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Discussions

Interactive comment on "3D-hydrodynamic modelling of flood impacts on a building and indoor flooding processes" *by* B. Gems et al.

Anonymous Referee #2

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This review addresses the paper "3D-hydrodynamic modelling of flood impacts on a building and indoor flooding processes" by Gems, Mazzorana, Hofer, Sturm, Gabl and Aufleger. The manuscript Ref. No. is nhess-2015-326. The paper demonstrates the application of a 3D model on a object at risk and the influence of different scenarios onto the internal flow processes within the building. While the methodology is able to demonstrate the influence of measures the protection scenarios are very abstract. Also the other border conditions are very specific, so it will be difficult to transfer the results to other regions or the effect of measures applied. In some parts the paper is difficult to read (f.e. page 11 and 12) as it refers to the all the numbers of wall segments, not being a reviewer I would skip these sections. It is not clear why the steady state modelling had been performed as it seems clear that the limitation of volume is an important factor in the filling process of the building. Even damage assessment and cost benefit

analysis are addressed it remains unclear, what type of benefit is expected from the 3D approach compared to a 2D in this domain. As there is even a lack of data for applying damage functions based on 2D data there is nearly no damage information that can be used to really use the additional value of 3D data. Even the simulation results are impressing and seem to be plausible, there would be a need for validation. It can be assumed, that the different materials in a building and the holes for pipes and service lines influence very much the flow into and within the building, this should at least be addressed in a proper way. Also it is not well addressed, why this specific building was chosen, is it a typical one or just the data have been available. How was the grid size chosen in the 3D model? There should be an English prove reading, as there are some mistakes and uncommon use of wording (like reoccurance interval instead of return interval) In general the structure of the paper is fine, after some revisions the paper may be published. Still a vision of using the methodology in practice is not existing or at least the potential not well explained. The conclusions are not convincing to make use of this methodology in near future.

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