Volcanic Eruptions

Eruption of Mount St Helens

Volcanic Eruptions in the Cascades

Mount St. Helens is one of a group of high volcanic peaks that dominate the Cascade Range between northern California and southern British Columbia. The distribution of these volcanic peaks in a broad band that roughly parallels the coastline is typical of the so-called “Ring of Fire,” a roughly circular array of volcanoes located on islands, peninsulas, and the margins of continents that rim the Pacific Ocean.

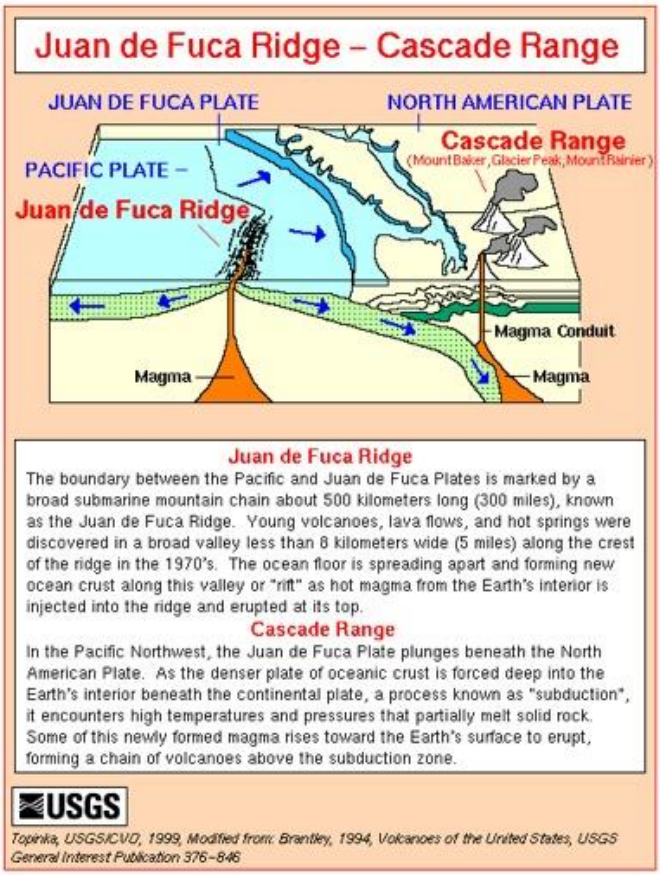
Even before it began erupting, Mount St. Helens, and at least six other volcanoes in the Cascade Range, were known to be "active" - that is, to have erupted at least once during historical time. Few major Cascade volcanoes are known to have been inactive long enough to be considered "extinct" or incapable of further eruption. Most display some evidence of residual volcanic heat, such as fumaroles, hot springs, or hot ground where snow melt is unusually rapid.

Dramatic eruptive activity in the Cascades has been rare so far in the 20th century. Until the recent eruptions at Mount St. Helens, the only Cascade volcano that had a major eruption during this century was Lassen Peak in California. A series of intermittent eruptions of steam and volcanic ash beginning in May 1914 and lasting until 1921 climaxed, during the 4 days from May 19 to 22, 1915, in a series of violent events comprising small lava flows, massive lava-triggered mudflows, and explosive eruptions of ash. From the time when Lassen Peak quieted until March 1980, the only other known increase in activity at a Cascade volcano occurred at Mount Baker when a sudden increase in emanations of heat, steam, and other gases from a previously steaming old crater began on March 10, 1975. Although new fumaroles were formed and minor amounts of "volcanic dust" and sulfur were emitted, "the greatest undesirable natural results" that were observed at Mount Baker were "an increase in local atmospheric pollution and a decrease in the quality of some local water resources" (Bortleson and others, 1977, p.B1). Since 1976, however, even those effects have subsided to levels only slightly higher than those that prevailed before 1975.

Eruptions of Cascade volcanoes tend to be much more explosive than those of, for example, the well-known Hawaiian volcanoes. This explosive tendency is related to the chemical composition of magma that feeds the volcanoes and to the amount of gas contained in the magma. Magma from the more explosive volcanoes contains relatively large amounts of gas and silicon and produces rocks such as andesite, dacite, or rhyolite. Magma from the less

explosive volcanoes contains smaller concentrations of gas and silicon and produces basalt as well as andesite. Some Cascade volcanoes, including Mount St. Helens, have had non-explosive eruptions of andesite and basalt, as well as explosive eruptions, in the past.

The existence, position, and recurrent activity of the Cascade volcanoes are generally thought to be related to the convergence of shifting crustal plates as diagrammed in the map below.



Dynamics eruptiondynamics.htm
Eruption Dynamics of Volcanoes

Activity monitoringvolcanicactivity.htm
Monitoring Volcanic Activity

Rainier mountranier.htm
Mount Rainier's Volcanic Activity

Adams mountadams.htm
Mount Adams Volcanic Activity

St. Helens mountsthelens.htm
Mount St. Helens Volcanic Activity

Baker mountbaker.htm
Mount Baker's Volcanic Activity

Glacier Peak glacierpeak.htm
Glacier Peak's Volcanic Activity