

June 2, 2017

### **Proposed elimination of the USGS Geomagnetism Program**

The President's fiscal year 2018 budget request, released May 23, 2017, proposes a cut in the budget of the Department of Interior, U.S. Geological Survey (USGS) that would, effective Oct 1, 2017, eliminate the USGS Geomagnetism Program (a \$1.9 million/year program with 12 full-time equivalent employee positions and which supports the operation of 14 magnetic observatories in the United States and Territories).

#### **Background:**

The USGS Geomagnetism Program is an integral part of the multiagency Space Weather Operations, Response, and Mitigation (SWORM) Subcommittee within the United States National Science and Technology Council. The role of the Geomagnetism Program in SWORM is highlighted in the bipartisan Space Weather Research and Forecasting Act (S. 141) that was passed by unanimous consent, in the United States Senate on May 2, 2017.

The USGS Geomagnetism Program operates magnetic observatories that provide real-time, long-term data streams that are used by government, academic, and the commercial sectors for a wide variety of scientific and operational purposes. The Program's observatory data are used for: (1) geomagnetic storm alerts that are widely used, including for protecting the Nation's electric power grid, satellite systems, and other critical infrastructure; (2) products and services that support multiple Department of Defense and National Intelligence Community activities; (3) directional drilling for oil and gas; (4) geophysical surveys and geomagnetic field mapping.

The USGS Geomagnetism Program conducts targeted research of importance to modern society. In recent years, Program research has been focused on the evaluation and monitoring of magnetic-storm geoelectric hazards that can interfere with the operation of electric-power grids. Projects include: (1) statistical maps of extreme-magnetic-storm geoelectric hazards; (2) real-time maps of geomagnetic variation across North America; (3) real-time maps of geoelectric fields across the continental United States; and (4) contributing to completion of the U.S. EarthScope magnetotelluric (MT) survey needed to evaluate geoelectric hazards.

#### **Impact:**

If the United States Congress accepts the President's proposed elimination of the USGS Geomagnetism Program and if another source of funding cannot be found, Program research will cease, and the operation of all USGS magnetic observatories will be terminated.

This means that there would be almost no reliable, real-time, open-access source for geomagnetic monitoring data for the United States and its territories. Long time series of

geomagnetic activity, some exceeding a century in duration, would be interrupted. This would, in turn, cripple the following data-derived products: (1) standard geomagnetic activity indices (Dst, Kp, AE) that are needed to issue geomagnetic storm alerts and model geospace; and (2) the International Geomagnetic Reference Field (IGRF) model that is widely used for navigation and research.

The following would be adversely affected: (1) the USGS-led project within SWORM for evaluating geoelectric hazards of importance to the North American Electric Reliability Corporation (NERC) and the Federal Energy Regulatory Commission (FERC); (2) operations of the 557<sup>th</sup> Weather Wing of the U.S. Air Force (USAF); (3) operations of the Joint Space Operations Center (JSpOC) of the North American Aerospace Defense Command (NORAD); (4) operations of the Space Weather Prediction Center (SWPC) of the National Oceanic and Atmospheric Administration (NOAA); (5) numerous research projects sponsored by the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA); (6) foreign-national geomagnetic projects, such as those of the Kyoto World Data Center (Japan) and the GeoForschungsZentrum (Germany); (7) commercial sector services such as those provided by Space Environment Technologies, PingThings, Inc., and Computational Physics, Inc.; and (8) collaboration between the USGS and Schlumberger that supports directional drilling for oil and gas in Alaska.

Additional information on the USGS 2018 President's budget can be found at the following link:

[https://www.usgs.gov/about/organization/science-support/budget-planning-and-integration?qt-science\\_support\\_l3\\_landing\\_pages=0#qt-science\\_support\\_l3\\_landing\\_pages](https://www.usgs.gov/about/organization/science-support/budget-planning-and-integration?qt-science_support_l3_landing_pages=0#qt-science_support_l3_landing_pages)

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