AGU FALL MEETING
San Francisco | 14 – 18 December 2015

T33F-2997: The Temporal Relationship Between Alkaline and Tholeiitic Magmatism in the Paraná-Etendeka Igneous Province: ID-TIMS U-Pb Ages of the José Fernandes Gabbro and Dykes of the Ponta Grossa Arch, Brazil

Wednesday, 16 December 2015
13:40 - 18:00
Moscone_South - Poster Hall

The Ponta Grossa Arch (PGA) region in S-SE Brazil hosts prominent NW-oriented lineaments with hundreds of tholeiitic dykes of the Ponta Grossa Dyke Swarm (PGDS) and also alkaline intrusions concentrated between the Guapiara and São Jerônimo-Curiúva lineaments. Many of these intrusions lack more robust geochronological data; the alkaline intrusions appear to be both coeval with (e.g. Jacupiranga, Juquiá with ~130 Ma) and much younger than (e.g. Tunas, Cananéia with ~85 Ma) the adjacent Paraná basaltic lavas.

We present in this work the first ID-TIMS U-Pb baddeleyite-zircon ages for diabase dykes of the Guapiara Lineament and for an alkaline intrusion (José Fernandes Gabbro) in order to determine more precisely the space-time relation between alkaline and tholeiitic magmatism in the PGA.

The dated diabase dykes show high TiO_2 (up to 4.5 wt%) and variable Sr (405-890 ppm). Baddeleyite-zircon concordia ages are 130.3 ± 0.5 Ma (all uncertainties reported at 2σ) and 131.3 ± 0.7 Ma, within the range of previously reported step-heating $^{40}Ar/^{39}Ar$ ages (133.1 ± 0.5 to 130.8 ± 0.4 Ma), confirming a good coherency between crystallization and cooling ages.

Three distinct samples of the José Fernandes Gabbro were investigated (melagabbro, banded gabbro and quartz monzogabbro). Preliminary baddeleyite U-Pb ages obtained for a crust-contaminated quartz monzogabbro (52-56% SiO_2; ~4% K_2O; $\delta^{18}O$= +6.7 to +7.5‰; eNd(T)= -10) yielded a weighted mean $^{206}Pb/^{238}U$ data of 133.56 ± 0.31 Ma as the age for the intrusion. The age is about 2 m.y. older than the U-Pb ages obtained for the diabase dykes of the PGA.

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