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Intergovernmental
Oceanographic
Commission

UNESCO/IOC Tsunami Ready Recognition Programme

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Vision:
*“The science we need
for the ocean we want”*

Mission:
*Transformative Ocean Science
solutions for sustainable
development, connecting
people and our ocean*



2016-2017



2018-2019



2019-2020

Ocean Decade Goals: Societal Outcomes



4. A Predicted Ocean

Society understands and can respond to changing ocean conditions.



5. A Safe Ocean

Life and livelihoods are protected from ocean-related hazards.



6. An Accessible Ocean

Open and equitable access to data, information and technology and innovation.

Capacity Development

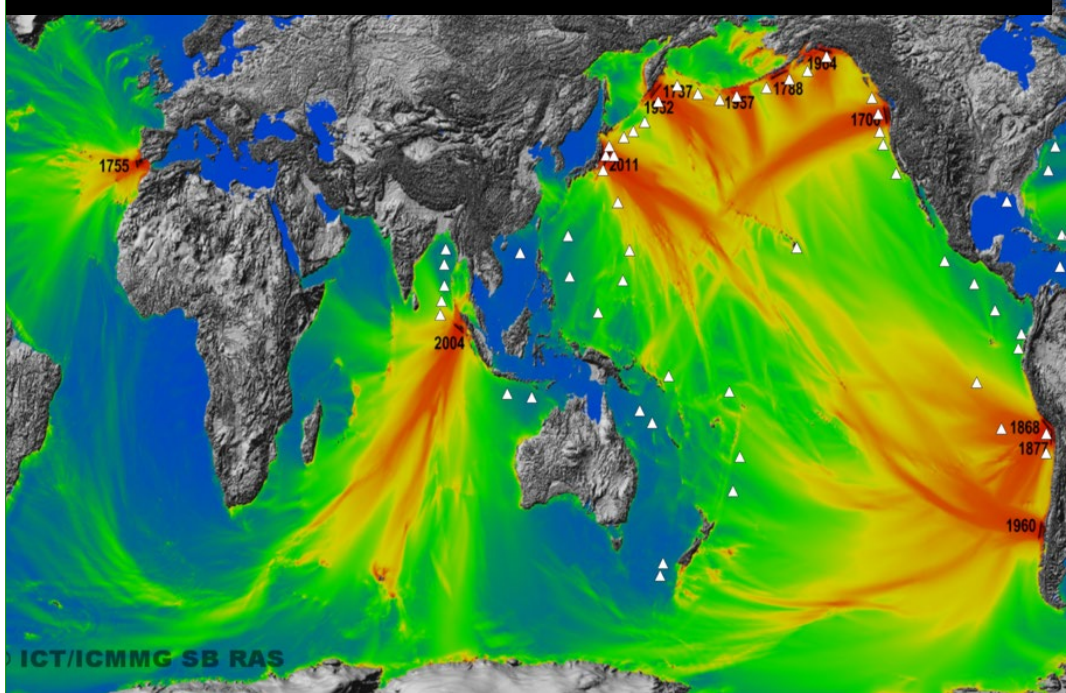
Cross-cutting. No one left behind.

UNESCO IOC

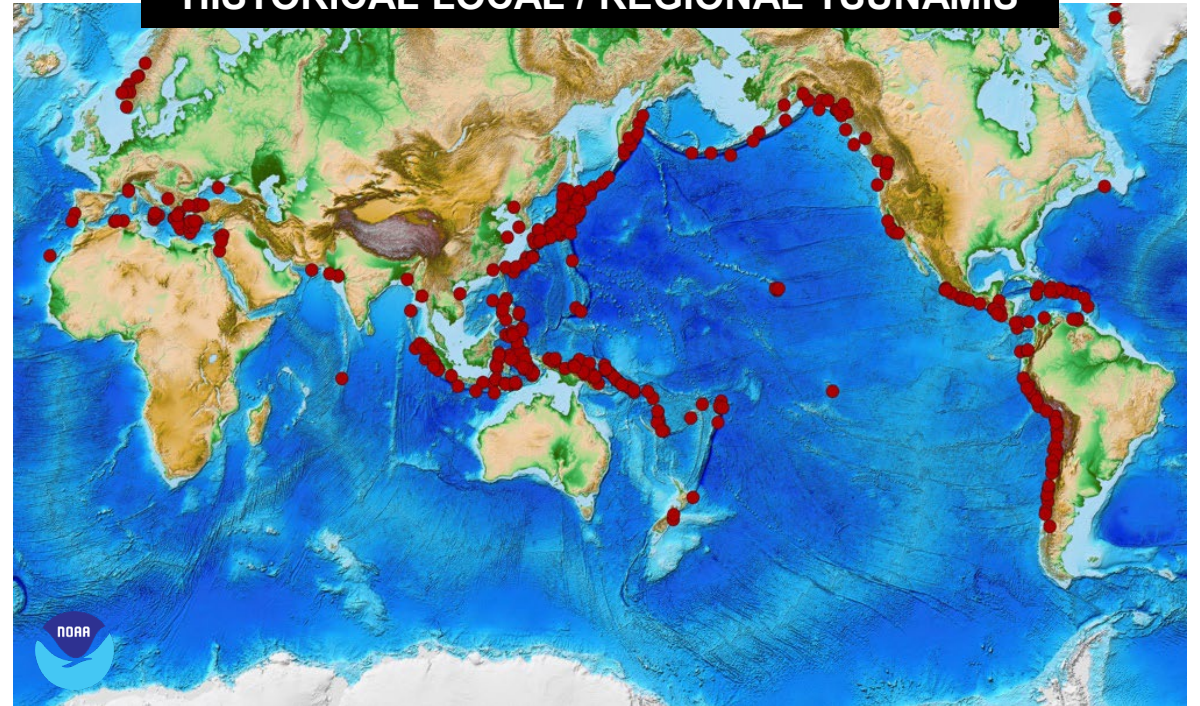


Deadly Tsunamis – MOST ARE LOCAL

HISTORICAL TRANS-OCEANIC DISTANT TSUNAMIS



HISTORICAL LOCAL / REGIONAL TSUNAMIS



- ❑ Most tsunamis are local (< 1 hr) or regional (1-3 hrs)
- ❑ Globally, 90% of deaths from local or regional tsunamis (in Pacific, 99% of deaths)



At-risk population - Pacific

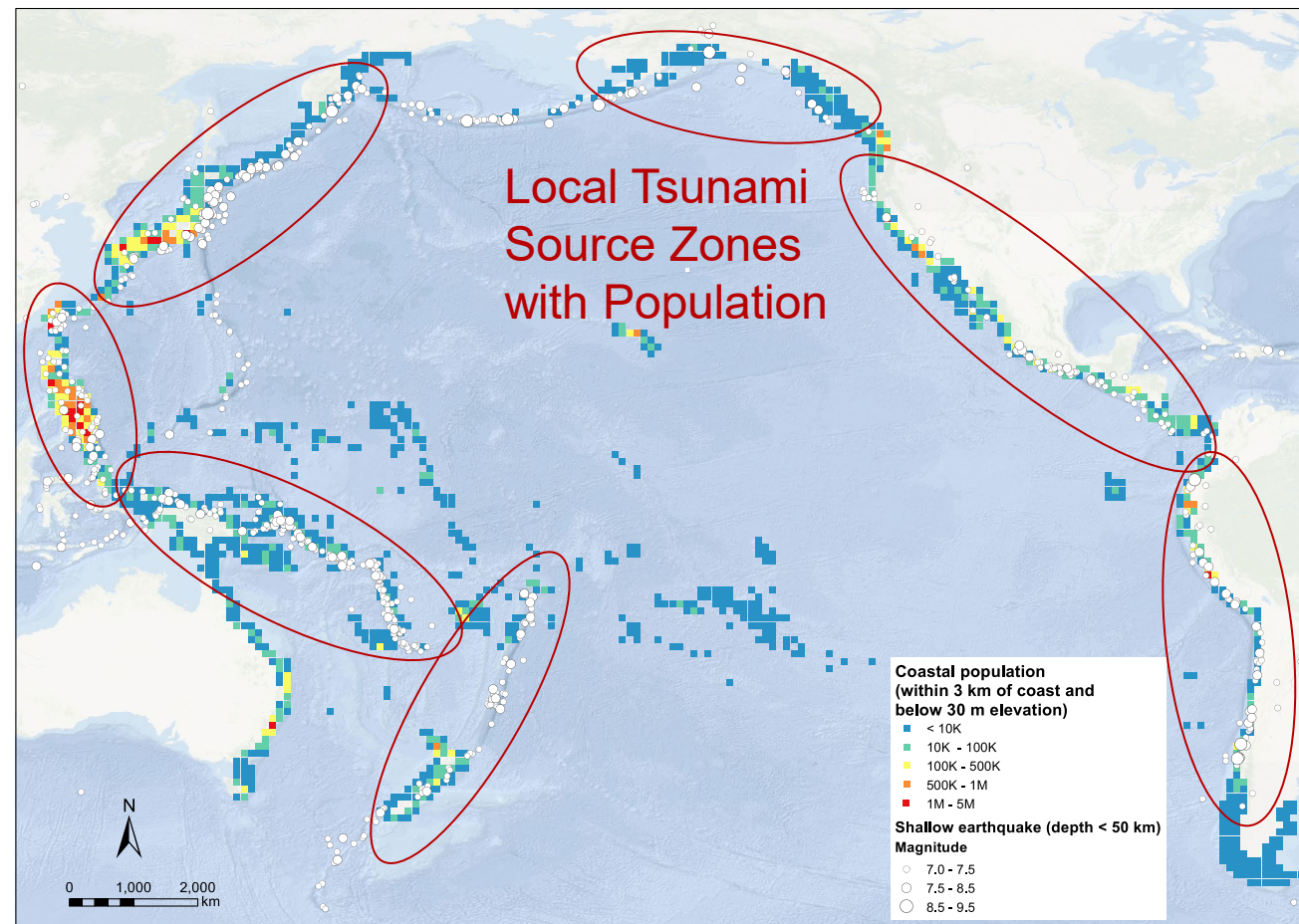


Tsunami evacuation zone

Population to evacuate

Less than 30 m elevation and within 3 km of coast

83,413,677



Coastal Population (1 deg aggregate)

- < 10K
- 10K - 100K
- 100K - 500K
- 500K - 1M
- 1M - 3M

Shallow Earthquakes Magnitude

- 7.0 - 7.5
- 7.5 - 8.5
- 8.5 - 9.5

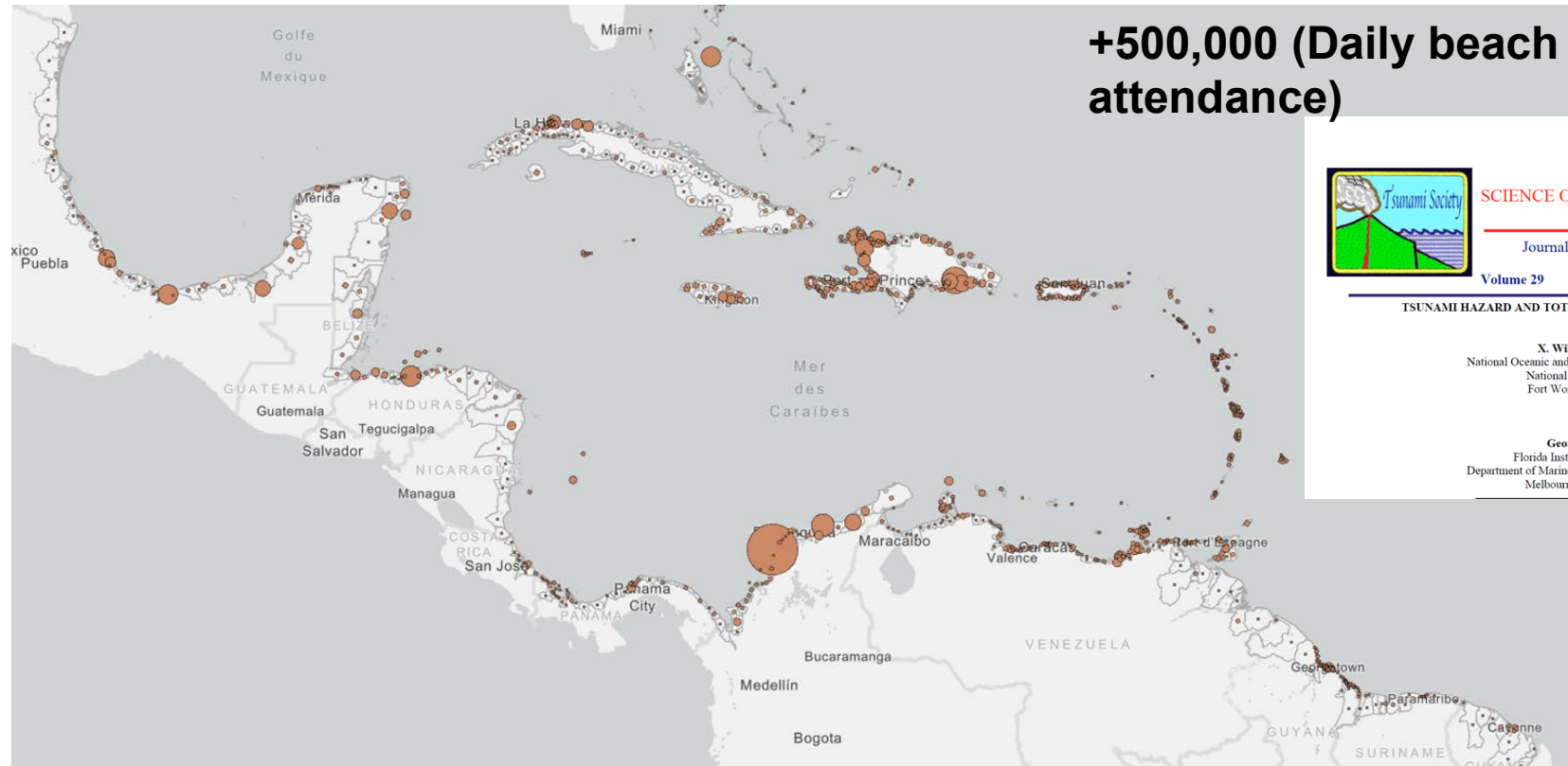
Gridded Population of the World, Version 4 (GPWv4) (<https://sedac.ciesin.columbia.edu/binaries/web/sedac/collections/gpw-v4/gpw-v4-documentation-rev11.pdf>).
30 sec resolution aggregated to 1 deg
B. Fry, GNS Science, NZ



At-risk population – Caribbean (total 47 million)




Tsunami evacuation zone	Population to evacuate
Less than 30 m elevation and within 3 km of coast	16,300,000. (35% of total)
Less than 15 m elevation and within 3 km of coast	13,000,000 (28% of total)



Zone defined according to SRTM Digital Elevation 30m data
 Average value estimated from Global Human Settlement Layer and WorldPop Hub
 M. Péroche,

ISSN 8755-6839



SCIENCE OF TSUNAMI HAZARDS
 Journal of Tsunami Society International
 Volume 29 Number 2 2010
 TSUNAMI HAZARD AND TOTAL RISK IN THE CARIBBEAN BASIN

X. William Proenza
 National Oceanic and Atmospheric Administration
 National Weather Service
 Fort Worth, Texas 76102

and

George A. Maul
 Florida Institute of Technology
 Department of Marine and Environmental Systems
 Melbourne, Florida 32901



OCEAN DECADE TSUNAMI PROGRAMME

A SAFE OCEAN

THE MAIN SOCIETAL OUTCOME

TO MAKE
100%

OF COMMUNITIES AT RISK
OF TSUNAMI PREPARED FOR
AND RESILIENT TO TSUNAMIS

BY
2030

➤ *Tsunami Coalition: collaborative with critical UN stakeholders, civil protection, others ==> Raise profile. Facilitate resourcing*

CHAIR is LAURA KONG

➤ *Capacity Development: "Tsunami Ready" training, augmented by online IOC Ocean Teacher Global Academy (OTGA) ==> Global reach, deep curricula*

ITIC is OTGA STC

History of Tsunami Ready Programme

US National Weather Service establishes TsunamiReady® Programme in its states and territories

2001

IOC Assembly approves Tsunami Ready Pilot Project to be implemented in other regions

2015

IOC Assembly approves establishment of IOC Ocean Decade Tsunami Programme including Tsunami Ready

2021


100% At-Risk Communities Tsunami Ready

2030

US supports joint NWS and UNESCO-IOC TsunamiReady® Pilot in Caribbean

2011

Tsunami Evacuation Maps, Plans and Procedures (TEMPP) training supports Tsunami Ready. Starts in Pacific and Indian Ocean

2015-2017

UNESCO-IOC establishes Tsunami Ready Recognition Programme



2022

Tsunami Ready



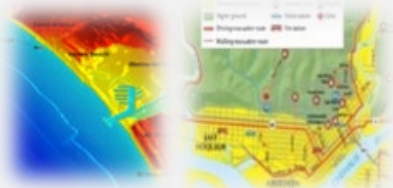
UNESCO-IOC Tsunami Ready Recognition Programme is:

- **Voluntary international performance-based community programme.**
- **Facilitated by UNESCO-IOC Tsunami Information Centres* (CTIC, IOTIC, ITIC, and NEAMTIC) of each region**
- **Formal recognition process follows standard guidelines (UNESCO-IOC Manual and Guide 74).**



UNESCO-IOC Tsunami Information Centres





UNESCO IOC TSUNAMI READY INDICATORS	
I ASSESSMENT (ASSESS)	
1	ASSESS-1. Tsunami hazard zones are mapped and designated.
2	ASSESS-2. The number of people at risk in the tsunami hazard zone is estimated.
3	ASSESS-3. Economic, infrastructural, political, and social resources are identified.
II PREPAREDNESS (PREP)	
4	PREP-1. Easily understood tsunami evacuation maps are approved.
5	PREP-2. Tsunami information including signage is publicly displayed.
6	PREP-3. Outreach and public awareness and education resources are available and distributed.
7	PREP-4. Outreach or educational activities are held at least three times a year.
8	PREP-5. A community tsunami exercise is conducted at least every two years.
III RESPONSE (RESP)	
9	RESP-1. A community tsunami emergency response plan (TERP) is approved.
10	RESP-2. The capacity to manage emergency response operations during a tsunami is in place.
11	RESP-3. Redundant and reliable means to timely receive 24-hour official tsunami alerts are in place.
12	RESP-4. Redundant and reliable means to timely disseminate 24-hour official tsunami alerts to the public are in place.

- **STRATEGY:**
Be Aware, Be Prepared
- **FRAMEWORK:**
 - Harmonized global guidelines UNESCO IOC Tsunami Ready
 - Performance-based Community Recognition
- **ACTION:**
National programs empower Communities
- **GLOBAL MEASURE**



102

TSUNAMI READY COMMUNITIES

22 CARIBBEAN AND ADJACENT REGIONS

23 PACIFIC

51 INDIAN OCEAN

6 THE NORTH-EASTERN ATLANTIC, MEDITERRANEAN AND CONNECTED SEAS

34 / 139 MS

16 CAR

10 PAC

2 IO

6 NEAM



UNESCO-IOC TSUNAMI READY RECOGNITION PROGRAMME (TRRP)

Intergovernmental Oceanographic Commission of UNESCO
www.ioc-tsunami.org

THE NORTH-EASTERN ATLANTIC, MEDITERRANEAN AND CONNECTED SEAS

- Recognize ○ In progress
- 1 Egypt
 - Egypt
 - Alexandria
- 2 France
 - Alpes-Maritimes
 - Cannes
- 3 Greece
 - North Aegean
 - Samos
- 4 Italy
 - Lattina
 - Minturno
- 5 Spain
 - Cádiz
 - Chipiona
- 6 Türkiye
 - Büyükçekirce

INDIAN OCEAN

Recognize ○ In progress

- 1 India
 - Ganjain
 - Melisahi
 - Kantagada
 - Markandi
 - Prayagi
 - Uppaliputi
 - Venkatapur (New Boxpalli)
 - Jagatsinghpur
 - Venkatapur
 - Baghepur
 - Bhuyanipta
 - Dhansharbelari
 - Melisahi
 - Sahadabadi
 - Balasore
 - Jagannathpur
 - Jaydevkasaba Pahi
 - Kanyanagari
 - Salapur
 - Bhadrak
 - Adhuan
 - Badshahablisahi
 - Mahapur
 - Sanakrushtapur
 - Kandrappada
 - Chinchin
 - Kaithe
 - Kantilo
 - Tantapala Sasan
 - Puri
 - Chhotipada
 - Keutanga
 - Khalakapatana
 - Narasingpatana
- 2 Indonesia
 - Kabupaten Lombok Tengah
 - Kota Mandalika
 - Badung Regency
 - Kelurahan Tanjung Benoa
 - Dukung
 - Desa Pengastulan
 - Malang
 - Desa Tambakrejo
 - Malang
 - Desa Tambakrejo
 - Kulon Progo
 - Desa Glagah
 - Labak
 - Desa panggarangan
 - Pangandaran
 - Kota Pangandaran
 - Padang City
 - Kelurahan Lolong Belanti
 - Kelurahan Purus
 - Padang Paraman
 - Nagari Tapakah
 - Gunung Kidul
 - Desa Kemadang
 - Aridadi City
 - Nagari Galala
 - Nagari Hatue Kecil
 - Kota Banda Aceh
 - Desa Glumpang
 - Gampong Jawa
 - Aceh Besar
 - Mon Isuan
 - Lam Krut
 - Cileay
 - Sidorip
 - Bantul
 - Karangpritis
 - Gadingari
 - Poncosari
 - Tertobargo

102

TSUNAMI READY COMMUNITIES

22 CARIBBEAN AND ADJACENT REGIONS

23 PACIFIC

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6 THE NORTH-EASTERN ATLANTIC, MEDITERRANEAN AND CONNECTED SEAS



PACIFIC

Recognize ○ In progress

- 1 Costa Rica
 - Guanacaste
 - Orotina
 - Playas del Coco
 - Samara
 - Tamarindo
 - Playa Hermosa
 - Puntarenas
 - Quepos
 - Uvita-Bahia
 - Tulea
 - Dominican, Dominicalito y Barú
 - Puerto Jiménez
- 2 Ecuador
 - Galapagos
 - Puerto Baquerizo Moreno
- 3 El Salvador
 - La Libertad
 - La Libertad
 - Tamanique
- 4 Federated States of Micronesia
 - Chuuk
 - Wono Municipality
 - Palmyra
 - Pohnpei State
- 5 Fiji
 - Doro District
 - Navunuu
 - Sika
- 6 Guatemala
 - Escuintla
 - San Jose
 - Sipacate
- 7 Oromada
 - Caracou
 - Carriacou & Petite Martinique
 - St. Patrick
 - St. Patrick
- 8 Samoa
 - Lefaga
 - Salea
- 9 Palau
 - Palau
- 10 Marshall Islands
 - Muro
 - Majuro

CARIBBEAN AND ADJACENT REGIONS

Recognize ○ In progress

- 1 Antigua and Barbuda
 - St. John's
 - St. John's
- 2 Barbados
 - St. Lucy & St. Peter
 - Sherburns, St. Lucy - Mullins, St. Peter
 - Christ Church
 - Christ Church West
 - St. James Central Community
- 3 British Virgin Islands
 - Commonwealth realm
 - British Virgin Islands
- 4 Costa Rica
 - Talamanca
 - Cahuita
- 5 Dominica
 - Dominica
 - Portsmouth
- 6 France
 - Guadeloupe
 - Deshaies
- 7 Grenada
 - Carriacou
 - Carriacou & Petite Martinique
 - St. Patrick
 - St. Patrick
- 8 Haiti
 - Nord-Est
 - Fort-Liberté
- 9 Honduras
 - Cortes
 - Omoa
 - Atlántida
 - Tornabe/Tela
- 10 Jamaica
 - St. Catherine
 - Old Harbour Bay
- 11 Nicaragua
 - Bluefields
 - Big Corn Island
 - Corn Island
- 12 Saint Kitts and Nevis
 - Saint Kitts and Nevis
 - Saint Kitts and Nevis
- 13 Saint Lucia
 - Laborie District
- 14 St. Vincent and the Grenadines
 - Union Island
 - Kingstown to Arzyle
 - Saint George
- 15 Trinidad and Tobago
 - Diego Martin
 - Carriacou
- 16 United Kingdom
 - Long Bay Village
 - Anguilla



Tsunami Ready Website

Tsunami Ready Viewer

October 2024

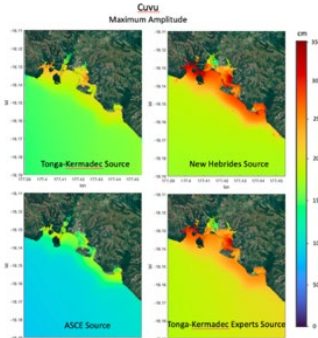
Fiji Coral Coast: Nayevuyevu and Sila Villages



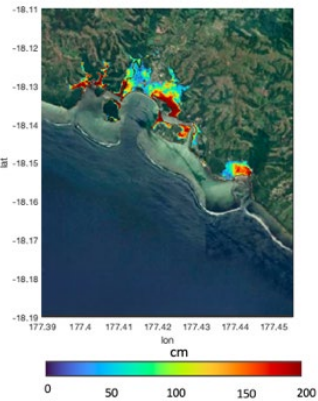
➤ **TR Recognition Ceremony: Nov 3, 2023**

Implementation Approach - Stakeholders
 Mineral Resources Dept, National Disaster Management Office,
 Ministry of Lands, Provincial Administrator, iTaukei Affairs, Plan
 International, Partners in Community Development (Fiji), People Living
 with Disability Organization

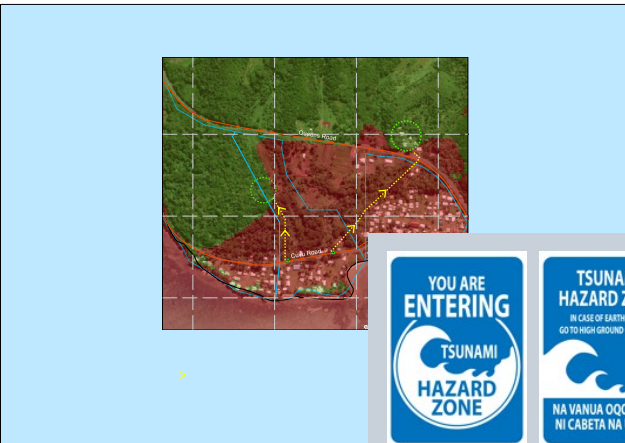
Preparedness: Hazard and Evacuation



Maximum Composite Flow Depth



Hazard Assessment:
Tsunami Sources and Inundation



Community participatory training, Sep 2023

GEOLOGICAL SERVICES DIVISION SEISMOLOGY UNIT

OFFICIAL WARNINGS

when tsunamis travel across the ocean from far away, we have more time to warn people what to do.

WARNING Move to higher ground or inland IMMEDIATELY! **DANGER** A Tsunami is imminent. Flooding and dangerous currents. 30 feet or greater

ADVISORY Stay out of the water and away from the shore. **STRONG CURRENTS AND DANGEROUS WAVES** IN YOUR COASTAL WATERS. 1-3 feet or 0.3-3 meters

WATCH Be prepared to take action. Know your evacuation route. Stay tuned to local radio/TV. **TSUNAMI POSSIBLE** Alert level may change once stations have received information. PREPARE

INFORMATION STATEMENT Move to higher ground or inland IMMEDIATELY! **NO ACTION REQUIRED**. RELAX

Alerts & Warnings

Outdoor Sirens, Social Media, Telephone Notifications, Radio, Wireless Emergency Alerts and Text Messages, Television

GEOLOGICAL SERVICES DIVISION SEISMOLOGY UNIT

IF YOU FEEL AN EARTHQUAKE THAT IS LONG AND STRONG, A TSUNAMI MAY FOLLOW

WHAT TO DO IN CASE OF A TSUNAMI

1. Drop, cover & hold during an earthquake
2. Move inland or to a higher ground quickly, or use local evacuation route
3. Wait for official ALL CLEAR before returning to the beach



Warning, Response, Awareness

Sila Village Nadroga Province, Fiji is Tsunami Ready

IN CASE OF STRONG OR LONG EARTHQUAKE OR ANY OFFICIAL MESSAGE, GO TO HIGHER GROUND OR FURTHER INLAND

The recognition does not imply approval or promise that a community can or will perform at a certain level in case of tsunami. Tsunami Ready recognition does not mean that a community is tsunami proof. UNESCO-IIOC recognizes that the community have built their capacity and implemented measures in accordance to the agreed indicators of UNESCO-IIOC Tsunami Ready Programme, and that they will continue to maintain and ensure the sustainability of this preparedness level.

English	iTaukei (Fijian)
• Tsunami Hazard Zone	• Na Vanua oqo e rawa ni cabeta na Ualoka
• Tsunami Evacuation Route	• Na sala mo ni muria kina i drodro ni Ualoka
• Tsunami Safe Zone	• Nai drodro ni Ualoka
• Wait for Official All Clear	• Waraka me soli nai vakaro ni veisukayaki



UNDRR

UN Office for Disaster Risk Reduction



unesco

Intergovernmental
Oceanographic
Commission

Call to Action!

Making **100%**
of at-risk communities
Tsunami Ready by **2030.**