



Master's thesis opportunity Residence time of wood in rivers

Context:

Instream wood (i.e., downed trees, trunks, rootwads and branches in rivers) is a key element of river ecosystems. Wood significantly affects river morphology and sediment dynamics, supporting biodiversity, influencing the nutrient and organic carbon cycles, and providing a variety of physical habitats in rivers. The amount and residence time of wood stored in rivers varies significantly. In temperate regions instream wood may persist for centuries depending on the riparian forest composition, channel morphology and flood intensity. However, the typical instream wood load and wood residence time in Alpine rivers are still unknown. But the knowledge on where and how much wood is stored in a river is essential, for example for the development of river restoration strategies.

Goals:

The goal of this project is to improve the knowledge about wood load and wood residence time in Swiss rivers. To do so, field surveys will be complemented by available high-resolution satellite- or drone-based aerial imagery and dendrochronological techniques to quantify instream wood residence time.

Knowledge and skill required:

High motivation. Interest and motivation for fieldwork in riverine environments and laboratory analysis of wood samples (dendrochronology). Basic knowledge of GIS and remote sensing would be an advantage. Good knowledge of English.

Collaboration:

SNSF Project led by Prof. Virginia Ruiz-Villanueva (RivES Research Group <https://wp.unil.ch/rives/>)

Keywords: instream large wood, riparian vegetation, river ecosystem, tree rings, dendrochronology

Working place: Fieldwork in several Swiss rivers (e.g., Vallon de Nant, Arve, Valserine, Allondon) and laboratory work at IDYST, Geopolis, UNIL-Mouline, CH-1015 Lausanne, Switzerland

References:

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- Wohl, E., Kramer, N., Ruiz-Villanueva, V., Scott, D., Comiti, F., Gurnell, A., Piégay, H., Lininger, K., Jaeger, K., Davis, W., Fausch, K., 2019. The natural wood regime in rivers. *Bioscience* 69, 259–273. doi:<https://doi.org/10.1093/biosci/biz013>

Contact: Virginia Ruiz-Villanueva, IDYST, Virginia.Ruiz-Villanueva@unil.ch
 Pascal Vittoz, Université de Lausanne, IDYST, pascal.vittoz@unil.ch; 021 692 43 67