

EVALUATION OF LAVA EMISSION RATES IN THE PARANÁ VOLCANIC PROVINCE

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Zircon U-Pb dating with the USP-SHRIMP-IIe establishes a long time period (135-119 Ma) of lava emission in the Paraná volcanic province of South America. Based on the 16 Ma duration of basaltic and rhyodacitic volcanism, the emission rate was 0.03 km³ per year when a homogeneous distribution of emission is assumed along the entire 562000 km³ of lavas and near-surface intrusions. But the age of large tracts of the province by ⁴⁰Ar/³⁹Ar, K-Ar, Rb-Sr, Re-Os and U-Pb methods indicate a peak of magmatic activity at 134 Ma. We presently report zircon U-Pb ages by the USP-SHRIMP-IIe at 134 Ma but ranging to 119 Ma. In order to find and concentrate zircon from basalts it is necessary to first chemically analyze the rocks so only high-Zr (> 200 pm) samples are selected. The large age spread is significant because other large intraplate basaltic provinces, e.g. Columbia River, Deccan and Karoo, evolved during approximately 1-3 Ma. The long duration may also explain the absence of mass extinction of species in the Lower Cretaceous. This is because the generation of greenhouse gases by volcanism (mostly CO₂, CH₄) was spread over a longer (16 Ma) period of time, allowing Gaia to recover its atmosphere before significant warming.