

Interactive comment on “Coupled hydro-meteorological modelling on HPC platform for high resolution extreme weather impact study” by Dehua Zhu et al.

Anonymous Referee #1

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General comments:

For small catchments, the leading-time of flood is generally very short. Therefore, it is important to extend the forecast period for preventing disasters and reducing damages. This manuscript tried to couple numerical weather prediction models with hydrological models in order to extend the forecast period. It is very interesting attempt. In addition, the results show the feasibility more or less. However, it is not well-organized and well-written, and many improvements are required, such as the structure, the data introduction, the method description, and the results interpretation. Consequently, I recommend a major revision.

Detailed comments:

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1. The structure of the manuscript. In the section of Results and Discussion, there are many sentences on the data description (P.8, line 260-275), which should be removed into the section of Materials and Methods. Also, some descriptions on the processing method, such as P.8 line 277-280, should be removed. Furthermore, the section of Materials and Methods should introduce data and methods used in this study in detail, such as data description including gauge data, radar data, soil type data, as well as the methods for weather prediction, interpolation, model calibration, and so on.
2. In Figures 3, 4, 6, and 7, the method how to get the UKV data needs a detailed description. For example, in Figure 3, whether the data during the period from 07/01/2007 to 13/01/2007 was predicted on 06/01/2007 according to the NWP?
3. In this manuscript, only two flood events were used to show the feasibility of this coupled method. I suggest more flood events.
4. The abstract. The introduction on the significance of this study is too long. Instead, the description on the results is not enough.
5. The authors stated “fully-coupled NWP-hydrology” in the Introduction, but only “one-way” in this study. Please specify!
6. In Figure 1, the rain gauges used in this study should be marked in the map.
7. P.5, line 142, the full name of UM-UKV should be given when it appears in the first time in the main body.
8. P. 5, line 172-174, the authors mentioned different time duration periods, i.e. 3 days, 6 days, 8 days and 12 days. In this study, it is not clear which time duration period(s) was used.
9. P. 6, line 212, the authors referred to model parameter calibration. It is not clear which parameters need calibrating, and what the criterion for the calibration is.
10. P. 7, line 222, more details on the parameterization of single soil type or multiple

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soil type are required.

11. P. 8, it should be introduced how to deal with the data, such as rain interpolation method.
12. The font size in the figures is too small and vague.
13. What is the aim of Figure 5?
14. The method for hydrological model calibration requires more description, such as the type of data, the period of data.

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