

## Response to RC1

Dear Reference

Thanks for your thoughtful comments and suggestions. We believe that they are helpful to further improve the clarity and quality of our manuscript. We are sure that your technical comments and suggestions are suitably addressed as follows.

**Comment:** 1) You need to deeply revise the English in all the document, otherwise it is difficult to understand.

**Response:** Thanks for your comments. All will be modified in revised manuscript.

**Comment:** 2) The manuscript is not scientifically well written. Check the comments regarding the citations, the figures and the tables.

**Response:** Thanks for your comments. All will be modified in revised manuscript.

**Comment:** 3) The conclusions are very vague and this is not what a external reviewers expects from reading the title of your work. In an international journal such as LDD, one would expect new insights on the influence of society and KDR, to give an example. Please revise the conclusion before thinking on submitting the manuscript again.

**Response:** the conclusions has been revised according to your suggestions, thanks.

**Comment:** If it is irrational...how can we explain the theory behind it? I do not understand what the authors want to explain in the sentence.

Is it to explain if there is a relationship between irrational activities and KRD?

**Response:** The steep slope land cultivations are irrational, because it is the main reason of KRD. The author want to explain the theoretical reasons why the local farmers took irrational activities such as steep slope land cultivations, the goal of the author is to analyze the genesis of KRD through typical case studies.

**Comment:** If you are talking here about the results, you do not need to explain the methods (highlighted in yellow).

**Response:** yes, modified in revised manuscript.

**Comment:** I would write this before. Explain in a sentence before the Results you are talking about, the methodology used (briefly).

1. Aim of the paper+hypothesis
2. Methodology used
3. Results
4. Conclusions

**Response:** The abstract is modified according to the Reference's suggestions.

**Comment:** Where are the statistics and the numbers to confirm this?

**Response:** This sentence is modified as follows: The KRD phenomenon occurred in six typical of peak-cluster depression areas confirms the hypothesis suggested by this paper is correct.

**Comment:** You can improve the definition of 'Desertification' by including the definition given by the IPCC.

**Response:** because the definition of UNCCD is the internationally agreed meaning, so, the author select this definition.

**Comment:** Check this citation: "Le Houérou HN, 2009

**Response:** This citation is checked.

**Comment:** This sentence does not make sense. Please consider to revise it. Also, do not use contractions when writing a scientific report. "therefore, some Chinese scholars they don't state explicitly that Chinese desertification includes the Karst Rocky Desertification in southwest China (Miao et al., 2015; Wang et al., 2015)."

**Response:** This sentence is modified as follows: therefore, when some Chinese scholars refer to desertification, they do not state explicitly whether Chinese desertification include the Karst Rocky Desertification (KRD) in southwest China (Miao et al., 2015; Wang et al., 2015).

**Comment:** I am sure you can provide more citations about karst in Europe

**Response:** the author increase the citation.

**Comment:** You need to explain more about the Karst area in China (references needed here as well).

**Response:** yes, some sentences is to be supplemented: In the karst areas of southwestern China, carbonate rocks cover about  $42.6 \times 10^4$  km<sup>2</sup>, largely in Guizhou Province, Guangxi Zhuang Autonomous Region and Yunnan Province (Wang, et al.,2005).

**Comment:** Who is Wang Shijie?

Please remember that you are trying the make the international scientific community to pay attention to your work. You need to be precise and concise so we can understand and follow you.

**Response:** this is modified.

**Comment:** Same comment as before

**Response:** this is modified.

**Comment:** Please revise this sentence as it is hard to follow and understand.

**Response:** this sentence has been modified.

**Comment:** I think you want to say:

The KDR phenomenon in karstic mountains in Southwest China, is the result of physical and human factor. The incentive of this phenomenon is the irrational human activity, the cropland per capita and the rural settlements.

**Response:** Yes, this sentence has been modified.

**Comment:** Please revise the English

In the severe KRD area, sloping land is overly reclaimed, why farmers are doing this, the reasons are attributed to the macro socio-economic circumstances of rural locality (Yan & Cai, 2015).

**Response:** this sentence is revied as: The reasins why farmers reclaimed overly sloping land

induced severe KRD are attributed to the macro socio-economic circumstances of rural locality (Yan & Cai, 2015).

**Comment:** This should be explained at the beginning of the introduction.

An Introduction needs to be very precise as it is the part of the manuscript in which we explain the problem we want to solve, or understand.

**Response:** the structure of the introduction is revised by author according to this suggestion.

**Comment:**

So, the aim of the work is:

- 1) To understand the social activities and behaviour
- 2) To understand the relationship between those activities and the KDR mechanism

**Response:** according to this suggestion, it is modified by author as follows:

So, the aim of the work is:

- 1) To understand the characteristic of flat cropland distributed at different karst topography and combined pattern.
- 2) To understand the relationship between farmland resources, settlement patterns and the mechanisms of KRD taking place in Karst mountains..

**Comment:**

'Selected'

When revising the text, please consider which tenses to use when writing (present or past).

**Response:** yes, thanks a lot.

**Comment:** We selected a total of XXXX gorges: (and here you name the gorges)

**Response:** We selected a total of 6 areas:

**Comment:** Have different...

**Response:** the author modified it.

**Comment:** Does this correlate with the gorges explained before? Which gorges have depression-canyons type?

The explanation of the study area is not very clear for the external reader.

**Response:** the statement of gorges is not correct, the author has modified it. This area distributes at Beipanjiang town in Zhenfeng County, this area include two terrain, the Peak cluster depressions in plateau and gorge when terrain transform from to plateau to the Beipanjiang valley.

**Comment:** This sentence should be at the beggining of the explanation of the study area.

**Response:** the author has modified it

**Comment:** Which statistics?

**Response:** the agricultural statistics

**Comment:** What did they comprise? When were they done?

**Response:** field surveys distinguishing the interpret mark of land use and KRD in 2011 and 2012.

**Comment:** Following which criteria?

**Response:** by integrating the the national standardized land classification scheme and the land use types of local area,

**Comment:** I do not understand the 'judgment on the KDR land is basically the same nowadays'...what you mean??

**Response:** Nowadays, the same indexes are used to indentify the KRD by scholars. The author has modified it.

**Comment:** I would delete this from here and put it as a footnote in the table.

**Response:** the author has modified it.

**Comment:** Please, revise the quality of the figure. It is very difficult to see the legends, the size of the images are different and the overall figure needs to be rethought.

**Response:** the author has modified it.

**Comment:** All of this is ok but...

1) Which statistics have you performed? How and with which package?

2) Where is the social aspect methodology used defined? You described cities, societies etc. in the study area...but nothing about social aspects in the methods. Information missing here.

**Response:** 1) the local agricultural statistics are used to verify further the area of flat cropland and slope cropland .

2) When we introduced the study area, we described 6 spots belong to Beipanjiang town in Zhenfeng County, Pingle town in Anlong County, Wangjiazhai small watershed in Qingzhen City, Houzhaihe in Puding County and Dongtang town in Libo County, we mean to introduce the administrative division.

The natural and socio-economic backgrounds can represent the typical Karst area in southwest Karst region of China, we do not use the livelihood data of local farmers, the number of population who undertake the agriculture indeed in this manuscript.

Thanks for your comments and we will adopt the suggestions in furthermore work.

**Comment:** What do you mean?

**Response:** It is modified as follows: different combinations of small terrain have different proportion of flatland terrain (referring to depressions in this paper) and form different area proportions of cropland resources.

**Comment:** Usually refer the area to  $\text{km}^2$

**Response:** because the area of cropland patches in study area is small, so, we refer it to  $\text{hm}^2$  (hektare), not  $\text{km}^2$ .

**Comment:** The most...what

Please give more information

**Response:** it is modified as follows: the number of flat cropland patches which range in sizes from  $\leq 0.10 \text{ hm}^2$  to  $0.1-1 \text{ hm}^2$ , are the most.

**Comment:** Revise the sentence “The number of croplands in size from 0.1-1 hm<sup>2</sup> to 1-5 hm<sup>2</sup> are 162 and 39, accounting for 28.24% and 36.12% of the total cropland area respectively.”

**Response:** it is modified as follows: The number of croplands in size from 0.1-1 hm<sup>2</sup> to 1-5 hm<sup>2</sup> are 162 and 39, and their area account for 28.24% and 36.12% of the total cropland area respectively.

**Comment:** Statistics missing. Are there differences?

**Response:** there are obvious differences

**Comment:** Please, check in international journals how to name the XY axes of a figure.

**Response:** the author has modified it. the author delete the “3.3 The relationships between cropland settlements and KRD in study area ”.

**Comment:** Where is this statistics? I can not find any stats along the manuscript.

**Response:** the author has modified it.

**Comment:** Delete "THE". Please, add the statistical information required for the analysis you have performed.

**Response:** the author delete the “3.3 The relationships between cropland settlements and KRD in study area ”.

**Comment:** Why did you do that? What was the point?

**Response:** the author supplement: Inorder to reveal the corresponding relation between the change of cropland and the change of KRD around the settlements,

**Comment:** I do not understand what the authors want to say with this

**Response:** it has been modified as follows: Correspondingly, the proportion of LKRD is highest within 200-400m buffer distance, and reduces from peak cluster-canyon, continuous

deep-depressions, shallow-depressions, peak cluster depression-valleys, this proportion in turn.

**Comment:** This is not a discussion.

A discussion is the section of your manuscript in which you DISCUSS/COMPARE your work with other scientists all around the world. The discussion is also the part of your manuscript in which you mention and show to the scientific community your findings, relating them to the work of other scientists.

Please consider to deeply revise it before submitting your work again.

I would suggest the authors to check how to write a discussion (download papers in English from international journals).

**Response:** According to these suggestions, the author delete the “3.3 The relationships between cropland settlements and KRD in study area ”and “4.1 The process of KRD in peak cluster depressions ” is moved to “3 Results and analysis”.

**We increase COMPARE** of our work with others in the revised manuscript:

Generally speaking, lithology and soil type and road influence are identified as the leading factors influencing KRD (Xu & Zhang, 2014; Yang, et al., 2013), and the succession of KRD had different impacts on soil fertility indicators (Xie et al., 2015), or attribute the genesis of KRD to land mismanagement of local household (Wu et al., 2011), or hold that climate change accelerate rocky desertification in the karst areas (Xiong, et al., 2009), but do not clarify why the local farmers take land mismanagement (Yan & Cai, 2015).

**Comment:** This conclusions are very vague and this is not what a external reviewers expects from reading the title of your work.

In an international journal such as LDD, one would expect new insights on the influence of society and KDR, to give an example.

Please revise the conclusion before thinking on submitting the manuscript again.

**Response:** the conclusion is revised as follows:

(1) The KRD area and distribution is related to the quantity and distribution of cropland and settlement in the six study points, KRD is a kind of response of this interaction relationship between human (settlement)-environment (cropland).



(2) SKRD only happened in areas with low land carrying capacity and big population pressure.

(3) The characteristics of KRD are: 1) population pressure exceeds land carrying capacity; 2) lack of arable depression resources makes slope land arable; 3) low land carrying capacity is the root cause of Karst rocky desertification.

**Comment:** If this work aims to be published, you have to make it international.

You have to provide international citations, in English, so the rest of the scientific community can access and understand your work.

Also, check other international journal in order to see how to cite properly.

**Response:** Yes, it is. The author increase the international citations, in English. There are only six Chinese citation, now.