

Dr. David Vetsch

Laboratory of Hydraulics, Hydrology and Glaciology (VAW) of ETH Zürich

From source to mouth - need for cross-scale numerical models to address current challenges in river management

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KIT, Bldg.10.81, Room 305

or online:

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Abstract

Restoring continuity and connectivity along rivers is essential for river ecosystems and biodiversity. The speaker will take you on a short journey along a river from its source to its mouth and demonstrate the relevance of various research projects and involved numerical modelling using a number of recent examples. These include reservoir sedimentation and the effect of sediment bypassing, detailed flow structures in steep channels further downstream and its role for assessing bed stability, how sediment supply can affect the morphology of river widenings and their aquatic habitats, dispersal of seeds and emerging vegetation on river bars, how fish can safely migrate downstream at a powerplant, and last but not least the deposition of sediments at the river mouth forming a delta that needs to be managed to meet stakeholder requirements – enjoy the trip.

Biography

Dr. David Vetsch studied civil engineering and holds a MSc and Dr. sc. degree from ETH Zurich. He joined the Laboratory of Hydraulics, Hydrology and Glaciology (VAW) in 2000 as research engineer. From 2002 on he was working as project manager and director of development of the BASEMENT software. In 2011, he completed his doctorate on the modeling of sediment transport using meshless particle methods. Since 2013 he is head of the computational fluid- and morphodynamics group at VAW and lecturer at the Dept. of Civil, Environmental and Geomatic Engineering of ETH Zurich. He is an expert in computational fluid dynamics and his research focusses on hydraulic and river engineering problems.

Contact information: dvetsch@ethz.ch