Dr Tobias Stephan

Postdoctoral associate

Lakehead University
Department of Geology
Thunder Bay, ON, Canada

Email: tstephan@lakeheadu.ca
Website: `https://tobiste.github.io/`
ORCID: 0000-0002-9290-014X

1 EDUCATION

2019/03	**Doctor of Philosophy (PhD)** in "Geology" *Technische Universität Bergakademie Freiberg, Germany*
2013/09	**Master of Science (MSc)** in "Geosciences" (major: Tectonics and Geochronology) *Technische Universität Bergakademie Freiberg, Germany*
2010/09	**Bachelor of Science (BSc)** in "Geology and Mineralogy" *Technische Universität Bergakademie Freiberg, Germany*

2 PROFESSIONAL EXPERIENCE

since 2023/04	**Postdoctoral associate** *Lakehead University, Department of Geology, Thunder Bay, ON, Canada*
since 2024/09	**Lecturer** *Lakehead University, Department of Geology, Thunder Bay, ON, Canada*
2020/12–2022/11	**Postdoctoral associate** (DFG Research Fellow) *University of Calgary, Geo- and Thermochronology Research Group, Department of Geoscience, Calgary, AB, Canada*
2020/03–2020/11	**Postdoctoral associate** *Friedrich-Alexander-Universität Erlangen-Nürnberg, Geozentrum Nordbayern, Erlangen, Germany*
2019/09–2019/12	**Research assistant** *Technische Universität Bergakademie Freiberg, Institute for Computer Sciences, Freiberg, Germany*
2014/01–2014/06	**Geologist** *Beak Consultants GmbH (Germany / Tanzania)*

3 PUBLICATIONS

3.1 Peer-reviewed articles

15 Stephan, T., and Enkelmann, E. "All Aligned on the Western Front of North America? Analyzing the Stress Field in the Northern Cordillera". accepted in *Tectonics* in August 2025.

14 Padgett, J., Enkelmann, E., Kellett, D., Moynihan, D., and Stephan, T. (2025): "Cenozoic faulting in the Upper Hyland River Valley, Southeastern Yukon: A thermochronological perspective". *Canadian Journal of Earth Sciences*. doi: 10.1139/cjes-2024-0147.

13 Schaeben, H., Kroner, U., and Stephan, T. (2024): "Mathematical Fundamentals of Spherical Kinematics of Plate Tectonics in Terms of Quaternions". *Mathematical Models and Methods in Applied Sciences* 47(6). pp. 4469–4496. doi: 10.1002/mma.9823

12 Stephan, T., Enkelmann, E., and Kroner, U. (2023): "Analyzing the horizontal orientation of the crustal stress adjacent to plate boundaries". *Scientific Reports* 13:15590. doi: 10.1038/s41598-023-42433-2.

11 Járóka, T., Pfänder, J. A., Seifert, T., Hauff, F., Sperner, B., Staude, S., Stephan, T., and Schulz, B. (2023): "Age and petrogenesis of Ni-Cu-(PGE) sulfide-bearing gabbroic intrusions in the Lausitz Block, northern Bohemian Massif (Germany/Czech Republic)". *Lithos* 444–445:107090. doi: 10.1016/j.lithos.2023.107090

10 Kroner, U., Romer, R. L., and Stephan, T. (2023): "Die Rekonstruktion von relativen Plattenbewegungen aus dem paläozoischen Deformationsmuster der kontinentalen Kruste". *Zeitschrift der Deutschen Gesellschaft für Geowissenschaften (J. Appl. Reg. Geol.)*. doi: 10.1127/zdgg/2023/0365

9 Köhler, S., Duschl, F., Fazlikhani, H., Koehn, D., Stephan, T., and Stollhofen, H. (2022): "Reconstruction of cyclic Mesozoic-Cenozoic stress development in SE Germany using fault-slip and stylolite inversion". *Geological Magazine* 159 (11–12). pp. 2323–2345. doi: 10.1017/S0016756822000656

8 Kroner, U., Stephan, T., and Romer, R. L. (2022): "Paleozoic orogenies and relative plate motions at the sutures of the Iapetus-Rheic Ocean". In Y. D. Kuiper, J. B. Murphy, R. D. Nance, R. A. Strachan, and M. D. Thompson (Eds.), *New Developments in the Appalachian-Caledonian-Variscan Orogen*. Geological Society of America. doi: 10.1130/2021.2554(01)

7 Schaeben, H., Kroner, U., and Stephan, T. (2021): "Euler Poles of Tectonic Plates". In B. S. Daza Sagar, Q. Cheng, J. McKinley, and F. Agterberg (Eds.), *Encyclopedia of Mathematical Geosciences. Encyclopedia of Earth Sciences Series. Springer Nature* Switzerland AG 2021. doi: 10.1007/978-3-030-26050-7_435-1

6 Caracciolo, L., Ravidà, D. C. G., Chew, D., Janßen, M., Lünsdorf, N. K., Heins, W. A., Stephan, T., and Stollhofen, H. (2021): "Reconstructing environmental signals across the Permian-Triassic boundary in the SE Germanic Basin: A Quantitative Provenance Analysis (QPA) approach". *Global and Planetary Change*, 206:103631. doi: 10.1016/j.gloplacha.2021.103631

5 Kroner, U., Stephan, T., Romer, R. L., and Roscher, M. (2020): "Paleozoic plate kinematics during the Pannotia–Pangaea supercontinent cycle". *Geological Society, London, Special Publications* 503, SP503-2020-15. doi: 10.1144/SP503-2020-15

4 Stephan, T., Kroner, U., Romer, R. L., and Rösel, D. (2019): "From a bipartite Gondwana shelf to the arcuate Variscan belt: The Early Paleozoic evolution of northern Peri-Gondwana". *Earth-Science Reviews* 192, pp. 491–512. doi: 10.1016/j.earscirev.2019.03.012

3 Heinicke, J., Stephan, T., Alexandrakis, C., Buske, S., and Gaupp, R. (2019): "Alteration as possible cause for transition from brittle failure to aseismic slip: the case of the NW-Bohemia / Vogtland earthquake swarm region". *Journal of Geodynamics* 124, pp. 79–92. doi: 10.1016/j.jog.2019.01.010

2 Stephan, T., Kroner, U., and Romer, R. L. (2018): "The pre-orogenic detrital zircon record of the Peri-Gondwanan crust". *Geological Magazine* 156 (2), pp. 281–307. doi: 10.1017/s0016756818000031.

1 Stephan, T., Kroner, U., Hahn, T., Hallas, P., and Heuse, T. (2016): "Fold / cleavage relationships as indicator for late Variscan sinistral transpression at the Rheno-Hercynian–Saxo-Thuringian boundary zone, Central European Variscides". *Tectonophysics* 681, pp. 250–262. doi: 10.1016/j.tecto.2016.03.005

3.2 Other academic articles

Book Legler, C., Barth, A., Knobloch, A., Mruma, A. H., Myumbilwa Y., Magigita, M., Msechu, M., Ngole, T., Stanek, K. P., Boniface, N., Kagya, M., Manya, S., Berndt, T., Stahl, M., Gebremichael, M., Dickmayer, E., Repper, C., Falk, D., and Stephan, T. (2015): "Explanatory Notes for the Minerogenic Map of Tanzania 1:1,5 M.", *Geological Survey of Tanzania*. ISBN: 978-9987-477-94-4

4 SOFTWARE DEVELOPMENTS

`tectonicr`	Free and open-source R package for modeling and analyzing the direction of the maximum horizontal stress using relative plate motion (doi: 10.32614/CRAN.package.tectonicr). Package website: `https://tobiste.github.io/tectonicr/`
`structr`	Free and open-source R package for analyzing and visualizing orientation data for structural geology. `https://github.com/tobiste/structr`
`geoprofiler`	Creates Swath profiles and Distance vs X plots by measuring the accurate distances parallel and perpendicular to user-defined lines. `https://tobiste.github.io/geoprofiler/`
`ptrotR`	Free and open-source R package for plate motion reconstruction. `https://github.com/tobiste/ptrotR`
`laftr`	Free and open-source R package to calculate the ages from LA-ICP-MS based fission track dating using the zeta approach. `https://github.com/tobiste/laftr`
`euler`	Free and open-source R package for describing plate motion in terms of quaternions. `https://github.com/tobiste/euler`
`euler.reco`	Free and open-source R package. Provides algorithms to find and evaluate the Euler pole solution describing the orientation of geological structures. `https://github.com/tobiste/euler.reco`

5 FUNDING, GRANTS, AND AWARDS

Grants	2020–2022 DFG Research Fellowship (85 000€) — *German Research Foundation (DFG)*
	2016 Travel grant (750€) — *Centre of Advanced Study and Research Freiberg*
	2013 Travel grant (500€) — *TU Bergakademie Freiberg Association of Friends*
	2009 IAESTE Internship stipend — *International Association for the Exchange of Students for Technical Experience (IAESTE)*
Awards	Poster award at *CETEG2015*, Kadaň, Czech Republic, 2014

6 PROFESSIONAL SERVICES AND MEMBERSHIPS

Memberships	The Geological Association of Canada (GAC), Canadian Tectonics Group (CTG)
Reviewer for journals	Geology, Gondwana Research, Terra Nova, Geological Society of America, Scientific Reports, Proceedings of the Geologists' Association, Basin Research, Lithosphere, Discover Geoscience, Tectonics
Reviewer for grant proposals	National Science Center, Poland
Committee board member	Jack Henderson Best PhD Thesis Award from the Canadian Tectonics Group of the GAC (since 2023)
Session Chair	*GAC-MAC-PEG 2024* (Brandon, MN, Canada): "It's our fault! Geological and geophysical insights into fault and shear zone processes"

August 25, 2025