

## Double-vergent orogenesis in north Patagonia: different mechanisms of Andean deformation

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The Andes constitute an ideal tectonic setting for investigating different modes of subduction orogeny, given its segmented anatomy and the potential drivers of the upper/lower plates over the episodic periods of mountain building (e.g., Mpodozis and Ramos, 1989). In this sense, integrated analyses of orogenic sections that contemplate from the fore to retroarc sections and their potential coupling are still lacking. Therefore, we studied a forearc segment in northern Patagonia (~41-44°S) in order to analyze its crustal architecture and the structural control over the thick-infilling oceanic forearc basins and Neogene strata in the western Andean slope and Coastal Cordillera. Here, Neogene strata were deposited during the tectonic switching from an accentuated late Oligocene-early Miocene extensional regime to a mid-late Miocene contractional period and the breakup of the Farallon into the Nazca plate (e.g., Jordan et al., 2001). We performed a structural analysis through field work along with acquisition of several seismic data (2D multichannel and refraction seismic data and drillholes from ENAP-Chile) in order to identify the time of activity of the main forearc structures and their relation, in a crustal scale, with the east-vergence faults that form the retroarc fold-thrust belt. Our data reveal the presence of a major west-vergent thrust in the western slope of the Andean cordillera and a trenchward directed splay in the Coastal Cordillera during mid-late Miocene time, contemporaneously with retroarc fold-thrust belt growth (e.g., Folguera et al., 2018). This suggests a double-vergent orogenesis for this Andean segment, and proposes a discussion on the general modes of Andean deformation like in other segments of the Central Andes (e.g., Riesner et al., 2018).

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