David A. Brain (As of October 2016)
Assistant Professor
Laboratory for Atmospheric and Space Physics 3665 Discovery Drive
& Department of Astrophysical and Planetary Sciences Boulder, Colorado 80303
University of Colorado Boulder (303) 735-5606
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Research Interests

- Planetary atmospheric source/loss processes and climate evolution
- Influence of planetary scale magnetic fields on climate
- Plasma environments and upper atmospheres of unmagnetized planets
- Star-planet interactions
- Interpretation of spacecraft measurements of magnetic fields and charged particles
- Plasma processes in small scale (non-global) magnetic fields

Education

2002 Ph.D. – University of Colorado at Boulder
Astrophysical, Planetary, and Atmospheric Sciences
Thesis: *The Influence of Crustal Magnetic Sources on the Topology of the Martian Magnetic Environment* (Fran Bagenal, advisor)

1997 M.S. – University of Colorado at Boulder
Astrophysical, Planetary, and Atmospheric Sciences

1995 B.A. – Rice University
Physics (Space Physics Concentration) and Mathematics

Academic Employment

2011 – Assistant Professor – University of Colorado Boulder
Laboratory for Atmospheric and Space Physics and
Department of Astrophysical and Planetary Sciences

2005 – 2011 Assistant Research Physicist - University of California Berkeley
Space Sciences Laboratory

2003 – 2005 Postdoc - University of California Berkeley
Space Sciences Laboratory

2002 – 2003 Postdoc - University of Colorado Boulder
Laboratory for Atmospheric and Space Physics

1995 – 2002 Graduate Research Assistant - University of Colorado Boulder
Laboratory for Atmospheric and Space Physics

Awards and Honors

2016	Provost's Faculty Achievement Award for significant publication or creative contribution to an academic field – University of Colorado
2015	Marinus Smith Award for positive impact on undergraduates – University of Colorado
2014	NASA Robert H. Goddard Exceptional Achievement for Engineering Team – awarded to the MAVEN Team
2013	CU ASSETT Award of Excellence as an Outstanding Teacher for Technology in Teaching
2011	NASA Group Achievement Award – awarded to the MAVEN Phase B Team
2010	Editor's Citation for Excellence in Refereeing for Geophysical Research Letters
2006	NASA Carl Sagan Early Career Fellowship in Planetary Sciences
2002	CU Boulder Residence Life Academic Teaching Award
2001	Outstanding Student Presentation (Spring Meeting of the American Geophysical Union)

Professional Organizations

1997 –	American Geophysical Union
1997 –	Division for Planetary Sciences of the American Astronomical Society

Grants

2016 - 2019	*Charged Particle Transport in Martian Magnetic Cusps* PI: D. Brain NASA Solar System Workings Program $453,051
2016 - 2019	*Solar Wind Interaction with the Mars Upper Atmosphere: The Impact of ICME Events* PI: W. Manchester (D. Brain Co-I) NASA Living With a Star Program $1,316,337 (<$100K/yr allocation for D. Brain)
2016 - 2018	*Mars Atmosphere and Volatile EvolutioN (MAVEN) Extended Mission Proposal* PI: B. Jakosky (D. Brain Co-I, named Deputy PI in September 2016) NASA Planetary Mission Program ~$30,000,000 requested (~$550,000 K allocation for D. Brain)

2015 - 2017 *Ion Escape Rates from the Martian Atmosphere*
PI: D. Brain
NASA Mars Data Analysis Program
$199,851

2015 - 2016 *Mars Atmosphere and Volatile EvolutioN (MAVEN) Bridge Phase Extended Mission Proposal*
PI: B. Jakosky (D. Brain Co-I)
NASA Planetary Mission Program
~$28,000,000 (~$330,000 K allocation for D. Brain)

2014 - 2017 *Influence of Asteroid and Comet Impacts on Atmospheric Abundances at Venus, Earth, and Mars*
PI: D. Brain (Fellowship for Caitlin Heath)
NASA Earth and Space Science Fellowship Program
$90,000

2014 - 2016 *HST Observations of Comet-Induced Aurora on Mars during the Siding Spring Encounter*
PI: J. Clarke (D. Brain Co-I)
Hubble Space Telescope Cycle 22
$44,783

2013 - 2018 *Institute for Modeling Plasma, Atmospheres, and Cosmic Dust (IMPACT)*
PI: M. Horanyi (D. Brain Co-I)
NASA Solar System Exploration Research Virtual Institute
~$6,200,000

2013 – 2015 *Plasma Environments of Unmagnetized Planets*
PI: D. Brain
NASA Early Career Fellowship in Planetary Science
$100,000

2012 – 2015 *Kinetic Plasma Processes at Airless Bodies*
PI: M. Fillingim (D. Brain Co-I)
International Space Science Institute (Switzerland) International Team
$0 (no funds dispersed; instead room and board provided for ~25 person weeks for the team, and travel covered for team leader)

2011 – 2013 *Particle Precipitation and Upper Atmospheric Energy Deposition at Mars and Venus*
PI: C. Parkinson (D. Brain Co-I)
NASA Planetary Atmospheres Program
~$416,000

2011 – 2015 *Modeling Atmospheric Erosion by Impacts at Mars, Earth, and Venus*
PI: D. Brain
NASA Planetary Atmospheres Program
$245,000

2009 – 2016 *Mars Atmosphere and Volatile EvolutioN (MAVEN)*
PI: B. Jakosky (D. Brain Co-I)
NASA Mars Scout Program
~$52,000,000

2009 – 2011 *Seeing the Invisible: Educating the Public on Planetary Magnetic Fields and How They Affect Atmospheres*
PI: M. Fillingim (D. Brain Co-I)
NASA Planetary Atmospheres Program
$105,000

2009 – 2011 *Comparative Study of Induced Magnetospheres*
PI: C. Bertucci (D. Brain Co-I)
International Space Science Institute (Switzerland) International Team
$0 (no funds dispersed; instead room and board provided for ~25 person weeks for the team, and travel covered for team leader)

2008 – 2014 *Magnetic Reconnection and Shear in the Martian Plasma Environment*
PI: D. Brain
NASA Mars Data Analysis Program
$349,322

2008 – 2012 *Magnetic Fields and Currents in the Martian Ionosphere*
PI: D. Crider (D. Brain Co-I)
NASA Mars Data Analysis Program
$230,236

2008 – 2011 *The Nighttime Ionosphere of Mars: Data-Model Comparisons and Statistical Properties*
PI: M. Fillingim (D. Brain Co-I)
NASA Mars Data Analysis Program
$177,032

2008 – 2011 *Lunar Surface Charging and Dust Transport During Extreme Space Weather Events*
PI: J. Halekas (D. Brain Co-I)
NASA Discovery Data Analysis Program
$144,313

2008 – 2010 *Intercomparison of Global Models and Measurements of the Martian Plasma Environment*
PI: D. Brain
International Space Science Institute (Switzerland) International Team
$0 (no funds dispersed; instead room and board provided for ~25 person weeks for the team, and travel covered for team leader)

2006 - 2015 *The First Suprathermal Electron Measurements at Venus: Implications for Planetary Evolution*
PI: D. Brain
Venus Express Supporting Investigator (NASA/ESA)
$286,443

2006 - 2010 *Martian Aurorae from Acceleration to Emission*
PI: D. Brain
NASA Mars Data Analysis Program
$288,129

2006 - 2010 *Atmospheric Energy Deposition at Mars, Venus and Extrasolar Planets from Solar Energetic Particle events*
PI: D. Brain
NASA Planetary Atmospheres Program
$234,380

2006 - Unfunded Collaborator on at least six NASA grants

1998 - 2001 *The Martian Surface Magnetic Field*
PI: D. Brain
NASA Graduate Student Research Program
~$60,000

Refereed Publications (125 publications, 2107 citations, h-index 27)[1]

125. Modolo, R., S. Hess, M. Mancini, F. Leblanc, J.-Y. Chaufray, D. **Brain**, L. Leclercq, R. Esteban-Hernandez, G.M. Chanteur, P. Weill, F. Gonzalez Galindo, F. Forget, M. Yagi, and C. Mazelle (2016), *Mars-solar wind interaction: LatHyS, an improved parallel 3D multi-species hybrid model*, J. Geophys. Res., 121, 10.1002/2015JA0022324.

124. Dewey, R., D. Baker, M.L. Mays, D. **Brain**, B. Jakosky, J. Halekas, J. Connerney, D. Odstrcil, J. Luhmann, and C. Lee (2016), *Continuous solar wind forcing knowledge: Providing continuous conditions at Mars with the WSA-ENLIL+Cone model*, J. Geophys. Res., 121, 10.1002/2015JA021941.

123. Ulusen, D., J.G. Luhmann, Y. Ma, and D.A. **Brain** (2016), *Solar control of the Martian magnetic topology: Implications from model-data comparisons* (2016)**,** Planetary and Space Science, 128, 1-13, 10.106/j.pss.2016.01.007.

122. Jarvinen, R., D.A. **Brain**, and J.G. Luhmann, *Dynamics of planetary ions in the induced magnetospheres of Venus and Mars* (2016)**,** Planetary and Space Science, 127, 1-14, 10.106/j.pss.2015.08.012.

121. Hara, T., J.G. Luhmann, J.S. Halekas, J.R. Espley, K. Seki, D.A. **Brain**, H. Hasegawa, J.P. McFadden, D.L. Mitchell, C. Mazelle, Y. Harada, R. Livi, G.A. DiBraccio, J.E.P. Connerney, L. Andersson, and B.M. Jakosky (2016), *MAVEN observations of magnetic flux ropes with a strong field amplitude in the Martian magnetosheath during the ICME passage on 8 March 2015*, Geophys. Res. Lett., 43(10), 4816-4824, 10.1002/2016GL068960.

[1] Citation statistics are computed from the NASA Astrophysical Data Service (ADS), and exclude non-refereed publications. ADS is more conservative than Google Scholar.

Underlined names denote student first authors directly or jointly supervised in their work.

120. Ruhunusiri, S., J.S. Halekas, J.P. McFadden, J.E.P. Connerney, J.R. Espley, Y. Harada, R. Livi, K. Seki, C. Mazelle, D. **Brain**, T. Hara, G.A. DiBraccio, D.E. Larson, D.L. Mitchell, B.M. Jakosky, and H. Hasegawa (2016), *MAVEN observations of partially developed Kelvin-Helmholtz vortices at Mars*, Geophys. Res. Lett., 43(10), 4763-4773, 10.1002/20116GL068926.

119. **Brain**, D.A. (2016), *Climates of Terrestrial Planets* in "Heliophysics: Active stars, their astrospheres, and impacts on planetary environments" edited by C. Shrijver, F. Bagenal, and J. Sojka, Cambridge University Press.

118. Masunaga, K., K. Seki, D. **Brain**, X. Fang, Y. Dong, B. Jakosky, J.P. McFadden, J. Halekas, and J. Connerney (2016), *O^+ ion beams reflected below the Martian bow shock: MAVEN observations*, J. Geophys. Res., 121, 3093-3107, 10.1002/2016JA022465.

117. Ruhunusiri, S., J. Halekas, J. Connerney, J. Espley, J.P. McFadden, C. Mazelle, D. **Brain**, G. Collinson, Y. Harada, D. Larson, D. Mitchell, R. Livi, and Bruce Jakosky (2016), *MAVEN observation of an obliquely propagating low-frequency wave upstream of Mars*, J. Geophys. Res., 121, 2374-2389, 10.1002/2015JA022306.

116. Halekas, J., D. **Brain**, S. Ruhunusiri, J.P. McFadden, D. Mitchell, C. Mazelle, J. Connerney, Y. Harada, T. Hara, J. Espley, G. DiBraccio, and Bruce Jakosky (2016), *Plasma clouds and snowplows: Bulk plasma escape from Mars observed by MAVEN*, Geophys. Res. Lett., 43, 1426-1434, 10.1002/2016GL067752.

115. Harada, Y., D. Mitchell, J. Halekas, J.P. Mcfadden, C. Mazelle, Jack Connerney, J. Espley, D. **Brain**, D. Larson, R. Lillis, T. Hara, R. Livi, G. DiBraccio, S. Ruhunusiri, and B. Jakosky (2016), *MAVEN observations of energy-time dispersed electron signatures in Martian crustal magnetic fields*, Geophys. Res. Lett., 43(3), 939-944, 10.10022015GL067040.

114. **Brain**, D.A., J.P. McFadden, J.S. Halekas, J.E.P. Connerney, S.W. Bougher, S. Curry, C.F. Dong, Y. Dong, F. Eparvier, X. Fang, K. Fortier, T. Hara, Y. Harada, B.M. Jakosky, R. J. Lillis, R. Livi, J.G. Luhmann, Y. Ma, R. Modolo, and K. Seki (2015), *The spatial distribution of planetary ion fluxes near Mars observed by MAVEN*, Geophys. Res. Lett*.,* 42, 10.1002/2015GL065293.

113. Luhmann, J.G., C. Dong, Y. Ma, S.M. Curry, D. Mitchell, J. Espley, J. Connerney, J. Halekas, D.A. **Brain**, B.M. Jakosky, and C. Mazelle (2015), *Implications of MAVEN Mars Near-Wake Measurements and Models*, Geophys. Res. Lett.*, 42,* 10.1002/2015GL066122.

112. Curry, S.M., J.G. Luhmann, Y.J. Ma, C.F. Dong, D. **Brain**, F. Leblanc, R. Modolo, Y. Dong, J. McFadden, J. Halekas, J. Connerney, J. Espley, T. Hara, Y. Harada, C. Lee, X. Fang, and B.M. Jakosky, *Response of Mars O+ pickup ions to the 8 March 2015 ICME: Inferences from MAVEN data-based models*, Geophys. Res. Lett*.,* 42*,* 10.1002/2015GL065304.

111. Dong, C., Y. Ma, S.W. Bougher, G. Toth, A.F. Nagy, J.S. Halekas, Y. Dong, S.M. Curry, J. G. Luhmann, D. **Brain**, J.E.P. Connerney, J. Espley, P. Mahaffy, M. Benna, J.P. McFadden, D.L. Mitchell, G.A. DiBraccio, R.J. Lillis, B.M. Jakosky, and J.M. Grebowsky, *Multifluid MHD study of the solar wind interaction with Mars' upper atmosphere during the 2015 March 8th ICME event*, Geophys. Res. Lett., 42, 10.1002/2015GL065944.

110. Harada, Y., J.S. Halekas, J.P. McFadden, D.L. Mitchell, C. Mazelle, J.E.P. Connerney, J. Espley, D.E. Larson, D.A. **Brain**, G.A. DiBraccio, S.M. Curry, T. Hara, R. Livi, S. Ruhunusiri, and B.M. Jakosky (2015), *Marsward and tailward ions in the near-Mars magnetotail: MAVEN observations*, Geophys. Res. Lett., 42, 10.1002/2015GL065005.

109. Hara, T., D.L. Mitchell, J.P. McFadden, K. Seki, D.A. **Brain**, J.S. Halekas, Y. Harada, J. R. Espley, G. A. DiBraccio, J.E.P. Connerney, L. Andersson, C. Mazelle, and B.M. Jakosky (2015), *Estimation of the spatial structure of a detached magnetic flux rope at Mars based on simultaneous MAVEN plasma and magnetic field observations*, Geophys. Res. Lett., 42, 10.1002/2015GL065720.

108. Dong, Y., X. Fang, D.A. **Brain**, J.P.McFadden, J.S. Halekas, J.E. Connerney, S.M. Curry, Y. Harada, J.G. Luhmann, and B.M. Jakosky (2015), *Strong plume fluxes at Mars observed by MAVEN: An important planetary ion escape channel*, Geophys. Res. Lett., 42, 10.1002/2015GL065346.

107. Halekas, J.S., J.P. McFadden, J.E.P. Connerney, J.R. Espley, D.A. **Brain**, D.L. Mitchell, D.E. Larson, Y. Harada, T. Hara, S. Ruhunusiri, and B.M. Jakosky (2015), *Time-dispersed ion signatures observed in the Martian magnetosphere by MAVEN*, Geophys. Res. Lett., 42, 10.1002/2015GL064781.

106. Espley, J.R., G.A. DiBraccio, J.E.P. Connerney, D. **Brain**, J. Gruesbeck, Y. Soobiah, J.S.Halekas, M. Combi, J. Luhmann, Y. Ma, Y. Jia and B.M. Jakosky (2015), *A comet engulfs Mars: MAVEN observations of comet Siding Spring's influence on the Martian magnetosphere*, Geophys. Res. Lett., 42, 10.1002/2015GL066300.

105. Connerney, J.E.P., J.R. Espley, G.A. DiBraccio, J.R. Gruesbeck, R.J. Oliversen, D.L. Mitchell, J. Halekas, C. Mazelle, D. **Brain**, and B.M. Jakosky (2015), *First results of the MAVEN magnetic field investigation*, Geophys. Res. Lett., 42, 10.1002/2015GL065366.

104. DiBraccio, G.A., J.R. Espley, J.R. Gruesbeck, J.E.P. Connerney, D.A. **Brain**, J.S. Halekas, D.L. Mitchell, J.P. McFadden, Y. Harada, R. *Livi*, G. Collinson, T. Hara, C. Mazelle, and B.M. Jakosky (2015), *Magnetotail dynamics at Mars: Initial MAVEN observations*, Geophys. Res. Lett., 42, 10.1002/2015GL065248.

103. Harada, Y., J.S. Halekas, J.P. McFadden, D.L. Mitchell, C. Mazelle, J.E.P. Connerney, J. Espley, D.E. Larson, D.A. **Brain**, L. Andersson, G.A. DiBraccio, G. A. Collinson, R. Livi, T. Hara, S. Ruhunusiri, and B.M. Jakosky (2015), *Magnetic reconnection in the near-Mars magnetotail: MAVEN observations*, Geophys. Res. Lett., 42, 10.1002/2015GL065004.

102. Jakosky, B.M., J. M. Grebowsky, J. G. Luhmann, and D. A. **Brain**, Initial results from the MAVEN mission to Mars (2015), *Geophys. Res. Lett.,* 42, DOI: 10.1002/2015GL065271.

101. Bougher, S., B.M. Jakosky, J. Halekas, J. Grebowsky[2], J. Luhmann, P. Mahaffy, J. Connerney, F. Eparvier, R. Ergun, D. Larson, J. McFadden, D. Mitchell, N. Schneider, R. Zurek, C. Mazelle, L. Andersson, D. Andrews, D. Baird, D. Baker, J.M. Bell, M. Benna, D. **Brain**, M. Chaffin, P. Chamberlin, J.-Y. Chaufray, J. Clarke, G. Collinson, M. Combi, F. Crary, T. Cravens, M. Crismani, S. Curry, D. Curtis, J. Deighan, G. Delory, R. Dewey, G. DiBraccio, C. Dong, Y. Dong, P. Dunn, M. Elrod, S. England, A. Eriksson, J. Espley, S. Evans, X. Fang, M. Fillingim, K. Fortier, C. M. Fowler, J. Fox, H. Gröller, S. Guzewich, T. Hara, Y. Harada, G. Holsclaw, S. K. Jain, R. Jolitz, F. Leblanc, C. O. Lee, Y. Lee, F. Lefevre, R. Lillis, R. Livi, D. Lo, Y. Ma, M. Mayyasi, W. McClintock, T. McEnulty, R. Modolo, F. Montmessin, M. Morooka, A. Nagy, K. Olsen, W. Peterson, A. Rahmati, S. Ruhunusiri, C. T. Russell, S. Sakai, J.-A. Sauvaud, K. Seki, M. Steckiewicz, M. Stevens, A. I. F. Stewart, A. Stiepen, S. Stone, V. Tenishev, E. Thiemann, R. Tolson, D. Toublanc, M. Vogt,T. Weber, P. Withers, T. Woods, and R. Yelle (2015), *Early MAVEN Deep Dip campaign reveals thermosphere and ionosphere variability*, Science, 350(6261), 10.1126/science.aad0459.

100. Jakosky, B.M., J.M. Grebowsky, J.G. Luhmann, J. Connerney, F. Eparvier, R. Ergun, J. Halekas, D. Larson, P. Mahaffy, J. McFadden, D.L. Mitchell, N. Schneider, R. Zurek, S. Bougher, D. **Brain**, Y.J. Ma, C. Mazelle, L. Andersson, D. Andrews, D. Baird, D. Baker, J.M. Bell, M. Benna, M. Chaffin, P. Chamberlin, J.-Y. Chaufray, J. Clarke, G. Collinson, M. Combi, F. Crary, T. Cravens, M. Crismani, S. Curry, D. Curtis, J. Deighan, G. Delory, R. Dewey, G. DiBraccio, C. Dong, Y. Dong, P. Dunn, M. Elrod, S. England, A. Eriksson, J. Espley, S. Evans, X. Fang, M. Fillingim, K. Fortier, C. M. Fowler, J. Fox, H. Gröller, S. Guzewich, T. Hara, Y. Harada, G. Holsclaw, S. K. Jain, R. Jolitz, F. Leblanc, C. O. Lee, Y. Lee, F. Lefevre, R. Lillis, R. Livi, D. Lo, M. Mayyasi, W. McClintock, T. McEnulty, R. Modolo, F. Montmessin, M. Morooka, A. Nagy, K. Olsen, W. Peterson, A. Rahmati, S. Ruhunusiri, C. T. Russell, S. Sakai, J.-A. Sauvaud, K. Seki, M. Steckiewicz, M. Stevens, A. I. F. Stewart, A. Stiepen, S. Stone, V. Tenishev, E. Thiemann, R. Tolson, D. Toublanc, M. Vogt,T. Weber, P. Withers, T. Woods, and R. Yelle (2015), *MAVEN observatrions of the response of Mars to an interplanetary coronal mass ejection*, Science, 350(6261), 10.1126/science.aad0210.

99. Schneider, N.M.S., J.I. Deighan, S.K. Jain, A. Stiepen, A.I.F. Stewart, D. Larson, D.L. Mitchell, C. Mazelle, C.O. Lee, R.J. Lillis, J.S. Evans, D. **Brain**, M.H. Stevens, W.E. McClintock, M.S. Chaffin, M. Crismani, G.M. Holsclaw, F. Lefevre, D.Y. Lo, J.T. Clarke, F. Montmessin, and B.M. Jakosky (2015), *Discovery of diffuse aurora on Mars*, Science, 350(6261), 10.1126/science.aad0313.

98. Lillis, R.J., D.A. **Brain**, S.W. Bougher, F. Leblanc, J.G. Luhmann, B.M. Jakosky, R. Modolo, J. Fox, J. Deighan, X. Fang, Y.C. Wang, Y. Lee, C. Dong, Y. Ma, T. Cravens, L. Andersson, S.M. Curry, N. Schneider, M. Combi, I. Stewart, J. Clarke, J. Grebowsky, D.L. Mitchell, R. Yelle, A.F. Nagy, D. Baker, and R.P. Lin (2015), *Characterizing atmospheric escape from Mars today and through time, with MAVEN*, Space Science Reviews, 195(1), 357-422, 10.1007/s11214-015-0165-8.

97. Jakosky, B.M., R.P. Lin, J.M. Grebowsky, J.G. Luhmann, D.F. Mitchell, G. Beutelschies, T. Priser, M. Acuña, L. Andersson, D. Baird, D. Baker, R. Bartlett, M. Benna, S. Bougher, D. **Brain**, D. Carson, S. Cauffman, P. Chamberlin, J.Y. Chaufray, O. Cheatom, J. Clarke, J. Connerney, T. Cravens, D. Curtis, G. Delory, S. Demcak, A. DeWolfe, F. Eparvier, R. Ergun, A. Eriksson, J. Espley, X. Fang, D. Folta, J. Fox, C. Gomez-Rosa, S. Habenicht, J. Halekas, G. Holsclaw, M. Houghton, R. Howard, M. Jarosz, N. Jedrich, M. Johnson, W. Kasprzak, M. Kelley, T. King, M. Lankton, D. Larson, F. Leblanc, F. Lefevre, R. Lillis, P. Mahaffy, C. Mazelle, W. McClintock, J. McFadden, D. L. Mitchell, F. Montmessin, J. Morrissey, W. Peterson, W. Possel, J.-A. Sauvaud, N. Schneider, W. Sidney, S. Sparacino, A. I. F. Stewart, R. Tolson, D. Toublanc, C. Waters, T. Woods, R. Yelle, and R. Zurek (2015), *The* Mars Atmosphere and Volatile Evolution (MAVEN) *Mission*, Space Science Reviews, 195(1), 3-48, 10.1007/s11214-015-0139-x.

96. Fang, X., Y. Ma, D. **Brain**, Y. Dong, and R. Lillis (2015), *Control of Mars global atmospheric loss by the continuous rotation of the crustal magnetic field: A time-dependent MHD study*, J. Geophys. Res., 120(12), 10926-10944, 10.1002/2015JA021605.

95. Luhmann, J.G., Y.-J. Ma, D.A. **Brain**, D. Ulusen, R.J. Lillis, J.S. Halekas, J.R. Espley (2015), *Solar wind interaction effects on the magnetic fields around Mars: Consequences for interplanetary and crustal field measurements*, Planetary and Space Science, 117, 15-23, 10.1016/j.pss.2015.05.004.

94. Diéval, C., D.J. Andrews, D.D. Morgan, D.A. **Brain**, and D.A. Gurnett (2015), *MARSIS remote sounding of localized density structures in the dayside Martian ionosphere: A study of controlling parameters*, J. Geophys. Res., 120(9), 8125-8145, doi:10.1002/2015JA021486.

93. Peterson, W.K., D.A. **Brain**, A.W. Yau, and P.G. Richards (2015), *Electron conic distributions produced by solar ionizing radiation in planetary atmospheres*, Adv. Space Res., 55(11), 2566-2572.

92. Matsunaga, K., K. Seki, T. Hara, and D.A. **Brain** (2015), *Asymmetric penetration of shocked solar wind down to 400 km altitudes at Mars*, J. Geophys. Res., 120(8), 6874-6883, doi:10.1002/2014JA020757.

91. Halekas, J.S., D.A. **Brain**, and M. Holmstrom, *The Moon's plasma wake*, in Magnetotails in the Solar System, Eds. A. Keiling, American Geophysical Union, Washington, D.C., 2015.

90. Halekas, J., Poppe, A., McFadden, J., Angelopoulos, V., Glassmeier, K.-H., and **Brain**, D. (2014), *Evidence for small-scale collisionless shocks at the Moon from ARTEMIS*, Geophys. Res. Lett., 41(21), 7436-7443, doi:10.1002/2014GL061973.

89. Ma, Y., Fang, X., Russell, C., Nagy, A., Toth, G., Luhmann, J., Brain, D., and Dong, C. (2014), *Effects of crustal field rotation on the solar wind plasma interaction with Mars*, Geophys. Res. Lett., 41(19), 6563-6569, doi:10.1002/2014GL060785.

88. Hara, T., Seki, K., Hasegawa, H., **Brain**, D., Matsunaga, K., Saito, M., and Shiota, D. (2014), *Formation processes of flux ropes downstream from Martian crustal magnetic fields inferred from Grad-Shafranov reconstruction*, J. Geophys. Res., 119(9), 7947-7962, doi:10.1002/2014JA019943.

87. Hara, T., K. Seki, H. Hasegawa, D.A. **Brain**, K. Matsunaga, and M.H. Saito (2014), *The spatial structure of Martian magnetic flux ropes recovered by the Grad-Shafranov reconstruction technique,* J. Geophys. Res., 119(2), 1262-1271, doi:10.1002/2013JA019414.

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14. Espley, J.R., P.A. Cloutier, D.H. Crider, D.A. **Brain**, and M.H. Acuña (2005), *Low frequency plasma oscillations at Mars during the October 2003 storm*, J. Geophys. Res., 110(A9), A09S33, doi:10.1029/2004JA010935.

13. Crider, D.H., J. Espley, D.A. **Brain**, D.L. Mitchell, J.E.P. Connerney, and M.H. Acuña (2005), *Mars Global Surveyor observations of the Halloween 2003 solar super-storm's encounter with Mars*, J. Geophys. Res., 110(A9), A09S21, doi:10.1029/2004JA010881.

12. Ferguson, B., J.C. Cain, D. Crider, D. **Brain**, and E. Harnett (2005), *External fields on the night-side of Mars at Mars Global Surveyor Mapping Altitudes*, Geophys. Res. Lett., 32(16), L16105, doi:10.1029/2004GL021964.

11. Espley, J.R., P.A. Cloutier, D.A. **Brain**, D.H. Crider, and M.H. Acuña (2004), *Observations of low frequency magnetic oscillations in the Martian magnetosheath, magnetic pileup region, and tail*, J. Geophys. Res., 109(A18), 7213, doi:10.1029/2003JA010193.

10. Crider, D.H., D.A. **Brain**, M.H. Acuña, D. Vignes, C. Mazelle, and C. Bertucci (2004), *Mars Global Surveyor observations of solar wind magnetic field draping around Mars*, Space Sci. Rev., 111(1), p.203-221, doi:10.1023/B:SPAC.0000032714.66124.4e.

9. Mazelle, C., D. Winterhalter, K. Sauer, J.-G. Trotignon, M.H. Acuña, K. Baumgartel, C. Bertucci, D.A. **Brain**, S.H. Brecht, M. Delva, E. Dubinin, M. Øieroset, and J. Slavin (2004), *Bow shock and upstream phenomena at Mars*, Space Sci. Rev., 111(1), p.115-181, doi:10.1023/B:SPAC.0000032717.98679.d0.

8. **Brain**, D.A. (2004), *The bow shocks and upstream waves at Venus and Mars*, Adv. Space Res., 33(11), p.1913-1919, doi:10.1016/j.asr.2003.05.036.

7. **Brain**, D.A., F. Bagenal, M.H. Acuña, and J.E.P. Connerney (2003), *Martian magnetic morphology: Contributions from the solar wind and crust*, J. Geophys. Res., 108(A12), 1424, doi:10.1029/2002JA009482.

6. **Brain**, D.A., F. Bagenal, M.H. Acuña, J.E.P. Connerney, D.H. Crider, C. Mazelle, D.L. Mitchell, and N.F. Ness (2002), *Observations of low frequency electromagnetic plasma waves upstream from the Martian shock*, J. Geophys. Res., 107(A6), 1076, doi:10.1029/2000JA000416.

5. Crider D., M. Acuña, J. Connerney, D. Mitchell, R. Lin, P. Cloutier, H. Reme, C. Mazelle, D. **Brain**, N. Ness, and S. Bauer (2001), *Magnetic field draping around Mars: Mars Global Surveyor results*, Adv. Space Res., 27(11), p.1831-1836, doi:10.1016/S0273-1177(01)00333-7.

4. Rousselot, P., S.M. Hill, M.H. Burger, D.A. **Brain**, C. Laffont, and G. Moreels (2000), *Theoretical modeling of the C2 flourescence spectrum in comet Hale-Bopp*, Icarus, 146, p.263-269, doi:10.1006/icar.2000.6383.

3. Crider, D., Cloutier, P., C. Law, P. Walker, Y. Chen, M. Acuña, J. Connerney, D. Mitchell, R. Lin, K. Anderson, C. Carlson, J. McFadden, H. Rème, C. Mazelle, C. d'Uston, J. Sauvaud, D. Vignes, D. **Brain**, and N.F. Ness (2000), *Evidence of Electron Impact Ionization in the Magnetic Pileup Boundary of Mars*, Geophys. Res. Lett., 27, p.45-48, doi:10.1029/1999GL003625.

2. Cloutier, P.A., C.C. Law, D.H. Crider, P.W. Walker, Y. Chen, M.H. Acuña, J.E.P. Connerney, R.P. Lin, K.A. Anderson, D.L. Mitchell, C.W. Carlson, J. McFadden, D.A. **Brain**, H. Rème, C. Mazelle, J.A. Sauvaud, C. d'Uston, C. D. Vignes, S.J. Bauer, and N.F. Ness (1999), *Venus-like interaction of the solar wind with Mars*, Geophys. Res. Lett., 26, p.2685, doi:10.1029/1999GL900591.

1. **Brain**, D.A. and B.M. Jakosky (1998), *Atmospheric loss since the onset of the Martian geologic record: Combined role of impact erosion and sputtering*, J. Geophys. Res., 103, p.22689, doi:10.1029/98JE02074.

Manuscripts in Press or Submitted

Brain, D.A., S. Barabash, S. Bougher, F. Duru, B. Jakosky, and R. Modolo, *Solar Wind Interaction and Atmospheric Escape*, in "The Mars Atmosphere" edited by B. Haberle, T. Clancy, F. Forget, and R. Zurek, Cambridge University Press, **in press, 2016**.

Bougher, S.W., D.A. **Brain**, J. Fox, F. Gonzalez-Galindo, C. Simon-Wedlund, and P. Withers, *Upper Neutral Atmosphere and Ionosphere* in "The Mars Atmosphere" edited by B. Haberle, T. Clancy, F. Forget, and R. Zurek, Cambridge University Press, **in press, 2016**.

Brain, D.A., G.T. Delory, R.J. Lillis, D. Ulusen, D.L. Mitchell, and J.G. Luhmann, *MGS measurements of solar storms and their effects*, in "Radiation from the Sun to Mars" edited by S. McKenna-Lawlor**,** IAAA**, in press**, **2016**. ← has been in press >4 years!

Harada, Y., L. Andersson, C. Fowler, D. Mitchell, J. Halekas, C. Mazelle, J. Espley, G. DiBraccio, J. P. Mcfadden, D. **Brain**, S. Xu, S. Ruhunusiri, D. Larson, R. Lillis, T. Hara, R. Livi, and B. Jakosky, *MAVEN observations of electron-induced whistler mode waves in the Martian magnetosphere*, J. Geophys. Res., 10.1002/2016JA023194, **in press, 2016**.

Brain, D.A., F. Bagenal, Y-J. Ma, H. Nilsson, and G. Stenberg, *Atmospheric escape from unmagentized bodies*, J. Geophys. Res., **resubmitted 2016**.

Hara, T., J. Luhmann, F. Leblanc, S. Curry, K. Seki, D. **Brain**, J. Halekas, Y. Harada, J. P. Mcfadden, R. Livi, G. DiBraccio, J. Connerney, and B. Jakosky, *MAVEN observations on a hemispheric asymmetry of precipitating ions toward the Martian upper atmosphere according to the upstream solar wind electric field*, J. Geophys. Res., **in revision, 2016**.

Hara, T., D. Brain, D. Mitchell, J. Luhmann, K. Seki, H. Hasegawa, J. P. Mcfadden, J. Halekas, J. Espley, Y. Harada, R. Livi, G. DiBraccio, J. Connerney, C. Mazelle, L. Andersson and B. Jakosky, *MAVEN observations of a giant ionospheric flux rope near Mars resulting from interaction between the crustal and interplanetary draped magnetic fields*, J. Geophys. Res., **in revision, 2016**.

Steckiewicz, M., P. Garnier, N. Andre, D. Mitchell, L. Andersson, E. Penou, A. Beth, A. Fedorov, J-A. Sauvaud, C. Mazelle, D. **Brain**, J. Espley, J.P. Mcfadden, J. Halekas, D. Larson, R. Lillis, J. Luhmann, Y. Soobiah, and Bruce Jakosky, *Martian suprathermal electron depletions*, J. Geophys. Res., **in revision, 2016**.

Romanelli, N., C. Mazelle, J-Y. Chaufray, K. Meziane, L. Shan, S. Ruhunusiri, J. Connerney, J. Espley, F. Eparvier, E. Thiemann, J. Halekas, D. Mitchell, J.P. McFadden, D. **Brain**, and B. Jakosky, *Proton cyclotron waves occurrence rate upstream from Mars observed by MAVEN: associated dynamics of the Martian upper atmosphere*, J. Geophys. Res., **in revision, 2016**.

Caldwell, C. and D. **Brain**, *Evolutionary modeling of atmospheric abundances due to impacts at Venus, Earth, and Mars*, Icarus, **submitted, 2016**.

Curry, S., C. Dong, J. Luhmann, Y. Ma, D. **Brain**, and D. Mitchell, *The influence of the IMF on simulated ion escape in the induced Martian magnetosphere,* Geophys. Res. Lett., **submitted, 2016**.

Larsson, R., M. Milz, P. Eriksson, J. Medrok, Y. Kasai, S.A. Buehler, C. Dieval, D. **Brain**, and P. Hartogh, *Martian magnetism with orbiting sub-millimeter sensor: Simulated retrieval system*, Geosci. Instrum. Method. Data Syst. Discuss., doi:10.5194/gi-2016-12 **in review, 2016**.

Jakosky, B., J. Grebowsky, J. Luhmann, and D. **Brain**, *The MAVEN mission to Mars at the end of one Mars year of science operations,* J. Geophys. Res., **submitted, 2016**.

Ruhunusiri, S., J. Halekas, J. Espley, C. Mazelle, D. **Brain**, Y. Harada, G. DiBraccio, R. Livi, D. Larson, D. Mitchell, B. Jakosky, and G. Howes, *Characterization of plasma turbulence in the Martian magnetosphere with MAVEN observations*, J. Geophys. Res., **submitted, 2016**.

Xu, S., D. Mitchell, M. Liemohn, X. Fang, Y.-J. Ma, J. Luhmann, D. **Brain**, M. Steckiewicz, C. Mazelle, J. Connerney, and B. Jakosky, *Martian low-altitude magnetic topology deduced from MAVEN/SWEA observations*, J. Geophys. Res., **submitted, 2016**.

DiBraccio, G., J. Dann, J. Espley, J. Gruesbeck, Y. Soobiah, J. Connerney, J. Halekas, Y. Harada, C. Bowers, D. **Brain**, S. Ruhunusiri, T. Hara, and B. Jakosky, *MAVEN observations of tail current sheet flapping at Mars,* J. Geophys. Res., **submitted, 2016**.

Gruesbeck, J., J. Espley, J. Connerney, G. DiBraccio, Y. Soobiah, D. **Brain**, C. Mazelle, J. Dann, J. Halekas, D. Mitchell, and B. Jakosky, *MAVEN observations of the Martian-Solar Wind Interaction Boundaries - On the Thickness and Asymmetry of the Bow Shock*, J. Geophys. Res., **submitted, 2016**.

Fang, X., Y.-J. Ma, K. Masunaga, Y. Dong, D. **Brain**, J. Halekas, Robert Lillis, B. Jakosky, J. Connerney, and J. Grebowsky, *A quantitative study of the Mars crustal magnetic field control of plasma boundary locations and atmospheric loss: MHD prediction and comparison with MAVEN observations*, J. Geophys. Res., **submitted, 2016**.

Luhmann, J., Chuanfei Dong, Y.-J. Ma, S. Curry, S. Xu, C. Lee, T. Hara, J. Halekas, Y. Li, J. Gruesbeck, J. Espley, D. **Brain**, C. T. Russell, and B. Jakosky, *Martian magnetic storms*, J. Geophys. Res., **submitted, 2016**.

Masunaga, K., K. Seki, D. **Brain**, X. Fang, Y. Dong, B. Jakosky, J. P. Mcfadden, J. Halekas, J. Connerney, D. Mitchell, and F. Epavier, *Statistical analysis of the reflection of incident O+ pickup ions at Mars: MAVEN observations*, J. Geophys. Res., **submitted, 2016**.

Dong, Y., X. Fang, D. Brain, J. P. Mcfadden, J. Halekas, J. Connerney, F. Eparvier, L. Andersson, D. Mitchell, and B. Jakosky, *Seasonal Variability of Martian Ion Escape through the Plume and Tail from MAVEN Observations*, J. Geophys. Res., **submitted, 2016**.

Other Publications

Schneider, N.M.S., and D.A. **Brain** (2009), *"Discoveries in Planetary Science" Classroom Powerpoints*, Astronomy Education Review, 8(1), doi:10.3847/AER2009030.

Brain, D.A. (2002), *The influences of crustal magnetic sources on the toplogy of the Martian magnetic environment*, Ph.D. Thesis, University of Colorado at Boulder.

Invited Presentations, Colloquia, and Seminars

"MAVEN Measurements of Ion Escape Rates from Mars", American Geophysical Union Fall Meeting, San Francisco, December 2016.

"Variability in the Loss of Ions from the Martian Atmosphere", European Geophysical Union General Assembly, Vienna, Austria, 18 April 2016.

"Martian Atmospheric Ion Loss Rates", Geospace Environment Modeling System for Integrated Studies (GEMSIS) Workshop, University of Nagoya, Nagoya, Japan, March 2016.

"Has the Martian Atmosphere Disappeared over Time?"
University of Minnestoa Physics and Astronomy Colloquium, 10 March 2016.
University of Arizona Lunar and Planetary Laboratory Colloquium, 19 January 2016.

"MAVEN Results", Indian Space Research Organization, Bangalore, India, 23 February 2016.

"Science and Science Traceability", LASP PI Training Series, 04 December, 2015.

"Evolution of the Martian Atmosphere", American University of Sharjah, United Arab Emirates, 20 October 2015.

"The Emirates Mars Mission", LASP Seminar, 01 October 2015.

"The Martian Atmosphere", Global Space and Satellite Forum, Abu Dhabi, 27 May, 2015.

"Bubbles in Space", Boulder Bubble Day, 01 May 2015.

"MAVEN Mission Update and Early Science", Mars Exploration Program Analysis Group, Pasadena, CA, 25 February, 2015.

"Fun Physics at Martian Crustal Fields", LASP - Friends of the Magnetosphere Seminar, 17 February 2015.

"What Happened to the Martian Atmosphere?", Goddard Space Flight Center, 10 February, 2015.

"What Happened to the Ancient Martian Atmosphere", University of Toronto Physics Colloquium, Toronto, 15 January 2015.

"Suprathermal Electrons in the Plasma Environments of Mars and Venus", American Geophysical Union Fall Meeting, San Francisco, December 2014.

"Climates of Terestrial Planets", Heliophysics Summer School, Boulder, Colorado, 16 July, 2014.

"Ion Escape from Mars: Expectations for MAVEN", 6th Alfven Conference, London, 08 July, 2014.

"What Happened to the Ancient Martian Atmosphere?"
Colorado School of Mines Department of Physics, 21 April, 2014.
Southwest Research Institute, 05 August, 2014.

"Do Magnetospheres Matter?", Georgia Tech Planetary Seminar, 26 March, 2013.

"Mars Atmospheric Escape and Climate Evolution", Nagoya University Global COE Program, Gifu, Japan, 09 March, 2013.

"Do Magnetospheres Matter?", Astrobiology Colloquium, University of Washington, 27 November, 2012.

"Lunar Crustal Magnetic Fields in the Solar Wind", Cluster/THEMIS Joint Workshop, Boulder, Colorado, 04 October 2012.

"The 2013 MAVEN Mission to Mars", Workshop on Planetary Atmospheres, Ahmedabad, India, 23 July 2012.

"The Dynamic Martian Plasma Environment", Workshop on Planetary Atmospheres, Ahmedabad, India, 23 July 2012.

"Planetary Magnetic Fields and Climate", Comparative Climatology of Terrestrial Planets, Boulder, Colorado, 27 June 2012.

"Aurora in Martian Mini-Magnetospheres", American Geophysicsal Union Chapman Conference on Relationship between Auroral Phenomenology and Magnetospheric Processes, Fairbanks, Alaska, 28 February 2011.

"The Induced Magnetotails of Mars and Venus: A Tale of Two Tails", American Geophysical Union Fall Meeting, San Francisco, December 2010.

"The Physics of Mini-Magnetospheres at Mars", 5th Alfven Conference, Sapporo, Japan, October, 2010.

"Models for the Venus Upper Atmosphere and Plasma Environment", International Venus Confernece, Aussois, France, 25 June 2010.

"Space Weather Influences on the Atmospheres of Unmagnetized Planets"
- University of Colorado Physics Seminar, 11 March 2010.
- University of Arizona LPL Seminar, 12 February 2010.
- UC Berkeley Space Physics Seminar, 09 February 2010.

"The Ins and Outs of Martian Mini-Magnetospheres"
- University of Colorado APS Colloquium, 02 June 2010.
- Goddard Space Flight Center Heliophysics Seminar, 30 April 2010.
- Boston University Center for Space Physics Seminar, 26 April 2010.
- University of Colorado Physics Colloquium, 12 March 2010.
- University of New Hampshire Physics Colloquium, 15 February 2010.
- University of Arizona Planetary Science Colloquium, 11 February 2010.

"Atmospheric Escape and Aurora on Mars", SETI Colloquium, August 2009.

"Plasma Transport in the Lumpy Martian Magnetosphere", Huntsville Workshop on The Physical Processes for Energy and Plasma Transport Across Magnetic Boundaries, 27 October, 2008.

"The Solar Wind Interaction with Mars (SWIM) Model Challenge", COSPAR, Montreal, 19 July 2008.

"Aurora in the lumpy magnetic fields of Mars"
- Southwest Research Institute, Boulder, 12 September 2008.
- University of California Berkeley CIPS, 07 May 2008.
- University of California Berkeley Space Physics Seminar, 29 April 2008.
- University of Iowa Space Physics Seminar, 31 March 2008.
- University of Minnesota Astronomy Colloquium, 29 February 2008.
- University of Alaska Fairbanks Geophysical Institute, 19 February 2008.
- George Mason University Department of Physics and Astronomy, 14 February 2008.

"The SWIM Model Challenge", American Geophysical Union Chapman Conference on the Solar Wind Interaction with Mars (SWIM), San Diego, 25 January 2008.

"Origin, Variability, and Consequences of the Martian Aurora", American Geophysical Union Fall Meeting, San Francisco, 12 December 2006.

"Aurora at Planets Lacking Global Magnetic Fields", European Planetary Science Congress, Berlin, Germany, 21 September 2006.

"Crustal fields in the solar wind: The lumpy bumpy magnetosphere of Mars", Boston University Center for Space Physics Seminar, 13 April, 2006.

"MGS Measurements of the Martian Solar Wind Interaction", Kiruna Mars Workshop, Kiruna, Sweden, 28 February, 2006.

"The interaction of the solar wind with Mars", American Geophysical Union Fall Meeting, San Francisco, 8 December 2005.

"Auroral Electrons in Mars's Neato Magneto(sphere)", Rice University Space Physics Seminar, Houston, TX, 14 November 2005.

"The bow shock and upstream waves at Venus and Mars", Committee for Space Research Meeting at the World Space Congress, October 11 2002, Houston, Texas.

"Observation of low frequency waves upstream from the Martian bow shock", Workshop at the International Space Science Institute on Mars magnetism and its interaction with the solar wind, Bern, Switzerland, October 2001.

"Comparative magnetospheres in the solar system", CEDAR 2000 Student Workshop, June 2000, Boulder, Colorado.

"Implications of Mars Global Surveyor MAG/ER data for atmospheric water loss at Mars", 30th Annual Lunar and Planetary Science Conference, March 1999, Houston, Texas.

Teaching and Mentoring

Courses (all at CU Boulder)

Fall 2016	ASTR 3750 – Planets, Moons, and Rings (3 credits; 101 students)
Summer 2016	ASTR 4840 – Independent Study (3 credits; 1 student)
Spring 2016	ASTR 5550 – Observations and Statistics (3 credits; 9 students)
Fall 2015	ASTR 1030 – Accelerated Introductory Astronomy 1 (4 credits;112 students)
Fall 2015	ASTR 4840 – Independent Study (2 credits; 1 student)
Fall 2014	ASTR 1010 – Introductory Astronomy 1 (4 credits; ~206 students)
Spring 2014	ASTR 5550 – Observations and Statistics (3 credits; 12 students)
Spring 2014	ASTR 4840 – Independent Study (2 credits; 1 student)
Fall 2013	ASTR 1000 – The Solar System (3 credits; 207 students)
Spring 2013	ASTR 1000 – The Solar System (3 credits; 206 students)
Spring 2012	ASTR 3720 – Planets and Their Atmospheres (3 credits; 47 students)
Fall 2011	ASTR 1000 – The Solar System (3 credits; 208 students)
Fall 2002	ASTR 1110 – General Astronomy: The Solar System (3 credits;327 students)

Advising

Graduate Advisor

2016-	Hilary Egan (CU APS)
2016-	Tristan Weber (CU APS)
2015-	Rebecca Jolitz (CU Physics)

Graduate Advisor through Comps II

2013-2016	Caitlin Heath (né Heath, CU APS)
2011-2014	Karan Molaverdikhani (CU APS)
2011-2014	William Ames (CU Physics)

Graduate Advisor through Comps I

2013-2016	Caitlin Heath (né Heath, CU APS)

Advisor / Host for Visiting Foreign Graduate Student

2012, 15, 16	Kazunari Matsunaga (U. Nagoya, Japan)
2012	Takuya Hara (U. Nagoya, Japan)
2010	Thea Falkenberg (Technical University of Denmark)
2008	Niklas Edberg (U. Leicester, UK)
2006-2007	Ella Carlsson (IRF, Sweden) – jointly supervised with J. Luhmann

Postdoc Supervisor

2014-	Yaxue Dong (at CU LASP) – jointly with X. Fang (primary supervisor)
2013-2015	Tess McEnulty (at CU LASP)
2009-2011	Demet Ulusen (at UC Berkeley) – jointly supervised with J. Luhmann

Advisor / Host for Visiting Foreign Postdoc

2013-2014	Riku Jarvinen (Finnish Meteorological Institute)
2015, 2016	Kei Masunaga (U. Nagoya & U. Tokyo, Japan)

Undergraduate Research Mentor

2016-	Jacob Hermann (CU LASP) – paid research assistant
2016-	Gwen Hanley (CU LASP) – paid research assistant
2016	Danny Thompson (CU LASP) – paid research assistant
2016-	Iris Altman (CU LASP) – paid research assistant
2015-	Charlie Bowers (CU LASP) – paid research assistant
2015	Fatmah AlKindi (CU LASP) – summer REU from UAE
2014-2015	Kier Fortier (CU LASP) – paid research assistant
2013	Caroline Warly (CU LASP) – volunteer research assistant
2012-2013	Keita Linden (CU LASP) – paid research assistant
2009-2011	Justin Briggs (UC Berkeley) – Honor's Thesis

High School Student Research Mentor

2016-	Kate Richardson (Fairview High School, Boulder, CO)
2012-2014	Elise Steichen (Broomfield High School, Broomfield, CO)
2009-2011	Sebastian Fischer (Piedmont High School, Piedmont, CA)

Academic Examination Committees

Ph.D. Thesis Committee

2015 Chuan Qin (CU Physics)
2015 Mike Chaffin (CU APS)
2014 Timothy Ellsworth-Bowers (CU APS)
2012 Richard Urata (CU APS)
2012 Jianfeng Xie (CU Physics)
2012 Addie Dove (CU APS)
2011 Monica Hoke (CU APS)

Comps III Committee

2013 Chuan Qin (CU Physics)
2012 Jianfeng Xie (CU Physics)

Comps II Committee

2016 Jessica Roberts (CU APS) – impartial chair
2016 Samuel Van Kooten (CU APS) – impartial chair
2016 Evan Anders (CU APS) – impartial chair
2016 Piyush Agrawal (CU APS)
2016 Tristan Weber (CU APS) – research advisor
2016 Alex Lanzano (CU ATOC)
2016 Drake Ranquist (CU APS)
2016 Ryan Orvedahl (CU APS)
2015 Becky Nevin (CU APS) – impartial chair
2015 Adalyn Fyhrie (CU APS)
2015 Dan Gole (CU APS)
2015 Marek Slipski (Geophysics) - impartial chair
2015 Matteo Crismani (CU APS) - impartial chair
2014 Caitlin Caldwell (né Heath, CU APS) - research advisor
2014 Alexandra Truebenbach (CU APS)
2014 Brian Holler (CU APS)
2014 Keri Hoadley (CU APS)
2013 Jennifer Kulow (CU APS)
2013 Chris Fowler (CU APS)
2012 Karan Molaverdikhani (CU APS) – research advisor
2012 Matthew McJunkin (CU APS)
2012 Mike Chaffin (CU APS)

Undergraduate Honors Thesis Committee

2013 Bryan Barnhart (CU Physics)

Service to the Research Community

2016 –	Scientific Organizing Committee for 2017 Nexus for Exoplanet System Science (NExSS) Conference
2016	Delegation member for NASA-ISRO (Indian Space Agency) Mars collaborations – traveled to Bangalore, India in February, 2016
2015 –	Convener for 2018 Comparative Climatology of Terrestrial Planets Conference
2015	Convener of Fall AGU session on "Planetary Atmospheres"
2014 – 2015	Scientific Organizing Committee for 2015 Comparative Climatology of Terrestrial Planets Conference
2014	Panelist for NASA Planetary Mission Senior Review
2013	Convener of Fall AGU session on "Atmospheric Escape, Upper Atmospheres, Ionospheres, and Plasma Interactions at Mars and Venus"
2013	Review Panelist for MAVEN Participating Scientist Program
2012	Review panelist for the NASA Planetary Atmospheres Program
2012	Review panelist for the NASA Planetary Mission Data Analysis Program
2011	Convener of Fall AGU session on "Extreme Space Weather"
2011	Convener of EPSC-DPS session on "Plasma Processes at Venus and Mars: Observations and Modeling"
2010	Convener of Fall AGU session on "Momentum and Energy Transfer and Atmospheric Escape in Weakly Magnetized Objects"
2010 - 2013	Associate Editor of *Journal of Geophysical Research - Space Physics*
2009 - 2011	Member of the NASA's Planetary Atmospheres and Astronomy Management Operations Working Group (MOWG)
2009 - 2010	Program Committee (Planetary Sciences Section) for 2010 Western Pacific Geophysics Meeting
2009 - 2010	Program Committee Member for 2010 Alfven Conference on Plasma Interaction with Unmagnetized Bodies in the Solar System
2009	Convener of Fall AGU session on "Planetary Plasma Interactions and Atmospheric Escape"
2008 - 2009	Guest editor for Icarus special issue on "The Solar Wind Interaction with Mars" (appearing December 2009)

2006 - 2008	Convener of 2008 AGU Chapman Conference "The Solar Wind Interaction with Mars"
2008	Review panelist for the NASA Planetary Atmospheres Program
2007	Convener of Spring AGU session on "Magnetospheres of the Inner Planets"
2004 - present	External Reviewer for data sets on the Planetary Data System: *Lunar Prospector Magnetometer and Electron Reflectometer, Cassini Plasma Spectrometer, MAVEN Key Parameters*
2004 – present	Session Chair at various conferences and workshops (not tracked explicitly)
2003 - present	External Reviewer for ~40 proposals to the following programs: *NASA Cassini Data Analysis, NASA Earth and Space Science Fellowships, NASA Geology and Geophysics, NASA Geospace Science, NASA Heliophysics Research, NASA Heliophysics Supporting Research, NASA Living with a Star, NASA Mars Data Analysis, NASA Mars Fundamental Research, NASA Jupiter Data Analysis, NASA Europa Instrument Investigation, NASA Lunar Advanced Science and Exploration Research, NASA Postdoc Program, NASA Solar System Workings, NSF Planetary Astronomy, UAE Maktoum Bin Rashed Space Center Space Science Program*
2001 - present	Reviewer for at least 55 manuscripts submitted to at least nine journals: *Science, Geophysical Research Letters, Journal of Geophysical Research - Space Physics, Journal of Geophysical Research - Planets, Icarus, Planetary and Space Science, Space Science Reviews, Annales Geophysicae, Advances in Space Research, Astrobiology*

Service to the University (all at CU Boulder)

2016-2017	APS Academic Review and Planning Department Committee
2016-2017	APS Planetary Faculty Search Committee
2016	LASP Research Associate Evaluations Committee
2016	Speaker on "The Classroom Experience" at CU Peak to Peak for high school guidance counselors – June, 2016
2016	Speaker at CU Admitted Student Day – April, 2016
2016	Faculty Teaching Excellence Program Workshop Co-Leader on "Teaching Large Classes" (Spring 2016 and Fall 2016)
2015-2016	APS Faculty Search Committee
2015-	CU Geophysics PhD Program Committee

2014-2016	APS Department Executive Committee
2014-2015	LASP Office of Communications and Outreach Director Search Committee
2014-2015	LASP Faculty Performance Evaluation Committee
2014	CU Chancellor's Tour faculty speaker
2014	LASP Office of Communications and Outreach Evaluation Committee
2014	LASP Promotion Evaluation Committee Chair for Mikki Osterloo
2013 – 2016	APS Department Lead Undergraduate Mentor
2013	LASP Promotion Evaluation Committee Chair for Sean Hsu
2013	APS Department Strategic Planning Committee
2012 - 2013	LASP Education and Public Outreach Advisory Committee
2012 - 2013	APS Department Colloquium Organizer
2011 - 2014	APS Department Graduate Admissions Committee
2011 – present	APS Department Undergraduate Mentor

Public Lectures

"Do Habitable Worlds Require Magnetic Fields?", TEDx Boulder, 19 September, 2015. → Promoted to "TED talk" at the TED.com website, 12 August, 2016. ~1 million views.

"CU's MAVEN Mission", Boulder Alumni Chapter: Fiske Planetarium, 16 May, 2015.

"An Insider's Look: CU Boulder and the Red Planet", eTown Hall, Boulder, 10 November, 2014.

"*Total Recall* and Terraforming Mars", Science on Screen at Boulder Dairy Center for the Arts, August 18, 2014.

"MAVEN: CU's Mission to Mars"
Denver – (CU Chancellor's Tour of Colorado) – June 3, 2014
Colorado Springs – (CU Chancellor's Tour of Colorado) – June 3, 2014
Pueblo – (CU Chancellor's Tour of Colorado) – June 3, 2014
Durango – (CU Chancellor's Tour of Colorado) – June 4, 2014
Grand Junction – (CU Chancellor's Tour of Colorado) – June 5, 2014
Carbondale – (CU Chancellor's Tour of Colorado) – June 5, 2014
Vail – (CU Chancellor's Tour of Colorado) – June 6, 2014
CU Lunch and Learn for Denver Metro Alumni Chapter – August 13, 2014

"Was Ancient Mars Earth-like?"
Fiske Planetarium, CU Boulder, March 6 & 7, 2014.
CU Seminar, Boulder, April 4, 2014.

Panelist on "Post-Launch MAVEN Briefing" hosted by the Denver Museum of Nature and Science, Cape Canaveral, Florida, November 18, 2013.

"Ancient Mars and the MAVEN Mission?", Chautauqua Space Series, Boulder, Colorado, October 10, 2013.

"The 2013 MAVEN Mission to Mars"
- University of Colorado College of Arts and Sciences Leadership Society, Boulder, Colorado, October 29, 2013.
- University of Colorado 50th Reunion and Golden Anniversary Club Dinner, Boulder, Colorado, October 25, 2013.
- Holly Creek Retirement Community, Centennial, Colorado, September 3, 2013.
- CU Director's Club, Vail, Colorado, June 15, 2013.
- The Academy Retirement Home, Boulder, Colorado, March 7, 2013.
- Denver Space Society, December 20, 2012.

Panelist on "Mars Exploration: The Next Steps" at the 16th Mars Society Convention, August 15, 2013.

"Was Ancient Mars Earth-like?", CU in the Community, Trinidad State Junior College, Trinidad, Colorado, February 13, 2013.

"The Mars Science Laboratory", MSL Public Event at LASP, August 05, 2012.

"The Mars Science Laboratory", CU Fiske Planetarium, August 06, 2012.

"The Disappearing Martian Atmosphere", CU SEDS, February 27, 2012.

"Mars's Lumpy Bumpy Neato Magneto(Sphero)", Nerd Nite San Francisco, November 17, 2010.

"Life in the Solar System", Berkeley City Commons Club, October, 2006.

"Invisible Mars: More than a Big Red Rock", Mars Night at Fiske Planetarium, CU Boulder, August 2003.

Additional Outreach Activities

Ongoing	Print, radio, podcast, and television press interviews. At least 34 since arriving at CU (local, state, national, and international), most about MAVEN and/or the Martian climate. Highlights include NPR's "Science Friday", NY Times, BBC Radio, The John Batchelor Show, Denver Post, 9 News, Daily Camera, Colorado Public Matters
Ongoing	Visit K-12 classrooms or school groups to talk about planets, Mars, or MAVEN. At least 8 classrooms or schools visited since arrival at CU.
Ongoing	Give presentations about Mars and/or MAVEN at teacher workshops sponsored by CU LASP, MAVEN, and the American Astronomical Society Division for Planetary Sciences. 11 talks given so far (none listed below), starting in 2013.
2016	Conducted 1-week short course in Planetary Science, with Bruce Jakosky, for employees of the United Arab Emirates Maktoum Bin Rashed Space Center
2016	Present MAVEN results at CU Advocacy Day
2016	Gave NASA "Hyperwall" presentation at the European Geophysical Union General Assembly
2016	Presented MAVEN results at CU Scoop event at Fiske Planetarium
2015	CBS Facebook Hangout and Reddit AMA, both for MAVEN results
2015	Participated in NASA Press Conference about MAVEN results
2015	Participated in workshop for science teachers in the United Arab Emirates, organized by the Maktoum Bin Rashed Space Center
2014-2015	Panelist and presenter at two New Media Workshops for MAVEN
2013	Science Advisor for "Red Planet" curriculum development pertaining to Mars atmospheric evolution, for K-12 teachers (sponsored by MAVEN)
2011 - 2012	Science Advisor (1 of 2) for "Science on a Sphere" spherical projection program development related to the MAVEN mission
2009 - 2012	Constructed slide sets for the American Astronomical Society Division for Planetary Sciences on recent discoveries in planetary science, for use by college and high school astronomy instructors in their classrooms
2009 - 2011	Science Advisor (1 of 2) for construction of 3D wire magnetic field models of Mars and Venus, and development of three "Science on a Sphere" presentations geared toward K-12 students about planetary magnetic fields