

# Gerard Rocher-Ros

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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](#)

*In review or in press*

- **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*. In press. [Limnology and Oceanography](#)
- 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

#### *In preparation*

- Gomez-Gener L\*, **Rocher-Ros G\***, Battin TJ, Cohen MJ, Dinsmore KJ, Duvert C, Horgby Å, Johnson M, Kirk L, Marzolf N, McDowell MJ, McDowell WH, Ojala AK, Peter HM, Pumpanen J, Stanley EH, Wallin M, Sponseller RA. *Enhanced nocturnal emissions of carbon dioxide amplify the importance of streams in global carbon cycling* (\*Shared first authorship)
- **Rocher-Ros G**, Harms TK, Mörtz CM, Giesler R. *Patterns of  $^{13}\text{C}$ -DIC and C species in streams in a latitudinal gradient encompassing multiple permafrost zones in Alaska*
- Olid C, **Rocher-Ros G**, Garcia-Orellana J, Rodellas V. *Groundwater inputs of active layer drive methane emissions from Arctic lakes*.
- **Rocher-Ros G**, Sponseller R, Olofsson J. *Landscape reorganization of tundra nutrient stocks mediated by reindeer movements*.

## ORAL COMMUNICATIONS

- **Rocher-Ros G**, Sponseller RA, Mörtz C-M, Myrstener M, Giesler R. *Aquatic metabolism is an important driver of  $\text{CO}_2$  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  $\text{CO}_2$  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).