

curriculum vitæ

Prof. Dr. Hans Burchard

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Personal Data

Date of Birth	August 17, 1959
Family status	married, 5 children
Citizenship	German
Contact information	Leibniz Institute for Baltic Sea Research Warnemünde Seestraße 15 D-18119 Rostock, Germany E-mail: hans.burchard@io-warnemuende.de Tel.: +49-381-5197-140 Fax: +49-381-5197-114
Home page	http://www.io-warnemuende.de/hans-burchard-en.html

Qualification

2001	Habilitation in Physical Oceanography at the University of Hamburg on <i>Applied Turbulence Modelling in Marine Waters</i>
1992-1995	PhD student at the Institute for Oceanography at the University of Hamburg, PhD thesis on <i>Turbulenzmodellierung mit Anwendungen auf thermische Deckschichten im Meer und Strömungen in Wattengebieten (Turbulence Modelling with Applications to Thermal Boundary Layers in the Ocean and Currents in Wadden Areas</i> , passed with distinction “summa cum laude”, awarded as best dissertation in 1995 at the Geophysical Faculty of the University of Hamburg).
1989-1992	University study (Master) of Applied Mathematics at the University of Hamburg
1985-1987	Training as high school teacher at the Seminar Elmshorn
1978-1984	University Study (Staatsexamen) of Mathematics and Sport for high school teachers at the University of Kiel

Employment

2002-present	University Professor for Physical Oceanography and Instrumentation at the University of Rostock
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2002-2012 / 2016-2023	Deputy Head of the Department of Physical Oceanography and Instrumentation at IOW (2013-2015 Acting Department Head)
2002-present	Head of the Working Group of Estuarine and Coastal Ocean Processes (ECOP) at IOW
2000-2001	Researcher at the Institute for Oceanography, University of Hamburg
1999-2000	Visiting Scientist, grant holder of the German Research Foundation, Institute for Oceanography, University of Hamburg
1996-1998	Researcher at the Space Applications Institute, Joint Research Centre of the European Communities, Ispra, Italy.
1995-1996	Research Assistant at the International Centre for Computational Hydrodynamics, Danish Hydraulic Institute, Hørsholm, Denmark.
1992-1995	PhD student, Institute for Oceanography, University of Hamburg
1987-1989	Teacher for Mathematics and Sports at the Gymnasium Büsum

Professional Experience

2024-2028	Co-Chair of the SCOR Working Group 172 on “ <i>Oceanic Salt Intrusion into Tidal Freshwater Rivers (SALTWATER)</i> ”
2024	Visiting Professor at the University of Bologna, Italy (3 months)
2022-2027	Member of the Scientific Advisory Board of the NEMO (Nucleus for European Modelling of the Ocean), 2025 Chair of the Advisory Board.
2021	Visiting Professor at the Scottish Association of Marine Science (SAMS) in Oban, Scotland (3 months)
2020-2025	Member of the <i>Zukunftsforum Ozean (Forum Future Ocean)</i> of the German Marine Research Consortium (KDM); Speaker since 2023. Also speaker of the German National SCOR Committee.
2020-2027	Member of the Advisory Board for the Research Vessels Maria M. Merian and Meteor; Speaker since 2022.
2019-2025	Co-Vice Chair (2019-2023) and Co-Chair (2024-2025) of the Gordon Research Conference of <i>Coastal Ocean Dynamics</i> .
2017	Visiting professor at the University of Victoria, B.C., Canada (3 months)
2015-2019, 2022-2024	Member of the Board of the Department of Maritime Systems of the Interdisciplinary Faculty of the University of Rostock
2012-2016	Associate Editor of Continental Shelf Research (Elsevier)
2012-2020	Elected member of the Fachkollegium 313 (Proposal Evaluation Panel for Atmospheric, Ocean and Climate Research) of the German Research Foundation.
2012-2016	Representative of DFG Fachkollegium 313 at the Senatskommission Ozeanographie (coordination of research activities on large German research vessels)
2012-2016, 2021-2025	Member of the Scientific Board of the North-German Supercomputing Alliance (HLRN)
2011	Visiting professor at the Woods Hole Oceanographic Institution in Woods Hole, MA, USA (3 months)
2008	Visiting professor at the School of Ocean Sciences of the University of

	Bangor, Wales (4 months)
2008-present	Member of the Interdisciplinary Faculty and the Department of Maritime Systems at the University of Rostock
2005-2007	Chairman of the Conference of Baltic Oceanographers (CBO)
2004-2007	Full Member of SCOR Working Group 121 on „Ocean Mixing“
2003-present	Organiser of the biannual Warnemünde Turbulence Days (WTD), see http://www.io-warnemuende.de/wtd.html
2000-present	Member of PECS Steering Committee (Biennial Conference of Physics of Estuaries and Coastal Seas)
2000-2006	Editor of Ocean Dynamics (Springer)
1999-2014	Partner in Bolding & Burchard ApS, Denmark (development and service in numerical ocean modelling), together with Dr. Karsten Bolding
1999-present	Major developer of the General Ocean Turbulence Model (GOTM, www.gotm.net) and the General Estuarine Transport Model (GETM, www.getm.eu)

Awards

2019	Georg Wüst Prize awarded by the German Society for Marine Research (DGM, Deutsche Gesellschaft für Meeresforschung) to honour outstanding ocean researchers
2013-2018	Honorary Professor of Physical Oceanography at the University of Aarhus, Denmark
2001-2002	Alexander-von-Humboldt-Prize of the National Belgian Research Foundation (Fonds National de la Recherche Scientifique)
1995	Best Dissertation of the Geophysical Faculty of the University of Hamburg

Scientific Interest

- Transport and mixing processes in estuaries and stratified coastal seas
- Tidal and non-tidal estuarine circulation regimes
- Sediment transport
- Impacts of offshore structures and anthropogenic discharges on coastal dynamics
- Long-term change and variability in the coastal ocean
- Physical-biological interaction in the marine environment
- Turbulence closure modelling
- Development of numerical ocean models
- Numerical methods for conservation equations

Teaching experience

- Regular lectures (one per semester) at the University of Rostock (since 2002) in the framework of the Master in Physics: Hydrodynamics, Marine Turbulence, Coastal Ocean Processes, Numerical

Methods of Conservation Equations

- Various summer school presentations, e.g. at the AWI-GKSS-IOW summer schools, the Physics Summer School of the Deutsche Physikalische Gesellschaft on “Physics of the Ocean” (2011, 2014), the POMOR winter school in St. Petersburg (2013, 2015, 2017, 2019), the winter school on lakes and estuaries (Trieste, 2014, 2016), the POGO courses in 2014 (List/Sylt), organised by AWI, and the BioCat summer school in the framework of the SOPRAN projects (2008).

Supervision of students

PhD students

- Richard Hofmeister, Numerical and diagnostic techniques for modelling stratified coastal seas, University of Rostock, 2007-2010, defended in February 2011 (supervisor).
- Hannes Rennau, Natural, numerical and structure-induced mixing in dense gravity currents: idealised and realistic model studies, University of Rostock, 2006-2010, defended in May 2011 (supervisor).
- Peter Holtermann, The Baltic Sea Tracer Release Experiment: Mixing processes in the Gotland Basin, University of Rostock, 2007-2012, defended in March 2012 (co-supervisor)
- Eefke van der Lee, Observation of internal waves in the Baltic Sea: Motions near the inertial and buoyancy frequencies, University of Rostock, 2008-2012, defended in May 2012 (co-supervisor)
- Bianca Schippmann, Particle tracking as modelling tool for coastal management in the Baltic Sea, University of Rostock, 2009-2013, defended in December 2013 (co-supervisor)
- Knut Klingbeil, Approaches for the improvement of physical transport processes in numerical models of the coastal ocean, University of Rostock, defended in February 2014 (supervisor).
- Johannes Becherer, Estuarine circulation in well-mixed tidal inlets, University of Rostock, defended in July 2014 (supervisor).
- Elisabeth Schulz, Impact of the depth-to-width ratio of a tidally energetic estuary on the residual along-channel circulation, University of Rostock, 2009-2014, defended in December 2014 (supervisor)
- Mahdi Mohamadi-Aragh, The impact of advection schemes on lateral shear and baroclinic instability, University of Hamburg, 2010-2014, defended in December 2014 (supervisor)
- Kaveh Purkiani, Numerical modelling of Wadden Sea dynamics, University of Rostock, 2010-2014, defended in April 2015 (supervisor)
- Xaver Lange, Baroclinic effects in the coastal zone, University of Rostock, 2016-2018, defended in April 2019 (supervisor)
- Evridiki Chrysagi, Energy conversions in the upper ocean mixed layer, University of Rostock, 2016-2020, defended in January 2021 (supervisor)
- Marvin Lorenz, Quantifying exchange flow in the Persian Gulf, University of Rostock, 2017-2020, defended in March 2021 (supervisor)
- Markus Reinert, Estimating melt rates in cavities under glacial ice in Greenland fjords, University of Rostock, 2020- (supervisor)
- Erika Henell, Effective diapycnal mixing in the Baltic Sea, University of Rostock, 2021-2025, defended in July 2025 (co-supervisor)
- Lloyd Reese, Diahaline mixing and exchange flow in tidal estuaries, University of Rostock, 2022-2025, to be defended in September 2025 (supervisor)
- Karoline Rummel, Salt intrusions into tidal estuaries, University of Rostock, 2023- (supervisor)

- Yannik Muche, Estuarine exchange flow in Arctic estuaries, University of Rostock, 2023- (supervisor)
- Torben Voß, Water Mass Transformations in Skagerrak, University of Rostock, 2025- (supervisor)

Master students

- Alger Werft, Surface wave modelling in the Wadden Sea, Carl von Ossietzki Universität Oldenburg, submitted in Feb. 2003.
- Frank Wolk, Three-dimensional Lagrangian Tracer modelling in Wadden Sea areas, Carl von Ossietzki Universität Oldenburg, submitted in Feb. 2003.
- Hannes Rennau, A two-layer model for simulating Baltic Sea inflows, University of Rostock, submitted in March 2006.
- Richard Hofmeister, Model studies on stratification in the Limfjord, University of Rostock, submitted in June 2006.
- Peter Holtermann, Reconstruction of the hydrodynamics in a tropical estuary, University of Rostock, submitted August 2007.
- Mathias Ahrenberg, Skalenabschätzung von Transporten in der Westlichen Ostsee, University of Rostock, submitted November 2007.
- Bianca Schippmann, Comparison of Rosenbrock methods with Modified Patankar schemes used in biogeochemical modelling, University of Rostock, submitted December 2008.
- Elisabeth Fischer, Turbulent kinetic energy dissipation rate in the Rhine Region of Freshwater Influence, University of Rostock, submitted December 2008.
- Knut Klingbeil, Testing the feasibility of an alternative approach for the inclusion of non-hydrostatic dynamics into the General Estuarine Transport Model, University of Rostock, submitted May 2009.
- Artur Szewczyk, Observations of the medium-intensity inflow into the Baltic Proper in November 2005 and comparison with the model data, University of Rostock, submitted November 2009.
- Anja Bachmann, Auswertungen von Feldmessungen und Computersimulationen zur Bestimmung des Strömungswiderstandes im Fehmarnbelt, University of Rostock, submitted August 2010.
- Johannes Fiedler, Second-moment turbulence closure modelling, University of Rostock, submitted March 2012.
- Lennart Schüler, One-dimensional basin-wide modelling, University of Rostock, submitted May 2012.
- Xaver Lange, Particle transport in the lower Warnow estuary, University of Rostock, submitted in October 2015.
- Clemens Krautschik, Baltic Sea sea surface elevation observations from satellite, University of Rostock, submitted in October 2017.
- Marvin Lorenz, Exchange flow in the Persian Gulf, University of Rostock, submitted in September 2017.
- Nicky Koganti, Diahaline mixing in tidal estuaries, University of Rostock, submitted in June 2020.
- Nina Reese, Mixing and exchange flow in the Elbe Estuary, University of Rostock, submitted in November 2021.
- Yannik Muche, Mixing in river plumes, University of Rostock, submitted in May 2023.

Evaluation activities

- Member of review panel for the Royal Netherlands Institute for Sea Research (NIOZ), September

2012, and GEOMAR, October 2017.

- Member of PhD committees at various universities such as University of Hamburg, University of Siegen, University of Southampton (UK), TU Delft (Netherlands), University Santiago de Compostela (Spain), University of Bergen (Norway), University of Trondheim (Norway), University of Louvain-la-Neuve (Belgium), University of Stockholm (Sweden), University of Copenhagen (Denmark), Technical University of Denmark, University of Western Australia, University of Eindhoven (The Netherlands).
- Research proposal peer-reviews for various funding agencies such as German Research Foundation, German Academic Exchange Service, Humboldt Foundation (Germany), National Science Foundation (USA), National Environment Research Council (UK), Estonian Science Foundation, Agence Nationale de la Recherche (France), and the Netherlands Organisation for Scientific Research (NWO).
- Peer-reviews for international scientific journals such as Journal of Physical Oceanography, Journal of Geophysical Research (Oceans), Geophysical Research Letters, Ocean Modelling, Coastal Engineering, Continental Shelf Research, Journal of Marine Systems, Ocean Dynamics, JAMES.
- Reviews of applications for professorships at various institutes such as Alfred-Wegener Institute (Germany), University of Hamburg (Germany), Oregon State University (USA), Woods Hole Oceanographic Institution (USA), Rutgers University (USA), Florida State University (USA), University of Aarhus (Denmark), South Africa's National Research Foundation (NRF).
- Environmental Impact Assessment of the fixed link across the Fehmarn Belt (modelling of local impacts on hydrography).
- Environmental Impact Assessment of cooling water discharge in Greifswald Bay from a planned coal power station in Lubmin.

Public Outreach

- Member of the Scientists for Future network with several public presentations on regional climate change impacts (since 2019)
- Various presentations in the framework of “Kinder-Universität” activities about “How does the Baltic Sea function” at the University of Rostock and at the Hochschule Wismar, with up to 400 elementary school children (2007-2009), as well as in schools in Rostock. An idealised Plexiglas model of the Baltic Sea which I developed was copied more than ten times and became a common teaching tool.
- Presentation in the framework of the “Senioren-Akademie” about possible obstruction of the water exchange between Baltic Sea and North Sea due to offshore constructions (about 300 participants).
- Various public presentations about the 2004 tsunami in the Indian Ocean (e.g. “Samstags-Universität” at the University of Rostock).
- Various TV, radio and newspaper interviews about the impacts of offshore wind farms on the exchange between Baltic Sea and North Sea.
- Three public presentations in the framework of the “Warnemünder Abende” of IOW about tides in the ocean, impacts of offshore wind farms and sediment transport in the Wadden Sea.

Research Cruises

1. North Atlantic, *R/V Valdivia*: Mooring work and CTD profiles for SEFOS project, (23.06.-14.07. 1995)
2. Knebel Vig (Denmark), *R/V Tyra*: Microstructure and CTD within PhASE project (14.09.-20.09.

1997)

3. Lloret de Mar (Spain), *R/V Odon de Buen*: Microstructure and CTD within PhASE project (01.06.-07.06. 1998)
4. Baltic Sea, *R/V Gauss*: HELCOM monitoring cruise (March 2003)
5. Arkona Sea, *R/V Helmsand*: CTD, microstructure, ADCP and mooring work within QuantAS projects (26.01.-13.02. 2004)
6. Arkona Sea, *R/V Professor Albrecht Penck*: CTD, microstructure, ADCP and mooring work within QuantAS projects (16.11.-29.11. 2005, chief scientist: Hans Burchard)
7. Wadden Sea in Lower Saxony, *R/V Ludwig Prandtl*: CTD, microstructure, ADCP and mooring work within ECOWS project (11.04.-14.04. 2010)
8. Wadden Sea in Lower Saxony, *R/V Ludwig Prandtl*: CTD, microstructure, ADCP and mooring work within ECOWS project (09.05.-19.05. 2011)
9. Central Baltic Sea, *R/V Elisabeth Mann Borgese*: synoptic observations of sub-meso-scale features of upper ocean layers, using various towed instruments (06.07.-19.07. 2012, chief scientist: Hans Burchard)

Selected Research Projects (last 5 years)

1. German Research Foundation: “Water Mass Transformation Processes in the Skagerrak (SkaMix)”, 2025-2028, 180.000 Euro.
2. German Research Foundation: “TRR181 - Energy Transfers in Atmosphere and Ocean, subproject S1 (Diagnosis and Metrics in Climate Models)”. Phase 3: 2024-2028, 250.000 Euro. The TRR is coordinated by the University of Hamburg.
3. DAM Coastal Futures II: Future scenarios for the improvement of sustainable coastal management. 2024-2027. 200.000 Euro.
4. DAM ElbeXtreme: “Extreme Scenarios in the Elbe Estuary”. 2024-2026, 200.000 Euro.
5. German Research Foundation: “Exchange Flow and Mixing in Ice-Covered Estuaries (ICEstuaries)”, 2023-2026, 200.000 Euro.
6. BAW - Bundesanstalt für Wasserbau: “Salt intrusions into the Weser Estuary (SALINE)”, 2023-2026, 300.000 Euro.
7. German Research Foundation: “Baltic TRANSCOAST, subproject H3: Downscaling (process oriented localization) of larger scale simulations of sea water currents to assess interactions between sea and groundwater bodies”, 2011-2024, 180.000 Euro. Efforts: Ocean modelling to investigate the interaction between a coastal swamp and the adjacent coastal ocean. This project is part of the Baltic TRANSCOAST graduate school, coordinated by the University of Rostock.
8. German Research Foundation: “Processes Impacting on Estuarine Turbidity Zones in tidal estuaries (PIETZ)”, 2022-2023, 230.000 Euro.
9. DAM Coastal Futures I: Future scenarios for the improvement of sustainable coastal management. 2021-2024. 200.000 Euro.
10. German Federal Ministry for Research and Education: “Greenland Ice sheet/Ocean interaction”, 2017-2020 (Phase I); 2020-2023 (Phase II), 250.000 Euro / 169.000 Euro. Efforts: Estimating melt rates at the water-ice interface below the 79°N glacier by means of idealised and spatially highly resolved model simulations (coordinated by Alfred Wegener Institute for Marine and Polar Research).

Publications

Total number of peer-reviewed journal publications: 153

Statistics:	web of knowledge:	> 7400 citations	h-index 46
	google scholar:	>13000 citations	h-index 61

Books

1. Burchard, H., *Applied turbulence modelling in marine waters*, vol. 100 of *Lecture Notes in Earth Sciences*, Springer, Berlin, Heidelberg, New York, 229 pp., **2002**.

Publications in peer-reviewed journals

1. Henell, E., H. Burchard, U. Gräwe, P. Holtermann, L. Umlauf, M. Naumann, K. Klingbeil, Exploring the variability of a non-tidal marginal sea with a single-model ensemble, *Ocean Modell.*, accepted for publication.
2. Mohammadi-Aragh, M., O. Zeising, M. Reinert, K. Klingbeil, A. Humbert, R. McPherson, M. Morlighem, R. Timmermann, C. Wekerle, H. Burchard, Impact of ice topography, basal channels and subglacial discharge on basal melting under the floating ice tongue of 79N Glacier, northeast Greenland, *J. Adv. Model. Earth Syst.*, accepted for publication.
3. Burchard, H., K. Klingbeil, X. Lange, X. Li, M. Lorenz, P. MacCready, L. Reese, The relation between exchange flow and diahaline mixing in estuaries, *J. Phys. Oceanogr.*, 55, 243-256, **2025**, <https://doi.org/10.1175/JPO-D-24-0105.1>.
4. Kanzow, T., A. Humbert, T. Mölg, M. Scheinert, M. Braun, H. Burchard, F. Doglioni, P. Hochreuther, M. Horwath, O. Huhn, J. Kusche, E. Loebel, K. Lutz, B. Marzeion, R. McPherson, M. Mohammadi-Aragh, M. Möller, C. Pickler, M. Reinert, M. Rhein, M. Rückamp, J. Schaffer, M. Shafeeque, S. Stolzenberger, R. Timmermann, J. Turton, and C. Wekerle, The atmosphere-land/ice-ocean system in the region near the 79N Glacier in Northeast Greenland: Synthesis and key findings from GROCE, *The Cryosphere*, 19, 1789–1824, **2025**. <https://doi.org/10.5194/tc-19-1789-2025>.
5. Konyssova, G., V. Sidorenko, A. Androsov, L. Sander, S. Danilov, S. Rubinetti, H. Burchard, C. Winter, and K.H. Wiltshire, Changes in Tidal Dynamics in Response to Sea Level Rise in the Sylt-Rømø Bight (Wadden Sea), *Ocean Dyn.*, 75, 43, **2025**.
6. Legay, A., B. Deremble, H. Burchard, Derivation and implementation of a non-gradient term to improve the oceanic convection representation within the $k-\epsilon$ parameterization, *J. Adv. Model. Earth Syst.*, 17, e2024MS004243, **2025**. <https://doi.org/10.1029/2024MS004243>
7. Li, M., R. Najjar, S. Kaushal, A. Mejia, R Chant, D. Ralston, H. Burchard, A. Hadjimichael, A.Lassiter, X. Wang, The emerging global threat of salt contamination of water supplies in tidal rivers, *Env. Sci. Tech. Lett.*, doi: 10.1021/acs.estlett.5c00505, **2025**.
8. Lorenz, M., K. Klingbeil, H. Burchard, Diahaline overturning and mixing in a semi-enclosed marginal sea with excess evaporation, *Geophys. Res. Lett.*, 52, e2025GL116434, **2025**. <https://doi.org/10.1029/2025GL116434>.
9. Rummel, K., U. Gräwe, K. Klingbeil, P. Kolb, X. Li, L. Reese, H. Burchard, Spatially resolved salt intrusion mechanisms in a tidal estuary and the impact of channel deepening, *J. Geophys. Res.: Oceans*, 130, e2024JC022073, **2025**. <https://doi.org/10.1029/2024JC022073>.
10. Bordbar, M.H., A. Nasrolahi, M. Lorenz, S. Moghaddam, H. Burchard, The Persian Gulf and the Oman Sea: climate variability and trends inferred from satellite observations, *Estuarine Coast. Shelf Sci.*, 296, 108588, **2024**.
11. Burchard, H., M. Alford, M. Chouksey, G. Dematteis, C. Eden, I. Giddy, K. Klingbeil, A. Le Boyer, D. Olbers, J. Pietrzak, F. Pollmann, K. Polzin, F. Roquet, P. Sebastia Saez, S. Swart, L. Umlauf, G. Voet, B. Wynne-Cattanach, Linking ocean mixing and overturning circulation, *Bull. Am. Meteorol. Soc.*, 105, E1265–E1274, **2024**.
12. Chang, Y., X. Li, Y.P. Wang, K. Klingbeil, W. Li, F. Zhang, H. Burchard, Salinity mixing in a tidal multi-branched estuary with huge and variable runoff, *J. Hydraul.*, 634, 131094, **2024**.
13. Li, X., E. Chrysagi, K. Klingbeil, H. Burchard, Impact of islands on tidally dominated river plumes:

- a high-resolution modelling study, *J. Geophys. Res.*, 129, e2023JC020272, 2024.
14. Reese, L., U. Gräwe, K. Klingbeil, X. Li, M. Lorenz, and H. Burchard, Local mixing determines spatial structure of diahaline exchange flow in a mesotidal estuary – a study of extreme runoff conditions, *J. Phys. Oceanogr.*, 54, 3-27, **2024**.
 15. Reinert, M., M. Lorenz, K. Klingbeil, B. Büchmann, and H. Burchard, High-resolution simulations of the plume dynamics in an idealized 79° N Glacier cavity using adaptive vertical coordinates, *J. Adv. Model. Earth Syst.*, 15, e2023MS003721, **2023**.
 16. Basdurak, N.B., H. Burchard, and H. M. Schuttelaars, A Local Eddy Viscosity Parameterization for Wind-Driven Estuarine Exchange Flow. Part II: Entrainment, *Progr. Oceanogr.*, 219, 103166, **2023**.
 17. Burchard, H., K. Bolding, X. Lange and A. Osadchiv, Decomposition of estuarine circulation and residual stratification under land-fast sea ice, *J. Phys. Oceanogr.*, 53, 55-78, **2023**.
 18. Henell, E., H. Burchard, U. Gräwe, and K. Klingbeil, Spatial composition of the diahaline overturning circulation in a fjord-type, non-tidal estuarine system, *J. Geophys. Res. Oceans*, 128, e2023JC019862, **2023**.
 19. Becherer, J., Burchard, H., Carpenter, J.R., Gräwe, U., and Merckelbach, L.M., The role of turbulence in fueling the subsurface chlorophyll maximum in tidally dominated shelf seas., *J. Geophys. Res.*, 127, e2022JC018561, **2022**.
 20. Burchard, H., K. Bolding, A. Jenkins, M. Losch, M. Reinert, L. Umlauf, The vertical structure and entrainment of subglacial melt water plumes, *J. Adv. Model. Earth Syst.*, 14, e2021MS002925. <https://doi.org/10.1029/2021MS002925>, **2022**.
 21. Chysagi, E., N.B. Basduak, L. Umlauf, H. Burchard, Thermocline salinity minima due to wind-driven differential advection, *J. Geophys. Res.*, 127, e2022JC018904, **2022**, <http://doi.org/10.1029/2022JC018904>.
 22. Kolb, P., Zorndt, A., Burchard, H., Gräwe, U., and Kösters, F., Modelling the impact of anthropogenic measures on saltwater intrusion in the Weser estuary, *Ocean Sci.*, 18, 1725–1739, **2022**.
 23. Li, X., M. Lorenz, K. Klingbeil, E. Chrysagi, U. Gräwe, J. Wu, H. Burchard, Diahaline mixing and exchange flow in a large multi-outlet estuary with islands, *J. Phys. Oceanogr.*, 52, 2111-2127, **2022**.
 24. Basdurak, N. B., H. Burchard, H. M. Schuttelaars, A local eddy viscosity parameterization for wind-driven estuarine exchange flow. Part I: Stratification dependence, *Progr. Oceanogr.*, 193, 102548, **2021**.
 25. Burchard, H., U. Gräwe, K. Klingbeil, N. Koganti, X. Lange, M. Lorenz, Effective diahaline diffusivities in estuaries, *J. Adv. Model. Earth Syst.*, 13, <https://doi.org/10.1029/2020MS002307>, **2021**.
 26. Chrysagi, E., P. L. Holtermann, L. Umlauf, K. Klingbeil, H. Burchard, High-resolution simulations of submesoscale processes in the Baltic Sea: The role of storm events, *J. Geophys. Res.*, 126, <https://doi.org/10.1029/2020JC016411>, **2021**.
 27. Fofonova, V., T. Kärnä, K. Klingbeil, A. Androsov, I. Kuznetsov, D. Sidorenko, S. Danilov, H. Burchard, K. H. Wiltshire, Plume spreading test case for coastal ocean models, *Geosci. Model Dev.*, 14, 6945–6975, **2021**.
 28. Li, Q., J. Bruggeman, H. Burchard, K. Klingbeil, L. Umlauf, K. Bolding, Integrating CVMix into GOTM (v6.0): A consistent framework for testing, comparing, and applying ocean mixing schemes, *Geosci. Model Dev.*, 14, 4261–4282, **2021**.
 29. Lorenz, M., K. Klingbeil, H. Burchard, Impact of evaporation and precipitation on estuarine mixing relations, *J. Phys. Oceanogr.*, 51, 1319–1333, <https://doi.org/10.1175/JPO-D-20-0158.1>, **2021**.
 30. Burchard, H., A universal law of estuarine mixing. *J. Phys. Oceanogr.*, 50, 81-93, **2020**.
 31. Chegini, F., P. L. Holtermann, O. Kerimoglu, M. Becker, M. Kreuz, K. Klingbeil, U. Gräwe, C.

- Winter, H. Burchard, Processes of stratification and de-stratification during an extreme river discharge event in the German Bight ROFI, *J. Geophys. Res.*, 125, 10.1029/2019JC015987, **2020**.
32. Lange, X., H. Burchard, K. Klingbeil, Inversions of estuarine circulation are frequent in a weakly tidal estuary with variable wind forcing and seaward salinity fluctuations, *J. Geophys. Res.*, 125, 10.1029/2019JC015789, **2020**.
 33. Lorenz, M., K. Klingbeil, H. Burchard, Numerical study of the exchange flow of the Persian Gulf using an extended Total Exchange Flow analysis framework. *J. Geophys. Res.*, 125, e2019JC015527. <https://doi.org/10.1029/2019JC015527>, **2020**.
 34. Schulz, K., H. Burchard, V. Mohrholz, P. Holtermann, H. Schuttelaars, M. Becker, C. Maushake, T. Gerkema, Intratidal and spatial variability over a slope in the Ems estuary: robust along-channel SPM transport versus episodic events, *Estuarine Coastal Shelf Sci.*, 243, 10.1016/j.ecss.2020.106902, **2020**.
 35. van Berkel, J., H. Burchard, A. Christensen, L. O. Mortensen, O. S. Petersen, F. Thomsen, The effects of offshore wind farms on hydrodynamics and implications for fishes. *Oceanogr.*, 33, 108-117, **2020**.
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