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19 March 2023

**Review 3: Response to reviewer comments for:**

“Global monthly sectoral water use for 2010-2100 at 0.5° resolution across alternative futures” (Manuscript ID: SDATA-22-00583), submitted to Nature Scientific Data

**Reviewer Comments Received: 16 March 2023**

Dear Chief Editor Guy Jones,

We would like to thank you and the reviewers for your invaluable feedback and comments in this third round of reviews. Please find a list of all editor and reviewers’ comments we received followed by an explanation of where and how each comment has been addressed in the revised manuscript. We think that with the suggested changes the paper has become much stronger.

Thank you for the guidance,

Sincerely,

Zarrar Khan

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# List of All Reviewer Comments

The following is a list of all reviewer comments received. Each comment has been addressed in the text as described in the corresponding section. Comments are numbered by referee as R1 for Referee 1, R2 for Referee 2, and E1 for Editor.

In this 3rd round review only one minor comment from Referee 2 (R2) was received.

R2 Comment 1: The manuscript presents a global monthly gridded (0.5° resolution) sectoral water withdrawal and consumption dataset that contains conditional projections of water usage (from 2010 to 2100) across a range of future socioeconomic and climate scenarios. It has been revised many times, and both the content and the words have been significantly improved. However, it needs some modifications in order to enhance the quality of the manuscript.

1. L398 The acronyms should be explained clearly, in order to facilitate direct comprehension of their meanings, without the need to resort to a search engine. So, please define USGS and FAO.

# R2 Comment 1

**R2 Comment 1: The manuscript presents a global monthly gridded (0.5° resolution) sectoral water withdrawal and consumption dataset that contains conditional projections of water usage (from 2010 to 2100) across a range of future socioeconomic and climate scenarios. It has been revised many times, and both the content and the words have been significantly improved. However, it needs some modifications in order to enhance the quality of the manuscript.**

**1. L398 The acronyms should be explained clearly, in order to facilitate direct comprehension of their meanings, without the need to resort to a search engine. So, please define USGS and FAO.**

**Response:** Thank you for your very helpful feedback and the detailed checks. We have revised line L398 to expand on the acronyms as follows.

**Edits Made:**

* L395: Acronyms updated as shown in red:

“ For the non-agricultural sectors (domestic, electricity, manufacturing, and mining), the same underlying population map is used to downscale water use. For irrigation, Huang et al. 2018 use United States Geological Survey (USGS) and Food and Agricultural Organization (FAO) AQUASTAT irrigation data, whereas the current version of Tethys uses crop landcover maps from Demeter.”