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A tale of two ignimbrites: new ages from the Maipo Valley

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A large eruption from the 20 x 16-km Diamante caldera on the Andean crest sent voluminous pyroclastic flows both east and west. Eruption products are now preserved as extensive outcrops of rhyolitic non-welded ignimbrite scattered throughout much of the drainage areas of the Maipo and Cachapoal rivers in Chile. In Argentina, the pyroclastic flows were largely directed along the Yaucha, Rosario, and Papagayos valleys, producing a widespread pyroclastic plain in the northern foothills of Mendoza that is now widely covered by modern gravel deposits. Stern et al. (1984, *Rev. Geol. Chile*, 23) combined zircon fission track measurements from two separate, distal ash-flow deposits in the Chilean Central Valley to produce a single 450 ± 60 ka age. Lara et al. (2008, CGA) reported a 150-ka U-Th-He age; however, recent papers still cling to the older one. We support here the younger age, reporting two $^{40}\text{Ar}/^{39}\text{Ar}$ ages— 150.2 ± 3.1 and 150.5 ± 3.5 ka for plagioclase in pumices collected from Diamante ignimbrite deposits ~20 km east of the caldera in Argentina and ~100 km to the west in the Río Maipo valley in Chile. A small remnant of a slightly sintered rhyolitic ignimbrite that overlies fluvial gravels 150 m up the ridge separating the lower Río Yeso from the Río del Volcán tributary of the Río Maipo has been assumed by previous workers to be another outcrop of Diamante ignimbrite. Assuming the 450-ka age, Hynek et al. (2010, *Quat Geochronolgy*) proposed a 0.3 mm/y erosion rate in the Yeso valley. However, our new $^{40}\text{Ar}/^{39}\text{Ar}$ age for plagioclase from pumice in the non-welded base of this ignimbrite remnant yields 247 ± 8 ka. The 247-ka age indicates that (1) this is not a remnant of the Diamante ignimbrite and (2) erosion rates in the Yeso valley could be close to 0.6 mm/y, much higher than previously appreciated.