
Reviewer's report

Journal: Atmospheric Chemistry and Physics

ID-no: acp-2012-861

Manuscript title: Extreme winds over Europe in the ENSEMBLES regional climate models

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Overview

This paper reports on the analysis and application of extreme value statistics to samples of simulated outputs generated by four “high resolution” regional climate models (RCMs) as used in the EU project ENSEMBLES. While these RCMs wind outputs show that the 50-y return values are projected to be less than 2 ms^{-1} , the inter-model spread is shown to be much larger than this at many locations figure thus indicating that information about wind extremes with climate change might be of limited use for decision making in a number of socio-economic sectors.

General comments

The manuscript contains methodological concepts and model evaluation relevant for publication in Atmospheric Chemistry and Physics; however, as described below, a number of points need to be addressed by the authors before the final acceptance of the manuscript. In its present form, the manuscript is not ready for publication. In an overall manner, the English writing is good but need to be revised at some places. A number of fundamental papers appeared these last 10 years or so also need to be cited. I have made few suggestions to improve the reading. Many typo errors have been left for further checking. The paper refers to projections made to future period (2071-2100) results, but do not mention in the abstract what are the major conclusions drawn from the analysis and the implications using such a scenario (less pessimistic than the A2 scenario I would tend to believe). Also, as stated in the conclusion: “When this method was applied in this work it was found that a considerable area of the domain failed the likelihood ratio test in either the current or future period. This area was different in each model, making it an unviable method to use for intercomparison.” I am just wondering what is the added value of using such ensembles... none is we refer to the above comment!

Specific comments

- L36: “... own right”, please consider removing “right”.
- L40: Please consider providing a reference to the European cold wave of 2012.
- L53: Please explain what the “downscale energy cascade” is.

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- L55: RCMs also have numerous “quality” and have been often been “successful”! Please consider starting with these aspects before listing their “weaknesses” as this work relies much on their simulated outputs.
 - L59: “Unfortunately...”, I would say “As a matter of fact”! It is not “unfortunate” *per se*... as this downscaling technique as been designed that way!
 - L67-73 : In order to introduce the wind extreme statistics, should you cite the following paper : A review of methods to calculate extreme wind speeds by J P Palutikof, B B Brabson, D H Lister, S T Adcock, in Meteorological Applications Volume 6, Issue 2, pages 119–132, June 1999 DOI: 10.1017/S1350482799001103
 - L110: ... this is “horizontal grid spacing” not “resolution” since the resolution is a function of the grid spacing implemented to resolve atmospheric phenomena at some scales.
 - L111-2: The length of the periods was chosen so as to provide sufficient data to determine 50-year return events.... What is that length exactly? Please comment.
 - L138 onwards: I presume that the simulated wind variables are the lowest model level winds (i.e. wind magnitudes of the horizontal wind velocity components closest to the surface)? Please clarify. I also presume that U50 is the “50-y return values” (not the median!) of the above quantity? Please clarify.
 - L138 onwards: Please provide some comments regarding the use of ensembles to perform such a study... It’s still not clear (to me at least).
 - L396 Table1: Please give more details regarding RCMs, such as horizontal and vertical grid spacings, altitude of the 1st momentum level corresponding to (I presume) the level of the extracted windspeeds, the archival frequencies,

Verdict: The manuscript as it stands right now is not ready for publication. A revision is needed to clarify some of the concepts and methodology, so as to improve the quality of the information brought in. The points raised in the review should help to achieve this goal. I would also like to see the revised manuscript before publication.