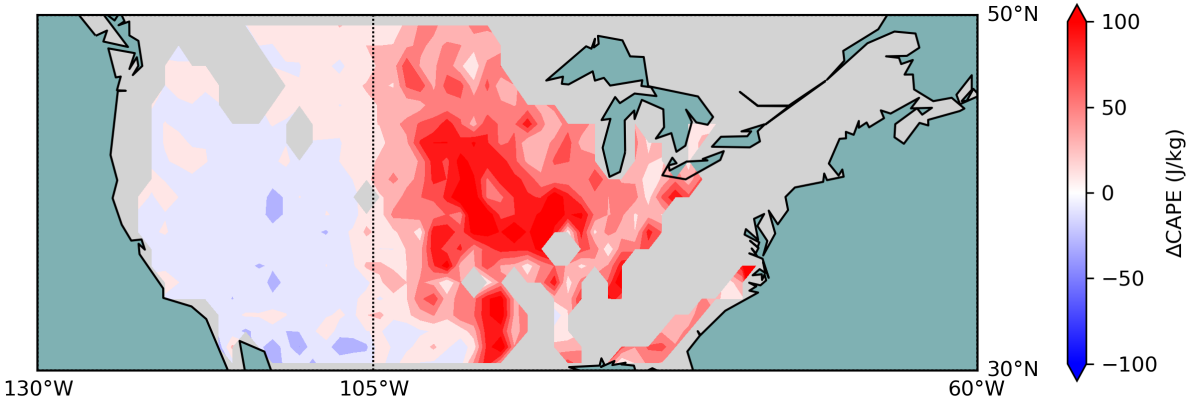
Pathways for Soil Moisture Influence on Weather

Problem: Quantify pathways through which soil moisture can affect the evolution of weather (positive and negative land-atmosphere feedback).

Finding: Change in Convective Available Potential Energy or CAPE (based on AIRS) during SMAP soil moisture drydowns have distinct and opposing-sign differences depending on regional hydroclimate regimes.



Soil moisture controls the build-up of CAPE during the period marking the end of one precipitation event and leading to the next.

Impacts: In land-atmosphere interactions terms, regions with increasing CAPE during drydowns have positive land-atmosphere feedback.

Regions with decreasing CAPE have negative land-atmosphere feedback.

Zhang, L., D. Gianotti & D. Entekhabi, 2023: Land surface influence on Convective Available Potential Energy (CAPE) change during interstorms, *Journal of Hydrometeorology,* 24.