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# ***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**

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Many thanks for the insightful comments and suggestions of the referees. I have made corresponding revision according to their advice. The following is the answers and revisions I have made in response to the reviewers' questions and suggestions on an item by item basis. 1. We have made corresponding changes, some grammar and spelling errors have been corrected. 2. The abstract has been revised thoroughly, according to the logical order of raise of problem, main method and data, conclusion and significance. 3. The data and method section: The indexes of social vulnerability are complex, principal components analysis can be used to select some representative

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indexes, which can represent one type of indexes. For example, the “resident female population ratio” was selected, it represented a kind of gender indexes. While the “resident male population ratio” was contained in gender indexes, so it can be replaced. The scholar Cutter first used PCA method in indexes selection in 2003. Mathew C. Schmidlein believed that ‘decreases in the scale of aggregation were found to result in decreases in the variance explained by principal components analysis, and in increases in the variance of the resulting index values’ in the paper ‘A sensitivity analysis of the social vulnerability index’. So choosing representative indexes with the method should be the indispensable step in the process of vulnerability evaluation. 4. The results section: The results should be concluded again. The paper presented the macro distribution of vulnerability in Huaihe River. In order to get more detail, we made a discussion of vulnerability from three aspects, which are population, economic, flood prevention, each distribution and influence factors have been presented. 5. There are some mistake in the number of figures, I will correct conscientiously. There are misunderstandings in the sentence “Then catastrophe model of social vulnerability in Huaihe River basin 15 will be created based on the normalized formula shown in Fig. 2”, which should be changed as “Then catastrophe model of social vulnerability in Huaihe River basin shown in Fig. 2 will be created after the normalized formula”

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