

Interactive comment on “Detection of collapsed buildings due to the 2016 Kumamoto, Japan, earthquake from Lidar data” by Luis Moya et al.

Anonymous Referee #1

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General comment: This paper discusses the possibility of pre- and post-event lidar data in detecting collapsed buildings by an earthquake. Background and literature reviews were well described. Their conclusions are very clear and useful but may sound to be simple because only the difference of elevation is effective in identifying collapsed buildings. However, the paper quantitatively discusses the accuracy of other features such as standard deviation and correlation coefficient in the building damage detection. The conclusions are carefully verified by these multiple feature-based approach. Therefore, the reviewer judged that the paper deserves to be accepted. Then, some questions for better understanding are listed in the following specific comments.

Specific comment: Line 14 in Page 3 The post-event DSM is shifted to match the pre-event DSM by giving the permanent displacement. The displacements are given to

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every pixels with the resolution of 50cm? In your previous paper (Moya et al. 2017), the displacement is calculated by 100m-grid size. How did you distribute the 100m-grid displacements to every 50cm pixels?

Line 27 in Page 3 In this study, building polygon is reduced by 1m in order to avoid the errors in matching of ADSM and BDSM. In the right column of Figures 4, the scale of the figures are not included. The reviewer could not judge the effect of the 1m-reduction of the building polygon and recommend to add not only the scales but also the 1m-reduced building polygons by dotted lines.

Equation (4) to (9) and Figure 12 In the equation (4) to (9), the subscript number 1 and 2 indicate non-collapsed and collapsed building, respectively. On the other hand, in Figure 12 the index number of the confusion matrix 0.0 and 1.0 indicate non-collapsed and collapsed building, respectively. The subscript number in the equations and Figure 12 should be unified for clearer understanding.

Line 1 in Page 7 The authors found that the K-means clustering provided lower accuracy but did not described the reason. Please describe the reason why the K-means clustering gives lower accuracy than SVM.

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