

OKLAHOMA GEOLOGICAL SURVEY

ANNUAL REPORT

2025

OKLAHOMA GEOLOGICAL SURVEY

LEGACY | VISION | SERVICE

MEWBOURNE COLLEGE OF EARTH AND ENERGY
THE UNIVERSITY OF OKLAHOMA

ACCESS TO TAR CREEK COURTESY OF THE QUAPAW NATION

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MISSION

The Oklahoma Geological Survey is a state agency for research and public service located on the Norman Campus of The University of Oklahoma and affiliated with the OU Mewbourne College of Earth and Energy. The Survey is chartered in the Oklahoma Constitution (70 OK Stat § 70-3310 (2014)). and is charged with investigating the state's land, water, mineral, and energy resources, and disseminating the results of those investigations to promote the wise use of Oklahoma's natural resources consistent with sound environmental practices.

COVER PHOTOS

Front. The OGS Field Geology Team samples mining chat piles at Tar Creek in Ottawa County; courtesy of the Quapaw Nation**.**
Back. Kevin Blackwood peruses aisles of legacy core maintained at the Oklahoma Petroleum Information Center in Norman.

STATE OF OKLAHOMA

J. Kevin Stitt, Governor

OFFICE OF THE SECRETARY OF ENERGY & ENVIRONMENT

Jeff Starling, Secretary of Energy & Environment

THE UNIVERSITY OF OKLAHOMA BOARD OF REGENTS

Rick Nagle, Chair

MEWBOURNE COLLEGE OF EARTH AND ENERGY

John Antonio, Dean

OKLAHOMA GEOLOGICAL SURVEY

Nicholas Hayman, State Geologist and Director

Publications produced by the Oklahoma Geological Survey are available to download from the OGS website (ou.edu/ogs). Publications on hard-copy can be purchased at the Oklahoma Petroleum Information Center:

OPIC, Oklahoma Geological Survey
2020 Industrial Blvd.
Norman, Oklahoma 73069
Phone: 405-325-1299
ogs@ou.edu | ou.edu/ogs

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ACRONYMS

AASG	American Association of State Geologists
AAPG	American Association of Petroleum Geologists
MCS	Midcontinent Section
SWS	Southwest Section
AGU	American Geophysical Union
ANSS	Advanced National Seismic System
ARCGIS	Arc/INFO Geographic Information System
BGN	U.S. Board on Geographic Names
CCS	Carbon Capture and Storage
CCUS	Carbon Capture, Utilization, and Storage
COGNA	Council of Geographic Names Authorities
CORE-CM	Carbon Ore, Rare Earth, and Critical Minerals Initiative
CT	Computed Tomography
DAS	Distributed Acoustic Sensing
DISC	Data Institute for Societal Challenges
DISSPATCH H2	Developing and Investigating Subsurface Storage Potential and Technical Challenges for Hydrogen
DMT	Digital Mapping Techniques
DOE	U.S. Department of Energy
EARTHMRI	Earth Mapping Resources Initiative
EPMA	Electron Probe Micro-Analyzer
GSA	Geological Society of America
SCS	South-Central Section
HEC-RAS	Hydrologic Engineering Center - River Analysis System
ICP-MS	Inductively Coupled Mass Spectrometry
LIDAR	Light Detecting and Ranging
MCEE	Mewbourne College of Earth and Energy
NASA	National Aeronautics and Space Administration
NGGDPP	National Geological and Geophysical Data Preservation Program
NSF	National Science Foundation
OGS	Oklahoma Geological Survey
OKBGN	Oklahoma Board on Geographic Names
OKEE	Oklahoma Environmental Education Expo
OPIC	Oklahoma Petroleum Information Center
OU	The University of Oklahoma
SAR	Synthetic Aperture Radar
INSAR	Interferometric SAR
NISAR	NASA-ISRO (Indian Space Research Organization) SAR
SEC	Sarkeys Energy Center
SEG	Society of Exploration Geologists
SEPM	Society for Sedimentary Geology
SPE	Society of Petroleum Engineers
SSA	Seismological Society of America
ES	Eastern Section
TOPO	Topography / Topographic
UAV	Unmanned Aerial Vehicle / drone
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
XRF	X-Ray Fluorescence
WPA	Works Progress Administration

LETTER FROM THE DIRECTOR



DR. NICHOLAS HAYMAN
OGS DIRECTOR AND
OKLAHOMA STATE GEOLOGIST

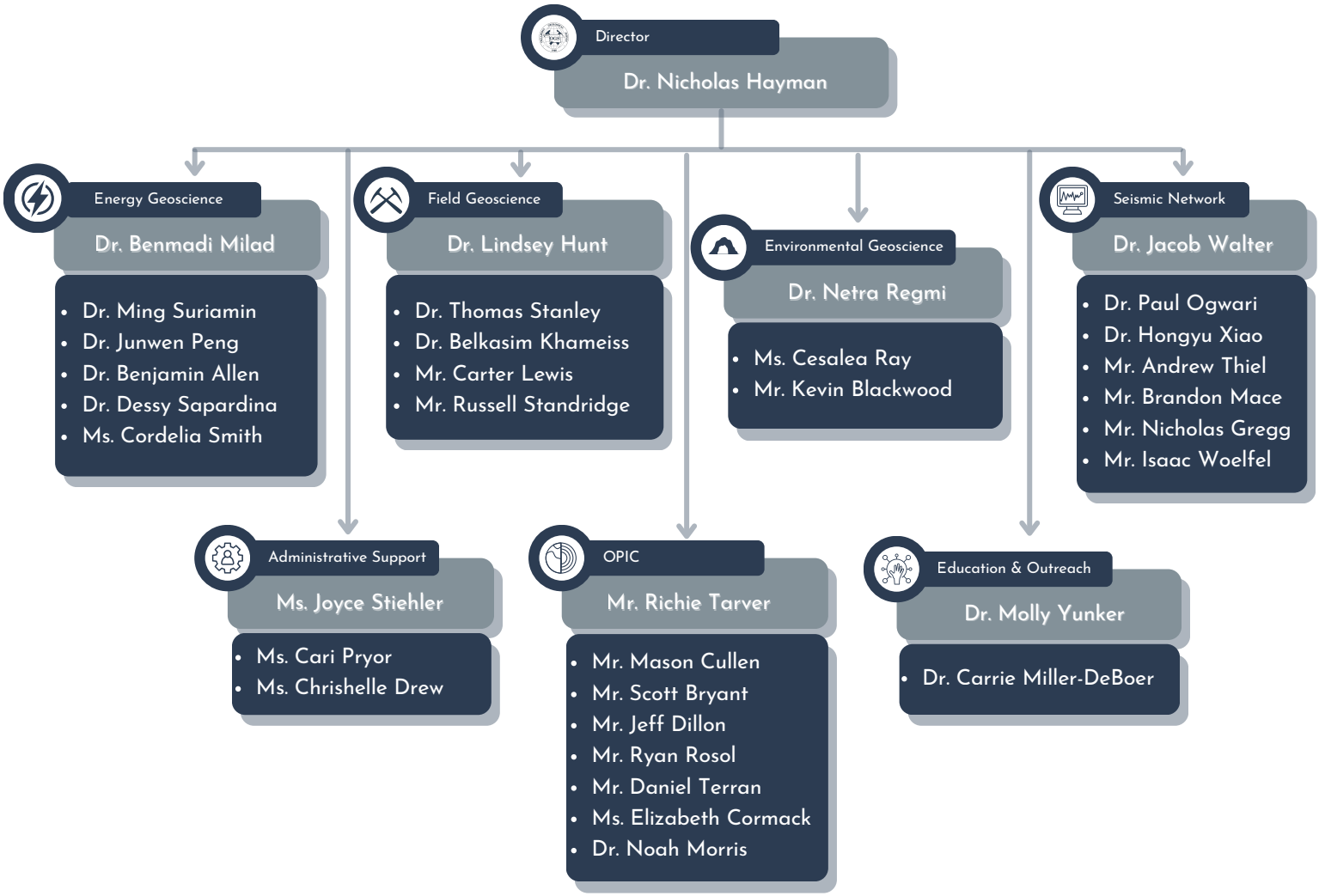
Greetings! Welcome to our 3rd consecutive Annual Report! OGS is a multi-legged stool, with brick-and-mortar facilities like our seismic network and the data-and-core repository, the Oklahoma Petroleum Information Center (OPIC), and our statewide Education & Outreach program, geologic mapping group, and disciplinary teams in Energy and the Environment. Our publication series go back over a century, and our workshops, field trips, and short courses go back almost as long. As we've achieved significant growth, change, and success over the last three years, many of these items have returned from hibernation, and others improved if not been reinvented.

In my letter last year I quixotically described a new era of power, in the sense of "powering the grid". My point was that applied geoscientists tend to focus on energy and resources, but with the dawn of the AI revolution, domestication of supply chains, and bigger geoscience-linked programs, the focus might turn even more about power. It is going to take OGS more than a year to best take on this new era, but we're off to a great start as we publish our many-years efforts in critical minerals, fuel storage, and get our data on line for analysis by the public, including new and upcoming industries.

But what does this year of 2026 hold? We often set our sites on the future by defining the present, and to me there is an obvious need for OGS to lead the way on the study of the Earth, with a capital "E". By this I mean that alongside our site-specific case studies in energy and field geology, it's important to consider the across-state environment, be it in the subsurface or the surface, in fuels or in water, in table-rocking earthquakes or in infinitesimal strains. As industry and the federal government implement AI approaches to working through the country's massive datasets, OGS can bring a vision forward that connects all of the various "spheres" and "zones", to benefit both the ongoing power revolution, but also the people who require affordable and clean energy, water, and land to thrive. In 2026 I look forward to working on that vision with OGS, and with all of you!



ORGANIZATION



COMMITTEES

Publications
Dr. Paul Ogwari
- Dr. Lindsey Hunt
- Dr. Netra Regmi
- Dr. Molly Yunker
- Mr. Andrew Thiel
- Mr. Carter Lewis
- Ms. Cesalea Ray

Information Technology
Mr. Richie Tarver
- Dr. Ming Suriamin
- Dr. Molly Yunker
- Mr. Nicholas Gregg
- Mr. Russell Standridge
- Ms. Joyce Stiehler

Facilities
Ms. Cesalea Ray
- Dr. Lindsey Hunt
- Dr. Ming Suriamin
- Mr. Scott Bryant
- Mr. Brandon Mace
- Ms. Joyce Stiehler

Awards
Dr. Lindsey Hunt
- Dr. Netra Regmi
- Dr. Junwen Peng
- Mr. Daniel Terran

Student Coordination
Dr. Jacob Walter
- Dr. Netra Regmi
- Dr. Ming Suriamin
- Dr. Molly Yunker
- Mr. Richie Tarver

OGS IMPACTS 2025

22 FLIGHT HOURS

INVESTIGATING 13
Sites & Formations
5 Energy | Geostorage | Minerals
Strategic Resources

218 OU STUDENTS
20 Credit Hours Taught
90 Enrolled in Classes
31 Students Mentored/Advised
100 Shortcourse Attendees

8,173 CONNECTED OKLAHOMANS
61 Ask a Geoscientist
75 Programs & Events
3,032 K-12 Students

1507+ SAMPLES
607 core, rock, & mine waste sent to USGS
400+ Thin Sections inventoried and/or scanned

SINKHOLES 2600

5,492+ ANALYSES
2,000 X-Ray Fluorescence
50 Microprobe Samples | 3,000 Points within a Grain
42 Petrographic | Geochemical | Petrophysical

4,676 EARTHQUAKES
123 Seismic Stations
44 Citizen Reports
Largest Magnitude **M3.7**
LINCOLN COUNTY

74 PUBLICATIONS
27 Presentations
25 Posters
8 Seminars
24 Journal Articles
46 Abstracts & Proceedings
2 Bulletins & Reports
2 Maps

22 CONFERENCES ATTENDED

1 HOSTED
DMT2025

$5.45 M ACTIVE GRANTS

14 IN THE NEWS
6 Interviews
10 Articles
4 TV Spots

RECORDS 20K+ DIGITIZED
plus Metadata

850 LANDSLIDES
750 Eastern
100 Southern

89,969 PAGE VIEWS

29,852 FILE DOWNLOADS

1,640 ROCK COLLECTIONS
started with GeoKIDS

43,943 MILES DRIVEN

ENERGY GEOSCIENCE



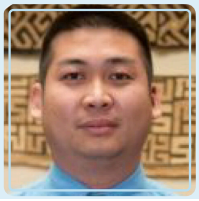
DR. BENMADI MILAD
GEOSTORAGE SPECIALIST



DR. JUNWEN PENG
GEOLOGIST



DR. DESSY SAPARDINA
GEOSTORAGE SCIENTIST



DR. FNU "MING" SURIAMIN
PETROLEUM GEOLOGIST
PETROPHYSICIST



DR. BENJAMIN ALLEN
GRANULAR PHYSICIST



MS. CORI SMITH
GEOSTORAGE SCIENTIST

ESSENTIAL ROLE

Energy Geoscience explores underground energy sources and geological storage in Oklahoma. We map and research underground reservoirs and surface geology to provide reliable energy for Oklahoma and the United States.

ENERGY SECURITY

- Support Oklahoma's energy industries and economic development of natural resources: oil and natural gas plays, enhanced oil recovery and carbon management, geological storage, critical minerals, hydrogen, geo-hydrogen, and geothermal.
- Develop methods to recover critical minerals from unconventional sources including oil and gas production byproducts.
- Describe Oklahoma's petroleum systems and characterize reservoirs for geological storage.
- Better understand the state's geothermal resources
- Provide workshops and field programs for industry groups and support OU-industry consortia development to facilitate knowledge sharing across industry and academic efforts.

ECONOMIC DEVELOPMENT

- Build and maintain interdisciplinary networks to prepare Oklahoma for new energy economies and commercial geological storage projects.
- Partner with industry, government agencies and other research labs to investigate new technologies and strategies for energy extraction and geological storage.
- Inform stakeholders, coordinate agencies, and advise industry on Oklahoma energy resources and practices.

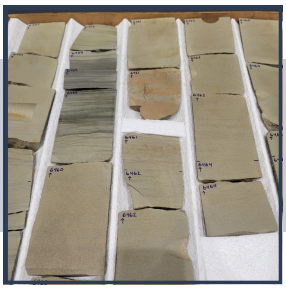
MONITORING AND SUPPORT

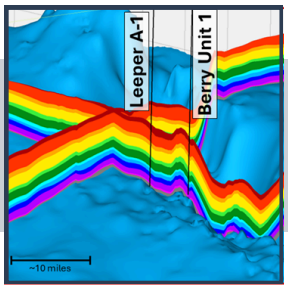
- Respond to data requests and geoscience questions from the public and local industries.
- Establish comprehensive analytical labs with state-of-the-art equipment
- Publish reports and non-technical explanations on saltwater purges

COLLABORATIONS

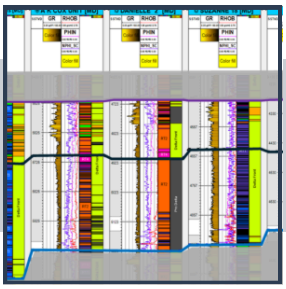
The OGS Energy Team collaborates with many industrial, national laboratory, and other technical groups from both within Oklahoma and around the country. Key recent partners include OneOK, Gas Technology Institute, and Pacific Northwest National Laboratory.











OGS ENERGY GEOSCIENCE TEAM KEY PLAYER IN AAPG MIDCONTINENTAL SECTION OKC MEETING

Energy Geoscience reinforced the OGS's commitment to advancing applied geoscience and industry collaboration within the region by serving on the AAPG MCS 2025 Organizing Committee for the annual meeting in October. Team members contributed to conference planning, technical session development and peer-review.

Participation in AAPG MCS 2025 strengthened OGS's visibility, fostered collaboration with industry and academic partners, and underscored the Energy Geoscience team's role in supporting responsible resource development and knowledge exchange across Oklahoma and the broader Mid-Continent region.



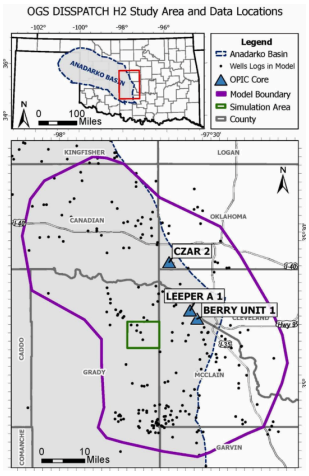
AAPG MCS attendees discuss the Energy Team Red Fork core exhibit.



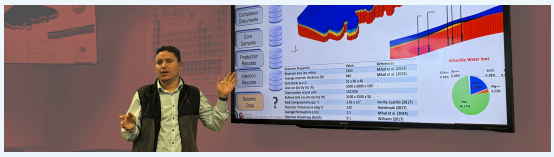
OGS showcased historic petroleum publications, artifacts, and current projects.

During the conference, Energy Geoscience worked with OPIC to host an exhibition featuring two Red Fork cores, which drew strong interest from industry professionals, researchers, and students. The cores provided a tangible connection to ongoing subsurface research in Oklahoma and served as a focal point for discussions on reservoir characterization, stratigraphy, and energy resource development. Research staff gave several presentations and posters, including Ben Allen's discussion of hydrogen energy development in Oklahoma, Benmadi Milad's talk on hydrogen geostorage potential in the Anadarko Basin, and Dessy Sapardina's work evaluating the Tonkawa Sandstone as a reservoir for CO_2 storage.

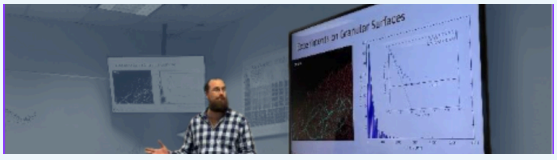
HYDROGEN STORAGE FEASIBLE IN OKLAHOMA'S DEPLETED RESERVOIRS



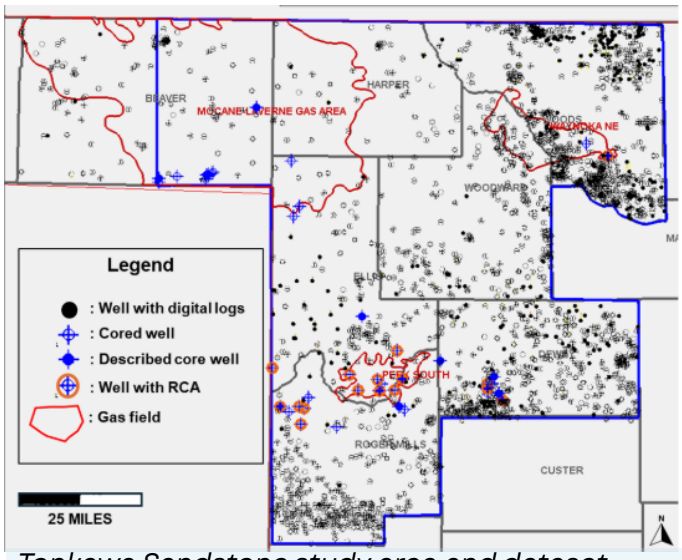
Work on a two-year collaboration with GTI Energy and the Pacific Northwest National Laboratory funded by the US Department of Energy DISSPATCH H2 grant program brings new insight on potential hydrogen storage in depleted oil and gas fields. Benmadi Milad and Cori Smith used legacy core and digitized well logs housed at OPIC to create a 3D geological model of the Simpson Group in the Anadarko Basin. Model results show high porosity and permeability throughout the Bromide Formation in the Simpson Group. Flow simulations under different injection and withdrawal durations provided encouraging results, indicating a strong relationship between hydrogen recovery and reservoir porosity and permeability that is further improved by using cushion gas. As an initial look into the feasibility of hydrogen storage, Milad and Smith's efforts mark the Bromide Formation as favorable for future industry investment. (Award Number DE-FE0032351)



Dr. Milad and Dr. Allen gave an invited talk on Arbuckle pressure and CCS to students in Geosciences Seminar.

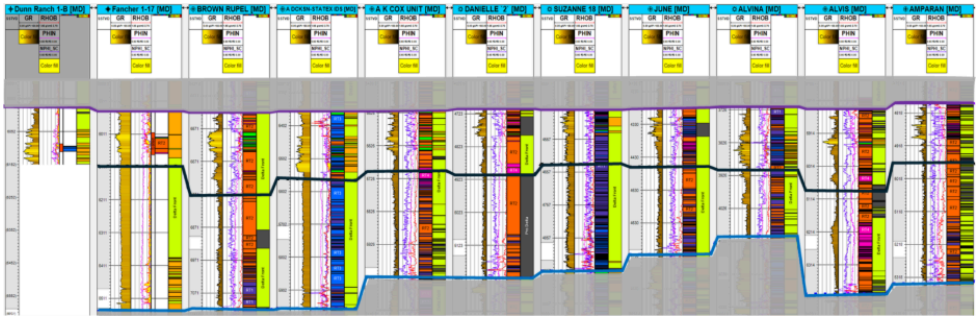


BIG DATA SYNTHESIS CONTINUES A HISTORY OF INNOVATION IN OKLAHOMA



Tonkawa Sandstone study area and dataset

Oklahoma entered the carbon management market in 1935 when a cement plant in Ada captured waste carbon dioxide and used it to make dry ice. Newspapers reported it as the first operation of its kind in the US. Nearly 25 years later, Dewey hosted the world's first production model carbon dioxide plant for secondary oil recovery. Even with changes in the nation's priorities for CCUS, understanding the subsurface management of CO_2 is vital, both for managing emissions and for energy sources like enhanced oil recovery and geothermal energy. Supported by the U.S. Department of Energy, Office of Fossil Energy and Carbon Management, under Award Number DE-FE0032351, OGS continues to prepare for and inform Oklahoma's carbon management and geostorage economy. Fnu "Ming" Suriamin and Dessy Sapardina provided contributions to this project from Energy Geosciences, completing evaluations of Oklahoma's carbon storage capacity in the Arbuckle Group and depleted non-Arbuckle group hydrocarbon reservoirs. Suriamin used mathematical estimates, simulation results, and models based on historic data from 317 wells to guide reliable prediction of carbon storage capacity in the Arbuckle. Sapardina analyzed more than 2,000 wells, 1,200 well logs, and 16 cores to build 3D geological models of the Tonkawa Sandstone of the Douglas Group within the Virgilian Series. As the nation's priorities for CCUS evolve, understanding of the subsurface management of CO_2 is vital, both for managing CO_2 emissions and for quantifying energy sources such as CO_2-enhanced oil recovery and geothermal energy.



Tonkawa Sandstone correlation and petrophysical analysis

> *Oklahoma [is set] up to lead the nation in the fast-growing carbon capture and sequestration industry, an emerging field that is poised to spur private investment and economic growth in the state.*
>
> *Sen. Dave Rader, R-Tulsa.*

Quoted in https://www.okhouse.gov/posts/news-20250603_1

ENERGY GEOSCIENCE PLANNING NEW FIELD TRIPS AND WORKSHOPS FOR 2026!

Join Dr. Benmadi Milad, Dr. Tom Stanley, and Dr. Molly Turko in 2026 for a spring field trip to explore key formations in Southern Oklahoma. Gain valuable insights into the stratigraphy, structural geology, and depositional environments from the Silurian, Devonian, and Mississipian. Discuss how to apply outcrop observations to subsurface exploration, especially when drilling in the Woodford.

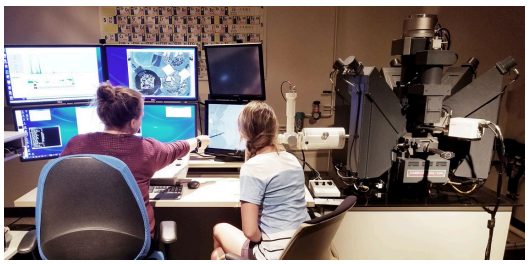
In the fall, OGS is hosting a workshop on the Cherokee (Excello) Shale with opportunities for core viewing. Subsurface mapping, unit identification in cross-section, and core/outcrop work are underway.



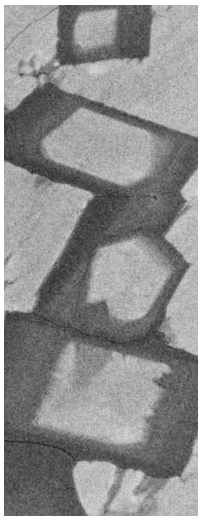
Fort Worth Geological Society

FACILITIES

MICROANALYSIS LAB



CAMECA SX100 Microprobe
In-situ geochemical analysis and multi-imaging



Phoenix Nanotom Micro-CT Scanner
High-Res 3D images of microscale textures and fabrics



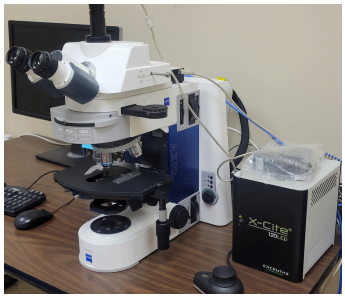


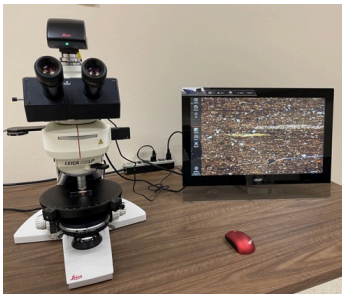
Niton XL5 Plus Portable XRF
Elemental analysis of materials in the lab or in the field

The OGS offers a variety of analytical facilities to provide high quality rock measurements from micro to macro scale.

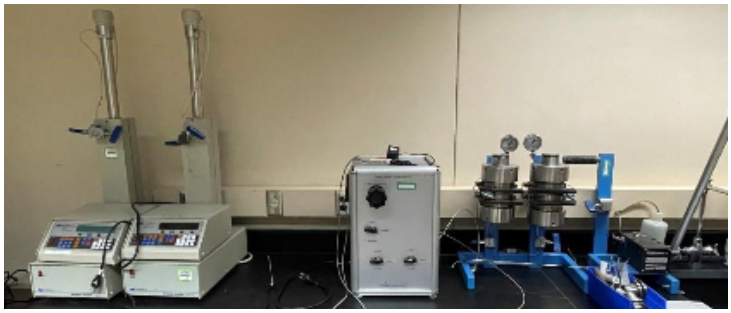
PETROGRAPHY LAB

Optical and Fluorescence Microscopes
Visualization of pore types, microfractures, mineralogy, and organic matter distribution





ENERGY GEOSCIENCE LAB





Pore-Permeability Apparatus and Core Flooding Experimental System
Measurement of core plug porosity and permeability and simulation of fluid and gas flow through core plugs at reservoir conditions (up to 10,000 psi) with two injection inlets



HAWK Pyrolysis, Total Organic Carbon, and Carbon Content Analyzer
Integrates pyrolysis, total organic carbon (TOC), and carbonate carbon (CC) measurements to quantify organic matter abundance and composition in rock samples

In addition to the equipment shown here, the OGS maintains a robust seismic network for earthquake monitoring and expertise in subsurface analysis and modeling.



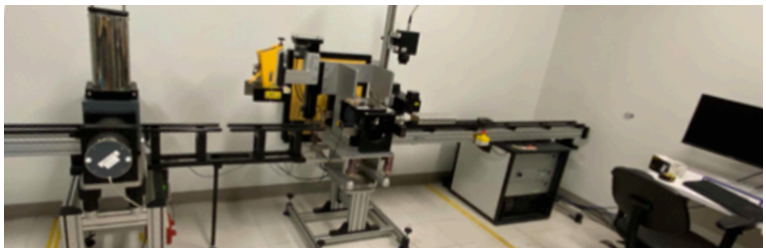
OPIC CORE LAB



Core Warehouse and Viewing Facility

Thousands of feet of Oklahoma core are stored at OPIC and can be viewed on site in the spacious, climate controlled core viewing room.





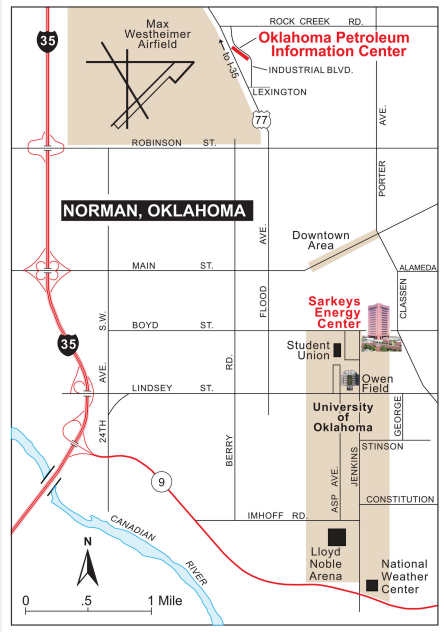
Ref-Tek Multi-Tool Core Scanner

Core scanner equipped with pXRF, Gamma, and a digital camera



Cabinet CT Scanner

High-resolution 3D CT scan for whole or slabbed core



Labs are housed in two locations:

OGS Main Office Sarkeys Energy Center (SEC)

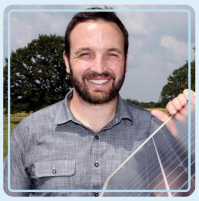
100 E. Boyd St.,
Suite N131
Norman, OK 73019

Oklahoma Petroleum Information Center (OPIC)

2020 Industrial Blvd.,
Norman, OK 73069

SEISMIC NETWORK

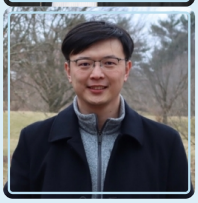
DR. JAKE WALTER



GEOPHYSICIST &
STATE SEISMOLOGIST



DR. PAUL OGWARI
GEOPHYSICIST



DR. HONGYU XIAO
GEOPHYSICIST
SEISMOLOGIST





MR. ANDREW THIEL
MR. NICHOLAS GREGG
SEISMIC ANALYSTS





MR. BRANDON MACE
MR. ISAAC WOELFEL
FIELD TECHNICIANS

ESSENTIAL ROLE

The OGS Seismic Team manages the State Seismic Network, used to detect, record, and report earthquakes in real-time via a public web portal. Funds appropriated by Senate Bill 1370 supported the team's efforts, increasing the network to 123 connected stations by the end of 2025.

RECORD

- Proactively monitor earthquake hazard in Oklahoma.
- Manage the Oklahoma seismic network.
- Maintain, standardize and expand seismic stations across the state.
- Upgrade earthquake identification software.

RESPOND

- Mitigate earthquake risks and promote public safety.
- Conduct planning exercises to enhance earthquake preparedness.
- Join Oklahoma Emergency Management in responding to large seismic events like the Prague M5.1 earthquake.

REPORT

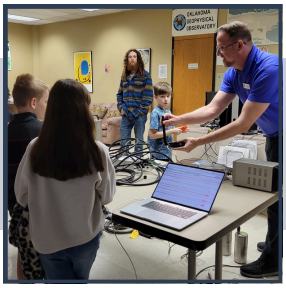
- Publish a real-time seismic event map available to the public online at no charge.
- Support the Oklahoma Corporation Commission with accurate data to oversee hydraulic fracturing operations.
- Work in coordination with USGS/ANSS, and Petroleum Alliance, as well as providing reports to the public through the news media.

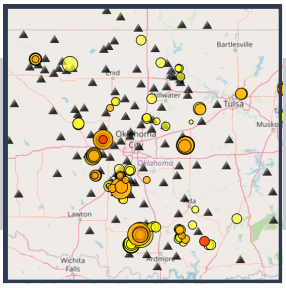
RESEARCH

- Work with USGS as an Advanced National Seismic System partner.
- Submit proposals to DOE and NSF for geophysics research activities.
- Recruit and advise graduate students for Geoscience research.
- Explore the feasibility of integrating Distributed Acoustic Sensing (DAS) and Infrasound into earthquake detection.

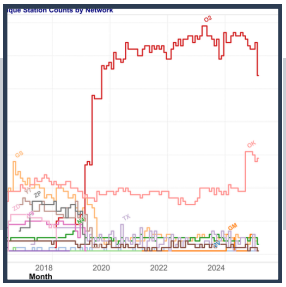
COLLABORATIONS

OGS Seismic Network collaborates with federal and state entities to ensure a robust system of monitoring is maintained at all times for the safety of Oklahomans.









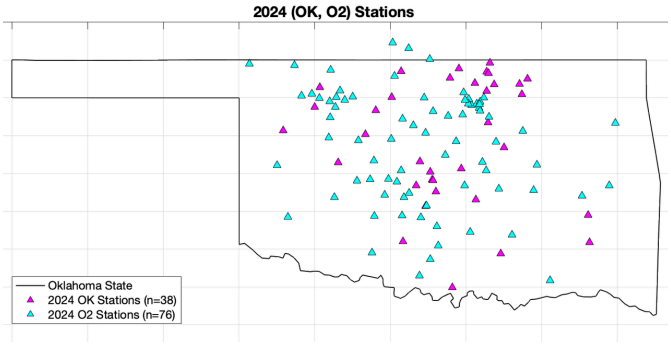


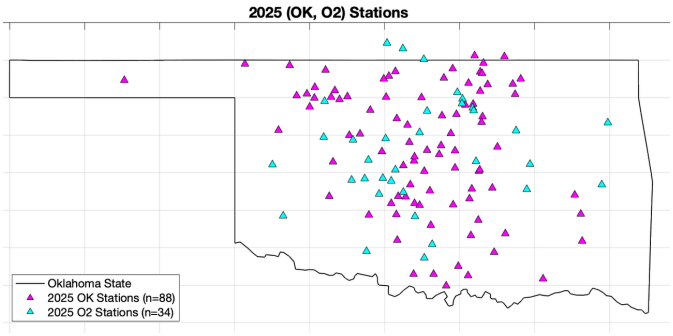
OKLAHOMA STATEWIDE SEISMIC NETWORK MODERNIZATION PROGRESS

In 2024, the passage of Senate Bill 1370 marked a major investment in strengthening the state's earthquake monitoring capabilities. The legislation provided a $4 million appropriation to modernize aging infrastructure and significantly expand the statewide seismic network.

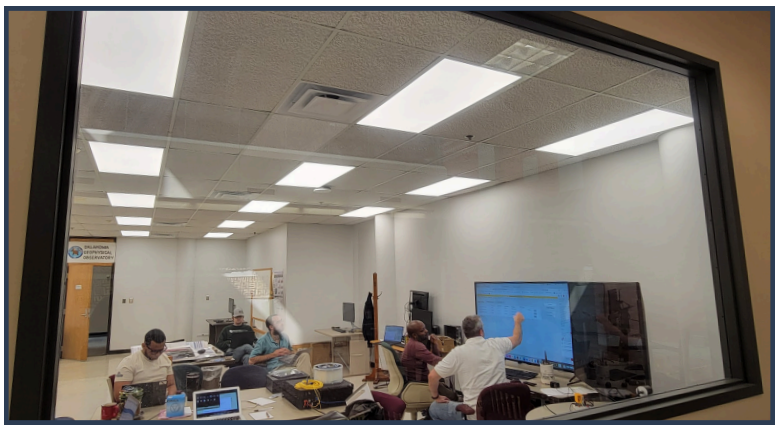
With this funding, more than 200 new seismic stations have been acquired. These instruments are being deployed as a combination of permanent stations and temporary, rapid-response arrays that can be installed in areas of emerging seismic activity. Together, these systems enhance our ability to detect very small earthquakes, improve location accuracy, and more reliable information to the public and decision-makers.

This effort represents one of the most substantial upgrades to the state's seismic monitoring system in decades. It also strengthens collaboration with partner agencies, universities, and industry, ensuring that seismic data are shared, analyzed, and used to improve public safety and scientific understanding. By expanding coverage into previously under-instrumented areas, the network is now better positioned to track evolving seismicity patterns and support both hazard mitigation and research.





MEWBOURNE FAMILY SUPPORTING ORGANIZATION OPENS A WINDOW ON SEISMIC NETWORK MONITORING IN OKLAHOMA



Visitors to the Sarkeys Energy Center will notice changes making the essential efforts of the Seismic Team visible to the public. Thanks to the Mewbourne Family Supporting Organization, the seismic monitoring offices are being modernized alongside the network.

Looking in through the new window, visitors will see the Seismic Team hard at work in a fresh setting with new paint, floors, and soon, new furniture. Together, these elements provide a unified space that reflects the professionalism of the Seismic Team.

In 2025, OGS identified and located 4,676 earthquakes. The largest number of events occurred as small-magnitude aftershocks of the 2024 Prague M5.1 earthquake.



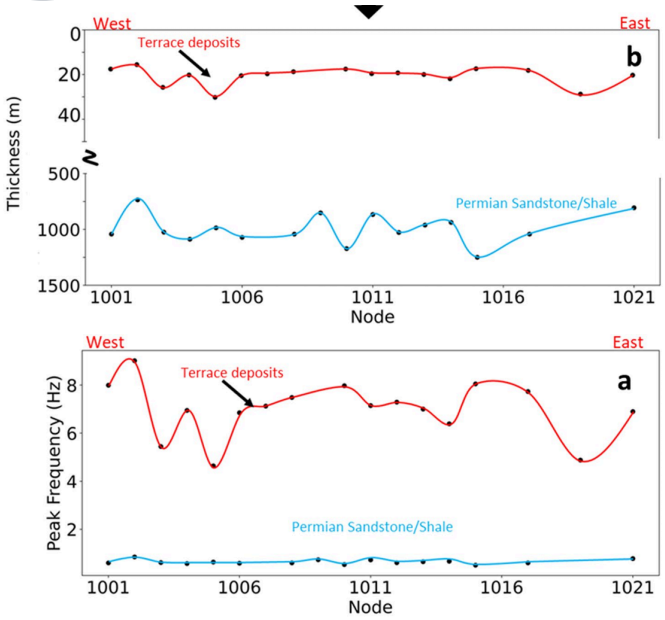








SURFACE SEDIMENTS AMPLIFY SEISMIC SHAKING



Top: *Sediments near the surface along this transect are loose gravels, sand, and silt. Deeper underground is sandstone, a layer of sedimentary rock.*
Bottom: *Earthquakes are released energy that moves in a wave. As the frequency of the wave increases, so does the amount of shaking we feel.*

Some communities experience stronger shaking than others during small earthquakes. A recent paper published by the Seismic Team describes a detailed field investigation in Union City, Oklahoma that deployed 60 temporary seismic stations across a 2 km area, complemented by geophysical surveys and shallow soil sampling to characterize subsurface conditions.

Our results found that variations in near-surface sediments like clay and terrace deposits (gravel, sand, and silt left by rivers) can significantly amplify seismic waves. As a result, earthquakes that might otherwise go unnoticed can produce stronger, more perceptible shaking in certain locations. This work highlights the importance of combining dense seismic monitoring with subsurface imaging to better understand local earthquake impacts and improve hazard assessments for communities.

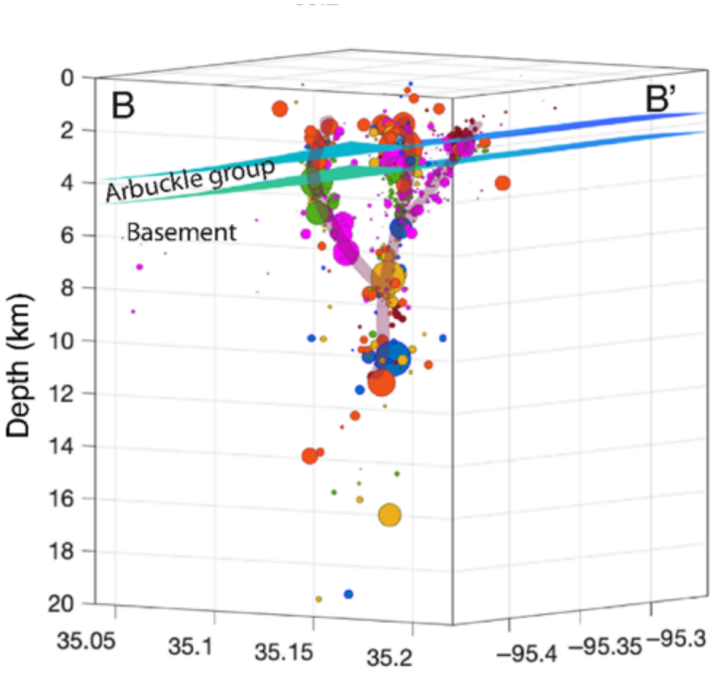
This paper is published as open-access so it is available for the public to read without cost at https://doi.org/10.1007/s11069-026-07989-y.

HYDRAULIC FRACTURING ENHANCES WASTEWATER-INDUCED EARTHQUAKE ACTIVITY

Researchers on the Seismic Team expanded monitoring in Quinton, Oklahoma, a previously under-instrumented location, to investigate a series of earthquakes in the area. The team installed additional seismic stations and deployed temporary nodal arrays, which significantly improved detection of small earthquakes and increased precision when mapping earthquake locations and depths.

Analyzing the improved dataset demonstrated that hydraulic fracturing activity can increase the reach and intensity of seismicity triggered by wastewater disposal. Specifically, fracturing operations may "prime" faults, making them more susceptible to later reactivation. The study shows combining permanent monitoring networks with temporary, targeted deployments provides critical insight into earthquake processes to support more effective hazard assessment and regulation.

Read the open-access publication free at https://doi.org/10.1785/0220250170.



Detailed seismic data plotted as a 3D map of earthquake origins (relocated earthquake hypocenters revealed the classic "flower structure" of the faults in Quinton, Oklahoma.

FIELD GEOSCIENCE



DR. LINDSEY HUNT
SENIOR PROGRAM MANAGER



DR. BELKASIM KHAMEISS
GEOLOGIST



MR. CARTER LEWIS
RESEARCH ASSOCIATE



DR. THOMAS STANLEY
FIELD GEOLOGIST



DR. NOAH MORRIS
GEOLOGIST



MR. RUSSELL STANDRIDGE
GIS SPECIALIST

ESSENTIAL ROLE

The Field Geoscience Team maps the geology of Oklahoma, traveling the state's landscapes, and integrating many datasets from geochemistry, paleontology, and three-dimensional data of the subsurface from boreholes and geophysical research. Through our field work, OGS explores Oklahoma's natural mineral resources, and describes its geologic history, linking modern landscapes to the deep past.

CRITICAL MINERALS

- Investigate the availability and economic potential of critical mineral resources in Oklahoma.
- Use cutting-edge technology and methods (XRF, EPMA, ICP-MS) to collect data and make it publicly available.
- Inventory Oklahoma mine waste as a possible source of critical minerals.
- Partner with agencies funding critical mineral initiatives available to state geological surveys
  - USGS's Earth Mineral Resources Initiative (EarthMRI)
  - DOE's Carbon Ore, Rare Earth, and Critical Minerals (CORE-CM) Initiative

CORE-CM supports collaborative efforts to identify regional resources and develop circular supply chains with elements near the raw resource.

MAPPING OKLAHOMA

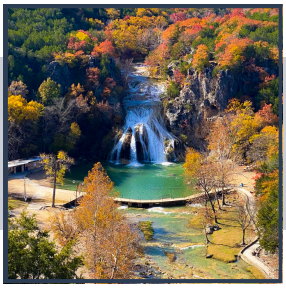
- Map Oklahoma's entire surface geology using new and existing data sources.
- Create detailed maps focused on areas of interest (e.g., urban, geologically complex).
- Develop 3D mapping strategies using drones and legacy well data.
- Compete annually to secure STATEMAP grant funding from USGS.

STATE STRATIGRAPHY

- Establish a common naming system for geologic features in Oklahoma.
- Analyze characteristics of rock layers, including fossils, chemistry, and position.
- Describe ancient environments and geologic processes that formed rocks and rock layers in Oklahoma.
- Assign ages and order events based on rock layer analysis.

COLLABORATIONS

OGS Field Geoscience routinely collaborates with sister surveys, academic departments, Tribal Nations, federal and state agencies.





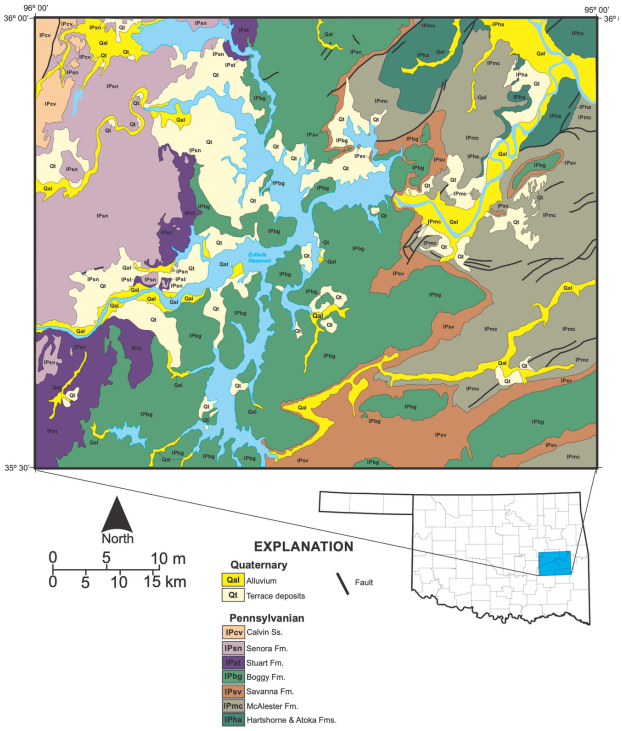






EUFAULA 1° SHEET MAPS GEOLOGY OF EUFAULA QUADRANGLE IN FULL FOR THE FIRST TIME

Tom Stanley and the Field Geology Team are making progress on the Western half of the Eufaula 30x60 Minute Quadrangle. Mapping is funded by USGS STATEMAP, a collaboration with state surveys to address social, scientific, and economic needs requiring geological information. The Eufaula quad extends north-south from 36° N to 35°30' S and east-west 95° E to 96° W, an area of roughly 2000 square miles that includes parts of eight counties. More detailed mapping at the 1:24,000 scale is being done in NE Oklahoma as the field team is also wrapping up the South Coffeyville and Hayrick Mound 7.5 Minute quads.



Drafting a map at this scale begins with several months of field reconnaissance. An OGS field geologist lays eyes on the entirety of Oklahoma's surface within a quad, driving all over the given area (roadside stops, in combination with overland transects) stopping to collect data and sketch field maps. Back in the office, the team reviews and finalizes a series of hand-drafted maps, delineating and describing major geologic features. These maps are eventually digitized and compiled into a coherent whole.

Every dollar invested in geologic mapping returned $7 to $10 in economic benefits, with a total investment of $1.99 billion fostering $20.61 billion in value.

Berg, R.C., and Faulds, J.E., eds., 2025, Economic Analysis of the Costs and Benefits of Geological Mapping in the United States of America from 1994 to 2019: Alexandria, Virginia, American Geosciences Institute, 184 p.

Clear geologic maps are essential to research and economic growth in Oklahoma. While detailed geology data is often kept behind a paywall, the Eufala 1° sheet is available for download on the OGS website, at no cost to users. Providing this service and information promotes research and scholarship and supports industry exploration for critical minerals, geologic storage sites, industrial minerals, and petroleum resources, providing a large return on investment for these efforts.

PROJECT UPDATE: EARTHMRI - PHOSPHATES



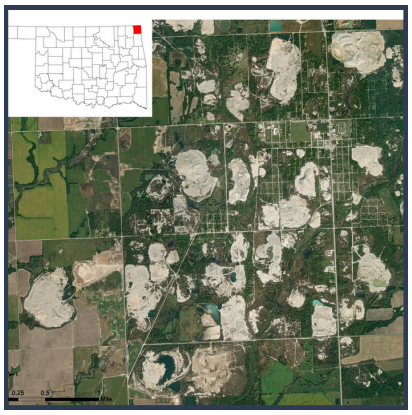
EarthMRI is a USGS program to assess domestic critical mineral resources by supporting and collaborating with state geological surveys. In 2024, OGS received EarthMRI funding to determine the critical mineral resource potential of phosphatic nodules and their associated black shale units in Eastern Oklahoma. Belkasim Khameiss and Noah Morris ramped up field work for the project this year with trips to three quarries and core sampling at OPIC. More trips are planned for 2026.



Analyzing new outcrop samples along with archived core gives us an idea of resource distribution

Analyzing new outcrop samples along with archived core gives us an idea of resource distribution within a formation and provides insight into other sites formed by similar ancient environments. The collected samples are sent to USGS for geochemical analysis and will be published by OGS at the end of the project.

PROJECT UPDATE: EARTHMRI MINE WASTE CHARACTERIZATION AT TAR CREEK SUPERFUND SITE



Tar Creek Superfund Site in Northeast Oklahoma once supplied lead and zinc critical to Allied military success in WWI, II and until 1970. Better known today as an ecological disaster, the landscape is dotted with mine waste leaking heavy metals into the surrounding water system. Additional funding from Earth MRI in 2024 supports the OGS Field Team as they characterize fine mine waste. Unique compared to other critical mineral projects, we collaborate directly with the USGS and Quapaw Nation. The OGS Tar Creek Team successfully completed hands-on training for USGS sampling protocols in fall of 2025 prior to starting the project, after the Tar Creek Workshop in Quapaw, Oklahoma. Since then, the team completed an additional sampling trip with more scheduled for spring 2026. Field work at Tar Creek is a tad bit messy due to the dusty and, vertical landscape, captured in amazing drone imagery from Cesalea Ray. The sheer enormity of the chat piles give testament to Oklahoma's efforts and influence in World War I and II.





MEET OGS STUDENT INTERN - EMMA MROZ



The Field Geoscience Team welcomed our first student intern in the summer of 2025. Currently a senior at Texas A&M Kingsville, Emma Mroz graduates this coming spring.

While at OU, Emma focused on understanding the importance of preserving existing data (legacy collections of core and thin sections) as she studied and collected new data from cores of the Glen Mountain Layered Igneous Complex with Carter Lewis. Emma also helped with the OGS Outreach team Rainbow of Rocks program and assisted Brandon Mace in installing a backyard seismic station. She presented her summer research with an oral presentation at GSA and Brown Bag seminars. After graduation, she plans to attend graduate school in fall 2026 with a focus in igneous petrology. She is returning to OGS this summer and will be joined by two new summer interns.

ENVIRONMENTAL GEOSCIENCE



DR. NETRA REGMI
HAZARDS GEOLOGIST



MS. CESALEA RAY
GIS SPECIALIST



MR. KEVIN BLACKWOOD
RESEARCH ASSOCIATE

ESSENTIAL ROLE

The Environmental Geoscience team studies how Earth's surface and underground processes interact, especially how water, geology, and human activity shape the environment. They research surface hydrology, groundwater, landslides, erosion, and land subsidence by analyzing rainfall, terrain, and climate. Using drones, satellites, LiDAR, and field surveys, they create hazard maps to help the public understand environmental risks.

LANDSLIDE MAPPING

- Funded by NASA Earth Surface and Interior
- Mapping slow and rapid landslide deformations Using SAR/InSAR (i.e. NISAR) data.
- Assess interactions among hillslope deformation, rainfall, surface and subsurface hydrology, and climate
- Develop a machine learning framework for landslide monitoring and susceptibility mapping

FLOOD MAPPING

- Investigate historical floods along the lower Arkansas River basin
- Develop a machine learning and hydrodynamic (HEC-RAS) flood inundation models
- Calibrate and validate the models

LAND SUBSIDENCE

- Prepare a map of sinkholes in central and western Oklahoma

POST-FIRE SURFACE PROCESSES

- High-resolution UAV mapping of a wildfire-affected area of the Arbuckle Mountains.
- Identify faults, karst features and associated geohazards

COLLABORATIONS

OGS Environmental Geoscience routinely collaborates with organizations within the OGS, local jurisdictions, and federal and state agencies.

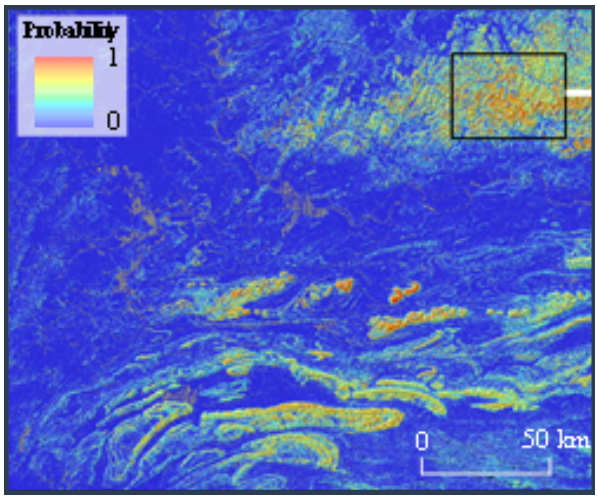


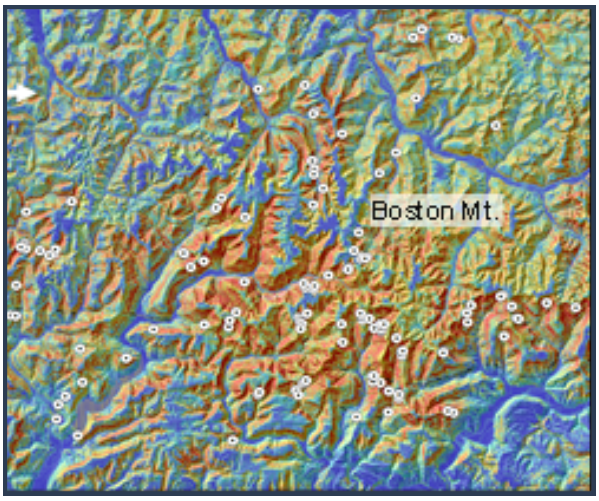




KARST FEATURE MAPPING

During 2024 and 2025, the Environmental org mapped the spatial distribution of karst features (i.e., sinkholes and dolines) within the evaporite karst of western Oklahoma as part of an investigation to identify potential geohazards near transportation infrastructure. Using a combination of LiDAR, aerial imagery, and topographic maps, the team identified several thousand sinkhole features and validated a subset through field visits. The team presented the results of this study at the regional conference of the Geological Society of America in Conway, Arkansas, in March 2025.





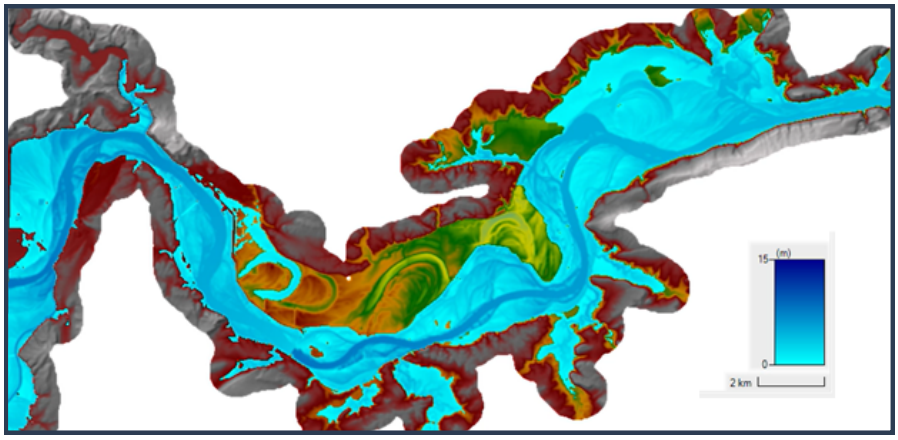
MAPPING LANDSLIDE SUSCEPTIBILITY

The Environmental Science Organization has been conducting landslide mapping in eastern and southern Oklahoma with support from NASA. This effort has mapped more than 700 landslides, including both slow-moving and rapid events. The study produced a comprehensive landslide inventory map that documents detailed characteristics of each landslide, along with a landslide susceptibility map highlighting areas prone to future landslides. In addition, the study established landslide-rainfall relationships using machine learning techniques. It also analyzed landslide frequency-size distribution and compared observed patterns with global landslide datasets.

Left: *Landslide probability maps developed based on empirical machine learning approach. Note white dots are observed landslides*

MAPPING FLOOD SUSCEPTIBILITY

Below: *A preliminary HEC-RAS model showing March 2008 flood inundation in Fort Smith.*



The organization has been actively working on flood-related issues across the state. Flooding is one of the most significant natural hazards in Oklahoma; for example, the Arkansas River has experienced multiple major flood events throughout its history. The organization is analyzing historical flood data, including discharge and gage height records, to better understand past flood behavior and improve predictive capabilities. As part of this effort, hydrodynamic modeling, specifically HEC-RAS, and machine learning is employed to assess flood susceptibility. The team is working towards calibrating and validating these models using historical flood inventories.



Above: *A field to the east of a ranch road in pre-fire conditions dominated by grasses (left). The same field in post-fire conditions with surface geology unobscured by grasses (right).*

In late 2025, the Environmental Org began testing a proof of concept and performing preliminary investigations of using unmanned aerial vehicle (UAV) to collect land surface data in post-fire conditions within the Arbuckle Mountains region. Seasonal prescribed burning has become increasingly common to manage rangeland over rocky terrain where mowing is not possible. The removal of prairie grasses through burning reveals a variety of surface features that would be otherwise obscured. Feature data collected includes faults, karst features, potential geohazards, springs, seeps, stratigraphic, paleontological, and mineral deposits, all of which are made more easily discernable in post-fireconditions. Due to the success of these results, we are preparing an official proposal to continue this investigation at scale through the USGS StateMap project.



Left: *Geoscientist Kevin Blackwood operates a UAV during a prescribed fire.*



Right: *A prescribed burn in progress. The contrast between the grassy and burned portions are stark.*

2025 USGS DIGITAL MAPPING TECHNIQUES ANNUAL CONFERENCE

In May, OGS hosted the 29th annual USGS DMT (Digital Mapping Techniques) workshop. State agencies, universities and 24 state geological surveys sent 54 technical experts to exchange knowledge and expertise, promote efficient methods for creating, managing, and delivering digital geoscience map information, and foster informal discussion. The workshop theme, “From field to publication and beyond: Comparing and improving our workflows,” featured 24 presentations and six hours of discussion sessions.



EDUCATION & OUTREACH



DR. MOLLY YUNKER
COORDINATOR



DR. CARRIE MILLER-DEBOER
ASSOCIATE

We connect the people of Oklahoma to each other, to the science in their lives, and to the wonders of our state.

Connect our story with yours!

ESSENTIAL ROLE

Education & Outreach promotes Geoscience Education in Oklahoma and works with OGS scientists to communicate investigation findings for the benefit of all Oklahomans.

PUBLIC ENGAGEMENT

- Communicate OGS efforts in ways approachable to stakeholders with varying interests and expertise.
- Reply to public inquiries.
- Regularly open OGS offices and resources to welcome Oklahomans' geoscience interests and needs.

INDUSTRY & AGENCY SUPPORT

- Coordinate continued education opportunities for a technical audience.
- Facilitate communication among stakeholder groups in the region.

PROMOTING GEOSCIENCE CAREERS

- Provide OU students with service opportunities, public engagement and outreach experiences, and research and career mentorship.
- Develop and curate resources aligned with state science standards to support educators in Oklahoma.
- Deliver outreach programming in communities across the state, including rural settings.
- Encourage curiosity and passion in children, families, and community groups.

COLLABORATIONS

OGS Education and Outreach resources and programs receive financial, volunteer, and expert support from several collaborating partners. Their passion for Geoscience Education connects communities across the state and enables sharing of information useful to all Oklahomans.











A "RAINBOW OF ROCKS" HELPS OKLAHOMA LIBRARIES "COLOR OUR WORLD" FOR 700 OKLAHOMANS

Families across the Metropolitan and Eastern Oklahoma Library Systems stayed engaged in learning over the summer with Oklahoma Geological Survey's *Rainbow of Rocks* program. During June and July, participants encountered the exciting world of rocks, minerals, and soils while exploring the science of color! Kids investigated geological treasures from a museum-quality collection, learned why minerals can be many different colors, and saw how colors in a single specimen change with the light. Each child also got to build, keep, and take home their very own collection, a true "Rainbow of Rocks".











GEMORY
THE CHERI ANN GRAHAM COLLECTION

A fan favorite at *Rainbow of Rocks* was the matching game, *Gemory*. Built from the Cheri Ann Graham collection, children and families enjoyed playing this memory game. Thanks to the generosity of her family, the legacy of the late Mrs. Graham's enthusiasm for rocks and gems extends to future generations.

By the Numbers

55 Days
22 Programs
700 Oklahomans







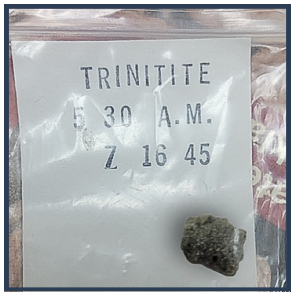
"This is the best day of my LIFE!"

Enthusiastic Young Rainbow of Rocks Participant

GEOLOGIST OFFICE HOURS *ON-THE-ROAD*

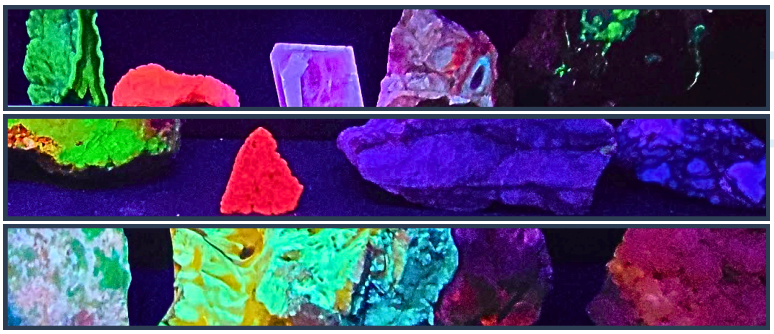
Taking the popular program, *Geologist Office Hours* beyond OGS offices in Norman increased access to scientific equipment and expert staff. *Geologist Office Hours* invites Oklahomans to bring geological treasures to OGS staff for identification about once a month and participants have been known to drive over three hours to attend. Partnerships with local rock clubs and community groups took *Office Hours* into the far corners of Oklahoma, including Ada, Enid, Tahlequah, and Pauls Valley.

By the Numbers	*On-the-Road*	*Office Hours*
	5 Events 8 Partners 3,762 Oklahomans	**8 Events 107 Oklahomans**









OGS AIDS IN RESTORING CODEX TO ROBERT DUBOIS METEORITE COLLECTION

Last year's annual report included a story about trying to help the Oklahoma Science Museum identify several hundred meteorites donated by the Robert DuBois family. Like many legacy collections, the meteorites were organized with ID numbers, but had since been separated from a codex linking each with identifying data.

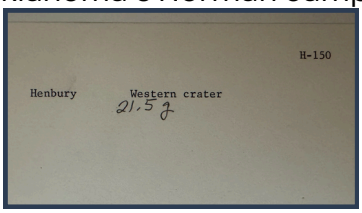
In February 2025, Dr. Carrie Miller-DeBoer discovered proceedings on an effort to save archaeomagnetic data collected by DuBois. Hoping the meteorite codex might be among these materials, Miller-DeBoer reached to author Dr. Shelby Jones, Project Director and Laboratory Supervisor for the New Mexico Office of Archaeological Studies. Within two weeks of connecting Dr. Jones with Curator Susan Berberet, the collection and codex were reunited in Oklahoma at the Science Musem.

OGS OPENS *GEOGLOW GALLERY*

It took Bob Warren five years to perfect his fluorescent rocks and minerals display for the two-day Ada Gem, Mineral, and Fossil Club Show. When Dr. Molly Yunker asked where he kept the collection during the other 363 days of the year, Warren agreed to loan the exhibit for the OGS to "store" as a public exhibit.

Together with the Mewbourne College of Earth and Energy, the fluorescent collection is on display and open to the public in Sarkeys Energy Center on the University of Oklahoma's Norman campus.







"The cards have made it here! I've looked through them and am so excited that the majority of the meteorites can now be identified!

Thank all of you for piecing all this together! I did not ever think his records would have been found!"

Susan Berberet
Science Museum Oklahoma

OPIC
OKLAHOMA PETROLEUM INFORMATION CENTER

MR. RICHIE TARVER



OPIC MANAGER



MS. ELIZABETH CORMACK
RESEARCH ASSOCIATE



MR. DANIEL TERAN
RESEARCH ASSOCIATE





MR. SCOTT BRYANT
MR. RYAN ROSOL
WAREHOUSE COORDINATOR



MR. JEFF DILLON
CORE & CUTTINGS CUSTOMER LIAISON
MR. MASON CULLEN
ARCHIVIST

ESSENTIAL ROLE

The Oklahoma Petroleum Information Center maintains a public archive of geological and geophysical data, including a repository of rock core, cuttings, well data, and OGS publications

DATA PRESERVATION

- Inventory and catalog geological and geophysical data collections
- Manage warehouse facility of geologic core and rock cuttings
- Preserve over a century of well data in a variety of forms including well logs, reports, aerial photos, scout tickets, and geologic maps

PUBLICATIONS

- 100+ years of Geological Scholarship
- Topo maps, guidebooks, educational pubs
- Hydrologic atlases, oil and gas field maps

OGS WELL VIEWER APP

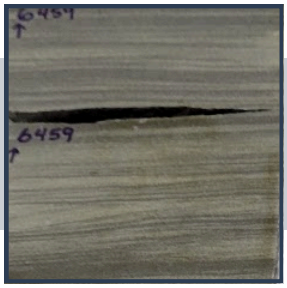
- Digitize collection materials into a single online source
- Provide a comprehensive database of Oklahoma's geoscience and natural resource data
- Significant effort on public information dissemination from an enormous collection with continual growth

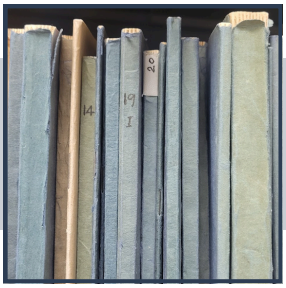
PUBLIC ACCESS TO DATA

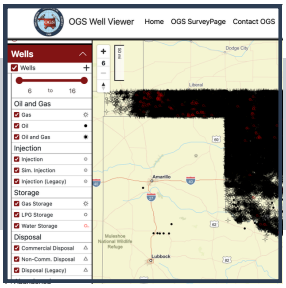
- Supports Oklahoma's oil & gas industry
- Open collection for 70+ visits per month
- Access for OU students and faculty, visiting scholars, workshops, and tours

COLLABORATIONS

OPIC receives donations of materials and equipment from industry partners and funding from federal grant opportunities. In 2024, Baker Hughes donated CT scanning equipment to OPIC which will provide additional data through non-destructive sampling of the core collection. OPIC also provides services to the local community, including educational tours and resources and temporary storage space for densified styrofoam logs from a local styrofoam recycling program.









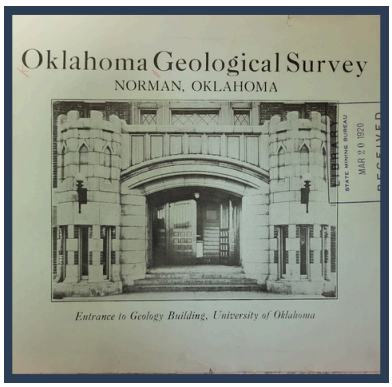


PRESERVING A LEGACY OF GEOLOGIC DATA ON OKLAHOMA'S RESOURCES AND CRITICAL MINERALS

Housing the most comprehensive well data and core repository in Oklahoma, the Oklahoma Petroleum Information Center (OPIC) supports geological resources exploration, one of the state's primary economic sectors. Kept in a warehouse facility the size of 3.5 football fields, the collection contains a staggering amount of physical and digital data from over a century of oil and gas exploration. OPIC's small staff processes, catalogs, and archives the ever-expanding collection, digitizing records to provide online access to the data with no additional cost to the public. Nearly 1,000 visitors each year come to view core and pour through well data.







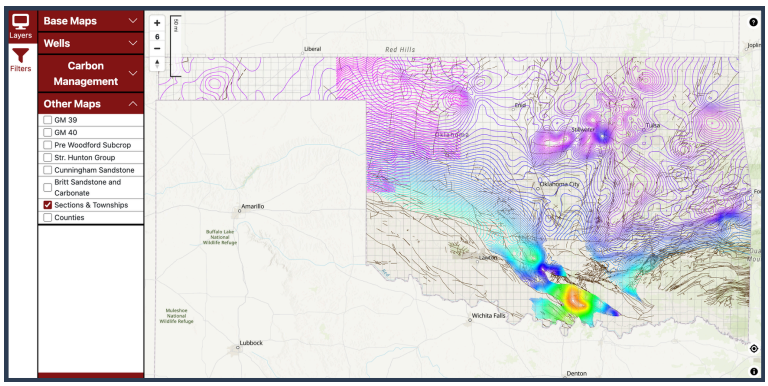


The core and sample library established in 1937 expanded into its present location in 2002 and houses geological samples preserved for future study and analysis, collected from wells drilled as far back as the 1920s.

The Encyclopedia of Oklahoma History and Culture

Recent data preservation efforts funded by USGS National Geophysical Data Preservation Program (NGGPP) awards continue to virtualize OPIC well data to be published through the OGS Well Viewer application. USGS also funded a new initiative to compile a database of geochemical analysis of mine waste and OPIC core to assess critical mineral resources across Oklahoma. OGS received geochemical analysis on ~500 samples to date, establishing the foundation of a long range critical minerals preservation plan. Deliverables from these projects promise to facilitate the dissemination of geoscience information to industry participants, the scientific community, and citizens, to promote the economic development of state resources through best practices and environmental stewardship.

One of the largest public information dissemination undertakings of the OGS, the OGS Well Viewer (https://uat-wellviewer.dig.ou.edu/libre/) remains in-development. Progress is significant and the map-based web portal includes an updated user interface with additional data layers to provide new ways to visualize geoscience and natural resource data in Oklahoma, free of charge.

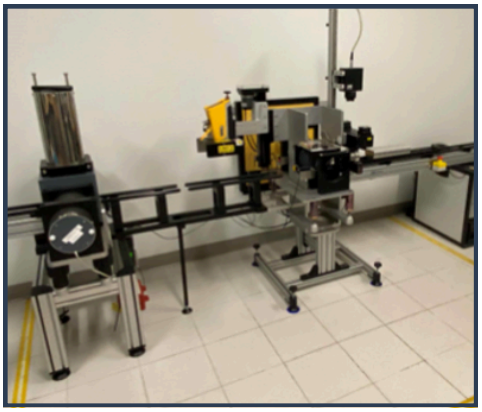




Thousands of feet of Oklahoma core and cuttings as well as materials from 47 contiguous states reside in the 192,000 sq ft. OPIC facility. R. Tarver

STARTUP FUNDING WOULD ESTABLISH OPIC AS ONE OF THE LARGEST ANALYTICAL FACILITIES IN THE NATION

Waiting on startup funds, OGS plans to establish enhanced analytical capabilities across its facilities. A 2025 Baker Hughes donation of state-of-the-art equipment included a GE Neutron Source CT scanner and a Geotek Multi-Sensor Core Logger with Olympus Vanta XRF and spectral core gamma, awaits installation at OPIC. Before OPIC can use this equipment to collect and archive a wide range of data from core without destroying the sample, OGS needs a one-time infusion of startup funds. These upgrades would allow the OGS-OPIC facility to emerge as one of the largest mid-continent geological repositories and analytical facilities in the country.



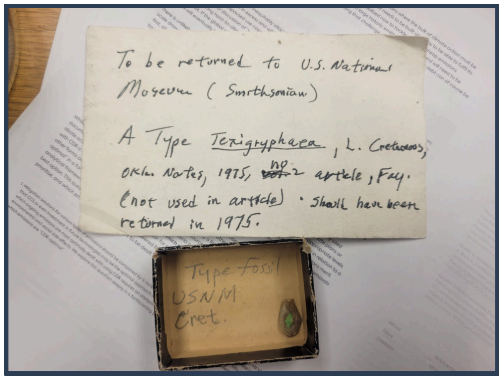


An existing a feasibility study recommends OPIC renovations, including an isolated concrete foundation and independent cooling system to accommodate the installation of this sensitive equipment. Automating analyses with these machines provides consistent and accurate data faster than traditional methods, resulting in large digital datasets easily incorporated into the current OGS Well Viewer database. An investment in establishing this analytical capacity is an investment in Oklahoma's economy, fostering growth in key industries and building infrastructure that attracts and supports new business in Oklahoma.

OVERDUE TYPE FOSSIL RETURNED TO SMITHSONIAN

Robert Fay, OGS geologist and expert on Oklahoma's fossils, borrowed a few type fossils from the National Museum of Natural History (Smithsonian)in 1975. Type fossils are used to establish a species. In one of his 140 publications, Fay presented a history of three type fossils collected in Oklahoma and used them to develop an identification guide to *Texigryphea*, a species of oyster prevalent during the Cretaceous.

> *Always a glad to see when one of these long-lost specimens emerge from the depths of a collection.*
>
> *I have Dr. Khameiss on our schedule for a visit in September and as this was due 50 years ago, I think waiting until September for him to hand carry it here is fine with us.*
>
> *Nicholas Drew, NMNH Collections Specialist*



While cleaning out a desk at OPIC, staff found one of the specimens Fay borrowed, along with a note indicating the specimen was 50 years overdue. Already traveling to the Washington DC for a fellowship, Belkasim Khameiss facilitated the specimen's return, hand-carrying it back to the National Museum.

ADMINISTRATIVE SUPPORT



MS. JOYCE STIEHLER
ASSISTANT TO THE DIRECTOR & OFFICE MANAGER



MS. CARI PRYOR
HR & FINANCIAL MANAGER



MS. CHRISHELLE DREW
FINANCIAL SPECIALIST

ESSENTIAL ROLE

The OGS Administration Team manages the front office, oversees department financials and coordinates staff gatherings to foster collaboration.

OFFICE MANAGEMENT

- The administrative team is often the first contact for people trying to get in touch with someone at the OGS.
- We help get people where they're trying to go, and we do it with a smile.

FOSTERING COMMUNITY

- Our Spring Get-Together convened at OPIC for a series of teamwork-testing relay races.
- Staff Week celebrations packed fun into daily activities and competitions, including scavenger hunts, door decorations, and a chili cookoff!

FINANCIAL OVERSIGHT

- Our team supports all of OGS to ensure invoices are paid, materials are purchased, and grant funds are spent appropriately.



Spring competitions included ping pong toss, puzzle races, hands-free cup stacking, and tandem blindfolded cereal stringing. Winter brought OGS together over finger foods, fine art, and a chili cookoff.

OKLAHOMA BOARD ON GEOGRAPHIC NAMES 28

The Oklahoma Board on Geographic Names (OKBGN) was created by State Legislation in 1965.

(b) *The said Oklahoma Geological Survey shall have for its object and duties the following: (4) Act as the Oklahoma Board on Geographic Names and make recommendations to the United States Board on Geographic Names. [HB 810, section 310(b), (4)]*

OKBGN evaluates all proposals concerning name changes, new names, and name controversies of geographic features within the State of Oklahoma and makes official recommendations to the U.S. Board of Geographic Names (BGN).

OKBGN YEAR IN REVIEW

One of the little known responsibilities entrusted to the OGS by the state legislature is to act as the OKBGN. Compared to larger states, the OKBGN receives one or two naming proposals per year to evaluate or facilitate. On August 14, 2025 the BGN Domestic Names Committee approved one of these proposals, renaming Sarge Creek and Sarge Creek Cove in Kaw Lake to LaSarge Creek and LaSarge Creek Cove, respectively. Discussions also continued to facilitate a proposal to name a currently unnamed creek in Holdenville, OK.



The 2025 OKBGN appreciated advice from former Executive Secretary, T. Wayne Furr. *L-R: Cesalea Ray, T. Wayne Furr, Carrie Miller-DeBoer, and G. Russell Standridge.*

Members of the OKBGN, 2025

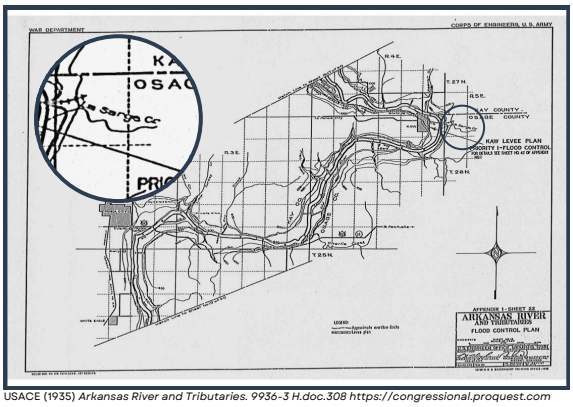
Cesalea Ray, Chair
G. Russell Standridge, Member
Carrie Miller-DeBoer, Member

2025 ANNUAL COGNA CONFERENCE

The OKBGN also interacts with the national “naming community” through the Council on Geographic Names Authorities (CoGNA). OGS sent one OKBGN member to the annual CoGNA conference in Golden, Colorado, one way our base budget serves the state. CoGNA is an association of state and federal government agencies, including the OKBGN, that represent the official and recognized geographic names authorities in the U.S. working to standardize the names of geographic features. The annual conference provides workshops, academic papers, and discussions that bring decision-makers from federal and state agencies, academia, and the public together. The conferences are the only avenue where the state and federal geographic names authorities can meet to share information on place naming principles, policies, procedures, and other aspects of toponymic issues.

RESTORING A LEGACY: LASARGE CREEK AND LASARGE CREEK COVE

In March 2014, a member of the LaSarge family contacted the U.S. Board on Geographic Names (BGN) to return Sarge Creek and Sarge Creek Cove, located within the Osage Nation Reservation, to their original family name of LaSarge. Prominent in the area, the LaSarge family included members of both the Osage and Kaw Nations. The creek runs through LaSarge family allotments, some of which were later affected by the Kaw Lake project, resulting in displacement and the erroneous alteration of the name.



USACE (1935) *Arkansas River and Tributaries. 9936-3 H.doc.308 https://congressional.proquest.com*

Nearly twelve years ago, the OKBGN denied to recommend the features be renamed based on feedback from the U.S. Army Corps of Engineers (USACE), which stated that changing the names established with the creation of Kaw Lake would create public confusion and require unplanned expenditures for signage, printed materials, and other official documentation.

In 2025, Ms. LaSarge provided the BGN with a map showing historical use of the LaSarge namesake for the creek. Osage Nation Principal Chief Geoffrey Standing Bear formally endorsed restoring the historic name and USACE offered no objection. Thus, on August 14, 2025 the BGN voted to officially restore the names LaSarge Creek and LaSarge Creek Cove.

> *With regard to the naming of geographic features located entirely on lands under the jurisdiction of Tribes, it is the policy of the BGN to: 1) Honor the prerogatives and authority of Tribes to determine the names of geographic features by deferring to Tribal preferences. BGN Policy X: Tribal Geographic Names, Section 1.a1*

HONORING VETERANS



On October 12, 2024, retired U.S. Marine Corps veteran and two-time Purple Heart recipient Captain Doyle Tampleton submitted a name establishment request on behalf of American Legion Post #32 in Holdenville, Oklahoma, proposing to name a local unnamed creek “Veterans Creek.” A Works Progress Administration (WPA) project conducted between 1936 and 1941 channelized the creek using local stone to construct approximately two miles of reinforced banks. Much of the labor force consisted of military veterans, including members of the Muscogee (Creek) Nation, as a court ruling required the WPA prioritize hiring veterans. Captain Tampleton thus proposed “Veterans Creek” to commemorate those who served in the military and subsequently participated in the project.

In accordance with Policy X: *Tribal Geographic Names*, the OKBGN connected Captain Tampleton with the Muscogee (Creek) Nation regarding the proposal. Principal Chief David Hill recommended the name be translated into the Mvskoke language to reflect both cultural and historical significance. The name “Tvstvnvke Hvccuce,” is a sense-for-sense translation meaning “Warrior Creek.” Tvstvnvke Hvccuce is pronounced *Dust-dun-uh-gey Hu-jo-jee.* The Muscogee (Creek) Nation sent the preferred name to the BGN at the end of 2025 and further updates can be expected in the 2026 OGS Annual Report.

PEER-REVIEWED JOURNAL ARTICLES

Allen B, Hayman N. 2025. Force chain dynamics in a quasistatic granular pile. *Physical Review E, 112:*045416. https://doi.org/10.1103/j8ch-x534

Benjamin O, Heo J, Lee J, **Regmi NR**. Machine learning applications to temporal and spatial dataset analysis for brackish groundwater monitoring in two Wink Sinks, Winkler County, Texas. *Water, in review*.

Cochran ES, Zakharova N, Carpenter B, Kolawole F, **Hayman NW**, Sone H, Schmitt DR, Eichhubl P, Ellsworth W, Guglielmi Y, Hickman S, Tobin HJ. 2025. Potential for continental scientific drilling to inform fault mechanics and earthquake science. *Seismica 4*(2). https://doi.org/10.26443/seismica.v4i2.1700

Kelly PR, Sano H, Ueno K, Davydov VI, Heavens NG, **Hunt LE**, Gleason JD, Soreghan GS. 2025. Volcanism and climate recorded in giant grains from dust of the late Paleozoic Panthalassic Ocean. *Journal of Sedimentary Research, 95*(3):532-542. https://doi.org/10.2110/jsr.2024.053

Khameiss B. 2025. The relationship between coral reefs and karst features in the Tertiary of Northeast Libya. In R Ruggieri (Ed), *Speleologia Iblea, 19*:285-287. Centro Ibleo di Ricerche Speleo-Idrogeologiche.

Khameiss B. 2025. Analysis of foraminifera in middle-late Miocene deposits within the Red Bay Formation, Florida: examination of nearshore marine facies and lithological discrepancies for enhanced scientific insights. *Research Square, preprint*. https://doi.org/10.21203/rs.3.rs-7294073/v1

Kibikas W, Ghassemi A, **Walter JI**, Carpenter B. 2025. Experimental velocity anisotropy in crystalline basement rocks of the Midcontinental USA. *Journal of Applied Geophysics, 242*. https://doi.org/10.1016/j.jappgeo.2025.105907

Long H, Sanchez Roldan JL, Hansen S, **Walter J**. Upper mantle earthquakes beneath East Antarctica verify intraplate geodynamic predictions. *Science, in review*.

McKnight J, **Ogwari P**, **Walter J**, Ng R, Mansourian D, Saneiyan S. 2026. An evaluation of near-surface sediments enhancing ground motions excited by shallow local earthquakes near Union City, Oklahoma. *Natural Hazards, 122:285.* https://doi.org/10.1007/s11069-026-07989-y

Masoud M, **Khameiss B**. 2025. Investigation of sedimentary microfacies and mineralogical analyses of the Coastal Rock Cliffs (Wadi al-Zaytoun) in the Al Jaghbub, Al Faidyah, and Abraq Formations, NE Libya. *Scientific Journal for the Faculty of Science-Sirte University, 5*(1):24-41. https://doi.org/10.37375/sjfssu.v5i1.3080

Masoud M, **Khameiss B**, **Al-Mabrouk MA**. 2025. Geochemical and mineralogical characterization of recent coastal sediments in the Gabes Region, Eastern Libya: implications for marine depositional processes and environmental change. *Libyan Journal of Ecological & Environmental Sciences and Technology, 7*(3):35-43. https://doi.org/10.63359/g1ph7j18

Milad B, **Allen B**, **Hayman N**. Simulation of a CO2 plume in the Arbuckle Group in Northeast Oklahoma. *International Journal of Greenhouse Gas Control, in press*.

PEER-REVIEWED JOURNAL ARTICLES

Milad B, Hadded A, Layeb M, Ismail A, Saidi M, Soussi M. Petrographic, geochemical, and mineralogical characterizations of the Bahloul Formation (North-Central Tunisia) and a comparison with the Eagle Ford Group (Texas, USA). *Marine and Petroleum Geology Journal, in review.*

Morency C, Kroll K, **Walter J**, Matzel E. Virtual seismometer method for moment tensor inversion. *Geophysics, in review*.

Munoz Santos L, **Walter J**, Pulliam J, Leonel J, Polanco E. Active crustal and slab seismicity in Hispaniola revealed through a unified machine-learning derived earthquake catalog. *Seismological Research Letters, in review.*

Ogwari P, **Walter J**, Chen X, **Woelfel I**, **Thiel AD**, Ferrer F, Brooks C. 2025. Hydraulic fracturing enhances wastewater disposal seismicity in Eastern Oklahoma. *Seismological Research Letters XX:1-14*. https://doi.org/10.1785/0220250170

Peng J, Hu Z, Feng D. 2025. The classification scheme for fine-grained sedimentary rocks: a review and a new approach based on five inherent rock attributes. *Gondwana Research, 145*:107-141. https://doi.org/10.1016/j.gr.2025.04.014

Peng J. Grain assemblages and diagenesis of the Mississippian organic-rich Caney Shale, Ardmore Basin, Oklahoma. *in review*.

Thapa M, Jiang J, Regmi NR, Walter J. Spectral analysis of multitemporal SAR imagery for multiscale landslide detection, mapping, and characterization. *Remote Sensing of Environment, in review. Authorea, preprint*. https://doi.org/10.22541/au.175191581.15932054/v2

Thapa M, Pradhan AMS, Chamlagain D, Jiang J, **Regmi, NR**. 2025. Variability of landslide susceptibility models under different ground motion scenarios in Rasuwa district, Nepal. *Natural Hazards, 122:*61. https://doi.org/10.1007/s11069-025-07752-9

Walter J, DeShon H. Solid earth tides modulate earthquake activity in the New Madrid Seismic Zone. *Seismological Research Letters, in review.*

Xiao H, **Walter J**, **Ogwari P**, Ho LM, **Thiel AD**, **Mace B**, **Woelfel I**. Transfer learning and benchmarking for induced seismic events detection: insights from Oklahoma. *JGR: Machine Learning and Computation, in review.*

Xiao H, Marshak S, DeLucia M, Song X. 2025. Moho depth (crustal thickness) variations under the northeastern midcontinent of North America, based on H-κ–c receiver-function analysis. *Earth and Planetary Science Letters, 658.* https://doi.org/10.1016/j.epsl.2025.119289

Zubi HF, Platt B, Abdalla M, Gifford J, **Khameiss B**. 2025. Depositional system transitions and sequence stratigraphic evolution of the Tuscaloosa Group in the Mississippi Embayment, USA: accommodation space and sediment supply controls. *Cretaceous Research, 178:*106241. https://doi.org/10.1016/j.cretres.2025.106241

GEOLOGICAL MAPS

Eichler CM, **Stanley TM**. 2025. Geologic map of the Hollow 7.5' quadrangle, Craig County, Oklahoma. Scale 1:24,000. https://www.ou.edu/ogs/maps/ogq

Eichler CM, **Stanley TM**. 2025. Geologic map of the the Welch NW 7.5 quadrangle, Craig County, Oklahoma. Scale 1:24,000. https://www.ou.edu/ogs/maps/ogq

ABSTRACTS & CONFERENCE PROCEEDINGS

Allen B, **Hayman N**. 2025. Working towards a Net-Zero Economy: geostorage in Oklahoma. *Sustainability Forum, January 24*. Norman, OK.

Allen B. 2025. Non-equilibrium fluid pressures of the Arbuckle Group of North Central Oklahoma. *John D. Pigott Colloquium, April 2*. School of Geosciences, The University of Oklahoma.

Allen B. 2025. Possible hydrogen energy in Oklahoma. *AAPG Midcontinent Sectional Meeting 2025, October 8*. Oklahoma City, Oklahoma. https://ocgs.org/images/downloads/2025_aapg_mcs_program_prefinal1.pdf

Allen B, **Hayman N**. 2025. Fluid intrusion and fingering across the viscous to solid transition. *Society of Rheology, October 22*. Santa Fe, New Mexico. https://www.rheology.org/sor25a/ViewAuthorProfile?ID=1129

Allen B, **Hayman N**. 2025. Patterns of viscous intrusion in visco-elastico-plasto media. *Society of Rheology, October 22*. Santa Fe, New Mexico. https://www.rheology.org/sor25a/ViewAuthorProfile?ID=1129

Blackwood KW. 2025. Mapping the spatial distribution of karst features in Oklahoma. *GSA 2025 South-Central Section Meeting, March 10*. Conway, Arkansas. https://gsa.confex.com/gsa/2025SC/meetingapp.cgi/Paper/408719

Blackwood KW, **Sanders LA**. 2025. Hypogene 'karst' development within the geyser basins of Yellowstone National Park, USA. *Geological Society of America: GSA Connects 2025, October 19*. San Antonio, Texas. https://doi.org/10.1130/abs/2025AM-11257

Blackwood KW. 2025. Projects, goals, and capabilities of the environmental geoscience group of the Oklahoma Geological Survey. *Ardmore Geological Society*.

Chen X, **Ogwari P**, **Walter J**. 2025. Characterizing earthquake source processes using nodal array. *Eastern Section Seismological Society of America 2025 Annual Meeting*, *October 28*. St. Louis, Missouri. http://pubs.geoscienceworld.org/ssa/srl/article-pdf/96/2B/1241/7163482/srl-2025104.1.pdf

Fleenor D, **Walter J**, **Ogwari P**, **Xiao B**, **Mace B**, **Woefel I**, **Thiel A**, **Gregg N**. 2025. Aftershock identification using waveform-migration and stacking of continuous nodal seismic data in the aftermath of the 2024 M5.1 Prague, Oklahoma earthquake. *AAPG Midcontinent Sectional Meeting 2025, October 8*. Oklahoma City, Oklahoma. https://ocgs.org/images/downloads/2025_aapg_mcs_program_prefinal1.pdf

ABSTRACTS & CONFERENCE PROCEEDINGS

Fleenor D, **Walter JI**, Smith EC, Karplus MS, Gonzalez LF. 2025. Basal icequake detection at eastern shear margin of Thwaites Glacier, Antarctica. *American Geophysical Union 2025 Annual Meeting (AGU25), December 17.* Washington, DC. https://agu.confex.com/agu/agu25/meetingapp.cgi/Paper/1982804

Hayman N, **Hunt L**, **Lewis P**, **Milad B**, **Morris N**, **Peng J**, **Suriamin FM**, **Tarver R**. 2025. Oklahoma Geological Survey geological core science and support. *GSA 2025 South-Central Section Meeting, March 11*. Conway, Arkansas. https://gsa.confex.com/gsa/2025SC/meetingapp.cgi/Paper/407793

Hayman N, **Milad B**, **Smith C**, McGlannan A, Huerta N, Aldana I, Baek S, Kwan M, McDonald Z. 2025. Assessing hydrogen geostorage in natural gas reservoirs: Anadarko Basin. *American Association of Petroleum Geologists: Southwest Section, April 30.* Fort Worth, Texas. https://doi.org/10.2172/2574451

Hayman N, **Hunt L**, **Lewis P**, McGlannan A, Huerta N, Aldana I, Baek S, Kwan M, McDonald Z. 2025. Assessing hydrogen geostorage in natural gas reservoirs: Anadarko Basin. *Geological Society of America: GSA Connects 2025, October 20*. San Antonio, Texas. https://doi.org/10.1130/abs/2025AM-9383

Ho L, Sánchez-Roldán JL, Hansen S, **Walter JI**. 2025. Intermediate-depth earthquakes beneath East Antarctica reveal lithosphere-asthenosphere interactions control intraplate deformation. *American Geophysical Union 2025 Annual Meeting (AGU25), December 17.* Washington, DC. https://agu.confex.com/agu/agu25/meetingapp.cgi/Paper/1872367

Hunt L, **Hayman N**, **Lewis P**. 2025. The value of core and cuttings in obtaining information on basement rocks of the midcontinent. *GSA 2025 South-Central Section Meeting, March 11*. Conway, Arkansas. https://gsa.confex.com/gsa/2025SC/meetingapp.cgi/Session/57601

Khameiss B, **Lewis P**, **Hunt L**, **Stanley T**. 2025. Preliminary insights into the morphology and paleoenvironment of paleozoic stromatolites from the Wichita Mountains, Southwestern Oklahoma. *AAPG Midcontinent Sectional 2025, October 8*. Oklahoma City, Oklahoma. https://ocgs.org/images/downloads/2025_aapg_mcs_program_prefinal1.pdf

Khameiss B, **Miller-DeBoer C**, **Morris N**. 2025. Stratigraphic framework and resource implications of the Duck Creek Formation at Texoma Lake and Red River: insights into hydrocarbon potential. *AAPG Midcontinent Sectional 2025, October 8*. Oklahoma City, Oklahoma. https://ocgs.org/images/downloads/2025_aapg_mcs_program_prefinal1.pdf

Khameiss B, **Stanley T**, **Lewis P**. 2025. Critical role of benthic foraminifera in age control, depositional environment analysis, and stratigraphic mapping of Mississippian successions: case studies from Oklahoma and Kansas. *Geological Society of America: GSA Connects 2025, October 20.* San Antonio, Texas. https://doi.org/10.1130/abs/2025AM-6789

Lewis P, **Hayman N**, **Hunt L**. 2025. Using outcrop and preserved cores to determine the critical mineral potential of the Wichita Mountains. *GSA 2025 South-Central Section Meeting, March 11*. Conway, Arkansas. https://gsa.confex.com/gsa/2025SC/meetingapp.cgi/Paper/408567

ABSTRACTS & CONFERENCE PROCEEDINGS

Lewis P, **Khameiss B**, **Stanley T**. 2025. Pennsylvanian stratigraphic reconciliation in the Cherokee Platform: integrating detailed mapping and benthic foraminifera biostratigraphy. *Geological Society of America: GSA Connects 2025, October 19*. San Antonio, Texas. https://doi.org/10.1130/abs/2025AM-8155

Masoud M, **Khameiss B**. 2025. Holocene coastal evolution and paleoecological significance of fossil assemblages at wadi mouths, Tobruk Region, Northeast Libya. *Geological Society of America: GSA Connects 2025, October 21*. San Antonio, Texas. https://doi.org/10.1130/abs/2025AM-6489

McLaughlin M. 2025. Accessible geophysical data in Oklahoma. *AAPG Midcontinent Sectional Meeting 2025, October 8*. Oklahoma City, Oklahoma. https://ocgs.org/images/downloads/2025_aapg_mcs_program_prefinal1.pdf

Milad B, **Suriamin FM**, **Allen B**, **Sapardina D**, **Peng J**, **Hayman N**. 2025. Petrophysical and geologic characterization for Arbuckle Group. *SPE-AAPG-SEG Carbon Capture, Utilization, and Storage, March 4*. Houston, Texas. https://42500357.fs1.hubspotusercontent-na1.net/hubfs/42500357/CCUS/CCUS%202025%20-%20Houston/CCUS%2025%20Announcement%20web%201.pdf

Milad B. 2025. OGS geostorage, CCS, and H2 short course. *School of Geosciences: GPHY 2013, April 26*. Mewbourne College of Earth and Energy, The University of Oklahoma.

Milad B, **Smith C**, **Hayman N**, McGlannan A, Baek S, Huerta N, Aldana I, Kwan M, McDonald Z. 2025. Hydrogen geostorage potential in Anadarko Basin, OK. *AAPG Midcontinent Sectional Meeting 2025, October 8*. Oklahoma City, Oklahoma. https://ocgs.org/images/downloads/2025_aapg_mcs_program_prefinal1.pdf

Miller-DeBoer CJ, **Yunker M**. 2025. ~~Carbon capture crash course for environmental educators.~~* *Oklahoma Environmental Education Expo (OKEE): Cultivating Community, February 7*. Oklahoma City, Oklahoma.
*Abstract submitted and accepted in 2024, presentation withdrawn per DOE memo January 28, 2025.

Miller-DeBoer CJ, **Hayman N**, **Suriamin FM**, **Milad B**, **Walter J**, **Yunker M**, **Sapardina D**, **Xiao H**, **Smith C**. 2025. Oklahoma: a legacy of CCUS. *CUSP West 2025 Annual Meeting, June 25*. Salt Lake City, Utah.

Miller-DeBoer CJ, **Yunker M**. 2025. Geoscience to the people! Geoscience education and outreach programs for all. *Geological Society of America: GSA Connects 2025, October 19*. San Antonio, Texas. https://doi.org/10.1130/abs/2025AM-10011

Morris N. 2025. Using black shales to constrain the source of Mississippi Valley-type lead-zinc deposits. *Missouri University of Science and Technology Department of Earth Sciences and Engineering Colloquium, February*. Rolla, Mississippi.

Morris N, **Tarver R**, **Hayman N**. 2025. Oklahoma Petroleum Information Center's core values: the history of a geological repository and information resource. *AAPG Midcontinent Sectional Meeting 2025, October 8*. Oklahoma City, Oklahoma. https://ocgs.org/images/downloads/2025_aapg_mcs_program_prefinal1.pdf

ABSTRACTS & CONFERENCE PROCEEDINGS

Morris N. 2025. Exploring the legacy and future of OPIC: a virtual tour of the Oklahoma Petroleum Information Center. *Tulsa Geological Society, November***.** Webinar. https://tulsageologicalsociety.wildapricot.org/event-6434807

Mroz E, **Lewis P**, **Hunt L**. 2025. Early insights into the Wichita Igneous Province using legacy collections from the Oklahoma Geological Survey. *Geological Society of America: GSA Connects 2025, October 19*. San Antonio, Texas. https://doi.org/10.1130/abs/2025AM-4842

Muhammad K, Xi D, Frontalini F, Pappazzoni CA, **Khameiss B**, Fawad N, Wan X. 2025. Larger benthic foraminiferal turnover during the Early Oligocene Glacial Maximum (EOGM) along the western margin of Indian plate Baluchistan Basin (eastern Neo-Tethys, Pakistan). *Geological Society of America: GSA Connects 2025, October 19*. San Antonio, Texas. https://doi.org/10.1130/abs/2025AM-6402

Nakata N, Zhang Z, Karplus MS, Christoffersen P, Young TJ, Bi Z, May DM, Gonzalez LF, Schroeder DM, Booth AD, Suckale JS, **Walter JI**, Kaip G, Tulacyzk SM. 2025. Seismic imaging of the eastern shear margin of Thwaites Glacier, West Antarctica. *American Geophysical Union 2025 Annual Meeting (AGU25), December 15*. Washington, DC. https://agu.confex.com/agu/agu25/meetingapp.cgi/Paper/1983367

Ogwari P, **Walter J**, **Thiel A**, **Gregg N**, **Mace B**, **Woelfel I**. 2025. Revamping the Oklahoma Geological Survey Statewide Seismic Network for the next generation of seismic monitoring. *Seismological Society of America 2025 Annual Meeting, April 15*. Baltimore, Maryland. https://seismosoc.secure-platform.com/a/gallery/rounds/43/details/12697

Ogwari P, **Walter J**, **Xiao H**, **Thiel A**. Interplay of wastewater injection and hydraulic fracturing in induced seismicity near Kingfisher, Oklahoma. *Eastern Section Seismological Society of America 2025 Annual Meeting, October 28*. St. Louis, Missouri. https://www.seismosoc.org/wp-content/uploads/2025/10/program.pdf

Peng J. 2025. Integrated depositional modeling and reservoir characterization of the Upper Pennsylvanian Cline Shale, Midland Basin. *Diamondback Energy, July*.

Regmi N. 2025. Landslide susceptibility in the Ozark and Ouachita Mountains. *Minnesota Geological Survey Geology Forum, January 30*. Webinar.

Sapardina D, **Suriamin FM**, **Hayman N**. Evaluating the Tonkawa Sandstone as a CO2 storage reservoir in Oklahoma: geological insights and site characterization. *SEPM: Sedimentary Geology and the Energy Transition, June 2*. Salt Lake City, Utah. https://www.sepm.org/files/energy-transitions-program-for-webmay22.4jjlnq0r3v6y7lh8

Sapardina D, **Suriamin FM**, **Hayman N**. 2025. Evaluating the Tonkawa Sandstone as a CO2 storage reservoir in Oklahoma: geological insights and site characterization. *AAPG Midcontinent Sectional Meeting 2025, October 8*. Oklahoma City, Oklahoma. https://ocgs.org/images/downloads/2025_aapg_mcs_program_prefinal1.pdf

Sapardina D. 2025. Petrel training - well correlation and seismic well tie. *Society of Geoscientists Student Chapter, November 5*. Mewbourne College of Earth and Energy, The University of Oklahoma.

ABSTRACTS & CONFERENCE PROCEEDINGS

Smith C, **Sapardina D**, **Milad B**, **McGlannan A**. 2025. Oklahoma Geological Survey Red Fork and Simpson core exhibit. *AAPG Midcontinent Sectional Meeting 2025, October 7.* Oklahoma City, Oklahoma.

Suriamin FM, Turnini A, Pranter M, **Hayman N**, **Walter J**, **Sapardina D**, **Standridge GR**. 2025. Quantitative evaluation of CO2 storage potential of the Arbuckle Saline Aquifers, Oklahoma. *SEPM: Sedimentary Geology and the Energy Transition, June 2*. Salt Lake City, Utah. https://www.sepm.org/files/energy-transitions-program-for-webmay22.4jjlnq0r3v6y7lh8.pdf

Walter J, **Ogwari P**, Woo J, **Thiel A**, **Mace B**, **Gregg N**, **Woefel I**, **Xiao H**, Ellsworth WL. 2025. Aftershocks and ongoing evolution of seismicity surrounding the damaging 2024 M5.1 Prague Earthquake in Oklahoma. *Seismological Society of America 2025 Annual Meeting, April 15*. Baltimore, Maryland. https://seismosoc.secure-platform.com/a/gallery/rounds/43/details/12862

Walter JI. Beamforming applied to Antarctic arrays to detect Amundsen Sea ice-ocean interface seismicity. *American Geophysical Union 2025 Annual Meeting (AGU25), December 17.* Washington, DC. https://agu.confex.com/agu/agu25/meetingapp.cgi/Paper/2001071

Walter JI, **Ogwari P**. 2025. The importance of small earthquake magnitude accuracy in regional networks. *American Geophysical Union 2025 Annual Meeting (AGU25), December 18.* Washington, DC. https://agu.confex.com/agu/agu25/meetingapp.cgi/Paper/2002065

Williams A, Karplus MS, Gonzalez LF, May DF, Kaip G, **Walter JI**, Nakata N, Booth AD, Tulaczyk SM, Young TJ. 2025. Linking seismic velocity and crystal fabric in glacier shear margins. *American Geophysical Union 2025 Annual Meeting (AGU25), December 17.* Washington, DC. https://agu.confex.com/agu/agu25/meetingapp.cgi/Paper/1996724

Xiao H. 2025. What lies beneath: moho depth and crustal structures in the central midcontinent, USA. *John D. Pigott Colloquium, January 23*. School of Geosciences, The University of Oklahoma.

Xiao H, **Walter J**, **Ogwari P**. 2025. Using transfer learning to enhance microseismicity monitoring and support carbon storage initiatives in Oklahoma. *Sustainability Forum, January 24*. Norman, OK.

Xiao H, **Walter J**, **Ogwari P**. 2025. Using transfer learning to enhance microseismicity monitoring and support carbon storage initiatives in Oklahoma. *DISC Data Science Symposium, March 26*. Norman, OK.

Xiao H, **Walter J**, **Ogwari P**, **Thiel A**, **Gregg N**, **Mace B**. 2025. Using machine learning to enhance microseismicity monitoring and support carbon storage initiatives in Oklahoma. *Seismological Society of America 2025 Annual Meeting, April 18*. Baltimore, Maryland. https://seismosoc.secure-platform.com/a/gallery/rounds/43/details/12978

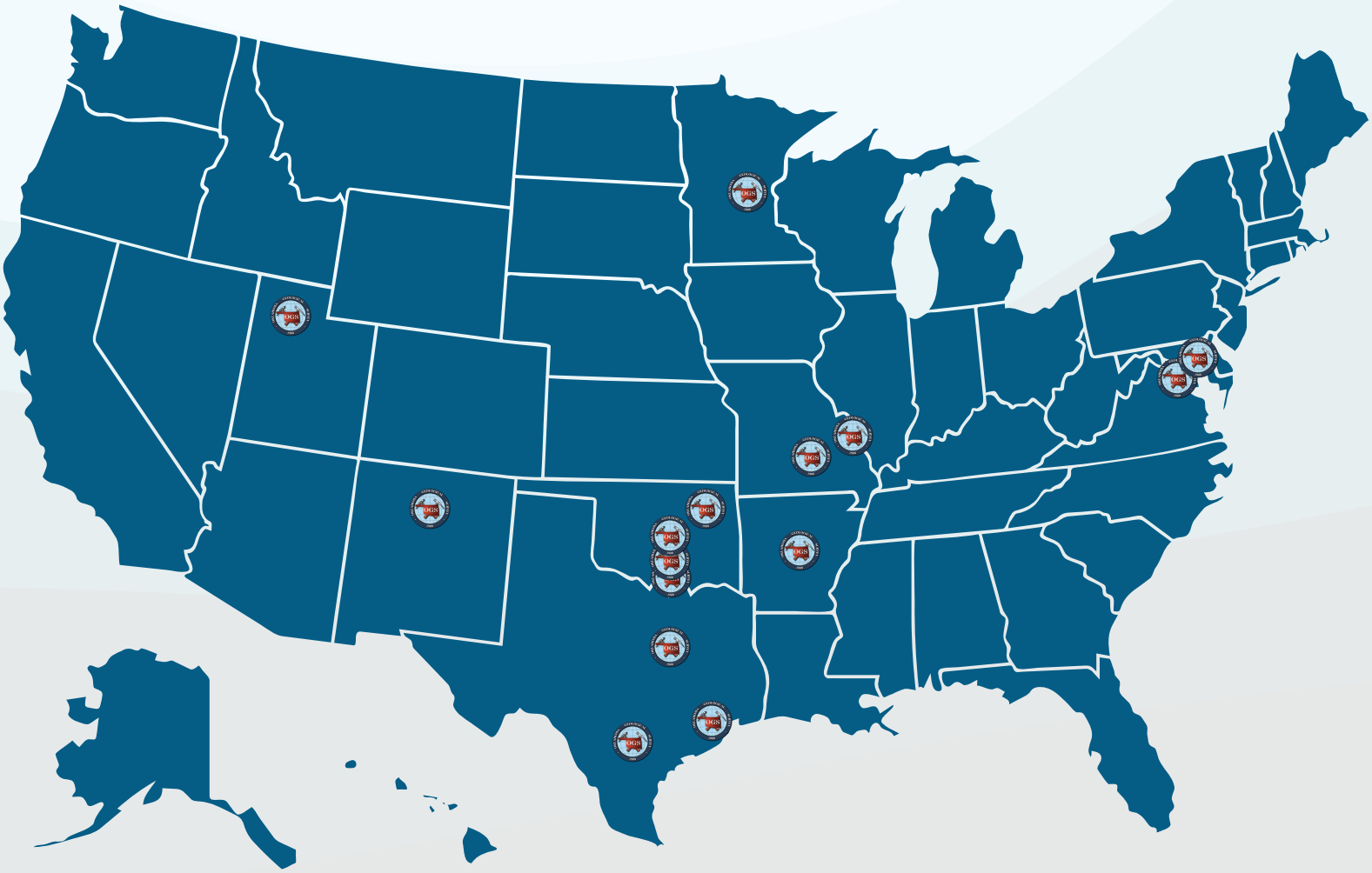
Xiao H, **Walter J**, **Ogwari P**, **Thiel A**, **Gregg N**, **Mace B**, **Woelfel I**. 2025. High-fidelity seismicity dataset and machine learning fine-tuning framework for induced seismicity monitoring in Oklahoma. *AAPG Midcontinent Sectional Meeting 2025, October 7.* Oklahoma City, Oklahoma. https://ocgs.org/images/downloads/2025_aapg_mcs_program_prefinal1.pdf

ABSTRACTS & CONFERENCE PROCEEDINGS

Xiao H, Marshak S, Song X. 2025. Unveiling shear velocity anomalies in the central midcontinent of the United States through high-resolution joint inversion: links to failed rifting, crustal under-plating, and trans-crustal faulting. *Eastern Section Seismological Society of America 2025 Annual Meeting, October 27.* St. Louis, Missouri. https://www.seismosoc.org/wp-content/uploads/2025/10/program.pdf

Xiao H, **Walter J**, **Ogwari P**, **Thiel A**, **Gregg N**, **Mace B**, **Woelfel I**. 2025. Machine learning for effective microseismicity monitoring: dataset, benchmarks, and adaptable models for carbon sequestration in Oklahoma. *Eastern Section Seismological Society of America 2025 Annual Meeting*, *October 28*. St. Louis, Missouri. https://www.seismosoc.org/wp-content/uploads/2025/10/program.pdf

Xiao H, **Walter J**, **Ogwari P**. 2025. Enhanced nodal array detection of induced seismicity in the southern midcontinent using fine-tuned machine learning models. *American Geophysical Union 2025 Annual Meeting (AGU25), December 18*. Washington, DC. https://agu.confex.com/agu/agu25/meetingapp.cgi/Paper/1996314



WHITE PAPERS, BULLETINS, & REPORTS

Oborny S, Andrezejewski K, Bream B, Bream K, Gumble J, Louis D, Schneider B, Smith R, Bancroft A, Clark R, Ganz K, Seegar C, Steele A, Joeckel RM, **Hayman N**, **Hunt L**, **Morris N**, **Ray C**, **Suriamin FM**, Cardott BJ, Seyedolali A, Symcox C, Lynn W. 2025. CMCSCFCB - critical minerals in coaly strata of the Cherokee-Forest City Basin. *Submitted under DE-FOA-0002364 to the U. S. Department of Energy* (pp. 258). Kansas Geological Survey. 10.2172/3009807

Li Y, Zhang J, Qiu Z, Kontakiotis G, **Peng J**, Wang Y. 2025. Fine-grained sedimentary rocks: sedimentary processes, diagenesis, geochemistry and their relationship with critical geological events. *Frontiers in Earth Science, 13:* Editorial. https://doi.org/10.3389/feart.2025.1625168

OKLAHOMA GEOLOGICAL SURVEY SEMINARS

The Oklahoma Geological Survey started the OGS Brown Bag Seminar series in the fall of 2025, organized by Dr. Netra Regmi. Every two weeks, an OGS staff member explains preliminary or final research findings or uses the opportunity to prepare for upcoming conference presentations.

October 1	Introduction to Brown Bag	Netra Regmi
	Hydrogen, OGS, Imaging, and Other Fun Stuff	Nick Hayman
October 15	Hypogene 'Karst' Development within the Geyser Basins of Yellowstone National Park, USA	Kevin Blackwood
	Geoscience to the People! Geoscience Education and Outreach Programs for All	Carrie Miller-DeBoer
October 29	Early Insights into the Wichita Igneous Province Using Legacy Collections from the Oklahoma Geological Survey	Emma Mroz
November 12	Arbuckle Fluid Pressures and Seismicity	Ben Allen
December 10	Revisiting an Acoustic Anomaly: How the OGS Seismic Network detected munitions disposal at an Army base and turned it into a research data set	Andrew Thiel

The series continues in Spring 2026. Find us in SEC 1410 from 12:00 - 1:00 every other Wednesday.

Spring 2026 Schedule

January 7 | January 21 | February 11 | February 25 | March 11 | March 25 | April 8 | April 22

2025 AWARDS & HONORS

EDITOR, SPECIAL ISSUE

Heo J, Cho H, **Regmi N**. (Eds). (2025). Water Modeling Using Combined Machine Learning and Fieldwork Investigation. *Water*. https://www.mdpi.com/journal/water/special_issues/18KBKTZ6K5

Li Y, Li Z, Zhang J, Qiu Z, Kontakiotis G, **Peng J**. (Eds). 2025. Fine-Grained Sedimentary Rocks: Sedimentary Processes, Diagenesis, Geochemistry and Their Relationship with Critical Geological Events. *Frontiers in Earth Science*. https://www.frontiersin.org/research-topics/62321

Hu T, Jarvie DM, Song Z, Han Y, **Peng J**, Jia P. (Eds). 2025. Shale Oil Micro-Migration and Its Effect on Shale Oil Differential Enrichment. *Frontiers in Earth Science*. https://www.frontiersin.org/research-topics/67513

Peng J. 2025. Associate Editor. *Journal of Sedimentary Research*.

Regmi N. 2025. Associate Editor. *Water Journal*.

Regmi N. 2025. Editorial Review Board. *Journal of Nepal Geological Society*.

EXTERNAL AWARDS

Netra Regmi. 2025. Research Excellence Award. Mewbourne College of Earth and Energy, The University of Oklahoma.

Andrew Thiel. 2025. Staff Excellence Award. Mewbourne College of Earth and Energy, The University of Oklahoma.

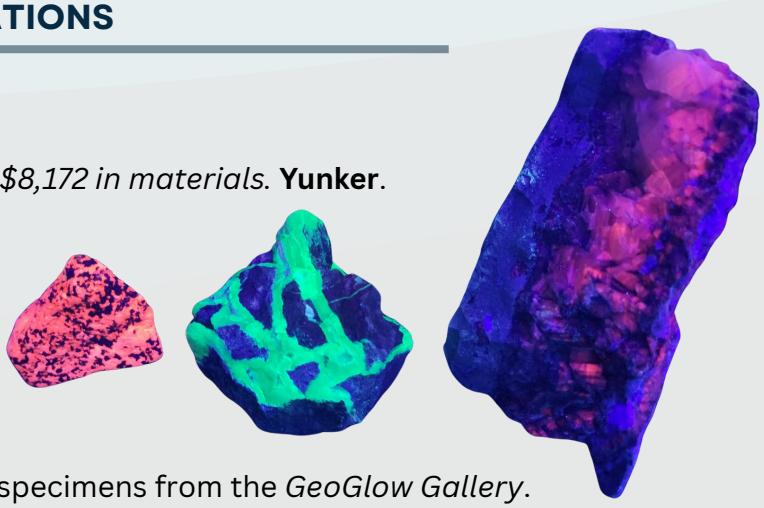
Hongyu Xiao. 2025. Symposium on Sustainability Best Poster Award. Symposium on Sustainability at the University of Oklahoma.

Hongyu Xiao. 2025. The Data Institute for Societal Challenges Poster Presentation Award, 3rd place. Innovating for Impact Data Science Symposium at the University of Oklahoma.

DONATIONS

GeoGlow Gallery. (2025). Bob Warren, *on loan*. **Yunker**.

GeoKIDS. (2025). The Oklahoma Geological Foundation. *$8,172 in materials*. **Yunker**.



Fluorescing specimens from the *GeoGlow Gallery*.

2025 ACTIVE GRANTS

SPECIAL FUNDING

Oklahoma Seismic Network Update. (2024-2025). State of Oklahoma, Secretary of Environment. *$4M (FY25)*. **Walter**.

Edge-Enabled Deep Learning for Induced Seismicity Detection in Oklahoma. (2025-2027). DISC Postdoctoral Fellowship Award. *$5,000 (FY26)*. **Xiao**.

DEPARTMENT OF ENERGY

Developing and Investigating Subsurface Storage Potential and Technical Challenges for Hydrogen DISSPATCH H2. (2023-2025). FE0032351. *$214,005 (FY24)*. **Hayman**, collaborating partner.

Oklahoma Geological Survey Coordination of Mid-Continent Carbon Management. (2024-2025). FE0032374. *$999,999 (FY24)*. **Hayman**.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Monitoring Hillslope Dynamics Using SAR Time Series and Machine Learning. (8/17/2022-8/16/2025). NASA Earth Surface and Interior. *$279,991 (FY25: $88.391)*. **Regmi**.

NATIONAL SCIENCE FOUNDATION

The Role of Shear Margin Dynamics in the Future Evolution of Thwaites Drainage Basin. (2023-2025). NSFPLR-NERC: TIME (Thwaites Interdisciplinary Margin Evolution). *$175,034 (FY23)*. **Walter**, collaborating partner.
Acquisition of the IRIS instruments FullWaver device for monitoring active landslides in Oklahoma. (2023-2025). 230845. *$20,493 (FY24)*. **Walter**, collaborating partner.

How the convergence of Engineering, Social Sciences, and Geoscience Can Enable Carbon-Free H2 Technologies. (2023-2028). 2317984. GCR: Transition to Green Energy in Gas-Producing Regions. *$105,000 (FY24)*. **Hayman**, collaborating partner.

Earth-System Responses to the Penultimate Icehouse-Greenhouse Transition. (2023-2028). 2317596. *$230,679 (FY24, 26)*. **Yunker**, collaborating partner.

2025 ACTIVE GRANTS

UNITED STATES GEOLOGICAL SURVEY

Critical Mineral Potential in the Wichita Mountains, Oklahoma. (2022-2027). EarthMRI. *$297,067 (FY23)*. **Hunt**.

Data Preservation of Geological Resources. (2025-2026). National Geological and Geophysical Data Preservation Program. *$178,810 (FY24)*. **Tarver**.

Oklahoma Mine Waste Inventory. (2023-2026). EarthMRI. *$53,568 (FY24)*. **Hunt**.

Pennsylvanian Reconciliation and ArcGIS Database. (2023-2025). *$309,570 (FY24)*. **Stanley**.

Geochemical Survey of Tri-State Mining Areas, Missouri, Kansas and Oklahoma (2024-2027). EarthMRI. *$109,995 (FY25)*. **Hunt**, collaborating partner.

Data Preservation of Geological Resources and Critical Minerals. (2025-2026). National Geological and Geophysical Data Preservation Program. *$182,268 (FY25)*. **Tarver**.

Mine Waste Characterization at Oklahoma's Tar Creek Superfund Site. (2024-2027). EarthMRI. *$299,175 (FY25)*. **Hunt**.

OGS STATEMAP FY2024-2026. (2024-2026). STATEMAP. *$467,242 (FY25)*. **Stanley**.

Phosphatic Nodules and Their Associated Black Shale Units in Oklahoma. (2024-2027). EarthMRI. *$329,994 (FY25)*. **Hunt**.

Evaporites in Western Oklahoma. (2026-2029). EarthMRI. *$329,996 (FY26)*. **Hunt**.

Revised Attachment A State Proposal FY2025. (2025-2027). STATEMAP. *$52,388 (FY26)*. **Stanley**.

Travel Funds to the 2025 EarthMRI Workshop. (2025). EarthMRI. *$5,992 (FY26)*. **Hunt**.



Concretion,
Little Axe, OK



Iron Smelting Slag,
Tulsa, OK



Nuclear Glass
Trinity Site, NM

Shattercone (?)
Ardmore, OK





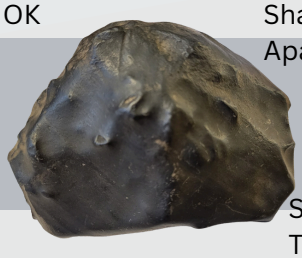
Bryozoan
Tahlequah,
OK



Colombia
Shuttle
Heat Shield
Dallas, TX

Mastodon Tooth
Pauls Valley, OK





Cretaceous
Shark Tooth
Apache, OK



St. Clair Limestone
Tahlequah, OK

2025 COLLABORATIONS

THE UNIVERSITY OF OKLAHOMA

COLLEGE OF ATMOSPHERIC AND GEOGRAPHIC SCIENCES
- Center for Analysis and Prediction of Storms
- Department of Geography and Environmental Sustainability

COLLEGE OF LAW

DATA INSTITUTE FOR SOCIETAL CHALLENGES

DODGE FAMILY COLLEGE OF ARTS AND SCIENCES
- Department of Economics
- Department of Psychology
- Shyam Dev Patwardhan Department of Philosophy

INSTITUTE FOR COMMUNITY AND SOCIETY TRANSFORMATION

INSTITUTE FOR RESILIENT ENVIRONMENTAL AND ENERGY SYSTEMS

GALLOGLY COLLEGE OF ENGINEERING
- School of Electrical and Computer Engineering
- School of Sustainable Chemical, Biological and Materials Engineering

GAYLORD COLLEGE OF JOURNALISM AND MASS COMMUNICATION

MEWBOURNE COLLEGE OF EARTH AND ENERGY
- Mewbourne School of Petroleum and Geological Engineering
- School of Geosciences
  - Pick and Hammer Club

NATIVE NATIONS CENTER FOR TRIBAL POLICY RESEARCH

SAM NOBLE MUSEUM - OKLAHOMA MUSEUM OF NATURAL HISTORY

VICE PRESIDENT FOR RESEARCH AND PARTNERSHIPS
- Transition to Green Energy in Gas producing regions (RANGE)

ACADEMIC RESEARCH

CARBON UTILIZATION AND STORAGE PARTNERSHIP (CUSP) WEST

OKLAHOMA CITY UNIVERSITY
- School of Law

OKLAHOMA STATE UNIVERSITY
- Boone Pickens School of Geology

SOUTHEAST REGIONAL CARBON SEQUESTRATION PARTNERSHIP (SECARB)

INDUSTRY PARTNERS

BAKER HUGHES
CARBON SOLUTIONS LLC
CAPTUREPOINT
CONTINENTAL RESOURCES
COTERRA
DEVON
ENLINK MIDSTREAM
GTI ENERGY
MEWBOURNE OIL COMPANY
NEXGEN CARBON SOLUTIONS
ONEOK
PROJEO

PROFESSIONAL ORGANIZATIONS

AAAS AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE
AASG AMERICAN ASSOCIATION OF STATE GEOLOGISTS
AGU AMERICAN GEOPHYSICAL UNION
AGI AMERICAN GEOSCIENCES INSTITUTE
AIPG AMERICAN INSTITUTE OF PROFESSIONAL GEOLOGISTS
APS AMERICAN PHYSICAL SOCIETY
AAPG ASSOCIATION OF AMERICAN PETROLEUM GEOLOGISTS
COGNA COUNCIL OF GEOGRAPHIC NAMES AUTHORITIES
CFFR CUSHMAN FOUNDATION FOR FORAMINIFERAL RESEARCH
IAMG INTERNATIONAL ASSOCIATION OF MATHEMATICAL GEOSCIENCES
GSA GEOLOGICAL SOCIETY OF AMERICA
SEG SOCIETY OF EXPLORATION GEOPHYSICISTS
SPWLA SOCIETY OF PETROPHYSICISTS AND WELL LOG ANALYSTS
SEPM SOCIETY FOR SEDIMENTARY GEOLOGY
SSA SEISMOLOGICAL SOCIETY OF AMERICA
TSOP THE SOCIETY FOR ORGANIC PETROLOGY

NONPROFIT GROUPS

ADA GEM, MINERAL AND FOSSIL CLUB
EASTERN OKLAHOMA LIBRARY SYSTEM
ENID GEM AND MINERAL SOCIETY
FOSSIL STUDY ROCK AND FOSSIL LIVING TREES
METROPOLITAN LIBRARY SYSTEM
OKLAHOMA GEOLOGICAL FOUNDATION
OKLAHOMA MINERAL AND GEM SOCIETY
SCIENCE MUSEUM OKLAHOMA
UNIVERSITY LUTHERAN CHURCH GREEN TEAM SCIENCE OLYMPIAD
YONDER OAK

2025 COLLABORATIONS

FEDERAL AGENCIES

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)
- Oklahoma Space Grant Consortium Educator Resource Center

NATIONAL SCIENCE FOUNDATION (NSF)

U. S. DEPARTMENT OF ENERGY
- Idaho National Laboratory
- Los Alamos National Laboratory
- National Energy Technology Laboratory
- National Renewable Energy Laboratory
- Pacific Northwest National Laboratory
- Sandia National Laboratories

U. S. DEPARTMENT OF THE INTERIOR

U. S. ENVIRONMENTAL PROTECTION AGENCY

U. S. FISH & WILDLIFE SERVICE
- Wichita Mountains Wildlife Refuge

U.S. NATIONAL PARK SERVICE
- Chickasaw National Recreation Area

U. S. GEOLOGICAL SURVEY (USGS)
- Advanced National Seismic System
- U. S. Board on Geographic Names

U. S. DEPARTMENT OF HOMELAND SECURITY
- Federal Emergency Management Agency (FEMA)

NATIVE NATIONS

CADDO NATION
CHEYENNE AND ARAPAHO TRIBES
THE MUSCOGEE NATION
OSAGE NATION
QUAPAW NATION

STATE AGENCIES

OKLAHOMA
- Conservation Commission
- Corporation Commission (OCC)
- Department of Emergency Management (OEM)
- Department of Environmental Quality (DEQ)
- Department of Transportation (ODOT)
- Department of Mines (ODM)

KANSAS GEOLOGICAL SURVEY
MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI GEOLOGICAL SURVEY

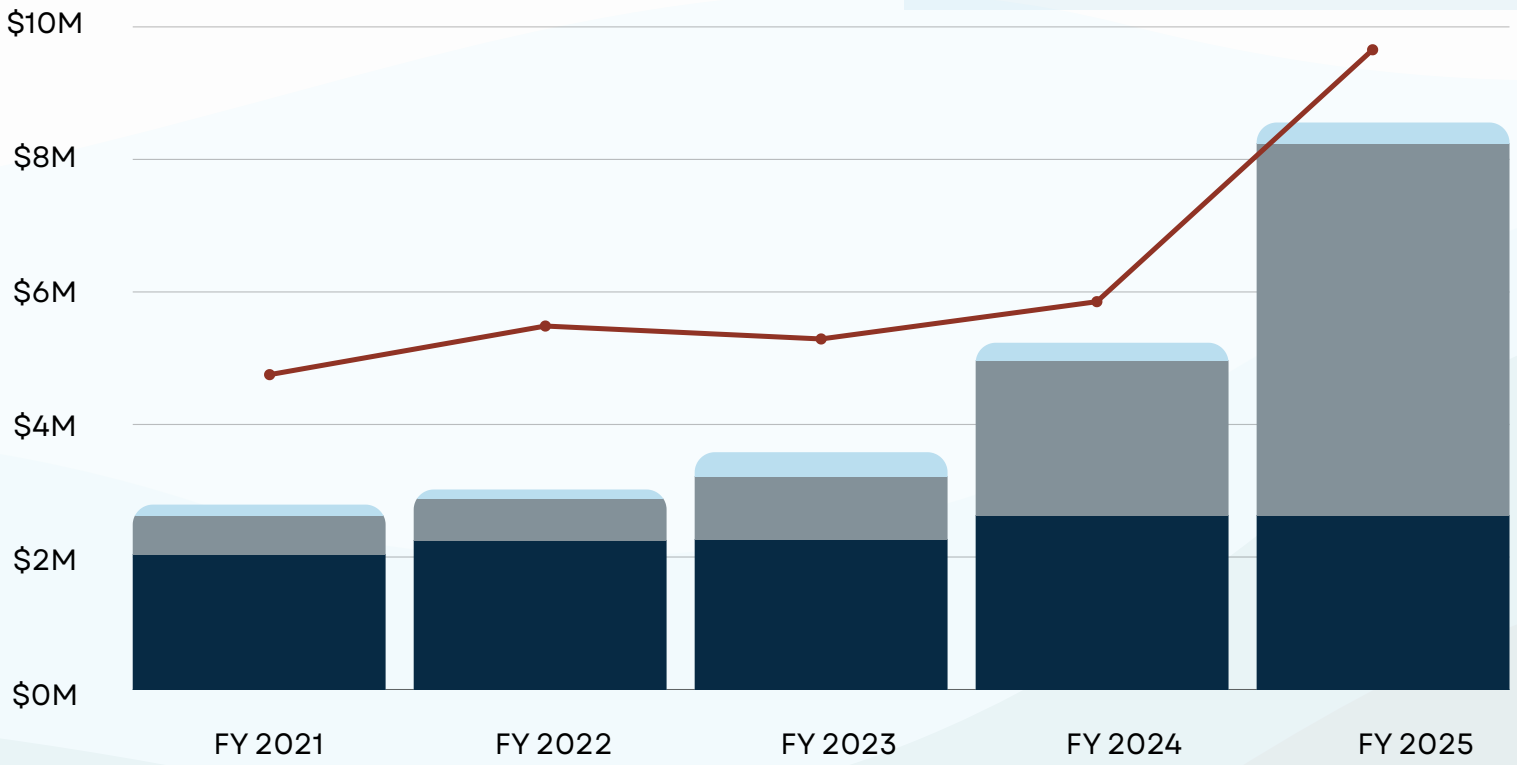


2025 FINANCIAL REPORTS

FY 2025 BUDGETS & EXPENDITURES

State Appropriations (incl. M&O)
Grant Awards
OGS/OPIC Income
Annual Expenditures (approx.)

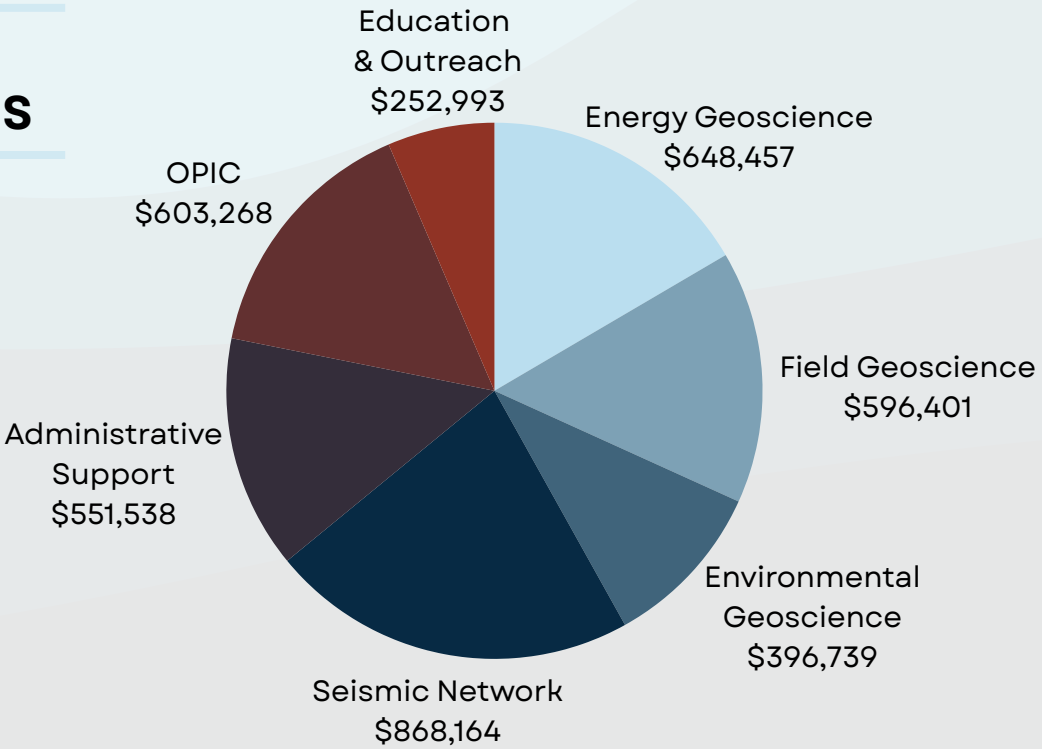
Base OGS Funding comes from the State's General Education budget, and is nearly entirely used to support the OGS staff. All other funding stems from external grants and contracts, workshop fees, and publication sales.



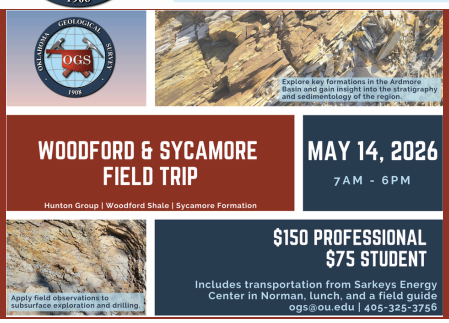
SPENDING BY ORGANIZATION TEAMS

TOTAL SPENDING FY 2025: $3,917,560

Spending includes salaries.



RESOURCES



UPCOMING EVENTS

WOODFORD-SYCAMORE PLAYS ENERGY FIELD TRIP
EXCELLO SHALE FALL WORKSHOP

OGS OFFICE | **OPIC** | **MICROPROBE LAB** | **EDUCATION**

EARTHQUAKE MAP | **WELL VIEWER** | **PUBLICATIONS** | **MAPS**

OGS AWARD RECIPIENTS, 2025

Dr. Ken Johnson gave his talents to the Oklahoma Geological Survey for nearly 40 years. The award in his name is given to an OGS employee who exemplifies Ken's dedication and stewardship in their commitment to the agency and the Oklahomans we serve.

SCOTT BRYANT
KEN JOHNSON
STAFF AWARD



The Director's Circle of Excellence includes those employees who represent OGS with outstanding performance.

MING SURIAMIN
DIRECTOR'S CIRCLE OF EXCELLENCE



NETRA REGMI
DIRECTOR'S CIRCLE OF EXCELLENCE



CARI PRYOR
DIRECTOR'S CIRCLE OF EXCELLENCE



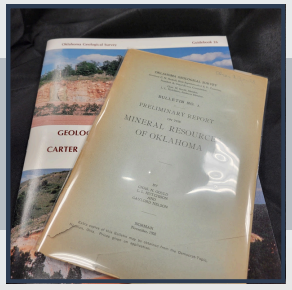


MAKE A GIFT

REPORT AN EARTHQUAKE

REPORT A SINKHOLE

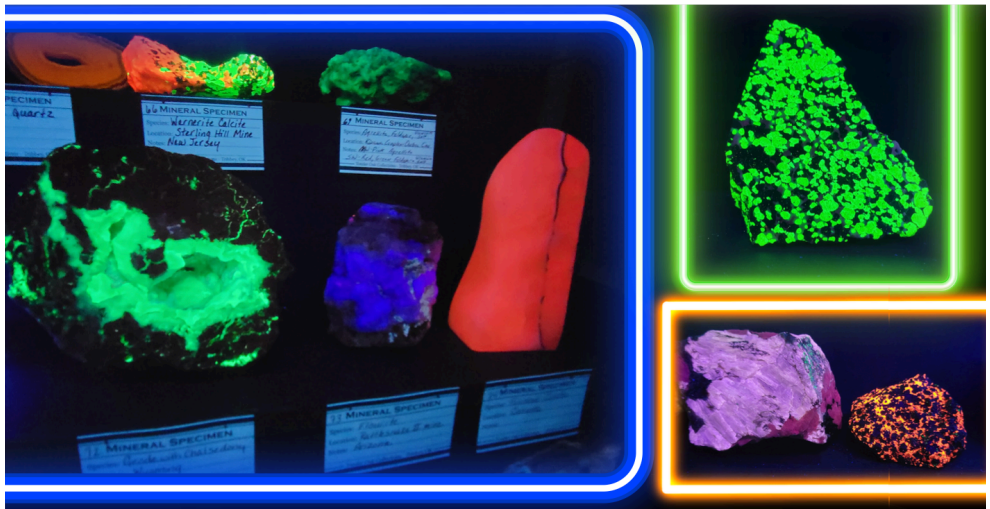
ASK A GEOSCIENTIST











GLOW WILD WITH OGS!

Visit the GeoGlow Gallery fluorescent rock display at our OGS offices in Norman. For more information, call 405-325-3031 or email OGSoutreach@ou.edu.

COMING SOON IN 2026

Oklahoma Geology Notes

Office Hours on the Road!





Reading Rocks!

Check your local library this summer and dig into Oklahoma's past with OGS!

GEOLOGIST OFFICE HOURS

Bring in your geological treasures!
-we'll take a look-

FREE! family-friendly

Check website (ogs.ou.edu) for next date
9:00am - 12:00pm

Sarkeys Energy Center
100 E. Boyd St., Norman, OK 73019
Room P130 (basement)
Free parking in the staff lot at Boyd St. & Trout Ave.

Questions? ogs@ou.edu 405-325-1211

ROCK & MINERAL GROUPS NEAR YOU

Join to participate in educational meetings, field trips, shows, and more...

Little Sahara Rock & Mineral Society
Waynoka, Oklahoma

Tulsa Rock & Mineral Society RTM

OKLAHOMA MINERAL & GEM SOCIETY
omgs-minerals.org

ADA GEM, MINERAL & FOSSIL CLUB, INC.
ADA, OKLAHOMA

ENID GEM AND MINERAL SOCIETY

Rough & Tumbled
Rock & Gem Club
Ponca City OK

TAHLEQUAH ROCK AND MINERAL SOCIETY
TAHLEQUAH, OKLAHOMA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TerraTek