

## **A Study on Model Development for Analysis on Debris Flow**

Kyewon Jun<sup>1</sup> and Changdeok Jang<sup>2</sup>, Byonghee Jun<sup>3</sup> and Pierre Y. Julien<sup>4</sup>  
Graduate School of Disaster Prevention, Kangwon National University, Samcheok, South Korea

**Abstract.** Debris flow is a natural disaster giving a large damage to facilities, buildings and human life in moving routes and sedimentary points as a phenomenon moving with stone, mud and water (from clay to large rock). Debris flow takes place by diverse factors of induction such as slope failure by localized heavy rain and erosion of river bed by torrential flow in mountain torrent. For reduction and prediction of damage, it is necessary to make a systematic research on features of topography, geology and rainfall-runoff in the pertinent area. The study constructed a one-dimensional model to analyze characteristics of flow followed by conditions of debris flow in mountains for the most part. With the constructed model, the study grasped characteristic of debris flow followed by changes of discharge and time and researched on changes of volumetric concentration followed by changes of time and changes of flow depth followed by time. Most of former analysis models of debris flow analyzed on debris flow, considering only one particle size. However, the study constructed a model to make it possible to analyze debris flow, considering diverse sizes of particles composed of debris flow. As a result, changes of concentration and flow depth in debris flow followed by time were relatively well-modeled. It is thought that the constructed model can grasp characteristic of debris flow when debris flow takes place and will be utilized to be basic data in calculating sedimentary amount of the sedimentary zone.

**Acknowledgements.** This research was supported by a grant (Code#'08 RTIP B-01) from Regional Technology Innovation Program (RTIP) funded by Ministry of Land Transport and Maritime affairs of Korea government.

---

<sup>1</sup> e-mail: [kwjun@kangwon.ac.kr](mailto:kwjun@kangwon.ac.kr)

<sup>2</sup> e-mail: [cdjang@kangwon.ac.kr](mailto:cdjang@kangwon.ac.kr)

<sup>3</sup> e-mail: [bhjun@kangwon.ac.kr](mailto:bhjun@kangwon.ac.kr)

<sup>4</sup> e-mail: [pierre@engr.colostate.edu](mailto:pierre@engr.colostate.edu)