DANIELLE GRAU

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311 Ferst Dr, Atlanta, Georgia 30332

EDUCATION

Georgia Institute of Technology *Anticipated Summer 2026*
PhD in Earth & Atmospheric Sciences GPA 3.85/4.00

Florida International University *May 2021*
B.S. in Physics, Summa Cum Laude, Phi Beta Kappa GPA 3.92/4.00

TECHNICAL SKILLS

Computational

MATLAB:	●●●●●
Python:	●●●●●
LaTeX:	●●●●○
Machine Learning:	●●●○○
GitHub:	●●●○○
Cloud Computing:	●●○○○
Parallel Computation:	●●○○○
Mathematica:	●●○○○

Field

Hydrophones
Seismometers
Ablation Stakes
Ice Steam Drill
Tree Corer
River-Crossing
"Leave No-Trace" Camping Techniques
Traversing Glacier and Alpine Terrain
Ice Climbing

PUBLICATIONS

1. **Grau, D.**, Hussain, A. & Robel, A.A. "Predicting mean depth and area fraction of Antarctic supraglacial melt lakes with physics-based parameterizations". *Nature Communications* **16**, 6518 (2025). https://doi.org/10.1038/s41467-025-61798-8
2. **Grau, D.**, Poinelli, M., Schlegel, Nicole, Seroussi, Helene, Robel, A.A. "Accelerated Ice Loss from Antarctica in Simulations with Calving Driven by Supraglacial Melt Lake Depth". *In prep.*

RESEARCH & PROFESSIONAL EXPERIENCE

Georgia Institute of Technology
Graduate Research Assistant *Aug. 2021 - Present*
-Developed Matlab and Python-based script to analyze self-affine surface roughness of ICESat-2 ATL06 altimetry tracks
-Developed a parallelized Monte-Carlo workflow to simulate supraglacial melt lake statistical distributions on randomly generated self-affine surfaces
-Developed statistical parameterizations for mean supraglacial melt lake depth and area fraction directly correlated to the melt volume supply and surface roughness properties
-Developed class for supraglacial melt lakes into ISSM (forked from original ISSM branch)
-Transient runs for Antarctica with new implemented melt lake parameterizations into the calving scheme within ISSM
Undergraduate Researcher *May 2020 - May 2021*
-Developed Python-based algorithm to analyze the self-affinity of ICESat-2 ATL06 altimetry tracks

Universidad de Magallanes, Patagonian Ice-Field Research Program
Student Researcher *Nov. 2023*
-Measuring Calving Events at Grey Glacier, Chile using an Aquarian Audio & Scientific H2d Hydrophone

University of Washington, ICESat-2 Hackweek
Student Researcher *Aug. 2023*
-Collaborative project to measure depression features, with ICESat-2 ATL06 altimetry tracks, at the ground-line in Antarctica using CryoCloud and SlideRule Earth.

TEACHING & MENTORING EXPERIENCE

Georgia Institute of Technology

Graduate Research Mentor — *2022-2025*

-Mentored two undergraduate students including one whom co-authored a paper
-Meet weekly with mentees to discuss project progress and science questions
-Assisted students with project presentations and professional development

Graduate Teaching Assistant for Earth System Modeling — *Aug. 2022 - Dec. 2022*

-Corresponded with Students on course assistance and materials
-Hosted hybrid office hours twice a week to assist students with coding and assignments
-Graded and Created answer keys for assignments

Florida International University

Undergraduate Learning Assistant — *Jan 2020 - May 2021*

-Aided students with materials for Introductory Physics Labs
-Assisted in Proctoring Exams for Physics II
-Hosted Review and Help Sessions before Exams for Physics II course

HONORS & AWARDS

- Georgia Tech Pathbreakers Fellow *(awarded to exceptional PhD students in GT CoS, CoC, and CoE)* 2023-2025
- Presidential Fellowship *(competitive award for top graduate applicants)* 2021-Present
- EAS Graduate Student Service Award 2025
(awarded to graduate student who demonstrates excellence in service to EAS)
- Georgia Tech College of Science Graduate Career Connect Travel Grant 2025
- Florida International University CASE Service Award April 2021
- Florida International University CASE Outstanding Academic Achievement April 2021
- Fred Hoover Scholar 2020-2021
- Dean's List 2018 - 2021
- Florida Bright Future's Scholar 2018 - 2021

CONFERENCE PRESENTATIONS

1. "*Modeling interaction between supraglacial melt lakes and calving in transient Antarctic simulations* (C22A-02)", American Geophysical Union Annual Meeting 2025, Oral Presenter. New Orleans, LA, USA, Dec. 2025.
2. "*A Physics-Based Parameterization of Mean Melt Lake Depth and Area Fraction of Supraglacial Melt Lakes* (EGU25-13983)", European Geophysical Union Assembly 2025, Poster Presenter. Vienna, Austria, May 2025.
3. "*A Physics-Based Parameterization to Predict Mean Depth & Areal Coverage of Supraglacial Melt Ponds*", West Antarctic Ice Sheet Workshop, Poster Presenter. Cloquet, MN, Sept. 2023.
4. "*A Physics-Based Parameterization to Predict Mean Depth and Areal Coverage of Supraglacial Melt Ponds*", Climate Sustainability Challenges and Opportunities Workshop, Oral Presenter. Atlanta, GA, USA, Aug. 2023.
5. "*A Statistical Parameterization of Supraglacial Melt Pond Area and Depth on Fractal Ice Sheet Surfaces from Percolation Theory* (1160496)", American Geophysical Union Annual Meeting 2022, Poster Presenter. Chicago, IL, Dec. 2022.
6. "*Statistical Models of Supraglacial Melt Ponds Characteristics from Monte-Carlo Simulations*", Women in High-Performance Computing, Poster Presenter. Atlanta, GA, April 2022.

PROFESSIONAL MEMBERSHIPS & LEADERSHIP ROLES

-Senator in Georgia Tech Graduate Student Senate Since 2025
-President of Graduate Students in GT Earth & Atmospheric Sciences June 2024-May 2025
-GeoLatinas Since 2022

-International Glaciological Society	Since 2023
-American Geophysical Union	Since 2022
-Phi Beta Kappa	Since 2021
-APS IDEA Team Member (FIU Chapter)	2020-2021
-Sigma Pi Sigma Chapter	Since 2020
· President (FIU Chapter)	2020-2021
· Vice President (FIU Chapter)	2019 - 2020
· Secretary (FIU Chapter)	2018-2019
-National Society of Leadership and Success	Since 2019
-Society of Physics Students	Since 2019

RELEVANT COURSEWORK

Electromagnetism 1 & 2, Mathematical Methods in Physics, Modern Physics, Advanced Modern Physics, Radiation Detection, Intermediate & Advanced Lab, Quantum Mechanics 1 & 2, Classical Mechanics 1, Thermodynamics, Physical Climatology, Environmental and Exploration Geophysics, Land Remote Sensing, Earth System Modeling, Physical Hydrology, Advanced Environmental Analysis, Fluid Dynamics & Synoptic Meteorology, Glacier & Ice Sheet Dynamics, Carbon Dioxide Removal, Machine Learning in Environmental Systems

LANGUAGES

English	*Native*
Spanish	*Conversational*
French	*Basics*

REFERENCES

References Upon Request