

# Ice Control Weir on the Sihl River: Study of the effect of gate position and of predictive factors for ice jam

Exploring the winter position of the ice control weir (German: Eiswehr), characterized by lowered gates, raises questions regarding its influence on bedload dynamics and woody debris passage during higher flow conditions (Fig. 1). The current regulatory framework assumes that higher discharges only occur in summer when the gates of the ice weir are open, allowing bedload and woody debris to freely pass underneath. However, in recent years, such events have increasingly occurred during periods when the gates are already in the winter position, for example, in autumn of 2023.



Fig. 1: Ice weir on the Sihl river with ice jam and floating woody debris

In the first part of the project the impact of the lowered gate position on bedload dynamics and the passage of woody debris during a typical summer flood event will be investigated, e.g. based on numerical modeling or similar quantitative tools. In the second part of the project, a historical event analysis will be conducted to identify factors reliably predicting the occurrence of critical ice jam events on the Sihl River. These findings could potentially replace the current rigid summer and winter gate position rules with a more adaptive regulatory approach based on predictive factors, enhancing future flood management strategies.

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**Remarks:** Project-oriented thesis;  
Topic can be distributed only once;

*The project can be conducted in English or German. If done in English, the main findings should be summarized in a German abstract.*