

Curriculum Vitae
J. MICHAEL BATTALIO

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revised: 5/28/2018

Employment

Postdoctoral Fellow (October 2017 – present)
Harvard-Smithsonian Center for Astrophysics, Cambridge, MA

Postdoctoral Researcher (June 2017 – September 2017)
Texas A&M University, Department of Atmospheric Science, College Station, TX

Graduate Assistant (August 2012 – May 2017)
Texas A&M University, Department of Atmospheric Science, College Station, TX
• Environmental Science Theme Lead for Mars Science Laboratory

Graduate Assistant (August 2010 – May 2012)
Mississippi State University, Department of Geosciences, Starkville, MS

Education

Ph.D. Atmospheric Science (May 2017)
Texas A&M University, College Station, TX
Dissertation: *Wave Energetics of the Atmosphere of Mars*
Committee co-chairs: Istvan Szunyogh and Mark Lemmon
Committee members: Craig Epifano and Kim-Vy Tran

M.S. Meteorology (May 2012)
Mississippi State University, Starkville, MS
Thesis: *Quantitative Analysis and 3D Visualization of NWP Data Using Quasi-Geostrophic Equations*
Committee Chair: Jamie Dyer
Committee members: Phil Amburn, Mike Brown, and P. Grady Dixon

B.S. Physics & minor in Mathematics (May 2010)
Mississippi State University, Starkville, MS

B.S. Meteorology & minors Communication and Music (May 2009)
Mississippi State University, Starkville, MS

Publications

Papers

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.

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. Michael Battalio**. “*The Vertical Dust Profile over Gale Crater, Mars.*” *Journal of Geophysical Research: Planets* 122 (2017). doi: 10.1002/2017JE005420.

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.

Newman, Claire, Javier Gómez-Elvira, Mark Richardson, Mercedes Marín, 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.

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.

In Prep

Battalio, J. Michael. “*Trends in Local Energetics.*” (in prep for *J. of Climate*).

Battalio, J. Michael, Wang, Huiqun. “*The Solis/Valles Dust Storm Track in the Souther Hemisphere of Mars.*” (in prep for submission to *Icarus* Summer 2018).

Lemmon, Mark, **J. Michael Battalio**, et al. “*Extinction Measurements of Dust Aerosol from Mars Science Laboratory Solar Images,*” (in prep for submission to *Icarus* 2018).

Battalio, J. Michael, Istvan Szunyogh, and Mark Lemmon. “*Spectral Decomposition of Eddy Energetics Before, During, and After the Mars Solsticial Pause.*” (in prep).

Battalio, J. Michael. “*The Three-Dimensional Structure of the Level of Non-divergence.*” (in prep).

Peer-reviewed journal articles as “Science Team” member

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. Niles, 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]

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. Martín-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]

Invited Seminars

“*The Solstitial Pause, Dust, and Baroclinic Instability in the Martian Atmosphere*” Department of Atmospheric Science, Texas A&M University, College Station, Texas, 1/26/2016.

“*Effects of the Martian Global Dust Storm on the Energetics of the Martian Atmosphere*” Department of Atmospheric Science, Texas A&M University, College Station, Texas, 1/24/2015.

Extended Abstracts

“*Martian Dust Devils Observed Simultaneously by Imaging and By Meteorological Measurements*” H. Kahanpää, Henrik, M. T. Lemmon, D. Reiss, J. Raack, E. Mason, **J. M. Battalio**, 49th Lunar and Planetary Science Conference, Woodlands, TX, March 2018.

“*Dust Devil Activity at the Curiosity Mars Rover Field Site*” M. T. Lemmon, C. E. Newman, N. Renno, E. Mason, **J. M. Battalio** et al. Lunar and Planetary Science Conference XLVIII, Woodlands, TX, March 2017.

“*Eddy Energetics of the Southern Hemisphere of Mars from the Mars Analysis Correction Data Assimilation (MACDA)*” **J. M. Battalio**, I. Szunyogh, M. T. Lemmon, Sixth International Workshop on the Mars Atmosphere: Modeling and Observations, Granada, Spain, January 2017.

Presentations/posters

- The Vertical Profile of Dust over Gale Crater, Mars* Poster: 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.
- “Meteorological properties of Martian Dust Devils as observed by MSL”*
Presentation: H. Kahanpää, M. T. Lemmon, E. Mason and **J. M. Battalio**, European Planetary Science Congress 2017, Riga, Latvia, September, 2017.
- “The Minimum Horizontal Length Scale When Evaluating Quasi-Geostrophic Omega”* Poster: **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.
- “A Comparison of Martian Transient Wave Energetics in High and Low Optical Depth Environments”* Poster: **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.
- “Extinction Measurements of Dust Aerosol from Mars Science Laboratory Solar Images”* Poster: M. T. Lemmon, **J. M. Battalio**, et al. Current Processes in the Atmosphere of Mars I, American Geophysical Union 2016 Meeting, San Francisco, CA, December 2016.
- “The Energetics of Transient Eddies in the Martian Northern Hemisphere”*
Presentation: **J. M. Battalio**, I. Szunyogh, M. T. Lemmon, The Dynamical Martian Atmosphere, 48th DPS Meeting, Pasadena, CA, October 2016.
- “Using Recent Inter-Annual Variability in Mars Atmospheric Dynamics to Consider Past Climates”* Poster: **J. M. Battalio**, Astrobiology Graduate Conference, Boulder, CO, July 2016.
- “Necessity of Convection Parameterization in Simulating an MCS at High Resolution”* Poster: **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.
- “Reduced Baroclinicity During Martian Global Dust Storms”* Presentation: **J. M. Battalio**, I. Szunyogh, M. T. Lemmon, Mars's Atmosphere and Surface, 47th DPS Meeting, National Harbor, MD, November 2015.
- “An Investigation of the Local Energetics of the Martian Atmosphere”* Poster: **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.
- “Energetics of the Northern Hemisphere of Mars”* Presentation: **J. M. Battalio**, I. Szunyogh, Atmospheric Science Graduate Council Seminar, Texas A&M University, March 2014.
- “Simulating an MCS: Microphysics Schemes vs Convective Parameterization”*

Presentation: **J. M. Battalio**, K. Pitts, M. Herrera, Atmospheric Science Graduate Council Seminar, Texas A&M University, November 2013.

“*Application of QG Theory to Assess Model Initialization*” Presentation: **J. M. Battalio**, J. L. Dyer, 10th Southeast Severe Storm Symposium, Starkville, MS, March 2012.

“*Quantitative Analysis and 3D Visualization of NWP Data Using Quasi-Geostrophic Equations*” Poster: **J. M. Battalio**, J. L. Dyer, 28th Conference on Interactive Information Processing Systems American Meteorological Society Annual Meeting, New Orleans, LA, January 2012.

“*Visualization of Vorticity and Divergence in Three Dimensions*” Poster: **J. M. Battalio**, J. L. Dyer, 36th Annual Meeting National Weather Association Conference, Birmingham, AL, October 2011.

“*Improved Vorticity Visualization*” Poster: **J. M. Battalio**, 9th Graduate Symposium, Mississippi State University, May 2011.

Service

Co-Organizer Stars and Planets Seminar 2018-present

Reviewer: Icarus, International Journal of Biometeorology

External Reviewer Mars Data Analysis Program Panel Review 2017 and 2018, Solar System Workings 2018

Atmospheric Science Graduate Council President (Texas A&M University)

June 2015 – Jun 2017

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

Atmospheric Science Graduate Council Vice-President (Texas A&M University)

June 2013 – May 2015

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

Judge for Student Research Week (Texas A&M University)

2013, 2014, 2015, 2016

Executive Secretary Mars Data Analysis Program Panel Review 2017

Teaching

Teaching Assistant Texas A&M University. Department of Atmospheric Science

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

Instructor Texas A&M University. Department of Atmospheric Science

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

Teaching Assistant Mississippi State University. Department of Geography

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

Instructor Mississippi State University. Department of Physics

- Physical Science Lab (PH 1011): Spring 2010

Awards/Fellowships/Scholarships

NASA Group Achievement Award, June 2017, for MSL Extended Mission-1 Science and Operations Team.

DPS Travel Grant, 2016

Claude Scruggs Scholarship, 2016-2017

Outstanding Graduate Seminar Speaker Award, Fall 2015, Spring 2014
Given to top graduate speaker in the Texas A&M Dept. of Atmospheric Science

NASA Group Achievement Award, June 2015
For MSL Prime Mission Science and Operations Team

Kenneth P. Pipes Endowed Fellowship in Geoscience, 2014 and 2015

College Top Off Scholar Grant, 2014
Texas A&M College of Geoscience

Ernestine P. Scoggins Memorial Scholarship, 2013
Texas A&M Dept. of Atmospheric Science

American Meteorological Society 21st Century Fellowship, 2010 – 2011