

# Supporting Information for “More Stabilizing Radiative Feedbacks in CO<sub>2</sub> removal scenarios”

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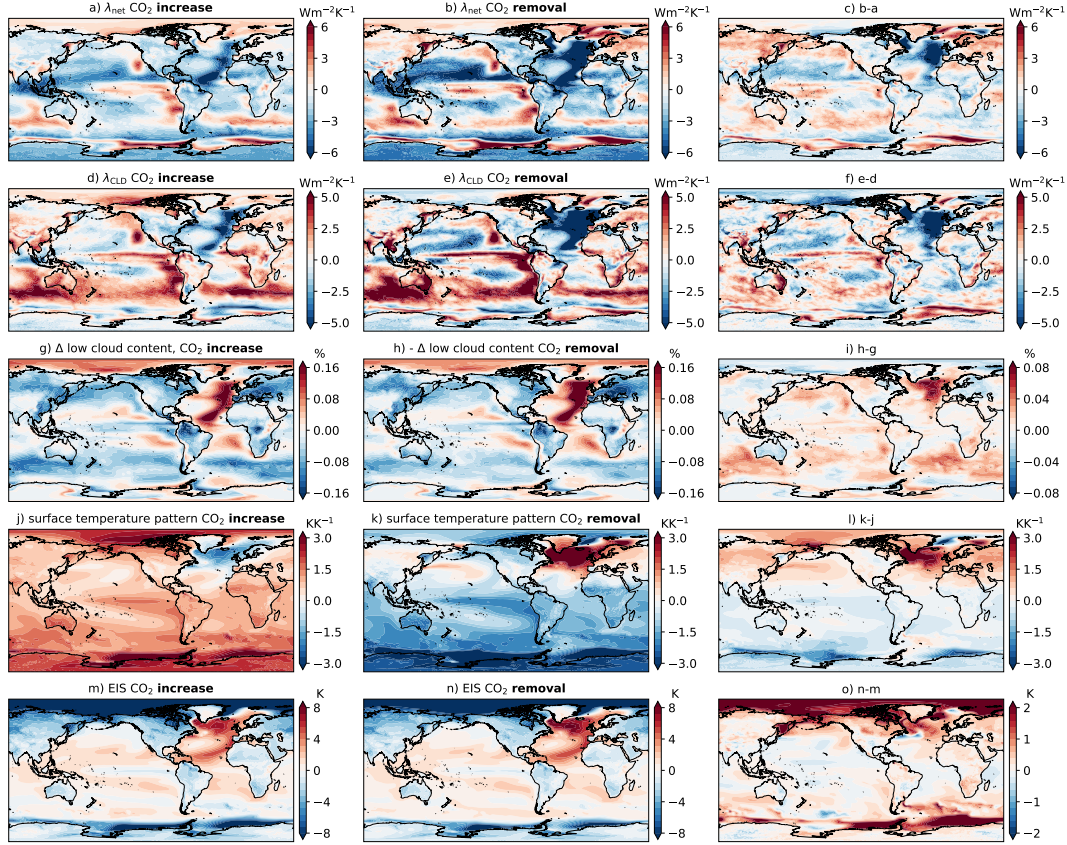
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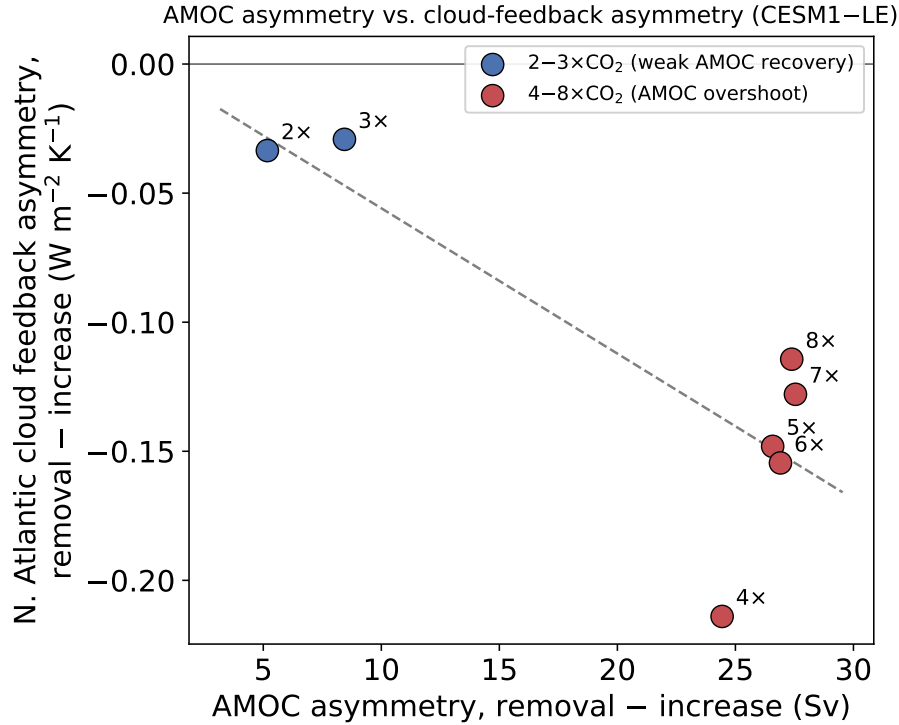
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**Figure S1.** Maps of (a-c) the net feedback parameter, (d-f) cloud feedbacks, (g-i) low cloud amount, (j-l) the surface temperature pattern, and (m-o) the estimated inversion strength (EIS), for the 4×CO<sub>2</sub> experiments. The first column shows the CO<sub>2</sub> increase scenario, the second column the CO<sub>2</sub> removal scenario, and the third column their difference (removal minus increase). The feedback and surface-temperature panels are regression slopes: the net and cloud feedbacks (a-f) from 150-year regressions of local top-of-atmosphere radiation against the global mean surface temperature response ( $\text{Wm}^{-2}\text{K}^{-1}$ ), and the surface-temperature pattern (j-l) from the regression of local against global mean surface temperature ( $\text{K K}^{-1}$ ). The low cloud amount (g-i) and EIS (m-o) are end-of-period differences over the final decade (years 140–150) of each 150-year simulation: the CO<sub>2</sub> increase column is referenced to the pre-industrial control and the CO<sub>2</sub> removal column to the end of the CO<sub>2</sub> increase run.



**Figure S2.** The North Atlantic cloud-feedback asymmetry between the CO<sub>2</sub> removal and increase phases scales with the AMOC asymmetry. Each point is one forcing level (2× to 8×CO<sub>2</sub>). Horizontal axis: the AMOC change during removal minus that during increase, each relative to the 1×CO<sub>2</sub> control (last-30-year means; positive values indicate a stronger overshoot on removal than the collapse on increase). Vertical axis: the corresponding difference in the area-weighted North Atlantic (0–60°N, 80°W–10°E) radiative-kernel cloud feedback (more negative values indicate a more stabilizing feedback under CO<sub>2</sub> removal). The dashed line is the least-squares fit.