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Supplemental Material

Journal of Climate

The Mechanisms of the Atlantic Meridional Overturning Circulation Slowdown Induced by Arctic Sea Ice Decline

<https://doi.org/10.1175/JCLI-D-18-0231.1>

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Supplementary Material:

**The mechanisms of the Atlantic Meridional Overturning Circulation
slowdown induced by Arctic sea ice decline**

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Sponsor, Country	Model Name
Commonwealth Scientific and Industrial Research Organisation, Australia	ACCESS1.0
	CSIRO-Mk3.6.0
Canadian Center for Climate Modeling and Analysis, Canada	CanESM2
National Center for Atmospheric Research, USA	CCSM4
	CESM1-BGC
	CESM1-CAM5
Météo-France/Centre National de Recherches Météorologiques, France	CNRM-CM5
National Oceanic and Atmospheric Administration/ Geophysical Fluid Dynamics Laboratory, USA	GFDL-CM3
	GFDL-ESM2M
Max-Planck-Institut für Meteorologie, Germany	MPI-ESM-LR
	MPI-ESM-MR
Meteorological Research Institute, Japan	MRI-CGCM3

Table S1. The CMIP5 models used in this study and their sponsors, countries and names.

Fig. S1. The ocean mixed layer depth (MLD, color shading, in unit of m) in March from 12 CMIP5 models, derived from the diagnostics "mlotst" in the CMIP5 archive, except for the CESM family models (CCSM4, CESM1-BGC, CESM1-CAM5). For those models, MLD is derived from the diagnostics "HMXL" in the NCAR Climate Data Gateway.

Annual mean sea ice concentration bias

Fig. S2. Model bias in annual mean sea ice concentration (color shading, in unit of percentage) in CESM1_T31 $\times$ 3, calculated as the difference between the CESM1_T31 $\times$ 3 historical simulation and the satellite-based Passive Microwave data provided by NSIDC for 1979-1988.

Fig. S3. As in Fig. 5 but for the LW experiment.

Fig. S4. As in Fig. 6 but for the LW experiment.

Fig. S5. As in Fig. 7 but for the LW experiment.

Fig. S6. As in Fig. 8 but for the LW experiment.

Fig. S7. As in Fig. 9 but for the LW experiment.

Fig. S8. As in Fig. 10 but for the LW experiment.

Fig. S9. As in Fig. 11 but for the LW experiment.

Fig. S10. As in Fig. 12 but for the LW experiment.