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Timing and distribution of the Los Chocoyos supereruption from Atitlán caldera (Guatemala)

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The Los Chocoyos (LCY) eruption from Atitlán caldera (Guatemala) is the largest eruption in the western hemisphere within the last 100 ka. Despite being an important stratigraphic marker horizon, a radioisotopic age for this eruption has remained elusive. To overcome this limitation, we apply ^{238}U-^{230}Th disequilibrium and (U-Th)/He dating (zircon double-dating; ZDD) in crystals from two fallout and one ignimbrite deposits [1]. The ZDD eruption ages for LCY are indistinguishable between samples with error-weighted averages of 75.1 ± 3.2 ka, 76.0 ± 2.5 ka, and 72.8 ± 3.5 ka (1σ, n = 16 each). Considering all individual zircon results as a single population, a weighted average ZDD age of 74.8 ± 1.7 ka (1σ; n = 48) is obtained. A reassessment of LCY eruptive volume based on 113 new outcrops and using a geographical information system indicates a new conservative volume of ~1,220 km^3, thus confirming the LCY as the first-ever recognized supereruption in Central America.

[1] Cisneros de León, A. et al. (2021) *J. Quat. Sci. 36*, 169–179.

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