Session: C31 Poster: W137A

Local Land-Atmosphere Coupling (LoCo): Analysis of soil moisture feedbacks on convective rainfall frequency

Jun Yin[†]; John Albertson
[†] Duke University, USA
Leading author: jun.yin@duke.edu

Local water recycling is an important source of water vapor for precipitation, and thus local evapotranspiration may significantly contribute to the summer precipitation. Therefore, positive statisticL correlation between soil moisture and subsequent rainfall is often observed. However, it is difficult to distinguish whether this correlation is rainfall autocorrelation or causality, and this feedback is still controversIal with a number of studies offering evidence against the hypothesis for positive feedback. In this study, soil moisture feedback on convective rainfall frequency is investigated by applying a diurnal slab model with a simple nocturnal decay mechanism. This combination will extend the individual diurnal cycle into multiple day evolution, which is suitable for analysis of rainfall frequency. This method also avoids direct statistical analysis of the soil moisture-rainfall feedback and a more physical explanation becomes possible.