

ATTICUS E. L. STOVALL

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Publications: 52 ◊ H-index: 25 ◊ Citations: 3024 ◊ Awards: \$2,273,139

Atticus Stovall earned his Ph.D. in Environmental Sciences from the University of Virginia in 2017. A unifying theme of his work is using new technology to understand how environmental factors influence plant structure and function. During his Ph.D., he developed new approaches to carbon monitoring in forests using high-resolution laser scanning through 3D modeling, algorithm development, extensive field work, building allometric equations, and airborne LiDAR and radar biomass calibration. In his first postdoc position he focused on plant stress monitoring - [i] capturing the structural components of the solar induced fluorescence signal with high temporal resolution leaf angle and area measurements and [ii] using LiDAR for monitoring 2 million California trees over 8 years of drought. Now, he is working directly with the GEDI science team to improve forest structure calibration with a global database of laser scanning acquisitions, developing high-resolution global canopy height products, and mapping 3D structural biodiversity traits of trees across the globe.

EDUCATION

University of Virginia Ph.D. in Environmental Sciences	2017
University of Virginia B.A. in Environmental Sciences	2012
Piedmont Virginia Community College A.A in Liberal Arts	2010

RESEARCH POSITIONS

University of Maryland / NASA Goddard Space Flight Center <i>Assistant Research Professor</i>	2021 - Present <i>Greenbelt, MD</i>
Quantifying global structural biodiversity traits with terrestrial laser scanning. Development of a pantropical high-resolution forest canopy height and mangrove biomass product by fusing the NASA Global Ecosystem Dynamics Investigation (GEDI) mission with TanDEM-X.	
NASA Goddard Space Flight Center <i>NASA Postdoctoral Fellowship Research under direction of Dr. Lola Fatoyinbo</i>	2019 - 2020 <i>Greenbelt, MD</i>
Improving global calibration and calibration of the NASA Global Ecosystem Dynamics Investigation (GEDI) mission with terrestrial laser scanning using precise vertical vegetation distributions, plot-level biomass estimates, and updated allometric equations.	
University of Virginia <i>Postdoctoral Research under direction of Dr. Xi Yang</i>	2018 - 2019 <i>Charlottesville, VA</i>
[i] Disentangled contribution of structural complexity to forest productivity by fusing solar induced fluorescence and terrestrial laser scanning (TLS) measurements. [ii] Determining size-dependent mortality risk for trees under extreme drought by mapping dimensions of 2 million tree crowns in the southern Sierra Nevada.	
University of Virginia <i>Ph.D. Research under direction of Dr. H. H. Shugart</i>	2012 - 2017 <i>Charlottesville, VA</i>

Quantifying forest structure and carbon storage in forest ecosystems using TLS at multiple spatial scales. Results improved biomass allometry and understanding of three—dimensional structure in forests.

Smithsonian Conservation Biology Institute

Smithsonian Fellow

2015 - 2016

Front Royal, VA

Investigating biomass mapping uncertainty from using national-scale allometric equations at the fine-scale by developing non-destructive local allometric equations with terrestrial LiDAR.

RECENT AWARDS

NASA BioSCape - <i>BioREaCH</i> (\$599,676)	2021-2023
NASA Commercial Smallsat Data Acquisition (\$100,000)	2021-2022
NASA Biodiversity - <i>Understanding the global 3D signature of tree biodiversity</i> (\$687,291)	2021-2023
NASA NPP Fellowship (\$78,724)	2020
Huron Mountain Wildlife Foundation (\$5,000)	2019
NASA NPP Fellowship (\$77,224)	2019
GRSM/Appalachian Highlands Science LC Grant (\$1,575)	2018

PEER-REVIEWED PUBLICATIONS

Miro Demol, Hans Verbeeck, Bert Gielen, John Armston, Andrew Burt, Mathias Disney, Laura Duncanson, Jan Hackenberg, Daniel Kükenbrink, Alvaro Lau, Pierre Ploton, Artie Sewdien, **Stovall, Atticus**, Stéphane Momo Takoudjou, Liubov Volkova, Chris Weston, Verginia Wortel, and Kim Calders. Estimating forest aboveground biomass with terrestrial laser scanning: current status and future directions. *Methods in Ecology and Evolution*, pages 2041–210X.13906, May 2022.

Jeff W. Atkins, Jonathan A. Walter, **Stovall, Atticus E. L.**, Robert T. Fahey, and Christopher M. Gough. Power law scaling relationships link canopy structural complexity and height across forest types. *Functional Ecology*, 36(3):713–726, March 2022.

Jeff W. Atkins, **Atticus E.L. Stovall**, and Carlos Alberto Silva. Open-Source tools in R for forestry and forest ecology. *Forest Ecology and Management*, 503:119813, January 2022.

Stovall, Atticus E.L., Temilola Fatoyinbo, Nathan M. Thomas, John Armston, Médard Obiang Ebanega, Marc Simard, Carl Trettin, Robert Vancelas Obiang Zogo, Igor Akendengue Aken, Michael Debina, Alpha Mekui Me Kemoe, Emmanuel Ondo Assoumou, Jun Su Kim, David Lagomasino, Seung-Kuk Lee, Jean Calvin Ndong Obame, Geldin Derrick Voubou, and Chamberlain Zame Essono. Comprehensive comparison of airborne and spaceborne SAR and LiDAR estimates of forest structure in the tallest mangrove forest on earth. *Science of Remote Sensing*, page 100034, November 2021.

Carl C. Trettin, Zhaohua Dai, Wenwu Tang, David Lagomasino, Nathan Thomas, Seung Kuk Lee, Marc Simard, Médard Obiang Ebanega, **Stovall, Atticus**, and Temilola E. Fatoyinbo. Mangrove carbon stocks in Pongara National Park, Gabon. *Estuarine, Coastal and Shelf Science*, page 107432, May 2021.

Nathan Thomas, Priscilla Baltezar, David Lagomasino, **Stovall, Atticus**, Zaheer Iqbal, and Lola Fatoyinbo. Trees outside forests are an underestimated resource in a country with low forest cover. *Scientific Reports*, 11(1):1–13, April 2021.

Xi Yang, Xiangtao Xu, **Stovall, Atticus**, Min Chen, and Jung-Eun Lee. Recovery: Fast and Slow—Vegetation Response During the 2012–2016 California Drought. *Journal of Geophysical Research: Biogeosciences*, 126(4), April 2021.

Jonathan A. Walter, **Stovall, Atticus E. L.**, and Jeff W. Atkins. Vegetation structural complexity and biodiversity in the Great Smoky Mountains. *Ecosphere*, 12(3), March 2021.

Andre S. Rovai, Robert R. Twilley, Edward Castañeda-Moya, Stephen R. Midway, Daniel A. Friess, Carl C. Trettin, Jacob J. Bukoski, **Stovall, Atticus E.L.**, Paulo R. Pagliosa, Alessandra L. Fonseca, Richard A. Mackenzie, Aslan Aslan, Sigit D. Sasmito, Mériadec Sillanpää, Thomas G. Cole, Joko Purbopuspito, Matthew W. Warren, Daniel Murdiyarso, Wolfram Mofu, Sahadev Sharma, Pham Hong Tinh, and Pablo Riul. Macroecological patterns of forest structure and allometric scaling in mangrove forests. *Global Ecology and Biogeography*, February 2021.

Committee on Earth Observation Satellites) Land Product Validation Subgroup (Working Group on Calibration and Validation. Aboveground Woody Biomass Product Validation Good Practices Protocol. 2021.

Stovall, Atticus E. L., Benjamin Masters, Lola Fatoyinbo, and Xi Yang. TLSLeAF: automatic leaf angle estimates from single-scan terrestrial laser scanning. *New Phytologist*, 232(4):1876–1892, 2021.

Kim Calders, Jennifer Adams, John Armston, Harm Bartholomeus, Sebastien Bauwens, Lisa Patrick Bentley, Jerome Chave, F. Mark Danson, Miro Demol, Mathias Disney, Rachel Gaulton, Sruthi M. Krishna Moorthy, Shaun R. Levick, Ninni Saarinen, Crystal Schaaf, **Stovall, Atticus**, Louise Terryn, Phil Wilkes, and Hans Verbeeck. Terrestrial laser scanning in forest ecology: Expanding the horizon. *Remote Sensing of Environment*, 251:112102, December 2020.

Anthony G. Vorster, Paul H. Evangelista, **Stovall, Atticus E. L.**, and Seth Ex. Variability and uncertainty in forest biomass estimates from the tree to landscape scale: the role of allometric equations. *Carbon Balance and Management*, 15(1), December 2020.

Jeff W. Atkins, **Stovall, Atticus E. L.**, and Xi Yang. Mapping Temperate Forest Phenology Using Tower, UAV, and Ground-Based Sensors. *Drones*, 4(3):56, September 2020.

Stovall, Atticus E. L., Herman H. Shugart, and Xi Yang. Reply to “Height-related changes in forest composition explain increasing tree mortality with height during an extreme drought”. *Nature Communications*, 11(1):3401, July 2020.

Jacob S. Diamond, Daniel L. McLaughlin, Robert A. Slesak, and **Stovall, Atticus E. L.** Microtopography is a fundamental organizing structure of vegetation and soil chemistry in black ash wetlands. *Biogeosciences*, 17(4):901–915, February 2020.

Jeff W. Atkins, Ben Bond-Lamberty, Robert T. Fahey, Lisa T. Haber, Ellen Stuart-Haëntjens, Brady S. Hardiman, Elizabeth LaRue, Brenden E. McNeil, David A. Orwig, **Stovall, Atticus E. L.**, Jason M. Tallant, Jonathan A. Walter, and Christopher M. Gough. Application of multidimensional structural characterization to detect and describe moderate forest disturbance. *Ecosphere*, 11(6):e03156, 2020.

Ian R. McGregor, Ryan Helcoski, Norbert Kunert, Alan J. Tepley, Erika B. Gonzalez-Akre, Valentine Herrmann, Joseph Zailaa, **Stovall, Atticus E. L.**, Norman A. Bourg, William J. McShea, Neil Pederson, Lawren Sack, and Kristina J. Anderson-Teixeira. Tree height and leaf drought tolerance traits shape growth responses across droughts in a temperate broadleaf forest. *New Phytologist*, n/a(n/a), 2020.

Martin Mokroš, Markus Hollaus, Yunsheng Wang, Peter Surový, Livia Piermattei, Xinlian Liang, Milan Koreň, Julián Tomašík, Lin Cao, Gábor Brolly, Carlos Cabo, Bartłomiej Kraszewski, Grzegorz Krok, Martin Krůček, Nizar Polat, **Stovall, Atticus**, Di Wang, and Jinhu Wang. International Benchmarking of Terrestrial Image-based Point Clouds for Forestry. *ISPRS Scientific initiative 2019*, page 12, 2020.

Jacob S. Diamond, Daniel L. McLaughlin, Robert A. Slesak, and **Stovall, Atticus E. L.** Pattern and structure of microtopography implies autogenic origins in forested wetlands. *Hydrology and Earth System Sciences*, 23(12):5069–5088, December 2019.

Stovall, Atticus E. L., Herman Shugart, and Xi Yang. Tree height explains mortality risk during an intense drought. *Nature Communications*, 10(1):4385, September 2019.

M. Disney, A. Burt, K. Calders, C. Schaaf, and **Stovall, A.** Innovations in Ground and Airborne Technologies as Reference and for Training and Validation: Terrestrial Laser Scanning (TLS). *Surveys in Geophysics*, March 2019.

Stovall, Atticus E. L., Jacob S. Diamond, Robert A. Slesak, Daniel L. McLaughlin, and Hank Shugart. Quantifying wetland microtopography with terrestrial laser scanning. *Remote Sensing of Environment*, 232:111271, 2019.

Stovall, Atticus E.L., Kristina J. Anderson-Teixeira, and Herman H. Shugart. Assessing terrestrial laser scanning for developing non-destructive biomass allometry. *Forest Ecology and Management*, 427:217–229, November 2018.

Stovall, A. E. L. and H. H. Shugart. Improved Biomass Calibration and Validation With Terrestrial LiDAR: Implications for Future LiDAR and SAR Missions. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 11(10):3527–3537, October 2018.

J. W. Atkins, Gil Bohrer, Robert T. Fahey, Brady S. Hardiman, Timothy H. Morin, **Stovall, Atticus E. L.**, Naupaka Zimmerman, and Christopher M. Gough. Quantifying vegetation and canopy structural complexity from terrestrial LiDAR data using the forstr package. *Methods in Ecology and Evolution*, August 2018.

Stovall, Atticus E.L., Kristina J. Anderson-Teixeira, and Herman H. Shugart. Terrestrial LiDAR-derived non-destructive woody biomass estimates for 10 hardwood species in Virginia. *Data in Brief*, June 2018.

Xi Yang, Hanyu Shi, **Stovall, Atticus**, Kaiyu Guan, Guofang Miao, Yongguang Zhang, Yao Zhang, Xiangming Xiao, Youngryel Ryu, and Jung-Eun Lee. FluSpec 2—An Automated Field Spectroscopy System to Monitor Canopy Solar-Induced Fluorescence. *Sensors*, 18(7):2063, June 2018.

Stovall, Atticus E.L., Anthony G. Vorster, Ryan S. Anderson, Paul H. Evangelista, and Herman H. Shugart. Non-destructive aboveground biomass estimation of coniferous trees using terrestrial LiDAR. *Remote Sensing of Environment*, 200:31–42, October 2017.

ACCEPTED, IN-REVIEW, SUBMITTED, AND IN-PREP PUBLICATIONS

Stovall, A.E.L., Anthony G. Vorster, Ryan S. Anderson, Paul H. Evangelista. Can terrestrial laser scanning improve or replace traditional species-specific allometric biomass equations? Submitted to *Remote Sensing of Environment*.

Stovall, A.E.L. ... Fatoyinbo, T. Improved structural estimates and allometry of tallest known mangrove forest using terrestrial laser scanning. To be submitted to *Methods in Ecology and Evolution*.

Stovall, A.E.L., ... Yang, X.. High-frequency seasonal shifts in leaf angle distribution from terrestrial laser scanning. To be submitted to *Global Change Biology*.

FELLOWSHIPS AND AWARDS

Fred Holmsley Moore Teaching Award (\$500)	2017
NASA VSGC Graduate Research STEM Fellowship Program (\$6,000)	2015-2016
NASA VSGC Graduate Research STEM Fellowship Program (\$5,000)	2014-2015
University of Virginia Graduate Travel Grant (\$1,000)	2014
National Fish and Wildlife Foundation Fellowship	2012-2017
Federal SEOG (\$600), UVA SMART Grant (\$4000), Dupont Grant (\$5,149)	2010-2012

SELECTED CONFERENCES AND PRESENTATIONS

Stovall, A.E.L., Calders, K., Armston, J.A., Fatoyinbo, L., Understanding global trends in 3D tree architecture. 2019 Fall Meeting, AGU, San Francisco, CA, Dec. 2019

Stovall, A.E.L., Calders, K., Armston, J.A.. Capturing global trends in tree and forest structure with a unified terrestrial laser scanning database. 2019 Fall Meeting, AGU, San Francisco, CA, Dec. 2019

Stovall, A.E.L. Capturing global trends in tree and forest structure with a unified terrestrial laser scanning database. Silviler 2019. Igazu Falls, Brazil, Oct. 8, 2019.

Stovall, A.E.L. Terrestrial Laser Scanning improves LiDAR and radar biomass calibration in tallest mangrove forest on Earth. NASA Terrestrial Ecology Meeting 2019. College Park, MD, Sep. 23, 2019.

Stovall, A.E.L. Monitoring two million trees through extreme drought shows size determines survival. ESA Meeting 2019. Louisville, KY, Aug.13, 2019. **(Invited)**

Stovall, A.E.L. Advancing TLS Technology Enables Sensor-Specific Applications. Terrestrial Laser Scanning in Forest Ecology: Expanding the Horizon. Ghent, Belgium, 6-7 May 2019. **(Invited Keynote)**

Stovall, A.E.L., Yang, X., Khuu, A., Smith, J., Widespread tree mortality mapping suggests size-dependent risk for extreme drought stress. 2018 Fall Meeting, AGU, Washington DC, 10-14 Dec. 2018

Stovall, A.E.L., Maini, R., Nardacci, R., Shi, H., Yang, X. Seasonal structure-function interactions: fusing solar induced fluorescence and terrestrial Lidar for holistic ecosystem measurement. ForestSat 2018, College Park, MD. 1-5 Oct. 2018.

Stovall, A.E.L. and X. Yang. Widespread tree mortality mapping suggests size-dependent risk for extreme drought stress. ForestSat 2018, College Park, MD. 1-5 Oct. 2018.

Stovall, A.E.L. and H. H. Shugart. Improving LiDAR Biomass Model Uncertainty through Non-Destructive Allometry and Plot-level 3D Reconstruction with Terrestrial Laser Scanning. Abstract B11H-02, 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec. 2017

Stovall, A.E.L. Reduced Uncertainty Biomass Mapping with Plot-level TLS Validation. Silviler 2017, Virginia Tech, Blacksburg, VA, 12 Oct. 2017

Stovall, A.E.L. Revolutionizing 3D Forest Measurement from the Ground Up: Integrating Terrestrial LiDAR into Biomass Mapping. Biospheric Sciences Seminar, NASA Goddard Space Flight Center, Greenbelt, MD, 19 Jul. 2017

Stovall, A.E.L. Outer Hull Model (OHM): Retrieving Component Biomass with Noisy Phase-shift TLS. TLS RCN Meeting, UCL, London, United Kingdom, 1 Mar. 2017

Stovall, A.E.L. Validated Non-Destructive Biomass Estimation with Terrestrial LiDAR for Reducing Uncertainty in Carbon Mapping. The terrestrial laser scanning revolution in forest ecology, Chicheley Hall, Newport Pagnell, United Kingdom, 28 Feb. 2017

Stovall, A.E.L. Estimating Biomass and Reducing Uncertainty for MRV with Terrestrial LiDAR. Silvacarbons Central/South America Meeting 2017, San José, Costa Rica, 30 Jan - 3 Feb. 2017

Stovall, A.E.L.; Vorster, Anthony G.; Anderson, Ryan; Evangelista, Paul; H. H. Shugart. Validated Non-Destructive Biomass Estimation with Terrestrial LiDAR for Reducing Uncertainty in Carbon Mapping. Abstract B51F-0471, 2016 Fall Meeting, AGU, San Francisco, CA, 12-16 Dec. 2016

- Stovall, A.E.L.** and H. H. Shugart. Mapping Forest Carbon by Fusing Terrestrial and Airborne LiDAR Datasets. Abstract B53C-0195, 2015 Fall Meeting, AGU, San Francisco, CA, 14-18 Dec. 2015
- Stovall, A.E.L.** Quantifying Structure and Carbon Storage in Forest Ecosystems using Terrestrial LiDAR on the Plot Level. Silvacarbons SE Asia Meeting 2015, Bogor, Indonesia, 5-9 Oct. 2015
- Stovall, A.E.L.** and H. H. Shugart. Quantifying Forest Carbon and Structure with Terrestrial LiDAR. Abstract B53C-0195, 2014 Fall Meeting, AGU, San Francisco, CA, 15-19 Dec. 2014
- Stovall, A.E.L.** and H. H. Shugart. Estimating Carbon Storage of a Temperate North American Forest with TLS. Abstract B51I-0416, 2013 Fall Meeting, AGU, San Francisco, CA, 9-13 Dec. 2013

WEB ARTICLES AND MEDIA SPOTS

Research Highlighted in PBS NOVA: Can We Cool the Planet (2020). Season 47, Episode 15.
<https://www.pbs.org/wgbh/nova/video/can-we-cool-the-planet/>

Stovall, A.E.L. (2020), Science Spotlight: Atticus Stovall. SketchFab Blog. In Press.

1st Place Winner of #GEDIVis Twitter GEDI Data visualization competition.

Sima, R. J. (2019), The bigger they are, the harder they fall, *Eos*, 100, <https://doi.org/10.1029/2019EO135705>.
 Published on 18 October 2019.

Pennisi, E. (2019), Sturdy as they are, giant trees are particularly susceptible to these three killers, *Science* 365, 962–963, doi:10.1126/science.aaz3891.

Lemon M.G. (2019), Where the mangrove grows, *Envirobites*. Jan. 23, 2019.
<https://envirobites.org/2019/01/23/where-the-mangrove-grows/>

Stovall, A.E.L., 2018. Measuring Forests In 3D To Improve Global Carbon Estimates. *ScienceTrends*.

Hansen, K., 2017. Below the Mangrove Canopy: *NASA Image of the Day*.

Feigenoff, C., 2016. Terrestrial LiDAR Measurements. *Environmental Sciences 2015-16 Annual Report*.

TECHNICAL SKILLS

Programming and Statistics

- R: *Algorithm development and modeling for terrestrial LiDAR biomass estimation, geospatial analysis with LiDAR and optical data, model evaluation and statistics, figures*
- MATLAB: *Algorithm development, 3D analysis, and figures*
- Python: *Geospatial analysis in the ArcMap environment and batch processing*
- IDL: *LiDAR product analysis in the ENVI environment*
- PC-ORD: *Multidimensional analysis of species distributions*

Geospatial Software

- ArcMap/QGIS: *Geospatial analysis, biomass mapping, model building and evaluation*
- Quick Terrain Modeler: *Airborne and terrestrial LiDAR processing, geospatial analysis, visualization*
- FUSION: *Airborne and terrestrial LiDAR processing (point cloud statistics and CHM creation)*
- LASTools *Airborne and terrestrial LiDAR processing (point cloud statistics and CHM creation)*
- CloudCompare: *Terrestrial LiDAR processing (point cloud mensuration and segmentation)*
- CompuTree: *Terrestrial LiDAR processing (3D forestry mensuration, biomass estimation)*
- ENVI: *Passive optical imagery analysis (Landsat and NAIP)*
- Faro SCENE: *Terrestrial LiDAR processing (registration and filtering)*

Field Experience

- TLS and Forest inventory: tropical (*Indonesia, Costa Rica*), temperate (*Virginia, Massachusetts, Minnesota, Michigan, Tennessee*), Tundra/Boreal (*Toolik Lake, Alaska*), and mangrove (*Gabon*).
- Licensed UAV/UAS Certified Drone Pilot

EARLY EXPERIENCE

The National Fish and Wildlife Foundation

2012

Internship and Research supervised by Dr. Daniel Petit

Charlottesville, VA

Developed a GIS based model that prioritized funding for longleaf pine restoration in North Carolina and identified high priority locations for restoration, maximizing cost benefit.

University of Virginia

2011 - 2012

Undergraduate Research under direction of Dr. Aaron Mills

Charlottesville, VA

Studied impact of management techniques for soil restoration in a Central VA farming community, with analysis of soil structure, chemistry, and a time series of in-situ moisture over an elevation gradient.

PROFESSIONAL ACTIVITIES AND AFFILIATIONS

Institutions of Past Collaboration

- University of Maryland: GEDI Science team Calibration and Validation with TLS *2018*
- University of Alaska Fairbanks: Tundra solar-induced chlorophyll fluorescence monitoring *2018*
- University of New Mexico: Dryland solar-induced chlorophyll fluorescence monitoring *2018*
- NASA: AfriSAR Field Campaign, Gabon *2017*
- Colorado State University: Non-destructive biomass estimation with TLS *2016-2017*
- Virginia Polytechnic Institute and State University: Microtopography mapping with TLS *2017-2019*

Academic

- Ecological Society of America *2019-2020*
- AAAS/Science Program for Excellence in Science Member *2018-2020*
- Terrestrial Laser Scanning Research Coordination Network *2016-Present*
- American Geophysical Union Member *2013-Present*

Broader Impacts

- Creation of the *Global TLS Metadata Database* for international collaboration *2019-Present*
- Coordination and participation in Silvacarbon workshops (Indonesia, D.C., Costa Rica) *2014-2017*

TEACHING AND MENTORING

PhD Advising and Mentoring

2019-Present

- Romina Gonzolez Musso - TLS Allometry and GEDI Calibration *2021-2024*
- Brandon Alvashere - Understanding Forest Complexity with TLS *2019-2022*
- Brian Lee - Forest Biomass mapping with LiDAR *2021-2022*
- Seamus Lombardo - GEDI Biomass mapping on Yurok Land in California *2021-2022*
- Isamar Cortes - Mangrove Island Height Sensitivity to Salinity *2021-2022*

Teaching Assistant

2012 - 2017

- GIS Methods *Fall 2017*
- Forest Sampling *Spring 2013, Spring 2015 - Spring 2017*

· Forest Ecosystems Management	<i>Fall 2012 - Fall 2016</i>
· Applied Statistics for Environmental Scientists	<i>Spring 2014</i>
Undergraduate Mentor	2012 - 2017
· Jacob Smith - Tree mortality mapping and UAV SFM reconstruction	2018
· Rebecca Nardacci - Precision TLS registration	2017-2018
· Kendra Counts - Tree modeling for allometry development using TLS	2017
· Annie Khuu - Tree mortality mapping at a NEON site using airborne LiDAR	2017
· Yvonne Dinh - Created local non-destructive allometry with TLS	2016-2017
· Gabriella Reyes - Developed field methods and data collection using TLS	2015-2016
· Gloria Desanker - Validated manual forestry measurements with TLS	2014-2015

SELECTED COAUTHORED CONFERENCES AND PRESENTATIONS

Alveshere, B., **Stovall, A.**, Atkins, J., Worthley, T., Fahey, R., 2021. Modeling Effects of Moderate Disturbance Severity and Spatial Distribution on Forest Canopy Structure and Complexity, in: AGU Fall Meeting Abstracts. pp. B51D-07.

Anderson-Teixeira, K.J., Helcoski, R., McGregor, I., Tepley, A.J., Herrmann, V., Gonzalez-Akre, E.B., Kunert, N., Pedersen, N., Sack, L., **Stovall, A.E.**, 2019. Resolving interannual climate sensitivity of tree growth and forest productivity by integrating tree-rings, leaf hydraulic traits, and forest census data, in: AGU Fall Meeting Abstracts. pp. B54B-03.

Atkins, J., **Stovall, A.**, Dahlin, K., 2019. Cutting-Edge Remote Sensing Applications in Ecology: Spanning Scales, Sensors, and Systems, in: 2019 ESA Annual Meeting (August 11–16). ESA.

Atkins, J., **Stovall, A.E.**, LaRue, E., 2018. Novel Methods of Connecting Ecosystem Structure to Function with Remote Sensing Posters, in: AGU Fall Meeting 2018. AGU.

Atkins, J.W., Fahey, R.T., Stuart-Haëntjens, E., Turner, L., LaRue, E., McNeil, B.E., David, O., **Stovall, A.E.**, Tallant, J., Gough, C.M., others, 2018. Unique Canopy Structural Signatures of Moderate Disturbance Derived from Terrestrial LiDAR, in: AGU Fall Meeting Abstracts. pp. B13I-2262.

Barenblitt, A., Thomas, N., **Stovall, A.**, Sousa, C., Nwobi, E., Fatoyinbo, T., 2021. Invasion in the Niger Delta: Remote Sensing of Mangrove Conversion to *Nypa Fruticans* from 2015-2020, in: AGU Fall Meeting Abstracts. pp. B45D-1660.

Cortes, I., Lorenzo-Trueba, J., Fatoyinbo, T., Twilley, R., Rovai, A., **Stovall, A.**, 2021. On the interplay between mangrove canopy height, salinity, and net evaporation rates: Insights from Florida and Puerto Rico, in: AGU Fall Meeting Abstracts. pp. EP22C-02.

Diamond, J., McLaughlin, D.L., Slesak, R., **Stovall, A.E.**, 2018. Small changes create big differences: A study on the importance of microtopography in wetlands, in: AGU Fall Meeting Abstracts. pp. H14D-06.

Euskirchen, E., Jones, L., Liu, Z., Kimball, J., Butterfield, Z., Keppel-Aleks, G., Magney, T., Koehler, P., Frankenberg, C., Pierrat, Z., others, 2019. Chlorophyll Fluorescence and Soil Moisture Observations to Characterize Terrestrial Vegetation Photosynthesis and Biosphere C Uptake in N America.

Fatoyinbo, T., Nwobi, C.J., Barenblitt, A., **Stovall, A.**, Sousa, C., Thomas, N.M., Lagomasino, D., Simard, M., Zabbey, N., 2020. Dynamics of Mangrove Carbon Stocks in the Niger Delta-linking remote sensing timeseries of vegetation structure, loss drivers and in situ measurements, in: AGU Fall Meeting Abstracts. pp. EP050-01.

- Jablonski, A., Lerda, M., Yi, K., **Stovall, A.E.**, Yang, X., 2019. The spatio-temporal variation, and its drivers, of solar induced fluorescence in a temperate forest ecosystem., in: AGU Fall Meeting Abstracts. pp. B11Q-2276.
- Li, R., Yi, K., **Stovall, A.**, Yang, X., 2021. Integrated framework to monitor forest structure and function with multi-source remote sensing, in: AGU Fall Meeting Abstracts. pp. B25H-1569.
- Qi, W., Armston, J., Dubayah, R., Fatoyinbo, T., **Stovall, A.**, Papathanassiou, K., Pardini, M., Cazcarra-Bes, V., 2021. High-resolution mapping of pantropical canopy height by integration of GEDI and TanDEM-X Data, in: AGU Fall Meeting Abstracts. pp. B25G-1557.
- Thomas, N.M., Fatoyinbo, T., Simard, M., Pertiwi, A.P., Lagomasino, D., **Stovall, A.**, Traganos, D., Poursanidis, D., Cortes, I., Moreno, S., others, 2021. Characterizing Coastal Ecosystem Structure: Tree Tops to Ocean Bottoms, in: AGU Fall Meeting 2021. AGU.
- Wang, M., Calders, K., Verbeeck, H., Van Coillie, F., De Frenne, P., Meeussen, C., Armston, J., **Stovall, A.**, 2021. Explore the structural diversity of forest edges using spaceborne lidar, pp. 129–131.
- Yang, X., Yi, K., Jablonski, A., Li, R., **Stovall, A.**, Petras, C., Beverly, D., Phillips, R.P., Lerda, M., Novick, K., 2021. The elephant in the room-leaf angle of forest canopies: measurements and implications for the light environment and photosynthesis, in: AGU Fall Meeting Abstracts. pp. B24F-08.
- Yang, X., Yi, K., **Stovall, A.E.**, Yin, Y., Parazoo, N., Euskirchen, E.S., 2020. From leaf to landscape: multi-scale measurements of solar-induced chlorophyll fluorescence in a tundra ecosystem, in: AGU Fall Meeting Abstracts. pp. B006-0005.
- D Crawford*, T Jovanovic, C Brack, **A Stovall**, D MacFarlane, J Frank, T Condon, A Strahler, C Schaaf, A Barker-Plotkin, D Orwig. Using Zeb1, a highly-mobile terrestrial laser scanner, to assess and measure trees in an eastern hemlock-dominated forest
- P Radtke, A Barker-Plotkin, P Boucher, A Burt, K Calders, D Walker, J Frank, Z Li, D MacFarlane, D Orwig, I Paynter, F Peri, P Raunonen, C Schaaf, **A Stovall**, A Strahler. Comparing Lidar-Derived Quantitative Structure Models (QSM) with Direct Measurements of Tree Structure, Volume, and Biomass. ForestSat 2018, College Park, MD. 1-5 Oct. 2018.
- J Atkins*, R Fahey, B Hardiman, E Stuart-Haëntjens, B McNeil, D Orwig, L Turner, **A Stovall**, C Gough. Structural Signatures of Forest Disturbance. ForestSat 2018, College Park, MD. 1-5 Oct. 2018.
- Atkins, J., **Stovall, A.E.L.**, Clark, G., Hardiman, B., Gough., Quantifying forest structure, complexity, and biomass using the Leica BLK360 terrestrial laser scanner. ForestSat 2018, College Park, MD. 1-5 Oct. 2018.
- Diamond, Jacob; **Stovall, A.E.L.**; Mclaughlin, Daniel; Slesak, Rob. Wetland Microtopographic Structure is Revealed with Terrestrial Laser Scanning. Abstract H11D-1199, 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec. 2017
- David Lagomasino, Lola Fatoyinbo, SeungKuk Lee, Emanuelle Feliciano, **Atticus Stovall**, Ian Paynter. Getting to the root of the problem. NASA Hyperwall. 2017 Fall Meeting, AGU, New Orleans, LA, 11-15 Dec. 2017.
- Vorster, Anthony; **Stovall, A.E.L.**. Biomass Estimate Variability between Allometric Equations from Tree to Landscape Scale. Abstract 427, SAF 2017, Portland, OR, Oct. 2017
- Alan Strahler, Jeff Atkins, Martin Beland, Debbie Crawford, Mark Danson, Mathias Disney, Ahmed Elsharif, Rachel Gaulton, Christopher Gough, Tom Jovanovic, Crystal Schaaf, **Atticus Stovall**. Early scanner data and structure retrievals from TLS calibrated by destructive sampling at Harvard Forest. Silvilaser 2017, Virginia Tech, Blacksburg, VA, 10-12 Oct. 2017