

# Tyson Lee Swetnam, Ph.D.

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## EDUCATION

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<b>School of Natural Resources &amp; Environment, The University of Arizona</b>	2013
<i>Doctor of Philosophy, Watershed Management</i>	<i>Tucson AZ</i>
<ul style="list-style-type: none"><li>• Remote Sensing &amp; Spatial Analysis Minor</li><li>• Dissertation “Cordilleran forest scaling dynamics &amp; disturbance regimes quantified by aerial lidar”</li></ul>	
<b>School of Natural Resources &amp; Environment, The University of Arizona</b>	2006
<i>Master of Science, Watershed Management</i>	<i>Tucson AZ</i>
<ul style="list-style-type: none"><li>• GIS Technical Certificate</li><li>• Thesis “Fire Regime Condition Class Accuracy: A comparison to tree-ring fire histories”</li></ul>	
<b>Ecology &amp; Evolutionary Biology, The University of Arizona</b>	2002
<i>Bachelor of Science, Watershed Management</i>	<i>Tucson AZ</i>

## APPOINTMENTS

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<b>Research Associate Professor of Geoinformatics</b>	7/2023 - Present
<i>BIO5 Institute, University of Arizona</i>	<i>Tucson, AZ</i>
<ul style="list-style-type: none"><li>• Jointly Appointed, School of Natural Resources &amp; Environment</li></ul>	
<b>Research Assistant Professor of Geoinformatics</b>	1/2019 - 6/2023
<i>BIO5 Institute, University of Arizona</i>	<i>Tucson, AZ</i>
<b>Science Analyst II, CyVerse</b>	9/2016 - 12/2018
<i>BIO5 Institute, University of Arizona</i>	<i>Tucson, AZ</i>
<b>Associate Research Scientist</b>	7/2015 - 8/2016
<i>School of Natural Resources &amp; Environment, University of Arizona</i>	<i>Tucson, AZ</i>
<b>Research Associate</b>	1/2015 - 7/2015
<i>Department of Geology &amp; Geophysics, University of Utah</i>	<i>Tucson, AZ</i>
<b>Postdoctoral Associate</b>	1/2014 - 12/2014
<i>Department of Geology &amp; Geophysics, University of Utah</i>	<i>Salt Lake City, UT</i>
<b>Graduate Research Assistant</b>	6/2012 - 12/2013
<i>School of Natural Resources &amp; Environment, University of Arizona</i>	<i>Tucson, AZ</i>
<b>Fire Management Specialist</b>	6/2008 - 5/2012
<i>Coronado National Forest Supervisor's Office, USDA Forest Service</i>	<i>Tucson, AZ</i>

## PUBLICATIONS

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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):e03833. 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. Hessler & C. Farris (2011) Reconstructing landscape pattern of historic fires and fire regimes. In *The Landscape Ecology of Fire*, editors D MacKenzie, DA 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

\*based on work done as a graduate student.

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#### *UNPUBLISHED & IN-REVIEW*

#### *PRE-PRINTS*

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

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#### *INTERNAL REVIEWED*

#### *THESES, PROCEEDINGS, WORKING PAPERS, & TECHNICAL REPORTS*

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/treesearch/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 Pinaleño 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.)

\*based on work done as a graduate student.

## *RESEARCH GRANTS*

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### *CURRENT*

ABOR TRIF \$122,228 (total \$900,000) 11/18/2022 - 1/31/2026, "Wildland Urban Interface (WUI): Fire Fuel Mitigation" Site Principal Investigator (UArizona Sub-Awardee). Lead Cyberinfrastructure Team. 2% effort.

NSF DBI-2153040 \$1,457,000 (total \$19,999,990) 8/1/22 - 7/31/27, "Environmental Data Science Innovation & Inclusion Lab (ESIIL): Accelerating Discovery by Fostering an Open & Diverse Earth Data Revolution" Site Principal Investigator (UArizona Sub-Awardee). Supervisory Lead Cyberinfrastructure Team. 15% effort.

NSF DBI-2152673 \$45,844 total, 9/1/22 - 8/31/25, "Collaborative Research: High-Resolution Aerial Forest Mapping Infrastructure & Database to Support Forest & Disturbance Ecology Research" Principal Investigator, Supervisory Lead Cyberinfrastructure Team. 2% effort.

USDA NIFA 2021-67021-35329 \$1,300,222 total, 9/1/21 - 8/31/26, "AIIRA: AI Institute for Resilient Agriculture" Senior Personnel, Lead Cyberinfrastructure Liaison. 5% effort.

NSF ITE-2134892 \$5,000,000 total, 10/1/21 - 9/30/23, "Track D: Hidden Water & Extreme Events: HydroGEN, A Physically Rigorous Machine Learning Platform for Hydrologic Scenario Generation" Senior Personnel, Cyberinfrastructure Liaison. 5% effort.

NSF AGS-2054516 \$143,148 total, 6/1/21 - 5/31/23, "Collaborative Research: OpenDendro - Advanced Open-source Tools for Paleoenvironmental Reconstruction" Co-Principal Investigator, Supervisory Lead Data Science & Software Engineering. 18% effort.

NSF DBI-1743442 \$14,999,752 total, 8/1/18 - 7/31/23, "CyVerse: Cyberinfrastructure for the Life Sciences" Co-Principal Investigator, Supervisory Lead Data Science & Education & Outreach Teams. 50% effort.

USDA NIFA 2020-68013-30934, \$497,481 total, 6/1/20 - 5/31/23, "High Intensity Phenotyping Sites: A Multi-Scale Multi-Modal Sensing & Sense-Making Cyber-Ecosystem for Genomes to Fields" Senior Personnel, Cyberinfrastructure Liaison. 5% effort.

USDA NIFA 2019-67021-29938, \$499,927 total, 9/1/19 - 8/31/22, “FACTS: A Scalable Cyber Ecosystem for Acquisition, Curation, & Analysis of MultiSpectral UAV Image Data” Senior Personnel, Cyberinfrastructure Liaison. 5% effort.

*PRIOR & COMPLETED*

University of Arizona Internal, State of Arizona TRIF, \$72,000, 11/1/21 - 8/31/22, “Assessing the Climate Change Mitigation Potential of Diverse Vegetation Types in the Pinaleno Mountains, Arizona” Co-Principal Investigator, CyberInfrastructure Liaison. 2% effort.

NSF DMS-1839307, \$199,859 total, 10/1/18 - 7/31/22, “TRIPODS+X:VIS: Data Science Pathways for a Vibrant TRIPODS Commons at Scale” Senior Personnel, Coordinator & Contributor. 2% effort.

NSF DBI-1940062, \$483,022 total, 10/1/19 - 7/31/22, “Collaborative Research: Converging Genomics, Phenomics, & Environments Using Interpretable Machine Learning Models” Co-Principal Investigator, Supervisor CyberInfrastructure Team” Co-Principal Investigator, Supervisory Lead CyberInfrastructure Team. 18% effort.

NSF ITE-2040542, \$1,000,000 total, 9/15/20 - 5/31/22, “NSF Convergence Accelerator - Track D: Hidden Water & Hydrologic Extremes: A Groundwater Data Platform for Machine Learning & Water Management” Senior Personnel, CyberInfrastructure Liaison. 5% effort.

Nature Conservancy, \$19,500 total, 7/30/19 - 12/31/2020, “Jemez River Corridor Forest Inventory” Principal Investigator, Lead. 5% effort.

USDA NIFA 2022-13610-012-07S, \$449,025 total, 1/1/15 - 12/31/20, “LTAR-NEON Collaboration to Quantify Rangeland Vegetation Production” Senior Personnel, Postdoctoral Researcher. 100-0% effort over time.

Bureau of Land Management, \$250,000 total, 7/7/16 - 3/26/20, “CESU Lower Gila River Vegetation Mapping” Senior Personnel, GIS consultant. 5% effort.

Arizona Game & Fish Department, \$10,000 total, 8/1/16 - 8/31/17, “Remote Sensing Support & Consultation for Evaluation of Wolf Habitat Suitability in Mexico & Southwestern United States” Principal Investigator, Lead. 10% effort.

Pima County Regional Flood Control District, \$17,186 total. 9/1/12 - 8/31/13, “Sediment Transport Analysis & Assessment of Vegetation Characteristics in the Santa Cruz River” Co-Principal Investigator, Graduate Student. 15% effort.

USDA NIFA ARZT-1392420-M12-183, 7/1/08 - 12/31/12, “Multi-scale controls on wildland fire in mountains of Western North America” Senior Personnel, Graduate Student. 100% effort.

Pima County Ecological Monitoring Program, \$2,500 total. 1/1/13 - 9/30/13, “Analysis of aerial lidar in the Santa Cruz River & Cienega Creek” Principal Investigator, Lead. 15% effort.

Bureau of Land Management National Interagency Fuels Team, \$81,000 total. 8/31/04 - 7/30/06, “Reference Conditions for Fire Regime Condition Class” Co-Principal Investigator, Graduate Student. 100% effort.

## AWARDS & HONORARIUM

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<b>Research Advancement Award, \$78,000</b>	1/2022
<i>Arizona Board of Regents (ABOR) Technology Research Initiative Fund (TRIF)</i>	
<b>Equipment Improvement Award, \$53,000</b>	7/2019
<i>ABOR TRIF Water, Environmental, &amp; Energy Solutions (WEES)</i>	
<b>NSF EarthCube Travel Award, \$1,500</b>	7/2014
<i>Arizona Geological Society, NSF ICER #1340233</i>	
<b>Scholarly Achievement Award</b>	5/2014
<i>School of Natural Resources &amp; Environment, University of Arizona</i>	
<b>Kel M. Fox Award Outstanding Graduate in Watershed Management, \$500</b>	9/2012
<i>School of Natural Resources &amp; Environment, University of Arizona</i>	
<b>President's award: Best Graduate Exhibit</b>	12/2009
<i>UA Graduate &amp; Professional Student Council</i>	
<b>Graduate Teaching Assistant of the Year</b>	5/2009
<i>School of Natural Resources &amp; Environment, University of Arizona</i>	

## CONFERENCE PROCEEDINGS & PRESENTATIONS

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\* invited

- \*Swetnam, T.L. (2023) "Working with cloud-optimized, and analysis-ready data formats on the cloud" Planet Labs UArizona Kick-Off, UArizona, Tucson AZ Feb 14
- \*Swetnam, T.L. (2023) "A not-so-gentle introduction to Cloud Computing for Forest Resiliency Science" NSF Macrosystems Forest Resiliency Working Group, CU Boulder, Feb 13
- \*Swetnam, T.L. (2023) "Foundational Open Science Skills" Plant and Animal Genome 30, San Diego, CA Jan 14
- \*Swetnam, T.L., C. Lizarraga (2022) "Introduction to Cloud Native & Analysis Ready Data Formats" Arizona Geospatial Information Council Meeting, Prescott AZ Sept 2
- \*Swetnam, T.L. (2022) "Arizona Society for Range Management: Cloud Native Science" V-V Ranch, Arizona. August 4
- \*Swetnam, T.L. (2022) "CyVerse DataCite Overview" Data Cite User Group, Virtual. May 4
- \*Swetnam, T.L., & E. Skidmore (2022) "CyVerse: Cyberinfrastructure for Data Driven Discovery. Open Source Science for ESO Mission Processing Study" Jet Propulsion Laboratory, NASA. Virtual, Mar 4
- \*Swetnam, T.L., (2022) "CyVerse: Cyberinfrastructure for Data Driven Discovery" CyberInfrastructure 4 Major Facilities (CI4MFs) 2022, Redondo Beach, CA Mar 1
- Wbley, 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, New Orleans, LA, 8 Dec.
- \*Swetnam, T.L., (2021) "The Airborne Environmental Observations Laboratory for Unoccupied Systems (AEOLUS)" Research Insights in Semi-Arid Ecosystems (RISE), Tucson AZ, 17 Oct
- \*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” ESA Annual Meeting (August 3-6)

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

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, Virtual. Jul 2

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

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.L., R. Walls & N. Merchant (2017) “CyVerse Data Commons: Lessons learned in cyberinfrastructure management & data hosting from the Life Sciences” AGU Fall Meeting 2017, San Francisco CA

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.

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## *MEDIA*

### **2023**

<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](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

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## **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

<b>The Carpentries</b>	2017-Present
<i>Instructor &amp; Lesson Maintainer</i>	
<b>Earth Science Information Partners (ESIP)</b>	2019-Present
<i>CyVerse Representative</i>	
<b>NASA Transform Open Science (TOPS)</b>	5/2022
<i>Subject Matter Expert, Open Source Tools &amp; Data</i>	
<b>NSF CI-Compass</b>	2019-Present
<i>Cloud Infrastructure Working Group Member</i>	
<b>NSF Macrosystems: Forest Resilience</b>	2023-Present
<i>Working Group Member, NSF Award DEB 2017889</i>	Boulder, CO
<b>NSF National Ecological Observatory Network (NEON)</b>	2018-2022
<i>Lidar Technical Working Group Member</i>	
<b>NSF NEON Science Summit</b>	5/2019
<i>Working Group Member, NSF Award DBI 1906144</i>	
<b>NSF EarthCube</b>	2017-2019
<i>Standing Committee Member</i>	

## PROFESSIONAL SERVICE (UNIVERSITY OF ARIZONA)

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

## TEACHING & MENTORSHIP

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### Technical Workshops

<b>The Carpentries</b>	2018-Present
<i>Data Carpentry &amp; Software Carpentry Core</i>	Tucson, AZ
<b>CyVerse: Foundational of Open Science Skills</b>	2019-Present
<i>Cyberinfrastructure, reproducible research, data science</i>	Tucson, AZ & Virtual
<b>CyVerse: Container Camp</b>	2018-Present
<i>reproducible research, Docker, Kubernetes, Singularity</i>	Tucson, AZ & Virtual
<b>CyVerse: Technical Overview</b>	11/2019
<i>Technical University of Graz</i>	Graz, Austria
<b>CyVerse: Technical Overview</b>	2/2019
<i>Battelle Inc. NEON Science</i>	Boulder, Colorado
<b>CyVerse: AstroContainers</b>	5/2018
<i>Event Horizon Telescope (EHT) PIRE, NSF Award OISE 1743747</i>	Tucson, AZ
<b>Macrosystems Forest Resilience</b>	2023-Present
<i>Cyberinfrastructure, Working Group, NSF Award DEB 2017889</i>	Boulder, Colorado
<b>Research Insights in Semi-Arid Ecosystems (RISE) Conference</b>	2020-2022
<i>NEON Airborne Observation Platform Data Analyses</i>	Tucson, AZ & Virtual

<b>Sensing the Earth II</b>	11/2022
<i>Tribal College Faculty Data Science Experience, ESIL</i>	<i>Haskell Indian Nations University, Kansas</i>
<b>Translational AI Center (TrAC) Training</b>	4/2022
<i>Machine Learning in Python</i>	<i>Iowa State University &amp; Virtual</i>
<b>University Credit</b>	
<b>Introduction to Wildland Fire</b>	Fall 2006-2008
<i>RNR 355/455</i>	<i>University of Arizona</i>
<b>Introductory Biology (Lab)</b>	Fall, Spring, Summer 2005-2006
<i>ECOL 181L/182L</i>	<i>University of Arizona</i>
<b>Guest Lectures</b>	
<b>Introduction to Wildland Fire</b>	Spring 2023
<i>RNR 355/455</i>	<i>University of Arizona</i>
<b>Open Source GIS</b>	11/2018-Present
<i>GIST604B</i>	<i>University of Arizona</i>
<b>KEYS High School Intern Program</b>	6/2019-Present
<i>BIO5 Institute</i>	<i>University of Arizona</i>
<b>Fire in Ecosystem Management</b>	1/2018-Present
<i>M-580 National Advanced Fire &amp; Resource Institute (NAFRI)</i>	<i>Tucson, AZ</i>
<b>Ecological Forecasting</b>	9/2019
<i>GEOG 595E</i>	<i>University of Arizona</i>
<b>Artificial Intelligence for Health Medicine</b>	2/2019
<i>SIE578</i>	<i>University of Arizona</i>
<b>Data Institute on Reproducible Workflows</b>	7/2018
<i>NEON AOP Summer Workshop</i>	<i>Boulder, CO</i>
<b>Resource Mapping</b>	8/2015 - 5/2017
<i>RNR422/522</i>	<i>University of Arizona</i>
<b>Remote Sensing</b>	10/2017
<i>GEOG330</i>	<i>University of Arizona</i>

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#### *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)

**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)

**High School Mentoring:** D.S. Lee (BASIS Oro Valley High School, 2018), E. Joshi (BASIS Oro Valley High School, 2020), S. Ramkumar (Hamilton High School, 2021), E. LeRoy (University High, 2022)