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Clay mineral distribution along the southern and western Svalbard continental margin in association with contouritic deposition: insights for environmental and oceanographic reconstruction

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The Kveithola and Storfjorden troughs are two glacial depositional systems, situated South of the Svalbard Archipelago (North Western Barents Sea), that during the last glaciation (MIS-2) have hosted ice streams, which contributed to the build-up of the relative Trough Mouth Fans (TMFs) on the continental slope. The sedimentary record contained in TMFs provides several proxies that can be useful for reconstructing the ice-streams dynamics during glacial periods, the onset of deglaciation and the climatic variability during interglacials. The TMF slopes facing the two troughs have been investigated during several international oceanographic cruises: SVAIS onboard R/V BIO Hespérides; EGLACOM, onboard R/V OGS Explora; PNRA Project CORIBAR, onboard R/V Maria S. Marien; Eurofleets-2 PREPARED, onboard RV-G.O. Sars.
For this study we have focused on XRD analyses on clay minerals, collected from seven cores, taken during these cruises, and XRF analyses have also been conducted on the whole length of the cores. Clay mineral assemblages are controlled by source rock composition, physical-chemical weathering, transport and depositional mechanisms. In polar areas clay mineral analysis can be used also for reconstructing sedimentary processes, associated with glacial and interglacial conditions. Moreover in the North western Barents Sea smectite is considered a good proxy for reconstructing the North Atlantic Current strength, giving thus additional indication on the palaeoceanographic conditions associated with climatic changes.
Here we present a first correlation among these cores, aiming to describe the clay mineral distribution in response to the climatic variations that followed the Last Glacial Maximum and describe the changes in ice-stream dynamics and related oceanographic/environmental changes along the margin.