Jordan N. Herbert

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Education

University of Colorado Boulder, Boulder, CO
PhD Candidate, Department of Geological Sciences, August 2022 – present
Advisor: Eric Small
Honors: Marcy and Bruce Benson distinguished fellow, August 2022 – present

Dartmouth College, Hanover, NH
Master of Science, Department of Earth Sciences, August 2022
Advisor: Meredith A. Kelly
Honors: John A. Ebers Memorial Award for most outstanding graduate student TA, Spring 2021
Gary B. Malone Memorial Award for most outstanding graduate student, Spring 2022

Union College, Schenectady, NY
Bachelor of Science in Geology, Minor in Spanish, June 2018
Advisors: David Gillikin, Donald Rodbell
GPA: 3.78 / 4.00
Honors: Magna cum Laude

Research Experience

Doctoral Dissertation, University of Colorado Boulder **Fall 2022–Present**

- Blended modeled, remotely sensed, and in-situ snow data using machine learning and data assimilation to improve estimates of water held in mountain snowpacks.
- Gained technical skills working with physically based snow models, advanced statistical methods, high performance parallel computing, and programming.
- Honed science communication skills such as data visualization, scientific writing, and oral presentation skills by publishing research in peer reviewed journals and presenting research at conferences.

Master's Thesis Research, Dartmouth College, NH **Fall 2020–Summer 2022**

"Climate change in the northern tropical Andes during Termination 1 derived from glacier reconstructions: The Sierra Nevada del Cocuy case"

- Utilized GIS and glacier models to map glacial landforms, reconstruct past glacier extents, and analyze glacial equilibrium line altitudes, integrating ^{10}Be age data to investigate tropical climate changes during the last glacial termination.

Honors Undergraduate Thesis Research, Union College, NY. **Fall 2017–Spring 2018**

"Investigating the causes of eutrophication in high Andean lakes (Junín region, Peru) through nitrogen isotope analysis of sediment cores"

- Conducted six days of fieldwork in Peru collecting water geochemistry data and sediment cores from high Andean lakes, followed by nitrogen isotope analysis via mass spectrometry and trace metal analysis using inductively coupled plasma mass spectrometry.

Work Experience

Scout Clean Energy, Boulder, CO **Spring 2023-Summer 2023**

Engineering Intern

- Developed a Matlab workflow to model historical snow depth at prospective solar farm sites using a physically based snow model. With this tool, solar developers can better predict how high solar panels should be built as to not be covered with snow.

Mabbett & Associates, Inc., Stoneham, MA **Fall 2018-Summer 2020**

Staff Geologist

- Conducted a variety of fieldwork including groundwater sampling, soil screening and sampling, landfill gas monitoring, soil-vapor sampling, drilling oversight, and soil classification.
- Performed relevant field tasks such as on-site client coordination, taking detailed field notes, filling out necessary field forms such as daily safety meetings logs and fieldwork reports, and submitting collected samples to laboratories using standard Chain of Custody procedures.
- Carried out office tasks such as report drafting and editing, data management and analysis. Conducted client and property owner correspondences.

Published Work

Herbert, J. N., Raleigh, M. S., & Small, E. E. (2024). High-resolution, daily snow depth estimates at the basin scale using machine learning interpolation of Snotel data enhanced with lidar. *Water Resources Research (in review)*.

Herbert, J. N., Raleigh, M. S., & Small, E. E. (2024). Reanalyzing the spatial representativeness of snow depth at automated monitoring stations using airborne lidar data. *The Cryosphere*.

Conference Presentations

Herbert, J. N., Raleigh, M. S., & Small, E. E. (2024). Integrating snow station and lidar data with machine learning: A daily, spatially representative snow validation dataset. *Nasa Snow Community Meeting* (poster).

Herbert, J. N., Raleigh, M. S., & Small, E. E. (2023). Apples to apples, and apples to oranges: assessing snow pillow representativeness with airborne Lidar. *American Geophysical Union Annual Meeting* (talk).

Herbert, J., Kelly, M., Bromley, G., Doughty, A., Ruiz-Carrascal, D., Hidy, A., & Restrepo-Moreno, S. (2021). Climate change in the northern tropical Andes during Termination 1 derived from glacier reconstructions: The Sierra Nevada del Cocuy Case. *Geological Society of America Annual Meeting* (talk).

Teaching Experience

How the Earth Works (Dartmouth College) **Fall 2020, Spring 2021**

- Ran weekly laboratory sections including preparing and giving pre-laboratory lectures; lead group discussions; held office hours; graded exams and laboratory assignments.

Dartmouth Stretch Field Camp **Fall 2021, Spring 2022**

- Lead students in a field camp expedition in the western US. Taught students in a variety of field techniques, designed and lead a TA-run field exercise, organized meals, and transported students in college vans.

Materials of Earth (Dartmouth College) **Summer 2021**

- Ran weekly laboratory sections including preparing and giving pre-laboratory lectures. Graded exams and laboratory assignments.

Visiting Scientist (Hartford High School, Hartford, VT) **Winter 2021, Spring 2021**

- Carried out multiple visits to a local science class to discuss my research, path in STEM, and discuss future career options for high schoolers interested in science.

Leadership Experience

Field Program Coordinator, CU Boulder **Winter 2022–Present**

- Recruited and trained undergraduate students for snow hydrology fieldwork in Crested Butte, Colorado.
- Coordinated logistics, safety protocols, and data quality assurance for snow measurements.

LikeARock Mentor, Dartmouth Earth Sciences Department **Summer 2021–2022**

- In charge of welcoming new graduate students to the Earth Sciences department. Responsibilities include preparing student orientation documents, organizing welcoming events, and personally checking in with new graduate students.

President, Treasurer, Member, Big Brothers Big Sisters Club, Schenectady, NY **Fall 2015–Spring 2018**

- Planned and coordinated events, recruited members, delegated responsibilities to other executive board members, and communicated with regional site coordinators.

Test Scores

Graduate Record Examinations (GRE)

- Verbal Reasoning: 166 (97th percentile)
- Quantitative Reasoning: 162 (79th percentile)
- Analytical Writing: 4.5 (81st percentile)

Computer Skills: Matlab, Python, Linux, GIS, High Performance Computing, Adobe Illustrator, Microsoft Office.
Language Skills: Proficient in Spanish