



Interactive  
Comment

## ***Interactive comment on “Paleointensities on 8 ka obsidian from Mayor Island, New Zealand” by A. Ferk et al.***

**A. Muxworthy (Referee)**

adrian.muxworthy@imperial.ac.uk

Received and published: 22 August 2011

This paper describes a detailed palaeointensity study of 8ka obsidian from NZ. The use of obsidian is rare in palaeomagnetic studies, but due to its single domain character appears to be a reliable palaeointensity recorder. The southern hemisphere locality is also rare, making the data particularly important for global geomagnetic field models. The study includes detailed rock magnetic analysis, and attempts to determine the anisotropy of thermoremanence and the effect of cooling rate. Both of the latter experiments suffered from the thermal chemical instability of the samples.

This is a well written paper which should be published after a few minor alterations:

1. the discussion (and conclusions) should be extended to include further discussion

Full Screen / Esc

Printer-friendly Version

Interactive Discussion

Discussion Paper



of the potential future applications and importance of obsidian in palaeointensity and palaeomagnetic studies generally. Are there any potential experiments which could be used to determine the mineralogy.

2. While non-interacting single-domain systems show an increase in thermoremanence intensity with longer cooling times, using a Preisach model, Muxworthy et al. (2011), showed that the thermoremanence of magnetostatically interacting SD systems decreases with increased cooling times. Given this difference in behaviour, the use of cooling rate corrections needs to be justified, i.e., how well the interactions within your system justified?

Muxworthy, A. R., D. Heslop, G. A. Paterson, and D. Michalk (2011), A Preisach method for estimating absolute paleofield intensity under the constraint of using only isothermal measurements: 2. Experimental testing, *J. Geophys. Res.*, 116, B04103, doi:10.1029/2010JB007844.

---

Interactive comment on *Solid Earth Discuss.*, 3, 679, 2011.

[Full Screen / Esc](#)[Printer-friendly Version](#)[Interactive Discussion](#)[Discussion Paper](#)