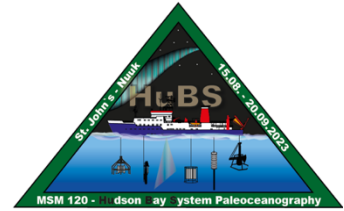




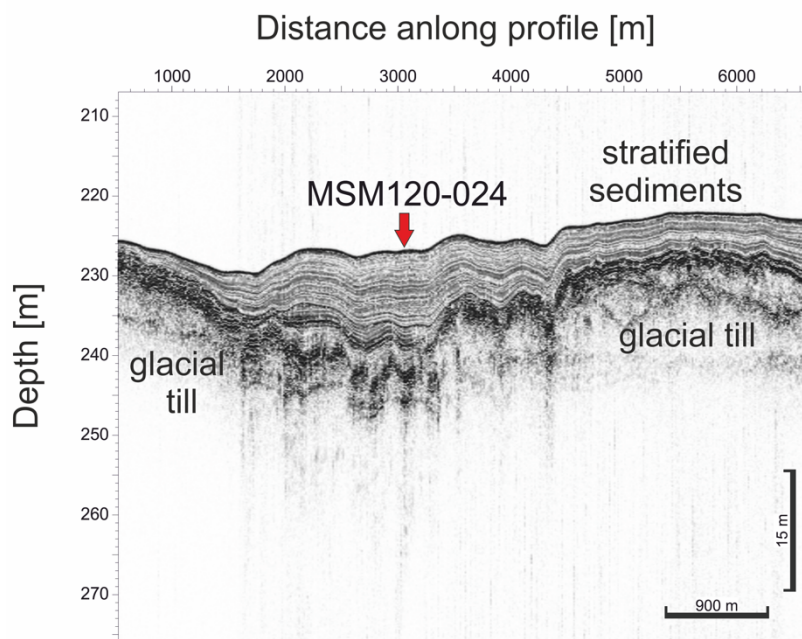
**FS MARIA S. MERIAN**  
**Reise MSM120, St. John's - Nuuk**  
**4<sup>th</sup> Weekly Report, 04.09. - 10.09.2023**



## Hudson Bay System (HuBS)

Having finally received all required research licenses from the Canadian authorities for Hudson Bay on Tuesday, September 5<sup>th</sup>, we started the hydroacoustic surveys and geological station work in the Winisk Trough and the central Hudson Bay. The small basins, carved by meltwater streams into the underlying Late Pleistocene till deposits, were inspected with the PARASOUND echosounder system for postglacial and complete sequences of Holocene sediments. However, none of the surveyed basins in the central Hudson Bay contained any Holocene deposits of reasonable thickness. Instead after a few centimeters of depth, all multicorer short tubes reached into the surface of the till layers. Die CTD profiles at all stations documented a pronounced thermocline at about 30 m water depth, with a low saline (~ 29-31 psu) and relatively warm (5°C) surface layer, underlain by higher saline (~32-34 psu), but very cold (-1°C) subsurface waters down to the seafloor at about 200 to 270 m basin depth.

Only in the southern part of the third work area between Coats and Mansell Islands, a small glacial meltwater valley filled with about 10 m thick postglacial sediments was mapped and sampled with the multicorer and gravity corer on Saturday, September 9<sup>th</sup>.



*PARASOUND sediment echosounder profile in a glacier meltwater valley between Coats and Mansell Islands in Hudson Bay. The profile shows the small valley incised into till layers at the bottom, superimposed by well-stratified postglacial sandy-to clayey muds (Fig. F. Lenz).*

These very soft, olive-green to gray muds, characterized by strong bioturbation and rarely containing rock fragments, represent the youngest Holocene sediments on top of the glacial tills. Rock fragments provide evidence for wintertime, sea-ice transport of dropstones, originating from the Paleozoic and Precambrian basement surrounding Hudson Bay.



*A 6 m long sediment core on deck of the Maria S. Merian, retrieved with gravity corer from the postglacial deposits covering the Late Pleistocene till layer. The sediments represent soft, bioturbated muds of middle (foreground) to youngest (background) Holocene age (Photo: R. Schneider).*

Sunday, September 10<sup>th</sup>, the hydroacoustic surveys and geological sampling were continued in a 300 m deep, west-east stretching basin north of Coats and Mansell Islands. At two stations, up to 10 m long sediment cores were retrieved, containing again postglacial sands, silt and clay layers. Similar activities will continue the next week in Foxe Basin, the northernmost work area close to the polar circle.

Despite wintertime conditions with air and water temperatures between 2 and 5°C, but calm seas and weak winds, we foresee again successful surveying as well as water-column and sea-floor sampling also in the northern Hudson Bay.

With best regards from RV MARIA S. MERIAN,

Ralph Schneider

September, 10<sup>th</sup>, 2023