

# Alexander B. Charn

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**Current**                      **Postdoctoral Scholar**                      2021 – Present  
Department of Earth and Atmospheric Sciences  
Indiana University, Bloomington, IN

**Education**                      **University of California, Berkeley**                      **Berkeley, CA**  
Ph.D., Earth and Planetary Science                      2015 – 2020  
Thesis: Impacts of Cloud Microphysics on Extreme Precipitation and Lightning

B.S., Environmental Engineering Science                      2011 – 2015  
High Honors

**Publications**                      **A.B. Charn**, T.A. O'Brien, M.D. Risser, J.M. Longmate, D.R. Feldman, "Sign of observed California temperature trends depends on data set homogenization: implications for weighting and downscaling," *Geophysical Research Letters*, vol. 49, no. 15, 2022

**A.B. Charn**, H. Parishani, "Predictive proxies of present and future lightning in a superparameterized model," *Journal of Geophysical Research: Atmospheres*, vol. 126, no. 17, 2021

**A.B. Charn**, W.D. Collins, H. Parishani, M.D. Risser, "Global microphysical sensitivity of superparameterized precipitation extremes," *Earth and Space Science*, vol. 8, no. 5, 2021

T.A. O'Brien, M.D. Risser, ..., **A.B. Charn**, ..., "Detection of Atmospheric Rivers with Inline Uncertainty Quantification: TECA-BARD v1.0," *Geoscientific Model Development*, vol. 13, no. 12, 6131-6148, 2020

**A.B. Charn**, W.D. Collins, H. Parishani, M.D. Risser, T.A. O'Brien, "Microphysical sensitivity of superparameterized precipitation extremes in the contiguous United States due to feedbacks on large-scale circulation," *Earth and Space Science*, vol. 7, no. 7, 2020

D.M. Romps, **A.B. Charn**, R.H. Holzworth, W.E. Lawrence, J. Molinari, D. Volaro, "CAPE times P explains lightning over land but not the land-ocean contrast," *Geophysical Research Letters*, vol. 45, no. 22, 12623-12630, 2018

D.M. Romps, **A.B. Charn**, "Sticky thermals: Evidence for a dominant balance between buoyancy and drag in cloud updrafts," *Journal of the Atmospheric Sciences*, vol. 72, no. 8, 2890-2901, 2015

## Presentations

**A.B. Charn**, “Climate modeling - how do we go from global to local?”  
Humphrey Distinguished Fellows Program, Indiana University, IN, 2022.

**A.B. Charn**, “Investigating the existence of lightning in warm clouds using  
GOES-R observations.” Poster, AGU Fall Meeting, San Francisco, CA, 2019.

**A.B. Charn**, W.D. Collins, H. Parishani, M.D. Risser, T.A. O’Brien, “Microphys-  
ical sensitivity of superparameterized precipitation extremes in the continen-  
tal US due to feedbacks on large-scale circulation.” Poster, AGU Fall Meeting,  
Washington, D.C., 2018.

**A.B. Charn**, W.D. Collins, H. Parishani, “Microphysical sensitivity of precipi-  
tation extremes in the continental US using a super-parameterized Community  
Atmosphere Model (CAM).” Oral and Poster, AGU Fall Meeting, New Orleans,  
LA, 2017.

## Research Experience

### **Lawrence Berkeley National Laboratory**

**Berkeley, CA**

Project Scientist

Sep 2020 – Dec 2020

Used Python and employed data from the ERA5 meteorological reanalysis to  
implement a Rossby wave detector.

### **University of California, Berkeley**

**Berkeley, CA**

Graduate Student Research Assistant

Aug 2015 – Aug 2020

Used R to look for statistically significant differences in extreme rainfall and  
lightning flash rates within present and future climates, as well as to evaluate  
climate-model simulation of these events against observations.

## Teaching Experience (all at University of California, Berkeley)

### **Reader**

Fall 2019

EPS 7: Introduction to Climate Change

### **Graduate Student Instructor**

Fall 2016

EPS 181: Atmospheric Physics and Dynamics

### **Reader**

Spring 2016

CEE 107: Climate Change Mitigation

## Industry Experience

### **Pacific Gas & Electric**

**San Francisco, CA**

### **Berkeley Innovative Solutions**

**Berkeley, CA**

Project Lead

Jan 2020 – May 2020

Consulting project with PG&E analyzing technologies to help medium-duty fleets electrify their vehicles. Provided recommendation report and developed Excel cost model, based on NREL's REopt techno-economic decision support model, to identify economic feasibility of onsite battery storage and solar PV generation.

Skills

Proficient in: R, MATLAB  
Familiar with: Python, QGIS, FORTRAN

Service

**Reviewer**

Journal of the Atmospheric Sciences, Journal of Advances in Modeling Earth Systems, Atmospheric Chemistry and Physics, Meteorology and Atmospheric Physics, Climate Dynamics

**Graduate Student Representative**

Department of Earth and Planetary Science – University of California, Berkeley

Received training for reporting of harassment and worked with staff to ensure on-time payments to graduate students.

Memberships

American Geophysical Union	Since 2015
Phi Beta Kappa	2015
American Meteorological Society	2014
Tau Beta Pi	2013

Certifications

Engineer-in-Training, CA