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OSNAP and water mass transport in CMIP6 models

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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 have shown that the overturning is stronger to the east of Greenland than the west.

Here 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 also investigate time-mean and low frequency water mass transformations in other CMIP6 climate models.