

## ***Interactive comment on “A dataset of distributed global water withdrawal from 1960 to 2017” by Denghua Yan et al.***

**Anonymous Referee #2**

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I carefully read the paper by Yan et al.. This paper appeared to be particularly clear, well written and easy to follow. Scope and objectives are stated clearly, the description of method is systematically, and the presentation of results is rather straightforward. They describe the method of obtaining the water withdrawal with high resolution in the world from 1960 to 2017, also provide the first global water withdrawal data set that would hopefully be applied in future. I appreciate this kind of study on the relationships between global water withdrawal and land use. The authors highlight the following points from their results: 1) The need and importance of water withdrawal in the world; 2) The product set enhance the accuracy and spatial variability of water withdrawal data; 3) The product set can reflect the space-apace changes of water withdrawal. Overall, I consider that, after revisions, this paper has the potential to become a timely

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and welcome addition to the literature. Specific comments: Line 16-17: I think it is necessary to indicate the resolution of the dataset in abstract. Line 23: Please refine the definition of water withdrawal and unify the use of 'water withdrawal' in the manuscript. Line 30: Change the word "account" to "accounts". Line 38-41: Please rewrite this sentence to clarify the disadvantages of traditional methods. Line 45-46: In abstract: "... regional or national governments and interpolating and extending them to specific land uses will maximize data accuracy", this sentence is the premise of the manuscript, should explain it in detail in the introduction. Line 47-48: There are some speculations in these sentences. Please add relevant references. Line 71-72: "...using EXCEL or MATLAB", please describe briefly the difference between the two software. Also, the version of the software should be mentioned. Line 87: The source of Globeland30 should be mentioned in the manuscript. Line 95-101: Also, there are some speculations in these sentences. They should be supported by reference. Line 102: This part is the key to the manuscript. I recommend to add it to Figure 1, which could facilitate further understanding of the choice of data interpolation method. Line 174: If I get through it well, the artificial surface part represents industrial and domestic water, and cultivated land represents most agricultural water, while this part still needs to add references to support your manuscript. Line 192-205: The comparison is not intuitive between the two pictures. I recommend keeping the division interval of the two figures consistent, so that the reader can intuitively learn the advantages of the new spreading method. Line 204-212: In this part, I can't distinguish whether the author only verified these two countries or use these two countries as examples for research. Line 220: Also, I'm not sure if the units in Figure 4 are correct. The manuscript mentions that the fitted water withdrawal differs from the official data by less than 10%, but it looks less than 0.25% in the figure.

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