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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "The extreme runoff index for flood early warning in Europe" *by* L. Alfieri et al.

Anonymous Referee #2

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This is an interesting paper which describes the development and reports some first results from a flood early warning system covering most of Europe. The modelling approach advanced in this work aims to reduce the sensitivity of flood forecasts to errors in uncalibrated, regionalised hydrological predictions. This is done by assessing the severity of the forecasted flood with respect to the local hydrological model climatology (i.e., with respect to flood frequencies derived based on model simulations instead than observations). The approach has the potential to correct inherently for simulation model biases and to filter out a portion of the hydrological model prediction uncertainty by maintaining a relatively simple framework. The issue is clearly of interest to hydrologists and hydro-meteorologist involved in flood risk management, and it is very well suited for publication in NHESS. The literature considered in the manuscript is

up to date (with some updating as per the review by M. Zappa). The paper is fairly well written and organised, though it would benefit from some corrections as shown below. I report below a list of comments concerning specific points and issues in the manuscript. I recommend minor review for this work and congratulate with the authors for the work done.

Specific comments These concerns two sections: Section 2.2 and the content of Fig. 6 and the relevant comments reported at P 7528-7529.

Section 2.2 The Extreme Runoff Index 1. I suggest to improve the text in this section (which I found rather confused) as follows. 2. Please explain the meaning of N in Eq. 1. 3. Also, please use a consistent formulation for the upstream cumulated surface runoff at each grid point (Usro (di, t)), which is reported in varying and confusing ways in the different equations and in the text. Two different writing of Usro are reported in Eq 1, and a further different one in Eq. 3. 4. Please briefly explain the dycotomy time lag-concentration time at L21 P7522.

P 7528-7529 The text in these two pages provides a discussion for the results reported in Fig. 6. This section falls short and fails to discuss some noteworthy features of the results. These first of all show that the combination of False Alarm and Probability of Detection is such to strongly limit the warning accuracy (the authors could report the CSI as a combined index for both FAR and POD). Even though the FAR is high, the POD is remarkably low; this should be considered in the discussion by the authors. An explanation for the low warning accuracy is reported by the authors (L3-7 P7239). However, the text here is rather confusing. I suggest to report the 'event based' statistics in the same Fig. 6, and to provide a more structured discussion of the results.

P7522 L10: 'Forecasts' instead of 'Forecast'

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 1, 7517, 2013.