



A Comparison of two Brunhes Chron Geomagnetic Excursions Recorded by Neighbouring North Atlantic Sites (ODP Sites 1062 and 1063)

M. Bourne (1), C. Mac Niocaill (1), M. F. Knudsen (2), A. L. Thomas (1), and G. M. Henderson (1)

(1) Department of Earth Sciences, University of Oxford, United Kingdom (mark.bourne@earth.ox.ac.uk), (2) Department of Earth Sciences, Aarhus University, Denmark

A full picture of geomagnetic field behaviour during the Blake excursion is currently limited by a paucity of robust, high-resolution records of this ambiguous event. Some records seem to point towards a 'double-excursion' character whilst others fail to record the Blake excursion at all. We present here a high-resolution record of the Blake excursion obtained from Ocean Drilling Program (ODP) Site 1062 on the Blake Outer Ridge (ODP Leg 172). Palaeomagnetic measurements in three cores reveal a single excursionsal feature associated with a broad palaeointensity low, characterised by rapid transitions (less than 500 years) between a stable normal polarity and a fully-reversed, pseudo-stable polarity. A relatively high sedimentation rate ($\sim 10 \text{ cm kyr}^{-1}$) allows the determination of transitional field behaviour during the excursion. Rather than assuming a constant sedimentation rate between assigned age tie-points, we employ measurements of $^{230}\text{Th}_{xs}$ concentrations in the sediment to assess variations in the sedimentation rates through the core sections of interest. This allows us to determine an age and duration for the two excursions with greater accuracy and known uncertainty. Our new age model gives an age of 127 ka for the midpoint of the Blake event at Site 1062. The age model also gives a duration for the directional excursion of $7.1 \pm 1.6 \text{ kyr}$.

This duration is similar to that previously reported for the Iceland Basin Excursion ($\sim 185 \text{ ka}$) from the nearby Bermuda Rise (ODP Site 1063), which recorded a $\sim 7\text{-}8 \text{ kyr}$ event. Similarly, a high sedimentation rate ($10\text{-}15 \text{ cm kyr}^{-1}$) at this site allows a high-resolution reconstruction of the geomagnetic field behaviour during the Iceland Basin Excursion. The Site 1063 palaeomagnetic record suggests more complicated behaviour than that of the Blake excursion at Site 1062. Instead, transitional VGP paths are characterised by stop-and-go behaviour between VGP clusters that may be related to long-standing thermo-dynamic features of the core-mantle system. The long duration of fully reversed directions at the two sites is somewhat longer than that typically assumed for excursions and appears to suggest that there may be a degree of stability associated with the two excursionsal events.

We will present a comparison of the geomagnetic field behaviour of the two excursions as recorded at these two sites.