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The Canadian Surface Reanalysis (CaSR) v3.2 precipitation dataset: a 45-year high-resolution analysis for North America (1980–2024)

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S1 Verification network in the LOO framework

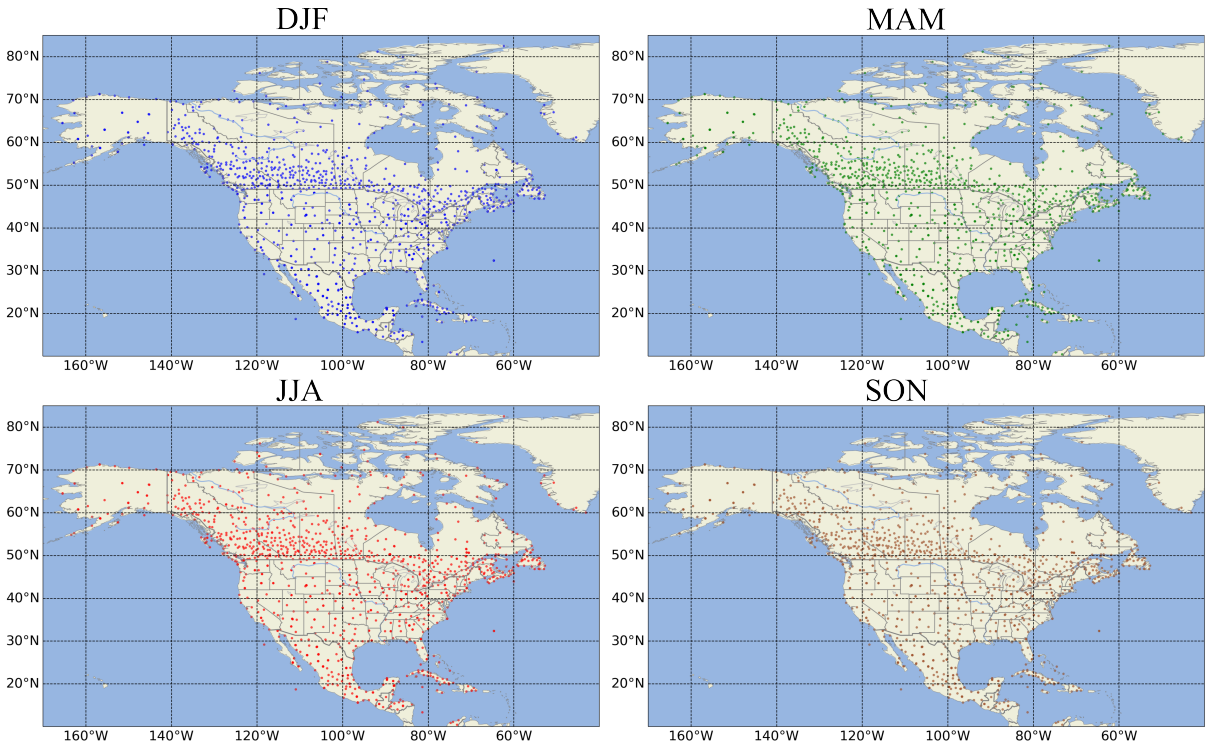

Figure S1. Location of the stations retained for evaluation after spatial thinning to a 0.1° × 0.1° grid, shown separately for each season. Winter and spring (DJF and MAM) include adjusted daily and hourly networks together with manual synoptic stations, while summer and autumn (JJA and SON) also include automatic stations in addition to the adjusted networks.

S2 Comparison of gridded datasets

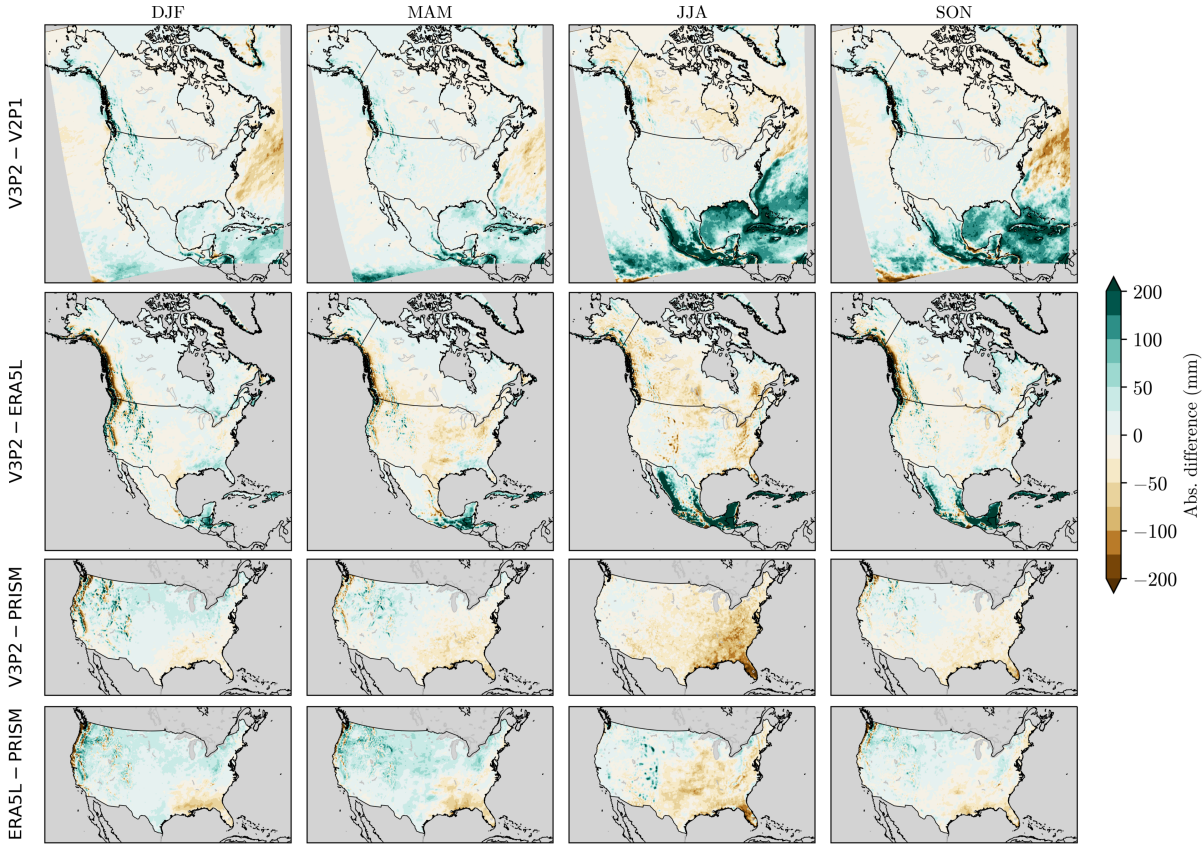

Figure S2. Mean differences over 2002–2018 in seasonal accumulation between (from top to bottom): CaPA-24h v3.2 and v2.1, CaPA-24h v3.2 and ERA5-Land, CaPA-24h v3.2 and PRISM, and ERA5-Land and PRISM. Each column corresponds to a season: winter (DJF), spring (MAM), summer (JJA), and autumn (SON).

S3 KGE confidence intervals for Rx1Day and R95pTOT

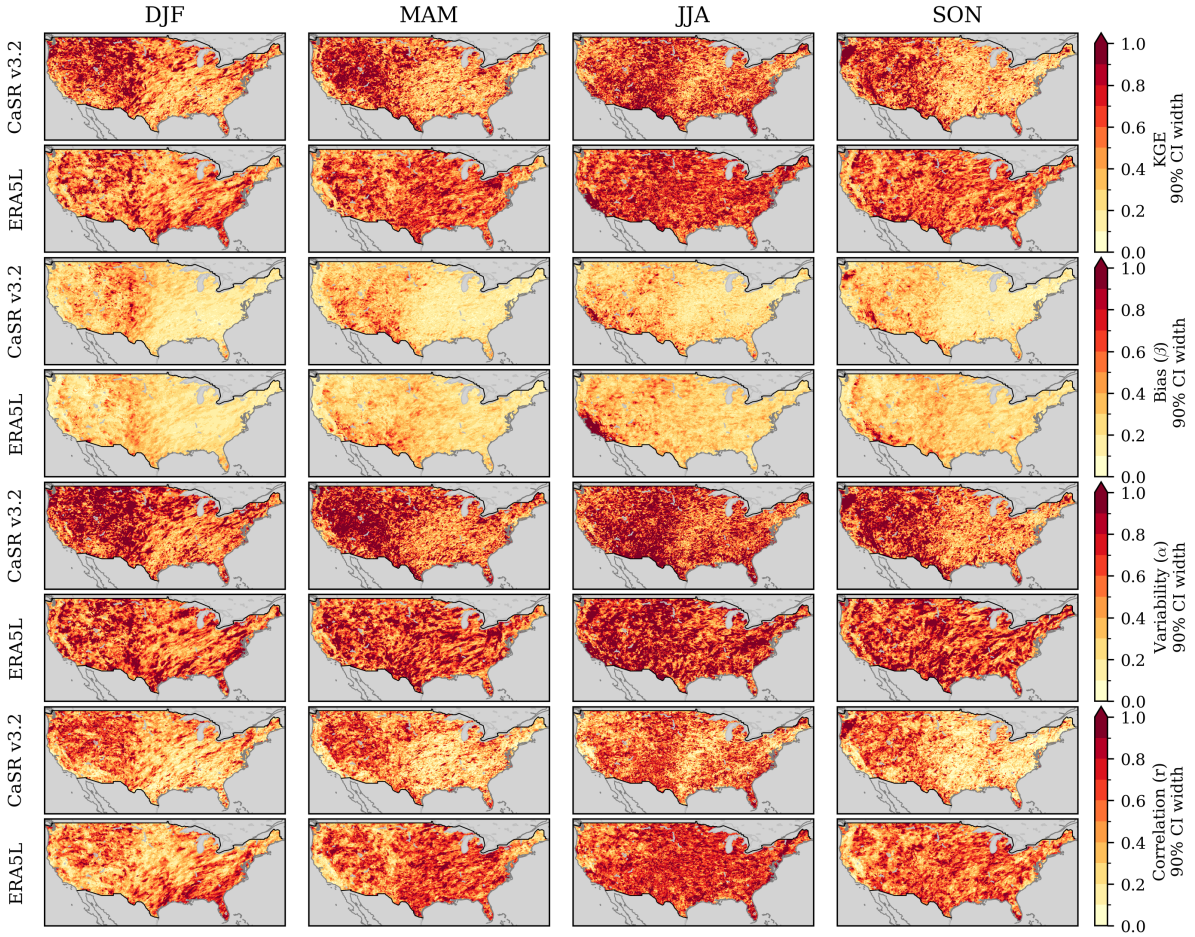

Figure S3. Width of the 90% confidence interval of the KGE and its components (β, α, r) for Rx1Day, estimated at each grid cell by a non-parametric bootstrap (1000 replicates) of the 17 annual values (2002–2018), for CaSR v3.2 and ERA5-Land evaluated against PRISM.

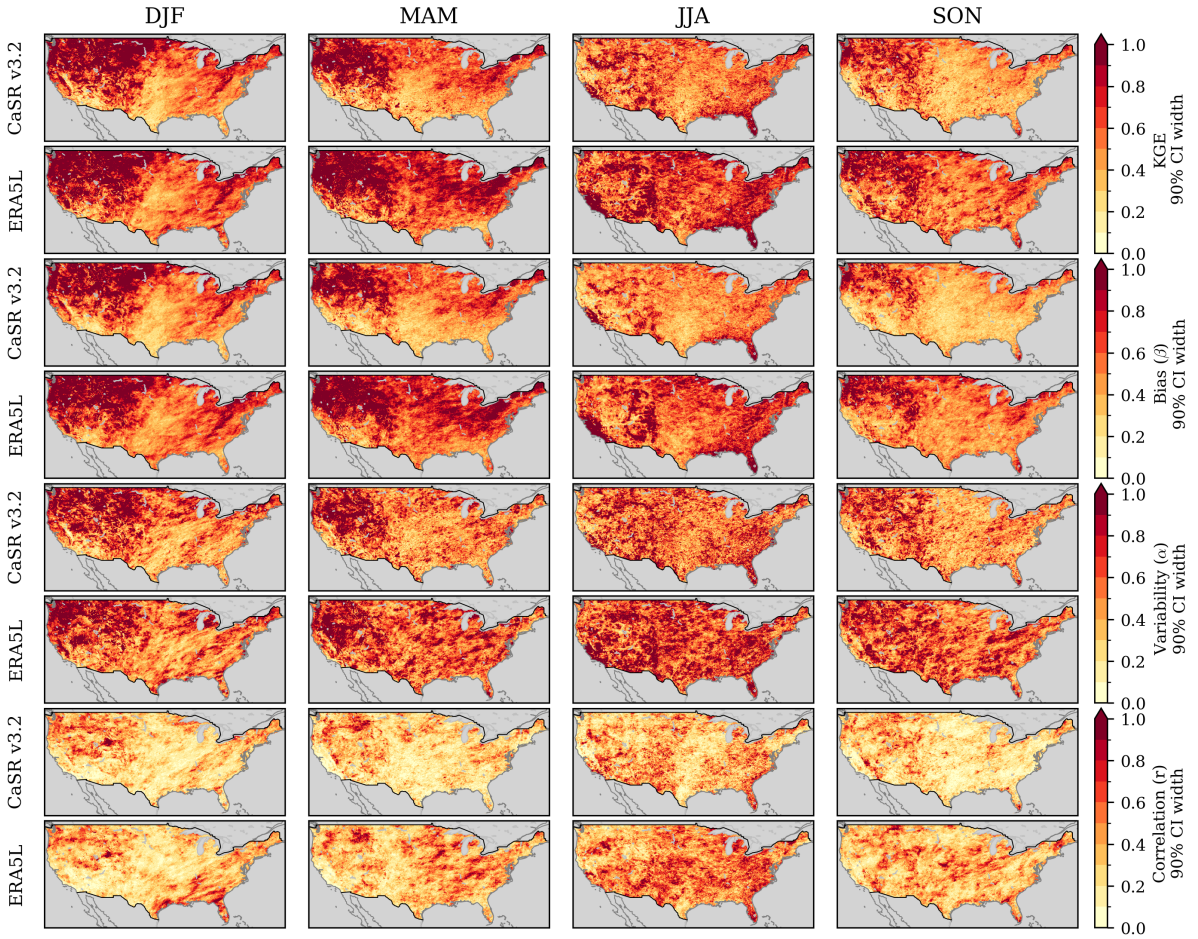

Figure S4. Same as S3 but for R95pTOT.

S4 KGE and its uncertainty for Rx5Day and R99pTOT

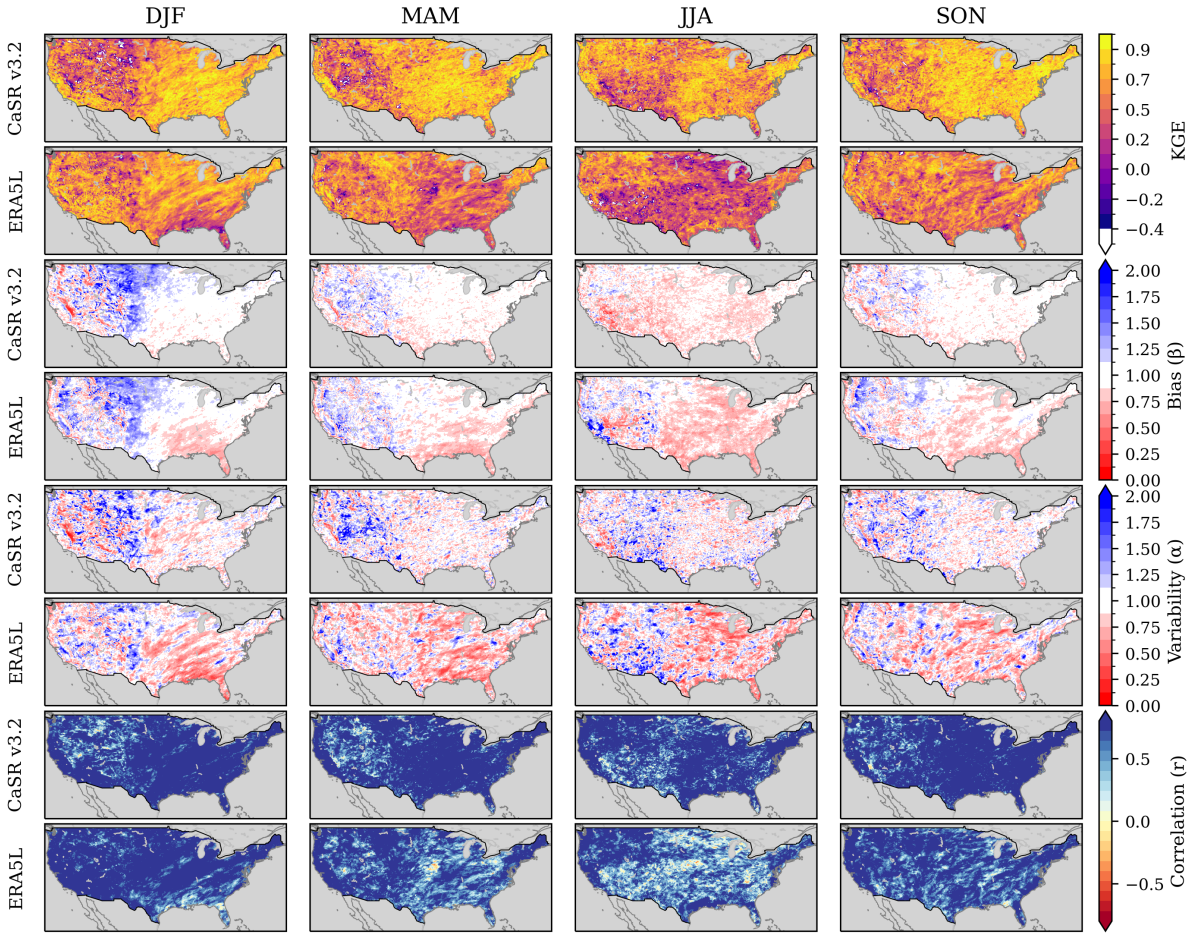

Figure S5. Kling–Gupta Efficiency (KGE) and its three components – bias ratio (β), variability ratio (α), and correlation (r) – for the annual **Rx5day** index, computed separately for each season (columns) and for the 2002-2018 period. Every other row corresponds to a different reanalysis, with CaPA-24h v3.2 and ERA5-Land evaluated against PRISM. The y-axis labels indicate the reanalysis product being compared. For all four metrics, a value of one represents a perfect match with PRISM.

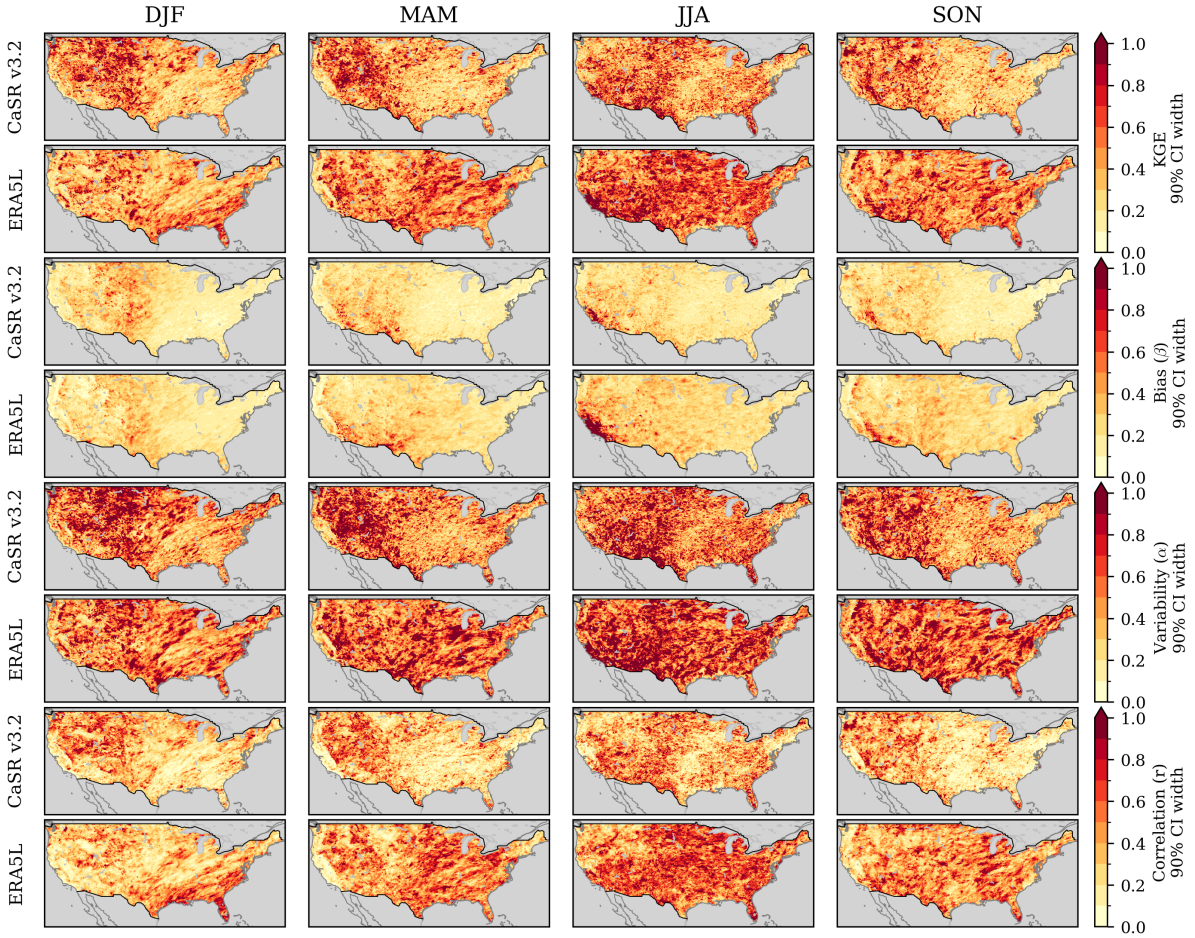

Figure S6. Same as S3 but for Rx5Day.

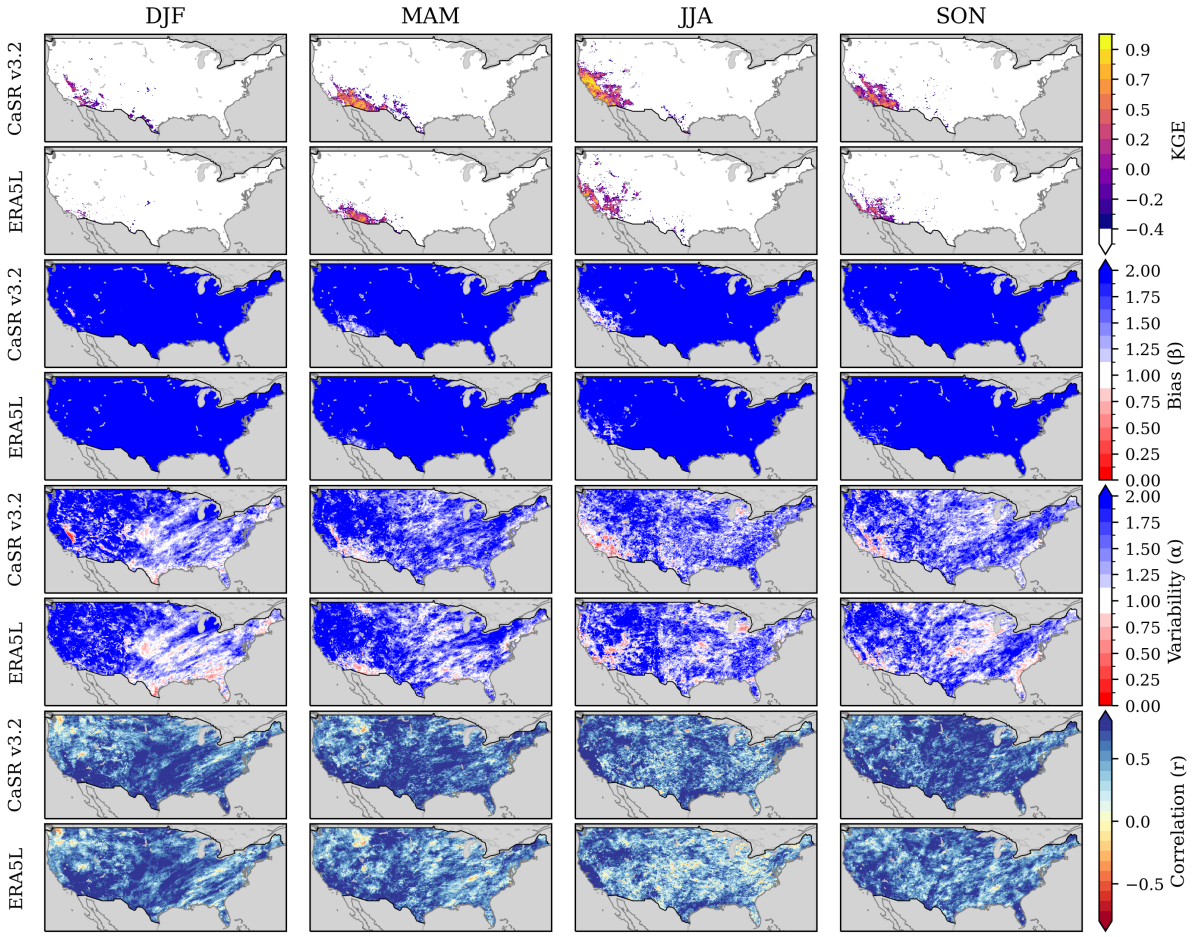

Figure S7. Kling–Gupta Efficiency (KGE) and its three components – bias ratio (β), variability ratio (α), and correlation (r) – for the annual **R95pTOT** index, computed separately for each season (columns) and for the 2002-2018 period. Every other row corresponds to a different reanalysis, with CaPA-24h v3.2 and ERA5-Land evaluated against PRISM. The y-axis labels indicate the reanalysis product being compared. For all four metrics, a value of one represents a perfect match with PRISM.

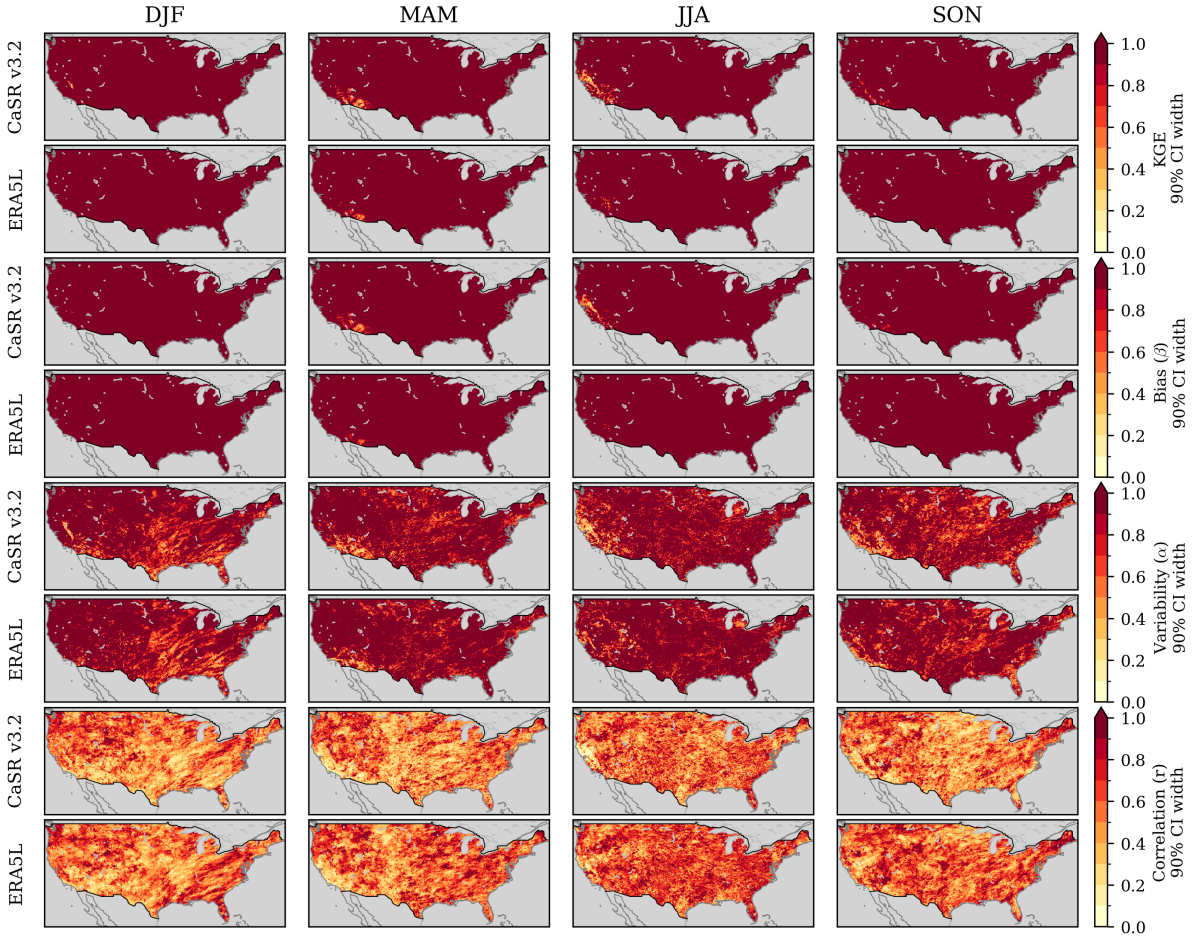

Figure S8. Same as S3 but for R99pTOT.