

Michael G. Alonzo

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APPOINTMENTS

Current:

Assistant Professor in the Department of Environmental Science (American University, 2017 – present)
NASA Science Collaborator (Goddard Space Flight Center, 2017 - present)

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 (undergraduate mentee co-author underlined)

- 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. (*under review*) 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. (*in revision*) Patterns of canopy and surface layer consumption in a boreal forest fire from repeat lidar. *Environmental Research Letters*.
- 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., Hutyrá, 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

- 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

FELLOWSHIPS AND AWARDS

Research grants

- Principal Investigator**, *Expanding access to data-intensive remote sensing algorithms through collaboration with the SES research community*. National Socio-Environmental Synthesis Center (SESYNC) -- \$TBD (1 year, 2017-2018).
- 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 -- \$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)

Awards and Scholarships

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 496/696: Remote Sensing (2017 – American University)
Introduction to Geographic Information Systems (2014 – UCSB)
Introduction to Geographic Information Systems (2013 -- UCSB)

Teaching Assistant

Oceans and Atmosphere (2014 -- UCSB)
Measuring our Environment (2011 -- UCSB)
Introduction to Remote Sensing (2011 -- UCSB)
Maps and Spatial Reasoning (2010 -- UCSB)
The Human Population (2004 – U. Denver)
Cities and Civilizations (2003 – U. Denver)
Introduction to GIS (2003 – U. Denver)
People, Places, and Landscapes (2002, 2003, 2004 – U. Denver)

UNDERGRADUATE MENTORSHIP

Matt Mullin: Independent study using drones and a lidar system to collect coastal erosion data (2017)

Mike Zuanich and Alex Sun: Calculation of plot-level LAI using high-dynamic range NIR hemispherical photography. Novel approach for foliage binarization using segmentation in eCognition (2013).

Seth Gorelik: Trained as lead field data collector for an Urban Forest Effects (UFORE) model plot-based urban forest inventory. Identified trees, measured crown structure, took NIR hemispherical photos. Led other field data collection interns (2012).

Keri Opalk and Alex Sun: Field crew for UFORE data collection (2012)

Bryan Wong: Atmospheric correction of AVIRIS imagery using MODTRAN5 and ATCOR-4 (2011)

SERVICE

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:

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

Sensors

Urban Forestry and Urban Greening

PRESENTATIONS AND INVITED TALKS

*Presenting author unless noted with **

- 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 *Spatiotemporal Patterns in Burn Severity and Post-Fire Recovery in Interior Alaska Using Multi-Sensor Airborne Data, Forest Inventory Plots, and Satellite Products (SilviLaser, La Grande Motte, France)
- 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 *Multi-sensor remote sensing of the extent and persistence of the 2005 Amazon drought (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 *Discriminating Plant Species Across Diverse Ecosystems With Imaging Spectroscopy (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

- 2013 Targeted Victory, Alexandria, VA – **GIS Consultant**
- 2007 – 2010 Casey Trees, Washington, DC – **GIS Specialist**
- 2004 – 2007 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)