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Work Experience

- 10.2022 – present **Deputy Group Leader**, Laboratory for the Analysis of Radiocarbon with AMS (LARA), University of Bern, Switzerland.
- 09.2020 – present **Senior Research Assistant (Group leader)** – SNSF Ambizione, University of Bern, Switzerland.
- 03.2020 – 08.2020 **Postdoctoral researcher** – SNSF Postdoc Mobility Fellowship Return CH grant, University of Bern, Switzerland.
- 08.2018 – 02.2020 **Postdoctoral researcher** – SNSF Postdoc Mobility Fellowship, University of Oxford, UK.
- 02.2017 – 07.2018 **Postdoctoral researcher** – SNSF Early Postdoc Mobility Fellowship, University of Oxford, UK.
- 01.2012 – 09.2016 **Research assistant** – Geological Institute, ETH Zürich, Biogeoscience group.
- 01.2010 – 12.2011 **Teaching assistant** – Department of Earth Sciences, ETH Zürich.

Education

- 01.2013 – 07.2016 **Ph.D.** - ETH Zürich, Switzerland
Dissertation title: "Characterizing the legacy of carbon in karst systems: isotopic and chronological applications on stalagmites." (Diss. ETH No. 23601)
Advisors: Prof. Timothy Eglinton, ETH Zürich
Dr. James Baldini, University of Durham
Defense date: 08. July 2016
- 09.2010 – 12.2011 **M.Sc. in Atmospheric and Climate Sciences** - ETH Zürich, Switzerland
Master's thesis: "Reconstruction of late Quaternary Indian Summer Monsoon climate from two stalagmites from Krem Mawmluh, Meghalaya, NE India"
Advisors: Dr. Sebastian Breitenbach, ETH Zürich

Prof. Gerald Haug, ETH Zürich

09.2007 – 07.2010 **B.Sc. in Earth Sciences** - University of Zürich, Switzerland

Prizes and Awards

- 2021 **COMET Career Programme of the University of Bern – 3,000 CHF**
Programme supporting female researchers in successfully pursuing their academic careers. Place allotted competitively.
- 2021 **EGU 2021 Division Outstanding Early Career Scientist Award** (Climate: Past, Present & Future Division)
Award recognises scientific achievement made by an Early Career Scientist in the field covered by the related division.
- 2017 **ETH Silver Medal** for outstanding doctoral thesis
Prize for outstanding doctoral thesis, based on the evaluation of referees, co-referees, and external referees (within 8% of all theses in the department and ETH Zürich).
- 2012 **ETH Silver Medal** for outstanding master thesis
Prize for outstanding master thesis, based on grading (6.0, i.e., highest grade), written confirmation of the quality of the thesis by the advisors, grade point average of master studies 5.25 (of 6). Within 2.5% of all theses in the department and ETH, based on originality of the thesis.

Successful Grant Applications

- 2022 *Exploring the potential of the North African speleothem archive*
Research Partnership Grant, Leading House for the Middle East and North Africa (Swiss State Secretariat for Education, Research, and Innovation). Co-PI with Prof. Yassine Ait Brahim, Mohammed VI Polytechnic University, Benguerir, Morocco – **15,000 CHF**
- 2022 *Writing4Women: Winter Writing Retreat for Female Postdocs and Young Researchers*
Fund for the Promotion of Young Researchers of the University of Bern grant. Co-PI – **5,000 CHF**
- 2022 Swiss National Science Foundation (SNSF) Flexibility grant for additional personnel support – **45,000 CHF**
- 2021 SNSF Flexibility grant to cover childcare costs – **24,000 CHF**
- 2021 PAGES Data Stewardship Scholarship (12 months, funding external collaborators for the PAGES SISAL working group), co-PI with Dr. Nikita Kaushal – **20,000 USD**
- 2019 *Probing the potential of STalagmite Organic Matter as a direct tracer for terrestrial ecosystem dynamics and their response to past Climate Change (STOM-CC)*
SNSF Ambizione Fellowship (48 months, DCBP, Univ. of Bern), PI – **950,541 CHF**

- 2019 *Exploring the potential of stalagmite organic carbon isotope records as a novel proxy for past ecosystem conditions*
SNSF Postdoc Mobility return CH grant (12 months, Univ. of Bern), PI – **125,386 CHF**
- 2018 *Constraining the potential of stalagmites as quantitative archives for past soil carbon dynamics*
SNSF Postdoc Mobility grant (18 months, Univ. of Oxford, UK), PI – **81,500 CHF**
- 2016 *Permafrost thawing in a warming climate – reconstructions from Siberian stalagmites*
SNSF Early Postdoc Mobility grant (18 months, Univ. of Oxford, UK), PI – **74,250 CHF**

Career breaks

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|------------------------|----------------------|
| 13.12.2020 – 30.4.2021 | Maternity leave |
| 1.5.2021 – 31.10.2021 | Part time work (50%) |
| 1.11.2021 – present | Part time work (80%) |

Publications

Publications in International Peer-Reviewed Scientific Journals

- P28** Braun, T., Breitenbach, S.F.M., Skiba, V., **Lechleitner, F.A.**, Ray, E.E., Baldini, L.M., Polyak, V.J., Baldini, J.U.L., Kennett, D.J., Pruffer, K.M., Marwan, N. (**2023**): Decline in seasonal predictability potentially destabilized Classic Maya societies. ***Communications Earth & Environment***, 4, 1, DOI: 10.1038/s43247-023-00717-5.
- P27** Xue, G., Cai, Y., Cheng, P., **Lechleitner, F.A.**, Zhang, H., Zhen, Y., Wei, Y., Huang, S., Yang, L., Cheng, X., Lu, Y., Zhou, J., Ma, L., Cheng, H., Edwards, L.R. (**2023**): The climate Control of soil organic carbon dynamics inferred from speleothem radiocarbon ages. ***Geophysical Research Letters***, 50, 3, e2022GL101875, DOI: 10.1029/2022GL101875.
- P26** Verniers, T., Couper, H., **Lechleitner, F.A.**, Baldini, J.U.L. (**2022**): Southeast Asian dust flux reconstructed using accurately dated stalagmite thorium concentrations. ***Results in Geochemistry***, 7, 100017, DOI: 10.1016/j.ringeo.2022.100017.
- P25** Bühler, J.C., Axelsson, J.M., **Lechleitner, F.A.**, Fohlmeister, J., LeGrande, A.N., Midhun, M., Sjolte, J., Werner, M., Yoshimura, K., Rehfeld, K. (**2021**): Investigating oxygen and carbon isotopic relationships in speleothem records over the last millennium using multiple isotope-enabled climate models. ***Climate of the Past***, 18, 1625-1654, DOI: 10.5194/cp-2021-152.
- P24** **Lechleitner, F.A.**, Day, C.C., Kost, O., Wilhelm, M., Haghypour, N., Henderson, G.M., Stoll, H.M. (**2021**): Stalagmite carbon isotopes suggest deglacial increase in soil respiration in western Europe driven by temperature change. ***Climate of the Past (invited contribution for EGU Outstanding Early Career Scientist Award)***, 17, 1903-1918, DOI: 10.5194/cp-17-1903-2021.

- P23** Paine, A.R., Baldini, J.U.L., Wadsworth, F.B., **Lechleitner, F.A.**, Jamieson, R.A., Baldini, L.M., Brown, R.J., Müller, W., Hercman, H., Gaşiorowski, M., Stefaniak, K., Socha, P., Sobczyk, A., Kasprzak, M. (2021): The trace-element composition of a Polish stalagmite: Implications for the use of speleothems as a record of explosive volcanism. **Chemical Geology**, 570, DOI: 10.1016/j.chemgeo.2021.120157.
- P22** Baldini, J.U.L., **Lechleitner, F.A.**, Breitenbach, S.F.M., van Hunen, J., Baldini, L.M., Wynn, P.M., Jamieson, R.A., Ridley, H.E., Baker, A.J., Walczak, I.W., Fohlmeister, J. (2021): Detecting and quantifying palaeoseasonality in stalagmites using geochemical and modelling approaches. **Quaternary Science Reviews (Invited review)**, 254, DOI: 10.1016/j.quascirev.2020.106784.
- P21** Comas-Bru, L., Rehfeld, K., Roesch, C., Amimezhad-Mozhdehi, S., Harrison, S.P., Atsawawaranunt, K., Ahmad, S.M., Ait Brahim, Y., Baker, A., Bosomworth, M., Breitenbach, S.F.M., Burstyn, Y., Columbu, A., Deininger, M., Demény, A., Dixon, B., Fohlmeister, J., Hatvani, I.G., Hu, J., Kaushal, N., Kern, Z., Labuhn, I., **Lechleitner, F.A.**, Lorrey, A., Martrat, B., Novello, V.F., Oster, J., Pérez-Mejías, C., Scholz, D., Scroxton, N., Sinha, N., Ward, B.M., Warken, S., Zhang, H. and SISAL Working Group members (2020): SISALv2: A comprehensive speleothem isotope database with multiple age-depth models. **Earth System Science Data**, 12, 2579-2606, DOI: 10.5194/essd-12-2579-2020.
- P20** Fohlmeister, J., Voarintsoa, N.R., **Lechleitner, F.A.**, Boyd, M., Brandstätter, S., Jacobson, M.J., Oster, J. (2020): Main controls on the stable carbon isotope composition of speleothems. **Geochimica et Cosmochimica Acta**, 279, 67-87, DOI: doi.org/10.1016/j.gca.2020.03.042.
- P19** **Lechleitner, F.A.**, Mason, A., Breitenbach, S.F.M., Vaks, A., Haghypour, N., Henderson, G.M. (2020): Evaluating the potential of speleothems for high-resolution reconstruction of permafrost carbon cycle dynamics. **Quaternary Geochronology**, 56, DOI: 10.1016/j.quageo.2019.101037.
- P18** Magiera, M., **Lechleitner, F.A.**, Erhardt, A.M., Hartland, A., Kwiecien, O., Cheng, H., Bradbury, H., Turchyn, A.V., Riechelmann, S., Edwards, L., Breitenbach, S.F.M. (2019): Local and regional Indian Summer Monsoon precipitation dynamics during Termination II and the Last Interglacial. **Geophysical Research Letters**, 46, 12454-12463, DOI: 10.1029/2019GL083721.
- P17** Comas-Bru, L., Harrison, S.P., Werner, M., Rehfeld, K., Scroxton, N., Veiga-Pires, C., **SISAL working group members (2019)**: Evaluating model outputs using integrated global speleothem records of climate change since the last glacial. **Climate of the Past**, 15, 1557-1579, DOI: doi.org/10.5194/cp-15-1557-2019 (as *SISAL working group member*).
- P16** **Lechleitner, F.A.**, Lang, S.Q., Haghypour, N., McIntyre, C., Prufer, K.M.P., Baldini, J.U.L., Eglinton, T.I. (2019): Towards organic carbon isotope records from stalagmites: coupled $\delta^{13}\text{C}$ and ^{14}C analysis using wet chemical oxidation. **Radiocarbon**, 61(3), 749-764, DOI: 10.1017/RDC.2019.35.
- P15** Fohlmeister, J., **Lechleitner, F.A.** (2019): STAlagmite dating by radiocarbon (star): A software tool for reliable and fast age depth modelling, **Quaternary Geochronology**, 51, 120-129, DOI: 10.1016/j.quageo.2019.02.008.

- P14** Lechleitner, F.A., Amirnezhad-Mozhdehi, S., Columbu, A., Comas-Bru, L., Labuhn, I., Pérez-Mejías, C., Rehfeld, K. (2018): The potential of speleothems from Western Europe as recorders of regional climate: A critical assessment of the SISAL database, *Quaternary*, 1(3), 30, DOI: 10.3390/quat1030030.
- P13** Kaushal, N., Breitenbach, S.F.M., Lechleitner, F.A., Sinha, A., Tewari, V.C., Ahmad, S.M., Berkelhammer, M., Band, S., Yadava, M., Ramehs, R., Henderson, G.M. (2018): The Indian Summer Monsoon from a speleothem $\delta^{18}\text{O}$ perspective – A review, *Quaternary*, 1(3), 29, DOI: 10.3390/quat1030029.
- P12** Atsawawaranunt, K., Comas-Bru, L., Amirnezhad Mozhdehi, S., Deininger, M., Harrison, S.P., Baker, A., Boyd, M., Kaushal, N., Ahmad, S.M., Ait Brahim, Y., Arienzo, M., Bajo, P., Braun, K., Burstyn, Y., Chawchai, S., Duan, W., Hatvani, I. G., Hu, J., Kern, Z., Labuhn, I., Lachniet, M., Lechleitner, F.A., Lorrey, A., Pérez-Mejías, C., Pickering, R., Scropton, N., and SISAL Working Group Members (2018): The SISAL database: a global resource to document oxygen and carbon isotope records from speleothems, *Earth System Science Data*, 10, 1687-1713, DOI: 10.5194/essd-10-1687-2018.
- P11** Lechleitner, F.A., Dittmar, T., Baldini, J.U.L., Prufer, K.M.P., Eglinton, T.I. (2017): Molecular signatures of dissolved organic matter in a tropical karst system. *Organic Geochemistry*, 113, 141-149, DOI: 10.1016/j.orggeochem.2017.07.015.
- P10** Lechleitner, F.A., Breitenbach, S.F.M., Cheng, H., Plessen, B., Rehfeld, K., Goswami, B., Marwan, N., Eroglu, D., Adkins, J., Haug, G. (2017): Climatic and in-cave influences on $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ in a stalagmite from northeastern India through the last deglaciation. *Quaternary Research*, 88, 458-471, DOI: 10.1017/qua.2017.72.
- P9** Smirnov, D.A., Breitenbach, S.F.M., Feulner, G., Lechleitner, F.A., Prufer, K.M.P., Baldini, J.U.L., Marwan, N., Kurths, J., (2017): A regime shift in the Sun-Climate connection with the end of the Medieval Climate Anomaly. *Scientific Reports*, 7, 11131, DOI: 10.1038/s41598-017-11340-8.
- P8** Lechleitner, F.A., Breitenbach, S.F.M., Rehfeld, K., Ridley, H.E., Asmerom, Y., Prufer, K.M., Marwan, N., Goswami, B., Kennett, D.J., Aquino, V.V., Polyak, V., Haug, G.H., Eglinton, T.I., Baldini, J.U.L. (2017): Tropical rainfall over the last two millennia: evidence for a low-latitude hydrologic seesaw. *Scientific Reports*, 7, 45809, DOI: 10.1038/srep45809.
- P7** Smirnov, D.A., Marwan, N., Breitenbach, S.F.M., Lechleitner, F.A., Kurths, J. (2017): Coping with dating errors in causality estimation. *EPL (Europhysics Letters)*, 117, 1, DOI: 10.1209/0295-5075/117/10004.
- P6** McIntyre, C.P., Lechleitner, F.A., Lang, S.Q., Haghypour, N., Fahrni, S., Wacker, L., Synal, H.-A. (2016): ^{14}C contamination testing in natural abundance laboratories: a new preparation method using wet chemical oxidation and some experiences. *Radiocarbon*, 58(4), 935-941, DOI: 10.1017/RDC.2016.78.
- P5** Lechleitner, F.A., Baldini, J.U.L., Breitenbach, S.F.M., Fohlmeister, J., McIntyre, C., Goswami, B., Jamieson, R.A., van der Voort, T.S., Prufer, K., Marwan, N., Culleton, B.J., Kennett, D.J., Asmerom, Y., Polyak, V., Eglinton, T.I. (2016): Hydrological and

- climatological controls on radiocarbon concentrations in a tropical stalagmite. ***Geochimica et Cosmochimica Acta***, 194, 233-252, DOI: 10.1016/j.gca.2016.08.039.
- P4** **Lechleitner, F.A.**, Fohlmeister, J., McIntyre, C., Baldini, L.M., Jamieson, R.A., Hercman, H., Gasiorowski, M., Pawlak, J., Stefaniak, K., Socha, P., Eglinton, T.I., Baldini, J.U.L. (2016): A novel approach for construction of radiocarbon-based chronologies for speleothems. ***Quaternary Geochronology***, 35, 54-66, DOI: 10.1016/j.quageo.2016.05.006.
- P3** Breitenbach, S.F.M., **Lechleitner, F.A.**, Meyer, H., Diengdoh, G., Matthey, D., Marwan, N. (2015): Cave ventilation and rainfall signals in dripwater in a monsoonal setting – a monitoring study from NE India. ***Chemical Geology***, 402, 111-124, DOI: 10.1016/j.chemgeo.2015.03.011.
- P2** Ridley, H.E., Asmerom, Y., Baldini, J.U.L., Breitenbach, S.F.M., Aquino, V.V., Pruffer, K.M., Culleton, B.J., Polyak, V., **Lechleitner, F.A.**, Kennett, D.J., Zhang, M., Marwan, N., Macpherson, C.G., Baldini, L.M., Xiao, T., Peterkin, J., Awe, J., Haug, G.H. (2015): Aerosol forcing of the position of the intertropical convergence zone since AD 1550. ***Nature Geoscience***, 8, 195-200, DOI: 10.1038/ngeo2353.
- P1** Pacton, M., Breitenbach, S.F.M., **Lechleitner, F.A.**, Vaks, A., Rollion-Bard, C., Gutareva, O.S., Osintcev, A.V., Vasconcelos, C. (2013): The role of microorganisms in the formation of a stalactite in Botovskaya Cave, Siberia – paleoenvironmental implications. ***Biogeosciences***, 10, 6115-6130, DOI: 10.5194/bg-10-6115-201.

Preprints and manuscripts under review

Stoll, H.M., Day, C., **Lechleitner, F.A.**, Kost, O., Endres, L., Sliwinski, J., Pérez-Mejías, C., Cheng, H., Scholz, D.: Distinguishing the vegetation and soil component of $\delta^{13}\text{C}$ variation in speleothem records from degassing and prior calcite precipitation effects, **preprint** in *Climate of the Past Discussions*, DOI: 10.5194/cp-2022-77 (undergoing review, first submission October 2022).

Other publications

Umbo, S., **Lechleitner, F.A.**, Breitenbach, S.F.M. (2022): The story of interglacial permafrost unraveled in frozen caves. ***PAGES Horizons***, 2, 41-45, DOI: 10.22498/pages.horiz.2.

Kaushal, N., Comas-Bru, L., **Lechleitner, F.A.**, Hatvani, I.G., Kern, Z. (2021): Improving access to paleoclimate data. ***Eos***, 102, DOI: 10.1029/2021EO155315.

Invited Oral Conference Presentations

- 06.2022 **Invited speaker** at the Young Faculty Meeting, Swiss Academy of Sciences, Platform Chemistry, Bern, Switzerland.
- 09.2021 **Keynote speaker** at GeoKarlsruhe 2021, session 5.3: “Advances in terrestrial and marine carbonate archives – novel proxies and innovative techniques to decipher past climate variability”, virtual conference.
- 04.2021 **CL Division Outstanding ECS Award Lecture** 2021, EGU, virtual conference.
- 09.2020 **Invited speaker** at the Oeschger Centre for Climate Change Research Plenary meeting, University of Bern, Switzerland.

- 10.2019 **Invited speaker** at SISAL 4 workshop: “Speleothen Isotope Synthesis and Analysis: Exploiting the SISALv2 database for evaluating climate processes” at Xi'an Jiaotong University, Xi'an, China.
- 04.2018 **Solicited speaker** in session: “Novel and quantitative methods for continental palaeoenvironmental reconstruction” at EGU, Vienna, Austria

Upcoming invited conference presentations

- 06.2023 PAGES International symposium on past global changes: lessons for a sustainable future, Bern, Switzerland

Invited Seminar Speaker

- 12.2022 Department of Chemistry, Biochemistry and Pharmaceutical Sciences house seminar, University of Bern, Switzerland
- 11.2022 Geology Colloquium (departmental seminar), Department of Geology, University of Georgia, USA (*virtual*)
- 10.2022 Environmental Chemistry (LUC) seminar, Paul Scherrer Institut (PSI), Switzerland
- 05.2022 Section of Earth and Environmental Sciences seminar, University of Geneva, Switzerland
- 03.2022 “Climotope group” seminar, Department of Earth Sciences, University of Oxford, UK (*virtual*)
- 02.2021 Institute of Environmental Physics, Heidelberg University, Germany (*virtual*)
- 09.2020 Laboratory for Ion beam physics, ETH Zürich, Switzerland
- 07.2020 “Radiocarbon Universe” webinar, Penn State University, USA (link to talk: <https://eesl.tee.psu.edu/radiocarbon-universe>) (*virtual*)
- 01.2020 Department of Geography and Environmental Sciences, Northumbria University, UK
- 11.2019 Organic Geochemistry Unit, University of Bristol, UK
- 10.2019 Department of Earth Sciences, University of Lausanne, Switzerland
- 10.2019 State Key Laboratory of Vegetation and Environmental Change, Chinese Academy of Sciences, Beijing, China
- 06.2018 Laboratory for the Analysis of Radiocarbon, University of Bern, Switzerland
- 06.2018 Department of Earth Sciences, UCL, UK
- 11.2017 Department of Geosciences, Goethe University Frankfurt am Main, Germany
- 01.2015 Potsdam Institute for climate impact research (PIK), Potsdam, Germany
- 04.2014 Laboratory for Ion beam physics (LIP), ETH Zürich, Switzerland
- 05.2012 North-Eastern Hill University, Shillong, Meghalaya, India

Mentoring and Supervision

- 2023 Tim Huber: undergraduate (BSc) thesis advisor (University of Bern)
- 2023 Joel Gasser: undergraduate (BSc) thesis advisor (University of Bern)
- 2020 – present Sarah Rowan: main PhD supervisor (University of Bern)
- 2019 – 2022 Donna Bou-Rabee: Field training and laboratory supervision (U-Th chemistry) for PhD thesis (University of Trieste, Italy)
- 2019 Elli Ronay: Training and mentoring during field expedition to northern India (Vanderbilt University, USA)
- 2018 Bela Becker: co-supervision of Master’s thesis titled “Identifying and dating

- of Baikal outflow using soft sediments and U-series dated flowstones from Botovskaya Cave” (University of Bochum, Germany)
- 2018 Niels Brall: Training and mentoring during field expedition to Siberia (University of Bochum)

Teaching Activities

- 2022 – present Development and implementation of content for the **blended learning course** “Radionuclides as Environmental Tracers” developed for MSc students at ETH Zurich by Dr. Caroline Welte (ETH). *Responsible for the design and implementation of the unit: “Case Study: Using stalagmite radiocarbon data to de-convolve the soil organic matter spectrum”.*
- 2022 **Lab practical course in Physical Chemistry** (PC-II Praktikum) for BSc students in Chemistry, University of Bern. *Instructor in the radiocarbon dating component of the course, taught independently, 12 hours, ~12 students.*
- 2022 **Workshop** at the Karst Record 9 conference (Innsbruck, Austria, July 2022): The value of Radiocarbon in speleothem science. Interactive course on age modelling and karst process forward modelling. *Course developed and taught independently.*
- 2022 **Invited lecture** at the mini summer school of speleothem science (miniS4) in Innsbruck, Austria (July 2022) – Lecture on the use of carbon isotopes in speleothem paleoclimate studies for PhD students. *Lecture developed and taught independently.*
- 2022 – present **Block course** “Quaternary Dating Methods”, section on U-series dating for MSc Earth Sciences students, University of Bern. *Course developed and taught independently, 2 hours, ~12 students.*
- 2022 **Participant in higher education teaching course** “Hochschullehre kompakt”
- 2020 **Full undergraduate course** Planet Earth – Physics of the Atmosphere and Ocean” (Hilary term 2020, 1st year undergraduate students, University of Oxford) – Introductory lecture on ocean and atmosphere dynamics and their role in the global climate system. *Lecture taught based on materials by Prof. Helen Johnson (during her sabbatical), 3 hours/week during Hilary term, ~35 students.*
- 2019 **Undergraduate tutorial** on the global carbon cycle (Trinity term 2019, 2nd year undergraduate students, University of Oxford) – Interactive tutorial on the global carbon cycle over Earth’s history (carbon reservoirs and response times, deep time carbon cycle, the role of the ocean in regulating atmospheric carbon content, future trends). *Course developed and taught independently.*
- 2017 **Invited lecture** at the summer school of speleothem science (S4) in Burgos, Spain (2017) – Lecture on the application of modern precipitation isotope analysis in speleothem paleoclimate studies for PhD students. *Lecture developed and taught independently.*
- 2014 – 2015 **Guest lecture** in terrestrial carbonate sedimentology (autumn semesters 2014 and 2015, MSc Earth Sciences, ETH Zürich) – Introductory lecture on types and significance of terrestrial carbonate deposits (travertines, tufas, speleothems and karst landscapes). Discussion of their sedimentological and geochemical properties. *Lecture developed and*

- taught independently.*
- 2016 **Laboratory supervision of students** in biogeoscience coursework (summer 2016, MSc Earth Sciences, ETH Zürich) – Preparation of spring water samples for ¹⁴C analysis, teaching of laboratory methods and evaluation of results.
- 2013 – 2015 **Teaching assistant** for lectures “Geologie der Schweiz” and “Sedimentologie” (2013 – 2015, BSc Earth Sciences, ETH Zürich) – Introductory lectures on the geology of Switzerland and sedimentology.
- 2013 – 2015 **Teaching assistant** for in-class geologic mapping practical (2013 – 2015, BSc Earth Sciences, ETH Zürich) – Exercises in interpretation of geologic maps, evaluation of geologic structures (“Kartenpraktikum”).
- 2013 – 2016 **Teaching assistant** in sedimentology field course (2013 – 2016, BSc Earth Sciences, ETH Zürich) – Mapping course in the Swiss Alps (Gemmipass).
- 2010 – 2011 **Teaching assistant** excursions in geology and sedimentology (2014, BSc Earth Sciences, ETH Zürich) – Mesozoic sediments of the southern Alps (Monte San Giorgio, Arzo, Gole della Breggia).
- 2010 – 2011 **Teaching assistant** (2010 – 2011, Bsc Earth Sciences and Geography, ETH Zürich) – Practical sessions for students accompanying the lecture “Dynamische Erde” (Dynamic Earth).

University Services

- 2022 External examiner of PhD thesis defence Oliver Kost, ETH Zürich
- 2022 External examiner of PhD thesis viva Christopher Theaker, University of Oxford
- 2022 Academic host (seminar and research visit) to Dr. Robyn Pickering, University of Cape Town, South Africa
- 2019 External panel member of PhD proposal defense Oliver Kost, ETH Zürich
- 2019 Panel member of Transfer of Status viva Hamish Couper (1st year graduate student), University of Oxford
- 2018 – 2020 Henderson group clean lab manager, Department of Earth Sciences, University of Oxford
- 2014 – 2016 Co-chair of the academic staff association (“akademischer Mittelbau”), member of the department teaching commission, Department of Earth Sciences, ETH Zürich

Scientific Community Services

- 2022 Panellist in the Climate: Past, Present and Future (CL) Division of EGU Campfire series on women in climate science.
- 2021 Contribution to the blog of the Climate: Past, Present and Future (CL) Division of EGU: “From mountains to caves: How I found my research niche”, **nominated for the EGU Best blog post of 2021 competition.**
- 2020 – present PAGES Early Career Network (ECN) Science Cluster initiator (<http://pastglobalchanges.org/ecn/clusters>)
- 2020 – present Associate editor at “Results in Geochemistry” (Elsevier, full open access journal). Since May 2023 merged to become “Results in Earth Sciences”.
- 2020 – present PAGES SISAL (Speleothem Isotope Synthesis and Analysis) working

2017 – 2022 group phase 2 steering committee member
Regional lead coordinator (Western Europe team) for the PAGES SISAL working group; PAGES ECN liaison

Convener of Sessions for Scientific Meetings

2023 Convener of Session “Radiocarbon and other geochronological tools for environmental reconstructions - technical advances and novel applications”, at the EGU international conference, Vienna.

2022 Convener of Session “Climate and Paleoclimate studies” at the 24th Radiocarbon conference, Zürich, Switzerland.

2022 Convener of Session “Methods and Technical Developments in Speleothem Science” at the Karst Record 9 conference, Innsbruck, Austria.

2022 Convener of Session “Interactions between biota and weathering” at the Goldschmidt Conference, Hawai’i.

2022 Convener of Session “New developments in speleothem paleoclimate and paleoenvironmental science” at the PAGES 6th Open Science Meeting, Agadir (fully online).

2022 Convener of Session CL.1.2.3 “Speleothem and Continental Carbonate Archives of Modern and Palaeoenvironmental Change” at the EGU international conference, Vienna.

2020 Convener of Session CL1.26 “Speleothem and Continental Carbonate Archives of Modern and Palaeoenvironmental Change” at the EGU international conference, Vienna.

2020 Convener of Session “Methods and Technical Developments in Speleothem Science” at the Karst Record conference in Innsbruck, postponed due to COVID-19 pandemic.

2019 Convener of Session CL1.18 “Challenges, potential and results from large-scale compilations of palaeoclimate data (co-sponsored by SISAL)” at the EGU international conference, Vienna.

Peer-Reviewing Activities

Manuscripts (33): *Nature Geoscience* (1), *Nature Communications* (2), *Scientific Reports* (2), *Earth and Planetary Science Letters* (1), *Geophysical Research Letters* (2), *Geochimica et Cosmochimica Acta* (3), *Climate of the Past* (3), *Quaternary Science Reviews* (1), *Journal of Quaternary Science* (2), *Chemical Geology* (1), *Rapid Communications in Mass Spectrometry* (1), *Sedimentology* (1), *Journal of Geophysical Research-Biogeosciences* (2), *Geoderma* (1), *Quaternary Geochronology* (2; **outstanding reviewer, May 2018**), *Palaeogeography, Palaeoclimatology, Palaeoecology* (1), *Quaternary Research* (3), *Radiocarbon* (2), *Hydrological Sciences Journal* (1), *Journal of Archaeological Science* (1), *South African Journal of Geology* (1)

Grants (8): *Natural Environment Research Council (NERC, UK) Standard Grant* (1), *Austrian Science Fund (FWF, 1)*, *French National Research Agency (ANR, projet générique, 1)*, *National Cave and Karst Research Institute (NCKRI, USA) Seed grant applications* (5)

Field Campaigns

04.2021 – present Bimonthly cave and environmental monitoring at Milandre Cave, Switzerland, collection of soil, gas and water samples from the Critical Zone

05.2019	Slovenia, exploratory sampling of stalagmites for palaeoseismicity studies
02.2019	Meghalaya, NE India, cave monitoring and sampling, soil sampling
01.2018	Eastern Siberia, scientific expedition to Botovskaya Cave, cave monitoring, speleothem, sediment, and water sample collection, cave exploration
07.2014	Belize, cave monitoring, collection of bulk soil, soil water and soil air, drip water sample collection for organic matter characterization
06.2013	Belize, cave monitoring, stalagmite and drip water sample collection, soil sample collection
03.2013	Bermuda, cave exploration, cave monitoring, identification of stalagmite samples for research
05.2012	Meghalaya, NE India, cave exploration, survey, monitoring, soil sampling

Ongoing collaborations and partnerships in scientific projects

2023 – present	Prof. Yassine Ait Brahim (Mohammed VI Polytechnic University, Benguerir, Morocco): Project “Exploring the potential of the North African speleothem archive”.
2022 – present	Dr. Gabriella Koltai (University of Innsbruck, Austria): understanding the formation mechanism, environmental significance and potential as a paleoarchive of cryogenic carbonate deposits.
2022 – present	Prof. Madhav P. Thakur (University of Bern): characterization of microbial communities in soil and cave sediments, understanding their importance for the Critical Zone carbon cycle and anthropogenic stressors.
2021 – present	Partner in RICH project (SNSF Sinergia grant): establishing an inventory of radiocarbon in Switzerland, PIs: Prof. Tim Eglinton (ETH Zurich), Prof. Sönke Szidat (University of Bern), Dr. Frank Hagedorn (WSL), Dr. Heather Graven (Imperial College London), https://biogeoscience.ethz.ch/research/theme3/rich.html).
2021 – present	Partner in ISOPERM project (The Leverhulme Trust): reconstructing Siberian permafrost change, PIs: Prof. Sebastian Breitenbach (Northumbria University), Prof. Hanno Meyer (Alfred Wegener Institute, Potsdam), https://isoperm.net/
2018 – present	Prof. Heather Stoll (ETH Zurich) and Dr. Christopher Day (University of Oxford): developing approaches to extract soil/ecosystem respiration signatures from speleothem carbonates.

Media and Public Outreach

2023	Feature article in the university of Bern’s online magazine; in German
2022	Public engagement event at University of Bern (“Nacht der Forschung/Night of Research”); in German and English
2019	Public engagement event at Oxford University Natural History Museum (“Museum late”); in English
2017	Article in ETH News after publication in Scientific Reports, “Little Ice Age displaced the tropical rain belt”; in German and English (published

- 24.04.2017)
 2017 Press release by University of Bochum after publication in Scientific Reports, “Wie der tropische Regengürtel wandert”; in German (published 05.04.2017)
 2017 Contribution on caves as analogues for extraterrestrial life forms in the newsletter of the Speläoclub Berlin (SCB); in German (March 2017)
 2016 Invited speaker in the lecture series for the special exhibition “Tambora and the year without a summer” at the museum focusTerra, ETH Zürich; in German
 2013 – 2015 Guided tours at the museum focusTerra, ETH Zürich; in German and Italian

Organization of Events

- 2019 Fellowship information day for students and postdocs in Earth and environmental sciences at University of Oxford
 2015 Seminar series “What is my PhD worth?” focusing on career planning for doctoral students and postdocs in Earth Sciences at ETH Zürich
 2013 Second PhD retreat of the Department of Earth Sciences at ETH Zürich

Memberships

- 2012 – present European Geosciences Union (EGU)
 2014 – present European Association of Geochemistry (EAG)
 2016 – present Società Ticinese di Scienze Naturali (STSN)
 2018 – present Swiss Society for Quaternary Research (CH-Quat)

Selected contributions to Conferences (Oral*, as senior author ▼)

- C36** Kaushal, N., Wilhelm, M., **Lechleitner, F.A.**, Braun, K., Rehfeld, K., Hatvani, I.G., Tanos, P., Ritzau, M., Skiba, V., Azenoud, K., Szucs, J.G., Kern, Z., Burstyn, Y., Ait Brahim, Y. (2023): Update to the SISAL speleothem database -- links to monitoring data, additional palaeoenvironmental proxies and enhanced accessibility. European Geosciences Union (EGU) general assembly 2023, Vienna.
- C35** Szidat, S., Laemmel, T., Geissbühler, D., Rowan, S., Gautschi, P., **Lechleitner, F.A.**, Wacker, L. (2023): New developments in techniques for the sampling and analysis of atmospheric $^{14}\text{CO}_2$ and $^{14}\text{CH}_4$ at ETHZ and UNIBE, Switzerland. European Geosciences Union (EGU) general assembly 2023, Vienna.
- C34** **Lechleitner, F.A.**, Day, C., Fohlmeister, J., Warken, S., Frank, N., Stoll, H., Welte, C. (2023): A global synthesis of speleothem radiocarbon data – is it a sensitive proxy for past ecosystem processes? European Geosciences Union (EGU) general assembly 2023, Vienna.
- C33 ▼** Rowan, S., Luetscher, M., Szidat, S., Laemmel, T., Kost, O., **Lechleitner, F.A.** (2023): Sources of cave CO₂ at Milandre cave, Switzerland constrained through multipool analysis of ^{14}C and $\delta^{13}\text{C}$. European Geosciences Union (EGU) general assembly 2023, Vienna.

- C32**▼ Rowan, S., Luetscher, M., Szidat, S., Laemmel, T., Kost, O., **Lechleitner, F.A.** (2022): Multi-Pool Monitoring of Organic and Inorganic Carbon at Milandre Cave, Switzerland – Implications for Future Paleoecosystem Proxies. 24th Radiocarbon conference, Zürich, Switzerland.
- C31** Strähl, J., **Lechleitner, F.A.**, Laemmel, T., Geissbühler, D., Salazar, G.A., Szidat, S. (2022): New developments in the radiocarbon-based source apportionment for the water-soluble organic carbon fraction of airborne particulate matter. 24th Radiocarbon conference, Zürich, Switzerland.
- C30** **Lechleitner, F.A.**, Day, C., Welte, C., Fohlmeister, J., Stoll, H.M. (2022): Towards a comprehensive understanding of the drivers of the reservoir effect (dead carbon fraction) in stalagmites - a modelling approach. 24th Radiocarbon conference, Zürich, Switzerland.
- C29**▼ Rowan, S., Luetscher, M., Szidat, S., **Lechleitner, F.A.** (2022): High Resolution Monitoring of Organic Matter at Milandre Cave, Switzerland – Implications for Future Paleoecosystem Proxies. The Karst Record 9 conference, Innsbruck, Austria.
- C28** **Lechleitner, F.A.**, Strähl, J., Rowan, S., Rauber, M., Geissbühler, D., Laemmel, T., Lang, S.Q., Szidat, S. (2022): New developments in speleothem organic carbon isotope analysis as a proxy for terrestrial ecosystem dynamics. The Karst Record 9 conference, Innsbruck, Austria.
- C27** Kaushal, N., **Lechleitner, F.A.**, Tanos, P., Hatvani, I.G., Kern, Z., Wilhelm, M., Burstyn, Y., Baker, A. (2022): SISAL speleothem database updates - link to modern monitoring data, additional proxies and increased accessibility. European Geosciences Union (EGU) general assembly 2022, Vienna. *Lightning talk due to COVID-19 pandemic, DOI: 10.5194/egusphere-egu22-1576.*
- C26** Umbo, S., Homann, J., **Lechleitner, F.A.**, Modestou, S., Kononov, A., Osintsev, A., Vaks A., Mason, A., Henderson, G.M., Breitenbach, S.F.M. (2022): A late Miocene seasonality and wildfire record from northern Siberia utilising novel speleothem proxies. European Geosciences Union (EGU) general assembly 2022, Vienna. *Lightning talk due to COVID-19 pandemic, DOI: 10.5194/egusphere-egu22-6078.*
- C25** Robinson, J., Homann, J., Umbo, S., Scott, P., Nehrke, G., Hoffmann, T., Vaks, A., Kononov, A., Osintsev, A., Mason, A., **Lechleitner, F.A.**, Henderson, G.M., Breitenbach, S.F.M. (2022): Reconstruction of Holocene wildfire occurrence using levoglucosan and lignin biomarkers from Siberian stalagmites. European Geosciences Union (EGU) general assembly 2022, Vienna. *Lightning talk due to COVID-19 pandemic, DOI: 10.5194/egusphere-egu22-10202.*
- C24**▼ Rowan, S., Luetscher, M., Szidat, S., **Lechleitner, F.A.** (2022): High Resolution Monitoring of Organic Matter at Milandre Cave, Switzerland. Implications for Future Paleoecosystem Proxies. European Geosciences Union (EGU) general assembly 2022, Vienna. *Lightning talk due to COVID-19 pandemic, DOI: 10.5194/egusphere-egu22-4066.*
- C23*** **Lechleitner, F.A.**, Rowan, S., Strähl, J., Rauber, M., Lang, S.Q., Szidat, S. (2022): Speleothem organic carbon isotopes as a novel tracer for terrestrial ecosystem change –

- new method developments. European Geosciences Union (EGU) general assembly 2022, Vienna. *Lightning talk due to COVID-19 pandemic*, DOI: 10.5194/egusphere-egu22-2967.
- C22** Braun, T., Breitenbach, S.F.M., Baldini, J.U.L., Ray, E., Baldini, L.M., **Lechleitner, F.**, Asmerom, Y., Polyak, V.J., Prufer, K.M., Marwan, N. (2021): Two millennia of changing predictability of seasonal rainfall and repercussions for societies in the Neotropics. American Geophysical Union (AGU) Fall meeting 2021, New Orleans and online.
- C21** [▼] Rowan S., Luetscher M., Szidat S., **Lechleitner F.** (2021): Stalagmite organic carbon as a novel paleoecosystem proxy? Implications from a high resolution cave process study. Swiss Geoscience Meeting 2021, Geneva (online).
- C20** Day, C., **Lechleitner, F.**, Pogge von Strandmann, P.A.E. (2021): Multi-proxy, localised reconstructions of climate and weathering from cave speleothem samples. Goldschmidt 2021, online.
- C19** Braun, T., Breitenbach, S.F.M., Ray, E., Baldini, J.U.L., Baldini, L.M., **Lechleitner, F.**, Asmerom, Y., Prufer, K.M., Marwan, N. (2021): Two millennia of seasonal rainfall predictability in the neotropics with repercussions for agricultural societies. European Geosciences Union (EGU) general assembly 2020, Vienna. *Virtual display due to COVID-19 pandemic*. DOI: 10.5194/egusphere-egu21-11012.
- C18** Prufer, K., Breitenbach, S., Baldini, J., Braun, T., Ray, E., Baldini, L., Polyak, V., **Lechleitner, F.**, Marwan, N., Kennett, D., and Asmerom, Y. (2020): A 1,600 year record of paleoseasonality from the neotropics of Central America and its implications for rainfall predictability in agricultural societies. European Geosciences Union (EGU) general assembly 2020, Vienna. *Virtual display due to COVID-19 pandemic*. DOI: 10.5194/egusphere-egu2020-18100.
- C17** **Lechleitner, F.A.**, Day, C.C., Wilhelm, M., Haghypour, N., Kost, O., Henderson, G.M., Stoll, H.M. (2020): Understanding the deglacial relationship between carbon isotopes and temperature in stalagmites from Western Europe. European Geosciences Union (EGU) general assembly 2020, Vienna. *Virtual display due to COVID-19 pandemic*. DOI: 10.5194/egusphere-egu2020-7466.
- C16** **Lechleitner, F.A.**, Stoll, H.M., Haghypour, N., Henderson, G.M. (2019): Reconciling local and regional trends in stalagmite carbon isotopes – Results from a case study at El Pindal cave, Spain. European Geosciences Union (EGU) general assembly 2019, Vienna.
- C15** **Lechleitner, F.A.**, Amirnezhad Mozdehi, S., Columbu, A., Comas-Bru, L., Labuhn, I., Pérez-Mejías, C., Rehfeld, K. (2018): What do speleothems in Western Europe record? Assessing regional and temporal trends in speleothem $\delta^{18}\text{O}$ with the SISAL database. Swiss Geoscience Meeting 2018, Bern.
- C14** Baldini, L.M., Walczak, I., Jamieson, R.A., **Lechleitner, F.A.**, Baldini, J.U.L. (2018): Reconstructing North Atlantic climate over the past six centuries using a high resolution stalagmite multi-proxy approach. Goldschmidt 2018, Boston.
- C13*** **Lechleitner, F.A.**, Mason, A., Vaks, A., Breitenbach, S.F.M., Kononov, A.M., Osinzev, A.V., Henderson, G.M. (2018): The underground legacy of permafrost carbon: Speleothems as

- potential high-resolution of the local carbon cycle. European Geosciences Union (EGU) general assembly 2018, Vienna, **invited contribution**.
- C12** Goswami, B., Breitenbach, S.F.M., **Lechleitner, F.A.**, Baldini, J.U.L., Cheng, H., Marwan, N. (2018): Is this an event? – Detecting abrupt changes in palaeoclimate records. European Geosciences Union (EGU) general assembly 2018, Vienna.
- C11*** **Lechleitner, F.A.**, Fohlmeister, J., McIntyre, C., Baldini, L.M., Jamieson, R.A., Hercman, H., Gasiorowski, M., Pawlak, J., Stefaniak, K., Socha, P., Eglinton, T.I., Baldini, J.U.L. (2016): Construction of reliable radiocarbon-based chronologies for speleothems. European Geosciences Union (EGU) general assembly 2016, Vienna.
- C10** **Lechleitner, F.A.**, Lang, S.Q., McIntyre, C., Baldini, J.U.L., Dittmar, T., Eglinton, T.I. (2016): Source to sink characterization of dissolved organic matter in a tropical karst system. European Geoscience Union (EGU) general assembly 2015, Vienna.
- C9*** **Lechleitner, F.A.**, Breitenbach, S.F.M., McIntyre, C., Asmerom, Y., Pruffer, K.M., Polyak, V., Culleton, B.J., Kennett, D.J., Eglinton, T.I., Baldini, J.U.L. (2015): Carbon cycle dynamics and solar activity embedded in a high-resolution ^{14}C speleothem record from Belize, Central America. European Geosciences Union (EGU) general assembly 2015, Vienna.
- C8** **Lechleitner, F.A.**, Jamieson, R.A., McIntyre, C., Baldini, L.M., Baldini, J.U.L., Eglinton, T.I. (2015): Modelling of dead carbon fraction in speleothems: a step towards reliable speleothem ^{14}C -chronologies. European Geoscience Union (EGU) general assembly 2015, Vienna.
- C7*** **Lechleitner, F.A.**, Breitenbach, S.F.M., Ridley, H.E., McIntyre, C., Asmerom, Y., Rehfeld, K., Pruffer, K.M., Kennett, D.J., Aquino, V.V., Polyak, V., Goswami, B., Marwan, N., Haug, G.H., Eglinton, T.I., Baldini, J.U.L. (2015): 2000 years of Northern Hemisphere volcanic activity recorded in carbon isotopes in a speleothem from Belize, Central America. Conference on volcanoes and climate 2015, Berne.
- C6** **Lechleitner, F.A.**, McIntyre, C., Breitenbach, S.F.M., Polyak, V., Asmerom, Y., Pruffer, K.M., Culleton, B.J., Kennett, D.J., Baldini, J.U.L., Eglinton, T.I. (2014): Late Holocene ^{14}C variations recorded by a speleothem from Yok Balum cave, Belize. Goldschmidt conference 2014, Sacramento CA.
- C5** **Lechleitner, F.A.**, Jamieson, R., Breitenbach, S.F.M., Pruffer, K.M., Kennett, D.J., Asmerom, Y., Polyak, V., Aquino, V., Baldini, J.U.L., Eglinton, T. (2013): New insights on carbon cycling in a tropical cave system from stable isotope, trace element, and radiocarbon measurements. Conference on Isotopes of Carbon, Water, and Geotracers in Paleoclimate Research 2013, Berne.
- C4** Goswami, B., Rehfeld, K., Marwan, N., **Lechleitner, F.A.**, Breitenbach, S.F.M., Kurths, J. (2013): COConstructing Proxy Records from Age models (COPRA). European Geosciences Union (EGU) general assembly 2013, Vienna.
- C3** Rehfeld, K., Goswami, B., Marwan, N., Breitenbach, S., **Lechleitner, F.A.**, Molkenhain, N., Kurths, J. (2013): Teleconnections and interannual variability of the Asian Monsoon in the last 1000 years from paleoclimate data. European Geosciences Union (EGU) general

assembly 2013, Vienna.

- C2** Breitenbach, S.F.M., Plessen, B., **Lechleitner, F.A.**, Marwan, N., Adkins, J.F., Haug, G.H. (2012): The glacial Indian summer monsoon - precipitation changes during Heinrich and D-O events in NE India. European Geosciences Union (EGU) general assembly 2012, Vienna.
- C1** **Lechleitner, F.A.**, Breitenbach, S.F.M., Cheng, H., Adkins, J.F., Plessen, B., Haug, G.H. (2012): The last deglaciation in NE India reconstructed from a stalagmite from Mawmluh cave. European Geosciences Union (EGU) general assembly 2012, Vienna.

Languages

German and Italian: native, C2

English: C2

French: B1

Russian: A1