Dear reviewer,

Thank you very much for your attention and the referee's evaluation and comments on our manuscript "Debris Flow Risk Mapping Based on GIS and Extenics".
We have studied the valuable comments, and tried our best to revise the manuscript. The respond to the reviewer's comments are as follows:

Comment 1: The methodology to compute correlation factors and weights is not defined in an understandable way. The general concepts of extenics methods (and its advantages over other methods) has to be defined more precisely and the assossiated mathematical description has to be improved. The symbols used in the equations are not all defined and when they are, it is often without any explanation. Furthermore, the mathematical operation are not explained. For example in eq. 1, M, aj1-ajn and bj1-bjn are not defined, as the operation <a, b> and finally what does exactly means this kind of matrix [] (with columns of different size). Thus, this section is very confused and almost impossible to understand, that takes all credibility away from the results.
Reply: According to the reviewer's comment, we will compare and analyze the evaluation results of existing debris flow risk assessment methods in first section, the third paragraph. We will make clear statement about the advantages and disadvantages on the existing assessment methods, and give the summary about the difference between extenics approach and other methods on evaluating debris flow risk. At the same time, we will improve the interpretation of symbols in manuscript formulas.

Comment 2: The input variables (for instance the historical data page 6, line 34 or rainfall page 7, line 11) are used to verify the data obtained. It is absolutely mandatory to find other parameters (or methods) than the input ones to check the results. Otherwise, they do not have any scientific validity. Moreover, to ensure the validity of the Class V, you claimed that the area (covered by the Class V) is constituted by (among other things) large relative elevation. However, when one looks at the debris flow risks as a function of the relative elevation, one sees that terrains with largest relative elevation fall in Class I and II. As far as I understand, there is a big conmtradiction here.
Reply: Thank you very much for the comment of the reviewer. I found that the data in the article were not introduced rigorously. The historical debris flow data (1981-1994) are used to calculate the correlation degree in this manuscript and the historical debris flow data (1995-2004) are used to verify the model. I will add the corresponding explanations in section 2.2 Data.

Comment 3: Some of your results are not intuitive, in this case a comment would be helpful. For example, risks become smaller with larger slope (page 5, lines 24-25). In this case, it is written: "For the valley with smaller slope, [...], smaller shear force means larger stability and lower probability of debris flow". It seems for me that your results are in complete disagreement with your interpretation, therefore an explication is expected and needed.
Reply: About the reviewer's comment, we will re-examine the conclusions in the manuscript and improve its logic and grammar. We will intuitively display the results of the analysis in the

main sentences of the paragraph.

Comment 4: Your study is based on field and historical data, which are not well described in the paper. It misses especially a discussion about the quality of the data and the associated uncertainty of measurement.
Reply: According to the reviewer's comment, we will add a detailed description of the different factor datasets in section 2.2, and discuss the accuracy of the dataset. And meanwhile, giving the reason why the dataset can be chosen.