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Volcanic activity in the Acambay Graben: a < 25 Ka subplinian eruption from the Temascalcingo volcano and implications for volcanic hazard.

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The Trans-Mexican Volcanic Belt (TMVB) contains a large number of stratovolcanoes, some well-known, as Popocatepetl, Iztaccihuatl, Nevado de Toluca, or Colima and many others of more modest dimensions that are not well known but constitute the majority in the TMVB. Such volcanoes are, for example, Tequila, San Juan, Sangangüey, Cerro Culiacán, Cerro Grande, El Zamorano, La Joya, Palo Huerfano, Jocotitlán, Altamirano and Temascalcingo, among many others. The Temascalcingo volcano (TV) is an andesitic-dacitic stratovolcano located in the Trans-Mexican Volcanic Belt (TMVB) at the eastern part of the Acambay Graben (northwest portion of Estado de México). The TV is composed mainly by dacitic, porphyritic lavas, block and ash deposits and subordinate pumice fall deposits and ignimbrites (Roldán-Quintana et al., 2011). The volcanic structure includes a summit caldera that has a rectangular shape, 2.5×3.5 km, with the largest side oriented E-W, parallel to major normal faults affecting the edifice. The San Mateo Pumice eruption is one of the greatest paroxysmal episodes of this volcano with pumice deposits mainly exposed at the scarp of the Acambay-Tixmadeje fault and at the northern and northeastern flanks of TV. It overlies a paleosol dated at 25 Ka. A NE-trending dispersion was obtained from field data covering an area of at least 80 km². These deposits overlie older lava flows and mud flows and are discontinuously covered and eroded by younger reworked deposits of Temascalcingo volcano. This event represents a highly explosive phase that generated a relatively thick and widespread pumice fallout deposit that may occur again in future eruptions. A similar eruption today would have a significantly impact in the region, overall due to the fact that there has been no systematic assessment of the volcanic hazard in any of the studies that have been conducted so far in the area. So, this is a pending and urgent subject that must be tackled without delay. Financed by grant DGAPA-PAPIIT IN-104615.