The dryline is among the most important meteorological phenomena in the Great Plains because of its significance in tornadogenesis, severe weather, and consistent rainfall. Past research has extensively examined the dynamics of the dryline. Recent meteorological research looks beyond dynamics and focuses on land-atmosphere interactions. Computer modeling has determined that land-atmosphere interactions affect boundary layer processes. This study focuses on how evapotranspiration (soil moisture and transpiration) effects the climatological longitudinal positioning of the dryline. If the dryline positioning is sensitive to evapotranspiration, the positioning may shift, thus consistent rainfall and severe weather also shifts, impacting agriculture interests and population centers. This 10-year climatological study looks closely at high and low evapotranspiration seasons and statistically compares them to the longitudinal position of the dryline from years 2005-2015. Above normal rainfall leads to high soil moisture and eventually high transpiration rates. To look at evapotranspiration, this research will study seasons with high soil moisture and seasons with minimal soil moisture content within the study period. Evapotranspiration data will be determined using data from the West Texas Mesonet and the Oklahoma Mesonet.