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Glacial history of the shelf north of the Hinlopen Strait, Svalbard - geophysical evidence

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We present new geophysical evidence on the glacial history of the region north of the Hinlopen Strait (northern Svalbard margin). A combination of bathymetric and sediment echosounder data recorded during the MSM31 Marian S. Merian expedition in summer 2013 reveals that the seafloor in the study area (80° 27.60' to 81°18.44' N and 13°55.76' to 19°20.72' E) is characterized by two different types of glaciogenic features: (a) Freshly looking scours were found in water depths between 109 and 306 m both in the western and eastern part of the study area, i.e. west and east of the Hinlopen Trough. These scours are randomly oriented and were interpreted as plough marks by single icebergs. The scours found east of the Hinlopen Trough are likely associated with iceberg calving from the Hinlopen Trough ice-stream during the late Weichselian. The scours detected west of the Hinlopen Trough were likely formed slightly later, during the deglaciation of the Svalbard-Barents ice sheet and the Hinlopen Trough at the end of the Late Weichselian. (b) Mega-scale lineations were detected in the northeastern part of the study area in water depths of 164 to 745 m. These features are mostly parallel with a SSW-NNE trending main orientation. In accordance with other studies on the Svalbard margin and on the Yermak Plateau, they were interpreted as marks left by a grounded ice sheet centered on Svalbard during the Saalian glaciation.