

Response to Referee Comments by Anonymous Referee #2

The authors would like to thank the referee for taking the time to review our manuscript.

Response to Main Comments:

The referee made two Main Comments, which we will summarise and to which we will respond.

1. *About the limits of the conclusions drawn from the case studied*

The Referee questions whether the use of “perfect forcing”, i.e. to force the forecast models with observed instead of predicted precipitation, allows for drawing the stated conclusions on the economic performance of the system. Related, the Referee would like to see a discussion of whether and, if so, how the interdependency between the deterministic and the probabilistic forecast affects the results. Finally, the Referee wonders if the title of the manuscript accurately reflects the content of the paper.

We will first address the last point made by the Referee. The Referee states that in his/her view, the comparison between deterministic and probabilistic forecasts is less the key point of the study than the economic benefits attained by flood forecasting and warning systems. Our intention, however, was to compare the benefits of different types of forecasting systems. In that sense, the monetary values of benefits attained are a means, not an end. As indicated in section 4.3 the estimates of damages in the area considered are rough, and a more complete analysis of flood risk would be required to evaluate this fully. A comment shall be added to this section to clarify this point further.

This also pertains to the first and second points raised by the Referee. If we had not used perfect forcing, the uncertainties would likely have been larger, especially for lead-times longer than the concentration time of the basin. We expect that this would have led to a lower performance of the system in terms of observed hits, false alarms and missed floods, and therefore to a lower expected economic benefit. The monetary values would indeed have been different. We shall add a comment to emphasize this in the manuscript. However, we expect that this would not affect the “ranking” of no warning / deterministic forecasting / probabilistic forecasting / perfect forecasts cases, which, in our view, is the main point of the manuscript.

For the case study described in this manuscript, probabilistic forecasts were produced using a post-processor of deterministic forecasts. This means that there is interdependency between the two types of forecasts. As a result, the uncertainties in the deterministic forecasts are reflected in the probabilistic forecast. The main difference, of course, is that these uncertainties remain “hidden” in the case of single value forecasting, thus preventing risk-based decision making. If, however, the technique for producing probability forecasts would depend on the use of different forcing data than that used for producing deterministic forecasts, this interdependency could well be different. It is not uncommon, for example, for flood forecasting agencies to use a high-resolution deterministic meteorological forecast to force the deterministic hydrological forecasting, and a lower resolution product for the forcing of a probability forecast. In that case, the interdependencies could be different and the relative performance of the two cases vis-à-vis one another could be different also. This may then influence the ranking, and a note will be added to this extent to the manuscript.

2. *About the length of the paper: “for a scientific paper... it is too long”*

This point was raised by the first Referee also. We will reduce the length of the manuscript where

possible. Most notably, we shall reduce the length of the Discussion and Conclusions section. In addition, we will carefully look at the Referee's additional suggestions for shortening the text.

Response to Minor Comments

These concern mistakes in spelling and grammar and some additional suggestions for shortening the text. All mistakes shall be corrected and suggestions will be considered.

Delft, September 17, 2011
Jan Verkade and Micha Werner