

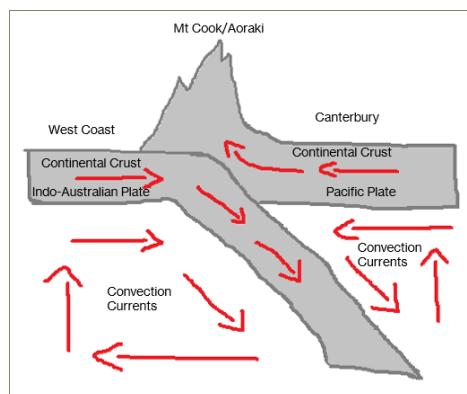
Spatial Distribution

The spatial distribution of the mountain ranges in Aotearoa are described as having a linear pattern in a Northeast and Southwest line because of the fault lines that runs through it, being the boundary between the Indo-Australian plate and the Pacific plate. This is seen in the map. The Southern Alps sit on top of the Alpine fault, lining the western side of the South Island starting from Nelson and running down to Milford Sound. In the North Island, the Raukūmara, Kaimanawa and Taranua Ranges sit on top of the North Island fault, which runs from the Bay of Plenty down to the Wellington coast.



Formation of the Mountain Backbone

The linear pattern of the Southern Alps were created and formed because of a process called "tectonic uplift", involving the Indo-Australian plate and the Pacific plate. Through convection currents in the earth's mantle, these tectonic plates move and friction between them causes a subduction fault to form. This is when two tectonic plates meet and one of the plates subduct under the other, causing tectonic uplift of the other plate. In this case, the Indo-Australian plate has subducted under the Pacific plate as a result of the Pacific plate having weaker crust. The subduction of the Indo-Australian plate causes the Pacific plate to rise above and create the Southern Alps.



Formation of the Mountain Backbone Pt. 2

The distribution of mountain ranges along the North Island fault system in a line were also created as a result of tectonic uplift but were as a result of the Pacific plate subducting under the Indo-Australian plate instead. With the same geographic process of tectonic uplift as the Southern Alps, the Indo-Australian plate rose above the Pacific plate along the subduction boundary, forming the North Island mountain ranges.



Impact of the Mountain Ranges- Accessibility

The Southern Alps impact the geography of the South Island quite significantly in different aspects such as the 'accessibility', 'climate' and 'pounamu'.

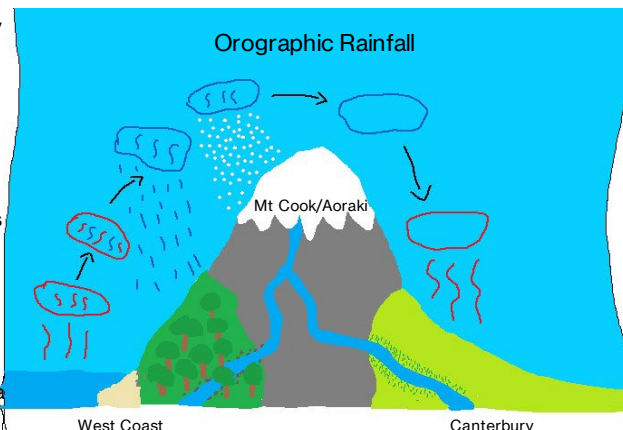
The **accessibility** of the South Island is heavily impacted by the Southern Alps because of its rugged and difficult terrain that acts as a natural barrier preventing most ways of transport between the West Coast and the rest of the land. The only way around this problem is through 3 main passes that cut through the Southern Alps, being Lewis Pass, Arthur's Pass and Haast Pass. The Southern Alps also impact and make a difference as to where people settle. People want to settle in more accessible places and are more likely to do so on the east side compared to the closed off West Coast. Nature is also affected with animals prevented from migrating to either side.



Impact of the Mountain Ranges- Climate

The **climate** of the South Island is also impacted by the Southern Alps through processes like 'orographic rainfall'. This influences different temperature and weather patterns in each region in the South Island.

With different climates and conditions in each region, people and the industries in the land are impacted differently by the geographic possibilities and opportunities that are available. Different industries are affected, and some are more successful and capitalizable as a result of natural climate and conditions that allow for them to flourish. With this, settlement on the east side is more desirable compared to the west because of a more favourable land geography. Flora and fauna also thrive on different sides, with different natural conditions that impact them.



Impact of the Mountain Ranges Pt. 3

Pounamu is another significant impact of the Southern Alps, both naturally and culturally. Pounamu/greenstone is formed when two contrasting rock types fuse under high heat and pressure. Through processes like tectonic uplift, pounamu created deep underground is lifted up and eventually erodes from host rocks where they end up in gravel deposits and rivers. Because of this, in more accessible areas, exposed pounamu was collected.



Judgement: Which impact is the most significant?

In my opinion I think that accessibility is the most significant impact. It impacts both the natural and the cultural environment, negatively limiting the physical capabilities and accessibility of transport between the east and west of the South Island because of the natural barrier it creates. It impacts where people settle and industries that are able to be capitalized and used. Without the Southern Alps, in the aspect of accessibility, travel all around the South Island would be significantly easier, without the natural barrier it creates. Although, the Southern Alps in other aspects positively impact the country with things like tourism, agriculture and other things that boost the economy, while also being a natural beauty of the country.