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A teleseismic tomography image of the Southern Central Andes at 21˚S

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A set of 59 seismological stations (47 short-period and 12 broadband) was deployed along 21˚S (Chile-Bolivia) on a profile about ∼600 km length and has been running between March 2002 and January 2004 in the Southern Central Andes region. The stations profile was intended and designed to record teleseismic waves ***(P and S)***, for use of teleseismic tomography method. The teleseismic tomographic images show what we interpret as the effects of melting fluids at both flanks of the Altiplano plateau. The western one correlates very well with the position of the Quebrada Blanca Bright Spot and the CVZ (Central Volcanic Zone), possibly related with fluids that originate at the cluster of earthquakes in the lithosphere of the subducting plate at a depth of 100 km. A low velocity anomaly has been detected underneath the eastern border of the Altiplano and the central part of the Eastern Cordillera province. The presence of the Brazilian shield is thought to be responsible for the strong high-velocity anomaly underneath the Inter-Subandean and Chaco Plain region. These characteristics reveal that some of the main tectonic features that are observed at the surface are related to structures in a lithospheric scale and have a signal that can be interpreted at depth. We propose a model that explains plateau location and evolution in the Andean subduction scheme.