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Chute experiments on slushflow dynamics

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Slushflows are gravity flows consisting of a mixture of snow and water, which exhibit considerable damage potential for endangered regions. Small scale slushflows with a volume of 10-15 m^3 were artificially generated on the 30 m long and 2.5 m wide snow chute of the Swiss Federal Institute of Snow and Avalanche Research at Weissfluhjoch, Davos, Switzerland.

Velocity profiles, dynamic pressure, basal and normal shear and flow height data were recorded to estimate the order of magnitude of the drag factor of slush flows interacting with obstacles and to test the measurement instrumentation for the use in slushflow measurements. We give an overview of the experimental setup and discuss experimental problems arising from the specific characteristics of slushflows.

First results are presented which indicate that the drag factor is about a factor 3 times higher than the ones observed in dry flowing avalanches test. Furthermore, a short outline of future adaptations of the optical velocity measurement devices to slushflows is given and a possible application of the measurement results for the development of numerical models of slushflows is suggested.