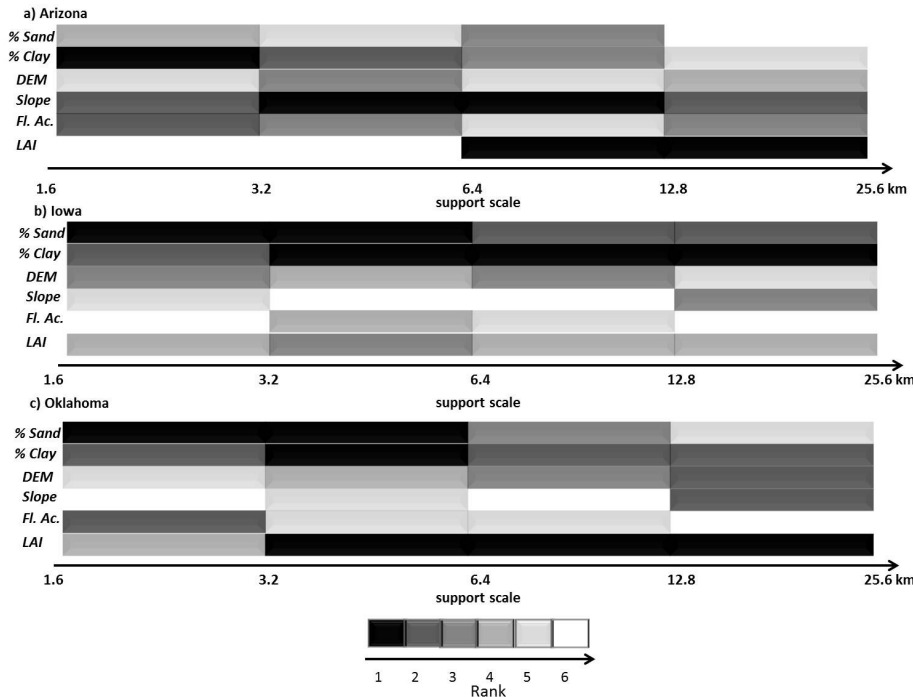
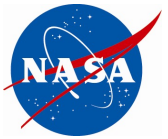


Geo-physical Heterogeneity Governs Soil Moisture Dynamics at Different Scales



Hierarchy of effect of biophysical factors on near-surface soil moisture distribution for different hydro-climates.

Problem: Influence of geophysical heterogeneity on soil moisture dynamics is poorly understood at different space-time scales despite its significance in multi-scale hydrologic, climatic, and ecosystems modeling applications.

Finding: The dominance of geophysical controls (soil, topography, and vegetation attributes) on soil moisture dynamics are discernable and evolves across scale. The distinct effect of hydroclimate is identifiable in the geophysical attributes dominating the soil moisture dynamics.

Impact: SMAP data has improved our understanding of the role of geophysical heterogeneity on soil moisture dynamics and their impact on improved hydrological, climatic, and ecosystems modeling skills at multiple-scales.

Gaur, Mohanty, 2016: Land-surface controls on near-surface soil moisture dynamics: Traversing remote sensing footprints. *Water Resources Research*.

Gaur, Mohanty, 2018: A Nomograph to incorporate geo-physical heterogeneity in soil moisture downscaling. *Water Resources Research*.