

Geoscience and South Dakota



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What is Geoscience?

Geoscientists study the Earth's systems—the complex geologic, marine, atmospheric, and hydrologic processes that sustain life and the economy. Geoscience expertise enables us to develop solutions to critical economic, environmental, health, and safety challenges.

By the numbers: South Dakota

\$360 million: value of nonfuel mineral production in 2016⁶

1,600: **geoscience employees** (non-federal/self-employed)¹

840: **jobs** in extractive industries in 2015²

25 severe storm disaster declarations since 1953⁷

14 fire disaster declarations since 1953⁷

\$11.6 million: NSF grants awarded in 2016 to **South Dakota**¹⁷

\$520,000 million: NSF GEO grants in 2016 to **South Dakota**¹⁷

Your State Source for Geoscience Information

South Dakota Department of Environment and Natural Resources Geological Survey Program

414 East Clark Street

Vermillion, SD 57069

<http://www.sdgs.usd.edu/>

(605) 677-5227

Workforce in South Dakota

- 1,600: **geoscience employees** (non-federal/self-employed) in 2015¹
- \$59,900: average median geoscience employee salary¹

- 840: jobs in extractive industries in 2015²
- 6: academic geoscience departments³

Water in South Dakota

- 340 million gallons/day: total groundwater withdrawal⁴
- 290 million gallons/day: total surface water withdrawal⁴
- 125 million gallons/day: public water supply withdrawal⁴
- 360 million gallons/day: self-supplied industrial fresh water withdrawal⁴
- 91% of the population is served by public water supplies⁴
- 24 USGS stream gages in **South Dakota**⁵

Energy and Minerals Production in South Dakota

- \$360 million: value of nonfuel mineral production in 2016⁶
- 1.7 million barrels: crude oil produced in 2015²
- 15.4 billion cubic feet: natural gas produced in 2014²
- 2.5 million megawatt hours: wind power produced in 2015²
- 4.8 million megawatt hours: hydroelectricity produced in 2015²

Natural Hazards in South Dakota

FEMA statistics for South Dakota

- 25 severe storm disaster declarations since 1953⁷
- 16 flooding disaster declarations since 1953⁷
- 14 fire disaster declarations since 1953⁷
- \$12 million: individual assistance grants since 2005⁷
- \$67 million: mitigation grants since 2005⁷
- \$110 million: preparedness grants since 2005⁷
- \$260 million: public assistance grants since 2005⁷
- 22 weather and/or climate events, each with costs exceeding \$1 billion (inflation adjusted) 1980-2016⁸

U.S. Geological Survey (USGS) Geologic Mapping

- \$1.06 billion: total USGS budget; 1.6% up from FY 2015⁹
- The USGS National Cooperative Geologic Mapping Program (NCGMP) funds geologic mapping projects by states (STATEMAP) and universities (EDMAP)
- **South Dakota School of Mines and Technology** participated in EDMAP¹⁰

National Aeronautics and Space Administration (NASA)

- \$5.6 billion: total NASA Science budget; 6.6% up from FY 2015¹¹
- \$1.9 billion: total NASA Earth Science budget; 7.7% up from FY 2015¹²
- GRACE satellites measure groundwater changes in all of **South Dakota**¹³
- SMAP satellite measures soil moisture in all of **South Dakota**¹³
- PACE satellite measures cloud coverage over all of **South Dakota**¹³

National Oceanic and Atmospheric Administration (NOAA)

- \$5.8 billion: total NOAA budget; 5.9% up from FY 2015¹⁴
- GOES satellites provide state-of-the-art weather forecasting over **South Dakota**¹⁵
- DISCOVER satellite monitors radiation and air quality over **South Dakota**¹⁵
- 172 National Weather Service Cooperative Observer Program (COOP) sites in **South Dakota**¹⁶

National Science Foundation (NSF)

- \$7.46 billion: total NSF budget; 1.6% up from FY 2015¹⁷
- \$1.28 billion: total NSF Geosciences Directorate (GEO) awards; 1.6% up from FY 2015¹⁷
- 46 NSF grants in **South Dakota** totaling \$11.6 million in 2016¹⁷
- 3 NSF GEO grants in **South Dakota** totaling \$520,000 million in 2016¹⁷
- \$4.6 million: NSF GEO grants to **University of South Dakota** in 2016¹⁷

U.S. Environmental Protection Agency (EPA)

- \$8.14 billion: total EPA budget; 0% up from FY 2015¹⁸
- 2 active/proposed superfund sites¹⁹
- \$194 million: federal grants for Drinking Water State Revolving Fund (DWSRF) in **South Dakota** (1997-2016)²⁰
- \$8 million: annual value of federal DWSRF grants in **South Dakota** in 2016²⁰

Major Federal Facilities in South Dakota

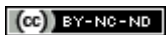
- USGS Earth Resources Observation and Science Center, Sioux Falls
- USGS South Dakota Water Science Center, Rapid City
- USGS South Dakota Field Research Station, Yankton

References

- ¹Data Derived from Bureau of Labor Statistics [Occupational Employment Statistics 2015](#)
- ²DOI [U.S. Extractive Industries Transparency Initiative](#)
- ³American Geosciences Institute [Directory of Geoscience Departments 2016](#)
- ⁴USGS [Estimated Use of Water in the United States in 2010](#)
- ⁵USGS WaterWatch [Total Streamgage Stations, March 10, 2017](#)
- ⁶USGS [Mineral Commodity Summaries 2017](#)
- ⁷FEMA [Summary of Disaster Declarations and Grants, 2016](#)
- ⁸NOAA [Billion-Dollar Weather and Climate Disasters: Mapping](#)
- ⁹DOI www.doi.gov/budget
- ¹⁰USGS [National Cooperative Geologic Mapping Program](#)
- ¹¹NASA [Budget Documents, Strategic Plans and Performance Reports](#)
- ¹²American Institute of Physics [FY2016 Appropriations](#)
- ¹³Gravity Recovery and Climate Experiment ([GRACE](#)); Soil Moisture Active Passive ([SMAP](#)); Plankton, Aerosol, Cloud, ocean Ecosystem ([PACE](#)), Global Precipitation Measurement ([GPM](#))
- ¹⁴NOAA [Total Budget](#)
- ¹⁵Geostationary Operational Environmental Satellite ([GOES](#)) & Deep Space Climate Observatory ([DISCOVER](#))
- ¹⁶[NOAA in Your State](#)
- ¹⁷NSF [Budget Internet Information System](#)
- ¹⁸EPA [Budget and Spending](#)
- ¹⁹EPA [Search for Superfund Sites Where You Live](#)
- ²⁰EPA [Drinking Water State Revolving Fund National Information Management System Reports](#)

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Written and compiled by J. Bernau and A. Ackerman for AGI, July 2017



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