

Mt Ruapehu Crater Lake Lahar threat response

Lahars

What is a lahar?

Lahar is an Indonesian word that refers to a rapidly flowing mixture of rock debris and water (other than normal water flows) from a volcano. Large lahars can present a significant natural hazard. When they overflow their channels they can destroy, erode or bury obstacles in their path. There are various kinds of lahar. A debris flow lahar contains large amounts of sediment (more than 60% of volume) of varying size (from small particles to boulders) and flows like a slurry. A hyperconcentrated flow lahar contains less sediment (mainly sand-sized particles or smaller) and flows more like water. Management precautions for the predicted Crater Lake lahar are based on a debris flow lahar.

Are lahars common?

Lahars are a well-known hazard on Ruapehu. The combination of a large volume of water (10 million cubic metres in Crater Lake) poised high (at about 2500 m) above the surrounding terrain on top of an active volcano constitutes a potentially hazardous situation should the volcano erupt or crater rim fail. The lahar that resulted when the Crater Lake dam failed in 1953 led to the Tangiwai Disaster. Over 60 lahars have been recorded in the Whangaehu valley since the 1860s, the latest occurring during the 1997 eruption. The 1953 lahar was the most hazardous in this period, but much larger lahars in the Whangaehu occurred in the previous 400–850 years.

What causes lahars on Mt Ruapehu?

Most Ruapehu lahars recorded since 1861 have been triggered by eruptions that have ejected water from the Crater Lake. However, lahars can also be triggered by a collapse of part of the rim of a crater lake, with or without an eruption. This type of collapse triggered the 1953 lahar and is predicted to be the trigger for the present lahar threat. Other triggers include heavy rain on volcanic deposits, or collapse of a volcano flank which releases water from the Crater Lake, or alternatively creates a dam that subsequently breaches.

Where do lahars occur?

There are recent lahar paths on all sides of the mountain, but the most active path by far is the one down the Whangaehu Valley on the eastern side. The Whangaehu lahar path is one of the most active in the world.



How do lahars influence the Central North Island landscape?

Lahars have played a considerable role, over many thousands of years, in shaping the outstanding landscapes and biodiversity of Tongariro National Park. The biodiversity of the Whangaehu outwash fan and the Rangipo Desert, which includes tussock shrublands, gravel fields and stone fields, depends in part on disturbance by natural large lahars.