

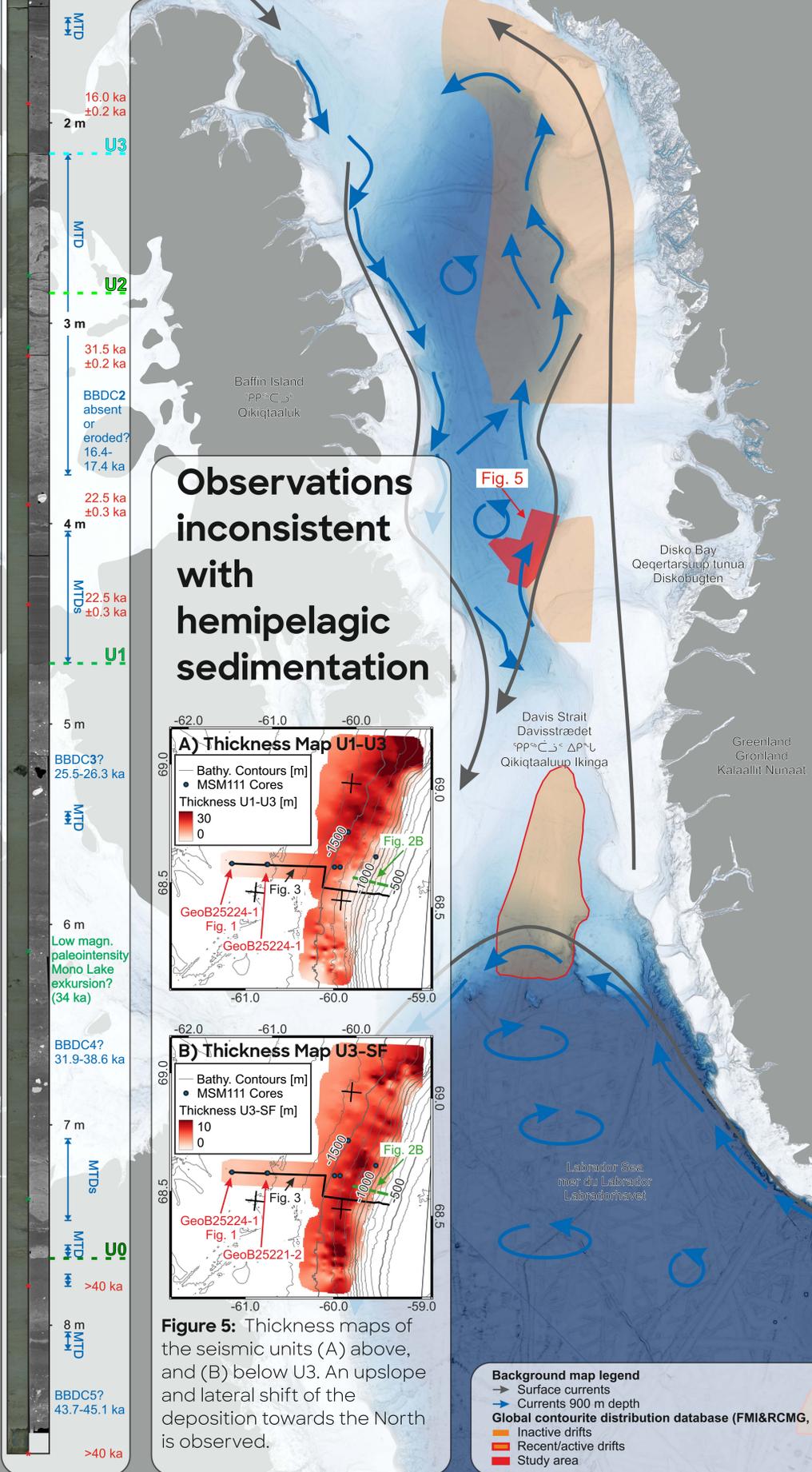
# Mixed turbidite-contourite deposits in an Arctic gateway: New insights into Baffin Bay from MSM 111

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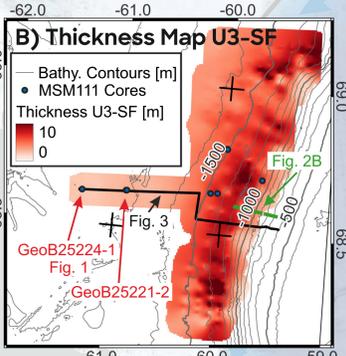
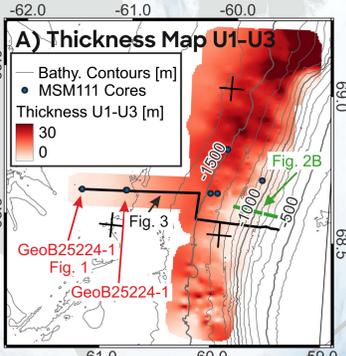
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**Figure 1:** The gravity core GeoB25224-1, shown here as true-color and CT images, provides the most condensed sediment record of the MSM111 cores due to its location ~50 km east of the shelf. Several **<sup>14</sup>C-ages** have been determined and sections have been correlated to **Baffin Bay Detrital Carbonate Events (BBDC; Jackson et al., 2023)**. The **unconformities U0-U4** (Fig. 3), mapped in the Sub-Bottom Echo Sounder images have been linked to the core. Especially in the depth interval 2.2-4.7 m, abundant **Mass Transport Deposits (MTD)** are identified.

**Abundant mass transport deposits, especially 16-25 ka**

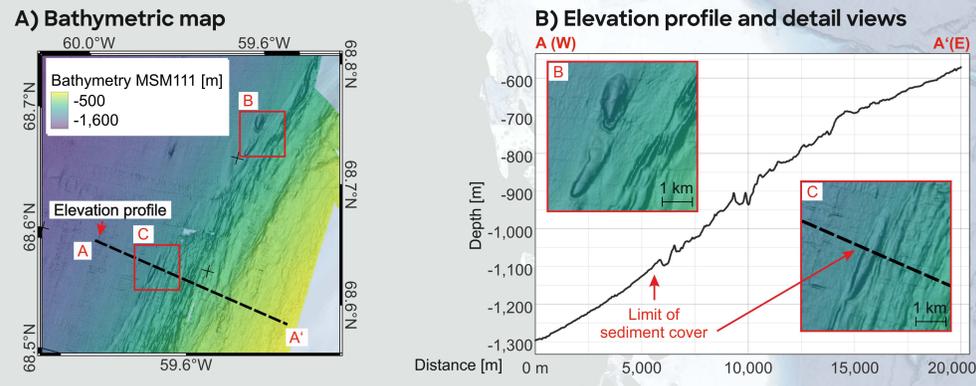


**Observations inconsistent with hemipelagic sedimentation**



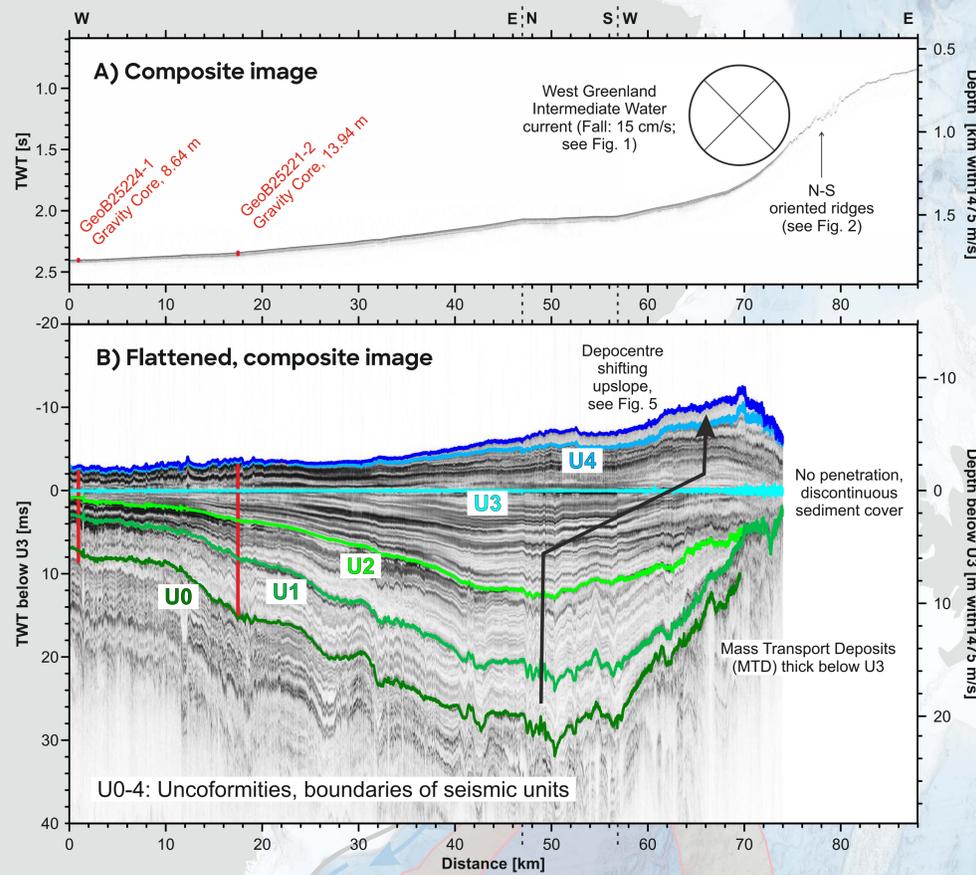
**Figure 5:** Thickness maps of the seismic units (A) above, and (B) below U3. An upslope and lateral shift of the deposition towards the North is observed.

## Longitudinal bedforms and scouring point towards erosion at 700-1100 m depth



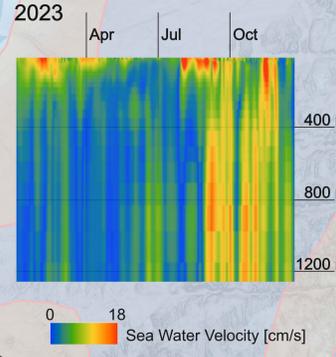
**Figure 2:** Bathymetric data set acquired during MSM111. No continuous sediment cover is observed at and upslope of the longitudinal bedforms and scours, indicating sediment winnowing and erosion.

## Across- and along slope processes shape sediment distribution



**Figure 3:** Composite Sub-Bottom Echo Sounder (Parasound P70) image showing five unconformities U0-4 characterized by erosional truncations, as well as on- and downlaps. Reflectors are generally parallel-diverging. Reflector strength seemingly increases above U2. Transparent units are found below U0.

## Seasonally strong (fall) circulation at 900 m depth



**Figure 4:** Global daily sea water velocity extracted from the GLORYS12V1 reanalysis model (Lellouche et al., 2021). Sea observations, especially during winter are rare, but models (see also Shan et al., 2024) indicate sea water velocities in the range of 15 cm/s at the western tip of Disko Bay Trough Mouth Fan centred at 900 m.