Prof. Dr. Elisa Mantelli

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Current position

Professor of Glaciology (W2 Tenure-Track) *4/2024 - current*
LMU München, Department of Earth and Environmental Science &
Alfred Wegener Institute for Polar and Marine Research, Glaciology Section.

Previous professional appointments

Vertretungs Professur *6/2023 - 3/2024*
LMU München, Department of Earth and Environmental Science

Adjunct Lecturer *3/2023 - 3/2024*
University of Tasmania, Institute for Marine and Antarctic Studies

Lecturer (equivalent to US Assistant Professor) *8/2021 - 2/2023*
University of Tasmania, Institute for Marine and Antarctic Studies

Postdoctoral Research Associate *5/2019 - 7/2021*
Princeton University & GFDL, Atmospheric & Oceanic Sciences Program
Faculty host: Dr. O. Sergienko

Visiting Postdoctoral Scholar *5/2019 - 7/2021*
Stanford University, Geophysics Department
Faculty host: Prof. D. Schroeder

Postdoctoral Research Scholar *1/2017 - 4/2019*
Stanford University, Geophysics Department
Advised by Profs. D. Schroeder & J. Suckale

Postdoctoral Research Scholar *5/2016 - 12/2016*
University of British Columbia, Department of Earth, Ocean and Atmospheric Sciences
Advised by Prof. C. Schoof

Education

Ph.D., Environmental Engineering, Politecnico di Torino *3/2013 - 3/2016*
Dissertation: *Mathematical models of ice stream dynamics and supraglacial drainage*
Supervised by Prof. C. Camporeale; external examiners: Profs. P. Perona & J. Kingslake

M.Sc., Environmental Engineering, Politecnico di Torino *2010 - 2012*
Dissertation: *A theoretical study of instabilities in film flows over permeable walls*
Supervised by Profs. C. Camporeale & C. Manes.
Grade: 110 cum laude/110, highest honor.

B.Sc., Environmental Engineering, Politecnico di Torino *2007 - 2010*
Grade: 110/110.

Research grants

ERC Starting Grant 2022 *6/2023-5/2028*
Project title: PHAST - A physics-based study of ice stream dynamics.
Role: PI.
Amount: 1.8M euros.

Helmholtz Professorship for Excellent Women Scientists *awarded 2022, current*
Role: PI. The funding supports the establishment of a permanent, joint Professorship in Glaciology at AWI and LMU München.
Amount: 200k euros/year, permanently.

Australian Center for Excellence in Antarctic Science [website] *2022 - 2025*
Role: Chief Investigator.
Amount: 20M AUD (split among 40 CIs).

Helmholtz Young Investigator Award 2022 *(declined)*
Role: PI.
Amount: 1.5M euros.

CIMES research fellowship, Princeton University & NOAA *2019 - 2021*
Role: PI. This is a personal grant that funded my postdoctoral work on ice-ocean interactions.
Amount: 130k USD.

Honors & awards

Certificate for outstanding mentoring and teaching, Stanford University	*2019*
Travel award, 26th West Antarctic Ice Sheet Workshop, Camp Julian (CA)	*2019*
Travel award, IGS Symposium on Five Decades of Radioglaciology, Stanford (CA)	*2019*
Travel award, 25th West Antarctic Ice Sheet Workshop, Stony Point (NY)	*2018*
Award for the best doctoral dissertation in Environmental Engineering, Politecnico di Torino	*2016*
Doctoral scholarship, Politecnico di Torino (90k EUR)	*2013-2016*
Scholarship for research abroad, Scuola Interpolitecnica di Dottorato (10k EUR)	*2014-2016*
Travel award, 2013 AGU Fall Meeting, San Francisco (CA)	*2013*
M.Sc. scholarship, Autostrade per l'Italia (10k EUR)	*2011-2012*
Award for outstanding M.Sc. dissertation, Unione Industriale di Torino	*2012*

Invited conference talks & seminars

- **Invited conference talks/ workshop participation:** [5] Selected as 'key participant' in the invitational workshop *'The Physics of Changing Polar Climate'*, Kavli Institute for Theoretical Physics (2025); [4] invitational workshop *'Mathematical Modeling in Glaciology'*, Banff International Research Station, Canada (2020) [recording]; [3] *'Climate Symposium'*, Yale University, USA (2020, postponed); [2] AGU Fall Meeting, San Francisco, USA (2019); [1] SIAM CSE19, Spokane, USA (2019).
- **Department seminars:** [2022] Harvard University; University of Oxford; LMU München; Alfred Wegener Institute; Ca' Foscari University of Venice. [2021] University of Texas at Austin; Colorado School of Mines. [2020] British Antarctic Survey; ETH Zürich; UC Santa Cruz; Princeton University. [2019] Lamont-Doherty Earth Observatory. [2018] Geophysical Fluid Dynamics Laboratory; California Institute of Technology; University of Oregon. [2016] Stanford University.

Mentoring & supervision

- **Postdoctoral advisor**: Dr. Emma Chizzali (glacier geophysics, LMU, 9/2024 - current); Dr. Tilly Woods (mathematical glaciology, LMU, 11/2024 - current); Dr. Cristina Gerli (data-model integration, LMU, 10/2024 current); Dr. Francesca Falcini (glacier geophysics, AWI, 1/2024 - 12/2025); Dr. Daniel Richards (ice anisotropy, University of Tasmania, 1/2023 - 10/2024).
- **Doctoral advisor**: Mr. Silas Lloyd (mathematical glaciology, LMU, started in 11/2025.
- **PhD supervisory committee member**: Charlotte Carter (AWI, 2023 - ongoing); Leah - Sophie Muhle (Univ. Tuebingen, 2024 - ongoing).
- **PhD examination committee member**: Clara Henry (Univ. Tuebingen, 11/2023); Thomas Gregov (Univ. Liege & ULB, 2/2025).
- **BSc/MSc thesis advisor**: Sophie Brass (LMU Physics MSc, 11/2023-4/2025); Madison Goldberg (Stanford Geophysics, 2018); Marnie Bryant (Stanford Geophysics, 2017); Chiara Roati (Politecnico di Torino, 2016-2017); Matteo Bertagni (Politecnico di Torino, 2015-2016); Loris Elba (Politecnico di Torino, 2014-2015).
- **Unofficial co-supervision**: Eliza Dawson (Ph.D., Stanford Univ., 2018 - 2023); Indraneel Kasmalkar (Ph.D., Stanford Univ., 2017-2019).

Teaching

- **Instructor**: *'Special Topics in Glaciology'*, M.Sc. Geophysics, LMU Munich (WS 2024, WS 2025); *'Geophysics Research: Overview on Methods and Open Questions'*, M.Sc. Geophysics, LMU Munich (WS 2023- WS 2025).
- **Curriculum development**: undergraduate major in Antarctic Cryosphere & Solid Earth, University of Tasmania (2022).
- **Guest lecturer**: *'Introduction to Radioglaciology'* at the IGS Symposium on Five Decades of Radioglaciology, Stanford, 2019. *'Environmental Fluid Mechanics'*, M.Sc. Environmental Engineering, Politecnico di Torino, 2016.

Refereeing activities

- **Scientific editor** for *'The Cryosphere'*, impact factor of 5.7 (since Sept. 2021).
- **Review panelist** for NASA ROSES (2020) and Marie Slodowska-Curie Postdoctoral Fellowships (2022).
- **Proposal reviewer** for the US National Science Foundation, Office of Polar Programs and the French Agence Nationale de la Recherche.
- **Referee** for manuscripts in Nature, Proceedings of the Royal Society A, Journal of Fluid Mechanics, Journal of Geophysical Research-Earth Surface, The Cryosphere, Annals of Glaciology, Journal of Glaciology, Earth Surface Dynamics, Hydrological Processes.

Service to the community

- **Convener and chair** of the session *'Advances and future opportunities for the integration of ice sheet models with geophysical observations'*, EGU General Assembly, 2020-2025.

- **Member** of the Executive Committee of the *'Commission on Mathematical Geophysics of the IUGG'*, 2023 - present.
- **Co-organizer** of *'Maths on Ice'*, an online seminar series/discussion forum on mathematical glaciology. With Ronja Reese, Sam Pegler, and Ian Hewitt (2021-2023).
- **Organizing committee member**, International Glaciological Society's *'International Symposium on Five Decades of Radioglaciology'* (Stanford Univ., July 2019).

Publications

n.b.: † denotes equal contributions; advisees are underlined.

Under review

[15] Richards D. H. , **Mantelli E.**, Pegler S. S., Piazolo S. *A comparative study of fabric evolution models and anisotropic rheologies.* The Cryosphere (2024). [link].

[14] Bingham G. R. and others including **Mantelli E.**. *Review Article: Antarctica's internal architecture: Towards a radiostratigraphically-informed age–depth model of the Antarctic ice sheets.* The Cryosphere (2024). [link].

Peer-reviewed publications

[13] Dawson E., Schroeder D., Chu W., **Mantelli E.**, Seroussi H. *Heterogeneous basal thermal conditions underpinning the Adelie-George V Coast, East Antarctica.* Geophys. Res. Letters (2024). [link].

[12] Hank K., Tarasov L., **Mantelli E.** *Modeling sensitivities of thermally and hydraulically driven ice stream surge cycling* Geoscientific Model Development (2023). [link].

[11] Dawson E., †Schroeder D., †Chu W., †**Mantelli E.**, †Seroussi H. *Ice mass loss sensitivity to the Antarctic Ice Sheet basal thermal state.* Nature Communications (2022). [link].

[10] †Schoof C., †**Mantelli E.** *The role of sliding in ice stream formation.* Proceedings of the Royal Society A (2021). [link]

[9] Goldberg M., Schroeder D. Castelletti D., **Mantelli E.**, Ross N., Siegert M. *Automated detection and characterization of Antarctic basal units using radar sounding data: Demonstration in Institute Ice Stream, West Antarctica.* Annals of Glaciology (2020). [link]

[8] **Mantelli E.**, Haseloff M., Schoof C. *Ice sheet flow with thermally activated sliding. Part I: The role of advection.* Proceedings of the Royal Society A (2019). [link]

[7] †**Mantelli E.**, †Schoof C. *Ice sheet flow with thermally activated sliding. Part II: The stability of subtemperate regions.* Proceedings of the Royal Society A (2019). [link]

[6] Castelletti D., Schroeder D.M., **Mantelli E.**, Hilger A. *Layer optimized SAR processing and slope estimation in radar sounder data.* Journal of Glaciology (2019). [link]

[5] Kasmalkar I., **Mantelli E.**, Suckale J. *Spatial heterogeneity in subglacial drainage driven by till erosion.* Proceedings of the Royal Society A (2019). [link]

[4] Castelletti D., Schroeder D., **Mantelli E.**, Hilger A. *Unfocused SAR processing for englacial layer slope estimation using radar sounder data.* Proceedings of the 2018 IEEE International Geoscience and Remote Sensing Symposium (2018). [link]

[3] **Mantelli E.**, Bertagni M., Ridolfi L. *Stochastic ice stream dynamics.* Proceedings of the National Academy of Sciences of the United States of America (2016). [link]

[2] **Mantelli E.**, Camporeale C., Ridolfi L. *Supraglacial channel inception: processes and modeling.* Water Resources Research (2015). [link]

[1] Camporeale C., **Mantelli E.**, Manes C. *Interplay among unstable modes in films over permeable walls.* Journal of Fluid Mechanics (2013). [link]