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Characterisation of the sedimentary processes responsible for the filling and excavation of two intra mountainous basins (Agua Amarga and Collon Cura) in the Andes of Neuquén (Argentina) during the Neogene

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Intramontane basins constitute potential good recorders of orogenic systems deformation history through the documentation of their remnant sedimentary filling and observation of syntectonic growth strata. In this work, we focus on the Neuquén basin, located on the eastern flank of the Andes between 32°S and 41°S latitude. It has been structured since the late Triassic, first as back arc basin and as compressive foreland basin since the upper Cretaceous. Most of the sedimentary filling is composed of Mesozoic sediments, which have been importantly studied because of their hydrocarbon potential. On the contrary, Cenozoic tectonic and sedimentologic evolutions remain poorly documented in regard to the Mesozoic.

The structural inheritance is very important and strongly influences the deformation and shortening rates from the North to the South of the basin. Thus, the northern part exhibits a classical configuration from the western high Andes, to younger fold and thrust belts and piggy-back basins to the East. On the contrary, no fold and thrust belt exist in the southern part of the basin and the deformation is restricted to the internal domain. Nevertheless, contemporaneous intramontane basins (the Agua Amarga to the North and the Collon Cura basin to the South) existed in these two parts of the basin and seem to have followed a similar evolution despite of a different structural context.

To the North, the partial closing of the Agua Amarga basin by the growth of the Chuihuidos anticlines during the Miocene is characterised by the deposition of a fining upward continental sequence of $\sim$250 m thick, from lacustrine environment at the base to alluvial and fluviatile environments in the upper part of the section. In the Collon Cura, the sedimentary filling, due to the rising of the Piedra del Aguila basement massif, reach at maximum 500 m and consist in fluvial tuffaceous material in the lower part to paleosoils and coarse conglomeratic fluvial deposits in the upper part.

To the North, excavation of the Agua Amarga basin happened after regressive erosion on the external flank of the Chuihuidos anticlines and generated the deposition of an alluvial fan of 50 km length and maximum thickness of 140 m. Concerning the South, the paleolandscape conditioned the deposition of a very long ($\sim$ 20 km) but very narrow (few tens of kilometres) alluvial fan. The excavation is the consequence of the elevation cessation of the Piedra del Aguila basement.