



Universidad de Concepción
Facultad de Ciencias Físicas y Matemáticas
Departamento de Geofísica y Ciencias de la Tierra



SEMINARIO:

“Chile’s seismogenic coupling zones – geophysical and neotectonic observations from the South American subduction zone”

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Accumulation of deformation at convergent plate margins is recently identified to be highly discontinuous and transient in nature across a single event as well as across several seismic cycles. A past (TIPTEQ) and an active international initiative (IPOC; Integrated Plate Boundary Observatory Chile) addressed this issue in international collaboration along the Chilean margin. Major recent seismic events have occurred in south Central Chile and in Northern Chile or are expected in the very near future (Iquique, last ruptured 1877) allowing observation at critical time windows of the seismic cycle. The reflection seismic data exhibit well defined changes of reflectivity and V_p/V_s ratio along the plate interface that can be correlated with different parts of the coupling zone as well as with changes during the seismic cycle. Observations suggest an important role of the hydraulic system, and of lateral variation of locking on subsequent rupture and aftershock distribution as evidenced by the recent Maule earthquake.

Surface deformation in Chile has been complex exhibiting tectonically uplifting areas along the coast next to coseismically subsiding domains. Moreover, the coseismic and interseismic vertical displacement identified is not coincident with long-term vertical motion that probably is superseded by slow basal underplating or tectonic erosion occurring at the downdip parts of the seismogenic zone causing discontinuous uplift. Finally, we note that the characteristic peninsulas along the South American margin constitute stable rupture boundaries and appear to have done so for a protracted time as evidenced by their long-term uplift history since at least the Late Pliocene.

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