

Abstract Submitted
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Avalanches in a V-shape: inverted roll-waves and a curved free surface¹ NATHALIE VRIEND, University of Cambridge, DAMTP, JIM MCELWAIN, Durham University, Department of Earth Sciences — In this work, we create avalanches in a V-shaped channel at different apertures and flowrates. For deep flows (at high apertures and flowrates), roll waves are triggered that have surprising features due to the chosen V-shape geometry. For shallower flows (low to medium apertures), the effects of roll waves are reduced and/or eliminated and the base flow appears. This background base flow is characterized by a curved free surface and recirculation cells whose structure and position is a strong function of the flowrate. An alternative rheology is proposed which accounts for this background base flow in terms of second-order stress differences.

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