

Adam R. Tjoelker

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Department of Geography Ohio State University

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Columbus, Ohio 43210

(Updated: May 2024)

EDUCATION

The Ohio State University – Columbus, OH, USA

Ph.D., Geography; Advisor: Dr. Bryan Mark

Degree start: August 2024

Anticipated Graduation: May 2028

The Ohio State University – Columbus, OH, USA

Master of Arts, Geography; Advisor: Dr. Bryan Mark

August 2022 - May 2024, GPA: 4.00 (4.0 Scale)

Calvin University - Grand Rapids, MI, USA

Bachelor of Science in Engineering, Mechanical Concentration

Geography Minor, GIS Certificate

August 2018 - April 2022, GPA: 3.852 (4.0 Scale)

Technische Universität Berlin – Berlin, Germany

Calvin Engineering: Statics & Dynamics — *T.U. Berlin:* German Language & Culture

Intensive Study Program: July – August 2019

University of Technology Sydney – Sydney, Australia

Mathematical Modelling 1; Mathematics Extension 1 Bridging Course

March – July 2018

HONORS AND AWARDS

ENGIE-Axiom Graduate Fellowship – 2023 (\$5,000 awarded to a nominated graduate student seeking to work in sustainability as part of their graduate curriculum)

Ray Travel Award for Service and Scholarship – 2024 (\$1,000 awarded to an OSU graduate student for service to their department to support travel to professional conferences)

Fenburr Travel Scholarship for Outstanding Graduate Students – 2024 (\$1,000 awarded to support professional development activities)

Vermeer Summer Research Fellowship – 2021 (\$5,000 awarded to a top student pursuing advanced geographical sciences research at Calvin University)

Career Development Grant – 2024 (\$350 awarded to an OSU graduate student in support of professionalization activities)

Collegiate Scholar Honors Program - 2020 – 2022 (Qualified with GPA > 3.65 and completion of four advanced academic or community engagements, including an honors class)

Deans' List - 2019 – 2022 (Qualified with a semester GPA of above 3.5 and at least a 3.5 GPA overall)

Member of Gamma Theta Upsilon International Geography Honor Society - 2021 – Present

Brian L. De Wall Memorial Scholarship - 2021 – 2022 (\$3,500 awarded to a senior engineering student who demonstrates good character and an intent to make a difference in the world)

Holtvluwer Family Scholarship - 2020 – 2021 (\$2,500 awarded to a junior engineering or education major)

PUBLICATIONS

- Tjoelker, Adam R.; Baraer, Michel; Valence, Eole; Charonnat, Bastien; Masse-Dufresne, Janie; Mark, Bryan G.; McKenzie, Jeffrey M. (2024) “Combining drone-based and manual ground-penetrating radar for improved field surveys of buried ice,” (in preparation)
- Tjoelker, Adam R.; Van Kanegan, Neil; Sparks, C. Renee; and Detmer, Simon (2022) “Bathymetry Based Modeling of Subaxial Magma Flows Under the Mid-Atlantic Ridge, 0 to 30° N,” *The Compass: Earth Science Journal of Sigma Gamma Epsilon*: Vol. 92: Iss. 1, Article 2. Available At: <https://digitalcommons.csbsju.edu/compass/vol92/iss1/2>
- Pfautsch, Sebastian; Tjoelker, Adam R. (2020) “The impact of surface cover and tree canopy on air temperature in Western Sydney.” *Western Sydney University*. DOI: <https://doi.org/10.26183/bk6d-1466>
- Detmer, Simon E.; Tjoelker, Adam R.; Sparks, C. Renee (2023) “Topography-Based Tectonic Analysis for Interpretation of Magma Migration Under the Southern Mid-Atlantic Ridge.” *Journal of Undergraduate Research. Volume 12*.

RESEARCH EXPERIENCE

Byrd Polar and Climate Research Center – Columbus, OH USA

Graduate Student, Glacier Environmental Change Group. Advisor: Dr. Bryan Mark, August 2022 – Present

- Led the rock glacier differential GPS and photogrammetry survey for the Great Basin Research Experience (GBEX) in August 2023, comprising a team of undergraduate, graduate students and faculty from OSU and Sinclair Community College in Dayton, OH.
- Conducted a drone-based ground penetrating radar (GPR) survey of buried ice in Shár Shaw Tagà (Grizzly Creek), a deglaciating valley in Kluane National Park and Reserve in southwest Yukon, Canada with the HC3 research group from ÉTS in Montreal, Canada (led by Dr. Michel Baraër).

Calvin University, Department of Geology, Geography and Environment – Grand Rapids, MI USA

Vermeer Research Fellow, Advisor: Dr. Renee Sparks, May – August 2021

- Was lead investigator for the Calvin Tectonics Summer Research Team, 2021
- Conducted an extensive literature review of mid-ocean ridge tectonics
- Applied GIS analysis techniques to model bathymetric depths and develop lithostatic load gradients
- Developed a new magma migration model of flows below the Mid-Atlantic Ridge

Weather Technician, Supervisor: Dr. Deanna van Dijk, September 2021 – December 2021

- Managed and prepared department meteorological equipment for lab and research use
- Designed and constructed a new weather station at the Perseverance Dune research site
- Assisted field team with research weather station setup

Western Sydney University, Parramatta South Campus - Parramatta, New South Wales, Australia

Spatial Analysis Research Assistant, Supervisor: Dr. Sebastian Pfautsch, June 2019 – August 2020

- Conducted research in spatial environmental analysis
- Analyzed aerial imagery for research on the urban heat island effect
- Co-authored published technical report on urban heat

Western Sydney University, Hawkesbury Institute for the Environment - Richmond, New South Wales, Australia

Contracted Field Work and Research Assistant, Jan 2016 – June 2019

- Maintained environmental monitoring instruments, tended to plants, and collected data
- Herded wild kangaroos out of forest and pasture research experiments
- Cooperated with field work teams of 2-10 and self-managed tasks as a contracted employee

PRESENTATIONS

- Tjoelker, Adam R.; Baraër, Michel; Valence, Eole; Charonnat, Bastien; Mark, Bryan G.; and McKenzie, Jeffrey M, 2023. "A Novel Approach for Detecting Buried Ice in Steep Mountainous Terrain Using Low-Frequency Drone-Based GPR." American Geophysical Union, Fall Meeting, December, 2023 (eLightning talk).
- Tjoelker, Adam R.; Baraër, Michel; Valence, Eole; Charonnat, Bastien; Mark, Bryan G.; and McKenzie, Jeffrey M, 2023. "Mapping debris covered glacier ice using drone-based ground penetrating radar." 2023 Annual Meeting East Lakes Division of the American Association of Geographers, November 17th, 2023 (talk).
- Tjoelker, Adam R.; Baraër, Michel; Valence, Eole; Charonnat, Bastien; Mark, Bryan G.; and McKenzie, Jeffrey M, 2023. "Using Drone-based GPR to Detect Buried Ice in a Deglaciating Valley." 2023 Byrd Center Symposium on Climate Change Research, October 20th, 2023 (poster).
- Tjoelker, Adam R.; Van Kanegan, Neil; and Sparks, C. Renee, 2021. "Bathymetry Based Modeling of Subaxial Magma Flows Under the Mid-Atlantic Ridge, 0 to 30° N." American Geophysical Union, Fall Meeting, 13-17 December, 2021. New Orleans, Louisiana, USA. (abstract & poster).
- Tjoelker, Adam R.; Mazan, Emily; Ball, Sydney, 2023. "Decoding climate change amidst rocks and trees at Great Basin National Park." Public Talk at Great Basin National Park. Aug 8th, 2023. Baker, Nevada, USA.
- Van Kanegan, Neil; Tjoelker, Adam R. and Sparks, C. Renee, 2021. "Bathymetry Based Modeling of Subaxial Magma Flows Under the Mid-Atlantic Ridge, 0 to 30° N." Calvin University STEM Division Poster Fair, October 22, 2021. Grand Rapids, Michigan, USA. (poster).
- Detmer, Simon; Tjoelker, Adam R.; and Sparks, C. Renee, 2021. "Mid-Ocean Ridge Tectonics." Calvin University Department of Geology, Geography and Environment Department Seminar Series, February 26, 2021. Grand Rapids, Michigan, USA. (presentation).

TEACHING EXPERIENCE

The Ohio State University Department of Geography – Columbus, OH USA

Graduate Teaching Assistant, GEOG 5200 Cartography and Map Design

Supervisor: Dr. Tammy Parece, January 2024 – present

- Assist with bi-weekly lab sessions of up to 30 students each
- Conduct office hours to assist students with GIS
- Grade lab assignments

Graduate Teaching Assistant, GEOG 1900 Extreme Weather and Climate

Supervisor: Dr. Alvaro Montenegro, August 2022 – December 2022 & August 2023 – December 2023

- Led two weekly lab sessions with a total of 64 students
- Guest lectured the main course lecture of 160 students
- Taught principals of meteorological data collection
- Graded lab assignments and provided feedback to students

Graduate Teaching Assistant, GEOG 5212 Geospatial Databases for GIS

Supervisor: Dr. Chayanika Singh, January 2023 – April 2023

- Led weekly lab sessions of 26 students
- Assisted students with spatial database creation and design
- Graded lab assignments and provided feedback to students

Calvin University Department of Geology, Geography and Environment– Grand Rapids, MI USA

Teaching Assistant, GEO-361 Advanced GIS

Supervisor: Dr. Jason VanHorn, January 2022 – May 2022

- Assisted class of 21 students in lab learning ArcGIS Pro
- Answered student questions on course content and lab assignments
- Graded lab assignments

Teaching Assistant, GEO-390 Remote Sensing of Earth

Supervisor: Dr. Jason VanHorn, August 2021 – December 2021

- Led weekly lab sessions for the class of 11 students
- Assisted students with questions on course content and labs
- Constructed a new online drone flight submission form for student drone flights
- Graded drone homework assignments and labs

LEADERSHIP AND PROJECT WORK

Department of Geography – Geography Technology Lending Library Acquisition Lead – The Ohio State University September 2023 – Present

- Secured the donation of a LiDAR and drone from American Electric Power (\$78,000 value)
- Manage corporate partnerships for acquiring new equipment
- Poll faculty for equipment needs and finalize equipment lists
- Contact vendors to seek quotes and buy equipment
- Set up an inventorying method for the new library

Geography Graduate Organization (GGO) – GGO Representative to Council of Graduate Students (GCS)– The Ohio State University August 2023 – Present

- Meet bi-weekly with the Geography Graduate Organization (GGO) to discuss current initiatives and issues of concern for graduate students in the department
- Attend monthly Council of Graduate Students (CGS) meetings to represent the GGO organization and geography graduate students within the larger CGS
- Bring up issues of concern and opportunities from CGS in GGO meetings to keep graduate students in the department informed about graduate student events and initiatives

Engineering Senior Design Project – Rocket Lab Wind Tunnel Project Team Executive – Calvin University September 2021 – April 2022

- Led a team of 4 engineering students to design and build a model rocket test system designed to measure thrust and drag to develop a simulation of model rocket performance in flight for academic research and fluid dynamics class laboratory applications
- Planned meetings, coordinated communication, and contacted faculty clients and project consultants
- Assisted with the design and construction of the drag force measurement wind tunnel test section and the fixed rocket engine thrust measurement systems built for the project

Habitat for Humanity Kent County – Low-Carbon Build Onsite Team Executive – Calvin University September 2021 – December 2021

- Led a team of 4 engineering students to quantify the carbon footprint of the new low-carbon Habitat house, focusing on the construction and transportation carbon emissions
- Collaborated with the 4 other teams of Calvin students who were covering other aspects of the build to prepare a report covering the total overall carbon footprint of the home, including carbon emissions associated with the embodied carbon, onsite construction and transportation, heating, and electricity
- Presented findings to Habitat for Humanity Kent County leadership and other community stakeholders at poster session and seminar presentation

Calvin Model Railroad Project - Lead Table Design - Calvin University, January 2020 – April 2022

Residence Hall Executive Team Member - Calvin University, August 2019 – March 2020

Youth Council Member - Blue Mountains City Council, NSW Australia, March 2016 - July 2018

School Captain - Springwood High School, NSW Australia, September 2016 – September 2017

RELEVANT COURSEWORK

Fluids and Thermodynamics:	ENGR-333 Thermal Systems Design, ENGR-328 Inter, Thermal/Fluids Sci. Des, ENGR-319 Intro to Thermal Sci, ENGR-209 Intro Laws of Conser & Fluids, ATMOSSC 5950 Atmos Thermodynamics
Mathematics and Statistics:	MATH-172 Calculus II, MATH-271 Multivariable Calculus, MATH-231 Diff Equ With Linear Algebra, STAT-241 Engr Stats, GEOG 8102 Adv Spatial Data, GEOSCIM 5652 Adjustment Computations
Geographic Information Science:	GEO-260 Geog Info Sys & Cartography, GEO-361 Adv Geog Information Systems, GEO-362 Remote Sensing of Earth, GEOSCIM 5636 Geovisualization
Other Courses:	ERTHSC 5650 Glaciology, ENGR-204 Circuit Analysis & Electronics, CS-104 Applied Computing, ENGR-305 Mechanics of Materials, ENGR-314 Vibration Analysis

SKILLS

Technical Skills: Part 107 Commercial Drone Pilot, MATLAB, Python, RStudio, ArcGIS Pro, Agisoft Metashape, Generic Mapping Tools (GMT) - Bash, Drone2Map, ERDAS Imagine, AutoCAD, Inventor FEA, EES, Microsoft Office Suite

Languages: Basic German, Basic French

OTHER EXPERIENCE

Calvin University Observatory - Grand Rapids, MI USA

Observatory Assistant, September 2018 – May 2019

- Operated 16-inch telescope equipment and custom software
- Used remote access web software to operate off-campus 16-inch telescope in Rehoboth, New Mexico
- Welcomed up to 40 guests per night to the observatory and assisted them in observing

Calvin University Grounds Department - Grand Rapids, MI USA

Snow Shoveler, December 2020 – March 2021

- Salted and shoveled walkways and doorsteps around campus
- Maintained safe walkways and stairs during snowy and icy weather

La Bello Pizzeria – Faulconbridge, New South Wales, Australia

Delivery Driver, October 2017 – July 2018

- Optimized work methods and route planning to increase efficiency and reduce delivery wait time
- Delivered up to 6 orders per hour to customers promptly and safely
- Assisted staff with food preparation and inventory management