National Reports will be posted to the ICG/PTWS-XXXI website without TWFP contact details

NATIONAL REPORT

Submitted by Fiji

BASIC INFORMATION

(FILL IN SECTIONS 1-3 ONLY IF THERE IS A NEED TO COMMUNICATE OFFICIAL UPDATES.)

1. ICG/PTWS Tsunami National Contact (TNC)

The person designated by a Member State to an Intergovernmental Coordination Group (ICG) to represent his/her country in the coordination of international tsunami warning and mitigation activities. The person is part of the main stakeholders of the national tsunami warning and mitigation system. The person may be the Tsunami Warning Focal Point, from the national disaster management organization, from a technical or scientific institution, or from another agency with tsunami warning and mitigation responsibilities.

Name: **Paula N.B. Cirikiyasawa**
Title: **Permanent Secretary**
Organization: **Ministry of Lands and Mineral Resources**
Postal Address: **241 Mead Road, Nabua, Suva.**

[redacted]

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:
(if different from NTWC agency)
TWFP Agency Contact or Officer in Charge *(if different from NTWC Agency):*
Name: **Dr. Apete Soro**

Position: **Director Mineral Development**

[redacted]

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

Name of office, operational unit or position: **Fiji Seismology Section**

[redacted]

National Tsunami Warning Centre (if different from the above)
A center 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: **Mineral Resources Department**
NTWC Agency Contact or Officer in Charge (person): **2950592**
Name: **Saula P. Mule**
Position: **Senior Scientific Officer**
[redacted]
Email address: **mule.saul@gmail.com**

Postal Address: **241 Mead Road, Nabua, Suva.**

3. Tsunami Advisor(s), if applicable
(Person, Committee or Agency managing Tsunami Mitigation in country)
Name:
Title:
Postal Address:
E-mail Address:
Emergency Telephone Number:
Emergency Fax Number:
Emergency Cellular Telephone Number:

4. Tsunami Standard Operating Procedures for a Local Tsunami (when a local tsunami hazard exists)

i. Tsunami Warning Bulletin

The tsunami warning bulletin shall be issued, and shall cover FELT offshore earthquakes (>30 sec) within local zone of magnitudes ranging from M5.0 to M5.9, at 0 to 100 kilometers in depth (refer eq SOP), and upon receipt of tsunami threat message statement evaluated with a tsunami land inundation threat from PTWC. 300 km from the epicenter will expect hazardous tsunami waves

The tsunami warning bulletin shall be issued and shall cover Felt earthquakes (>30secs) within local zone of magnitudes ranging from M6.0 to M9.5, at 0 to 100 kilometers in depth, and upon receipt of tsunami threat message statement evaluated with a tsunami major land inundation threat from PTWC. Expect hazardous tsunami waves 300 km from the epicenter.

Activation of Tsunami Siren Network for Suva ??

- This is in the Warning Criteria Table

Wave Amplitude information received on tide gauge monitored on the National Data Buoy Center & IOC Sea Level Monitoring Facility and Tide Tool have the following readings;

Tide level	Zone	Coastline
>1.0m	Local	Port Villa, Nuku'alofa, Leava, Suva, Lautoka

The threat categories and levels used by PTWS for wave height of 1.0 meters to 3.0 meters means **Land Inundation Threat** and wave height of 3.0 meters and above means **Major Land Inundation Threat.**

Recommended Actions

- All residents on low lying coastal areas must EVACUATE to safe zones.
- Vertical Evacuation is advisable when necessary
- Activate Siren in Suva when land inundation threat is imminent.

ii. Tsunami Advisory Bulletin

The tsunami advisory bulletin shall be issued,and shall cover FELT offshore earthquakes (>30 secs) within local zone of magnitudes ranging from M5.0 to M5.9, at 0 to 100 kilometers in depth (refer eq SOP), and upon receipt of tsunami threat message statement evaluated with a tsunami land inundation threat from PTWC.300 km from the epicenter will expect hazardous tsunami waves

The tsunami advisory bulletin shall be issued and shall cover Felt earthquakes (>30secs) within local zone of magnitudes ranging from M6.0 to M9.5, at 0 to 100 kilometers in depth, and upon receipt of tsunami threat message statement evaluated with a tsunami major land inundation threat from PTWC. Expect hazardous tsunami waves 300 km from the epicenter.

Wave Amplitude information received on tide gauge monitored on the National Data Buoy Center & IOC Sea Level Monitoring Facility and Tide Tool have the following readings;

Tide level	**Zone**	**Coastline**
>1.0m	Local	Port Villa, Nuku'alofa, Leava, Suva, Lautoka

The threat categories and levels used by PTWS for wave height of 1.0 meters to 3.0 meters means **Land Inundation Threat** and wave height of 3.0 meters and above means **Major Land Inundation Threat.**

Recommended Actions

- All residents on low lying coastal areas must EVACUATE to safe zones.
- Vertical Evacuation is advisable when necessary
- Activate Siren in Suva when land inundation threat is imminent.

iii. Tsunami Information Bulletin

The tsunami information shall be issued upon receipt of **TSUNAMI INFORMATION STATEMENT** from PTWC, with the forecasted tsunami waves less than 0.3 meters above the tide level for Fiji.

The tsunami information bulletin shall be issued, and shall cover earthquakes of magnitudes ranging from M5.0 to M5.9 with depth from to 0 to 100 km, earthquakes of this magnitude range usually do not generate potential destructive tsunamis.

The tsunami information bulletin shall be issued, and shall cover earthquakes of magnitudes ranging from M6.0 to M9.5 with depth from 0 to 100 km, earthquakes of this magnitude range usually do not generate potential destructive tsunamis.

Tide level	**Zone**	**Coastline**
< 0.3	Local	Suva, Lautoka

The threat categories and levels used by PTWS for wave height less than 0.3meters means **No Significant Threat.**

Recommended Actions

- No Immediate Tsunami Expected
- Alert level may change once more information is known
- No response action needed

iv. Earthquake Information Bulletin

The Seismology Unit will issue earthquake information that will contain earthquake parameters with magnitude ranging from below M4.9 with less than 100 kilometers depth based on the NDC's local seismic network. These events are mostly felt locally in the Fiji Region.

The earthquake information bulletin shall be issued and shall cover earthquakes of magnitudes ranging from M5.0 to M5.9 with depth from 0 to 100 km based on the NDC's local seismic network. This includes both felt and unfelt events. In most cases, these earthquakes do not generate destructive tsunamis and are confirmed by no activity on the tide gauge.

The earthquake information bulletin shall be issued and shall cover earthquakes of magnitudes ranging from M6.0 to M9.5 and above with depth from 0 to 100 km, earthquakes of this magnitude range may or may not generate destructive tsunamis.

These earthquakes are likely to be felt locally here in Fiji, Vanuatu, Samoa and Tonga and widely felt close to the epicenter.

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

For each situation, please provide the following:

- *What organization identifies and characterizes tsunamigenic events?*
  Seismology Section of the Mineral Resources Department.
- *What is the threshold or criteria for declaring a potential tsunami emergency?*
  A Tsunami Warning bulletin shall specify that there is a potential Tsunami threat which may produce strong currents or waves dangerous to those in or near the water and on the low-lying areas along the coastline.

  The tsunami warning bulletin shall be issued and shall cover earthquakes within regional and distant zones of magnitudes ranging from M6.1 to M6.9, at 0 to 100 kilometers in depth, and upon receipt of PTWC tsunami threat message statement evaluated with wave forecasted for Fiji coastline over 1.0meters.

  The tsunami warning bulletin shall be issued, and shall cover earthquakes within regional and distant zones of magnitudes ranging from M7.0 and above at 0 to 100 kilometers in depth, and upon receipt of PTWC tsunami threat message statement evaluated with wave forecasted for Fiji coastline over 1.0meters.

  Wave Amplitude information received on tide gauge monitored on the National Data Buoy Center & IOC Sea Level Monitoring Facility and Tide Tool have the following readings;

Tide level	Zone	Coastline

>1.0m -	Local	Port Villa, Nuku'alofa, Leava, Suva, Lautoka
>3.0m	North Pacific	Nauru, Betio, Kanton, Fongafale, MATA-Utu
>3.0m	South	Raoul, Norfolk Island, North Cape
>3.0m	East	Apia, Pagopago, Alofi, Rarotonga, Huahine island, Papeete, Vairaro, Tubuai
>3.0m	West	Tarekukure, Honiara, Lata, Luganville, Litzlitz, Loyalty islands, Lifou, Thio, Ouinne, Hienghene

The threat categories and levels used by PTWC for wave height of 1.0 meters to 3.0 meters means Land Inundation Threat and wave height of 3.0 meters and above means Major Land Inundation Threat.

Recommended Actions

- All residents on low-lying coastal areas must EVACUATE to safe zones.
- Vertical Evacuation is advisable when necessary
- Activate Siren in Suva when land inundation threat is imminent.

NEED to Include Advisory, Watch and Information Bulletin for distant tsunami

- *What organization acts on the information provided by the agency responsible for characterizing the potential tsunami threat?*
  Fiji National Disaster Risk Management Office.
- *How is the tsunami information (warning, public safety action, etc) disseminated within country? Who is it disseminated to?*
  The Seismology Unit of the Mineral Resources Department is the Fiji National Tsunami Warning Center (NTWC) and National Focal Point, which is responsible for the monitoring of earthquakes, tsunamis, dissemination of tsunami alert bulletins, to its stakeholders and members of the public.

  Dissemination of Tsunami Warning products includes the use of Viber and email distribution list to;
  - MLMR, PSLMR,
  - DDM, DMD,
  - All government and non-government stakeholders,
  - All media organizations,
  - Emergency and Response Services

- *How is the emergency situation terminated?*
  A Tsunami Warning, Advisory and Watch should only be canceled once it is clear that the:
  - threat has passed, or
  - threat no longer exist

While the PTWC Threat Message (enhanced products) can be used as an indicator, a cancellation message should only be issued once it is ascertained (visual checks, feedback from NDMO, TNK, etc) that dangerous waves have passed and will no longer affect Fiji coastal areas and waters especially during time of high tide.

In the case of no observations, it is advisable to wait for 2 hrs after the predicted tsunami arrival time(s) on the tide gauge to cancel the warning.

Recommended Actions
Use one of the following bulletins headers as appropriate;

- Tsunami Warning Cancellation Message
- Tsunami Advisory Cancellation Message
- Tsunami Watch Cancellation Message

- *For Distant Tsunami Procedures:*
  What actions were taken in response to tsunami bulletins issued by PTWC, NWPTAC, and/or SCSTAC during the intersessional period?
  A Tsunami Watch bulletin shall specify that there is a potential Tsunami threat which may produce weak currents or non-threatening waves to those in or near the water.

  The tsunami watch shall be issued upon receipt of **TSUNAMI WATCH STATEMENT** from PTWC, with the forecasted tsunami waves above than 0.3 meters above the tide level for nearby member states.

  The tsunami watch bulletin shall be issued and shall cover earthquakes within regional and distant zones of magnitudes ranging from M6.1 to M6.9, at 0 to 100 kilometers in depth, and upon receipt of tsunami information statement evaluated with a tsunami threat from PTWC.

  The tsunami watch bulletin shall be issued, and shall cover earthquakes within regional and distant zones of magnitudes ranging from M7.0 and above at 0 to 100 kilometers in depth, and upon receipt of tsunami information statement evaluated with a tsunami threat from PTWC.

Wave Amplitude information received on tide gauge monitored on the National Data Buoy Center & IOC Sea Level Monitoring Facility and Tide Tool have the following readings.

Tide level	Zone	Coastline

< 0.4 -1m	Local	Port Villa, Nuku'alofa, Leava, Suva, Lautoka
>0.3-1m	North Pacific	Nauru, Betio, Kanton, Fongafale, MATA-Utu
>0.3- 1m	South	Raoul, Norfolk Island, North Cape
>0.3 -1m	East	Apia, Pagopago, Alofi, Rarotonga, Huahine island, Papeete, Vairaro, Tubuai
>0.3 -1m	West	Tarekukure, Honiara, Lata, Luganville, Litzlitz, Loyalty islands, Lifou, Thio, Ouinne, Hienghene

The threat categories and levels used by PTWS for wave height of 0.3meters to 1 meter means **Potential Marine Coastal Waters Threat.**

Recommended Actions

- Alert level may change once more information is known
- Stay tuned to local Radio and Television and official social media platforms
- Be prepared to take Action

6. **National Sea Level Network**

Please include a table with position and description of stations/sensors, and a map.

UNESCO SEA LEVEL STATION MONITORING FACILITY

DESCRIPTION OF STATION	
Station metadata for Suva	
Code	viti
Country	Fiji Islands
Location	Suva_Viti_Levu_FJ
Added to the system	2008-01-22 00:20:00
Other contact	National Tidal Centre/Australian Bureau of Meteorology (Australia)
GLOSS core ID	122
Long-term MSL data	UHSLC 018 (1972-2021) PSMSL 1327 (1972-1997) PSMSL 976 (1960-1964)
Latitude	-18.1342
Longitude	178.4236
Connection	GTS message

GTS message type	SZPS01
GTS station code	67050
Transmit interval (min)	3
Transmit lag UTC (sec)	0
Ave. transmit delay (min)	1
Messages received (24h)	479
Messages expected (24h)	480
Sensor 1	
Type of sensor	Aqu (Aquatrak (brand))
Sampling rate (min)	1
GTS format	
Units of measure	m
First value	0
Samples	6
Reversed order	No
Station metadata for Lautoka	
Code	levu
Country	Fiji Islands
Location	Lautoka_FJ
Status	Operational
Added to the system	2007-12-05 22:50:00
Other Contact	National Tidal Centre/Australian Bureau of Meteorology (Australia)
Long-term MSL data	UHSLC 402 (1992-2021) PSMSL 1805 (1992-2023)
Latitude	-17.6049
Longitude	177.4383
Connection	GTS message
GTS message type	SZPS01
GTS station code	67070
Transmit interval (min)	3
Transmit lag UTC (sec)	0
Ave. transmit delay (min)	1
Messages received (24h)	480
Messages	480

expected	
Sensor 1	
Type of sensor	Aqu (Aquatrak (brand))
Sampling rate (min)	1
GTS format	
Units of measure	m
First value	0
Samples	6
Reversed order	no

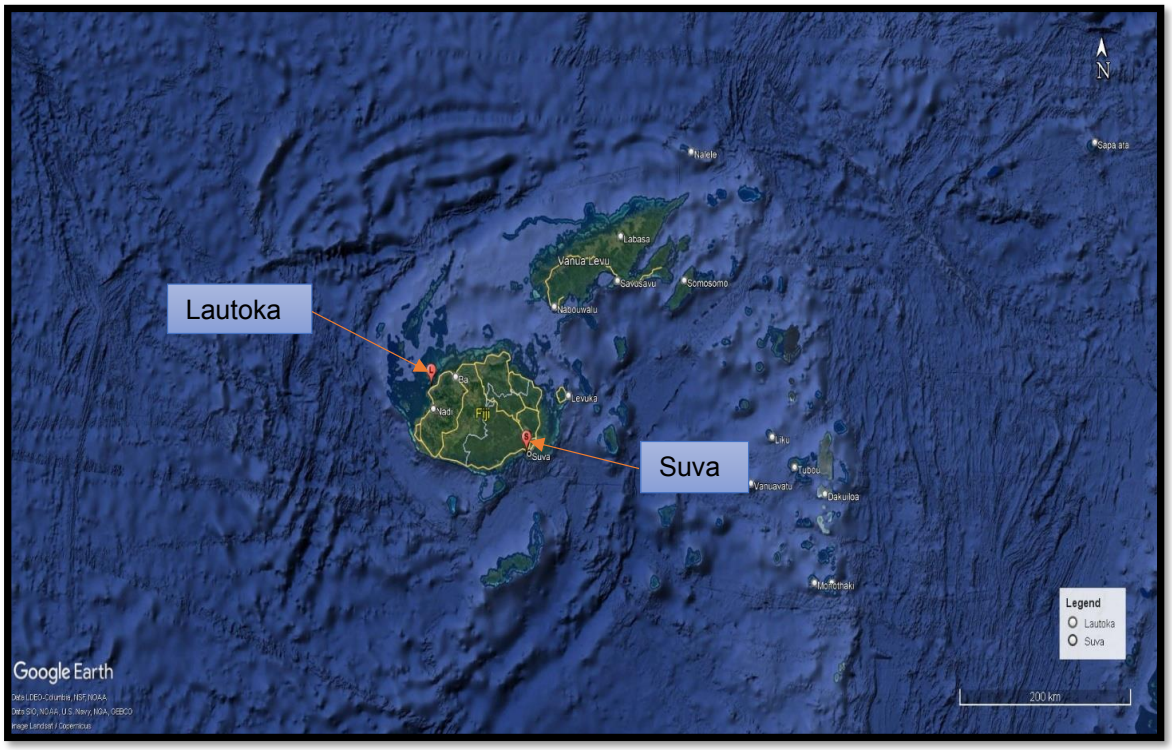


Figure 1*: Sea Level Station locations in Fiji*

7. Information on Tsunami occurrences

Please include sea level observations, pictures, wave arrival descriptions, public, media, or other responses to warnings, lessons learned, etc.

a) Local Tsunamis (< 1.5 hours ETA)
   i) 1953 (Submarine Landslide Induced)
      - Earthquake Characteristics:

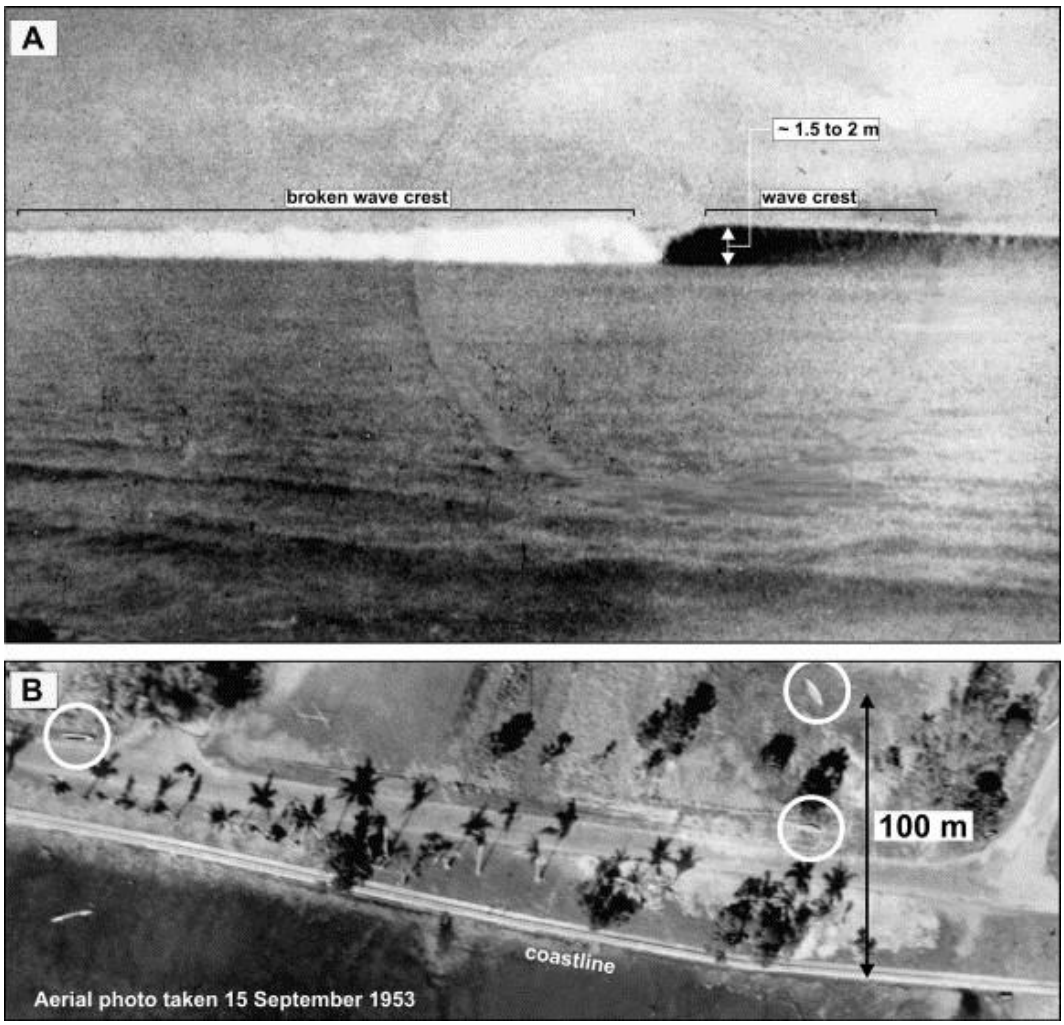
(a) Date: September 14, 1953
(b) Magnitude: 6.8
(c) Depth:
(d) Location: 18.25S, 178.25E
(e) Earthquake Intensity caused infrastructure damage costing about 500,00 euro.

- Reports:
  (a) Suva (wave height- 5m)
    (i) ETA of tsunami was 4 minutes
    (ii) 3 fatalities
  (b) Nakasaleka and Yale, Kadavu (wave height- 5m)
    (i) 5m wave height
    (ii) 5 fatalities
  (c) Levuka (3m wave height)
  (d) Savusavu (3m wave height)
- After the 1953 Tsunami:
  (a) The event exposed Fiji's vulnerability to locally generated tsunamis and the lack of seismic and tsunami monitoring capacity.
  (b) It highlighted the urgent need for a dedicated, around-the-clock system to detect and respond to such hazards.
- Progress Since 1953 till now:
  (a) Establishment of the Seismology Section in 1976 initiating Earthquake Monitoring. On the 2nd of April, 2016 at 12am, the 24/7 Earthquake and Tsunami Monitoring Operation began for the Seismology section.
  (b) Strengthened collaboration with the National Disaster Management Office (NDMO) for tsunami response protocols.
  (c) Development of national Standard Operating Procedures (SOPs) for tsunami alerts and community evacuations.
  (d) Increased public education and awareness efforts to promote earthquake and tsunami preparedness.
  (e) National Tsunami Response Plan 2017 approved by Cabinet

ii) The 2022 Hunga Tonga-Hunga Ha'apai Volcanic Eruption and Tsunami (Volcanic-Induced)

- Date: January 15, 2022
- Event: A massive undersea volcanic eruption in Tonga triggered a powerful tsunami across the Pacific.
- Evaluation Threat (PTWC information): less than 0.3m wave height above the tide level
- Cause of Tsunami: The explosive eruption displaced large volume of water, generating waves that radiated across the region
- Impacts on Fiji:
  (a) Tsunami waves recorded in various parts of Fiji, including the Lau Group and eastern Viti Levu.
  (b) Minor coastal inundation flooding and boat damage occurred.
  (c) Public confusion arose due to the non-earthquake nature of the tsunami.
  (d) Showed the need for preparedness for non-seismic tsunami sources.
  (e) 24/7 ETMO – No SOP for volcanic induced Tsunami.

More information in Number 8


A
~ 1.5 to 2 m
broken wave crest
wave crest
B
100 m
coastline
Aerial photo taken 15 September 1953

Suva - Navua 1953 Earthquake Triggered this Tsunami which attacked the Suva Harbor 8 minutes after the Earthquake

DAMAGE TO THE SUVA WHARF CAUSED BY THE TSUNAMI

Boats piled up in a confused mess after the Tsunami

Coastal innundation on Moce Island from the Hunga Ha'apai, Tonga event

Coastal Innundation on Tavuki, Kadavu Island from the Hunga Ha'apai, Tonga event

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

- *https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.sciencedirect.com%2Fscience%2Farticle%2Fpii%2FS0025322706003008&psig=AOvVaw12_0ZoRVw1WNiYh-8H-vkO&ust=1743899524120000&source=images&cd=vfe&opi=89978449&ved=0CBcQjhxqFwoTCJDH1ZfSv4wDFQAAAAAdAAAAABAE*

- *https://www.google.com/url?sa=i&url=https%3A%2F%2Fwww.facebook.com%2Ffaaris.ali.fj%2Fposts%2F1953-the-suva-tsunamion-14th-september-1953-a-magnitude-66-earthquake-occurred-j%2F3948176947883 99%2F&psig=AOvVaw12_0ZoRVw1WNiYh-8H-vkO&ust=1743899524120000&source=images&cd=vfe&opi=89978449&ved=0CBcQjhxqFwoTCJDH1ZfSv4wDFQAAAAAdAAAAABAI*

- *Mr Lasarusa Vuetibau's presentation (former Principal Scientific Officer) - https://www.slideserve.com/cutter/the-international-workshop-tsunami-hazard-mitigation-and-risk-assessment-organised-by-iugg-tsunami-commission-iugg*

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

- Improvement for tsunami hazard zones
- Tsunami Estimated Time of Arrival (ETA)
- Improvement in Tsunami Warning dissemination
- Tsunami information – Database
- Installation of DART
- Update/Review Tsunami Warning SOP
- Working on revision of National Tsunami Response Plan
- UNESCO/IOC Tsunami Ready Programme – Sigatoka, Viti Levu