Natural Hazards
and Earth System
Sciences

Discussions

Interactive comment on "Review Article: A comprehensive review of datasets and methodologies employed to produce thunderstorm climatologies" *by* Leah Hayward et al.

Leah Hayward et al.

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Comment:

"There is a lack of coherence in the style of the manuscript as a scientific publication. For instance, I can't find the motivation or the goal that leads to the start of the research. This is basic, because it helps to define the path that you choose along your research. What I mean is that if you want to present some type of methodologies, you need to clarify if the purpose of each one fits your necessities, and which are the main

disadvantages. And this is not appearing in any place in your manuscript.

Please, rewrite this condition and adapt all the rest of the manuscript to your necessities."

Response:

To address the point raised we have restructured the paper and included two new paragraphs (below) at the end of the introduction providing the motivation for this review and making the justification clearer. We have also outlined the structure of the paper which illustrates how the subject areas covered address the goals of the paper. The two additional paragraphs read as follows:

"The purpose of the paper is to conduct a systematic and comprehensive review of the datasets and methodologies applied to create thunderstorm climatologies. This review aims to assist those at the design stage of their research and those new to the subject area to become familiar with the strengths and weaknesses of the available data types, to consider which climatological approach best fits their research goal and to identify potential alternative approaches which may not have previously been considered. Whilst there are existing reviews in this subject area available (Betz et al., 2009; Cummins and Murphy, 2009; Ellis and Miller, 2016; Nag et al., 2015), these tend to focus either on analysis of a particular dataset, data type or methodology. This paper, in contrast, fills a gap in the literature by providing an overview of the whole subject area to help the reader to subsequently move on to more specific and detailed examples. Lastly, recommendations for research areas which require development are made.

To fulfil the above purposes, we first review the dataset types in section 2, before then moving on to evaluating how different dataset types have been applied in compiling thunderstorm frequency climatologies (section 3) and thunderstorm tracking (section 4). Section 5 reviews the methods used to produce lightning flash density climatologies, using one dataset type: lightning remote sensing data. This section also includes a review on how lightning flash density results have correlated with potential drivers of

thunderstorm formation, such as topography, which thereby introduces further methods and datasets. Recommendations for study design are contained in Section 6 and future research areas outlined in Section 7."

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