Title: Land Surface Emission Modeling to Support Physical Precipitation Retrievals

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Land surface modeling and data assimilation can provide dynamic land surface state variables necessary to support physical precipitation retrieval algorithms over land. It is well-known that surface emission, particularly over the range of frequencies to be included in the Global Precipitation Measurement Mission (GPM), is sensitive to land surface states, including soil properties, vegetation type and greenness, soil moisture, surface temperature, and snow cover, density, and grain size. In order to investigate the robustness of both the land surface model states and the microwave emissivity and forward radiative transfer models, we have undertaken a multi-site investigation as part of the NASA Precipitation Measurement Missions (PMM) Land Surface Characterization Working Group. Specifically, we will demonstrate the performance of the Land Information System (LIS; http://lis.gsfc.nasa.gov; Peters-Lidard et al., 2007; Kumar et al., 2006) coupled to the Joint Center for Satellite Data Assimilation (JCSDA's) Community Radiative Transfer Model (CRTM; Weng, 2007; van Delst, 2009).