Oliver Watt-Meyer

Machine Learning Scientist for Climate Model Development · oliwm@vulcan.com
Vulcan Inc., Seattle, WA · (206) 556-9633

Work experience

Vulcan Inc., Seattle, WA · 2019 – present
Machine Learning Scientist. Using machine learning to improve weather and climate models. Working under the supervision of Dr. Chris Bretherton.

University of Washington, Department of Atmospheric Sciences · 2016 – 2019
NSERC and NOAA Climate and Global Change Postdoctoral Fellow. Studied general circulation of the atmosphere and its response to global warming using idealized models. Hosted by Prof. Dargan Frierson.

National Center for Atmospheric Research, Boulder, CO · 2015
ASP Graduate Student Visitor. Analyzed climate model simulations to demonstrate the stratosphere's role in the atmospheric response to El Niño.

University of Toronto, Department of Physics · 2011-2016
Ph.D. Candidate. Investigated the role of planetary waves in dynamical stratosphere-troposphere coupling by developing and applying a novel spectral analysis method to historical observational data.

Education

Ph.D., Department of Physics, University of Toronto · 2016
The Role of Standing and Travelling Waves in Stratosphere-Troposphere Coupling
Supervisor: Prof. Paul J. Kushner

B.Sc., Joint Honours Mathematics and Physics, McGill University · 2010
First Class Honours, Distinction

Awards

NSERC Postdoctoral Fellowship, $45,000/year	2018 – 2019
CMOS Tertia M.C. Hughes Memorial Graduate Student Prize	2017
NOAA Climate and Global Change Postdoctoral Fellowship, $63,300/year	2016 – 2018
Ontario Graduate Scholarship, $15,000/year	2011 – 2014, 2015 – 2016
NCAR Advanced Study Program, Graduate Visitor Program, $5,250	2015
Centre for Global Change Science, Graduate Student Research Award, $3,720	2013
School of Graduate Studies, Conference Grant, $400	2013
David M. Harrison Teaching Award (3rd place)	2013
Admission Award (University of Toronto Fellowship), $3,000	2011
J.W. McConnell Scholarship, $3,000/year	2006 – 2010

Publications

O. Watt-Meyer, N. D. Brenowitz, S. K. Clark, B. Henn, A. Kwa, J. McGibbon, W. A. Perkins and C. S. Bretherton (under review at *Geophys. Res. Lett.*): Correcting weather and climate models by machine learning nudged historical simulations. Preprint available at doi.org/10.1002/essoar.10505959.1

McGibbon, J. et al. including **O. Watt-Meyer** (under review at *Geosci. Model Dev.*): fv3gfs-wrapper: a Python wrapper of the FV3GFS atmospheric model.

Pendergrass, A. G., **O. Watt-Meyer,** M. P. Byrne et al. (in prep for *JAMES*): ITCZ-MIP: How do changes in ITCZ width affect global climate?

Watt-Meyer, O., D. M. W. Frierson and Q. Fu (2019): Hemispheric asymmetries in tropical expansion under CO_2 forcing. *Geophys. Res. Lett.,* **46,** 9231-9240.

Watt-Meyer, O., and D. M. W. Frierson, (2019): ITCZ width controls on Hadley cell extent and eddy-driven jet position and their response to warming. *J. Clim.,* **32,** 1151-1166.

Watt-Meyer, O., and P.J. Kushner (2018): Why are temperature and upward wave activity flux positively skewed in the polar stratosphere? *J. Clim.,* **31,** 115-130.

Watt-Meyer, O., and D. M. W. Frierson, (2017): Local and remote impacts of cloud radiative effects onto the eddy-driven jet. *Geophys. Res. Lett.,* **44,** 10,036-10,044.

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Watt-Meyer, O., and P.J. Kushner, (2015): The role of standing waves in driving persistent anomalies of upward wave activity flux. *J. Clim.*, **28,** 9941-9954.

Watt-Meyer, O., and P.J. Kushner, (2015): Decomposition of atmospheric disturbances into standing and travelling components, with application to Northern Hemisphere planetary waves and stratosphere-troposphere coupling. *J. Atmos. Sci.,* **72,** 787-802.

Conference Presentations

NOAA 2nd Workshop on Leveraging AI in Env. Sciences, Washington, D.C. (poster)	December 2020
AGU Fall Meeting, Washington, D.C. (poster)	December 2020
AMS 22nd Conference on Atmos. And Oceanic Fluid Dynamics, Portland, ME (oral+poster)	June 2019
AGU Fall Meeting, Washington, D.C. (oral)	December 2018
2018 CFMIP Meeting, Boulder, CO (poster)	October 2018
2018 Stormtracks Workshop, Utö, Sweden (oral)	September 2018
AOGS 15th Annual Meeting, Honolulu, HI (oral+poster)	June 2018
AGU Fall Meeting, New Orleans, LA (poster)	December 2017
2017 CFMIP Meeting, Tokyo, Japan (oral)	September 2017
AMS 21st Conference on Atmos. And Oceanic Fluid Dynamics, Portland, OR (oral)	June 2017
AMS 19th Conference on the Middle Atmosphere, Portland, OR (oral)	June 2017
CMOS Congress 2017, Toronto, Canada (oral)	June 2017
AMS 29th Conference on Climate Variability and Change, Seattle, WA (oral)	January 2017
AGU Fall Meeting, San Francisco, CA (poster)	December 2016
SPARC DynVar Workshop, FMI, Helsinki, Finland (oral)	June 2016
AGU Fall Meeting, San Francisco, CA (poster)	December 2015
MODES Workshop, NCAR, Boulder, CO (oral)	August 2015
AMS 20th Conference on Atmos. and Oceanic Fluid Dynamics, Minneapolis, MN (oral)	June 2015
CMOS Congress 2015, Whistler, Canada (oral)	June 2015
AMS 18th Conference on Middle Atmosphere, Phoenix, AZ (oral)	January 2015
World Weather Open Science Conference, Montreal, Canada (poster)	August 2014
EGU General Assembly 2014, Vienna, Austria (oral)	April 2014
AMS 17th Conference on Middle Atmosphere, Newport, RI (oral)	June 2013

Seminar Presentations

University of British Columbia – Dept. of Earth, Ocean & Atmospheric Sciences	January 2019
Columbia University – Applied Physics and Applied Mathematics	September 2018
New York University – Center for Atmosphere Ocean Science, Courant Institute	September 2018
University of Washington – Department of Atmospheric Sciences	June 2018
University of California Los Angeles – Atmospheric & Oceanic Sciences	May 2018
York University – Department of Earth and Space Science and Engineering	May 2018
University of Washington – Department of Atmospheric Sciences	January 2017
University of Toronto – Department of Physics	January 2015
New York University – Center for Atmosphere Ocean Science, Courant Institute	September 2013
University of Toronto – Department of Physics	March 2013

Teaching Experience

University of Washington – Department of Atmospheric Science   Spring/Fall 2017, 2018

Guest lecturer for ATMS220, Exploring the Atmospheric Sciences. Lectured on seasonal forecasting and El Niño teleconnections.

University of Toronto – Department of Physics   Fall 2013, 2014, 2015

Teaching Assistant (TA) in PHY407, Computational Physics. Duties were tutorial supervision, hosting office hours, grading and problem set development.

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University of Toronto – Department of Physics Winter 2013, 2014, 2015, 2016
TA in PHY392, Physics of Climate. Duties were grading and problem set development.

University of Toronto – Department of Physics Fall 2011, Winter and Fall 2012
TA in PHY131/132, an introductory physics course for life science students. Awarded 3rd place out of 64 TAs for the David M. Harrison teaching award, which is based on student evaluations of TAs.

McGill University – Department of Mathematics Winter 2010
Tutor at the Help Desk, a location for fellow undergraduates to get assistance with their math courses.

Professional Activities

Reviewer Ongoing
Peer reviewer for journals including Nature Climate Change, Geophysical Research Letters, Quarterly Journal of the Royal Meteorological Society, Journal of the Atmospheric Sciences and Atmospheric Science Letters.

Postdoc Liaison – Department of Atmospheric Sciences – U. of Washington June 2018 – Aug 2019
I was a representative for postdoctoral fellows within the department. I attended regular faculty meetings, organize social events and acted as a liaison between the atmospheric science postdocs and faculty.

Co-convener – Atmospheric Sciences Session – AGU Fall Meeting 2018 December 2018
Co-convener of session "Large-Scale Moist Circulations and Tropical Variability".

Primary convener – Atmospheric Sciences Session – AGU Fall Meeting 2017 December 2017
Primary convener of session "Coupling of clouds and moisture with the large-scale atmospheric circulation".

Co-Organizer, CGCS Graduate Symposium – University of Toronto February 2015
Organized a two-day symposium of talks by graduate students and visiting faculty for the Centre for Global Change Science Graduate Symposium.

Noble Committee – University of Toronto August 2012 – June 2015
Member of committee that selected and invited speakers for the Atmospheric Physics group's biweekly seminar series and organized a yearly week-long lecture series given by a distinguished visitor.

DCMIP Summer School – NCAR, Boulder, Colorado August 2012
Attended a two-week workshop, the Dynamical Core Model Intercomparison Project at the National Center for Atmospheric Research in Boulder, Colorado.

Visiting Scientist – CERFACS, Toulouse, France June 2012
Collaboration with researchers at the Centre Européen de Recherche et de Formation Avancée en Calcul Scientifique. This resulted in a technical report summarizing the differences between high-top and low-top versions of the CNRM-CM5 climate model.

Outreach Activities

Member – UW Atmospheric Sciences Video Outreach Team November 2016 – August 2019
Part of a group that creates videos about atmospheric science concepts, which are distributed publicly on YouTube. I have produced and edited two videos, one on how chaos relates to weather prediction using a double pendulum and the other on why cloudy nights tend to be warmer than clear nights.

Mentorship program – University of Toronto September 2014 – April 2015
Mentored an undergraduate student in the Department of Physics on future career opportunities.

Outreach talk – The Silent Barn – Brooklyn, New York, USA September 2013
Pedagogical talk on stratosphere-troposphere coupling at an independent arts venue in New York City.

Languages

English (native), French (conversational), Spanish (conversational)