Data for: "Experimental riparian forest gaps and increased sediment loads modify stream metabolic patterns and biofilm composition"

SND-ID: 2023-75-1. **Version**: 1. **DOI**: https://doi.org/10.5878/xvy7-q004

Download data

Chla_channels.txt *(15.04 KB)*

Chla_streams.txt *(27.65 KB)*

Oxygen_incubations_for_community_respiration.txt *(28.6 KB)*

Whole_channel_dissolved_oxygen_data_for_metabolic_rates.txt *(2.59 MB)*

Associated documentation

Methods_section_for_chla_data.pdf *(190.58 KB)*

Methods_section_for_incubation_and_oxygen_data.pdf *(223.7 KB)*

README.txt *(3.8 KB)*

Download all files

2023-75-1-1.zip *(~3.07 MB)*

Citation

Myrstener, M. (2023) Data for: "Experimental riparian forest gaps and increased sediment loads modify stream metabolic patterns and biofilm composition" (Version 1) [Data set]. Swedish University of Agricultural Sciences. Available at: https://doi.org/10.5878/xvy7-q004

Creator/Principal investigator(s)

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Research principal

Swedish University of Agricultural Sciences - Forest ecology and management

Principal's reference number

SLU.seksko.2019.4.2-92

Description

This dataset was used for the paper "Simulated riparian forest gaps and increased sediment loads modify stream metabolic patterns and biofilm composition". Raw data includes mesocosm stream channel oxygen data, temperature data, and flourometric chl a data. This manuscript is part of a larger project which aims at evaluating how current forest management practices effect ecological functions of headwaters. This specific dataset was collected to answer how fine sediments and light conditions affect algal biofilms in small, boreal waters.

Data contains personal data

No

Language

English

Time period(s) investigated

2022-07-01 – 2022-10-31

Variables

24

Data format / data structure

Numeric

Text

Data collection 1

- Mode of collection: Experiment
- Description of the mode of collection: We estimated biofilm biomass as chl α (µg cm-2) in each channel. For all chl α estimates, we used a BenthoTorch, an in-situ, hand-held fluorometric instrument (bbe Moldaenke, Germany). The BenthoTorch estimates chl α and distinguishes between diatoms, green algae and cyanobacteria. Estimates of total chl α from a BenthoTorch compare well with conventional spectrophotometric methods when biofilms are relatively thin, as in our situation. However when quantifying community composition, the BenthoTorch have been shown to overestimate the abundance of diatoms, yet the instrument performs well in factory calibrations against standards. Still, we only used the community composition results to note presence or absence of green algae in the channels. All statistical analyses used the sum of diatoms, green algae and cyanobacteria (i.e. total chl α).
- Time period(s) for data collection: 2022-07-01 – 2022-10-31
- Instrument: BenthoTorch (Technical instrument(s)) - Handheld, in situ fluorometric chla analyser
- Temporal resolution: 7 day

Data collection 2

- Mode of collection: Experiment
- Description of the mode of collection: Each channel was equipped with a miniDOT (Precision Measurement Engineering Inc., USA) to record dissolved oxygen. Metabolism was estimated using the single-station diel oxygen method approach where gross primary production (GPP) and Ecosystem Respiration (ER) was estimated using Bayesian inverse modelling.
- Time period(s) for data collection: 2022-07-01 – 2022-10-31
- Instrument: miniDOT (Technical instrument(s)) - A miniDOT records dissolved oxygen and is deployed in water
- Temporal resolution: 10 minute

Geographic spread

Geographic location: Västerbotten County, Västerbotten Province

Geographic description: The experimental channels are located next to Svartberget researchstation outside Vindeln, Västerbotten. The surveyed streams are located outside Nordmaling, Rödånäs, Gräsmyr, Bjurholm and Vindeln.

Responsible department/unit

Forest ecology and management

Contributor(s)

Lenka Kuglerová - Swedish University of Agricultural Sciences, Forest ecology and management

Larry Greenberg - Karlstad University

Funding 1

- Funding agency: Swedish Research Council for Environment Agricultural Sciences and Spatial Planning
- Funding agency's reference number: 2019-01108

Funding 2

- Funding agency: World Wide Fund for Nature
- Funding agency's reference number: 300326

Research area

Environmental sciences (Standard för svensk indelning av forskningsämnen 2011)

Physical geography (Standard för svensk indelning av forskningsämnen 2011)

Ecology (Standard för svensk indelning av forskningsämnen 2011)

Agriculture, forestry and fisheries (Standard för svensk indelning av forskningsämnen 2011)

Biota (INSPIRE topic categories)

Inland waters (INSPIRE topic categories)

Keywords

Rivers/stream, Cyanobacteria (blue-green algae), Forestry, Metabolism, Stream, Sediment, Chlorophyll, Buffer zone, Gross primary production, Clearcut, Land use, Biofilms, Chl a, Clearcut, Forestry, Stream

Publications

Myrstener, M., Greenberg, L. & Kuglerova L. (2023). Experimental riparian forest gaps and increased sediment loads modify stream metabolic patterns and biofilm composition. Ecosphere.
DOI: https://doi.org/10.1002/ecs2.4695

Accessibility level

Access to data through SND
Data are freely accessible

Use of data

Things to consider when using data shared through SND

License

Versions

Version 1. 2023-10-02

Contact for questions about the data

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Download metadata

DataCite

DDI 2.5

DDI 3.3

DCAT-AP-SE 2.0

JSON-LD

PDF

Citation (CSL)

File overview (CSV)

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