

Interactive comment on “Changes in Imja Tsho in the Mt. Everest region of Nepal” by M. A. Somos-Valenzuela et al.

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Received and published: 8 July 2014

This is not a full review of this manuscript by Somos-Valenzuela. I briefly comment on potential drainage water, which is surely important in terms of mitigation of glacial lake hazards.

Although Sakai et al. (2007) estimated the potential drainage water in case of complete collapse of damming moraine, the assumption of "complete collapse" has to be discussed in detail because Imja Tsho is dammed by a wide moraine (> 500 m). Fujita et al. (2013) evaluated probability of outburst using remotely sensed digital elevation models on pre/post-GLOF images for five glacial lakes along the Himalayas. They found a critical angle of 10 degree between lake surface and outer terrain on the GLOF experienced lakes. It means that if damming moraine is wide enough or height differ-

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ence is little enough, such lake will not cause a GLOF.

The estimation made by Sakai et al. (2007) and by this study is the maximum one. Although this kind of value is meaningful as a "rough estimation" when no other information available, at least probability of the assumption of "complete collapse" has to be discussed together with recent studies.

In addition, when one evaluates the volume, relative height between lake surface and base of moraine have to be precisely measured. However, no information is given in the manuscript in terms of topography around the lake.

Sakai et al. (2003) is an extended abstract of a conference. Sakai et al. (2007) provided more detailed analyses and discussions not only on bathymetry but also topography of damming moraine.

References

Sakai A, Saito M, Nishimura K, Yamada T, Iizuka Y, Harada K, Kobayashi S, Fujita K, Gurung CB (2007) Topographical survey of end-moraine and dead ice area at the Imja Glacial Lake in 2001 and 2002. Bulletin of Glaciological Research, 24, 29-36.

<http://www.seppyo.org/bgr/pdf/24/BGR24p29.pdf>

Fujita K, Sakai A, Takenaka S, Nuimura T, Surazakov AB, Sawagaki T, Yamanokuchi T (2013) Potential flood volume of Himalayan glacial lakes. Natural Hazards and Earth System Sciences, 13(7), 1827-1839. doi:10.5194/nhess-13-1827-2013.

<http://www.nat-hazards-earth-syst-sci.net/13/1827/2013/nhess-13-1827-2013.html>

Interactive comment on The Cryosphere Discuss., 8, 2375, 2014.

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