Alex Fox

Phone: (646) 276-1821 **Email:** alextsfox@gmail.com
Website: www.afox.land **ORCID:** 0009-0009-9775-4784

BACKGROUND

My work focuses on providing tools, data pipelines, and field instrumentation to study how landscape processes like energy and water cycles respond to environmental change. My current research at the University of Wyoming focuses on hydrologic modeling, soil-plant-atmosphere interactions, disturbance recovery in snow-dominated ecosystems, and developing pipelines for micrometeorological data processing. I also manage sensor networks to support long-term, high-resolution ecosystem monitoring efforts.

EDUCATION

Ph.D. Candidate in Hydrologic Science, University of Wyoming Planned: Aug 2025
Advisor: Brent E. Ewers GPA: 4.0
Relevant coursework: Geosci. Data Analysis, Env. Biophysics, Spatial Data Sci.

B.A. Physics (conc. in astrophysics) and Math, Oberlin College May 2018 GPA: 3.38

RELEVANT WORK EXPERIENCE

University of Wyoming Laramie, WY
Graduate Research Assistant June 2020 – Present

- Developed a high-throughput workflow for eddy covariance data pre-processing in Python
- Used Process modeling to differentiate drought tolerance between perennial and annual grains
- Studied interactions between fires, beetle-kill, and the water cycle in the Rocky Mountains
- Improved energy and water cycle measurements in snow-dominated ecosystems
- Data stewardship and equipment maintenance for the US-CPk Ameriflux eddy covariance site

Graduate Teaching Assistant

- Courses: Water Resources Seminar, Ecological Forest Management, Introduction to Research and Data Analysis

Oak Ridge National Lab & UT Battelle Oak Ridge, TN
RSI Intern, Watershed Dynamics and Evolution SFA Jun–Aug 2024

- Hydrologic modeling of river network expansion dynamics and flow activation in ephemeral streams.
- Optimization of sensor placements within watersheds using simulated watershed topographies and morphologies.

University of Wyoming Laramie, WY
Eddy Covariance Field Technician Jun– Nov 2019

- Data collection and instrument maintenance at the US-CPk Ameriflux site

Cooperative Institute for Satellite and Earth System Studies (CISESS) College Park, MD
Research Assistant, OpenET Project Nov 2018 – May 2019

- Development of a rapid water balance assessment software tool for remote sensing data products.

AWARDS AND HONORS

Hydrologic Science Student Service Award – University of Wyoming	2025
Rhoads Hydrology Scholarship – University of Wyoming	2023-2024
Professional-Producer Grant – Western SARE	2021-2024
Graduate Student Fellowship – Wyoming NASA Space Grant Consortium	2021-2022
Grant A. Harris Fellowship – METER Group	2021

Sigma Xi Scientific Research Honor Society 2017

PUBLICATIONS

Fox, A.S., Ewers, B.E., Frank, J.M., Bretfeld, M., Beverly, D., Berardi, D. *In Progress:* Stored snowmelt stabilizes the water balance by supporting post-disturbance vegetation regrowth in a subalpine forest. (2025)

Fox, A.S., Gomez Velez, J., Rathore, S. *In Progress:* Stress-Testing a lightweight stochastic model of river network dynamics under data-limited conditions. (2025)

Webb, R.W., Knowles, J.F., **Fox, A.S.**, et al. Energy-Water Asynchrony Principally Determines Water Available for Runoff from Snowmelt in Continental Montane Forests. *Hydrologic Processes 38, e15297* (2024).

Owen, R., **Fox, A. S.**, Freiberg, J. A., Jacques, T. P. Black hole spin axis in numerical relativity. *Phys. Rev. D 99, 084031* (2019).

TOP PRESENTATIONS

Fox, A.S., Ewers, B.E., Frank, J.M. Impacts of Compound Bark Beetle-Forest Fire Disturbance on the Water Budget of a Subalpine Rocky Mountain Forest Ecosystem (2024). *AGU24. Poster.*

Fox, A.S., Mainzer, L., Ewers, B.E., Frank, J.M., et al. A High-Throughput Workflow for Exploring Eddy Covariance Data Processing Using EddyPro (2023). *AGU23. Poster.*

Fox, A.S. Uncertainty in Surface Energy Fluxes in Mountain Environments (2023). *University of Wyoming Hydrologic Science Program Seminar. Oral Presentation.*

Fox, A. S. Linking plant physiology to ecosystem-scale processes using biophysical first-principles (2023). *University of Wyoming Botany Department Seminar. Oral Presentation.*

Fox, A. S., Frank, J. M., Blanken, P., Bretfeld, M., Burns, S., Hubbard, R., Ewers, B. E. et al. Understanding ecosystem processes in the subalpine forests of Wyoming and Colorado under synergistic disturbances from bark beetles, wildfire, and climate change. (2022). *Ameriflux Annual Meeting 2022. Poster.*

OTHER WORK AND LEADERSHIP EXPERIENCE

The Land Institute **Salina, KS**
Research Intern Sep – Oct 2018

Oberlin College **Oberlin, OH**
Teaching Assistant: Energy Sci. & Tech. Jan – May 2018
Research Assistant, Dept. of Physics and Astronomy May – Aug 2017
Research Assistant, Dept. of Mathematics Feb – Sep 2016
Peters Observatory Telescope Technician Nov 2014 – May 2017

PROFESSIONAL TRAININGS

Fluxcourse, University of Colorado Mountain Research Station, Nederland, CO 2023
LI-COR Photosynthesis Workshop, Colorado State University, Fort Collins, CO 2022
New Advances in Land Carbon Cycle Modeling, Northern Arizona University, Virtual 2021

SKILLS

Programming Languages: Proficient in Python, R; familiar with Julia, FORTRAN, C
Tools & Technologies: Micrometeorology and eddy covariance, HPC, GIS, SQL, Quarto
Interests: Rock climbing, canoeing, cooking, 3D printing