Supplementary Information for

The Radiative Forcing Pattern Effect on Climate Sensitivity

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Table S1 A list of experiments conducted in this study. Both positive and negative perturbations are considered with a global mean forcing of or . See the solar forcing pattern in Figure S1.

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| --- | --- | --- |
| Experiment Name | Anomalous Solar Forcing Region | Integration Time |
| Control | N.A. | 400 years (year 101 to year 300 is used) |
| Global (GL) | Global | 200 years (initial conditions are from year 101 of the Control); Abrupt anomalous solar forcing is applied |
| Northern Hemisphere Mid-latitudes (NM) | 30°N-60°N; 0-360° | Same as GL |
| Southern Ocean (SO) | 30°S-60°S; 0-360° | Same as GL |
| Tropics (TR) | 30°S-30°N; 0-360° | Same as GL |

Diagram, engineering drawing

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Figure S1 Maps of annual mean anomalous downward shortwave (SW) radiation at the TOA (units: W m-2) added over the entire globe (a and e), the Northern Hemisphere Mid-latitude (b and f), the Southern Ocean (c and g), and the tropics (d and h). Both positive (a-d) and negative (e-g) anomalies are considered.

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Figure S2 Changes in AMOC (units: ; ) averaged over the last 50 years (year 151-200) of each simulation relative to the base state of Control.

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Figure S3 Time series of changes in global annual mean surface air temperature (units: K) in each experiment relative to the mean climatology of the Control. A 5-year running mean is applied to the time series.