

## ***Interactive comment on “HESS Opinions ”On forecast (in)consistency in a hydro-meteorological chain: curse or blessing?” by F. Pappenberger et al.***

**G. Di Baldassarre (Referee)**

g.dibaldassarre@unesco-ihe.org

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The discussion paper by Pappenberger et al. deals with forecast (in)consistency. The topic is significant and matches the scope of HESS. I have really enjoyed reviewing this paper, which is very well written and gives proper credit to related work. I therefore recommend its publication after minor revision.

### MINOR COMMENTS

1. During the discussion of Figure 1 (page 1227), showing examples of deterministic forecast, the paper reports: "...indicates a slight possibility of a flood..." and then "...but with a lower possibility of flooding...". The authors should clarify what they exactly

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mean here by "possibility".

2. Given the subject and the title of the paper, I seriously wonder whether the authors made Table 1 and Figure 1 (as well as their captions and descriptions) deliberately inconsistent. Anyhow, I would avoid to confuse the readers and therefore suggest to make the example clear.

3. In general, as the dimension (or complexity) of a model increases, the bias tends to decrease, whereas the uncertainty tends to increase (Principle of Parsimony; Box and Jenkins, 1970). A modelers should aim at building parsimonious models that achieve a proper tradeoff between bias and uncertainty (Di Baldassarre et al., 2009). This reflects the famous sentence, commonly attributed to Albert Einstein, "everything should be made as simple as possible, but no simpler". Interestingly, this discussion paper states (page 1229) that: "NWP models were more consistent 20–30 years ago because the poverty of their representations of atmospheric processes and their low spatio-temporal resolutions made them less sensitive to variance in the specification of initial conditions. Thus reducing the quality of the NWP model would improve consistency, but reduce overall skill." Is this necessarily true? What do this paper mean by "quality"? Can this be linked to the aforementioned principle of parsimony? I would invite to have a more in-depth discussion of these issues that are also related to the question of whether it would be better to add inconsistency to the total uncertainty (point 4.c. of the proposed code of practice).

TECHNICAL CORRECTIONS Table 1 and Figure 1: Besides the aforementioned fact that they do not match, I would like to point out some inaccuracies of related text and captions:

"while the forecast (iv) issued on 27 March (iv) again does predict flooding"; "A flood alert would be issued in case (i) and (ii)"; "according to Fig. 1b."

Page 1228, line 20: "range from 0 to 35 between different forecasts." See Table 1

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Page 1234, line 17: "31 March or 1 April" See Table 1 and Figure 1

## REFERENCES

Box, G.E.P., Jenkins, G.M. (1970). Time Series Analysis: Forecasting and Control. Holden Day Press, San Francisco, CA.

Di Baldassarre, G., F. Laio, A. Montanari (2009). Design flood estimation using model selection criteria, Physics and Chemistry of the Earth, Special Issue on Recent developments of statistical tools for hydrological application, 34(10-12), 606-611.

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