Natural Hazards
and Earth System
Sciences
Discussions

Interactive comment on "Evaluation of social vulnerability to floods in Huaihe River basin: a methodology based on catastrophe theory" *by* W. J. You and Y. L. Zhang

Anonymous Referee #1

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Overview:

This manuscript describes an attempt at evaluating the social vulnerability to floods in the Huaihe River Basin. The evaluation was done based on the catastrophe theory and the index system includes a) the population related characteristics; b) the economy related metrics; and c) the flood prevention related variables. Some of the variables from each of these three groups were selected to calculate the population, economy, and flood prevention vulnerability. On top of that, the social vulnerability, as a comprehensive vulnerability index, was calculated by averaging the three vulnerability indices and ranked. The spatial distributions of the population, economy, flood prevention, and

social vulnerability were mapped.

General comments:

Overall, the present study is an interesting attempt to study the floods in the Huaihe River Basin. However, few major concerns need to be addressed prior to the publication. Detailed comments to the authors, which might be helpful to improve this manuscript are given below.

1. Language issue: There are too many grammatical errors in the manuscript, making it difficult to read and understand. For example, I read "indexes" throughout the document. It needs to be edited by a native English speaker.

2. The abstract is meaningless in that it does not contain much information. What is the result of this work?, what is the implication of this work? We cannot get this important information from the abstract. The authors need to rewrite this section?

3. The data and method section: The selection of variables were done through the principle component analysis. However, no explanation about why some variables were selected while some were not is provided. For example, the "resident female population ratio" was selected as a negative index, while why the "resident male population ratio" was not selected as a positive index? Also the classification of variables is not clear. For example, I think the variable "number of cars and motorcycles ownership per ten thousand people" indicates the economic condition rather than the flood prevention level of a city (table 3).

4. The results section: to be frank, after read this manuscript, I cannot summarize the findings of this work in a few sentences. The authors should extract the essence from the data and present it as the result.

5. The manuscript is underprepared. Just few examples. They used two lines (P4945 L21-23) to define "positive "indexes"" twice. In lines 13-15 (P4946) they states that "the control variables are B1–B3, as shown in Fig. 1. Then catastrophe model of

social vulnerability in Huaihe River basin 15 will be created based on the normalized formula shown in Fig. 2.", however, I cannot either find variables B1-B3 in Fig. 1 or find the normalized formula in Fig. 2. Furthermore, the legends in Fig.s 3 and 4 are not consistent with the associated figure captions. This carefulness makes others difficult to trust the results of one's work.

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