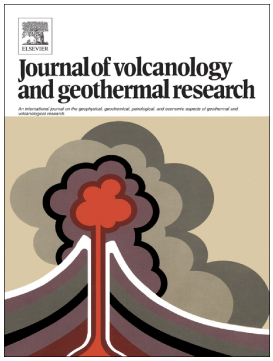

Boiling-over dense pyroclastic density currents during the formation of the ~100km3 Huichapan ignimbrite in Central Mexico: Stratigraphic and lithofacies analysis

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Abstract

A lithofacies analysis of the Huichapan ignimbrite has been undertaken to evaluate its depositional history from large pyroclastic density currents. The Huichapan ignimbrite is a massive ignimbrite sheet with a maximum runout of at least 55 km and thickness variations between 6 and 80 meters. The lower portion of the Huichapan ignimbrite consists of a large plateau [~100 km^3; 69 km^3 as dense-rock equivalent (DRE)] of massive ignimbrites with welding variations from densely welded to partly welded, devitrification, and high-temperature vapor-phase alteration. The lower part grades laterally to moderately welded and non-devitrified ignimbrites. These variations are interpreted as the sedimentation of density-stratified pyroclastic density currents erupted as boiling-over pulses from the Huichapan-Donguinyó caldera complex at a continuous rate, supporting deposition by quasi-steady progressive aggradation of sustained and hot currents. To the