



## UFZ-Seminar



Research Unit

## Water Resources and Environment



26 April 2021, 3 p.m.

Seminar Room 1, Brückstr. 3a, Magdeburg (online seminar)

### Damien Bouffard

EAWAG Kastanienbaum Schweiz

will give a talk on:

### **Aquatic physics in 2021: juggling with environmental fluid dynamics, limnology and open science**

Nature doesn't care about discipline. Yet, limnology, as science, is fundamentally structured by disciplines. Aquatic physics, for instance, consists in unravelling and quantifying processes responsible for transport and mixing in water. Those dynamical processes contribute to the lake ecosystem functioning and thereby call for interdisciplinary studies and exchanges of expertise. In this talk I will present the framework we are currently developing in Switzerland to facilitate scientific exchanges in limnology. Here, I will practically start with one research question in the field of aquatic physics: Does night cooling significantly affect exchanges between the littoral and the pelagic regions (part 1)? I will then illustrate how we could potentially increase research efficiency by optimizing open access to observations and modelling results to the broad limnology community (part 2).

Part 1. A remaining central question in lakes is about the connection between the littoral and the pelagic regions. The exchanges are driven by lateral transport that controls the accumulation or dispersion of natural and anthropogenic particles in the shallow. River inflows and wind-driven transport are two important drivers of cross-shore flows. Surface convection on sloping boundaries, or thermal siphon, is another important, yet less visible, process that can flush the littoral water on a daily basis. Here, I will present our recent developments in the quantification of this process.

Part 2. Today, technological developments have opened countless ways to investigate lakes, with the drawback that we are now overwhelmed by data. Efficiently utilizing the benefits of present-day data and technology requires optimizing the way data is collected, shared and reused to insure reproducibility after the end of the project's timeframe. I present here a recently developed user-friendly web based open access data platform Datalakes (<https://www.datalakes-eawag.ch/>). Datalakes was built to foster scientific data exchange by promoting open access through a visualization, and extraction framework of environmental data and products (in-situ, remote sensing and hydrodynamic models).