

Steven A. Hauck, II

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Education

- Washington University in St. Louis Earth and Planetary Sciences Ph.D. – 2001
- Washington University in St. Louis Earth and Planetary Sciences A.M. – 1998
- University of Minnesota Aerospace Engineering and Mechanics B.A.E.M. – 1996

Appointments

- Associate Professor Case Western Reserve University 2009 – Present
- Assistant Professor Case Western Reserve University 2003 – 2009
- Postdoctoral Associate Carnegie Institution of Washington 2001 – 2003
- Graduate Research Assistant Washington University in St. Louis 1996 – 2001
- Graduate Teaching Assistant Washington University in St. Louis 1996 – 1999
- Undergraduate Teaching Assistant University of Minnesota 1995 – 1996
- Undergraduate Research Assistant University of Minnesota 1994

Honors

- MESSENGER Participating Scientist 2007 – 2013
- Carl Tolman Outstanding Graduate Teaching Assistant Award 1998 – 1999
 - *Department of Earth and Planetary Sciences, Washington University*
- Letter of Recognition - Teaching Assistant 1996 – 1997
 - *Department of Earth and Planetary Sciences, Washington University*
- Stephen E. Dwornik Planetary Geoscience Student Paper Award – Honorable Mention 1997
 - *Geological Society of America.*
- National Merit Scholar 1992

Service to Community

- National Research Council, Planetary Science Decadal Survey Inner Planets Panel 2009 – 2011
- Guest Editor, *Icarus*, MESSENGER Special Issue 2009 – 2010
- NASA Venus Exploration Analysis Group – *Planetary Formation and Evolution Focus Group* 2005 – Present
- Associate Editor, *Journal of Geophysical Research – Planets* 2003 – 2007
- Session Organizer, Fall 2005 AGU Meeting, *Diversity of Planetary Magnetic Fields in the Solar System* 2005
- Member, NASA Mars Fundamental Research Program Review Panel 2003, 2004
- Member, NASA Mars Data Analysis Program Review Panel 2001, 2007
- Group Chief, NASA Planetary Geology and Geophysics Review Panel 2008
- Proposal Reviewer, NASA, NSF, Netherlands Organization for Scientific Research (NWO)
- Peer Reviewer, *Astrobiology, Astrophysical Journal, Earth and Planetary Science Letters, Geophysical Research Letters, Icarus, Journal of Geophysical Research, Physics of the Earth and Planetary Interiors, Planetary and Space Science*

Institutional Service

- Advisory Committee on Research Computing 2005 – Present
- Arts and Sciences Strategic Planning Task Force on Infrastructure 2008
- University Undergraduate Faculty Curriculum Committee 2005 – 2007
- Case High Performance Computing Technical Working Group 2004 – 2005

Department Service

- Faculty Search Committee 2009 – 2010
- Website Redesign Committee 2006 – Present
- Graduate Admissions Committee 2003 – Present
- Journal Club Coordinator 2003 – Present
- Department *Experience Case* Coordinator 2006 – 2009
- Faculty Search Committee 2004 – 2005
- Department Seminar Coordinator 2004 – 2006

Advising and Mentoring

- Ph.D: J. Andreas Ritzer (Fall 2004 – Present), Katherine Crispin (w/J. Van Orman, Fall 2005 – Present), Jeffrey Balcerski (Fall 2008 – Present).
- Undergraduate research: Derek Smith (Summer 2005), David Blair (2005 – 2007), Zachary Newman (2006 – 2007), Andrew Opsitnick (2007 –2008), Andrew Enns (2008), Marinda Mitchell (Summer 2009 –).
- Thesis Advising/Examination committees: Molly Yunker (M.S. 2005), Bin Zhang (Ph.D. student in Civil Engineering, 2007), Katherine Crispin (current Ph.D. student)
- Case Western Reserve University Geological Society (CWRUGS) Advisor 2005 – Present

Professional Society Memberships

- American Geophysical Union 1994 – Present

Invited Professional Presentations

- University of California – Los Angeles 2007
- JASON Project Professional Development Workshop 2005
- Case Western Reserve University – Department of Astronomy 2004
- University of Illinois – Chicago 2003
- Case Western Reserve University 2003
- 34th Interface Foundation Symposia, Montreal 2002
- Princeton University 2001
- Brown University – Vernadsky Institute Microsymposium 1999

Invited Public Lectures

- Third Saturday Series, NASA Glenn Research Center Visitor's Center 2008
- Frontiers of Astronomy Lecture Series, Case Dept. of Astronomy, Cleveland Astronomical Society, and Cleveland Museum of Natural History 2005
- Cleveland Astronomical Society 2005
- Ecophilia 2004
- Northern Ohio Geological Society 2004

Workshops

- Early Career Faculty Workshop: Teaching, Research, and Managing Your Career, College of William and Mary 2004

Peer-reviewed Publications (Hauck and his students in bold, § = student author)

- §Vilim, R., S. Stanley, **S. A. Hauck, II**, Iron snow zones as a mechanism for generating Mercury's weak observed magnetic field, *Journal of Geophysical Research*, *submitted*.
- Zuber, M. T., L. G. J. Montesi, G. T. Farmer, **S. A. Hauck, II**, §**J. A. Ritzer**, R. J. Phillips, S. C. Solomon, D. E. Smith, M. J. Talpe, J. W. Head III, G. A. Neumann, T. R. Watters, C. L. Johnson, Lithospheric strain accommodation on Mercury from altimetric profiles of ridges and lobate scarps measured during MESSENGER flybys 1 and 2, *Icarus*, *submitted*.
- Zuber, M. T., D. E. Smith, R. J. Phillips, S. C. Solomon, G. A. Neumann, F. J. Lemoine, S. J. Peale, J. Margot, M. H. Torrence, M. J. Talpe, J. W. Head, **S. A. Hauck**, C. L. Johnson, M. E. Perry, O. S. Barnouin-Jha, R. L. McNutt, J. Oberst, The equatorial shape and gravity field of Mercury from MESSENGER flybys 1 and 2, *Icarus*, *submitted*.
- §**Ritzer, J. A.**, and **S. A. Hauck, II**, Lithospheric structure and tectonics at Isidis Planitia, Mars, *Icarus*, 201, 528-539, 2009.
- Watters, T.R., S.C. Solomon, M.S. Robinson, J.W. Head, S.L. Andre, **S. A. Hauck, II**, and S.L. Murchie, The tectonics of Mercury: The view after MESSENGER's first flyby, *Earth and Planetary Science Letters*, 285, 283-296, 2009.
- Dombard, A. J., and **S. A. Hauck, II**, Despinning plus global contraction and the orientation of lobate scarps on Mercury, *Icarus*, 198, 274-276, 2008.
- Andrews-Hanna, J. C., M. T. Zuber, and **S. A. Hauck, II**, Strike-slip faults on Mars: Observations and implications for global tectonics and geodynamics, *Journal of Geophysical Research*, 113, E08002, doi: 10.1029/2007JE002980, 2008.
- Zuber, M. T., D. E. Smith, S. C. Solomon, R. J. Phillips, S. J. Peale, J. W. Head III, **S. A. Hauck, II**, R. L. McNutt, Jr., J. Oberst, G. A. Neumann, F. G. Lemoine, X. Sun, O. Barnouin-Jha, J. K. Harmon, Laser altimeter observations from MESSENGER's first Mercury flyby, *Science*, 321, 77-79, doi: 10.1126/science.1159086, 2008.
- §Chen, B., J. Li, and **S. A. Hauck, II**, Non-ideal liquidus curve in the Fe-S system and Mercury's snowing core, *Geophysical Research Letters*, 35, L07201, doi: 10.1029/2008GL033311, 2008.
- Breuer, D., **S. A. Hauck, II**, M. Buske, M. Pauer, and T. Spohn, Interior evolution of Mercury, *Space Science Reviews*, 132, 229-260, doi:10.1007/s11214-007-9228-9, 2007.
- Zuber, M.T., O Aharonson, J. M. Aurnou, A. F. Cheng, **S. A. Hauck, II**, M. H. Heimpel, G. A. Neumann, S. J. Peale, R. J. Phillips, D. E. Smith, S. C. Solomon, and S. Stanley, The geophysics of Mercury: Current knowledge and future opportunities, *Space Science Reviews*, 131, 105-132, doi:10.1007/s11215-007-9265-4, 2007.
- **Hauck, S. A., II**, S. C. Solomon, and §**D. A. Smith**, Predicted recovery of Mercury's internal structure by MESSENGER, *Geophysical Research Letters*, 34, L18201, doi: 10.1029/2007GL030793, 2007.
- Tarter, J., Backus, P., Mancinelli, R., Aurnou, J., Backman, D., Basri, G., Boss, A., Clarke, A., Deming, D., Doyle, L., Feigelson, E., Freund, F., Grinspoon, D., Haberle, R., **Hauck, S.**, Heath, M., Henry, T., Hollingsworth, J., Joshi, M., Kilston, S., Liu, M., Meikle, E., Reid, I., Rothschild, L., Scalo, J., Segura, A., Tang, C., Tiedje, J., Turnbull, M., Walkowicz, L., Weber, A., Young, R., A re-appraisal of the habitability of planets around M dwarf stars, *Astrobiology*, 7, 30-65, 2007.
- **Hauck, S. A., II**, J. M. Aurnou, and A. J. Dombard, Sulfur's impact on core evolution and magnetic field generation on Ganymede, *Journal of Geophysical Research*, 111, E09008, doi:10.1029/2005JE002557, 2006.
- Solomon, S. C., O. Aharonson, J. M. Aurnou, W. B. Banerdt, M. H. Carr, A. J. Dombard, H. V. Frey, M. P. Golombek, **S. A. Hauck, II**, J. W. Head, III, B. M. Jakosky, C. L. Johnson, P. J. McGovern, G. A. Neumann, R. J. Phillips, D. E. Smith, and M. T. Zuber, New perspectives on ancient Mars, *Science*, 307, 1214-1220, 2005.
- **Hauck, S. A., II**, A. J. Dombard, R. J. Phillips, S. C. Solomon, Internal and tectonic evolution of Mercury, *Earth and Planetary Science Letters*, 222, 713-728, 2004.

- **Hauck, S. A., II**, R. J. Phillips, Thermal and crustal evolution of Mars, *Journal of Geophysical Research*, 107, 5052, 10.1029/2001JE001801, 2002.
- Phillips, R. J., M. A. Bullock, **S. A. Hauck, II**, Climate and interior coupled evolution on Venus, *Geophysical Research Letters*, 28, 1779-1782, 2001.
- Phillips, R. J., M. T. Zuber, S. C. Solomon, M. P. Golombek, B. M. Jakosky, W. B. Banerdt, D. E. Smith, R. M. Williams, B. Hynek, O. Aharonson, **S. A. Hauck, II**, Ancient geodynamics and global-scale hydrology on Mars, *Science*, 291, 2587-2591, 2001.
- **Hauck, S. A., II**, R. J. Phillips, A. M. Hofmeister, Variable conductivity: Effects on the thermal structure of subducting slabs, *Geophysical Research Letters*, 26, 3257-3260, 1999.
- Smith, D. E., M. T. Zuber, S. C. Solomon, R. J. Phillips, J. W. Head, J. B. Garvin, W. B. Banerdt, D. O. Muhleman, G. H. Pettengill, G. A. Neumann, F. G. Lemoine, J. B. Abshire, O. Aharonson, C. D. Brown, **S. A. Hauck**, A. B. Ivanov, P. J. McGovern, H. J. Zwally, and T. C. Duxbury, The global topography of Mars and implications for surface evolution, *Science*, 284, 1495-1503, 1999.
- **Hauck, S. A., II**, R. J. Phillips, M. H. Price, Venus: Crater distribution and plains resurfacing models, *Journal of Geophysical Research*, 103, 13,635-13,642, 1998.

Published Abstracts

(§ = Graduate student author)

- Phillips, R. J., M. T. Zuber, D. E. Smith, S. C. Solomon, G. A. Neumann, F. G. Lemoine, S. J. Peale, J. Margot, C. L. Johnson, **S. A. Hauck**, T. R. Watters, G. T. Farmer, M. E. Perry, AGU Fall Meeting, P23D-02 (cdrom), December 2009.
- §Vilim, R., S. Stanley, **S. A. Hauck**, Dynamo models incorporating iron “snow zones” consistent with Mercury’s weak magnetic field, AGU Fall Meeting, San Francisco, CA, P31C-1264 (cdrom), December 2009.
- Stofan, E. R., S. J. Mackwell, B. A. Cohen, M. S. Gilmore, L. S. Glaze, D. H. Grinspoon, **S. A. Hauck**, A. Howard, C. R. Shearer, D. Stetson, E. M. Stolper, A. H. Treiman, Mercury, Venus, and the Moon: The Next Decade, Fall AGU Meeting, San Francisco, CA, P51H-01 (cdrom), December 2009.
- Solomon, S. C., A. M. Freed, **S. A. Hauck, II**, J. W. Head, L. Kerber, R. J. Phillips, M. S. Robinson, T. R. Watters, M. T. Zuber, The geophysical evolution of Mercury, GSA Annual Meeting, 197-2 (cdrom), October 2009.
- §Vilim, R., S. Stanley, and **S. Hauck**, Dynamo models incorporating iron “snow zones” consistent with Mercury’s weak observed magnetic field, Spring AGU Meeting, Montreal, Canada, DI71A-02 (cdrom), May 2009.
- Barnouin-Jha, O., M. T. Zuber, J. Oberst, F. Preusker, D. E. Smith, G. A. Neumann, S. C. Solomon, **S. A. Hauck, II**, R. J. Phillips, J. W. Head, III, L. M. Prockter, M. S. Robinson, Assessing the relationship between crater depth and diameter on Mercury with topographic measurements by MESSENGER, *40th Lunar and Planetary Science Conference*, League City, TX, 1638 (cdrom), 2009.
- Solomon, S. C., A. M. Freed, **S. A. Hauck, II**, J. W. Head, III, L. Kerber, R. J. Phillips, M. S. Robinson, T. R. Watters, and Maria T. Zuber, MESSENGER’S newly global perspective on Mercury: Some implications for interior evolution, *40th Lunar and Planetary Science Conference*, League City, TX, 1750 (cdrom), 2009.
- Zuber, M.T., G. T. Farmer, **S. A. Hauck, II**, §**J. A. Ritzer**, R. J. Phillips, S. C. Solomon, D. E. Smith, J. W. Head, III, G. A. Neumann, M. S. Robinson, T. R. Watters, C. L. Johnson, J. Oberst, O. Barnouin-Jha, R.L McNutt, Jr., Observations of ridges and lobate scarps on Mercury from MESSENGER altimetry and imaging and implications for lithospheric strain, *40th Lunar and Planetary Science Conference*, League City, TX, 1813 (cdrom), 2009.
- **Hauck, S.A., II**, Connecting spacecraft observations to planetary evolution, Fall AGU Meeting, San Francisco, CA, P44C-04 (cdrom), December 2008.

- **§Ritzer, J. A., S. A. Hauck, II**, C.L. Johnson, R. J. Phillips, and M.T. Zuber, Prospects for the Representation of Geophysical Fields from MESSENGER Observations of Mercury Using Harmonic Radial Bases, Fall AGU Meeting, San Francisco, CA, U21A-0010 (cdrom), December 2008.
- §Vilim, R., S. Stanley, and **S. A. Hauck, II**, The effect of iron “snow” layers on magnetic field generation in Mercury, Fall AGU Meeting, San Francisco, CA, U21A-0004 (cdrom), December 2008.
- Smith, D.E., M.T. Zuber, R. J. Phillips. S.C. Solomon, S. J. Peale, F. G. Lemoine, M. H. Torrence, M. Perry, **S. A. Hauck**, J. Margot, J. Oberst, and C.L. Johnson, The Mercury gravity field: MESSENGER observations, Fall AGU Meeting, San Francisco, CA, U11C-03 (cdrom), December 2008.
- Zuber, M.T., D. E. Smith, S.C. Solomon, R. J. Phillips. S. J. Peale, J. W. Head, **S. A. Hauck**, R.L. McNutt, J. Oberst, G.A. Neumann, F.G., Lemoine, X. Sun, O. Barnouin-Jha and C.L. Johnson, Topography of equatorial Mercury from MESSENGER flybys 1 and 2, Fall AGU Meeting, San Francisco, CA, U11C-04 (cdrom), December 2008.
- Watters, T.R., S.C. Solomon, M. S. Robinson, S. L. Murchie, J.W. Head, S.L. Andre, **S.A. Hauck**, and L.M. Prockter, The global tectonics of Mercury, Fall AGU Meeting, San Francisco, CA, U21A-0007 (cdrom), December 2008.
- Mohit, P.S., R.J. Phillips, C.L. Johnson, **S.A. Hauck**, M.T. Zuber, G. A. Neumann, and S.C. Solomon, Lateral viscosity variations and the contractional history of Mercury, Fall AGU Meeting, San Francisco, CA, U21C-0016 (cdrom), December 2008.
- Zuber, M. T., D. E. Smith, R. J. Phillips, S. C. Solomon, S. J. Peale, J. W. Head, **S. A. Hauck**, J. Margot, J. Oberst, C. L. Johnson, G. A. Neumann, F. G. Lemoine, X. Sun, M. Perry, O. Barnouin-Jha, J. K. Harmon, Topography and gravity results from MESSENGER’s first flyby of Mercury, Spring AGU – Joint Assembly, Fort Lauderdale, U23A-02 (cdrom), 2008.
- **§Ritzer, J. A., S. A. Hauck, II**, and C. L. Johnson, Spherical splines: Beyond spherical harmonics for non-uniform geophysical datasets on the Moon and Mercury, *39th Lunar and Planetary Science Conference*, League City, TX, 2338 (cdrom), 2008.
- §Chen, B., J. Li, and **S. A. Hauck, II**, Experimental constraints on the state of Mercury’s core, *39th Lunar and Planetary Science Conference*, League City, TX, 1486 (cdrom), 2008.
- Smith, D. E., M. T. Zuber, R. J. Phillips, S. C. Solomon, S. J. Peale, J.-L. Margot, F. G. Lemoine, G. A. Neumann, M. E. Perry, D. K. Srinivasan, M. H. Torrence, and **S. A. Hauck, II**, Mercury gravity observations during the MESSENGER flyby of January 2008, *39th Lunar and Planetary Science Conference*, League City, TX, (cdrom), 2008.
- §Chen, B., J. Li, and **S. A. Hauck, II**, Effect of pressure on the melting behavior of the Fe-S system at moderate pressures: Insight into the state of Mercury’s core, Fall AGU Meeting, San Francisco, CA, DI31A-0257 (cdrom), December 2007.
- **§Ritzer, J. A., and S. A. Hauck, II**, Influence of external loads on interpretations of lithospheric flexure and tectonics at Isidis Planitia, Mars, *38th Lunar and Planetary Science Conference*, League City, TX, 2244 (cdrom), 2007.
- Dombard, A. J., and **S. A. Hauck, II**, Despinning plus global contraction and the orientation of lobate scarps on Mercury, *38th Lunar and Planetary Science Conference*, League City, TX, 2026 (cdrom), 2007.
- **§Ritzer, J. A., and S. A. Hauck, II**, Crustal and lithospheric structure at Isidis Planitia, Mars, North Central Section GSA Meeting, GSA Abstracts with Programs Vol. 38, No. 4, 2006.
- **§Ritzer, J. A., and S. A. Hauck, II**, Crustal and lithospheric structure at Isidis Planitia, Mars, Fall AGU Meeting, San Francisco, CA, P51B-0923 (cdrom), December 2005.
- **Hauck, S. A., II**, J. M. Aurnou, and A. J. Dombard, Sulfur’s impact on core evolution and magnetic field generation on Ganymede, Fall AGU Meeting, San Francisco, CA, GP43A-0889 (cdrom), December 2005.

- Solomon, S. C., O. Aharonson, **S.A. Hauck, II**, B.M. Jakosky, R. J. Phillips, and M. T. Zuber, Why the Martian mantle is (mostly) wet, *36th Lunar and Planetary Science Conference*, Houston, TX, 1689 (cdrom), March 2005.
- Solomon, S. C with **S.A. Hauck, II** and 15 others, New perspectives on early Mars, Second Conference on Early Mars, Jackson Hole, WY, 8087 (cdrom), October 2004.
- **Hauck, S. A., II**, S. C. Solomon, Mercury: Determination of internal structure and evolution, *35th Lunar and Planetary Science Conference*, Houston, TX, March 2004.
- **Hauck, S. A., II**, S. C. Solomon, A. J. Dombard, R. J. Phillips, Internal and tectonic evolution of Mercury, AGU-EGS-EUG, Nice, France, April 2003.
- **Hauck, S. A., II**, S. C. Solomon, R. J. Phillips, Potential sources of Hesperian contractional tectonics on Mars, *34th Lunar and Planetary Science Conference*, Houston, TX, March 2003.
- Solomon, S. C., with **S. A. Hauck, II** and 11 others, Why are there so few magnetic anomalies in Martian lowlands and basins?, *34th Lunar and Planetary Science Conference*, Houston, TX, March 2003.
- **Hauck, S. A., II**, Statistics on Venus: Craters and Catastrophes (?), Interface Foundation Symposia, Montreal, Canada, April 2002.
- **Hauck, S. A., II**, A. J. Dombard, S. C. Solomon, J. M. Aurnou, Internal structure and mechanisms of core convection on Ganymede, *33rd Lunar and Planetary Science Conference*, Houston, TX, March 2002.
- Solomon, S. C. with **S. A. Hauck, II** and 17 others, Insights into the earliest history of Mars: A new synthesis, *33rd Lunar and Planetary Science Conference*, Houston, TX, March 2002.
- **Hauck, S. A., II**, A. J. Dombard, R. J. Phillips, S. C. Solomon, Mercury's thermal, tectonic, and magmatic evolution, *Mercury: Space Environment, Surface and Interior*, Chicago, IL, October 2001.
- Dombard, A. J, **S. A. Hauck, II**, S. C. Solomon, R. J. Phillips, Potential for long-wavelength folding on Mercury, *32nd Lunar and Planetary Science Conference*, Houston, TX, March 2001.
- **Hauck, S. A., II**, R. J. Phillips, Partial melting, crustal differentiation, and the thermo-magmatic evolution of Mars, AGU Fall Meeting, San Francisco, CA, December 2000.
- Phillips, R. J., M. A. Bullock, D. H. Grinspoon, B. M. Hynek, O. Aharonson, R. M. Williams, **S. A. Hauck, II**, Did Tharsis influence climate and fluvial activity on Mars?, AGU Fall Meeting, San Francisco, CA, December 2000.
- **Hauck, S. A., II**, A. J. Dombard, R. J. Phillips, S. C. Solomon, Thermo-compressional evolution of Mercury, AGU Spring Meeting, Washington, DC, June 2000.
- **Hauck, S. A., II**, R. J. Phillips, "Mars' Dirty Little Secret", *31st Lunar and Planetary Science Conference*, Houston, TX, March 2000.
- Phillips, R. J., M. T. Zuber, **S. A. Hauck, II**, R. M. Williams, K. B. Portle, Why is there a negative gravity ring around Tharsis on Mars?, *31st Lunar and Planetary Science Conference*, Houston, TX, March 2000.
- **Hauck, S. A., II**, R. J. Phillips, A. M. Hofmeister, Effects of temperature- and pressure-dependent thermal conductivity and the thermal structure of subducting slabs, AGU Fall Meeting, San Francisco, CA, December, 1998.
- Phillips, R. J., C. D. Brown, **S. A. Hauck, II**, B. W. Harrington, M. A. Wieczorek, Channel and valley networks on Mars: Results from the MGS MOLA experiment, AGU Spring Meeting, Boston, MA, May, 1998.
- Phillips, R. J., C. D. Brown, **S. A. Hauck, II**, B. W. Harrington, M. A. Wieczorek, Preliminary geomorphology results from the MGS MOLA experiment, *29th Lunar and Planetary Science Conference*, Houston, TX, March 1998.
- **Hauck, S. A., II**, R. J. Phillips, M. H. Price, Venus craters and resurfacing: More realistic constraints and models, *AGU Chapman Conference - Geodynamics of Venus*, Snowmass, CO, September, 1997.

- **Hauck, S. A., II**, R. J. Phillips, M. H. Price, Implications for Venusian plains resurfacing from geomorphic mapping and impact crater densities, *28th Lunar and Planetary Science Conference*, Houston, TX, March 1997.