The Role of Sulfate Aerosol Forcing and Air-Sea Feedbacks in Generating Strong Seasonality of Climate Change over the Mid-latitude Oceans

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EESD RGMA Project DE-SC0022029

Poster #104

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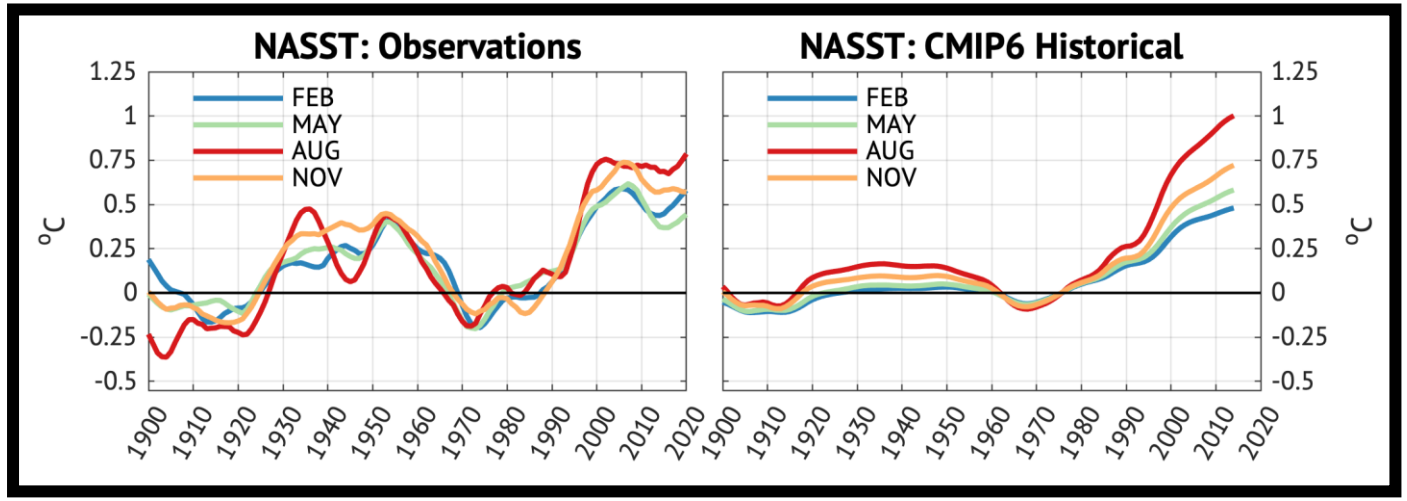
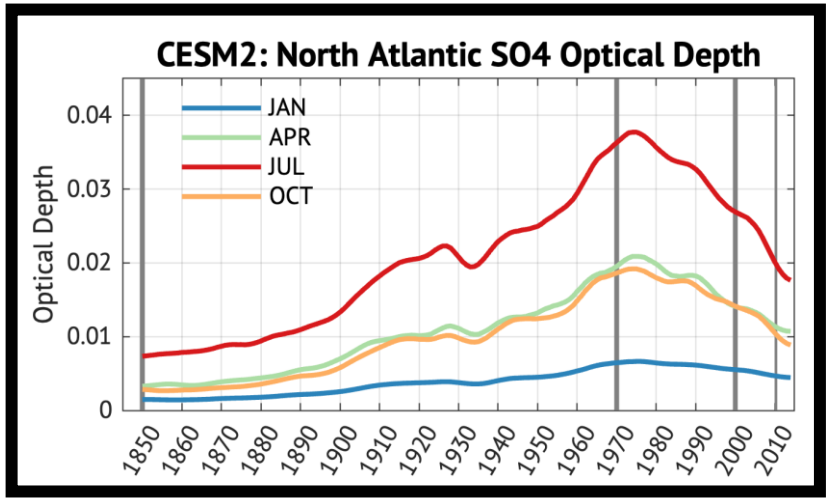


Since 1970, North Atlantic SST has warmed 50% faster during late **SUMMER** than late **WINTER**

Sulfate aerosols are **FIVE TIMES** more abundant during **SUMMER** than **WINTER** despite no seasonality in SO_2 emissions



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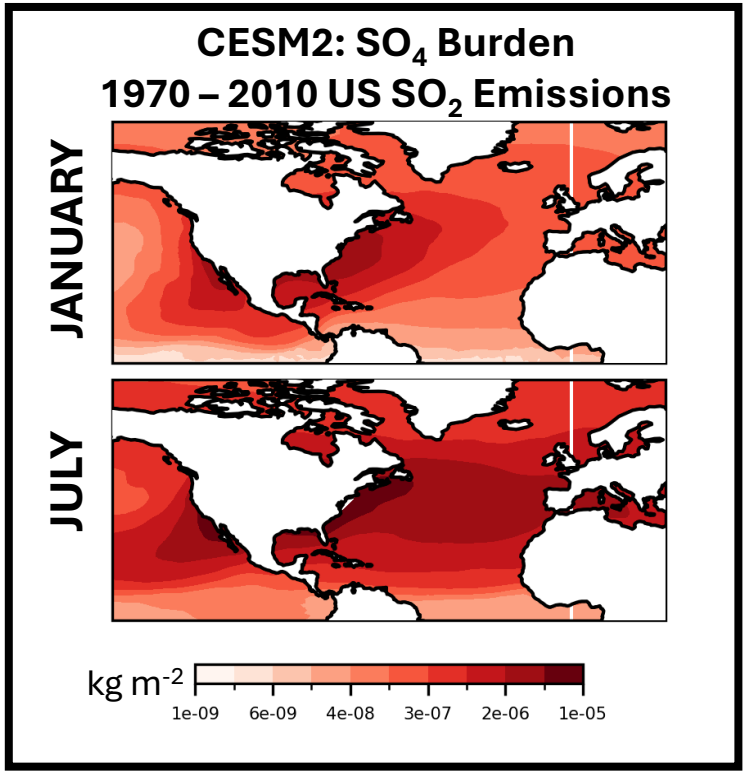
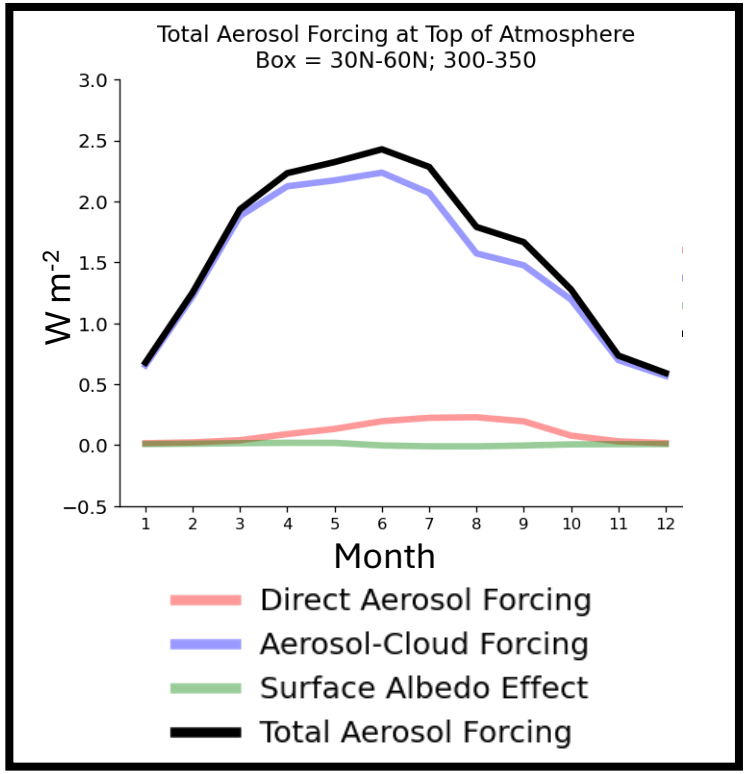
Why do sulfate aerosols exhibit strong seasonality?

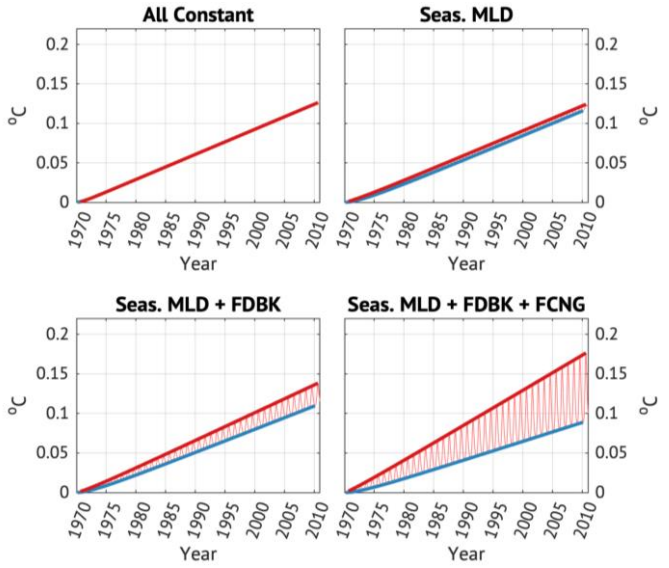


How does sulfate seasonality affect sulfate direct and cloud radiative forcing?



How do the mean state, radiative forcing, and air-sea feedbacks contribute to SST seasonality?

$$\frac{d(\rho c H(t) T)}{dt} = -k(t)T + F(t)$$



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