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Is the oceanic heat transport with Atlantic water towards the Arctic changing?

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The flow of Atlantic water (Atlantic inflow) across the Greenland-Scotland Ridge (GSR) is critical for conditions in the Nordic Seas and Arctic Ocean by importing heat and salt. All three branches crossing the GSR have been monitored since the mid-1990ies and the transports of water and heat have been estimated. The Atlantic inflow, that forms the surface part of the thermohaline circulation in the North Atlantic, is affected by wind forcing and freshwater input but the most important driving appears to be the cooling of the ocean by the atmosphere in the subarctic seas and increasing of salinity in the Arctic Ocean through freezing of seawater. This results in the sinking of the surface waters that subsequently flow out of the area close to the bottom over the GSR. This removal of water from the Arctic region by the overflow generates sea level slopes that drive a northward transport of water and heat. With global climate change, the Arctic atmosphere is expected to warm and freshwater input to the Arctic to increase, both of which may act to slow the mechanism that drives these flows, and climate models predict a weakening of the North Atlantic thermohaline circulation. This presentation addresses the question, whether the weakening has already been initiated and what regions may have been affected. Based on observations and model results, we conclude that the volume transport of the Atlantic inflow has not weakened consistently whereas the temperature has increased.