

Michael T Lundquist - CV

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Department of Mathematics, Department of Atmospheric & Oceanic Sciences at UCLA

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Education

University of California, Los Angeles (UCLA)

Ph.D, Atmospheric and Oceanic Sciences — Space Physics

Sept 2025 - Present

Coursework:

- Solar-Terrestrial Physics, Solar System Plasmas, Geophysical Fluid Dynamics, Dynamics of the Earth System, and Atmospheric and Oceanic Radiation, Physics, and Chemistry.
- Advisor: Prof. Roger Varney

B.S. Applied Mathematics

Sept 2021 - June 2025

Coursework:

- Plasma Physics and Electronics, Advanced Fluid Dynamics, Complex and Real Analysis, Mathematical Imaging, Mathematical Modeling, Solar System Plasmas, Ordinary & Nonlinear Systems of Differential Equations, Numerical Methods, Probability Theory, and Advanced Programming (Python & C++), Nonlinear Dynamics and Chaos, Linear Algebra, Atmospheric Dynamics and Thermodynamics.

Experience

Varney Geospace Research Group at UCLA | Graduate Student Researcher

Jan 2023 - Present

- Active member of the Center for Geospace Storms, NASA Drive center as a graduate student researcher working on polar ionosphere model development, aiding the MAGE global magnetosphere model.
- Experienced in both ground-based ionospheric observation techniques, such as Incoherent Scatter Radar and bottom-side ionospheric sounding from ionosondes, and physics-based modeling of the ionosphere using the Center for Geospace Storms MAGE Model.
- Presented my research on the polar cap ionosphere to the UCLA Space Physics community through Space Physics INformal EXchange (SPHINX) 30-minute presentations.

Incoherent Scatter Radar Summer School at UAF Geophysical Institute

July 2025

- Traveled to Fairbanks, Alaska, to attend a week-long, fully-funded ISR summer school sponsored by the University of Alaska, Fairbanks' Geophysical Institute.
- Learned from ISR experts from SRI International, UCLA, and Boston University how to leverage ISR and other ground-based ionospheric instruments for my Ph.D studies.
- Presented a week-long project on identifying traveling ionospheric disturbances (TID) observed by the Poker Flat ISR (PFSIR) by algorithmically identifying plasma line oscillations in data.

International Urban Sustainability Student Corps | President

Oct 2021 - June 2025

- Served as President of the environmental research club IUSSC in my 3rd year, and currently serving as the Director of Research in my 4th year, which includes overseeing four student-led research groups in our Institute of the Environment and Sustainability, introducing underclassmen to scientific research.
- Organized networking trips to Washington D.C. in 2023 and San Francisco in 2024 to connect with the National Resources Defense Council, Environmental and Energy Study Institute, and many others.

Publications

1. **Michael T Lundquist**, Roger H Varney. A Statistical Survey of F2 Layer Peak Properties in the Polar Cap Ionosphere Observed by RISR-N. ESS Open Archive. September 19, 2025. doi: [10.22541/essoar.175827232.24983624/v1](https://doi.org/10.22541/essoar.175827232.24983624/v1) (Submitted to JGR Space Physics)

Presentations

June 2025 | CEDAR GEM 2025 Workshop

- Presented a student poster ([link](#)) on the topic "A Statistical Survey of F2 Layer Peaks Properties in the Polar Cap Ionosphere Observed by RISR-N." Received the undergraduate student poster award for this original research presentation.

Sep 2024 | UCLA SPARTHRB/SPHINX

- Presented a seminar ([link](#)) talk on my summer 2024 research project “Characterizing the Vertical Structure of the F2 Region Polar Cap Ionosphere Through Identification of Lifted Plasma Structures”

May 2024 | UCLA Undergraduate Research Week

- Presented a talk ([link](#)) on the topic “Characterizing the Vertical Polar Cap Ionosphere Plasma Profile through Identification of Lifted Plasma Structures”

Nov 2023 | Center for Geospace Storms (CGS) 4th Workshop

- Presented a talk ([link](#)) on the topic “Characterizing the Appearance Lifted Polar Cap Patches in the F-Region Ionosphere”

June 2023 | CEDAR 2023 Workshop

- Presented a student poster ([link](#)) on the topic “Characterizing the Appearance and Behavior of Lifted Patches of Plasma in the Polar Cap Ionosphere”

Awards

June 2025 | CEDAR GEM Undergraduate Student Poster Award

- I was one of two undergraduates selected out of a pool of 10+ to receive the undergraduate student poster award at the 2025 CEDAR GEM Workshop in Des Moines, Iowa.

2021-2024 | UCLA Bosley Mingori Climate Science Scholarship (\$20,000 over 4 years)

- I was awarded this alumni scholarship to help pay for my undergraduate education after I was identified as a potential innovator in the field of climate change for my work on my engineering capstone project.

Skills

- **Proficient:** Python, Linux, Data Visualization **Intermediate:** C++, QGIS, Matlab, Git, Arduino

Teaching

Fall 2023-Fall 2024 | A&O Sci 101: Fundamentals of Atmospheric Dynamics & Thermodynamics

- Accepted as a Learning Assistant; aided TA with discussion section, reviews, and office hours.

Winter 2024 | Physics 1C: Physics for Scientists/Engineers: Electrodynamics, Optics, & Special Relativity

- Accepted as a Learning Assistant; aided TA with discussion section, reviews, and office hours.