

# **Aerosol-forced AMOC changes in CMIP6 historical simulations**

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The Atlantic Meridional Overturning Circulation (AMOC) has been, and will continue to be, a key factor in the modulation of climate change both locally and globally. However, there remains considerable uncertainty in recent AMOC evolution. Here, we show that the multi-model mean AMOC strengthened by approximately 10% from 1850-1985 in new simulations from the 6th Coupled Model Inter-comparison Project (CMIP6), a larger change than was seen in CMIP5. Across the models, the strength of the AMOC trend up to 1985 is related to a proxy for the strength of the aerosol forcing. Therefore, the multi-model difference is a result of stronger anthropogenic aerosol forcing on average in CMIP6 than CMIP5, which is primarily due to more models including aerosol-cloud interactions. However, observational constraints - including a historical sea surface temperature fingerprint and shortwave radiative forcing in recent decades - suggest that anthropogenic forcing and/or the AMOC response may be overestimated.