

DANIELLE GRAU

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 311 Ferst Dr, Atlanta, Georgia 30332

EDUCATION

Georgia Institute of Technology
PhD in Earth & Atmospheric Sciences

Anticipated July 2026

GPA 3.85/4.00

Florida International University
B.S. in Physics, Summa Cum Laude, ΦBK

May 2021

GPA 3.92/4.00

TECHNICAL SKILLS

Computational	MATLAB:	● ● ● ● ●	Field	Hydrophones
	Python:	● ● ● ● ●		Seismometers
	L ^A T _E X:	● ● ● ● ○		Ablation Stakes
	Machine Learning:	● ● ● ○ ○		Ice Steam Drill
	GitHub:	● ● ● ○ ○		Tree Corer
	C++:	● ● ○ ○ ○		River-Crossing
	Cloud Computing:	● ● ○ ○ ○		“Leave No-Trace” Camping Techniques
	Parallel Computation:	● ● ○ ○ ○		Traversing Glacier and Alpine Terrain
Mathematica:	● ● ○ ○ ○	Ice Climbing		

PUBLICATIONS

- 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>
- 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 Space Grant Consortium PhD Fellow (\$8300) Nov. 2025
- Georgia Tech Pathbreakers Fellow (\$20000) 2023-2025
(awarded to exceptional PhD students in GT CoS, CoC, and CoE)
- Presidential Fellowship (\$22000) (competitive award for top graduate applicants) 2021-2025
- 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 (\$1000) 2025
- Florida International University CASE Service Award April 2021
- Florida International University CASE Outstanding Academic Achievement April 2021
- Fred Hoover Scholar (\$1500) 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 (EGU26-5759)", European Geophysical Union Assembly 2026, TBD, Vienna, Austria, May 2026.
2. "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.
3. "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.
4. "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.
5. "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.
6. "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.
7. "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	<i>Native</i>
Spanish	<i>Conversational</i>
French	<i>Basics</i>