

MSc project

Discipline: HYDROLOGY and WATER RESOURCES MANAGEMENT

Thesis advisor: Prof. Dr. P. Molnar

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Data analysis of Spöl river data

In Spring 2021, we collected suspended sediment concentration (SSC) samples and turbidity data at two and four different locations, respectively. We simultaneously sampled on the Inn, on the Spöl during a flood, and below the confluence of these two rivers. In Spring 2022, we will repeat this sampling on the Spöl.

The task of the student will be to do 1) a simple regression analysis on the turbidity-SSC relationship, 2) apply this relationship to all four turbidity sampling locations to obtain the SSC at the four locations for both 2021 and 2022 Spring campaigns, 3) investigate the discharge/suspended sediment hysteresis loops and analyze what characteristics influence these loops. For example, some questions to answer could be:

1. What factors influence these hysteresis loops? (e.g. landcover type, geology, sediment supply, soil moisture, rainfall)
2. Do artificial flood hysteresis loops differ from those we would expect from widespread rainfall events (long duration, low intensities) and heavy, local, short-duration storms? If so, how do they differ and why?
3. What does this say about the connectivity/disconnectivity of the catchment to the main stem? Does the hydropower plant affect the catchment connectivity and how?

Discharge/SSC hysteresis loops literature:

- [Seeger, M., et al. *Journal of Hydrology* 288.3-4 \(2004\)](#)
- [Navratil, Oldrich, et al. *Earth Surface Processes and Landforms* 37.8 \(2012\)](#)

Requisites: We are looking **for one student** to conduct this analysis during their project work in the **Spring or Fall 2022 semester**.

Number of Students: 1