Paper Number: 5097

U-Pb age in zircon (LA-ICP-MS) of alkaline rocks from Marapicu Massif (RJ), Brazil.

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Meso-Cenozoic magmatism registered in the Brazilian territory can be associated with two great magmatic events that occurred in the South American Platform, which are: (i) Tholeiitic Magmatism aged around 130-120 Ma (Ar-Ar), which is associated to the fragmentation of the West Gondwana, the opening of the South Atlantic Ocean and implantation of the Brazilian continental margin basins; and (ii) Alkaline Magmatism, which occurred due to the South American Platform drifting above a mantelic plume, culminating with the formation of the Southeastern Brazil Tertiary basins and platform uplifting phenomena. In the Southeast Brazilian region the continental alkaline magmatism occurs as plugs, stocks, dykes and sills presenting a general NE direction, in agreement with the basement structures that have a predominant ENE strike. In the continental margin and oceanic areas there are volcanic submarine cones associated with volcanoclastics rocks.

The Marapicu Massif in Southeast Brazil (Rio de Janeiro State) comprises an important alkaline intrusion formed by two plutons very close to each other (Marapicu and Mendanha). Recent studies have yielded different Ar-Ar ages for these intrusions (80 Ma and 65 Ma, respectively). The major Marapicu rock type is a nepheline syenite from which one sample was taken and analysed in this work for U-Pb dating by LA-ICP-MS. The zircon U-Pb isotopic data yielded the age of 78,0 ± 2,1 Ma ([Figure 1}, which is interpreted as the crystallization age of the intrusion. This result is in agreement with $^{40}Ar/^{39}Ar$ age (in hornblende) obtained previously. This shows a promising geochronological technique for the study of the alkaline intrusions, with important contribution to the Poços de Caldas - Cabo Frio lineament petrogenetic models.

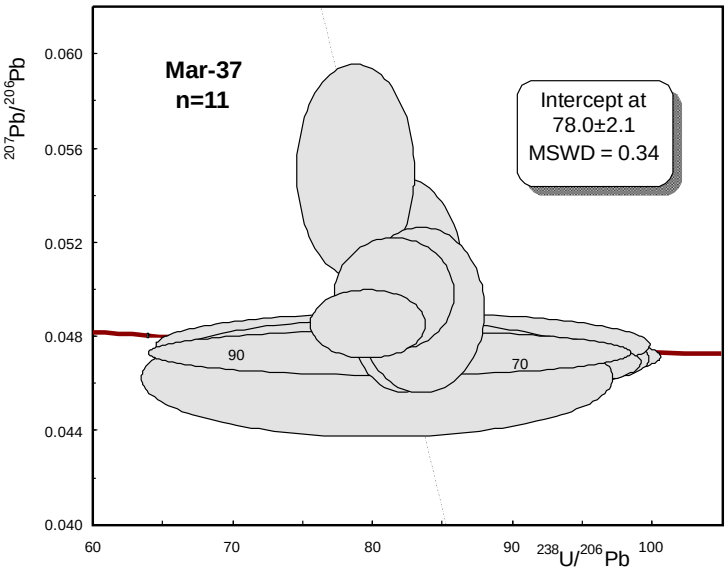

Figure 1: Concordia diagram for the Marapicu Massif.

The Marapicu Massif formation is probably due to a mantelic plume which aligns with several intrusive bodies that extend from the Poços de Caldas region in Minas Gerais State to the Cabo Frio region in eastern Rio de Janeiro State. This intrusion was followed by a crustal flexure due to a copious sediment deposition episode (dated about 84-65 Ma) in the offshore Santos Basin. This flexure would have provoked the disruption of the crust in the onshore region, parallel the shoreline and created an extensive structure that extends from Curitiba city (Curitiba Basin) in the Parana State towards the São Paulo, Taubaté, Resende, Volta Redonda and Macacu basins in Sao Paulo and Rio de Janeiro states, ending in the coastal region between Búzios and Barra de São João (Barra de São João Graben).