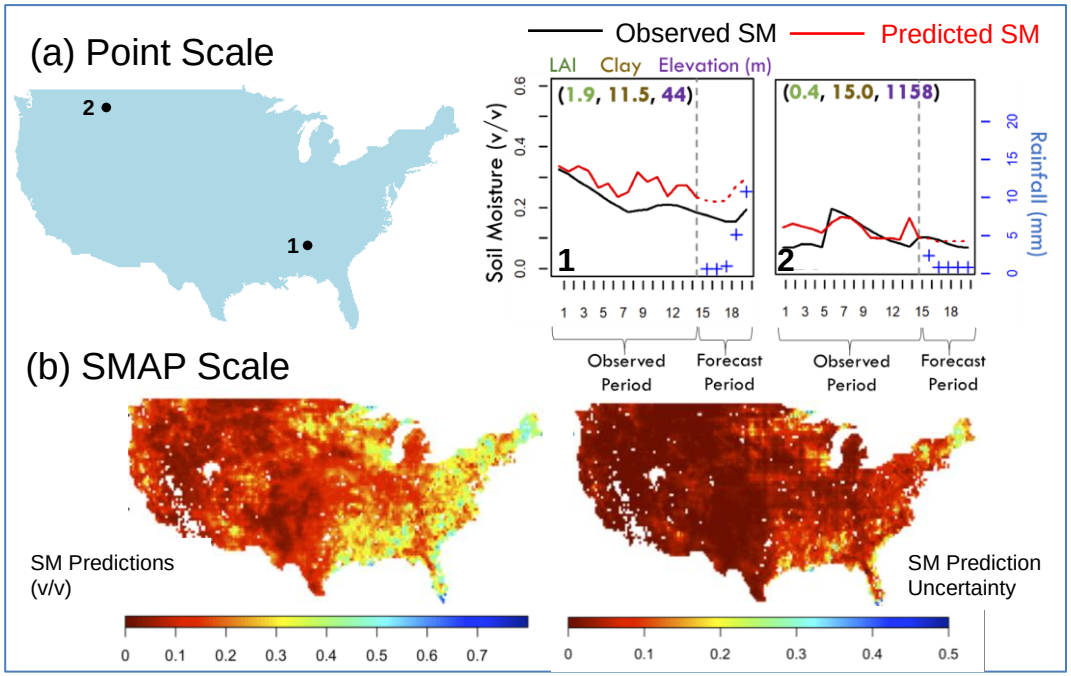
Multiscale Big Data Soil Moisture Fusion

Problem: The past decade has seen an explosive growth in soil moisture (SM) remote sensing data across spatio-temporal scales. There is a dearth of algorithms which combine disparate SM data platforms and improve our understanding of multi-scale SM dynamics.



Finding:

A novel data fusion algorithm is proposed and applied to combine multi-platform SM data across Contiguous US. The algorithm has satisfactory predictive accuracy from point to satellite scales (~ 36 km) and fills in gaps left by individual data platforms. The effect of land and atmospheric variables on SM variability is quantified.

Impact: Developed first SM data fusion algorithm which is driven by physical controls (vegetation, topography, soil and rainfall) and is capable off combining massive SM datasets at vast spatio-temporal extents such as Contiguous US.

Kathuria, Mohanty and Katzfuss, 2019: Multiscale data fusion for surface soil moisture estimation: A spatial hierarchical approach , *Water Resources Research.*