

Intergovernmental Oceanographic Commission
Reports of Meetings of Experts and Equivalent Bodies



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**Regional Working Group
of the PTWS on Tsunami
Warning and Mitigation for
the Pacific Islands Countries
and Territories (PICTS)**

Nineth Meeting

3 February 2023

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Nineth Meeting
3 February 2023

UNESCO 2023

ICG/PTWS-WG-PICT-IX/3
Suva, Fiji, August 2023
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1. WELCOME AND OPENING OF SESSION

The Honorable Minister of Land and Mineral Resources (MLMR) Mr Filimoni Vosarogo in his Key Note Address Remarks stated that ***“regional and international collaboration is the only way to address our limited local capacity to effectively prepare for and respond to tsunamis. “We cannot afford to work in isolation when it comes to dealing with a natural phenomenon such as tsunamis,” “Our experts continue to invest their time and energy trying to understand our environment better. Sometimes they are on point whilst other times they are not. However, this should never discourage us from continuing our good work to build better-prepared communities, particularly for maritime islands like ours. It sometimes may feel like an exercise in futility but build we must. We can never let our guard down, not even to take a breather.”***

He recalled that Pacific Ministers responsible for Disaster Risk Reduction met in September 2022 here in Nadi and pledged, as part of the Pacific Disaster Risk Reduction Declaration of Action, commitment towards a safer and more resilient region in the face of natural disaster and climate change. To show their steadfast commitment, the Ministers of the 17 Pacific Countries and Territories endorsed the “Nadi Declaration” on the 16th of September 2022. This declaration recognizes and commits to the need for early warning systems, collaboration with partners and communities to foster innovative approaches for disaster preparedness, and inclusion of traditional knowledge; and will guide the regions in disaster resilience and future actions.

The Honorable Minister of Land and Mineral Resources (MLMR) Mr Filimoni Vosarogo and meeting participants was formally welcomed by Director of UNESCO Pacific States Ms. Nisha. She thanked the Honorable Minister and distinguished speakers and more importantly the meeting participants from Member States National Tsunami Warning Centers (NTWC), National Disaster Management Office (NDMO) and Geological Services for their presence and look forward to their participation at this important regional tsunami meeting.

Ms Eslie Garaebiti, the Director General of the Ministry of Climate Change, Meteorology Geohazards Environment, Energy and Disaster in Vanuatu and Chair of the PTWS Regional Working Group on Tsunami Warning and Mitigation for Pacific Islands Countries and Territories (WG-PICT) in her opening remarks thanked the Chief Guest, the Honorable Minister for his presence and Member States participants. She highlighted the importance of the meeting to PICT Member States in identifying collective solutions to a transboundary threat such as tsunamis.

2. ORGANIZATION OF THE SESSION

2.1 Adoption of Agenda

The Chair Ms Eslie Garaebiti (Vanuatu) presented the agenda and highlighted that it was designed in consultation with the co-chairs and the secretariat before the meeting adopted the agenda.

2.2 Designation of rapporteur

New Caledonia and SPC was designated as the rapporteur and supported by secretariat.

2.3 Conduct of the Session, Timetable and Documentation

The secretariat informed the meeting that the meeting website have all the documents required for the meeting and participants are encouraged to register the on the meeting website if not done.

3. INTRODUCTION TO THE UNESCO/IOC-ICG/PTWS – DRIECTOR

Director of the International Tsunami Information Centre (ITIC) presented on the Global Tsunami Warning System specially the set up and structure of the Pacific Tsunami Warning and Mitigation System.

The Pacific Ocean generates 80% of deadly tsunami and earthquakes and 69 % of deadly tsunamis are generated in the Pacific Ocean.

There was no international warning system before the 1960 deadly basin-wide tsunami from a 9.5 Mw Chile earthquake the killed 2000 in Chile, hundred s in Hawaii, Japan and the Philippines

In 1965 UNESCO/IOC established the Pacific Tsunami Warning System (PTWS) and PTWC (NOAA) became the PTWS Operational Centre. This followed the establishment of the International Tsunami Information Centre (ITIC) hosted by NOAA and supports PTWS.

There are two types of warning centres;

1. Tsunami Service Providers

- Provide INFORMATION/ADVICE on THREAT. Since 214, do not issue tsunami warnings
- Has capability to detect and assess tsunami threats over a large region, covering multiple member states
- Has been accepted by the ICG to disseminate threat assessment to other member states
- Current TSPs are PTWC/NWPTAC/SCSTAC/CATAC

2. National Tsunami Warning Centres

- A centre operated by a Member State that has the authority by law or otherwise to issue tsunami warnings for the coasts of that Member State.
- Ideally, an NTWC should have some technical capacity to aid decisions making.

Outlined below is the set up and functions of the Tsunami Information Centres (TICs) on four major ocean basins;

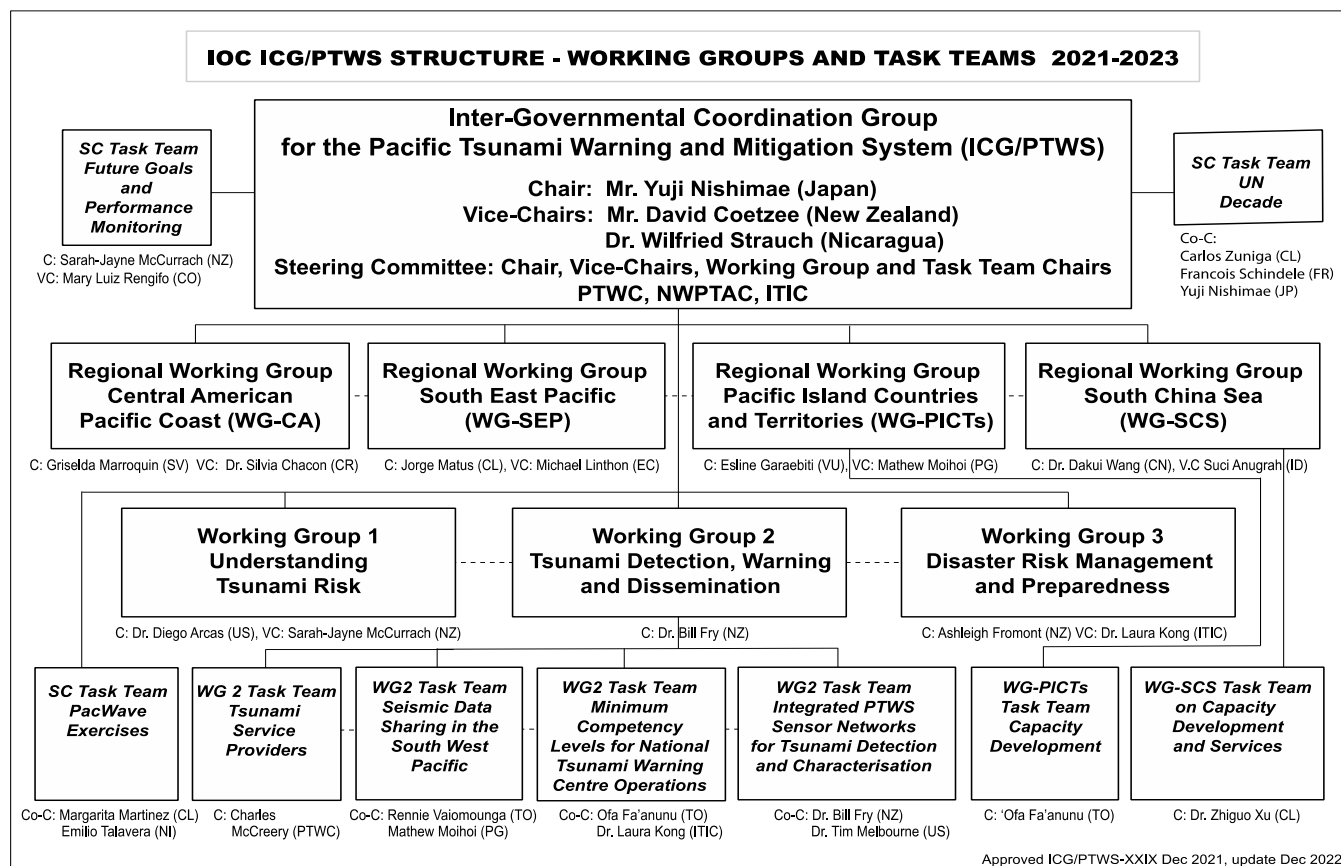
1. ITIC – Pacific Ocean
2. IOTWS – Indian Ocean
3. CITIC – Caribbean Ocean
4. NEAMTWS – North-Eastern Atlantic and Mediterranean Ocean

The IOC mandate and functions (1977) for ITIC covers the following;

- monitor and recommend improvements to PTWS and other tsunami warning system -

- communications, data networks evaluations, dissemination
- assist in establishing regional and national tsunami systems
- serves technology transfer resource; encourage research to improve evaluations; conduct training to build capacity
- serve as an information resource for preparedness/education, develop, publish, distribute materials
- serve as information resource on historical tsunamis- database, post-event survey

The structure of PTWS is shown below;



3-1 WG-PICT Outcomes, focus on PICTs – Chairs Report

The Chair of the WG-PICT Ms. Esline Garaebiti presented on the progress of the recommendations of the WG-PICT from the 29th Session of the IC/PTWS.

The Chair recalled that WG-PICT have newly elected officials since 2021. She highlighted that the WG-PICT Task Team Capacity Development will provide their progress report on Agenda Item 4.2 and the WG 2 Task Team Seismic Data Sharing will provide their progress report on Agenda Item 4.1.

The meeting noted the SPC support and coordination there is extended bathymetry and topography baseline data (LIDAR) acquisition in Vanuatu, Tonga, Palau (UNDP/Japan) and Cook Islands (MFAT).

The progress on bilateral and multilateral support for Tsunami Ready Programme, TEMPP and MHEW through Development Partners and Donors highlighted and will be reported and discussed on Agenda Item 6.

In 2022 WG-PICT officials collaborated with Government of Tonga, The Pacific Community (SPC), ITIC and UNESCO-IOC to coordinate and provide technical advice and support post HTHH. This effort resulted in the publication of technical papers and report on HTHH tsunami inundation field assessment.

The ICG/PTWS to develop a template to conduct Hot Wash/ Debrief after a significant event and it was noted, in coordination with ITIC, a template to be developed and circulated by UNESCO-IOC for review and feedback.

ITIC is now a Member of WG-PICT and represented at the 9th meeting of ICG/PTWS.

The meeting noted the accomplishments of the PacWave22 Regional Exercise that promoted sharing of information between member states. Finally, the meeting noted the need to improve the capacity assessment efforts to review and evaluate capabilities of PICTs tsunami warning and mitigation system with the technical support of ITIC.

Action: In coordination with ITIC, PTWS to develop a template to conduct Hot Wash/ Debrief after a significant event and circulated by UNESCO-IOC for review and feedback.

4. REVIEW OF TSUNAMI DETECTION AND RESPONSE AND TSUNAMI MITIGATION ACTIVITIES IN THE REGION

4-1 Report from WG-2 Task Team Seismic Data Sharing in the Southwest Pacific

The Chair of the WG-2 Task Team Seismic Data Sharing in the Southwest Pacific presented the report of the 8th Meeting of the PTWS WG 2 Seismic Data Sharing in the Southwest Pacific and recalled the 7th ORSNET meeting recommendations outlined below;

- Develop a capacity development programme to strengthen competency and capability of national tsunami warning centres, seismic and volcano observatories including the training and support provided by ITIC, bilateral partners and peer to peer and mentoring exchanges between members
- Develop a strategy to use common instrumentation, equipment and systems including a resourcing plan for financing, equipment standardization and maintenance, and staffing;
- Develop the ORSNET Strategic and Implementation Plan by July 2023
- Expand the objectives of ORSNET to include volcanic hazard
- Enhance the information and dissemination interface to allow operational centers to quickly access and use ORSNET products
- Develop SOP and protocols for the deployment of the 5 mobile seismic stations
- Strengthen the institutional arrangements for early warning including the development of legislation and policies with clearly defined responsibilities between warning centres, observatories, and disaster management
- Undertake a periodic stocktake of the geohazards observatories in the Pacific re: volcano,

- seismic and tsunami as part of strengthening MHEWS. This should include the services that support early warning such as communication, staff competencies and arrangements
- Encourage countries to advocate for the investment in new and emerging technologies such as the Science Monitoring and Reliable Telecommunications (SMART) subsea cable systems and GNSS, to improve early warning
 - Learning from the Hunga Tonga Hunga Ha’apai event, develop guidelines for requesting post event technical assistance to include:
 - the assessment of tsunami warning capability;
 - harmonisation with disaster management protocols for the deployment of goods, personnel and services; and
 - development of National Post-Tsunami Field Survey Guide for PICTs
 - Develop a web-portal for collaboration & communication solution to secure and storing information which ORSNET members countries can access, upload & download data.
 - Explore resources available within ORSNET countries and how assistance can be mobilized within to assist member countries that require assistance
 - Note the need to strengthen volcanic hazard monitoring and consider data sharing of emerging technologies such as infrasound
 - Explore the use of a World Meteorological Organization (WMO) dissemination method through the Global Telecommunication System (GTS) and Common Alert Protocol (CAP) for tsunami alerts Review, exercise and strengthen tsunami warning and response Standard Operating Procedures (SOP), in particular for local earthquakes and tsunamis
 - Encourage ORSNET member states to have the seismic data sharing agreement signed prior to the XXX UNESCO-IOC ICG/PTWS biannual session in Tonga in September 2023.

The meeting noted the reviewed and updated TOR and Membership to be reported at the next ICG/PTWS Session shown on the table below;

TOR	Amendments
1. Advocate seismic data [INCLUDE] and related tsunami monitoring] sharing in the region.	1. Advocate seismic [and related tsunami monitoring] data sharing in the region.
2. Advise South West Pacific countries on data sharing protocols, techniques and technologies.	2. Advise South West Pacific countries on data sharing protocols, techniques and technologies.
3. Work with South West Pacific Countries and [REPLACE donors] to [DELETE ensure] a common data sharing policy.	3. Work with South West Pacific Countries and partners to have a common data sharing policy.
4. Encourage South West Pacific Countries with existing or planned broadband seismograph stations to <ul style="list-style-type: none"> i) join the International Federation of Digital Seismograph Networks (FDSN), ii) use the standards developed by the FDSN for data exchange and 	4. Encourage South West Pacific Countries with existing or planned broadband seismograph stations to <ul style="list-style-type: none"> 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 [ADD and services] provided by FDSN.	iii) take advantage of the data archiving and services provided by FDSN.
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The Task Team is represented by Pacific Island 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 United States.

The Task Team Officials were re-elected namely Mr Rennie Vai'oMounga (Tonga) and Mr Mathew Moihoi (PNG).

The meeting recognized the recommendations the 8th Meeting of WG 2 Task Team Seismic Data Sharing in the Southwest Pacific as outlined below;

- Facilitate the open sharing of seismic data by ORSNET members to harness the benefit of seismic data centres and services like the International Federation of Digital Seismograph Networks (FDSN) and help contribute towards the achievement of the Ocean Decade Goals
- Encourage partners and countries to collaborate and share seismic data in order to improve tsunami early warning
- Endorse the 7th ORSNET Meeting Outcomes
- Submit the revisions to the Terms of Reference of the *ICG/PTWS Working Group 2 Task Team Seismic Data Sharing in the Southwest Pacific* to be considered at the 30th UNESCO-IOC ICG/PTWS
- Convene intersessional virtual meetings of the task team by the co-chair to address the challenge of data sharing
- Convene the 9th ICG/PTWS Working Group 2 Task Team Seismic Data Sharing in the Southwest Pacific after the 30th UNESCO-IOC ICG/PTWS in September 2023.

4.2 Report from WG-PICT Task Team Capacity Development

The Chair of the Task Team Capacity Development presented the progress report of the Task Team Capacity Development of WG-PICT and the recommendations of the meeting of the Team Capacity Development held on 2nd February, 2023.

The meeting was informed on ways forward on the draft Competency Framework for NTWC that included the following;

- Secretariat to provide a feedback matrix to Pilot Member States for feedback on the draft competency framework and to be submitted to WG 2 Task Team Minimum Competency Levels for National Tsunami Warning Centre (NTWC) Operations Staff by **30th April, 2023**.
- The inclusion of Solomon Islands, and Nauru to participate in the piloting of the competency framework.

The Local Source Tsunami Guideline received further considerations from the Task Team Capacity Development meeting that included the following;

- Inclusion of Education and Awareness of Self Evacuation

- Inclusion of the use local/traditional knowledge in the guideline.
- Inclusion of the promotion of the **Mainstreaming of Natural Warning** and local/traditional knowledge in **formal education system**
- Inclusion of the seamless coordination of public warning
- consideration of landslide hazards during evacuation to safe zone
- Consideration of community-based tsunami response
- Consider atolls in the development of the guideline for evacuation

The Task Team Capacity Development meeting requested;

- the WG 2 Task Team Minimum Competency Levels for National Tsunami Warning Centre (NTWC) Operations Staff to consider including Volcano.
- ITIC/IOC support to provide Technical Assistance in developing Terms of Reference for hiring Tsunami Ready national consultants.
- SPC to support the stock-take of topographic and bathymetric data for inundation mapping
- WG-PICT to endorse French Polynesia to join Task Team Capacity Development to assist the Competency Framework
- ITIC to review the existing survey of warning and mitigation capabilities in PICTs in-consideration of recent events and provide feedback of the Task Team
- Secretariat to annually administer online capability survey.

The Task Team Capacity Development recognized the following challenges on the implementation of Tsunami Ready Programme;

- Lack of adequate topographic and bathymetric data for tsunami inundation mapping
- Support needed towards Hazard Mapping
- Need for National Tsunami Ready Training
- Promote data sharing between PICTs
- Volcano generated tsunami and taking into consideration the WMO initiative on Volcano hazard on Marine Services;
- Impact based forecasting;
- Training of Trainers;

5. DISCUSSION ON WORKING GROUP PRIORITIES AND FUTURE ACTION PLAN

5.1 UN Oceans Decade Tsunami Programme

Dr Laura Kong presented on the UN Oceans Decade Tsunami Programme (OTDP). She recalled that the UN Oceans Decade for Sustainable Development was approved in 2017 at the UN General Assembly. The UN General Assembly delegated authority to UNESCO/IOC to galvanize a UN Ocean Decade of Actions on the Science we need for the Ocean we want.

The meeting recalled the UN Ocean Decade provides a 'once-in-a-lifetime' opportunity for UN agencies, Member States and Research Institutions to work together to generate the global ocean science needed to support the sustainable development of our shared ocean.

The UN Ocean Decade works across the UN Agencies and Systems and asks for actions, programmes and projects from countries and institutions to put together a list of actions and encourage others to get involved since we can do much more done than working alone.

The meeting noted the following Decade Challenges:

- Decade Challenge 6 – Increase community resilience to ocean hazard
- Decade Challenge 7 – Expand the global ocean observation system
- Societal outcome 5 - Safe Ocean
- Actions -projects – SMART will strengthen Tsunami Early warning System
Faster detection, better forecasts, faster warning save lives

The meeting noted the UNESCO/IOC Ocean Decade Tsunami Programme was endorsed by the IOC Assembly in June 2021. The components of the Ocean Decade Tsunami Programme includes;

1. Risk Knowledge – data collection and risk assessment
2. Monitoring and Warning – tsunami detection, forecasting and warning
3. Warning, Dissemination and Communication-integration of Tsunami Services within a Multi-Hazard Early Warning Framework
4. Response Capability – To make 100% of communities at risk of tsunami meeting the indicators of IOC Tsunami Ready Programme

At the center of the ODTP is Capacity Development.

The meeting recalled the IOC CL 2825 “Protecting Communities from the World’s Most Dangerous Waves: A Framework for Action under the UN Decade of Ocean Science for Sustainable Development” issued in January 2021. In addition, a scientific paper on “Ocean Observation required to Minimize Uncertainty in Global Tsunami Forecasts, Warning and Emergency Response” was published on a Frontiers Scientific Journal in 2019. This paper provides a scientific overview and outlines where we are and where we could be and summarizes the technical and preparedness requirements.

The meeting noted in a more similar manner, the two efforts to focus on in the ODTP where resilience communities respond to tsunami threats by combining accurate **1) Real-time impact forecast with** improved observations from increased number of sensors that lower uncertainties with **2) Deep community preparedness**. Tsunami disaster impacts are minimized, enabling rapid restoration of critical infrastructure and services.

In addition to making your community tsunami ready and better prepare respond and assess there is also a need to safeguard critical infrastructure and better planning (soft & hard mitigation) including vertical evacuations etc.

The meeting recognized that most deadly tsunami are local tsunamis. The main question is “How do we confirm a tsunami and how long does it take to hit our coastline? Where are our tide gauges? These questions allow us to identify where we need to install more coastal tide gauges including other solutions such as the deep ocean sensors and SMART cables.

The meeting noted a diagram on where we were to where we want to be and how to improve our warning and make them faster. Before 2004, it takes 45 minutes to issue a tsunami bulletin with limited sensors and instruments. Post 2004, there was increased deployment of sensors and

instruments reducing the time to issue a tsunami bulletin to 15 mins. Under the OTDP, the addition of SMART cables and strong motion seismic GNSS can reduce and W-Phase (weak motion) can reduce the to issue tsunami bulletin to below 10 minutes.

Finally, the meeting noted that we need to get down to 5-10mins but we need to install more sensors and GNSS stations and sharing data in real-time to everyone. For example, the Regional GNSS stations in Chile provides data in a few minutes. Therefore, increased SMART Cable and GNSS network will greatly improve detection speed.

5.2 PacWave22 PICT Regional Exercise Report

Mr Anthony Jamelot (New Caledonia) presented on the PacWave22 PICT Regional Exercise covering the following;

- 1) overview and objectives;
- 2) exercise observations and feedback;
- 3) post exercise outcomes; and
- 4) recommendations.

He thanked all participating Member States, the IOC Secretariat, ITIC and PTWC for their participation on the first-ever PICT Regional Exercise Pacific Wave.

He presented the PacWave22 PICT Regional Exercise objectives;

3. Test the HTHH PTWC Interim Procedures and PTWS Products (IOC Circular Letter 2902), and whether the HTHH PTWS products are interpreted by PICT Member States accurately and in a timely manner, and
4. Test regional communication and cooperation between PICT Member States, and the value of information sharing in facilitating national tsunami alert decision-making.

The PacWave22 PICT Regional Exercise objectives were to investigate how information is shared in an unexpected event and how informal communication modes amongst PICTs can be developed along with alert and impact information sharing during the issuance of warning.

PacWave22 PICT Regional Exercise was proposed at the PTWS Steering Committee Meeting in July 2022 and accepted by PTWS Regional Working Group PICT. Below are the subsequent actions undertaken for the PacWave22 PICT Regional Exercise;

- IOC Circular Letter 2908 (issued on 27 September 2022) announcing exercise
- Regional exercise webinar on 2 November 2022
- Regional exercise conducted on 9 November 2022
- Cold Wash meeting on 16 November 2022
- PacWave22-PICT Regional Post-Exercise Evaluation Form - 21 Dec 2022

At this stage, eight countries (44%) responded to the PacWave22-PICT Regional Evaluation survey from the 18 countries that participated. A reminder email was sent on 18th January 2023 and the online evaluation survey is still open. However, the revised deadline of submission of evaluation form is now tentatively by the end of February 2023. PICT are encouraged to submit evaluation forms and to participate in the drafting of the PacWave22 PICT Regional Exercise report.

The meeting noted, a total of 80 people from 18 PICTs participated where 15-member states fully

participated and 3 Member States were observers. 2 Controllers and four independent observers.

The three main communication method;

- Dedicated Email listserv,
- WhatsApp and
- HF Radio

The meeting noted the conduct of the exercise where the controllers simulated 4 PTWC bulletin injects sent by e-mail using a Listserv and notified via WhatsApp group too. All information was immediately shared (no delay or review), 5 mails were not distributed because sent from an unregistered email into Listserv. The HF Radio communication were only tested between a few Member States.

The meeting noted the summary on Member States feedback under Objective 1;

- PTWC products are good as it captures event and scaled forecast heights are useful for issuing warning;
- It was noted that PTWC provides forecast points on main coastal cities, but there are many extended territories that need information. Could PTWC increase ETA location and forecast points?
- The HTHH interim products is simple, easy to use and ETAs are useful.
- For the first message only capture forecast for 3 hrs travel time regions. PTWC to be requested to extend first bulletin to report (forecast and ETA) to 6 hrs. (not 3 hrs.)

The meeting noted member states feedback under Objective 2;

- Tonga, New Caledonia and Fiji agreed on the importance and value of HF Radio and want to continue checking and testing so that it is a regular communication method for Tsunami Information sharing between countries. Member States stated that it would be good to list the frequencies that work in the region. This exercise is realistic exercise since only two officials in office, which is the normal case for a real event.
- Member States prefer WhatsApp – It is simple, good for interaction between others
- Email more detail but also more formal – had a delay

The meeting recognized the reported Post Exercise Outcomes;

The PacWave22 informal WhatsApp group - PacWave22-PICT was utilized during the real-time earthquake, volcano and tsunami events listed below;

- 11/11/2022: Tonga earthquake Mw 7.3
- 22/11/2022: Solomon earthquake Mw 7.0
- 31/01/2023: Vanuatu's East EPI sub-marine volcano event (2 days ago).

The meeting was asked the following questions to generate discussion for the actions and way forward to be proposed and recommended;

1. Do we keep this group alive?
2. Any WG-PICT recommendations?
 - Do we continue to work on developing a real-time cooperation and information sharing among tsunami stakeholders of the region?
 - If yes, do we need to define a dedicated Task Team?
 - Go for Regional PacWave24? Any new objectives?

The Chair thanked Mr Anthony Jamelot for the tremendous effort in coordinating the exercise and asked the meeting for comments and recommendations.

Mr Robert Greenwood (BOM- Australia) agreed with the proposal to keep the WhatsApp Group.

Ms. Celine Barbre (New Caledonia) remarked that WhatsApp group is useful and also the HF Radio WhatsApp Group.

She also asked whether PICT want to have a monthly Radio Tests and HF Radio Test Annual Workplan.

Mr Robert Greenwood (BOM- Australia) seek clarification is there any radio interference from using public frequencies.

The meeting noted that a WhatsApp group was set-up for Member States using HF Radio. Member States identified common radio frequencies through their WhatsApp group chat group conversation.

Dr Laura Kong (ITIC) explained that 28th February 2022 is the deadline for the PacWave22 Summary Report to be completed. The Steering Committee advices the ICG/PTWS Chair on progress or any revision of deadline. WG-PICT need to decide on the deadline for the PacWave22-PICT Regional Post-Exercise Evaluation form submission.

The Chair encouraged PacWave22 participating PICTs to submit their Post-Exercise Evaluation form on 10th February, 2023.

The Chair reiterated that the meeting agreed;

- to maintain both WhatsApp group;
- to Include operation staff in the PICTs WhatsApp Group

Ms. Esline Garaebiti (Vanuatu) presented the meeting with the two questions;

1. Do we continue to work on developing a real-time cooperation and information sharing?
2. Do we need to develop a dedicated Task Team?

Laura Kong (ITIC) stated on the development of Guideline for informal - information sharing, members need to take the time to refine the process and format of sharing and probably a Task Team to look into this development.

Mr Jonathan Tafiariki (Solomon Islands) supported the idea of a guideline for real-time information sharing to broadcast directly to the countries. The proposed Task Team need to also look at a suitable platform for this kind of notification.

Ms. Celine Barbre (New Caledonia) remarked that the WhatsApp Group is really useful and agree with the development of Guideline for informal - information sharing.

The Chairlady highlighted that the meeting noted we have general consensuses to develop a Task Team to develop a Guideline for informal - information sharing.

Anthony Jamelot (French Polynesia) remarked that the guideline is on how to communicate information and also new mode of communication. For example, the email listserv.

Ms. Esline Garaebiti (Vanuatu) stated the Task Team is best placed to do this assessment.

Roy Harris (Nauru) reiterated to keep the PICT WhatsApp group. However, the name of the WhatsApp group may need to be changed as it can be used for future events and exercises.

Ms. Esline Garaebiti (Vanuatu) stated we take note of the comment and Task Team is best placed to do this assessment.

Ms. Litea Biukoto (SPC) highlighted that NDMOs do not need to re-invent the wheel and perhaps conduct a review existing National Disaster Communication Strategies.

Laura Kong (ITIC) propose that the Task Team figure out its name and define its TOR.

Ms. Esline Garaebiti (Vanuatu) highlighted that the meeting noted Member States that volunteered to be members of the second WG-PICT Task Team; Task Team Members are New Zealand, New Caledonia, Tonga, Solomon Islands, Australia, Vanuatu, Fiji and French Polynesia.

Action: The Task team to meet online before the next ICG/PTWS to define the following;

- Terms of Reference (TOR)
- Title for the Task Team.

Mr Ofa Fa'anunu (Tonga) asked is this Task Team only for WhatsApp or for HF Radio as well?

Anthony Jamelot (French Polynesia) responded that it is easier for the Task Team to include all communication mode and look into new ones.

Ms. Celine Barbre (New Caledonia) – the Task Team can provide benchmarks and prioritize information sharing modality for PICTs.

Ms. Adrienne Moseley (Australia-GA) raised that the scope could be too broad and would like the Task Team scope to be limited to WhatsApp only. And separate Task Team for other technologies

The Chairlady reiterated that this is a informal communication Task Team

Mr Saula Mule (Fiji) remarked that the Task Team to provide a Timeline on what needs to be achieved.

Mr Raymond Mohammed (Fiji) remarked that data sharing Task Team to be consolidated into one to look at information sharing.

Ms. Rajjeli Taga (Fiji) highlighted if we have more task team created, a team needs to track their progress and put an urgency on what needs to be done within a timeframe.

Laura Kong (ITIC) remarked that in terms of governance for parametric information sharing it is the function of PTWS WG 2 and a relevant Task Team can be placed here. Based on types of Common Services WG-PICT Task Team can be linked to WG 2 Task Team. Depending on the direction decided by the WG-PICT this development can be done specially to the PICT region and your own system. However, it may have relevance to communication sharing development in other regions and ICGs

Mr Luka Selu (Tuvalu) remarked in agreement with Fiji in putting in place measures for monitoring progress. UNOCHA have quarterly meeting to monitor the Country progress. Progress is determined by Member States and we need define our commitment whether we have enough resources and should we prioritize a selected tsunami activity.

Mr Ofa Fa'anunu (Tonga) remarked that it is very true that Task Team is meant to be shot-lived. He suggested when forming Task Team, we may have to make sure we don't have the same people in different Task Teams. Membership of the Task Team needs to be different. We doing this on volunteer basis and we do it when we can. We mostly rely on UNESCO/IOC to remind us on what we need to do. Perhaps co-chairing is need when putting Task Teams together.

Ms. Eslina Garaebiti (Vanuatu) highlighted that each country has Communication personal they must be included in this Task Team.

Mr Jonathan Tafiariki (Solomon Islands) seek clarification on whether the WG-PICT have the mandate and authority to implement these initiatives.

Secretariat – the WG-PICT is an intergovernmental mechanism that has the mandate of the Member States to provide strategic guidance in strengthening PICTs Tsunami Warning and Mitigation System.

The meeting noted that the IOC set-up is similar to WMO.

The PTWS is set up to address common topical issues on tsunami. The WG-PICT is a regional mechanism to ensure Member States can together to work on tsunami. WG-PICT can develop a Regional Guideline and inform the Global Community through the ICG/PTWS. A Task Team is meant to start and end. The proposed Task Team on Event data sharing has to be specific e.g. design guideline for WhatsApp

Mr Robert Greenwood (BOM- Australia) asked if WG-PICT can create a Task Team. Laura Kong and Secretariat responded yes, you can create your own Task Team under WG-PICT.

Ms. Eslina Garaebiti (Vanuatu) reiterated the Task Team can be established and it will be stated in the meeting recommendations.

She highlighted that Regional PacWave24 Objectives will be not be discussed but will ask the proposed Task Team to discuss it.

Ms. Adrienne Moseley (Australia-GA) asked the meeting to nominate an interim Task Team Chair and nominated Mr Anthony Jamelot to be Chair and this is supported by Solomon Islands and New Zealand.

Vanuatu nominated Solomon Islands to be Vice Chair – Jonathan Tafiariki from Solomon Islands and supported by Australia and Fiji.

Members of the proposed Task Team to include New Caledonia, New Zealand, Solomon Islands, Australia, Fiji, French Polynesia, Tonga and ITIC.

ACTION –Proposed Task Team to undertake the following actions and report progress to inform the WG-PICT report at the ICG/PTWS XXX;

- Develop TOR
- Develop Task Team Name

- Review PacWave 2022 Objectives and propose WG-PICT PacWave24 Objectives

5.3 World Tsunami Awareness Day – 5th November 2023

The Chair asked members of the Task Team to provide feedback on In-country WTAD22 Awareness Day activities.

1. French Polynesia

The meeting noted that 5th November is in the Cyclone season and they found it problematic to conduct WTAD events. They will look at conducting national tsunami awareness on the month of June.

2. New Zealand

The meeting noted that GNS NZ and NEMA conducted awareness programme at a Fenua with the local Marai of a coastal school. They developed and disseminated awareness materials to this target school and community.

Action: Bill Fry to share awareness resources

3. Vanuatu

The meeting noted that the WTAD22 and IDDRR22 in Vanuatu were both commemorated on the same week at Eton Island involving national agencies, NGOs, development partners and community. A tsunami drill was conducted on the 4th of November, 2022 on Eton Village with the with the support of NGOs and the VAN-REDI project.

4. Fiji

The meeting noted that Fiji's WTAD22 programme included awareness competition (Posters and Short-Videos) among students in Fiji and IEC material produced such as T-shirts with the support of UNDP and Government of Japan. Community Awareness through Radio Spots were supported by UNDRR. The WTAD22 event was officiated by the Minister of Land and Mineral Resources, His Excellency the Ambassador of the Government of Japan, Govt stakeholders and selected tsunami at-risk schools.

The Chair highlighted that WTAD22 reports and awareness materials to be sent to the Secretariat to be circulated among Member States.

ACTION – Secretariat to collate all reports and awareness materials for dissemination.

6. PARTNERSHIP AND OPPORTUNITIES

6.1 THE PACIFIC COMMUNITY (SPC)

Ms. Litea Biukoto (SPC) shared a brief update on support provided to the PICTs with partners and national agencies.

She posed a question to the meeting on how many know that UNESCO/IOC is based at SPC. The meeting was reminded on the need to work together to improve utilization of the limited resources we have to strengthen our regional and national warning and mitigation system.

She highlighted the ongoing support provided to ORSNET Member States through SPC has been going well but it is close to the end of the project period.

She reiterated the need for better understanding of what is needed by Member States and resources required to map the direction for raising funds and resource mobilization.

She also reiterated that PICTs need to register interest to implement the UNESCO/IOC Tsunami Ready Programme by email to the Director ITIC and UNESCO/IOC.

She highlighted SPC support for Tsunami Inundation Modelling would be based on Member States request through their Department of Foreign Affairs to officially engage SPC support. She outlined the importance of understanding the building blocks required to conduct a successful tsunami inundation modelling. The baseline data or LIDAR required and the existing LIDAR data that partners have such as;

- LIDAR for Cook Islands acquired through New Zealand MFAT;
- LIDAR for Tuvalu acquired through UNDP project;
- LIDAR for Samoa and Tonga acquired through World Bank PREP project
- French Polynesia about to commence with their LIDAR acquisition.

She reiterated that each Member State need to identify what data is needed to conduct tsunami inundation modelling.

She highlighted the capability assessment of PICTs should identify the needs to direct resources to where it is really needed. The capability assessment should identify the needed capacity for both Early Warning and Disaster Management in each Member State.

She highlighted the efforts of SPC through the PIEMA project in the roll out of accredited Emergency Management training. Finally, she noted the importance of internships where PIEMA worked with individuals on career pathways in close collaboration with their Supervisor.

6.2 Pacific Meteorological Council (Pacific Islands Marine and Ocean Services (PIMOS) Panel)

Mr Ofa Fa'anunu remarked that there is no report from the PIMOS Panel Secretariat. However, he added the Pacific Meteorological Council (PMC) will meet in August 2023.

6.3 UNDRR (UN Office for Disaster Risk Reduction)

Ms. Gabrielle Emery presented on UNDRR initiatives in the region. She highlighted that in March 2022, the UN Secretary General launched the UN Executive Action Plan 2023-2027 on Early Warnings for All. Basically, the global target is, in five years everyone on the planet will be covered by an effective end-to-end MHEWS. Globally, UNDRR and WMO is convening this initiative and in the near future PICTs can come together and define what this means for them.

The meeting recalled the commitment of Pacific Islands Leaders with the Pacific Ministers for DRR Declaration and the Asia Pacific Ministerial Conference on Disaster Risk Reduction (APMCDRR) Co-chairs Statement. This is timely for the Mid-Term review of the Sendai Framework looking at what is working and what is not working at local, national, regional and global level. There will be a meeting on the Sendai Framework Mid-term review later on this year.

Ms. Nazgul Borkosheva presented that the Sendai Framework progress report identified 95 countries reported on the existence of MHEWS from the 120 countries that reported on Sendai Framework Target G. However, SIDS, LDCs and LLDCs reported on the need to strengthen MHEWS. These statistics is used by donors and international communities to identify gaps, the needs and where funding is directed. We encourage PICTs, NDMOs and NTWCs to report on their country progress and highlight their priorities.

Ms. Nazgul Borkosheva highlighted three UNDRR initiatives for strengthening Member States MHEWS;

1. MHEWS Effectiveness Custom Indicators – measuring effectiveness of MHEWS- Do you have a policy and framework and coordination of agencies,
2. Forthcoming MHWES Words into Action – what exists and how it can be strengthened
3. Gender and Disability EWS – Disaster risk knowledge; monitoring detection and forecasting; dissemination and communication; preparedness to respond

Ms. Gabrielle Emery encouraged Member States to participate in the Midterm Review of Sendai Framework to be held this year. She mentioned, in May 2023 a High-Level meeting will be held in New York to attain political commitment of Member States.

She stated that the Sendai Framework focal points are the NDMO Directors.

Mr Luka Selu (Tuvalu) remarked that Tsunami Ready Preparedness and other initiative are national efforts to meet the seven targets of the Sendai Framework. He highlighted the statistics from the review of the Sendai Framework can be used to access exiting support of donors such as the Green Climate Fund for strengthening EWS.

The Secretariat highlighted the effort of PTWS Task Team Future Goals and Performance Monitoring complements the Mid-Term Review of the Sendai Framework.

6.4 Project Proposals /Funding Opportunities

The secretariat presented on IRIS Call for Expression of interest that is due on 16th February, 2022. <https://iris.cdri.world/>

ACTION: The EOI Link to be sent to interested WG-PICT Member States

6.5 Australia Humanitarian Partnership (AHP)

Mr Josefa Lalabalavu presented on Australian Humanitarian Partnership (AHP) Disaster Ready Programme. He highlighted that in January 2022, AHP partners were re-designing the AHP 2.0 programme reviewing PICT context and hazards. It was identified that geohazards was not included in both phases of the programme. He said his presentation is an opportunity to identify the linkage between AHP Disaster Ready Programme and the UNESCO/IOC Tsunami Ready Recognition Programme.

He presented the AHP Disaster Ready Programme is a DFAT funded of AUD 50M targeting five Pacific Island Countries (PNG, Solomon Islands, Vanuatu, Fiji and Timor Leste) in 4.5 years commencing 01 July 2022 to June 2027. The focus of the programme is on disaster preparedness, response and recovery. On response, the Programme has an activation mechanism to respond to disasters (protracted crisis and sudden events). He stated the programme targets five countries with multiple partners so the allocation for each implementing partner is limited.

The meeting noted that in the re-design of AHP 2.0, they identified how the AHP programme can add value to government efforts in addressing disaster preparedness priorities such as the UNESCO/IOC Tsunami Ready Programme.

The programme has three main objectives;

1. Communities (especially vulnerable groups) plan and implement effective, inclusive and integrated disaster preparedness and climate change adaptation activities.

This is focussed on supporting communities.

2. Local civil society actors (NGOs, CBOs, OPDs Churches, informal groups) have improved institutional and technical capacity to fulfil their role in effective disaster preparedness and climate change adaptation

This is focused on supporting CSOs and NGOs.

3. National and Sub-national governments are supported to lead effective and coordinated disaster preparedness, climate change adaptation and response activities.

This is focused on supporting government agencies at national and sub-national level.

He finally encouraged PNG, Solomon Islands, Vanuatu and Tonga to liaise with In-country AHP partners to engage them in the Tsunami Ready Programme.

Dr Rajeli Taga (Fiji) enquired s AHP support towards land development for displaced communities and relocation.

Mr Lalabalavu stated that support can be provided as long as the scope of the activity is within the scope of the three strategic objectives of the AHP programme.

Mr Vaaua Wilson (Samoa) enquired on how can non AHP countries access AHP programme support.

Mr Lalabalavu responded that there is opportunity when disaster response is activated in non-AHP countries. This activation of disaster response programmes and activities allows AHP to embed footprint into new countries and expand the AHP programme. He also encouraged PICTs to register their interest with DFAT post in-country to promote access to AHP Disaster Ready Programme 2.0.

Mr David Hiba (Solomon Islands) remarked the Solomon Islands Meteorological Service (SIMS) worked with World Vision to reach community on the Impact Forecasting Training. SIMS benefited from AHP during COVID-19 where assistance received to continue with community awareness programmes including;

- Pidgin version of Warning Bulletins developed;
- Oxfam supported the video documentary on Tropical Cyclone; and
- Oxfam will support the launch of website that include SMS capability.

The Chair thanked Mr Lalabalavu for his presentation and moved the meeting to the next agenda item.

7. REVIEW OF WG TOR AND ELECTION OF OFFICERS

The meeting re-elected Ms Esline Garaebiti and Mr Mathew Moihoi as Chair and Vice Chair respectively for another intersessional period.

The Meeting updated the Terms of Reference as outlined below:

1. To continually review and evaluate capabilities of, and evaluate capabilities of, and make recommendations for improvements to countries in the Pacific Islands and Territories (PICT) Region for providing end to –end tsunami warning and mitigation services within the multi-hazard framework.
2. To support the involvement and contribution of PICT in the activities of the ICG/PTWS
3. To promote and facilitate the tsunami hazard and risk studies in the PICT region.
4. To facilitate cooperation in the establishment and upgrading of earthquake and tsunami monitoring networks in the region and the interoperability of these systems in accordance with ICG/PTWS requirements.
5. To facilitate training and capacity building in the end-to-end tsunami warning and mitigation system in the region.
6. To encourage the sharing of tsunami information, including but not limited to the free and open exchange of data.
7. To facilitate tsunami awareness in school curricula, and development and dissemination of public educational materials
8. To 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. Support the implementation of Tsunami priorities under the UN Decade.

Members composed of representatives from Pacific Island Countries and Territories (PICTs), Council of Regional Organizations in the Pacific (CROP) Agencies, International Tsunami Information Centre (ITIC) and WMO, Chair and Vice-Chair elected by the members of the Working Group AND endorsed by the ICG.

8. DISCUSSION ON FUTURE WORK OF WORKING GROUP & RECOMMENDATION TO ICG/PTWS-XXX (SEPT 2023)

The meeting was attended by representatives of Australia, Cook Islands, Fiji, French Polynesia, Kiribati, Nauru, New Caledonia, New Zealand, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu as well as the Intergovernmental Oceanographic Commission of UNESCO (UNESCO/IOC), IOC International Tsunami Information Centre (ITIC), United Nations Office for Disaster Risk Reduction (UNDRR), Plan International and the Pacific Community (SPC). The meeting convened experts from national seismic observatories, national tsunami warning centers, national meteorological services, geohazards, tsunami scientists and disaster risk management community.

The meeting noted:

- the complex structure of the PTWS and acknowledged the importance of being involved in the technical working groups and task teams and being able to monitor progress of implementing tsunami warning and preparedness activities
- the Chair's progress report and updates on the tsunami detection, warning & response and mitigation activities in the region by the leads of the WG-2 Task Team Seismic Data Sharing of the South West Pacific and WG-PICT Task Team on Capacity Development.
- the aspirations and target of the UN Ocean Decade for 100% of coastal at-risk communities to be tsunami ready by 2030 and reiterated support of the Tsunami Ready programme
- the report from the Exercise Pacific Wave 2022 - PICT Regional Exercise and the value of non-tradition communication platforms like WhatsApp, HF Radio and listserv for regional NTCW/NDMO tsunami information sharing
- the reports by countries on World Tsunami Awareness Day and National Disaster Awareness Week
- in terms of partnerships and collaboration, opportunities were presented by the Pacific Community, UNDRR and Plan International/Australian Humanitarian Partnership to support countries in progressing early warning and preparedness priorities and interventions
- and commended the efforts of New Caledonia and Vanuatu to install SMART cables between their countries supporting regional tsunami early warning
- and commended the Government of New Zealand in providing open data access to the NZ DART network given its importance in providing timely detection of tsunami and evaluating tsunami risk with more accuracy.

The meeting recommended

- Greater coherence across the efforts (activities, ToR) of the task teams, working groups and its members.
 - The Secretariat develop a matrix to track implementation of recommendations and provide quarterly updates of progress to member states
 - Members update Tsunami National Contact (TNC) and Tsunami Warning Focal Points (TWFP) and National Tsunami Warning Centre (NTWC) to ICG/PTWS (*Secretariat to share details*)
 - members formalise their intent to implement the UNESCO/IOC Tsunami Ready Recognition Programme to ITIC (*ITIC to share details*) and encourage members to incorporate it into national tsunami ready programmes
 - guidelines be developed on the use of non-traditional platforms like WhatsApp to be used for unofficial communication during exercises and tsunami warning operations noting the need for differentiation of official and shared content for operations (*consider the establishment of a task team. Lead – FP supported by SB*)
 - Establishment of a Task Team to be chaired by French Polynesia and Solomon Islands. Members of the Task Team: New Caledonia, New Zealand, Solomon Islands, Australia, Fiji, French Polynesia, Tonga and ITIC. The Task team to meet online before the next ICG/PTWS to define the following;
 - Terms of Reference (TOR)
 - Title for the Task Team.
-
- WG-PICT to keep and re-name the PICT Regional Exercise WhatsApp Group
 - to maintain both WhatsApp group;
 - to Include operation staff in the PICTs WhatsApp Group
-
- the Secretariat facilitate monthly testing of non-traditional communication systems eg HF radio, WhatsApp, satellite phones between countries
 - Request PTWC to extend first bulletin to report (forecast and ETA) to 6 hrs. (not 3 hrs.').
 - that members to continue to explore options in relation to a communications strategy in order to enhance national tsunami warning systems
 - Secretariat facilitate the completion of the tsunami warning and capacity assessment of members within 2023 for inclusion in the next national report to ICG/PTWS, in order to guide interventions of countries and support from partners
 - the submission of the remaining national PacWave2022 evaluation forms by the 10 FEB for inclusion in the PacWave 2022 Summary report
 - the sharing of educational materials between members for tsunami preparedness activities
 - lessons and learnings from HTHH are shared and considered in the revision of standard operating procedures for tsunami warning by PICTs
 - the use of a World Meteorological Organization (WMO) dissemination method through the Global Telecommunication System (GTS) and Common Alert Protocol (CAP) in order to share national tsunami warnings between countries. This will be piloted by Solomon Islands and Tonga

9. NEXT MEETING

The next meeting is scheduled to be held in 2024 after the XXX ICG/PTWS in September, 2023.

10. CLOSURE OF MEETING

The chair thanked all in-person and online participant for their participation and contribution to the meeting and encouraged participants to commit the actions in the recommendations. The meeting was closed with a prayer by Mr Epeli Bola.

ANNEX I

AGENDA



INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
(of UNESCO)

**Ninth Meeting of the PTWS Regional Working Group on Tsunami Warning and Mitigation
for Pacific Island Countries and Territories (WG-PICTs)
Nadi, Fiji 02-03 February 2023**

3RD February, 2023

Length (min)	Session	Start Time	End Time	Topic	Speaker
10	1	9:00	9:10	Welcome and Opening	Fiji
10	2	9:10	9:20	Organization of the session	Chair WG-PICT
	2.1			Adoption of agenda	
	2.2			Designation of rapporteur	
	2.3			Conduct of the Session, Timetable and Documentation	
10	3.0	9:20	9:30	Introduction to the UNESCO/IOC-ICG/PTWS	ITIC
15	3.1	9:30	9:45	WG-PICT Outcomes, focus on PICTs	Chair WG-PICT
				<ul style="list-style-type: none"> - Chairs Report -WG-PICT - PTWC SC Updates 	
30	4	9:45	10:30	Review of Tsunami Detection, Warning and Response and Tsunami Mitigation activities in the region	
	4.1			<ul style="list-style-type: none"> - Report from WG-2 Task Team Seismic Data Sharing in the Southwest Pacific 	Chair, WG 2 Task Team Seismic Data Sharing in the Southwest Pacific
	4.2			<ul style="list-style-type: none"> - Report from WG-PICT Task Team Capacity Development 	Chair, Task Team Capacity Development
30		10:0	10:30	Morning Tea	

30	5	10:30	11:00	Discussion on Working Group priorities and future action plans	Chair, WG-PICT
	5.1			UN Oceans Decade – Tsunami Decade Programme - Ocean Decade - Tsunami Programme - CL 2921	UNESCO/IOC
	5.2			PacWave22 PICT Regional Exercise Report - Action: Revise Deadline for Submission of Evaluation form	Anthony Jamelot Carolina Hincapie
	5.3			World Tsunami Awareness Day – 5th November 2023 • Date for commemoration • Regional Comms Test/ Tabletop/ Drills	Chair, WG-PICT
60	6	11:00	12:00	Partnership and Opportunities	Chair WG-PICT
	6.1			- THE PACIFIC COMMUNITY (SPC)	Litea Biukoto
	6.2			- PACIFIC MET Council (Pacific Islands Marine and Ocean Services (PIMOS) Panel)	Ofa Fa'anunu
	6.3			- UNDRR	Nazgul
	6.4			- Project Proposals /Funding Opportunities - IRIS – EOI is due on 16 th Feb	IOC
	6.5			- Australia Humanitarian Partnership (AHP)	Josefa Lalabalavu
60		12:00	13:00	Lunch	
60	7	13:00	14:00	Review of WG TOR and Election of Officers	Chair WG-PICT
60	8	14:00	15:00	Discussion on Future Work of Working Group & Recommendation to ICG/PTWS-XXX (Sept 2023)	Chair WG-PICT
10	9	15:00	15:10	Next Meeting	Chair WG-PICT
20	10	15:10	15:30	Closure of Meeting	Chair WG-PICT
		15:30		Afternoon Tea	

ANNEX II

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ANNEX III

LIST OF ACRONYMS

CREWS	Climate Risk & Early Warning Systems
CROP	Council of Regional Organizations in the Pacific
DART	Deep-ocean Assessment and Reporting of Tsunamis Project
EU	European Union
FDSN	International Federation of Digital Seismograph Networks
ICG	Intergovernmental Coordination Group (IOC-UNESCO)
ICG/PTWS	Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (IOC-UNESCO)
IOC	Intergovernmental Oceanographic Commission (UNESCO)
IOTIC	Indian Ocean Tsunami Information Centre
ITIC	International Tsunami Information Center
ITU	International Telecommunication Union
JCB	Joint WMO-IOC Collaborative Board
JCOMM	Joint WMO-IOC Technical Commission for Oceanography and Marine Meteorology
JFT	Joint Task Force
LIDAR	Light Detection and Ranging (remote sensing method)
MHEWS	Multi Hazard Early Warning System
NGO	Non-Government Organization
NWPTAC	Northwest Pacific Tsunami Advisory Centre
NZ	New Zealand
NEMA	New Zealand Emergency Management Agency
ORSNET	Oceania Regional Seismic Network
OTGA	Ocean Teacher Global Academy
PacWAVE20	Exercise Pacific Wave 2020
PICT	Pacific Island Countries and Territories
PMC	Pacific Meteorological Council
PIMOS	Pacific Islands Marine and Ocean Services
PNG	Papua New Guinea
PPP	Public-Private Partnership
PRP	Pacific Resilience Partnership
PTWC	Pacific Tsunami Warning Center
PTWS	Pacific Tsunami Warning and Mitigation System (IOC-UNESCO)
RVO	Rabaul Volcano Observatory
SC	Steering Committee
SIDS	Small Island Developing State
SOP	Standard Operating Procedure
SPC	The Pacific Community
TEMPP	Tsunami Evacuation Mapping, Plans and Procedures
TOR	Terms of Reference
TOWS-WG	Working Group on Tsunamis and other Hazard related to Sea-level Warning and Mitigation Systems (IOC-UNESCO)
US	United States
UN	United Nations
WG	Working Group
WMO	World Meteorological Organization
WTAD	World Tsunami Awareness Day (5 November)