

Danielle Grau

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🔗 <https://dgrau13.github.io/>

🐙 <https://github.com/dgrau13>

EDUCATION

- **Georgia Institute of Technology**
Doctor of Philosophy - Earth & Atmospheric Sciences; GPA: 3.85 Aug 2021 - July 2026
Doctoral Minor: High Performance Computing
- **Florida International University**
Bachelors of Science - Physics (Summa Cum Laude & ΦBK); GPA: 3.92 Jan 2018 - May 2021

EXPERIENCE

- **Graduate Research Assistant**
Georgia Institute of Technology Aug 2021 - July 2026
 - **Analyze Observational, Remote-Sensing Datasets:** Developed MATLAB and Python-based workflows to analyze the statistical surface roughness properties of the entire Antarctic and Greenland Ice Sheets from NASA ICESat-2 Satellite Altimetry tracks.
 - **Designed and Parallelized Monte-Carlo Simulations:** Developed a MATLAB-based workflow that generates a random, statistically rough surface and uses a cellular automaton model to simulate surface water distribution and routing.
 - **Extrapolate Relationships from Large Simulated Datasets:** Utilized MATLAB's Curve Analysis library to derive mathematical relationships from a Monte-Carlo simulated data set.
 - **Model Configuring and Tuning:** Performed Transient Projections for Antarctic Ice Sheet Loss from 2015 to 2300 with external GCM and Ocean Forcing.
 - **Large Ice-Sheet Model Component Development:** Developed new class and calving scheme within NASA's Ice-Sheet and Sea-Level System Model (ISSM) using MATLAB and C++.
 - **Present Scientific Research:** Present academic research in both poster and oral format at national and international conferences.
 - **Scientific Writing:** Composed and published scientific articles in high-profile journals (*Nature Communications*)
 - **Mentor Undergraduate Researchers:** Provide resources and guidance on research projects for three undergraduate student researchers.
- **President, Graduate Students in Earth & Atmospheric Sciences**
Georgia Institute of Technology, School of Earth & Atmospheric Sciences June 2024 - May 2025
 - **Delegation:** Collaborate with other members of the executive member board and assign tasks.
 - **Organize Events:** Graduate Student Socials, Professional Development Events, Department-wide events.
 - **Coordinate with Department Faculty and Staff:** Deliver concerns and worries from graduate students and collaborate on solutions.
- **Undergraduate Research Assistant**
Georgia Institute of Technology May 2020 - May 2021
 - **Signal and Power Spectral Density Analysis:** Developed a Python-based workflow to perform PSD analysis on ICESat-2 land-ice Altimetry tracks.
- **Undergraduate Teaching Assistant**
Florida International University Jan 2020 - May 2021
 - **Lecture Aid:** Aid students' comprehension of course materials and hosted exam review sessions.
 - **Laboratory Aid:** Assist students in laboratory experiments and analysis for Intro. Physics I & II Lab sections.
 - **Exam Proctor:** Assist in proctoring and prepping exam materials.

SKILLS SUMMARY

- **Languages:** Python, MATLAB, Linux, C++, L^AT_EX, Mathematica
- **Frameworks:** Scikit, Pandas, TensorFlow, Keras, PBS, Slurm
- **Tools:** GitHub, Machine Learning, Parallel Computing, Cloud Computing, MS Office, Adobe Illustrator
- **Soft Skills:** Leadership, Event Organization & Management, Scientific & Professional Writing, Public Speaking

PROJECTS

- **ICESat-2 Hackweek 2023:** Develop a Python-based workflow to analyze grounding zone features in Antarctica using NASA's ICESat-2 Land Ice Altimetry. Tech: CryoCloud, SlideRule Earth (Aug 2023)
- **Patagonian Ice-field Research Program (PIRP):** Measured Calving Events at Grey Glacier, Chile using an Aquarian Audio & Scientific H2d Hydrophone faster. Data was analyzed using signal processing in the field. Tech: MATLAB, Signal Processing. (Nov 2023)

COMMUNITY ENGAGEMENT & LEADERSHIP EXPERIENCE

- **Graduate Student Senator** Georgia Tech
Graduate Senator for the School of Earth and Atmospheric Sciences Aug 2025 - Present
 - **Review and Vote on Legislation:** Review and Vote on incoming bills from various committees.
- **President of ΣΠΣ (Florida International University Chapter) FIU**
National Physics and Astronomy Honor Society May 2020 - April 2021
 - **Delegation:** Collaborate with other members of the executive board.
 - **Organize & Host Events:** Professional Development Events, Career Advice, Coding Workshops