



Geology, petrology and geochemistry of the Florianópolis Dike Swarms

Natasha Sarde Marteleto¹, Valdecir de Assis Janasi², Luana Moreira Florisbal³

¹ Instituto de Geociências, Universidade de São Paulo, e-mail: natasha.marteleto@usp.br;

² Instituto de Geociências, Universidade de São Paulo, e-mail: vajanasi@usp.br;

³ Departamento de Geociências, Universidade Federal de Santa Catarina, e-mail: geoluana@yahoo.com.br

Diabase dike swarms are undoubtful important elements during the geological evolution of the voluminous ~134-131 Ma Paraná-Etendeka Magmatic Province (PEMP). Tectonics associated with the formation of the South Atlantic Ocean, preceded by rifting, can be better constrained by the combination of geochemical and geochronological studies of intrusive rocks with the stratigraphy of the onshore and offshore associated volcanic sequences.

Field work carried out in the Florianópolis Dike Swarm (FDS) in the Santa Catarina Island, South Brazil, showed that the main NNE-trend dikes attain thicknesses up to 70 m. They are locally cut by much thinner dikes oriented NNE and NNW.

Geochemical data allowed the identification of three sets of basalts, designated A, B and C. They are respectively similar to the Urubici, Pitanga and Ribeira magma-types from the PEMP lava pile in South America. Younger C-type dikes have porphyritic to glomeroporphyritic textures, with phenocrysts and clusters of plagioclase and pyroxene up to 2.5 mm. Those with affinities with A and B-types have seriated inequigranular texture. Associated rocks with acidic to intermediate composition (dacite to rhyolite) are rare, but may occur as composite dikes with basic margins.

The stratigraphy of the volcanic sequences at the south-central portion of the PEMP in South America can be compared to the chronology of dike emplacement in the FDS. The main NNE-trending dikes are correlative to the oldest Urubici-type lavas. On the other hand crosscutting dikes are similar to younger B and C-type basalts, typical of the northern portion of the PEMP. B-type dikes are occasionally crosscut by A-type dikes. This could be explained by: 1) a recurrence of magma batches not apparent in the volcanic column; 2) that our B and C types from the FDS are not from the same magma batch which originated the Pitanga and Ribeira basalts; or 3) assimilation and contamination processes while crossing the crust.

Financial Support: FAPESP, Process 2012/06082-6.

Key words: Florianópolis Dike Swarms, Paraná Magmatic Province, Geochemistry.