

## ***Interactive comment on “Drought in a human-modified world: reframing drought definitions, understanding and analysis approaches” by A. F. Van Loon et al.***

**A. F. Van Loon et al.**

a.f.vanloon@bham.ac.uk

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Thanks for your positive evaluation of our paper. In this reply we will shortly discuss your comments. A more detailed reply will follow with the revised version of our paper.

You mention that you have some issues understanding Section 2 “Defining drought in the Anthropocene”. I think your confusion might have arisen from a misunderstanding of the title of this section. We say on p.2 l.1-2 that in this section “we revisit drought definitions and make suggestions for robust use in the Anthropocene”. So we are not defining a new term called “drought in the Anthropocene”, but we are evaluating how we should use existing drought definitions in the Anthropocene. Would your issue be solved if we rephrase the title of Section 2 as “Use of drought definitions in the

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Anthropocene”?

With the term “human-modified drought” we indicate drought events that are caused by a combination of climate and human processes or drought events of which the severity has been altered substantially by human activities. These human processes / activities can be short-lived (“rare events” such as emergency relief groundwater abstraction) or more chronic (land use change, dam building). The latter are regarded in this paper as human activities changing the propagation of drought (see Figure 2), so they are not causing the specific event, but change its characteristics. We think it is important to make this explicit by using the term “human-modified drought”, so that in the drought analysis the characteristics of the drought are attributed to the correct processes, which is crucial in drought management (see our examples in Box 1).

You also suggest to limit the information in Sections 3-4 by focussing on cases where drought is significantly influenced by human activities. We agree that the magnitude of human influence on drought is probably very variable, but since it has rarely been quantified an objective selection cannot easily be made. With this opinion / review article we hope to encourage colleagues to do that quantification of the relation between people and drought, so that in the future we will be able to make the selection you propose of which areas / processes are more important.

Thanks for your view on the comments of Prof Marc Bierkens. We agree that local water managers and citizens often have a lot of knowledge on local drought processes and their relation with human activities. In our paper we therefore suggest to make more use of this knowledge, e.g. p.9 l.5-10 where we advise that “More qualitative and local scale information on the human influences in a catchment can be gathered by a range of methods, including . . .” and p.12 l.18-24 where we state that “Qualitative data (such as drought narratives) are essential in our quest for increased understanding” of feedbacks between drought and society.

We will address your specific comments in our review. Here we only comment on your

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point regarding section titles and definitions:

- We will revisit the section and subsection titles now we are aware that they can create confusion. We agree that our section on “Impacts of drought in the Anthropocene” is not specific for the Anthropocene. Quantifying the relation between drought characteristics and drought impacts is however a very relevant open research question in the Anthropocene. We suggest to remove the “in the Anthropocene” from the subsection titles, so that the structure of this section becomes: “Drought drivers”, “Modifications of drought”, “Drought impacts”, “Feedbacks between humans and drought” and “Changing norms”.

- You suggest to add a table with definitions for drought, water scarcity and other relevant terms. Such a table is already included (Table 1). We will include more references to Table 1 in the text, where needed. We will also rewrite the paragraph on definitions in other disciplines to clarify the difference.

- Thanks for the suggested references.

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