

Name: Emily Mason (she/her/hers)

Code: 693

Home institution: University of Maryland Baltimore County

Name of task: Planetary atmospheres, Martian boundary layer processes

Role in task/What do you do for CRESST:

My work involves analysis of lander and rover meteorological data on the surface of Mars to study boundary layer processes. I also work with orbital observations to study Martian atmospheric aerosols, mainly atmospheric dust, which profoundly impacts the atmospheric vertical temperature profile. This work is accomplished in collaboration with my GSFC sponsor, Dr. Michael D. Smith.



What is your background:

I obtained a B.Sc. in Mechanical Engineering at Texas A&M University and continued studying at the same institution for a PhD in atmospheric sciences. After graduating, I moved to Maryland to pursue postdoctoral work as a NASA Postdoctoral Fellow starting in January of 2019. This program lasted two years, and in January of 2021 I joined the CRESST II science team at UMBC Center for Space Sciences and Technology.

Favorite part of being a CRESST Scientist:

UMBC has been an incredibly accommodating home institution and I still get to benefit from working with my GSFC sponsor. CRESST is unique in that way. I am looking forward to meeting more scientists within my UMBC department when it is possible and branching out to different fields of research.

Highlight of research as a CRESST Scientist:

I am involved in several different types of projects, although most of my work involves analyzing temperature data from landed missions on Mars. The results from this work are preliminary and show interesting comparisons of boundary layer behavior between rover and lander missions, including Mars Science Laboratory and the Phoenix lander, which measured temperature at a different latitude and Mars years. Though the last two years, one with CRESST II, have been unconventional due to the global pandemic, I was able to join CONNECTORS as well, which has paired me with a student to mentor for the next two years.

Selected list of recent publications:

- **Mason, E. M., & 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>.

Grants and fellowships:

- **NASA Postdoctoral Program (2019-2021)**

To contact Emily to learn more about her work or to collaborate, you can reach her at:
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