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High-Latitude, paleodirectional and paleointensity results of 0.5-6.5 Ma lavas from Jökuldalur and Fljotsdalur, north-eastern Iceland

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Recent paleomagnetic results of extrusive rocks from high southern latitudes (>60S) and high northern latitudes (>60N) have been hypothesized to reflect a hemispheric asymmetry of the geomagnetic field on time-scales of 10^5 to 10^6 years, with higher and more stable fields in the north. However, this interpretation is based mainly on a single, high southern latitude data set and on high northern latitude rocks that are mostly younger than 100 Kyr. The sparsity of modern data sets from high latitudes questions the validity of such a long-lived hemispheric geomagnetic asymmetry. In 2013 and 2014, we sampled basaltic lava flows in Jökuldalur and Fljotsdalur, north-eastern Iceland, to deliver high-quality paleodirectional and paleointensity results from high northern latitudes (65N). More than 2300 cores were sampled from ∼170 flows, with ∼70% and ∼97% of the cores being oriented using a sun compass in Jökuldalur and Fljotsdalur, respectively. Hand samples were taken for new 40Ar/39Ar ages. Here, we present 10 new paleointensity estimates from Jökuldalur for the Matuyama period (∼1-2 Ma). Results are also presented of new paleodiretional results for the 0.5 – 6.5 Ma field. Our results confirm the existence of a geomagnetic hemispheric asymmetry on time-scales of 10^6 years. In particular, we find a VADM of ∼55 ZAm2 during the Matuyama (∼1-2 Ma), compared with only ∼30 ZAm2 for the southern hemisphere during the same period.