

INTERCALATIONS OF MVDS, BASIC AND ACID LAVA FLOWS: THE INTERACTION BETWEEN THE TWO SUB-PROVINCES OF THE PARANÁ IGNEOUS PROVINCE

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A profile between the locations of Foz do Areia and Entre Rios, along the PR-170 highway was performed with 89 petrographical descriptions and 130 X-ray fluorescence analysis and gamma-ray profile data of the drillhole 1-PH-001-PR. It was adopted the model with two sub-provinces: South (Sul-SSP) and Central North (Centro Norte – CNSP), and the classification of flows in 16 geochemical types characterized by the combinations of high (H) and low (L) contents of SiO₂, Zr, TiO₂ e P₂O₅ recently proposed for the Paraná Igneous Province (PIP). In the profile, the SSP is represented by **Type-1S** (LSi-LZr-LTi-LP) basalts and the CNSP by **Type-4** (LSi-LZr-HTi-LP) basalts and **Types-14** (HSi-HZr-LTi-HP) and **13** (HSi-HZr-LTi-LP) dacites to rhyolites. The drillhole's lithological description, combined with the gamma-ray profile, indicates two lava flows included in the paleozoical sedimentary sequence, four intertrapp sandstones and base and top vesicular zones of the lava flow. The first lava flows, classified as **Type-1S**, associated with intertrap sandstones, characterize the transitional contact between the Botucatu/Pirambóia Formations and the Serra Geral Group. **Type-1S** flows are the most frequent in the profile and has an accumulated thickness of 600 m. In the southern portion of the profile, **Type-4** lava flows (average thickness of 50 m) occur interleaved with the **Type-1S** lava flows. Both lava flows are composed of basalts with hypo- to holocrystalline textures and variolitic, flow or homogeneous structures. Aphyric to subaphyric basalts with plagioclase, augite and pigeonite in addition to opaque minerals, quartz, alkaline-feldspar and apatite as accessory minerals. Alteration minerals: celadonite, chlorite, carbonate and iddingsite. In the TAS diagram, they are at the basalt, andesi-basalt and trachy-basalt fields; in the R1-R2 diagram they are shown at the areas of tholeiitic association: basalt, latibasalt and andesi-basalt. Volcaniclastic rocks containing shards, pumice and fiamme-like structures, were recognized associated to the **Type-4** basalts. From the altitude of 1050 m to the top of the profile (1250 m) **Type-14** lava flows (HSi-HZr-LTi-HP) dominate, enclosing thin intercalations of the **Type-13** (HSi-HZr-LTi-LP) flows, being both incompatible elements enriched. They are composed by intermediate to acidic rocks. In thin section, euhedral to subhedral phenocrysts of andesine and augite showing zoning, corrosion rims and inclusions, occur immersed in the groundmass in isotropic arrangement. The cryptocrystalline groundmass shows glass under devitrification. In the TAS diagram, the samples are in the dacite and trachy-dacite fields and at the dacite, rhyodacite and even rhyolite fields in the R1-R2 diagram. An isolated and thin **Type-4** lava flow occurs at the top of the profile interleaved with the **Type-14** flows. High gamma-ray counts and the geochemical analysis allowed the identification of a single **Type-14** lava flow at the altitude of 950 m, intercalated within the **Type-1S** flows. Synchronous eruptive processes occurring in both sub-provinces originated the intercalation of the **Types 4, 14 and 13** (CNSP) lava flows interdigitated with **Type-1S** flows (SSP). The volcaniclastic rocks constitute the Mafic Volcaniclastic Deposits (MVDs) and indicate the occurrence of explosive events related to **Type-4** flows.

KEYWORDS: PARANA IGNEOUS PROVINCE, MAFIC VOLCANICLASTIC DEPOSITS, ACID LAVA FLOWS