

Structural model of the basement and its relationship with the Holocene activity of Antuco Volcano, Biobío Region, Chile.

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During the last decades there has been considerable progress in the understanding of the relationship between the structure of the substrate and the spatial distribution of volcanism. Today the relationship between the morphology of volcanic buildings, the orientation of dikes and the distribution of peripheral cones, with the state of regional and local stress, as well as with inherited structures is widely accepted. In this context, the Antuco (Holocene) - Sierra Velluda (Plio-Pleistocene) volcanic complex (37.5°S) is an excellent laboratory to study the link between tectonics and volcanism. In this sector, the role of the structures that have been recognized in the area, and whether they facilitate the development of volcanism and its minor eruptive centers, is still unknown.

Through the kinematic and dynamic analysis of fault data measured in the field, we demonstrate that in the area there is an extensional domain, reaffirming what was proposed by previous studies. Our results allow us to build a three-dimensional structural model, consisting of two sub-basins connected by a NW structural accommodation zone between them, that would correspond to a structure inherited from pre-Andean processes. Antuco and Sierra Velluda volcanoes are located transversely across this zone of weakness, marking a notorious NE lineage. It is possible that the intersection between the mentioned structures and their relationship with some NE faults present in the area, facilitates the ascent, location and development of Holocene magmatism and volcanism.