



## MSc Project

### Resilience of meta-ecosystems: how openness and diversity buffer for ecosystem functioning under perturbation.

We are looking for an enthusiastic MSc student who will be working on community dynamics and ecosystem functioning. The project involves laboratory work using microcosm experiments and is part of a larger research program (based at Eawag, Dübendorf).

Ecosystems are connected by an exchange of both organisms and resource flows (i.e. degree of openness). Metacommunity studies have showed that intermediate dispersal rates of organisms from a regional species pool can buffer against changes in ecosystem function and diversity after environmental change (spatial insurance hypothesis). However, these studies ignore the fact that ecosystems differ not only in their openness to species dispersal, but also in resource flows. The recently developed meta-ecosystem theory integrates this, and postulates that resource flows between ecosystems matter for ecosystem functioning and its response to anthropogenic pressure.

In this MSc project, you would develop a meta-ecosystem microcosm experiment to obtain a mechanistic understanding if and how organism dispersal versus resource flow affect ecosystem diversity and functioning under environmental stress. This is important, as the degree of openness of ecosystems is currently changing: systems become either more closed through habitat fragmentation or more open through human-induced transportation. We expect that organism dispersal as resource flow can have similar effects to ecosystem functioning, but may strongly depend on the severity of the environmental stress and the diversity present in the meta-ecosystem.

Requirements: Interest in ecology and ecosystem functioning, and willingness to perform laboratory microcosm experiments with protist species using well-equipped facilities to perform video analysis. The MSc project can start any time.



#### Contact/Supervision:

Prof. Dr. Florian Altermatt ([Florian.Altermatt@eawag.ch](mailto:Florian.Altermatt@eawag.ch)), IEU, University of Zurich and

Dr. Lynn Govaert ([Lynn.Govaert@eawag.ch](mailto:Lynn.Govaert@eawag.ch)), Eawag, Dep. Aquatic Ecology, Dübendorf.

More info: [www.altermattlab.ch](http://www.altermattlab.ch)

We are looking forward to meeting you!