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Quick Analysis Method for Estimating Debris Flow Prone Area Caused by Overflow from Landslide dam

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When earthquake or torrential rainfall cause deep catastrophic landslides, landslide dams can be formed in mountainous region. If water overflows from the landslide dams, large scale debris flow can occurs and possibly causes serious disasters in the downward region. Debris flow caused by the overflow from landslide dam is possible to affect the larger area than normal debris flow and flash flood. It is important for both a decision maker and resident in the area to recognize the disaster prone area as early as possible. For that reason, it is important to establish a quick analysis method for estimating debris flow prone area caused by overflow from landslide dams under the emergency situation. This situation requires the method to have both accuracy and speed for release. Nonetheless these two factors have trade-off relationship.

We recently developed the quick analysis method to estimate debris flow disaster prone area caused by overflow from landslide dams. The method including the ways of efficient survey and numerical simulation programs called QUAD-L (QUick Analysis system for Debris flow caused by Landslide dam overflow).

Our quick analysis system was actually applied to show the area for evacuation against debris flow caused by overflow from landslide dam formed by the 2011 Typhoon Talas which hit mainly the central region of Japan on September 2-4th, 2011. In addition to background of this application, since May 1st, 2011, Erosion and Sediment Control (SABO) Department of the Ministry of Land, Infrastructure, Transport and Tourism, Japan (MLIT) launched a new scheme using above-mentioned quick analysis method.