We thank Anonymous Referee #1 for his/her constructive comments. Our reply is in blue and quotes from the revised manuscript are in purple. Line numbers correspond to the original submission.

Anonymous Referee #1

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The paper by Caumont et al. (1) describes a heavy precipitation event, (2) discusses the inclusion of personal weather stations in precipitation analyses, and (3) tries to evaluate numerical weather forecasts. Consequently, it is an interesting manuscript with many details, but it is a long and sometimes confusing manuscript too. It is overall well written and illustrated. I suggest focusing on one of the three items, and thereby rewriting and shortening the manuscript substantially.

> The manuscript now focuses on the use of operational weather forecasts and standard and crowd-sourced observations to highlight the meteorological processes that characterise this extreme hydrometeorological event. The text has been significantly shortened. The text is now 32 pages long instead of 38 initially. For instance, the part discussing the inclusion of personal weather stations in precipitation analyses—which we believe to be interesting *per se*, but not essential in the presentation of the article's main objective—has been moved to an appendix. The evaluation of the numerical weather forecasts has been reduced to what is strictly necessary to validate their use in Section 5. Thus, the evaluation of AROME-NWC has been deleted.

Suppose the focus shall be on event description (1). In that case, I think it will be worth trying to quantify the impact of the mentioned leftovers of a former hurricane, which made the "classic synoptic situation" (line 4) special. These hurricane leftovers were mentioned already in the Abstract, and the reader is hoping for a more in-depth consideration. But, the authors only wrote vaguely in the Conclusion "did not reveal any particular role" and mention that trajectory studies would have been necessary (line 450). They mention (line 452) strong evaporation over the Western Mediterranean Sea, which "most likely contributed to the supply of moisture". It would be interesting to learn if strong winds related to the hurricane leftovers lead to the strong evaporation. The ARPEGE and AROME analysis could help in the discussion of the event processes, but the distraction of discussing the skill of the AROME now- and forecasts should be skipped. Finally, it would be important to discuss the features of this "classic" event in the context of other classic events in the area and beyond in the Mediterranean basin (not France only).

> We understand the reviewer's expectations regarding the role of former hurricane Leslie. The outcome of our work is that our tools are not able to draw any definite conclusion about the role of Leslie and therefore calls for further investigations with more appropriate tools such as research atmospheric models with the capability of tracing the origin of moisture back. The respective roles of SST and low-level wind velocity on evaporation could be quantified in models thanks to Spearman's rank correlations as done for example in Bouin and Lebeaupin Brossier (2020), but are more relevant if applied on ocean-atmosphere coupled numerical systems. Such a coupled system is currently under development and we clearly identify this situation as a golden case for further investigating the sea upper layer role on moisture feeding.
> As proposed by the reviewer, the distraction of discussing the skill of the AROME now- and forecasts has been mostly skipped and has been reduced to the minimum necessary to validate our tools on this case. More references to other heavy precipitation events in the Mediterranean basin were added.

The discussion (2) about the impact of personal weather stations could be kept very short and moved to an Appendix. The discussion of the added value of personal weather stations in the QPE should not be mixed with the event description in Sec.3.2.

> The discussion about the impact of personal weather stations has been moved to Appendix A.

If evaluation (3) of the AROME now- and forecasts shall be the manuscript's goal, this has to be more conclusive. For example, the authors wrote in the Abstract that the rainfall forecasts had limited predictability (line 9). Which forecast? The forecasts of ARPEGE, AROME-FRANCE, AROME-NWC, or all of the AROME-EPS members? In the Abstract and Conclusion, it is mentioned that the best forecast (one of the EPS members) contained the warmest, wettest, and fastest low-level jet. The EPS is introduced in one sentence only (lines 87-88!) without hinting at the applied perturbation method. Was the one good forecast member just luck? Has the EPS any predictive value for events like the discussed one? Why did the other members miss the important mesoscale features?

The evaluation of models is no longer a goal of the article. We have therefore shortened the related text. We kept our (short) conclusions about the predictability of the event because it is a property of the meteorological event at forecast time, not of the numerical forecasts used, so it cannot be ascribed to a particular NWP run. On lines 234–235 it is explained that predictability is estimated using successive AROME-France runs. In order to clarify it, we changed the corresponding sentence which now reads:

This complicates the work of forecasters and crisis managers, since the spread of successive AROME-France runs indicates that the event had limited predictability.

So as to further clarify this point, the sentence in lines 280–282 has been changed to:

In summary, fig. 8 indicates that, although the higher quantiles of the ensembles provided an accurate representation of the overall event in space, time and intensity, the predictability of the event was rather low according to AROME-EPS (as already indicated by AROME-France in section 4.1): prediction could not have been forecast with less than a 50 % uncertainty on intensity, and about 3 hours in terms of timing.

Concerning the description of AROME-EPS, some details have been added and it now reads as follows:

AROME-EPS is a 12-member ensemble based on perturbations of the AROME-France model at a resolution of 2.5 km in 2018. The AROME-EPS system is updated every six hours and it samples the forecast uncertainties using perturbations of the initial condition (atmosphere and surface), large-scale coupling, and model equation (using stochastic physics perturbations). The system is extensively documented in the references given above.

The following text is added at the beginning of section 4.2, which refers to section 5 where a physical interpretation of the AROME-EPS members is provided:

Although they are not perfect tools, convection-permitting ensembles like AROME-EPS are known to provide valuable information about the probability distribution of Mediterranean heavy precipitation events (see e.g. Hally et al. 2015). In this section we present the forecasted probability distribution. Some discussion of the link between member performance and its physical behaviour is provided in section 5.

The discussion of river network, runoff, infiltration, etc. (e.g., page 13) could be skipped or very briefly done in the introduction. The comments on soil moisture (e.g., line 8) and its role in flood formation (line 458) are misleading as the authors neither discuss any precipitation - soil moisture feedback/recycling, nor discuss the flood event in depth.

Most of the hydrological part of the article has been skipped. We kept the brief comment regarding the soil wetness because it could have been one of the meteorological factors explaining the intensity of the floods and the main goal of the article is now to highlight the meteorological processes that characterise this extreme hydrometeorological event.

References

Bouin, M.-N. and Lebeaupin Brossier, C.: Surface processes in the 7 November 2014 medicane from air-sea coupled high-resolution numerical modelling, Atmospheric Chemistry and Physics, 20, 6861–6881, https://doi.org/10.5194/acp-20-6861-2020, 2020.