

APPOINTMENTS

Current:

Assistant Professor in the Department of Environmental Science (American University, 2017 – present)

NASA Carbon Monitoring System Science Team

NASA Arctic Boreal Vulnerability Experiment (ABoVE) Science Team

Previous:

NASA Postdoctoral Program Fellow (Goddard Space Flight Center, 2015 - 2017)

EDUCATION

Ph.D. University of California, Santa Barbara, Department of Geography (September 2015)

Research focus: Urban ecosystem analysis through fusion of hyperspectral imagery and lidar data

Certificate in College and University Teaching (January 2015)

M.A. University of Denver, Department of Geography (2007)

Thesis: Rural vs. Rural: An examination of the disparities in access to primary care among Colorado's non-metropolitan communities

B.A. Middlebury College, Department of Geography (2001)

Study abroad: Universidad de La Serena, Chile (July 1999 – February 2000)

PUBLICATIONS

Peer reviewed (student author underlined)

Miller, D., **Alonzo, M.**, Meerdink, S., Allen, M., Tague, C., Roberts, D., McFadden, J. (*in revision*) Seasonal and interannual drought responses of vegetation in a California urbanized area measured using complementary remote sensing indices. *ISPRS Journal of Photogrammetry and Remote Sensing*.

Alonzo, M., Van Den Hoek, J., Murillo-Sandoval, P., Steger, C., & Zinda, J.A. (2021) Mapping and quantifying land cover dynamics using dense remote sensing time series with the user-friendly pyNITA software. *Environmental Modelling and Software*, 145, 105179,

Cessna, J., **Alonzo, M.**, Foster, A., Cook, B., (2021) Mapping boreal forest spruce beetle health status at the individual crown scale using fused spectral and structural data. *Forests*. 12 (9), 1145

Alonzo, M., Baker, M.E., Gao, Y., Shandas, V. (2021) Spatial configuration and time of day impact the magnitude of urban tree canopy cooling. *Environmental Research Letters* 16(8).

Alonzo, M., Dial, R. J., Schulz, B. K., Andersen, H. E., Lewis-Clark, E., Cook, B. D., & Morton, D. C. (2020). Mapping tall shrub biomass in Alaska at landscape scale using structure-from-motion photogrammetry and lidar. *Remote Sensing of Environment*, 245, 111841.

Miller, D., **Alonzo, M.**, Roberts, D.A., Tague, C.L., & McFadden, J.P. (2020) Drought response of urban trees and turfgrass using airborne imaging spectroscopy. *Remote Sensing of Environment* 240, 111646.

Steger, C., Nigussie, G., **Alonzo, M.**, Warkineh, B., Van Den Hoek, J., Fekadu, M., Evangelista, P., & Klein, J. (2020) Knowledge Co-production to Assess Environmental Change in the Ethiopian Highlands. *Ecology and Society* 25 (2):2.

Alonzo, M., Andersen, H-E., Morton, D.C., & Cook B.D. (2018) Quantifying boreal forest structure and composition using UAV structure from motion. *Forests*. 9(3), 119.

- Babcock, C., Finley, A.O., Andersen, H-E., Pattison, R., Cook, B.D., Morton, D.C., **Alonzo, M.**, Nelson, R., Gregoire, T., Ene, L., Gobbaken, T., Naesset, E. (2018) Geostatistical estimation of forest biomass in interior Alaska combining Landsat-derived tree cover, sampled airborne lidar and field observations. *Remote Sensing of Environment*.
- Alonzo, M.**, Morton, D.C., Cook, B.D., Andersen, H.E., Babcock, C., & Pattison, R. (2017) Patterns of canopy and surface layer consumption in a boreal forest fire from repeat lidar. *Environmental Research Letters*. 12,6.
- Roberts, D.A., **Alonzo, M.**, Weatherly, E., Dennison, P., & Dudley, K. (2017) Multiscale analysis of urban areas using mixing models. Invited book chapter for *Integrating Scale in Remote Sensing and GIS*. Quattrochi, D., Wentz, L., Lam, N., & Emerson, J. (Eds.)
- Alonzo, M.**, Van Den Hoek, J., & Ahmed, N. (2016). Capturing coupled riparian and coastal disturbance from industrial mining using cloud-resilient satellite time series analysis. *Scientific Reports*. 6, 35129; doi: 10.1038/srep35129.
- Jenerette, G.D., Weller Clarke, L., Avolio, M.L., Pataki, D.E., Gillespie, T.W., Pincetl, S., Nowak, D.J., Hutya, L.R., McHale, M., McFadden, J.P., & **Alonzo, M.** (2016) Environmental Filters and Trait Choices Shape Urban Tree Biodiversity. *Global Ecology and Biogeography*.
- Alonzo, M.**, McFadden, J.P., Nowak, D.J., & Roberts, D.A. (2016) Mapping urban forest structure and function using hyperspectral imagery and lidar data. *Urban Forestry & Urban Greening*, 17, 135-147.
- Roth, K.L., Roberts, D.A., Dennison, P., Peterson, S.H., & **Alonzo, M.** (2015) The impact of spatial resolution on the classification of plant species and functional types within imaging spectrometer data. *Remote Sensing of Environment*, 171, 45-57.
- Roth, K.L., Roberts, D.A., Dennison, P.E., **Alonzo, M.**, Peterson, S.H., Beland, M. (2015). Evaluating strategies for discriminating plant species across diverse ecosystems with imaging spectroscopy. *Remote Sensing of Environment*, 167, 135-151.
- Alonzo, M.**, Bookhagen, B., McFadden, J.P., Sun, A., & Roberts, D.A. (2015) Mapping urban forest leaf area index with airborne lidar using penetration metrics and allometry. *Remote Sensing of Environment*, 162, 141-153.
- Alonzo, M.**, Bookhagen, B., & Roberts, D. A. (2014). Urban tree species mapping using hyperspectral and lidar data fusion. *Remote Sensing of Environment*, 148, 70–83.
- Alonzo, M.**, Roth, K., Roberts, D. (2013). Identifying Santa Barbara’s urban tree species from AVIRIS imagery using canonical discriminant analysis. *Remote Sensing Letters*, 4(5), pp. 513-521.

Other publications and media

- Fox5 DC segment, *New study finds that planting trees can help drop early evening temperatures* (July 14, 2021, Washington, DC) <https://www.fox5dc.com/news/new-study-finds-that-planting-trees-can-help-drop-early-evening-temperatures>
- Konheim, Orinn, “Entering its second year, initiative strives to protect Tidal Basin and its cherry trees ‘at a pivotal moment’”, *The DC Line* (March 24, 2020) <https://thedcline.org/2020/03/24/entering-its-second-year-initiative-strives-to-protect-tidal-basin-and-its-cherry-trees-at-a-pivotal-moment/>
- Watts, Andrea; Andersen, Hans-Erik; Cook, Bruce; **Alonzo, Mike**. 2019. “Innovation in the Interior: How state-of-the-art remote sensing is helping to inventory Alaska’s last frontier”. *Science Findings* 222. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station. 5 p.

NBC4 segment, *Researchers Find the Coolest Trees in the District* (June 21, 2019, Washington, DC)
https://www.nbcwashington.com/news/local/researchers-find-the-coolest-trees-in-the-district_washington-dc/136846/

Howard, H. & **Alonzo, M.** (2010) Improving watershed health and air quality in Washington, DC. *Mapping Forestry*. P. Eredics (Ed.). Redlands, CA: Esri Press.

Alonzo, M. (2009) Casey Trees Study: Understanding the Residential Energy Benefits of Trees in the District of Columbia. *City Trees*. May/June 2009

GRANTS, FELLOWSHIPS, AND AWARDS

Research grants (funded)

Principal Investigator, *Understanding tree species and site controls on urban transpiration using high resolution spatial analyses*, National Science Foundation -- \$416,659 (3 years, 2020 – 2023)

Co-Investigator, *NASA-USFS Partnership to Advance Operational Forest Carbon Monitoring in Interior Alaska*, NASA Carbon Monitoring System – AU portion: \$136,000 (3 years, 2020 – 2022).

Principal Investigator, *Expanding access to data-intensive remote sensing algorithms through collaboration with the SES research community*. National Socio-Environmental Synthesis Center (SESYNC) – AU portion: \$89,000 (1 year, 2018).

Principal Investigator, *Mapping boreal forest structure and composition using fine-scale lidar and hyperspectral data from the G-LiHT Airborne Imager*. Sub-award via NASA Carbon Monitoring System – AU portion: \$123,000 (3 years, 2017 – 2019).

Imagery Grant, GeoEye Foundation (2011)

Fellowships

NASA Postdoctoral Program Fellowship (2015 – 2017)

EPA-STAR Fellowship (2014) -- \$84,000.

UCSB Graduate Division Dissertation Fellowship (2014) -- \$12,647

Casey Trees Fellow, Garden Club of America Zone VI Fellowship in Urban Forestry (2014) -- \$4,000

Robert N. Colwell Memorial Fellowship (2014) - \$6,000 (American Society for Photogrammetry and Remote Sensing Foundation)

AU Student advisee fellowships:

Avery Williams (MS '21) - Casey Trees Fellow, Garden Club of America Zone VI Fellowship in Urban Forestry (2019) -- \$5,000

Awards and Scholarships

Jack Child Teaching with Technology Award -- 2019

Mellon Fund Competition (\$1,900, American University) – 2018

International Association for Urban Climate / American Meteorological Society Student Presentation Award (9th International Conference on Urban Climate)

The Jack Estes Memorial Award (\$1,000 for excellence in remote sensing research)

Outstanding Student Paper Award (Biogeosciences) – AGU 2014

Special Achievement in GIS, ESRI Users Conference (2010)

Graduate Student Association Travel Grant -- \$200 (AGU 2014 in San Francisco, CA)

UCSB Graduate Senate Doctoral Student Travel Grant -- \$1030 (ForestSat 2014 in Riva del Garda, Italy)

Dangermond Travel Scholarship - \$1200 (ICUC9 in Toulouse, France)

Dangermond Travel Scholarship - \$500 (AAG 2015 in Chicago, IL)
Dangermond Travel Scholarship - \$600 (AAG 2014 in Tampa, FL)
Dangermond Travel Scholarship - \$500 (AGU 2013 in San Francisco, CA)
Dangermond Travel Scholarship - \$1200 (Riegl Lidar 2013 in Vienna, Austria)
Dangermond Travel Scholarship - \$500 (AAG 2013 in Los Angeles, CA)
Dangermond Travel Scholarship - \$580 (AAG 2012 in New York City, NY)

TEACHING EXPERIENCE

Instructor:

ENVS 455/655: Environmental GIS (American University)
ENVS 485/685: Remote Sensing (American University)
ENVS 410/610: City and Environment (American University)
ENVS 250: Living on Earth (American University)
CORE 105-055: Maxing Out Planet Earth (Complex Problems, American University)
Introduction to Geographic Information Systems (UCSB)

SERVICE

Current/Recent

AU Core: CAS representative on the Habits of Mind/Natural-Scientific Inquiry Committee (2019 -)
ENVS tenure line and term faculty search committees (2018, 2019, 2020)
Graduate Studies Committee (Dept. Environmental Science., American University, 2018 -)
Geospatial Working Group (American University, 2017 -)
Outstanding Student Paper Award Judge at AGU (2017-)
Coordinator for the AU Environmental Science Honors Program (2017 -)

Past

SilviLaser Scientific Committee (2017)
NASA Earth Systems Science Fellowship Panelist (Washington, DC 2017)
NEON Hackathon: Designing teaching materials for hyperspectral imagery data using R/Python (2015)
AAG Remote Sensing Specialty Group Awards ad-hoc committee member (2015)
UCSB-ASPRS Workshop co-organizer / instructor: How to answer science questions with airborne lidar (2015)
UCSB-ASPRS Workshop co-organizer: Python for Scientific Computing and Image Analysis (2013)
UCSB-ASPRS Workshop co-organizer: Terrestrial lidar data acquisition, processing, and analysis (2013)
President UCSB Student chapter of the American Society for Photogrammetry and Remote Sensing (2012-13)

Peer reviewer for:

Environmental Science & Technology
Frontiers in Ecology and Evolution
ISPRS Journal of Photogrammetry and Remote Sensing
Journal of Selected Topics in Applied Earth Observations and Remote Sensing
Remote Sensing
Remote Sensing of Environment
Remote Sensing for Ecology and Conservation
Sensors
Urban Forestry and Urban Greening

PRESENTATIONS AND INVITED TALKS

- 2021 Urban trees cool the air but also feel the heat (Urban Ecology Collaborative, Virtual, **Invited**)
- 2020 High resolution monitoring of forest ecosystems using UAV and cubesats (Temple University, Philadelphia, PA; **Invited** colloquium)
- 2020 High resolution monitoring of forest ecosystems using UAV and cubesats (UMBC, Baltimore, MD; **Invited** colloquium)
- 2019 Mapping tall shrub structure in Alaska at landscape scale using structure-from-motion photogrammetry and lidar (AGU, San Francisco, CA)
- 2019 High resolution monitoring of forest ecosystems using UAV and cubesats (KU Leuven, Belgium; **Invited**)
- 2019 Researching the District of Columbia (AU Library Conference for High-Impact Research, Washington, DC; **Invited Panelist**)
- 2019 NITA Phenology and Python Tool Talk and Demo (AAG, Washington, DC)
- 2019 Hands-on Research in Real Time: Crowd Sourcing in the Classroom using Google Tools (Ann Ferren Conference, DC)
- 2018 Mapping boreal shrub biomass: Scaling from field estimates to spatial models using UAV and airborne lidar (AGU, Washington, DC)
- 2018 Update: Forest monitoring in interior Alaska using UAV, G-LiHT, and Landsat data (USFS/NASA meeting, Seattle, WA)
- 2017 Monitoring post-fire changes in species composition and stand structure in boreal forests using high-resolution, 3-D aerial drone data and Landsat (AGU, New Orleans, LA)
- 2017 Urban Ecosystem Analysis using Hyperspectral Imagery and Lidar Data (American University Sciences Colloquium)
- 2017 Monitoring post-fire changes in species composition and stand structure in boreal forests using optical imagery and structural data (SilviLaser, Blacksburg, VA)
- 2017 Cloud-resilient Remote Sensing Time Series Analysis of Land Cover Change in Tropical, Socio-environmental Systems (AAG, Boston, MA)
- 2017 Monitoring Approaches to Understand the Socio-ecological Dynamics of the Urban Forest (AAG, Boston, 2017) (**Invited Panelist**)
- 2016 Monitoring fire effects and post-fire ecosystem recovery in boreal forest using airborne lidar and spectral data (AGU, San Francisco, CA)
- 2016 Changes in forest structure from fires on Alaska's Kenai Peninsula measured using airborne lidar (ESA, Ft. Lauderdale, FL)
- 2016 Spatial Justice Symposium: Exploring the intersection of remote sensing, art, architecture and contemporary eco-politics in the making of new legal and political forums. (Co-convener, Basel, Switzerland) (**Invited**)
- 2016 Spatial justice at the threshold: sensing ecological conflict and more-than-human rights (Basel, Switzerland) (**Invited**)
- 2015 Quantifying forest and coastal disturbance from industrial mining using satellite time series analysis under very cloudy conditions (AGU, San Francisco, CA)
- 2015 Mapping urban forest structure using airborne imaging spectroscopy and lidar (ICUC9, Toulouse, France)
- 2015 Complete maps of urban forest structure and function using hyperspectral imagery and lidar data (AAG, Chicago, IL)
- 2014 Mapping Urban Forest Leaf Area Index Using Lidar: A Comparison of Gap Fraction Inversion and Allometric Methods (AGU, San Francisco, CA)
- 2014 Mapping Urban Forest Leaf Area Index with high scan angle lidar in discontinuous canopy (ForestSat2014, Riva del Garda, Italy)
- 2014 Mapping urban Leaf Area Index (LAI) using high point density lidar (AAG, Tampa, FL)
- 2013 Urban forest species mapping with imaging spectroscopy and lidar (AGU, San Francisco, CA)

- 2013 Urban forest inventory with imaging spectroscopy and lidar (Riegl UC, Vienna, Austria)
- 2013 Urban forest inventory with imaging spectroscopy and lidar (AAG, Los Angeles, CA)
- 2012 Crown scale fusion of imaging spectroscopy and lidar for urban tree species identification **(Invited)** (ForestSat2012, Corvallis, OR)
- 2012 Crown scale fusion of imaging spectroscopy and lidar for urban tree species identification (IGARSS, Munich, Germany)
- 2012 Mapping and quantifying the urban forest with imaging spectroscopy and lidar (ASPRS, Sacramento, CA)
- 2012 Mapping and quantifying the urban forest with imaging spectroscopy and lidar (AAG, New York, NY)
- 2010 Integrating ArcGIS Server and Flex: Highlighting Trees in Washington, DC (ESRI UC, San Diego, CA)
- 2010 The Benefits of Urban Trees (Center for Neighborhood Technology, Chicago, IL) **(Invited)**
- 2007 Incorporating GIS into Community Tree Inventories (Partners in Community Forestry, Baltimore, MD)
- 2007 Implementing the Urban Forest Effects Model in Washington, DC (Rutgers, NJ) **(Invited)**
- 2004 Physician location and retention in rural Colorado (Assoc. of American Geographers, Philadelphia, PA)

PROFESSIONAL EXPERIENCE

- 2007 – 2010 Casey Trees, Washington, DC – **GIS Specialist**
- 2004 – 2006 Epic Systems Corporation, Madison, WI – Application Manager
- 2003 – 2004 GVR Metropolitan District, Denver, CO – **GIS Consultant**
- Summer 2002 FV Bligh Reef and FV Carmen Rose, Cordova and Bristol Bay, AK – Fisherman
- 2001 – 2002 Pictometry International, Rochester, NY – Aerial Data Acquisition
- Summer 2001 Middlebury College Geography Department, Middlebury, VT – **GIS Intern**

PROFESSIONAL AFFILIATIONS

- Association of American Geographers (2011 – present)
- American Geophysical Union (2013 – present)
- International Association for Urban Climate (2015-present)