

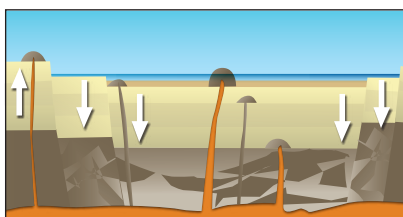
Volcano Fact Sheet

Taupo Volcano



Description

- This is a large caldera (collapsed) volcano which is partly filled by NZ's largest lake, Lake Taupo
- It can be termed a 'supervolcano' and is the most frequently active and productive rhyolite caldera in the world.



▲ Lake Taupo is a **caldera volcano** - a volcano that has collapsed into itself, often filling with water to form a lake. Lake Taupo has had at least two separate collapses.

▶ Lake Taupo looking South.



Maori Name

- *Taupo* from *Taupo-nui-a-Tia* meaning 'the great cloak of Tia'. In Maori mythology Tia discovered the lake.

Features

- In 1998 a mini submarine called JAGO was used to explore the most recently active vent on the lakebed and found hot water jets.
- Layered cliffs of light coloured ignimbrite rock, looser tephra (pumice and ash) and evidence of old shorelines are found around the lake.

Type

- It is an active caldera volcano created by collapse of the ground surface due to emptying of the magma chamber in huge eruptions.
- It produces viscous rhyolite magma and has less frequent but more violent eruptions than cone volcanoes.

Cause

- Taupo was created by subduction of the Pacific Plate below the Australian Plate.
- The Earth's crust is stretched and thinned in the entire Taupo Volcanic Zone by movement of the plates.
- A magma chamber is located between 6 and 8 km below the lake floor.

Eruptive History

- Taupo Volcano began erupting about 300,000 years ago.

- The present day caldera was created by an eruption about 27,000 years ago called the Oruanui eruption.

- Between the Oruanui eruption (27,000 years ago) and the Taupo eruption (1800 years ago) there were at least 26 much smaller eruptions which formed lava domes and spread pumice and ash over nearby areas.

Eruptive material

- 99% of the material erupted from Taupo is pumice and ash which has exploded violently to form pyroclastic ash falls and flow deposits.
- When the flow deposits are hot enough they become re-melted to create a rock type called welded ignimbrite.
- The remaining 1% of the magma has lost enough gas to flow rather than explode and forms small lava domes such as Mt Tauhara.

Last eruptive activity

- This was about 1800 years ago, and is called the Taupo Eruption.
- It is the most violent eruption known in the world in the last 5000 years.
- The eruption plume reached 50 km into the air, all of NZ received at least 1cm of ash and areas near the lake were covered in more than 100 m of pyroclastic flow.
- The flow spread up to 90 km from the vent and flowed over all local features except Ruapehu.

- It is possible that ash from this eruption was the cause of red sunsets recorded by the Romans and Chinese.

Other Volcanic Hazards

- Strong earthquakes causing ground deformation, these will precede a big eruption.
- Lahars of loose pumice and ash deposits flowing down rivers after eruptions.
- Deposits from the Taupo eruption blocked the lake outlet, raising the lake 34m above its modern level. When this blockage failed a catastrophic flood was released down the Waikato River.
- Increased activity in geothermal areas can be expected, with steam explosions.

Monitoring

- There are 7 seismographs and 6 continuous GPS stations, and lake levelling at 22 sites.

