

Elisa Calamita, Ph.D.



Date of Birth: 7.12.1989

Citizenship: *Italian*

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Working Experience

- 2024 - ... → Research Associate in the group of Environmental Systems Analysis at Eberhard Karls Universität Tübingen, Germany. Mentor: Prof. Christiane Zarfl.
- 2023-2024 → Maternity break (October-June).
- 2021 - 2024 → Postdoctoral Researcher at Eawag (Dübendorf, Switzerland) under the CCI Research Fellowship Grant LakeCREST (European Space Agency). Mentors: Dr. Daniel Odermatt (Eawag); Dr. Clement Albergel (ESA).
- 2021 → Maternity break (May-December).
- 2020-2021 → Postdoctoral Researcher at the Institute of Biogeochemistry and Pollutant Dynamics of ETH Zürich.
- 2019 → Visiting Researcher at IHE Delft, Netherlands.
- 2016 → Internship within the project "Environmental Regulation in the aviation". ENAC (Italian Civil Aviation Authority), Rome, Italy.
- 2015 → Research fellow within the project "Thermal dynamics of the 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.

Academic Qualifications - Education

- 2023 → National Scientific qualification as associate professor in the Italian higher education system for the disciplinary field of 08/A1 - Hydraulics, hydrology, hydraulic and marine constructions.
- 2020 → Doctor of Science (Dr. sc. ETH) in Environmental Science, ETH Zürich, Switzerland.
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, Dr. Martin Schmid.
- 2015 → Master's Degree in Environmental Engineering. University of Trento, Italy.
Thesis: River Thermal Dynamics: Analysis and Modelling.
Supervisors: Prof. Marco Toffolon, Prof. Bruno Majone.
- 2012 → Bachelor's Degree in Environmental Engineering. University of Perugia, Italy.
Thesis: On Unsteady Flows in Pumping Systems.
Supervisors: Prof. Bruno Brunone, Prof. Silvia Meniconi.

Grants

YEAR	ROLE	PROJECT	FUNDER	AMOUNT
pending	Co-I and WP Leader	FLOWER: Flexible Hydropower for a Bio-diverse, Climate-Resilient, and Societally-Ready Energy Transition	Horizon Europe	~ 330,000 €
2024	Co-I and WP Leader	RESETlakes: Remote Sensing of Tipping Lakes	European Space Agency (ESA)	~ 145,000 €
2023	PI	Tailwind Grant after maternity leave	Eawag	~ 22,000 CHF
2022	Collaborator	FunkyFish: Functional fish habitats in hydropower reservoirs	Research Council of Norway	~ 30,000 CHF
2022	Collaborator	SOS-Water: Establishing a Safe Operating Space for the global water resources system	Horizon Europe	~ 400,000 CHF
2021	PI	Tailwind Grant after maternity leave	Eawag	~ 20,000 CHF
2021	PI	Postdoctoral Research Fellowship	European Space Agency (ESA)	~ 200,000 €
2021	Co-PI	Fix the leaky pipeline: Peer Mentoring Group for Women in Science	ETH Equal Opportunities Grant	~ 5,000 CHF
2018	Co-PI	Sandwich Program: Partnership Programme for Developing Countries	Eawag and IHE Delft	~ 20,000 CHF

Awards

- 2023 → Young Scientist Award for Best Presentation. International Workshop on Physical Processes in Natural Waters. Brescia, Italy.
- 2021 → Otto Jaag Water Protection Prize. ETH Zürich. **Award for best Doctoral Thesis in the Water Protection sector** (1'500 CHF).
- 2016 → Award Gii Supino for best Master Thesis in Water Engineering. (Third place, ~500 EUR).
- 2015 → Award for academic excellence during Master's degree studies: "Premio di Merito". University of Trento. (~800 EUR).

Teaching

- 2025 → Lecturer - Physical Processes in Surface Waters. University of Tübingen, Germany.
- 2024 - 2025 → Tutor - Environmental Systems Analysis. University of Tübingen, Germany.
- 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

- 2025 → Research Assistant at University of Tübingen (DE). On the use of EO to study polar lake shifts. M.Sc. Julius Konietzko.
- Research Assistant at University of Tübingen (DE). Linking physical and ecological processes using EO monitoring. B.Sc. Paul Klatte.
- Master Project at KIT - Karlsruher Institut für Technologie (DE). The role of local river morphology on the magnitude of air-water gas exchanges: numerical modelling and comparison of existing approaches. M.Sc. Nicolas Pava.
- 2024 → Research Assistant at Eawag (CH) hired under personal Tailwind Grant. Spatially distributed indexes of lake warming using Earth Observations. M.Sc. Yasmin Ghadyani.
- 2022 → Research Assistant at Eawag (CH) hired under personal Tailwind Grant. Tracking lake regime shifts using remotely sensed data. M.Sc. Michael Brechbühler

Master Thesis

- 2024 - 2025 → Thesis: "Mapping Renewable Energy Development in Africa: A Continental Assessment of Wind and Solar Potential for a Low-Conflict Energy Transition", Bulëza Qorri. University of Tübingen, Germany.

Supervision Activity (continued)

- 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 Itzhi-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 Itzhi-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.

Bachelor Thesis

- 2024 - 2025 → Thesis: "Solarenergy in Africa: An analysis of solar power plants in Africa and their impact on biodiversity", Lilly Ida Theresa Koch. University of Tübingen, Germany.
- Thesis: "Barrier Removal: Analysis of Existing Data and Investigations of Impacts on River Ecosystems", Alexandra Schaefer. University of Tübingen, Germany.

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 → Conveener 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 - 2024 → 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)

Memberships (continued)

- 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^AT_EX, 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.

List of publications

Peer-reviewed Journal Papers: under review

- **Calamita** E., M. Brechbuehler, R. I. Woolway, C. Albergel, L. Carrea, D. Odermatt., A global early warning system for lake mixing regime shifts. *Nature Water*.
- Seth M., M. Ubierna Aparicio; B. Nakomcic-Smargdakis; M Brboric; E. **Calamita**; T Dasic; C Diez Santos. A Review of Hydropower Reservoir GHG Estimation Methods. *Renewable and Sustainable Energy Reviews*..
- Lewis A., K.Attermeyer, P. Aurich, S. Bansal, M. Bartosiewicz, B. Bertolet, I. Bussmann, S. Cadieux, E. **Calamita** et al. Carbon dioxide and methane depth-profile concentrations in 543 lakes, ponds, and reservoirs worldwide. *Scientific Data*.
- Politti E.; S. Artuso; E. **Calamita**; A. Castelletti; K. Cetinic; S. Domisch; M. Giuliani; H.M. Sorribes; M. Smilovic; J. Marquez; D. Odermatt; M.P. Velázquez; S.R. Casadevall; J.C. Steyaert; S. Tramberend; N. Wanders; W. Xia; T. Kahil. Diverse environmental factors shape patterns of terrestrial and riverine productivity decoupling. *One Earth*.

Peer-reviewed Journal Papers

- 2025 → Chen S., Blougouras G., **Calamita** E., Lee S., Fatecha B., Zheng R., Huang J., Jiang S. Diverse environmental factors shape patterns of terrestrial and riverine productivity decoupling. *Geophysical Research Letters*. [Doi:10.1029/2025GL118748](https://doi.org/10.1029/2025GL118748).
- Duvert C., A.V. Borges A.V., E. **Calamita**, Rocher-Ros G., et al., Hydroclimate and landscape diversity drive highly variable greenhouse gas emissions from tropical and subtropical inland waters. *Nature Water*. [Doi:10.1038/s44221-025-00522-8](https://doi.org/10.1038/s44221-025-00522-8).
- Amadori M., A. J. Greife, L. Carrea, M. Pinardi, R. Caroni, E. **Calamita**, L. Serrao, R. Maidment, S. Bordoni6, C. Giardino, M. Bresciani, F. P. Fava, M. Schmid, M. Ndebele-Murisa, T. Nhiwatiwa, J-F. Crétaux, C. J. Merchant, X. Liu, S. Simis, D. Lomeo, H. Yesou, C. Albergel, R.I. Woolway. A climatological baseline for understanding patterns of seasonal lake dynamics across sub-Saharan Africa. *Communications, Earth & Environment*. [Doi:10.1038/s43247-025-02684-5](https://doi.org/10.1038/s43247-025-02684-5).

List of publications (continued)

- Brovkin V., Bartsch, A., Hugelius, G., E. **Calamita**, 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.* **Doi: 10.1007/s10712-025-09885-9**. *Book Chapter*.
- 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.* **Doi: 10.1007/s10712-024-09866-4**. *Book Chapter*.
- Dolcetti G., S. Piccolroaz, M.C. Bruno, E. **Calamita**, S. Larsen, G. Zolezzi, A. Siviglia. Quantification of carbon peaking and CO₂ fluxes in a regulated Alpine river. *Water Resources Research*. **Doi: 10.1029/2024WR037834**.
- 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**.
- 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**.
- 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. *Environmental Science: Processes & Impacts*. **Doi: 10.1039/D1EM00006C**.
- **Calamita** E., A. Siviglia, G. Gettel, M.J. Franca, R.S. Winton, C.R. Teodoru, M. Schmid, B. Wehrli. Unaccounted CO₂ leaks downstream of a large tropical hydroelectric reservoirs. *Proceedings of the National Academy of Sciences*. **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*. **Doi: 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**.
- 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* **Doi: 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**.
- 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*. **Doi: 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**.
- Winton, R. S., E. **Calamita**, and B. Wehrli. 2019. Reviews and syntheses: Dams, water quality and tropical reservoir stratification. *Biogeosciences*. **Doi: 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*. **Doi: 10.1002/hyp.10913**.

Dataset publications

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