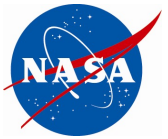


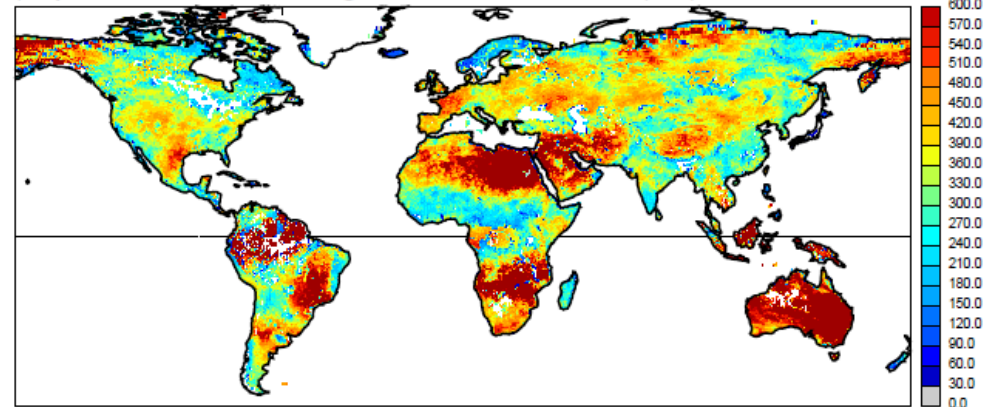
Length Scales of Hydrological Variability as Inferred from SMAP Soil Moisture Retrievals



Problem: A key facet of hydrological variability is its length scale: the distance one can travel from a given location and still see similarities in the timing of hydrological variations. Can we quantify this length scale with SMAP data?

Finding: Geographical and seasonal differences in length scales are consistent with known features of meteorological variability. One example: length scales in summer are smaller than those in winter, reflecting dominance of convection during summer. Length scales derived from SMAP are consistent with those derived from precipitation data where precipitation data are trustworthy.

(a) Spatial Correlation Length Scale from SMAP (km): MJJAS



Impact: Existing (non-SMAP) datasets do not allow the full quantification of these length scales across the globe. SMAP data thus provide an otherwise unobtainable comprehensive look at an important facet of hydrological variability.