AN INTERNAL REFERENCE SAMPLE FOR APATITE FISSION-TRACK ANALYSIS

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Analytical methodologies can be greatly improved if an adequate series of standard samples is available. In order to enrich the reference sample-set for fission-track dating of apatite, we have studied an apatite (sample VC1) from an olivine piroxenite, outcropping in the Canaã Valley, Espirito Santo, Brazil, chosen for its abundance in the rock and for its relatively high fission-track density. Confined track length measurements were performed by three analysts, whereas fission-track ages corresponding to two different irradiations were determined by two analysts. Length distributions (mean length 13.08 mm, mean standard deviation 1.71 mm) as well as ages (weighted mean 94.1 ± 1.6 Ma, 1s) showed good reproducibility. Computer thermal history modelling applied to analytical results yielded a time-temperature path well consistent with geological studies, that correlated cooling of these rocks with the opening of the South Atlantic Ocean. Similar results had been obtained in other sector of the Brazilian coast as well as in the Atlantic continental margin of SW Africa. Apatite VC1 peculiarities, considering also its relatively high content of confined tracks, make it a very promising additional standard which experienced a more complex thermal history in comparison with the volcanic FCT and Durango standard apatites. Sample VC1 may turn very useful for comparison of measurements performed by different analysts and/or using different equipments and for testing various computer modelling programs used in apatite fission-track analysis.