

Interactive comment on “Incorporating multi-source remote sensing in the detection of earthquake-damaged buildings based on logistic regression modelling” by Qiang Li et al.

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In this paper, a method of building damage extraction based on multi-source remote sensing data is proposed and applied to Beichuan area, which is a good innovation. The paper is technically fair and the topic is relevant for the journal. However, there are also some issues that need to be revised: 1. In the abstract part, the author introduces the application of single source data in the extraction of seismic damage information. As far as I know, many scholars have also begun to study the methods of extracting information from images by fusion of two or more types of data. It is suggested that the author supplement and supplement relevant references. Reply: Thanks for

C1

the reviewer's suggestion. We will add the relevant references in the revised paper. The following references were added: Yinyi Lin, Hongsheng Zhang, Hui Lin, Paolo Ettore Gamba, Xiaoping Liu. Incorporating synthetic aperture radar and optical images to investigate the annual dynamics of anthropogenic impervious surface at large scale. Remote Sensing of Environment, 2020, 242. Fang Chen, Zhigang Yuan, Yongfeng Huang. Multi-source data fusion for aspect-level sentiment classification. Knowledge-Based Systems, 2020, 187. Dino Ienco, Roberto Interdonato, Raffaele Gaetano, Dinh Ho Tong Minh. Combining Sentinel-1 and Sentinel-2 Satellite Image Time Series for land cover mapping via a multi-source deep learning architecture. ISPRS Journal of Photogrammetry and Remote Sensing, 2019, 158. Shiran Song, Jianhua Liu, Yuan Liu, et al. Intelligent Object Recognition of Urban Water Bodies Based on Deep Learning for Multi-Source and Multi-Temporal High Spatial Resolution Remote Sensing Imagery. 2020, 20(2) AI Jinqian. Long-term evolution process and mechanisms of wetland ecosystem in the Yangtze River estuary using time-series multi-sensor remote sensing data. Acta Geodaetica et Cartographica Sinica, 2020, 49(1): 133-133. 2. In the part of datasets introduction, it is suggested that the author take the form of table, which can be more intuitive. Reply: Thanks for the reviewer's suggestion. We will turn it into a table in the revised paper. 3. The author analyzes the characteristics of different buildings and adopts the object analysis method, so how does the author obtain the image object and what is the segmentation method adopted? It is suggested that the author should supplement it in the original text Reply: Thanks for the reviewer's suggestion. The multi-scale segmentation is used to obtain the model element. Multiscale segmentation is a bottom-up approach and is achieved by merging adjacent pixels or small segmented objects under the premise that the average heterogeneity between the objects is the smallest and the homogeneity of the inner pixels is the largest. To obtain image objects of the same size, we use the multi-data joint segmentation strategy. The image segmentation scale is set to 60. 4. The logical regression method used in this paper is a statistical analysis method, so samples are needed. Please elaborate the principles and methods of sample selection. Reply: Thanks for the reviewer's sugges-

C2

tion. In the manuscript, the introduction of principles and methods of sample selection is as follows: Generally, using similar proportions of 1 (“destroyed building”) and 0 (“intact building”) cells is recommended. Hence, we took 56 random samples consisting of 26 destroyed building cells and 30 intact building cells. 5. What is the method of feature selection? It is suggested to add a detailed description. Reply: Thanks for the reviewer’s suggestion. We selected the object characteristics based on some previous published papers and related literature. We will add them in the revised paper. 6. What does the table mean in “The initial decision table is formed by the random sampling of a 10% table.” The corresponding attribute of the 18 feature factors and the decision attribute corresponding to the damage of the building (1 represents a destroyed building, and 0 represents an intact building) form a two-dimensional table. In the table, each row describes an object and corresponds to the features of the corresponding object; that is, the two-dimensional table contains 1032 rows and 19 columns. The initial decision table contains 10% of the sample information. 7. In Figure 8. The ELE is missing. Reply: Thanks for the reviewer’s suggestion. We have added it in the revised paper. 8. In Fig. 7 and Fig. 8, the abbreviations are used, while in Fig. 6, P1-P4 is used, so it is recommended to be unified. Reply: Sorry about it. We will change them in the revised paper. 9. There are some references with different formats Reply: Sorry about it. We will modify it according to the requirements of the paper template.

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