

A narrower belt of sub-Andean thin crust constrained by new measurements of crustal thickness in the central part of South America

C. Rivadeneyra-Vera¹, M. Bianchi¹

¹Institute of Astronomy, Geophysics and Atmospheric Sciences; University of São Paulo; São Paulo, SP, 05508-090, Brazil

The sub-Andean region is a long belt of approximately 200 km wide between the Andes and the stable part of South America. Due to its complexity and lack of seismic stations, the study of its crustal properties has been poorly constrained, compared with the Andes that has been largely investigated by many seismic studies. Knowing the crustal properties is essential in tectonic studies to understand the geological evolution, as well as elaborating velocity models for better monitoring the regional and global seismicity. Previous studies have shown a long belt of thin crust (~35 km) along most of the Sub-Andean region, between the thick crust of the Andes (up to 70 km) and the stable platform (~40 km). Nevertheless, these measurements have poor resolution since they have been estimated mostly by gravity data. A deployment of 35 temporary seismic stations in southwest Brazil and parts of Bolivia, Paraguay, Argentina, and Uruguay filled a significant gap in crustal information in the central part of South America. We estimated crustal thicknesses and V_p/V_s ratios with a modified H-k method by previously producing optimized traces with the three enhanced Moho conversions. This modified method yields lower uncertainties, given by bootstrap resamplings, and shows more regional consistency between adjacent stations. Using the temporary stations and the Brazilian permanent network (RSBR) we better characterized the crustal structure in the central part of South America, our results show a belt of thin crust (35-40 km) along the Sub-Andean region, which is narrower than previous works. More seismic stations of Bolivia and the eastern part of Peru are being analyzed to better constraint our results.