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Education

B.S. in Electrical Engineering (1976), Massachusetts Institute of Technology
M.S. in Electrical Engineering (1978), Stanford University
Ph.D. in Electrical Engineering (1984), Stanford University

Professional Positions

12/83-6/86: Research Associate, Stanford University
6/86-present: Senior Research Scientist, Stanford University
12/07-present: Principal Investigator, The SETI Institute

Fields of Interest

Meteorology and climate of Mars
Spacecraft exploration of the solar system
Atmospheric sounding through radio occultation experiments
Propagation and scattering of electromagnetic waves
Structure and dynamics of planetary atmospheres

Research Activities and Experience

Co-I New Horizons Radio Science Team (Pluto)
Co-I Mars Express Radio Science Team (Mars)
Co-I Mars Global Surveyor Radio Science Team (Mars)
Associate member of Galileo Radio Science Team (Jupiter)
Associate member of Voyager Radio Science Team (Uranus and Neptune)
Participant in radio occultation studies of the atmospheres of Venus, Mars, Jupiter, Io, Europa, Callisto, Saturn, Titan, Uranus, Neptune, and Triton

Awards

NASA Group Achievement Awards for Voyager 2 at Uranus, Voyager 2 at Neptune, Galileo Jupiter Orbiter, and Mars Global Surveyor

Publications

Spiga, A., F. Forget, S. Lewis, D. Hinson, Structure and dynamics of the convective boundary layer on Mars as inferred from large-eddy simulations and remote-sensing measurements, *Q. J. R. Meteorol. Soc.*, doi:10.1002/qj.563.
Hinson, D. P., and H. Wang, Further observations of regional dust storms and baroclinic eddies in the northern hemisphere of Mars, *Icarus*, 206, 290-305, doi:10.1016/j.icarus.2009.08.019, 2010.
Withers, P., M. Mendillo, D. P. Hinson, and K. Cahoy, Physical characteristics and occurrence rates of meteoric plasma layers detected in the Martian ionosphere by the Mars Global

- Surveyor Radio Science Experiment, *J. Geophys. Res.*, 113, A12314, doi:10.1029/2008JA013636, 2008.
- Hinson, D. P., M. Pätzold, S. Tellmann, B. Häusler, and G. L. Tyler, The depth of the convective boundary layer on Mars, *Icarus*, 198, 57-66, doi:10.1016/j.icarus.2008.07.003, 2008.
- Tyler, G. L., I. R. Linscott, M. K. Bird, D. P. Hinson, D. F. Strobel, M. Pätzold, M. E. Summers, and K. Sivaramakrishnan, The New Horizons Radio Science Experiment (REX), *Space Science Reviews*, 140, 217-259, doi:10.1007/s11214-007-9302-3, 2008.
- Hinson, D. P., M. Pätzold, R. J. Wilson, B. Häusler, S. Tellmann, and G. L. Tyler, Radio occultation measurements and MGCM simulations of Kelvin waves on Mars, *Icarus*, 193, 125-138, doi:10.1016/j.icarus.2007.09.009, 2008.
- Cahoy, K. L., D. P. Hinson, and G. L. Tyler, Characterization of a semidiurnal eastward-propagating tide at high northern latitudes with Mars Global Surveyor electron density profiles, *Geophys. Res. Lett.*, 34, L15201, doi:10.1029/2007GL030449, 2007.
- Montabone, L., S. R. Lewis, P. L. Read, and D. P. Hinson, Validation of martian meteorological data assimilation for MGS/TES using radio occultation measurements, *Icarus*, 185, 113-132, 2006.
- Hinson, D. P., Radio occultation measurements of transient eddies in the northern hemisphere of Mars, *J. Geophys. Res.*, 111, E05002, doi:10.1029/2005JE002612, 2006.
- Cahoy, K. L., D. P. Hinson, and G. L. Tyler, Radio science measurements of atmospheric refractivity with Mars Global Surveyor, *J. Geophys. Res.*, 111, E05003, doi:10.1029/2005JE002634, 2006.
- Mendillo, M., P. Withers, D. Hinson, H. Rishbeth, and B. Reinisch, Effects of solar flares on the ionosphere of Mars, *Science*, 311, 1135-1138, 2006.
- Creasey, J. E., J. M. Forbes, and D. P. Hinson, Global and seasonal distribution of gravity wave activity in Mars' lower atmosphere derived from MGS radio occultation data, *Geophys. Res. Lett.*, 33, L01803, doi:10.1029/2005GL024037, 2006.
- Withers, P., M. Mendillo, H. Rishbeth, D. P. Hinson, and J. Arkani-Hamed, Ionospheric characteristics above Martian crustal magnetic anomalies, *Geophys. Res. Lett.*, 32, L16204, doi:10.1029/2005GL023483, 2005.
- Pätzold, M., S. Tellmann, B. Häusler, D. Hinson, R. Schaa, and G. L. Tyler, "A Sporadic Third Layer in the Ionosphere of Mars," *Science*, 310, 837-839, 2005.
- Krymskii, A. M., N. F. Ness, D. H. Crider, T. K. Breus, M. H. Acuna, and D. P. Hinson, Solar wind interaction with the ionosphere/atmosphere and crustal magnetic fields at Mars: MGS Magnetometer/Electron Reflectometer, radio science, and accelerometer data, *J. Geophys. Res.*, 109, A11306, doi:10.1029/2004JA010420, 2004.
- Hinson, D. P., M. D. Smith, and B. J. Conrath, Comparison of atmospheric temperatures obtained through infrared sounding and radio occultation by Mars Global Surveyor, *J. Geophys. Res.*, 109, E12002, doi:10.1029/2004JE002344, 2004.
- Breus, T. K., A. M. Krymskii, D. H. Crider, N. F. Ness, D. Hinson, and K. K. Barashyan, Effect of the solar radiation in the topside atmosphere/ionosphere of Mars: Mars Global Surveyor observations, *J. Geophys. Res.*, 109, A09310, doi:10.1029/2004JA010431, 2004.
- Mendillo, M., X. Pi, S. Smith, C. Martinis, J. Wilson, and D. Hinson, Ionospheric effects upon a satellite navigation system at Mars, *Radio Sci.*, 39, RS2028, doi:10.1029/2003RS002933, 2004.

- Bougher, S. W., S. Engel, D. P. Hinson, and J. R. Murphy, MGS Radio Science electron density profiles: Interannual variability and implications for the Martian neutral atmosphere, *J. Geophys. Res.*, 109, E03010, doi:10.1029/2003JE002154, 2004.
- Hinson, D. P., and R. J. Wilson, Temperature inversions, thermal tides, and water ice clouds in the Martian tropics, *J. Geophys. Res.*, 109, E01002, doi:10.1029/2003JE002129, 2004.
- Krymskii, A. M., T. K. Breus, N. F. Ness, D. P. Hinson, and D. I. Bojkov, Effect of crustal magnetic fields on the near terminator ionosphere at Mars..., *J. Geophys. Res.*, 108(A12), 1431, doi:10.1029/2002JA009662, 2003.
- Mendillo, M., S. Smith, J. Wroten, H. Rishbeth, and D. Hinson, Simultaneous ionospheric variability on Earth and Mars, *J. Geophys. Res.*, 108(A12), 1432, doi:10.1029/2003JA009961, 2003.
- Hinson, D. P., R. J. Wilson, M. D. Smith, and B. J. Conrath, Stationary planetary waves in the atmosphere of Mars during southern winter, *J. Geophys. Res.*, 108(E1), 5004, doi:10.1029/2002JE001949, 2003.
- Kliore, A. J., A. Anabtawi, R. G. Herrera, S. W. Asmar, A. F. Nagy, D. P. Hinson, and F. M. Flasar, Ionosphere of Callisto from Galileo radio occultation observations, *J. Geophys. Res.*, 107(A11), 1407, doi:10.1029/2002JA009365, 2002.
- Hinson, D. P., and R. J. Wilson, Transient eddies in the southern hemisphere of Mars, *Geophys. Res. Lett.*, 29(7), 1154, doi:10.1029/2001GL014103, 2002.
- Tyler, G. L., G. Balmino, D. P. Hinson, W. L. Sjogren, D. E. Smith, R. A. Simpson, S. W. Asmar, P. Priest, and J. D. Twicken, Radio science observations with Mars Global Surveyor: Orbit insertion through one Mars year in mapping orbit, *J. Geophys. Res.*, 106, 23327-23348, 2001.
- Bougher, S. W., S. Engel, D. P. Hinson, and J. M. Forbes, Mars Global Surveyor radio science electron density profiles: Neutral atmosphere implications, *Geophys. Res. Lett.*, 28, 3091-3094, 2001.
- Hinson, D. P., G. L. Tyler, J. L. Hollingsworth, and R. J. Wilson, Radio occultation measurements of forced atmospheric waves on Mars, *J. Geophys. Res.*, 106, 1463-1480, 2001.
- Joshi, M., R. Haberle, J. Hollingsworth, and D. Hinson, A comparison of MGS Phase 1 aerobraking radio occultation data and the NASA Ames Mars GCM, *J. Geophys. Res.*, 105, 17601-17615, 2000.
- Hinson, D. P., R. A. Simpson, J. D. Twicken, G. L. Tyler, and F. M. Flasar, Initial results from radio occultation measurements with Mars Global Surveyor, *J. Geophys. Res.*, 104, 26997-27012, 1999.
- Hinson, D. P., A. J. Kliore, F. M. Flasar, J. D. Twicken, P. J. Schinder, and R. G. Herrera, Galileo radio occultation measurements of Io's ionosphere and plasma wake, *J. Geophys. Res.*, 103, 29,343-29,357, 1998.
- Hinson, D. P., J. D. Twicken, and E. T. Karayel, Jupiter's ionosphere: New results from Voyager 2 radio occultation measurements, *J. Geophys. Res.*, 103, 9505-9520, 1998.
- Kliore, A. J., D. P. Hinson, F. M. Flasar, A. F. Nagy, and T. E. Cravens, The ionosphere of Europa from Galileo radio occultations, *Science*, 277, 355-358, 1997.
- Hinson, D. P., F. M. Flasar, A. J. Kliore, P. J. Schinder, J. D. Twicken, and R. G. Herrera, Jupiter's ionosphere: Results from the first Galileo radio occultation experiment, *Geophys. Res. Lett.*, 24, 2107-2110, 1997.

- Karayel, E. T., and D. P. Hinson, Sub-Fresnel-scale vertical resolution in atmospheric profiles from radio occultation, *Radio Sci.*, 32, 411-423, 1997.
- Hinson, D. P., and J. M. Jenkins, Magellan radio occultation measurements of atmospheric waves on Venus, *Icarus*, 114, 310-327, 1995.
- Ingersoll, A. P., C. D. Barnet, R. F. Beebe, F. M. Flasar, D. P. Hinson, S. S. Limaye, L. A. Sromovsky, and V. E. Suomi, Dynamic meteorology of Neptune, in *Neptune and Triton*, edited by D. Cruikshank, pp. 613-682, Univ. of Ariz. Press, Tucson, 1995.
- Jenkins, J. M., P. G. Steffes, D. P. Hinson, J. D. Twicken, and G. L. Tyler, Radio occultation studies of the Venus atmosphere with the Magellan Spacecraft, 2. Results from the October 1991 experiments, *Icarus*, 110, 79-94, 1994.
- Hinson, D. P., and J. A. Magalhaes, Inertio-gravity waves in the atmosphere of Neptune, *Icarus*, 105, 142-161, 1993.
- Tyler, G. L., G. Balmino, D. P. Hinson, W. L. Sjogren, D. E. Smith, R. Woo, S. W. Asmar, M. J. Connally, C. L. Hamilton, and R. A. Simpson, Radio science investigations with Mars Observer, *J. Geophys. Res.*, 97, 7759-7779, 1992.
- Howard, H. T., V. R. Eshleman, D. P. Hinson, A. J. Kliore, G. F. Lindal, R. Woo, M. K. Bird, H. Volland, P. Edenhofer, M. Patzold, and H. Porsche, Galileo radio science investigations, *Space Sci. Rev.*, 60, 565-590, 1992.
- Allison, M., R. F. Beebe, B. J. Conrath, D. P. Hinson, and A. P. Ingersoll, Uranus atmospheric dynamics and circulation, in *Uranus*, edited by J. Bergstralh and E. Miner, pp. 253-295, Univ. of Ariz. Press, Tucson, 1991.
- Hinson, D. P., and J. A. Magalhaes, Equatorial waves in the stratosphere of Uranus, *Icarus*, 94, 64-91, 1991.
- Lindal, G. F., J. R. Lyons, D. N. Sweetnam, V. R. Eshleman, D. P. Hinson, and G. L. Tyler, The atmosphere of Neptune: Results of radio occultation measurements with the Voyager 2 spacecraft, *Geophys. Res. Lett.*, 17, 1733-1736, 1990.
- Tyler, G. L., D. N. Sweetnam, J. D. Anderson, S. E. Borutzki, J. K. Campbell, V. R. Eshleman, D. L. Gresh, E. M. Gurrola, D. P. Hinson, N. Kawashima, E. R. Kursinski, G. S. Levy, G. F. Lindal, J. R. Lyons, E. A. Marouf, P. A. Rosen, R. A. Simpson, and G. E. Wood, Voyager radio science observations of Neptune and Triton, *Science*, 246, 1466-1473, 1989.
- Lindal, G. F., J. R. Lyons, D. N. Sweetnam, V. R. Eshleman, D. P. Hinson, and G. L. Tyler, The atmosphere of Uranus: Results of radio occultation measurements with Voyager 2, *J. Geophys. Res.*, 92, 14,987-15,001, 1987.
- Hinson, D. P., Strong scintillations during atmospheric occultations: Theoretical intensity spectra, *Radio Sci.*, 21, 257-270, 1986.
- Tyler, G. L., D. N. Sweetnam, J. D. Anderson, J. K. Campbell, V. R. Eshleman, D. P. Hinson, G. S. Levy, G. F. Lindal, E. A. Marouf, and R. A. Simpson, Voyager 2 radio science observations of the Uranian system: Atmosphere, rings, and satellites, *Science*, 233, 79-84, 1986.
- Hinson, D. P., Magnetic field orientations in Saturn's upper ionosphere inferred from Voyager radio occultations, *J. Geophys. Res.*, 89, 65-73, 1984.
- Hinson, D. P., and G. L. Tyler, Internal gravity waves in Titan's atmosphere observed by Voyager radio occultation, *Icarus*, 54, 337-352, 1983.
- Hinson, D. P., and G. L. Tyler, Spatial irregularities in Jupiter's upper ionosphere observed by Voyager radio occultations, *J. Geophys. Res.*, 87, 5275-5289, 1982.