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低温及び高温磁気測定による北大西洋海底堆積物コア（IODP Site U1314）の磁性鉱物の分析
Magnetic minerals of a sediment core (IODP Site U1314) determined by low-temperature and high-temperature magnetism

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Magnetic minerals in the sediments from IODP Site U1314 in the North Atlantic have been investigated by low-temperature magnetometry and high-temperature magnetometry. Site U1314 is located in the southern Gardar Drift at 2820 m water depth. In the post-glacial Gardar Drift, the source area for the terrigenous material transported by the bottom current is the Iceland Faeroe Ridge and the Faeroe Bank Channel. Thermomagnetic curves of the sediments show reversible curves in heating and cooling with the Curie temperature of ~580 degrees, indicating low Ti-content titanomagnetite (Kissel et al., 2009). In contrast, in the thermomagnetic curves of sediments of 2~3 Ma, although magnetite is considered as the dominant magnetic mineral, contribution of an additional component is suggested from the small decrease during heating in magnetization at around 250 degrees, and higher magnetization (Js/J0) along the cooling curve than along the heating curve (Zhao et al., 2011). A possible explanation for this is the magnetite formation by heating from titanomagnetite, titanomaghemite, or pyrite. In the results of low-temperature magnetometry, magnetite is considered as the dominant magnetic mineral of the sediments (Zhao et al., 2011). The results also indicate that the magnetite suffers surface maghemization but that maghemization is not very severe because Verwey transition is observed at ~110 K.

In the temporal variation in Mr/Ms and Hc during the period including marine isotope stage (MIS) 100, quick decrease associated with IRD events and succeeding gradual recover was observed in these parameters. In the thermomagnetic curves of these sediments, the dip around 250 degrees is observed more clearly for the periods without IRD events than for the periods with IRD events. Further, the dip is more apparent during the interglacial period (MIS99 and 101). The results suggest millennial-scale variability in the bottom current as well as the variability associated with glacial-interglacial cycles.

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