

WHAT TO DO?

SENSING A TSUNAMI



Tsunamis can be detected using our human senses.
Recognize a tsunami's natural warning signs.

FEEL

- Big local earthquakes may cause tsunamis.
- **FEEL** the ground shaking severely, or for a long time?

SEE

- Tsunami may be preceded by rapid fall in sea level as the ocean recedes, exposing reefs, rocks, and fishes on the sea bottom.
- Tsunami often come ashore as a wall of water, and quickly flood inland.
- **SEE** an unusual disappearance of water, or oncoming wall of water?

HEAR

- Abnormal ocean activity, a wall of water, and approaching tsunami create a loud "roaring" sound similar to that of a train or jet aircraft.
- **HEAR** the roar?

RUN

- Don't wait for official evacuation orders.
- Immediately leave low-lying coastal areas.
- Move inland to higher ground.
- **RUN** if you see a tsunami coming!

For Hawai'i information, visit www.tsunamihawaii.org



United Nations
Educational, Scientific and
Cultural Organization



Intergovernmental
Oceanographic
Commission



National Oceanic
and Atmospheric
Administration



Servicio Hidrográfico y
Oceanográfico de la
Armada de Chile



International Tsunami
Information Center

International Tsunami Information Center
A UNESCO/IOC - NOAA Partnership
E-mail: itic.tsunami@noaa.gov
Web: <http://www.tsunamiwave.org>

WHAT TO DO?

TSUNAMI SAFETY RULES FOR HAWAII



1. A tsunami is a series of dangerous waves carrying a massive volume of water that can inundate miles inland for hours. If you are near the ocean and feel the earth shake, immediately protect yourself from falling objects if indoors: **DROP, COVER and HOLD**. Following the earthquake, move immediately to higher ground. **DO NOT** wait for a tsunami warning to be issued.
2. If a tsunami **WATCH** is issued, there is potential that a tsunami will occur. Stand by for emergency information. Check the phone books to see if you are in a tsunami evacuation zone.
3. If a tsunami **ADVISORY** is issued, expect strong currents or waves dangerous to those in or near the water. Significant land flooding is not expected. Move away from beaches. Evacuate harbors/marinas and deploy boats to deep water, if there is time.
4. If a tsunami **WARNING** is issued, expect significant land flooding. When an evacuation is necessary, sirens will sound. Immediately evacuate inland to higher ground, if you are in a tsunami evacuation zone. Otherwise, stay put and do not contribute to traffic congestion.
5. Turn on your radio, TV, or NOAA Weather Radio for emergency information. Stay out of danger areas until an "all-clear" is issued by County Civil Defense/Emergency Management Agency.
6. Never go down to the shore to view a tsunami. When you can see the wave, you are too close to outrun it. Tsunami waves typically do not curl and break - do not try to surf a tsunami.
7. All warnings must be taken very seriously. The May 1960 tsunami killed 61 people in Hilo, Hawai'i because some thought it was a false warning.

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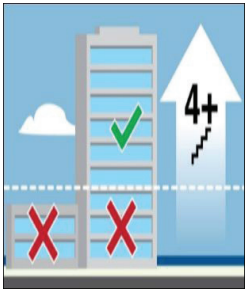
Pacific Tsunami Warning Center
Web: <https://tsunami.gov>



International Tsunami Information Center
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Web: <http://www.tsunamiwave.org>

WHAT TO DO IN A TSUNAMI WARNING?

- When an evacuation is necessary, sirens will sound. Significant and widespread land flooding is expected. Stay away from rivers, streams and any water channels that lead to the ocean due to strong tsunami wave action and currents. If you are not in a tsunami evacuation zone, stay where you are to minimize traffic congestion.
- Check Hawai'i radio and TV stations, **HNL.info** or NOAA Weather Radio for emergency information. (National news stations may not have information about Hawai'i)
- If you are in a metropolitan area with high-rise buildings, vertical evacuation maybe an option. The building must be at least 10 stories of reinforced concrete and you must move to the 4th floor or higher for safety. Move boats and ships to deep water if there is time.
- Stay out of Tsunami Evacuation Zones until an "All Clear" is issued by local emergency officials. Obey local emergency and law enforcement authorities. Do not return to Tsunami Evacuation Zones until local authorities say it is safe.
- Check local Hawai'i radio/TV stations, **HNL.info** or NOAA Weather Radio for emergency information, regarding long- term public shelters and/or disaster assistance centers.



IF YOU EXPERIENCE ANY OF THE NATURAL WARNING SIGNS, FOLLOW THIS ADVICE:

- Evacuate immediately to safe zones, inland to high ground and away from low-lying coastal areas. Or move vertically into a building that is at least 10 stories, to the 4th floor or higher.
- Do not wait for an official warning.
- Go on foot or bicycle if at all possible.
- Do not pack your belongings or delay.
- Do not return to the beach – large waves may continue to come onshore for hours.

HOW DO I PREPARE?

- Double check if you live, work, play, or travel in a Tsunami Evacuation Zone, an Extreme Tsunami Evacuation Zone or in a Safe Zone.
- Study the Tsunami Evacuation Information and Maps online at **www.honolulu.gov/dem**, in the local Hawaiian Telcom White Pages Telephone Book, or at any Public Library.
- Prepare a GO BAG of essential items beforehand. A GO BAG is a bag, suitcase, or kit that you can quickly grab and take with you during an emergency situation.



Water



Food



Radio



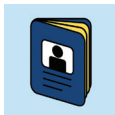
Flashlight



Medicine



First Aid



Important Documents

**GO BAG
Contents**



WHAT TO DO FOR DISTANT EARTHQUAKES AND TSUNAMIS?

For earthquakes that occur around the Pacific Rim, check if there is a Tsunami Watch, Advisory, or Warning for Hawai'i.

WHAT TO DO FOR LOCAL EARTHQUAKES AND TSUNAMIS?

DROP

Drop down onto your hands and knees so the earthquake doesn't knock you down.

COVER

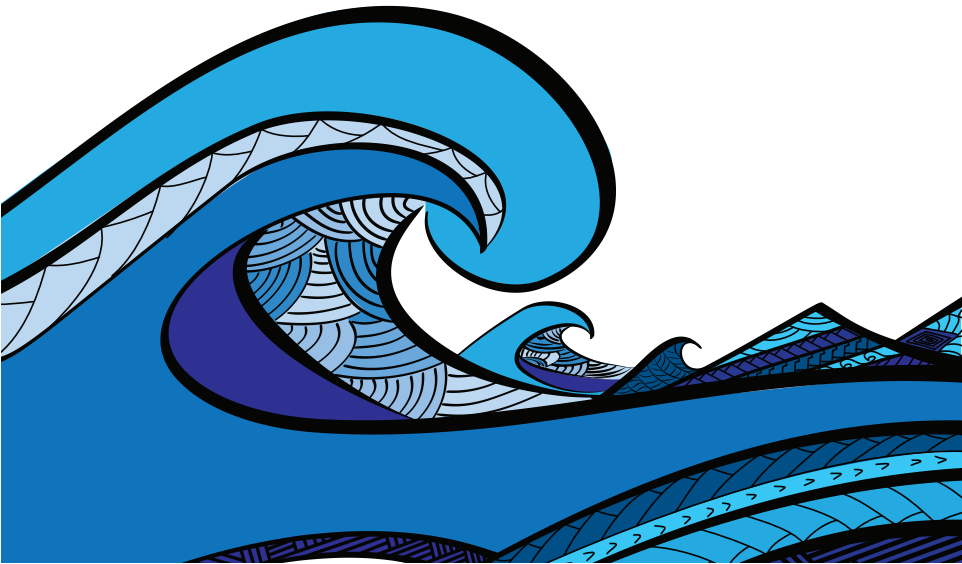
Cover your head and neck with your arms to protect yourself from falling debris. Stay away from glass and windows.

HOLD

Hold on to any sturdy covering so you can move with it until the shaking stops.

- Stay where you are until the shaking stops. Do not go outside until the shaking stops.
- The earthquake may have caused a local tsunami that could arrive in a few minutes. If you are near the ocean, move immediately to higher ground to a Safe Zone outside of the Tsunami Evacuation Zone once the shaking stops.
- Do not wait for a tsunami warning to be issued.
- Calmly walk or bike to a Safe Zone, do not drive your vehicle.

ENGLISH



TSUNAMI FACTS

FREQUENTLY ASKED QUESTIONS

Prepare today for a tsunami

Learn about tsunami facts and help save lives!

**IMPORTANT INFORMATION
YOU NEED TO KNOW**

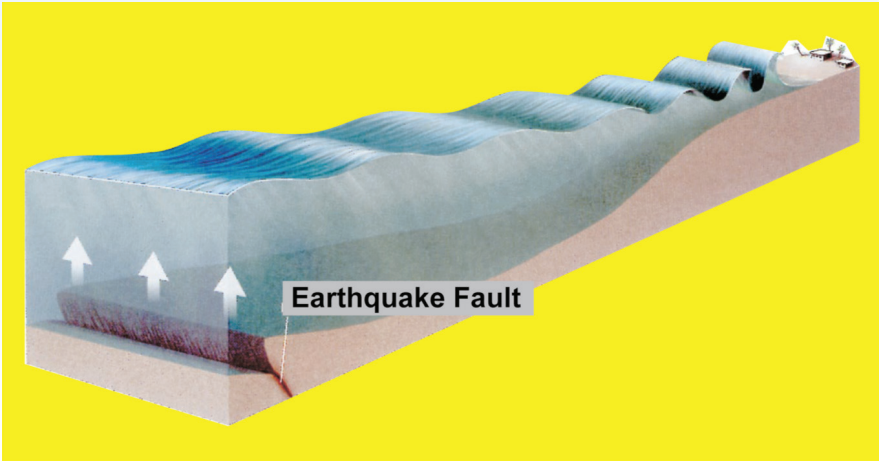


Department of Emergency Management
City and County of Honolulu
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O'AHU

WHAT IS A TSUNAMI?

- Tsunamis are a series of very dangerous, large, long ocean waves. You cannot swim or surf tsunamis because they flood the land like a rushing river (or fast-rising tide) rather than curling and breaking like a regular surfing wave. Tsunamis pick up and carry debris, which greatly increases the chance of injury.
 - Tsunami waves may keep coming for hours, with waves arriving every 10 minutes to one hour apart. The first wave may not be the largest.
 - Tsunamis travel as fast as a jet airliner (approximately 500 mph) in the deep ocean with waves only a few inches high.
 - As tsunamis approach the shore they slow down but increase dramatically in height. Tsunamis strike with devastating force and quickly flood all low-lying coastal areas threatening life and property.
- Historically, locations in Hawai'i have been flooded with water more than 30 feet deep.
- Tsunamis are usually caused by shallow, undersea earthquakes.
 - Tsunamis are less frequently caused by underwater volcanic eruptions, landslides, slumps, and meteorites.
 - Homes and small buildings are not designed to withstand tsunami impacts.



THESE ARE NATURAL WARNING SIGNS THAT A TSUNAMI MAY BE APPROACHING

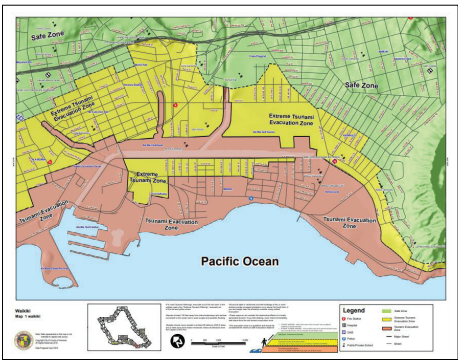
- FEEL:** Feel the earth shake (earthquake) so strong that you feel you cannot stand.
- SEE:** See the ocean water recede, swirl or act unusual.
- HEAR:** Hear the roar of the tsunami that sounds like a jet aircraft or freight train.

TSUNAMI ALERT LEVELS
PACIFIC TSUNAMI WARNING CENTER (PTWC)

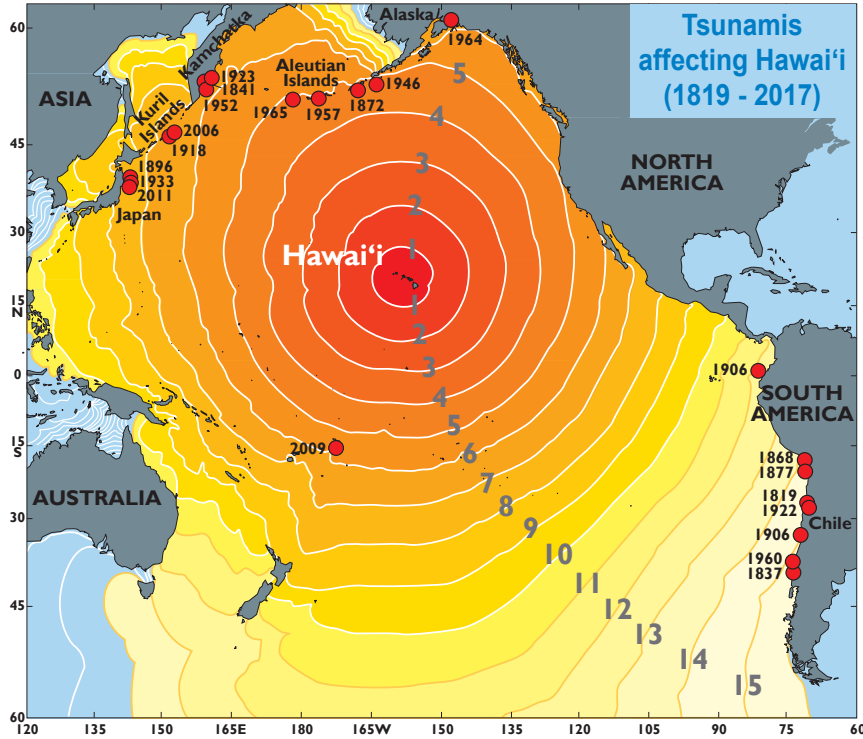
- **Tsunami Information Statement**
If a Tsunami Information Statement is issued, there is no tsunami threat.
- **Tsunami Watch**
If a Tsunami Watch is issued, you should prepare and be ready to act because a tsunami may occur.
- **Tsunami Advisory**
If a Tsunami Advisory is issued, you should move away from beaches and low-lying coastal areas and evacuate harbors/marinas.

Move boats and ships to deep water if there is time. You can expect strong currents and dangerous waves in coastal areas and waterways. But significant land flooding is not expected.
- **Tsunami Warning**
If a Tsunami Warning is issued, quickly leave Red Tsunami Evacuation Zones (outlined in a bold line) to Green Safe Zones as indicated on the Tsunami Evacuation Map.
- **Extreme Tsunami Warning**
If an Extreme Tsunami Warning is issued, quickly leave Yellow Extreme Tsunami Evacuation Zones (outlined in a dotted line) and Red Tsunami Evacuation Zones (outlined in a bold line) to Green Safe Zones as indicated on the Tsunami Evacuation Map.

A very large magnitude 9+ earthquake may cause an extreme tsunami. There may only be 3.5 hours to evacuate before the first wave arrives.



Tsunami Evacuation Map (Waikiki)



Each ring equals 1 hour of tsunami travel time coming to Hawai'i.

AFTER A TSUNAMI, WHEN IS IT SAFE TO RETURN?

- A tsunami may have been destructive or non-destructive. If it was destructive, emergency search and rescue operations will immediately start on land and at sea. An "All Clear" to return to impacted areas may not be issued for hours or days.
- If the tsunami was non-destructive, an "All Clear" allowing return to coastal areas may be issued. But an "All Clear" to return to the water, may not necessarily be issued.
- Coastal areas could be devastated with flooding, damaged homes, buildings, debris, fires, hazardous material spills (HAZMAT) and inoperable utility lifeline systems (electrical, telecommunications, roads / bridges, natural gas lines, etc.) The public will not be able to re-enter these areas until roadway debris is cleared.
- Wait for an "All Clear" from local emergency officials before returning to low-lying areas or the water.

FOR MORE INFORMATION:

DEPARTMENT OF EMERGENCY MANAGEMENT
CITY AND COUNTY OF HONOLULU
WWW.HONOLULU.GOV/DEM DEM@HONOLULU.GOV
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