

AN ANALYSIS OF THE SPRING-TO-SUMMER TRANSITION IN THE WEST CENTRAL MISSOURI PLAINS

Rosalie Newberry

Dr. Anthony R. Lupo, Thesis Supervisor

ABSTRACT

The spring-to-summer transition is of special importance in forecasting, as the general circulation undergoes an energy shift to a warmer regime, which affects the Midwestern United States. Beginning at the most localized scale, temperature variables are observed from surface observations at a representative station in the West Central Missouri Plains to identify the shift from late spring to early summer, with chosen guidelines for maximum temperature thresholds. Precipitation is analyzed as a summer onset validation tool, in the form of heavy precipitation event frequencies. From an upper-air analysis perspective, 500-mb height observations are examined to find a spring/summer transitional date from a chosen height minimum, as a surrogate for the jet stream, and thus a proxy for atmospheric kinetic energy. Finally, teleconnections on the planetary scale, specifically the influence of El Niño Southern Oscillation (ENSO) and Pacific Decadal Oscillation (PDO), are examined to aid in identifying the change of regime and its interannual variability. Isolating an approximate day or smaller time frame focus for the spring/summer transition will facilitate the ability to forecast seasonal pattern changes, as well as the seasonal potential for severe weather in the Missouri Plains. This, in turn, will provide safer, more economical outcomes for the population of this area.