

Jan Sodoge

M.Sc. Computational Social Science — Doctoral Researcher
Helmholtz-Centre for Environmental Research
+49 15787906189
jan.sodoge@ufz.de

PRINCIPAL INTERESTS My work focuses on assessing, modeling, and understanding the impacts of natural hazards (specifically droughts) on social-ecological systems. I apply text mining, machine learning and natural language processing, and participatory modeling.

ACADEMIC BACKGROUND *M.Sc. Computational Social Science* 2021
Linköping University, Sweden

- Thesis title: Economic heterogeneity, inequality and forest transitions: an empirically-grounded dynamic evaluation of agricultural land-cover change.
Grade: A (excellent)

B.Sc. Environmental System Science and Geography 2019
University of Osnabrück, Germany

- Thesis title: Participatory modelling for investigating the complexity of social, demographic and cultural issues linked to the Water-Energy-Food Nexus in the Omo-Turkana Basin.
Grade: 1.0 (excellent)

EMPLOYMENT *Doctoral Researcher* 2021 - Present
Helmholtz-Centre for Environmental Research, Germany

- Research on the assessment and modeling of drought impacts through computational and participatory methods. Supervised by Dr. Mariana M. de Brito and Prof. Christian Kuhlicke.
Thesis working title: Assessing current and future droughts impacts: A mixed-methods approach
- Research stay: Sep.2022 - Nov. 2022 at Karlsruhe Institute of Technology, Institute of Water and River Basin Management - Hydrology. Research on the application of information theory to socio-economic drought impacts.
- Member of the Swedish Interdisciplinary Research School in Computational Social Science
- Member of the NFDI4 Earth Academy

Research Assistant 2018 - 20189
University of Osnabrück, Institute for Environmental System Science, Germany

- Assistance in the DAFNE project, writing and editing of project-related reports and newsletters, overall project organization.

Research Internship 2019 - 2020
Center for research in economics and Statistics (CREST), France

- Contribution to the development of a statistical software for self-organizing maps. Supervised by Etienne Ollion and Julien Boelaert.

TEACHING • Seminar: Big data and artificial intelligence in Geography. University of Potsdam, 2023, lecturer.

- Lecture: Participatory Modelling. University of Osnabrück, 2019, teaching assistant (TA).
- Lecture: Agent-based modelling. University of Osnabrück, 2019, TA.
- Lecture: Ecological modelling. University of Osnabrück, 2019,2020, TA.

AWARDS & STIPENDS

- Helmholtz Information and Data Science Academy Annual Conference, award for the best scientific telegram (500€)
- European Geoscience Union Travel Grant (500€) - Summer School on natural hazards (2023)
- Helmholtz Visiting Researcher Grant - HIDA Trainee Network Research Stay at Karlsruhe Institute of Technology (approx. 2000€)

PUBLICATIONS

1. Sodoge, Jan, Christian Kuhlicke, and Mariana Madruga de Brito. "Automatized spatio-temporal detection of drought impacts from newspaper articles using natural language processing and machine learning." *Weather and Climate Extremes* (2023): 100574.
2. Boelaert, Julien, Etienne Ollion, **Jan Sodoge**, Mohamed Megdoud, Otmane Naji, Arnaud Lemba Kote, Theo Renoud, Samuel Hym, and Maintainer Julien Boelaert. "Package 'aweSOM'." (2021).
3. de Brito, M.M., Sodoge, J. (2023). Computational Social Sciences in der Umweltsoziologie. In: Sonnberger, M., Bleicher, A., Groß, M. (eds) *Handbuch Umweltsoziologie*. Springer VS, Wiesbaden.
4. **Sodoge, J.**, de Brito, M.M., Kuhlicke, C., (2022): Automatized drought impact detection using natural language processing. *WasserWirtschaft* 112 (S1), 30 - 31
5. Akinsete, E., et al. (2022). "Sustainable WEF Nexus Management: A Conceptual Framework to Integrate Models of Social, Economic, Policy, and Institutional Developments." *Frontiers in Water* 4.
6. de Brito, M.M., **Sodoge, J.**, Kreibich, H., Kuhlicke, C. (2023): Unprecedented flood socioeconomic impacts assessed through text-mining. *Nature Unprecedented flood socioeconomic impacts assessed through text-mining* (under review).

CONFERENCE CONTRIBUTIONS

1. Sodoge, J., de Brito, M. M., and Kuhlicke, C. (2023): Pooling complex socioeconomic drought impact patterns from participatory modeling. *Panta Rhei Symposium*, Potsdam, Germany.
2. Sodoge, J., Kuhlicke, C., Mahecha, M., & de Brito, M. (2023). Drought impact profiles: Analyzing multivariate socio-economic drought impacts using nonlinear dimensionality reduction (No. EGU23-286). *Copernicus Meetings*.
3. Bartkowski, B., Nagpal, M., Baaken, M., Chan, K., Schneider, N., Sodoge, J., de Brito, M. M. (2023). Sustainable agriculture discourses in Germany: a comparative analysis of large-scale text data (No. EGU23-14623). *Copernicus Meetings*.
4. Sodoge, J., de Brito, M. M., and Kuhlicke, C.: Automatized drought impact detection from newspaper articles using natural language processing and machine learning, *EGU General Assembly 2022*, Vienna, Austria, 23–27 May 2022.

5. Sodoge, J., de Brito, M. M., and Kuhlicke, C.: Automatizing drought impact assessments using machine learning and natural language processing. HydroML Symposium, Pennsylvania State University 2022, USA. 18-20 May 2022.
6. Sodoge, J., de Brito, M. M., and Kuhlicke, C.: Automatized drought impact detection using natural language processing. World Canals Conference 2022.
7. Madruga de Brito, M., Sodoge, J., Kreibich, H., and Kuhlicke, C.: Text-mining of natural hazard impacts (TM-Impacts): an application to the 2021 flood in Germany, EGU General Assembly 2022, Vienna, Austria, 23–27 May 2022.
8. Sodoge, J., de Brito, M. M., and Kuhlicke, C.: Automatizing drought impact assessments using machine learning and natural language processing. HydroML Symposium, Penn State University, USA, 18-20 May 2022.
9. de Brito, M.M., Sodoge, J., Kreibich, H., Kuhlicke, C. (2022) Assessing the socioeconomic impacts of the 2021 flood in Germany through text-mining of newspaper articles. In: KAHR Conference.
10. de Brito, M.M., Otto, D., Sodoge, J., Rechhaus, Z., Kuhlicke, C. (2022) Narratives of reconstructing hydro-social territories after the 2021 flood in Germany: a natural language processing approach. In: KAHR Conference.
11. Sodoge, J., de Brito, M. M., and Kuhlicke, C.: Drought impacts profiles: Deriving compound and cascading impact patterns from a 20-year, cross-sectoral drought impact dataset. In: DAMOCLES Compound Events Final Conference.

INVITED TALKS

1. Using AI-based text-mining for drought impact data - University of Potsdam, Germany - 15.11.2023.
2. Text mining of natural hazard impacts (TM-Impact) - University of Leipzig, Germany - 11.2021.
3. Mapping the social consequences of natural hazards with text mining - Colloquium for analytical sociology - University of Leipzig, Germany - 05.2022.

LANGUAGES & SOFTWARE

English (fluent), German (native speaker), French (basic)
 R (proficient, among others: tidymodels, tidyverse, shiny, targets, sf)
 Python (intermediate)
 NetLogo (proficient) & Repast Symphony (intermediate)
 QGIS (basic spatial analysis and map creation)

PROJECTS & FREELANCE

Computational Social Journalism 2020 - Present
 I co-founded this [web-based platform](#) as an outlet to develop a personal vision on journalism. It covers the intersection of data-driven storytelling and computational social science.

Basketball Statistics Consultation 2016 - Present
 Development of basketball advanced statistics and analytics solutions for multiple German professional basketball teams. I have worked together with coaches, trying to establish statistical measures and tools that support coaching workflows.