

Tyler Horvath

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Department of Earth, Planetary and Space Sciences
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Summary My research focuses on the thermal environment and near surface structure of planetary bodies. I develop computational models and new data analysis techniques to better understand these environments and their impacts on future exploration. Teaching and public engagement are also fundamental to my work.

Positions Held
Loyola Marymount University
Part-Time Faculty, August 2022 – present
Seaver College of Science and Engineering

University of California, Los Angeles
Graduate Student Researcher, August 2019 – present
Department of Earth, Planetary, and Physical Sciences

Laboratory for Atmospheric and Space Physics
Undergraduate Research Assistant, January 2018 – August 2019

Education
University of California, Los Angeles
Ph.D., Planetary Science, 2025 Expected (Advisor: David A. Paige)
M.S., Geophysics and Space Physics, 2022 (Advisor: David A. Paige)

University of Colorado, Boulder
B.A., Astronomy, 2019

Community College of Aurora
A.S., Physics Designation, Cum Laude, 2017
A.A., Business Designation, Cum Laude, 2017

Teaching
Loyola Marymount University
Phys 2710: Astronomy (Fall 2022 - Present)
Professor for undergraduate non major course (30 students per semester)

University of California, Los Angeles
EPSS 101: Earth's Energy: Diminishing Fossil Resources and Prospects for a Sustainable Future (Winter 2020)
Teaching Assistant for undergraduate course (86 students)

Mission Involvement
NASA Lunar Flashlight
Participating Graduate Student (2022 – 2023)

NASA Lunar Compact Infrared Imaging System (L-CIRiS)

Participating Graduate Student (2019 – present)

NASA Lunar Reconnaissance Orbiter

Participating Graduate Student (2018 – present)

Diviner Lunar Radiometer Experiment

Other
Involvement

Loyola Marymount University

Fluids of Astrophysical Bodies Laboratory (FAB LAB)

Engineering Consultant

University of California, Los Angeles

Simulating Planetary Interiors Laboratory (SPINLab)

Engineering Consultant

Honors

2023 NASA Jet Propulsion Laboratory Planetary Science Summer School

Systems Engineer for Proposed New Frontiers Class Mission to Triton

2023 John N. Truex Research Award in the Department of Earth,

Planetary, and Space Sciences

*2020 Outstanding Teaching in the Department of Earth, Planetary, and
Space Sciences*

Invited
Lectures

2022 Loyola Marymount University

2020 NASA Jet Propulsion Laboratory

Volunteer
Work

Exploring Your Universe (EYU), 2019 – 2023

Explore the Moon Night, 2019, 2023, 2024

Underrepresented Students in Astronomy (URSA), 2018 – 2019

Sommers-Bausch Observatory Open House, 2018 – 2019

Skills &
Training

Remote sensing and spacecraft instrumentation

Thermal modeling and numerical simulation

Computer programming languages

Proficient/Expert: Python, MATLAB

Familiar: C++, IDL, Fortran 09/95, SQL, Bash

Software

Proficient/Expert: SolidWorks, COMSOL Multiphysics, Inventor

Familiar: ArcGIS, QGIS, Agisoft Metashape

Additional Training and Certifications

PADI Open Water Diver Scuba Certification (6 dives), 2022

Certified SolidWorks Expert – Mechanical Design, 2021

Certified SolidWorks Professional – Mechanical Design, Drawing Tools,

Sheet Metal, Surfacing, Weldments, 2021

Soldering and Circuitry Workshop, 2016

Publications: Journal Articles

1. B. Cohen et al. (2024) Lunar Flashlight Science Ground and Flight Measurements and Operations Using a Multi-band Laser Reflectometer, *Icarus*.
2. I. A. Nesnas **et al.** (2023) Moon Diver: Exploring a Pit's Exposed Strata to Understand Lunar Volcanism. *Acta Astronautica*.
3. J. Venkatraman **et al.** (2023) Statistical Estimates of Rock-free Lunar Regolith Thickness from Diviner. *Journal of Geophysical Research: Planets*.
4. T. M. Powell **et al.** (2023). Improved Lunar Nighttime Temperature and Rock Abundance Maps from the LRO Diviner Lunar Radiometer Experiment. *Journal of Geophysical Research: Planets*.
5. **T. Horvath**, P. O. Hayne, and D. A. Paige (2022). Thermal and Illumination Environments of Lunar Pits and Caves: Models and Observations from the Diviner Lunar Radiometer Experiment. *Geophysical Research Letters*.
6. C.E. Gary-Bicas **et al.** (2020). Asymmetries in Snowfall, Emissivity and Albedo of Mars' Seasonal Polar Caps: Mars Climate Sounder Observations. *Journal of Geophysical Research: Planets*.
7. I.A. Nesnas **et al.** (2019). Moon Diver: A Discovery Mission Concept for Understanding the History of Secondary Crusts through the Exploration of a Lunar Mare. 2019 IEEE Aerospace Conference.