

# **Late Permian - Middle Cretaceous episodic lithospheric thinning along the Peru-Bolivia segment of the southwest Gondwana margin**

<sup>1</sup>SEMPERE, T., <sup>1</sup>CARLIER, G., <sup>2</sup>CARLOTTO, V., <sup>3</sup>JACAY, J. and

<sup>4</sup>JIMÉNEZ, N. <sup>1</sup>IRD, Lima, Peru (e-mail: [sempere@bellnet.com.pe](mailto:sempere@bellnet.com.pe)).

<sup>2</sup>Universidad Nacional de San Antonio Abad del Cusco, Cusco, Peru.

<sup>3</sup>Universidad Nacional Mayor de San Marcos, Lima, Peru.

<sup>4</sup>Universidad Mayor de San Andrés, La Paz, Bolivia.

Basin analysis and magmatism in the Andes of Peru and Bolivia show that the southwest margin of Gondwana was locally submitted to at least 4 episodes of lithospheric thinning during the Late Permian-Middle Cretaceous interval. The distribution of the thinned areas indicates an overall east to west propagation of lithospheric thinning. This ~180 Myr-long stretching-dominated evolution ended with the onset of Andean shortening ~90 Ma.

Rifting diachronously developed along the present-day Eastern Cordillera of Peru and Bolivia during the Late Permian through Middle Jurassic, propagating from north to south. North of the present-day Bolivian orocline (6°S-13°S), mostly alluvial to lacustrine deposits, including evaporites, accumulated in early grabens and were subsequently overlain by thick Late Triassic-Liassic carbonates (sag phase). In the Bolivian orocline region (east of the Altiplano; 13°S-22°S), similar but younger syn-rift deposits were subsequently buried below laterally-onlapping fluvio-eolian Jurassic sands (sag phase). Rift structures in the Eastern Cordillera were gently inverted in the Late Jurassic.

West of the present-day Altiplano and in the Arequipa region of western southern Peru (13°S-22°S), younger lithospheric thinning is indicated by Bajocian-Bathonian abrupt deepening and Dogger-Malm considerable subsidence of the marine Yura basin. To the north (6°S-10°S), west of the Eastern Cordillera, similar processes produced in the Tithonian an abrupt deepening of the Chicama basin. Along the present-day coastal region, i.e. west of all these areas, Aptian-Cenomanian lithospheric thinning is attested by considerable subsidence and volcanism in the Casma basin.