Dan Weaver

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Current Position:

2019 – current	Assistant Professor, Teaching Stream
	Physics & Astrophysics Group
	Department of Physical & Environmental Sciences
	University of Toronto Scarborough

Education: University of Toronto

2018	Ph.D., Dept. of Physics
	Thesis: Water Vapour Measurements in the Canadian High Arctic Supervisor: Prof. Kimberly Strong
2012	Master of Science, Dept. of Physics
2010	Bachelor of Education, Ontario Studies in Education Qualifications: Physics & Politics (Intermediate/Senior)
2007	Bachelor of Science, Astronomy & Astrophysics, Political Science

Professional Certification

2010 – Present Tea	acher, Ontario	College of T	eachers (OCT)
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2016 – 2021 Professional Physicist, Canadian Association of Physicists

Professional Certificates

2021 – 2022 Effective Online Teaching Practices Certificate, Association of College and University Educators (ACUE)

Awards

Funding

Teaching Grants

Spring 2023	UTSC CTL – Teaching Equipment Grant: \$13,844.45 "Physics Waves Experiment"
Fall 2022	UTSC PIE – PHYA11 Practical Curriculum Renewal: \$3,500 "Newton's Laws & Forces Experiment"
2020 – 2021	UTSC CTL – Teaching Equipment Grant: \$9,544 "Optics experiment kits"
2019 – 2020	UTSC CTL – Teaching Equipment Grant: \$17,844 "Track and smart carts for physics kinematic and dynamics physics experiments"
2019 – 2020	UTSC CTL – Teaching Software Grant: \$1,231 "PASCO Capstone 2"
2019 – 2020	UTSC CTL – Teaching Equipment Grant: \$8,793 "Portable educational kit Atomic Force Microscope for instructional purposes" (co-investigator: Ruby Sullan, Chemistry)

Funding (graduate school)

2015 – 2016	E. F. Burton Fellowship (\$11,500)
2014 – 2015	R.A. Blyth Fellowship (\$11,000)
2013 - 2014	University of Toronto Fellowship (\$11,000)
2012 – 2013	University of Toronto Fellowship (\$10,000)
2011 - 2012	University of Toronto Fellowship (\$10,000)
Travel	
2016	Centre for Global Change Science (CGCS),
	Graduate Student Research Award (\$4500)
2012	University of Toronto School of Graduate Studies (SGS),
	Conference Grant (\$770)
Fieldwork	
2015 – 2016	Northern Scientific Training Program (\$2900)
2014 – 2015	Northern Scientific Training Program (\$2900)
2013 - 2014	Northern Scientific Training Program (\$3400)
2010 - 2011	Northern Scientific Training Program (\$3000)
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Awards (continued)

Research excellence, leadership, and teaching

2022	Dean's Merit Award, University of Toronto Scarborough	
2020	Dean's Merit Award, University of Toronto Scarborough	
June 2020	Tertia M.C. Hughes Memorial Graduate Student Prize, Canadian Meteorological and Oceanographic Society (For excellence in Ph.D. thesis.)	
June 2017	Van Kranendonk Teaching Assistant Award, Dept. of Physics, University of Toronto	
April 2017	Alan H. Weatherley Graduate Fellowship in Environmental Leadership, School of the Environment, University of Toronto	
April 2015	George Burwash Langford Award, School of the Environment, University of Toronto	
Scientific research communication		
October 2018	Outstanding Student Poster and PICO (OSPP) Award, European Geosciences Union (EGU) meeting, Vienna, Austria	
November 2012	Best student presentation, CANDAC/CREATE annual workshop, Toronto, Ontario, Canada	
July 2012	Best research poster, CREATE Summer School in Arctic Atmospheric Science, Nottawasaga, Ontario, Canada	

Research Experience

2019 – present Founder and Leader, UTSC Atmospheric Observatory

- Maintain and operate instruments, e.g., Pandora.
- Negotiate legal agreements with partner groups and organizations, e.g., Environment and Climate Change Canada.
- Analyze atmospheric measurement data.
- Plan and implement long term research strategy and links to education and outreach.

2011 – 2018 Graduate Student, Department of Physics, University of Toronto

- Led scientific study of several atmospheric water vapour measurement techniques using instruments located at Eureka, Nunavut to determine the reliability and accuracy of their high Arctic results.
- Investigated the accuracy of new data from the TCCON and MUSICA measurement networks to assess their ability to contribute to studies of climate and atmospheric dynamics using water isotopologues.
- Contributed to the validation analysis of multiple satellite datasets (e.g. Atmospheric Chemistry Experiment, GOSAT).
- Analyzing high Arctic satellite measurements of water vapour, focusing on products of the Atmospheric Chemistry Experiment.
- Developed macro codes to support remote operation of PEARL FTIR.

2014 (fall) Volunteer Research Assistant, Dept. of Physics, University of Toronto

 Contributed to the design and implementation of undergraduate education research, investigating the ideal organization of students into groups by skill level (study led by Prof. Harlow and Prof. Harrison).

- Operated and maintained instruments the Toronto Atmospheric Observatory (TAO), including daily measurements of urban pollutants and greenhouse gases using an ABB DA8 Fourier Transform Spectrometer.
- Analyzed OSIRIS satellite data using MATLAB for use in research, conference presentations, and reports.
- Researched and facilitated construction of two new heliostat (sun tracking) instruments.

^{2010 – 2011} Environment Canada Science Horizons Research Internship, Department of Physics, University of Toronto

Field Campaigns

Feb.25 – Mar.18	Canadian Arctic ACE/OSIRIS Validation Campaign
2015	Polar Environment Atmospheric Research Laboratory (PEARL)
	Eureka, Nunavut, Canada

- Led campaign team communications, e.g. wrote daily emails summarizing research progress and challenges to stakeholders and collaborators, updated campaign website.
- Wrote "Guide to being the ACE campaign webmaster" document to support future campaign communications.
- Posted campaign highlights to social media accounts (@CREATEarcticsci on Twitter and Instagram) for public outreach, resulting in direct engagement (e.g. retweets, link clicks) with hundreds of people and reaching over 37,000 accounts.
- Operated Bruker IFS 125HR, a high-resolution Fourier transform spectrometer, to acquire solar absorption measurements of the atmospheric gases, contributing to global observation networks (e.g. Network for Detection of Atmospheric Composition Change) as well as ACE and OSIRIS satellite validation.
- Performed 125HR maintenance and calibration
- Repaired 125HR source chiller.
- Installed and set up new computer to run the 125HR instrument.
- Improved OPUS macro codes to run measurements with greater efficiency and to report measurement successes through on-screen monitoring and email summaries.
- Operated suntracker, tested auto-iris adjustment function.
- Successfully tested lunar measurements, using the 125HR and the recently-installed suntracker.
- Trained new graduate student for 125HR operations.
- Wrote substantial updates 125HR Standard Operating Procedure (SOP) documents
- Demonstrated resilient personal and professional character by working in a highly remote and harsh environment with a small team for over 3 weeks.
- Contributed to annual campaign report and presentations to Canadian Space Agency.

Feb.26 – Mar.18	Canadian Arctic ACE/OSIRIS Validation Campaign
2014	Polar Environment Atmospheric Research Laboratory (PEARL)
	Eureka, Nunavut, Canada

- Operated the Portable Atmospheric Research Interferometric Spectrometer for the Infrared (PARIS-IR), the terrestrial version of the ACE-FTS, the high-resolution FTS on board SCISAT.
- Operated and tested a newly-installed suntracker, including testing of active tracking mode, dome control, and remote operation (e.g. Halifax, Toronto, Eureka).
- Assisted with operation of Bruker IFS 125HR, a high-resolution Fourier transform spectrometer, to acquire solar absorption measurements of the atmospheric gases, contributing to global observation networks (e.g. NDACC, TCCON) as well as ACE and OSIRIS satellite validation.
- Led research team communications, including writing daily emails to stakeholders and collaborators and updating campaign website with daily stories about fieldwork and photos.
- Wrote 5-part article series about the campaign for U of T News
- Posted campaign highlights to social media accounts (@CREATEarcticsci on Twitter and Instagram) for public engagement.
- Demonstrated resilient personal and professional character by working in a highly remote and harsh environment with a small team for over 3 weeks.
- Contributed to annual campaign report to Canadian Space Agency

Feb.24 – Mar.18	Canadian Arctic ACE/OSIRIS Validation Campaign
2013	Polar Environment Atmospheric Research Laboratory (PEARL)
	Eureka, Nunavut, Canada

- Operated Bruker IFS 125HR, a high-resolution Fourier transform spectrometer, to acquire solar absorption measurements of the atmospheric gases, contributing to global observation networks (e.g. NDACC, TCCON) and ACE and OSIRIS satellite validation.
- Performed 125HR maintenance and calibration, installed new source chiller.
- Led research team communications, including writing daily emails to stakeholders and collaborators and updating website with stories, instrument status updates, and photos.
- Posted campaign highlights to social media accounts (@CREATEarcticsci on Twitter) for public engagement
- Demonstrated resilient personal and professional character by working in a highly remote and harsh environment with a small team for over 3 weeks.
- Contributed to annual campaign report to Canadian Space Agency

Feb.21 – Mar.12	Canadian Arctic ACE/OSIRIS Validation Campaign
2012	Polar Environment Atmospheric Research Laboratory (PEARL)
	Eureka, Nunavut, Canada

- Assisted with operation of Bruker IFS 125HR, a high-resolution Fourier transform spectrometer; acquired solar absorption measurements of the atmospheric gases, contributing to global observation networks (e.g. NDACC, TCCON) as well as ACE and OSIRIS satellite validation, and various maintenance and calibration tests.
- Led research team communications, including writing daily emails to stakeholders and collaborators and updating website with stories, instrument status updates, and photos.
- Demonstrated resilient personal and professional character by working in a highly remote and harsh environment with a small team for over 3 weeks.

Conference Presentations

(presenter underlined)

<u>Lawson Gillespie</u>, Nasrin Pak, Sebastien Ars, Romina Piunno, **Dan Weaver**, Felix Vogel, and Debra Wunch: The GTA Greenhouse Gas Observatory Network: An update for 2022. TCCON Meeting, June 2022.

<u>X. Zhao</u>, D. Griffin, V. E. Fioletov, C. A. McLinden, A. Cede, M. Tiefengraber, M. Mueller, K. Bognar, K. Strong, F. Boersma, H. Eskes, J. Davies, A. Ogyu, S. C. Lee, **D. Weaver**: "Assessment of the Quality of TROPOMI High-spatial resolution NO₂ Data Products and COVID-19 Lockdown Air Quality Changes in the Greater Toronto Area", American Geophysical Union Fall Meeting, December 2020.

<u>N. Pak</u>, S. Ars, B. Lehman, **D. Weaver**, F. Vogel, and D. Wunch: "Methane Measurements Using Portable Fourier Transform Spectrometers in the Greater Toronto Area", American Geophysical Union Fall Meeting, December 2019. (poster)

<u>D. Weaver</u>, K. Strong, M. Schneider, C. Sioris, K. A. Walker, H. Vömel, M. Sommer, C. T. McElroy. Intercomparison of atmospheric water vapour satellite measurements made over the Canadian High Arctic. European Geosciences Union meeting, Vienna, Austria, April 2018. (poster)

<u>D. Weaver</u>, K. Strong, K. A. Walker, C. Sioris, M. Schneider, C. T. McElroy, H. Vömel. Intercomparison of satellite water vapour profile measurements at Eureka, Nunavut. ACE-Odin Science Team Meeting, University of Waterloo, Waterloo, Canada, October 2017.

<u>D. Weaver</u>, K. Strong, M. Schneider, P. M. Rowe, C. Sioris, K. A. Walker, and H. Vömel. High Arctic water vapour measurements at PEARL. Canadian Meteorological and Oceanographic Society Congress, Toronto, Canada, June 2017. (poster)

<u>D. Weaver</u>, K. Strong, M. Schneider, N. Deutscher. Intercomparison of water vapour products update. IRWG /TCCON meeting, Jeju, Republic of Korea, May 2016.

<u>D. Weaver</u>, K. Strong, M. Schneider, N. Deutscher. TCCON and MUSICA water vapour intercomparison. IRWG workshop, Toronto, Canada, June 2015.

D. Weaver, K. Strong, M. Schneider, N. Deutscher, T. Blumenstock, J. Robinson, J. Notholt, V. Sherlock, D.W.T. Griffith, S. Barthlott, O.E. García, M. Palm, N. Jones, F. Hase, R. Kivi, Y. González, E. Sepúlveda, M. Gisi, T. Warneke, S. Dohe, R. Kohlhepp, A. Wiegele, E. Christner, B. Lejeune, and P. Demoulin. Intercomparison of MUSICA and TCCON water vapour products. AGU Fall Meeting, San Francisco, United States, December 2014. (poster)

<u>S. Conway</u>, **D. Weaver**, J. Mendonca, C. Viatte, E. Lutsch, A. Pugliese, K. Strong. Eureka Site Report. IRWG meeting, Bad Sulza, Germany, May 2014.

<u>D. Weaver</u>, K. Strong, M. Schneider K.A. Walker, T. Uttal, N. O'Neill, C.T. McElroy, C. Sioris, Z. Mariani, P.M. Rowe, V.P. Walden, H. Vömel. Intercomparison of atmospheric water vapour measurements in the High Arctic. NSERC CREATE-AAS Research Symposium, Toronto, Canada, April 2014.

<u>D. Weaver</u>, K. Strong, M. Schneider, K.A. Walker, T. Uttal, N. O'Neill, C.T. McElroy, C. Sioris, Z. Mariani, P.M. Rowe, V.P. Walden, H. Vömel. Expanding our understanding of atmospheric water vapour in the High Arctic. ArcticNet Meeting, Halifax, Canada, December 2013.

Debora Griffin, <u>D. Weaver</u>, Kaley Walker, Kimberly Strong, Felicia Kolonjari, Rodica Lindenmaier, Lin Dan, Gloria Manney, Chris Boone, Peter Bernath, James R. Drummond. Investigating the stratosphere of the High Arctic using three Fourier transform spectrometers: instrument intercomparison and validation between 2011 and 2013. ArcticNet Meeting, Halifax, Canada, December 2013.

<u>D. Weaver</u>, K. Strong, M. Schneider, T. Uttal, N. O'Neill, C.T. McElroy, C. Sioris, K.A. Walker. Intercomparison of water vapour measurements at Eureka, IRWG Meeting, Abashiri, Japan, June 2013.

<u>K. Strong</u>, O. Colebatch, S. Conway, P.F. Fogal, D. Griffin, D.B.A. Jones, Z. Mariani, J. Mendonca, M. Semelhago, I. Stanevich, C. Viatte, K.A. Walker, **D. Weaver**, C. Whaley, R. Lindenmaier, H. Fast, R. Mittermeier, J.R. Drummond, J. Franklin, J.G. Giroux, and J.C. Lin. Probing Atmospheric Composition over Canada using Ground-based FTIR Spectroscopy. Optical Society of America Fourier Transform Spectroscopy (OSA-FTS) Meeting, Arlington, Virginia, USA, 23-27 June 2013. In Imaging and Applied Optics (Optical Society of America, Washington, DC, 2013), FTh2C.1. Invited talk.

D. Weaver, K. Strong, M. Schneider, T. Uttal, C. Perro, T. Duck, A. Moss, E. McCullough, R.J. Sica, N. O'Neill, C.T. McElroy, C. Sioris, K. Strawbridge, K.A. Walker. Intercomparison of water vapour measurements at Eureka, IRWG Meeting, Wengen, Switzerland, June 2012.

<u>C. Whaley</u>, K. Strong, D. Jones, **D. Weaver**. Ground-based FTIR Measurements and Modeling of Tropospheric Trace Gases Over Toronto. Imaging and Applied Optics Technical Digest. Signal Recovery and synthesis, July 10, 2011, Toronto, Canada.

<u>C. Adams</u>, A. Fraser, K. Strong, C. McLinden, J. Mendonca, J.-H. Park, **D. Weaver**, X. Zhao, R. Lindenmaier, R. Batchelor, F. Goutail, A. Pazmino, K. Walker, J.R. Drummond, K. Chance, T. Kurosu, R. Schofield, P. Bernath, C. Boone, C.T. McElroy, D. Deigenstein, V. Umlenski, G. Manney, and W. Daffer. Highlights of UV-visible measurements at PEARL, CANDAC Workshop and CREATE Symposium, Halifax, Canada, Nov 1 2010.

<u>C. Adams</u>, K. Strong, R. Lindenmaier, R. Batchelor, J.-H. Park, **D. Weaver**, A. Fraser, J. Mendonca, J. R. Drummond, F. Goutail, A. Pazmino, K.A. Walker, P. Bernath, C. Boone, C.T. McElroy, D. Degenstein, C.A. McLinden, G. Manney and W. Daffer. Intercomparison of ground-based and satellite NO₂ measurements above Eureka, Nunavut, ACE/OSIRIS Joint Meeting, Toronto, Canada, Oct 26 2010.

Publications

Zhao X, Fioletov V, Alwarda R, Su Y, Griffin D, **Weaver, D.,** Strong K, Cede A, Hanisco T, Tiefengraber M, McLinden C, Eskes H, Davies J, Ogyu A, Sit R, Abboud I, Lee SC. Tropospheric and Surface Nitrogen Dioxide Changes in the Greater Toronto Area during the First Two Years of the COVID-19 Pandemic. Remote Sensing, 14(7):1625, <u>https://doi.org/10.3390/rs14071625</u>, 2022.

K. Gierens, L. Wilhelm, M. Sommer, and **D. Weaver**: On ice supersaturation over the Arctic, Meteorol. Z., https://doi.org/10.1127/metz/2020/1012, 2020.

D. Weaver, K. Strong, K. A. Walker, C. Sioris, M. Schneider, C. T. McElroy, H. Vömel, M. Sommer, K. Weigel, W. Rozanov, J. P. Burrows, W. G. Read, E. Fishbein, and G. Stiller: Comparison of ground-based and satellite measurements of water vapour vertical profiles over Ellesmere Island, Nunavut, Atmos. Meas. Tech., https://doi.org/10.5194/amt-12-4039-2019, 2019.

D. Weaver, K. Strong, M. Schneider, P.M. Rowe, C. Sioris, K.A. Walker, Z. Mariani, T. Uttal, C.T. McElroy, H. Vömel, A. Spassiani, and J.R. Drummond: Intercomparison of water vapour measurements in the Canadian high Arctic, Atmos. Meas. Tech., doi:10.5194/amt-10-2851-2017, 2017.

X. Zhao, **D. Weaver**, K. Bognar, G. Manney, L. Millan, X. Yang, E. Eloranta, M. Schneider, and K. Strong: Cyclone-induced surface ozone and HDO depletion in the Arctic, Atmos. Chem. Phys., 17, 14955-14974, https://doi.org/10.5194/acp-17-14955-2017, 2017.

Griffin, D., Walker, K. A., Conway, S., Kolonjari, F., Strong, K., Batchelor, R., Boone, C. D., Dan, L., Drummond, J. R., Fogal, P. F., Fu, D., Lindenmaier, R., Manney, G. L., and **Weaver, D**.: Multi-year comparisons of ground-based and space-borne Fourier Transform Spectrometers in the high Arctic between 2006 and 2013, Atmos. Meas. Tech., https://doi.org/10.5194/amt-10-3273-2017, 2017.

S. Barthlott, M. Schneider, F. Hase, A. Wiegele, E. Christner, Y. Gonzalez, T. Blumenstock, S. Dohe, O.E. Garcia, E. Sepulveda, K. Strong, J. Mendonca, **D. Weaver**, M. Palm, N.M. Deutscher, T. Warneke, J. Notholt, B. Lejeune, E. Mahieu, N. Jones, D.W.T. Griffith, V.A. Velazco, D. Smale, J. Robinson, R. Kivi, P. Heikkinen, and U. Raffalski. Using XCO2 retrievals for assessing the long-term consistency of NDACC/FTIR data sets. Atmos. Meas. Tech., 8, 1555-1573, 2015.

E. Sepúlveda, M. Schneider, F. Hase, S. Barthlott, D. Dubravica, O. E. García, A. Gomez-Pelaez, Y. González, J. C. Guerra, M. Gis, R. Kohlhepp, S. Dohe, T. Blumenstock, K. Strong, **D. Weaver**, M. Palm, A. Sadeghi, N. M. Deutscher, T. Warneke, J. Notholt, N. Jones, D. W. T. Griffith, D. Smale, G. W. Brailsford, J. Robinson, F. Meinhardt, M. Steinbacher, T. Aalto, and D. Worthy. Tropospheric CH₄ signals as observed by NDACC FTIR at globally distributed sites and comparison to GAW surface in-situ measurements, Atmos. Meas. Tech., 7, 2337-2360, 2014.

D. Griffin, K. A. Walker, J. E. Franklin, M. Parrington, C. Whaley, J. Hopper, J. R. Drummond, P. I. Palmer, K. Strong, T. J. Duck, I. Abboud, P. F. Bernath, C. Clerbaux, P.-F. Coheur, K. R. Curry, L. Dan, E. Hyer, J. Kliever, G. Lesins, A. Saha, K. Tereszchuk, M. Maurice, and **D. Weaver**. Investigation of CO, C_2H_6 and aerosols in a boreal fire plume over Eastern Canada during BORTAS 2011 using ground- and satellite-based observations, and model simulations. Atmos. Chem. Phys., 13, 10227-10241, 2013.

P.I. Palmer, M. Parrington, J.D. Lee, A.C. Lewis, A.R. Rickard, P.F. Bernath, T.J. Duck, D.L. Waugh, D.W. Tarasick, S. Andrews, E. Aruffo, L.J. Bailey, E. Barrett, S.J.-B. Bauguitte, K.R. Curry, P. Di Carlo, L. Chisholm, L. Dan, G. Forster, J.E. Franklin, M.D. Gibson, D. Griffin, D. Helmig, J.R. Hopkins, J.T. Hopper, M.E. Jenkin, D. Kindred, J. Kliever, M. Le Breton, S. Matthiesen, M. Maurice, S. Moller, D.P. Moore, D.E. Oram, S.J. O'Shea, R.C. Owen, C.M.L.S. Pagniello, S. Pawson, C.J. Percival, J.R. Pierce, S. Punjabi, R.M. Purvis, J.J. Remedios, K.M. Rotermund, K.M. Sakamoto, A.M. da Silva, K.B. Strawbridge, K. Strong, J. Taylor, R. Trigwell, K.A. Tereszchuk, K.A. Walker, D. Weaver, C. Whaley, and J.C. Young. Quantifying the impact of BOReal forest fires on Tropospheric oxidants over the Atlantic using Aircraft and Satellites (BORTAS) experiment: design, execution and science overview. Atmos. Chem. Phys., 13, 6239-6261, 2013.

Schneider, M., S. Barthlott, F. Hase, Y. González, K. Yoshimura, O. E. García, E. Sepúlveda, A. Gomez-Pelaez, M. Gisi, R. Kohlhepp, S. Dohe, T. Blumenstock, A. Wiegele, E. Christner, K. Strong, **D. Weaver**, M. Palm, N. M. Deutscher, T. Warneke, J. Notholt, B. Lejeune, P. Demoulin, N. Jones, D. W. T. Griffith, D. Smale, and J. Robinson. Ground-based remote sensing of tropospheric water vapour isotopologues within the project MUSICA, Atmos. Meas. Tech., 5, 3007-3027, doi:10.5194/amt-5-3007-2012, 2012.

C. Adams, K. Strong, R.L. Batchelor, P.R. Bernath, S. Brohede, C. Boone, D. Degenstein, W.G. Daffer, J.R. Drummond, P.F. Fogal, E. Farahani, C. Fayt, A. Graser, F. Goutail, F. Hendrick, F. Kolonjari, R. Lindenmaier, G. Manney, C.T. McElroy, C.A. McLinden, J. Mendonca, J.-H. Park, B. Pavlovic, A. Pazmino, C. Roth, V. Savastiouk, K.A. Walker, **D. Weaver**, and X. Zhao. "Validation of ACE and OSIRIS ozone and NO₂ measurements using ground-based instruments at 80° N." Atmos. Meas. Tech., 5, 927-953, 2012.

D. Weaver. Involve Me and I'll Understand: Constructivism in the Physics Classroom. The Crucible, Vol. 42, January 2011.

Peer Review Referee

2021	Atmospheric Chemistry and Physics	(1 manuscript)
2019	Atmospheric Chemistry and Physics	(1 manuscript)
2018	Journal of Atmospheric and Solar-Terrestrial Physics	(1 manuscript)
2017	Atmospheres-Ocean	(1 manuscript)
2016	Atmosphere Chemistry and Physics	(1 manuscript)
2016	Atmospheric Measurement Techniques	(1 manuscript)

Public Speaking & Outreach Highlights

Mar. 2021	Speaker, Exploring by the Seat of Your Pants, online talk and Q&A with students at several high schools in the U.S. and Canada.
May 2020	Panelist, Beyond the Lab: Careers in Science (Ryerson University)
Apr. 2019	Speaker, Exploring by the Seat of Your Pants, online talk and Q&A with students at several high schools in the U.S. and Canada.
Mar. 2019	Moderator & speaker, Climate Action event, Toronto Science Policy Network, University of Toronto
Oct. 2018	Speaker, Ontario Science Centre, Nuit Blanche event
May 2018	Panelist, RawTalk Live, It's Not You, It's the SCItuation: Better Engagement, Better Science (University of Toronto)
Dec. 2017	Speaker, Royal Institute for Science, RCItalks
Sept. 2017	Speaker, Story Collider, Science Literacy Week
Aug. 2015-2017	Speaker, gave Virtual Tour & intro to research at PEARL talk Science Unlimited Summer Camp (University of Toronto)
May 2017	Speaker, Toronto Public Library (Bloor-Gladstone branch) Fragile Planet speaker series
Feb. 2017	Week-long visit to Iqaluit, Nunavut elementary & high school classrooms to support researcher-student collaboration program
Dec. 2016	Wrote feature article on PEARL fieldwork for CMOS Bulletin, Dec. 2016
Nov. 2016	Speaker, Virtual Tour of PEARL, Northern Secondary School environmental science class visit at U of T School of the Environment

- Apr. 2016 Invited talk, Our Poles Our Planet Youth Sustainability Conference
- Mar. 2016 Wrote blog for CREATE Arctic Science about high latitude (Arctic) sunlight changes (<u>link</u>).
- Nov. 2015 Speaker, Sigma Xi Distinguished Speaker Series (at U of T)
- May 2015 Speaker, NDACC IRWG meeting (at U of T), Virtual Tour of PEARL
- Mar. 2015 Speaker, University of Toronto Sustainability Commission (at U of T)
- Oct. 2014 Speaker, The Association for Science and Reason (Toronto)
- Nov. 2014 Speaker, Toronto Public Library (with Dr. Zen Mariani)
- Feb. 2014Wrote series of articles about PEARL fieldwork for U of T News during the 2014
ACE/OSIRIS Validation Campaign (link to part one).
- Dec. 2013 Speaker, Fieldstone King's College (Mr. Rob Foster's class)
- May 2012 Speaker, Ursula Franklin Academy Environmental Assembly (with Dr. Patrick Sheese)
- May 2012 Guest, Virtual Researcher on Call (Podcast)

Teaching Experience (University-level)

2019 - 2023	Assistant Professor Teaching Stream
2015 2025	Department of Physical and Environmental Sciences, University of Toronto Scarborough
	Courses taught:
	1 st year undergraduate physics for life sciences (PHYA11 & PHYA22)
	2 nd & 3 rd year undergraduate physics laboratory (PHYB10 & PHYC11)
	3 rd year undergraduate atmospheric physics course
	(PHYC14)
	4 th year undergraduate physics research course coordination (PHYD01 & PHYD72)
2014 – 2017	Senior Teaching Assistant, microteaching Department of Physics, University of Toronto
	Created and delivered training sessions for new graduate students at the Physics Dept., emphasizing strategies for effective pedagogy, Physics Dept specific challenges, and public speaking; the mini-course was delivered through lectures and small group sessions.
2014 – 2017	Teaching Assistant for PHY100, The Magic of Physics Department of Physics, University of Toronto
	Taught tutorial sessions reviewing and fortifying course content. Marked assignments and exams.
2016	Senior Teaching Assistant, PHY131 Introduction to Physics Department of Physics, University of Toronto
	Trained and managed a team of 64 teaching assistants.
2011 – 2018	Practicals Leader for PHY131, Introduction to Physics Department of Physics, University of Toronto
	Led physics practical sessions (mix of laboratory and tutorial). Marked labs, quizzes, and exams.

2015 – 2016 Co-creator & Teaching Assistant for Science for Change School of the Environment, University of Toronto (pilot co-curricular course)

Co-designed and co-delivered lessons and activities for new interdisciplinary course facilitating engagement between science department undergraduates and entrepreneurship at U of T's Banting & Best Institute, in collaboration with the Rotman School Executive-in-Residence and Faculty of Arts & Science staff.

Wrote report for senior administrative staff regarding the success of the course pilot, and how the concept could be moved forward.

2012 – 2014 Teaching Assistant for PHY205, Physics of Everyday Life Department of Physics, University of Toronto

Prepared and led activity-focused tutorial sessions Marked assignments and exams.

Guest Lectures

Oct. 2020	NEW106, Science, Health, and Social Justice, University of Toronto Global climate science and policy
Oct. 2018	NEW106, Science, Health, and Social Justice, University of Toronto Global climate science and policy
Oct. 2017	NEW106, Science, Health, and Social Justice, University of Toronto Global climate change and atmospheric science
Mar. 2016	ABS240, Ecological Interactions, Aboriginal and Western Sciences, University of Toronto Climate and atmospheric monitoring in the Canadian High Arctic

Teaching Experience (non-University)

Spring 2010	Teacher Candidate – B.Ed. Practicum Grade 12 University Physics and Grade 11 University Physics R. H. King Academy, Toronto District School Board
•	Created new project-based applied culminating tasks (i.e. design, creation and explanation of catapults, Rube-Goldberg machines). Infused technology (e.g. SMARTboards, Prezi) into lessons to foster learning opportunities and engagement within an academically-focused environment.
Winter 2009	Teacher Candidate – B.Ed. Practicum Grade 12 College Physics and Grade 10 Science Central Technical School, Toronto District School Board
•	Prepared and delivered interactive and engaging lessons that encouraged student attendance (a significant challenge facing the school) through emphasizing hands-on activity-based activities, real-world applications of curriculum topics, and problem solving skills.
-	Examples include providing ELL support and providing additional time to complete assignments to students facing academic and personal challenges.
Summer 2009	Textbook Researcher and Writer Quality of Course Inc.
	Researched curriculum content using printed book, academic journal, and web- based sources. Wrote textbook chapters and accompanying student evaluation documents to meet rigorous standards for quality.
2008	Teacher Eagle Learning Center
•	Taught grade 6-12 ESL/ELL students math, science and social science in one-on- one and small group classroom sessions as part of an intense and comprehensive after-school program. Collaboratively developed student-specific teaching strategies with English teachers and counsellor to address language, attitude and capability-based learning challenges. Wrote weekly student analysis and evaluation, marked assignments and created solution sets for assigned homework.

Leadership Experience (Volunteer)

2013 – Present Treasurer and member of the Board of Directors

Evidence for Democracy

- Contribute to strategic decision-making and organizational vision.
- Give public talks about science advocacy campaigns, research, and analysis done by Evidence for Democracy.
- Liaise with partner organizations and supporters in Toronto area.
- Plan advocacy events in Toronto (e.g. rallies, panel discussions, supporter gatherings).
- Monitor finances and present statements to the Board of Directors.
- Wrote content for social media posts.
- 2014 2015 President, Graduate Environmental Students' Association (GESA) School of the Environment, University of Toronto
 - Re-founded GESA, which had been dormant for several years, to enhance graduate student experience & represent their interests.
 - Created a vision for GESA as an organization which fosters interdisciplinary thinking and a sense of community at the recently established School of the Environment.
 - Led writing of a constitution and gained GESA official recognition from the University of Toronto and the Graduate Student Union.
 - Managed and supported work of GESA Executive members (graduate students) in organizing informal social and academic events.
 - Moderated GESA's signature interdisciplinary academic event, "Bees, Neonics, and Policy", which featured a panel of experts from different points of view.
 - Organized election for new 2015-2016 GESA executive.
 - Began planning environmental documentary screening of "Watermark" with director as guest for interdisciplinary discussion at event.

2014 – 2015 Chair, Trainee's Advisory Committee NSERC CREATE Training program in Arctic atmospheric science

- Initiated and ran meetings of the committee.
- Managed and supported the work of fellow members (e.g. the social media coordination, social events, outreach planning).
- Represented trainee perspective at Program Committee meetings.

Volunteer Experience

- 2012 2014 Social Media Coordinator, Trainee's Advisory Committee NSERC CREATE training program in Arctic atmospheric science
 - Created and managed Twitter feed (<u>@CREATEArcticSci</u>), Instagram (@CREATEArcticSci) & CREATE Arctic Science blog.
 - Wrote and edited social media posts (e.g. updates about research conducted at PEARL, fieldwork experiences, wildlife sightings).
 - Helped organize CREATE program in Arctic atmospheric science summer school activities
 - Moderated career panels at the CREATE Summer Schools in Arctic atmospheric science.
- 2010 2011 Host Committee Member Canada-Wide Science Fair
 - Organized a series of engaging educational and social events for 509 science fair finalists from high schools across Canada.
 - Created activities for science fair participants linked with ongoing physical sciences research programs.
- 2008 2010 Science Chase Creator & Coordinator Science Rendezvous
 - Created The Science Chase for the inaugural Science Rendezvous event in downtown Toronto (2008). This competitive family-friendly team event challenged participants to solve a series of problem solving science activities while fulfilling a dramatic storyline. Equal parts fun adventure and scientific inquiry, this event motivated attendees to ask questions, explore ideas, and get light exercise.
 - Directed research and logistical work of a multi-disciplinary team of University of Toronto undergraduate and graduate students working to conceive, plan and implement Science Chase activities.
 - Expanded the Science Chase event (over 40 participating teams in 2009) by creating separate events for kids (aged 8-12) and for participants aged 15 and over (2010's event drew hundreds of participants).
 - Organized, trained and managed 100 event-day volunteers each spring (mostly undergraduates from the University of Toronto).

Science Advocacy

Leadership positions

2013 – present	Board of Directors member and Treasurer Evidence for Democracy
2018 – 2022	Board of Directors member Canadian Climate Forum
2017	Organizing committee member Toronto March for Science
2014 – 2015	Evidence for Democracy representative Right to Know advocacy network (Toronto, ON)
2013 – 2014	Organizing committee member Scientists for the Right to Know
2012 – 2013	Founder and organizer Save PEARL campaign

Science Advocacy

<u>Talks</u>

09 Dec. 2017	Invited speaker, Humanist Association of Toronto
	"Science Advocacy in Canada: What is the role of Evidence and Scientists in a Democracy?"
13 July 2017	Colloquium talk, Dept. of Physics, University of Toronto
	"Science advocacy in Canada: What is the role of evidence and scientists in a democracy?"
22 Apr. 2017	March for Science (Toronto) event kick-off speaker
18 Apr. 2017	Panelist, Canadian Science Policy Centre event discussing the March for Science (Toronto)
25 Mar. 2017	Speaker, March for Science (Toronto) pre-event
	Public talk at the Tranzac Club about science advocacy and motivations for the March for Science
08 Mar. 2017	Speaker & panelist, Markham Library (Markham)
	"The Politics of Science" event (with John Dupuis)
29 Mar. 2015	Panelist, Silence of the Labs documentary screening and discussion, organized by Evidence for Democracy (at U of T Mississauga)
27 Jan. 2015	Panelist, Silence of the Labs discussion, organized by Evidence for Democracy and the School of Public Policy, University of Toronto
17 Oct. 2014	Speaker, The Association for Science and Reason (Skeptics Canada) (Toronto, ON)

Photography (science-related)

<u>Cover photos</u>

Dec. 2017	Cover photo,	
	Canadian Meteorological and Oceanographic Sciences Bulletin December 2017, Vol. 45, No. 6	
	 Image of an Environment Canada truck travelling along the desolate Arctic road between Eureka, Nunavut and the PEARL Ridge Laboratory at sunrise. Supported special issue on Arctic science. 	
Jan. 2017	Cover photo, Physics in Canada 2017, Vol. 73, No. 01	
	 Image of suntracking instrument on the roof of the Polar Environment Atmospheric Research Laboratory (PEARL) Ridge Lab on Ellesmere Island, Nunavut. Supported special issue on "Remote Sensing of the Atmosphere". 	
Dec. 2016	Cover photo, Canadian Meteorological and Oceanographic Sciences Bulletin December 2016, Vol. 44, No. 6	
	 Image of researchers installing instruments for satellite validation measurements on the roof of the Polar Environment Atmospheric Research Laboratory (PEARL) Ridge Lab on Ellesmere Island, Nunavut. An additional collection of photos was also featured as part of an article on 	

atmospheric research I contributed.

<u>Media</u>	
Jan. 2018	Article images, the Globe and Mail
	Story covering Canadian climate funding issues "Scientists urge Trudeau to restore or replace key climate research fund"
Nov. 2017	Images used in articles covering new funding for PEARL facility
	CBC News: "High Arctic lab saved as federal money comes through"
	Globe and Mail: "Arctic climate research lab granted federal funding in late reprieve"
	Physics Today: "Canada's Arctic research station secures last-minute funding"
	Nunatsiaq News: "Ottawa coughs up short-term money for High Arctic research station"
2013	Article image, the Toronto Star
	Lead image of the view from the Polar Environment Research Laboratory window used in article discussing Arctic research and funding, "Arctic scientists see Canada slipping on world stage" as well as other articles about Arctic science issues.
2012	Cover image, Le Devoir
	Image of PEARL facility used to support lead cover story about the loss of funding to support Arctic atmospheric research in Canada and the closure of PEARL, "La station Eureka fermera en avril".
<u>Other</u>	
2018	Calendar, Polar Continental Shelf Program
2018	Magazine feature, Reader's Digest: Our Canada (Feb-Mar. issue)
2014	Calendar (November), Seriously Northern, by Canadian North