

POSTER #2

An Approach to Revealing Meso-Scale Spatial Patterns of Soil Moisture

Jingnuo Dong*, Jason C. Patton, and Tyson E. Ochsner

Department of Plant and Soil Sciences, Oklahoma State University, Stillwater, OK

geano.dong@okstate.edu

Meso-scale spatial patterns of soil moisture with length scales between 0.5 and 50 km are difficult to identify due to the relatively small footprints of in situ measurement devices and the relatively large footprints of soil moisture satellites. Soil moisture observations from large-scale in situ networks, complemented by appropriate spatial interpolation methods, may provide a solution to this scale gap problem. But, how can the interpolated maps be evaluated and refined? A cosmic-ray neutron rover, with a footprint of ~400 m diameter, makes it possible to reveal previously unknown spatial patterns of soil moisture at this scale. A rover was repeatedly transported by vehicle along a 160-km transect in Oklahoma recording fast neutron counts in order to observe meso-scale soil moisture patterns in one-dimension. The spatial patterns perceived by the rover will be presented with a view toward the use of these data to test and improve spatial interpolation methods for large-scale in situ networks.