

## The snow avalanche experiment and its simulation with TITAN2D.

Keisuke Mori<sup>1\*</sup>, ITO, Yoichi<sup>1</sup>, Kouichi Nishimura<sup>1</sup>

<sup>1</sup>Graduate School of Environmental Studies, Nagoya university

In mountainous regions, snow avalanches occasionally cause the traffic hazard on the road. For the disaster prevention, the development of the accurate avalanche model is an essential task. Although numerous models have been launched so far, their accuracies are not always satisfactory.

In this study we applied the mass flow model TITAN2D, which assumes that the flow is an incompressible Coulomb continuum and a depth-averaged, 'shallow water'. And, key parameters involved in are the internal friction angle and the bed friction angle. In order to evaluate the model performance, first all, we carried out the chute flow experiments with two types of granules; size, shape and friction angles are different. Experiments gave us a variety of data, such as flow height, velocities, and width. Substituting the internal and basal friction angles of two granules, we carried out the flow simulation with the TITAN2D and compared with the experimental ones. In addition, the effects of internal friction angle were evaluated in reference to the flow width. Same procedures are planned for the snow flow experiment with the same chute and, then, will be applied to the real avalanches recorded in Hiziori, Yamagata.

Keywords: snow avalanche, titan2d