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The climatic significance of laminated sediments from turbid meltwaters on the NW Barents Sea continental margin (Arctic)

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The recent depositional architecture of the north-western Barents Sea continental margin derives from past climate changes with alternating deposition of highly consolidated glacigenic diamicton (continental shelf) and debris flows (continental slope). These are associated to shelf-edge glaciations, and low-density, normally consolidated biogenic-rich sediments deposited during interglacial conditions. In addition, sub-bottom records outline the presence of acoustically laminated deposits locally having thickness exceeding 10 m, which lithofacies characteristics indicating deposition from turbid meltwaters (plumites) during short-living, phases of glacial retreat (meltwater pulses, MWP). One of the youngest stratigraphic intervals recognized along the NW Barents Sea margin was related to the MWP-1a that was responsible for the deposition of about 1.1 x 1011 tonnes of sediments on the upper slope of the Storfjorden-Kveithola TMFs (south of Svalbard) (Lucchi et al., 2015). New compositional analyses of such plumites revealed a distinct signature that allow us to distinguish deposition from glacial melting from that related to the ice-sheet sub-glacial erosion and transport to the edge of margins. Sediment facies and compositional analyses lead to a new climate-related interpretation of the laminated deposits recognized during Marine Isotopic Stages 3 and 2 on the NW margin of the Barents Sea, including Heinrich Event H2.

References:
Lucchi et al., αrktos DOI 10.1007/s41063-015-0008-6