



Geomagnetic excursion recorded in 80 ka old lava sequence on Tristan da Cunha, South Atlantic Ocean

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We sampled three sequences with a total of 40 lava flows from the main volcanic sequence of the South Atlantic island Tristan da Cunha. All flows were erupted around 80 ka ago, presumably within a short time interval beyond the resolution of our Ar/Ar data. Primary titanomagnetite and high temperature oxyexsolved magnetite are present in all samples to various proportions. Occasionally, titanomaghemite is observed. Paleointensity results were obtained for 41 samples from 11 flows by a modified Thellier method. Some paleointensity results were obtained only after correction for thermal alteration during the experiments. Good agreement to paleointensity results of samples without thermal alteration confirms the validity of the alteration correction in many cases. The paleointensity results are around 25 microT, leading to virtual dipole moments of approximately halve of today's value. The paleomagnetic directions recorded in the upper sequence change from normal to intermediate with VGP latitudes down to 45° and back to normal. Our lava sequence gives the so far strongest evidence for a geomagnetic excursion at around 80 ka, which is presumably identical to features observed in sedimentary geomagnetic records (e.g. Bleil and Gard, 1989) and also to an intermediate direction observed in a lava from Japan (Tanaka and Kobayashi, 2003). We have thus clearly identified a global geomagnetic excursion between the well studied Laschamp and Blake geomagnetic excursions.