

ANNEX II

DRAFT RECOMMENDATIONS

Recommendation ICG/PTWS-XXXI.1

ICG/PTWS Governance

The Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS), commemorating 60 years of international cooperation and coordination providing and improving all aspects of tsunami mitigation in the Pacific including hazard assessment, warnings, preparedness, and research,

Recalling the M9.5 1960 earthquake and tsunami in southern Chile that killed locally and also propagated across the Pacific without warning killing persons in Japan and the Philippines one day later,

Expresses its gratitude to Canada, Chile, France, Japan, Russia, and the United States of America (USA) for providing the leadership to develop and implement the international cooperation programme aimed at saving lives through the creation of the International Coordination Group for the Tsunami Warning System in the Pacific (ITSU) under the umbrella of the IOC in 1965,

Recalling IOC Resolution IV-6 in 1965 that established the International Coordination Group for the Tsunami Warning System in the Pacific (ICG/ITSU) and IOC Resolution XXXIX-8 in 2005 that renamed ITSU to be the Pacific Tsunami Warning and Mitigation System (PTWS) and to provide continuity through the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS),

Reaffirming that the PTWS is a coordinated network of national systems and capacities, and is part of a global network of early-warning systems for all ocean-related hazards,

Recognizing the Pacific Tsunami Warning Center (PTWC), originally established as part of ITIC also in 1965, for its services to provide timely tsunami threat information to PTWS Member States and leading by example the development of National Tsunami Warning Centers (NTWCs) in the PTWS,

Recognizing with appreciation the International Tsunami Information Center (ITIC) for its long-standing contributions in tsunami and warning mitigation that have been essential for building a strong, capable and resilient tsunami warning system working with all Member States,

Further Recognizing the continuous and regular capacity development efforts of the ITIC through its training courses in warning and emergency response operations and tsunami readiness, including the annual ITIC Visiting Scientist and Experts Programme conducted since 1975, the 2-week ITIC Training Programme on Tsunami Early Warning Systems (ITP-TEWS) in Hawaii since 2006, and the ITP-TEWS kindly hosted by the Chile Servicio Hidrográfico y Oceanográfico de la Armada (SHOA) in 2018 and in 2024, that have trained more than 4000 government officials through more than 160 training courses with 60% of the courses devoted to PTWS,

Appreciating and thanking the USA for hosting the ITIC of the IOC, and operating the PTWC from the start of the PTWS in 1965, Japan for operating the Northwest Pacific Tsunami Advisory Center (NWPTAC) since 2005, China for operating the South China Sea Tsunami

Advisory Center (SCSTAC) since 2019, and Nicaragua for operating the Central America Tsunami Advisory Center (CATAC) in interim TSP status,

Appreciating and thanking Canada, Mexico, New Zealand, and Chile for providing the ITIC Associate Director established in 1974, with Chile SHOA providing the Associate Director continuously since 1998.

Noting:

- [Sendai Framework for Disaster Risk Reduction 2015–2030](#) was adopted by UN Member States on 18 March 2015 at the World Conference for Disaster Risk Reduction (WCDRR),
- IOC Decision A-32/3.4.1 on Warning Mitigation Systems for Ocean Hazards decided to endorse the 10-Year Research, Development and Implementation Plan of the UN Ocean Decade Tsunami Programme (ODTP) as presented in document IOC/A-32/3.4.1.2.Doc(1), and also decided that warning systems for tsunamis generated by volcanoes should be considered and coordinated as part of the UNESCO-IOC Global tsunami and other Ocean-related Hazards Warning and Mitigation System, and also when possible be part of a Multi-Hazard Early Warning Systems (MHEWS);

Having reviewed the progress made in the implementation of the PTWS since the 30th Session of the ICG/PTWS,

Having considered the reports of:

- Working Group 1 on Understanding Tsunami Risk
- Working Group 2 on Tsunami Detection, Warning and Dissemination
- Working Group 3 on Disaster Risk Management and Preparedness
- Working Group 2 Task Team on Forecasting from Ocean Observations
- Working Group 2 Task Team on Tsunami Generated by Volcanoes
- Working Group 2 Task Team on Integrated PTWS Sensor Networks for Tsunami Detection and Characterisation
- Working Group 2 Task Team of Tsunami Service Providers (TSPs)
- Working Group 3 Task Team on Tsunami Ready
- Task Team on PacWave Exercises on PacWave24
- Regional Working Group on Tsunami Warning and Mitigation System for the Central American Pacific Coast (WG-CA)
- Regional Working Group on Tsunami Warning and Mitigation System for the South East Pacific Region (WG-SEP)
- Regional Working Group on Tsunami Warning and Mitigation System for the Pacific Island Countries and Territories (WG-PICT)
- WG-PICT Task Team on Information Sharing Platforms
- Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (WG-SCS)
- Reports of the Meetings of the PTWS Steering Committee on 26-27 March 2024 and 16-20 September 2024
- 17th Meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG-XVII), 22-23 February 2024

- 18th Meeting of the Working Group on Tsunamis and Other Hazards Related to Sea-Level Warning and Mitigation Systems (TOWS-WG-XVIII), 24-25 February 2025
- 5th Meeting of Scientific Committee for the UN ODTP (ODTP SC-5), 16-17 January 2025
- CATAC, NWPTAC, PTWC, SCSTAC
- ITIC
- Reports of the ICG/CARIBE-EWS, ICG for the Indian Ocean Tsunami Warning and Mitigation System (IOTWMS), ICG for the Tsunami Early Warning and Mitigation System in the North-Eastern Atlantic, the Mediterranean and Connected Seas (NEAMTWS)
- Chair's Report
- Secretariat Report

Having further considered the reports on/of:

- United Nations Office for Disaster Risk Reduction (UNDRR)
- United Nations Economic and Social Commission for Asia and the Pacific (ESCAP)
- World Meteorological Organization (WMO)
- ITU/WMO/UNESCO-IOC Joint Task Force on SMART Cables
- NOAA/NCEI-WDS Report on the Global Historical Tsunami Data Services
- Minimum competencies for NTWCs Training Course
- Tiered use of PTHA results in assessments
- Integration of PTWS sensors networks for tsunami detection and characterisation
- Tsunami service provision considerations for events outside PTWS earthquake source zone
- Provision for tsunami information services for the maritime community
- Revised User's Manuals and Services overview document
- Global Tsunami Performance Monitoring Framework
- PTWS Tsunami Preparedness Capacity Assessment (PTWS-TPCA)

Acknowledging that the PTWS is effective in saving lives and reducing the impacts to communities in both near-field and distant-tsunami events through the three pillars of risk assessment and reduction, detection, warning and dissemination, and awareness and response,

Requests Member States to share any new forms of sea level data for tsunami warning purposes in accordance with the IOC Oceanographic Data Sharing Policy,

Decides to:

1. Continue *WG1 Understanding Tsunami Risk* with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Co-Chairs are Mr Chris Moore (USA, second term) and Dr Silvia Chacon Barrantes (Costa Rica, first term),
2. Continue *WG2 Tsunami Detection, Warning and Dissemination* with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected

Chair is Dr Bill Fry (New Zealand, second term) and Vice-Chair(s) Dr Vasily Titov (USA, second term) and Dr Takeshi Sato (Japan, first term),

3. Dissolve *WG2 Task Team on the Integrated PTWS Sensor Networks for Tsunami Detection and Characterisation*,
4. Continue *Task Team on Seismic Data Sharing in the Southwest Pacific* under the *Regional Working Group on Tsunami Warning and Mitigation System for the Pacific Island Countries and Territories*, with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Chair is Mr Rennie Vaiomunga (Tonga, second term), and Vice-Chair is Mr Mathew Moihoi (Papua New Guinea, second term);
5. Continue *WG3 Disaster Risk Management and Preparedness* with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Chair is Ms Ashleigh Fromont (New Zealand, third term) and Vice-Chair is Dr Laura Kong (USA, third term);
6. Continue Sub-Regional Working Groups and Task Teams with the same Terms of Reference except where noted:
 - *Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region* with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Chair Mrs Suci Dewi Anugrah (Indonesia, first term) and Vice-Chair Ms Queenie Ching-chi Lam (China, first term).
 - *Task Team on Capacity Development and Services* under the *Regional Working Group on Tsunami Warning and Mitigation Systems for the South China Sea Region* with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Chair Dr Peitao Wang (China, first term) and Vice-Chair Dr Indra Gunawan (Indonesia, first term).
 - *Regional Working Group on Tsunami Warning and Mitigation System for the Central American Pacific Coast* with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Chair Ms Griselda Marroquin (El Salvador, third term) and Vice-Chair Dr Wilfried Strauch (Nicaragua, second term).
 - *Regional Working Group on Tsunami Warning and Mitigation System for the Southeast Pacific Region* with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Chair Mr Leonardo Alvarado (Ecuador, first term) and Vice-Chair Fernando Villacís (Ecuador, first term).
 - *Regional Working Group on Tsunami Warning and Mitigation System for the Pacific Island Countries and Territories* with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Chair Mr Mathew Moihoi (Papua New Guinea, first term) and Vice Chair Ms Mele Manu (Tonga, first term).
 - *Task Team on Seismic Data Sharing in the Southwest Pacific* under the *Regional Working Group on Tsunami Warning and Mitigation System for the Pacific Island Countries and Territories* with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Chair Mr Rennie Vaiomunga (Tonga, second term) and Vice-Chair Mr Mathew Moihoi (Papua New Guinea, second term)
 - *Task Team on Capacity Development* under the *Regional Working Group on Tsunami Warning and Mitigation System for the Pacific Island Countries and*

Territories with updated Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Co-Chairs Mr Laitia Fifita (Tonga, first term) and Dr Laura Kong (USA, first term).

- *Task Team on Information Sharing Platforms* under the Regional Working Group on Tsunami Warning and Mitigation System for the Pacific Island Countries and Territories with updated Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Chair Mr Anthony Jamelot (France–French Polynesia, second term) and Co-Chair Mr Jonathan Tafiariki (Solomon Islands, second term).
7. Continue the PTWS Steering Committee with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1;
 8. Continue *Task Team on PacWave Exercises* with revised Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Co-Chairs Mr Anthony Jamelot (France–French Polynesia, first term) and Ms Margarita Martinez (Chile, third term);
 9. Continue *Task Team of the Tsunami Service Providers (TSPs)* under WG2 with Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1, Elected Co-Chairs Dr Charles “Chip” McCreery (USA, third term) and Mr Yuji Nishimae (Japan, first term);
 10. Continue *WG2 Task Team on Tsunami Generated by Volcanoes (TGV)* with Terms of Reference attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Co-Chairs Dr Geoff Kilgour (New Zealand, first term) and Mr Matias Sifon (Chile, first term);
 11. Continue *WG2 Task Team on Forecasting from Ocean Observations (TT-FOO)* with revised Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Co-Chair Dr Bill Fry (New Zealand, second term), and Dr Vasily Titov (USA, second term);
 12. Continue *WG3 Task Team on Tsunami Ready* with revised Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1. Elected Co-Chairs Dr Laura Kong (USA, second term) and Ms Ashleigh Fromont (New Zealand, second term);

Recommends the provisional approval of the Tsunami Ready Equivalency Guidance, as described in IOC ICG/PTWS-XXXI Draft Document (Agenda 4.2),

Notes Secretariat’s efforts in developing a comprehensive ODTP Research, Development, and Implementation (ODTP–RDI) Performance Monitoring and Tracking Tool based on the Global Tsunami Performance Monitoring Framework Assessment Table developed by the Task Team on Future Goals and Performance Monitoring during 2019-2023,

Endorses the conduct of the PTWS-TPCA as the first systemwide measurement of the existing capacities to inform next efforts to improve the PTWS under the kind support of ESCAP.

Requests the PTWS Steering Committee to provide the leadership role in the intersessional period for the execution, reporting and follow-up of the PTWS-TPCA, as outlined in detail under the Recommendation ICG/PTWS-XXXI.7

Noting the decision made at the ICG/PTWS-XXX held in Tonga in 2023, resulting in the election of three Vice-Chairs for a subsequent two-year term;

Considering the extensive geographical area of the Pacific basin and its inherent differences in seismotectonics and tsunami hazard, and diversity of cultures and languages, among other factors; and

Acknowledging the leadership role of the ICG/PTWS within the ODTP,

Decides to modify the current Terms of Reference of the Group to establish a permanent structure comprising three Vice-Chairs.

Expresses solidarity with those affected by the 17 December 2024 earthquake and tsunami, in Vanuatu, and 28 March 2025 earthquake in Myanmar and Thailand;

Acknowledges the conduct of PacWave24 and first-time testing of the maritime safety products,

Welcomed the organization of the 9th IOC/ICG/PTWS–IUGG Joint Tsunami Commission (JTC) Technical Workshop on the "60th Anniversary of the ICG/PTWS – Past and Future", with Part II in-person on 7 April 2025 during the ICG/PTWS-XXXI, and Part I as a webinar on 1 April 2025, and

Appreciates Dr Bill Fry for his scientific and organizational leadership, and the Workshop Organizing Committee, in the realization of these events,

Expresses its gratitude to Vanuatu Meteorology and Geo-hazards Department (VMGD) of Vanuatu for hosting Expert Meeting on Tsunami Sources, Hazards, Risk and Uncertainties Associated with Vanuatu, San Cristobal and New Britain Subduction Zones, 14 - 17 May 2024, Port Vila, Vanuatu, and notes the publication of the Workshop Report ([IOC-WR-315](#)),

Appreciates Mr Christopher Moore and Dr Ken Gledhill for their scientific leadership in the organization, conduct and reporting of this workshop,

Appreciates SHOA (Chile) for hosting the ITIC Training Programme on Tsunami Early Warning Systems and the PTWC Enhanced Products, Tsunami Evacuation Planning and Tsunami Ready Programme (ITP-TEWS-Chile), Valparaíso, Chile, 19 - 30 August 2024,

Kindly appreciates the offer of Chile to host the ITP-TEWS-Chile in 2026,

Also Appreciates Indonesia for hosting the 2nd UNESCO-IOC Global Tsunami Symposium in Banda Aceh 2024 to commemorate the two decades of the Indian Ocean Tsunami,

Congratulates Palau on being the first UNESCO-IOC Member State and Small Island Developing State (SIDS) to achieve the Tsunami Ready Recognition in 2024,

Appreciates the activities undertaken by the respective regions for [World Tsunami Awareness Day](#) (WTAD) 2024 and collaboration between UNESCO-IOC and UNDRR,

Recognizes that the advancement of CAP implementation globally represents a significant milestone in the Early Warnings for All (EW4All) initiative, and the fact that CAP can be considered as the bridge connecting “observations, monitoring, analysis and forecasting” to “warning dissemination and communication”, and that WMO is able to provide any assistance that may be required in this regard,

Decides to carry out the twelfth Exercise Pacific Wave in 2026 (PacWave 26) in the months of September through to November 2026 to support International Disaster Risk Reduction Day (13 October) and World Tsunami Awareness Day (5 November), as reflected in the Terms of Reference.

Noting the approval of the PTWS NTWC Competency Framework for operations staff and training requirements by the ICG/PTWS-XXX in 2023,

Further noting core staff competencies as a foundational to NTWC operations,

Commends the ITIC efforts to develop and pilot a training programme targeted at the Pacific Island Countries and Territories in consultation with WG2 and the PICT WG Task Team on Capacity Development,

Appreciates the important contributions of the World Data Service for Geophysics, hosted by NOAA National Centers for Environmental Information, toward maintaining the global historical tsunami database which provides crucial data supporting hazard risk assessments and model validation for PTWS Member States to mitigate the impacts of tsunamis,

Recalling the concerns regarding the seismic activity in the Scotia Arc region as reflected in the Executive Summary of the ICG/PTWS-XXX (IOC/ICG/PTWS-XXX/3s),

Noting the request of the 32nd Session of the Assembly to the IOC Secretariat to develop a paper on the tsunami threat on coasts along the Southern Atlantic Ocean to assist concerned Member States of IOC on the decision to be part of the global Tsunami Warning and Mitigation System, as reflected in IOC/A-32/Decisions,

Noting that tsunami bulletins are issued by the PTWC for the ICG/CARIBE-EWS and ICG/PTWS for earthquakes in the Scotia Arc and its adjacent seismic zones for events fulfilling certain criteria as reflected in the IOC Technical Series, 130, the Tsunami Watch Operations-Global Service Definition Document,

Noting the need for the active engagement of Argentina with the ICG/CARIBE-EWS and ICG/PTWS regarding Argentinian Search and Rescue (SAR) and NAVAREA VI coordination responsibilities as reflected in the Adopted Decisions and Resolutions of the Fifty-seventh Session of the Executive Council (IOC/EC-57/Decisions),

Notes Argentina’s participation to the ICG/PTWS XXXI as an Observer,

Notes with satisfaction active participation of Argentina in the PacWave24 as the Coordinator of the NAVAREA VI for the purposes of testing tsunami maritime safety product dissemination,

Encourages Argentina to actively participate in the future PacWave exercises with respect to its Search and Rescue (SAR) and NAVAREA VI coordination responsibilities,

Invites WG1 and the Secretariat to consider organizing a scientific workshop with the aim of assessing tsunamigenic potential of the Scotia Arc in its impact to PTWS Area of Service,

Recalls the recommendation of the ICG/PTWS XXX to admit the start of the official full functional operations of CATAC, starting after the IOC governing body meeting in 2024, with the specific starting date to be decided after the coordination with the ICG/CARIBE-EWS (Recommendation ICG/PTWS-XXX-6),

Notes the recommendation of the ICG/CARIBE-EWS XVII on the consideration of CATAC as a TSP in its XVIII Session in May 2025 to enable the IOC Assembly to consider the final admission of CATAC as TSP in June 2025 (Recommendation ICG/CARIBE-EWS-XVII.8),

Expresses its gratitude to the Government of the People's Republic of China for kindly hosting the 31st Session of the ICG/PTWS in Beijing, China and providing financial support to some of the participants for their attendance,

Accepts with appreciation the kind offer of Ecuador to host the 32nd Session of the ICG/PTWS in 2027 in Ecuador. Specific dates will be determined at a later stage,

Notes with appreciation the intention of Costa Rica to host the 33rd Session of the ICG/PTWS in 2029 in Costa Rica, to be confirmed at the 32nd Session of the ICG/PTWS,

Congratulates Chair Dr Dakui Wang (China) and Vice Chairs Ms Lara Bland (New Zealand), Dr Mylene Villegas (Philippines), and Mr Levu Antfalo (Vanuatu) on their election to leadership of the PTWS.

Financial Implications: None

Recommendation ICG/PTWS-XXXI.2

Understanding Tsunami Risk

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

Recalling the importance of Risk Assessment research as a key mechanism toward achieving the UN Ocean Decade Goal of ‘100% of communities at risk of tsunami prepared for and resilient to tsunamis by 2030’,

Recalling the important work of Geoscience Australia and GNS Science New Zealand over the last two decades in developing Probabilistic Tsunami Hazard Assessment (PTHA) methods for the Southwest Pacific and across the world, and freely providing important documented techniques for these methods,

Recalling the recommendation of the PTWS PICT Task Team on Seismic Data Sharing in the Southwest Pacific at its 8th session, conducted the ICG/PTWS Scientific Meeting of Experts to Understand Tsunami Sources, Hazards, Risk and Uncertainties associated with the Vanuatu, San Cristobal and New Britain Subduction Zones in May 2024 hosted by the Government of Vanuatu, as part of the IOC series of Expert Meetings to quantify earthquake and tsunami sources, hazards and risks to support holistic risk management (readiness, response, reduction and recovery) and target suitable reduction projects,

Notes the barrier that the lack of availability of high-resolution bathymetry and topography for inundation modelling presents to tsunami preparedness and Tsunami Ready Recognition,

Requests WG1 to consider the collation of existing or creation of new guidance on techniques for inundation modelling where high-resolution bathymetry and topography are not available, as part of a ‘tiered’ approach to PTHA.

Requests WG1 to continue to support Tsunami Hazard Assessment studies in the Pacific as part of comprehensive risk assessment, consistent with the first objective of the UN ODTP, to achieve 100% coverage for coasts at risk of tsunamis.

Requests WG1 to support and encourage regional workshops of seismic experts in tsunami sources, noting that such regional workshops are the best way to include local experts into Tsunami Hazard Assessment studies,

Requests WG1 to support further development of the tsunami hazard and risk assessment tools for use in Tsunami Hazard Assessment studies.

Encourages WG1 to develop new and improved methods and promote use of best practices for Tsunami Hazard and Risk Assessment.

Encourages WG1 in the creation of a clearing house for access to the results of the Tsunami Hazard and Risk Assessment studies.

Encourages WG1 to investigate the establishment of a baseline Pacific-wide source model, in collaboration with efforts on the Global Tsunami Model (GTM) to aid in the creation of Tsunami Hazard and Risk Assessment studies.

Encourages WG1 use of Tsunami Hazard Assessment results for use in various IOC programs such as ITIC training, Tsunami Ready Program, IOC/ICG/PTWS WG2 and WG3 activities and UN ODTP.

Financial implications: None

Recommendation ICG/PTWS-XXXI.3**Tsunami Detection, Warning and Dissemination**

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

Noting the Recommendation of TOWS-WG-XVIII to the IOC Assembly at its 33rd session in 2025 to request the IOC Secretariat to prepare a standard and improved methodology of collecting TNC/TWFP/NTWC contact information, in close collaboration with the TT-TWO and TT-DMP, and present its work at the next Joint TT-DMP and TT-TWO Meeting; TOWS-WG approved the proposal on TSP Messages for the Maritime Community and requested the ICGs to consider the proposal for implementation in their respective basins in the TOWS-WG XII session,

Requests WG2 TT-TSP to investigate TSP, TNC, NTWC and TWFP requirements to serve as an input for this effort.

Noting the Secretariat Report on the best practices of the ICG/NEAMTWS since 2012 regarding the conduct of TSP Communication Tests with a fixed schedule,

Requests WG2 TT-TSP to investigate the implementation of such modality by the ICG/PTWS TSPs in order to eliminate the need to issue IOC Circular Letters for such regular activity of operational nature,

Noting the Recommendation of TOWS-WG-XVIII to the IOC Assembly at its 33rd session in 2025 to establish arrangements among TSPs within each ICG to ensure that service provision is ensured at all times for the full Area of Service of the ICG,

Requests WG2 TT-TSP to produce an analysis report on the need and requirements of such arrangements within the PTWS by taking into consideration the requirements and capabilities for both near and far-field events, existing back-up modalities, expansion of Areas of Service of the existing TSPs, where applicable, and the possibility and feasibility of forming new TSPs by other Member States, independently or jointly,

Noting that TSPs continue to edit/revise their own User's Guide,

Requests WG2 TT-TSP to consider creation of a common standard for naming forecast points and polygons in their User's Guides,

Also noting the clarification with the PICT on the request for an event identifier,

Recommends TSPs to add an event identifier in the email subject of their bulletins.

Recognizing the need for novel data technologies to achieve the ODTP warning goals,

Noting that recent scientific advances in quantum technology applied to fibre-optic seafloor cables provides the possibility of cost-effective expansion of monitoring and early warning instrumental networks,

WG2 **commends** the United Kingdom for supporting testing of laser interferometry on the Southern Cross NEXT fibre-optic cable in the southwest Pacific,

Recognizing the significant improvement in the integrated tsunami monitoring network that GNSS-based technology can support,

WG2 **commends** the GNSS Enhancement of Tsunami Early Warning Systems (GeTEWS) Oceania initiative in the southwest and continues to follow their efforts and supports alignment with PTWS forecasting goals,

WG2 **commends** Australia for continued support of instrumentation and data retrieval in the southwest Pacific, including installation and maintenance of seismic and geodetic infrastructure,

WG2 **commends** New Zealand for continued maintenance and open data sharing of a regional DART network that supports forecasting from direct ocean observations, including for non-earthquake tsunamis.

WG2 **recognizes** and **appreciates** the regional efforts of the ORSNET seismic network to support SW Pacific monitoring,

WG2 **appreciates** USA and France for contributions to Member State capacity building through the generous sharing of analysis tools and knowledge,

Noting the significant potential of SMART Cables to advance tsunami monitoring and forecasting,

And further **noting** the progress of SMART Cable initiatives in the SW Pacific including the TAM-TAM cable deployment,

WG2 **recommends** the PTWS encourages Member States to incorporate SMART capability into new subsea telecom cable projects, prioritize deployment in high-risk tsunami zones and provide open access data for monitoring and forecasting, and **encourages** its open access for DRR research purposes,

WG2 further **recommends** partnering with the JTF SMART Cables to develop protocols for real-time data access and integration from SMART Cables into the PTWS and NTWCs,

Recognizing the opportunities to improve tsunami DRR through the standardization of Member State reporting of tsunamigenic events,

WG2 **recommends** the ICG-PTWS to request Member States to adopt standard event reporting within their National Reports to the ICG according to the template in WG2 report to the ICG/PTWS XXXI,

WG2 further **recommends** that the regional working groups facilitate the compilation and reporting of historical data available in their respective regions for events currently unavailable in the Global Tsunami Database, with support on request of the ITIC as part of its Mandate and Functions (IOC.X.23, 1977),

WG2 **requests** the PTWS to support them to convene a joint IUGG-JTC/IOC Technical Workshop to consider the issues related to tsunami data collection and dissemination, to be convened during the XXXI intersessional period,

And **commends** the IUGG-JTC for leading the effort to standardize event reporting standards.

Recognizing the ability of infrasound and acoustic gravity observations to detect some tsunamigenic phenomena not generated by earthquakes,

WG2 **recommends** the PTWS to define guidelines of the use of such data for event detection in areas where it is available.

Noting that the TT Integrated Sensor Network has completed the task contained within its terms of reference,

And **noting** that more work on integrated sensor networks, beyond the original terms of reference is needed,

And **further noting** the alignment of TTISN with TTFOO,

WG2 **recommends** dissolving of TTISN and an expansion of the terms of reference of TTFOO to incorporate continued focus on integrated sensor networks within the context of forecasting strategies highlighted by TTFOO,

WG2 **recommends** that ICG/PTWS continues the Task Team on Forecasting from Ocean Observations and expands its terms of reference to include integration of sensor networks,

WG2 **recommends** that ICG/PTWS continues the Task Team for Tsunami Generated by Volcanoes,

WG2 **recommends** that ICG/PTWS continues the Task Team for Tsunami Service Providers,

WG2 **requests** the ICG/PTWS to solicit confirmation of current members of WG2 and nominations for additional representatives from Member States.

Noting advances in the use of geodetic data in tsunami forecasting,

Recognizing the need for all Member States to benefit from recent advances in forecasting,

Recognizing the benefits of coordinating support for monitoring advances in Member States,

Continues WG2 with revised Terms of Reference as attached in Appendix 1 to Recommendation ICG/PTWS-XXXI.1

Financial implications: None

Recommendation ICG/PTWS-XXXI.4

PTWC Product Changes and Addition of Maritime Products

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

Noting the discussion on proposed PTWC text product changes that included naming coasts with tsunami amplitude forecasts less than 0.3 meters and on adding language to key statements clarifying that they are advice only and intended only for the PTWS coasts,

Requests that PTWC eliminates that section naming coasts with less than 0.3 meter amplitude forecast and include clarifying language about the application of key text product statements that they are advice only and only for PTWS coasts,

Also noting that the International Hydrographic Organization (IHO) World Wide Navigational Warning System (WWNWS) requested TSPs to produce concise informational products about tsunami threats for NAVAREA Coordinators,

Recalling that IOC Decision A-32/3.4.1 instructed ICG TSPs in collaboration with NAVAREA operators of IHO to test the tsunami maritime safety products in 2023/24, with a view to operationally implementing them in 2024-2025,

Considering that the PTWC as a TSP that covers all coasts of the PTWS has agreed to provide this service for the PTWS and has designed such products, conducted a communication test with Pacific NAVAREA Coordinators, and produced a draft guide to those products,

Requests PTWC to implement the products in 2025 following the next meeting of the WWNWS in September 2025.

Recommendation ICG/PTWS-XXXI.5**Disaster Risk Management and Preparedness**

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

Recalling there are nearly 70% of the world's historical tsunamis in the Pacific and 99% of the tsunami deaths from local and regional tsunamis, making tsunami community preparedness, such as through programmes like Tsunami Ready, a high-priority action for saving lives,

Recalling the establishment of the World Tsunami Awareness Day in 2015, and its achievements that continually remind us that tsunamis, while infrequent, can have damaging and deadly impacts anytime and anywhere around the world,

Noting and applauding many PTWS Member States which conduct activities annually that have built preparedness at the community levels, including through exercises, school activities, and activities that support Tsunami Readiness,

Appreciating the continued advocacy of the IOC and UNDRR working in collaboration to celebrate tsunami preparedness champions, highlight activities and initiatives, and support Member States activities,

Welcomes the proposal to enshrine Tsunami Ready as a permanent theme of the World Tsunami Awareness Day,

Notes the report of Working Group 3 (Disaster Management & Preparedness),

Appreciates and thanks the ongoing significant effort and leadership provided by the ITIC for tsunami preparedness in the Pacific, including through standard operating procedures (SOP) training, online training under the OceanTeacher Global Academy, and the creation and distribution awareness products,

Notes the importance of PacWave exercises for improving tsunami disaster management and preparedness, and in particular the ongoing efforts to involve National Disaster Management Offices (NDMOs) to prepare and respond,

Also Notes the importance of encouraging more NDMO participation and involvement in PTWS discussions and governance mechanisms, especially given the nature of the UN Ocean Decade Goals and their connection with disaster management and preparedness,

Encourages Member States to provide nominated representatives, particularly from NDMOs to WG3 Disaster Risk Management and Preparedness to support an active work programme for this working group.

Notes the benefit of collating best practice guidance and materials on disaster management preparedness for collective reference, and that there is no method currently available to facilitate this,

Requests that WG3 and the ITIC continue to explore mechanisms with the Secretariat for Member States to share materials, in order to better facilitate the collection and accessibility of best practice resources on disaster management and preparedness topics.

Welcomes the ITIC offer to host an interim repository to share materials, and

Requests PTWS Member States to share their best practice awareness and preparedness material, programs and assessment tools with the ITIC to compile and maintain for the PTWS.

Recalling the approval of the Tsunami Ready Coalition Implementation Plan by the TOWS-XVII WG, towards realizing and sustaining tsunami readiness through targeted promotion, advocacy, resource mobilization, networking, influence, and advice,

Requests WG3 and its Task Team on Tsunami Ready to actively support the implementation activities of the Tsunami Ready Coalition.

Accepts the Report of the Task Team on Tsunami Ready and **approves** the provisional PTWS Tsunami Ready Equivalency Guidance for piloting in order to finalize the Guidance for approval at the ICG/PTWS-XXXII,

Continues WG3 to facilitate the coordination of efforts relating to Disaster Risk Management and Preparedness within the ICG/PTWS with revised Terms of Reference in Appendix 1 to Recommendation ICG/PTWS-XXXI.1.

Recommendation ICG/PTWS-XXXI.6**Tsunami Ready**

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

Appreciates the significant role that the ITIC plays in the facilitation, promotion and application of the Tsunami Ready Recognition Programme across the PTWS.

Notes the challenge in reporting the progress of Tsunami Ready for the PTWS, in particular interest and planning of the programme that may not have been communicated to ITIC or the IOC,

Requests the WG3 Task Team on Tsunami Ready to continue to investigate and develop the Tsunami Ready survey for the PTWS for implementation prior to the ICG/PTWS-XXXII, to support reporting at that Session.

Encourages Member States to continue to share outcomes and progression towards '100% Tsunami Ready' with WG3.

Mandates the ITIC to continue to facilitate implementation and data collation regarding Tsunami Ready progress in the PTWS.

Recalling the importance of the UNESCO-IOC Tsunami Ready Recognition Programme as a key mechanism toward achieving the UN Ocean Decade Goal of '100% of communities at risk of tsunami prepared for and resilient to tsunamis by 2030',

Requests WG3 Task Team on Tsunami Ready to continue to investigate further actions to recognize, support and celebrate the benefits of formal UNESCO-IOC Tsunami Ready Recognition,

Requests WG3, through its Task Team on Tsunami Ready, to address key future governance and Tsunami Ready implementation questions as identified by the TOWS-WG-XVII Inter-ICG Task Team on Disaster Management and Preparedness, for sharing to the TOWS WG, including the matter of other types of 'community' and sustainability of the Tsunami Ready initiative.

Recalling the approval of the Tsunami Ready Coalition Implementation Plan by the TOWS-XVII WG, towards realizing and sustaining tsunami readiness through targeted promotion, advocacy, resource mobilization, networking, influence, and advice,

Requests WG3 to actively support the implementation activities of the Tsunami Ready Coalition.

Recalling ICG/PTWS-XXIX.1 recommendation for WG3 to explore ways to recognize communities that choose not to implement the UNESCO-IOC Tsunami Ready Recognition Programme as compliant with the Tsunami Ready Indicators,

Recalling the proposed Tsunami Ready Equivalency Approach shared at the Thirtieth Session of the ICG/PTWS by WG3, and the establishment of the Task Team on Tsunami Ready under PTWS WG3 at that Session,

Recalling further ICG/PTWS-XXX.5 recommendation that formal guidance be developed for ICG/PTWS on the application of the proposed Tsunami Ready Equivalency Approach, and led by WG3 Task Team on Tsunami Ready, in consultation with Regional Working Groups,

Notes TOWS WG-XVII (2024) appreciation of the progress made by the ICG/PTWS on exploring mechanisms of how to include national tsunami preparedness and readiness programmes and initiatives in the UN Ocean Decade Programme, and that the Tsunami Ready Equivalency Approach framed under other similar initiatives seeks to enable reporting on tsunami preparedness in a manner compatible with the TRRP, using existing national frameworks and requirements,

Notes the progress during the intersessional period to develop a Guideline for the PTWS Tsunami Ready Equivalency Framework by ICG/PTWS WG3 Task Team on Tsunami Ready, under the leadership of the New Zealand National Emergency Management Agency and the ITIC,

Recommends the provisional approval of the Tsunami Ready Equivalency Guidance, as described in IOC/PTWS-XXI Draft Document (Agenda 4.2) and **recommends** the ICG/PTWS WG3 Task Team on Tsunami Ready to conduct a pilot of the PTWS Tsunami Ready Equivalency Guidance,

Encourages Member States to consider working with the ICG/PTWS WG3 Task Team on Tsunami Ready to contribute to a pilot of the PTWS Tsunami Ready Equivalency Guidance, in order to report back on the feasibility and usability of the approach,

Recommends the ICG/PTWS WG3 Task Team on Tsunami Ready to utilize the results of pilot applications to finalize guidance for approval at the ICG/PTWS-XXXII,

Continues the WG3 Task Team on Tsunami Ready with revised Terms of Reference in Appendix 1 to Recommendation ICG/PTWS-XXXI.1.

Recommendation ICG/PTWS-XXXI.7**PTWS Tsunami Preparedness Capacity Assessment**

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

Recalling that nearly 70% of the world's deadly tsunamis occur in the Pacific Ocean and its marginal seas, posing a significant threat to coastal communities and emphasizing the need for robust preparedness and response measures,

Recalling the ITSU Master Plan (1989, 1999, 2004) for the International Coordination Group for the Tsunami Warning System in the Pacific (ITSU, now PTWS), which outlined current status, limitations, and directions for improvement in all aspects of tsunami mitigation in the Pacific including hazard assessment, warnings, preparedness, and research through a system of international cooperation and coordination of activities,

Recalling IOC Circular Letter No 3027 (dated 5 February 2025) announcing the conduct of a Tsunami Preparedness Capacity Assessment (TPCA) of the PTWS between September 2024 and September 2025 as Phase II of the ESCAP 2024 Tsunami Preparedness Capacity Assessment in Indian and Pacific Oceans,

Notes the initiative will provide the first opportunity to evaluate the existing capacity of the PTWS (formerly ITSU established in 1965), highlight progress after the catastrophic 2004 Indian Ocean Tsunami to build an effective tsunami warning and mitigation system as outlined in the ITSU Master Plan (through 2004) and following PTWS Medium Term Strategies (from 2009 to present), identify gaps and capacity development requirements at regional and national levels, and provide recommendations for the next efforts through regional cooperation and mainstreaming of science,

Notes the ICG/IOTWMS conducted capacity assessments in 2018, and in 2024 in line with the 20th commemoration of the Indian Ocean Tsunami, which have informed the development of the survey and conduct of the PTWS tsunami preparedness capacity assessment,

Expresses gratitude to ESCAP for support to this initiative through funding from the Trust Fund for Tsunami, Disaster and Climate Preparedness to enhance disaster risk reduction through early warning systems, setting a milestone and making better connection among regional entities,

Expresses gratitude to ICG/PTWS Chair Mr Yuji Nishimae (Japan) for his initiative and leadership, especially in identifying and moving forward with a process that involves all PTWS Member States, Ms Lara Bland (New Zealand), Dr Laura Kong (US) and the Secretariat for leading the organization and conduct of the PTWS Tsunami Preparedness Capacity Assessment,

Expresses gratitude to 29 Member States for completing the survey by early March 2025, and

Notes that several additional Member States will submit the surveys by the 18 April final deadline,

Expresses gratitude to the Philippines Institute of Volcanology and Seismology (PHIVOLCS) for hosting the Recommendations Workshop, 14-16 May 2025, and providing support with visa requests as needed,

Requests the PTWS Steering Committee to provide the leadership role in the intersessional period, including to

- Nominate a Vice-Chair to chair the PTWS-TPCA initiative,
- Identify representatives to participate in the PTWS-TPCA Evaluation Workshop, 14-16 May 2025, in Manila, The Philippines,
- Assist in the review of the resulting recommendations and relevant reports and publications,
- Assist in the drafting final report of the Tsunami Preparedness Capacity Assessment to be the baseline of the preparedness capacity of the PTWS
- Provide guidance to the Chair/ICG on the actions and implementation options for the recommendations and incorporation of the findings into the future implementation efforts and strategies of the PTWS,
- Share outcomes with the other regions of the IOC's Global Tsunami Warning and Mitigation System, especially with the adjacent ICG/CARIBE-EWS and ICG/IOTWMS to identify synergies for action in Member States belonging to both regions,
- Report the results of the PTWS Tsunami Preparedness Capacity Assessment at the IOC EC and Assembly,
- Invite additional members to support the PTWS-TPCA initiative, through the PTWS-TPCA Chair in consultation with the PTWS Steering Committee.

Recommendation ICG/PTWS-XXXI.8

Pacific Islands Countries and Territories

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

Recognizes that WG-PICT will be aligned to advise the Regional Geohazards Body with current WG-PICT TOR and Membership and inform the Regional Geohazards Body Concept Note. The Regional Geohazards Body will advise two subsidiary bodies of the Pacific Leaders Forum i.e. Pacific Disaster and Emergency Managers Meeting and Pacific Meteorological Council Meeting,

Notes that WG-PICT as a Task Team of the Pacific Meteorological Council (PMC) Panel on Marine and Ocean Services,

Notes the ORSNET's endorsement of the latest version of the Portable Station SOP until additional amendment is required,

Recognizes that the decision of the 10th WG-PICT meeting on the development of Regional Geohazards Strategy to be informed by Draft ORSNET Strategy and Concept Note,

Also Recognizes that the decision of the 10th WG-PICT meeting on the submission of Concept Note for Regional Geohazards Body and Strategy to the Pacific Disasters Managers Meeting and Pacific Meteorological Council (PMC),

- Pacific Islands Aviation Weather Services Panel,
- Pacific Islands Marine and Oceans Services Panel, and
- Weather Ready Pacific Programme.

Encourages

- Member States to identify gaps and needs on Tsunami Hazard and Risk Assessment and the need to review and update National Warning and Response SOPs and National Tsunami Response Plans.
- WG-PICT Task Team Capacity Development to **develop** a Tsunami Ready Guideline for Schools in collaboration with ITIC and WG 3 Task Team on Tsunami Ready.
- ORSNET Members to seek more staff from central government and project staff (e.g. IT Technician) from development partners.
- Member States to **strengthen** infrastructure & maintenance & upgrade services
- ORSNET countries to collaborate with members and bilateral/multilateral partners
- Member States to acquire additional SeisComP products
- ORSNET Members to join SeisComP User Group
- Member States training & capacity development – to focus volcano waveform analysis, SeisComP Basic and Advanced Training and Station Maintenance.
- ORSNET Members to expedite the signing of the ORSNET Agreement following national guidelines. Samoa, Solomon Islands, Tonga, Vanuatu- **3 months deadline**.
- France and New Caledonia, Development Research Institute (IRD) to secure resources to ensure the sustainability of ORSNET,

- Member States NTWC, NDMO, National Geohazards Agency and relevant agencies to take OTGA Tsunami Awareness and Tsunami Ready Courses (self-paced) as a prerequisites for the TWC Minimum Staff Competency training course (TWC-MCTC).
- Working Group 3, on the translation of OTGA Tsunami Awareness and Tsunami Ready Course (self-paced) into French/Spanish.
- Member States to send UNESCO-IOC Letters of Intent to implement UNESCO-IOC Tsunami Ready Recognition Programme and increase number of communities recognized UNESCO-IOC Tsunami Ready towards 100% tsunami-at risk communities.
- Member States to review and update PTWS guideline for NTWCs in responding to local tsunami to ensure consideration of non-seismic and complex sources for warning operations.
- Member States to establish and submit National Tsunami Ready Board Application to ICG/PTWS Secretariat by end of 2025.
- communication technology such as satellite link to support national emergency and recommend PICT members to acquire such equipment.
- PICTs Member States to join the initiative on the integration of PTWS Sensor Network – GNSS and the Pacific Islands –Global Ocean Observation System (PI-GOOS)
- Enhanced information sharing guidelines through all tested communication lines among Member States,
- Enhanced and promote the regional information sharing platform (currently SLACK) among Member States.
- Member States to continue to conduct and support the next regional PICT PacWave exercise.
- In-person tabletop exercise between WG-PICT members at their convenience with the support of Task Team on Information Sharing Platforms.
- Member States to maintain VHF/HF radio communication redundancy to support national emergency.
- monthly regional HF radio test communication between PICT with the collaboration of the World Food Programme – Emergency Telecommunication Cluster.

Requests to encourage the Task Team PacWave 26 to consider the lessons learnt of PICT Regional Exercise in their planning.

Recommendation ICG/PTWS-XXXI.9**PacWave Exercises**

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

Noting the successful conduct of PacWave24 and lessons learned from the exercise,

Acknowledges identified gaps and opportunities for improvement during the PacWave24,

Recommends that in PacWave26 dissemination of the maritime special products target directly to the NAVAREA Coordinators instead of NTWCs,

Acknowledges reports of the WG-PICT and WG-SEP on regional exercises as part of PavWave24 and resulting recommendations,

Encourages targeting enhanced cooperation with other geohazard agencies in future exercises through consideration of non-seismic scenarios,

Further encourages Member States to exercise the use of VHF/HF radio communication and maintain redundancy to support national emergency and potential regional cooperation.

Appendix 1 to Recommendation ICG/PTWS-XXXI.1

Terms of Reference

Working Group 1: Understanding Tsunami Risk

1. Develop and promote best practice tsunami risk assessment material, programmes, standards, and tools for understanding tsunami risk, to support emergency management and early warning, including but not limited to:
 - (i) hazard assessment and coastal inundation models and products
 - (ii) risk assessment methodology and risk forecasting
 - (iii) scenario assessments including maximum credible and most likely events to understand likely exposure, vulnerability, and event frequency
 - (iv) forecast and threat models
 - (v) evacuation and inundation modelling
 - (vi) use of new and improved data including digital elevation modelling (DEM), GNSS and paleotsunami information.
2. Work with scientific experts to support Member States tsunami risk assessment.
3. Improve best practice for assessing risk of local source and non-seismic tsunami sources.
4. Develop projects to address gaps or areas for improvement in tsunami risk assessment, this may include land-use planning, vertical evacuation or supporting early warning improvements.

The Group will be composed of members nominated by Member States, with two co-chairs, one from science and one from a disaster risk management background, to be elected by the ICG.

Terms of Reference**Working Group 2:
Tsunami Detection, Warning and Dissemination**

1. Liaise with other working group(s) and Task Team(s) within the ICG/PTWS and with working groups from the other ocean basins through the TOWS-WG to:
2. Develop, coordinate, and enhance operational implementation of interoperable tsunami threat information products and services.
3. Undertake studies to determine warning requirements for seismic, geodetic and sea level data.
4. Monitor and report on the performance of key observational, warning and communication system components.
5. Contribute to the conduct of regular exercises and communication tests of the PTWS.
6. Identify areas of priority for action following assessments, communications tests, exercises, and real tsunami events.
7. Develop and maintain relevant documentation, such as the PTWS TSP User's Guides.
8. Provide advice to the ITIC on educational materials and for capacity building about the warning systems and services.
9. Support the transfer of knowledge and technology between Member States to promote capacity building in monitoring, detection and forecasting of tsunami threats.
10. Provide decision support advice to Member States to encourage useful expansion of the integrated sensing network.
11. Provide advice to the PTWS considering emergent data and novel processing and forecasting technologies to support NTWC and TSP, ensuring alignment to the UN ODTP goals.

The Working Group will be composed of members nominated by Member States, representatives for each ICG designated TSPs, ITIC, and invited observers, with a Chair and two Vice-Chairs to be elected by the ICG.

Terms of Reference

**WG2 Task Team:
Tsunami Service Providers (TT-TSP)**

1. Share with each other their response to significant events including a timeline of actions, analyses made and the result of those analyses, decisions made and the basis for those decisions, the timeliness and accuracy of products issued, and any other notable successes or challenges.
2. Share with each other information about existing and any new methodologies for rapidly detecting and characterizing tsunami source events, for detecting and measuring tsunami waves, and for forecasting tsunami propagation and impacts.
3. Share with each other information on the effectiveness of products including format and content to make them understandable and actionable, dissemination methods and their testing, and any other support to customers prior to and during events.
4. Report to ICG on Task Team activities during the intersessional period as well as any resulting findings, changes, or recommendations regarding TSP operations.

The Task Team will be composed of representatives of PTWS TSPs and a representative from ITIC.

Terms of Reference**WG2 Task Team:
Tsunami Forecasting from Ocean Observations (TT-FOO)**

This Task Team will establish and document a methodology to test the sensitivity of the PTWS sensing networks and forecasting ability, integrating new and emerging techniques and technologies by:

- 1) Comparing and documenting existing strategies for source-independent tsunami early warning, and quantifying and documenting their operational usefulness. Efforts will include consideration of both existing and emerging ocean observation technologies and techniques.
- 2) Connecting with appropriate entities in the WMO and IOC oceanographic communities to allow best-practice direct-observation-driven forecasting techniques to be assessed for their usefulness in tsunami forecasting from ocean observations.
- 3) Integrating emerging techniques and sensor technologies with the existing sensing network for the purpose of advancing tsunami warning service capability towards achieving UN ODTP goals.
- 4) Undertaking to establish direct collaboration between ICG/PTWS Member States and other expert groups for the purpose of collaborating on data sharing, respecting the data policies of Member States and data collection organisations and research efforts that are adaptable to the tsunami warning systems and operations of the IOC-Tsunami Programme, and aligned to the 10-year Research, Development and Implementation Plan of the UN ODTP.
- 5) Aligning efforts with the Task Team for TSPs and NTWC operational needs, to ensure that the Task Team recommendations consider the current and potential operational feasibility of emergent technologies augmentation for TSPs and NTWCs.
- 6) Support Member States through the analysis of the capability existing and proposed observational networks and network expansion to provide actionable forecasts within the operational frameworks of the TSPs and NTWCs.

The Task Team will be open to members nominated by Member States, invited experts. Co-chairs to be elected by the ICG.

Terms of Reference

**WG2 Task Team:
Tsunami Generated by Volcanoes (TGV)**

1. To confirm the list of volcanoes identified by the TGV as posing a potential threat to the Pacific (referred in Annex 4 Technical Series 183), to identify additional potential threat volcanoes, and continually review the list.
2. Among the volcanoes with potential tsunami threat, to identify those with implemented tsunami hazard assessment, monitoring, warning, and preparedness systems.
3. To establish direct collaboration between ICG/PTWS Member States and IAVCEI to facilitate the contribution of PTWS tsunami expertise to the monitoring and warning capability of existing volcano monitoring centers or NTWCs, as appropriate.
4. To Identify potential volcanic partners in countries and international bodies, and recommend collaboration opportunities with them to improve tsunami early warning and to support the downstream decision makers affected by the volcanically-generated tsunami.
5. To develop guidelines on SOPs to monitor, detect, warn, and prepare for any volcano-induced tsunami waves and their generation processes.

The Task Team will be composed of members nominated by Member States, a representative from ITIC, and invited observers. Co-chairs to be elected by the ICG.

Terms of Reference**Working Group 3:
Disaster Risk Management and Preparedness**

1. In collaboration with TOWS WG Inter-ICG Task Team on Disaster Management and Preparedness (TT-DMP), and organizations such as the UNDRR, support the exchange of experiences and information on risk reduction and preparedness actions, and matters related to disaster management.
2. Support the exchange of experiences and information on Tsunami Ready implementation globally.
3. Support the implementation activities of the Tsunami Ready Coalition.
4. Promote preparedness in coastal communities through education and awareness products and campaigns.
5. Facilitate SOP training across regions to strengthen emergency response capabilities of Member States and their Disaster Management Offices.
6. Develop and promote best practice preparedness material, programs, and assessment tools.
7. Develop and promote tsunami risk reduction theory and practice.
8. Review and advocate for the filling of gaps in Pacific Tsunami Risk Management and Preparedness identified from the 2025 PTWS-TPCA.
9. Support the ITIC of the ICG.

The Group will be composed of members nominated by Member States, regional organisations, a representative of ITIC with a Chair and a Vice-Chair to be elected by the ICG.

Terms of Reference

**WG3 Task Team:
Tsunami Ready**

1. Support the continued development and piloting of PTWS guidelines following the 'Tsunami Ready Equivalency Approach' for recognition of tsunami readiness of communities not implementing the UNESCO-IOC TRRP.
2. Monitor Tsunami Ready campaigns and outcomes, and report results.
3. Ensure the advocacy for Tsunami Ready is aligned with other PTWS and IOC documents.
4. Advise on the Tsunami Ready workflow as it pertains to the PTWS and regions.
5. Support ITIC in its efforts to facilitate the implementation of Tsunami Ready in PTWS Member States.
6. Support ITIC's efforts to develop standardized training supporting Tsunami Ready under the framework of OTGA, such as through feedback on content and helping to test trainings before officially deployed.
7. Help identify sources of funding in support of the implementation of Tsunami Ready.
8. Report its activities and outcomes to the PTWS WG3, for sharing with the PTWS, TOWS WG, and globally.

The Group will be composed of members nominated by the Member States, representative of ITIC, with two co-chairs to be elected by the ICG.

Terms of Reference**Regional Working Group on Tsunami Warning and Mitigation System on the Central American Pacific Coast**

1. To assist the Central American countries in the development, improvement and implementation of their National Tsunami Warning and Mitigation Systems, and the countries which are becoming new members of ICG/PTWS in their integration into the ICG/PTWS.
2. To request CEPREDENAC to support the development of CATAC in Nicaragua as interim Regional Tsunami Advisory Center for all Central American countries.
3. To implement a regional communications and warning plan.
4. To facilitate Tsunami Hazard and Risk studies in the Central American Region.
5. To Serve as coordination point within the region for Member States proposals related to UN ODTP objectives, including the SMART Cables initiative and advising the PTWS Steering Committee on details of such proposals for consideration.

The Group will be composed of members from Member States Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, and Panama, with a Chair and a Vice-Chair elected by the members of the Working Group and endorsed by the ICG.

Terms of Reference

Regional Working Group on Tsunami Warning and Mitigation System for the Southeast Pacific Region

1. To enhance regional capabilities in the Southeast Pacific Region for the Detection, Assessment, Warning and Dissemination of tsunami events, based on lessons learned and global trends, with the purpose of generating improvement opportunities for the NTWCs following the Sendai Framework priorities as a reference.
2. To facilitate cooperation in the establishment and upgrading of seismic and sea level stations and networks and communication systems in the region, and their interoperability in accordance with ICG/PTWS requirements, through the active participation of appropriate national delegates from Member States, in the Working Group 2: Tsunami Detection, Warning and Dissemination.
3. To improve the communication channels between the countries, according to the regional communications protocol established under Permanent Commission for the South Pacific (CPPS), through periodical tests using redundant systems.
4. To evaluate the merits of implementing the Tsunami Ready Equivalency Approach or the IOC TRRP in the region.
5. To promote regional activities and join projects considering in-region capacity building and enhancing disaster preparedness for response as main efforts, according to the priorities number 1 and 4 of the Sendai Framework.
6. To facilitate capacity building and the sharing of sea level information among others, including the free and open exchange of data.
7. To improve the educational programs with regional criteria based on social, cultural, and economic reality, through the active participation of appropriate national delegates from Member States, in the Working Group 3: Disaster Risk Management and Preparedness.
8. To develop synergies with universities and academic centers to promote and to facilitate regional tsunami research in order to cope with regional needs.
9. To serve as coordination point within the region for Member States proposals related to UN ODTP objectives, including the SMART Cables initiative, and advising the PTWS SC on details of such proposals for consideration

The Group will be composed of representatives nominated by the Member States of Chile, Colombia, Ecuador, and Peru, with a Chair and a Vice-Chair from each country rotating every two years, following an alphabetical order. In this context, the Vice-Chair will assume regional presidency for the coming period.

Terms of Reference**Regional Working Group on Tsunami Warning and Mitigation System for the South China Sea Region (WG-SCS)**

1. To evaluate capabilities of countries in the South China Sea region for providing end-to-end tsunami warning and mitigation services.
2. To ascertain requirements from countries in the South China Sea region for the tsunami warning and mitigation services.
3. To promote and facilitate tsunami hazard and risk studies in the region.
4. To facilitate cooperation in the establishment and upgrading of seismic and sea level stations and networks and communication systems in the region.
5. To facilitate improvement of the education programmes on tsunami mitigation in the region.
6. To facilitate capacity building and the sharing of tsunami information in the region, including the free and open exchange of data.
7. To serve as coordination point within the region for Member States proposals related to UN ODTP objectives, including the SMART Cables initiative, and advising the PTWS SC on details of such proposals for consideration.

The Group will be composed of members nominated by Member States Brunei, Cambodia, China, Indonesia, Malaysia, The Philippines, Singapore, Thailand, Vietnam and invited experts with a Chair and Vice-Chair to be elected by the members of the Working Group and endorsed by the ICG.

Terms of Reference

**WG-SCS Task Team:
Capacity Development and Services**

1. To coordinate training workshops and other technical exchanges on topics related to earthquake and tsunami for enhancing the tsunami warning capabilities of the WG-SCS Member States.
2. To facilitate implementation of the International Staff Programme for short-term secondment of staff from WG-SCS Member States to SCSTAC on an annual basis.
3. To explore ways for furthering the sharing and exchange of relevant data and information in the South China Sea region.
4. To ascertain the latest requirements of WG-SCS Member States for tsunami advisory service provided by SCSTAC.

Membership: Representatives of Member States of the ICG/PTWS WG-SCS (Brunei Darussalam, Cambodia, China, Indonesia, Malaysia, The Philippines, Singapore, Thailand, and Vietnam) and invited experts; representatives of PTWC and NWPTAC (JMA), and the ITIC; with Chair and Vice-Chair to be elected by the ICG.

Terms of Reference**Regional Working Group on Tsunami Warning and Mitigation for the Pacific Island Countries and Territories (WG-PICT)**

The Regional Working Group on Tsunami Warning and Mitigation for the Pacific Island Countries and Territories will contribute to the implementation to Framework for Resilient Development in the Pacific and is encouraged to share the results of the working group with the Pacific Resilience Partnership.

The working group aims to:

1. continually review and evaluate capabilities of and make recommendations for improvements to countries in the PICT Region for providing end to-end tsunami warning and mitigation services.
2. support the involvement and contribution of PICT countries in the activities of the ICG/PTWS.
3. promote and facilitate the tsunami hazard and risk studies in the PICT region.
4. facilitate cooperation in the establishment and upgrading of seismic and sea level stations and networks in the region, and the interoperability of these systems in accordance with ICG/PTWS requirements.
5. facilitate training and capacity building in the end-to-end tsunami warning and mitigation system in the region.
6. encourage the sharing of tsunami information, including but not limited to the free and open exchange of data.
7. facilitate tsunami awareness in school curricula, and development and dissemination of public educational materials.
8. work in cooperation with PTWS Working Group 1, 2 & 3, and relevant task teams especially on activities that strengthen country capacity in tsunami warning, risk mitigation & emergency response.

Members composed of representatives from PICT, Council of Regional Organizations in the Pacific (CROP) Agencies, ITIC and WMO. Chair and Vice Chair elected by the members of the Working Group and endorsed by the ICG.

Terms of Reference

**WG-PICT Task Team:
Seismic Data Sharing in the Southwest Pacific**

1. Advocate seismic data and related tsunami monitoring sharing in the region.
2. Advise Southwest Pacific countries on data sharing protocols, techniques, and technologies.
3. Work with Southwest Pacific Countries and partners to have a common data sharing policy.
4. Encourage Southwest Pacific Countries with existing or planned broadband seismograph stations to (i) join the International Federation of Digital Seismograph Networks (FDSN), (ii) use the standards developed by the FDSN for data exchange and (iii) take advantage of the data archiving and services provided by FDSN.

Members are representatives of Southwest Pacific Countries and territories (Australia, Fiji, France–French Polynesia, France-New Caledonia, New Zealand, Papua New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu), PTWC, NWPTAC, Japan, and US. Co-chairs to be elected by the ICG.

Terms of Reference**WG-PICT Task Team:
Capacity Development**

1. Develop a training course based on the PTWS NTWC competencies framework and minimum competency levels for operational staff training requirements (TWC-MSC, PTWS-XXX.7, 2023) for personnel in the NTWCs, including addressing NTWC local response SOP best practice.
2. Vanuatu, Solomon Islands, Nauru, Fiji, Samoa, and Tonga to pilot TWC-MSC as well as report progress and lessons learnt to ICG/PTWS WG1, 2, and 3.
3. Coordinate and support on-going training and sharing of best practices on the Implementation of UNESCO-IOC TRRP and similar programmes.
4. Review the existing PTWS guideline for NTWCs in responding to local tsunami to ensure consideration of non-seismic and complex sources for warning operations.
5. Develop a PTWS-TPCA to address PICT warning and mitigation capabilities (Member States and IOC) with consideration to the PTWS-TPCA (PTWS-XXXI.7, 2025).

The Task Team Members: Australia, Tonga (Co-Chair), Samoa, Vanuatu, New Zealand, Solomon Islands, Fiji, PNG, ITIC (Co-Chair), SPREP, SPC, IOC, PTWC. Co-chairs to be elected by the ICG.

Terms of Reference

**WG-PICT Task Team:
Information Sharing Platforms**

1. Propose and conduct the next WG-PICT regional PacWave exercise.
2. Support members exercise at their convenience.
3. Evaluate and test early/anticipatory information to be shared between NTWC and NDMO and recommend which platform would be more adapted for each kind of information.
4. Support regional communication test and information sharing platforms
 - (i) HF- Radio Guidelines;
 - (ii) Email Listserv Guidelines;
 - (iii) Mobile Desktop application Guidelines (WhatsApp, SLACK).
5. Identify and list new relevant platforms for Information Sharing.
6. Identify technology and tools for emergency broadcasting and communication redundancy.

The Group to be comprised of representatives from PICT, South West Pacific Members States and ITIC as members, Council of Regional Organizations in the Pacific (CROP) Agencies and WMO Regional Association V (RA V) as observers with Chair and Vice Chair to be elected by the members of the Working Group and endorsed by the ICG/PTWS.

Terms of Reference**PTWS Steering Committee**

1. The Steering Committee shall act in an advisory capacity to the Chair of the ICG/PTWS during the inter-sessional period.
2. The Steering Committee shall coordinate and integrate the work of ICG/PTWS in the inter-sessional periods, as implemented through the various technical and regional working groups and task teams, including but not limited to:
 - Maintain the PTWS Medium Term Strategic Plan.
 - Monitor, maintain and update the PTWS Implementation Plan.
 - Develop a Strategy for funding PTWS activities.
 - Monitor the performance of the PTWS.
 - Guide the work and direction of the PTWS to help deliver the goals of the UN ODTP in support of its 10-year Scientific Research Implementation and Development Plan.
 - Facilitate and report on PTWS contributions to the UN ODTP and provide input to the ODTP on behalf of the ICG/PTWS.
 - Provide leadership to the execution, reporting and follow-up of the PTWS-TPCA.
3. The Steering Group will be composed of the ICG/PTWS Officers (Chair and the Vice-Chairs), Chairs of the Technical and Regional Working Groups, Directors of the TSPs and ITIC, or their delegates, and other members' representatives by invitation of the Chair.

Terms of Reference

Task Team on PacWave Exercises

1. Design and carry out a twelfth Exercise Pacific Wave 2026 with the following characteristics:

- An exercise shall be conducted with the aim to test PTWS tsunami service provider arrangements, and Country preparedness arrangements and operational procedures to respond and recover from a destructive tsunami.
- An exercise shall be conducted with the following objectives
 - a) Test communications from the PTWS TSPs to TWFPs and NTWCs of Member States.
 - b) Test national communication and cooperation, and readiness within the country.
 - c) Test regional communication and cooperation between Member States.
 - d) Test NAVAREA Live communication from PTWC to each NAVAREA coordinator.

2. Exercise Pacific Wave 2026 (PacWave26) will:

- Take place in the months of September through to November 2026 to support International Disaster Risk Reduction Day (13 October) and World Tsunami awareness Day (5 November).
- Be conducted as a series of regional exercises organized through the PTWS Regional Working Groups where applicable, with support from the PTWS TSPs and ITIC involving all PTWS countries as part of the regular biennial Pacific Wave exercise conducted since 2006.
- Be conducted to include one live communication test from the PTWS TSPs to Member States on World Tsunami awareness Day (5 November).
- Be conducted to include exercise activities over and above a tabletop exercise. Possible exercise variations include:
- Consider conducting in real time during the daytime working hours with full staffing, or simulating minimal staff during night-time or weekend hours
- Consider testing country capability to carry out their warning and response responsibilities for the situation where one or more PTWS TSPs is not able to provide guidance in a timely manner.
- Consider conducting the exercise down to the community level, including where possible an extensive public awareness campaign.
- The PACWAVE-TT recommends increasing the scenario difficulties to be experienced during the exercise as for example including non-seismic sources or multiple events scenario. And in this particular case, Members States are encouraged to enhance, as

needed, local, national or regional cooperation with other geohazard monitoring agencies (such as volcanoes observatories, volcanic ash advisory centers, etc.)

The exercise shall be announced by the IOC circular letter to Member States at least 120 days in advance of the exercise date with the exercise manual.

- The exercise manual will

- a) Include information on each regional exercise.
- b) Inform Member States on the availability of exercise products for their region, including instructions to Member States regarding the distribution dates.
- c) Include instructions to Member States regarding their participation and the evaluation instrument be prepared with content and structure similar to what was prepared for previous Pacific-wide exercises, but considering lessons learned and any need to collect additional information.

Participating Member States will be asked to complete and return the evaluation form following the end of the PacWave26 exercise period.

3. Prepare the Summary Report for the exercise, compiling a list of recommendations and the list of actions from the findings for consideration by the ICG/PTWS-XXXII.
4. Members invited from the ICG/PTWS Member States and Regional Working Groups, SPC, PTWC, NWPTAC, SCSTAC and CATAC. Task Team co-chairs to be elected by the ICG.