Dependency of watershed-scale rainwater storage on watershed-area at the occurrence times of slope failures: a preliminary investigation in Japan

*Hikaru Satou[1], Yoshiyuki Yokoo[2], Chris Leong[2]

1. Graduate School of Symbiotic Systems Science, Fukushima University, 2. Faculty of Symbiotic Systems Science, Fukushima University

The authors investigated whether watershed-scale rainwater storage at the occurrence times of slope failures depended on watershed area. If slope failures can be regarded as near surface processes, then rainwater storage that causes slope failures would be independent of watershed area. However, if slope failures are not of near surface processes, slower hydrological processes would influence the slope failures and they would be dependent on watershed area. Towards the aim, we estimated watershed-scale rainwater storage at several watersheds with different watershed areas. We employed a methodology to estimate watershed-scale rainwater storage that was developed in our research group. The result showed that watershed-scale rainwater storage that caused slope failures increased with watershed area. This result suggest that slope failures are not just near surface processes but also slower processes deep in soil that would contribute to slope failures in relatively large watersheds.

Keywords: hydrograph separation, storage, hydrological processes

