

CONTACT INFORMATION	E-mail: mccraycd@gmail.com Website: www.cdmccray.com	Languages: English, French
EDUCATION	<p>Ph.D., Atmospheric and Oceanic Sciences 2020 McGill University, Montréal, Québec, Canada</p> <ul style="list-style-type: none"> • Research Topic: Long-duration freezing rain events over North America • Supervisor: Prof. John R. Gyakum <p>B.S., Atmospheric Sciences and Mathematics 2015 Lyndon State College, Lyndonville, Vermont, U.S.A.</p> <ul style="list-style-type: none"> • Graduated magna cum laude 	
RESEARCH EXPERIENCES	<p>Postdoctoral Researcher 2020– Université du Québec à Montréal (UQÀM) Département des sciences de la Terre et de l'atmosphère Ouranos Consortium on Regional Climatology and Adaptation to Climate Change</p> <ul style="list-style-type: none"> • Studying the evolution of ice storms over North America under climate change using an ensemble of regional climate model (RCM) simulations • Examining the uncertainty related to precipitation type algorithm selection on projected changes in freezing rain events <p>Graduate Research Assistant 2015–2020 McGill University, Department of Atmospheric & Oceanic Sciences</p> <ul style="list-style-type: none"> • Researched thermodynamic and synoptic-dynamic conditions associated with long-duration freezing rain events over the United States and Canada <p>Research Assistant – NCEP Internship Program 2017 NOAA/NWS Weather Prediction Center – College Park, Maryland</p> <ul style="list-style-type: none"> • Mentors: Bruce Veenhuis, James Nelson • Project: Verification of WPC ice accretion guidance using observed ice accretion from surface stations <ul style="list-style-type: none"> – Developed procedure using Python and Model Evaluation Tools (MET) to evaluate ice accretion forecasts over the United States <p>Meteorology Research Intern 2015 IBM T.J. Watson Research Center – Yorktown Heights, New York</p> <ul style="list-style-type: none"> • Project: Verification of IBM's Deep Thunder weather forecast model <ul style="list-style-type: none"> – Used Python to download data from other forecast sources and compare skill with IBM's forecasts <p>Research Assistant – NOAA Hollings Scholar 2014 NOAA/NWS Storm Prediction Center – Norman, Oklahoma</p> <ul style="list-style-type: none"> • Mentors: Dr. Christopher Melick, William Bunting • Project: Verification of SPC winter weather mesoscale discussions <ul style="list-style-type: none"> – Devised method for verifying SPC winter weather forecast products with GEMPAK and Perl – Developed gridded dominant precipitation type product for operations 	

TEACHING EXPERIENCES	<p>Course Lecturer</p> <p>McGill University, Atmospheric & Oceanic Sciences</p> <ul style="list-style-type: none"> • Fall 2019: ATOC 540 - Synoptic Meteorology I (graduate) 	2019
	<p>Teaching Assistant</p> <p>McGill University, Atmospheric & Oceanic Sciences</p> <ul style="list-style-type: none"> • Winter 2019: ATOC 542 - Weather Analysis and Forecasting (graduate) • Winter 2017, 2018, 2019: ATOC 541 - Synoptic Meteorology II (graduate) • Fall 2017, 2018: ATOC 540 - Synoptic Meteorology I (graduate) • Fall 2016: ATOC 185 - Natural Disasters (undergraduate) • Winter 2016: ATOC 184 - Science of Storms (undergraduate) 	2016 – 2019
	<p>Supplementary Instructor</p> <p>Lyndon State College Academic Support</p> <ul style="list-style-type: none"> • Atmospheric Dynamics I and II 	2014 – 2015
REFEREED JOURNAL PUBLICATIONS	<p>[1] McCray, C.D., E.H. Atallah, and J.R. Gyakum, 2019: Long-Duration Freezing Rain Events over North America: Regional Climatology and Thermodynamic Evolution. <i>Weather and Forecasting</i>, 34, 665?681, https://doi.org/10.1175/WAF-D-18-0154.1</p> <p>[2] McCray, C.D., J.R. Gyakum et E.H. Atallah, 2020: Regional Thermodynamic Characteristics Distinguishing Long- and Short-Duration Freezing Rain Events over North America. <i>Weather and Forecasting</i>, 35, 657?671, https://doi.org/10.1175/WAF-D-18-0154.1.</p> <p>[3] McCray, C.D., J.R. Gyakum et E.H. Atallah: Synoptic-Dynamic and Airmass Characteristics Distinguishing Long- and Short-Duration Freezing Rain Events in the South-Central United States. <i>In prep.</i></p>	
PROFESSIONAL DEVELOPMENT	<p>Science Outside the Lab North</p> <p>Ottawa, Ontario and Montreal, Quebec</p> <ul style="list-style-type: none"> • Attended week-long workshop for graduate students and postdocs fostering discussions with scientists working in policy in the Canadian federal government. • Learned how science informs policy in Canada and met with policy analysts, senior civil servants, think tanks, and scientists doing policy-relevant work. 	2019
	<p>Tomlinson Graduate Teaching Workshop</p> <p>McGill University - Montreal, Quebec</p> <ul style="list-style-type: none"> • Participated in one-day teaching workshop for science graduate students. • Learned techniques for presenting information effectively, grading assignments, and communicating with students. 	2018
	<p>NCAR Advanced Study Program Summer Colloquium</p> <p>NCAR Mesa Laboratory - Boulder, Colorado</p> <ul style="list-style-type: none"> • Topic: The Interaction of Precipitation with Orography • Participated in two weeks of seminars on topics related to orographic precipitation in weather and climate. • Ran WRF-ARW model and analyzed output using Python. 	2017

- OTHER RELEVANT EXPERIENCE**
- Meteorologist Intern** **2015–2017**
 WeatherWorks, LLC, Hackettstown, New Jersey
- Wrote winter storm summaries for snow and ice events and created snowfall total reports for clients
- Winter Road Weather Forecaster** **2013 – 2015**
 Vermont Institute of Applied Meteorology, Lyndonville, Vermont
- Forecasted regional road weather conditions within the state of Vermont for the Vermont Agency of Transportation (VTrans)
- NWS Summer Student Intern** **2013**
 U.S. National Weather Service, Taunton, Massachusetts
- Aided in public outreach and media/partner relationship development
 - Shadowed forecasters and gained experience with AWIPS
- LEADERSHIP AND SERVICE**
- AMS Committee on Weather Analysis & Forecasting** **2015 – 2020**
- Student member
 - Conference Program Committee Chairperson
 - 29th Weather Analysis and Forecasting/25th Numerical Weather Prediction Conferences, Denver, CO, 4–8 June 2018
 - Conference Program Committee member
 - 30th Weather Analysis and Forecasting/25th Numerical Weather Prediction Conferences, Boston, MA, 22–26 January 2020
 - 28th Weather Analysis and Forecasting/24th Numerical Weather Prediction Conferences, Seattle, WA, 22–26 January 2017
 - 27th Weather Analysis and Forecasting/23rd Numerical Weather Prediction Conferences, Chicago, IL, 28 June–3 July 2015
- Reviewer - AMS Journals** **2019 - Present**
- *Weather and Forecasting*
 - *Journal of Applied Meteorology and Climatology*
- McGill Council of Atmospheric & Oceanic Sciences** **2015 – 2019**
- 2016 – 2019: Graduate Student Representative to the department
 - Attended monthly departmental faculty meetings and represented concerns of graduate student body
 - 2015 – 2016: First-Year Student Representative
- Pint of Science Canada – Montreal** **2019**
- Event manager for *Planet Earth* sessions of the Montreal English-language version of *Pint of Science*, an international science communication event that brings scientists together with the public to discuss their research
- President, Lyndon State College AMS & NWA** **2013 – 2015**
- Chairperson and lead organizer
 - 40th Northeastern Storm Conference, Saratoga Springs, NY, 6–8 March 2015
 - 39th Northeastern Storm Conference, Rutland, VT, 7–9 March 2014

AWARDS AND SCHOLARSHIPS	<ul style="list-style-type: none"> ● Outstanding Oral Presentation Award AMS 30th Conference on Weather Analysis & Forecasting 2020 ● FRQNT – Bourse de doctorat en recherche (\$49,000) 2019 ● CatIQ Connect Student Delegate Award 2019 ● Outstanding Student Oral Presentation AMS 29th Conference on Weather Analysis & Forecasting 2018 ● 2nd Place Student Oral Presentation AMS 28th Conference on Weather Analysis & Forecasting 2017 ● 1st Place Student Oral Presentation AMS 5th Conference on the Transition of Research to Operations 2015 ● NOAA Ernest F. Hollings Scholarship 2013 – 2015 ● AMS Undergraduate Named Scholarship 2014
INVITED PRESENTATIONS	<ul style="list-style-type: none"> ● 2020 WPC-HMT Winter Weather Experiment 2020 – <i>Long-Duration Freezing Rain Events over North America: Regional Climatology and Maintenance Mechanisms</i> ● City of Montréal – Mayor’s executive committee 2019 – <i>Effets observés des changements climatiques sur l’hiver Montréalais (Observed effects of climate change on Montreal winters)</i> – Presentation to members of mayor’s executive committee responsible for environment and the ecological transition/resilience. ● Centre de recherche informatique de Montréal (CRIM) 2018 – <i>Analyzing weather data to improve prediction of freezing rain events</i> ● Ouranos (regional climate research consortium) – Montreal 2017 – <i>Ice storms over North America: A thermodynamic and synoptic-dynamic analysis</i> ● Lyndon State College, Atmospheric Sciences Department 2016 – <i>A Surface Dynamic and Thermodynamic Analysis of Long-Duration Freezing Rain Events</i>
CONFERENCE ORAL PRESENTATIONS	<p>McCray, C.D., J.R. Gyakum, and E.H. Atallah. What Allows Some Freezing Rain Events to Persist for Many Hours? A Focus on Dynamic and Thermodynamic Processes. <i>30th Conference on Weather Analysis and Forecasting</i>, 100th AMS Annual Meeting, Boston, MA, 12–16 January 2020.</p> <p>McCray, C.D., J.R. Gyakum, and E.H. Atallah. Synoptic-Dynamic Modulations of Freezing Rain Event Duration. <i>19th Cyclone Workshop</i>, Seon, Germany, 29 September–4 October 2019.</p> <p>McCray, C.D., J.R. Gyakum, and E.H. Atallah. Thermodynamic and Synoptic-Dynamic Modulations of Freezing Rain Event Duration. <i>27th IUGG General Assembly</i>, Montreal, QC, 8–18 July 2019.</p> <p>McCray, C.D., J.R. Gyakum, and E.H. Atallah. Thermodynamic and Synoptic-Dynamic Modulations of Freezing Rain Event Duration. <i>44th Northeastern Storm Conference</i>, Saratoga Springs, NY, 8–10 March 2019.</p> <p>McCray, C.D., J.R. Gyakum, and E.H. Atallah. Long-Duration Freezing Rain Events over North America. <i>CatIQ Connect – Canada’s Catastrophe Conference</i>, Toronto,</p>

ON, 4–6 February 2019.

McCray, C.D., J.R. Gyakum, and E.H. Atallah. Long-Duration Freezing Rain Events over North America: Regional Climatology and Maintenance Mechanisms. *29th Conference on Weather Analysis & Forecasting*, Denver, CO, 4–8 June 2018.

McCray, C.D., J.R. Gyakum, and E.H. Atallah. A Multi-Scale Analysis of Widespread Long-Duration Freezing Rain Events over North America. *18th Cyclone Workshop*, Sainte-Adele, QC, 1–6 October 2017.

McCray, C.D., B. Veenhuis, and J. Nelson. Verification of WPC freezing rain guidance using ASOS ice accretion observations. *NCEP Student Presentation Workshop*, College Park, MD, 10 August 2017.

McCray, C.D., J.R. Gyakum, and E.H. Atallah. A Surface Dynamic and Thermodynamic Analysis of Long-Duration Freezing Rain Events. *Canadian Network for Regional Climate and Weather Processes Annual Science Meeting*, Montreal, QC, 3–5 May 2017.

McCray, C.D., J.R. Gyakum, and E.H. Atallah. A Surface Dynamic and Thermodynamic Analysis of Long-Duration Freezing Rain Events. *28th Conference on Weather Analysis and Forecasting*, 97th AMS Annual Meeting, Seattle, WA, 22–26 January 2017.

McCray, C.D. Influences of the Lake Champlain Valley on Freezing Rain Events at Burlington, Vermont. *41st Northeastern Storm Conference*, Saratoga Springs, NY, 4–6 March 2016.

McCray, C.D., C. J. Melick, W. F. Bunting, I. L. Jirak, A. E. Cohen, A. R. Dean, P. T. Marsh, and J. L. Guyer. Verification of Storm Prediction Center Winter Weather Mesoscale Discussions. *5th Conference on the Transition of Research to Operations*, 95th AMS Annual Meeting, Phoenix, AZ, 4–8 January 2015.

McCray, C.D., C. J. Melick, W. F. Bunting, I. L. Jirak, A. E. Cohen, A. R. Dean, P. T. Marsh, and J. L. Guyer. Verification of Storm Prediction Center Winter Weather Mesoscale Discussions. *15th Northeast Regional Operational Workshop (NROW XV)*, Albany, NY, 12–13 November 2014.

CONFERENCE
POSTERS

McCray, C.D., J.R. Gyakum, and E.H. Atallah. Long-Duration Freezing Rain Events over North America *CatIQ Connect – Canada’s Catastrophe Conference.*, Toronto, ON, 4–6 February 2019.

McCray, C.D., J.R. Gyakum, and E.H. Atallah. Long-Duration Freezing Rain Events over North America: Regional Climatology and Maintenance Mechanisms. *8th GEWEX Open Science Conference*, Canmore, AB, 6–11 May 2018.

McCray, C.D., J.R. Gyakum, and E.H. Atallah. A Synoptic- and Planetary-Scale Analysis of Widespread North American Ice Storms. *2017 American Geophysical Union Fall Meeting*, New Orleans, LA, 11–16 December 2017.

McCray, C.D., J.R. Gyakum, and E.H. Atallah. Characteristics of High-Impact Long-Duration Freezing Rain Events over North America. *2017 European Geosciences Union General Assembly*, Vienna, Austria, 23–28 April 2017.

TECHNICAL
SKILLS

Programming Languages/Systems:

- Python (NumPy, Pandas, xarray, Matplotlib), Perl, MATLAB, Unix

Meteorological Packages:

- GEMPAK, Model Evaluation Tools (MET), AWIPS, GRLevelX, BUFKIT

MEDIA
INTERVIEWS

"De la neige à la chaleur accablante en quelques jours", *Le Journal de Montréal*, 4 June 2020.

"Une première tempête réellement hâtive?", *Le Devoir*, 15 November 2019.

"Changements climatiques, la cause de notre hiver difficile ?", *MétéoMédia*, 29 March 2019.

"Montreal's winters unlikely to remain white", *McGill Tribune*, 26 March 2019.

"Weather whiplash: Yes, Montreal winters are getting wetter and icier", *Montreal Gazette*, 23 February 2019.

"As city scrambles on icy roads, scientist warns of new normal for Montreal winters", *CTV News Montreal*, 25 February 2019.

"Incoming: snow, freezing rain, and then rain are heading for southern Quebec", *CBC Montreal News*, 23 February 2019.

"Another ice storm could happen. Is Hydro-Quebec ready?", *CBC Montreal News*, 5 January 2018.