Prof. Dr. Nils Brüggemann

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Research

01/2026 - present	Professor for Earth System Modelling and Tropical Ecosystems at Leibniz Centre for Tropical Marine Research (ZMT) and University of Bremen; Head of Earth System Modelling Group at ZMT
11/2022 - 12/2025	Co-group leader for Ocean Modelling at Max Planck Institute for Meteorology
06/2020 - 10/2022	Research scientist at Universität Hamburg and guest scientist at Max Planck Institute for Meteorology
05/2017 - 05/2020	Postdoctoral scientist, Universität Hamburg and Max Planck Institute for Meteorology Funding: TRR181 – Energy Transfers in Atmosphere and Ocean: Improved parameterisations and numerics in climate models
04/2015 - 04/2017	Postdoctoral scientist, Delft University of Technology Funding: Caroline Katsman's Vidi project: From small whirls to the global ocean
02/2014 - 04/2015	Postdoctoral scientist, Universität Hamburg Funding: SOPRAN II – Surface Ocean Processes in the Anthropocene
11/2009 - 01/2014	PhD student, GEOMAR Helmholtz Center for Ocean Research Kiel and Universität Hamburg Funding: SOPRAN – Surface Ocean Processes in the Anthropocene

Qualification

01/2014	PhD at Universität Hamburg "Ageostrophic effects on large scale circulation, eddy mixing and dissipation in the ocean"; Advisor: Carsten Eden
09/2009	Physics diploma at Universität Bremen Thesis: "A zonally averaged ocean model of the Atlantic circulation"; Advisor: Dirk Olbers

Awards

2025	ACM Gordon Bell Prize for Climate Modelling
2019	Best poster award at the TRR181 winter school
2016	Outstanding poster award at CLIVAR 2016 Open Science Conference
2010	OALD award for best Diploma in physics at Universität Bremen

Interests

Ocean modelling:	Global ocean and coupled modelling with eddying and non-eddying configurations up to sub-kilometer scale resolutions Idealised 3D modelling from sub-mesoscales up to global scales Zonally averaged, shallow water, quasi-geostrophic and 1D modelling
Ocean and climate models:	ICON, MPIESM, POP, MITgcm, pyOM2.0, Connectivity Modeling System
Biogeochemistry modelling:	Basic knowledge, applied and analyzed in coupled simulations
Computing:	Parallel high performance computing: Fortran and Python Post-processing: Python with Dask, CDO, shell scripting Data visualization: Python, Matlab, Gimp and Inkscape Collaborative code development: git, svn

Reviewing activities

Reviewer for Journal of Physical Oceanography, Ocean Modelling, Ocean Dynamics, JGR Oceans, Geophysical Research Letters, Journal of Advances in Modeling Earth Systems, ERC grant proposals, NERC grant proposals, and DAAD proposals

Organization of scientific meetings

2026	Convener of OSM26 session "Energy Transfers in Mesoscale and Submesoscale Turbulence: Toward Energetically Consistent Theories and Ocean Models"
2025	Organizer of the 5th International Conference on Earth System Modeling: CELLO – Climate Exploration in Lively Liaison with the Ocean
2024	Organizer of ICON-O development meeting with DWD / HEREON / MPI / UHH
2023 - present	Convener of EGU session "Eddies, waves, and instabilities: observing, modelling, and parameterizing oceanic energy transfers"
2022	Co-organization of the EASYMS 2022 summer schools at the Max Planck Institute for Meteorology
2021	Co-organization of the winterschool of the TRR181

Supervisions

Post-Docs

Jan 2026 - present	Maxime Collin, extreme events in the Tropics (supervisor)
May 2025 - present	Christopher Higgins, coupling surface waves to ICON ocean (co-supervisor)
Mar 2025 - Dec 2025	John Ssebandeke, investigating the ocean energetics in a changing climate (co-supervisor)
Mar 2025 - Dec 2025	Philip Freese, coupling of a glacier model into ICON framework (co-supervisor)
Aug 2023 - Dec 2023	Arjun Kumar, implementing online diagnostic tools for tropical cyclone tracking and machine learning applications (main supervisor)
Jun 2021 - Dec 2022	Oliver Gutjahr, physical and numerical mixing and air-sea coupling in high latitudes (co-supervisor)
Jun 2022 - Jul 2023	Arjun Kumar, air-sea interactions at Tropical Cyclones (co-supervisor)

PhD students

2025 - present	Muxin Hu, The implication of surface waves and upper-ocean mixing on air-sea (main supervisor)
2023 - present	Dominic Hillenkötter, Mesoscale eddy dissipation (main supervisor)
2023 - present	Mikael Karvinen, Tropical cyclone statistics in a warming world (co-supervisor)
2021 - 2025	Moritz Epke, Sub-mesoscale impact on air-sea coupling (main supervisor)
2019 - 2024	John Ssebandeke, The Lorenz energy cycle (co-supervisor)
2018 - 2022	Arjun Kumar, Tropical cyclones in storm-resolving coupled ICON simulations (co-supervisor)
2016 - 2017	Carine van der Boog, Dynamics of the Caribbean (daily supervisor)
2015 - 2019	Steffie Ypma, The role of asymmetries in Nordic Seas dynamics (daily supervisor)
2015 - 2021	Sotiria Georgiou, Boundary-interior exchanges controlling the Labrador Sea dynamics (daily supervisor)
2015 - 2017	Manita Chouksey, Disentangling gravity waves from balanced flow (daily supervisor)

Master students

2015	Tabea Brodhagen, Effects of phytoplankton motility on upper ocean physics - Modelling biogeophysical feedback mechanisms (daily supervisor)
2013	Yi-Wen Chang, Dynamics of Brazil Current Rings (daily supervisor)
2012	Hannah Kleppin, Analysing spiral eddies as an example of baroclinic mixed layer instabilities (daily supervisor)

Bachelor students

2023	Josua Neufeld, "Undulating Road to Ocean Equilibrium - Testing the IDEMIX Parameterization in the ICON Earth System Model" (main supervisor)
2016	Laurie van Gijzen, Menglaagdiepten in de Noord-Atlantische Oceaan (daily supervisor)

Third party funded projects

2026-2028	TropEcS: Modelling socio-economic dimensions across Tropical Coastal Ecosystems and the Earth System (project leader)
2025-2029	HORIZON TERRADT: Co-project leader with funding for three Post-Docs (shared supervision)
2024-2028	BMBF CAP7: Co-project leader with funding for one Post-Doc (shared supervision)
2024-2028	TRR181 III subprojects T2, L4 and S2: Project leader with funding for one PhD student and two Post-Docs (shared supervision)
2024-2027	WarmWorld ELPHE: Co-project leader
2020-2024	TRR181 II subprojects T2, L4 and S2: Project leader with funding for one PhD student and a Post-Doc (shared supervision)