Public Abstract
First Name:Marc
Middle Name:Ryan
Last Name:Dahmer
Adviser's First Name:Patrick
Adviser's Last Name:Market
Co-Adviser's First Name:Neil
Co-Adviser's Last Name:Fox
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Title: INVESTIGATING NEAR-SURFACE WIND FIELDS AS INFLUENCED BY LOW-LEVEL JET OCCURRENCES IN MISSOURI

Renewable energy sources remain a topic of increasing importance in todayâ€™s society. One possible source is the utilization of wind energy. The objectives of this study were to investigate and classify the character of low-level jet (LLJ) in Missouri and determine whether near-surface winds are enhanced at times when the LLJ is active. Upper-air observations at Springfield, Missouri (SGF), from 01 May 2003 to 30 April 2004, were analyzed to determine the cases that satisfied our criteria.

The 80-km model analysis version of the Rapid Update Cycle (RUC) was utilized in the determining of jet type classifications for each individual LLJ event, based on the jet types noted in the Walters and Winkler (2001) study. A total of 68 LLJ events were classified. Composite median wind speed analysis, based on each LLJ event, were generated at assumed turbine levels to determine whether wind speeds were enhanced on days when the LLJ was active. This was assisted by the compositing of 42 non-LLJ events that were generated to compare to the LLJ composites. The data utilized in the generation of these composites was acquired using 20-km RUC model (RUC20) analysis. A similar compositing process was undertaken to examine shear between the estimated top and bottom of wind-turbine blades for LLJ and non-LLJ events. Analyses of the median wind speed composites illustrate an approximate 1 to 8 ms-1 increase from non-LLJ to LLJ composites within the state of Missouri. A similar trend was noted with the shear composites as well.