



unesco

Intergovernmental
Oceanographic
Commission

Report from the ICG/PTWS

NISHIMAE Yuji
ICG/PTWS Chair

Significant Earthquakes from January 2022 to May 2024 (M>7.0)



unesco

Intergovernmental
Oceanographic
Commission

| NO | Date | time | latitude | longitude | depth | mag | Mag type | Max. tsunami height (m) |
|------|------------|---------------|-------------|--------------|-------|-----|----------|-------------------------|
| 1* | 2022-03-16 | 14:36:30.997Z | 37.71 | 141.58 | 41 | 7.3 | mww | 0.31** |
| 2* | 2022-05-26 | 12:02:21.110Z | -14.91 | -70.29 | 236 | 7.2 | mww | no tsunami |
| 3* | 2022-09-10 | 23:47:00.233Z | -6.29 | 146.50 | 116 | 7.6 | mww | no tsunami |
| 4* | 2022-09-19 | 18:05:08.217Z | 18.46 | -102.96 | 27 | 7.6 | mww | 0.79* |
| 5* | 2022-11-11 | 10:48:46.710Z | -19.29 | -172.15 | 37 | 7.3 | mww | 0.12* |
| 6* | 2023-01-09 | 17:47:35.037Z | -7.06 | 130.01 | 105 | 7.6 | mww | 0.09* |
| 7* | 2023-04-24 | 00:41:55.894Z | -29.96 | -177.84 | 47 | 7.1 | mww | 0.11* |
| 8* | 2023-05-10 | 16:02:00.334Z | -15.63 | -174.49 | 210 | 7.6 | mww | No Tsunami |
| 9* | 2023-05-19 | 02:57:03.172Z | -23.21 | 170.74 | 18 | 7.7 | mww | 0.61* |
| 10* | 2023-05-20 | 01:50:59.158Z | -23.04 | 170.56 | 27 | 7.1 | mww | 0.14* |
| 11* | 2023-06-15 | 18:06:28.572Z | -22.99 | -177.11 | 179 | 7.2 | mww | No Tsunami |
| 12* | 2023-07-16 | 06:48:21.158Z | 54.39 | -160.76 | 25 | 7.2 | mww | 0.15* |
| 13* | 2023-08-28 | 19:55:30.875Z | -6.79 | 116.52 | 500 | 7.1 | mww | No Tsunami |
| 14* | 2023-11-08 | 04:53:50.283Z | -6.42 | 129.55 | 10 | 7.1 | mww | No Tsunami |
| 15* | 2023-12-02 | 14:37:05.568Z | 8.49 | 126.35 | 51 | 7.6 | mww | 0.32* |
| 16* | 2023-12-07 | 12:56:31.002Z | -20.60 | 169.29 | 54 | 7.1 | mww | 0.08* |
| 17** | 2024-01-01 | 07:10:09.692Z | 37° 29.7' N | 137° 16.2' E | 16 | 7.6 | Mjma | 5.8 ** |
| 18* | 2024-04-02 | 23:58:12.171Z | 23.84 | 121.60 | 40 | 7.4 | mww | 1.0* |



| | |
|---|-----------------|
| ● | No Tsunami |
| ● | 0.3 m < H |
| ● | 0.3 m ≤ H < 1 m |
| ● | 1 m ≤ H < 3 m |
| ● | 3 m ≤ H |

(run-up height,
post tsunami survey by the JMA)

*) Earthquake Source Parameters by USGS

***) Earthquake Source Parameters by Japan Meteorological Agency

Max tsunami height by;

*: NGDC/WDS Global Historical
Tsunami Database

**): Japan Meteorological Agency

No.17: 1st January, 2024 Noto Peninsula Earthquake



unesco

Intergovernmental
Oceanographic
Commission

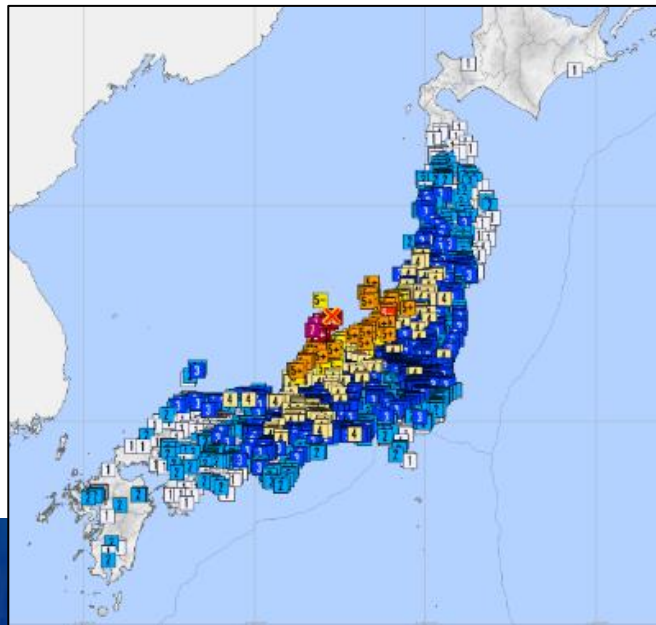
| Origin time (UTC) | Latitude | Longitude | Depth | Magnitude |
|------------------------|-------------|--------------|-------|-----------|
| 1-Jan.-2024 07:10:22.5 | 37° 29.7' N | 137° 16.2' E | 16km | 7.6 |

(source parameters determined by the JMA)

Statistics of damages from the Fire and Disaster Management Agency (as of 18 June, 2024)

- Casualties: 1,582 (Fatalities: 260, Missing: 3)
- Damaged buildings and houses : 125,090 (completely destroyed: 8,418)

Distribution of seismic intensities



Timeline of tsunami message issuance

| Date and Time (UTC) | PTWC | Tsunami warnings and advisories by the JMA |
|----------------------|------------------------------|---|
| 1-January-2024 07:12 | | Tsunami warnings and Tsunami advisories were issued based on JMA's magnitude 7.4. |
| 1-January-2024 07:21 | Tsunami Threat Message #1 | |
| 1-January-2024 07:22 | | Major tsunami warning was issued to the NOTO AREA, ISHIKAWA PREF. based on the moment magnitude 7.6 obtained by the CMT analysis. |
| 1-January-2024 07:56 | Tsunami Threat Message #2 | |
| 1-January-2024 08:57 | Tsunami Threat Message #3 | |
| 1-January-2024 09:49 | Tsunami Threat Message #4 | |
| 1-January-2024 11:07 | Final Tsunami Threat Message | |
| 1-January-2024 11:30 | | Major tsunami warning was downgraded to Tsunami warning. |
| 1-January-2024 16:15 | | All tsunami warnings was downgraded to tsunami advisories. |
| 2-January-2024 01:00 | | All tsunami warnings and advisories were lifted. |

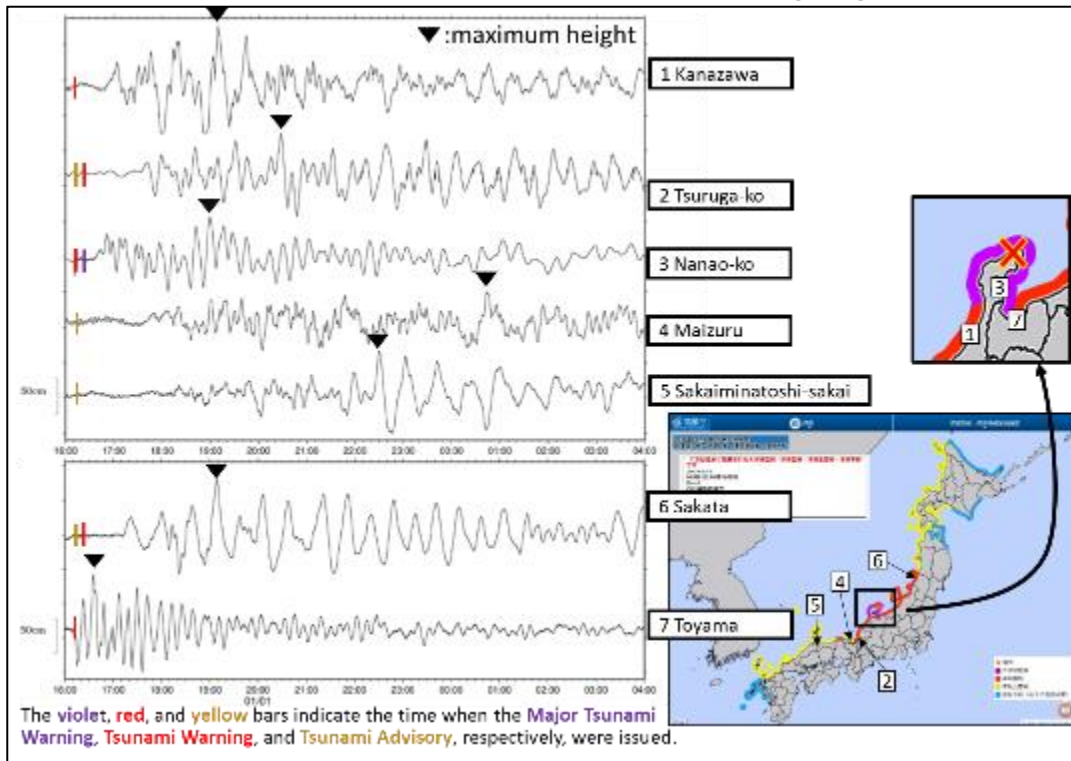
Observed Tsunami Height



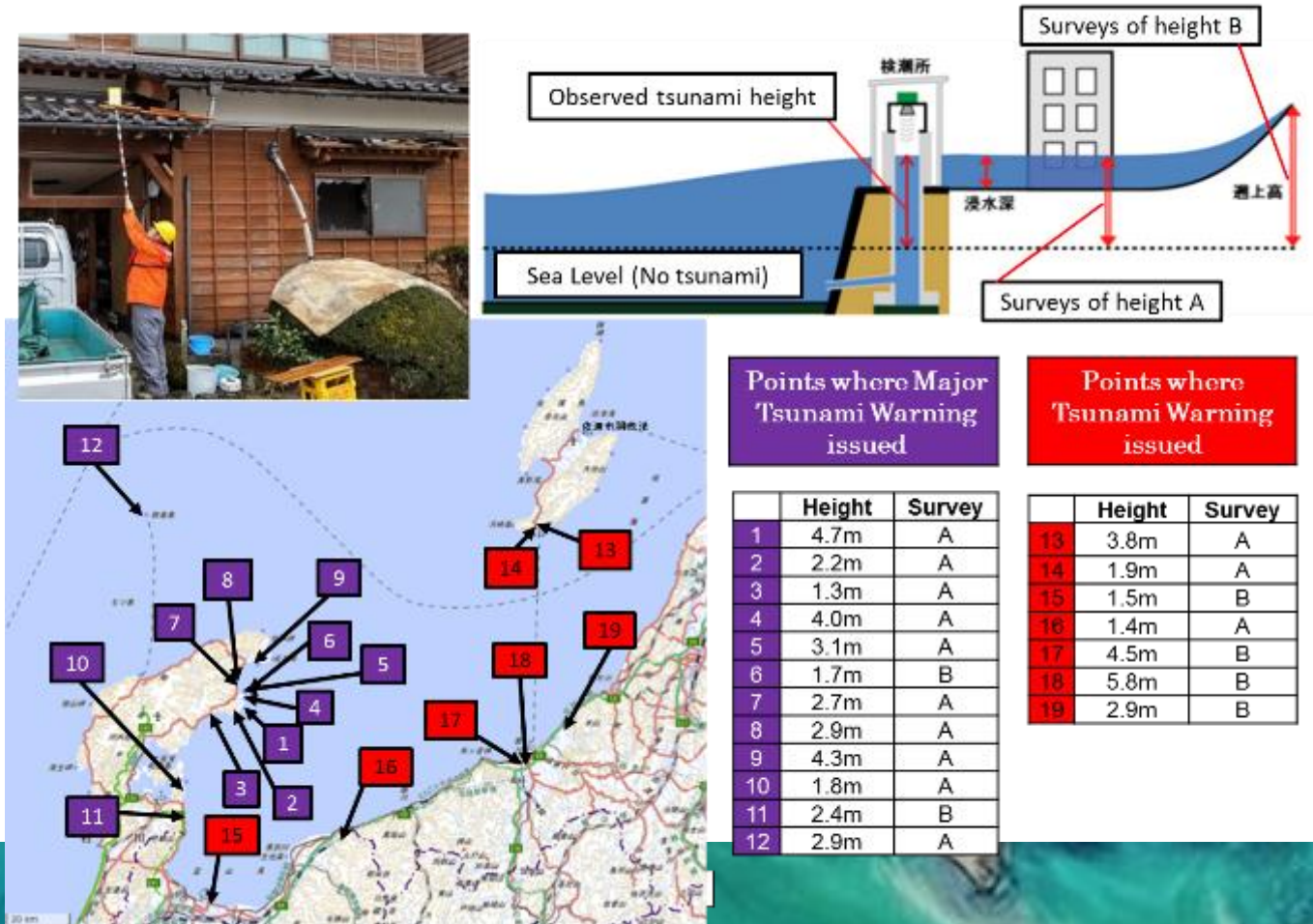
unesco

Intergovernmental
Oceanographic
Commission

Tsunami records observed at coastal tide gauges



Post field surveys of run-up height conducted by the JMA



Related Events to the ICG/PTWS from June 2022 to June 2024



unesco

Intergovernmental
Oceanographic
Commission

| 2022 | September to November | Exercise Pacific Wave 22 |
|------|-----------------------|---|
| | 6 September | ICG/PTWS HTHH Interim Procedures and PTWS Products Informational Webinar |
| 2023 | 9 - 13 January | Tsunami Warning and Emergency Response: Review and Update of Distant, regional, and Local Tsunami Standard Operating Procedures (SOPs) |
| | 30 Jan - 1 Feb | Regional Training on the UNESCO/IOC Tsunami Ready Recognition Programme |
| | 8 - 9 February | Fiji Tsunami Ready Stakeholder Workshop |
| | 6 – 9 March | ICG/PTWS Steering Committee (Paris) |
| | 7 - 18 August | ITIC Training Programme on Tsunami Early Warning Systems and the PTWC Enhanced Products, Tsunami Evacuation Planning and UNESCO IOC Tsunami Ready Recognition Programme |
| | 21 – 25 August | UNESCO-IOC Meeting of Experts on tsunami sources and hazard in southern Peru and northern Chile |
| | 11 September | 8th JOINT ICG/PTWS– IUGG JOINT TSUNAMI COMMISSION TECHNICAL WORKSHOP - Understanding and lessons learned from the tsunami generated by the Hunga Tonga-Hunga Ha'apai volcano eruption on 15 January 2022 for development of Tsunami Warning and Mitigation System for tsunamis generated by volcanoes and other non-seismic sources |
| | 12 – 15 September | ICG/PTWS-XXX Session |

Related Events to the ICG/PTWS from June 2022 to June 2024 (continued)



unesco

Intergovernmental
Oceanographic
Commission

| 2024 | 26 March | ICG/PTWS Steering Committee (online) |
|------|---------------|--|
| | 12 – 15 March | Joint Review of Tonga Tsunami Warning and Response Standard Operation Procedure (SOP) Workshop |
| | 13 – 14 May | Pacific Island Country and Territories (PICT) Tsunami Ready Workshops |
| | 14 – 17 May | 2024 Expert Meeting on Tsunami Sources, Hazards, Risk and Uncertainties Associated with Vanuatu, San Cristobal and New Britain Subduction Zones |
| | 22 May | Online training for seismic and tsunami warning operators in the South China Sea region on theories, applications and operations of tsunami numerical models |



The Thirtieth Session of the ICG/PTWS (ICG/PTWS-XXX)



unesco

Intergovernmental
Oceanographic
Commission

- Venue: Nuku'alofa in Kingdom of Tonga
- Date: 12th - 15th September, 2023
- 62 delegates from 17 Member States (Australia, Canada, Chile, China, Ecuador, Fiji, France, Indonesia, Japan, Malaysia, New Zealand, Nicaragua, Republic of Korea, Solomon Islands, Tokelau, Tonga, and United States of America)
- 11th September, 2023: 8th JOINT ICG/PTWS– IUGG JOINT TSUNAMI COMMISSION TECHNICAL WORKSHOP





unesco

Intergovernmental
Oceanographic
Commission

Recommendations adopted in the ICG/PTWS-XXX

- Recommendation ICG/PTWS-XXX.1: ICG/PTWS Governance
- Recommendation ICG/PTWS-XXX.2: Understanding Tsunami Risk
- Recommendation ICG/PTWS-XXX.3: Tsunami Detection, Warning and Dissemination
- Recommendation ICG/PTWS-XXX.4: TSP Messages for the Maritime Community
- Recommendation ICG/PTWS-XXX.5: Disaster Risk Management and Preparedness
- Recommendation ICG/PTWS-XXX.6: Start of Operation of Central America Tsunami Advisory Center (CATAC)
- Recommendation ICG/PTWS-XXX.7: Minimum competency levels for National Tsunami Warning Center (NTWC) operations staff
- Recommendation ICG/PTWS-XXX.8: UN Decade of Ocean Science for Sustainable Development (2021 – 2030)

ICG/PTWS Organizational Structure (Recommendation ICG/PTWS-XXX.1)



unesco
Intergovernmental
Oceanographic
Commission

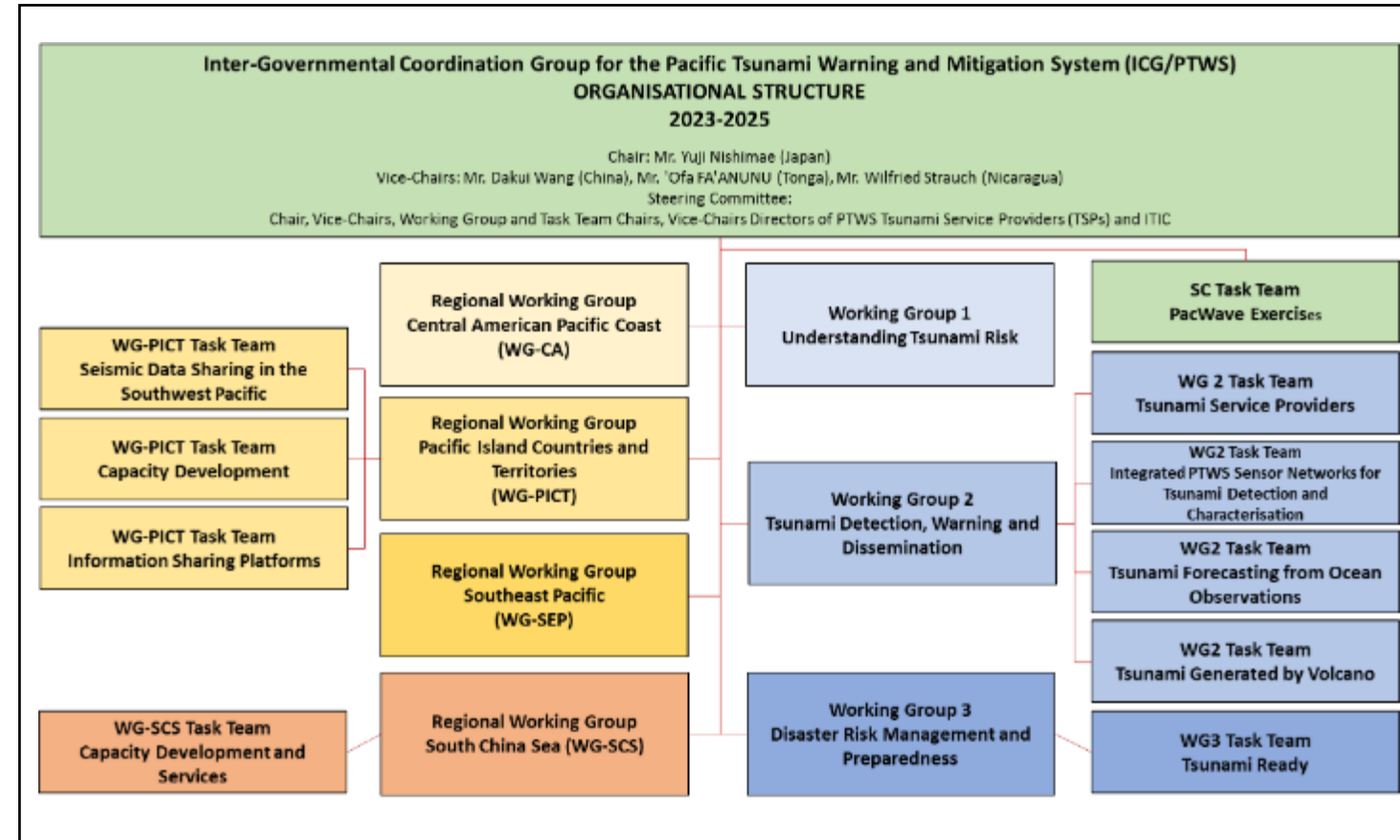
Chair: Mr. Yuji Nishimae (Japan)
Vice-Chairs: Dr. Dakui Wang (China)
Dr. Wilfreid Strauch (Nicaragua)
Mr. 'Ofa Fa'anunu (Tonga)

Dissolved Task Teams;

- Task Team on UN Ocean Decade,
- Task Team on Future Goals and Performance Monitoring,
- WG2 Task Team on the Minimum Competency Levels for National Tsunami Warning Centre (NTWC) Operations Staff

Established Task Teams;

- WG2 Task Team on Tsunami Generated by Volcanoes (TGV)
- WG2 Task Team on Forecasting from Ocean Observations (TT-FOO)
- WG3 Task Team on Tsunami Ready
- Pacific Island Countries and Territories Working Group Task Team on Information Sharing Platforms

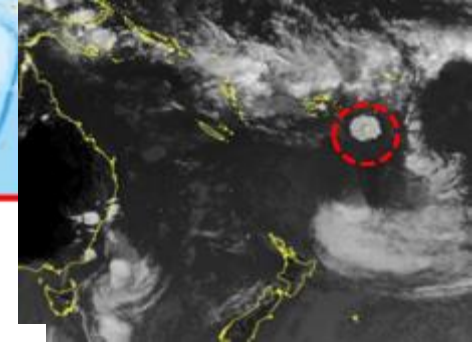



15 Jan 2022 – Hunga Tonga – Hunga Ha’apai Event

- **Unprecedented – massive eruption and tsunami** Tsunami waves were observed at not only near tide gauges but also distant tide gauges.- Larger than 1 meter in California of USA, Chile, Japan.
- 1. **3 PTWS Briefs (20 Jan, 3 Feb, 10 Feb 2022)**
- 2. **Post-Event Assessment (PAE)**
- 3. **ITIC expert/facilitate support to Tonga (ensure best technical effort with minimum duplication), 1st call 25 Jan => April (30+ virtual meetings, IOC hosted) – (Situational EQ/Volcano activity, HTHH interim procedures, equipment install / repair and post-tsunami survey (NZ, AU, US, SPC)**
- 4. **PTWS HTHH Interim Products and Procedures**
- 5. **Post-Tsunami Field Survey (runup, inundations)**
- 6. **Hunga Tonga Hunga Ha’apai’ Volcano Permanent Monitoring and Warning Procedures of the Pacific Tsunami Warning Center was published (IOC CL-2984 dated on 19 January, 2024) as IOC TS 188.**



Location of Hunga-Tonga Hunga-Ha'apai volcano



Intergovernmental Oceanographic Commission
Technical Series 188

unesco
Intergovernmental
Oceanographic
Commission

Hunga Tonga – Hunga Ha’apai
Volcanic Tsunami Hazard
Response
PTWC Procedures and PTWS Products
User’s Guide (version 1.6)

UNESCO



Establishment of Task Teams for Tsunami Forecasting under the WG2 (Recommendation ICG/PTWS-XXX.1 and ICG/PTWS-XXX.3)



unesco

Intergovernmental
Oceanographic
Commission

The first objective of the Ocean Decade Tsunami Programme is to develop the warning systems' capability to issue actionable and timely tsunami warnings for tsunamis from all identified sources to 100 percent of coasts at risk.

WG2 Task Team on Tsunami Generated by Volcanoes (TGV)

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 centres 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.
6. To develop guidelines on SOPs to monitor, detect, warn, and prepare for any volcano process that could induce tsunami waves.

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.

WG2 Task Team on Forecasting from Ocean Observations (TT-FOO)

Terms of Reference

WG2 Task Team: Tsunami Forecasting from Ocean Observations (TT-FOO)

1. Compare and document existing strategies for source-independent tsunami early warning and quantify and document their operational usefulness. Efforts will include consideration of both existing and emerging ocean observations technologies and techniques.
2. Connect 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. Align efforts with the Task Team Integrated PTWS Sensor Networks to ensure that existing and likely future monitoring systems support TT recommendations.

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

Expansion of the ICG/PTWS Earthquake Source Zone (Recommendation ICG/PTWS-XXX.3)



unesco

Intergovernmental
Oceanographic
Commission

Decision in the ICG/PTWS-XXX session

Decides to expand the PTWS Earthquake Source Zone to include an area from 63° to 52° south latitude and from 72° to 18° west longitude to include the Scotia Arc and its adjacent seismic zones.

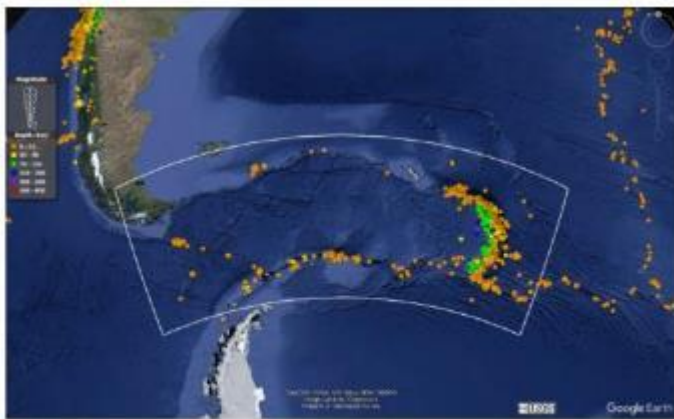


Figure 5. Seismicity in the southern Atlantic Ocean including the Scotia Arc Subduction Zone. The polygon surrounding this seismicity, extending from 63° to 52° South latitude and from 72° to 18° West longitude, is the proposed extension of the PTWS Earthquake Source Zone.

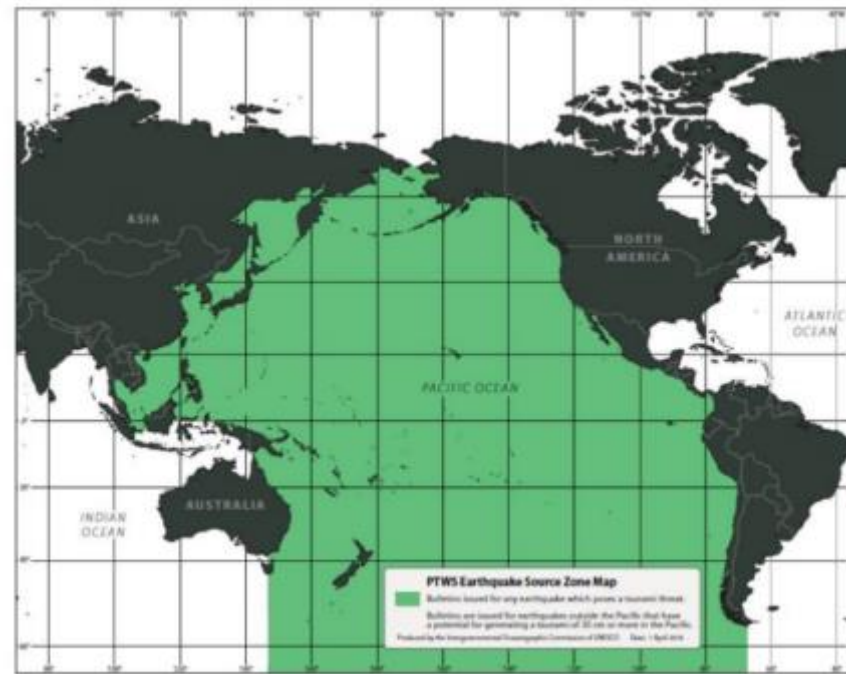


Figure 4. The current PTWS Earthquake Source Zone is indicated in green. The transparent green box at the lower right indicates the approximate proposed addition to the PTWS ESZ that would include the seismic zone associated with the Scotia Arc and South Sandwich Islands.

TSP Messages for the Maritime Community (Recommendation ICG/PTWS-XXX.4)



unesco

Intergovernmental
Oceanographic
Commission

IOC Decision A-32/3.4.1
Warning and Mitigation
Systems for Ocean
Hazards

- **Instructs** the regional Intergovernmental Coordination Groups (ICGs) to;
- TSPs in collaboration with NAVAREA operators of the International Hydrographic Organization (IHO) test the tsunami maritime safety products in 2023/24, with a view to operationally implementing them in 2024-2025

Recommendation
ICG/PTWS-XXX.4

- **Recommends** the PTWC to finalize necessary preparations to provide special tsunami maritime safety products specifically for ships for all NAVAREA Coordinators in the Pacific and in the Southwest Atlantic (e.g. NAVAREAs VI, X, XI, XII, XIII, XIV, XV, and XVI) to transmit to the NTWCs to be forwarded to the NAVAREA Coordinators of their countries, or upon their request directly to the NAVAREA Coordinators in the absence of a NTWC,

IOC/TOWS-WG-XVII
DECISIONS AND
RECOMMENDATIONS

- **The Group recommended to Intergovernmental Coordination Groups (ICGs):**
- TSPs identified for each ICG to trial dissemination of maritime bulletins to respective NAVAREA operators in their Area of Service (AoS) in the second half of 2024 for full operational implementation in 2025;



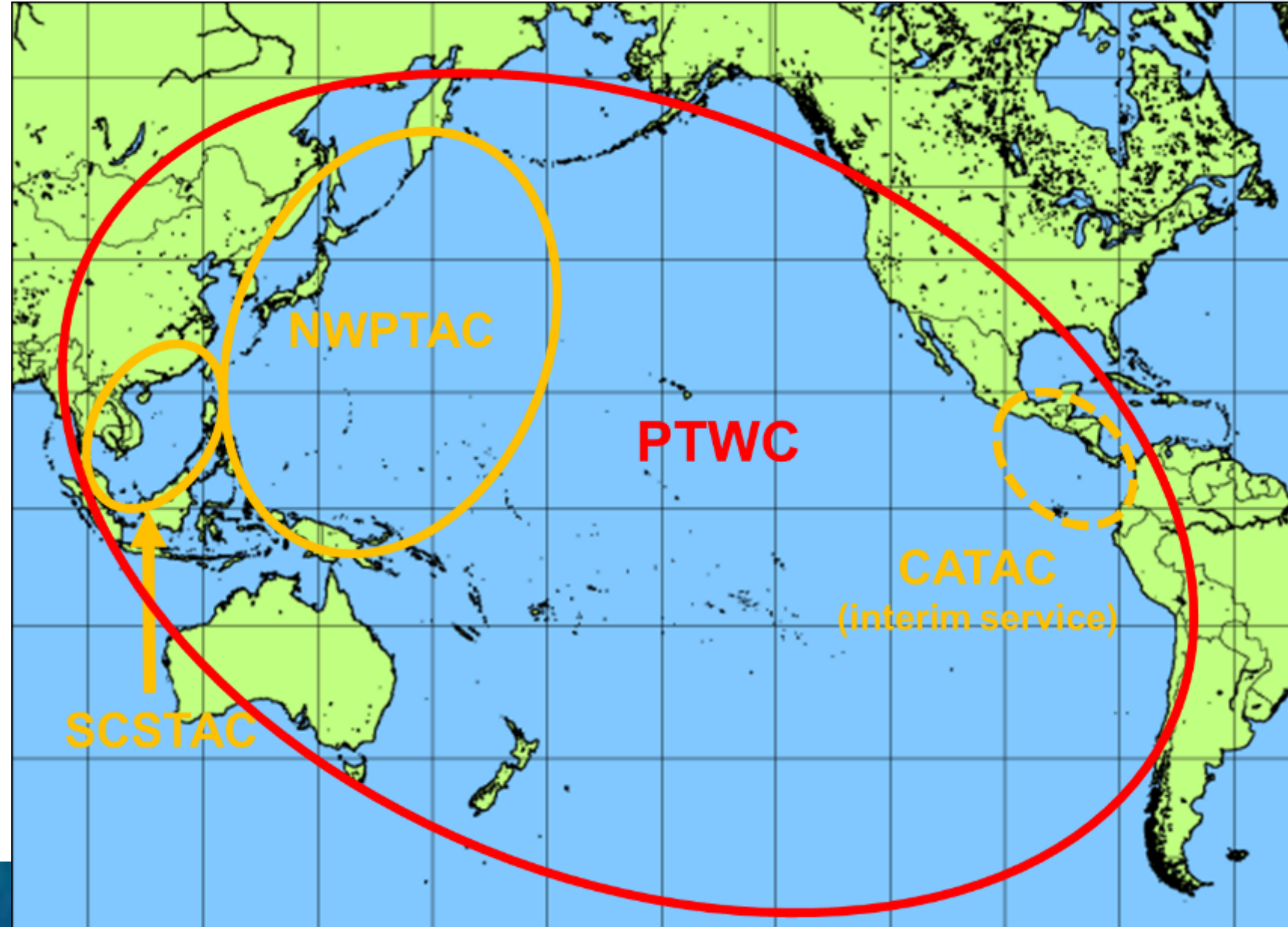
Trial Transmission of a dummy message to the NAVAREA coordinators in the PacWave24

Tsunami Service Providers in the Pacific



Four Tsunami Service Providers

- **Pacific Tsunami Warning Center (PTWC)** operated by USA
- **Northwest Pacific Tsunami Advisory Center (NWPTAC)** operated by Japan
- **South China Sea Tsunami Advisory Center (SCSTAC)** operated by China
- **Central America Tsunami Warning Center (CATAC)** operated by Nicaragua
- The CATAC is fully operated (24hours/7days) on the interim service.



Start of Operation of Central America Tsunami Advisory Center (CATAC) (Recommendation ICG/PTWS-XXX.6)



unesco

Intergovernmental
Oceanographic
Commission

➤ Recommendation ICG/PTWS-XXX-6

- **Decides** 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



Minimum competency levels for National Tsunami Warning Centre (NTWC) operations staff (Recommendation ICG/PTWS-XXX.7)



unesco

Intergovernmental
Oceanographic
Commission

Recommends the approval of the PTWS National Tsunami Warning Centre competencies, framework, and training requirements, as described in IOC ICG/PTWS-XXX Working Document (Agenda 4.5) Report from the Task Team on the Minimum Competency Levels for National Tsunami Warning Centre (NTWC) Operational Staff.

➤ **Framework -2 Tiers (1. TSP Products, 2. TSP + National analyses)**

- **NTWC Staffing Role 1: Tsunami incident controller (or manager)**

This tier 1 role requires a comprehensive understanding of tsunami causes and impacts, expert interpretation of TSP products, and competent performance of all key national warning procedures.

- **NTWC Staffing Role 2: Tsunami incident assistant**

This tier 2 role requires a basic understanding of tsunami causes and impacts, simple interpretation of TSP products, and ability to perform some tasks of the national warning procedures.

➤ **Minimum Competencies**

- Core science knowledge
- Advanced science knowledge
- Core operational competency
- Advance agency competency

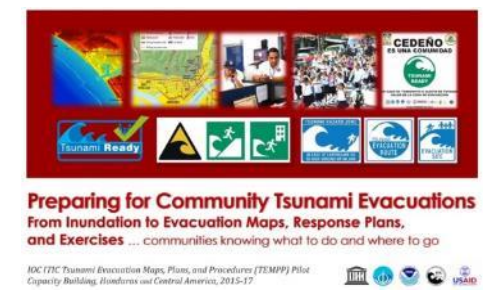
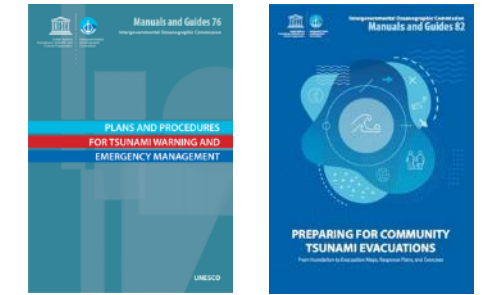
➤ **Training Requirements**

An NTWC Competency Programme should

- Include a NTWC Staffing Profile, including positions, qualifications, and capabilities,
- Establish standardized training modules, covering science, operational, and agency competencies, that have measureable assessments, performance criteria, and/or tests.

Existing

- PTWS Country Schema – Australia, Chile, India, NZ, USA, other
- ITIC Standard Training based on IOC Manual and Guides
 - TWC / TER SOP (MG 76); Evac Planning (TEMPP, MG 82)
 - 145+ trainings since 2005
- ITIC Ocean Teacher Global Academy (OTGA) – online/hybrid TEWS, SOPs, Decision Support Tools/Software, TEMPP
- PTWC Products training videos



ITIC - NTWC Competency Training Pilot (2024-25)



Requirements - Content and Training Modality (Online, Hybrid, In-person)

1. Knowledge – do self-paced, hybrid
2. Operational SOP – do self-paced, hybrid, in-person
3. Real-life Experience – do by attachment to Advanced Centre
4. National Qualification / Certification – by country. IOC / ITIC does not provide certification for tsunami training and cannot certify staff

ITIC pilot for PTWS

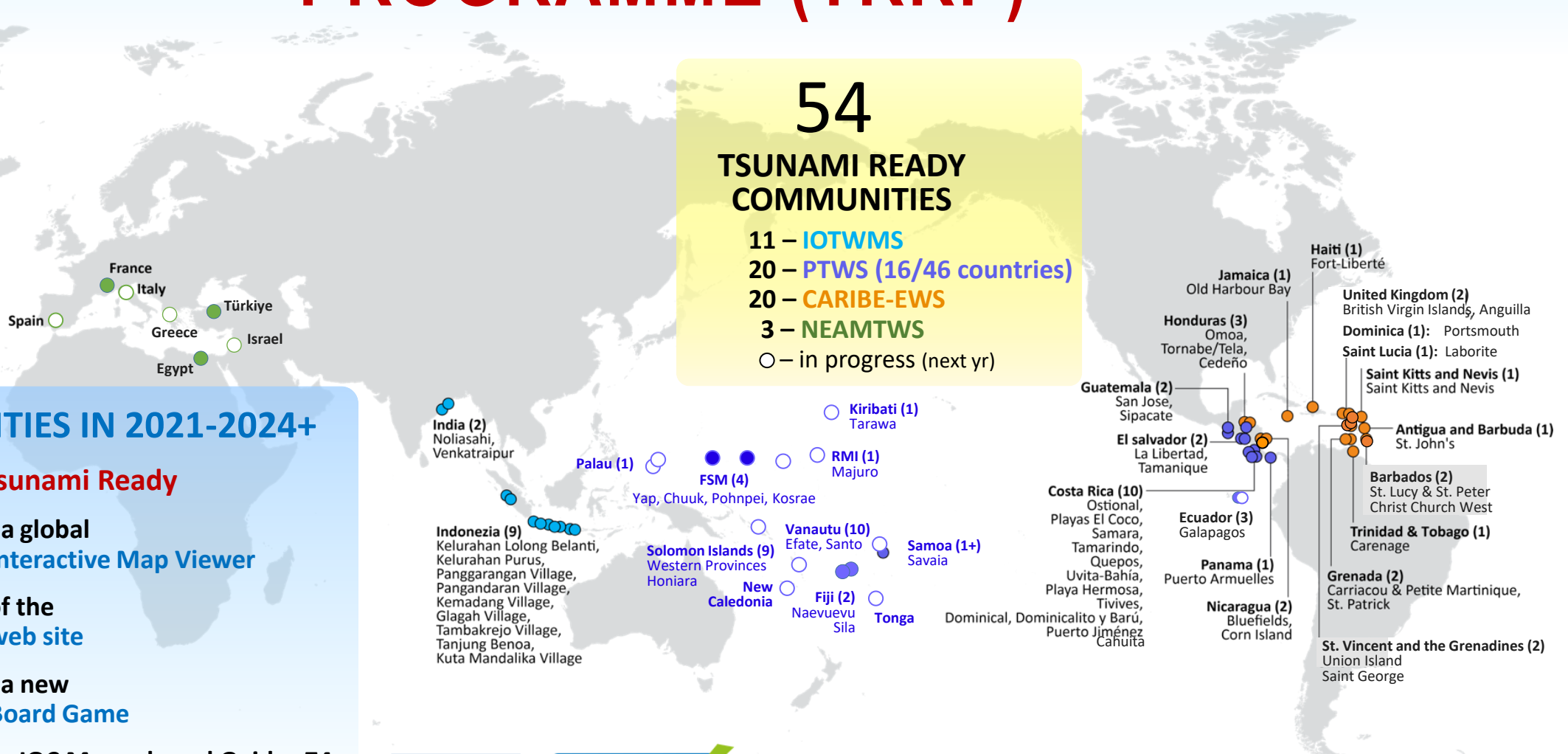
- Pilot with Pacific Island Countries
- Concept after US NWS Weather Pacific Training Desk (small cohort group staying 3 weeks - 1 month, incl attachment, measured competency)
- Course under IOC Ocean Teacher Global Academy (OTGA) - Pre-requisites must be passed to attend in-person (PTWC, with hands-on in simulated TWC)
- Use Existing materials
 - PTWS Country Schema – Australia, NZ, USA, Chile, India
 - IOC TWC / TER SOP (MG 76); Evac Planning (TEMPP, MG 82)
- To Develop Training Course with Subject Matter Experts (consult PTWS WG 2, PICT)
- Pilot 1 small cohort end 2025. Report back to ICG/PTWS



UNESCO/IOC TSUNAMI READY RECOGNITION PROGRAMME (TRRP)

54
TSUNAMI READY COMMUNITIES
 11 – IOTWMS
 20 – PTWS (16/46 countries)
 20 – CARIBE-EWS
 3 – NEAMTWS
 ○ – in progress (next yr)

- ### MAJOR ACTIVITIES IN 2021-2024+
- **Ramp-up for Tsunami Ready**
 - **Development of a global Tsunami Ready Interactive Map Viewer**
 - **Hosting by ITIC of the Tsunami Ready web site**
 - **Development of a new Tsunami Ready Board Game**
 - **Publication of the IOC Manuals and Guides 74 «Standard Guidelines for Tsunami Ready Recognition Programme»**



After Frolov, 2023; ITIC, June 2024

IOC/UNESCO Tsunami Ready Recognition Program (Recommendation ICG/PTWS-XXX.1 and ICG/PTWS-XXX.5)



The second objective of the Ocean Decade Tsunami Programme is that 100 percent of communities at risk to be prepared and resilient to tsunamis by 2030 through efforts like the IOC-UNESCO Tsunami Ready Recognition Programme.

TO INITIATE THE IMPLEMENTATION OF TSUNAMI READY, CONTACT TSUNAMI INFORMATION CENTERS (ITIC):

- CARIBBEAN AND ADJACENT REGIONS TIC (CTIC) ctic@unesco.org
- INDIAN OCEAN TIC (IOTIC) iotic@unesco.org
- PACIFIC OCEAN INTERNATIONAL TIC (ITIC) itic@unesco.org
- NORTH-EASTERN ATLANTIC, MEDITERRANEAN AND CONNECTED SEAS (NEAMTIC) neamtic@unesco.org

SCAN *Here*  TSUNAMIREADY.ORG

UNESCO/IOC TSUNAMI READY RECOGNITION

The Tsunami Ready Recognition Programme (TRRP) of UNESCO/IOC is an international community-based initiative designed to mitigate tsunami-related risks.

It is a voluntary, performance-based community recognition programme that promotes an understanding of the concept of readiness as an active collaboration among national and local warning and emergency management agencies, and government authorities, scientists, community leaders and the public.

The main objective is to improve coastal community preparedness for tsunamis and to minimize the loss of life, livelihoods and property.

Coastal communities seeking the UNESCO/IOC Tsunami Ready Recognition, should follow the guidelines and meet all 12 indicators.

The recognition is renewable every four years.

To effectively implement the Tsunami Ready Recognition Programme, refer to:

- IOC Manuals and Guide 74 [Standard Guidelines for the Tsunami Ready Recognition Programme](#)
- IOC Manuals and Guide 82, [Preparing for community tsunami evacuations: from inundation to evacuation maps, response plans and exercises](#)

UNESCO/IOC TSUNAMI READY RECOGNITION PROGRAMME

Building resilient coastal communities against tsunamis

Tsunami Ready

Terms of Reference

WG3 Task Team: Tsunami Ready

This expert Task Team will facilitate and coordinate efforts relating to the Tsunami Ready Recognition Programme and within the ICG/PTWS, in support of UN Ocean Decade Goals.

- Develop formal PTWS guidelines following the 'Tsunami Ready Equivalency Approach' for recognition of tsunami readiness of communities not implementing the IOC Tsunami Ready Recognition Programme.
- Monitor Tsunami Ready campaigns and outcomes, and report results,
- Ensure the advocacy for Tsunami Ready is aligned with other PTWS and IOC documents,
- Advise on the Tsunami Ready workflow as it pertains to the PTWS and regions,
- Support ITIC in its efforts to facilitate the implementation of Tsunami Ready in PTWS Member States,
- 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,
- Help to identify sources of funding in support of the implementation of Tsunami Ready,
- Report progress on encouraging the standard text in the UNESCO-IOC Tsunami Ready signage for vertical evacuation, such as "Go to the designated building for vertical evacuation",
- Report progress toward informing the public on the validity of the recognition, to be indicated on Tsunami Ready signage and on the certificate under the UNESCO-IOC Tsunami Ready logo.

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.

Exercise Pacific Wave 22

Informational
video



- September to November, 2022 to support IDDRR and WTAD
- Regional Exercise and National Exercise
Participants: 19 countries + 3 territories
Implemented Regional Exercise: South East Regional Exercise and PICTS Regional Exercise
- Live Communications Test from the PTWS TSPs conducted at 0000 UTC on 13 October

SEP-WG



PacWave22
Two phase exercise
Oct. 20 and 27

- Role Play as PTWC
- Generate PTWC messages using TsuCAT tool

<https://gt-atps.info/>




PacWave22
PICTS Regional Exercise
9 November 2022
18 pacific island countries and territories conducted a 2-hour live regional exercise

- Live 2-hour, HTHH scenario from 15 January
- Info sharing (warning levels, observations) by Email listserv, WhatsApp, HF radio



Exercise Pacific Wave 24

- September to November, 2024 to support IDDRR (13 Oct. 2024) and WTAD (5 Nov. 2024)
- Regional Exercise and National Exercise
- Live Communications Test from the PTWS TSPs on 5 November
- Trial Transmission of the dummy message from PTWC to the NAVAREA coordinators through the NTWC on 5 November.
- IOC-CL 2999 dated 28 May 2024 has been issued with the Exercise Manual (IOC TS-191) as an attachment.



UNESCO
Intergovernmental
Oceanographic
Commission

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION
COMMISSION Océanographique Intergouvernementale
COMISIÓN OCEANOGRÁFICA INTERGUBERNAMENTAL
МЕЖПРАВИТЕЛЬСТВЕННАЯ ОКЕАНОГРАФИЧЕСКАЯ КОМИССИЯ
اللجنة الدولية الحكومية لعلوم المحيطات
政府间海洋学委员会

UNESCO - 7 Place de Fontenay - 75352 Paris Cedex 07 SP, France
<http://ioc.unesco.org> - contact phone: +33 (0)1 45 68 03 18
E-mail: ioc.secretariat@unesco.org

IOC Circular Letter No 2999
(Available in English only)

IOC/VH/ON/ah
28 May 2024

To : ICG/PTWS Tsunami Warning Focal Points (TWFP)
ICG/PTWS Tsunami National Contacts (TNC)
ICG/PTWS Chair and Vice-Chairs

C.c. : Official National Coordinating Bodies for liaison with IOC (IOC Member States)
Permanent Delegates/Observer Missions to UNESCO, and
National Commissions for UNESCO of IOC Member States
Directors of UNESCO and IOC Regional Offices in the Asia/Pacific Region
Regional Organizations cooperating with UNESCO-IOC
Director, Pacific Tsunami Warning Center (PTWC)
Director, Northwest Pacific Tsunami Advisory Center (NWPAC)
Director, International Tsunami Information Center (ITIC)
Head, Tsunami Warning Division, China National Marine Environmental
Forecasting Center and South China Sea Tsunami Advisory Center (SCSTAC)
Coordinator, Central America Tsunami Advisory Center (CATAC)


Subject: Pacific Tsunami Warning and Mitigation System (PTWS) Exercise Pacific Wave 2024 (PacWave24), September–November 2024, including live Tsunami Service Provider Communication Test on 5 November 2024 at 0000 UTC

At its 30th session ([ICG/PTWS-XXX](#), Nuku'alofa, Kingdom of Tonga, 11–15 September 2023), the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System approved the conduct of Exercise Pacific Wave 2024 ([PacWave24](#)) in the months of September through November 2024 to support [International Disaster Risk Reduction Day](#) (13 October) and [World Tsunami Awareness Day](#) (5 November).

PacWave24 will test PTWS Tsunami Service Provider (TSP), and country operational plans and procedures to respond to a destructive tsunami. PacWave24 is the eleventh in a series of PacWave exercises that have been conducted biennially since 2006. The Exercise Manual ([IOC Technical Series 191](#)) is attached. For PacWave24, all exercise information, including resources, manual

Intergovernmental Oceanographic Commission
Technical Series

191



unesco
Intergovernmental
Oceanographic
Commission

EXERCISE PACIFIC WAVE 2024
September–November 2024

Volume 1

Exercise Manual

UNESCO

Future Events for the ICG/PTWS

➤ **Ocean Teacher Global Academy - UNESCO-IOC Tsunami Courses**

- Tsunami Awareness – now available
- Tsunami Ready Introduction – July 2024



➤ **ITIC Training Programme on Tsunami Early Warning Systems and the PTWC Enhanced Products, Tsunami Evacuation Planning and Tsunami Ready Programme**

- Venue: Valparaiso, Chile
- Date: 19-30 August 2024

➤ **ICG/PTWS Steering Committee Meeting**

- Venue: Hawaii, USA
- Date: 16-20 September 2024

➤ **ICG/PTWS-XXXI Session**

- Venue: Beijing, China
- Date: April, 2025



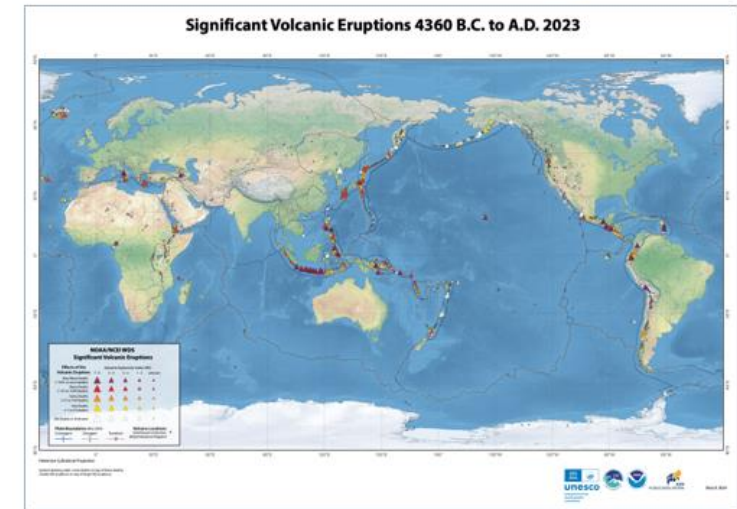
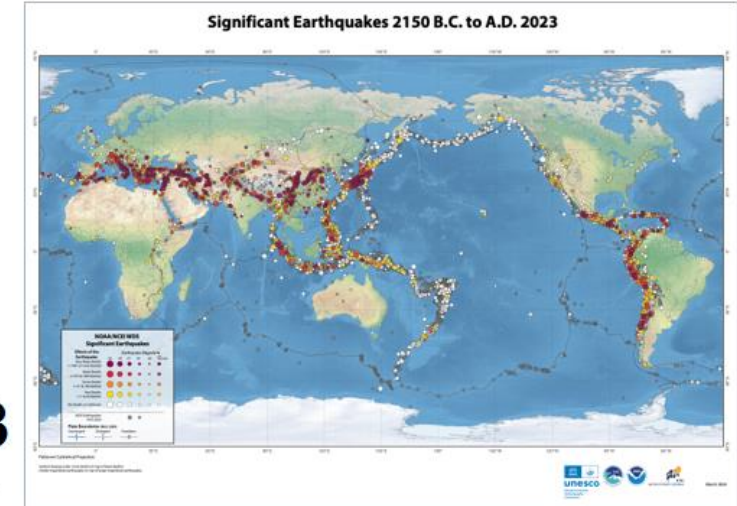
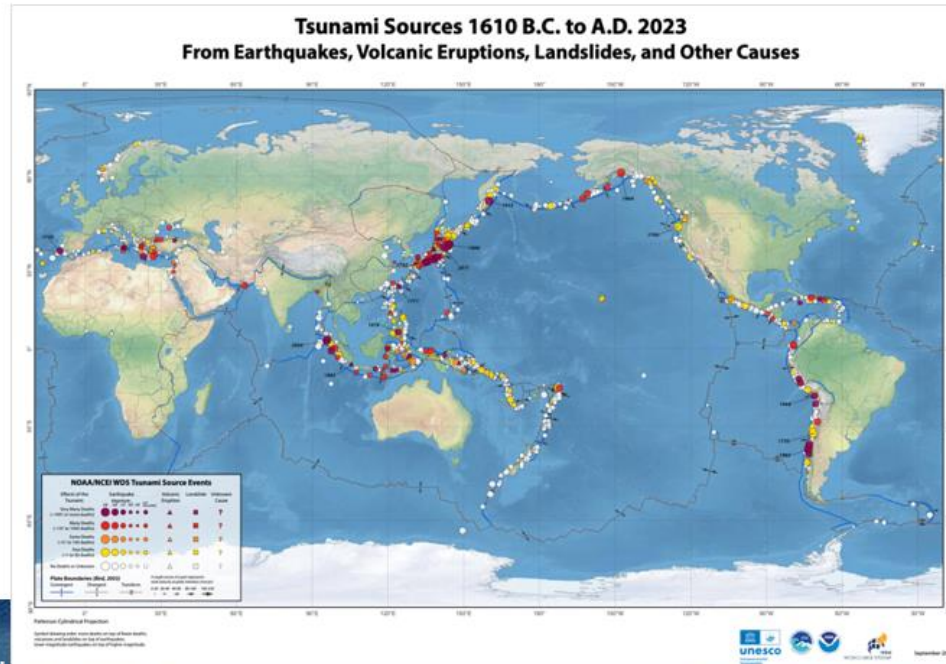
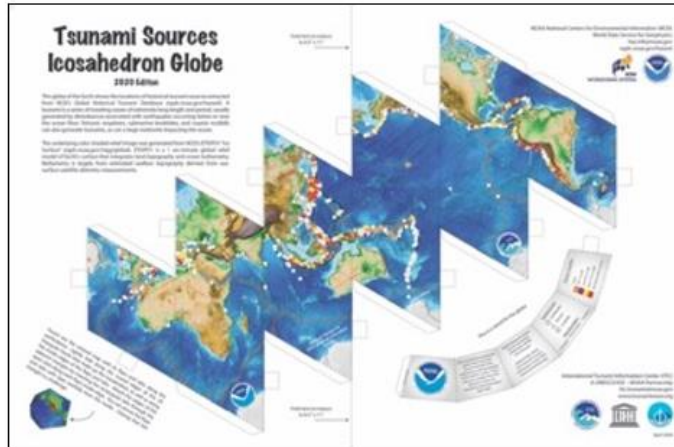
ITIC Awareness materials – updates



http://itic.ioc-unesco.org/index.php?option=com_content&view=category&layout=blog&id=1075&Itemid=1075

Global Hazard Posters (WDS/NCEI – ITIC)

- ❑ **Global Tsunami Sources 1610 B.C. to A.D. 2023 poster (2023), icosahedron (2020)**
- ❑ **Significant Earthquakes 2150 B.C. to A.D. 2023**
- ❑ **Significant Volcanic Eruptions 4360 B.C. to A.D. 2023**



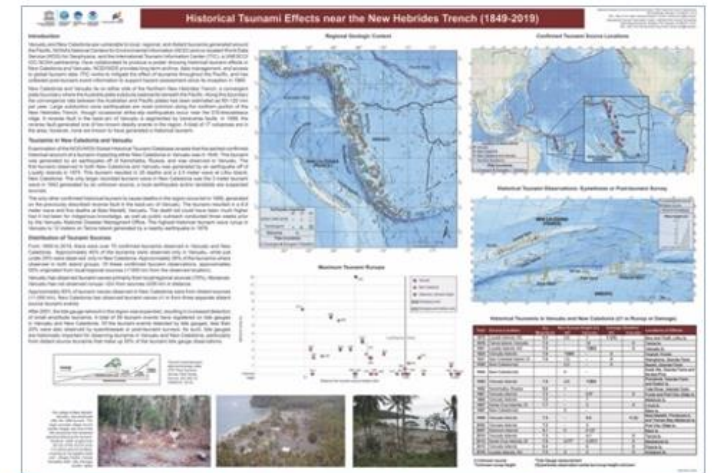
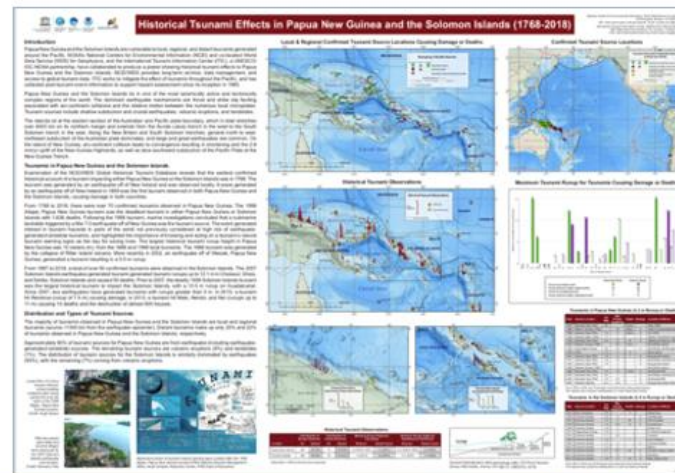
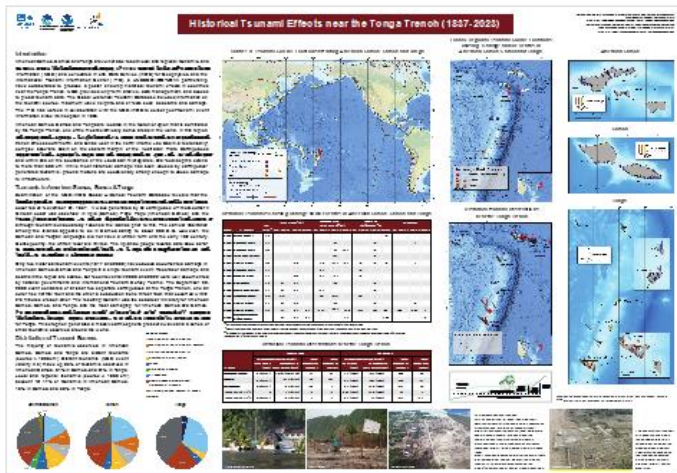
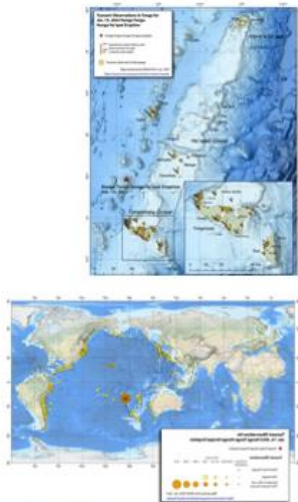
ITIC Awareness materials – updates



http://itic.ioc-unesco.org/index.php?option=com_content&view=category&layout=blog&id=1075&Itemid=1075

Regional Historical Tsunami Effects posters (WDS/NCEI-ITIC)

- **Caribbean, Central America, Mexico 1610-2023**
- **Tonga Trench 1837-2023 (includes HTHH)**
- **Papua New Guinea/Solomons 1768-2018**
- **Vanuatu / New Caledonia, New Hebrides 1949-2019**
- **Planned for Nov – 2004 Indian Ocean Tsunami**





unesco

Intergovernmental
Oceanographic
Commission

THANK YOU

