



Source: NASA Earth Observatory,  
([https://earthobservatory.nasa.gov/features/  
BlueMarble/BlueMarble\\_2002.php](https://earthobservatory.nasa.gov/features/BlueMarble/BlueMarble_2002.php))

**Position Summary.** The Geological Society of America (GSA) recognizes the critical need for citizens and policymakers to understand important aspects of the Earth's systems as they face issues related to natural resources, energy, natural hazards, and human impacts on the environment. GSA supports the active involvement of geoscientists and geoscience educators in helping to improve the knowledge and understanding of the geosciences among members of the general public in order to support informed decision-making by citizens and communities. GSA and GSA members should contribute to education and outreach about fundamental concepts of earth science, issues related to long-term human sustainability (such as the use and availability of water, critical minerals, and energy resources), and socially prominent topics (such as climate change and natural hazards preparedness).

## CONCLUSIONS AND RECOMMENDATIONS

### *Geoscientists are encouraged to:*

- Consider their work in the context of its relevance for addressing societal problems and identify key elements for public and educational outreach;
- Seek to improve the perceived relevance of the geosciences by the public, including the public's understanding of Earth and the environment across all aspects of geosciences with particular attention to natural resources, energy, natural hazards, and impact on the environment by individuals and communities; and
- Use various avenues to achieve these ends, including formal and informal education, communication with the public through a variety of media, and other types of professional outreach, including interviews, museum displays, workshops with teachers and schools, and governmental, organizational, and social programs.

### *Employers of geoscientists and geoscience educators are encouraged to:*

- Support geoscience education and outreach by providing employees with the tools and training they need for public engagement and fostering partnerships with professional outreach organizations; and
- Provide formal recognition of their employees' efforts to increase public understanding of Earth and the environment by rewarding these activities with favorable salary and promotion decisions and with company/organization staff awards.

### *Educators of future geoscientists are encouraged to:*

- Weave opportunities for actual or simulated public engagement into the formal curriculum for future geoscientists; and
- Provide knowledge, skills, mentoring, contacts, and internships for undergraduate and graduate students relevant to careers in which they will use their geoscience expertise to address societal issues.

## RATIONALE

For most people, formal geoscience education is minimal. Once an individual has completed formal earth science education, often in middle school, opportunities for continued learning are uncommon. Geoscience is relevant in all citizens' lives, whether individually (e.g., components in everyday technologies) or collectively (e.g., natural hazards preparedness). In fact, most citizens use geoscience information in routine activities, such as checking the weather, reading news about natural hazards, or using computer-based visualization tools that display Earth datasets.

The U.S. National Research Council has recommended, and the National Science Foundation has mandated, that scientists effectively disseminate the outcomes of their research. This obligation comes not only from the fiscal responsibility of the scientists to the public who paid for the research, but also from the public's need for information and knowledge with which to make informed decisions. Communications must go beyond the scholarly dissemination of scientific research results and should place the scientific insights into the context of locally relevant and societally important issues that individuals and communities need to address.

A healthy democracy, or any representative or direct-election form of government, relies upon an informed and educated citizenry to guide the country. This need intensifies as populations increase, resources become scarcer, the social and economic impacts from natural hazards increase, and human impacts on the environment increase. Making informed choices about energy and natural resources, preparing for natural hazards, and mitigating and adapting to climate change requires an understanding of geoscience processes and timescales. An informed and educated citizenry can guide decision-makers as they develop regulations through the legislative and rulemaking process and put in place infrastructures that can protect citizens and communities, safeguard the environment, ensure access to energy, and preserve natural resources.

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## ABOUT THE GEOLOGICAL SOCIETY OF AMERICA

The Geological Society of America (<https://www.geosociety.org>) unites a diverse community of geoscientists in a common purpose to study the mysteries of our planet (and beyond) and share scientific findings. Members and friends around the world, from academia, government, and industry, participate in GSA meetings, publications, and programs at all career levels to foster professional excellence. GSA values and supports inclusion through cooperative research, public dialogue on earth issues, science education, and the application of geoscience in the service of humankind. Inquiries about GSA or this position statement should be directed to GSA's Director for Geoscience Policy, Kasey S. White, at +1-202-669-0466 or [kwhite@geosociety.org](mailto:kwhite@geosociety.org).

## OPPORTUNITIES FOR GSA AND ITS MEMBERS TO HELP IMPLEMENT RECOMMENDATIONS

### *GSA members can:*

- Lead or participate in geoscience workshops and other geoscience engagement activities for or by nonscience experts, including citizens, community organizations, professionals, and policy-makers, whose efforts affect and are affected by the geosciences;
- Participate in discussions occurring outside the scientific community, including public hearings at all levels of government, that address societal issues or problems to help inform and contribute solutions from a geoscience perspective;
- Communicate with their elected officials about issues for which geoscience can provide support—either through informing decisions or by providing solutions;
- Identify legislation that can be informed by the geosciences and alert GSA’s Geology and Public Policy Committee, GSA’s Geology and Society Division, and the GSA Associated Societies if action by GSA and its membership might positively contribute to that legislation; and
- Practice an active civic role using your geoscience literacy through actions including participation in Congressional Visits Day with GSA to help educate members of Congress and their staff and submission of comments to administrative entities in the rulemaking process at local, state, and federal levels.

### *The Geological Society of America can:*

- Support geoscience education and outreach by providing GSA members with tools and training for public engagement and fostering partnerships with professional outreach organizations;
- Provide avenues to enable collective or individual action through GSA Committees and Divisions and through organizations with which GSA is affiliated;
- Publish and publicize successful examples of initiatives that have increased public understanding of Earth and the environment with examples of societal decisions that have benefited from geoscience input;
- Encourage academic institutions to value and reward, in a concrete way (e.g., credit toward tenure), faculty and staff efforts to improve understanding of the geosciences;
- Support earth science education at community and technical colleges;
- Identify experts to speak and engage with the media, legislators, and other stakeholders on geoscience topics that have ramifications for societal issues;
- Identify legislation that can be informed by the geosciences and pursue avenues to effectively and positively affect that legislation;
- Support earth science education at precollegiate levels by creating opportunities for geoscientists to learn about and develop content for the earth science curriculum recommended in the National Research Council’s *Framework for K–12 Science Education* and the Next Generation Science Standards (<https://www.nextgenscience.org/>); and
- Support this effort by addressing the recommendations from the GSA position statements, including *The Importance of Teaching Earth Science*; *Expanding and Improving Geoscience in Higher Education*; and *Rewarding Professional Contributions in the Public Spheres*.