

# Patrick Martineau, Ph.D.

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## ACADEMIC EMPLOYMENT

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<b>Japan Society for the Promotion of Science postdoctoral fellow</b> Research Center for Advanced Science and Technology The University of Tokyo, Tokyo, Japan Supervisor: Prof. Hisashi Nakamura	<i>2017-present</i>
<b>Postdoctoral scholar</b> Department of Atmospheric and Oceanic Sciences University of California, Los Angeles Supervisor: Prof. Gang Chen	<i>2016-2017</i>
<b>Postdoctoral Research Associate</b> Cornell University Supervisor: Prof. Gang Chen	<i>2015-2016</i>
<b>Undergraduate Research Assistant</b> Department of Atmospheric and Oceanic Sciences McGill University Advisor: Prof. Jacques Derome	<i>Summer 2007</i>

## EDUCATION

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<b>Ph.D in Atmospheric And Oceanic Sciences</b> Department of Atmospheric and Oceanic Sciences McGill University Supervisor : Prof. Seok-Woo Son	<i>2015</i>
<b>M.Sc in Atmospheric And Oceanic Sciences</b> Department of Atmospheric and Oceanic Sciences McGill University Supervisor : Prof. Seok-Woo Son	<i>2011</i>
<b>B.Sc (Honours) in Atmospheric And Oceanic Sciences</b> Department of Atmospheric and Oceanic Sciences McGill University	<i>2009</i>

## RESEARCH INTERESTS

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Weather extremes: heat waves, cold spells, blocking events, interannual to multidecadal variability, coupling with the oceans, and trends

Stratospheric variability and stratosphere-troposphere dynamical coupling  
Assessment and comparison of reanalysis datasets

## TEACHING

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**Guest lecturer** 2017  
McGill University  
Course on data analysis in atmospheric and oceanic sciences (ATOC551). One class on the topic of Fourier transform and storm track identification.

**Guest lecturer** 2016  
Cornell University  
Course on introductory atmospheric dynamics (EAS3420). Three classes taught.

## PUBLICATIONS AND PRESENTATIONS

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### Manuscripts in preparation

Martineau, P., J. Wright and M. Fujiwara, A zonal-mean dataset of reanalyses on pressure levels.

Burrows, D. A., G. Chen, and P. Martineau, Response of Midlatitude Extreme Events to Thermal Perturbations in an Idealized Model.

### Submitted manuscripts

Martineau, P., S.-W. Son, M. Taguchi, and A. H. Butler, A comparison of the momentum budget in reanalysis datasets during sudden stratospheric warming events. (*in revision*)

### Peer-reviewed publications

Martineau, P., Chen, G., Son, S.-W. and Kim, J. 2018: Lower-stratospheric control of the frequency of sudden stratospheric warming events, *J. Geophys. Res. Atmos.*, doi:10.1002/2017JD027648, 2018.

Martineau P., Gang Chen and D. Alex Burrows, 2017: Wave Events: Climatology, Trends, and Relationship to Northern Hemisphere Winter Blocking and Weather Extremes. *J. Clim.*, 30, 5675–5697, doi:10.1175/JCLI-D-16-0692.1.

Fujiwara, M., and Coauthors, 2017: Introduction to the SPARC Reanalysis Intercomparison Project (S-RIP) and overview of the reanalysis systems. *Atmos. Chem. Phys.*, 17, 1417–1452, doi:10.5194/acp-17-1417-2017.

Martineau, P., S.-W. Son, and M. Taguchi, 2016: Dynamical Consistency of Reanalysis Datasets in the Extratropical Stratosphere. *J. Clim.*, 29, 3057–3074, doi:10.1175/JCLI-D-15-0469.1.

Martineau, P., and S.-W. Son, 2015: Onset of Circulation Anomalies during Stratospheric Vortex Weakening Events: The Role of Planetary-Scale Waves. J. Clim., 28, 7347–7370, doi:10.1175/JCLI-D-14-00478.1.

Martineau, P., and S.-W. Son, 2013: Planetary-scale wave activity as a source of varying tropospheric response to stratospheric sudden warming events: A case study. J. Geophys. Res. Atm., 118, doi:10.1002/jgrd.50871.

Martineau, P., and S.-W. Son, 2010: Quality of reanalysis data during stratospheric vortex weakening and intensification events. Geophys. Res. Lett., 37, doi:10.1029/2010GL045237.

### **Presentations (only as first author)**

Martineau, P., H. Nakamura, B. Taguchi, Y. Kosaka, and M. Mori, 2018: Decadal covariability between ocean temperatures and weather extremes, poster, Ocean Science meeting 2018, February 11-16, Portland, Oregon

Martineau, P., Chen, G., Son, S.-W. and Kim, 2017: Lower-stratospheric control of the frequency of sudden stratospheric warming events, poster, AGU 2017 Fall meeting, December 11-15, New-Orleans, Louisiana

Martineau, P., G. Chen, 2017: The role of wave trains in the intensification of mid-latitude wintertime waviness, poster, Asian conference on meteorology, October 23-24, Busan, Korea

Martineau, P., G. Chen, S.-W. Son, J. Kim, 2017: Lower-stratospheric control of the frequency of sudden stratospheric warming events, oral, WCRP/SPARC Local Workshop, October 19-20, Incheon, Korea

Martineau, P., G. Chen, S.-W. Son and J. Kim, 2017: Lower stratospheric control of the frequency of sudden stratospheric warming events, invited oral, JpGU-AGU joint meeting 2017, May 20-25, Makuhari, Japan

Martineau, P., S.-W. Son and M. Taguchi, 2017: A comparison of the momentum budget in reanalysis datasets during sudden stratospheric warming events, poster, JpGU-AGU joint meeting 2017, May 20-25, Makuhari, Japan

Martineau, P., G. Chen and A. Burrows, 2016: Wave events: climatology and relationship to Northern Hemisphere winter blocking and weather extremes, poster, AGU 2016 Fall meeting, December 12-16, San Francisco, California

Martineau, P., G. Chen and A. Burrows, 2016: Méandres du courant-jet: extrêmes de température et changements climatiques, invited talk, November 1, UQAM, Montreal, Canada

Martineau, P., G. Chen, A. Burrows, D. Xue and J. Lu, 2016: Finite-amplitude local wave activity as a diagnostic of persistent extreme weather, poster, DynVar Workshop, June 6-10, Helsinki, Finland

Martineau, P., S.-W. Son and M. Taguchi, 2016: Dynamical consistency of reanalysis datasets in the extratropical stratosphere, oral, DynVar Workshop, June 6-10, Helsinki, Finland

Martineau, P., G. Chen and A. Burrows, 2016: Finite-amplitude local wave activity as a diagnostic of blocking events and persistent extreme weather, oral, Workshop on Atmospheric Blocking, April 6-8, Reading, England

Martineau, P., S.-W. Son and M. Taguchi, 2015: Dynamical consistency of reanalysis data sets in the extratropical stratosphere, poster, S-RIP Workshop, October 12-13, Paris, France

Martineau, P., E. Gerber and coauthors, 2015: Chapter 6: Stratosphere-Troposphere Coupling, oral, S-RIP Workshop, October 12-13, Paris, France

Martineau, P., S.-W. Son and M. Taguchi, 2015: How well do momentum diagnostics explain extratropical stratospheric variability in reanalysis datasets? oral, 18th Conference on Middle Atmosphere, AMS 2015, January 4-8, Phoenix, Arizona, USA

Martineau, P. and S.-W. Son, 2015: Onset of circulation anomalies during stratospheric vortex weakening events: the role of planetary-scale waves. poster, AMS 2015 Phoenix, Arizona, January 4-8, USA

Martineau, P. and S.-W. Son, 2014: Which reanalysis data is good for momentum diagnostics of the extratropical stratosphere? poster, SPARC Reanalysis Intercomparison Project (S-RIP) workshop, September 10-12, Maryland, USA

Martineau, P. and S.-W. Son, 2013: The role of momentum forcing by planetary-scale waves in the onset of tropospheric circulation anomalies during stratospheric sudden warming events, oral, 17th Conference on Middle Atmosphere, June 16-21, Newport, Rhode Island

Martineau, P. and S.-W. Son, 2013: A spectral climatology of planetary-scale disturbances in the southern and northern hemispheres: present and future climate scenarios, poster, 17th Conference on Middle Atmosphere, June 16-21, Newport, Rhode Island

Martineau, P. and S.-W. Son, 2013: The role of momentum forcing by planetary-scale waves in the onset of tropospheric circulation anomalies during stratospheric sudden warming events, poster, WCRP Regional Workshop on Stratosphere-Troposphere Processes and their Role in Climate, April 1-3, Kyoto, Japan

Martineau, P. and S.-W. Son, 2012: Tropospheric response to stratospheric vortex weakening events and its inter-annual variability in the Northern Hemisphere cold season, oral, AGU 2012 fall meeting, December 3-7, San Francisco, California

Martineau, P. and S.-W. Son, 2012: Downward propagation of Stratospheric Vortex Weakening events, oral, International Polar Year, From Knowledge to Action, April 23-27, Montreal, Canada

Martineau, P. and S.-W. Son, 2012: Contrasting propagating and non-propagating Stratospheric Sudden Warming events, poster, Workshop on Stratospheric Sudden Warming and its Role in Weather and Climate Variations, February 22-24, Kyoto, Japan

Martineau, P. and S.-W. Son, 2011: Quality of reanalysis data during stratospheric vortex weakening and intensification events, poster, Stratospheric Climate and Coupling Between the Stratosphere and Troposphere, 91st American Meteorological Society Annual Meeting, January 23-27, Seattle, WA

Martineau, P. and S.-W. Son, 2010: Quality of Reanalysis Data during Stratospheric Extreme Events, poster, Stratospheric Processes and their Role in Climate, 3rd Joint CMOS-CGU Congress, May 31-June 4, Ottawa, Canada

## PROFESSIONAL ACTIVITIES

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Convener of a session entitled “Atmospheric Circulation and Hydrological Cycle under a changing climate: Monsoons, Storm Tracks, and the ITCZ” (A106; AGU 2016)

Co-lead of the chapter “Stratosphere–Troposphere Coupling” of the S-RIP project (<http://s-rip.ees.hokudai.ac.jp/report/structure.html>)

## OUTREACH

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I gave a lecture about my research at the Toyama Senior Prefectural High School as part of the JSPS Science Dialogue program <https://www.jsps.go.jp/english/e-plaza/e-sdialogue/index.html>.

## PEER REVIEW EXPERIENCE

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Journal of Climate

Climate Dynamics

Quarterly Journal of the Royal Meteorological Society

Monthly Weather Review

Journal of Geophysical Research : Atmospheres

Annales Geophysicae (Copernicus)

## SCHOLARSHIPS

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Japan Society for the Promotion of Science  
Postdoctoral Fellowship for Overseas Researchers *Aug 2017 – Aug 2019*

Alexander Graham Bell Canada Graduate Scholarships  
NSERC CGS D *Sept 2011 – Sept 2014*

Master’s research scholarship  
FQRNT *Sept 2010 – Sept 2011*

Alexander Graham Bell Canada Graduate Scholarship  
NSERC CGS M *Sept 2009 – Sept 2010*

Undergraduate Summer Research Award  
NSERC USRA

*May 2008 – Sept 2008*

## **AWARDS**

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GEC3 Travel Grant	<i>2012</i>
Atmospheric and Meteorological Graduate Supplements Environment Canada (Supplements CGS D)	<i>2011 - 2012</i>
Peter-Zwack prize (CMOS)	<i>2011</i>
McGill's Dr. and Mrs. Milton Leong Graduate Student Award	<i>2009</i>
Sigma Xi : McGill Chapter Undergraduate Research Award	<i>2009</i>
First Class Honours in Atmospheric Science, J.S. Marshall Prize	<i>2009</i>

## **SKILLS**

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Language : French and English, elementary Japanese

Operating System : Linux, Windows

Programming : Matlab, Bash, Fortran, PHP, Javascript, IDL

Presentation : Latex, HTML, CSS, OppenOffice, Word, PowerPoint, Illustrator

## **MEMBERSHIPS**

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American Geophysical Union

American Meteorological Society