Supplementary: Evaluating Microphysics and Planetary Boundary Layer Schemes in WRF

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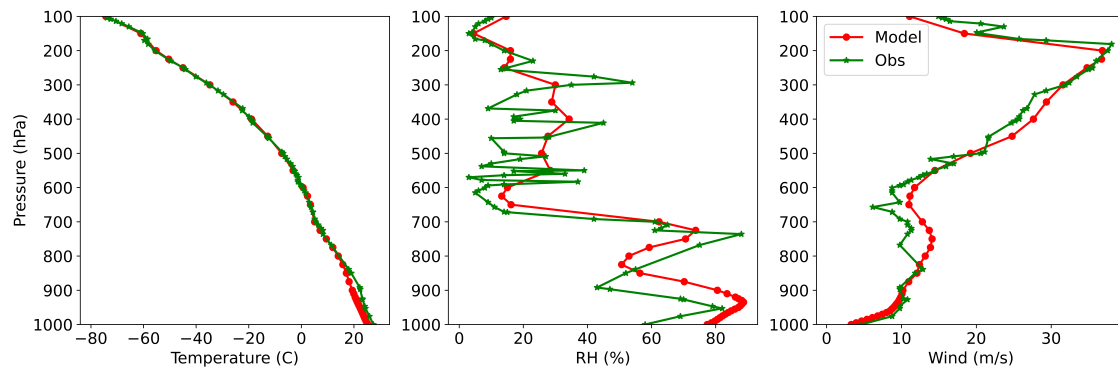
Figure S1. Vertical meteorological parameters over Jeddah on 24th November 2022: temperature (°C), relative humidity (%), and wind speed (m/s), comparing WRF model simulations with radiosonde observations.
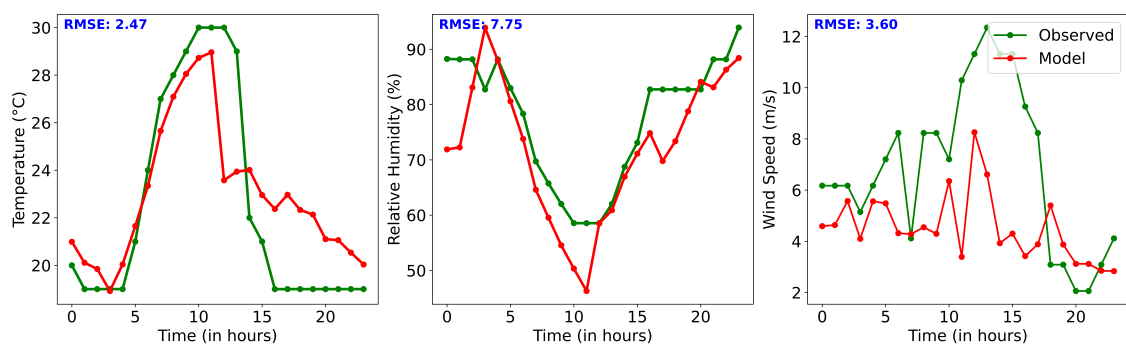
Figure S2. Surface meteorological parameters over Hafr Al Batin on 27th October 2019: temperature (°C), relative humidity (%), and wind speed (m/s), comparing WRF model simulations with IOWA station observations.
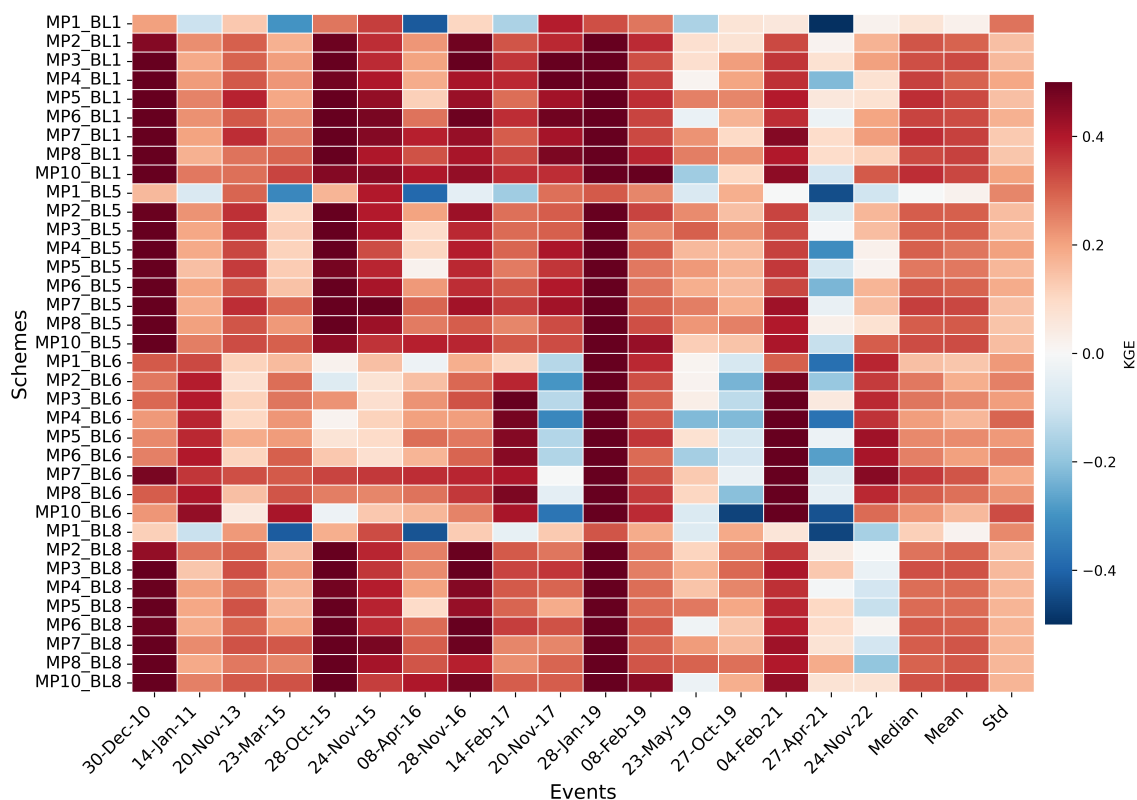
Figure S3. Spatial KGE scores for precipitation of 36 schemes combined for 17 EREs.
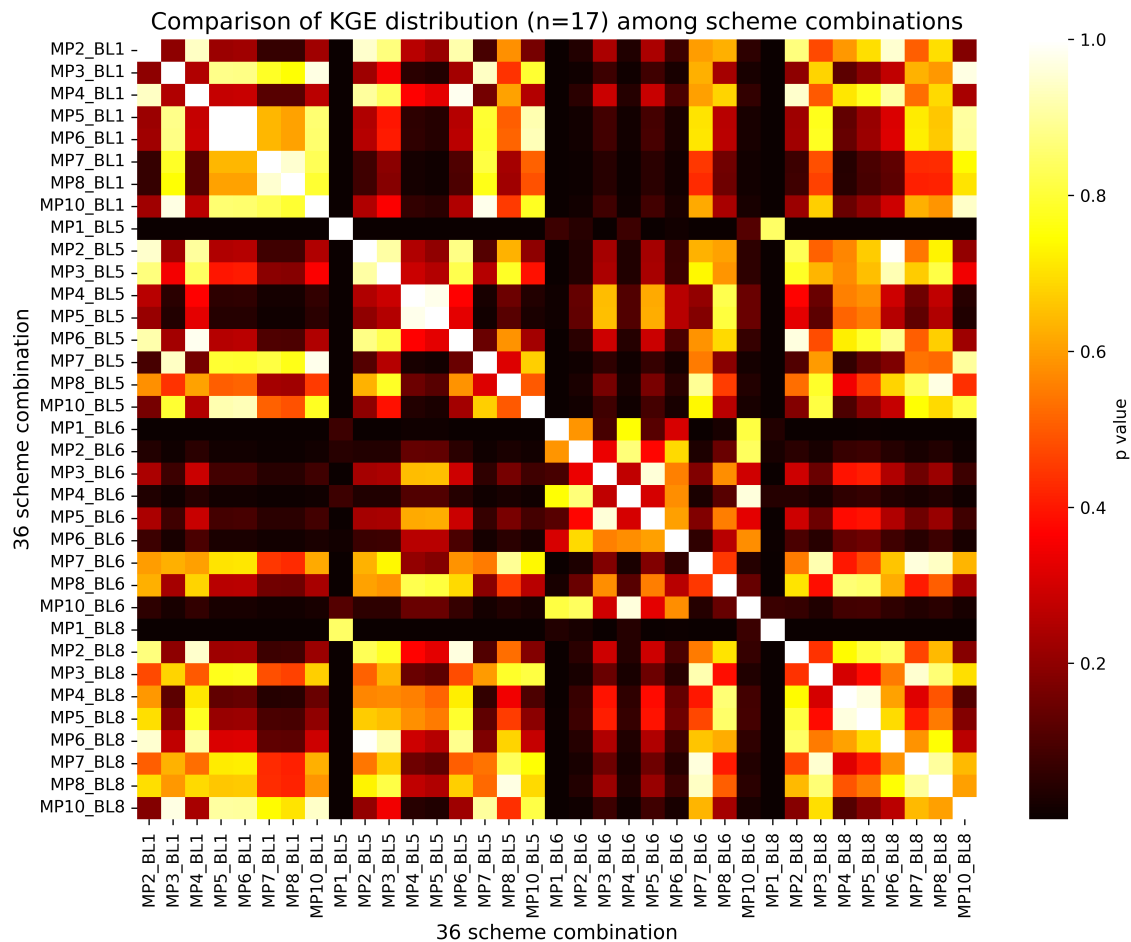
Figure S4. Pairwise p-values from independent t-tests comparing the ΔKGE distributions of 36 scheme combinations for rainfall spatially. ΔKGE values were calculated by subtracting the mean KGE across events from the KGE values. A p-value threshold of 0.1 was used to identify statistically significant differences between scheme combinations