P50 Impact of satellite and model based soil moisture initial conditions on coupled NU-WRF simulations.

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Despite their importance, the representation of land-atmosphere (L-A) interactions in weather and climate models remains poorly constrained, as they involve a complex set of processes that are difficult to observe in nature. SMAP offers, for the first time, the ability to map high quality, near-surface soil moisture globally every few days at a spatial resolution comparable to current modeling efforts. In this study, we assess multiple points of intersection of SMAP products with offline and coupled models and evaluate impacts using process-level diagnostics. Results will inform upon the importance of high-resolution soil moisture mapping and LDAS systems for improved coupled prediction and model development, as well as reconciling differences in modeled, retrieved, and measured soil moisture. Specifically, NASA model (LIS, NU-WRF) and observation (SMAP, NLDAS-2) products are combined with in-situ standard and IOP measurements (soil moisture, flux, and radiosonde) over the ARM-SGP. An array of land surface model spinups (via LIS-Noah) are performed with varying atmospheric forcing, greenness fraction, and soil layering permutations.