

Jim M. Raines

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| Employment | 2018-present | Associate Research Scientist, Dept. of Climate and Space Sciences and Engineering, University of Michigan |
| | 2013-2018 | Assistant Research Scientist, Dept. of Climate and Space Sciences and Engineering, University of Michigan |
| | 2005-2013 | Lead Mission Operations Engineer, University of Michigan Space Physics Research Laboratory. |
| | 1999-2005 | Programmer/Analyst II, University of Michigan Space Physics Research Laboratory. |
| | 1996-9 | High School Science Teacher, Lincoln Community Schools. |
| Education | 2013 | Ph.D., Atmospheric, Oceanic and Space Sciences, University of Michigan. Dissertation: "MESSENGER investigations of the plasma environment at Mercury." |
| | 1994 | M.S. Chemistry, Carnegie Mellon University. Research focused on theoretical, simulation and computational aspects of nuclear magnetic resonance spectroscopy. |
| | 1990 | B.S. Biochemistry, Clemson University. Coursework and research focused on molecular genetics. |
| Awards | 2011 | NASA Group Achievement Award, MESSENGER Mission, Orbital mission |
| | 2009 | NASA Graduate Student Research Program fellowship |
| | 2008 | NASA Group Achievement Award, MESSENGER Mission, First Mercury flyby since Mariner 10 |
| | 2006 | NASA Group Achievement Award, UARS Mission |
| | 2005 | ESA Achievement Award, Ulysses Mission |
| Mission Teams | 2014-present | <i>Solar Orbiter</i> , Co-Investigator (ESA) |
| | 2012-present | <i>Solar Orbiter</i> , HIS Instrument Scientist |
| | 2005-2015 | <i>MESSENGER</i> , FIPS Instrument Scientist |
| | 2004-2014 | <i>MESSENGER</i> , FIPS Instrument Engineer |
| | 2002-2005 | <i>UARS</i> , HRDI Lead Engineer |
| | 2000-present | <i>ACE</i> , SWICS and SWIMS Lead Engineer <i>WIND</i> , SWICS, MASS and STICS Lead Engineer |

Summary of skills and accomplishments

Science: Research focuses on understanding of heavy ions in Mercury's space environment. Accomplishments include first observation of solar wind with MESSENGER, first confirmation of Mercury's Earth-like plasma sheet and, first observation of non-adiabatic ion behavior at Mercury and first explanation of high-energy ions in Mercury's cusp. Contributed expertise on Mercury magnetosphere and plasma data analysis to numerous MESSENGER team publications.

Management and Leadership: Managed day-to-day operation of MESSENGER/FIPS instrument team from first data acquisition (2005), through Mercury orbital insertion (2011) and into present orbital science mission. Accomplishments: Planned and operated FIPS instrument in cruise and Mercury orbit. Developed and produced over 10 public science data products along with detailed documentation, and delivered them to the Planetary Data System (PDS). Managed team of software engineers, scientists and students in production, validation and delivery of ACE/SWICS and ACE/SWIMS public science data from 2008-2012.

Relevant technical expertise: *MESSENGER/FIPS:* Lead development of instrument software model, including physical and geometric effects of measurement process and time-dependent variation due to spacecraft motion. Developed method for recovery of plasma parameters from observed data through use of software model. Modeled 3D velocity distribution functions and analyzed relation to measured data. Analyzed calibration data. *ACE/SWICS:* Lead development of data inversion system, with overlap removal and probabilistic assignment of measurements to individual ion species. Work included implementation C++ code, testing/revision of statistical and physics forward models, calibration/efficiency analysis, and extensive analysis of method performance and scientific validity. Delivered resulting dataset to ACE Science Center, over 20 data series in 3 time resolutions spanning 10 years. *Wind/SMS:* Lead development of telemetry decoding, as well instrument health monitoring software.

Students Mentored

Doctoral

Austin N. Glass, 2017-present.

Patrick J. Tracy, 2011-2016, graduated December 2016.

Ryan M. Dewey, 2015-present.

Undergraduate, Undergraduate Research Opportunities Program

Brian Chan, 2017-2018, "Developing a Computer Algorithm to Identify High-Energy Protons in Mercury's Dayside Magnetosphere."

Kayla Kornoelje, 2017-2018, "Identifying High-Energy Protons in Mercury's Dayside Magnetosphere"

Audrey Pierce, 2016-2017, "Identifying High-Energy Protons in Mercury's Dayside Magnetosphere"

Natalie Staudacher, 2015-2016, "Heavy Ion Transport through Mercury's Magnetotail"

Patrick Lawton, 2015-2016, "Heavy Ion Transport through Mercury's Magnetotail"

Austin Glass, 2015-2016, "Analyzing Mercury's Foreshock"

Hannah Fan, 2014-2015, "Identifying Mercury's Northern Magnetospheric Cusps"

Daniel Bennet, 2014-2015, "Developing a Computer Algorithm to Analyze Energy – Time Dispersions of Protons in Mercury's Northern Magnetospheric Cusp"

Zachary Meves, 2013-2014, “Analyzing Heavy Lunar Pick-up Ions in Wind/STICS Data”
Jessica Reid, 2013-2014, “Identifying Mercury’s Northern Magnetospheric Cusps”

Undergraduate, Research Experience for Undergraduates (NSF)

Christopher Bert, Univ. of Massachusetts, Summer 2014
Christine De Zeeuw, Hope College, Summer 2014
Jake Morrison, Montana State University, Summer 2013
Kayla MacLennan, University of Michigan, Summer 2011
Vincent Russo, Eastern Michigan University, Summer 2010
Patrick Tracy, University of Minnesota, Summer 2010
Aron Dodger, Eastern Michigan University, Summer 2008

Undergraduate, paid research associates

Alana Cardenas-O’Toole, May 2018 – present
Sindhu Selvaraju Jayakala, February 2018 – present
Natalie Staudacher, May 2016 – present.
Austin Glass, May 2016 – August 2017
Kathryn L. Wallace, May 2016 – December 2016
Zachary Meves, May 2015 – December 2015
Kayla MacLennan, September 2011 – May 2013
Aron Dodger, Summer 2009

Public Outreach

Quoted by BBC World concerning MESSENGER spacecraft surface impact, 30 Apr 2015,
<http://www.bbc.com/news/science-environment-32510911>

Quoted by USA Today concerning MESSENGER spacecraft surface impact, 30 Apr 2015.
<http://www.usatoday.com/story/news/2015/04/30/mercury-messenger-satellite-spacecraft/26616163/>

Contributed to UM CoE press release, “Six things you didn’t know about MESSENGER’s Mercury crash”, 28 Apr 2015,
<http://www.engin.umich.edu/college/about/news/stories/2015/april/six-things-you-didnt-know-about-messengers-crash>

Contributed to UM CoE Mconnex video, “From Michigan to Mercury”, 16 Apr 2015,
<http://www.engin.umich.edu/college/about/news/stories/2015/april/from-michigan-to-mercury>

Service

1. Conference Organizing Committee and Session Chair, "Mercury: Current and Future Science of the Innermost Planet", May 1-3, 2018, Columbia, MD.
2. Referee, Icarus, 2016
3. Referee, Journal of Geophysical Research: Space Physics, 2014 - 2017
4. Referee, Planetary and Space Sciences, 2014 - 2015
5. Reviewer, NASA Proposal Review Panel: NASA Earth and Space Science Fellowship, 2014
6. Reviewer, NASA Proposal Review Panel: Heliospheric Guest Investigator, 2014
7. Reviewer, NASA Proposal Review Panel: Discovery Data Analysis, 2014

8. Reviewer, NSF Proposal Review Panel: Solar, Heliospheric, and Interplanetary Environment, 2014
9. Referee, Annales Geophysica, 2013
10. Reviewer, NSF Proposal Review Panel: Solar-Terrestrial Program, 2013

Invited Presentations

- Raines, J. M.**, R. M. Dewey, G.-K. Poh, W.J. Sun, S. M. Imber, and J. A. Slavin (2018), Recent Findings from MESSENGER on the Magnetosphere of Mercury, European Geosciences Union General Assembly, Vienna, Austria.
- Raines, J. M.**, J. A. Slavin, P. J. Tracy, D. J. Gershman, R. M. Dewey, and M. Sarantos (2017), Ion composition and circulation in the magnetosphere of Mercury, Asia Oceania Geosciences Society, 14th Annual Meeting, Singapore.
- Raines, J. M.**, J. A. Slavin, P. J. Tracy, D. J. Gershman, R. M. Dewey and M. Sarantos (2017), Ion composition and circulation in the magnetosphere of Mercury, Asia Oceania Geosciences Society (AOGS), Singapore.
- Raines, J. M.**, D. J. Gershman, T. H. Zurbuchen, J. A. Slavin, H. Korth and B. J. Anderson, Magnetospheric Cusp Structure and Dynamics: MESSENGER FIPS Measurements at Mercury, BepiColumbo SERENA – Hermean Environment Working Group, Key Largo, FL, 2013.
- Raines, J. M.** (2013), MESSENGER Observations of the Plasma Environment at Mercury, Plasma Sources in Planetary Magnetospheres Workshop, International Space Sciences Institute, Bern, Switzerland.
- Raines, J. M.**, D. J. Gershman, T. H. Zurbuchen, G. Gloeckler, J. A. Slavin, B. J. Anderson, H. Korth, D. Schriver, S. M. Krimigis, R. M. Killen, M. Sarantos, A. L. Sprague and R. L. McNutt (2011), The Plasma Environment at Mercury: First Orbital Measurements, Asia Oceania Geosciences Society (AOGS), Taipei, Taiwan.

Contributed Presentations

2017

- J. M. Raines**, K. L. Wallace, M. Sarantos, J. M. Jasinski, P. J. Tracy, R. M. Dewey, M. J. Weberg, and J. A. Slavin (2017), First in-situ observations of exospheric response to CME impact at Mercury, American Geophysical Union Fall Meeting, New Orleans, LA.

Five co-author presentations not listed.

2016

- Dewey, R., J. A. Slavin, D. Baker, **J. Raines**, and D. Lawrence (2016), MESSENGER observations of energetic electron acceleration in Mercury's magnetotail, AAS/Division for Planetary Sciences Meeting Abstracts, 48, 117.02.
- Jasinski, J., **J. Raines**, and J. Slavin (2016), Ion observations at Mercury's Magnetospheric Cusp, EGU General Assembly Conference Abstracts, 18, 10818.
- Jasinski, J. M., J. A. Slavin, **J. Raines**, and G. DiBraccio (2016), Mercury's Plasma Mantle - a survey of MESSENGER observations, AAS/Division for Planetary Sciences Meeting Abstracts, 48, 524.03.

- Poh, G., J. Slavin, X. Jia, **J. Raines**, W.-J. Sun, K. Genestreti, A. Smith, D. Gershman, and B. Anderson (2016), MESSENGER Observations of Asymmetries at Mercury's Magnetotail Current Sheet, EGU General Assembly Conference Abstracts, 18, 2227.
- Raines, J. M.**, J. A. Slavin, P. J. Tracy, D. J. Gershman, T. H. Zurbuchen, R. M. Dewey, and M. Sarantos (2016), Plasma precipitation on Mercury's nightside and its implications for magnetospheric convection and exosphere generation, AGU Fall Meeting Abstracts.

2015

- Baker, D. N., R. Dewey, B. J. Anderson, G. Ho, H. Korth, S. Krimigis, D. J. Lawrence, R. L. McNutt Jr., D. Odstrcil, **J. M. Raines**, D. Schriver, J. A. Slavin, and S. C. Solomon (2015), Energetic electron flux enhancements in Mercury's magnetosphere: An integrated view with multi-instrument observations from MESSENGER, EGU General Assembly Conference Abstracts, 17, 2517.
- Dewey, R. M., D. N. Baker, J. A. Slavin, **J. M. Raines**, D. J. Lawrence, J. O. Goldsten, P. N. Peplowski, H. Korth, S. M. Krimigis, B. J. Anderson, G. C. Ho, R. L. McNutt Jr., D. Schriver, and S. C. Solomon (2015), Intense energetic-electron flux enhancements in Mercury's magnetosphere: An integrated view with high-resolution observations from MESSENGER, AGU Fall Meeting Abstracts.
- Dewey, R., J. A. Slavin, D. Baker, **J. Raines**, and D. Lawrence (2016), MESSENGER observations of energetic electron acceleration in Mercury's magnetotail, AAS/Division for Planetary Sciences Meeting Abstracts, 48, 117.02- doi:
- Gershman, D. J., **J. M. Raines**, J. A. Slavin, T. Zurbuchen, B. J. Anderson, H. Korth, G. C. Ho, S. A. Boardsen, T. A. Cassidy, B. Walsh, and S. C. Solomon (2015), Mapping Mercury's magnetic topology with solar energetic electrons, AGU Fall Meeting Abstracts, doi:
- Liljeblad, E. I., T. Karlsson, **J. M. Raines**, J. A. Slavin, A. Kullen, T. Sundberg, and T. Zurbuchen (2015), MESSENGER Observations of the Dayside Low-Latitude Boundary Layer in Mercury's Magnetosphere, AGU Fall Meeting Abstracts, doi:
- Poh, G., J. Slavin, X. Jia, G. DiBraccio, **J. Raines**, S. Imber, D. Gershman, B. Anderson, H. Korth, R. McNutt, and S. Solomon (2015), MESSENGER Observations of Cusp Plasma Filaments at Mercury, EGU General Assembly Conference Abstracts, 17, 2582.
- Schriver, D., P. M. Travnicek, G. C. Ho, R. D. Starr, D. L. Domingue, D. N. Baker, P. Hellinger, S. M. Krimigis, R. L. McNutt Jr., **J. M. Raines**, J. A. Slavin, and S. C. Solomon (2015), Energization and Precipitation of Electrons in Mercury's Magnetosphere, AGU Fall Meeting Abstracts.
- Sun, W. J., J. A. Slavin, S. Fu, **J. M. Raines**, Q. G. Zong, G. Poh, X. Jia, T. Sundberg, D. J. Gershman, Z. Pu, T. Zurbuchen, and Q. Shi (2015), MESSENGER Observations of Substorm Activity at Mercury, AGU Fall Meeting Abstracts.
- Sun, W.-J., J. Slavin, S. Fu, **J. Raines**, Q.-G. Zong, Z. Yao, Z. Pu, Q. Shi, G. Poh, S. Boardsen, S. Imber, T. Sundberg, B. Anderson, H. Korth, and D. Baker (2015), MESSENGER observations of substorm activity in Mercury's near magnetotail, EGU General Assembly Conference Abstracts, 17, 2687.
- Tracy, P., J. C. Kasper, T. Zurbuchen, **J. M. Raines**, and J. A. Gilbert (2015), Relative Heating of Heavy Ions Observed at 1 AU with ACE/SWICS, AGU Fall Meeting Abstracts.

Weberg, M. J., **J. M. Raines**, D. J. Gershman, S. T. Lepri, and T. Zurbuchen (2015), Bulk Velocity and Thermal Properties of the Solar Wind in the Inner Heliosphere, AGU Fall Meeting Abstracts.

2014

- Bisi, M. M., R. A. Fallows, C. Sobey, T. Eftekhari, E. A. Jensen, B. V. Jackson, H. S. Yu, D. J. Gershman, **J. M. Raines**, and D. Odstrcil (2014), Faraday Rotation (FR) and Interplanetary Scintillation (IPS) Case Studies Using the LOw Frequency ARray (LOFAR), AGU Fall Meeting Abstracts.
- Dewey, R. M., D. N. Baker, B. J. Anderson, M. Benna, C. L. Johnson, H. Korth, D. J. Gershman, G. C. Ho, W. E. McClintock, D. Odstrcil, L. C. Philpott, **J. M. Raines**, D. Schriver, J. A. Slavin, S. C. Solomon, R. M. Winslow, and T. Zurbuchen (2014), Improving solar wind modeling at Mercury: Incorporating transient solar phenomena into the WSA-ENLIL model, AGU Fall Meeting Abstracts.
- DiBraccio, G. A., J. A. Slavin, **J. M. Raines**, D. J. Gershman, P. Tracy, S. A. Boardsen, T. Zurbuchen, B. J. Anderson, H. Korth, R. L. McNutt Jr., and S. C. Solomon (2014), First Observations of Mercury's Plasma Mantle As Seen By MESSENGER, AGU Fall Meeting Abstracts, doi:
- DiBraccio, G. A., J. A. Slavin, S. M. Imber, D. J. Gershman, **J. M. Raines**, S. A. Boardsen, B. J. Anderson, H. Korth, T. H. Zurbuchen, R. L. McNutt Jr., and S. C. Solomon (2014), MESSENGER Observations of Magnetic Flux Ropes in Mercury's Plasma Sheet, EGU General Assembly Conference Abstracts, 16, 6821.
- Gershman, D. J., **J. M. Raines**, J. A. Slavin, T. Zurbuchen, T. Sundberg, S. A. Boardsen, B. J. Anderson, H. Korth, and S. C. Solomon (2014), Multi-Scale Kelvin-Helmholtz Vortices Along Mercury's Magnetopause, AGU Fall Meeting Abstracts, doi:
- Gershman, D. J., **J. M. Raines**, J. A. Slavin, T. H. Zurbuchen, T. Sundberg, S. A. Boardsen, B. J. Anderson, H. Korth, and S. C. Solomon (2014), On the dynamic influence of Na⁺ in Mercury's magnetotail, EGU General Assembly Conference Abstracts, 16, 7002.
- Lepri, S. T., S. A. Livi, A. B. Galvin, L. M. Kistler, **J. M. Raines**, F. Allegrini, M. R. Collier, and T. Zurbuchen (2014), Heavy ion composition in the inner heliosphere: Predictions for Solar Orbiter, AGU Fall Meeting Abstracts.
- Middleton, H. R., J. A. Slavin, J. M. Raines, X. Jia, B. J. Anderson, M. L. Mays, and T. Zurbuchen (2014), MESSENGER Disappearing Dayside Magnetosphere Events: Evidence for Severe Dayside Erosion and/or Compression?, AGU Fall Meeting Abstracts.
- Poh, G. K., J. A. Slavin, G. A. DiBraccio, X. Jia, **J. M. Raines**, S. M. Imber, B. J. Anderson, H. Korth, D. J. Gershman, T. Zurbuchen, R. L. McNutt Jr., and S. C. Solomon (2014), MESSENGER Observations of Cusp Plasma Filaments at Mercury, AGU Fall Meeting Abstracts.
- Raines, J. M.**, P. Tracy, D. J. Gershman, G. K. Poh, J. A. Slavin, T. Zurbuchen, H. Korth, B. J. Anderson, and S. C. Solomon (2014), MESSENGER's low-altitude plasma observations in Mercury's northern magnetospheric cusp, AGU Fall Meeting Abstracts, doi:
- Schriver, D., P. M. Travnicek, B. J. Anderson, M. Ashour-Abdalla, D. N. Baker, M. Benna, S. A. Boardsen, P. Hellinger, G. C. Ho, H. Korth, S. M. Krimigis, R. L. McNutt Jr., **J. M. Raines**, R. L. Richard, J. A. Slavin, R. D. Starr, S. C. Solomon, and T. Zurbuchen (2014), Plasma Transport, Acceleration, and Loss in Mercury's Magnetosphere and Comparison with Other Planetary Magnetospheres, AGU Fall Meeting Abstracts,.

- Sun, W.-J., J. Slavin, S. Fu, **J. Raines**, Q.-G. Zong, Z. Yao, Z. Pu, Q. Shi, G. Poh, S. Boardsen, S. Imber, T. Sundberg, B. Anderson, H. Korth, and D. Baker (2015), MESSENGER observations of substorm activity in Mercury's near magnetotail, EGU General Assembly Conference Abstracts, 17, 2687.
- Tracy, P., T. Zurbuchen, **J. M. Raines**, P. Shearer, J. C. Kasper, J. A. Gilbert, and B. L. Alterman (2014), Heavy Ion Temperatures As Observed By ACE/Swics, AGU Fall Meeting Abstracts.
- Uritsky, V., J. Slavin, S. Boardsen, T. Sundberg, **J. Raines**, D. Gershman, T. Zurbuchen, G. Khazanov, B. Anderson, and H. Korth (2014), Multiscale magnetic turbulence at Mercury, EGU General Assembly Conference Abstracts, 16, 13988.
- Winslow, R. M., C. L. Johnson, B. J. Anderson, D. J. Gershman, **J. M. Raines**, R. J. Lillis, H. Korth, J. A. Slavin, S. C. Solomon, and T. Zurbuchen (2014), Regional-Scale Surface Magnetic Fields and Proton Fluxes to Mercury's Surface from Proton-Reflection Magnetometry, AGU Fall Meeting Abstracts.

2013

- Benna, M., J. A. Slavin, B. J. Anderson, D. N. Baker, H. Korth, **J. M. Raines**, T. Zurbuchen, C. L. Johnson, and S. C. Solomon (2013), Effect of Electromagnetic Induction on the Magnetosphere of Mercury, AGU Fall Meeting Abstracts.
- Dewey, R. M., D. N. Baker, B. J. Anderson, M. Benna, C. L. Johnson, H. Korth, D. J. Gershman, G. C. Ho, W. E. McClintock, D. Odstrcil, **J. M. Raines**, D. Schriver, J. A. Slavin, S. C. Solomon, R. M. Winslow, and T. Zurbuchen (2013), WSA-ENLIL Cone Extension: Improving Solar Wind Forcing Parameter Estimates at Mercury, AGU Fall Meeting Abstracts.
- DiBraccio, G. A., J. A. Slavin, S. A. Boardsen, B. J. Anderson, H. Korth, T. Zurbuchen, **J. M. Raines**, D. N. Baker, R. L. McNutt, and S. C. Solomon (2013), MESSENGER Observations of Magnetopause Reconnection at Mercury (Invited), AGU Fall Meeting Abstracts.
- DiBraccio, G. A., J. A. Slavin, S. M. Imber, D. J. Gershman, **J. M. Raines**, S. A. Boardsen, B. J. Anderson, H. Korth, T. Zurbuchen, R. L. McNutt, and S. C. Solomon (2013), MESSENGER Observations of Plasmoid-type Flux Ropes in Mercury's Magnetotail, AGU Fall Meeting Abstracts.
- DiBraccio, G. A., J. A. Slavin, S. M. Imber, D. J. Gershman, **J. M. Raines**, S. A. Boardsen, B. J. Anderson, H. Korth, T. H. Zurbuchen, R. L. McNutt Jr., and S. C. Solomon (2013), MESSENGER Observations of Plasmoid-type Flux Ropes in Mercury's Magnetotail, European Planetary Science Congress 2013, held 8-13 September in London, UK., 8, EPSC2013-681.
- Gershman, D. J., J. A. Slavin, J. M. Raines, T. Zurbuchen, B. J. Anderson, H. Korth, D. N. Baker, and S. C. Solomon (2013), Ion composition and kinetics in Mercury's magnetotail (Invited), AGU Fall Meeting Abstracts.
- Gershman, D. J., J. A. Slavin, **J. M. Raines**, T. Zurbuchen, B. J. Anderson, H. Korth, D. N. Baker, and S. C. Solomon (2013), Plasma Depletion in a Low-Alfvénic-Mach-Number Magnetosheath: Observations at Mercury, AGU Fall Meeting Abstracts.
- Korth, H., B. J. Anderson, **J. M. Raines**, D. J. Gershman, J. A. Slavin, T. Zurbuchen, S. C. Solomon, and R. L. McNutt Jr. (2013), Plasma distribution in Mercury's magnetosphere inferred from MESSENGER Magnetometer and Fast Imaging Plasma Spectrometer observations, AGU Fall Meeting Abstracts.

- Poh, G., J. A. Slavin, S. M. Imber, G. A. DiBraccio, X. Jia, B. J. Anderson, H. Korth, D. J. Gershman, **J. M. Raines**, T. Zurbuchen, R. L. McNutt, and S. C. Solomon (2013), MESSENGER Observations of Flux Transfer Events during the Impact of the 23 November 2011 Coronal Mass Ejection onto Mercury's Magnetosphere, AGU Fall Meeting Abstracts.
- Raines, J. M.**, D. J. Gershman, J. A. Slavin, T. Zurbuchen, H. Korth, B. J. Anderson, and S. C. Solomon (2013), MESSENGER observations of proton precipitation in Mercury's northern magnetospheric cusp, AGU Fall Meeting Abstracts, doi:
- Sarantos, M., M. Benna, **J. M. Raines**, J. A. Slavin, R. M. Killen, T. Zurbuchen, and S. C. Solomon (2013), Simulations of the Na⁺/O⁺ ratio observed by MESSENGER and implications for oxygen-bearing volatiles in Mercury's exosphere, AGU Fall Meeting Abstracts, doi:
- Schriver, D., P. M. Travnicek, B. J. Anderson, M. Ashour-Abdalla, D. N. Baker, M. Benna, S. A. Boardsen, P. Hellinger, G. C. Ho, H. Korth, S. M. Krimigis, R. L. McNutt Jr., **J. M. Raines**, R. L. Richard, J. A. Slavin, S. C. Solomon, R. D. Starr, and T. Zurbuchen (2013), What Happened to the High-Energy (> 100 keV) Particles at Mercury?, AGU Fall Meeting Abstracts, doi:
- Shearer, P., M. K. Jawed, **J. M. Raines**, S. T. Lepri, J. A. Gilbert, R. von Steiger, and T. Zurbuchen (2013), A Rigorous Statistical Approach to Determine Solar Wind Composition from ACE/SWICS Data, and New Ne/O Ratios, AGU Fall Meeting Abstracts.
- Tenishev, V., M. R. Combi, X. Jia, M. Rubin, and **J. Raines** (2013), Kinetic modeling of the sodium distribution in the Hermean surface-bound exosphere, AAS/Division for Planetary Sciences Meeting Abstracts, 45, 114.02.
- Travnicek, P. M., D. Hercik, D. Schriver, P. Hellinger, B. J. Anderson, **J. M. Raines**, J. A. Slavin, and T. H. Zurbuchen (2013), Mercury's plasma belt under different Interplanetary Magnetic Field: hybrid simulations results compared to in-situ measurements, EGU General Assembly Conference Abstracts, 15, EGU2013-7237.
- Uritsky, V. M., J. A. Slavin, G. A. Collinson, T. Sundberg, S. A. Boardsen, **J. M. Raines**, and D. J. Gershman (2013), Active current sheets at Mercury and across the solar system, AGU Fall Meeting Abstracts.
- Winslow, R. M., C. L. Johnson, B. J. Anderson, D. J. Gershman, **J. M. Raines**, R. J. Lillis, H. Korth, J. A. Slavin, and S. C. Solomon (2013), First application of proton reflection magnetometry with MESSENGER to estimate Mercury's surface magnetic field strength (Invited), AGU Fall Meeting Abstracts.

Publications (H index: 25)

2018

72. Orsini, S., V. Mangano, A. Milillo, C. Plainaki, A. Mura, J. M. Raines, E. De Angelis, R. Rispoli, F. Lazzarotto, and A. Aronica (2018), Mercury sodium exospheric emission as a proxy for solar perturbations transit, *Nature Scientific Reports*, (2018) 8:928, DOI:10.1038/s41598-018-19163-x.

2017

- 71 .Dewey, R. M., J. A. Slavin, J. M. Raines, D. N. Baker, and D. J. Lawrence (2017), Energetic Electron Acceleration and Injection During Dipolarization Events in Mercury's Magnetotail, *Journal of Geophysical Research (Space Physics)*, 122, 12- doi: 10.1002/2017JA024617.
70. Jasinski, J. M., J. A. Slavin, J. M. Raines, and G. A. DiBraccio (2017), Mercury's Solar Wind Interaction as Characterized by Magnetospheric Plasma Mantle Observations With

- MESSENGER, *Journal of Geophysical Research (Space Physics)*, 122, 12- doi: 10.1002/2017JA024594.
69. Lepri, S. T., J. M. Raines, J. A. Gilbert, J. Cutler, M. Panning, and T. H. Zurbuchen (2017), Detecting negative ions on board small satellites, *Journal of Geophysical Research (Space Physics)*, 122, 3961-3971, doi: 10.1002/2016JA023327.
68. Poh, G., J. A. Slavin, X. Jia, J. M. Raines, S. M. Imber, W.-J. Sun, D. J. Gershman, G. A. DiBraccio, K. J. Genestreti, and A. W. Smith (2017), Coupling between Mercury and its nightside magnetosphere: Cross-tail current sheet asymmetry and substorm current wedge formation, *Journal of Geophysical Research (Space Physics)*, 122, 8419-8433, doi: 10.1002/2017JA024266.
67. Poh, G., J. A. Slavin, X. Jia, J. M. Raines, S. M. Imber, W.-J. Sun, D. J. Gershman, G. A. DiBraccio, K. J. Genestreti, and A. W. Smith (2017), Mercury's cross-tail current sheet: Structure, X-line location and stress balance, *Geophysical Research Letters*, 44, 678-686, doi: 10.1002/2016GL071612.
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