

北大西洋の大陸氷床発達期 (MIS100) における千年スケールの古環境変動の岩石磁気学的研究

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Millennial-scale rock magnetic variations indicating instability of North Atlantic environments during MIS 100

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This study investigated the millennial-scale environmental change from a sediment core (IODP Site U1314) in the Gardar drift located in the subpolar North Atlantic. We have performed Ice-rafted detritus (IRD) counts, XRD measurement, rock-magnetic analysis of the sediments at every 100~200 years (at every 2 cm intervals) from 2.55 to 2.50 Ma, including the period of marine isotope stage (MIS) 100.

Eight IRD events were recognized during MIS 100 with a periodicity of three- to five-thousand years. The maximum IRD flux was as large as 15,000 - 30,000 grains/cm²kyr. This is comparable with the IRD flux at Site U1314 during the mid-Pleistocene. The rock-magnetic analysis demonstrates that quick decrease associated with IRD events and succeeding gradual recover was observed in M_{rs}/M_s (saturation remanence/ saturation magnetization) and H_c (coercivity).

The observed variation in these magnetic parameters is interpreted by the change in the intensity of sediment transport by ISOW (Iceland-Scotland overflow water) that transports sediments with fine magnetic grain size from Icelandic sources to the Gardar drift. The sediments in Icelandic sources are considered to have finer magnetic grain size than any other sediments which are transported to the Gardar drift. Therefore, the coarser magnetic grain sizes (low values of M_{rs}/M_s and H_c) associated with IRD events is explained by relatively low intensity of sediment transport by ISOW.