Supplementary Information

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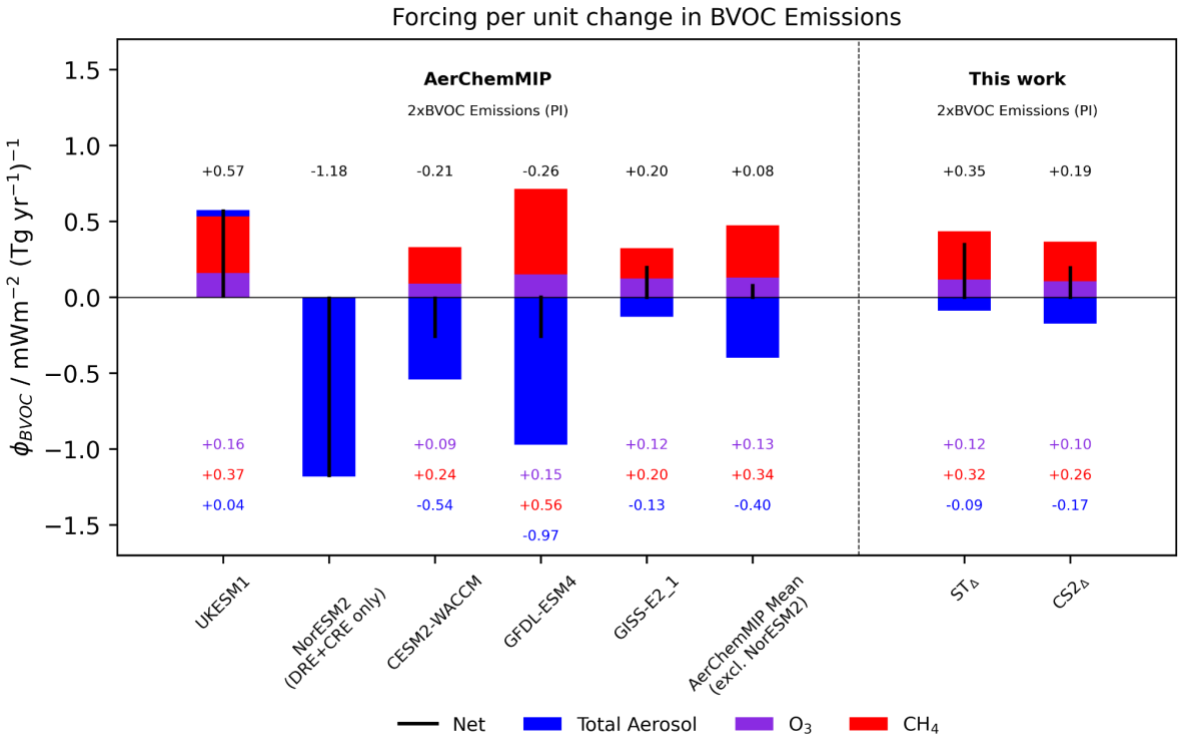

Fig. S1. Forcing per unit change in BVOC emissions from the AerChemMIP 2xBVOC study (Thornhill et al., 2021) and this work.

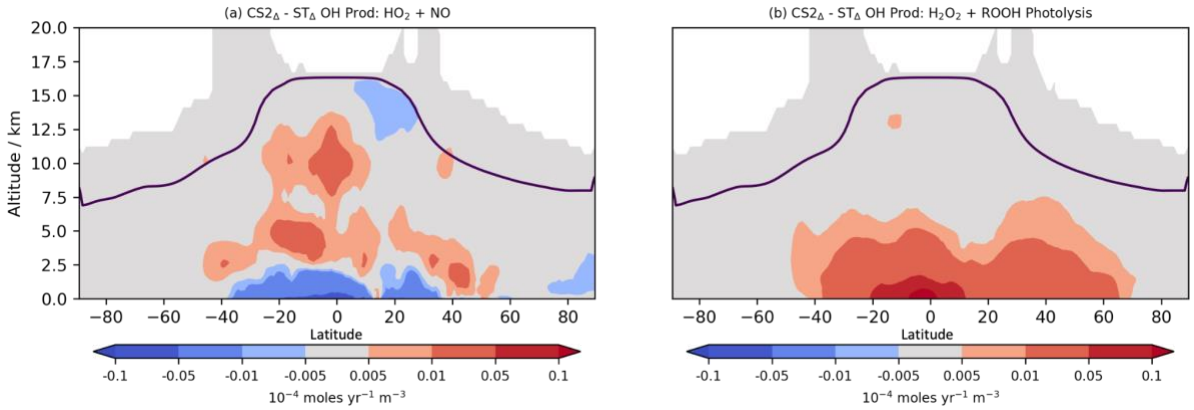

Fig. S2. OH production differences. Zonal mean difference between Strat-Trop (ST_{Δ}) and CRI-Strat 2 ($CS2_{\Delta}$) for OH production from (a) HO_2 + NO and (b) H_2O_2 and other peroxides (ROOH).

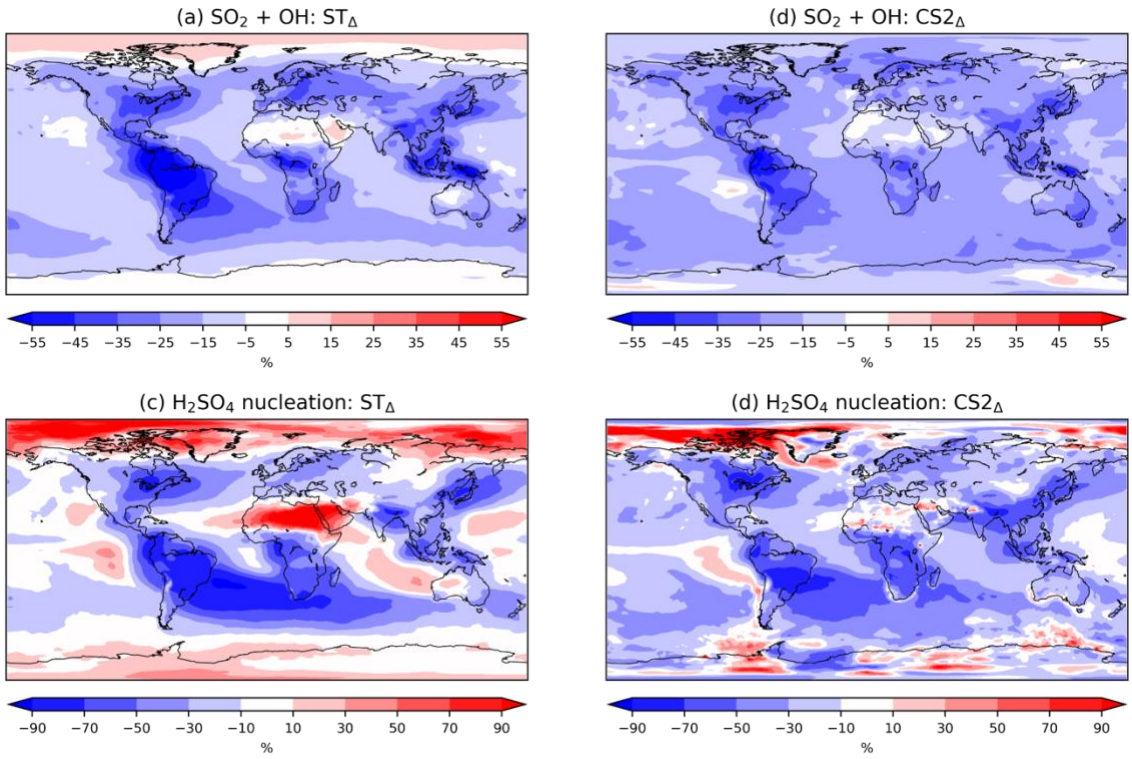

Fig. S3. SO_2 oxidation and H_2SO_4 nucleation. Percentage change in vertically integrated flux of SO_2 + OH for (a) Strat-Trop (ST_Δ) and (b) CRI-Strat 2 ($CS2_\Delta$) and nucleation flux of new particle formation from H_2SO_4 for (c) ST_Δ and (d) $CS2_\Delta$.

Supplementary References

1. G. Thornhill et al. Climate-driven chemistry and aerosol feedbacks in CMIP6 Earth system models. *Atmospheric Chemistry and Physics* 21.2, 1105-1126 (2021).