The referee no. 2 introduced four problematic points related to our paper. The first two points were already mentioned by the first referee, thus our previous replies to these two comments are only summarised here, and the complete text including several new figures can be found in the reply to the first referee.

Comment

"First, there is a scale mismatch between observation (_25x25km) and RCM simulated precipitation (_10x10km), which is usually the other way around. Why do the observation here not have a higher spatial resolution. Interpolation of observation leads to smoothing and to overestimation of dependence (likely as stronger as coarser the scale). This is not considered for bias calculations. Even with smoothed observations the fields may still contain outliers (for some cells and days), which is not discussed, either."

Reply

This problem was discussed in detail in the reply to reviewer 1. The observations were provided by the Czech Hydrometeorological Institute as a gridded data-set, unfortunately we do not have access to the original station data from which the final product was derived due to licence. Nevertheless the effect of the resolution discrepancy was analysed. The resolution of the model data was reduced to the half (four neighbouring model grid-boxes were combined to a grid-box with 0.22 degree resolution) in order to move the model resolution closer to the observations. The model correlations slightly increased, which affected the biases. Nevertheless the resolution 0.22 degree still differs from the resolution of the observed data. Since the proper evaluation of the model bias requires the precise match of the model and observed data resolutions, we suggest removing Section 4.1 from the paper. The paper primarily deals with the effect of outliers on the correlation estimates and changes of correlation in climate projections, thus the section is not necessary. The removal would also simplify the paper and make it easier to follow.

Comment

"Second, I would not include the days with zero in all calculations. This may hurt the pre-conditions for analysing Pearsons correlations and distort the picture if the number of rainy days changes from past to the future or is different from observations to models. It would be better to analyse this separately (e.g. by using binary correlations and wet day correlations)."

Reply

Also this point was analysed in detail in the reply to reviewer 1. All results were re-calculated using only non-zero pairs of data. The detailed comparison of the results obtained with and without zeros (including several figures) is in the reply to the first reviewer. In general, neither the changes of the correlations nor the analysis of their significance is considerably affected by exclusion of zeros. Also the presence of outliers remains visible in the results and the detection of outliers is not affected. We agree that the exclusion of zeros represents more correct way to assess the dependency between variables, thus we suggest presenting the results with the correlations calculated without zeroes. This modification changes neither the ideas nor the results of our paper.

Comment

"Third, the use of catchments instead of corresponding rasters makes analyses and corrections very specific to the application and hardly transferrable."

Reply

Although the results were presented using the time series for specific catchments, the ideas and the proposed procedure are fully applicable on the original raster data. There is no reason why the applicability should be limited only to the catchment time series. The outliers can occur in any data and in any data they can be detected using the proposed approach.

Comment

"Finally, I doubt that such a "big" procedure is necessary to solve the problems of simulated outliers. May be a classwise or trimmed calculation of correlations would be a simpler solution."

Reply

The outliers affecting dependence structure are specific, the concept of ´dependence´ outliers was proposed in the paper. It means that not each extreme value is a dependence outlier and at the same time the dependence outlier does not need to be necessarily an extreme value. It is not clear which data (from multivariate dataset) should be trimmed in the suggested approach and how the threshold or classes should be set. Such procedure would involve subjective decisions and likely waste the data which do not affect the correlation structures.

The procedure proposed in the paper allows for objective identification of the data points that considerably distort the information from the data. Furthermore, the final results are presented as a one-dimensional plot, which is rather simple to interpret. The source code performing the procedure was submitted together with the paper.