

## ***Interactive comment on “A method for predicting the factor of safety of an infinite slope based on the depth ratio of the wetting front” by B.-G. Chae et al.***

**B.-G. Chae et al.**

bgchae@kigam.re.kr

Received and published: 3 February 2015

Thank you for the constructive comment. I agree with the comment that landslides are triggered by many factors such as rainfall condition, topography, and soil properties. The influential factors can be divided into invariable factors to time function and variable factors to time function. Invariable factors to time function are topography and initial soil properties related to geology of the areas. Variable factors to time function are rainfall condition and its related hydrological properties of soils. The purpose of this study is to understand change of the factor of safety of a slope at the aspect of time-variant factors to landslide triggering. Change of the factor of safety is influenced

C19

by several time-variant factors. As mentioned on your comment, it is necessary to consider various factors to affect landslide triggering. However, it needs to evaluate the influence of each factor on landslide triggering individually before considering all factors simultaneously. There are several previous studies to discuss on rainfall conditions such as rain drop, rain velocity and other physical/mechanical properties. Therefore we will include the discussion about rainfall condition in the manuscript. However, since few studies analyzed direct influence of the depth ratio of the wetting front on change of the safety factor of a slope, this study focused on the influence of the depth ratio of the wetting front among various factors to occur landslides as the landslide occurrence studies at the aspect of time-variant concept. Based on the result of the study, the authors plan to evaluate landslide triggering with multiple factors to occur landslides for the further studies. We also have a plan to compare the results of study with a real time monitoring data in the future. Concerning about the feasibility of this approach for different saturation conditions such that the subsurface soil is more saturated than upper layer, it is difficult to make this condition in soil column testing and subsequently, it is not feasible to predict factor of safety for such condition now. We will consider many different moisture and boundary condition in the future study. But since it needs modification of our testing equipment, it will take some time and effort.

---

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 791, 2015.

C20