
Open Data Access

Position Statement. The Geological Society of America (GSA) strongly supports open access to scientific data by all purveyors of such 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

The scientific process runs on data; without data, science cannot progress, science education is hampered, and science cannot provide the groundwork for the economic progress, health, and welfare of society. Despite this underlying importance, scientific data are not always “open” (readily available to the public). Access to some scientific data is reasonably restricted due to national security concerns or because the data have eminent economic value. Data are also sometimes withheld to avoid revealing site-specific personal information. In addition, data donated under proprietary arrangements with the private sector are often held as confidential by government agencies or academic institutions. 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.

Government agencies have often charged fees for access to data, generally to recover the costs of reproducing or printing the data and sometimes to recover partial costs of developing the data. Increasingly, however, government agencies are able to provide data and information to the public through the Internet without charging user fees.

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. These data often become available through publications in the scientific literature, but many of the data sets are incomplete, and the raw and processed data and metadata are often not readily accessible for further analysis.

Publication of scientific results and interpretations is a cornerstone of science, and there must be assurance that the open access to data not jeopardize the viability of science publishers. The livelihood of many scientific and professional organizations is dependent on subscriptions to and sales of their peer-reviewed journals and other publications. The ability to copyright these publications is critical to the survival of these organizations, but the data that underlie them should be openly accessible and uncopyrighted. Scientific publications are, have been, and will continue to serve as repositories of science knowledge; without these publications, science itself would be compromised. The quality of science must be maintained through the peer-review process. The publishers of this peer-reviewed literature include government agencies, for-profit publishers, and nonprofit scientific and professional organizations.

GSA supports open access to the full spectra of scientific data, including derived data products that result from a transformation applied to source data, 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.

Finally, these data provide a factual base to decision-makers involved in environmental, natural resource, global change, hazards, and other science-based issues.

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. 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 search ability of geologic data, including better metadata, adherence to standard record structures, and other data management techniques.

Physical samples, such as fossils, minerals, rocks, and ice cores collected from commonly inaccessible locations (deep drill holes, excavations, the seafloor, the arctic poles, etc.), are considerably 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.

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. Among these are 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. The position of The Geological Society of America is consistent with the recommendations of these organizations. 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 develop mechanisms 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

The Geological Society of America, with the assistance of its Geology and Public Policy Committee, Director for Geoscience Policy, and Division of Geology and Society will

- Communicate this Position Statement to the heads of agencies that fund acquisition, storage, and dissemination of geoscience data in the United States of America, but also internationally, particularly in Canada and Mexico;
- Monitor the progress of such communication;
- Encourage all members of the Society to promote open access to data in their respective countries; and
- Monitor pending legislation dealing with geoscience 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 over 22,000 members from academia, government, and industry in 97 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. Please direct inquiries about GSA or this position statement to GSA's Director for Geoscience Policy, Dr. Craig M. Schiffries, at +1-202-669-0466 or cschiffries@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 for supporting public policy decision making, and they should make GSA's Geology and Public Policy Committee, Geology and Society Division, and Director of 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.