Geophysical Research Abstracts
Vol. 14, EGU2012-13123-1, 2012
EGU General Assembly 2012

Experimental measurements on a powder avalanche impacting an obstacle: 3D velocity field and exerted pressures

P. Caccamo, F. Naaim-Bouvet, H. Bellot, F. Ousset, and T. Faug
Irstea (ex CEMAGREF), Isère, Saint Martin d'Hères, France (paolo.caccamo@cemagref.fr)

In the framework of the Alcotra DYNAVAL Interreg project, this experimental study aims at investigating the dynamical behaviour of a powder snow avalanche impacting an obstacle.
Tests have been realised in a water tank where a salty water solution (rho=1.2kg m-3) flows down in a channel and impacts an obstacle at a distance d=1m from the releasing gate. The set-up geometry reproduces a simplified small-scale model of the real avalanche site of Taconnaz (Chamonix, France). A high-resolution acoustic velocimeter allows measurements on the 3D flow velocity. By measuring the velocity just upstream and downstream of the obstacle, it is possible to determine the influence of the obstacle on the flow.
In a lack of suitable sensors, the pressure exerted on the obstacle is calculated using the classical formula $P=1/2 rho U^2$. Then, density values are required. A new method to measure the flow density is advanced and preliminary results are presented.