



THE TIPTEQ SEISMIC NETWORK COVERING THE CHILEAN FOREARC BETWEEN 41.5° AND 43.5°: SEISMICITY AND VELOCITY MODEL

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The convergent margin from Southern Chile is the focus of studies within largescale, multi-discipline experiment TIPTEQ (From The Incoming Plate to megaThrust EarthQuake Processes). An amphibious seismic network consisting of 18 landstations and 20 offshore stations was deployed on the island of Chiloé, the corresponding continental region around Chaitén and the offshore forearc between 41.5° S and 43.5° S (Figure 1). Average station spacing was 35 km. The network was installed and maintained by the University of Potsdam (Germany), the University of Hamburg (Germany), the Universidad de Concepción (Chile) and the University of Liverpool (UK). From November 2004 until October 2005 the onshore network observed 350 seismic events, an average of about 1 event per day.

For this region there is no local velocity model available and the seismicity is not known in detail. We used joint hypocenter inversion for 1-D velocity structure, station delays and hypocenters. The hypocenters define a 22-26 inclined Benioff zone, the maximal focal depth is 60 km. Main activity is situated parallel to the coast of Chiloé. The distribution of crustal seismicity can mainly be linked to volcanoes and the Liquine-Ofqui fault zone. We present focal mechanisms and a local 1D velocity model for the region.

We are planning to derive 3D structural models of the forearc by tomographic methods and receiver functions. The analysis of the stress field (moment tensor inversion) will contribute to the

structure and dynamics of the forearc, of the oceanic plate (fracture zones, wedge) and of the coupling zone.

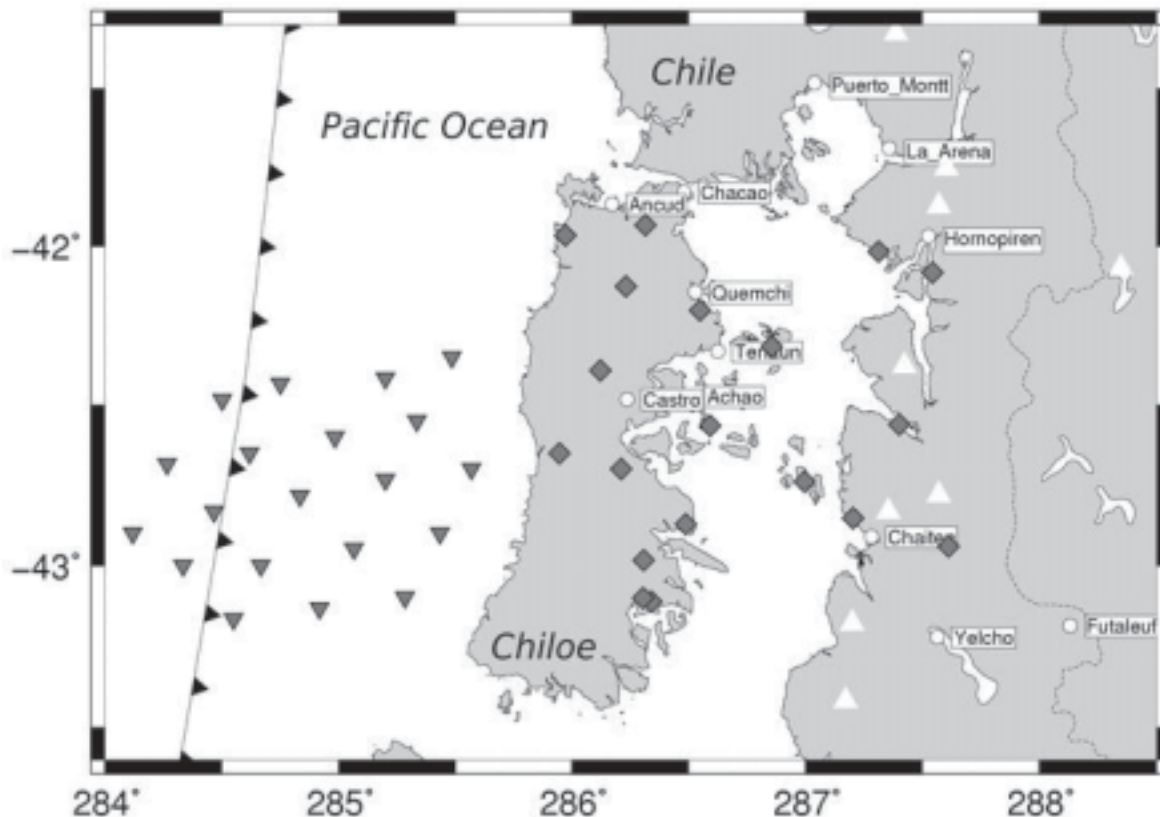


Figure 1: Temporary seismological network in Southern Chile. Seismological land stations are denoted by grey diamonds, off-shore stations (OBS/OBH) by inverted filled triangles. Recent volcanoes are indicated by white triangles.