Geoscience in Ohio

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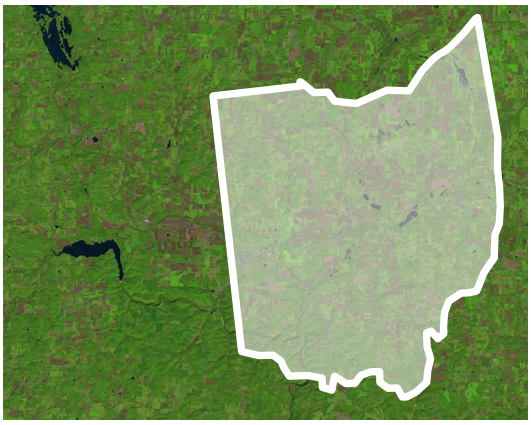
WHAT IS GEOSCIENCE?

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: OHIO

- 10,494 geoscience employees (excludes self-employed)[1]
- 866 million gallons/day: total groundwater withdrawal[3]
- $1.08 billion: value of nonfuel mineral production in 2017[4]
- 54 total disaster declarations, including 24 severe storm, 15 flood, and 4 snow disasters (1953-2017)[6]
- $4.85 million: NSF GEO grants awarded in 2017[14]

WORKFORCE IN OHIO

- 10,494 geoscience employees (excludes self-employed) in 2017[1]
- $74,567: average median geoscience employee salary[1]
- 29 academic geoscience departments[2]

WATER USE IN OHIO

- 866 million gallons/day: total groundwater withdrawal[3]
- 5.66 billion gallons/day: total surface water withdrawal[3]
- 1.31 billion gallons/day: public supply water withdrawal[3]
- 55 million gallons/day: water withdrawal for irrigation[3]
- 348 million gallons/day: industrial fresh water withdrawal[3]
- 84% of the population is served by public water supplies[3]

ENERGY AND MINERALS IN OHIO

- $1.08 billion: value of nonfuel mineral production in 2017[4]
- Stone (crushed), salt, sand and gravel (construction): top three nonfuel minerals in order of value produced in 2017[4]
- 12.7 million short tons: coal produced in 2016[5]
- 1.78 trillion cubic feet: natural gas produced in 2017[5]
- 18.9 million barrels: crude oil produced in 2017[5]
- 1.56 million megawatt hours: solar produced in 2017[5]

NATURAL HAZARDS IN OHIO

- 54 total disaster declarations, including 24 severe storm, 15 flood, and 4 snow disasters (1953-2017)[6]
- $47 million: individual assistance grants (2005-2017)[6]
- $78 million: mitigation grants (2005-2017)[6]
- $512 million: preparedness grants (2005-2017)[6]
- $236 million: public assistance grants (2005-2017)[6]
- 56 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.
Compiled by the AGI Geoscience Policy program, July 2018.
https://www.americangeosciences.org/policy/factsheet/states | govt@americangeosciences.org

Geoscience, Ohio, and Federal Agencies

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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
- $2.2 million: Ohio STATEMAP funding (1993-2016)[9]
- 5 Ohio universities, including Kent State University and Ohio State University, have participated in EDMAP[9]
- USGS streamgages collect real-time or recent streamflow, groundwater, and water-quality data throughout Ohio

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

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 Ohio
- Deep Space Climate Observatory (DISCOVR) satellite monitors radiation and air quality over Ohio
- 26 National Weather Service Automated Surface Observing Systems (ASOS) stations in Ohio[12]
- 173 National Weather Service Cooperative Observer Program (COOP) sites in Ohio[12]

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]
- 27 NSF GEO awards in Ohio totaling $4.85 million in 2017[14]
- $3.3 million: NSF GEO grants awarded to Ohio State University in 2017[14]

U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

- $8.1 billion: total EPA budget in FY 2018 (0% change from FY 2017)[15]
- 38 active Superfund sites in Ohio in 2018[16]
- $22.91 million: Drinking Water State Revolving Fund (DWSRF) grants in Ohio in 2017[17]

FEDERAL FACILITIES IN OHIO

- USGS Ohio Water Science Center, Columbus
- NASA Glenn Research Station, Cleveland
- USDA ARS Soil Drainage Research, Columbus
- EPA National Risk Management Research Laboratory, Cincinnati

YOUR STATE SOURCE FOR GEOSCIENCE INFORMATION

Ohio Department of Natural Resources
Division of Geological Survey
2045 Morse Rd, Bldg C-1
Columbus, OH 43229-6693
http://geosurvey.ohiodnr.gov
614-265-6576

8 U.S. Department of the Interior, FY 2019 Budet 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