Dr. Alex Dye, Faculty Research Associate, Oregon State University
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Curriculum Vitae

EDUCATION
2018   **Ph.D., Geography,** West Virginia University, Morgantown, WV

2013   **M.S., Geography**, University of Tennessee, Knoxville, TN

2011   **B.A., Geography**, Indiana University-Purdue University, Indianapolis, IN

PROFESSIONAL POSITIONS
04/20 –Present   **Faculty Research Associate**, Dept. of Forest Ecosystems and Society, Oregon State University, Corvallis, OR

05/18 – 03/20   **Oak Ridge Institute for Science and Education (ORISE) Postdoctoral Fellow**, Western Wildland Environmental Threat Assessment Center, Corvallis, OR

08/17 – 05/18   **Instructor**, Dept. of Geology & Geography, West Virginia University

01/14 – 08/17   **Graduate Research Assistant**, Dept. of Geology & Geography, West Virginia University

05/13 – 11/13   **GIS Analyst**, Big Thicket National Preserve, Saratoga, TX

08/11 – 05/13   **Graduate Teaching Assistant**, Dept. of Geography, University of Tennessee

PUBLICATIONS
Dye, A., M. Reilly, A. McEvoy, R. Lemons, K. Riley, J. Kim, and B. Kerns. Changing wildfire regimes for Pacific Northwest forests: new insights for the mid-21st century. *In Review at JGR: Biogeosciences*

Dye, A., P. Gao, J. Kim, T. Lei, K. Riley, and L. Yocom. 2023. High-resolution wildfire simulations reveal complexity of climate change impacts on projected burn probability for Southern California. *Fire Ecology* 19: 20. doi.org/10.1186/s42408-023-00179-2.

Tortorelli, C., J.B. Kim, N.M. Vaillant, K. Riley, **A. Dye,** T.C. Nietupski, K.C. Vogler, R. Lemons, M. Day, M.A. Krawchuk, and B.K. Kerns. 2023. Feeding the fire: annual grass invasion facilitates modeled fire spread across Inland Northwest forest-mosaic landscapes. *Ecosphere*. 14(2): e4413. doi.org/10.1002/ecs2.4413.

Reilly, M., A. Zuspan, J. Halofsky, C. Raymond, A. McEvoy, **A. Dye**, D. Donato, J. Kim, B. Potter, N. Walker, C. Dunn, D. Bell, M. Gregory, J. Johnston, B. Harvey, J. Halofsky, and B. Kerns 2022. Cascadia Burning: The historic, but not historically unprecedented, 2020 wildfires in the Pacific Northwest, USA. *Ecosphere*. 13(6): e4070. doi.org/10.1002/ecs2.4070.

Dye, A., J.B. Kim, A. McEvoy, F. Fang, and K. Riley 2021. Evaluating rural Pacific Northwest towns for wildfire evacuation vulnerability. *Natural Hazards*. 107(1): 911–935. doi.org/10.1007/s11069-021-04615-x.

C. Rollinson, M.R. Alexander, **A. Dye**, D.J.P. Moore, N. Pederson, and V. Trouet. 2020. Climate sensitivity of understory trees differs from overstory trees in temperate mesic forests. *Ecology* 102(3): e03264. doi.org10.1002/ecy.3264.

Dye, A.W., B. Rastogi, R. Samelson, R. Clemesha, J.B. Kim, C.S. Still, and A.P. Williams. 2020. Spatial patterns and trends of summertime low cloudiness for the Pacific Northwest, 1996-2017. *Geophysical Research Letters* e2020GL088121. doi.org/10.1029/2020GL088121.

Dye, A., J. Kim, and K. Riley. Spatial heterogeneity of winds during Santa Ana and non-Santa Ana wildfires in Southern California with implications for fire risk modeling 2020. *Heliyon* 6: e04159.

doi.org/10.1016/j.heliyon.2020.e04159.

Dye, A., and K.D. Woods. Growth and climate response of four new *Tsuga canadensis* (L.) Carrière (eastern hemlock) tree-ring chronologies from Michigan's Upper Peninsula 2019. *The Great Lakes Botanist* 58: 182-193. hdl.handle.net/2027/spo.0497763.0058.304.

Dye, A., M.R. Alexander, D. Bishop, D. Druckenbrod, N. Pederson, and A. Hessl. 2019. Size-growth asymmetry is not consistently related to productivity across an Eastern U.S. forest network. *Oecologia* 189: 515–528. doi.org/10.1007/s00442-018-4318-9.

Montane, F., A. Fox, A. Arellano, N. MacBean, M.R. Alexander, **A. Dye**, D. Bishop, V. Trouet, F. Babst, A. Hessl, N. Pederson, P. Blanken, G. Bohrer, C. Gough, M. Litvak, K. Novick, R. Phillips, J. Wood, and D. Moore. 2017. Evaluating the effect of alternative carbon allocation schemes in a land surface model on carbon fluxes, pools and turnover in temperate forests. *Geoscientific Model Development* 10: 3499–3517. doi.org/10.5194/gmd-10-3499-2017.

Rollinson, Christine, Y. Liu, A. Raiho, D. Moore, J. McLachlan, D. Bishop, **A. Dye**, J. Matthes, A. Hessl, T. Hickler, N. Pederson, B. Poulter, T. Quaife, K. Schaefer, J. Steinkamp, and M. Dietze. 2017. Emergent climate and CO_2 sensitivities of net primary productivity in ecosystem models do not agree with empirical data in temperate forests of eastern North America. *Global Change Biology* 23(7) : 2755-2767. doi.org/10.1111/gcb.13626.

Dye, A., A. Barker-Plotkin, D. Bishop, N. Pederson, B. Poulter, and A. Hessl. 2016. Comparing tree-ring and permanent plot estimates of aboveground net primary production in three Eastern U.S. forests. *Ecosphere* 7(9): e01454. doi.org/10.1002/ecs2.1454.

Grissino-Mayer, H.D., J.T. Maxwell, G.L. Harley, N.A. Garland, D.H. Holt, C. Absher, B.J. Beale, M.S. Boehm, K.A. de Graauw, A. Rautio, and **A.W. Dye.** Dendrochronology reveals the construction history of an early 19th century farm settlement, southwestern Virginia, USA. *Journal of Archaeological Science* 40: 481-489. doi.org10.1016/j.jas.2012.05.038.

RESEARCH SUPPORT

Forest Carbon Risk Rating Values and Methodologies. Role: co-PI, Duration: 2023-2025, State of California Air Resources Board, **$350,000**

Prototyping an Image-based Coastal Fog Detection Network. Role: co-PI, Duration: 2023-2024, Earth Science Information Partners, **$10,000**

Fog ecohydrology on the Oregon Coast: Testing and evaluation of a new micro-sensor array. Role: PI, Duration: 2023-2024, Oregon Sea Grant, **$10,000**

Foggy States: Which weather conditions create fog in the coastal Northwest? Role: PI, Duration: 2020–2021, Oregon State College of Forestry Mentored Employment Program, **$1,130.**

Simulating fire risk for Western United States Climate Change Scenarios. Role: co-PI, Duration: 2019–2020, Extreme Science and Engineering Discovery Environment (XSEDE), **$7,445.**

Developing long-term records of annual woody productivity for Upper Midwest old-growth forests using tree rings. Role: PI, Duration: 2016, Huron Mountain Wildlife Foundation, **$840.**

Comparing tree-ring and permanent plot estimates of aboveground net primary production in three eastern U.S. forests. Role: PI, Duration, 2016, West Virginia University Libraries Open Access Author Fund, **$1,500.**

PROFESSIONAL PRESENTATIONS

Young, K.S., P. Gao, **A.W. Dye**, J.B. Kim, J.A. Kupfer, K.L. Riley, and G.M. Sanchez. Effects of Climate change and urbanization on wildfire activity in a Florida-Georgia Area. Association of American Geographers Annual Meeting. March 2023, Denver, CO.

Dye, A.W. Climate change modifies future burn probability, size, and frequency of wildfires in Western Oregon and Washington. Oregon Post-Fire Research and Monitoring Symposium. February 7, 2023, Corvallis, OR.

Dye, A.W., P. Gao, J. Kim, K. Riley, and L. Yocom. Shifts in Southern California simulated burn probability by mid-century under 8 climate change scenarios. Association for Fire Ecology Congress. December 2, 2021.

Dye, A.W., J. Kim, A. McEvoy, F. Fang, and K. Riley. Identifying rural communities vulnerable to wildfire and evacuation risk. Ecological Society of America Annual Meeting. August 2, 2021.

Dye, A.W. Evaluating rural Pacific Northwest towns for evacuation vulnerability. Northwest Fire Science Consortium, Corvallis, OR. May 12, 2021. *INVITED.*

Dye, A.W., J. Kim, A. McEvoy, F. Fang, and K. Riley. Evaluating rural Pacific Northwest towns for wildfire evacuation vulnerability. Association of American Geographers Annual Meeting (Virtual). April 10, 2021.

Dye, A.W. Using web maps to visualize community wildfire vulnerability in Oregon and Washington. Department of Urban and Regional Planning, University of Illinois. April 5, 2021. *INVITED.*

Dye, A.W. Evaluating rural Pacific Northwest towns for evacuation vulnerability. Cascadia Innovation Corridor Wildfire and Urban Smoke Webinar series. March 31, 2021. *INVITED.*

Dye, A.W., B. Rastogi, R. Samelson, R. Clemesha, J.B. Kim, C.S. Still, and A.P. Williams. Observed summertime patterns in coastal low cloud frequency for the Pacific Northwest, 1996–2017. American Geophysical Union Annual Meeting (Virtual). December 10, 2020.

Dye, A.W., P. Gao, K.L. Riley, J.B. Kim, and L. Yocom. Calibrating the large-fire simulator FSim for Southern California. 8th International Fire Ecology and Management Congress, November 19–22, 2019, Tucson, AZ

Dye, A.W. Spatial and seasonal characteristics of summertime low cloudiness for the Pacific Northwest. Oregon State University Postdoctoral Research Symposium, October 2, 2019, Corvallis, OR

Dye, A.W., J.B. Kim, and K.L. Riley. An evaluation of alternative weather inputs on fire risk simulations in Southern California. 6th Intl Fire Behavior and Fuels Conference, April 30-May 3, 2019, Albuquerque, NM

Dye, A.W. Observed wind variability during southern California Santa Ana wildfires. Oregon State University Postdoctoral Research Symposium, October 4, 2020, Corvallis, OR

Alexander, M.R., C.R. Rollinson, **A.W. Dye**, D.J.P. Moore, V. Trouet, and N. Pedersn. Don't forget the little guys: Understory trees show dynamic climate sensitivity in northeastern U.S. forests. ESA Annual Meeting, August 5-10, 2018, New Orleans, LA

Dye, A., and K. Woods. Huron Mountain hemlocks: growth synchrony, disturbance, and regional context. Poster. Association of American Geographers Annual Meeting, April 10–13, 2018, New Orleans, LA

Dye, A., M.R. Alexander, N. Pederson, and A. Hessl. Large trees are primarily driving stand biomass accumulation. Association of American Geographers Annual Meeting, April 4–7, 2017, Boston, MA

Stetler, R., K. de Graauw, **A. Dye**, and A. Hessl. Exploring mesoscale disturbance in eastern North American forests using a tree-ring database. Poster. Association of American Geographers Annual Meeting, April 4–7, 2017, Boston, MA

Dye, A., M.R. Alexander, N. Pederson, and A. Hessl. Coupling tree rings and eddy covariance to estimate long-term above and below ground carbon storage at the stand level. Poster. American Geophysical Union Annual Meeting, December 2016, San Francisco, CA

Alexander, M.R., C. Rollinson, **A. Dye**, N. Pederson, D. Moore, and V. Trouet. Stand structure and composition provide differential tree-ring growth signals in eastern U.S. forests. American Geophysical Union Annual Meeting, December 2016, San Francisco, CA

Dawson, A., C. Paciorek, D. Moore, N. Pederson, A. Hessl**, A. Dye**, D. Bishop, R. Alexander, and J. McLachlan Reconstructing aboveground forest biomass increment uncertainty using tree-ring data. American Geophysical Union Annual Meeting, December 2015, San Francisco, CA.

Dye, A., A. Barker-Plotkin, D. Bishop, A. Hessl, N. Pederson, and B. Poulter. Calibrating alternative measurements of forest productivity. Poster. Association of American Geographers Annual Meeting, April 2015, Chicago, IL.

Pederson, N., D. Martin-Benito, D. Bishop, A. Dawson, M. Dietze, D. Druckenbrod, **A. Dye**, A. Gonzalez, A. Hessl, J. Martin Fernandez, J. McLachlan, C. Paciorek, B. Poulter, and J. Williams Emergent patterns of forest biomass production from across and within a micro-network. American Geophysical Union Annual Meeting, December 2014, San Francisco, CA.

Dye, A.W. Mapping New Species in Big Thicket (2013). Mercer Arboretum and Botanical Gardens, Humble, TX. *INVITED.*

Dye, A.W. Stand dynamics and fire history of a pine-hardwood forest at Rainy Mountain, Chattahoochee National Forest, Georgia. Poster. Association of American Geographers Annual Meeting, April 2013, Los Angeles, CA.

UNDERGRADUATE RESEARCH MENTORSHIPS
Which weather conditions create fog in the coastal Northwest?
Advisee: Lauren Zinkel, Oregon State University

Effects of climate and balsam woolly adelgid on growth of Canaan fir
Advisee: Morgan Leef, West Virginia University. Co-advised with Dr. Amy Hessl.

Understanding change in tree-ring growth over time without using method of detrending* Advisee: Emily Bushman, West Virginia University. Co-advised with Dr. Amy Hessl
*Won 1st place in Agricultural and Environmental Sciences category at WVU Summer Undergraduate Research Symposium

Developing records of annual woody productivity for Upper Midwest old growth forests Advisees: Lynsey Blackburn, West Virginia University. Co-advised with Dr. Amy Hessl.

Comparing estimates of net primary productivity in a lowland evergreen forest
Advisee: Julianne Liebenguth, West Virginia University Co-advised with Dr. Amy Hessl.

TEACHING EXPERIENCE
Instructor
Topics in Wildland Fire (FOR346), Oregon State University (Spring 2021)

Introduction to Physical Geography (GEOG107), West Virginia University (Summer 2016, Spring 2017, Spring 2018)

Physical Geography Laboratory (GEOG 106), West Virginia University (Fall 2015, Fall 2016)

Teaching Assistant
Earth Science in the Digital Age, West Virginia University (Spring 2018). Lead Instructor: Dr. Amy Hessl

Environmental Field Practicuum, West Virginia University (Fall 2017). Lead Instructor: Dr. Amy Hessl

Geography of the Natural Environment: Weather, Climate, and Biomes (GEOG131), University of Tennessee (Fall 2011, Fall 2012). Lead Instructor: Dr. Grant Harley

Geography of the Natural Environment: Geomorphology and Soils (GEOG132), University of Tennessee (Spring 2013). Lead Instructor: Dr. Derek Martin.

Biogeography (GEOG435), University of Tennessee (Spring 2012). Lead Instructor: Dr. Sally Horn

RESEARCH TECHNIQUES

Data analytics
-Retrieval and organization of large spatiotemporal datasets, e.g. International Tree-Ring Databank, ASOS meteorological data, Remote Access Weather Stations (RAWS) fire weather data, U.S. Census Bureau/Department of Homeland Security demographic datasets, eddy covariance (NEON, Ameriflux), GridMet, and PRISM
-Statistical analysis in R, e.g. regression, hierarchical clustering, EOF analysis, point pattern analysis, bias correction, time series, circular statistics
-Geographic analysis software (QGIS and ArcMap), e.g. model builder, spatial modeling, network analysis, and raster analysis
-Analysis of large remote sensing datasets (e.g. GOES, MODIS)
-U.S. Forest Service suite of fire modeling software: FSim, FlamMap, WindNinja, FARSITE, FireFamily+, and Behave
-Version control using GitHub
-Box, Dropbox, Open Science Framework

Data visualization
-Cartography - QGIS, ArcGIS, and R (e.g. ggplot2, raster, sp packages)
-Advanced plotting in R (ggplot2, base graphics, Shiny)

Ecological Field Work
-Forestry plot inventory (tree diameters, canopy position, species id)
-Live and dead biomass mapping
-Tree coring for dendroecological analysis
-Historical structure sampling for dendroarchaeological analysis
-Advanced navigational experience in remote settings (e.g. map and compass and GPS)
-Comprehensive species inventory (in support of Big Thicket Natl Preserve All-Taxa Biodiversity Inventory Program) for fungi, mussels, lichens, and plants
-Freshwater stream sampling for acidity and salinity
-Extensive experience in U.S. Northeast, Midwest, and Southeast regions

SERVICE

Academic service
-Associate Editor, *Fire Ecology*

-Special Session Coordinator:
"Wildfire simulation under future climate change: methods and applications. 9th International Fire Ecology and Management Congress, Association for Fire Ecology, November 2021.

-Peer Reviewer
Agricultural and Forest Meteorology, Canadian Journal of Forest Research, Environmental Research Letters, Fire Ecology, Forest Ecology and Management, Forest Ecosystems, Forests, Intl Journal of Disaster Risk Reduction, Intl Journal of Wildland Fire, Sustainability

-Montane Forest Dynamics Laboratory Meeting Coordinator. WVU (08/2016–05/2017)

-Department of Geology & Geography e-testing coordinator. WVU (08/2016–12/2016)

Media outreach
"When to Flee a Wildfire: A New Interactive Map Ranks Rural Communitites in Washington and Oregon for Wildfire Evacuation Vulnerability" Forbes, August 9, 2021. Article by Rebecca Coffey

"Records of the Rings: An ancient archive informs the future" Huron Mountain Wildlife Foundation Newsletter, Summer 2019. Article by Jill Riddell