Geophysical Research Abstracts
Vol. 14, EGU2012-10948, 2012
EGU General Assembly 2012

Paleo- and Rockmagnetic Studies on the Kirkpatrick Basalts of Early Jurassic Age, Northern Victoria Land, Antarctica

V. Bachtadse (1) and C. Rolf (2)

(1) Dept. Earth and Environmental Sciences, Ludwig-Maximilians-Universität, München, Germany (valerian@lmu.de), (2) Leibniz-Institut für Angewandte Geophysik, Hannover, Germany (Christian.Rolf@liag-hannover.de)

Continental Flood Basalts (CFB) such as the Karoo-Ferrar province of early Jurassic age are interpreted as having been emplaced over huge continental areas and within a relatively short period of time of less than 1m.y. and therefore are often linked to mass extinctions. Whether the Karoo-Ferrar volcanic rocks of early Jurassic age meet the requirement of rapid extrusion has recently been challenged and geochronological data suggests a longer duration of the volcanic activity of up to 6 m.y. If this extended period of emplacement is realistic than it becomes questionable whether the end-Plienbachian mass extinction is linked to the Karoo-Ferrar CFB at all. Taking into account that the early Jurassic geomagnetic field displays extremely high reversal rates, any volcanic sequence which spans more than 1m.y. should record at least one, but probably more, reversals of the Earth magnetic field. Here we report paleo- and rockmagnetic results from the well dated (^{40}Ar/^{39}Ar 183.4$\pm$1.4 m.y. and U/Pb 183.8$\pm$1.6 m.y.) Kirkpatrick Basalts of the Mesa Range, Antarctica. Here at least 40 volcanic flows are exposed totalling to approx. 800m of thickness. First paleomagnetic results show a quite homogeneous distribution of magnetic properties and directions across the section. Maximum unblocking temperatures are generally in the order of 580°C, maximum coercivities are around 60mT. Both thermal and alternating field demagnetization experiments reveal univectorial decay of the magnetization towards the origin of the projection above 100 to 150°C. The resulting directions of positive polarity exclusively point towards the southwest with intermediate to steep negative inclinations. This is in accord with data presented earlier and opens several possible interpretations. The lack of reversals might either point towards a remagnetization event of Cretaceous age or be indicative for a emplacement of the volcanic sequence during a very short time interval during the Jurassic.