

Reply to the comments made by the Referees and the editor

Firstly, we would like to express our appreciation for the referees' and the editor's thoughtful comments and constructive suggestions.

Our replies to the specific comments made by referee #1 are given below. Their comments are written in regular font style, and our reply is written in italic style.

Reply to Referee #1

General Comments: This manuscript analyzes the performance of a coupled hydrologic-crop growth model (Hydrus-1D and WOFOST) against the field observations while evaluating it further through uncertainty and sensitivity analyses. In addition to the model simulations, an ensemble approach was used for predicting the probability of crop production, with special concern on the impact of reduced irrigation. The manuscript is related to a timely, important study. However, there are major flaws in the writing and organization of the manuscript. It has too much information of the methods used, and the methods have been given even under Introduction and Results sections. It could be greatly shortened by avoiding unnecessary details. Also, certain mistakes in grammar and punctuation need to be corrected. Therefore the manuscript needs major revision before acceptance for publication.

Reply: The organization and structure of manuscript is adjusted. The mistakes in grammar and punctuation are also corrected.

Specific comments:

1. Please be consistent in using the same tense throughout the text. For instance, the Abstract itself has used both present and past tense. The same could be found in the other sections, as well.

Reply: The tense throughout the text is corrected.

2. P 3844 L 4- P 3845 L 14: Although there is good information in this para, certain information is not directly relevant to the subject area. Therefore I suggest deleting too much unnecessary information given there in trying to justify the importance of UA/SA.

Reply: Unnecessary information is deleted.

3. P 3844 L18: Delete 'is' after 'e.g.'.

Reply: Deleted

4. P 3844 L26-28: What you mean here is not clear.

Reply: "Sensitivity analysis was used to identify the effect of model parameters and structure on the output estimation. Uncertainty analysis quantifies the variability of the output caused by the

incomplete knowledge or misspecification of the modeler.” is replaced by “UA/SA analysis is used to quantitatively identify the effect of model parameters and structure on the output estimation.”

5. Please check for proper punctuation throughout the text.

Reply: *Punctuation throughout the text is checked.*

6. P 3846 Section 2 and the sub sectors should go under Materials and Methods.

Reply: *Contents in Section 2 have been moved to correct place.*

7. P 3846 L3: Please insert ‘of’ after ‘optimization’.

Reply: *Inserted.*

8. P 3848 L 1: How did you obtain the ‘development-dependent’ SLA?

Reply: *SLA is included in maize parameter data set. The characteristics of the maize variety studied here are similar with those of grain maize 203 variety of Europe, such as drought-resistant, cold-resistant, plant height, leaf width, full grain, etc. So, the maize data set (MAG 203), which is provided by European Community (Boons-Prins et al., 1993), are chosen for the parameters of crop characteristics in the model.*

9. P 3848 L19: Change ‘maintenance growth respiration’ to ‘maintenance and growth respiration’.

Reply: *Changed.*

10. Materials and Methods section is too long. Probably you should delete some of the detailed equations given for the HYDRUS-1D model, and simply give the relevant reference.

Reply: *We have simplified the information of the methods used. Detailed information about methods is deleted.*

11. P 3852 Section 4.1: Some of the details here should go to the Materials and Methods section. Please check carefully.

Reply: *Adjusted.*

12. Please thoroughly check your Methods after the suggested changes above, and shorten it.

Reply: *Checked and shortened.*

13. Most of the information given under the section 4.2 (P 3854-3855) either explains or discusses the methods. Therefore this section needs to be thoroughly revised to include and

discuss mostly the results.

Reply: *Information of explaining and discussing the methods has been moved to Materials and Methods. We only present and discuss the results of study in this section.*