

TILL J.W. WAGNER

Curriculum Vitae

Atmospheric and Oceanic Sciences
University of Wisconsin–Madison
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Preparation and Appointments

- 2021 - **Assistant Professor**, Department of Atmospheric and Oceanic Sciences
University of Wisconsin–Madison
- 2018 - 2021 **Assistant Professor**, Department of Physics and Physical Oceanography
University of North Carolina Wilmington
- 2013 - 2017 **Postdoctoral Scholar**, Scripps Institution of Oceanography, *University of California San Diego*
Advisor: Ian Eisenman (2013-2017), Co-advisor: Fiamma Straneo (2017)
- 2009 - 2013 **Doctor of Philosophy (Ph.D.) in Mathematics**
University of Cambridge, UK
Advisors: Dominic Vella, Peter Wadhams
- 2008 - 2009 **Master of Advanced Studies (MASt) in Mathematics (Part III)**
University of Cambridge, UK
- 2004 - 2008 **Master of Science (M.Sci.) in Physics & Philosophy**, *University of Bristol, UK*

Funding and Fellowships (selected)

- 2024 - 2029 **NSF Polar - Antarctic Ocean and Atmospheric Science** (\$784,598)
"CAREER: Constraining iceberg size distributions and their climate impacts in models"
Role: PI
- 2024 - 2027 **NSF Physical Oceanography** (\$399,211)
"Collaborative Research: Prospects and limitations of predicting a potential collapse of the Atlantic meridional overturning circulation"
Role: PI (Co-PI E Maroon; Collaboration with D McNamara, UNC Wilmington; \$683,657 total)
- 2023 - 2025 **UW Madison - Research Forward 3** (\$476,632)
"A Fresh Look at Lake Biophysics: Wave-Driven Processes Across Scales and Seasons"
Role: Co-PI (PI: N Pujara; shared between 7 faculty at UW Madison)
- 2022 - 2026 **NSF Polar - Antarctic Ocean and Atmospheric Science** (\$622,183)
"Wave Erosion at Ice Cliffs"
Role: PI (Co-PIs L Zoet, UW Geosciences; N Pujara, UW Engineering)
- 2023 - 2024 **UW Madison - WARF Fall Research Competition** (\$51,312)
"Dynamics of a wind-ice-ocean feedback in the Arctic Ocean"
Role: PI
- 2018 - 2021 **NSF Polar - Antarctic Ocean and Atmospheric Science** (\$289,502)
"Collaborative Research: Modeling Giant Icebergs and Their Decay"
Role: PI (Collaboration with A Adcroft, Princeton University; \$578,170 total)
- 2017 - 2021 **NSF Polar - Antarctic Ocean and Atmospheric Science** (\$399,570)
"The influence of sea ice motion on Antarctic sea ice expansion"
Role: Co-PI (PI: Eisenman)

- 2019 **Greenpeace International**, 3 weeks exclusive ship time on MY Arctic Sunrise
"Life on the edge: the marginal sea ice zone and the changing Arctic ecosystem"
 Role: PI
- 2016 - 2017 **Frontiers of Innovation Scholars Program (FISP)** (\$25,000)
 Project Fellowship for Postdoctoral Scholars
- 2012 **Mathematical Institute, University of Oxford**
 KAUST Visiting Student Fellowship

Publications (* denotes member of my group)

- [37] Calving from horizontal forces in a revised crevasse-depth framework**
 D.A. Slater and **T.J.W. Wagner** (*under review*)
- [36] Slowed response of Atlantic meridional overturning circulation not a robust signal of collapse**
 C.C. Zimmerman*, **T.J.W. Wagner**, E.A. Maroon, D.E. McNamara (*under review*)
- [35] Calving of Ross Ice Shelf from wave erosion and hydrostatic stresses**
 N.B. Sartore*, **T.J.W. Wagner**, M.R. Siegfried, N. Pujara, and L.K. Zoet (*under review*)
- [34] The role of surface water waves on driving cyanobacterial blooms in lakes**
 C.A.C. Gushulak, T.H. Bertram, ... **T.J.W. Wagner**, L.K. Zoet, G.M. Wilkinson (*under review*)
- [33] A frontal ablation dataset for 49 tidewater glaciers in Greenland**
 D. Fahrner, D. Slater, A. KC, C. Cenedese, D.A. Sutherland, E. Enderlin, F. de Jong, K.K. Kjeldsen, M. Wood, P. Nienow, S. Nowicki, **T.J.W. Wagner** (*under review*)
- [32] A model of near-sea ice phytoplankton blooms**
 C. Lester, **T.J.W. Wagner**, D.E. McNamara, *Limnology and Oceanography Letters* (*accepted*)
- [31] Evaluating the importance of footloose-type failure in ice island deterioration modeling**
 A.J. Crawford, G. Crocker, J. Smith, D. Mueller, **T.J.W. Wagner**, *Cold Reg Sci & Tech*, 104325 (2024)
- [30] Increased sea ice melt as a driver of enhanced Arctic phytoplankton blooming**
 A. Castagno*, **T.J.W. Wagner**, and 6 others, *Global Change Biology*, 29, 5087–5098 (2023)
- [29] Asymmetry in the seasonal cycle of zonal-mean surface air temperature**
 L. Roach, I. Eisenman, **T.J.W. Wagner**, A. Donohoe, *Geophys Res Lett*, 50, e2023GL103403 (2023)
- [28] A possible hysteresis in the Arctic Ocean due to release of ocean heat during sea ice retreat**
 E. Beer, I. Eisenman, **T.J.W. Wagner**, E.C. Fine, *J Phys Oceanogr*, 53, 1323–1335 (2023)
- [27] Spurious climate impacts in sea ice loss simulations**
 M.R. England*, I. Eisenman, **T.J.W. Wagner**, *Journal of Climate*, 35, 7401–7411 (2022)
- [26] Asymmetry in the seasonal cycle of Antarctic sea ice due to insolation**
 L. Roach, I. Eisenman, **T.J.W. Wagner**, E. Blanchard, C. Bitz, *Nature Geoscience*, 15 (4) 277–281 (2022)
- [25] How winds and currents determine the drift of floating objects**
T.J.W. Wagner, I. Eisenman, A. Ceroli*, Navid Constantinou, *J Phys Oceanogr*, 52 (5) 907–916 (2022)
- [24] How sea ice drift influences sea ice area and volume**
T.J.W. Wagner, I. Eisenman, and H.C. Mason*, *Geophysical Research Letters*, e2021GL093069 (2021)
- [23] The recent emergence of Arctic Amplification**
 M. R. England*, I. Eisenman, N. Lutsko, **T.J.W. Wagner**, *Geophysical Research Letters*, e2021GL094086 (2021)
- [22] The Influence of Meltwater on Phytoplankton Blooms Near the Sea-Ice Edge**
 C.W. Lester*, **T.J.W. Wagner**, D.E. McNamara, M.R. Cape, *Geophys Res Lett*, e2020GL091758 (2021)

- [21] **Modeling the breakup of tabular icebergs**
M. R. England*, **T.J.W. Wagner**, I. Eisenman, *Science Advances*, 6 (51) eabd1273 (2020)
- [20] **Polar amplification due to enhanced heat flux across the halocline**
E. Beer, I. Eisenman, **T.J.W. Wagner**, *Geophysical Research Letters*, 47, e2019GL086706 (2020)
- [19] **Viscous and elastic buoyancy stresses as drivers of ice-shelf calving**
C. Mosbeux, **T.J.W. Wagner**, M. K. Becker, H. A. Fricker, *Journal of Glaciology*, 66.258, 643-657 (2020)
- [18] **Large spatial variations in the flux balance along the front of a Greenland tidewater glacier**
T.J.W. Wagner, F. Straneo, [...], H. Singh, *The Cryosphere*, 13, 911-925 (2019)
- [17] **Patterns of change in Antarctic sea ice extent from seasonal to longer timescales**
C. Eayrs, D. Holland, D. Francis, **T.J.W. Wagner**, R. Kumar, X. Li, *Reviews of Geophysics*, 57, 631 (2019)
- [16] **Localized Plumes Drive Front-Wide Ocean Melting of A Greenlandic Tidewater Glacier**
D. A. Slater, F. Straneo, S. B. Das, C. B. Richards, **T.J.W. Wagner**, P.W. Nienow, *GRL*, 45, 12350-12358 (2018)
- [15] **The influence of layering and barometric pumping on firn air transport in a 2-D model**
Benjamin Birner, Christo Buizert, **T.J.W. Wagner**, J.P. Severinghaus, *The Cryosphere*, 12, 2021-2037 (2018)
- [14] **Wave inhibition by sea ice enables trans-Atlantic ice rafting of debris during Heinrich Events**
T.J.W. Wagner, R.W. Dell, I. Eisenman, R.F. Keeling, L. Padman, J.P. Severinghaus, *EPSL*, 495, 157-163 (2018)
- [13] **On the Representation of Capsizing in Iceberg Models**
T.J.W. Wagner, A.A. Stern, R.W. Dell, I. Eisenman, *Ocean Modelling*, 117, 88-96 (2017)
- [12] **An Analytical Model of Iceberg Drift**
T.J.W. Wagner, R.W. Dell, I. Eisenman, *Journal of Physical Oceanography*, 47, 1605-1616 (2017)
- [11] **How Model Biases Skew the Distribution of Iceberg Meltwater**
T.J.W. Wagner and I. Eisenman, *Geophysical Research Letters*, 44, 3691-3699 (2017)
- [10] **Journey of an Arctic Ice Island**
A. Crawford, P. Wadhams, **T.J.W. Wagner**, [...] K.W. Nicholls, *Oceanography*, 29, (2) 254-263 (2016)
- [9] **On the Role of Buoyant Flexure in Glacier Calving**
T.J.W. Wagner, T.D. James, T. Murray, D. Vella, *Geophysical Research Letters*, 43, 1, 232-240 (2016)
- [8] **False Alarms: How Early Warning Signals Falsely Predict Abrupt Sea Ice Loss**
T.J.W. Wagner and I. Eisenman, *Geophysical Research Letters*, 42, (23) 10333 (2015)
- [7] **Wind-Driven Upwelling around Grounded Tabular Icebergs**
A.A. Stern, E. Johnson, D.M. Holland, **T.J.W. Wagner**, [...] J.-E. Tremblay, *JGR-Oceans*, 120(8), 5820-5835 (2015)
- [6] **How Climate Model Complexity Influences Sea Ice Stability**
T.J.W. Wagner and I. Eisenman, *Journal of Climate*, 28 (10) 3998-4014 (2015)
- [5] **The 'Footloose' Mechanism: Iceberg Decay from Hydrostatic Stresses**
T.J.W. Wagner, [...] K.W. Nicholls, *Geophysical Research Letters*, 41 (15) 5522 (2014)
- [4] **Switch on, Switch off: Stiction in Nanoelectromechanical Switches**
T.J.W. Wagner and D. Vella, *Nanotechnology*, 24, 275501 (2013)
- [3] **The 'Sticky Elastica' - Delamination Blisters Beyond Small Deformations**
T.J.W. Wagner and D. Vella, *Soft Matter*, 9, 1025-1030 (2013)
- [2] **The Sensitivity of Graphene 'Snap-Through' to Substrate Geometry**
T.J.W. Wagner and D. Vella, *Applied Physics Letters*, 100, 233111 (2012)
- [1] **Floating Carpets and the Delamination of Thin Elastic Sheets**
T.J.W. Wagner and D. Vella, *Physical Review Letters*, 107, 044301 (2011)

Invited Seminars & Talks (last 7 years)

- 2024 Icy Lunch, **University of Edinburgh**
Oceanography Seminar, **Texas A&M University**
Weeks Lecture, Geosciences, **UW–Madison**
- 2023 Program in Atmospheres, Oceans, & Climate (PAOC) Colloquium, **MIT**
Ice and Climate Seminar, **Dartmouth College**
Weston Round Table, Nelson Institute, **University of Wisconsin–Madison**
- 2022 Earth Day Presenter and Panelist, CPEP, **University of Wisconsin–Madison**
- 2021 Iceberg Mechanics Session, Invited Presentation, **AGU Fall Meeting**
Nicholas School of the Environment, **Duke University**
Climate People and Environment Program (CPEP), **University of Wisconsin–Madison**
- 2020 Geography 2050 Symposium, **American Geographical Society**
Department of Physical Oceanography, **Woods Hole Oceanographic Institution**
Department of Earth Sciences, **University of Oxford**
Department of Atmospheric and Oceanic Sciences, **University of Wisconsin–Madison**
Centre for Earth Observation Science Seminar, **University of Manitoba**
- 2019 Earth and Atmospheric Sciences Seminar, **Georgia Tech**
Southeastern Section Meeting, **American Physical Society**
Global Marine Science Summit, **UNC Wilmington**
- 2018 BiSEPPS Seminar Series, **Harvard University**
Center for Coastal Physical Oceanography Seminar, **Old Dominion University**
Applied Mathematics Colloquium, **University of North Carolina Chapel Hill**

Teaching

- 2023 – *Physical Oceanography, AOS 660, UW–Madison*
- 2022 – *Global Warming Science and Impacts, GEOG 332, UW–Madison*
- 2021 – *Ice and Climate Dynamics, AOS 801, UW–Madison*
- 2020 *Introduction to Climate Physics, PHY 292, UNCW*
- 2018 – 2021 *Fluid Mechanics, PHY 350, UNCW*
- 2018 – 2021 *Elementary College Physics, PHY 101, UNCW*
- 2016 – 2018 Developing course materials and training high school teachers to incorporate *Climate Science* in the **Next Generation Science Standards, State of California**

Advising

- Postdocs Ben Smith (2024 -)
Mark England (2019-2021, now research fellow at U Exeter)
Lettie Roach (visiting 2019, now research scientist NASA GISS/Columbia University)
- PhD Students Clark Zimmerman (2022 -)
Nicolas Sartore (2022 -)
- MS Student Andrew Castagno (2019-2021, then Fulbright Scholar in Iceland)
- Undergraduates Joe Mahoney (2024 -); Jeremy Shodell (2023 -)
Elizabeth Bailey (2019-2021, then PhD student at Yale University)
Conner Lester (2019-2021, then PhD student at Duke University)
Hassan Mason (2018-2020, then PhD student at New York University)
Amanda Ceroli (2018-2020, then Fulbright Scholar in the UK)

Seagoing Polar Expeditions

May 2019	Fram Strait , Sea ice–ecosystem interactions during spring blooms (PI)
Jul - Aug 2012	<i>"Operation Iceberg"</i> , West Baffin Bay (West Greenland/Canada) , Iceberg decay processes
Jul 2012	Fram Strait , Sea ice deformation in the marginal ice zone
Sept 2011	<i>"Arctic Climate Impact Tour"</i> , Fram Strait (East Greenland/Svalbard) Sea ice thickness & morphology in the marginal ice zone
Oct - Dec 2010	Weddell & Bellingshausen Seas (Western Antarctica) Sea ice & snow conditions in spring in Western Antarctica

Service and Memberships (selected)

Working Group Lead of the NSF-funded Greenland Ice Sheet-Oceans Interactions Network (GRISO) working group on "Ocean-Forcing-Ice" (2021 - 2024)

Committee Member of the American Meteorological Society Polar Meteorology and Oceanography Committee (2016-2019); UNCW Coastal and Marine Science Council (2018 - 2020)

Primary Convener AGU Fall Meeting 2017, 2018, 2022

Co-Convener EGU General Assembly 2019 and 2020, AGU Fall Meeting 2023

Journal Reviewer for *Nature*; *Nature Climate Change*; *Nature Communications*; *Science Advances*; *Journal of Climate*; *Journal of Fluid Mechanics*; *Geophysical Research Letters*; *The Cryosphere*; *JGR - Atmosphere*; *JGR - Oceans*; *JGR - Earth Surface*; *Journal of Glaciology*; *Physical D*; *Nonlinear Processes in Geophysics*; *Annals of Glaciology*; *Atmospheric Science Letters*; *Climate Dynamics*; *Earth Systems Science Data*; *npj Climate and Atmospheric Science*; *Cold Regions Science and Technology*; *Polar Research*; *Arctic*; *Arctic, Antarctic, and Alpine Research*; *Climate of the Past*; *Scientific Reports*; *Ecological Indicators*; *Frontiers of Marine Science*; *Progress in Oceanography*; *Earth System Dynamics*

Proposal Reviewer for *Natural Sciences and Engineering Research Council of Canada*; *NSF Polar Programs*; *NSF Ocean Sciences*

External Reviewer for *Ocean Impact Navigator*, *World Economic Forum*; IPCC Special Report on the Ocean and Cryosphere in a Changing Climate

Panel Reviewer for *NASA Earth Science Division*; *NSF Polar Programs*; *NSF Oceanography*

Selected Outreach

Presentations and workshops for non-expert audiences:

2024	Drumlin Reserve Assisted Living, Kegonsa Elementary, FIRST LEGO League Challenge
2023	Centers of Climatic Research & Sustainability and the Global Environment Lighting Talk
2022	Wednesday Night @ The Lab; CIMMS Weather Camp; Kegonsa Elementary (all UW-Madison)
2021	Climate Science Workshop for K-12 teachers, San Diego Unified School District (remote)
2017-2020	Scientific Advisor for California Science Teacher Association
2020	Planet Ocean Evening Seminar, Center for Marine Science, UNCW
2019	Osher Lifelong Learning Institute, Wilmington, NC; Marine Quest UNCW
2018	STEAM Team Summer Camp, UNCW; Summer Ventures in Science & Mathematics, UNCW
2014 - 2017	BE WiSE (Better Education for Women in Science & Engineering) Birch Aquarium, UCSD
2016	Ostercamp #1 Future Factory, Kammerspiele Theatre Munich, Germany

Youtube Channel with instructional animated videos (8-10 mins): "Intro to Climate Physics" and "Intro to Fluid Mechanics" ~100 videos total (>30,000 views)

Advised the **Washington Post's Visual Forensics Team** on reconstructing the drift of the migrant vessel *Andriana* prior to its capsizing in June 2023

Media interviews with news outlets covering studies and field work (incl. *CNN, BBC Science, TIME Magazine, The Sun, The Guardian, National Geographic, NPR, ARTE, Discovery News, Bloomberg, PRX The World, Vox*)

Communication workshop on Climate Change "*Revealing the New Arctic*"; invited speaker, AGU, SF, 2015

Exhibition of frozen scaled sea ice floe replica at Architectural Association, London (collaboration with *ScanLAB Projects*, 2013)