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## Supplemental Material

*Weather and Forecasting*

Forecasting U.S. Tornado Outbreak Activity and Associated Environments in the Global Ensemble Forecast System (GEFS)

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## Supplementary Figures

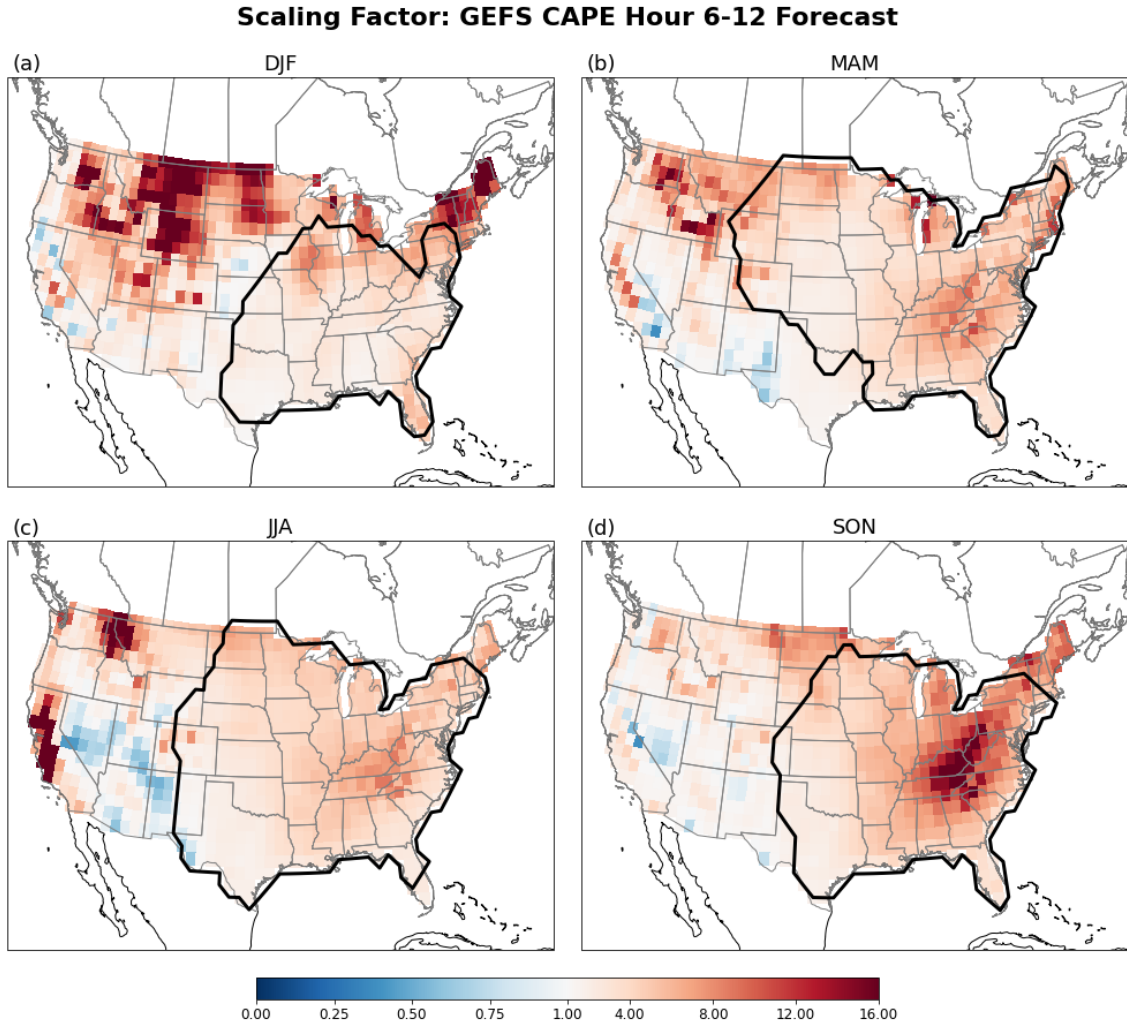


FIG. S1. Scaling factor for GEFS CAPE hour 6-12 forecasts fit to NARR CAPE, for (a) DJF, (b) MAM, (c) JJA, and (d) SON. Thick black line outlines where tornado outbreak climatological frequency  $< 0.01\%$ .

Reliability Diagrams for GEFS Outbreak Index Day 8-14 Forecasts

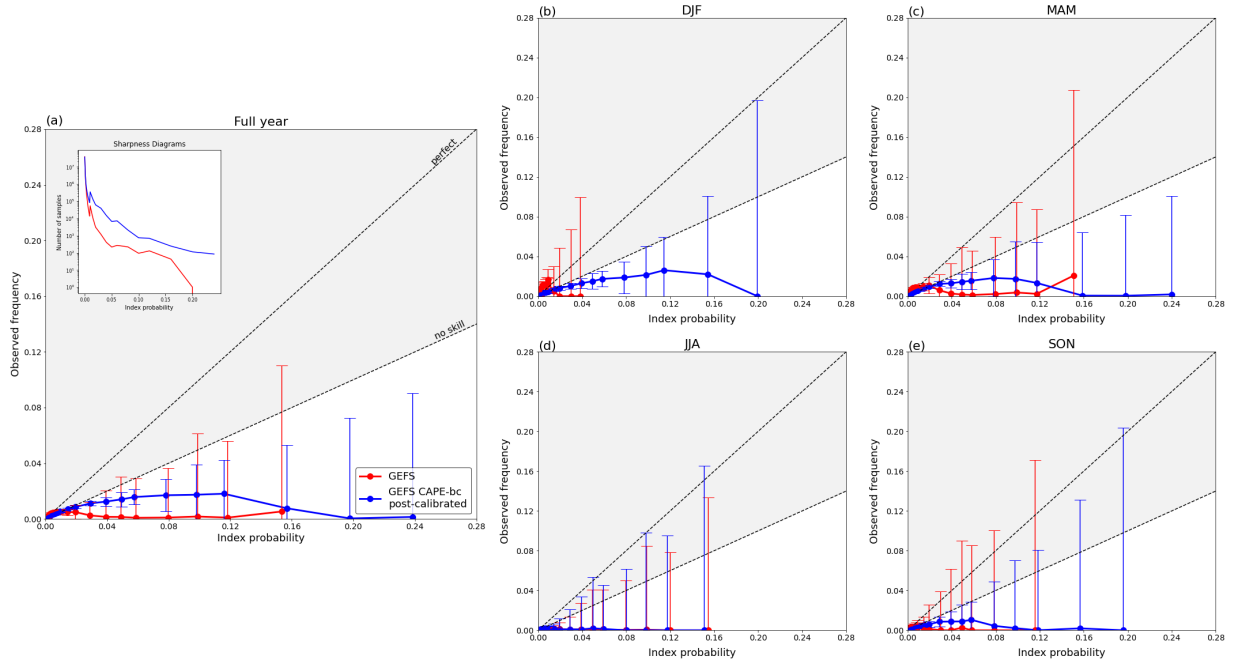


FIG. S2. Same as Fig. 5 but for GEFS day 8-14 forecasts of outbreak index.

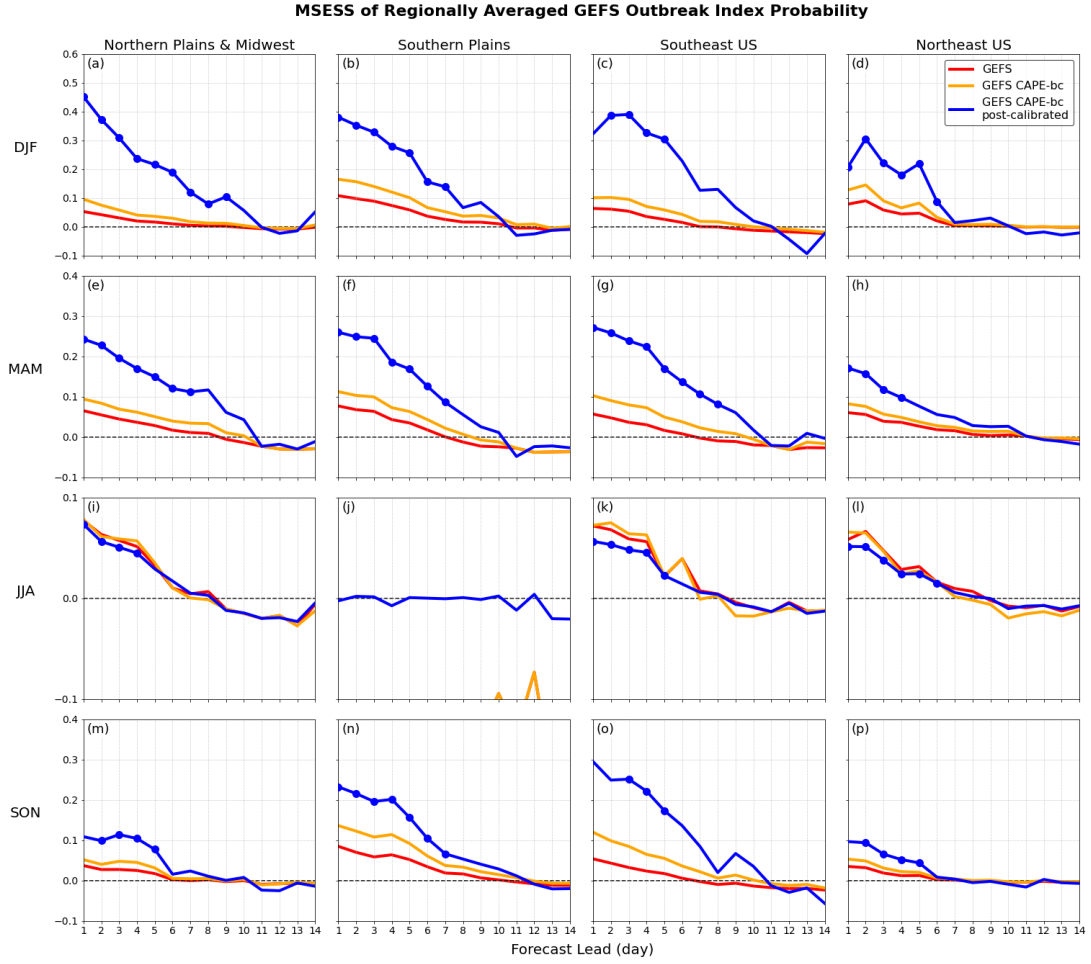


FIG. S3. Same format as Fig. 3, but the mean squared error skill score (MSESS) for regionally averaged GEFS outbreak index.

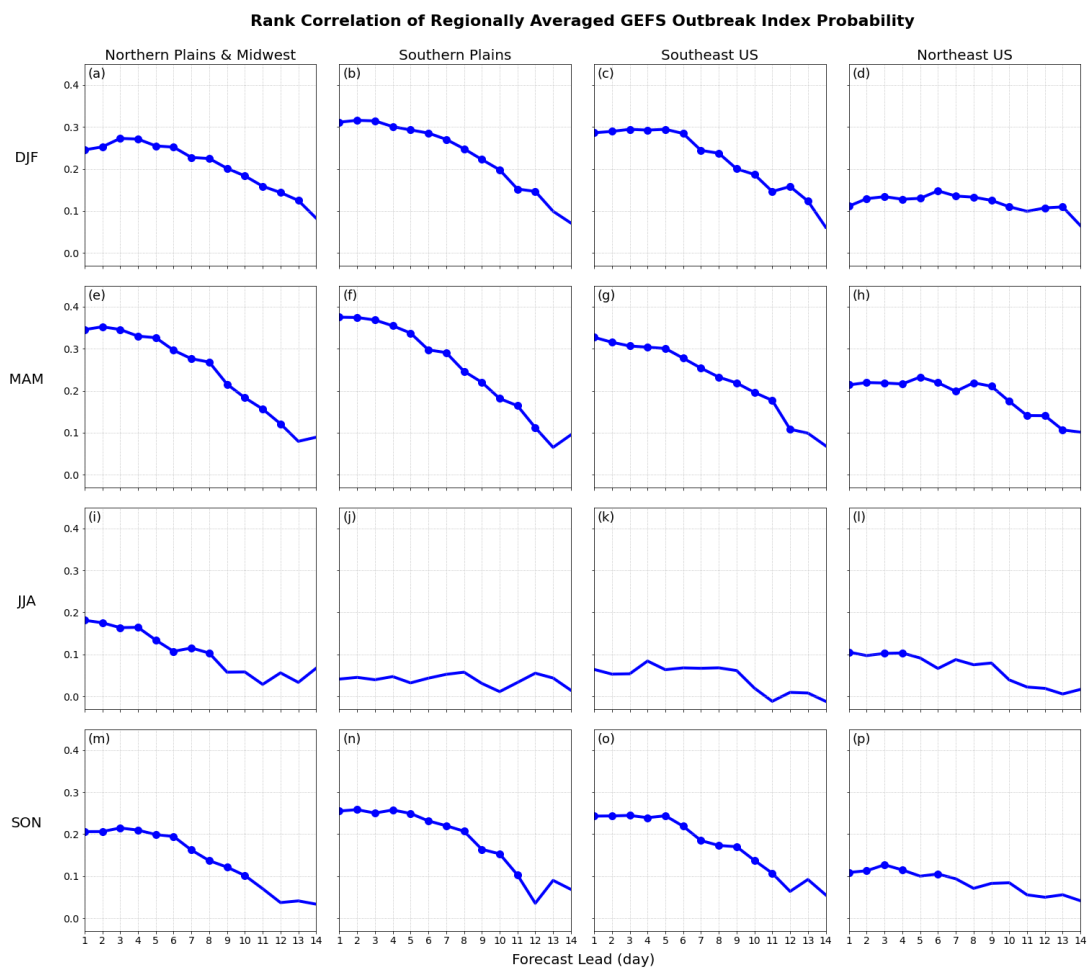


FIG. S4. Same format as Fig. 4, but the rank correlation for regionally averaged GEFS outbreak index.

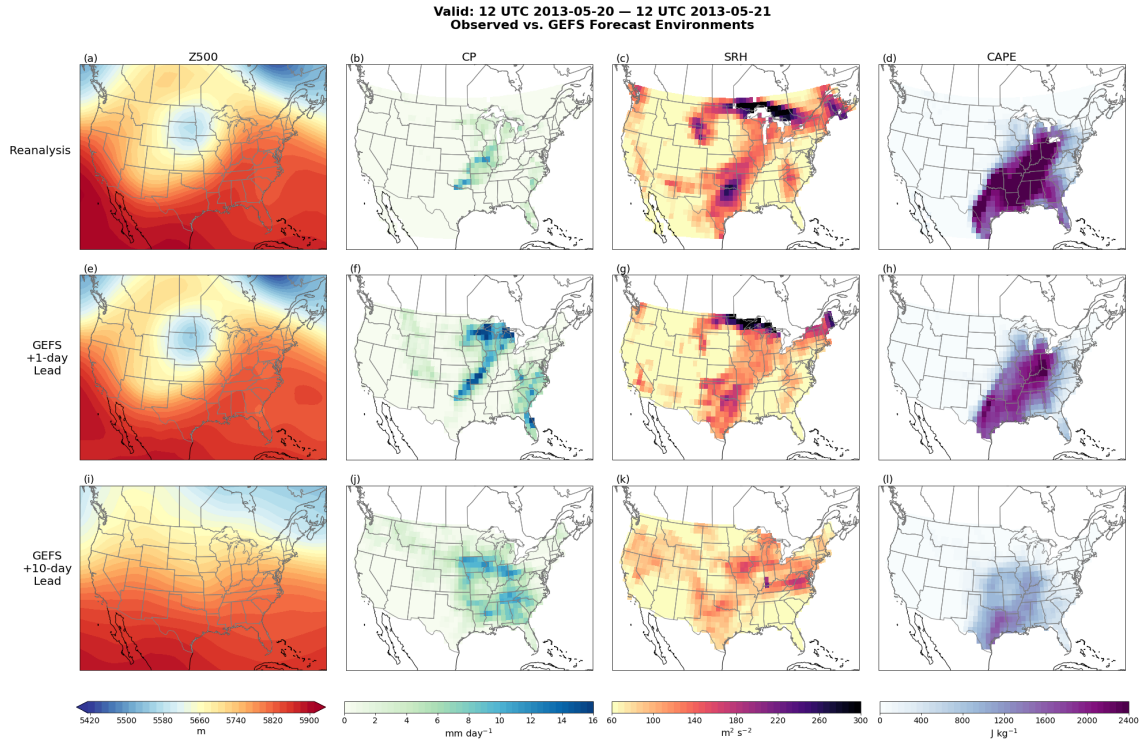


FIG. S5. 12 UTC on May 20, 2013 through 12 UTC on May 21, 2013: (a-d) reanalysis environments of (first column) 500-hPa geopotential height, (second column) convective precipitation, (third column) storm relative helicity, and (last column) convective available potential energy. Panels e-h same as panels a-d but for GEFS day-1 forecasts (initialized 00 UTC on May 20), and panels i-l are same as panels a-d but for GEFS day-10 forecasts (initialized 00 UTC on May 11).