



Late Quaternary Activity of the La Rinconada Fault Zone, San Juan, Argentina

Jeremy Rimando (1,2), Lindsay Schoenbohm (1,2), Carlos Costa (3), Lewis Owen (4), Jason Cesta (4), and Andres Richard (3)

(1) Department of Earth Sciences, University of Toronto, Canada (jeremy.rimando@mail.utoronto.ca), (2) Department of Chemical and Physical Sciences, University of Toronto Mississauga, Canada (jeremy.rimando@mail.utoronto.ca), (3) Universidad Nacional de San Luis, Argentina, (4) University of Cincinnati, USA

Most of the active permanent deformation in the Pampean Flat slab segment of the Central Andes is accommodated at the Andean Orogenic Front in Argentina. This is a narrow zone between the Eastern Precordillera and Sierras Pampeanas that comprises one of the most seismically active thrust zones on Earth. Active faults and folds in the region have been mapped but still largely lack information on rates of deformation which is essential to understanding the detailed distribution of regional strain and to estimating the seismic potential of individual faults. This study focuses on the 30-km-long La Rinconada Fault Zone (LRFZ) which is 15 km away from the city of San Juan in west-central Argentina and has a population of $\sim 100,000$. We use structural and geomorphic data combined with ^{36}Cl cosmogenic radionuclide surface exposure ages to constrain average long-term slip rates of the LRFZ. The LRFZ has a late Quaternary average shortening rate of 0.39 ± 0.01 mm/yr. This is on the same order of magnitude of, but slightly lower than, the slip rates of nearby east-dipping Eastern Precordillera structures such as the La Laja and Las Tapias faults. We interpret lower slip rates of the LRFZ are as a consequence of a highly distributed zone of deformation at the range of latitudes (31 to 32°S) where the LRFZ is found. While we estimate that the LRFZ is capable of generating earthquake magnitudes ranging from M_w 6.8–7.2, further investigations are required to determine timing and recurrence intervals of discrete events.