

## ***Interactive comment on “An examination of land use impacts of sea level rise induced flooding” by Jie Song et al.***

**Anonymous Referee #2**

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**General Comments** The paper entitled “An examination of land use impacts of sea level rise induced flooding” by Song et al. reports on an important analysis that is the assessment of the impact of potential urban developments or landuse of a coastal region on flooding risks associated to sea level rise in future climate. Despite the article focuses on a specific geographic region that means with specific associated risks, lacking in generality, it is overall well-written, well-structured and findings are generally supported by the analysis carried-out. Overall, the article is scientifically sound although I have a number of comments and requests of clarifications as outlined below that in my view need to be addressed by authors to improve the clarity and presentation of some specific aspects. Overall, the article would benefit if a more profound/critical description of choices made for the several steps leading to model outputs were made.

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**Specific Comments** 1)The Abstract is somewhat too qualitative. I suggest to strengthen it to give more emphasis on the methodology used. The SLEUTH model is mentioned without a reference (how this has to be done I guess depends on the specific Editorial formatting procedure) 2)The rationale for the choice of the Bay County has not been addressed. In connection to it the article should give evidence of a larger breath that is how the analysis carried out here could be done in other areas in the world? Despite the research questions clearly states “How would different urban growth patterns increase regional vulnerability to sea level rise induced flooding?” , not enough attention has been paid to why the specific area chosen should be of general interest. The limitations of this study should be clearly stated. 3)The description of the data set (section 2) is rather uncritical. Why these data have been chosen? Are all available data? Would this analysis possible without all these data? 4)Section 3 – I would consider to entitle this section “methodological approach” rather than “method”. Please note a typo. An Introduction to the SLEUTH model not “An Induction”. The section requires some adjustment. First: please add some references for “dispersion, breed, spread, road gravity, and slope” given that specific definitions of those variables/parameters are application. 5) Overall section 3 is uncritical. The authors report on the method used to set-up the model but fail in explicitly comment on why? For example a function for the annual rate of urban growth (Eq. 1) has been taken that is reasonable but there is no comment on why this should be taken as a general rule or is just a common practice. If so what are the uncertainty associated to given choices? 6)The authors acknowledge the problem of estimating model calibration to reach a good match with data based on metrics. Nevertheless after mentioning the problem they adopt OSM. It would be good to have some comments of the properties/efficacy of such selection. 7)The statistics is used somehow without properly justifying the choices. We read (par. 15, page 9) “Seven Monte Carlo iterations with narrower parameter ranges were employed in the fine stage.” Why 7 and not 8, 9, 10... what is the impact of this choice? We read “Therefore, a derive calibration with the candidate set were performed with 100 Monte Carlo iterations” Why 100? Can the authors justify and provide more insight on the

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choice made? 8) Paragraph 4.1 is interesting but needed to be expanded. 9) As a general remark I suggest wherever possible to point-out that this work is a methodology type of work. Also, the level of approximations, uncertainties associated to each step of the analysis performed are so many that it should be clarified as much as possible that conclusions have to be put in context and somehow used as a general indication of possible risks. 10) Figures overall are of a poor quality. They would also benefit from more substantial captions - at present it is difficult to understand much without a careful reading of the text.

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