

CURRICULUM VITAE

Dr. Miriam Christina Reiss

Education

08/2014 -10/2017	Ph.D. Degree in Geosciences (Seismology) at Goethe-University Frankfurt, Germany Title: “Probing the Earth’s Interior with Shear-Wave Splitting: Methodological Advances and Application in Different Tectonic Settings”
10/2007-10/2013	Staatsexamen (Master equivalent) in English and Physics at Goethe-University Frankfurt, Germany

Appointments

Since 12/2018	Researcher at Goethe University Frankfurt, Department for Geosciences On maternity leave: 12/2020-09/2021
06/2018-11/2018	PostDoc at Yale University, Department of Geology & Geophysics
08/2014 – 04/2018	Research Associate at Goethe-University Frankfurt, Department for Geosciences
09/2012-10/2013	Student assistant at Goethe-University Frankfurt, Department for Geosciences

Research Grants

2019 -	3 small research proposals within TeMaS (Terrestrial Magmatic Systems) University of Mainz & Frankfurt, ~13k
12/2018-12/2021	SEISVOL – Seismic and Infrasound Networks to study the volcano Oldoinyo Lengai 3-year DFG (German Research Council) research grant

Awards and Commissions of Trust

2020	Member/ Representative of Scientific personal of the appointment committee for the Geodynamics professorship at Goethe University Frankfurt
10/2019-	Representative of Scientific personal at the board meetings of the Institute for Geosciences (“Direktorium”) and structural committee
2019-2020	Co-Convener for “Anisotropy from crust to core: Observations, models and implications” at EGU Assembly

06/2018-11/2018	PostDoc Scholarship by the DAAD (German Academic Exchange Service) at Yale University
2017 -	Reviewer for Earth and Planetary Science Letters, G-Cubed, Geophysical Research Letters, Physics of the Earth and Planetary Interiors, FrontiersIn Earth Science, Annals of Geophysics, Seismological Research Letters, Swiss National Science Foundation
10/2011-09/2013	„Deutschland Stipendium“ , Goethe-University Frankfurt
2010	DAAD Scholarship for two semesters to study at Victoria University of Wellington. New Zealand

Field Experience

02/2019 – 06/2020	SEISVOL project leader , Tanzania. Building and maintaining seismic and infrasound stations, data handling.
09/10 2018	Field crew member SEISConn, USA. Servicing seismic stations.
11/2015-10/2017	Leader of field crew for Frankfurt stations of the Alp Array project, Germany. Building and servicing seismic stations, data handling.
01 & 10/2016	Field crew member for FoMAps project, Cape Verdes. Servicing and building seismic stations.
04/2013	Field crew member for the SELASOMA project, Madagascar. Servicing and building seismic stations.

Teaching Experience

2019-2020	Teaching & Supervising Earthquake Localization Techniques to a Bachelor student
2017	Co-Supervisor for two students, one MSc thesis on shear wave splitting in the western Alps & one BSc thesis on the seismicity of southern Madagascar
10/2014-10/2016	Instructor “Geophysical Field Lab” , experiment refraction seismics

Invited Talks

EGU 2022, Vienna, Austria	Reiss, M.C. , Muirhead, J.D., Laizer, A.S., Link, F., Kazimoto, E.O., Ebinger, C.J., Rumpker, G. The nature of seismicity in a complex volcanic rift setting
Rift and Rifted Margins, 2021, online	Reiss, M.C. , Muirhead, J.D., Laizer, A.S., Link, F., Kazimoto, E.O., Ebinger, C.J., Rumpker, G. Seismicity and complex volcanic plumbing in the magmatic Natron Rift, Tanzania
September 2018, Syracuse University, USA,	Reiss, M.C. , Rumpker, G., Long, M., Seismic anisotropy: how to decipher the Earth's interior with shear-wave splitting

SisVoc, November 2016 **Reiss, M.C.**, Rümpker, G., Seismic anisotropy of the lithosphere and asthenosphere beneath southern Madagascar from teleseismic shear wave splitting analysis and waveform modeling

Scientific Papers

- Rümpker, G., Kaviani, A., Link, F., **Reiss, M.C.** & Komeazi, A. (2022). Testing observables for teleseismic shear-wave splitting inversions: ambiguities of intensities, parameters, and waveforms. *To be submitted to Annals of Geophysics*.
- Reiss, M.C.**, Muirhead, J.D., De Siena, L. (2022). The interconnected magmatic plumbing system of the Natron rift. *GRL, under review*.
- Link, F., **Reiss, M.C.**, & Rümpker, G. (2022). An automatized XKS-splitting procedure for large data sets: Extension package for SplitRacer and application to the USArray. *Computers & Geoscience*, Volume 158, <https://doi.org/10.1016/j.cageo.2021.104961>
- Reiss, M.C.**, Muirhead, J.D., Laizer, A.S., Link, F., Kazimoto, E.O., Ebinger, C.J. & Rümpker, G. (2021). The impact of complex volcanic plumbing on the nature of seismicity in the developing magmatic Natron rift, Tanzania. *Frontiers In Earth Science*, <https://doi.org/10.3389/feart.2020.609805>
- Muirhead, J.D., Fischer, T.P., Oliva, S.J.,...**Reiss, M.C.**, et al. Displaced cratonic mantle concentrates deep carbon during continental rifting. *Nature* 582, 67–72 (2020). <https://doi.org/10.1038/s41586-020-2328-3>
- Reiss, M.C.** & M. D. Long (2019). Lowermost mantle anisotropy beneath Africa from differential SKS-SKKS shear-wave splitting. *Journal Geophys. Res. Solid Earth*, 124, 8, 8540-8564. <https://doi.org/10.1029/2018JB017160>
- Hetényi, G., Molinari, I., Clinton, J., Bokelmann, G., ...**Reiss, M.C.**, et al. (2018). AlpArray Seismic Network Team, AlpArray OBS Cruise Crew, and AlpArray Working Group: The AlpArray Seismic Network: A Large-Scale European Experiment to Image the Alpine Orogen. *Survey of Geophysics*, 39, pages 1009–1033, <https://doi.org/10.1007/s10712-018-9472-4>
- Reiss, M.C.**, Rümpker, G. & I. Wölbern (2018), Large-scale trench-normal mantle flow beneath central South America, *Earth and Planetary Science Letters*, 482, 115-125, <https://doi.org/10.1016/j.epsl.2017.11.002>
- Reiss, M.C.** & G. Rümpker (2017), SplitRacer: MATLAB Code and GUI for Semiautomated Analysis and Interpretation of Teleseismic Shear-Wave Splitting. *Seismological Research Letters* 88 (2A), 392-409, <https://doi.org/10.1785/0220160191>

Reiss, M.C., Rumpker, G., Tilmann, F., Yuan, X., Giese, J. and E. J. Rindraharisaona (2016). Seismic anisotropy of the lithosphere and asthenosphere beneath southern Madagascar from teleseismic shear wave splitting analysis and waveform modeling, *Journal Geophys. Res. Solid Earth*, <https://doi.org/10.1002/2016JB013020>

Conference Papers

- EGU 2022, Vienna, **Reiss, M.C.**, Muirhead, J.D., Laizer, A.S., Link, F., Austria Kazimoto, E.O., Ebinger, C.J., Rumpker, G. The nature of seismicity in a complex volcanic rift setting
- Reiss, M.C.**, Muirhead, J.D., De Siena, L. The complex plumbing system of Oldoinyo Lengai seen by 3D attenuation tomography
- Rumpker, G., Kaviani, A., Laizer, A.S., **Reiss, M.C.**, Kazimoto, E.O. Seismic signals of crater instability at Oldoinyo Lengai volcano, Tanzania
- Physics of Volcanoes **Reiss, M.C.**, Muirhead, J.D., De Siena, L., Laizer, A.S., 2022, online Link, F., Kazimoto, E.O., Ebinger, C.J., Rumpker, G. The complex volcanic plumbing of the developing magmatic Natron rift, Tanzania.
- AGU 2021, New Orleans, Ebinger, C.J., Aber, S., Chambers, E.L., Steiner A., **Reiss, M.C.**, Oliva, S.J.C., Gase, A., Illsely-Kemp, F. Crustal USA growth in continental rifts and flood volcanic provinces
- AG Seismologie 2021, **Reiss, M.C.**, Muirhead, J.D., Laizer, A.S., Link, F., online Kazimoto, E.O., Ebinger, C.J., Rumpker, G. Volcanic plumbing and seismicity in the developing magmatic Natron rift, Tanzania
- EGU 2021, online Zhang, Y., De Siena, L., Kaus, B., **Reiss, M.C.**, Castro, C., Spang, A., Hering, P., Junge, A., Baumann, T. Synthetic seismic modeling and inversion for the Oldoinyo Lengai volcanic complex
- Castro, C., **Reiss, M.C.**, Spang, A., Hering, P., De Siena, L., Komeazi, A., Zhang, Y., Rumpker, G., Kaus, B., Junge, A. Chasing the Magma Chamber: MT meets Geodynamics and Seismology-A numerical case study of magmatic plumbing at Oldoinyo Lengai Volcano
- EGU 2020, online **M.C. Reiss**, L. De Siena, G Rumpker, E. Kazimoto. Imaging active magmatic systems at Oldoinyo Lengai volcano (Tanzania) via earthquake distribution and seismic scattering and absorption mapping
- Physics of Volcanoes, **M.C. Reiss**, L. De Siena, G Rumpker, E. Kazimoto. 2020, Hamburg, Imaging active magmatic systems at Oldoinyo Lengai volcano (Tanzania) via earthquake distribution and seismic scattering and absorption mapping
- Germany
- AGU 2019, San **M.C. Reiss**, F. Link, G. Rumpker, E. Kazimoto. First Francisco, USA results of the SEISVOL project: Seismicity at Oldoinyo Lengai volcano, Tanzania
- C.J. Ebinger, **M.C. Reiss**, ... et al. Mantle contributions to magma and strain localization in rift zones

- 28th meeting ESC working group “Seismic phenomena associated with volcanic activity”, 2019, Garachico, Spain
 EGU 2019, Vienna, Austria
 AGU 2018, Washington D.C., USA
 EGU 2018, Vienna, Austria
 AGU 2017, New Orleans, USA
 EGU 2017, Vienna, Austria
 DDG 2017, Potsdam, Germany
 AGU 2016, San Francisco, USA
 AG Seismologie 2016, Bad Salzschlirf, Germany
 DDG 2016, Münster, Germany
 AGU 2015, San Francisco, USA
 AG Seismologie 2016, Wild Bad Kreuth, Germany
- M.C. Reiss**, F. Link, G. Rümpker, E. Kazimoto. First results of the SEISVOL project: Seismicity at Oldoinyo Lengai volcano, Tanzania
- M.C. Reiss** & M.D. Long. Lowermost mantle anisotropy beneath Africa imaged by SKS-SKKS differential splitting
- M.C. Reiss** & M.D. Long. Lower mantle structure beneath Africa imaged by SKS-SKKS differential splitting and travel time delays
- M.C. Reiss**, G. Rümpker & I. Wölbern. Large-scale trench-perpendicular mantle flow beneath central South America
- M.C. Reiss**, G. Rümpker, F. Tilmann. The seismicity of southern Madagascar from the temporary SELASOMA network
- M.C. Reiss**, G. Rümpker & I. Wölbern. Large-scale trench-perpendicular mantle flow beneath northern Chile.
- M.C. Reiss** & G. Rümpker. SplitRacer – a new Semi-Automatic Tool to Quantify And Interpret Teleseismic Shear-Wave Splitting.
- M.C. Reiss**, G. Rümpker & I. Wölbern. Complex seismic anisotropy beneath northern Chile.
- M.C. Reiss** & G. Rümpker. SplitRacer – a semi-automatic tool for the analysis and interpretation of teleseismic shear-wave splitting.
- M.C. Reiss**, G. Rümpker & I. Wölbern. Complex seismic anisotropy beneath northern Chile.
- M.C. Reiss** & G. Rümpker. SplitRacer – a semi-automatic tool for the analysis and interpretation of teleseismic shear-wave splitting.
- Giese, J., Reiss, M.C., Rindraharisaona, E.J., Rümpker, G., Schreurs, G., Tilmann, F.J., Yuan, X. Brittle reactivation of inherited late Neoproterozoic/Cambrian lithospheric-scale structures during extension and break-up of Madagascar from Africa
- M.C. Reiss** & G. Rümpker. SplitRacer – eine grafische Oberfläche in MATLAB zur Analyse teleseismischer Scherwellen-Splittings.
- M.C. Reiss** & G. Rümpker. Rapid and joint analysis of shear-wave splitting with application to the Swiss network.
- M.C. Reiss**, G. Rümpker, F. Tilmann, X. Yuan, E.J. Rindraharisaona. Seismic anisotropy of the lithosphere-asthenosphere system beneath southern Madagascar.
- M.C. Reiss**, G. Rümpker, F. Tilmann, X. Yuan, E.J. Rindraharisaona. Seismische Anisotropie des Lithosphären-Asthenosphären-Systems im südlichen Madagaskar.

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- EGU 2015, Vienna, **M.C. Reiss**, G. Rümpker, F. Tilmann, X. Yuan, E.J. Austria
Rindraharisaona: Seismic anisotropy of the lithosphere-asthenosphere system beneath southern Madagascar.
- DDG 2015, Hannover, **M.C. Reiss**, G. Rümpker, F. Tilmann, X. Yuan, E.J. Germany
Rindraharisaona: Seismische Anisotropie des Lithosphären-Asthenosphären-Systems im südlichen Madagaskar.
- IASPEI 2013, Goteborg, **M.Reiss**, M. Lindenfeld, G. Rümpker: Application of array Sweden
methods to the monitoring of induced and natural seismicity in the northern Upper Rhine Graben