

Loren P. Albert
Curriculum vitae

ORCID: 0000-0002-9674-6071

EDUCATION

- Ph.D. Ecology and Evolutionary Biology, University of Arizona, December 2016.
Dissertation: From leaves to ecosystems: resolving the responses of evergreen forests to seasonality.
Committee: Scott R. Saleska (co-advisor), Travis E. Huxman (co-advisor),
Russell K. Monson, David D. Breshears, Greg A. Barron-Gafford
- B.A. Biology, Reed College, 2007.

PROFESSIONAL EXPERIENCE

- 2020–Present Assistant Professor, Department of Biology, West Virginia University,
Morgantown, WV
- 2017–2020 Voss Postdoctoral Research Associate, Institute at Brown for Environment &
Society, Brown University, Providence, RI
- 2007–2010 Research Associate, Ecology and Evolutionary Biology Department, Rice
University, Houston, TX

PUBLICATIONS

20. Porcar-Castell, A., Malenovský, Z., Magney, T., Van Wittenberghe, S., Fernández-Marín, Maignan, F., Zhang, Y., Maseyk, K., Atherton, J., **Albert, L. P.**, Robson, T. M., Zhao, F., Garcia-Plazaola, J-I., Ensminger, I., Rajewicz, P. A., Grebe, S., Tikkanen, M., Kellner, J. R., Ihalainen, J. A., Rascher, U., Logan, B. (2021). Chlorophyll-*a* fluorescence: illuminating the path connecting plant molecular biology to Earth-system science. *Nature Plants* 7: 998-1009.
19. Restrepo-Coupe, N., **Albert, L. P.**, Baker, I., Longo, M., Levine, N., Mercado, L., Araujo, A., Christoffersen, B., Costa, M. H., Fitzgarrald, D., Galbraith, D., Imbuzeiro, H., Malhi, Y., von Randow, C., Xubin, Z., Moorcroft, P., Saleska, S. (2021). Understanding water and energy fluxes in the Amazonia: Lessons from an observation-model intercomparison. *Global Change Biology* 27(9): 1802-1819.
18. Ely, K. S., Rogers A., Agarwal, D. A., Ainsworth, E. A., **Albert, L. P.**, Ali, A., Anderson J., Aspinwall, M. J., Bellasio, C., Bernacchi, C., Bonnage, S., Buckley, T. N., Bunce, J., Burnett, A. C., Busch, F. A., Cavanagh, A., Cernusak, L. A., Crystal-Ornelas, R., Damerow, J., Davidson, K. J., De Kauwe, M. G., Dietze, M. C., Domingues, T. F., Dusenage, M. E., Ellsworth, D. S., Evans, J. R., Gauthier, P. P. G., Gimenez, B. O., Gordon, E. P., Gough, C. M., Halbritter, A. H., Hanson, D. T., Heskell, M., Hogan, J. A.,

- Hupp, J. R., Jardine, K., Kattge, J., Keenan T., Kromdijk, J., Kumarathunge, D. P., Lamour, J., Leaky, A. D. B., LeBauer, D. S., Li, Q., Lundgren, M. R., McDowell, N., Meacham-Hensold, K., Medlyn, B. E., Moore, D. J. P., Negrón-Juárez, R., Niinemets, Ü., Osborne, C. P., Pivovarov, A. L., Poorter, H., Reed, S. C., Ryu, Y., Sanz-Saez, A., Schmiege, S. C., Serbin, S. P., Sharkey, T. D., Slot, M., Smith, N. G., Sonawane, B. V., South, P. F., Souza, D. C., Stinziano, J. R., Stuart-Haëntjens, E., Taylor, S. H., Tejera, M. D., Uddling, J., Vandvik, V., Varadharajan, C., Walker, A. P., Walker, B. J., Warren, J. M., Way, D. A., Wolfe, B. T., Wu, J., Wullschlegel, S. D., Xu, C., Yan, Z., Yang, D. (2021). A reporting format for leaf-level gas exchange data and metadata. *Ecological Informatics* 61: 101232.
17. **Albert, L. P.**, Restrepo-Coupe, N., Smith, M., Wu, J., Chavana-Bryant, C., Prohaska, N., Taylor, T., Martins, G., Ciais, P., Mao, J., Arain, A., Li, W., Shi, X., Ricciuto, D., Huxman, T. E., McMahon, S. M., Saleska, S. R. (2019). Cryptic phenology in plants: case studies, implications and recommendations. *Global Change Biology* 25(11): 3591-3608.
 16. Wu, J., Rogers, A., **Albert, L. P.**, Ely, K., Prohaska, N., Wolfe, B. T., de Oliveira Junior, R. C., Saleska, S. R., Serbin, S. (2019). Leaf reflectance spectroscopy captures variation in carboxylation capacity across species, canopy environment, and leaf age in lowland moist tropical forests. *New Phytologist* 224(2): 663-674.
 15. Kellner, James R., **Albert, L. P.**, Burley, John T., Cushman, Katherine C. (2019). The case for remote sensing of individual plants. *American Journal of Botany* 106(9): 1–4.
 14. **Albert, L. P.**, Cushman, K. C., Allen, D. W., Zong, Y., Alonso, L., Kellner J. R. (2019). Stray light characterization in a high-resolution imaging spectrometer designed for solar-induced fluorescence. Proc. SPIE 10986, Algorithms, Technologies, and Applications for Multispectral and Hyperspectral Imagery XXV, 109860G (14 May 2019).
 13. Foisy, M., **Albert, L. P.**, Hughes, D., Weber, M. (2019). Do latex and resin plant defenses spur diversification? Reexamining an early hypothesis of escape and radiate coevolution. *Journal of Ecology* 107: 1606-1619.
 12. **Albert, L. P.**, Wu, J., Prohaska, N., Barbosa de Camargo, P., Huxman, T. E., Tribuzy, E. S., Ivanov, V. Y., Oliveira, R. S., Garcia, S., Smith, M., de Oliveira Junior, R. C., Restrepo-Coupe, N., da Silva, R., Stark, S. C., Martins, G., Penha, D. V., Saleska, S. R. (2018). Age-dependent leaf function and consequences for crown-scale carbon uptake during the dry season in an Amazon evergreen forest. *New Phytologist* 219(3): 870-884.
 11. Wu, J., Serbin, S., Xu, X., **Albert, L. P.**, Chen, M., Meng, R., Saleska, S., Rogers, A. (2017). The phenology of leaf quality and its within-canopy variation are essential for accurate modeling of photosynthesis in tropical evergreen forests. *Global Change Biology* 23(11): 4814-4827.
 10. **Albert, L. P.**, Keenan, T. F., Burns, S. P., Huxman, T. E., Monson, R. K. (2017). Climate controls over ecosystem metabolism: insights from a fifteen-year inductive synthesis for a high-elevation subalpine forest. *Oecologia* 184(1): 25-41.
 9. Xu, X., Medvigy, D., Wright, J., Kitajima, K., Wu, J., **Albert, L. P.**, Martins, G., Saleska, S. R., Pacala, S. (2017). Variations of leaf longevity in tropical evergreen moist forests predicted by a trait-driven carbon optimality model. *Ecology Letters* 20(9): 1097-1106.
 8. Restrepo-Coupe, N., Levine, N., Christoffersen, B. O., **Albert, L. P.**, Wu, J., Costa, M. H., Galbraith, D., Imbuzeiro, Hewlley., Martins, G., da Araujo, A. C., Malhi, Y. S., Zeng, X., Moorcroft, P., Saleska, S. R. (2017). Do dynamic global vegetation models capture the

- seasonality of carbon fluxes in the Amazon basin? A data-model intercomparison. *Global Change Biology* 23(1): 191-208.
7. Hilker, T., Soares Galvão, L., Aragão, L. E. O. C., Moura, Y. M., do Amaral, C. H., Lyapustin, A. I., Wu, J., **Albert, L. P.**, Ferreira, M. J., Anderson, L. O., dos Santos, V. A. H. F., Prohaska, N., Tribuzy, E., Ceron, J. V. B., Saleska, S. R., Wang, Y., Gonçalves, J. F. de Carvalho, de Oliveira Junior, R. C., Rodrigues, J. V. F. C., Garcia, M., N. (2017). Vegetation chlorophyll estimates in the Amazon from multi-angle MODIS observations and canopy reflectance model. *International Journal of Applied Earth Observation and Geoinformation* 58: 278–287.
 6. Wu, J., **Albert, L. P.**, Lopes, A. P., Restrepo-Coupe, N., Hayek, M., Wiedemann, K. T., Guan, K., Stark, S. C., Christoffersen, B., Prohaska, N., Tavares, J. V., Marostica, S., Kobayashi, H., Ferreira, M. L., Campos, K. S., Silva, R., Brando, P. M., Dye, D. G., Huxman, T. E., Huete, A. R., Nelson, B. W., Saleska, S. R. (2016). Leaf development and demography explain photosynthetic seasonality in Amazon evergreen forests. *Science* 351(6276): 972-976. (**Cited > 100 times.**)
 5. Campbell, L. G., **Albert, L. P.**, Gumuser, E., Whitney, K. D. (2016). Water-induced stress influences the relative investment in cleistogamous and chasmogamous flowers of an invasive grass, *Microstegium vimineum* (Poaceae). *Plant Ecology & Diversity* 9(4): 339-348.
 4. Wu, J., Chavana-Bryant, C., Prohaska, N., Serbin, S., Guan, K., **Albert, L. P.**, Yang, X., van Leeuwen, W., Garnello, A., Martins, G., Malhi, Y., Gerard, F., Oliviera, R., Saleska, S. R. (2016). Convergence in relations among leaf traits, spectra and age across diverse canopy environments and two contrasting tropical forests. *New Phytologist* 214(3): 1033-1048.
 3. Arrigo, N.*, **Albert, L. P.***, Mickelson, P. G., Barker, M. S. (2012). Quantitative Visualization of Biological Data in Google Earth Using R2G2, an R Cran Package. *Molecular Ecology Resources* 12(6): 1177-1179. (***Co-first author.**)
 2. **Albert, L. P.**, Campbell, L. G., Whitney, K. D. (2011). Beyond Simple Reproductive Assurance: Cleistogamy Allows Adaptive Plastic Responses to Pollen Limitation. *International Journal of Plant Sciences* 172(7): 862-869.
 1. Whitney, K. D., Ahern, J. R., Campbell, L. G., **Albert, L. P.**, King, M. S. (2010). Patterns of Hybridization in Plants. *Perspectives in Plant Ecology, Evolution and Systematics* 12(3): 175-182. (**Cited > 100 times.**)

FORTHCOMING PUBLICATIONS

- Albert, L. P.**, Cushman, K. C., Zong, Y., Allen, D. W., Alonso, L., Kellner, J. R. Sensitivity of solar-induced fluorescence to spectral stray light in high resolution imaging spectroscopy (*In revision for Remote Sensing of Environment*).
- Yang, J., Magney, T. S., **Albert, L. P.**, Richardson, A. D., Frankenberg, C., Stutz, J., Grossman, K., Burns, S. P., Seyednasrollah, B., Blanken, P. D., Bowling, D. R. Solar induced fluorescence (SIF) and gross primary production (GPP) respond differently to light and seasonal environmental conditions in a subalpine conifer forest. (*Accepted by Agricultural and Forest Meteorology*).

Yan, Z., Detto, M., Guo, Z., Smith, N. G., Wang, H. **Albert, L. P.**, Xu, X., Lin, Z., Liu, S., Zhao, Y., Chen, S., Bonebrake, T. C., Liu, L., Wu, J. Global photosynthetic capacity jointly determined by enzyme kinetics and eco-evolutionary processes. (*In review at Ecology Letters*)

GRANTS

Federal

NSF – “Collaborative research: Cascade ‘Ecohydromics’ in the Amazonian Headwater System” \$1.2M total, \$153k to WVU, role: Co-PI (PI: Valeriy Ivanov, UM; Co-PIs: Ty Taylor, UM, Scott Saleska, UA). 1-1-2022 to 12-31-2025, effort 4.8% years 1 and 2.

NASA – “Quantifying leaf-to-landscape predictors of tropical forest drought vulnerability through ISS observation-model integration” \$1M total, \$309k to WVU, role: PI (Co-Is: Fred Huemmerich and Petya Campbell, UMBC, Sean McMahon, SERC, Joanna Joiner, NASA). 10-1-2021 to 9-30-2024, effort 8%.

Other

2016 U. Arizona Commission on the Status of Women Mini-Grant
2016 AGU Chapman Conference Travel Grant
2013 U. Arizona Graduate and Professional Student Council Travel Grant
2007 James F. and Marion L. Miller Foundation Travel Grant
2006 Merck/AAAS Summer Research Grant

FELLOWSHIPS AND SCHOLARSHIPS

2017–2020 Institute at Brown for Environment and Society Voss Postdoctoral Fellowship
2016 Louise Foucar Marshall Foundation Graduate Fellowship
2016 U. Arizona Commission on the Status of Women Mini-Grant
2016 AGU Chapman Conference Travel Grant
2014, 2016 U. Arizona Galileo Circle Scholar
2013 U. Arizona Graduate and Professional Student Council Travel Grant
2010–2013 Amazon PIRE Graduate Fellowship
2007 James F. and Marion L. Miller Foundation Travel Grant
2006 Merck/AAAS Summer Research Grant

HONORS AND AWARDS

2012 DOE Office of Science Graduate Fellowship Finalist
2009, 2011 NSF Graduate Research Fellowship Program Honorable Mention

SCHOLARLY PRESENTATIONS (LEAD AUTHOR)

Invited Talks

- 2022 “Drivers of photosynthetic capacity from leaves to ecosystems in evergreen tropical forests.” Graduate Student Invited Speaker, Department of Environmental & Plant Biology, Ohio University, (virtual), February 11.
- 2020 “Drivers of forest photosynthesis from leaves to ecosystems.” University of Maryland Center for Environmental Science, (virtual) Frostburg, MD Sept 24.
- 2020 “Understanding drivers of forest photosynthesis from leaves to ecosystems in an era of global change.” West Virginia University, Morgantown, WV March 2.
- 2020 “Leaf phenology as a driver of photosynthetic capacity from leaves to ecosystems in evergreen tropical forests.” University of Utah, Salt Lake City, UT Feb 19.
- 2019 “Towards estimating photosynthesis with imaging spectroscopy: signal, noise, and scale.” Ecological Society of America meeting, Louisville, KY, Aug 11-16.
- 2019 “Forest photosynthesis from leaves to ecosystems” University of Massachusetts Dartmouth, Dartmouth, MA, Apr 5.
- 2019 “The role of photosynthesis in climate change from leaves to ecosystems.” Princeton University, Princeton, NJ, Feb 26.
- 2019 “The role of photosynthesis in climate change from leaves to ecosystems.” UC Santa Barbara, Santa Barbara, CA, Feb 7.
- 2019 “The role of photosynthesis in climate change from leaves to ecosystems.” University of Washington, Seattle, WA, Jan 28.
- 2019 “The role of photosynthesis in climate change from leaves to ecosystems.” University of Florida, Gainesville, FL, Jan 17.
- 2018 “Phenology as a window into controls over metabolism from trees to ecosystems.” Marine Biological Laboratory, Woods Hole, MA, Nov 16.
- 2018 “The role of photosynthesis in global change.” Vassar College, Poughkeepsie, NY Nov 8.
- 2018 “Interpreting chlorophyll fluorescence signals: the effects of leaf age.” Ecological Society of America meeting, New Orleans, LA Aug 5-10.

Contributed Talks

- 2020 “Sensitivity of Sun-Induced Fluorescence to Spectral Stray Light in High Resolution Imaging Spectroscopy.” American Geophysical Union, Virtual, Dec 7.
- 2017 “High-resolution fluorescence imaging for red and far-red SIF retrieval at leaf and canopy scales.” American Geophysical Union, New Orleans, LA, Dec 11-15.
- 2017 “Age-dependent leaf function and consequences for crown-scale carbon uptake during the dry season in an Amazon evergreen forest.” Ecological Society of America, Portland, OR Aug 7-11.
- 2015 “Interpreting chlorophyll fluorescence signals: the effects of leaf age.” American Geophysical Union, San Francisco, CA, Dec 15.
- 2013 “Phenology of an evergreen moist tropical forest: shifts in leaf demography and physiology during the dry season of the Tapajós National Forest, Brazil.” Ecological Society of America, Minneapolis, MN, Aug 4-9.
- 2011 “Photosystem II Thermotolerance of Tropical Trees across an Elevation Gradient.” Grad Blitz, University of Arizona, Tucson, AZ, Nov 8.

Posters

- 2017 “Linking leaf-level active and passive SIF with gas exchange: a semi-empirical approach.” Airborne solar-induced fluorescence workshop, Lincoln, NE, Sept 26-29.
- 2016 “Could leaf phenology help the wet season recommence in Amazonia?” AGU Chapman Conference on Emerging Issues in Tropical Ecohydrology, Cuenca, Ecuador, June 9.
- 2014 “Leaf demography and physiology of the Tapajós National Forest: could phenology cause a forest-level increase in gross primary productivity during the dry season?” American Geophysical Union, San Francisco, CA, Dec 15-19.
- 2007 “A Test of Genetic Divergence and Local Adaptation for *Brachypodium sylvaticum*, an Invasive Grass in Oregon.” Ecological Society of America, San Jose, CA, Aug 5-10.

TEACHING EXPERIENCE

West Virginia University

- 2021 Ecology in an Era of Big Data (14 students). <https://albertl.github.io/ecology-data/>

Brown University

- 2020 Data Science Course Design Institute (from the Harriet W. Sheridan Center for Teaching and Learning).
- 2019 The Sheridan Teaching Seminar - Reflective Teaching Certificate I (from the Harriet W. Sheridan Center for Teaching and Learning).

University of Arizona

- 2015 Introductory Biology Lab, Secondary Instructor (two sections, 50 students).
- 2014 Evolution of Plant Form, Function, and Diversity, Teaching Assistant (16 students). Course website: <https://ecol340.wordpress.com/course-overview/>

ADVISING

Graduate Guidance Committees

- 2022–Present Zoe Pagliaro (WVU Biology)
- 2021–Present Lauren Kosslow (WVU Biology)
- 2020–Present Emel Kangi (WVU Biology)
- 2020–Present Yiting Fan (WVU Geology and Geography)
- 2020–Present Cameron Corbett (WVU Biology)

Undergraduate Senior Thesis (Capstone) Committees

- 2021 Janna Kleinsasser (WVU Biology)
- 2020–Present Emmelia Braun (WVU Biology)

Mentorship of undergraduates

- 2021–Present Koral Hickey, Research Apprenticeship Program (RAP), WVU.
- 2017 Jessica Levey, summer research assistant, Brown University.
- 2017 William Klimpert, summer research assistant, Brown University.
- 2014–2015 Pilar Carmela Vergeli, undergraduate research assistant, University of Arizona.
- 2013 Kaitlyn Ann D’Aguano Springer, Honors Introductory Biology project, University of Arizona.
- 2013 Vanessa Laurel Springer, Honors Introductory Biology project, University of Arizona.
- 2013 Casey Skowron, Honors Introductory Biology project, University of Arizona.
- 2007–2010 Supervised 3-5 undergraduate research assistants each summer as part of NSF project ‘Long-term natural selection and adaptive introgression in weedy sunflowers,’ (NSF DEB 0716868), Rice University.

SERVICE

Profession and community

Refereed journals: *Global Change Biology*, *JGR Biogeosciences*, *Frontiers in Plant Science*, *Agricultural and Forest Meteorology*, *Tree Physiology*, *Journal of Experimental Botany*, *Frontiers in Forests and Global Change*, *New Phytologist* and *Geophysical Research Letters*

- 2021–Present NASA Terrestrial Ecology Science Team
- 2020–Present SpecNet Board member, <https://specnet.info>.
- 2019 Co-organizer of “Bridging Plant Ecophysiology with Remotely Sensed Ecosystem Function: Solar-Induced Fluorescence, Lidar and Hyperspectral Remote Sensing.” Ecological Society of America Annual Meeting, Louisville, KY.
- 2018–2019 Review Editor for Tropical Forests, *Frontiers in Forests and Global Change*.
- 2018 National Science Foundation, ad hoc reviewer.
- 2017 Student presentation judge, American Geophysical Union, New Orleans, LA.

Department

- 2019 Co-director for Ecology and Evolutionary Biology Department (EEB) Doctoral Dissertation Enhancement Grant (DDEG) program, Brown University.
- 2017 Reviewer for EEB DDEG proposals, Brown University.

Diversity and Inclusion in STEM

- 2017–2020 Co-founder of 500WS Providence pod, group dedicated to making science open, inclusive, and accessible: <https://500womenscientists.org/>
- 2013–2016 Founding member, Women in the Natural Sciences (WINS), group dedicated to promoting and retaining women in the Natural Sciences. Events archive: <https://uazwins.weebly.com/news-and-events.html>

OTHER SKILLS AND TOOLS

Instrumentation

Gas exchange systems (LI-COR, Walz)

Active chlorophyll fluorometers (LI-COR, Hansatech)

Plant-water relations instrumentation (pressure bomb, porometer, etc)

Leaf spectroscopy and near-surface remote sensing (ASD Fieldspec spectroradiometers, Headwall imaging spectrometers)

Analysis and Programming

Matlab

R Statistics

Git and Github

LaTeX

Languages

English (native)

Brazilian Portuguese (conversational)

French (conversational)

Spanish (basic)

CERTIFICATIONS, FIELD COURSES AND NON-DEGREE COURSES

- 2020 New Advances in Land Carbon Cycle Modeling, Northern Arizona University.
- 2018 Introduction to Linear Mixed Effects Models and GLMM with R: Frequentist and Bayesian approaches. Highland Statistics Ltd. Halifax, Nova Scotia.
- 2016 Leader in Classroom Diversity & Inclusion Certification. University of Arizona.
- 2013 Annual Flux Course. University of Colorado Mountain Research Station.
- 2011 Pan-American Advanced Study Institute course: Tropical Ecology and Biogeochemistry from Andean Cloud Forests to the Lowland Amazon. Wayqecha and Tambopata Field Stations, Peru.
- 2009 Amazon-PIRE field course: Ecology and Biogeochemistry of the Amazon. Ferreira Penna Field Station, Brazil.

OUTREACH

Media and News

- 2021 “West Virginia University receiving funds to study rainforest,” *Associated Press*.
- 2018 “University researchers use drones to study forests, carbon cycle,” *The Brown Daily Herald*.
- 2017 “Deep breathing: One postdoc’s quest to understand how photosynthesis fights climate change,” *Brunonia*.
- 2017 “From Leaf to Landscape,” *bioGraphic*.
- 2016 “New insights into the seasonality of Amazon's evergreen forests,” *NSF News*

2016 “Come varia la capacità di fotosintesi dell'Amazzonia,” *La Scienze*.

Outreach Presentations

2014 “Amazon Forests: Wet and Dry.” Southern Arizona Arborist group, April 17

2012 “Entendendo o futuro da Amazônia sob a mudanca da clima.” Agronomy Week, Santarém, Brazil, Oct 24.

K-12 Outreach

2015 Guest Scientist, Ironwood Gallery, Arizona-Sonora Desert Museum, Tucson, AZ
Science demonstration, “What Happens in the Rainforest Doesn’t Stay in the Rainforest: Measuring the Fate of the Amazon Rainforests, a Solo Photographic Exhibition by Jake Bryant.”

2012–2015 Volunteer, Inner City Outings, The Sierra Club, Tucson, AZ

2011 Volunteer, BioBlitz 2011, Saguaro National Park, AZ

2009 Guest Scientist, Sarah T. Reed High School, New Orleans, LA

PROFESSIONAL MEMBERSHIPS

2007–present The Ecological Society of America (ESA)

2009–present Association of Women in Science (AWIS)

2014–present American Geophysical Union (AGU)

2015–present Association for Women Geoscientists (AWG)