

Interactive comment on “Economic impacts of drought risks for water utilities through Severity-Duration-Frequency framework under climate change scenarios” by Diego A. Guzmán et al.

Anonymous Referee #1

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This manuscript aims to develop a method to estimate future economic impacts of climate change on water utilities. Specifically, it uses severity-duration-frequency analysis of rainfall projected by a regional climate model to assess financial risk to the Sao Paulo metropolitan water supply.

I found this the most challenging manuscript I have review in quite a while. On the one hand, there is a great need for studies finding ways to translate hydrometeorological predictions into impact assessments, and this study tries to do just that. On the other hand, in such a study one still looks for some generic insights that advance the field.

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This is where I struggled.

I do believe the conventional standard of scientific evidence can be relaxed a bit to in the case of inter-disciplinary papers of a more applied nature, which try to make science relevant to socio-economic decisions in the presence of uncertainty. However such interdisciplinary papers have requirements of their own, part of which derive from the fact that no reader is likely to be an expert in all areas of the methodology and that large uncertainties occur throughout the analysis chain.

To address this, the authors should provide more detailed discussion on:

- 1) Discussion of issues or uncertainties in pre-existing methods and techniques used, both those that are known (upfront, in the methods) and those that are newly found in interpretation (in the discussion).
- 2) Justification of any new methods, techniques or assumptions that are made.
- 3) In the discussion; the overall most tenuous assumptions, and therefore ultimately the greatest caveats and uncertainties, that need to be considered when basing practical decisions on this study.
- 4) A research agenda that provides new insights into what specifically would need to happen to make studies such as this more suitable for decision makers.

From the hydrological perspective, the methods are not novel and open to varying degrees of criticism, but broadly competent and probably acceptable for this type of analysis, although that still needs to be argued. I have some doubts about the assumptions made in the economical analysis, but I have very little expertise in economic analysis and I recommend the editor seek an additional review from at least one economist.

At face value, I found it hard to believe that water utility profit loss could realistically reduce regional GDP by as much as 10%. If that were the case, than would that not imply that the utility is one of the main employers? Presumably that level of loss would well exceed the company's capacity, sending it bankrupt well before that, leaving the gov-

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ernment to deal with the fallout, and moving the scenario beyond your assumptions?
As I said I am not an economist, but something seems not quite right there.

The English is generally very readable but a few issues occur more than once:

* Long sentences with unnecessary clauses (e.g., p1, l15-17). Please try to shorten and simplify such sentences without using clauses where possible.

* Poor word choice. For example 'to prioritize' (p1,l11) is a mental activity by (in this case) people, and cannot be done by phenomena. Also, do 'establishments' (p3,l91) relate to households or businesses?

* Inconsistent form (single/plural) between noun and verb (e.g., p1, l20)

* Incorrect combination of verb and preposition (e.g. p1,l31 should be "associated with")

Most of these would likely be picked up in proofreading by a native English speaker.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2017-615>, 2017.