The regional geology within the Andes mountains is rather unique because even though it is a continuous range, there are three relatively distinct sections (north, central, and south) that vary in their topography and geologic makeup.

- The Northern Andes topography is controlled by fluvial (stream produced) processes, while the Southern portion is mainly controlled by glacial erosion. The Central Andes plateau (Altiplano) is largely controlled by tectonic uplift and is not affected by fluvial processes.

- Drainage, precipitation rates, and vegetation all play a role in the deposition of sediment, which affects climate change.

In the Andes, the climate controls the landscape and uplift in three main ways: fluvial erosion and high precipitation in the northern Andes. There is little erosion in the central Andes, increasing the mass balances which promote crustal thickening.

Lastly, the highest portions of the Southern Andes are carved by glacial erosion (Montgomery, 2001).

Feedback system controlling climate through tectonics in the Andes Mountains represented in this simplified diagram, created by Ava Kopellas.

- Plate coupling is responsible for uplift that increases sediment starvation.
- Uplift and sediment starvation promote vertical development leading to higher altitudes.
- Mass balances throughout the Andes Mountain range vary due to differing amounts of eroded sediment deposited into the trenches.

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In the Andes, climate and topography are interrelated through many feedback systems.

- The topography is controlled by tectonics and climate, yet topography also controls tectonics and climate to an extent.
- Ocean and atmosphere circulation with topographic constraints controls the local climate.

REFERENCES