Solid Earth Discuss.,
doi:10.5194/se-2016-127-AC4, 2016

Solid Earth Discussions
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Interactive comment on "Application of a modified distributed-dynamic erosion and sediment yield model in a typical watershed of hilly and gully region, Chinese Loess Plateau" *by* Lei Wu et al.

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Received and published: 19 October 2016

Response to Referee's Interactive comment on Solid Earth Discuss., doi:10.5194/se-2016-127, 2016.

Journal: Solid Earth Authors: Lei Wu, Xia Liu, Xiaoyi Ma Title: Application of a modified distributed-dynamic erosion and sediment yield model in a typical watershed of hilly and gully region, Chinese Loess Plateau

Reviewer 1

DOI: 10.5194/se-2016-127-RC1, 2016

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Discussion paper

1. The figures can be improved in the manuscript. $\surd$ The Figures in this manuscript have been improved according to referee's suggestion. Please see Figure 1, 2, 3, 4, 7, 8, 10 in the back figure part of the manuscript. Thank you very much.

2. The authors must highlight previous research in the study area. $\surd$ We have added the previous research in the Loess Plateau, and we also propose this study based on the above analysis. Please see the Introduction section, Thank you very much.

Reviewer 2

DOI: 10.5194/se-2016-127-RC2, 2016 1. The language quality of certain sentences in this manuscript still needs to be improved. Therefore, a thoroughly check would be recommended. $\surd$ Thank you very much for your suggestion, we have thoroughly checked the manuscript and modified the English language. Thank you.

2. The Results section could be further discussed with the consideration of relevant literatures. $\surd$ We have further discussed the results section with the consideration of relevant literatures. Thank you very much for your suggestion.

3. The conclusion could be further summarized through a solid data support. Therefore, a rearrangement of the conclusions would be recommended in the revised manuscript. $\surd$ We have rearranged the conclusions according to reviewer's suggestion. Thank you very much.

Reviewer 3

DOI: 10.5194/se-2016-127-RC3, 2016 The proposal named: Application of a modified distributed-dynamic erosion and sediment yield model in a typical watershed of hilly and gully region, Chinese Loess Plateau, is of great importance. However, prior to the publication the manuscript has to be improved in general aspects. 1. Some sentences are written in poor English. It would be helpful if an English native speaker reads carefully through the text. $\surd$ Thank you very much for your suggestion. We have modified the English language of the whole manuscript.

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Discussion paper

2. In the methodology section, specifically review the method of extracting the LS-factor and the K-factor for this mountainous terrain. √ Thank you very much for your suggestion. The selected calculation formula of LS factor is suitable for this mountainous terrain. We have specifically described the method of extracting the LS-factor and the K-factor in section 2.4. Thank you.

3. The main problem of the USLE/RUSLE to be applied in other regions of the world was the percentage of organic matter for the k-factor analysis. How was addressed this issue with your proposal? √ Thank you very much for your suggestion. Physical and chemical properties (organic matter, soil texture, sand fraction, clay fraction, structural coefficient, permeability level) are obtained from âŚă Soil Survey Office in Shaanxi Province. Dataset of the Second Soil Survey in Shaanxi Province (1979-1990), and âŚą Soil quality background in Loess Hilly Region (2000-2008). We have described this data sources in Table 1.

4. To calculate the k-factor; It is not described clearly how the data were taken for structure and soil permeability. √ Thank you very much for your suggestion. We have added the description of the data sources in Table 1 and section “2) Soil erodibility factor”. Thank you.

5. How it was developed the interpolation data for the different factors, considering that you have different formats as shown in Table 1. √ Thank you very much for your suggestion. According to spatial interpolation and spatial calculation in GIS program, the spatial distributions of each factor are all spatially calculated by the optimal calculation formula of different factors ().

6. If the main objective of your proposal was to make a spatial and temporal study, before and after agricultural production. Why do not describe a rate of decrease in the forest or grassland? Yourself makes a previous analysis of this evolution in the paragraph (2.3) of materials and methods? √ Thank you very much for your suggestion. We have added the changing situation of land use types between 1995

and 2010 in section 3.4. Thank you.

Please also note the supplement to this comment:
http://www.solid-earth-discuss.net/se-2016-127/se-2016-127-AC4-supplement.zip

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