**Hydrology and
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Comment

Interactive comment on "Assessing rating-curve uncertainty and its effects on hydraulic model calibration" *by* A. Domeneghetti et al.

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In this paper, Domeneghetti et al. uses hydro-dynamic models to consider the uncertainty of the rating curve. Therefore, they select a three-step approach. First, a 2D model is applied to simulate synthetic floods. Second, a 1D model is used to construct the rating curve. Third, the uncertainty of the rating-curve is assessed by using again a 2D model.

I really liked to read this manuscript and I agree with the two other referees that this paper is well written and almost ready for publication. The introduction is well written including a good review. The goals are clearly emphasized. In addition to the comments of the two other referees, I'd like to give some recommendations to the sections

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3.2 and 4 which might be helpful to understand the paper directly when reading it for the first time.

General comments

Comments to Sect. 3.2:

The models are named according to the cities at the upper and lower bound of the modeling reach. This makes sense, but for a non-Italian it is difficult to distinguish the models, especially the two 2-D models. I would propose to show the modeling reaches of the three different models either in the exisiting map or in a new map. For a better understanding, it would be enough to have three schemes of the Po River where the modeling reach of the considered model is coloured.

The section 3.2 would benefit from an additional structure. This is especially important since it is a rather important section of the paper. I would recommend to add three sub-sections (3.2.1-3.2.3) which shall be named according to the use of the model to receive paper's goals. Please find some suggestions below.

"3.2.1 Model for simulating historical flood events" (from 10511),

"3.2.2 Model for rating curve identification" (from 10512, line 17),

"3.2.3 Model for rating curve uncertainty" (from 10512, line 27).

P. 10512, Line 17: I would recommend to write as transition between 3.2.1 and 3.2.2 something such as "50 synthetic flood events with 15 pairs of h,Q-values were provided for the 1 D model."

P. 10512, 27: I would recommend to add as transition from 3.2.2 to 3.2.3: "to obtain a hmax-Qmax-pair for each campaign. In this way, the 1D model provides additional information for the constrained approach."

Comments to Sect. 4:

The beginning of the section 4.1 is difficult to understand because it is not said that the traditional approach is considered at first and the constrained approach is presented later on. Therefore, I suggest to add a sentence at the beginning of Sect. 4.1 saying that the results of the both approaches are presented consecutively.

P. 10513, line 26: I propose to add at the end of this sentence something such as "showing a large part of extrapolation without any data, i.e. for Q>6000 or 3000 m^3/s respectively."

P. 10514, 10: I propose to add at the end of this sentence that the blue curve is the same curve as in Fig. 4.

P. 10515, 24: I would propose to include the Figure 5 in the explanation. I could be noted: "(see Figs. 4 and 5)"

P. 10530, Fig. 5: I would suggest to show the boxplot apart from the figure because the scale is completely different, since it is related to the maximum discharge values. Even though, that all scales are clear, the first impression of the range of the boxplot is different than it is in reality. Another possibility would be to draw lines from vertical axis of the main figure to the boxplot axis to show which part of the figure/axis is only considered.

Specific comments:

p. 10506, line 24: 0.265 is the half of 5.3%.

p. 10508, 9: Consider: "of rating curves for high flood events" or "of a rating curve for high flood event"

p. 10513, 26: Consider: magnitudes instead of magnitude

p. 10514, 7: traditional approach with small letter

p. 10522, 25: assessing instead of assess- ing

p. 10523, 7: Co-authors from Rantz et al.?

p. 10523, 13: Type of work?, PhD-thesis?

p. 10532, Fig.7: overestimation instead of overstimation

p. 10532, Fig.7: The resolution seems to be small. The authors should consider it at least while checking the final draft of the paper.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 10501, 2011.

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