**Hydrology and
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Interactive comment on "The European Flood Alert System EFAS – Part 2: Statistical skill assessment of probabilistic and deterministic operational forecasts" *by* J. C. Bartholmes et al.

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In the present paper, the Authors evaluate probabilistic forecasts of the European Flood Alert System (EFAS) applying a threshold exceedance criterion: "EFAS forecasted discharges are not processed as continuous variables but are reduced to binary events of exceeding or not exceeding a threshold" (page 295, line 4-5). In our opinion, assessing the skill of a probabilistic forecast in terms of rates of exceedance is restrictive and somehow inappropriate. In fact, reducing the continuous-valued probabilistic predictions to a binary sequence of exceedances necessarily implies a great loss of information. The forecast skill assessment should instead be performed directly on the model

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output, i.e. on the empirical probability distribution given by the ensemble prediction. Only in this way the reliability of the probabilistic forecasts can be accurately evaluated.

Probabilistic predictions of continuous variables require specific evaluation tools, as those described for example in *Laio and Tamea* (2007, "Verification tools for probabilistic forecasts of continuous hydrological variables", HESS, **11**, 1267-1277). Although we agree on the inappropriateness of self-citations, we would like to address authors' attention to the specific methods for evaluating probabilistic forecasts of continuous variables. Operational value and statistical correctness are the basic skills to be verified in a complete and correct evaluation of a probabilistic prediction method, as the one proposed in the paper under discussion. An assessment of the operational value of a prediction can be performed through i) the expected costs associated to the predicted distribution and ii) a cost/loss ratio modeling the risk acceptance. However, this evaluation is vain if not complemented by the formal statistical verification of the probabilistic forecast, which can be carried out through the use of suitable statistical tests. We believe that a paper specifically targeted to probabilistic forecast evaluation should apply or consider these verification principles. Not doing so results in an incomplete assessment of the forecast skills and could be misleading for other researchers and end-users.

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