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EMPLOYMENT HISTORY

Postdoctoral Fellow Harvard-Smithsonian Center for Astrophysics · Cambridge, MA	<i>October 2017–present</i>
Postdoctoral Researcher Texas A&M University · College Station, TX	<i>June 2017–September 2017</i>
Graduate Assistant Texas A&M University · College Station, TX Kenneth P. Pipes Endowed Fellow	<i>August 2012–May 2017</i> <i>August 2014–July 2016</i>
Graduate Teaching Assistant Mississippi State University · Starkville, MS American Meteorological Society 21st Century Fellow	<i>August 2010–May 2012</i> <i>August 2010–July 2011</i>

EDUCATION

Ph.D. Atmospheric Sciences Texas A&M University · College Station, TX Dissertation: <i>Wave Energetics of the Atmosphere of Mars</i> Committee co-chairs: Istvan Szunyogh and Mark Lemmon Committee members: Craig Epifano and Kim-Vy Tran	<i>May 2017</i>
M.S. Geoscience Mississippi State University · Starkville, MS	<i>May 2012</i>
B.S. Physics & B.S. Geoscience (Professional Meteorology) minors in Mathematics, Communication, and Music Mississippi State University · Starkville, MS	<i>May 2010</i>

PUBLICATIONS

Peer-Reviewed Articles

1. **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
2. **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.

3. **Battalio, J. Michael**, Istvan Szunyogh, and Mark Lemmon. “*Corrigendum to ‘Energetics of the Martian Atmosphere Using the Mars Analysis Correction Data Assimilation (MACDA) Dataset.’*” *Icarus* 302 (2018): 565–567. doi: 10.1016/j.icarus.2017.10.001.
4. 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. Martin-Torres, M-P. Zorzano-Mier, and **J. Michael Battalio**. “*The Vertical Dust Profile over Gale Crater, Mars.*” *Journal of Geophysical Research: Planets* 122 (2017): doi:10.1002/2017JE005420.
5. **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.
6. Newman, Claire, Javier Gomez-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.
7. **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.

Submitted Articles

1. Moore, Casey, John Moores, Claire Newman, **J. Michael Battalio**, Mark Lemmon, and Scott Guzewich. “*Vertical and Horizontal Heterogeneity of Atmospheric Dust Loading in Northern Gale Crater, Mars.*” *Icarus*, (submitted).

Articles in Preparation

1. **Battalio, J. Michael** and Huiqun Wang. “*Changes in Atmospheric Circulation on Mars due to Dust Storm Activity.*” (in prep for submission to *Geophysical Research Letters*).

Peer-reviewed articles as “Science Team” member

1. Mahaffy P. R., C. R. Webster, J. C. Stern, A. E. Brunner, S. K. Atreya, P. G. Conrad, S. Domagal-Goldman, J. L. Eigenbrode, G. J. Flesch, L. E. Christensen, H. B. Franz, C. Freissinet, D. P. Glavin, J. P. Grotzinger, J. H. Jones, L. A. Leshin, C. Malespin, A.C. McAdam, D. W. Ming, R. Navarro-Gonzalez, P. B. Nilcs, T. Owen, A. A. Pavlov, A. Steele, M. G. Trainer, K. H. Williford, J. J. Wray, 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 [*as a member of the “MSL Science Team” identified in Supplementary Material]

2. Webster, C. R. , P. R. Mahaffy, S. K. Atreya, G. J. Flesch, M. A. Mischna, P-Y. Meslin, K. A. Farley, P. G. Conrad, L. E. Christensen, A. A. Pavlov, J. Martin-Torres, M-P. Zorzano, T. H. McConnochie, T. Owen, J. L. Eigenbrode, D. P. Glavin, A. Steele, C. A. Malespin, P. D. Archer Jr., B. Sutter, P. Coll, C. Freissinet, C. P. McKay, J. E. Moores, S. P. Schwenzer, J. C. Bridges, R. Navarro-Gonzalez, R. Gellert, M. T. Lemmon, and the MSL Science Team*. “*Mars methane detection and variability at Gale crater.*” *Science* (2014) doi:10.1126/science.1261713 [*as a member of the “MSL Science Team” identified in Supplementary Material]

Extended Abstracts

1. Kahanpää, Henrik, Mark Lemmon, D. Reiss, J. Raack, E. Mason, **J. Michael Battalio**. “*Martian Dust Devils Observed Simultaneously by Imaging and By Meteorological Measurements.*” 49th Lunar and Planetary Science Conference, Woodlands, TX, March 2018.
2. Lemmon, Mark, C. E. Newman, N. Renno, E. Mason, **J. Michael Battalio** and others. “*Dust Devil Activity at the Curiosity Mars Rover Field Site.*” Lunar and Planetary Science Conference XLVIII, Woodlands, TX, March 2017.
3. **Battalio, J. Michael**, I. Szunyogh, M. T. Lemmon. “*Eddy Energetics of the Southern Hemisphere of Mars from the Mars Analysis Correction Data Assimilation (MACDA).*” Sixth International Workshop on the Mars Atmosphere: Modeling and Observations, Granada, Spain, January 2017.

PRESENTATIONS

Invited Oral Presentations

1. “*The Solstitial Pause, Dust, and Baroclinic Instability in the Martian Atmosphere*” Department of Atmospheric Sciences, Texas A&M University, College Station, Texas, 1/26/2016.
2. “*Effects of the Martian Global Dust Storm on the Energetics of the Martian Atmosphere*” Department of Atmospheric Sciences, Texas A&M University, College Station, Texas, 1/24/2015.

Contributed Oral Presentations

1. “*Atmospheric Circulation and Dust Activity on Mars.*” **J. M. Battalio**, H. Q. Wang. American Geophysical Union 2018 Meeting, Washington DC, December 2018.
2. “*Major Dust Storms and Changes in Atmospheric Circulation on Mars.*” H. Q. Wang, **J. M. Battalio**. 42nd COSPAR Scientific Assembly, Pasadena, CA, July 2018.
3. “*Development Histories of Martian Dust Storms.*” **J. M. Battalio**, H. Q. Wang. Harvard-CfA Postdoc Symposium, Cambridge, MA, October 2017.

4. “*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.
5. “*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.
6. “*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.
7. “*Energetics of the Northern Hemisphere of Mars.*” **J. M. Battalio**, I. Szunyogh. Atmospheric Science Graduate Council Seminar, Texas A&M University, March 2014.
8. “*Application of QG Theory to Assess Model Initialization.*” **J. M. Battalio**, J. L. Dyer, 10th Southeast Severe Storm Symposium, Starkville, MS, March 2012.

Contributed Poster Presentations

1. “*An Important Dust Storm Track in the Southern Hemisphere of Mars.*” **J. M. Battalio**, H. Q. Wang. 50th DPS Meeting, Pasadena, Knoxville, TN, October 2018.
2. “*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. Martin-Torres, M-P. Zorzano Mier, **J. M. Battalio**. American Geophysical Union 2017 Meeting, New Orleans, LA, December 2017.
3. “*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.
4. “*The Mars Science Laboratory Dust Storm Campaign.*” S. D. Guzewich, C. E. Newman, M. De la Torre, M. Lemmon, E. Mason, **J. M. Battalio** and others. Sixth International Workshop on the Mars Atmosphere: Modeling and Observations, Granada, Spain, January 2017.
5. “*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.
6. “*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.

7. "Using Recent Inter-Annual Variability in Mars Atmospheric Dynamics to Consider Past Climates." **J. M. Battalio**. Astrobiology Graduate Conference, Boulder, CO, July 2016.
8. "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.
9. "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.
10. "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.
11. "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.

TEACHING EXPERIENCE

Graduate Mentor

Texas A&M University

Department of Atmospheric Sciences

College Station, TX

- Texas A&M Research Experience for Undergraduates: Summer 2014 and Summer 2015

Teaching Assistant

Texas A&M University

Department of Atmospheric Sciences

College Station, TX

- Computer Applications in the Atmospheric Sciences (ATMO 321): Fall 2014 (1 section total)

Instructor

Texas A&M University

Department of Atmospheric Sciences

College Station, TX

- Atmospheric Science Lab (ATMO 202): Fall 2012, Spring 2013, Fall 2013 (7 sections total)

Teaching Assistant

Mississippi State University

Department of Geosciences

Starkville, MS

- Forecasting Severe Local Storms (GR 6842): Spring 2012 (1 section)
- Principles of GIS (GR 4303/6303): Summer 2011, Fall 2011 (2 sections total)
- Geography (GR 1123): Fall 2010, Spring 2011, Fall 2011, Spring 2012 (4 sections total)

Substitute Lecturer

Mississippi State University

Department of Geosciences

Starkville, MS

- Dynamic Meteorology II (GR 4933/6933): Spring 2011, Spring 2012 (2 sections total)
- Dynamic Meteorology I (GR 4823/6823): Fall 2010, Fall 2011 (2 sections total)

Instructor

Mississippi State University

Department of Physics
Starkville, MS

- Physical Science Lab (PH 1011): Spring 2010 (1 section total)

SERVICE

Seminar Organizing Committee Member

Harvard-Smithsonian Center for Astrophysics

January 2018–present

Reviewer *Icarus, Geoscience Data Journal, International Journal of Biometeorology*

Mentor

MS State Famous Maroon Band Alumni Mentoring Program

Contributor

NASA Mars Rover Curiosity: Mission Updates

March–October 2017

<https://mars.jpl.nasa.gov/msl/mission/mars-rover-curiosity-mission-updates/>

Panel Reviewer

Solar System Workings Week IV 2018

External Reviewer

- Mars Data Analysis Program Panel Review 2018
- Solar System Workings Week II 2018
- Mars Data Analysis Program Panel Review 2017
- Planetary Data Archiving, Restoration, and Tools 2017

Executive Secretary

Mars Data Analysis Program Panel Review 2017

Atmospheric Science Graduate Student Council President

Department of Atmospheric Sciences Texas A&M University

June 2015–June 2017

- Recruitment Committee
- Invited Speaker Committee Chair
- Graduate Electives Committee

Graduate Program Committee Student Representative

Department of Atmospheric Sciences Texas A&M University

August 2015–May 2017

Atmospheric Science Graduate Student Council Vice-President

Department of Atmospheric Sciences Texas A&M University

June 2013–May 2015

- IT Committee Chair
- Graduate Electives Committee Chair
- Recruitment Committee
- Texas A&M Graduate Student Council

Judge for Student Research Week
Texas A&M University

2013–2016

Member

- American Meteorological Society 2007–present
- National Weather Association 2007–present
- American Geophysical Union 2012–present
- American Astronomical Society (Division of Planetary Science) 2014–present

PROPOSALS

1. **Co-Investigator** “*Improved Climatology of Lower and Middle Atmospheric Gravity Wave Activity at Mars.*” Mars Data Analysis Program (PI: Nicholas Heavens, Space Science Institute), PENDING 2018.
2. **Primary Investigator** “*Exowether: Modeling of Warm Jupiter Atmospheres and Implications for Observations.*” NSF Astronomy and Astrophysics Postdoctoral Fellowships, UNFUNDED 2017.
3. **Primary Investigator** “*Transient Waves Within the Current Martian Climate System: Interactions with Forced, Quasi-Stationary Modes and Implications.*” NASA Postdoctoral Program Fellowship, UNFUNDED 2017.

AWARDS

NASA Group Achievement Award <i>MSL Extended Mission-1 Science and Operations Team</i>	June 2017
Division of Planetary Science Travel Grant	2016
Claude Scruggs Scholarship <i>Texas A&M College of Geoscience</i>	2016
Outstanding Graduate Seminar Speaker Award	Spring 2014 and Fall 2015
NASA Group Achievement Award <i>MSL Prime Mission Science and Operations Team</i>	June 2015
College Top Off Scholarship <i>Texas A&M College of Geoscience</i>	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 Scholarship <i>American Meteorological Society Undergraduate Scholarship.</i>	2010