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Interactive comment on "Telling the boiling frog what he needs to know: why climate change risks should be plotted as probability over time" *by* Simon Sharpe

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I'm grateful for these comments which provide additional insight into the issues raised in the paper.

I think the distinction between the information content of a risk assessment ('risk-as-analysis') and the presentation of a risk assessment ('risk-as-feeling' and 'intuitive evaluability') is a helpful one to make. The main argument of my paper is that within the relatively narrow scope of the information content of the risk assessment ('risk-as-analysis'), there is room for improvement. If the variables of probability, impact and time have not been explored enough to bring the largest risks to light, then the

risk assessment has omitted information that is likely to be of great relevance to the decision-maker. I propose identifying a non-arbitrary threshold of impact, and then assessing its probability over time, mainly because this seems likely to ensure that the largest risks are considered – and are not left hanging somewhere beyond the end of the x-axis or in the invisible margins of a shaded band of uncertainty. I believe that on this basis alone, there are advantages to this approach.

At the same time, I think it is quite possible that the probability over time approach also has an advantage in intuitive evaluability, and if so, this would be another argument in its favour. The discussion comment points out that 'The degree to which a complex problem is intuitively evaluable is related to a person's "lived expertise" in that problem domain'. This could explain the value of the 'experiential' threshold, as used in Christidis, Jones and Stott, 2015: once an extreme weather event has been experienced, it becomes part of the 'lived expertise' of all those it affected. Extreme event attribution studies use this effect to give greater social salience to the reporting of climate change in the present. Risk assessments using experiential thresholds of impact could do the same for the communication of possible climate changes of the future.

Finally: I agree with the point about the need for co-production of climate change risk assessments. The identification of a meaningful non-arbitrary threshold of impact is often likely to be possible only through dialogue between scientists and decision-makers. It is useful to recognise that this dialogue does not necessarily happen by itself. Consequently, dedicated and deliberate processes may be needed to produce information that is appropriate for the purpose of risk assessment.

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