

Curriculum Vitae:

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Education:

Doctor of Philosophy, School of Geophysical Sciences, Georgia Institute of Technology, Atlanta, Georgia, U.S.A., 1986.
Master of Arts, Physics, University of Montana, Missoula, Montana, U.S.A., 1977.
Bachelor of Arts, Physics and Math, University of Montana, Missoula, Montana, U.S.A., 1973.

Experience:

1988-present: Research Scientist III, Cooperative Institute for Research in Environmental Sciences, University of Colorado/ Chemical Sciences Division (Aeronomy Lab), NOAA/ESRL, Boulder, CO
1987-1988: Guest Scientist, Institut für Chemie, Kernforschungsanlage, Jülich, FRG
1982-1987: Research Associate (CIRES), Aeronomy Lab, NOAA/ERL, Boulder, CO
1978-1982: Graduate Research Assistant, Georgia Institute of Technology, Atlanta, GA
1979-1981: Research Assistant, Aeronomy Lab, NOAA/ERL, Boulder, CO (summer or part-time employment)
1977-1978: Research Scientist, NCAR, Boulder, CO
1973-1977 Graduate Teaching Assistant, Physics, University of Montana, Missoula, Montana

Sample of Recent or Significant Publications:

Sources and characteristics of summertime organic aerosol in the Colorado Front Range: perspective from measurements and WRF-Chem modeling, R. Bahreini, Ahmadov, R; McKeen, SA; Vu, KT; Dingle, JH; Apel, EC; Blake, DR; Blake, N; Campos, TL; Cantrell, C; Flocke, F; Fried, A; Gilman, JB; Hills, AJ; Hornbrook, RS; Huey, G; Kaser, L; Lerner, BM; Mauldin, RL; Meinardi, S; Montzka, DD; Richter, D; Schroeder, JR; Stell, M; Tanner, D; Walega, J; Weibring, P; Weinheimer, A, *Atmos. Chem. Phys.* , 18 (11) , 8293-8312, doi: [10.5194/acp-18-8293-2018](https://doi.org/10.5194/acp-18-8293-2018), issn: 1680-7316, 2018.

Modeling Ozone in the Eastern U.S. using a Fuel-Based Mobile Source Emissions Inventory, B.C. McDonald, S.A. McKeen, Y. Cui, R. Ahmadov, S.W. Kim, G.J. Frost, I.B. Pollack, T.B. Ryerson, J.S. Holloway, M. Graus, C. Warneke, J.B. Gilman, J.A. de Gouw, J. Kaiser, F.N. Keutsch, T.F. Hanisco, G.M. Wolfe, M. Trainer, *Environ. Sci. Technol.* , 52 (13) , 7360-7370, doi: [10.1021/acs.est.8b00778](https://doi.org/10.1021/acs.est.8b00778), 2018.

Volatile chemical products emerging as largest petrochemical source of urban organic emissions BC McDonald, de Gouw, JA; Gilman, JB; Jathar, SH; Akherati, A; Cappa, CD; Jimenez, JL; Lee-Taylor, J; Hayes, PL; McKeen, SA; Cui, YY; Kim, SW; Gentner, DR; Isaacman-VanWertz, G; Goldstein, AH; Harley, RA; Frost, GJ; Roberts, JM; Ryerson, TB; Trainer, M, *Science*, 359 (6377) , 760-764, doi: [10.1126/science.aag0524](https://doi.org/10.1126/science.aag0524), issn: 0036-8075, 2018.

Representing the effects of stratosphere-troposphere exchange on 3-D O₃ distributions in chemistry transport models using a potential vorticity-based parameterization, J Xing, R Mathur, J Pleim, C

Hogrefe, JD Wang, CM Gan, G Sarwar, DC Wong and S McKeen, *Atmos. Chem. Phys.*: Vol. 16, 10865-10877, [doi: 10.5194/acp-16-10865-2016](https://doi.org/10.5194/acp-16-10865-2016), 2016.

Understanding high wintertime ozone pollution events in an oil and natural gas producing region of the western US, Ahmadov, R., McKeen, S., Trainer, M., Banta, R., Brewer, A., Brown, S., Edwards, P. M., de Gouw, J. A., Frost, G. J., Gilman, J., Helmig, D., Johnson, B., Karion, A., Koss, A., Langford, A., Lerner, B., Olson, J., Oltmans, S., Peischl, J., Pétron, G., Pichugina, Y., Roberts, J. M., Ryerson, T., Schnell, R., Senff, C., Sweeney, C., Thompson, C., Veres, P., Warneke, C., Wild, R., Williams, E. J., Yuan, B., and Zamora, R., *Atmos. Chem. Phys.*, 15, 411-429, [doi:10.5194/acpd-15-411-2015](https://doi.org/10.5194/acpd-15-411-2015), 2015.

Ozone distributions over southern Lake Michigan: comparisons between ferry-based observations, shoreline-based DOAS observations and model forecasts, Cleary, PA, N Fuhrman, L Schulz, J Schafer, J Fillingham, H Bootsma, J McQueen, Y Tang, T Langel, S McKeen, EJ Williams and SS Brown, 2015: *Atmos. Chem. Phys.*: Vol. 15, 5109-5122, [doi: 10.5194/acp-15-5109-2015](https://doi.org/10.5194/acp-15-5109-2015), 2015.

Airborne measurements of the atmospheric emissions from a fuel ethanol refinery, JA de Gouw, SA McKeen, KC Aikin, CA Brock, SS Brown, JB Gilman, M Graus, T Hanisco, JS Holloway, J Kaiser, FN Keutsch, BM Lerner, J Liao, MZ Markovic, AM Middlebrook, KE Min, JA Neuman, JB Nowak, J Peischl, IB Pollack, JM Roberts, TB Ryerson, M Trainer, PR Veres, C Warneke, A Welti and GM Wolfe, 2015.: *J. Geophys. Res. Atmos.*: Vol. 120, 4385-4397, [doi: 10.1002/2015JD023138](https://doi.org/10.1002/2015JD023138), 2015.

Black carbon emissions from the Bakken oil and gas development region, JP Schwarz, JS Holloway, JM Katich, S McKeen, EA Kort, ML Smith, TB Ryerson, C Sweeney and J Peischl, 2015, *Environ. Sci. Technol. Lett.*, Vol. 2, 281-285, [doi: 10.1021/acs.estlett.5b00225](https://doi.org/10.1021/acs.estlett.5b00225), 2015.

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Deposition and rainwater concentrations of trifluoroacetic acid in the United States from the use of HFO-1234yf, J Kazil, S. McKeen, S.-W. Kim, R. Ahmadov, G.A. Grell, R.K. Talukdar, and A.R. Ravishankara, *J. Geophys. Res.*, Vol: 119, Iss: 24, 14059-14079, [doi:10.1002/2014JD022058](https://doi.org/10.1002/2014JD022058), 2014.

A regression approach for estimation of anthropogenic heat flux based on a bottom-up air pollutant emission database, S.-H. Lee, S. McKeen, and D.J. Sailor, *Atmos. Environ.*, Vol.: 95, 629-633, [doi:10.1016/j.atmosenv.2014.07.009](https://doi.org/10.1016/j.atmosenv.2014.07.009), 2014.

The very short-lived ozone depleting substance CHBr₃ (bromoform): revised UV absorption spectrum, atmospheric lifetime and ozone depletion potential, D.K. Papanastasiou, S. McKeen, and J.B. Burkholder, *Atmos. Chem. Phys.*, Vol. 14, Issue: 6, 3017-3025, [doi:10.5194/acpd-14-3017-2014](https://doi.org/10.5194/acpd-14-3017-2014).

Pollutant transport among California regions, W.M. Angevine, J. Brioude, S. McKeen, et al., *J. Geophys. Res.-Atmos.*, Vol.: 118 Issue: 12 6750-6763, DOI: 10.1002/jgrd.50490, 2013.

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A volatility basis set model for summertime secondary organic aerosols over the eastern U.S. in 2006, R. Ahmadov, S. McKeen, A.L. Robinson, R. Bahreini, A. Middlebrook, J. de Gouw, J. Meagher, E.-Y. Hsie, E. Edgerton, S. Shaw, and M. Trainer, *J. Geophys. Res.*, 117, D6, [doi:10.1029/2011JD016831](https://doi.org/10.1029/2011JD016831), 2012.

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Publications - First Author:

An evaluation of real-time air quality forecasts and their urban emissions over Eastern Texas during the summer of 2006 TexAQS field study, S. McKeen, G. Grell, S. Peckham, J. Wilczak, I. Djalalova, E.-Y. Hsie, G. Frost, J. Peischl, J. Schwarz, R. Spackman, J. Holloway, J. de Gouw, C. Warneke, W. Gong, V. Bouchet, S. Gaudreault, J. Racine, J. McHenry, J. McQueen, P. Lee, Y. Tang, G. R. Carmichael, R. Mathur, *J. Geophys. Res.*, Vol. 114, D00F11, doi:10.1029/2008JD011697, 2009.

The evaluation of several PM_{2.5} forecast models using data collected during the ICARTT/NEAQS 2004 field study, S. McKeen, S.H. Chung, J. Wilczak, G. Grell, I. Djalalova, S. Peckham, W. Gong, V. Bouchet, R. Moffet, Y. Tang, G. R. Carmichael, R. Mathur, and S. Yu, *J. Geophys. Res.*, Vol. 112, D10S20, doi:10.1029/2006JD007608, 2007.

Assessment of an ensemble of seven real-time ozone forecasts over Eastern North America during the summer of 2004, S. McKeen, J. Wilczak, G. Grell, I. Djalalova, S. Peckham, E.-Y. Hsie, W. Gong, V. Bouchet, S. Menard, R. Moffet, J. McHenry, J. McQueen, Y. Tang, G. R. Carmichael, M. Pagowski, A. Chan, T. Dye, G. Frost, P. Lee, R. Mathur, *J. Geophys. Res.*, Vol. 110, D21307, doi:10.1029/2004JD005858, 2005.

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The photochemistry of acetone in the upper troposphere: A source of odd-hydrogen radicals, McKeen, S.A., T. Gierczak, J. Burkholder, P.O. Wennberg, T.F. Hanisco, E.R. Keim, R.S. Gao, S.C. Liu, A.R. Ravishankara, D.W. Fahey, *Geophys. Res. Lett.*, 24, 3177-3180, doi:10.1029/97GL03349, 1997.

Photochemical modeling of hydroxyl and its relationship to other species during the Tropospheric OH Photochemistry Experiment, S.A. McKeen, G. Mount, F. Eisele, E. Williams, J. Harder, P. Goldan, W. Kuster, S.C. Liu, K. Baumann, D. Tanner, A. Fried, S. Sewell, C. Cantrell, R. Shetter, *J. Geophys. Res.*, 102, Issue: 24, 3201-3204, doi: 10.1029/96JD03322, 1997.

Hydrocarbon Ratios during PEM-West(A): A Model Perspective, S.A. McKeen, S.C. Liu, E.Y. Hsie, X. Lin, J.D. Bradshaw, S. Smyth, G.L. Gregory and D.R. Blake, *J. Geophys. Res.*, 101, 2073-2086, 1996.

Hydrocarbon Ratios and Photochemical History of Air Masses, S.A. McKeen and S.C. Liu, *Geophys. Res. Lett.*, vol. 20, 2363-2366, 1993.

A Study of the Dependence of Rural Ozone on Ozone Precursors in the Eastern United States, S.A. McKeen, E.-Y. Hsie and S.C. Liu, *J. Geophys. Res.*, vol. 96, 15377-15394, 1991.

A Regional Model Study of the Ozone Budget in the Eastern United States, S.A. McKeen, E.-Y. Hsie, M. Trainer, R. Tallamraju and S.C. Liu, *J. Geophys. Res.*, vol. 96, 10809-10845, 1991.

On the Indirect Determination of Atmospheric OH Radical Concentrations from Reactive Hydrocarbon Measurements, S.A. McKeen, M. Trainer, E.Y. Hsie, R.K. Tallamraju and S.C. Liu, *J. Geophys. Res.*, vol. 95, 7493-7500, 1990.

The Historical Trend of Tropospheric Ozone over Western Europe: A Model Perspective, S. McKeen, D. Kley and A. Volz, Proceeding of 1988 Quadrennial Ozone Symposium, Gottingen, FRG, Rumen Bojkov and Peter Fabian, eds., 1989.

On the Chemistry of Stratospheric SO₂ From Volcanic Eruptions, S.A. McKeen, S.C. Liu, and C.S. Kiang, *J. Geophys. Res.*, 89: 4873-4881, 1984.

On the Determination of Transport Variables for Two-Dimensional Photochemical Models of the Stratosphere. Ph.D. Thesis, Georgia Institute of Technology, 158 pgs., 1986.

A Two-Dimensional Model of the Earth's Atmosphere with Application to Stratospheric Debris Transport. M.A. Thesis, University of Montana, 67 pgs., 1977.

Stopping Powers for Electrons Near 500 keV of Some Composite Materials of Biological Interest, S.A. McKeen, D.L. Fulgham, and L.E. Porter, Proceedings of the Montana Academy of Sciences, 34, 128-131, 1974.

Undergraduate Laboratory Measurement of the Stopping Powers of Mylar and Polyethylene for 600 keV electrons, S.A. McKeen, D.L. Fulgham, and L.E. Porter, Proceedings of the Montana Academy of Sciences, 33, 139-141, 1973.

Honors, Awards, Recognition

2016, Co-winner, Haagen-Smit Prize for exceptional contribution to the quality of Atmospheric Environment, recognizing the number of citations of research article: Fully coupled “online” chemistry within the WRF model, G.A. Grell, S.E. Peckham, S. McKeen, R. Schmitz, and G. Frost, *Atmos. Environ.*, 39, 37,6957 – 37,6975 2005.

2014, Team Member, Governor’s Award for high impact research: Into the Air: Helping the public and policy makers understand the air quality and other atmospheric effects of oil and gas activities in Colorado, Utah, Wyoming and beyond.

2013, Team Member, Governor’s Award for high impact research: The 2010 Deepwater Horizon Oil Spill.