

## Mudslides at Curio Bay!

180 million years ago Curio Bay was a broad forested coastal floodplain on the ancient super continent Gondwana . Trees formed a low canopy over an undergrowth of ferns.

Mudslides from active volcanoes covered the forest at least four times over 20,000 years. For millions of years trees and fern lay deeply buried as silica minerals seeped in and slowly turned the wood to rock. But how did these mudslides or lahars actually happen?



### What is a lahar?

Mixtures of water, mud, sand and rock that rush down river valleys. turning normally quiet rivers into deep torrents of fast moving debris.

### How fast do they move?

180 kph on very steep slopes and 20 to 40 kph on the lower slopes. The speed depends on the mixture. A thick guggy mix will flow slower than a watery one.

### How do they flow?

Lahars behave like wet concrete as they flow but they probably travel like snow avalanches on a cushion of air.

### How do lahars start ?

Some lahars have a lot more water than others and any one of these events can trigger one off.

- The collapse of a crater lake
- An eruption of hot material through a crater lake.
- An eruption of hot material melting the winter snow pack.
- An avalanche mixing with water from stream or ponds.
- Heavy rainfall on unstable volcanic slopes can cause the slope to collapse.

Once lahars build up speed they can climb the walls at the bends in valleys and even flow over great barriers in their path. They look like fast moving rivers of concrete and they can carry huge boulders 50 kilometres or more and uproot and destroy everything in their path.

Imagine a plate of raisin porridge poured on a sloping surface.



As the porridge (mud) travels down the slope it spreads out and slows. The raisins (rocks) are bigger and heavier so they stop moving and little bits of slurry form around them.

Mix up a batch of porridge with raisins. Make yourself a model of a mountain slope and forest on the flood plain. Heat up your porridge and carefully tip your lahar down your mountain and watch what happens.



**Airedale Reef near Waitara where a lahar from Mt Taranaki destroyed the forest 105,000 years ago.**

One of New Zealand's greatest disasters was caused by a lahar from a North Island volcano so find out:

- Which volcano?
- Which event triggered this lahar?
- Which river did the lahar flow down?
- What were the results?