H13B-1104 Evaluation of fine soil moisture data from the IFloodS (NASA GPM) Ground Validation campaign using a fully-distributed ecohydrological model

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The spatial variability of soil, vegetation, topography, and precipitation controls hydrological processes, consequently resulting in high spatio-temporal variability of most of the hydrological variables, such as soil moisture. Limitation in existing measuring system to characterize this spatial variability, and its importance in various application have resulted in a need of reconciling spatially distributed soil moisture evolution model and corresponding measurements. Fully distributed ecohydrological model simulates soil moisture at high resolution soil moisture. This is relevant for range of environmental studies e.g., flood forecasting. They can also be used to evaluate the value of space born soil moisture data, by assimilating them into hydrological models. In this study, fine resolution soil moisture data simulated by a physically-based distributed hydrological model, tRIBS-VEGGIE, is compared with soil moisture data collected during the field campaign in Turkey river basin, Iowa. The soil moisture series at the 2 and 4 inch depth exhibited a more rapid response to rainfall as compared to bottom 8 and 20 inch ones. The spatial variability in two distinct land surfaces of Turkey River, IA, reflects the control of vegetation, topography and soil texture in the characterization of spatial variability. The comparison of observed and simulated soil moisture at various depth showed that model was able to capture the dynamics of soil moisture at a number of gauging stations. Discrepancies are large in some of the gauging stations, which are characterized by rugged terrain and represented, in the model, through large computational units.

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