

Supplementary information for...

Impact of northern hemisphere mid-latitude anthropogenic SO₂ emissions on local and remote tropospheric oxidants

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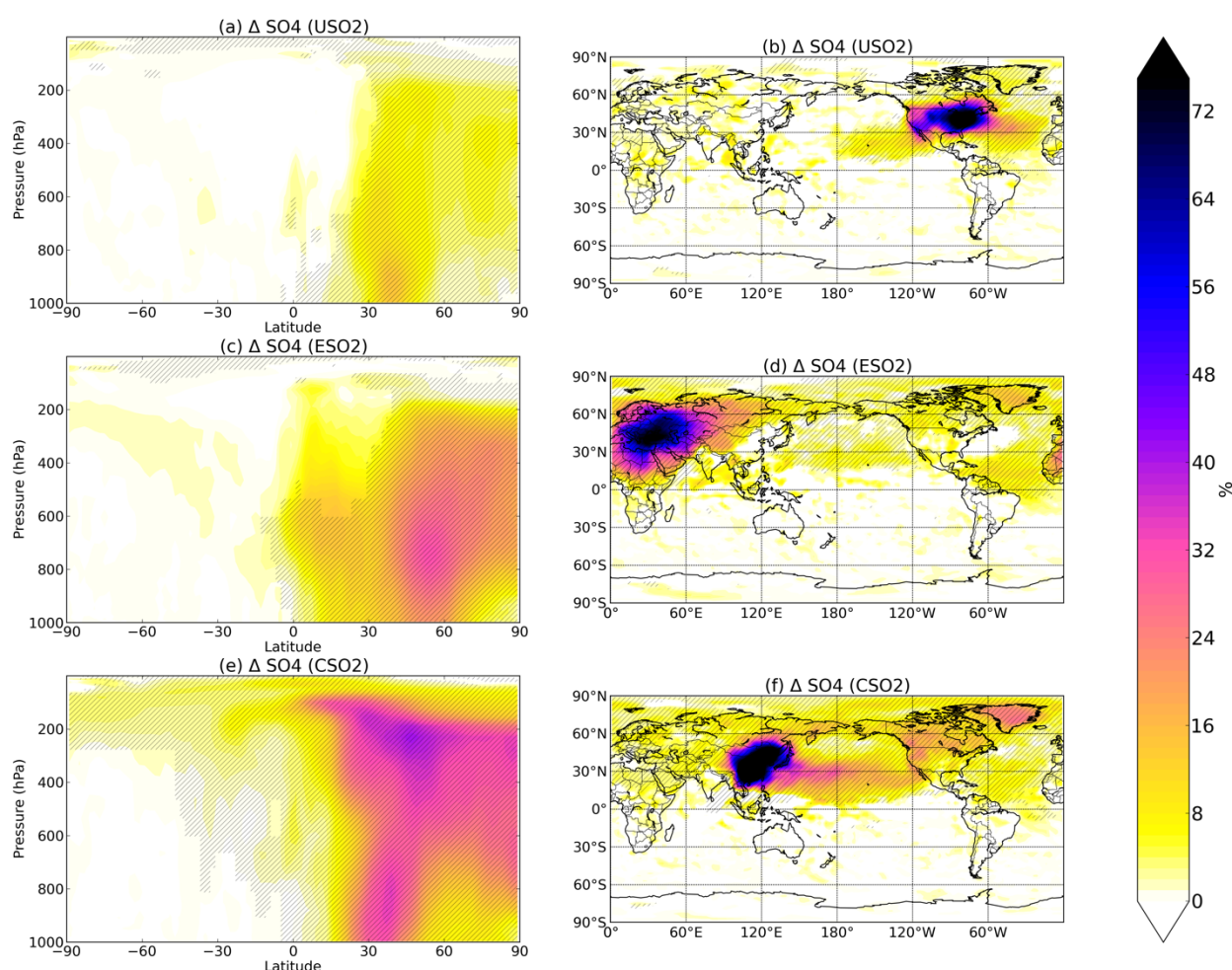


Figure S1: Boreal summer (JJA) mean percent change in sulfate concentration between a control simulation and a perturbation simulation in which anthropogenic SO₂ emissions are removed over a certain region: (a,b) US, (c,d) Europe, and (e,f) China. Hatching denotes statistical significance according to a Student's t-test at the 95% confidence level.

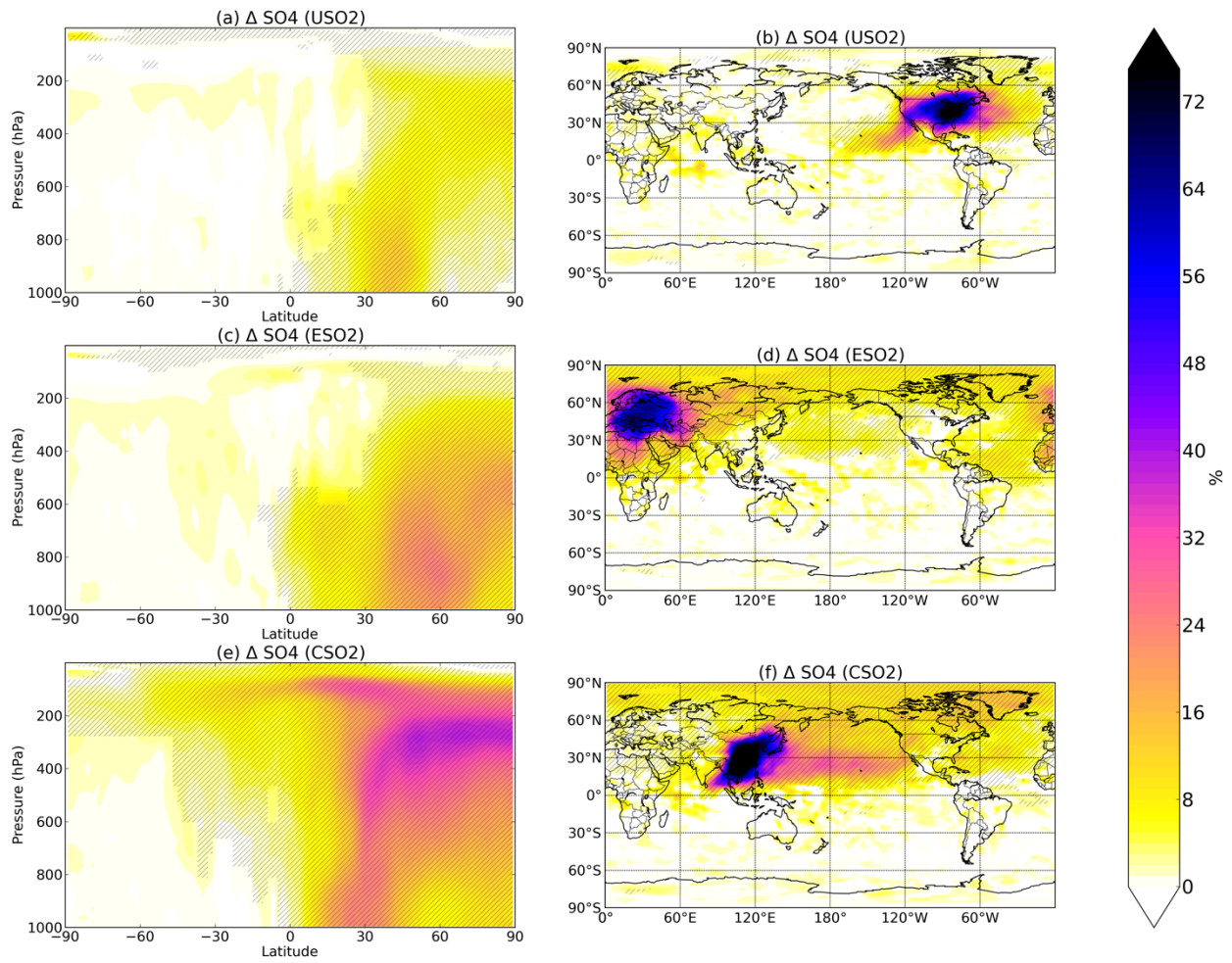


Figure S2: As in Figure S1 but for boreal autumn (SON).

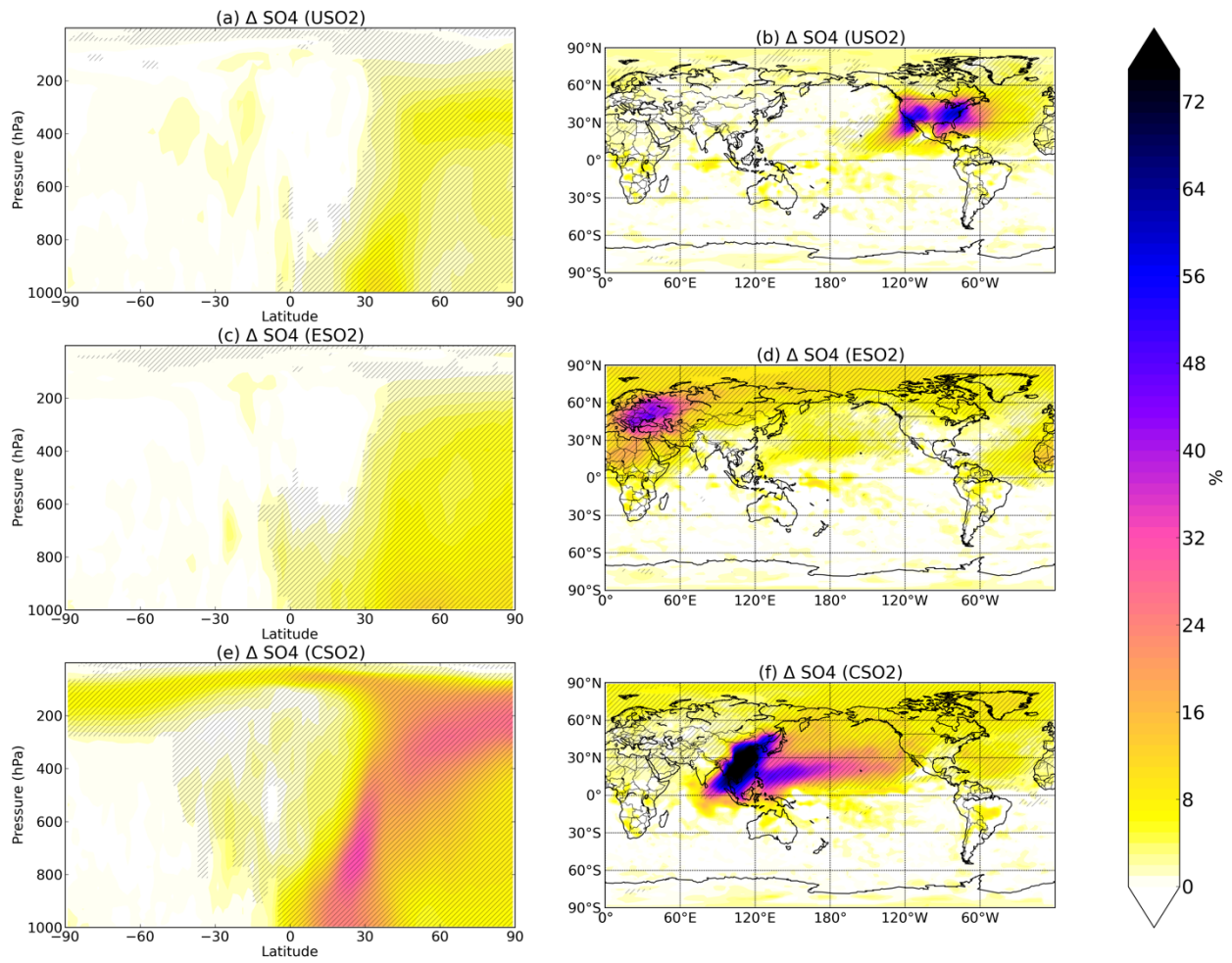


Figure S3: As in Figure S1 but for boreal winter (DJF).

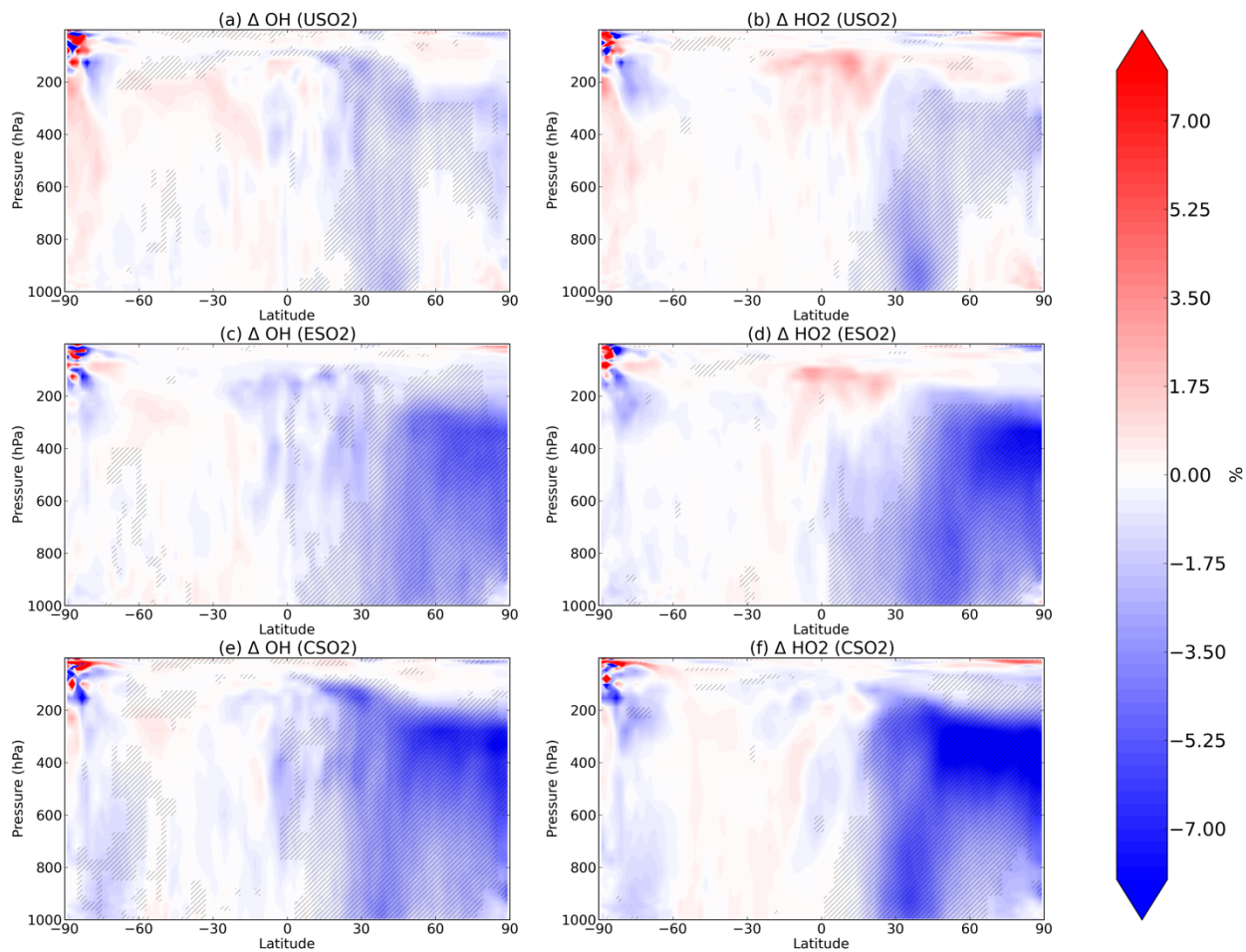


Figure S4: Boreal summer (JJA) mean percent change in OH (left column) and HO₂ (right column) between a control simulation and a perturbation simulation in which anthropogenic SO₂ emissions are removed over a certain region: (a,b) US, (c,d) Europe, and (e,f) China. Hatching denotes statistical significance according to a Student's t-test at the 95% confidence level.

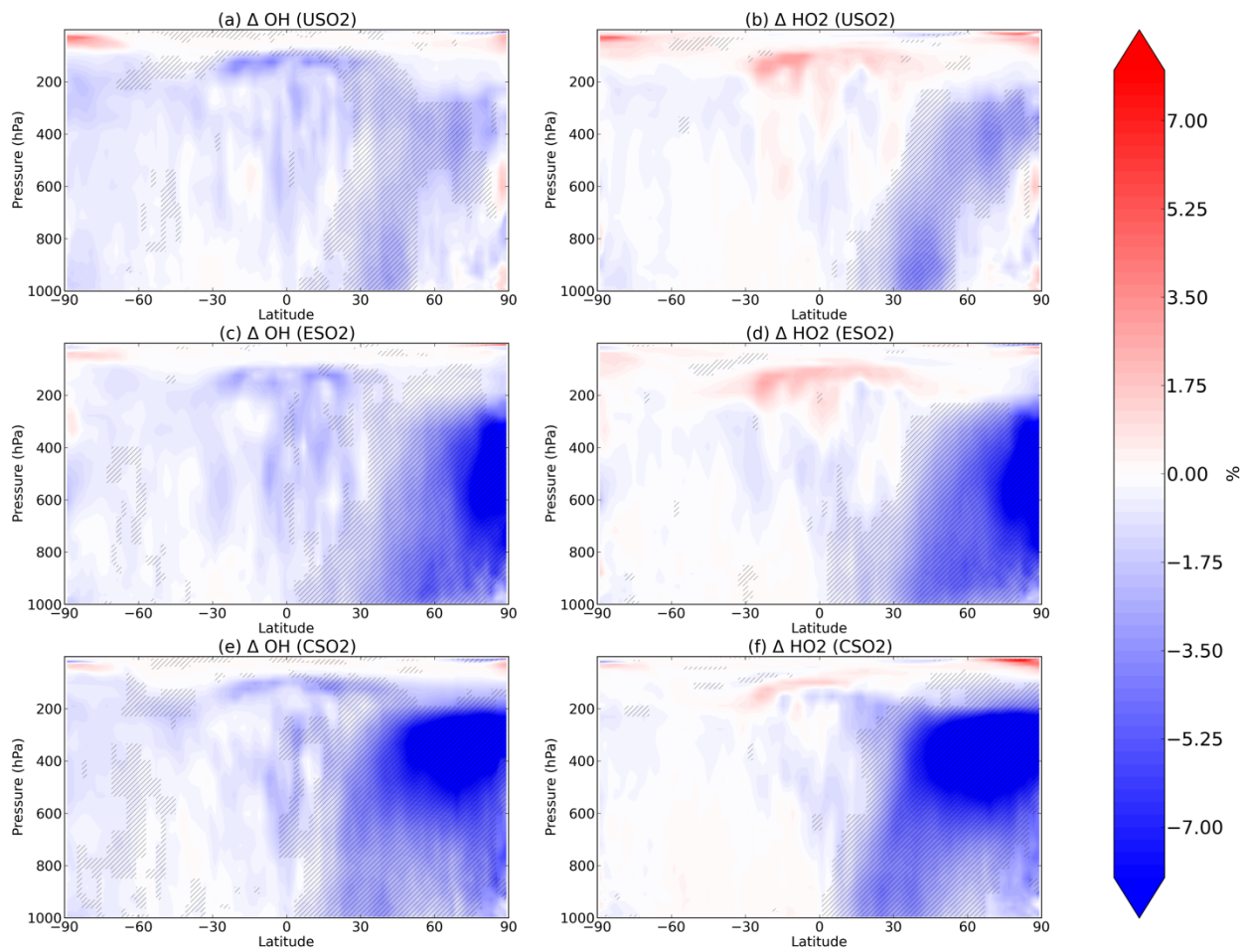


Figure S5: As in Figure S4 but for boreal autumn (SON).

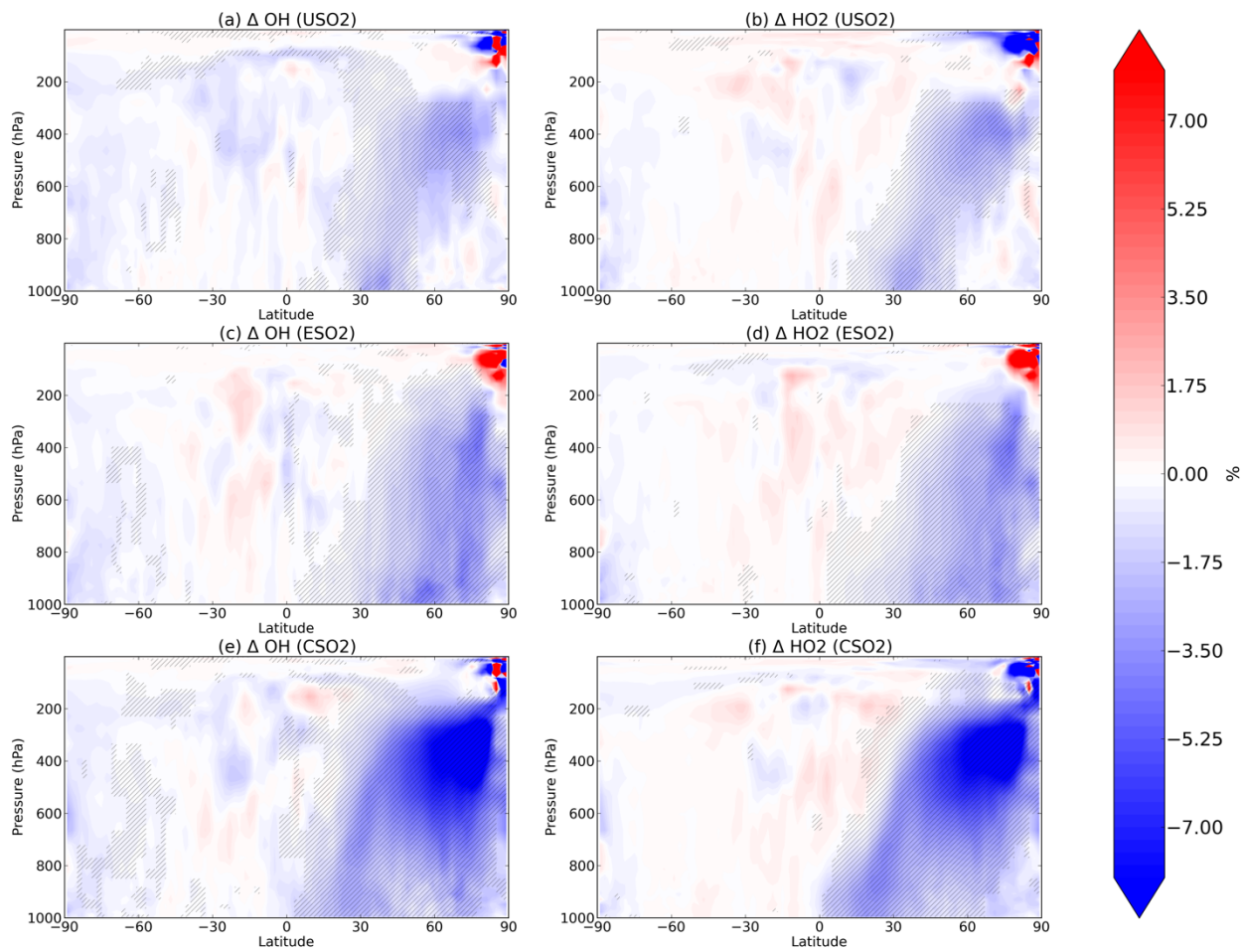


Figure S6: As in Figure S4 but for boreal winter (DJF).

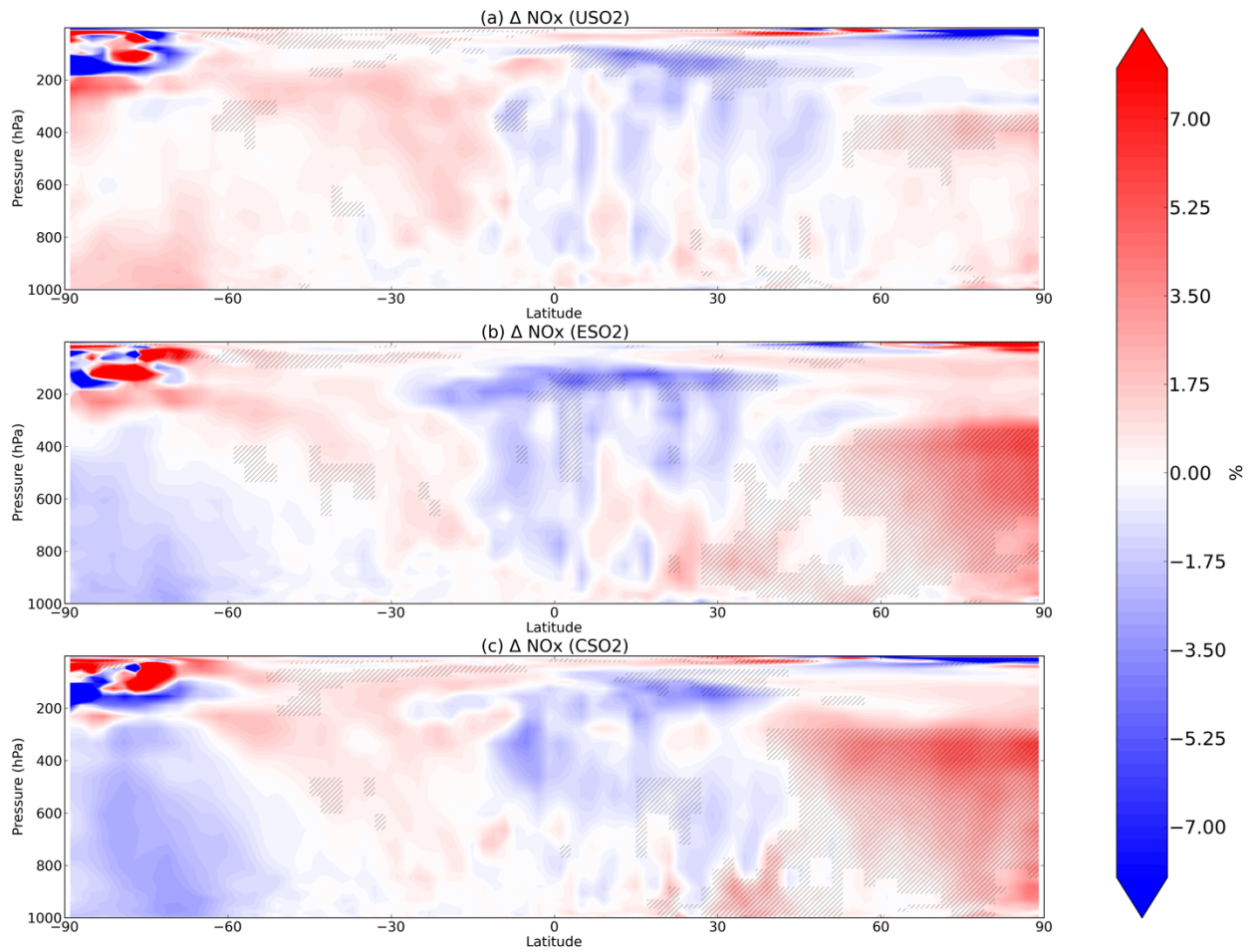


Figure S7: Boreal summer (JJA) mean percent change in NO_x between a control simulation and a perturbation simulation in which anthropogenic SO₂ emissions are removed over a certain region: (a) US, (b) Europe, and (c) China. Hatching denotes statistical significance according to a Student's t-test at the 95% confidence level.

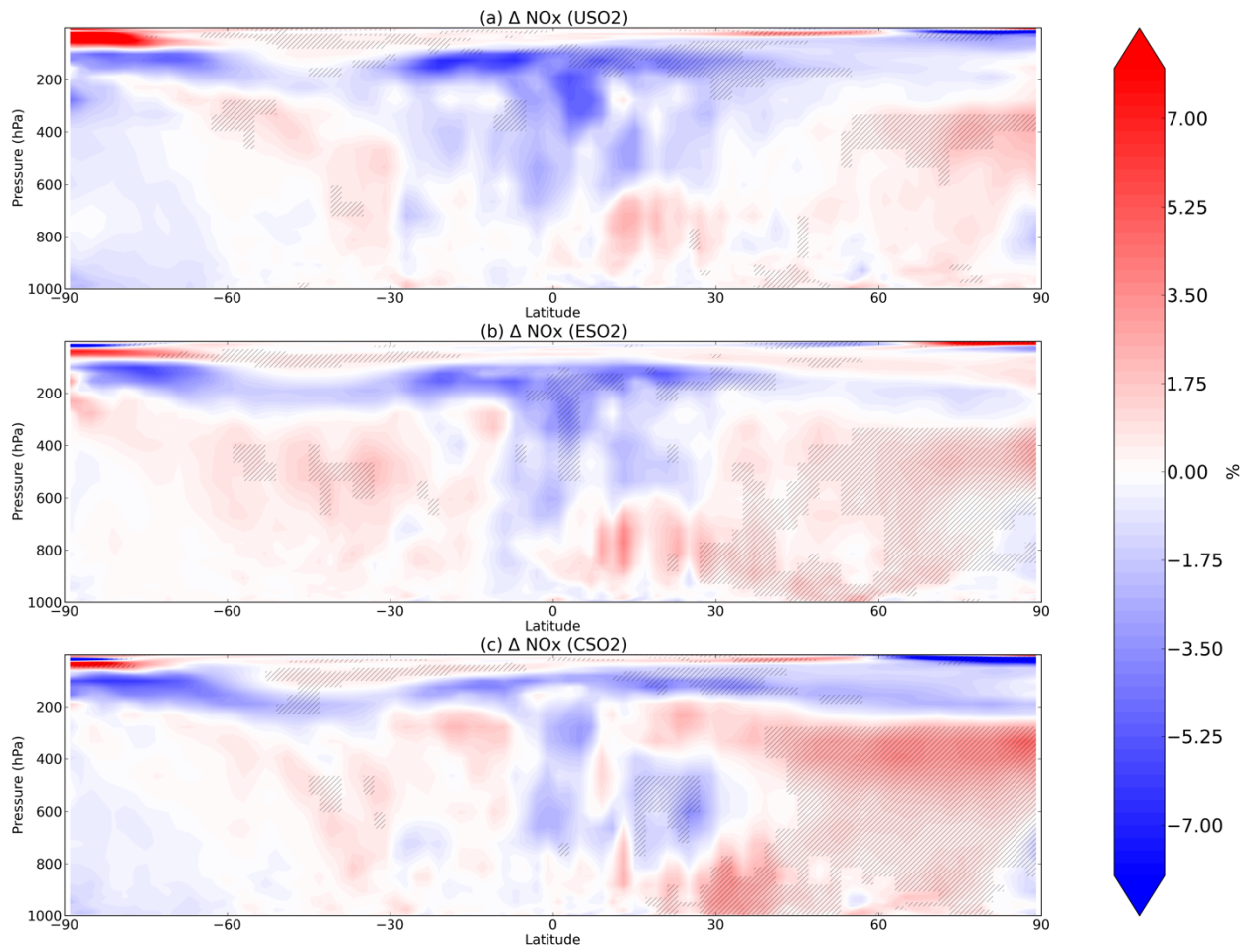


Figure S8: As in Figure S7 but for boreal autumn (SON).

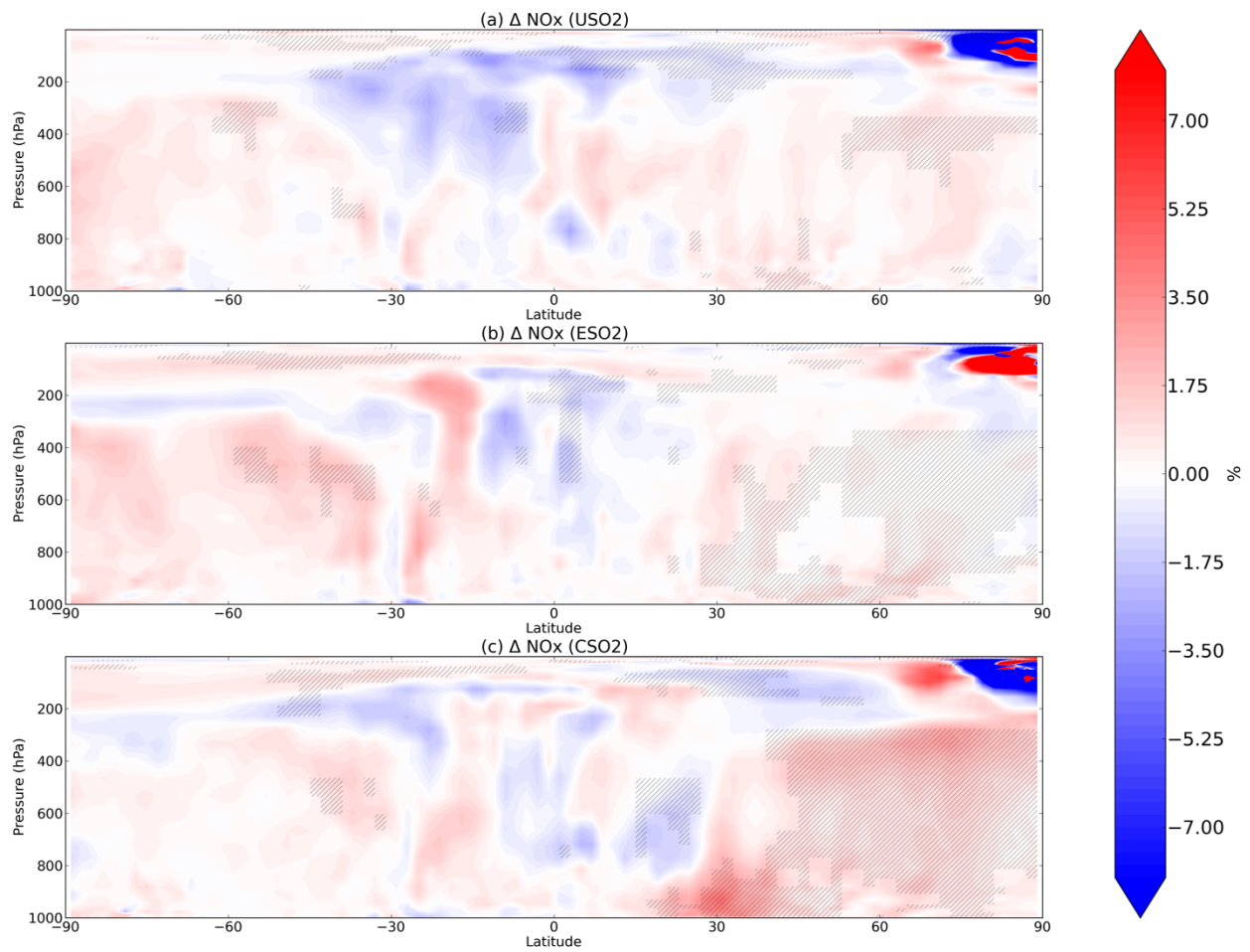


Figure S9: As in Figure S7 but for boreal winter (DJF).

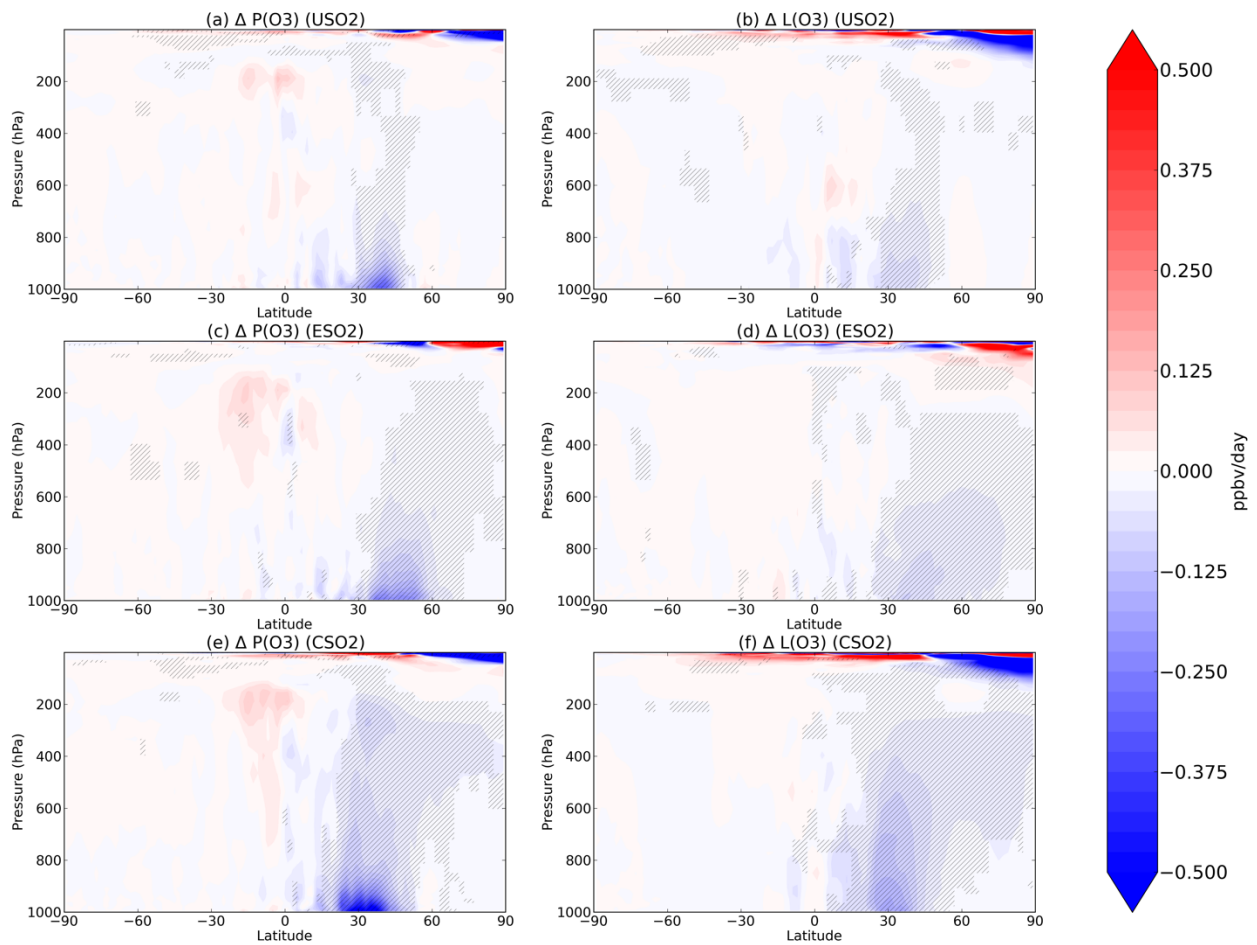


Fig. S10. Change in MAM O₃ production (left column) and loss (right column) for each of the SO₂ emission perturbation simulations (rows). Units are in ppbv day⁻¹. Hatching denotes statistical significance according to a Student's t-test at the 95% confidence level.

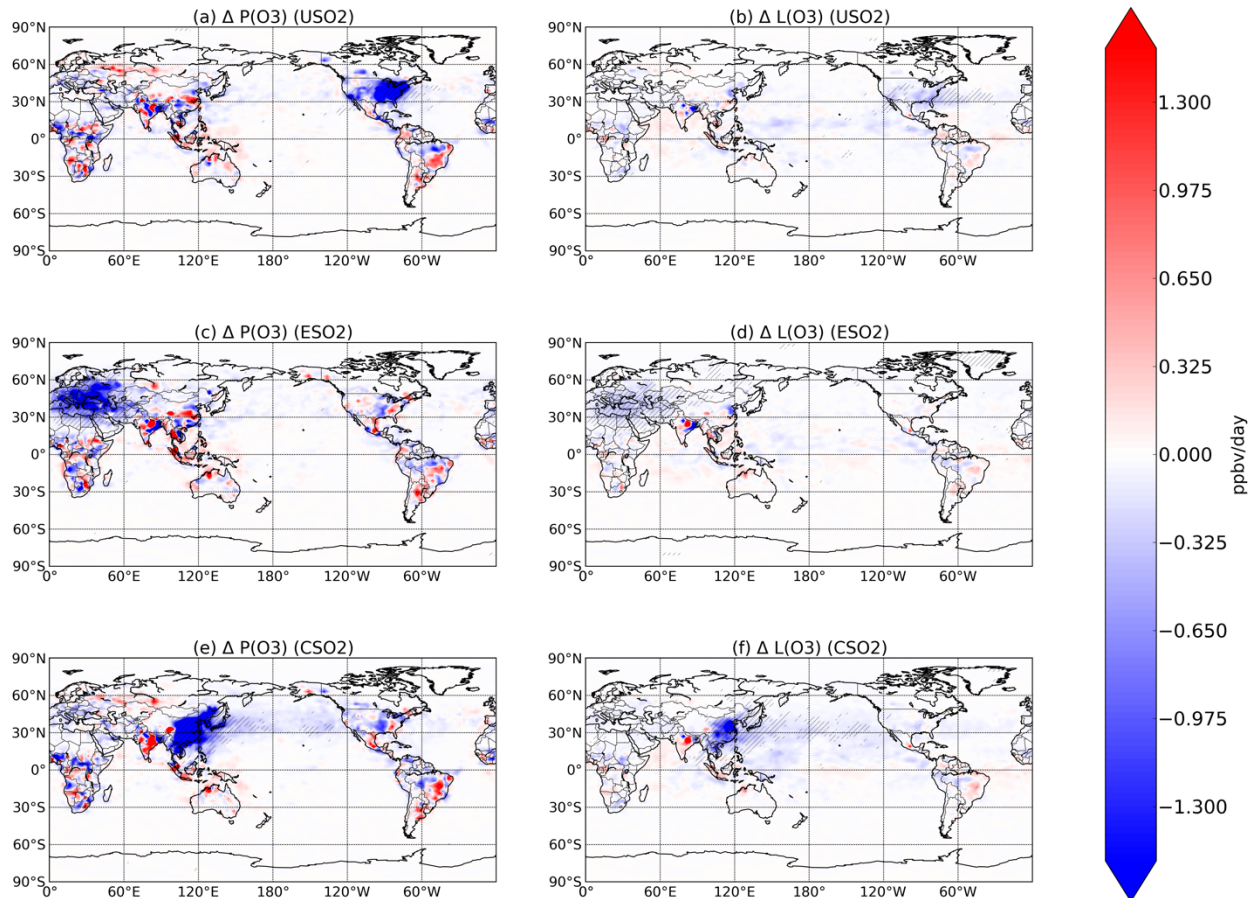


Fig. S11: Change in MAM O₃ production (left column) and loss (right column) for each of the SO₂ emission perturbation simulations (rows). Units are in ppbv day⁻¹. Hatching denotes statistical significance according to a Student's t-test at the 95% confidence level.

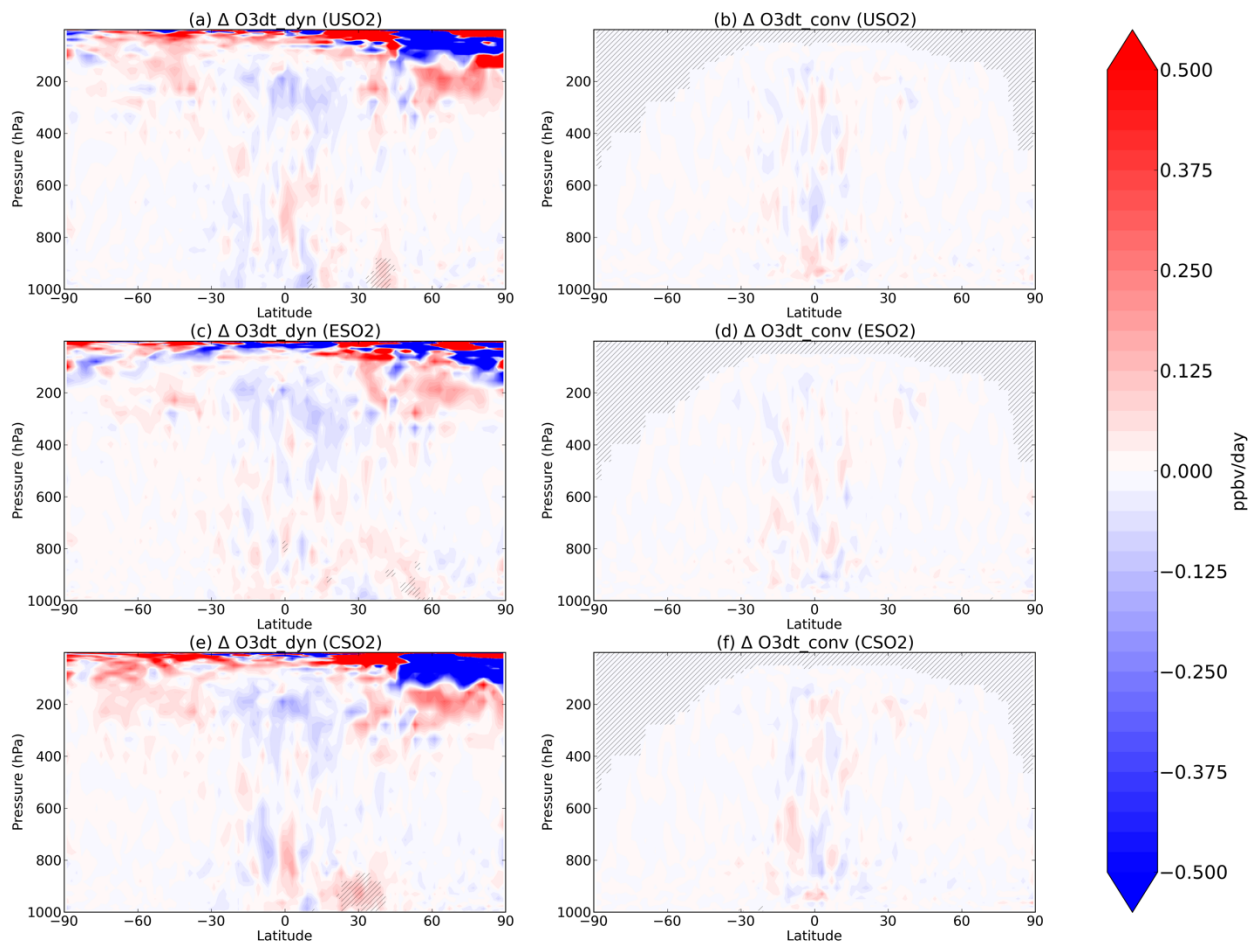


Fig. S12. Change in O₃ advective (left column) and convective (right column) tendency for each of the SO₂ emission perturbation simulations (rows). Units are in ppbv day⁻¹. Hatching denotes statistical significance according to a Student's t-test at the 95% confidence level.

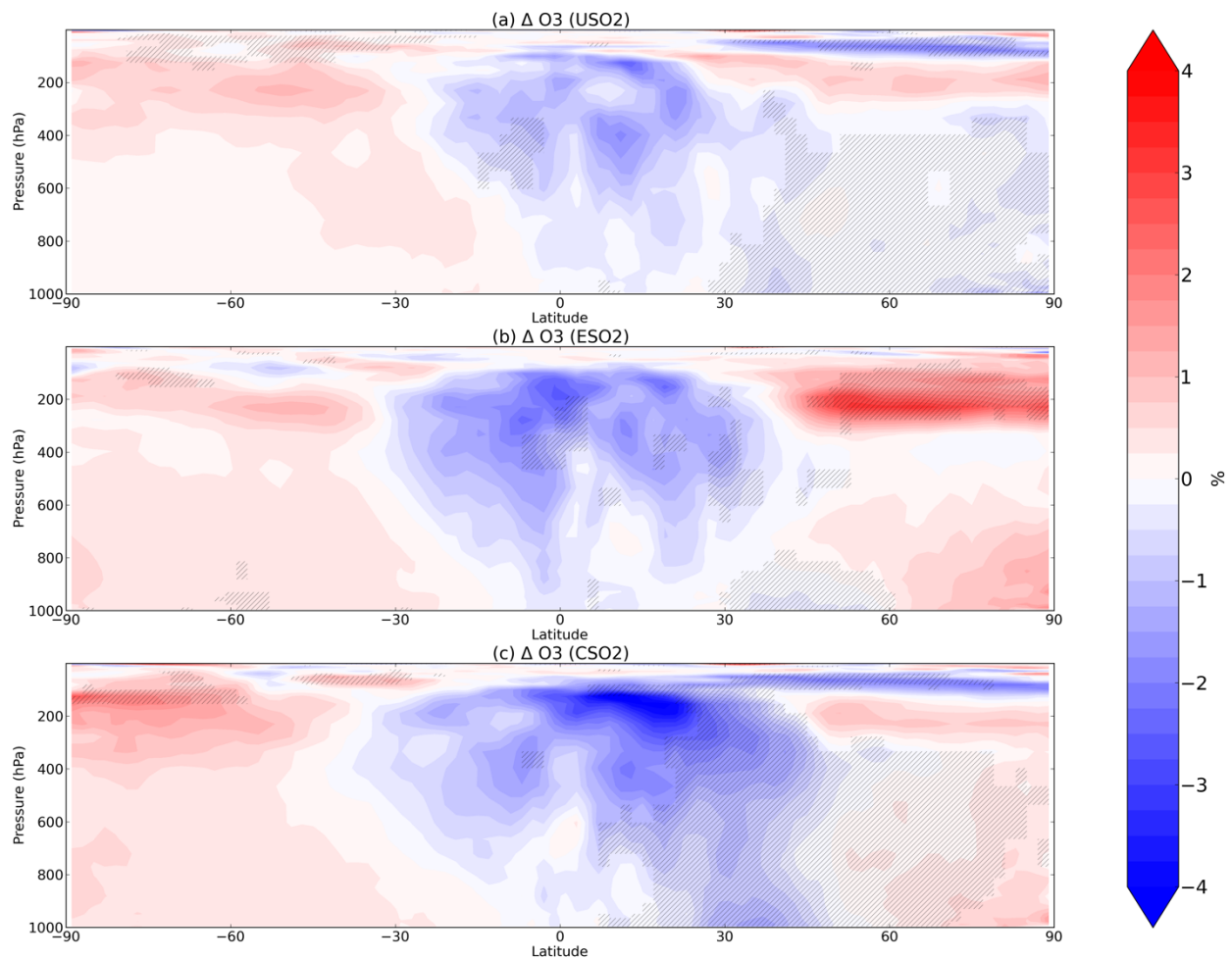


Figure S13: Boreal summer (JJA) mean percent change in O₃ between a control simulation and a perturbation simulation in which anthropogenic SO₂ emissions are removed over a certain region: (a) US, (b) Europe, and (c) China. Hatching denotes statistical significance according to a Student's t-test at the 95% confidence level.

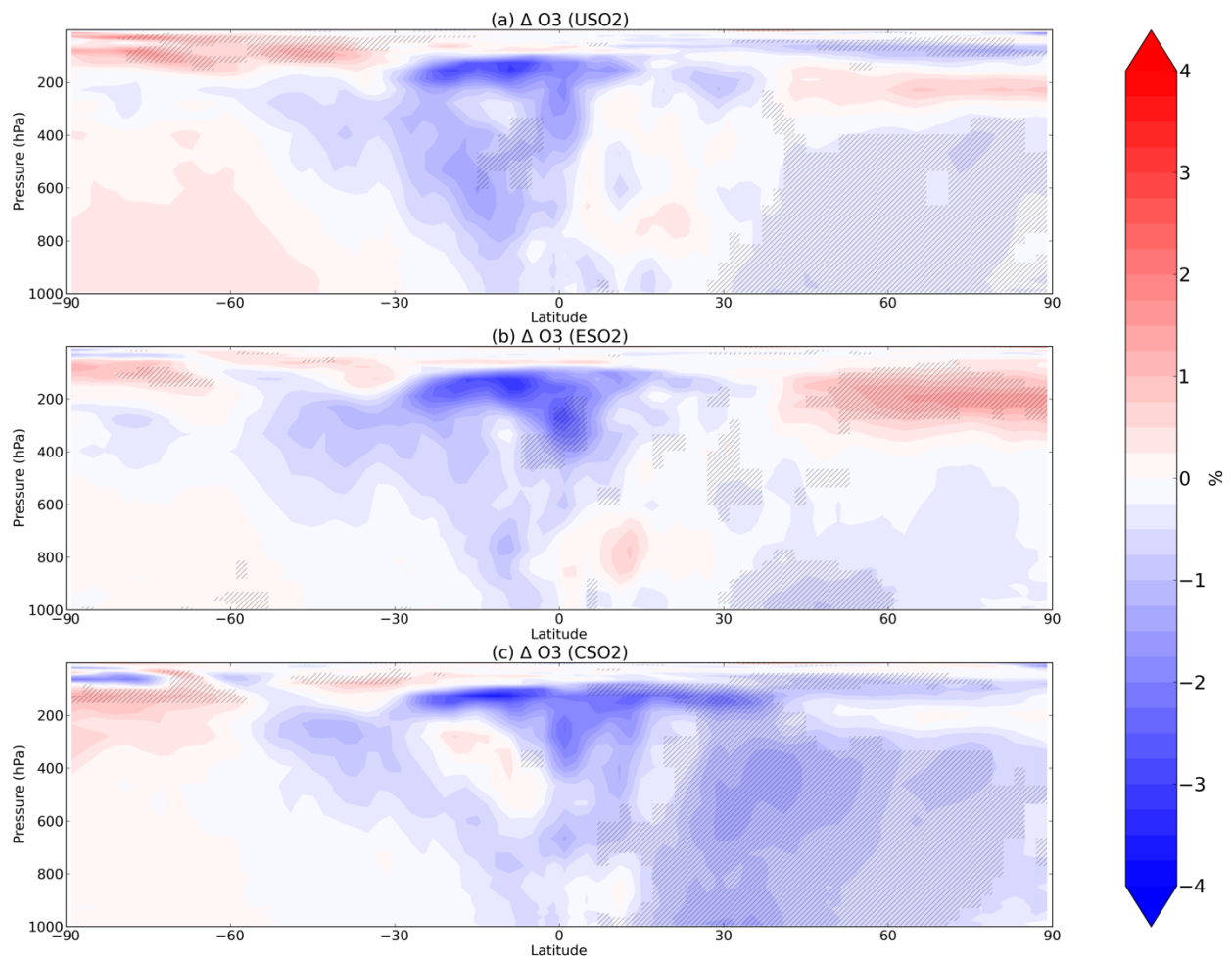


Figure S14: As in Figure S13 but for boreal autumn (SON).

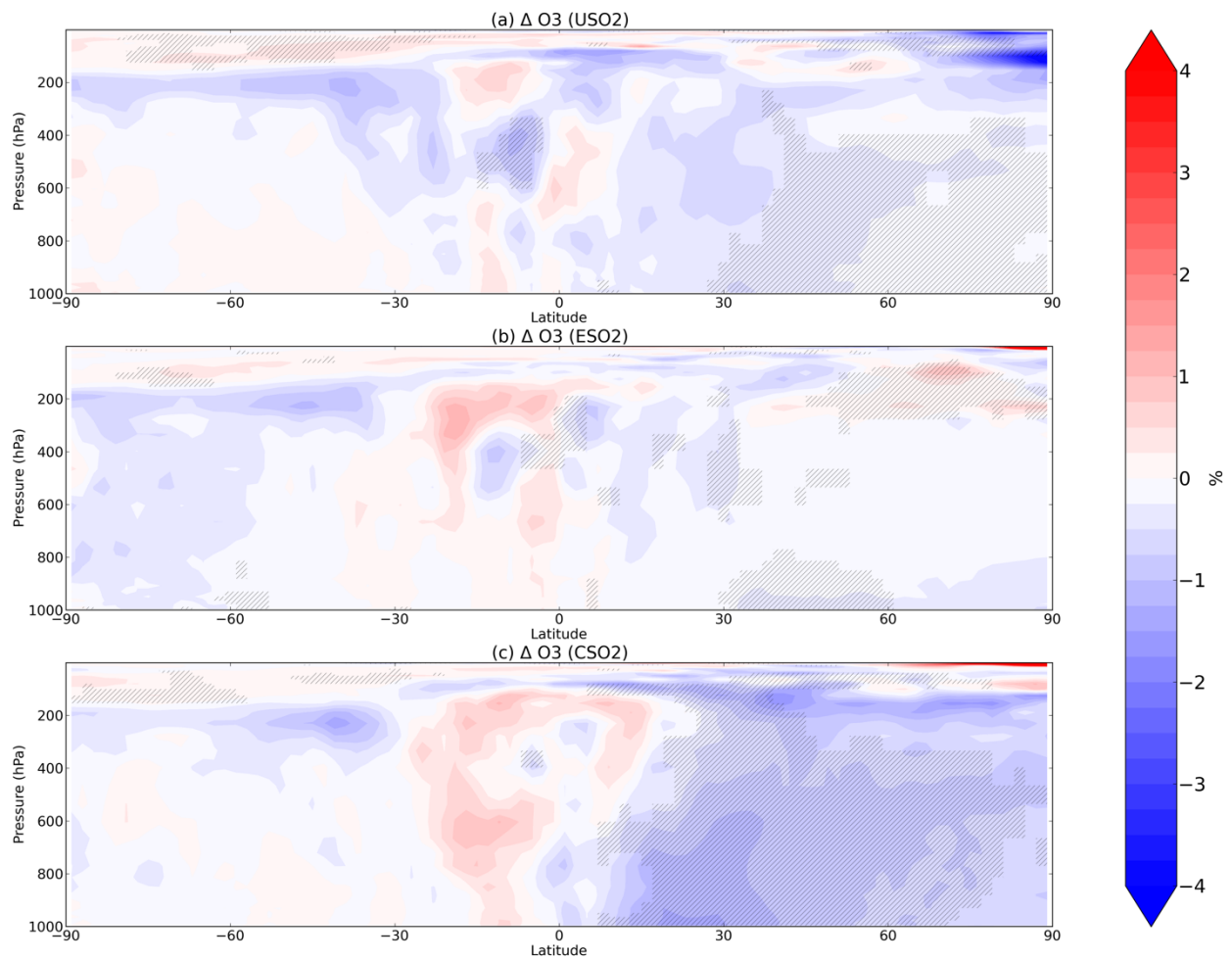


Figure S15: As in Figure S13 but for boreal winter (DJF).