

**Dependence of Midwest US spring precipitation extremes on Gulf of Mexico SST**Christopher Anderson<sup>†</sup>; Craig Clark<sup>†</sup> Iowa State University, USALeading author: [cjames@iastate.edu](mailto:cjames@iastate.edu)

Analysis of Gulf of Mexico (GoM) Sea Surface Temperature (SST) anomalies reveals no statistically significant correlation with anomalies in other basins. We present evidence of persistence in GoM April through June SST anomalies that correlate with Midwest precipitation. A correlation isn't surprising given the dependence of Midwest rainfall on moisture flux from the Gulf of Mexico; however, the independence of GoM SST with other SST anomalies suggest it is a regional forcing mechanism of extreme water cycle events in the Midwest. We perform sensitivity simulations with a regional model to further understand the mechanisms of the correlation. Our experiments develop three ensembles of 90-day simulations. Each ensemble is given the same atmospheric conditions at the regional model boundary from the NCEP-DOE Reanalysis II. The ensembles are distinguished by the GoM SST. A control ensemble is defined with climatological average GoM SST. Two additional ensembles are given a perturbation GoM SST pattern corresponding to a plus or minus 2-standard-deviation GoM SST pattern. Results indicate the expected higher moisture content of the Midwest air, permitting heavier rainfall events in the simulation. The low-level flow, however, is also accelerated in some ensemble members, indicating a feedback into the atmospheric dynamics.