

2009 Core Data

Equipment: 10 cm diameter fiberglass corer powered by an electric drill.

Location: 71.36206 deg N, 156.5701 deg W
Note that this location is approximately 1 km S/SW of the 2009S observation site. Holes created during coring have been observed to drain substantial amounts of meltwater, significantly altering the area melt ponds. To avoid altering the primary sites, this secondary site, with ice of the same character as the primary site, was selected for all coring.



Extracting a Core
Photo: Chris Petrich

Processing: Cores used for salinity and isotope measurements were cut into 5 cm or 10 cm sections (indicated in data profiles) with a handsaw and bagged immediately after extraction to minimize brine drainage. Temperatures were measured out of direct sunlight at the center of a second adjacent core by inserting a temperature probe into holes drilled into the core within a few minutes of extraction. Samples collected for salinity and isotope measurement were melted in double sealed bags at room temperature. A sample from the well mixed bag was taken in a glass vial for later isotope analysis, then salinity measurements were made with a YSI 30 conductivity probe having stated measurement error of 1% of bulk salinity. Isotope samples were sent to the University of Utah Stable Isotope Ratio Facility for Environmental Research for measurement on a PICARRO Wavelength Scanned Cavity Ring-Down Spectrometer. Standard uncertainty determined from laboratory standard samples is $1.6 \delta^2\text{H}$ and $0.1 \delta^{18}\text{O}$.



Measuring core temperature.
Photo: Kathryn Hansen/
NASA

Data Format: Data files are comma separated with a single header line naming columns. The filename indicates the date collected and the type of ice cored (BI = bare ice, MP = ponded ice). The first column is the depth of the top of the core segment, as measured from the ice surface, in cm. The second column is the depth of the bottom of the core segment, as measured from the ice surface, in cm. The third column is the temperature measured in that segment. The fourth column is the salinity. The fifth column is the $\delta^2\text{H}$ stable isotope reading, and the sixth column is the $\delta^{18}\text{O}$ stable isotope reading. Missing values indicate that a data type was not collected.