

The passage of the Farallon-Aluk spreading ridge along the Andean margin

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Plate reconstructions show that the Farallon-Aluk mid-ocean ridge interacted with the Andean margin at 30°S by ~80 Ma and then moved southwards. This process influenced the margin producing contrasts in the magmatic evolution. At 35°30'S, the Late Cretaceous-Paleocene Los Angeles Unit (67 Ma; Fennell et al., in press), developed with a tholeiitic to alkaline signature, and Sr-Nd isotopic trends similar to OIB magmatism (Iannelli et al., 2018). The coeval Plan de Los Yeuques Formation (34°30'S, Muñoz et al., 2018) and Naunauco Group (37-38°S, Zamora Valcarce et al., 2006) show calc-alkaline signatures with arc-like trends. By Eocene times the Farallon-Aluk ridge reached the 42°S. Its influence is seen when comparing arc-like PVNM (37-38°S; Llambías and Rapela 1989) with the alkaline-like Pilcaniyeu Belt (40-42°S; Aragón et al. 2011). The segmented configuration of this spreading ridge would have favored the development of diachronic slab windows and the upwelling of more enriched mantle. This could explain the geochemical signatures and distribution of magmatism. A recent methodology combining plate reconstructions and seismic tomography supports the past existence of this process.

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