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Circulation and transport at the south east tip of Greenland

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It is at the south east tip of Greenland that converge the water from the Arctic, via the East Greenland Current, and the water from the North Atlantic Current, via the Irminger Current.The resulting East Greenland-Irminger Current (EGIC) was observed with a moored current-meter array from June 2004 to June 2006. Hydrographic and LADCP Ovide 2004 and Ovide 2006 measurements are used to describe the watermass properties and the circulation at the time of the deployment and the recovery of the moorings.
The net southward transport from the coast (43.15W - 60N) to the 2000m isobath (100 km offshore) was estimated at 17.1 +/- 1.6 Sv on the two-year period, and monthly values in June 2004 and 2006 were in remarkable good agreement with the estimates obtained by inversion of Ovide hydrological data. A high temporal variability is observed, with transport oscillating between 6 and 33Sv. The variance is mainly concentrated in the period range from 2 weeks to 2 months, and the transport variability appears to be enhanced during winter. The partition in barotropic/baroclinic components shows that the transport is mainly barotropic, apart in the East Greenland / Irminger Current (EGIC) where a maximum of baroclinic variability is found at 200m. Below the 3deg. C. isotherm, a 1 Sv transport on the slope contributes to the Deep Western Boundary Current.
Most of the resulting EGIC is known to flow around the tip of Greenland to circulate around and in the Labrador Sea and ultimately feed the lower limb of the Atlantic Meridional Overturning Cell.