

# ***Interactive comment on “Ideas: a simple proposal to improve the contribution of IPCC WG1 to the assessment and communication of climate change risks” by Rowan T. Sutton***

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We would like to address one further point as illustrated in the author’s first reference “Climate change a risk assessment.” On page 19:

“2. Identify the biggest risks. This follows logically from the first principle. The more a risk could affect our objectives, the more relevance it is likely to have for our decision-making. If risk is defined simply as the product of likelihood and impact, then the biggest risks may be those which are most likely to occur, or those which would have the greatest impact, or those which fall somewhere in between. Mathematically speaking, this will depend on the shape of the probability distribution function. In practice,

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the risks of most concern are usually those with the greatest impact, especially when there is potential for irreversible consequences (e.g. death).”

We now believe that the author has confused the words “probability distribution function” (or PDF) with what is really meant which is “cumulative distribution function” (or CDF). We say this because on page 51 (Figure 2), page 52 (Figure 3), pages 58-61 (new chapter Figures 1 and 2) we see the likelihood function on the y-axis going between 0% and 100%, in other words, the likelihood function, we now believe, was always meant to be some form of CDF or probability of exceedance. In fact, throughout this reference we always see the y-axis in either percent or usually an increasing scale of some quantity.

Is anyone here really paying attention to the very fundamentals of risk? How could this happen? I am embarrassed for the author and Professor Ed Hawkins (acknowledgments). As an idealized CDF is rather monotonic and the impact is assumed to be monotonic the resulting  $R = LI$  itself will also be monotonic.

We do not claim any subject matter expert (SME) status in risk or impacts (well except for 30+ years as a research coastal engineer where we deal with this stuff all the time), but at least we are able to read a graph with a y-axis labeled “Likelihood” and said “Likelihood” is indeed a CDF.

References King, D., Schrag, D., Dadi, Z., Qui, Y., Ghosh, A. Climate change: a risk assesment. Cambridge University Centre for Science and Policy, Cambridge; 2015.

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