



Woody debris flow behavior from experimental analysis

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A consequence of debris flow in streams are well known, the collapse of the stream flooding all over the land. The high momentum flux of those flows can devastate houses, drag and crushes cars, etc. The presence of woody debris into the flow rise the flow depth and increment the collapse of the streams, bridges and structures.

The present preliminary study offer a qualitative comparison between a debris flow and a woody debris flow with similar flow characteristics. To obtain this a series of experiments were performed in the Morphodynamic Laboratory of the Hydraulic, Marine and Environmental Department. A high slope flume of 9 meters length, 40 cm width and 60 cm high was used. Up to 5 experiments were running in the flume. Initially the material was placed dry in the bed conforming a 20 cm depth of granular material changing the way of water wave entrance. Always water wave was introduced as a step function with different step size and different flow duration in order to introduce the same volume of water, just enough to saturate all the material in the channel. The flow was filmed with a handycam in order to see the general flow characteristics and with a high speed camera, just in a section, to visualize the flow velocities. Several woody pieces were placed along the channel to simulate the presence of wood and tress in the stream. Each tree was constructed in such a way that each one have a root made by rocks simulating a real root and different mass distribution.

The comparison with experiments without wood was clever to understand the influence of woods in the debris flow. The woody debris flow alone creates natural dams along the stream without presence of inciters obstacles along the reach.