

Jim M. Raines

Employment	2013-present	Assistant Research Scientist, Dept. of Atmospheric, Oceanic and Space Sciences, 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	2009	NASA Graduate Student Research Program fellowship
	2008	NASA Group Achievement Award, MESSENGER Mission
	2006	NASA Group Achievement Award, UARS Mission
	2005	ESA Achievement Award, Ulysses Mission
Selected Oral Presentations	2013	BepiColumbo SERENA – Hermean Environment Working Group, Key Largo, FL (<i>invited</i>)
	2012	MESSENGER Science Team Plenary, ASU, Tempe, AZ American Geophysical Union, Fall Meeting, San Francisco, CA European Geophysical Union, Vienna, Austria
	2011	American Geophysical Union, Fall Meeting, San Francisco, CA Asia Oceana Geosciences Society, Taipei, Taiwan (<i>invited</i>)
	2010	European Planetary Science Congress, Nantes, France.
	2009	American Geophysical Union, Fall Meeting, San Francisco, CA
Missions	2012-present	<i>Solar Orbiter</i> , HIS Instrument Scientist
	2005-present	<i>MESSENGER</i> , FIPS Instrument Scientist (acting)
	2004-present	<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

Publications (H index: 13)

2013

Baker, D. N., G. Poh, D. Odstrcil, C. N. Arge, M. Benna, C. L. Johnson, H. Korth, D. J. Gershman, G. C. Ho, W. E. McClintock, T. A. Cassidy, A. Merkel, **J. M. Raines**, D. Schriver, J. A. Slavin, S. C. Solomon, P. M. Travnicek, R. M. Winslow, and T. H. Zurbuchen (2013), Solar wind forcing at Mercury: WSA-ENLIL model results, *J Geophys Res-Space*, 118(1), 45-57, Doi 10.1029/2012ja018064.

Raines, J.M., D.J. Gershman , T.H. Zurbuchen, M. Sarantos, J.A. Slavin, J.A. Gilbert, H. Korth, B.J. Anderson, G. Gloeckler, S.M. Krimigis, D.N. Baker, R.L. McNutt, Jr., S.C. Solomon (2013), Distribution and compositional variations of plasma ions in Mercury's space environment: The first three Mercury years of MESSENGER observations, *J. Geophys. Res.*, 118, 1604–1619, doi:10.1029/2012JA018073.

2012

Anderson, B. J., J. A. Slavin, H. Korth, S. A. Boardsen, T. H. Zurbuchen, **J. M. Raines**, G. Gloeckler, R. L. McNutt, and S. C. Solomon (2011a), The dayside magnetospheric boundary layer at Mercury, *Planetary and Space Science*, 59(15), 2037-2050, Doi 10.1016/J.Pss.2011.01.010.

Anderson, B. J., C. L. Johnson, H. Korth, M. E. Purucker, R. M. Winslow, J. A. Slavin, S. C. Solomon, R. L. McNutt, **J. M. Raines**, and T. H. Zurbuchen (2011b), The Global Magnetic Field of Mercury from MESSENGER Orbital Observations, *Science*, 333(6051), 1859-1862, Doi 10.1126/Science.1211001.

Gershman, D. J., T. H. Zurbuchen, L. A. Fisk, J. A. Gilbert, **J. M. Raines**, B. J. Anderson, C. W. Smith, H. Korth, and S. C. Solomon (2012), Solar wind alpha particles and heavy ions in the inner heliosphere observed with MESSENGER, *J Geophys Res-Space*, 117, A00m02, Doi 10.1029/2012ja017829.

Slavin, J. A., B. J. Anderson, D. N. Baker, M. Benna, S. A. Boardsen, R. E. Gold, G. C. Ho, S. M. Imber, H. Korth, S. M. Krimigis, R. L. McNutt, **J. M. Raines**, M. Sarantos, D. Schriver, S. C. Solomon, P. Travnicek, and T. H. Zurbuchen (2012a), MESSENGER and Mariner 10 flyby observations of magnetotail structure and dynamics at Mercury, *J Geophys Res-Space*, 117, A01215, Doi 10.1029/2011ja016900.

Slavin, J. A., S. M. Imber, S. A. Boardsen, G. A. DiBraccio, T. Sundberg, M. Sarantos, T. Nieves-Chinchilla, A. Szabo, B. J. Anderson, H. Korth, T. H. Zurbuchen, **J. M. Raines**, C. L. Johnson, R. M. Winslow, R. M. Killen, R. L. McNutt, and S. C. Solomon (2012b), MESSENGER observations of a flux-transfer-event shower at Mercury, *J Geophys Res-Space*, 117, Artn A00m06, Doi 10.1029/2012ja017926.

Sundberg, T., S. A. Boardsen, J. A. Slavin, B. J. Anderson, H. Korth, T. H. Zurbuchen, **J. M. Raines**, and S. C. Solomon (2012a), MESSENGER orbital observations of large-amplitude Kelvin-Helmholtz waves at Mercury's magnetopause, *J Geophys Res-Space*, 117, A04216, Doi 10.1029/2011ja017268.

Sundberg, T., J. A. Slavin, S. A. Boardsen, B. J. Anderson, H. Korth, G. C. Ho, D. Schriver, V. M. Uritsky, T. H. Zurbuchen, **J. M. Raines**, D. N. Baker, S. M. Krimigis, R. L. McNutt, and S. C. Solomon (2012b), MESSENGER observations of dipolarization events in Mercury's magnetotail, *J Geophys Res-Space*, 117, Artn A00m03
Doi 10.1029/2012ja017756.

2011

- Baker, D. N., D. Odstrcil, B. J. Anderson, C. N. Arge, M. Benna, G. Gloeckler, H. Korth, L. R. Mayer, **J. M. Raines**, D. Schriver, J. A. Slavin, S. C. Solomon, P. M. Travnicek, and T. H. Zurbuchen (2011), The space environment of Mercury at the times of the second and third MESSENGER flybys, *Planetary and Space Science*, 59(15), 2066-2074, Doi 10.1016/J.Pss.2011.01.018.
- Korth, H., B. J. Anderson, **J. M. Raines**, J. A. Slavin, T. H. Zurbuchen, C. L. Johnson, M. E. Purucker, R. M. Winslow, S. C. Solomon, and R. L. McNutt (2011), Plasma pressure in Mercury's equatorial magnetosphere derived from MESSENGER Magnetometer observations, *Geophysical Research Letters*, 38, L22201, Doi 10.1029/2011gl049451.
- Raines, J. M.**, J. A. Slavin, T. H. Zurbuchen, G. Gloeckler, B. J. Anderson, D. N. Baker, H. Korth, S. M. Krimigis, and R. L. McNutt (2011), MESSENGER observations of the plasma environment near Mercury, *Planetary and Space Science*, 59(15), 2004-2015, Doi 10.1016/J.Pss.2011.02.004.
- Schriver, D., P. M. Travnicek, B. J. Anderson, M. Ashour-Abdalla, D. N. Baker, M. Benna, S. A. Boardsen, R. E. Gold, P. Hellinger, G. C. Ho, H. Korth, S. M. Krimigis, R. L. McNutt, **J. M. Raines**, R. L. Richard, J. A. Slavin, S. C. Solomon, R. D. Starr, and T. H. Zurbuchen (2011), Quasi-trapped ion and electron populations at Mercury, *Geophysical Research Letters*, 38, L23103, Doi 10.1029/2011gl049629.
- Zurbuchen, T. H., **J. M. Raines**, J. A. Slavin, D. J. Gershman, J. A. Gilbert, G. Gloeckler, B. J. Anderson, D. N. Baker, H. Korth, S. M. Krimigis, M. Sarantos, D. Schriver, R. L. McNutt, and S. C. Solomon (2011), MESSENGER Observations of the Spatial Distribution of Planetary Ions Near Mercury, *Science*, 333(6051), 1862-1865, Doi 10.1126/Science.1211302.

2010

- Anderson, B. J., M. H. Acuna, H. Korth, J. A. Slavin, H. Uno, C. L. Johnson, M. E. Purucker, S. C. Solomon, **J. M. Raines**, T. H. Zurbuchen, G. Gloeckler, and R. L. McNutt (2010), The Magnetic Field of Mercury, *Space Science Reviews*, 152(1-4), 307-339, Doi 10.1007/S11214-009-9544-3.
- Benna, M., B. J. Anderson, D. N. Baker, S. A. Boardsen, G. Gloeckler, R. E. Gold, G. C. Ho, R. M. Killen, H. Korth, S. M. Krimigis, M. E. Purucker, R. L. McNutt, **J. M. Raines**, W. E. McClintock, M. Sarantos, J. A. Slavin, S. C. Solomon, and T. H. Zurbuchen (2010), Modeling of the magnetosphere of Mercury at the time of the first MESSENGER flyby, *Icarus*, 209(1), 3-10, Doi 10.1016/J.Icarus.2009.11.036.
- Slavin, J. A., B. J. Anderson, D. N. Baker, M. Benna, S. A. Boardsen, G. Gloeckler, R. E. Gold, G. C. Ho, H. Korth, S. M. Krimigis, R. L. McNutt, L. R. Nittler, **J. M. Raines**, M. Sarantos, D. Schriver, S. C. Solomon, R. D. Starr, P. M. Travnicek, and T. H. Zurbuchen (2010), MESSENGER Observations of Extreme Loading and Unloading of Mercury's Magnetic Tail, *Science*, 329(5992), 665-668, Doi 10.1126/Science.1188067.

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- Baker, D. N., D. Odstrcil, B. J. Anderson, C. N. Arge, M. Benna, G. Gloeckler, **J. M. Raines**, D. Schriver, J. A. Slavin, S. C. Solomon, R. M. Killen, and T. H. Zurbuchen (2009), Space environment of Mercury at the time of the first MESSENGER flyby: Solar wind and interplanetary magnetic field modeling of upstream conditions, *J Geophys Res-Space*, 114, Artn A10101, Doi 10.1029/2009ja014287.
- Benna, M., M. H. Acuna, B. J. Anderson, S. Barabash, S. A. Boardsen, G. Gloeckler, R. E. Gold, G. C. Ho, H. Korth, S. M. Krimigis, R. L. McNutt, **J. M. Raines**, M. Sarantos, J. A. Slavin, S. C. Solomon, T. L. L. Zhang, and T. H. Zurbuchen (2009), Modeling the response of the

- induced magnetosphere of Venus to changing IMF direction using MESSENGER and Venus Express observations, *Geophysical Research Letters*, 36, L04109, Doi 10.1029/2008gl036718.
- Slavin, J. A., M. H. Acuna, B. J. Anderson, D. N. Baker, M. Benna, S. A. Boardsen, G. Gloeckler, R. E. Gold, G. C. Ho, H. Korth, S. M. Krimigis, R. L. McNutt, **J. M. Raines**, M. Sarantos, D. Schriver, S. C. Solomon, P. Travnicek, and T. H. Zurbuchen (2009a), MESSENGER Observations of Magnetic Reconnection in Mercury's Magnetosphere, *Science*, 324(5927), 606-610, Doi 10.1126/Science.1172011.
- Slavin, J. A., M. H. Acuna, B. J. Anderson, S. Barabash, M. Benna, S. A. Boardsen, M. Fraenz, G. Gloeckler, R. E. Gold, G. C. Ho, H. Korth, S. M. Krimigis, R. L. McNutt, **J. M. Raines**, M. Sarantos, S. C. Solomon, T. Zhang, and T. H. Zurbuchen (2009b), MESSENGER and Venus Express observations of the solar wind interaction with Venus, *Geophysical Research Letters*, 36, L09106, Doi 10.1029/2009gl037876.
- Slavin, J. A., B. J. Anderson, T. H. Zurbuchen, D. N. Baker, S. M. Krimigis, M. H. Acuna, M. Benna, S. A. Boardsen, G. Gloeckler, R. E. Gold, G. C. Ho, H. Korth, R. L. McNutt, **J. M. Raines**, M. Sarantos, D. Schriver, S. C. Solomon, and P. Travnicek (2009c), MESSENGER observations of Mercury's magnetosphere during northward IMF, *Geophysical Research Letters*, 36, L02101, Doi 10.1029/2008gl036158.

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- Slavin, J. A., M. H. Acuna, B. J. Anderson, D. N. Baker, M. Benna, G. Gloeckler, R. E. Gold, G. C. Ho, R. M. Killen, H. Korth, S. M. Krimigis, R. L. McNutt, L. R. Nittler, **J. M. Raines**, D. Schriver, S. C. Solomon, R. D. Starr, P. Travnicek, and T. H. Zurbuchen (2008), Mercury's magnetosphere after MESSENGER's first flyby, *Science*, 321(5885), 85-89, Doi 10.1126/Science.1159040.
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- Andrews, G. B., T. H. Zurbuchen, B. H. Mauk, H. Malcom, L. A. Fisk, G. Gloeckler, G. C. Ho, J. S. Kelley, P. L. Koehn, T. W. LeFevre, S. S. Livi, R. A. Lundgren, and **J. M. Raines** (2007), The energetic particle and plasma spectrometer instrument on the MESSENGER spacecraft, *Space Science Reviews*, 131(1-4), 523-556, Doi 10.1007/S11214-007-9272-5.
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- Reisenfeld, D. B., D. S. Burnett, R. H. Becker, A. G. Grimberg, V. S. Heber, C. M. Hohenberg, A. J. G. Jurewicz, A. Meshik, R. O. Pepin, **J. M. Raines**, D. J. Schlutter, R. Wieler, R. C. Wiens, and T. H. Zurbuchen (2007), Elemental abundances of the bulk solar wind: Analyses from genesis and ACE, *Space Science Reviews*, 130(1-4), 79-86, Doi 10.1007/S11214-007-9215-1.

2006

- Ko, Y. K., J. C. Raymond, T. H. Zurbuchen, P. Riley, **J. M. Raines**, and L. Strachan (2006), Abundance variation at the vicinity of an active region and the coronal origin of the slow solar wind, *Astrophys J*, 646(2), 1275-1287, Doi 10.1086/505021.

2005

Raines, J. M., S. T. Lepri, T. H. Zurbuchen, G. Gloeckler, and L. A. Fisk (2005), Heavy ions in the solar wind: A new dataset from ACE, *Esa Sp Publ*, 592, 539-542,

2004

Zurbuchen, T. H., G. Gloeckler, F. Ipavich, **J. Raines**, C. W. Smith, and L. A. Fisk (2004), On the fast coronal mass ejections in October/November 2003: ACE-SWICS results, *Geophysical Research Letters*, 31(11), L11805, Doi 10.1029/2004gl019461.

2003

Skinner, W. R., A. R. Marshall, D. A. Gell, and **J. Raines** (2003), The high resolution Doppler imager: Status update 12 years after launch, *Optical Spectroscopic Techniques and Instrumentation for Atmospheric and Space Research V*, 5157, 231-241, Doi 10.1117/12.504563.