

David B. Bonan

Education

- 2019 — now **Ph.D., Environmental Science and Engineering**
California Institute of Technology Pasadena, CA
Advisors: Andrew Thompson & Tapio Schneider
- 2015 — 2019 **B.S., Atmospheric Sciences | Minor, Applied Mathematics | College Honors**
University of Washington Seattle, WA
Advisors: Kyle Armour & Gerard Roe

Research Interests

climate change · climate variability · sea ice · ocean general circulation · ice-ocean-atmosphere interactions

Appointments & Experience

- 2019 — now **Graduate Research Assistant**
Environmental Science and Engineering, California Institute of Technology Pasadena, CA
- 2018 — 2019 **Ernest F. Hollings Scholar**
Geophysical Fluid Dynamics Laboratory, National Oceanic and Atmospheric Administration Princeton, NJ
- 2017 — 2019 **Mary Gates Research Fellow**
Department of Atmospheric Sciences, University of Washington Seattle, WA
- 2017 — 2018 **Undergraduate Research Assistant**
Department of Earth and Space Sciences, University of Washington Seattle, WA
- 2016 — 2018 **Undergraduate Researcher**
Department of Atmospheric Sciences, University of Washington Seattle, WA
- 2016 — 2019 **Assistant**
Program on Climate Change, University of Washington Seattle, WA
- 2016 — 2017 **Illustrator**
American Alpine Club Golden, CO
- 2014 — now **Freelance Artist**
Self Employed Boulder, CO

Honors, Awards, & Fellowships

- 2019 American Meteorological Society (AMS) Graduate Fellowship
- 2019 National Science Fellowship (NSF) Graduate Research Fellowship Honorable Mention
- 2019 — 2020 California Institute of Technology Graduate Fellowship
- 2019 AGU Editors' Highlight: "Sources of uncertainty in the meridional pattern of climate change"
- 2018 Mary Gates Research Scholarship
- 2018 American Meteorological Society (AMS) Senior Named Scholarship
- 2018 American Alpine Club (AAC) Research Grant
- 2017 Mary Gates Research Scholarship
- 2017 — 2019 NOAA Ernest F. Hollings Scholarship
- 2015 — 2019 CenturyLink Scholarship
- 2015 Premier Members Credit Union Scholarship

Publications

Peer-Reviewed

2020

4. **Bonan, D.B.** and E. Blanchard-Wrigglesworth (2020): Nonstationary teleconnection between the Pacific Ocean and Arctic sea ice. *Geophysical Research Letters*, **47** (2), e2019GL085666. doi: 10.1029/2019GL085666

2019

3. **Bonan, D.B.**, J.E. Christian, and K. Christianson (2019): Influence of North Atlantic climate variability on glacier mass balance in Norway, Sweden and Svalbard. *Journal of Glaciology*, **65** (252), 580-594. doi: 10.1017/JOG.2019.35
2. **Bonan, D.B.**, M. Bushuk, and M. Winton (2019): A spring barrier for regional predictions of summer Arctic sea ice. *Geophysical Research Letters*, **46** (11), 5937-5947. doi: 10.1029/2019GL082947

2018

1. **Bonan, D.B.**, K.C. Armour, G.H. Roe, N. Siler, and N. Feldl (2018): Sources of uncertainty in the meridional pattern of climate change. *Geophysical Research Letters*, **45** (17), 9131-9140. doi: 10.1029/2018GL079429

Non-Refereed

Bonan, D.B. (2019): Disaggregating uncertainty in the regional climate response. Undergraduate Honors Thesis. University of Washington.

Grants

Research

- 2018 Mary Gates Research Scholarship (\$5000): Quantifying uncertainty in the response of the hydrological cycle to climate change using an idealized model.
- 2018 American Alpine Club (AAC) Research Grant (\$1500): Deriving elevation change, validating GPRI-derived glacier velocities, and using citizen science to enrich public awareness of regional climate change on Mt. Baker, WA. Co-awarded with Andrew Hoffman (UW).
- 2017 Mary Gates Research Scholarship (\$5000): Evaluating uncertainty in the spatial pattern of global warming.

Travel

- 2019 15th Conference on Polar Meteorology and Oceanography Student Travel Award (\$250)
- 2018 University of Washington College of the Environment Travel Award (\$500)
- 2018 University of Washington Research Conference Travel Award (\$500)

Presentations

Oral

6. A spring barrier for regional predictions of summer Arctic sea ice. Ocean Sciences Meeting (OSM), San Diego, CA, USA, February 2020.
5. Is there a spring predictability barrier for Arctic sea ice? 15th Conference on Polar Meteorology and Oceanography, Boulder, CO, USA, May 2019.
4. What sets changes to the pattern of precipitation and evaporation under global warming? 22nd Annual Undergraduate Research Symposium, University of Washington, Seattle, WA, USA, May 2019.
3. Is there a spring predictability barrier for Arctic sea ice? Geophysical Fluid Dynamics Laboratory (GFDL) Seminar, Princeton, NJ, USA, August 2018.
2. Is there a spring predictability barrier for Arctic sea ice? NOAA Science and Education Symposium, Silver Spring, MD, USA, July 2018.
1. What causes uncertainty in regional projections of climate change? 21st Annual Undergraduate Research Symposium, University of Washington, Seattle, WA, USA, May 2018.

Poster

11. Assessing the robustness and stationarity of a Pacific Ocean teleconnection to Arctic sea ice in global climate models. American Geophysical Union (AGU) Fall Meeting, San Francisco, CA, USA, December 2019.
10. Uncertainty in the pattern of warming. 2019 CESM Polar Modeling Workshop, National Center for Atmospheric Research (NCAR), Boulder, CO, USA, August 2019.

9. Investigating the stationarity of a Pacific Ocean teleconnection to Arctic sea ice in global climate models. Department of Atmospheric Sciences Undergraduate Symposium, University of Washington, Seattle, WA, USA, May 2019.
8. A spring predictability barrier for Arctic sea ice. American Meteorological Society (AMS) Annual Meeting, Phoenix, AZ, USA, January 2019.
7. The role of radiative feedbacks in driving uncertainty in the meridional pattern of climate change. American Geophysical Union (AGU) Fall Meeting, Washington, D.C., USA, December 2018.
6. Sources of uncertainty in the meridional pattern of climate change. Program on Climate Change (PCC) Summer Institute, Friday Harbor Labs, WA, USA, September 2018.
5. Explaining the spread in the spatial pattern of climate predictions using a moist energy balance model. Department of Atmospheric Sciences Undergraduate Symposium, University of Washington, Seattle, WA, USA, May 2018.
4. Using glaciers as climate signals. 21st Annual Undergraduate Research Symposium, University of Washington, Seattle, WA, USA, May 2018.
3. Sources of uncertainty in the spatial pattern of climate change. Program on Climate Change (PCC) Mini-symposium, University of Washington, Seattle, WA, USA, February 2018.
2. Dynamical adjustment of Scandinavian glacier mass-balance time series. American Geophysical Union (AGU) Fall Meeting, New Orleans, LA, USA, December 2017.
1. The cause of Western Europe's mild climate. 20th Annual Undergraduate Research Symposium, University of Washington, Seattle, WA, USA, May 2017.

Other

3. M. Bushuk, D.B. Bonan, M. Winton, E. Blanchard-Wrigglesworth: A spring barrier for regional predictions of summer Arctic sea ice. American Geophysical Union (AGU) Fall Meeting, San Francisco, CA, USA, December 2019.
2. M. Bushuk, D.B. Bonan, M. Winton: A spring barrier for regional predictions of summer sea ice: mechanisms and future changes. International Glaciological Society (IGS) Sea Ice Symposium, Winnipeg, ON, Canada, August 2019.
1. R.H. White, D.M.W. Frierson, D.S. Battisti, D.B. Bonan: A tale of two mountain ranges: the remarkable dominance of Asian orography over North American on the Atlantic meridional overturning circulation. 22nd Conference on Atmospheric and Oceanic Fluid Dynamics, Portland, ME, USA, June 2019.

Workshops

Participant

7. "2019 CESM Polar Modeling Workshop". National Center for Atmospheric Research (NCAR). August 12-16, 2019. Boulder, CO, USA.
6. "2019 CESM Tutorial". National Center for Atmospheric Research (NCAR). August 5-9, 2019. Boulder, CO, USA.
5. "Sources of Uncertainty in Long-term Climate Projections". Program on Climate Change (PCC) Summer Institute. September 12-14, 2018. Friday Harbor Labs, WA, USA.
4. "Using Past Observations to Constrain Future Climate Variability and Change". Program on Climate Change (PCC) Workshop. February 8-9, 2018. University of Washington, Seattle, WA, USA.
3. 24th Annual West Antarctic Ice sheet (WAIS) Workshop. October 8-11, 2017. Camp Casey Conference Center, Coupeville, WA, USA.
2. "The Climate of Antarctica and the Southern Ocean". Program on Climate Change (PCC) Summer Institute. September 14-16, 2016. Friday Harbor Labs, WA, USA.
1. "Terrestrial Ecosystems, Land Surface, and Climate Change". Program on Climate Change (PCC) Summer Institute. September 23-25, 2015. Friday Harbor Labs, WA, USA.

Conferences

9. Ocean Sciences Meeting (OSM). February 16-21, 2020. San Diego, CA, USA.
8. American Meteorological Society (AMS) Annual Meeting. January 12-16, 2020. Boston, MA, USA.
7. American Geophysical Union (AGU) Fall Meeting. December 9-13, 2019. San Francisco, CA, USA.
6. 15th Conference on Polar Meteorology and Oceanography. May 19-23, 2019. Boulder, CO, USA.
5. American Meteorological Society (AMS) Annual Meeting. January 6-10, 2019. Phoenix, AZ, USA.
4. American Geophysical Union (AGU) Fall Meeting. December 10-14, 2018. Washington, D.C., USA.
3. American Geophysical Union (AGU) Fall Meeting. December 11-15, 2017. New Orleans, LA, USA.

2. Northwest Glaciologist's Meeting. October 13-14, 2017. Vancouver, BC, Canada.
1. American Meteorological Society (AMS) Annual Meeting. January 22-26, 2017. Seattle, WA, USA.

Volunteering, Service, & Outreach

Volunteering

Eliot Arts Magnet Academy Middle School Science, Technology, Engineering, Environment and Health Night, January 24, 2020, Altadena, CA, USA.

Climate Science Workshops for High School Science Teachers: "Does a few degrees of global warming matter?" May 18, 2019, Seattle, WA, USA.

University of Washington College of the Environment Student Visit Day. August 18, 2017, Seattle, WA, USA.

Service

Peer Reviewer: *Journal of Geophysical Research: Oceans, Climate Dynamics*

Science Communication

Bonan, D.B. (2017): Making the esoteric pertinent: a talk with Inez Fung

Transcribed an interview with Professor Inez Fung of University of California, Berkley, about the future of climate and climate change research, climate communication, and her colleague Piers Sellers.

Bonan, D.B. (2016): An emerging scientist explores the intersection of climate activism and science

Conducted an interview with Dr. Bill McKibben, famed environmentalist and co-founder of 350.org, on where climate communication and science intersect.

Professional Memberships

2018 — now International Glaciology Society (IGS)
2017 — now American Geophysical Union (AGU)
2016 — now American Meteorological Society (AMS)

Computer Skills

Basic Fortran, Shell-scripting, R
Intermediate L^AT_EX, Adobe Photoshop & Illustrator, Linux, Julia
Advanced MATLAB, Python

Collaborators & Colleagues

J. Adkins (Caltech) · E. Newsom (Oxford) · R. Wills (UW) · T. Schneider (Caltech) · A. Thompson (Caltech) · E. Blanchard-Wrigglesworth (UW) · N. Siler (OSU) · N. Feldl (UCSC) · M. Bushuk (GFDL) · M. Winton (GFDL) · G. Roe (UW) · K. Armour (UW) · R. White (UBC) · J. Christian (UW) · K. Christianson (UW) · E. Maroon (NCAR) · M. Bertram (UW) · E. Dawson (Stanford) · D. Frierson (UW)