



ESEG-4: Evolución tectónica del arco de Scotia en Sudamérica y la Península Antártica

The Relation Between Neogene Denudation of the Southernmost Andes and Sedimentation in the Offshore Argentine and Malvinas Basins During the Opening of the Drake Passage

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Abstract The Neogene orogenic growth of the Southern Patagonian Andes has been related to the approximation and collision of a series of segments of the Chile seismic ridge, which separates the Antarctic and Nazca plates, against South America. The compiled thermochronological data consistently indicates an eastward moving trend of exhumation, where uplift of the western basement domain occurred from 34 to 15 Ma and was followed by denudation of the basement front and the fold and thrust belt between 20 and 5 Ma. There has been an assumption that tectonic growth in southern Patagonia ended in late Miocene times, largely based on the top age of the molasse deposits of the Santa Cruz Formation, spanning from 22–19 to 14 Ma. There is, however, multiple thermochronological evidence that exhumation in the hinterland continued profusely, with large volumes of rock denudated rapidly between 15 and 5 Ma, and steadily since 7 Ma. However, continental sedimentation rate was very low in the Magallanes–Austral Basin of the Southernmost Andes after 14 Ma, an effect produced by the dynamic uplift of Patagonia. Contrastingly, the upper Miocene–lower Pliocene constitutes an aggradational period very well developed in the offshore Argentine continental margin. We propose that the great volumes of sediments produced by Miocene–Pliocene denudation of the Southernmost Andes bypassed Patagonia and reached the Argentina and Malvinas basins, where they were accommodated in thick sequences with high sedimentation rates. Those sediments were distributed along the Southern Atlantic margin by sub-Antarctic currents, which propagated into the Argentine continental margin during the deepening of the Drake Passage. The sediments were probably funneled through gargantuan fluvial and glaci-fluvial W–E systems, similar to those preserved in Patagonia from the last glaciation, and axially through the Fuegian Andes foothills toward the offshore basins.