



Project <u>or</u> Master Thesis FS 2019

Head: Prof. Dr. Robert Boes Supervision: Dr. I. Schalko, Dr. V. Weitbrecht Partner: Dr. L. Schmocker (Basler & Hofmann)

Sediment continuity and large wood retention at sediment traps

Sediment transport and large wood (LW) transport significantly increase during floods. Transported LW is prone to accumulate at barriers, e.g. at sediment traps. Due to the LW accumulation, the open flow cross-section area decreases. This leads to backwater rise upstream of the structure and possibly a flooding of the surrounding area. In addition, local scour occurs in the vicinity of the retention structure, possibly destabilizing the structure itself.

Sediment traps have the objective to retain transported sediment during floods in order to prevent deposition and flooding of the downstream areas. However, the majority of the sediment traps likewise retain sediment for small discharges. A LW accumulation at the retention structure of the sediment trap can further disrupt sediment transport, thereby increasing the possibility of erosion downstream. Therefore, the local separation of sediment and LW at a retention structure will be investigated using physical modeling.

The physical experiments will be performed at a flume at the Laboratory of Hydraulics, Hydrology, and Glaciology (VAW) (Fig. 1). The objectives of this thesis are to study the effects of (1) retention rack types, (2) approach flow conditions, (3) LW characteristics, and (4) bed material on sediment continuity and LW retention at retention structures.

Please feel free to contact us, if you enjoy performing physical model investigations!



Fig. 1: Model large wood accumulation at a retention rack

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Physical model investigation Project (2 students) or single Master Thesis

Remarks: