
Open Data Access

Position Statement. The Geological Society of America (GSA) strongly supports open access to scientific data to promote advancement in research, support education, and improve the economic progress, health, and welfare of society.

Purpose. This position statement (1) summarizes the consensus view of GSA on issues related to access to scientific data; (2) advocates open access to the full spectra of scientific data; (3) encourages public agencies and the private sector to make data available to the greatest extent possible; and (4) provides a communications tool for geoscientists.

RATIONALE

GSA supports open access to the full spectra of scientific data, including derived data products, to support critical research, education, and decision making. Geoscience data are concerned with the solid Earth, atmosphere, hydrosphere, and biosphere both in the present and over the past four billion years. They pertain to diverse, societally relevant topics, such as weather, climate and paleoclimate, water quality and availability, extinction and evolution, earthquakes and volcanoes, and earth resources, which have economic and strategic importance. These data are also prerequisite to conducting the next generation of earth-science research and for providing the basis for the continued improvement of earth-science education. In addition, open access to and synthesis of these data for use by the general public are important for building a broader public awareness of the importance of science to society. These data provide a factual base to decision makers involved in environmental, natural resource, global change, hazards, and other science-based issues.

The scientific process runs on data; full access to both new and historical data supports scientific advances and contributes to science education—both provide the groundwork for the economic progress, health, and welfare of society. Despite this underlying importance, access to scientific data is not always “open” and readily available to the public. Access to some scientific data is justifiably restricted for a variety of reasons (e.g., proprietary or confidential information or national security concerns). The majority of scientific data collected with public funds, however, is not constrained by these restrictions, and much of the data generated by private funds could be made openly available. In addition, physical samples, such as fossils, minerals, rocks, and ice cores collected from commonly inaccessible locations (deep drill holes, excavations, the seafloor, the arctic poles, the moon, etc.), are valuable components of geoscience data. GSA supports efforts to preserve and archive physical samples in museums, universities, government agencies, and other repositories and to make these samples and their associated data readily available to both the research community and the general public.

Many government agencies financially support the acquisition of scientific data by researchers in their own agencies as well as in other government agencies, academia, and the private sector. Some of these data may become available through publications in the scientific literature, but the raw and processed data and metadata may not be readily accessible for further analysis. Publication of peer-reviewed scientific results and interpretations is a cornerstone of science; however, the data that underlie these publications should be openly accessible.

GSA encourages public agencies and professional societies to adopt policies that make unclassified data open to the public. Whenever feasible, these data should be available digitally without user fees. GSA also encourages the private sector, when possible, to make scientific data available at no charge to educators and scientific researchers for use in research and public forums, including lectures and peer-reviewed scientific literature. While it is important to maintain the copyright status of publications involving analysis and interpretation of data, the development of seamless links among peer-reviewed

publications and public databases must be pursued so that the data are openly available to everyone. GSA supports efforts to improve the electronic searchability of geologic data, including better metadata, adherence to standard record structures, and other data management techniques.

GSA recognizes that building and maintaining open access to science data are shared responsibilities among researchers, public and private institutions, and government agencies. Academic institutions need to fully recognize the economic and societal value inherent in the development and maintenance of geologic data sets and repositories as well as individual scholarship and scientific merit.

Other national and international organizations have made recommendations regarding access to scientific data, including the National Research Council, the American Geophysical Union, the International Union of Geological Sciences, the International Council for Science, the U.S. Global Change Research Program, the World Meteorological Organization, the Intergovernmental Oceanographic Commission of UNESCO, the World Climate Program, the Committee on Earth Observations–Satellites, the International Earth Observing System, and the Global Climate Observing System. GSA’s position is consistent with these organizations’ recommendations. GSA supports the continued efforts of the National Science Foundation, the U.S. Geological Survey, the U.S. Department of Energy, the Association of American State Geologists, and other federal and state agencies to make data broadly available.

Only through open access to data and derived data products can we maximize the stewardship of Earth’s resources and environment. Consequently, GSA supports laws, regulations, funding, policies, and institutions that allow the preservation and enhancement of open access to the full suite of unclassified science data while preserving the economic viability of the entities that generate and publish data and the analyses and interpretations based on these data.

RECOMMENDATIONS

- Clearly communicate the requirement for open data access and the value of scientific data access, including direct communication to the heads of agencies (federal, state, and local) and institutions that fund acquisition, storage, and dissemination of geoscience data;
- Encourage all members of the Society to promote open access to data in their respective communities, institutions, and countries;
- Support digital data banks and continue to keep abreast of new methods and forums for providing data to the scientific community;
- Promote dialogs with scientific publishers to ensure that the fullest access to data is provided, while ensuring scientific data integrity;
- Regularly reexamine the classification of restricted or proprietary data to determine if a status change is appropriate; and
- Monitor pending legislation dealing with scientific data and offer to provide testimony consistent with this position, as appropriate.

ABOUT THE GEOLOGICAL SOCIETY OF AMERICA

The Geological Society of America, founded in 1888, is a scientific society with more than 25,000 members from academia, government, and industry in more than 100 countries. Through its meetings, publications, and programs, GSA enhances the professional growth of its members and promotes the geosciences in the service of humankind. GSA encourages cooperative research among earth, life, planetary, and social scientists, fosters public dialogue on geoscience issues, and supports all levels of earth science education. Inquiries about the 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.

OPPORTUNITIES FOR GSA AND ITS MEMBERS TO HELP IMPLEMENT RECOMMENDATIONS

- GSA members should identify circumstances where data and metadata developed by public agencies could be made reasonably accessible to the scientific community, for research and supporting public-policy decision-making; members should make GSA's Geology and Public Policy Committee, Geology and Society Division, and Director for Geoscience Policy aware of their findings.
- GSA members can use this Position Statement to persuade the gatekeepers of unreleased science data to release those data for future research and for consideration in public-policy development.
- GSA members can seek opportunities to serve and share data and stay abreast of new methods and forums for providing data to the scientific community
- GSA members should support open data access in educational settings, informing new generations of Earth scientists in the value of sharing and using new and historical scientific data.