



August 2014 Hiroshima landslide disaster and its societal impact

Hiroshi FUKUOKA (1), Kyoji SASSA (2), and Chunxiang WANG (1)

(1) Niigata University, Research Institute for Natural Hazards and Disaster Recovery, Niigata, Japan
(fukuoka@cc.niigata-u.ac.jp), (2) International Consortium on Landslides, Kyoto, Japan

In the early morning of August 20, 2014, Hiroshima city was hit by a number of debris flows along a linear rain band which caused extreme downpour. This disaster claimed 74 death, although this city experienced very similar disaster in 1999, claiming more than 30 residents lives.

In the most severely affected debris flow torrent, more than 50 residents were killed. Most of the casualties arose in the wooden, vulnerable houses constructed in front of the exit of torrents.

Points and lessons learnt from the disaster are as follows:

1. Extreme rainfall events : geology and geomorphology does not much affect the distribution of landslides initiation sites.
2. Area of causative extreme rainfall is localized in 2 km x 10 km along the rain band.
3. Authors collected two types of sands from the source scar of the initial debris slides which induced debris flows. Tested by the ring shear apparatus under pore-pressure control condition, clear "Sliding surface liquefaction" was confirmed for both samples even under small normal stress, representing the small thickness of the slides. These results shows even instant excess pore pressure could initiate the slides and trigger slide-induced debris flow by undrained loading onto the torrent deposits.
4. Apparently long-term land-use change affected the vulnerability of the community. Residential area had expanded into hill-slope (mountainous / semi-mountainous area) especially along the torrents. Those communities were developed on the past debris flow fan.
5. As the devastated area is very close to downtown of Hiroshima city, it gave gigantic societal impact to the Japanese citizens. After 1999 Hiroshima debris flow disaster, the Landslide disaster reduction law which intends to promote designation of landslide potential risk zones, was adopted in 2000. Immediately after 2014 disaster, national diet approved revision of the bill.