

Interactive comment on “Spatial and temporal patterns of recent and future climate extremes in the Eastern Mediterranean and Middle East region” by E. Kostopoulou et al.

Anonymous Referee #2

Received and published: 12 November 2013

The paper “Spatial and temporal patterns of recent and future climate extremes in the Eastern Mediterranean and Middle East region” presents climate indexes for the Eastern Mediterranean region as calculated from one regional climate model for a present day and a future time period, as well as climate indexes calculated from few climate stations. As the region of interest is not well studied, it could be a relevant paper. However, the manuscript has to undergo major revision in order to answer the following questions: What is the aim of the study? What has been done? Why is the work relevant? What are the limitations of the data and methods used? What are the implications of the results? Especially the methods used need to be described and

C1705

carefully checked for appropriateness. So far the study is a display of indices calculated from different data. I am missing the bigger picture such as the discussion of analogous studies, the relevance of the results and their critical interpretation. Additionally, there are many imprecise statements, for a selection see specific comments. Also a revision of the title should be considered. The title implies an explicit analysis of the spatial and temporal patterns, but so far a spatial-temporal phenomenon is analyzed point-wise without discussing neither spatial nor temporal dependencies.

By sections: For the introduction, I am missing a section on projected changes of extremes for the studied area (e.g., IPCC SREX and more recent studies). The section on the methodological approach still reads as belonging to the introduction. I am missing an adequate description of the methods used. Also the definition of the indexes is missing. It is inadequate to use the the same methods for temperature as for precipitation. It is vital to give all information on the estimation performed. The section on model evaluation has to be revised completely. Please read the literature! Clearly describe the methods used, discuss the difference between station data and RCM output, if using the control run, state so! If not there should not be a correlation in time. If there exists one, as in temperature, you are most likely detecting the annual cycle. Also, consider using a relative measure for assessing the precipitation bias (mean percentage error, for instance). Since the methods used are not explained, I cannot assess their appropriateness nor the interpretation of the results. The selection of the indices calculated is not motivated. Relevant for human health, for instance, would be the spell length of tropical nights or the length and intensity of heat waves. In general, the results are not well discussed. For example, since you are using absolute thresholds for defining the indices a discussion on the bias of the model would be appropriate. Can you assume the bias to be stationary in a changing climate?

Few specific comments: 4427, 9 “better projections” in what sense? Please rephrase considering that the goodness of projections cannot be assessed; the idea that accuracy today implies accuracy in future is only an assumptions. 4427, 19 Please rephrase

C1706

“small research”. 4428, 24-26 Please read carefully, for instance the cited IPCC report, on the use of RCMs. 4428, 24-28 Please do not use acronyms in the introduction without explanation (RCM, CIMME, PRECIS, EMME). 4429, 2-4 What are their results?

4429, 16-17 horizontal resolution of 25km? 4429, 17 “easily applicable” - please give appropriate reference. 4430, 12-14 Please give more detail on the outcome of the evaluation. Monthly values are not appropriate for evaluating daily performance for neither daily temperature extremes nor daily precipitation extremes; as well as station data is not suited to evaluate gridded precipitation. Please rephrase throughout the article, as not to convey a false sense of reliability of the model.

4430, 16-18 Statement not suited for methodological approach section, either delete or provide a reference or an argument for it. 4430,20 “local” needs more explanation since you are working with regional climate model output which is not independent across grid points. 4430,20-21 Reference is more appropriate in the introduction.

4431,22 “contrasting patterns”? Please rephrase.

4435, 8-9 spatial patterns instead of distribution 4435,12 “projected to continue” you have not shown this since you performed a time-slice based analysis

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 4425, 2013.