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## Overturning and Water Mass Transformation in the Subpolar North Atlantic

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The Atlantic Meridional Overturning Circulation (AMOC) influences our climate by transporting heat northwards in the Atlantic ocean. The subpolar North Atlantic plays an important role in this circulation, with transformation of water to higher densities, deep convection and formation of deep water. Recent OSNAP observations and observations of surface flux driven water mass transformation have shown that the overturning is stronger to the east of Greenland than the west.

Firstly we analyse a CMIP6 climate model at two resolutions (HadGEM3 GC3.1 LL and MM) and show both compare well with the OSNAP observations. We explore the source of low frequency variability of the AMOC and how it is related to the surface water mass transformation in different regions. We then use a set of CMIP6 climate models and show that most climate models agree with the observations that overturning in the west is small, and show biases in the overturning in the west are related to biases in temperature and salinity. We also investigate low frequency variability and find a range of behaviour.