Geoscience in Ohio

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.

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\(^3\)
- 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)\(^7\)

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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)
Geoscience, Ohio, 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
- $2.2 million: Ohio STATEMAP funding (1993-2016)⁹
- 5 Ohio universities, including Kent State University and Ohio State University, have participated in EDMAP⁹
- 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 Ohio¹²
- 173 National Weather Service Cooperative Observer Program (COOP) sites in Ohio¹²

**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 2017¹⁴
- $3.3 million: NSF GEO grants awarded to Ohio State University in 2017¹⁴

**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 2018¹⁶
- $22.91 million: Drinking Water State Revolving Fund (DWSRF) grants in Ohio in 2017¹⁷

**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

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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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