



A reappraisal of the explosive activity of Xitle volcano, Mexico City.

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Xitle volcano is located in southern Mexico City, part of the megalopolis being directly built on its products. The volcano erupted around 1.7-2.0 ka, producing basaltic lavas and scoria that have already been the subject of several petrological and volcanological studies. Such studies revealed that, besides the volumetrically-dominant lavas that invaded an area now largely occupied by the city, explosive activity was not limited to cone-forming, but possibly reached intensities up to Violent Strombolian. Given the high risks posed by potential future activity in the area, a new investigation of the products of Xitle is under way, aimed at better defining the dispersal area and eruption/fragmentation mechanisms of the explosive phases of the eruption. Field survey already revealed that the area covered by fallout deposits is much larger than previously thought, and an extensive sampling campaign provided pyroclasts currently analysed for the following aspects: 1) grain size distribution and componentry; 2) vesicle and microlite textures, indicative of cooling and degassing conditions of the erupting magma; 3) morphology and surface chemistry of ash-sized pyroclasts, indicative of magma fragmentation (e.g., magmatic vs. hydromagmatic) and transport (e.g., primary vs. reworking) processes. Preliminary results indicate that the Xitle tephra share many features with products from well-characterized Violent Strombolian eruptions, suggesting a similar eruption process, partly controlled by in-conduit degassing and crystallization of magma.