

## PARANÁ MAGMATIC PROVINCE AGE FROM HIGH Th/U MAGMATIC ZIRCON, SOUTHERN BRAZIL

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**RESUMO:** The Paraná magmatic province in South America and the small Etendeka remnant in Namibia, Africa, is one of the largest igneous provinces (LIPs) in the world, closely related with the Lower Cretaceous opening of the South Atlantic Ocean. The province comprises the Serra Geral Formation, the formal stratigraphic name for the lavas in Brazil. The large volume of magma generated in a comparatively short period of time has long been linked to upwelling of deep and hot mantle plumes - Tristan mantle plume. The Paraná lavas are composed mostly of tholeiitic basalt and basaltic andesite (>90% by volume), but significant quantities of acid rocks (rhyodacite, quartz latite) cap the sequence near the continental margin. New U-Pb sensitive high-resolution ion microprobe (SHRIMP II) data on zircons from the Paraná magmatic province are presented on four rocks. One rock is a tholeiitic high-Ti, Pitanga type, the best estimate for the composition of the dominant component in the early stages of the Tristan plume and three are acid volcanic rocks from the low-Ti Palmas and high-Ti Chapecó types, which are related to the late stage in continental magmatic activity. Igneous zircons from the four volcanic rocks yield the following volcanic ages, within error:  $134.4 \pm 1.1$  Ma (basalt),  $134.6 \pm 1.4$  Ma (rhyodacite),  $134.8 \pm 1.4$  Ma (quartz latite) and  $135.6 \pm 1.8$  Ma (quartz latite). The age of Paraná magmatism based on Ar-Ar geochronology from previous studies has two divergent ranges: 1) one to two million years with magmatic peak at 131-133 Ma; 2) over ~10 m.y. between 137 and 127 Ma. Our results show that the bimodal volcanics of the province, at least to the south of the Piquiri lineament, indicate that duration of magmatism was 1 million years with a main pulse at ~135 Ma, about 2% older than proposal one, more akin to a short period of magmatism. The high Th/U ratios in zircons from basalt (5.4), quartz latite (~3.0) and rhyodacite (1.5) are characteristic of mantle-derived melts and may indicate crustal contamination in the more felsic rocks. These results are most significant for the understanding of time relations in this large intraplate magmatic province.

**PALAVRAS-CHAVE:** PARANÁ MAGMATIC PROVINCE; ZIRCON IN BASALT; SHRIMP GEOCHRONOLOGY.