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Warming of the Atlantic water in Fram Strait and its impact on the ice cover

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The northern extension of the Norwegian Atlantic Current carries warm water to the Arctic Ocean. This oceanic heat has only limited relevance for the ice cover in large parts of the Arctic Ocean where the warm (and saline) water layer is isolated from the surface by the strong halocline created by the surface freshwater water lid. However, the partially ice-free waters in the western Barents Sea and west and north of Svalbard suggest a pronounced local effect of the warm Atlantic Water at the surface.

In the past decades, the Atlantic Water in the West-Spitsbergen Current has shown considerably warming (about one degree) but the trend is overlaid by multi-year variability. Here we analyse observational data of the Atlantic water in the West Spitsbergen Current as well as remote sensing data of ice cover and ice motion downstream to investigate if these changes have an impact on the local ice cover.