

# David B. Bonan

## Education

- 2021 – now **Ph.D., Environmental Science and Engineering**  
California Institute of Technology Pasadena, CA  
Advisors: Andrew Thompson & Tapio Schneider  
· Thesis Committee: Andrew Thompson, Tapio Schneider, Laure Zanna, Maria Rugenstein, Jess Adkins
- 2019 – 2021 **M.S., 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 dynamics · sea ice · ocean circulation · hydrological cycle · 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

- 2021 – 2024 National Science Fellowship (NSF) Graduate Research Fellowship
- 2019 – 2020 American Meteorological Society (AMS) Graduate Fellowship
- 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

#### 2022

8. **Bonan, D.B.**, A.F. Thompson, E.R. Newsom, S. Sun, and M. Rugenstein (2022): Transient and equilibrium responses of the Atlantic overturning circulation to warming in coupled climate models: the role of temperature and salinity. *Journal of Climate*, **35** (15), 5173-5193. doi: 10.1175/JCLI-D-21-0912

#### 2021

7. **Bonan, D.B.**, T. Schneider, I. Eisenman, and R.C.J. Wills (2021): Constraining the date of a seasonally ice-free Arctic using a simple model. *Geophysical Research Letters*, **48** (18), e2021GL094309. doi: 10.1029/2021GL094309
6. **Bonan, D.B.**, F. Lehner, and M.M. Holland (2021): Partitioning uncertainty in projections of Arctic sea ice. *Environmental Research Letters*, **16** (4), 044002. doi: 10.1088/1748-9326/ABE0EC

#### 2020

5. Bushuk, M., M. Winton, **D.B. Bonan**, E. Blanchard-Wrigglesworth, and T. Delworth (2020): A mechanism for the Arctic sea ice spring predictability barrier. *Geophysical Research Letters*, **47** (13), e2020GL088335. doi: 10.1029/2020GL088335
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

### Submitted

- **Bonan, D.B.**, N. Siler, G.H. Roe, and K.C. Armour: Energetic constraints on the pattern of changes to the hydrologic cycle under global warming. *Journal of Climate*.
- Wilson, E.A., **D.B. Bonan**, A.F. Thompson, N. Armstrong, and S.C. Riser: Mixed layer depth seasonality modulates summertime SST variability in the Southern Ocean. *Journal of Climate*.

### Non-Refereed

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

---

## Teaching, Mentoring, & Advising

### Teaching

- Spring 2023 Teaching Assistant, ESE 136: Climate Models, California Institute of Technology (Instructor: Tapio Schneider)  
Fall 2021 Teaching Assistant, ESE 102: Earth's Oceans, California Institute of Technology (Instructor: Andrew Thompson)  
Fall 2020 Teaching Assistant, ESE 101: Earth's Atmosphere, California Institute of Technology (Instructor: Tapio Schneider)

### Mentoring

- 2020 – now Mentor, Graduate Student Mentorship Initiative (GSMI) – Científico Latino

### Advising

- Summer 2022 Manali Nayak, Undergraduate Student, Ohio State University (Co-advised with Andrew Thompson and Emily Newsom)

---

## Service, Leadership, & Synergistic Activities

### Service

Peer Reviewer: *Earth's Future*, *The Cryosphere*, *Geophysical Research Letters*, *Journal of Climate*, *Annals of Glaciology*, *Journal of Geophysical Research: Oceans*, *Climate Dynamics*

- 2021 – now Student Representative, American Meteorological Society (AMS) Committee on Polar Meteorology and Oceanography
- Co-convenor, “The ocean’s role in polar climate”, 17th Conference on Polar Meteorology and Oceanography
  - Co-convenor, “High Latitude Variability and Change: Arctic Change”, 16th Conference on Polar Meteorology and Oceanography

---

## Volunteering, Outreach, & Writing

### 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.

### Outreach

#### Writing

- 09/2021 “The Future of Arctic sea ice”. Polar Bears International.
- 03/2017 “Making the esoteric pertinent: a talk with Inez Fung. Program on Climate Change, University of Washington
- 09/2016 “An emerging scientist explores the intersection of climate activism and science”. Program on Climate Change, University of Washington.

---

## Professional Memberships

- 2021 – now European Geophysical Union (EGU)
- 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<sup>A</sup>T<sub>E</sub>X, Adobe Photoshop & Illustrator, Linux, Julia, GitHub
- Advanced MATLAB, Python

---

## Collaborators & Colleagues

E. Beer (UCSD) · E. Wilson (Stanford) · L. Zanna (NYU) · D. Notz (MPI) · J. Dörr (UiB) · M. Årthun (UiB) · Z. Shen (Caltech) · Sally Zhang (JPU) · B. Markle (CU) · M. Holland (NCAR) · S. Sun (Caltech) · I. Eisenman (Scripps) · M. Rugenstein (CSU) · F. Lehner (Cornell) · 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) · J. Baldwin (UCI) · D. Battisti (UW) · R. White (UBC) · J. Christian (Georgia Tech) · K. Christianson (UW) · E. Maroon (UW) · M. Bertram (UW) · E. Dawson (Stanford) · D. Frierson (UW)