FY 2017 USGS Budget Request

Delivering Earth science research, national mapping and information science through Core Science Systems

The FY 2017 Budget Request for Core Science Systems (CSS) is $118,395,000, a net change of +$6,845,000 from the 2016 Enacted level.

USGS characterizes and understands complex Earth and biological systems through research, modeling and mapping.

Dollars in Thousands	2015	2016	2017			
	Base	Enacted	Fixed Costs	Program Changes	Request	Change from 2016 Enacted
Core Science Systems	**$107,228**	**$111,550**	**$408**	**$6,437**	**$118,395**	**$6,845**
Science Synthesis, Analysis, and Research Program	**$24,299**	**$24,299**	**$81**	**$550**	**$24,930**	**$631**
Pollinators	*[$0]*	*[$0]*		*[+$350]*	*[$350]*	*[+$350]*
WaterSMART: Drought	*[$0]*	*[$0]*		*[+$200]*	*[$200]*	*[+$200]*
National Cooperative Geologic Mapping Program	**$24,397**	**$24,397**	**$89**	**$0**	**$24,486**	**$89**
National Geospatial Program	**$58,532**	**$62,854**	**$238**	**$5,887**	**$68,979**	**$6,125**
3D Elevation: Alaska Mapping and Map Modernization	*[$3,900]*	*[$5,222]*		*[+$1,500]*	*[$6,722]*	*[+$1,500]*
3D Elevation: Coastal lidar	*[$0]*	*[$0]*		*[+$500]*	*[$500]*	*[+$500]*
3D Elevation: National Enhancement	*[$16,500]*	*[$19,500]*		*[+$2,387]*	*[$21,887]*	*[+$2,387]*
3D Elevation: NHD/Landscape Level Assessments - Chesapeake Bay	*[$0]*	*[$0]*		*[+$500]*	*[$500]*	*[+$500]*
WaterSMART: National Hydrography Database	*[$0]*	*[$0]*		*[+$1,000]*	*[$1,000]*	*[+$1,000]*

The Core Science Systems Mission Area conducts national-focused Earth-system science to deliver an understanding of the Earth's complex geologic structure. CSS conducts core sciences across a broad range of fields from structural geology, geomorphology (geomorphologists seek to understand why landscapes look the way they do, to understand landform history and dynamics and to predict changes) and geophysics, to geography and remote sensing, evolutionary biology and biogeography (the study of the distribution of species and ecosystems in geographic space and through (geological) time). Products include scientific publications, three-dimensional geologic models, fundamental geospatial data, geologic, topographic, and biogeographic maps, and interpretive studies, all of which are essential for informed public policy decision making.

Modern mapping includes Earth observations from many platforms (such as satellite, airborne, and unmanned aerial vehicles) and uses continuously evolving technologies that can sense and map an expanding list of features, such as gravity, magnetism, and thermal signatures using the latest technologies. Through collaborative efforts with Federal, State, tribal and local partners, CSS delivers nationally consistent, high-quality geologic, topographic, and biogeographic information. For example, highly accurate elevation maps and data are essential for hazards mitigation, conservation, infrastructure development, national security and coastal shoreline erosion. In addition, detailed, accurate information about the nature and origin of the geology of an area, portrayed through geologic maps and three-dimensional frameworks, is essential for identifying mineral, oil, and gas resources, finding and protecting groundwater, guiding earthquake damage prediction, identifying landslide and post-wildfire hazards, guiding transportation planning, and generally improving the quality of life and economic vitality of the Nation.

Highlights of the 2017 President's Budget for Core Science Systems include:

Three-Dimension Elevation Program (+$4,887,000 for a total of $29,609,000):

Alaska Mapping and Map Modernization +$1,500,000 for a total of $6,722,000: Improved mapping products are urgently needed in Alaska to support scientists investigating climate change impacts on the North, including melting permafrost, land subsidence, and erosion-- all of which are redefining Alaska's terrain. High resolution mapping products are also needed for aircraft navigation, since weather conditions in Alaska deteriorate quickly and pilots frequently need to fly using only their instruments and GPS. The 2017 increase would accelerate collection rates of ifsar (interferometric synthetic aperture radar) elevation data in Alaska by 25 percent (or more with partners), and speed the availability of improved topographic map products for the State.

National Enhancement, Landscape-scale 3-D Maps +$2,387,000 for a total of $21,887,000: The 3D Elevation Program (3DEP) is a cooperative activity to produce lidar data for the conterminous United States, Hawaii, and U.S. territories, and ifsar data for Alaska. The USGS and partner organizations acquire high quality 3D elevation data that support requirements beyond what could be realized if agencies pursued independent lidar and ifsar data collection activities. The 2017 increase would accelerate acquisition of lidar data to expand available 3DEP holdings. Accelerating the national coverage of lidar will enable decision-making in management of infrastructure and construction, more accurate and cost effective application of chemicals in farming, development of energy projects, and support of aviation safety and vehicle navigation.

Coastal Lidar +$500,000 for a total of $500,000: The USGS 3DEP responds to growing needs for high-quality and high resolution topographic data to capture change in the Nation's natural and constructed features and would be used for sea level rise modeling projects in the Coastal and Marine Geology Program. The 2017 increase would collect enhanced elevation data using lidar in coastal zones over the United States to understand and mitigate the negative effects of coastal erosion and storm surge.

Landscape Level Assessments – Chesapeake Bay +$500,000 for a total of $500,000: The Chesapeake Bay, a 65,000 square mile drainage basin, is the largest estuary in the United States touching six States and the District of Columbia. New and accurate baseline elevation data are required to understand landscape processes at a parcel and local scale and to develop strategies that allow for the Bay's sustainable development and management of natural resources. The 2017 increase would allow CSS to systematically collect and manage high-quality lidar over the eastern shore of the Chesapeake Bay. Ongoing Federal and State lidar acquisition partnerships throughout the Chesapeake Bay watershed would be leveraged and expanded.

WaterSMART: National Hydrography Database & Drought +$1,200,000 for a total of $1,200,000 (USGS Total: $37,064,000): Meeting the water resource needs of the Nation is an increasing challenge because of rapidly changing drivers of water availability, such as climate change, population increases, and water use and land use changes. The 2017 budget request for Core Science Systems includes increases that would complete the initial production of the National Hydrography Database High Resolution dataset and develop a single, scalable hydrographic referencing system that would integrate currently fragmented water information into a connected, national water data framework. This framework would underpin innovation, modeling, data sharing and solution development by Federal, state, local and tribal governments. The increase would also model the effects of drought on the habitat for those species most at risk, and create maps that show areas most viable for mitigation activities.

Pollinators +$350,000, for a total of $350,000 (USGS Total: $2,405,000): USGS and other scientists are documenting alarming declines in pollinators, which are critical to agriculture and the economy. The 2017 increase would enable the creation of maps and analyses for habitats of critical concern for pollinators with areas of greatest potential for mitigation and restoration activities, and enhance existing repositories to capture national distributions and ranges for pollinators to inform climate change. The work would be conducted in collaboration with the Ecosystems Mission Area. Conservation and land managers would use these maps and analyses to make more informed decisions on pollinator habitat mitigation and restoration strategies.