GCD

Interactive comment

Interactive comment on "The Met Office Weather Game: investigating how different methods for presenting probabilistic weather forecasts influence decision-making" *by* Elisabeth M. Stephens et al.

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The authors have conducted a study where participants in an online game were presented with weather information in different formats and with different levels of information contained, to test how the information provided on the uncertainty in the weather forecast influences decision making by those receiving the weather forecast. I like the idea to use a game instead of classic survey or interview techniques as it forces people to actually make decisions instead of asking them what their decision would be.

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I do have some concerns with the presentation and interpretations of the results that I would like to ask the authors and editor to consider before publishing the article in GC.

1 On ensemble visualisation

The authors focus their paper on the impact that providing uncertainty information has on decisions and they embed it within previous work by the atmospheric science community: nearly all their references come from this angle. The authors fail to acknowledge the complexities in he choice of how to visualize the outcome of an ensemble forecast in the first place. Given their scope (and, most likely, funding) I understand the choice to use the ensemble forecast visuals as they were made by the UK MET Office, but I would like to ask the authors to spend some words on explaining what the design decisions in this visualisation are based on. A quick google scholar search on "data visualization ensemble uncertainty" wields a host of papers from outside of geoscience with valuable insights, such as Obermaier 2014.

2 On using a game as proxy for decision making

As expressed above: I like the use of a game to gauge what decisions people would make based on uncertain information. However, I do believe that the scenario chosen to represent in the game can have influence on the outcome. By focussing on an ice-cream business scenario in summer I am afraid that the players in the game might be taking more risk than they would in real life. Even more so because, unlike in a real enterprise, there is no real cost associated with losing the game, which makes game-

players take more risks than they would in real life[1]. This is an inherit problem with using games (and surveys for that matter), but I'd like to ask the authors to spend some more words on reflecting how the design choices in the "game" might have impacted the results. Could the risk taking nature of the game explain the offset in figure 4c where a median at zero is expected?

3   On statistics

The authors rightfully mention that in an online game it is relatively easy to get a large sample, more than 8.000 in their case. However, only using online users as the potential population to base your conclusions on could lead to skewed results when extrapolating to the entire general population. To get a first indication of how much the results of this study are applicable to the entire population, in figure 3 change the y axis to

Finally, the authors removed almost half of the sample because they had been taught about uncertainty. Since uncertainty is being treated in more and more disciplines, this limits the scope of the study to "can people who have not been taught uncertainty use forecasts that communicate uncertainty?". I do, however, believe that the group that has been taught uncertainty is of interest as well. By excluding them the authors make the (implicit) assumption that they would be better at interpreting uncertainty information in forecasts than others, something that I very much would like to see tested. I recommend the authors to either include this in the study, or to promise us a follow up study where those taught uncertainty are compared to those who did not receive that education. On improving the game The author state that "generating realistic forecasts was difficult enough". I would suggest not to let difficulty stop one from trying to further science. Given enough time (funding) one could envision that

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[1] the reviewer would have shattered his legs jumping of cliffs on multiple occasions if he took the same risks in real life as in the games he plays. . .

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weather forecasts be integrated in major online games and player actions could be tracked. Difficult, yes, but the "future work" section of an article is the place to dream big and I would invite the authors to do so.

Which also brings me to the author contributions. Did the authors work on the coding of the game itself? From the contributions it looks like they contributed to the design, but not the actual coding. Please have a look at the CRediT taxonomy to acknowledge all scientific roles that contributed to this work (https://casrai.org/credit/). (note to the editor: maybe campaign to have this journal support these roles? It has already been linked to ORCID profiles).

4 On extending the analyses.

The authors state looking deeper into different results for different age and educational levels is beyond the scope of the article (and I agree). They proceed, however, to still give a very quick comment on how results differ with educational attainment. They forego the care they take in presenting their other results in this quick remark though. I would ask the authors to either do the ANOVA analyses and present it as complete part of the study, or to remove the comment and invite the community to follow on this work using the data they will provide.

On a related note: I applaud the authors for making their data available. I do want to ask them to take extreme care in making the data anonymous enough to not be able to trace answers to individuals. Ask your local sociologists for advice on how to do this: our sociological colleagues have a long history of dealing with this.

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5 On presentation

When printing the pdf on A4 paper the text in the figures was barely readable by this middle aged man. I ask the authors to expand the figures 4 and 5 into bigger separate figures.

6 concluding

I thoroughly enjoyed reading the paper and think it is of value to the geoscientific community. The above concerns can be addressed in minor revisions to the article.

H. Obermaier and K. I. Joy, "Future challenges for ensemble visualization," in-ÂăIEEE Computer Graphics and Applications, vol. 34, no. 3, pp. 8-11, 2014.Âă doi:10.1109/MCG.2014.52

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