



On pore fluid pressure measurements of large scale laboratory generated debris flow mixtures

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Debris flows are highly concentrated mixtures of water and sediment including grain sizes from clay to boulders. To investigate their basic mechanics two groups (in Austria and Berkeley) have built vertically rotating drums in order to create long-lived, accessible, stationary flows in which the underlying mechanics can be investigated. The groups have recently begun cross-collaboration. The Austrian group built a 2.5 m diameter 0.45 wide drum and instrumented it to measure bulk shear stress at the channel boundary as well as the longitudinal distribution of bed normal- and shear stress and pore fluid pressure. A series of experiments with simple uniform grain - fluid mixtures of varying grain concentration and fluid viscosities have been carried out to study the development of pore fluid pressure at the base of the flow at different rotation velocities. Experiments including natural debris flow mixtures are underway in the 4 m diameter, 0.8 wide Berkeley drum. The larger scale enables us to use grain size distributions the same as that found in the field, and to create longer, deeper flows.