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Interactive comment on "Two multi-temporal datasets to track the enhanced landsliding after the 2008 Wenchuan earthquake" *by* Xuanmei Fan et al.

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Referee #4 – T. Gorum Comment #1 The Wenchuan earthquake is a major event where many slope failures have been recorded (200,000>) in one single event. I think this is the most important earthquake in the last century in terms of the amount of debris that exposed. The importance of this earthquake in landslide science is not only due to the number of landslides it triggered. The change in the type and size of the landslides after the earthquake showed that the effects of the earthquake could last much longer than expected which is emphasized in the manuscript. The dataset revealed by this study was produced from very high resolution images to map the pre-

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and coseismic landslides, post-seismic reactivations of coseismic landslide debris and new landslides in the main earthquake struck the region. Unlike other studies in this respect, this contribution is based on the extensive results of the earthquake and made the data freely available to other researchers which are quite important to improve the current knowledge state regarding the coseismic landslide hazard. Moreover, the two multi-temporal data sets presented in this study have the potential to contribute for better understanding the relaxation phase of the landscape after major earthquakes and the full impact of earthquake-induced landslides on the landscape. This will allow for a more comprehensive understanding of temporal perturbations caused by strong earthquakes. My suggestion is that these two valuable datasets worth to be published after minor revisions. Response #1 Dear Prof. Gorum, We thank you for reviewing our manuscript. We sincerely appreciate your positive review. Please find our detailed reply below. Comment #2 Please clarify the main difference between debris flows in different data set of co-seismic landslide and post-seismic reactivation and new landslides. Some of them, especially post-seismic reactivations, looks like torrents and/or channelized debris flows. Response #2 Debris flows exhibited a finer material texture along a preferential movement path. They were found along the hillslopes (named hillslope debris flows) and into small channels (named hillslope debris flows). .It has been clarified in the text Comment #3 Please consider changing the title of 3.1.3 “Simple statistics” to “Descriptive statistics”. Response #3 Done for 3.1.3 and also for 3.2.3. Comment #4 In general, the manuscript is lack of a rigorous description of the landslide volume calculations. Please give more details about the volume estimation of the debris flow deposited at the fan area and also for other volume estimation that has been used in the study for landslides. Response #4 The volume of the debris flow deposited at the fan area (Dataset2) has been obtained from the existing literature. Regarding the volume calculated for the other landslides, it is true that just little information has been given about this. Actually, it has been done on purpose as the objective of the paper is to give a general vision of the prepared inventory and a few examples of different analyses that can be performed with this.

Nevertheless, more information about the area-volume relationship can be found in Fan et al. (2018a). It has also been included bellow: The volume (V) of the co-seismic landslides was estimated from the mapped areas using the empirical relation suggested by Xu et al. (2016), which was calibrated on a large set of co-seismic landslides triggered by the Wenchuan earthquake: V=1.315·Aˆ1.208 where A is the landslide area (m2) and V is the estimated volume of the landslide (m3). The relation brings an uncertainty ($\pm$1 standard deviation in the calibration set) on the calculated volume of +14.7%/-13.8% (Xu et al. 2016). We employed the same volume-area relationship to calculate also the volumes of post-seismic remobilisations and new landslides, as we did not have any means to constrain them further. However, this assumption might cause an overestimation of the post-seismic landslide volumes, as bedrock landslides (a portion of the co-seismic landslides) are generally deeper than soil/debris landslides (the post-seismic remobilisations of the co-seismic deposits) with the same area, as noted by Larsen et al. (2010) and Parker et al. (2011). The document “Readme.doc”, attached in the repository, has been pasted here for the ease of referee 2. This document explains the different files found in the repository.:

Please also note the supplement to this comment:
https://www.earth-syst-sci-data-discuss.net/essd-2018-105/essd-2018-105-AC8-supplement.zip

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