



## **The discussion on the wind power density estimation using the surface synoptic and climatological data**

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More and more companies for power production by wind turbines are making investigations in East Europe, especially in the region west of the Carpathian Mountains. Some of them are interested in metadata, types of instruments and data collections at the surface synoptic stations.

In this paper we make analyses of a wind power density and a wind speed at which efficiency is maximum in dependents of different kind of wind measurements and wind extrapolations. The first is a choice of the different types of samples for wind extrapolation - (mean wind speed over 10 minute period which is collected once per hour and rounded to an integer and mean wind speed over an 1 hour period in comparison with continuously, averaged wind speeds in 10 minute intervals. ) Then we discuss many different methods for the fitting of the two Weibull parameters to a histogram giving the frequency of occurrence of wind speed for all samples. After that, we try to analyze impact of a roughness length on the extrapolated wind speed and both significant variables. And finally, we discuss the wind power density and the wind speed at which the efficiency is maximum for different diabatic wind speed profiles: one where Monin-Obukhov length is derived from single wind speed, temperature and amount of clouds and other where the Monin-Obukhov length is derived from sunshine instead of amount of clouds. We hope we can compare our results with the results of WaSP.