Geoscience in South Dakota

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: SOUTH DAKOTA
• 1,505 geoscience employees (excludes 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

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

WORKFORCE IN SOUTH DAKOTA
• 1,505 geoscience employees (excludes 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

---
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)
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 EDMAP\(^9\)
- USGS streamgages collect real-time or recent streamflow, groundwater, and water-quality data in South Dakota

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 2017\(^14\)
- $114,000: NSF GEO grants awarded to South Dakota State University in 2017\(^14\)

U.S. 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

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 2018\(^16\)
- $8.24 million: Drinking Water State Revolving Fund (DWSRF) grants in South Dakota in 2017\(^17\)

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