Crustal assimilation during CAMP emplacement and its impact on the End Triassic mass extinction: constraints from zircon.

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The Central Atlantic magmatic province (CAMP) is dominantly preserved as intrusives roughly along the edges of the Atlantic Ocean. U-Pb ages indicate that the magmatism occurred over ~600 ka between 201.6 and 201 Ma and was synchronous with the End Triassic extinction (ETE), suggesting a causal relationship. Sill injection into the Brazilian Amazonian sedimentary basin, which contains abundant volatile rich organic sediments and evaporates was also synchronous with the ETE. This has led to postulation that interaction between the sills and the sediments leads to degassing of volatiles and may have triggered the ETE.

Here we report new U-Pb zircon ages for sills in the Amazonian basin which show that magmas were continually emplaced over ~200 ka. We also report Hf and O isotope data from dated zircons from the Amazonian sills and other CAMP intrusions, which suggest a relatively homogenous source for the CAMP with some upper crustal contamination presumably during emplacement, consistent with other geochemical tracers. We discuss the relationship between contamination of the intrusives and the ETE and suggest that this contamination may contribute to the volatile load of the magmas and therefore also to their degassing.