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Title: Assessing the impact of uncertainty on flood risk estimates with reliability analysis using 1-D and 2-D hydraulic models
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The paper is interesting since it deals with practical application of numerical models for flood risk estimates. It describes the PEM method comparing it with the Montecarlo approach. It refers to a 1D and a 2D commercial models.

First of all I set forth some general remarks.

The structure of the paper is correct.

Figures are not very intelligible, mainly those showing water heights over flooded areas. Adding contour lines shall improve their readability. The legend as well as the axis title should always be displayed.

Some more references should be added in the text

More in detail I make the following remarks.

Pag 4 line 29- The authors have cited only one reference (Cobby et al 2001) on the use of DEM models for floodplain delimitation. In the scientific literature there is plenty of more recent models that use DEMs, that should be added in the text.

[1] Cook A., Merwade V.,(2009) Effect of topographic data, geometric configurations and modeling approach on flood inundation mapping, Journal of hydrology, Vol. 377, pp 131-142
[2] Gregory M., Walker B., Yi S., Cunningham B., Kjelds J. (2007) Case studies in automated floodplain mapping, proceedings of Flood management Asce conference,
[3] Sanders B.F. (2007) Evaluation of on line DEMs for flood inundation modeling, Advances in Water resources, Vol.20, pp 1831-1843
[4] Shatnawu F.M., Goodall J.L.,(2010) Comparison of flood top width predictions using surveyed and lidar derived channel geometries. Journal of Hydrologic Engineering, Vol. 15, 2, pp 97-106

Page 4 line 32, some more references for the uncertainty related to the manning roughness coefficient, see e.g.

Pappenberger, F,Beven, K,Horritt, M, Blazkova, S (2005) Uncertainty in the calibration of effective roughness parameters in HEC-RAS using inundation and downstream level observations, Journal of Hidrology 2005, 302, pp 46-69

These references should added in the text

Pag 5 line 5 The authors talk about 1d and 2D models, without adding proper references, see e.g.

He, H., Yu, Q., Zhou, J., Tian, Y.Q. & Chen, R.F. 2008 Modeling complex flood flow evolution in the middle yellow river basin, china. *Journal of Hydrology*, **353**, 76-92.

Helmio, T. 2005 Unsteady 1D flow model of a river with partially vegetated floodplains-application to the Rhine river. *Environmental Modeling & Software*, **20**, 361-375.
Horrit M.S., Bates P.D., 2002. Evaluation of 1D and 2D numerical models for predicting river flood inundation, Journal of Hydrology, Vol. 268, pp 87-99

Yoshida, H. & Dittrich, A. 2002 1D unsteady state flow simulation of a section of the upper Rhine. *Journal of Hydrology*, **269**, 79-88.
Remo J.W.F., Pinter N., Heine R. (2009) The use of retro and scenario modeling to assess effects of 100 + years river of engineering and land cover change on middle and lower Mississipi flood stages, Journal of Hydrology, Vol. 376, pp 403-416
Wright, N.G., Villanueva, I., Bates, P.D., Mason, D.C., Wilson, M.D., Pender, G. & Neelz, S. 2008 Case study of the use of remotely sensed data for modeling flood inundation on the river Severn, U.K. *Journal of Hydraulic Engineering*, **134** (5), 533-540.

These references should added in the text

Some coupled 1d-2d model should at least be cited, see e.g.

S. N. Kuiry; D. Sen; and P.D. Bates (2010).Coupled 1D–Quasi-2D Flood Inundation Model with Unstructured Grids, Journal of Hydraulic Engineering, Vol. 136, No. 8, pp 493-506
Kun-Yeun Han, Jong-Tae Lee & Jae-Hong Park (1998): Flood inundation analysis resulting from Levee-break, Journal of Hydraulic Research, 36:5, 747-759
Finaud-Guyot, P.; Delenne, C. Guinot, V.; Llovel, C. (2011), 1D-2D coupling for river flow modelling,Comptes Rendus Mécanique, vol. 339 (4), pp. 226-234
LaTorre B., Burgete J., Murillo J., Brufau P., garcia navarro P., Petaccia G., Calvo B., Savi F, (2009). Flood wave simulation with 1d-2d coupled models., Proceedings of CCWI 2009, Taylor and Francis. London. CCWI.

Page 5, line 28 the authors refer to a 1D and a 2D commercial code, that will be used in the paper. The authors should cite more 1D and 2D academic research code, see e.g. MIKE 11, MIKE 21, BASEMENT (see references) and tell the reason of their choice.

BASEMENT- Basic Simulation Environment for computation of Environmental flow and natural hazard simulation. Version 2.2,ETH Zurich, Faeh R., Mueller R., Rousselot P., Vetsch D., Volz C., Vonwiller L., Veprek R., Farshi D., 2006-2011

Page 6- line 17- the authors refer to three models, two of them are 1d and one is 2d. How were the simulation performed with HEC-RAS? Using the unsteady or the steady module? The authors should distinguish between the geometry (simplified 1d with only one cross section, 1D with 12 cross sections and 2D with how many computational cells?) and the mathematical model used (uniform flow/steady flow/ unsteady Flow)

Page 12, line 20- again the authors should specify which are the upstream boundary conditions, why are different by the 2d model boundary conditions? The downstream boundary condition in the 1D model is uniform flow while in the 2D model is a stage discharge relation. Is there a reason for this difference? The authors should explain it in the text.

Page 13- line 2 why is the turbulent viscosity taken into account? Which was the ν_t value for the simulations? How were the source terms treated? How many elements has the computational grid? Which was the CFL used for the simulations?

Page 14 line 3-the authors compare the uniform flow with the 1d HEC_RAS model, but the type of flow is not specified (uniform/steady?)

Page 14-line21- Figure 3 should be improved, the title axis should be added, together with the legend and the title for each set (uniform, triangular, normal)

Page 15 line 29- the convergence in figure 5 is not clear, the authors should say which is the error between the asymptotic value and the value after 1000 simulations, did the authors try with a larger number of simulations?

Page 17-line 5- Figure 7 should be improved, the scales of the right figures should be reduced to better view the variations, the axis should be labelled in all 4 the figures.

Page 17 line 25-figure 11 is not clear, the differences between the two models are not easy to understand. The authors should add a table with the mean error or unify the two figures in one in order to show the differences.

Figure 12-13-14-15-16-17 are not clear, adding contour lines shall improve their readability, adding some more intervals in the legends should also improve. How were the 1D And 2D flooded map taken? Using the same GIS interface or using different tools? In figures 12 and 13 the 1D cross sections should be added.

Page 18 line 10, which was the duration of the constant discharge step?.

Page 19 line 9-the authors refer to the dragging coefficient which was not introduced elsewhere in the text.

Why the severity analysis was not performed for the 1D models?

Figure 19 should be more commented by the authors. Why does the higher discharge, for a given severity level, give sometimes lower inundated area? Explain the data for a severity level of 1 and 2.