

Natural remanent magnetization and rock magnetic parameters from the North-East Atlantic continental margin : Insights from a new, automated cryogenic magnetometer at the Geological Survey of Norway

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Natural remanent magnetization (NRM) and rock magnetic parameters from two locations, West Barents Sea ($\sim 71.6^{\circ}\text{N}, 16.2^{\circ}\text{E}$) and Vestnesa Ridge, NW Svalbard ($\sim 79.0^{\circ}\text{N}, 6.9^{\circ}\text{E}$), were acquired using a new, automatically operating cryogenic magnetometer system at the Geological Survey of Norway. The magnetometer setup comprises an automated robot sample feeding, dynamic operation and measurement monitoring, and customised output-to-database data handling. The setup is designed to dynamically enable a variety of parallel measurements with several coupled devices (e.g. balance, MS2B) to effectively use dead-time in between the otherwise time-consuming measurements with the cryogen magnetometer. Web-based access allows remote quality control and interaction 24/7 and enables high sample throughput.

The magnetic properties are combined with geophysical, geochemical measurements and optical imaging, both radiographic and colour images, from high-resolution core-logging. The multidisciplinary approach enables determination and interpretation of content and formation of the magnetic fraction, and its development during diagenetic processes. Besides palaeomagnetic age determination the results offer the opportunity to study sediment transformation processes that have implications for the burial and degradation of organic matter. The results also help to understand long and short-term variability of sediment accumulation. Chemical sediment stability is directly linked to environmental and climate variability in the polar marine environment during the recent past.