



## **ICE VELOCITY MEASUREMENTS IN THE FRAM STRAIT, 1996-2000**

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Direct ice velocity measurements from Doppler Current Meters (DCM) moored in the western Fram Strait during 1996-2000 have been analyzed. The moorings have been positioned in the core of the ice stream, where mean southward ice speed is 0.16 m/s, and the mean southward speed at 50 m depth (also measured by the DCM) is about 1/3 of that of the ice. The variability of the ice motion relative to the current and wind is discussed. A strong correlation between measured southward ice velocity and the cross strait atmospheric sea level pressure (SLP) difference is found ( $R=0.76$  daily means  $R=0.79$  monthly means), indicating that wind forcing is responsible for most of the day to day variability in ice velocity. Based on the relation between observed velocity and pressure, a new parameterization of the ice area flux by the atmospheric pressure is presented, and the estimates agree well with literature satellite estimates for the period after 1978. A non-uniform change in the atmospheric pressure pattern over the Strait since the 1950's is present in both NCEP/NCAR and Norwegian Meteorological Institute reanalysis records. Both reanalyses indicate a positive trend in the cross strait pressure difference since the 1960's of around 5% per decade. We hypothesize that the stronger atmospheric forcing implies an increase in ice area flux of the same order, due to increased velocity. Using ice thickness recordings from Upward Looking Sonars (series spanning 1990-1999) and literature values of ice thickness, ice volume fluxes are estimated.