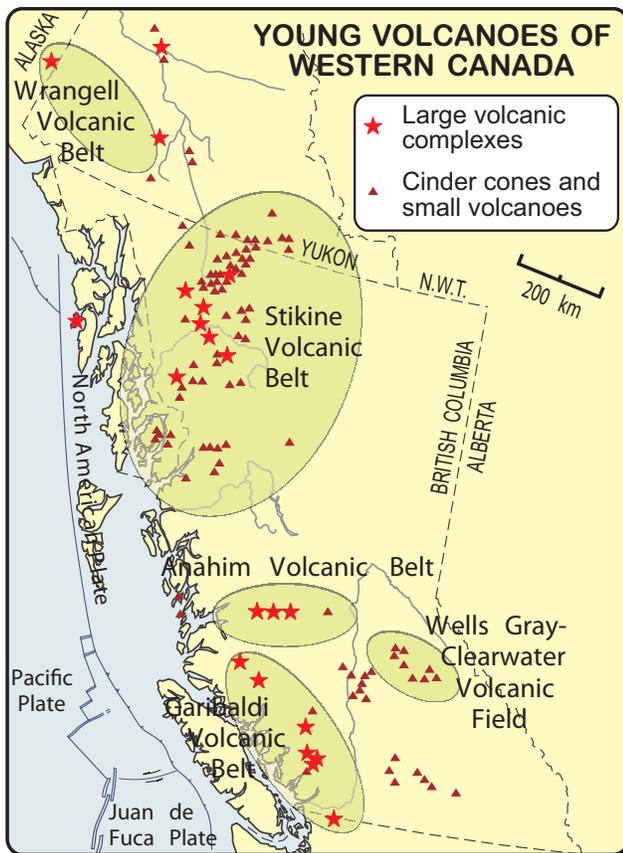




# Volcanoes In Canada

Many mountains in western Canada are volcanoes, including Garibaldi, Cayley and Meager in southwestern British Columbia (B.C.) Less familiar examples include Nazko, Tseax, Hoodoo and Edziza. Canada's most recent eruption was at Lava Fork volcano in northwestern B.C. about 150 years ago.

easily. A runny lava with lots of gas forms fire-fountains that spew into the air and break into globs that solidify as they fall to the ground. Small fire-fountain eruptions produce **cinder cones** (like B.C.'s Eve Cone shown below). When runny lava contains less gas, the volcano erupts in rivers of lava, called flows. Repeated fire-fountain and lava-flow eruptions over long time periods form gently sloping **shield volcanoes**. If lava is viscous rather than runny, gases cannot escape. Viscous lava with little trapped gas will pile up in steep-sided **lava domes**. Viscous lava with a lot of trapped gas will erupt explosively, spreading ash over wide areas. **Stratovolcanoes** like Mount Garibaldi, north of Vancouver, B.C. and Mount St. Helens in Washington State alternate explosive and dome-building eruptions, and may remain dormant for thousands of years.



Young volcanoes of western Canada

## How do volcanoes work?

A volcano is an opening in the Earth's crust from which magma (hot molten rock), ash and gases escape. Volcanic eruptions are driven, in part, by pressure from dissolved gas, much as escaping gases force the cork out of a bottle of champagne. When magma erupts, it is called lava. The type of volcano that forms depends on whether the lava is viscous (thick and sticky) or runny, and on how much gas it contains. If lava is runny, gases escape



Eve Cone, a 150 metre cinder cone in northern B.C.

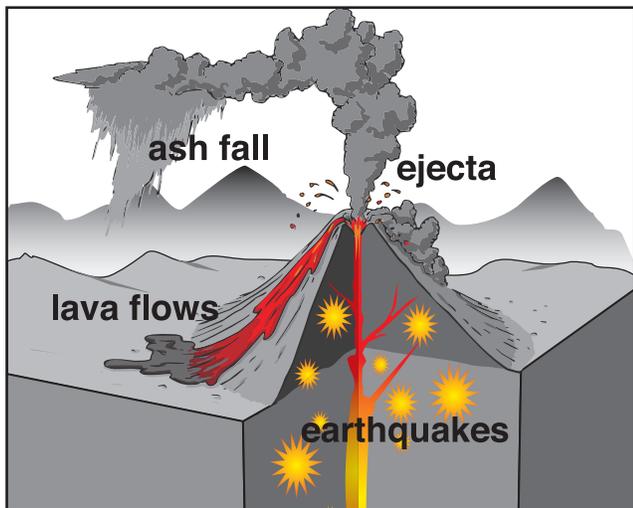


Mount Garibaldi, a stratovolcano in B.C.

P. Adam

## Could an eruption happen in Canada?

Yes. Volcanoes can erupt after remaining quiet for hundreds or thousands of years. However, eruptions rarely occur without warning. Movement of magma within the Earth's crust causes swarms of small earthquakes. Seismographs, which measure ground motion, detect these earthquakes and warn of a possible eruption. Other eruption warnings include ground surface deformation (which may only be measurable with instruments) and release of volcanic gases. Because of these warning signals, it is unlikely a volcano will surprise us.



*Hazards from a cinder cone eruption include earthquakes, lava flows, ash fall, and ejecta (volcanic fragments ejected during fire fountaining). Gas emissions (such as carbon dioxide) might also pose a hazard.*

## What hazards do volcanoes pose to Canadians?

The greatest volcanic hazard is wind-borne ash from distant volcanoes. This poses a serious threat to aircraft and can damage crops, contaminate water and threaten the health of people with respiratory problems. The volcano most likely to threaten Canadians is Mount Baker, just over the Canadian border in Washington State. If it erupted,

Canadians might experience ash falls and flooding or mudflows in nearby valleys. An eruption from a cinder cone like Nazko might produce fire fountains, lava flows, gases and minor ash. An eruption from a stratovolcano like Mount Garibaldi could produce explosions, pyroclastic flows (hot mixtures of rock, ash and gas), mudflows, gases, lava flows and significant ash, although such events occur thousands to tens of thousands of years apart. The last such eruption was 2350 years ago, at B.C.'s Mount Meager. It spread ash as far as southern Alberta.

## Where can you see volcanic rock in Canada?

North of Vancouver, the triple peaks of Mount Garibaldi are visible near Squamish. Cooled, hardened lava flows, recognizable by their columnar joints, can be spotted between Squamish and Whistler. Mount Baker, in Washington State, is seen from many places on B.C.'s southern coast. Volcanic landforms are also preserved in Wells Gray Provincial Park and Nisga'a Memorial Lava Bed Provincial Park in B.C.



*Columnar joints, created by hardened lava flows, on Finngal Island, B.C.*

(J. Young, B.C. Ministry of Environment)

**For further information on volcanoes, visit the Natural Resources Canada website:**

**[gsc.nrcan.gc.ca/volcanoes](http://gsc.nrcan.gc.ca/volcanoes)**

*Or contact one of these Geological Survey of Canada offices, NRCan:*

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