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Aerosol trends as a potential driver of regional climate in the central United States: evidence from observations

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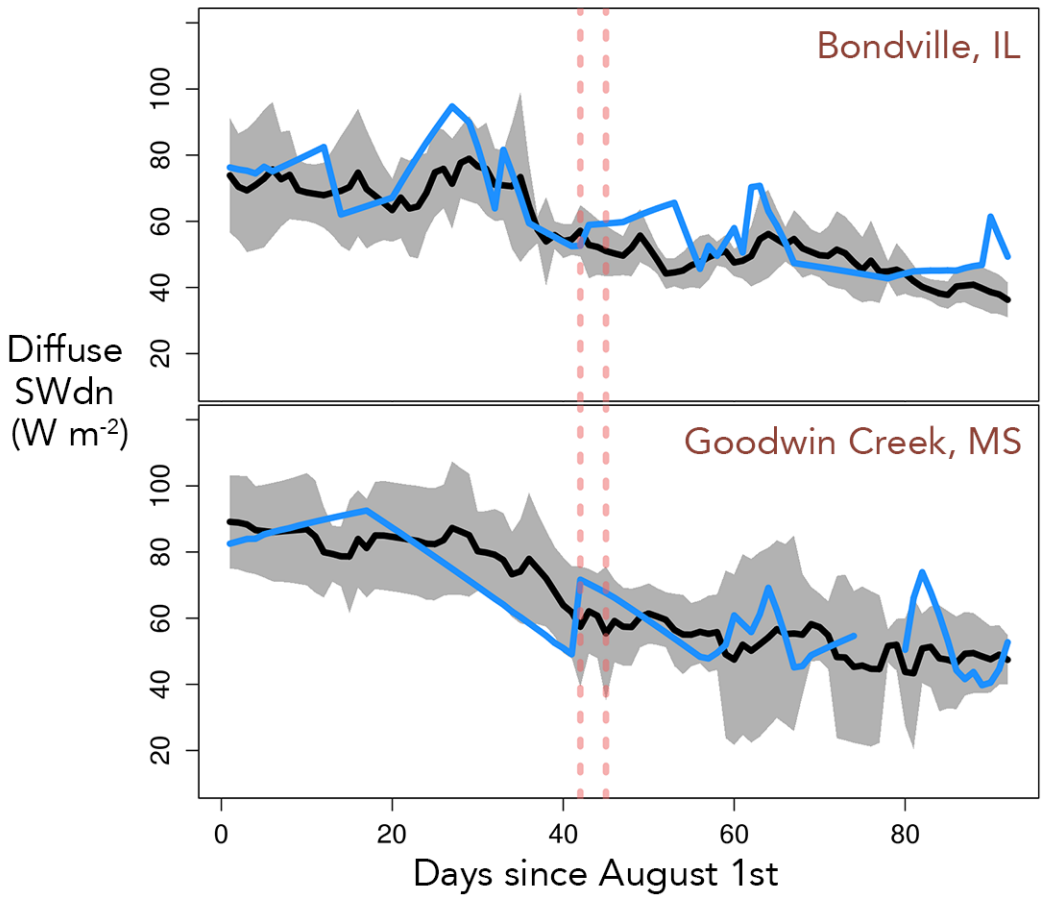

Figure S1. Observed diffuse downward surface solar radiation (SWdn) during August-October at Bondville, IL (top), and Goodwin Creek, MS (bottom). The blue line is the timeseries of daily mean diffuse SWdn at each site in 2001. The black line represents daily diffuse SWdn averaged over 1995–2000 at the sites, shaded by one standard deviation from the mean. The red vertical lines mark September 11th, when air traffic was temporarily suspended in 2011, and three days after, when air travel largely resumed.

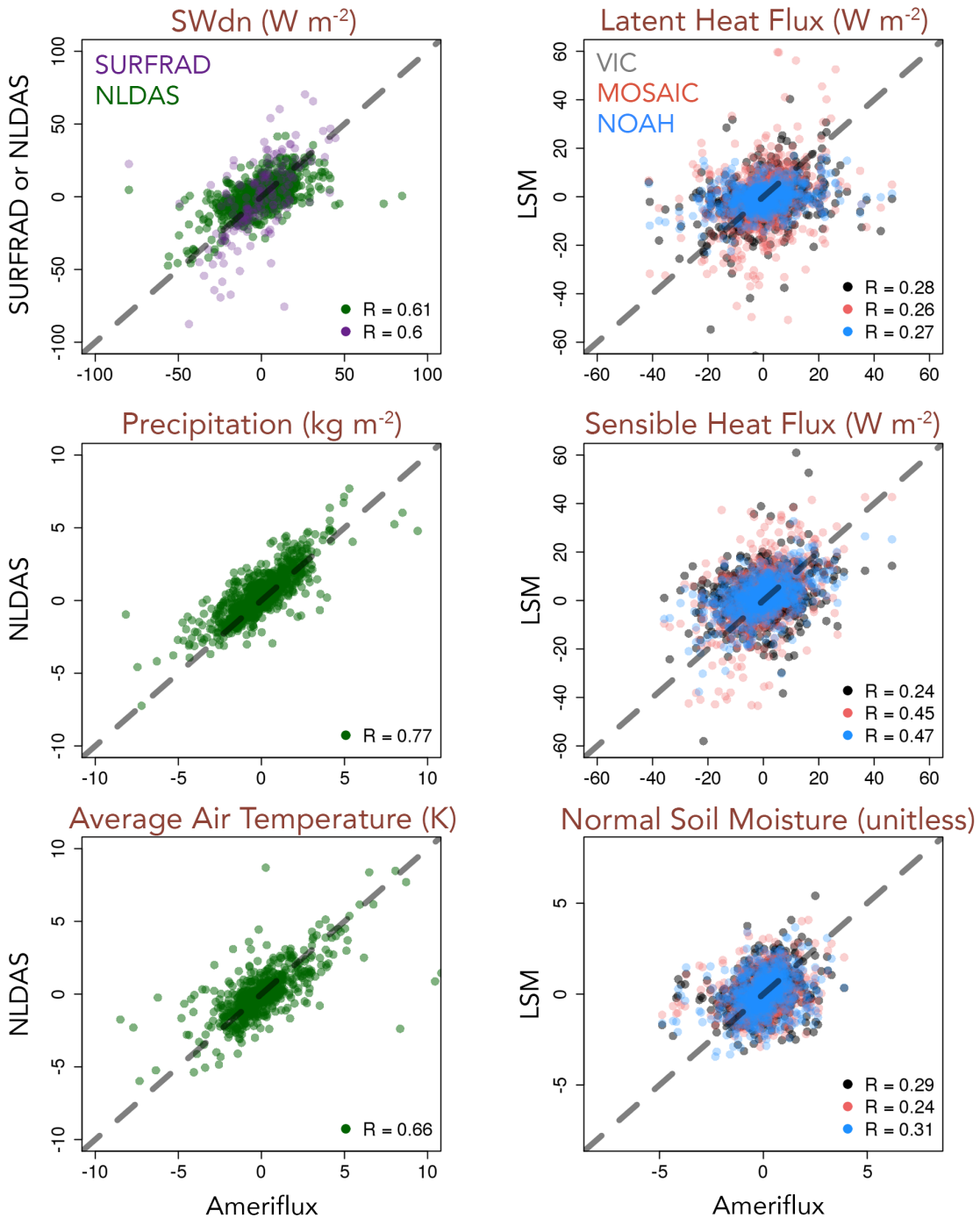
SWdn (W m-2)
SURFRAD
NLDAS
R = 0.61
R = 0.6
SURFRAD or NLDAS
Latent Heat Flux (W m-2)
VIC
MOSAIC
NOAH
R = 0.28
R = 0.26
R = 0.27
LSM
Precipitation (kg m-2)
R = 0.77
NLDAS
Sensible Heat Flux (W m-2)
R = 0.24
R = 0.45
R = 0.47
LSM
Average Air Temperature (K)
R = 0.66
NLDAS
Ameriflux
Normal Soil Moisture (unitless)
R = 0.29
R = 0.24
R = 0.31
LSM
Ameriflux

Figure S2. Comparison between Ameriflux/SURFRAD stations (11 total) with 5+ years of data and the corresponding North American Land Data Assimilation System (NLDAS) data. The left column compares observed forcing data to the NLDAS forcing data. The right column compares the land surface model (LSM) results to the Ameriflux observations. Each point represents the monthly anomaly calculated by removing the monthly climatology from the monthly mean of the data. Soil moisture has been standardized by its mean and standard deviation to remove biases in unit conversion.