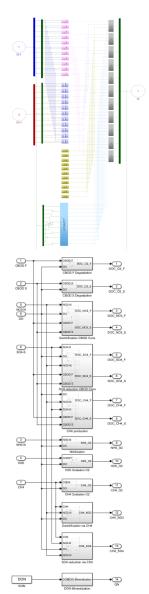Technische Universität München

Faculty of Civil, Geo and
Environmental Engineering

Chair of Hydrology and
River Basin Management

Study Project – Environmental Engineering
Workload: 12 ECTS, 360 hours

Topic: Assisting release of open-source MATLAB software for water quality model SimShui

Study Objective:
River water quality models offer a vital tool for engineers and decision-makers in water management. Water quality models usually contain multiple stated variables and equations for biogeochemical processes. To enable users to get started without being involved in the complexity, software developers often provide water quality models with an interface for pre- and post-processing. Although the interface makes it convenient for users to use models, it also creates a communication barrier between users and models. With the advancement of monitoring technology, the users may need to modify the equations based on their new process insights. Besides, the interface also increases the difficulty of sensitivity and uncertainty analysis, which are more and more called to become the standard protocol of model evaluation. To meet these new requirements, the water quality modeler community needs open-source models.

Dr. Jingshui Huang has developed a water quality model 'SimShui' on the Matlab Simulink platform. Currently, she is working on releasing the software to the public. This study project aims to assist in the software release by preparing the necessary documentation.

Task:
The student (you) will first read the basic theory of water quality models. You will try to understand the structure of SimShui with our introductions. You will help to improve the interface for pre- and post-processing by commenting on the code lines. A theoretical introduction and user manual of SimShui will be prepared for its final release on GitHub. Constructive inputs from your side and insightful discussion are very welcome.

We want to find a student, who is familiar with Matlab (even better also Simulink) and good at organizing to participate in this project.

Time:
As soon as possible, e.g., 15.02.2021 – 15.05.2021

Contact:
Please send your interest to Dr. Jingshui Huang, jingshui.huang@tum.de