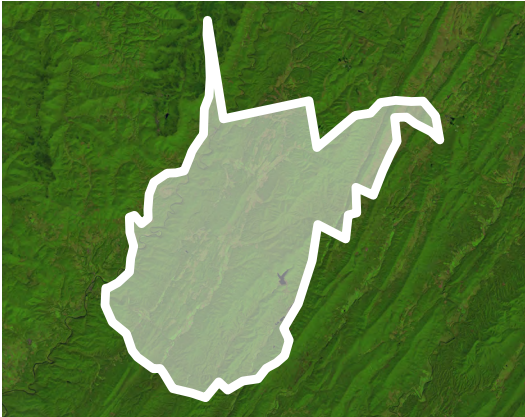


## WHAT IS GEOSCIENCE?

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: WEST VIRGINIA

- 3,217 geoscience employees (excludes self-employed)<sup>1</sup>
- 134 million gallons/day: total groundwater withdrawal<sup>3</sup>
- \$245 million: value of nonfuel mineral production in 2017<sup>4</sup>
- 67 total disaster declarations, including 29 flood, 23 severe storm, and 4 snow disasters (1953-2017)<sup>6</sup>
- \$294,000: NSF GEO grants awarded in 2017<sup>14</sup>

## WORKFORCE IN WEST VIRGINIA

- 3,217 geoscience employees (excludes self-employed) in 2017<sup>1</sup>
- \$53,085: average median geoscience employee salary<sup>1</sup>
- 4 academic geoscience departments<sup>2</sup>

## WATER USE IN WEST VIRGINIA

- 134 million gallons/day: total groundwater withdrawal<sup>3</sup>
- 2.19 billion gallons/day: total surface water withdrawal<sup>3</sup>
- 185 million gallons/day: public supply water withdrawal<sup>3</sup>
- 4 million gallons/day: water withdrawal for irrigation<sup>3</sup>
- 424 million gallons/day: industrial fresh water withdrawal<sup>3</sup>
- 79% of the population is served by public water supplies<sup>3</sup>

## ENERGY AND MINERALS IN WEST VIRGINIA

- \$245 million: value of nonfuel mineral production in 2017<sup>4</sup>
- Crushed stone, portland cement, sand and gravel (industrial): top three nonfuel minerals in order of value produced in 2017<sup>4</sup>
- 79.8 million short tons: coal produced in 2016<sup>5</sup>
- 1.60 trillion cubic feet: natural gas produced in 2017<sup>5</sup>
- 9.47 million barrels: crude oil produced in 2017<sup>5</sup>
- 1.77 million megawatt hours: hydroelectricity produced in 2017<sup>5</sup>

## NATURAL HAZARDS IN WEST VIRGINIA

- 67 total disaster declarations, including 29 flood, 23 severe storm, and 4 snow disasters (1953-2017)<sup>6</sup>
- \$117 million: individual assistance grants (2005-2017)<sup>6</sup>
- \$36 million: mitigation grants (2005-2017)<sup>6</sup>
- \$129 million: preparedness grants (2005-2017)<sup>6</sup>
- \$224 million: public assistance grants (2005-2017)<sup>6</sup>
- 33 weather and/or climate events, each with costs exceeding \$1 billion (inflation adjusted) (1980-2017)<sup>7</sup>

<sup>1</sup> U.S. Bureau of Labor Statistics, Occupational Employment Statistics, May 2017  
<sup>2</sup> American Geosciences Institute, Directory of Geoscience Departments, 53rd Edition (2018)  
<sup>3</sup> U.S. Geological Survey, Estimated Use of Water in the United States in 2015

<sup>4</sup> U.S. Geological Survey, Mineral Commodity Summaries 2018  
<sup>5</sup> U.S. Energy Information Administration  
<sup>6</sup> FEMA Data Visualization: Summary of Disaster Declarations and Grants (accessed May 2, 2018)  
<sup>7</sup> 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, West Virginia, and Federal Agencies



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## U.S. GEOLOGICAL SURVEY (USGS)

- \$1.15 billion: total USGS budget in FY 2018 (5.8% increase from FY 2017)<sup>8</sup>
- The National Cooperative Geologic Mapping Program funds geologic mapping projects with federal (FEDMAP), state (STATEMAP), and university (EDMAP) partners
- \$1.43 million: STATEMAP funding to the West Virginia Geological and Economic Survey (1993-2016)<sup>9</sup>
- West Virginia University has participated in EDMAP<sup>9</sup>
- USGS streamgages collect real-time or recent streamflow, groundwater, and water-quality data in West Virginia

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## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

- \$20.7 billion: total NASA budget in FY 2018 (5.5% increase from FY 2017)<sup>10</sup>
- \$1.9 billion: total NASA Earth Science budget in FY 2018 (0% change from FY 2017)<sup>10</sup>
- Gravity Recovery and Climate Experiment (GRACE) satellites measure groundwater changes in West Virginia
- Soil Moisture Active Passive (SMAP) satellite measures soil moisture in West Virginia

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## NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

- \$5.9 billion: total NOAA budget in FY 2018 (4.1% increase from FY 2017)<sup>11</sup>
- Next-generation geostationary (GOES) and polar orbiting (JPSS) satellites provide weather forecasting over West Virginia
- Deep Space Climate Observatory (DISCOVER) satellite monitors radiation and air quality over West Virginia
- 10 National Weather Service Automated Surface Observing Systems (ASOS) stations in West Virginia<sup>12</sup>
- 108 National Weather Service Cooperative Observer Program (COOP) sites in West Virginia<sup>12</sup>

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## NATIONAL SCIENCE FOUNDATION (NSF)

- \$7.8 billion: total NSF budget in FY 2018 (4% increase from FY 2017)<sup>13</sup>
- \$1.4 billion: total NSF Geosciences Directorate (GEO) awards in FY 2017 (7.2% increase from FY 2016)<sup>14</sup>
- 5 NSF GEO awards in West Virginia totaling \$294,000 in 2017<sup>14</sup>
- \$192,000: NSF GEO grants awarded to West Virginia University in 2017<sup>14</sup>

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## U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)

- \$8.1 billion: total EPA budget in FY 2018 (0% change from FY 2017)<sup>15</sup>
- 10 active Superfund sites in West Virginia in 2018<sup>16</sup>
- \$8.17 million: Drinking Water State Revolving Fund (DWSRF) grants in West Virginia in 2017<sup>17</sup>
- \$200,000 Brownfield cleanup grants awarded to West Virginia in 2018<sup>18</sup>

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## FEDERAL FACILITIES IN WEST VIRGINIA

- USGS Leetown Science Center, Kearneysville
- NOAA Cyber Security Center, Fairmont
- NASA Independent Verification and Validation Facility, Fairmont
- DOE National Energy Technology Lab, Morgantown

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## YOUR STATE SOURCE FOR GEOSCIENCE INFORMATION

West Virginia Geological and Economic Survey  
1 Mont Chateau Road  
Morgantown, WV 26508  
<http://www.wvgs.wvnet.edu/>  
304-594-2331

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<sup>8</sup> U.S. Department of the Interior, FY 2019 Budget in Brief

<sup>9</sup> U.S. Geological Survey, National Cooperative Geologic Mapping Program

<sup>10</sup> National Aeronautics and Space Administration, FY 2019 Budget Estimates

<sup>11</sup> National Oceanic and Atmospheric Administration, FY 2019 Bluebook

<sup>12</sup> NOAA In Your State and Territory

<sup>13</sup> U.S. House of Representatives, FY 2018 Omnibus Spending Bill (Division B) – Commerce, Justice, Science, and Related Agencies Appropriations Act, 2018

<sup>14</sup> National Science Foundation, Budget Information System

<sup>15</sup> U.S. House of Representatives, FY 2018 Omnibus Spending Bill (Division G) – Department of the Interior, Environment, and Related Agencies Appropriations Act, 2018

<sup>16</sup> U.S. Environmental Protection Agency, Superfund Sites

<sup>17</sup> U.S. Environmental Protection Agency, Drinking Water State Revolving Fund National Information Management System Reports

<sup>18</sup> U.S. Environmental Protection Agency, Brownfields Grant Fact Sheet Search

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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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