

DESCRIPTION OF INFRASTRUCTURE

- Name: Lunzer:::Rinnen - Experimental Flumes
- Location: Coordinates: 47°51'09.9" N, 15°03'57.3" E; near Lake Lunz and WasserCluster Lunz (WCL) research center, Austria.
Six streamside flow-through mesocosms (flumes), 40m long, 40cm x 40cm wide/deep
- Ecosystem: freshwater, headwater stream.
- Controlled Parameters:
 - Discharge (0 to ~7,5 L/s), flow velocity, water level, slope, bed structure/ sediment composition, biofilm age (often co-variable), light /shading
- Operation modes:
 - Flow-through mode with raw stream water to all flumes from same header tank
 - Recirculation mode, with separate pumps for each flume.
- Experimental Designs:
 - Replicated treatment vs. non-treatment (3 vs. 3) often combined with co-factor time (= biofilm age). Pre-treatment time ~3 weeks needed. Statistical method: two-way ANOVA or PERMANOVA.
 - Gradient approach: Treatment intensity along gradient (no treatment to intense treatment, no replication), for example for drought or addition studies. Statistical method: two-way ANOVA or PERMANOVA.
- Research Topics: Biofilm diversity, stream ecosystem functioning, soil, sludge and nutrient additions, drought simulation, hydrodynamic variability.
- Uniqueness: Adjacent to a nearly pristine pre-alpine stream.
- Instrumentation:
 - Measurements of temperature, light and O₂ dynamics etc. *in-situ* possible.
 - Instrumentation includes a system so measure full high frequency (1h) DOC, NO₃, COD, Turbidity etc. from DOM absorbance spectra (Scan:::Spectrolyser probe), for all 6 flumes plus the inlet. Other *in-situ* probes can be added to measurement chamber.
 - Manual sampling of in and outlet.
- Supporting Laboratory and other facilities: Close to adjacent stream, small hut for sample preparation etc. Labs in 2 and 15 min drive at the BSL and WCL main buildings. Lodging at WCL possible.
- Scientific possibilities, manipulated factors, impossibilities (e.g. toxins): All types of additions can be done in flow-through mode, except for toxins. Harmful substances possibly doable in circulation mode.
- Uniqueness of your mesocosm facility, local expertise, ...
Local expertise in DOM biogeochemistry, Absorbance/Fluorescence Spectroscopy of DOM, High-resolution measurements of water quality, CO₂ and CH₄ evasion, biofilm structure and biodiversity.
- Planned experiments for 2018, 2019 and 2020: Planned experiments on microbial inoculation of Biofilms and microbial establishment in summer 2018.

- People/Number/Type: Needed to prepare: 5-7 people for 1-2 weeks; to run only 2 people needed. Cleanup needs 5-7 people for one week again.
- Years/Time/Season: Experiments possible during frost free season; May to October. Common duration shall be minimum of 4-6 weeks, as biofilm needs 2-3 weeks to mature, depending on question.
- Link to website: <http://biofilm.univie.ac.at/index.php?content=Lunzer%20Rinnen%20-%20Experimental%20Flumes&category=FIELD%20SITES>
- Contact: Dr. Jakob Schelker, University of Vienna, jakob.schelker@univie.ac.at



Overview from Header Tank.



Header Tank with inflow pipes.