

## USGS HAWAIIAN VOLCANO OBSERVATORY

### INFORMATION STATEMENT FOR TA'Ū VOLCANO AND THE MANU'A ISLANDS, AMERICAN SAMOA: August 18, 2022

#### Summary:

The earthquake swarm in the Manu'a islands of American Samoa continues without significant changes. Approximately 20 earthquakes per hour are being recorded by the two microseismometers installed in the Manu'a islands; most events are too small to be felt. Estimated magnitudes of the largest earthquakes are between magnitude 2 and 3. Seismic data indicate that earthquakes are related to magma moving beneath the Manu'a Islands, likely closer to Ta'ū island rather than Ofu-Olosega, and are not related to Vailulu'u seamount. Satellite data from the past 24 hours showed fairly clear views and no signs of volcanic activity. Additional microseismometers are being installed today, and a permanent seismic monitoring station is being delivered this week.

#### Observations and Reports:

- Residents of the Manu'a group of islands in American Samoa continue to feel earthquakes. Residents began reporting feeling earthquakes around July 26th.
- Reports from both Ta'ū and Ofu-Olosega islands suggest that the earthquakes vary in intensity, but are generally short, sharp jolts. The earthquakes are more likely to be felt by people indoors at rest and along the coast, where buildings sit on sediment that amplifies shaking. These factors are probably responsible for the variability in reporting.

#### Upcoming Change in Communication:

Volcanoes in the Manu'a islands have not previously been monitored and were classified as unassigned in the US Geological Survey's Volcano Alert System (<https://www.usgs.gov/programs/VHP/volcanic-alert-levels-characterize-conditions-us-volcanoes>).

Current seismic monitoring shows that earthquake activity is above NORMAL (Green) and that the appropriate level should be ADVISORY (Yellow). On Friday, August 19, the USGS will change Ta'ū and Ofu-Olosega volcanoes to ADVISORY (Yellow) status if conditions remain the same. This change in Alert Level will be communicated in a Volcano Activity Notice (VAN) that acknowledges the new level of activity. Beginning Saturday, August 20, Daily Updates will be issued for Ta'ū and Ofu-Olosega instead of Information Statements. To subscribe to receive VANs and Updates, see STAY INFORMED at: <https://www.usgs.gov/volcanoes/ta-u-island>.

#### Analysis:

Not all earthquake swarms on volcanoes result in eruptions. Current low-level earthquake activity may continue and vary in intensity for days to months or longer without an eruption. It is also possible that the swarm is an early precursor to an eventual eruption. At this time, we cannot determine which of these possibilities is more likely. A large explosive eruption similar to the Tonga eruption earlier this year is extremely unlikely.

Scientists are also investigating reports of other activity provided by local residents, which are appreciated. Several residents have reported booming noises associated with felt earthquakes. Booming noises could have a number of natural and man-made sources including rockfalls, ground cracking, volcanic noise, and human caused events. Scientists will be deploying instruments in the coming weeks to capture and analyze noises in the region.

#### Response:

Experts at the Pago Pago National Weather Service Office (NWS), U.S. Geological Survey (USGS) Volcano Hazards Program, NOAA Pacific Tsunami Warning Center, NOAA-IOC International Tsunami Information Center, and USGS National Earthquake Information Center are working together with the local authorities in American Samoa to understand the source of these earthquakes. These agencies are working to install monitoring stations so earthquake locations and magnitudes can be more precisely determined.

USGS Hawaiian Volcano Observatory (HVO) staff have been in Pago Pago since August 11 and are consulting with local authorities. Additional HVO personnel and permanent seismometers for earthquake detection are expected to arrive in American Samoa tomorrow and will be installed as soon as installation sites are identified.

#### Monitoring:

American Samoa's volcanoes are monitored for earthquakes by a [microseismometer in Fiti'uta village on Ta'u island](#), a [microseismometer in Olosega village on Ofu-Olosega island](#), and a more distant global [seismic station in Apia, Samoa](#). Due to limited earthquake monitoring equipment, the exact location, depth, and magnitude depth of these earthquakes is currently unknown.

Remote sensing satellite data is also being used to monitor American Samoa for events potentially related to volcanic activity, such as thermal anomalies, volcanic plumes, or volcanic gases. This monitoring is being done by USGS Alaskan Volcano Observatory scientists and the Wellington Volcano Ash Advisory Center (VAAC).

Residents can assist these monitoring efforts by noting and reporting accurate times that they feel earthquake shaking, hear unusual noises, or see changes that might be volcanically related to either the Pago Pago National Weather Service Office (<https://www.weather.gov/ppg/wsopagooffice>) or the American Samoa EOC in Pago Pago (684-699-3800).

#### Hazards:

Currently, the primary hazard of concern is earthquake shaking. For information on how to prepare for an earthquake, see: <https://www.usgs.gov/faqs/what-can-i-do-be-prepared-earthquake>.

If you feel shaking and are not near the coast, immediately [drop, cover, and hold on](#) until the shaking stops.

*If you are at the coast, heed the natural tsunami warning signs. If you feel a strong or long-duration earthquake, see a sudden rise or fall of the ocean, hear a loud roar from the ocean, or*

*see a large aerial plume from an eruption, a tsunami may follow, and you should immediately move to higher ground.*

It is unclear if this unrest will escalate to a volcanic eruption. An eruption could pose significant hazards to residents of American Samoa; these hazards include volcanic gases, low-level localized explosions of lava, lava flows, earthquake shaking, and tsunami. Information about these hazards, which are similar to those in Hawaii, can be found at this HVO website: <https://www.usgs.gov/observatories/hvo/hazards>.

## Tsunami Information

Tsunami information:

- Subscribe to U.S. Tsunami Warning Center: <https://www.tsunami.gov/?page=productRetrieval>
- National Weather Service Pago Pago Office: <https://www.weather.gov/ppg/wsopagooffice>
- Pacific Tsunami Warning Center: <https://tsunami.gov/>
- International Tsunami Information Center and American Samoa Tsunami Awareness Information: <http://www.tsunamiwave.org>
- Protecting yourself and your family from tsunami: <https://www.weather.gov/safety/tsunami>

## Background

Ta'ū Island is located at the east end of the Samoan Islands, in American Samoa. It is the top of a large shield volcano, most of which is below the ocean surface. Ta'ū, as well as Ofu-Olosega islands, are located on the crest of the Samoan Ridge, a predominantly submarine feature formed from volcanic activity associated with the Samoa hotspot. A [vent](#) that erupted between Ta'ū and Ofu-Olosega in 1866 could have been related to either volcano. Vailulu'u is a submarine volcano located about 25 miles (40 km) to the east of Ta'ū island. It has erupted multiple times during the past 50 years.

- Ta'ū Island website: <https://www.usgs.gov/volcanoes/ta-u-island>.
- Volcanoes in American Samoa website: <https://www.usgs.gov/observatories/hvo/volcanoes-american-samoa>.