

CURRICULUM VITAE

**PD DR. MARCEL FREHNER**

GEOLOGICAL INSTITUTE  
ETH ZURICH, SWITZERLAND

**PERSONAL DETAILS**

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Full Name PD Dr. sc. Dipl.-Natw. Marcel Frehner  
Born November 30<sup>th</sup> 1979, Swiss citizen, married, 1 son  
Address Geological Institute  
ETH Zurich  
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**QUALIFICATIONS**

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2016 **Habilitation** (Venia Legendi, Privatdozent) in Structural Geology at Department of Earth Sciences, ETH Zurich, Switzerland  
Habilitation title Computational structural geology and rock physics

2006–2009 **PhD** at Geological Institute of ETH Zurich, Switzerland  
Joint industry-academia research project with Spectraseis AG, Zurich, Switzerland  
Thesis title Numerical modeling of multiscale wave propagation phenomena in fluid-rock systems  
Advisors S.M. Schmalholz and J.-P. Burg  
Degree Dr. sc. ETH Zurich (Doktor der Wissenschaften)

2000–2005 **Diploma study** (BSc and MSc) in Earth Sciences at ETH Zurich, Switzerland  
Major subject Structural Geology and Tectonics  
Specialization in numerical modeling  
Minor subjects Seismology, Sedimentology and Stratigraphy  
Geochemistry and Isotope Geology  
Thesis title Strain distribution of buckled multilayer systems and its influence on the development of asymmetric parasitic folds  
Advisor S.M. Schmalholz and J.-P. Burg  
Degree Diplomierter Naturwissenschaftler ETH  
(equivalent to Master ETH of Earth Sciences)  
Graduation with award

1995–1999 **Swiss Matura** Type C (Mathematics and natural science)  
Kantonsschule am Burggraben, St. Gallen, Switzerland  
Graduation with award

## **POSITIONS AND PROFESSIONAL EXPERIENCE**

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- 2016–present **Privatdozent** (equivalent to Senior Lecturer/Researcher)  
at Geological Institute, ETH Zurich, Switzerland
- 2013–2016 **Oberassistent** (equivalent to Senior Lecturer/Researcher)  
at Geological Institute, ETH Zurich, Switzerland
- 2011–2012 **Assistant** (equivalent to Lecturer/Research Associate)  
at Geological Institute, ETH Zurich, Switzerland
- 2009–2010 **University Assistant** (equivalent to Lecturer/Research Associate)  
at Department for Geodynamics and Sedimentology, University of Vienna, Austria
- 2006–2009 Involvement in Spectraseis AG, Zurich, Switzerland  
due to joint industry-academia PhD-project
- 2006–2009 **Research and Teaching Assistant** at Geological Institute, ETH Zurich, Switzerland

## **AWARDS, RECOGNITIONS AND HONOURS**

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- 2015 **Paul Niggli Medal** of the Swiss Geological Society and the Swiss Society of Mineralogy and Petrology, received at the 13<sup>th</sup> Swiss Geoscience Meeting, November 20 2015, Basel, Switzerland
- 2012 **Otto Ampferer Award** of the Austrian Geological Society (ÖGG), received at the 10<sup>th</sup> PANGEO AUSTRIA Conference, September 17 2012, Salzburg, Austria
- 2012 **Best paper** selected from the SEG Annual Meeting 2012 (Las Vegas NV, USA) for Saenger E.H., Madonna C., Frehner M. and Almqvist B.S.G.: Numerical support of laboratory experiments: Attenuation and velocity estimations
- 2010 **Cultural recognition award** of the city of Wil, Switzerland, for the six board members of the rockamweier association
- 2008 **Ria & Arthur Dietschweiler Award** of the Ria & Arthur Dietschweiler Foundation, Cultural promotion award for the rockamweier association
- 2005 **Award for best Diploma** graduation (MSc), Department of Earth Sciences ETH Zurich, Switzerland
- 1999 **Award for best Matura** graduation, Mathematics and Natural Science Division, Kantonsschule am Burggraben, St. Gallen, Switzerland

## **GRANTS**

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- 2017–2019 **Implementing digital mapping and data acquisition in geology field courses**  
Educational focus project funded by the Innovedum Fund, ETH Zurich, Switzerland  
PI: M. Ziegler and M. Frehner
- 2013–2017 **UPseis: Upscaling of seismic properties in fractured fluid reservoirs**  
1 PhD-position granted by the Swiss National Science Foundation  
PI: M. Frehner
- 2013–2015 **RoCha: Rock Characterization**  
1 senior researcher position (2 years) and 1 PhD-position (3 years), including running cost for seismic attenuation laboratory granted by Petrobras, Brazil  
PI's: B. Quintal, E.H. Saenger, and M. Frehner

- 2014 **CO<sub>2</sub>-exsolution and bubble nucleation in porous reservoir rocks filled with CO<sub>2</sub>-saturated fluid under in-situ pressure conditions: Application to CO<sub>2</sub>-sequestration hazard and seismic wave attenuation**  
72 hours of measurement-time at the TOMCAT beamline of the Swiss Light Source (SLS) granted by the Paul Scherrer Institute, Switzerland  
PI: M. Frehner, co-proposer: N. Tisato, H. Steeb, F. Füsseis, A.S. Zappone and J.-P. Burg
- 2011–2014 **Deformation mechanisms and chemical/mineralogical changes around porphyroblasts/clasts**  
1.5 PhD-positions (3 years) granted by the University of Vienna, Austria  
PI's: B. Grasemann and M. Frehner  
Project I.1 of “DOGMA: Deformation of geological materials–Mechanical-chemical feedback and the coupling across scales”, a doctoral program for 10 PhD students
- 2013 **DRP: Digital Rock Physics**  
1 senior researcher position (1 year) and 1 Post-Doc position (1 year) granted by major oil company  
PI's: E.H. Saenger, B. Quintal, and M. Frehner
- 2013 **Digital Rock Physics: Oscillatory behavior of residual fluid in porous rocks**  
56 hours of measurement-time at the TOMCAT beamline of the Swiss Light Source (SLS) granted by the Paul Scherrer Institute, Switzerland  
PI: M. Frehner, co-proposer: H. Steeb, C. Madonna, F.C. Füsseis, E.H. Saenger, and J.-P. Burg
- 2010–2013 **3D micro-imaging of fracture networks using micro-computed tomography – Upscaling of porosity and permeability of a fractured reservoir (Hauptdolomit)**  
2 PhD-positions (3 years) granted by the OMV E&P, Austria  
PI's: U. Exner, K. Decker, M. Frehner, and B. Grasemann
- 2011 **Digital rock physics: Calibration with laboratory measurements**  
24 hours of measurement-time at the TOMCAT beamline of the Swiss Light Source (SLS) granted by the Paul Scherrer Institute, Switzerland  
PI: C. Madonna, co-proposer: E.H. Saenger, M. Frehner, and J.-P. Burg

## TEACHING EXPERIENCE

2011–present at the Geological Institute, ETH Zurich, Switzerland:

- **Geological mapping techniques** (maps and cross-sections) including stereographic projection (regular semester course, BSc level)
- Introduction to **structural geology** (regular semester course, BSc level)
- **Numerical modeling of rock deformation** (regular semester course, MSc and PhD level)
- Introduction to **finite element modeling** in geosciences (1-week block course, MSc and PhD level)

Geological field teaching:

- **Terrain course I:** Introduction to geological field work (5 days, BSc level)
- **Terrain course II:** Introduction to geological mapping in sedimentary rocks (1 week, BSc level)
- **Terrain course III:** Geological mapping in crystalline rocks (10 days, BSc level)
- **Terrain course IV:** Advanced (outer-alpine) geological mapping course (2 weeks, MSc level; e.g., Morocco, Oman)
- Specialized **structural geology** mapping course (4 days, MSc level)
- Excursion to the **Glarus Alps**, Switzerland (1 day, BSc level)

- **Transect excursion** through the western Swiss Alps (4 days, BSc and MSc level)
- **Tectonic sedimentology** excursion to the **Pyrenees**, Spain (2 weeks, MSc level)
- Excursion to the **Glarus Thrust**, Switzerland (3 days, all levels)

2009–2010 at the University of Vienna, Austria:

- Fundamentals of **structural geology and tectonics** (regular semester course plus field course, BSc level)
- **Quantitative structural geology and tectonics** (regular semester course, MSc level)
- **Quantification of geological processes** (regular semester course, MSc level)
- **Numerical methods** in earth sciences (finite-difference method) (regular semester course, MSc and PhD level)

Geological field teaching:

- Specialized **structural geology** mapping course (4 days, BSc level)
- **Geological mapping** field course (1 week, BSc and MSc level)
- Excursion to the **Aeolian Islands**, Greece (3 weeks, MSc and PhD level)

2003–2009 As Teaching Assistant at the Geological Institute, ETH Zurich, Switzerland:

- Various courses on **numerical modeling** of geological and geodynamical processes using the finite element and the finite difference methods (both regular semester courses and 1-week block courses, MSc and PhD level)
- **Geological mapping techniques** (maps and cross-sections) including stereographic projection (regular semester course, BSc level)
- Various **geological excursions and field courses** (all levels)
- **Practical courses** on fundamentals of earth sciences (regular semester practical, BSc level)

Off-curriculum teaching:

- 2018 **Gruppenarbeiten und online Selbststudium im “Flipped Classroom” Konstruktionspraktikum**, my own experiences presented at the University-wide didactic event “Tag der Lehre” for all professors and lecturers of the University of Bern, Switzerland (1 lecture in German)
- 2017 **Student group work in Flipped Classroom environments**, my own experiences presented at the ETH-wide didactic event “Refresh Teaching” for all professors and lecturers of ETH Zurich, Switzerland (1 lecture)
- 2016 **Innovative student examination** methods using peer- and self-evaluation of semester-end project work, my own experiences presented to all professors and lecturers of the Department of Earth Sciences, ETH Zurich, Switzerland (1 lecture)
- 2016 Organizer and leader of the **geological excursion to the Glarus Alps**, Switzerland, for a delegation of the National Iranian Oil Company (1 day)
- 2015 Organizer and leader of an off-the-records **geological excursion to the Flims area**, Switzerland, for all students of the Department of Earth Sciences, ETH Zurich, Switzerland (3 days on all levels)
- 2014 Organizer and leader of the **geological excursion to the Flims area**, Switzerland, for the Student Association (erfa) of the Department of Earth Sciences, ETH Zurich, Switzerland (3 days on all levels)
- 2014 Organizer and leader of the **geological excursion to the Glarus Thrust**, Switzerland, for the Mainland Europe Branch of the Open University Geological Society (1 day)

## **PUBLIC OUTREACH AND MEDIA APPEARANCES**

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- 2013 Participation in report “**Geothermie: Schwierige Suche nach unerschöpflicher Energie**”, June 20 2013 in Einstein (science magazine of the Swiss national TV SRF1) about deep geothermal activities in Switzerland and related research ([www.srf.ch/sendungen/einstein/geothermie-oekoparadies-kiesgrube-beton-kanu](http://www.srf.ch/sendungen/einstein/geothermie-oekoparadies-kiesgrube-beton-kanu))
- 2013 Article “**The story of VAME**”, January 19 2013 in AVETHnews (online news magazine of the ETH mid-level faculty association AVETH) about the founding of the Association for mid-level faculty at the Department of Earth Sciences (VAME) (<http://www.aveth.ethz.ch/AVETHNews/AVETHNews2013.pdf>)
- 2012 Article “**Mehr Licht in den Untergrund**”, April 2 2012 in ETH Life (online newspaper of ETH Zurich) about the establishment and research of The Rock Physics Network at ETH Zurich (ROCKETH) ([www.ethlife.ethz.ch/archive\\_articles/120402\\_Rocketh\\_su](http://www.ethlife.ethz.ch/archive_articles/120402_Rocketh_su))
- 2012 News article “**Rock physics group formed at ETH**”, February 2012 in First Break (magazine of the European Association for Geoscientists and Engineers, EAGE) about the establishment of The Rock Physics Network at ETH Zurich (ROCKETH) (<http://fb.eage.org/publication/content?id=56418>)
- 2011 Public lecture “**Folds in nature and in the computer**”, held on October 20 2011 at the PGP Oslo, Norway. Available online on <http://vimeo.com/31646310> or <https://www.youtube.com/watch?v=OM7eupd4Hz8>
- 2011 Article “**Das Gedächtnis der Gesteine**”, October 18 2011 in uni:view (online newspaper of the University of Vienna) about the new doctoral school DOGMA: Deformation of geological materials (<http://medienportal.univie.ac.at/uniview/forschung/detailansicht/artikel/das-gedaechtnis-der-gesteine>).
- 2010 Video interview about the 10<sup>th</sup> anniversary of the rockamweier music festival
- 2009 Video interview and report about the rockamweier music festival after receiving the Ria & Arthur Dietschweiler Award
- 2001–2010 More than 40 newspaper articles, radio interviews and reports, and local television interviews and reports about the rockamweier music festival

## **SCIENTIFIC COMMITTEE MEMBERSHIPS**

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- 2013–2017 Board member of the Tectonics and Structural Geology Division, **European Geosciences Union (EGU)**, News and Information Officer ([www.egu.eu/ts](http://www.egu.eu/ts))
- 2015 External member of the **PhD thesis examination committee** for Kamal, Department of Earthquake Engineering, Indian Institute of Technology, Roorkee, India
- 2013 Member of the **PhD thesis evaluation committee** for P. Sala, Institute of Geological Sciences, University of Bern, Switzerland
- 2011–2013 Program Committee member of the Tectonics and Structural Geology Division of the **European Geosciences Union (EGU)**, responsible for the Subprogram Group: Methods and Techniques in Tectonics and Structural Geology ([www.egu.eu/ts](http://www.egu.eu/ts))
- 2012 External member of the **PhD thesis adjudication committee** for M.A. Adamuszek, Physics of Geological Processes (PGP), Oslo, Norway

## **ORGANIZATION OF SCIENTIFIC EVENTS**

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- 2016 Convener of the session “Rheology, strain localization, folding and faulting” at the **GeoMod Conference**, October 17–20 2016, Montpellier, France
- 2015–2016 Main convener of the session “Analogue and numerical modeling of tectonic processes” at the **EGU General Assemblies**, Vienna, Austria
- 2012–2016 Co-initiator and -organizer of the **Poroelasticity Minisymposium** ([www.rockphysics.ethz.ch/news-and-events/poroelasticity-minisymposium.html](http://www.rockphysics.ethz.ch/news-and-events/poroelasticity-minisymposium.html))
- 2014 Main organizer of the **Tectonomechanics Colloquium**, May 5–6 2014, Zurich, Switzerland
- 2014 Convener of the session “Methods & Materials” at the **GeoMod Conference**, August 31 – September 5 2014, Potsdam, Germany
- 2014 Main convener of the session “Advances in analogue and numerical modeling of geologic processes” at the **EGU General Assembly**, April 27 – May 2 2014, Vienna, Austria
- 2014 Chair of the session “Finite Elements” at the **SEG Annual Meeting**, October 26–31 2014, Denver CO, USA
- 2011–2014 Initiator and main convener of the “Geophysics and Rock Physics Session” at the **Swiss Geoscience Meetings** (<http://geoscience-meeting.ch>)
- 2012 & 2013 Main convener of the session “Recent advances in analogue and numerical modeling of tectonic processes” at the **EGU General Assemblies**, Vienna, Austria
- 2012 Co-organizer of the **GeoMod Conference**, July 15–20 2012, Lausanne, Switzerland ([www.unil.ch/geomod2012](http://www.unil.ch/geomod2012))
- 2011 Chairperson of the Friday-afternoon session of the **Tectonomechanics Colloquium**, April 29–30 2011, Salzburg, Austria
- 2010 Co-convener of the session “The evolution of structures in the crust: Insights from analogue and numerical modeling” at the **EGU General Assembly**, May 2–7 2010, Vienna, Austria

## **OTHER PROFESSIONAL INITIATIVES AND ACTIVITIES**

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- Continuous **Scientific reviewer** for
- US National Science Foundation (NSF)
  - Natural Sciences and Engineering Research Council of Canada (NSERC)
  - Petroleum Research Fund (PRF) of the American Chemical Society (ACS)
  - SEG Annual Meeting 2012–2015 (seismic modeling section)
- as well as for the **peer-reviewed journals**
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|-------------------------------|--|
| Geology                       | Swiss Journal of Geosciences                     |
| Tectonics                     | Italian Journal of Geosciences                   |
| Terra Nova                    | Journal of Applied Geophysics                    |
| Geophysics                    | Marine and Petroleum Geology                     |
| Basin Research                | Journal of Geophysical Research                  |
| Tectonophysics                | Geophysical Journal International                |
| Natural Hazards               | Austrian Journal of Earth Sciences               |
| Acta Geophysica               | International Journal of Earth Sciences          |
| The Journal of Geology        | Journal of Computational and Applied Mathematics |
| Earth Planets and Space       | International Journal of Nonlinear Sciences      |
| Mathematical Geosciences      | and Numerical Simulation                         |
| Journal of Structural Geology |  |

- 2014–present Member of the **Departmental Teaching Commission** and representative of the mid-level faculty at the Department of Earth Sciences, ETH Zurich, Switzerland
- 2012–present Co-organizer of the **seminar-series** of the Structural Geology and Tectonics Group at ETH Zurich, Switzerland
- 2012–present Permanent guest at the **Institute Executive Assembly** of the Geological Institute, ETH Zurich, Switzerland
- 2011–present Initiator, Principal Investigator, and Speaker of **The Rock Physics Network at ETH Zurich (ROCKETH)** ([www.rockphysics.ethz.ch](http://www.rockphysics.ethz.ch))
- 2011–2016 Main organizer of the annual Christmas dinner for faculty members, students, alumni, and friends of the Geological Institute of ETH Zurich, Switzerland, named **Geosynklinale** ([www.geosynklinale.ch](http://www.geosynklinale.ch))
- 2012–2014 Founder and Co-President of the **Association for mid-level faculty at the Department of Earth Sciences (VAME)** (<https://www.erdw.ethz.ch/en/people/mittelbau.html>)
- 2011–2014 Member of the **Departmental Executive Commission** and representative of the mid-level faculty at the Department of Earth Sciences, ETH Zurich, Switzerland
- 2009–2010 Initiator and organizer of the **Informal Structural Seminar (ISS)** at the Department for Geodynamics and Sedimentology, University of Vienna, Austria

#### THESIS SUPERVISION (AS PI, MAIN OR CO-SUPERVISOR)

- GI-ETHZ: Geological Institute, ETH Zurich, Switzerland  
 DGS-UVie: Department for Geodynamics and Sedimentology, University of Vienna, Austria
- PhD**
- 2016–2018 Nabavi S.T.: **Modelling of transpression zones using finite element method**  
 Shahid Beheshti University, Tehran, Iran;  
 PI: S.A. Alavi, co-supervisor: S. Mohammadi (Tehran University, Iran), M.-R. Ghassemi (Geological Survey of Iran) and M. Frehner
- 2013–2017 Shih P.-J.R.: **Fracture-related seismic propagation effects studied by combining laboratory measurements and numerical modeling**  
 GI-ETHZ; PI: M. Frehner
- 2014–2016 Bakker R.R.: **Understanding basement processes in sub-volcanic settings by laboratory measurements**  
 GI-ETHZ; PI: P.M. Benson and J.-P. Burg, co-supervisor: M.E.S. Violay, M. Lupi and M. Frehner
- 2013–2016 Subramaniyan S.: **Laboratory experiments to assess seismic attenuation in reservoir rocks**  
 GI-ETHZ; PI: B. Quintal, co-supervisor: M. Frehner, E.H. Saenger and C. Madonna
- 2011–2015 Collignon M.: **Interactions between surface processes and fold growth in fold-and-thrust belts: application to the Zagros Fold Belt**  
 GI-ETHZ; PI: B.J.P. Kaus (Johannes Gutenberg University Mainz, Germany), S. Castellort (University of Geneva, Switzerland) and J.-P. Burg, co-supervisor: M. Frehner
- 2012–2014 Rogowitz A.: **Strain localization in a calcite marble and its isotopic and mechanical impact: insights from a natural experiment at varying geological strain rates (Syros, Greece)**  
 DGS-UVie; PI: M. Frehner and B. Grasemann

- 2010–2014 Voorn M.: **Improving the characterisation of fractured hydrocarbon reservoir dolomites (Vienna Basin, Austria) by 3D and 2D micro-imaging and permeability measurements**  
DGS-UVie; PI: U. Exner, co-supervisor: M. Frehner, B. Grasemann and K. Decker
- 2012–2013 Hoyer S.: **3D micro-imaging of fracture networks using micro-computed tomography – Upscaling of porosity and permeability of a fractured reservoir (Hauptdolomit)**  
DGS-UVie; PI: U. Exner, co-supervisor: M. Frehner, B. Grasemann and K. Decker
- 2011–2013 Riahi N.: **Statistics of ambient seismic noise : Investigations into spectral attributes and multi-component array processing**  
GI-ETHZ; PI: E.H. Saenger and A. Goertz (Spectraseis, Zurich, Switzerland), co-supervisor: M. Frehner and B. Quintal
- 2011–2013 Sala P.: **3-D modeling applied to geological structures: Case studies from the Paris Basin and the Swiss Alps**  
Institute of Geological Sciences, University of Bern, Switzerland; PI: O.A. Pfiffner and E.H. Saenger (ETH Zurich, Switzerland), co-supervisor: M. Frehner
- 2011–2013 Tisato N.: **Experimental characterization of reservoir rocks and geotechnical materials : Low frequency attenuation, ultrasonic velocities and local pore pressure effects**  
GI-ETHZ; PI: E.H. Saenger and J.-P. Burg, co-supervisor: M. Frehner and B. Quintal
- 2011–2012 Madonna C.: **Laboratory measurements of seismic attenuation and computation of elastic moduli of reservoir rocks**  
GI-ETHZ; PI: E.H. Saenger and J.-P. Burg, co-supervisor: M. Frehner and B. Quintal
- 2010–2012 Rath A.: **3D micro-imaging of fracture networks using micro-computed tomography – Upscaling of porosity and permeability of a fractured reservoir (Hauptdolomit)**  
DGS-UVie; PI: U. Exner, co-supervisor: M. Frehner, B. Grasemann and K. Decker
- 2009–2012 Tuitz C.: **Pebble breakage in gravel**  
DGS-UVie; PI: U. Exner, co-supervisor: M. Frehner
- 2009–2011 Reif D.: **Structural and tectonic setting of Zagros fold-and-thrust belt, NE Kurdistan**  
DGS-UVie; PI: B. Grasemann, G. Milan (OMV E&P), D. Lockhart (OMV E&P), and G.C. Tari (OMV E&P), co-supervisor: M. Frehner

## MSc

- 2017–2018 Schmid T.: **Amplitude and wavelength variations in multilayer folds: Integrating field and numerical investigations in the Anti-Atlas Mountains, Morocco**  
GI-ETHZ; PI: M. Frehner and N.S. Mancktelow
- 2017–2018 Amschwand D.: **Dating and numerically modeling an active rockglacier**  
GI-ETHZ; PI: S. Ivy-Ochs and M. Frehner
- 2017 Lindsay E.R.P.: **Reversible recharge-related groundwater fluctuation and ground surface deformation at Alp Canfinal, Switzerland**  
GI-ETHZ; PI: S. Loew and A. Wolter, co-supervisor: M. Frehner
- 2016 Frøystein M.: **Relative timing and characterization of Au-associated veins in the Gotthard Massif, Graubünden, Switzerland**  
Institute of Geochemistry and Petrology, ETH Zurich, Switzerland;  
PI: C. Heinrich, co-supervisor: M. Frehner



- 2015–2016 Reichlin J.: **Petrographic studies and geochemical analyses of the Val Plattas gold mineralisation in the Surselva district of Graubünden, Switzerland**  
Institute of Geochemistry and Petrology, ETH Zurich, Switzerland;  
PI: C. Heinrich, co-supervisor: M. Frehner
- 2015–2016 de Palezieux L.: **Pore pressure variations in mountain slopes near Poschiavo, Switzerland**  
GI-ETHZ; PI: S. Löw, co-supervisor: M. Frehner and S. Ivy-Ochs
- 2015 Verheij J.: **Seismic attenuation analyses of fracturing in reservoir rocks**  
Faculty of Civil Engineering and Geosciences, Delft University of Technology, The Netherlands; PI: A. Barnhoorn and M. Frehner
- 2015 Vogler M.: **Hydro-mechanical interactions between the Great Aletsch Glacier and the Driest Landslide (Switzerland)**  
GI-ETHZ; PI: S. Löw, co-supervisor: F. Glüer and M. Frehner
- 2014–2015 von Däniken P.: **3D Fold Geometry at Panixer Pass**  
GI-ETHZ; PI: M. Frehner, co-supervisor: N.S. Mancktelow and E. Reusser
- 2013 Zhong X.: **Physical properties of amphibole and phlogopite bearing peridotites from Finero, Ivrea Zone (Italy): An experimental and numerical investigation**  
GI-ETHZ;  
PI: M. Frehner and A. Zappone, co-supervisor: K. Kunze, P. Ulmer and E.H. Saenger
- 2012–2013 Ling A.H.M.: **Application of buckle folding theory to the development of transverse ridges on a rockglacier**  
Department of Geography, University of Zurich, Switzerland;  
PI: M. Frehner and I. Gärtner-Roer, co-supervisor: W. Haeberli
- 2012–2013 Philippe T.A.: **Single viscous layer fold interplay and linkage: A 3D-FEM modelling approach**  
Institute of Geophysics, ETH Zurich, Switzerland; PI: M. Frehner and D.A. May, co-supervisor: M. Septfontaine (em. Musée de Géologie, Lausanne, Switzerland)
- 2011 Eugster P.: **Basin dynamics in Taiwan**  
Institute of Geophysics, ETH Zurich, Switzerland;  
PI: B.J.P. Kaus, co-supervisor: M. Frehner and S. Nagel
- 2009–2010 Rath A.: **Petrophysical properties of deformation bands in carbonate grainstones from micro computed tomography and cathodoluminescence measurements**  
DGS-UniVie; PI: U. Exner, co-supervisor: M. Frehner
- 2009–2010 Erkmen C.: **Kinematik und Deformation an der Leithagebirgs-W-Randstörung (Wimpassing) (in German)**  
DGS-UniVie; PI: B. Grasemann, co-supervisor: M. Frehner
- 2007–2008 Lechmann S.M.: **2D dynamic retro-deformation of folded multilayers: Application to Carboniferous turbidites in South-West Portugal**  
GI-ETHZ; PI: S.M. Schmalholz and J.-P. Burg, co-supervisor: M. Frehner
- BSc**
- 2017 Morgenthaler J.: **Numerical modeling of bulldozer-like dynamic soil erosion at the front of the active Furggentälti rockglacier (Gemmi Pass, Switzerland)**  
GI-ETHZ; PI: M. Frehner, co-supervisor: S. Ivy-Ochs
- 2016 Amschwand D.: **Rock glacier flow-law exponent determined from geomorphological observations: A case study from the Murtèl rock glacier (Engadin)**  
GI-ETHZ; PI: M. Frehner, co-supervisor: I. Gärtner-Roer

- 2015 Schmid T.: **Parasitic folds with wrong vergence: How asymmetries can be inherited**  
GI-ETHZ; PI: M. Frehner, co-supervisor: N.S. Mancktelow
- 2015 Brack M.: **Digital geomorphological mapping of the Lämmerenboden alluvial plain and Little Ice Age glacial moraines**  
GI-ETHZ; PI: M. Frehner, co-supervisor: A. Gilli
- 2014 Zengaffinen T.: **Structural mapping along the Rhone-Simplon Fault of the Gampel area**  
GI-ETHZ; PI: N.S. Mancktelow, co-supervisor: M. Frehner
- 2013 von Däniken P.: **Structural history of the overturned limb of the Morcles Nappe in the Rhone Valley**  
GI-ETHZ; PI: N.S. Mancktelow, co-supervisor: M. Frehner
- 2010–2011 Burtscher A.: **Curvature analysis of anticlines in the Zagros Mountains (Iraq)**  
DGS-UniVie; PI: M. Frehner, co-supervisor: B. Grasemann

### C O N T I N U I N G   E D U C A T I O N

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- 2016–2017 **Flipped classroom** workshop, 2-day didactic course incl. implementation into my own class (P. Schmidt, ETH Zurich, Switzerland)
- 2015 Introduction to **problem-based teaching**, 1-day didactic course (A. Weber, ETH Zurich, Switzerland)
- 2015 **Flipped classroom**, 1-day didactic course (G. Schiltz and B. Volk, ETH Zurich, Switzerland)
- 2015 Teaching and learning with basic **e-learning tools**, half-day didactic course (J. Kehl and J. Lanz, ETH Zurich, Switzerland)
- 2015 Improve **assessment and examination** – Theory and application examples, 1-day didactic course (E. Feldbrugge and T. Halbherr, ETH Zurich, Switzerland)
- 2015 Leaving your four walls: **Teaching and learning outside the University**, half-day didactic course (K. Osterwalder and A. Gilli, ETH Zurich, Switzerland)
- 2015 Supporting student learning with **web-based self-tests and quizzes**, half-day didactic course (M. Lehre, ETH Zurich, Switzerland)
- 2013 Fundamentals of the **Hybrid Finite-Discrete Element (FEMDEM) Technology** and its applications in Engineering and Earth Science (G. Grasselli and A. Lisjak, University of Toronto, Canada)
- 2012 **Physical Properties and Dating of Fault Rocks** (H. Zwingmann, CSIRO, Perth, Australia; N.S. Mancktelow, ETH Zurich, Switzerland)
- 2011 **Web Content Management System, WCMS** (A. Stadler, ETH Zurich, Switzerland)
- 2010 **EGU Summer School: Structural Analysis of crystalline rocks**, 2 days field, 3 days theory (G. Pennacchioni, University of Padova, Italy; N.S. Mancktelow, ETH Zurich, Switzerland; A. Camacho, University of Manitoba, Canada; G. Dresen, GFZ Potsdam, Germany; S.F. Cox, ANU, Canberra, Australia; B. Leiss, University of Göttingen, Germany; L. Menegon, University of Tromsø, Norway; D. Schmid, University of Oslo, Norway)
- 2010 **Interaction of brittle and ductile deformation** for shear zone initiation (G. Pennacchioni, University of Padova, Italy)
- 2009 **Fracture mechanics** (S. Martel, University of Hawaii, USA)
- 2008 **HTML and CSS** programming (A. Stadler, ETH Zurich, Switzerland)

2008	Scientific writing with <b>LaTEX</b> (ETH Zurich, Switzerland)
2007	<b>Seismic wave propagation</b> (D. Fäh, ETH Zurich, Switzerland)
2007	<b>Petrophysics</b> (D.M.J. Smeulders, Delft University of Technology, Netherlands)
2006	<b>Petroleum Geology</b> field course (P.W. Homewood, Elf EP, Pau, France)
2005	<b>Seismic facies analysis</b> (G.P. Eberli, University of Miami, USA)

## **L A N G U A G E S**

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German	Native language
English	Fluent
French	Basic knowledge
Spanish	Beginner

## **C O M P U T I N G / P R O G R A M M I N G S K I L L S**

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Methods	Expert on the finite-element and the finite-difference method, both for high-strain deformation, wave propagation and quasi-static simulations, spectral method
Programming	Expert on MATLAB (MathWorks)
Mathematics	Maple (Maplesoft), some experience on Mathematica (Wolfram)
Geology	Experience on ArcGIS (ESRI; ArcMap and ArcScene), some experience in 3D GeoModeller (Intrepid Geophysics and BRGM)
Graphics	Illustrator (Adobe), Corel Draw, and Photoshop (Adobe)
Text	LaTEX, OpenOffice.org
Other	HTML and CSS programming, all Microsoft Office standard packages
OS	Microsoft Windows and Apple Mac, some experience on LINUX

## **M E M B E R S H I P S A N D A F F I L I A T I O N S**

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EGU	European Geosciences Union
SEG	Society of Exploration Geophysicists
EAGE	European Association for Geoscientists and Engineers
SGS	Swiss Geological Society
ÖGG	Austrian Geological Society

## NON-PROFESSIONAL ACTIVITIES

2017–present	Being a father, and enjoying it	
2006–present	Leader (2006–2016) and main responsible leader (as of 2017) of a <b>summer camp for children</b> with congenital heart disease ( <a href="http://www.herzlager.ch">www.herzlager.ch</a> )	
2007–2011	Founder and board member of the <b>ETH Alumni group for Earth Scientists</b>	
2001–2011	Founder and president of the <b>rockamweier</b> association ( <a href="http://www.rockamweier.ch">www.rockamweier.ch</a> ) Promoter of the annual free-of-charge openair music festival “rockamweier” in Wil, Switzerland (approx. 10'000 spectators) and several smaller events Main responsibility: Artist booking and stage equipment, as well as administration	
2005	Travelling to New Zealand	
2001–2005	Founder, board member, and president of the <b>Student Association</b> for Earth Science Students at the ETH Zurich and the University of Zurich (erfa) ( <a href="http://www.erfa.ethz.ch">www.erfa.ethz.ch</a> ) Event coordination (2001-2002) and president (2003-2005)	
2002–2003	Travelling to South America (Brazil, Argentina, Chile, Bolivia, Peru)	
1994–2001	Leader in the <b>YMCA</b> section Wil, Switzerland ( <a href="http://www.ceviwil.com">www.ceviwil.com</a> )	
1993–2001	Guitarist in the rock band close-down	
Hobbies:	Mountaineering Hiking Skiing and Snowboarding Ski touring	Cycling Sailing Reading (mainly thrillers) Music (listening and playing the Guitar)

## PUBLICATIONS, ABSTRACTS, PRESENTATIONS

This is only a summary! See the attached list of publications, abstracts, and presentations for details. Most publications, abstracts, and some presentations can be downloaded on [www.marcelrehner.ch](http://www.marcelrehner.ch).

### Peer-reviewed publications and book chapters:

34	Publications listed in ISI Web of Science Core Collection	(14 as first author)
3	Publications listed in ISI Web of Science Inspec	(2 as first author)
2	Publications not listed in ISI Web of Science	(1 as first author)
0	Publications in press or accepted	(0 as first author)
4	Publication submitted	(1 as first author)

	ISI Web of Science	Google Scholar	Self-calculated
Citations	355	712	422
Citations per article	10.72	6.03	10.82
H-Index	10	15	11

ISI Web of Science has some delay in finding recent publications. Google Scholar also lists non-peer reviewed publications and makes wrong links. Therefore, I maintain my own up-to-date citation record. Therefore, the numbers above may differ.

### Abstracts and conference appearances:

27	Expanded conference abstracts	(8 as first author)
107	Short conference abstracts	(53 as first author)
69	Oral presentations at conferences	(37 as first author)
65	Poster presentations at conferences	(24 as first author)