**Jacob Joshua Blais**

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[Carbone Lab](https://carbone-lab.nau.edu/)

# Education

**Ph.D.** Northern Arizona University, Flagstaff, Arizona | August 2023 to Present

 Department of Biological Sciences, Center for Ecosystem Science and Society

 Advised by Dr. Andrew Richardson and Dr. Mariah Carbone

Research foci: Dryland ecohydrology, phenology, proximal remote sensing

One-sentence synopsis: I am leveraging a Sevilleta LTER precipitation manipulation experiment called the Mean-Variance Experiment (MVE) to investigate the independent and interactive effects of reduced and more variable precipitation on dryland plant phenology and productivity.

**B.S.** University of Arizona, Tucson, Arizona | August 2019 to May 2023

Natural Resources Major with an emphasis in Global Change Ecology and Management

Geographic Information Systems Certificate

 *Summa cum laude*

# Undergraduate Research Experience

**University of Arizona’s School of Natural Resources and the Environment**, Tucson, Arizona | March 2021 to August 2023

Research Technician, Project Co-Investigators: Dr. Joel Biederman and Dr. William Smith

* Project: RainManSR: A collaborative field experimental research site investigating the effects of altered rainfall amounts and timing on the structure and function of Sonoran desert grasslands.
* Duties/Skills: Exposure to and experience with various field data collection techniques and instruments such as measuring photosynthesis with an LI-6800, measuring soil respiration with an LI-8100, estimating surface cover by species functional type with point-frame measurements, imaging roots with a minirhizotron system, estimating leaf area index (LAI) with an LAI meter, and more. Soil KCL extractions in the lab. Organizing and leading field days. Heavy focus on an analysis of the abiotic controls of soil respiration in the Sonoran desert. Occasional out-of-state field work for scientific collaborations.

**Arizona NASA Space Grant Consortium**, Tucson, Arizona | September 2022 to May 2023

Intern Advisor, Mentor: Dr. Nathan Pierce

* Project: Contrasting abiotic controls of soil respiration during the spring and summer growing seasons in a semiarid grassland.
* Duties/Skills: Responsibilities include building relationships and maintaining contact with Space Grant interns to help ensure internships are proceeding well, helping organize and put on Space Grant events, and continuing research from my Space Grant internship the previous academic year.

**German Academic Exchange Service: Research Internships in Science and Engineering**, Göttingen, Lower Saxony, Germany | June to August 2022

Intern, Advisor: Sharath Paligi, M.S.

* Project: Tree water relations and drought response. This project is embedded within the research program RTG 2300: Enrichment of European Beech forests with conifers: impacts of functional traits on ecosystem functioning at the University of Göttingen.
* Duties/Skills: Installing and maintaining sap flow sensors, correcting sap flow sensor probe misalignment, measuring leaf water potential using a Scholander bomb, and collecting and analyzing minimum leaf conductance data.

**Arizona NASA Space Grant Consortium**, Tucson, Arizona | September 2021 to May 2022

Intern, Mentor: Dr. Nathan Pierce

* Project: Persistence of soil respiration legacies induced by temporally repackaged summer rainfall in Sonoran desert grasslands.
* Duties/Skills: Analysis, summarization, and presentation of soil respiration data. Analysis of soil volumetric water content and near-surface temperature data. Introduction to data wrangling and analysis in R, attention to detail, and explaining findings to scientific and general audiences.

# Publications

**Blais, J.J.** and A.D. Richardson. 2024. SEV LTER: Tracking Vegetation Phenology Using PhenoCam Imagery at the Sevilleta National Wildlife Refuge, New Mexico, 2014-2024 ver 1. Environmental Data Initiative. <https://doi.org/10.6073/pasta/92893de6e7337372a7bbc73e606e44d6>.

Richardson, A.D., C. Schädel, **J. Blais**, T. Milliman, K. J. Pearson, M.B. Krassovski, and P.J. Hanson. 2023. SPRUCE Vegetation Phenology in Experimental Plots from Phenocam Imagery, 2015-2022.Oak Ridge National Laboratory, TES SFA, U.S. Department of Energy, Oak Ridge, Tennessee, U.S.A. [https://doi.org/ 10.25581/spruce.108/1996813](https://doi.org/%2010.25581/spruce.108/1996813).

Richardson, A.D., K. J. Pearson, C. Schädel, **J. Blais**, J.M. Warren, and P. J. Hanson. 2023. SPRUCE Ground Observations of Phenology in Experimental Plots, 2022. Oak Ridge National Laboratory, TES SFA, U.S. Department of Energy, Oak Ridge, Tennessee, U.S.A. <https://doi.org/10.25581/spruce.107/1996808>

# Presentations

**Talk**, “Leveraging PhenoCam imagery to track plant phenology at the Sevilleta LTER Mean-Variance Experiment”, Sevilleta LTER Brown Bag Discussion | 9 November 2023.

**Poster**, “Legacy effects of shifting precipitation patterns on soil respiration in a Sonoran desert grassland”, Research Insights in Semiarid Ecosystems Symposium | 21 October 2023.

**Poster**, “Legacy effects of shifting precipitation patterns on soil respiration in a Sonoran desert grassland”, Ecological Society of America 2023 Annual Meeting | 9 August 2023.

**Talk**, “My Space Grant research”, University of Arizona’s College of Science Undergraduate Research Opportunities | 2 November 2022.

**Talk**, “Persistence of soil respiration legacies induced by temporally repackaged summer rainfall in Sonoran desert grasslands”, Arizona NASA Space Grant Statewide Symposium | 23 April 2022.

**Poster**, “Persistence of soil respiration legacies induced by temporally repackaged summer rainfall in Sonoran desert grasslands”, School of Earth and Environmental Sciences Earth Week Poster Showcase | 21 March 2022.

**Poster**, “Quantifying the response of soil respiration to rainfall pulses: A comparison of weekly manual and continuous automated measurement techniques”, Research Insights in Semiarid Ecosystems Symposium | 20 November 2021.

# Professional Societies and Networks

**Macrosystems Ecology For All Research Coordination Network**

General Member | February 2024 to Present

**Ecological Society of America**

Student Chapter and Southwestern Chapter Member | April 2023 to Present

# Professional Training

**Sevilleta All-Hands Meeting**

Sevilleta LTER and the Department of Biology, University of New Mexico | January 2024

A two-day meeting on the University of New Mexico campus with the goal of fostering two-way conversations between regional land managers and Sevilleta LTER researchers about land management challenges to improve resilience to climate change and information needs.

**Diana Liverman Scholar**

Arizona Institute for Resilient Environments and Societies, University of Arizona | August 2022 to May 2023

Cross-disciplinary experiential learning program for undergraduate students focused on public engagement, problem-solving, and environmental communication. We work with community partners in southern Arizona to develop communication pieces that address current environmental and societal issues. One of the projects I was involved on included writing a grant proposal for a non-profit community farm in South Phoenix called Project Roots that they could use to attain funding for an agrivoltaics project at their farm.

**Space Camp at Biosphere 2**

Arizona NASA Space Grant Consortium, Biosphere 2 | February 2022

Week-long camp with an international team. Eight participants, some from Arizona and others from Japan. We conducted experiments in different biomes within Biosphere 2, received lectures from scientists across a variety of disciplines, improved upon our collaboration skills, and gave a presentation on our results and experiences.

**Open Data Makeover Workshop**

University of Arizona, Tucson, Arizona | Summer 2021

Virtual data science workshop with my lab group.

Focused on data stream organization and workflows.

# Honors and Awards

**Sevilleta Summer Fellowship** March 2024

The Sevilleta LTER awards yearly Graduate Student Summer Fellowships to support research using Sevilleta LTER data. With the support of this Fellowship, I will be in-residence at the Sevilleta Field Station, collecting chlorophyll fluorescence data at my field site, and mentoring an undergraduate student through the Sevilleta Research Experiences for Undergraduates (REU) Program during the summer of 2024. $4,000.

**Presidential Fellowship** August 2023

The Northern Arizona University Presidential Fellowship is awarded to academically and professionally driven Ph.D. students, providing a generous support package consisting of a graduate assistantship stipend, a supplemental fellowship stipend, full tuition remission, major medical insurance benefits, and annual professional development funding. $9,000 per academic year.

**Outstanding Senior** May 2023

I received the University of Arizona’s School of Natural Resources and the Environment Outstanding Senior Award for the Global Change Ecology and Management emphasis for my contributions to the School's accomplishment of its mission and goals.

**Academic Year Highest Academic Distinction** May 2021, 2022, 2023

Based on 30 units and a 4.0-grade point average.

**Dean’s List With Distinction** December 2020, 2021, 2022 and May 2021, 2022, 2023

Based on 15 units and a 4.0-grade point average.

**Green Growth Network Student Feature** January 2023

Student feature in a newsletter that promotes environmental opportunities on and off the University of Arizona campus, supported by the Arizona Institute for Resilient Environments and Societies.

**Bear Down Rundown Wildcat of the Week** October 2022

Student feature in a university-wide email newsletter.

**Francis Colwell Scholarship** May 2022

Nomination-based academic scholarship awarded by the University of Arizona’s School of Natural Resources and the Environment. $1,000.

**USA Cycling Collegiate Academic All-Star** March 2021

Held a 2020 USA Cycling Collegiate license and maintained a 3.5 or higher GPA.

# Volunteer and Service Experience

**Northern Arizona University’s Center for Ecosystem Science and Society**, Flagstaff, Arizona | February 2024

Graduate student recruitment weekend committee member. I helped plan and lead events for prospective Center for Ecosystem Science and Society graduate students.

**University of Arizona’s Students for Sustainability Club**, Tucson, Arizona | April 2023

Panel speaker for the University of Arizona’s Sustainability Summit.

**University of Arizona’s School of Natural Resources and the Environment**,Tucson, Arizona | November 2022

Joined a Ph.D. student for field work where we sampled tinaja pools to learn about the invertebrate populations that reside in them for their dissertation research.

**University of Arizona’s School of Natural Resources and the Environment**, Tucson, Arizona | October 2021

Assisted a post-doctoral researcher with field work collecting ecophysiology and vegetation cover data for a buffelgrass experiment.

# Affiliations

**University of Arizona Collegiate Club Cycling Team** | August 2019 to May 2023

Social media officer, ride leader, and team member.