

Lessons from **Popocatepetl** volcano (Mexico): Ancient settlement buried by **lavas**, mudflows, and air-fall deposits.

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Popocatepetl volcano (19.02° N, 98.62° W) is 5452 m in altitude and capped by glaciers with a long Late Pleistocene-Holocene history. Volcanic activity has been intense during the last 10,000 years. Therefore, the valleys at the NE foothills of the volcano, covered by **airfall** ejects and drained by the runoff of the glaciers, became very attractive to ancient inhabitants of the **Xalizintla** Valley (XV) west of **Puebla** City, because of fertility of soils. The XV was occupied by humans about 2000 years ago who witnessed five events related to volcanic activity of Popo. 1) The studied **stratigraphy** shows that a **Plinian** eruption took place more than 2000 years ago covering the region with a yellow pumice. Thereafter, an incipient soil was developing when human beings arrived to the valley and used that soil to grow corn. Furrows, pottery along with other cultural remains support this. 2) After that, lava flows of basaltic **andesite** composition spilled out from a NE-trending fissure on the NE flank of the volcano, reaching the lowlands and covering part of the area occupied by the ancient inhabitants of the valley. 3) The lava flows dammed the glacial runoff forming a lake which was filled up quickly by **fluvioglacial** sediments. 4) Another eruption of Popo melted the glaciers and triggered a large scale mudflow that reached more than 20 km from the **vent**. This mudflow called the **San Nicol's lahar** is characterized by its hardness, thickness and length. 5) **Plinian airfall** deposits followed the mudflow. This pinky pumice is underlaid by surge deposits. The events described here are being taken into account for volcanic risk evaluation since several towns with a population of more than 23,000 people reoccupied again the **Xalizintla** Valley.