

***Interactive comment on “The Climatology,
precipitation types and atmospheric conditions of
extreme precipitation events in western Turkey”
by Bulent Oktay Akkoyunlu et al.***

Anonymous Referee #1

Received and published: 2 July 2018

This paper attempts to investigate the precipitation types (using radar outputs and circulation weather types) of extreme precipitation events (EPEs) over western Turkey for the period 2006-2015. This work grouped weather types by origin sea effect, cyclonic effect and convective effect based on Lamb Weather Classification and helping with radar data. The final objective is a descriptive analysis of the EPEs patterns in terms of spatio-temporal and environmental point of view. Although I find the angle really interesting and worthy of research I think that this paper should go through to a major revision process before being published as there are strong issues related to the methodology and some unclear sections that needs major revisions. Overall, this work has potential to develop a good article but is not mature for the publication in an

C1

international journal at this stage. The way in which it is written is hard to read. There are many redundancies in terms of writing style, paper structure and most importantly big sentences with complex meaning. I would recommend to get this paper edited by a professional editor/corrector. My main concerns are Introduction and title: - Talking about climatology for a period of 10 years is not correct. I recommend you another title including the period (2006-2010) without climatology. - You need references or justify better why you are choosing percentile 90th to talk about extreme events. - In the abstract you have identified precipitation types by using radar information and LWT but in the title you are budding between precipitation types and atmospheric conditions. - From line 20 the abstract is confused. I recommend you to rewrite the highlights of the abstract. I suggest extensively to revise the Abstract to better summarize the paper. Some information is missing in the current version. - I suggest to the authors thoroughly review previous studies and summarize their limitations, based on which the specific objective of this paper should be explicitly presented. Without this information, readers cannot evaluate the novelty of the contribution of the paper. You need to add more references in the first paragraph. The lack of flow and structuring of ideas makes it weak. E.g. you do not reference to studies that use radar to characterize precipitation types. Data and methodology: - I recommend you to do a new section/subsection of study area (if you are not from the region it can be confused) highlighting the orography, regions, and some useful and generic information. - It is not clear how you use the radar data. You are talking about radar in the methodology but you don't mention the radar analysis in the results. - Lamb Weather Type is not an objective classification. Jenkinson and Collison (based on LWT) is the objective classification. For this study you have to apply Jenkinson and Collison (and show the equations and the grid points used) or use a new methodology based on ACP/cluster analysis. Using a subjective methodology is not very rigorous. - Why do you use mean daily pressure data? Is it possible that sub-daily changes in the circulation may distort the pattern when averaged? You are working with hourly resolution and convective weather types are difficult to reflect in a “daily mean synoptic scale”. - In section 2.4:

C2

there is a lack of examples or studies that use percentiles to establish thresholds of extreme precipitation, is not enough the example of Karl et al., 1996. In this section the methodology is unclear and needs more scientific rigor. Results: - I suggest to create a discussion chapter. You are talking about discussion but there are few references. I recommend you to move the discussion paragraphs and extend this new section (after the results). - When the results are read, the methodology becomes clearer, which is why the major revisions focus on section 2, which will influence changes in section 3. However, this section is rather structured. Convection is not a synoptic process. you have to take it into account and not confuse it, as shown throughout the article. - I suggest a new table summarizing all kind of weather types for all EPEs. All kind of weather types that you comment are part of the sample? - You talk about radar in the methodology but is unclear that use radar data for the final results. You can support with the radar data when you talk about convection. - In section 3.1 I don't understand why you talk about a case of study. You are describing the climatology of EPEs (general results, not specific case). - In the figures 3, 5, 6a-c-e and 7a. Which kind of interpolation do you use? I recommend you kriging interpolation for this kind of area and data.

Please also note the supplement to this comment:

<https://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2018-29/nhess-2018-29-RC1-supplement.pdf>

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2018-29>, 2018.