

Decadal warming in the West Spitsbergen Current in Fram Strait

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In the northernmost extension of the North Atlantic Current, the West Spitsbergen Current (WSC) carries warm and saline Atlantic water to the Arctic Ocean. In the Nordic Seas and in Fram Strait branching of the WSC feeds this water into the East Greenland Current and some of the water may flow on the shelf off the East Greenland shore.

The variability in flow and temperature of the West Spitsbergen Current has been captured in Fram Strait (78°50'N) with an array of moorings and a series of annual hydrographic sections over the period 1997-2012. The observations showed the core current of the WSC to be fairly stable while the offshore branch showed a considerable seasonal to interannual variability. Over the observation period, the temperature of both parts of the WSC increased by about 1°C. The warming occurred in two warm anomalies passing through Fram Strait in 1999–2000 and 2005–2007. Model simulations allow to trace the origin of these anomalies back to either increased warm inflow via the Faroer-Scotland passage and/or reduced heat loss to the atmosphere in the early 1990s. We will discuss, if these anomalies through recirculation might have approached the North East Greenland glaciers.