



Freshwater components and transports in the FRAM Strait: Recent observations and changes since the late 1990s

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The fresh water leaving the Arctic Ocean has been shown to influence the circulation and climate relevant processes in the North Atlantic. Although recent variability in the Arctic fresh water budget has been observed, the processes associated with storage and export of fresh water are not yet well understood. We investigate the conditions in the upper western part of the Fram Strait during late summer 2004 and 2005. For this purpose, hydrographic data and water $\delta_{18}O$ values are analysed to separate the fractions of fresh water originating in sea ice melt and from meteoric (riverine and precipitation) sources. These fresh water fractions are combined with volume transport estimates from a finite element inverse model (FEMSECT), incorporating data from shipboard hydrographic surveys and velocity from moored current meters and a Vessel-mounted Acoustic Current Profiler (ADCP). The resulting transport estimates are of similar order as previous estimates by Meredith et al. (2001), although differences are found related to the method of calculating the volume transport through the section. Furthermore, the structure of the hydrographic and $\delta_{18}O$ sections to data from 1998 reflect the changes in Arctic circulation and hydrography since the 1990s. Our results indicate that not only the core of the East Greenland Current but also the eastern part of the East Greenland Shelf is an important contributor to the fractional fresh water transports through the Fram Strait.