Emerson Whittaker

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Education

University of California, Los Angeles (UCLA) 2021–2026
Department of Earth, Planetary, and Space Sciences (EPSS)
MS: Planetary Science, Awarded Jun. 2023
PhD: Planetary Science, Awarded Oct. 2026

University of Maryland, College Park (UMD) 2017–2021
Department of Physics, Department of Astronomy
BS: Physics, Astronomy, Awarded May 2021

Teaching Experience

Instructor of Record, Solar System and Planets, EPSS, UCLA 2026

- Modernized and refined the curriculum including all lectures, homework assignments, discussion activities, and exams
- Taught two two-hour lectures and one one-hour discussion section and held one office hour per week
- Graded all homework assignments, discussion activities, and exams

Head Teaching Assistant, Astrobiology, EPSS, UCLA 2023

- Lead a team of TAs in designing lesson plans and group activities for discussion sections
- Taught three discussion sections and held one office hour per week
- Graded homework and assisted in homework design and grading exams

Teaching Assistant, Astrobiology, EPSS, UCLA 2022

- Co-designed homework, graded homework, assisted in grading exams
- Planned and taught three discussion sections and held one office hour per week

Research Experience

NASA Postdoctoral Program Fellow 2026–Present
Advisor: Bonni Buratti; Jet Propulsion Laboratory

- Optimizing the near-Earth asteroid thermal model (NEATM) with Lommel-Seeliger dominated scattering for more accurate near-Earth asteroid diameters

PhD Candidate 2021–2026
Advisor: Jean-Luc Margot; UCLA

- Modeled asteroid sizes using two of four infrared bands on the Wide-field Infrared Survey Explorer (WISE) and estimated errors compared with four-band models in preparation for the two-band-only NEO Surveyor mission
- Discovered thousands of asteroids in WISE data using synthetic tracking
- Modeling libration of an asteroid secondary to improve center of mass estimates of the secondary to estimate mutual orbital expansion rate

Research Assistant 2020–2021
Eliza Kempton, Matej Malik; UMD

- Modeled spectra of super Earth LHS 3844 b varying atmospheric profiles and surface types
- Included preliminary results in an accepted observing proposal for JWST

Summer Intern Jun.–Aug. 2020
George Helou, Frank Masci; Caltech GROWTH SURF Program

- Analyzed the positional accuracy of the Zwicky Transient Facility's streaking near-Earth asteroid fitting method

Research Assistant 2019–2020
Drake Deming; UMD

- Modeled atmospheric transit spectra of warm Neptune GJ 3470 b

Research Experience for Undergraduates (REU) Intern Jun.–Aug. 2019
Patrick Taylor, Ed Rivera-Valentín; Lunar and Planetary Institute

- Determined the accuracy of various methods of radar image-based radius measurement of near-Earth asteroids to improve planetary defense

Research Assistant Jul.–Aug. 2018
Suvi Gezari; UMD

- Compared demographics of sample blazars to neutrino source blazar TXS 0506+056

Publications

Whittaker, E. and Margot, J.-L. (2026). Discovery of Thousands of Main-Belt Asteroids with Synthetic Tracking of WISE Data. PSJ, 7 (6), 148, doi: 10.3847/PSJ/ae6fa1

Zieba, S., Kreidberg, L., Coy, B., Bello-Arufe, A., Paragas, K., Lyu, X., Hu, R., Yer, A., Kite, E., Koll, D., Wohlfarth, K., **Whittaker, E.**, Knutson, H., Wordsworth, R., Morley, C., and Schaefer, L. (2026). JWST mid-infrared spectroscopy of the bare rock LHS 3844 b reveals a dark, featureless surface. Nat. Astron., doi: 10.1038/s41550-026-02860-3

Chandler, C. O., Bernardinelli, P., H., Jurić, M., ... **Whittaker, E.**, ..., and Zhang, J (2026). NSF-DOE Vera C. Rubin Observatory Observations of Interstellar Comet 3I/ATLAS (C/2025 N1). ApJL, 1001 (2), L35, doi: 10.3847/2041-8213/ae4b3a

Ih, J., Kempton, E. M. R., **Whittaker, E. A.**, and Lessard, M. (2023). Constraining the Thickness of TRAPPIST-1 b's Atmosphere from Its JWST Secondary Eclipse Observation at 15 μm. ApJL, 952 (1), L4, doi: 10.3847/2041-8213/ace03b

Whittaker, E. A., Margot, J. L., Lam, A. L. H., and Myhrvold, N. (2023). Thermal Models of Asteroids with Two-band Combinations of Wide-field Infrared Survey Explorer Cryogenic Data. PSJ, 4 (4), 64, doi: 10.3847/PSJ/acc6d2

Lam, A. L. H., Margot, J. L., **Whittaker, E. A.**, and Myhrvold, N. (2023). Determination of 1929 Asteroid Rotation Periods from WISE Data. PSJ, 4 (4) 61, doi: 10.3847/PSJ/acc5e4

Whittaker, E. A., Malik, M., Ih, J., Kempton, E. M. R., Mansfield, M., Bean, J. L., Kite, E. S., Koll, D. D. B., Cronin, T. W., and Hu, R (2022). The Detectability of Rocky Planet Surface and Atmosphere Composition with JWST: The Case of LHS 3844b. AJ, 164 (6), 258, doi: 10.3847/1538-3881/ac9ab3

Awards and Honors

Dissertation Year Award, $30,000, UCLA	2025–2026
Constantine and Perina Panunzio Citizenship Award, EPSS, UCLA	Sep. 2024
Nathan P. Myhrvold Fellowship, $95,000, EPSS, UCLA	2022–2025
John N. Truex Research Award, EPSS, UCLA	Sep. 2023
Cota-Robles Fellowship, $55,000, UCLA	2021–2022, 2024–2025
Co-I, JWST Cycle 1 GO Program, 1846.	Mar. 2021

Service

Group Leader, EPSS Family Mentorship Program, UCLA	2025–Present
Member, Legacy Survey of Space and Time (LSST) Solar System Science Collaboration	2024–Present
Holiday Band Leader, EPSS, UCLA	2024–Present
Elected Steward, EPSS Student Organization, UCLA	2023–2025
Booth Volunteer, Exploring Your Universe, UCLA	2022–2025
Science Volunteer, Summer Literacy Program, Boone United Methodist Church	Jul. 2021

Talks and Media

Interview, Frank Timmes, AAS Journal Author Series	Aug. 2026
Talk, The Solar System in Context, Tuscon, Arizona, USA *Modeling the Shape of 1999 KW4's Secondary with Libration Included*	Oct. 2025

Talk, Division of Planetary Sciences Meeting, Boise, Idaho, USA *Discovering Asteroids with WISE Data*	Oct. 2024
Interview, Joseph Howlett, Nature	Feb. 2024
Talk, Division of Planetary Sciences Meeting, London, Ontario, Canada *Analysis of Two-Band WISE Observations of Asteroids.*	Oct. 2022
Interview, Alex Wilkins, New Scientist	Jul. 2022
Invited for talk, Lunar and Planetary Sciences Conference (meeting canceled), Houston, Texas, USA *Uncertainty Assessment of Near-Earth Asteroid Size Measurements from Radar Images.*	Mar. 2020