



Experiments investigating the flow of dry snow on a steep incline.

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Experiments have been carried out investigating the nature of the flow of dry, fine, natural snow down an incline with a view to gaining qualitative and quantitative insight into the formation and dynamics of powder snow avalanches. In particular the transition from dense to suspended flows. Finite volumes of snow were released onto a chute inclined at angles between 45° and 90° . At shallower angles few particles became suspended, while with a vertical chute the drag is almost entirely due to air resistance and the current behaves like a plume. At intermediate angles varying degrees of suspension are achieved. In this paper we will outline the experimental methods developed to perform repeatable experiments with both natural snow and polystyrene balls. Digital video recordings were made of the experiments from two different positions. From these the front and surface contours of the current could be inferred and the flow height and front velocity calculated. In agreement with experiments and theory developed for continuous 2-dimensional currents, the front velocity was found to be almost constant and independent of slope angle. A Pitot pressure sensor measured the static pressure at the base of the current. From this we could draw information about the air flow both inside and in front of the current. A comparison both with air pressure measurements from real avalanches and theory shows good agreement.