

PROF. DR. ALEXANDER BRENNING – CURRICULUM VITAE

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ACADEMIC POSITIONS

10/2017 –	Dean of the Faculty of Chemistry and Earth Sciences , Friedrich Schiller University Jena, Germany
10/2014 –	Full Professor (W3) of Geographic Information Science , Department of Geography, 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

AWARDS

04/2013	Outstanding Performance Award , University of Waterloo
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EDUCATION

10/2005	Doctor rerum naturalium in Geography (<i>magna cum laude</i>) , Humboldt-Universität zu Berlin (supervisor: Prof. Dr. W. Endlicher) “Climatic and geomorphological controls of rock glaciers in the Andes of Central Chile: Combining statistical modeling and field mapping”
06/2001	Diplom-Mathematiker , Technical University of Freiberg, Germany Thesis: “Geostatistics without Stationarity Assumptions within Geographical Information Systems” (supervisor: Prof. Dr. H. Schaben)
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 RESEARCH VISITS

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
06/2010 – 07/2010	Visiting Scientist , Dept. of Geography, University of Zürich, Switzerland

RESEARCH FUNDING HELD AS PRINCIPAL INVESTIGATOR

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 caused by invasive and pathogenic agents” (LIFE14 ENV/ES/000179), Co-PI
2015 – 2018	German Scholars Organization / Carl Zeiss Foundation , programm to support German researchers abroad returning to Germany
2013 – 2015	NSERC Discovery Grant – Individual , “Statistical Geocomputing”
2014	Humboldt Fellowship for Experienced Researchers , sabbatical at the University of Heidelberg, Germany
2014	Contract Research , Aguas Andinas, “Potential effects of dust on glaciers”
2008 – 2013	NSERC Discovery Grant – Individual , “Improved Spatial Classification in Mountain Geomorphology”
2008 – 2012	Emerging Leaders in the Americas Program and Graduate Student Exchange Program , Department of Foreign Affairs and International Trade, Canada; six scholarships for research students from South America
2011	Grant Program for Distinguished Visiting Professors , Catholic University of Chile, Santiago, Chile
2010 – 2011	Co-operative Education Research Grant , Canadian Association for Co-operative Education; spatial analysis and data mining of student jobs; cooperation with Co-operative Education, University of Waterloo
2009 – 2010	Contract Research , Chilean Ministry of Public Works; “Monitoring of rock glaciers in semi-arid Chile”
2009 – 2010	Latin America and the Caribbean Research Exchange Grants , Int. Development Research Centre (IDRC); with Univ. Mayor, Santiago, Chile

RECENT TEACHING

2014/15 –	Graduate student seminars for GIScience M.Sc. and Ph.D. students
2014/15 –	Environmental Statistics & GeoComputation (~10 students, M.Sc.)
2014/15 –	Applied Environmental Statistics (~20 students expected, year 2/3)
2014/15 –	Various GIScience courses at different levels (~10-50 students)
2012 - 2014	Advanced Environmental Research Methods (~300 students, year 2)
2010 – 2013	On Becoming a Geographer (~100 students, year 1)
2008 – 2013	Spatial Statistics (~10-20 Master’s/PhD students)
2007 – 2013	Spatial Analysis (~10-45 students, year 3)

SERVICE AND CONSULTING

Service to the University	Vice-Dean of the Faculty of Chemistry and Earth Sciences (2016/17) Chair of the Examinations Committee , B.Sc. Geography (2014-17) Senator , University of Waterloo (2012-14)
Organizing Committee	Field Trip Coordinator, Meeting of the Canadian Assoc. of Geographers
Scientific Committees	Int. Assoc. for Mathematical Geosciences 2015; Earth Obs. for Global Changes, 2009–; Geomorphometry, 2009–; Ecological Informatics, 2018
Proposal Reviewer	CNCS (Romania), Conicyt (Chile), DFG (Germany), FWF (Austria), MITACS (Canada), NSERC (Canada), NSF (USA), OMAF (Canada), among others
Consulting	Freelance geostatistical consultant (intermittently since 2006)

ADDITIONAL QUALIFICATIONS

Accreditation	Professional Statistician, Statistical Society of Canada, 2008
Languages	German: first language; English, Spanish: fluent; French: intermediate

PUBLICATIONS

Number of Publications in Web of Science:	61
Sum of Times Cited:	1131
Average Citations per Item:	18.5
<i>h</i> -index:	17

Peer-Reviewed Publications since 2013

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

Endicott, S., Drescher, M., **Brenning, A.** (2017). Modelling the spread of European buckthorn in the Region of Waterloo. *Biological Invasions*, 19: 2993-3011.

Flach, M., Gans, F., **Brenning, A.**, Denzler, J., Reichstein, M., Rodner, E., Bathiany, S., Bodesheim, P., Guanache, Y., Sippel, S., Mahecha, M.D. (2017). Multivariate anomaly detection for Earth observations: a comparison of algorithms and feature extraction techniques, *Earth System Dynamics*, 8: 677-696.

Geiss, C., Pelizari, P.A., Schrade, H., **Brenning, A.**, Taubenboeck, H. (2017). On the effect of spatially non-disjoint training and test samples on estimated model generalization capabilities in supervised classification with spatial features. *IEEE Geoscience and Remote Sensing Letters*, 14: 2008-2012.

Minokhin, I., Fletcher, C.G., **Brenning, A.** (2017). Forecasting northern polar stratospheric variability with competing statistical learning models. *Quarterly Journal of the Royal Meteorological Society*, 143: 1816-1827.

Peña, M.A., Liao, R., **Brenning, A.** (2017). Using spectrotemporal indices to improve the fruit-tree crop classification accuracy. *ISPRS Journal of Photogrammetry and Remote Sensing*, 128: 158-169.

Steger, S., **Brenning, A.**, Bell, R., Glade, T. (2017). The influence of systematically incomplete shallow landslide inventories on statistical susceptibility models and suggestions for improvements. *Landslides*, 14: 1767-1781.

Müller, M.E.H., Koszinski, S., Bangs, D.E., Wehrhan, M., Ulrich, A., Verch, G., **Brenning, A.** (2016). Crop biomass and humidity related factors reflect the spatial distribution of phytopathogenic *Fusarium* fungi and their mycotoxins in heterogeneous fields and landscapes. *Precision Agriculture*, 17: 698-720.

Schumacher, P., Mislinshoeva, B., **Brenning, A.**, Zandler, H., Brandt, M., Samimi, C., Koellner, T. (2016). Do red edge and texture attributes from high-resolution satellite data improve wood volume estimation in a semi-arid mountainous region? *Remote Sensing*, 8(7): 540.

Shen, Y.-J., Shen, Y., Goetz, J., **Brenning, A.** (2016). Spatio-temporal variation of near-surface temperature lapse rates over the Tianshan Mountains, central Asia. *Journal of Geophysical Research – Atmospheres*, 121(23): 14006-14017.

Steger, S., **Brenning, A.**, Bell, R., Glade, T. (2016). The propagation of inventory-based positional errors into statistical landslide susceptibility models. *Nat. Hazards and Earth System Sci.*, 16(12): 2729-2745.

Steger, S., **Brenning, A.**, Bell, R., Petschko, H., Glade, T. (2016). Exploring discrepancies between quantitative validation results and the geomorphic plausibility of statistical landslide susceptibility maps. *Geomorphology*, 262: 8-23.

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.

Brenning, A., Schwinn, M., Ruíz-Páez, A.P., Muenchow, J. (2015). Landslide susceptibility near highways is increased by 1 order of magnitude in the Andes of southern Ecuador, Loja province. *Natural Hazards and Earth System Sciences*, 15: 45-57.

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.

Goetz, J.N., Guthrie, R.H., **Brenning, A.** (2015). Forest harvesting is associated with increased landslide activity during an extreme rainstorm on Vancouver Island, Canada. *Natural Hazards and Earth System Sciences*, 15(6): 1311-1330.

Iturrutxa, E., Mesanza, N., **Brenning, A.** (2015). Spatial analysis of the risk of major forest diseases in Monterey pine plantations. *Plant Pathology*, 64(4): 880-889.

Peña, M.A., **Brenning, A.** (2015). Assessing fruit-tree crop classification from Landsat-8 time series for the Maipo Valley, Chile. *Remote Sensing of Environment*, 171: 234-244.

Zandler, H., **Brenning, A.**, Samimi, C. (2015). Potential of space-borne hyperspectral data for biomass quantification in an arid environment: advantages and limitations, *Remote Sensing*, 7(4): 4565-4580.

Zandler, H., **Brenning, A.**, Samimi, C. (2015). Quantifying dwarf shrub biomass in an arid environment: Comparing empirical models in a high dimensional setting. *Remote Sensing of Envir.*, 158: 140-155.

Goetz, J. N., Bell, R., **Brenning, A.** (2014). Could surface roughness be a poor proxy for landslide age? Results from the Swabian Alb, Germany. *Earth Surface Processes and Landforms*, 39: 1697-1704.

Petschko, H., **Brenning, A.**, Bell, R., Goetz, J., Glade, T. (2014). Assessing the quality of landslide susceptibility maps – case study Lower Austria. *Natural Hazards and Earth System Sci.*, 14: 95-118.

Xu, L., Li, J., **Brenning, A.** (2014). A comparative study of different classification techniques for marine oil spill identification using RADARSAT-1 images. *Remote Sensing of Environment*, 141-14-23.

Puertas, O.L., **Brenning, A.**, Meza, F.J. (2013). Balancing misclassification errors of land cover classification maps using support vector machines and Landsat imagery in the Maipo river basin (Central Chile, 1975-2010). *Remote Sensing of Environment*, 137: 112-123.

Soliman, A., Heck, R.J., **Brenning, A.**, Brown, R., Miller, S. (2013). Remote sensing of soil moisture in vineyards using airborne and ground-based thermal inertia data. *Remote Sensing*, 5: 3729-3748.

Torres, H.J., **Brenning, A.**, García, J.L. (2013). Balance de masa del glaciar cubierto del Pirámide (Chile Central, 33°S) entre 1965 y 2000 aplicando métodos geodésicos. *Espacios*, 3(5): 11-25.

Selected Earlier Peer-Reviewed Publications (before 2013)

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.

Boeckli, L., **Brenning, A.**, Gruber, S., Noetzli, J. (2012). Permafrost distribution in the European Alps: calculation and evaluation of an index map and summary statistics. *The Cryosphere*, 6: 807-820.

Brenning, A. (2012): Spatial cross-validation and bootstrap for the assessment of prediction rules in remote sensing: the R package 'sperrorest'. *Proceedings, 2012 IEEE International Geoscience and Remote Sensing Symposium (IGARSS), 23-27 July 2012*, 5372-5375.

Brenning, A., Long, S., Fieguth, P. (2012). Detecting rock glacier flow structures using Gabor filters and IKONOS imagery. *Remote Sensing of Environment*, 125: 227-237.

Muenchow, J., **Brenning, A.**, Richter, M. (2012). Geomorphic process rates of landslides along a humidity gradient in the tropical Andes. *Geomorphology*, 139-140: 271-284.

Goetz, J., Guthrie, R., **Brenning, A.** (2011). Integrating physical and empirical landslide susceptibility models using generalized additive models. *Geomorphology*, 129: 376-386.

Bodin, X., Rojas, F., **Brenning, A.** (2010). Status and evolution of the cryosphere in the Andes of Santiago (Chile, 33.5°S). *Geomorphology*, 118: 453-464.

Knudby, A., **Brenning, A.**, LeDrew, E. (2010). New approaches for modeling fish-habitat relationships. *Ecological Modelling*, 221, 503-511.

Brenning, A. (2009). Benchmarking classifiers to optimally integrate terrain analysis and multispectral remote sensing in automatic rock glacier detection. *Remote Sensing of Environment*, 113(1), 239-247.

Brenning, A. (2005): Spatial prediction models for landslide hazards: review, comparison and evaluation. *Natural Hazards and Earth System Sciences*, 5(6), 853-862.