

# Gerard Rocher-Ros

PhD in Physical geography, Umeå University  
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*Ecosystem ecologist interested in landscape patterns of ecosystem function,  
with a background in complex systems and statistical modelling.*

## WORK EXPERIENCE

Postdoctoral researcher at **Umeå University, Sweden**. Climate Impacts Research Centre. Department of Ecology and Environmental Science. 2020 - present

Project: *Effect of reindeer herbivory on ecosystem functioning of stream networks in the tundra*. Advisors: Johan Olofsson, Ryan Sponseller.

## EDUCATION

**Umeå University, Sweden**, Ph.D. in Physical geography 2014-2019

Climate Impacts Research Centre. Department of Ecology and Environmental Science.

Thesis: *Biophysical controls of CO<sub>2</sub> evasion in inland waters*. [\[link\]](#) Advisor: Reiner Giesler. Co-advisors: Ryan Sponseller, Ann-Kristin Bergström

**Autonomous University of Barcelona, Spain**, M.S. Statistical Modelling 2013-2014

Department of Mathematics. Specialty in Statistical Modelling and Complex Systems.

Thesis: *"Multifractal patterns in ecosystems: implications for the response of forest fires to environmental conditions"*. [\[link\]](#) Advisor: Salvador Pueyo

**University of Barcelona, Spain**, B.S. Environmental Sciences 2008-2013

## SCIENTIFIC PUBLICATIONS

1. **Rocher-Ros G**, Giesler R, Lundin E, Salimi S, Jonsson A, Karlsson J. (2017) *Large lakes dominate CO<sub>2</sub> evasion from lakes in an arctic catchment*. [Geophysical Research Letters](#)
2. Myrstener M, **Rocher-Ros G**, Burrows RM, Bergström AK, Giesler R, Sponseller RA. (2018) *Persistent nitrogen limitation of stream biofilm communities along climate gradients in the arctic*. [Global Change Biology](#)
3. Lyon SW, Ploum SW, van der Velde Y, **Rocher-Ros G**, Mörtz C-M, Giesler R. (2018) *Lessons learned from monitoring the stable water isotopic variability in precipitation and streamflow across a snow-dominated sub-arctic catchment*. [Arctic, Antarctic and Alpine Research](#)
4. **Rocher-Ros G**, Sponseller RA, Lidberg W, Mörtz C-M, Giesler R. (2019) *Landscape process domains drive patterns of CO<sub>2</sub> evasion from river networks*. [Limnology and Oceanography: Letters](#)
5. **Rocher-Ros G.**, Sponseller RA, Bergström A-K, Myrstener M, Giesler R. (2019). *Stream metabolism controls diel patterns and evasion of CO<sub>2</sub> in Arctic streams*. [Global Change Biology](#)

*In review / preparation*

- **Rocher-Ros G.**, Harms TK, Sponseller RA, Väisänen M, Mörtz C-M, Giesler R. *Photosynthesis overrides photo-oxidation in CO<sub>2</sub> dynamics of Arctic permafrost streams*. In review.
- Serikova S, Pokrovsky OS, **Rocher-Ros G**, Denfeld B, Karlsson J. *Greenhouse gas emissions from Western Siberian Inland Waters*. In review.
- Myrstener M, **Rocher-Ros G**, Gomez-Gener L, Giesler R, Sponseller RA. *Nutrient availability shapes metabolic seasonal regimes in Arctic streams*. In review.
- Harms TK, **Rocher-Ros G**, Godsey SE. *Emission of greenhouse gases from water tracks draining arctic hillslopes*. In review.

- Gomez-Gener L, **Rocher-Ros G**, Sponseller RA, ... , Battin TJ. *Nocturnal carbon dioxide emissions from streams are an unaccounted major source*. In prep.
- **Rocher-Ros G**, Pueyo S. *Multifractal patterns make ecosystems sensitive to climate*. In prep.

## ORAL COMMUNICATIONS

- **Rocher-Ros G**, Sponseller RA, Mörtz C-M, Myrstener M, Giesler R. *Aquatic metabolism is an important driver of CO<sub>2</sub> dynamics in Arctic streams of Sweden*. (Presented at SFS meeting in Detroit (USA), 2018, and in ASLO meeting in Victoria (Canada), 2018)
- Myrstener M, **Rocher-Ros G**, Gomez-Gener L, Giesler R, Sponseller RA. *Nutrient availability shapes seasonal metabolic regimes in Arctic streams*. (Presented in ASLO meeting in Victoria (Canada), 2018)
- **Rocher-Ros G**, Sponseller RA, Mörtz C-M, Giesler R. *High resolution measurements of CO<sub>2</sub> fluxes in an Arctic stream network reveal high spatial variability*. (Presented at SEFS meeting in Olomouc (Czech Republic), 2017)
- **Rocher-Ros G**, Burrows R, Bergström A-K, Giesler R, Sponseller RA. *Resource limitation in arctic stream ecosystems: a comparative study in three ecoregions in northern Sweden*. (Presented at ASLO Meeting in Granada (Spain), 2015)
- Karlsson J, Giesler R, **Rocher-Ros G**, Salimi S, Lundin E. *The role of inland waters in the carbon cycle at high latitudes: Assessment from integrated terrestrial-aquatic carbon balances of subarctic catchments* (Presented at ASLO+SFS meeting in Portland (USA), 2014)
- Karlsson J, Klaus M, Lundin E, **Rocher-Ros G**. *Spatiotemporal variability in GHG fluxes and implications for accurately estimating GHG emissions from inland waters*. (Presented at AGU Meeting in San Francisco (USA), 2013)
- Vogel H, Wagner B, Rosén P, Meyer-Jacob C, Ritter B, Boxberg F, Gudas C, **Rocher-Ros G**, Snowball I. *Lake floor morphology, sediment architecture, and patterns of sedimentation in Lake Torneträsk*. (Presented at EGU Meeting in Vienna (Austria), 2012).

## TEACHING EXPERIENCE

### Umeå University

- Teaching assistant in *Arctic Geoecology*. 2015-2018  
Field course taught in Abisko, Sweden. Coordinating field projects and one lecture. Course coordinator: Reiner Giesler.
- Teaching assistant in *Water quality and management*. 2015-2017  
Supervising lab classes about aquatic macroinvertebrates and its use for water quality assessment. Course coordinator: Ryan Sponseller.
- Teaching assistant in *Aquatic Biogeochemistry*. 2015-2017  
Leading a field project on greenhouse gas dynamics in experimental ponds. Course coordinator: Ann-Kristin Bergström.
- Teaching assistant in *Miljöresan* 2015-2017  
Field course taught in Abisko, Sweden. Coordinating field projects and leading one excursion. Course coordinator: Micael Jonsson.
- Teaching assistant in *Environmental disturbances in soil and water* 2015  
Teaching practical sessions on spatial statistics, applied to soil and water disturbances Course coordinator: Håkan Eriksson.

## PROFESSIONAL CONTRIBUTIONS AND AFFILIATIONS

- Reviewer for *Hydrological Processes, Aquatic Sciences*.
- Member of the *Association for the Sciences of Limnology and Oceanography (ASLO)*.

- Member of the *Society for Freshwater Science* (SFS).
- Member of the *Asociación Ibérica de Limnología* (AIL).

## RELEVANT SKILLS

### *Software skills*

- Proficiency level programming with R.
  - Data processing and statistical analysis (*tidyverse*)
  - Graphical visualisation (*ggplot2*, *shiny*)
  - GIS analysis and hydrological modelling (*whitebox*)
  - Reproducible documentation (*Rmarkdown*)
- Intermediate level programming in C.
- Intermediate GIS user. Knowledge of ArcGIS, QGIS, RGIS.
- User of git/github.
- User of illustration software (Inkscape, Adobe Photoshop/Illustrator)
- User of Linux and Windows OS.
- Modelling aquatic stream metabolism using inverse Bayesian model fitting.
- Development of simple celular automata models.
- Development of basic websites using Hugo in markdown.

### *Environmental science skills*

- Coordinate and perform fieldwork campaigns in remote places.
- Perform hydrological measures in streams and rivers.
- Field and laboratory handling of a wide array of water, soil and biological samples.
- Maintain, calibrate and program aquatic sensors (CO<sub>2</sub>, O<sub>2</sub>, temperature, pressure, conductivity ...)
- Use of Campbell Scientific dataloggers, including basic knowledge of electrical wiring and management.
- Interest and basic understanding of emerging sensor and logging platforms (Arduino).

### *Languages skills*

- Native in: Catalan, Spanish, Occitan.
- Profficient in: English.
- Intermediate in: French, Swedish.

### *Community engagement*

- Member of the European-wide collaborative project “Urban Algae”, on the societal perception of the ecological status of urban ponds.
- Vice-chairman (2015-2017) and Chairman (2017-2018) of the PhD branch of NTK (Student association of the Science and Technology faculty, Umeå University).
- Treasurer of the Association *Eth Pè deth Cèu* (2010-2015). Association with the aim to promote the knowledge of the Pyrenees in Val d’Aran, Spain.
- Responsible of one study site of the Catalan Butterfly Monitoring Scheme in Val d’Aran, Spain (2009-2014).