

1 Large inter-model spread in simulated aerosol load 2 over Arctic sea ice: Supplement Material

3 **Basudev Swain^{1,*}, Marco Vountas^{2,*}, Aishwarya Singh³, Linus Andrae², Ina Tegen⁴, Luca**
4 **Lelli⁵, Rui Song⁶, Bernd Heinold⁴, Neha Mehendale², and Hartmut Bösch²**

5 ^{1,*}Department of Physics, Atmospheric, Oceanic and Planetary Physics, University of Oxford, UK

6 ²Institute of Environmental Physics, University of Bremen, Germany

7 ³Aerosol Chemistry Department, Max-Planck Institute for Chemistry, Mainz, Germany

8 ⁴Department Modelling of Atmospheric Processes, Leibniz Institute for Tropospheric Research, Leipzig, Germany

9 ⁵Remote Sensing Technology Institute, German Aerospace Centre (DLR), Wessling, Germany

10 ⁶NCEO, Department of Physics, Atmospheric, Oceanic and Planetary Physics, University of Oxford, UK

11 * Corresponding author, Basudev Swain: basudev.swain@physics.ox.ac.uk; and Marco Vountas:

12 vountas@iup.physik.uni-bremen.de

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Sr. No.	Model Name	Modelling Center/Institute ID, Country	Model resolution (Latitude × Longitude)	Aerosol Scheme	Aerosol Module Reference	Model Reference	AOD Ensembles
1	MIROC6	Japan Agency for Marine-Earth Science and Technology, Japan	2.8° × 2.8°	Spectral Radiation-Transport module (SPRINTARS6.0)	[1]	[2]	10
2	CNRM-ESM2-1	Centre National de Recherches Meteorologiques, France	1.4° × 1.4°	Tropospheric Aerosols for Climate In CNRM (TACTIC _{v2})	[3]	[4]	11
3	IPSL-CM6A-LR	Institut Pierre Simon Laplace, France	1.26°x2.5°	none	none	[5]	33
4	CESM2-WACCM-FV2	National Center for Atmospheric Research, USA	1.9°x2.5°	Modal Aerosol Module (MAM4)	[6]	[7]	3
5	MPI-ESM-1-2-HAM	Max Planck Institut für Meteorologie, Germany	1.875° × 1.875°	Hamburg Aerosol Module version 2.3 (HAM2.3)	[8]	[9]	3
6	NorESM2-LM	Norwegian Meteorological Institute, Norway	2.5° × 1.875°	Oslo aerosol module (OsloAero)	[10]	[11]	1
7	NorESM2-MM	Norwegian Meteorological Institute, Norway	1° × 1.25°	Oslo aerosol module (OsloAero)	[10]	[11]	1
8	IPSL-CM6A-LR-INCA	Institut Pierre Simon Laplace, France	1.26°x2.5°	Interaction with Chemistry and Aerosols module (INCA v6 AER)	[5]	[5]	1
9	IPSL-CM5A2-INCA	Institut Pierre Simon Laplace, France	2°x3.75°	none	none	[5]	1
10	EC-Earth3-AerChem	Swedish Meteorological and Hydrological Institute, Sweden	2°x3°	Chemistry transport model (TM5)	[12]	[13]	4
11	MRI-ESM2-0	Meteorological Research Institute, Japan	1.125° × 1.125°	Model of Aerosol Species IN the Global Atmosphere (MASINGAR mk2r4)	[14]	[14]	10
12	GISS-E2-1-G	Goddard Institute for Space Studies, USA	2°x2.5°	One-Moment Aerosol scheme (OMA)	[15]	[16]	10
13	GISS-E2-1-H	Goddard Institute for Space Studies, USA	2°x2.5°	One-Moment Aerosol scheme (OMA)	[15]	[16]	5
14	INM-CM5-0	Institute for Numerical Mathematics, Russia	1.5°x2°	INM-AER1	[17]	[17]	9
15	INM-CM4-8	Institute for Numerical Mathematics, Russia	1.5°x2°	INM-AER1	[17]	[18]	1
16	GISS-E2-2-G	Goddard Institute for Space Studies, USA	2°x2.5°	One-Moment Aerosol scheme (OMA)	[15]	[19]	1

Table S1. Information about the CMIP6 models. List of the models contributing to the CMIP6 experiments that are used in this study, the modeling centers leading the modeling efforts, atmospheric model resolution, aerosol scheme used, and number of ensemble members.

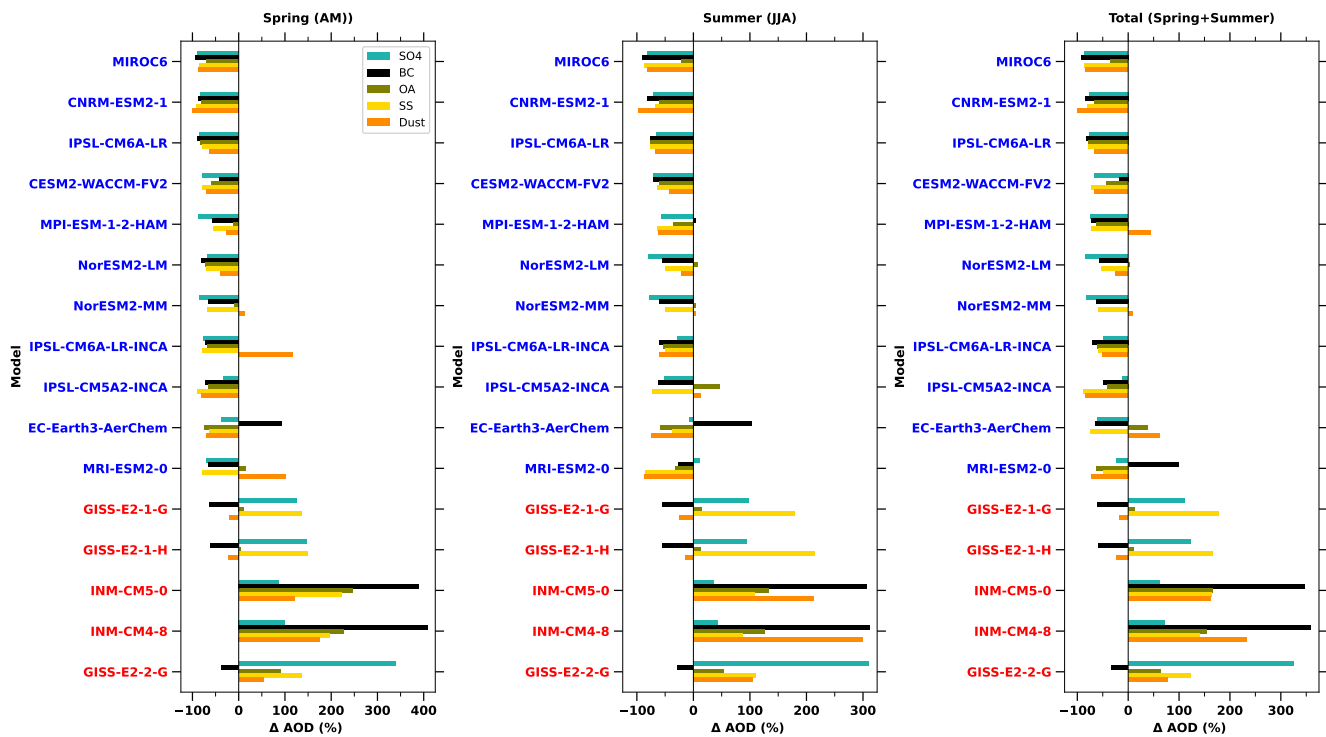


Figure S1. Spring and summertime AOD components relative percentage changes with respect to multi-model-mean. (a-c) Spring, summer, and total (spring=summer) AOD components percentage changes simulated by individual models with respect to multi-model-mean respectively. The components of AOD are presented in different colors.

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