Brief on Fiji's National Report

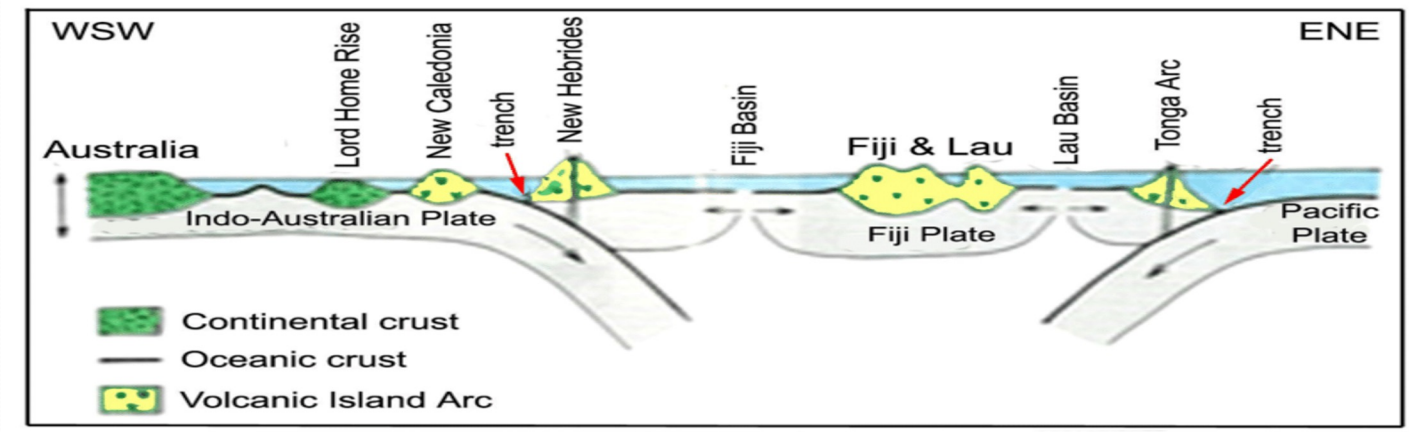
Seismology Section
Mineral Resources Department
Ministry of Lands and Mineral Resources

Outline

- Introduction
- Tsunami Sources/ Tsunami Classification
- Warning Products/Alert Levels
- Tsunami Ready Recognition Program & World Tsunami Awareness Day 2023 & 2024
- Way Forward

Introduction

- Fiji is located in the southwest Pacific Ocean at the midpoint of the opposing potential tsunami sources, the Tonga Trench and New Hebrides Trench therefore is particularly vulnerable to tsunamis.

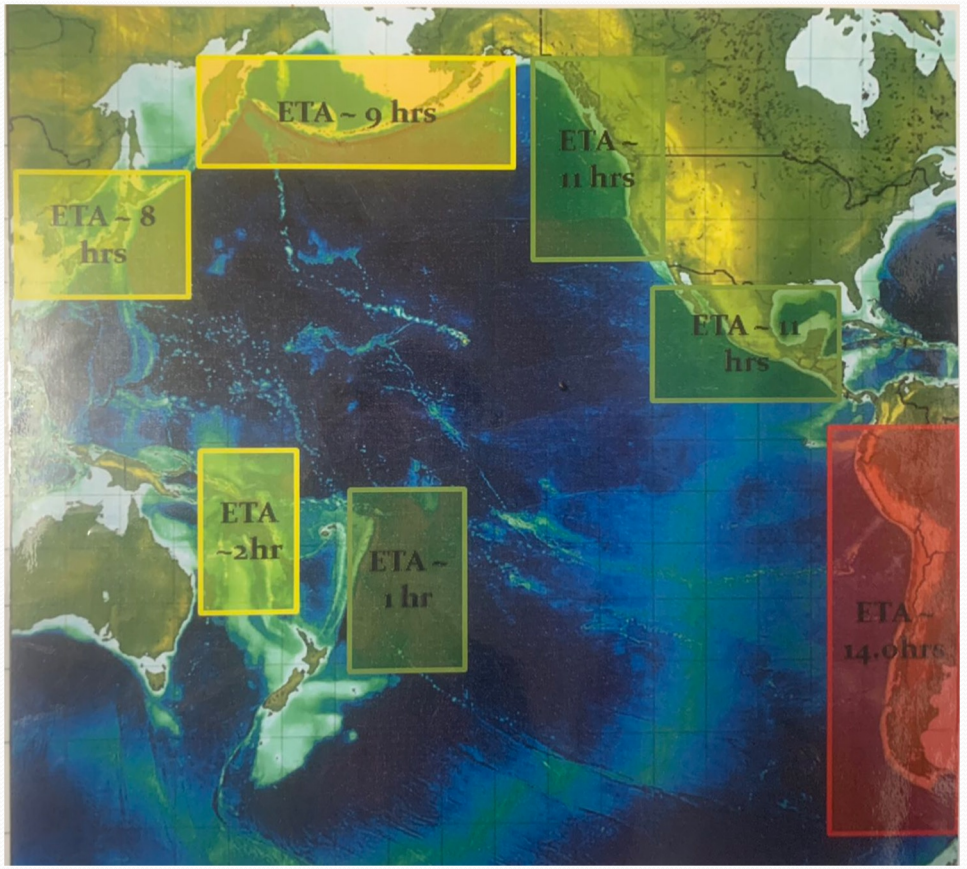


Seismology Units Responsibility

- The Seismology unit's primary role is to provide information on geo-hazards assessment and timely dissemination of information at the time of any local or felt regional event.
- The team coordinates with the National Disaster Management Office and other Operational Centers during any felt event or tsunami warning operation.
- Mineral Resources Department, Suva (earthquakes and possible aftershocks or tsunamis, landslides) Fiji National Disaster Management Plan 1998 (Section IV – 3)

TSUNAMI CLASSIFICATION

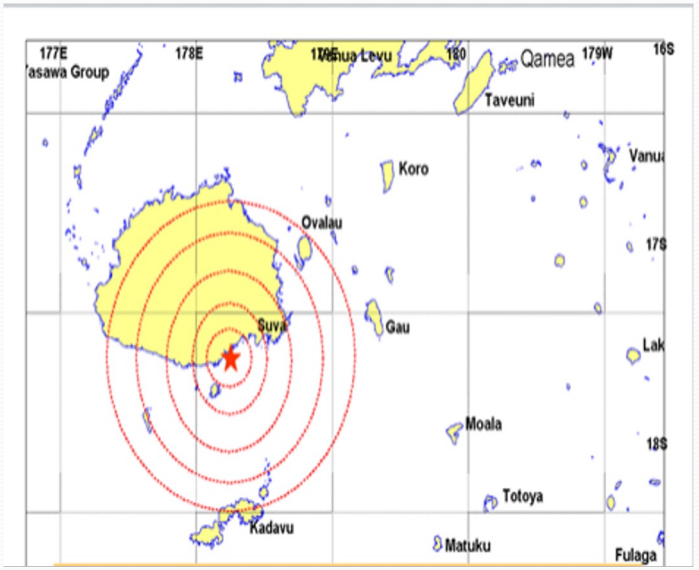
	Wave Travel Time
Local	Less than 1.5 hour
Regional	More than 1.5 hours Less than 3 Hours
Distant	More than 3 hours



Local Source

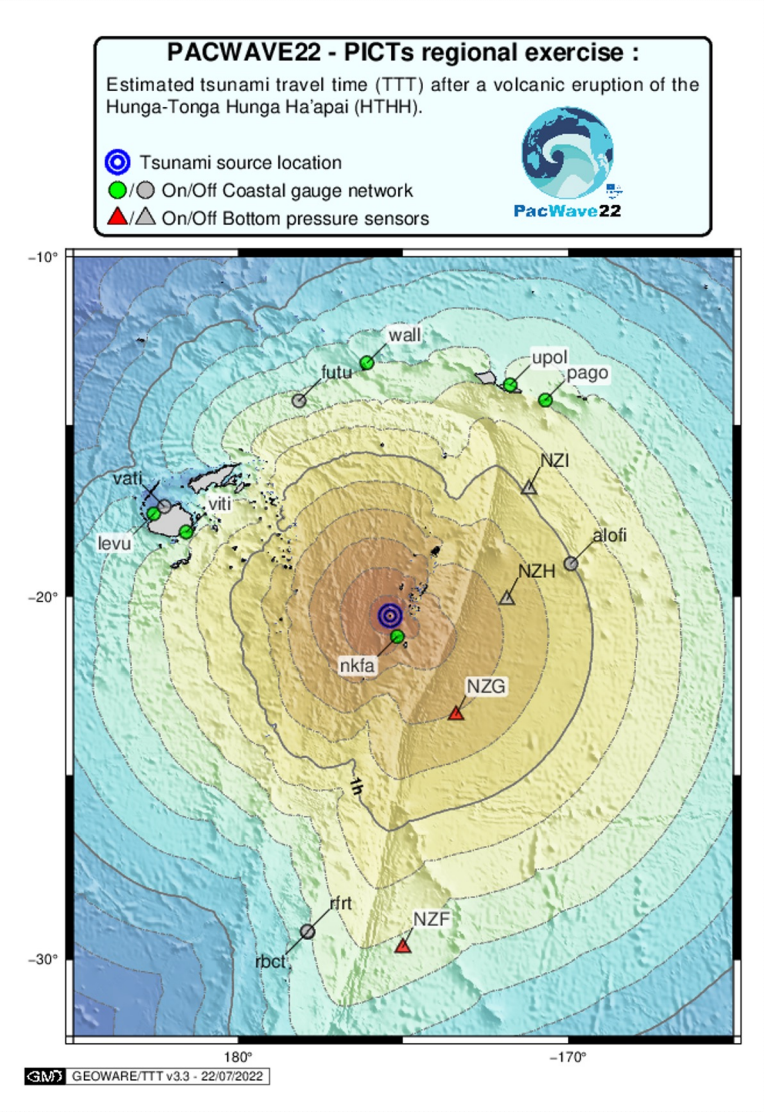
- Earthquake Generated
- Vanuatu-Fiji-Tonga source– Estimated time of arrival is less than 1.5 hours for Fiji

- Eg. September, 14th 1953 –Suva Earthquake
  - Magnitude-6.7 Ms, Depth- 21km
  - Wave height ;
    - Nakasaleka- 5m
    - Suva- 5m
    - Levuka & Savusavu- 3m
  - 8 fatalities & 20 cases of serious injuries
  - The Suva Wharf, bridges, buildings, and water reticulation facilities in southeast Viti Levu faced severe damages.



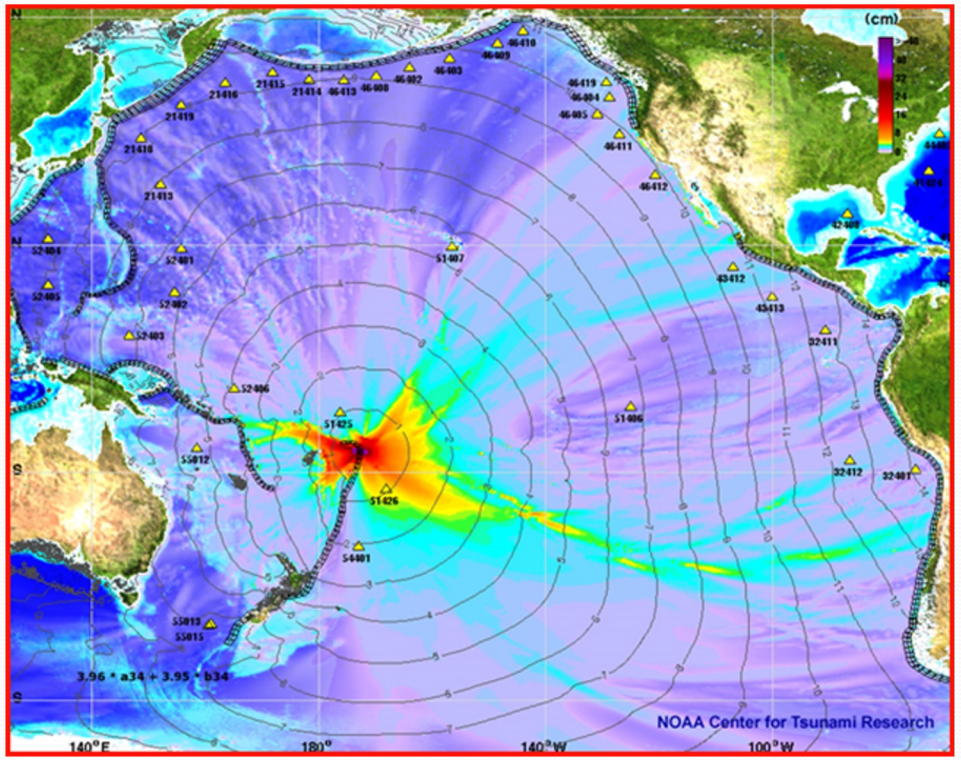
Local Source

- Volcano Generated
- Hunga Tonga Hunga-Ha'apai Volcano on the 15th of January
- Generated a 20 meter wave that killed 4 people in Tonga
- This tsunami inundated coastal areas of Lau and Lomaiviti Group Kadavu and southern coast of Viti Levu.



Regional Source

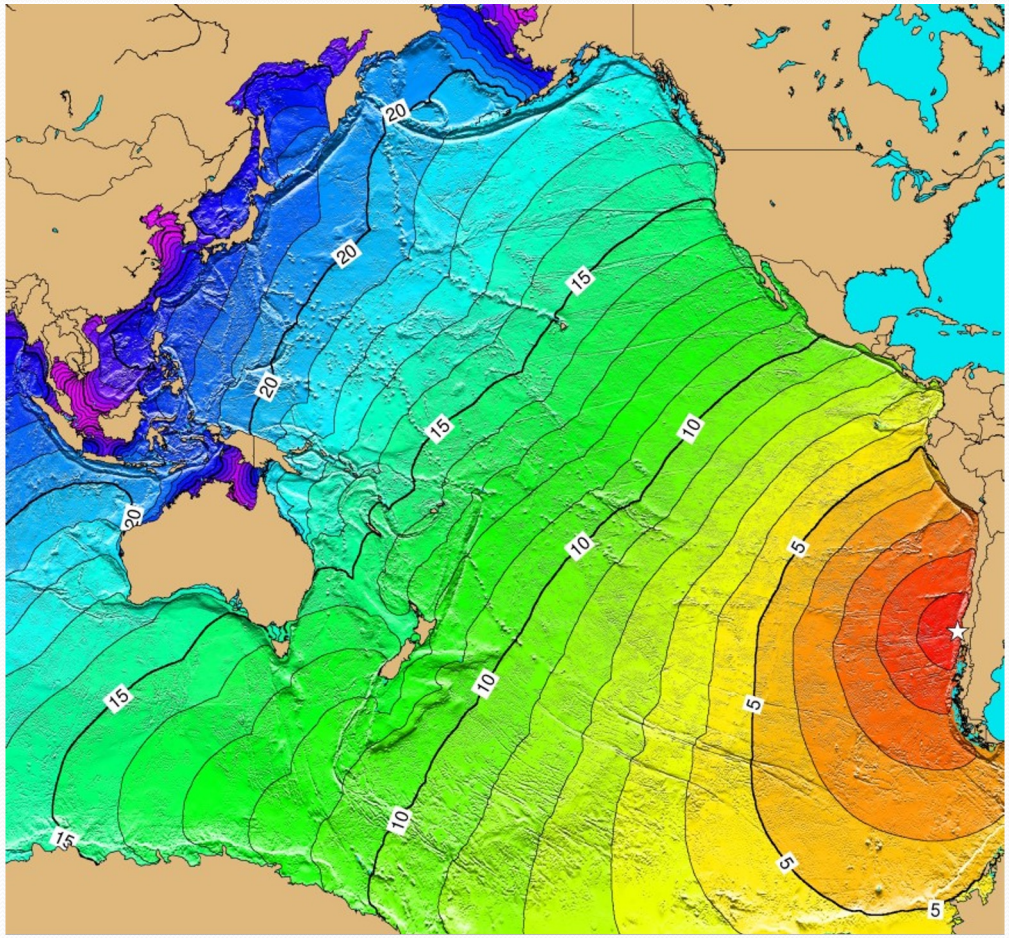
- A tsunami generally within 1,000 km or 1.5-3 hours tsunami travel time from its source.
- Eg -29th September, 2009 in the Samoa Region.
- Mag- 7.9, Depth- 15km
- Casualties- 189 in Samoa
- This tsunami was reported to have inundated a few coastal areas in Vanua Levu.



Source: PTWC

Distant Source

- A tsunami generally more than 1,000 km or more than 3 hours tsunami travel time from its source.
- Eg- 25th May, 1960- Great Chile Earthquake
- Mag- 9.6, Depth- 33km
- Casualties- 6,000
- This tsunami was reported to have inundated Savusavu, Natewa Bay and a few coastal areas in Vanua Levu.

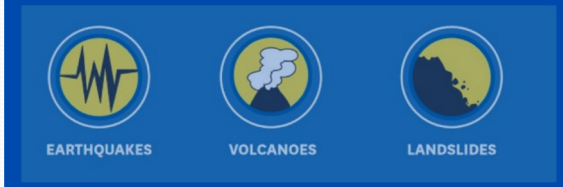


Source: NOAA

MINERAL RESOURCES DEPARTMENT

WHERE DO TSUNAMI COME FROM?

CAUSES OF TSUNAMI



SOURCES OF TSUNAMI

1. **Distant or Telestsunami**
   A tsunami originating from a far away source, generally more than 1,000 km or more that 3 hours tsunami travel time from its source (e.g. Chile).
2. **Regional**
   A tsunami capable of destruction in a particular geographic region, generally within 1,000 km or 1-3 hours travel time from its source (e.g Tonga Trench or New Hebrides Trench).
3. **Local**
   A tsunami from a nearby source (less than an hour away from the Fiji coastline (e.g. 1953 Navua earthquake).

WARNING PRODUCTS/ALERT LEVELS

Warning Products	Alert Level	Public Action	Potential Hazard
Tsunami Information	Information Statement	No action suggested at this time	No threat or very distant event for which hazard has not been determined
Tsunami Watch	Watch	Be prepared to take action Stay tuned to local radio/TV	Tsunami Possible Alert level may change once more information is known
Tsunami Advisory	Advisory	Stay out of the water and away from the shore	Strong currents and waves dangerous to those in or very near coastal waters
Tsunami Warning	Warning	Move to high ground or inland immediately	Dangerous coastal flooding and powerful currents

TRRP & WTAD

2023 World Tsunami Awareness Day & UNESCO/IOC Tsunami Ready Pilot Programme Launch – Fiji

- Navuevu & Sila Villages
- Tsunami Ready recognition after meeting all 12 indicators (hazard assessment, signage, mapping, planning, drill exercise, education & outreach,).
- Tsunami Exercise Drill conducted simulating a M7.2 earthquake.
- Community successfully evacuated to safe zones following tsunami signage; returned after “All Clear”.
- Fiji Navuevu and Sila villages, Tsunami Ready, 1 Nov 2023- Video: https://youtu.be/gi_7PgDpCB8

Live Tsunami Drill for Navuevu & Sila Community

TRRP & WTAD cont.'s

WTAD 2023: Nasese School Cluster & Korova Settlement – Live Tsunami Drill

- Participants included 665 students and 21 residents.
- Covered all 12 indicators; drill marked final recognition step.
- Simulated two major earthquakes (M8.8 Vanuatu & M8.9 Tonga).
- Evacuation completed successfully; "All Clear" issued at 12:00pm.

TRRP Fiji UPDATE

- Recognized communities:
  - Sila, Cuvu, Nadroga.
  - Navuevu, Cuvu, Nadroga.
- **TRRP - Application in-progress:**
  - Korova settlement, Nasese.
  - Sanasana, Cuvu, Nadroga.
  - Rukurukulevu, Cuvu, Nadroga.
  - Cuvu, Cuvu, Nadroga.
  - Yadua, Cuvu, Nadroga.
  - Tore, Cuvu, Nadroga.

TRRP training for the five (5) village in Cuvu

Live Tsunami Drill for Korova Settlement, Nasese

Way forward

- Update of Tsunami SOP to include both Seismic and Non- Seismic tsunami sources currently being done with our Japanese counterparts from the SATREP project.
- This was updated with the help of UNESCO whereby we reviewed our Earthquake Dissemination SOP and Tsunami SOP on seismic sources.
- Increase of tsunami awareness and education in schools.
- Updating and review of school DRR handbook.
- Participate in the PACWAVE Exercise.
- Tsunami Ready Recognition.
- Capacity Building & Development.
- Risk assessment
    - LIDAR Baseline Data
    - Super computer
    - Seismic Catalogue
    - Seismotectonic model
    - PSHA
    - W- Phase (moment tensor)