

# **MAGNETIC FABRICS AND ROCK-MAGNETISM STUDIES OF EARLY-LATE CRETACEOUS MAFIC DIKE SWARMS FROM UBATUBA (SAO PAULO STATE, BRAZIL): PRELIMINARY RESULTS**

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The Mesozoic magmatism in Southern Brazil is represented mainly by the basaltic flows of the Serra Geral Formation, the dikes swarms from the Ponta Grossa Arch, Florianópolis, and along the coast between São Paulo and Rio de Janeiro, and several alkaline complexes that lie along tectonic features associated with the evolution of the Paraná Basin. The emplacement of the dike swarms and the alkaline complexes is related to the processes of separation between South America and Africa and, consequently, with the opening of Atlantic Ocean.

The studied swarms occur along the coast in the city of Ubatuba (NE of Sao Paulo State), and crosscut Archean and Proterozoic polymetamorphosed rocks of the Costeiro Complex. The dikes are basalts and lamprophyres, and they crop out side by side in the beaches. They range from a few centimeters up to 2 m wide for the lamprophyres, and up to > 10 m for the basalts. Their trend is predominately N40°-50°E with vertical dips.

Magnetic studies were performed on 19 basalt and lamprophyre dikes. Magnetic fabrics were determined by applying both anisotropy of low-field magnetic susceptibility (AMS) and anisotropy of anhysteretic remanent magnetization (AARM). Rock magnetism properties indicate that pseudo-single-domain grains of almost pure magnetite carry the magnetic fabrics. However, six lamprophyre dikes show an unusual magnetic behavior probably due to the presence of the iron carbonate siderite which was detected in magnetic measurements at liquid helium temperature. Normal AMS fabric acquired during magma flow is dominant in both swarms, and its  $K_{\max}$ - $K_{\text{int}}$  plane is parallel to the dike plane while the magnetic foliation pole ( $K_{\min}$ ) is perpendicular to it. The analysis of the  $K_{\max}$  inclination permitted to infer that all lamprophyre dikes were fed by horizontal flow ( $K_{\max} < 30^\circ$ ), while basaltic dikes were fed by both horizontal and inclined ( $K_{\max} > 30^\circ$ ) flows. The AARM fabric is either coaxial or better defined than AMS fabric. In addition, to better understand the tectonic assembly of the swarms, paleomagnetic studies are also being determined.

AMS, AARM, dikes

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