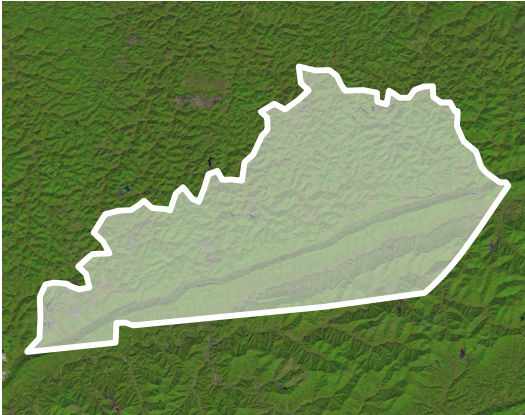


WHAT IS GEOSCIENCE?

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: KENTUCKY

- 3,159 geoscience employees (excludes self-employed)¹
- 207 million gallons/day: total groundwater withdrawal³
- \$592 million: value of nonfuel mineral production in 2017⁴
- 74 total disaster declarations, including 29 severe storm, 22 flood, and 8 fire disasters (1953-2017)⁶
- \$314,000: NSF GEO grants awarded in 2017¹⁴

ENERGY AND MINERALS IN KENTUCKY

- \$592 million: value of nonfuel mineral production in 2017⁴
- Crushed stone, lime, portland cement: top three nonfuel minerals in order of value produced in 2017⁴
- 42.9 million short tons: coal produced in 2016⁵
- 2.48 million barrels: crude oil produced in 2017⁵
- 4.47 million megawatt hours: hydroelectricity produced in 2017⁵
- 347,000 megawatt hours: wood-derived fuels produced in 2017⁵

WORKFORCE IN KENTUCKY

- 3,159 geoscience employees (excludes self-employed) in 2017¹
- \$62,677: average median geoscience employee salary¹
- 8 academic geoscience departments²

WATER USE IN KENTUCKY

- 207 million gallons/day: total groundwater withdrawal³
- 2.63 billion gallons/day: total surface water withdrawal³
- 553 million gallons/day: public supply water withdrawal³
- 40 million gallons/day: water withdrawal for irrigation³
- 225 gallons/day: self-supplied industrial fresh water withdrawal³
- 90% of the population is served by public water supplies³

NATURAL HAZARDS IN KENTUCKY

- 74 total disaster declarations, including 29 severe storm, 22 flood, and 8 fire disasters (1953-2017)⁶
- \$104 million: individual assistance grants (2005-2017)⁶
- \$180 million: mitigation grants (2005-2017)⁶
- \$214 million: preparedness grants (2005-2017)⁶
- \$452 million: public assistance grants (2005-2017)⁶
- 60 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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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
- \$3.95million: Kentucky STATEMAP funding (1993-2016)⁹
- Eastern Kentucky University, Morehead State University, and University of Kentucky have participated in EDMAP⁹
- USGS streamgages collect real-time or recent streamflow, groundwater, and water-quality data in Kentucky

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 Kentucky
- Soil Moisture Active Passive (SMAP) satellite measures soil moisture in Kentucky

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 over Kentucky
- Deep Space Climate Observatory (DISCOVER) satellite monitors radiation and air quality over Kentucky
- 9 National Weather Service Automated Surface Observing Systems (ASOS) stations in Kentucky¹²
- 149 National Weather Service Cooperative Observer Program (COOP) sites in Kentucky¹²

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
- 3 NSF GEO awards in Kentucky totaling \$314,000 in 2017¹⁴
- \$127,000: NSF GEO grants awarded to University of Kentucky Research Foundation in 2017¹⁴

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

- \$8.1 billion: total EPA budget in FY 2018 (0% change from FY 2017)¹⁵
- 13 active superfund sites in Kentucky in 2018¹⁶
- \$12.8 million: Drinking Water State Revolving Fund (DWSRF) grants in Kentucky in 2017¹⁷

FEDERAL FACILITIES IN KENTUCKY

- USGS Kentucky Water Science Center, Louisville
- NSF EPSCoR, Lexington

YOUR STATE SOURCE FOR GEOSCIENCE INFORMATION

Kentucky Geological Survey
228 Mining and Mineral Resources Building
University of Kentucky
504 Rose Street
Lexington, KY 40506
<http://www.uky.edu/KGS/>
859-257-5500

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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