Ash L. Gilbert

(they/them/theirs)
(734) 645-3707, ash.gilbert@colorado.edu
Website: https://gilbertcloud.github.io/
Dept. of Atmospheric & Oceanic Sciences, University of Colorado-Boulder, Boulder, CO 80309

EDUCATION

University of Colorado, Boulder — Boulder, CO
PhD, Atmospheric Sciences — Expected 2027

University of Michigan — Ann Arbor, MI
BSE with Honors, *summa cum laude* — April 2022
Major: Climate & Meteorology, concentration in Meteorology
Minors: Latin & Computer Science

AWARDS & HONORS

National Science Foundation (NSF) Graduate Research Fellowship — 2022

RESEARCH INTERESTS

- polar cloud processes
- cloud radiative properties
- Community Earth System Model (CESM)
- Arctic amplification
- meltwater dynamics in Greenland
- wind nudging
- model development

RESEARCH EXPERIENCE

University of Colorado, Boulder — Boulder, CO
Graduate Research Assistant, Advisor: Jennifer E. Kay — 2022 – Present
Project 1:

- Evaluating the impact of temperature dependent liquid water optical properties on the Arctic climate via a hierarchy of models
- Identified small but not statistically significant effect of temperature dependent optics in both a single-column CESM case study and a long-term pre-industrial global CESM simulation
- Isolating the signal of the optics change by using a novel technique called wind nudging and by using ensemble members in CESM
- Presented poster on work in 2023 and 2024
- Gave a talk on work in 2024
- Writing up project for journal submission

Project 2:

- Breaking down the controls on Arctic warming by attributing contributions from the winds, mean state, and forcing in CESM

University of Michigan — Ann Arbor, MI
Research Assistant, Advisor: Jeremy N. Bassis — 2019 – 2023

- Determined the controls on supraglacial lake formation through observational analysis and modeling to further knowledge of ice sheet ablation
- Identified the observed spatio-temporal patterns in supraglacial lake formation and air temperature with ArcGIS

- Modeled how supraglacial lakes drain to replicate observed patterns using Python software and ArcGIS
- Presented poster on work in 2020 and 2021 at national conference for American Geophysical Union
- Participated in weekly lab meetings discussing relevant research papers and professional development topics
- Wrote and submitted a research paper for publication from this project (rejected)

University of Michigan Ann Arbor, MI
Research Assistant, Advisor: Christiane Jablonowski 2021 – 2022

- Analyzed a case study of lake effect snow forecasting for the UFS-SRW model coupled to the FV3COM, a lake dynamics model
- Ran various configurations of the coupled UFS-FV3COM model on the NCAR Cheyenne supercomputer
- Compared model results to reanalysis data and snow accumulation observations to evaluate model skill

NSF Oceanic Sciences (Virtual) REU, NorthWest Research Associates
Research Intern, Advisor: Penny Rowe 2020

- Worked under a mentor to find the influence of temperature dependence of cloud optical properties on simulated IR flux
- Received anti-discrimination, anti-harassment, DEI, and research ethics training through a series of professional development seminars provided by NSF
- Gave research talk as final part of the REU
- Presented poster on work in 2021 at national conference for American Meteorological Society

University of Michigan Kangerlussuaq, Greenland
Field Expedition Member, Lead: Perry Samson 2019

- Gained significant field research experience by working with team of students and professors to conduct multiple experiments involving stream flow, net solar radiation, PIBAL and rawinsonde launches, air quality, and 3D-scanning with drones
- Led and trained sub-team responsible for rawinsonde launches

University of Michigan Ann Arbor, MI
Research Assistant, Advisor: Perry Samson 2018 – 2019

- Study titled: *Ensemble Probability Program for Backward Trajectories from the University of Michigan Biological Station (UMBS) based on the Relative Abundance of ^{18}O*
- Wrote Python program that accessed a data bank of HY-SPLIT trajectories and retrieved trajectories corresponding to high or low ^{18}O values, then ran trajectory coordinates through probability function to produce a map that described where air with a high or low ^{18}O likely originated in order to find moisture sources for the UMBS using Python
- Concluded project by writing a summary paper and giving a poster presentation

University of Michigan Ann Arbor, MI
Research Assistant, Advisor: Phoebe Aron 2018 – 2019

- Interpolated meteorological, hydrological, and isotopic data with ArcGIS tools
- Developed and evaluated multiple procedures for calculating statistics of watersheds with ArcGIS tools
- Maintained and updated database of meteorological and isotopic information with SQL for Southern Peru
- Performed linear regression analysis on reanalysis datasets and isotope data using MATLAB

- Assisted PhD student relating to their study of hydrology in the Peruvian Andes by completing a variety of small research projects

TEACHING EXPERIENCE

University of Michigan
Instructional Aide, Earth and Space System Evolution — Fall 2021
Collaborator, Melting Ice Rising Seas Teach-Out — Fall 2019 – Spring 2020

SERVICE

University of Colorado, Boulder
Technology Committee — 2022 – Present
- Made improvements to department website including removal of old links and addition of photos and personal website links to graduate student pages
- Advocated for committee to have department website access to make regular updates

Mentorship Committee — 2023 – Present
- Participated as a mentor in the Graduate Application Mentorship program in Fall 2022, 2023
    - Mentored several students each year applying to the department by giving advice and reviewing personal statements
- Co-led Graduate Application Mentorship program in Fall 2023
    - Matched mentor graduate students to mentee applying students

Prospective Student Committee — 2023 – Present
- Helped organized prospective student visits in the spring

ATOC REU — Summer 2024
- Mentored an undergraduate student for a summer research project
- Gave technical and career advice

RECCS Program — Summer 2023
- Co-mentored an undergraduate student for summer research project with another graduate student
- Gave technical help

COMPUTER SKILLS

- Python
- Jupyter
- C++
- SQL
- MATLAB
- Fortran
- ArcGIS
- Unified Forecast System (UFS)
- Autodesk Inventor
- Adobe Illustrator
- Community Earth System Model (CESM)
- Microsoft Powerpoint
- LaTeX
- GitHub

LANGUAGES

Latin (reading knowledge)

PROFESSIONAL ASSOCIATIONS

American Geophysical Union
American Meteorological Society
Out in STEM

PUBLICATIONS IN PREPARATION

Gilbert, A., Kay. J.E., and Rowe, P. A Novel Model Hierarchy Isolates the Effect of Temperature-dependent Cloud Optics on Infrared Radiation. *Geoscientific Model Development*.

PUBLICATIONS

Jonko, A., Oliveto, J., Beaty, T., Atchley, A., Battaglia, M.A., Dickinson, M.R., **Gilbert, A.**, Godwin, D., Kupfer, J.A., Hiers, J.K., Hoffman, C., North, M., Restaino, J., Sieg, C., and Skowronski, N. (2024). How will future climate change impact prescribed fire across the contiguous United States? *npj Climate and Atmospheric Science*. https://doi.org/10.1038/s41612-024-00649-7

Snide, C.E., **Gilbert, L.**, Meyer, A., Samson, P., Flanner, M., and Bassis, J. (2020). Seeing the Greenland Ice Sheet through students' eyes. *Eos*. https://doi.org/10.1029/2020EO139739.

CONFERENCE PRESENTATIONS

Gilbert, A., Kay, J., and Rowe, P. Isolating the Influence of Temperature-dependent Cloud Optics on Infrared Radiation within a Model Hierarchy. Community Earth System Model (CESM) Workshop. Submitted talk delivered at the CESM Workshop, UCAR, Boulder, CO, June, 2024.

Gilbert, A., Kay, J., and Rowe, P. Isolating the Influence of Temperature-dependent Cloud Optics on Infrared Radiation within a Model Hierarchy. Cloud Feedback Modeling Intercomparison Project (CFMIP) Meeting. Poster presentation delivered at the CFMIP Meeting, Boston College, Boston, MA, June, 2024.

Gilbert, A. and Kay, J., A Breakdown of Arctic Warming. Land Ice and Polar Climate Working Group Meeting 2024. Submitted talk delivered at the Polar Climate Working Group meeting, NCAR Mesa Lab, Boulder, CO, February, 2024.

Gilbert, A., Kay, J., and Rowe, P. Isolating the Influence of Temperature-dependent Cloud Optics on Infrared Radiation within a Model Hierarchy. Polar Amplification of Climate Change Across Hemispheres and Seasons: Causes and Constraints Workshop. Poster presentation delivered at the Polar Amplification workshop, UCAR, Boulder, CO, January, 2024.

Gilbert, A. and Kay, J. Impact of Temperature Dependent Cloud Optical Properties on Modeled Infrared Radiation. Gordon Research Conferences (GRC) 2023 Radiation and Climate. Poster presentation delivered at the GRC Radiation and Climate meeting, Bates College, Lewiston, ME, July, 2023.

Gilbert, L. and Bassis, J. Observing and Modeling Drainage Networks from Supraglacial Lakes on Russell Glacier, West Greenland. American Geophysical Union Abstracts. C151C-0809. Poster presentation delivered virtually at the American Geophysical Union meeting, New Orleans, LA, December, 2021.

Gilbert, L. and Bassis, J. Observing and Modeling Drainage Networks from Supraglacial Lakes on Russell Glacier, West Greenland. American Geophysical Union Abstracts. C061-0011. Poster presentation delivered virtually at the American Geophysical Union meeting, December, 2020.

Gilbert, L., Rowe, P., Fergoda, M., Neshyba, S. Influence of Temperature Dependence of Cloud Optical Properties on Simulated IR Flux at South Pole, Antarctica. American Meteorological Society Abstracts. 136. Poster presentation delivered virtually at the American Meteorological Society meeting, January, 2021.

REFERENCES

Jennifer E. Kay, PhD
Associate Professor
Department of Atmospheric & Oceanic Sciences
University of Colorado, Boulder
(303) 492-6289
jennifer.e.kay@colorado.edu

Jeremy N. Bassis, PhD
Professor
Department of Climate & Space Sciences & Engineering
University of Michigan, Ann Arbor
(734) 615-3606
jbassis@umich.edu