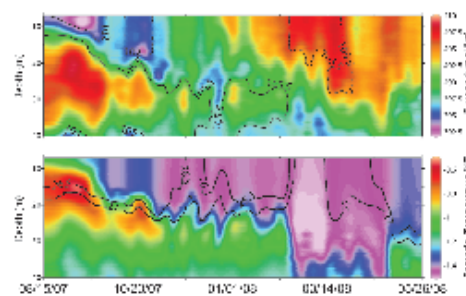


Ice-Tethered Profiler: ITP measurements of dissolved oxygen

Four ITPs, deployed between 2006 and 2009, have provided year-round dissolved oxygen (DO) measurements from the surface mixed layer to 760 m depth under permanent sea-ice cover in the Arctic Ocean. Long-term calibration drift of the oxygen sensor can be characterized and removed by referencing to recent calibrated ship DO observations on deep isotherms. Observed changes in the water column time series are due to drift of the ITP into different water masses and also to seasonal variability, driven by both physical and biological processes within the water column. Several scientific examples are highlighted that demonstrate the considerable potential for sustained ITP-based DO measurements to better understand the Arctic Ocean circulation patterns and biogeochemical processes beneath sea ice.



[Enlarge Image](#)

The evolution of dissolved oxygen (top, contour lines indicate percent saturation) and potential temperature (bottom, contour lines indicate salinity) in the upper 40 m in the central Canada Basin as measured by ITP 13.

Reference: Timmermans, M.-L., R. Krishfield, S. Laney, and J. Toole, 2010. Ice-Tethered Profiler measurements of dissolved oxygen under permanent ice cover in the Arctic Ocean. *Journal of Atmospheric and Oceanic Technology*, Vol. 27, 1936-1949. doi: 10.1175/2010JTECHO772.1.

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