

Improvement of Hydro-debris2D and It's application to Mountain Hazards and Sediment transport

*Yosuke Yamashiki¹, Tsutao OIZUMI², Ryusuke Kuroki¹

1. Global Water Resources Assessment Laboratory - Yamashiki Laboratory Graduate School of Advanced Integrated Studies in Human Survivability Kyoto University, 2. Japan Agency for Marine-Earth Science and Technology

Hydro-debris2D model has been developed and improved for predicting occurrence of debris flow throughout hydrological regime changes. The model contains three components: (1) Shallow-water based surface flow modules, in order to calculate mountain zone torrential flow regimes, (2) rapid subsurface/interflow in weathered rock, and (3) debris flow and sediment-transport components. The model has been applied into Izu Oshima Island's debris flow event in 2013 and to Hiroshima's debris flow disaster in 2014. As rainfall was input, we made a comprehensive comparison between observed rainfall station datasets from AMEDAS and High-resolution NHM calculation results. In the case of Izu Oshima, heavy rainfall and extensive surface flow occurred in the western part of the island, together with extreme interflow which may have caused the start of debris flow in the wall. In Hiroshima's case, observed rainfall reproduced occurrences of debris flow with better agreement of the disaster due to the slight changes in heavy-rainfall zone. Projected rainfall produced by NHM gave also appropriate results in preparation. The model was also applied to Aso Mountain zone in order to predict possible occurrence of landslides in the zone

Prediction using ensemble rainfall data may be needed in order to increase the accuracy of the occurrence.

Keywords: Hydro-debris 2D, NHM, debris flow