# Petrofabric of the acid volcanic rocks from the Southern Paraná Magmatic Province obtained via AMS: a contribution to the understanding of their emplacement

Letícia Freitas Guimarães[1], Maria Irene Bartolomeu Raposo[1], Valdecir de Assis Janasi[1], Edgardo Cañón-Tapia [2], Liza Angélica Polo[1]

[1] Instituto de Geociências, Universidade de São Paulo, leticia.guimaraes@usp.br; irene@usp.br; vajanasi@usp.br; lizapolo@gmail.com
[2] CICESE, Dept. of Geology, P.O. Box 434843, San Diego, CA 92143, USA. ecanon@cicese.mx

Anisotropy of magnetic susceptibility (AMS) technique has been largely employed for igneous rocks as an auxiliary tool for the reconstruction of magmatic flow directions, especially when rocks are characterized on a macroscopic scale as texturally isotropic. This is the case for most of volcanic occurrences. In this work AMS and other rock magnetic measurements were carried out in the older and younger units of a succession of intermediate to acid volcanic rocks in the southern portion of the Paraná Magmatic Province in order to understand the emplacement mechanism of these rocks. In conjunction with field evidence, the AMS results revealed structures indicative of an eruptive emplacement as lava flows and lava-domes.

Rock magnetic experiments allowed the recognition of "pseudo-single domain" magnetite as the carrying of the mean magnetic susceptibility, with grain sizes ranging from 0.75 to 25 µm for the older dacitic unit (Caxias do Sul dacites – CdSD) and from 2 to 25 µm for the younger rhyolitic unit (Santa Maria rhyolite – SMR).

AMS patterns from CdSD reveal horizontal foliations on the central part of lobed flow features, whereas foliations of the external parts dip on approximately opposite directions. Magnetic lineations suggest a main flow towards the NW. These results are consistent with observed patterns of cooling fractures and with patterns expected for confined flows.

Sampling of the SMR focused around a notable hill with a circular, dome-type structure. The results revealed the existence of different flow units. On the first one, magnetic lineation is suggestive of the frontal portion of lobed flows, with a flow main direction from NW to SE. On the outer, lateral sections divergent flows to the SSW and NE are revealed. Finally, magnetic lineations obtained for the samples collected closer and around the domic relief indicate divergent flow directions, which define a major circular shaped structure. Its central portion corresponds to the dome-type hills: a potential local emission center.

Our data point towards dome to coulée structures with associated compound lava flows (lobes). This type of volcanism implies in the existence of local emission centers.

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