



## **Simultaneous measurement of wind speed profiles with two sodars in complex terrain and results of numerical simulations**

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After recent changes in the legislation concerning renewable resources in the Czech Republic, the interest in wind energy production is increasing. It is followed by the need for more precise and more detailed wind resource assessment. The state-of-the-art technology allows the construction of considerably high towers for wind turbines. Consequently the blades reach the heights far above the layer where the logarithmic wind profile is considered to be valid.

Since the information of wind profile structure above complex terrain is scarce, our team measured the wind profiles simultaneously with two Doppler sodars during various synoptic situations in the range of Ore mountains (Erzgebirge). Due to the favourable wind conditions, this region is the most suitable for construction of wind turbines in the Czech republic. The wind profilers were usually situated between 500 and 1000 m away from each other. While the first sensor remained directly above the steep slope of the mountain range, the second one was moved towards the plateau. The generalization of the profiles and the differences between them may serve for improvement of precision of the simulated wind profile fields.

The second part of our work included the modelling of wind fields in the complex terrain of surrounding mountainous range. We applied selected non-hydrostatic meso-scale models, including KAMM and PIAP. Initialisation of the models corresponded to weather situations during the wind profile measurements. The numerical simulations with the models were performed for given scenarios of ambient flow, described by geostrophic wind speed and direction, and temperature stratification.