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Influences on particle and zooplankton distribution north of Svalbard

Due to Atlantic water inflow and sea ice coverage, the region North of Svalbard is very dynamic in terms of particle production and plankton ecology. To shed a new light on the biological carbon pump and temporal plankton distributions in this area, we compiled a free-moving sensor package, which was connected to a biogeochemical mooring within the A-Twain mooring array at the continental slope North of Svalbard.

The system consisted of an Underwater Vision Profiler 6 (UVP 6), which acquires particle sizes and quantities as well as zooplankton and aggregate images. The fluorometric SUNA sensor measures nitrate concentrations, while the Ecotriplet sensor acquires chlorophyll a, cDOM, and particle backscatter. The mooring was deployed at 50 m between August 2018 and September 2019. Deployment was conducted onboard KV Svalbard, and recovery was possible with RV Kronprins Haakon.

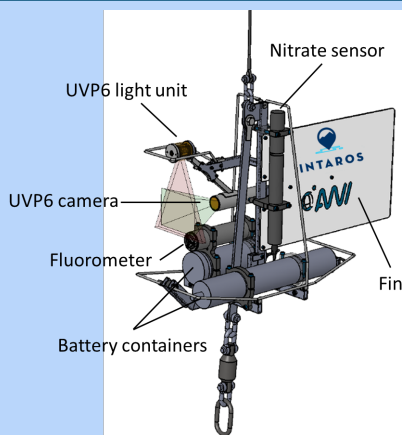


Fig. 1: Sensor package setup and its location within the study site of A-TWAIN. Red arrows indicate pathway of warm Atlantic water inflow, while yellow arrow marks sensor location.

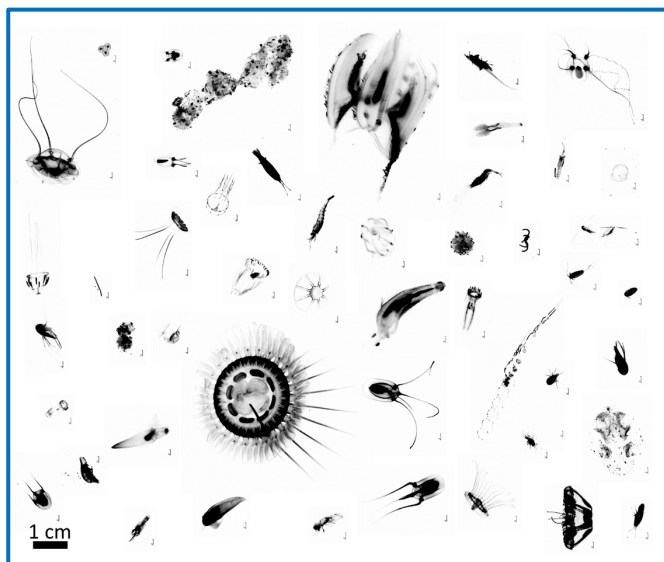


Fig. 3: Example images of Arctic zooplankton and aggregates from the Siberian shelf region. The method will provide new insight into temporal zooplankton and particle distributions.

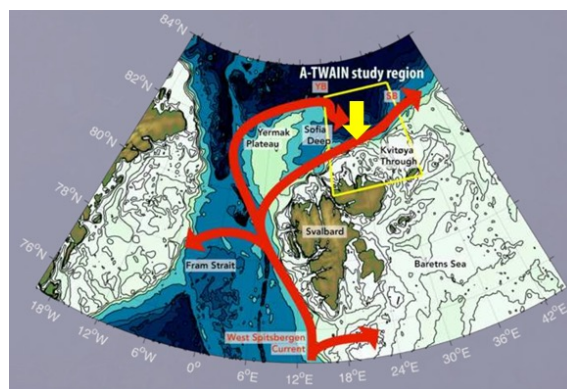


Figure 2 Map of the study area

The combination with nutrient and fluorescence measurements, as well as other sensors will provide new knowledge about the impact of sea ice dynamics, as well as oceanographic properties on carbon export and zooplankton diversity and abundance in the Arctic.

