Geophysical Research Abstracts, Vol. 9, 09087, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-09087
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The British Tertiary Volcanics : origin, history and new paleogeographic constraints for the North Atlantic

S. Rousse (1), M. Ganerød (1,2), M.A. Smethurst (1), T.H. Torsvik (1), T. Prestvik (2)

(1) Geological Survey of Norway, Leiv Eirikssons vei 39, 7491 Trondheim, Norway, (2) Norwegian University of Science and Technology. NTNU, Trondheim, Norway

Large Igneous Provinces, overwhelmingly of basaltic affinity constitute the surface expressions of catastrophically rapid dissipation of large quantities of internal heat. Subsequent to their extrusion, most LIPs have changed position in the Earth's surface due to plate motions. The North Atlantic Igneous Province (NAIP) represents the 3rd largest magmatic event on Earth for the last 150 Ma. The NAIP formed during two major magmatic phases: a pre-break-up phase (62-58 Ma) and a synbreakup phase (56-54 Ma) contemporaneous with the onset of North Atlantic sea floor spreading. The formation of the NAIP has been linked to the proto-Icelandic plume through paleogeographic reconstructions and geochemical observations. Since the late 1980's much of the research focus on the NAIP has been guided by the understanding of the genetic relationship between North Atlantic magmatism that began in the earliest Palaeocene, the genesis/position of the Iceland Hotspots and/or related mantle plume(s) through the Cenozoic, and the change at ˜54 Ma from a long period of continental rifting and thinning of sea-floor spreading. However, despite the number of data available, the temporal and physico-chemical ties between NAIP rocks, hotspot motion and continental break-up have not been demonstrated to fit a single regionally applicable and consistent geodynamic model. For example, discrepancies between recent palaeomagnetic poles from western Greenland and the Faeroe Islands (Riisager et al., 2002) and older data from the British Tertiary Igneous Province (BTIP) have questioned the reliability of the latest. Therefore, to ultimately understand the tertiary evolution of the North Atlantic and its links with the proto-Icelandic plume, extensive palaeomagnetic and 40Ar/39Ar sampling on the lava fields of the British Igneous Provinces (Isle of Skye, Isle of Mull, Antrim Plateau) has been initiated. These data provide new insights on the BTIP formation and we will review their implications for

the ’early’ palaeogeographic evolution of the North Atlantic.