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

Fifteenth Session

Paris, France
26–28 November 2018
Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas (ICG/NEAMTWS)

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The Executive Summary is available in English, French, Spanish and Russian.
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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 15th session on 26–28 November 2018, at the IOC/UNESCO Headquarters in Paris, France:

Noted the intention of Instituto Português do Mar e da Atmosfera (IPMA), Portugal, to apply for accreditation to become Tsunami Service Provider (TSP) in the next intersessional period;

Recognized the efforts made nationally to increase awareness on tsunami hazards and preparedness in line with and as contributions to the World Tsunami Awareness Day, 5 November 2018;

Acknowledged the IOC commissioned survey, analysis and proposed strategies for revitalizing NEAMTIC (Tsunami Information Centre for the region);

Appreciated the continued effort of IOC in organising workshops in North-African countries to support the further development of national tsunami early warming and mitigation capacities;

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

Took note of IOC Executive Council Decision EC-LI/3.3.3 (2018) concerning Tsunami and Other Coastal Hazards Warning Systems;

Acknowledged and supported the bottom-up initiative from the tsunami scientific community in the NEAM Region towards the establishment of a Tsunami Thematic Core Service (TCS) within EPOS —The European Plate Observing System, a European Research Infrastructure Consortium (ERIC);

Appreciated the presentation by Cecilia Valbonesi, INGV Rome –University of Florence— on legal aspects of risk governance, liability of scientist and Civil Protection Authorities in Tsunami Warning Systems;

Expressed its thanks to Co-Chairpersons of the Task Team on Exercises for finalizing the NEAMWave17 evaluation report;

Acknowledged the continued support of the European Commission (EC) and its Joint Research Centre (JRC) in capacity development, including infrastructure and research, sea level instrumentation, tsunami alerting devices and provision of measurements;

Requested the Co-Chairpersons of the Working Groups and the Task Teams to prepare, in consultation with the Members of their respective groups, a plan of action for the intersessional period, and submit it to the IOC Secretariat no later than the end of January 2019;

Decided:

i. To merge Working Groups 2 (Seismic and Geophysical Measurements) and 3 (Sea Level Data Collection and Exchange) with a new mandate provided in Annex 1 to Decision ICG/NEAMTWS-XV.1 for the time of the intersessional period;
ii. To task Working Group 4 with further analysis, the elaboration of an action plan for the 
redevelopment of the website (phase 2 of the NEAMTIC Plan of Action proposal) and 
a progress report at the next ICG/NEAMTWS Steering Committee;

iii. To continue the activities of the Task Team on Operations with existing Terms of 
Reference (see Annex 4 to Decision ICG/NEAMTWS-XV.1);

iv. To continue the Task Team on Tsunami Exercises with revised Terms of Reference as 
given in Annex 2 to Decision ICG/NEAMTWS-XV.1;

v. To organise and conduct the fourth NEAMTWS exercise in 2020 (NEAMWave20);

vi. To continue the activities of the Steering Committee during the intersessional period 
with existing Terms of References (see Annex 5 to Decision ICG/NEAMTWS-XV.1);

vii. To request the Steering Committee to further reflect on the structure of 
ICG/NEAMTWS;

viii. To continue the Task Team on Documentation, with revised Terms of Reference as 
given in Annex 3 to Decision ICG/NEAMTWS-XV.1);

Recommended:

i. To increase the participation of Member States in the ICG activities, with particular 
focus on tsunami education, awareness and preparedness, and to explore the 
adaptation of community preparedness and recognition programmes such as Tsunami 
Ready for the NEAM region, including Tsunami Hazard and Tsunami Evacuation Maps, 
Plans, and Procedures (TEMPP);

ii. Member States who have not yet subscribed through the IOC to the services of a TSPs 
to do so as soon as possible;

iii. To increase the accessibility of the NEAMTWS documentation through the use of the 
collaborative workspace made available by the IOC Secretariat;

Further recommended:

i. That all sea level data should be made available to the TSPs and NTWCs using 
bilateral agreements between NTWCs whenever possible;

ii. To increase the number of seismic and sea level stations available in the North of 
Africa, and for sea level data, to reduce sampling and latency to 1 minute or less as far 
as possible;

iii. That Member States through their national representatives (Tsunami National 
Contacts) encourage the active involvement of their national Civil Protection Authorities 
(CPAs) in the routine activities of the ICG, with the aim of making the ICG/NEAMTWS 
products more suitable to their needs and expectations;

Accepted additional recommendations of Working Groups and Task Teams as outlined in 
Annex 6 to Decision ICG/NEAMTWS-XV.1);

Welcomed the offer of France to host ICG/NEAMTWS-XVI in Cannes in 2019;

Thanked IOC for having hosted the 15th session of ICG/NEAMTWS at UNESCO, Paris.
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), réuni au Siège de la COI/UNESCO à Paris (France) du 26 au 28 novembre 2018 pour sa 15e session :

Prend note de l’intention de l’Instituto Português do Mar e da Atmosfera (IPMA) (Portugal) de se porter candidat aux fonctions de prestataire de services relatifs aux tsunamis (TSP) pour la prochaine période intersessions ;

Reconnait les efforts consentis au niveau national pour améliorer la sensibilisation et la préparation aux risques liés aux tsunamis, conformément et en tant que contribution à la Journée mondiale de sensibilisation aux tsunamis, le 5 novembre 2018 ;

Prend acte de l’enquête commandée, de l’analyse effectuée ainsi que des stratégies proposées par la COI pour revitaliser le NEAMTIC (Centre d’information sur les tsunamis pour la région) ;

Salue les efforts constants déployés par la COI pour organiser des ateliers dans les pays d’Afrique du Nord afin de soutenir le développement des capacités nationales en matière d’alerte rapide aux tsunamis et de mitigation ;

Encourage les prestataires de services relatifs aux tsunamis (TSP) à finaliser leurs travaux en vue d’établir une liste harmonisée des points de prévision des tsunamis, notamment les zones côtières du NEAMTWS où il n’existe officiellement pas de points de prévision des tsunamis ;

Prend note de la décision EC-LI/3.3.3 (2018) du Conseil exécutif de la COI concernant les systèmes d’alerte aux tsunamis et autres aléas côtiers ;

Accueille avec satisfaction et soutient l’initiative ascendante de la communauté scientifique spécialisée sur les tsunamis dans la région de l’Atlantique du Nord-Est, de la Méditerranée et des mers adjacentes visant à créer un service de base thématique sur les tsunamis (TCS) au sein de l’EPOS – le Système d’observation de la lithosphère en Europe, un Consortium pour une infrastructure européenne de recherche (ERIC) ;

Salue la présentation de Cecilia Valbonesi, INGV Rome – Université de Florence – sur les aspects juridiques de la gouvernance des risques et la responsabilité des scientifiques et des autorités de protection civile dans les systèmes d’alerte aux tsunamis ;

Remercie les coprésidents de l’Équipe spéciale sur les exercices pour avoir finalisé le rapport d’évaluation de NEAMWave17 ;

Se félicite du soutien constant de la Commission européenne (CE) et de son Centre commun de recherche (CCR) au développement des capacités, notamment des infrastructures et de la recherche, des instruments de mesure du niveau de la mer, des dispositifs d’alerte aux tsunamis et de la fourniture de mesures ;

Prie les coprésidents des groupes de travail et des équipes spéciales de préparer, en consultation avec leurs membres respectifs, un plan d’action pour la période intersessions et de le soumettre au Secrétariat de la COI avant la fin janvier 2019 ;
Décide :

i. de fusionner les groupes de travail 2 (Mesures sismiques et géophysiques) et 3 (Collecte et échange de données relatives au niveau de la mer) avec un nouveau mandat énoncé à l’annexe 1 de la décision ICG/NEAMTWS-XV.1 pour la durée de la période intersessions ;

ii. de charger le Groupe de travail 4 de poursuivre les analyses et de présenter un plan d’action pour la refonte du site Web (phase 2 de la proposition de Plan d’action du NEAMTIC) ainsi qu’un rapport d’étape à la prochaine réunion du Comité directeur du GIC/NEAMTWS ;

iii. de poursuivre les activités de l’Équipe spéciale sur les opérations selon le mandat actuel (voir l’annexe 4 de la décision ICG/NEAMTWS-XV.1) ;

iv. de maintenir l’Équipe spéciale sur les exercices d’alerte aux tsunamis avec le mandat révisé figurant à l’annexe 2 de la décision ICG/NEAMTWS-XV.1 ;

v. d’organiser et de conduire le quatrième exercice NEAMTWS en 2020 (NEAMWave20) ;

vi. de poursuivre les activités du Comité directeur pendant la période intersessions selon le mandat actuel (voir l’annexe 5 de la décision ICG/NEAMTWS-XV.1) ;

vii. de prier le Comité directeur de réfléchir plus avant sur la structure du GIC/NEAMTWS ;

viii. de maintenir l’Équipe spéciale sur la documentation avec le mandat révisé figurant à l’annexe 3 de la décision ICG/NEAMTWS-XV.1 ;

Recommande :

i. d’accroître la participation des États membres aux activités du GIC, en mettant l’accent sur l’éducation, la sensibilisation et la préparation aux tsunamis, et d’envisager d’adapter les programmes de préparation des communautés et de reconnaissance tels que Tsunami Ready pour la région de l’Atlantique du Nord-Est, de la Méditerranée et des mers adjacentes, notamment le risque de tsunami et les cartes, plans et procédures d’évacuation en cas de tsunami (TEMPP) ;

ii. aux États membres qui n’ont pas encore souscrit aux services des prestataires de services relatifs aux tsunamis par le biais de la COI de le faire dès que possible ;

iii. d’accroître l’accès à la documentation du NEAMTWS au moyen de l’espace de travail collaboratif mis en place par le Secrétariat de la COI ;

Recommande également :

i. que toutes les données concernant le niveau de la mer soient mises à la disposition des prestataires de services relatifs aux tsunamis (TSP) et des centres nationaux d’alerte aux tsunamis (NTWC) au moyen d’accords bilatéraux entre les NTWC, dans toute la mesure possible ;

ii. d’accroître le nombre de stations sismiques et marégraphiques disponibles dans le nord de l’Afrique et, en ce qui concerne les données relatives au niveau de la mer, de réduire l’échantillonnage et la latence à 1 minute ou moins, autant que possible ;
iii. que les États membres, par l’intermédiaire de leurs représentants nationaux (Contacts nationaux pour les tsunamis) encouragent leurs autorités nationales de protection civile à participer activement aux activités courantes du GIC, afin que les produits du GIC/NEAMTWS répondent mieux aux besoins et aux attentes de ces autorités ;

Accepte les autres recommandations formulées par les groupes de travail et les équipes spéciales, telles qu’énoncées dans l’annexe 6 de la décision ICG/NEAMTWS-XV.1 ;

Se félicite de la proposition de la France d’accueillir la 16e session du GIC/NEAMTWS à Cannes en 2019 ;

Remercie la COI pour avoir accueilli la 15e session du GIC/NEAMTWS à l’UNESCO, à Paris.
Resumen dispositivo

El Grupo Intergubernamental de Coordinación del Sistema de Alerta Temprana contra los Tsunamis y Atenución de sus Efectos en el Atlántico Nororiental y el Mediterráneo y Mares Adyacentes (ICG/NEAMTWS), en su 15ª reunión celebrada en París (Francia) del 26 al 28 de noviembre de 2018 en la Sede de la Comisión Oceanográfica Intergubernamental (COI) de la UNESCO:

**Tomó nota** de la intención del Instituto Português do Mar e da Atmosfera (IPMA) (Portugal) de presentar una solicitud de acreditación para ser proveedor de servicios sobre tsunamis (TSP) en el próximo periodo entre reuniones;

**Reconoció** los esfuerzos realizados en el plano nacional para aumentar la sensibilización sobre el peligro de tsunamis y la preparación para afrontarlos, de conformidad con el Día Mundial de Concienciación sobre los Tsunamis, celebrado el 5 de noviembre de 2018, y como contribución a él;

**Tomó nota** de la encuesta realizada por encargo de la COI, de los análisis y de las estrategias propuestas para revitalizar al NEAMTIC (Centro de Información sobre Tsunamis en la región);

**Celebró** los continuos esfuerzos de la COI para organizar talleres en los países de África Septentrional a fin de fomentar el desarrollo de capacidades nacionales de alerta temprana contra los tsunamis y atenuación de sus efectos;

**Instó** a los proveedores de servicios sobre tsunamis a ultimar su labor para establecer una lista armonizada de centros de pronóstico de tsunamis, incluidas las zonas costeras del NEAMTWS donde no existen oficialmente centros de pronóstico de tsunamis;

**Tomó nota** de la decisión EC-LI/3.3.3 (2018) del Consejo Ejecutivo de la COI relativa a los sistemas de alerta contra los tsunamis y otros peligros costeros;

**Reconoció y apoyó** la iniciativa definida con un enfoque ascendente por la comunidad científica especializada en tsunamis de la región del Atlántico Nororiental y el Mediterráneo, con miras a crear un servicio básico temático sobre tsunamis (TCS) en el marco del Sistema Europeo de Observación de Placas (EPOS), un Consorcio de Infraestructuras de Investigación Europeas (ERIC);

**Agradeció** la presentación realizada por Cecilia Valbonesi, del Instituto Nacional de Geofísica y Vulcanología (INGV) de Roma –Universidad de Florencia–, sobre los aspectos jurídicos de la gestión de riesgos y la responsabilidad de investigadores y autoridades de protección civil en los sistemas de alerta contra los tsunamis;

**Expresó** su gratitud a los copresidentes del Equipo de Trabajo sobre ejercicios de simulación de tsunamis por la finalización del informe de evaluación del ejercicio NEAMWave17;

**Reconoció** el continuo apoyo de la Comisión Europea (CE) y su Centro Común de Investigación (CCI) al desarrollo de capacidades, incluidas las infraestructuras y la investigación, los instrumentos de medición del nivel del mar, los dispositivos de alerta contra los tsunamis y el suministro de mediciones;

**Pidió** a los copresidentes de los grupos de trabajo y de los equipos de trabajo que, en consulta con los miembros de sus respectivos grupos, prepararan un plan de acción para el periodo entre reuniones y lo presentaran a la Secretaría de la COI a más tardar a finales de enero de 2019;
Decidió:

i) fusionar el Grupo de Trabajo 2 (Mediciones sísmicas y geofísicas) y el Grupo de Trabajo 3 (Acopio e intercambio de datos sobre el nivel del mar) con un nuevo mandato para el periodo entre reuniones, que figura en el anexo 1 de la decisión ICG/NEAMTWS-XV.1;

ii) encargar al Grupo de Trabajo 4 la realización de nuevos análisis, la elaboración de un plan de acción para la remodelación del sitio web (segunda fase de la propuesta de Plan de Acción del NEAMTIC) y la preparación de un informe sobre los progresos realizados en la próxima reunión del Comité de Dirección del ICG/NEAMTWS;

iii) proseguir las actividades del Equipo de Trabajo sobre Operaciones con el actual mandato (véase el anexo 4 de la decisión ICG/NEAMTWS-XV.1);

iv) mantener el Equipo de Trabajo sobre ejercicios de simulación de tsunamis con el mandato revisado que figura en el anexo 2 de la decisión ICG/NEAMTWS-XV.1;

v) organizar y llevar a cabo el cuarto ejercicio del NEAMTWS en 2020 (NEAMWave20);

vi) proseguir las actividades del Comité de Dirección durante el periodo entre reuniones, con el actual mandato que figura en la decisión --- (véase el anexo 5 de la decisión ICG/NEAMTWS-XV.1);

vii) pedir al Comité de Dirección que siguiera reflexionando sobre la estructura del ICG/NEAMTWS;

viii) mantener el Equipo de Trabajo sobre Documentación, con el mandato revisado que figura en el anexo 3 de la decisión ICG/NEAMTWS-XV.1;

Recomendó:

i) aumentar la participación de los Estados Miembros en las actividades del ICG, prestando especial atención a la educación, la sensibilización y la preparación con respecto a los tsunamis, y examinar la adaptación de los programas comunitarios de preparación y reconocimiento, como "Tsunami Ready" para la región del Atlántico Nororiental y el Mediterráneo, incluidos mapas sobre el riesgo de tsunami y planes y procedimientos de evacuación en caso de tsunami (TEMPP);

ii) a los Estados Miembros que aún no se hubieran suscrito, por conducto de la COI, a los servicios de los TSP, que lo hicieran cuanto antes;

iii) mejorar el acceso a la documentación del NEAMTWS mediante la utilización del espacio de trabajo colaborativo facilitado por la Secretaría de la COI;

Recomendó también:

iv) que todos los datos sobre el nivel del mar se pusieran a disposición de los TSP y los centros nacionales de alerta contra los tsunamis (NTWC) mediante acuerdos bilaterales entre distintos NTWC siempre que fuera posible;

v) aumentar el número de las estaciones sismológicas y de medición del nivel del mar disponibles en África Septentrional y, en lo que respecta al nivel del mar, reducir el muestreo y la latencia a un minuto o menos, en la medida de lo posible;

vi) que los Estados Miembros, por conducto de sus representantes nacionales (contactos nacionales sobre tsunamis), alentaran la participación activa de sus autoridades nacionales de protección civil (APC) en las actividades ordinarias del ICG, para que
los productos del ICG/NEAMTWS se adaptarán mejor a sus necesidades y expectativas;

**Aceptó** las recomendaciones adicionales de los grupos de trabajo y los equipos de trabajo que figuran en el anexo 6 de la decisión ICG/NEAMTWS-XV.1;

**Acogió con beneplácito** el ofrecimiento de Francia de acoger la 16ª reunión del ICG/NEAMTWS en Cannes en 2019;

**Agradeció** a la COI el haber acogido la 15ª reunión del ICG/NEAMTWS en la UNESCO, en París.
Краткий Рабочий Доклад

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 15-ю сессию 26–28 ноября 2018 г. в Штаб-квартире МОК/ЮНЕСКО в Париже (Франция).

Межправительственная координационная группа:

приняла к сведению намерение Португальского института моря и атмосферы подать в течение следующего межсессионного периода заявку на свою аккредитацию в качестве провайдера данных слежения за цунами (ПДСЦ);

отметила усилия, предпринятые на национальном уровне с целью повышения осведомленности об опасности цунами и уровня готовности к ним в рамках подготовки и в качестве вклада в проведение Всемирного дня распространения информации о проблеме цунами, отмечавшегося 5 ноября 2018 г.;

выразила признательность за проведенное по поручению МОК обследование положения дел, анализ его результатов и разработку комплекса мер, направленных на активизацию деятельности Центра информации о цунами для региона Северо-Восточной Атлантики, Средиземного и прилегающих морей (НЕАМТИК);

дала высокую оценку последовательным усилиям МОК по организации практических семинаров в североафриканских странах, что призвано содействовать дальнейшему развитию на национальном уровне потенциала в области раннего предупреждения о цунами и смягчения их последствий;

призвала ПДСЦ завершить работу по составлению согласованного списка пунктов прогнозирования цунами (ППЦ), в том числе в отношении прибрежных зон СПЦСВАСМ, в которых нет официально заявленных ППЦ;

приняла к сведению решение Исполнительного совета МОК ЕС-LI/3.3.3 (2018 г.) в отношении систем предупреждения о цунами и других потенциальных опасностях в прибрежной зоне;

приветствовала и поддержала децентрализованную инициативу научного сообщества, занимающегося проблемами цунами в регионе СВАСМ, направленную на создание в рамках Европейской системы наблюдений за динамикой плит, которая входит в Европейский консорциум научно-исследовательской инфраструктуры (ЕРИК), профильной базовой услуги по цунам (БУЦ);

дала высокую оценку докладу Чечилии Валбонези из Национального института геофизики и вулканологии, Флорентийский университет, касавшемуся правовых аспектов управления рисками, а также вопросов ответственности научных работников (исследователей) и органов защиты гражданского населения в рамках систем оповещения о цунами;

выразила признательность сопредседателям Целевой группы по проведению учений за подготовку доклада об итогах «СВАСМ/Волна-17»;

поблагодарила Европейскую комиссию (ЕК) и ее Объединенный исследовательский центр (ОИЦ) за постоянную поддержку в деле наращивания потенциала, включая укрепление технической и исследовательской базы, оснащение инструментарием для
измерения уровня моря и устройствами предупреждения о цунами, а также предоставление результатов наблюдений;

просила сопредседателей рабочих и целевых групп подготовить в консультации с членами своих соответствующих групп план действий на межсессионный период и представить его Секретариату МОК не позднее конца января 2019 г.;

постановила:

i. объединить на время межсессионного периода рабочие группы 2 (Сейсмические и геофизические измерения) и 3 (Сбор данных об уровне моря и обмен ими) на основе нового круга ведения, представленного в приложении 1 к решению ICG/NEAMTWS-XV.1;

ii. поручить Рабочей группе 4 провести дополнительный анализ, разработать план мероприятий по обновлению структуры веб-сайта (этап 2 проекта плана действий NEAMTIK) и представить доклад о ходе работы на следующем совещании Руководящего комитета МКГ/СПЦСВАСМ;

iii. продолжить деятельность Целевой группы по оперативным вопросам на основе существующего круга ведения (см. приложение 4 к решению ICG/NEAMTWS-XV.1);

iv. продолжить деятельность Целевой группы по проведению учений, связанных с цунами, на основе пересмотренного круга ведения, представленного в приложении 2 к решению ICG/NEAMTWS-XV.1;

v. организовать и провести в 2020 г. четвертые учения СПЦСВАСМ по предупреждению цунами (СВАСМ/Волна-20);

vi. продолжить деятельность Руководящего комитета в межсессионный период на основе существующего круга ведения, представленного в решении (см. приложение 5 к решению ICG/NEAMTWS-XV.1);

vii. просить Руководящий комитет продолжить рассмотрение вопроса о структуре МКГ/СПЦСВАСМ;

viii. продолжить деятельность Целевой группы по документации на основе пересмотренного круга ведения, представленного в приложении 3 к решению ICG/NEAMTWS-XV.1;

рекомендовала:

i. расширить участие государств-членов в деятельности МКГ, уделяя особое внимание информационно-просветительской работе и усилиям по повышению готовности к цунами, а также изучению возможностей адаптации для региона СВАСМ программ, направленных на повышение готовности населения к цунами и оценку такой готовности, например, с помощью сертификата «К цунами готов», включая разработку карт, планов и порядка проведения связанных с цunami эвакуационных мероприятий (КППМЦ);

ii. государствам-членам, еще не подписавшимся через МОК на услуги ПДСЦ, сделать это в возможно короткие сроки;

iii. расширить доступ к документации СПЦСВАСМ посредством использования предоставленного Секретариатом МОК совместного рабочего пространства;
рекомендовала также:

i. обеспечить предоставление ПДСЦ и НЦПЦ всех данных об уровне моря, используя там, где это возможно, двусторонние соглашения между НЦПЦ;

ii. увеличить число действующих станций измерения уровня моря в Северной Африке, а также сократить по мере возможности время проведения измерений уровня моря и ожидания запрошенной информации до одной минуты;

iii. государствам-членам поощрять своих представителей (национальные контакты по цунами) к активному вовлечению органов защиты гражданского населения (ОЗГН) в плановую деятельность МКГ для обеспечения более полного соответствия продуктов МКГ/СПЦСВАСМ потребностям и ожиданиям ОЗГН;

утвердила дополнительные рекомендации рабочих и целевых групп, изложенные в приложении 6 к решению ICG/NEAMTWS-XV.1;

приветствовала предложение Франции провести 16-ю сессию МКГ/СПЦСВАСМ в 2019 г. в Каннах, Франция;

поблагодарила МОК за проведение 15-й сессии МКГ/СПЦСВАСМ в Штаб-квартире ЮНЕСКО в Париже.
1. OPENING OF SESSION

1. The 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-XV) was opened on Monday 26 November 2018 at 10:00 by Mr Gerasimos Papadopoulos, Chairperson of ICG/NEAMTWS, who welcomed the participants to the meeting.

2. Mr Thorkild Aarup, Head of Tsunami Section welcomed participants on behalf of Vladimir Ryabinin, Executive Secretary of IOC.

3. He highlighted several contributions and developments in the Global Tsunami Warning and Mitigation System over the last year. Some of the highlights included: growing momentum for the Tsunami community recognition program (Tsunami Ready) particularly in the Caribbean and Central America; concerted efforts from the secretariat to increase awareness through national information meetings, participation in science and policy meetings; progress by TOWS-WG to finalize guidelines for how tsunami alerts for the maritime community and growing number of nations who participated in the World Tsunami Awareness Day on 5 November 2018 to create awareness about tsunami risks.

4. He reminded the session about the recent tsunami disaster in Palu, Indonesia on 28 September 2018 and the need to conduct post-tsunami field investigations to improve understanding of tsunamis and in developing the tools and programs necessary to mitigate their effects.

5. A small local tsunami was also generated in NEAM region following an earthquake near Zakynthos Island on 26 October 2018.

6. Mr Aarup stressed the important topics to discuss concerning the direction of work for the coming years, including the future direction for the NEAM Tsunami Information Centre; updating key NEAMTWS planning documents; as well as plans for the next tsunami exercise.

7. He also reported on the budget situation facing IOC and the planning efforts for UN Decade of Ocean Science for Sustainable Development (2021–2030).

8. In closing, he wished participants a productive meeting.

2. ORGANIZATION OF THE SESSION

2.1 ADOPTION OF THE AGENDA

9. Mr Gerasimos Papadopoulos, the Chairperson of the ICG/NEAMTWS introduced the provisional Agenda. The Group adopted the Provisional Agenda with no change, as included in Annex I.

2.2 DESIGNATION OF THE RAPPORTEUR

10. Mr Iordanis Dimiriadis from Cyprus Geological Survey Department was designated to be the rapporteur of the ICG/NEAMTWS-XV Session.

2.3 TIMETABLE AND DOCUMENTATION

11. The ICG reviewed and adopted the timetable for the meeting.
2.4 ESTABLISHMENT OF SESSIONAL COMMITTEES AND WORKING/DRAFTING GROUPS

12. The ICG discussed the formation of sessional committees and Working Groups (WGs). There would be two breakout sessions. During the first break out session individual WGs & Task Teams (TTs) would meet. This would include a joint meeting between WG 2 and WG 3. In the second break-out session there would be joint meetings on cluster topics:
   - WG 1 (Hazard and Modelling) – TT on Operations
   - WG 1 – WG4 (Education, Awareness and Mitigation) / WG 1 – TT on Operations
   - TT on Documentation & TT on Exercise.

13. Ms Anna Von Gyldenfeldt and Mr Thorkild Aarup (IOC Secretariat) agreed to prepare the first draft Decisions and Recommendations of the ICG/NEAMTWS-XV session.

3. REPORT ON ICG/NEAMTWS INTERSESSIONAL ACTIVITIES

3.1 REPORT BY THE CHAIRPERSON

14. Mr Gerasimos Papadopoulos, Chairperson of the ICG/NEAMTWS, reported on the activities undertaken since the last session of the ICG/NEAMTWS-XIV in Lisbon, Portugal, 21–23 November 2017. The majority of activities concern governance, coordination and advocacy meetings.

15. The Chairperson highlighted governance and advocacy activities, and summarised the activities implemented since the last session which encompassed the organization of the steering committee (SC) meeting in Paris on 20–21 March 2018, and his participation in other meetings and activities.

16. The Chairperson also reported his participation in the JRC meeting about the Lesvos and Bodrum —Kos 2017 earthquake and tsunami events in the Aegean Sea area held at JRC, Ispra, 11–12 December 2017. The meeting discussed the needs for the further improvement particularly for the downstream component of the Tsunami Warning System. He also participated in: the EGU —EPOS Tsunami Project meeting in Vienna, 11 April 2018; the GFZ-meeting in Munich on 25 June 2018; and the European Commission Eleventh meeting of the Community of Users on Secure, Safe and Resilient Societies-Geological Disasters meeting in Brussels on 6 June 2018. The Chair also participated in the International Workshop on Advances in Tsunami Warning to Enhance Community Responses in Paris, France on 12–14 February 2018. He also participated in the inter-ICG and TOWS-Eleventh meeting on 14–17 February 2018.

17. Finally, the Chairperson reported that he participated in the IOC-ISESCO (Islamic Educational, Scientific and Cultural Organization) workshop on Tsunami Warning and Mitigation System-Preparing for the Next Tsunami: Reducing Losses and Damages in the Coastal Mediterranean Areas in Rabat, Morocco, 15–16 November 2018.

18. Mr Papadopoulos highlighted that he considered these workshops in North-Africa as very important towards the further development of NEAMTWS.

3.2 REPORT BY THE IOC SECRETARIAT

19. Mr Denis Chang Seng, Technical Secretary of the ICG/NEAMTWS, reported on the IOC Secretariat activities for the intersessional period.
20. The Technical Secretary supported and participated in several meetings including the IOC/UNESCO Tsunami Symposium: Advances in Tsunami Warning to Enhance Community Responses, 12–14 February 2018, Paris, France; the TOWS Task Team on Disaster Management & Preparedness, 14–15 February 2018; and the TOWS-WG-XI meeting, 16–17 February 2018, Paris, France.


22. The Technical Secretary participated in the 36th General Assembly of the European Seismological Commission, 4–7 September, Valetta, Malta and the Beach and Coastal Resort Risks Workshop, 24 September, Valetta, Malta. The Workshop discussed about how the Council of Europe's EU-OPA Major Hazards Agreement project intends to contribute to a Tsunami Ready Community working on two programmes: Tsunami Ready Beach (TRB) and a Tsunami Ready Hotel (TRH). The project will develop partnerships with several national bodies including the Malta Tourism Authority and will consider adopting a step-by-step approach towards implementing Tsunami Ready initiatives in Malta.

23. The Technical Secretary also participated in a EPOS Tsunami meeting in Munich, 25 September 2018. EPOS (European Plate Observing System) is a long-term plan for the integration of research infrastructures for solid Earth Science in Europe. Dr Alexander Rudloff (see section 4.5) would later brief ICG/NEAMTWS-XV session in Paris about the TCS Tsunami/EPOS meeting in Munich and key outcome. Mr Massimo Cocco, EPOS Coordinator was also invited to give a presentation on EPOS at the ICG/NEAMTWS-15 session.

24. The Technical Secretary participated in the first ever UNISDR Regional Platform on Disaster Risk Reduction in the Africa-Arab region, 9–13 October and contributed to an expert panel discussion on tsunami risks and how to protect African-Arab countries from tsunamis in commemoration of the World Tsunami Awareness Day (WTAD), 5 November 2018.

25. The Technical Secretary supported the organisation of two joint IOC/UNESCO-ISESCO Workshops on (i) Tsunami Early Warning and Mitigation System and (ii) Identification and Prioritization of Capacity-Building Activities related to Natural Hazards in Rabat, Morocco, 12–16 November 2018. The workshops were hosted by the Headquarters of the Islamic Educational, Scientific and Cultural Organization (ISESCO). Further information about the Tsunami Workshop is available here.

26. The Secretariat commissioned a study to carry out a survey on the needs and requirements of the ICG/NEAMTWS Member States with respect to NEAMTIC, and to prepare a strategy for the further development of NEAMTIC and its website. The consultant has prepared a full survey report and a NEAMTIC Strategy document for the future development of the Tsunami Information Centre for the North East Atlantic, Mediterranean and Connected Seas region. The ICG/NEAMTWS-XV session was requested to review the survey report and provide any recommendations and decisions concerning the NEAMTIC Strategy.

27. The Technical Secretary finalized the NEAMWave17 Evaluation report and prepared a new ICG/NEAMTWS poster.
3.3 REPORT BY THE WORKING GROUP ON TSUNAMIS AND OTHER HAZARDS RELATED TO SEA-LEVEL WARNING AND MITIGATION SYSTEMS (TOWS-WG)

28. Mr Gerasimos Papadopoulos reported on the Eleventh Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation System (TOWS-WG) which was held on 16–17 February, UNESCO, Paris.

29. Prior to the TOWS-WG a Symposium on Advances in Tsunami Warning to Enhance Community Response (12–14 February 2018, Paris) had been convened in identifying the current status and future directions to improve operational tsunami warnings and community resilience. The findings and recommendations are published in the Summary Statement (IOC/BRO/2018/3) at: https://unesdoc.unesco.org/ark:/48223/pf0000262840.

30. The TOWS-WG made several recommendations to the IOC Executive Council requesting Member States:

- to increase and sustain technical and financial support of the tsunami and other coastal hazards warning systems in their respective regions considering the significant impacts of these hazards on lives and livelihoods in coastal communities;
- to further promote tsunami awareness in communities and among authorities through communication and tsunami wave exercises, training, information, and community preparedness & recognition programmes;
- to densify sea level networks and seismic network particularly near field tsunamigenic sources;
- to advocate World Tsunami Awareness Day among Member States and advise them of the availability of material from the UNISDR in this regard, and share activities and materials with UNISDR and Tsunami Information Centres;
- to recommend TSPs and NTWSs to continue populating international register of alerting authorities through WMO National Permanent Representative;
- the ICG/PTWS: (i) to complete its present work on Key Performance Indicators (KPIs) and tailor them to the Sendai Target G Indicators; (ii) develop a document with background and context for the proposed KPIs; and (iii) provide the document to all ICGs for consideration, with a view to present a consolidated report to the 30th IOC Assembly (2019);
- to finalize sample tsunami threat messages for vessels at sea in consultation with the IHO/IMO/WMO World-Wide Navigational Warning Service Sub-Committee;
- to continue efforts for monitoring and responding to tsunamis generated by non-seismic sources and possible integration into tsunami watch operation;
- to consider the summary statement from the Symposium;
- to prepare a concept note for developing capacity that can lead to transformative tsunami warning products that enable stakeholders to manage public response efficiently.

3.4 REPORT BY OTHER ICGs

31. There were no representation from other ICGs. The Chair informed that reports from other ICGs are available at the website for the 51st Session of the IOC Executive Council (http://www.ioc-unesco.org/ec51).
3.5 REPORT BY OTHER INTERGOVERNMENTAL ORGANIZATIONS

32. Mr Alessandro Annunziato from the Joint Research Center (JRC)/European Commission reported on the results of the Aegean Sea Workshop, 12–13 December 2017 in Ispra, Italy. The workshop discussions focused on the Lesvos (12 June 2017) and Kos – Bodrum (20 July 2017) tsunami events. The workshop concluded that the alerting chain, particularly in its downstream component presented some problems at national and local levels as no alert was issued to the population.

33. Ten new IDSL (Inexpensive Devices for Sea Level Measurement) have been installed in the NEAM region in the intersessional period. Currently there are 31 IDSL devices installed in the NEAM region. Five stations have either sensor, router and telecommunication problems. He pointed out that one of the IDSL detected the 6.8 Mw Zakynthos event on 25 October 2018.

34. After some years of operation and maintenance, the IDSLs will be transferred to Member States for maintenance. JRC will continue to support data collection and distribution. It is up to Member States to decide if they want to continue the operation of IDSL at own expenses, replace with new instrument and or dismantle.

35. JRC has purchased a GPS floating buoy which will be tested in La Spezia Gulf in 2019, and in the Ionian Sea starting in 2020. Deployment of the buoy is foreseen before end of 2018.

36. He also discussed about the JRC real time-fast calculation (HySea) operational in GDACS (Global Disaster Alerting Coordination System), and the JRCs contribution to International Tsunami Survey Team in Indonesia following the 28 September 2018 tsunami.

37. Mr Alessandro Annunziato reported on the JRC Last Mile Project funded by DG - ECHO with the participation of NOA (Greece) and KOERI / METU (Turkey) to address the problem of alerting for near-shore earthquake events. The project will deliver new seismic accelerometers, sea level measurement instruments, alerting panels, evacuation plans, tsunami signage and provide for a local tsunami drill in 2019 involving the local municipality and CPAs.

38. JRC has been requested by DG - ECHO to explore the possibility to extend the piloting phase to other countries to enhance tsunami risk awareness and preparations. He added that there is the possibility to identify three additional locations that could host the ‘Last Mile Package’. Member Countries interested in creating a ‘Last Mile city or village’ could contact the European Commission (EC) Joint Research Centre (JRC) and/or the IOC Secretariat.

39. In concluding, JRC also offered to support the development of NEAMTIC.

40. Turkey and other countries thanked JRC for their continuous support in relation to the IDSL stations.

3.6 REPORTS BY THE NEAMTWS WORKING GROUPS AND TASK TEAMS

41. The Chair invited the Co-Chairs of the Working Groups (WG) and Task Teams to report on progress achieved during the past intersessional period with respect to the recommendations adopted at the earlier session of the ICG/NEAMTWS and the tasks assigned to them in the Implementation Plan.

Working Group 1 on Hazard Assessment and Modelling

42. Mr Jörn Behrens reported on the activities of WG 1. The Group addressed the recommendation on basin definition during the intersessional period. The NEAM region is physically separated into a number of ocean basins. The study on basin definition aims to verify
this by looking at typical wave heights from scenarios in diverse locations to find to which extent a tsunami source in one basin can extend hazardous wave heights into another neighbouring basin. By this separation, a forecast becomes much easier, since only minor tsunami threat can extend beyond the margins of such a basin.

However, WG 1 was unable to make progress on the work item – documentation on interpretation of modeling results in operational procedures. There is a need to follow up and work closely with WG 4. He suggested the necessity to discuss on the work item adaptation of Global Service Definition Document at the ICG/NEAMTWS-XV sessional working committees and working groups.

Mr Jörn Behrens proposed to have a new discussion on possible ‘stratification’ or restructuring of the WGs, and preparing revised ToRs for the next session (ICG/NEAMTWS-XVI).

He informed the session that the project proposal on COST Action CA18109 Accelerating Global Science In Tsunami Hazard and Risk Analysis (AGITHAR) has been approved on 13 November 2018. It is a four-year Networking Project. Application for participation will open soon based upon availability and expertise. The project objectives are to:

- Assess, benchmark, improve, document methods to analyse tsunami hazard and risk;
- Understand and communicate uncertainty involved;
- Interact with stakeholders in order to understand the societal needs.

Mr Behrens also discussed the cancellation of tsunami alert in Palu, Indonesia on 28 September 2018. He suggested that cancellation policies and procedures particularly for remote locations should be reviewed and defined. The matter was further discussed by the task team on Operations.

### Working Group 2 on Seismic and Geophysical Measurements

Mr Marinos Charalampakis, Co-Chairperson of WG 2, reported on seismic and geophysical measurements. He pointed out that the seismological observation gap still exists in northern Africa.

He reported that the Technical Secretary of the ICG/NEAMTWS discussed the matter of data exchange with the Director General of CRAAG (Center of Research in Astronomy, Astrophysics, and Geophysics, Algeria) in the margins of the 36 General Assembly of the European Seismological Commission, 4–7 September, Valetta, Malta. The IOC Secretariat and WG 2 need to explore the possibility of data exchange through high level engagement with concerned Member States in the next intersessional periods. Nonetheless, he reported effort and progress concerning establishing contacts with the Egyptian colleagues.

Mr Charalampakis reported that seismic stations maps have been provided by the TSPs. An updated list of MoUs (national & international) has been sent to the Co-Chairperson by the TSPs.

WG 2 Co-Chairpersons are closely monitoring the development of a collaborative GNSS network between INGV and NOA. This network will facilitate real-time monitoring of ground motion.

A summary of selected submarine networks in connection with Tsunami Early Warning Systems is currently available at the following website [http://emso.eu](http://emso.eu) for the Euro-Mediterranean Region.
52. WG 2 would like to request Member States to provide reference contact details for the persons in charge for the various seismic and geophysical networks, in order to add them in the database.

53. Mr Charalampakis underlined that there is no special need for NEAMTWS to maintain its own seismic database, but will use the database EIDA (European Integrated Data Archive) —an initiative within ORFEUS, which has a detailed metadata catalogue of the available stations per region.

**Working Group 3 on Sea Level Data Collection and Exchange, Including Offshore Tsunami Detection and Instruments**

54. The session noted the resignation of Mr Sergui Dov Rosen earlier this year as Co-Chairperson of WG 3.

55. The Chairperson of ICG/NEAMTWS thanked Mr Dov Rosen for his contributions to the development of NEAMTWS.

56. The session noted that Mr Carlos Santos Fernandes, the Co-Chairperson of WG 3 was not able to carry out any of his WG 3 duties during the intersessional period. Mr Fernandes was also unable to attend the ICG/NEAMTWS-XV session. No report was received from WG 3.

57. The session agreed to discuss and address the matter of leadership in the sessional working committees and working groups.

**Working Group 4 on Public Awareness, Preparedness and Mitigation**

58. Ms Marzia Santini, Co-Chairperson of the Working Group reported on the progress and development since ICG/NEAMTWS-XIV.

59. Key activities of WG 4 for the intersessional period included: (i) representation of WG 4 in ICG/NEAMTWS steering committee meeting, Paris, 21–23 March 2018 and in the TOWS Task Team meeting on Disaster Management and Preparedness Paris, 15–16 February 2018; (ii) improved user participation in NEAMTWS (WG 4 members received periodic updates through email and uploading of documents of interest on the session dedicated to WG 4 of the UNEASTEAM website.); (iii) encouraged and coordinated ICG/NEAMTWS participation in the UNISDR Tsunami World Awareness Day campaign; (iv) supported documentation update and the development of the preparedness and response of NEAMTWS; (v) participated in the Tsunami Workshop in Rabat, 15–16 November; and (vi) supported NEAMWave17 evaluation as well as the NEAMTIC survey commissioned by the IOC.

60. A full report of WG 4 is available at the [event site](#).

**Task Team on Exercise**

61. Ms Ceren Ozer Sozdinler, Co-Chairperson of TT on Exercise reported on the activities accomplished for the intersessional period.

62. She noted that Ms Eleonora Panunzi resigned as Co-Chairperson on TT on Exercise after the steering committee meeting in March 2018. The ICG thanked Ms Panunzi for her valuable contributions in the planning and organization of NEAMWave17 tsunami exercise. Ms Raluca Partheniu, National Institute for Earth Physics, Romania was appointed by ICG/NEAMTWS Chair as Co-Chairperson of the task team on Exercise on 28 March 2018.

63. The TT on Exercise worked on several actions: (i) collection and compilation of the NEAMWave17 evaluation questionnaires from exercise participants via Google Survey and
detailed evaluation reporting of Phase A Tsunami Service Providers; (ii) preparation of draft NEAMWave17 Final Evaluation Report; (iii) evaluation and proposal of strategies for the implementation of future NEAMWave exercises.

Ms Sozdinler reported that the TT on Exercise with the support of Secretariat organized two online meetings on 23 October and 8 November 2018 with the participation of C/TSPs (INGV, IPMA, KOERI, and NOA) and Working Group 4. The meetings discussed and received comments on: (i) the use of online exercise subscription mechanism; (ii) new strategies for the implementation of next NEAMWave exercises; (iii) exercise evaluation mechanism; (iv) revision of NEAMWave exercise manual for the next NEAMWave exercise.

**Task Team on Operations**

Mr François Schindelé and Öcal Necmioglu, Co-Chairpersons of TT on Operations reported on the activities accomplished for the intersessional period.

It was pointed out that following ICG/NEAMTWS–XIII, TSPs were invited to adopt and implement the Performance Monitoring Framework for NEAMTWS upstream component in an experimental phase to be evaluated at the upcoming ICGs. However, there has been no further feedback on the matter.

TT on Operations reported that a summary paper on the assessment of the Global Service Definition Document (GSDD) and investigation of its adaptability by the NEAMTWS was provided to the NEAMTWS Steering Committee on 20 February 2018.

A draft proposal for the updated NEAMTWS bulletins with respect to the concept of Threat Levels as defined in the Global Service Definition Document was provided to the NEAMTWS Steering Committee on 4 July 2018. An updated version of the proposal is provided in the TT on Operations report. The proposal included three Alert Levels, as it was the case before. However, the TT did not consider the alert level proposed by the TOWS-WG related to the potential threat, but rather accommodated this in the lowest threat level:

1. LOW THREAT - NO TSUNAMI IMPACT EXPECTED
2. COASTAL THREAT
3. INUNDATION THREAT

NEAMTWS Users were asked to comment on the NEAMTWS bulletins proposal. Preliminary responses indicated the usefulness of these updates for the end-users, as well as associated difficulties in implementation at the national level due to legislative issues. Users recommended a time-frame of around six months for possible implementation and clarification in using the new terminology when translated to the national language.

TT on Operations reported that they have provided extensive support to the Task Team on Documentation concerning the ICG/NEAMTWS Interim Operational User's Guide (2011).

A Task Team on Operations meeting was conducted in the fringes of the Steering Committee meeting on 20 March 2018. The following items were discussed: updates related to documentation; TSP feedback on the assessment of the Global Service Definition Document (GSDD) and investigation of its adaptability by the NEAMTWS, in particular the Threat Level to initial feedbacks concerning the use of Enhanced Products by NEAM Tsunami Service Provider KOERI.

The TT on Operations also examined the modification/change of alert products and messages and lessons learnt from the 28 September 2018 Sulawesi Earthquake and Tsunami.
TT on Operations recommended to TSPs to update their SOPs and define minimum sea-level observation times following an earthquake event (for example 2–3 hours for the Mediterranean and 4–5 hours for the NE Atlantic) before issuing a CANCELLATION or END-OF TSUNAMI messages. This recommendation would eventually have to be adopted by the ICG/NEAMTWS.

The session was reminded by the Secretariat that the ICG/PTWS was tasked by TOWS to report on the development of a Key Performance Framework at the 12th session of Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG), 21–22 February 2019.

The Chairperson stressed the need for TSPs/NTWCs to discuss and engage with end-users concerning specific needs and tsunami information requirements. Otherwise WGs, TTs will be continually challenged to find acceptable solutions.

Task Team on Documentation

The Co-Chairpersons Mr Brian McConnell and Mr Alessandro Amato reported on the progress. The work of the TT has focused mainly on the proposal for a new Implementation Plan document and the proposed modifications to the Interim Operational Users Guide (2011).

The new NEAMTWS Implementation Plan will consist of the following: (i) Analysis of the current state of the NEAMTWS; (ii) EWS strategic pillars (Tsunami Hazard Assessment, Detection, Warning and Dissemination, Awareness and Response); and (iii) Implementation (NEAMTWS Strategic roadmap, establishment, development, testing, validation, accreditation, performance monitoring, sustainability and future trends related to TEWS).

The Group agreed with the proposed NEAMTWS Implementation Plan content and the modifications to the Interim Operational User Guide, and requested the Task Team on Documentation to submit first draft documents at the next ICG/NEAMTWS Steering Committee in March 2019, and a final version at the Sixteenth ICG/NEAMTWS session in 2019.

4. IMPLEMENTATION

4.1 STATUS AND REPORTS FOR ESTABLISHMENT OF NATIONAL TSUNAMI WARNING CENTRES AND TSUNAMI SERVICE PROVIDERS

France

Mr François Schindelé provided an update of the French Tsunami Warning Centre CENALT. CENALT is hosted by CEA. The CENALT national mandate is to warn French civil security authorities within 15 minutes of a potentially tsunamigenic event occurring in the North-Eastern Atlantic Ocean and Western Mediterranean Sea, transmitting pertinent parameters of the event. CENALT international objectives is to advice NEAM TSPs, National Warning Centers and Tsunami Warning Focal Points within 15 minutes. CENALT has been in operation since July 2012.

CENALT has a secured operational seismic and tide gauge data network transmission system mainly through a dedicated private telecommunication network for data transmission and message dissemination.

Two new sea level stations were installed in 2018. Forty-one sea level stations transmit to CENALT by VPN.
The communication system can send messages to Metéo France and the Global Telecommunication System and the COGIC (Centre opérationnel de gestion interministérielle des crises —Centre of Civil Protection Agencies). It is a robust telecommunication system, which has been used in the last four and half years.

CENALT has participated in international tests and tsunami exercises, and carried out self-evaluation of the system and procedures by conducting crisis exercises since July 2012.

CENALT has detected, monitored and processed more than 2,500 seismic events in the NEAM region. CENALT has issued 36 tsunami alert messages in the NEAM region which consist of 1 Advisory and 35 information messages.

He pointed out that in the Atlantic Ocean several seismic zones are located more than 1,000 km from any coast. In case of earthquakes (7.1–7.5 Mw) in that region, all countries should be provided an “information level” message (advisory level message is not relevant), and an “advisory level” message for earthquakes in the range 7.6–7.8 Mw.

He reported that the Cannes town council participated in the NEAMWave17 exercise. This included harbour, beaches and coastal evacuation, crisis management and emergency and mitigation measures after impacts of the simulated tsunami waves.

Mr Schindelé also reported that on the occasion of the 5 November World Tsunami Awareness Day (WTAD) in 2018, an exercise was conducted in the city of Cannes. Maps of evacuation roads, road signs, escape and refuge buildings were identified.

He informed the session that the City of Cannes plans to conduct exercise on yearly basis as a result of the WTAD.

In regards to issues concerning event messages for the Atlantic Ocean, the Chairperson suggested the need to evaluate the status of NEAMTWS Decision Matrix and to provide the scientific and operational background for the implemented changes by TSPs.

Greece

Mr Gerassimos Papadopoulos reported on the activities of the Hellenic National Tsunami Warning Center (HL-NTWC). The HL–NTWC consist of the Operational Services, Training, Education and Research and Infrastructure.

The HL-NTWC launched a new website in July 2018.

HL-NTWC installed one new IDSL station in 2018. There are a total of 19 Sea Level Stations in Greece.

The HL-NTEC Unified Seismograph Network (HUSN) incorporates more than 155 seismic stations. HL-NTEC also operates a GPS network of 20 continuous stations. GPS stations have been installed recently in western Greece in collaboration with INGV through an MoU agreement.

He reported that NOA conducted a two-month intense staff training for tsunami operations from August to September 2018.

Research is ongoing for a new Decision Matrix considering the complex physiographic environment of the eastern Mediterranean.

HL-NTWC is working on estimating tsunami magnitude for both earthquakes and tsunamis based on tide records which is important for operational applications.
97. HL-NTWC has issued 21 tsunami messages since 2012. There are 17 agencies from 12 Member States as well as 3 international bodies that subscribe to and receive tsunami information from the centre.

98. The centre continues to participate in several European funded research projects including the EPOS (HORIZON 2020), SERA (HORIZON 2020) and the JRC Last Mile Project (2018–2019). National projects include the GEORISK (2017–2020), HELPOS (2017–2020) and the Lesvos project (North Aegean region, 2018–2019).

99. The Center participated with the National University of Athens, local CPA, coast guard and fire service in the tsunami evacuation exercise related to the International Day for Disaster Risk Reduction, Lindos coast, Rhodes, Island, 12–13 October 2018.

100. HL-NTWC organized several public awareness and education events including at the Athens Science Festival, 25–26 April, 2018 Technopolis, City of Athens. New tsunami leaflets and posters are under preparation funded by the national project on GEORISK.

101. Areti Plessa from NOA reported that HL-NTWC and EC-JRC and Kos municipality are implementing a tsunami last mile project for Kos Island in the aftermath of the Bodrum —Kos earthquake and tsunami in 2017. Two sites have been selected to improve the resilience of coastal community. A tsunami drill is planned by the end of 2019.

Italy

102. Mr Alessandro Amato reported on the Italian National Tsunami Warning Center.

103. CAT–INGV was pre-operational as a candidate TSP in 2014 and was accredited as a TSP in 2016. The area of competence is the whole Mediterranean, but INGV is also involved in global earthquake monitoring. The CAT–INGV Global real-time forecasting is useful for continuous training of personnel on duty. They have issued 270 messages which consist of 234 information; 24 advisories and 12 watch. The centre has signed an MoU agreement with NOA on GNSS activities.

104. CAT–INGV has examined closely the 25 October 2018 Zakynthos earthquake and small tsunami to assess if the Centre can do better in the future. There is a compromise to consider between accuracy and rapidity versus benefits and risks.

105. Mr Amato reported that they are working on a higher resolution Probability Tsunami Hazard Assessment based on the TSUMAPS-NEAM results in order to develop Probabilistic Tsunami Forecast instead of using the Decision Matrix. CAT–INGV is also supporting the development of the Civil Protection Guidelines for tsunami evacuation planning.

106. CAT–INGV has conducted a survey on tsunami risk perception. The study aims to improve knowledge about the way individuals and communities understand tsunamis and related risk.

107. CAT–INGV is developing a new website. The website is mainly intended to disseminate knowledge on tsunamis, alert and mitigation measures. The content design will take into account evidence from the Tsunami Risk Perception Survey.

108. Ms Cecilia Valbonesi, INGV Rome —University of Florence gave a presentation on the ‘Traps of Risk Governance: Liability of Scientist and Civil Protection Authorities in Tsunami Warning System’. She elaborated that society is increasingly focused on the criminal and civil liability for consequences of natural disasters. Following every disastrous event the same questions arise including: could we have foreseen it; what counter measures should have been
taken; who should have protected the population and infrastructures and finally who is responsible? The answer to these questions are complex, but involves science and law. In the recent years there have been a number of court cases in several countries where scientists and CP officers have not been seen as "experts" to the court but rather scientists found themselves in the tragic position of defenders. She provided examples of trials conducted in Italy, Chile and Japan. Predictability of phenomenon becomes the corner stone of criminal judgment and thus the challenge in the case of tsunami.

109. She remarked that although there is great scientific progress in regards to the tsunami warning and mitigation system, it is not possible to eliminate the uncertainty associated with tsunami prediction, hence there is a need to protect scientists and CP officers from potential criminal charges.

110. CAT-INGV is codifying the procedures, rules, and also the limits of the service offered according to the best science and experiences on the subject.

111. Ms Valbonesi concluded that codification of protocols, guidelines and best practices will be submitted to IOC ICG/NEAMTWS for review. The codification allows the creation of a set of rules that virtuously guide the work of scientist and technicians and represents a parameter of judgement.

Portugal

112. Mr Fernando Carrilho informed the session that the NTWC (hosted at the Portuguese Institute for Sea and Atmosphere — IPMA) was inaugurated on 25 November 2017 shortly after the ICG/NEAMTWS-XIV session was held in Lisbon, Portugal, 21–23 November 2018. He noted that IPMA was created in March 2012.

113. The session was informed that IPMA started operating as a Candidate TSP in January 2018. The first tsunami communication test was issued on 5 March 2018. Nine tsunami messages have been issued since the start of its operation.

114. IPMA received subscriptions from Denmark, France, Turkey, Greece and Italy. Other countries have expressed a wish to subscribe (i.e. Morocco, UK, Spain, Finland, and Germany) but not formally requested the subscription.

115. He reported that IPMA will request accreditation as a TSP in 2019.

116. The Portuguese NTWC consists of the seismic network, the tide gauge network, the scenario database, the tsunami detection/analysis and the dissemination and communication of tsunami messages to the civil authorities in Portugal. The seismic network consists of 62 broadband stations, 24 short–period and 66 real time accelerometers. The Portuguese NTWC can detect the hypocentre of an earthquake in less than 3–4 minutes using the Seiscomp3 platform.

117. A database of more than 6,000 scenarios has been developed for the North Atlantic Region and installed at IPMA in collaboration with the EC-JRC. IPMA uses the Tsunami Analysis and Dissemination / Report (TAAR) in establishing level of alert and tsunami travel times, access pre-computed scenarios, analysis of sea level data and sending the messages. IPMA does not use Tsunami Forecast Points, but rather has introduced 20 Forecast Coastal segments for Portugal.

118. IPMA has access to 64 national and international tide gauge stations in near real time. In future IPMA plans to install 4 new sea level stations. This includes 2 new IDSL tide-gauges established in 2018 from EC-JRC. Data is communicated via internet and GTS and is unified
into integrated seismic and sea level data on a common analysis platform under Seiscomp. A tool has been developed to generate bulletin messages according to the decision matrix for the North Eastern Atlantic. IMPA has also developed a platform to disseminate messages by fax, email, SMS and GTS.

119. The ICG congratulated Portugal for having established its NTWC and asked Portugal TNC to officially inform the IOC Secretariat about any accreditation request.

120. The session discussed the relationship between Tsunami Hazard / Threat Levels with respect to distances to coast.

Turkey

121. Mr Öcal Necmioglu presented the current status of the NTWC hosted at KOERI, Turkey. The National Tsunami Warning Centre at KOERI (NTWC-TR) has been operational since 1 July 2012. KOERI has 16 tsunami service subscribers. He described the daily operational set up, as well as the Decision Support System currently in use based on the KOERI Decision Matrix.

122. The NTWC-TR seismic network comprises of 239 national stations and 99 stations through bilateral agreements.

In the case of sea level monitoring, he pointed out that currently there are 19 stations operated by the General Directorate of Mapping and that 5 of these tide gauge stations are transmitting data via satellite to KOERI. Integration of the whole network is awaiting progress in GDM’s plans to upgrade whole network with radar type tide-gauges by 2020. He mentioned the ongoing collaboration with JRC regarding IDSL installations and reported on the installation of the 3rd IDSL in Samsun on the Easter Black Sea coast of Turkey. KOERI is hoping to install the next IDSL in Bodrum in 2019.

123. The KOERI TSP carries out daily tests of the operational system. KOERI has modified its internal scenario testing in 2018. Currently KOERI utilizes a fix set of 58 scenarios where one scenario from this set is tested at each shift to simulate real events in KOERI’s service area.

124. A provisional agreement has been made to initiate a “Tsunami Awareness and Preparedness Program” in Bodrum, Turkey, in close coordination with the Bodrum Municipality and District Governorship, supported by the EC-JRC within the “Last Mile Project”. The 12-months project to be finalized late 2019 will consist of development and installation of a local tsunami early warning system, conduct a local tsunami exercise, accompanied with supporting awareness and educational actives targeting local residents, especially focusing on schools. KOERI hopes that this local project will evolve in to a pilot NEAMTWS Tsunami Ready type of initiative in the near future.

125. KOERI’s Disaster Preparedness and Education Unit provided briefings and education to approximately 6000 people, from which around 5500 were registered as students from primary and secondary education, including teachers. All the visitors were provided with a hardcopy of KOERI’s Tsunami Information Booklet.

126. Two public seminars titled “Are we prepared for Tsunami threat?” targeting coastal municipalities in Istanbul were organized during the intersessional period. These seminars were attended by around 100 people in total supported with web-broadcasting organized by the respective municipalities.
127. KOERI participated in the WTAD, 5 November 2018 by holding a press conference at KOERI Regional Earthquake and Tsunami Monitoring Centre. Prof. Fikret Adaman from the Department of Economics of Boğaziçi University gave a talk focusing on estimation of disaster economic losses and added value of the investment made in tsunami prevention in reducing tsunami related economic losses.

128. Mr Öcal Necmioglu also drew attention to an earlier proposal for a NEAMTWS Performance Monitoring Framework and invited the ICG/NEAMTWS TSPs to adopt and implement it for NEAMTWS Upstream Components in its current form in an experimental phase to be evaluated by the next ICG.

4.2 REPORTS BY CIVIL PROTECTION AGENCIES/ORGANISATIONS

Italy

129. Mr Luigi D’Angelo from the Civil Protection Agency of Italy gave a presentation focusing on where CPA is today (Status, achievements, Challenges of the Italian Alert and Response System for Tsunamis), what it took to get there (timeline, milestones) and where it needs to be (way forward). He underlined that the upstream component is operational and tested by real events and through NEAMWave17 exercise.

130. He reported that they are working on a transition from Decision Matrix to a more advanced method (e.g. Probabilistic Tsunami Forecast). The decision to transit from Alert Level to Threat Level is presently on hold.

131. CPA is working on the downstream component from tsunami messages to timely evacuation.

132. Tsunami is the only risk for which alerting procedures are automated and centralized at national level. In terms of emergency planning, he mentioned that alert levels will be related to actions, based on the results of long-term probabilistic hazard assessments, and eventually on the local vulnerability and exposure. National strategy need to be translated into SOPs which needs to be tested. He noted that that the dissemination of tsunami messages from national CPA is now within the entire emergency response, and alerting the population is the responsibility of the individual mayors.

133. Key milestones in 2018 included the development of tsunami national guidelines to inform how to update the emergency management plans. These guidelines provide details of tsunami early warning system at national level, probabilistic tsunami hazard maps for the entire coastline, inundation maps and evacuation zones, safe areas, recommendations on tsunami signage and best practices on tsunami alert communication. Tsunami inundation areas is already available for Calabria and Silica regions.

134. CPA continues to raise awareness about tsunami risk. Volunteers for example informed the population on how to raise awareness and what they can do in terms of prevention and self-protection.

135. Mr D’Angelo underlined that the establishment of the Italian tsunami early warning system is a long process and still ongoing.

Greece

136. Mr Evangelos Angelopoulos from Greece General Secretariat for Civil Protection gave a presentation on the Emergency Planning and Response Directorate.
He explained how the tsunami message flows from NOA to the Operational Center and other users; including the police, coast guard, fire brigade, army, health and the regional and municipal Civil Protection Departments. The General Secretariat for Civil Protection have Self-Protection Guidelines for different hazards including tsunami.

Israel

Mr Amir Yahav from Israel National Steering Committee for Earthquake Preparedness reported that they are planning to execute an earthquake and tsunami exercise focusing on the schools in Israel on 12 March 2019.

The tsunami exercise will train and evacuate all schools along Israel's Mediterranean coast and about 20 high schools (10,000 students) to the signed assembly zones.

Israel will also test the end-to-end alert procedures with the kind support of the TSPs (already approved by NOA and KOERI) and the EC-JRC.

With reference to the 26 October 2018 tsunami alert, he proposed the possibility of direct verbal communication exchange (e.g. telephone) between the TSP's and the alerted countries during an anticipated real time event.

The Group discussed the lack of information concerning the 26 October 2018 tsunami and the need to enhance tsunami offshore detection system (if such information is considered important in emergency response and evacuation of the coastal communities). TSPs raised concerns regarding verbal communications and potential liabilities between TSPs and nations.

The Secretariat pointed out that Australia faced similar challenges, but decided to purchase new tsunami offshore detection system because it was considered very important to Australia.

The session welcomed Israel plans to execute an earthquake and tsunami exercise on 12 March 2019.

Spain

Ms Elena Tel reported on the Spanish Civil Protection activities. She noted that the Spanish government approved on 20 November 2015 a Royal Decree 1053/2015, establishing the planning directive for civil protection regarding tsunami risk. This document provides the design of the overall organization and requirements for the national and regional civil protection response plans that must be elaborated by the national and regional government concerned.

The document points out the need for evaluation of tsunami risk in the coastal areas, the setting up of the national warning system, the civil protection response organization and public risk awareness measures at national, regional and local levels.

She reported that in 2017, a study was completed based on deterministic approach to assess tsunami hazard over the Spanish coastline. More detailed studies for critical areas in which expected amplitude height was higher than 0.5 m are needed.

A National Response Plan has been developed and discussed with concerned authorities. It is expected to be approved by the government in 2019. This document will determine the regions that must draw and design their own civil protection planning structure.

Ms Elena Tel highlighted some of the latest achievements of the Spanish NTWC: (i) development and implementation of automatic procedures based on a set of decision matrices adapted to the Spanish conditions; (ii) implementation of Tsunami Scenario Data Base
developed by the Environmental Hydraulics Institute IH Cantabria; (iii) implementation of the Tsunami —HySEA model developed by the University of Málaga (EDANYA group) in a GPU cluster at the IGN in order to run faster-than-real-time tsunami simulations; (iv) increased number of real-time tide gauge data acquired at the Spanish NTWC, including three new IDSL (JRC), have been installed, and a large number of CENALT (France) tide gauges are currently being received.

The Spanish NTWC will continue its effort to improve the system, in particular the implementation of the faster real-time tsunami simulations into the NTWC operational routines; improvement of the detection system and the development of a Tsunami Alert Protocol in cooperation with the Civil Protection.

4.3 TSUNAMI ADVISORIES TO SHIPPING (MARITIME COMMUNITY)

Ms Anna Gyldenfeldt, ICG/NEAMTWS Vice-Chair discussed on tsunami advisories to maritime community. She explained how maritime safety information is broadcast. She also discussed about the International NAVTEX, International SafetyNet service, NAVAREAS, NAVAREA Coordinator responsibilities and presented an example of tsunami message drawn from the Manual on Maritime Safety Information, IHO Publication.

She outlined the ongoing work and progress implemented by TOWS Task Team on Watch Operation (TTTWO) concerning tsunami advisories to the maritime community. A proposed draft message content/format for a maritime message was presented to the WWNWS-SC in August 2018 and commented. The revised message content is expected to be discussed at the TTTWO and at TOWS-WG meetings in February 2019 with a view to adoption.

4.4 EVALUATION SUMMARY REPORT OF NEAMWAVE17

Ms Ceren Özer Sözdinler Co-Chairperson of Task Team on Exercise provided an evaluation summary of NEAMWave17 tsunami exercise which was conducted from 31 October–3 November 2017. NEAMWave17 consisted of four earthquake scenarios from five (C)TSPs. She highlighted the following:

- A total of 20 Member States participated in the exercise;
- Despite the delay in dissemination of NEAMWave17 Exercise Manual, 13 national CPAs performed a total of 17 Phase-B simulations. Similar participation was also observed for the NEAMWave14 exercise;
- A joint scenario was used for the first time to disseminate exercise message by two Tsunami Service Providers (INGV & NOA) in Central Mediterranean;
- NEAMWave17 created opportunities for some countries (e.g. Spain, Lebanon, Romania, UK) to work closely with actors at national level;
- Morocco participated for the first time in NEAMWave exercise by subscribing to 2 scenarios and undertook both Phase-A and B simulations;
- The system of providing international assistance in case of major disasters was tested again in NEAMWave17. The Union Civil Protection Mechanism of ERCC —EC tested for a second time the Phase-C simulation with the participation of five Member States (one had requested assistance and the others had offered assistance).

The common issues pointed out by participants included: need for simpler alert messages; more user friendly products; confusion in exercise subscription; too many scenarios played out with many TSPs and confusion in exercise evaluation.
Participants suggested the need for better collaboration with TSPs in preparing the exercise scenarios. Other suggestions included: a shorter and standardized NEAMWave Exercise Manual; more user-friendly online Exercise Evaluation Questionnaire; timely exercise announcements and distribution of exercise manual to Member States; better definition of exercise subscription arrangements; implementation of “Lessons Learnt” from NEAMWave17 to next exercises and close consultation and preparation between the tsunami exercise team and IOC Secretariat.

Ms Ceren Özer Sözdinler pointed out that the main issues to address include improving:
- NEAMWave Subscription Mechanism;
- Implementation Mechanism;
- Evaluation Mechanism;
- NEAMWave Exercise Manual;
- Participation of Civil Protection Agencies in the exercise.

The TT on Exercise suggested using online subscription forms to address the ongoing problems associated with subscribing to the exercise. There is a need to use more joint scenarios and implement the exercise biannually. Other suggestions included using more user-friendly online evaluation system (with a combination of text and multiple choice questions) in order to improve evaluation of the exercise. Feedbacks should be shared with tsunami Service Providers before submitting their reports. "After-action" discussions and evaluations ("hotwash") meetings between C/TSPs and Tsunami Warning Recipients to be conducted immediately after the exercise was also suggested. There is also a need to have shorter and more concise exercise manual. The TT on Exercise proposed using online links and standard templates for the exercise participation forms, announcements, scenarios, etc. A new exercise manual should be prepared in collaboration with TT on Documentation.

Ms Sözdinler suggested recommending the representatives of Member States to encourage their CPAs to participate in NEAMWave exercise. Other propositions include: organizing online meetings with CPAs; encouraging CPAs to combine national exercise with NEAMWave, and preparing a short description of CPA experiences to share with others.

4.5 DISCUSSION ON THE EUROPEAN PLATE OBSERVING SYSTEM (EPOS) AND TSUNAMI PLANS

The Chairperson briefly reported on the developments concerning the European Plate Observing System (EPOS) and the meeting on EPOS and Tsunami organized in Munich, 25 September 2018.

Mr Massimo Cocco, INGV, delivered a presentation on EPOS data and service provision to scientists and other stakeholders. He outlined the context, vision and mission of EPOS.

EPOS has been designed with the vision of creating a single distributed pan-European infrastructure for solid Earth science to support a safe and sustainable society. EPOS mission is to integrate the diverse and advanced European Research Infrastructures for solid Earth relying on new e-science opportunities to monitor and unravel the dynamic and complex Earth System. EPOS will facilitate sharing the outcomes of research, not solely by linking data to publications, by guaranteeing data traceability and re-use, but also in convincing scientists to share the products of their investigations.

EPOS is presently in its implementation phase, which consists of the EPOS Implementation Plan/Phase project and the legal establishment of EPOS-ERIC. The EPOS
Implementation Phase builds on the achievements of the successful EPOS Preparatory Phase project. The EPOS implementation phase will last from 2015 to 2019.

Further information about Mr Cocco’s presentation and report to ICG/NEAMTWS is available in Annex II.

The session was informed that there is no EPOS data template, however EPOS has adopted twelve metadata level to interact with users and that services related to tsunami messages are not of interest to EPOS.

Mr Alexander Rudloff, GFZ further outlined in his report the intentions of the Munich meeting concerning the proposal for a new EPOS Thematic Core Service (TCS) on Tsunami. He stated that tsunami communities in Europe is well established and has a strong cooperation history. The NEAMTWS Group includes mostly European countries with four accredited operational TSPs. Tsunami research is highly multidisciplinary in nature. The Thematic Core Service on Tsunami will be strongly connected to TCS Seismology, TCS Volcano Observations, TCS GNSS Data and Products, TCS Near Fault Observatories, TCS Satellite Data. EPOS structure will foster cooperation among different TCS (i.e. seismology, GNSS, volcanology, Near Fault observatories) and will serve as a platform to foster development of new methods and technologies for NEAMTWS.

Mr Rudloff stressed that EPOS will not offer any real-time (early warning) services and has no intentions of replacing ICG/NEAMTWS.

He concluded that the next step is the preparation of a white paper.

4.6 REPORTS ON PROJECTS RELATED TO NEAMTWS (EU)

Nothing additional was reported here to what has already been mentioned elsewhere.

4.7 WORLD TSUNAMI AWARENESS DAY (WTAD, 5 NOV 2018)

Several earlier presentations had already covered Member States activities and contributions to the WTAD, 5 November 2018, and nothing additional was reported.

5. DISCUSSION ON NEAM TSUNAMI INFORMATION CENTRE (NEAMTIC STRATEGY)

Mr Tony Elliott, IOC consultant, reported on the NEAMTIC survey and the draft NEAMTIC Strategy documents commissioned by the IOC Secretariat.

He outlined that the purpose of the survey was to provide evidence base for developing a forward strategy by seeking views of stakeholders on status of development of tsunami warning and mitigation systems, opinions on appropriateness and relevance of NEAMTIC website; as well as opinions on options for future development of the website, future management and potential funding mechanisms.

He elaborated on the history of NEAMTIC development, NEAMTIC project activities, target users, present status of NEAMTIC, comparison of NEAMTIC to other TICs; as well as key NEAMTIC challenges focused on staffing and funding.

The draft NEAMTIC Strategy provides an action plan with a three-phase implementation: (i) NEAMTIC website maintenance and updates; (ii) redevelopment of NEAMTIC website; and (iii) develop NEAMTIC as a training centre/platform.
174. The development of NEAMTIC as a training centre/platform would additionally require providing physical office space, facilities and support staff source; as well as head of NEAMTIC (National Professional officer or IOC Project Appointment position).

175. Mr Elliott discussed the need to revise NEAMTIC ToRs and to clearly identify all intended end-user groups, and stressed that the future of NEAMTIC is dependent on the commitment of the ICG/NEAMTWS Member States without which NEAMTIC will not be able to develop and evolve into a TIC that provides training and capacity building services.

176. Mr Elliott highlighted the need to review and finalize a vision, mission and strategic objectives for NEAMTIC.

177. The session welcomed the survey, analysis and proposed strategies for revitalizing NEAMTIC.

178. The session discussed different issues including timing of survey, target groups, and NEAMTIC languages offered to users. There was a consensus that language translation is a challenge in NEAM region. Each country should address language issues at a national level.

179. Italy and EC-JRC offered to provide in-kind and staff support to NEAMTIC.

180. The Secretariat informed the session that an intern will support the maintenance and update of NEAMTIC website (Phase 1) in the first quarter of 2019.

6. PROGRAMME FOR 2019

6.1. ACTIVITIES AND ACTIONS FOR 2019

181. Actions and activities follow from adopted decisions and recommendations.

6.2. NEXT NEAMWAVE EXERCISE

182. Based on the recommendations of TT on Exercise, the ICG decided to organise and conduct the fourth tsunami exercise in 2020 (NEAMWave20).

6.3. ESTABLISHMENT OF INTERSSIONAL WORKING GROUPS AND TASK TEAMS

183. The ICG established the following Working Groups and Task Teams with Chairpersons/Co-Chairpersons as given below. Working Groups 2 (Seismic and Geophysical Measurements) and 3 (Sea Level Data Collection and Exchange) have been merged for the next intersessional period and will act according to the revised Terms of Reference given in Annex 1 to Decision on ICG/NEAMTWS-XV.

**Working Group 1** – Hazard Assessment and Modelling – Co-Chairpersons: **Mauricio González** (University of Cantabria, Spain) and **Jörn Behrens** (University of Hamburg, Germany).

**Working Groups 2** (Seismic and Geophysical Measurements) and **3** (Sea Level Data Collection and Exchange, Including Offshore Tsunami Detection and Instruments) – Co-Chairpersons: **Marinos Charalampakis** (Institute of Geodynamics, National Observatory of Athens, Greece) and **Francesco Mele** (National Institute of Geophysics and Volcanology, Italy) and **Carlos Santos Fernandes** (Oceanographic Division of Instituto Hidrográfico, Portugal).
**Working Group 4** – Public Awareness, Preparedness and Mitigation – Co-Chairpersons: Areti Plessa (Institute of Geodynamics, National Observatory of Athens) and Marzia Santini (Department for Civil Protection, Italy).

**Task Team on Tsunami Exercises** – Co-Chairpersons: Ceren Ozer Sozdinler (Kandilli Observatory and Earthquake Research Institute, Turkey) and Raluca Partheniu (National Institute for Earth Physics, Romania).

**Task Team on Operations** – Co-Chairpersons: François Schindelé (CENALT, France) and Fernando Carrilho (Instituto Português do Mar e da Atmosfera, I. P, Portugal).

**Task Team on Documentation** – Co-Chairpersons: Brian McConnel (Geological Survey Ireland, Ireland) and Alessandro Amato (Istituto Nazionale di Geofisica e Vulcanologia Roma, Italy).

### 7. DATE AND PLACE FOR ICG/NEAMTWS-XVI


### 8. ANY OTHER BUSINESS

185. No other business was raised to be considered by the session.

### 9. ADOPTION OF DECISIONS AND RECOMMENDATIONS

186. The meeting reviewed the draft decisions and recommendations from the plenary and the working groups prepared by the Secretariat. The adopted version is included in Annex II.

### 10. CLOSING

187. The meeting was closed on Wednesday 23 November at 13:00.
ANNEX I

AGENDA

1. OPENING

2. ORGANIZATION OF THE SESSION
   2.1. ADOPTION OF THE AGENDA
   2.2. DESIGNATION OF THE RAPPORTEUR
   2.3. CONDUCT OF THE SESSION, TIME TABLE AND DOCUMENTATION
   2.4. ESTABLISHMENT OF SESSIONAL COMMITTEES AND WGs

3. REPORTS ON ICG/NEAMTWS INTERSESSIONAL ACTIVITIES
   3.1. REPORT BY THE CHAIRPERSON
   3.2. REPORT BY THE IOC SECRETARIAT
   3.3. REPORT BY THE TOWS-WG
   3.4. REPORT BY OTHER ICGs
   3.5. REPORTS BY OTHER INTERGOVERNMENTAL ORGANIZATIONS
   3.6. REPORT BY WORKING GROUPS AND TASK TEAMS

4. IMPLEMENTATION
   4.1. STATUS FOR ESTABLISHMENT OF NTWCS AND TSPS
   4.2. REPORT BY CIVIL PROTECTION AGENCIES / ORGANISATIONS
   4.3. TSUNAMI ADVISORIES TO SHIPPING (MARITIME COMMUNITY)
   4.4. EVALUATION SUMMARY REPORT OF NEAMWAVE 17
   4.5. DISCUSSION ON THE EUROPEAN PLATE OBSERVING SYSTEM (EPOS) AND TSUNAMI PLANS
   4.6. REPORTS ON PROJECTS RELATED TO NEAMTWS (EU)
   4.7. WORLD TSUNAMI AWARENESS DAY (WTAD, 5 NOV 2018)

5. DISCUSSION ON NEAMTIC (NEAMTIC STRATEGY)

6. PROGRAMME FOR 2019
   6.1. ACTIVITIES SCHEDULED FOR 2019
   6.2. NEXT NEAMWAVE EXERCISE
   6.3. ESTABLISHMENT OF INTERSESSIONAL WGS AND TTS

7. DATE AND PLACE FOR ICG/NEAMTWS-XVI

8. ANY OTHER BUSINESS

9. ADOPTION OF DECISIONS AND RECOMMENDATIONS

10. CLOSING
ANNEX II

DECISIONS AND RECOMMENDATIONS

Paris, France, 26–28 November 2018

Decision ICG/NEAMTWS-XV.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 for its 15th session in UNESCO, Paris, on 26–28 November 2018,

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

Notes the intention of Instituto Português do Mar e da Atmosfera (IPMA), Portugal to apply for accreditation to become Tsunami Service Provider (TSP) in the next intersessional period;

Recognizes the efforts made nationally to increase awareness on tsunami hazards and preparedness in line with and as contributions to the World Tsunami Awareness Day, 5 November 2018;

Acknowledges the IOC commissioned survey, analysis and proposed strategies for revitalizing NEAMTIC (Tsunami Information Centre for the region);

Appreciates the continued effort of IOC in organising workshops in North-African countries to support the further development of national tsunami early warning and mitigation capacities;

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

Takes note of IOC Executive Council Decision EC-LI/3.3.3 (2018) concerning Tsunami and Other Coastal Hazards Warning Systems;

Acknowledges and supports with interest the bottom-up initiative from the tsunami scientific community in the NEAM Region towards the establishment of a Tsunami Thematic Core Service (TCS) within EPOS —The European Plate Observing System, a European Research Infrastructure Consortium (ERIC);

Appreciates the presentation by Cecilia Valbonesi, INGV Rome –University of Florence– on legal aspects of risk governance, liability of scientist and Civil Protection Authorities in Tsunami Warning Systems;

Expresses its thanks to Co-Chairpersons of the Task Team on Exercises for finalizing the NEAMWave 17 evaluation report;

Acknowledges the continued support of the European Commission (EC) and its Joint Research Centre (JRC) in capacity development, including infrastructure and research, sea level instrumentation, tsunami alerting devices and provision of measurements;
Requests the Co-Chairpersons of the Working Groups and the Task Teams to prepare, in consultation with the Members of their respective groups, a plan of action for the intersessional period, and submit it to the IOC Secretariat no later than the end of January 2019;

Decides:

(i) To merge Working Groups 2 (Seismic and Geophysical Measurements) and 3 (Sea Level Data Collection and Exchange) with a new mandate provided in Annex 1 for the time of the intersessional period;

(ii) To task Working Group 4 with further analysis, the elaboration of an action plan for the redevelopment of the website (phase 2 of the NEAMTIC Plan of Action proposal) and a progress report at the next ICG/NEAMTWS Steering Committee;

(iii) To continue the activities of the Task Team on Operations with existing Terms of Reference provided in Annex 4;

(iv) To continue the Task Team on Tsunami Exercises with revised Terms of Reference as given in Annex 2;

(v) To organise and conduct the fourth NEAMTWS exercise in 2020 (NEAMWave20);

(vi) To continue the activities of the Steering Committee during the intersessional period with existing Terms of References provided in Annex 5;

(vii) To request the Steering Committee to further reflect on the structure of ICG/NEAMTWS;

(viii) To continue the Task Team on Documentation, with revised Terms of Reference as given in Annex 3.

 recommends:

(i) To increase the participation of Member States in the ICG activities, with particular focus on tsunami education, awareness and preparedness, and to explore the adaptation of community preparedness and recognition programmes such as Tsunami Ready for the NEAM region, including Tsunami Hazard and Tsunami Evacuation Maps, Plans, and Procedures (TEMPP);

(ii) Member States who have not subscribed through the IOC to the services of a TSPs yet to do so as soon as possible;

(iii) To increase the accessibility of the NEAMTWS documentation through the use of the collaborative workspace made available by the IOC Secretariat.

Further recommends:

(i) That all sea level data should be made available to the TSPs and NTWCs using bilateral agreements between NTWCs whenever possible;

(ii) To increase the number of seismic and sea level stations available in the North of Africa, and for sea level data, to reduce sampling and latency to 1 minute or less as far as possible;

(iii) That Member States through their national representatives (Tsunami National Contacts) encourage the active involvement of their national Civil Protection Authorities (CPAs) in
the routine activities of the ICG, with the aim of making the ICG/NEAMTWS products more suitable to their needs and expectations;

Accepts additional recommendations of Working Groups and Task Teams as outlined in Annex 6;

Welcomes the offer of France to host ICG/NEAMTWS-XVI in Cannes in 2019;

Thanks IOC for having hosted the 15th session of ICG/NEAMTWS at UNESCO, Paris.

Annex 1 to Decision ICG/NEAMTWS-XV.1

Merging of Working Groups 2 and 3
(Seismic, Geophysical & Sea level Measurements) – New mandate –

Mandate

The working group will be responsible for:

(i) Defining, based on existing organizations and functions, transnational detection networks, like seismic, geophysical and sea-level/marine networks as part of early warning tsunami detection;

(ii) Providing recommendations on the data processing and analysis;

(iii) Providing a list of possible sea level stations;

(iv) Reporting on status and needs of upgrade, and final requirements on priority of site.

Annex 2 to Decision ICG/NEAMTWS-XV.1

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

Mandate

The Task Team will:

(i) Revise the NEAMWave Exercise Manual in collaboration with the Task Team on Documentation (Annex 3 to this decision) and the IOC Secretariat;

(ii) Support the IOC Secretariat in the preparation of an online NEAMWave exercise subscription system;

(iii) Collaborate with the IOC Secretariat and Working Group 4 in preparing a user-friendly online exercise evaluation questionnaire.

Modus operandi

The Task Team will mainly work by correspondence.
Membership

- The ICG/NEAMTWS Officers,
- Chairpersons or Co-Chairpersons of existing NEAMTWS Task Teams and Working Groups;
- Representatives of TSPs;
- Experts designated by Member States having interest in participating in the system (NTWCs, TWFPs, TNCs, Civil Protection Authorities);
- Representatives of relevant organizations working in the NEAMTWS region;
- Co-Chairpersons of the Task Team will be appointed by the ICG/NEAMTWS Chairperson in consultation with Vice-Chairpersons.

Annex 3 to Decision ICG/NEAMTWS-XV.1

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

Mandate

The Task Team will:

(i) Coordinate inputs from Tsunami Service Providers (TSPs), Candidate TSP, Working Groups and the Task Team on Operations to update the Implementation Plan and Operational Users Guide;

(ii) Analyse the NEAMWave Exercise Manual and provide comments and suggestions to the Task Team on Tsunami Exercises;

(iii) Report to ICG/NEAMTWS Steering Committee in March 2019 and subsequent ICG/NEAMTWS-XVI.

Modus operandi

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

Membership

- The ICG/NEAMTWS Officers;
- All TSP Representatives;
- Chairperson or 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.
Terms of Reference for Task Team on Operations

Mandate

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

(i) Continuing 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 CTEs; 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;

(ii) Foster and propose a technical solution for real-time data exchange among TSPs and possible new CTSPs;

(iii) Evaluate the recommendations made by inter-ICG/TOWS Working Group on Tsunami Operation for possible implementation by ICG/NEAMTWS;

(iv) Advice on arrangements for redundancy and back-up arrangements;

(v) Support the newly established Task Team on Documentation;

(vi) Continue the assessment of the Global Service Definition Document and investigate its adaptability by the NEAMTWS;

(vii) Report progress to ICG/NEAMTWS-XV.

Modus operandi

The Task Team will mainly work by correspondence and will hold a meeting in the first half of 2019, and if required, another one in preparation for the next ICG meeting.

Membership

- The ICG Officers;
- All TSP Representatives;
- NTWC, TWFP and CPA Representatives;
- Chairperson or 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.

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:

- Monitor performance and interoperability of the NEAMTWS and report to ICG/NEAMTWS;
- Implement decisions and recommendations of the ICG and provide strategic advice on the implementation of the NEAMTWS;
- Identify relevant funding sources taking account of the resource implications of approved activities;
- Facilitate implementation at the level of the ICG of relevant resolutions, decisions and recommendations of the IOC governing bodies;
- 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;
- Develop and maintain the NEAMTWS Implementation Plan and Interim Operations Users Guide;
- Examine continuing compliance of Tsunami Service Providers (TSPs) with the adopted operational and organizational function and requirements;
- Implement the procedures as adopted and the Terms of References (ToRs) for the accreditation of Candidate Tsunami Service Providers (CTSPs);
- Nominate accreditation teams, foster the accreditation process during the coming year;
- Liaise with the Steering Committees of equivalent structures of other ICGs;
- Consider the potential re-organization of Working Groups and Task Teams structure;
- 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 (C)TSPs.

Annex 6 to ICG/NEAMTWS-XV.1

Recommendations of Working Groups and Task Teams

Working Group 1 on Hazard Assessment and Modelling

(i) To elaborate in collaboration with the Task Team on Operations on specific SOPs for cancellation of tsunami hazard in relation to different characteristics of local and remote source tsunami events.

Working Groups 2 and 3 on Seismic, Geophysical & Sea level Measurements

(i) Member States to use the online seismic (e.g. EIDA) and GNSS network repositories as a reference for station availability;
(ii) Member States to check sea level station metadata table for errors or duplication, if any, and inform Working Groups 2 and 3 co-chairpersons accordingly;

(iii) Data exchange between Member States shall be accommodated through mutual bilateral agreements and MoU;

(iv) The IOC Secretariat to issue a circular letter requesting ICG/NEAMTWS Member States to provide reference contacts for all seismic, GNSS and sea level networks, to be included in the sensor databases;

(v) TSPs / CTSP to include strong motion data in routine operations, where feasible;

(vi) Member States to upgrade their sea level stations as much as possible in order to be International Tsunami Warning System compatible;

(vii) Support the IOC Secretariat explore possible high-level approaches and engagement to facilitate seismic and sea level data exchange from North-African countries.

**Working Group 4 on Public Awareness, Preparedness and Mitigation**

(i) To analyse the NEAMTIC survey/strategy reports and prepare a plan of action for the redevelopment of NEAMTIC website (Phase 2 NEAMTIC Proposed Action Plan), and report to the next ICG/NEAMTWS Steering Committee;

(ii) Continue to monitor the progress in the implementation of community preparedness and recognition initiatives; as well as foster synergies whenever possible and appropriate;

(iii) Analyse the legal implications of piloting Tsunami Ready-like initiatives in some test countries of the NEAM region;

(iv) Consideration of the development of NEAMTIC as a training and capacity building centre/platform (NEAMTIC Plan of Action Phase 3) as a future objective;

(v) All TSPs / CTSP to consider providing examples of tsunami enhanced products for alert messages.

**Task Team on Tsunami on Tsunami Exercises**

(i) To revise NEAMWave exercise manual and implement new subscription, exercise evaluation, and exercise implementation strategies;

(ii) To plan and conduct the next NEAMWave tsunami exercise in 2020 (NEAMWave20);

(iii) TSPs/CTSP to use fewer exercise scenarios by preparing joint exercise scenarios between more than one Message Providers;

(iv) To develop and implement online subscription forms for NEAMWave exercises;

(v) To use more user-friendly online evaluation questionnaire tool/platform; reduce the number of questions consisting of both free text and multiple-choice types;

(vi) To revise NEAMWave Exercise Manual in collaboration with the Task Team on Documentation using where possible online platforms, rather than annexes in order to make the manual document shorter and more comprehensible to participants;
(vii) Tsunami Service Providers to continue sending exercise messages to their regular message recipients as default;

(viii) IOC Secretariat to continue requesting Member States tsunami contact points (TNC, TWFP) and Tsunami Forecast Points in exercise subscription forms;

(ix) To share the NEAMWave Exercise Manual with the exercise participants early to facilitate the necessary preparations and organizations;

(x) To organize regular online meetings between CTSP/TSPs, Working Group 4 co-Chairpersons and the IOC Secretariat for discussing on the progress of NEAMWave activities;

(xi) To organize at least one face-to-face meeting with the IOC Secretariat on the organization and preparation of NEAMWave tsunami exercise;

(xii) The TNC of Member States to encourage Civil Protection Authorities in their country to participate in future NEAMWave exercises;

(xiii) To conduct hot wash between Tsunami Warning Recipients and Message Providers immediately after the exercise in order to increase the number of feedbacks for exercise evaluation;

(xiv) To organize online meetings with the representatives of Civil Protection Authorities before implementing NEAMWave exercises in order to encourage them to participate in them;

(xv) To request Civil Protection Authorities with exercises experience to prepare a one-page guiding document to share with other non-experienced CPAs, describing their experience in implementing Phase B of NEAMWave Exercises.

Task Team on Operation

(i) In close cooperation with Working Group 4 continue its work on the adaptation of Threat Levels as proposed by the Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems Working Group through the Global Service Definition Document, by taking into consideration the alert/threat levels utilised by the meteorological community, especially considering the storm surge hazard, and consider possible improvements or shortenings of the contents of the bulletins, TSPs / CTSP / NTWC to define minimum sea-level observation time through their SOPs before issuing CANCELLATION or END-OF-TSUNAMI messages;

(ii) TOWS-WG to consider both issues reached by ICG/NEAMTWS-XV on THREAT Level terminology and criteria, and to consider CANCELLATION recommendation following the recent tsunami event in Palu, Indonesia, to guide TSPs and NTWCs.

Task Team on Documentation

(i) Continue coordinating inputs from TSPs, Working Groups and the Task Team on Operations to update the NEAMTWS documentation;

(ii) Prepare the first drafts of the Operational User Guide and Implementation Plan to be presented to the NEAMTWS Steering Committee meeting scheduled in March 2019;

(iii) Provide suggestions on the modification of the NEAMTWS Exercise Manual to the Task Team on Tsunami Exercises.
OPENNING ADDRESSES

Mr Thorkild Aarup
Head Tsunami Unit, UNESCO/IOC, Paris, France

25 November 2018

On behalf of Vladimir Ryabinin, Executive Secretary of IOC I am very happy to welcome you here at IOC and to the UNESCO Headquarters. Dr Ryabinin is away on mission attending the Sustainable Blue Economy Conference in Nairobi but he sends his greetings.

[Also a very warm welcome to representative of the permanent delegations to UNESCO.]

This is the fifteenth session of the Intergovernmental Coordination Group for the North-eastern Atlantic, Mediterranean and connected seas tsunami warning and mitigation system.

NEAMTWS is one of four regional components of the Global Tsunami Warning System which was established following the decision of the IOC Member States at the IOC Assembly in 2005.

There has been a steady contributions and development in the Global System over the last year. Some of the highlights include:

- UNESCO/IOC Symposium on Advances in Tsunami Warning to Enhance Community Responses from 12-14 February 2018 which was attended by 105 physical and social scientists, warning system operators, emergency and response managers. The summary statement is available.
- Inauguration of the South China Sea Tsunami Advisory Center under the PTWS in May 2018. This center now operates in trial mode until the next ICG/PTWS in April 2019.
- We are seeing growing momentum for the Tsunami community recognition program (Tsunami Ready) particularly in the Caribbean and Central America.
- Tsunami Exercises are periodically carried out and in the past years there have been exercises in Caribbean, Indian Ocean and Pacific. An example is the IOWave 18 where a record 119,000 people in the Indian Ocean region evacuated during the Exercise conducted on 4th and 5th September 2018.
- In NEAMTWS there has been concerted efforts from the secretariat to increase awareness through national information meetings, participation in science and policy meetings and a new poster.
- The Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems is expected to finalize guidelines for how tsunami alerts can be extended to the maritime community.
- World Tsunami Awareness Day is also used by a growing number of nations to create awareness. At IOC/UNESCO we hosted an event jointly UNISDR in the margins of the UNESCO Executive Board on “REDUCING HUMAN AND ECONOMIC IMPACTS FROM TSUNAMIS”

At the same time we are reminded about the Tsunami threat. The Palu tsunami on 28 September 2018 caused significant loss of lives and property damage.

Post-tsunami field investigations are essential to improve understanding of tsunamis and in developing the tools and programs necessary to mitigate their effects.
For the Palu Tsunami, IOC was requested by Indonesia to coordinate and International Tsunami Survey Team, and over the last 6 weeks several teams conducted field surveys.

But also in the NEAMTWS region saw a small local tsunami following an earthquake near Lithakia on 26 October 2018.

Turning to this 15th session there are many important topics to discuss that concern the direction of work for the coming years. These include:

- The Future direction for the NEAM Tsunami Information Center
- Update of key NEAMTWS planning documents such as the Operational Users Guide and the Strategy and implementation documents for NEAMTWS.
- Evaluation of the NEAMWave 2017 Exercise and plans for the next exercise.

Turning to IOC and UNESCO, last year at the NEAMTWS meeting I mentioned the pending proposal for UN Decade of Ocean Science for Sustainable Development (2021-2030). This proposal was adopted by the UN General Assembly in NY on 6 December 2017. IOC has been designated to coordinate the development of an implementation plan and submit it to the UN GA in 2nd half of 2020. Last July the IOC Executive Council has adopted a roadmap for this process and a high level Expert Planning Group has just been established which will have its first meeting in about two weeks. Further details about the decade will be provided in Denis report.

It is no secret that the budget of UNESCO and IOC continue to be strained after USA stopped paying it's assessed contribution to the regular program UNESCO budget in 2011. USA also stopped its contribution of voluntary extra budgetary funding which benefitted a number of programs and activities at IOC.

With the increasing number of demands that are placed on the Intergovernmental Oceanographic Commission there is also increased competition for its small budgetary resources.

The 2020-2021 the Regular Program and Budget for UNESCO (and IOC) is under development and will be decided in the IOC Assembly and UNESCO governing bodies.

Communicating needs and gaps between Tsunami National Contacts, National IOC Focal Points (or National IOC Committees) and the national UNESCO delegation in Paris is therefore essential.

I want to end on that note. I look forward to the discussions in the coming days hope for a productive meeting.

Once again welcome and thank you.
## ANNEX IV

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ANNEX V

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## ANNEX VI

### LIST OF ACRONYMS

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASTARTE</td>
<td>Assessment, STrategy And Risk Reduction for Tsunamis in Europe</td>
</tr>
<tr>
<td>ALECSO</td>
<td>Arab League for Educational, Cultural and Science Organization</td>
</tr>
<tr>
<td>CEA</td>
<td>Commissariat à l’énergie atomique et aux énergies alternatives (France)</td>
</tr>
<tr>
<td>CPA</td>
<td>Civil Protection Authority</td>
</tr>
<tr>
<td>CTBTO</td>
<td>Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization</td>
</tr>
<tr>
<td>CTE</td>
<td>Communication Test Exercise</td>
</tr>
<tr>
<td>CTSP</td>
<td>Candidate Tsunami Service Provider</td>
</tr>
<tr>
<td>DBCP</td>
<td>Data Buoy Cooperation Panel</td>
</tr>
<tr>
<td>DG-ECHO</td>
<td>Directorate-General of the European Commission's Humanitarian Aid Office</td>
</tr>
<tr>
<td>ERCC</td>
<td>Emergency Response and Coordination Center</td>
</tr>
<tr>
<td>GOSR</td>
<td>Global Ocean Science Report (IOC)</td>
</tr>
<tr>
<td>ICG</td>
<td>Intergovernmental Coordination Group</td>
</tr>
<tr>
<td>ICG/CARIBE-EWS</td>
<td>Intergovernmental Coordination Group for the Tsunami and other Coastal Hazards Warning System for the Caribbean and Adjacent Regions</td>
</tr>
<tr>
<td>ICG/NEAMTWS</td>
<td>Intergovernmental Coordination Group for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas</td>
</tr>
<tr>
<td>ICG/PTWS</td>
<td>Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System</td>
</tr>
<tr>
<td>IPMA</td>
<td>Instituto Português do Mar e da Atmosfera (Portugal)</td>
</tr>
<tr>
<td>IOC</td>
<td>Intergovernmental Oceanographic Commission (UNESCO)</td>
</tr>
<tr>
<td>IOTR</td>
<td>Indian Ocean Tsunami Ready</td>
</tr>
<tr>
<td>JRC</td>
<td>Joint Research Centre</td>
</tr>
<tr>
<td>MID</td>
<td>Message Identifier</td>
</tr>
<tr>
<td>NEAM</td>
<td>North-Eastern Atlantic, the Mediterranean and Connected Seas</td>
</tr>
<tr>
<td>NEAMTIC</td>
<td>Tsunami Information Centre for the North-Eastern Atlantic, the Mediterranean and Connected Seas</td>
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<tr>
<td>NTWC</td>
<td>National Tsunami Warning Centre</td>
</tr>
<tr>
<td>OUG</td>
<td>Operational Users Guide</td>
</tr>
<tr>
<td>PTHA</td>
<td>Probability Tsunami Hazard Assessment</td>
</tr>
<tr>
<td>TNC</td>
<td>Tsunami National Contact</td>
</tr>
<tr>
<td>ToR</td>
<td>Terms of Reference</td>
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<tr>
<td>TOWS-WG</td>
<td>Working Group on Tsunamis and Other Hazards related to Sea-Level Warning and Mitigation Systems</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<td>TT</td>
<td>Task Team</td>
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<tr>
<td>TSUMAPS</td>
<td>Probabilistic Tsunami Hazard Maps</td>
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<td>TWFP</td>
<td>Tsunami Warning Focal Point</td>
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<tr>
<td>UNESCO</td>
<td>United Nations Educational, Scientific and Cultural Organization</td>
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<td>UNISDR</td>
<td>United Nations Office for Disaster Risk Reduction</td>
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<tr>
<td>WG</td>
<td>Working Group</td>
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<tr>
<td>WTAD</td>
<td>World Tsunami Awareness Day</td>
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</table>