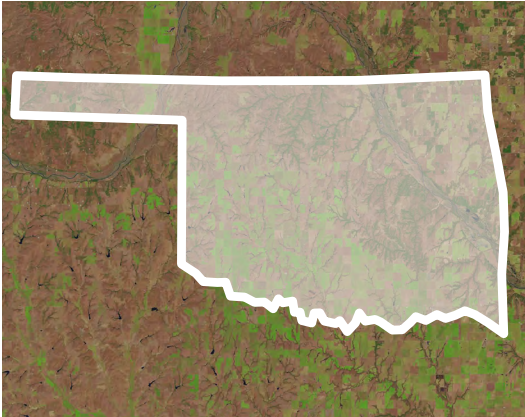


WHAT IS GEOSCIENCE?

Geoscience is the study of the Earth and the complex geologic, marine, atmospheric, and hydrologic processes that sustain life and the economy. Understanding the Earth's surface and subsurface, its resources, history, and hazards allows us to develop solutions to critical economic, environmental, health, and safety challenges.



Satellite image: NASA/USGS Landsat Program. State outline (not to scale): Matt Battison.

By the numbers: OKLAHOMA

- 8,200 geoscience employees (excludes self-employed)¹
- 1.11 billion gallons/day: total groundwater withdrawal³
- \$700 million: value of nonfuel mineral production in 2017⁴
- 167 total disaster declarations, including 84 fire, 39 severe storm, and 22 flood disasters (1953-2017)⁶
- \$2.94 million: NSF GEO grants awarded in 2017¹⁴

ENERGY AND MINERALS IN OKLAHOMA

- \$700 million: value of nonfuel mineral production in 2017⁴
- Stone (crushed), cement (portland), sand and gravel (construction): top three nonfuel minerals in order of value produced in 2017⁴
- 650,000 short tons: coal produced in 2016⁵
- 2.51 trillion cubic feet: natural gas produced in 2017⁵
- 166 million barrels: crude oil produced in 2017⁵
- 2.86 million megawatt hours: hydroelectricity produced in 2017⁵

WORKFORCE IN OKLAHOMA

- 8,200 geoscience employees (excludes self-employed) in 2017¹
- \$83,436: average median geoscience employee salary¹
- 4 academic geoscience departments²

WATER USE IN OKLAHOMA

- 1.11 billion gallons/day: total groundwater withdrawal³
- 850 million gallons/day: total surface water withdrawal³
- 611 million gallons/day: public supply water withdrawal³
- 931 million gallons/day: water withdrawal for irrigation³
- 52 million gallons/day: industrial fresh water withdrawal³
- 91% of the population is served by public water supplies³

NATURAL HAZARDS IN OKLAHOMA

- 167 total disaster declarations, including 84 fire, 39 severe storm, and 22 flood disasters (1953-2017)⁶
- \$72 million: individual assistance grants (2005-2017)⁶
- \$197 million: mitigation grants (2005-2017)⁶
- \$194 million: preparedness grants (2005-2017)⁶
- \$718 million: public assistance grants (2005-2017)⁶
- 71 weather and/or climate events, each with costs exceeding \$1 billion (inflation adjusted) (1980-2017)⁷

¹ U.S. Bureau of Labor Statistics, *Occupational Employment Statistics*, May 2017
² American Geosciences Institute, *Directory of Geoscience Departments*, 53rd Edition (2018)
³ U.S. Geological Survey, *Estimated Use of Water in the United States in 2015*

⁴ U.S. Geological Survey, *Mineral Commodity Summaries 2018*
⁵ U.S. Energy Information Administration
⁶ FEMA Data Visualization: *Summary of Disaster Declarations and Grants* (accessed May 2, 2018)
⁷ NOAA National Centers for Environmental Information, *U.S. Billion-Dollar Weather and Climate Disasters from 1980 to 2018* (accessed April 6, 2018)

AGI is a network of 52 member societies, representing more than 260,000 geoscientists.

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Geoscience, Oklahoma, and Federal Agencies

U.S. GEOLOGICAL SURVEY (USGS)

- \$1.15 billion: total USGS budget in FY 2018 (5.8% increase from FY 2017)⁸
- The National Cooperative Geologic Mapping Program funds geologic mapping projects with federal (FEDMAP), state (STATEMAP), and university (EDMAP) partners
- \$2.01 million: Oklahoma STATEMAP funding (1993-2016)⁹
- University of Oklahoma has participated in EDMAP⁹
- USGS streamgages collect real-time or recent streamflow, groundwater, and water-quality data in Oklahoma

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

- \$20.7 billion: total NASA budget in FY 2018 (5.5% increase from FY 2017)¹⁰
- \$1.9 billion: total NASA Earth Science budget in FY 2018 (0% change from FY 2017)¹⁰
- Gravity Recovery and Climate Experiment (GRACE) satellites measure groundwater changes in Oklahoma
- Soil Moisture Active Passive (SMAP) satellite measures soil moisture in Oklahoma

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

- \$5.9 billion: total NOAA budget in FY 2018 (4.1% increase from FY 2017)¹¹
- Next-generation geostationary (GOES) and polar orbiting (JPSS) satellites provide weather forecasting for Oklahoma
- Deep Space Climate Observatory (DISCOVER) satellite monitors radiation and air quality over Oklahoma
- 16 National Weather Service Automated Surface Observing Systems (ASOS) stations in Oklahoma¹²
- 243 National Weather Service Cooperative Observer Program (COOP) sites in Oklahoma¹²

NATIONAL SCIENCE FOUNDATION (NSF)

- \$7.8 billion: total NSF budget in FY 2018 (4% increase from FY 2017)¹³
- \$1.4 billion: total NSF Geosciences Directorate (GEO) awards in FY 2017 (7.2% increase from FY 2016)¹⁴
- 17 NSF GEO awards in Oklahoma totaling \$2.94 million in 2017¹⁴
- \$2.3 million: NSF GEO grants awarded to University of Oklahoma Norman Campus in 2017¹⁴

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

- \$8.1 billion: total EPA budget in FY 2018 (0% change from FY 2017)¹⁵
- 8 active Superfund sites in Oklahoma in 2018¹⁶
- \$13.3 million: Drinking Water State Revolving Fund (DWSRF) grants in Oklahoma in 2017¹⁷

FEDERAL FACILITIES IN OKLAHOMA

- USGS Oklahoma Water Science Center, Oklahoma City
- NOAA (NWS) River Forecast Center Arkansas-Red Basin River Forecast Center, Tulsa
- EPA (SPRD) Center for Subsurface Modeling Support, Ada
- NOAA National Severe Storm Laboratory, Norman

YOUR STATE SOURCE FOR GEOSCIENCE INFORMATION

Oklahoma Geological Survey
100 E. Boyd Street, Suite N131
Norman, OK 73019
<http://www.ogs.ou.edu/>
405-325-3031

⁸ U.S. Department of the Interior, FY 2019 Budget in Brief

⁹ U.S. Geological Survey, National Cooperative Geologic Mapping Program

¹⁰ National Aeronautics and Space Administration, FY 2019 Budget Estimates

¹¹ National Oceanic and Atmospheric Administration, FY 2019 Bluebook

¹² NOAA In Your State and Territory

¹³ U.S. House of Representatives, FY 2018 Omnibus Spending Bill (Division B) – Commerce, Justice, Science, and Related Agencies Appropriations Act, 2018

¹⁴ National Science Foundation, Budget Information System

¹⁵ U.S. House of Representatives, FY 2018 Omnibus Spending Bill (Division G) – Department of the Interior, Environment, and Related Agencies Appropriations Act, 2018

¹⁶ U.S. Environmental Protection Agency, Superfund Sites

¹⁷ U.S. Environmental Protection Agency, Drinking Water State Revolving Fund National Information Management System Reports

AGI's Geoscience Policy and Critical Issues programs support well-informed public policy and decision making by providing information and facilitating dialogue between the geoscience community and decision makers at all levels.

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