

Soil Moisture Dynamics: A Comparison of the SMOS Satellite to the South Fork In-Situ Soil Moisture Network

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Abstract

Several publications show a lack of accuracy in weather models that stem from poor representation of soil moisture and evapotranspiration. The Soil Moisture and Oceanic Salinity (SMOS) satellite, launched in 2009, is a remote sensing instrument that will help soil moisture and oceanic salinity measurements represent global conditions. Using the United States Department of Agriculture's South Fork data collection site, this study will compare soil drying as observed by the 5 cm depth soil probe network to SMOS observations. Using statistical analysis, this study will show how the soil moisture from SMOS and the in-situ networks change during the few days following a rain event with data throughout the months of April through October. Our analysis suggests soil drying in the Central Iowa is depicted differently by measurements from SMOS compared to the in-situ network. Additionally, evidence suggests SMOS is significantly noisier than the in-situ networks.