

## **Accretionary history and magma sources in the Southern Andes**

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The crustal framework of the Andes between 23-37°S was formed during earliest Paleozoic continental collisions. As suggested by the present coastal location of the Carboniferous magmatic arc in this sector, no major accretion took place after docking of the exotic Precordillera terrane (PT) in Late Ordovician-Silurian times. The Early to Middle Cambrian (530-520 Ma) collision of the Pampean terrane against the margin of Gondwana was contemporaneous with a collisional episode in the Coastal Domain of Brazil, indicating amalgamation of east and west Gondwana. Subduction restarted on the proto-Pacific margin at ca. 490 Ma with events assigned to the Famatinian cycle, during which a wide continental arc and an ensialic back-arc basin were formed. Accretion of the PT to Gondwana was complex and protracted, starting with closure of this back-arc basin during the late Ordovician (440-450 Ma) and collision in Silurian time (440-420 Ma), followed by intrusion of large post-orogenic Devonian batholiths in the southern Sierras Pampeanas and Patagonia. Accretion of the PT is considered to be the final episode in the amalgamation of Gondwana.

The isotopic composition of I-type metaluminous magmas associated with the Cambrian, Early Ordovician and Carboniferous convergence episodes is characterized by relatively high initial  $^{87}\text{Sr}/^{86}\text{Sr}$  (0.705-0.713) and relatively low  $\epsilon\text{Nd}_t$  (-2 to -6), suggesting a lithospheric source, probably Proterozoic lower crust overlying an old lithospheric mantle. Progressive removal of this old lithosphere by delamination did not start until the Jurassic as suggested by recent isotopic studies of the Coastal Batholith of Central Chile.