

## Geoscience and Louisiana



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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: Louisiana

\$560 million: value of nonfuel mineral production in 2016<sup>7</sup>

7,390: **geoscience employees** (non-federal/self-employed)<sup>1</sup>

45,270: jobs in extractive industry in 2015<sup>2</sup>

41 severe storm, hurricane/tropical storm, and tornado disaster declarations since 1953<sup>8</sup>

\$45.6 million: NSF grants awarded in **Louisiana** in 2016<sup>18</sup>

\$2.3 million: NSF GEO grants awarded in **Louisiana** in 2016<sup>18</sup>

### Your State Source for Geoscience Information

#### Louisiana Geological Survey

3079 Energy, Coastal and Environment Building

Baton Rouge, LA 70803

<http://www.lsu.edu/lgs/>

225-578-5320

### Workforce in Louisiana

- 7,390: **geoscience employees** (non-federal/selfemployed) in 2015<sup>1</sup>
- \$78,500: average median geoscience employee salary<sup>1</sup>
- 45,270: **jobs** in extractive industries in 2015<sup>2</sup>
- 14: academic geoscience departments<sup>3</sup>

## Water in Louisiana

- 1.6 billion gallons/day: total groundwater withdrawal<sup>4</sup>
- 7 billion gallons/day: total surface water withdrawal<sup>4</sup>
- 746 million gallons/day: public water supply withdrawal<sup>4</sup>
- 928 million gallons/day: irrigation water withdrawal<sup>4</sup>
- 87% of the population is served by public water supplies<sup>4</sup>
- 38 parishes in 2015, and 19 parishes in 2016, designated as primary natural disaster areas caused by drought<sup>5</sup>
- 36 USGS stream gages in **Louisiana**<sup>6</sup>

## Energy and Minerals Production in Louisiana

- \$560 million: value of nonfuel mineral production in 2016<sup>7</sup>
- 62.9 million barrels: crude oil produced in 2015<sup>2</sup>
- 1.9 trillion cubic feet: natural gas produced in 2015, #5 in the nation<sup>2</sup>
- 2.6 million short tons: coal produced in 2014<sup>2</sup>
- 1 million megawatt hours: hydroelectricity produced in 2015<sup>2</sup>

## Natural Hazards in Louisiana

### FEMA statistics for Louisiana

- 14 severe storm disaster declarations since 1953<sup>8</sup>
- 23 hurricane/tropical storm disaster declarations since 1953<sup>8</sup>
- 26 flooding disaster declarations since 1953<sup>8</sup>
- 4 tornado disaster declarations since 1953<sup>8</sup>
- \$7 billion: individual assistance grants since 2005<sup>8</sup>
- \$3 billion: mitigation grants since 2005<sup>8</sup>
- \$430 million: preparedness grants since 2005<sup>8</sup>
- \$15.5 billion: public assistance grants since 2005<sup>8</sup>
- 51 weather and/or climate events, each with costs exceeding \$1 billion (inflation adjusted) 1980-2016<sup>9</sup>

## U.S. Geological Survey (USGS) Geologic Mapping

- \$1.06 billion: total USGS budget; 1.6% up from FY 2015<sup>10</sup>
- The USGS National Cooperative Geologic Mapping Program (NCGMP) funds geologic mapping projects by states (STATEMAP) and universities (EDMAP)
- \$2 million: **Louisiana** STATEMAP funding (1993-2016)<sup>11</sup>
- Over 40 geologic maps in **Louisiana** created with STATEMAP support (1993-2010)<sup>11</sup>
- Over half of **Louisiana** mapped through STATEMAP (1993-2010)<sup>11</sup>
- 4 **Louisiana** universities participated in EDMAP<sup>11</sup>

## National Aeronautics and Space Administration (NASA)

- \$5.6 billion: total NASA Science budget; 6.6% up from FY 2015<sup>12</sup>
- \$1.9 billion: total NASA Earth Science budget; 7.7% up from FY 2015<sup>13</sup>
- GRACE satellites measure groundwater changes in all of **Louisiana**<sup>14</sup>
- SMAP satellite measures soil moisture in all of **Louisiana**<sup>14</sup>

## National Oceanic and Atmospheric Administration (NOAA)

- \$5.8 billion: total NOAA budget; 5.9% up from FY 2015<sup>15</sup>
- GOES satellites provide state-of-the-art weather forecasting over **Louisiana**<sup>16</sup>
- DISCOVER satellite monitors radiation and air quality over **Louisiana**<sup>16</sup>
- 21 National Weather Service observing stations in **Louisiana**<sup>17</sup>
- 166 National Weather Service cooperative observer sites in **Louisiana**<sup>17</sup>

## National Science Foundation (NSF)

- \$7.46 billion: total NSF budget; 1.6% up from FY 2015<sup>18</sup>
- \$1.28 billion: total NSF Geosciences Directorate (GEO) budget; 1.6% up from FY 2015<sup>18</sup>
- 166 NSF grants in **Louisiana** totaling \$45.6 million in 2016<sup>18</sup>

- 15 NSF GEO grants in **Louisiana** totaling \$2.3 million in 2016<sup>18</sup>
- \$1.2 million: NSF GEO grants to **Louisiana State University & Agricultural and Mechanical College** in 2016<sup>18</sup>
- \$510,000: NSF GEO grants to **Louisiana Universities Marine Consortium** in 2016<sup>18</sup>

## U.S. Environmental Protection Agency (EPA)

- \$8.14 billion: total EPA budget; 0% up from FY 2015<sup>19</sup>
- 16 active/proposed superfund sites<sup>20</sup>
- \$281 million: cumulative federal grants for Drinking Water State Revolving Fund (DWSRF) in **Louisiana** (1997-2016)<sup>21</sup>
- \$11.4 million: annual value of federal DWSRF grants in **Louisiana** in 2016<sup>21</sup>

## References

- <sup>1</sup>Data Derived from Bureau of Labor Statistics: [Occupational Employment Statistics \(2015\)](#)
- <sup>2</sup>U.S. DOI [U.S. Extractive Industries Transparency Initiative](#)
- <sup>3</sup>American Geosciences Institute [Directory of Geoscience Departments \(2016\)](#)
- <sup>4</sup>USGS [Estimated Use of Water in the United States in 2010](#)
- <sup>5</sup>USDA Farm Service Agency: [Disaster Designation Information, 2015 \(2015 Crop Year & 2016 Crop Year\)](#)
- <sup>6</sup>USGS WaterWatch [Total Streamgage Stations \(March 10, 2017\)](#)
- <sup>7</sup>USGS [Mineral Commodity Summaries 2017](#)
- <sup>8</sup>FEMA [Summary of Disaster Declarations and Grants \(2016\)](#)
- <sup>9</sup>NOAA [Billion-Dollar Weather and Climate Disasters: Mapping](#)
- <sup>10</sup>DOI [Budget and Performance](#)
- <sup>11</sup>USGS [National Cooperative Geologic Mapping Program](#)
- <sup>12</sup>NASA [Budget Documents, Strategic Plans and Performance Reports](#)
- <sup>13</sup>American Institute of Physics [FY2016 Appropriations](#)
- <sup>14</sup>Gravity Recovery and Climate Experiment ([GRACE](#)); Soil Moisture Active Passive ([SMAP](#)); Plankton, Aerosol, Cloud, ocean Ecosystem ([PACE](#)); Global Precipitation Measurement ([GPM](#));
- <sup>15</sup>NOAA [Total Budget](#)
- <sup>16</sup>Geostationary Operational Environmental Satellite ([GOES](#)) & Deep Space Climate Observatory ([DISCOVER](#))
- <sup>17</sup>[NOAA in Your State](#)
- <sup>18</sup>NSF [Budget Internet Information System](#)
- <sup>19</sup>EPA [Budget and Spending](#)
- <sup>20</sup>EPA [Search for Superfund Sites Where You Live \(August 2017\)](#)
- <sup>21</sup>EPA [Drinking Water State Revolving Fund National Information Management System Reports](#)

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