

Influence of sediment supply on dynamic river widening

The wide range of restoration measures in channelized, morphologically degraded rivers includes dynamic river widening. This method is based on the reactivation of bank erosion, sediment redistribution, and channel shifting processes within certain spatial limitations. The goal is to restore the morphodynamic processes typical for river-floodplain systems and to increase the diversity of aquatic and terrestrial habitats.



Fig. 1: Hydromorphological flume at VAW

The temporal and spatial development of a dynamic river widening is of substantial interest for flood safety and the assessment of its ecological effectiveness. However, the impacts and interactions of the multitude of influencing parameters are still insufficiently understood. For example, the sediment supply from the upstream river reach is influencing the development of a river widening significantly.

In this study, hydromorphological experiments will be performed in a large-scale physical model (Fig. 1) at the Laboratory of Hydraulics, Hydrology and Glaciology (VAW). The objectives of the thesis are to investigate (i) the width development and (ii) the overall morphological processes in a dynamic river widening. Modern measurement techniques such as terrestrial laser scanning are used and the results will contribute to recommendations on the design of dynamic river widening.

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Remarks:

Hydraulic laboratory experiments
Project language: English or German
1 student for Master's or up to 2 students for project thesis