
Geoscience Data Preservation

Position Statement. The Geological Society of America (GSA) supports the preservation of geoscience samples and data sets for the public good and urges public and private sector organizations and individuals to routinely catalog and preserve their collections and make them more widely accessible.

Purpose. This position statement (1) summarizes the consensus view of GSA on issues related to data preservation; (2) advocates the preservation, archiving, and increased availability of data sets and physical collections; (3) encourages agencies and organizations to work toward improved data preservation and dissemination; and (4) provides a communications tool for geoscientists to advocate for data preservation.

RATIONALE

The work of earth scientists depends on the availability of representative samples and measurements collected above, at, and beneath Earth's surface. Such collections include geologic samples from surface exposures, drill cuttings and cores, photographs, maps, and other assorted field and laboratory observations, analyses, and measurements in analog and digital form. These samples and data sets are fundamental references supporting basic and applied research and education, professional publications, geologic maps and reports, natural resource assessments, environmental protection plans, natural hazards assessment and mitigation, and the continued development of a broad understanding of Earth's processes and history. Equally important, these collections are regularly reexamined as required by new societal issues, environmental concerns, scientific interpretations, and analytical techniques. Old samples routinely produce new knowledge.

A 2002 National Academies report, "Geoscience Data and Collections: National Resources in Peril," characterizes these samples and data collections as a library of geologic reference materials. The analogy is especially apt because it emphasizes the future value of information contained in but not yet fully extracted from the collections. Like many library collections, these data sets and samples often include individual specimens acquired at great cost and with substantial difficulty and that are rare or even unique. Many samples are irreplaceable, for example, obtained where ore deposits are mined or glaciers melt or where urban development, environmental restrictions, and other limits on land access restrict or prohibit the collecting of new specimens. Even when re-sampling is possible, replacement costs are discouragingly high. Original samples are often the only samples.

Many collections, including those housed by federal and state agencies, universities, museums, private companies, and individuals are at risk because of severely limited space and funding for proper curation. Physical samples are inadequately housed in garages, basements, deteriorating warehouses, semi-trailers, or shipping containers. Analog data, including maps, photographs, and field notes, often suffer a similar fate. Digital information may reside on punch cards, magnetic tapes, and variously sized plastic discs that may be in unfamiliar or obsolete formats. All too commonly, these collections and data sets are also incompletely inventoried and inadequately documented. There are no efficient ways to identify, search for, and retrieve items of interest. In fact, potential users may not even be able to determine that a relevant collection exists. Inaccessible, irretrievable collections are unusable and have little value until they are opened to scientist and public access.

RECOMMENDATIONS

Government, educational, and private sector organizations, individually as well as collectively, are encouraged to aggressively address the following geoscience data–preservation challenges:

- identifying, organizing, documenting, and cataloging existing data collections, preferably in a digital format;
- constructing logical linkages and search engines that facilitate access to organizations and their geoscience sample and data collections;
- dedicating adequate space — physical and digital — for storage of and efficient access to existing and future samples and data sets;
- adding suitably documented new material to the collections responsibly and selectively;
- reminding individual geoscientists to share their data and samples during their professional careers and to make suitable arrangements for the preservation of these materials upon their retirement; and
- committing continuing financial and personnel resources to do all of the above.

GSA also urges the broader earth-science community to give appropriate professional recognition and data citation to those organizations and individuals who serve as geoscience “libraries and librarians.”

The Geological Society of America supports federal, state, and private sector funding for all of these essential geoscience data preservation activities, including those actions described in the National Geological and Geophysical Data Preservation Program as part of the Energy Policy Act of 2005. GSA encourages all appropriate state and federal agencies and universities to develop and implement similar programs.

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 the 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 may wish to maintain a database for tracking high-priority data sets to insure their preservation. This database would be open, online, and useable by GSA members to inform the Society of valuable geoscience sample collections and or data sets that are in jeopardy.
- GSA members can present this Position Statement as part of their advocacy for preservation and proper curation of specific collections of geoscience samples and/or data sets that are at risk of being discarded. This effort should be part of GSA members' efforts to highlight opportunities for research and documentation that preservation can provide.