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Call to Action

**Be Aware, Be Prepared
Be Tsunami Ready !**

Dr. Laura Kong

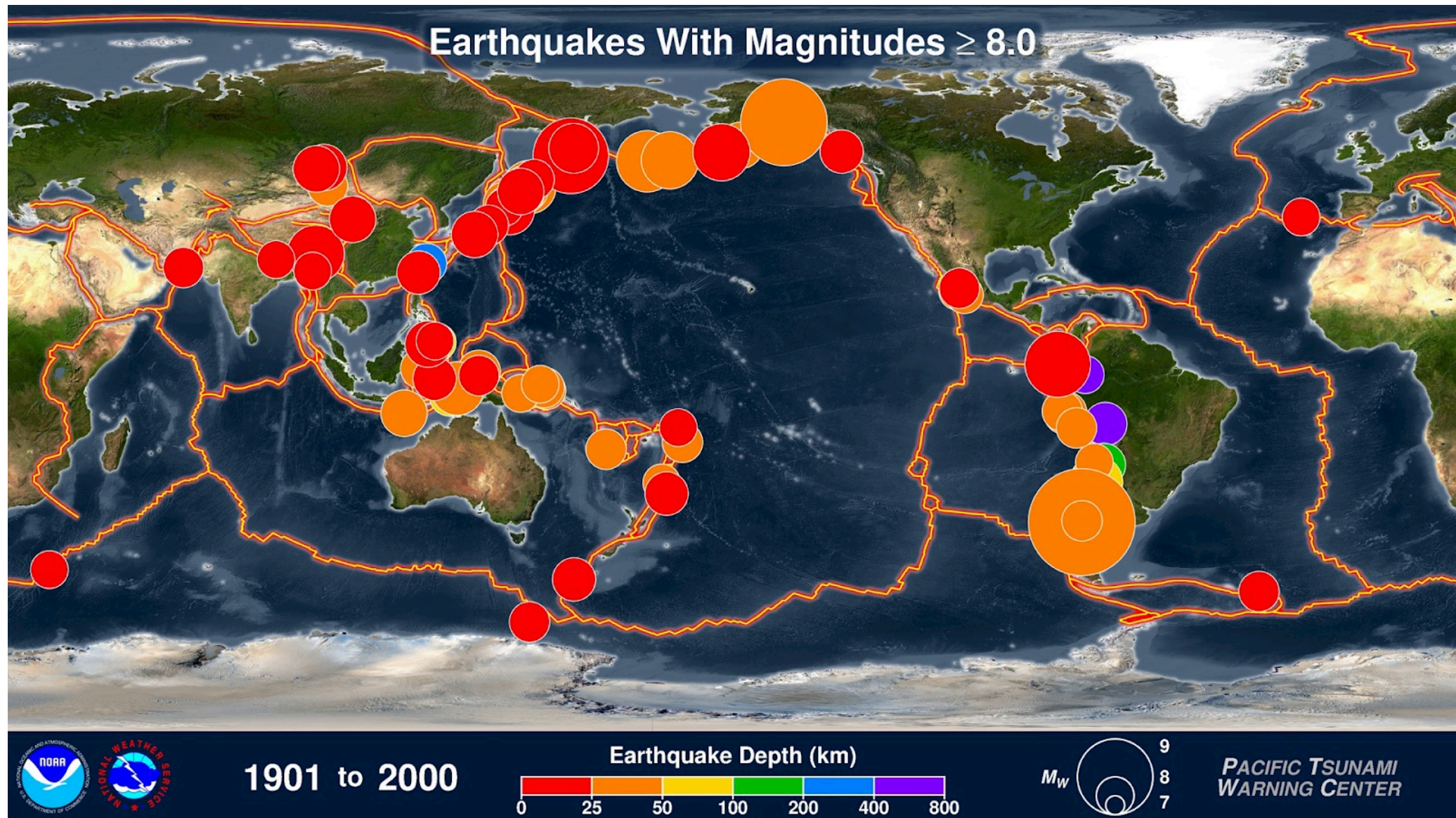
Chair, Tsunami Ready Coalition

International Tsunami Information Centre (ITIC), Honolulu

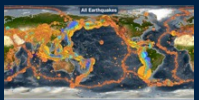
Bernardo Aliaga

Head, UNESCO/IOC/Tsunami Resilience Section, Paris

DANGEROUS EARTHQUAKES & TSUNAMIS

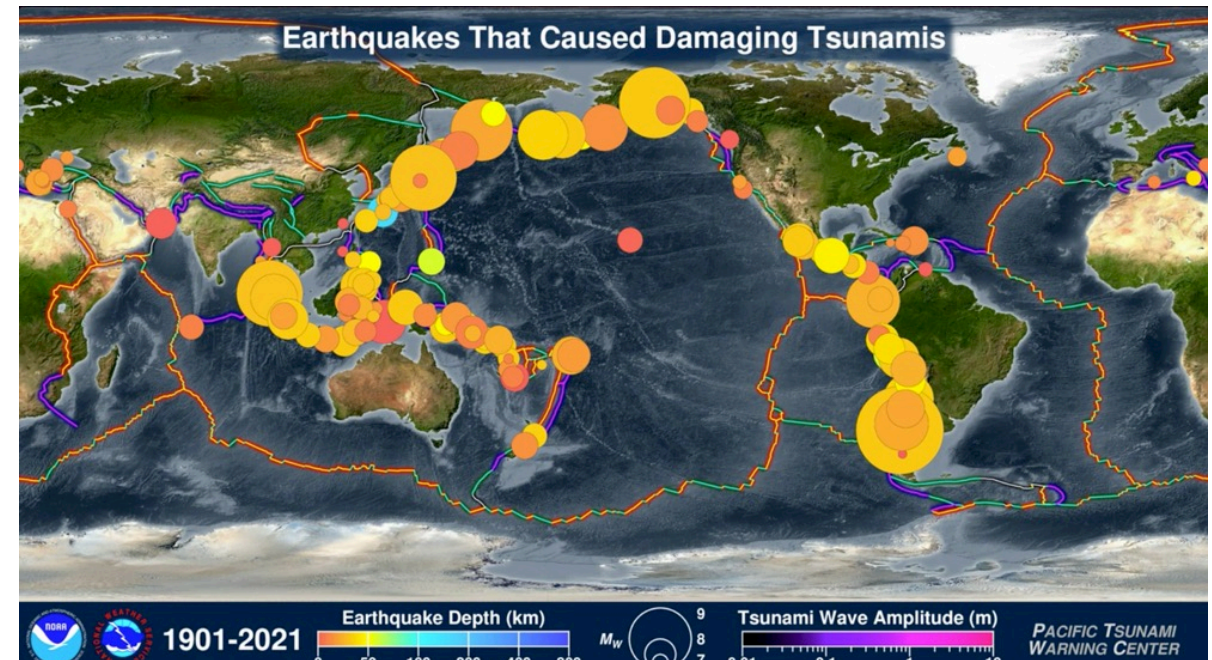
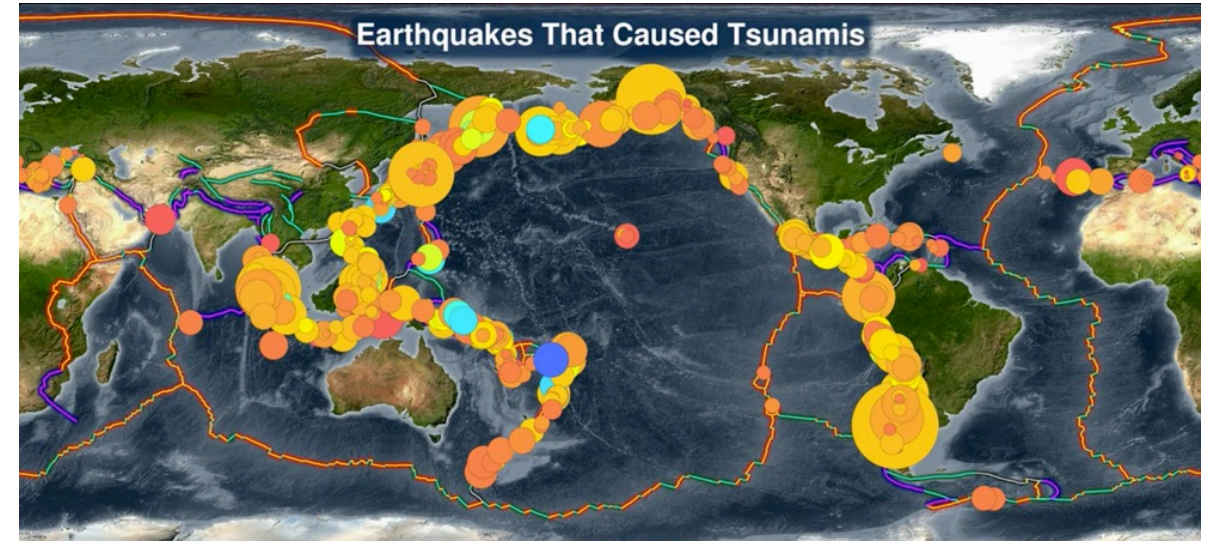
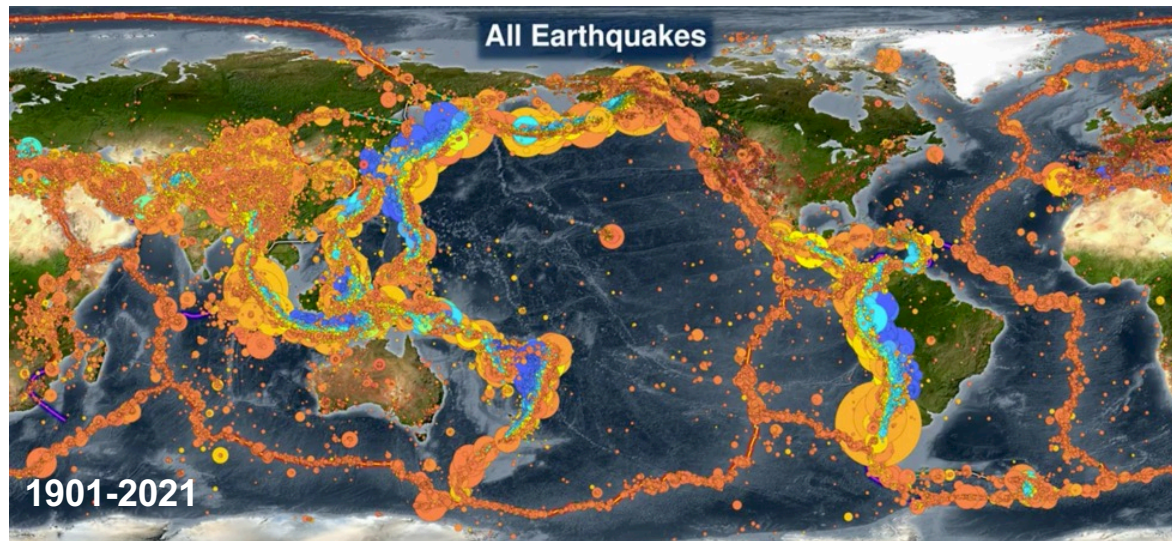


Click below
for video
EQ-Tsunami
1901-2021



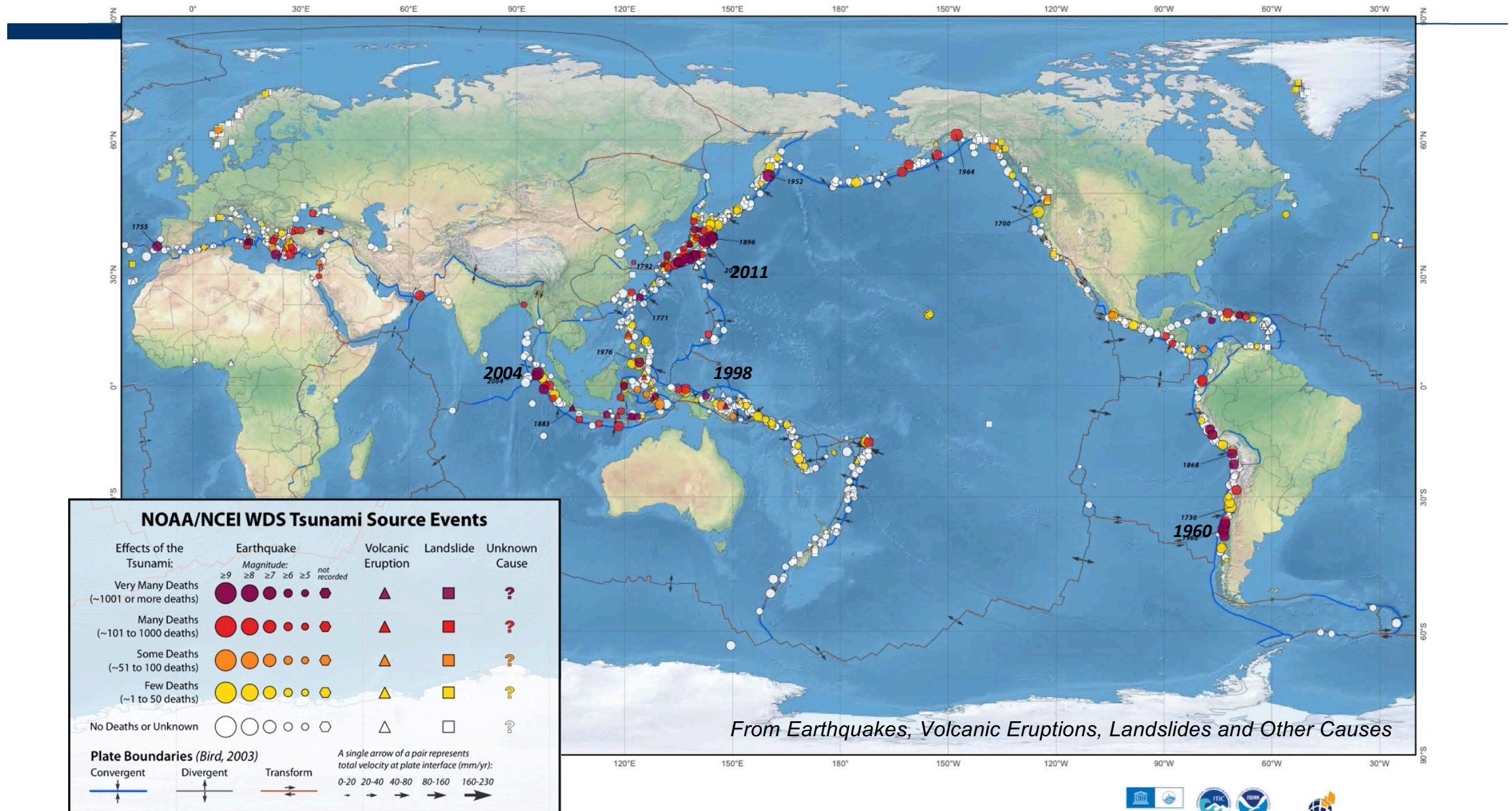
1901 to 2000

DANGEROUS EARTHQUAKES & TSUNAMIS

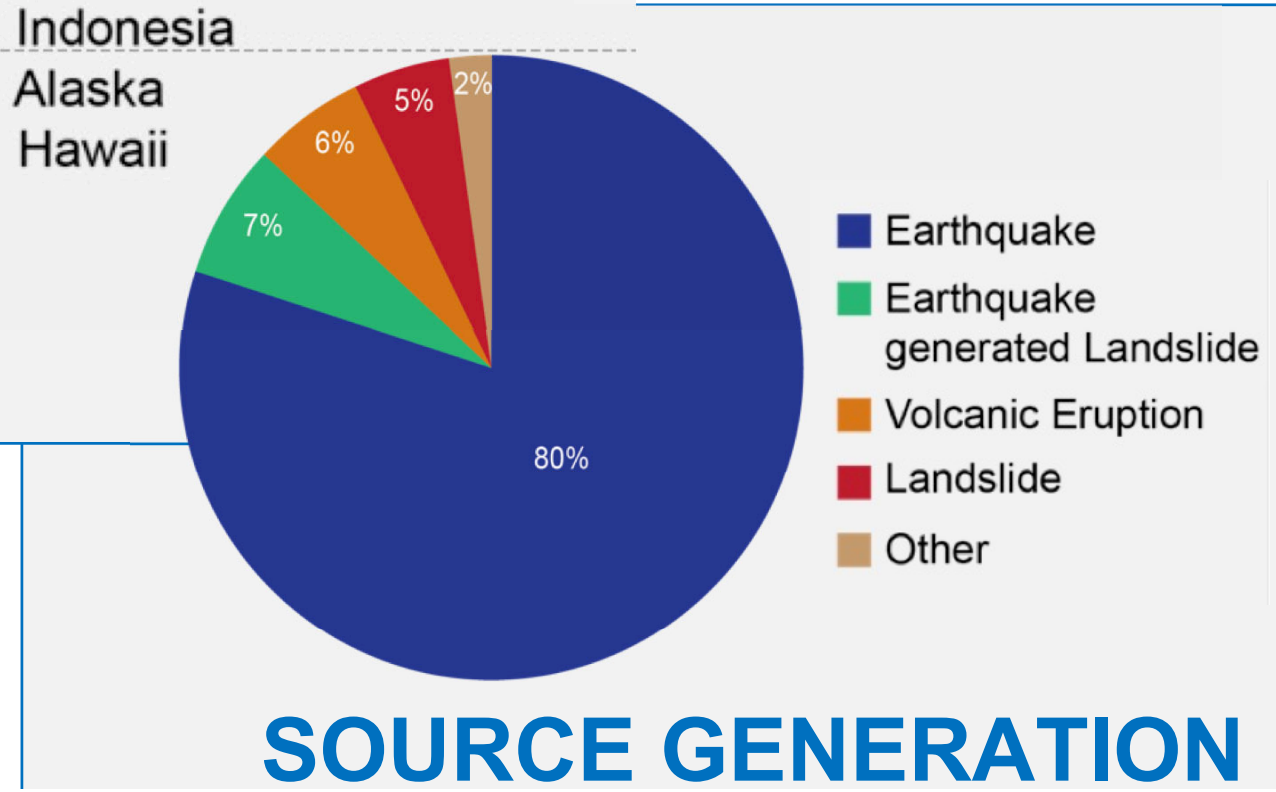
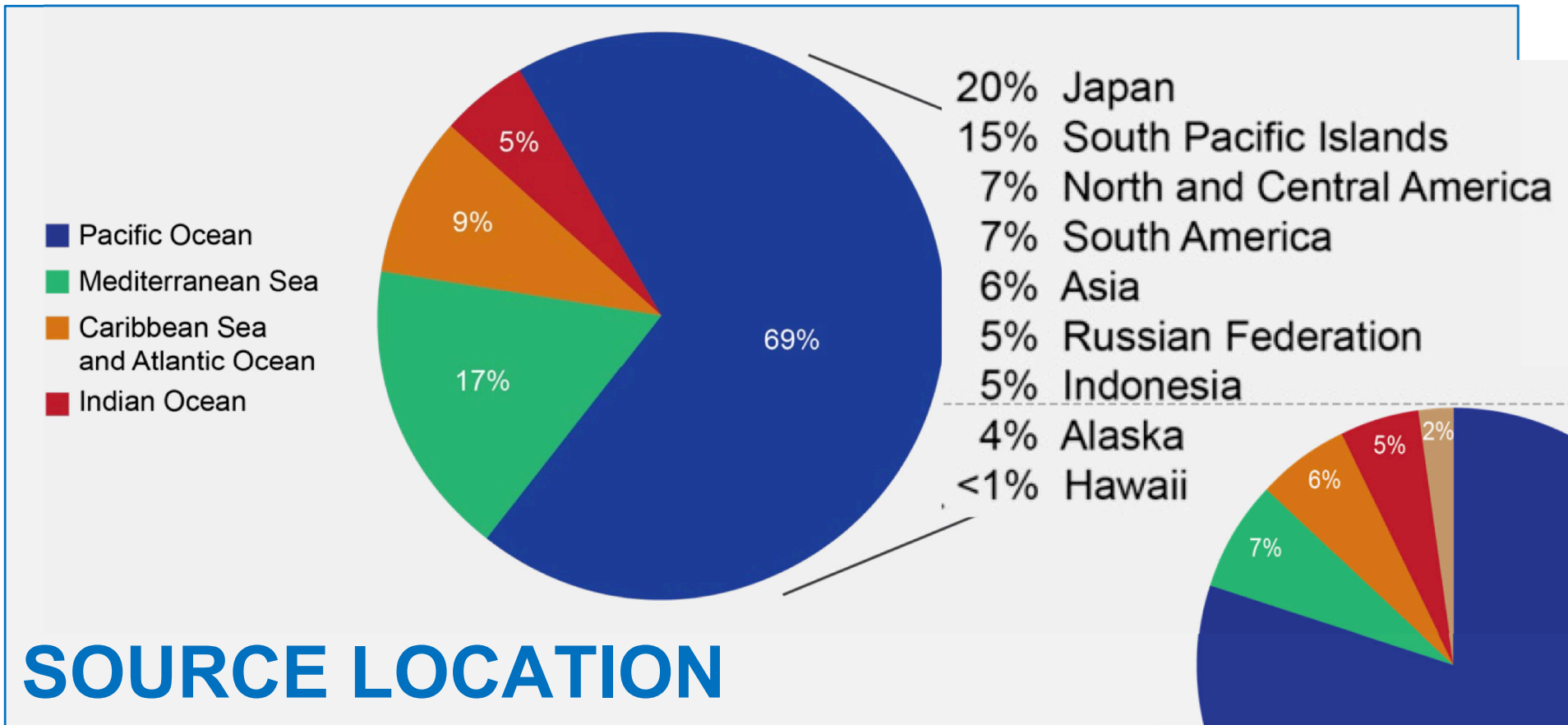


- ❑ 80% caused by earthquakes
- ❑ Shallow, undersea/near coast
- ❑ Magnitude 8+ ($M7+$)

DEADLY TSUNAMIS (1620 B.C to A.D. 2023)

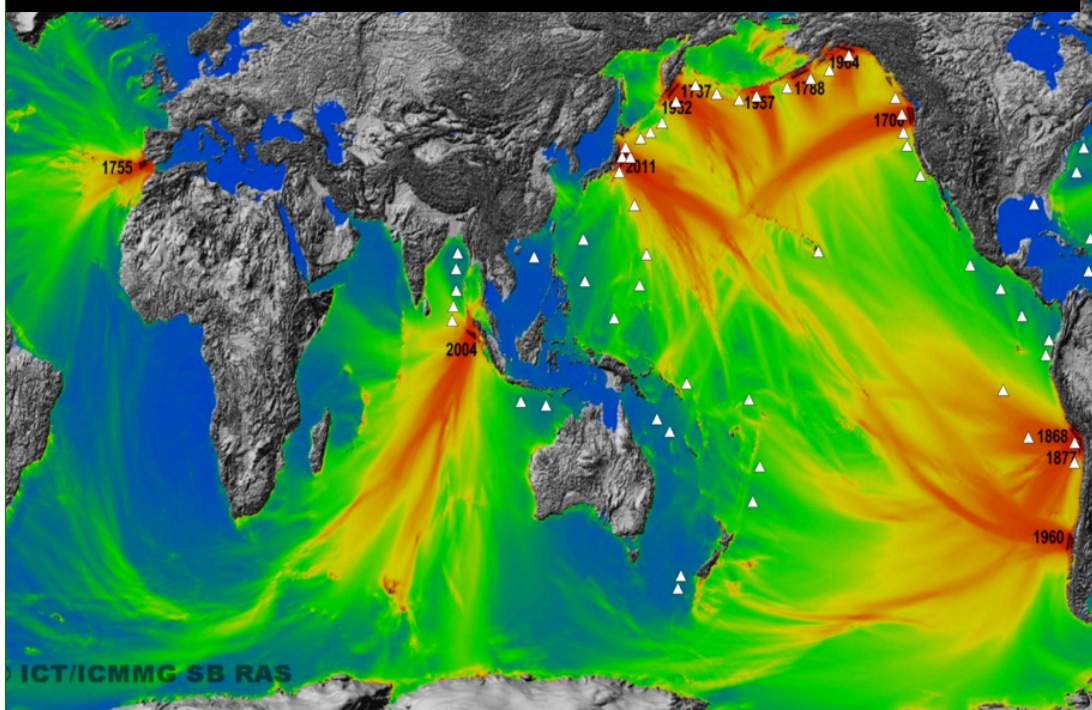


DEADLY TSUNAMIS (1620 B.C to A.D. 2023)

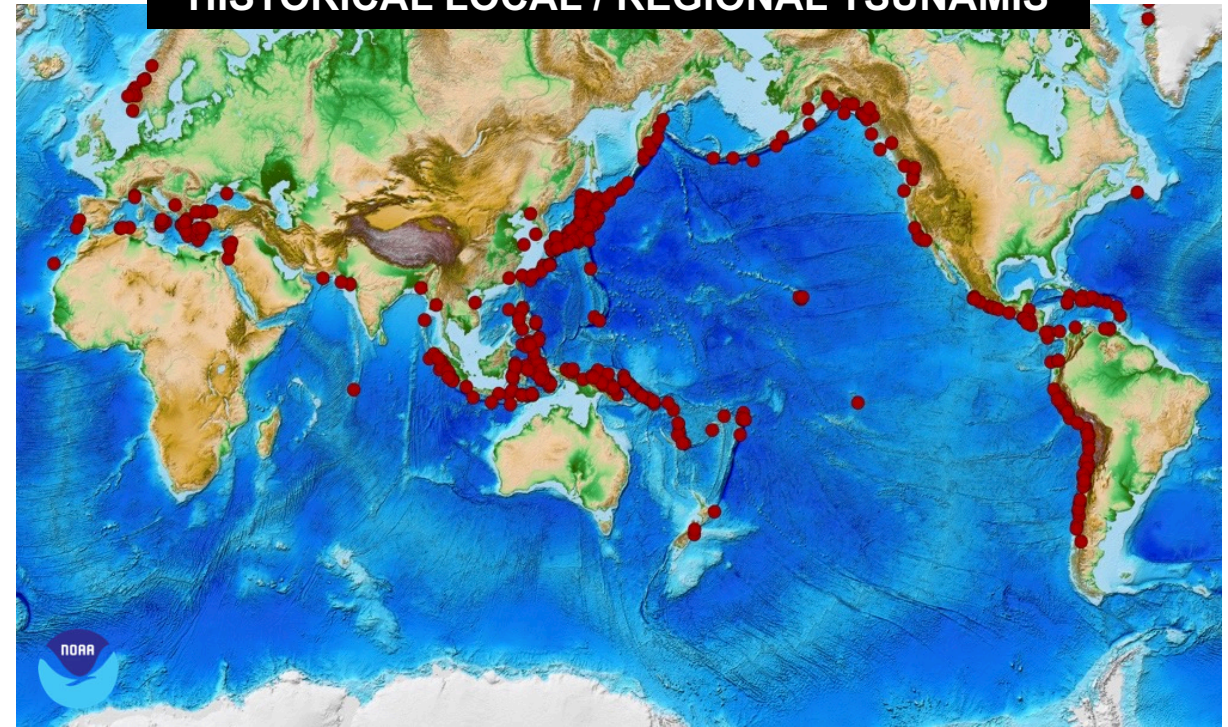


DEADLY TSUNAMIS – DISTANT to LOCAL

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)



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UNESCO/IOC Tsunami Ready Recognition Programme

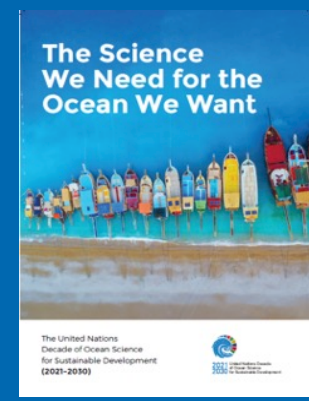


Vision:
*“The science we need
for the ocean we want”*

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

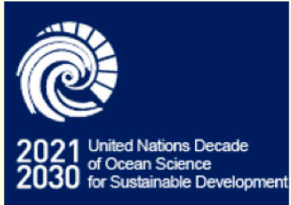
Open and equitable access to data, information and technology and innovation.

Capacity Development

Cross-cutting. No one left behind.

UNESCO IOC





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

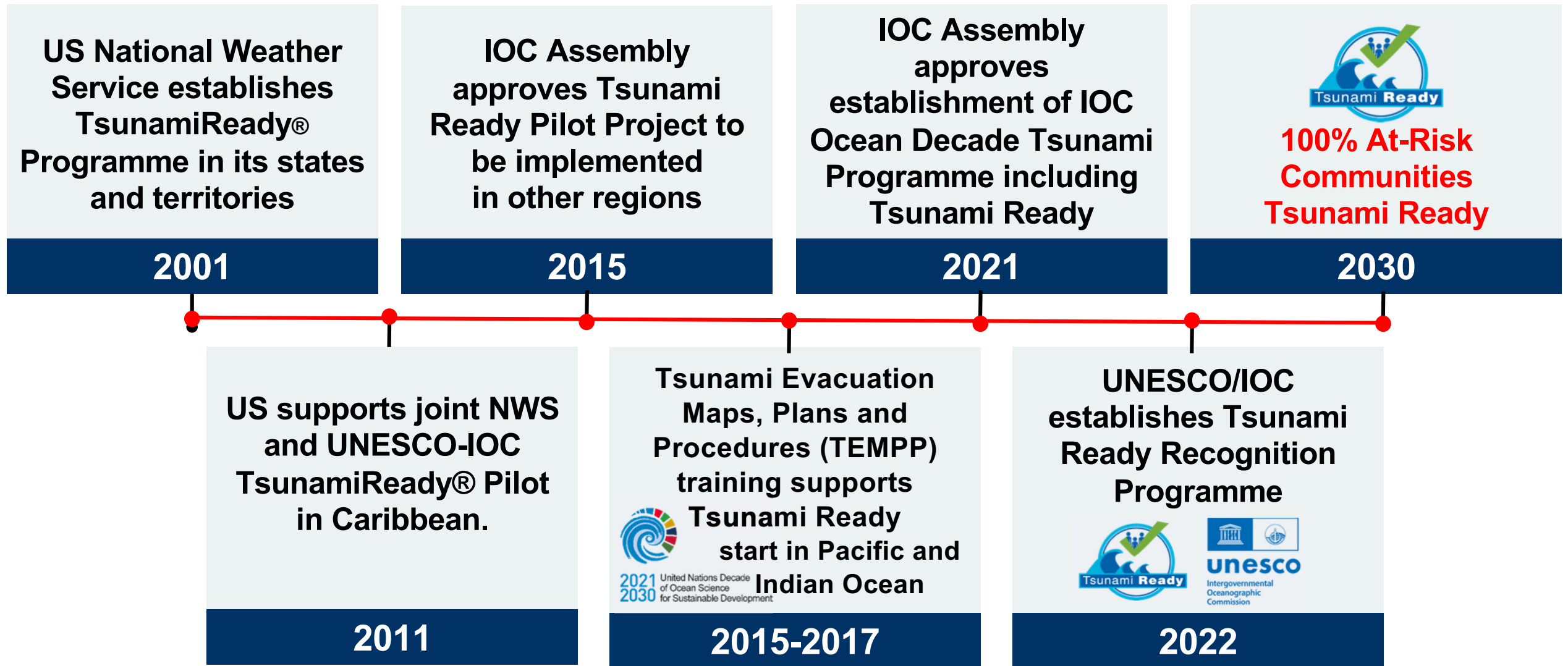
➤ *Tsunami Coalition: collaborative with critical UN stakeholders, civil protection, others ==> Raise profile. Facilitate resourcing*

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



UN OCEAN DECADE TSUNAMI PROGRAMME: 100% AT-RISK COMMUNITIES TSUNAMI READY



UNESCO IOC TSUNAMI READY INDICATORS	
I	MITIGATION (MIT)
1	MIT-1. Tsunami hazard zones are mapped and designated
2	MIT-2. The number of people at risk in the tsunami hazard zone is estimated
3	MIT-3. Available economic, infrastructural, political, and social resources are identified
4	MIT-4. Tsunami information is publicly displayed.
II	PREPAREDNESS (PREP)
5	PREP-1. Easily understood tsunami evacuation maps are developed.
6	PREP-2. Outreach and public awareness and education resources are available and distributed.
7	PREP-3. Outreach or educational activities <u>are held at least 3 times a year.</u>
8	PREP-4: A Tsunami community exercise is conducted at least every two years
III	RESPONSE (RESP)
9	RESP-1. A community tsunami emergency operations plan (EOP) has been prepared
10	RESP-2. The capacity to manage emergency response operations during a tsunami has been established.
11	RESP-3. Redundant and reliable means to timely receive 24-hour official tsunami alerts have been identified.
12	RESP-4. Redundant and reliable means to timely disseminate 24-hour official tsunami alerts to the public have been identified.

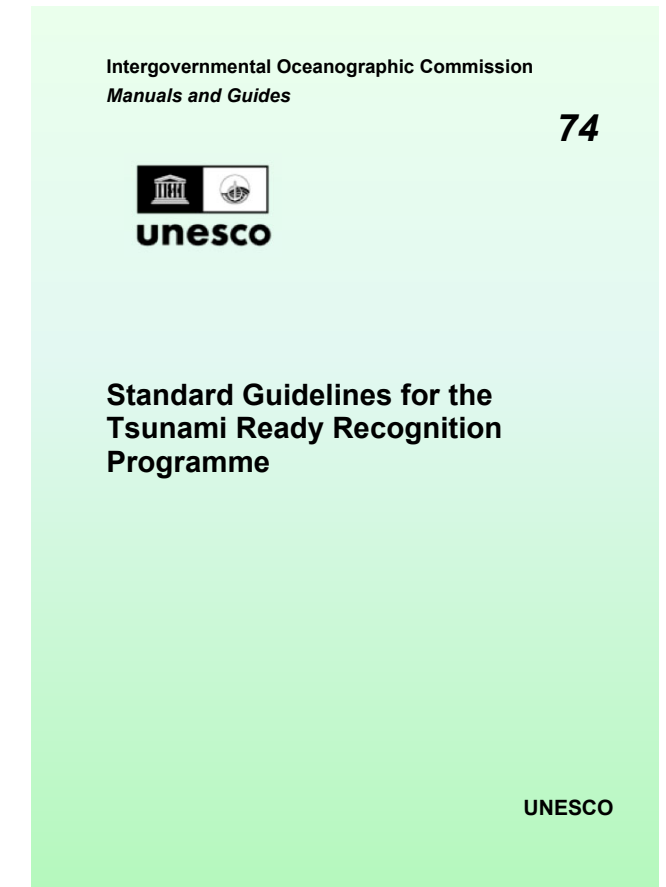
- **STRATEGY:**
Be Aware, Be Prepared
- **FRAMEWORK:**
 - Harmonized global guidelines UNESCO IOC Tsunami Ready
 - Performance-based Community Recognition
- **ACTION:**
National programs empower Communities
- **GLOBAL MEASURE**
 - 12 Indicators – Assessment, Preparedness, Response

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

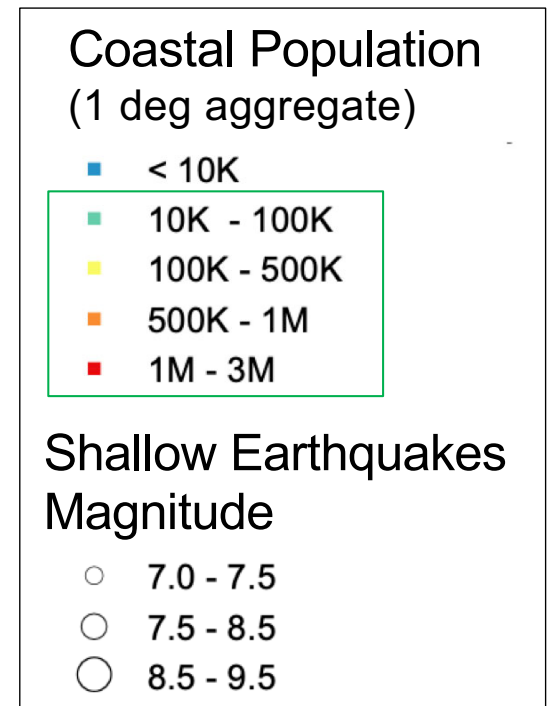
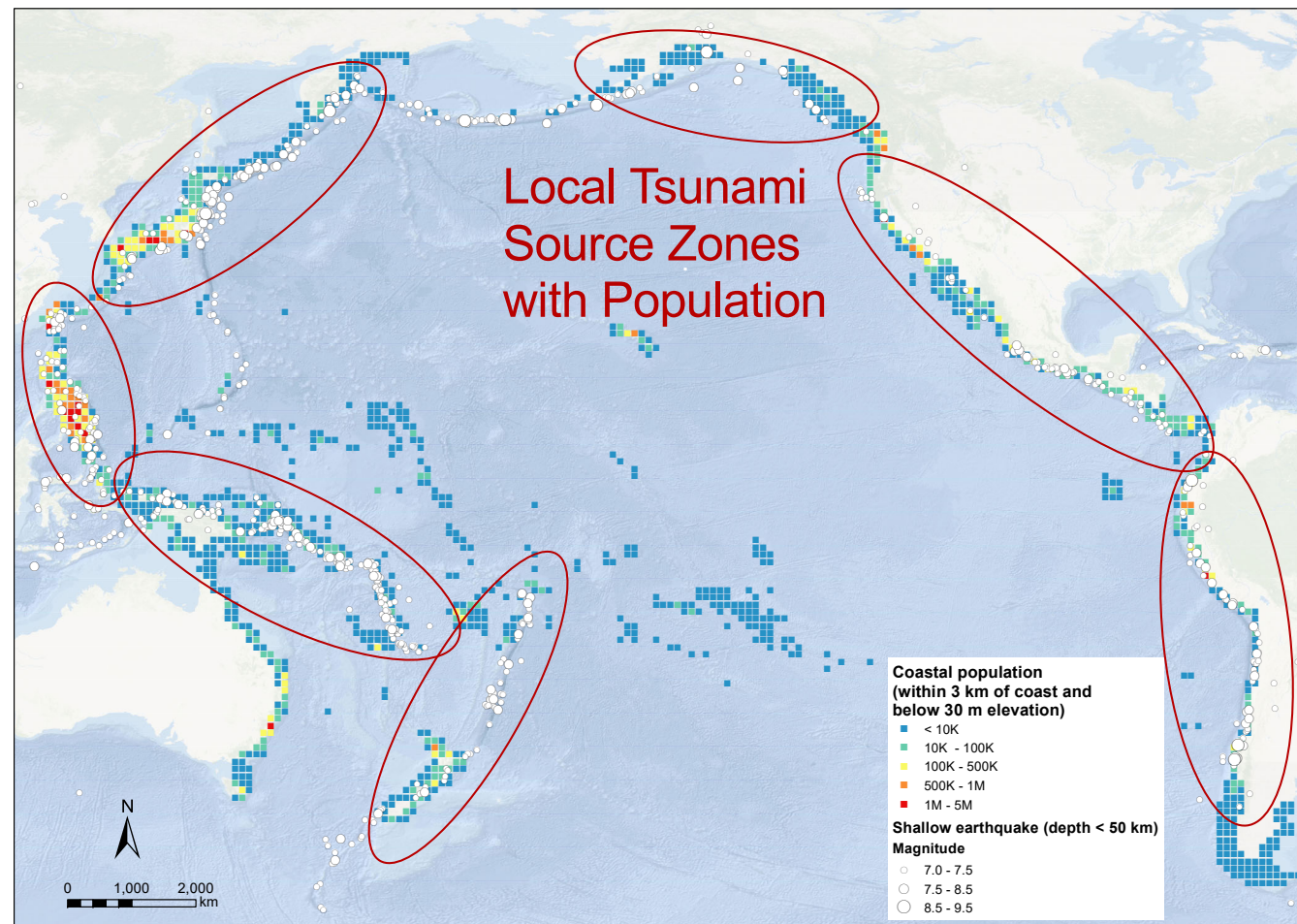




At-risk population - Pacific



Tsunami evacuation zone	Population to evacuate
Less than 30 m elevation and within 3 km of coast	83,413,677



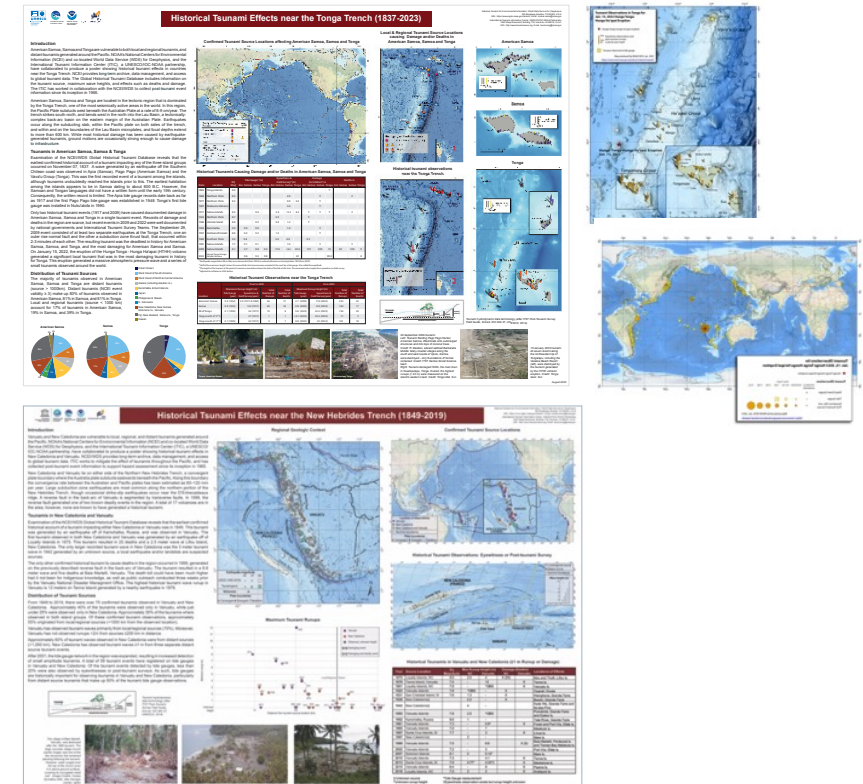
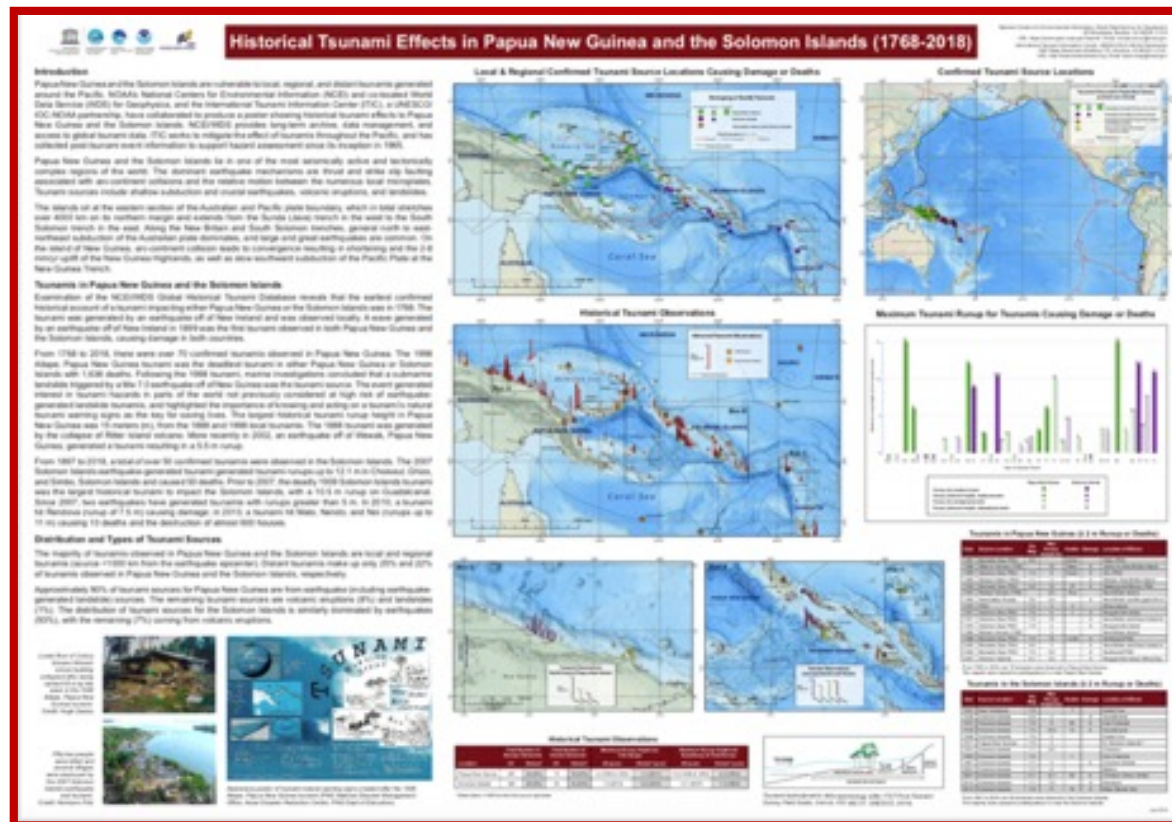
Gridded Population of the World, Version 4 (GPWv4) (<https://sedac.ciesin.columbia.edu/binaries/web/sedac/collections/gpw-v4/gpw-v4-documentation-rev11.pdf>).
30 sec resolution aggregated to 1 deg
B. Fry, GNS Science, NZ

Regional Historical Tsunami Effects posters (NCEI-ITIC)



- **Papua New Guinea / Solomons 1768-2018 (2019)**
- **American Samoa, Samoa, Tonga 1837-2023 (update HTHH 2023)**
- **Vanuatu / New Caledonia, 1949-2019 (2021)**

15% Pacific Deadly Tsunami in Southwest Pacific. 99% Pacific deaths from Local/Regional Tsunamis



UNESCO/IOC TSUNAMI READY RECOGNITION PROGRAMME (TRRP)

54
TSUNAMI READY COMMUNITIES
 11 – IOTWMS
 20 – PTWS (16/46 countries)
 20 – CARIBE-EWS
 3 – NEAMTWS
 ○ – in progress (next yr)

MAJOR ACTIVITIES IN 2021-2024+

- Ramp-up for Tsunami Ready
- Development of a global Tsunami Ready Interactive Map Viewer
- Hosting by ITIC of the Tsunami Ready web site
- Development of a new Tsunami Ready Board Game
- Publication of the IOC Manuals and Guides 74 «Standard Guidelines for Tsunami Ready Recognition Programme»

Spain ○ France ● Italy ○ Türkiye ● Greece ○ Israel ○ Egypt ●

India (2) Noliyasahi, Venkatraipur
 Palau (1)
 Indonesia (9) Kelurahan Lolong Belanti, Kelurahan Purus, Panggarangan Village, Pangandaran Village, Kemadang Village, Glagah Village, Tambakrejo Village, Tanjung Benoa, Kuta Mandalika Village
 Palau (1)
 FSM (4) Yap, Chuuk, Pohnpei, Kosrae
 Kiribati (1) Tarawa
 RMI (1) Majuro
 Vanuatu (10) Efate, Santo
 Samoa (1+) Savaia
 Solomon Islands (9) Western Provinces Honiara
 New Caledonia
 Fiji (2) Naevuevu Sila
 Tonga

Haiti (1) Fort-Liberté
 Jamaica (1) Old Harbour Bay
 Honduras (3) Omoa, Tornabe/Tela, Cedeño
 Guatemala (2) San Jose, Sipacate
 El Salvador (2) La Libertad, Tamanique
 Costa Rica (10) Ostional, Playas El Coco, Samara, Tamarindo, Quepos, Uvita-Bahia, Playa Hermosa, Tivives, Puerto Jiménez Cahuita
 Ecuador (3) Galapagos
 Panama (1) Puerto Armuelles
 Nicaragua (2) Bluefields, Corn Island
 United Kingdom (2) British Virgin Islands, Anguilla
 Dominica (1): Portsmouth
 Saint Lucia (1): Laborite
 Saint Kitts and Nevis (1) Saint Kitts and Nevis
 Antigua and Barbuda (1) St. John's
 Barbados (2) St. Lucy & St. Peter Christ Church West
 Trinidad & Tobago (1) Carenage
 Grenada (2) Carriacou & Petite Martinique, St. Patrick
 St. Vincent and the Grenadines (2) Union Island Saint George



Fiji Coral Coast: Nayevuyevu and Sila Villages

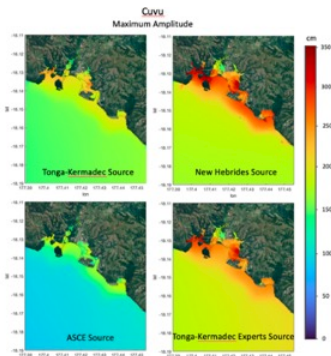


TR Recognition Ceremony: Nov 3, 2023

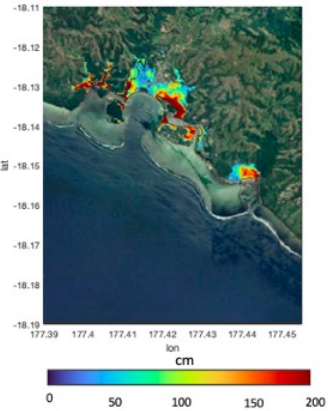
Implementation Approach - Stakeholders

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

COLA VINA!! WELCOME TO NAEVUEVU VILLAGE

TSUNAMI EVACUATION PROCEDURE

- If you feel an earthquake - protect yourself! Do not panic. Drop, cover, and hold!
- After an earthquake, be aware that a tsunami may follow. Move away from the beach immediately as a precautionary measure. Look for more information through TV and Radio.
- After an intense and prolonged earthquake, evacuate immediately if possible or look for shelter in Higher Buildings. As a community visitor, please follow Community Disaster Management's instructions.
- The sound of the siren is the official call for evacuation. If the siren sounds, follow the evacuation procedure.

After the first tsunami wave, more waves are likely to come! Wait for an official "All Clear" message before leaving the shelter.

TSUNAMI HAZARD ZONES

- 5m - 5m (Tsunami Hazard Zone)
- 5m and Above (Tsunami Safe Zone)

Legend

- Signage
- FRA Roads
- Districts
- Evacuation Area
- Evacuation Route
- Village Boundaries

NA I VAKARO MO MURIA NI YACO NA UA LOKA

1. Kevaka na vavata na unesevu - kavaia ni veivale.
2. Na oti na unesevu, mo na dau namaka ni rava ni veivale mo na oti na unesevu.
3. Na oti na unesevu, mo na dau namaka ni rava ni veivale mo na oti na unesevu.
4. Na tagi ni misini vakavakavaki e sa na oti mo i vakarua ni Muria. Na dau daua mo na unesevu mo na tagi ni misini vakavakavaki, mo vakavakavaki na i vakarua ni Muria.

YOU ARE ENTERING TSUNAMI HAZARD ZONE

TSUNAMI HAZARD ZONE
IN CASE OF EARTHQUAKE, GO TO HIGH GROUND OR INLAND

NA VANUA OOO E RAWA NI CABETA NA UALOKA

COLA VINA!! WELCOME TO SILA VILLAGE

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YOU ARE ENTERING TSUNAMI HAZARD ZONE

TSUNAMI HAZARD ZONE
IN CASE OF EARTHQUAKE, GO TO HIGH GROUND OR INLAND

NA VANUA OOO E RAWA NI CABETA NA UALOKA



Community participatory training, 18-22 Sep 2023

GEOLOGICAL SERVICES DIVISION SEISMOLOGY UNIT

OFFICIAL WARNINGS

when tsunami 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.

ADVISORY Stay out of the water and away from the shore. STRONG CURRENTS AND DANGEROUS WAVES in or near coastal waters.

WATCH Be prepared to take action. TSUNAMI POSSIBLE. Avoid level high change zones. Stay tuned to local Radio/TV.

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

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

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

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-IOC recognizes that the community have built their capacity and implemented measures in accordance to the agreed indicators of UNESCO-IOC 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 ooo 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

Warning, Response, Awareness



UNDRR

UN Office for Disaster Risk Reduction



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Oceanographic
Commission

Call to Action!

Making **100%**

of at-risk communities

Tsunami Ready by **2030.**