

## **SATELLITE DATA APPLICATION FOR WIND ENERGY RESOURCES IN KPK, PAKISTAN**

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### **Abstract**

Renewable energy resources have great potential to give solution to the long-lasting energy deficiency problems being faced by Pakistan. Pakistan is blessed with various sources of renewable energy such as wind, solar, biofuel, geothermal and hydal. If these resources are explored, they can help to better the economic condition of the country. Pakistan is located in an area with abundant wind energy resources in the world. The purpose of this study is to utilize the satellite procured data to identify the best wind potential locations in KPK, Pakistan by analyzing the monthly and annual averaged wind speeds along with the resultant wind speed and wind direction for the districts (Dir, Chitral, Buner, Mansehra, Peshawar & DIK) at heights of 10m (1983-1993) and 50m, 100m, 150m & 300m (1983-2005). The results manifested that in case of the monthly averages all six districts showed similar patterns with two maximum peaks one in April and the other peak between October and November. It should be noted that Chitral and Dir districts shows significant high wind speed all over the year as compared to other districts. Multi-criteria analysis showed that Chitral has maximum total score. It can be concluded that based on methodology applied in this research, Chitral district appeared as the best location for exploiting in terms of wind power. This vast potential can be exploited to vanquish the energy shortage and for this purpose satellite technology has proved to be best for the selection of windy sites.