

# Geologic changes vinoth loganathan new zealand

[Science](#), [Geology](#)



Mt Cook/Aoraki formation Vinoth Loganathan New Zealand is a country which 'straddles' between two tectonic plates; the Indo-Australian and the Pacific. The location of the South Island is south of both Australia and South Africa; this is a major contributor to the geological process of weathering because it makes Mt. Cook subject to the westerly winds. Mt Cook is situated in the Southern Alps between the two tectonic plates mentioned above. Its current height is now stated at 3,753 meters making it the tallest mountain in Australasia.

The mountain itself has been formed by three main geological processes; one internal: tectonic uplifting and 2 external: weathering and erosion.

Internal: 1. Tectonic Uplifting Mt. Cook was formed by the internal process of orogenic tectonic uplifting, where two plates collide and one plate increases in elevation and the opposite plate decreases. However Mt. Cook formed differently compared to other mountains. This is due to both tectonic plates having landmass on the top and the plates meeting at different angles. The movement occurring here is grinding which pushes up land mass (Mt.

Cook) and creates a transform fault. Present rate of uplift is 5-10 mm a year but this is easily countered by weathering and erosion. Evidence of this uplift is apparent on the mount on the south ridge specifically the Endeavour col fold where sand, mud and silt has been folded and fractures forming vertical beds of silt and sandstone. Overall the tectonic uplift of Mt. Cook over the past 2 to 3 million years could have been up to 20 kilometres but weathering and erosion have easily countered it. Westerly Winds External 1. Weathering Mt.

Cook has been shaped by powerful forces of weathering. Mt Cook is subject to high amounts of weathering due to its height and location. Mt Cook is located south of Australia and South Africa making it the first significant barrier to the powerful westerly winds the 'roaring forties'. Due to the wind Mt. Cook is subject to various different types of weathering such as freeze thaw weathering. When the wind reaches the Southern Alps the air rises and drops rain on Mt. Cook. When the water reaches the mountain it lands in a crack, it then freezes freezes and expands making the crack bigger.

The process repeats and weathers the mountain. This process occurs all over the mountain rapidly due to often temperature change. This process also occurs a lot on the peaks on the mountain being the reason why the peaks are so 'sharp'. 2. Erosion The wind and rain affecting Mt. Cook is a significant cause of erosion. Rain and wind both use gravity to essentially remove the 'loose rock' of the mountain. Rain does it by 'washing' it off and wind does it by 'blowing' it off. There is significant evidence that substantial erosion has occurred on Mt. Cook.

This is located at the valleys of the Southern Alps. Large river beds made up of of 'eroded scree' and gravel. Also multiple glaciers such as the hooker glacier are carrying eroded debris matching the rock Mt. Cook is made up of. Weathering and erosion have contributed to the formation of Mount Cook by shaping it. The shape of Mt. Cook is wide at the bottom but skinny at the top this is because the higher you go the more weathering and erosion occurring. So in conclusion Mt. Cook has been formed by multiple geological processes and is continuing to be formed this present age.