EVALUATING THE TEMPORAL LINK BETWEEN SILICIC MAGMATISM FROM THE PARANÁ MAGMATIC PROVINCE AND THE VALANGINIAN WEISSERT EPISODE USING HIGH-PRECISION U-Pb ZIRCON GEOCHRONOLOGY

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Large Igneous Province (LIP) magmatism is thought to be responsible for global climate changes, which have led in some cases to major mass extinction events during the Phanerozoic. The breakup of Gondwana during the Lower Cretaceous produced the Paraná-Etendeka LIP, with up to 1,000,000 km^3 of preserved volcanic rocks of dominantly basaltic composition and is one of the world's largest LIPs. Silicic volcanic rocks are relatively abundant compared to other continental flood basalt provinces and are divided into Palmas (low-Ti) and Chapecó (high-Ti) types. The current paradigm suggests a temporal correlation between the Paraná-Etendeka volcanism and the Valanginian Weissert Episode, with volcanic activity before and during the associated $\delta^{13}C$ excursion and Hg enrichment in the sedimentary record. The Valanginian Weissert Episode is an important episode of environmental change, characterized by a global-scale carbon cycle perturbation and a biotic crisis, very likely due to excess atmospheric CO_2 and is defined by the positive $\delta^{13}C$ shift recorded in several sediment sections across the Tethys, North Atlantic and Pacific realm. To test if a temporal connection between the Paraná Magmatic Province (PMP) volcanism and the Valanginian $\delta^{13}C$ excursion exists, the precise timing and duration of the volcanic activity in the province needs to be ascertained. In this study, we significantly revise the timescales of magmatism and environmental impact of the PMP using high-precision U-Pb zircon geochronology. We present new ages from the low-Ti Palmas sequence (Anita Garibaldi, Caxias do Sul and Jacuí dacites, and Santa Maria rhyolite), obtained by chemical abrasion-isotope dilution-thermal ionization mass spectrometry (CA-ID-TIMS), combined to Hf isotopic data of several dated zircon crystals to evaluate the melt sources and assist in the interpretation of U-Pb dates. Our data demonstrates that significant volumes of silicic magma of the PMP erupted very rapidly at *ca*. 133.6 Ma, providing evidence for a very short duration of the main magmatic event of the PMP (<100 ka). Our high-precision ages are systematically younger than previously accepted and postdate the major positive carbon excursion. Furthermore, our new ages are *ca*. 1.5 Ma younger than the 135.22 Ma age recently determined for the Valanginian Weissert Episode, reinforcing the hypothesis that PMP silicic magmatism was likely not the triggering mechanism for the Valanginian positive $\delta^{13}C$ excursion.