

J. MICHAEL BATTALIO

Department of Earth and Planetary Sciences ◊ Yale University
210 Whitney Ave. ◊ New Haven, CT 06511

Education	Ph.D. Atmospheric Sciences · Texas A&M University	2017
	M.S. Geoscience · Mississippi State University	2012
	B.S. Physics & B.S. Professional Meteorology · Mississippi State University minors in Mathematics, Communication, & Music	2010
Experience	Research Scientist	Oct. 2025–present
	Associate Research Scientist	Oct. 2022–Oct. 2025
	Postdoctoral Associate Yale University · New Haven, CT	2019–Oct. 2022
	Postdoctoral Fellow Harvard-Smithsonian Center for Astrophysics · Cambridge, MA	2017–2019
	Graduate Research and Teaching Assistant Texas A&M University · College Station, TX <i>Kenneth P. Pipes Endowed Fellow</i>	2012–2017 2014–2016
	Lecturer and Laboratory Manager Teacher Academy in the Natural Sciences · Starkville, MS	2010–2012
	Graduate Research and Teaching Assistant Mississippi State University · Starkville, MS <i>American Meteorological Society 21st Century Fellow</i>	2010–2012 2010–2011
Mission Involvement	Collaborator , Mars Reconnaissance Orbiter, Mars Climate Sounder	2023–present
	Participating Scientist , NASA Mars Science Laboratory (<i>Curiosity</i>)	2022–present
	Associate Scientist , NASA <i>Dragonfly</i> mission to Titan	2020–present
	Collaborator , NASA Mars Science Laboratory (<i>Curiosity</i>)	2013–2017
Funded Grants	Total funded amount: \$3.9 million. Amount for Battalio : \$1.7 million	
	Principal Investigator Yale University (\$215,807) <i>“Quantifying Mars’s Global Climate from Gale Crater.”</i> Funded by NASA Mars Science Laboratory Participating Scientist Program 2025–2028	
	Co-Investigator (Institutional PI) <i>“Development and Evolution of Martian Regional-Scale Dust Storms in Space and Time.”</i> Funded by NASA Mars Data Analysis Program 2024–2026 PI: Armin Kleinböhl, NASA Jet Propulsion Laboratory. (Amount to Yale: \$59,968)	
	Co-Investigator (Institutional PI) <i>“Atmospheric Blocking and Regional Features of Periodic Variability in Mars’s Storm Track and Their Relationship with Large Dust Events.”</i> Funded by NASA Mars Data Analysis Program 2024–2027 PI: Lei Wang, Purdue University. (Amount to Yale: \$68,646)	

Co-Investigator (Institutional PI)

“Characterizing the Impact of Small Dust Storms on the Martian Climate.”

Funded by NASA Mars Data Analysis Program 2023–2026

PI: Mark Wronkiewicz, NASA Jet Propulsion Laboratory. (Amount to Yale: \$22,003)

Principal Investigator Yale University (\$248,520)

“Connecting Atmospheric Dynamics Across Many Scales at Gale Crater.”

Funded by NASA Mars Science Laboratory Participating Scientist Program 2022–2025

Principal Investigator Yale University (\$272,203)

“Diagnosing the Causes of Regional Dust Storms Using the Mars Dust Activity Database.”

Funded by NASA Mars Data Analysis Program 2022–2026

Principal Investigator Yale University (\$259,573)

“Annular Modes of Variability in the Martian Atmosphere.”

Funded by NASA Mars Data Analysis Program 2021–2025

Co-Investigator (Institutional PI)

“Detecting Missing Dust Activity during Southern Polar Summer.”

Funded by NASA Mars Data Analysis Program 2022–2025

PI: Scott Guzewich, NASA Goddard Space Flight Center. (Amount to Yale: \$209,240)

Co-Investigator (Institutional PI)

“Development and Evolution of Martian Regional-Scale Dust Storms in Space and Time.”

Funded by NASA Mars Data Analysis Program 2021–2024

PI: David Kass, NASA Jet Propulsion Laboratory. (Amount to Yale: \$116,500)

Co-Investigator (Institutional PI)

“Improved Climatology of Lower and Middle Atmospheric Gravity Wave Activity at Mars.”

Funded by NASA Mars Data Analysis Program 2019–2023

PI: Nicholas Heavens, Space Science Institute. (Amount to Yale: \$160,075)

Research Fellow (\$24,000)

“21st Century Graduate Fellowship” Funded by American Meteorological Society 2010–2011

Publications Peer-Reviewed Book Chapters

(18 first author)

- 2 **Battalio, J. Michael.** *“Connection Between Martian Weather, Climate, and Dust Storms.”* In: Weather, Climate, and Seasons in the Solar System. R. Soare, ed. Elsevier, (2026).
- 1 **Battalio, J. Michael,** Maureen Cohen, Juan Lora, Peter Read, and Timothy McConnochie. *“Oscillations in terrestrial planetary atmospheres.”* In: Atmospheric Oscillations: Sources of Subseasonal-to-Seasonal Variability and Predictability. B. Guan, ed. Elsevier, (2025): 399–441. ISBN:978-0-443-15638-0.

Peer-Reviewed Articles *Mentee author

- 36 Campbell, Charissa*, Scott Guzewich, **J. Michael Battalio,** Stuart Robbins, Courtney Batterson. *“Martian South Polar Summer Dust Storms in Observations, Reanalyses, and Modeling.”* Journal of Geophysical Research: Planets 130, 12 (2025): doi:10.1029/2025JE009268.
- 35 **Battalio, J. Michael,** Juan M. Lora, Sandro Lubis, Pedram Hassanzadeh. *“Propagation and Periodicity of Mars’s Northern Annular Mode Modulates the Dust Cycle.”*

- Geophysical Research Letters 52, 6 (2025): doi:10.1029/2024GL112814.
- 34 **Battalio, J. Michael** “*Quasi-Biennial Oscillation Absent in Mars Atmospheric Reanalysis Datasets.*” *Icarus* 472 (2025): 116367. doi:10.1016/j.icarus.2024.116367.
- 33 Olm, Ethan*, Juan M. Lora, **J. Michael Battalio**. “*Methane storm characteristics and evolution in simulations of Titan’s hydroclimate.*” *Icarus* 425 (2025): 116290. doi:10.1016/j.icarus.2024.116290.
- 32 Bischof, Grace*, Scott Guzewich, John Moores, Mark Lemmon, **J. Michael Battalio**, Conor Hayes, Alex Innanen, Christina Smith. “*Dust Dynamics in Gale Crater Observed using the Line-of-Sight Extinction through 3663 Sols of the Mars Science Lab Mission.*” *Journal of Geophysical Research: Planets* 129, 10 (2024): doi:10.1029/2024JE008349.
- 31 **Battalio, J. Michael**, Juan M. Lora. “*Increases in the Local Eddy Energetics of the Extratropical Atmosphere over the Last Four Decades.*” *Journal of Climate* 37, 12 (2024): 3283–3304. doi:10.1175/JCLI-D-22-0930.1
- 30 Lemmon, Mark T., Scott S. Guzewich, **J. Michael Battalio**, A. Vicente-Retortillo, M.-P. Zorzano, J. Martín Torres, M. D. Smith, J. F. Bell III, M. C. Malin, J. N. Naki. “*The Mars Science Laboratory record of optical depth measurements via solar imaging.*” *Icarus* 408 (2024): 115821. doi:10.1016/j.icarus.2023.115821.
- 29 Pankine, Alexey A., Nicholas G. Heavens, **J. Michael Battalio**, Corwin Wright “*Seasonal Variability of Gravity Wave Activity in Mars’s Lower Atmosphere from MGS-*TES* Nadir Observations.*” *Icarus* 408 (2024): 115819. doi:10.1016/j.icarus.2023.115819.
- 28 Heavens, Nicholas G., Alexey Pankine, **J. Michael Battalio**, Corwin Wright, David M. Kass, Armin Kleinböhl. “*A multiannual record of convective instability in Mars’s middle atmosphere from the Mars Climate Sounder.*” *The Planetary Science Journal* 4, 101 (2023): 1–22. doi:10.3847/PSJ/acd69d.
- 27 **Battalio, J. Michael**, Huiqun Wang, Mark Richardson, Anthony Toigo, and Morgan Saidel*. “*Dust Storm Boundaries in the Mars Dust Activity Database.*” *Icarus* 400 (2023): 115567. doi:10.1016/j.icarus.2023.115567.
- 26 **Battalio, J. Michael**, Nicholas Heavens, Alexey Pankine, Corwin Wright, and Aster Cowart. “*Martian Gravity Waves Observed by the Thermal Emission Imaging System (THEMIS) during Northern Summer.*” *Journal of Geophysical Research: Planets* 128, 3 (2023): doi:10.1029/2022JE007653.
- 25 Baek, Seung H.*, **J. Michael Battalio**, and Juan Lora. “*Atmospheric river variability over the last millennium driven by annular modes.*” *AGU Advances* 4 (2023): doi:10.1029/2022AV000834.
- 24 Wang, Huiqun, Morgan Saidel*, Mark Richardson, Anthony Toigo and **J. Michael Battalio**. “*Characterization of Martian Dust Storm Distributions from Mars Daily Global Map Observations.*” *Icarus* 394 (2023): 115095. doi:10.1016/j.icarus.2022.115416.
- 23 **Battalio, J. Michael**, Germán Martínez, Claire Newman, Manuel de la Torre Juárez, Agustín Sánchez-Lavega, and Daniel Víudez-Moreiras. “*Planetary Waves Traveling between Mars Science Laboratory and Mars 2020.*” *Geophysical Research Letters* 49, 21 (2022): doi:10.1029/2022GL100866.
- 22 Heavens, Nicholas G., Alexey Pankine, **J. Michael Battalio**, and Corwin Wright. “*The horizontal wavelength spectrum of gravity wave activity in Mars’s lower atmosphere: the perspective from MGS-*TES* nadir observations.*” *The Planetary Science Journal* 3, 228 (2022): 1–20. doi:10.3847/PSJ/ac8d62.
- 21 Lora, Juan M., **J. Michael Battalio**, Mary Yap*, and Colin Baccioco*. “*Topographic and orbital forcing of Titan’s hydroclimate.*” *Icarus* 384 (2022): 115095. doi:10.1016/j.icarus.2022.115095.

- 20 Heavens, Nicholas G., Alexey Pankine, **J. Michael Battalio**, Corwin Wright, David M. Kass, Armin Kleinböhl, Sylvain Piqueux, and John T. Schofield. “*Mars Climate Sounder observations of gravity wave activity throughout Mars’s lower atmosphere.*” *The Planetary Science Journal* 3, 57 (2022): 1–32. doi:10.3847/PSJ/ac51ce.
- 19 **Battalio, J. Michael**. “*Transient eddy energetics on Mars in three reanalysis datasets.*” *Journal of the Atmospheric Sciences* 79, 2 (2022): 361–382. doi:10.1175/JAS-D-21-0038.1.
- 18 **Battalio, J. Michael**, Juan M. Lora, Scot Rafkin, and Alejandro Soto. “*The interaction of deep convection with the general circulation in Titan’s atmosphere. Part 2: Impacts on the climate.*” *Icarus* 373 (2022): 114623. doi:10.1016/j.icarus.2021.114623.
- 17 Rafkin, Scot, Juan M. Lora, Alejandro Soto, and **Battalio, J. Michael**. “*The interaction of deep convection with the general circulation in Titan’s atmosphere. Part 1: Cloud Resolving Simulations.*” *Icarus* 373 (2022): 114755. doi:10.1016/j.icarus.2021.114755.
- 16 **Battalio, J. Michael** and Juan M. Lora. “*Global impacts from high-latitude storms on Titan.*” *Geophysical Research Letters* 48, 18 (2021): doi:10.1029/2021GL094244.
- 15 **Battalio, J. Michael** and Juan M. Lora. “*Annular modes of variability in the atmospheres of Mars and Titan.*” *Nature Astronomy* 5, 11 (2021): 1139–1147 doi:10.1038/s41550-021-01447-4.
- 14 **Battalio, J. Michael** and Huiqun Wang. “*The Mars Dust Activity Database (MDAD): A comprehensive statistical study of dust storm sequences.*” *Icarus* 354 (2021): 114059. doi:10.1016/j.icarus.2020.114059.
- 13 Cooper*, Brittney, John Moores, **J. Michael Battalio**, Scott Guzewich, Rachel Modestino, and Michael Tabascio. “*Aphelion Cloud Belt Phase Function Investigations with Mars Color Imager (MARCI).*” *Planetary and Space Science* 184 (2020): 104840. doi:10.1016/j.pss.2020.104840.
- 12 Smith, Christina L., Mark Lemmon, John Moores, Scott Guzewich, Timothy H. McConnochie, Claire E. Newman, Alain S. J. Khayat, **J. Michael Battalio**, Casey A. Moore, and Douglas Ellison. “*The Line-of-Sight Extinction record at Gale Crater as observed by MSL’s Mastcam and Navcam through ~2500 sols.*” *Journal of Geophysical Research: Planets* 125, 11 (2020): doi:10.1029/2020JE006465.
- 11 **Battalio, J. Michael** and Huiqun Wang. “*Eddy Evolution during Large Dust Storms.*” *Icarus* 338 (2020): 113507. doi:10.1016/j.icarus.2019.113507.
- 10 Shirley, James H., Richard J. McKim, **J. Michael Battalio**, and David M. Kass. “*Orbit-Spin Coupling and the Triggering of the Martian Planet-Encircling Dust Storm of 2018.*” *Journal of Geophysical Research: Planets* 125, 6 (2020): doi:10.1029/2019JE006077.
- 9 Moore, Casey, John Moores, Claire Newman, Mark Lemmon, Scott Guzewich, **J. Michael Battalio**. “*Vertical and Horizontal Heterogeneity of Atmospheric Dust Loading in Northern Gale Crater, Mars.*” *Icarus* 329 (2019): 197–206. doi:10.1016/j.icarus.2019.03.041.
- 8 **Battalio, J. Michael** and Huiqun Wang. “*The Aonia-Solis-Valles Dust Storm Track in the Southern Hemisphere of Mars.*” *Icarus* 321 (2019): 367–378. doi:10.1016/j.icarus.2018.10.026.
- 7 **Battalio, J. Michael**, Istvan Szunyogh, and Mark Lemmon. “*Wave Energetics of the Southern Hemisphere of Mars.*” *Icarus* 309 (2018): 220–240. doi:10.1016/j.icarus.2018.03.015.
- 6 Guzewich, Scott, Claire E. Newman, Michael Smith, John E. Moores, Christina L. Smith, Casey Moore, Mark I. Richardson, David Kass, Armin Kleinböhl, Michael Mischna, F. J. Martín Torres, M-P. Zorzano Mier, and **J. Michael Battalio**. “*The Vertical Dust*

Profile over Gale Crater, Mars. Journal of Geophysical Research: Planets 122, 12 (2017): doi:10.1002/2017JE005420.

- 5 Newman, Claire, Javier Gómez-Elvira, Mark Richardson, Mercedes Marin, Sara Navarro, Josefina Torres, **J. Michael Battalio**, Scott Guzewich, Robert Sullivan, Manuel de la Torre, Ashwin Vasavada, and Nathan Bridges. “Winds Measured by the Rover Environmental Monitoring Station (REMS) during the Mars Science Laboratory (MSL) Rover’s Bagnold Dunes Campaign and Comparison with Numerical Modeling using MarsWRF.” *Icarus* 291 (2017): 203–231. doi:10.1016/j.icarus.2016.12.016.
- 4 **Battalio, J. Michael** and Jamie Dyer. “The Minimum Length Scale for Evaluating QG Omega Using High Resolution Numerical Model Data.” *Monthly Weather Review* 145 (2017): 1659–1678. doi:10.1175/MWR-D-16-0241.1.
- 3 **Battalio, J. Michael**, Istvan Szunyogh, and Mark Lemmon. “Energetics of the Martian Atmosphere Using the Mars Analysis Correction Data Assimilation (MACDA) Dataset.” *Icarus* 276 (2016): 1–20. doi:10.1016/j.icarus.2016.04.028.
- 2 Mahaffy P. R., et al., and the MSL Science Team[†]. “The imprint of atmospheric evolution in the D/H of Hesperian clay minerals on Mars.” *Science* (2015) doi:10.1126/science.1260291 [[†]**Battalio** identified as a member of the “MSL Science Team” in Supplementary Material]
- 1 Webster, C. R., et al., and the MSL Science Team[†]. “Mars methane detection and variability at Gale crater.” *Science* (2014) doi:10.1126/science.1261713 [[†]**Battalio** identified as a member of the “MSL Science Team” in Supplementary Material]

Published Datasets

1. **Battalio, J. Michael**, Helen Wang, Mark Richardson, Anthony Toigo and Morgan Sidel, 2023: *The Mars Dust Activity Database (MDAD) Boundaries v1.1*. Zenodo, doi:10.5281/zenodo.7480334.
2. Sidel, Morgan, Helen Wang, **J. Michael Battalio**, Anthony D. Toigo, and Mark I. Richardson, 2022: *Mars Dust Storm Sequence Dataset (MDSSD)*. Harvard Dataverse, doi:10.7910/DVN/OXB6KN.
3. **Battalio, J. Michael**, and Helen Wang, 2019: *The Mars Dust Activity Database (MDAD) v1.0*. Harvard Dataverse, doi:10.7910/DVN/F8R2JX.
4. Wang, Helen, **J. Michael Battalio**, and Zachery Huber, 2018: *Mars MRO MARCI Daily Global Weather Maps v1*. NASA Planetary Data System.

Awards

JPL <i>Exoplanets 3</i> Travel Grant	October 2024
US CLIVAR Travel Grant	March 2024
<i>Icarus</i> Best Reviewers of the Year	October 2022
JPL <i>Exoplanets 2</i> Travel Grant	September 2022
Mars Exploration Program Analysis Group Travel Grant	May 2022
<i>Titan Through Time 5</i> Travel Grant	July 2021
NASA Group Achievement Award <i>MSL Extended Mission-1 Science and Operations Team</i>	June 2017
AAS Division of Planetary Science Travel Grant	September 2016
Claude Scruggs Scholarship, Texas A&M College of Geoscience	2016
Outstanding Graduate Seminar Speaker Award	Fall 2015
NASA Group Achievement Award <i>MSL Prime Mission Science and Operations Team</i>	June 2015
Outstanding Graduate Seminar Speaker Award	Spring 2014
Texas A&M College of Geoscience Top Off Scholarship	2013

Ernestine P. Scoggins Memorial Scholarship <i>Texas A&M Department of Atmospheric Sciences</i>	2013
National Science Foundation S-STEM Fellow	2010
Mississippi State University Society of Scholars	2010
Guillermo Salazar Rodriguez Undergraduate Scholarship <i>American Meteorological Society</i>	2009

Invited

Presentations

1. Laboratoire de Météorologie Dynamique, Institut Pierre Simon Laplace, Sorbonne Université, 2/27/2026.
2. Department of Meteorology and Atmospheric Science Colloquium, Pennsylvania State University, 2/4/2026.
3. Department of Marine, Earth, and Atmospheric Sciences Colloquium, North Carolina State University, 1/9/2025.
4. Mars Climate Sounder Team Meeting, Pasadena, CA, 7/21/2024.
5. Department of Earth and Planetary Sciences, Atmosphere, Ocean, and Climate Dynamics Seminar, Yale University, 3/7/2024.
6. Department of Earth and Planetary Sciences Colloquium, Yale University, 3/6/2024.
7. SwRI Boulder Colloquium, Southwest Research Institute, Boulder, CO, 2/21/2023.
8. Department of Earth and Planetary Sciences, Atmosphere, Ocean, and Climate Dynamics Seminar, Yale University, 2/16/2023.
9. Department of Earth and Planetary Sciences Colloquium, Yale University, 2/15/2023.
10. Department of Mathematics and Statistics, Geophysical and Astrophysical Fluid Dynamics Seminar, University of Exeter 11/8/2022.
11. Department of Earth, Atmospheric, and Planetary Sciences Seminar, Purdue University, 9/12/2022.
12. California Institute of Technology, NASA JPL Mars Forum, 10/29/2021.
13. University of California, Santa Cruz, Other Worlds Laboratory Seminar, 10/11/2021.
14. NASA Goddard Institute for Space Studies, 9/7/2021.
15. California Institute of Technology, Planetary Science Seminar, 11/3/2020.
16. Department of Geology and Geophysics, Atmosphere, Ocean, and Climate Dynamics Seminar, Yale University, 11/14/2019.
17. Department of Geology and Geophysics, Postdoc Seminar, Yale University, 11/13/2019.
18. Department of Atmospheric Sciences Colloquium, Texas A&M University, 1/26/2016.
19. Department of Atmospheric Sciences Colloquium, Texas A&M University, 1/24/2015.

Contributed Extended Abstracts

Presentations

1. C. Campbell*, S. Guzewich, **J. M. Battalio**. “*Studying Dust Storm Activity During Southern Polar Summer.*” Poster 8th Mars Polar Conference, Whitehorse, Yukon, Canada, July, 2024.
2. M. de la Torre Juárez, **J. M. Battalio**, C. Newman, T. del Río Gaztelurrutia, R. Hueso, A. Sánchez-Lavega. “*Signatures of the Martian Polar CO₂ Cycle on Surface Pressures at Gale and Jezero.*” Poster 8th Mars Polar Conference, Whitehorse, Yukon, Canada, July, 2024.
3. **J. M. Battalio**. “*Constraining Mars’s Atmospheric Dynamics with a Surface Network.*” Poster 10th Mars Conference, Pasadena, CA July, 2024.
4. **J. M. Battalio** J. M. Lora. “*Annular Modes on Mars Explain Substantial Amounts of Variability and Propagate in the Northern Hemisphere with Two Periodicities.*” Poster 10th Mars Conference, Pasadena, CA July, 2024.

5. **J. M. Battalio**, H. Wang, M. Richardson, A. Toigo, M. Saidel*. “*Spatial Extent Of Dust Storm Boundaries In The Mars Dust Activity Database And Their Composite Structure.*” Poster 10th Mars Conference, Pasadena, CA July, 2024.
6. G. Bischof*, S. D. Guzewich, J.E. Moores, M.T Lemmon, **J. M. Battalio**, C.W. Hayes, A.C. Innanen, C.L. Smith. “*3663 Sols of Line-of-Sight Dust Extinction in Gale Crater with Applications to Jezero Crater and Beyond.*” Poster 10th Mars Conference, Pasadena, CA July, 2024.
7. C. Campbell*, S. Guzewich, **J. M. Battalio**. “*Studying Dust Storm Activity During Southern Polar Summer.*” Poster 10th Mars Conference, Pasadena, CA July, 2024.
8. C.E. Newman, **J. M. Battalio**, Á Vicente- Retortillo, D. Viúdez-Moreiras, C. Charalambou. “*Insights into Near-Surface Winds, Sediment Motion, and Dust Storms from Recent Surface Observations and Modeling.*” Poster 10th Mars Conference, Pasadena, CA July, 2024.
9. M. de la Torre Juárez, J. A. Rodríguez-Manfredi, G. Martínez, **J. M. Battalio**, R. Lorenz, C. E. Newman, L. K. Tamppari. “*Near-Surface Martian Environments as Measured by Surface Stations.*” Poster 10th Mars Conference, Pasadena, CA July, 2024.
10. Mark Wronkiewicz, Marek Slipski, **J. M. Battalio**, Huiqun Wang, David Kass. “*Characterizing Martian Atmospheric Perturbations Due to Small Dust Storms.*” Poster 10th Mars Conference, Pasadena, CA July, 2024.
11. S. Guzewich, C. Campbell*, **J. M. Battalio**. “*Studying Dust Storm Activity During Southern Polar Summer.*” Poster Mars Polar Conference, Whitehorse, Yukon, Canada July, 2024.
12. M. de la Torre Juárez, **J. M. Battalio**, C. E. Newman, T. del Río Gaztelurrutia, R. Hueso, A. Sánchez-Lavega. “*Signatures of the Martian Polar CO₂ Cycle on Surface Pressures at Gale and Jezero.*” Poster Mars Polar Conference, Whitehorse, Yukon, Canada July, 2024.
13. J. M. Lora, **J. M. Battalio**. “*The Influence of Orbital Forcing on the Distribution of Titan’s Surface Liquids.*” Talk Lunar and Planetary Science Conference, Woodlands, TX, March 2023.
14. S. D. Guzewich G. Martínez, A. Innanen, J. Pla-García, M. Ruíz Pérez, M. de la Torre-Juárez, C. E. Newman, M. Lemmon, G. Bischof, M. Richardson, J. Moores, E. Mason, **J. M. Battalio**, Á. Vincente-Retortillo, T. McConnochie, C. Hayes, A. Fraeman, A. Vasavada. “*10 Years of Environmental Science in Gale Crater.*” Talk Lunar and Planetary Science Conference, Woodlands, TX, March 2023.
15. **J. M. Battalio**. N. Heavens, A. Pankine, A. Cowart. “*Detection of Gravity Waves on Mars using Themis Band 10.*” Talk Seventh International Workshop on the Mars Atmosphere: Modelling and Observations, Paris, France, June 2022.
16. **J. M. Battalio**, J. Lora. “*A Comparison of Annular Modes on Mars and Earth.*” Poster Seventh International Workshop on the Mars Atmosphere: Modelling and Observations, Paris, France, June 2022.
17. **J. M. Battalio**, “*Relating Dust Storm Morphology to Wave Dynamics.*” Talk Seventh International Workshop on the Mars Atmosphere: Modelling and Observations, Paris, France, June 2022.
18. J. Shirley, **J. M. Battalio**, D. Kass, A. Kleinböhl, N. Heavens, S. Piqueux, S. Suzuki, D. J. McCleese, J. T. Schofield. “*Orbit-Spin Coupling and Martian Early-Season Global-scale Dust Storms: Challenges and Opportunities.*” Poster Seventh International Workshop on the Mars Atmosphere: Modelling and Observations, Paris, France, June 2022.
19. L. Montabone, et al., [including **Battalio**]. “*The Case and Approach for Continuous, Simultaneous, Global Mars Weather Monitoring from Orbit.*” Seventh International Workshop on the Mars Atmosphere: Modelling and Observations, Paris, France, June 2022.
20. N. Heavens, A. Pankine, **J. M. Battalio**, C.J. Wright, D.M. Kass, A. Kleinböhl, S. Piqueux, J.T. Schofield. “*Improved Climatologies of Lower and Middle Atmospheric*

- Gravity Wave Activity at Mars.*” Seventh International Workshop on the Mars Atmosphere: Modelling and Observations, Paris, France, June 2022.
21. **J. M. Battalio**, “*Opportunities for Constraining Mars’s Atmospheric Dynamics with Both Surface Networks and a Martian Satellite Fleet.*” Low-Cost Science Mission Concepts for Mars Exploration workshop, Pasadena, CA, March 31, 2022.
 22. **J. M. Battalio**, J. Lora. “*Titan’s Annular Modes of Climate Variability Compared to Earth and Mars.*” Titan Through Time 5, Boulder, CO, August 2021.
 23. J. Lora, **J. M. Battalio**. “*Global Influences of Polar Storms in Simulations of Titan’s Climate.*” Titan Through Time 5, Boulder, CO, August 2021.
 24. H. Kahanpää, M. Lemmon, D. Reiss, J. Raack, E. Mason, **J. M. Battalio**. “*Martian Dust Devils Observed Simultaneously by Imaging and By Meteorological Measurements.*” 49th Lunar and Planetary Science Conference, Woodlands, TX, March 2018.
 25. M. Lemmon, C. E. Newman, N. Renno, E. Mason, **J. M. Battalio** and others. “*Dust Devil Activity at the Curiosity Mars Rover Field Site.*” Lunar and Planetary Science Conference XLVIII, Woodlands, TX, March 2017.
 26. **J. M. Battalio**, I. Szunyogh, M. Lemmon. “*Eddy Energetics of the Southern Hemisphere of Mars from the Mars Analysis Correction Data Assimilation (MACDA).*” Sixth International Workshop on the Mars Atmosphere: Modelling and Observations, Granada, Spain, January 2017.

Oral Presentations

1. “*Northern Winter Midlatitude Temperature Increases and Storm Track Intensification Related to Hadley Cell Expansion and Northern Annular Mode Variability.*” **J. M. Battalio**, 2026 American Meteorological Society meeting, Houston, TX January 2026.
2. “*Composite Synoptic Meteorological Structure of Mars’s Major Dust Storms.*” **J. M. Battalio**, H. Wang, M. Richardson, and A. Toigo, 2026 American Meteorological Society meeting, Houston, TX January 2026.
3. “*Linking the Extratropical Storm Tracks and the Jet Stream through the Annular Modes.*” **J. M. Battalio**, American Geophysical Union 2025 Meeting, New Orleans, LA, December 2025.
4. “*Periodicity of Mars’s Northern Annular Mode May Help Explain Global Dust Storm Frequency.*” **J. M. Battalio**, J. Lora, S. Lubis, and P. Hassanzadeh, 2025 DPS-EPSC Meeting, Helsinki, Finland, September 11, 2025.
5. “*The Transient Baroclinic Annular Mode Captures The Baroclinic Wave Lifecycle.*” **J. M. Battalio**, Storm Tracks 2025, Rosendal, Norway, June 17, 2025.
6. “*Increases of northern midlatitude temperatures and storm tracks related to Hadley cell expansion and strengthening Northern Annular Mode.*” **J. M. Battalio**, American Geophysical Union 2024 Meeting, Washington DC, December 2024.
7. “*Composite Synoptic Meteorological Structure of Mars’s Major Dust Storms.*” **J. M. Battalio**, H. Wang, M. Richardson, A. Toigo, and M. Saidel, American Geophysical Union 2024 Meeting, Washington DC, December 2024.
8. “*Terrestrial climate variability at seasonal to sub-seasonal timescales.*” **J. M. Battalio**, M. Cohen, J. Lora, P. Read, and T. McConnochie, 56th DPS Meeting, Boise, ID, October 2024.
9. “*Identification of a Coupling Between the Baroclinic and Barotropic Annular Modes Using Transient Eddy Energetics.*” **J. M. Battalio** and J. Lora, American Meteorological Society Atmosphere Ocean Fluid Dynamics Meeting, Burlington, VT, June 2024.
10. “*Trends in transient wave eddy kinetic energetics.*” **J. M. Battalio** and J. Lora, 2024 American Meteorological Society meeting, Baltimore, MD, January 2024.
11. “*Joint Observation of Planetary Waves from the Curiosity and Perseverance Rovers.*” **J. M. Battalio**, G. Martínez, C. Newman, M. de la Torre Juárez, A. Sánchez-Lavega,

- and D. Víudez-Moreiras., American Geophysical Union 2022 Meeting, Chicago, Illinois, December 2022.
12. “*Planetary Waves Traveling between the Mars Science Laboratory and Mars 2020 Rovers.*” **J. M. Battalio**, G. Martínez, C. Newman, M. de la Torre Juarez, A. Sánchez-Lavega, and D. Víudez-Moreiras., Royal Astronomical Society, Burlington House, London, UK, November 11, 2022.
 13. “*Incorporating dust storm boundaries into an updated Mars Dust Activity Database.*” **J. M. Battalio**, H. Wang, and M. Saidel*, 54th DPS Meeting, London, Ontario, October 2, 2022.
 14. “*Trends in transient wave eddy kinetic energetics in ERA5.*” **J. M. Battalio** and J. Lora, 2022 American Meteorological Society meeting, virtual, January 2022.
 15. “*Planetary Waves Traveling between Curiosity and Perseverance.*” **J. M. Battalio**, G. Martínez, C. Newman, M. de la Torre Juarez, A. Sánchez-Lavega, and D. Víudez-Moreiras., Mars Science Laboratory team meeting, October 4, 2022.
 16. “*Annular modes of climate variability and their relationship to dust storms on Mars.*” **J. M. Battalio**, J. Lora, American Geophysical Union 2021 Meeting, New Orleans, December 2021.
 17. “*Connecting regional dust storms to atmospheric traveling waves using the Mars Dust Activity Database (MDAD).*” **J. M. Battalio**. 53rd DPS Meeting, virtual, October 2021.
 18. “*Comparison of Baroclinic Waves and Annular Modes Across Reanalysis Datasets.*” **J. M. Battalio**. Mars Climate Sounder Team Meeting, virtual, August 2021.
 19. “*Contrasting Convective Systems in the Extratropics of Earth and Titan.*” **J. M. Battalio**. 19th Southeast Severe Storms Symposium, virtual, March 2021.
 20. “*Barotropic and Baroclinic Annular Modes of Variability in the Atmospheres of Mars and Titan.*” **J. M. Battalio**, J. Lora. American Geophysical Union 2020 Meeting, virtual, December 2020.
 21. “*Comparison of Gravity Wave Activity between THEMIS Band-10 and MCS Nadir Observations.*” **J. M. Battalio**, N. Heavens, A. Pankine, J. Cowart. 52nd DPS Meeting, virtual, October 2020.
 22. “*Atmospheric Circulation and Dust Activity on Mars.*” **J. M. Battalio**, H. Wang. American Geophysical Union 2018 Meeting, Washington DC, November 2018.
 23. “*Development Histories of Martian Dust Storms.*” **J. M. Battalio**, H. Wang. Harvard-CfA Postdoc Symposium, Cambridge, MA, October 2017.
 24. “*The Energetics of Transient Eddies in the Martian Northern Hemisphere.*” **J. M. Battalio**, I. Szunyogh, M. T. Lemmon. The Dynamical Martian Atmosphere, 48th DPS Meeting, Pasadena, CA, October 2016.
 25. “*Reduced Baroclinicity During Martian Global Dust Storms.*” **J. M. Battalio**, I. Szunyogh, M. T. Lemmon. Mars’s Atmosphere and Surface, 47th DPS Meeting, National Harbor, MD, November 2015.
 26. “*Energetics of the Northern Hemisphere of Mars.*” **J. M. Battalio**, I. Szunyogh. Atmospheric Sciences Graduate Council Seminar, Texas A&M University, March 2014.
 27. “*Application of QG Theory to Assess Model Initialization.*” **J. M. Battalio**, J. L. Dyer, 10th Southeast Severe Storm Symposium, Starkville, MS, March 2012.

Poster Presentations

1. “*Periodicity of Mars’s Northern Annular Mode May Help Explain Global Dust Storm Intermittency.*” **J. M. Battalio**, J. Lora, S. Lubis, and P. Hassanzadeh, American Geophysical Union 2022 Meeting, New Orleans, LA, December 2025.
2. “*Internal Climate Variability Adds Complexity to Zonal-mean Winds.*” **J. M. Battalio**, D. Williams, J. Lora, Exoclines VII, Montreal, Canada July 2025.

3. “*Earth as an Exoplanet from Mars.*” **J. M. Battalio**, Exoplanets in Our Backyard 3, Louisville, KY November 2024.
4. “*Increases in the Local Eddy Energetics of the Extratropical Atmosphere over the Last Four Decades.*” **J. M. Battalio** and J. Lora, American Meteorological Society Atmosphere Ocean Fluid Dynamics Meeting, Burlington, VT, June 2024.
5. “*Annular Modes on Mars Explain Large Portions of Climate Variability and Propagate in the Northern Hemisphere.*” **J. M. Battalio** and J. Lora, American Meteorological Society Atmosphere Ocean Fluid Dynamics Meeting, Burlington, VT, June 2024.
6. “*Atmospheric Blocking Precedes Flushing Dust Storms on Mars.*” **J. M. Battalio**, L. Wang, Z. Liu*. US CLIVAR Workshop on Blocking and Extreme Weather in a Changing Climate, Boulder, CO, March 2024.
7. “*Annular Modes Set Climate Variability Across the Solar System and Beyond.*” **J. M. Battalio**, S. Scholz*, J. Lora. Exoclimes VI, Exeter, UK, June 2023.
8. “*Increasing Midlatitude Temperatures Caused by Hadley Circulation.*” **J. M. Battalio**. Yale Climate Day 2023, New Haven, CT, May 2023.
9. “*Impact of Extratropical Eddy Kinetic Energy Energetics on Atmospheric Rivers.*” **J. M. Battalio**, H. Baek*, J. Lora. American Geophysical Union 2022 Meeting, Chicago, IL, December 2022.
10. “*Annular Modes of Climate Variability Across the Solar System and Implications for Exoplanets.*” **J. M. Battalio** and J. Lora, Exoplanets in Our Backyard 2, Albuquerque, NM November 2022.
11. “*Comparing Titan’s Global to Earth’s Mesoscale Convective Systems.*” **J. M. Battalio**, J. Lora. 2022 National Weather Association meeting, virtual, August 23, 2022.
12. “*Annular modes on Mars and Titan.*” **J. M. Battalio**, J. Lora. 2022 American Meteorological Society meeting, virtual, January 2022.
13. “*Isotropic gravity wave activity on Mars.*” **J. M. Battalio**, N. Heavens, A. Pankine, A. Cowart. American Meteorological Society meeting, virtual, January 2022.
14. “*Sources and sinks of energy of traveling waves on Mars.*” **J. M. Battalio**, American Geophysical Union 2021 Meeting, New Orleans, LA, December 2021.
15. “*Baroclinic traveling waves detected by Mars 2020 MEDA.*” **J. M. Battalio**, American Geophysical Union 2021 Meeting, New Orleans, LA, December 2021.
16. “*Major and Minor Dust Storm Sequences on Mars.*” **J. M. Battalio**, H. Wang. American Geophysical Union 2019 Meeting, San Francisco, CA, December 2019.
17. “*An Important Dust Storm Track in the Southern Hemisphere of Mars.*” **J. M. Battalio**, H. Wang. 50th DPS Meeting, Pasadena, Knoxville, TN, October 2018.
18. “*The Minimum Horizontal Length Scale When Evaluating Quasi-Geostrophic Omega.*” **J. M. Battalio**, J. L. Dyer. 28th Conference on Weather Analysis and Forecasting / 24th Conference on Numerical Weather Prediction, American Meteorological Society Meeting, Seattle, WA, January 2017.
19. “*A Comparison of Martian Transient Wave Energetics in High and Low Optical Depth Environments.*” **J. M. Battalio**, I. Szunyogh, M. T. Lemmon. Current Processes in the Atmosphere of Mars I, American Geophysical Union 2016 Meeting, San Francisco, CA, December 2016.
20. “*Using Recent Inter-Annual Variability in Mars Atmospheric Dynamics to Consider Past Climates.*” **J. M. Battalio**. Astrobiology Graduate Conference, Boulder, CO, July 2016.
21. “*Necessity of Convection Parameterization in Simulating an MCS at High Resolution.*” **J. M. Battalio**, K. Pitts, M. Herrera. 30th Conference on Hydrology, Precipitation Processes and Observations for Atmospheric, Land Surface, and Hydrological Modeling, American Meteorological Society Meeting, New Orleans, LA, January 2016.
22. “*An Investigation of the Local Energetics of the Martian Atmosphere.*” **J. M. Battalio**, I. Szunyogh, M. T. Lemmon. Current Processes in the Atmosphere of Mars I, American Geophysical Union 2014 Meeting, San Francisco, CA, December 2014.

23. “*Quantitative Analysis and 3D Visualization of NWP Data Using Quasi-Geostrophic Equations.*” **J. M. Battalio**, J. L. Dyer. 28th Conference on Interactive Information Processing Systems American Meteorological Society Annual Meeting, New Orleans, LA, January 2012.
24. “*Visualization of Vorticity and Divergence in Three Dimensions.*” **J. M. Battalio**, J. L. Dyer. 36th Annual Meeting National Weather Association Conference, Birmingham, AL, October 2011.

Co-authored Presentations

1. “*Atmospheric Blocking in Mars’s Storm Track and Their Relationship with Large Dust Events.*” L. Wang, Z. Liu*, **J. M. Battalio**. American Geophysical Union 2024 Meeting, Washington, D.C., December 2024.
2. “*Regional features of Baroclinic Annular Mode on Mars.*” Z. Liu*, L. Wang, **J. M. Battalio**. American Geophysical Union 2024 Meeting, Washington, D.C., December 2024.
3. “*Characterizing Dust Activity near the South Pole at Summer Solstice.*” C. Campbell*, S. Guzewich, **J. M. Battalio**. American Geophysical Union 2024 Meeting, Washington, D.C., December 2024.
4. “*Straight-Line Wind Stress Dust Lifting on Mars.*” S. Guzewich, M. Lemmon, E. Mason, C. Newman, **J. M. Battalio**. American Geophysical Union 2024 Meeting, Washington, D.C., December 2024.
5. “*Characterizing the Lifecycle of Small Martian Dust Storms for Science and Mission Planning.*” M. Wronkiewicz, M. Slipski, **J. M. Battalio**, H. Wang, D. Kass. American Geophysical Union 2024 Meeting, Washington, D.C., December 2024.
6. “*Characterizing Dust Activity near the South Pole at Summer Solstice.*” C. Campbell*, S. Guzewich, **J. M. Battalio**. American Geophysical Union 2024 Meeting, Washington, D.C., July 2024.
7. “*Response of the Martian near-surface atmosphere at two different locations to large-scale circulation processes.*” M. de la Torre-Juárez, E. Mason, S. Guzewich, C. Newman, S. Zurita-Zurita, **J. M. Battalio**, M. Ruíz Pérez, American Geophysical Union 2023 Meeting, CA, December 2023.
8. “*Methane storm distribution and evolution in simulations of Titan’s climate.*” J. M. Lora, E. Olim*, **J. M. Battalio**, Titan Through Time VI Meeting, Paris, France, June 2023.
9. “*Regional Features of Periodic Variability in Mars’s Storm Track and Their Relationship with Large Dust Events.*” K. El-Sharkawy*, A. Durham*, Z. Liu*, **J. M. Battalio**, L. Wang. American Geophysical Union 2022 Meeting, Chicago, Illinois, December 2022.
10. “*Development and Evolution of Large-Scale Regional Dust Storms in Space and Time.*” D. Kass, A. Kleinböhl, J. Shirley, **J. M. Battalio**. American Geophysical Union 2022 Meeting, Chicago, Illinois, December 2022.
11. “*Frost Detection Campaigns by the Mars Science Laboratory Mission: Results and Lessons for the Mars 2020 mission.*” G. Martínez, R. Gough, W. Rapin, P.-Y. Meslin, O. Gasnault, S. Schöder, T. McConnochie, H. Savijarvi, E. Fischer, S. Guzewich, C. Newman, **J. M. Battalio**, A. Vasavada, M. de la Torre-Juárez, R. Wiens, N. Lanza. American Geophysical Union 2022 Meeting, Chicago, Illinois, December 2022.
12. “*Recent insights into dust lifting and sand motion at the surface of Mars.*” C. Newman, M. Baker, R. Sullivan, C. Charalambous, M. Lemmon, M. Richardson, R. Hueso, D. Toledo, V. Palacio, I. Arruego, Á. Vincente-Retortillo, A. Munguira, G. Martínez, H. Kahanpää, C. Swann, B. Jackson, S. Diniega, R. Ewing, N. Murdoch, A. Scott, D. Mimoun, J. Lasue, S. Thorne, **J. M. Battalio**. American Geophysical Union 2022 Meeting, Chicago, Illinois, December 2022.
13. “*Characterizing Martian dust storm development using the Mars Dust Storm Sequence Database (MDSSD).*” H. Wang, M. Saidel*, M. Richardson, A. Toigo, **J. M. Battalio**. American Geophysical Union 2022 Meeting, Chicago, Illinois, December 2022.

14. “*Atmospheric River Variability over the Last Millennium Driven by Annular Modes.*” S.H. Baek*, **J. M. Battalio**, J.M. Lora. American Geophysical Union 2022 Meeting, Chicago, Illinois, December 2022.
15. “*A multiannual record of gravity wave breaking in the middle atmosphere from the Mars Climate Sounder.*” N. Heavens, A. Pankine, **J. M. Battalio**, C.J. Wright, D.M. Kass, A. Kleinböhl. American Geophysical Union 2022 Meeting, Chicago, Illinois, December 2022.
16. “*Atmospheric river variability over the last millennium driven by annular modes.*” S. H. Baek*, **J. M. Battalio**, J.M. Lora. 4th International Atmospheric River Conference, 2022.
17. “*Creating a climatology of gravity wave activity throughout Mars’s lower and middle atmosphere from Mars Climate Sounder limb observations.*” N. Heavens, **J. M. Battalio**, D. Kass, A. Kleinböhl, A. Pankine, C. Wright. American Geophysical Union 2021 Meeting, New Orleans, December 2021.
18. “*Understanding the Influences of Topography and Orbital Forcing on Titan’s Surface Methane.*” J. M. Lora, **J. M. Battalio**, M. Yap*, C. Baciocco*. American Geophysical Union 2021 Meeting, New Orleans, December 2021.
19. “*Global influences of polar storms in simulations of Titan’s climate.*” J. M. Lora, **J. M. Battalio**. Titan Through Time 5, Boulder, CO, August 2021.
20. “*Re-examining the horizontal wavelength spectrum of gravity wave activity in Mars’s lower atmosphere.*” N. Heavens, A. Pankine, **J. M. Battalio**, American Geophysical Union 2020 Meeting, virtual, December 2020.
21. “*A Multiannual Record of Gravity Wave Activity in Mars’s Lower Atmosphere of On-Planet Observations by the Mars Climate Sounder.*” N. Heavens, D. Kass, A. Kleinböhl, J. Schofield, **J. M. Battalio**, A. Pankine. UK Planetary Atmospheres Meeting, London, UK, February 2020.
22. “*Major Dust Storms and Changes in Atmospheric Circulation on Mars.*” H. Wang, **J. M. Battalio**. 42nd COSPAR Scientific Assembly, Pasadena, CA, July 2018.
23. “*The Vertical Profile of Dust over Gale Crater, Mars.*” S. D. Guzewich, C. E. Newman, M. D. Smith, J. E. Moores, C. L. Smith, C. Moore, M. I. Richardson, D. Kass, A. Kleinböhl M. Mischna, F. J. Martín Torres, M-P. Zorzano Mier, **J. M. Battalio**. American Geophysical Union 2017 Meeting, New Orleans, LA, December 2017.
24. “*Meteorological properties of Martian Dust Devils as observed by MSL.*” H. Kahanpää, M. T. Lemmon, E. Mason, **J. M. Battalio**. European Planetary Science Congress 2017, Riga, Latvia, September, 2017.
25. “*The Mars Science Laboratory Dust Storm Campaign.*” S. D. Guzewich, C. E. Newman, M. de la Torre-Juárez, M. Lemmon, E. Mason, **J. M. Battalio** and others. Sixth International Workshop on the Mars Atmosphere: Modeling and Observations, Granada, Spain, January 2017.
26. “*Extinction Measurements of Dust Aerosol from Mars Science Laboratory Solar Images.*” M. T. Lemmon, **J. M. Battalio**, and others. Current Processes in the Atmosphere of Mars I, American Geophysical Union 2016 Meeting, San Francisco, CA, December 2016.

White Papers

1. Guzewich, Scott, et al., [including **J. M. Battalio**]. “*Measuring Mars Atmospheric Winds from Orbit.*” 2020, submitted to the National Academy of Sciences Planetary Science and Astrobiology Decadal Survey 2023–2032. doi:10.3847/25c2cfef.6576a506
2. Montabone, Luca, et al., [including **J. M. Battalio**]. “*Observing Mars from Areostationary Orbit: Benefits and Applications.*” 2020, submitted to the National Academy of Sciences Planetary Science and Astrobiology Decadal Survey 2023–2032. doi:10.3847/25c2cfef.0cdca220
3. Newman, Claire, Tanguy Bertrand, **J. Michael Battalio** et al., “*Toward More Realistic Simulation and Prediction of Dust Storms on Mars.*” 2020, submitted to the National

Academy of Sciences Planetary Science and Astrobiology Decadal Survey 2023–2032. doi:10.3847/25c2cfef.726b0b65

4. Newman, Claire, Michael A. Mischna, Alejandro Soto, **J. Michael Battalio** et al., “*An Urgently Needed Repository for Planetary Atmospheric Model Output.*” 2020, submitted to the National Academy of Sciences Planetary Science and Astrobiology Decadal Survey 2023–2032. doi:10.3847/25c2cfef.6974fd2e
5. Barnes, Jason, et al., [including **J. M. Battalio**]. “*New Frontiers Titan Orbiter.*” 2020, submitted to the National Academy of Sciences Planetary Science and Astrobiology Decadal Survey 2023–2032. doi:10.3847/25c2cfef.4c2df948

Teaching

Texas A&M University courses

ATMO 321 *Computer Applications in the Atmospheric Sciences* F2014
Teaching Assistant (1 section, 23 students total)

ATMO 202 *Atmospheric Science Lab* F2012, S2013, F2013
Instructor (7 sections, 151 students total)

Teaching Academy in the Natural Sciences

Introductory Physics Su2010, Su2011, Su2012
Lecturer (~80 students total)

Mississippi State University courses

GR 6842 *Forecasting Severe Local Storms* S2012
Co-Instructor (1 section, ~20 students, 5 lectures)

GR 4303/6303 *Principles of GIS* S2011, F2011
Teaching Assistant (2 sections, ~45 students total)

GR 1123 *Introduction to World Geography* F2010, S2011, F2011, S2012
Teaching Assistant (4 sections, ~400 students total)

GR 4933/6933 *Dynamic Meteorology II* S2011, S2012
Substitute Lecturer (2 sections, 4 lectures total)

GR 4823/6823 *Dynamic Meteorology I* F2010, F2011
Substitute Lecturer (2 sections, 2 lectures total)

PH 1011 *Physical Science Lab* S2010
Instructor, Department of Physics (1 section, 18 students)

Mentoring

Postdoctoral

Charissa Campbell
Goddard Space Flight Center (co-funded with Scott Guzewich)
S. Hun Baek & William Rush
Yale University (principally advised by J. M. Lora)

Graduate

Thomas Pierron
Sorbonne Université (PhD 2026; doctoral committee, principally advised by F. Forget)
Zehao Song & Zhaoyu Liu
Purdue University (principally advised by L. Wang)
Ashley Arroyo, Sooman Han, Nicholas Lombardo, & Serena Scholz
Yale University (principally advised by J. M. Lora)
Grace Bischof, Brittney Cooper, & Diana Hayes
York University (principally advised by J. E. Moores)

Timote Lombard
Sorbonne University (principally advised by L. Montabone)

Undergraduate

Sebastian Mengwall
Yale University

Colin Baccioco, Sofia Menemenlis, Ethan Olim, Juliana Surprenant, & Mary Yap
Yale University (principally advised by J. M. Lora)

Audrey Durham, Karim Mohamed El-Sharkawy, & Zhaoyu Liu
Purdue University (principally advised by L. Wang)

Morgan Saidel
Harvard-Smithsonian Center for Astrophysics (principally advised by H. Wang)

Jacob Widmer
NASA JPL (principally advised by S. Diniega)

Lindsay Hogan
Yale University (principally advised by R. Smith)

Barrett Goudeau & Carlee Loeser
Texas A&M University (principally advised by I. Szunyogh)

**Service &
Outreach**

Associate Editor for Climate & Planetary Science January 2024–present
Geophysical Research Letters American Geophysical Union

Session Co-Convener December 2025
Processes in the Present-day Climate of Mars American Geophysical Union

Weather and Climate Livestream May 31, 2025
What We Learn About Earth’s Climate from Studying Mars’s Global Dust Storms and Titan’s Methane Rain

Member June 2023–present
Independent Working Group Mars Climate Modeling Center, NASA Ames

Judge AGU Outstanding Student Presentation Awards 2019, 2022, 2024, 2025

Reviewer
Acta Astronautica, AGU Advances, Bulletin of the American Meteorological Society, Earth and Space Science, Geophysical Research Letters, Geoscience Data Journal, Geoscience Model Development, Icarus, International Journal of Biometeorology, Journal of Geophysical Research: Planets, Journal of the Atmospheric Sciences, Nature Astronomy, Planetary and Space Science, Space Science Reviews, The Planetary Science Journal

Review Panel Group Chief (2 Panels total)
Solar System Workings, Mars Data Analysis Program

Panel Reviewer (23 Panels total)
NSF Planetary Astronomy; NASA Mars Data Analysis Program; NASA Solar System Workings; Future Investigators in NASA Earth and Space Science and Technology; NASA Planetary Data Archiving, Restoration, and Tools; NASA Postdoctoral Program

External Reviewer
Leverhulme Trust; Sorbonne Université Emergence; NASA Mars Data Analysis Program (3 Panels); NASA Solar System Workings (5 Panels); NASA Planetary Data Archiving, Restoration, and Tools (2 Panels), NASA Postdoctoral Program (2 Panels)

Contributor
NASA Mars Rover Curiosity: Mission Updates March–October 2017, April 2022–present
<https://mars.jpl.nasa.gov/msl/mission/mars-rover-curiosity-mission-updates/>

Chair September 2020–August 2023
Atmosphere, Ocean, and Climate Dynamics Seminar Series Yale University

Judge Yale University Climate Day	May 2023
Facilitator <i>Modernist Focus Group, Extended Mission 4 Strategic Exercise</i>	July 2022–January 2023 Mars Science Laboratory
Session Chair Mars: From the Surface to the Atmosphere 53rd Annual Meeting of the AAS Division of Planetary Science	October 2021
Session Chair Mars Surface/Atmosphere Interactions 52nd Annual Meeting of the AAS Division of Planetary Science	October 2020
Seminar Organizing Committee Member Harvard-Smithsonian Center for Astrophysics	December 2017–September 2019
Organizer Department of Atmospheric Science March for Science Texas A&M University	Spring 2017
Session Chair Mars Atmosphere General Circulation and Dynamics 6th Workshop on the Mars Atmosphere: Modelling and Observations	January 2017
Atmospheric Sciences Graduate Council President Department of Atmospheric Sciences Invited Speaker Committee Chair, Recruitment & Graduate Electives Committees Graduate Program Committee Student Representative	June 2015–June 2017 Texas A&M University
Atmospheric Sciences Graduate Council Vice-President Department of Atmospheric Sciences IT Committee Chair, Graduate Electives Committee Chair Texas A&M Graduate Student Council	June 2013–May 2015 Texas A&M University
Judge Texas A&M University Student Research Week	2013–2017
Member: American Meteorological Society National Weather Association American Geophysical Union American Astronomical Society (Division of Planetary Science)	2007–present 2007–present 2012–present 2014–present

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