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# A Holocene paleosecular variation record from the southern Svalbard continental margin

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A high-resolution paleomagnetic and rock magnetic study has been carried out on 8 cores sampled in the hemipelagic fine-grained (silty-clays) sediments from the shelf and slope of the Southern Storfjorden trough-mouth fan, on the Svalbard south-western continental margin. The Storfjorden sedimentary system was investigated during the SVAIS and EGLACOM cruises, when 10 gravity cores, with a variable length from 1.03 m to 6.41 m, have been retrieved. Accelerator mass spectrometry (AMS) 14C analyses on 27 samples (mainly foraminifera, and a few mollusc shells) demonstrate that the cores span a time interval that includes the Holocene, the Deglaciation and in some parts reaches back to the Last Glacial Maximum. Rock magnetic and paleomagnetic measurements were collected at 1-cm spacing on u-channel samples. The data indicate that the sediments carry a well-defined characteristic remanent magnetization (ChRM) and have a valuable potential to reconstruct the paleosecular variation (PSV) of the geomagnetic field, including changes in ChRM inclination as well as in relative paleointensity (RPI).The paleomagnetic data obtained from the SVAIS and EGLACOM cores allow us to reconstruct dynamics and amplitude of the geomagnetic field variations at high northern latitudes (75°-76° N). At the same time, the rock magnetic and paleomagnetic data allow a high-resolution correlation of the sedimentary sequences and a refinement of their preliminary age model. The Holocene PSV and RPI records appear particularly sound, since they are consistent between cores and they can be correlated to the available regional stacking curves (UK PSV, FENNOSTACK and FENNORPIS) and global geomagnetic models for the last 7 ka (CALS7k.2), matching the obtained 14C dates. A Holocene PSV and RPI stack for the Storfjorden area is therefore proposed, which can be important for the reconstruction of the geomagnetic field variability within the inner core tangent cylinder, an imaginary cylinder parallel to the Earth's spin axis that circumscribes the equator of the inner core and intersects the surface of the Earth in the polar regions in both hemispheres at a latitude of 69.6°. These data bring valuable inputs for the refinement of global models of past geomagnetic field variation and for testing models on the geomagnetic dynamo and the outer core dynamics.