

NATALIE S. WOLFENBARGER

(818) 919-9930 ◊ nwolfenb@utexas.edu

RESEARCH STATEMENT

I study terrestrial ice to inform interpretation of ice-penetrating radar data collected by the REASON instrument on NASA's Europa Clipper mission. I pursue this research to understand how future observations could be used to constrain Europa's potential for life.

EDUCATION

University of Texas, Austin

Ph.D. Geophysics

~ Aug 2022

M.S. Aerospace Engineering

May 2017

California Polytechnic State University, San Luis Obispo

B.S. Aerospace Engineering

Dec 2013

FELLOWSHIPS & AWARDS

UTIG Fellowship	2021
UTIG Graduate Student Award	2020
Zonta International Amelia Earhart Fellowship	2019
Jackson School Research Symposium Early-Career Best Poster Honorable Mention	2019
Graduate And Industry Networking (GAIN) Research Award	2017
Cockrell School of Engineering Multi-Year Fellowship	2014–2017
Texas Space Grant Consortium Fellowship	2015
University of Texas at Austin Graduate School Fellowship	2014–2015

PUBLICATIONS

8. **N. S. Wolfenbarger**, M. G. Fox-Powell, J. J. Buffo, K. M. Soderlund, and D. D. Blankenship (202X) Permeability governs the habitability of brine pockets in Europa's ice shell. In prep for *GRL*.
7. **N. S. Wolfenbarger**, M. G. Fox-Powell, J. J. Buffo, K. M. Soderlund, and D. D. Blankenship (202X) Compositional controls on the distribution of brine in Europa's ice shell. Submitted to *JGR: Planets*.
6. **N. S. Wolfenbarger**, J. J. Buffo, K. M. Soderlund, and D. D. Blankenship (202X) Ice shell structure and composition of ocean worlds: insights from accreted ice on Earth. Accepted for publication in *Astrobiology*.
5. A. Rutishauser, D. D. Blankenship, D. A. Young, **N. S. Wolfenbarger**, L. H. Beem, M. L. Skidmore, A. Dubnick, and A. S. Criscitiello (2022) Radar sounding survey over Devon Ice Cap indicates the potential for a diverse hypersaline subglacial hydrological environment. *The Cryosphere* 16(2), 379-395.
4. **N. S. Wolfenbarger**, E. Carnahan, J. Jordan, and M. A. Hesse (2021) A comprehensive dataset for the thermal conductivity of ice Ih for application to planetary ice shells. *Data in Brief* 36, 107079.
3. E. Carnahan, **N. S. Wolfenbarger**, J. Jordan, and M. A. Hesse (2021) New insights into temperature-dependent ice properties and their effect on ice shell convection for icy moons. *Earth Planet. Sci. Lett.* 563, 116886.
2. G. Steinbrügge, J. R. C. Voigt, **N. S. Wolfenbarger**, C. W. Hamilton, K. M. Soderlund, D. A. Young, D. D. Blankenship, S. D. Vance, and D. M. Schroeder (2020) Brine migration and impact-induced cryovolcanism on Europa. *Geophys. Res. Lett.* 47(21), e2020GL090797.

1. C. A. Greene, K. Thirumalai, K. A. Kearney, J. M. Delgado, W. Schwanghart, **N. S. Wolfenbarger**, K. M. Thyng, D. E. Gwyther, A. S. Gardner, D. D. Blankenship (2019) The climate data toolbox for MATLAB. *Geochem. Geophys. Geosyst.* 20(7), 3774–3781.

SELECTED PRESENTATIONS

7. **N. S. Wolfenbarger**. Brine Pocket Habitat's in Europa's Ice Shell. *Oceans Across Space and Time* (2022) **Invited Oral Presentation.**
6. **N. S. Wolfenbarger**. The Salinity of Europa's Ice Shell: Insights from Accreted Ice on Earth. *Europa Clipper Lecture Series* (2022) **Invited Oral Presentation.**
5. **N. S. Wolfenbarger**, M. G. Fox-Powell, J. J. Buffo, K. M. Soderlund, and D. D. Blankenship. A Framework for Modeling the Distribution of Brine and Salt in an Ice Shell. *Brines Across the Solar System: Modern Brines* (2021) Oral Presentation.
4. **N. S. Wolfenbarger**. Where has that water been? *Europa Clipper Project Science Group 10* (2021) **Invited Panel Member.**
3. **N. S. Wolfenbarger**. Ice Shell Structure and Composition of Ocean Worlds: Insights from Accreted Ice on Earth. *JPL ICE Seminar* (2021) **Invited Oral Presentation.**
2. **N. S. Wolfenbarger**. Adding Salinity to the Ice Data Sets. *SESAME Subsurface Modeling Workshop* (2020) **Invited Oral Presentation.**
1. **N. S. Wolfenbarger**, K. M. Soderlund, and D. D. Blankenship. Properties of Accreted Ices on Icy Ocean Worlds as Fingerprints of Sub-Ice Oceans. *AGU Fall Meeting* (2019) Oral Presentation.

SELECTED MENTORSHIP

2021 Heidi Jackson, *Sea Ice Geochemistry*

2018 – 2019 Madeleine Maylath, *Accretion under Amery Ice Shelf*

FIELD EXPERIENCE

Dec 2019 – Feb 2020 Thwaites Glacier, Antarctica

May 2018 – Jun 2018 Nunavut, Canadian High Arctic

WORK & INTERNSHIP EXPERIENCE

Institute for Geophysics – *Graduate Research Assistant*

Jun 2017 – Present

Performed analysis and wrote documentation for science measurement quality requirement verification and validation for the REASON ice-penetrating radar instrument on the NASA Europa Clipper mission

Center for Space Research – *Graduate Research Assistant*

Aug 2014 – May 2017

Analyzed the effects of space weather on GRACE orbit decay and performed estimation and correction of distortion for ICESat star trackers

SpaceX – *Dynamics Intern*

Jan 2014 – Apr 2014

Derived reentry shock environments for the Dragon V2 capsule from test data

CubeSat – *Undergraduate Research Assistant*

Jul 2011 – Dec 2013

Modeled cubesat deployment and orbital dynamics, conducted thermal vacuum and vibration testing, supported integration for flight and test hardware

NASA Goddard Space Flight Center – *Propulsion Intern*

Jun 2012 – Sep 2012

Performed thermal integration of propulsion systems in a clean room environment for the Magneto-spheric Multiscale (MMS) Mission