

### **General Comments:**

This research is interesting to readers doing landslides inventory mapping, where SAR intensity images are employed in a large area. This method can overcome the shortage of optical images in case of cloud. The rationale and procedure are introduced reasonably. However, some quantitative description of the parameters and the results need to be considered carefully. Besides, the current title is somehow inaccurate. The main contribution of the research is the detection of failed landslides (event inventory mapping) rather than rapid moving landslides detection before occurrence. Therefore, I suggest to revise the title.

### **Specific Comments:**

(1) Lines 95-96: "Satellites Sentinel-1A and 1B acquire images characterized by a spatial resolution up to 5x5 m, ...".

The statement is not correct, the spatial resolutions of Sentinel-1 images are about 5 x 20 m.

(2) Lines 135-136: "..., the resulting stacked images are filtered for speckling reduction using the adaptive Frost filter (Frost et al., 1982), ...".

There are many methods to filter speckle noise in SAR images, please give some explanation to use Frost filter in this study.

(3) Lines 146 and 128, the meaning of  $\beta_0$  should be unified.

(4) Due to the side-looking imaging geometry of SAR satellites, geometric distortions including layover, shadow and foreshortening are inevitable in mountainous regions, which will cause some blind areas and seriously decrease the capability of landslide detection. In this study, how did the authors deal with geometric distortions during the calculation of SAR amplitude changes?

(5) Line 583: "Flowchart of the automatic steps of the processing chain described in the text."

The authors used the terminology "semi-automatic" in title, however, in here used "automatic". Please unify them. And the manual interaction section should be highlighted.

(6) Figure 2: Please add the coverage of Sentinel-1 SAR images.

(7) Figure 4: (1) Please add a color bar in Figure 4(b) and (c).

(8) Line 290, what do you mean the multiply 196 m<sup>2</sup> .5 (980 m<sup>2</sup>) ?, Combined with the results shown in figure 6, what's the uncertainty and accuracy of the landslides detection? Moreover, what's the minimum area (size) can be detected with SAR intensity change method with high precision?

(9) Figure 6: The obtained results look not good compared with the previous studies (Tessari et al., 2017; Konishi and Suga, 2018) of SAR amplitude images used for landslide detection. Such a result used directly in the detection of landslides will cause serious mis-interpretation. On the other hand, the authors should compare the landslide detection results with the ground truth to evaluate the accuracy and reliability of the method presented in this study, rather than just superimpose the SAR

amplitude changes on the ground truth. Here some quantitative assessments will be better for this method.

(10) Still in Figure 6, the shapes of yellow polygons do not look like landslide, especially the ones close to epicenter of M7.5. So I wonder the surface changes even in the yellow polygons are not landslides but earthquake damage. Can you verify the results?

(11) In general, “rapid-moving landslides” represent the landslides which are deforming with large-gradient without failures so far. Accurately, the landslides detected in this manuscript belong to the event-triggered landslides, i.e. landslides triggered by earthquakes. Please think more about it and make it express more precisely.