

ICG-PTWS XXXI
8th-11th April, 2025
Beijing, China



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3.7 National Progress Report

FRANCE

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NTWC French Polynesia

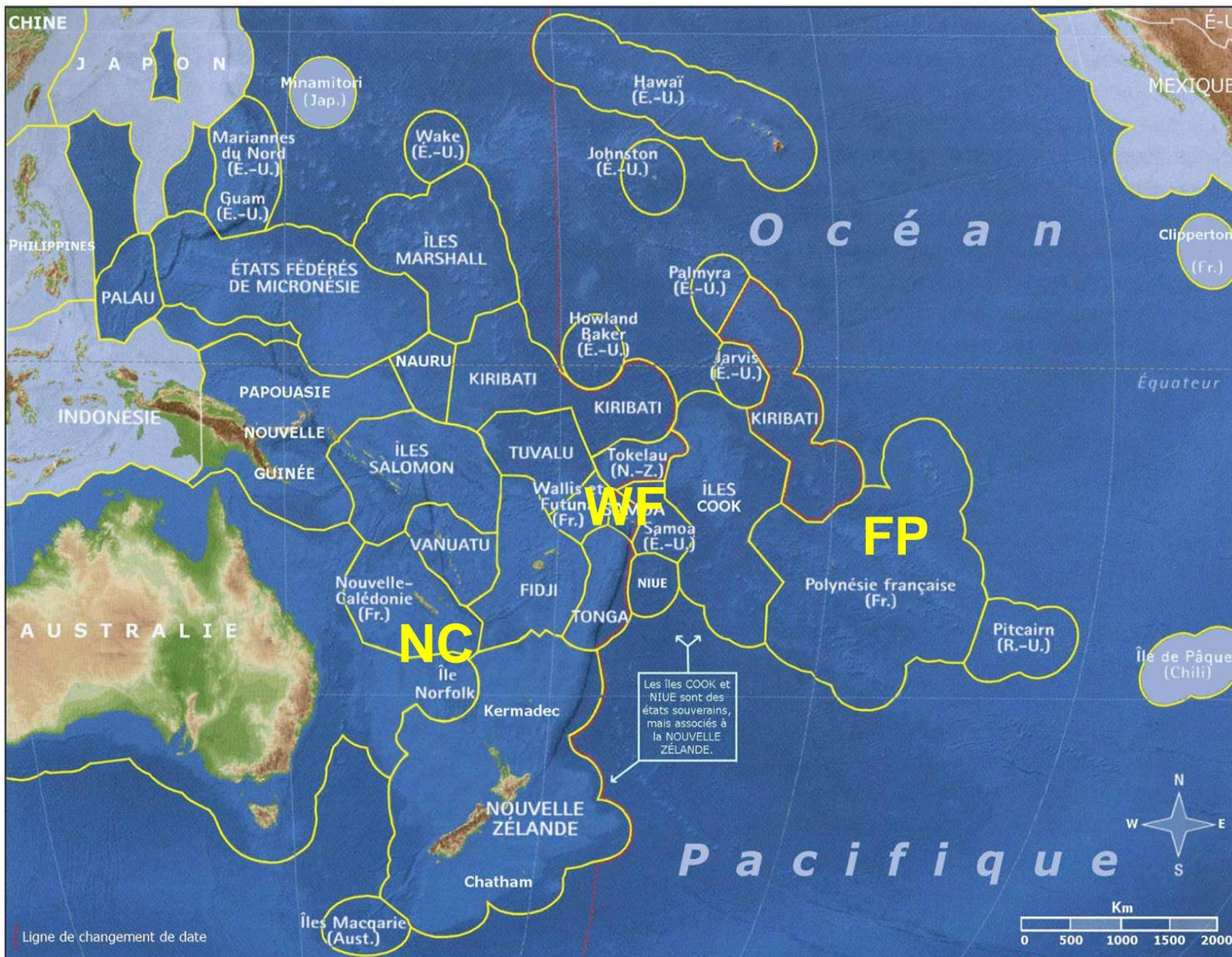
Manon Brasseur, Pierre Emmanuel Brunier
DSCGR New Caledonia

FRANCE - FRENCH POLYNESIA (FP) , NEW CALEDONIA (NC) , WALLIS & FUTUNA (WF)



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Territories description

New Caledonia:
Several groups of islands
~270,000 people
Minimal ETA = 15 min
NDMO: New Caledonia

Wallis & Futuna:
2 Islands
~11,000 people
Minimal ETA = 15 min
NDMO: French state

French Polynesia:
118 Islands
375 000 people
Minimal ETA = 2.5 hours
NDMO: French state

Tsunami warning

Felt Earthquake,
PTWC Message

NTWC (CPPT) Message



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CONTRIBUTION of France to PTWS mandate and ICG/PTWS activities

→ *Working groups and Task teams*

- ◆ WG-1 – Understanding Tsunami Risk
- ◆ WG-2 – Tsunami detection, warning and dissemination
- ◆ WG-3 – Disaster risk management and preparedness
- ◆ WG – Pacific Island Countries and Territories (PICT)
 - TT Information Sharing Platform **Chair**
 - TT Data Sharing
- ◆ TT – PacWave24
- ◆ TT – Tsunami Generated by Volcanoes

→ *NTWC : CPPT (only French Polynesia)*

→ *ICG/PTWS XXXI National reports*

→ *Bilateral scientific and technical collaborations (tide gauges, seismic data - moment tensor...)*

EVENTS IMPACTING FRENCH POLYNESIA AND/OR NEW CALEDONIA



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Origin Time (OT) UTC	Region	PDE at OT+15min			CPPT Early Evaluation			GCMT Mw	French Polynesia			New Caledonia			Wallis et Futuna		
		Depth (km)	Latitude	Longitude	First Detection (minutes after OT)	Preliminary Magnitude OT+15min	Mww OT+30min		Maximal Observation (m)	NTWC tsunami criteria reached	Max. Tsunami warning level Threat (NDMO)	Maximal Observation (m)	NTWC tsunami criteria reached	Max. Tsunami warning level Threat (NDMO)	Maximal Observation (m)	NTWC tsunami criteria reached	Max. Tsunami warning level Threat (NDMO)
02/12/2023 14:37:02	Mindanao, Philippines	10	8.587	126.436	3	7.4	7.5	7.6	None	Yes	No-Threat	None	Yes	No-Threat	None	Yes	No-Threat
01/01/2024 07:10:16	Near West Coast of Honshu, Japan	15	37.162	136.878	3	7.1	7.5	7.5	None	Yes	No-Threat	None	Yes	No-Threat	None	Yes	No-Threat
02/04/2024 23:58:09	Taiwan	35	23.885	122.023	4	7.3	7.4	7.4	None	Yes	No-Threat	None	Yes	No-Threat	None	Yes	No-Threat
28/06/2024 05:36:38	Near Coast of Peru	35	-16.017	-74.469	4	6.9	7.1	7.1	None	No	No-Threat	None	No	No-Threat	None	No	No-Threat
19/07/2024 01:50:45	Chile-Argentina Border Region	130	-23.070	-67.510	3	7.3	7.4	7.3	None	Yes	No-Threat	None	Yes	No-Threat	None	Yes	No-Threat
17/12/2024 01:47:27	Vanuatu Islands	90	-17.297	167.806	4	7.4	7.2	7.3	None	Yes	No-Threat	None	Yes	No-Threat	None	Yes	No-Threat

NC1 – Occurrence of events and alert actions on the period 2023-2025

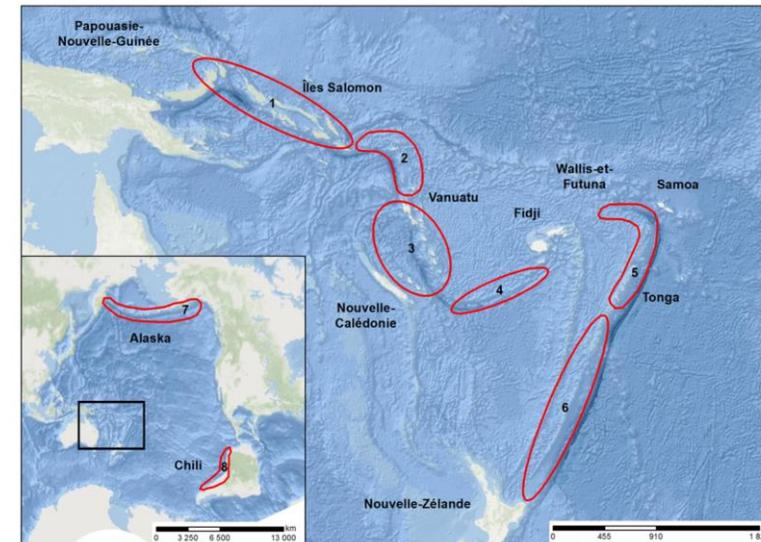
- Reception by the operational room (COG 988) from **IRD/ORSNET and PTWC**
 - PTWC: Additional ETA points nearby tide gauges spread across the entire territory, instead of a single initial one (offshore Noumea)
 - ORSNET: $M_w \geq 3$ for local earthquakes, $M_w \geq 6.5$ for South West Pacific area, $M_w \geq 7.5$ beyond 3000 km around Noumea
- **No threat and no observation** since Sept 2023
- Local **context politically unstable** since 2024

NC2 – PacWave24 exercise

- NC could not participate in 2024

NC3 – Collaboration and sharing

- **Sharing of data** with ORSNET (Oceania Regional Seismic Network) still in place
- New Caledonia aims at being more active in Working groups and Task teams
- Collaboration in progress with Vanuatu and New Zealand for temporary seismic network (Pacific fund)



NC4 - Actions at the national level

→ *Monitoring network*

- ◆ Tide gauges - > 9 gauges total -> international network
- ◆ Seismic stations - consolidation of existing network and extension to 8 fully functional stations -> ORSNET Network
- ◆ **TAM TAM SMART Cable** – to be deployed by end 2026

→ *Crisis management tools*

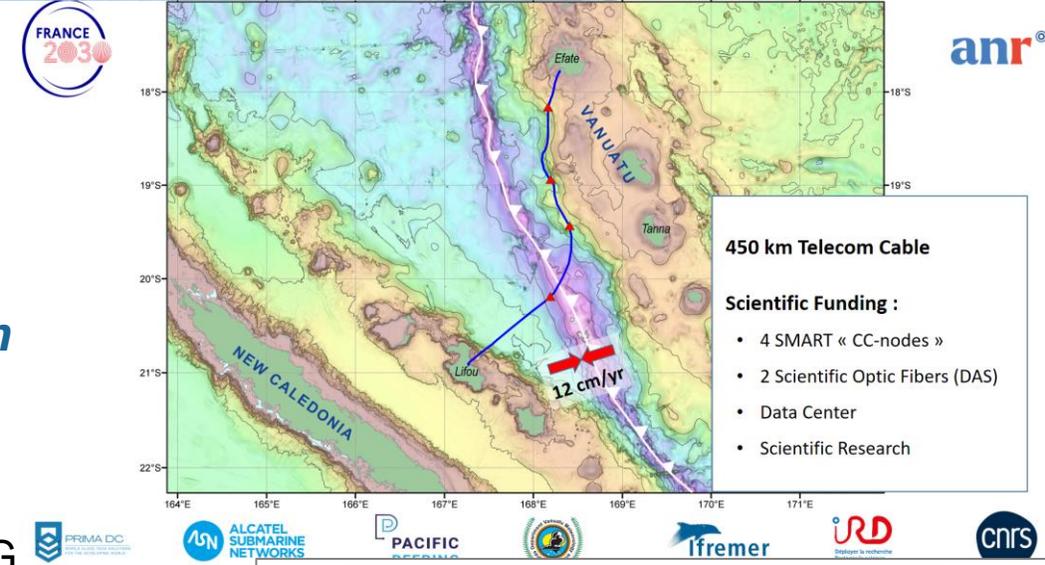
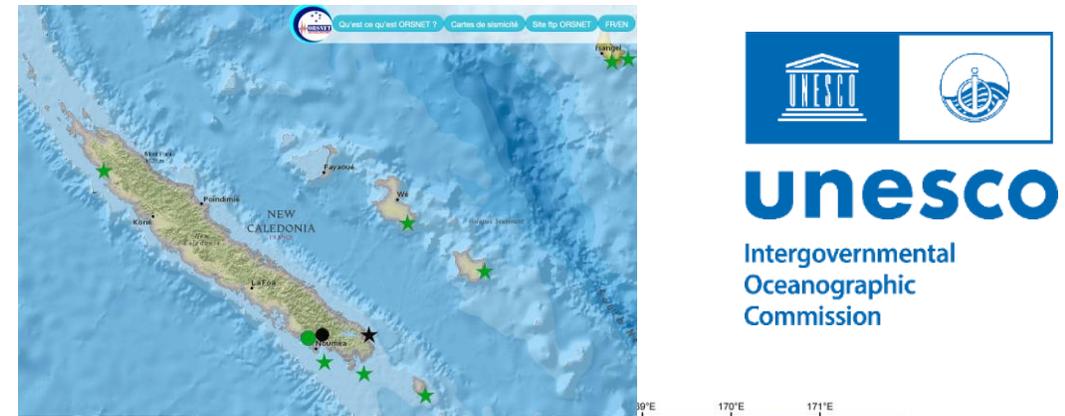
- ◆ **TsuCAL**: Decision-making tool for tsunami warning management - Operational since June 9, 2023
- ◆ **Tsunami expert committee** since June 2023 with 3 WG

→ *Development plan for warning systems towards population*

- ◆ **Sirens - 73 sirens total**
- ◆ **Maintenance budget needed**
- ◆ **FRAAlert**
 - Cell-broadcast technology 4G/5G and geolocated SMS 2G/3G promoted by France
 - Still under development

→ *Communication strategy*

- ◆ Communication tools and activities should to be **reactivated in 2025**



FP1 - French Polynesia Tsunami Detection and Forecast System



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In operation since 1964 (first alert for Alaska event)

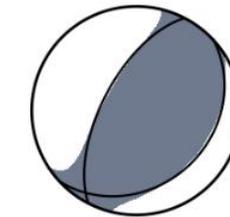
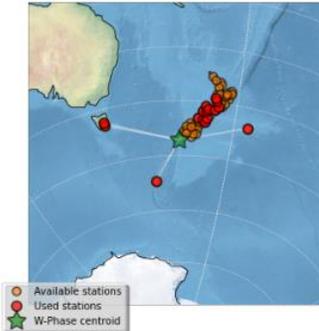
- Acquisition system and earthquake detection based on SeisComP6
- Internally developed Seiscomp modules (Bulletins, SMS, Maps)
- Automatic focal Mechanisms from
 - Seiscomp module [scfirstmotion](#) (FM solution at OT+5min – OT+10min)
 - SeiscomP module [scwphase](#) (MT solution at OT+10 min – OT+30min)
 - SeiscomP module [PDFM2](#) (MT solution at OT+45min)
- **Tsunami warning based on forecast results**
 - Code [Taitoko](#), with new GPU HPC since 2024 (execution times, sites forecast)
- Forecast bulletins (with inundation maps) are available to NDMO at T0+25 minutes (without pre computed database) with low uncertainties

Upcoming Improvements

- French Polynesia Seismic [Network Update](#) (Seedlink acquisition, sensors)
- [More forecast sites](#) (new bathymetry) and [more information](#) (arrival times for max tsunami height and end of impact) + Tsunami [current](#) forecast in harbor
- [GPU R&D](#) to improve efficiency, results delivery, energy savings

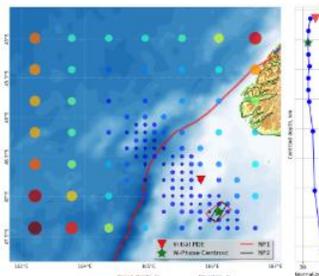
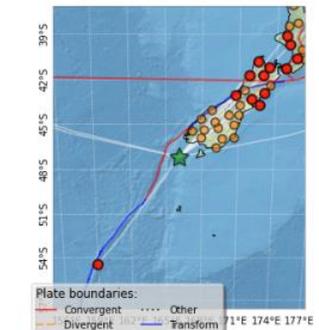
```
Mw=6.64, Off West Coast of South Island, New Zealand
Event Time: 2025-03-25 01:43:09 UTC
Epicenter : 46.795S 165.823E 12.0km
Centroid  : 47.195S 166.182E 15.5km
```

```
CENTROID-MOMENT-TENSOR SOLUTION
AUTO WPHASE INVERSION - 0T+10MIN
CPPT EVENT: C202503250143A
DATA: NZ AU II
TIMESTAMP: Q-20250325015318
WPHASE WAVES: 16S, 16C, T= 57
CENTROID LOCATION:
ORIGIN TIME: 01:43:09.1 0.0
LAT:47.195 0.00;LON:166.182 0.00
DEP: 15.5 0.0;TRIANG HOUR: 2.6
MOMENT TENSOR: SCALE 10**26 D-CH
RR= 0.852 0.000; TT=-0.245 0.000
PP=-0.604 0.000; RT=-0.265 0.000
RP=-0.626 0.000; TP=-0.571 0.000
PRINCIPAL AXES:
1.(T) VAL= 1.086;PLG=70;AZM= 98
2.(N) 0.149; 8; 212
3.(P) -1.235; 18; 304
BEST DBLE.COUPLE=M0= 1.16*10**26
NP1: STRIKE= 47;DIP=28;SLIP= 108
NP2: STRIKE=207;DIP=63;SLIP= 81
```



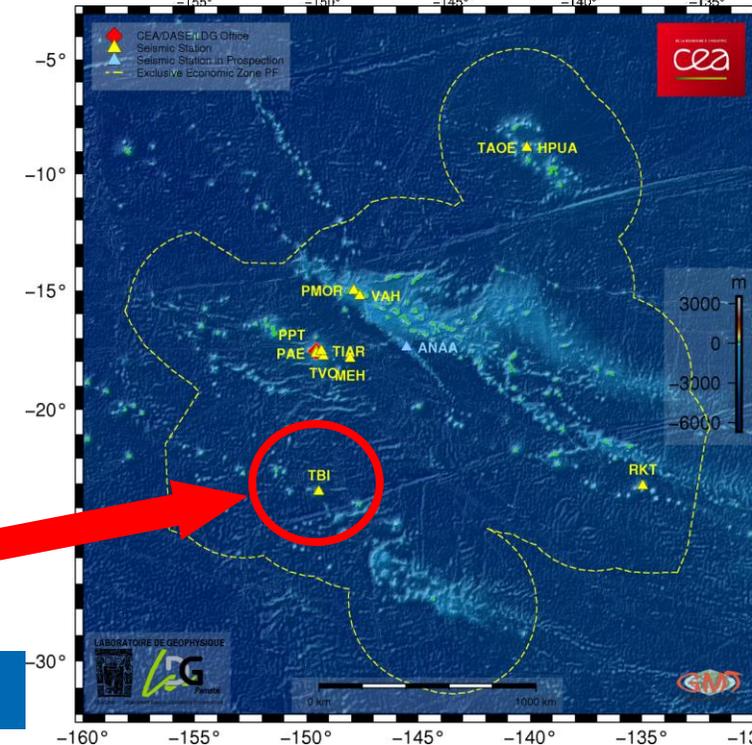
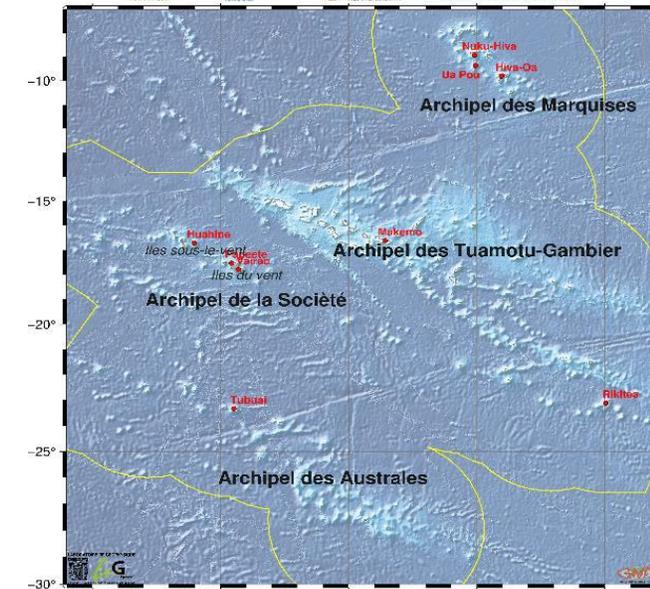
```
# ADDITIONAL INFORMATIONS :
Event ID : cppt2025fvue
Double-Couple : 87 %
Scalar moment : 1.16e+19 N.m
Stations used : 16
Phases used : 16
Channels used : HHZ,BHZ,LHZ
RMS misfit : 45.0 %
Azimuthal gap : 124.5 deg
Min. distance : 5.1 deg
Max. distance : 14.0 deg
BP filter : 57 s - 179 s
Time shift : 2 s
Half duration : (= Time shift)
RMS screening : 5.0 3.0 0.9
P2P screening : 0.1 3.0
PDE Magnitude : 6.6 (M, 15 sta)
Run time : 0.2 min
Author : scwphase10min@cornaline2
Version : 1.2.0
```

```
# FAULT PARAMETERS :
shear modulus : 3.50e+10 Pa (forced)
Scaling law : Blaser, 2010
Fault length : 26 km
Fault width : 18 km
Mean slip : 0.7 m
```



FP2 – French Polynesia Sharing and Collaborations

- Sharing Wphase SeiscomP module [scwphase](#)
- Sharing CPPT W-Phase Results by email on demand or available in real time through the EMSC portal <https://seismicportal.eu>
- Collaboration with GNS and GA on sharing and comparing Wphase solutions for improvements and uncertainties reduction.
- **A new dedicated SW Pacific W-Phase Quick Inversion at OT+10 min**
- More involved in ICG/PTWS Task Teams, Working Groups and
 - PICT / PACWAVE24 / WG2 / WG1
- Tide Gauges
 - New tide Gauges in Ua Pou - Marquesas Islands
 - End of 2024: a new station at Raivavae (Australes Islands) (UPF), but data currently not shared in real-time
- Seismic Station Sharing via Geoscope Network G
 - TAOE / PPT
 - Upcoming **newly shared T360 Station** (2026) – Tubuai (Australes)



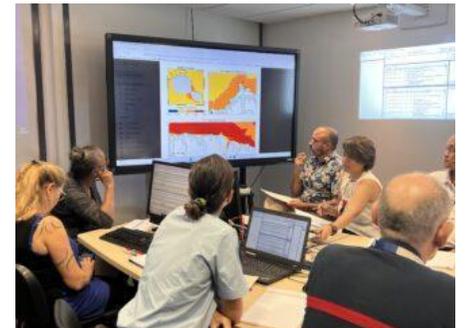
FP3 – French Polynesia Tsunami Exercises and Education

- **PACWAVE 2024**
 - PICT regional exercise (multi events scenario)
 - NDMO + NTWC involvements
- Next exercise on **Tsunami Awareness Day** June 3, 2025
 - Administrative, infrastructures, emergency services + Defense disaster response
 - Risk awareness and formation
 - Schools Evacuations
 - Media press conference to improve population awareness
- Raising awareness of the **tsunami ready program** for communities
- Raising awareness on **tsunami risks** in French Polynesia
 - Authorities involved in Risk managements
 - Communities, tsunami warning signage
 - Schools
- Science Day Informations



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**Thank you for your
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