

Scot C. R. Rafkin
Program Director, Department of Space Studies, Southwest Research Institute

Education

B.S., Dept. of Atmospheric Science, UCLA, 1989.

M.S., Dept. of Atmospheric Science, Colorado State University, 1992.

Ph.D., Dept. of Atmospheric Science, Colorado State University, 1996.

Professional Positions and Employment

- Graduate Research and Teaching Assistant, Colorado State University, 1989-1996.
- Research Scientist, ASTER and METSAT Incorporated, Fort Collins, Colorado, 1992-1993.
- Post-Doctoral Fellow, University Corporation for Atmospheric Research (NCAR/UCAR), 1996-1997.
- Assistant Professor, San José State University and California State University Monterey Bay, 1997-2003.
- NASA Ames Research Center Associate, 1998-2003.
- NASA-ASEE Faculty Fellow, NASA Ames Research Center, 1998-1999.
- Senior Scientist, Southwest Research Institute, 2003-2005.
- Principal Scientist, Southwest Research Institute, 2005-2007.
- Section Manager, Southwest Research Institute, 2007-2011.
- Assistant Director, Southwest Research Institute 2011-2014
- Program Director, Southwest Research Institute 2014-
- Adjunct Faculty, University of Colorado, 2011-
- Visiting Research Scholar, University of Arizona, 2013-

Professional Expertise

Dr. Rafkin researches planetary atmospheres with a specialization in mesoscale modeling and dynamics. He has extensive experience developing weather and research modeling codes and has applied these to the study of mesoscale circulations, clouds, and aerosols for Earth and to other terrestrial planetary atmospheres including Mars, Titan, Venus, and Pluto. His Mars and Titan Regional Atmospheric Modeling System codes are recognized as the premier tools for simulating local and regional atmospheric circulations and these codes have become the model of choice for both fundamental and applied planetary atmospheric problems. NASA has selected Dr. Rafkin and his team to provide environmental predictions for every Mars rover and lander since 2003. Dr. Rafkin also develops space instrumentation and missions for remote and in situ atmospheric measurements. He currently chairs the MEPAG Climate Committee, has served on Science Definition Teams for Mars and Titan missions, and has participated in NASA flagship mission studies.

Experience, Service and Awards

- MSL RAD Project Scientist and MSL Co-I
- PI of E/PO Camera on TGE Mars Scout Proposal (Phase A)
- Deputy PI of Mars Balloon Discovery Proposal
- Group Achievement Award, Mars Phoenix Scout
- Group Achievement Award, MSL RAD Instrument
- NASA PSS Managers Operations Working Group (Emeritus)
- Previous Subpanel Chair for NASA programs: PATM, MFRP, MDAP, OPR
- Review Panel Member for NASA programs: MRO PS, MSL PS, OPR, PATM, MFRP, ASTID, MDAP
- SDT member for Mars Telecommunication Orbiter
- SDT member for Titan Flagship Mission
- MEPAG Climate Goal Co-Chair

Current Grants and Contracts

Venus Express Participating Scientist: Venus Thermospheric GCM, NASA VEXPS, 2010-2015, \$379K.

Deep Convection on Titan, NASA OPR, 2010-2014, \$300K.

Convective Boundary Layer Studies on Mars, NASA MDAP, 2012-2015, \$394K.

Structure, Dynamics and Volatile Cycle of the Pluto Atmosphere, NASA PATM, 2012-2015, \$475K.

Development of a Turbulent Eddy Flux Instrument for Planetary Atmospheres, NASA PIDDP, 2012-2015, \$933K.

Astronomy Night in the St. Vrain School District, NASA EPO to OPR, 2013-2014, \$20K

EDL Modeling Support for InSight, JPL Contract, 2014-2016, \$240K

MSL RAD, Phase E Co-I support, 2013-2015, \$270K

Pending Grants and Contracts

Atmospheric Characterization for Exploration and Science, NASA Mars 2020, 2014-2023, \$30M

Martian Dust Disturbance Analogs of Terrestrial Deep Convection, 2014-2017, NSF PAST, \$412K

Previous External Research Grants and Contracts

Mesoscale and LES Modeling of the Martian Atmosphere, NASA PATM, 2001-2003, \$180K.

Mesoscale Wind Modeling for the Mars Exploration Rovers, JPL Contract, 2001-2003, \$45K.

Large Eddy Simulations of the Martian Atmosphere, NASA MDAP, 2001-2004, \$280K.

Condensate Clouds on Mars, NASA MFRP, 2003-2005, \$250K.

Mars Atmospheric Modeling Support for Phoenix, JPL Contract, 2004-2005 \$19.5K.

Mesoscale Meteorology of the Martian Atmosphere, NASA PATM, 2004-2006, \$50K.

Mars Climate Simulations, NASA MFRP, 2005-2009, \$270K.

Mini-TES Atmospheric Temperature Profile Analysis, NASA MDAP, 2005-2009, \$180K.

Continued Atmospheric Modeling Support for Phoenix, JPL Contract, 2005-2007, \$67K.

Transverse Aeolian Ridges on Mars, Subcontract PSS (NASA MDAP), 2006-2008, \$40K.

Venus Express Participating Science: Venus Thermospheric GCM, NASA VEXPS, 2006-2010, \$190K.

Atmospheric Modeling Support for MSL, JPL Contract, 2007, \$54K.

Air-Sea Interactions on Titan, NASA PATM, 2010-2013, \$302K.

Mars Atmospheric Characterization for ExoMars, ESA Contract via CNRS (France), 2012-2013, \$63K.

Previous Internal (SwRI) Grants

Mars Mesoscale Model Development, 2003, \$160K

Preliminary Mars Atmospheric Modeling for Phoenix, 2003, \$25K.

Development of a Tunable Laser Spectrometer for Planetary Atmospheres, 2009, \$218K

Mars Modeling Short Course, 2004, \$20K.

Concept Study for a Mission to Titan, 2006, \$30K.

E/PO Activities

Discovery Channel, The Know Zone

National Geographic Mars Phoenix Lander Special

Developed On-line "Introduction to Meteorology" Course for San Jose State University

MSL Landing Site Event, IMAX theatre, Denver Museum of Nature and Science

Annual "Astronomy Night" Event Attracting >800 Children and Parents

Numerous Public Talks at Local Clubs and Organizations

Numerous K-12 Classroom Visits and Presentations

Peer Reviewed Journal Publications

Bish, D. L., 18 others, and the **MSL Science Team**, 2013: X-ray Diffraction Results from Mars Science Laboratory: Mineralogy of Rocknest at Gale Crater, *Science*, **341**, doi:10.1126/science.1238932.

Blake, D. F., 44 others, and the **MSL Science Team**, 2013: Curiosity at Gale Crater, Mars: Characterization and Analysis of the Rocknest Sand Shadow, *Science*, **341**, doi:10.1126/science.1239505.

Mahaffy, P. R., 13 others, and the **MSL Science Team**, Abundance and Isotopic Composition of Gases in the Martian Atmosphere from the Curiosity Rover, *Science*, **341**, doi:10.1126/science.1237966.

Hassler, D. M., C. Zeitlin, R. F. Wimmer-Schweingruber, B. Ehresmann, **S. Rafkin**, and 18 others, 2013, Mars' Surface Radiation Environment Measured with the Mars Science Laboratory's Curiosity Rover, *Science*, DOI: 10.1126/science.1244797.

Rafkin, S. C. R., 2013: Mesoscale Modeling of Extraterrestrial Atmospheres, In *Mesoscale Meteorological Modeling, 3rd Ed.*, Academic Press Intl. Geophys, Series **98**, R. Pielke (Ed), 491-500.

- Rafkin S. C. R.**, Hollingsworth J.L., Mischna M. A., Newman C. E., and Richardson M. I., 2013: Mars: Atmosphere and climate overview. In *Comparative Climatology of Terrestrial Planets*, S. J. Mackwell et al., (Eds.), Univ. of Arizona, Tucson, In Press.
- Webster, C. R., P. R. Mahaffy, S. K. Atreya, G. J. Flesch, K. A. Farley, and the **MSL Science Team**, 2013: Low Upper Limit to Methane Abundance on Mars, *Science*, **342**, doi:10.1126/science.1242902.
- Zalucha, A. M., A. S. Brecht, **S. Rafkin**, S. W. Bougher, and M. J. Alexander, 2013: Incorporation of a Gravity Wave Momentum Deposition Parameterization into the Venus Thermosphere General Circulation Model (VTGCM), *J. Geophys. Res.* **118**, doi:10.1029/2012JE004168.
- Zeitlin **et al.**, 2013: Measurements of Energetic Particle Radiation in Transit to Mars on the Mars Science Laboratory, *Science*, **340**, 1080-1084. doi: 10.1126/science.1235989.
- Posner **et al.**, 2013: The Hohmann-Parker Effect Measured by the Mars Science Laboratory on the Transfer from Earth to Mars: Consequences and Opportunities, *Planetary and Space Science*, **89**, doi:10.1016/j.pss.2013.09.013.
- Rafkin, S. C. R.**, 2013: Diurnal Variations of Energetic Particle Radiation at the Surface of Mars as Observed by the Mars Science Laboratory Radiation Assessment Detector, *J. Geophys. Res.*, Submitted.
- Hassler, D.M., C. Zeitlin, R.F. Wimmer-Schweingruber, B. Ehresmann, **S. Rafkin**, and 15 others, 2013: The Radiation Environment on the Surface of Mars Measured on the Mars Science Laboratory's Curiosity Rover, *Science*, doi:10.1126/science.1244797.
- Griffith, C. A., **S. Rafkin**, P. Rannou, and C. P. McKay, 2012: Storms, Clouds, and Weather, In *Titan: Surface, Atmosphere and Magnetosphere*, Cambridge Univ. Press, In press.
- Rafkin, S. C. R.**, 2013: Mesoscale Dynamics, In *The Atmosphere and Climate of Mars*, Cambridge University Press, Submitted.
- Barth, E. L., W. M. Farrell, **S. C. R. Rafkin**, 2013: Electric Field Generation in Martian Dust Devils, *Mars Journal*, In Press.
- Vasavada, A. R., A. Chen, J. r. Barnes, P. D. Burkhart, B. A. Cantor, A. M. Dwyer-Cianciolo, R. L. Fergason, D. P. Hinson, H. L. Justh, D. M. Kass, S. R. Lewis, M. A. Mischna, J. R. Murphy, **S. C. R. Rafkin**, D. Tyler, and P. Withers, 2012: Assessment of Environments for Mars Science Laboratory Entry, Descent, and Surface Operations, *Space Sci. Rev.*, **170**, doi:10.1007/s11214-012-9911-3.
- Zalucha, A.M., A. S. Brecht, **S. Rafkin**, S. W. Bougher, M. J. Alexander, 2012: Incorporation of a Gravity Wave Momentum Deposition Parameterization into the Venus Thermosphere General Circulation Model (VTGCM), *J. Geophys. Res.*, **118**, doi:10.1029/2012JE004189.
- Berman, D. C., M. R. Balme, **S. C. R. Rafkin**, and J. R. Zimbleman, 2011: Transverse Aeolian Ridges (TARs) on Mars II: Distributions, orientations, and ages, *Icarus*, **213**, doi:10.1016/j.icarus.2011.02.014.
- Brecht, A. S., S. W. Bougher, J.-C. Gerard, C. D. Parkinson, **S. Rafkin**, and B. Foster, 2011: Understanding the Variability of Nightside Temperatures, NO UV and O₂ IR Nightglow Emissions in the Venus Upper Atmosphere. *J. Geophys. Res.*, **116**, E08004, doi:10.1029/2010JE003770.
- Rafkin, S. C. R.**, 2011: The Potential Importance of Non-Local, Deep Transport on the Energetics, Momentum, Chemistry, and Aerosol Distributions in the Atmospheres of Earth, Mars, and Titan. *Plan. and Space. Sci.*, **60**, doi:10.1016/j.pss.2011.07.015
- Kite, E. S., **S. Rafkin**, T. I. Michaels, W. E. Dietrich, and M. Manga, 2011: Chaos, Storms and Climate on Mars. *J. Geophys. Res.*, **116**, DOI: 10.1029/2010JE003783.
- Kite, E. S., T. I. Michaels, **S. Rafkin** and M. Manga, and W. E. Dietrich, 2011: Localized Precipitation and Runoff on Mars, *J. Geophys. Res.*, **116**, doi:10.1029/2010JE003792.
- Nesvorny, D., W. F. Bottke, D. Vokroulicky, and **S. Rafkin**, 2010: Do Planetary Encounters Reset surfaces of Near Earth Asteroids? *Icarus*, **209**, doi:10.1016/j.icarus.2010.05.003.
- Rafkin, S. C. R.**, 2009: A Positive Radiative-Dynamic Feedback Mechanism for the Maintenance and Growth of Martian Dust Storms, *J. Geophys. Res.*, **114**, E01009, doi:10.1029/2008JE003217.
- Barth, E., and **S. C. R. Rafkin**, 2009: Convective Cloud Heights as a Diagnostic for Methane Environment on Titan, *Icarus*, **206**, 467-484, doi:10.1016/j.icarus.2009.01.032
- Michaels T. I., **S. C. R. Rafkin**, 2008: Meteorological Predictions for Candidate 2007 Phoenix Mars Lander Sites Using the Mars Regional Atmospheric Modeling System (MRAMS), *J. Geophys. Res.*, **113**, E00A07, doi:10.1029/2007JE003013.
- Tamppari L. K., **et al.**, 2008: Expected Atmospheric Environment for the Phoenix Landing Season and Location, *J. Geophys. Res.*, **113**, E00A20, doi:10.1029/2007JE003034.
- Murphy, N. W., B. M. Jakosky, **S. C. Rafkin**, K. W. Larsen, N. E. Putzig, and M. T. Mellon, 2007: Thermophysical Properties of the Isidis Basin, Mars, *J. Geophys. Res.*, **112**, doi:10.1029/2005JE002586.
- Barth, E. L. and **S. C. R. Rafkin**, 2007: TRAMS: A New Dynamic Cloud Model for Titan's Methane Clouds, *Geophys. Res. Lett.*, **34**, L03203, doi:10.1029/2006GL028652.

- Atreya, S. K., A.-S. Wong, N. O. Renno, W. M. Farrell, G. T. Delory, D. D. Sentman, S. A. Cummer, J. R. Marshall, **S. C. R. Rafkin**, and D. C. Catling, 2006: Oxidant Enhancement in Martian Dust Devils and Storms: Implications for Life and Habitability, *Astrobiology*, **6**, No. 3 : 439-450.
- Bougher, S. W., **S. Rafkin**, and P. Drossart, 2006: Dynamics of the Venus Upper Atmosphere: Outstanding Problems and New Constraints Expected From Venus Express, *Plan. Space. Sci.*, **54**, 1371–1380.
- Delory, G. T., W. M. Farrell, S. K. Atreya, N. O. Renno, A.-S. Wong, S. A. Cummer, D. D. Sentman, J. R. Marshall, **S. C. R. Rafkin**, and D. C. Catling, 2006: Oxidant Enhancement in Martian Dust Devils and Storms: Implications for Life and Habitability, *Astrobiology*, **6**, 451-462.
- Greeley, R., R. E. Arvidson, P. W. Barlett, D. Blaney, N. A. Cabrol, P. R. Christensen, R. L. Fergason, M. P. Golombek, G. A. Landis, M. T. Lemmon, S. M. McLennan, J. N. Maki, T. Michaels, J. E. Moersch, L. D. V. Neakrase, **S. C. R. Rafkin**, L. Richter, S. W. Squyres, P. A. de Souza, R. J. Sullivan, S. D. Thompson, and P. L. Whelley, 2006: Gusev Crater: Wind-Related Features and Processes Observed by the Mars Exploration Rover Spirit, *J. Geophys. Res.*, **111**, doi:10.1029/2005JE002491.
- Michael, T. I., A. Colaprete, and **S. C. R. Rafkin**, 2006: Significant Vertical Water Transport by Mountain-Induced Circulations on Mars, *Geophys. Res. Lett.*, **33**, L16201, doi:10.1029/2006GL026562.
- Sta. Maria, M. R. V., **S. C. R. Rafkin**, T. I. Michaels, 2006: Numerical Simulation of Atmospheric Bore Waves on Mars, *Icarus*, **185**, 383-394, doi:10.1016/j.icarus.2006.07.006.
- Posner, A., D. M. Hassler, D. J. McComas, **S. Rafkin**, R. F. Wimmer-Schweingruber, E. Bohn, S. Botthcer, S. Burmeister, W. Dorge, B. Heber, 2005: A high energy telescope for the Solar Orbiter, *Adv. Space. Res.*, **36**, 1426-1431.
- Neakrase, L. D. V., R. Greeley, D. A. Williams, D. Reiss, T. I. Michaels, **S. C. R. Rafkin**, and G. Neukum, 2005: Hecates Tholus, Mars: Nighttime Aeolian Activity Suggested by Thermal Images and Mesoscale Atmospheric Model Simulations, *Science* **183**, 847-849.
- Michaels, T. I., and **S. C. R. Rafkin**, 2004: Large-Eddy Simulation of Atmospheric Convection on Mars, *Q. J. Roy. Meteor. Soc.*, **130(599)**, 1251-1274.
- Rafkin, S. C. R.**, T. I. Michaels, and R. M. Haberle, 2003: Meteorological Predictions for the Beagle 2 mission to Mars, *Geophys. Res. Lett.*, **31**, 10.1029/2003GL018966.
- Rafkin, S. C. R.** and T. I. Michaels, 2003: Meteorological predictions for 2003 Mars Exploration Rover high-priority landing sites, *J. Geophys. Res.* **108(E12)**, 10.1029/2002JE002027.
- Kass, D. M., J. T. Schofield, T. I. Michaels, **S. C. R. Rafkin**, M. I. Richardson, and A. D. Toigo, 2003: Analysis of Atmospheric Mesoscale Models for Entry, Descent and Landing, *J. Geophys. Res.*, **108(E12)**, 10.1029/2003JE002065.
- Greeley, R., R. O. Kuzmin, **S. C. R. Rafkin**, T. I. Michaels, and R. Haberle, 2003: Wind-Related Features in Gusev Crater, Mars, *J. Geophys. Res.*, **108(E12)**, 10.1029/2002JE002006.
- Rafkin, S. C. R.**, Sta. Maria, M. R. V., and T. I. Michaels, 2002: Simulation of the Atmospheric Thermal Circulation of a Martian Volcano Using a Mesoscale Numerical Model, *Nature*, **419**, 697-699.
- Rafkin, S. C. R.**, R. M. Haberle, and T. Michaels, 2001: The Mars Regional Atmospheric Modeling System: Model Description and Selected Simulations, *Icarus*, **151**, 228-256.
- Rafkin, S.C.R.**, 1996: Development of a Cumulus Parameterization Suitable for Use in Mesoscale Through GCM-Scale Models, Ph.D. Dissertation, Colorado State University, Department of Atmospheric Science.
- Randell (Rafkin), S. C.**, S. A. Rutledge, R. D. Farley, and J. H. Helsdon, Jr., 1994: A Modeling Study on the Early Electrical Development of Tropical Convection: Continental and Oceanic (Monsoon) Storms. *Mon. Wea. Rev.*, **122**, 1852–1877.

Conference Proceedings

- Appel, J. K, **et al.**, 2013: Investigation of the Importance of Atmospheric Dust Content on Particle Spectra on the Surface of Mars, *Fall Meeting of the Amer. Geophys. Union*, San Francisco.
- Bertrand, T., A. Spiga, **S. Rafkin**, A. Colaitis, F. Forget, and E. Millour, 2013: LMD–SwRI Martian Mesoscale Models Intercomparison for ExoMars Landing Site Characterization, *European Planetary Science Congress 2013*, 8-13 September in London, UK.
- Chaney, B., E. L. Barth, **S. C. Rafkin**, 2013: Is Titan’s Dune Orientation Controlled by Tropical Methane Storms? *Fall Meeting of the Amer. Geophys. Union*, San Francisco.
- Chen, A., A. Cianciolo, A. Vasavada, D. Kass, D. Tyler, J. Barnes, **S. Rafkin**, B. Cantor, C. Karlgaard, 2013: Mars Science Laboratory Entry, Descent, and Landing Atmosphere Reconstruction, *10th Intl. Planetary Probe Workshop*, San Jose, CA.
- Ehresmann, B., **et al.**, 2013: Charged Particle Measurements on Mars and during Cruise with the Radiation Assessment Detector (MSL/RAD), *Fall Meeting of the Amer. Geophys. Union*, San Francisco.
- Esposito, F., **et al.**, 2013: DREAMS for the ExoMars 2016 Mission: a Suite of Sensors for the Characterization of Martian environment, *European Planetary Science Congress*, 8-13 September London, UK.

- Genzer, M., **et al.**, 2103: Mars Science Laboratory (MSL)-First Results of Relative Humidity Observations, *EGU General Assembly Conference*, Vienna, Austria.
- Guo, J., **et al.**, 2013: Reconstruction of Charged Particle Fluxes Detected by the Radiation Assessment Detector Onboard MSL, *Fall Meeting of the Amer. Geophys. Union*, San Francisco.
- Haberle, R. M., **et al.**, 2013: Secular Climate Change on Mars: An Update Using MSL Pressure Data, *Fall Meeting of the Amer. Geophys. Union*, San Francisco.
- Harri, A.M., **et al.**, 2013: Mars Science Laboratory (MSL)-First Results of Pressure Observations, *EGU General Assembly Conference*, Vienna, Austria
- Kohler, J., **et al.**, 2013: Measurements of the Martian Gamma/Neutron Spectra with MSL/RAD, *Fall Meeting of the Amer. Geophys. Union*, San Francisco.
- Martín-Torres, J., M. Paz Zorzano, J. Pla-García, **S. Rafkin**, A. Lepinette, E. Sebastián, J. Gómez-Elvira, and REMS. Team, 2013: Nighttime Infrared radiative cooling and opacity inferred by REMS Ground Temperature Sensor Measurements, *EGU General Assembly Conference*, Vienna Austria.
- Pla-García, J., **S. Rafkin**, J. Martín-Torres, J. Elvira-Gómez, A. Lepinette, H. Kahanpää, J. Rodríguez-Manfredi, S. Navarro, and E. Sebastián, 2013: Prediction of Meteorological Conditions for the Mars Science Laboratory Rover Curiosity and comparisons with the Rover Environmental Monitoring Station (REMS) measurements, *EGU General Assembly Conference*, Vienna, Austria.
- Pla-García, J., **S. Rafkin**, F. J. Martín-Torres, M. P. Zorzano, J. Gómez-Elvira, H. Kahanpää, and E. Sebastián, 2013: Preliminary Interpretation of the Meteorological Environment Through Mars Science Laboratory Rover Environmental Monitoring Station Observations and Mesoscale Modeling, *European Planetary Science Congress 2013*, 8-13 September, London, UK.
- Rafkin, S. C. R.**, D. Banfield, R. Dissly, 2013: Filling Mars Human Exploration Strategic Knowledge Gaps with Next Generation Meteorological Instrumentation, *10th Intl. Planetary Probe Workshop*, San Jose, CA.
- Rafkin, S.**, 2013: An Instrument to Measure Turbulent Fluxes in the Atmosphere of Mars and other Planets, *European Planetary Science Conference*, 8-13 September, London, UK.
- Rafkin, S. C. R.**, and J. Pla-Garcia, 2013: The Dynamic Meteorology of Gale Crater, *Fall Meeting of the Amer. Geophys. Union*, San Francisco, (INVITED).
- Soto, A., **S. C. R. Rafkin**, I. J. McEwan, and M. I. Richardson, 2013: Net radiometer for Martian surface energy balance, *European Planetary Science Congress*, London, UK.
- Wimmer-Schweingruber, **et al.**, 2013: Onset times of solar particle events at Mars Science Laboratory en route to Mars, *EGU General Assembly Conference*, Vienna, Austria.
- Zalucha, Angela M., T. I. Michaels, and **S. Rafkin**, 2013: The Effect of Surface Albedo on Pluto's Atmospheric Circulation, *Division for Planetary Sciences Meeting*, Denver, CO.
- Zeitlin, C., **et al.**, 2013: MSL-RAD Radiation Environment Measurements, *EGU General Assembly Conference*, Vienna, Austria.
- Zeitlin, C., **et al.**, 2013: Radiation Measurements in Cruise and on Mars by the MSL Radiation Assessment Detector, *Fall Meeting of the Amer. Geophys. Union*, San Francisco.
- Banfield, D., R. W. Dissly, and **S. C. R. Rafkin**, 2012: Mars Surface Wind Measurements Using an Acoustic Anemometer, *Concepts and Approaches for Mars Exploration*, Houston, TX.
- Barth, E. L., W. M. Farrell, and **S. C. R. Rafkin**, 2012: Modeling Electric Fields Generated by Martian Dust Devils, *European Planetary Science Congress*, Madrid, Spain.
- Rafkin, S.**, and A. Rothchild, 2012: Methane and Energy Fluxes Above Titan's Lakes, *EGU General Assembly Conference*, Vienna, Austria.
- Rafkin, S.**, 2012: Air-Sea Interaction on Titan, *European Planetary Science Congress*, Madrid, Spain.
- Rafkin, S. C. R.**, 2012: Mars Exploration Pathways: Past, Present and Future, *Europlanet 2012 NA2 Working Group*, Tallin, Estonia, (INVITED).
- Rafkin, S. C. R.**, 2012: The Mars Science Laboratory, *Europlanet 2012 NA2 Working Group*, Tallin, Estonia, (INVITED).
- Rafkin, S.**, D. Banfield, R. Dissly, J. Silver, A. Stanton, E. Wilkinson, W. Massman, and J. Ham, 2012: An Instrument to Measure Turbulent Eddy Fluxes in the Atmosphere of Mars, *International Workshop on Instrumentation for Planetary Missions*, Greenbelt, MD.
- Rafkin, S. C. R.**, 2012: Is the Evaporation Rate of Methane from Titan's Lakes Greatly Overestimated? *Division for Planetary Sciences Meeting*, Reno, NV.
- Wimmer-Schweingruber, **et al.**, 2012: Determining the Martian Radiation Environment---The Radiation Assessment Detector (RAD) on Mars Science Laboratory (MSL), *Lunar and Planetary Institute Science Conference*, The Woodlands, TX.
- Kite, E. S., **S. C. R. Rafkin**, T. I. Michaels, and M. Manga, 2011: Localized Precipitation, Lake-effect Storms, and Erosion on Mars, *Mars Atmosphere: Modelling and Observation*, Paris, France.
- Rafkin, S. C.**, and T. I. Michaels, 2011: Turbulent Exchanges of Heat and Methane at the Atmosphere-Lake Interfaces of Titan, *AGU Fall Meeting*, San Francisco, CA.

- Rafkin, S. C. R.**, 2011: Non-Local, Deep Transport in the Atmosphere of Mars, *Fourth International Workshop on the Mars Atmosphere*, Pasadena, CA.
- Rafkin, S. C.**, A. Rothchild, and R. A. Pielke, 2011: Wind Enhanced Interaction of Radiation and Dust (Weird): Application Under a Realistic Scenario, *Mars Atmosphere: Modelling and Observation*, Paris, France (INVITED).
- Rothchild, A. T., **S. C. Rafkin**, M. A. Kahre, and R. A. Pielke, 2011: The Impact of a Realistic Vertical Dust Distribution on the General Circulation of the Martian Atmosphere, *AGU Fall Meeting*, San Francisco, CA.
- Chen, Allen, A. Vasavada, A. Cianciolo, J. Barnes, D. Tyler, **S. Rafkin**, D. Hinson, and S. Lewis, 2010: Atmospheric Risk Assessment for the Mars Science Laboratory Entry, Descent, and Landing System, *2010 IEEE Aerospace Conference*, pp. 1-12, Big Sky, Montana.
- Hassler, D. M., **et al.**, 2010: Space Radiation Dosimetry with the The Radiation Assessment Detector (RAD) on the Mars Science Laboratory (MSL), *38th COSPAR Scientific Assembly*, Bremen, Germany.
- Kite, E. S., **S. C. R. Rafkin**, T. I. Michaels, and M. Manga, 2010: Mesoscale Simulation of Atmospheric Response to Chaos Terrain Formation, *Lunar and Planetary Institute Science Conference*, The Woodlands, TX.
- Rafkin, S.**, 2010: Measurement Requirements for Quantifying Titan's Air-Sea Interactions, *European Planetary Science Congress*, Rome, Italy (INVITED).
- Rafkin, Scot C. R.**, 2010: Application of Mesoscale Atmospheric Models to Mars Missions, *1st Symposium on Planetary Atmospheres, Amer. Met. Soc. Annual Meeting*, Atlanta, GA, (INVITED).
- Rothchild, A., **S. C. Rafkin**, and R. A. Pielke Sr., 2010: Meteorological Predictions in Support of the Mars Science Laboratory Entry, Descent and Landing, *AGU Fall Meeting*, San Francisco, CA.
- Barth, E. L., **Rafkin, S. C. R.**, Farrell, W. M., 2009: The Electrodynamics of Mars Dust Disturbances, *Mars Atmosphere Dust Workshop*, NASA Ames Research Center, Moffet Field, CA.
- Berman, D. C., M. R. Balme, M. C. Bourke, **S. Rafkin**, and J. R. Zimbelman, 2009: Transverse Aeolian Ridges on Mars: Distribution, Orientations, and Ages, *40th Lunar and Planetary Science Conference*, The Woodlands, TX.
- Brecht, A., S. W. Bougher, C. D. Parkinson, Y. L. Yung, and **S. C. Rafkin**, 2009: Understanding the Variability of Nightside Temperatures and Airglow Emissions in Venus' Middle and Upper Atmosphere: NCAR VTGCM Simulations, *AGU Fall Meeting*, San Francisco, CA.
- Rafkin, S. C. R.**, R. Haberle, D. Banfield, and J. Barnes, 2009: The Value of Landed Meteorological Investigations on Mars: the Next Advance for Climate Science, *Division for Planetary Sciences Meeting*, **41**, Fajardo, Puerto Rico.
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