Postdoctoral Research Associate

Texas Tech University
Department of Geosciences
Atmospheric Science Group

To apply, please search for position 30743BR at https://www.texastech.edu/careers/ under Staff Postions at Texas Tech University.

Prof. Eric Bruning's group at Texas Tech University seeks a postdoctoral research associate, beginning no later than Fall 2023, to advance understanding of the coupling between lightning and thunderstorm dynamics.

A Doctoral degree must be completed or expected by Fall 2023. Primary funding for this position is provided by NOAA's Weather Program Office, for at least two years, and the successful candidate will collaborate with operational experts at the National Weather Service Forecast Decision Training Division. Additional duties may include contributions to other sponsored projects and field measurement efforts.

The successful candidate will study how variability in near-storm environments associated with high-shear, low-CAPE, linear storm modes relate to spatiotemporal patterns in lightning mapping data, with the aim of aiding forecasting operations by providing sound physical logic that can explain a range of covariability in lightning, satellite, and weather radar observations.

The successful candidate will complement and contribute to ongoing analysis of relevant observational datasets and support an analysis pipeline that can continuously improve our understanding of these factors as new field campaign data are collected. The candidate will place field observations in the context of high spatiotemporal resolution reanalysis datasets, such as ERA5 (for near-storm environment) and the MYRORRS and GridRad (for storm microphysics, rotation, and draft dynamics) datasets, initially focusing on the relationship between lightning flash rates and updraft width and intensity through changes in low-level shear, overshooting top area, and vertical distribution of CAPE, while controlling for microphysical variability. We are interested in exploiting statistical methods for characterizing such variability, so familiarity with older (self-organizing maps, principal component analysis) and newer machine learning techniques would also be beneficial.

The candidate will also design appropriate storm-scale electrified modeling studies for testing hypotheses regarding fundamental electrification process dynamics and microphysics and their coupling to other storm processes and their observable manifestation in radar and satellite datasets where mesoscale heterogeneities are present.