

Interactive comment on “Integrated high-resolution dataset of high intensity Euro-Mediterranean flash floods” by William Amponsah et al.

Anonymous Referee #2

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Summary of Review: This paper presents and describes a database of selected European flash flood events from 1991 to 2015. This database is a valuable resource for researchers, decision-makers, and other stakeholders across the hydrometeorological community. In particular, I found the unit peak discharge envelope curves quite informative. I have some concerns with a handful of assertions made in the text, some suggestions for improving wording, and a couple of questions that could possibly be answered more fully in the manuscript. However, these concerns are generally fairly minor, and given the detailed data included in the mooted flash flood dataset, I believe this paper contains worthy contributions to the literature surrounding impactful flash floods.

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Specific Comments: Lines 50-51: Saying the dataset is both available to the public and is a “public dataset” seems redundant.

Lines 136-138: This wording is slightly awkward. I would recommend “is primarily driven by” instead of “mostly derives from”. Additionally, the authors should expand upon how the inclusion of an event in the database is driven by the “local observed impact”. Are these criteria subjective or objective, and can they be described in the manuscript?

Section 2. iii): The authors restrict causative rainfall events to durations of less than 48 hours and appropriately separate events from one another via objective criteria applied to the basin-averaged hourly rainfall intensity. However, there are many definitions of “flash flood” (for example, the U.S. National Weather Service) that rely upon the time elapsed (often 6 hours, or less) between the causative rainfall and the onset of observable flash flood impacts. This might be difficult to determine for the ungauged events without information from the people impacted, but the database nevertheless includes estimates of the timing of the peak flow for each event. Did the authors calculate the time elapsed between the rainfall and the onset of impacts to determine how the events in the database compare to some of the other flash flood definitions in the scientific literature?

Lines 154-155: This sentence is awkward. I would suggest “This enables us to account for antecedent rainfall in the analyses”.

Lines 160-161: I would suggest the following modification: “to uniquely identify” instead of “to identify unequivocally”.

Section 3.1: The authors summarize their procedures here and refer to several other studies on the topic of processing radar data into quantitative precipitation estimates (QPEs). However, there is some point at which radar data are so degraded (e.g., substantial beam blockage, very high beam height) as to become difficult to use for QPE. Did the authors employ any criteria to ensure that the radar data used were of

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sufficiently high quality to be used in the QPE process? On a related point: were any flash floods excluded from consideration on the basis that quality radar data were not available? (Though three French events were kept in without radar data, it is not clear if events in other regions were excluded due to a combination of lacking radar data and being in larger catchments).

Lines 221-223: This statement should be revised to something like the following: “Digital Terrain Models (DTMs) with a grid size of 90 m or less are provided. However, to avoid data storage problems,” continuing as currently worded.

Lines 228-229: I am curious why the radar data are available in different spatial resolutions in the dataset. Elsewhere in the manuscript it seemed that the authors are starting with the raw polar coordinate radar data, so if the data are being transformed to a rectangular grid why not choose the same grid spacing for each event? I am assuming there is a good reason (i.e. radar characteristics) but I am curious.

Lines 286-288: I am not sure it is fair to draw this conclusion from this dataset. It's appropriate to say that 90% of the included discharge data is from the Mediterranean region, but this does not necessarily support other research showing that flash floods occur more in this region than elsewhere in Europe, because the authors don't discuss attempts to collect flash flood event data in other parts of Europe. This database does not seem climatologically-representative of all Europe.

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