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Supplement of

Sensitivity of modelled sulfate aerosol and its radiative effect on climate to ocean DMS concentration and air–sea flux

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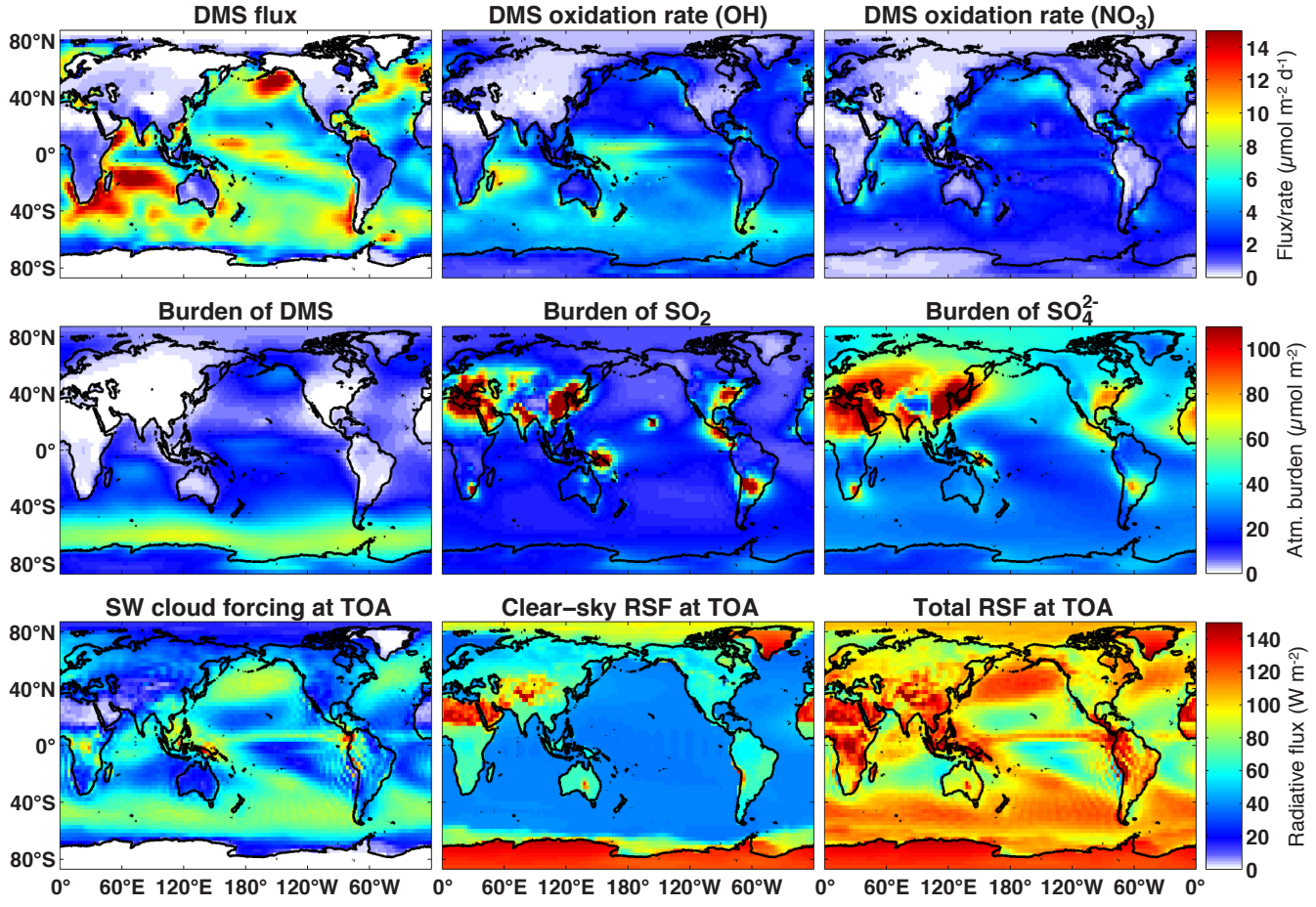

Figure S1. Global maps of annual mean distributions of DMS flux, oxidation rates, sulfur burdens and radiation for control run (L10 & N00 & γ_a). Global maps of flux and oxidation rates of DMS are shown in the upper panels. DMS flux includes terrestrial sources. The only sink for DMS is oxidation to SO_2, which is shown for both oxidation pathways (oxidation by OH and NO_3 radicals). Global maps of atmospheric sulfur burdens of DMS, SO_2, and SO_4^{2-} are shown in the middle panels. Bottom panels show maps of cloud forcing, clear-sky reflected and total reflected shortwave flux (RSF) at TOA. Total RSF is the sum of cloud and clear-sky RSF.

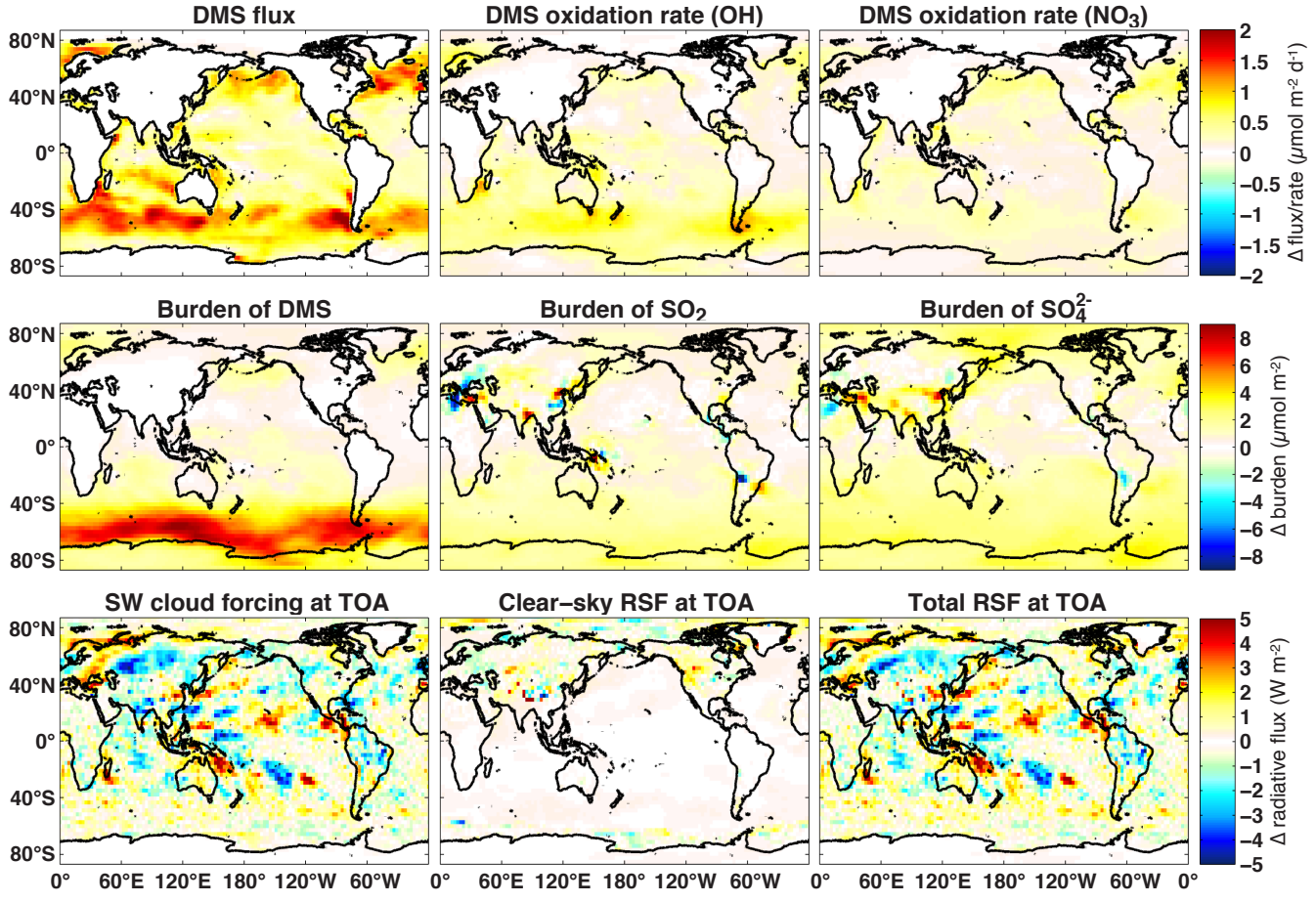

Figure S2. Global maps showing absolute differences between model configuration L10 & N00 (control without air resistance) and the control run (L10 & N00 & γ_a) of DMS flux, oxidation rates (both oxidation by OH and NO_3 radicals), sulfur burdens (DMS, SO_2, and SO_4^{2-}) and radiation (cloud forcing, clear-sky reflected and total reflected shortwave flux (RSF) at TOA). The difference is calculated as experiment run (L10 & N00) minus control run (L10 & N00 & γ_a).

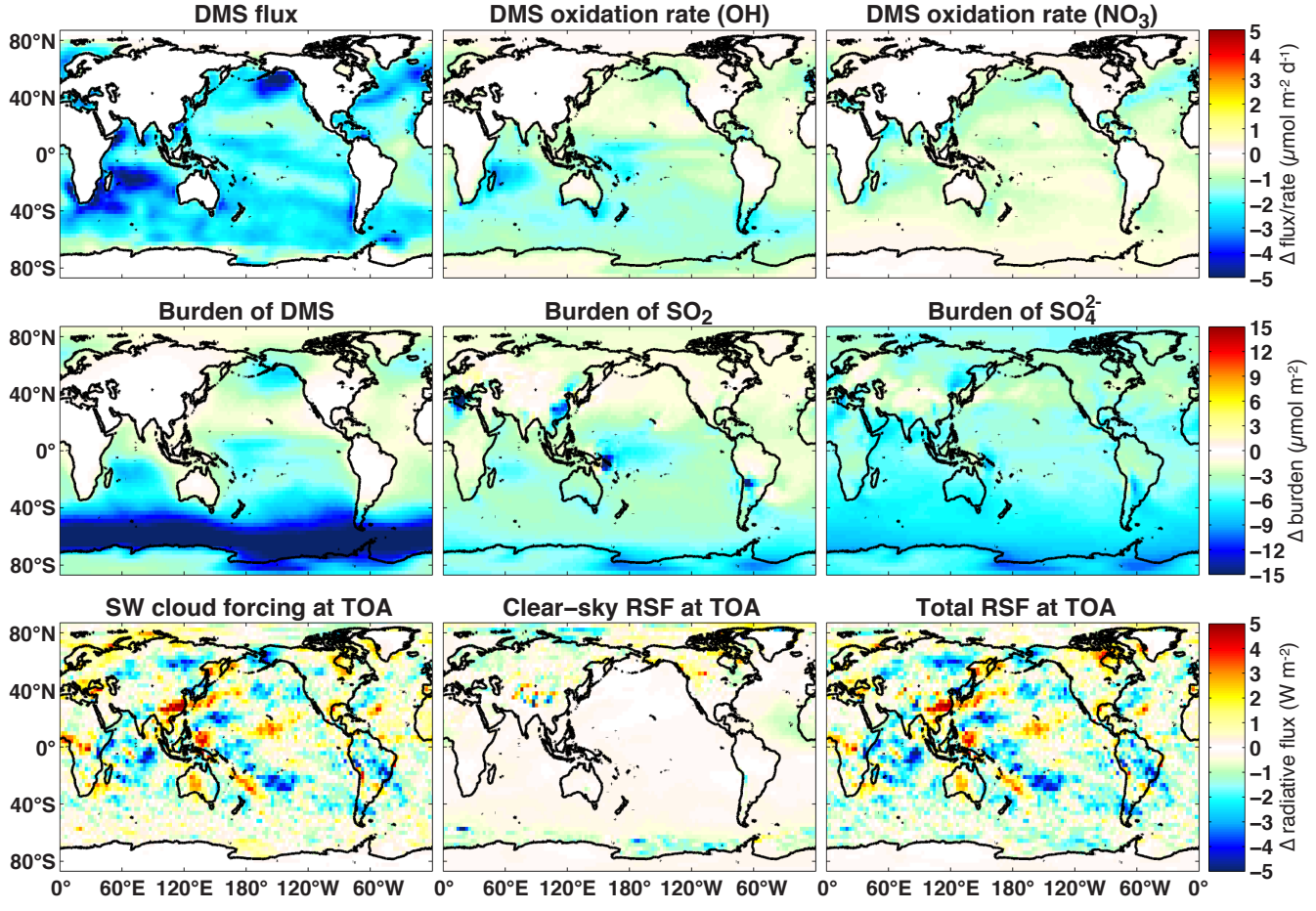

Figure S3. Same as Fig. S2, but for experiment L10 & LM86. The difference is calculated as experiment run (L10 & LM86) minus control run (L10 & N00 & γ_a).

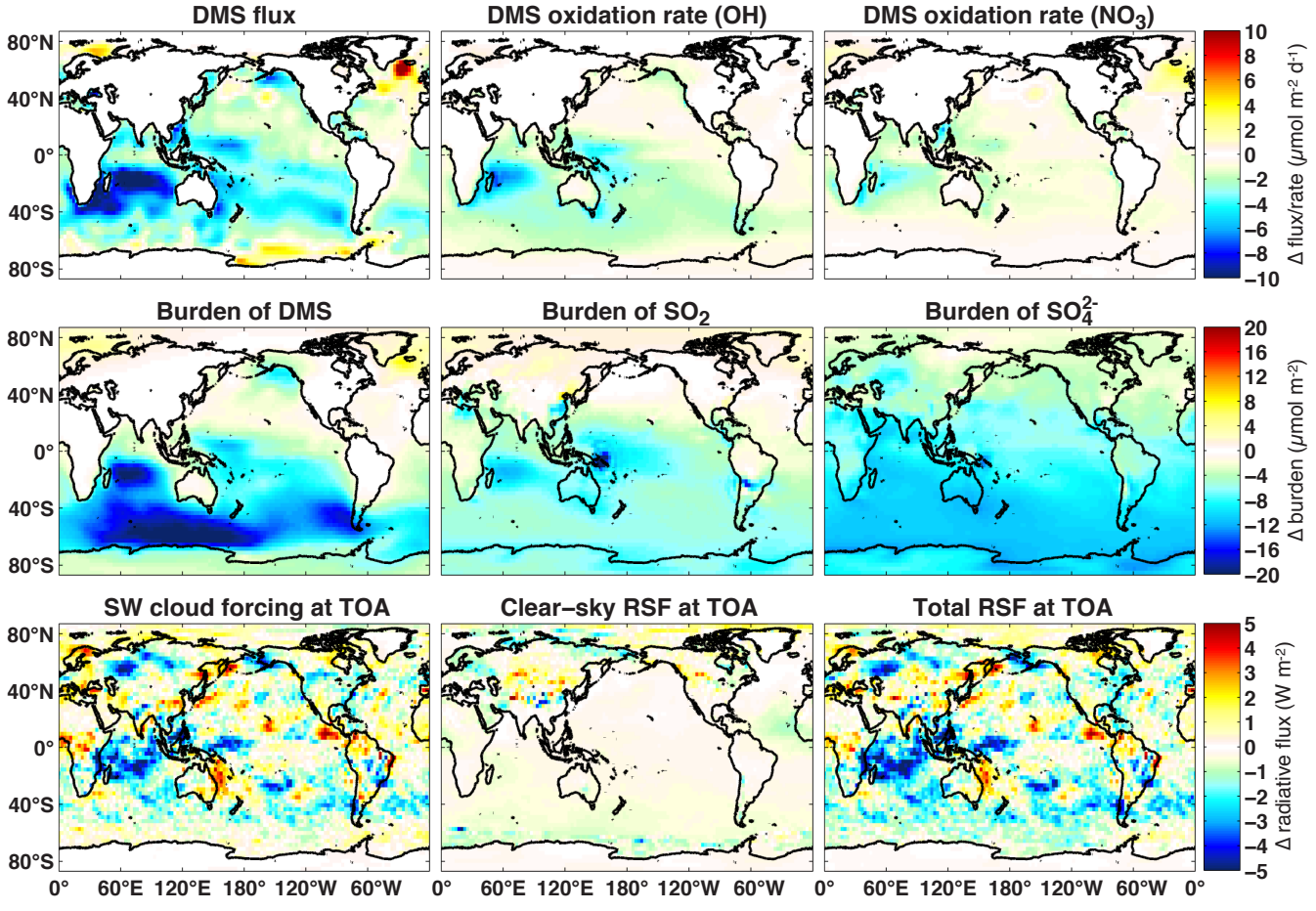

Figure S4. Same as Fig. S2, but for experiment K99 & LM86. The difference is calculated as experiment run (K99 & LM86) minus control run (L10 & N00 & γ_a).

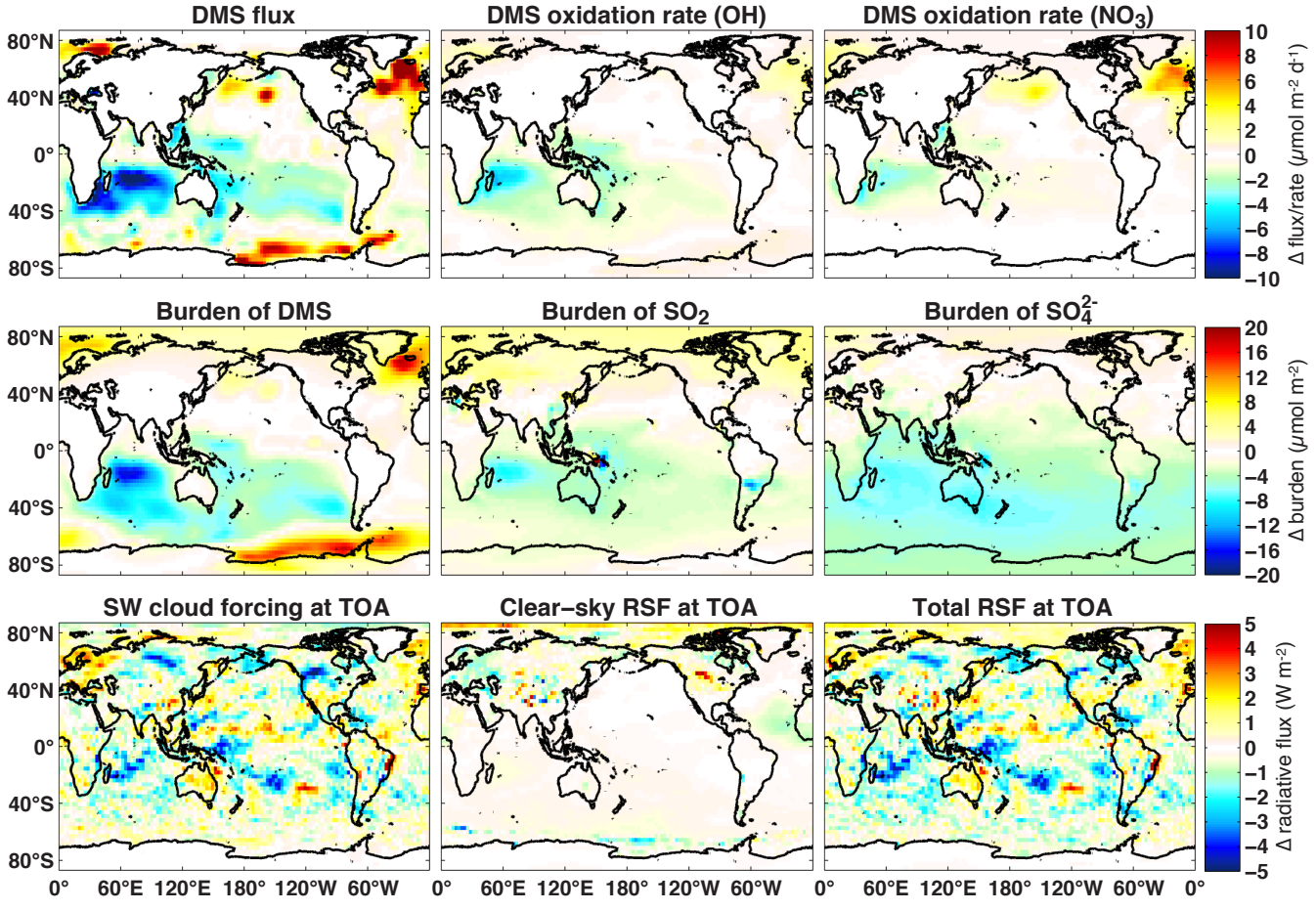

Figure S5. Same as Fig. S2, but for experiment K99 & N00 & γ_{a}. The difference is calculated as experiment run (K99 & N00 & γ_{a}) minus control run (L10 & N00 & γ_{a}).

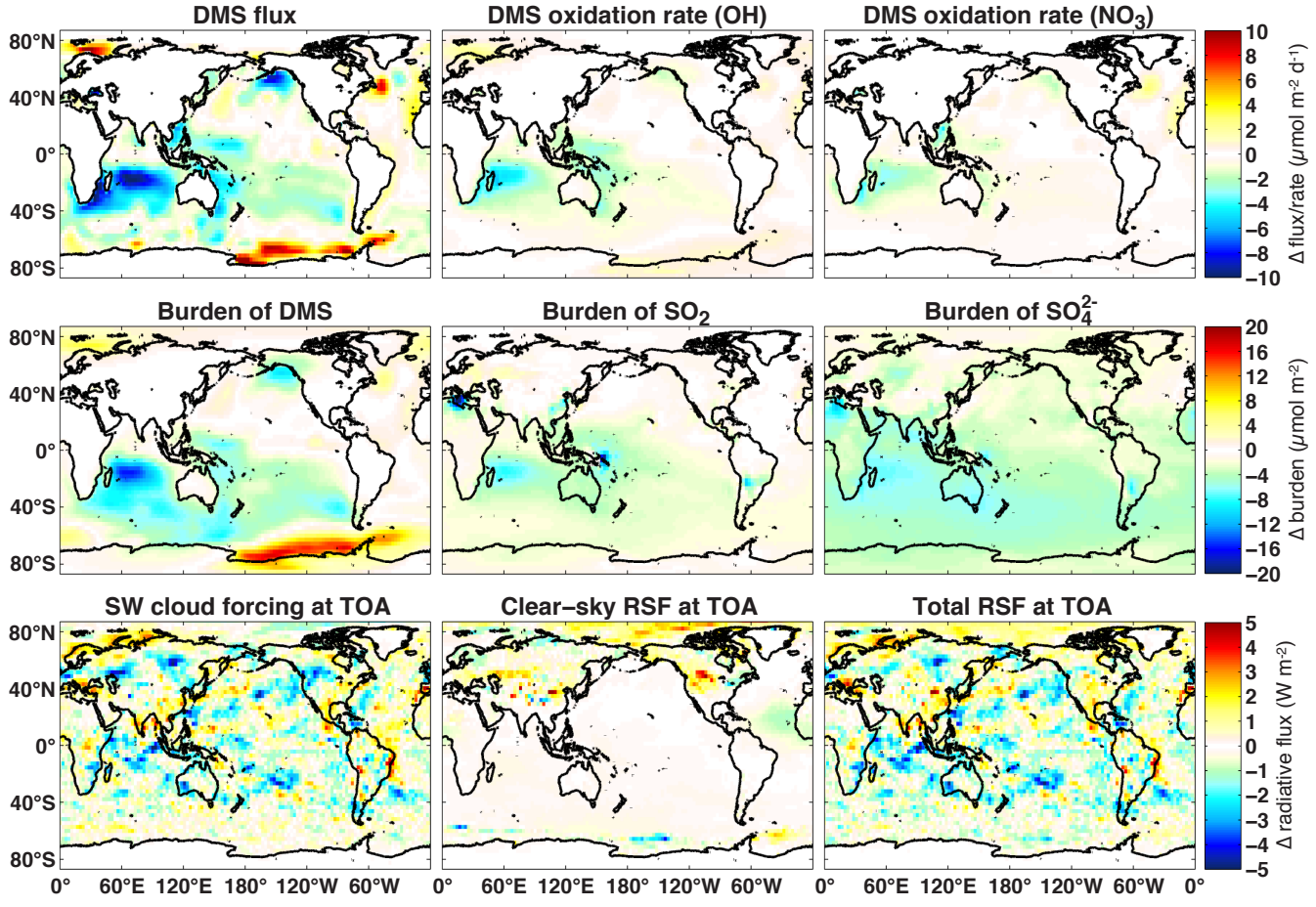

Figure S6. Same as Fig. S2, but for experiment K00 & N00 & γ_{a}. The difference is calculated as experiment run (K00 & N00 & γ_{a}) minus control run (L10 & N00 & γ_{a}).

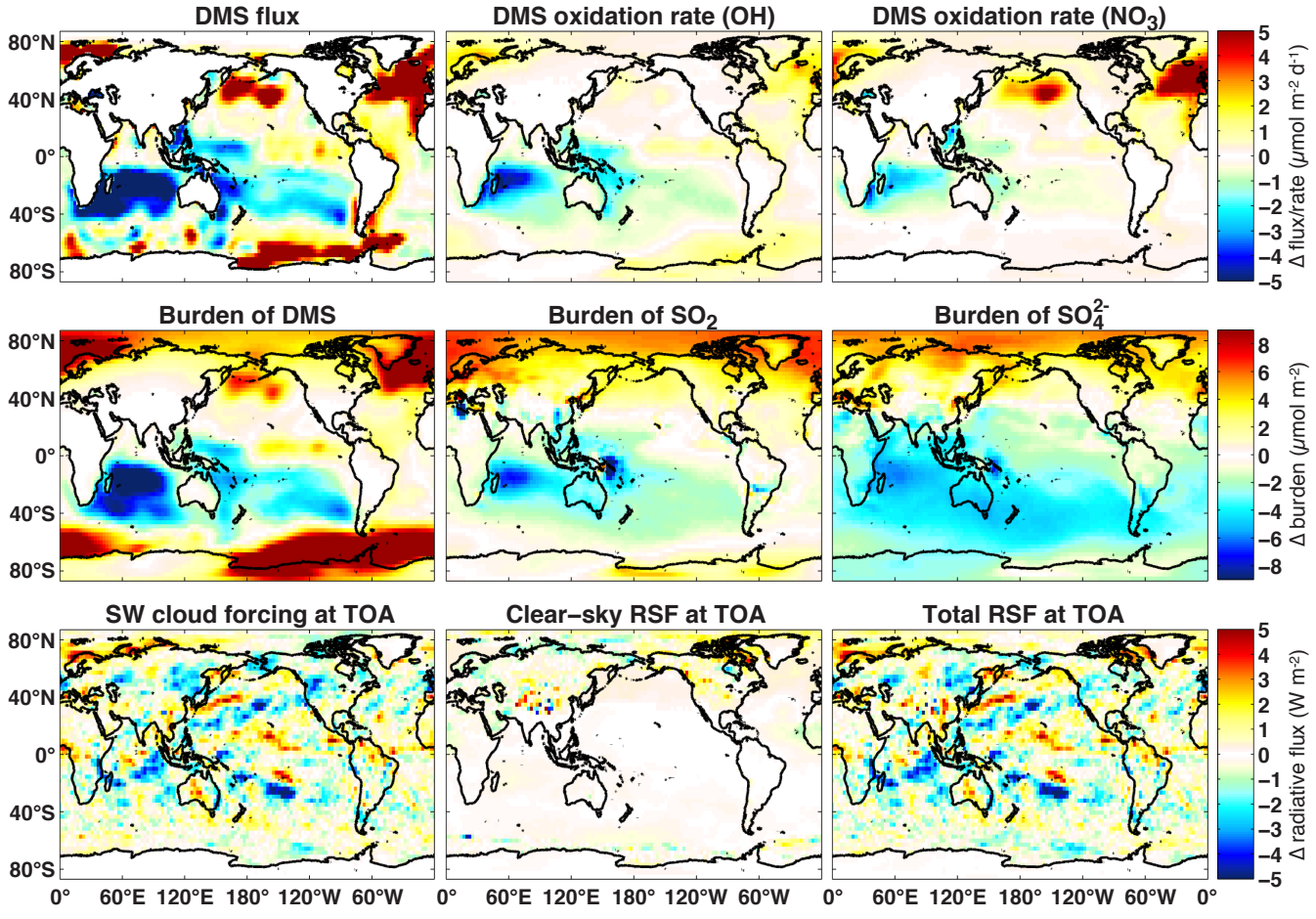

Figure S7. Same as Fig. S2, but for experiment K99* & N00 & γ_a. The difference is calculated as experiment run (K99* & N00 & γ_a) minus control run (L10 & N00 & γ_a).

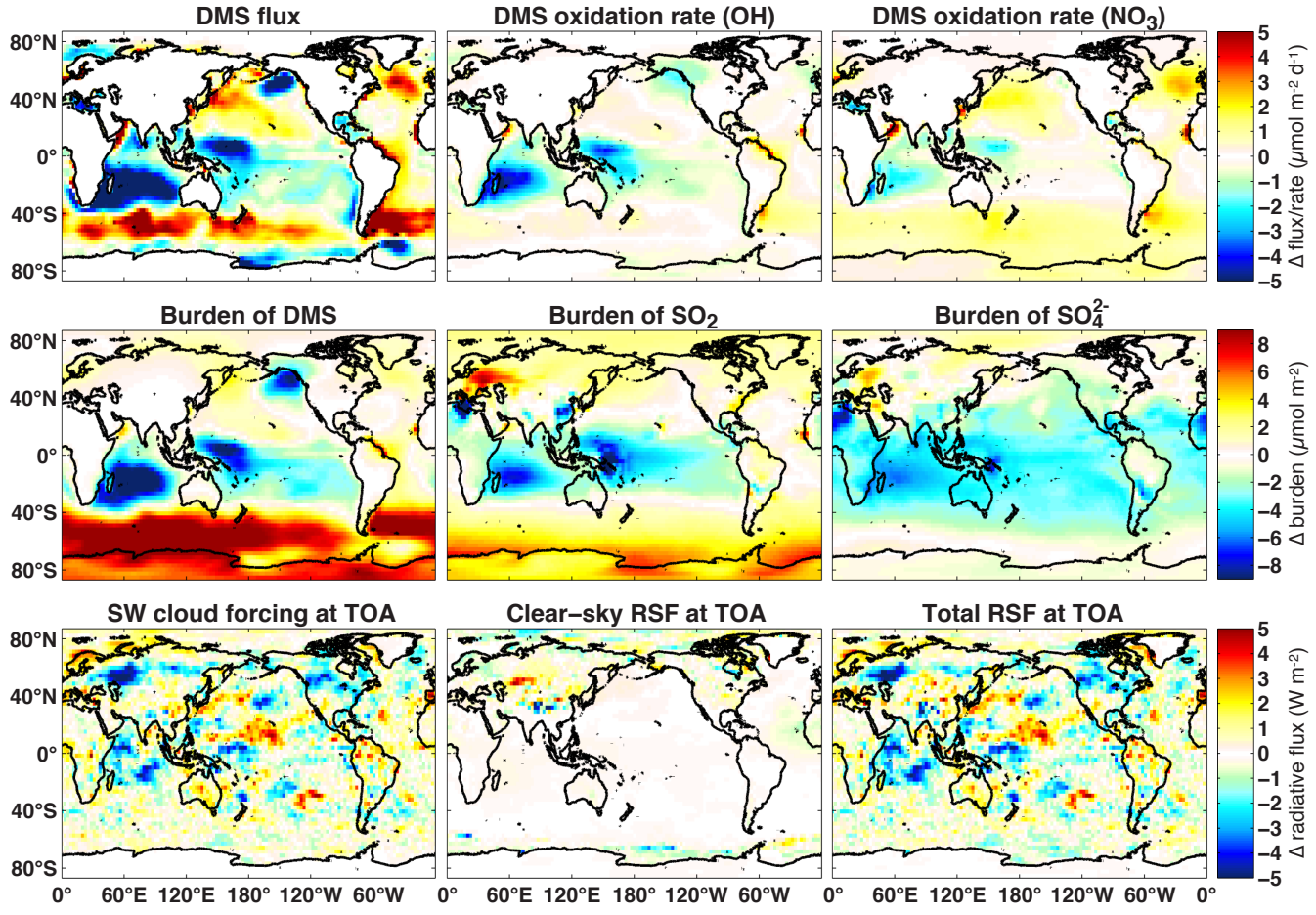

Figure S8. Same as Fig. S2, but for experiment AN01* & N00 & γ_a. The difference is calculated as experiment run (AN01* & N00 & γ_a) minus control run (L10 & N00 & γ_a).

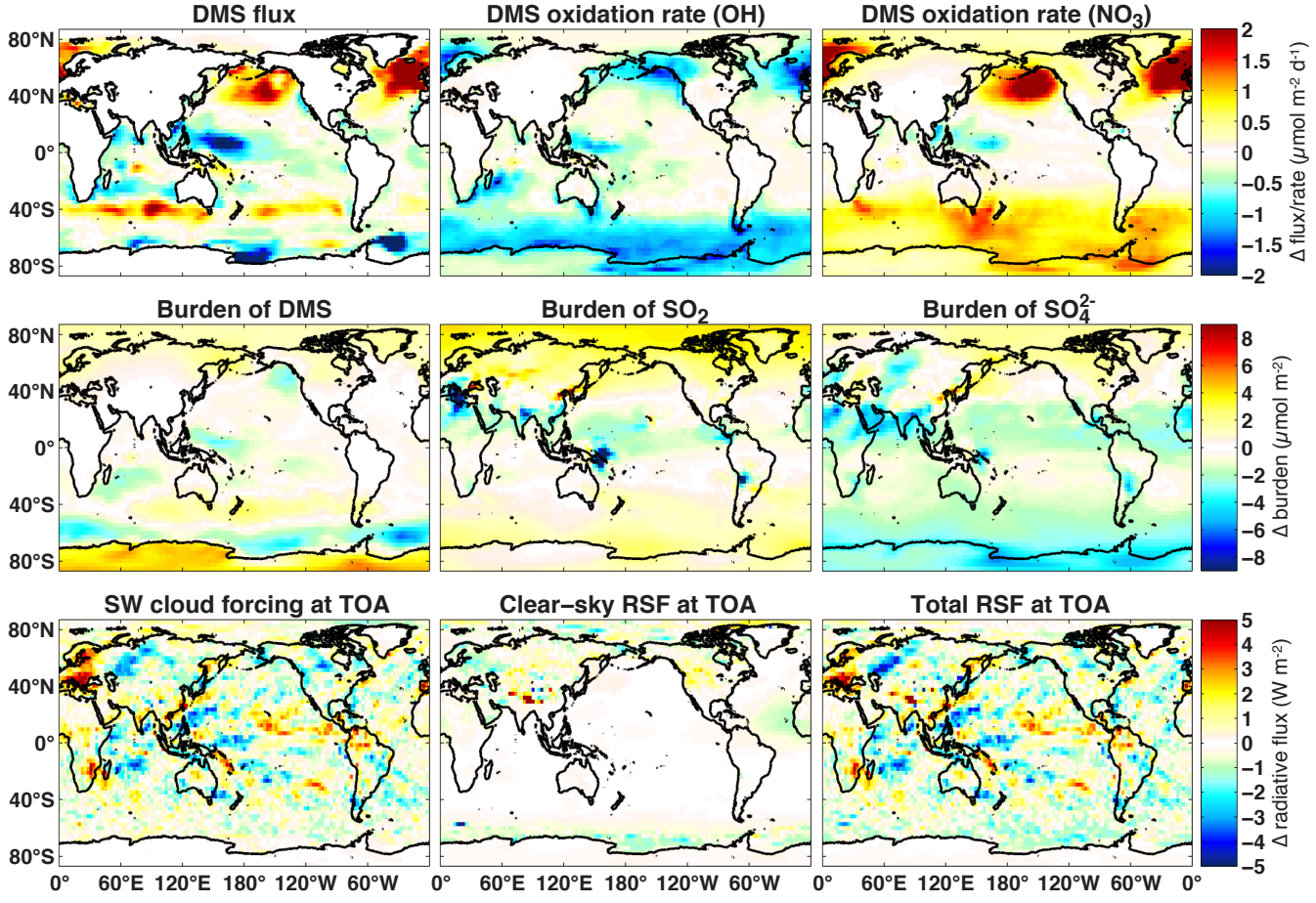

Figure S9. Same as Fig. S2, but for experiment using temporally invariant DMS concentration field. The difference is calculated as experiment run minus control run (L10 & N00 & γ_a).

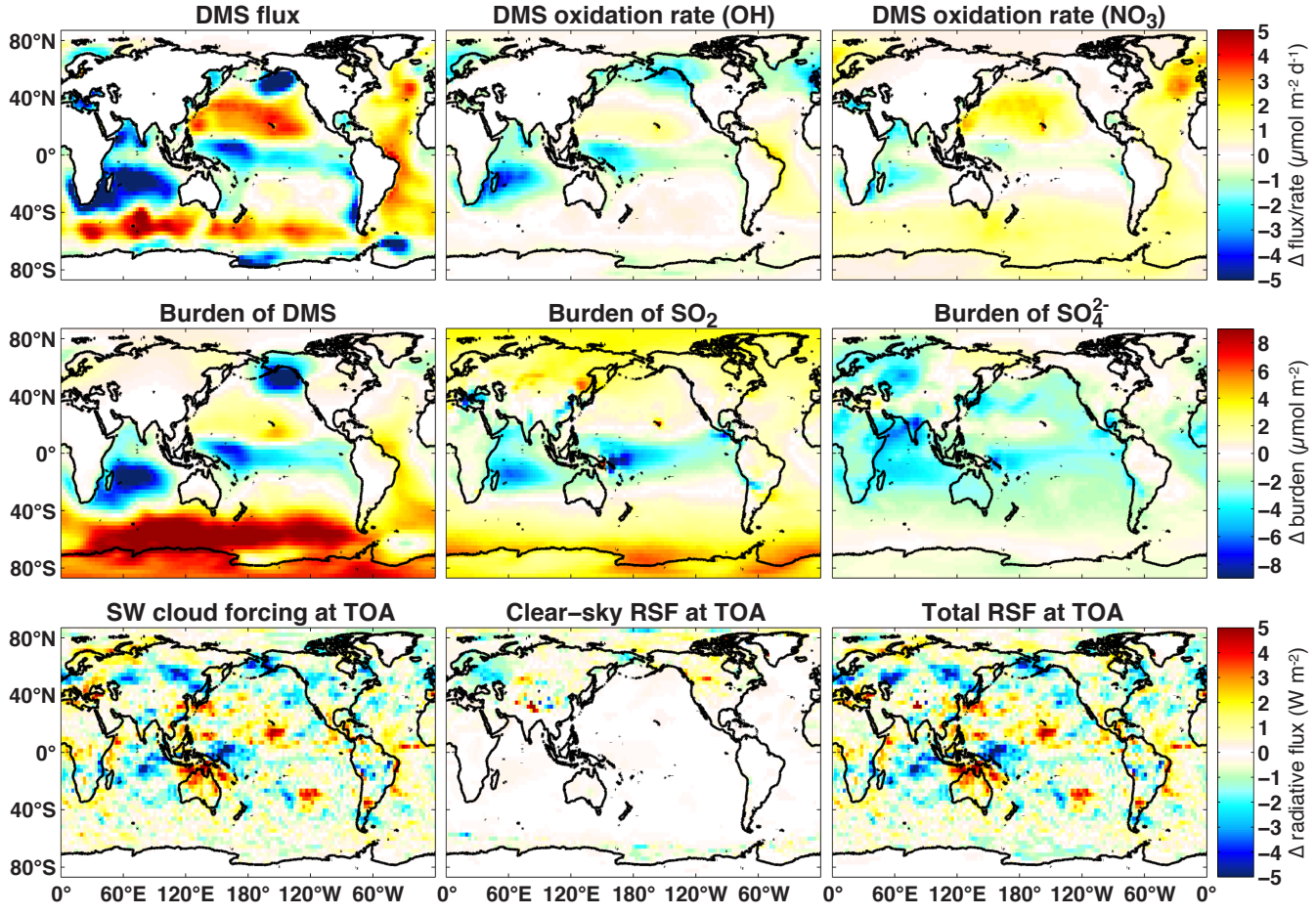

Figure S10. Same as Fig. S2, but for experiment using spatially uniform DMS concentration field. The difference is calculated as experiment run minus control run (L10 & N00 & γ_a).