

Jennifer G. Murphy

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Education

- 2000-2005 **Ph.D.** in Physical Chemistry (Title: *Photochemistry of Nitrogen Oxides and Ozone on Urban, Regional, and Global Scales*, Supervisor: R.C. Cohen)
Department of Chemistry, University of California, Berkeley
- 1995-2000 **B.Sc.** in Chemistry (Honours) with Environmental Studies Minor
McGill University

Employment

- 2015 - Associate Chair, Graduate Studies, Department of Chemistry, University of Toronto
- 2012 - Associate Professor, Department of Chemistry, University of Toronto
- 2010 - Associate Member of the Graduate Faculty of Physical and Environmental Sciences, UTSC
- 2007 - Full Member of the Graduate Faculty of the School of the Environment, University of Toronto
- 2007 - 2012 Assistant Professor, Department of Chemistry, University of Toronto
- 2005 - 2006 Postdoctoral Research Fellow, School of Environmental Sciences,
University of East Anglia (Supervisor: C.E. Reeves)

Honours

- 2016 Departmental Teaching Award, University of Toronto Department of Chemistry
- 2016 - Member of the Scientific Steering Committee, International Global Atmospheric Chemistry
- 2013 Editors' Citation for Excellence in Reviewing, *Journal of Geophysical Research - Atmospheres*
- 2013 - 2014 Science Leadership Program Fellow
- 2011 Ontario Early Researcher Award
- 2007 - 2016 Canada Research Chair (Tier II) in Atmospheric and Environmental Chemistry
- 2003 - 2004 Berkeley Atmospheric Science Center Graduate Fellowship
- 2003 Outstanding Graduate Student Instructor at UC Berkeley
- 2002 - 2004 NSERC PGS-B Scholarship (held abroad)

Fieldwork Experience

- 2016 NETCARE fieldwork in Canadian Arctic (Alert, NU and aboard CCGS Amundsen)
- 2016 AMOS campaign at the University of Michigan Biological Station, MI, USA
- 2015 Manitou Forest Biosphere-Atmosphere Exchange Study, CO, USA
- 2014 Front Range Air Pollution and Photochemistry Experiment (FRAPPÉ), CO, USA
- 2014 NETCARE research cruise on CCGS Amundsen in the Canadian Arctic Ocean
- 2014 Uintah Basin Winter Ozone Study (UBWOS), UT, USA
- 2013 Oil Sands ground measurement campaign in Fort McKay, Alberta (FOSSILS)
- 2012 Characterizing Ontario Nitrogen Transport and Chemical Transformations (CONTACT)
- 2012 PROPHET tower, University of Michigan Biological Station, MI, USA
- 2010 California Nexus Air Quality Study (CalNex), Pasadena and Bakersfield sites
- 2009 - 2013 Haliburton Forest Flux Tower, Haliburton Forest, Ontario, Canada
- 2008 NITROEurope Intercomparison Campaign, Edinburgh, UK
- 2007 Border Air Quality and Meteorology Study (BAQS-Met), Harrow, Ontario, Canada
- 2006 African Monsoon Multidisciplinary Analysis (AMMA) campaign, Niamey, Niger
- 2004 New England Air Quality Study (NEAQS), Chebogue Point, Canada
- 2003 Lake Tahoe Atmospheric Deposition Study, Big Hill, California, USA

Research Awards (amounts listed are totals over the funding period, Murphy is sole PI except where indicated)

2016 – 2021	“Photo-oxidation and multiphase reactions of atmospheric reduced nitrogen” NSERC Discovery Grant, awarded April 2016	\$225, 000
2016 – 2019	NSERC Discovery Accelerator Supplement Award, awarded April 2016	\$120, 000
2016 – 2019	“CALASET: Canadian Atmospheric Laser Absorption Spectrometer Experiment Test-bed” Canadian Space Agency, awarded March 2016 (P.I. K. Walker, co-PIs J. Murphy, W. Jaeger)	\$500, 000
2015 – 2018	“Reactive nitrogen biogeochemical cycling in the GFDL Earth System Models” U.S. NOAA Earth System Science Grant (PI L. Horowitz; Murphy receives \$100,000 over three years)	\$1,500,000
2013 – 2018	“NETCARE Network on Climate and Aerosols” NSERC Climate Change and Atmospheric Research (CCAR) grant awarded Feb 2013 (P.I. Jon Abbatt, Murphy one of 15 co-Is)	\$4,798,900
2007 - 2016	Canada Research Chair Tier II in Environmental and Atmospheric Chemistry	\$1,000,000
2011 – 2016	“Emissions, chemical transformations, and fate of atmospheric reduced nitrogen including functionalized amines” Environment Canada Grants and Contributions, awarded Dec 2011	\$118, 000
2011 – 2016	“Surface-atmosphere exchange of aerosol in forests” Ontario Early Researcher Award, awarded March 2011	\$100, 000
2011 – 2016	“The Chemistry, Sources and Sinks of Atmospheric Reactive Nitrogen”, NSERC Discovery Grant, awarded April 2011	\$125, 000
2011 – 2016	“Integrating Atmospheric Chemistry and Physics from Earth to Space” NSERC CREATE Grant, awarded June 2011 (PI: J. Rudolph, Murphy one of 10 other co-Is)	\$1,645, 000
2011 – 2013	“Long Term Study of Carbon and Nitrogen Biogeochemistry in a Managed Forest Ecosystem” U of T Connaught New Research Award, awarded May 2011	\$50,000
2011 - 2012	Science Horizons Internship Support Environment Canada Contract, awarded June 2011	\$12,000
2011	“Custom Mobile Sampling Inlet for Ambient Ion Monitor” Contract with Wood Buffalo Environmental Association, Aug 2010	\$20,956
2010 - 2011	“Quantifying ammonia and amines in the atmosphere” Environment Canada Grants and Contributions, awarded June 2010	\$50, 000
2009 - 2012	“Carbon flux measurements in a mixed-age hardwood ecosystem” Ontario Ministry of Environment grant, awarded March 2009 (PI: Murphy (60%), co-Is: N. Basiliko, S. Thomas)	\$150,000
2008 - 2011	“Observations of Atmospheric Reactive Nitrogen” NSERC Discovery Grant, awarded April 2008	\$109,800
2008 - 2010	“Forest management under high nitrogen deposition” NSERC Strategic Project Grant Supplemental Competition March 2008 (PI: S. Thomas, co-Is: J. Murphy (35%), N. Basiliko)	\$200,000
2008 - 2011	Research Affiliate Positions for two graduate students Environment Canada RAP salary support (in lieu of grant support)	\$134,000
2008	Connaught Start-up Award, awarded January 2008	\$10,000

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2007 - 2010	“Analysis of long term measurements of atmospheric composition” Environment Canada Grants and Contributions awarded January 2008	\$60,000
2007 - 2008	University Initiative in Support of Border Air Quality Study Environment Canada and Ontario Ministry of Environment grant (PI: R. McLaren, numerous co-Is, Murphy (12%)) awarded April 2007	\$250,000
2007 - 2009	“Infrastructure Requirements for Field Measurements of Reactive Nitrogen in the Atmosphere”, awarded 2006 CFI (40%), ORF (40%), U of T (20%)	\$650,000

Invited Seminars

- “Surface-Atmosphere Exchange of Reactive Nitrogen”
 - Syracuse University, Department of Chemistry Colloquium, Apr 2016
- “Surface-Atmosphere Exchange of Reactive Nitrogen”
 - Indiana University, School of Public and Environmental Affairs Env Science Seminar, Mar 2016
- “Detecting reduced nitrogen species in atmospheric gas and particle phases”
 - University of Michigan, Department of Chemistry Analytical Seminar, Feb 2016
- “Aerosol Acidity: Observations and Impacts”
 - Trent University, Departments of Chemistry and Physics Seminar, Nov 2014
- “Ammonia: Surface-Atmosphere Exchange and Influences on Aerosol Acidity”
 - Environment Canada Air Quality Research Division Seminar, October 2014
- “An observational perspective on surface-atmosphere exchange of reactive nitrogen”
 - NOAA Geophysical Fluid Dynamics Laboratory, September 2014
- “Aerosol Acidity: Observations and Impacts”
 - Southern Ontario Centre for Atmospheric Aerosol Research Seminar, December 2013
- “Surface-atmosphere exchange of reactive nitrogen in the environment”
 - MIT, Department of Civil and Environmental Engineering Seminar, October 2013
- “Carbon and nitrogen biogeochemistry at a mid-latitude forest”
 - University of Guelph, School of Environmental Sciences Seminar, September 2013
- “Detecting reduced nitrogen species in the atmosphere”
 - University of Wisconsin, Madison, Department of Chemistry Analytical Seminar, Mar 2012
- “Atmospheric reduced nitrogen and links between surface-atmosphere exchange and gas-particle partitioning”
 - Harvard University, Atmospheric Science Seminar Series, Feb 2012
- “Ammonia as an observational constraint on aerosol pH in rural and urban environments”
 - American Geophysical Union Fall Meeting, San Francisco, CA, Dec 2011
- “Atmospheric Reduced Nitrogen (NH_x) and the Coupling between Surface Fluxes and Particle Formation”
 - Berkeley Atmospheric Science Center Seminar Series, University of California, Sep 2011
- “Sources, Sinks, and Chemical Transformations of Atmospheric Reactive Nitrogen”
 - University of Toronto, Department of Geology Seminar Series, Nov 2010
- “Quantifying the sources, chemical transformations, and sinks of atmospheric reactive nitrogen”
 - Environment Canada Atmospheric Science and Technology Directorate Seminar Series, Mar 2010
- “Trends in nitrogen oxides and implications for secondary pollutants in the atmosphere”
 - Mount Allison University, Acadia University, Dalhousie University and University of Prince Edward Island, Oct, 2008
- “Aircraft measurements of VOC over West Africa”
 - University of Toronto Environmental Chemistry Seminar Series, October 2007
 - Centre for Atmospheric Chemistry, York University, October 2007

“Observations of the chemical composition of the atmosphere over West Africa”

- Environment Canada Air Quality Research Division Seminar Series, March 2007
- Aerodyne Research Inc, February 2007

“What the weekend effect in ozone and its precursors can teach us about strategies for air quality improvements”

- Harvard University, Atmospheric Sciences Seminar, April 2006

Invited Conference Presentations

“Oxidation of Reduced Nitrogen Species in the Atmosphere”

- Telluride Workshop, New Insights into Gas Phase Atmospheric Chemistry, Telluride, CO, July 2016

“The Role of Ammonia in Chemistry-Climate Interactions”

- Canadian Society of Chemistry Conference, Ottawa, ON, June 2015

“Relative abundances of gas phase amines and ammonia in the ambient atmosphere”

- American Chemical Society Spring Meeting, Denver, CO, Mar 2015

“Ammonia Surface-Atmosphere Exchange in the Arctic Marine Boundary Layer”

- American Geophysical Union Fall Meeting, San Francisco, CA, Dec 2014

“Surface-atmosphere exchange of ammonia in continental and marine environments”

- American Chemical Society Fall Meeting, San Francisco, CA, August 2014

“The coupling of particle acidity and gas phase ammonia in the biosphere-atmosphere system”

- Goldschmidt Conference in Florence, Italy, August 2013

“Significance of supermicron particles for atmospheric nitrogen oxides”

- American Chemical Society Fall Meeting, Philadelphia, PA, August 2012

“Surface Exchange of Reactive Nitrogen”

- Telluride Workshop, New Insights into Gas Phase Atmospheric Chemistry, Telluride, CO, July 2012

“Methane Fluxes Measured by Eddy Covariance at a Temperate Upland Forest in Central Ontario”

- AMS Conference on Atmospheric Biogeosciences, Boston, MA, May 2012

“Links between the surface-atmosphere exchange and gas-particle partitioning of ammonia”

- Atmospheric Chemistry Gordon Conference, Mt Snow VT, July 2011

“New Insights from Observations of Reduced Nitrogen Species (NH_x)”

- Telluride Workshop, New Insights into Gas Phase Atmospheric Chemistry, Telluride, CO, Aug 2010

“Aircraft Observations of the Lower Atmosphere and Surface Exchange Processes”

- Canadian Space Agency Suborbital Platform Workshop, St Hubert, QC, Apr 2010

“Quantifying the impact of nitrogen oxide emission reductions on secondary pollutants”

- Canadian Society of Chemistry (CSC) Conference, June 2009

Peer-Reviewed Publications (see ResearcherID C-2367-2011 for citation information)

56. Borduas, N., Murphy, J.G., Wang, C., da Silva, G., Abbatt, J.P.D., “Gas Phase Oxidation of Nicotine by OH Radicals: Kinetics, Mechanisms and Formation of HNCO”, in press at *ES&T Lett*, 2016.

55. B. Croft, G. R. Wentworth, R. V. Martin, W. R. Leitch, J. G. Murphy, B. N. Murphy, J. Kodros, J. P. D. Abbatt, and J. R. Pierce, “Contribution of Arctic seabird ammonia to atmospheric particles and cloud radiative effect”, in press, *Nature Communications*, 2016.

54. E.E. McDuffie, P.M. Edwards, J.B. Gilman, B.M. Lerner, W.P. Dubé, M. Trainer, D.E. Wolfe, W.M. Angevine, J. deGouw, E.J. Williams, A.G. Tevlin, J. Murphy, E.V. Fischer, S. McKeen, T.B. Ryerson, J. Peischl, J.S. Holloway, K. Aikin, A.O. Langford, C.J. Senff, R.J. Alvarez II, S.R. Hall, K. Ullmann, K.O. Lantz,

S.S. Brown “Influence of Oil and Gas Emissions on Summertime Ozone in the Colorado Northern Front Range” in press, *JGR-Atmospheres*, 2016.

53. Wentworth, G.R., Murphy, J.G., Benedict, K., Bangs, E., Collett, J., “The role of dew as a nighttime reservoir and morning source for atmospheric ammonia”, *Atmos Chem Phys*, 16, 7435-7449, 2016.

52. Mungall, E.L., Croft, B., Lizotte, M., Thomas, J.L., Murphy, J.G., Lévassieur, M., Martin, R.V., Wentzell, J.J.B., Liggio, J., Abbatt, J.P.D., “Dimethyl sulfide in the summertime Arctic atmosphere: measurements and source sensitivity simulations”, *Atmos Chem Phys*, 16, 6665–6680, 2016.

51. Wentworth, G. R., J. G. Murphy, B. Croft, R. V. Martin, J. R. Pierce, J.-S. Côté, I. Courchesne, J.-É. Tremblay, J. Gagnon, J. L. Thomas, S. Sharma, D. Toom-Saunty, A. Chivulescu, M. Lévassieur, and J. P. D. Abbatt, “Ammonia in the summertime Arctic marine boundary layer: sources, sinks and implications” *Atmos Chem Phys*, 16, 1937-1953, 2016.

50. Borduas, N., B. Place, G. R. Wentworth, J. P. D. Abbatt, and J. G. Murphy, “Solubility and reactivity of HNCO in water: insights into HNCO’s fate in the atmosphere”, *Atmos Chem Phys*, 16, 703-712, 2016.

49. Pusede, S.E., VandenBoer, T.C., Murphy, J.G., Markovic, M.Z., Young, C.J., Veres, P.R., Roberts, J.M., Washenfelder, R.A., Brown, S.S., Ren, X., Tsai, C., Stutz, J., Brune, W.H., Browne, E.C., Wooldridge, P.J., Graham, A.R., Weber, R., Goldstein, A.H., Dusanter, S., Griffith, S.M., Stevens, P.S., Lefer, B.L., Cohen, R.C., “An Atmospheric Constraint on the NO₂ Dependence of Daytime Near-Surface Nitrous Acid (HONO)”, *Env Sci Tech*, 49, 12774–12781, 2015.

48. Wentworth, G.R., Murphy, J.G., Sills, D. M.L., “Impact of lake breezes on ozone, and nitrogen oxides in the Greater Toronto Area” *Atmos Env*, 109, 52-60, 2015.

47. Kroll, J.H., Cross, E.S., Hunter, J.F., Pai, S., TREX XII, TREX XI, Wallace, L.M.M., Croteau, P.L., Jayne, J.T., Worsnop, D.R., Heald, C.L., Murphy, J.G., Frankel, S., “Atmospheric evolution of volcanic smog (“vog”) from Kilauea: Real-time measurements of oxidation, dilution, and neutralization within a volcanic plume”, *Env Sci Tech*, 49, 4129-4137, 2015.

46. VandenBoer, T.C., Young, C.J., Talukdar, R.K., Markovic, M.Z., Brown, S.S., Roberts, J.M., Murphy, J.G., “Nocturnal loss and daytime source of nitrous acid through reactive uptake and displacement” *Nature Geoscience*, 8, 55-60, 2015.

45. Borduas, N., da Silva, G., Murphy, J.G., Abbatt, J.P.D., “Experimental and Theoretical Understanding of the Gas Phase Oxidation of Atmospheric Amides with OH Radicals: Kinetics, Products, and Mechanisms”, *J Phys Chem A*, 119, 19, 4298-4308, 2015.

44. Geddes, J.A. and Murphy, J.G., Schurman, J., Petroff, A., Thomas, S.C., Net ecosystem exchange of an uneven-aged managed forest in central Ontario, and the impact of a spring heat wave event” *Agricultural and Forest Meteorology*, 198-199, 105-115, 2014.

43. Wentworth, G.R., Murphy, J.G., Gregoire, P.K., Cheyne, C.A.L., Tevlin, A.G., Hems, R., “Soil-atmosphere exchange of ammonia in a non-fertilized grassland: measured emission potentials and inferred fluxes” *Biogeosciences*, 11, 5675–5686, 2014.

42. Pugliese, S.C., Murphy, J.G., Geddes, J.A., Wang, J.M., “Chemical and meteorological factors influencing ground-level ozone in the Greater Toronto Area and the efficacy of precursor reductions” *Atmos Chem Phys* 14, 8197-8207, 2014.
41. Kelly, J.T., Baker K.R., Nowak, J.B., Murphy, J.G., Markovic, M.Z., VandenBoer, T.C., Ellis, R.A., Neuman, J.A., Weber, R.J., Roberts, J.M., Veres, P.R., de Gouw, J.A., Beaver, M.R., Newman, S., Misenis, C., “Fine-Scale Simulation of Ammonium and Nitrate over the South Coast Air Basin and San Joaquin Valley of California during CalNex-2010” *JGR-Atmospheres*, 119, 3600-3614, 2014.
40. VandenBoer, T.C., Markovic, M.Z., Sanders, J.E., Ren, X., Pusede, S.E., Browne, E.C., Cohen, R.C., Zhang, L., Thomas, J., Brune, W.H., Murphy, J.G., “Evidence for a nitrous acid (HONO) reservoir at the ground surface in Bakersfield, CA during CalNex 2010” *JGR-Atmospheres*, 119, 9093-9106, 2014.
39. Markovic, M.Z., VandenBoer, T.C., Baker, K.R., Kelly, J.T., Murphy, J.G., “Measurements and modeling of the inorganic chemical composition of fine particulate matter and associated precursor gases in California’s San Joaquin Valley during CalNex 2010” *JGR-Atmospheres*, 119, 6853–6866, 2014.
38. Geddes, J.A. and Murphy, J.G., “Observations of reactive nitrogen oxide fluxes by eddy covariance above two mid-latitude North American mixed hardwood forests”, *Atmos Chem Phys*, 14, 2939–2957, 2014.
37. Gentner, D.R. , Ford, T.B., Guha, A., Boulanger, K., Brioude, J., Angevine, W.M., de Gouw, J.A., Warneke, C., Gilman, J.B., Ryerson, T.B., Peischl, J., Meinardi, S., Blake, D.R., Atlas, E., Lonneman, W.A., Kleindienst, T.E., Beaver, M.R., St. Clair, J.M., Wennberg, P.O, VandenBoer, T.C., Markovic, M.Z., Murphy, J.G., Harley, R.A., Goldstein, A.H., “Emissions of organic carbon and methane from petroleum and dairy operations in California’s San Joaquin Valley”, *Atmos Chem Phys*, 14, 4955–4978, 2014.
36. Schiferl, L.D. , Heald, C.L. , Nowak, J.B., Holloway, J.S., Neuman, J.A., Bahreini, R., Pollack, I.B., Ryerson, T.B., Wiedinmyer, C., Murphy, J.G., “An Investigation of Ammonia and Inorganic Particulate Matter in California during the CalNex Campaign”, *JGR-Atmospheres*, 19, 1883-1902, 2014.
35. Marais, E.A., Jacob, D.J., Guenther, A., Chance, K., Kurosu, T.P., Murphy, J.G., Reeves, C.E., Pye, H.O.T., “Improved model of isoprene emissions in Africa using OMI satellite observations of formaldehyde: implications for oxidants and particulate matter” *Atmos Chem Phys* , 14, 7693-7703, 2014.
34. VandenBoer, T.C., Brown, S.S., Murphy, J.G., Keene, W.C., Young, C.J., Pszenny, A.A.P., Kim, S., Warneke, C., de Gouw, J.A., Maben, J.R., Wagner, N.L., Riedel, T. P., Thornton, J.A., Wolfe, D.E., Dubé, W.P., Öztürk, F., Brock, C.A., Grossberg, N., Lefer, B., Lerner, B., Middlebrook, A.M., Roberts, J.M., “Understanding the role of the ground surface in HONO vertical structure: High resolution vertical profiles during NACHTT-11”, *JGR-Atmospheres*, 118, 10,155–10,171, 2013.
33. Wang, J. M., Murphy, J. G., Geddes, J. A. , Winsborough, C. L., Basiliko, N., Thomas, S. C., “Methane fluxes measured by eddy covariance and static chamber techniques at a temperate forest in central Ontario, Canada”, *Biogeosciences*, 10, 4371-4382, 2013.
32. Borduas, N., Abbatt, J. P.D., Murphy, J.G., “Gas Phase Oxidation of Monoethanolamine (MEA) with OH Radical and Ozone: Kinetics, Products, and Particles”, *Environ Sci Technol*, 47(12), 6377-6383, 2013.

31. Zhao, Y., Kreisberg, N.M., Worton, D.R., Isaacman, G., Weber, R.J., Liu, S., Day, D.A., Russell, L.M., Markovic, M.Z., VandenBoer, T.C., Murphy, J.G., Hering, S.V., Goldstein, A.H., “Insights into Secondary Organic Aerosol Formation Mechanisms from Measured Gas/Particle Partitioning of Specific Organic Tracer Compounds”, *Environ Sci Technol*, DOI: 10.1021/es304587x, 2013.
30. Ensberg, J.J., Craven, J.S., Metcalf, A.R., Angevine, W.M., Bahreini, R., Brioude, J., Cai, C., de Gouw, J.A., Ellis, R.A., Flynn, J.H., Haman, C.L., Hayes, P.L., Jimenez, J.L., Lefer, B.L., Middlebrook, A.M., Murphy, J.G., Neuman, J.A., Nowak, J.B., Roberts, J.M., Stutz, J., Veres, P.R., Walker, J.M., Seinfeld, J.H. “Inorganic and black carbon aerosols in the Los Angeles Basin during CalNex” *JGR-Atmospheres*, 118, 1-27, 2013.
29. Liu, J., Zhang, X., Parker, E.T., Veres, P.R., Roberts, J.M., de Gouw, J.A., Hayes, P.L., Jimenez, J.L., Murphy, J.G., Ellis, R.A., Huey, G.L., Weber, R.J., “On the Gas-Particle Partitioning of Soluble Organic Aerosol in Two Urban Atmospheres with Contrasting Emissions: Part 2. Gas and Particle Phase Formic Acid”, *JGR-Atmospheres*, 117, D00V21, 2012.
28. Ahrens, L., Harner, T., Shoeib, M., Lane, D.A., Murphy, J.G., “Improved characterization of gas-particle partitioning for per- and polyfluoroalkyl substances in the atmosphere using annular diffusion denuder samplers”, *Environ Sci Technol*, 46 (13), 7199–7206, 2012.
27. Geddes, J.A., Murphy, J.G., O’Brien, J.M., Celarier, E.A. “Biases in long-term NO₂ averages inferred from satellite observations due to cloud selection criteria”, *Remote Sensing Environ*, 124, 210-216, 2012.
26. Markovic, M.Z., VandenBoer, T.C., Murphy J.G., “Characterization and optimization of an online system for the simultaneous measurement of atmospheric water-soluble constituents in the gas and particles phases” *J Environ Monitor*, 14 (7), 1872 – 1884, 2012. (*invited submission to Emerging Investigators issue*)
25. VandenBoer, T.C., Markovic, M.Z., Petroff, A., Czar, M.F., Borduas, N., Murphy J.G., “Ion chromatographic separation and quantification of alkyl methylamines and ethylamines in atmospheric gas and particulate matter by ion concentration and suppressed conductivity detection” *J Chromatogr A*, 1252, 74-83, DOI: 10.1016/j.chroma.2012.06.062, 2012.
24. Marais, E. A., Jacob, D.J., Kurosu, T.P., Chance, K., Murphy, J.G., Reeves, C.E., Mills, G., Casadio, S., Millet, D.B., Barkley, M.P., Paulot, F., Mao, J., “Isoprene emissions in Africa inferred from OMI observations of formaldehyde columns”, *Atmos Chem Phys*, 12, 6219-6235, 2012.
23. Ahlm, L. Liu, S., Day, D.A., Russell, L.M., Weber, R., Gentner, D.R., Goldstein, A.H., DiGangi, J.P., Henry, S.B., Keutsch, F.N, VandenBoer, T.C., Markovic, M.Z., Murphy, J.G., Ren, X., Scheller, S., “Formation and growth of ultrafine particles from secondary sources in Bakersfield, California” *J. Geophys Res-Atmos*, 117, D00V08, 2012.
22. VandenBoer, T.C., Petroff, A., Markovic, M.Z., Murphy, J.G., “Size distribution of alkyl amines in continental particulate matter and their online detection in the gas and particle phase”, *Atmos Chem Phys*, 11, 4319-4332, 2011.
21. Markovic, M. Z., Hayden, K.L., Murphy, J.G., Makar, P.A., Ellis, R. A., Chang, R.Y.-W., Slowik, J.G., Mihele, C., Brook, J. “The effect of meteorological and chemical factors on the agreement between

observations and predictions of fine aerosol composition in Southwestern Ontario during BAQS-Met”, *Atmos Chem Phys*, 11, 3195-3210, 2011.

20. Ellis, R. A., Murphy, J.G., Markovic, M.Z., VandenBoer, T. C., Makar, P. A., Brook, J, Mihele, C. “The influence of gas-particle partitioning and surface-atmosphere exchange on ammonia during BAQS-Met”, *Atmos Chem Phys*, 11, 133-145, 2011.

19. Mari, C., Reeves, C.E., Law, K.S., Ancellet, G., Andres-Hernandez, L., Barret, B., Bechara, J., Borbon, A., Bourar, I., Cairo, F., Commane, R., Delon, C., Evans, M.J., Fierlie, F., Floquet, C., Galy-Lacaux, C., Heard, D.E., Homan, C.D., Ingham, T., Larsen, N., Lewis, A.C., Liousse, C., Murphy, J.G., Orlandi, E., Oram, D.E., Saunio, M., Serca, D., Stewart, D.J., Stone, D., Thouret, V., van Velthoven, P., Williams, J.E., “Atmospheric composition of West Africa: highlights from the AMMA program” *Atmos Sci Lett*, 12(1), 13-18, 2011.

18. Stone, D., Evans, M. J., Commane, R., Ingham, T., Floquet, C. F. A. , McQuaid, J. B., Brookes, D. M., Monks, P.S., Purvis, R., Hamilton, J., Hopkins, J., Lee, J, Lewis, A.C., Stewart, D., Murphy, J.G., Mills, G., Oram, D., Reeves, C.E., and Heard, D.E., “HO_x observations over West Africa during AMMA: impact of isoprene and NO_x”, *Atmos Chem Phys*, 10, 9415–9429, 2010.

17. Ferreira, J., Reeves, C.E., Murphy, J.G., Garcia-Carreras, L., Parker, D.J., Oram, D.E., “Isoprene Emissions Modelling for West Africa using MEGAN”, *Atmos Chem Phys*, 10, 8453-8467, 2010.

16. Reeves, C.E., Formenti, P., Afif, C., Ancellet, G., Attie, J.-L., Bechara, J., Borbon, A., Cairo, F., Coe, H., Crumeyrolle, S., Fierli, F., Flamant, C., Gomes, L., Hamburger, T., Lambert, C., Law, K.S., Mari, C., Matsuki, A., Methven, J., Mills, G.P., Minikin, A., Murphy, J.G., Nielsen, J.K., Oram, D.E., Parker, D.J., Richter, A., Schlager, H., Schwarzenbock, A., Thouret, V., “Chemical and aerosol characterisation of the troposphere over West Africa during the monsoon period as part of AMMA”, *Atmos Chem Phys*, 10, 7575-7601, 2010.

15. Murphy, J.G., Reeves, C.E., Oram, D.E., “Measurements of volatile organic compounds over West Africa”, *Atmos Chem Phys*, 10, 5281-5294, 2010.

14. Wooldridge, P.J., Bertram, T.H., Farmer, D.K., Murphy, J.G., Thornton, J.A., Perring, A., Roberts, J.M., Flocke, F., Singh, H.B., Cohen, R.C., “Total Peroxy Nitrates in the atmosphere: the Thermal Dissociation-Laser Induced Fluorescence technique and comparisons to speciated PAN measurements”, *Atmos Meas Tech*, 3, 593-607, 2010.

13. Ellis, R.A., Murphy, J.G., Pattey, E., van Haarlem, R., O’Brien, J.M., Herndon, S.C., “Characterizing a Quantum Cascade Tunable Infrared Laser Differential Absorption Spectrometer (QC-TILDAS) for Measurements of Atmospheric Ammonia”, *Atmos Meas Tech*, 3, 397-406, 2010.

12. von Bobruzki, K., C. F. Braban, D. Famulari, S. K. Jones, T. Blackall, T. E. L. Smith, M. Blom, H. Coe, M. Gallagher, M. Ghalaieny, M. R. McGillen, C. J. Percival, J. D. Whitehead, R. Ellis, J. Murphy, A. Mohacsi, H. Junninen, A. Pogany, S. Rantanen, M. A. Sutton, and E. Nemitz “Field Inter-comparison of Eleven Ammonia Measurement Techniques”, *Atmos Meas Tech*, 3, 91-112, 2010.

11. Garcia-Carreras, L., Parker, D.J., Taylor, C.M., Murphy, J.G., Reeves C.E. “The impact of mesoscale vegetation heterogeneities on the dynamical, thermodynamical and chemical properties of the planetary boundary layer”, *J. Geophys Res-Atmos*, 115, D03102, doi:10.1029/2009JD012811, 2010.

10. Geddes, J.A., Murphy, J.G., Wang, D.K., “Long term changes in nitrogen oxides and volatile organic compounds in Toronto and the challenges facing local ozone control”, *Atmos Env*, 43, 3407-3415, 2009.
9. Capes, G., Murphy, J.G., Reeves, C.E, McQuaid, J.B., Hamilton, J.F., Hopkins, J.R., Crosier, J., Williams, P.I., Coe, H., “Secondary organic aerosol from biogenic VOCs over West Africa during AMMA”, *Atmos Chem Phys*, 9, 3841-3850, 2009.
8. Saunio, M., Reeves, C.E., Mari, C., Murphy, J.G., Stewart, D.J., Mills, G.P., Oram, D.E., Purvis, R.M, Factors controlling the distribution of ozone in the West African lower troposphere during the AMMA (African Monsoon Multidisciplinary Analysis) wet season campaign” *Atmos Chem Phys*, 9, 6135-6155, 2009.
7. Murphy, J.G., Day, D.A., Cleary, P.A., Wooldridge, P.J., Cohen, R.C, Millet, D.B., Goldstein, A.G., “The weekend effect within and downwind of Sacramento: Part 1. Observations of ozone, nitrogen oxides, and VOC reactivity”, *Atmos Chem Phys*, 7(20), 5327-5339, 2007.
6. Murphy, J.G., Day, D.A., Cleary, P.A., Wooldridge, P.J., Cohen, R.C., “Observations of the diurnal and seasonal trends in nitrogen oxides in the western Sierra Nevada”, *Atmos Chem Phys*, 6(12), 5321-5338, 2006.
5. Boxe, C.S., Colussi, A.J., Hoffman, M.R., Perez, I.M., Murphy, J.G., Cohen, R.C. “Kinetics of NO and NO₂ Evolution from Illuminated Frozen Nitrate Solutions” *J. Phys Chem A*, 110(10): 3578-3583, 2006.
4. Boxe, C.S., Colussi, A.J., Hoffman, M.R., Murphy, J.G., Bertram, T.H., Cohen, R.C. “Photochemical Production and Release of Gaseous NO₂ from Nitrate-Doped Water Ice” *J. Phys Chem A* 109(38): 8520-8525, 2005.
3. Murphy, J.G., Thornton, J.A., Wooldridge, P.J., Day, D.A., Rosen, R.S., Cohen, R.C., Cantrell, C., Lefer, B., Shetter, R.E, “Measurements of the sum of HO₂NO₂ and CH₃O₂NO₂ in the remote troposphere”, *Atmos Chem Phys*, 4(2), 377-384, 2004.
2. Cohen, R.C. and Murphy, J.G., “Nitrogen Oxide Photochemistry in Earth’s Stratosphere: Constraints from Observations”, *Chemical Reviews*, 103(12): 4985-4998, 2003.
1. Ying, H., Murphy, J., Tromp, J.W., Mermert, J.M., Salin, E.D., “Warning diagnostics for inductively coupled plasma mass spectrometry” *Spectrochim Acta Part B*, 55(4), 311-326, 2000.

Manuscripts Under Review

60. Borduas, N., Abbatt, J.P.D., Murphy, J.G., So, S., da Silva, G., “Gas-Phase Mechanisms of the Reactions of Reduced Organic Nitrogen Compounds with OH Radicals” in review at *ES&T*, 2016.
59. Morenz, K., Shi, Q., Murphy, J.G., Donaldson, D.J., “Nitrate Photolysis in Salty Snow”, in review at *J Phys Chem A*, 2016
58. Zheng, T., Chen, J., Arain, M.A., Thomas, S.C., Murphy, J.G., Geddes, J.A., Black, T.A., “Inverting the maximum carboxylation rate (V_{cmax}) from the sunlit leaf photosynthesis rate derived from measured light response curves at tower flux sites” in review at *Agr For Met*, AGRFORMET-D-16-00469, 2016.

57. Lonsdale, C.R., Hegarty, J.D., Cady-Pereira, K., Alvarado, M.J., Henze, D.K., Turner, M.D., Capps, S.L., Nowak, J.B., Neuman, J.A., Middlebrook, A.M., Bahreini, R., Murphy, J.G., Markovic, M., VandenBoer, T.C., Russell, L.M., Scarino, A.J., “Modeling the Diurnal Variability of Agricultural Ammonia in Bakersfield, California during CalNex” in review at *Atmos Chem Phys*, Mar 2016.

Government Reports

Murphy, J.G., Cohen, R.C., “Keeping Tahoe Blue: Quantifying Atmospheric Nitrogen Oxides Upwind and in the Lake Tahoe Basin”, Final Report for California Air Resources Board, Contract No. 01-327, January, 2005.

Murphy, J.G., Cohen, R.C., “Chemistry and Transport of Nitrogen Oxides on the Western Slopes of the Sierra Nevada Mountains: Implications for Lake Tahoe” for the California Air Resources Board contribution to the Lake Tahoe Atmospheric Deposition Study, April, 2004.

Textbook Chapter

Geddes, J.A., Murphy, J.G., solicited textbook chapter entitled, “The Science of Smog: A Chemical Understanding of Ground Level Ozone and Fine Particulate Matter” in the Handbook of Metropolitan Sustainability, editor Professor Frank Zeman and Woodhead Publishing Ltd, 2012.

Courses Taught

Undergraduate

CHM139 *Chemistry: Physical Principles* (co-taught Winter 08, 09, 10 and Fall 12)
CHM210 *Chemistry of Environmental Change* (new course Fall 11, 12, 15, Winter 15)
CHM415 *Atmospheric Chemistry* (Winter 07, 08, 09, 10, 11, 12, 16)
ENV316 *Laboratory and Field Methods in Environmental Science* (new course Fall 14, Fall 15)

Graduate

CHM1415 *Atmospheric Chemistry* (joint with CHM415)
CHM1401 *Transport and Fate of Chemical Species in the Environment* (co-taught Fall 07, 09, 12, 14)
CHM1430 *Advanced Topics in Atmospheric Chemistry* (co-taught Winter 09, Fall 11, Winter 16)

Theses Supervised (primary supervisor except where noted)

Masters Students

Trevor VandenBoer *AIM-IC Applications to Nitrous Acid and Precipitation Sampling*
supervised September 2007-January 2009, completed Jan 2009

Avila de Sousa *Wet and Dry Deposition of Water-Soluble Inorganic Ions, in Particular Reactive Nitrogen Species to Haliburton Forest*
supervised September 2008 – Aug 2010, completed Aug 2010

Jonathan Wang *Methane Flux Measurements at a Temperate Upland Forest in Central Ontario*
supervised June 2010 – July 2012, completed July 2012

Phillip Gregoire *Implications of Ambient Ammonia on Aerosol Acidity and Reactive Nitrogen Measurements*
supervised September 2011 – June 2013, completed June 2013

Doctoral Students

Raluca Ellis *Using High Resolution Measurements and Models to Investigate the Behaviour of Atmospheric Ammonia*
supervised September 2006 – September 2011, completed Sep 2011

Milos Markovic *Water Soluble Aerosol and Precursor Gas Composition of the Ambient Atmosphere Quantified Using Online Ion Chromatography*
supervised September 2006 – Mar 2012, completed Mar 2012

Jeffrey Geddes *Observations of Reactive Nitrogen Oxides: From Urban Ground Level Ozone Production to Biosphere-Atmosphere Exchange in Downwind Forest Environments*
supervised January 2008 – April 2013, completed April 2013

Trevor VandenBoer *Atmospheric Chemistry of Trace Nitrogenous Acids and Bases*
supervised January 2009 - present, completed August 2012

Alexandra Tevlin *Aerosol Acidity and Ammonia*
supervised September 2010 – present

Gregory Wentworth *Ammonia in Rural and Remote Environments*
supervised September 2011 – present

Nadine Borduas *The Atmospheric Fate of Organic Nitrogen Compounds*
co-supervised with Jon Abbatt, November 2011 – Sep 2015

Stephanie Pugliese *Observational Constraints on Urban Air Pollutants and Greenhouse Gases*
Supervised Sep 2012 - present

Angela Hong *Trace Gas Interactions with Water and Ice*
co-supervised with Jamie Donaldson, March 2013 – present

Sarah Kavassalis *Climate and Chemical Controls on the Variability in Ground-level Ozone*
supervised May 2014 - present

Amy Hrdina *Development of an REA System to Measure Particle Deposition to Ecosystems*
supervised Sep 2014 – present

Qianwen Shi *Measurements of Nitrogen Oxide Fluxes over Soil and Snow*
Supervised Sep 2015 - present

Postdoctoral Fellows

Alexandre Petroff *Particle Fluxes in a Temperate Forest and their Contribution to Nitrogen Deposition*
supervised June 2009 – May 2012 (research associate from June 2011)

Alexander Moravek *Eddy Covariance Fluxes of Ammonia in Remote Ecosystems*
supervised Sep 2014 - present

Research Associate

Geoffrey Stupple *Long-term Measurements of Carbon and Energy Fluxes at Haliburton Forest*
supervised Sep 2011 – Mar 2012

Research Assistants

Amanda Cole, Science Horizons Intern, October 2007 – April 2008

Sonya Issad, French MSc intern, summer 2011

Pegah Baratzadeh, Science Horizons Intern, Sep 2015 – Mar 2016

Undergraduate Student Researchers

Vivian Xie, USRA 2016

Alice Zhu, USRA 2016

Juan Zhao, CGCS summer intern 2016

Nancy Khuu, CHM499, 2015-2016

Supriya Singh, CGCS summer intern 2015

Heather Schwartz-Narbonne, USRA 2015

Denise Peda, USRA 2015

Bryan Place, CHM499, 2014-2015

Erin Evoy, CGCS summer intern, 2014

Sarah Kavassalis, IACPES summer student, 2014

updated Aug 3, 2016

JGM CV 11/13

Cynthia Cheung, CHM499, 2013-2014
Janice Tang, CHM499, 2013-2014
Xinke Wang, CHM499, 2013-2014, co-supervised with Jessica D'Eon
Carol Cheyne, USRA 2012 and CHM499 2012-2013
Rachel Hems, CGCS summer intern 2012
Irene Brueckner-Irwin, CGCS summer intern 2011
Alexandra Carvajal, ENV 493, 2010-2011
Wuren Zhang, ROP299, 2010
Lewis Liu, ROP299, 2010
Lori Yin, USRA 2010 (recipient of Meteorological Service of Canada Undergraduate Supplement)
Ran Zhao, CHM499, 2009-2010
Heeba Abdullah, ROP299, 2009-2010
Vero Oldham, ROP299, 2009-2010
Theodora Nah, summer 2009
Lucy Oliver, CHM499, 2008-2009
Mihaela Ceausu, ROP299, 2008-2009, research assistant summer 2011
Michael Chudzinski, USRA 2008 and summer 2009
Martin Czar, USRA 2008 and summer 2009 – winter 2010
Deborah Durbin, USRA 2008
Elton Chan, CHM499, 2007-2008
Victor Chukalovskiy, ROP299, 2007-2008
Kelvin Fong, ROP299, 2007-2008
Jeffrey Geddes, CGCS summer intern 2007

Outreach/Educational Activities

Lecturer on environmental chemistry to high school students visiting U of T	Dec 2015, Mar 2016
Speaker at Royal York Library during Science Literacy Week	Sep 2015
Speaker on the Livable Cities panel at the Canadian Science Writers' Association conference	June 2014
Lecturer in Royal Canadian Institute public science series	Dec 2013
Lecturer and panelist at Arctic Atmospheric Science CREATE summer school	July 2013
Lecturer at IACPES CREATE summer school	annually 2013-2015
Speaker at School of the Environment Research Day, University of Toronto	April 2013
Speaker at Chemistry Ask-a-Laureate Activity	May 2013
Instructor in MIT Travelling Research Experience (TREX) in Hawaii	Jan 2013, 2015
Speaker on climate change and clean energy at Pueblo Science summer camp	Aug 2012
Interview with Australian Broadcasting Corporation	Feb 2011
Speaker at Campus Day Activities, Convocation Hall	Oct 2010
Speaker at inaugural Chemistry Ask-a-Laureate Activity	May 2010
Panelist at the "Positioning for a Career in Academia" Workshop	Apr 2010
'Inspirational' talk to high school students visiting department	May 2008, 2009
TCDSB Gifted Students Conference Enrichment Activity	Feb 2009
Girls Rock Science Saturday Enrichment Activity	annually 2008-2012
Public Lecture: Atmospheric Chemistry and Society, Mount Allison University	Oct 2008
Virtual Researcher on Call (VROC) – High School Activity on Environmental Toxicology	May 2008
Speaker at Central Technical School's Environmental Awareness Seminar Series	Feb 2008
Presentation on air quality-health research project to GTA Clean Air Council at City Hall	Oct 2007

Administrative Positions

Professional Activities at U of T

- 2015 - Associate Chair of Graduate Studies, Chemistry Department
- 2013 - Faculty liaison for the environmental chemistry undergraduate program
- 2012 - 2013 Member of Environmental Science curriculum committee
- 2012 Member of search committee for Director of School of the Environment
- 2010 - 2012 Faculty liaison for the environmental chemistry undergraduate program
- 2009 - 2012 Member of Site Steering Committee for Canadian Aerosol Research Network (CARN)
- 2009 - 2011 Member of the Science Advisory Committee for Pathways to Aboriginal Learning (PAWSS)
- 2009 Faculty co-organizer for Centre for Global Change Science Graduate Student Symposium
- 2009 Faculty liaison for Environmental Chemistry Colloquium
- 2008 - 2014 Member of the Graduate Studies Committee, Department of Chemistry
- 2008 - 2012 Member of the Colloquium Committee, Department of Chemistry
- 2007 - 2009 Management Committee member of Southern Ontario Centre for Atmospheric Aerosol Research

Professional Activities – External

- 2016 Session co-convener for 2016 IGAC conference in Breckenridge, CO
- 2015 Session co-convener for Fall 2015 American Geophysical Union Meeting, San Francisco
- 2015 Symposium co-organizer for Canadian Meteorological and Oceanographic Society meeting
- 2014 - Council member of the Royal Canadian Institute for the Advancement of Science
- 2014 Review Panel Member, Canada Foundation for Innovation
- 2014 External PhD Examiner for Eva Webster, Environmental and Life Sciences, Trent University
- 2014 Symposium co-organizer for Canadian Society of Chemistry Conference
- 2013 External PhD Examiner for Patryck Wojtal, Department of Chemistry, York University
- 2013 Review Panel Member, US National Oceanic and Atmospheric Administration (NOAA)
- 2012 - Associate Editor, *Geochemical Journal*
- 2012 Member of Adjudication Panel for Ontario Graduate Scholarship Competition
- 2010 - 2012 Treasurer of the Environmental Division of the Canadian Society of Chemistry
- 2010 External PhD Examiner for Julie Bennett, Department of Chemistry, York University
- 2010 External PhD Examiner for Patrick Marchand, Universite de Sherbrooke
- 2010 Environmental Chemistry Divisional Representative for the CSC Conference, Toronto
- 2010 Reviewer, National Agri-environmental Health Analysis and Reporting Program
- 2009 Session convener at Spring American Geophysical Union Meeting, Toronto
- 2009 Reviewer, Canadian Space Agency's Space Science Enhancement Program (SSEP)
- 2008 - Reviewer, NSERC Discovery Grant competition
- 2008 Reviewer, US National Oceanic and Atmospheric Administration (NOAA) ACC program
- 2008 Session Convener at Fall 2008 American Geophysical Union Meeting, San Francisco
- 2008 Session Chair at International Global Atmospheric Chemistry Conference, Annecy, France
- 2008 External PhD Examiner for Ian Burling, Department of Chemistry, York University
- 2007 - Reviewer, *Geophysical Research Letters*, *Journal of Geophysical Research - Atmospheres*, *Atmospheric Chemistry and Physics*, *Atmospheric Measurement Techniques*, *Environmental Science and Technology*, *Atmospheric Environment*, *Biogeosciences*, *Nature*
- 2006 - Editorial Board member, *Atmospheric Chemistry and Physics*