# VERTICAL VARIATION OF AMS ALONG SELECTED BASALT FLOW PROFILES, XITLE VOLCANO, MEXICO: ZONE-LAYER RECOGNITION BY MAGNETIC FABRIC

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Three selected basalt flow units from the Xitle volcano (2000-year-old, Basin of Mexico) are used to study the vertical variation of anisotropy of magnetic susceptibility (AMS) to examine their possible relationship with magnetic mineralogy, flow strain and general dynamic flow behavior of lava flows.

Selected profiles are 4.8, 5.0 and 6.6 m thick and are located at different positions inside the flows; the thickest one is at the flow border. Sampling was performed at intervals from 12 to 20 cm. Number of specimens was 42, 75 and 36, respectively. Measurements were performed with a KLY2 and a Minisep instruments, a comparative analysis with selected specimens was performed with both instruments. Jelínek statistic was applied, as well as density distribution analysis for determining maximum distribution areas of principal directions. Hysteresis curves, Curie temperatures and some ore microscopy analysis indicate that magnetic mineralogy is dominated by Ti-poor titanomagnetite and that large ilmenite grains are also present, their sizes increasing towards the flow center.

The k1 (maximum AMS axis) means broadly parallel the local geologically inferred flow direction, their inclinations point toward flow source. The respective k3 (minimum AMS axis) means reveal near horizontal main foliations (at least in 2 sites) defining dominant AMS ellipsoids dipping against flow. The density distribution analysis show that k3 individual directions have two maximums peaks; one of these peaks corresponding to a foliation dipping against the flow direction and the other one towards it, lying the k3 means among the two maximum peaks. A detailed analysis of the vertical variations of the AMS ellipsoids allowed identifying several zone-layers in the flow units, each one characterized with a particular AMS pattern. The lower layer in all cases shows ellipsoids dipping against flow; meanwhile the upper layer usually presents AMS ellipsoids dipping in favor of flow direction or dipping both against and favor of flow (site at flow border). Significant bottommost and topmost horizons and in cases thin middle layers show transversal ellipsoids, suggesting that all these layers and horizons have a rheological origin.

Anisotropy of magnetic susceptibility (AMS), Lava flow magnetic fabrics, Trans-Mexican volcanic field, Xitle volcano.

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