



Analysis of Cases-99 Lidar and Turbulence Data in Support of Wind Turbine Effects (Paperback)

By -

Bibliogov, United States, 2012. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.The nocturnal low-level jet (LLJ) of the Great Plains of the central United States has been identified as a promising source of high-momentum wind flow for wind energy. The acceleration of the winds after sunset above the surface produces a jet profile in the wind velocity, with maximum speeds that often exceed 10 m s⁻¹ or more at heights near 100 m or more. These high wind speeds are advantageous for wind energy generation. The high speeds aloft, however, also produce a region of high shear between the LLJ and the earth's surface, where the nocturnal flow is often calm or nearly so. This shear zone below the LLJ generates atmospheric waves and turbulence that can cause strong vibration in the turbine rotors. It has been suggested that these vibrations contribute to premature failures in large wind turbines, which, of course, would be a considerable disadvantage for wind energy applications. In October 1999, a field project called the Cooperative Atmosphere-Surface Exchange Study 1999 campaign, or CASES-99, was conducted in southeastern Kansas to study the nocturnal stable boundary...

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