

Edward Blanchard-Wrigglesworth

- Contact Information** Department of Atmospheric Sciences
University of Washington
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Seattle, WA 98195-1640
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- Education** **University of Washington, Seattle, USA**
- Ph. D., in Atmospheric Sciences, Aug 2013
- Advisor: Professor Cecilia Bitz
 - Thesis topic: On the predictability of sea ice
- University of Cambridge, Cambridge, UK**
- M. Phil., in Polar and Glacier Studies July 2005
- Advisor: Professors Julian Dowdeswell and Hans Graf
 - Thesis topic: Ocean-Atmosphere variability in the Arctic and polar North Atlantic
- B.A., in Geography (Part II) and Natural Sciences Tripos (Part I) June 2003
- *First Class Honours*
 - Thesis topic: Atmospheric forcing of glacier mass balance in Scandinavia and North America
- Professional positions held**
- 2017 March - present: Research Assistant Professor, Department of Atmospheric Sciences, University of Washington, Seattle, USA
 - 2015 Apr - May: Visiting Research Associate, Catalan Institute for Climate Science, Barcelona, Spain
 - 2013 Sep - 2017 Feb: Research Associate, Department of Atmospheric Sciences, University of Washington, Seattle, USA
 - 2010 Jul - Sep: Visiting Research Assistant, National Center for Atmospheric Research, Boulder, USA
 - 2007 - 2013: Research Assistant, Department of Atmospheric Sciences, University of Washington, Seattle, USA
- Publications (peer reviewed)**
- Ding, Q., Schweiger, A., L'Hereux, M., Battisti, D., Po-Chedley, S., Johnson, N., Blanchard-Wrigglesworth, E., Harnos, K., Zhang, Q., Eastman, R., and Steig, E (2017) Influence of high-latitude atmospheric circulation change on summertime Arctic sea ice, *Nature Climate Change*, doi: 10.1038/nclimate3241
 - Cheng, W., E. Blanchard-Wrigglesworth, C. M. Bitz, C. Ladd, and P. J. Stabeno (2016), Diagnostic sea ice predictability in the pan-Arctic and U.S. Arctic regional seas, *Geophysical Research Letters*, 43, doi:10.1002/2016GL070735.

- Blanchard-Wrigglesworth E, A. Barthélemy M. Chevallier R. Cullather N. Fučkar F. Massonnet P. Posey W. Wang J. Zhang C. Ardilouze C. M. Bitz G. Vernieres A. Wallcraft M. Wang, (2016) Multi-model seasonal forecast of Arctic sea-ice: forecast uncertainty at pan-Arctic and regional scales, *Climate Dynamics*, doi: 10.1007/s00382-016-3388-9
- Blanchard-Wrigglesworth E, Farrell S, Newman, T, and Bitz, C. M., (2015) Snow cover on Arctic Sea ice in observations and an Earth System Model, *Geophysical Research Letters*, 42, doi:10.1002/2015GL066049
- Blanchard-Wrigglesworth E, Cullather, R, Wanqiu, W, Zhang, J, and Bitz, C. M., (2015) Model skill and sensitivity to initial conditions in a sea-ice prediction system, *Geophysical Research Letters*, 42, doi:10.1002/2015GL065860
- Dukhovskoy D, Ubnoske J, Blanchard-Wrigglesworth E, Heister H, and Proshutinsky A Y (2015) Skill metrics for evaluation and comparison of sea ice models, *Journal of Geophysical Research: Oceans*, doi:10.1002/2015JC010989
- Stroeve, J, Blanchard-Wrigglesworth E, Guemas, V. Howell, S. Massonnet, F, and Tietsche, S (2015) Improving predictions of Arctic sea ice extent, *EOS*, 96, doi:10.1029/2015EO031431
- Blanchard-Wrigglesworth, E., and C. M. Bitz (2014), Characteristics of Arctic sea ice thickness variability in GCMs, *Journal of Climate*, 27, 8244-8258, doi: 10.1175/JCLI-D-14-00345.1
- Virginie Guemas, Edward Blanchard-Wrigglesworth, Matthieu Chevallier, Jonathan J Day, Michel Dqu, Francisco J Doblus-Reyes, Neven Fuckar, Agathe Germe, Ed Hawkins, Sarah Keeley, Torben Koenigk, David Salas y Mlia, Steffen Tietsche (2014) A review on Arctic sea ice predictability and prediction on seasonal-to-decadal timescales *Quarterly Journal of the Royal Meteorological Society*.
- Stroeve, J. Hamilton, L. C. Bitz, M. and Blanchard-Wrigglesworth E (2014) Predicting September sea ice: Ensemble skill of the SEARCH Sea Ice Outlook 2008-2013 *Geophysical Research Letters*, 41(7), 2411-2418
- Holland, M. M., E. Blanchard-Wrigglesworth E., J. E. Kay, and S. Vavrus (2013) Initial-Value predictability of Antarctic sea ice in the community climate system model 3, *Geophysical Research Letters*, doi: 10.1002/grl.50410
- Kay, J. E., M. M. Holland, C. M. Bitz, E. Blanchard-Wrigglesworth, A. Conley, A. Gettelman, and D. Bailey (2012) The influence of local feedbacks and northward heat transport on the equilibrium Arctic climate response to increased greenhouse gas forcing in coupled climate models, *Journal of Climate*, 25, 5433-5450, doi:10.1175/JCLI-D-11-00622.1
- Blanchard-Wrigglesworth E., C. M. Bitz and M. M. Holland (2011) Influence of initial conditions and climate forcing on predicting Arctic sea ice, *Geophysical Research Letters*, 38, L18503, doi: 10.1029/2011GL048807
- Armour K. C., I. Eisenman, E. Blanchard-Wrigglesworth, K. E. McCusker, and C. M. Bitz (2011) The reversibility of sea ice loss in a state-of-the-art climate model, *Geophysical Research Letters*, 38, L16705, doi: 10.1029/2011GL048739
- Blanchard-Wrigglesworth, E., E. DeWeaver, K. Armour, and C. M. Bitz, (2011): Persistence and inherent predictability of Arctic sea ice in a GCM ensemble and observations, *Journal of Climate*, 24, 231-250, doi: 10.1175/2010JCLI3775.1
- Cía, J. C., A. J. Andrés, J L Peña Monné, and E. Blanchard Wrigglesworth (2000) Dinámica de los glaciares del Pirineo aragonés: resultados de la campaña glaciológica del año 1998, *Boletín Glaciológico Aragonés*

- Blanchard-Wrigglesworth, E. (1999), The 1997 veranillo of San Miguel in north-eastern Spain, *Weather*, 54, 114-119, DOI: 10.1002/j.1477-8696.1999.tb06437.x

Manuscripts in review, submitted or in preparation

- Blanchard-Wrigglesworth E and Bushuk, M., Robustness of Arctic sea ice - ocean predictability in a GCM, to be submitted to *Journal of Climate*

Presentations

- CESM Climate Variability and Change Working Group annual meeting , Boulder, CO, March 2017. "Robustness of atmospheric teleconnections in a GCM"
- CESM Polar Climate Working Group annual meeting, Boulder, CO, Feb 2017. "Reconstruction of snow on Arctic sea ice in observations and CESM"
- National Snow and Ice Data Center, Boulder, Colorado, USA, February 2017 "Butterflies and Polar bears: understanding sea ice predictability" (*Invited speaker*)
- American Meteorological Society Annual Meeting, Seattle, WA, January 2017 "Stability of atmospheric teleconnections in dynamical models"
- Sea Ice Thickness workshop, National Center for Atmospheric Research, Boulder, Colorado, USA, November 2016 "Sea Ice Thickness"
- Scripps Institute of Oceanography, La Jolla, California, USA, November 2016 "Butterflies and Polar bears: understanding sea ice predictability"
- FAMOS school lecture, Woods Hole Oceanographic Institute, Massachusetts, USA, November 2016 "Butterflies and Polar bears: understanding sea ice predictability" (*Invited speaker*)
- Barcelona Supercomputing Center, Barcelona, Spain, September 2016. "Multi-model seasonal forecast of Arctic sea-ice: forecast uncertainty at pan-Arctic and regional scales".
- Year of Polar Prediction workshop, ECMWF, Reading, UK, September 2016. "Lessons from multi-model experiments in the Sea Ice Prediction Network"
- Polar Predictability Workshop, Palisades, NY, USA, May 2016. "Lessons from a multi-model SIO experiment"
- CESM Polar Climate Working Group annual meeting, Boulder, CO, Feb 2016. "Arctic sea ice forecasting: an update from the trenches" (*Invited speaker*)
- AGU Annual General Meeting, San Francisco, CA, Dec 2015. "Recent Seasonal Forecast Skill in a Sea-Ice Prediction System. Have We Entered a Period of Inherently Low Predictability?" (*Invited speaker*)
- AGU Annual General Meeting, San Francisco, CA, Dec 2015. "The Impact of Model Uncertainty on Seasonal Sea Ice Forecasts" (*Invited speaker*)
- Year of Polar Prediction (YOPP) summit, UN, Geneva, Switzerland, July 2015. "The Sea Ice Prediction Network" (*Invited speaker*).
- NCAR CESM Annual Workshop, Breckenridge, CO, June 2015. "Arctic sea ice predictability - or can we forecast September sea ice extent at seasonal lags" (*Invited speaker*).
- CMOS Annual General Meeting, Whistler, BC, Canada, June 2015. "Model skill and sensitivity to initial conditions in a sea-ice prediction system".
- Institut Català de Ciències del Clima (IC3), Barcelona, Spain, May 2015. "Developing a seasonal statistical sea ice model".
- MeteoFrance, Toulouse, France, May 2015. "Model skill and sensitivity to initial conditions in a sea-ice prediction system" (*Invited speaker*).

- Polar Predictability Workshop, Reading University, Reading, UK, April 2015. "Model skill and sensitivity to initial conditions in a sea-ice prediction system".
- Courant Insitute, New York University, NY, April 2015. "Model skill and sensitivity to initial conditions in a sea-ice prediction system" (*Invited speaker*).
- National Center for Atmospheric Research, Boulder, CO, Feb 2015. "Model skill and sensitivity to initial conditions in a sea-ice prediction system" (*Invited speaker*).
- National Aeronautics and Space Administration, Goddard, ME, Jan 2015. "Snow cover on Arctic sea ice in Icebridge and the NCAR Community Earth System Model - mean state, variability, and impacts on sea ice predictability" (*Invited speaker*).
- Polar-lower latitude linkage workshop, Barcelona, Spain, Dec 2014. " Snow cover on Arctic sea ice in Icebridge and the NCAR Community Earth System Model - mean state, variability, and impacts on sea ice predictability" (*Invited speaker*).
- EGU Annual General Meeting, Vienna, Austria, May 2014. "General characteristics of sea ice thickness variability in GCMs."
- Sea-ice Predictability Workshop, National Center for Atmospheric Research, Boulder, CO, April 2014. "Advancing predictability thinking outside the box".
- Polar Climate Working Group Workshop, Boulder, Co. Feb 2014. "Worrying about snow"
- AGU Annual General Meeting, San Francisco, CA, Dec 2013. "General characteristics of sea ice thickness variability in GCMs."
- AGU Annual General Meeting, San Francisco, CA, Dec 2012. "Seasonal predictability of Arctic Sea Ice: assessing its limits and potential in a GCM and implications for observations." (*Invited speaker*)
- Reading University, Reading, UK, Nov 2012. "Mechanisms for Arctic sea ice predictability"
- Institut Català de Ciències del Clima (IC3), Barcelona, Spain, Nov 2012. "Seasonal predictability of Arctic sea ice: assessing its limits and potential in a GCM and implications for observations."
- National Research Council Arctic Sea Ice Prediction Workshop, Boulder, Co, May 2012.
- Polar Climate Working Group Workshop, Boulder, Co. Feb 2012. "Atmosphere - Sea ice interations in the Arctic. Non stationarity and implications for predictability"
- University of Washington, Seattle, WA, Nov 2011. "Arctic Sea Ice Predictability: assessing its range and constraints from a GCM and observations"
- WCRP Open Science Conference, Denver, Co. Oct 2011. "The Influence of initial conditions and climate forcing on Arctic Predictability" (poster)
- AGU Annual General Meeting, San Francisco, CA, Dec 2010. "The Influence of initial conditions on predictability in the Arctic" (poster)
- IGS Annual General Meeting, Tromso, Norway, Jun 2010. "The Persistence of Arctic Sea Ice in a GCM and Observations"
- CCSM Annual Workshop, Breckenridge, CO, June 2009. "Temporal characteristics of Arctic sea ice in CCSM and observations: implications for seasonal predictability".

Awards

WCRP

- WCRP Open Science Conference poster award, Oct 2011

University of Washington

- Top Scholar award, The Graduate School, 2007

University of Cambridge

- Girton College Emily Davies Scholarship, 2003
- Girton College Janet Chamberlain Dissertation Prize, 2003
- Cambridge University William Vaughan Lewis Dissertation Prize, 2003

Seveonoaks School

- Alan Tammadge mathematics scholarship, 1997-1999

Teaching and fieldwork experience

University of Washington, Seattle, USA

Guest lecturer ATM S 220 – Exploring the Atmospheric Sciences Summer & fall 2016

Joint Ocean and Ice Studies, Beaufort Gyre, Arctic

Fieldwork Assistant, September - October 2015

- Arctic sea ice fieldwork aboard the Louis S St-Laurent icebreaker

University of Washington, Seattle, USA

Grader for ATM S 501– Fundamentals of Physics and Chemistry of the Atmosphere September 2011 to Dec 2011

Teaching Assistant,

April 2009 to June 2009

- Instructor for undergraduate Weather 101 course

University of Washington, Seattle, USA

Fieldwork Assistant, May 2010

- Glacier survey work on Mt Olympus, Olympic National Park, WA

Cambridge Tutors, Cambridge and London, UK

Private tutor, Sep 2005 to May 2006

- Tutor for undergraduate Mathematics and Physics

University of Cambridge, Cambridge, UK

Teaching Assistant, March 2005 to June 2005

- Instructor for undergraduate Physical Geography course

North Cascades Glacier Climate Project, Washington, USA

Fieldwork Assistant, August 2002

- Focus: analysis of glacier mass balance in the North Cascades

ETH, Glacier d'Arolla, Swiss Alps, Switzerland
Fieldwork Assistant, July 2001 to August 2001

- Focus: analysis of glacier mass balance and surface fluxes on Glacier d'Arolla

North Cascades Glacier Climate Project, Washington, USA
Fieldwork Assistant, July 2000 to August 2000

- Focus: analysis of glacier mass balance in the North Cascades

British Antarctic Survey, Cambridge, UK
Data Analyst Assistant, June 1999 to July 1999

- Focus: analysis of ground penetrating radar data from Antarctica

Pyrenees Glacier Fieldwork, Huesca, Spain
Fieldwork Leader, August 1998 to September 1998

- Focus: analysis of glacier retreat in the Spanish Pyrenees

British Antarctic Survey, Cambridge, UK
Laboratory Assistant, June 1998 to July 1998

- Focus: ice core treatment in ice and climate research group

**Professional
service and
outreach**

American Meteorological Society,
Polar Meteorology and Oceanography committee vice-chair Jan 2015 to present

Sea Ice Prediction Network,
Leadership team member Oct 2013 to present

CMOS-AMS annual meeting, Instructor for short course: 'A practical guide to using the Community Earth System Model and Regional Arctic System Model for polar climate research', June 2015

Reviewer for: *Nature Geoscience, Geophysical Research Letters, Journal of Climate, Climate Dynamics, Journal of Geophysical Research-Atmospheres, Deep Sea Research Part I, Environmental Research Letters, Bulletin of the American Meteorological Society, Monthly Weather Review*

Session convener for Polar Climate Predictability and Prediction, EGU General Assembly 2015, Vienna, AT

Lead organizer for Sea Ice Prediction Network Workshop, Boulder, CO, April 2014.