Answer to the further review by Editor Dr. Hans de Moel - (26 Feb 2014)
"Conceptual and methodological frameworks for large scale and high resolution analysis of the physical flood susceptibility of buildings"
New proposed tittle: "**Assessment of the physical flood susceptibility of buildings on large scale − Conceptual and methodological frameworks**"
Version of the 11th March 2014

Question of the reviewer	Answer to the reviewer:	Page and line
* I generally like Figure 1, but believe it deserves more explanation in the text, especially on what is and is not included in your study. Now under 3. you disucuss the three modules, but the other components of Figure 1 are not mentioned. My interpretation is that you study relates to physical flood vulnerability (and not the other vulnerabilities in the outer ring). I'm not sure if the three items in the middle ring are all explicitly considered (or left completely constant). Please clarify the position of your method in this figure in the section of 3. (before 3.1).	We appreciate the additional comment of the editor regarding the explaination of Figure 1 and repond with three modifications of the manuscript. First, we added a reference to Figure 1 under section 2. Second, we more explicitly clarify the methodological focus of the paper under section 3 as requested. "Operationalisation of the conceptual framework focusses on the physical dimension of sustainability on the one hand and on susceptibility as one of the components of vulnerability on the other hand. It makes use of three modules which refer to all relevant aspects influencing the physical flood susceptibility of buildings (Fig. 1)." Third, we enhanced the caption of Figure 1.	Page 5697, line 23 Page 5700, line 11
* I'm confused by your answer on question 9 of reviewer one. You state that the proposed approach provides effective results if the sources have a resolution lower than 1 meter, but the resolution of your case study is 2 meter (5707 - 20).	We thank the editor for this comment. High resolution (≤ 1 m) plays a significant role for the derivation of the required information for the methodology regarding both planimetric (esp. vertices of the building roof and building size) and altitude (esp. building height). For the case study in Colombia, resolution regarding to the planimetric information meets this requirement. Limitations are given with respect to the altitude since the DSM had to be generated based on aerial photos and photogrammetric technique due to an unexpected poor quality of the availalbe DSM. This led to a resolution of 2 m only which is slightly below the proposed threshold. In the case study, this mainly affected the detection of smaller buildings as mentioned in the manuscript. Additional field work allowed for compensation. In another case study, we were able to reach the proposed $\leq$ 1 m resolution in altitude with the expected reduction of the field work. However, there are other reasons why we prefer to present this case study.	

| | To make the implications of the resolution of the altitude more clear, we revised the respective paragraph as follows:

Planimetric and elevation information are required for the extraction of building features for the derivation of the building taxonomy. Building size, elogatedness, roof form, adjacency and compactness are derived from the planimetric information provided from stereo images of the UltaCAM sensor with ground sample distance of 0.15 m and 3 bands accessible for this study area. Elevation information from precise sources such LiDAR was not available for this area. Therefore, a DSM was photogrammetrically generated from the stereo photos for the extraction of the building height and building roof slope. However, resolution in altitude of this DSM did not exceed 2 m.
The semi-automatic building extraction process consisted in combining masks methods (Awrangjeb et al., 2010) and segmentation processes (Schöpfer et al., 2010). Segmentation was used for dividing the image into regions that are supposed to be the building roofs with similar spectral and topological characteristics. Using reference polygons of the building outline, the accuracy of the building extraction is calculated using the indexes proposed by Song and Haithcoat (2005) and Aguilar and Mills (2008); for a more general discussion of factors influencing accuracy see Sohn and Dowman (2007).
The building extraction process gave as result the detection of only 44% of the buildings. The inconsistencies for the building extraction in this selected area is due to the presence of corrosion of the roof materials, the occlusion of the buildings from tree and shadows and the low resolution of the DSM in combination with numerous small buildings. The latter has been overcome through additional field work. The issue of the DSM's resolution for this area was compensated validating it in the field work. Testing the methodology in other cases has proofed that the proposed resolution of the DSM with > 1 m significantly improves accuracy. The buildings that did not fit the criteria of accuracy were manually edited. | Page 5707, line 19 |
| * You position the paper as an methodolgy contrasting exptensive ex-post damage surveys and ex-ante synthetic damage | We appreciate this comment of the editor. Indeed, the building taxonomic approach allows for multiple other applications in different fields of settlement analysis. As regards the damage simulation modelling, where our | Page 5710, line 17 |

simulation modelling (response to comment 2 of reviewer 2). However, I believe the building taxonomy you create from the RS data may also be very valuable to combine in a synthetic damage simulation model. If that is indeed a useful use, could you spend some words on this?	group has some experience (see paper of Schinke et al. 2012 in your journal), the new methodology allows for a large scale screening of settlement areas with buildings of a certain susceptability and hence governs more detailed analysis. The later could need consideration of additional classification criteria such as building age for the derivation of in-depth information on the building construction. Details of building construction particularly matter in case of physical-based damage simulation modelling as it is realised in our models HOWAD, GRUWAD and others. Against this background, we still position our paper as we've done. Beyond, coupling with a damage simulation model is another story and will lead us to one of our next papers.	
* On the case-study selection you now state "... in a study site of a developing country selected randomly according to the availability of data". If you selected it because of the availability of data, than clearly it was not random. Please slightly rephrase and remove 'randomly'	We thank the editor for this precision. We agree that we should remove the word 'randomly' in the answer to question 5 of the second reviewer.	Page 5697, line 20