



Zircon Hf-O isotopes and U-Pb ages from the Central Atlantic Magmatic Province (CAMP) help constrain its mantle sources and relationship to the end Triassic mass extinction.

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The Central Atlantic magmatic province (CAMP) is preserved as intrusives and minor flood basalt lavas, which crop out in Europe, North America, South America and Africa, roughly along the edges of the Atlantic Ocean. The magmatism mostly occurred over a short period of time between 201.6 and 201 Ma (according to U-Pb ages) and has been shown to occur synchronously with the End Triassic extinction (ETE), strongly suggesting a causative relationship. Sill injection into the Brazilian Amazonian sedimentary basin rich in volatile rich organic sediments and evaporates was synchronous with the ETE. This has led to postulation that interaction between the sills and the organic rich sediments and subsequent degassing of volatiles from the sediments and/or magmas triggered the ETE.

Here we report new U-Pb zircon ages for sills within the Amazonian basin which show that magmas were injected continually into the basin over ~ 200 ka after the initial syn-extinction pulse. We also report new Hf and O isotope data from the dated zircon crystals from the Amazonian sills and other CAMP intrusions, which suggest a relatively homogenous source for the CAMP magmas with little evidence for upper crustal contamination, which is consistent with other geochemical tracers. We conclude by discussing in detail the relationship between the CAMP intrusives and the ETE and we suggest that metamorphism of volatile rich sediments by the CAMP sills is likely a major contributor to the climate change that accompanied the CAMP and caused the ETE.