

P D D R . M A R C E L F R E H N E R

GEOLOGICAL INSTITUTE
ETH ZURICH, SWITZERLAND

SUBMITTED AND ACCEPTED PUBLICATIONS

Submitted:

- Barnhoorn A., Verheij J., Frehner M., Zhubayev A. and Houben M.: **Identification of the transition from elasticity to inelasticity from seismic attenuation analyses**, submitted to Geophysical Research Letters
- Lupi M., Frehner M., Weis P., Saenger E.H., Tisato N., Geiger S., Chiodini G., Skelton A. and Driesner T.: **Delayed fluid-driven ground uplift triggered by regional earthquakes at Campi Flegrei**, submitted to Earth and Planetary Science Letters

PEER-REVIEWED PUBLICATIONS

(LISTED IN ISI WEB OF SCIENCE CORE COLLECTION)

- 2017 Nabavi S.T., Alavi S.A., Mohammadi S., Ghassemi M.R. and Frehner M., 2017: **Analysis of transpression within contractional fault steps using finite-element method**, Journal of Structural Geology 96, 1–20, doi:10.1016/j.jsg.2017.01.004
- von Däniken P.A. and Frehner M., 2017: **3D structural model and kinematic interpretation of the Panixer Pass Transverse Zone (Infrahelvetic Complex, eastern Switzerland)**, Swiss Journal of Geosciences 110, 653–675, doi:10.1007/s00015-016-0230-7
- 2016 Bakker R.R., Frehner M. and Lupi M., 2016: **How temperature-dependent elasticity alters host rock/magmatic reservoir models: A case study on the effects of ice-cap unloading on shallow volcanic systems**, Earth and Planetary Science Letters 456, 16–25, doi:10.1016/j.epsl.2016.09.039
- Frehner M., 2016: **3D fold growth in transpression**, Tectonophysics 693, 183–196, doi:10.1016/j.tecto.2016.01.002
- Frehner M., 2016: **Paul Niggli Medal 2015 awarded to Marcel Frehner**, Swiss Journal of Geosciences 109, 117–119, doi:10.1007/s00015-016-0213-8
- Frehner M. and Schmid T., 2016: **Parasitic folds with wrong vergence: How pre-existing geometrical asymmetries can be inherited during multilayer buckle folding**, Journal of Structural Geology 87, 19–29, doi:10.1016/j.jsg.2016.04.004
- Shih P.-J.R. and Frehner M., 2016: **Laboratory evidence for Krauklis wave resonance in fractures and implications for seismic coda wave analysis**, Geophysics 81, T285–T293, doi:10.1190/GEO2016-0067.1
- 2015 Frehner M., Ling A.H.M. and Gärtner-Roer I., 2015: **Furrow-and-ridge morphology on rockglaciers explained by gravity-driven buckle folding: A case study from the Murtèl rockglacier (Switzerland)**, Permafrost and Periglacial Processes 26, 57–66, doi:10.1002/ppp.1831

- Zhong X., Frehner M., Kunze K. and Zappone A.S., 2015: **A numerical and experimental investigation on seismic anisotropy of Finero Peridotite, Ivrea-Verbano Zone, northern Italy**, in *Materials Science and Engineering* (Eds: Skrotzki W. and Oertel C.-G.), Volume 82 of IOP Conference Series, IOP Science and Publishing, 012072, doi:0.1088/1757-899X/82/1/012072 (open access)
- 2014 Frehner M., 2014: **3D fold growth rates**, *Terra Nova* 26, 417–424, doi:10.1111/ter.12116
- Frehner M., 2014: **Krauklis wave initiation in fluid-filled fractures by seismic body waves**, *Geophysics* 79, T27–T35, doi:10.1190/GEO2013-0093.1
- Frehner M. and Exner U., 2014: **Strain and foliation refraction patterns around buckle folds**, in *Deformation Structures and Processes within the Continental Crust* (Eds: Llana-Fúnez S., Marcos A. and Bastida F.), Volume 394 of Geological Society, London, Special Publications, The Geological Society of London, ISBN 978-1-86239-627-2, 21–37, doi:10.1144/SP394.4
- Saenger E.H., Madonna C., Frehner M. and Almqvist B.S.G., 2014: **Numerical support of laboratory experiments: Attenuation and velocity estimations**, *Acta Geophysica* 62, 1–11, doi:10.2478/s11600-013-0162-9
- Sala P., Pfiffner O.A. and Frehner M., 2014: **The Alpstein in three dimensions: Fold-and-thrust belt visualization in the Helvetic zone, Switzerland**, *Swiss Journal of Geosciences* 107, 177–195, doi:10.1007/s00015-014-0168-6
- Zhong X., Frehner M., Kunze K. and Zappone A., 2014: **A novel EBSD-based finite-element wave propagation model for investigating seismic anisotropy: Application to Finero Peridotite, Ivrea-Verbano Zone, Northern Italy**, *Geophysical Research Letters* 41, 7105–7114, doi:10.1002/2014GL060490
- 2013 Madonna C., Quintal B., Frehner M., Almqvist B.S.G., Tisato N., Pistone M., Marone F. and Saenger E.H., 2013: **Synchrotron-based X-ray tomographic microscopy for rock microstructure investigations**, *Geophysics* 78, D53–D64, doi:10.1190/GEO2012-0113.1
- Sala P., Frehner M., Tisato N. and Pfiffner O.A., 2013: **Building a three-dimensional near-surface geologic and petrophysical model based on borehole data: A case-study from Chémery, Paris Basin, France**, *AAPG Bulletin* 97, 1303–1324, doi:10.1306/02261312120
- 2012 Burtscher A., Frehner M. and Grasemann B., 2012: **Tectonic geomorphological investigations of antiforms using differential geometry: Permian anticline, northern Iraq**, *AAPG Bulletin* 96, 301–314, doi:10.1306/06141110204
- Frehner M., Reif D. and Grasemann B., 2012: **Mechanical versus kinematical shortening reconstructions of the Zagros High Folded Zone (Kurdistan Region of Iraq)**, *Tectonics* 31, TC3002, doi:10.1029/2011TC003010
- Quintal B., Steeb H., Frehner M., Schmalholz S.M. and Saenger E.H., 2012: **Pore fluid effects on S-wave attenuation caused by wave-induced fluid flow**, *Geophysics* 77, L13–L23, doi:10.1190/GEO2011-0233.1
- Steeb H., Kurzeja P., Frehner M. and Schmalholz S.M., 2012: **Phase velocity dispersion and attenuation of seismic waves due to trapped fluids in residual-saturated porous media**, *Vadose Zone Journal* 11, vzj2011.0121, doi:10.2136/vzj2011.0121 (open access)
- Tuitz C., Exner U., Frehner M. and Grasemann B., 2012: **The impact of ellipsoidal particle shape on pebble breakage in gravel**, *International Journal of Rock Mechanics and Mining Sciences* 54, 70–79, doi:10.1016/j.ijrmms.2012.05.018
- 2011 Frehner M., 2011: **The neutral lines in buckle folds**, *Journal of Structural Geology* 33, 1501–1508, doi:10.1016/j.jsg.2011.07.005

- Frehner M., Exner U., Mancktelow N.S. and Grujic D., 2011: **The not-so-simple effects of boundary conditions on models of simple shear**, *Geology* 39, 719–722, doi:10.1130/G31957.1
- Quintal B., Steeb H., Frehner M. and Schmalholz S.M., 2011: **Quasi-static finite element modeling of seismic attenuation and dispersion due to wave-induced fluid flow in poroelastic media**, *Journal of Geophysical Research* 116, B01201, doi:10.1029/2010JB007475
- 2010 Frehner M. and Schmalholz S.M., 2010: **Finite-element simulations of Stoneley guided-wave reflection and scattering at the tips of fluid-filled fractures**, *Geophysics* 75, T23–T36, doi:10.1190/1.3340361
- Steeb H., Frehner M. and Schmalholz S.M., 2010: **Waves in residual-saturated porous media**, Chapter 19 in *Mechanics of Generalized Continua: One Hundred Years after the Cosserats* (Eds: Maugin G.A. and Metrikine A.V.), Volume 21 of *Advances in Mechanics and Mathematics*, Springer Verlag, ISBN 978-1-4419-5694-1, 179–190
- 2009 Frehner M., Schmalholz S.M. and Podladchikov Y., 2009: **Spectral modification of seismic waves propagating through solids exhibiting a resonance frequency: a 1-D coupled wave propagation-oscillation model**, *Geophysical Journal International* 176, 589–600, doi:10.1111/j.1365-246x.2008.04001.x
- Holzner R., Eschle P., Dangel S., Frehner M., Narayanan C. and Lakehal D., 2009: **Hydrocarbon microtremors interpreted as nonlinear oscillations driven by oceanic background waves**, *Communications in Nonlinear Science and Numerical Simulation* 14, 160–173, doi:10.1016/j.cnsns.2007.06.013
- 2008 Frehner M., Schmalholz S.M., Saenger E.H. and Steeb H., 2008: **Comparison of finite difference and finite element methods for simulating two-dimensional scattering of elastic waves**, *Physics of the Earth and Planetary Interiors* 171, 112–121, doi:10.1016/j.pepi.2008.07.003
- 2006 Frehner M. and Schmalholz S.M., 2006: **Numerical simulations of parasitic folding in multilayers**, *Journal of Structural Geology* 28, 1647–1657, doi:10.1016/j.jsg.2006.05.008

PEER-REVIEWED PUBLICATIONS

(LISTED IN ISI WEB OF SCIENCE INSPEC)

- 2013 Frehner M., 2013: **Krauklis wave initiation in fluid-filled fractures by a passing body wave**, in *Poromechanics V: Proceedings of the fifth Biot Conference on Poromechanics* (Eds: Hellmich C., Pichler B. and Adam D.), American Society of Civil Engineers, ISBN 978-0-7844-1299-2, 92–100
- Quintal B., Frehner M., Madonna C., Tisato N., Kuteynikova M. and Saenger E.H., 2011: **Integrated numerical and laboratory rock physics applied to seismic characterization of reservoir rocks**, *The Leading Edge* 30, 1360–1367, doi:10.1190/1.3672480
- 2010 Frehner M., Steeb H. and Schmalholz S.M., 2010: **Wave velocity dispersion and attenuation in media exhibiting internal oscillations**, Chapter 24 in *Wave Propagation in Materials for Modern Applications* (Ed: Petrin A.), In-Tech Education and Publishing, ISBN 978-953-7619-65-7, 455–476 (open access)

OTHER REVIEWED PUBLICATIONS

(NOT LISTED IN ISI WEB OF SCIENCE)

- 2014 Tisato N., Quintal B., Chapman S., Madonna C., Subramaniyan S., Frehner M., Saenger E.H. and Grasselli G., 2014: **Seismic attenuation in partially saturated rocks: recent advances and future directions**, *The Leading Edge* 33, 640–646, doi:10.1190/tle33060640.1

- 2013 Frehner M., 2013: **Photograph of the month**, Journal of Structural Geology 55, 196, doi:10.1016/j.jsg.2012.09.010

T H E S E S

- 2016 Habilitation Treatise
Frehner M.: **Computational structural geology and rock physics**, Department of Earth Sciences, ETH Zurich, Switzerland
- 2009 Ph.D. Thesis
Frehner M.: **Numerical modeling of multiscale wave propagation phenomena in fluid-rock systems**, Geological Institute, ETH Zurich, Switzerland, doi:10.3929/ethz-a-005862023
- 2005 Diploma (MSc) Thesis
Frehner M.: **Strain distribution of buckled multilayer systems and its influence on the development of asymmetric parasitic folds**, Geological Institute, ETH Zurich, Switzerland, doi:10.3929/ethz-a-005872161

I N V I T E D C O N F E R E N C E P R E S E N T A T I O N S

- 2015 Swiss Geoscience Meeting, Basel, Switzerland, November 20–21 2015, medal lecture for receiving the Paul Niggli Medal of the Swiss Geological Society and the Swiss Society of Mineralogy and Petrology
- Frehner M.: **3D fold growth in transpression** (oral)
- 2012 Pangeo, Salzburg, Austria, September 17 2012, award lecture for receiving the Otto Ampferer Award of the Austrian Geological Society (ÖGG)
- Frehner M.: **Computational Structural Geology – Examples from combined fold observations and modeling** (oral)

E X P A N D E D C O N F E R E N C E A B S T R A C T S

- 2015 SEG Annual Meeting, October 18–23 2015, New Orleans LA, USA
- Shih P.-J.R. and Frehner M.: **Laboratory evidence for Krauklis wave resonance in a fracture and implications for seismic coda wave analysis** (oral)
- International Workshop on Rock Physics, April 13–17 2015, Perth, Australia
- Shih P.-J.R. and Frehner M.: **Laboratory evidence for Krauklis wave resonance in fractures** (oral)
- 2014 SEG Annual Meeting, October 26–31 2014, Denver CO, USA
- Frehner M., Shih P.-J.R. and Lupi M.: **Initiation of Krauklis waves by incident seismic body waves: Numerical modeling, laboratory perspectives, and application for fracture-size estimation** (oral)
- GeoMod, August 31 – September 5 2014, Potsdam, Germany
- Frehner M.: **Fold growth rates in 3D buckle folds** (poster)
 - Frehner M., Gärtner-Roer I., and Ling A.H.M.: **Furrow-and-ridge morphology on rockglaciers explained by gravity-driven buckle folding: A case study from the Murtèl rockglacier (Switzerland)** (poster)
- 2013 SEG Annual Meeting, September 22–27 2013, Houston TX, USA
- Madonna C., Frehner M., Tisato N., Saenger E.H., Sell K., Kersten M. and Quintal B.: **Synchrotron-based X-ray tomographic images: Raw data, segmentation techniques, and their influence on estimated rock properties** (oral)

- SBGf International Congress, August 26–29 2013, Rio de Janeiro
- Sell K., Madonna C., Quintal B., Frehner M., Tisato N. and Saenger E.H.: **Synchrotron-based X-ray tomographic images and segmentation techniques to account for effects of grain contacts and micro-cracks on rock properties** (oral)
- EAGE Conference, June 10–13 2013, London, UK
- Madonna C., Quintal B., Frehner M., Almquist B.S.G., Tisato N., Pistone M., Marone F. and Saenger E.H.: **Synchrotron-based X-ray tomographic microscopy for rock physics investigations** (oral)
- 2012 SEG Annual Meeting, November 4–9 2012, Las Vegas NV, USA
- Saenger E.H., Madonna C., Frehner M. and Almquist B.S.G.: **Numerical support of laboratory experiments: Attenuation and velocity estimations** (e-poster)
- EAGE Conference, June 4–7 2012, Copenhagen, Denmark
- Frehner M., Quintal B., Tisato N., Riahi N., Madonna C., Sala P., Kuteynikova M. and Saenger E.H.: **Integrated numerical and laboratory rock physics applied to seismic characterization of reservoir rocks** (oral)
 - Quintal B., Frehner M., Schmalholz S.M., Steeb H. and Saenger E.H.: **Effects of permeability barriers and pore fluids on S-wave attenuation** (oral)
- EAGE Saint Petersburg, April 2–5 2012, Saint Petersburg, Russia
- Korneev V., Goloshubin G., Kashtan B., Bakulin A., Troyan V., Maximov G., Molotkov L., Frehner M., Shapiro S. and Shigapov R.: **Krauklis wave: Half a century after** (oral)
- EAGE Workshop: Applications & Challenges of Rock Physics for Quantitative Geophysical Interpretation, January 15–18 2012, Dubai, United Arab Emirates
- Saenger E.H., Frehner M., Madonna C., Tisato N., Kuteynikova M., Riahi N., Sala P. and Quintal B.: **Integrated numerical and laboratory rock physics applied to seismic characterization of reservoir rocks** (oral)
- 2011 SEG Annual Meeting, September 18–23 2011, San Antonio TX, USA
- Quintal B., Steeb H., Frehner M. and Schmalholz S.M.: **S-wave attenuation caused by wave-induced fluid flow** (oral)
- SBGf International Congress, August 15–18 2011, Rio de Janeiro, Brazil
- Quintal B., Steeb H., Frehner M. and Schmalholz S.M.: **S-wave attenuation caused by wave-induced fluid flow** (oral)
- EAGE Conference, May 23–26 2011, Vienna, Austria
- Quintal B., Steeb H., Frehner M. and Schmalholz S.M.: **Pore fluid effects on seismic P- and S-wave attenuation in rocks with double porosity and patchy saturation** (oral)
- 2010 SEG Annual Meeting, October 17–22 2010, Denver CO, USA
- Quintal B., Steeb H., Frehner M. and Schmalholz S.M.: **Finite element modeling of seismic attenuation due to fluid flow in partially saturated rocks** (oral)
- 2007 SBGf International Congress, November 19–22 2007, Rio de Janeiro, Brazil
- Frehner M., Schmalholz S.M. and Podladchikov Y.: **Low frequency spectral modifications of seismic background noise due to interaction with oscillating fluids entrapped in porous rocks** (oral)
 - Saenger E.H., Steiner B., Schmalholz S.M., Lambert M., Podladchikov Y.Y., Quintal B. and Frehner M.: **Considerations of observed spectral anomalies over hydrocarbon reservoirs generated by microtremors** (oral)
- SEG Annual Meeting, September 23–28 2007, San Antonio TX, USA
- Frehner M., Schmalholz S.M. and Podladchikov Y.: **Interaction of seismic background noise with oscillating pore fluids causes spectral modifications of passive seismic measurements at low frequencies** (oral)

EAGE Conference, June 11–14 2007, London, UK

- Saenger E.H., Schmalholz S.M., Podladchikov Y., Holzner R., Lambert M., Steiner B., Quintal B. and Frehner M.: **Scientific strategy to explain observed spectral anomalies over hydrocarbon reservoirs generated by microtremors** (oral)
- Frehner M., Schmalholz S.M., Podladchikov Y. and Holzner R.: **Low frequency modifications of seismic background noise due to interaction with oscillating fluids in porous rocks** (poster)

2006 EAGE Workshop: Passive Seismic: Exploration and Monitoring Applications, December 10–13 2006, Dubai, United Arab Emirates

- Frehner M., Schmalholz S.M., Holzner R. and Podladchikov Y.: **Interpretation of hydrocarbon microtremors as pore fluid oscillations driven by ambient seismic noise** (oral)

SEG Annual Meeting, October 1–6 2006, New Orleans LA, USA

- Holzner R., Eschle P., Frehner M., Schmalholz S.M. and Podladchikov Y.: **Interpretation of hydrocarbon microtremors as nonlinear oscillations driven by oceanic background waves** (poster)

SICC (Italian Society for Chaos and Complexity) Workshop: Nonlinear dynamical methods and time series analysis, August 30 – September 1 2006, Udine, Italy

- Holzner R., Eschle P., Dewarrat R., Lambert M., Meftahi R., Graf R., Schmalholz S.M., Steiner B., Frehner M., Podladchikov Y. and Narayanan C.: **Interpretation of hydrocarbon microtremors as nonlinear oscillations driven by oceanic background waves** (oral)

EAGE Conference, June 12–15 2006, Vienna, Austria

- Holzner R., Eschle P., Frehner M., Schmalholz S.M. and Podladchikov Y.: **Hydrocarbon microtremors interpreted as oscillations driven by oceanic background waves** (oral)

SHORT CONFERENCE ABSTRACTS

2017 AK Permafrost, Einsiedeln, Switzerland, February 9–11 2017

- Frehner M., Amschwand D. and Gärtner-Roer I.: **Bestimmung des Blockgletscher-Fliessverhaltens aufgrund von Deformationsdaten und geomorphologischen Indikatoren: Beispiel des Murtèl Blockgletschers (Engadin, Schweiz)** (oral in German)

2016 Swiss Geoscience Meeting, Geneva, Switzerland, November 18–19 2016

- Barnhoorn A., Verheij J. and Frehner M.: **Transition from elastic to inelastic deformation identified by seismic attenuation, not seismic velocity** (oral)
- Frehner M.: **Fold axis rotation during transpressional folding: Insights from numerical modeling and application to the Zagros Simply Folded Belt** (oral)
- Frehner M., Amschwand D. and Gärtner-Roer I.: **Rockglacier flow law determined from deformation data and geomorphological indicators: An example from the Murtèl rockglacier (Engadin, SE Switzerland)** (oral)

GeoMod, October 17–20 2016, Montpellier, France

- Frehner M.: **Fold axis rotation during transpressional folding: Insights from numerical modeling and application to the Zagros Simply Folded Belt** (poster)
- Frehner M. and Schmid T.: **Structural inheritance during multilayer buckle folding: How pre-existing asymmetries result in parasitic folds with wrong vergence** (poster)

International Conference on Permafrost (ICOP), June 20–24 2016, Potsdam, Germany

- Frehner M., Amschwand D. and Gärtner-Roer I.: **Non-linearity of rockglacier flow law determined from geomorphological observations: A case study from the Murtèl rockglacier (Engadin, SE Switzerland)** (poster)

EGU General Assembly, April 17–22 2016, Vienna, Austria

- Barnhoorn A., Verheij J., Frehner M., Zhubayev A. and Houben M.: **Transition from elastic to inelastic deformation identified by a change in trend of seismic attenuation, not seismic velocity – A laboratory study** (poster)
- Frehner M., Amschwand D. and Gärtner-Roer I.: **Non-linear flow law of rockglacier creep determined from geomorphological observations: A case study from the Murtèl rockglacier (Engadin, SE Switzerland)** (poster)
- Frehner M. and Schmid T.: **Structural inheritance during multilayer buckle folding: How pre-existing asymmetries result in parasitic folds with wrong vergence** (PICO)
- Frehner M. and Schreurs G.: **Fold axis rotation during transpressional folding: Insights from analog and numerical models** (PICO)
- Frehner M. and von Däniken P.: **3D structural model and kinematic interpretation of the Panixer Pass Transverse Fold (Infralhelvetic Complex, eastern Switzerland)** (poster)

2015 Swiss Geoscience Meeting, Basel, Switzerland, November 20–21 2015

- Schmid T. and Frehner M.: **Parasitic folds with wrong vergence: How asymmetries can be inherited** (poster)
- Shih P.-J.R. and Frehner M.: **Laboratory evidence for Krauklis wave resonance in fractures** (poster)
- von Däniken P. and Frehner M.: **3D fold geometry at Panixer pass** (poster)

EGU General Assembly, April 12–17 2015, Vienna, Austria

- Bakker R., Lupi M. and Frehner M.: **Effects of ice-cap unloading on shallow magmatic reservoirs** (poster)
- Frehner M.: **3D fold growth rates in transpressional tectonic settings** (PICO)
- Lupi M., Frehner M., Saenger E.H., Tisato N., Weis P., Geiger S., Chiodini G. and Driesner T.: **Delayed earthquake-volcano interactions at Campi Flegrei Caledra, Italy** (oral)
- Tisato N. Frehner M., Busellato L. and Grasselli G.: **Localized sub-glacial deep karst formation due to water infiltration into glacier crevasses: A case study from Asiago, North Italy** (poster)

2014 Swiss Geoscience Meeting, November 21–22 2014, Fribourg, Switzerland

- Shih P.-J. R. and Frehner M.: **Laboratory evidence for Krauklis wave resonance in fractures** (poster)
- Bakker R., Lupi M. and Frehner M.: **Effects of rapid icecap melting on a shallow magma chamber: A multi-disciplinary case study of Snæfellsjökull volcano, Western Iceland** (poster)

Congress of the Italian Geological Society, September 10–12 2014, Milan, Italy

- Sala P., Pfiffner A. and Frehner M.: **Visualization and modeling techniques in complex tectonic settings for petroleum potential assessment, a geometrical example from a collisional mountain belt** (oral)

International Conference on Textures of Materials, August 24–29 2014, Dresden, Germany

- Zhong X., Zappone A.S., Frehner M. and Kunze K.: **Numerical and Experimental Investigation on Seismic Anisotropy of Finero Peridotite, Ivrea-Verbano Zone, Northern Italy** (poster)

EUCOP (European Conference on Permafrost), June 18–21 2014, Évora, Portugal

- Frehner M., Gärtner-Roer I. and Ling A.H.M.: **Furrow-and-ridge morphology on rockglaciers explained by gravity-driven buckle folding: A case study from the Murtèl rockglacier (Switzerland)** (oral)

Euroconference on Rock Physics and Rock Mechanics, May 12–15 2014, Aussois, France

- Frehner M. and Lupi M.: **Krauklis wave initiation in fluid-filled fractures by a passing body wave: Finite-element modeling and application to earthquake-induced mudvolcanic tremor** (oral)
- Shih P.-J.R. and Frehner M.: **Numerical modeling and laboratory measurements of seismic properties in fractured fluid reservoirs** (poster)

Tectonomechanics Colloquium, May 5–6 2014, Zurich, Switzerland

- Frehner M., Philippe T. and May D.A.: **3D folds: Growth rates and linkage using the vorticity dominant wave length** (oral)

EGU General Assembly, April 27 – May 2 2014, Vienna, Austria

- Bakker R., Lupi M., Frehner M., Berger J. and Fuchs F.: **Volcanic unrest primed by ice cap melting: A case study of Snæfellsjökull volcano, Western Iceland** (PICO)
- Frehner M., Gärtner-Roer I. and Ling A.H.M.: **Rockglacier furrow-and-ridge morphology explained by gravity-driven buckle folding: A case study of the Murtèl rockglacier (Switzerland)** (oral)
- Frehner M. and Lupi M.: **Earthquake-induced seismic tremor explained by Krauklis wave resonance in fractured reservoir rocks: A case study of Salse di Nirano mud volcanic field (Italy)** (poster)
- Shih P.-J. R. and Frehner M.: **Fracture-related seismic propagation effects studied by combining numerical modeling and laboratory measurements** (poster)
- Zhong X., Frehner M., Zappone A. and Kunze K.: **A numerical and experimental investigation on seismic anisotropy of Finero Peridotite, Ivrea-Verbano Zone, northern Italy** (poster)

2013 AGU Fall Meeting, December 9–13 2013, San Francisco CA, USA

- Zhong X., Zappone A.S., Kunze K. and Frehner M.: **A numerical and experimental investigation on seismic anisotropy of Finero Peridotite, Ivrea-Verbano Zone, northern Italy** (poster)

Hubbert Quorum, December 8 2013, Menlo Park CA, USA

- Lupi M., Saenger E.H., Geiger S., Frehner M., Tisato N., Miller S.A., Fuchs F., Weis P., Driesner T.: **From the mud volcano catastrophe in Indonesia to the highest risk volcano in Europe: secret affairs between fluids and earthquakes revealed** (oral)

Swiss Geoscience Meeting, November 15–16 2013, Lausanne, Switzerland

- Frehner M.: **3D fold growth rates** (poster)
- Frehner M., Gärtner-Roer I. and Ling A.H.M.: **Furrow-and-ridge structures on active rockglaciers explained by gravity-driven buckle folding: A finite-element study applied to the Murtèl rockglacier** (oral)
- Philippe T.A., Frehner M. and May D.A.: **Single viscous layer fold interplay and linkage: A 3D-FEM modeling approach** (poster)
- Shih P.-J.R. and Frehner M.: **Numerical modeling and laboratory measurements of seismic properties in fractured fluid reservoirs** (poster)

Biot Conference on Poromechanics, July 10–12 2013, Vienna, Austria

- Frehner M.: **Krauklis wave initiation in fluid-filled fractures by a passing body wave** (oral)

Swiss Geomorphological Society Annual Meeting, June 26–28 2013, Basel, Switzerland

- Ling A.H.M., Frehner M. and Gärtner-Roer I.: **Application of buckle folding theory to the development of transverse ridges on a rockglacier** (poster)

Tectonomechanics Colloquium, April 15–16 2013, Paris, France

- Frehner M., Quintal B., Madonna C., Tisato N. and Saenger E.H.: **Multiscale laboratory and numerical rock physics – A snapshot of ongoing ROCKETH-science** (oral)

EGU General Assembly, April 7–12 2013, Vienna, Austria

- Frehner M.: **Initiation of Krauklis waves in fluid-filled fractures by an incident seismic body wave** (oral)
- Frehner M.: **3D fold growth rates** (poster)
- Frehner M. and Tisato N.: **Hands-on guide for 3D image creation for geological purposes** (poster)
- Ling A., Frehner M. and Gärtner-Roer I.: **Application of buckle folding theory to the development of transverse ridges on a rockglacier** (poster)
- Sala P., Pfiffner A. and Frehner M.: **Alpine fold-and-thrust structures revealed: A 3D model from the Helvetic Zone (Säntis area, Switzerland)** (oral)

2012 The Geological Society Conference: Industrial Structural Geology – Principles, Techniques and Integration, November 28–30 2012, London, UK

- Frehner M., Reif D. and Grasemann B.: **Dynamical unfolding for quality control of geological cross-sections** (poster)
- Sala P., Frehner M., Tisato N. and Pfiffner A.: **Modeling near surface with shallow borehole information** (poster)
- Sala P., Pfiffner A. and Frehner M.: **Alpine fold and thrust structures: a 3-D model of the Säntis area (Switzerland)** (poster)
- Tisato N., Madonna C., Quintal B., Frehner M., Kuteynikova M. and Saenger E.H.: **Combining laboratory and computational experiments to increase rock physics knowledge** (oral)

Swiss Geoscience Meeting, November 16–17 2012, Bern, Switzerland

- Collignon M., Kaus B., Frehner M., Fernandez N., Castelltort S., Simpson G. and Burg J.-P.: **Modeling interactions between tectonic and surface processes in the Zagros Mountain, Iran** (poster)
- Frehner M. and Exner U.: **Do foliation refraction patterns around buckle folds represent finite strain?** (poster)
- Frehner M., Reif D. and Grasemann B.: **Mechanical versus kinematical shortening reconstructions of the Zagros High Folded Zone (Kurdistan Region of Iraq)** (oral)
- Saenger E.H., Madonna C., Frehner M. and Almquist B.S.G.: **Numerical support of laboratory experiments: Attenuation and velocity estimations** (poster)
- Sala P., Pfiffner O.A. and Frehner M.: **Alpine fold and thrust structures: a 3-D model of the Säntis area (Switzerland)** (oral)
- Steeb H., Kurzeja P., Frehner M. and Schmalholz S.M.: **Phase velocity dispersion and attenuation of seismic waves due to trapped fluids in residual-saturated porous media** (poster)

GeoMod, July 16–18 2012, Lausanne, Switzerland

- Collignon M., Kaus B., Fernandez N., Castelltort S., Simpson G. and Frehner M.: **Modelling interaction between tectonics and surface processes in the Zagros mountain, Iran** (poster)
- Frehner M., Reif D. and Grasemann B.: **Mechanical versus kinematical shortening reconstructions of the Zagros High Folded Zone (Kurdistan Region of Iraq)** (poster)

EGU General Assembly, April 22–27 2012, Vienna, Austria

- Collignon M., Kaus B.J.P., Frehner M., Castellort S., Simpson G. and Burg J.-P.: **Modeling interactions between tectonics and surface processes in the Zagros Mountains, Iran** (poster)
- Frehner M. and Exner U.: **Do foliation refraction patterns around buckle folds represent finite strain?** (poster)
- Frehner M., Reif D. and Grasemann B.: **Mechanical versus kinematical shortening reconstructions of the Zagros High Folded Zone (Kurdistan Region of Iraq)** (oral)
- Quintal B. and Frehner M.: **Effects of permeability barriers and pore fluids on S-wave attenuation** (poster)
- Saenger E.H., Frehner M., Madonna C., Tisato N., Kuteynikova M., Riahi N., Sala P. and Quintal B.: **Combining laboratory and computational rock physics** (poster)
- Sala P., Pfiffner O.A. and Frehner M.: **Alpine fold and thrust structures: insight from the Säntis area (Switzerland)** (poster)
- Sala P., Tisato N., Pfiffner O.A. and Frehner M.: **Building a 3D geological near surface model from borehole and laboratory data** (poster)
- Steeb H., Kurzeja P., Frehner M. and Schmalholz S.M.: **Phase velocity dispersion and attenuation of seismic waves due to trapped fluids in residual-saturated porous media** (oral)

2011 Swiss Geoscience Meeting, November 11–13 2011, Zurich, Switzerland

- Frehner M.: **The neutral lines in buckle folds** (oral)
- Frehner M. and Quintal B.: **Physical mechanisms for low-frequency seismic wave attenuation in fractured media** (poster)
- Quintal B., Steeb H., Frehner M. and Schmalholz S.M.: **S-wave attenuation due to wave-induced fluid flow in heterogeneous, partially saturated porous media** (oral)

DRT (Deformation mechanisms, Rheology and Tectonics) Conference, August 31 – September 2 2011, Oviedo, Spain

- Frehner M.: **The neutral lines in buckle folds** (oral)

EGU General Assembly, April 3–8 2011, Vienna, Austria

- Burtscher A., Frehner M. and Grasemann B.: **Tectonic geomorphological investigations of antiforms using differential geometry (Permian Anticline, Northern Iraq)** (poster)
- Frehner M.: **The neutral lines in buckle folds** (oral)

Tectonomechanics Colloquium, March 31 –April 1 2011, Salzburg, Austria

- Frehner M.: **The neutral lines in buckle folds** (oral)
- Tuitz C., Exner U., Frehner M. and Grasemann B.: **Variability in breakage load of pebbles in gravels, or: Does shape really matter?** (oral)

2010 Swiss Geoscience Meeting, November 19–20 2010, Fribourg, Switzerland

- Frehner M., Exner U., Mancktelow N. and Grujic D.: **The not-so-simple effects of boundary conditions on models of simple shear** (oral)

GeoMod, September 27–29 2010, Lisbon, Portugal

- Frehner M. and Exner U.: **Boundary effects in physical models of simple shear** (poster)

Pangeo, September 15–19 2010, Leoben, Austria

- Frehner M., Exner U., Mancktelow N.S. and Grujic D.: **The not-so-simple effects of boundary conditions on models of simple shear** (oral)

ECCM (European Conference on Computational Mechanics), May 16–21 2010, Paris, France

- Steeb H., Frehner M. and Schmalholz S.M.: **Oscillatory waves in residual saturated porous media: Theoretical and numerical investigations** (oral)

- EGU General Assembly, May 2–7 2010, Vienna, Austria
- Exner U., Frehner M., Mancktelow N.S. and Grujic D.: **Why homogeneous boundary conditions lead to heterogeneous internal strain in analogue simple shear experiments – explained by numerical modeling** (poster)
 - Frehner M., Reif D. and Grasmann B.: **Mechanical restoration of large-scale folded multilayers using the finite element method: Application to the Zagros Simply Folded Belt, N-Iraq** (poster)
 - Frehner M., Steeb H. and Schmalholz S.M.: **Wave velocity dispersion and attenuation in media exhibiting internal oscillations** (oral)
 - Tschegg C., Grasmann B. and Frehner M.: **The transition of boudinage into brittle low-angle faults – chemical and mechanical feedback mechanisms** (poster)
- Tectonomechanics Colloquium, April 29–30 2010, Salzburg, Austria
- Frehner M. and Exner U.: **How homogeneous boundary conditions lead to heterogeneous strain in analogue simple shear models** (oral)
- DGG (German Geophysical Union) Annual Meeting, March 15–18 2010, Bochum, Germany
- Steeb H., Frehner M. and Schmalholz S.M.: **Wave propagation phenomena in residual-saturated rocks** (poster)
- 2009 AGU Fall Meeting, December 14–18 2009, San Francisco CA, USA
- Frehner M. and Schmalholz S.M.: **Reflection and scattering of Stoneley guided waves at the tips of fluid-filled fractures** (poster)
- Swiss Geoscience Meeting, November 20–21 2009, Neuchatel, Switzerland
- Frehner M. and Schmalholz S.M.: **Reflection and scattering of Stoneley guided waves at the tips of fluid-filled fractures** (poster)
- Tectonomechanics Colloquium, May 15–16 2009, Salzburg, Austria
- Frehner M. and Schmalholz S.M.: **Stoneley guided wave reflection and scattering at the tips of fluid-filled finite fractures** (oral)
- EGU General Assembly, April 19–24 2009, Vienna, Austria
- Frehner M. and Schmalholz S.M.: **Reflection, radiation and attenuation of Stoneley guided waves in fluid-filled finite cracks** (poster)
- DGG (German Geophysical Union) Annual Meeting, March 23–26 2009, Kiel, Germany
- Frehner M. and Schmalholz S.M.: **Reflection, radiation and attenuation of Stoneley guided waves in fluid-filled fractures** (oral)
- GAMM (International Association of Applied Mathematics and Mechanics) Annual Meeting, February 9–13 2009, Gdansk, Poland
- Steeb H., Frehner M. and Schmalholz S.M.: **Numerical modeling of scattered elastic waves: Finite element method versus finite difference method** (oral)
- 2008 Swiss Geoscience Meeting, November 21–23 2008, Lugano, Switzerland
- Frehner M., Deubelbeiss Y., Schmalholz S.M., Kaus B., Saenger E.H. and Steeb H.: **Finite element method versus finite difference method: Numerical accuracy study for two different applications** (oral)
- SEG Summer Research Workshop: Emergent and Challenging Issues in Rock Physics: Rock This House!, July 20–24 2008, Galway, Ireland
- Schmalholz S.M., Steeb H., Saenger E.H. and Frehner M.: **Theoretical and numerical modeling of waves in three-phase media** (poster)
- EGU General Assembly, April 13–18 2008, Vienna, Austria
- Frehner M., Steeb H., Saenger E.H. and Schmalholz S.M.: **Numerical modeling of wave propagation in heterogeneous and poroelastic rocks** (oral)

- 2007 EGU General Assembly, April 15–20 2007, Vienna, Austria
- Frehner M. and Schmalholz S.M.: **Numerical simulations of parasitic folding and strain distribution in multilayer systems** (oral)
 - Frehner M., Schmalholz S.M., Podladchikov Y. and Holzner R.: **Low frequency spectral modification of geoseismic background noise due to interaction with oscillating fluids entrapped in subsurface porous rocks** (poster)
- 2006 Swiss Geoscience Meeting, November 24–25 2006, Bern, Switzerland
- Frehner M. and Schmalholz S.M.: **Numerical simulations of parasitic folding in multilayers** (oral)
- EAGE Conference, Workshop 3: What can EP learn from seismology and vice versa, June 11 2006, Vienna, Austria
- Holzner R., Eschle P., Dewarrat R., Lambert M., Meftahi R., Graf R., Schmalholz S.M., Steiner B., Frehner M. and Podladchikov Y.: **Identification of reservoirs by Hydrocarbon Microtremor Analysis (HyMAS)** (poster)
- EGU General Assembly, April 2–7 2006, Vienna, Austria
- Frehner M. and Schmalholz S.M.: **Numerical simulations of parasitic folding in multilayers** (poster)
- GEO Middle East Geoscience Conference, March 27–29 2006, Manama, Bahrain
- Holzner R., Eschle P., Lambert M., Dewarrat R., Meier P.F., Dangel S., Graf R., Frehner M., Schmalholz S.M. and Podladchikov Y.: **Linear model for low frequency pore liquid oscillations observed in Hydrocarbon Microtremor Analysis (HyMAS)** (poster)
- 2005 AAPG International Conference, September 11–14 2005, Paris, France
- Burg J.-P., Bahroudi A., Simpson G., Schmalholz S.M., Dolati A. and Frehner M.: **Preliminary structural results on the Makran accretionary wedge, Iran** (oral)

OTHER INVITED PRESENTATIONS

- 2017 Job Interview at the Department of Earth Sciences, ETH Zurich, Switzerland, May 18–19 2017
- Frehner M.: **This is RockETH Science: Computational Structural Geology, Digital Rock Physics, and beyond...** (oral)
- 2016 Introductory lecture for receiving the Venia Legendi (Habilitation), Department of Earth Sciences, ETH Zurich, Switzerland, November 4 2016
- Frehner M.: **Computational Structural Geology – A modern support for field geologists** (oral)
- Technical Meeting of the Mont Terri Project, Porrentruy, Switzerland, February 11 2016
- Lupi M., Violay M., Frehner M. and Saenger E.H.: **FReD: Fault reactivation frequency-dependent** (oral)
- 2015 Job Interview at the Department of Earth Sciences, VU University Amsterdam, The Netherlands, Mai 27 2015
- Frehner M.: **Computational Structural Geology & Digital Rock Physics – Modern tools integrated into field and lab investigations** (oral)
- Department Seminar, Section for Earth and Environmental Sciences, University of Geneva, Switzerland, April 24 2015
- Frehner M.: **Insights into the dynamics of folds by Computational Structural Geology** (oral)
- Conference, Centre for Hydrogeology and Geothermics, University of Neuchatel, Switzerland, April 23 2015
- Frehner M.: **Insights into the dynamics of folds by Computational Structural Geology** (oral)

- 2013 Earth Science Colloquium, Institute of Geological Sciences, University of Bern, Switzerland, March 4 2013
- Frehner M.: **Insights into the dynamics of folds by Computational Structural Geology** (oral)
- 2012 Poroelasticity Minisymposium, ETH Zurich, Switzerland, June 26 2012
- Steeb H., Kurzeja P., Schmalholz S.M. and Frehner M.: **Multi-scale modeling of waves in partially saturated rocks** (oral)
- Geophysical Fluid Dynamics Seminar, Institute of Geophysics, ETH Zurich, Switzerland, May 23 2012
- Frehner M.: **Fold analysis and dynamical unfolding in the Zagros High Folded Zone, Kurdistan Region of Iraq** (oral)
- Job Interview at the Department of Earth Science and Engineering, Imperial College London, UK, March 20 2012
- Frehner M.: **Integrating Numerics into Geoscience – Examples from Computational Structural Geology and Digital Rock Physics** (oral)
- 2011 Seminar Géologie des Alps, Institute of Geology and Paleontology, University of Lausanne, Switzerland, November 8 2011
- Frehner M.: **Folds in nature and in the computer** (oral)
- Seminar at Physics of Geological Processes (PGP), Oslo, Norway, October 20 2011
- Frehner M.: **Folds in nature and in the computer** (oral) available online on www.youtube.com/user/pgpuio?feature=mhee#p/c/2/OM7eupd4Hz8 or vimeo.com/31646310
- Kurdish Region of Iraq Workshop, Österreichische Mineralölverwaltung Aktiengesellschaft (OMV), Vienna, Austria, October 19 2011
- Frehner M., Burtscher A., Grasmann B., Reif D.: **Tectonic geomorphological investigations and mechanical versus kinematical shortening estimates of folded multilayers: Application to the Permian and adjacent anticlines, Zagros Simply Folded Belt, Kurdistan Region of Iraq** (oral)
- Informal Structural Seminar, Department for Geodynamics and Sedimentology, University of Vienna, Austria, October 18 2011
- Frehner M.: **Folds in nature and in the computer** (oral)
- Geophysics Network meeting, Petrobras Research Center (CENPES), Rio de Janeiro, Brazil, August 19 2011
- Quintal B., Frehner M., Saenger E.H. and The Rock Physics Network at ETH Zurich: **Integrated laboratory and numerical rock physics applied to seismic characterization of reservoirs** (poster)
- 2010 Zagros fold and thrust belt (Kurdistan, NE Iraq) Workshop at Österreichische Mineralölverwaltung Aktiengesellschaft (OMV), Vienna, Austria, December 15 2010
- Frehner M.: **Kinematical versus mechanical balancing techniques and curvature analysis of digital elevation models in the Zagros fold and thrust belt (Kurdistan, NE Iraq)** (oral)
- Job Interview at the Structural Geology and Tectonics Group, Geological Institute, ETH Zurich, Switzerland, June 30 2010
- Frehner M.: **Numerics in Geosciences – A useful tool across disciplines** (oral)
- EP Technology Platform at Österreichische Mineralölverwaltung Aktiengesellschaft (OMV), Vienna, Austria, February 25 2010
- Exner U., Rath A. and Frehner M.: **Deformation bands in reservoir analogues at the margin of the Vienna Basin: Microstructural and mineralogical characterization of petrophysical properties** (oral)

- 2009 Seminarreihe des Lehrstuhls für Kontinuumsmechanik, Ruhr-University Bochum, Germany, September 9 2009
- Frehner M.: **Stoneley guided wave reflection and scattering at the tips of fluid-filled finite fractures** (oral)
- EP Technology Platform at Österreichische Mineralölverwaltung Aktiengesellschaft (OMV), Vienna, Austria, June 5 2009
- Grasemann B., Reif D., Bartl N., Bretis B., Frehner M. and Faber R.: **Quantitative tectonics and geomorphology in the Zagros fold and thrust belt (N-Iraq)** (oral)
- 2008 Job Interview at Schlumberger Cambridge Research (SCR), Cambridge, UK, July 4 2008
- Frehner M.: **Potential mechanisms for low-frequency spectral anomalies** (oral)
- Workshop at Chevron Corporation: Spectraseis' Passive Technology & Chevron West Texas Field Test, San Ramon CA, USA, April 29 2008
- Frehner M.: **Potential mechanisms for low-frequency spectral anomalies** (oral)
- Workshop at Abu Dhabi Company for Onshore Oil Operations (ADCO): Hydrocarbon Microtremors, Abu Dhabi, United Arab Emirates, January 22 2008
- Saenger E.H. and Frehner M.: **Hydrocarbon microtremor research** (oral)
- 2006 Diplomandenkongress, Department of Earth Sciences, ETH Zurich, Switzerland, February 10 2006
- Frehner M.: **Numerische Simulation von Parasitärfaalten in Mehrschicht-Systemen** (oral in German)

OTHER PRESENTATIONS

- 2016 Poroelasticity Minisymposium, Bochum University of Applied Sciences, Germany, February 23 2016
- Frehner M., Verheij J., Zhubayev A., Houben M and Barnhoorn A.: **How seismic attenuation marks the transition from elastic to inelastic deformation in laboratory rock fracturing experiments** (oral)
- 2015 Poroelasticity Minisymposium, ETH Zurich, Switzerland, February 24 2015
- Shih P.-J.R. and Frehner M.: **Laboratory evidence for Krauklis wave resonance in a fracture and implications for seismic coda wave analysis** (oral)
- 2014 Poroelasticity Minisymposium, University of Lausanne, Switzerland, February 18 2014
- Shih P.-J.R. and Frehner M.: **Laboratory measurements and numerical modeling of Krauklis wave initiation in fractured media** (poster)
 - Zhong X., Frehner M., Kunze K. and Zappone A.: **Integrated study of seismic anisotropy of Finero Peridotite (Ivrea-Verbano Zone, northern Italy) by combining laboratory measurements, EBSD-based estimations, and fully anisotropic numerical wave-propagation simulation** (poster)
- Visit of ExxonMobil delegation at ETH Zurich, Switzerland, January 8 2014
- Frehner M.: **Krauklis waves in fractured rocks and oscillations in residual saturated rocks** (oral)
- 2013 Poroelasticity Minisymposium, ETH Zurich, Switzerland, February 19 2013
- Frehner M.: **On Krauklis waves in fluid-saturated fractured rocks** (oral)
- 2012 Poroelasticity Minisymposium, ETH Zurich, Switzerland, June 26 2012
- Quintal B., Steeb H., Frehner M., Saenger E.H. and Schmalholz S.M.: **Effects of pore fluids and permeability barriers on S-wave attenuation** (poster)
 - Saenger E.H., Frehner M., Madonna C., Tisato N., Kuteynikova M., Riahi N., Sala P. and Quintal B.: **Combining laboratory and computational rock physics** (poster)

- 2011 Visit of Petrobras management delegation at ETH Zurich, Switzerland, October 31 2011
- Frehner M., Saenger E.H. and Madonna C.: **Integrated laboratory and numerical rock physics applied to seismic characterization of reservoir rocks** (oral)
- Structural Geology and Tectonics Seminar, Geological Institute, ETH Zurich, Switzerland, October 26 2011
- Frehner M.: **Folds in nature and in the computer** (oral)
- 2010 Informal Structural Seminar, Department for Geodynamics and Sedimentology, University of Vienna, Austria, December 14 2010
- Frehner M.: **Vienna in retrospective** (oral)
- Informal Structural Seminar, Department for Geodynamics and Sedimentology, University of Vienna, Austria, November 23 2010
- Frehner M., Grasmann B., Rice H., Petrakakis K., Schober A., Bichler M., Kollmann C., Homolova D. and Blumel A.: **Excursion report from Greece** (oral)
- Informal Structural Seminar, Department for Geodynamics and Sedimentology, University of Vienna, Austria, May 11 2010
- Exner U., Frehner M., Mancktelow N.S. and Grujic D.: **Why homogeneous boundary conditions lead to heterogeneous internal strain in analogue simple shear experiments – explained by numerical modeling** (poster)
 - Frehner M., Reif D. and Grasmann B.: **Mechanical restoration of large-scale folded multilayers using the finite element method: Application to the Zagros Simply Folded Belt, N-Iraq** (poster)
 - Tschegg C., Grasmann B. and Frehner M.: **The transition of boudinage into brittle low-angle faults – chemical and mechanical feedback mechanisms** (poster)
- Informal Structural Seminar, Department for Geodynamics and Sedimentology, University of Vienna, Austria, April 27 2010
- Frehner M.: **Numerical models in Geosciences** (oral)
- Informal Structural Seminar, Department for Geodynamics and Sedimentology, University of Vienna, Austria, March 23 2010
- Frehner M. and Exner U.: **Boundary effects in physical models of simple shear** (oral)
- 2009 Earth Science Colloquium, Center for Earth Sciences, University of Vienna and Austrian Geological Society (ÖGG), Vienna, Austria, November 12 2009
- Frehner M.: **Numerical modeling of multiscale wave propagation phenomena in fluid-rock systems** (oral)
- Informal Structural Seminar, Department for Geodynamics and Sedimentology, University of Vienna, Austria, June 9 2009
- Frehner M. and Grasmann B.: **Curvature analysis of digital elevation models and mechanical restoration of folds using the finite element method** (oral)
- Informal Structural Seminar, Department for Geodynamics and Sedimentology, University of Vienna, Austria, April 28 2009
- Frehner M. and Schmalholz S.M.: **Reflection, radiation and attenuation of Stoneley guided waves in fluid-filled finite cracks** (poster)
- PhD defense, Geological Institute, ETH Zurich, Switzerland, March 13 2009
- Frehner M.: **Numerical modeling of multiscale wave propagation phenomena in fluid-rock systems** (oral)
- 2008 Seminar of ETH-Spectraseis-CTI Research Group at Spectraseis AG, Zurich, Switzerland, November 7 2008
- Frehner M.: **Scattering and internal oscillations in heterogeneous rocks – Numerical and analytical studies** (oral)

- 2007 Structural Geology and Tectonics Seminar, Geological Institute, ETH Zurich, Switzerland, May 16 2007
- Frehner M., Schmalholz S.M., Podladchikov Y. and Holzner R.: **Low frequency spectral modification of geoseismic background noise due to interaction with oscillating fluids entrapped in subsurface porous rocks** (poster)
- Structural Geology and Tectonics Seminar, Geological Institute, ETH Zurich, Switzerland, May 9 2007
- Frehner M. and Schmalholz S.M.: **Numerical simulations of parasitic folding and strain distribution in multilayer systems** (oral)
- 2006 PhD Proposal defense, Geological Institute, ETH Zurich, Switzerland, September 5 2006
- Frehner M.: **Hydrocarbon reservoir detection by integrating microtremor analysis and computational geodynamics** (oral)
- Structural Geology and Tectonics Seminar, Geological Institute, ETH Zurich, Switzerland, April 19 2006
- Frehner M. and Schmalholz S.M.: **Numerical simulations of parasitic folding in multilayers** (poster)
- 2005 Master Thesis defense, Geological Institute, ETH Zurich, Switzerland, October 27 2005
- Frehner M.: **Strain distribution of buckled multilayer systems and its influence on the development of asymmetric parasitic folds** (oral)

OTHER WRITTEN WORK

- 2017 Ziegler M., Frehner M., 2017: **Implementing digital mapping and data acquisition in geology field courses**, Application for educational focus project, submitted to the Innovedum Fund, ETH Zurich, Switzerland
- 2014 Frehner M., Tisato N., Steeb H., Fousseis F., Zappone A.S. and Burg J.-P., 2014: **CO₂-exsolution and bubble nucleation in porous reservoir rocks filled with CO₂-saturated fluid under in-situ pressure conditions: Application to CO₂-sequestration hazard and seismic wave attenuation**, Application for 72 hours measurement-time at the TOMCAT-beamline at the Swiss Light Source (SLS), submitted to the Paul Scherrer Institute, Villingen, Switzerland, Proposal No. 20140051
- 2013 Frehner M., Steeb H., Madonna C., Fousseis F., Saenger E.H. and Burg J.-P., 2013: **Digital Rock Physics: Oscillatory behavior of residual fluid in porous rocks**, Application for 72 hours measurement-time at the TOMCAT-beamline at the Swiss Light Source (SLS), submitted to the Paul Scherrer Institute, Villingen, Switzerland, Proposal No. 20130271
- Madonna C., Saenger E.H., Frehner M., Quintal B., Krakowska P.I. and Burg J.-P., 2013: **Digital Rock Physics: Pressure-dependent elastic properties**, Application for 72 hours measurement-time at the TOMCAT-beamline at the Swiss Light Source (SLS), submitted to the Paul Scherrer Institute, Villingen, Switzerland, Proposal No. 20130402
- 2012 Frehner M., 2012: **UPseis: Upscaling of seismic properties in fractured fluid reservoirs**, Application for funding of a stand-alone project for 1 PhD-student, submitted to the Swiss National Science Foundation (SNF), Proposal No. 200021_143319
- 2011 Frehner M., 2011: **Upscaling of fracture-related seismic attenuation mechanisms in fluid-filled reservoirs**, Application for funding of a stand-alone project for 1 PhD-student, submitted to the Swiss National Science Foundation (SNF), Proposal No. 200021_137620
- Madonna C., Saenger E.H., Frehner M. and Burg J.-P., 2011: **Digital rock physics: Calibration with laboratory measurements**, Application for 40 hours measurement-time at the TOMCAT-beamline at the Swiss Light Source (SLS), submitted to the Paul Scherrer Institute, Villingen, Switzerland, Proposal No. 20110192

- 2010 Exner U., Decker K., Frehner M. and Grasemann B., 2010: **3D porosity and permeability model of fractured Hauptdolomit reservoir core samples**, Application for funding of a research project for 2 PhD-students, submitted to the OMV Exploration and Production GmbH, Vienna, Austria
- Abart R., Grasemann B., Exner U., Frehner M., Habler G., Klötzli U. and Nasdala L., 2010: **Deformation in geological materials: Mechanical-chemical feedback and the coupling across scales**, Application for funding of a structured doctoral program (Initiativkollegs) for 12 PhD-students submitted to the University of Vienna, Austria
- 2009 Frehner M., 2009: **Fluid migration and effects of fluids on seismic wave propagation in porous and fractured rocks with application to deformation bands**, Application for funding of a stand-alone project for 2 PhD-students, submitted to the Austrian Science Fund (FWF), Project No. P22337-N22
- Grasemann B., Rice H. and Frehner M., 2009: **Textures and microstructures in fault rocks from brittle/ductile low-angle faults: Controls of deformation mechanisms on fault strength**, Application for a research grant for 2 PhD-students, Project No. 13 of the proposal for a second funding period of the research group FOR 741 D-A-CH of the German Research Foundation (DFG) entitled "Nanoscale processes and geomaterials properties"
- 2006 Frehner M., 2006: **Hydrocarbon reservoir detection by integrating microtremor analysis and computational geodynamics**, PhD Proposal, Geological Institute, ETH Zurich, Switzerland, supervised by Dr. Stefan M. Schmalholz and Prof. Jean-Pierre Burg
- Quintal B., Frehner M., Lambert M., Podladchikov Y. and Schmalholz S.M.: **Mapping reservoirs and reservoir fluids**, U.S. Provisional Application for Patent No. 60869346, filed December 10 2006
- 2005 Frehner M., 2005: **Grossräumige Geometrie von Akkretionskeilen**, Term paper, Structural Geology and Tectonics Group, Geological Institute, ETH Zurich, Switzerland, supervised by Prof. Jean-Pierre Burg (in German)
- 2004 Brönnimann C., Deubelbeiss Y., Seiler A. and Frehner M., 2004: **Ingenieurgeologisches Feldpraktikum: Sondermüldeponie Kölliken (SMDK)**, Term paper, Engineering Geology Group, Geological Institute, ETH Zurich, Switzerland, supervised by Dr. Frank Lemy, Dr. Edward A. Button and Prof. Simon Löw (in German)
- 2003 Frehner M., 2003: **Geologische Kartierarbeit Panixerpass**, Geological Map 1:10'000 of Panixerpass area, Canton Glarus, Switzerland, including documentation, Structural Geology and Tectonics Group, Geological Institute, ETH Zurich, Switzerland, supervised by Dr. Bas den Brok and Prof. Jean-Pierre Burg (in German)