

4.3 Healy Baffin Bay survey equipment details:		
Types of samples and measurements	Methods to be used	Instruments to be used
Water vapor & gaseous C stable Isotopes- 18O, 2H, 13CO <sub>2</sub> and 13CH <sub>4</sub> .	Continuous Air and sea water sampling using pumps and analysers.	Picarro L2130i for water vapour isotopes and Picarro G2201i for CO <sub>2</sub> and CH <sub>4</sub>
Seawater Isotopes and Carbon: Isotopes- 14C, CH <sub>4</sub> , 18O, 2H. Carbon- DOC, POC.	Continuous seawater sampling using flow-through instruments and lab analysis.	Picarro L2130i for water isotopes; accelerator mass spectrometer for 14POC and 14DOC back in the UC Irvine lab.
Seawater properties- temperature, salinity, dissolved oxygen, fluorescence, PCO <sub>2</sub> , light transmission.	Continuous flow through seawater instrumentation-	Seabird Electronics: SBE 3 Temperature sensor SBE 43 dissolved oxygen sensor SBE 45 Micro TSG (thermosalinograph) Wetlabs: WetSTAR fluorometer (chlorophyll) C-Star Transmissometer
Conductivity, temperature, depth profiles; Niskin bottle analysis of salinity, 18O, nutrients, 2H, CFC-12, SF-6, DIC/TA, PCO <sub>2</sub> , CH <sub>4</sub> , DOC, CDOM, FDOM, POC, POM.	Water column sampling using a CTD and niskin bottles lower over the side.	Seabird CTD with Niskin bottles lowered on .322 wire. CTD: SBE 9+ Oxygen: SBE 43 Conductivity: SBE 4C Temperature: SBE 3+ Fluorometer: Wetlabs ECO FLTRD
Earth's Gravity field	Shipboard underway Gravimeters	Bell BGM3 and Dynamic Gravity Systems AT1M underway marine gravimeter
Sea floor mapping	Hull mounted shipboard Multibeam echo sounder	Kongsberg EM122 Multibeam
Ocean Current velocity and direction	Hull mounted echo sounders. Acoustic Doppler current profilers (ADCPs).	Teledyne Marine Ocean Surveyor 150 (OS150) and Ocean Surveyor 75 (OS75)
2D image of sediment stratigraphy.	Hull mounted echo-sounder.	Knudsen CHIRP 3260 with 12kHz and 3.5 kHz frequency transducers
In Situ sea surface and ice Met and ocean observations. Temperature and Latitude and Longitude, sea level pressure.	Deploy Satellite/Iridium linked drifting buoys that record sea surface Observations. Thermistor, barometric pressure, GPS.	SVPB (surface velocity profiler with barometric pressure) drogued at 15m, as part of the Global Drifter Program ( <a href="https://gdp.ucsd.edu/ldl/svp/">https://gdp.ucsd.edu/ldl/svp/</a> )
In Situ sea surface and ice Met and ocean observations. Temperature and Latitude and Longitude, wind speed and direction, sea level pressure.	Deploy Satellite linked drifting buoys that record sea surface Observations. Thermistor, anemometer, barometric pressure sensor, GPS.	SVPBW (surface velocity profiler with barometric pressure and wind speed) as above with the addition of meteorological sensors ( <a href="https://gdp.ucsd.edu/ldl/minimet/">https://gdp.ucsd.edu/ldl/minimet/</a> )

Meteorological measurements	Shipboard sensors for continuous measurements	wind speed and direction: Metek usonic2 air temperature: RM Young 41342VC air temp/relative humidity: Vaisala HMP110 barometer: RM young 61302V surface PAR: Biospherical Instruments QSR 2200 radiometer pyranometer: Eppley PSP radiometer pyrgeometer: Eppley PIR
seawater pCO2 system	Sampling of Continuous flow Seawater	seawater/air equilibrator, LI-COR infrared gas analyzer, gas dryer, pressure sensor.
Atmospheric CO2	Air intake mounted on the Bow of Healy for continuous sampling	Picarro G2301 or similar
Remotely collected CTD data	Autonomous Glider deployment	Slocum turbulence glider