

Curriculum Vitae

Grosjean, Martin (Prof. Dr.)

1. Personal information

Swiss Citizen, 25.01.1962, ORCID ID: 0000-0002-3553-8842

website http://www.geography.unibe.ch/research/paleolimnology_group/index_eng.html

2. Education, academic qualifications and positions

Full Professor 2016 Ordentlicher Professor, University of Bern
Assoc. Prof. 2009 Ausserordentlicher Professor, University of Bern
Titular Prof. 2004 University of Bern
Ph.D. 1992 University of Bern, Faculty of Science, Geography

3. Employment history

2007–present Director Oeschger Centre for Climate Change Research, University of Bern
2006–present Director Graduate School of Climate Sciences, University of Bern
2001–2013 Executive Director NCCR Climate (Swiss NSF)
(National Centre of Excellence in Research on Climate)
2000-2001 Head of Division; Swiss Federal Institute for Snow and Avalanche Research SLF
1996-1999 Research Assistant, Institute of Geography, University of Bern
1992-1995 Postdoc Soil Science Department, University of British Columbia, Vancouver; Limnological Research Center LRC, University of Minnesota, Minneapolis (visiting researcher); extended fieldwork in Chile.

4. Institutional responsibilities (selection)

- Director Oeschger Centre for Climate Change Research (2007 – present); 40-50% activity rate
- Studies Director Graduate School of Climate Sciences (2006 – present); 20% activity rate
- Studies Commission Faculty of Science, University of Bern (2009 – 2020)
- University self-administration

5. Approved research projects

Ex-officio extramural funding in my position as the Director of the OCCR, the Studies Director of the Graduate School and the Executive Director of the NCCR Climate is not listed here.

Research Projects (> 100 kCHF only; directly for research group; 2006 – present only)

2022-2026 SNF Div II. Biochemical responses of lakes to rapid climate transitions across space and time: insights from novel high-resolution analyses of sediments from Europe and Northern China. (SNF_204220). PI: M. Grosjean. 736 kCHF.
2019-2024 SNF Sinergia. 20,000 years of evolution and ecosystem dynamics in the world's largest tropical lake reconstructed from sediment cores, fossils and ancient DNA (Co-PI; CRSII5_183566; 2.6 mio CHF)
2018-2022 IFC UniBE. One Health: Cascading and Microbiome-Dependent Effects on Multitrophic Health. Co-PI M. Grosjean. 5.89 mioCHF, share Grosjean 448 kCHF.
2018-2019 Faculty of Science, UniBE, Strategy Pool. Digging deep into Lake Victoria's past: 15,000 years of ecosystem dynamics and evolution reconstructed from sediment cores of the world's largest tropical lake. Co-PI M. Grosjean. 100 kCHF.
2017-2021 SNF Div II: Exploring VNIR/SWIR Hyperspectral Imaging of Varved Lake Sediments: Methods and Applications in Paleoclimatology and Paleoecology. PI: M. Grosjean. 523 kCHF. SNF (200021_172586).
2014-2017 SNF Div II: Climate variability in the SW Ecuadorian Andes of the past two millennia: a contribution to IGBP-PAGES 2k. PI: Grosjean. 213 kCHF (SNF 152986).
2011-2015 SBF Polish-Swiss Research Projects. CLIMPOL Climate of northern Poland during the last 1000 years: Constraining the future with the past. PIs W. Tylmann & M. Grosjean. 821 kCHF (PSPB-086/2010).
2011-2014 SNF Div II: Calibrating and validating scanning VIS Reflectance Spectroscopy data (380 – 730 nm) from minerogenic and biochemical varves: improving climate reconstructions from lake sediments. PI Grosjean. 184 kCHF (SNF 134945).
2010-2012 SBF Chilean Swiss Joint Research Programme. Climate change and dynamics of freshwater systems in central and southern Chile: a perspective from lakes. PI Grosjean. 150 kCHF (No. CJRP-1001).
2008-2011 SNF Div II: Annual- to decadal-scale quantitative climate reconstructions from varved Alpine lake sediments for the last 3300 years. PI: Grosjean. 212 kCHF (SNF 116005).
2006-2011 EU FP6 IP. Millennium: European climate of the last millennium. Grosjean: 950 kCHF. (Nr 017008).

Equipment

2013-2013 SNF R'EQUIP XRF Core Scanner and digital radiography. (PI: Anselmetti, Co-PI Grosjean). 230 kCHF.
2010-2012 SNF R'EQUIP Environmental Analysis and Dating with Radiocarbon. Co-PI Grosjean. 600 kCHF. (SNF 133817).
2006-2007: SNF R'EQUIP Environmental Scanning Electron Microscope ESEM ("Stomatocysts in Lake Sediments: a novel tool for high-resolution quantitative climate reconstruction"). PI: Grosjean. 75 kCHF (SNF 113059).

Research Infrastructure

2007-2019 SNF. Global Change and Mountain Regions: the Mountain Research Initiative Coordination Office. PI: Weingartner, Co-PI Grosjean. (SNF 149873, SNF 132773, SNF 117630).

6. Supervision of Early Stage Researchers

Postdocs and PhD students:

EU Marie-Curie IEF/IIF: Rixt de Jong (2008-2010), Krystyna Saunders (2009-2011)

SNF Postdoctoral Fellowship: Chuxian Li (2022-2024)

SNF AMBIZIONE: Rixt de Jong (2011-2014), Krystyna Saunders (2012-2015), Raphael Neukom (2015-2019)

Supervised PhDs: Noe Schmidhauser (ongoing), Stan Schouten (ongoing), Giulia Wienhues (ongoing); Yunuen Temoltzin (2023), Luyao Tu (2021), Paul Zander (2021), Andrea Sanchini (2020), Stamatina Makri (2020), Christoph Dätwyler (2019), Tobias Schneider (2018); Christoph Butz (2016), Benjamin Amann (2015), Julie Elbert (2013); Monique Stewart (2012); Mathias Trachsel (2011); Lucien von Gunten (2009); Alex Blass (2007); Christoph Kull (2000).

Supervised postdocs: C. Kamenik (2007-2012); I. Hernandez (2012-2016); R. de Jong (2008-2014); K. Saunders (2019-2015), B. Bandowe (2015-2016), R. Neukom (2015-2019), A. C. Hernandez (2018-2022), Petra Zahajska (2022 ongoing), Chuxian Li (ongoing 2022-2024).

7. Teaching activities (selected current activities; MSc Climate Sciences, MSc Geography, yearly courses)

- "Quaternary climate changes and terrestrial ecosystems" (3 ECTS)
- "Limnology and Paleolimnology" (3 ECTS)
- "Paleoclimatological and Paleoeological Excursion to the Swiss Plateau and the Alps" (3 ECTS)
- "Field course Paleolimnology" (1.5 ECTS)
- "Seminar in Paleolimnology" (5 ECTS)
- Responsible for 'Compulsory Module' (8 ECTS) MSc Climate Sciences.
- Swiss Climate Summer School; (3 ECTS); principal organizer; yearly since 2002.
- Young Researchers Meetings; (2 ECTS); yearly since 2002.
- Co-teaching in numerous courses BSc and MSc level Geography and Climate Sciences.

8. Memberships in panels, boards, etc., and individual scientific reviewing activities

2022 ff PAGES Past Global Changes; Scientific Steering Committee; and co-chair 2023 ff.

2022 ff Elected Member of the Leopoldina National Academy of Sciences

2008-2021 Swiss State Secretary for Education, Research and Innovation: Member of the Support Group FP7, Horizon 2020, Horizon Europe for "Environment including Climate Change" (Nominated by Swiss Universities).

2020-2022 Nominations Committee for "The Earthshot Prize" (Prince William and The Royal Foundation)

2018-2020 Swiss Academy of Science. Mandated for Project Group "Large Research Infrastructure in Geosciences"

2006-2015 IGBP-PAGES Research Initiative LOTRED-SA "Long-term climate reconstruction and dynamics in South America". Initiator and coordinator. 2006 - 2015. PAGES 2k.

2010-2019 Mountain Research Initiative MRI (IGBP-IHDP-GLP-GTOS-UNESCO; Future Earth). Co-Principal Investigator.

Since 2013 Mobilier Lab for Climate Risks and Natural Hazards, University of Bern. Steering Board.

2009-2011 IGBP-PAGES Varves Working Group: Scientific Steering Committee.

2009 Platform Science and Policy, Swiss Academy of Sciences. President.

2000-2008 ICAS Interacademic Commission for Alpine Studies of the Swiss Academy of Sciences. Member SSC.

Regular reviewer of research proposals for NSF (USA), NERC (UK), DFG (D), FWF (A) and FONDECYT (Chile), Helmholtz-Gesellschaft (D); Humboldt Foundation (D), VW Foundation (D), Swiss NSF, among others.

Regular reviewer for journals: Science, Nature Geoscience, Climatic Change, The Holocene, Quaternary Research, Quaternary Science Reviews, J Quaternary Science, Palaeo3, Climate of the Past, J Paleolimnology and others.

Editorial Board: "Global and Planetary Change" and "The Holocene"

9. Active memberships in scientific societies

European Geosciences Union EGU; Swiss Academy of Sciences: ProClim; Swiss Meteorological Society; Swiss Geomorphological Society, Swiss Hydrological and Limnological Society.

10. Organization of conferences (including workshops and seminars)

Principal organizer and co-organizer of numerous international workshops and conferences, mainly through the Oeschger Centre for Climate Change Research; on average ca 4-5 conferences annually, including the 10th International Carbon Dioxide Conference ICDC10 2017 with >500 participants and INQUA 2011 with more than 2500 participants.

Complete list of forthcoming/past conferences: http://www.oeschger.unibe.ch/services/events/conferences/index_eng.html

11. Outreach

Several contributions to

- International and Swiss TV and Radio broadcast including BBC International, SRF, and local TV and radio stations
- Museum and outdoors exhibitions (Swiss Alpine Museum, Container3 etc); Museumsnacht, Nacht der Forschung etc

- Presentations and Discussion Fora at Secondary and High Schools (across Switzerland)
- Public Presentations and participation for Science et Cité, Wissenschaftscafe, Forum Universität und Gesellschaft, Volkshochschulen, Service Clubs (Lyon's and Rotary), Naturforschende Gesellschaften, and many others.
- General outreach through the Oeschger Centre for Climate Change Research.

12. Career breaks

None of relevance

Major scientific achievements

The Paleolimnology Research Group, established at the Institute of Geography University of Bern in 2005, uses a broad range of sedimentological, mineralogical, biogeochemical and paleontological proxies in lake sediments and statistical tools to investigate long-term climate and environmental variability and change. The spotlight of investigation is currently (i) on very high-resolution (seasonal to annual) quantitative climate reconstructions, variability and dynamics, (ii) on the nexus between climate - land cover – eutrophication – productivity - anoxia in freshwater lakes, and (iii) on pollution history as recorded in lake sediments including metals and organic pollutants such as Polycyclic Aromatic Compounds and Plant Protection Products. The time-scales of interest range from the industrial period to the last Millennium, the Holocene and, recently, to Glacial-Interglacial cycles. Research projects are conducted in the Swiss Alps and Plateau, in Central Europe (Poland, Germany, Italy, Greece), tropical Africa (Lake Victoria), and the southern Hemisphere (subantarctic Islands, South America). Commonly applied analytical techniques include scanning XRF and Hyperspectral Imaging, ICP-MS, HPLC, HPLC-MS/MS among others. Research is typically highly interdisciplinary.

The group is a member of the Oeschger Centre for Climate Change Research, University of Bern and is strongly linked with PAGES (Past Global Changes) working groups.

Major scientific achievements of the past years include (a selection):

1. We have developed a new protocol for the optimized sampling, sequential analysis of lake sediments and statistical evaluation with the purpose to produce quantitative, well-calibrated high-resolution climate reconstructions. The protocol also includes developments of advanced numerical tools for dating young sediments (20th century). High quality sediment chronologies are the basis for pollution histories.
2. We have demonstrated with lakes in Switzerland and Poland that chironomids and chrysophytes reveal highly accurate estimates for summer temperature (RMSEP 1.3°C) and winter climate (length of ice cover, RMSEP 3.4 days) at near-annual resolution. These millennial-long near-annually resolved data sets are worldwide unique.
3. We have pioneered the development (methodological, hardware, software) of scanning hyperspectral imaging techniques (VNIR 400 – 1000 nm, Specim Single Core Scanner) with direct measurements of fresh and moist sediment cores at ultra-high spatial resolution (pixel size 45 x 45 µm²). This novel technique allows us for the first time to quantify groups of sedimentary pigments (chlorophylls and diagenetic products, bacteriopheophytins, phytotoxins such as phycocyanin) at unprecedented spatial and temporal resolution and, thus, to gain new insight into paleoproductivity, mixing regimes, anoxia and related chemical feedbacks in freshwater lakes.
4. Latest ongoing research projects use novel interdisciplinary approaches to investigate the relationship between late Quaternary climate and environmental change and the pacing of adaptive fish species radiation in Lake Victoria as reconstructed by DNA of fish fossils preserved in lake sediments of the past 17,000 years.
5. In an Interfaculty Cooperation Research (Uni Bern) project we investigate cascading effects of selected environmental pollutants (arsenic, plant protection products and phytotoxins) across different environmental compartments and along the food chain from soils and sediments, root microbiomes and plants, gut microbiomes of ruminants and mice (model organism for the human gut microbiome). Here we work with soil scientists, plant physiologists, microbiologists, bioinformation scientists, veterinarians and medical doctors.

Keywords: Climate change, pollution history, Quaternary, Holocene, Anthropocene, limnogeology, biogeochemistry, biomarkers, eutrophication, anoxia.

Current research projects (as Principal Investigator or project leader):

http://www.geography.unibe.ch/research/paleolimnology_group/index_eng.html