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

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Anonymous Referee #1

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.

Please refer to the revised manuscript.

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.

The require information can be found in the revised manuscript, such as the soil type data is described in P4 Line 136-146, the gauge data and radar data description are in P6 Line 170-186, weather prediction is described P7 Line 222-230, 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?

More detailed UKV data production is described in section 2.1. The initialisation of UKV model started 8 days earlier and the model is set to make 36-hr forecast with a high resolution inner domain from the start date of the event.

3. In this manuscript, only two flood events were used to show the feasibility of this coupled method. I suggest more flood events.

Two more events have been added, thus four flood events in total in this study. Please refer to the revised manuscript.

4. The abstract. The introduction on the significance of this study is too long. Instead, the description on the results is not enough.

Abstract has been rewritten, please refer to the revised manuscript.

5. The authors stated "fully-coupled NWP-hydrology" in the Introduction, but only "oneway" in this study. Please specify!

Please refer to P4 Line 124-128 in the revised manuscript.

6. In Figure 1, the rain gauges used in this study should be marked in the map.

Figure 1 has been updated, please refer to the revised manuscript.

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.

Please refer to the revised manuscript.

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.

In this study, 8 days initialisation start dumps was chosen, see P7 Line 218.

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.

The model parameter calibration is described in P8 Line 267-276, the critical performance criteria for the model is the Nash-Sutcliffe Efficiency (NSE).

10. P. 7, line 222, more details on the parameterization of single soil type or multiple soil type are required.

The soil type and parameterization are described in P9 Line 281-287.

11. P. 8, it should be introduced how to deal with the data, such as rain interpolation method.

The interpolation is used to fill the miss data, therefore, the simple linear interpolation was employed.

12. The font size in the figures is too small and vague.

Please refer to the revised manuscript.

13. What is the aim of Figure 5?

Figure 5 is deleted.

14. The method for hydrological model calibration requires more description, such as the type of data, the period of data.

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The method for model calibration is detailed in P8 line 260-265 and line 273-276.

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/hess-2016-140/hess-2016-140-AC1-supplement.pdf