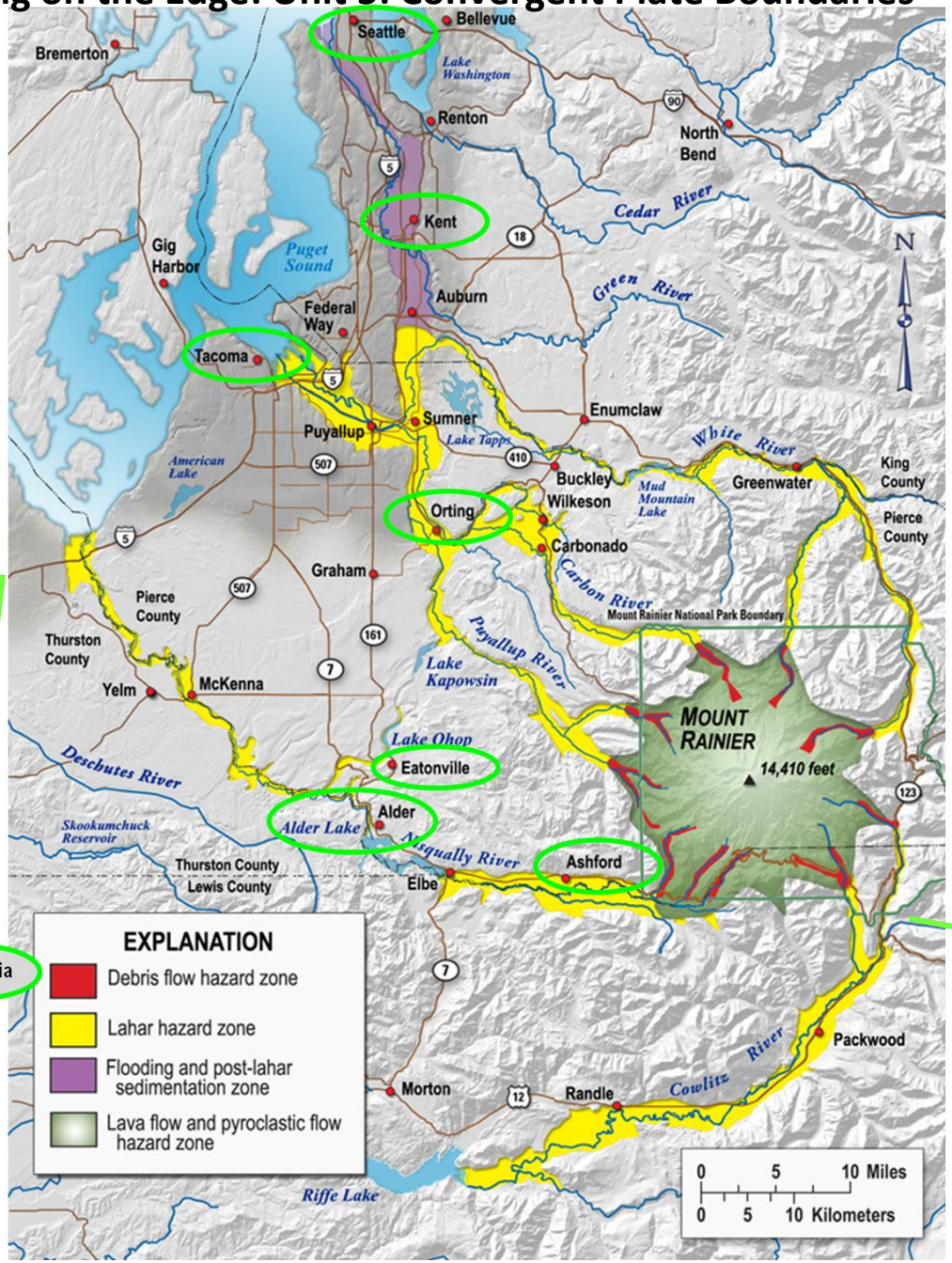
Living on the Edge: Unit 5: Convergent Plate Boundaries

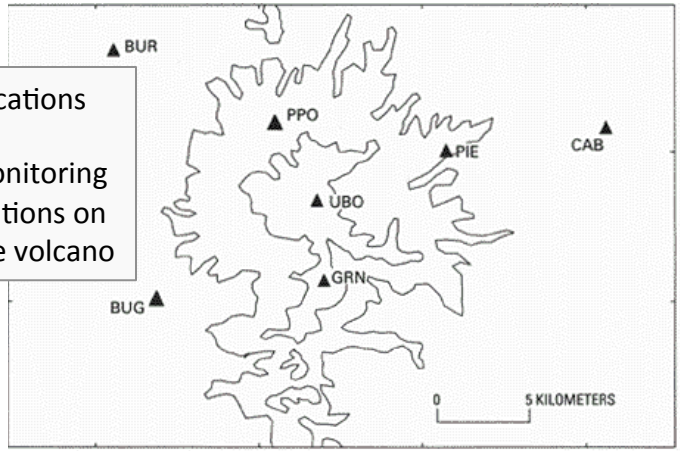


Centralia

Yakima

Because of its elevation (4,392 m), relief, hydrothermal alteration, ice cap, glacier-fed radial valleys, and proximity to suburbs of the Seattle-Tacoma area, ***Mount Rainier is the most threatening volcano in the Cascades***. Its next eruption could produce volcanic ash, lava flows, and *avalanches of intensely hot rock and volcanic gases, called pyroclastic flow*s. Some of these events swiftly melt snow and ice and could produce torrents of meltwater that erode loose rock and become *rapidly flowing slurries of mud and boulders known as lahars,* which is the greatest risk at the volcano, rather than from an eruption itself.

http://volcanoes.usgs.gov/volcanoes/mount_rainier/mount_rainier_hazard_49.html



Locations of monitoring stations on the volcano

"We call it low probability, high consequence," says Steven Bailey, Pierce County, Washington's director of emergency management. "It's a low probability it's going to occur in our lifetime. But if and when it does, the consequences are going to be huge."

www.geographyalltheway.com/igcse_geography/natural_environments/plate_tectonics/igcse_volcanoes_manage.htm

Above left, modified from: USGS Fact Sheet 2008-3062; http://volcanoes.usgs.gov/vsc/images/image_mngr/300-399/img350.jpg; Map above right from Lockhart et al., 1996

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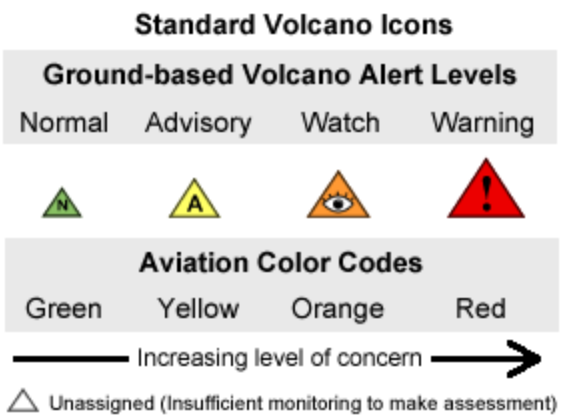
The USGS has established an alert level system to communicate the likelihood of increasing or decreasing volcanic activity. Keep these alert levels in mind as you look through the geologic activity data attached.



Alert Level	Description
NORMAL	Volcano is in typical background, non-eruptive state *or, if changing from a higher level*: The activity has ceased and volcano has returned to non-eruptive background state.
Advisory	Volcano is exhibiting signs of elevated unrest above known background level; *or, if changing from a higher level:* Volcanic activity has decreased significantly but continues to be closely monitored for possible renewed increase.
Watch	Volcano is exhibiting heightened or escalating unrest with increased potential of eruption, timeframe uncertain, OR eruption is underway but poses limited hazards.
Warning	Hazardous eruption is imminent, underway, or suspected.

http://volcanoes.usgs.gov/activity/alertsystem/index.php#alertlevel

Note: Data included in the following handouts are from the USGS. References for specific figures and information can be obtained from your instructor.

TILT DATA SET 1: THROUGH JUNE 8

TILT

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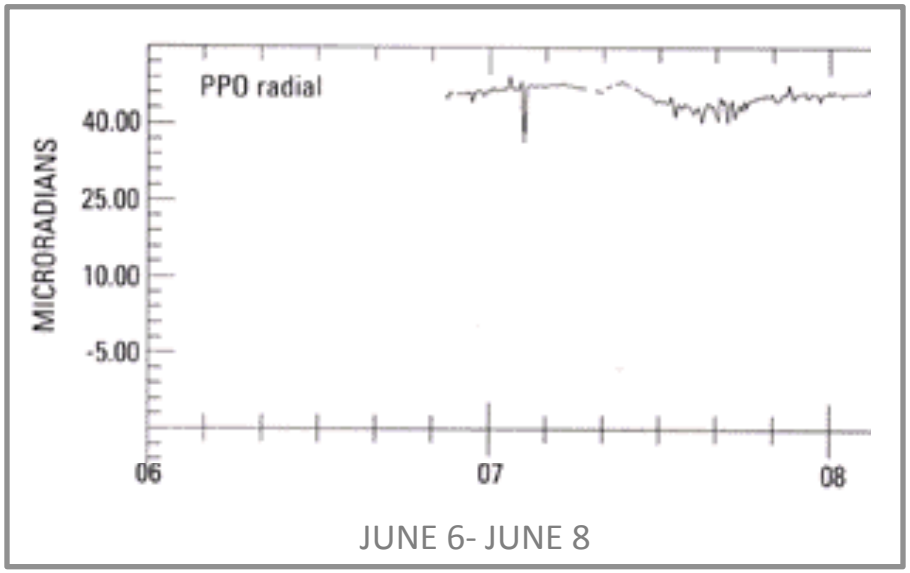
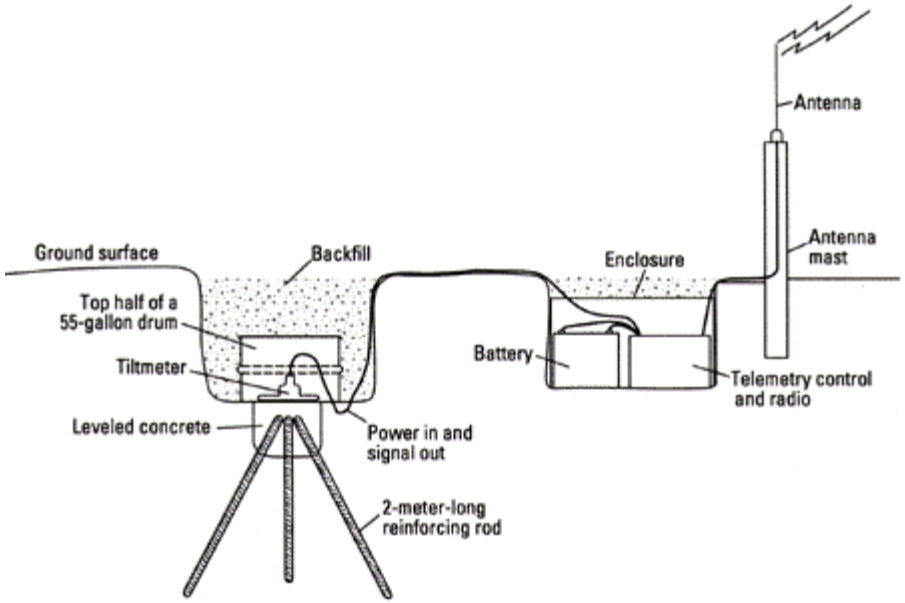
The PPO Tilt station was installed 4 km north of summit, on May 2. Two additional tiltmeters were installed during the last week of May. Starting almost immediately after installation, the UBO tiltmeter record was reasonably stable. Instrumental and logistical problems, along with the increasing volcanic activity, prevented getting useful data from the second tiltmeter.

Data telemetered from tiltmeters can provide information from high-hazard areas that are too dangerous to revisit.



PPO tiltmeter, north side of volcano. Tiltmeters are sensitive to even slight changes in temperature, so burial 1 to 2 m deep is necessary in order to isolate the instrument from diurnal temperature changes.

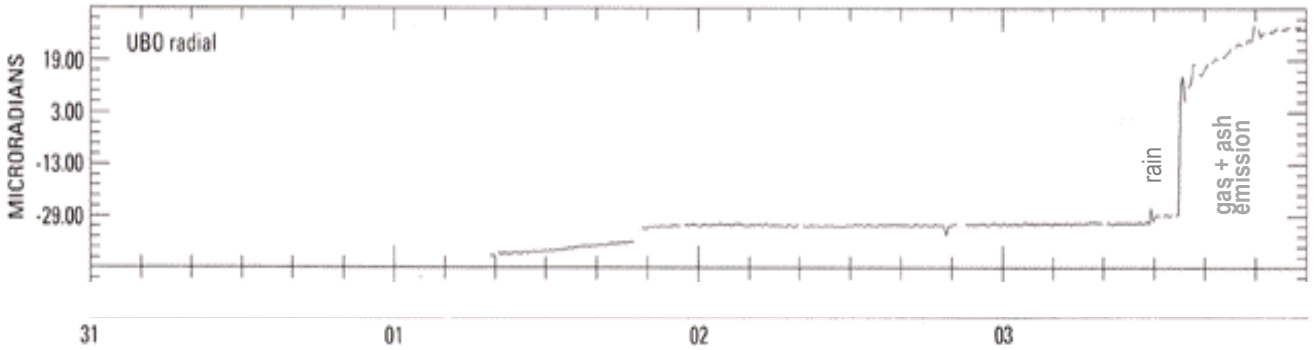


Schematic of the UBO tiltmeter installation on the east side of the Mount Pinatubo summit dome.

From Ewert et al., 1996

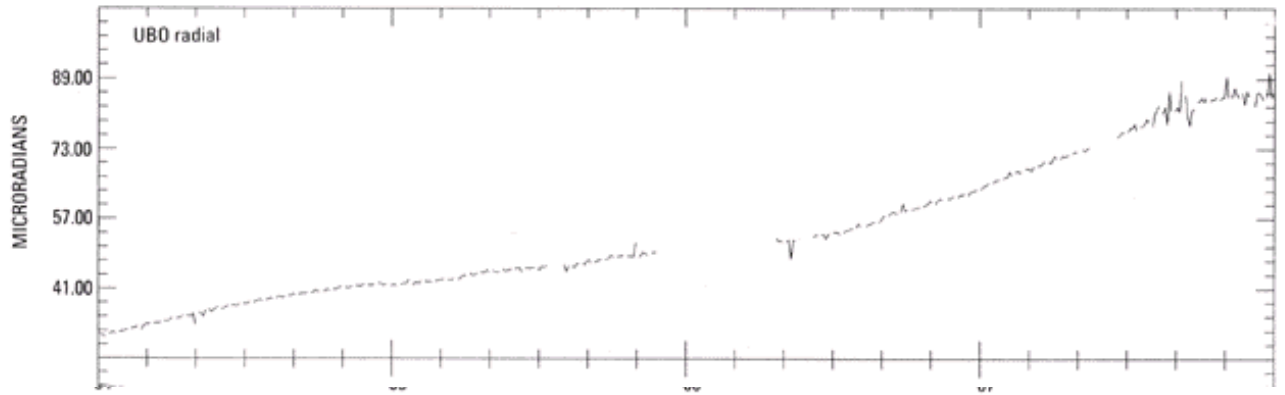
TILT

RADIAL DATA: increasing values indicate west up, or edifice inflation.



MAY 31 – JUNE 4

May 31-June 3: Data from the tiltmeter located at UBO. Rainstorm on June 3 is indicated, as is the ash emission that followed.



JUNE 4 – JUNE 8

June 4 – June 8: Data from the tiltmeter located at UBO. **NOTE** the change in vertical scale from previous UBO data (above).

From Ewert et al., 1996