Tyson Lee Swetnam, Ph.D.

Research Associate Professor · University of Arizona
tswetnam@arizona.edu · tysonswetnam.com · ORCID: 0000-0002-6639-7181

Appointments

Research Associate Professor 2023–Present
Director of Open Science Initiatives,
Arizona Institute for Artificial Intelligence & Society, University of Arizona
Joint: College of Agriculture, Life Sciences, & Environment; College of Information Science

Research Assistant Professor, BIO5 Institute, University of Arizona 2019–2023

Data Scientist III, BIO5 Institute, University of Arizona 2016–2018

Associate Research Scientist, School of Natural Resources & Environment, UA 2015–2016

Postdoctoral Researcher, Department of Geosciences, University of Arizona 2014

Fire Management Specialist, USDA Forest Service, Coronado National Forest 2008–2012

Education

Ph.D., Watershed Management (Remote Sensing & Spatial Analysis), University of Arizona 2013
M.S., Watershed Management (GIS Certificate), University of Arizona 2006
B.S., Ecology & Evolutionary Biology, University of Arizona 2002

Selected Publications

(39 total peer-reviewed)

- **Swetnam TL**, Antin PB, Bartelme R, et al. (2024) CyVerse: Cyberinfrastructure for Open Science. *PLOS Computational Biology*. 10.1371/journal.pcbi.1011270
- Shuman JK, Balch JK, Barnes RT, et al. (2022) Reimagine fire science for the anthropocene. *PNAS Nexus*. 10.1093/pnasnexus/pgac115
- **Swetnam TL**, Yool SR, Roy S, Falk DA (2021) On the Use of Standardized Multi-Temporal Indices for Monitoring Disturbance and Ecosystem Moisture Stress. *Remote Sensing*. 10.3390/rs13081448 10.1002/ecs2.3649
- Sankey TT, McVay J, **Swetnam TL**, McClaran MP, Heilman P, Nichols M (2017) UAV hyperspectral and lidar data and their fusion for arid and semi-arid land vegetation monitoring. *Remote Sensing in Ecology and Conservation* 4(1):20–33. 10.1002/rse2.44
- **Swetnam TL**, Brooks PD, Barnard HR, Harpold AA, Gallo EL (2017) Topographically driven differences in energy and water constrain climatic control on forest carbon sequestration. *Ecosphere*. 10.1002/ecs2.1797
- **Swetnam TL**, Falk DA, Hessl AE, Farris C (2011) Reconstructing landscape pattern of historic fires and fire regimes. In: *The Landscape Ecology of Fire*, pp. 165–192. Springer. 10.1007/978-94-007-0301-8_7

Major Research Grants

(Total Active: >$90M; UA Scope: >$17M)

- **NSF NCEMS** (DBI-2335029), National Synthesis Center for Emergence in Molecular & Cellular Sciences. *Sub-award lead.* 2024–2029. $1.93M (UA), $20M Penn State University.
- **NSF ESIIL** (DBI-2153040), Environmental Data Science Innovation & Impact Lab. *Sub-award Lead.* 2022–2027. $1.46M (UA), $20M CU Boulder.
- **USDA AIIRA** (2021-67021-35329), AI Institute for Resilient Agriculture. *Sr. Personnel.* 2021–2028. $1.3M (UA), $20M Iowa State University.
- **NSF CyVerse** (DBI-1743442), Cyberinfrastructure for the Life Sciences. *Co-PI.* 2018–2025. $15.2M.

- **NIEH DUST Center** (P42ES004940), NIH Superfund Research. *Sr. Personnel.* 1997–2030. $14.8M.

Selected Awards & Honors

- 18th Mile Award ($141K), ABOR TRIF Innovative Technologies 2023
- Best Short Paper: Workforce Development, PEARC Conference 2023
- Outstanding Scholarly Achievement by Research Staff, CALES SNRE 2023
- Research Advancement Award ($78K), ABOR TRIF WEES 2022

Teaching & Mentorship

Workshops Developed & Delivered: CyVerse Foundational Open Science Skills (2019–Present); Container Camp: Docker, Kubernetes, Singularity (2018–2024); Introduction to LLMs (2023–Present); The Carpentries Instructor (2018–Present)

Lecturer: Fire in Ecosystem Management (NAFRI M-580, 2018–Present); Open Source GIS (GIST604B, 2018–Present); Introduction to Wildland Fire (RNR 355/455)

Mentorship: 2 Postdoctoral Researchers; 12+ Graduate Students; 10+ Undergraduate Researchers; 8 High School Interns (KEYS Program)

Professional Service

Working Groups & Committees:

- NASA Transform Open Science (TOPS) – Subject Matter Expert 2022
- NSF CI-Compass Cloud Infrastructure Working Group 2019–Present
- NSF NEON Lidar Technical Working Group 2018–2022
- The Carpentries – Instructor & Lesson Maintainer 2017–Present
- Earth Science Information Partners (ESIP) – CyVerse Representative 2019–Present

Grant Review Panels: USDA NIFA; NSF CISE; NSF DBI

Journal Reviewer: Remote Sensing of Environment; Ecological Applications; International Journal of Wildland Fire; PLOS One; Canadian Journal of Forest Research

Selected Invited Presentations

- "The Pillars of Open Science & Artificial Intelligence" – GERI Early Career Exchange, Boulder CO 2025
- "Seeing the Forest & the Trees: Bringing AI into the US Largest National Forest" – Alaska Innovation Summit, Juneau Economic Development Council 2025
- "Open Science & the Age of Artificial Intelligence" – Texas A&M ASCEND Fellows 2023
- "CyVerse: Cyberinfrastructure for Data Driven Discovery" – NASA JPL 2022

Technical Expertise

Research Areas: Open Science Cyberinfrastructure; Remote Sensing & LiDAR; Forest & Fire Ecology; Uncrewed Aerial Systems (UAS); Machine Learning for Environmental Science; Cloud Computing
Tools & Platforms: CyVerse; Google Earth Engine; Jetstream2; Docker/Kubernetes/Singularity; Python; R; GIS (QGIS, ArcGIS)