Franziska Glassmeier – Curriculum Vitae

CONTACT Delft University of Technology (TU Delft)
Faculty of Civil Engineering and Geosciences
Department Geoscience and Remote Sensing

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Employment and Education

since 04/2020 **Assistant Professor** in Atmospheric Science, **TU Delft**.

2018–2019 Postdoctoral Researcher/Assistant Professor, Wageningen University.

2016–2018 **Postdoctoral Researcher**, **NOAA**, Boulder (CO, US).

03/2016 **Doctor of Sciences** (Dr. sc.), **ETH Zürich**.
Supervisor: Ulrike Lohmann.

11/2010 **Diploma in Physics** (Dipl. Phys.), **University of Göttingen**.
Thesis at **Max Planck Institute for Dynamics and Self-Organization**.
Supervisors: Jürgen Vollmer & Annette Zippelius.

Grants and Awards

from 2024 **ERC Starting Grant** (EU).

since 2018 The **Branco Weiss Fellowship** – Society in Science (CH).

2018–2023 **Veni** grant of the Dutch Research Council (NL).

2016–2018 **National Academies of Sciences** Research Associateship (US).

2017 PhD Award of the Atmospheric Chemistry and Physics Commission of the **Swiss Academy of Sciences** (CH).

2015 **CIRES Innovative Research Program** grant (US).

2011 **Dr. Berliner–Dr. Ungewitter–Prize** for outstanding diploma (DE).

Key Publications

- **Glassmeier, F.**, F. Hoffmann, J. S. Johnson, T. Yamaguchi, K. S. Carslaw and G. Feingold (2021): Aerosol-cloud-climate cooling overestimated by ship-track data, *Science*, 371, 485–489, doi:10.1126/science.abd3980.
- **Glassmeier, F.** and G. Feingold (2017): A network approach to patterns in stratocumulus clouds, *PNAS*, 114 (40), 10578–10583, doi:10.1073/pnas.1706495114.

Research Group

I am currently hiring 2 postdocs and 2 PhDs – get in touch if interested!

since 05/2024 **Caspar Jungbacker**, PhD candidate (jointly with F. Jansson, P. Siebesma).

since 10/2023 **Zachary Rowland**, PhD candidate (jointly with I. Steinke, H. Russchenberg).

since 12/2022 **Benjamin Hernandez**, PhD candidate.

since 06/2021 **Pouriya Alinaghi**, PhD candidate.

ALUMNI

2022-2023 **Meiling Cheng** (now: Postdoc TU Delft)
2021-2023 **Antoon van Hooft** (now: Lecturer TU Eindhoven)
2021-2022 **Valerie Engelmayer** (now: PhD TU Munich)
2019-2023 **Martin Janssens** (now: Assistant Professor U Wageningen)

Invitations

INVITED CONFERENCE TALKS

09/2024 Keynote lecture at 12th Liquid Matter Conference, Mainz.
04/2024 European Geosciences Union General Assembly, Vienna.
04/2024 Fysica (annual meeting of Netherlands' Physical Society), Eindhoven.
02/2023 Batsheva de Rothschild Seminar on Cloud-Climate Interactions Across Scales, Eilat.
12/2022 American Geophysical Union Fall Meeting, remote.
11/2022 German Conference of Women in Physics, Karlsruhe.
11/2022 Multiphase Flows in Geophysics and the Environment, Kavli Institute, Santa Barbara.
12/2020 American Geophysical Union Fall Meeting, remote.
07/2019 Gordon Research Conference on Radiation and Climate, Maine.
04/2017 European Geosciences Union General Assembly, Vienna.

INVITATIONS TO WORKSHOPS

07/2024 Model Hierarchies in Atmosphere, Ocean, and Climate Sciences, Oberwolfach.
08/2023 Computational Geometry of Earth System Analysis, Dagstuhl.
04/2023 Cloud physics on the Zugspitze, Schneefernerhaus.
03/2023 ORCESTRA field campaign workshop, Ringberg.
04/2022 DOE-NOAA Marine Cloud Brightening Workshop, virtual.
06/2019 Workshop on EarthCARE Forward Operators, MPI Hamburg.

INVITED COLLOQUIA & SEMINARS (SELECTED)

06/2024 Seminar Mathematics and Atmospheric Physics, virtual.
02/2024 Caltech, Climate Modeling Alliance, Pasadena.
02/2024 U Wyoming, Atmospheric Science Seminar, Laramie.
01/2024 Meteorological Colloquium, Leipzig.
12/2023 Colloquium of the Atmospheric Sciences, Mainz (+ Frankfurt remotely).
12/2022 Center for Earth System Observation & Computational Analysis Seminar, Cologne.
02/2022 KlimaCampus Colloquium, Hamburg.
09/2021 Stockholm University, Meteorology Department Seminar, Stockholm.
02/2021 Oxford University, Atmospheric, Oceanic and Planetary Physics Seminar, remote.
04/2018 PIK, Complex Networks Seminar, Potsdam.
02/2018 CU Boulder, Complex Systems Seminar.

Teaching

Fall 2023 Lecture course (MSc): *Aerosol and Cloud Microphysics*, TU Delft.
Fall 2023 Lecture course (BSc) *The Science of Climate Change*, TU Delft.
Winter 2022 Lecture course (BSc) *Dynamics and Modelling* for Civil Engineers, TU Delft.
Fall 2022 Lecture course (BSc) *The Science of Climate Change*, TU Delft.
Winter 2021 Lecture course (BSc) *Dynamics and Modelling* for Civil Engineers, TU Delft.
Winter 2021 Lecture course (MSc) *Climate Change: Science and Ethics*, TU Delft.
Fall 2021 Lecture course (BSc) *The Science of Climate Change*, TU Delft.
Winter 2020 Lecture course (MSc) *Climate Change: Science and Ethics*, TU Delft.

Winter 2020	Course (BSc) *Grand Challenges & Earth Sciences: Climate*, TU Delft.
Fall 2020	Seminar (MSc) *Journal Club on Geoscience and Climate Change*, TU Delft.
Winter 2019	Lecture course (BSc) *Meteorology and Climate*, U Wageningen.
Winter 2019	Course (MSc/BSc) *Clouds in Present & Changing Climate*, U Wageningen.
Winter 2018	Course (MSc/BSc) *Clouds in Present & Changing Climate*, U Wageningen.

Other Professional Activities & Service

Editing & Reviewing

since 2020	**Co-editor of Atmospheric Chemistry and Physics.**
since 2016	Manuscript reviews for *Science*, *Nature Geoscience*, *Science Advances*, *npj Climate and Atmospheric Science*, *Geophysical Research Letters*, *Atmospheric Chemistry and Physics*, *Journal of Geophysical Research: Atmospheres*, *Journal of Applied Meteorology and Climatology*, *Journal of Advances in Modeling Earth Systems*, *Weather and Climate Dynamics*, *Nonlinear Processes in Geophysics*, *Physica D*.
2023	PhD committee of Ulrike Proske (ETH).
2021	PhD committee of Karolina Sarna (TU Delft).

Organization of Scientific Meetings

since 2019	Co-convener of sessions at EGU General Assembly (2019), AMS Annual Meeting (2022), EMS Annual Meeting (2022), AGU Fall Meeting (2022), SIAM Conference (2023).
07/2024	Co-organizer *4th Workshop on Cloud Organization*, Trieste.
09/2023	Co-organizer *3rd Workshop on Cloud Organization*, Trieste.
05/2022	**Local organizer *2nd Workshop on Cloud Organization*, Utrecht.**
05/2021	Co-organizer *1st Workshop on Cloud Organization*, virtual.
04/2018	Co-organizer Aerosol-Cloud-Precipitation-Climate workshop, Boulder.

Committees

since 2023	External advisory board *Perturbed physics ensemble Regression Optimization Center for ESM Evaluation and Development* project (DOE).
since 2022	**Steering committee** Aerosol, Cloud, Precipitation & Climate Working Group.
2019	Funding committee *NWA Idea Generator* (NL).

List of Publications

Peer-reviewed journal articles

- Alinaghi, P., M. Janssens, G. Choudhury, T. Goren, P. Siebesma, **and F. Glassmeier**: Shallow Cumulus Cloud Fields Are Optically Thicker When They Are More Clustered, *Q. J. R. Meteorol. Soc.*, in press.
- Feingold, G., V. P. Ghate, L. M. Russell, P. Blossey, W. Cantrell, M. W. Christensen, M. S. Diamond, A. Gettelman, **F. Glassmeier**, E. Gryspeerdt, J. Haywood, F. Hoffmann, C. Kaul, M. Lebsock, A. C. McComiskey, D. T. McCoy, Y. Ming, J. Muelmenstaedt, A. Possner, P. Prabhakaran, P. K. Quinn, K. S. Schmidt, R. A. Shaw, C. E. Singer, A. Sorooshian, V. Toll, J. S. Wan, R. Wood, F. Yang, J. Zhang, and X. Zheng (2024): Physical science research needed to evaluate the viability and risks of marine cloud brightening, ***Science Advances***, 10, eadi8594.
- Jansson, F., M. Janssens, J.H. Grönqvist, A. P. Siebesma, **F. Glassmeier**, J. Attema, V. Azizi, M. Satoh, Y. Sato, H. Schulz, T. Kölling (2023): Cloud Botany: Shallow cumulus clouds in an ensemble of idealized large-domain large-eddy simulations of the trades, *J. Adv. Model. Earth Syst.*, 15, e2023MS003796.
- Hoffmann, F., **F. Glassmeier**, T. Yamaguchi and G. Feingold (2023): On the Roles of Precipitation and Entrainment in Stratocumulus Transitions Between Mesoscale States, *J. Atmos. Sci.*, 80, 2791–2803.

- Janssens, M., J. Vilà-Guerau de Arellano, C. C. van Heerwaarden, B. J. H. van Stratum, S. R. de Roode, A. P. Siebesma and **F. Glassmeier** (2023): The time scale of shallow convective self-aggregation in large-eddy simulations is sensitive to numerics, *J. Adv. Model. Earth Syst.*, 15, e2022MS003292.
- Janssens, M., J. Vilà-Guerau de Arellano, C. C. van Heerwaarden, S. R. de Roode, A. P. Siebesma and **F. Glassmeier** (2023): Nonprecipitating shallow cumulus convection is intrinsically unstable to length scale growth, *J. Atmos. Sci.*, 80, 849–870.
- Gryspeerdt, E., **F. Glassmeier**, G. Feingold, F. Hoffmann and R.J. Murray-Watson (2022): Observing short timescale cloud development to constrain aerosol-cloud interactions, *Atmos. Chem. Phys.*, 22, 11727–11738.
- Christensen, M. W., A. Gettelman, J. Cermak, G. Dagan, M. Diamond, A. Douglas, G. Feingold, **F. Glassmeier**, T. Goren, D. P. Grosvenor, E. Gryspeerdt, R. Kahn, Z. Li, P.-L. Ma, F. Malavelle, I. L. McCoy, D. T. McCoy, G. McFarquhar, J. Mülmenstädt, S. Pal, A. Possner, A. Povey, J. Quaas, D. Rosenfeld, A. Schmidt, R. Schrödner, A. Sorooshian, P. Stier, V. Toll, D. Watson-Parris, R. Wood, M. Yang and T. Yuan (2022): Opportunistic experiments to constrain aerosol effective radiative forcing, *Atmos. Chem. Phys.*, 22, 641–674.
- Janssens, M., J. Vila-Guerau de Arellano, M. Scheffer, C. Antonissen, A. P. Siebesma and **F. Glassmeier** (2021): Cloud pattern in the trades have four interpretable dimensions, *Geophys. Res. Lett.*, 48, e2020GL091001.
- **Glassmeier, F.**, F. Hoffmann, J. Johnson, T. Yamaguchi, K. Carslaw and G. Feingold: (2021): Aerosol-cloud-climate cooling overestimated by ship-track data, ***Science***, 371, 485–489.
- Lunderman, S., M. Morzfeld, **F. Glassmeier** and G. Feingold (2020): Estimating parameters of the nonlinear cloud and rain equation from a large-eddy simulation, *Physica D*, 410, 132500.
- Hoffmann, F., **F. Glassmeier**, G. Feingold and T. Yamaguchi (2020): Liquid Water Path Steady States in Stratocumulus: Insights From Process-Level Emulation and Mixed-Layer Theory, *J. Atmos. Sci.*, 77, 2203–2215.
- Possner, A., R. Eastman, F. Bender and **F. Glassmeier** (2020): Deconvolution of boundary layer depth and aerosol constraints on cloud water path in subtropical stratocumulus decks, *Atmos. Chem. Phys.*, 20, 3609–3621.
- **Glassmeier, F.**, F. Hoffmann, J. Johnson, T. Yamaguchi, K. Carslaw and G. Feingold (2019): An emulator approach to stratocumulus susceptibility, *Atmos. Chem. Phys.*, 19, 10191–10203.
- **Glassmeier, F.**, L. Arnold, R. Dietlicher, M. Paukert and U. Lohmann (2018): A modeling study on the sensitivities of atmospheric charge separation according to the relative-diffusional-growth-rate theory on non-spherical hydrometeors and cloud microphysics, *J. Geophys. Res. Atmos.*, 123, 12236–12252.
- **Glassmeier, F.** and U. Lohmann (2018): Precipitation susceptibility and aerosol buffering of warm and mixed-phase orographic clouds in idealized simulations, *J. Atmos. Sci.*, 75(4), 1173–1194.
- **Glassmeier, F.** and G. Feingold (2017): A network approach to patterns in stratocumulus clouds, *Proc. Natl. Acad. Sci. (**PNAS**)*, 114 (40), 10578–10583.
- Feingold, G., J. Balsells, **F. Glassmeier**, T. Yamaguchi, J. Kazil and A. McComiskey (2017): Analysis of albedo versus cloud fraction relationships in liquid water clouds using heuristic models and large eddy simulation, *J. Geophys. Res. Atmos.*, 122, 7086–7102.
- **Glassmeier, F.**, A. Possner, B. Vogel, H. Vogel and U. Lohmann (2017): A comparison of two chemistry and aerosol schemes on the regional scale and the resulting impact on radiative properties and liquid- and ice-phase aerosol-cloud interactions, *Atmos. Chem. Phys.*, 17, 8651–8680.
- **Glassmeier, F.**, and U. Lohmann (2016): Constraining precipitation susceptibility of warm, ice- and mixed-phase clouds with microphysical equations, *J. Atmos. Sci.*, 73 (12), 5003–5023.

PEER-REVIEWED BOOK CHAPTER

- Gordon, H., **F. Glassmeier** and D. McCoy (2023): An overview of aerosol-cloud interactions, in: Clouds and Their Climatic Impact: Radiation, Circulation, and Precipitation, AGU Books.

REPORTS

- Feingold, G., V. P. Ghate, L. M. Russell, P. Blossey, W. Cantrell, M. W. Christensen, M. S. Diamond, A. Gettelman, **F. Glassmeier**, E. Gryspeerdt, J. Haywood, F. Hoffmann, C. Kaul, M. Lebsock, A. C. McComiskey, D. T. McCoy, Y. Ming, J. Muelmenstaedt, A. Possner, P. Prabhakaran, P. K. Quinn, S. Schmidt, R. A. Shaw, C. E. Singer, A. Sorooshian, V. Toll, J. Wan, R. Wood, F. Yang, J. Zhang, and X. Zheng (2022): DOE-NOAA Marine Cloud Brightening Workshop, U.S. Department of Energy and U.S. Department of Commerce NOAA, DOE/SC-0207, NOAA Technical Report OAR ESRL/CSL-1.

THESES

- Doctoral Thesis: *Constraining susceptibilities of aerosol-cloud-precipitation interactions in warm and cold clouds*, ETH Zürich (2016). Available online at doi.org/10.3929/ethz-a-010614474.
- Diploma Thesis: *A billiard model for wet granular matter*, University of Göttingen (2010). Available online at hdl.handle.net/11858/00-001M-0000-002D-C094-3.

Media Coverage

11/2023	nrc (Dutch): *De uitstoot van schepen heeft ook een verkoelend effect op het klimaat* (Shipping emissions have also a cooling effect on climate) by L. Bergshoef.
11/2023	Trouw (Dutch): *Door strenge milieuregels voor de scheepvaart warmt het klimaat extra op. Hoe kan dat?* (Strict controls on shipping pollution lead to extra climate warming) by M. van Gestel.
08/2023	Science/Süddeutsche Zeitung: *Ship fuel rules have altered clouds and warmed waters* (*„Wir verändern die Wolken"*, German version) by P. Voosen.
01/2023	nrc (Dutch): *Wat er in de wolken gebeurt wordt nu pas een beetje duidelijk* (What happens in the clouds is only now becoming a little clearer) by L. Wismans.
02/2021	SPIEGEL Klimabericht (German): *Sind Aerosole Klimaretter?* (Are aerosols climate savers?) by K. Stukenberg.
02/2021	Het Financieele Dagblad (Dutch): *Sleutel aan de wolken, red het klimaat* (Regulate the clouds, save the climate) by J. Koot.
02/2021	ScienceNews: *Ship exhaust studies overestimate cooling from pollution-altered clouds* by C. Gramling.
01/2021	Chemical & Engineering News: *Scientists might be overestimating atmospheric cooling effects of aerosol pollution* by S. Lemonick.
01/2021	bild der wissenschaft (German): *Aerosole kühlen die Atmosphäre weniger als gedacht* (Aerosols cool the atmosphere less than we thought) by E. Bernhard.
12/2019	National Geographic Magazine (Dutch): *De Wetenschap van morgen - Talentvolle onderzoekers verkennen onze wereld* (The science of tomorrow - talented researchers explore our world) by M. Prins.
11/2017	Climatewire: *Clouds' warming potential is frightening researchers* by J. Fialka.
09/2017	Dutch public broadcasting (Dutch): *Zo ontstaan wolken - en voorspellen we het klimaat beter* (This is how clouds form - and how to better predict the climate) by M. Drost.

Outreach

11/2023	**Branco Weiss Lecture** on *(Un)predictability*, ETH Zürich.
06/2023	**Art event** with J. F. Thomas and E. Volkova at Jan van Eyck Academie *Open Studios*.
02/2023	Portrait *Physikerin der Woche* (Female physicist of the week) for German Physical Society.
05/2022	Public talk *Pint of Science*, The Hague.
05/2021	**Physik in unserer Zeit** (German language physics trade journal): *Aerosol-Wolken-Wechselwirkungen im Klimasystem* (Aerosol-cloud interactions in the climate system) by F. Hoffmann, **F. Glassmeier**.