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WIND POWER CLIMATOLOGY OF THE UNITED STATES

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ABSTRACT

All suitable data in the National Climatic Center archives, for 758 stations, have been analyzed for monthly, seasonal, and annual average wind power. Results have been assembled in maps with equal power (isodyn) contours to show geographic regions most suitable for wind power exploitation. An Appendix contains an almanac of all these wind speed distributions and power data tabulations, ordered by state and region and suitable for referencing.

Wind speed versus height above ground relationships were examined with upper air climatologies at 85 kPa and 70 kPa pressure-altitude levels and certain micro-meteorological research towers. An often-used rule-of-thumb appears adequate: that wind speed increases in proportion to the one-seventh power of height above ground. Thus, wind power increases with the three-sevenths power of height, for use in sizing designs for wind turbines and mounts.