of the Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (SCS-WG), 12–14 December 2011, Sanya, China
238. First Meeting of the IODE Steering Group for OceanDocs (SG-OceanDocs), 24–27 January 2012, Ostend, Belgium
239. Fifth Session of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), Tokyo, Japan, 15 February 2012 (**Executive Summary in English, French, Russian and Spanish included**)