

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: SOUTH DAKOTA

- 1,505 geoscience employees (non-federal/self-employed)¹
- 238 million gallons/day: total groundwater withdrawal³
- \$372 million: value of nonfuel mineral production in 2017⁴
- 62 total disaster declarations, including 25 severe storm, 16 flood, and 14 fire disasters (1953-2017)⁶
- \$224,000: NSF GEO grants awarded in 2017¹⁴

WORKFORCE IN SOUTH DAKOTA

- 1,505 geoscience employees (non-federal/self-employed) in 2017¹
- \$62,865: average median geoscience employee salary¹
- 4 academic geoscience departments²

WATER USE IN SOUTH DAKOTA

- 238 million gallons/day: total groundwater withdrawal³
- 160 million gallons/day: total surface water withdrawal³
- 72 million gallons/day: public supply water withdrawal³
- 211 million gallons/day: water withdrawal for irrigation³
- 24 million gallons/day: industrial fresh water withdrawal³
- 85% of the population is served by public water supplies³

ENERGY AND MINERALS IN SOUTH DAKOTA

- \$372 million: value of nonfuel mineral production in 2017⁴
- Gold, cement (portland), and sand and gravel (construction): top three nonfuel minerals in order of value produced in 2017⁴
- 1.31 million barrels: crude oil produced in 2017⁵
- 4.5 million megawatt hours: hydroelectricity produced in 2017⁵
- 3.15 million megawatt hours: wind produced in 2017⁵

NATURAL HAZARDS IN SOUTH DAKOTA

- 62 total disaster declarations, including 25 severe storm, 16 flood, and 14 fire disasters (1953-2017)⁶
- \$12 million: individual assistance grants (2005-2017)⁶
- \$67 million: mitigation grants (2005-2017)⁶
- \$107 million: preparedness grants (2005-2017)⁶
- \$256 million: public assistance grants (2005-2017)⁶
- 24 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 2010

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, South Dakota, 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
- South Dakota School of Mines and Technology has participated in EDMAP⁹
- USGS streamgages collect real-time or recent streamflow, groundwater, and water-quality data in South Dakota

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

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 South Dakota
- Deep Space Climate Observatory (DISCOVER) satellite monitors radiation and air quality over South Dakota
- 16 National Weather Service Automated Surface Observing Systems (ASOS) stations in South Dakota¹²
- 172 National Weather Service Cooperative Observer Program (COOP) sites in South Dakota¹²

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
- 2 NSF GEO awards in South Dakota totaling \$224,000 in 2017¹⁴
- \$114,000: NSF GEO grants awarded to South Dakota 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
- 2 active Superfund sites in South Dakota in 2018¹⁶
- \$8.24 million: Drinking Water State Revolving Fund (DWSRF) grants in South Dakota in 2017¹⁷

FEDERAL FACILITIES IN SOUTH DAKOTA

- USGS Earth Resources Observation and Science (EROS) Center, Sioux Falls
- USGS South Dakota Water Science Center, Rapid City
- USGS Field Research Station, Yankton

YOUR STATE SOURCE FOR GEOSCIENCE INFORMATION

Department of Environment & Natural Resources
Geological Survey Program
414 East Clark Street
Vermillion, SD 57069
<http://www.sdgs.usd.edu/>
605-677-5227

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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