Palaeo-environmental variability in Holocene cold-water coral reefs in Stjernsund, northern Norway

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Overview and aims
During RV Poseidon cruise POS-325 in 2015 the world's northernmost cold-water coral province has been explored in great detail. One of the key sites was the Stjernsund-Fjord at 70°N in the West Finnmark District, northern Norway (Fig. 1). Three coral mounds of *Lophelia pertusa* are situated at 260 to 235 m depth on top of a Late Glacial terminal moraine, which forms a 350 m high sill. This sill comprises a current-swept environment, influenced by tides and ambient water temperatures of 5 to 6°C. The currents provide a steady nutrient flux and inhibit sedimentation. A series of gravity cores has been taken in an E-W transect (Fig. 2) across the sill, to investigate the geological and climatic history of the Holocene coral mounds and the deglacial ice-stream retreat. Palaeoceanographic and facies changes are currently reconstructed using benthic foraminiferal assemblages in the coral mound core POS-325-472 and the fjord basin core POS-325-482.

Sedimentary facies, habitats and benthic fauna

First conclusions and outlook
- Cores and Jago-submersible transects revealed a complex facies zonation with life reefs, eroded coral rubble, basin-muds and glaciomarine deposits.
- Several on-mound cores show the contact with the underlying till of the Late Glacial terminal moraine, suggesting a Holocene coral growth.
- Planktonic foraminifera are scarce in basin and on-mound cores, reflecting low primary production in the low saline upper water column.
- Benthic foraminiferal assemblages in the on-mound core (POS-325-472) are dominated by miliolid atoll滨 species like *D. pustulosa* and *Cibicides sp.*. Basin communities (POS-325-462) instead are dominated by (shallow) atoll species like *E. trilobata*, *C. laevigata* and *N. labradonica*.
- The coral mound core comprises several hiatus, reflecting the current dominated setting.
- The postglacial record instead comprises a homogenous and continuous high-resolution sequence (60 cm) in this fjord basin, which is currently under investigation for stable isotopes.