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Preparedness Indicators – How to achieve, challenges and solutions

6.5 Outreach, Public Awareness, Education – PREP 2, 3

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International Tsunami Information Centre (ITIC)

Tsunami Ready Indicators

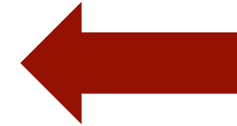


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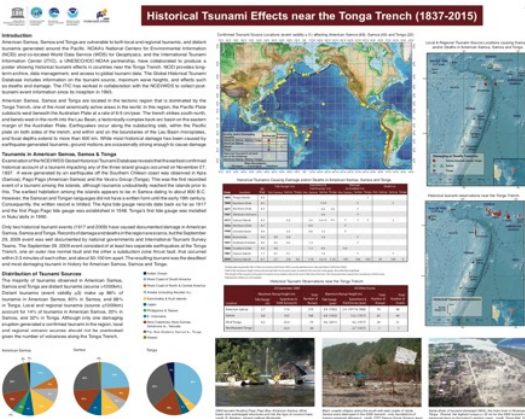
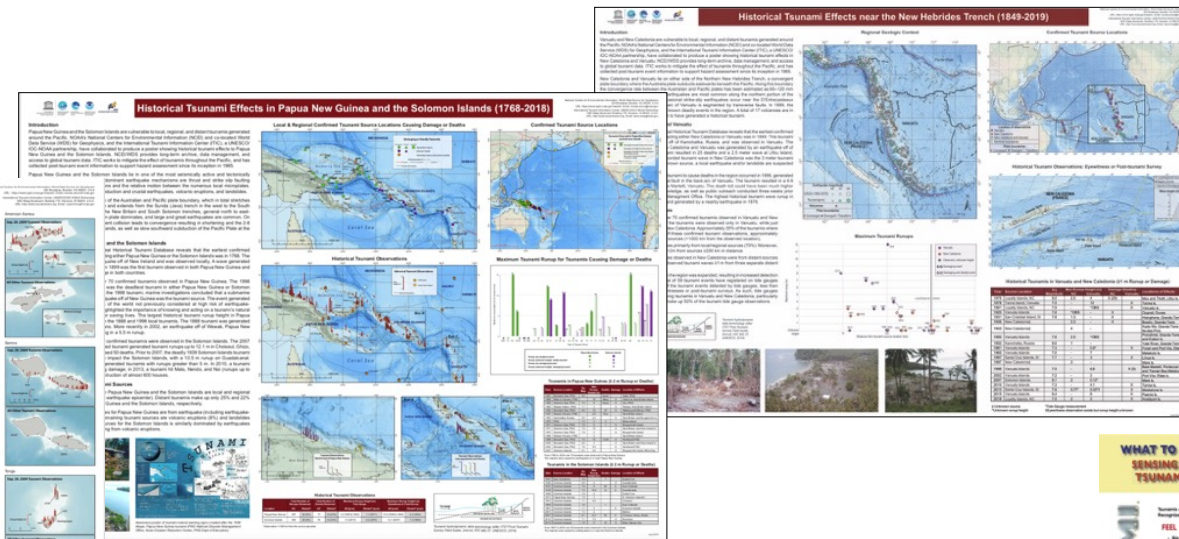
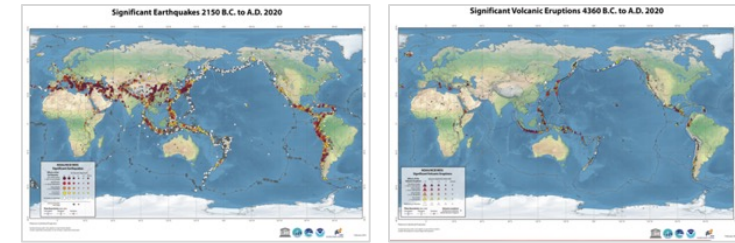
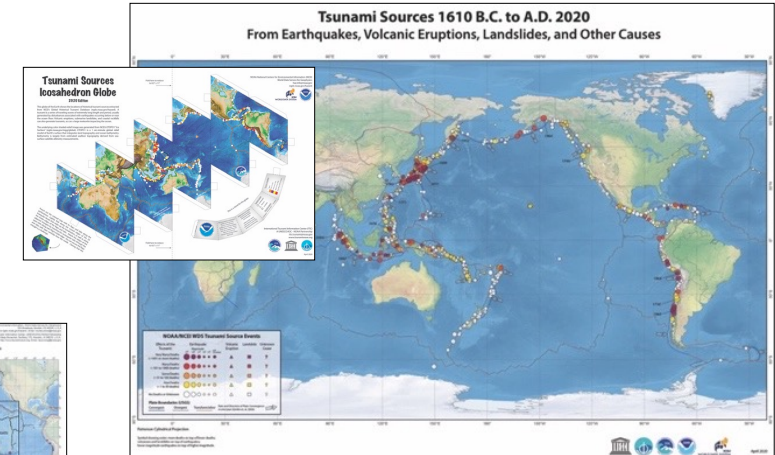
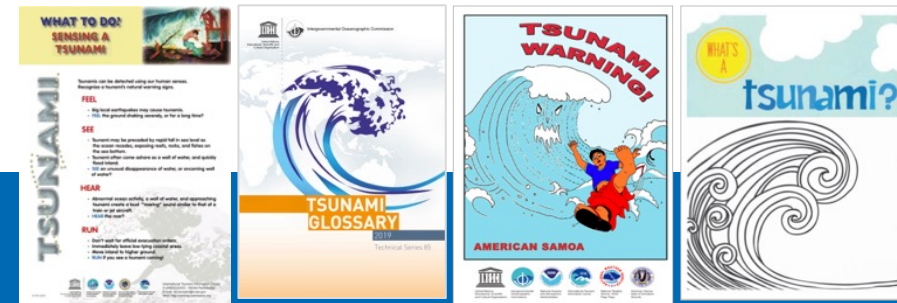


TSUNAMI READY INDICATORS	
I	ASSESSMENT (ASSESS)
1	ASSESS-1. Tsunami hazard zones are mapped and designated.
2	ASSESS-2. The number of people at risk in the tsunami hazard zone is estimated.
3	ASSESS-3. Economic, infrastructural, political, and social resources are identified.
II	PREPAREDNESS (PREP)
4	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 3 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 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.



IOC – ITIC: Awareness, Historical Hazard Maps

- **Global Tsunami, Earthquake, Volcanic Eruption Maps** (update through 2021)
- **Regional Historical Tsunami Effects Maps –**
 - American Samoa /Samoa/Tonga (2017, draft 2022)
 - Papua New Guinea/Solomons (Jun 2019) - printed
 - Vanuatu / New Caledonia, New Hebrides (draft 2020)

HTHH Tsunami Observations (Post-Tsunami)



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Historical Tsunami Effects near the Tonga Trench (1837-2015)

Introduction
American Samoa, Samoa and Tonga are vulnerable to both local and regional tsunamis, and distant tsunamis generated around the Pacific. NOAA's National Centers for Environmental Information (NCEI) and its related World Data Service (WDS) for Tsunamis, and the International Tsunami Information Center (ITIC), in collaboration with the National Oceanic and Atmospheric Administration (NOAA) and the National Oceanic and Atmospheric Administration (NOAA), have undertaken to produce a joint historical tsunami effects in countries near the Tonga Trench. NCEI provides long-term archive, data management, and access to global tsunami data. The Global Tsunami Database includes information on the tsunami source, maximum wave heights, and effects such as deaths and damage. The ITIC has worked in collaboration with the NCEI to collect and disseminate tsunami information since its inception in 1985.

Background
American Samoa, Samoa and Tonga are located in the Pacific region that is dominated by the Tonga Trench, one of the most seismically active areas in the world. In this region, the Pacific Plate subducts and beneath the Australian Plate at a rate of 80 cm/year. The trench extends south-westward and trends east to the north into the Lau Basin, a tectonically complex basin on the eastern margin of the Australian Plate. Earthquake occur along the subducting plate, within the Pacific plate on both sides of the trench, and within and on the boundaries of the Lau Basin intraplate, and local faults extend to more than 800 km. While most historical tsunamis have been caused by earthquake generated tsunamis, several tsunamis were occasionally strong enough to cause damage.

Tsunami in American Samoa, Samoa & Tonga
An examination of the NCEI WDS (Global Tsunami) Tsunami Database reveals that the earliest confirmed historical account of a tsunami impacting any of the three island groups occurred on November 07, 1837. A wave generated by an earthquake off the Southern Chilean coast was observed in Apia (Samoa), Pago Pago (American Samoa) and the main island of Tonga. This was the first recorded event of a tsunami among the islands, although tsunamis undoubtedly reached the islands prior to this. The earliest tsunami among the islands appears to be in Samoa during the early 1800s. However, the Samoan and Tongan tsunamis did not have a written form until the early 19th century. Consequently, the earliest record is limited. The Apia tide gauge records date back to 1817 and the first Pago Pago tide gauge was established in 1946. Tonga's first tide gauge was installed in Nukunono in 1960.

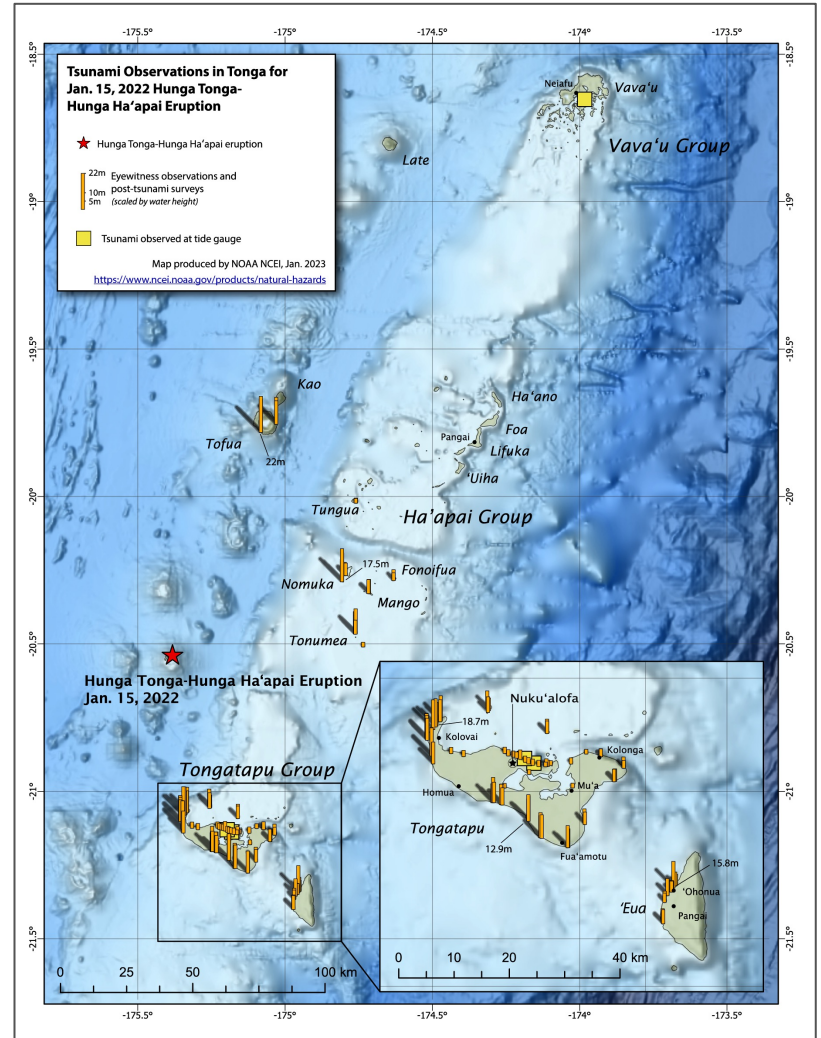
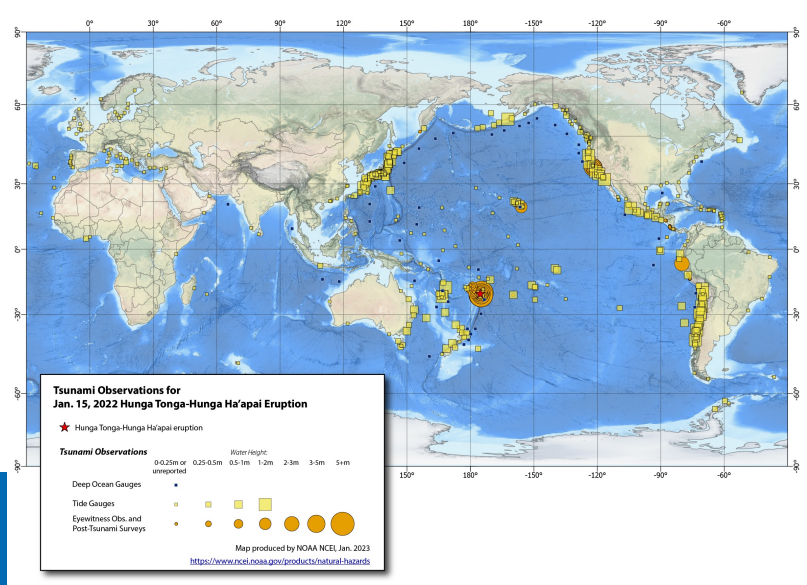
Only two historical tsunami events (1917 and 2009) have caused documented damage in American Samoa, Samoa and Tonga. However, damage to infrastructure and human casualties in Samoa, Tonga, and Tonga were well documented by national governments and International Tsunami Survey Team. The November 15, 2009 event consisted of at least two separate earthquakes off the Tonga Trench, one off near the normal fault and the other a subduction zone thrust fault, that occurred within 20 minutes of each other, and about 80-100 km apart. The resulting tsunami was the deadliest and most damaging tsunami in history for American Samoa, Samoa and Tonga.

Distribution of Tsunami Tsunamis
The majority of tsunamis observed in American Samoa, Samoa and Tonga are distant tsunamis originating from the Pacific Ocean basin. Distant tsunamis (overall) vary in size up to 80% of tsunamis in American Samoa, 80% in Samoa, and 80% in Tonga. Local and regional tsunamis (overall) account for 10% of tsunamis in American Samoa, 30% in Samoa, and 30% in Tonga. Although only one damaging earthquake generated a tsunami near the Tonga Trench, and regional tsunamis account for the remainder, given the number of tsunamis along the Tonga Trench.

Historical Tsunami

- 1837
- 1853
- 1868
- 1883
- 1893
- 1917
- 1929
- 1939
- 1946
- 1952
- 1960
- 1964
- 1968
- 1970
- 1975
- 1980
- 1985
- 1992
- 1997
- 2004
- 2009
- 2011
- 2015

Map produced by NOAA NCEI, Jan. 2023
<https://www.ncei.noaa.gov/products/natural-hazards>

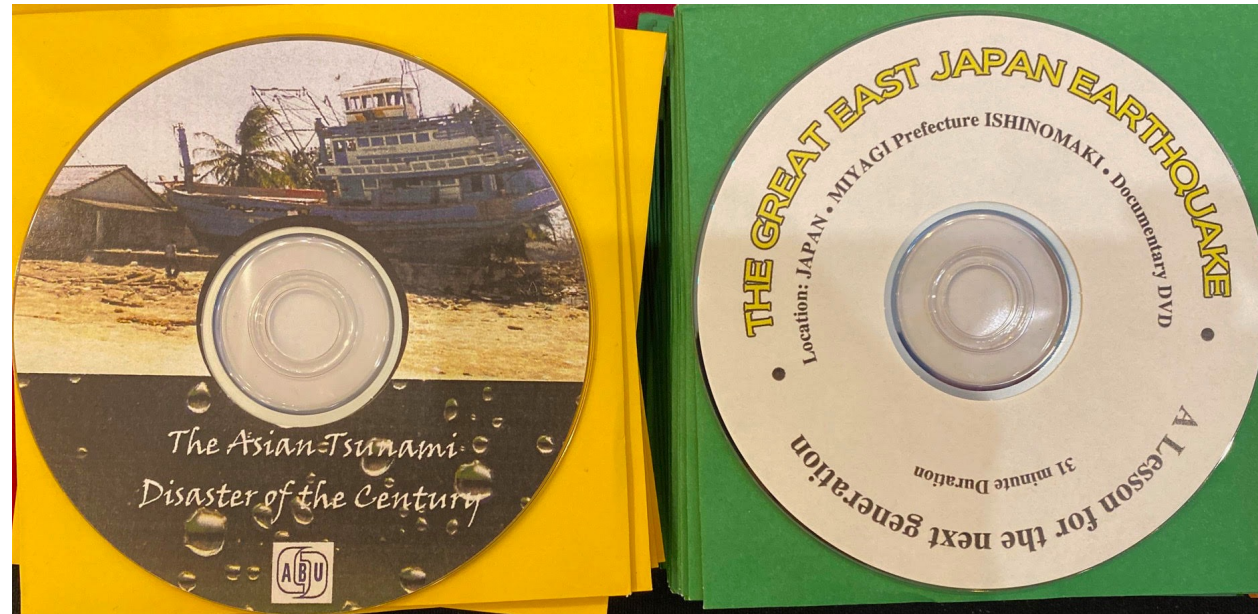


Field Survey of Runup and Inundation in Tonga from the January 2022 eruption of the **HUNGA VOLCANO**

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http://itic.ioc-unesco.org/index.php?option=com_content&view=article&id=2226:international-tsunami-survey-team-tonga&catid=2709&Itemid=3327

Events



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THANK YOU

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