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Variability in the Denmark Strait Overflow

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The plume of the Denmark Strait overflow has been measured since 1986 by an array of current meters on the continental slope of SE Greenland about 300 km south-west of the Denmark Strait (the Angmagssalik array of Dickson and Brown, 1994). Over the last 4-5 years the current meters have been augmented by the addition of moored CTD instruments. Here we present evidence that the watermass properties in the overflow plume experienced a rapid and extreme change in 2004. We place this change in the context of longer term change (Dickson *et al*, 2002) which has seen the entire system of overflow and entrainment in the North Atlantic freshen by about 0.01 psu per decade since the 1960s. In 2004 the array measured a freshening of about 0.1 psu over a few months which was evident across the entire width of the array (about 70 km) additionally temperatures were the coldest measured since the first array was deployed in 1986. We speculate that the most likely cause of the event is a change in the source waters of the overflow at the Denmark Strait associated with variability in the Nordic Seas and East Greenland Current.