Enhanced hydrological cycle increases ocean heat uptake and moderates transient climate sensitivity

Maofeng Liu¹*, Gabriel Vecchi²⁻³, Brian Soden¹, Wenchang Yang², Bosong Zhang¹
¹Rosenstiel School of Marine and Atmospheric Science, University of Miami, Miami, FL
²Department of Geosciences, Princeton University, Princeton, NJ
³Princeton Environmental Institute, Princeton University, Princeton, NJ

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*Corresponding Author: Maofeng Liu (mxl1744@miami.rsmas.edu; maofengliu2012@gmail.com)

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Supplementary Fig. 1. Time series of difference in global mean surface temperature (K) between the control run of the STD and fixed-SSS-GL version. Data are plotted as 20-year running mean.
Supplementary Fig. 2. a. Time series of difference in global-mean the top-of-atmosphere net radiation (blue) and global-total ocean heat content change (OHC; red) between the control run of the STD and fixed-SSS-GL version. b. Difference in OHC climatology (GJ m$^{-2}$ or $10^9$ J m$^{-2}$) between the STD and fixed-SSS-GL version from the 100-year control run. c. the same as b. but for SSS (psu).
Supplementary Fig. 3. **a.** The climatology of P-E (mm day\(^{-1}\)) from the STD version from the 100-year control run. **b.** Change in P-E in response to the transient CO\(_2\) increase for the STD version.
Supplementary Fig. 4. a. The linear trend (psu/50yr) of sea surface salinity over the period of 1968-2017 from a JMA, b IAP, and c ORAS4 data. The trend is tuned by the ratio of CO$_2$ concentration at CO$_2$ doubling in FLOR to that in 2017 from observations. The area with statistical significance (p < 0.05) is stippled.
Supplementary Fig. 5. The streamfunction of AMOC (Sv) as a function of depth at 40°N for all FLOR runs. The control runs use model year 101-200 while the transient CO₂ runs use model years 161-180 centered on the year with CO₂ doubling (year 170).
Supplementary Fig. 6. The subtropical Atlantic Ocean (masked in orange) used for the fixed-SSS-subAtl experiment.
Supplementary Fig. 7. As in Fig. 3, but using the FLOR experiments with fixed SSS in the subtropical Atlantic as indicated in Supplementary Fig. 6 (the fixed-SSS-subAtl version).
Supplementary Fig. 8. The non-Atlantic Oceans (masked in orange) used for the fixed-SSS-nonAtl experiment.
Supplementary Fig. 9. As in Fig. 3, but using the FLOR experiments with fixed SSS in the non-Atlantic as indicated in Supplementary Fig. 8 (the fixed-SSS-nonAtl version).
Supplementary Fig. 10. As in Fig. 4, but using JMA data.
Supplementary Fig. 11. As in Fig. 4, but using IAP data.
Supplementary Fig. 12. As in Fig. 4, but using ORAS4 data.