

Moyo AJAYI

Earth Scientist | Environmental Engineer

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Enthusiastic geoscientist, dynamic leader, and productive data analyst with skills summarized as :

- Gas Geochemist : Gas Chromatography & Cavity Ring Down Spectroscopy
- Applied Field Geoscientist : Multiple years of experience in deploying, maintaining, and designing research in remote locations
- Earth Data Scientist : Highly skilled in cleaning, analyzing, and visualizing gigabyte-sized data sets
- Effective Data Communicator : Talented narrator of data stories, ensuring comprehension for diverse audiences

PROFESSIONAL EXPERIENCE

Present May2018	Long-term Continuous Observations of Gas Emissions in Upland Forest, OAK RIDGE, TN One of three projects of my dissertation : <ul style="list-style-type: none">➤ Working with NOAA's Atmospheric Turbulence Diffusion Division (ATDD) to quantify CH₄ emissions at soil-, stem-, canopy-atmosphere interfaces➤ Deployed CRDS (Picarro G2201-i) coupled to an autochamber (eosAC) and a homemade sleeve for soil- and stem-gas measurements, respectively➤ Plan to collect 6+ months (tens of GBs) of measurements➤ Applying time-series & signal processing analysis (wavelet & spectral analysis) <div>MATLAB Python Electrical Eng. Chamber Fabrication Continuous Measurements</div>
Present Jul2017	Survey of Gas Emissions in Valles & Yellowstone Calderas, SANDOVAL Co., NM & Yellowstone, WY Two of three projects of my dissertation : <ul style="list-style-type: none">➤ Developed mobile laboratory using cavity ring-down spectroscopic technology to measure CH₄ & CO₂ and carbon isotopes➤ Investigated spatial and temporal trends of gas emissions at both calderas to compare and contrast the two supervolcanoes➤ Designed project to gather first measurements of diffuse CH₄ emissions in N. American calderas➤ Constructed an algorithm to model the sampling of soil gas emissions with linear programming and Monte Carlo simulation➤ Devised algorithms to quantify hundreds of flux and isotopic measurements at dozens of locations between both calderas➤ Recorded emissions prior, during, after geyser eruptions (including tallest active geyser, Steamboat)➤ Corresponded with hundreds of patrons during data collection <div>MATLAB Python Lab to Field Instrument Deployment Survey Measurements Science Communication</div>
Aug2016 Oct2015	Surface Fluxes at Hydraulic Fracturing Sites, MORGAN COUNTY, TN Master's Thesis, Completed in 2016 : <ul style="list-style-type: none">➤ Established methodology for spectroscopic-chamber (Picarro G2201-i & eosAC) measurements at several hydraulic fracturing sites➤ Sought to detect thermogenic CH₄ from leaking natural gas wells with surface flux measurements and carbon isotope measurements➤ Fabricated static chambers to sample heavier hydrocarbons; processed samples with gas chromatograph➤ Final products include data reduction algorithms and a manuscript <div>Environmental Assessment Energy Science MATLAB Gas Chromatography Lab to Field Instrument Deployment</div>
May2014 Jan2013	Arctic Shrub Carbon Assimilation, TOOLIK LAKE, AK Senior Thesis, Completed in 2014 : <ul style="list-style-type: none">➤ Traveled above the Arctic Circle to the tundra as a team member of a multi-institution NASA funded project➤ Examined carbon assimilation by deciduous shrubs in a warming tundra➤ Drafted and constructed homemade chamber in the lab and deployed the chamber and infrared gas analyzer in the field <div>Open Path Infrared Gas Analysis MATLAB Chamber Fabrication</div>

EDUCATION

Summer 2020 PhD Candidate, Earth Science & Environmental Engineering, Vanderbilt University, Nashville, TN
Summer 2016 MS Candidate, Earth & Environmental Sciences, Vanderbilt University, Nashville, TN
Spring 2014 Bachelor's, Environmental Biology, Minor in Earth Science, Columbia University, New York, NY

SKILLS

Programming & Software | Advanced MATLAB, Tableau
Programming & Software | Experienced Python, Git, Web Scraping, PostgreSQL, Linux, AWS
Frameworks & IDEs Microsoft VS Code, MATLAB Live Editor, Pandas, Bokeh, scikit-learn, scipy, numpy, Jupyter
Algorithms Monte Carlo Simulation, Bayesian Hierarchical Modeling, Supervised Classification & Regression

PUBLICATIONS

- 2018 Hornberger, George, Ayers, John, & **Ajayi, Moyo** 2018 : "Hydraulic Fracturing" *Oxford Bibliographies*, DOI : 10.1093/obo/9780199363445-0006
- 2018 Taylor, B. N., Patterson, A. E., **Ajayi, M.**, Arkebauer, R., Bao, K., Bray, N., ... & Guerin, M. 2018 : "Growth and physiology of a dominant understory shrub, *Hamamelis virginiana*, following canopy disturbance in a temperate hardwood forest" *Canadian Journal of Forest Research*, 47(999)
- 2017 **Ajayi, Moyo**, Ayers, John, & Hornberger, George 2017 : "Detection of Surface Fluxes of Thermogenic CH₄ at HVHF Sites in Morgan Co., TN," Presented at Goldschmidt Annual Meeting, Paris, France, 14 Aug 2017
- 2017 **Ajayi, M.** : "Methane Rising". 2017 *Web Blog Post*
- 2015 **Ajayi, M.**, Ayers, J., Hornberger, G. 2015 : "Geochemical and Isotopic Analysis of Escaped Natural Gases in Hydraulically Fractured and non-Fractured," Abstract A43F-0343 presented at AGU Fall Meeting, San Francisco, CA 14-18 Dec

PROFESSIONAL ENRICHMENT

Sci Com Mar2019	ComSciCon, ATLANTA, GA <ul style="list-style-type: none">➢ Drafted a thinkpiece on the integration of computational technology and geosciences and presented an oral rendition of my research➢ Engaged with over two dozen faculty and professionals on the best practices on scientific communication <div>Science Communication for non-Scientists</div> <div>Writing and Oral Communication</div>
Invited Speaker Nov2018	Graduate Climate Conference, PACK FOREST, WA <ul style="list-style-type: none">➢ Presented preliminary results from my dissertation at a small conference among other scientists interested in aspects of climate change <div>Science Communication for Scientists</div> <div>Professional Presentation</div>
Participant Jul2016	Deep Carbon Observatory Summer School, YELLOWSTONE NAT. PARK, WY <ul style="list-style-type: none">➢ Graduate students and post-doctoral associate learned in the field and in the classroom about the complex nature and processes of deep carbon within the Yellowstone caldera➢ Forged a connection with colleagues at Univ. of New Mexico, which turned into research for dissertation <div>Explored New Field Area</div> <div>Connections with Other Scientists</div>
TA Aug2015-Present	Creating Course Materials for Computational Geosciences, NASHVILLE, TN <p>Geoscience Computation Instruction :</p> <ul style="list-style-type: none">➢ Created multiple modules, daily quizzes, and HW materials that guided students toward the fundamentals of introductory earth sciences➢ Lessons were created to supplement course material and to introduce computational (MATLAB and Excel) skills to younger undergraduates <div>Teaching</div> <div>Mentoring</div> <div>Computational Earth Sciences</div>

HONORS AND AWARDS

- 2019 National Association of Black Geoscientists, 1st Place Oral Presentation, Fayetteville, AR
- 2019 Vanderbilt Summer Research Award, Research Grant Awardee, Nashville, TN
- 2016 American Geosciences Institute, Diversity Grant Recipient, Alexandria, VA