

# Elisa Calamita, Ph.D.

Date of Birth: 7.12.1989

Citizenship: *Italian*

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## Current Position

- 2024 - ... → Senior Scientist in the group of Environmental Systems Analysis at Eberhard Karls Universität Tübingen, Germany. Mentor: Prof. Christiane Zarfl.
- 2021 - ... → Postdoctoral Researcher at Eawag under the CCI Research Fellowship Grant LakeCREST (ESA). Mentors: Dr. Daniel Odermatt (Eawag); Dr. Clement Albergel (ESA).

## Education

- 2016 - 2020 → Doctoral degree at the Institute of Biogeochemistry and Pollutant Dynamics of ETH Zürich. Thesis: "Modelling the effects of large dams on water quality in tropical rivers". Diss. ETH No. 27143. [Doi: 10.3929/ethz-b-000476521](https://doi.org/10.3929/ethz-b-000476521). (Supervisors: Prof. Bernhard Wehrli and Dr. Martin Schmid).
- 2012 - 2015 → Master's degree in Environmental Engineering. University of Trento, Italy. Thesis: "River thermal dynamics: analysis and modelling" (Supervisors: Prof. M. Toffolon, Prof. B. Majone and Prof. S. Piccolroaz).
- 2008 - 20012 → Bachelor's degree in Environmental Engineering. University of Perugia, Italy. Thesis: "On unsteady flows in pumping systems" (Supervisors: Prof. B. Brunone and Prof. S. Meniconi).

## Teaching

- 2024 → Invited Lecturer - Environmental Hydraulics. University of Brescia, Italy.
- 2021 → Lecturer - Cooperation and conflict over international water resources. ETH Zürich, Switzerland.
- 2018 - 2019 → Tutor - Biogeochemical Modelling of Sediments, Lakes and Oceans. ETH Zürich, Switzerland.
- 2018 → Tutor - Laboratory of biogeochemistry. ETH Zürich, Switzerland.
- 2017 - 2018 → Tutor - Laboratory of chemistry. ETH Zürich, Switzerland.

## Supervision Activity

### *Research Assistants*

- 2024 → Research Assistant hired under personal Tailwind Grant. Spatially distributed indexes of lake warming using Earth Observations. M.Sc. Yasmin Ghadyani.
- 2022 → Research Assistant hired under personal Tailwind Grant. Tracking lake regime shifts using remotely sensed data. M.Sc. Michael Brechbühler

### *Master Thesis*

- 2023 - 2024 → Thesis: "Analysis of satellite-derived surface temperature data to characterize spatial patterns of heat-waves in lakes", Aldo Cominetti. University of Brescia, Italy.
- 2022 → Thesis: "Understanding hypoxia in the Kafue River downstream of the Itezhi-Tezhi Dam, Kafue River Zambia", Kamal Bakare. IHE Delft, The Netherlands.
- 2019 → Thesis: "Water management scenarios for Kariba Dam.", Ali Mohammadi. ETH Zürich/EAWAG - Politecnico Milano, Italy.
- 2018 - 2019 → Thesis: "Impact of the Itezhi-Tezhi reservoir on dissolved oxygen and greenhouse gas dynamics in the downstream floodplain.", Namakau Muyumbana. IHE Delft, The Netherlands.
- 2017 - 2018 → Thesis: "Surface water temperature of Lake Kariba: dynamics and spatial heterogeneity", Johanna Fuchs. UZH, University of Zürich - ETH Zürich.

## Working Experience

- 2023-2024 → Maternity break (October-June).
- 2021 → Maternity break (May-December).
- 2020-2021 → Postdoctoral Researcher at the Institute of Biogeochemistry and Pollutant Dynamics of ETH Zürich.
- 2016 → Internship within the project "Environmental Regulation in the aviation". ENAC (Italian Civil Aviation Authority), Rome, Italy.
- 2015 → Research fellow within the project "Study of the thermal response of lakes: case study of Laurentian Great Lakes". Department of Civil, Environmental and Mechanical Engineering, University of Trento, Italy.
- Research fellow within the project "Analysis and modelling of thermal dynamics in rivers". Department of Civil, Environmental and Mechanical Engineering, University of Trento, Italy.

## Visiting Periods

- Sept - Dec 2019 → Visiting period at IHE Delft, Netherlands.

## Invited Talks and Workshops

- 2024 → Convener at *ASLO*. Madison, Wisconsin, USA. The Next Frontier in Aquatic Sciences: Linking remote sensing, data science, modeling, and open science to understand ecosystems' emergent properties. M. Meyer, E. Calamita, K. Fickas, R. Ladwig, R. Pilla.
- 2023 → Invited speaker at *ASLO*. Palma, Spain. Satellite Earth Observation reveal lake mixing regime and mixing anomalies.
- Keynote Speaker. AEMON-J Hacking Limnology Workshop. Virtual.
- Speaker at International Workshop on Physical Processes in Natural Waters (PPNW). Brescia (Italy).
- Invited speaker at Virtual HyPeak seminar series. Carbopeaking: from its drivers to its relevance.
- 2022 → Convener at IAHR Europe Congress 2022. Reservoir sedimentation: processes and management strategies. N. Ruther, E. Calamita, K. El Kadi Abderrezzak.
- Invited participant. Tipping Points and Understanding EO data needs for a Tipping Element Model Intercomparison Project (TipMIP). ISSI. Bern (Switzerland).
- 2020 → Participant. GLEON 21.5 All Hands' Meeting. Virtual meeting.
- Speaker. DAFNE e-Summer School. Supported by DAFNE project (Horizon 2020). Organized by ETH Zürich.
- 2019 → Poster presentation. GLEON 21 All Hands' Meeting. Hosted by Queen's University. Huntsville (Muskoka, Canada).
- 2018 → Invited speaker. Zambezi Day. Supported by IHE-UNESCO. Organized by IHE-UNESCO. Delft (Netherlands).
- Invited speaker. Zambezi Data and exploration meeting. Organized by IHE-Delft (Netherlands).
- 2017 → Co-organizer. Catchment Transport Processes Summer School. Supported by ETH Zürich-EPFL programme "Create your own Summer/Winter School 2017". Organized by ETH-EPFL. Einsiedeln (Switzerland).

## Editorial Activities

### *Reviewer for ISI journals*

- Earth's Future - Wiley
- Earth System Science Data - Copernicus
- Nature Communications - Springer
- Hydrological Processes - John Wiley & Sons Ltd
- Water Resources Research - AGU
- Journal of Hydrology - Elsevier
- River Research and Applications - Wiley
- Journal of Ecohydraulics - Elsevier
- Journal of Environmental Management - Elsevier

## Memberships

- 2023 - present → member of the Association for the Sciences of Limnology and Oceanography (ASLO) .
- 2022 - present → member of the Equal Opportunity Committee at Eawag, Switzerland.
- 2020 - present → member of the American Geophysical Union, (AGU)
- 2019 - present → member of the International Society of Limnology, (SIL)
- member of the Global Lake Ecological Observatory Network, (GLEON)
- 2017 - present → member of the European Geophysical Union, (EGU)
- 2016 - present → member of the Gruppo Italiano di Idraulica, (GII)

## Miscellaneous

### *Technical skills*

- Programming languages: Fortran 95/2003, Matlab, Python
- Applications: L<sup>A</sup>T<sub>E</sub>X, Office Suite and similar, Autocad, Qgis

### *Fieldwork experience*

- Water quality monitoring: Zambezi River Basin, Zambia.
- Greenhouse gases emissions: Aare River (Switzerland) and Noce River (Italy).

### *Languages*

- *Italian* native speaker, *English* fluent *Spanish* basic *German* basic

### *Educational experience*

- 2023 → Block course: Physical Limnology. Heidelberg 26-31 March 2023.
- 2022 → Peer-mentoring group: "Stepping up the Ladder: Career development and work-life balance". Funded by Fix the Leaky Pipeline programme, Switzerland.
- 2021 → Course: "Learning to teach". Organized by ETH Zürich, Switzerland.
- 2020 → Coaching group for women in science. Organized by Fix the Leaky Pipeline programme, Switzerland.
- Course: Copernicus MOOC "Learn to harness the power of space data". European Commission.
- 2019 → Course: Advanced Writing Workshop English C1 - C2. ETH Zürich, Switzerland.
- 2018 → Course: Writing at doctoral level: Natural science and engineering. ETH Zürich, Switzerland.
- 2017 → Course: Global Biogeochemical Cycles and Climate. ETH Zürich, Switzerland.
- 2014 → Course: Methods for International cooperation and management of participated projects. University of Trento, Italy.
- 2012 → IELTS English Certificate. British Institute, B2 level.
- 2002 - 2007 → Conservatorium, Piano and Pipe Organ. Conservatorio G.B.Pergolesi, Fermo, Italy.

## Grants and Awards

- 2023 → Eawag Tailwind Grant for mothers to resume scientific work after maternity leave (~22'000 CHF).
- Young Scientist Award for Best Presentation. International Workshop on Physical Processes in Natural Waters. Brescia, Italy.
- 2022 → Project Collaborator - Functional fish habitats in hydropower reservoirs (FunkyFish). The Research Council of Norway (~20'000 CHF).
- Project Collaborator - SOS-Water. Horizon Europe Project. (~400'000 CHF).
- 2021 → Eawag Tailwind Grant for mothers to resume scientific work after maternity leave (~20'000 CHF).
- Postdoctoral Research Fellowship – European Space Agency Climate Change Initiative (~200'000 EUR).
- Otto Jaag Water Protection Prize. ETH Zürich. **Award for best Doctoral Thesis in the Water Protection sector** (1'500 CHF).
- ETH Equal Opportunities Grant - Peer Mentoring Group for Women in Science – Fix the leaky pipeline (~5'000 CHF).
- 2018 → Scholarship for Master Student – "Sandwich Program" Eawag Partnership Programme for Developing Countries - IHE Delft (~20'000 CHF).
- 2016 → Award Gii Supino for best Master Thesis in Water Engineering. (Third place, 500 EUR).

## Highlighted Publications

- 2024 → **Calamita** E., J. J. Lever, C. Albergel, R. I. Woolway, D. Odermatt. Detecting climate-related shifts in lakes: A review of the use of satellite Earth Observation. *Limnology & Oceanography*. **Doi: 10.1002/lno.12498**.
- 2021 → **Calamita** E., A. Siviglia, G. Gettel, M.J. Franca, R.S. Winton, C.R. Teodoru, M. Schmid, B. Wehrli. Unaccounted CO<sub>2</sub> leaks downstream of a large tropical hydroelectric reservoirs. *Proceedings of the National Academy of Sciences*; 22;118(25). **Doi: 10.1073/pnas.2026004118**.
- **Calamita** E., D. Vanzo, B. Wehrli, M. Schmid. 2021. Lake modelling reveals management opportunities for improving water quality downstream of transboundary tropical dams. *Water Resources Research*; 57, e2020WR027465. **Doi: 10.1029/2020WR027465**.

# List of publications

## Peer-reviewed Journal Papers: under review

- G. Dolcetti, S. Piccolroaz, M.C. Bruno, **Calamita E.**, S. Larsen, G. Zolezzi, A. Siviglia. Quantification of carbopeaking and CO<sub>2</sub> fluxes in a regulated Alpine river. *Limnology & Oceanography*. Doi: [10.36227/techrxiv.171527523.33732320/v1](https://doi.org/10.36227/techrxiv.171527523.33732320/v1).
- Loriani, S., Bartsch, A., **Calamita, E.**, Donges, J.F., Hebden, S., Hirota, M., Landolfi, A., Nagler, T., Sakschewski, B., Staal, A., Verbesselt, J., Winkelmann, R., Wood, R., Wunderling, N. Monitoring the multiple stages of climate tipping systems from space: Do the GCOS Essential Climate Variables meet the needs? *Surv. Geophys.*
- Brovkin, V., Bartsch, A., Hugelius, G., **Calamita, E.**, Goo, E., Kim, H., Stacke, T., De Vrese, P., Lever, J.J. Permafrost and freshwater systems in the Arctic as tipping elements of the climate system. *Surv. Geophys.*

## Peer-reviewed Journal Papers

- 2024 → **Calamita E.**, J. J. Lever, C. Albergel, R. I. Woolway, D. Odermatt. Detecting climate-related shifts in lakes: A review of the use of satellite Earth Observation. *Limnology & Oceanography*. Doi: [10.1002/lno.12498](https://doi.org/10.1002/lno.12498).
- 2023 → Meyer MF, Harlan ME, Hensley RT, Zhan Q, Börekçi NS, Bucak T, Cramer AN, Feldbauer J, Ladwig R, Mesman JP, Oleksy IA, RM Pilla, JA Zwart, E **Calamita**, ... MJ Vlah. Hacking Limnology Workshops and DSOS23: Growing a Workforce for the Nexus of Data Science, Open Science, and the Aquatic Sciences. Hacking Limnology Workshops and DSOS23 : Growing a Workforce for the Nexus of Data Science, Open Science, and the Aquatic Sciences. *Limnology & Oceanography Bulletin*. Doi: [10.1002/lob.10607](https://doi.org/10.1002/lob.10607).
- 2021 → Winton R., C. R. Teodoru, E. **Calamita**, F. Kleinschroth, K. Banda, I. Nyambe, B. Wehrli. Anthropogenic influences on Zambian water quality: hydropower and land-use change. Accepted in *Environmental Science: Processes & Impacts*. Doi: [10.1039/D1EM00006C](https://doi.org/10.1039/D1EM00006C).
- **Calamita E.**, A. Siviglia, G. Gettel, M.J. Franca, R.S. Winton, C.R. Teodoru, M. Schmid, B. Wehrli. Unaccounted CO<sub>2</sub> leaks downstream of a large tropical hydroelectric reservoirs. *Proceedings of the National Academy of Sciences*; 22;118(25). Doi: [10.1073/pnas.2026004118](https://doi.org/10.1073/pnas.2026004118).
- **Calamita E.**, D. Vanzo, B. Wehrli, M. Schmid. 2021. Lake modelling reveals management opportunities for improving water quality downstream of transboundary tropical dams. *Water Resources Research*; 57, e2020WR027465. Doi: [10.1029/2020WR027465](https://doi.org/10.1029/2020WR027465).
- **Calamita E.**, S. Piccolroaz, B. Majone, M. Toffolon. 2021. On the role of local depth and latitude on surface warming heterogeneity in the Laurentian Great Lakes. *Inland Waters*. Doi: [10.1080/20442041.2021.1873698](https://doi.org/10.1080/20442041.2021.1873698).
- 2020 → Winton R.S., F. Kleinschroth, E. **Calamita**, M. Botter, C.R. Teodoru, I. Nyambe, B. Wehrli. 2020. potential of aquatic weeds to improve water quality in natural waterways of the Zambezi catchment. *Scientific Report* 22;10(1):1-1. Doi: [10.1038/s41598020-72499-1](https://doi.org/10.1038/s41598020-72499-1).
- Kleinschroth K., R.S. Winton, E. **Calamita**, F. Niggeman, M. Botter, B. Wehrli, J. Ghazoul. 2020. Living with floating vegetation invasions. *Ambio*. Doi: [10.1007/s13280-020-01360-6](https://doi.org/10.1007/s13280-020-01360-6).
- Toffolon M., S. Piccolroaz, and E. **Calamita**. 2020. On the use of averaged indices to assess lakes' thermal response to changes in climatic conditions. *Environmental Research Letters*. 15 034060 Doi: [10.1088/1748-9326/ab763e](https://doi.org/10.1088/1748-9326/ab763e).
- 2019 → **Calamita E.**, M. Kunz, M. R. Ndebele-Murisa, C. H. D. Magadza, I. Nyambe, M. Schmid, B. Wehrli. 2019. Sixty years since the creation of Lake Kariba: thermal and oxygen dynamics in the riverine and lacustrine sub-basins. *PLoS ONE*. 14(11):e0224679 Doi: [10.1371/journal.pone.0224679](https://doi.org/10.1371/journal.pone.0224679).
- Winton, R. S., E. **Calamita**, and B. Wehrli. 2019. Reviews and syntheses: Dams, water quality and tropical reservoir stratification. *Biogeosciences*. 16, 1657-1671. Doi: [10.5194/bg-2018-510](https://doi.org/10.5194/bg-2018-510).
- 2016 → Piccolroaz, S., E. **Calamita**, B. Majone, A. Gallice, A. Siviglia, and M. Toffolon. 2016. Prediction of river water temperature: A comparison between a new family of hybrid models and statistical approaches. *Hydrol. Process*. 30: 3901–3917. Doi: [10.1002/hyp.10913](https://doi.org/10.1002/hyp.10913).

## Dataset publications

- 2021 → **Calamita E.**, R.S. Winton R.S., C.R. Teodoru and B. Wehrli. (2021). Water quality field campaign in the Zambezi River Basin. Doi:[10.3929/ethz-b-000476426](https://doi.org/10.3929/ethz-b-000476426).
- Winton R.S., E. **Calamita**, C.R. Teodoru and B. Wehrli. (2021). ETH/Eawag Aquatic Chemistry field campaigns in the Zambezi River Basin 2018/2019. Doi:[10.3929/ethz-b-000476426](https://doi.org/10.3929/ethz-b-000476426).
- 2019 → **Calamita E.**, M. Schmid, M. Kunz, M.R. Ndebele-Murisa, C.H.D. Magadza, I. Nyambe, B. Wehrli. (2019). Sixty years of Lake Kariba: thermal and oxygen dynamics in the riverine and lacustrine sub-basins (dataset). Doi: [10.3929/ethz-b-000334971](https://doi.org/10.3929/ethz-b-000334971).
- 2018 → Winton R.S., E. **Calamita** and B. Wehrli. (2018). Physical data for the 54 most voluminous low latitude reservoirs. Doi: [10.3929/ethz-b-000310656](https://doi.org/10.3929/ethz-b-000310656).

## Soft publications

- 2019 → **Calamita E.** (2019). Understanding The Role Of Big Rivers In Africa. [ETH Ambassadors - ETH Zürich](#).
- **Calamita E.** (2019). Zambezi water quality alterations under different dam operation scenarios and future climatic conditions. [Newsletter of DAFNE project](#).