

Interactive comment on “Urbanization and climate change impacts on future urban flood risk in Can Tho city, Vietnam” by H. T. L. Huong and A. Pathirana

H. Apel

hapel@gfz-potsdam.de

Received and published: 29 December 2011

In general, we regard this manuscript as an important step towards a flood risk-oriented planning in a lowland area highly threatened by expected climate change impacts on flooding. Can Tho city (and the Mekong delta in general) is a typical example for estuarine areas facing this problem. Methodologically the authors provide model based estimations of future urban development along with scenarios for future flooding, both pluvial and riverine. Our comments focus mainly on the latter aspect - the riverine flood scenarios. The authors present a static flood scenario combined with a static

C5477

sea level rise. However, the authors do not provide any measure of probability of occurrence of the scenarios, as required by an up-to-date risk assessment, other than saying that they are "expected". These expected values, in turn, are obtained from a report which is not available to the reader, and the uncertainty associated with this "expected" value is not given. The same criticism applies to the documentation of the hydraulic modeling. The description given in the manuscript does not provide essential information on model setup and calibration and validation. The cited references are conference contributions, where – at least at the moment – associated papers are not available. Given these drawbacks, the reliability of the results and conclusions are surely impaired and we therefor suggest to provide more information on the hydraulic modeling and the flood scenarios used from the cited sources in order to substantiate the conclusions.

Some more specific comments:

page 1079

We suggest to provide information about the source and quality of the used DEM. This is essential especially in the low topography of the presented case study.

page 10795 line 20-24 and page 10799 line 3

"The results show that, in case of sea level increase up to 1m and water flow from up-stream in scenarios of high emission scenario (A1F1), the river level at Can Tho will be increased up to 1.1m in an event similar to year 2009." This sentence is confusing. Do you mean projected discharge under climate change or the event of 2009 or a climate change impact superimposed on a flood as in 2009? This is unclear. And how likely is this to happen? Essentially we miss a clear description of the assumptions taken for the definition of the scenario and a quantification of the flood magnitude and its probability of occurrence.

page 10798 line 10

C5478

It is not explained how the sea level rise is included in the model. Is it just superimposed to the water levels at Can Tho, or is there some sort of hydraulic modeling associated? The IMHEN reference is not available, therefore it should be explained here.

page 10802 line 11

"We urge the reader to exercise caution when interpreting the results presented here in a quantitative sense." – How should the reader do then? Do you mean that the results are indicative only? An uncertainty estimation would help here.

page 10803 line 4

"The city does not have a suitable urban drainage system and adequate flood protection. All remedial action should probably start at this point." – The authors seem to be advocating more "flood protection". It is definitely necessary in particular cases, but that's business as usual! What about "living with floods"? It would be helpful to mention this option at least, because 100% flood protection will never be achieved especially in the presented case study. This would provide a good starting point for discussion on new urban planning concepts for lowland and coastal/estuarine cities. Water and the delta are a tangible and concrete part of Can Tho city and are not an obstruction to development.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 10781, 2011.