

# JOSHUA ANADU

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## EDUCATION

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<b>California Institute of Technology</b> PhD in Geobiology	October 2021 - Present
<b>Oklahoma State University</b> BSAG in Environmental Science Honors College Degree Minors in Chemistry & Geology Thesis: "A Detailed Description of the Morphology, Taxonomy, and Ecology of <i>Coniuncta radix</i> , an Agglutinated Epibenthic Foraminifera from the Pacific Abyssal Plain."	August 2017 - May 2021 <i>Summa Cum Laude</i>

## CONTINUED EDUCATION: SHORT COURSES, WORKSHOPS, OTHER

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<b>Life Detection Forum Webinar Series</b>	August 2020 - Present
<b>Microbial 'Omics Seminar Series</b>	July 2020 - August 2020

## PROFESSIONAL SOCIETIES

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<b>American Geophysical Union (AGU)</b>	January 2021 - Present
<b>Geological Society of America (GSA)</b>	May 2020 - Present
<b>American Institute of Professional Geologists (AIPG)</b>	January 2020 - Present
<b>Network for Life Detection (NFoLD)</b>	December 2019 - Present

## RESEARCH EXPERIENCE

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### **Invertebrate Paleontology Lab**

August 2019 - June 2021

Oklahoma State University: Supervised by Dr. Ashley Burkett

*Research Lab Member*

The primary focus of my research is the investigation of modern epibenthic foraminifera colonizing artificial substrates at station M in the Pacific Ocean. I am also investigating both modern and paleoecology of benthic foraminifera in the Pacific Ocean Basin.

### **Climate Change Impacts in Semi-Arid Regions REU**

June 2019 - August 2019

University of Texas: Supervised by Dr. Rob Plowes

*NSF-Funded Summer Researcher*

My research project focused on determining whether or not *Solenopsis invicta* (fire ants) exhibit behavioral fever as a social immune response against *Kneallhazia solenopsae*: a host-specific microsporidian pathogen being incorporated as a biological control.

### **Fish Toxicology Lab**

August 2018 - August 2020

Oklahoma State University: Supervised by Dr. Matteo Minghetti

*Research Lab Member*

My research is centered around quantifying and visualizing toxic stress in Rainbow Trout cells to better understand the cellular mechanisms associated with reactive oxygen species regulation.

### **Soil Microbiology Lab**

January 2018 - May 2018

*Research Lab Member*

Gathered and analyzed preliminary data to investigate the effects of heavy metal contamination on soil microbiomes.

## JOB EXPERIENCE

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### **NASA JPL & California Institute of Technology**

November 2020 - August 2021

*Mars 2020 Science Team Intern*

Supervised by: Dr. Kenneth Farley

Participate in daily operations in the Mars 2020 mission, assisting the project scientist and the project science office on both scientific and outreach documents.

### **Oklahoma State University**

August 2020 - December 2020

*Honors Tutor*

Tutored undergraduate honors students in chemistry.

### **Oklahoma State University**

August 2020 - December 2020

*LASSO Student Tutor*

Tutored undergraduate students in biology, physics, soil science, geology, math, & chemistry.

### **Aestus, LLC**

June 2020 - June 2021

*Field Technician/Data Analyst*

Supervised by: Samantha Frandsen & Dr. Todd Halihan

Member of the field team working to collect relevant geophysical data on in Springfield, MO and Ada, OK. Created, analyzed, and trimmed large data sets, which I integrated into professional reports for clients.

### **Harris County DRAC/MAP**

May 2018 - August 2018

### Research Intern

Supervised by: Anita Schiller

Carried out the day-to-day operations necessary to rear and release *Toxorhynchites rutilus* (Tox) - a biological control agent for pest mosquitoes. Participated in the field release of Tox along with the collection of pest mosquitoes for release assessment. Created and successfully completed an artificial diet trial experiment to aid in the mass production of Tox as a biological control agent.

## FIELD EXPERIENCE

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<b>Naukluft Mountains, Namibia</b>	June 2021 - August 2021
FieldpPartner for Dustin Morris in the stratigraphic and structural mapping of the Naukluft Mountains.	
<b>Oklahoma City, OK</b>	October 2020
Electrical resistivity imaging (ERI) surveys for site characterization.	
<b>Springfield, MO</b>	June 2020 - July 2020
Electrical resistivity imaging (ERI) surveys for site characterization.	
<b>Stillwater, OK - Lightning Lake</b>	June 2020
Electrical resistivity imaging (ERI) surveys for site characterization.	
<b>Austin, TX - Brackenridge Field Lab</b>	June 2019 - August 2019
Fire ant collection for genetic analysis. Hemispherical imaging for gap light analysis.	
<b>Houston, TX</b>	June 2018 - August 2018
Placement & recapture of mosquito traps for population studies. Release of <i>Toxorhynchites rutilus</i> mosquitoes as biological control.	
<b>Stillwater, OK - Boomer Creek</b>	August 2017 - June 2021
Monthly monitoring of physical and chemical parameters associated with water quality at Boomer Creek. Yearly macro-invertebrate collection for stream health assessment.	

## HONORS, AWARDS, & FELLOWSHIPS

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<b>NSF Graduate Research Fellow*</b>	Fall 2021 - Present
<b>California Institute of Technology President's Fellow*</b>	Fall 2021 - Present
<b>California Institute of Technology GPS Fellow*</b>	Fall 2021 - Present
<b>Low Wentz Research Symposium Runner-Up*</b>	Spring 2021
<b>OSU Athletics Scholar-Athlete of the Year</b>	Fall 2020 - Spring 2021
<b>OSU Track &amp; Field Scholar-Athlete of the Year</b>	Fall 2020 - Spring 2021
<b>Arthur Ashe Sports Scholar</b>	Spring 2021
<b>Oklahoma State University Outstanding Senior</b>	Fall 2020 - Spring 2021
<b>Oklahoma State University Senior of Significance</b>	Fall 2020 - Spring 2021
<b>Ferguson College of Agriculture Senior of Distinction</b>	Fall 2020 - Spring 2021
<b>Oklahoma Louis Stokes Alliance for Minority Participation Scholar*</b>	Fall 2020
<b>Barry Goldwater Congressional Scholarship*</b>	2020
<b>Dr. Gerald Lage Academic Achievement Award</b>	2020
<b>Big-12 First-Team Academic All-American</b>	2020
<b>CoSIDA Google Cloud Third-Team Academic All-American</b>	2020

CoSIDA Google Cloud Academic All-District Team	2020
Karen L. Smith Undergraduate Symposium Best Presenter*	2020
Lew Wentz Research Fellowship*	2020
Joseph Flemming Memorial Continuing Scholarship*	2020
Joseph Flemming Environmental Science Scholarship*	2020
HCA Healthcare Scholar*	2020
Oklahoma Louis Stokes Alliance for Minority Participation Scholar*	Spring 2020
Mortar Board Honor Society Achafoa Chapter Member	2020
Morris K. Udall Congressional Scholarship Honorable Mention	2020
Oklahoma Louis Stokes Alliance for Minority Participation Scholar*	Fall 2019
HCA Healthcare Scholar*	2019
Joseph Flemming Environmental Science Scholarship*	2019
Joseph Flemming Memorial Continuing Scholarship*	2019
Big-12 First-Team Academic All-American	2019
Barry Goldwater Congressional Scholarship Institutional Nominee	2019
Morris K. Udall Congressional Scholarship Institutional Nominee	2019
Gulf Coast Undergraduate Research Symposium Outstanding Presentation Award	2019
Oklahoma State University Honors College General Honors Award	2019
CoSIDA Google Cloud Third-Team Academic All-American	2019
WK Kellogg Foundation & Bobby Moser Scholarship*	2018
Morris K. Udall Congressional Scholarship Institutional Nominee	2018
Oklahoma State Out-Of-State Achievement Scholarship*	2017-2021
Houston Chronicle Athlete of the Week	2017

\* indicates funded award

## TECHNICAL SKILLS

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Biological Lab Techniques	qPCR, Cell Culture, Insectary Upkeep, Cytotoxicity Assays
Microscopy Techniques & Systems	Light, Fluorescence, Cytation 5 Multi-Mode Reader, NikonSMZ25
Geo-spatial Programs	ArcGIS, Global Mapper, Rockworks (limited)
Data Visualization & Analysis	Surfer (limited), R (limited), Processing (limited)
Coding Languages	Python, Julia (limited), Java (limited)
Professional Programs	Adobe Suite, Microsoft Office Extensions, Latex
Geophysical Techniques	Electrical Resistivity Tomography (limited)
Modeling Tools	API LDRM

## LEADERSHIP

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<b>AIPG Campus Chapter President</b>	August 2020 - May 2021
<i>American Institute of Professional Geologists/Oklahoma State University</i>	
Led the campus chapter of AIPG to promote student development and provide student opportunities for career advancement.	
<b>CovEd Mentor</b>	August 2020 - December 2020
<i>CovEducation</i>	
Tutored a junior high student to supplement online learning caused by the pandemic.	
<b>AIPG Campus Chapter Secretary</b>	January 2020 - August 2020
<i>American Institute of Professional Geologists/Oklahoma State University</i>	
Delineate local, regional, and national AIPG information to members via email and social media. In addition, aiding in the planning of club events.	

**Environmental Science Club Secretary**

May 2019 - May 2020

*Oklahoma State University*

Distribute Environmental Science Club information to members via email and social media. In addition, aiding in the planning of club events and acting as an advisor for environmental-related activities across campus.

**Environmental Science Program Review Team Student Representative**

September 2018

*Oklahoma State University*

I acted as one of five student representatives during a period in which the environmental science program was undergoing a major review from an external team that was looking to revamp the curriculum and direction of the program.

**Environmental Science Club Blue Thumb Coordinator**

May 2018 - May 2021

*Oklahoma State University*

Coordinating monthly creek monitoring of Boomer Creek as part of a citizen science program run by the Oklahoma Conservation Commission Blue Thumb Program.

**Environmental Science Club President**

May 2018 - May 2019

*Oklahoma State University*

Led and organized the activities associated with the Environmental Science Club including: volunteer opportunities, environmental activism, group activities, and administrative affairs.

**Environmental Science Club Historian**

August 2017 - May 2018

*Oklahoma State University*

Ran the social media accounts for the Environmental Science Club and contributed in the planning of events and activities.

**Environmental Science Club College Representative**

August 2017 - May 2018

*Oklahoma State University*

Represented the Environmental Science Club at College of Agriculture and Natural Resources meetings, which included voting on monetary allocation, college activities, and community representation.

**PUBLICATIONS**

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**2021**

**Anadu, J.** & Halihan, T. Using EasyBakeEarth, an excel climate model, to improve climate intuition (in prep).

Pickens, C., Halihan, T., **Anadu, J.**, & Frandsen, S. A comparison between model and field diesel mass recovery in dolomite karst. (in prep).

Chanda, C., Dufefoi, W., **Anadu, J.**, & Minghetti, M. Evaluation of the effect of silver and silver nanoparticles on the function of selenoproteins using an in-vitro model of the fish intestine: the cell line RTgutGC. *Ecotoxicology and Environmental Safety*. v. 211, p. 111930, 2021.

**NON-REFEREED WRITING**

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**2021**

**Anadu, J.** To P, Not to P? That Is (an Oversimplification of) the Biogeochemical Question-. Geobites, 20 Jan. 2021, [geobites.org/to-p-not-to-p-that-is-an-oversimplification-of-the-biogeochemical-question/](https://geobites.org/to-p-not-to-p-that-is-an-oversimplification-of-the-biogeochemical-question/).

## 2020

**Anadu, J.**, Ali, H., & Jackson, C. Ten steps to protect BIPOC scholars in the field, *Eos*, 101, 2020.

A Group of Goldwater Scholars. #STEMforBLM Open Letter and Call to Action. [bit.ly/STEMforBLM\\_openletter](https://bit.ly/STEMforBLM_openletter).

## PRESENTATIONS

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### 2020

**Anadu, J.** & Minghetti, M. *Investigating toxicity of silver and silver nanoparticles in RTgutGC cells through nuclear surface area visualization and quantification*. Online PowerPoint Presentation at the Karen L. Smith Life Science Undergraduate Research Symposium, May 1, 2020, Stillwater, OK, USA (moved online by COVID-19 Pandemic).

### 2019

Minghetti, M., Ulker, O., & **Anadu, J.** *Imaging of mitochondrial surface area and reactive oxygen species as a toxicity endpoint in the rainbow trout liver cells line, RTL-W1*. Poster Presentation at the Society of Environmental Toxicology and Chemistry, November 3-7, 2019, Toronto, ON, Canada.

**Anadu, J.** & Plowes, R. *Behavioral Fever & Microclimate in Fire Ants*. Oral presentation at the Gulf Coast Undergraduate Symposium, November 2-3, 2019 Houston, TX, USA.

**Anadu, J.** & Plowes, R. *Behavioral Fever & Microclimate in Fire Ants*. Poster presentation at The University of Texas at Austin Office of Undergraduate Research Summer Scholars Research Symposium, August 9, 2019, Austin, TX, USA.

**Anadu, J.**, Chanda, D., & Minghetti, M. *Quantifying and visualizing oxidative stress: An in vitro assessment of chemical toxicity on RTgutGC cells*. Poster presentation at the Karen L. Smith Life Science Undergraduate Research Symposium, April 24, 2019, Stillwater, OK, USA.

### 2018

**Anadu, J.**, Chanda, D., & Minghetti, M. *Quantifying and visualizing oxidative stress: An in vitro assessment of chemical toxicity on RTgutGC cells*. Poster presentation at the Karen L. Smith Life Science Undergraduate Research Symposium, December 7, 2018, Stillwater, OK, USA.

Chanda, D., **Anadu, J.**, & Minghetti, M. *Silver and selenium interaction and its effect on selenium metabolism studied using rainbow trout*. Poster presentation at the Society of Environmental Toxicology and Chemistry, November 4-8, 2018, Sacramento, CA, USA.

**Anadu, J.** & Carballo, F. *Harris County Precinct 4 DRAC/MAP Intern Presentation*. Oral Presentation at Harris County Summer Interns Celebration, Houston, TX, USA.

**Anadu, J.** Means, K., Dale, N., & Anderson, J. *Photoperiod Effect on Wheat (monocot) and Sunflower (eudicot)*. Poster presentation at Plant Biology Poster Symposium, May 1, 2018, Stillwater, OK, USA.

## SERVICE TO THE FIELD

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<b>OSU AIPG Chapter "Environmental Careers Panel" Organizer &amp; Host</b>	March 2021
<b>GSA GBGM "Diverse Faces in Geobiology" Bio Writer</b>	June 2020
<b>Earth ArXiv Moderator</b>	January 2021 - Present

## OUTREACH

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\*contact me for details on where to find media\*

Texas A&M NABG Chapter "Black Voices in Geosciences" Panelist	April 2021
Interview for PCPG Podcast on Minority Fieldwork Safety	July 2020
Interview for Nature Article entitled "Racism and harassment are common in field research - scientists are speaking up"	July 2020
Science Friday Interview for Segment on Fieldwork Inclusivity	July 2020
Fieldwork Initiative Interview for Field Stories Podcast	July 2020
YouTube Channel: Black Thoughts	2020 - Present

#### **PROFESSIONAL CERTIFICATIONS**

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24 Hour HAZWOPER Certified	2020
Oklahoma Conservation Commission Certified Creek Monitor	2017

#### **OTHER ACTIVITIES**

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Division I Track & Field Athlete	2017 - 2021
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