

INTERACTIONS OF ANDEAN TRANSVERSE STRUCTURES AND WEST-DIPPING THRUST FAULTS, SOUTHERN VOLCANIC ZONE, CHILE

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Margin oblique structures are common to subduction tectonics and are observed to play a significant role in regional structural systems. Constraining the mechanics between Andean Transverse Structures and the Southern Volcanic Zone, Chile, is essential to understanding the behavior of large thrust fault systems in convergent settings and their interaction with hydrothermal processes and mineral ore deposits. West dipping thrust faults at the eastern boundary of the Southern Volcanic Zone are located north of Tatara-San Pedro-Pellado volcanic field in the Curicó Province, an intense area of tectonic activity. A detailed study of these faults will provide a better understanding of geometries and mechanisms of these faults. My research will utilize field observations, aerial photography, and numerical modeling to characterize the geometry of west dipping thrust faults. Using Boundary Element Method models and constraints from field data, the state of stress in the Southern Volcanic Zone will be understood. With these calculated stresses, further models can be created to analyze how Andean Transverse Structures and fluid pressure affect rupture activity of the eastern fault system. This study will explicate our understanding of magma/hydrothermal interactions with fault systems, and how these interactions affect mineral ore formation.

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