

Charles L. Curry

CURRICULUM VITAE

MAILING ADDRESS

Pacific Climate Impacts Consortium
University of Victoria, Box 1700, STN CSC
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CITIZENSHIP: Canadian Citizen

EDUCATION

Ph.D. Physics, McMaster University, Hamilton, Ontario, Canada, 1995
M.Sc. Physics, Queen's University, Kingston, Ontario, Canada, 1990
B.Sc. Physics & Mathematics (Hons.), Saint Mary's University, Halifax, N.S., Canada, 1988

EXPERTISE AND RESEARCH INTERESTS

Climatology and hydrology of Western North America
Statistical/mathematical analysis of climate data
Climate system modelling at both regional and global scales
Sensitivity of renewable energy systems to climate
Impacts of climate change, policy & science communication

RELEVANT ABILITIES AND EXPERIENCE

Critical thinking and creative problem solving
Experience coordinating and leading research projects, including
partnerships with industry
Experience supervising and evaluating graduate students & research staff
Facility in oral communication and in writing for specialist and general audiences,
including generating publications and conference presentations
Excellent computer skills, including large-scale computing infrastructure

ACADEMIC AND RESEARCH HISTORY

- 01/2021 - present Acting Lead, Regional Climate Impacts, Pacific Climate Impacts Consortium, University of Victoria
- 07/2010 - present Adjunct Professor, School of Earth and Ocean Sciences, University of Victoria
- 04/2016 - 12/2020 Senior Research Associate, Pacific Climate Impacts Consortium, University of Victoria
- 07/2011 - 03/2016 Research Associate, School of Earth and Ocean Sciences, University of Victoria
- 09/2008 - 06/2011 Research Scientist (SE-RES-02), Canadian Centre for Climate Modelling & Analysis (CCCma), Environment Canada
- 04/2008 - 07/2008 Postdoctoral Intern, University of Victoria and BC Transmission Corp.
- 01/2003 - 04/2008 Research Associate and Lecturer, University of Victoria and CCCma
- 09/1999 - 12/2002 Postdoctoral Fellow and Lecturer, University of Waterloo
- 09/1998 - 12/2002 Visiting Scientist and Lecturer, University of Western Ontario
- 10/1995 - 08/1998 NSERC Postdoctoral Fellow & Lecturer, University of California, Berkeley

SELECTED HONOURS AND AWARDS

- NSERC Postdoctoral Fellowship, University of California at Berkeley, 1995-97
- Desmond G. Burns Scholarship in Theoretical Physics, McMaster University, 1994
- Centennial Scholarship, McMaster, 1993
- Pass With Distinction, Ph.D. Physics Comprehensive Exam, McMaster, 1992
- NSERC Postgraduate Scholarship, Queen's, 1988-90

TEACHING EXPERIENCE

- 01/2008 - 04/2008 Lecturer, SEOS, University of Victoria
- 09/2000 - 12/2002 Lecturer/Adjunct Professor, Dept. of Physics and Astronomy, University of Western Ontario
- 01/1999 - 08/2000 Lecturer, Dept. of Physics, University of Waterloo
- 05/1997 - 08/1997 Lecturer, Astronomy Dept., University of California, Berkeley

MEMBERSHIP IN PROFESSIONAL SOCIETIES AND ORGANIZATIONS

2018 – present	Member, Canadian Water Resources Association
2004 – present	Member, American Geophysical Union
2005 – present	Member, Canadian Meteorological and Oceanographic Society
2005 – 2006	Member, American Meteorological Society

RESEARCH SUPPORT

I competed successfully for the following grants:

05/2017 – 05/2020	MEOPAR-YOPP Grant for project, “Predicting the Future(s) of Renewable Energy in Canada’s Arctic,” co-Investigator, non-funded. PI: Prof. Adam Monahan, University of Victoria
01/2010 – 08/2010	CFCAS Knowledge Synthesis Grant, \$40,000, Co-Investigator, non-funded. PI: Prof. A. Monahan, University of Victoria
04/2008 – 07/2008	MITACS-ACCELERATE BC Internship, \$30,000, Postdoctoral Intern Supervisor: Prof. A. Monahan, University of Victoria

SELECTED PRESENTATIONS AT PROFESSIONAL MEETINGS (last 6 years)

“A new methodology for estimating historical snow loads for infrastructure design in Canada (talk)”, CMOS Annual Congress, online, June 2020

“Twenty-first century hydrologic change and extreme streamflow in the Fraser River Basin of British Columbia” (talk), CMOS Annual Congress, Halifax, NS, June 2018

“Twenty-first century hydrologic change and flood risk in the Fraser River Basin of British Columbia” (talk), CWRA Annual Conference, Victoria, BC, May 2018

“Predictors of high streamflow events in the Fraser River Basin of British Columbia, Canada,” (poster), AGU Fall Meeting, San Francisco, U.S.A., December 2016
<https://agu.confex.com/agu/fm16/meetingapp.cgi/Paper/192277>

SELECTED PRESENTATIONS (CONT'D)

“Does increased resolution alone add value in RCM simulations of climate extremes? A multi-scale study over western Canada” (talk), CMOS Annual Congress, Whistler, BC, June 2015

“A multimodel study of climate extremes in an idealized geoengineering experiment” (poster), Climate Engineering Conference 2014, Berlin, Germany, August 2014

“Quantifying uncertainty in regional climate model projections over Western Canadian watersheds” (poster), 3rd International Lund Regional-Scale Climate Modelling Workshop, Lund, Sweden, June 2014

“Impact of increased resolution in RCM simulation of extreme climate events over Western Canada” (talk), Norwegian Institute for Water Research, Oslo, Norway, June 2014

SELECTED REFEREED JOURNAL PUBLICATIONS

For citation statistics, see:

<http://scholar.google.ca/citations?user=8oiwu60AAAAJ&hl=en> or

https://www.researchgate.net/profile/Charles_Curry

M. Saunio, ..., C. L. Curry [25th of 90 authors], et al.,
“The Global Methane Budget 2000-2017,” *Earth System Science Data*, 12, 1561–1623,
<https://essd.copernicus.org/articles/12/1561/2020/>

S. Ul Islam, C.L. Curry, S.J. Déry and F.W. Zwiers,
“Quantifying projected changes in runoff variability and flow regimes of the Fraser River Basin, British Columbia,”
Hydrology and Earth System Sciences, <https://doi.org/10.5194/hess-23-811-2019> (2019)

C.L. Curry, S. Ul Islam, F.W. Zwiers and S.J. Déry,
“Atmospheric Rivers Increase Future Flood Risk in Western Canada's Largest Pacific River,”
Geophysical Research Letters, <https://doi.org/10.1029/2018GL080720> (2019)

SELECTED REFEREED JOURNAL PUBLICATIONS (CONT'D)

C.L. Curry and F.W. Zwiers, "Examining controls on peak annual streamflow and floods in the Fraser River Basin of British Columbia," *Hydrology and Earth System Sciences*, <https://doi.org/10.5194/hess-22-2285-2018> (2018)

D. Ji, S. Fang, J.C. Moore, C.L. Curry, and 9 co-authors, "Impacts of solar dimming and stratospheric aerosol geoengineering on extreme temperature and precipitation," *Atmospheric Chemistry and Physics*, 18, 10133–10156, <https://doi.org/10.5194/acp-18-10133-2018> (2018)

A. Lew, P. von Aderkas, A. Berland, C.L. Curry, D. Kolotelo, T. Lacourse, B. Tencer and A.J. Weaver,

"An assessment of *Pinus contorta* seed production in British Columbia: Geographic variation and dynamically-downscaled climate correlates from the Canadian Regional Climate Model," *Agric. Forest Meteorol.*, <http://dx.doi.org/10.1016/j.agrformet.2016.12.013> (2017)

M. Saunio, ..., C. Curry [27th of 79 authors], et al.,
"The Global Methane Budget 2000-2012,"
Earth Syst. Sci. Data, 8(2), 697-751, doi:10.5194/essd-2016-25 (2016)

J. T. Daines, A.H. Monahan and C.L. Curry,
"Model-Based Projections and Uncertainties of Near-Surface Wind Climate in Western Canada,"
J. Appl. Meteor. Clim., doi: 10.1175/JAMC-D-16-0091.1 (2016)

C.L. Curry, B. Tencer, K. Whan, A. J. Weaver, M. Giguère and E. Wiebe,
"Searching for added value in simulating climate extremes with a high-resolution regional climate model over Western Canada: I. Large scale results,"
Atmosphere-Ocean, doi: 10.1080/07055900.2016.1158146 (2016)

C.L. Curry, B. Tencer, K. Whan, A. J. Weaver, M. Giguère and E. Wiebe,
"Searching for added value in simulating climate extremes with a high-resolution regional climate model. II: Results at the basin scale,"
Atmosphere-Ocean, doi: 10.1080/07055900.2016.1215287 (2016)

C.L. Curry, J. Sillmann, D. Bronaugh, and 11 coauthors, "A multi-model examination of climate extremes in an idealized geoengineering experiment," *J. Geophys. Res.: Atmospheres*, 119, 3900–3923, doi: 10.1002/2013JD020648 (2014)

SELECTED REFEREED JOURNAL PUBLICATIONS (CONT'D)

Note on the following collaborative publications as part of the GeoMIP project (2013-2014):
Order of authorship is generally alphabetical, with lead author as principal contributor

B. Kravitz, ... , C.L. Curry [7th of 18 coauthors], et al.,
"A multi-model assessment of regional climate disparities caused by solar geoengineering,"
Environ. Res. Lett., 9, 074013, doi:10.1088/1748-9326/9/7/074013 (2014)

N, Huneus, ..., C.L. Curry [5th of 20 coauthors], et al.,
"Forcings and feedbacks in the GeoMIP ensemble for a reduction in solar irradiance
and increase in CO₂,"
J. Geophys. Res.: Atmospheres, 119, 5226-5239, doi: 10.1002/2013JD021110 (2014)

L. Xia, ..., C.L. Curry [4th of 14 coauthors],
"Solar radiation management impacts on agriculture in China: A case study in the
Geoengineering Model Intercomparison Project (GeoMIP),"
J. Geophys. Res.: Atmospheres, 119, 8695-8711 (2014)

B. Kravitz, ... , C.L. Curry [9th of 24 authors], et al., "Climate model response from the
Geoengineering Model Intercomparison Project (GeoMIP)," *J. Geophys. Res.: Atmospheres*, 118,
1-13, doi: 10.1002/jgrd.50646 (2013)

A. Jones, ..., C.L. Curry [6th of 18 coauthors], et al.,
"The impact of abrupt suspension of solar radiation management (termination effect) in
experiment G2 of the Geoengineering Model Intercomparison Project (GeoMIP),"
J. Geophys. Res.: Atmospheres, 118, 9743-9752 (2013)

S. Tilmes, ..., C.L. Curry [12th of 28 coauthors], et al.,
"The hydrological impact of geoengineering in the Geoengineering Model Intercomparison
Project (GeoMIP),"
J. Geophys. Res.: Atmospheres, 118 (19), 11,036-11,058 (2013)

S.R. Haughian, P.J. Burton, S.W. Taylor, and C. Curry,
"Expected effects of climate change on forest disturbance regimes in British Columbia,"
J. Ecosys. Manag., 13, 16-38 (2012)

SELECTED REFEREED JOURNAL PUBLICATIONS (CONT'D)

C.L. Curry, D. van der Kamp, and A.H. Monahan,
"Statistical downscaling of historical monthly mean winds over a coastal region of complex terrain. I. Predicting wind speed," *Climate Dynamics*, doi: 10.1007/s00382-011-1173-3 (2011)

D. van der Kamp, C.L. Curry, and A.H. Monahan,
"Statistical downscaling of historical monthly mean winds over a coastal region of complex terrain. II. Predicting wind components," *Climate Dynamics*, doi: 10.1007/s00382-011-1175-1 (2011)

J. Li, C.L. Curry, Z. Sun, and F. Zhang,
"Overlap of solar and infrared spectra and the shortwave radiative effect of methane," *J. Atmos. Sci.*, 67, 2372-2389 (2010)

J.R. Christian, V. K. Arora, G. J. Boer, C. L. Curry, K. Zahariev, K. L. Denman, G. M. Flato, W. G. Lee, W. J. Merryfield, N. T. Roulet, and J. F. Scinocca,
"The global carbon cycle in the Canadian Earth System Model (CanESM1): Preindustrial control simulation," *J. Geophys. Res.: Biogeosciences*, 115, doi: 10.1029/2008JG000920 (2010)

C.L. Curry, "The consumption of atmospheric methane by soil in a simulated future climate," *Biogeosciences*, 6, 2355-2367 (2009)

V. K. Arora, G. J. Boer, J.R. Christian, C.L. Curry, K. Denman, K. Zahariev, G. Flato, J. Scinocca, W.J. Merryfield, and W.G. Lee,
"The effect of terrestrial photosynthesis down-regulation on the 20th century carbon budget simulated with the CCCma Earth System Model," *J. Climate*, 22 (22), 6066-6088, doi: 10.1175/2009JCLI3037.1 (2009)

C.L. Curry, "Modelling the soil consumption of atmospheric methane at the global scale," *Global Biogeochem. Cycles*, 21, GB4012, doi:10.1029/2006GB002818 (2007)

C.L. Curry, N.A. McFarlane, and J.F. Scinocca,
"Relaxing the well-mixed greenhouse gas approximation in climate simulations: Consequences for stratospheric climate," *J. Geophys. Res.: Atmospheres*, 111, D08104, doi:10.1029/2005JD006670 (2006)

MEDIA ATTENTION / ARTICLES WRITTEN FOR THE PUBLIC

A. Cruikshank, "There will be floods: risk could double for world's coastal and river communities by 2030," *The Narwhal*, April 23, 2020 [cited Curry et al., 2019].

C. Curry, "Physics in the pandemic: 'Watching a phenomenon of staggering scope unfold in real time, dictated by simple mathematics'," *Physics World*, April 1, 2020

CONSULTING EXPERIENCE

Extension of the Actuaries Climate Index (ACI) to the UK and Europe: A Feasibility Study. Report for the Institute and Faculty of Actuaries, United Kingdom. Completed, December 2015.

The summary report is available at:

<https://www.actuaries.org.uk/documents/extension-actuaries-climate-index-uk-and-europe-feasibility-study>

Determining the Impact of Climate Change on Insurance Risk and the Global Community Phase II: Development of an Actuaries Climate Index. Completed, November 2015. The index was launched in November 2016 and is available at:

<http://actuariesclimateindex.org/>

Determining the Impact of Climate Change on Insurance Risk and the Global Community Phase I: Key Climate Indicators. Completed, July 2012. Comprehensive summary report available at:

<https://www.soa.org/Research/Research-Projects/Risk-Management/research-2012-climate-change-reports.aspx>

OTHER EXPERTISE AND CONTRIBUTIONS

Served as Expert Reviewer in the Sixth Assessment Report of the IPCC Working Group I, Chapter 5: Global carbon and other biogeochemical cycles and feedbacks (2021)

Served as Expert Reviewer in the Fifth Assessment Report of the IPCC Working Group I, Chapter 6: Carbon and other biogeochemical cycles (2013)