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Supporting information for

Feedbacks, Pattern Effects, and Efficacies in a Large Ensemble of HadGEM3-GC3.1-LL Historical Simulations

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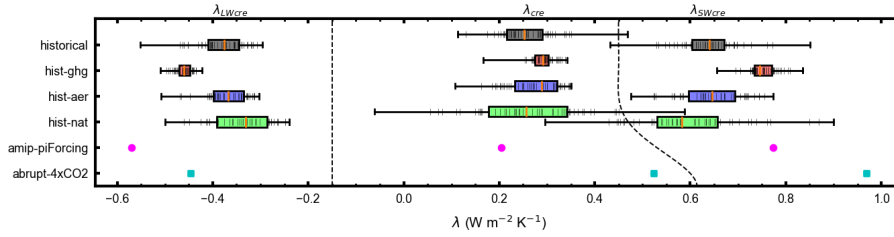
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- Figures S1 to S3

Introduction

The figures presented in this document show the decomposition of the cloud feedback analysis in Figures 3, 4, and 13 into longwave and shortwave components.


Figure S1. Boxplots of feedbacks in the historical and single forcing ensembles (1850–2014), amip-piForcing experiment (1870–2014), and abrupt-4xCO2 experiment (first 150 years). For each boxplot, the vertical black lines indicate each ensemble member, the whiskers indicate the maximum and minimum feedbacks seen in the ensemble, the boxes indicate the interquartile range, and the vertical orange line represents the median value.

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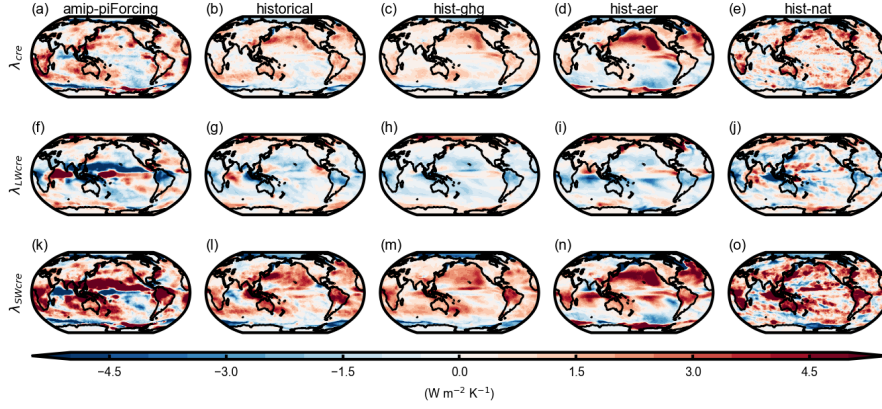
Figure S2. Maps of ensemble mean λ_{cre}, λ_{LWcre}, and λ_{SWcre} in amip-piForcing, historical, hist-ghg, hist-aer, and hist-nat experiments. Here, λ has been calculated by regressing the ensemble mean local annual mean $(N - F)$ against the ensemble mean global annual mean T_s timeseries between $1850 - 2014$ for historical and single forcing experiments, and $1870 - 2014$ for amip-piForcing.
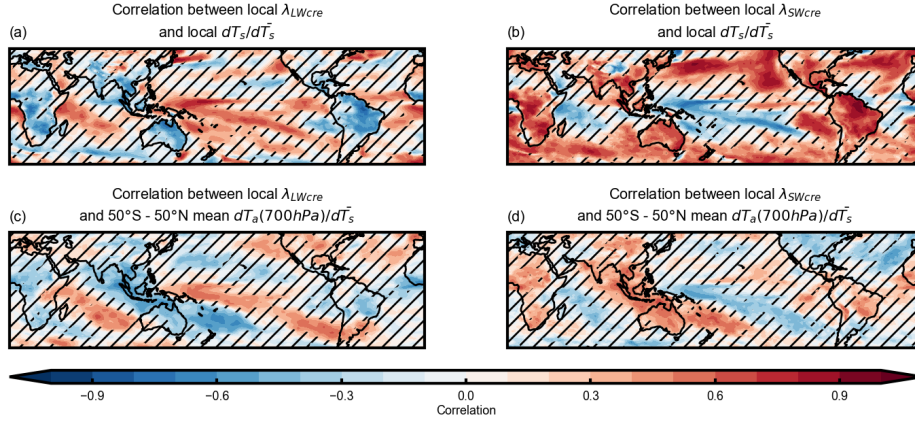
Figure S3. Maps of correlation between local λ_{LWcre} and λ_{SWcre} against local T_s changes per degree of global warming, and $50°S - 50°N$ mean 700hPa temperature change per degree of global warming across the historical ensemble. Hatching indicates where correlations are not significant at the 95% confidence interval (i.e. p values are greater than 0.05). Here the p value approximately indicates the probability of two random distributions producing a correlation coefficient at least as great as those indicated in the colored contours.