

Dr. Nadine Mengis

Curriculum Vitae

Professional Development

- 2024– **Department Head (interim)**, *Maritime Meteorology*, GEOMAR, Helmholtz Centre for Ocean Research, Kiel, Germany.
- 2024– **Research Group Lead**, *Maritime Meteorology*, GEOMAR, Helmholtz Centre for Ocean Research, Kiel, Germany.
Earth system sciences
- 2021–2027 **Research Group Lead**, *Emmy Noether research group (DFG)*, GEOMAR, Helmholtz Centre for Ocean Research, Kiel, Germany.
FOOTPRINTS - From carbon removal to achieving the Paris agreement's goal: Temperature Stabilisation
- 2019–2021 **Researcher**, *Biogeochemical Modelling*, GEOMAR, Helmholtz Centre for Ocean Research, Kiel, Germany.
Helmholtz-Initiative Climate Adaptation and Mitigation - Net-Zero-2050 Cluster
- 2019 **Postdoctoral Fellow**, *Climate Research Lab, Geography*, Simon Fraser University, Vancouver, Canada.
March - August Development, Calibration and Evaluation of the University of Victoria Earth System Climate Model version 2.10
- 2017–2019 **Horizon Postdoctoral Fellow**, *Climate Scenarios, Impacts and Modelling (CSIM) Lab*, Concordia University, Montreal, Canada.
Carbon Cycle uncertainty quantification of the 1.5°C carbon budget
- 2013–2016 **PhD candidate**, *Biogeochemical Modelling*, GEOMAR, Helmholtz Centre for Ocean Research, Kiel, Germany.
DFG priority program 1689: Climate Engineering - Risks, Challenges, Opportunities?

Degrees

- 2016 **Doctorate in Natural Sciences (Dr. rer. nat.)**, *Christian Albrechts University of Kiel, Germany*, magna cum laude.
Title: Towards a comprehensive, comparative assessment of Climate Engineering schemes – Metrics, Indicators and Uncertainties
- 2013 **Master of Science (M.Sc.)**, *Christian Albrechts University of Kiel, Germany*, Climate Physics: Meteorology and Physical Oceanography, Final grade: 1.5 (Excellent).
Title: Validation of Bias Correction Methods for RCM Scenarios for Hydrological Impact Modelling

2010 **Bachelor of Science (B.Sc.)**, *Christian Albrechts University of Kiel, Germany*, Physics of the Earth's System - Meteorology - Oceanography - Geophysics, *Final grade: 1.5 (Excellent)*.

Title (translated): Correlations between changes in wind stress, sea level and density stratification in the Atlantic Sector of the Southern Ocean with respect to annual and inter-annual time scales

Technical and Soft Skill Trainings (selected)

2024 **How to improve PhD supervision**, *TRESS ACADEMIC*, 29-30 April, 1,5 days of training.

International developments in PhD education, Challenges of PhD students, Clarifying expectations & setting up supervisory agreements, Organising productive supervisory meetings, Monitoring student progress, Self- and peer assessment in supervision

2022 **Leading your group**, *Helmholtz Leadership Akademie*, 2022 cohort, 10 days of training in total.

Set up your group, Inspire your Group, Lead your Group

2018 **Designing your Course & Classroom Management**, *School of Graduate Studies, GradProSkills, Montreal, Winter 2018*.

2017 **Communicate Effectively**, *School of Graduate Studies, GradProSkills, Montreal, Fall 2017*.

2015 **Presentation Skills**, *Gender Training*, Institute for Personal Performance, *Berlin, February 19 - 20*.

2014 **Peer Coaching**, *Graduate Centre*, Christian Albrechts University of Kiel, *Kiel, February 5 - 6*.

Academic Services

Comittees

2024–dato Co-Lead for Carbon Dioxide Removal Model Intercomparison Project (**CDRMIP**) for CMIP7

2023–dato Member for **WCRP Lighthouse Activity on Research on Climate Intervention**

2021–dato Member of **GESAMP Working group 41: Ocean Interventions for Climate Change Mitigation**

2022–2024 Member of **WCRP Task Team on CMIP7 Strategic Ensemble Design**

2021–2024 Representative of Young Investigator Group Leads, incl. guest in *Extended Directorate and Steering Committee of GEOMAR*, and member of FYORD (Foster Young Ocean Researcher Development) steering group

2022–2023 Member for **WCRP Task Team on Climate Interventions**

2019–2021 Steering committee member for **Climate Engineering in Context 2021** conference

Editorial activities

2023–2025 Guest Editor for Environmental Research Letters **Focus on Carbon Dioxide Removal**

2021–2022 Editorial Board Member for **npj Communications Earth & Environment**

Reviews provided

Nature Geoscience, Nature Climate Change, Geophysical Research Letters, Environmental Research Letters, Earth's Future, Journal of Geophysical Research: Atmosphere, Cambridge University Press - book proposal, Flanders Innovation & Entrepreneurship on behalf of the Hermes Fund - Project Proposal

Seminar and Colloquium invitations (selected)

- 2025 **Colloquium on the Occasion of the Appointment for Associate Professorship at the GEOMAR, Kiel**, *Net-zero - Why, how and what then?*, Kiel, Germany.
short-listed
- 2025 **Taiwan Workshop on Ocean-Based Carbon Dioxide Removal (mCDR)**, *Modelling mCDR - On the danger of overestimating CDR potentials*, Academia Sinica, Taipei, Taiwan.
online participation
- 2023 **Seminar at Department of Environmental Systems Science, ETHzürich**, *Net-Zero - Why, how and what then?*, Zurich, Switzerland.
- 2022 **Keynote at SOLAS Open Science Conference 2022**, *Carbon Dioxide Removal - Their contribution to net-zero, feasibility & uncertainties*, South Africa / hybrid.
 - **Panelist at Colloque international 'Neutralité carbone: comment fait-on pour y parvenir?'**, *Pilotage et mise en œuvre des transformations*, Salons de la Mairie de Paris, France.
 - **Panelist at Workshop 50 years 'Limits to growth' - Limits and beyond: Is it too late for climate action?**, *Research, Communication, and the Climate Crisis: Lessons from the report*, The New Institute, Hamburg, Germany.
- 2021 **Seminar at Centre for Climate System Modelling, ETHzürich**, *How much more carbon can we emit? Defining a German Carbon Budget & Ways how Germany can keep it*, virtuell seminar.
- 2019 **Seminar Series Geography Department, Concordia University, Montreal**, *On the non-linearity of the effective transient climate response to cumulative emissions - Implications for carbon budget estimates*, Montreal, Canada.
- 2018 **Colloquium on the Occasion of the Appointment for Assistant Professorship at the GEOMAR, Kiel**, *Carbon cycle and scenario uncertainty of the 1.5°C carbon budget*, Kiel, Germany.
short-listed

Knowledge transfer activities (selected)

- 2025 **GESAMP: The State of the Science for Marine Carbon Dioxide Removal (mCDR) - A Scientific Summary for Policy-Makers**, Policy Brief for the 2025 UN Ocean Conference
 - **Sind die 1,5 Grad noch zu retten?** - Climate scientists disagree on whether the 1.5-degree target is still fit for purpose., Interview for taz Verlags und Vertriebs GmbH

- 2024 **Andere Zeiten, andere Räume**, Contribution to the design of the Junge Akademie space for the Sophie Charlotte Salon 2024, Berlin-Brandenburg Akademie of Sciences and Humanities
- **Unsicherheiten an der Schnittstelle zwischen Wissenschaft und Demokratie**, Contribution to The Young Academy magazine #30
- 2023 **Welche Rolle hat Carbon Capture and Storage (CCS) im nationalen Klimaschutz?**, Parliamentary evening with the German Climate Consortium and the German Environment Agency
- **45 Minuten Zukunft**, Folge 12: Treibhausgase endlagern? Holz, Humus oder Hightech zur langfristigen Kohlenstoff-Speicherung, Thünen Institute's podcast on the transformation of land and sea use
- 2023-2024 Member of working group on *climate neutrality* in **DIN Standards Committee Principles of Environmental Protection**
- 2022-ongoing Factsheets, Science Stories, Policy Briefings and Infographics with *CDRmare*: Chancen und Hürden der marinen geologischen CO₂-Speicherung; Das 10 Millionen-Tonnen CO₂-Ziel: Im Team schaffen, was allein nicht zu leisten ist; Möglichkeiten ozeanbasierter Methoden der Kohlendioxid-Entnahme zur Erreichung des 1,5° Ziels; Vergleich der Emissionen Deutschlands 2019 mit einem Netto-Null-CO₂-Emissionsziel 2050
- 2022 **Orchester des Wandels** - Naturfantasie in Bildern, *Music and Congress Hall Lübeck*, text content creation in close collaboration with performing artist
- **Ideenlauf**, Member of scientific jury, in the context of Science Year 2022 *organised by German Federal Ministry of Education and Research*
 - **Back from the Future**, Interview with helmholtz-klima.de
- 2021 **How much more CO₂ can we emit? - A stroll down uncertainty-lane**, TEDxESMTBerlin
- **10 New Insights in Climate Science 2021**, *Future Earth, The Earth League, WCRP*. Policy report
 - **Energy and Climate**, Panel discussion at 70th Lindau Nobel Laureate Meeting
 - **Klimagipfel in Glasgow: Ist das unsere letzte Chance?** – mit Klimaforscherin Dr. Nadine Mengis, funk Podcast
- 2019-2021 Project and policy briefings in the context of *Helmholtz Climate Initiative*: Defining the German carbon budget; Avoided and removed emissions; Defining the scenario approach; Spatial Heterogeneity – Challenges and Opportunities for Net-Zero Germany
- 2013–2016 **Active Participation in SPP Outreach and School program**, *under the Coordination of Ulrike Bernitt and Martin Behrens*.
Climate Engineering Game (development and execution), Role Play discussion (development and execution), Information Brochures, Talks

Publication record

Nadine Mengis has 39 peer-reviewed publications, 9 first author and 9 last author publications, with a total number of 1043 article citations and a h-index of 19 (scopus.com, 15 Dec 2025; Google-Scholar records 1706 article citations and a h-index of 22, 15 Dec 2025).

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Peer-reviewed publications

- 2025 Yao, W., T. M. Morganti, J. Wu, M. Borchers, A. Anschütz, L.-K. Bednarz, K. A. Bhaumik, M. Böttcher, K. Burkhard, T. Cabus, A. S. Chua, I. Diercks, M. Esposito, M. Fink, M. Fouqueray, F. Gasanzade, S. Geilert, J. Hauck, F. Havermann, I. Hellige, S. Hoog, M. Jürchott, H. T. Kalapurakkal, J. Kemper, I. Kremin, I. Lange, J. M. Lencina-Avila, M. Liadova, F. Liu, S. Mathesius, N. Mehendale, T. Nagwekar, M. Philippi, G. L. N. Luz, M. Ramasamy, F. Stahl, L. Tank, M.-E. Vorrath, L. Westmark, H. Wey, R. Wollnik, M. Wölfelschneider, W. Bach, K. Bischof, M. Boersma, U. Daewel, M. Fernández-Méndez, J. K. Geuer, D. P. Keller, A. Kopf, C. Merk, N. Moosdorf, N. Oppelt, A. Oschlies, J. Pongratz, A. Prölss, G. J. Rehder, L. Rüpke, N. Szarka, D. Thraen, K. Wallmann, and **N. Mengis**. Exploring site-specific carbon dioxide removal options with storage or sequestration in the marine environment - The 10 Mt CO₂ yr⁻¹ removal challenge for Germany, *Earth's Future*, doi.org/10.1029/2024EF004902
- Baatz, C., Tank, L., Bednarz, L., Böttcher, M., Morganti, T.M., Voget-Kleschin, L., Cabus, T., Doorn, E. van, Dorndorf, T., Havermann, F., Holzhüter, W., Keller, D., Kreuzburg, M., Matz-Lück, N., **Mengis, N.**, Merk, C., Moustakis, Y., Pongratz, J., Wehnert, H., Yao, W., Rehder, G. A Holistic Assessment Framework for Marine Carbon Dioxide Removal Options, *Environ. Res. Lett.*, doi.org/10.1088/1748-9326/adc93f
 - Tank, L., L. Voget-Kleschin, M. Garschagen, M. Böttcher, **N. Mengis**, A. Holland-Cunz, G. Rehder, and C. Baatz. Distinguish between Feasibility and Desirability when Assessing Climate Response Options, *npj Climate Action*, doi.org/10.1038/s44168-025-00237-2
 - Sanderson, B. M., Brovkin, V., Fisher, R., Hohn, D., Ilyina, T., Jones, C., Koenigk, T., Koven, C., Li, H., Lawrence, D., Lawrence, P., Liddicoat, S., Macdougall, A., **Mengis, N.**, Nicholls, Z., O'Rourke, E., Romanou, A., Sandstad, M., Schwinger, J., Seferian, R., Sentman, L., Simpson, I., Smith, C., Steinert, N., Swann, A., Tjiputra, J., and Ziehn, T. flat10MIP: An emissions-driven experiment to diagnose the climate response to positive, zero, and negative CO₂ emissions, *Geosci. Model Dev.*, doi.org/10.5194/gmd-18-5699-2025
 - Morganti, T. M., Yao W., **N. Mengis**, A. Oschlies, G. Rehder Monitoring marine carbon dioxide removal: quantitative analysis of indicators for carbon removed and environmental side-effects, *Environmental Research Letters*, doi.org/10.1088/1748-9326/ae1c54

- Jürchott, M., A Oschlies, N **Mengis**, I Frenger and W Koeve. Direct cooling effect of artificial upwelling dominates over its marine carbon dioxide removal potential, *npj Climate Action*, doi.org/10.1088/1748-9326/ae0054
- Oschlies A., Bach L. T., Fennel K., Gattuso J.-P. and N. **Mengis**. Perspectives and challenges of marine carbon dioxide removal, *Front. Clim.*, doi.org/10.3389/fclim.2024.1506181
- 2024 Monteiro, E. A., Y. Silvy, D. Hohn, F. A. Burger, T. L. Frölicher and N. **Mengis**. FROT: A Framework to comprehensively describe radiative contributions to temperature responses, *Environ. Res. Lett.*, doi.org/10.1088/1748-9326/ad8807
- Voget-Kleschin, L., Baatz C., Heyward C., Van Vuuren D., and N. **Mengis**. Re-assessing the need for carbon dioxide removal: Moral implications of alternative climate target pathways, *Global Sustainability*, doi.org/10.1017/sus.2023.21
- Borchers M., Förster J, D.Thraen, S Beck, T. Thoni, K. Korte, E. Gawel, T. Markus, R. Schaller, I. Rhoden, Y. Chi, N. Dahmen, R. Dittmeyer, T. Dolch, C. Dold, M. Herbst, D. Heß, A. Kalhori, K. Koop-Jakobsen, Z. Li, A. Oschlies, T. Reusch, T. Sachs, C. Schmidt-Hattenberger, A. Stevenson, J. Wu, C. Yeates, and N. **Mengis**. A comprehensive assessment of carbon dioxide removal options for Germany, *Earth's Future*, doi.org/10.1029/2023EF003986
- Sanderson, B. M., B. B. Booth, J. Dunne, V. Eyring, R. A. Fisher, P. Friedlingstein, M. J. Gidden, T. Hajima, C. D. Jones, C. Jones, A. King, C. D. Koven, D. M. Lawrence, J. Lowe, N. **Mengis**, G. P. Peters, J. Rogelj, C. Smith, A. C. Snyder, I. R. Simpson, A. L. S. Swann, C. Tebaldi, T. Ilyina, C.-F. Schleussner, R. Seferian, B. Samset, D. van Vuuren, and S. Zaehle. The need for carbon emissions-driven climate projections in CMIP7, *Geosci. Model Dev.*, doi.org/10.5194/gmd-17-8141-2024
- Silvy, Y., T. L. Frölicher, J. Terhaar, F. Joos, F. A. Burger, F. Lacroix, M. Allen, R. Bernardello, L. Bopp, V. Brovkin, J. R. Buzan, P. Cadule, M. Dix, J. Dunne, P. Friedlingstein, G. Georgievski, T. Hajima, S. Jenkins, M. Kawamiya, N. Y. Kiang, V. Lapin, D. Lee, P. Lerner, N. **Mengis**, E. A. Monteiro, D. Paynter, G. P. Peters, A. Romanou, J. Schwinger, S. Sparrow, E. Stofferahn, J. Tjiputra, E. Tourigny, and T. Ziehn. AERA-MIP: emission pathways, remaining budgets, and carbon cycle dynamics compatible with 1.5 and 2 °C global warming stabilization, *Earth Syst. Dynam.*, doi.org/10.5194/esd-15-1591-2024
- Köhnke F, Steuri B, Baetcke L, Borchers M, Brinkmann T, Dittmeyer R, Dornheim M, El Zohbi J, Förster J, Gawel E, Görl K, Herbst M, Heß D, Kalhori A, Korte K, Li Z, Markus T, N. **Mengis**, Monnerie N, Oschlies A, Prats-Salvado E, Reusch TBH, Rhoden I, Sachs T, Schaller R, Schill E, Simon S, Stevenson A, Thoni T, Thrän D, Xiao M and Jacob D. A storyline approach: integrating comprehensive, interdisciplinary research results to create narratives – in the context of the net-zero target in Germany, *Front. Environ. Sci.*, doi.org/10.3389/fenvs.2024.1433491
- 2023 **Mengis, N.**, Paul A., and M. Fernández-Méndez. Counting (on) Blue Carbon - Challenges and Ways forward for carbon accounting of ecosystem-based carbon removal in marine environments, *PLOS Climate*, doi.org/10.1371/journal.pclm.0000148

- De Sisto, M. L., MacDougall, A. H., **Mengis, N.**, and S. Antonello. *Modelling the terrestrial nitrogen and phosphorus cycle in the UVic ESCM version 2.10*, *Geosci. Model Dev.*, doi.org/10.5194/gmd-16-4113-2023
- Köhnke F., Steuri B., El Zohbi J., Görl K., Borchers M., Förster J., Thrän D., **Mengis, N.**, Oschlies A. and Jacob D. *On the path to net-zero: Establishing a multi-level system to support the complex endeavor of reaching national carbon neutrality*, *Front. Clim.*, doi.org/10.3389/fclim.2023.1056023
- 2022 **Mengis, N.**, Kalhori, A., Simon, S., Harpprecht, C., Baetcke, L., Prats-Salvado, E., Schmidt-Hattenberger, C., Stevenson, A., Dold, C., El Zohbi, J., Borchers, M., Thrän, D., Korte, K., Gawel, E., Dolch, T., Heß, D., Yeates, C., Thoni, T., Markus, T., Schill, E., Xiao, M., Köhnke, F., Oschlies, A., Förster, J., Görl, K., Dornheim, M., Brinkmann, T., Beck, S., Bruhn, D., Li, Z., Steuri, B., Herbst, M., Sachs, T., Monnerie, N., Pregger, T., Jacob, D., and R. Dittmeyer. *Net-zero CO₂ Germany - A Retrospect From the Year 2050*, *Earth's Future*, doi.org/10.1029/2021EF002324
- MacDougall A. H., Mallett J., Hohn D., and **N. Mengis**. *Substantial Regional Climate Change Expected Following Cessation of CO₂ Emissions*, *Environmental Research Letters*, doi.org/10.1088/1748-9326/ac9f59
- Borchers M., D. Thrän, Y. Chi, N. Dahmen, R. Dittmeyer, T. Dolch, C. Dold, J. Förster, M. Herbst, D. Heß, A. Kalhori, K. Koop-Jakobsen, Z. Li, **N. Mengis**, T. B. H. Reusch, I. Rhoden, T. Sachs, C. Schmidt-Hattenberger, A. Stevenson, T. Thoni, J. Wu and C. Yeates. *Scoping carbon dioxide removal options for Germany—What is their potential contribution to Net-Zero CO₂?*, *Front. Clim.*, doi.org/10.3389/fclim.2022.810343
- Hadziosmanovic, M., Lloyd, S. M., Bjørn, A., Paquin, R. L., **Mengis, N.**, and H. D. Matthews. *Using cumulative carbon budgets and corporate carbon disclosure to inform ambitious corporate emissions targets and long-term mitigation pathways*, *Journal of Industrial Ecology*, doi.org/10.1111/jiec.13322
- Förster J., Beck S., Borchers M., Gawel E., Korte K., Markus T., **Mengis, N.**, Oschlies A., Schaller R., Stevenson A., Thoni T. and D. Thrän. *Framework for Assessing the Feasibility of Carbon Dioxide Removal Options Within the National Context of Germany*, *Front. Clim.*, doi.org/10.3389/fclim.2022.758628
- 2021 Dean, J., Kiendler-Scharr, A., **Mengis, N.**, Rudich, Y., Schepanski, K., and R. Zimmermann. *Above us only sky*, *Comm. Earth & Environment*, doi.org/10.1038/s43247-021-00245-0
- Matthews, H. D., Tokarska, K. B., Rogelj, J., Smith, C. J., MacDougall, A. H., Haustein, K., **Mengis, N.**, Sippel, S., Forster, P. M. and R. Knutti. *An integrated approach to quantifying uncertainties in the remaining carbon budget*, *Comm. Earth & Environment*, doi.org/10.1038/s43247-020-00064-9
- Boettcher, M., Brent, K., Buck, H. J., Low, S., McLaren, D. and **N. Mengis**. *Navigating Potential Hype and Opportunity in Governing Marine Carbon Removal*, *Frontiers in Climate*, doi.org/10.3389/fclim.2021.664456
- Kvale, K. F., Koeve, W. and **N. Mengis**. *Calcifying Phytoplankton Demonstrate an Enhanced Role in Greenhouse Atmospheric CO₂ Regulation*, *Frontiers in Marine Science*, doi.org/10.3389/fmars.2020.583989

- Martin, M. A., Alcaraz Sendra, O., Bastos, A., Bauer, N., Bertram, C., Blenckner, T., Bowen, K., Brando, P. M., Brodie Rudolph, T., Büchs, M., Bustamante, M., Chen, D., Cleugh, H., Dasgupta, P., Denton, F., Donges, J. F., Donkor, F.K., Duan, H., Duarte, C. M., Ebi, K. L., Edwards, C.M., Engel, A., Fisher, E., Fuss, S., Gaertner, J., Gettelman, A., Girardin, C. A. J., Golledge, N. R., Green, J. F., Grose, M. R., Hashizume, M., Hebden, S., Hepach, H., Hirota, M., Hsu, H. H., Kojima, S., Lele, S., Lorek, S., Lotze, H. K., Matthews, H. D., McCauley, D., Mebratu, D., **Mengis, N.**, Nolan, R. H., Pihl, E., Rahmstorf, S., Redman, A., Reid, C. E., Rockström, J., Rogelj, J., Saunio, M., Sayer, L., Schlosser, P., Sioen, G. B., Spangenberg, J. H., Stammer, D., Sterner, T. N. S., Stevens, N., Thonicke, K., Tian, H., Winkelmann, R., and J. Woodcock. *Ten new insights in climate science 2021: a horizon scan*, *Global Sustainability*, doi.org/10.1017/sus.2021.25
- 2020 **Mengis, N.**, and H. D. Matthews. *Non-CO₂ forcing changes will likely decrease the remaining carbon budget for 1.5°C*, *npj Climate and Atmospheric Science*, doi.org/10.1038/s41612-020-0123-3
- **Mengis, N.**, Keller, D. P., MacDougall, A., Eby, M., Wright, N., Meissner, K. J., Oschlies, A., Schmittner, A., Matthews, H. D., and K. Zickfeld. *Evaluation of the University of Victoria Earth System Climate Model version 2.10 (UVic ESCM 2.10)*, *Geosci. Model Dev.*, doi.org/10.5194/gmd-13-4183-2020
- Kreuter J., N. Matzner, D. P. Keller, T. Markus, C. Baatz, F. Wittstock, U. Bernitt. **N. Mengis.** *Unveiling assumptions through interdisciplinary scrutiny: Observations from the German Priority Program on Climate Engineering (SPP 1689)*, *Climatic Change*, doi.org/10.1007/s10584-020-02777-4
- MacDougall, A. H., T. L. Frölicher, C. D. Jones, J. Rogelj, H. D. Matthews, K. Zickfeld, V. K. Arora, N. J. Barrett, V. Brovkin, F. A. Burger, M. Eby, A. V. Eliseev, T. Hajima, P. B. Holden, A. Jeltsch-Thommes, C. Koven, **N. Mengis**, L. Menviel, M. Michou, I. I. Mokhov, A. Oka, J. Schwinger, R. Seferian, G. Shaffer, A. Sokolov, K. Tachiiri, J. Tjiputra, A. Wiltshire, and T. Ziehn. *Is there warming in the pipeline? A multi-model analysis of the zero emission commitment from CO₂*, *Biogeosciences*, doi.org/10.5194/bg-2019-492
- Matthews H. D., K. B. Tokarska, Z. R. J. Nicholls, J. Rogelj, J. G. Canadell, P. Friedlingstein, T. L. Frolicher, P. M. Forster, N. P. Gillett, T. Ilyina, R. B. Jackson, C. D. Jones, C. Koven, R. Knutti, A. H. MacDougall, M. Meinshausen, **N. Mengis**, R. Seferian, and K. Zickfeld. *Opportunities and challenges in using remaining carbon budgets to guide climate policy*, *Nature Geoscience*, doi.org/10.1038/s41561-020-00663-3
- Thoni, T., Beck, S., Borchers, M., Förster, J., Görl, K., Hahn, A., **Mengis, N.**, Stevenson, A. and D. Thrän. *Deployment of Negative Emissions Technologies at the national level: A need for holistic feasibility assessments*, *Frontiers in Climate*, doi.org/10.3389/fclim.2020.590305
- 2019 **Mengis, N.**, W. Rickels, D. P. Keller, M. Quaas, and A. Oschlies. *Climate engineering-induced changes in correlations between Earth system variables – implications for appropriate indicator selection*, *Climatic Change*, doi.org/10.1007/s10584-019-02389-7

- Chavaillaz, Y., P. Roy, A.-I. Partanen, L. Da Silva, E. Bresson, **N. Mengis**, D. Chaumont, and H. D. Matthews. Exposure to excessive heat and impacts on labour productivity linked to cumulative CO₂ emissions, *Scientific reports*, doi.org/10.1038/s41598-019-50047-w
- Jones, C. D., T. L. Frölicher, C. Koven, A. H. MacDougall, H. D. Matthews, K. Zickfeld, J. Rogelj, K. B. Tokarska, N. Gillett, T. Ilyina, M. Meinshausen, **N. Mengis**, R. Seferian. The Zero Emission Commitment Model Intercomparison Project (ZECMIP) contribution to CMIP6: Quantifying committed climate changes following zero carbon emissions, *Geosci. Model Dev.*, doi.org/10.5194/gmd-12-4375-2019
- 2018 (a) **Mengis, N.**, D. P. Keller, and A. Oschlies. Systematic Correlation Matrix Evaluation (SCoMaE) – a bottom-up, science-led approach to identifying indicators, *Earth System Dynamics*, doi.org/10.5194/esd-9-15-2018
- (b) **Mengis, N.**, A.-I. Partanen, J. Jalbert, and H. D. Matthews. 1.5°C carbon budget dependent on carbon cycle uncertainty and future non-CO₂ forcing, *Scientific Reports*, doi.org/10.1038/s41598-018-24241-1
- 2017 Oschlies, A., H. Held, D. P. Keller, K. Keller, **N. Mengis**, M. Quaas, W. Rickels, and H. Schmidt. Indicators and metrics for the assessment of Climate Engineering, *Earth's Future*, doi.org/10.1002/2016EF000449
- 2016 **Mengis, N.**, T. Martin, D. P. Keller, and A. Oschlies. Assessing climate impacts and risks of ocean albedo modification in the Arctic, *Journal of Geophysical Research - Oceans*, doi.org/10.1002/2015JC011433
- 2015 **Mengis, N.**, D. P. Keller, M. Eby, and A. Oschlies. Uncertainty in the response of transpiration to CO₂ and implications for climate change, *Environmental Research Letters*, doi.org/10.1088/1748-9326/10/9/094001
- in review Monteiro, E. A. , Tran, G. , Gidden, M. J. and **Mengis, N.** Carbon-climate feedbacks to spatial aerosol model implementation variations, in review at *npj Climate and Atmospheric Science [preprint]*, doi.org/10.21203/rs.3.rs-7502615/v1

Non Peer-Reviewed Publications or Datasets

- 2024 **Mengis, N.** Overshooting warming limits is a risky idea, *Nature News & Views*, doi.org/10.1038/d41586-024-03052-7
- Mathesius, S., Wright, N., **Mengis, N.**, MacIsaac, A., Nzotungicimpaye, C.-M., Keller, D., Giang, T., & Zickfeld, K. CMIP6 scenarios' radiative forcing of non-CO₂ greenhouse gases and aerosols for UVic ESCM simulations (1850-2500), *Zenodo*, doi.org/10.5281/zenodo.11061151
- 2022 Klima retten mit Kohlendioxid-Entnahme?, *promet* Heft 105, 51-58, doi.org/10.5676/DWD_pub/promet_105_09
- IDEENLAUF - Gesellschaftliche Impulse für Wissenschaft und Forschungspolitik, 'Wissenschaft im Dialog' & German Federal Ministry of Education and Research
- Final Report 2022, *Helmholtz Climate Initiative*
- 2018 Conference Report: Climate Engineering Conference 2017, *IASS, Potsdam*. Parallel Session 3.4: CE assessment metrics – Comparative, Integrative, Comprehensive

Teaching and Supervision experience

Teaching experience (selected)

- WiSe 2025/26 **Lecturer for graduate course**, *Christian-Albrechts-University Kiel (CAU)*, Kiel, Oct. 2025 - Feb. 2026.
climOMSEM: Oceanography-Meteorology Seminar
- WiSe 2025/26 **Lecturer for graduate course**, *Christian-Albrechts-University Kiel (CAU)*, Kiel, Oct. 2025 - Feb. 2026.
climCPCARBON-01a: Modern Aspects in Climate Physics IV: Carbon budgets
- SoSe 2025 **Lecturer for graduate course**, *Christian-Albrechts-University Kiel (CAU)*, Kiel, April 2025 - Sept. 2025.
climMEMODEL: Modern Aspects in Meteorology I: Climate Modeling
- **Lecturer for undergraduate course**, *Christian-Albrechts-University Kiel (CAU)*, Kiel, Sept. 2025.
pherPraM - P: Feldpraktikum Meteorologie
- 2025 **Guest lecturer**, *Faculty of Environment and Natural Resources, Biogeochemical System Modeling, Uni Freiburg*, Net-Zero - Why, how and what then?, Freiburg.
- SoSe 2023 **Lecturer for graduate course**, *Christian-Albrechts-University Kiel (CAU)*, Kiel, April 2023 - Sept. 2023.
climSUSTAIN: Ocean Sustainability
- 2022 **Guest lecturer for X-Tutorium Transparency for sustainability**, *Faculty of Economics at the Humboldt University, Berlin*, May 25, Lecture incl. programming exercise.
Netto-Null und andere Klimaziele, und wie wir sie erreichen - Was können CO₂-Emissionsbudgets?
- WiSe 2021/22 **Lecturer for graduate course**, *Christian-Albrechts-University Kiel (CAU)*, Kiel, Oct. 2021 - Feb. 2022.
climMECARBON: Modern Aspects in Meteorology III: "Uncertainties surrounding carbon budget concept"
- 2018 **Guest lecturer for undergraduate course held by H.D. Matthews**, *Concordia University, Montreal*, February 15, 3h class design and implementation.
Climate Change Science, Impacts and Policy: Climate Impacts

PhD candidates

- 2024–dato **PhD Supervisor**, *Judith Matz*, *Christian-Albrechts-University, Kiel, Germany*.
Assessing the contributions of macro-algae mCDR for ambitious climate change mitigation pathways for Germany
- 2023–dato **PhD Supervisor (since Nov. 2024)**, *Tabea Rahm*, *Christian-Albrechts-University, Kiel, Germany*.
Investigating Earth system dynamics surrounding ambitious climate change mitigation
- 2022–2025 **PhD Supervisor**, *Estela Monteiro*, *Christian-Albrechts-University, Kiel, Germany*.
Earth System responses to highly ambitious mitigation scenarios - Contributions from forcing and model uncertainties

- 2024–dato **Second PhD Supervisor**, *Martje Buhr*, Christian-Albrechts-University, Kiel, Germany.
Machine Learning Techniques for the Inversion of Climate Models
- 2024–dato **Second PhD Supervisor**, *Janika Rhein*, Christian-Albrechts-University, Kiel, Germany.
Explainable data-driven climate projections with learnable climate indices
- 2024–dato **Second PhD Supervisor (since Nov. 2024)**, *Yingxue Liu*, Christian-Albrechts-University, Kiel, Germany.
- 2024–dato **Second PhD Supervisor (since Nov. 2024)**, *Qi Zhang*, Christian-Albrechts-University, Kiel, Germany.
- 2026 **Examiner**, *Mitchell David Dickau*, Concordia University, Montreal, Quebec, Canada.
Informing climate policy through advancements in our understanding of the Earth system response to emissions, temperature overshoot, and temporary carbon storage
- 2025 **Second Examiner**, *Miriam Wagner-Jacht*, Christian-Albrechts-University, Kiel, Germany.
Mechanisms and Extent of Indirect Influence of Anthropogenic Substance Input on the Earth System: Case Studies in the Atmosphere and the Ocean
- 2021–2024 **External PhD Supervisor**, *Makcim L. De Sisto*, St. Francis Xavier University, Antigonish, Nova Scotia, Canada.

Master students

- 2025 **Supervision Master Thesis**, *Pia Undine Rethmeier*, Christian-Albrechts-University, Kiel, Germany.
Investigating the Earth system's response to overshoot scenarios
- 2025 **Supervision Master Thesis**, *Christeena Miriam Babu*, Christian-Albrechts-University, Kiel, Germany.
Analysis of TOA Energy Budget Variations in Net-Zero SSP scenarios using Uvic ESCM 2.10
- 2019–2020 **Co-mentored Master Thesis**, *Nesha Wright*, Simon Fraser University, Burnaby, British Columbia, Canada.
Constructing forcing time series to be used by Earth system models of intermediate complexity for the 6th Coupled Model Intercomparison Project
- 2018–2019 **Co-mentored Master Thesis**, *Alex MacIsaac*, Simon Fraser University, Burnaby, British Columbia, Canada.
Implement and estimate the effect of emissions rates of non-CO₂ greenhouse gases on temperature change in the UVic ESCM
- 2018 **Co-mentored Master Thesis**, *Maida Hadziosmanovic*, Concordia University, Montreal, Quebec, Canada.
Using disclosed emissions from public companies to inform the pursuit of ambitious climate targets for the cooperate world

Bachelor students

- 2025 **Second examiner**, *Henriette Haberland*, Christian-Albrechts-University, Kiel, Germany.
On the role of wind stress and buoyancy forcing for the Southern Ocean Carbon uptake variability
- 2021 **Second examiner**, *Thore Müller*, Christian-Albrechts-University, Kiel, Germany.
Ozeandüngung: Der Zwiespalt zwischen der Bekämpfung des Klimawandels und der Gefährdung mariner Ökosysteme

Funding Acquisition Record

- 2024–2027 **Consortium lead**, *ASMASYS II - Assessment framework for marine CO₂ removal and synthesis of current knowledge*, Funding Agency: German Federal Ministry of Education and Research.
value: 4.6M Euro, GEOMAR allocation: 2M Euro
- 2022–2026 **Principal investigator**, *RESCUE - Response of the Earth System to overshoot, Climate neUtrality and negative Emissions*, Funding Agency: EU Horizon Europe research and innovation programme.
value: 7M Euro, GEOMAR allocation: 700.000 Euro
- 2021–2027 **Research group lead**, *FOOTPRINTS - From carbOn remOval To achieving the PaRls agreemeNt's goal: Temperature Stabilisation*, DFG Emmy Noether Programme.
value: 1.46M Euro

Honours, Awards, and other funding (selected)

- 2024–2027 **Co-Chair**, *CDRmare - Research Mission of the German Marine Research Alliance (DAM) »Marine carbon sinks in decarbonisation pathways«*.
value of CDRmare 2nd phase: 20M Euro
- 2023–2028 **Elected Member**, *Die Junge Akademie (German Academy for outstanding young academics). The Berlin-Brandenburg Academy of Sciences and Humanities (BBAW) and the German National Academy of Sciences Leopoldina are the supporting academies..*
value: project based funding, plus 15.000 Euro person-specific allocation
- 2020 **Invitation to participate in the 70th Lindau Nobel Laureate Meeting on Interdisciplinary research**, Nomination and funding by Helmholtz-Society, *Meinau (online), June 27 - July 2*.
- 2019 **Invitation to Expert Workshop - Progress for carbon budget assessments**, Wosk Centre for Dialogue, *Vancouver, January 14-16*.
value: 600 CAD
- 2018 **Invitation to Colloquium on the Occasion of the Appointment for Assistant Professorship at the GEOMAR**, Kiel, Germany, Oct. 26 - Nov. 3.
value: 800 Euro
- 2017 **Concordia University Conference and Exposition Award**, *September*.
value: 1000 CAD
- 2016 **Horizon Postdoctoral Fellowship of the Concordia University Montreal**, appointed a 2-year position starting in January 2017.
value: 47,500 CAD per year
- 2015 **Coordination and participation of Funding Proposal for the second phase of the ComparCE project, within the second call for the SPP 1689**, *September*.
value: 772.000 Euro, GEOMAR allocation: 360.000 Euro