

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: WYOMING

- 2,197 geoscience employees (excludes self-employed)¹
- 748 million gallons/day: total groundwater withdrawal³
- \$2.41 billion: value of nonfuel mineral production in 2017⁴
- 30 total disaster declarations, including 18 fire, 5 flood, and 2 severe storm disasters (1953-2017)⁶
- \$4.65 million: NSF GEO grants awarded in 2017¹⁴

WORKFORCE IN WYOMING

- 2,197 geoscience employees (excludes self-employed) in 2017¹
- \$77,359: average median geoscience employee salary¹
- 1 academic geoscience department²

WATER USE IN WYOMING

- 748 million gallons/day: total groundwater withdrawal³
- 7.40 billion gallons/day: total surface water withdrawal³
- 101 million gallons/day: public supply water withdrawal³
- 7.79 billion gallons/day: water withdrawal for irrigation³
- 8 million gallons/day: industrial fresh water withdrawal³
- 80% of the population is served by public water supplies³

ENERGY AND MINERALS IN WYOMING

- \$2.41 billion: value of nonfuel mineral production in 2017⁴
- Soda ash, helium (Grade-A), clays (bentonite): top three nonfuel minerals in order of value produced in 2017⁴
- 297 million short tons: coal produced in 2016⁵
- 1.55 trillion cubic feet: natural gas produced in 2017⁵
- 75.5 million barrels: crude oil produced in 2017⁵
- 1.04 million megawatt hours: hydroelectricity produced in 2017⁵

NATURAL HAZARDS IN WYOMING

- 30 total disaster declarations, including 18 fire, 5 flood, and 2 severe storm disasters (1953-2017)⁶
- \$2 million: individual assistance grants (2005-2017)⁶
- \$17 million: mitigation grants (2005-2017)⁶
- \$96 million : preparedness grants (2005-2017)⁶
- \$11 million: public assistance grants (2005-2017)⁶
- 19 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)

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
- \$1.97 million: Wyoming STATEMAP funding (1993-2016)⁹
- University of Wyoming have participated in EDMAP⁹
- USGS streamgages collect real-time or recent streamflow, groundwater, and water-quality data throughout Wyoming

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

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 Wyoming
- Deep Space Climate Observatory (DISCOVER) satellite monitors radiation and air quality over Wyoming
- 17 National Weather Service Automated Surface Observing Systems (ASOS) stations in Wyoming¹²
- 169 National Weather Service Cooperative Observer Program (COOP) sites in Wyoming¹²

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
- 11 NSF GEO awards in Wyoming totaling \$4.65 million in 2017¹⁴
- \$4.65 million: NSF GEO grants awarded to University of Wyoming 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 Wyoming in 2018¹⁶
- \$8.24 million: Drinking Water State Revolving Fund (DWSRF) grants in Wyoming in 2017¹⁷

FEDERAL FACILITIES IN WYOMING

- USGS Northern Rocky Mountain Science Center (NOROCK) - Jackson Duty Station
- USGS Wyoming-Montana Water Science Center - Cheyenne Office
- USDA ARS High Plains Grasslands Research Station

YOUR STATE SOURCE FOR GEOSCIENCE INFORMATION

Wyoming State Geological Survey
1000 E University Ave
P.O. Box 1347
Laramie, WY 82073
<http://www.wsgs.uwyo.gov/>
307-766-2286

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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