Hydrology and Earth System Sciences Discussions

Interactive comment on **"Distributed specific sediment yield estimations in Japan attributed to extreme-rainfall-induced slope failures under a changing climate"** *by* **K. Ono et al.**

K. Ono et al.

luminda@kaigan.civil.tohoku.ac.jp

Received and published: 23 December 2010

We are greatly appreciating the reviewer's comments. Answer for your comment was made after careful consideration and listed below. Manuscript was revised accordingly.

Comment 1 The GEV needs more than 21 years to be used (extreme precipitation usually occurs in a time interval that is larger than 21 years). However in the case of the authors it should be applied to the whole data set. In other words there is no meaning to have 1024 GEV distributions based on 21 years observation but it is meaningful to use the GEV for the whole data set (Stedinger et al., 1993;Hosking and

C4409

Wallis, 1997). GEV has sense in a regionalization procedure. Authors should carry out the same calculation using the GEV for the whole dataset. For the same reason I suggest the authors change the extreme rainfall with significant rainfall or something else.

Answer We agree with author's comment about the need of using a larger data set for GEV analysis. However, in our study, objective was to develop a spatially distributed hazard map. Therefore, if we have considered whole data set, it will give us one extreme value distribution (or few if we have considered in the regional scale), which is then unable to distribute in 1 km resolution. On the other hand, precipitation variation in Japan is more complex leading to many precipitation zones in Japan. As an example, Northern part of Japan receives much snowfall but the southern parts of Japan experience frequent typhoons. Because of the mountainous topography, local scale precipitation patterns also significantly vary. Therefore, use of whole data set will over-predict the extreme rainfall in areas with less extreme rainfall events.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 7121, 2010.