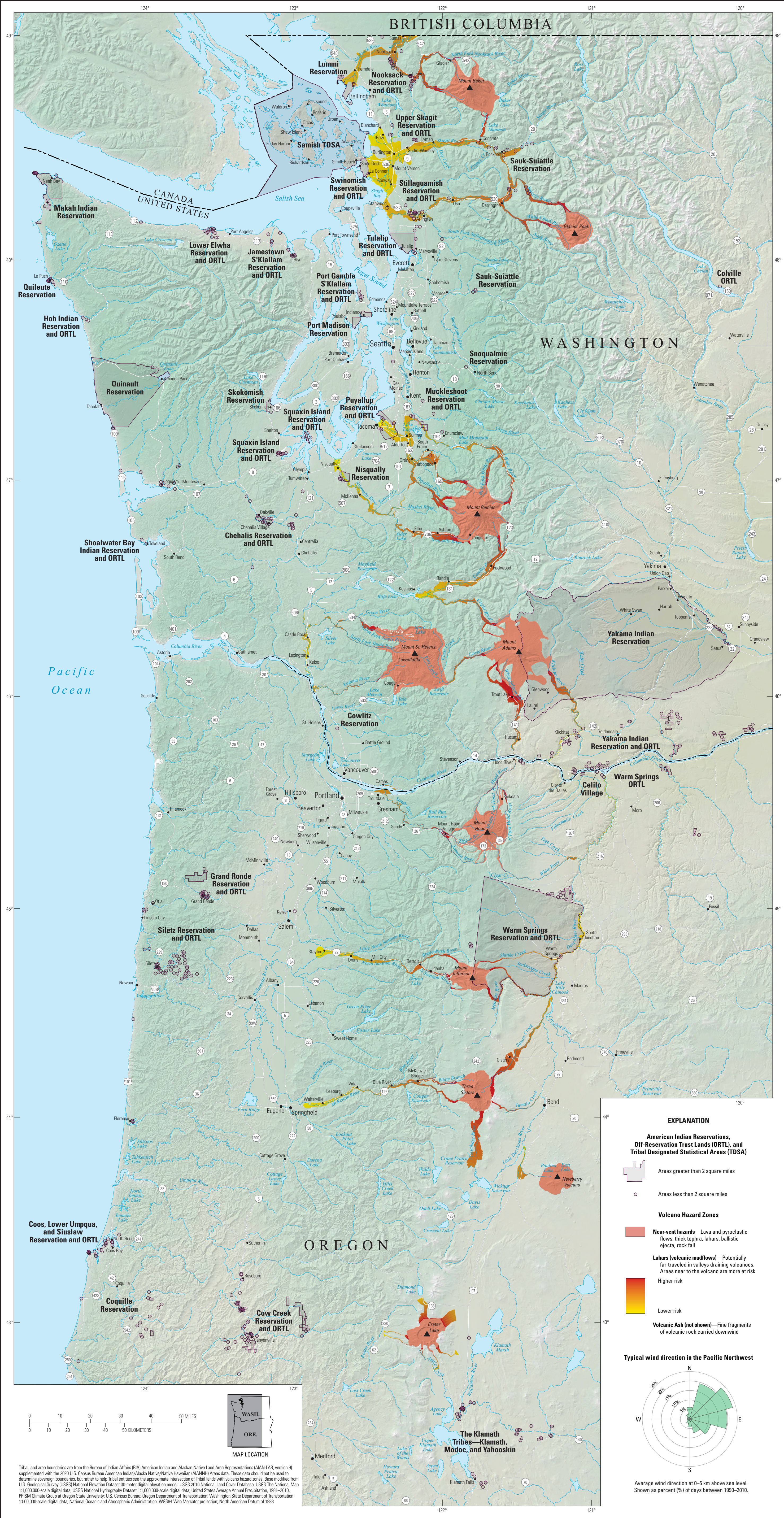


How Would a Volcanic Eruption Affect Your Tribe?

Tribal Lands and Volcano Hazards in the Pacific Northwest
Do you live in, work in, or cross volcano hazard zones?



Volcanic eruptions are rare, but when they do occur they could profoundly change your life and your community.

Know the hazards

Near-vent hazards

Pyroclastic flows, lava, ballistics



Where: These hazards generally occur within 10 miles of the place where rock particles, ash, gas, and lava come out of the ground (known as the vent or source area).

When: During unrest and eruption. Ballistic projectiles produced by explosive events and pyroclastic flows caused by the collapse of a lava dome or lava-flow front can occur with little to no warning.

Impacts: These hazards are very hot (500° to 1,500° F). Ballistic blocks and pyroclastic flows can move very fast—more than 100 miles per hour—and reach distant areas within seconds to minutes. Lava flows are generally more sluggish, moving less than a few miles per hour. Pyroclastic flows, lava flows, and ballistics will burn, bury, or crush most everything they encounter.

Take protective action

Stay away from the volcano during unrest and eruption.

An eruption could affect areas immediately surrounding the volcano as well as those far downstream and downwind.

Know the hazards

Lahar hazards

Fast-flowing slurries of mud, water, rocks, and debris



Where: Lahars travel down river valleys that originate on the slopes of volcanoes. Large lahars can travel many tens of miles and affect communities far downstream from a volcano.

When: Lahars can be initiated in several ways during unrest and eruption. Lahars move faster than river water and may take only minutes to reach the base of a volcano but many hours to travel farther down river. After eruptions, lahars can be triggered during intense rainfalls by mobilizing freshly deposited volcanic sediment.

Impacts: Lahars can destroy or bury almost everything in their path. Their impacts often last long after an eruption is over. Sediment deposited in rivers by lahars can increase flooding and impact water quality and fish habitat for years to decades afterwards.

Take protective action

Evacuate from valley floors to higher ground.

Although an eruption may not happen in our lifetime, our best defense against volcanic hazards is to be prepared.

Know the hazards

Volcanic ash hazards

Particles of volcanic rock carried downwind



Where: Areas downwind from the volcano are affected by ash hazards. Large particles fall within a few miles of the volcano, whereas fine particles can fall hundreds to thousands of miles downwind.

When: Volcanic ash hazards occur during and after an explosive eruption. Ash travels in the direction of, and at the speed of, the wind; thus, it may take hours to days to affect areas far from source. Larger eruptions produce more ash and stronger winds carry ash farther downwind.

Impacts: Ash irritates the eyes and sinuses of people and animals and makes it difficult for animals to forage and find drinking water. Ash reduces visibility, abrades machines, clogs filters, and could affect the electrical grid and water supply. It may also endanger aircraft in flight, make runways unusable, and hamper aircraft use in rescue work.

Take protective action

If ash is falling, shelter in place, keep ash outside, and minimize driving.

Know what to do

Be informed about volcanic activity

Volcano monitoring

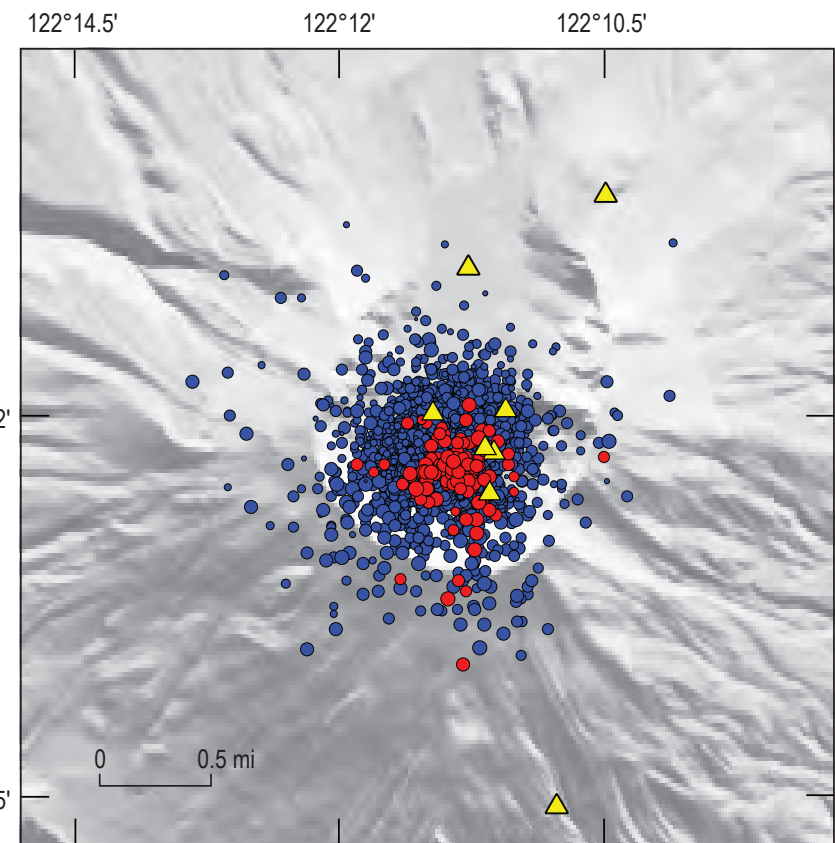
USGS monitors U.S. volcanoes continuously

- Volcanoes often show signs of unrest for weeks to months before an eruption.
- Hazardous activity, such as flank failures (landslides) and ballistics, can occur during unrest, but such events are generally larger during eruptions.
- Unrest often begins with earthquakes or ground deformation too small to be felt or seen by people, but easily detected by monitoring instruments.
- During unrest, there is generally great uncertainty about which hazardous events will occur and when.

Volcano notifications

USGS provides warnings about unrest and eruptions

- Sign up at <https://volcanoes.usgs.gov/vns2/>
- Listen to public officials for information about actions to take, such as whether to evacuate or not.



Map showing thousands of earthquake locations occurring between November 2004 and December 2005 during the 2004–2008 eruption of Mount St. Helens. Red dots indicate magnitudes between 2.0–2.4 and blue dots are smaller magnitude events. Dot sizes vary with magnitude. During quiet times, the volcano typically has 30–50 earthquakes per month. Yellow triangles correspond to seismic stations as of July 2005. Map by U.S. Geological Survey.



A volcano monitoring station near Mount Hood, Oregon, equipped with seismic (earthquake sensing) and global positioning system (GPS) instruments. The protective enclosure (known as a hut) and the GPS and communications antennas are visible. U.S. Geological Survey photograph by Marcel Pelka.

Know what to do

Prepare for volcanic activity

Be ready

During unrest or an eruption you could be asked to

- Stay off the volcano.
- Evacuate volcanic hazard and lahar hazard zones near the volcano for days to months.
- Shelter in place and limit driving during ash fall.
- Be self-sufficient for days to possibly a few weeks.

Plan ahead

- Know how to get information during a disaster.
- Have an emergency preparedness kit with prescription medications and important documents.
- Practice a communication and evacuation plan with everyone in your family. If you are separated during an evacuation, know how to reunite.
- Include provisions in your plan for pets and livestock that may require special care.



A volcano evacuation route sign showing the direction to evacuate in case of a lahar, Puyallup, Washington. Photograph by Chris Light (CC-BY-SA 4.0), used with permission.



Example of some of the important items to have in a basic emergency preparedness kit. Photograph by Federal Emergency Management Agency, used with permission.

Know what to do

Find additional resources

Volcano information

Find information about the volcanoes near you on the web:

- <https://www.usgs.gov/natural-hazards/volcano-hazards/>

Stay connected on social media:

@USGSVolcanoes

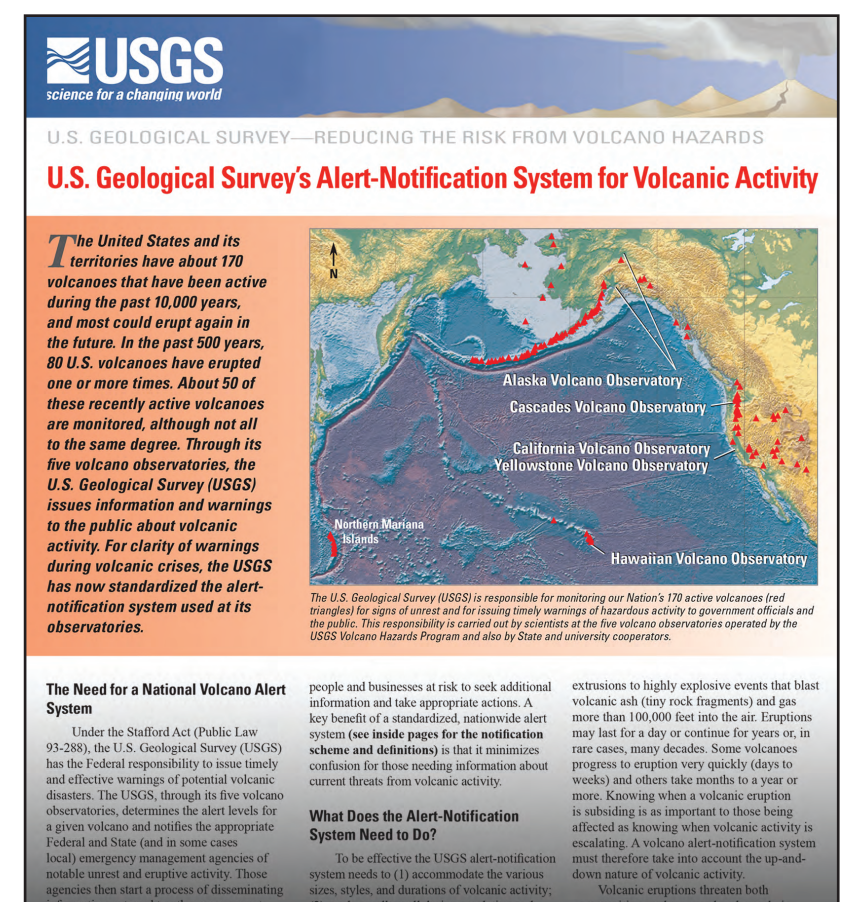
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Community preparedness

Visit Tribal, State, and Federal Emergency Management Agency (FEMA) websites for

- Emergency safety tips.
- Information about Emergency Alert System (EAS) notifications.
- Hazard mitigation and planning information.
- Toolkits and checklists for businesses and individuals.

Poster by Cynthia A. Gardner and Joseph A. Bard
Prepared in collaboration with Monique Fordham, USGS Office of Tribal Relations



A U.S. Geological Survey (USGS) Fact Sheet explains volcano alert levels issued by USGS. It and other USGS Fact Sheets are available on the web and explain many aspects of volcanic activity.



Tribal, State, and city emergency managers, as well as U.S. Geological Survey personnel work together during an exercise of a hypothetical volcanic eruption. U.S. Geological Survey photograph by Carolyn Dreier.