

# 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](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, Geography, Faculty of Science

### 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  
1997-1999 Research Assistant, Institute of Geography, University of Bern  
1992-1996 Postdoc positions: Soil Science Department, U of British Columbia, Vancouver; Limnological Research Center LRC, University of Minnesota, Minneapolis

### 4. Institutional responsibilities

- Director Oeschger Centre for Climate Change Research (2007 – present); 40-50% activity rate  
- Studies Director Graduate School Climate Sciences (2006 – present); 20% activity rate  
- Studies Commission Faculty of Science, University of Bern (2009 – present)  
- Executive Director NCCR Climate (2001 – 2013)

### 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)

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 SBFi 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 SBFi 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 (SUSTDEV-2004-3.1.4.1). Millennium: European climate of the last millennium. Share Grosjean: 950 kCHF. (Nr 017008).  
2005-2008 SNF Div II: Medieval Climate Anomaly and Little Ice Age Type Events in the South-Central Andes. PI Grosjean. 176 kCHF. (SNF 107598).  
2004-2007 SNF/NCCR Climate. Varved sediments in the Engadine lakes, Swiss Alps. 150 kCHF.  
2004-2006 SNF Div II: Environmental changes in mountain regions; recorded in high-resolution archives of Lakes of the Upper Engadine, Switzerland. PI: M. Sturm, Co-PI Grosjean. 117 kCHF. (SNF 103892).

#### 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 using MICADAS. PI: A. Türlér, Co-PI Grosjean). 600 kCHF. (SNF 133817).

2006-2007: SNF R'EQIP 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 AMBIZIONE*: Rixt de Jong (2011-2014), Krystyna Saunders (2012-2015), Raphael Neukom (2015-2019)

*Supervised PhDs*: Luyao Tu, Paul Zander, Andrea Sanchini, Stamatina Makri, Christoph Dätwyler, Tobias Schneider (ongoing); 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*: Christian Kamenik (2007-2012); Isabelle Larocque (2006-2012); Ivan Hernandez (2012-2016); Rixt de Jong (2008-2014; Krystyna Saunders (2019-2015), Benjamin Bandowe (2015-2016), Raphael Neukom (2015-2019), Aurea C. Hernandez (2018 ff).

### **7. Teaching activities (selected)**

Yearly courses:

- "Quaternary climate changes and terrestrial ecosystems" (3 ECTS)
- "Soils & Sediments as archives of Quaternary Climate Change" (3 ECTS)
- "Paleoclimatological and Paleoecological Excursion to the Swiss Plateau and the Alps" with W. Tinner; (3 ECTS)
- "Field course Paleolimnology" (1.5 ECTS)
- "Regionalgeographie" (8 ECTS) Part: Arid Zone, team teaching. Compulsory Module (8 ECTS). Discontinued 2015)
- Responsible for 'Compulsory Module' (8 ECTS) MSc Climate Sciences.

Swiss Climate Summer Schools; (3 ECTS); principal organizer; since 2002. Yearly.

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

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

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

Since 2010 Mountain Research Initiative MRI (IGBP-IHDP-GLP-GTOS-UNESCO). 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); Swiss NF, among others.

Regular reviewer for journals: Science, 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, ICAS, TDnet

Swiss Meteorological Society

Swiss Geomorphological 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 5 conferences annually, including the 10<sup>th</sup> 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](http://www.oeschger.unibe.ch/services/events/conferences/index_eng.html)

### **11. Prizes, awards, fellowships (selected)**

None of relevance

### **12. Career breaks**

None of relevance

## Major scientific achievements

The group uses a 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 on very high-resolution (seasonal to annual), quantitative climate reconstructions, process studies and pollution history covering the industrial period, the last Millennium and the late Holocene. The Swiss Alps, Central Europe and the southern Hemisphere (subantarctic Islands) are the main areas of interest. Research is typically highly interdisciplinary.

The group is a member of the Oeschger Centre for Climate Change Research, University of Bern and assumes leadership in several FutureEarth-PAGES (Past Global Changes) working groups.

Major scientific achievements 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 (20<sup>th</sup> 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 made significant advancements with reflectance spectroscopy in the visible range (380-700 nm, VIS-RS) and could show that VIS-RS indices from clastic and organic sediments can be calibrated to meteorological data. This resulted in novel quantitative high-resolution reconstructions of summer and spring temperatures in Switzerland, Poland, Patagonia, Central Chile and Tasmania, and precipitation changes in NW Tasmania. The calibration statistics are similar to tree-ring reconstructions.
4. Motivated by this work, we developed with Specim Ltd (Finland) a prototype of a hyperspectral VNIR Single Core Scanner (Specim VNIR SCS, 400–1000 nm) which allows measurements at ultra-high spatial resolution (45 x 45 µm<sup>2</sup>). We customized data acquisition and post-processing (hardware, software) and established a workflow for the proxy-proxy calibration (VNIR-HPLC). A 'User Manual' and a protocol for standard output data is available for internal and external users.

Keywords: Climate change, pollution history, Quaternary, Holocene, Anthropocene, limnogeology, sedimentology, biogeochemistry, climate and culture, Alps, Andes, Poland, southern hemisphere.

Funding sources for research projects (past 10 years): Swiss NF Divisions II and IV, EU-FP6/FP7, National Geographic Society, FONDECYT (Chilean NF), Polish-Swiss Joint Research Projects (SBFI), Chile-Swiss Joint Research Projects (SBFI)

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

[http://www.geography.unibe.ch/research/paleolimnology\\_group/index\\_eng.html](http://www.geography.unibe.ch/research/paleolimnology_group/index_eng.html)