
Increased risk of near term global warming due to a recent AMOC weakening

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Abstract

Some of the new generation CMIP6 models are characterised by a larger low-frequency internal climate variability than their CMIP5 counterparts. Using an ensemble of 32 historical simulations performed with the IPSL-CM6A-LR model, which is one of these models with a relatively large internal variability, we investigate the influence of this variability on global mean surface temperature. We show that members with the smallest rates of global warming are also those with a large internally-driven weakening of the Atlantic Meridional Overturning Circulation (AMOC) in the past decades. This subset of members also matches several AMOC observational fingerprints in line with such a weakening. This suggests that internal variability may have dampened the magnitude of global warming over the historical era. A larger warming rate for the next decades is found in this subset of members, reinforcing the risk of crossing the 2°C warming.

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