

Interactive comment on “Contribution of the Sensitivity Analysis in Groundwater Vulnerability Assessing Using the DRASTIC and Composite DRASTIC Indexes” by Mohammad Malakootian and Majid Nozari

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Received and published: 2 December 2019

I am very much thankful to the reviewer for his/her deep and thorough review. I have revised my present research paper in the light of his/her useful suggestions and comments. I hope my revision has improved the paper to a level of his/her satisfaction. Number wise answers to his/her specific comments/suggestions/queries are as follows: Comment-1: The title should be modified. In fact, this is only a case study not a general evaluation of existing methods or a sensitivity test approach. To me, what the authors did is a characterization of a specific Iranian

C1

aquifer. This should be made clear in the title, rather than to generalize the results. In any case, the authors should not claim their study may quantify the contribution of ‘sensitivity analysis’ in groundwater vulnerability assessment. This is too broad but not what the authors actually achieved. Response: Manuscript title changed. The changes highlighted in the manuscript with the yellow color.

Comment-2: The authors should highlight their contributions in Abstract and Conclusion sections. Again, the contributions should be specific, not generally saying the sensitivity test is useful.

Response: The required changes were made. The changes highlighted in the manuscript with the yellow color.

Comment-3: Introduction. This part should be modified further. Apart from the English, the literature review on DRASTIC should be developed further. In the present manuscript, the authors only listed a few studies that apply the methods. They did not discuss the significance or the limitations of the approach. Also, the purpose of the research is introduced in a not very convincing way. Why the droughts and pumping make the studies on pathology and groundwater contamination undeniable? Response: The required changes were made. The significance or the limitations of the approach were added. The purpose of the research was revised. Due to recent droughts, this aquifer has been under heavy pumping stress to irrigate crops, which caused a graduated drop of water level. Consequently, this could increase contamination potential in the aquifer. The changes highlighted in the manuscript with the yellow color.

Comment-4: Methodology. The authors mixed the presentation of methods and data. This section should be called Methods and Materials (or Datasets). The authors should give support for the selected values for each parameter listed in all the Tables. How do you assign weights to each factor? Based on which data or

C2

information? Are these subjectively assigned or you have references?

Response: The required changes were made. The name of this section was changed. According to Aller et al.1985, weight factors are a constant value in all studies. But the ranges vary according to the type or amount of factors in each geographic area. Based on the degree of their impact on pollution, assigned a rank of between 1 to 10. Relevant reference was added. Of course, assigning rankings to each of ranges is based on an inherent mentality that can be one of the limitations of overlapping methods. As we mentioned in the introduction section. The changes highlighted in the manuscript with the yellow color.

Comment-5: Is it really useful to separate the components and discuss about their general functions? Consider to merge sections 2.3 to 2.10. These small sections make the presentation fragmented.

Response: The required changes were made. The changes highlighted in the manuscript with the yellow color.

Comment-6: Conclusions. Here the authors mentioned agricultural and industrial activities. However, these are not discussed in the main body of the Results section. How do you support your conclusion? I suggest the authors to make specific conclusions that are directly derived from study. To discuss about general concept based on this single characterization case study and sensitivity test makes no sense.

Response: The conclusion section was rewritten. The changes highlighted in the manuscript with the yellow color.

Comment: I marked a number of comments on English usage directly on the PDF file while I went through the manuscript (see the attached supplement file). I used the PDF file after the author's correction based on the comments from Reviewer

C3

#1. I want to point out that my corrections are not exhaustive. The authors should ask a native speaker to help to improve the English. Otherwise, it is too hard to comprehend the study as it is.

Response: Your valuable comments applied to the manuscript (in the supplement file). The manuscript was also edited by a native English editor.

Please also note the supplement to this comment:

<https://www.nat-hazards-earth-syst-sci-discuss.net/nhess-2019-181/nhess-2019-181-AC2-supplement.pdf>

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2019-181>, 2019.

C4