

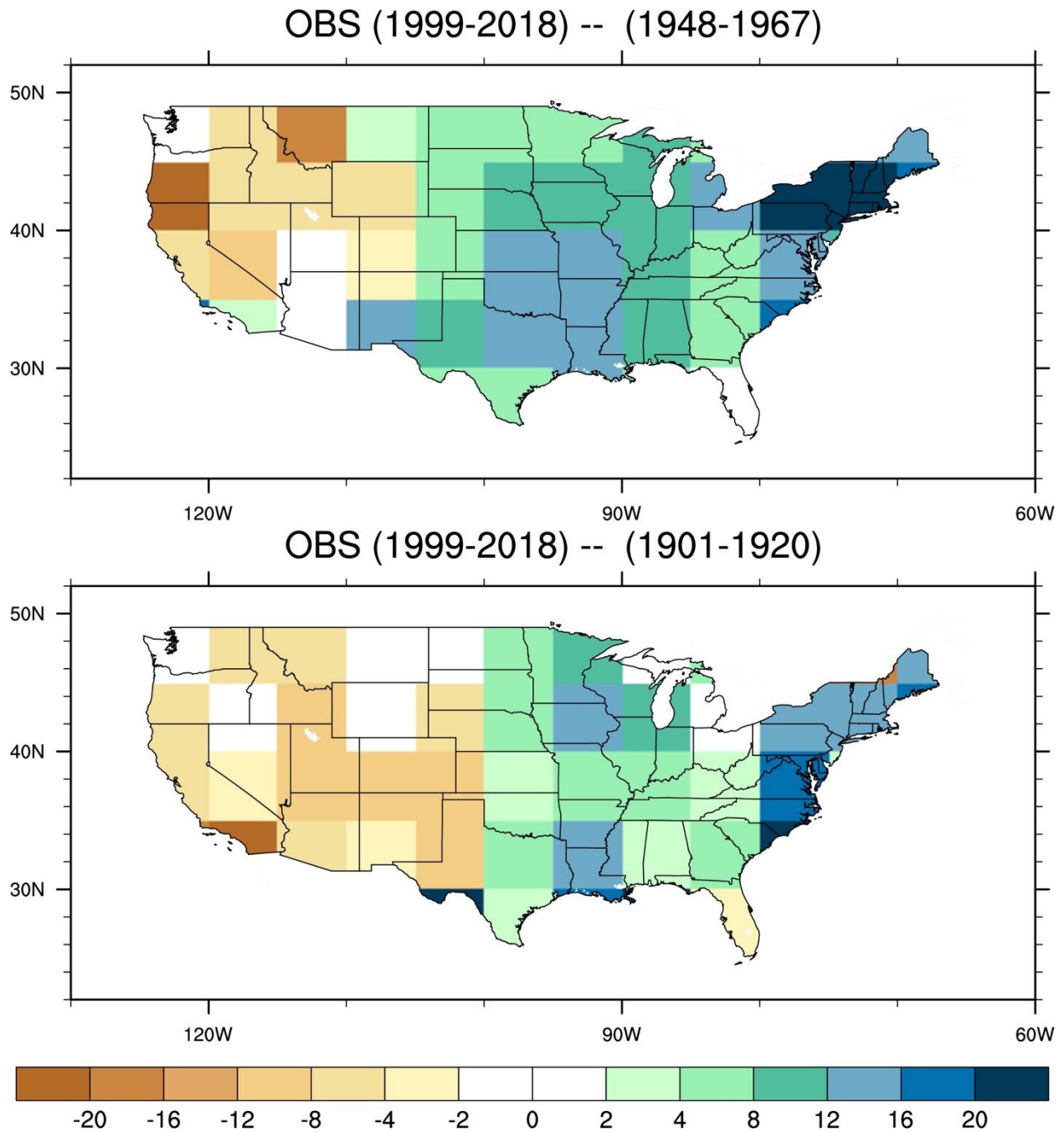


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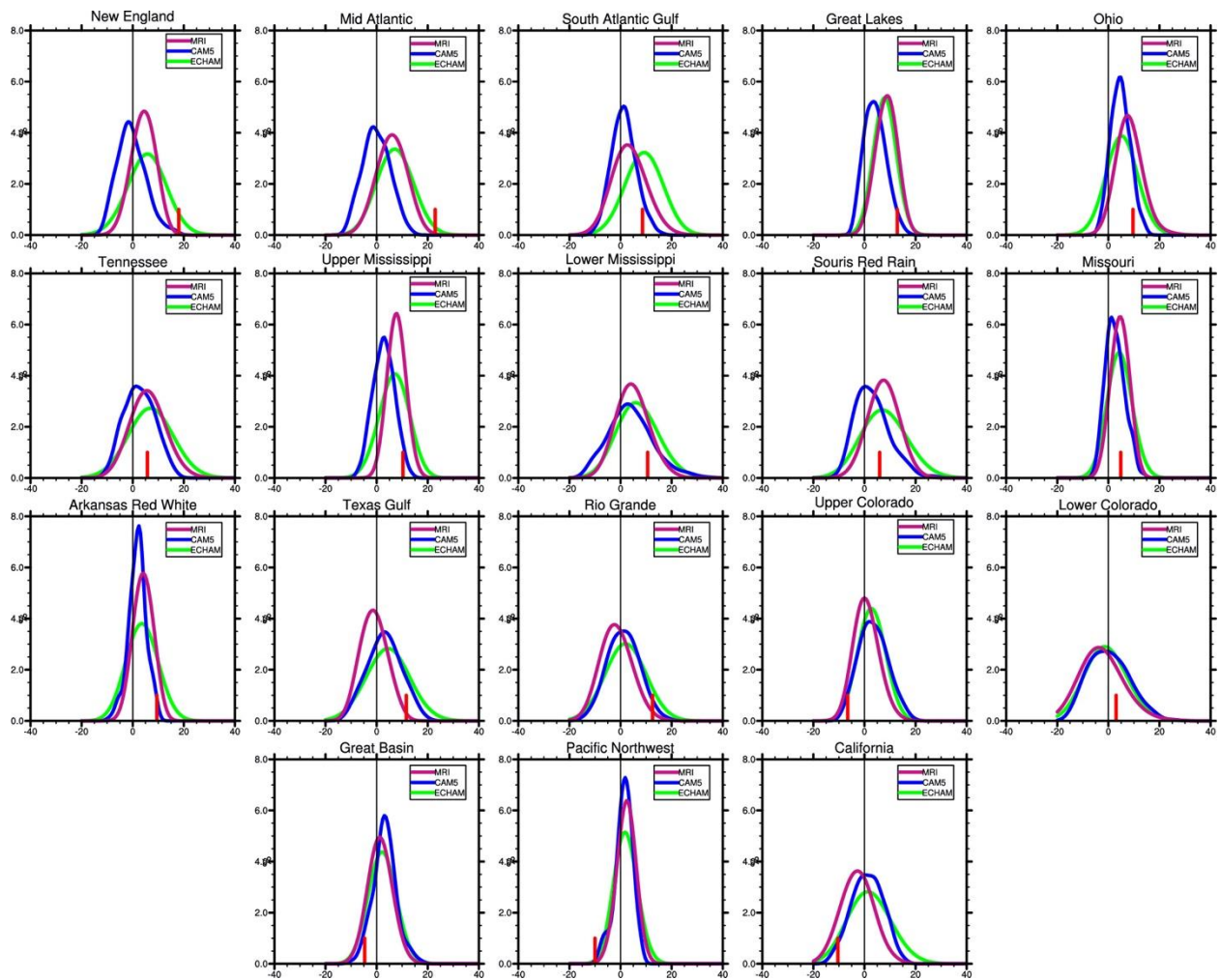
## Supplemental Material

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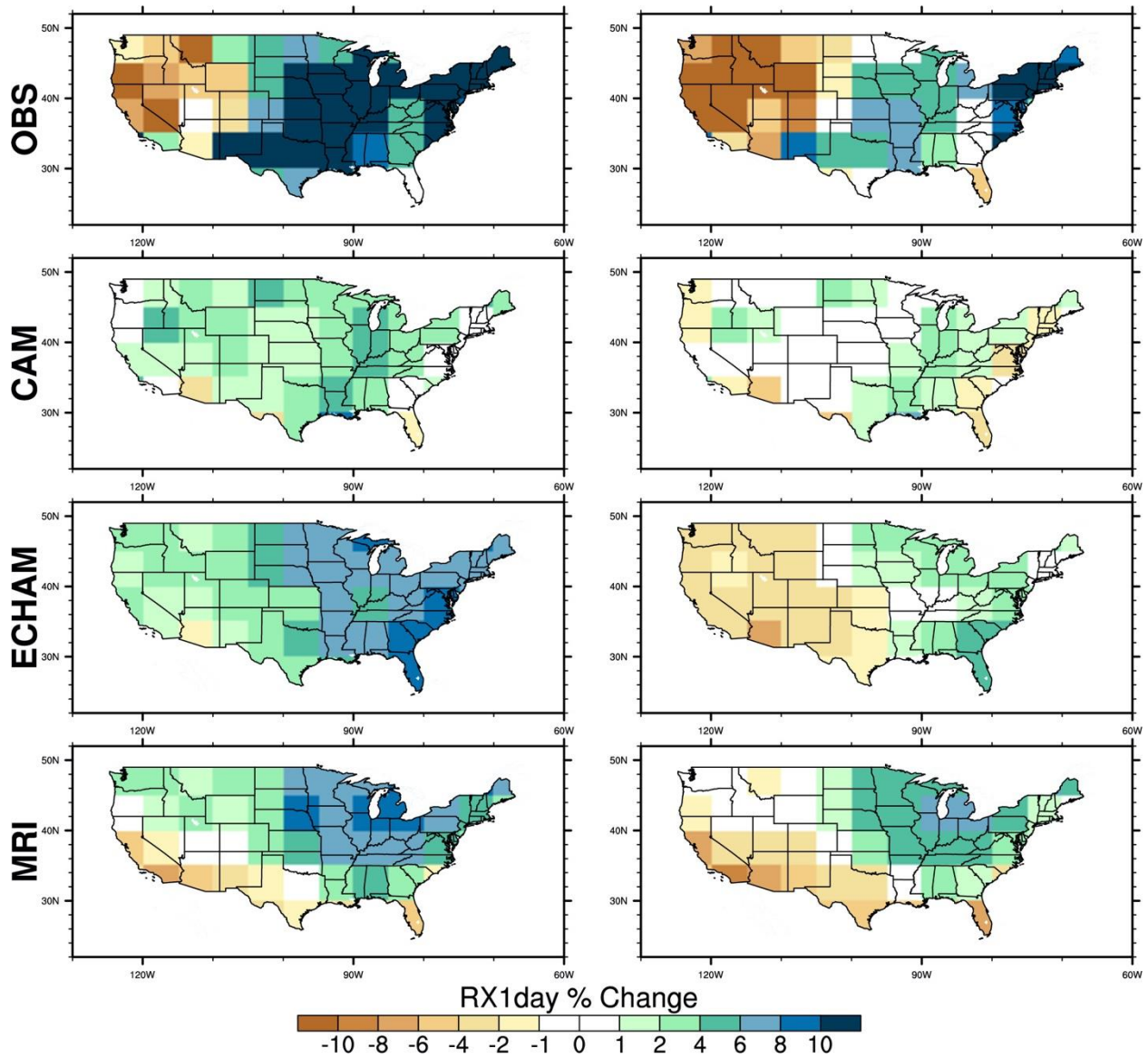
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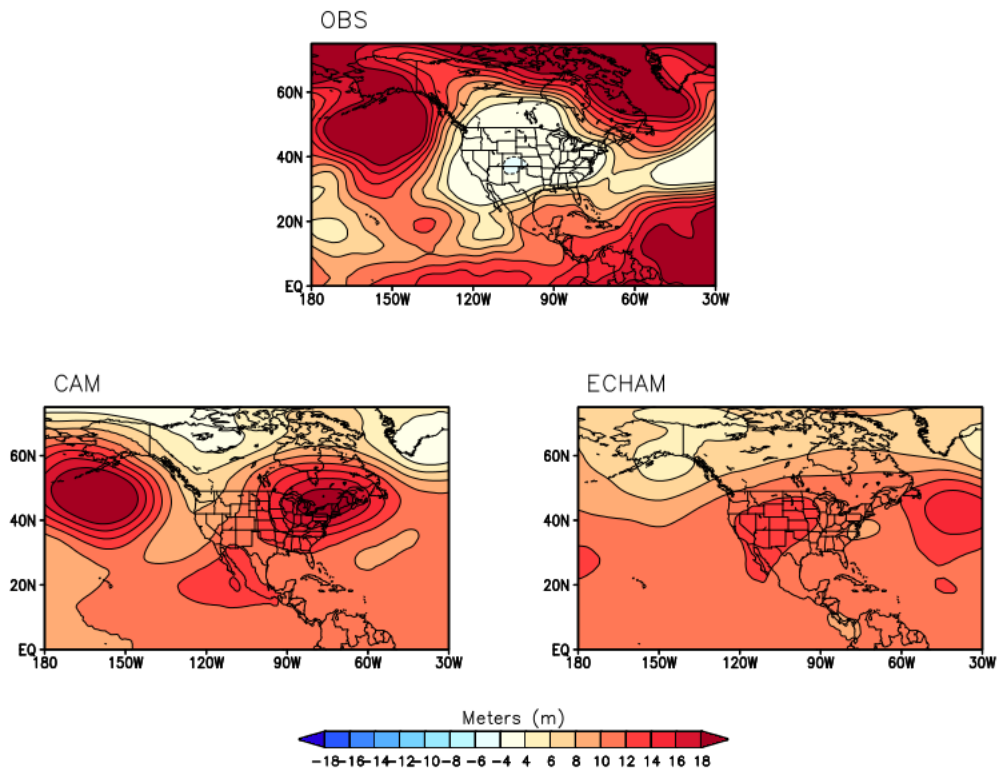
**Figure S1.** The observed changes in wettest day of the year (RX1day) calculated as (top) the difference (1999–2018) minus (1948–1967), and (bottom) the difference (1999–2018) minus (1901–1920). RX1day change is calculated at native grid scales, aggregated to 5°x 5° scales, and then expressed as the % difference relative to earlier climate.



**Figure S2.** Histograms of simulated RX1day change (%) for all 18 U.S. river basins. Histograms shown as smoothed non-parametric probability distributions. Histograms are derived from 364 CAM (blue), 2500 ECHAM5 (green), and 625 MRI (purple) paired differences of factual versus counterfactual experiments. Red tic marks denote the observed RX1day changes. The probability distribution functions are nonparametric curves constructed using the R software program, which utilizes a kernel density estimation and a Gaussian smoother.



**Figure S3.** (left) The changes in wettest day of the year (RX1day) and (right) same but with the contiguous U.S. mean change removed. Observed change (top) is the difference (1999–2018) minus (1948–1967), and the ensemble mean changes are the factual minus counterfactual simulations of 1999–2018 for CAM (second row), ECHAM (third row), and MRI (bottom) models. RX1day change is calculated at native grid scales, aggregated to the  $5^\circ \times 5^\circ$  scales, and then expressed as the % difference relative to the earlier or counterfactual climate.



**Figure S4.** (top) Observed September/October 700 hPa height change, and the ensemble mean simulated September/October 700 hPa height change for CAM (left) and ECHAM (right). Contour interval is 2m. The observed height change is calculated as the difference (1999–2018) minus (1948–1967) based on NCEP/NCAR reanalysis. The simulated changes are the difference of factual versus counterfactual experiments for 1999–2018.