

# Dan Weaver

Ph.D., M.Sc., B.Ed., B.Sc.

Assistant Professor, Teaching Stream

Department of Physical & Environmental Sciences

University of Toronto Scarborough

Office: Science Wing, Room 506F, 1265 Military Trail, Toronto, ON, M1C1A4  
Telephone (office): 416-287-7248  
Email: [dan.weaver@utoronto.ca](mailto:dan.weaver@utoronto.ca)  
Website (personal): [www.danweaver.ca](http://www.danweaver.ca)  
Website (lab): [www.utscc.utoronto.ca/labs/utsc-atmosphere/](http://www.utscc.utoronto.ca/labs/utsc-atmosphere/)

## A. Education

### Degrees

2018 Ph.D., Dept. of Physics, University of Toronto  
Thesis: Water Vapour Measurements in the Canadian High Arctic  
Supervisor: Prof. Kimberly Strong

2012 Master of Science, Dept. of Physics, University of Toronto

2010 Bachelor of Education, Ontario Institute for Studies in Education  
Qualifications: Physics & Politics (Intermediate/Senior)

2007 Bachelor of Science, Astronomy & Astrophysics,  
Dept. of Astronomy, University of Toronto

### Professional Certifications

2010 – Present Teacher, Ontario College of Teachers

2016 – 2021 Professional Physicist, Canadian Association of Physicists

### Professional Certificates

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

### Professional Associations

2010 – present Ontario College of Teachers

2016 – present Canadian Association of Physicists

2018, 2024 European Physical Union

2014 American Geophysical Union

## B. Employment

### Current appointment

January 2019 – present

**Assistant Professor, Teaching Stream**  
Physics and Astrophysics Group  
Department of Physical and Environmental Sciences  
University of Toronto Scarborough

Courses taught:

**PHYA11: Physics for Life Sciences I**

Enrollment: ~250 students, 3-hrs lecture + coord labs  
Fall 2019 – 2023

**PHYA22: Physics for Life Sciences II**

Enrollment: ~150 students, 3-hrs lecture + coord labs  
Winter 2019 – 2022, Winter 2024

**PHYB10: Intermediate Physics Laboratory I**

Enrollment: ~48 students, 1-hrs lecture + 6-hrs labs  
Fall 2019 – 2023

**PHYC11: Intermediate Physics Laboratory II**

Enrollment: ~20 students, 1-hrs lecture + 6-hrs labs  
Winter 2019 – 2024

**PHYC14: Introduction to Atmospheric Physics**

Enrollment: ~10 students, 2-hrs lecture + 1-hr tutorial  
Winter 2023

Courses coordinated:

**PHYD01: Research Project in Physics & Astrophysics**

**PHYD02: Extended Research Project in Physics & Astrophysics**

**PHYD72: Supervised Reading in Physics & Astrophysics**

### Research Lab: Established and Lead the UTSC Atmospheric Observatory

- Maintain and operate instruments.
- Negotiate legal agreements with partner groups and organizations, e.g., Environment and Climate Change Canada.
- Plan and facilitate instrument installations.
- Analyze atmospheric measurement data.
- Create education and outreach content, e.g., for courses, social media, website.
- Worked with UTSC web developers to create and manage website, including interactive plots of measurements:  
<https://www.utsc.utoronto.ca/labs/utsc-atmosphere/>

## Past Employment Highlights

- 2014 – 2017      Senior Teaching Assistant: TA Training and 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.
- 2011 – 2018      Teaching Assistant for PHY100 and PHY131  
Department of Physics, University of Toronto
- Led practical sessions (labs), taught tutorial sessions, 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.
- 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 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.
- 2014              Physics Education Research, volunteer research assistant
- Contributed to the design and implementation of undergraduate education research, investigating the ideal organization of students into groups by skill level, led by Prof. David Harrison at the Dept. of Physics at U of T.
- 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.
- 2010 – 2011      Environment Canada Science Horizons Research Internship,  
Strong Research Group, Dept. of Physics, University of Toronto
- 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, construction of two new heliostat (sun tracking) instruments.

## C. Administrative Service

### Department of Physical and Environmental Sciences

2019 – present	Supervisor, Minor Program in Astronomy & Astrophysics
2019 – 2023	Member, DPES Teaching & Curriculum Committee
2019 – 2023	Member, DPES Outreach Committee
Spring 2023	Member, Master in Environmental Science Admissions Committee
2019 – 2022	Member, PTR Committee
2019 – 2020	Member, iSPEAC Organizing Group (seminar series)

### University of Toronto Scarborough

2023 – 2024	Member, Data Driven Design: Quercus Record Store (D3:QRS) Pre-launch consultations, testing, and workshops
2022 – 2023	Student Academic Success. (SAS) Initiative (Tri-campus U of T) Functional User Group (FUG) (now renamed Student Academic Analytics)
2021 – 2023	Member, Strategic Enrolment Management (SEM) Retention and Flowthrough Working Group

## D. Student Supervisions

2023 – 2024	Work Study project, Libertad Rojas (physics undergraduate student) PHYC11 Interferometer digitization upgrades
Summer 2023	Teaching Fellowship Program, Dustin Almanza (physics Ph.D. student) PHYC11 new Nuclear Magnetic Resonance experiments

## E. Grants

### Teaching Grants

2024 – 2025	UTSC CTL – Teaching Equipment Grant: \$8,645.63 “Human Eye Models for Optics Experiments”
2023 – 2024	UTSC CTL – Teaching Equipment Grant: \$13,844.45 “Physics Waves Experiment”
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)
2012 – 2013	Northern Scientific Training Program (\$3000)

## **F. Awards**

### **University of Toronto Scarborough**

2024	Dean's Merit Award, University of Toronto Scarborough
2023	Dean's Merit Award, University of Toronto Scarborough
2022	Dean's Merit Award, University of Toronto Scarborough
2020	Dean's Merit Award, University of Toronto Scarborough

### **Research and Teaching Excellence**

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
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

## G. Conference Presentations

(presenter underlined)

Xiaoyi Zhao, Vitali Fioletov, Debora Griffin, Chris McLinden, Sumi Wren, Kimberly Strong, **Dan Weaver**, Yushan Su, Jonathan Davies, Akira Ogyu, Reno Sit, Ihab Abboud, Ramina Alwarda, Sum Chi Lee. Introduction of Pandora and Pandonia Global network – extra efforts for SWAPIT. Study of Winter Air Pollution in Toronto (SWAPIT) meeting, Oct. 30, 2023.

Lawson Gillespie, 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.

X. Zhao, 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 NO<sub>2</sub> Data Products and COVID-19 Lockdown Air Quality Changes in the Greater Toronto Area”, American Geophysical Union Fall Meeting, December 2020.

N. Pak, 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)

**D. Weaver**, 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)

**D. Weaver**, 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.

**D. Weaver**, 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)

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

**D. Weaver**, 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. Wiegeler, 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)

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

**D. Weaver**, 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.

**D. Weaver**, 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, **Dan Weaver**, 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.

**D. Weaver**, 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.

**K. Strong**, 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.

**C. Whaley**, 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.

**C. Adams**, 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.

**C. Adams**, 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. Deigenstein, C.A. McLinden, G. Manney and W. Daffer. Intercomparison of ground-based and satellite NO<sub>2</sub> measurements above Eureka, Nunavut, ACE/OSIRIS Joint Meeting, Toronto, Canada, Oct 26 2010.

## H. Publications (Peer Reviewed)

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, <https://doi.org/10.3390/rs14071625>, 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. Wiegeler, 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 XCO<sub>2</sub> 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 CH<sub>4</sub> 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<sub>2</sub>H<sub>6</sub> 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. Wiegeler, 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 NO<sub>2</sub> 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.

## I. Peer Review Referee

2024	Atmospheric chemistry and physics textbook	
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)

## J. Field Campaigns

2012 – 2015 Canadian Arctic ACE/OSIRIS Validation Campaign  
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 new 125HR Standard Operating Procedure (SOP) documents
- Contributed to annual campaign report and presentations to Canadian Space Agency.

## K. 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

### Talks

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)

## L. Public 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 ([link](#)).
- 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. 2014 Wrote 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)
- 2012 – 2014 Social Media Coordinator, Trainee's Advisory Committee  
NSERC CREATE training program in Arctic atmospheric science  
  
Created and managed Twitter feed ([@CREATEArcticSci](#)), Instagram ([@CREATEArcticSci](#)) & CREATE Arctic Science [blog](#).
- 2010 – 2011 Host Committee Member, Canada-Wide Science Fair
- 2008 – 2010 Science Chase Creator & Coordinator, Science Rendezvous
- Created The Science Chase for 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.
  - 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 for three years.
  - Organized, trained and managed 100 event-day volunteers each spring (mostly undergraduates from the University of Toronto).

## M. Science Communication through Photography

### Cover photos

- 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.

### Media

- 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”.
- Other**
- 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