

## Subproject: Sediment distributions and characteristics in seawater, sea ice and glacier ice.

Actual field dates: August 9 – August 28, 2015

Field site: Villum Research Station, Station Nord, Greenland

Number of man-days in the field: 20

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### Summary:

Despite difficult conditions with a highly mobile broken up ice floe field dictating where it was possible to sample, we managed to collect a representative set of samples from the area. These included multiyear ice melt pond, under-ice water, surface ice, cryoconite hole and ice core samples that were analyzed for particulate dry mass, spectral absorption and size distribution. The sea ice work was all conducted on the multi-year ice floe located just northwest of the station. Water column observations were focused on transect sampling in the area to the east of the station where a major outlet glacier of Flade Isblink terminates.

A major difficulty was the limited space available in the small Zodiak boats, which meant that sampling per outing had to be limited. Nevertheless, we observed notable changes in the water column hydrography related to ice and glacier melting and radiative heating which clearly influenced the optical properties and suspended particulate matter distributions in the area. Optical sampling included transects of vertical profiles with a Satlantic HyperOCR free-falling profiler and a Sequoia LISST-100X in addition to taking water samples with a Niskin bottle. More frequent optical sampling obtained with the CTD which included PAR and turbidity sensors.

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### Photos:

Fig. 1: Typical surface of MYI floe on 17 August 2015. Credit: Jens Ehn

Fig. 2: Lamellar pattern of columnar ice structure exposed on surface after extensive surface melting. Credit: Jens Ehn

Fig. 3: Microscope images of material collected in cryoconite holes  
Credit: Jens Ehn

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### Participants:

Jens Ehn (CEOS)

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### Acknowledgements:

ASP, NSERC Discovery Grant Program, Canada Research Chairs Programme, the helpful personnel at Station Nord and Villum Research Station.



Figure 1



Figure 2

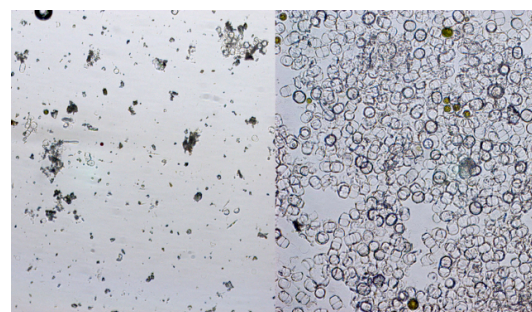


Figure 3