
Model simulated historical (HIST) forcing and trends

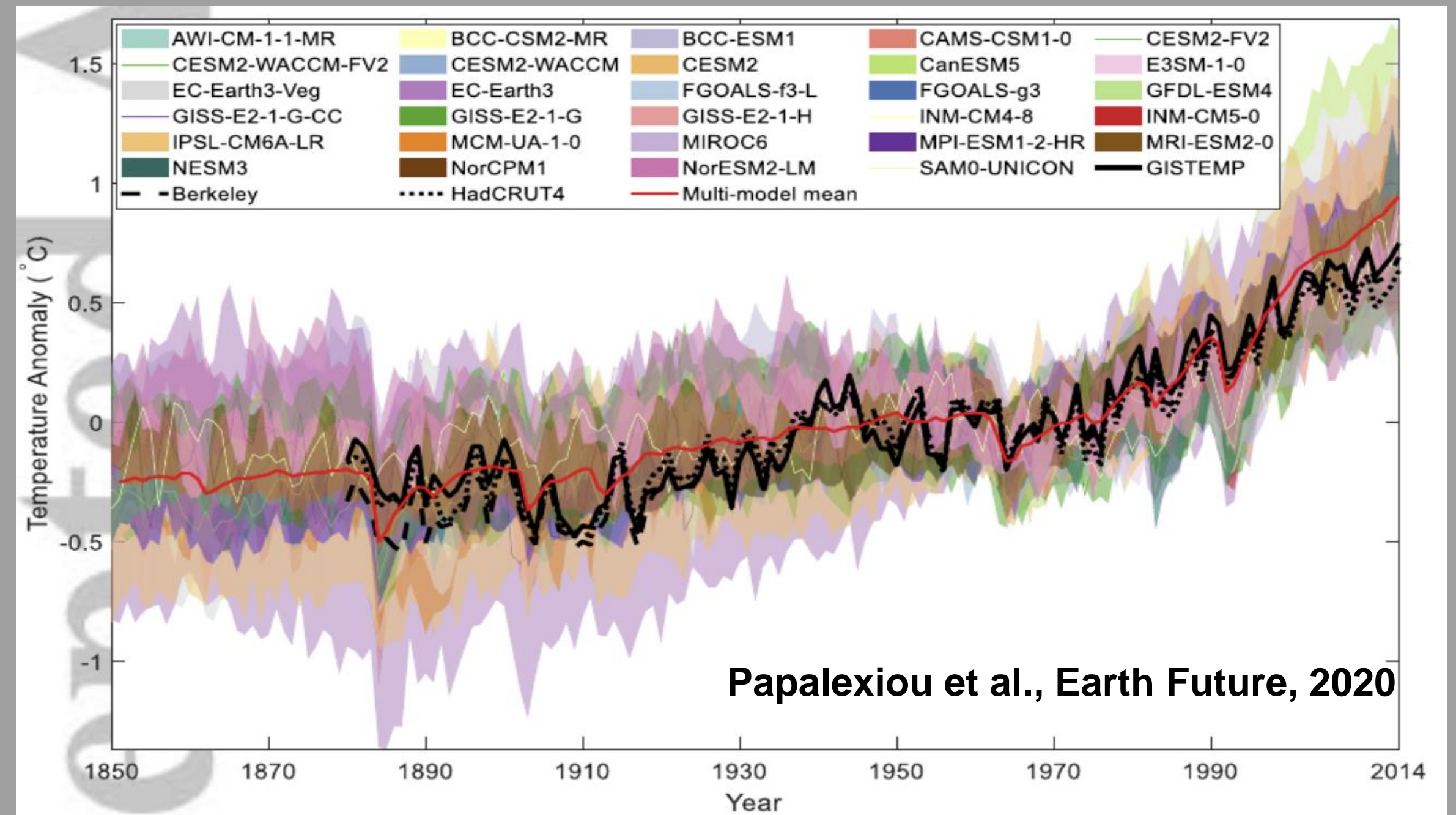
Gunnar Myhre

Why important?

Most CMIP6 models have too rapid global mean temperature increase over last decades compared to observations, several models also too cold in last mid-century.

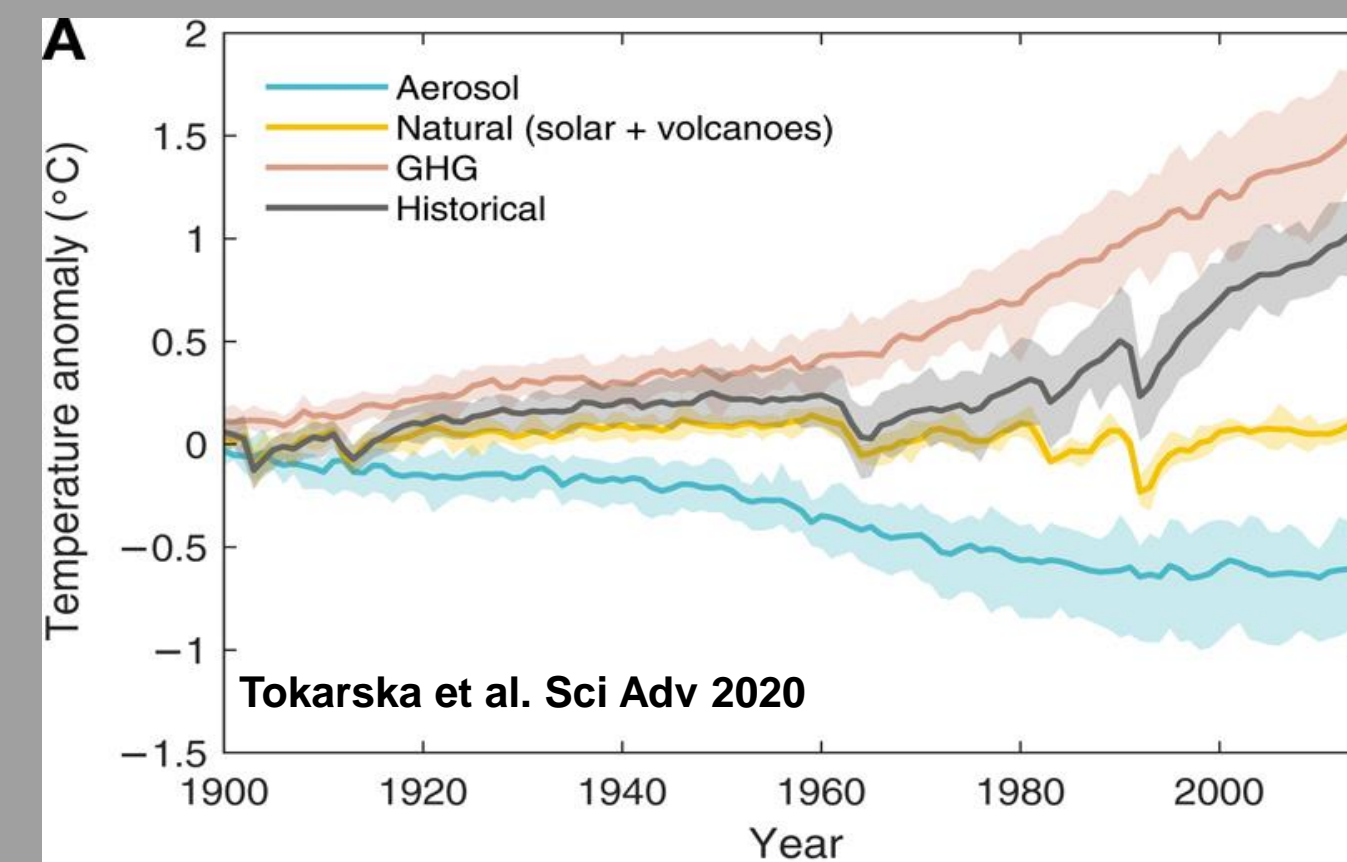
How important contributor are aerosols to the differences between observations and CMIP6?

Any change in the aerosol forcing over the last decades?

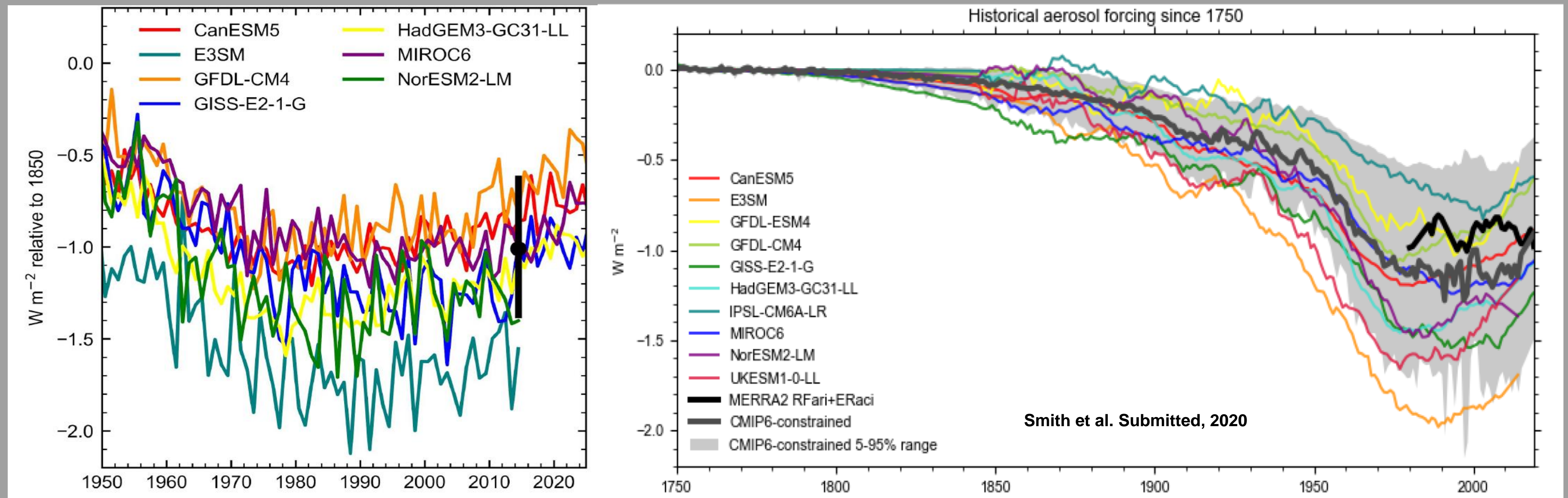


CMIP6 results:
Comparison to observations in the historical experiment (Upper)

Additional simulations for GHG, aerosols, and natural (Lower)

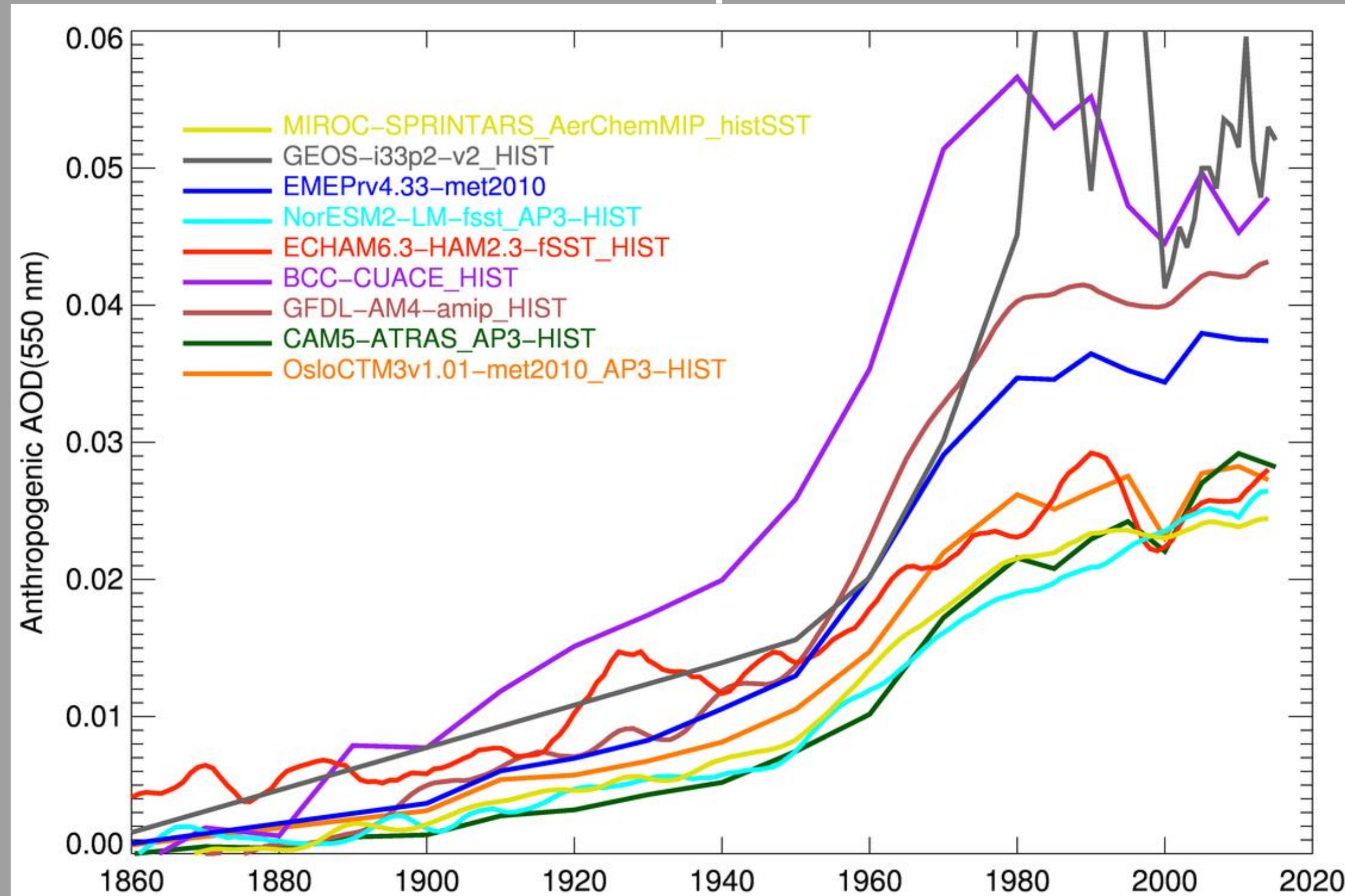


Aerosol forcing within RFMIP CMIP6. The black line in the left figure show the pre-industrial to present aerosol forcing for a large set of models. The right figure shows in the grey colour the aerosol forcing constrained by observed temperature and ocean heat uptake.

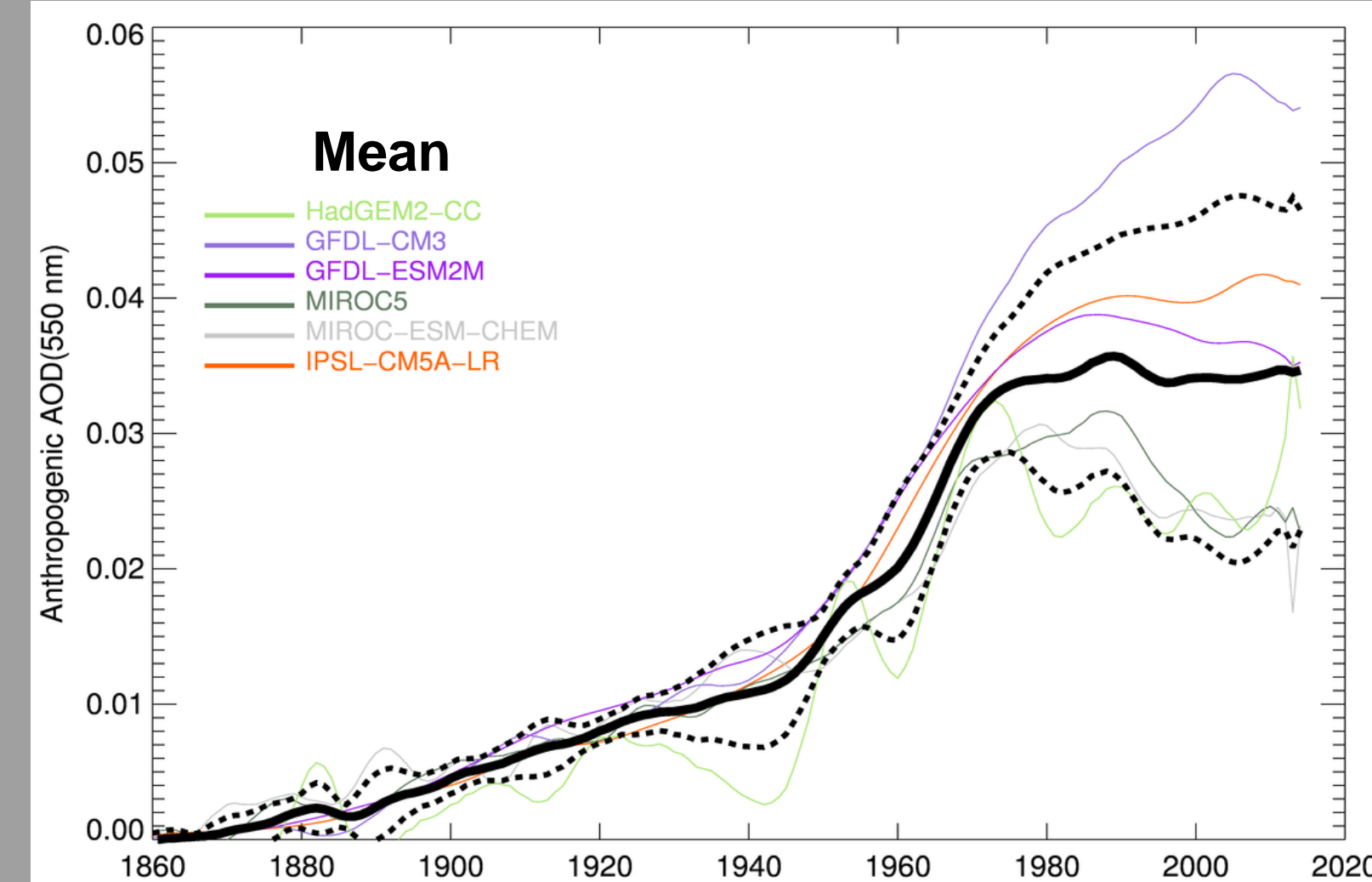


Any improvements in model diversity?

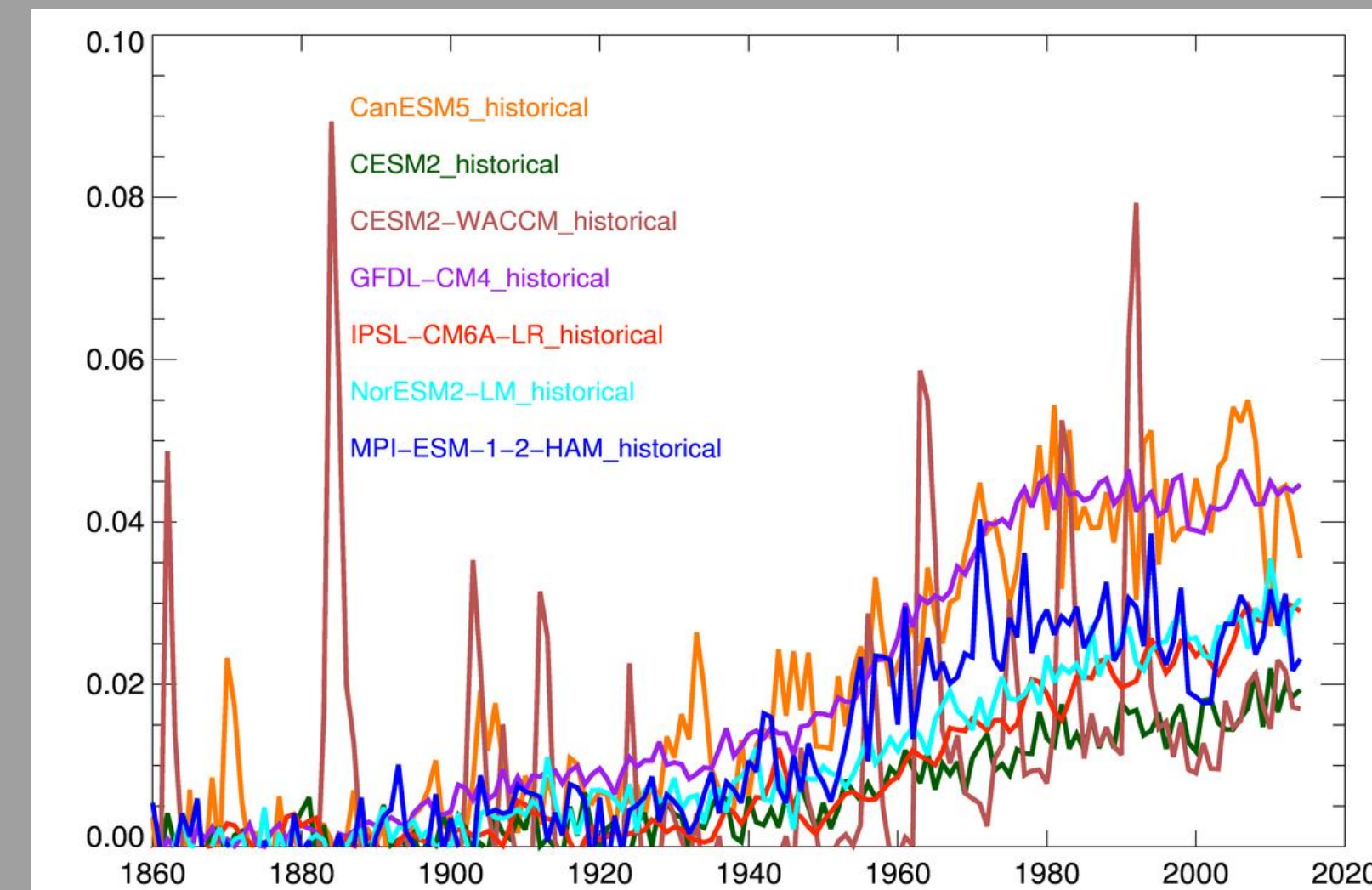
AeroCom Historical experiment



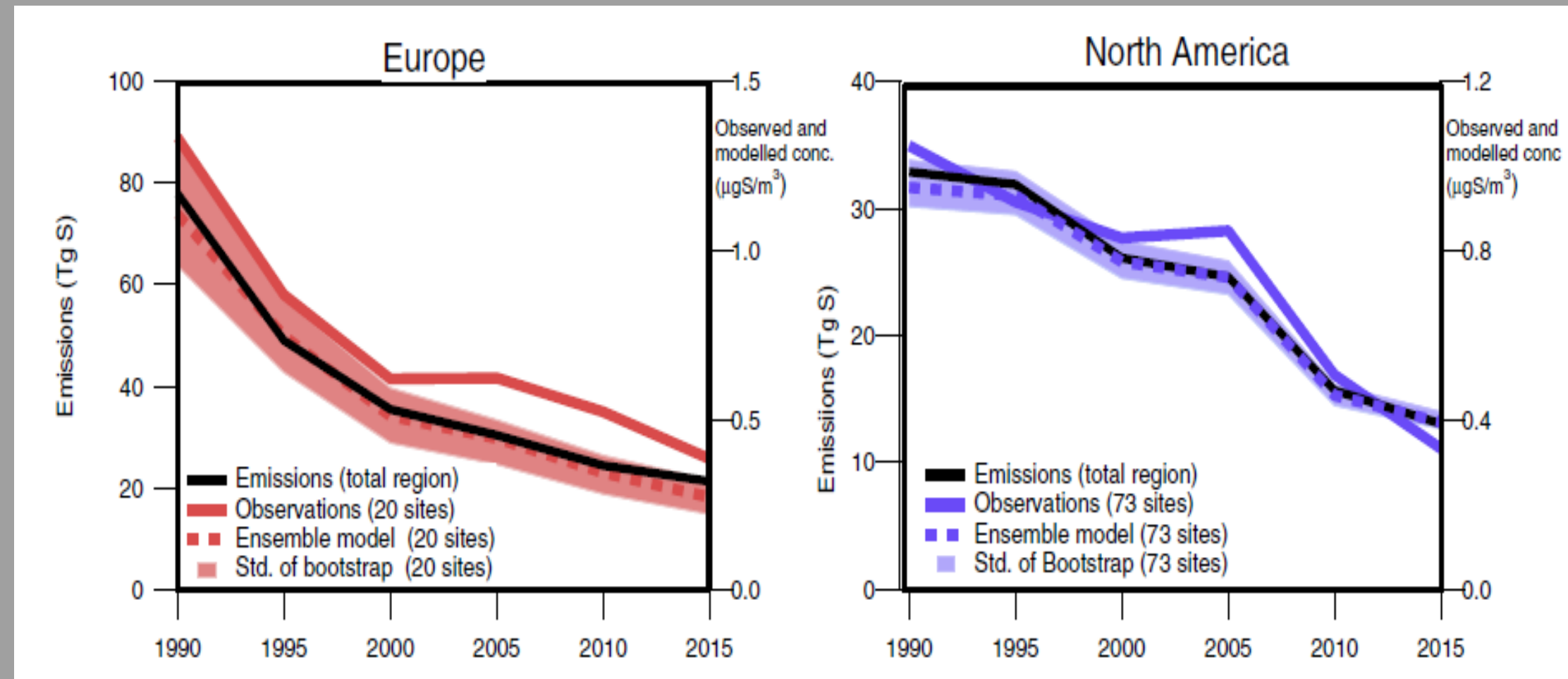
Some selected CMIP5 models



Some selected CMIP6 models

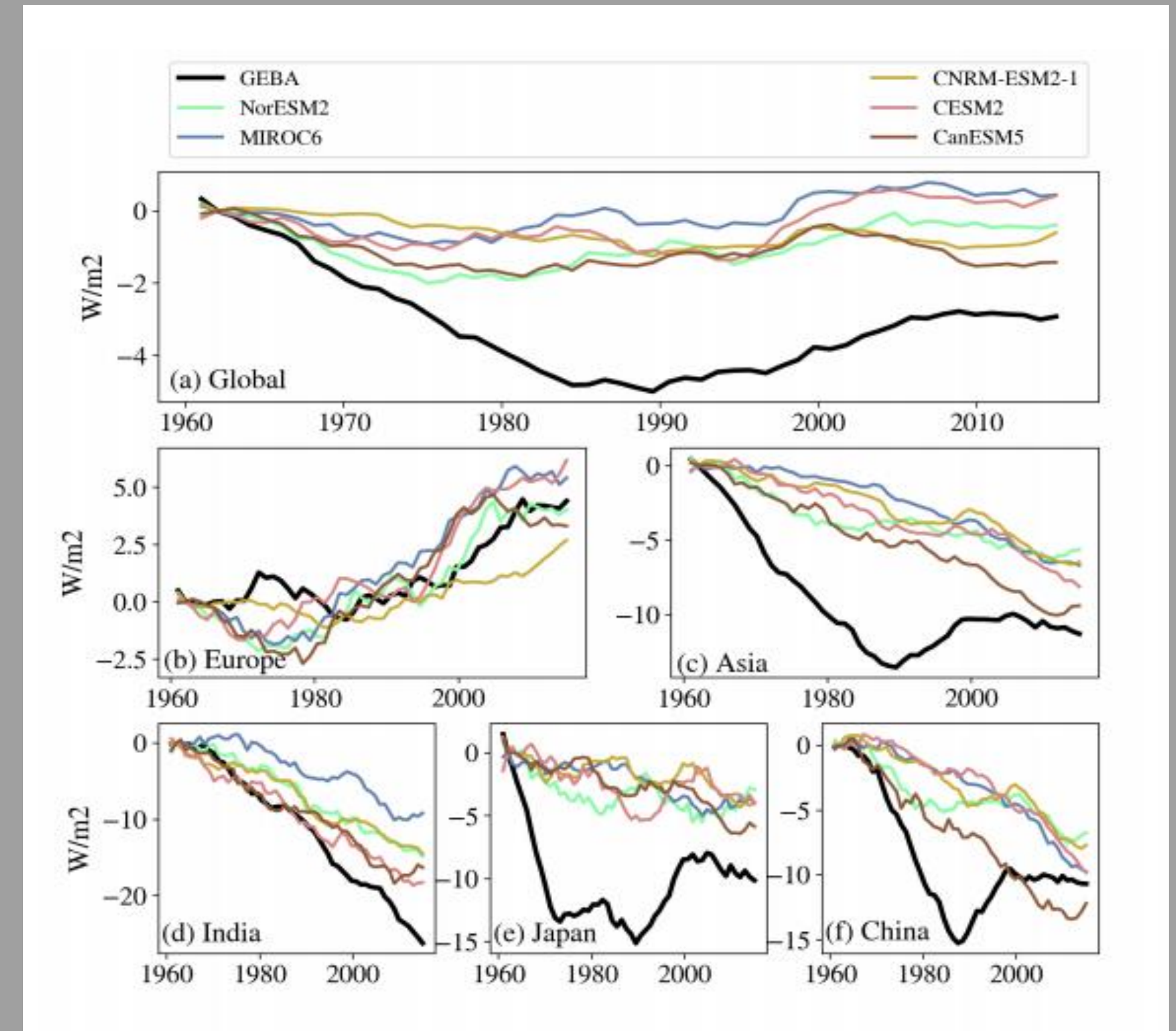


Model and observations trends in good agreement

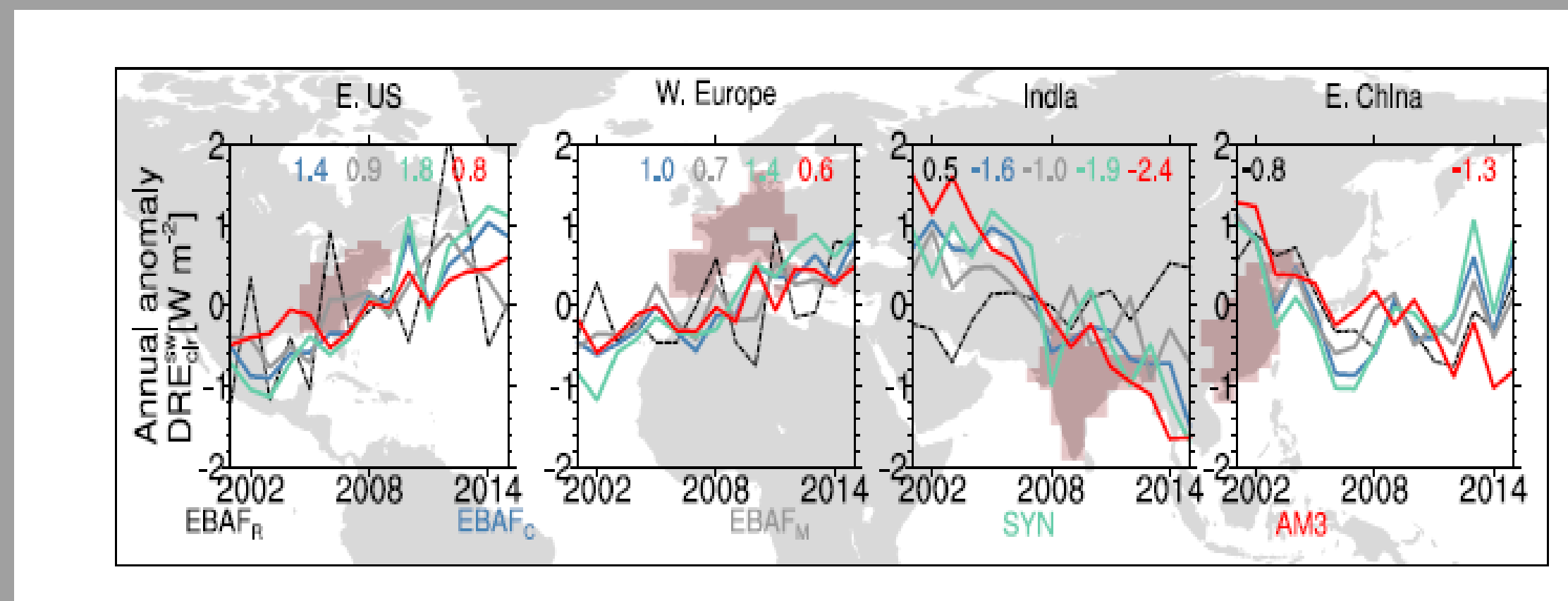


Surface sulfate (Aas et al., Scientific Reports, 2019)

Large differences in model and observations trends

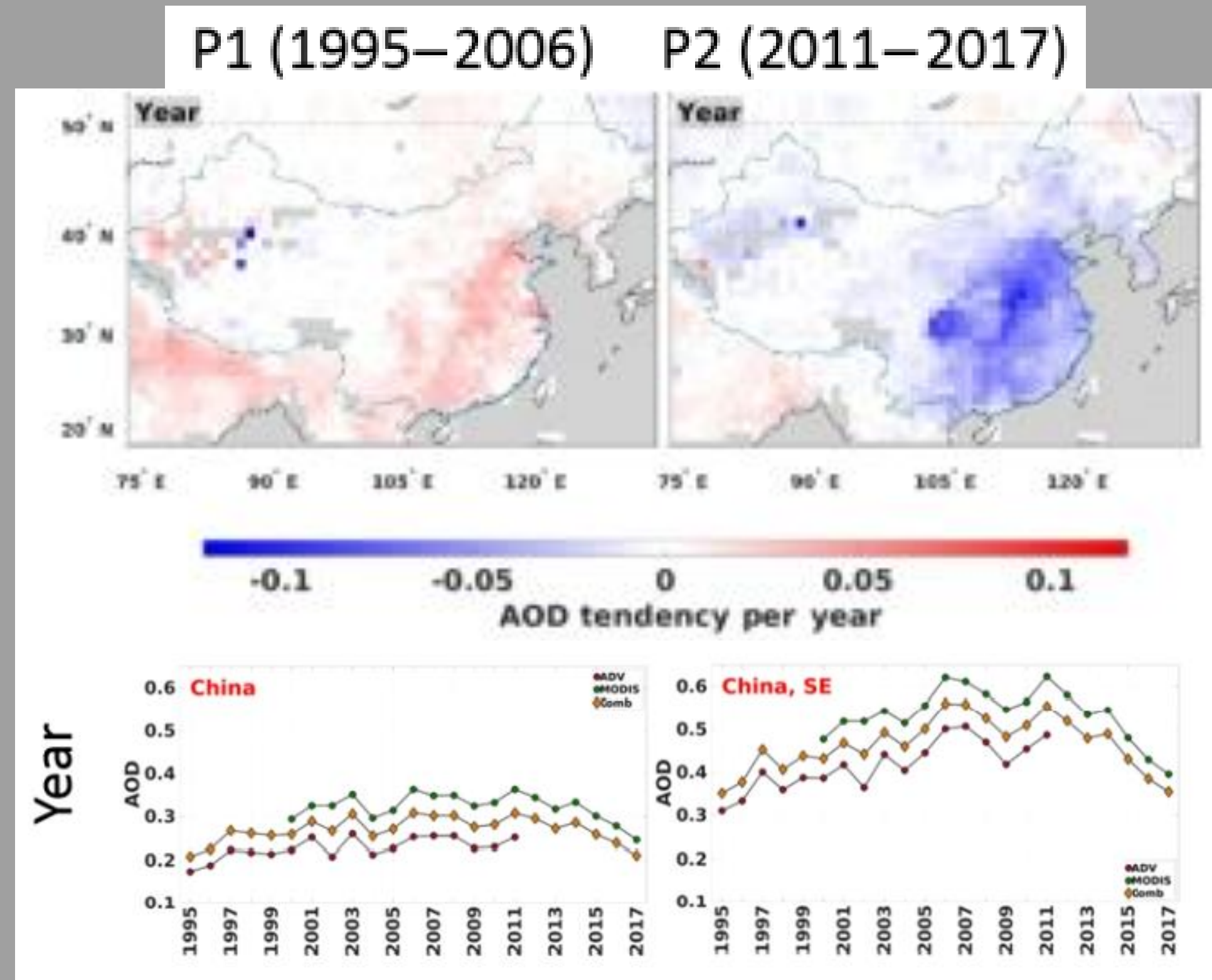


Surface radiation (dimming & brightening) (Moseid et al., ACPD, 2020)



Top of the atmosphere clear sky aerosol radiative effect (Paulot et al., ACP, 2019)

Other useful data



Spatial and seasonal variations of aerosols over China from two decades of multi-satellite observations – Part 2: AOD time series for 1995–2017 combined from ATSR ADV and MODIS C6.1 and AOD tendency estimations

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