

## ***Interactive comment on “Correcting mean and extremes in monthly precipitation from 8 regional climate models over Europe” by B. Kurnik et al.***

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Reply to the comments from referee 2

Answer to general comments

In this reply we will try to explain and, where needed, object to the referee's points or comments.

There are two main referee's motivations to reject the paper:

1) Referee remarks that some of the sections of the paper are difficult to understand and the paper lacks of the detail explanations. Authors will rewrite sections of the paper taking into account all detailed comments. With the specific referee's comment about

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not explaining ensemble spread, we would like to point to section about validation (page 960, line 23), where ensemble spread is explained. However, we agree, the additional explanations has to be added under this section and also to all figures captions. In the potentially revised version the detailed explanations will be included. Also figures will be revised and redraw using different software where are more possibilities for colour palettes (currently we have used R).

2) Discussion and conclusion section will be revised and whole this section be rewritten. Discussion will be incorporated into results where party we have already discussed the results. In sections where paper lacks detailed discussion, we will include additional clarifications. At the moment first paragraphs in the conclusion section presents overview of the results and last paragraphs concluded the main findings of the paper; correction/adjustment was successful according to the statistical measures used to measure performance. It is also concluded the corrected/adjusted datasets can be used for studies about climate impacts on droughts.

Referee also suggests to use term adjustment instead correction. Here authors agree, since also E-OBS dataset is biased. In the potentially revised form the title and wording will be changed accordingly. E-OBS dataset was assumed to be a ground base and correction/adjustment was made according to this dataset. Due to the fact the E-OBS is one of the most accurate daily gridded observation dataset, authors took it as “ground base” and correct 8 different RCMs accordingly. In the potentially revised paper E-OBS will be described in more details (for example number of underpinning observations in different periods). In the results/discussion sections this point will be also discussed.

Answer to detailed comments:

P954, 1-18. Reference is already included (EEA, 2011) – EEA technical report. In new version is going to be moved at the end of the sentence

P955, 13-15 and 25-26. Sentences will be reformulated.

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P955, 28: E-OBS v4 has been used.

P956, 13: After correction/adjustment of the data, spread of the ensemble members is smaller. Thus, we named it as a correction of the spread. In the revised version this will be explained more and sentence will be reformulated.

P956 21-23. Assumption for gamma distribution has been tested, using K-S test. Map presenting grids where assumption gamma distribution was rejected/not rejected will be added in potential next version

P957, 9: correct form is: x is monthly precipitation

P957, 14: plural form is used since sentence talks about form parameters at all grids. After revise sentence in singular form has to be used - talking in general about form parameter.

P958, 15-16: several references will be added, justifying why these 2 models were excluded.

P958/P959 all points. Text will be revised and all proposed corrections will be included

P959, 24: table 1 represents deviation of the precipitation from ensemble mean (in SD) for all grid cells. The intention of the table is to present variability of each model in 2 different periods, summer and winter. With this we have tried to present the variability of the each model.

P962, 15: July precipitation

P962, section 3.1.2: Validation has been done only for period 1991-2010. Thus, we have compared simulated against observed (RMSEsim) values with corrected against observed (RMSEcor). In new version additional text in order to be more clear

P963, 4-15: yes, this is consequence of the text. According to the results original dataset from ETH performs better than datasets from other selected models. This can be written also with other words; after applying correction, RMSE between original and

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observed data is lower in 25% of the area.

P965, 7-9: the number of figures will be reduced and several figures will be replaced by text

P972-983 all figures will be revised and enhanced (see answer to the general comments)

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