

# PLUGOLOGY OF SHALLOW BINGHAM AVALANCHE FLOWS

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## ABSTRACT

We consider a prototype of a 2D Shallow Water Bingham model as derived in [1]. For such integrated models, Finite Volume methods are known to be very efficient. In this talk, we present a 2D well-balanced scheme for this model which is able to compute accurately the arrested states of avalanches of Bingham fluids on real topographies and in the presence of wet/dry fronts. The Bingham law is here solved unregularised via duality methods [2]. Note also the existence of works in the 3D context, e.g. [3]. The idea of integrated models is an attempt to handle more parsimonious models in terms of computational times.

We illustrate the results of these schemes by studying the shape of the deposits obtained in a dam break configuration on complex topographies. For such models, we are also able to show naturally the evolution of the 2D yielded and unyielded zones' topology, also termed (following Neil Balmforth's) "plugology".

## REFERENCES

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