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Hydrology and Earth System Sciences Discussions

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

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Thanks for your interesting to my paper. In order to show the efficient method can be used successfully in Taiwan, I decide to change the title as "Flood discharge measurement of a mountain river – Nanshih River in Taiwan". I will also rewrite the abstract, introduction, and conclusions to more carefully and precisely claim the method using for measuring discharge of mountain rivers in the Nanshih River at the Lansheng Bridge.

P12656 l25 The definition of a mountain river is added in the section of introduction. It is "A mountain river is a river located within a mountainous region and has a stream gradient greater than or equal to 0.2% (Jarrette, 1992) along the majority of its channel-length".

P12657 l18: I rewrite the sentence as "especially as floods often occur during thundershowers and typhoons in Taiwan".

P12659 l13: Thanks for your comment. "below water surface 0.4 m" is replaced by "to the position under water surface 0.4 m".

P12659 l15: Because the ADP is lowered to the position under water 0.4 m. Therefore I rewrite the sentence as "The advantage of the ADP is that it can immediately obtain velocity distribution and water-depth when ADP touches water".

P12359 l25-27: Two ADPs with 3.0 and 1.5-MHz are tested at the beginning of the flood discharge measurement. However the 1.5-MHz ADP cannot be used near the right bank when water is too shallow. A 3.0-MHz ADP gives shorter profiling ranges but better spatial resolution. The water depth of the Nanshih River at the Lansheng Bridge is usually less than 6 m and the maximum profiling range of a 3.0-MHz ADP is 6 m. Thus a 3.0-MHz ADP, which is suited to the hydrological characteristics of the Nanshih River at the Langsheng Bridge, can collect velocity data. Thanks for your suggestion. "cross-sectional" is removed.

P12666 l6-24: The average monthly precipitation in the area from June to October exceeds 300 mm from 1992.

P12666 l8: Thanks for your suggestion. "gage" is replaced by "gauge" throughout the text.

P12666 l10: Thanks for your comment. Taipei is shown in Figure 2.

P12667 l22: z is the distance from relative point. The horizontal axis title in Figure 4 has been changed by z.

P12670 l23: It is my mistake. It is Table 3, not Table 2.

P12671 l25: Looking for the location of y-axis in an open channel is difficult. For a straight and regular artificial channel, the y-axis usually occurs at the center of the cross-section. The location of y-axis in a natural channel can be located anywhere in the cross-section. Fortunately, the velocities used to determine the discharge reveal the location of y-axis. By using the measured velocity data, isovel patterns of a stream can indicate the location of y-axis.

P12672 l13-16: The results provide evidence that this efficient method can offer good performance in measuring flood discharge of the Nanshih River at the Lansheng Bridge. Recently I applied the efficient method to measure discharge in another mountain river and an estuary for estimating the pollutant flux. The results are quite well. I will try to publish the results as soon as possible.

Table 1: It is my mistake and has been corrected. Thanks for your comment. Table 2 is used to shows the variation of cross-sectional area during typhoons.

Table 3: Thanks for your kindly suggestion. Difference between Qest and Qr is shown in the last column of Table 3.

Figures: Thanks for your valuable comment. The dots in Figure 11(b) is cumulative frequency of error percentage and the curve is normal distribution function. The legends are explained in the text. Table 2:

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/9/C6255/2013/hessd-9-C6255-2013-supplement.pdf

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 12655, 2012.