

Subproject: Underwater eddy covariance measurements of heat, salt, and dissolved oxygen

Actual field dates: April 22-June 8, 2014

Field site: Cambridge Bay, Nunavut, Canada

Number of man-days in the field: 15

Summary:

An underwater eddy covariance system was deployed under thick (1.8m) landfast sea ice to measure ice-ocean exchanges of dissolved oxygen, salt, heat and momentum. The system was left in place from Apr. 22-June 8, 2014, but the full system only worked until Apr. 29. A seal likely ran into the instrument, damaging it. The period that the system did operate was interesting. We observed a downwards flux of salt (desalination of the ice) throughout the period, which followed a distinct diurnal pattern whereby the strongest fluxes occurred at night. Heat flux also followed a diurnal pattern, with energy being transferred from the ocean to the ice at night, and vice versa during the day. Oxygen fluxes were persistently directed upwards, in contrast to the expected autotrophic nature of the under-ice community during this time period.

Photos:

Fig. 1: The underwater eddy covariance system deployed in the field. Only the solar panel and battery box are visible.

Credit: Brent Else

Fig. 2: Jens Ehn retrieving dissolved oxygen and conductivity/temperature sensors that were deployed near the eddy covariance site.

Credit: Brent Else

Fig. 3: De The eddy covariance equipment after retrieval in June.

Credit: Brent Else

Participants:

Brent Else (CEOS)

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For more information contact Brent Else: belse@ucalgary.ca

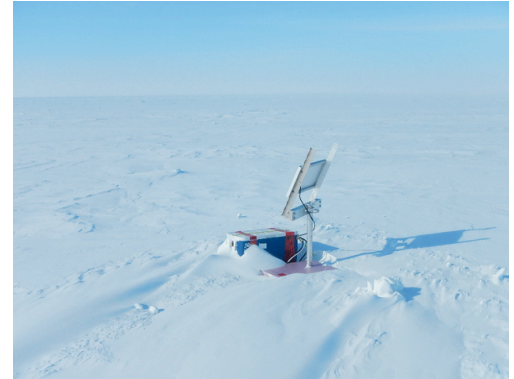


Figure 1



Figure 2



Figure 3