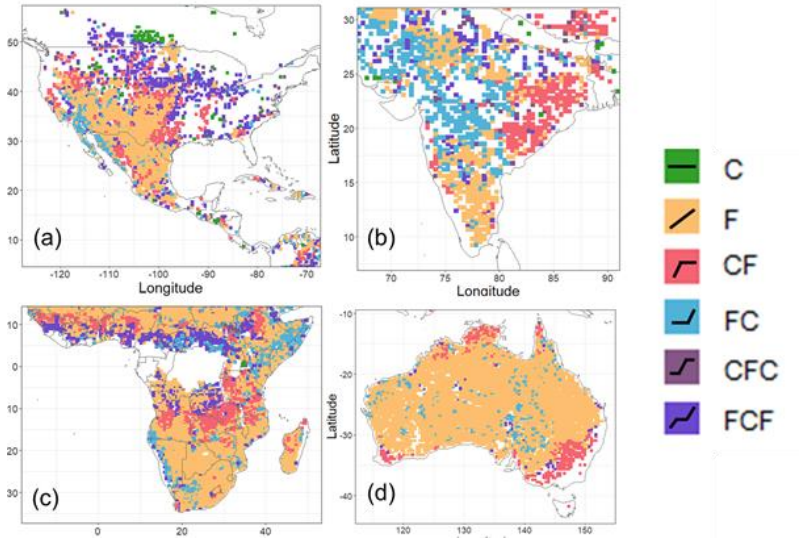
Global Surface Soil Moisture Drydown Patterns

Problem: Understanding the global soil moisture dynamics and its governing controls beyond the Darcy Scale is critical for various hydrological, meteorological, agricultural, and environmental applications. Seasonal dynamics of soil moisture drydowns at remote sensing scale remained unparameterized, especially at a global scale.



Distribution of the canonical form of the surface soil moisture loss function

Finding:

Soil moisture drydown responds to changes in the meteorological drivers, land-surface characteristics, and the soil-vegetative and atmospheric dynamics. Drydown parameters display high interseasonal variability, especially in the grasslands, croplands, and savannah landscapes. Soil texture exerts influence on the drydown parameters when the footprint mean soil moisture is low.

Impact: A global understanding of the SM drydown features at SMAP footprint provides a significant step toward a scale-specific, effective soil hydrologic parameterization for various applications. Recently, a global flash drought monitoring approach is developed using soil moisture drydown curves parameterized in this study.

Sehgal, Gaur, Mohanty, 2021: Global Surface Soil Moisture Drydown Patterns. *Water Resources Research*