

Marcel Ricker

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WORK EXPERIENCE

Helmholtz-Zentrum Hereon, Institute of Coastal Systems - Analysis and Modeling – Geesthacht, Germany

City: Geesthacht | **Country:** Germany

Scientist

[Dec 2018 – Current]

Numerical wave modelling: setup, application, validation, and calibration of the Wave Model WAM
Development and maintenance of the wave model WAM
Technical responsible for operational wave models of the Black Sea (Copernicus Marine Environment Monitoring Service - CMEMS) and North Sea (Coastal Observing System for Northern and Arctic Seas - COSYNA)
Implementation and development of operational wave model systems (CMEMS, Deutscher Wetterdienst - DWD, Omani Weather Service, Bundesanstalt für Wasserbau - BAW)
Transfer of WAM to various European meteorological service providers (e.g. Finnish Meteorological Institute or Danish Meteorological Institute)
Knowledge and technology transfer
Implementation and assimilation of satellite altimetry data into wave data production
Contribution to a variety of national and international research projects (see Projects section)
Lagrangian drift simulations to address biological and environmental issues
Development, implementation, and application of coupled model systems (ocean-waves)
Preparation of scientific publications and reviews
Participation in scientific conferences

Carl-von-Ossietzky University of Oldenburg, Department of Coastal Oceanography – Oldenburg, Germany

City: Oldenburg | **Country:** Germany

PhD Student

[May 2016 – Jun 2020]

- Preparation of the doctoral thesis
- WP representative in a German research project about marine plastic litter in the North Sea
- Numerical ocean modelling of the European Northwest Shelf using NEMO (Nucleus for European Modelling of the Ocean)
- Lagrangian drift simulations of marine litter
- Preparation of scientific publications and reviews
- Participation in scientific conferences

EDUCATION AND TRAINING

PhD in Physical Oceanography

Carl-von-Ossietzky University of Oldenburg, Department of Coastal Oceanography [May 2016 – Jun 2020]

City: Oldenburg | **Country:** Germany | **Thesis:** On the Dynamics of Floating Marine Litter in the North Sea (magna cum laude)

MSc in Physical Oceanography

University of Hamburg, Institute of Oceanography [Oct 2013 – Feb 2016]

City: Hamburg | Country: Germany | Thesis: Process studies on Baltic inflows

BSc in Physical Oceanography

University of Hamburg, Institute of Oceanography [Oct 2010 – Feb 2014]

City: Hamburg | Country: Germany | Thesis: Double diffusive structures of the Mediterranean outflow (in German)

Vocational Training as an Electronics Technician for Equipment and Systems

Hamburger Hochbahn AG [Aug 2007 – Jun 2010]

City: Hamburg | Country: Germany

A Levels

Gymnasium Uhlenhorst-Barmbek [Aug 1998 – Jun 2007]

City: Hamburg | Country: Germany

Primary School

Schule Tieloh [Aug 1994 – Jul 1998]

City: Hamburg | Country: Germany

LANGUAGE SKILLS

Mother tongue(s): German

Other language(s): English (B2.6)

SKILLS

Matlab / Fortran / Bash / NCO Tools / Python / CDO / Microsoft Office / LaTeX / Windows / Linux

KNOWLEDGE TRANSFER

[Nov 2022]

Training and knowledge transfer in the frame of the SEA-ReCap project

[May 2020]

Copernicus Marine Training for the Black Sea (wave products)

PROJECTS

[2025 – Current]

Black Sea - Monitoring Forecasting Centre (BLK-MFC) (Copernicus 2 - Phase 2)

Mercator Ocean

[2022 – 2024]

Black Sea - Monitoring Forecasting Centre (BS-MFC) (Copernicus 2 - Phase 1)

Mercator Ocean

Contribution to:

[2025 – Current]

Northwest Shelf - Monitoring Forecasting Centre (NWS-MFC) (Copernicus 2 - Phase 2)

Mercator Ocean

[2025 – Current]

natESM WAM wave model sprint

German natESM project

[2024 – Current]

Data Assimilation of Wave Spectra Observations and its Impact on Sea State Predictions (DAWN)

[2023 – 2024]

Validation/Verification and Intercomparison of Forecast and Reanalysis Blue Products (VERIBLUE)

Mercator Ocean

[2023 – 2024]

Design Study (and Implementation) of a High-Resolution Forecasting System for the Blue and Green Ocean in the North Sea (DEISY)

Mercator Ocean

[2023 – Current]

CRANMANII (Wissenschaftliche Untersuchungen zur Biologie und Fischerei der Nordseegarnele CRANgon CRANgon als Basis für ein effizientes Selbst-Management-System)

German Federal State Lower Saxony/EMFAF

[2023 – Current]

Technical support and validation of the coupled wave model "ICON-WAM"

German Weather Service

[2023 – Current]

European Digital Twin Ocean (EDITO) Model Lab

Horizon Europe

[2023 – Current]

New Copernicus capability for trophic ocean networks (NECCTON)

Horizon Europe

[2023 – Current]

Installation of the wave model WAM at the Omani Weather Service

Omani Weather Service

[2023 – Current]

Data Assimilation of Wave Spectra Observations (SYNWAVE) - CFOSAT Science Team

without funding

[2022 – Current]

Copernicus Wave Expert and various Working Groups (ensemble forecast, technical, product quality, coastal interfaces)

[2021 – Current]

Research Capacity Building for Healthy, Productive and Resilient Seas (SEA-ReCap)

HGF

[2021 – Current]

Developing Optimal and Open Research Support for the Black Sea (DOORS Black Sea)

Horizon Europe

[2018 – Current]

Coastal Observing System for Northern and Arctic Seas (COSYNA)

Helmholtz-Zentrum Hereon

[2018 – 2021]

Black Sea - Monitoring Forecasting Centre (BS-MFC) (Copernicus)

Mercator Ocean

[2016 – 2020]

Macroplastics Pollution in the Southern North Sea - Sources, Pathways and Abatement Strategies

Federal State of Lower Saxony

PUBLICATIONS

Ricker, M., Kousal, J., Günther, H., Behrens, A., & Staneva, J. The Introduction of Observation-Based Wave Physics into the Wind-Wave Model WAM: Wave Assessments for a Semi-Enclosed Basin, in review.

Yuan, B., Ricker, M., Chen, W., Jacob, B., Pham, N. T., & Staneva, J. (2025). Statistical spatial downscaling of significant wave height in a regional sea from the global ERA5 dataset. *Ocean Engineering*, 329, 121100. <https://doi.org/10.1016/j.oceaneng.2025.121100>

Zlateva, I., Ricker, M., Slabakova, V., Slavova, K., Doncheva, V., Staneva, J., Stanev, E., Popov, I., Gramcianinov, C., & Raykov, V. (2024). Analysis of terrestrial and riverine sources of plastic litter contributing to plastic pollution in the Western Black Sea using a lagrangian particle tracking model. *Marine Pollution Bulletin*, 209, 117108. <https://doi.org/10.1016/j.marpolbul.2024.117108>

Ricker, M., Behrens, A., & Staneva, J. (2024). The operational CMEMS wind wave forecasting system of the Black Sea. *Journal of Operational Oceanography*, 1–22. <https://doi.org/10.1080/1755876X.2024.2364974>

Villa Castrillón, L., Ricker, M., Staneva, J., Meyerjürgens, J., Badewien, T. H., & Stanev, E. V. (2024). Relative dispersion and relative diffusivities in an ocean-wave coupled model of the North Sea. *Ocean Dynamics*. <https://doi.org/10.1007/s10236-024-01619-6>

Meyerjürgens, J., Ricker, M., Aden, C., Albinus, M., Barrelet, J., Freund, H., Hahner, F., Lettmann, K. A., Mose, I., Schaal, P., Schöneich-Argent, R. I., Stanev, E. V., Wolff, J.-O., Zielinski, O., & Badewien, T. H. (2023). Sources, pathways, and abatement strategies of macroplastic pollution: An interdisciplinary approach for the southern North Sea. *Frontiers in Marine Science*, 10. <https://doi.org/10.3389/fmars.2023.1148714>

Staneva, J., Ricker, M., Akpınar, A., Behrens, A., Giesen, R., & von Schuckmann, K. (2022): Long-term interannual changes in extreme winds and waves in the Black Sea. In: Schuckmann, K., et al. (eds):

Belkin, I. M. et al. (2022): Introduction to the Chemical Oceanography of Frontal Zones. In: The Handbook of Environmental Chemistry. Springer, Berlin, Heidelberg, https://doi.org/10.1007/698_2022_894

Staneva, J., Ricker, M., & Behrens, A. (2022). Black Sea Waves Analysis and Forecast (CMEMS BS-Waves, EAS5 system) (Version 1) Data set. Copernicus Monitoring Environment Marine Service (CMEMS). https://doi.org/10.25423/CMCC/BLKSEA_ANALYSISFORECAST_WAV_007_003_EAS5

Staneva, J., Ricker, M., & Behrens, A. (2022). Black Sea Waves Reanalysis (CMEMS BS-Waves, EAS4 system) (Version 1) Data set. Copernicus Monitoring Environment Marine Service (CMEMS). https://doi.org/10.25423/CMCC/BLKSEA_MULTIYEAR_WAV_007_006_EAS4

Ricker, M., Meyerjürgens, J., Badewien, T. H., & Stanev E. V. (2021): Lagrangian Methods for Visualizing and Assessing Frontal Dynamics of Floating Marine Litter with a Focus on Tidal Basins. In: The Handbook of Environmental Chemistry. Springer, Berlin, Heidelberg, https://doi.org/10.1007/698_2021_812

Ciliberti, S. A. et al. (2021). Monitoring and Forecasting the Ocean State and Biogeochemical Processes in the Black Sea: Recent Developments in the Copernicus Marine Service. Journal of Marine Science and Engineering, 9(10), 1146. <https://doi.org/10.3390/jmse9101146>

Meyerjürgens, J., Ricker, M., Schakau, V., Badewien, T. H., & Stanev, E. V. (2020). Relative Dispersion of Surface Drifters in the North Sea: The Effect of Tides on Mesoscale Diffusivity. Journal of Geophysical Research: Oceans, 125(8), e2019JC015925. <https://doi.org/10.1029/2019JC015925>

Ricker, M., & Stanev, E. V. (2020). Circulation of the European northwest shelf: A Lagrangian perspective. Ocean Science, 16(3), 637–655. <https://doi.org/10.5194/os-16-637-2020>

Ricker, M., Stanev, E. V., Badewien, T. H., Freund, H., Meyerjürgens, J., Wolff, J.-O., & Zielinski, O. (2020): Drifter observations and Lagrangian tracking of the 2018 easterly wind event in the North Sea. In: Schuckmann, K., et al. (eds): Copernicus Marine Service Ocean State Report, Issue 4, Journal of Operational Oceanography, Volume 13 Supplement, Section 4.9, doi:10.1080/1755876X.2020.1785097

Stanev, E. V., & Ricker, M. (2020). Interactions between barotropic tides and mesoscale processes in deep ocean and shelf regions. Ocean Dynamics, 70(5), 713–728. <https://doi.org/10.1007/s10236-020-01348-6>

Stanev, E. V., Ricker, M., Grayek, S., Jacob, B., Haid, V., & Staneva, J. (2020). Numerical Eddy-Resolving Modeling of the Ocean: Mesoscale and Sub-Mesoscale Examples. Physical Oceanography, 27(6), 631–658. <https://doi.org/10.22449/1573-160X-2020-6-631-658>

Stanev, E. V., & Ricker, M. (2019). The Fate of Marine Litter in Semi-Enclosed Seas: A Case Study of the Black Sea. Frontiers in Marine Science, 6, 660. <https://doi.org/10.3389/fmars.2019.00660>

Stanev, E. V., Badewien, T. H., Freund, H., Grayek, S., Hahner, F., Meyerjürgens, J., Ricker, M., Schöneich-Argent, R. I., Wolff, J.-O., & Zielinski, O. (2019). Extreme westward surface drift in the North Sea: Public reports of stranded drifters and Lagrangian tracking. Continental Shelf Research, 177, 24–32. <https://doi.org/10.1016/j.csr.2019.03.003>

Gutow, L., Ricker, M., Holstein, J. M., Dannheim, J., Stanev, E. V., & Wolff, J.-O. (2018). Distribution and trajectories of floating and benthic marine macrolitter in the south-eastern North Sea. Marine Pollution Bulletin, 131, Part A, 763–772. <https://doi.org/10.1016/j.marpolbul.2018.05.003>

Hamburg, Germany, 8 May 2025

A handwritten signature in blue ink, appearing to read 'M. Ricker', is positioned in the top right corner of the page.

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