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Review and update about the late Triassic to Jurassic tectonics through the transition zone between the southern Central and Patagonian Andes

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In the last years, a substantial change has occurred concerning previous concepts accepted for the Jurassic tectonics in the area comprehended between the Patagonian and Central Andes. The previous hypothesis conceived a rather simple framework in which from the Neuquén Basin latitudes to the south into Patagonia, a series of extensional depocenters were evolving through their mechanical and thermal subsiding stages during incipient Pangea break up. However, in the last time, new data and ideas have defied these hypotheses, strongly affianced in the scientific community, following pioneering proposals of Lock (1980) and Dalziel et al. (2000). The first of these controversial premises is that Patagonia suffered a shortening stage associated with the inland migration of a volcanic arc in Late Triassic times (Navarrete et al., 2019), while to the north crustal stretching conditions dominated south-western Gondwana. This new hypothesis considers that the Late Triassic Central Batholith constitutes a magmatic arc in central Patagonia and that a Late Triassic contractional episode developed, described from field and seismic data. The second premise is that Patagonia kept suffering short pulses of within-plate shortening during the Jurassic, interrupting sag stages of intra- and retro-arc basins (Navarrete et al., 2016). These discrete pulses most likely relate to a strong kinematic change and drifting to the south registered in Gondwana at ~180 Ma, when the North Atlantic ocean started to spread, and with the initial Weddell sea opening at ~160 Ma that pushed the Patagonian platform in the opposite direction, at the time when the Karoo hot spot emplaced and expanded to the east (Müller et al., 2006). During these changes, the Liassic and Cañadón Asfalto basins in Chubut, eastern volcanogenic basins, and the North Patagonian and Deseado massifs suffered early inversion and exhumation phases. These Late Triassic to Jurassic contractional pulses thickened the crust indicated by REE elements in Mesozoic magmas emplaced in the Patagonian Andes and created a topography that fed with detritus Jurassic basins that were subsiding to the north in the proto-Central Andes region.

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