

Earth Science Information Management and Delivery Subactivity

Subactivity	FY 2000 Estimate	Uncontrol. & Related Changes	Program Changes	FY 2001 Budget Request	Change From FY 2000
Mapping Data Collection and Integration	56,330	+228	+10,769	67,327	+10,997
Earth Science Information Management and Delivery	34,270	+641	(1)+2,000	36,911	+2,641
Geographic Research and Applications	36,117	+727	+14,200	51,044	+14,927
Total Requirements \$000	126,717	+1,596	+26,969	155,282	+28,565

¹ See Program Change section for details on Community/Federal Information Partnership (+\$2,000).

Current Program Highlights

The growing numbers of citizens and customers using USGS data, information, and products is a result of widespread use of high powered and relatively inexpensive personal computers, Internet connectivity, greater availability of geospatial information and compatible geographic information system software, and place-based information becoming an important component of solving societal problems. USGS now archives over 11 million frames of aerial and space photographs and 130 terabytes (trillion bytes) of digital imagery, cartographic, and earth science data; manages over 130,000 published product titles; and has streamlined its processes and warehouse, including creating a perpetual inventory, in Denver, Colorado. The agency has also significantly evolved toward paperless delivery of natural science information to enable customers to put geospatial data directly into their computer applications. Examples of these free online data include global and climate change data, those in the National Geospatial Data Clearinghouse, and GeoData (elevation and land use data), all using public domain software.

Federal Geographic Data Committee (FGDC) Expands Organizational Involvement in Building the National Spatial Data Infrastructure (NSDI) — To improve geographic information coordination in the United States, FGDC is focusing on broadening the coalition of organizations that guide NSDI and exploring new models of governance. This will include efforts to explore an innovative public-private nationwide organizational alliance to provide future NSDI direction and to promote locally independent, regionally coordinated geographic information processes as a means of achieving national consistency. The FGDC will also fund local and State initiatives and provide incentives through Federal activities that advance the capacity of communities to create and use geographic data. Web site: <http://www.fgdc.gov/>.

National Satellite Land Remote Sensing Data Archive (NSLRSDA) — Preservation activities involving the archive's oldest Landsat image data resulted in several thousand new images being discovered that were previously not cataloged. USGS agreements involving its facilities and staff in Sioux Falls, South Dakota, and collaborative support from two private sector firms (Space Imaging, Inc. of Colorado and SPOT Image in Reston, Virginia) will result in hundreds

Distribution of Landsat-7 Images

Following the successful April 1999 launch and the downlink testing in summer 1999, Landsat 7 data were made available promptly to citizens in September.

Web site: <http://landsat7.usgs.gov/>.

of thousands of images being added to NSLRSDA in FY 2000 and 2001. New access methods, consistent with NSDI policies, are being adopted to enable broader customer access to NSLRSDA imagery. The archive contains Landsat and other satellite data and images from the 1960's to the present. Web site: <http://edcftp.cr.usgs.gov/programs/NSLRSDA.html>.

National Civil Applications Program (NCAP) — For classified data archives and dissemination activities, USGS is improving several areas of NCAP; for example: increasing near real-time softcopy ingestion of classified data from the national data provider (including commercial imagery) and establishing secure connectivity inside USGS facilities using support from private sector companies. The bureau is also managing the Global Fiducials Library (a long-term archive of environmentally significant sites). NCAP provides dedicated staff that support the Civil Applications Committee and its working groups; represent the Federal civil community in military and intelligence forums; promote the CAC and the NCAP programs through educational and outreach materials and activities, and coordinate USGS and CAC member agency requirements for classified data. The CAC member agencies are the Departments of the Interior, Agriculture, Commerce, Transportation, and Energy; FEMA; NASA; U.S. ACE; EPA; and NSF. Also under development are tools to measure customer satisfaction with NCAP products and services. Overall, USGS is increasing its electronic distribution of classified remote sensing data, information, and products using improved data gathering and distribution strategies. NCAP activities also occur under the Mapping Data Collection and Integration subactivity.

National Atlas — The USGS and Chicago Map Corporation (a division of LEXON Technologies, Inc.) in Chicago, Illinois, have formed a partnership to bring new products to market designed to allow unequaled access to geographic, historical, economic, social, environmental, and other data about our country. The partnership will produce CD-ROM and DVD formats, plus web-based programs, references, and software tool-kits that will allow program developers to make use of the vast array of Federal data being made available through the National Atlas project.

ESRI Agreement with USGS — The USGS and Environmental Systems Research Institute, Inc., (ESRI), a developer of GIS technologies in Redlands, California, are enhancing geospatial information tools. ESRI specializes in large-scale spatial database management, as well as access to and distribution of these data via the intra/Internet and CD-ROM. One focus of the agreement is spatial data management, access, and distribution. A second focus is to develop methods for using GIS tools to generate data for computer models. A specific objective is to develop a graphical user interface for modeling groundwater flow.

Open GIS Consortium (OGC) Web Mapping Test-bed Participation — USGS has joined with other Federal agency sponsors collaborating with 31 companies in this information management research project designed to achieve next-generation mapping solutions for disaster relief and emergency management, global and national geospatial information infrastructures, military, crime management, and environmental monitoring. Desktop computer users will be able to easily and quickly search, retrieve, access, and display multiple datasets from several locations on the Internet. Federal agencies are providing links to public domain datasets, and vendor companies and agencies are adopting common protocols that allow interoperable web-based exploitation of geodata and sharing of processing services. These efforts will enable users to pull down geospatial and natural science information and other data, to display multiple layers of these data, and to make decisions based on the displays.

Recent Accomplishments

National Atlas — New this year for the USGS National Atlas web site are additional data layers including 105th and 106th Congressional Districts, watersheds, abandoned coal mines, time zones, revised real time streamflow data, shaded relief, metropolitan areas, epicenters of significant earthquakes, and breeding bird survey routes. The USGS also added new online capabilities to zoom in on a specific State, to print hard copy for a selected Atlas map and its legend, and to display 24-bit color maps. Web site: <http://www-atlas.usgs.gov/>.

Microsoft Corporation Agreement with USGS — The year-old TerraServer web site (developed under an agreement between USGS and Microsoft) passed the **1-billion-image mark** in terms of digital orthophoto quadrangle image tiles accessed via the Microsoft TerraServer web page. About 5 million queries and 70,000 image tiles are downloaded daily. An article about TerraServer in the June 1999 *The Economist* caused a temporary spike of 12 million queries in a single day. Begun in 1996 as a collaborative research project, USGS efforts with Microsoft, Digital Equipment Corporation, and SPIN-2 have demonstrated that a massive database of digital orthophoto images and aerial photographs could be created using standard software and off-the-shelf server technology. The online image atlas is free for browsing by anyone that has a standard desktop computer. Web site: <http://www.terraserver.microsoft.com/>.

GeoData Forum: Livable Communities — A landmark forum of government, industry, and academia gathered to debate key public policy issues related to geodata and geoprocessing and present recommendations for decision makers, drawing over 500 elected officials, community leaders, industry leaders, and technologists to Washington, D.C., in June 1999. Sponsored by FGDC and academic and public and private sector organizations, the Forum initiated a number of activities to stimulate the growth of the NSDI. The forum sponsored a technology demonstration in the Capitol. Also, the House Government Reform Subcommittee on Government Management, Information and Technology met to discuss the value and use of geographic information in communities.

Satellite Broadcast Program, "Tribal Update on Geographic Information Systems" — Co-sponsored by FGDC and the Southwestern Indian Polytechnic Institute (SIPI) in Albuquerque, New Mexico, this quarterly program aims at collaborative GIS opportunities for Native Americans. The November 1999 program included a keynote speech by Dr. Carolyn Elgin, President of SIPI and presentations from the National Indian Business Association, Sandia Pueblo, USGS, Bureau of Reclamation, Bureau of Land Management, Department of Agriculture, and FGDC.

Easy Access to USGS Natural Science Information — The **1-888-ASK-USGS** toll-free telephone line routes callers to USGS Earth Science Information Centers (ESIC) offices in Anchorage, Alaska; Reston, Virginia; Menlo Park, California; Spokane, Washington; Rolla, Missouri; Sioux Falls, South Dakota; and Washington, D.C. E-mail, which can be sent to the ask@usgs.gov address, is dispersed to information offices in a similar manner. The new call distribution system includes routing to specialty sites (hydrology to Water Resources Division in Reston, aerial photography and satellite imagery to the EROS Data Center in Sioux Falls, Alaska-originating calls to the

ASK USGS

Citizens can locate USGS earth science information more easily than in the past by remembering one simple phrase — ASK USGS. This phrase is the key to a revised set of information dissemination capabilities that include Internet World Wide Web, fax-on-demand, e-mail, and telephone access.

NSDI Cooperative Agreements Program (CAP) Grants — Participants in this program develop reference data (metadata) for existing geospatial data and serve the metadata through new or existing clearinghouse nodes. To continue to foster the growth, awareness, and understanding of the National Spatial Data Infrastructure, the USGS awarded 95 CAP grants to organizations to further geospatial data documentation and clearinghouse development. The awards involve over 240 Federal, State, and local governments, and private and academic organizations nationwide.

National Research Council (NRC) Workshop: “Promoting Access to Scientific and Technical Data for the Public Interest” — Aimed at exploring the potential opportunities and pitfalls for accessing and exchanging scientific data and databases, the workshop participants included government, academia, and private sector experts concerned about the societal and legal future of data access and protection of intellectual property in the information age. USGS sponsored and participated in this January 1999 annual workshop in Washington, D.C.

Distribution of Hazard-Related Maps and Products — Within 24 hours of the request from the Federal Emergency Management Agency prior to the major tornadoes that swept through the area in May 1999, USGS provided emergency responders with digital images and aerial photographs covering the Oklahoma City, Oklahoma and Kansas City, Missouri and Kansas areas. To enable emergency crews to assess the damaged areas, USGS also provided via overnight delivery 350 topographic maps and after-event images from Landsat 5 and SPOT satellites. USGS also worked with officials in San Antonio, Texas, to provide maps and data to assist with devastating floods during Hurricane Georges. USGS supported the National Imagery and Mapping Agency (NIMA) Special Operations with maps of the southeastern United States. USGS provided maps and map data to the Georgia Emergency Management Department during the Okefenokee Swamp fires. USGS provided maps and data to the Bureau of Land Management for Arizona and California in wildfire containment efforts. USGS also provided support to the FBI's National Infrastructure Key Asset Data Base. In coordination with NIMA, USGS supplied maps, imagery, and assistance in response to the simultaneous eruption of two adjacent volcanoes threatening the capital city of Quito - Guagua Pincincha (west of Quito) and Volcan Tungurahua (south of Quito). USGS scientists advised local officials and global air carriers on safe operations during ash falls and ash plumes, in addition to the U.S. Embassy, USAID staff in Ecuador, the U.S. military, and representatives of international agencies responding to the crises.

Hurricane Mitch

USGS responded in FY 1999 to support urgent map and data needs of the Central America Reconstruction Task Force in its efforts to assist Honduras, Nicaragua, Guatemala, and El Salvador in recovery from Hurricane Mitch, which crossed the Latin American landmass during Fall 1998. USGS collaborated with NIMA to ensure the timely availability of maps, digital data, and custom imagery products. The USGS provided GIS support to critical data collection and analytical needs in Honduras, including in-country support to the U.S. Agency for International Development and Honduran agencies doing reconstruction work and planning. USGS also set up a geospatial data clearinghouse in Central America that provided online access to geospatial data and metadata using a distributed system.

Hurricane Floyd

The USGS research laboratory Center for Integration of Natural Disaster Information (CINDI) collaborated with emergency responders in the States of North Carolina, Virginia, and New Jersey to document and graphically portray the threats to human health associated with the September 1999 flood event. The work included quantifying water quality impacts of runoff from flooded hog and poultry farms, the breach of sewage treatment plants, and flooding of water treatment facilities.