

## ***Interactive comment on “Effectiveness and efficiency of slot-check dam system on debris flow control” by Y. H. Zou and X. Q. Chen***

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### Reply to Reviewer’s Comments

The authors thank the reviewer for the careful examination of the manuscript and concrete suggestions for improvement. The manuscript will be carefully revised according to the comments. Specific responses to the review comments are itemized separately for the reviewer.

The manuscript has been sent to be edited by a specialist so that the English would be proofed and grammar would be improved.

ABSTRACT

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Line 1, pg. 5778: The sentence in line 1 is 'Slot-check dam system'. We will check and correct the wrongly used plural form all over the paper.

Line 12, pg. 5778: The 'conserving efficiency' can be revised to 'sediment retention efficiency'. We will correct this all over the paper; 'Evaluation models' can be revised to 'estimation method'.

## INTRODUCTION

Line 2-4, 8-9, 17-18, 21-23, 24-25, pg. 5779: We will list the references in chronological order.

Line 12, pg. 5778: 'Evaluation models of the efficiency' will be specified to 'estimation method of the efficiency'.

## STUDY AREA

Line 118, pg. 5780: 'a typical debris-flow gully' will be revised to 'a typical debris-flow river basin'.

Line 27, pg. 5780: 'rain shower' will be deleted. Rainstorm here means a heavy fall of rain whose 24-h rainfall intensity is more than 50 mm.

Line 4, pg. 5781: 'river trench' will be revised to 'river basin'.

Line 12, pg. 5781: The check dams were built by the local government. The soil or geological information will be added to describe the basin.

## METHODOLOGY

Line 16, pg. 5781: More information about the variables measured and technology employed will be given in the revised version.

Line 19, pg. 5781: Resistance of such dams to the impacts of debris flow shows the effectiveness of a series of slot-check dams in sediment control and erosion prevention.

Line 22, pg. 5781: 'The efficiency to assess the function of the mitigation project has

been represented by several quantitative evaluation parameters' has been revised to 'Several quantitative evaluation parameters are used to assess the efficiency of these dams in debris flow mitigation. The possible surface erosion volume of the region vo. is measured by the local government.

Line 6, pg. 5783: The shape factor is related to the erosion ability of debris flows in previous studies and related literature.

Line 13, pg. 5784: The experimental tests for design of openings of slot-check dams for controlling debris flows in Annual study record of institute of mountain hazards and environment.

Line 17, pg. 5784: The sentence has been revised to 'By contrast, debris flow discharges from large slots.'

Line 6, 14, pg. 5786; Line 19, pg. 5787 and others: The figures will be re-numbered so as to be referred in order.

Eq. 24- 25, pg. 5786: The variables that without definitions will be defined.

## RESULTS AND DISCUSSION

Line 6, pg. 5787: The sentence will be revised.

Line 15-26, pg. 5787: The structure and content of those sentences will be revised.

Line 1, pg. 5788: Figure 5 corresponds to the field survey measurements.

Line 6-7, pg. 5788: The sentence will be moved to be included in methodology.

## TABLES

Abbreviations will be added in tables to facilitate the reader the interpretation.

Table 1: B is the average width of the stream. The origin of the discharges is provided from the hydrology calculation according the previous flood and debris flows by the local hydrological bureau.

Table 3: The efficiency is derived from the volume ratio. More explanation will be added in the text.

## FIGURES

Figure 2: They are slot check dams with several holes to favor the drainage of the structure.

Figure 7: More quantitative information will be added to make the design procedure more clear and useful.

## MINOR CORRECTIONS

Thank you for your advice. The manuscript has been sent to be proofed by a specialist. (a or the ) will be used at the beginning of sentences when required.

Line 23, pg. 5778: 'to' has been removed before inundate.

Line 17, pg. 5786: 'distant' has been revised to 'distance'.

Line 11, pg. 5788: 'slower' has been revised to 'lower'.

Line 13, pg. 5788: 'reservior' has been revised to 'reservoir'.

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