

# DR. ELISA MANTELLI

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## CURRENT POSITION

**Professor of Glaciology (Vertretungsprofessur/ substitute professor)** 6/2023 - current  
LMU München, Department of Earth and Environmental Science.

**Guest scientist** 6/2023 - current  
Alfred Wegener Institute for Polar and Marine Research, Glaciology section.

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

## PREVIOUS PROFESSIONAL APPOINTMENTS

**Lecturer (equiv. Assist. Prof.)** 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.

## 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

## ACTIVE GRANTS

<b>ERC Starting Grant 2022</b>	6/2023-5/2028
Project title: PHAST - A physics-based study of ice stream dynamics.	
Role: PI.	
Amount: 1.8M euros.	
<b>Helmholtz Professorship for Excellent Women Scientists</b>	starting 2023
Role: PI. The funding supports the establishment of a permanent, joint Professorship in Glaciology at AWI and LMU München.	
Amount: 200k euros/year, permanently.	
<b>Australian Center for Excellence in Antarctic Science</b> [ <a href="#">website</a> ]	2022 - 2025
Role: Chief Investigator.	
Amount: 20M AUD (split among 40 CIs).	

## PREVIOUS GRANTS

<b>Helmholtz Young Investigator Award 2022</b>	(declined)
Role: PI.	
Amount: 1.5M euros.	
<b>CIMES research fellowship, Princeton University &amp; NOAA</b>	2019 - 2021
Role: PI. This is a personal grant that funded my postdoctoral work on ice-ocean interactions.	
Amount: 130k USD.	

## 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. Daniel Richards (ice anisotropy and its links to ice flow, University of Tasmania, 2023 - *ongoing*).
- **PhD supervisory committee member:** Yu Wang (Ph.D. program in Antarctic Sciences, University of Tasmania, 2022 - *ongoing*).
- **Unofficial co-supervision:** Eliza Dawson (Ph.D., Stanford Univ., 2018 - *ongoing*); Indraneel Kasmalkar (Ph.D., Stanford Univ., 2017-2019).
- **BSc/MSc student mentoring:** Madison Goldberg (Harvard College/ Stanford summer intern, 2018); Marnie Bryant (UC Santa Cruz/ Stanford summer intern, 2017); Chiara Roati (Politecnico di Torino, 2016-2017); Matteo Bertagni (Politecnico di Torino, 2015-2016); Loris Elba (Politecnico di Torino, 2014-2015).

## TEACHING

- **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.
- **Teaching assistant:** tutor for Calculus I, Calculus II, Differential Geometry, B.Sc. Engineering (Politecnico di Torino, 2010-2012). Laboratory session tutor for Hydraulics and Environmental Fluid Mechanics, M.Sc. Civil and Environmental Engineering (Politecnico di Torino, 2013-2014).

## REFEREEING ACTIVITIES

- **Scientific editor** for the EGU flagship glaciology journal ‘*The Cryosphere*’, impact factor of 5.7 (since Sept. 2021).
- **Review panelist** for NASA ROSES (2020) and Marie Skłodowska-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, 2020-2023. With Helene Seroussi, Rob Bingham, Olaf Eisen, Nanna Karlsson, Mathieu Morlighem, Johannes Sutter.

- **Co-organizer** of ‘*Maths on Ice*’, an online seminar series/discussion forum on mathematical glaciology. With Ronja Reese, Sam Pegler, and Ian Hewitt (since 2021).
- **Organizing committee member**, International Glaciological Society’s ‘*International Symposium on Five Decades of Radioglaciology*’ (Stanford Univ., July 2019).

## **OTHER PROFESSIONAL ACTIVITIES**

- **Fieldwork participation**: 3 expeditions in the Canadian Arctic for glacier hydrology fieldwork (2016-2017, ca. 2 months total, St. Elias range. With C. Schoof). Volunteer for the annual glacier monitoring campaigns for surface geophysics and glacier mass balance work in the Italian Western Alps (2006-2015, Parco Nazionale Gran Paradiso, Italy).
- **Outreach and public engagement** (selected activities): [3] Expert for the ‘*Curious Climate Schools*’ initiative [[website](#)], a Tasmanian outreach initiative for grade school students. [2] Discussion panelist for the movie ‘*Chasing Ice*’ (Nov 2020), Princeton University, University Center for Human Values Film Forum. [1] Bronx Community College, ‘*STEM Talks*’ seminar series speaker (Nov 2019).

## PUBLICATION LIST

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n.b.: † denotes equal contributions; students I co-supervised are underlined.

### UNDER REVIEW

- [13] Hank K., Tarasov L., **Mantelli E.** *Numerical issues in modeling thermally and hydraulically driven ice stream surge cycling*. Under review on Geoscientific Model Development.
- [12] Dawson E., †Schroeder D., †Chu W., †**Mantelli E.**, †Seroussi H. *Heterogeneous basal thermal conditions of Wilkes Basin and the Adelie-George V Land region of East Antarctica detected from airborne radar sounding*. . Under review on Geophysical Research Letters.

### PEER-REVIEWED PUBLICATIONS

- [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](#)]