

Lahar Encyclopedia Article

Lahar

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Lahar

Lahars are debris flows associated with volcanoes, and can be further classified as either hot or cold depending on their **temperature**. The word lahar is of Indonesian origin, reflecting the frequency of volcanic debris flows in that region. Lahars can be mobilized by processes similar to those producing non-volcanic debris flows, most notably the transition of saturated **landslide** masses into **debris flow**, but can also be associated with the rapid **melting** of snow and **ice** by hot volcanic (pyroclastic) debris during an eruption. Earthquakes associated with volcanic activity can also trigger landslides that have the potential to mobilize into lahars.

Like non-volcanic debris flows, lahars move as fluid masses with the general consistency of wet concrete. Two characteristics of lahars that can make them particularly hazardous are their potentially very large volume and great velocity relative to many non-volcanic debris flows. For example, a lahar that occurred during an eruption of Cotopaxi **Volcano** (Ecuador) in 1877 traveled more than 186 mi (300 km) at an average velocity of 16.7 mph (27 kph). Lahars triggered by the 1980 eruption of Mount St. Helens traveled at an average velocity of 41.6 mph (67 kph). Eruptions of volcanoes mantled with snow or ice can also produce catastrophic lahars, as in the 1985 eruption of Nevado del Ruiz (Columbia) that killed some 23,000 people. Like non-volcanic debris flows, lahars are able to transport extremely large boulders or other objects because of the density of the flow, which is in most cases nearly the same as the intact debris from which the flow mobilized. Lahars are not necessarily large; some may involve as little as a few cubic centimeters of debris and pose little threat to life and limb.

Mapping and analyzing ancient lahar deposits are an important part of volcanic hazard assessment for volcanoes such as Mount Rainier and Mount Hood in the northwestern United States. Deposits left by past lahars provide insight into the likely size and frequency of future lahars. Trees and other organic material found ancient lahar deposits can be dated using radiometric methods, allowing geologists to assemble a chronology of lahar activity in the **area** around a volcano.

See Also

Catastrophic Mass Movements; Debris Flow; Erosion; Landslide; Mass Movement; Mass Wasting; Mud Flow