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The Chile subduction zone : Nature of the lithosphere between alternating regions of slow earthquakes versus non slow earthquakes

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Subduction zones host some of the greatest megathrust earthquakes in the world. Slow earthquakes have been discovered around the subduction zones of the Pacific rim very close to megathrust earthquakes. Investigating the lithosphere of the slow earthquake area versus non slow-earthquake area in subduction zones is crucial in understanding the role of the internal structure to control slow earthquakes. In this study, we investigate the lithospheric structure of stations in the slow earthquake area and non slow-earthquake areas in Chile using receiver function analysis and inversion method using teleseismic earthquakes. Here we focus on, especially the V_p/V_s ratios from both slow and non-slow earthquake areas, because the V_p/V_s ratio is sensitive to the fluid distribution in the lithosphere; the fluid distribution possibly controls the potential occurrence of slow earthquakes. Additionally, the nature of the slab can also play a crucial factor. The V_p/V_s ratio results across depth shows significantly higher value in the deeper oceanic slab region beneath the stations in the slow earthquake areas with higher contrast at the boundary.