



Using the hybrid VAS/WAsP model for high resolution assessment of wind potential over the area of the Czech Republic

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The "hybrid model" VAS/WAsP represents a combination of two distinct models. The VAS model is based on 3D interpolation between available measurement sites. For detailed site assessment it uses empirical rules, which is not always satisfactory. The WAsP model, for example, is much more suitable for local terrain evaluation. However, the application of single WAsP model does not give reliable results if there is not corresponding wind speed measurement close enough to the assessed site.

The VAS/WAsP model combines the strong points of VAS and WAsP models. Its calculation consists of three steps: 1) Meteorological measurements are used in WAsP model to obtain generalized climatological characteristics at their locations, called "wind atlases", 2) The parameters of "wind atlases" are interpolated by the VAS method into the grid of 2×2 km covering the area of the Czech Republic, 3) Finally the WAsP model is applied again, performing a detailed calculation of the wind climate in the resolution of 100 meters.

As a wind data source the standard climatological and synoptic stations were used. The data were checked thoroughly and most of the stations were also visited and documented. As a result the number of applicable stations had to be significantly reduced. In many cases (various obstacles, rugged terrain) the user corrections or a specific approach to the WAsP model were necessary to adjust the stations.

The main output of the model is a detailed map of wind climate parameters in the Czech Republic. The "wind atlases" (see step 2) themselves are also useful result, because it is possible to use them as a wind climate data source for preliminary turbine site or wind farm assessment with WAsP model.