

The geology of Mount Taranaki/Egmont



The igneous rocks of Mount Taranaki and their origin.

Mount Taranaki is made up of an igneous rock called andesite. Andesite is a fine-grained volcanic rock that is found in stratovolcanic form volcanoes. These volcanoes have steep sides and look like how volcanoes are drawn.

Andesite is a mixture rock made where a subducting plate dips under a continental plate. For Mount Taranaki the subducting plate is the Pacific oceanic plate moving in a westerly direction and it dips under the Australian continental plate. As the Pacific plate moves westward it sinks under the Australian plate and as it sinks the rock melts as the temperature rises. The rock type on the subducting plate is basalt. As the basalt melts it rises as the density is reduced. As it rises to the surface it meets the solid continental rock and is trapped there. The heat from the molten basalt is transferred to the continental rock and helps to melt it. Molten continental rock melts to rhyolite. The molten rocks of basalt and rhyolite mix together and end up making andesite. This andesite migrates along the Egmont Fault and erupts to the surface at Mount Taranaki. (1)

Andesitic volcanoes produce lava that is fairly viscous and does not travel far. The maximum lava flow on Mount Taranaki is about 15 km long. Andesitic volcanoes are quite high and have steep sides because of the thick lava. When the volcano is not erupting lava it erupts ash deposits so the mountain is layered with ash layers and lava flows. The ash deposits are very weak. So the key shape of Mount Taranaki is a steep sided volcano.

Lahars as an erosional force that helps shape Mount Taranaki.

Mount Taranaki is famous for its lahars. Much of the landscape around the volcano is the result of lahars. Lahars are where ice and snow are melted during an eruption and lubricate the unstable ash deposits and weathered rocks which slip down the steep sided volcano and rush out over the landscape. This erosive force is caused when ice melts on the crater and water lubricates the unstable rocks. These lahars move fast and form deep gullies over the mountain. (2)

Lahars are a real concern for future eruptions and since Mount Taranaki could erupt at any time in the future damage from lahars is a major concern. They can travel up to 40km from the vent area.