



Northern water mass transformation and AMOC

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A coherent assessment of water mass transformation in ocean or climate models, e.g. associated with the northern part of the Atlantic Meridional Overturning Circulation (AMOC), requires thermohaline properties (temperature and salinity) to be analyzed according to the methodology routinely applied to observations. When combining an appropriate (model) water mass analysis with the corresponding model transports, water mass transformation can be quantified. This approach have been implemented for diagnosing a pre-industrial multi-century simulation with an updated version of the Bergen Climate Model and provided a framework where the relation(s) between the northern water mass transformation, AMOC, and the Atlantic Multidecadal Oscillation could be reassessed. Multi-decadal water mass changes have been particularly investigated in the dense overflows across the Greenland-Scotland Ridge, where the variability of the dense overflows have been traced back to their source regions. The products of the northern water mass transformation and their contributions to the large-scale circulation are important to understand, since successful climate prediction depends on climate models' ability to capture the multi-decadal variability of the North Atlantic Ocean.