EDUARDO ALASTRUÉ DE ASENJO

Climate scientist and modeller

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I research the impacts of climate change and variability, focusing on the AMOC and North Atlantic, net-zero/overshoot futures, and temperature extremes. I work with Earth System Models, performing new experiments and analysing output from existing multi-model and initial-condition large ensembles.

Current position

Postdoctoral Researcher — April 2026 – Present
Climate Modelling Group, University of Hamburg — *Hamburg, Germany*

Education

PhD in Earth System Sciences, *summa cum laude* — 2022 – April 2026
International Max Planck Research School on Earth System Modelling — *Hamburg, Germany*

- Thesis: *AMOC Impacts on Surface Temperatures Across Changing CO_2 Concentrations*, supervised by Prof. Johanna Baehr, Prof. Jana Sillmann
- Two-month research visit to A/Prof. Andrew King at The University of Melbourne, Australia

MSc in Integrated Climate System Sciences, *with Distinction* — 2019 – 2022 (120 ECTS)
University of Hamburg — *Hamburg, Germany*

- Thesis: *Event Attribution of the Atlantic Meridional Overturning Circulation*, supervised by Prof. Johanna Baehr, Dr. Armineh Barkhordarian (Grade: 1.0)
- 2-year student research assistant job with Dr. Johann Jungclaus at the MPI for Meteorology

ERASMUS+ Exchange — 2017 – 2018
University of Amsterdam — *Amsterdam, The Netherlands*

- Courses from MSc in Theoretical Physics & Energy and Sustainability

BSc in Physics, Theoretical Physics Track — 2014 – 2019 (240 ECTS)
Complutense University of Madrid — *Madrid, Spain*

- Thesis: *Climate Change: Global Analysis of Temperature Variations in Response to Changes in External Forcings During the Instrumental Period*, supervised by Prof. Fidel González Rouco (Grade 10/10).

Publications

Peer-Reviewed/Accepted

Alastrué de Asenjo, E. & Schaumann, F. (accepted at *Nature*). AMOC Weakening Unlikely to Cool Large Parts of Europe in a Warming Climate.

Alastrué de Asenjo, E., King, A. D., & Ziehn, T. (2025). European Heat Extremes Under Net-Zero Emissions. *Environmental Research Letters*, 20(7), 074029.

Diamond, R., Sime, L. C., Schroeder, D., Jackson, L. C., Holland, P. R., **Alastrué de Asenjo, E.**, et al. (2025). A Weakened AMOC Could Cause Southern Ocean Temperature and Sea-Ice Change on Multidecadal Timescales. *Journal of Geophysical Research: Oceans*, 130(7), e2024JC022027.

Jackson, L. C., **Alastrué de Asenjo, E.**, et al. (2023). Understanding AMOC Stability: The North Atlantic Hosing Model Intercomparison Project. *Geoscientific Model Development*, 16(7), 1975–1995.

Jackson, L. C., **Alastrué de Asenjo, E.**, et al. (accepted at *Climate Dynamics*). Processes and Feedbacks for AMOC Stability Following Freshwater-Induced Weakening. Preprint: https://doi.org/10.21203/rs.3.rs-8742476/v1.

King, A. D., **Alastrué de Asenjo, E.**, et al. (2025). Detectability of Post-Net Zero Climate Changes and the Effects of Delay in Emissions Cessation. *Earth's Future*, 13(12), e2025EF006918.

King, A. D., Abram, N. J., **Alastrué de Asenjo, E.**, & Ziehn, T. (2025). ESD Ideas: Extended Net Zero Simulations are Critical for Informed Decision Making. *Earth System Dynamics*, 16(5), 1605–1609.

Schaumann, F., & **Alastrué de Asenjo, E.** (2025). Weakening AMOC Reduces Ocean Carbon Uptake and Increases the Social Cost of Carbon. *Proceedings of the National Academy of Sciences*, 122(9), e2419543122.

Submitted/In Review

Avakumovic, V., Kompas, T., **Alastrué de Asenjo, E.**, Li, C., & Ha, P. V. (submitted to *Environmental and Resource Economics*). The Unequal Burden of Global Warming: Cross-Country Heat-Stress Economic Damages to Labor Productivity, Agricultural Yields, and Heat-Related Mortality.

Clark, S., King, A. D., Brown, J. R., Cassidy, L. J., **Alastrué de Asenjo, E.**, & Ziehn, T. (in review at *Earth's Future*). The Reversibility of Local and Regional Temperature Extremes in CDRMIP. ESS Open Archive Eprints, 071, 27388. Preprint: https://doi.org/10.22541/essoar.176556040.07127388/v1.

King, A. D., Reid, K. J., Wille, J., **Alastrué de Asenjo, E.** (in review at *Environmental Research Letters*). Atmospheric Rivers Behind Daily Global Temperature Spikes and Dips.

In Preparation

Alastrué de Asenjo, E., Borchert, L. F., Sillmann, J., & Baehr, J. Changing Past Influence of Interannual AMOC Variability on European Cold Extremes.

Alastrué de Asenjo, E., Baehr, J., & Barkhordarian, A. Anthropogenic Greenhouse Gases Emerging as a Necessary Cause for Interannual AMOC Weakenings.

Bellomo, K., Cyr, F., **Alastrué de Asenjo, E.**, et al. Global Impacts and Risks of a Weakened AMOC in Projections of Future Anthropogenic Climate Change. Chapter 5 of the JPI *AMOC in Focus* assessment report.

Hansen, J., **Alastrué de Asenjo, E.**, Schaumann, F., & Baehr J. Assessing the Effect of AMOC-induced Temperature Patterns on the Global Social Cost of Carbon.

Conferences

EGU General Assembly, Vienna, Austria — 2022, 2024, 2025, 2026
2026 - Convener of new session *AMOC changes and impacts on physical, biogeochemical, and societal systems*

Overshoot Conference, Laxenburg, Austria — 2025
Awarded Best Poster Prize

EAERE Annual Conference, Leuven, Belgium — 2024

AGU Annual Meeting, San Francisco, USA — 2023

IUGG General Assembly, Berlin, Germany — 2023

Invited talks & seminars

Keynote invited speaker, AMOC Hamburg-Utrecht workshop, Hamburg, Germany — 2026
Invited speaker, EPOC Science meeting, webinar — 2026
Visitor seminar, University of Bern, Bern, Switzerland — 2025
IAC Extraordinary seminar, ETH Zurich, Zurich, Switzerland — 2025
BCCR Seminar, Bjerknes Centre for Climate Research, Bergen, Norway — 2025
Joint Oslo Seminar, CICERO, Oslo, Norway — 2025
Visitor seminar, Monash University, Melbourne, Australia — 2024
CCRC Seminar, UNSW, Sydney, Australia — 2024
Visitor seminar, University of Melbourne, Melbourne, Australia — 2024

Teaching & Supervision

Lecturer, *Physics of the Climate System*, *MSc course, University of Hamburg* — 2026
Lecturer, *Climate Modelling*, *MSc course, University of Hamburg* — 2026
Supervisor, *MSc thesis*, *Jordis Hansen, University of Hamburg* — 2025-2026
Topic: "Assessing the effect of AMOC-induced temperature patterns on the global social cost of carbon"

Lecturer, *Understanding Climate Change*, *BSc course, University of Hamburg* — 2023 & 2024
Teaching Assistant, *Climate Dynamics*, *MSc course, University of Hamburg* — 2022

Scholarships & Grants

MIN Faculty Graduate Center Grant for research stays abroad — 2024
Merit Scholarship for International Students at University of Hamburg — 2021 – 2022
Complutense University of Madrid (UCM) Enrolment Grant — 2018 – 2019
Spanish Ministry of Education and Culture (MEC) General Scholarship — 2013 – 2018