

Nat. Hazards Earth Syst. Sci. Discuss., referee comment RC2
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Comment on nhess-2021-200

Anonymous Referee #2

Referee comment on "Multi-scenario urban flood risk assessment by integrating future land use change models and hydrodynamic models" by Qinke Sun et al., Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2021-200-RC2>, 2021

The paper tackles an important subject in future management perspectives of coastal urban regions. Nevertheless, there are some major constraints/criticism to the current version of the paper:

- the land cover data set seems to be outdated (2014) and has only a coarse spatial resolution (100 m). Based on this, to model the year 2015 with land cover data from 2014 is not so difficult and shows a high coincidence as expected. Why not using a higher spatial resolution from Sentinel-2 (10 m) from the year 2020? Six years after the acquired land use data set from 2014 this would show whether the performance of the land use model is good enough or not...,

- the ASTER-DEM used has a 30 m spatial grid, but everybody knows, that the vertical accuracy may vary up to 5 m and more. This is a major drawback in coastal lowlands, where just small height differences may cause large discrepancies in flooded areas. Better use LIDAR data if available,

- the single forward modelling of the urban development may not consider the polycentric development of the agglomeration,

- land subsidence is not equally everywhere. It depends very much on the ground substrate. Fluvial sediments may subside more than rocky underground. And it also depends on the anthropogenic use. Roads on sedimentary ground, where heavy trucks are driving each day may subside much more than anywhere else... It's not enough to analyze that statistically, one would have to look attentive where this would happen. Interferometric evaluation of multitemporal microwave data would provide a proper estimation on that...,

- the result showed a stronger inundation by the GE scenario than with the GP scenario. Flooding per se is not bad, so one would not rank the GE scenarion worse than the GP scenario, since it might consider clean air allies or urban green spaces. The authors mention that in their chapter 5.2 "Recommendations", but should emphasize that much more...

Please also note the supplement to this comment:

<https://nhess.copernicus.org/preprints/nhess-2021-200/nhess-2021-200-RC2-supplement.pdf>