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HR: 1340h

AN: **IN43B-1179**

TI: data fusion toolbox to optimize precipitation estimates for land surface modeling applications

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AB: The precipitation estimates from the planned Global Precipitation Measurement (GPM) mission will complement a host of existing rainfall products. We are investigating and evaluating intelligent techniques to merge various precipitation sources and optimize them for land surface and hydrological modeling applications. The decision making agencies, such as NOAA, USBR and USGS, are faced with the problem of inadequate rainfall estimates in the western regions of the United States which does not have a adequate network of in-situ measurements. Hence, satellite-based rainfall estimates offer the promise of improving the precipitation estimates in data- sparse regions with difficult water management problems. A suite of GPM proxy data is being produced using different combinations of existing satellites, currently in orbit. A number of techniques are being incorporated into a data fusion toolbox, including a dynamic four dimensional objective analysis techniques (such as EnKF) and intelligent methods (ANN, Bayesian merging) to optimally merge various precipitation estimates. Further spatial downscaling and temporal disaggregation techniques are also implemented to derive

precipitation forcings for land surface modeling and to evaluate the optimized and downscaled products by running land surface model experiments. The suite of land surface models (LSM) in the Land Information System (LIS) will be used in sensitivity analyses. The NRL-Blend is being run in 10 parallel modes, each simulating a different GPM-Era satellite constellation, to generate an ensemble of precipitation data sets that as input to the merging process.

DE: 0520 Data analysis: algorithms and implementation

DE: 0525 Data management

DE: 1805 Computational hydrology

DE: 1855 Remote sensing (1640)

SC: Earth and Space Science Informatics [IN]

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