



unesco

Intergovernmental
Oceanographic
Commission

TOWS WG Interagency Task Team on Disaster Management and Preparedness,
Task Team on Watch Operations
27-28 February 2023
Paris, France, and Virtual

Joint TT-TWO, TT-TMP, Agenda J2

PacWave 2022



PacWave22

Margarita Martinez, ONEMI, Chile

Emilio Talavera, INETER, Nicaragua

Laura Kong, International Tsunami Information Center

Task Team on PacWave



PacWave22 Exercise Task Team Members

- ❑ **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.**

Co-Chairs

- ❑ Margarita Martinez – Chile
- ❑ Emilio Talavera – Nicaragua

Members (PacWave20)

- ❑ Dr Charles McCreery, PTWC
- ❑ Dr Laura Kong, ITIC
- ❑ Carolina Hincapie, ITIC
- ❑ Mr Lianda Zhao, China
- ❑ Jorge Matus, SHOA, Chile
- ❑ Carolina Henriquez, Chile
- ❑ Laura González, Colombia
- ❑ Jasson Pérez, Colombia
- ❑ Francois Schindele, France
- ❑ Anthony Jamelot, France, French Polynesia
- ❑ Céline BARRE, France, New Caledonia
- ❑ Rodolfo Alvarado, Guatemala
- ❑ Mr. Nishimae, Japan
- ❑ David Coetzee, New Zealand
- ❑ Sara Mitchell, New Zealand
- ❑ Jorge Rodriguez, Panama
- ❑ Eric Chichaco, Panama



Outline

- 1. Overview**
- 2. TSP Comm Test**
- 3. Regional Exercises**



Background

- **Due to COVID-19, PacWave20 scope reduced. Tested only 2 of 4 objectives.**
 - Objective a. Communication test on November 5, 2020
 - Objective d. CATAC regional exercise
 - Other activities encouraged but at the discretion of country

- **At PTWS Steering Committee (SC, Sep 2021), next PacWave (PacWave22) discussed noting PacWave20 reduced scope and findings. SC approved:**
 - PTWS Task Team on PacWave Exercise to oversee.
 - **PacWave22 to be conducted using same objectives and following same format and conduct as original PacWave20 (PTWS-XXVIII.1, 2019)**
 - Member States consider conducting for situations based on limitations derived from COVID-19 pandemic
 - TT to compile and summarize good practices for planning, conducting, and evaluating virtual exercises, and include in exercise manual
 - Post-Exercise Evaluation reporting for PTWS Communications Test to be earlier to accommodate reporting to ICG/PTWS-XXX (Nov 2022)
 - TT to explore more automatic & efficient ways to compile information prior to Oct 2022

Exercise Aim and Objectives (same as original PacWave20)

- 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
 - **Test communications from the PTWS Tsunami Service Providers to Tsunami Warning Focal Points and National Tsunami Warning Centers of Member States.**
 - Test national communication and cooperation, and readiness within the country.
 - **Test regional communication and cooperation between Member States.**
 - Support the development of tsunami procedures and products by the Central America Tsunami Advisory Center (CATAC).



PacWave information video – Dec 2021

- **ITIC, IOC, USA, Chile**
- **TOPICS**
 - What is PacWave ?
 - Why is PacWave important ?
 - What does PacWave do ?
- **CONTENT**
 - ‘Interview’ narratives – IOC, ITIC, PTWC, NWPTAC, Chile, Philippines, El Salvador
 - Visuals of previous PacWave and other exercises (upstream, downstream)



<https://vimeo.com/654705877>

Exercises make communities Tsunami Ready



Produced by
NOAA, in collaboration with UNESCO IOC, Chile,
and countries of Pacific



Outline

1. Overview
- 2. TSP Comm Test**
3. Regional Exercises



TSP Live Comm test

13 Oct 2022, 0000 UTC

Pacwave22 Live TSP Communications Test

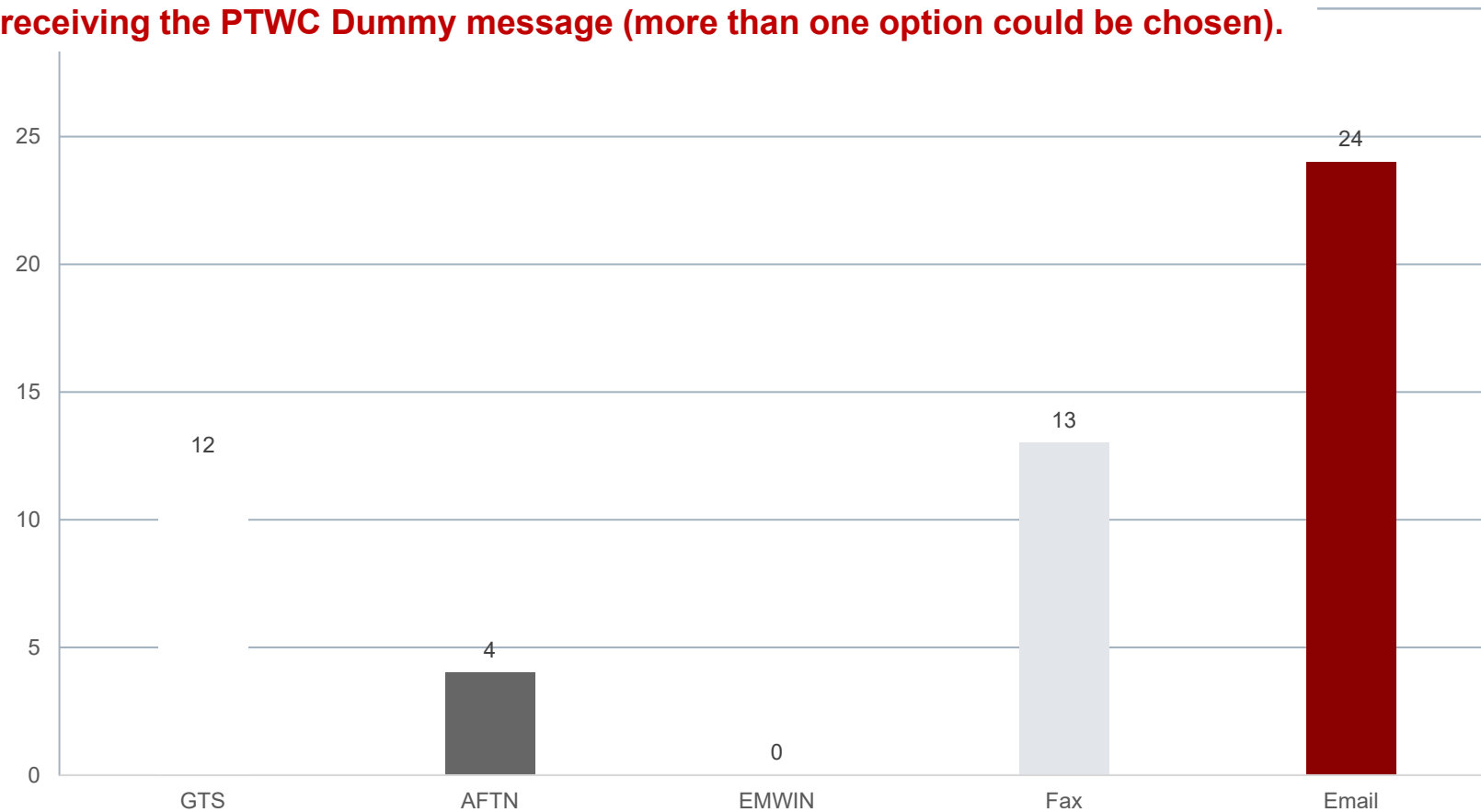
1. TSP Communication Test: Participation – 27 countries

- All the TSP that participated in the exercise send messages according procedures, 24 respondents reported that received the message from PTWC correctly, 11 from NWPTAC, 7 from SCSTAC and 3 from CATAC. Details are in
- The majority respondents to this question indicated that the Dummy message was received.
- Two respondents indicated that the Dummy message was not received (Mexico and Samoa).
- PTWC, NWPTAC, SCSTAC messages were received in a timely manner.
- A few countries reported large delays for unknown reasons.

Summary:

1. 89% percent of countries reported received message by email.
2. Fax was next most common form of receipt (44%). Followed by GTS (44%)
3. Other method of receipt include AFTN and there is no reported message received through EMWIN.

Figure 3: Methods of receiving the PTWC Dummy message (more than one option could be chosen).



Outline

1. Overview
2. TSP Comm Test
- 3. Regional Exercises – PICT, SEP, SCS**



Objective 3: To test regional communication and cooperation.

Did your country engage in communication and cooperation with other countries in the region for PacWave22?

11 / 21 countries engaged in communication and cooperation with other countries in region for PacWave22.

The type of information shared was:

- 6 states members shared Data sharing (Seismic, sea level, etc.).
- 8 states members shared Event information sharing
- 5 states members shared Alert coordination (levels, dissemination)
- 7 states members shared Joint PacWave22 exercise.

Communication and cooperation with other countries in the region for PacWave22

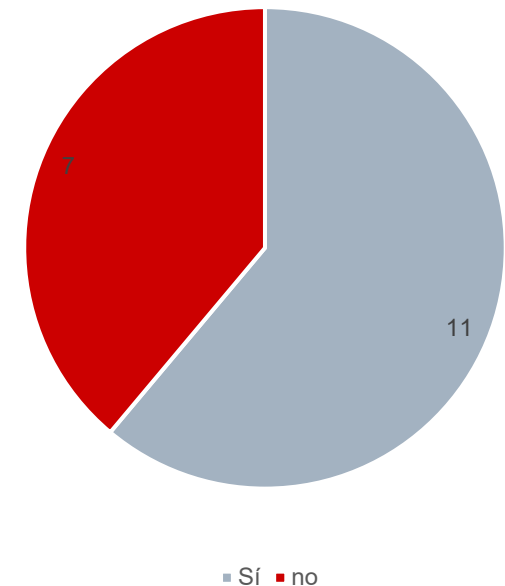
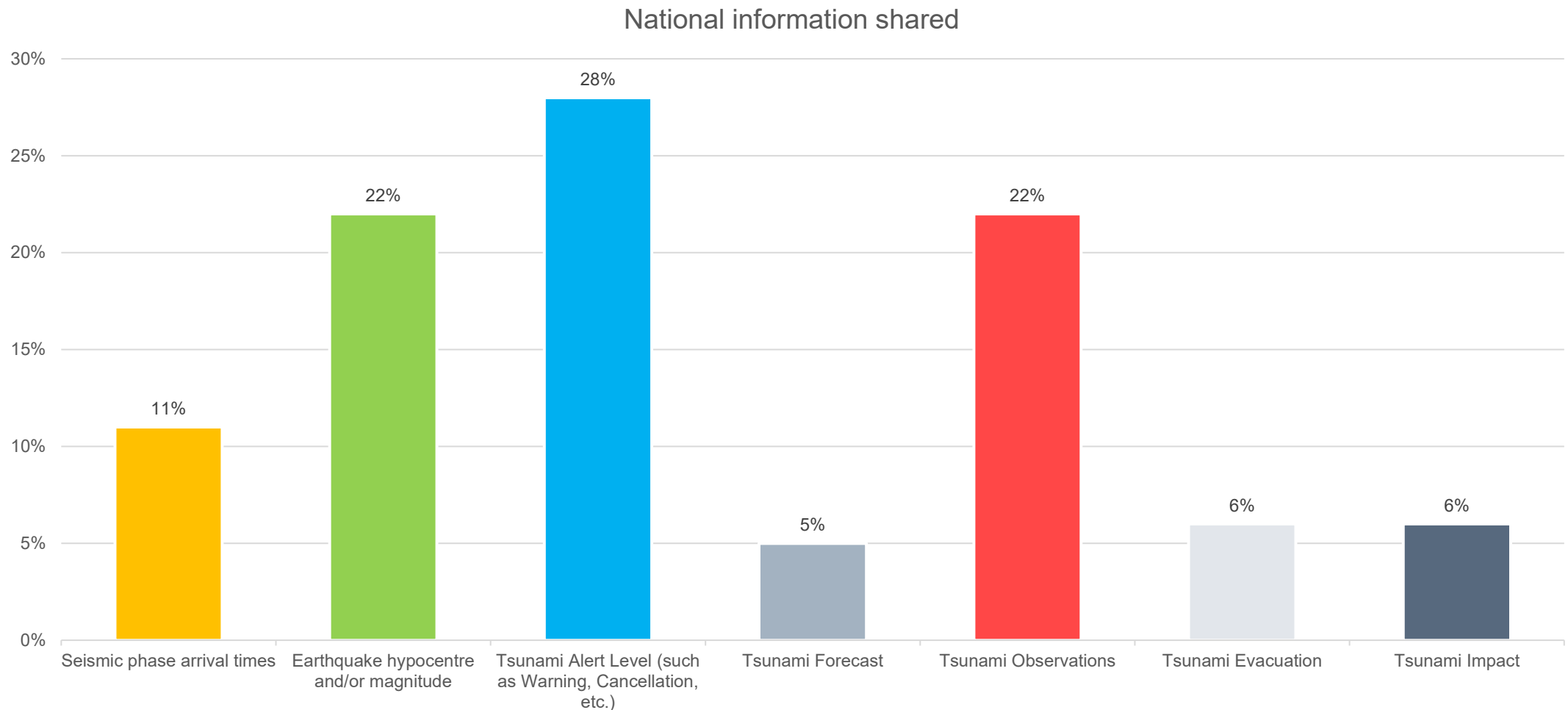


Figure 21:
Engagement in communication and cooperation with other countries in the region for PacWave22.

Was national information shared with other countries during the event?

Summary:

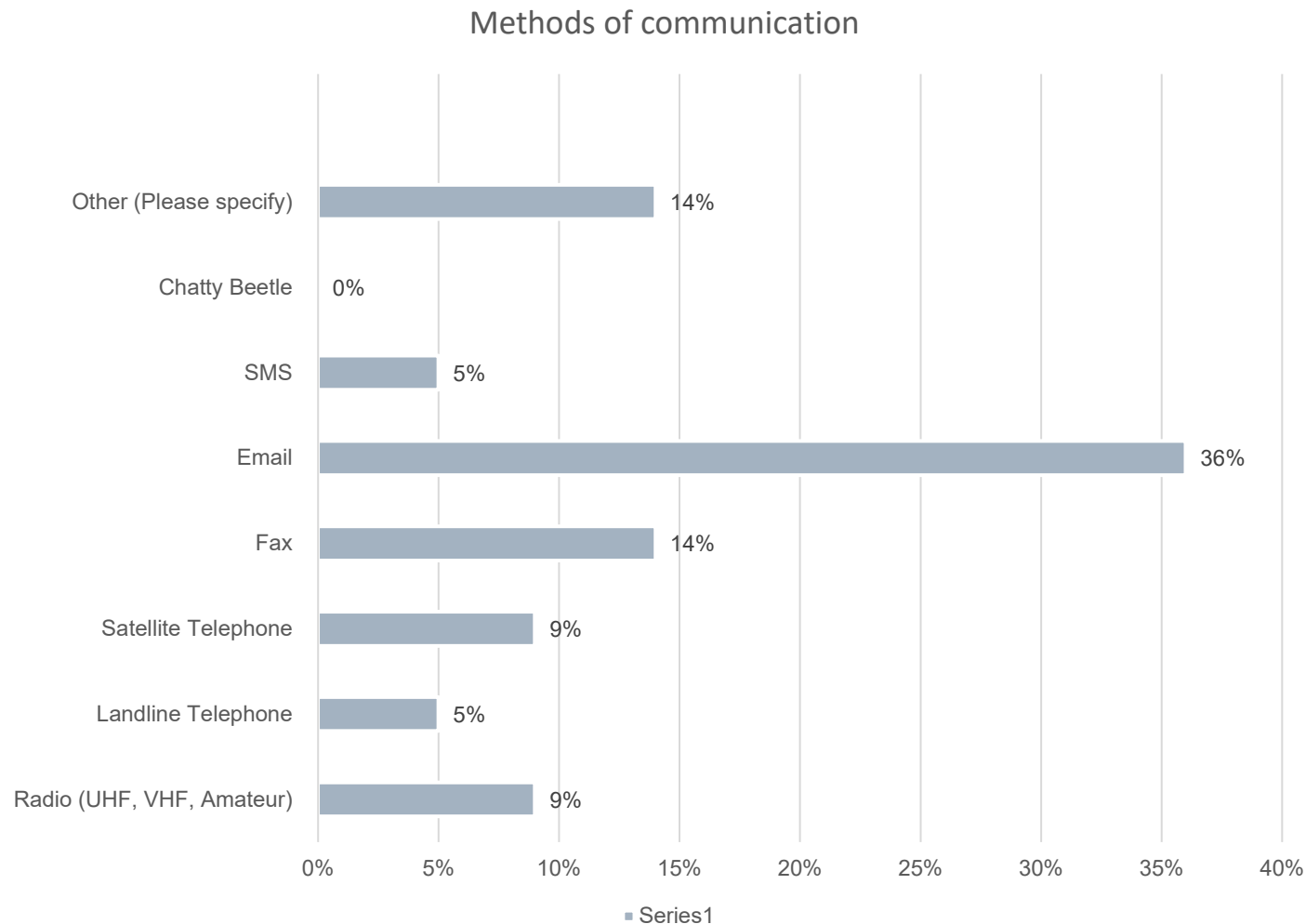
33% of respondents indicated national information was shared with other countries during the exercise.



How did you communicate the information?

Summary:

Email was primary method of communication with other countries. Followed by fax and Other methods. Then Radio and Satellite Telephone. Landline telephone and SMS were methods least used





unesco

Intergovernmental
Oceanographic
Commission



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



Exercise Overview - Objectives



unesco

Intergovernmental
Oceanographic
Commission

- **IOC Circular Letter 2908** (*issued on 27 September 2022*) announcing exercise
 - Date, Time, Length: **2300 UTC 9 Nov - 0100 UTC 10 Nov 2022, 2 hours**
 - Format: **Live Table Top Exercise**
 - Scenario: **HTHH Volcanic Eruption and Tsunami (15 January 2022)**

Exercise Objectives:

1. ***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***
2. ***Test regional communication and cooperation between PICT Member States, and the value of information sharing in facilitating national tsunami alert decision-making.***

Exercise Overview - Milestones

- **PacWave22 PICT Regional Exercise** accepted end of July 2022 (PTWS Regional Working Group PICT)
- **IOC Circular Letter 2908 announcing** (*issued on 27 September 2022*) 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

Exercise Summary - Participants

- **18 Pacific Island Countries and Territories**
(15 Players, 3 Observers)
- **Total participants : ~ 80 persons**
- **2 Controllers:**
Anthony Jamelot, CPPT/PF, France
Jiuta Korovulavula, IOC
- **4 External Observers:**
Laura Kong, Carolina Hincapie, ITIC
Bernardo Aliaga, IOC
Chip McCreery, PTWC

Territories/ Islands	Territory Code	Participant	Observer
	2-letters		
American Samoa, USA	AS	Yes	
Australia	AU	Yes	
Cook Islands	CK	Yes	
Fiji	FJ	Yes	
French Polynesia, France	PF	Yes	
Kiribati	KI	No	Yes
Marshall Islands	MH		
Micronesia	FM		
Nauru	NR	Yes	
New Caledonia, France	NC	Yes	
New Zealand	NZ		
Niue	NU	No	Yes
Norfolk Island, Australia	NF		
Palau	PW		
Papua New Guinea	PG	Yes	
Pitcairn Islands	PN		
Samoa	WS	Yes	
Solomon Islands	SB	Yes	
Timor-Leste	TL	Yes	
Tokelau	TK	Yes	
Tonga, Kingdom of	TO	Yes	
Tuvalu	TV	No	Yes
Vanuatu	VU	Yes	
Wallis and Futuna, France	WF	Yes	

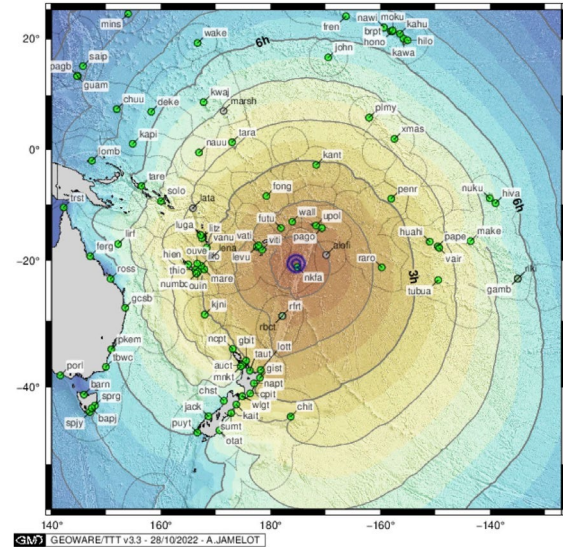
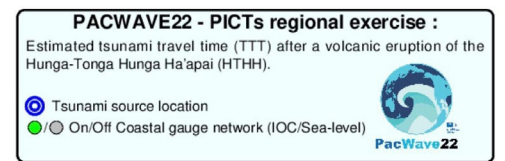
Exercise Summary – Conduct and Format

- **3 Communication methods:**

- Dedicated E-mail Listserv (hosted by ITIC) – 63 msgs (18 unique info sharing)
- PacWave22-PICT WhatsApp group chat – 89 msgs (45 unique info sharing)
- HF Radio – 3 countries (Tonga, Fiji, Nauru)

- **Conduct**

- **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.
- **HF Radio communication tests** between Players



GMT GEOWARE/TTT v3.3 - 28/10/2022 - A.JAMELOT
PacWave22-PICT regional exercise manual - 3

Exercise Summary – Cold wash, debrief 16 Nov



unesco

Intergovernmental
Oceanographic
Commission

Exercise communication review and Debrief notes (ITIC) available :

<https://oceanexpert.org/event/3691#documents>

Objective 1 :

- PTWC products good. Captured event.
Scaled forecast heights useful for issuing warning
- Simple, easy to use. ETA useful

Objective 2 :

- Countries and Observers unanimous that Info Sharing valuable
- Countries highlighted unique value of HF radio (in differing agencies within country and not tsunami-specific). Along with Satellite Phone (essential and critical, but expensive), were **only comms that worked post-HTHH.**

Exercise Summary – Cold wash, debrief 16 Nov

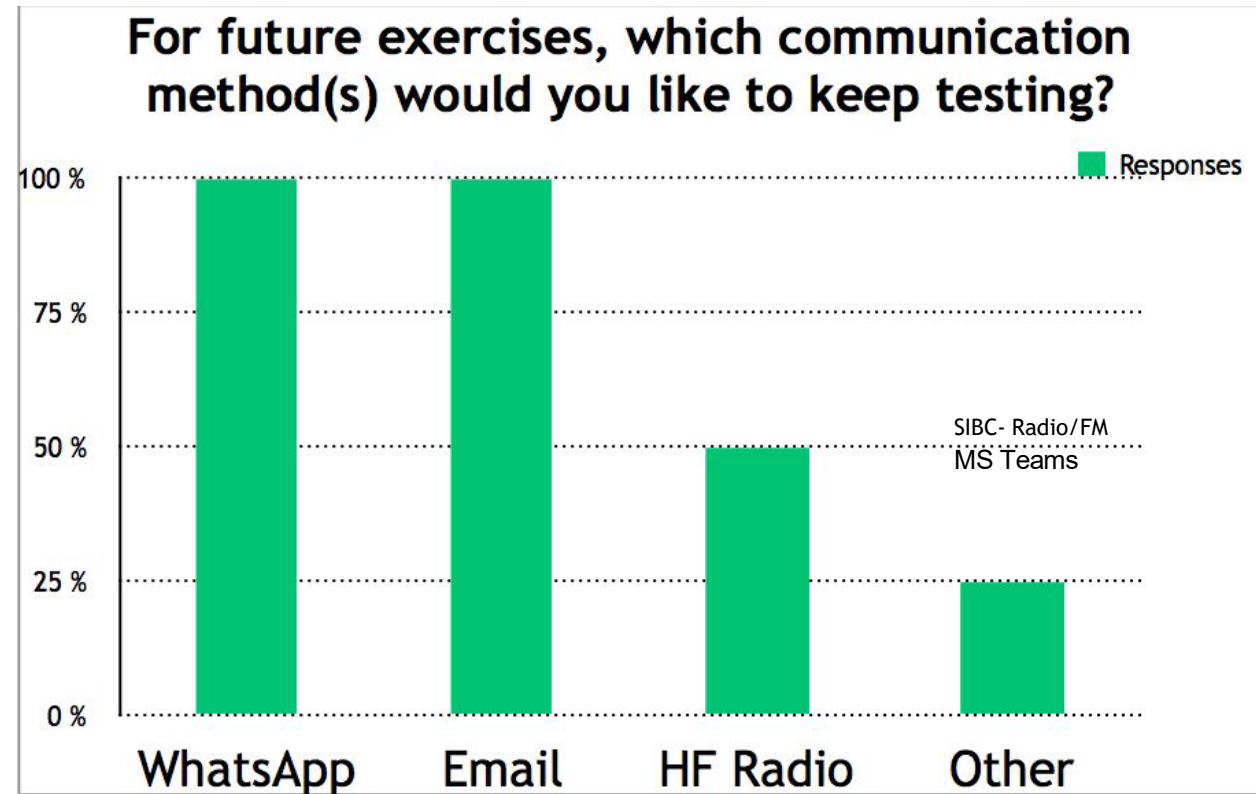
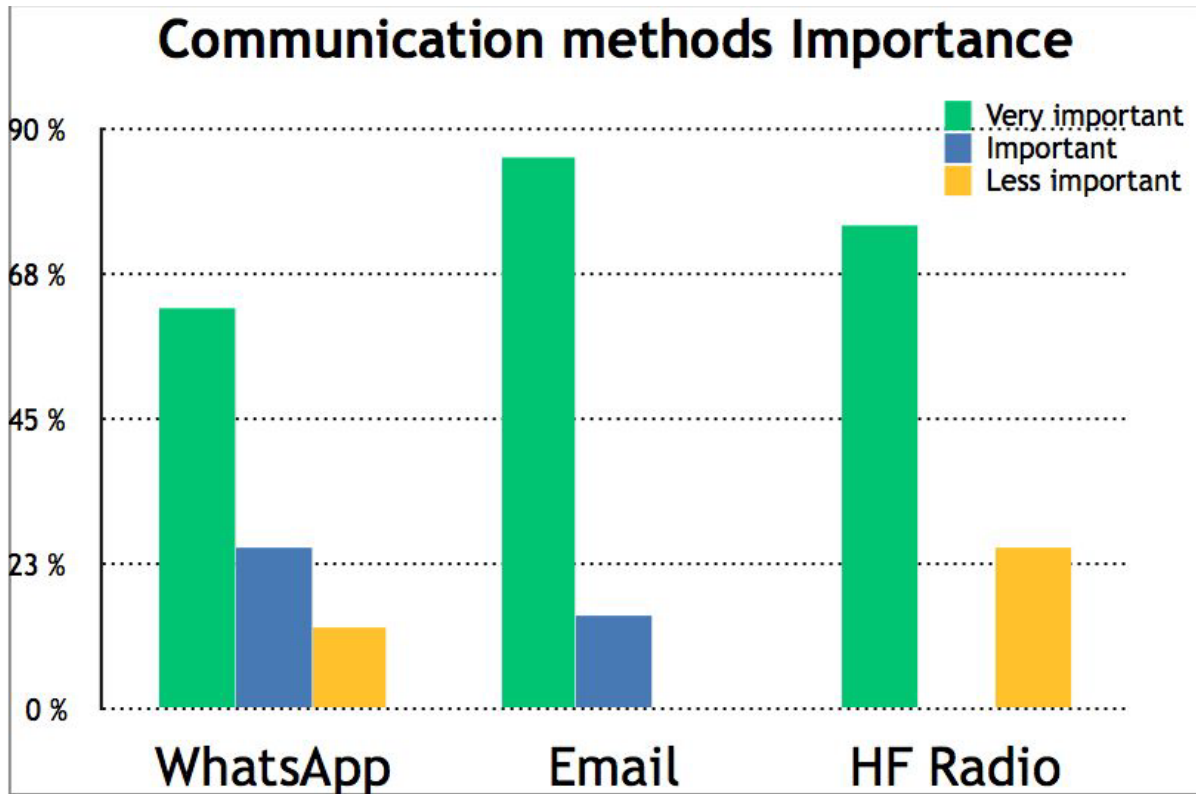
(note only 8/18 participants ~ 44% < 50% answered question))



unesco

Intergovernmental
Oceanographic
Commission

Objective 2 : Alternative tsunami informal communication mode between regional duty officers



Exercise Outcomes – Next activities

- **HF Radio WhatsApp group still active**
- **Post-PacWave22-PICT, WhatsApp group used for real events**
 - **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).

Now WhatsApp Group Chat name changed to Tsunami-PICT

- **PTWS WG-PICT-IX (Feb 2023) decided to formalize, standardize messaging to ensure simple, effective, and i**



Outline

1. Overview
2. TSP Comm Test
- 3. Regional Exercises – SCS**



SEP-WG

EXERCISES



PacWave22

Two phase exercise
Oct. 20 and 27

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

Chile



Ecuador



Perú

Colombia

Joint TT-TWO, TT-TMP, Agenda J2

PacWave 2022 – prelim highlights



Margarita Martinez, ONEMI, Chile

Emilio Talavera, INETER, Nicaragua

Laura Kong, International Tsunami Information Center

Task Team on PacWave