

Peter Washam, Ph.D.

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Research Interests

- glacier-ocean-atmosphere interactions
- observational coastal oceanography
- underwater robotics

Professional Positions

- 2021 - current **Research Associate**, Cornell University: Department of Astronomy.
Ithaca, NY, USA
- 2019 - 2021 **Research Scientist II**, Georgia Institute of Technology: Earth and Atmospheric Sciences.
Atlanta, GA, USA

Education

- 2014 - 2019 **Ph.D.** University of Delaware: *Physical Ocean Science and Engineering*
Newark, DE, USA
- 2012 - 2014 **M.S.** Florida International University: *Geoscience*
Miami, FL, USA
- 2007 - 2011 **B.S.** University of South Carolina: *Marine Science*
Columbia SC, USA

Peer-Reviewed Publications

- Washam, P.**, Nicholls, K.W., Münchow, A., & Padman, L. (2020). Tidal modulation of buoyant flow and basal melt beneath Petermann Gletscher Ice Shelf, Greenland. *JGR-Oceans*, 125, e2020JC016427, <https://doi.org/10.1029/2020JC016427>
- Washam, P.**, Nicholls, K.W., Münchow, A., & Padman, L. (2019). Summer surface melt thins Petermann Gletscher Ice Shelf by enhancing channelized basal melt. *Journal of Glaciology*, 65(252), 662–674, <https://doi.org/10.1017/jog.2019.43>
- Washam, P.**, Münchow, A., & Nicholls, K.W. (2018). A decade of ocean changes impacting the ice shelf of Petermann Gletscher, Greenland. *J. Phys. Oceanography*, 48:2477–2493, <https://doi.org/10.1175/JPO-D-17-0181.1>
- Münchow, A., Padman, L., **Washam, P.**, & Nicholls K.W. (2016). The ice shelf of Petermann Gletscher, North Greenland, and its connection to the Arctic and Atlantic oceans. *Oceanography*, 29(4):84–95, <https://doi.org/10.5670/oceanog.2016.101>

in preparation

- Schmidt, B.E., **Washam, P.**, Davis, P.E., Nicholls, K.W., ... & Makinson, K. (in prep). Ice loss from asymmetric melting at Thwaites Glacier grounding zone. *Nature*, submission imminent, May-2021.
- Lawrence, J., Schmidt, B.E., **Washam, P.**, Stevens, C.L., ... & Spears, A. (in prep). Ice, ocean, and seafloor interactions at Kamb Ice Stream grounding zone. *Nature*, submission imminent, Jun-2021.
- Udell, K., Schmidt, B.E., **Washam, P.**, ... & Wood, A.G. (in prep). Evolution of supraglacial hydrology on three Greenland tidewater glaciers. *The Cryosphere*, submission imminent, Jun-2021.

Davis, P.E., Nicholls, K.W., Holland, D.M., Schmidt, B.E., **Washam, P.**, ... & Basinski-Ferris, A. (in prep). Weak basal melting in the Thwaites Glacier grounding zone. *Nature*, submission imminent, Apr-2021.

Riverman, K., Anandakrishnan, S., Clyne, E., ... **Washam, P.**, ... & Holland, D.M. (in prep). Tidal flexure (de)stabilizes the Thwaites Glacier grounding zone. *Nature*, submission imminent, Apr-2021.

Grants

- Co-PI **NSF-2053280**, Unravelling the Role of Subglacial Channels in Ice Stream Evolution. [\$1,239,283]
- PI (pending) **NSF-2141389**, NSFGE0-NERC: Collaborative Research: Tracing the impact of summer surface melt in northern Greenland. [\$1,941,329]
- Co-PI (resub 2021) **NASA-19-PSTAR19-2-0052**, POPTART - Planetary Ocean Platform for persistent Autonomous Robots. Initial review: Very Good. [\$3,464,586]

Students Advised

- Justin Lawrence** Advised Ph.D. candidate Lawrence in sub-ice shelf physical oceanographic research. This included but was not limited to: ice-ocean thermodynamic interactions, tidal flows, ocean stratification, turbulent mixing, data fidelity, and publication preparation.
- Kathrine Udell** Advised undergraduate Udell in remote sensing of glacier surface hydrology and dynamics. This included but was not limited to: atmospherically-forced summer surface melting, glacier velocity maps, data fidelity, and publication preparation.

Select Conference Proceedings

- Washam, P.**, Schmidt, B.E., Lawrence, J., Meister, M., & Holland, D.: A synthesis of ice-ocean boundary observations from the underwater vehicle Icefin. *AGU Fall Meeting*, **C022-0001**, Dec-2020.
- Schmidt, B.E., **Washam, P.**, Davis, P.E., Nicholls, K.W., ... & Makinson, K.: Melting at the Grounding Zone of Thwaites Glacier Observed by Icefin. *AGU Fall Meeting*, **C057-04**, Dec-2020.
- Lawrence, J., Schmidt, B.E., **Washam, P.**, Hulbe, C.L., ... & Bryson, F.E.: ROV Icefin at Ross Ice Shelf Grounding Zone: 5 km of ice, ocean, seafloor, and crevasse exploration. *AGU Fall Meeting*, **C019-07**, Dec-2020.
- Udell, K., Schmidt, B.E., **Washam, P.**, ... & Wood, A.G.: Constraints on the Hydrologic Systems of Three Tidewater Glaciers using High Temporal Spatial Resolution Satellite Imagery. *AGU Fall Meeting*, **C043-08**, Dec-2020.
- Meister, M., Spears, A., Dichek, D., ... **Washam, P.**, ... & Schmidt, B.E.: Antarctic Deep Field Deployments and Design of the Icefin ROV. Global Oceans 2020. Oct-2020.
- Washam, P.**, Nicholls, K.W., Münchow, A., & Padman, L.: Observations of Subglacial Runoff-Enhanced Melt beneath Petermann Gletscher Ice Shelf, Greenland. *FRISP*, Oxford, UK, Sep-2019.
- EGU General Assembly*, **11946**, Vienna, Austria, Apr-2019.
- Freitag, L., Singh, S., Nall, K., Johnson, T., Giaya, D., Muenchow, A., & **Washam, P.**: Experimental Results in Acoustics Communications Under Shore-Fast Greenland Ice. *OCEANS 2019 - Marseille*, Marseille, France, Jun-2019.
- Washam, P.**, Nicholls, K.W., Münchow, A., & Padman, L.: Heightened Summer Melting of Petermann Gletscher's ice shelf, Greenland, *AGU Fall Meeting*, **C11A-02**, Washington, DC, Dec-2018.
- Münchow A. & **Washam, P.**: Ice-Ocean-Glacier Interactions in Wostenholme Fjord, North-West Greenland in April 2017. *Ocean Sciences Meeting*, **HE14B-2836**, Portland, Oregon, Feb-2018.

Invited Presentations

A synthesis of ice-ocean boundary observations from the underwater vehicle Icefin.

British Antarctic Survey Polar Oceans Seminar, Feb-2021.

Los Alamos National Lab COSIM virtual meeting, Feb-2021.

The Oceanic and Atmospheric Forcing on the ice shelf of Petermann Gletscher, Greenland.

GA Tech Seminar, Atlanta, GA, May-2019.

Subglacial Runoff enhances basal melt beneath Petermann Gletscher's ice shelf, Greenland.

LDEO Seminar, Palisades, New York, Oct-2018,

Univ. South Carolina Seminar, Columbia, SC, Nov-2018.

Data Published in US National Archives

Nicholls K.W. & **Washam, P.** (2020). Autonomous phase-sensitive Radio-Echo Sounder (ApRES)-derived basal and surface melt rates for Petermann Gletscher Ice Shelf, Greenland, 2015 - 2017.

Arctic Data Center. doi:10.18739/A2T14TQ57.

Muenchow, A. & **Washam, P.** (2019). Glacier-ocean interactions at a Greenland ice shelf at tidal to interannual time scales, North Greenland, 2015-17. **Arctic Data Center**.

doi:10.18739/A22J6846K.

Muenchow, A. & **Washam, P.** (2019). Ocean profiles of temperature and salinity below the ice

shelf of Petermann Gletscher, Greenland, 2015. **Arctic Data Center**. doi:10.18739/A2PC2T86B.

Other Works

Washam, P. (2019). The Ocean's Forcing on the Ice Shelf of Petermann Gletscher, Greenland.

UDEL Electronic Theses and Dissertations.

Washam, P. (2014). Recent Changes in Central and Eastern Pacific El Niño. **FIU Electronic**

Theses and Dissertations. 1556. 10.25148/etd.FI14071180.

Service

Proposal Reviewer NASA Cryosphere

Journal Reviewer Nature Communications Earth and Environment, JGR-Oceans,
Elsevier Estuarine, Coastal, and Shelf Sciences, Journal of Glaciology

Memberships American Geophysical Union, European Geophysical Union

Teaching Experience

2013 - 2014 Introduction to Oceanography - Lab

Outreach

• **What happens to ice when it enters the ocean?** Arbor Station Elementary School, Douglasville, GA.
Atlanta Science Festival - Imagining the Future. Mar-2021.

• **Surviving the Polar Regions: Then and Now.** Grady High School, Atlanta, GA. Mar-2021.

• **Conversations with a NASA-funded Scientist.** Laurens Academy, Laurens, SC. Nov-2020.

• **Switching Poles: Atmospheric-Ice-Ocean Interactions beneath one of Greenland's last remaining ice shelves.** McMurdo Science Seminar, McMurdo, Antarctica. Nov-2019.

• **Life on a Glacier.** Eastside Charter School, Wilmington, DE. Nov-2015.

Field Work Experience

- Winter 2019 **Ross Ice Shelf and Europa Underwater Probe**
McMurdo and Ross Ice Shelves, Antarctica
Responsibilities: Under-ice robot vehicle deployment, data processing and analysis, differential GPS programming, deployment, and recovery
- Fall 2017 **R/V Polarstern, PS109:** Greenland ice sheet-ocean interaction
Tromsø, Norway - Bremerhaven, Germany
Responsibilities: CTD operations, mooring deployment and recovery, data processing and analysis
- Spring 2017 **Acoustic Sensor Networks for Ice-Covered Seas**
Thule, Greenland
Responsibilities: Sea ice drilling operations, CTD operations, under-ice mooring deployment and recovery, data processing and analysis
- Fall 2016 **R/V Sikuliaq,** Canada Basin Acoustic Propagation Experiment
Nome - Dutch Harbor, Alaska
Responsibilities: CTD operations, instrument preparation, mooring hardware preparation, mooring deployment
- Summer 2015 **Petermann Gletscher Expedition**
Petermann Gletscher, Greenland
Responsibilities: Ice shelf drilling operations, under-ice mooring deployment, sediment core collection, AWS set up, programming, deployment, and recovery of differential GPS units
- Summer 2015 **I/B Oden,** Petermann Gletscher Expedition
Petermann Gletscher, Greenland
Responsibilities: CTD operations, instrument preparation, data processing and analysis
- Summer 2010 **R/V Point Sur,** Summer Freshwater Runoff into the Gulf of Alaska
Dutch Harbor, Alaska
Responsibilities: CTD operations, mooring recovery

Awards and Skills

- Fluent in MATLAB, QGIS, and shell scripting languages
- Developed an original post processing script for RBR and underwater vehicle CTD operations
- Academic Excellence Award for Florida International University M.S. Program in Geosciences
- University of Delaware College of Earth, Ocean, and Environment Travel Award