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Receiver function results from the PUDEL (PUna DELamination) Seismic Array in the Southern Puna plateau

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A passive seismic array which operated between December 2007 and November 2010 has been deployed in the southern Puna plateau between 25°S to 28°S latitude and 65W to 70W longitude in Argentina and Chile to address fundamental questions on the processes that form, modify and destroy continental lithosphere and control lithospheric dynamics along Andean-type continental margins. This experiment consisted of 75 stations has been conducted by Argentine, Chilean, German and US scientists and was designed to improve our understanding of the evolution of the Central Andean plateau in an area where there is a very little geophysical data available. We present here some preliminary results form P and S receiver functions that enables us to address fundamental questions about the role of crustal and mantle lithospheric delamination in the evolution of plateau regions and the evolution of the continental crust in general. Our aim is to determine the seismic structure and thickness of the continental crust and the lithospheric mantle beneath the southern Puna plateau. We also want to determine the thickness of the mantle transition zone beneath the southern Puna and constrain the geometry and rheology of the subducting slab. As a collaborative project, our network has been designed to use other standard broadband seismological methods besides receiver function involving surface wave tomography, tomographic travel time inversion, and shear wave splitting analysis.