

Intergovernmental Oceanographic Commission
Reports of Governing and Major Subsidiary Bodies



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

Eighteenth Session

6–8 February 2024

Paris, France

UNESCO

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

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Executive Summary

The Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS) held its 18th session on 6–8 February 2024, at the UNESCO-IOC Headquarters in Paris, France.

The ICG/NEAMTWS:

Noted the positive results of the fifth tsunami exercise for the region, NEAMWave23 conducted on 6–7 November 2023;

Appreciated the Tsunami Exercises conducted for the first time in 2023 within NEAMWave23 exercise at the local community level in Cyprus, Egypt, France, Greece, Italy, Malta, Morocco, Portugal, Spain and Türkiye as a contribution to the World Tsunami Awareness Day (5 November) and sensitise about tsunami;

Further appreciated Cannes Municipality (Alpes Maritimes), France as the [first UNESCO-IOC Tsunami Ready Recognized Community](#) in mainland France and North-eastern Atlantic, the Mediterranean, and the connected seas region, and the ceremony organized in Cannes on 19 January 2024;

Recognized the progress made towards establishing UNESCO-IOC Tsunami Ready communities in several countries;

Welcomed the recently new approved two-years DG-ECHO funded CoastWAVE Project -Phase II (CoastWAVE 2.0) project starting on 1 July 2024 on “*Scaling-Up and Strengthening the Resilience of Coastal Communities in the North-Eastern Atlantic and Mediterranean Regions to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards*”;

Appreciated the organization of several meetings during the intersessional period of 2023-2024 including the: [Experts meeting on the implementation of the new ICG/NEAMTWS 2030 Strategy to Further Advance NEAMTWS, Naples, Italy](#); [Side event on Resilient and Safer Coasts, Cairo, Egypt](#); [Scientific workshop organized by CENALT \(Centre National d'ALerte aux Tsunamis, Paris, France\)](#); [Workshop on Standard Operating Procedures \(SOPs\) in the Northeast Atlantic, Mediterranean and the connected seas \(NEAM\), Ispra, Italy](#));

Acknowledged the finalization and publication of the ICG/NEAMTWS 2021–2030 Strategy Document as [IOC Technical Series, 171](#) and [Brochure](#), and the [launch ceremony](#) held during the ICG/NEAMTWS Steering Committee meeting, 12–13 April 2023 at UNESCO Headquarters, Paris, France;

Decided to:

- (i) continue the merged activities of Working Groups 2 and 3 in accordance to the revised Terms of Reference in [Appendix 1](#);
- (ii) continue the Task Team on Documentation according to the Terms of Reference in [Appendix 2](#);
- (iii) continue the Task Team on Tsunami Exercises according to the revised Terms of Reference in [Appendix 3](#);
- (iv) continue the activities of the Task Team on Operations according to the Terms of Reference in [Appendix 4](#);
- (v) continue the activities of the Task Team on Tsunami Ready with Terms of Reference in [Appendix 5](#);

- (vi) endorse the use of the UNESCO-IOC. 2022 *Standard Guidelines for the Tsunami Ready Recognition Programme*. Paris. (IOC Manuals and Guides, [74](#)) in NEAM region;
- (vii) establish a new Task Team on Non-Seismic Tsunamis with draft Terms of Reference in [Appendix 6](#);
- (viii) continue the activities of the Steering Committee during the intersessional period according to Terms of Reference in [Appendix 7](#);
- (ix) conduct the next NEAMWave exercise in the last quarter of the 2025 (NEAMWave25);

Recommended:

- (i) New Task Team on Non-Seismic Tsunamis to finalize ToR by end of March 2024;
- (ii) Task Team on Tsunami Exercise to finalize the NEAMWave23 Evaluation report and present it at the ICG/NEAMTWS-XIX session in 2024;
- (iii) Tsunami Service Providers (TSP) to continue providing alert-level information based on their best practices, including (possibly different) decision matrices, scenario databases or other methods including probabilistic ones;
- (iv) to increase the availability of seismic and sea level data in the North of Africa through agreements with MS and with the institutions in charge of the management of the monitoring networks.

Welcomed the offer of Egypt to host ICG/NEAMTWS-XIX in October 2024 and Italy's intention to host the ICG/NEAMTWS-XX session;

Further welcomed Mr Alessandro Amato, Italy, as the new ICG/NEAMTWS Chairperson, Mr Amr Hamouda (Egypt) and Mr Ignacio Aguirre Ayerbe (Spain) as vice Chairpersons for the period 2024–2025.

Thanked Ms Maria Ana Baptista (Chairperson) from Portugal and Mr Costas Synolakis (Vice Chairperson) from Greece for serving two consecutive mandates as ICG/NEAMTWS Officers from May 2020 to February 2024;

Résumé exécutif

Le Groupe intergouvernemental de coordination du Système d'alerte rapide aux tsunamis et de mitigation dans l'Atlantique du Nord-Est, la Méditerranée et les mers adjacentes (GIC/NEAMTWS) a tenu sa 18^e session du 6 au 8 février 2024 au Siège de l'UNESCO (COI) à Paris (France).

Le GIC/NEAMTWS :

Prend note des résultats positifs du cinquième exercice d'alerte au tsunami dans la région, NEAMWave23, organisé les 6 et 7 novembre 2023 ;

Salue les exercices d'alerte au tsunami menés pour la première fois en 2023, dans le cadre de l'exercice NEAMWave23, au niveau des communautés locales à Chypre, en Égypte, en Espagne, en France, en Grèce, en Italie, à Malte, au Maroc, au Portugal et en Türkiye, afin de contribuer à la Journée mondiale de sensibilisation aux tsunamis (5 novembre) et de sensibiliser aux tsunamis ;

Salue également la municipalité de Cannes (Alpes maritimes, France), [première communauté ayant obtenu la certification Tsunami Ready de l'UNESCO-COI](#) en France métropolitaine et dans la région de l'Atlantique du Nord-Est, de la Méditerranée et des mers adjacentes, et **se félicite** de la cérémonie organisée à Cannes le 19 janvier 2024 ;

Reconnait les progrès accomplis concernant l'établissement de communautés certifiées Tsunami Ready par l'UNESCO-COI dans plusieurs pays ;

Se félicite de la phase II du projet CoastWAVE (CoastWAVE 2.0), récemment approuvée pour une durée de deux ans et financée par la Direction générale de la protection civile et des opérations d'aide humanitaire européennes (DG-ECHO), qui débutera le 1^{er} juillet 2024 avec pour thème « *Étendre et renforcer la résilience des communautés côtières de l'Atlantique du Nord-Est et de la mer Méditerranée face à l'impact des tsunamis et autres risques côtiers liés au niveau de la mer* » ;

Salue l'organisation de plusieurs réunions au cours de la période intersessions 2023-2024, notamment la [réunion d'experts sur la mise en œuvre de la nouvelle Stratégie 2030 du GIC/NEAMTWS pour promouvoir davantage le NEAMTWS](#), à Naples (Italie), la [manifestation parallèle sur le thème « Des côtes résilientes et plus sûres »](#), organisée au Caire (Égypte), l'[atelier scientifique organisé par le CENALT](#) (CENTre d'ALerte aux Tsunamis) à Paris (France), et l'[atelier sur les procédures opérationnelles normalisées dans l'Atlantique du Nord-Est, la Méditerranée et les mers adjacentes \(NEAM\)](#) à Ispra (Italie) ;

Prend acte de la finalisation et de la publication de la Stratégie 2021-2030 du GIC/NEAMTWS dans la [Série technique de la COI, n° 171](#), et sous la forme de [brochure](#), ainsi que de la [cérémonie de lancement](#) organisée lors de la réunion du Comité directeur du GIC/NEAMTWS les 12 et 13 avril 2023 au Siège de l'UNESCO, à Paris (France) ;

Décide :

- (i) de poursuivre les activités fusionnées des Groupes de travail 2 et 3, conformément au mandat révisé figurant à l'annexe 1 ;
- (ii) de maintenir l'Équipe spéciale sur la documentation avec le mandat figurant à l'annexe 2 ;
- (iii) de maintenir l'Équipe spéciale sur les exercices d'alerte au tsunami avec le mandat révisé figurant à l'annexe 3 ;

- (iv) de poursuivre les activités de l'Équipe spéciale sur les opérations avec le mandat révisé figurant à l'annexe 4 ;
- (v) de poursuivre les activités de l'Équipe spéciale sur le programme de certification Tsunami Ready, dont le mandat figure à l'annexe 5 ;
- (vi) d'approuver l'utilisation des *Principes directeurs pour le programme de certification Tsunami Ready* (UNESCO-COI, Manuels et guides de la COI [n° 74](#), Paris, 2022) dans la région de l'Atlantique du Nord-Est, de la Méditerranée et des mers adjacentes ;
- (vii) d'établir une nouvelle Équipe spéciale sur les tsunamis d'origine non sismique, dont le projet de mandat figure à l'annexe 6 ;
- (viii) de poursuivre les activités du Comité directeur pendant la période intersessions avec le mandat figurant à l'annexe 7 ;
- (ix) de mener le prochain exercice NEAMWave au cours du dernier trimestre de l'année 2025 (NEAMWave25) ;

Recommande :

- (i) à la nouvelle Équipe spéciale sur les tsunamis d'origine non sismique de finaliser son mandat d'ici la fin du mois de mars 2024 ;
- (ii) à l'Équipe spéciale sur les exercices d'alerte au tsunami de finaliser le rapport d'évaluation de NEAMWave23 et de le lui présenter à sa 19^e session (ICG/NEAMTWS-XIX) en 2024 ;
- (iii) que les prestataires de services relatifs aux tsunamis (TSP) continuent de fournir des informations sur le niveau de menace fondées sur leurs bonnes pratiques, notamment des matrices de décision (éventuellement différentes), des bases de données sur les scénarios ou d'autres méthodes, y compris des méthodes probabilistes ;
- (iv) d'accroître la disponibilité des données sismiques et des données relatives au niveau de la mer dans le nord de l'Afrique grâce à des accords avec les États membres et avec les institutions chargées de la gestion des réseaux de surveillance ;

Se félicite de l'offre de l'Égypte d'accueillir sa 19^e session (ICG/NEAMTWS-XIX) en octobre 2024, ainsi que de l'intention de l'Italie d'accueillir sa 20^e session (ICG/NEAMTWS-XX) ;

Se félicite également de la nomination de M. Alessandro Amato (Italie) en tant que nouveau Président du GIC/NEAMTWS, ainsi que de celles de M. Amr Hamouda (Égypte) et de M. Ignacio Aguirre Ayerbe (Espagne) en tant que Vice-Présidents, pour la période 2024-2025 ;

Remercie Mme Maria Ana Baptista (Présidente), du Portugal, et M. Costas Synolakis (Vice-Président), de la Grèce, d'avoir exercé deux mandats consécutifs en tant que membres du Bureau du GIC/NEAMTWS, de mai 2020 à février 2024.

Resumen

El Grupo Intergubernamental de Coordinación del Sistema de Alerta Temprana contra los Tsunamis y Atenuación de sus Efectos en el Atlántico Nororiental y el Mediterráneo y Mares Adyacentes (ICG/NEAMTWS) celebró su 18ª reunión del 6 al 8 de febrero de 2024 en la Sede de la UNESCO-COI, en París (Francia).

El ICG/NEAMTWS:

Hizo notar los resultados positivos de la quinta simulación de tsunamis en la región, NEAMWave23, realizada los días 6 y 7 de noviembre de 2023;

Apreció las simulaciones de tsunamis realizadas por primera vez en 2023 en el marco de la NEAMWave23 a nivel de las comunidades locales en Chipre, Egipto, España, Francia, Grecia, Italia, Malta, Marruecos, Portugal y Türkiye como contribución al Día Mundial de Concienciación sobre los Tsunamis (5 de noviembre) y a la sensibilización sobre los tsunamis;

Valoró positivamente la designación del municipio de Cannes (Alpes Marítimos) (Francia), como [primera comunidad reconocida como preparada para tsunamis por la UNESCO-COI](#) en Francia continental y en la región del Atlántico Nororiental y el Mediterráneo y Mares Adyacentes, así como la ceremonia organizada en Cannes el 19 de enero de 2024;

Reconoció los progresos realizados en la creación de comunidades Tsunami Ready de la UNESCO-COI en varios países;

Acogió con beneplácito el nuevo proyecto CoastWAVE - Fase II (CoastWAVE 2.0), de dos años de duración, aprobado recientemente y que financia la Dirección General de Protección Civil y Operaciones de Ayuda Humanitaria Europeas (ECHO) de la Unión Europea, denominado "Aumento y fortalecimiento de la resiliencia de las comunidades costeras en la región del Atlántico Nororiental y el Mediterráneo ante el impacto de los tsunamis y otros peligros costeros relacionados con el nivel del mar", que comenzará el 1 de julio de 2024;

Apreció la organización de varias reuniones durante el periodo entre reuniones de 2023-2024, como: [la reunión de expertos sobre la ejecución de la nueva Estrategia ICG/NEAMTWS 2030 para seguir avanzando en NEAMTWS, celebrada en Nápoles \(Italia\)](#); [el acto paralelo sobre costas resilientes y más seguras, que tuvo lugar en El Cairo \(Egipto\)](#); [el taller científico organizado por el CENALT \(CEntre National d'ALerte aux Tsunamis\) en París \(Francia\)](#); y [el taller sobre procedimientos operativos estándar en la región del Atlántico Nororiental y el Mediterráneo y Mares Adyacentes \(NEAM\), celebrado en Ispra \(Italia\)](#);

Reconoció la finalización y publicación del Documento de Estrategia 2021-2030 del ICG/NEAMTWS dentro de la [Colección Técnica de la COI nº 171](#) y [Folleto](#), y la [ceremonia de presentación](#) celebrada durante la reunión del Comité de Dirección del ICG/NEAMTWS, los días 12 y 13 de abril de 2023 en la Sede de la UNESCO, en París (Francia);

Decidió:

- (i) continuar las actividades fusionadas de los grupos de trabajo 2 y 3, de conformidad con su mandato revisado (apéndice 1);
- (ii) mantener el Equipo de Trabajo sobre Documentación, de conformidad con su mandato (apéndice 2);
- (iii) mantener el Equipo de Trabajo sobre Simulaciones de Tsunamis, de conformidad con su mandato (apéndice 3);
- (iv) proseguir las actividades del Equipo de Trabajo sobre Operaciones, de conformidad con su mandato (apéndice 4);

- (v) proseguir las actividades del Equipo de Trabajo sobre Tsunami Ready, de conformidad con su mandato (apéndice 5);
- (vi) hacer suya la utilización de las *Directrices generales del Programa de Reconocimiento Tsunami Ready 2022* de la UNESCO-COI, París, (Manuales y guías de la COI, [74](#)) en la región NEAM;
- (vii) establecer un nuevo equipo de trabajo sobre tsunamis no sísmicos, cuyo proyecto de mandato figura en el apéndice 6;
- (viii) proseguir las actividades del Comité de Dirección durante el periodo entre reuniones, de conformidad con su mandato (apéndice 7);
- (ix) realizar la próxima simulación NEAMWave en el último trimestre de 2025 (NEAMWave25);

Recomendó que:

- (i) el nuevo equipo de trabajo sobre tsunamis no sísmicos ultimara su mandato antes de finales de marzo de 2024;
- (ii) el Equipo de Trabajo sobre Simulaciones de Tsunamis finalizara el informe de evaluación de NEAMWave23 y lo presentara en la reunión ICG/NEAMTWS-XIX en 2024;
- (iii) los proveedores de servicios sobre tsunamis siguieran proporcionando información sobre el nivel de alerta basándose en sus mejores prácticas, en particular matrices de decisión (posiblemente diferentes), bases de datos sobre hipótesis u otros métodos, incluso sobre probabilidades;
- (iv) aumentar la disponibilidad de datos sísmicos y sobre el nivel del mar en África Septentrional mediante acuerdos con los Estados Miembros y con las instituciones encargadas de la gestión de las redes de vigilancia.

Acogió con beneplácito la oferta de Egipto de acoger la reunión ICG/NEAMTWS-XIX en octubre de 2024 y la intención de Italia de acoger la reunión ICG/NEAMTWS-XX;

Celebró el nombramiento del Sr. Alessandro Amato (Italia) como nuevo Presidente del ICG/NEAMTWS y de los Sres. Amr Hamouda (Egipto) e Ignacio Aguirre Ayerbe (España) como vicepresidentes para el periodo 2024-2025.

Agradeció a la Sra. Maria Ana Baptista (Presidenta) (Portugal) y al Sr. Costas Synolakis (Vicepresidente) (Grecia) el haber desempeñado dos mandatos consecutivos como miembros de la Mesa del ICG/NEAMTWS desde mayo de 2020 hasta febrero de 2024.

Рабочее резюме

Межправительственная координационная группа по системе раннего предупреждения о цунами и смягчения их последствий в Северо-Восточной Атлантике, Средиземном и прилегающих морях (МКГ/СПЦСВАСМ) провела свою 18-ю сессию 6-8 февраля 2024 г. в Штаб-квартире ЮНЕСКО в Париже, Франция.

ВАСМКГ/СПЦСМ:

приняла к сведению положительные результаты пятых учений по предупреждению о цунами в регионе СВАСМ (Волна-23), прошедших 6-7 ноября 2023 г.;

приветствовала проведение впервые в 2023 г. в рамках учений СВАСМ (Волна-23) учения по цунами на уровне местных общин в Греции, Египте, Испании, Италии, Кипре, Мальте, Марокко, Португалии, Турции и Франции в качестве вклада во Всемирный день распространения информации о цунами (5 ноября) и повышения осведомленности о цунами;

приветствовала также сертификацию муниципалитета Канны (Приморские Альпы), Франция, как [первой признанной ЮНЕСКО-МОК готовой к цунами общины](#) на материковой части Франции и в регионе Северо-Восточной Атлантики, Средиземного моря и прилегающих морей, и церемонию, организованную в Каннах 19 января 2024 г.;

отметила прогресс, достигнутый в создании готовых к цунами в соответствии с критериями ЮНЕСКО-МОК общин в нескольких странах;

приветствовала далее финансируемый генеральным директором Европейской комиссии по защите гражданского населения и гуманитарной помощи недавно утвержденный двухлетний проект «Прибрежная волна – второй этап» (CoastWAVE 2.0) по теме «Укрепление устойчивости прибрежных общин в регионах Северо-Восточной Атлантики и Средиземноморья к воздействию цунами и других связанных с уровнем моря опасных явлений в прибрежной зоне», начинающийся 1 июля 2024 г.;

положительно оценила организацию в межсессионный период 2023-2024 гг. нескольких совещаний, включая [прошедшее в Неаполе, Италия, совещание экспертов по осуществлению новой стратегии МКГ/СПЦСВАСМ до 2030 г. по дальнейшему развитию СПЦСВАСМ, состоявшееся в Каире, Египет, параллельное мероприятие по устойчивым и более безопасным побережьям, организованный CENALT \(Национальный центр предупреждения о цунами, Париж, Франция\) научный семинар, прошедший в Испре, Италия, семинар по стандартным операционным процедурам \(СОП\) в Северо-Восточной Атлантике, Средиземном и прилегающих морях \(СВАСМ\)](#);

приняла к сведению также завершение работы над документом о стратегии МКГ/СПЦСВАСМ на 2021-2030 гг. и его публикацию в виде [технической серии МОК за номером 171](#) и [брошюры](#), а также [церемонию его презентации](#), состоявшуюся в ходе заседания руководящего комитета МКГ/СПЦСВАСМ 12-13 апреля 2023 г. в Штаб-квартире ЮНЕСКО, Париж, Франция;

постановила:

- (i) продолжить совместную работу рабочих групп 2 и 3 в соответствии с пересмотренным кругом ведения ([приложение 1](#));
- (ii) продолжить работу целевой группы по документации в соответствии с кругом ведения ([приложение 2](#));

- (iii) продолжить работу целевой группы по связанным с цунами учениям в соответствии с кругом ведения ([приложение 3](#));
- (iv) продолжить работу целевой группы по операциям в соответствии с кругом ведения ([приложение 4](#));
- (v) продолжить деятельность целевой группы по готовности к цунами в соответствии с кругом ведения ([приложение 5](#));
- (vi) одобрить использование в регионе СВАСМ типовых руководящих принципов программы сертификации готовности к цунами ЮНЕСКО-МОК 2022 г. (Справочники и руководства МОК, [74](#));
- (vii) учредить новую целевую группу по цунами несейсмического происхождения, проект круга ведения которой содержится в [приложении 6](#);
- (viii) продолжить работу руководящего комитета в межсессионный период в соответствии с кругом ведения ([приложение 7](#));
- (ix) провести следующее учение в регионе СВАСМ в последнем квартале 2025 г. (Волна-25);

рекомендовала:

- (i) новой целевой группе по цунами несейсмического происхождения завершить разработку круга ведения к концу марта 2024 г.;
- (ii) целевой группе по учениям по цунами завершить работу над оценочным докладом «Волна-23 СВАСМ» и представить его на сессии МКГ/СПЦСВАСМ-ХІХ в 2024 г.;
- (iii) поставщикам услуг в области цунами продолжить предоставление информации об уровне опасности с использованием успешно зарекомендовавших себя методологий, включая (по возможности различные) матрицы принятия решений, базы данных по возможным сценариям и другие методики, в том числе основанные на вероятностных подходах;
- (iv) увеличить доступность сейсмических данных и данных об уровне моря на севере Африки путем заключения соглашений с государствами-членами и учреждениями, отвечающими за управление сетями мониторинга;

приветствовала предложение Египта провести у себя сессию МКГ/СПЦСВАСМ-ХІХ в октябре 2024 г. и намерение Италии провести у себя сессию МКГ/СПЦСВАСМ-ХХ;

приветствовала также г-на Алессандро Амато (Италия) в качестве нового председателя МКГ/СПЦСВАСМ, г-на Амра Хамуду (Египет) и г-на Игнасио Агирре Айербе (Испания) в качестве заместителей председателя на период 2024-2025 гг.;

поблагодарила г-жу Марию Ану Баптисту (председателя) из Португалии и г-на Костаса Синолакиса (заместителя председателя) из Греции за выполнение двух последовательных мандатов в качестве должностных лиц МКГ/СПЦСВАСМ с мая 2020 г. по февраль 2024 г.

1. OPENING SESSION

1. The Eighteenth 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-XVII) was opened on Tuesday 6 February 2024 at 10:00 CET by Ms Maria Ana Baptista, Chairperson of ICG/NEAMTWS, who welcomed the participants to the first in person ICG/NEAMTWS Session since the COVID-19 crisis.

2. The Chairperson highlighted the significant progress made in Tsunami Early Warning System (TEWS) in the North-Eastern Atlantic and Mediterranean (NEAM) region since the 2004 Sumatra tsunami event in the Indian Ocean. In particular, she noted the increased number in tsunami exercises conducted by Member States, the approval and implementation of the European Union Directorate General for Civil Protection and Humanitarian Aid Operations (EU DG ECHO) funded CoastWAVE Project since September 2021, and the progress made in the implementation of the Tsunami Ready Recognition Programme (TRRP) in the region. In regard to tsunami monitoring technologies, she noted important advancements such as the Science Monitoring and Reliable Telecommunications (SMART) Cable initiatives, e.g. SMART-CAM in Portugal and the InSEA project in Italy. Last but not least, she highlighted that there is notable progress on tsunami research specifically on Probabilistic Tsunami Hazard and Risk Assessment (PTHA).

3. Mr Vladimir Ryabinin, Executive Secretary of the Intergovernmental Oceanographic Commission of UNESCO, provided his opening remarks. He highlighted the publication of the new ICG/NEAMTWS 2030 Strategy as an important milestone during the Intersessional period. In addition, he noted the significant progress made in TRRP implementation, in particular by the Municipality of Cannes, France which has been recognized as the first Tsunami Ready community in the region. He pointed to the importance of TRRP and the strategy not only in Tsunami Early Warning and Mitigation, but also in reducing coastal risks in a multi hazard context. Consequently, the ICG/NEAMTWS and the Tsunami Resilience Section are able to contribute to other important UN initiatives such as the Early Warnings for All (EW4ALL) co-led by the World Meteorological Organization (WMO) and the United Nations Office for Disaster Risk Reduction (UNDRR). Important achievements of the IOC include the progress made by the UN Ocean Decade with the endorsement of 291 Projects and 47 Programmes, and the ongoing efforts to support the tsunami community to be more recognized and increase access to funding. He highlighted the success witnessed in the decision by the 42nd Session of the UNESCO General Conference to increase the budget of IOC to support the implementation of the IOC activities. The decision was also welcomed at the thirty-second session of the IOC Assembly (IOC Resolution A-32/4).

4. Mr Ryabinin then expressed his gratitude to Ms Maria Ana Baptista from Portugal for serving two consecutive mandates of 4 years as the ICG/NEAMTWS Chairperson from 29 May 2020 to 8 February 2024 and reminded the session that new election of ICG/NEAMTWS officers will take place under agenda item number 6.

2. ORGANIZATION OF THE SESSION

2.1. ADOPTION OF THE AGENDA

5. Ms Maria Ana Baptista, the Chairperson of the ICG/NEAMTWS, introduced the provisional Agenda. The Group adopted the Provisional Agenda with no changes, as included in [Annex II](#).

2.2. DESIGNATION OF THE RAPPORTEUR

6. The Chairperson assigned the ICG/NEAMTWS Secretariat as rapporteur of the ICG/NEAMTWS-XVIII session as there were no volunteers offered from the Member States.

2.3. ESTABLISHMENT OF THE NOMINATIONS COMMITTEE AND CHAIR OF ELECTIONS

7. The session accepted the nomination of Mr Alexander Rudloff (Germany) as the Chair of the Elections Nominations Committee (ENC). The session then accepted the nomination of Mr Ahmet Yalciner (Türkiye) and Ms Hélène Hébert (France) to be the remaining Members of the ENC.

2.4. CONDUCT OF THE SESSION, TIMETABLE AND DOCUMENTATION

8. Ms Anna von Gyldenfeldt, Head of the German Delegation, and Ms Elena Daskalaki, member of the Greek Delegation, agreed to prepare the ICG/NEAMTWS draft Decisions and Recommendations.

3. REPORT ON ICG/NEAMTWS INTERSESSIONAL ACTIVITIES

3.1. REPORT BY THE CHAIRPERSON

9. Ms Maria Ana Baptista, [reported](#) on the activities undertaken since the ICG/NEAMTWS-XVII hybrid Session, 24-26 November 2021. These included the Scientific workshop on the occasion of the CENtre d'Alerte aux Tsunamis (CENALT, France) ten year anniversary, 29-30 September 2022; the meeting of experts for the implementation of the NEAMTWS Strategy which took place in Naples, Italy from 28-30 November 2022; the ICG/NEAMTWS Steering Committee meeting and ceremony to launch the ICG/NEAMTWS 2030 Strategy which took place in UNESCO Headquarters from 12-13 April, 2023; the Workshop on SMART Cables, Science and Society in Aveiro, Portugal from 22-23 May, 2023; the International Conference on Coastal Research in Tangier, Morocco from 8-10 December 2023; and the 4th meeting of the Scientific Committee of the Ocean Decade Tsunami Programme (ODTP) from 25-26 January 2024. Several important topics were discussed in these meetings to highlight the implementation of the NEAMTWS strategic pillars on tsunami hazard and risk assessment, detection warning and dissemination, and public awareness and response in accordance with the new Ocean Decade Tsunami Programme. She informed the session that the 2nd UNESCO IOC Global Tsunami Symposium will take place in Banda Aceh, Indonesia from 11-14 November 2024 to commemorate the 20th year anniversary of the Indian Ocean Tsunami.

10. The Chairperson reported that she followed closely the development of key projects and initiatives related to the ICG/NEAMTWS, such as the Accelerating Global Science In Tsunami Hazard and Risk Analysis (AGITHAR) and its current COST Innovator Grant which will strive to transform the activities of AGITHAR into a sustainable business model.

3.2. REPORT BY THE IOC SECRETARIAT

11. Mr Denis Chang Seng, Technical Secretary of ICG/NEAMTWS [reported](#) on the IOC Secretariat activities for the intersessional period. He thanked the support of the EU DG ECHO which has been instrumental for the implementation of several initiatives such as TRRP and the growth in Secretariat support staff.

12. The Technical Secretary highlighted the endorsement of the CoastWAVE project as an Ocean Decade action and its contribution to challenge six on "Increasing Coastal Resilience to Coastal Hazards". He also noted that there is an increase in meetings. These encompassed a total of 8 governance related meetings, including the Sixteenth Meeting of the Working Group on

Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG XVI); the Third Multi-Hazard Early Warning Conference (MHEWS III) in Bali, Indonesia in 2022; and the African Conference on Priority Setting & Partnership Development for the UN Ocean Decade, Cairo, Egypt, in May 2022.

13. The ICG/NEAMTWS also organized 11 regional workshops and meetings, including the UN Climate Change and the Conference of the Parties (COP28) on 5 December 2023 co-organized with the National Institute of Oceanography and Fisheries (NIOF, Egypt); the local tsunami warning in the context of multi-hazard and disaster risk mitigation workshop co-organized with the European Commission Joint Research Centre (EC-JRC) in Ispra, Italy from 4-5 October 2022.

14. The Secretariat also reported that more than 18 project related workshops and trainings were organized to support Member States build capabilities, for example in: developing national to local Standard Operating Procedures (SOPs); tsunami exercise within NEAMWave framework; implementation of Tsunami Ready indicators, and in the implementation of CoastWAVE project activities. There was an estimated total of 15 tsunami exercises conducted in the region including the NEAMWave23 exercise from 6-7 November 2023.

15. A total of 4 Technical documents have been published: NEAMWave21 Evaluation; NEAMWave23 Exercise Manual; ICG/NEAMTWS XVII Session Summary Report; and the ICG/NEAMTWS 2030 Strategy. Three more technical documents are currently in the process of preparation and or close to finalization. These includes:

- (i) Coastal Multi-Hazard Risk Perceptions of the Communities in Alexandria, Büyükçekmece, Chipiona, El Jadida, Larnaca, Marsaxlokk, and Samos
- (ii) NEAMWave 23 Evaluation Document
- (iii) Update of the NEAMTWS Operational User Guide (OUG)

16. He emphasised that communication and outreach materials have increased significantly. A total of 28 news articles and 9 brochures, posters, leaflets including an “Early Warning and Early Action” Tsunami Ready poster were published. The number of videos has increased from 2 to 10 in the reporting period. All these products can be found in the [NEAMTIC](#) and [Unesdoc](#) websites.

17. In terms of key recent major developments, he reported that on January 19, 2024, he attended the first UNESCO-IOC Tsunami Ready Recognition ceremony in Cannes. The municipality of [Cannes \(France\) became the first Tsunami Ready Recognized community](#) of mainland France and in the NEAM region.

18. The Technical Secretary informed the session that they have received approval for a new IOC DG-ECHO Funded CoastWAVE Project (1.2 M Euros) - Phase II, starting on 1 July 2024 (2 yrs) on “Scaling-Up and Strengthening the Resilience of Coastal Communities in the North-Eastern Atlantic and Mediterranean Regions to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards” and further details will be provided in due time.

19. He also informed the session on the main upcoming meetings, including a satellite event on Coastal Cities and Communities Joining Tsunami Ready at the Ocean Decade Conference in Barcelona (10–12 April 2024); the IOC-UNESCO EU DG-ECHO CoastWAVE Project final meeting planned in June 2024; and a potential side event at the 57th Session of the IOC Executive Council at Headquarters in Paris, France in later June.

20. Ms Maria Ana Baptista suggested considering the conduction of the NEAMWave exercise during the summer period.

3.3. REPORT BY OTHER INTERGOVERNMENTAL COORDINATION GROUPS

3.3.1 Pacific Tsunami Warning and Mitigation System (ICG/PTWS)

21. Mr Yuji Nishimae, Chairperson of the ICG/PTWS, provided a [report](#) online on the ICG/PTWS activities. The Thirtieth Session of the ICG/PTWS (ICG/PTWS-XXX) took place in Nuku'alofa, Kingdom of Tonga from 12–15 September, 2023. Prior to the session, the 8th Joint ICG/PTWS– IUGG Joint Tsunami Commission Technical Workshop was held on 11 September 2023 at the same location. As a highlight, the ICG/PTWS-XXX, established three new Task Teams, namely a Task Team on Tsunami Generated by Volcanoes (TGV) – under WG2; a Task Team on Forecasting from Ocean Observations (TT-FOO) – under WG2; and a Task Team on Tsunami Ready – under WG3; and a Pacific Island Countries and Territories Working Group Task Team on Information Sharing Platforms.

22. A key decision of the session was to expand the PTWS Earthquake Source Zone to include an area from 52° to 63° south latitude and from 72° to 18° west longitude to include the Scotia Arc and its adjacent seismic zones. Recommendations included the start of operation in an interim manner of Central America Tsunami Advisory Center (CATAC); and the approval of the PTWS National Tsunami Warning Centre competencies framework, and training requirements, as described in IOC ICG/PTWS-XXX Working Document; and develop formal PTWS guidelines following the “Tsunami Ready Equivalency Approach” for recognition of Tsunami Ready communities not implementing the IOC UNESCO TRRP.

23. The technical workshop discussed lessons learned from the tsunami generated by the Hunga Tonga-Hunga Ha'apai (HTHH) volcano eruption on 15 January 2022 for the development of Tsunami Warning and Mitigation System for tsunamis generated by volcanoes and other non-seismic sources.

24. Future important meetings include the ICG/PTWS XXXI Session in Beijing, China in April 2025; and the conduction of the PACWave exercise between September to November 2024.

25. Mr Stefano Lorito, INGV, Italy, inquired about the status of the Standard Operating Procedures for tsunamis generated by non-seismic sources implemented by PTWS.

26. Mr Yuji Nishimae, informed that the Pacific Tsunami Warning Centre (PTWC) will provide recommendations on SOPs for non-seismic tsunami sources for the HTHH event. In addition, the newly established Task Team on Tsunami Generated by Volcanoes (TGV) will start a discussion on non-seismic methodologies.

3.3.2 Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS)

27. Mr Gerard Metayer, Chairperson of the ICG/CARIBE-EWS, provided a [report](#) online on their activities. The Sixteenth Session meeting of the ICG/CARIBE-EWS took place in Costa Rica from 25–28 April, 2023. Key highlights of the session included the election of new Chairperson, Mr Gerard Metayer (Haiti), and two Vice-chairpersons, Ms Regina Browne (United States Virgin Islands) and Mr Antony Murillo (Costa Rica).

28. The PTWC (TSP) reported working on a strategy to monitor volcanoes that could generate tsunamis, and completed 9 tsunami event reports, 3 of these of significant tsunami risk (Sandwich Islands, Haiti, and Hunga Tonga Hunga Ha'apai).

29. The Japan International Cooperation Agency (JICA) and UNESCO played an important role in the establishment of the Central America Tsunami Advisory Centre (CATAC). A key recommendation of the CARIBE-EWS-XVI session was for CATAC to begin full operation in

interim mode from June 2023. The upcoming ICG/CARIBE-EWS XVII session will recommend considering its approval as a Tsunami Service Provider.

30. The CARIBE Wave23 exercise was conducted on 23 March 2023, with two scenarios featuring an earthquake event in the Honduras Gulf, and a volcano generated event located at Mount Pelee. Approximately 730,000 people participated in the exercise. The next CARIBE Wave exercise will take place on 24 March 2024, with two earthquake scenarios in the Puerto Rico Trench 1882 North Panama Deformed Belt.

31. On the implementation of the TRRP, there are 18 Tsunami Ready Recognized communities in 13 Member States. In addition, there are 12 communities in the nomination and renewal process.

32. Ms Ceren Sozdinler, Co-Chair of Task Team on Tsunami Exercise, queried how the CARIBE EWS estimated the number of participants during the CARIBEWave23 exercise.

33. Mr Gerard Metayer, responded that Member States are responsible to gather information about exercise participants.

3.4. REPORT BY OTHER INTERGOVERNMENTAL ORGANIZATIONS

3.4.1 European Commission's Directorate General for Defense, Industry and Space (EC DG DEFIS)

34. Mr Eric Guyader, European Commission's Directorate General for Defense, Industry and Space (EC DG DEFIS), provided a [report](#) on the Galileo Emergency Warning Satellite Service (EWSS). The EC DG DEFIS has made progress towards introducing the Galileo EWSS infrastructure, as a multi-hazard alert dissemination satellite system to EU national civil protection authorities in complement to existing terrestrial alert systems. For such a purpose, it has completed a demonstration campaign conducted in 2023/2024 with national Civil Protection Authorities (CPAs) in France, Germany, Cyprus, Belgium, and Luxembourg. The demonstrations had the objective to allow CPAs to experience the characteristics and performance of the service, and provide feedback on performance, interface design and functionalities, and coherence with national doctrine, systems and protocols. The Galileo Emergency Warning Satellite Service Declaration of initial service is planned in 2025, which will then be adopted by EU Member States Civil Protection Service (Connection to Galileo, observation phase, integration in national PWS) and then eventual adoption by end users.

35. Mr Ran Nof, Israel delegation, inquired if the EWSS needs a dedicated application on the phone and if it is included in the android or IOS.

36. Mr Eric Guyader, noted that the two methods are possible, it depends on how Member States want to integrate the service on their own system. The EC DG DEFIS has developed a prototype application, as well as a fully validated application at the European Commission level which can be found in a Google or apple store and be downloaded. Member States can also propose additional ways to integrate this on the devices. For example, there are ongoing discussions for Belgium to implement it within their [BE-Alert system](#). It can also be directly coded in the mobile Operative System of smart phones, such as the case of the Netherlands.

37. Mr Ran Nof, delegate from Israel queried if the system is available for use in countries outside the European Union.

38. Mr Eric Guyader, responded that it is currently being developed only for the EU Member States. However, the EWSS has the technical potential to be available anywhere on earth. The system has a limited bandwidth, and it is essential to discuss with Member States the level of

usage. The intention is to use EWSS as a backup in case the terrestrial networks do not work, this would make the use of Member States modest.

39. Ms Hélène Hébert, CENALT TSP representative, inquired if the EWSS has any connection with the WMO Common Alert Protocol system (CAP) and other GNSS systems such as GPS and [Glonass](#).

40. Mr Eric Guyader, informed that EWSS receives alerts from authorities in two ways, by wave interface and directly via CAP message. There is a need to be cautious because the CAP format has a varying dictionary, which the Galileo can carefully translate and adopt as default values; this needs to be defined in depth with Member States. As for a connection with GPS or Glonass, EWSS is being presented at international conferences, and the GPS is aware of the initiative. However, GPS is commonly used for military purposes and there is not a strong pursuit from them to partner. Contrary to this, there are discussions with the [Quasi-Zenith Satellite System](#) (QZSS), a Japanese regional navigation system, for a potential collaboration since it is implemented in a similar format.

41. Ms Selda Altuncu, Türkiye delegation, asked if the system has ever delivered a false alert.

42. Mr Eric Guyader responded that the system is built so that it does not send wrong data. The alert content is directly taken from Member States, therefore, Galileo trusts that the Member States are sharing the right data.

43. Mr Fernando Carrilho, Co-Chairperson of Task Team on Operations, queried if the Quasi-Zenith Satellite System (QZSS), is considering sending seismic early warning through the system given there are a few seconds to react.

44. Mr Eric Guyader, informed that the EWSS is an alert dissemination, there is no detection or monitoring of seismic events, the Galileo simply sends data when an authority indicates to them to send it. It is a matter at national level to organize and make a decision of what and when to broadcast such alerts.

45. Mr Alessandro Amato inquired in case of a tsunami, an alert is issued along a coast and is there a way to be as precise as possible on the dimensions of the coastal area in which there is an alert.

46. Mr Eric Guyader, indicated that the area of alert is drawn with an ellipse, from which the parameters can be adjusted. The smaller size is a 40 m radius and the biggest is 5000 km in diameter. The area measurement can only be done with a single ellipse and as fitting as possible to the coastline.

47. Mr Alessandro Amato noted it is a concern because one ellipse would not fit a complex Island or Peninsula.

48. Mr Eric Guyader, added that to mitigate this issue, more than one message can be sent with a different ellipse corresponding to another area.

49. Mr Stefano Lorito, noted that this would imply sending many messages and this is a limitation given that population response times to a tsunami event in the NEAM region are very short. This is due to the fact that tsunami travel times are short in the region.

50. Mr Eric Guyader, informed that a message is delivered within 5 to 10 seconds. They all can be sent by Galileo one after the other.

51. The Technical Secretary noted that there is a lot of dependency on email and fax messages during tsunami bulletin dissemination. The ICG/NEAMTWS will look at the possibility to integrate the EWSS as part of the NEAMWave25 exercise, to seek more methods of disseminating alert messages.

52. Mr Jörn Behrens, member of the German delegation appreciated the EWSS technology offered and highlighted that it is essential to educate populations to react in the correct manner to the alert messages. Community education and awareness is very important for the technology to be successful.

53. Mr Jorge Macias, member of the Spanish delegation, provided an example of the Madrid flood events from 3-4 September 2023, where the ES-Alert or Inverse 112 messages caused more chaos and even possibly more fatalities.

54. Mr Eric Guyader noted that this is a concern. He added that the EWSS has the capacity to send messages in the application or as a notification in the operative system of the smartphone. The notification is a short text but lacks context, while the app provides a lot more content such as maps and colors. The feedback from the Member States who recently tested the system was very positive. In the future, there needs to be more discussion on how to best integrate the system including on a response capacity.

3.5. REPORTS BY THE WORKING GROUPS AND TASK TEAM

55. The Chairperson invited the Co-Chairs of the Working Groups (WGs) and Task Teams (TTs) to report on the progress achieved during the past intersessional period.

3.5.1 Working Group 1 on Hazard Assessment and Modelling

56. Mr Mauricio Gonzalez, Co-Chairperson of Working Group 1 reported on the activities for the intersessional period. There are two areas of focus, one is on how to use the Probabilistic Tsunami Hazard Analysis (PTHA) products to inform the civil protection authorities and the provision of data for tsunami modeling benchmarking. WG1 has also interacted with several ongoing projects such as the EPOS Candidate Thematic Core Service on Tsunami (cTCS-Tsu).

57. Mr Stefano Lorito, Co-Chairperson of Task Team on Documentation, noted that on the use of PTHA, Italy is using the regional PTHA for coastal evacuation planning at national scale. He also recalled an important local case in Larnaca, Cyprus where the evacuation planning is based on a complete PTHA.

58. The Technical Secretary mentioned that in CoastWAVE Project phase 1, only Larnaca, Cyprus with the support of partners developed a PTHA, while other Member States used deterministic tsunami hazard assessment methods. He then informed that CoastWAVE Project Phase 2 has a component on hazard assessment, thus it will be important to have guidance from WG1 to understand PTHA methods better and keep good standards in the NEAM region.

59. Mr Alessandro Amato, INGV TSP Focal Point, highlighted the work that has been done in hazard assessment in Italy was based on projects such as the Probabilistic TSUnami Hazard MAPS in the NEAM Region ([TSUMAPS NEAM](#)). This is available for all Member States and can be a starting point for those interested in learning about the methodology.

60. The Technical Secretary noted that a common ground needs to be applied to develop, test and share these methodologies and technologies, e.g. CoastWAVE project.

61. Mr Mauricio Gonzales, Co-chairperson of WG1, informed the session he will no longer continue as Co-chairperson for the group after the session.

62. Ms Maria Ana Baptista thanked Mr Mauricio Gonzalez for his work as a Co-chairperson of WG1. A new co-chairperson will be identified during the session.

3.5.2 Working Group 2 on Seismic and Geophysical Measurements and Working Group 3 on Sea Level Data Collection and Exchange, Including Offshore Tsunami Detection and Instruments

63. Ms Didem Cambaz, Co-Chairperson of Working Group 2 and 3 [reported](#) on the activities for the intersessional period.

64. The Group has been compiling an inventory of seismic and sea level stations network for the NEAM region, the stations have been mapped by Ms Claire Jaffrezic, a former consultant of the IOC-UNESCO. However, there are still some missing stations, and once the remaining data is compiled the maps need to be updated. The group follows closely the European Data Archive, EPOS tsunami data portal, the EuroGOOS tide gauge inventory, and the UNESCO Sea Level Station Monitoring facility,

65. The group follows projects such as the EuroSea (WP3 and WP5) and AGITHAR.

66. Ms Anna Von Gyldenfeldt, Co-Chairperson of Working Group 2 and 3, added that the EuroSea project may have some important outcomes for the tsunami community in terms of instruments such as inexpensive sensors.

67. Mr Alessandro Amato, commented about the sea level and seismic station inventory, he noted discrepancies and difficulty in choosing which seismic stations can be shared with WG 2 and 3. This is due to the fact that different set of seismic stations are used in different countries for hypocentral location and magnitude assessment. There is a need to decide what to share with the WG2 and 3.

68. Ms Didem Cambaz, Co-Chairperson of Working Group 2 and 3, noted that it is important to ensure WG2 and 3 as well as Member States agree which stations to include in the inventory. For example, if the stations function for tsunami operations, in real time, etc.

69. The Technical Secretary highlighted the importance of encouraging the Member States to complete the maps to be able to track the networks' operational performance in time. In this manner, the ICG/NEAMTWS and WG 2 and 3 can identify gaps and suggest how to improve the network.

3.5.3 Working Group 4 on Public Awareness, Preparedness and Mitigation

70. Ms Cecilia Valbonesi, Chairperson of Working Group 4 [reported](#) on the progress and development since ICG/NEAMTWS-XVII. The main highlights during the intersessional period were on education and information activities, risk perception assessment, and joint NEAMWave23 and World Tsunami Awareness Day activities.

71. The ICG/NEAMTWS Secretariat has prepared three brochures on "Tsunami What to Do", "Tsunami Fact Sheet", and "Tsunami Ready Recognition Programme" which have been disseminated to Member States. There were educational activities in the Town Hall of Samos, Greece with general presentations on earthquakes and tsunamis including self protection measures. Tsunami walk exercise, a religious procession in commemoration of the tsunami of 1755, an awareness-raising conference with numerous informative lectures, and several awareness activities for students were organized during WTAD 2023 in Chipiona, Spain, while Italy conducted tsunami risk perception studies in coastal regions (peninsular and main islands) and in the Stromboli volcano area. In another achievement, the National Institute for Earth Physics (Romania) focused on educational projects and activities related to earthquake and tsunami which

were highlighted in the publication of an article at the 16th annual International Conference of Education, Research and Innovation (ICERI) conference.

3.5.4 Task Team on Documentation

72. Mr Nikos Kalligeris, Co-Chairperson of the Task Team on Documentation (TT-Doc) [reported](#) on the progress on the update of the Operational Users Guide (OUG) of the ICG/NEAMTWS. A new OUG structure (table of contents) was drafted between the co-chairpersons. In the last Steering Committee, the TT-Doc provided a first roadmap towards drafting the new OUG. In the meeting, it was discussed on how to prioritize the critical issues to be addressed towards the inclusion either as a prescription or as a recommendation/good practice in the new OUG. A confirmation from selected OUG authors has been received, and the final roadmap to prepare the OUG should be agreed at the present ICG/NEAMTWS XVIII Session.

73. Other key activities of the TT-Doc included inter-TSP meetings co-organized with the Task Team on Operations to discuss SOPs for issuing END and CANCELLATION messages. Feedback was collected and recommendations were made.

74. The Technical Secretary proposed to the TT-Doc that the Secretariat would be willing to provide any support needed to complete the OUG.

75. Mr Stefano Lorito, noted that there are sections in the OUG such as ICG procedures, nomination of TSPs and other mechanisms of the system where the Secretariat can contribute given their knowledge of expertise. The Secretariat has been included in the proposed list of editors.

76. Mr Alessandro Amato, suggested that the OUG should have information regarding the cell broadcast systems including their mechanism, operation, etc.

77. Mr Stefano Lorito pointed out that this can be considered taking into consideration that a line needs to be drawn regarding the Last Mile component which is not the main focus of the guide.

78. Mr Marinos Charalampakis, Co-Chairperson of Task Team on Tsunami Exercise, noted that cell broadcast system is a national practice that may be difficult to integrate into the OUG, but further discussions may be needed on the matter. He also proposed including information that does not need frequent update, otherwise the publishing date may be delayed.

79. Mr Ignacio Aguirre, Co-Chairperson of the Task Team on Tsunami Ready, commented that dissemination of tsunami messages should be a topic in which WG4 and the Task Team on Tsunami Ready should be included.

80. Mr Nikos Kalligeris, proposed to recognize some dynamic sections in the OUG which can facilitate the OUG document.

3.5.5 Task Team on Operations

81. Mr Alessio Piatanesi, Co-Chairperson on the Task Team on Operations (TT-O) [reported](#) on the activities accomplished for the intersessional period. He informed the session regarding a list of actions and progress where TT-O was involved.

82. The TT on Operations has continued its assessment of the Global Service Definition Document (GSDD) and has investigated its adaptability by the NEAMTWS. The TT on Operations had a discussion with Working Group 1 in order to improve the Decision Matrix for the NE Atlantic, and supported the Task Team on Documentation by reviewing the Operational User's Guide.

83. It was highlighted that key topics to discuss and propose solutions include the tsunami forecast methods used by TSPs (Decision Matrices, Probabilistic Tsunami Forecast, etc); and if bulletins received by a subscriber should be made public.

84. Ms Cecilia Valbonesi, inquired if WG4 can discuss with TT-O the adoption of Tsunami Threat Levels in NEAM region.

85. Mr Alessio Piatanesi pointed out that one objective of the TT-O is to decide on the adoption of tsunami threat level at the ICG/NEAMTWS-XVIII Session during the sessional committee meeting.

4. IMPLEMENTATION

4.1. COASTWAVE PROJECT REPORT

86. Ms Derya Vennin, UNESCO-IOC Associate Project Officer, provided a [report](#) on the implementation of the UNESCO-IOC EU DG ECHO CoastWAVE project. The project has three major components: 1. Adapt Global Tsunami Ready Standards and Guidelines and pilot Tsunami Ready within the Framework of the ICG/NEAMTWS; 2. Supply and install tsunami detection and alert equipment in selected NEAMTWS countries; and 3. Evaluate the effectiveness, compatibility, performance, and effectiveness of the “Inexpensive Device for Sea Level Measurement” network in NEAMTWS countries and secure its sustainability.

87. Over the course of the project there have been more than 30 workshops conducted on Standard Operating Procedures, implementation of the 12 TR indicators, sea level related risk perception, and IDSL operators and maintenance training. In addition, there have been several community tsunami exercises in project countries; over 21 outreach and public education activities; and 4 project related technical reports and guidelines including the NEAMWave23 report at local level by project partners, and the IDSL evaluation report have been prepared.

88. Some of the challenges faced during the implementation of the project included the maintenance of the IDSL devices. There is a lack of coordination between national and local authorities and the difficulties faced by some Member States to establish the NTRB.

89. In the next few months, the project aims to support the establishment of the NTRB in Malta and Spain; install alerting systems in Spain, Morocco, Egypt and Cyprus; finalize installation of tsunami signages in Morocco, Egypt and Cyprus; and organize TR ceremonies in project countries. The final CoastWAVE Phase 1 meeting is expected to take place in Early June 2024, where there will be a reporting and evaluation from the outcomes of the project.

90. The CoastWAVE Project Phase 2 will start on 1 July 2024, funded by the EU DG ECHO.

91. Mr Alessandro Amato inquired if the Secretariat could provide more details about the new approved CoastWAVE Project Phase 2. In addition, he asked about the IDSL evaluation report and when it will be available.

92. The Technical Secretary responded that the CoastWAVE Project Phase 2 will have 4 components:

Component 1: Build and strengthen tsunami hazard assessments and evacuation mapping using probabilistic approaches, risk knowledge, risk communication, and decision-making capacities.

Component 2: Scale-up and expand Tsunami Ready in selected NEAM countries.

Component 3: Enhance and density early warning, detection, monitoring, and alerting systems.

Component 4: Enhance dialogues with Emergency Responders, Decision Makers on High Impact Low Probability (HILP) tsunami events within a multi-hazard context to improve strategies and effective decision-making capabilities.

93. The project aims to increase resilience of communities to tsunami risk and other sea level related hazards. There are 7 to 8 Member States that will directly benefit from the project.

94. Ms Derya Vennin mentioned that the Secretariat is drafting a report on the IDSL evaluation and it will be shared with Member States once completed.

4.2. STATUS AND REPORTS FOR ESTABLISHMENT OF NATIONAL TSUNAMI WARNING CENTRES AND TSUNAMI SERVICE PROVIDER

95. Tsunami Service Providers (TSPs), National Tsunami Warning Centers (NTWCs) and other centres supporting tsunami work provided detailed presentations available at the following links below.

NEAM Tsunami Service Providers (TSPs)

- France ([CENALT](#)), Ms H el ene H ebert
- Greece ([NOA](#)), Mr Marinos Charalampakis
- Italy ([INGV](#)), Mr Alessandro Amato
- Portugal ([IPMA](#)), Mr Fernando Carrilho
- T urkiye ([KOERI](#)), Mr Didem Cambaz

NEAM National Tsunami Warning Centers / National Efforts

- Romania ([NIEP](#)), Ms Raluca Parthineu
- Spain, ([ING](#)), Mr Carlos Gonzalez
- Egypt, (NIOF), Mr Amr Hamouda

Key Highlights

4.2.1 The National Institute of Geophysics and Volcanology (INGV, Italy)

- INGV is preparing a “revised” version of Amplification Factors (AF) which will be adopted in the Long-Term Probabilistic Tsunami Hazard Model for the Italian coast.
- On Probabilistic Tsunami Forecast (PTF), Italy is having a final discussion with the Italian Civil Protection to decide on the thresholds to convert probability into alert level. The M7.8, Feb. 6, 2023 T urkiye event and the subsequent basin-wide tsunami alert underscored the need to review the forecasting method leaving the Decision Matrix for the PTF.
- On technological advancements, an accurate study has been carried out to optimize the position of the two ocean bottom sensors (DART buoys), taking into account all the possible tsunami sources and their characteristics. Italy is also implementing SMART cables located in the Ionian Sea.
- The SMART cables in Italy detect seismic information, but also data collected for environmental studies such as water temperature, salinity, etc. The cables also have pressure (for sea level) and temperature sensors. It is a permanent network, which will count with the installation of another SMART segment in the South eastern part of Sicily.
- Italy informed that there is a negotiation with the Italian Civil Protection to give full management of the Stromboli EWS to the INGV. There is also an increased interest

to integrate the Stromboli EWS (including alert messages) within the NEAMTWS regional system.

- More tsunami risk perception studies were conducted in the Italian coasts (peninsular regions and main islands) and in the Stromboli Island.
- Progress was made in the three TRRP Italian pilot sites, to which in the last part of 2023 other two municipalities have started their activities for the recognition.

4.2.2 CENtre d'Alerte aux Tsunamis (CENALT, France)

- CENALT has completed a major modernisation of the tide gauge network in 2022. It included a replacement of data-loggers and transmission systems, new sensors, improvement of supervision and network reliability. In addition, the Naval Hydrographic and Oceanographic Service (SHOM, France) has secured in 2023 long-term support from the French Government, to fulfill its mandate.
- France conducted several tsunami exercises, e.g. two conducted at Frontignan, 13 October 2023 (Hérault Préfecture) and on 19 January 2024 as a delayed second phase to the WTAD 2023. In both exercises, the FR-Alert system disseminated watch level messages. However, depending on the case, it would also disseminate advisory messages – this is a conservatory approach. France noted that the FR-Alert is commonly triggered at the local level.

96. The session congratulated France for the recognition of Cannes as the first UNESCO-IOC Tsunami Ready community in the NEAM region.

4.2.3 The Instituto Português do Mar e da Atmosfera (IPMA, Portugal)

- IPMA reported on the SMART CAM System. It is currently pending signature of contract. The objective is for the SMART *Atlantic CAM* to be operational by 2025/2026.
- IPMA, informed that on the Tsunami Ready Recognition Programme, 8 communities (Cascais, Lisbon, Sesimbra, Setubal, Lagos, Loulé, Portimão, and Lourinhã) have begun implementing the TR indicators at national level.

4.2.4 The Kandilli Observatory and Earthquake Research Institute (KOERI, Türkiye)

- KOERI reported that 20 multisensor sea level stations, including mareographs, meteorological sensors, and GNSS will be installed in the frame of the Provincial Disaster Risk Mitigation plan for Istanbul. The first station was installed on 24 January, 2024 at Kartal, Istanbul.
- There is a close collaboration between IOC and the World Meteorological Organization through the Joint Collaborative Board (JCB) and TOWS-WG. If there is any information from WMO regarding the GTS communication method, the Technical Secretary will inform Member States about it.
- There is an important concern during tsunami communication tests conducted by all TSPs. There are some Member States that never respond to the communication tests, and this could prove problematic during a real event. It would be recommended if Member States provide feedback on whether the messages were received satisfactorily or not – to confirm that communication channels are correct and if not to fix any issues.

97. The ICG/NEAMTWS Secretariat, recommended that updated information regarding tsunami messages can be reflected in the future ICG/NEAMTWS Fact Sheet.

4.2.5 The National Observatory of Athens (NOA, Greece)

- NOA reported key ongoing developments such as a tender for the purchase of 12 new tide gauges which is pending for 2024; the preparation of local SOPs, following the guidelines and recommendations of the National SOP; and the development of a national tsunami warning page to publish information related to tsunami events for the public.
- NOA reported that in February 2023 and May 2023 – tsunami awareness activities were organized in Samos targeting the general public and education sector. In addition, on WTAD 2023 a table-top exercise and tsunami drill were organized in Samos. During the drill, students were asked to follow the school protocol for earthquakes and following the receipt of the tsunami warning message to evacuate to an assembly area.

4.2.6 The National Institute for Earth Physics (NIEP, Romania)

- NIEP NTWC focused on educational projects and activities related to earthquake and tsunami which were highlighted in the publication of an article titled “*Tsunami Research, Education, and Awareness in Romania, Provided by the National Institute for Earth Physics*” at the 16th annual International Conference of Education, Research and Innovation (ICERI) conference. NIEP also translated several educational and awareness products of the NEAMTIC website, e.g. NEAMTIC flyer, to their native language.
- NIEP informed that presently there are issues with the Tsunami real time modeling tool. Until this issue is resolved, NIEP can not look into becoming one of the TSPs in the region yet.

4.2.7 The National Geographic Institute (ING, Spain)

- ING reported that with the Tsunami-HySEA model, it has created a database of travel times for different locations using the Gaussian source as tsunamis. It is possible to compute 135 scenarios in one minute.
- The Spanish Redmar tide gauge network is composed of 41 stations. ING has acquired an oceanic floating buoy with a GNSS antenna donated by EC JRC. To be installed offshore of the Balearic Islands.
- Spain has approved the National Emergency Plan. In addition, Chipiona is making advances in a local Tsunami Emergency Plan, which should be approved by the municipal government in a couple of months.

4.3. REPORTS BY OTHER CIVIL PROTECTION AGENCIES/ORGANIZATIONS

4.3.1 Italian Civil Protection Department (DPC)

98. Ms Chiara Paniccia provided a [report](#) from the Italian Civil Protection Department (DPC). The “I Don't take Risks” campaign is a communication campaign established in 2013, which promotes the sharing of information on disaster risk reduction between citizens. It is a training process which, through a cascade model, potentially involves all citizens. In 2023, the campaign completed a comic strip, multimedia content for students and video lessons for teachers.

99. Another important component of the DPC is the National Alert System for Tsunami wave generated by earthquakes in the Mediterranean Sea (SiAM) which was established in 2017. The SiAM technology disseminates the messages to the addresses of the different institutions of the civil protection national system, which are listed in a Centralised Register (ANCE) site. The SiAM platform is able to send the alert in a few minutes, e.g. for the NEAMWave23 exercise about 3,000 text messages (sms, email and Interactive Voice Response activated for the exercise) were

issued. Another key example is the National Tsunami Full Scale exercise, 4–6 November 2022 where an earthquake of magnitude 6.2 was simulated at the Stretto di Messina. During the exercise, tsunami risk messages were delivered through the SiAM platform and the IT-Alert system.

100. The IT-Alert is a public alert system. In cases of imminent or ongoing major emergencies and disasters, it allows providers of mobile communication services to disseminate public alerts to affected end-users by transmitting messages called 'IT-alert messages'. It is presently in a testing phase, where several risk scenarios are carried out including tsunamis, dam collapses, industrial plant accidents, etc.

101. Mr Alessandro Amato reported that INGV in partnership with the DPC, created as a component of the “comic strip”, a video telling the story of the tsunami warning system. Member States are welcome to see the video.

102. The Technical Secretary congratulated the INGV and DPC for the video and it seems appealing to younger viewers.

4.4. REPORTS ON OTHER PROJECTS RELATED TO NEAMTWS

4.4.1 Accelerating Global Science in Tsunami Hazard and Risk Analysis (AGITHAR)

103. Mr Jörn Behrens, University of Hamburg, [reported](#) on the progress of the AGITHAR project. AGITHAR aims to assess and provide a common inventory on Probabilistic Tsunami Hazard Assessment (PTHA) and Probabilistic Tsunami Risk Assessment (PTRA) approaches; identify and develop performance metrics and test cases (benchmarks) for individual components; provide open access data repositories with standardized interfaces; develop a structure for standardized PTHA and PTRA workflows; have a quality assurance for PTHA and PTRA; and support the implementation and dissemination of PTHA and PTRA methods to stakeholders and end users.

104. AGITHAR created a research topic in the [Frontiers](#) and *Earth Sciences* journals. This is a collection of current methods and achievements from different articles that have been accepted, and the first deliverable of this action is an exhaustive compilation of research gaps on tsunami hazard and risk assessment. This gives information on where to go next from a scientific research point of view. In the EPOS context, there is an open data repository with standardized data phases.

105. AGITHAR is working on a “Cookbook” for PTHA/PTRA which includes important information on the framework, components, gaps, good practices and examples of success stories in PTHA/PTRA. The cookbook is in the last phase of its development. It will be an open access publication by Springer Nature.

106. There are also efforts on developing a Global Tsunami Model (GTM) association, with the objective to host and support the efforts of the GTM community over a long time. There will be a General COST innovators Assembly in Lisbon on 24 March 2024, and several stakeholder meetings to bridge the gap between science and upstream operations, develop the mission, business model and compliance structure.

107. AGITHAR has been granted a COST Innovators Grant titled Sustaining AGITHAR – building a Global Tsunami Model Association. With this one-year initiative, core participants and the AGITHAR community will strive to transform the activities into a sustainable business model. This will be another year of exciting and intense initiatives.

108. Mr Stefano Lorito recommended that the ICG/NEAMTWS Secretariat promote AGITHAR and GTM within the TOWS-WG and global context.

109. Ms Maria Ana Baptista informed that she presented these efforts during the Ocean Decade Tsunami Programme Scientific Committee meeting from 25–26 January 2024. She noted that within the ICG/NEAMTWS context, there will be further exposure of these initiatives in future meetings.

4.4.2 European Plate Observing System (EPOS)

110. Mr Alexander Rudloff, GFZ German Research Centre for Geosciences reported on the key activities of EPOS in the intersessional period. The EPOS ERIC General Assembly adopted the Candidate Thematic Core Service on Tsunami (cTCS) with effect on 22 July 2021. The TCS signifies the governance framework needed to ensure the provision of multidisciplinary, high quality, standardized data and services.

111. There are datasets already distributed in the EPOS data portal from organizations, e.g. INGV and Flanders Marine Institute (VLIZ). There are four thematic pillars: (1) Support to Tsunami Service Providers, (2) Tsunami Data, (3) Numerical Models, and (4) Hazard and Risk Products.

112. The EPOS Consortium Board is composed of 18 partners and the first General Assembly will be hosted by GFZ on 15–16 February 2024.

113. Mr Alexander Rudloff invited participants to get involved in the EPOS cTCS Tsunami community as it is inclusive.

4.4.3 Geosphere INfrastructures for QUestions into Integrated Research (Geo-INQUIRE)

114. Mr Stefano Lorito, provided a [report](#) on Geo-Inquire. It offers a portfolio of 150 Virtual Access (VA) and Transnational Access (TA, both virtual and on-site installations which are offered to the scientific community – being integrated across different large Research Infrastructures in Europe.

115. There is a possibility to apply for resources to build on simulations to model tsunami sources, including landslides, and PTHA. Geo-INQUIRE welcomes applications from researchers, technicians, students, and other specialists working in the fields of research covered by the installations until 15 March 2024. There will be three more calls in the future for other services as well – not only tsunami.

4.5. REPORT ON UNESCO-IOC TSUNAMI READY IMPLEMENTATION

116. Mr Ignacio Aguirre Ayerbe, Co-Chairperson of the Task Team on Tsunami Ready (TT-TR), provided a [report](#) on the status of TR implementation in the NEAM region. In terms of supporting community preparedness and promotion of the TRRP, the TT-TR provided advice and support to Loulé (Portugal) Municipal Civil Protection to apply for the recognition of TR; provided support to the ICG Technical Secretariat to review country's applications; and is jointly monitoring the implementation of TR pilot projects with the Tsunami Resilience Section (TRS), Technical Secretariat of ICG/NEAMTWS and CoastWAVE project coordinators. He also presented the recommendations of the TT-TR to be further approved at the Session.

117. He noted that one of the decisions to be considered at the session is the adoption of the Manuals and Guides 74 “Standard Guidelines for the Tsunami Ready Recognition Programme”, as the official reference document for Tsunami Ready implementation in NEAM region. To accomplish this, the TT-TR has been identifying the main challenges faced by NEAM countries in the implementation of the TRRP through workshop discussions and meetings.

118. He reiterated that on January 19, 2024, the municipality of Cannes, France became the first Tsunami Ready Recognized community of mainland France and in the NEAM region. An

additional 14 communities in 10 countries are progressing towards recognition. One of these communities, Büyükçekmece in Türkiye, has completed the 12 Tsunami Ready indicators. A ceremony of recognition is planned on 15 March 2024, pending approval from the Secretariat.

119. The EU DG ECHO CoastWAVE project supports the implementation of TR in 6 other communities, namely in El Jadida (Morocco), Chipiona (Spain), Marsaxlokk (Malta), Samos (Greece), Larnaca (Cyprus), and Alexandria (Egypt). The remaining communities are non-project related and implemented in Loulé (Portugal); Marzamemi, Minturno, Palmi, Otranto, and Stromboli volcano (Italy). It should be noted that Israel had earlier applied for the entire coastline of Israel to become recognized as TR. The Secretariat is presently engaging with Israel on the matter.

120. Mr Alessandro Amato inquired what can be suggested to Member States to adopt on the definition of inundation zones related to TR indicator Assessment number 1 on “Tsunami Hazard Zones are Mapped and Designated”, and what can be the role of the TT-TR on this matter.

121. Mr Ignacio Aguirre Ayerbe noted that this needs to be discussed and it is essential to include all Member States in the discussion.

122. The Technical Secretary, proposed to draft a Technical Series (TS) document on Tsunami Ready Implementation in the NEAM region focusing on best practices, and challenges in implementing each indicator, etc. Member States demonstrating best practices by indicator will be selected and included in the document. The TS can be presented at the Second Global Tsunami Symposium in Indonesia, 11-14 November 2024.

4.6. PRELIMINARY REPORT ON NEAMWAVE23 EXERCISE

123. Ms Ceren Sozdinler, Co-Chairperson of Task Team on Tsunami Exercise (TT-TE), [reported](#) on the regional tsunami exercise (NEAMWave23) which took place on November 6–7, 2023. The exercise was conducted using two joint scenarios by Tsunami Service Providers—one in the North-eastern Atlantic and the other in the Mediterranean. The North-eastern Atlantic scenario was conducted by IPMA (Portugal) and CENALT (France) on the 6th, and the Mediterranean Sea scenario was jointly conducted by INGV (Italy), NOA (Greece), and KOERI (Türkiye) on the 7th of November. The exercise was also a contribution to the WTAD on November 5, 2023.

124. This exercise was designed to test the efficiency and abilities of the pilot IOC-UNESCO Tsunami Ready communities to respond in a complex and realistic situation, overcoming any challenges that may arise. Among several products prepared for the exercise is the “NEAMWave Exercise Information Brief” leaflet, which explains the general objectives, benefits and outcomes of the exercise. The exercise had the participation of 18 Member States, from which 10 participated in Phase A (TSP Level), 16 in Phase B (CPA Level), and 1 in Phase C (EC Emergency Response Coordination Centre assistance). For the first time, NEAMWave 23 exercises were also conducted at the local community level in all seven pilot “Tsunami Ready” IOC/EU DG ECHO CoastWAVE project countries (Cyprus, Egypt, Greece, Malta, Morocco, Türkiye, and Spain). Tsunami exercises were also conducted in Italy, France, and Portugal (non-project countries). An exercise evaluation report is under preparation to be finalized and presented at the ICG/NEAMTWS-IXX session.

125. Early evaluation results highlight improvement of National tsunami warning messages, more active involvement of the Civil Protection Authorities, promotion of self-protection in sectors with activity on the coast and at sea, against tsunami risk. The evaluation raised questions concerning the usefulness of old-fashioned dissemination messages, such as those via fax. Furthermore, preliminary recommendations include disassociating NEAMWave exercise from the WTAD, considering there are many activities organized during the WTAD and to target 13 October, the International Day for Disaster Risk Reduction, or in March as a semi-annual

complimentary activity. An important recommendation is to continue with joint scenarios to strengthen cooperation among the five TSPs, as well as organizing targeted workshops for different types of participants.

126. Mr Ignacio Aguirre Ayerbe mentioned that Spain changed the level of alert during NEAMWave23, from “Advisory” to “Watch”, based on seismic re-evaluation and the NTWC decision matrix. It was a very good experience because it brought a different level of complexity to the exercise. Spain would be happy to share more about the experience with the TT-TE.

127. The Technical Secretary congratulated and thanked the TT-TE for their round the year work in the preparation, and evaluation of the NEAMWave exercise.

4.7. UPDATE ON OCEAN DECADE TSUNAMI PROGRAMME (ODTP) AND THE RESEARCH DEVELOPMENT AND IMPLEMENTATION PLAN (RDIP)

128. The session did not explicitly discuss this agenda item. Mr Denis Chang Seng, Technical Secretary of ICG/NEAMTWS and Tsunami Resilience Section Focal Point for ODTP and Decade Coordination Unit (DCU) made available on the ICG/NEAMTWS -XVIII session web page a [report](#) on the Ocean Decade Endorsed Actions Related to Challenge 6 and the Ocean Decade Tsunami Programme (ODTP) which he presented at the ODTP Scientific Committee meeting on 23 January 2024.

129. There is also another presentation provided on the approved satellite event on “Coastal Cities and Communities Joining Tsunami Ready” which will take place during the Ocean Decade Conference in Barcelona, Spain on 11 April 2024. The satellite event focuses on the readiness of coastal communities and TRRP with the following objectives: Promote partnerships, collaboration and understanding how to co-design actions to enhance the readiness of coastal communities to tsunamis in a multi-hazard context; showcase the benefits of UNESCO IOC TRRP and or similar initiatives; acknowledge new cities and communities recognized as TRRP; and call for new countries and communities to join UNESCO-IOC TRRP.

4.8. REPORT ON THE WORLD TSUNAMI AWARENESS DAY 2024

130. The ICG/NEAMTWS Technical Secretary, mentioned that the session has already discussed several elements and activities of the World Tsunami Awareness Day 2023. The theme for 2024 will be ‘Empowering children and youth, ensuring the next generation is tsunami prepared’. This year is the 20th anniversary of the Indian Ocean tsunami, and there will be a global media engagement on tsunami documentaries; innovative tools, games and stories for disaster risk reduction; a social and digital activation toolkit with customizable cards, videos, and a dedicated WTAD webpage; video collaboration with UNESCO-IOC; and Early Warning for All Initiative interlinkages.

4.9. SECOND UNESCO IOC-GLOBAL TSUNAMI SYMPOSIUM

131. Ms Harkunti Rahayu, Chairperson of the Global Tsunami Symposium Programme Organising Committee (POC), provided a [report](#) on the Second UNESCO IOC Global Tsunami Symposium. The event will take place in Banda Aceh Convention Hall, Indonesia from 11–14 November 2024. It is hosted by the Government of Indonesia through the Meteorology, Climatology, and Geophysical Agency (BMKG), the UNESCO IOC, and the International Union of Geodesy and Geophysics (IUGG) – Joint Tsunami Commission (JTC). The aim of the symposium is to commemorate two decades after the 2004 Indian Ocean tsunami, identify gaps, challenges, and priorities in Tsunami Early Warning (TEWS); and identify synergies with global challenges and coherence with global commitments.

132. The programme outline consists of 8 sessions, which align with the four pillars of TEWS and the objectives and focus of the Ocean Decade Tsunami Programme and its Research Development and Implementation Plan. It also consist of side events such as exhibitions; posters; ignite stages; a “Rhuma Resilience Indonesia” elementary school drawing competition organized by collaboration of BMKG, government of Banda Aceh, IABI, USK, IGI; a global video competition for youth (high school) will be organized by the Indian Ocean Tsunami Information Centre (IOTIC); and an open access edited book will be drawn upon inputs from each session on “Two Decades After the 2004 Indian Ocean Tsunami, Reflection and the Way Forward”.

133. The first and second day of the symposium will have an anticipated number of 800 participants, while on day four only 100 participants will be present. Invited speakers to the sessions will be nominated/selected by the POC, i.e. global and local prominent academia, engineers, practicians, politicians, and public figures. Registration to the event will take place through a Second UNESCO IOC Global Tsunami Symposium dedicated website which is presently under development, but she seeks IOC advice on the matter.

134. There will also be a pre-event, “International Scientific Workshop” from 9 to 10 November 2024, which will be open to the global scientific and practitioner communities to present their work.

135. Mr Jörn Behrens inquired if there was a website to find the latest information on the symposium.

136. Ms Harkunti Rahayu responded that the website structure will be discussed and finalized by the end of February. It will include general information and registration. It will possibly be hosted by the IOC and BMKG.

137. Mr Alessandro Amato asked if there will be a live streaming of the event.

138. Ms Harkunti Rahayu informed that there will be a live streaming where people will be able to listen and observe the sessions. However, people will not be able to provide interventions during the streaming.

139. Mr Alejandro Rojas, UNESCO IOC consultant, inquired when the best time is for Member States to send an application to participate in the side events.

140. Ms Harkunti Rahayu informed that Member States are welcome to send written proposals for the pre-event scientific workshop, booth, or exhibition, before the registration site is open. They can send it directly to the ICG/NEAMTWS Technical Secretary. Member States are also welcome to send proposals once the registration website opens.

141. The Technical Secretary informed the ICG/NEAMTWS that the Technical Secretary is also a member of the POC. He encouraged the NEAM region Member States to actively participate in the Tsunami Global Symposium.

142. Ms Harkunti Rahayu concluded that it is important to showcase the progress in TEWS since 2004, specifically the development of the four Intergovernmental Coordination Groups.

5. PROGRAMME FOR 2024

5.1. ACTIVITIES SCHEDULES FOR 2024

143. Mr Ahmed Yalciner, Türkiye delegation, reported on the upcoming 3rd World Conference on Meteotsunamis which will take place in Bodrum, Türkiye from 13 to 17 October 2024. The conference will be included in the UNESCO-IOC Ocean Decade Tsunami Programme.

144. Ms Maria Ana Baptista and Mr Denis Chang Seng informed that the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems XVII Meeting will take place in Sendai, Japan from 22–23 February 2024. It will be preceded by the TOWS WG Task Team on Disaster Management and Preparedness (TT-DMP) and the Task Team on Tsunami Watch Operations (TT-TWO) meetings at the same venue from 19–20 February 2024.

145. A Tsunami Ready Recognition ceremony is planned on 15 March 2024, in Büyükçekmece Türkiye. A satellite event on “Coastal Cities and Communities Joining Tsunami Ready” will be held at the Ocean Decade Conference in Barcelona, Spain on 11 April 2024. A final meeting of the IOC UNESCO EU DG ECHO CoastWAVE Project Phase I will be organised in June 2024.

146. The Fifty-Seventh Session of the IOC Executive Council will also take place in UNESCO Headquarters from 24-28 June 2024. The Technical Secretary has an interest in organizing a side event at the IOC Executive Council. The last major event of the year will be the 2nd UNESCO–IOC Global Tsunami Symposium which will be organized in Banda Aceh, Indonesia from 11 to 14 November 2024.

5.2. ESTABLISHMENT OF INTERSESSIONAL WORKING GROUPS AND TTs

147. The ICG/NEAMTWS XVIII Session established the following Working Groups and Task Teams with Chairs/Co-Chairs as given below:

- **Working Group 1 - Hazard Assessment and Modelling** - Co-Chairs: Jorge Macías (University of Malaga, Spain) and Audrey Gailler (Commissariat à l’Energie Atomique et aux Énergies Alternatives, France)
- **Working Group 2 and 3 - Seismic, Geophysical and Sea Level Measurements and Sea Level Data Collection and Exchange, Including Offshore Tsunami Detection and Instruments** – Co-Chairs: Anna von Gyldenfeldt (Federal Maritime and Hydrographic Agency, Germany) and Didem Cambaz (Bogazici University Kandilli Observatory and Earthquake Research Institute, Türkiye)
- **Working Group 4 - Public Awareness, Preparedness and Mitigation** – Chair: Cecilia Valbonesi (Università Degli Studi di Firenze, Italy) and Raluca Partheniu (National Institute for Earth Physics, Romania).
- **Task Team on Tsunami Exercises** - Co-Chairs: Ceren Ozer Sözdinler (Gebze Technical University, Türkiye) and Marinos Charalampakis (Institute of Geodynamics, National Observatory of Athens, Greece)
- **Task Team on Operations** - Co-Chairs: Alessio Piatanesi (Istituto Nazionale di Geofisica e Vulcanologia, Italy) and Fernando Carrilho (Instituto Português do Mar e da Atmosfera, Portugal)
- **Task Team on Documentation** - Co-Chairs: Stefano Lorito (Istituto Nazionale di Geofisica e Vulcanologia, Italy) and Nikos Kalligeris (National Observatory of Athens, Greece)
- **Task Team on Tsunami Ready** – Co-Chairs: Maria Ana Baptista (Instituto Superior de Engenharia de Lisboa, Instituto Politécnico de Lisboa, Portugal) and Elena Daskalaki (National Observatory of Athens, Greece).
- **Task Team on Non-Seismic Tsunami Sources**- Co-chairs: Rachid Omira (Instituto Português do Mar e da Atmosfera, Portugal) and Fabrizio Romano (Istituto Nazionale di Geofisica e Vulcanologia Roma, Italy) were appointed as the co-chairs for the newly established Task Team.

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

- **Task Team on Disaster Management and Preparedness-** Members: Ignacio Aguirre Ayerbe (Instituto de Hidráulica Ambiental de Cantabria, Spain) and Marinos Charalampakis (National Observatory of Athens, Greece).
- **Task Team on Tsunami Watch Operations-** Members: Hélène Hébert (Commissariat à l'Energie Atomique et aux Énergies Alternatives, France) and Alessio Piatanesi ((Istituto Nazionale di Geofisica e Vulcanologia Roma, Italy)

148. Ms Maria Ana Baptista (Instituto Superior de Engenharia de Lisboa, Instituto Politécnico de Lisboa, Portugal) is also member of the Ocean Decade Tsunami Programme Scientific Committee.

6. ELECTIONS

149. Mr Alexander Rudloff, Chairperson of the Elections Nominations Committee (ENC), informed the session that the ENC was established on 6 February 2024. The ENC is composed of a Chairperson, Mr Alexander Rudloff (Germany), and two more Members: Ms Hélène Hébert (France) and Mr Ahmed Yalciner (Türkiye). The Committee is composed of delegates from Member States who do not have candidatures to fill any of the officer positions.

150. The ENC reviewed IOC [Circular Letter 2961](#) on the call for Elections for Chairperson and Vice-Chairpersons of the ICG/NEAMTWS at its Eighteenth Session meeting for the period 2024–2025.

151. Mr Alessandro Amato, Italy was the only candidate received for Chairperson of the ICG/NEAMTWS. He was seconded by Portugal and Greece. The candidates for the two Vice-Chair positions are Mr Amr Hamouda, Egypt, seconded by Malta and Morocco; and Mr Ignacio Aguirre Ayerbe, seconded by Portugal and Greece.

152. Mr Alexander Rudloff, Chairperson of the Elections Nominations Committee (ENC) then announced that:

- Mr Alessandro Amato, Italy (nomination for chairperson)
- Mr Amr Hamouda, Egypt (nomination for Vice-chairperson)
- Mr Ignacio Aguirre Ayerbe, Spain (nomination for Vice-chairperson)

153. The nominations for Chairperson and vice-chairperson were the only candidates and were therefore elected without a vote and by acclamation.

154. The ICG/NEAMTWS-XVIII Session gratefully thanked Ms Maria Ana Baptista for her active role as Chairperson for the last 4 years.

7. DATE AND PLACE FOR ICG/NEAMTWS-XIX

155. Mr Denis Chang Seng, the Technical Secretary introduced the agenda item on the date and place for the ICG/NEAMTWS XIX Session. He informed that it is important to have interests to host the ICG/NEAMTWS-XIX Session from more than one Member State. Equally, he encouraged to have at least one interest for the XX Session in 2025. This is due to the fact that it is important to have backup options in case there are compelling issues concerning Host Country Agreement and or unforeseen situations, as observed in the past.

156. The Technical Secretary added that there is a need to avoid overlapping the ICG/NEAMTWS XIX Session with other important events such as the 2nd UNESCO-IOC Global

Tsunami Symposium. Therefore, the recommended date for the forthcoming session should be in October 2024.

157. Mr Amr Hamouda, Egypt delegation proposed Egypt as the host of the ICG/NEAMTWS-XIX Session.

158. The Technical Secretary welcomed the proposal and added that this is subject to the ongoing conflict in neighbouring countries in the middle east.

159. Mr Alessandro Amato, proposed Italy as a potential host for the ICG/NEAMTWS-XX Session in 2025.

8. ADOPTION OF DECISIONS AND RECOMMENDATIONS

160. The meeting reviewed the draft decisions and recommendations from the plenary. The adopted and final version is included in [Annex I](#).

9. ANY OTHER BUSINESS

161. Mr Eric Guyader, EC DG DEFIS, encouraged the Secretariat to conduct a central event at Brussels to commemorate the 20th Anniversary of the Indian Ocean Tsunami.

10. CLOSURE

162. The meeting was closed on Thursday, 8 February 2024 at 18:00 CET.

ANNEX I

DECISIONS AND RECOMMENDATIONS

Paris, France, 6–8 February 2024

Decision ICG/NEAMTWS-XVIII.1

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

Having met in Paris, France for its 18th Session on 6–8 February 2024,

Having reviewed the progress made in the implementation of the NEAMTWS,

Recognizes the continued awareness-raising efforts nationally on tsunami hazards and preparedness by Member States during the inter-sessional period in line with, and as a contribution to World Tsunami Awareness Day, 5 November 2023;

Notes the positive results of the fifth tsunami exercise for the region, NEAMWave23 conducted on 6-7 November 2023;

Appreciates the Tsunami Exercises conducted for the first time in 2023 within NEAMWave23 exercise at the local community level in EU DG ECHO CoastWAVE project countries in Cyprus, Egypt, Greece, Malta, Spain and Türkiye, and **further appreciates** the exercises conducted in non-project countries in France, Italy and Portugal to commemorate the World Tsunami Awareness Day (WTAD) and sensitise about tsunami;

Expresses its thanks to Co-Chairpersons of the Task Team and members on Tsunami Exercise for the preparation and conduction of NEAMWave23 on 6–7 November 2023 and their preliminary evaluation report of the exercise;

Further appreciates the organization of several meetings, including:

- Side event on Building Coastal Resilience to Sea Level Rise and Tsunami Impacts, Observing System and Early Warning at COP 28, Dubai, 5 December 2023 co-organized with the National Institute of Oceanography and Fisheries (NIOF), Egypt and International partners;
- Workshops in several NEAM countries on the development and validation of tsunami evacuation maps and SOPs;
- Experts meeting on the implementation of the new ICG/NEAMTWS 2030 Strategy to Further Advance NEAMTWS, Naples, Italy, 28-30 November 2022, organized jointly by INGV and University of Naples;
- Joint meeting of Task Team on Operations and Task Team on Documentation, 18 October 2023;
- Ceremony side event to launch NEAMTWS 2030 Strategy at UNESCO Headquarters, Paris, France, 12 April 2023;
- CoastWAVE Project - Tsunami Ready Recognition Programme (TRRP) online training workshop, 16–17 February 2023;

- Side event co-organized by the Secretariat and the National Institute in Oceanography and Fisheries (NIOF, Egypt) on “Resilient and Safer Coasts” at the kickoff African Conference on Priority Setting and Partnership Development for the United Nations Decade of Ocean Science for Sustainable Development in Cairo, Egypt, 11 May 2022;
- Scientific workshop organized by CENALT (CEntre National d'ALerte aux Tsunamis) at the Commissariat à L'énergie Atomique et Aux énergies Alternatives (CEA, France) to celebrate 10-years operations of CENALT, Paris, France, 29–30 September 2022;
- Workshop on Tsunami Early Warning and Risk Mitigation to commemorate KOERI (Türkiye) 10-years of operations (Türkiye) in November 2022;
- Hybrid workshops co-organized by the Joint Research Centre (JRC) of the European Commission and UNESCO-IOC on the requirements, challenges and opportunities of effective local tsunami warning in the multi-hazard disaster risk mitigation context including earthquake, volcano, and meteo-tsunami Early Warning Systems (EWS) for rapid response, as well as the first workshop on Standard Operating Procedures (SOPs) in the Northeast Atlantic, Mediterranean and the connected seas (NEAM), at EC-JRC Ispra, Italy, 4-5 October 2022,

Appreciates the finalization and publication of the ICG/NEAMTWS 2021-2030 Strategy Document as an [IOC Technical Series](#) and [Brochure](#), and the [launch ceremony](#) held during the ICG/NEAMTWS Steering Committee meeting, 12–13 April 2023 at UNESCO Headquarters, Paris, France with the participation of the Permanent Delegates to UNESCO from France, Italy, Portugal, and Türkiye;

Expresses its thanks to the Co-Chairs of the Task Team on Documentation and **encourages** Member States and partners to contribute to the implementation of the strategy;

Notes the progress made by the Task Team on Documentation on preparing the new Tsunami Operational User Guide (OUG) and **recommends** an updated draft OUG by ICG/NEAMTWS XIX session in 2024;

Requests the Executive Secretary to contact Member States who have not provided Tsunami Forecast Points (TFPs) and remind them to urgently do so;

Encourages the TSPs to finalize their work to produce a harmonized list of Tsunami Forecast Points (TFPs), including coastal areas of NEAMTWS where no officially communicated TFPs exist;

Thanks the Chairpersons of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions and the Pacific Tsunami Warning System for exchanging and sharing recent developments in the Caribbean and Pacific and **agrees** to continue exchanging information between the three ICGs as appropriate;

Takes note of the Decisions and Recommendations of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG) Sixteenth Meeting Paris, France 2–3 March 2023;

Further notes the IOC Decision A-32/3.4.1 Warning and Mitigation Systems for Ocean Hazards at the IOC of UNESCO Thirty-second Session of the Assembly UNESCO, Paris, 21–30 June 2023, in particular concerning:

- i. The warning systems for tsunamis generated by volcanoes should be considered and coordinated as part of the UNESCO/IOC Global tsunami and other Ocean-related Hazards

Warning and Mitigation System (GOHWMS), and also when possible be part of a Multi Hazard Early Warning System;

- ii. The organisation of a Global Scientific Symposium and establishment of an Organizing Committee composed of two Co-chairs nominated by the TT-TWO and TT-DMP, the Chair of the ODTP Scientific Committee, a representative from the Indonesian Agency for Meteorology, Climatology and Geophysics (BMKG), a representative of the IUGG-Joint Tsunami Commission, and a representative of each of the Tsunami Information Centres to be hosted by the Government of Indonesia in December 2024 as part of the plans by the ICG/IOTWMS to commemorate the 20th Anniversary of the Indian Ocean Tsunami of 2004;
- iii. Endorse the 10-Year Research, Development and Implementation Plan of the Ocean Decade Tsunami Programme as presented in document IOC/A-32/3.4.1.2. Doc (1);

Appreciates Cannes Municipality (Alpes Maritimes), France as the first UNESCO IOC Tsunami Ready Recognized Community in France and North-eastern Atlantic, the Mediterranean, and the connected seas region, and the ceremony organized in Cannes on 19 January 2024;

Further appreciates the overall progress and achievements in implementing the European Union DG-ECHO 'CoastWAVE' project in Cyprus, Egypt, Greece, Malta, Morocco, Spain, and Türkiye on "Strengthening the Resilience of Coastal Communities in the North-eastern Atlantic, Mediterranean Region to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards",

Notes the progress made towards establishing UNESCO-IOC Tsunami Ready communities in Cyprus (Larnaca), Egypt (Alexandria), Greece (Samos), Italy (Minturno, Palmi, Marzamemi, Otranto and Stromboli), Israel (entire coast), Malta (Marsaxlokk), Morocco (El Jadida), Spain (Chipiona), and Türkiye (Büyükçekmece) and other similar initiatives in Portugal;

Welcomes the recently new approved two-years DG-ECHO funded CoastWAVE Project -Phase II project starting on 1 July 2024 on "*Scaling-Up and Strengthening the Resilience of Coastal Communities in the North-Eastern Atlantic and Mediterranean Regions to the Impact of Tsunamis and Other Sea Level-Related Coastal Hazards*";

Affirms target to establish at least seven new UNESCO IOC Tsunami Ready Recognized communities in NEAM countries in the next two years, further contributing to making 100% of communities at risk of tsunami prepared for and resilient to tsunami by 2030 through the implementation of the UNESCO/IOC Tsunami Ready Programme and other initiatives, as stated by the Ocean Decade Tsunami Programme;

Encourages Member States through Tsunami National Contacts (TNCs) and Tsunami Warning Focal Points to support and foster the implementation of the UNESCO-IOC Tsunami Ready Recognition Programme (TRRP) and to submit a potential list of communities at tsunami risk to join the UNESCO-IOC TRRP, and to initiate the recognition process where applicable through their Tsunami National Contact (TNC) in line with IOC Circular Letter No 2896;

Acknowledges and will follow with interest the new phase of COST Action AGITHAR (Accelerating Global Science in Tsunami Hazard and Risk Analysis) to establish the Global Tsunami Model (GTM) organization, and the SMART Cables initiatives;

Acknowledges and **welcomes** the progress report on the Thematic Core Service (TCS) Tsunami within EPOS —The European Plate Observing System. The TCS Tsunami, a bottom-up community activity, was recently recognized by the EPOS General Assembly in December 2023;

Notes the Galileo Emergency Warning Service (GEWS) offered through DG DEFIS (Defence Industry and Space) to the EU Member States (MS) civil protection authorities as a complementary system to broadcast alert messages, using Galileo infrastructure and the demonstrations projects carried out in Belgium (2024) Cyprus (2023);

Acknowledges the efforts towards the development of a new UNESCO-IOC Tsunami Resilience Section website;

Requests the Co-Chairs of the Working Groups and of the Task Teams to prepare, in consultation with the members of their respective Working Groups or Task Teams, a plan of action for the current inter-sessional period, and to submit it to the IOC Secretariat no later than the end of March 2024;

Accepts additional recommendations of Working Groups and Task Teams as outlined in Annex I;

Decides:

- (i) To continue the merged activities of Working Groups 2 and 3 in accordance to the revised Terms of Reference in [Appendix 1](#);
- (ii) To continue the Task Team on Documentation according to the Terms of Reference in [Appendix 2](#);
- (iii) To continue the Task Team on Tsunami Exercises according to the revised Terms of Reference in [Appendix 3](#);
- (iv) To continue the activities of the Task Team on Operations according to the Terms of Reference in [Appendix 4](#);
- (v) To continue the activities of the Task Team on Tsunami Ready with Terms of Reference in [Appendix 5](#);
- (vi) To endorse the use of the UNESCO/IOC. 2022. *Standard Guidelines for the Tsunami Ready Recognition Programme*. Paris. (IOC Manuals and Guides,74). (IOC/2022/MG/74) in NEAM region;
- (vii) To establish a new Task Team on Non-Seismic Tsunamis with draft Terms of Reference in [Appendix 6](#);
- (viii) To continue the activities of the Steering Committee during the intersessional period according to Terms of Reference in [Appendix 7](#).
- (ix) To conduct the next NEAMWave exercise in the 4th quarter of the 2025 (NEAMWave25).

Recommends:

- (i) New Task Team on Non-Seismic Tsunamis to finalize ToR by end of March 2024;
- (ii) Task Team on Tsunami Exercise to finalize the NEAMWave23 Evaluation report and present it at the ICG/NEAMTWS-XIX session in 2024;
- (iii) TSPs, NTWCs, WGs, TTs and Member States to provide key documents and reports to the IOC Secretariat at least one month before the next ICG/NEAMTWS Session;

Also recommends:

- (i) That each TSP continues to provide alert-level information based on their best practices, including (possibly different) decision matrices, scenario databases or other methods,

these methodologies need to be documented in the NEAMTWS Operational Users Guide;

- (ii) That all sea-level data should be made available to the TSPs and NTWCs using bilateral agreements, between TSPs/NTWCs, whenever possible;
- (iii) To increase the availability of seismic and sea level data in the North of Africa through agreements with Member States and with the institutions in charge of the management of the monitoring networks.;
- (iv) To increase sea level sampling rate (towards 1sps) and to reduce the real time data latency to 1 minute or less;
- (v) That Member States should encourage the active involvement of their national Civil Protection Authorities (CPAs);

Supports the investigation and possibility to adopt tsunami forecasting methods by TSPs which represent an improvement over the Decision Matrices presently in use with a view to reducing uncertainty and false alarms, particularly the forecasting methods which consider tsunami numerical modeling and uncertainty quantification (e.g., the Probabilistic Tsunami Forecasting PTF, pre-calculated scenario databases, etc.);

Also supports CAT-INGV (Centro Allerta Tsunami - Istituto Nazionale di Geofisica e Vulcanologia, Italy) TSP ongoing transition towards implementing a PTF based Decision Matrix, and requires that the methodology implemented is documented in the updated NEAMTWS Operational User Guide and that TSP subscribers are informed accordingly;

Notes that the ICG/NEAMTWS-XVIII session planned in Alexandria, Egypt, 20-23 November 2023 was postponed, and by decision of the Chairperson in consultation of the ICG/NEAMTWS Steering Committee held at UNESCO Headquarters, Paris, 6-8 February 2024 due to safety and security concerns in the region;

Appreciates National Institute of Oceanography and Fisheries (NIOF), Egypt's initial efforts in their preparation to organize the ICG/NEAMTWS-XVIII session in Alexandria;

Welcomes the new offer of Egypt to host ICG/NEAMTWS-XIX in October 2024 and Italy's intention to host the ICG/NEAMTWS-XX session;

Also welcomes Mr Alessandro Amato, Italy as the new ICG/NEAMTWS Chairperson and Mr Amr Hamouda (Egypt), and Mr Ignacio Aguirre Ayerbe (Spain) for vice Chairpersons for the period 2024-2025;

Thanks Ms Maria Ana Baptista (Chairperson) from Portugal and Mr Costas Synolakis (Vice Chairperson) from Greece for serving two consecutive mandates (4 years) as ICG/NEAMTWS Officers from 29 May 2020 to 8 February 2024;

Appendix 1 to Decisions and Recommendations ICG/NEAMTWS-XVIII

Terms of References for Working Groups 2 and 3 on Seismic and Sea Level Measurements

Mandate

The working group will be responsible for:

- (i) Defining, based on existing organizations and functions, detection transnational networks, like seismic, geophysical and sea-level/marine networks as part of early warning tsunami detection instruments;
- (ii) Providing recommendations on the data processing and analysis;
- (iii) Providing a list of possible sea level stations for the NEAMTWS.

Appendix 2 to Decisions and Recommendations ICG/NEAMTWS-XVIII

Terms of Reference of the ICG/NEAMTWS Task Team on Documentation

Mandate

The Task Team will:

- (i) Coordinate inputs from Tsunami Service Providers (TSPs), Working Groups and the Task Team on Operations and the Technical Secretariat to produce the NEAMTWS Strategy and Operational User Guide (OUG);
- (ii) Report to ICG/NEAMTWS Steering Committee in March/April 2024 and subsequent ICG/NEAMTWS session.

Modus operandi

The Task Team will mainly work by correspondence, but will meet by teleconference as required.

Membership

- The ICG/NEAMTWS Officers;
- All TSP representatives;
- Co-Chairpersons of existing NEAMTWS Task Teams and Working Groups;
- Co-Chairpersons of the Task Team will be appointed by the ICG/NEAMTWS Chairperson in consultation with Vice-Chairpersons for a one-year term;
- Reappointed, if needed, on a rotational basis.

Appendix 3 to Decisions and Recommendations ICG/NEAMTWS-XVIII

Terms of Reference of the ICG/NEAMTWS Task Team on Tsunami Exercise

Mandate

The Task Team will:

- (i) Finalize NEAMWave23 Evaluation report in the second quarter of 2024;
- (ii) Work on the preparations of the next NEAMWave exercise;
- (iii) Update the NEAMWave Exercise Manual and online forms for subscription and evaluation, in collaboration with the ICG/NEAMTWS Secretariat;
- (iv) Support the ICG/NEAMTWS Secretariat in the organization of online meetings for exercise preparation.

Appendix 4 to Decisions and Recommendations ICG/NEAMTWS-XVIII

Terms of Reference of the ICG/NEAMTWS Task Team on Operations

Mandate

The Task Team on Operations will facilitate improvements and harmonization of operational implementation of warning centres/systems through:

- (i) Continue to improve the Performance Monitoring Framework for NEAMTWS upstream components, based on the functions-requirements defined in the approved accreditation procedure and performance indicators developed for Communication Test Exercises;
- (ii) Advice on the modalities of operation, interoperability, methods and standards for the development and issuance of warnings, such as methods and reporting of magnitudes, and requirements in terms of coordination and operation of NEAMTWS;
- (iii) Foster and propose a technical solution for real-time data exchange among TSPs and possible new CTSPs;
- (iv) Evaluate the recommendations made by the inter-ICG/TOWS Working Group on Tsunami Operation for possible implementation by ICG/NEAMTWS;
- (v) Advice on arrangements for redundancy and back-up arrangements;
- (vi) Support the Task Team on Documentation;
- (vii) Continue the assessment of the Global Service Definition Document and investigate its adaptability by the NEAMTWS and report progress to ICG/NEAMTWS-XVIII.

Modus operandi

The Task Team will mainly work by correspondence and if required, another one in preparation for the next ICG meeting.

Membership

- The ICG Officers;
- All TSP Representatives;
- NTWC, TWFP and CPA Representatives;
- Co-Chairpersons of existing NEAMTWS Task Teams and Working Groups;

Co-Chairpersons of the Task Team will be appointed by the ICG/NEAMTWS Officers and will be reappointed on a rotational basis every year.

Appendix 5 to Decisions and Recommendations ICG/NEAMTWS-XVIII

Terms of Reference of the ICG/NEAMTWS Task Team on Tsunami Ready

Mandate

The Task Team on Tsunami Ready Team will:

- (i) Promote the Tsunami Ready Programme in the NEAM region and encourage Member States to join the programme;
- (ii) Coordinate and foster cooperation among NEAM countries and other regions worldwide on the Tsunami Ready Programme in place, as well as exchange knowledge, experiences and best practices;

- (iii) Provide advice on the procedures to achieve a Tsunami Ready recognition;
- (iv) Adapt the standards in NEAM region according to the IOC UNESCO Tsunami Ready guidelines;
- (v) Report to and have a strong interaction with the ICG/NEAMTWS/WG4.

Modus operandi

The Task Team on Tsunami Ready will mainly work by correspondence. Online meetings will be scheduled as required and agreed.

Membership

Nominated experts by Member States according to [the IOC Circular Letter No 2821](#). The list of experts can be updated by Member States, if needed;

WG 4 members on request to join the Task Team of Tsunami Ready through their respective Tsunami National Contacts; Steering Committee members.

Appendix 6 to Decisions and Recommendations ICG/NEAMTWS-XVIII

Terms of Reference of the ICG/NEAMTWS Task Team on Non-Seismic Tsunamis

1. To explore potential approaches to assess hazard, monitor, and to warn for non-seismic tsunamis (e.g., volcanoes, landslides including earthquake-induced landslides, meteotsunamis).
2. Identify critical areas in the NEAM region which may serve as test cases to guide future risk management measures.

The Task Team will be composed of:

- All TSP Representatives;
- NTWC Representatives;
- Co-Chairpersons of existing NEAMTWS Task Teams and Working Groups.

Co-chairs to be elected by the ICG.

Appendix 7 to Decisions and Recommendations ICG/NEAMTWS-XVIII

Terms of Reference of the ICG/NEAMTWS Steering Committee

Mandate

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 and interoperability of the NEAMTWS and report to ICG/NEAMTWS;
- (ii) Implement 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;
- (v) Evaluate the feasibility of implementation of the recommendations of the Working Group on Tsunamis and Other Hazards related to Sea-Level Warning and Mitigation Systems (TOWS-WG) in NEAMTWS;
- (vi) Develop and maintain the NEAMTWS Implementation Plan and Interim Operations Users Guide;
- (vii) Examine continuing compliance of Tsunami Service Providers (TSPs) with the adopted operational and organizational function and requirements;
- (viii) Implement the procedures as adopted and the Terms of References (ToRs) for the accreditation of Candidate Tsunami Service Providers (CTSPs);
- (ix) Nominate accreditation teams, foster the accreditation process during the coming year;
- (x) Liaise with the Steering Committees of equivalent structures of other ICGs;
- (xi) Consider the potential re-organization of Working Groups and Task Teams structure;
- (xii) Promote increased awareness of NEAMTWS.

Modus operandi

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.

Membership

- The ICG/NEAMTWS Officers (Chairperson and two Vice-Chairpersons);
- The Co-Chairpersons of ICG/NEAMTWS Working Groups and Task Teams;
- Representatives of TSPs
- Representatives to TOWS Task Team on Disaster Management and Preparedness (TT-DMP) and Task Team on Tsunami Watch Operations (TT-TWO)
- Members of the Ocean Decade Tsunami Programme: Scientific Committee and Tsunami Coalition

Annex I to Decisions and Recommendations ICG/NEAMTWS XVIII

Recommendations of Working Group 1 on Hazard Assessment and Modelling
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Decisions

- (i) Elaborate a draft ToR of WG1, including Tsunami Risk assessment.
- (ii) Decision Matrix (DM) test is recommended by Task Team on Operation
 - To provide numerical forecast procedures and methodologies to test the TSPs Decision Matrix (DM).
 - To provide operational benchmarks on specific cases (e.g., Corinth Gulf, Cadiz area, Marmara Sea, Messina strait).
 - TSPs to compare their numerical results with DM.
 - WG1 to provide key recommendations based on numerical results
- (iii) Provide an inventory/review of the different methodologies used to prepare hazard and evacuation maps for Member States involved in the NEAM region.

- WG1 to provide template with maps indicators (e.g., tools, deterministic/probabilistic approach, type of data, map representation)
 - Collect benchmark data for NEAMTWS.
- (iv) Contribution to guidelines and standards for hazard and evacuation maps in collaboration with TT TR, WG4, CoastWave and CoastWave project phase II.
- (v) Interact with stakeholders to better understand the societal needs on tsunami risk and improve communication of the inherited uncertainties, in collaboration with WG4.
- (vi) Organise meeting in different conferences.
- (vii) Nomination of new co-chairs for WG1.

Recommendations

- (i) To collect Probabilistic Tsunami Hazard Assessment (PTHA) methodologies and application guidelines developed in the different countries, to have a document showing the state-of-the-art, methodologies and application guidelines in regards PTHA for the NEAM region. It could be an effort conducted within the framework of the COST Action AGITHAR;
- (ii) To organize at least one conference with WG 1 members to present and discuss PTHA methodologies;
- (iii) To include new benchmark cases provided by NEAM member states to be included in the NEAM benchmark Web page;
- (iv) To elaborate in collaboration with TT on Operations on specific SOPs for cancellation of tsunami hazard in relation to different characteristics of local and remote source tsunami events;
- (v) To continue the activities of the WG1 during the intersessional period.

Recommendations of Working Group 2 and 3 on Seismic, Geophysical and Sea level Measurements
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Recommendations

- (i) Member States through Secretariat to inform WG 2 and 3 on new stations or sensors and consider making data available to open access data platforms;
- (ii) To compile an information catalogue about the contacts for sea level and seismic data, their availability and restrictions;
- (iii) To explore possibilities of long-term funding through National and European initiatives and consider alternatives including public support;
- (iv) To fill the gaps regarding sea level stations along the North African shoreline, eastern Mediterranean and areas with complex coastline;
- (v) To find a mechanism for identifying promising technology and its potential implementation;
- (vi) To organize regular bimonthly virtual meetings with groups relevant to Pillar 2 of the Strategy document. One meeting during the intersessional period would be desirable.

Recommendations of Working Group 4 on Public Awareness, Preparedness and Mitigation
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Recommendations

- (i) To enhance the cooperation with Task Team on Tsunami Ready and CoastWAVE project to create a common framework for improving awareness and response to tsunamis;
- (ii) To contribute to the development, update and optimization of the NEAM Tsunami Information Center (NEAMTIC) so that contributions, such as web pages, news, press releases, photos, videos, multimedia content and social media produced by Member States and TSPs can be translated and released to NEAM countries to raise media attention and increase public awareness;
- (iii) The drafting of a proposal for a European directive making it mandatory for the EU Member States at risk of tsunami to provide economic and logistical means to manage the risk;
- (iv) To analyse different channels and means to improve tsunami risk communication;
- (v) To prepare and share educational and informative modules on tsunami science and risks for different school levels in different languages;
- (vi) To share collected data on repositories that guarantee its protection with a view to benchmarking by time and area;
- (vii) Civil Protection Agencies (CPAs) communicate their needs on the format and content of the bulletins, type and precision of their content, the delay of the transmission and of all other elements important to fulfil their objectives;
- (viii) To continue studies to better understand risk perception of residents and tourists;
- (ix) To collect, compare and possibly combine the results of risk perceptions studies that have been or will be carried out in different Member States to allow comparisons and help in designing future surveys and address risk communication strategies;
- (x) Member States to include maps of the event to the TSP's messages as a mandatory request.

Acknowledges

- The conversation on the future opportunity of establishing a new Task Team on Outreach and Communication;
- The cooperation needed with Task Team on Operation for a strategy on public bulletins dissemination; Task Team on Documentation for updating the NEAMTWS Operational Users Guide; and WG1 on communication issues regarding uncertainties in hazard assessment and inundation zones definition;
- The importance of collecting the different cases where information would be needed by the Member States CPAs;
- The opportunity to share with members and non-members the contribution “Tsunami Risk Prevention in Italian Municipalities through the Application of Tsunami Ready Guidelines: Influences of the International Paradigm on the Regulatory Framework and Criminal Liability”.

Recommendations of the Task Team on Tsunami Ready

- (i) To establish a membership mechanism and update members of Task Team Tsunami Ready (TT-TR) and cross reference with WG4 membership list;
- (ii) To organize two annual coordination meetings between TT-TR, WG4 and NEAMTWS Technical Secretariat;
- (iii) To liaise and advise the Technical Secretary regarding contacting the Tsunami National Contacts on a regular basis (e.g., annually) to promote new proposals of candidates for the Tsunami Ready Program;
- (iv) To strengthen the promotion of the Tsunami Ready Recognition Programme among key stakeholders in the NEAM region;
- (v) To organize one annual event (online workshop) for the promotion and explanation of the TRRP in NEAM region, for a wide audience, especially representatives of municipalities from all NEAM countries, Civil Protection Officials from all levels, and institutions that can provide support to meet all TRRP requirements;
- (vi) To facilitate interaction between ICG/NEAMTWS TT-TR, inter ICG TT-DMP, Tsunami Ready Coalition and other ICGs. ICG/NEAMTWS TT-TR representatives to be invited as observers to the inter ICG TOWS TT-DMP meetings;
- (vii) To identify critical points and challenges implementing TR and suggest future revisions to MG74 for a better adaptation to the NEAM region;
- (viii) Member State to translate MG74 into non-official UNESCO languages. It is recommended to translate the newly developed tsunami related brochures into other languages;
- (ix) To conduct a survey questionnaire after TRRP certification, to receive feedback from implementers. Explore other ICG examples in this regard;
- (x) To interact with other ICGs to follow up the preparation of guidelines for critical infrastructures from tsunami impacts;
- (xi) To explore ways, together with the TOWS TT-DMP to recognize communities which apply national tsunami programmes and initiatives similar to UNESCO-IOC TRRP.

Recommendations of the Task Team on Documentation

- (i) To support the organization of a hybrid meeting between NEAMTWS TSPs, NTWCs and possibly TWFPs, prior to the next ICG in order to discuss critical operational issues to be reflected in the updated Operational Users Guide (OUG);
- (ii) To support the drafting of the updated OUG by the next upcoming ICG/NEAMTWS session.

Recommendations of the Task Team on Tsunami Exercises

- (i) To plan and conduct the next NEAMWave tsunami exercise in 2025 (NEAMWave25);
- (ii) To decouple NEAMWave exercise from the WTAD, since a lot of activities are organized at a national level, preventing Member States from fully implementing NEAMWave exercise phases;
- (iii) To revise the online tools (subscription and evaluation) to become more user friendly. Subscription mechanism should become more efficient to be able to better capture the number of participants;

- (iv) Member States to make use of the NEAMWave exercise as an opportunity for local tsunami exercises, especially at the communities that are implementing the TRRP;
- (v) To investigate the potential for further testing the use of Galileo EWS for message dissemination. Other dissemination methods like SMSs or automated phone calls should be explored, in order to evaluate the effectiveness and feasibility of non-internet-based methods, as alternative dissemination ways of sharing information;
- (vi) To timely share the NEAMWave Exercise Manual earlier with the exercise participants early to facilitate the necessary preparations and organizations;
- (vii) To organize an adequate number of online meetings between the TT-TE Exercise Team and targeted participant groups, like TSPs, TWFPs, CPAs etc. prior to the exercise for explaining the details of exercise scenarios and discussing on the progress of NEAMWave activities;
- (viii) To organize online meetings with the ERCC and representatives of Civil Protection Authorities before implementing NEAMWave exercises in order to encourage them to participate in the exercises and discuss about a clearer classification of Phase B exercise types;
- (ix) TNCs of Member States to encourage Civil Protection Authorities in their country to participate in future NEAMWave exercises;
- (x) TSPs encouraged to co-operate and prepare one or more joint exercise scenarios.

Recommendations of the Task Team on Operations

- (i) To discuss further with WG4 and TNCs whether the TSP tsunami bulletins should be received by a subscriber be made public;
- (ii) To discuss further the proposal to move from area of source monitoring to area of service delivery or some other solution and the decision should be reported in the OUG;
- (iii) Acknowledges the efforts made by TSPs during the years to convey proper tsunami information to CPAs, National and local authorities about the meaning of the alert levels currently in use (INFORMATION, ADVISORY, WATCH) and judges that the adoption, at this stage, of a new glossary following the GSDD has to be further investigated.

ANNEX II

AGENDA

1. OPENING

2. ORGANIZATION OF THE SESSION

- 2.1. Adoption of the agenda
- 2.2. Designation of the rapporteur
- 2.3. Establishment of the nominations committee and chair for elections
- 2.4. Conduct of the session, timetable and documentation

3. REPORTS ON ICG/NEAMTWS INTERSESSIONAL ACTIVITIES

- 3.1. Report by the Chairperson
- 3.2. Report by IOC Secretariat
- 3.3. Report by other ICGs
- 3.4. Reports by other Intergovernmental Organizations (JRC etc.)
- 3.5. Reports by the Working Groups and Task Teams

4. IMPLEMENTATION

- 4.1. Report on CoastWAVE Project
- 4.2. Reports from Tsunami Service Providers and National Tsunami Warning Centres
- 4.3. Reports from Civil Protection Agencies
- 4.4. Reports on other major Projects Related to NEAMTWS
- 4.5. Reports on UNESCO/IOC Tsunami Ready Programme Implementation
- 4.6. Preliminary Report on NEAMWave23 Exercise
- 4.7. Reports on Ocean Decade, Ocean Decade Tsunami Programme and Research Development and Implementation Plan
- 4.8. Reports on the World Tsunami Awareness Day (WTAD, 5 November)
- 4.9. 2nd UNESCO IOC Global Tsunami Symposium

5. PROGRAMME FOR 2024

- 5.1. Activities scheduled for 2024
- 5.2. Establishment of intersessional working groups and TTs

6. ELECTIONS

7. DATE AND PLACE FOR ICG/NEAMTWS-XIX

8. ANY OTHER BUSINESS

9. ADOPTION OF DECISIONS AND RECOMMENDATIONS

10. CLOSING

ANNEX III

LIST OF DOCUMENTS

Agenda Item	Document Title and Link
2.1	ICGNEAMTWS XVII Time Table
3.1	Report of ICGNEAMTWS Chair
3.2	Report of IOC Secretariat
3.3	Report of the ICG/PTWS
3.3	Report of the ICG/CARIBE-EWS
3.4	Galileo Emergency Warning Satellite Service (EWSS)
3.5	Report of Task Team on Documentation
3.5	Report of WG1
3.5	Report of WG 2 and 3
3.5	Report of WG 4
3.5	Report of Task Team on Operations
4.1	CoastWAVE Project Report
4.2	Romania (NIEP)
4.2	NOA-HL-NTWC
4.2	INGV
4.2	CENALT
4.2	KOERI
4.2	Spain IGN
4.2	Egypt -NIOF
4.3	National Civil Protection Department of Italy

4.4	AGITHAR
4.4	EPOS cTCS
4.4	Geo-INQUIRE
4.5	Task Team on Tsunami Ready and TRRP Report
4.6	NEAMWave23 Preliminary Evaluation Report
4.7	Ocean Decade Tsunami Programme Actions
4.7	Ocean Decade Conference TSR Satellite Event
4.9	2nd UNESCO IOC Global Tsunami Symposium

ANNEX IV

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ANNEX V

LIST OF ACRONYMS

AGITHAR	Accelerating Global science In Tsunami Hazard And Risk analysis
ANPC	Autoridade Nacional de Proteccao Civil
CATAC	Central America Tsunami Advisory Center
CAP	Common Alert Protocol
CARIBE-EWS	Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions
CEA	Commissariat à l'énergie atomique et aux énergies alternatives (France)
CAT	Centro Allerta Tsunami (INGV-Italy)
CENALT	CENtre d'Alerte aux Tsunamis, France
COP	Conference of the Parties
CPA	Civil Protection Authority
cTCS	Candidate Thematic Core Service on Tsunami
CTE	Communication Test Exercise
EC-DG-DEFIS	Directorate General for Defense, Industry and Space
EU-DG-ECHO	Directorate-General of the European Commission's Humanitarian Aid Office
EGU	European Geoscience Union
ENC	Elections Nominations Committee
EPOS	European Plate Observing System
ERCC	Emergency Response and Coordination Center
EWSS	Galileo Emergency Warning Satellite Service
EW4ALL	Early Warnings for All
GFZ	German Research Centre for Geosciences
GSDD	Global Service Definition Document
GNSS	Global Navigation Satellite System
GTM	Global Tsunami Model
GTS	Global Telecommunication System
GPS	Global Positioning System
HTHH	Hunga Tonga Hunga Ha'apai
ICG	Intergovernmental Coordination Group
ICERI	International Conference of Education, Research and Innovation
PTWS	Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System

IGN	National Geographic Institute (Spain)
INGV	Istituto Nazionale di Geofisica e Vulcanologia (Italy)
IPMA	Instituto Português do Mar e da Atmosfera (Portugal)
IOT	Inter-Operability Tool
IOC	Intergovernmental Oceanographic Commission (UNESCO)
JCB	Joint Collaborative Board
JRC	Joint Research Centre
JICA	Japan International Cooperation Agency
KOERI	Kandilli Observatory and Earthquake Research (Türkiye)
LDS	Least Developed States
METU	Middle East Technical University, Türkiye
MHEWS	Multi-Hazard Early Warning Systems
MOU	Memorandum of Understanding
NIOF	National Institute of Oceanography and Fisheries, Egypt
NEAMTWS	Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas
NEAMTIC	Tsunami Information Centre for the North-Eastern Atlantic, the Mediterranean and Connected Seas
NIEP	National Institute for Earth Physics, Romania
NOA	National Observatory of Athens, Greece
NTWC	National Tsunami Warning Centre
NTRB	National Tsunami Ready Board
ODTP	Ocean Decade Tsunami Programme
OUG	Operational Users Guide
PTHA	Probability Tsunami Hazard Assessment
PTWC	Pacific Tsunami Warning Centre
QZSS	Quasi-Zenith Satellite System
SMART	Science Monitoring and Reliable Communications
SOPs	Standard Operating Procedures
SIDS	Small Island Developing States
TEWS	Tsunami Early Warning System
TEMPP	Tsunami Evacuation Maps, Plans, and Procedures
TNC	Tsunami National Contact
ToR	Terms of Reference
TOWS-WG	Working Group on Tsunamis and Other Hazards related to Sea-Level Warning and Mitigation Systems
TRRP	Tsunami Ready Recognition Programme

TSP	Tsunami Service Provider
TSR	Tsunami Service Recipient
TSUMAPS	TSUnami hazard MAPS in the NEAM Region
TT	Task Team
TTL	Tsunami Threat Levels
TGV	Tsunamis Generated by Volcanos
TWFP	Tsunami Warning Focal Point
TT-DMP	Task Team on Disaster Management and Preparedness
TT-TWO	Task Team on Tsunami Watch Operations
TT-FOO	Task Team on Forecasting from Ocean Observations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDRR	United Nations Office for Disaster Risk Reduction
WG	Working Group
WMO	World Meteorological Organization
WTAD	World Tsunami Awareness Day

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

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

114.	Second Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), Hyderabad, India, 14–16 December 2005	E only
115.	Second Session of the WMO-IOC Joint Technical Commission for Oceanography and Marine Meteorology, Halifax, Canada, 19–27 September 2005 (Abridged final report with resolutions and recommendations)	E, F, R, S
116.	Sixth Session of the IOC Regional Committee for the Western Indian Ocean (IOCWIO), Maputo, Mozambique, 2–4 November 2005 (* Executive Summary available separately in E, F, S & R)	E*
117.	Fourth Session of the IOC Regional Committee for the Central Indian Ocean, Colombo, Sri Lanka 8–10 December 2005 (* Executive Summary available separately in E, F, S & R)	E*
118.	Thirty-eighth Session of the Executive Council, Paris, 20 June 2005 (Electronic copy only)	E, F, R, S
119.	Thirty-ninth Session of the Executive Council, Paris, 21–28 June 2006	E, F, R, S
120.	Third Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), Bali, Indonesia, 31 July–2 August 2006 (*Executive Summary available separately in E,F,S & R)	E*
121.	Second Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS), Nice, France, 22–24 May 2006	E only
122.	Seventh Session of the IOC Intergovernmental Panel on Harmful Algal Blooms, Paris, France, 16–18 March 2005 (* Executive Summary available separately in E, F, S & R)	E*
123.	Fourth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-IV), 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*
159.	Twenty-seventh Session of the Assembly, Paris, 26 June–5 July 2013 and Forty-sixth Session of the Executive Council, Paris, 25 June 2013	E, F, R, S
160.	Twenty-fifth Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS), Vladivostok, Russian Federation, 9–11 September 2013 (*Executive Summary in E, F & R)	E*
161.	Ninth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions, US Virgin Islands, 13-15 May 2014 (*Executive Summary available in E, F, S & R)	E*
162.	Forty-seventh Session of the Executive Council, Paris, 1–4 July 2014 (* Decisions available in E, F, S & R)	E*
163.	Ninth Session of the IOC Sub-Commission of the Western Pacific (WESTPAC-IX), Busan, Republic of Korea, 9–12 May 2012	E
164.	Eleventh Session of the Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North Eastern Atlantic, the Mediterranean and Connected Seas, 12–14 November 2014, Nicosia, Cyprus (*Executive Summary available in E, F, S & R)	E*
165.	Twenty-sixth Session of the Intergovernmental Coordination Group for the for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS-XXVI), Hawaii, USA, 22–24 April 2015 (*Executive Summary available in E, F, S & R)	E*
166.	Tenth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS), Philipsburg, Sint Maarten, Kingdom of the Netherlands, 19–21 May 2015 (*Executive Summary available in E, F, S & R)	E*
167.	Tenth Session of the IOC Sub-Commission of the Western Pacific (WESTPAC-X), Phuket, Thailand, 12–15 May 2015	E
168.	Twenty-eighth Session of the Assembly, Paris, 18–25 June 2015	
169.	Twelfth 12th 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-XII), Dublin, Ireland, 16-18 November 2015 (*Executive Summary available in E, F, S & R)	E*
170.	Eleventh Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-XI), Cartagena, Colombia, 5-7 April 2016 (*Executive Summary available in E, F, S & R)	E*
171.	Tenth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS), Muscat, Oman, 24–26 March 2015	E*
172.	Forty-ninth Session of the Executive Council, Paris, 7–10 June 2016 (* Decisions available in E, F, S & R)	E*
173.	Thirteenth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions, Bucharest, Romania, 26–28 September 2016 (*Executive Summary available in E, F, S & R)	E*
174.	Twenty-seventh Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS-XXVII), Tahiti, France, 28-31 March 2017 (*Executive Summary available in E, F, S & R)	E*
175.	Twelfth Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS), Puntarenas, Costa Rica, 10–12 May 2017 (*Executive Summary available in E, F, S & R)	E*
176.	Eleventh Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS), Putrajaya, Malaysia, 18–20 April 2017 (*Executive Summary available in E, F, S & R)	E*
177.	Fourteenth 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), Lisbon, Portugal, 21–23 November 2017 (*Executive Summary available in E, F, S & R)	E*
178.	Twenty-ninth Session of the Assembly, Paris, 21–29 June 2017 and Fiftieth Session of the Executive Council, Paris, 20 June 2017 (*Executive Summary available in E, F, S & R)	E*
179.	Thirteenth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-XIII), Curaçao, 23–27 April 2018 (*Executive Summary available in E, F, S & R)	E*
180.	Twenty-fifth Session of the IOC Committee on International Oceanographic Data and Information Exchange, Tokyo, 2019 (* Executive Summary available separately in E, F, S & R)	E*
181.	Fifteenth 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), Paris, France, 26–28 November 2018 (*Executive Summary available in E, F, S & R)	E*
182.	Twelfth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS), Kish, Islamic Republic of Iran, 9–12 March 2019 (*Executive Summary available in E, F, S, R)	E*
183.	Twenty-eighth Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS-XXVIII), Montelimar, Nicaragua, 2–5 April 2019 (*Executive Summary available in E, F, S & R)	E*
184.	Fourteenth session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS-XIV/3), Punta Leona, Costa Rica, 8–11 April 2019 (*Executive Summary available in E, F, S & R)	E*
185.	Fifth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-V/3), Putrajaya, Malaysia, 8–10 April 2008	E

186.	Sixth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-VI/3), Hyderabad, India, 7–9 April 2009	E
187.	Eighth Session of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWS-VIII/3), Melbourne, Australia, 3–6 May 2011	E
188.	Fifty-first Session of the Executive Council, Paris, 3–6 July 2018 (* Decisions available in E, F, S & R)	E*
189.	Sixteenth 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), Cannes, France, 2-4 December 2019 (* Executive Summary available in E, F, S & R)	E*
190.	Fifteenth Session of the Intergovernmental Coordination Group for the Tsunami and Other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE EWS-XV), 27–29 April 2021 (online) (* Executive Summary available in E, F, S & R)	E*
191.	Twenty-ninth Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS-XXIX), Online, 1–2 and 7–8 December 2021 (*Executive Summary available in E, F, S & R)	E*
192.	Thirtieth Session of the IOC Assembly, Paris, 26 June–4 July 2019 and Fifty-second session of the IOC Executive Council, Paris, 25 June 2019 (*Summary report available in E, F, S & R)	E*
193.	Fifty-third Session of the Executive Council, Online, 3–9 February 2021 (* Decisions available in E, F, S & R)	E*
194.	Thirty-first Session of the IOC Assembly, Online, 14–25 June-2021	E F S R
195.	Tenth Session of the International Co-ordinating Group for the Tsunami Warning System in the Pacific, Sidney, Canada, 1–3 August 1985	E
196.	Inter-Sessional Meeting of the Intergovernmental Coordination Group for the Indian Ocean Tsunami Warning and Mitigation System (ICG/IOTWMS), online, 23–24 November 2021	E
197.	Twenty-ninth Session of the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS), 1–2 & 7–8 December 2021 (online)	E*
198.	Sixteenth Session of the Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions (ICG/CARIBE-EWS), San José, Costa Rica, 25–28 April 2023	E (summary in F & S)
199.	Summary Report of the Eighteenth 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-XVIII), 6–8 February 2024, UNESCO Headquarters, Paris	E (summary in F & S)