

CURRICULUM VITAE

Tyson Lee Swetnam

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APPOINTMENTS

Research Associate Professor <i>Arizona Institute for Artificial Intelligence & Society, University of Arizona</i> <ul style="list-style-type: none">Joint Appointment, College of Agriculture, Life & Environmental Sciences, School of Natural Resources & EnvironmentJoint Appointment, College of Information Science	7/2023 - Present <i>Tucson, AZ</i>
Research Assistant Professor <i>BIO5 Institute, University of Arizona</i>	1/2019 - 6/2023 <i>Tucson, AZ</i>
Data Scientist III <i>BIO5 Institute, University of Arizona</i>	9/2016 - 12/2018 <i>Tucson, AZ</i>
Associate Research Scientist <i>School of Natural Resources & Environment, University of Arizona</i>	7/2015 - 8/2016 <i>Tucson, AZ</i>
Research Associate <i>Department of Geology & Geophysics, University of Utah</i>	1/2015 - 7/2015 <i>Salt Lake City, UT</i>
Postdoctoral Researcher <i>Department of Geosciences, University of Arizona</i>	1/2014 - 12/2014 <i>Tucson, AZ</i>
Graduate Research Assistant <i>School of Natural Resources & Environment, University of Arizona</i>	6/2012 - 12/2013 <i>Tucson, AZ</i>
Fire Management Specialist <i>Coronado National Forest Supervisor's Office, USDA Forest Service</i>	6/2008 - 5/2012 <i>Tucson, AZ</i>

EDUCATION

University of Arizona <i>Doctor of Philosophy, School of Natural Resources & Environment</i> <ul style="list-style-type: none">Remote Sensing & Spatial Analysis MinorDissertation "Cordilleran forest scaling dynamics & disturbance regimes quantified by aerial lidar"	2013 <i>Tucson AZ</i>
University of Arizona <i>Master of Science, School of Natural Resources & Environment</i> <ul style="list-style-type: none">GIS Technical CertificateThesis "Fire Regime Condition Class Accuracy: A comparison to tree-ring fire histories"	2006 <i>Tucson AZ</i>
University of Arizona <i>Bachelor of Science, Department of Ecology & Evolutionary Biology</i>	2002 <i>Tucson AZ</i>

39. Reed, S.C., A.F. Feldman, N.P. Hanan, D.J.P. Moore, et al. (2025) The ARID Scoping Study Final Report. ORNL DAAC, Oak Ridge, Tennessee, USA. 10.3334/ORNLDAAC/2408
38. Roy A., E. Ward, I. Choi, et al. (2025) MDRepo — an open data warehouse for community-contributed molecular dynamics simulations of proteins. *Nucleic Acids Research* 10.1093/nar/gkae1109
37. Brunk R., K. Shukla, B.L. Hutson, et al. (2024) Data Science for Biochemists: Integrating and Evaluating the Use of Interactive Digital Python Notebooks in a Large-Enrollment Undergraduate Biochemistry Course. *Journal of Chemical Education*. 10.1021/acs.jchemed.4c00167
36. Swetnam T.L., P.B. Antin, R. Bartelme, et al. (2024) CyVerse: Cyberinfrastructure for Open Science. *PLOS Computational Biology* 10.1371/journal.pcbi.1011270
35. Thessen, A., L. Cooper, T.L. Swetnam, et al. (2023) Using knowledge graphs to infer gene expression in plants. *Frontiers in Artificial Intelligence*, 6, 92. 10.3389/frai.2023.1201002
34. Gonzalez, E.M., A. Zarei, N. Hendler, et al. (2023). PhytoOracle: Scalable, modular phenomics data processing pipelines. *Frontiers in Plant Science*, 14, 1112973-1112973. 10.1002/essoar.10508789.1
33. Yang, D., B.D. Morrison, K.J. Davidson, et al. (2022). Remote sensing from unoccupied aerial systems: Opportunities to enhance Arctic plant ecology in a changing climate. *Journal of Ecology*, 00, 1–24. 10.1111/1365-2745.13976
32. Shuman, J.K., J.K. Balch, R.T. Barnes, et al. (2022) Reimagine fire science for the anthropocene, *PNAS Nexus*, Volume 1, Issue 3, July 2022, pgac115, 10.1093/pnasnexus/pgac115
31. Nagy, R.C., J.K. Balch, E.K. Bissell, et al. (2021) Harnessing the NEON data revolution to advance open environmental science with a diverse and data-capable community. *Ecosphere* 12(12):e038333. 10.1002/ecs2.3833
30. Rengers, F.K., L.A. McGuire, J.W. Kean, et al. (2021) Movement of sediment through a burned landscape: Sediment volume observations and model comparisons in the San Gabriel Mountains, California, USA - *Journal of Geophysical Research: Earth Surface*, 2021 10.1029/2020JF006053
29. Guo, W., M.E. Carroll, A. Singh, et.al. (2021) UAS-Based Plant Phenotyping for Research and Breeding Applications. *Plant Phenomics*, vol. 2021, Article ID 9840192, 21 pages, 2021. 10.34133/2021/9840192
28. Sahneh, F., M.A. Balk, M. Kisley, et al. (2021) Ten simple rules to cultivate transdisciplinary collaboration in data science. *PLoS Comput Biol* 17(5): e1008879. 10.1371/journal.pcbi.1008879
27. Swetnam, T.L., S.R. Yool, S. Roy & D.A. Falk (2021) On the Use of Standardized Multi-Temporal Indices for Monitoring Disturbance and Ecosystem Moisture Stress across

- Multiple Earth Observation Systems in the Google Earth Engine. *Remote Sens.* 2021, 13, 1448. 10.3390/rs13081448
26. Gillan, J. K., G.E. Ponce-Campos, T.L. Swetnam, et al. (2021). Innovations to expand drone data collection and analysis for rangeland monitoring. *Ecosphere*, 12(7). 10.1002/ecs2.3649
 25. Martínez-Meyer, E., A. González-Bernal, J.A. Velasco, et al. (2020) Rangewide habitat suitability analysis for the Mexican wolf (*Canis lupus baileyi*) to identify recovery areas in its historical distribution. *Divers Distrib.* 2020; 00: 1– 13. 10.1111/ddi.13222
 24. Nust, D., D. Eddelbuettel, D. Bennett, et al. (2020). The RockerVerse: Packages and Applications for Containerization with R. *R Journal* 08-2020. 10.32614/RJ-2020-007
 23. Ponsero A., R. Bartelme, G. de Oliveira Almeida, et al. (2020) Ten simple rules for organizing a data science workshop. *PLoS Comput Biol* 16(10): e1008226. 10.1371/journal.pcbi.1008226
 22. Gedir, J.V., J.W. Cain, T.L. Swetnam, P.R. Krausman, & J.R. Mogart (2020) Extreme drought and adaptive resource selection by a desert mammal. *Ecosphere* 10.1002/ecs2.3175
 21. Mitra, B., S.A. Papuga, M.R. Alexander, T.L. Swetnam, & N. Abramson (2019) Allometric relationships between primary size measures and sapwood area for six common tree species in snow-dependent ecosystems in the Southwest United States. *Journal of Forestry Research* 1-10. 10.1007/s11676-019-01048-y
 20. Gillan, J., M.P. McClaran, T.L. Swetnam, & P. Heilman (2019) Estimating forage utilization with drone-based photogrammetric point clouds. *Journal of Rangeland Ecology & Management* 10.1016/j.rama.2019.02.009
 19. Norman, L.M., J.B. Callegary, L. Lacher, et al. (2019) Modeling Riparian Restoration Impacts on the Hydrologic Cycle at the Babacomari Ranch, SE Arizona, USA. *Water* 11, 381. 10.3390/w11020381
 18. Hancock, D., C. Stewart, M. Vaughn, et al. (2018) Jetstream—Early operations performance, adoption, and impacts. *Concurrency and Computation: Practice and Experience* 10.1002/cpe.4683
 17. Perdrial, J., P.D. Brooks, T.L. Swetnam, et al. (2018) A net ecosystem carbon budget for snow dominated forested headwater catchments: linking water and carbon fluxes to critical zone carbon storage. *Biogeochemistry* 138:225. 10.1007/s10533-018-0440-3
 16. Swetnam, T.L., J.K. Gillan, T.T. Sankey, et al. (2018) Considerations for Achieving Cross-Platform Point Cloud Data Fusion across Different Dryland Ecosystem Structural States. *Front. Plant Sci.* 8:2144. 10.3389/fpls.2017.02144
 15. Pelletier J.D., G.A. Barron-Gafford, et al. (2018) Which way do you lean? Using slope aspect variations to understand Critical Zone processes and feedbacks. *Earth Surf. Process. Landforms*, 10.1002/esp.4306
 14. Evans, M.E.K., D.A. Falk, A. Arizpe, et al. (2017) Fusing tree-ring and forest inventory data to infer influences on tree growth. *Ecosphere* 8(7):e01889. 10.1002/ecs2.1889
 13. Swetnam, T.L., P.D. Brooks, H.R. Barnard, A.A. Harpold & E.L. Gallo (2017) Topographically driven differences in energy and water constrain climatic control on forest carbon sequestration. *Ecosphere* 8(4):e01797. 10.1002/ecs2.1797

12. Pelletier, J.D., & T.L. Swetnam (2017) Asymmetry of weathering-limited hillslopes: the importance of diurnal covariation in solar insolation and temperature. *Earth Surf. Process. Landforms*, 42: 1408–1418. 10.1002/esp.4136
11. Sankey, T.T., J. McVay, T.L. Swetnam, M.P. McClaran, P. Heilman & M. Nichols (2017) UAV hyperspectral and lidar data and their fusion for arid and semi-arid land vegetation monitoring. *Remote Sens Ecol Conserv.* 10.1002/rse2.44
10. *Swetnam T.L., C.D. O'Connor & A.M. Lynch (2016) Tree morphologic plasticity explains deviation from metabolic scaling theory in semi-arid conifer forests, southwestern USA. *PLoS One* 11(7):e0157582. 10.1371/journal.pone.0157582
9. *Swetnam, T.L., A.M. Lynch, D.A. Falk, D.P. Guertin & S.R. Yool (2015) Discriminating disturbance from natural variation with LiDAR in semi-arid forests, Southwestern USA. *Ecosphere* 6(6):97. 10.1890/ES14-00384.1
8. Harpold, A.A., J.A. Marshall, S.W. Lyon, et al. (2015) Laser vision: lidar as a transformative tool to advance critical zone science. *Hydrology & Earth System Science* 19, 2881-2897. 10.5194/hess-19-2881-2015
7. Rasmussen, C., J.D. Pelletier, P.A. Troch, T.L. Swetnam & J. Chorover (2015) Quantifying topographic, vegetation, and disturbance effects on the transfer of energy and mass to the critical zone. *Vadose Zone* 10.2136/vzj2014.07.0102
6. *Swetnam, T.L., D.A. Falk, A.M. Lynch & S.R. Yool (2014) Estimating individual tree mid-and understory rank-size distributions from airborne laser scanning in semi-arid forests. *Forest Ecology and Management* 330, 271-282. 10.1016/j.foreco.2014.07.011
5. *Swetnam, T.L. & D.A. Falk (2014) Allometric scaling rules to limit commission error in aerial LiDAR forest inventories. *Forest Ecology and Management* 323, 158-167. 10.1016/j.foreco.2014.03.016
4. *Harpold, A.A., Q. Guo, N. Molotch, et al. (2014) LiDAR-Derived Snowpack Datasets from Mixed Conifer Forests Across the Western US. *Water Resources Research* 50(3), 2749-2755. 10.1002/2013WR013935
3. *Pelletier, J.D., G.A. Barron-Gafford, D.D. Breshears, et al. (2013) Coevolution of nonlinear trends in vegetation, soils, and topography with elevation and slope aspect: A case study in the sky islands of southern Arizona. *Journal of Geophysical Research: Earth Surface* 1-18. 10.1002/jgrf.20046
2. *Swetnam, T.L., D.A. Falk, A. Hessl & C. Farris (2011) Reconstructing landscape pattern of historic fires and fire regimes. In *The Landscape Ecology of Fire*, editors D MacKenzie, D.A. Falk, C. Miller. pp. 165-192. Springer Netherlands, 2011. 10.1007/978-94-007-0301-8_7
1. *Swetnam, T.L., & P.M. Brown (2010) Comparing Fire Regime Condition Class (FRCC) Vegetation Models to Tree Ring Data. *International Journal of Wildland Fire* 19, 1-13. 10.1071/WF08001

THESES, PROCEEDINGS, WORKING PAPERS, PERSPECTIVES, & TECHNICAL REPORTS

* graduate work

- Berriman, B., et al. (2025). Cloud Adoption Survey in Major Facilities and Mid Scale Institutes (1.0). Zenodo. 10.5281/zenodo.15192261
- Reed, S.C., A.F. Feldman, N.P. Hanan, et al. (2025) The ARID Scoping Study Final Report. ORNL DAAC, Oak Ridge, Tennessee, USA. 10.3334/ORNLDAAC/2408
- Roy, S., T.L. Swetnam, & A. Saah. (2024). samapriya/awesome-gee-community-datasets: Community Catalog (3.1.0). Zenodo. 10.5281/zenodo.14042069
- Berriman, G.B., et al. (2024) NSF Major Facilities Cloud Use Cases and Considerations. 10.5281/zenodo.10481410
- Jung, J., et al. (2024) Data to science: an open-source online platform for managing, visualizing, and publishing UAS data. Proceedings Volume 13053, Autonomous Air and Ground Sensing Systems for Agricultural Optimization and Phenotyping IX; 1305303 (2024) 10.1117/12.3021199
- Swetnam, T.L. (2023) Separating the Wheat From the Chaff: Identifying the Benefits of Artificial Intelligence. Crop Society of America News 68:6 22-25. 10.1002/csan.21045
- McIntosh, T.L., E. Verleye, J.K. Balch, et al. (2023) Cyberinfrastructure deployments on public research clouds enable accessible Environmental Data Science education. In Practice and Experience in Advanced Research Computing (PEARC '23), July 23–27, 2023, Portland, OR, USA. ACM, New York, NY, USA, 7 pages. 10.1145/3569951.3597606
- Skidmore, E., M. Cosi, T.L. Swetnam, et al. (2023) Cloud Computing for Research and Education Gets a Sweet Upgrade with CACAO. In Practice and Experience in Advanced Research Computing (PEARC '23), July 23–27, 2023, Portland, OR, USA. ACM, New York, NY, USA, 4 pages. 10.1145/3569951.3597555
- Almarzouq, B., et al. (2023) Opensciency - A core open science curriculum by and for the research community. Zenodo. 10.5281/zenodo.7662732
- Bartelme, R.P., et al. (2020) Do Androids Dream of Electric Sorghum?: Predicting Phenotypes from Multi-scale Genomic and Environmental Data Using Neural Networks and Knowledge Graphs. OSF Preprints, 18 Aug. 2020. Web. 10.31219/osf.io/yx7t9
- Martínez-Meyer, E., A. González-Bernal, J.A. Velasco, et al. (2017) Mexican wolf habitat suitability analysis in historical range in the Southwestern US and Mexico. U.S. Fish and Wildlife Service, Region 2, Albuquerque, New Mexico, USA.
- Swetnam, T.L., J.D. Pelletier, C. Rasmussen, et al. (2016) Scaling GIS analysis tasks from the desktop to the cloud utilizing contemporary distributed computing and data management approaches: A case study of project-based learning and cyberinfrastructure concepts. In Proceedings of the XSEDE16 Conference on Diversity, Big Data, and Science at Scale, p. 21. ACM, 2016. 10.1145/2949550.2949573
- Swetnam, T.L. & D.A. Falk (2015) Carbon Cycling in Southwestern Forests: Reservoirs, Fluxes, and the Effects of Fire and Management. ERI Working Paper #35. Flagstaff, AZ: Ecological Restoration Institute and Southwest Fire Science Consortium, Northern Arizona University. 15 p.
- *Swetnam, TL (2013) Cordilleran forest scaling dynamics and disturbance regimes quantified by aerial LiDAR. (Doctoral Dissertation, University of Arizona) 277 p.

<https://www.fs.usda.gov/treearch/pubs/48047>

- *Swetnam, T.L., D.P. Guertin, E. Canfield, & A. Kimoto (2013) Riparian vegetation characterization of the Lower Santa Cruz River and Ciénega Creek through remotely sensed multi-sensor data fusion. Addendum to the "Historical Conditions of the Effluent-Dependent Santa Cruz River, Pima County".
- *O'Connor C.D., D.A. Falk, A.M. Lynch, C.P. Wilcox, T.W. Swetnam & T.L. Swetnam (2013) Growth and Demography of Pinaleno High Elevation Forests. RJVA 07-JV-11221615317. Rocky Mountain Research Station, Ft. Collins, CO.
<https://www.fs.usda.gov/treearch/pubs/41787>
- *Swetnam, T.L., & B. Powell (2010) Example of the use of LiDAR for monitoring vegetation characteristics: An example from the Ciénega Creek Nature Preserve. Supplement to the Pima County Ecological Monitoring Program: Phase II Monitoring Plan Summary.
- *Swetnam, T.L. (2006) Fire Regime Condition Class Accuracy: A comparison to tree-ring fire histories. (M.S. Thesis, University of Arizona. 111 p.)

RESEARCH GRANTS

ACTIVE

- "DUST Center: Superfund Research" NIEH NIH, P42ES004940, PI Xinxin Ding, Sr. Personnel N. Merchant, T. Swetnam. 4/1/1997 - 1/31/2030 \$14,800,000
- "Center: National Synthesis Center for Emergence in the Molecular and Cellular Sciences (NCMS)" NSF DBI-2335029 Sub-award T. Swetnam, Penn State University Prime, PI: E. O'Brien - 05/01/2024 - 04/30/2029 (University of Arizona scope: \$1,930,000)
- "Wildland Urban Interface (WUI): Fire Fuel Mitigation" PI: T.L. Swetnam, Co-PIs: L. McGuire, A. Youberg, ABOR TRIF Sub-award of Northern Arizona University, PIs: A. Sanchez-Meador, A. Thode 11/18/2022 - 1/31/2026 \$900,000 (University of Arizona scope: \$122,228)
- "Environmental Data Science Innovation & Inclusion Lab (ESIIL): Accelerating Discovery by Fostering an Open & Diverse Earth Data Revolution" NSF DBI-2153040 Sub-award lead T. Swetnam, UC Boulder Prime, PI: J. Balch, 8/1/22 - 7/31/27 \$19,999,990 (University of Arizona scope: \$1,457,000)
- "AIIRA: AI Institute for Resilient Agriculture" PI: N. Merchant, Sr. Personnel: E. Skidmore, T.L. Swetnam, USDA NIFA 2021-67021-35329 Sub-award of Iowa State University PI: B. Ganapathysubramanian 9/1/21 - 8/31/28 \$20,000,000 (University of Arizona scope: \$1,300,222)

PRIOR & COMPLETED

- "Collaborative Research: High-Resolution Aerial Forest Mapping Infrastructure & Database to Support Forest & Disturbance Ecology Research" PI: T.L. Swetnam NSF DBI-2152673 Collaborative Research with UC Davis PI: D. Young, & UC Boulder PI: M. Koontz 9/1/2022 - 8/31/2025 \$1,005,364 (University of Arizona scope: \$45,844)
- "CyVerse: Cyberinfrastructure for the Life Sciences" PI: N. Merchant, CoPIs: T.L. Swetnam, D. Micklos, J. Fonner NSF DBI-1743442 8/1/18 - 7/31/25 \$15,199,324

“Collaborative Research: OpenDendro - Advanced Open-source Tools for Paleoenvironmental Reconstruction” PI: A. Bunn, CoPIs: K. Anchukaitis, E. Cook, T.L. Swetnam NSF AGS-2054516 6/1/21 - 5/31/24 \$143,148

“Track D: Hidden Water & Extreme Events: HydroGEN, A Physically Rigorous Machine Learning Platform for Hydrologic Scenario Generation” PI: L. Condon, CoPIs: N. Merchant, R. Maxwell, P. Melchior NSF ITE-2134892 10/1/21 - 9/30/23 \$5,000,000

“Towards Distributed and Scalable Personalized Cyber-Training” PI: T.L. Swetnam. OAC-1829701 9/1/18 - 8/31/23 \$60,631

“High Intensity Phenotyping Sites: A Multi-Scale Multi-Modal Sensing & Sense-Making Cyber-Ecosystem for Genomes to Fields” PI: A. Singh USDA NIFA 2020-68013-30934 6/1/20 - 5/31/23 \$497,481

“FACTS: A Scalable Cyber Ecosystem for Acquisition, Curation, & Analysis of MultiSpectral UAV Image Data” USDA NIFA 2019-67021-29938 9/1/19 - 8/31/22 \$499,927

“Assessing the Climate Change Mitigation Potential of Diverse Vegetation Types in the Pinaleno Mountains, Arizona” PI: F. Babst, CoPI: T.L. Swetnam ABOR TRIF AIR 11/1/21 - 8/31/22 \$72,000

“TRIPODS+X:VIS: Data Science Pathways for a Vibrant TRIPODS Commons at Scale” PI: N. Merchant, CoPIs: M. Sahneh, M. Kobourov, M. Papes NSF DMS-1839307 10/1/18 - 7/31/22 \$199,859

“Collaborative Research: Converging Genomics, Phenomics, & Environments Using Interpretable Machine Learning Models” PI: B. Heidorn, CoPI: T.L. Swetnam NSF DBI-1940062 10/1/19 - 7/31/22 \$483,022

“NSF Convergence Accelerator - Track D: Hidden Water & Hydrologic Extremes: A Groundwater Data Platform for Machine Learning & Water Management” PI: L. Condon, CoPI: N. Merchant NSF ITE-2040542 \$1,000,000

“Jemez River Corridor Forest Inventory” PI: T.L. Swetnam Nature Conservancy 7/30/19 - 12/31/2020 \$19,500

“LTAR-NEON Collaboration to Quantify Rangeland Vegetation Production” PI: M. McClaran USDA NIFA 2022-13610-012-07S \$449,025

“CESU Lower Gila River Vegetation Mapping” PI: W. van der Leeuwen Bureau of Land Management 7/7/16 - 3/26/20 \$250,000

“Remote Sensing Support & Consultation for Evaluation of Wolf Habitat Suitability in Mexico & Southwestern United States” PI: T.L. Swetnam Arizona Game & Fish Department 8/1/16 - 8/31/17 \$10,000

“Sediment Transport Analysis & Assessment of Vegetation Characteristics in the Santa Cruz River” PI: D.P. Guertin, CoPI: T.L. Swetnam Pima County Regional Flood Control District 9/1/12 - 8/31/13 \$17,186

“Multi-scale controls on wildland fire in mountains of Western North America” PI: D. Falk USDA NIFA ARZT-1392420-M12-183 7/1/08 - 12/31/12

“Analysis of aerial lidar in the Santa Cruz River & Cienega Creek” PI: T.L. Swetnam Pima County Ecological Monitoring Program 1/1/13 - 9/30/13 \$2,500

“Reference Conditions for Fire Regime Condition Class” PI: P.M. Brown, CoPI: T.L. Swetnam Bureau of Land Management National Interagency Fuels Team 8/31/04 - 7/30/06 \$81,000

AWARDS & HONORARIUM

18th Mile Award, \$141,214	11/2023
<i>ABOR TRIF Innovative Technologies for the 4th Industrial Revolution</i>	
Best Short Paper: Workforce Development	7/2023
<i>Practice and Experience in Advanced Research Computing (PEARC), Portland OR</i>	
Outstanding Scholarly Achievement by Research Staff	5/2023
<i>School of Natural Resources & Environment, University of Arizona</i>	
Research Advancement Award, \$78,000	1/2022
<i>ABOR TRIF Equipment Improvement</i>	
Equipment Improvement Award, \$53,000	7/2019
<i>ABOR TRIF Water, Environmental, & Energy Solutions (WEES)</i>	
NSF EarthCube Travel Award, \$1,500	7/2014
<i>Arizona Geological Society, NSF ICER #1340233</i>	
Scholarly Achievement Award	5/2014
<i>School of Natural Resources & Environment, University of Arizona</i>	
Kel M. Fox Award Outstanding Graduate in Watershed Management, \$500	9/2012
<i>School of Natural Resources & Environment, University of Arizona</i>	
President’s award: Best Graduate Exhibit	12/2009
<i>UA Graduate & Professional Student Council</i>	
Graduate Teaching Assistant of the Year	5/2009
<i>School of Natural Resources & Environment, University of Arizona</i>	

CONFERENCE PROCEEDINGS & PRESENTATIONS

* invited

*Swetnam, T.L. (2025) "The Pillars of Open Science & Artificial Intelligence" Global Ecosystem Research Infrastructure Early Career Researcher Scholar Exchange, Jul 21 - 25, Boulder, CO

Swetnam, T.L. (2025) "Prompt Engineering, Vibe Coding & Agentic AI" Public Health & AI Summer School, Jun 6-12, Tucson AZ

*Swetnam, T.L., et al. (2025) "Building an Agricultural AI workbench & toolbox in the cloud" Agri-Food Robotics Online Conference, 15-16 May 2025, University of Cambridge UK

*Swetnam, T.L. (2025) "Metadata: why metadata matters" NSF ESIIL Monthly Colloquium, May 6 Boulder, CO

*Swetnam, T.L. (2025) "NSF grant proposal success" NSF CISE Early Career Investigator Workshop, Mar 16-21 Fairbanks AK

*Swetnam, T.L. (2025) "Seeing the Forest & the Trees: Bringing AI into the US Largest National Forest" Juneau Economic Development Council Alaska Innovation Summit, Feb 25-28, Juneau AK

*Swetnam, T.L. (2025) "Fire Technology Applications" M580 Fire in Ecosystem Management, National Advanced Fire and Resource Institute, Jan 28, Tucson AZ

Merchant, N., E. Skidmore, T.L. Swetnam (2025) "Building your AI workbench & toolbox in the cloud with Jetstream2" NSF Jetstream-2 NAIRR Fellows Program, Jan 16, Tucson AZ

Amaral, C., et al. (2024) "Hyperspectral and Thermal Remote Sensing for Environmental Justice (HYR-SENSE) Workshop: Program and Lessons Learned" AGU Fall Meeting 2024, held in Washington, D.C., 9-13 Dec, SY12A-05.

*Swetnam, T.L., (2024) "The Pillars of Open Science & Artificial Intelligence in Research" ASCEND Fellows, Oct 22, Texas A&M, College Station TX

*Swetnam, T.L., (2024) "The Pillars of Open Science" Machine Ground Interaction Consortium (MaGIC) Annual Meeting, Sept 11, Madison WI

*Swetnam, T.L., (2024) "Cybersecurity/Cyberinfrastructure Panel" Global Autonomous Systems Conference (GASC), Aug 13, Anchorage AK

*Swetnam, T.L., (2024) "Big Data for Spatial Datasets" Long Term Agricultural Research (LTAR) All-Scientists Meeting, May 23, Tucson AZ

*Swetnam, T.L., (2024) "Lessons Learned: Open Science, Cyberinfrastructure, & Artificial Intelligence" NSF-SCIPe Chishiki AI, University of Texas, Apr 05, Texas Advanced Computing Center (TACC), Austin TX

*Swetnam, T.L. (2024) "Open Science & becoming Cloud Native" NSF-CNPq Sinbiose, Feb 27, Brasília Brazil

*Swetnam, T.L., J. Gillan (2024) "Open Science, Artificial Intelligence& Flying Robots" University of Alaska, Jan 26, Fairbanks AK

*Swetnam, T.L. (2024) "Building Private GPTs and LLMs for Research and Daily Productivity" CI-Compass, Jan 17, Long Beach, CA

*Swetnam, T.L. (2024) "Building Your Own GPTs and LLMs for Research and Daily Productivity" Plant and Animal Genome (PAG) 31, Jan 13, San Diego CA

Sanovia, J., C.H. Amaral, N. Quarderer, T. Tuff, T.L. Swetnam, J. Balch, R.C. Nagy, J. Rattling Leaf, (2023) "Data Access to Data Sovereignty: Overcoming Infrastructure Challenges in Indian Country" American Geophysical Union Fall Meeting, Dec 12, Washington DC

*Swetnam, T.L. (2023) "Open Science & the Age of Artificial Intelligence" Texas A&M ASCEND Fellows, Sept 22, College Station, TX

*Swetnam, T.L. (2023) "Cyber cowboys: wrangling big data on the open science frontier" Texas A&M Institute for Data Science Spring Seminar, Apr 3, College Station, TX

*Swetnam, T.L. (2023) "Working with cloud-optimized, and analysis-ready data formats on the cloud" Planet Labs University of Arizona Kick-Off, University of Arizona, Feb 14, Tucson AZ

*Swetnam, T.L. (2023) "A not-so-gentle introduction to Cloud Computing for Forest Resiliency Science" NSF Macrosystems Forest Resiliency Working Group, University of Colorado, Feb 13, Boulder CO

*Swetnam, T.L. (2023) "Foundational Open Science Skills" Plant and Animal Genome 30, Jan 14, San Diego, CA

Balch, J., et al. (2022) "The Environmental Data Science Innovation & Inclusion Lab (ESIIL): a next-generation NSF data synthesis center" AGU Fall Meeting 2022, held in Chicago, IL, 12-16 Dec 2022, id. ED12C-0371.

*Swetnam, T.L., C. Lizarraga (2022) "Introduction to Cloud Native & Analysis Ready Data Formats" Arizona Geospatial Information Council Meeting, Sept 2, Prescott AZ

*Swetnam, T.L. (2022) "Arizona Society for Range Management: Cloud Native Science" V-V Ranch, August 4, Arizona.

*Swetnam, T.L. (2022) "CyVerse DataCite Overview" Data Cite User Group, May 4, Virtual.

*Swetnam, T.L., & E. Skidmore (2022) "CyVerse: Cyberinfrastructure for Data Driven Discovery. Open Source Science for ESO Mission Processing Study" Jet Propulsion Laboratory, Mar 4, NASA. Virtual

*Swetnam, T.L., (2022) "CyVerse: Cyberinfrastructure for Data Driven Discovery" CyberInfrastructure 4 Major Facilities (CI4MFs) 2022, Mar 1, Redondo Beach, CA

Condon, L., et al. (2021) "Lessons learned designing the HydroGEN machine learning platform for hydrologic exploration: a story of collaboration between hydrologic scientists, software developers, machine learning researchers and water managers" AGU Fall Meeting 2021, 13-17 Dec, New Orleans, LA

Webley, P.W., D.V. Sullivan, D. Durden & T.L. Swetnam (2021) "TH45E: Autonomous Scientific Observations: Building Reproducible Research Today & Into the Future" American Geophysical Union (AGU) Town Hall. Virtual, Dec 8, New Orleans, LA,

*Swetnam, T.L., (2021) "The Airborne Environmental Observations Laboratory for Unoccupied Systems (AEOLUS)" Research Insights in Semi-Arid Ecosystems (RISE), 17 Oct, Tucson AZ

*Swetnam, T.L., (2021) "Developing Foundational Open Science Skills (CyVerse Skills Tutorial)" Northern Arizona University School of Information, Computing, & Cyber Systems. Apr 5. Virtual.

Webley, P.W., R.P. Dahlgren, T.L. Swetnam & D. Durden (2020) "TH058: Methods & Processes Using Small Unmanned Aircraft Systems: Sharing & Reusing Lessons Learned Across Scientific Disciplines" AGU Fall Meeting 2020.

Swetnam, T.L., D. LeBauer, C.F. Vardeman & D. Durden (2020) "NH028-0007 Wrestling the four V's of small unoccupied aerial systems data in the cloud & on national cyberinfrastructure" AGU Fall Meeting 2020.

*Swetnam, T.L., (2020) NVIDIA GPU Cloud "Panel: Simplifying HPC Workflows with containers" Dec 3. Virtual

Thessen, A.E., R. Bartelme, M. Behrisch, et al. (2020) "Predicting phenotype from multi-scale genomic & environment data using neural networks & knowledge graphs" (August 3-6) ESA Annual Meeting

*Swetnam, T.L., (2020) "CyVerse Learning Institute's foundational open science skills workshop" Bioinformatics Open Source Conference (BOSC). July 20. Virtual.

Skidmore, E., T.E., R. Walls, T.L. Swetnam, N. Merchant & E. Lyons (2020) "CyVerse: Informatics Cyberinfrastructure for the Earth Sciences" Earth Science Information Partners 2020 Summer meeting, Jul 2 Virtual.

Thessen, A.E., M. Behrisch, E.J. Cain, et al. (2020) “Predicting Phenotype from Multi-Scale Genomic & Environment Data using Neural Networks & Knowledge Graphs: An Introduction to the NSF GenoPhenoEnvo Project” Plant & Animal Genome XXVIII Conference Jan 11-15

Swetnam, T.L., (2020) “The Airborne Environmental Observations Laboratory for Unoccupied Systems (AEOLUS)” Plant & Animal Genome XXVIII Conference Jan 11-15

Holifield-Collins C., S.M. Skirvin, G. Armendariz, et al. (2019) “GC23G-1430 Is a Picture Worth a Thousand Measurements? A Comparison of Drone Systems & Data Processing Methods for Rangeland Vegetation Monitoring” AGU Fall Meeting 2019

Swetnam, T.L., (2019) “All the Things; Capitalizing on Big Data from Devices, Drones, & Cubesats” Arizona Geospatial Information Council Symposia Oct 1 2019, Prescott AZ

Swetnam, T.L., D.S. LeBauer & N. Merchant (2019) “Looking toward an Institute to support both users & creators of geospatial software” Geospatial Software Institute Workshop 3, 15 Jul

*Swetnam, T.L., (2019) “The ability & audacity to scale your science with free & open cyberinfrastructure” Santa Fe Institute, Jul 5, Santa Fe NM

Devisetty U.K., T.L. Swetnam, I. McEwen, J. Wregglesworth & N. Merchant (2019) “Get a Grip on Your Data Science Tools with CyVerse VICE (Visual Interactive Computing Environment)” Plant & Animal Genome XXVII Conference Jan 12-16

Swetnam, T., R. Walls, U.K. Devisetty, and N.C. Merchant. (2017) “CyVerse: A Ten-Year Perspective on Cyberinfrastructure Development, Collaboration, and Community Building” AGU Fall Meeting, New Orleans, Dec 11 <https://par.nsf.gov/biblio/10108389>

Brooks P.D., H.R. Barnard, J.A. Biederman, et al. (2018) “H21A-06 Multi-disciplinary Insights into the Effects of Vegetation Change on Hydrologic Partitioning” AGU Fall Meeting, Washington DC, Dec 11

*Swetnam, T.L., (2018) “The problem of pattern & scale in semi-arid ecosystem ecology: Does big data help or hurt?” Research Insights in Semi-Arid Ecosystems (RISE), Tucson AZ, 10 Oct

Swetnam, T.L., B. Hickson, B. Joyce & R. Walls (2018) “Ensuring best practices for reproducibility of long tail data in intensive geospatial scientific research.” Geospatial Software Institute Workshop 2, 17 July

*Swetnam, T.L., (2018) “Vertical Scaling of Remote Sensing” Invited Talk Battelle Inc. NEON, Boulder CO, 12 July.

Swetnam, T.L., (2018) “The Ecosystem Moisture Stress Index” Madrean Conference, Tucson AZ, 17 May.

Swetnam, T.L., (2018) “Unleashing your inner data scientist: The ability & audacity to scale your science with free & open cyberinfrastructure” TRIPODS-X Workshop, Tucson AZ 26 Feb

Swetnam T.L., (2018) “Portable, scalable, high throughput geospatial analyses with Singularity containers on cloud & high performance computing” Phenome, Tucson AZ, 15 Feb

Swetnam, T.L., (2018) “Cyberinfrastructure for scientific reproducibility in data-intensive geospatial research & education”. Geospatial Software Institute Workshop 1, 29 Jan

Swetnam, T., R. Walls, U.K. Devisetty, and N.C. Merchant. (2017) "CyVerse: A Ten-Year Perspective on Cyberinfrastructure Development, Collaboration, and Community Building" AGU Fall Meeting, New Orleans, Dec 11 <https://par.nsf.gov/biblio/10108389>

Walls, R., B. Joyce, Swetnam, T.L. & U.K. Devisetty (2017) "Analyzing & managing ecological data with CyVerse" Ecological Society of America Meeting, Portland OR, 10 Aug.

Swetnam, T.L., (2017) "A Gentle Introduction to Forestry Science Workflows in the Era of Cloud Computing" Society of American Foresters Southwestern Section Meeting Northern Arizona Chapter April 27-29, 2017 Flagstaff, AZ

*Swetnam, T.L., (2017) "CyVerse: Transforming science through data driven discovery" Northern Arizona University. School of Forestry. Flagstaff AZ Apr 5

*Swetnam, T.L., (2017) "Cyber-Cowboys on the Range" Invited seminar, Santa Rita Experimental Range Florida Station, Green Valley AZ, 18 Mar.

MEDIA

2024

<https://news.arizona.edu/news/uarizona-led-cyverse-part-20m-nsf-award-catalyze-biosciences-discoveries> "University of Arizona-led CyVerse part of \$20M NSF award to catalyze biosciences discoveries"

<https://datascience.arizona.edu/news/aeolus-soars-eighteenth-mile-trif-funding> "AEOLUS Soars with Eighteenth Mile TRIF Funding"

2023

<https://news.iu.edu/it/live/news/31802-jetstream2-supports-open-source-gis-data-catalog-with-Jetstream2-supports-open-source-GIS-data-catalog-with-Google-Earth-Engine>

<https://cyverse.org/cyverse-and-ua-host-chatgpt-workshops> "CyVerse and the University of Arizona Host ChatGPT Workshops"

<https://uaatwork.arizona.edu/lqp/new-license-gives-campus-access-steady-stream-web-geo-data> "New license gives campus access to a steady stream of web-geo data"

<https://www.planet.com/pulse/university-of-arizona-explores-our-earth-with-new-campus-wide-planet-license/> "University of Arizona Explores Our Earth with New Campus-Wide Planet License"

<https://cyverse.org/cyverses-compute-power-accelerates-doctoral-researchers-science> "CyVerse's Compute Power Accelerates Doctoral Researcher's Science"

2022

<https://cyverse.org/new-abor-grant-will-utilize-cyverse-technology-and-expertise-to-mitigate-wildfire-risk> "New ABOR Grant Will Use CyVerse's Technology and Expertise to Mitigate Wildfire Risk"

<https://cyverse.org/esiil-center> "New Center Brings Environmental Data Science Home"

<https://www.ucdavis.edu/climate/blog/monitoring-forest-threats-new-open-forest-observatory> - "Monitoring Forest Threats with New Open Forest Observatory"

<https://news.ucar.edu/132859/wildfire-experts-provide-guidance-new-research-directions> -
“Wildfire experts provide guidance for new research directions”

https://cyverse.org/deep_learning_workshop “A Deep Dive into Deep Learning Techniques: A Firstofitskind Hands-on Workshop”

2021

<https://cyverse.org/foundational-friendships-lead-to-open-ecological-science> “Foundational Friendships Lead to Open Ecological Science”

<https://cyverse.org/from-landforms-to-landslides-students-investigate-earth-surface-processes-with-cyverse> “From Landforms to Landslides, Students Investigate Earth Surface Processes with CyVerse”

<https://bio5.org/news/study-shows-impacts-deforestation-and-forest-burning-biodiversity-amazon>
“Study Shows Impacts of Deforestation And Forest Burning On Biodiversity In The Amazon”
BIO5 Institute News

<https://bio5.org/news/hydrogen-project-awarded-5m-model-national-water-resources-using-machine-learning-1> “HydroGEN Project Awarded \$5M To Model National Water Resources Using Machine Learning” BIO5 Institute News

<https://bio5.org/news/cyverse-welcomes-new-project-leader-eric-lyons> “CyVerse Welcomes New Project Leader Eric Lyons” BIO5 Institute News

<https://www.nvidia.cn/on-demand/session/iscdigital2021-iscd2102/> &

<https://www.youtube.com/watch?v=hanqTQui498> “Leveraging AI and NVIDIA GPUs to Advance Research in Crop Production”

<https://resources.nvidia.com/en-us-ngc/ngc-uofa-success-story?lx=699wyX> “NVIDIA University of Arizona Success Story”

<https://resources.nvidia.com/en-us-ngc/ngc-simplifying-and-accelerating-hpc-workflows?lx=699wyX> “NVIDIA GPU Cloud Simplifying and Accelerating HPC Workflows”

2020

<https://cyverse.org/new-cyverse-node-brings-easier-collaboration-to-austrian-scientists> “New CyVerse Node Brings Easier Collaboration to Austrian Scientists”

<https://www.youtube.com/watch?v=da2gKRdMeXY> “This 30-Ton Robot Could Help Scientists Produce the Crops of the Future” Wall Street Journal

2019

<https://www.xsede.org/-/ecss-program-accelerates-xsede-user-s-career-in-geoinformatics> “ECSS Program Accelerates XSEDE User’s Career in Geoinformatics”

2018

<https://cyverse.org/Observing-Ecology-with-CyVerse-Atmosphere> “Observing Ecology with CyVerse Atmosphere”

<https://borderlore.org/the-culture-of-wildfire-perceptions-practices-policies/> “The Culture of Wildfire: Perceptions, Practices, Policies”

<https://cyverse.org/CyVerse-Hosts-2018-Earth-Science-Information-Partners> “CyVerse Hosts 2018 Earth Science Information Partners”

<https://bio5.org/news/summer-interns-work-drone-datasets-rna-analyses-0> - “Summer Interns Work With Drone Datasets, RNA Analyses” BIO5 Institute News

2017

<https://www.azpm.org/s/49986-mountain-forests-capture-carbon-from-atmosphere/> “Carbon Capture from Trees? It’s All Downhill From Here, Study Says” Arizona Public Media

<https://bio5.org/news/how-mountains-hold-carbon-and-do-good-job-it-2> “How Mountains Hold Carbon (And Do A Good Job of It)” BIO5 Institute News

<https://sciencenode.org/feature/riding-the-jetstream-to-the-treetops.php> “Riding the Jetstream to the treetops” Science Node

PROFESSIONAL SERVICE (EXTERNAL)

Professional Society Memberships

United States

- American Geophysical Union (AGU)
- Association for Fire Ecology (AFE)
- Critical Zone Exploration Network (CZEN)
- Ecological Society of America (ESA)

Journal Reviewer

International

- Canadian Journal of Forest Research
- Ecological Applications
- International Journal of Wildland Fire
- Journal of Environmental Informatics
- PLOS One
- Remote Sensing
- Remote Sensing of Environment
- Science of The Total Environment

Grant Panelist

United States

- USDA National Institute of Food & Agriculture (NIFA)
- NSF Computer Information & Science Engineering (CISE)
- NSF Division of Biological Infrastructure (DBI)

Working Groups

The Carpentries

2017-Present

Instructor & Lesson Maintainer

Earth Science Information Partners (ESIP)

2019-Present

CyVerse Representative

NASA Transform Open Science (TOPS)

5/2022

Subject Matter Expert, Open Source Tools & Data

NSF CI-Compass <i>Cloud Infrastructure Working Group Member</i>	2019-Present
NSF Macrosystems: Forest Resilience <i>Working Group Member, NSF Award DEB 2017889</i>	2023-Present <i>Boulder, CO</i>
NSF National Ecological Observatory Network (NEON) <i>Lidar Technical Working Group Member</i>	2018-2022
NSF NEON Science Summit <i>Working Group Member, NSF Award DBI 1906144</i>	5/2019
NSF EarthCube <i>Standing Committee Member</i>	2017-2019

PROFESSIONAL SERVICE (UNIVERSITY OF ARIZONA)

Arizona Board of Regents Technology & Research Initiative Fund (TRIF) <i>Grant Review Panelist</i>	2022-Present
BIO5 Institute Promotion Standing Committee <i>Panelist</i>	2022-Present
BIO5 Institute KEYS Summer Internship Program <i>Student Mentor</i>	2019-Present
Data Science Institute Resource & Training <i>Steering Committee Member</i>	2019-Present
Research Bazaar Arizona <i>Steering Committee Member</i>	2018-Present

TEACHING & MENTORSHIP

Technical Workshops

CyVerse: Introduction to LLMs & ChatGPT <i>Data Science Institute, University of Arizona</i>	2023-Present <i>Tucson, AZ</i>
The Carpentries <i>Data Carpentry & Software Carpentry Core</i>	2018-Present <i>Tucson, AZ</i>
CyVerse: Foundational of Open Science Skills <i>Cyberinfrastructure, reproducible research, data science</i>	2019-Present <i>Tucson, AZ & Virtual</i>
CyVerse: Container Camp <i>reproducible research, Docker, Kubernetes, Singularity</i>	2018-Present <i>Tucson, AZ & Virtual</i>
CyVerse: Technical Overview <i>Technical University of Graz</i>	11/2019 <i>Graz, Austria</i>
CyVerse: Technical Overview <i>Battelle Inc. NEON Science</i>	2/2019 <i>Boulder, Colorado</i>
CyVerse: AstroContainers <i>Event Horizon Telescope (EHT) PIRE, NSF Award OISE 1743747</i>	5/2018 <i>Tucson, AZ</i>
Macrosystems Forest Resilience <i>Cyberinfrastructure, Working Group, NSF Award DEB 2017889</i>	2023-Present <i>Boulder, Colorado</i>
Research Insights in Semi-Arid Ecosystems (RISE) Conference <i>NEON Airborne Observation Platform Data Analyses</i>	2020-2022 <i>Tucson, AZ & Virtual</i>
Sensing the Earth II <i>Tribal College Faculty Data Science Experience, ESHIL</i>	11/2022 <i>Haskell Indian Nations University, Kansas</i>
Translational AI Center (TrAC) Training <i>Machine Learning in Python</i>	4/2022 <i>Iowa State University & Virtual</i>

University Credit

Introduction to Wildland Fire

RNR 355/455

Introductory Biology (Lab)

ECOL 181L/182L

Fall 2006-2008

University of Arizona

Fall, Spring, Summer 2005-2006

University of Arizona

Guest Lectures

Introduction to Wildland Fire

RNR 355/455

Open Source GIS

GIST604B

KEYS High School Intern Program

BIO5 Institute

Fire in Ecosystem Management

M-580 National Advanced Fire & Resource Institute (NAFRI)

Ecological Forecasting

GEOG 595E

Artificial Intelligence for Health Medicine

SIE578

Data Institute on Reproducible Workflows

NEON AOP Summer Workshop

Resource Mapping

RNR422/522

Remote Sensing

GEOG330

Spring 2023

University of Arizona

11/2018-Present

University of Arizona

6/2019-Present

University of Arizona

1/2018-Present

Tucson, AZ

9/2019

University of Arizona

2/2019

University of Arizona

7/2018

Boulder, CO

8/2015 - 5/2017

University of Arizona

10/2017

University of Arizona

STUDENT ADVISING, MENTORING, SUPERVISORY

Postdoctoral Researchers: R. Bartelme (2020-2021), M. Culshaw-Maurer (2021-2022)

Graduate Mentoring & or Supervisor: L. Carpenter (Masters-GIST, 2012), J. Kennedy (Masters-GIST, 2014), A. Ruff (Masters-GIST, 2017), A. Brischke (MS, School of Natural Resources and Environment, 2015), S. Hendryx (MS, Geography, 2017), J. Gillan (PhD, School of Natural Resources and Environment, 2019), P.L. Narayan (MS, Computer Science, 2018), D. Slovikosky (MS, Computer Science, 2018), B. LaSala (MS, Mining and Geological Engineering, 2020), J. Lindsay (MS, Computer Science, 2021), D. Somasundaram (MS, Information Science, 2024), N. Jain (MS, Eller College of Management, 2024), B. Mani (MBA, MIS Eller College of Management, 2025)

Undergraduate Advising: J. Mack (NASA Space-Grant intern, 2010), D. Wilcox (NASA Space-Grant intern, 2014), N. Callahan (Computer Science, 2016), K. Pope (NSF UWIN, 2017), C. Prigge (Computer Science, 2021), V. Mehta (Computer Science 2020), J. van der Leeuw (Computer Science Mathematics, 2021), K. Henry (Computer Science, 2021), A. Bande (Data Science, Statistics, 2022), S. Jackson (Computer Science, Mathematics, 2023), I. Ale (Computer Science, 2023), E. Hagyard (Software Engineering, 2023), E. Schillinger (Computer Science, 2025)

High School Mentoring: D.S. Lee (BASIS Oro Valley High School, 2018), E. Joshi (KEYS, BASIS Oro Valley High School, 2020), S. Ramkumar (KEYS, Hamilton High School, 2021), E. LeRoy

(KEYS, University High School, 2022), E. Dorland (KEYS, City High School, 2023), A. Noor (KEYS, University High School, 2023), D. Patel (KEYS, BASIS High School Scottsdale, 2024), A. Kar (KEYS, Mountain Ridge High School, Glendale, 2025)