



Sensitivity of Atlantic Circulation to Overflow Water Mass Properties

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Experiments are carried out in the HadGEM3 coupled GCM to investigate the response of the MOC to improvements in the overflow water masses. Level coordinate models are unable to correctly simulate the overflow of dense water from the Nordic Seas down the slope into the deep Atlantic Ocean. Spurious mixing of the overflow waters results in water masses that are too light and too shallow compared to the real ocean.

In one experiment the waters downstream of the overflows are relaxed to a climatological seasonal cycle and in a second experiment the waters upstream of the overflows are relaxed. This presentation will show the changes to the North Atlantic ocean circulation that result from the relaxation experiments including significant improvements to the simulation of the Labrador Sea and depth of the North Atlantic Deep Water (NADW) return flow.