

## USING FLUORESCENT DISSOLVED ORGANIC MATTER TO TRACE ARCTIC SURFACE FRESH WATER

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Climate change affects the Arctic environment with regards to permafrost thaw, changes in the riverine runoff and subsequent export of fresh water and terrestrial material to the Arctic Ocean. In this context, the Fram Strait represents a major pathway for export to the Atlantic basin. We assess the potential of visible wavelength dissolved organic matter fluorescence (VIS-FDOM) to trace the origin of Arctic outflow waters. Oceanographic surveys were performed in the Fram Strait, as well as on the east Greenland shelf (following the East Greenland Current), in late summer 2012 and 2013. Meteoric ( $f_{mw}$ ), sea-ice melt ( $f_{sim}$ ), Atlantic ( $f_{aw}$ ) and Pacific ( $f_{pw}$ ) water fractions were determined and FDOM components were identified by PARAFAC modeling. In Fram Strait and east Greenland shelf, a robust correlation between VIS-FDOM and  $f_{mw}$  was apparent, suggesting it as a reliable tracer of polar waters. However, variability was observed in the origin of polar waters, in relation to contribution of  $f_{aw}$  and  $f_{pw}$ , between the sampled years. VIS-FDOM traced this variability, and distinguished between the origins of the halocline waters as originating in either the Eurasian or Canada basins. The findings presented highlight the potential of designing *in situ* DOM fluorometers to trace the freshwater origins and decipher water mass dynamics in the region.