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Multi-scale analysis of soil moisture estimation and its dynamical coupling to the lower atmosphere.

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The strength of coupling in global models has been a focus of hydrometeorological research (e.g. Betts, 2004 (BAMS, 85:1673-1688); Dirmeyer et al. 2006 (JHM, 7:1177-1198) and is critical in determining the sensitivity of summertime precipitation to soil moisture. To date the research has focused on model results, with Betts (2004) focusing on ERA 40 model output while Dirmeyer et al. (2006) used results from the GLACE experiment. In this talk we calculate the coupling strength using a combination of in-situ and remotely sensed data. Here the coupling strength follows the approach of Betts (2004) who looks at the relationship between surface variables (such as soil moisture) and boundary layer variables (such as lifting condensation level pressure). Data used to develop these relationships include remotely sensed retrievals of soil moisture from AMSR-E, surface humidity from AIRS and radiation from CERES, all sensors on the NASA Aqua satellite. It is believed that this study will be the first to assess land-atmospheric coupling using only remotely sensed data.