Dr. Florian Börgel

florianboergel@gmail.com @climateflo
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.**, Gröger, M., Meier, H. E. M., Dutheil, C., Radtke, H., & Borchert, L. (n.d.). Tracing the fingerprint of multi-decadal fluctuations in the Baltic Sea. *npj - Climate and atmosphere*. under review.
3. Meier, H. E. M., Barghorn, L., **Börgel**, **F.**, Gröger, M., Naumov, L., & Radtke, H. s. (n.d.). Multidecadal climate variability dominated past trends in the water balance of the baltic sea catchment area. *npj - Climate and atmosphere*. under review.
4. 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
5. 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
6. **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
7. 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
8. 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
9. 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
10. **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
11. 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
12. 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
13. 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

14 **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*

Scientific Presentations (continued)

- **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

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
- 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)