FRANZ SCHUG

email: fschug@wisc.edu
phone +49 (0)176 380 761 64

professional experience and training

Since 2022	*Postdoctoral Research Associate*, Dpt. of Forest & Wildlife Ecology, University of Wisconsin 1630 Linden Dr., Madison WI, 53706, USA *Global Hotspots of the Wildland-Urban Interface* Advisor: Prof. Volker Radeloff
2018 – 2021	*Doctoral Researcher*, Humboldt-Universität zu Berlin, Earth Observation Lab Unter den Linden 6, 10099 Berlin, Germany *Understanding the Role of Material Stock Patterns for the Transformation to a Sustainable Society (MAT_STOCKS)* Advisor: Prof. Patrick Hostert
2017 – 2017	*Research Assistant*, Humboldt-Innovation GmbH Rudower Chaussee 16, 12489 Berlin, Germany
2016 – 2016	*Intern*, botanicly Luisenstraße 53, 101117 Berlin, Germany
2013 – 2015	*Student Research Assistant*, Humboldt-Universität zu Berlin, Earth Observation Lab Rudower Chaussee 16, 12489 Berlin, Germany
2014	*Intern*, GFZ German Research Centre for Geosciences Telegrafenberg, 14473 Potsdam, Germany

education

2018 – 2021	Ph.D., Earth Observation Lab, Humboldt-Universität zu Berlin, Germany *A multi-dimensional characterization of settlements with Earth Observation data* Advisor: Prof. Patrick Hostert
2018 – 2021	IRI THESys graduate program, Humboldt-Universität zu Berlin, Germany Interdisciplinary learning and research program, with contributions from, e.g., Geography, Ethnology, Philosophy, Agricultural, Environmental and Sustainability Sciences
2014 – 2017	M.Sc., Physical Geography, Humboldt-Universität zu Berlin, Germany Advisor: Prof. Patrick Hostert, Prof. Tobia Lakes, Prof. Blake Walker
2015 – 2016	Visiting Student, Simon Fraser University, Burnaby, BC, Canada
2011 – 2014	B.Sc., Geography (major) / Computer Sciences (minor), Humboldt-Universität zu Berlin, Ger. Advisor: Prof. Sebastian van der Linden, Prof. Jonas Ø. Nielsen
2008 - 2011	B.A., Business Administration University of Applied Sciences Saarbrücken, Germany & Université de Lorraine, France

publications

peer-reviewed articles

2021 8. Kreyling, J.; Tanneberger, F.; Jansen, F.; van der Linden, S.; Aggenbach, C.; Blüml, V.; Couwenberg, J.; Emsens, W.J.; Joosten, H.; Klimkowska, A.; Kotowski, W.; Kozub, L.; Lennartz, B.; Liczner, Y.; Liu, H.; Michaelis, D.; Oehmke, C.; Parakenings, K.; Pleyl, E.; Poyda, A.; Raabe,

S.; Röhl, M.; Rücker, K.; Schneider, A.; Schrautzer, J.; Schröder, C.; **Schug, F.**; Seeber, E., Thiel, F.; Thiele, S.; Tiemeyer, B.; Timmermann, T.; Urich, T.; van Diggelen, R.; Vegelin; K.; Verbruggen, E.; Wilmking, M.; Wrage-Mönnig, N.; Wołejko, L.; Zak, D.; Jurasinski, G. (2021): *Rewetting does not return drained fen peatlands to their old selves*. Nature Communications, 12, 5693. doi: 10.1038/s41467-021-25619-y

7. **Schug, F.**; Frantz, D.; van der Linden, S.; Hostert, P. (2021): *Gridded population mapping for Germany based on building density, height and type from Earth Observation data using census disaggregation and bottom-up estimates*. PLOS ONE, 16(3). doi: 10.1371/journal.pone.0249044

6. Haberl, H.; Wiedenhofer, D.; **Schug, F.**; Frantz, D.; Virág, D.; Plutzar, C.; Gruhler, K.; Lederer, J.; Schiller, G.; Fishman, T.; Lanau, M.; Gattringer, A.; Kemper, T.; Liu, G.; Tanikawa, H.; van der Linden, S.; Hostert, P (2021): *High-Resolution Maps of Material Stocks in Buildings and Infrastructures in Austria and Germany*. Environmental Science & Technology, doi: 10.1021/acs.est.0c05642

5. Frantz, D.; **Schug, F.**; Okujeni, A.; Navacchi, C.; Wagner, W.; van der Linden, S.; Hostert, P. (2021): *National-scale mapping of building height using Sentinel-1 and Sentinel-2 time series*. Remote Sensing of Environment, vol. 252. doi: 10.1016/j.rse.2020.112128

2020 4. Wellmann, T.; Lausch, A.; Andersson, E.; Knapp, S.; Cortinovis, C.; Jache, J.; Scheuer, S.; Kremer, P.; Mascarenhas, A.; Kraemer, R.; Haase, A.; **Schug, F.**; Haase, D. (2020): *Remote Sensing in urban planning: Contributions towards ecologically sound policies?* Landscape and Urban Planning, vol. 204. doi: https://doi.org/10.1016/j.landurbplan.2020.103921

3. **Schug, F.**; Frantz, D.; Okujeni, A.; van der Linden, S.; Hostert, P. (2020). *Mapping urban-rural gradients of settlements and vegetation at national scale using Sentinel-2 spectral-temporal metrics and regression-based unmixing with synthetic training data*. Remote Sensing of Environment, vol. 246, September 2020, doi: 10.1016/j.rse.2020.111810

2. Wellmann, T.; **Schug, F.**; Haase, D.; Pflugmacher, D.; van der Linden, S. (2020). *Green growth? On the relation between popoulation density, land use and vegetation cover fractions in a city using a 30-years Landsat time series*. Landscape and Urban Planning, vol. 202. doi: 10.1016/j.landurbplan.2020.103857

2018 1. **Schug, F.**; Okujeni, A.; Hauer, J.; Hostert, P.; Nielsen, J. Ø.; van der Linden, S. (2018). *Mapping patterns of urban development in Ouagadougou, Burkina Faso, using machine learning regression modeling with bi-seasonal Landsat time series*. Remote Sensing of Environment, vol. 210, June 2018, doi: 10.1016/j.rse.2018.03.022

conference contributions / talks

2021 13. **Schug, F.**; Frantz, D.; Okujeni, A.; van der Linden, S.; Hostert, P (2021): Sub-pixel mapping of land cover along the urban-rural gradient with regression-based unmixing and spectral-temporal metrics. **Oral** contribution. WSL Remote Sensing Lecture, Birmensdorf (CH), 02 June 2021

12. **Schug, F.**; Frantz, D.; Okujeni, A.; van der Linden, S.; Hostert, P (2021): *Mapping urban-rural gradients of settlements and vegetation using Sentinel-2 spectral-temporal metrics and regression-based unmixing with synthetic training data*. **Oral** contribution. EARSeL Joint Workshop 2020, Liège, 30 March – 01 April 2021

11. Wellmann, T.; **Schug, F.**; Haase, D.; Pflugmacher, D.; van der Linden, S. (2021): Green Growth? On The Relation Between Population Density, Land Use And Vegetation Cover Fractions In A City Using A 30-Years Landsat Time Series.EARSeL Joint Workshop 2020, Liège, 30 March – 01 April 2021

10. Wiedenhofer, D.; Virág, D.; **Schug, F.**; Frantz, D.; van der Linden, S.; Hostert, P.; Haberl, H. (2021): A novel approach for mapping material stocks of buildings and infrastructure from remote-

sensing data at the national scale and beyond. Oral contribution. 14th Biennial International Conference on EcoBalance, Sendai, 25 February – 05 March 2021.

2019   9.   **Schug, F.**; Frantz, D.; Okujeni, A.; van der Linden, S.; Hostert, P (2019): *Sentinel-2 and machine learning regression for built-up and urban green fraction mapping across European settlements*. **Oral** contribution. ESA Living Planet Symposium, Milan, 13 – 17 May 2019

8.   **Schug, F.**; Frantz, D.; Okujeni, A.; van der Linden, S.; Hostert, P (2019): *Urban surface fraction mapping with optical remote sensing for material stock estimation*. **Oral** contribution. Global Land Programme Open Science Meeting, Bern, 24 – 26 April 2019

7.   **Schug, F.**; van der Linden, S.; Okujeni, A.; Hostert, P (2019): *Using Time Series Information For Mapping Human Settlements With Sentinel-2*. **Oral** contribution. DGPF Dreiländertagung, Vienna, 20 – 21 February 2019

2018   5.   **Schug, F.**; van der Linden, S.; Okujeni, A.; Hostert, P (2018): *Evaluating Sentinel-2 imagery for mapping human settlements*. **Oral** contribution. ESA Mapping Urban Areas From Space, Frascati, 30 – 31 October 2018

6.   **Schug, F.**; Okujeni, A.; Hauer, J.; Hostert, P.; Nielsen, J. Ø; van der Linden, S. (2018). *Mapping Patterns Of Urban Development Using Support Vector Regression With Synthetically Mixed Training Spectra And Bi-seasonal Landsat Time Series*. **Poster** contribution. EARSeL 5th Joint Workshop "Urban Remote Sensing – Challenges and Solutions", Bochum, 24 – 26 September 2018

2015   3.   **Schug, F.**; Pagalan, L.; Mather, S. (2015): *Modeling population growth of young adults within the City of Vancouver using Cellular Automata*. **Poster** contribution. ESRI User Conference, Vancouver, November 2015

2.   **Schug, F.**; van der Linden, S.; Nielsen, J. Ø; Okujeni, A. (2015): *Multi-seasonal spectral mixture analysis using Landsat data for mapping urban land cover in Ouagadougou, Burkina Faso*. **Oral** contribution. IEEE International Geoscience and Remote Sensing Symposium, Milan, 26 – 31 July 2015

2014   1.   van der Linden, S.; Kuemmerle, T.; Janson, K.; **Schug, F.** (Eds., 2014). Conference proceedings: *Frontiers in Earth Observation for Land System Science*. 5th Workshop of the EARSeL Special Interest Group on Land Use and Land Cover, Berlin, 17 – 18 March 2014

student supervision

2019	*Cremer, N.:* Regression-based impervious surface mapping across European capital cities using semi-automated training data collection, *Bachelor's Thesis*
2019	*Küpper, J.:* Dhaka revisited - Combining Sentinel-1 and Sentinel-2 Imagery for Land Cover Mapping in a Monsoon Region, *Bachelor's Thesis*
2018	*Spengler, S.:* Mapping urban structures from Sentinel-2 data for Ouagadougou, Burkina Faso, *Bachelor's Thesis*
2018	*Will, C.:* Eine Untersuchung der zeitlichen Übertragbarkeit fernerkundlicher Klassifikationsmodelle zur urbanen Landnutzungskartierung in Berlin auf Basis einer Landsat-Zeitreihe, *Bachelor's Thesis*

reviewing activities

Science of the Total Environment, Elsevier; International Journal of Remote Sensing, T & F; GIScience & Remote Sensing, T & F; Remote Sensing, MDPI; Earth System Science Data, Cop. Pub.; Remote Sensing in Ecology and Conservation, Wiley

teaching

2020, 2021	Instructor, Lecture & Seminar, Remote Sensing in Fundamentals of Human-Environment Research, 6 hrs., M.Sc. / Ph.D., IRI THESys, Humboldt-Universität zu Berlin
2020	Instructor, Research Seminar, Remote Sensing for Settlement Mapping & Scientific Writing, 31 hrs., B.Sc. / M.Sc., Humboldt-Universität zu Berlin
2018 – 2019	Student project advice, Seminar, Sustainability and Global Justice, 8 hrs., B.Sc. / M.Sc.
2018	Student project supervision, Seminar, Quantitative Methods in Geography, 10 hrs., M.Sc.
2014 – 2015	Assistantship, Lecture & Seminar, Advanced Remote Sensing Methods, 20 hrs., M.Sc.
2014 – 2015	Assistantship, Seminar, Introduction to Remote Sensing, 20 hrs., B.Sc.

grants / awards

2019	European Commission Travel Grant for attending ESA Living Planet Symposium
2015	IEEE Travel Grant for attending IEEE Intl. Geosci. and Remote Sensing Sympos.
2015	Travel Grant, Humboldt-Universität zu Berlin for exchange student travel expenes
2015	IRI THESys award - best Thesis in human-environment research
2014	Best undergraduate Bachelor of Science, Geography, Humboldt-Universität zu Berlin
2014 – 2016	Scholarship (Deutschlandstipendium) granted by Stiftung Humboldt-Universität and the German Federal Ministry of Education and Research for student research in sustainability and global justice
2008	Erasmus exchange student grant, Université de Lorraine, France

workshops / courses attended (after M.Sc. graduation)

2021	Workshop, *Preparing for the Disputation*, Humboldt Graudate Schook, Germany, 16 hrs.
2020 - 2021	Course, *Globalization of the Global South – Examples from Sub Saharan Africa*, Humboldt-Universität zu Berlin, Germany, 90 hrs.
2020	Workshop, *Grant Application Writing*, Humboldt Graudate Schook, Germany, 32 hrs.
2019	Workshop, *How to design visual storylines to communicate research*, IRI THESys, 16 hrs.
2018 - 2019	Course, *Fundamentals of Human-Environment Research*, IRI THESys, 32 hrs.
2018	Workshop, Conceptualizing services and the stock-flow-services nexus, University of Natural Resources & Life Sciences Vienna, Austria, 16 hrs.
2018	Summer School, SAR-EDU Summer School for Applied Radar Remote Sensing, Friedrich-Schiller-Universität Jena, Germany, 30 hrs.

language proficiency

German	native
English, French	advanced (fluent in writing and speaking)
Spanish	beginner (speaking and writing), intermediate (reading and understanding)