EXPLORING DEEP PERU-BRAZIL BORDER EARTHQUAKES TO OBTAIN CRUSTAL STRUCTURE AT REGIONAL STATIONS

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Crustal structure is an important parameter in global and regional seismic studies. Even though Brazil presents an already published Moho thickness map there is still a missing detailed knowledge of the crustal structure. A widely used method to obtain important features of the crust and upper mantle is receiver function, that uses teleseismic data (in distances ranging from 30 to 95 degrees) in order to avoid the triplication of P wave and ensure the vertical arriving of plane body waves. As consequence of using teleseismic data, traditional receiver functions has a lower frequency content and resolving power of shallower layers like middle crustal interfaces including sedimentary basins thickness mapping. In order to obtain a more detailed information about the Brazilian crust, we used data of 47 deep earthquakes (between 350 and 750 km of depth) occurred in the border of Peru and Brazil from 2010 to 2016, registered at RSBR (Brazilian Seismographic Network) and XC (FAPESP 3-basins project) stations. Despite the short distance between the source and stations, the vertical arriving of P waves is guaranteed due to the depth of the events. Traces identified at the depth and distance that generate P-wave triplication are excluded from processing. Automated selection of traces is performed based on azimuth recovering, radial SNR values and fit percentage of the original trace recovering. Deconvolution of the signal was done in time domain and an initial estimation of crustal thickness was performed on filtered low-frequency receiver function traces by the Zhu and Kanamori method. Results corroborate the pre-existent models of crustal thickness. Moho depth at stations are between 31 and 47 km, being deeper in Amazon and Paraná basin and shallower in Pantanal basin, with uncertainties smaller than 5km. Initial tests of receiver function of high frequency and dispersion curves inversion are under development.

KEY WORDS: *CRUSTAL STRUCTURE, RECEIVER FUNCTION, DEEP EVENTS.*