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Interactive comment on "Rapid landslide identification using synthetic aperture radar amplitude change detection on the Google Earth Engine" *by* Alexander L. Handwerger et al.

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We thank Referee #2 for their response. As is mentioned in our previous response, and throughout our manuscript, the novelty of our paper is that we document, for the first time, a way to use the cloud-based Google Earth Engine (GEE) to detect landslides and we show a clear relationship between the number of pre- and post-event SAR images and detection success. To our knowledge, there is no previously published manuscript documenting the use of SAR amplitude data to identify landslides in Google Earth Engine and therefore it is not fair to assume whether or not people would doubt its feasibility. Furthermore, our work highlights the importance of rapid SAR image

collections and how the accuracy of our landslide detection technique increases with the number of images acquired following a landslide event.

We attempted to clearly outline the main advantages/disadvantages of our method throughout our manuscript but will make sure to further clarify these points in our revised manuscript. The main advantage of using SAR, as numerous previous studies have documented, is that SAR is able to "see" through clouds and therefore we may have information on the location of landslides for rapid response when cloud cover is preventing the use of optical data. Being able to do this in GEE, which requires no specialized software or data storage, will enable many more people to search for landslides using SAR data. The main disadvantages are related to the limitations based on the satellite and landform geometry (which is also an issue for optical) and noise and error in the Sentinel-1 images.

While it is beyond the scope of our manuscript to make direct comparison of our method with other landslide detection methods, by making direct comparison with an external inventory we are effectively comparing to an optical-based inventory that has a high accuracy. Our AUC analyses provide an objective comparison with the external landslide inventory and we find AUC ranging from $\sim$0.6 for rapid response up to 0.8 with many post-event SAR images. In the revised manuscript we will clarify the main advantages and disadvantages of our new approach to put our findings in better context.

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