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Interactive comment on “Ensemble flood forecasting to support dam water release operation using 10 and 2 km-resolution JMA Nonhydrostatic Model ensemble rainfalls” by K. Kobayashi et al.

Anonymous Referee #2

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The authors present the hydrometeorological analysis of a severe event in the Kasahori dam catchment in Japan. The analysis involves the full hydrometeorological forecasting chain using ensemble weather simulations and a distributed hydrological model. Their emphasis is on the verification of the performance of the forecasting chain through post event analysis and validation with radar and raingauge rainfalls. They compare results with two spatial resolutions of the meteorological model and perform an exercise of position shift to improve model performance. They obtain some interesting conclusions on the performance of state of the art modelling tools in flooding events.

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The topic is relevant for the audience of NHESS, the research is methodologically sound and the paper is well organized and written. The methodology for the analysis is correct and the conclusions are correctly supported by the results and discussion. Therefore, I believe the paper deserves publication in NHESS. However, I think the paper still needs additional work to cover the scope mentioned in the title.

My major concern is related to the paper title and approach. The paper title mentions dam water release operation as the main purpose of the forecasting exercise. However, the paper presents very little detail on dam operation and how such operation may be conditioned by model forecasts. In the Introduction (page 7414, lines 15-26) a brief discussion is presented on how rainfall forecast was useful in the decision of allowing a preliminary dam release. In the rest of the paper they only present data on the dam catchment, but we do not have any information of the dam spillway, the reservoir flood control capacity or the operating rules proposed for the dam in connection with the quantitative forecast. Only in the section on Ensemble flow simulation a very brief reference is made (page 7423, lines 8-9) to the decision to release water in the dam being linked to a discharge threshold of 140 m³s⁻¹. In my opinion, the paper in its current form does not cover the aspects related to dam operation promised in the title. With the current title I would have expected to see analyses on how the flood hydrographs would have been routed through the dam under different management decisions and a detailed discussion on how the forecasts could be incorporated in the decisions, proving the usefulness of the approach. All analyses and discussions are only focused in the inflow hydrograph to the dam, with no reference to the implications for dam management. In dam management hydrograph shape and volume are equally as important as peak discharge. Real time issues and data assimilation are also of interest. I suggest that the authors either remove the reference to dam operation from their title or include all these aspects in the analysis.

My minor comments are the following:

On section 4.3 (page 7417, lines 7-9) some rainfall data are presented. Cumulative

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data correspond to a certain period and is therefore presented in mm, but maximum rainfall is also presented in mm while it should have been presented as rainfall intensity in mm/h.

On section 6 (page 7419, lines 12-15) the authors indicate that actual runoff observed in the catchment is larger than rainfall. This is very unusual and I think it deserves a deeper discussion. Did they perform a baseflow runoff separation? On page 7421, line 2, change “have” into “has”

The paper has a total of 24 figures, but in my opinion some of them could be removed or at least be joined to simplify the analysis. For instance, figures 7 and 8 could be joined in one single figure. Same for figures 12 and 13, for figures 15 and 16 and for figures 18 and 19.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 7411, 2015.

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