Geoscientific Model Development Discussions

Geosci. Model Dev. Discuss., referee comment RC2
https://doi.org/10.5194/gmd-2021-207-RC2, 2021

Comment on gmd-2021-207

Anonymous Referee #2

Referee comment on "Added value of EURO-CORDEX high-resolution downscaling over the Iberian Peninsula revisited – Part 1: Precipitation" by João António Martins Careto et al., Geosci. Model Dev. Discuss., https://doi.org/10.5194/gmd-2021-207-RC2, 2021

The manuscript assesses the added value of EURO-CORDEX simulations for precipitation over the Iberian Peninsula. The metric "distribution added value" (DAV) is applied for this purpose. The EURO-CORDEX simulations are dynamical downscalings with Regional Climate Models (RCM) of either simulations with a general circulation model (GCM) or a global reanalysis. The DAV is then computed as the percentage change in the Perkins skill score for probability density functions derived from the RCM simulations and their respective lower-resolution driving datasets. As an observational reference for this evaluation, the Iberian Gridded Dataset is used. The manuscript presents original science that fits into the scope of GMD. The Introduction and the desciption of data and methods are especially well written. The discussion of the results and the presentation of the main findings and conclusions in the last section, however, fall a little bit short.

Specific comments:

In their description of the results, the authors often use terms like "significant gains", "significant percentages", "significant added value", "more/less significant" and also "very significant". Could you please specify if all these uses of "significant" are to be understood as a purely subjective estimation by the authors, or is it meant that the results are significant relative to a specific, objective degree? Has the statistical significance of the results been computed with a certain reference? Or does it simply mean that the obtained values are "somewhat large"? If the latter is the case, I would suggest to rephrase accordingly, and not use the term "significant" at all, to avoid confusion with an objectively calculated significance.

I would suggest to consider phrasings like "larger/higher" or "lower" instead of "strong" and "weak gains".

Line 353 is unclear to me. Could you please rephrase or clarify?

line 376: "gains not as relevant". Could you please clarify the meaning of relevant here?

I believe "Summary and conclusions" would be a better fitting title for the last section, as it begins with a summary of the study, and much of the discussion has been done in the results section already.

line 436: I am not sure what is meant with "approaching ERA-Interim and CMIP5 GCMs". Could you please clarify?

line 437: "uncertainty associated is higher": Could you please discuss a little bit further what kind of uncertainty is meant here, and what this uncertainty means for the results of the study? Can this uncertainty be quantified somehow?

line 441: It is stated that "lower-resolution models will shower higher DAV values". Should it not be "downscalings of lower-resolution models show higher DAV"? Apologies if I misunderstood. Could you please clarify?

I would suggest dividing lines 431-446 into several paragraphs, for the sake of readability. It is difficult to derive the main conclusions from this one big paragraph, which is a mixture of discussions and conclusions. A clearer structure and a sharper rephrasing would help in driving home the main message of this study.

Could you please consider discussing what this study means for future research in this field? I believe you present important results here, and there is a good opportunity to finish the manuscript with a statement on a larger scope, setting the results in context with the aim of the CORDEX initiative, and future efforts in regional climate modelling.

I am looking forward to a revised version of this manuscript.

Please find my technical comments below.

Technical comments:

Please carefully check the whole text for misplaced commas and the singular/plural use of verbs.

Throughout the manuscript there are several instances of the unit "km" being written as "Km". There is also often a space missing between number and "km".

line 35: "assessment between" -> either "comparison between" or "assessment of"

line 36: "Global" -> "global" and use of "PDF", an acronym which has not been introduced yet

line 43: "become" -> either "has become" or "became"

Throughout the manuscript: The term should called "convection permitting", and not "convective permitting".

I would also recommend to use either British English or American English throughout the whole manuscript, instead of mixing the two. As for example British: "kilometre", "analysed" and American: "parametrization", "normalization", "~ized"

line 92: Maybe an article missing in front of "station-based dataset"?

line 143: remove "is"

line 144: remove comma after "one"

line 172: "is" -> "are"

line 173: "behaviour are" -> "behaviours are" or "behaviour is"

line 210: "of" in front of "ERA-Interim"

line 213, and other instances: "superior" -> "larger than" or something to similar effect

Throughout the manuscript there are many instances in which there is an unnecessary comma in front of the year in paranthesis, as for example in line 218: "Soares and Cardoso, (2018)".

line 228: Is there something missing between "which" and "display"?

line 235: "can't" -> "cannot"

line 242: "smoothing precipitation field" -> "smoothing of the ... "

line 288: "The next section" -> "This section", no?

line 294: "was" -> "were"