Oral.5: **10:00-10:15. Future Mesoscale Convective System Rainfall Related to Changes in Convective and Stratiform Structure**

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Abstract

Mesoscale convective systems (MCSs) are responsible for a majority of warm-season flash flood events in the central U.S. Given their high impact, it is critical to understand how MCSs will change in a future climate. This study identifies 8 flood-producing MCS cases and perturbs them with an ensemble of climate change signals in order to analyze the variability in future MCS rainfall. Future MCS area average rainfall increases by 95–120%, with maximum hourly rain rates varying from 19–63% among all cases. The MCS reflectivity structure is classified into convective and stratiform structures, with both components showing systematic changes in a future climate. These structural changes in MCS convective and stratiform elements are related to future changes in rainfall amounts, highlighting which regions of the MCS dominate the changes in area-average and maximum rainfall amounts. The results from this study not only highlight which MCS elements contribute most to future rainfall changes, but also distinguish these changes by MCS archetypes, which is necessary to understand the impact of convective storms on future flood impacts in the Central U.S.