

## 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: ALABAMA

- 4,137 geoscience employees (excludes self-employed)<sup>1</sup>
- 501 million gallons/day: total groundwater withdrawal<sup>3</sup>
- \$1.31 billion: value of nonfuel mineral production in 2017<sup>4</sup>
- 79 total disaster declarations, including 16 hurricane, 36 severe storm, and 10 flood disasters (1953-2017)<sup>6</sup>
- \$2.49 million: NSF GEO grants awarded in 2017<sup>14</sup>

## WORKFORCE IN ALABAMA

- 4,137 geoscience employees (excludes self-employed) in 2017<sup>1</sup>
- \$78,533: average median geoscience employee salary<sup>1</sup>
- 8 academic geoscience departments<sup>2</sup>

## WATER USE IN ALABAMA

- 501 million gallons/day: total groundwater withdrawal<sup>3</sup>
- 7.75 billion gallons/day: total surface water withdrawal<sup>3</sup>
- 762 million gallons/day: public supply water withdrawal<sup>3</sup>
- 223 million gallons/day: water withdrawal for irrigation<sup>3</sup>
- 494 million gallons/day: self-supplied industrial fresh water withdrawal<sup>3</sup>
- 89% of the population is served by public water supplies<sup>3</sup>

## ENERGY AND MINERALS IN ALABAMA

- \$1.31 billion: value of nonfuel mineral production in 2017<sup>4</sup>
- Stone (crushed), cement (portland), lime: top three nonfuel minerals in order of value produced in 2017<sup>4</sup>
- 9.64 million short tons: coal produced in 2016<sup>5</sup>
- 6.74 million barrels: crude oil produced in 2017<sup>5</sup>
- 9.2 million megawatt hours: hydroelectricity produced in 2017<sup>5</sup>

## NATURAL HAZARDS IN ALABAMA

- 79 total disaster declarations, including 16 hurricane, 36 severe storm, and 10 flood disasters (1953-2017)<sup>6</sup>
- \$246 million: individual assistance grants (2005-2017)<sup>6</sup>
- \$222 million: mitigation grants (2005-2017)<sup>6</sup>
- \$210 million: preparedness grants (2005-2017)<sup>6</sup>
- \$494 million: public assistance grants (2005-2017)<sup>6</sup>
- 73 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)

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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
- \$2.12 million: Alabama STATEMAP funding (1993-2016)<sup>9</sup>
- Auburn University and University of South Alabama have participated in EDMAP<sup>9</sup>
- USGS streamgages collect real-time or recent streamflow, groundwater, and water-quality data throughout Alabama

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

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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 Alabama
- Deep Space Climate Observatory (DISCOVER) satellite monitors radiation and air quality over Alabama
- 20 National Weather Service Automated Surface Observing Systems (ASOS) stations in Alabama<sup>12</sup>
- 143 National Weather Service Cooperative Observer Program (COOP) sites in Alabama<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>
- 19 NSF GEO awards in Alabama totaling \$2.49 million in 2017<sup>14</sup>
- \$1.7 million: NSF GEO grants awarded to University of Alabama in Huntsville 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>
- 12 active Superfund sites in Alabama in 2018<sup>16</sup>
- \$15.7 million: Drinking Water State Revolving Fund (DWSRF) grants in Alabama in 2017<sup>17</sup>

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## FEDERAL FACILITIES IN ALABAMA

- NASA Marshall Space Flight Center, Huntsville
- NOAA National Environmental Satellite, Data, and Information Service (NESDIS), Gadsden
- NOAA OAR Ozone Measurement Office, Huntsville
- NOAA National Weather Service, Weather Forecast Office, Birmingham
- USGS Lower Mississippi-Gulf Water Science Centers, Montgomery and Tuscaloosa

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## YOUR STATE SOURCE FOR GEOSCIENCE INFORMATION

Geological Survey of Alabama  
420 Hackberry Lane  
Tuscaloosa, AL 35401  
<https://www.gsa.state.al.us>  
205-349-2852

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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

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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