

Interactive comment on “Evaluation of a probabilistic hydrometeorological forecast system” by S. Jaun and B. Ahrens

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We would like to thank the anonymous referee #1 for his comments. Here we want to shortly answer to the issues raised by referee #1:

(1) In the page 1848 and in the paragraph 5, it is not easy to consider that the coupling of PREVAH with COSMO-LEPS provides probabilistic hydrological forecasts in terms of a hydrological EPS. The paper should be paid attention to check the equal probability and the total uncertainty (Golding, 2000). In order to check these characteristic, we must use the Talagrand diagram or the spread skill relationship (Houtekamer 1993).

You are right, to check these characteristics, one must use the Talagrand diagram (also known as the rank histogram) and the spread skill relationship. We actually used both,

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as we consider this check on general ensemble properties to be important (cf. page 1850, section 3.3 and Figs. 7-10).

(2) RPSS is a measure of the multi-category probabilistic forecast relative to a reference forecast. The ROC and the Reliability diagram are always considered in the ensemble forecasts. Also another score more general than RPSS, which is Continuous Rank Probability Score (CRPS)(Hersbach 2000). CRPS is also quantified to have CRPS_{pot} (score for the resolution and the lead time) and the reliability.

As you correctly state, the RPSS is a skill score relative to a reference forecast, while e.g. the ROC represents a score without linking to a reference forecast. Consequently one should not try to directly compare results from these methods. We did not intend to do this, we only state that we would like to avoid evaluation methods requiring a single threshold. In our opinion, the use of the term "evaluation methods" (page 1851, line 23: "Other probabilistic evaluation methods such as ...") is general enough to comprise this difference.

Thank you for the hint regarding the CRPS, which is basically an extension of the categorical RPS (infinite number of categories of infinitesimal width). We opted for the RPS (resp. for the associated RPSS), as operational hydrological forecasts are usually working with different warning-levels. As we did not have specific warning-levels available, we used the defined runoff quantiles to separate the runoff categories.

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