

**Master's Thesis or Project Work  
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# The morphological evolution of an alpine gravel-bed river, Moesa

Most rivers worldwide underwent severe anthropogenic modifications in the last centuries, to accommodate and ensure human activities and security. Such modifications often interact with the natural fluvial processes (for e.g., sediment dynamics) and affect the morphological evolution of rivers. Nowadays, effective river restoration or conservation actions require to infer possible morphological trajectories of river systems, especially in highly altered context. Through a characterization of geo-morphological change, it is possible to peel back the layers of time to investigate how and why a river has changed.

The case study for this thesis is Moesa River (Fig. 1) from Soazza to Ticino River confluence in Canton Graubünden. The main goals of the thesis are: i) to reconstruct a timeline of the morphological evolution of Moesa River; and ii) to identify and discuss possible anthropogenic (i.e., damming, sediment mining) and natural (i.e., floods, sediment fluxes from tributaries) breakpoints occurred in last decades.



Fig. 1: Moesa River at Cabbio, Canton Graubünden

The investigation will be based on GIS and data analysis to account for the morphological evolution of the river, including analysis of hydrological data, aerial imageries, digital elevation models, and available cross-sectional data.

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**Remarks:** Research-based thesis; communication and report in English;  
thesis can be continued with a follow-up project as part of the  
Master's thesis (only possible for Civil Engineering students)