

## ***Interactive comment on “Empirical Study on Drought Adaptation of Regional Rainfed Agriculture in China” by Z. Wang et al.***

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Detailed responses to the reviewer' comments (nhess-2016-94) of " Empirical Study on Drought Adaptation of Regional Rainfed Agriculture in China"

We appreciate the valuable suggestions and comments of the expert reviewer, which help us knowing our shortages. Below is our point-by-point response to the comments of the reviewers.

1. The article is poor in quality in both its contents and its methodology used. The research is rather lengthy and contains lots of descriptive information, lacking serious analysis with quantitative methods.

Response: This article is focus on the on-the-spot investigation and analytic demon-

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stration of a special county located in farming-pastoral ecotone of China. We collect the meteorological data, social-economic development data and interview data in different time periods, and using empirical research methodology intuitively analyze the interrelation among natural environment change, human environment change and adaptation measures change, which presented by a timeline. The assessment and analysis method of natural environment change factors and human environment change factors is quantitative method.

2. The conclusion that the interaction among environmental change (E), development demand (D) and adaptation measure (A) maintain the dynamic balance of the regional natural-social-economic compound system is common sense to public. The conceptual model of the agricultural drought adaptation mechanism built in this study is therefore of quite low value in research point of view.

Response: This research tries to analysis how agricultural drought adaptation happens and influences environment and development of specific areas based on an empirical research method at farmer and government level, through the research, we find that the effects of adaptation measures often had an inertia, which sometimes had a more profound impact beyond our expectation. Thus, when adaptation measures are implemented, it is necessary to make macro and long-term decisions and adjust these measures on a timely manner. The conceptual model of the agricultural drought adaptation mechanism and the interaction among environmental change (E), development demand (D) and adaptation measure (A) in the long historical period is still valuable for understanding of disaster adaptation

3. In page 4 "The population of Shidian County is approximately 33 million. It has a total land area of 2,009 hectares and a per capita cultivated land area of 0.07 hectares." It is almost half of the population of France. How a small area like this holds such large population for Shidian, a small county in Yunnan province of China? Response: As for the population of Shidian County, we feel so sorry about our mistakes which should be 330,000 people of the whole Shidian. Once again, we will carefully check all the

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content to avoid the happening of this kind of mistake.

4.The title suggests that this is an empirical study on drought adaptation of regional rainfed agriculture in China. Actually, the authors only select a small county as the study area. As China has large area of rainfed agriculture, it is questionable for the representative of the study area.

Response: Study area Shidian County is located in farming-pastoral ecotone in southern China, which is a typical rainfed agricultural area that is affected by the southwestern subtropical monsoon. This study reveals the mechanism of agricultural drought adaptation in a macroscopic perspective, and provides some references on measures and strategies for drought adaptation in rainfed agricultural areas. As a case of typical area of rainfed agriculture, Shidian County has a good representativeness for the drought adaptation study.

5.In terms of the drought indices, the authors used the De Martonne's aridity index (Iar-DM) , the ratio between the mean annual values of precipitation (P) and temperature (T) plus 10°C (Martonne,1926). As both soil moisture or evapotranspiration can more directly reflect the drought condition in the rainfed agriculture area, the selection of the index from lots of aridity indexes should be reconsidered.

Response: This suggestion is very valuable. De Martonne's aridity is indeed more applicable to analyze the drought condition on a large scale, but it is also a useful method to analyze the climate drought. We choose this index is considering the accessibility and effectiveness of data.

6.Check some types and spelling errors. Response: The reviewer will correct about some minor issues in the revised condition. These types and spelling errors will be checked in the next manuscript.

Finally, I express our sincere thanks for your suggestion.

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