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Hydrology and Earth System Sciences
Discussions

# *Interactive comment on* "Hydrometeorological evaluation of two nowcasting systems for Mediterranean heavy precipitation events with operational considerations" *by* Alexane Lovat et al.

**Anonymous Referee #2**

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hess-2020-629 review: Hydrometeorological evaluation of two nowcasting systems for Mediterranean heavy precipitation events with operational considerations

The purpose of this article is to compare two different meteorological nowcasting products AROME-NWC and PIAF in South-eastern France. The study is conducted both from a meteorological point of view (comparison of cumulated rainfall on the whole domain) and from a hydrological point of view (comparison of cumulated rainfall at the catchment scale and corresponding discharges simulated with the hydrological model



ISBA-TOP).

The topic is of great interest in the field of hydrology and the article clearly shows the potential of these nowcasting products for Mediterranean events. However, the present article lacks a global view on two main points:

- The added value of these nowcasting systems with respect to traditional forecasting systems for Mediterranean heavy precipitation events: only nowcasting systems have been tested without any comparison or analysis of other existing systems,

- The forecasted discharges are compared to reference discharges, simulated with observation of precipitations: this makes it possible not to take into account the uncertainties in the model structure and parametrization but adds the uncertainties related to precipitation observations. It would have been interesting to extend the analysis also to observed discharges and see to what extent the current conclusions are still valid.

From the results and analysis, it also seems to me that AROME-NWC is more promising than PIAF for flash-flood forecasting, at least on the tested events and catchments, yet it is not clearly stated either on the abstract, or in the conclusions. Am I missing something on the added value of PIAF on that point?

1. P4 L119: what is the "regret"? A more detailed description of PIAF will be interesting for a better understanding of the results and analysis, without the need to read several other publications.

2. P5 L123: the Gerrity score is detailed in Appendix A, you should add a cross-reference here for clarification.

3. P5 §2.3: how is handled the different spatial resolution between ISBA (300m) and TOPODYN (50m)?

4. P6 L171: how is ISBA-TOP calibrated? Using ANTILOPE rainfall estimates and observed discharges at the catchment outlet? With continuous or event-based simulations? On which time period?

5. P7 L186: AROME-NWC shows a trend to predict too frequently high rainfall accumulation but at the same time precipitations are underestimated by the model on average (see mean error figure 3). I'm not sure I correctly get this point: does it indicate a questionable representation of the dynamic of precipitation (high peaks forecasted instead of continuous precipitation of lower intensity)?

6. Table 2, second column: maximum cumulative rainfall estimate (mm): where does this estimation come from? ANTILOPE radar product?

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