NATIONAL REPORT
Submitted by FRANCE (French Polynesia)

BASIC INFORMATION

1. ICG/PTWS Tsunami National Contact (TNC)

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2. ICG/PTWS Tsunami Warning Focal Point (TWFP) and National Tsunami Warning Centre (NTWC)

2.1 TWFP Agency Name:

Haut-commissariat de la République en Polynésie Française –
Direction de la Protection Civile (DPC)
High Commissioner of Republic in French Polynesia

TWFP Agency Contact

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TWFP 24x7 point of contact:

Name of office: High Commissioner of Republic in French Polynesia

2.2 NTWC Agency name:

Laboratoire de Géophysique de Tahiti (LDG)
Centre Polynésien de Prévention des Tsunamis (CPPT)
French Polynesian Tsunami Warning Center

NTWC Agency Contact

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3. Tsunami Advisor(s)

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4. Tsunami Standard Operating Procedures for a Local Tsunami

The Laboratoire de Géophysique de Tahiti (LDG-Tahiti) has been monitoring regional seismicity and submarine volcanic activity since more than 60 years.

The LDG-Tahiti has also been monitoring and forecasting tsunami risk over the French Polynesian territory officially since 1964 and was *named French Polynesian Tsunami Warning Center* – Centre Polynésien de Prévention des Tsunamis (CPPT).

Currently, based on the seismic historical activity in French Polynesia, there is no local tsunami hazard from local earthquake. Also, French Polynesia does not have at the moment any significant volcanic activity that could trigger a tsunami.

Nevertheless, there is a very rare occurrence of localized tsunami generated by cliff failure (at Fatu-Hiva, 1999) or submarine landslide (underwater scars).

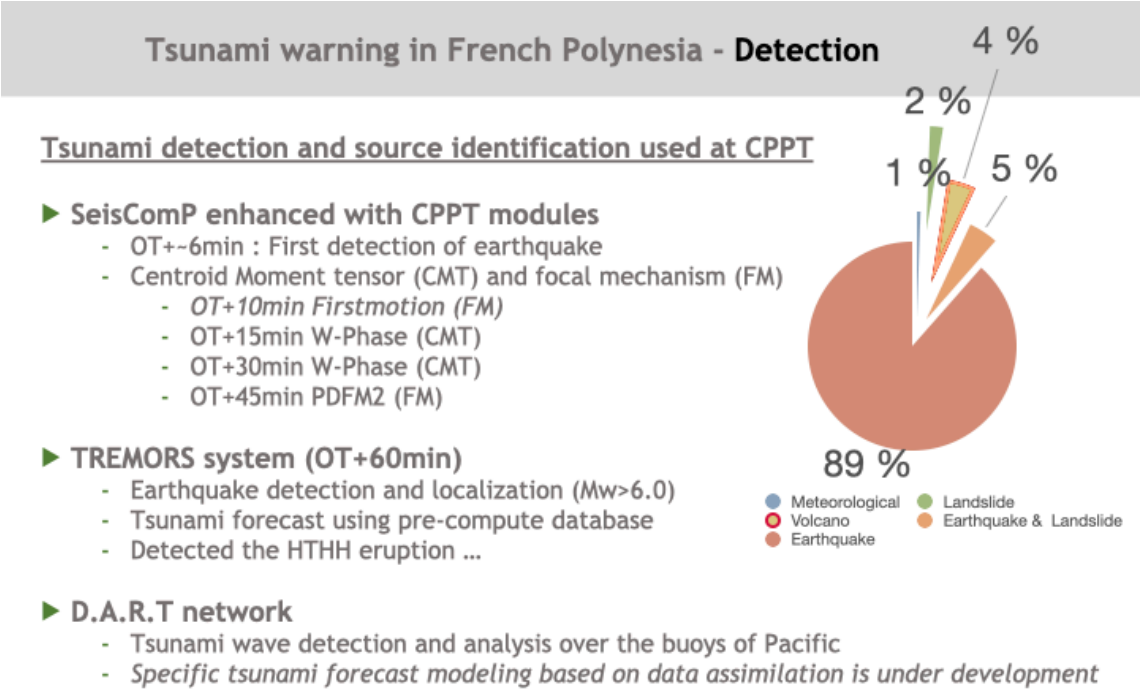
There is no general procedure for local tsunami implemented at this time except tsunami risk preparedness to the communities of Marquesas Islands along cliff failure and one specific submarine landslide risk procedure implemented and enabled for three islands from Tuamotu archipelago.

5. Tsunami Standard Operating Procedures for a Distant Tsunami

- ***What organization identifies and characterizes tsunamigenic events?***
  Laboratoire de Géophysique de Tahiti / Centre Polynésien de Prévention des Tsunamis LDG-Tahiti/CPPT (French Polynesian Tsunami Warning Center)

- ***What is the threshold or criteria for declaring a potential tsunami emergency?***
  Seismic alarm is triggered at the CPPT soon as we detect an earthquake of a Mw > 7.3 then an automatic tsunami warning is disseminated to the Direction de la Protection Civile – DPC (= Direction of Civil Defense) with an automatic adaptative response following the source parameters.

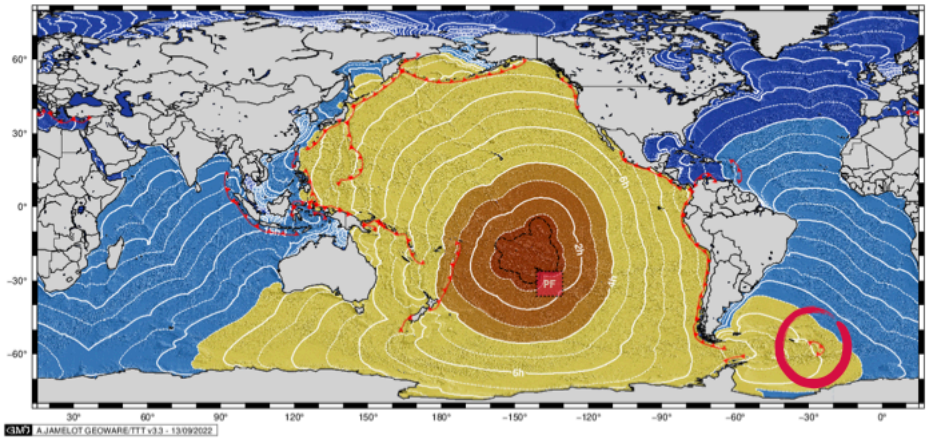
  The NTWC has currently 3 independant modes to trigger its preliminary alarm based on earthquake detection for the Seiscomp System and TREMORS system but also from the Pacific DART® Buoys network detection, that alert the duty officer by SMS as soon as one of the buoys has been triggered.



Note: Since 2022, the default monitoring area of Pacific region has been extended to include the Scotia sea and subduction zone after the South Sandwich event Mw 8.3 of 12th August 2021. The criteria about geographical location and monitoring area are based on the tsunami travel time with an adaptative magnitude threshold to be able to handle unexpected worldwide tsunami events as shown in the figure below.

Three tsunami areas monitored by CPPT :

- Regional scenario : Samoa, Tonga & Kermadec Trench
- Pacific scenario : Pacific trenches
- Worldwide scenario : Atlantic, Indian trench (for extreme event)



For earthquake with a preliminary magnitude >= 7.3 located in the Pacific region or located at a tsunami travel time <= 13 hours from French Polynesia, an automatic and preliminary tsunami threat is sent by mail and fax to the NDMO - DPC in less than 15 minutes after the origin time based on the initial earthquake parameters.

The tsunami maximal heights forecast is automatically updated (fast global simulation) as earthquake parameters (Moment magnitude and CMT or FM) are updated.

Then, the NTWC agent on duty will interpret and send reviewed bulletin with forecasts provided in the following hour to the NDMO.

Based on tsunami forecast the tsunami warning threat is based on the following table:

Tsunami warning level is based on tsunami heights forecast and fixed by the civil defense authority in French Polynesia.

NO IMPACT 0 – 30 CM	No alert and no communication to population
MARINE THREAT 30 CM – 1 M	Coastal access restricted and nautical activities are forbidden, ships should leave harbors and go in open ocean. No use of sirens. Localized evacuation can be perform
TSUNAMI THREAT 1 – 3 M	Population warning, sirens triggered 2 hours before the arrival time. Tsunami coastal impact can be observed. Evacuation is recommended.
MAJOR TSUNAMI THREAT > 3 M	Strong coastal inundation is forecast, all concerned area will be evacuated.

- ***What organization acts on the information provided by the agency responsible for characterizing the potential tsunami threat?***
  The agency is: Direction de la Protection Civile – DPC
  This is the Direction of Civil Defense, under the responsibility of High-Commissioner, representative of the French Government.
  The tsunami threat is determined in function of the tsunami forecast heights transmitted by the NTWC: CPPT.

- ***How is the tsunami information (warning, public safety action, etc) disseminated within country? Who is it disseminated to?***
  The tsunami warning level is disseminated via *the media* (TV, radios), the telemetered siren network and GSM network by the Direction of Civil Defense.
  The new mobile broadcasting warning system FR-Alert is implemented and has been tested through multiple exercise. It will be fully operational by mid-2025.

- ***How is the emergency situation terminated?***
  Via the media (TV, radios), the telemetered siren network and GSM network.

- ***For Distant Tsunami Procedures:***
  What actions were taken in response to warnings issued by PTWC, WC/ATWC, and/or JMA NWPTAC during the intersessional period?
  The ***PTWC messages*** are part of the French Polynesian tsunami warning system as a backup to secure the seismic/tsunami detection of the CPPT.
  PTWC bulletins are received at the NTWC (CPPT) as well as at the NDMO (DPC) as a telecommunication back-up. PTWC bulletins are only used as the backup system in case the NTWC is down.

6. National Sea Level Network

Currently there are 12 tide gages installed in harbors in French Polynesia with data shared via "IOC-sea-level facility", are owned/maintained by **University of Polynésie Française (UPF), SHOM, PTWC, LDG & University of Hawaii** (UHSLC).

Station ID (IOC)	City/ Island	Archipelago	Longitude	Latitude	Owner
nuku	Nuku-Hiva	Marquesas	-140.084683	-8.914847	UPF / UHSLC
uapo	Ua Pou		-140.046471	-9.35789	UPF
hiva	Hiva-Oa		-139.034469	-9.804869	UHSLC
rangi	Rangiroa	Tuamotus	-147.706037917	-14.945834667	UPF
make	Makemo		-143.5691	-16.6269	UPF
huahi	Huahine	Society	-151.032445833	-16.721563333	DPC
pape	Papeete Tahiti		-149.572678	-17.533092	UHSLC
pape2	Papeete Tahiti		-149.573165	-17.53237	SHOM
vair	Vairao Tahiti		-149.295298	-17.805923	UPF
tubua	Tubuai	Australes	-149.475529583	-23.341802611	UPF
gamb	Rikitea Mangareva	Gambiers	-134.968888	-23.117774	UPF
riki[1]	*Rikitea Mangareva*		*-134.966628*	*-23.122189*	*UHSLC*

Table 1: French Polynesian sea level network

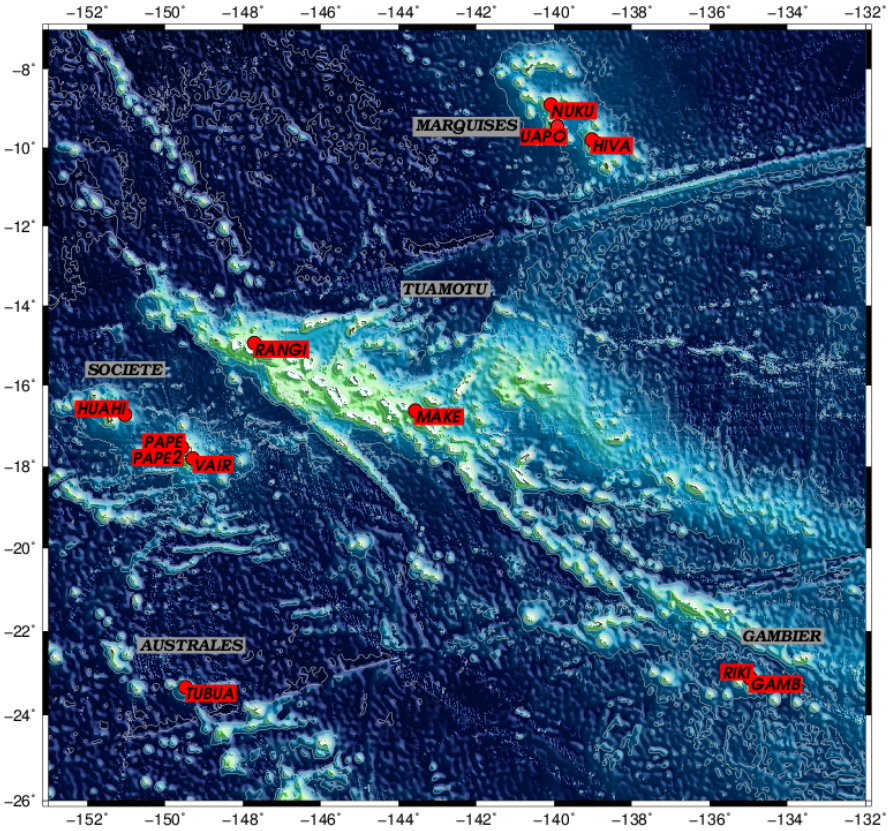


Figure 1 : Tide gages map over French Polynesia.

[1] Station ID *RIKI* from UHSLC has been closed and is permanently replaced by the station ID *GAMB* from the UPF.

7. Information on Tsunami occurrences between 2023-07-01 and 2025-03-01

7.1. Synthesis

Since 2023-07-01, we consider 6 significant events to take into account in this intersessional synthesis. No tsunami threat was sent by NTWC and no tsunami has been recorded in French Polynesia.

Between July 2023 and February 2025, the NTWC (CPPT) issued 10 tsunami bulletins for the 6 events detailed in the table below, five of them reached the tsunami warning threshold at the NTWC (CPPT) that trigger an automatic initial tsunami warning message sent to the NDMO (DPC).

Origin Time (OT) UTC	Region	PDE at OT+15min			CPPT Early Evaluation			GCMT Mw	French Polynesia		
		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)
2023-12-02 14:37:02	Mindanao, Philippines	10	8.587	126.436	3	7.4	7.5	7.6	None	Yes	No-Threat
2024-01-01 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
2024-04-02 23:58:09	Taiwan	35	23.885	122.023	4	7.3	7.4	7.4	None	Yes	No-Threat
2024-06-28 05:36:38	Near Coast of Peru	35	-16.017	-74.469	4	6.9	7.1	7.1	None	No	No-Threat
2024-07-19 01:50:45	Chile-Argentina Border Region	130	-23.070	-67.510	3	7.3	7.4	7.3	None	Yes	No-Threat
2024-12-17 01:47:27	Vanuatu Islands	90	-17.297	167.806	4	7.4	7.2	7.3	None	Yes	No-Threat

Table 2: Event list of NTWC (CPPT) warning triggered with a tsunami evaluation issued to the NDMO (DPC).

The tsunami event from Near Coast of Peru generated by the earthquake of Mw 7.1 on June 28, 2024 was below the tsunami risk threshold for French Polynesia, but a bulletin has been sent to the civil authorities NDMO (DPC) to confirm officially the no risk level (for warning context exercise/ training purpose).

The NDMO (DPC) with NTWC (CPPT) have issued a public information and press release to explain the absence of tsunami risk in French Polynesia following the Vanuatu event (December 2024) regarding fake information shared through different social networks.

Also, following the Kyushu event Mw 7.1 – August 8, 2024, the NTWC (CPPT) participated through TV news to explain locally the Japanese response and preparation after this event in order to avoid any mis-understanding.

8. Web sites (URLs) of national tsunami-related web sites

No tsunami/seismic dedicated web site in French Polynesia, this is an important point of progress:
We need a local web site in the three languages: Reo Tahiti, French and English (For tourists) that gives access to the following tsunami information:

- Tsunami hazard, evacuation map, warning levels explanation
- CPPT historical database and observations of tsunamis in French Polynesian territories.
- Educational materials

The current tsunami brochure for French Polynesia is available here (Reo Tahiti and French):

http://www.polynesie-francaise.pref.gouv.fr/PUBLICATIONS/Brochure-Alerte-Tsunami/(language)/fre-FR

9. Summary plans of future tsunami warning and mitigation system improvements.

9.1. Tsunami detection and forecast system:

- Update the forecast method and map layout for Tahiti and Moorea Islands for a better efficiency (~75% of French Polynesian inhabitants)
- A preliminary W-Phase solution is being tested at OT+10 min for South-West Pacific Region. Results of the study should be shared with WG-PICT and ORSNET.
- A new tide gage from university of French Polynesia has been installed on Raivavae island, Austral archipelago. The station is currently not shared in real time.
- Adding in the NTWC(CPPT) bulletin NDMO-DPC the predicted arrival time of the maximum tsunami height and time of the end of significant impact of the tsunami.
- The second bulletin with preliminary forecast generated automatically by NTWC(CPPT) should be sent automatically as well to NDMO(DPC) especially for Tsunami with a first estimated arrival time lower or equal to 4 hours (End of 2025).
- Revising the tsunami hazard assessment over French-Polynesia using multi-grid simulations from global scale to high resolution digital elevation model, based on joint bathymetry and topography LiDAR campaign measurement, as funded by the French Polynesian government and its Ministry of equipment;
- Adding in the bulletin the maximal tsunami current forecast in main harbors.
- Research and development on tsunami propagation model TAITOKO to be more efficient with less processors, also using GPU (Graphics Processing Unit) technologies.

9.2. Tsunami warning system:

- Improving tsunami evacuation route (enhance the current existing tsunami signs for the evacuation routes and explanation boards);
- Renew or update of Community risk preparedness
- Prepare new communication tool for tsunami hazard and risk awareness;
- [FINAL STEP] Implementation of the warning dissemination and mitigation tool FR-Alert;
- Update of the Siren system monitoring and triggering.

NATIONAL PROGRAMMES AND ACTIVITIES INFORMATION

10. EXECUTIVE SUMMARY

10.1. French Polynesia tsunami warning system:

- In 2021, The ORSEC/PSS Tsunami (specialized tsunami disaster management, response and procedures) has been updated by the NDMO – DPC to adapt the emergency response and tsunami warning organization to the NTWC forecast tools products and response.

- The tsunami threat level is defined by the maximal tsunami height forecast by simulation on the shoreline. The dedicated high-performance computer has been renewed in early 2020.

- Improve our tsunami propagation model TAITOKO to be able to predict the tsunami impact duration so the NDMO – DPC could help to define the evacuation time duration. The is done over a global grid.

- Following the unexpected events of 2021 (Sandwich) and 2022 (HTHH, Tonga), the detection and monitoring area has been globalized and not limited anymore to Pacific Ocean, in order to be able to provide forecast in case of extreme global tsunami events. The NTWC internal tsunami alarm was enhanced by automatic monitoring and forwarding any DART system detection into the Pacific to the tsunami on-duty officer.

- New tsunami signs for the evacuation routes and tsunami risk area have been implemented in several communities.

10.2. Tsunami Exercise:

- PACWAVE 2024 & PICT Regional exercise were organized into a regional cooperation to test and evaluate regional cooperation and test direct informational communication between PICT member's NTWC and NDMO.

- The month of June has been defined to hold the tsunami awareness day and any enlarged tsunami exercise (involving a community for evacuation exercise), the next exercise has been set to 3rd of June 2025 to be used as well for tsunami risk awareness and formation.

- Every year, several evacuation exercises are regularly made by the NDMO – DPC involving schools and/or a whole community (a valley).

- Ongoing implementation of the warning dissemination and mitigation tool FR-Alert, with three global communication exercise already performed.

10.3. Education:

- Between 2 and 3 schools visits per year at the LDG-Tahiti/CPPT.

- DPC (NDMO) & LDG-Tahiti/CPPT used to make some oral presentation on natural hazards risk of French Polynesia for schools and teachers

- Active participation to Science day for tsunami risk awareness.

- Training and awareness preparedness updated and shared with Education Department.

Date: 22/03/2025 **Name***: J.POUSSAC (DPC), A.JAMELOT (LDG-TAHITI, CPPT)*