

Interactive comment on “Technical notes: Rainfall threshold calculation for debris flow early warning in areas with scarcity of data” by Hua-li Pan et al.

Anonymous Referee #2

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General comments: The paper deals with an interesting topic, which is completely within the scope of the special issue. The study area is of particular interest given the amount of loose sediments that become available after the Wenchuan earthquake. Thus, the authors propose a quantitative method to identify the critical rainfall threshold for the triggering of debris flows in a data-poor area. This is an important contribution considering that in mountain areas the availability of data is often very limited and one of the major problems regarding the development of hazards studies. However, given the debris flows initiation mechanism (surface runoff erosion) the use of the API index should be better argued. For instance, if I understood it well the authors considered the cumulative precipitation of 20 days plus the 1-hour rainfall for the triggering of debris flows. Again, this must be deeply discussed given the debris flows initiation mecha-

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nism. Therefore, I think the manuscript could be accepted after major revisions.

Furthermore, some specific comments are listed below:

Regarding the structure of the manuscript, I would suggest placing the section “3.1 Location and gully characteristics of the study area” after the “1. Introduction” and before the “2. Materials and methods”.

Page 2, Line 48-49: Please, check the sentence because is not clear

Page 3, Line 58-59: The references should be chronologically displayed

Page 3, Line 67: Please, check how to cite the authors (and also along the manuscript)

Page 4, Line 88-91: Please, check the sentence

Page 4, Line 109-110: Please, explain how this was done

Page 4, Line 113-114: Please, explain why did the authors assumed a saturated condition to explain the debris flows initiated by runoff?

Page 5, Line 126-127: Please, provide some references that support this sentence

Page 5-6, Line 132-134: When you mention “the great amount of antecedent precipitation” you should clarify the temporal resolution

Page 7, Line 164-167: Please, provide references

Page 9, Line 221: Please, indicate the average slope angle of the main channel in degrees

Page 11, Line 247: Please, standardize the name of the gully along the manuscript. Sometimes is written as Guojuanyan gully, others as Guo Juanyan gully

Page 13, Line 281: In which way is evaluated the spatial variability of rainfall?

Page 17, Line 348: Replace “was present” with “become available”

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Page 17, Line 358: Please, check the equation number

Page 17, Line 361: Please, standardize the units used in Table 2 and Equation 3

Page 19, Line 391: Please, explain how equation 12 can be used to estimate the amount of solid material

Page 23, Line 441-443: Please, check the sentence

Page 23, Line 447: Please, refer which other factors should be addressed

Finally, I suggest a rereading of the text in order to correct some minor mistakes.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2017-333>, 2017.