Supplementary Data for Stronger Arctic Amplification Produced by Decreasing, not increasing, CO2 Concentrations

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Figure 1. Contributions of feedbacks and meridional heat transports to the Arctic against tropical SATs under a wide range of abrupt CO2 forcings (from 0.125\times CO2 to 4\times CO2). The line with slope one (i.e., the one-to-one line) is plotted as a grey dashed line, and small dots are generated with 10,000 time random sampling for each feedback.
Figure 2. The same as Figure 1, but for 5xCO2 to 8xCO4 forcings.
Figure 3. (a-j) Atmospheric vertical temperature responses and (k) the polar-cap-average temperature vertical changes with respect to global SAT changes in the polar-cap region in the cooling experiments.
Figure 4. The latitudinal distribution of the Planck feedback parameter in (a) the tropical region and (b) the polar-cap region.
Figure 5. Seasonal migrations of (a) Arctic (55°N) SAT response, (b) Arctic SIE response, (c) turbulent heat flux response, and (d) AAF. The error bars denote 95% confidence intervals calculated using Student’s t-distribution.
Figure 6. Seasonal migrations of (a) Planck feedback parameter, (b) lapse-rate feedback parameter, and (c) temperature inversion over the Arctic domain. Temperature inversion is estimated as the difference between the air temperature at 850 hPa and 1,000 hPa ($T_{850hPa} - T_{1000hPa}$). The color shadings denote 95% confidence intervals calculated using Student’s t-distribution. The results averaged over the tropical domain are plotted as dashed lines. The largest values over the 12 months are marked as stars.