

DR. FLORIAN BÖRGEL

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please see <https://florianboergel.github.io/>

PROFESSIONAL EMPLOYMENT

Leibniz Institute for Baltic Sea Research Warnemünde

Dynamics of regional climate systems

Rostock, Germany

January 2021 - Present

Tenure-track researcher

- Analysis of the remote connection between the North Atlantic and the Baltic Sea using global and regional climate models
- Forecasting of river runoff into the Baltic Sea using Recurrent Neural Networks
- Deployment of a regional climate model (NEMO4) for the Baltic Sea
- Analysis of oxygen variability in the Baltic Sea during the last 1,000 years

Leibniz Institute for Baltic Sea Research Warnemünde

Dynamics of regional climate systems

Rostock, Germany

September 2017 - December 2020

Research Scientist

- numerical modeling of the Baltic Sea using different models such as MOM, NEMO and ERGOM
- statistical analysis of long-term climate variability on regional and global scales
- analysis of ensemble simulations (past and future)
- visualization and scientific evaluation of large amounts of data: data pre- and post-processing of large model output ($> TB$)
- parallel computation on super computers (HLRN)

Parental Leave

My son Leo was born.

Berlin, Germany

August 2019 - October 2020

Leibniz Institute for Baltic Sea Research Warnemünde

Supervision by Dr. Thomas Neumann

Rostock, Germany

January 2016 - August 2017

Research assistant

- application and development of a sea-ice model
- numerical modeling of the Baltic Sea
- statistical analysis of big data sets
- model validation with measurement data

Fraunhofer Institute for Manufacturing Technology and Applied Materials Research

Energy Systems Analysis

Bremen, Germany

2014 - 2015

Research assistant

- co-development of a tool to estimate the energy usage of a smart home system

EWE Baskets Oldenburg*Technical support*

Oldenburg, Germany

2014 - 2015

Technical assistant

- camera work
- control of the advertising boards

energielenker GmbH (formerly infas enermetric)*Planning Group*

Greven, Germany

2013 - 2014

Student assistant

- planning of environment and climate concepts for cities
- organization of events that deal with CO_2 -reduction, energy management and the future use of renewable energies
- planning of a local area heating system in the historic city of Warendorf

ExKern GmbH*12 week internship as prerequisite for my bachelor studies*

Münster, Germany

2010 - 2011

Intern

- gutting and reconstruction of buildings

EDUCATION

Ph.D Physics

Leibniz Institute for Baltic Sea Research Warnemünde

Department of physical oceanography

Thesis: *Long-term climate variability of the Baltic Sea*

Supervisor: Prof. Dr. H. E. Markus Meier

September 2017 - October 2020

Grade: with honors (summa cum laude)

Master of Science

University of Oldenburg

Engineering physics

Thesis: *The influence of sea ice on Baltic inflows**October 2014 - September 2017*

Grade: 1.2

Bachelor of Engineering

Münster University of Applied Sciences

Energy engineering

Thesis: *Planning of a local area heating system in the historic city of Warendorf**September 2010 - February 2014*

Grade: 2.0

HONORS & SCHOLARSHIPS

Fulbright ScholarshipFull scholarship to study in the United States for one year
(not attended for personal reasons)

2014

SUPERVISING

PhD student Leonie Barghorn

Co-supervisor

Thesis: Understanding Baltic Sea saltwater inflow dynamics under changing climate

since 2022

SOFTWARE DEVELOPMENT

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 bot @ozeanforscher was built using the Twitter API and posts job offers related to marine science. The bot was created for a talk at the Forum Science Communication where the participants were introduced to the bot infrastructure on Twitter. During the session all participants were able to use the bot via jupyter notebooks.

for more see https://florianboergel.github.io/outreach/forum_wisskomm_2018

RELEVANT COURSES

Core courses

Computational intelligence, computational fluid dynamics I + II, computeroriented physics, advanced computerphysics, theoretical oceanography

Online Courses (Coursera)

Neural Networks and Deep Learning

Improving Deep Neural Networks: Hyperparameter Tuning Regularization and Optimization

COMPUTER SKILLS

Expert: python, Matlab, Linux/Unix, git, climate data operators (cdo)

Advanced: R, Fortran, Pytorch, julia, HPC computing, docker, Twitter API, LaTeX

Basic: Django, C, HTML, Java, Tensorflow, Scikit-learn, Content Management Systems

TEACHING

Baltic Earth Winter School

WS 2021/22

University of Rostock, (Master level)

Interactive lecture about wavelet analysis and statistics

Climate of the ocean

WS 2021/22

University of Rostock (Master level)

Co-Instructor

Climate of the ocean

WS 2020/21

University of Rostock (Master level)

Co-Instructor

Baltic Earth Winter School

WS 2018/19

University of Rostock, (Master level)

Interactive lecture about wavelet analysis

Climate of the ocean

WS 2018/19

University of Rostock (Master level)

Teaching assistant

PUBLICATIONS IN PEER-REVIEWED JOURNALS

- [10] Dutheil, C., Meier, H. E. M., Gröger M. and Börgel F.: Warming of Baltic Sea water masses since 1850, *Journal of Climate*, submitted
- [9] Börgel, F., Meier, H. E. M., Gröger, M., Rhein, M., Dutheil, C., and Kaiser, J. M.: Atlantic Multidecadal Variability and the Implications for North European Precipitation, *Environmental Research Letters*, <https://doi.org/10.1088/1748-9326/ac5ca1>, 2022
- [8] Meier, H. E. M., Kniebusch, M., Dieterich, C., Gröger, M., Zorita, E., Elmgren, R., Myrberg, K., Ahola, M., Bartosova, A., Bonsdorff, E., Börgel, F., Capell, R., Carlén, I., Carlund, T., Carstensen, J., Christensen, O. B., Dierschke, V., Frauen, C., Frederiksen, M., Gaget, E., Galatius, A., Haapala, J. J., Halkka, A., Hugelius, G., Hünicke, B., Jaagus, J., Jüssi, M., Käyhkö, J., Kirchner, N., Kjellström, E., Kulinski, K., Lehmann, A., Lindström, G., May, W., Miller, P., Mohrholz, V., Müller-Karulis, B., Pavón-Jordán, D., Quante, M., Reckermann, M., Rutgersson, A., Savchuk, O. P., Stendel, M., Tuomi, L., Viitasalo, M., Weisse, R., and Zhang, W.: Climate Change in the Baltic Sea Region: A Summary, *Earth Syst. Dynam. Discuss.*, <https://doi.org/10.5194/esd-2021-67>, <https://doi.org/10.5194/esd-13-457-2022>, 2022.
- [7] H. E. Markus Meier, Christian Dieterich, Matthias Gröger, Cyril Dutheil, Florian Börgel, Kseniia Safonova, Ole B. Christensen, Erik Kjellström: Oceanographic regional climate projections for the Baltic Sea until 2100, <https://doi.org/10.5194/esd-13-159-2022>, 2022
- [6] Dutheil, C., Meier, H.E.M., Gröger, M. and Börgel, F. Understanding past and future sea surface temperature trends in the Baltic Sea. *Clim Dyn* (2021). <https://doi.org/10.1007/s00382-021-06084-1>, 2021
- [5] Börgel, F., C. Frauen, T. Neumann, and H. E. M. Meier., The Atlantic Multidecadal Oscillation controls the impact of the North Atlantic Oscillation on North European climate, *Environmental Research Letters*, <https://doi.org/10.1088/1748-9326/aba925>. 2020
- [4] Meier H. E. M., Börgel F., Frauen C., Radtke H., Commentary: Lake or Sea? The Unknown Future of Central Baltic Sea Herring , *Frontiers in Ecology and Evolution*, <https://doi.org/10.3389/fevo.2020.00055>. 2020
- [3] Kniebusch, M., Meier, H. E. M., Neumann, T., and Börgel, F., Temperature variability of the Baltic Sea since 1850 and attribution to atmospheric forcing variables, *Journal of Geophysical Research: Oceans*, <https://doi.org/10.1029/2018JC013948>. 2019
- [2] Radtke, H, Börgel, F, Brunnabend, S-E, Eggert, A, Kniebusch, M, Meier, H E M, Neumann, D, Neumann, T and Placke, M, Validator a Web-Based Interactive Tool for Validation of Ocean Models at Oceanographic Stations., *Journal of Open Research Software*, <https://doi.org/10.5334/jors.259>. 2019
- [1] Börgel, F., C. Frauen, T. Neumann, S. Schimanke, and H. E. M. Meier., Impact of the Atlantic Multidecadal Oscillation on Baltic Sea variability, *Geophysical Research Letters*, 45., <https://doi.org/10.1029/2018GL078943>. 2018

SCIENTIFIC PRESENTATIONS

Baltic Earth Conference

May 2022

Speaker

Atlantic Multidecadal Variability
and the implications for North European Climate

University of Bremen, physics seminar

December 2021

Speaker

Atlantic Multidecadal Variability
and the implications for North European Climate

EGU General Assembly

June 2021

Speaker

The Atlantic Multidecadal Oscillation controls the impact
of the North Atlantic Oscillation on North European climate

EGU General Assembly

April 2019

Poster Session

The impact of the Atlantic Multidecadal Oscillation on Baltic Sea variability

Baltic Earth Conference

June 2018

Speaker

The impact of the Atlantic Multidecadal Oscillation on Baltic Sea variability

Baltic Sea Science Congress

June 2017

Poster Session

The influence of sea ice on Baltic Inflows

OUTREACH

Visit of Dr. Ingrid Nestle (MdB)

2020

I invited Ingrid Nestle and organized her visit to the Leibniz Institute for Baltic Sea Research.

I presented recent results of our working group.

Coastal Research on Tour

2019

Presenting my research to a broad audience, organized by Helmholtz-Zentrum Geesthacht

Warnemünder Abender

2019

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

Rostock's Eleven, science communication challenge

2019

Nominee for the Leibniz Institute of Baltic Sea Research

Create your own #Scicomm bot

2018

Host of an interactive session at Forum Wissenschaftskommunikation

(German forum science communication)

LANGUAGES

German (*native*)

English (*C1*)

French (*basic knowledge*)

VOLUNTEER WORK

Board member of Bündnis 90/Die Grünen in Rostock

since 2021

Member of the committee for urban development

of the city of Rostock

2021

Bündnis 90/Die Grünen

Deputy speaker of the state working group Energy and Climate

since 2020

Bündnis 90/Die Grünen

Candidate for the local election in Rostock

2019

Bündnis 90/Die Grünen

Member of Radentscheid Rostock

since 2018

Citizen-initiated cycling referendum for the City of Rostock

Co-organization of the young scientists event

2018

Baltic Earth conference