

High-Low



Figure S1. Mean bias in near-surface (2 m) air temperature (in °C) in each individual atmosphere-only simulation of the ensemble at low (*left*), high (*middle*) resolutions, and as the difference between the two (*right*). Biases are with respect to ERA-Interim. Non-significant anomalies at the 5 % level are masked white. The Equator is a dashed line.

Low Resolution

EC-Earth3P

ECMWF-IFS

MPI-ESM1-2

High Resolution

High-Low











-5







0

1











Figure S2. As in Fig. S1 but for the coupled simulations.

-4

-3

-2

-1



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Figure S3. Mean bias in the precipitation rate (in mm d⁻¹) in each individual atmosphere-only simulation of the ensemble at low (*left*), high (*middle*) resolutions, and as the difference between the two (*right*). Biases are with respect to the GPCP precipitation. Non-significant anomalies at the 5 % level are masked white. The Equator is a dashed line.

Low Resolution

EC-Earth3P

ECMWF-IFS

MPI-ESM1-2

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High Resolution

High-Low











-3.5



0

0.5









Figure 84. As in Fig. 83 but for the coupled simulations.

-1.5

-1

-0.5



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Figure S5. Mean bias in the net cloud cover (in %) in each individual atmosphere-only simulation of the ensemble at low (*left*), high (*middle*) resolutions, and as the difference between the two (*right*). Biases are with respect to ESACCI-CLOUD. Non-significant anomalies at the 5 % level are masked white. The Equator is a dashed line.

Low Resolution

CNRM-CM6-1

EC-Earth3P

ECMWF-IFS

High Resolution

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-30





















-25

-20

-15

-10

-5

0



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Figure S7. Mean bias in the net cloud radiative effect (in Wm^{-2}) in each individual atmosphere-only simulation of the ensemble at low (*left*), high (*middle*) resolutions, and as the difference between the two (*right*). Biases are with respect to CERES-EBAF. Non-significant anomalies at the 5 % level are masked white. The Equator is a dashed line.



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Figure S8. As in Fig. S7 but for the coupled simulations.



Figure S9. Mean bias in the zonally averaged zonal wind (in ms^{-1}) in each individual atmosphere-only simulation of the ensemble at low (*left*), high (*middle*) resolutions, and as the difference between the two (*right*). Biases are with respect to ERA-Interim. Non-significant anomalies at the 5 % level are masked white. The Equator is a vertical dashed line. Contours represent the ERA-Interim climatology (every 5 ms^{-1} ; negative values, which are for easterlies, are dashed lines, and positive values, for westerlies, are solid lines).



Figure S10. As in Fig. S9 but for the coupled simulations.