Geoscience and Tennessee

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: TENNESSEE
- $1.2 billion: value of nonfuel mineral production in 2016
- 5,780: geoscience employees (non-federal/self-employed)
- 3,460: jobs in extractive industries
- 31 severe storm disaster declarations since 1953
- 11 fire disaster declarations since 1953
- $80.8 million: NSF grants awarded in Tennessee in 2016
- $2.1 million: NSF GEO grants awarded in Tennessee in 2016

ENERGY AND MINERALS PRODUCTION IN TENNESSEE
- $1.2 billion: value of nonfuel mineral production in 2016
- 300,000 barrels: crude oil produced in 2015
- 4.3 billion cubic feet: natural gas produced in 2014
- 900,000 short tons: coal produced in 2014
- 9.8 million megawatt hours: hydroelectricity produced in 2015

NATURAL HAZARDS IN TENNESSEE
FEMA statistics for Tennessee
- 31 severe storm disaster declarations since 1953
- 17 flooding disaster declarations since 1953
- 4 tornado disaster declarations since 1953
- 11 fire disaster declarations since 1953
- $196 million: individual assistance grants since 2005
- $149 million: mitigation grants since 2005
- $260 million: preparedness grants since 2005
- $444 million: public assistance grants since 2005
- 61 weather and/or climate events, each with costs exceeding $1 billion (inflation adjusted) 1980-2016

WORKFORCE IN TENNESSEE
- 5,780: geoscience employees (non-federal/self-employed) in 2015
- $74,970: average median geoscience employee salary
- 3,460: jobs in extractive industries in 2015
- 14: academic geoscience departments

WATER IN TENNESSEE
- 470 million gallons/day: total groundwater withdrawal
- 7.2 billion gallons/day: total surface water withdrawal
- 920 million gallons/day: public supply water withdrawal
- 72 million gallons/day: water withdrawal for irrigation
- 776 million gallons/day: self-supplied industrial fresh water withdrawal
- 92% of the population is served by public water supplies
- 51 USGS stream gages in Tennessee

2 U.S. DOI Extractive Industries Transparency Initiative
3 American Geosciences Institute Directory of Geoscience Departments (2016)
4 USGS Estimated Use of Water in the United States in 2010
5 USGS WaterWatch Total Streamgage Stations (March 10, 2017)
6 USGS Mineral Commodity Summaries (2017)
7 FEMA Summary of Disaster Declarations and Grants (2016)
8 NOAA Billion-Dollar Weather and Climate Disasters: Mapping

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# Geoscience, Tennessee, and Federal Agencies

## U.S. Geological Survey (USGS)

### GEOLOGIC MAPPING
- $1.06 billion: total FY 2016 USGS budget; 1.6% up from FY 2015\(^9\)
- The USGS National Cooperative Geologic Mapping Program (NCGMP) funds geologic mapping projects by states (STATEMAP) and universities (EDMAP)
- $1.06 million: Tennessee STATEMAP funding (1993-2016)\(^10\)
- 25 geologic maps covering 1,750 square miles of Tennessee created through STATEMAP (1993-2010)\(^10\)
- 4 Tennessee universities participated in EDMAP\(^10\)

## National Aeronautics and Space Administration (NASA)

- $5.6 billion: total FY 2016 NASA Science budget; 6.6% up from FY 2015\(^11\)
- $1.9 billion: total FY 2016 NASA Earth Science budget; 7.7% up from FY 2015\(^12\)
- GRACE satellites measure groundwater changes in all of Tennessee\(^13\)
- SMAP satellite measures soil moisture in all of Tennessee\(^13\)

## National Oceanic and Atmospheric Administration (NOAA)

- $5.8 billion: total FY 2016 NOAA budget; 5.9% up from FY 2015\(^14\)
- GOES satellites provide state-of-the-art weather forecasting over Tennessee\(^15\)
- DISCOVR satellite monitors radiation and air quality over Tennessee\(^15\)
- 169 National Weather Service Cooperative Observer Program (COOP) sites in Tennessee\(^16\)

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

- $8.14 billion: total FY 2016 EPA budget; 0% up from FY 2015\(^18\)
- 18 active/proposed superfund sites\(^19\)
- $211 million: federal grants for Drinking Water State Revolving Fund (DWSRF) in Tennessee (1997-2016)\(^20\)
- $8.3 million: annual value of federal DWSRF grants in Tennessee in 2016\(^20\)

### Major Federal Facilities in Tennessee
- USGS NOROCK Southern Appalachian Duty Station, Knoxville
- USGS Lower Mississippi-Gulf Water Science Center - Nashville, TN Office, Nashville
- USGS Patuxent Wildlife Research Center - Tennessee, Memphis
- DOE Oak Ridge National Lab, Oak Ridge

### Your State Source for Geoscience Information

Tennessee Geological Survey  
312 Rosa L. Parks Ave  
Nashville, TN 37243  
http://tn.gov/environment/section/geo-geology/  
(615) 532-1502

\(^9\) DOI Budget and Performance  
\(^10\) USGS National Cooperative Geologic Mapping Program  
\(^11\) NASA Budget Documents, Strategic Plans and Performance Reports  
\(^12\) American Institute of Physics FY2016 Appropriations  
\(^13\) Gravity Recovery and Climate Experiment (GRACE), Soil Moisture Active Passive (SMAP), Plankton, Aerosol, Cloud, ocean Ecosystem (PACE), Global Precipitation Measurement (GPM)  
\(^14\) NOAA Total Budget  
\(^15\) Geostationary Operational Environmental Satellite (GOES) & Deep Space Climate Observatory (DISCOVR)  
\(^16\) NOAA in Your State

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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