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## Initiation mechanism of large landslides induced by 2008 China Ms 8.0 Earthquake

Zhao, X.Y.<sup>1</sup>, Hu, H.T<sup>2</sup>

<sup>1</sup>Southwest Jiaotong University, 999, Xi'an Road, Chengdu 611756, P.R.China. email :xyzhao2@swjtu.cn.

<sup>2</sup> Southwest Jiaotong University, 999, Xi'an Road, Chengdu 611756, P.R.China.

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Large earthquake-induced landslides usually differ from general gravity-induced landslides by sudden departure with big acceleration, fluidization, long run out distance and catastrophic results. Based on the investigations of over 300 large landslides triggered by the 2008 Chinese Wenchuan Ms 8.0 earthquake and the sequence of landslide-quakes related to the main shock, the large landslides triggered by the earthquake are classified into three types. The first type landslides are called main shock-induced landslides, because the landslides occurred during the main shock of the earthquake and there was no landslide-quake. The second type landslides are named by co-seismic-induced landslides, because landslide-quakes happened at the occurrence of the landslides although the landslides also happened during the main shock of the earthquake. The third type landslides are named by landslide-quake-induced landslides, because the landslides occurred after the main shock of the earthquake. The processes of sudden departures of these three types of landslides were analyzed, indicating that landslide-quake may be a new explanation for the sudden departure of some large high-speed landslides.

### References:

- [1]Burchiel B C, Royden L H, Vander Hilst R O, Hager B H (2008) GAS today 18(7):4-11.
- [2]Huang R.Q, Pei X.J, Li T.B (2008) J. of Engineering Geology 16 (6): 730-741.
- [3]Teng J.W, Bai D.H and Yang H (2008) Geophys ( in Chinese) 51( 5):1385-1402
- [4]Xu Q, Huang R.Q (2008) J. of Engineering Geology 16 (6) :721-729.
- [5]Xu C, Dai F.C, Xu X. W (2010) Geological Review (in Chinese) 56(6):860-874.
- [6]Yin Y.P(2009) J.of Engineering Geology 17(1):29-38.
- [7]Melosh H.J (1983) Science 71:158-165.
- [8]McEwen A.S (1989) Geology 17:1111-1114.
- [9]Norris R.D (1994) Bull. Seismol. Soc. Am 84:1925-1939.
- [10]Rocca M.L., Galluzzo D., Saccorotti G., et al (2004) Bull. Seismol. Soc. Am 94:1850-1867
- [11]Sassa K (1988) 5<sup>th</sup> Int. Symposium on landslide, Lausanne:37-56.
- [12]Surinach E., Vilajosana I., Khazaradze G., et al (2005) Nat. Hazards Earth Syst. Sci. 5:791-798.
- [13]Yamada M., Matsushi Y., Chigira, M., et al (2012) Geophys. Res. Lett. 39:L13301

