



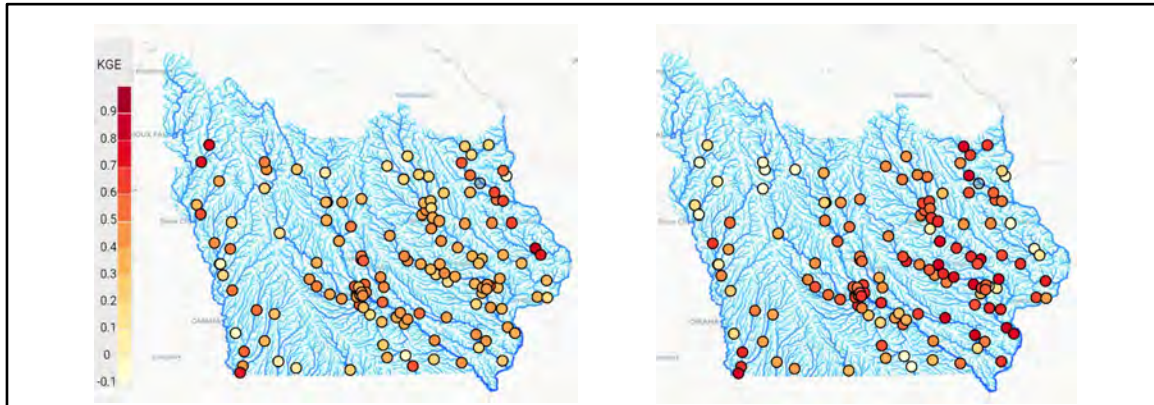
SMAP Soil Moisture Data Assimilation Improves Streamflow Prediction Performance



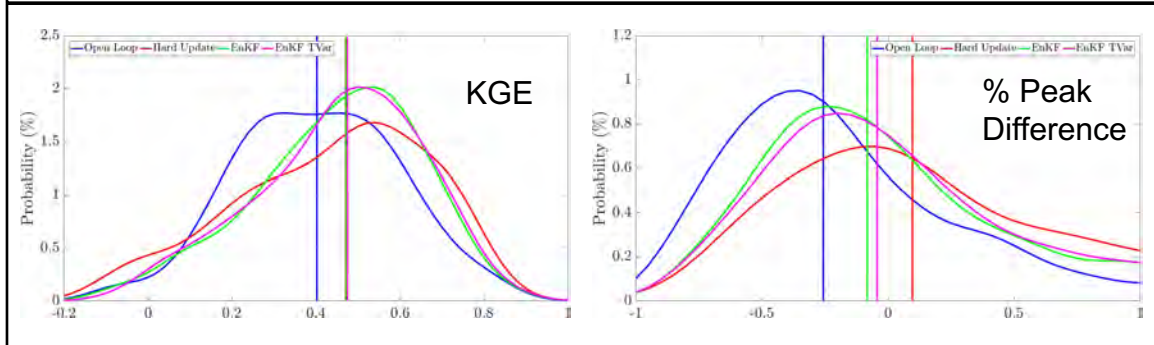
Problem: Model-based soil moisture states depend on model structure, assumptions, and data included. SMAP products provide reality-based estimates. What is an effective way for combining these two?

Findings: SMAP soil moisture data assimilation using Ensemble Kalman Filter with accounting for time-dependent errors in satellite-based soil moisture in a distributed hydrologic model increases model performance.

Impact: Improvements in real-time streamflow (flood) predictions



Streamflow prediction performance (Kling-Gupta Efficiency) for 2015 with open-loop (left) and SMAP soil moisture assimilated (right) model using Ensemble Kalman Filter



Distributions and median value for annual streamflow prediction performance in terms of KGE (left) and percent peak difference (right) for 4 years (2015-2018)