



Eidgenössische Technische Hochschule Zürich  
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**Institute of Environmental Engineering**

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# SEMINAR

**Monday, March 26, 17:00 h, ETH Hönggerberg HIT J53**

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University of Bern, CH

## **Modelling fluvial geomorphic response to a human perturbation**

Abstract:

A method to investigate geomorphic changes in rivers are landscape evolution models (LEMs) that simulate the movement of water and sediment. Although much progress has been made in the development of LEMs, few have been tested in rivers subject to human perturbations and extreme forcings. As such, it remains uncertain if LEMs are useful and stable in extreme situations that include large movements of sediment and water- To shed light on this topic we use a LEM (CAESAR-Lisflood), historic maps and documents to develop a detailed reach scale model (10 m spatial resolution) of the Kander River (Switzerland) starting in the year 1714. We use this model to simulate the extreme geomorphic events that followed engineering works that deviated the Kander River into a lake and resulted in a large decrease in base level. Our model simulates decades of channel change as impacts of the river deviation cascaded upstream. We test our model by replicating observed long term effects to the river that include 1) rates of incision within the deviation, 2) knickpoint migration, and 3) delta formation in the lake. In doing this we build confidence in the LEM and gain understanding of how the river system responded to anthropogenic perturbations.

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