

Dr. Emily Mason, Curriculum Vitae

Postdoctoral Scholar
Department of Astronomy and Planetary Science
Northern Arizona University
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Research Interests

Radiative transfer in the Earth and Martian atmospheres, Martian planetary boundary layer processes, data analysis for Martian lander, rover meteorological data, atmospheric aerosol retrievals and data analysis from orbiter observations.

Education

B.S. in Mechanical Engineering, Texas A&M University	December 2011
Ph.D. in Atmospheric Sciences, Texas A&M University	August 2018

Research Experience

Postdoctoral Scholar, Northern Arizona University. Sponsor: Dr. Christopher Edwards, (February 2024 – Present).

Mars 2020 Science and Operations Team Collaborator, University of Maryland Baltimore County, Baltimore, Maryland (October 2022-present)

MSL Science and Operations Team Co-investigator, University of Maryland, Baltimore, Maryland (April 2022-present)

Postdoctoral Research Associate, University of Maryland Baltimore County, Goddard Space Flight Center, CRESST II. Sponsor: Dr. Michael D. Smith, NASA Goddard Space Flight Center (January 2021 – 2024)

NASA Postdoctoral Program Fellow, NASA Postdoctoral Program, NASA Goddard Space Flight Center, Greenbelt, Maryland. Sponsor: Dr. Michael D. Smith (January 2019 – January 2021)

JPL Visiting Student Research Program, Jet Propulsion Laboratory, Pasadena, California. Advisor: Dr. Manuel De La Torre Juarez (July 6 – September 15, 2015)

MSL Science and Operations Team, Texas A&M University, College Station, Texas. Advisor: Dr. Mark T. Lemmon (2013-2016)

Graduate Research Assistant, Texas A&M University, College Station, Texas. Advisor: Dr. Mark T. Lemmon (2012-2018)

Teaching Experience

Computational Numerical Methods, CMSC 455 and 655 (cross listed graduate and undergraduate), University of Maryland Baltimore County, Baltimore, MD, August 30, 2023 – December 20, 2023.

Grants

Science PI, Mars Data Analysis Program, 2020, Using Air Temperature Observations from Landed Mars Missions to Understand Turbulent Convection, PI: Michael D. Smith, Period: August 2021 – August 2024.

Co-Investigator, Mars Science Laboratory Participating Scientist Program, 2021, Devils on Mt. Sharp: Dust Lifting in Gale Crater, PI: Scott D. Guzewich, April 2022 – April 2025.

Highlighted skillsets

Numerical analysis and numerical methods implementation.
Experience with Python, FORTRAN, IDL
Radiative transfer modeling in thermal infrared and ultraviolet.

Selected Publications and Presentations

Mason, E.L., M.D. Smith, M.J. Wolff, T.H. McConnochie (2023). Retrieval of the vertical profile of atmospheric optical depth using Thermal Emission Spectrometer visible and infrared bolometer observations, poster presentation, European Geophysical Union, Vienna, Austria, April 23-April 28, 2023.

Guzewich, S.D., **E. Mason**, M. Lemmon, C. Newman, K. Lewis (2023). Dust Lifting Observations with the Mars Science Laboratory Navigation Cameras, accepted, Jour. Geophys. Res. Planets.

Mason, E.L., M. D. Smith, S.D. Guzewich, M.I. Richardson, (2023). Comparing Temperature Fluctuations from Landed Missions, in review, Jour. Geophys. Res. Planets.

Mason, E. L., & Smith, M. D. (2021). Temperature fluctuations and Boundary Layer Turbulence as seen by Mars Exploration Rovers Miniature Thermal Emission Spectrometer. *Icarus*, 360, 114350. <https://doi.org/10.1016/j.icarus.2021.114350>

Guzewich, S. D., de la Torre Juárez, M., Newman, C. E., **Mason, E.**, Smith, M. D., Miller, N., et al. (2021). Gravity wave observations by the Mars Science Laboratory REMS pressure sensor and comparison with mesoscale atmospheric modeling with MarsWRF. *Journal of Geophysical Research: Planets*, 126, e2021JE006907.
<https://doi.org/10.1029/2021JE006907>.

Mason, E., M.T. Lemmon (2017). A quick look estimation of optical depth measurements from the Rover Environmental Monitoring Station Ultraviolet Sensors. Abstract presented at 2017 Sixth International Workshop on the Mars Atmosphere: Modelling and Observations (MAMO), Grenada, Spain, Jan. 17-20. (Poster Presentation).