Natural Hazards and Earth System Sciences

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Discussions

Interactive comment on "Ensemble flood forecasting considering dominant runoff processes: I. Setup and application to nested basins (Emme, Switzerland)" *by* Manuel Antonetti et al.

Anonymous Referee #1

Received and published: 4 June 2018

GENERAL COMMENTS AND RECOMMENDATION

The manuscript presents a study comparing different setups of the PREVAH model in a nested catchment configuration in the Canton of Berne (Switzerland). Both the topic of the manuscript and the methods used are very interesting. However, I find that the presentation requires significant improvement. Particularly, in the current version the manuscript is somewhat disorganized and does not stand by itself (the authors send the reader to external references in an excessive number of times). This affects the understanding of the methods and the relevancy of the results. Therefore, I think that

the manuscript requires further work before it can be recommended for publication.

MAJOR COMMENTS

1) Introduction: The organization of the first section requires some sharpening and reorganization. Section 1.1 gives too much detail on some of the approaches and very little detail about some others.

2) The presentation of the datasets and methods used in the study should be improved. The authors could focus on the following points:

a. Description of the datasets should include their origin and resolutions. In particular, a brief description of the analyzed COSMO configurations is missing.

b. Calibration of RGM-PRO and RGM-TRD. Given that one of the main differences between the two systems is in the way they are calibrated, the authors should provide a detailed description of the calibration process.

c. How were the uncalibrated and calibrated versions of PREVAH set up? Was the TRD-UC configuration calibrated using the observations of a single event? Did the authors use uniform parameters in the Emme catchment?

d. I find Section 2 too long. The authors could consider splitting it into "Target area and datasets", and "Models and methods."

MINOR COMMENTS

1) Page 4, line 13: "which requires a high model resolution" I guess that the text refers to high NWP model resolution, but it would be worth making it explicit.

2) Page 5, lines 26-29: "For the Trueb catchment, measurements from the Bau-, Verkehr- und Energiedirektion of the Canton of Berne were available. For the evaluation of hindcasts, only four events are investigated as runoff data is not available from 2005 to 2010." It is not fully clear that the last sentence refers to the Trueb catchment.

3) Page 6, lines 10-15: How was CombiPrecip applied in the study? Was the operational CombiPrecip product the one applied here? Were the rain gauge measurements of the Napf station blended in CombiPrecip?

4) Page 7, lines 1-9: It is difficult to follow the retrieval of the RTs maps. Could you provide some details about the Magreth map of SoilCom GmbH, DEM used for the Müller map, resolution...?

5) Page 7, line 31. Why is RGM-PRO event-based? Is this the only alternative?

6) Page 8, lines 4-7: It is surprising that the calibration of the RGM-TRD was done using a single event. How could this affect the performance of the system?

7) Figure 4 - caption: In the figure "Uncalibrated PREVAH" is referred to as "NC".

8) Figure 7 – caption: Please, specify the duration of the analysis. Is this for the event of 12 May? Over what period?

9) Please, refer to the accepted version of the work of Kienzler and Naef (2008): Kienzler, P. M. and Naef, F.: Temporal variability of subsurface stormflow formation, Hydrol. Earth Syst. Sci., 12, 257-265, https://doi.org/10.5194/hess-12-257-2008, 2008.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2018-118, 2018.