



New information on the glacial history of the NW Barents Sea from clay minerals and radiocarbon dates

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Here we present results from new analyses on marine sediment cores that recovered subglacial and postglacial units deposited in the NW Barents Sea during the LGM and the Holocene. We have performed a pilot study on clay-mineral assemblages in three cores collected in palaeo-ice stream troughs surrounding Nordaustlandet (Hinlopen, Erik Eriksen and Kvitøya troughs) to investigate the provenance and pathways of subglacial sediment transported by the Barents Sea Ice Sheet (BSIS) during the LGM and of Holocene marine sediments. In all of the cores there is a clear change in clay mineral composition between the subglacial diamicts and the postglacial muds, and the clay-mineral assemblage in the diamicts is distinctive in each core. This suggests that the clay mineral composition records different pathways of subglacially transported detritus around eastern Svalbard. We interpret these data in relation to local source rocks on the Svalbard archipelago and in the central Barents Sea in order to provide new information regarding the BSIS dynamics during the last glacial period, about which there is still considerable debate for the central-northern Barents Sea sector (cf. Landvik and Ingolfsson, 2013). In addition, new radiocarbon ages from sediment cores around Nordaustlandet suggest that grounded ice had retreated from the shelf break north of Nordaustlandet and in Kvitøya Trough east of Svalbard by 13.3-13.6 ^{14}C kyrs BP. This is in line with deglacial dates of 13-13.3 ^{14}C kyrs BP from the other major troughs on the northern Barents Sea margin (Saint Anna and Franz Victoria troughs). In Hinlopen Trough our deglacial date confirms that the Polar Front was in the vicinity of the core site on the continental shelf some 20 km landward of the shelf break by 11.0 ^{14}C kyrs BP.