

High-latitude stratospheric aerosol geoengineering can be more effective if injection is limited to spring: supplementary material

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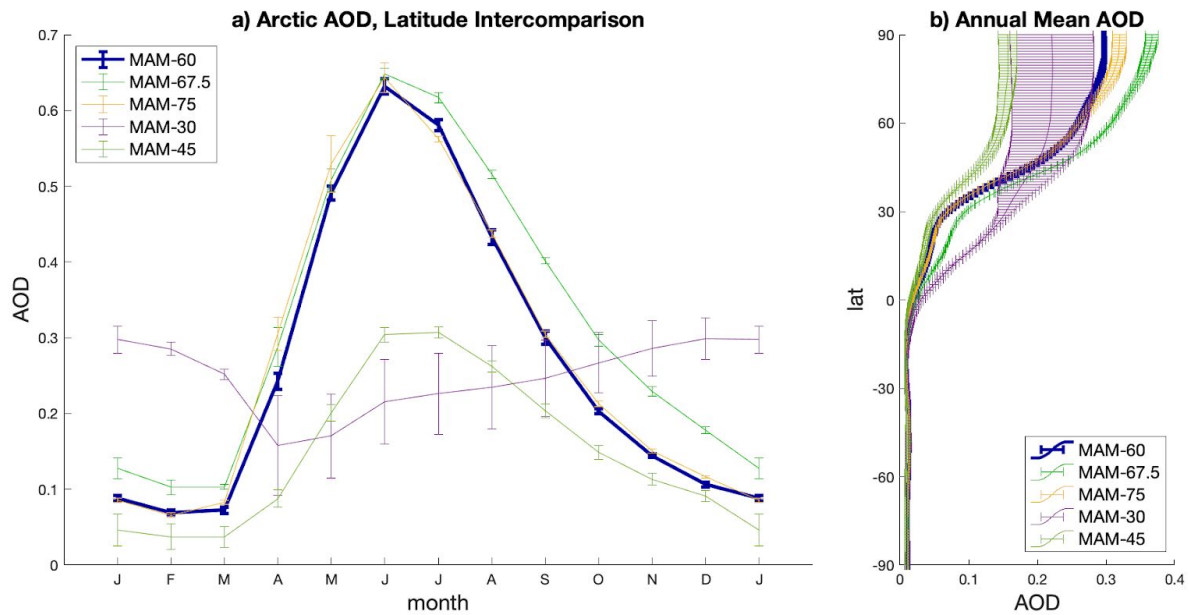
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a. Table of climate values for MAM-60, ANN-60, and RCP8.5

Metric	RCP8.5	MAM-60	ANN-60
Global mean temperature (K)	289.18	-0.65 ± 0.06	-0.44 ± 0.06
Arctic mean temperature (K)	268.08	-3.7 ± 0.2	-2.5 ± 0.2
ITCZ, prcp. centroid method (deg. lat)	-0.21 ± 0.05	-0.3 ± 0.2	-0.17 ± 0.04
ITCZ, heat flux method (deg. lat)	-2.4 ± 0.1	-2.9 ± 0.1	-3.4 ± 0.1
SSI (million km ²)	0.32 ± 0.02	5.3 ± 0.1	2.9 ± 0.2
Total heat flux at 60°N (PW)	3.41 ± 0.01	3.45 ± 0.01	3.40 ± 0.02
Oceanic heat flux at 60°N (PW)	-1.4 ± 0.3	-1.3 ± 0.2	-1.5 ± 0.2
Atmospheric heat flux at 60°N (PW)	4.8 ± 0.3	4.9 ± 0.2	4.9 ± 0.2

This table presents values for various climate metrics discussed in the main text. All values are averaged over the years 2035-2039, which correspond to the last 5 years of simulation for MAM-60 and ANN-60. ± values indicate standard error. “Arctic mean temperature” refers to the average temperature north of 60°N. The ITCZ as defined by the precipitation centroid method refers to the centroid of precipitation between 20°S and 20°N. The ITCZ as defined by the heat flux method refers to the latitude of net zero meridional heat flux, found by fitting a linear function to meridional heat transport between 10°S and 10°N and finding the intercept. SSI refers to the extent of Northern Hemisphere sea ice during the month of September. Total heat flux is broken down into oceanic and atmospheric heat fluxes using the methods of Wunsch (2006).

b. AOD comparisons for injections at different latitudes, including MAM-30 and MAM-45



This figure presents Arctic AOD seasonal cycles and annual mean zonal mean AOD for MAM-60, MAM-67.5, and MAM-75 from this study alongside MAM-30 and MAM-45 from Visioni, MacMartin, Kravitz, Richter, et al. (2020). Data from MAM-60 is averaged over the last 5 years of simulation; all other data are averaged over the last 3 years of simulation.