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Post-glacial Laguna del Maule: Multi-stage rhyolitic edifices built by >50 eruptive events over 14 kyr

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The Laguna del Maule (LdM) volcanic field on the Chile-Argentina border (36° 10'S) is a unique focus of postglacial rhyolitic eruptions. Study of the tephra and related lavas has established its postglacial eruptive history. Stratigraphy, chemistry, and grain-size distributions yield tephra-to-vent correlations for many of the > 50 young LdM eruptive events and, combined with radiocarbon dating, show that each of the 24 postglacial silicic vents identified by Hildreth et al. (2010, SNGM Boletín 63) were built over time by multi-stage eruptive sequences. The most voluminous began ~14 ka with high-silica rhyolite that is inferred to have erupted at the site of the subsequent lake and produced as much as 20 km³ of pyroclastic flows and fallout, impacting both sides of the border. A compositionally similar but distinct eruption then built a pumice cone on the nearby north lakeshore with widely dispersed fallout. Los Espejos lava flows overlie the pyroclastic-flow deposits and wrap around the pumice cone, capping a sequence that likely erupted in <2 kyr. Longest-lived and largest of the postglacial edifices is the Barrancas complex near the SE lakeshore, with effusive events that produced ~14 rhyolitic lava domes and flows and one large and many smaller explosive events that disrupted prior lavas and produced pyroclastic flows and falls between ~14 and ~3.5 ka. Near the east lakeshore, the Cari Launa and Divisoria centers were each built by two sequences of initially explosive, then effusive eruptions between ~10.5 and ~3.5 ka. Most recently, the Nieblas center produced several lavas and small pyroclastic flows and falls with no clear breaks between them; all likely erupted ~2 ka over months to years. Reconstruction of sequences that built the postglacial edifices around LdM shows a range of episode durations, from months to millenia.