



Crustal structure of the Colorado Basin from 3D gravity modelling

Julia Autin (1), Magdalena Scheck-Wenderoth (1), Markus J. Loegering (1), Zahie Anka (1), Eduardo Vallejo (2), Jorge F. Rodriguez (2), Denis Marchal (2), Fabian Dominguez (2), Christian Reichert (3), and Rolando di Primio (1)

(1) GFZ Research Centre for Geosciences, Basin Analysis, Potsdam, Germany (julia.autin@gfz-potsdam.de, +49 (0)331/288-1349), (2) Petrobras Energía S.A., Buenos Aires, Argentina, (3) Federal Institute for Geosciences and Natural Resources, Hannover, Germany

The Colorado Basin is located on the Argentine margin, which presents a strong segmentation with strike-slip movements along the fracture zones [e.g. Moulin et al., 2010]. This volcanic segment (between the Salado and Colorado transfer zones) is characterized by seaward dipping reflectors (SDR) all along the ocean-continent transition [e.g. Franke et al., 2006; Gladchenko et al., 1997; Hinz et al., 1999]. Unlike the conjugate South African margin (Orange Basin), the segment is structured by E-W trending structures forming the basin boundaries, which cannot be explained by classical models of rifting. This study aims to understand the contemporary development of the basins and the Argentine margin itself and to highlight the particular evolution of rifting and break-up suggested by the comparison of the conjugate margins.

This work presents results of a combined approach using seismic interpretation and structural, isostatic and gravimetric modelling. The presence of a magmatic intrusion and a high density lower crust were highlighted along a E-W refraction line [Franke et al., 2006], and they could correspond to a high density body (HDB) at the base of the crust. Nevertheless, its lateral extension and geometry is unknown. Using 3D gravimetric modelling, we can assess the geometry of such a body and propose what are its effects on the basin subsidence and infill history.

We propose two main scenarios: (1) The HDB is emplaced during rifting time and enhanced the extension, eventually producing the NE-SW direction of extension. (2) The HDB is emplaced at the very end of rifting, during SDRs formation, and does not contribute to the Colorado Basin extension. Depending on the hypothesis we interpret the related evolution of the basin and its subsidence history.

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