

# ***Interactive comment on “Analysing post-earthquake landslide activity using multi-temporal landslide inventories near the epicentral area of the 2008 Wenchuan earthquake” by C. Tang et al.***

## **Anonymous Referee #2**

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In the paper, various remote sensing datasets acquired at different times have been used to produce multi-temporal landslide inventories using digital artificial stereoscopic image interpretation, which have been analysed to monitor the activity of landslides within a small area affected by the well-known 2008 Wenchuan earthquake. Generally a good description of results (multi-temporal landslide inventory maps) is presented and compared with those previously produced by other authors, together with their evolution in relation to major rainy events in the years following the earthquake. However, some issues have been identified as follows, which need attention from the authors.

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The introduction section needs to be better structured, as different works appear somehow mixed up with the current one, while the objectives of this new study with respect to previous works are not sufficiently remarked. In addition, references are needed after sentences both in lines 45-46 and 47-48. In line 53 the correct reference citation is Shieh et al., 2009.

In the study area section, including brief information on land cover would be helpful, especially as vegetation is later said to be used for landslide detection and classification purposes. In line 68, covers should be spelled as cover. The words area or study area could be removed in some instances to avoid too much redundancy.

As regards the methodology, very little is said about pre-processing of the remote sensing data used, which is relevant to produce a homogeneous multi-temporal dataset, especially in this case as different types and epochs of remote sensing data are used in a mountainous area. Also, given the several remote sensing image epochs used and the high number of landslides in the study area, some semi-automatic image change detection approach preceded by suitable image pre-processing may appear more appropriate than the single-epoch based stereo image interpretation technique used. In this respect, the authors should prove the advantages of their chosen technique over the above mentioned ones while providing more insight into it, especially to be able to find differences in landslide activity between the different image epochs and to detect new landslides. In addition, the issue of processing/analysing different spatial resolution images to produce comparable landslide inventory maps should be dealt with in the paper. Table 1 should inform also of the colour (multispectral) or panchromatic characteristics of the various imagery used. It would also be useful to mention which systems or informatics tools were used for landside digitizing and stereo visualisation.

Regarding landslide classification, a reference is needed on the scheme adopted as proposed by BGS (line 106), rather than on the works such classification is based on if not the same as them. The classification, especially as shown in Fig. 2, appears somehow inconsistent as some categories combine material and movement, whilst

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others refer only to movement. In this figure, the green line is missing in the legend and the type and date of the background images should be mentioned in the caption.

It is arguable that Spot 5 imagery of 2009 at only 2.5 m resolution (i.e. panchromatic), mentioned in lines 269-270, can be reliably used to map and classify most small or very small landslides. Further justification on this should be provided.

As for the controlling factors, rainfall is rather a triggering factor. It would be useful to show the relation between landslide activity changes and different classes/categories of topographic factors and lithology on a table.

The reference cited in line 139 is missing, as well as that cited in line 243. The year of the citation in line 182 must specify whether is a or b, as well of that cited in line 210, that in line 214, that in line 248, and the last one on Table 5. The sentence in lines 192-194 needs some rephrasing for clarity. The scale bar is missing in Fig. 11, while north arrows are missing in Fig. 2, 3, 4, 6, 7, 8, 9, and 11. Landslide inventory mapped should be replaced with landslide inventory map in captions of Fig. 6, 7, 8 and 9. In line 241 phenome should be replaced with phenomenon. Same for B with beta (as symbol) in Table 5 caption. Contrary to what is stated, the statement in lines 285-286 cannot be confirmed just from Fig. 7. In line 288, of should be replaced with or. In Table 6 all occurrences of The can be removed. The same applies to the caption after (1) and (2). The subject and verb in line 373 do not match. There is an extra parenthesis in line 377. Finally, the last comma in line 479 should be deleted, in line 504 either an should be inserted before early warning system or systems should be rather used, and the reference in line 576 must include spaces between words.

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