

***Interactive comment on* “Can seasonal hydrological forecasts inform local decisions and actions? An “in-the-moment” decision-making activity” by Jessica L. Neumann et al.**

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We thank reviewer 2 for taking the time to review our manuscript and for providing helpful comments and insight. We’ve edited our manuscript accordingly and our responses to all the reviewer’s comments are included below. We have used the following sequence: (1) comments from Referee, (2) author’s response, (3) author’s changes in manuscript.

General comments I would like to thank the authors for this innovative contribution that addresses a still little-explored topic in the (seasonal) hydrological forecasting research community. The proposed article explores forecast uncertainty, forecast com-

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munication and decision-making with an original experiment involving and giving voices to decision-makers from the West Thames. As highlighted by the authors, this is a research area with limited contributions, which, in my opinion, fits nicely in Geosciences Communication. The paper is didactic and well documented, and I strongly recommend it for publication, though I do have some minor questions which I list below.

Specific comments

(1) Section 2.2.1: (a) Here, I think some more information on the process of finding participants would be useful for the reader. From this section, it seems that all eleven invited participants agreed to be part of the focus group: “11 West Thames stakeholders [: :] were invited to take part in the focus group [: : :]” (L.12). If so, I assume there were previous collaborations, and did these have any role in the willingness to participate? And if not, how many stakeholders were invited, how many declined and, if any, for which reasons?

(2/3) Thank you for this point – we have added more information about how many participants were originally invited (17), how we chose to invite participants (which was largely based on previous collaborations or people known to hold established positions relevant to SHF in the West Thames) and how many participants declined (5) with explanations given as to why where this was known (Page 6, lines 8 – 18).

(1) (b) Additionally, it would be interesting that the authors mentioned how many forecasters, public water suppliers, waste water modellers and operators, etc. are active in the area. For example, how representative are the 3 forecasters that took part in the group? What do 11 stakeholders represent at the scale of the region? This is for the sake of giving a wider picture to the reader on the stakeholders being active in the area, and on the impact/outreach this experiment has had.

(2) We’re afraid that we don’t have this information. However, we did make sure that those who were invited held established positions (i.e. had long-term experience of working in their role and at their organisation thus would be in a good position to rep-

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resent their viewpoint). We also ensured that the major water sector organisations in the West Thames were represented.

With respect to outreach, Sect. 5.4 details the implications for future policy and decision-making from the Environment Agency's perspective which was raised directly as a result of our Focus Group.

(1) (c) How many different organizations were represented through these 11 participants?

(2) 5, including Government agencies, public bodies, water utilities companies and not-for-profit organisations.

(3) This is now clarified in Sect 2.3.1.

(1) Section 3.2.2: How much do you think the group opinion influenced the colour chosen by individual participants? Could there be biases here?

(2) There was the potential for bias here, however, discussions would often take place in real-life and we did reiterate to participants that the colour they chose should represent what they or their organisation would do with the information. The responses (Fig. 8) do differ between same-group members which suggests that bias was not a major issue.

(1) Figure 3: It is mentioned in the text that there are about 110 dots on each map (L.9), but in Figure 3, we observe around 9 or 10 dots per catchments. What is the reason for this? Were some stakeholders only working on their usual catchments of interest?

(2) Yes, some participants said that they only felt comfortable providing decisions for catchments they were familiar with. In some cases, participants also felt that they were not able to make an informed decision and so did not place a dot.

(3) We have clarified this more clearly on Page 9, lines 22-23.

(1) Section 3.3.1: It was not clear to me how familiar the participants were to this

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information and what they got out from it if they are already familiar with the region.

(2) Some participants were very familiar with the West Thames as a whole and the hydrological risks and opportunities that the different catchments present, whilst others were less so i.e., where they work on just a few catchments on a day-to-day basis. The background maps were used to kick-off discussions and to make sure that everyone was familiar with the wider area being used for the activity (now clarified in Sect. 3.3.1). From our perspective, the maps also allowed us to find out what factors different users of the water sector focus on (Sect. 4.4.1).

(1) Section 4.2: “At no point did participants ignore the SHF information” (L.18) Isn't this result due to the context? From the moment the participants know they are in a seasonal forecasting experiment, they are willing to use the provided information.

(2) We believe not – we reiterated to all participants that we would like their decisions to be representative of what they or their organisation would do with the SHF information in real life. As we had already identified that participants are engaging with SHF to some degree (Sect. 2.3.2), we knew that they would likely be willing to use the information. If we had found out that the water sector were not currently using SHF, then the activity would have taken on a more hypothetical focus.

(1) Section 5.3 (L.22-29): How did the authors deal with forecast quality in this experiment? (a) From this paragraph, it seems that no quality information was provided, and indeed, no quality information appears in the Stage 1, Stage 2 and Stage 3 sections of the Supplement. Was it a choice to exclude this information, or is it not available to users in the Hydrological Outlook UK and the EFAS-Seasonal?

(2/3) You are correct, we did not provide forecast quality information (we have clarified this on Page 9, line 10) for 2 main reasons. Firstly, quality information is not routinely provided in Hydrological Outlook UK and EFAS-Seasonal. Secondly, during the co-development of the activity, the Environment Agency recommended that introducing information on SHF quality / skill may make the activity too complex, especially if there

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were participants who were not familiar with using SHF at all. We did however discuss the importance of forecast quality with participants and present this in the Discussion on Page 21, lines 4 – 18.

(1) (b) In the absence of quality information, did the users assume that forecast quality was the current/latest one they are aware of?

(2) Yes – participants were broadly familiar with Hydrological Outlook UK and so during discussions they said they interpreted the information in the same way as they would in real-life. By contrast, at Stage 3 ('Improved' EFAS-Seasonal) the quality of the forecast was questioned because it was beyond what is expected by current SHF.

(1) (c) Several platforms now propose quality information along with the forecasts, and assuming that this information is provided in a clear manner, users do not have to hypothesize about the quality of the forecasts they use. In this specific paragraph, authors suggest “to keep water sector users informed of scientific developments”. In my opinion, it is also crucial to provide quality information in an intelligible way along with the forecasts, as well as build the required user knowledge to understand this information.

(2/3) Thank you, this is important and we have added this point on Page 23, line 4.

Technical corrections

(1) Figure 8: A reminder of the colour codes would be useful for the reader to have.

(2/3) Thank you, yes we agree – we have added this information to the legend for Figure 8.

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