

Interactive comment on “Comment on “A dynamic rating curve approach to indirect discharge measurement” by Dottori et al. (2009)” by A. D. Koussis

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In his review of my Comment to the paper by Dottori et al. (2009) (DTM), the Anonymous Referee #1 has found a few errors and has expressed the opinion that the fifth point of my critique to DTM is not justified and should be eliminated.

First, I would like to thank the Anonymous Referee #1 for his careful review. The Referee is right about the errors, and I apologise for these oversights, which will be corrected in the final version of the Comment: (1) the second term in the modified Jones rating formula should be “@Q/@t/Bc2So, (2) the correct reference is Wong and Lau-

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renson, and (3) the upper and lower graphs in Fig. 1 do not match. The explanation for this mismatch, astutely observed by the Referee, is that, while both graphs are from the same flood wave simulation, the hydrographs (upper graph) are for location $x = 40$ km and the rating curve (lower graph) for $x = 20$ km. For the point made in the discussion the different locations are immaterial, although the availability of all results at the same cross-section would have been preferable. The revisions concerning item (3) will be as follows: (a) in the caption of Fig. 1, the location of the cross-section for which the rating curves are given will be identified as $x = 20$ km, i.e., "Comparison of routing solutions, of the St. Venant equations and of two diffusive-wave equivalent models, for a rapidly rising wave through a prismatic channel of trapezoidal cross-section: (top) in- and out-flow ($x=40$ km) hydrographs; (bottom) rating curves at $x=20$ km. KCD=Kinematic wave Corrected for Dynamic effects: $y-Q$ conversions and c computed with the Jones formula; GK=Generalised Kinematic: diffusive-wave equivalent, but $y-Q$ conversions and c computed with the steady-flow rating curve (from Weinmann, 1977).";

and (b) the sentence in 7432:8 of my Comment will read "...of the flow even after 20km (~2m-wide at 500m³/s);".

The Anonymous Referee#1 gives two reasons for eliminating the “fifth critique to DTM”: (i) “that the idea of inverting an equation to estimate flow instead of the backwater profile is something new and does not correspond to the use of the “standard step” method to estimate backwater profiles”, and (ii) that it may somehow give the reader the negative impression that the author of the comment wants to step in and say “I did it first”.

I will respond to the second point first. The statement in my Comment (7434:9-11) “This standard procedure of BGS (Darmstadt, Germany) was adopted in the modeling of flood flows in the River/Canal Kiphissos, in Athens, Attica Region, Greece (Koussis et al., 2003; Mazi and Koussis, 2006)” indicates clearly BGS as the developer of the method, therefore the “I did it first” cannot apply to me; the method of BGS was merely adopted in work in which I participated. My response to the first, and substantive

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reason is as follows. First, I would like to point out that I did not write that the method of DTM “corresponds to the use of the “standard step” method to estimate backwater profiles”, but that (7434:8) it “is a reversing of the BGS procedure.” Although in my view “. . .the DMT methodology restates a known method for computing flood depth profiles.” (end of last sentence of the Introduction to my Comment, 7430:17-18), I agree that there is also novelty in the inversion method of DTM. For this reason, I propose rewriting the relevant passages in my Comment to accommodate both viewpoints; this way the readers of HESS will be also informed about the BGS method.

The last sentence of the Introduction (7430:17-18) will be modified as follows: “It will be also documented that the DMT methodology relates to a known method for computing flood depth profiles.” Finally, the middle phrase in section 3 (7434:7-8) will be modified as follows: “It thus follows that the novel idea of DTM of using stage observations at two cross-sections to estimate flood flows and the BGS procedure of flood depth estimation from known flows are inversions of each other.”

REFERENCES Anonymous Referee #1, Hydrol. Earth Syst. Sci. Discuss., 6, C2983–C2985, 2009, to “Comment on “A dynamic rating curve approach to indirect discharge measurement” by Dottori et al. (2009)” by A. D. Koussis

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