Supporting Information for "Rethinking the Ozone-Climate Change Penalty"

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1. Figures S1 to S2

Introduction

We include additional figures in support of and are referenced in the main manuscript.

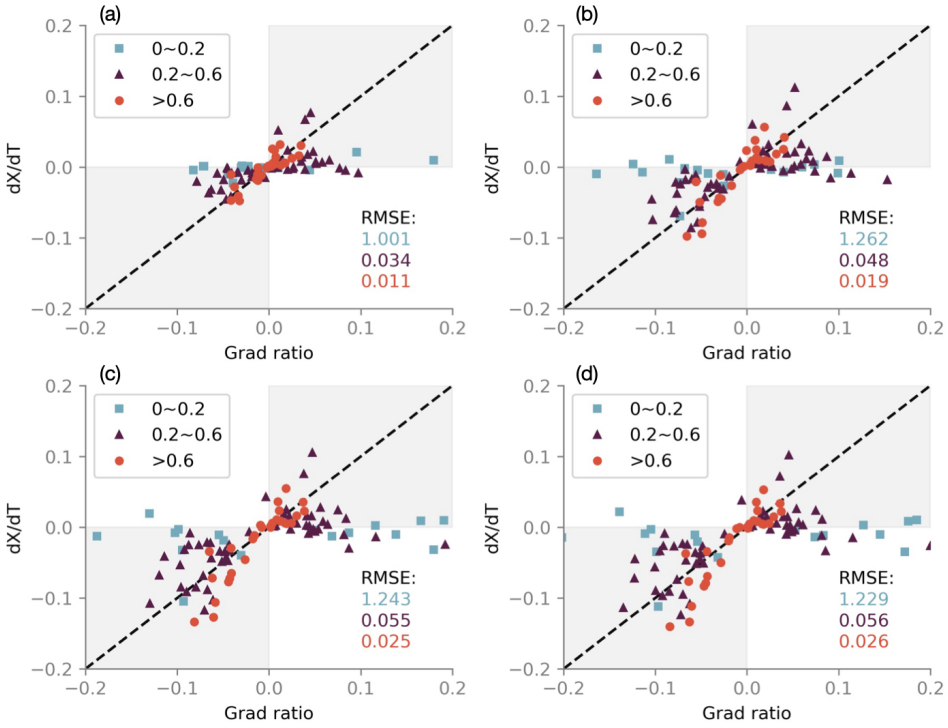

Figure S1. Idealized tracer scatter plots of JJA gradient ratio $\partial_\phi \chi_{40-50}/\partial_\phi T$ versus $d\chi_{40-50}/dT$ averaged over 20° longitude × 10° latitude regions with loss rate of (a) 5 days^{-1}, (b) 25 days^{-1}, (c) 100 days^{-1}, and (d) 150 days^{-1}. All points are colored by their absolute value of meridional temperature gradient. Dashed line shows the 1:1 slope. RMSE between gradient ratio and regression for each bin is indicated.

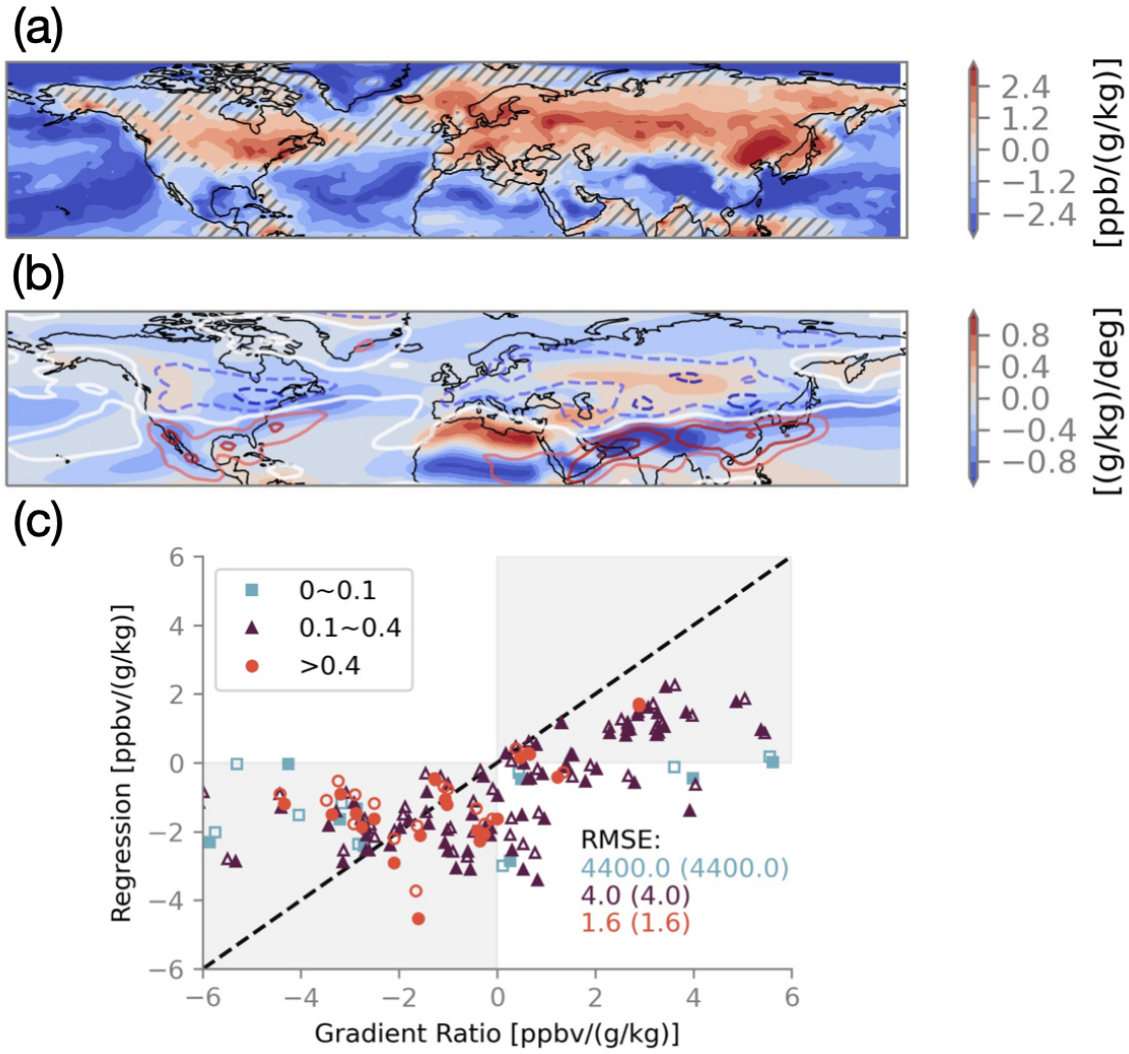

Figure S2. 2008–2010 JJA O_3-Q relationship from GMI simulation. (a) Daily dO_3/dQ regression slope. Regions with $p > 0.05$ (not statistically significant) are hatched. (b) Mean meridional gradients of $\partial_\phi O_3$ in contours and of $\partial_\phi Q$ in shading. Solid contours show positive $\partial_\phi O_3$ and dashed contours show negative $\partial_\phi O_3$, with an interval of 1.0 ppbv/°. (c) Gradient ratio $\partial_\phi O_3/\partial_\phi Q$ versus regression dO_3/dQ averaged over 10° latitude × 20° longitude regions, binned by the absolute values of meridional temperature gradient $|\partial_\phi Q|$ (g/kg/°). Dashed line shows the 1:1 slope. RMSE between gradient ratio and regression for each bin is indicated. Open symbols and RMSE in brackets are from the transport-only simulation.