Results from Assimilating AMSR-E Soil Moisture Estimates into a Land Surface Model using an Ensemble Kalman Filter in the Land Information System (LIS)

Clay B. Blankenship¹, William L. Crosson¹, Jonathan L. Case², and Robert Hale³

¹USRA, Huntsville, AL ²ENSICO, Inc., Huntsville, AL ³Cooperative Institute for Research in the Atmosphere, Ft. Collins, CO

CMORPH rainfall estimates of soil moisture temperature, and consequently hydrologic states, are used in the LIS/Stage IV simulation framework to provide initial conditions to future WRF-SHEELS coupled simulations. The LIS/Stage IV simulation is forced with the best available precipitation observations. Since the DA simulation has run for 5 days, initial conditions from this simulation can be used to provide initial conditions to future WRF-SHEELS coupled simulations.

We have performed off-line simulations over a Great Plains domain in LIS to provide soil conditions to future WRF-SHEELS coupled simulations. SIF techs, soil moisture, and temperature are used as initial conditions for the WRF-SHEELS model. The LIS/Stage IV simulation is forced with the best available precipitation observations. Since the DA simulation has run for 5 days, initial conditions from this simulation can be used to provide initial conditions to future WRF-SHEELS coupled simulations.

We have performed off-line simulations over a Great Plains domain in LIS to provide soil conditions to future WRF-SHEELS coupled simulations. The LIS/Stage IV simulation is forced with the best available precipitation observations. Since the DA simulation has run for 5 days, initial conditions from this simulation can be used to provide initial conditions to future WRF-SHEELS coupled simulations.

Highly customizable at run-time, facilitating modeling experiments & intercomparisons.

Features of LIS

- Highly customizable at run-time, facilitating modeling experiments & intercomparisons.
- Land Surface Model
- Base forcing (meteorological data)
- Supplemental forcing (e.g., precipitation)
- Parameters including land cover, soil type, grassness fraction, wetness
- Domain of input variables may be independent.
- Can run coupled with the WRF meteorological model.

The result of assimilation into the LIS/Stage IV simulation framework for running land surface models...