

*Hydrology Seminar***Turn on your loopleft: progress in the modeling of river loops****Dr. Niccolò Ragno**

Department of Civil, Environmental and Mechanical Engineering, University of Trento, Italy

*Date: Tuesday 5 December**Time: 16:30-17:30**Room: ETH Hönggerberg, HIF D80.2**Zoom link: <https://ethz.zoom.us/j/62290062452>***Abstract**

Along their course rivers often display a multi-thread pattern. This sometimes occurs in the form of a loop, where a main channel diverts water and sediment between two smaller anabranches, which flow around islands and ridges then reconnecting further downstream. River loops can be encountered as individual elements in natural single-thread rivers, or as nested components in multi-thread networks like anastomosing and braided rivers.

Moreover, the artificial restoration of pristine looping patterns is part of river training techniques aimed at recovering morphological and ecological processes of degraded fluvial ecosystems.

In this seminar, some recent advances about the morphodynamics of looping patterns will be presented. In particular, a basic question will drive our discussion: is there some relationship between the spatial structure of river loops and their evolutionary trajectory? I will start by presenting a recent analysis of a global loop dataset. Following basic principles of dimensional analysis, it will be shown how the average length of anabranches emerging from data is not randomly distributed, but follows quasi-universal relations regardless of the specific climatic and geologic context of single rivers. Successively, a theoretical explanation for the scaling relations is proposed. I will end the talk by discussing a one-dimensional modeling framework to explore the response of looping systems to the long-term hydrological regime.