

Decadal to multi-decadal **AMOC** variability in the CMIP5 models.

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This study explores decadal to multi-decadal decadal variability of the AMOC in the Coupled Model Intercomparison Project Phase 5 (CMIP5) dataset, which provides a unique opportunity to investigate decadal AMOC variability across multiple models in simulations extending up to 500 years. As our preliminary results shows, a large majority of these climate models indeed exhibit a strong AMOC variability in this particular frequency band. However, the crucial characteristics of this variability vary greatly from one model to the next, including the typical oscillation period, the amplitude of the variations in the AMOC volume transport, and spatio-temporal characteristics of the dominant modes. For instance, the dominant period of AMOC variations ranges from 8 years (ACCESS1-0) to 100 years (CCSM4), while its magnitude varies from 0.6 Sv (FIO-ESM) to 2 Sv (GFDL-CM3). In some models the AMOC variability is clearly associated with westward-propagating density anomalies, but in other cases density anomalies behave more like standing waves. We investigate the causes of these differences and the underlying mechanisms of the simulated AMOC variations.