



SCIENCE FOR COMMUNITIES

Dedicated and highly skilled geologists, geophysicists, and other scientists are working to protect and preserve our natural resources and environment, keeping us safe from natural disasters and promote our appreciation for the beauty and grandeur of nature.

President George W. Bush, April 2002

Scientific research provides information critical to better understanding many of the complex issues faced by the Department. The ability of land managers to address a broad range of issues depends on accessible data, information, and associated tools and technologies. The Department sets priorities for these science needs using an integrated approach to science that encompasses the research, monitoring, assessment, and coordination needs of all the bureaus within the Department.

The U.S. Geological Survey is the Department's primary source of scientific research, earth sciences data, and other geologic information. The USGS conducts research on earth and biological processes, including natural resources and natural hazards. These studies are responsive to the needs of Interior partners and may address either long-term research questions or short-term tactical science applications. Research results, in the form of publications, analyses, maps, decision support systems, web pages, and other media, provide systematic information to other Interior bureaus and the Nation for use in land and resource decision-making. Scientists in other bureaus rely on USGS for objective scientific results and well-designed application programs to translate the information to specific land or resource use questions.

The 2005 USGS budget request of \$919.8 million continues the Department's science program, advancing the goal of maintaining scientific leadership as described in the Interior's strategic plan, as well as supporting resource protection and resource use goals.

KLAMATH STUDIES

During the 20th century, nutrient levels supporting diverse plant and animal life in the Upper Klamath Lake in southern Oregon became high enough to cause annual, extensive blue-green algae blooms that coincide with water quality problems that can cause extensive fish kills. Degraded water quality may contribute to the decline of the populations of the short-nose sucker and the Lost River sucker, both of which are listed as federally endangered species.

Currently, USGS conducts research on the Klamath River basin focused on population dynamics and behavioral ecology of lake suckers and on the causes for change in the trophic status of Upper Klamath Lake. The 2005 budget requests an increase of \$2.7 million for USGS to conduct additional research in these areas, with \$1.3 million dedicated to improving the quality and quantity of water entering Agency and Upper Klamath Lakes through a pilot project with the Klamath Basin Rangeland Trust and \$1.4 million to focus on the ecology of the suckers.

SCIENCE ON INTERIOR LANDS

The Department is increasingly emphasizing the USGS role in providing science to Interior bureaus to improve the effectiveness of Federal resource management decision-making and to avoid duplication of science among the bureaus. Department bureaus rely on USGS to provide science information and technical assistance to meet their management goals. The 2005 budget requests an increase of \$1.2 million for science on the Interior landscape to address priority bureau science needs.

EXCELLENCE IN BUSINESS AND TECHNOLOGY

The strength of USGS science lies in its ability to interact with its customers and partners. The science must be built on accurate and timely financial information to ensure best performance and the highest measure of accountability. To improve the USGS information base, information management, and technical assistance, one of the top priorities is to improve USGS financial management practices in response to recent audit reports. The 2005 budget includes \$2.7 million to address material weaknesses cited in these audit reports and to improve the overall financial management function of in bureau.

Additionally, the 2005 budget proposes \$1.8 million to modernize and centrally support certain key information technology management practices within USGS at the bureau level to enhance service to its scientists and customers. This increased funding will eliminate critical deficiencies in the USGS IT security infrastructure and will strengthen the overall IT security program.

GEOGRAPHY

Land managers, policy and decisionmakers, researchers, and the public depend on a common set of current, accurate and consistent basic data that describe the Earth's land surface and its dynam-

ics. In the past, USGS played a primary role in the collection of these data. Today, the most current, highest resolution, continuously maintained, basic geospatial datasets often reside with State and local governments, private entities, and other Federal agencies.

As the ability to produce topographic maps has become fairly common and the demand for more technologically current, seamless, and flexible data and information has grown, USGS is moving away from its role as primary data collector to a role that focuses on partnerships, standards, base data themes, archiving, science and applications, and products and services. The vision for the future of the National Map is based on the availability of continuously maintained, nationally consistent basic geospatial data and applications. The National Map will integrate these data on a national scale and make them publicly available.



Revitalizing the program starts with workforce restructuring. In 2004, the USGS offered a buyout to its geography employees. One hundred and fifty persons accepted the buyout. The USGS will fill one-fifth of these resultant vacancies focusing on new needed skill sets. An estimated savings of \$9.0 million will be available in 2005. The President's budget requests the use of these savings to address Landsat 7 needs; establish new

partnerships to further the National Map; develop the science and applications needed to promote geographic integration and analysis; and provide access to tools for specific applications and modeling. The redirection of this funding is in line with both a PART review and National Research Council recommendations for the National Map.

HAZARDS

Earthquakes, volcanic eruptions, landslides, coastal storms, erosion, and flooding pose threats to lives and property and undermine local and national economic health. The Department is working to enhance the quality and timeliness

of information provided to communities so they can improve their warning systems, planning processes, response efforts, community education, and building modifications.

The USGS has begun using Interferometric Synthetic Aperture Radar to monitor the ground deformation at several of the 65 active and potentially active volcanoes in the United States, as part of a pilot project, to assist in predicting future volcanic events. The USGS, in partnership with NASA and the National Science Foundation, has shown that InSAR can be used to monitor the ground deformation that precedes volcanic eruptions and that accompanies large earthquakes and groundwater withdrawals. The 2005 budget requests an increase of \$800,000 to expand current InSAR investigations past the pilot stage toward a national monitoring capability, with increased tracking of the behavior of priority volcanoes, including Yellowstone Caldera in Yellowstone National Park,

Three Sisters volcano in Oregon, and four to six Alaskan volcanoes.

The 2005 budget also maintains the 2004 funding of \$4.4 million for the Advanced National Seismic System. During 2005, USGS will continue to upgrade and install new ANSS seismic monitoring stations. Information from ANSS stations will support real-time earthquake shake maps for emergency response in five metropolitan areas.



As part of the 2005 budget process, the USGS hazards program underwent a review using the Program Assessment Rating Tool. The hazards programs received a rating of moderately effective, demonstrating a generally successful program that has a clear purpose and can demonstrate progress toward long-term goals. The review found that USGS should work with partners to determine the effectiveness of Federal efforts to reduce the loss of life and property due to geologic hazards.