Interactive comment on "Willingness-to-pay for a probabilistic flood forecast: a risk-based decision-making game" *by* L. Arnal et al.

Anonymous Referee #1

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GENERAL COMMENT: This manuscript brings interesting insights about the value of flood forecasts for decision making. As well stated by the authors, the field of probabilistic flood forecast has evolved a lot in the past years. However, there is still a gap on how to interpret the probabilistic flood forecasts and use it for decision making, and how valuable are it is for decision makers. SO this paper reports an interesting experiment that brings new reflections on both the experiment's participants and the reader of NHESS/HESS. It was interesting to read it, so it is generally well written. So I'll be pleased to see it published in NHESS/HESS. These are minor questions/comments that hopefully will help the authors to improve the presentation of their manuscript:

-Experiment Setup: How conclusions could be impacted by the choice of the parameters for the experiment? e.g. protection cost or damage costs? How river levels and increments were sampled??? What about the uncertainty of forecast increments? How

such choice could impact conclusions?

-Page 5.Line 10 Include a figure (or a new panel on fig. 1) showing a diagram with the sequences of rounds, auction, etc., to summarize section 2 (experiment setup).

-Page 10 Line 15. Figure 2. How this distribution compare to the distribution of people actually making the decisions?

-Page 11, Lines 5-22. Figure 3. It is really not clear from this figure 3 if participants changed strategy during the 5 cases. It would be easier to ask this question to the participants in the form.

-Page 11, Lines 20-25. Figure 3. It seems that participants also used information on the other percentiles different from median. For example, in case 4 for type 2, 5th and 95th percentiles indicate flood, so all participants chose the same and correct action. On the other hand, in cases where 5th and 95th percentiles fall above and below the flood threshold, more people did not follow the median (case 1 type 1, case 2 type 3, case 3 type 2, case 5 type 3).

-Page 12, Line 5, Figure 6b This is very interesting. Participants attribute good decision making performance with good forecast quality, but they forget that their personal strategy adopted for decision making plays a major role, as there are several ways to interpret and use the probabilistic forecasts. What is the implication in the real world? Decision makers will tend to blame (thank) forecast providers for their wrong (good) decisions?

-How the flood frequency observed in Round 1 impacted the WLP? Why participants from Green river are more WLP?

-Section 3.5: The analyses show that participants using forecasts had better performance in Round 2, however, participants with more money and better performance in Round 1 were willing to pay more for the forecasts. Consequently, participants with better performance in Round 1 ended buying forecasts and having better performance in

Round 2. How the skill of the participants could impact the conclusion that "Decisions are better when they are made with the help of unbiased forecasts, comparatively to having no forecasts at all"

-Section 3.6. : Show % values, table or figure for these results. It may help the reader.

-Is a biased forecast better than no forecast? Can you access that from this experiment?

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