

Geochronological constrains on mega-eruptive pulses in the Central Atlantic magmatic province (CAMP).

(Proposer: Prof. Andrea Marzoli)

$^{40}\text{Ar}/^{39}\text{Ar}$ age data obtained on the CAMP have shown that the magmatism occurred between about 201 and 192 Ma with peak activity at ca. 201 Ma. More recently, U/Pb ages on zircon from CAMP intrusives have refined this picture, showing that: 1) most activity occurred between ca. 201.7 and 201.1 Ma; 2) that magmatism seems formed by main pulses at ca. 201.55, 201.43, and 201.36 Ma. However, U/Pb geochronology is limited to the few (mostly intrusive) rocks where zircon is available. Fortunately, new mass spectrometers developed for $^{40}\text{Ar}/^{39}\text{Ar}$ dating are now capable of reducing analytical errors to as little as 0.1 Ma (at ca. 200Ma). With such resolution, it should be possible to check in detail the eruptive history of the CAMP and explore mechanism by which magmatism can synchronously emplace over distances in excess of 8000 km. Moreover, the timing of CAMP emplacement will be compared with the three main Carbon isotope excursions measured in end-Triassic sediments worldwide, posing detailed constraints on the relation between CAMP and the end-Triassic extinction.

The aim of this project is thus to date stratigraphically well positioned samples (40-50) by means of the Argus mass spectrometer at Perth, Curtin University, in collaboration with Prof. Fred Jourdan. Samples are mostly available and only a limited number will be sampled ex novo. Geochemical analyses will be furthermore performed in order to verify any time-related geochemical variation on the global scale of CAMP, from Europe to South America.

The candidate is expected to spend at least 6 months at Curtin University.

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