



The upper-mantle transition zone beneath the Chile-Argentina flat subduction zone

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The main objective of the present work is the study of the upper mantle structure of the western margin of South America (between 26°S and 36°S) within an area known as the Chile-Argentina flat subduction zone. For this purpose, we use teleseismic records from temporary broad band seismic stations that resulted from different seismic experiments carried out in South America. This area is characterized by on-going orogenic processes and complex subduction history that have profoundly affected the underlying mantle structure. The detection and characterization of the upper mantle seismic discontinuities are useful to understand subduction processes and the dynamics of mantle convection; this is due to the fact that they mark changes in mantle composition or phase changes in mantle minerals that respond differently to the disturbances caused by mantle convection. The discontinuities at a depth of 410 km and 660 km, generally associated to phase changes in olivine, vary in width and depth as a result of compositional and temperature anomalies. As a consequence, these discontinuities are an essential tool to study the thermal and compositional structure of the mantle. Here, we analyze the upper-mantle transition zone discontinuities at a depth of 410 km and 660 km as seen from Pds seismic phases beneath the Argentina-Chile flat subduction.