

CURRICULUM VITAE: Dominik Hülse

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Professional Experience

Since 01/2024	MARUM Postdoctoral Fellow/Researcher , Cluster of Excellence “The Ocean Floor”, University of Bremen (01/2024–08/2026); University of Oldenburg (from 09/2026)
05/2022 – 12/2023	Scientific Researcher , Max-Planck-Institute for Meteorology (MPI-M), Hamburg (Germany)
11/2019 – 04/2022	Simons Postdoctoral Fellow in Marine Microbial Ecology , Department of Earth and Planetary Sciences, University of California Riverside (USA)
01/2018 – 10/2019	Postdoctoral Researcher , Department of Earth and Planetary Sciences, University of California Riverside (USA)
10/2013 – 01/2018	Ph.D. Researcher and Tutor , School of Geographical Sciences, University of Bristol (UK)
08/2011 – 09/2012	Assistant Researcher/Quantitative Analysis Officer , DARA International, Madrid (Spain): Independent non-profit organization
01/2010 – 03/2011	International Management Trainee , Generali Deutschland Holding AG, Köln (Germany)

Education

10/2013 – 01/2018	Ph.D. in Physical Geography, School of Geographical Sciences, University of Bristol (UK), Adviser: Dr. Sandra Arndt, ‘Marine biogeochemical cycling during extreme climate events - Exploring the importance of benthic-pelagic processes with models’
09/2012 – 09/2013	MSc in Climate Change Science and Policy (Distinction), School of Geographical Sciences, University of Bristol (UK), Advisers: Dr. Sandra Arndt
04/2002 – 10/2008	German Diplom (M.Sc. Equiv.) in Mathematics, Minors: Computer Sciences and Economics, (Sehr Gut), Johannes Gutenberg-Universität Mainz (Germany)

Summer School

July 2014	Urbino Summer School in Paleoclimatology (2.5 weeks) , University of Urbino (Italy) Theoretical and modeling techniques to reconstruct past global change.
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Numerical Model & Software Development

OMEN-SED	Computationally efficient reaction-transport model of marine sediment diagenesis; developed for coupling to Earth-system models.
cGENIE	Development and implementation of sedimentary organic carbon, nutrient/redox, and long-term carbon-cycle feedbacks.
IMP	Co-development of a carbonate diagenesis and paleo-proxy signal-tracking model.
iTURBO2	Numerical framework for quantifying effects of bioturbation on paleoceanographic time series.

Awards, Fellowships & Research Funding

2027	European Research Council Starting Grant — In preparation ~1,500,000 € Title: RECOVER – The role of marine organic carbon and phosphorus cycling for climate recovery
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2026	In Review: “DFG Eigene Stelle“ for a 3-year postdoc position ~300,000 € Title: Hidden Reservoirs at Risk: Organic Carbon, Nutrient, and Greenhouse Gas Budgets in Global Marine Sediments
2026	Joint Call on Blue Carbon Ecosystems Total: ~1,600,000 € (Not funded) My part: ~225,000 € Title: HOTSPOT – Harmonized Assessment of Organic Carbon Transfer and Storage in NE Atlantic Margin Sediments to Support Blue Carbon Policy Targets
2025	European Research Council Starting Grant ~1,500,000 € Title: RECOVER – The role of marine organic carbon and phosphorus cycling for climate recovery Rating A – not funded due to budget limitations
2024 – 2026	Postdoctoral Fellowship, MARUM Excellence Cluster ~200,000 € Title: GEOSIM – Global quantification of Element transfer across the Seafloor and its Importance for climate stability
2019 – 2022	Simons Postdoctoral Fellowships in Marine Microbial Ecology ~264,000 \$ Title: Modeling emergent microbial communities in marine sediments
2018	Faculty of Science Commendation, University of Bristol Ph.D. thesis award ‘for truly outstanding contributions in the chosen field of research’ from the Dean of the Faculty of Sciences
2016	Alumni Foundation, University of Bristol ~700 \$ Travel and accommodation award to attend EGU 2016 in Vienna, Austria
2014	European Consortium for Ocean Research Drilling (ECORD) scholarship 1,100 \$ Registration, travel and accommodation award to ‘allow outstanding young scientists to attend the Urbino Summer School in Paleoclimatology’

Invited Talks

04/2026	Carbon sequestration at Å resolution – CONCENTRATE, University of Bremen “Modelling carbon sequestration at ocean scale resolution and 1000-year time scales”
12/2024	Current Topics in Marine Biogeochemistry Seminar , GEOMAR, Kiel “Organic carbon fluxes and stocks in global continental margin sediments”
05/2024	Ocean Floor Symposium, MARUM – Cluster of Excellence , University of Bremen “Silicate Weathering vs. Organic Carbon Burial: Who Wins?”
02/2024	MARUM Research Seminar, University of Bremen “Simulating marine organic matter cycling over time and space”
03/2023	Project Seminar, Nanjing University, China (online) “Biological feedbacks and Earth’s most severe extinction (in silico)”
05/2022	Joint Seminar, MPI-M & CEN, Hamburg “Modelling marine organic carbon cycling and its impact on global biogeochemistry”
01/2022	Astrobiology Seminar, UC Riverside, USA “End-Permian marine extinction due to temperature-driven nutrient recycling”
08/2021	Carbon Cycle Summer School 2021, Nanjing University, China (online) “Understanding past (marine) carbon cycling variability through models”
07/2021	Goldschmidt 2021, Session: Benthic dynamics in a changing ocean “Global budgets of organic carbon degradation pathways in marine sediments”
12/2016	Paleoenvironmental Seminar University of Southern California (USC), USA “Modeling OM burial: Sulfurization as an important recovery mechanism from OAE2?”
11/2016	Astrobiology Seminar, UC Riverside, USA “Modeling OM burial: Sulfurization as an important recovery mechanism from OAE2?”

Conference presentations *(Note: only first-author contributions at international conferences are listed)*

2026	Goldschmidt Conference, Montreal, Canada (Talk) “Feedback-Controlled Carbon Cycle Dynamics During OAE2”
2026	Ocean Sciences, Glasgow, Scotland (Poster) “Vulnerable Organic Carbon Stocks in Global Continental Margin Sediments”
2025	Goldschmidt Conference, Prague, Czech Republic (Talk) “Organic carbon burial in continental margin sediments of the global ocean”
2024	Goldschmidt Conference, Chicago, USA (Talk) “Silicate Weathering vs. Organic Carbon Burial: Who Wins?”
2023	Life & Planet, Geological Society of London, UK (Highlight Talk) “Instability in the geological regulation of Earth’s climate”
2023	EGU General Assembly, Vienna, Austria (Talk) “An extended N cycle in the eddy-permitting global ocean model ICON-O”
2021	Goldschmidt Conference, Remote (Invited Talk) “Global budgets of organic carbon degradation pathways in marine sediments”
2020	Ocean Sciences Meeting, San Diego, USA (Poster) “Secular Changes to the Biological Carbon Pump and its Interrelation with Past Extinction Events”
2019	Goldschmidt Conference, Barcelona, Spain (Talk) “Bioturbation: How much is it messing up our view of the past?”
2018	Ocean Deoxygenation Conference, Kiel, Germany (Poster) “About the beginning and end of OAEs”
2018	Goldschmidt Conference, Boston, USA (Talk) “A story of biogeochemical feedbacks and organic matter burial during OAE2”
2017	Nereis Park Conference, Stony Brook University, USA (Poster) “OMEN-SED: A new, numerically efficient sediment model for coupling to ESMs”
2016	AGU Fall Meeting, San Francisco, USA (Poster) “Evolution and Termination of OAE2: Testing impacts of organic matter sulfurization”
2016	CliMathNet Conference, Exeter, UK (Poster) “OMEN-SED: A new, numerically efficient sediment model for coupling to ESMs”
2016	EGU General Assembly, Vienna, Austria (Talk) “The biological carbon pump in the ocean: Reviewing model representations and its feedback on climate perturbations”

Academic Service

Conference convener:

2025: Co-convener session: “Evolution and tipping points of biogeochemical cycles throughout Earth's history” at the Goldschmidt Conference, Prague, Czech Republic

2021: Main Convener session: “Understanding the co-evolution of Earth's interior, its surface, and its microorganisms” at the virtual Goldschmidt Conference

2019: Co-convener session: “Mechanisms, Impacts, and Records of Sulfur Biogeochemistry” at the Goldschmidt Conference, Barcelona, Spain

Reviewer:

Nature; Nature Communications; Communications Earth & Environment; Biogeosciences, Geophysical Research – Oceans; Geoscientific Model Development; Paleoceanography and Paleoclimatology; Continental Shelf Research; Geosciences

Alexander von Humboldt-Stiftung; Israel Science Foundation; STARS@University of Padua

Scientific Working Groups & International Networks:

SCOR – Data SYnthesis and Method Harmonization for Global Benthic Modeling (**SYM-Benthic**)

Co-developer of working group proposal (under review)

PAGES – Past Ocean Oxygenation (**PO2**)

Full member; contributing author to an invited *Nature Reviews Earth & Environment* review; Web Officer (03/2024–07/2025)

Time Integrated Matrix for Earth Sciences – (**TIMES**)

Full member; contributor to the Climate Modeling Working Group and Cretaceous Team

Department/Project activities:

MARUM Member of the Center Council Board (since 10/2024)
PostDoc Representative (05/2024 - 07/2025)

ESM2025 Early Career Scientist panel leader (11/2022 – 12/2023)

Teaching Experience

06/2025	2-day practical “An Introduction to climate modeling” (Summer School on Numerical Climate Modelling, University of Burgundy Europe in Dijon, France)
08/2021	Online Lecture “Understanding past (marine) carbon cycling variability through models” (Summer School on Carbon Cycling, Nanjing University, China)
Fall 2021	Weekly ‘Freshman Advising Seminar’ [24 students] (UC, Riverside, USA)
2014 – 2016	Year-1 Geography Summer Field Trip, Dartmoor (UK) [~80 students each year]: Co-led an exercise on ‘Meso- and micro-climates associated with the Dartmoor Massif’ (University of Bristol, UK)
2014 – 2016	Personal Tutor for Year-1 Geography students, weekly seminars [~80 students each year] (course design, organization, teaching and marking of essays): Introduction to scientific literature and academic writing (University of Bristol, UK)
2015	Year-1 Geography Fall Field Trip, Tewkesbury (UK) [~80 students each year]: Co-led an exercise on ‘River quality assessment’ (University of Bristol, UK)

Student mentoring/co-advising

Co-advised 3 PhD, 2 MSc, and 1 undergraduate researcher, resulting in three peer-reviewed publications, one manuscript in revision, and three manuscripts in preparation.

2025 – present	Justin Gérard, UC Louvain PhD student. (Primary Advisor: Prof. Michel Crucifix), focus: cGENIE simulations of anoxia during the Devonian
2022 – present	Emeric Babut du Mares, Université libre de Bruxelles (ULB) Master student. (Primary Adviser: Prof. Sandra Arndt), focus: The quantification of panarctic benthic-pelagic carbon and nutrients fluxes
2020 – 2022	Pam Vervoort, University of California Riverside PhD student (Primary Adviser: Prof. Sandra Kirtland Turner), focus: deciphering C-isotope excursions encoded in the sedimentary record
2020 – 2022	Sherry Xu, Yale University Bachelor student (Primary Adviser: Prof. Pincelli Hull), focus: benthic oxygenation using model worlds; ongoing collaboration on EcoGENIE modeling of plankton community size structure and biological-pump strength.
2019 – 2021	Philip Pika, University of Bristol and ULB PhD student (Primary Adviser: Prof. Sandra Arndt), “Exploring regional and global patterns in organic matter reactivity and its influence on benthic biogeochemical dynamics”
2019 – 2020	Thibault Duvieusart, ULB Master student (Primary Adviser: Prof. Sandra Arndt): ‘A Cretaceous energy boost for the starving majority in the marine deep biosphere?’

Public outreach and media appearances

- 2025 Articles on our Science paper Hülse & Ridgwell (2025), published on [livescience](#), [earth.com](#), [interestingengineering.com](#)
- 2024 Explore Science Outreach Event in Bremen, Germany.
- 2022 EOS article on our *Nature Geoscience* paper Hülse et al. (2021): Donovan, R. (2022), A New Model for an Old Extinction Event, <https://doi.org/10.1029/2022EO220071>.
- 2021 Article on our *Nature Geoscience* paper Hülse et al. (2021): “*Deadliest period in Earth's history was also the stinkiest*”, published on [phys.org](#), [sciencedaily.com](#), [scitechdaily.com](#)

Bremen, August 13, 2026