Dr. Florian Börgel

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🌐 https://florianboergel.github.io/

Professional Employment

2021 – ····	**Tenure-track researcher** Dynamics of regional climate systems, Leibniz Institute for Baltic Sea Research.

- Regional climate variability and the teleconnection between the North Atlantic and Northern Europe
- Forecasting river runoff using Recurrent Neural Networks
- Ocean oxygen variability during the last millennium

2019 - 2020	**Parental leave** 15 months
2017 - 2020	**Research scientist** Dynamics of regional climate systems, Leibniz Institute for Baltic Sea Research
2016 - 2017	**Research assistant** Biogeochemical modeling, Leibniz Institute for Baltic Sea Research
2014 - 2015	**Research assistant** Energy Systems Analysis, Fraunhofer Institute for Manufacturing Technology and Applied Materials
	Technical support EWE Baskets Oldenburg
2013 - 2014	**Student assistant** Engineering company for environment and climate action plans for cities, energieLenker GmbH,

Education

09/2017 – 10/2020	**Ph.D., Physics** in Physical Oceanography, with honors (summa cum laude), Leibniz Institute for Baltic Sea Research Thesis title: *Long-term climate variability of the Baltic Sea.*
10/2014 – 09/2017	**M.Sc. Engineering Physics** in Computational physics, very good (1.2), University of Oldenburg Thesis title: *The influence of sea ice on Baltic inflows.*
09/2010 – 02/2014	**B.Eng. Energy Engineering**, good (2.0), Münster University of Applied Sciences Thesis title: *Designing of a district heating network in the historic city of Warendorf.*

Honors and relevant responsibilities

2023	**Outstanding Early Career Scientist award** Ocean Science Division, European Geosciences Union, https://www.egu.eu/awards-medals/
2022	**Nominee for the Ocean Circulation & Climate Strategy Group** A joint initiative of the German Climate Consortium and German Marine Research Consortium (KDM)
2021	**Google Cloud Research Grant** Forecasting river runoff using Recurrent Neural Networks, worth 2,500€

Honors and relevant responsibilities (continued)

2014   🔖   **Fulbright Scholarship** Full scholarship to study in the United States for one year (not attended for personal reasons)

Research Publications

Journal Articles

1.   Aue, L., & **Börgel**, **F.** (n.d.). From "Bangtan Boys" to "International Relations Professor": Mapping Self-Identifications in the UN's Twitter Public. *Politics and Governance*. under review.

2.   **Börgel**, **F.**, Neumann, T., Rooze, J., Radtke, H., Barghorn, L., & Meier, H. (n.d.). Deoxygenation of the Baltic Sea during the last millenium. *Frontiers in Marine Science*. under review.

3.   Dutheil, C., **Börgel**, **F.**, Gröger, M., & Meier, H. E. M. (n.d.). Changes in spatial structure of weather regimes dominate european precipitation changes since 1950. *Sciences advances*. under review.

4.   Gröger, M., Dutheil, C., **Börgel**, **F.**, & Meier, H. E. M. (n.d.). Winter marine heatwaves promoted by warm deepwater showcased in a sub-polar marginal sea. *Communications Earth & Environment*. under review.

5.   **Börgel**, **F.**, Gröger, M., Meier, H. E. M., Dutheil, C., Radtke, H., & Borchert, L. (2023). Tracing the fingerprint of multi-decadal fluctuations in the Baltic Sea. *npj - Climate and atmosphere*. accepted.

6.   Meier, H. E. M., Barghorn, L., **Börgel**, **F.**, Gröger, M., Naumov, L., & Radtke, H. (2023). Multidecadal climate variability dominated past trends in the water balance of the Baltic Sea catchment area. *npj - Climate and atmosphere*. accepted.

7.   Dutheil, C., Meier, H. E. M., Gröger, M., & **Börgel**, **F.** (2022). Warming of Baltic Sea water masses since 1850. *Climate Dynamics*. 🔗 doi:10.1007/s00382-022-06628-z

8.   Gröger, M., Placke, M., Meier, M., **Börgel**, **F.**, Brunnabend, S.-E., Dutheil, C., … Väli, G. (2022). The Baltic Sea Model Inter-Comparison Project BMIP – a Platform for Model Development, Evaluation, and Uncertainty Assessment. *Geoscientific Model Development Discussions*, 1–34. Publisher: Copernicus GmbH. 🔗 doi:10.5194/gmd-2022-160

9.   **Börgel**, **F.**, Meier, H. E. M., Gröger, M., Rhein, M., Dutheil, C., & Kaiser, J. M. (2022). Atlantic Multidecadal Variability and the Implications for North European Precipitation. *Environmental Research Letters*, 17(4), 044040. Publisher: IOP Publishing. 🔗 doi:10.1088/1748-9326/ac5ca1

10.   Meier, H. E. M., Kniebusch, M., Dieterich, C., Gröger, M., Zorita, E., Elmgren, R., … Zhang, W. (2022). Climate Change in the Baltic Sea Region: A Summary. *Earth System Dynamics*, 13(1), 457–593. Publisher: Copernicus GmbH. 🔗 doi:10.5194/esd-13-457-2022

11.   Meier, H. E. M., Dieterich, C., Gröger, M., Dutheil, C., **Börgel**, **F.**, Safonova, K., … Kjellström, E. (2022). Oceanographic Regional Climate Projections for the Baltic Sea until 2100. *Earth System Dynamics*, 13(1), 159–199. Publisher: Copernicus GmbH. 🔗 doi:10.5194/esd-13-159-2022

12.   Dutheil, C., Meier, H. E. M., Gröger, M., & **Börgel**, **F.** (2021). Understanding Past and Future Sea Surface Temperature Trends in the Baltic Sea. *Climate Dynamics*. 🔗 doi:10.1007/s00382-021-06084-1

13.   **Börgel**, **F.**, Frauen, C., Neumann, T., & Meier, H. E. M. (2020). The Atlantic Multidecadal Oscillation Controls the Impact of the North Atlantic Oscillation on North European Climate. *Environmental Research Letters*, 15(10), 104025. Publisher: IOP Publishing. 🔗 doi:10.1088/1748-9326/aba925

14.   Meier, H. E. M., **Börgel**, F., Frauen, C., & Radtke, H. (2020). Commentary: Lake or Sea? The Unknown Future of Central Baltic Sea Herring. *Frontiers in Ecology and Evolution*, 8. Retrieved September 24, 2022, from 🔗 https://www.frontiersin.org/articles/10.3389/fevo.2020.00055

15 Radtke, H., **Börgel, F.**, Brunnabend, S.-E., Eggert, A., Kniebusch, M., Meier, H. E. M., … Placke, M. (2019). Validator – a Web-Based Interactive Tool for Validation of Ocean Models at Oceanographic Stations. *Journal of Open Research Software*, *7*(1), 18. Number: 1 Publisher: Ubiquity Press. 🔗 doi:10.5334/jors.259

16 Kniebusch, M., Meier, H. M., Neumann, T., & **Börgel, F.** (2019). Temperature Variability of the Baltic Sea Since 1850 and Attribution to Atmospheric Forcing Variables. *Journal of Geophysical Research: Oceans*, *124*(6), 4168–4187. 🔗 doi:10.1029/2018JC013948

17 **Börgel, F.**, Frauen, C., Neumann, T., Schimanke, S., & Meier, H. E. (2018). Impact of the Atlantic Multidecadal Oscillation on Baltic Sea Variability. *Geophysical Research Letters*, *45*(18), 9880–9888. 🔗 doi:10.1029/2018GL078943

Skills

Languages	🔖	German (native), English (C1), French (B1)
Coding	🔖	**Expert**: python, Matlab, Linux/Unix, git, HPC computing, Twitter API **Advanced**: R, Fortran, Pytorch, julia, docker **Basic**: Django, C, HTML, Java, Tensorflow
Methods	🔖	Singular Value Decomposition, low-frequency component analysis, multi regression analysis for data prediction, time series prediction using recurrent neural networks, cluster analysis (kmeans), big data handling (TB), wavelet analysis, multiple correspondence analysis

Software Development

pyTEF	🔖	**pyTEF** is a python package that can be used to apply the total exchange analysis framework to analyze the exchange flow of an estuary. https://github.com/florianboergel/pyTEF
Twitter API	🔖	**Twitter bot @ozeanforscher** was built using the Twitter API and posts job offers related to marine science. It has about 1,750 followers. For more see https://florianboergel.github.io/outreach/forum_wisskomm_2018

Teaching

WS 2022/2023	🔖	**Climate of the Earth** University of Rostock, master level, co-instructor, see the interactive online lecture
WS 2021/2022	🔖	**Baltic Earth Winter School** University of Rostock, master and Ph.D. students, Interactive lecture about wavelet analysis and statistics
WS 2021/2022	🔖	**Climate of the ocean** University of Rostock, master level, co-instructor
WS 2020/2021	🔖	**Climate of the ocean** University of Rostock, master level, co-instructor
WS 2018/2019	🔖	**Baltic Earth Winter School** University of Rostock, Interactive lecture about wavelet analysis
WS 2018/2019	🔖	**Climate of the ocean** University of Rostock, master level, co-instructor

Supervising

since 2022	🔖	**PhD student** Leonie Barghorn, co-supervisor Thesis title: *Understanding Baltic Sea saltwater inflow dynamics under changing climate*

Scientific Presentations

2022 **Research Unit Climate Modeling, University of Hamburg**, Speaker, *Atlantic Multidecadal Variability and the implications for North European Climate*

Baltic Earth Conference, Speaker, *Atlantic Multidecadal Variability and the implications for North European Climate*

2021 **University of Bremen - physics seminar**, Speaker, *Atlantic Multidecadal Variability and the implications for North European Climate*

EGU General Assembly, Speaker, *The Atlantic Multidecadal Oscillation controls the impact of the North Atlantic Oscillation on North European climate*

2019 **EGU General Assembly**, Poster session, *The impact of the Atlantic Multidecadal Oscillation on Baltic Sea variability*

2018 **Baltic Earth Conference**, Speaker, *The impact of the Atlantic Multidecadal Oscillation on Baltic Sea variability*

2017 **Baltic Sea Science Congress**, Poster session, *The influence of sea ice on Baltic Inflows*

Outreach

2022 Visit of Katrin Zschau (Member of the German Bundestag), I presented the ongoing activities related to climate modeling

2021 Contributor to the Baltic Sea Climate Change Fact Sheets published within EN-CLIME, a joint expert network by HELCOM and Baltic Earth

2020 Visit of Dr. Ingrid Nestle (Member of the German Bundestag), I invited Dr. Nestle and organized her visit to the Leibniz Institute for Baltic Sea Research

2019 Reviewer for the IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC)

Coastal Research on Tour, I presented my research to a broad audience, organized by Helmholtz center Hereon

Warnemünder Abende, Presenting my research to a broad audience, organized by Leibniz-Institute for Baltic Sea Research

Rostock's Eleven, science communication challenge, nominee for the Leibniz Institute for Baltic Sea Research

2018 Create your own #Scicomm bot, speaker, host of an interactive session at Forum Wissenschaftskommunikation (German forum science communication)

Volunteering

2021-2022 **Board member**, Bündnis 90/Die Grünen, Rostock

2021 **Committee member**, urban development, city of Rostock

2020-2022 **Deputy speaker**, state working group 'Energy and Climate', Bündnis 90/Die Grünen

2019 **Candidate**, local election in Rostock, Bündnis 90/Die Grünen

Member Radentscheid Rostock, citizen-initiated cycling referendum for the City of Rostock

2018 **Co-organization**, young scientists event, Baltic Earth Conference