

PROF. DR. ALEXANDER BRENNING – CURRICULUM VITAE

Department of Geography, Friedrich Schiller University Jena, Löbdergraben 32, 07743 Jena, Germany
Email: alexander.brenning@uni-jena.de, phone +49-3641-948850 (direct), -948851 (secretary)

ACADEMIC POSITIONS

10/2014 –	Full Professor (W3) of Geographic Information Science , Department of Geography, Friedrich Schiller University Jena, Germany
10/2017 – 09/2020	Dean of the Faculty of Chemistry and Earth Sciences , Friedrich Schiller University Jena, Germany
07/2012 – 08/2015	Associate Professor (tenured) , Department of Geography and Environmental Management, University of Waterloo, Ontario, Canada
01/2007 – 06/2012	Assistant Professor (tenure track) , Department of Geography and Environmental Management, University of Waterloo, Ontario, Canada
02/2006 – 10/2006	Research Associate in Geostatistics , Department of Soil Landscape Research, Leibniz Centre for Agricultural Landscape Research, Müncheberg, Germany
03/2005 – 01/2006	Research Associate in Biometry , Department of Medical Informatics, Biometry, Epidemiology, University of Erlangen-Nuremberg, Germany
09/2002 – 02/2005	Research and Teaching Assistant, Geomorphology and Geovisualization , Geographical Institute, Humboldt-Universität zu Berlin
08/2001 – 08/2002	Research Assistant, Geovisualization , Department of Geography, University of Erlangen-Nuremberg, Germany

EDUCATION

10/2005	Doctor rerum naturalium in Geography , Humboldt-Universität zu Berlin on rock glacier distribution in the Andes
06/2001	Diplom-Mathematiker , Technical University of Freiberg, Germany on non-stationary geostatistics
11/1995 – 06/2001	Studied Mathematics with a Minor in Physical Geography , Technical University of Freiberg, Germany, Catholic University of Chile (DAAD scholarship), and University of Erlangen-Nuremberg, Germany

VISITING PROFESSORSHIPS AND SELECTED RESEARCH VISITS

Since 09/2015	Adjunct Professor , Department of Geography and Environmental Management, University of Waterloo
02/2014 – 08/2014	Humboldt Research Fellow (sabbatical) , Department of Geography, University of Heidelberg, Germany
04/2013 – 06/2013	Visiting Professor , Department of Geography and Regional Research, University of Vienna, Austria
01/2011 – 04/2011	Distinguished Visiting Professor (sabbatical) , Dept. of Geography, Pontificia Universidad Católica de Chile

AWARDS

2021	LiP Award for outstanding dedication to teaching during the pandemic, Friedrich Schiller University Jena, Germany
------	--

EXTERNAL FUNDING

2026 –	Carl-Zeiss-Stiftung Breakthroughs program , “AI Generalizability for Non-stationary Environmental Regimes” (GENAI-X), coordinator
2025 –	Deutsche Forschungsgemeinschaft (DFG) , “Desert Pavements: Assessing their Modulating Role in the Atmospheric Dust Cycle”, Co-PI
2024 –	Umweltbundesamt (federal environmental agency), “Countrywide regionalization of groundwater nitrate contamination with geostatistics and artificial intelligence” (ReGeNi), PI
2023 –	European Universities program , EU, “European Campus of City-Universities (EC2U)”, Virtual Institute on Sustainable Cities and Communities, work package co-PI
2018 – 2021	German Aerospace Center (DLR) , “Multiscale data analysis”, PI, within the DLR Institute of Data Science
2019 – 2020	CETAQUA Chile , “Mass movement processes in the upper Maipo basin”, PI
2017 – 2019	German Ministry of Education and Research , “Network for environmental modeling of Earth surface processes,” PI
2015 – 2019	LIFE Environment and Resource Efficiency Project , EU, “Early detection and advanced management systems to reduce forest decline [...]”, Co-PI
2015 – 2018	Carl-Zeiss-Stiftung / German Scholars Organization , start-up grant
2013 – 2015	NSERC Discovery Grant – Individual , “Statistical Geocomputing”
2014	Humboldt Fellowship for Experienced Researchers , sabbatical at the University of Heidelberg, Germany

RECENT TEACHING

Ongoing	Graduate student seminar for GIScience M.Sc. and Ph.D. students Advanced Statistics + Machine Learning for Geospatial Modeling (~10 students each, M.Sc. level) Integrated GIScience/remote sensing project course (~15 students, M.Sc.) Intro. + Advanced Statistics for Geographers (~30-50 students, B.Sc.) Various GIScience courses at different levels (~20-110 students, B.Sc.)
---------	---

SERVICE AND CONSULTING

Service to the University	Dean (2017–2020) and Vice-Dean (2016–17) of the Faculty of Chemistry and Earth Sciences, Friedrich Schiller University Jena Vice-Chair , EC2U Virtual Institute of Sustainable Cities and Communities Board Member , Michael Stifel Centre for Data-Driven and Simulation Science Jena (MSCJ, 2022–), and ELLIS Unit Jena (2023–) Chair of the Examinations Committee , B.Sc. Geography (2014–17), and M.Sc. Geoinformatics (2025–) Senator , Friedrich Schiller University Jena (2022–25) Senator , University of Waterloo (2012–14)
Associate Editor	Remote Sensing (2020–22) Stochastic Environmental Research and Risk Assessment (2016–20)
Scientific Committees	Geomorphometry, 2009–; Earth Obs. for Global Changes, 2009–2017; Int. Assoc. for Mathematical Geosciences 2015; Ecological Informatics, 2018
Proposal Reviewer	ANID (Chile), DFG (Germany), FWF (Austria), Humboldt Foundation (Germany), NSERC (Canada), among others
Consulting	Expert reviewer for the German Federal Environmental Protection Agency Freelance geostatistical consultant (intermittently since 2006)

PUBLICATIONS

ORCID: 0000-0001-6640-679X

ResearcherID: E-6022-2011

Number of Publications in Web of Science: 128

h-index: 43

Times Cited: 6427

Average Citations per Item: 50.2

Peer-Reviewed Publications since 2023

De, R., Bao, S., Koirala, S., **Brenning, A.**, Reichstein, M., [...], Carvalhais, N. (2025). Addressing challenges in simulating inter-annual variability of gross primary production. *Journal of Advances in Modeling Earth Systems*, 17(5): e2024MS004697.

Frank, J.K., Suesse, T., **Brenning, A.** (2025). An assessment of spatial random forests for environmental mapping: the case of groundwater nitrate concentration. *Env. Modelling & Software*, 193: 106626.

Lucchese, L., de Oliveira, G., Pedrollo, O., **Brenning, A.** (2025). Spatially distributed antecedent rainfall thresholds for landslide occurrence: a multitask machine learning modeling approach. *Hydrological Sciences Journal*, DOI: 10.1080/02626667.2025.2561163

Pfeifer, C., Knetsch, S., Maercker, J., Mustafa, O., Rümmler, M.-C., **Brenning, A.** (2025). Exploring the potential of aerial drone imagery to distinguish breeding Adélie (Pygoscelis adeliae), chinstrap (Pygoscelis antarcticus) and gentoo (Pygoscelis papua) penguins in Antarctica. *Ecological Indicators*, 170: 113011.

Suesse, T., **Brenning, A.** (2025). Softening the criteria for determining inner and outer predicted exceedance sets. *Spatial Statistics*, 65.

Weidt, F., Bell, R., Schrott, L., **Brenning, A.**, Dietze, M., Burghardt, L., Groeßer, J. (2025). Spatial patterns and bridge collapse interactions of erosional processes due to the 2021 Ahr valley flood. *Environmental Sciences Europe*, 37: 82.

Jiang, S., Sweet, L., Blougouras, G., **Brenning, A.**, Li, W., Reichstein, M., Denzler, J., Shangguan, W., Yu G., Huang, F., Zscheischler, J. (2024). How interpretable machine learning can benefit process understanding in the geosciences. *Earth's Future*, 12: e2024EF004540.

Schäfer, S., **Brenning, A.** Industry diversity in entrepreneurial ecosystems – A longitudinal study of industrial composition and firm locations in Tel Aviv, Israel. *Progress in Econ. Geography*, 2: 100016.

Schratz, P., Lang, M., Becker, M., **Brenning, A.** (2024). mlr3spatiotempcv: Spatiotemporal resampling methods for machine learning in R. *Journal of Statistical Software*, 111(7): 1-36.

Suesse, T., **Brenning, A.** (2024). A precise and efficient exceedance-set algorithm for detecting environmental extremes. *Computational Statistics*, DOI: 10.1007/s00180-024-01540-y

Urquiza-Muñoz, J.D., Trumbore, S., Negrón-Juárez, R.I., Feng, Y., **Brenning, A.**, Vasquez-Parana, C.M., Magnabosco Marra, D. (2024). Increased occurrence of large-scale windthrows across the Amazon basin. *AGU Advances*, 5(6): e2023AV001030.

Adeniyi, O.D., **Brenning, A.**, Bernini, A., Brenna, S., Maerker, M. (2023). Digital mapping of soil properties using ensemble machine learning approaches in an agricultural lowland area of Lombardy, Italy. *Land*, 12(2): 494.

Bogdanovich, E., Guenther, L., Reichstein, M., Frank, D., Ruhrmann, G., **Brenning, A.**, Denissen, J., Orth, R. (2023). Societal attention to heat waves can indicate public health impacts. *Weather, Climate and Society*, 15(3): 557-569.

Brenning, A. (2023). Spatial machine-learning model diagnostics: a model-agnostic distance-based approach. *International Journal of Geographical Information Science*, 37(3): 584-606.

Brenning, A. (2023). Interpreting machine-learning models in transformed feature space with an application to remote-sensing classification. *Machine Learning*, 112: 3455-3471.

Castagner, A., **Brenning, A.**, Gruber, S., Kokelj, S. (2023). Vertical distribution of excess ice in icy sediments and its statistical estimation from geotechnical data (Tuktoyaktuk Coastlands and Anderson Plain, Northwest Territories). *Arctic Science*, 9(2): 483-496.

Estupinan-Suarez, L.M., Mahecha, M.D., **Brenning, A.**, Kremer, G., Poveda, G., Reichstein, M., Sierra, C. (2023). Spatial patterns of vegetation activity related to ENSO in northern South America. *Journal of Geophysical Research – Biogeosciences*, 129(1): e2022JG007344.

Knevels, R., Petschko, H., Proske, H., Leopold, P., Mishra, A. N., Maraun, D., **Brenning, A.** (2023). Assessing uncertainties in landslide susceptibility predictions in a changing environment (Styrian Basin, Austria). *Natural Hazards and Earth System Sciences*, 23: 205–229.

Mishra, A.N., Maraun, D., Knevels, R., Truhetz, H., **Brenning, A.**, Proske, H. (2023). Climate change amplified the 2009 extreme landslide event in Austria. *Climatic Change*, 176(9): 124.

Peña, M.A., **Brenning, A.** (2023). Benchmarking Sentinel-2-derived predictors for long-term burn severity modelling: the 2016-17 Chilean firestorm. *International Journal of Remote Sensing*, 44(8): 2668-2690.

Ruiz-Vásquez, M., O, S., Arduini, G., Boussetta, S., **Brenning, A.**, Bastos, A., Koirala, S., Balsamo, G., Reichstein, M., Orth, R. (2023). Impact of updating vegetation information on land surface model performance. *Journal of Geophysical Research – Atmospheres*, 128(21): e2023JD039076.

Suesse, T., Grupp, V., **Brenning, A.** (2023). Spatial linear discriminant analysis approaches for remote-sensing classification. *Spatial Statistics*, 57: 100775.

Wang, Z., **Brenning, A.** (2023). Unsupervised active-transfer learning for automated landslide mapping. *Computers & Geosciences*, 181: 105457.

Zehner, M., Dubois, C., Thiel, C., Schellenberg, K., Rüetschi, M., **Brenning, A.**, Baade, J., Schullius, C. (2023). Accounting for deciduous forest structure and viewing-geometry effects improves Sentinel-1 time series image consistency. Submitted to *IEEE Transaction on Geosciences and Remote Sensing*, 61.

Selected Earlier Peer-Reviewed Publications (before 2023)

Maraun, D., Knevels, R., Mishra, A.N., Truhetz, H., Bevacqua, E., Proske, H., Zappa, G., **Brenning, A.**, Petschko, H., Schaffer, A., Leopold, P., Puxley, B.L. (2022). A severe landslide event in the Alpine foreland under possible future climate and land-use changes. *Communications Earth & Envir.*, 3: 87.

Wang, Z., Goetz, J., **Brenning, A.** (2022). Transfer learning for landslide susceptibility modelling using domain adaptation and case-based reasoning. *Geoscientific Model Development*, 15, 8765–8784.

Cortés, J., Mahecha, M.D., Reichstein, M., Myneni, R.B., Chen, C., **Brenning, A.** (2021). Where are global greening and browning trends significant? *Geophysical Research Letters*, 48(6): e2020GL091496.

Goetz, J., Kohrs, R., Parra-Hormazábal, E., Bustos-Morales, E., Araneda-Riquelme, M.B., Henríquez, C., **Brenning, A.** (2021). Optimizing and validating the Gravitational Process Path model for regional debris-flow runout modelling. *Natural Hazards and Earth System Sciences*, 21, 2543–2562.

Cortés, J., Mahecha, M., Reichstein, M., **Brenning, A.** (2020). Accounting for multiple testing in the analysis of spatio-temporal environmental data. *Environmental and Ecological Statistics*, 27: 293-318.

Goetz, J., **Brenning, A.** (2019). Quantifying uncertainties in snow depth mapping from structure from motion photogrammetry in an alpine area. *Water Resources Research*, 55: 7772-7783.

Schratz, P., Muenchow, J., Iturrutxa, E., Richter, J., **Brenning, A.** (2019). Hyperparameter tuning and performance assessment of statistical and machine-learning algorithms using spatial data. *Ecological Modelling*, 406: 109-120.

Azócar, G.F., **Brenning, A.**, Bodin, X. (2017). Permafrost distribution modelling in the semi-arid Chilean Andes. *The Cryosphere*, 11: 877-890.

Albuquerque, J. P., Herfort, B., **Brenning, A.**, Zipf, A. (2015). Geographic approach for combining social media and authoritative data towards improving information extraction for disaster management. *International Journal of Geographic Information Science*, 29(4): 667-689.

Goetz, J.N., **Brenning, A.**, Petschko, H., Leopold, P. (2015). Evaluating machine learning and statistical prediction techniques for landslide susceptibility modeling. *Computers & Geosciences*, 81: 1-11.

Boeckli, L., **Brenning, A.**, Gruber, S., Noetzli, J. (2012). A statistical approach to modelling permafrost distribution in the European Alps or similar mountain ranges. *The Cryosphere*, 6, 125-140.