

Reply to:

Reviewer's report – reviewer #3

Journal: NHESS

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Paper title: Mapping of extreme wind speed for landscape modelling of the Bohemian Forest, Czech Republic

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The authors thank both referees for their constructive comments and suggestions. We respond to all comments in the reviewer's report. We believe that the overall quality of the manuscript has improved.

General comment 1: the English form needs to be revised

The English form was revised and corrected.

General comment 2: Provide a flow chart of proposed model

The flowchart for the proposed method was added as Figure 1. The individual sections were also reordered in more logical sequence.

Comment 1: P4L14-15 Specify the reasons for the decision to produce windspeed maps at 30 m a.g.l.

The height of 30 m above ground was required for the application of the method in landscape model. The sentence was clarified with: "... due to the application in forestry" (now at P4L11).

P4 L17-23 The use of Gumbel distribution is described too generically. Please specify the integration of the Gumbel probability function in the proposed model

The text describing the use of Gumbel distribution (now at P4L15-25) was merged with other basic methodology in rewritten section 2.

P5L13-14 WaSP "is broadly used for estimation of extreme wind speeds": please provide references

References were provided (now at P9L8-9).

P5L25 What's the "original value"? Please specify

The sentence was rewritten in clearer form (now at P9L11-13).

P5L26 What do you mean with “model instability”? Please clarify

The meaning is numerical instability. The model produced undesirable artificial waves at 60-m resolution. The sentence was changed (now at P9L11-13).

P5L30 – PAG6L1-2 Please clarify the use of roughness parameter into the model

As it is mentioned (now at P9L13), the roughness parameter was input to the linear numerical model. The study of Wieringa (1993) was only used to create raster layers of roughness parameter.

P6L6-13 You used wind speed measurements provided by only 1 meteo station. Can be reliable a model applied on an area of 7000 km² with data from a single weather station? Please provide explanations about

The extreme wind speed analysis requires long measurements with good quality and those are only found on professional weather stations. The density of station network is normally not high enough in mountainous regions to cover such area with more professional stations. Moreover the method is designed to be used with one reference dataset. We believe that effect of synoptic-scale circulation on the presented area is small compared to the effect of orography, especially in complex terrain.

P6L20 What do you mean with “complementary reanalysis data”? Please clarify

The wording was changed to: “corresponding reanalysis data” (now at P6L5). It address the ERA Interim data used later in the method to separate the convective and non- convective events.

P10L25-27 What are the parameters, which you produce an estimate, which influence the extreme wind speed? Please specify

The paragraph with conclusions was rewritten in clearer form.

P17 Please add colours code

Colour legend was added (now Figure 5, P20).

P18 This map should be compared with terrain map and roughness map

The terrain is already displayed on the map as contours. A note of that was added to the caption (now Figure 7, P22).