

Final responses “Quantifying the Impacts of Compound Extremes on Agriculture and Irrigation Water Demand” by Iman Haqiqi et al.

Comments and Responses to Anonymous Referee #2

Overall:

- 5 **The paper has been significantly improved. However, it still needs further refinement.**

The authors would like to thank anonymous referee #2 for his/her helpful comments and for acknowledging the improvements made.

My major comments are:

- 10 **1- The first two sections (introduction and method) are still chaotic. It is not easy to follow, many bits and pieces were presented without a flow/structuring. This makes it difficult to read and capture the essence.**

These two sections are revised substantially to improve the flow of the paper as described below.

- 15 **2- On the contrast, the results, discussion and conclusion sections were really neatly written/revised. The difference in writing, organization/structure and clarity between those two parts is very obvious. I think the authors can further improve the first two sections as they did for the last three.**

Thanks for acknowledging the improvements of the Discussion and Conclusion sections.

Introduction:

- 20 **3- Line 19: the starting sentence to the article is awkward. I recommend the authors first guide the reader through the subject and later define what they did. Also, please use past tense, not present, in describing what was done. I also recommend not to use “we” type of personal pronouns.**

a) This paragraph has been revised. So, the paper starts with an introduction to the subject.

b) Also, the manuscript is revised to employ the past tense for describing what was done.

c) As advised, the use of first person is avoided in most of the parts of the revised manuscript.

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- 4- Line 33: this is a repetition. The reader can understand what was written before, peer understanding.**

This sentence has been removed.

- 30 **5- The use of language in telling the narrative in the introduction section is confusing. It is like a combined bits and pieces but lacks flow of a narrative. This section still needs a thorough (not grammatical) editing to detect**

such issues. There are repetitive sentences and statements. The first paragraph can be divided into two or three as well.

The introduction section is revised substantially in an attempt to provide a better flow. The repetitions are eliminated and the first paragraph is shortened.

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6- Line 52: please avoid using “we”, and who do you mean by “we”?

The authors tried to use third person sentences in the revised manuscript.

40 **7- After line 52: the authors in this revised form again starts the reader education about “textbook” information. I don’t see why any reader would like to read such information. If someone is interested in fundamental agricultural soil moisture relations, they can read a book. In this form, the article is still too long and many unnecessary statements.**

The paragraph is shortened in the revised manuscript trying to avoid the use of textbook information.

45 **8- “Beneficial heat is less beneficial without sufficient soil moisture. On the other hand, soil moisture is not beneficial without sufficient heat for plant growth. Harmful heat can be less harmful when there is enough soil” These statements are like taken from a guidebook.**

This sentence is removed.

50 **9- The authors are telling us limitations of previous studies a lot, however no insight about if their study response to those limitations.**

The paragraph on the research gap is shortened. Only relevant limitations are discussed to show how the current study fills the gap.

55 **10- Line 70: this is a conclusion statement!!!**

This sentence is removed.

Methods:

60 **11- First sentence: how do the readers supposed to know what the referred studies did and what they are about? Please revise this section.**

This section is revised. The revised starting paragraph of the Methods section provides sufficient information about those studies.

12- Line 76-78: these two sentences are not needed. The information given after is enough for the reader.

65 This sentence is removed.

13- First paragraph: according to the author's description, the 3rd option is conditional, please correct it.

This sentence is removed. Instead, the metrics are introduced in the data processing section.

70 **14- Line 88: which metrics?**

This sentence is removed. The compound metrics are introduced in the data processing and model sections.

15- Line 98: the section number should be 2.1.1, not 3.3.1, please correct all section numbering

The section numbers are corrected in the revised manuscript.

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16- In data section, many equations were provided. This section is a mix of data, assumption and method. Please either change the section heading or only provide data sources. Furthermore, this section is too detailed for the main text, most of it can be taken to SI.

80 The Data section is divided into two parts. Section 2.1 describes the data sources and section 2.2 explains the data processing. Also the soil moisture Module is moved to the SI.

17- Estimation strategy section can be taken from here and described in SI. Same for decomposition method.

These sections are moved to the SI.

85 **18- It is very challenging for the reader to follow the content in this section. . The authors can re-organize this section by first describing the models used, their differences, input data resources. Then provide fundamental equations. The rest can be provided as SI. An overview of the models, what they refer to, major differences, metrics used, source of data can be provided in a table so that reader can follow easily the results by checking what has been done in each modelling effort. In the current, flow of the text is confusing.**

90 The Methods section is shortened and reorganized. As mentioned above, the soil moisture module, estimation strategy, and decomposition methods are moved to the SI. Further, Table 1 is revised to show an overview of the models and the major metrics used in each model.

Results:

19- Line 280: Figure 2 doesn't show precipitation.

95 Thanks for catching this. It is corrected to Fig 3.

20- This section was improved significantly and nicely written.

Thanks for acknowledging the improvement of the Results section.

Discussion:

100 **21- Line 397: is it a comma or a stop?**

Thanks for catching this mistake. It should be a stop.

Conclusions:

22- Nicely written.

105 Thanks for acknowledging the improvement of the Conclusion section.