NATIONAL REPORT
Submitted by FRANCE (New Caledonia)

BASIC INFORMATION

1. ICG/PTWS Tsunami National Contact (TNC)

See TNC for FRANCE

2. ICG/PTWS Tsunami Warning Focal Point (TWFP)
A 24 x 7 point of contact (office, operational unit or position, not a person) officially designated by the NTWC or the government to receive and disseminate tsunami information from an ICG Tsunami Service Provider according to established National Standard Operating Procedures. The TWFP may or not be the NTWC.

TWFP Agency name #1 : Direction de la Sécurité Civile et de la Gestion des Risques

TWFP Agency Contact or Officer in Charge (if different from NTWC Agency):
Name:
Position: Director
Telephone Number:
Email address:
Postal Address : BP 10468, 98805, Nouméa, New Caledonia

TWFP 24x7 point of contact (office, operational unit or position, not a person):
Name of office, operational unit or position: officer on duty
E-mail Address:
Telephone Number:
Cellular phone number:

TWFP Agency name #2 : Maritime Rescue Coordination Center (MRCC)

TWFP Agency Contact or Officer in Charge (if different from NTWC Agency):
Name:
Position: Director
Telephone Number:
Email Address:
Postal Address : Quartier Alleyron, BP 38, 98843 Noumea Cedex, NEW CALEDONIA

TWFP 24x7 point of contact (office, operational unit or position, not a person):
Name of office, operational unit or position: officer on duty
E-mail Address:
Telephone Number:
Fax :

TWFP Agency name #3: High Commissioner French Security Zone Headquarter

TWFP Agency Contact or Officer in Charge (if different from NTWC Agency):
Name:
Position: Director
Telephone Number:
Email Address: Postal Address: 1, avenue du Marechal Foch, 98800, Noumea, New Caledonia.

**TWFP 24x7 point of contact** (office, operational unit or position, not a person):

- Name of office, operational unit or position: Chief
- E-mail Address:
- Telephone Number:
- Cellular phone number:

**TWFP Agency name #4: IRD (Institute for Research and Development)**

**TWFP Agency Contact or Officer in Charge (if different from NTWC Agency):**
- Name:
- Position: Research Scientist
- Telephone Number:
- Email Address:
- Postal Address: BP A5, 98848 Noumea New Caledonia

**TWFP 24x7 point of contact** (office, operational unit or position, not a person):
- E-mail Address:

**National Tsunami Warning Centre (if different from the above)**

_A centre officially designated by the government to monitor and issue tsunami warnings and other related statements within their country according to established National Standard Operating Procedures_

**NTWC Agency Name : Direction de la Sécurité Civile et de la Gestion des Risques**

**NTWC Agency Contact or Officer in Charge (person):**
- Name:
- Position: Director
- Telephone Number:
- Email address:
- Postal Address : BP 10468, 98805, Nouméa, New Caledonia

3. **Tsunami Advisor(s), if applicable**

_(Person, Committee or Agency managing Tsunami Mitigation in country)_

Name: J
Title: Research Scientist, IRD

Name:
Title: Senior Research Scientist, IRD

Name:
Title: Research Engineer, IRD

Postal Address: BP A5, 98848, Noumea, New Caledonia
E-mail Address:
Emergency Telephone Number: 0

4. **Tsunami Standard Operating Procedures for a Local Tsunami**

_(when a local tsunami hazard exists)_
The local tsunami threat is the New Hebrides trench, with epicenter distance ranging between 70 and 500 km from New Caledonia. Given this proximity, natural evacuation criteria is given as shaking lasting 60 seconds or more, and/or shaking so strong it is impossible to stand.

5. Tsunami Standard Operating Procedures for a Distant Tsunami (when a distant tsunami hazard exists)

The TWFP #1 and TWFP #2 (DSCGR and MRCC) receive seismic information directly from the IRD/ORSNET system via text messages, email and twitter feeds. These messages (exemple below) provide location, depth and magnitude within minutes of the event:

Alert ird2017ffbx: determined by 49 stations, type A
LOCSAT solution with earthmodel iasp91 (with start solution, 49 stations used, weight 49):
Rat Islands, Aleutian Islands mb=5.5  2017/03/15  22:19:42.3  51.10 N  178.97 E   10 km

They then receive the initial assessment from PTWC (text messages and emails) several minutes after the initial IRD/ORSNET message.
Initial national threat assessment is based on the table below which relates EQ location, depth and magnitude to a simple risk/no risk assessment (30 cm threshold) for the different area of the territory. Further assessment is done using PTWC graphical products (we note here the extensive use of the kml file).
Additional assessment is provided directly by tsunami advisors from IRD (TWFP #4), if they are available/contactable.
The possibility of land flooding is assessed based on PTWC products (data in kml files) and tidal level.

Tsunami heights are monitored on the IOC sea-level monitoring website for neighboring tide gauge stations, and on the NOAA/NDBC webpage for DART stations (webpages bookmarked on the DSCGR operations computers)

The TWFP #1/NTWC is the country NDMO, and TWFP #2 is the Maritime Safety Agency. TWFP #1 will disseminate information for land users, and TWFP #2 will disseminate to mariners and ships.
TWFP #1 and TWFP #2 are exchanging information throughout the event, and there are currently discussions on dispatching one officer from one to the Headquarter of the other during events, to streamline communication between the 2 agencies.

If evacuation of coastal areas (whether below or above the high tide level) is decided, there are 54 tsunami sirens on the territory, individually actionable from the NDMO headquarter.
Press releases are immediately issued, and a network of users is directly informed by text message.
There is a general emergency procedure in place for disasters called ORSEC (Organisation de la réponse de SÉcurité Civile = Organisation of Civil defense Response). In that context, the NDMO maintains a list of contacts of emergency medical services, fire and police stations, network operators, local city and provincial councils, etc.. to be contacted in case of an emergency. This list is contacted in case a tsunami evacuation is requested.

The emergency situation is terminated via a termination press release (and the initial press release usually contains a termination time as well).
<table>
<thead>
<tr>
<th>Zone</th>
<th>Etat de la zone (ordre alphabétique)</th>
<th>Coordonnées épicentre</th>
<th>Magnitude</th>
<th>Profondeur</th>
<th>Risque</th>
<th>Run-up</th>
<th>Délai estimé</th>
<th>Impact potentiel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>New Britain New Ireland Papua New Guinea Solomon Island</td>
<td>longitudes 150 à 160° est latitudes 4 à 11°</td>
<td>&lt; 7,9 &gt; = 7,9</td>
<td>/</td>
<td>&lt; 100 km</td>
<td>non avéré avéré</td>
<td>&lt; 0,30 m &gt; 0,30m</td>
<td>/</td>
</tr>
<tr>
<td>2</td>
<td>Bank Island Santa Cruz Island Torres Island</td>
<td>longitudes 160 à 168° est latitudes 9 à 16° sud</td>
<td>&lt; 7,6 &gt; = 7,6 &gt; = 7,9</td>
<td>/</td>
<td>&lt; 100 km</td>
<td>non avéré avéré avéré</td>
<td>&lt; 0,30 m &gt; 0,30m</td>
<td>/</td>
</tr>
<tr>
<td>3</td>
<td>Vanuatu</td>
<td>longitudes 167 à 171° est latitudes 16 à 24° sud</td>
<td>&lt; 7,2 &gt; = 7,2 &gt; = 7,9</td>
<td>/</td>
<td>&lt; 100 km</td>
<td>non avéré avéré avéré</td>
<td>&lt; 0,30 m &gt; 0,30m</td>
<td>/</td>
</tr>
<tr>
<td>4</td>
<td>Fiji Island Minerva reef</td>
<td>longitudes 171 à 179° est latitudes 18 à 24° sud</td>
<td>&lt; 7,2 &gt; = 7,6 &gt; = 7,9</td>
<td>/</td>
<td>&lt; 100 km</td>
<td>non avéré avéré avéré</td>
<td>&lt; 0,30 m &gt; 0,30m</td>
<td>/</td>
</tr>
<tr>
<td>5</td>
<td>Tonga Trench Wallis and Futuna</td>
<td>longitudes 172 à 177° est latitudes 14 à 21° sud</td>
<td>&lt; 7,9 &gt; = 7,9</td>
<td>/</td>
<td>&lt; 100 km</td>
<td>non avéré avéré</td>
<td>&lt; 0,30 m &gt; 0,30m</td>
<td>/</td>
</tr>
<tr>
<td>6</td>
<td>New-Zealand Kermadec Ridge</td>
<td>longitudes 178° à 180° est latitudes 21 à 38° sud</td>
<td>&lt; 7,9 &gt; = 7,9</td>
<td>/</td>
<td>&lt; 100 km</td>
<td>non avéré avéré</td>
<td>&lt; 0,30 m &gt; 0,30m</td>
<td>/</td>
</tr>
<tr>
<td>7</td>
<td>Alaska</td>
<td>longitudes 130° à 173° ouest latitude 71° à 55° nord</td>
<td>&lt; 8,5 &gt; = 8,5</td>
<td>/</td>
<td>&lt; 100 km</td>
<td>non avéré avéré</td>
<td>&lt; 0,30 m &gt; 0,30m</td>
<td>/</td>
</tr>
<tr>
<td>8</td>
<td>Chili</td>
<td>longitudes 78° à 65° ouest latitude 10° à 40° sud</td>
<td>&lt; 8,5 &gt; = 8,5</td>
<td>/</td>
<td>&lt; 100 km</td>
<td>non avéré avéré</td>
<td>&lt; 0,30 m &gt; 0,30m</td>
<td>/</td>
</tr>
</tbody>
</table>
6. National Sea Level Network

There are now 7 tide gauges around New Caledonia. The new Thio tide gauge was installed in April 2015 and the new Ouvea tide gauge was installed in March 2017.

In addition to the data from the permanent tide gauges, data from temporary bottom pressure sensors is shown for some events (Uitoe, poindimié, and Noumea/Chaleix):

- The Uitoe pressure sensor was deployed outside the Barrier reef in front of Noumea in 20m depth, for a project focusing on wave attenuation over the reef.
- The Poindimie pressure sensors were deployed outside the Barrier reef (Poindimié Fourmi) in 20m depth, and near the shoreline (poindimié Tieti) in 1 m depth, for a project focusing on coastal vulnerability.
- The Noumea/Chaleix pressure sensor was deployed specifically a few hours after the Chile earthquake to record any signal at the site of the historical tide gauge in Noumea (which had recorded the 1960 tsunami).
7. Information on Tsunami occurrences

Dec 8 2016 Tsunami, Solomon Islands

Summary

The timeline of the event is reported in the table below. Initial assessment was made on the basis of early EQ detection contained in PTWC message #1, and the look-up table relating EQ parameters and potential threat. Our assessment concluded of a potential risk in coastal areas on the East coast of the New Caledonia mainland and the Loyalty Islands, without land flooding. A coastal evacuation for coastlines of the Loyalty Islands and East Coast mainland was therefore ordered and followed. Waves were noticeable by the population. Evacuation of coastal area and cancelling of beach activities was done appropriately by the population.

Note on PTWC forecast and messages for this event

PTWC forecast was inaccurate for New Caledonia for this event. Message #3 contained a forecast of waves “much less than 0.3m”. More disturbing was the new wording in the message concerning locations with ringing or barrier reefs where waves will be much smaller than the forecast indicates.

* FOR OTHER AREAS TSUNAMI WAVES ARE FORECAST TO BE MUCH LESS THAN 0.3 METERS ABOVE THE TIDE LEVEL.

* ACTUAL AMPLITUDES AT THE COAST MAY VARY FROM FORECAST AMPLITUDES DUE TO UNCERTAINTIES IN THE FORECAST AND LOCAL FEATURES. IN PARTICULAR MAXIMUM TSUNAMI AMPLITUDES ON ATOLLS AND AT LOCATIONS WITH FRINGING OR BARRIER REEFS WILL LIKELY BE MUCH SMALLER THAN THE FORECAST INDICATES.

Should the PTWC products have been followed, the assessment would have been « waves much smaller than much smaller than 0.3m ». Observations showed waves with amplitudes > 0.3m in hienghene, and >0.2m in Ouinne. In addition, the PTWC message #4 signaling the « threat has largely passed » arrived at 19:46, before waves even arrived at the tide gauges in New Caledonia. This caused a large cruise ship to ignore the coastal evacuation order and to proceed with the unloading of passengers in the middle of the event.

Observations (crest to trough) :

Hienghene : 71 cm 21 minutes
Ouinne : 42 cm 16 minutes
Uitoe : 2.6 cm 17 minutes
Numbo : noise
<table>
<thead>
<tr>
<th>Time (UTC/Local)</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:39/4:39</td>
<td>Earthquake</td>
</tr>
<tr>
<td>17:51/4:51</td>
<td>PTWC message #1 received (received by email, <strong>NO SMS, NO FAX received</strong>), Magnitude 8</td>
</tr>
<tr>
<td>18:30/5:30</td>
<td>Based on EQ location and Magnitude, Beach and « coastal zone » evacuation order is decided (before reception of PTWC message #2)</td>
</tr>
<tr>
<td>18:39/5:39</td>
<td>PTWC message #2 received (received by email) Revised at 7.9, &lt;0.3 m in NC</td>
</tr>
<tr>
<td>18:41/5:41</td>
<td>Decision : Sirens sounded on East Coast and Loyalty Islands (before asessement of message #2). 51 out of 54 sirens worked properly.</td>
</tr>
<tr>
<td>18:54/5:54</td>
<td>PTWC message #3 : Waves « much less than 0.3 m » for New Caledonia.</td>
</tr>
<tr>
<td>19:46/6:46</td>
<td>PTWC message #4 : « Threat has passed »</td>
</tr>
<tr>
<td>19:50/6:50</td>
<td>First wave observed at Hienghene tide gauge</td>
</tr>
<tr>
<td>20:04/7:04</td>
<td>Waves are beginning to be seen by observers on the East Coast of the Mainland.</td>
</tr>
<tr>
<td>20:56/7:56</td>
<td>MRCC is notified of a cruise ship at anchor ready to bring passengers to shore. Ship is ordered to wait until evacuation order is over, but proceeds anyway (arguing end of threat from message #4).</td>
</tr>
<tr>
<td>22:30/9:30</td>
<td>End of alert.</td>
</tr>
</tbody>
</table>
Dec 17 2016 Tsunami, PNG

Observations:
Hienghene : 7.5 cm 19 minutes
Ouinne : 7.5 cm 16 minutes
Uitoe : 2 cm 15 minutes
Numbo : noise

Sep 18 2015 Tsunami, Chile

Observations:
Lifou 8.0 cm 16 min.
Mare 4.3 cm 16 min.
Chaleix (pressure sensor at historical tide gauge site) 8.5 cm 27 min
Numbo 3.0 cm 15.3 min.
Ouinne 29.6 cm 20 min.
Poindimié fourmi 3 cm 15 min.
Poindimié Tieti 12 cm 38 min.
8. **Web sites (URLs) of national tsunami-related web sites**

https://seisme.nc/ : IRD/ORSNET public website for earthquakes detection

https://securite-civile.nc/ : NDMO website

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

A comprehensive study will begin in 2017 to model and assess tsunami hazards around New Caledonia from a wide variety of source.

**NATIONAL PROGRAMMES AND ACTIVITIES INFORMATION**

10. **EXECUTIVE SUMMARY**

The local tsunami threat is the New Hebrides trench, with epicenter distance ranging between 70 and 500 km from New Caledonia. Given this proximity, natural evacuation criteria is given as shaking lasting 60 seconds or more, and/or shaking so strong it is impossible to stand.

For local and distant threats, the TWFPs (Civil Defense and Maritime Rescue Coordination Center) receive seismic information directly from the IRD/ORSNET system via text messages, email and twitter feeds. These messages provide location, depth and magnitude within minutes of the earthquake.
They then receive the initial assessment from PTWC (text messages and emails) a few minutes after the initial IRD/ORSNET message.

Initial national threat assessment is based on a table which relates EQ location, depth and magnitude to a simple risk/no risk assessment (30 cm threshold) for the different area of the territory.

Further assessment is done using PTWC graphical products (we note here the extensive use of the kml file).

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Tsunami heights are monitored on the IOC sea-level monitoring website for neighboring tide gauge stations, and on the NOAA/NDBC webpage for DART stations (webpages bookmarked on the DSCGR operations computers). New Caledonia has now 7 tide gauges, and two additional are managed by France in Wallis and Futuna, all data are available on the IOC sea-level monitoring website.

If evacuation of coastal areas (whether below or above the high tide level) is decided, there are 54 tsunami sirens on the territory, individually actionable from the NDMO headquarter.

Press releases are immediately issued, and a network of users is directly informed by text message.

There is a general emergency procedure in place for disasters called ORSEC (Organisation de la réponse de Sécurité Civile = Organisation of Civil defense Response). In that context, the NDMO maintains a list of contacts of emergency medical services, fire and police stations, network operators, local city and provincial councils, etc. to be contacted in case of an emergency. This list is contacted in case a tsunami evacuation is requested.

The emergency situation is terminated via a termination press release (and the initial press release usually contains a termination time as well).

New Caledonia did not participate in PacWave17, since it considered the Dec. 8 2016 tsunami alert and evacuation as a “good exercise”.

Date: 03/17/17 Name: Jerome Aucan