



B.Sc. / M.Sc. Topic

2D Numerical Modelling of Bedload Transport in the Inn River

Background

The Inn is the river with the highest discharge in Bavaria and at the same time the largest northern alpine tributary of the Danube. In 1924, the VERBUND-Innkraftwerke GmbH constructed a hydropower plant at Töging with a diversion weir at Jettenbach and the so-called Innwerk artificial channel. As a result, a residual flow section between Jettenbach and Töging shows considerable water management and ecological deficits due to a lack of sediment supply and impaired discharge. In the next years, several measures will be implemented to improve the physical habitat conditions of the residual flow section. To evaluate morphological changes of rivers over the course of time, numerical models have become a strong tool in recent years. A two-dimensional hydro-morphodynamic model has been established and calibrated for the above mentioned flow section and is therefore available for further studies within the framework of a Bachelor's or Master's thesis. Possible investigations include:

- Comparison with other modelling software
- Methods of detailed calibration and validation
- Sensitivity analyses
- Simulations of small structures or gravel augmentation scenarios

The results of this study will be part of a project that aims to develop a holistic sediment management concept for the residual flow section of the Inn River.

Thesis Overview

1. Literature review on hydro-morphodynamic modelling with 2D numerical models.
2. Familiarize with the state-of-the-art hydro-morphodynamic numerical model software and the project region.
3. Develop, run and evaluate different modelling scenarios.
4. Interpret the results and draw relevant conclusions.



Apply now!

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The thesis can be written in German or English.

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