SUPPLEMENTAL INFORMATION FOR Separating weather and climate using a spatially-scalable precipitation model with optimized subseasonal-to-seasonal statistics

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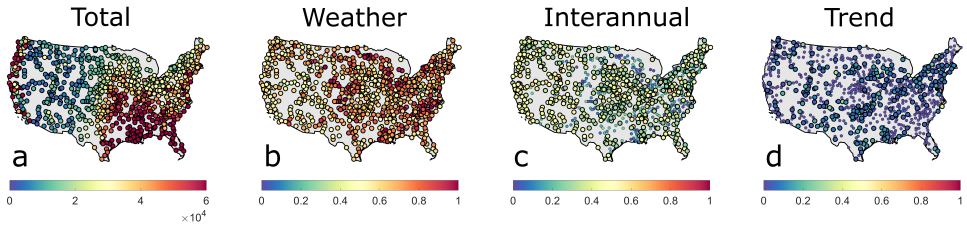

Figure 1. Normalized interannual variance in annual precipitation from daily GHCN data (1948–2004) [(mm/yr)^2]. Compare with main text Figure 7. a) Total interannual variance of annual precipitation. b) Fraction of total variance due to weather-scale processes from 1000 annually-stationary kernel autoregressive weather generator simulations. c) Fraction of total variance due to non-trend interannual variability, calculated as the variance of the detrended observations minus the variance of the detrended weather simulations, all divided by (a) to give a variance explained. Larger markers indicate significantly different from zero at the $\alpha = 0.05$ level using the distribution of 1000 weather simulations. d) Fraction of total interannual variance due to linear trend in observations. Larger markers denote a significant ($\alpha = 0.05$) trend as in Figure 6 in the main text. The large majority of interannual variability is driven by weather-scale processes in the Eastern ConUS, equally by weather- and climate-scale variability in the Western ConUS, and to a lesser degree by significant trends across ConUS.

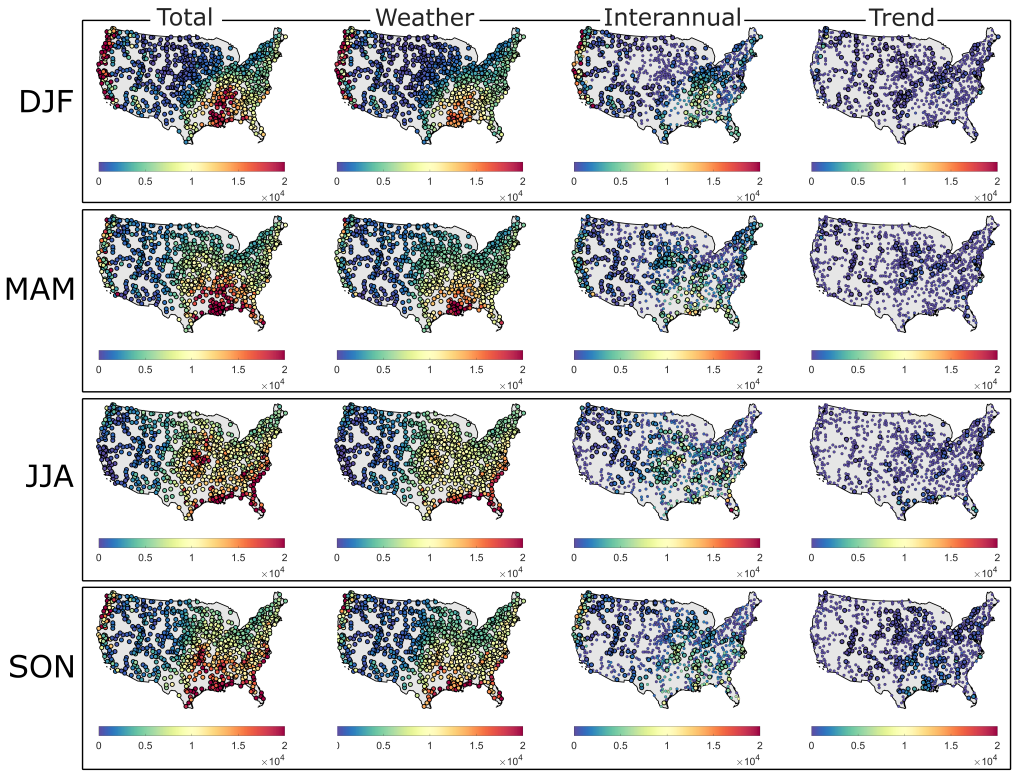

Figure 2. Interannual variance in seasonal precipitation from daily GHCN data (1948–2004). "Total" column shows total interannual variance of seasonal precipitation [$(\text{mm/yr})^2$] for winter (DJF), spring (MAM), summer (JJA), and autumn (SON). "Weather" column shows variance of weather-scale processes from 1000 annually-stationary kernel autoregressive weather generator simulations as in Main Text Fig. 7b. "Interanual" column shows non-trend interannual variability, calculated as the variance of the detrended observations minus the variance of the detrended weather simulations as in Main Text Fig. 7c. Larger markers indicate significantly different from zero at the $\alpha = 0.05$ level using the distribution of 1000 weather simulations. "Trend" column shows interannual variance due to linear trend in observations as in Main Text Fig. 7d. Larger markers denote a significant ($\alpha = 0.05$) trend as in Main Text Figure 6. See Main Text Figure 8 for normalized maps.