



Cities on Volcanoes 9
November 20-25, 2016
Puerto Varas, Chile

'Understanding volcanoes and society: the key for risk mitigation'



Tectonic structure of the Southern Andes (37 ° S - 46°S) at short and long-term: analysis of geological, seismological and geodetic information

Francisco Letelier and Andrés Tassara

¹Dpto. Ciencias de la Tierra, Universidad de Concepción

Keywords: Tectonics, LOFZ, inherited structures, multiple data analysis

The segment between 37°S and 46°S in the Southern Andes is controlled by the interaction between the margin-parallel Liquiñe-Ofqui Fault Zone (LOFZ) and secondary arc-oblique structures. The LOFZ is a nearly 1,000 km long dextral strike-slip fault system, that absorbs part of the oblique convergence between Nazca and South America plates and is cross-cut by a series of NW-SE and NE-SW structures. Many of these structures have been interpreted as long-lived reactivated basement faults. Recent seismological and geodetic data have confirmed the active nature and dextral motion of the LOFZ and suggest that these oblique structures could be actively segmenting the system and playing an important role in the contemporary activity of some volcanic centers of the Southern Volcanic Zone (SVZ) located at or near its intersections. In order to evaluate this hypothesis, we are collecting an extensive georeferenced database for the whole Andean margin between 37°S and 46°S. The database includes: published and unedited information linked with structures and regional faults (mapped and inferred), paleomagnetism, thermochronology, ground deformation, crustal seismicity, and the automatic identification of lineaments from digital elevation models. With this information, we will perform a qualitative geologic-structural analysis contributing to the reliable determination of the LOFZ spatial geometry, clarifying its tectonic relationship with oblique structures in space and time. The analysis will also test the role they these structures could play on differential exhumation of crustal blocks and the location of active volcanism, further attesting for past and current geotectonic segmentation of the LOFZ-SVZ tectono-volcanic system.