NATIONAL REPORT
Submitted by FRANCE (NEW CALEDONIA)

BASIC INFORMATION

1. ICG/PTWS Tsunami National contact (TNC)

TNC for France
Commissariat à l'Energie Atomique et aux Énergies Alternatives / Département Analyse Surveillance Environnement - CEA/DASE
François SCHINDELE
CEA - Bruyères-Le-Châtel 91297 Arpajon CEDEX France
francois.schindele@cea.fr - +33 169265063

2. ICG/PTWS Tsunami Warning Focal Point (TWFP)

TWFP #1 - Direction de la sécurité civile et de la gestion des risques - DSCGR - Government of New Caledonia
Watch Officer 24h/24
Mobile: - Fax: +

7 rue Paul Doumer, Bâtiment N, BP M2, 98849 Nouméa Cedex, New Caledonia

TWFP #2 - Centre opérationnel de surveillance et de sauvetage de Nouvelle-Calédonie - COSS-NC
Watch Officer 24h/24
Tel: - Fax:

Quartier Alleyron, BP 38, 98843 Nouméa Cedex, New Caledonia

TWFP #3 - Etat-major interministériel de zone - EMIZ - French state
Watch Officer 24h/24
Tel: (open days)
Mobile: (nights, week-ends and holidays)
1 avenue du Maréchal Foch – 98800 Noumea Cedex, New Caledonia

TWFP alternate - Institut de recherche pour le développement - IRD
101 Promenade Roger Laroque, BP A5, 98848 Nouméa Cedex, New Caledonia
tsunami.nc@ird.fr

National Tsunami Warning Centre - Direction de la sécurité civile et de la gestion des risques - DSCGR - Government of New Caledonia

3. Tsunami Advisor(s) if applicable

Jérôme AUCAN - IRD research scientist (in secondment) - Head of the Pacific Community Centre for Ocean Science (PCCOS) at SPC
CPS – BP D5, 98848 Nouméa Cedex, New Caledonia
jeromea@spc.int

Regulatory framework in New Caledonia
- *28 August 2012* - Tsunami civil security response organization plan (ORSEC)
- *15 June 2016, updated on 28 September 2021* - Tsunami operational procedure
- *31 July 2017* - Order No. 2017-008196 relating to the alert signal in New Caledonia

4. Tsunami Standard Operating Procedures for a local Tsunami

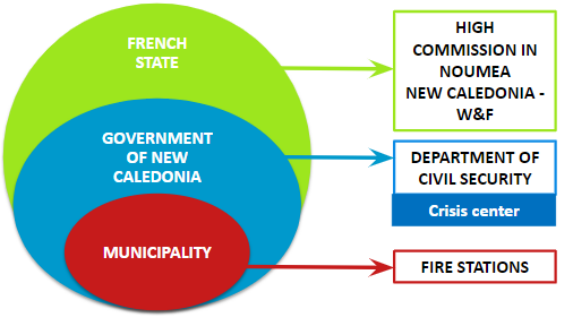
The local tsunami threat is the local seismicity and Vanuatu trench, with epicenter distance ranging between 70 and 500 km from New Caledonia (area 3 of the analysis grid - New Caledonia and Vanuatu). Given this proximity, natural evacuation criteria is given as shaking lasting more than 20 seconds and/or unabling to stand. For the watch officer at DSCGR, it is then an immediate reaction for triggering sirens and following ORSEC procedure.

5. Tsunami Standard Operating Procedures for a distant Tsunami

Tsunami risk management organization in New Caledonia

Since the transfer of skill for civil security, government of New Caledonia through Directorate for Civil Security and Risk Management (DSCGR) is responsible for prevention of risks of all kinds, informing and alerting populations as well as protection of people, property and environment throughout the territory.

An officer of the operational center of the government (COG 988) is on call H24 and 7/7. He is connected with the on-call duties of the other operational rooms (COSS NC and State) to cross-check the information and with IRD/CPS experts.



Three steps

a. Reception of the alert

The three TWFP agency contacts, which are operational rooms, receive :

1/ seismic information directly from the IRD/ORSNET system, based at IRD in Noumea, via text message and email. These messages provide location, depth and magnitude within minutes of the event.

SMS -

ird2023opcydt * 4 * Vanuatu Islands Mw(Mwp)=6.6 2023/07/26 12:44:36.7 14.87 S 167.85 E 5 km https://bit.ly/3OwaxCH

Email - ird2023opcydt Vanuatu Islands Mw(Mwp)=6.6 2023/07/26 12:44:36.7 14.87 S 167.85 E 5 km

Oceania Regional Seismic Network (ORSNET) - http://www.orsnet.org
This is an automatic detection: event has not yet been reviewed by a seismologist
For subsequent updates, maps, and technical information, see https://bit.ly/3OwaxCH
Alert ird2023opcydt: determined by 21 stations, type A
LOCSAT solution with earthmodel iasp91_scanloc (with start solution, 21 stations used, weight 21):
Vanuatu Islands Mw(Mwp)=6.6 2023/07/26 12:44:36.7 14.87 S 167.85 E 5 km
Stat Net Date Time Amp Per Res Dist Az mb ML mB
MRNO VU 23/07/26 12:44:40.0 0.0 0.0 -0.9 0.2 117 0.0 6.0 0.0 etc.
RMS-ERR: 1.52
First location: 2023/07/26 12:46:28
This location: 2023/07/26 12:49:04

2/ PTWC tsunami information statement, from PTWC based in Hawaï, via email, several minutes after the IRD/ORSNET messages.

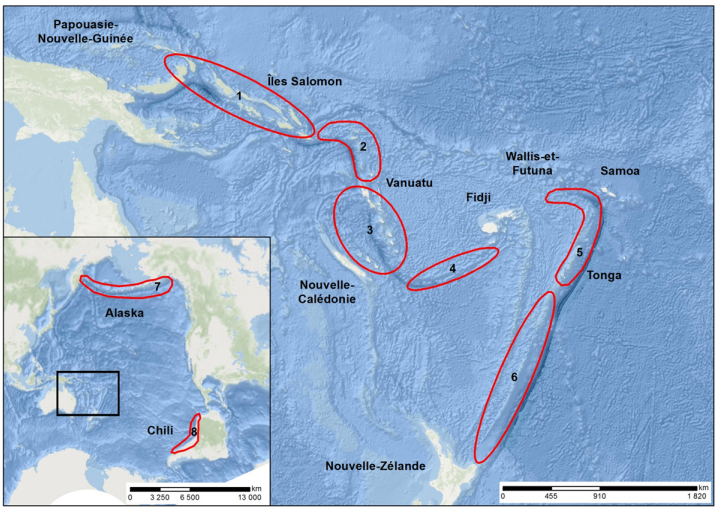
Also, the warning can be provided from tsunami experts from IRD or any civil security actor through several phone calls.

TWFP #1 / NTWC is the country NDMO, TWFP #2 is the Maritime Safety Agency and TWFP #3 is the French State. TWFP #1 and #3 will disseminate information for entire country and more specifically on land, TWFP #2 to mariners and ships. TWPP #3 is in charge of Wallis-and-Futuna. TWFPs are exchanging information throughout the event.

b. <u>Risk analysis according to a grid</u>

The Tsunami operational procedure is implemented as soon as alert messages are received, taking into account the location, magnitude (greater than 6.5) and depth (between 0 and 100 km) and/or the feelings of the population following an earthquake / the call from a tsunami expert.

For the location of the earthquake, height (8) geographical areas have been identified with the IRD experts. Depending on the area, scenarios and operational responses are different.



1 LOCATION OF EARTHQUAKE		2 DEPTH LESS THAN 100 KM	3 MAGNITUDE	4 IRD EXPERTISE	5 PTWC
AREA 1	New Britain New Ireland Papua New Guinea Solomon Islands		0.0 – 6.5 – 7.9: LOYALTY ISLANDS & MAIN ISLAND ETA: 1h30-2h40	**Contact the IRD expert for further information:** - when the risk is not proven and magnitude greater than 6.5 - when the risk is confirmed	**Refine the risk analysis:** using the elements sent by the PTWC (KMZ...).
AREA 2	Banks Islands Santa Cruz Islands Torres Islands		0.0 – 6.5 – 7.6: LOYALTY ISLANDS & EAST COAST ETA: 1h10-1h30 7.6 – 7.9: LOYALTY ISLANDS & MAIN ISLAND ETA: 1h20-1h40		
AREA 3	New Caledonia Vanuatu		0.0 – 6.5 – 7.2: LOYALTY ISLANDS & EAST COAST ETA: 0h10-0h30 7.2 – 7.9: LOYALTY ISLANDS & MAIN ISLAND ETA: 1h00		
AREA 4	Fiji Minerva Reefs		0.0 – 6.5 – 7.6: LOYALTY ISLANDS & EAST COAST ETA: 0h30-2h00 7.6 – 7.9: LOYALTY ISLANDS & MAIN ISLAND ETA: 1h00-2h20		
AREA 5	Tonga Trench Wallis and Futuna		0.0 – 6.5 – 7.9: LOYALTY ISLANDS & MAIN ISLAND ETA: 3h00-3h30		
AREA 6	New Zealand Kermadec Ridge		0.0 – 6.5 – 7.9: LOYALTY ISLANDS & MAIN ISLAND ETA: 2h30-3h00		
AREA 7	Alaska		0.0 – 6.5 – 8.5: LOYALTY ISLANDS & EAST COAST ETA: 11h00-15h00		
AREA 8	Chili		0.0 – 6.5 – 8.5: SOUTH WEST & MAIN ISLAND ETA: 11h00-15h00		

Tsunami heights are monitored on the IOC sea-level monitoring website for neighboring tide gauge stations, and on the NOAA/NDBC and GEONET webpages for DART stations.

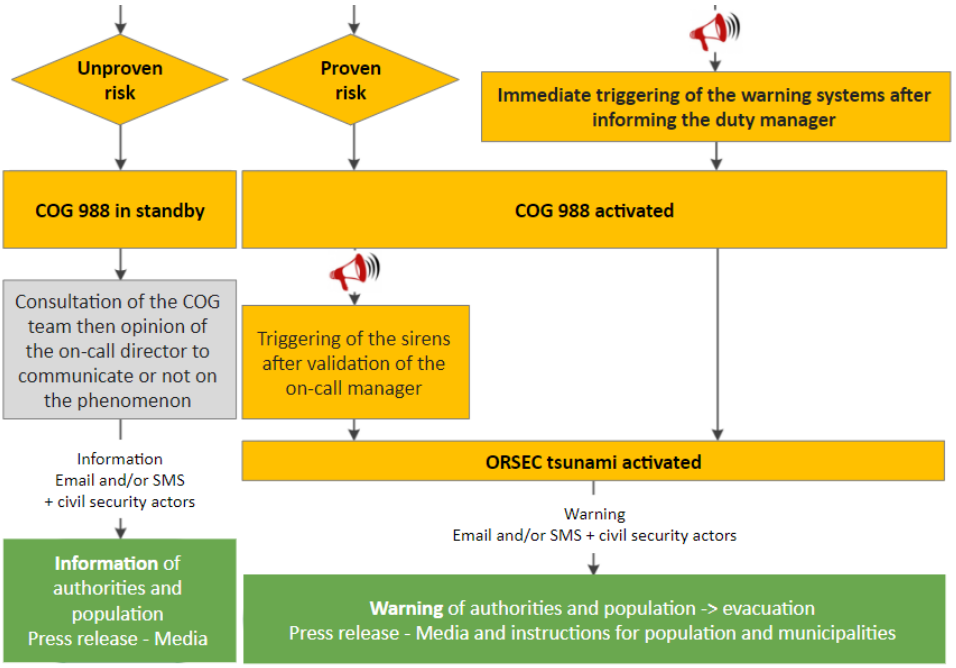
c. Operational response

Two scenarios are possible:

1/ a reflex reaction with an immediate triggering of the sirens according to well-defined criteria - earthquake felt significantly in New Caledonia AND/OR earthquake with a proven and immediate risk according to the analysis grid (zone 3 - New Caledonia and Vanuatu) AND/OR reasoned opinion from the IRD/CPS expert to the DSCGR.

2/ a risk analysis with the exploitation of the different messages and sources of information, using an analysis grid, and in connection if possible with an IRD/CPS expert (TWFP alternate and/or tsunami advisor) .

- *Either the risk is not proven*: there is no action required from the population.
- *Either the risk is proven:*
  - There is an evacuation of the coast / coastal strip in the geographical sector concerned, following abnormal movements of the sea level (no sirens triggered); **OR**
  - There is an evacuation to high points or refuge areas in the geographical sector concerned (areas defined as points of altitude higher than 12 meters and/or located more than 300 meters from the coast) following the triggering of the sirens.



Triggering of the sirens (in reflex reaction or after analysis of the phenomenon) is carried out by the COG 988 officer after validation by the director of the DSCGR, in conjunction with the President of the government of New Caledonia. It is carried out using an application developed by Assystem with three geographical sectors: the East coast and the islands (Loyalty Islands and Île des Pins) / the West coast (Bourail) / the entire territory.

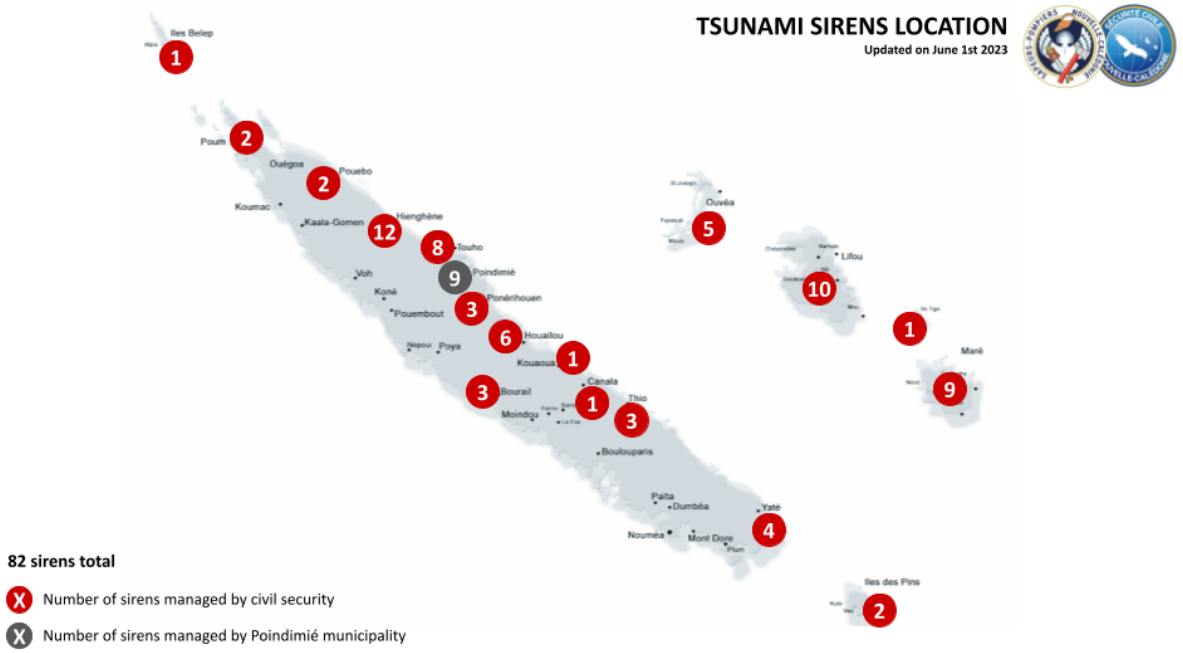
Information is then disseminated by DSCGR:

- to institutions and local authorities (ORSEC list) by email, SMS, telephone call with transmission of the press release, instructions to the mayor and the population and the decree if the ORSEC Tsunami plan is activated;
- to the public via the media and social networks. The websites that can be consulted are those of the DSCGR (securite-civile.gouv.nc), the PTWC (tsunami.gov) and the IRD (seismes.nc).

There is a mobilization of operational resources of:

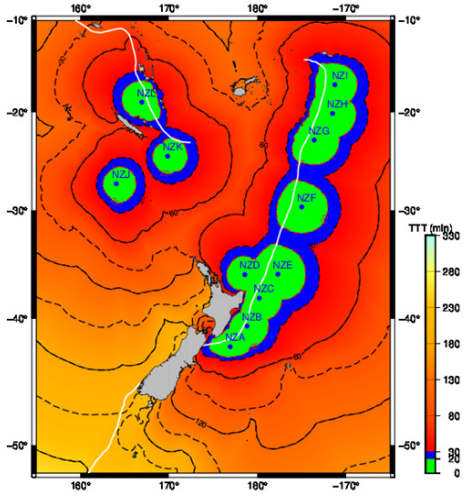
- municipalities, as part of their municipal safeguard plan;
- government;
- French state;
- approved civil security associations, if necessary.

In 2023, the government of New Caledonia (DSCGR) manages all the tsunami warning systems (preventive and curative maintenance carried out by Assystem), with the exception of the nine (9) sirens in the municipality of Poindimié, i.e. a total of 73 sirens.



6. National Sea Level Network

There are seven (7) tide gauges around New Caledonia. SHOM (Service hydrographique et océanographique de la Marine) is taking care of the network.



Source - Roger & Burbidge, 2022

In addition to the data from the permanent tide gauges, New Caledonia is using the data from New Zealand DART (Deep Assessment and Reporting of Tsunamis) network (12 stations total). 2 DART stations NZK and NZL between New Caledonia and Vanuatu have been installed since July 2021, to record tsunamis generated at the Vanuatu Trench in less than 30 minutes.

7. Information on Tsunami occurrences

Since January 1st 2021, the operational room has received 96 warnings from IRD/ORSNET and PTWC (see Annex 1). Timelines and observations of 3 major events are described below. Lessons learned from post-event briefs allowed civil security to design an action plan (paragraphs I.9 and II).

March 04, 2021 - Kermadec Islands event - Mw 8.1 - Event combined with Niran cyclone

Crisis center was already activated for the Niran cyclone in Nouméa (South Province), as well as one in Koné (North Province), with prepositioned teams of firefighters.

Time (UTC)	Event
19:28	Email of the PTWC n° 1 - PTWC Tsunami Threat message
20:34	- Triggering of sirens throughout the territory - Evacuation of the coastlines on the East Coast, Loyalty Islands, Isle of Pines, Nouméa and islets around, with firefighters, municipal teams and police / gendarmerie
21:00	- Triggering of sirens in Poindimie municipality - First SMS message to ORSEC list
21:10	Press release n° 1 sent by email to ORSEC and media lists
22:03	ORSEC tsunami activation order and press release n° 2 sent by email to ORSEC and media lists
22:20	Takeoff of helicopter with officer on board to confirm evacuation of islets around Nouméa
22:11	Email of availability from the French Red Cross NGO, based in Nouméa
22:20	Call from tsunami expert after receiving the last Niran cyclone trajectory - risk of storm surge, effect on the lagoon and Nouméa: add 1 meter to high tide + lagoons
22:34	Activation of the toll-free number 05.05.05 (public information unit)
01:30 (03/05)	End of the tsunami warning signal
01:32 (03/05)	Deactivation of the toll-free number 05.05.05 (public information unit)
01:48 (03/05)	End of ORSEC activation order and press release n° 3 sent to ORSEC list

Tsunami wave observations from gauges - PTWC Tsunami message n° 9

GAUGE LOCATION	GAUGE COORDINATES LAT	LON	TIME OF MEASURE (UTC)	MAXIMUM TSUNAMI HEIGHT	WAVE PERIOD (MIN)
HIVA OA MARQUESAS	9.8S	139.0W	0155	0.23M/ 0.8FT	14
RIKITEA PF	23.1S	135.0W	0133	0.08M/ 0.2FT	16
NUKU HIVA MARQUESAS	8.9S	140.1W	0143	0.25M/ 0.8FT	12
PAPEETE TAHITI	17.5S	149.6W	2338	0.17M/ 0.6FT	14
HUAHINE PF	16.7S	151.0W	2349	0.10M/ 0.3FT	06
LENAKEL VU	19.5S	169.3E	2249	0.30M/ 1.0FT	12
MARE NEW CALEDONIA	21.5S	167.9E	2322	0.11M/ 0.4FT	08
LAUTOKA FJ	17.6S	177.4E	2325	0.03M/ 0.1FT	20
SUVA VITI LEVU FJ	18.1S	178.4E	2220	0.08M/ 0.3FT	38
TUBUAI PF	23.3S	149.5W	2313	0.08M/ 0.3FT	16
KINGSTON NORFOLK IS	29.1S	168.0E	2239	0.56M/ 1.8FT	10
GREAT BARRIER IS NZ	36.2S	175.5E	2248	0.30M/ 1.0FT	06
APIA UPOLU WS	13.8S	171.8W	2241	0.03M/ 0.1FT	12
NORTH CAPE NZ	34.4S	173.0E	2150	0.15M/ 0.5FT	32
EAST CAPE NZ	37.6S	178.2E	2153	0.16M/ 0.5FT	14
NUKUALOFA TO	21.1S	175.2W	2129	0.05M/ 0.2FT	30

January 15, 2022 - Hunga Tonga Hunga Ha'apai (HTHH) event - Volcanic eruption

Time (UTC)	Event
04:10	Beginning of the eruption
04:27	Explosion reported on social medias
05:25	Tonga tide gauge observed
05:27	Email of the PTWC n° 7 - "head's up" **Warning! This email has not been received by the department of civil security -> only on Sunday january 16 2022 at 07h21 (local time)**
05:30	Tsunami expert call to civil security Anomalous sea level movements are expected in New Caledonia: East Coast, Pines Island and Loyalty Islands
06:00	Activation of the crisis center
06:01	Duty officer at the crisis center ask the tsunami expert if W&F will be impacted by the event -> the expert answers yes
06:04	Duty officer at the high commission in Noumea is notified of the risk (for W&F)
06:31	MRCC is notified of the risk -> dissemination of prevention messages on the marine VHF to sea users
06:35	First SMS message to civil security responders "Following the eruption in Tonga, anomalous sea level movements are expected on the East coast, Loyalty Islands around 19:00." (local time)
06:41	Tsunami expert informs the duty officer at the high commission in Noumea that W&F will be impacted within the next quarter of an hour and that monitoring of the ashes projected by the volcano will have to be monitored
06:54-07:21	Contact by phone with all the fire stations concerned by the event
07:20	First set of movements at Lifou tide gauge observed Movements visible since 17:15 (06:15 UTC) - Direct propagation speed =320 m/s
07:21	Second SMS message to civil security responders "Anomalous sea level movements happening now on the East coast and Loyalty Islands."
07:23	Press release "Following the eruption in Tonga, anomalous sea level movements are expected on the East coast, Loyalty Islands around 18:00. No flooding expected, so no evacuation needed but stay away from the beach."
08:00	Second set of movements observed at Lifou Movements visible since 18:40 (07:40 UTC)
08:22	Third SMS message to civil security responders "Main event has passed, but movements can persist for hours, stay away from the shore."
09:00	Crisis center disabled
09:00-13:00	Active watch by duty officer - Calls on the duty phone of the various actors of civil security for the follow-up of the event - Mail from Météo France about the ash clouds generated by the eruption, and their probable impact on Monday January 16

May 19, 2023 - Southeast Loyalty Islands event - Mw 7.7

Time (UTC)	Event
03:00	IRD/ORSNET - SMS Southeast of Loyalty Islands mb=7.0 2023/05/19 02:57:06.5 23.15 S 170.59 E 124 km
03:02	Tsunami expert call from civil security duty officer - Recommendation for triggering the alert Immediate phone call with French State to alert for Wallis-and-Futuna
03:03	Email of the PTWC n° 1 - PTWC Tsunami Threat message
03:03	Triggering of sirens throughout the territory
03:06	Information of the authorities (Director, HCR, MRCC, CORG) + Municipality of Poindimié
03:15	Activation of the crisis center
03:21	Tsunami expert call to civil security - expected waves between 20 and 30 cm - West Coast and Loyalty Islands mainly affected - West Coast most probably not affected
04:01	Wave observed in Mare - 15 cm
04:08	First SMS message to civil security responders “Tsunami alert in progress in New Caledonia - Follow safety instructions - securite-civile.gouv.nc - Civil Security”
04:15	Wave observed in Mare - 40 cm
04:22	Wave observed in Isle of Pines - 50 cm
04:24	Civil security Facebook updated
04:43	ORSEC activation order, press release and instructions to mayors and population sent to ORSEC list
04:45	- Press release and instructions to population sent to media list - Wave observed in Mare - 40 cm
04:51	SMS message to civil security responders “End of tsunami warning - Civil Security”
05:13	Press release sent to media list
05:23	Civil security Facebook updated
05:28	End of ORSEC activation order and press release sent to ORSEC list
06:00	Crisis center disabled

Tsunami wave observations from gauges - PTWC Tsunami messages n° 4 and 7

➔ LIFOU, NEW CALEDONIA	03:40 UTC	0.05 M	10 min wave period
➔ MARE, NEW CALEDONIA	03:42 UTC	0.08 M	12 min wave period
➔ LIFOU, NEW CALEDONIA	04:00 UTC	0.12 M	6 min wave period
➔ LENAKEL, VANUATU	04:02 UTC	0.45 M	4 min wave period
➔ OUINNE, NEW CALEDONIA	04:06 UTC	0.20 M	8 min wave period
➔ THIO, NEW CALEDONIA	04:09 UTC	0.07 M	20 min wave period
➔ MARE, NEW CALEDONIA	04:13 UTC	0.19 M	6 min wave period
➔ LENAKEL, VANUATU	04:44 UTC	0.52 M	4 min wave period
➔ HIENGHÈNE, NEW CALEDONIA	04:54 UTC	0.03 M	20 min wave period
➔ LENAKEL, VANUATU	05:11 UTC	0.61 M	4 min wave period
➔ RAOUL IS BOAT COVE	05:23 UTC	0.07 M	6 min wave period
➔ NORTH CAPE, NEW ZEALAND	05:32 UTC	0.21 M	6 min wave period
➔ FISHING ROCK RAOUL	05:35 UTC	0.15 M	4 min wave period
➔ EAST CAPE, NEW ZEALAND	05:44 UTC	0.11 M	8 min wave period

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

DSCGR (NDMO): securite-civile.gouv.nc
IRD/ORSNET (earthquake detection): seisme.nc

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

ALERT RECEPTION - IMPROVEMENT OF IRD/ORSNET AND PTWC PRODUCTS SINCE 2023

IRD/ORSNET products:

They have been adapted to fit better with the needs of the crisis center and to have a better coverage of the regions that concern NC and reception of local earthquakes (hazard to be now taken into consideration given the latest studies and the multiplication of the feelings of the population). Instead of receiving messages for worldwide seisms with magnitude greater than 6.4 (about 50 messages per year), about 30 messages per year based on:

1. events of magnitude greater than or equal to 3 within a radius of 300 km around Bourail (this covers the whole of Grande Terre + Belep + Isle of Pines + Loyalty Islands) -> local earthquakes;
2. events of magnitude greater than or equal to 6.5 within a radius of 3000 km around Noumea. This covers NZ, Kermadec, Tonga, Fiji, Vanuatu, Solomon, PNG, so the entire South West Pacific area;
3. events of magnitude greater than or equal to 7.5 elsewhere, outside the South West Pacific zone beyond 3000 km around Noumea.

PTWC products:

1. splitting of the existing polygon that encompasses the entire territory into three polygons, to better reflect the difference in hazard levels in New Caledonia;
2. additional ETA points nearby tide gauges spread across the entire territory, instead of a single initial one located offshore of Noumea.

Contact lists for both products have been updated for New Caledonia at the same time as all improvements made.

MONITORING NETWORK

New Caledonia is applying to different fundings with governmental technical directorates and partners involved (SHOM, IRD) in order to consolidate and/or extend monitoring networks:

➔ *Tide gauges* - extend network by having two more tide gauges in Isle of Pines and up North (location to be defined) to have nine (9) gauges total;
➔ *Seismic stations* - consolidate existing network (relocate two stations in Lifou and South-East coast) and extend it with one more station on the North-East coast (Touho or Poindimié, location to be defined) to have height (8) fully functional stations.

CRISIS MANAGEMENT TOOLS

TsuCAL project

The initial objective of TsuCAL, a research project carried out jointly by the research institute for development (IRD) and the civil security and risk management directorate (DSCGR), is to offer duty officers of the operational center of the government (COG 988) an additional decision-making tool for tsunami warning management. This tool has been operational since June 9, 2023.

TsuCAL data are intended to form a catalog of exposure maps of New Caledonia coastline to a representative sample of tsunamis from regional and distant sources (about 3000 scenarios). Exposure to the hazard is characterized by maps of maximum amplitude (Hmax) and supplemented by an indication of waves arrival times (Estimated Time of Arrival) for different municipalities. These results are available at a Pdf format and on ARCGIS online at the operational crisis center. Warning messages are sent by email giving the most relevant scenario according to the seismic event.

Establishment of a tsunami committee of experts, whose first meeting was held on 15 June 2023, is to use these TsuCAL modeling results for decision-making support on municipal prevention measures. The municipality of Noumea offered at the conference on tsunami risk on 6 September 2022 to be a test municipality, given the human and material resources available within its GIS department. The method put in place must therefore be replicable on other coastal sectors and applicable at the scale of the territory. It will therefore be necessary to define a local methodological standard.

Three working groups have been identified:
WG 1 - Exploitation of TsuCAL data and cartography
WG 2 - Evacuation and signage
WG 3 - Risk culture / training

Need of LiDAR type reference data
Better knowledge of marine and land topography is one of the keys to significantly improve models. Unlike many Pacific Island Countries and Territories (PICTs), much of New Caledonia remains devoid of LiDAR coverage on land, and most of its lagoon, being the largest in the World with an area of 24000 km², is still unknown in terms of high-resolution bathymetry.

In order to make up for this lack of data, a working group has existed since January 2023 and brings together five technical departments of the government of New Caledonia. It is dedicated to find funding to acquire reference data for the purpose of characterizing hazards and associated risks. Several applications are pending in order to cover up to 60% of the coastline of New Caledonia (500 m inside land and 0-20 m bathymetry). This high-resolution data will be used, among other thematics, to:
- improve TsuCAL modeling - for now, only maximum amplitudes have been simulated based on 3000 seismic scenarios, the goal being to have inundation calculations (runup distances and flow depth).
- design hazard and risk maps and define evacuation roads and safe areas.

Access to tsunami expertise by duty officers on-call in case of event
Since civil security skill transfer in 2014, there is no on-call duty IRD expert in New Caledonia. Different ways are explored to solve this problem:
- Access to 24-hour on-call expertise in France (CENALT) or French Polynesia (LDG-CCPT) -> a request letter has been written by the government of New Caledonia to the French High Commissionary. Action is in progress and an answer is expected in 2024.
- Set-up of a persistent tsunami committee of experts, with a contact list of people able to join the crisis center in case of an event.

Development plan for warning systems
- *Sirens* - existing development plan has to be modified following TsuCal results with a new prioritization of municipalities - 2 to 3 sirens can be installed per year according to available budgets. Also, apart from this plan, there is a project of mutualisation with the municipality of Noumea and the government to install several sirens for both shark and tsunami risks on Noumea coastline. Work is in progress to update the siren triggering software with the service provider Assystem.

- *FR-alert* - a warning tool developed by the French state, available and operational in New Caledonia in 2024, allowing sending text messages on individual mobile phones and using cell-broadcast technology in 4G/5G and geolocated SMS in 2G/3G.

II. NATIONAL PROGRAMMES AND ACTIVITIES INFORMATION

1. Integration of New Caledonia in working groups (WG) and task teams (TT), via France TNC:

- WG-2 - Tsunami detection, warning and dissemination
- WG-3 - Disaster risk management and preparedness
- WG - Pacific Island Countries and Territories (PICT)
- TT - PacWave
- TT - Tsunami Ready
- PTWS Post-event Brief I - 15 January 2022, Hunga-Tonga-Hunga-Ha'apai Volcanic Eruption and Tsunami

2. Participation of New Caledonia at PacWave22 exercise with three events:

- *October 13, 2022 - PacWave22 Live TSP Communications Test*
- *November 9, 2022 - PacWave22-PICT regional exercise* with other countries in the Pacific region in order to test 1/ new PTWC products for HTHH volcanic eruption, and 2/ unofficial communication channels (email / WhatsApp / HF radios) -> Production of an internal post-event brief -> Form completed and sent to the Pacific region
- November 22, 2022 - PacWave22-NC national exercise - Tabletop exercise in relation with the other operational rooms and two municipalities -> Production of an internal post-event brief -> Form completed and sent to the Pacific region

3. Organization of a conference on tsunami risk in New Caledonia - September 6, 2022

The conference on tsunami risk in NC took place on September 6, 2022 in the hemicycle of the Pacific Community (SPC). Its main goals were:
1/ to provide the same level of information on tsunami risk to all institutions;
2/ to be a place of exchange, which becomes sustainable;
3/ to allow an opening towards the Pacific region.

Thus, 67 participants (in person) and representatives of UNESCO and civil protection of Wallis-and-Futuna (by visio) were able to attend it. Speakers (IRD, SPC, UNESCO and DSCGR) covered as thematics 1/ the definition of tsunami risk, 2/ the post-event briefs, 3/ the various existing measurement networks, 4/ the risk management in New Caledonia, 5/ the TSUCAL project and 6/ the opening towards the Pacific region.

Throughout exchanges during the day, an action plan has been developed by DSCGR and is ongoing. A progress point should be presented at the end of the year, taking advantage of the organization of a new caledonian hub as part of the Pacific Resilience Meeting (October 11-13, 2023).

4. Tsunami Ready program

New Caledonia wishes to implement the UNESCO Tsunami Ready program in three test municipalities, one on the East Coast, one on Loyalty Islands and Noumea. Work is in progress to put in place the national committee and proceed to meet all 12 indicators.

5. Development of a communication plan

<u>Crisis</u>

- Creation of templates for press releases according to possible scenarii
- Development of graphical chart and Facebook banners

<u>Public</u>

- Participation to two events:
  - September 29-30, 2022 - Scientific workshop dedicated to the Cenalt 10 year anniversary
  - December 9, 2022 - OBLIC seminar
- Promotion of a comic strip with a board dedicated to tsunami risk, being the translation of the major risks file in New Caledonia (official document 2016) for children
- Ongoing work to develop Facebook posts on tsunami risk
- Regular articles in local newspapers, participation in radio programs

Institutional

- Permanent link with all institutional levels in New Caledonia from municipalities, provinces, government to French State

6. Training of duty officers

After the HTHH event in January 2022, annual training has been put in place for duty officers with the participation of tsunami experts (IRD-SPC).

Narrative

Date: 2023/09/01 Name: Céline BARRÉ (DSCGR)

Annex 1 - Events from 2021/01/01 to 2023/09/01 - PTWC and IRD warning messages

#	Mw	Time (UTC)	Date	Location	Depth (km)	Action	PTWC	IRD
1	6.6	05:01	January 8 2021	Vanuatu Islands	123	Press release		X
2	7.7	13:20	February 10 2021	Southeast of Loyalty Islands	20	Press release	X	X
3	6.7	00:49	February 16 2021	Vanuatu Islands	10	Press release		X
4	7.1	13:40	March 4 2021	New Zealand	10	-	X	
5	8.1	19:28	March 4 2021	Kermadec Islands Region	10	Triggering of sirens	X	
6	6.9	10:09	March 20 2021	Near East Coast of Honshu, Japan	45	-		X
7	6.7	07:01	May 2 2021	Chile	-	-		X
8	6.8	22:13	May 21 2021	Fiji Region	10	-	X	
9	8.1	06:16	July 29 2021	Alaska Peninsula	17	-	X	
10	7.1	10:10	August 18 2021	Vanuatu	84	-	X	
11	6.7	21:33	August 22 2021	South Sandwich Islands Region	5	-		X
12	6.5	02:53	August 31 2021	Kermadec Islands Region	40	-	X	
13	6.5	18:35	September 1 2021	Near coast of Northern Chile	15	-		X
14	6.4	18:05	September 20 2021	Tonga Islands	128	-		X
15	6.4	23:15	September 21 2021	Near SE coast of Australia	16	-		X
16	6.7	09:57	September 22 2021	Near the coast of Nicaragua	10	-	X	X
17	6.8	09:10	October 11 2021	Alaska Peninsula	40	-	X	X
18	7.6	03:20	December 14 2021	Flores Sea	76	-	X	
19	6.4	16:25	January 06 2022	Near coast of Nicaragua	8	-		X
20	6.7	11:36	January 11 2022	Fox Islands Aleutian Islands Alaska	5	-	X	X
21	-	04:27	January 15 2022	Tonga	-	Volcanic eruption	X	
22	6.4	11:14	January 28 2022	South of Panama	5	-		X
23	6.6	02:46	January 29 2022	Kermadec Islands Region	33	-	X	
24	7.0	07:12	February 16 2022	Guatemala	5	-		X
25	6.6	20:21	February 16 2022	South of the Fiji Islands	568	-	X	
26	6.8	12:52	March 2 2022	Kermadec Islands New Zealand	33	-	X	
27	6.4	21:09	March 13 2022	Southern Sumatra, Indonesia	10	-		X
28	7.3	14:37	March 16 2022	Near the East coast of Honshu Japan	33	-	X	X
29	6.9	17:42	March 22 2022	Taiwan	10	-	X	
30	7.0	20:57	March 30 2022	Southeast of Loyalty Islands	10	-	X	X
31	7.2	05:44	March 31 2022	Southeast of Loyalty Islands	10	Press release	X	X

#	Mw	Time (UTC)	Date	Location	Depth (km)	Action	PTWC	IRD
32	6.8	19:51	March 31 2022	Southeast of Loyalty Islands	10	Press release	X	X
33	7.3	10:14	May 19 2022	Macquarie Island Region	29	-	X	X
34	7.2	12:02	May 26 2022	Central Peru	212	-	X	X
35	6.9	15:38	May 26 2022	Southeast of Loyalty Islands	10	-	X	X
36	6.5	23:38	June 4 2022	Rat Islands, Aleutian Islands	99	-		X
37	6.6	19:17	July 12 2022	Easter Island Region	33	-	X	X
38	6.8	00:43	July 27 2022	Luzon Philippines	15	-	X	X
39	6.8	13:44	August 14 2022	South of the Kermadec Islands	33	-	X	X
40	6.8	04:52	September 5 2022	Sichuan, China	32	-		X
41	6.4	23:10	September 10 2022	Southern Sumatra, Indonesia	50	-		X
42	7.7	23:47	September 10 2022	Eastern New Guinea Region PNG	79	-	X	X
43	7.0	11:04	September 14 2022	Southeast of Loyalty Islands	124	-	X	X
44	6.6	13:41	September 17 2022	Taiwan	45	-	X	X
45	7.2	06:44	September 18 2022	Taiwan	10	-	X	X
46	7.5	18:05	September 19 2022	Near the coast of Michoacan Mexico	10	Press release	X	X
47	7.0	06:16	September 22 2022	Michoacan Mexico	61	-	X	X
48	6.5	22:20	October 13 2022	New Ireland Region, PNG	99	-		X
49	6.7	12:48	October 16 2022	Off the coast of Central America	10	-	X	X
50	6.9	11:57	October 20 2022	South of Panama	10	-	X	X
51	6.5	04:26	November 4 2022	El Salvador	38	-		X
52	6.6	04:57	November 7 2022	Baja California, Salvador	5	-		X
53	6.7	09:39	November 9 2022	South of the Fiji Islands	653	-	X	X
54	7.0	09:51	November 9 2022	South of the Fiji Islands	670	-	X	X
55	6.5	10:15	November 9 2022	South of the Fiji Islands	623	-	X	
56	7.5	10:49	November 11 2022	Tonga Region	33	-	X	X
57	6.5	04:39	November 12 2022	Guatemala	10	-		X
58	6.7	07:09	November 12 2022	Fiji Region	587	-	X	X
59	6.7	02:23	November 13 2022	Off Coast of Central Chile	2	-		X
60	6.6	08:08	November 14 2022	Near S. Coast of Honshu, Japan	367	-		X
61	7.3	02:03	November 22 2022	Solomon Islands	10	Press release	X	X
62	7.0	12:33	January 8 2023	Vanuatu	10	-	X	
63	-	-	February 1 2023	Vanuatu East EPI	-	Volcanic eruption		
64	6.6	00:37	February 2 2023	Tajikistan	5	-		X

#	Mw	Time (UTC)	Date	Location	Depth (km)	Action	PTWC	IRD
65	6.5	05:36	March 1 2023	Bismarck Sea	583	-	X	
66	6.8	18:05	March 2 2023	Vanuatu	33	-	X	X
67	6.9	06:41	March 4 2023	Kermadec Islands New Zealand	152	-	X	X
68	7.1	00:56	March 16 2023	Kermadec Islands Region	10	Press release	X	X
69	6.9	17:13	March 18 2023	Near the coast of Ecuador	75	-	X	X
70	7.3	18:04	April 2 2023	New Guinea Papua New Guinea	74	-	X	
71	6.7	03:07	April 3 2O23	Near the East coast of Kamchatka Russia	100	-	X	
72	6.6	22:18	April 4 2023	South of Panama	10	-	X	
73	6.5	04:32	April 18 2023	South of the Fiji Islands	602	-	X	
74	7.3	00:42	April 24 2023	Kermadec Islands Region	10	-	X	
75	7.4	16:02	May 10 2023	Tonga	213	-	X	X
76	7.7	02:57	May 19 2023	Southeast of Loyalty Islands	10	Triggering of sirens	X	X
77	6.4	10:03	May 26 2023	Near East Coast of Honshu, Japan	40	-		X
78	7.0	18:06	June 15 2023	South of the Fiji Islands	206	-	X	X
79	6.5	19:11	June 16 2023	Tonga Region	10	-	X	
80	6.6	20:30	June 18 2023	Gulf of California	33	-	X	
81	3.1	08:15	June 25 2023	New Caledonia	5	-		X
82	3.2	04:07	July 1 2023	New Caledonia	5	-		X
83	3.0	02:54	July 2 2023	New Caledonia	5	-		X
84	6.7	10:28	July 2 2023	Tonga	247	-	X	X
85	3.0	09:57	July 6 2023	New Caledonia	10	-		X
86	3.9	17:47	July 7 2023	Southwest of New Caledonia	5	-		X
87	3.1	17:38	July 11 2023	New Caledonia	5	-		X
88	3.1	10:27	July 26 2023	New Caledonia	5	-		X
89	6.8	12:45	July 26 2023	Vanuatu	10	-	X	X
90	3.1	00:50	August 2 2023	Loyalty Islands	34	-		X
91	3.1	16:47	August 3 2023	New Caledonia	5	-		X
92	6.5	12:47	August 16 2023	Vanuatu Islands	179	-		X
93	3.0	19:30	August 21 2023	New Caledonia	5	-		X
94	3.8	07:15	August 22 2023	Southwest of New Caledonia	5	-		X
95	6.9	19:56	August 28 2023	Bali Sea	525	-	X	
96	3.9	13:55	August 30 2023	Loyalty Islands	5	-		X