

## ***Interactive comment on “Flood discharge measurement of mountain rivers” by Y.-C. Chen***

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Dear editor and reviewer,

First I apologize to reply your questions so late. I thank you for your interesting to my paper. Your comments are very valuable and helpful for the modification that should let the readers much more clearly understand the theory and application of the paper. They will be added to the new version of the paper.

The method for measuring flood discharge of mountain rivers is described first. Then the data collected in the Nanshih River at the Lengsheng Bridge is used to show that the proposed method can be successfully applied to measure flood discharge. I will rewrite the abstract, introduction, and conclusions to more carefully and precisely claim the method using for measuring discharge of mountain rivers.

C6174

Discharges of streams and estuaries are successfully estimated by using the relation of mean and maximum velocities in United States, Taiwan, and Algeria. I will cite those references to show the application of the relationship between mean and maximum velocities in different rivers. Thus the proposed can be used not only in Taiwan.

In order not to mislead the readers, I will emphasize the importance of complete flood discharge measurement over the full cross section for establishing the relation of mean and maximum velocities. Once the relation of mean and maximum velocities is established, the discharge can be quickly measured by the maximum velocity on the y-axis.

Grammatical and writing style errors in the original version will be corrected by my colleague who is a native English speaker.

In Page 12656 Line 2. The paragraph will be rewritten as “The method applying available tools which are adapted for flood conditions can be used to quickly and accurately measure flood discharge.”

In Page 12656 Line 4. I rewrite the paragraphs as “Measuring flood discharge directly from mountain rivers by using conventional discharge measurement method is costly, time-consuming, and dangerous. Thus previous discharge estimations for mountainous area were typically based on indirect methods, which alone cannot generate accurate measurements”.

In Page 12656 Line 10. “a novel” is removed.

In Page 12657 Line8-11. It means that the conventional methods for directly measuring discharge usually apply velocity-area method. Therefore the current meter has to be placed at a desired location. More lecture reviews of discharge measurement methods using during flood such as dilution gauging using fluorescent dyes (e.g. Weiler) and rising bubble method (e.g. Hilgersom) will be shown in the section of introduction.

In Page 12658 Line 21. Yes! “Wireless system” is “a wireless data transmission system”. It will be replaced by “a wireless data transmission system”.

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In Page 12658 Line 22. Thanks for your suggestion. The paragraph will be rewrite as "I introduce my measurement method for flood discharge that I refer to as "the efficient measurement method". The efficient method which makes use of maximum velocity and gage height to estimate flood discharge is developed in Sect. 3".

In Page 12660 Line 18. Thanks for your kindly suggestion. It will be replaced by "areas were data is missing".

In Page 12661 Line 6. Thanks for your suggestion. "humanly" will be removed.

In Page 12663 Line 22. O.K.! "The y-axis is extremely steady" will be replaced by "the location of the y-axis is extremely steady".

In Page 12664 Line 1. It is my mistake. It should be (Rantz, 1982).

In Page 12665 Line 16. Thanks for your suggestion. The chapter heading 3.4 will be replaced by "Estimation of the discharge by the efficient measurement method".

In Page 12665 Line 17. The sentence will be changed into "Before the discharge estimation method, referred to as the efficient measurement method, is developed for a given cross-section in a stream, . . .".

In Page 12666 Line 19-20. More description of the study area will be added in the new version of the paper.

In Page 12666 Line 21. Yes! It is 45 km long to the bridge. More description of the study area will be provided to show that the bed slope of the upstream of the Nanshih River exceeds 10%.

In Page 12667 Line 10. The new sentence will be "The velocity distribution and water depth are measured at 3m intervals during the typhoons for computation of discharge".

In Page 12667 Line 18. The "shape" will be removed.

In Page 12667 Line 22. It is my mistake. The discharge should be 185.27 m<sup>3</sup>s<sup>-1</sup>.

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In Page 12675 Table 1. It is my mistake. The discharge should be 308.6 m<sup>3</sup>s<sup>-1</sup>.

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