

	Repeat Hydrography	Argo / drifters	Underway sampling	Moorings	Tide gauges	Animal sensors	Glider/ AUV	Satellite	Airborne	Ice stations	IS stations & traverses (surface)
Temperature			XBT/XCTD	Yes							Suspended moorings CTDs and distributed temp sensing (DTS)
Salinity			XBT/XCTD	Yes							Suspended moorings CTDs
Velocity			Surface layer	Yes				Surface			Moorings (ADCPs)
Tracers											
Nutrients				Developing							
Oxygen				Yes							
Microstructure											
Sea Ice											
Wind, accumulation								If ice free		Automatic weather stations on IS and fast ice	Automatic weather stations on IS and fast ice
Sea surface height (SLR)								If ice free			
Seabed pressure											
IS Topography								InSAR, Radar and Laser altimetry	Radar (RES) and Laser altimetry		GPS (Spot values or traverse)
IS thickness								Buoyancy estimates from surface topography	RES, buoyancy estimates from surface topograph		Seismic, RES
IS flow speed								InSAR, feature tracking	Radar (RES) and Laser altimetry		GPS
Glacier topography								InSAR, Radar and Laser altimetry			GPS
Glacier flow speed								InSAR, feature tracking			GPS, boreholes for velocity depth profiles
SST								If ice free			
SSS								If ice free			
Bottom topography (below IS)									Gravimetry		Seismic
Bottom topography (seafloor bathymetry under floating ice)									Gravimetry		Seismic
Bottom topography (bedrock under grounded ice)									RES, Gravimetry		RES, Seismic
IS basal melt/freeze rates				Upward-looking altimeter							Phase Coherent RES (at surface)
IS englacial temperatures (for ocean ice heat transfer flux)				Embedded temp sensors (boreholes)							Embedded temp sensors: thermistor chains or DTS (boreholes)

Light Green = Mature, available technology; Yellow = developmental stage