M.Sc. Topic
Make the Inn sustainable again –
2D Numerical Modelling of Sediment Replenishments in the River Inn

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. With its source in the
Swiss Engadine, the upper reaches of the Inn represent a typical Alpine
river.

In 1924, the VERBUND-Innkraftwerke GmbH constructed a hydropower
plant at Töging with a diverson 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. Therefore, a
sustainable sediment management concept is currently developed, which
also includes ecologically oriented sediment replenishments in the Inn River.

To evaluate morphological changes of rivers over the course of time, two-
dimensional numerical models have become a strong tool in recent years. The goal
of this study is to develop sediment replenishment scenarios and to verify their
effect on the river morphology using a state-of-the-art 2D numerical model.

Thesis Overview
1. Literature review on sediment replenishment and hydro-morphodynamic modelling with 2D
   numerical models
2. Familiarize with the state-of-the-art hydro-morphodynamic numerical model software
   “Hydro-FT” and the project region
3. Develop sediment replenishment scenarios based on the literature review
4. Run hydro-morphodynamic models to evaluate and adapt the replenishment scenarios
5. Interpret the results and draw relevant conclusions

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The thesis can be written in German or English.

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