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Natural Hazards and Earth System Sciences
Discussions

# *Interactive comment on* "Radar-derived convective storms climatology for Prut River Basin: 2003–2017" *by* S. Burcea et al.

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We greatly appreciate the Referee 1 comments. These were very valuable in improving the manuscript.

Below are the authors responses.

Section 4.4 of the manuscript, named "Large scale drivers of convective storms in the Prut River basin", was added to present the physical interpretation approach suggested by the reviewer. Sea level pression and CAPE were extracted from the ERA5 reanalysis, and used to identify the large-scale drivers of local convective storms from the Prut River basin. Therefore, it was highlighted that low values of sea level pressure over the Balkan peninsula and Black Sea region are important dynamical drivers of



convective storms in the analysed area. Furthermore, through the correlation between the monthly number of convective systems in the Prut basin and CAPE, one can better identify the statistical signature of atmospheric fronts associated to the high convective activity in the Prut basin.

The language has been revised to make the manuscript much clearer to the reader.

Regarding the referee's comments on section 4.1, we underline that the statistical results reported herein are important for the readers. It is not the scope of this article to investigate any differences of convective storm characteristics between Prut river basin and other places. Also, we believe that the general physical interpretation given in Section 4.4 provides the necessary information regarding the peculiarities of the convective storm in the basin to the reader.

The spatial distribution (uniform or hot-spots) of the convective storms could be related to mesoscale flows and/or the distribution of convection parameters like CAPE. The scope of this paper is to present the distribution of convective storms at basin to regional scale in order to provide a simple but practical information to the readers. To detail the different yearly distribution, an additional deeper mesoscale analysis is needed, which can be solely the subject of a whole paper.

Storm properties section was corrected taking into account the spread of the data. To measure the central tendency, the mean was replaced with the median estimator, being more robust than the average. The inter-annual variation is given by the dynamic large-scale drivers of convective storms in the Prut River basin. The convective storms were divided into groups considering the overall median values and the radar parameters characteristic to severe weather. Storm speed versus storm direction is not necessarily given by the large-scale circulation, but can be influenced by local mesoscale condition. This investigation requires deeper analysis, which is not the aim of this paper.

Section 4.4 was rewritten to highlight the large-scale drivers of convective storms in the Prut river basin.

Section 4.5 was removed from the manuscript.

Table 1 was updated according to the reviewer's comments; the median estimator was used.

Table 2 was checked and corrected for misspellings.

Figures 6 and 7 were replotted, and the same colour scale, number of classes and classes values for each year were used. Also, the Prut river basin was highlighted in these figures.

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