

# Gerard Rocher-Ros

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

## 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 from Arctic inland waters*. 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"*. Advisor: Salvador Pueyo

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

## PROFESSIONAL APPOINTMENTS

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

Project: *Effect of reindeer herbivory on the reorganization of nutrient stocks and export to stream networks in the Arctic*. Advisors: Johan Olofsson, Ryan Sponseller.

Research engineer at **Umeå University, Sweden**. June 2019 - January 2020  
Climate Impacts Research Centre. Department of Ecology and Environmental Science.

## 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. 2020. *Stream metabolism controls diel patterns and evasion of CO<sub>2</sub> in Arctic streams*. [Global Change Biology](#)
6. **Rocher-Ros G**, Harms TK, Sponseller RA, Väisänen M, Mörtz C-M, Giesler R. *Metabolism overrides photo-oxidation in CO<sub>2</sub> dynamics of Arctic permafrost streams*. [Limnology and Oceanography](#)

*In review or in press*

- Myrstener M, Gomez-Gener L, **Rocher-Ros G**, Giesler R, Sponseller RA. *Nutrient availability shapes metabolic seasonal regimes in Arctic streams*. In minor revisions
- Karlsson J, Serikova S, **Rocher-Ros G**, Denfeld B, Pokrovsky OS. *Greenhouse gas emissions from Western Siberian Inland Waters*. In review

- Harms TK, **Rocher-Ros G**, Godsey SE. *Emission of greenhouse gases from water tracks draining Arctic hillslopes*. In review

## 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*. SFS meeting 2018 (Detroit, USA) and ASLO meeting (Victoria, Canada)
- Myrstener M, **Rocher-Ros G**, Gomez-Gener L, Giesler R, Sponseller RA. *Nutrient availability shapes seasonal metabolic regimes in Arctic streams*. ASLO meeting 2018 (Victoria, Canada)
- **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*. SEFS meeting 2017 (Olomouc, Czech Republic)
- **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*. ASLO meeting 2015 (Granada, Spain)
- 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* (ASLO+SFS meeting 2014 (Portland, USA))
- Karlsson J, Klaus M, Lundin E, **Rocher-Ros G**. *Spatiotemporal variability in GHG fluxes and implications for estimating GHG emissions from inland waters*. AGU meeting 2013 (San Francisco, USA)
- 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*. EGU meeting 2012 (Vienna, Austria)

## 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 (field trip)* 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.

## AWARDS AND GRANTS

- Endowment award from the Society of Freshwater Science (2018): \$1000
- Early career project grant from the Climate Impacts Research Centre in Umeå (2020): €3000.  
*Closing the tundra carbon cycle opened by reindeers: Accounting for aquatic carbon losses*

## PROFESSIONAL CONTRIBUTIONS AND AFFILIATIONS

- Manuscript reviewer for *Water Resources Research*, *Ecosystems*, *Hydrological Processes*, *Journal of Geophysical Research-Biogeosciences*, *Aquatic Sciences*.
- Member of the *Association for the Sciences of Limnology and Oceanography*, the *Society for Freshwater Science* (SFS) and the *Asociación Ibérica de Limnología* (AIL).

## RELEVANT SKILLS

### *Computational 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*) and project management (*git/github*)
- Intermediate level programming in C.
- Intermediate GIS user. Knowledge of ArcGIS, QGIS.
- User of illustration software (Inkscape, Adobe Photoshop/Illustrator)
- User of Linux and Windows OS.
- Modelling aquatic stream metabolism using inverse Bayesian model fitting.
- Development cellular 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 Sci. data loggers, including knowledge of electrical wiring and management.

### *Languages skills*

- Native in: Catalan, Spanish, Occitan.
- Proficient 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).