National Academies release second decadal survey for earth observations from space

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Last month, on January 5, the National Academies of Sciences, Engineering, and Medicine released a report titled Thriving on Our Changing Planet: A Decadal Strategy for Earth Observation from Space. Commissioned by the civilian agencies involved with space-based Earth observations – the National Aeronautics and Space Administration (NASA), the National Oceanic and Atmospheric Administration (NOAA), and the U.S. Geological Survey (USGS) – the study identifies key science and application priorities for 2017-2027 and highlights the ways in which U.S. Earth observation programs are an integral part of the nation's information infrastructure. The report calls for the overall U.S. government's program of Earth observations from space to be robust, resilient, and appropriately balanced, and for federal agencies to ensure efficient and effective use of U.S. resources.

The report identifies gaps and opportunities in the "Program of Record" – the series of existing or previously planned observations that must be completed as planned – at NASA, NOAA, and USGS. The "Designated" or cost-capped medium- to large-size missions should address five target observables identified in the report: aerosols, mass change, surface biology and geology, surface deformation and change, and clouds, convection, and precipitation. Earth System Explorer, a new program element involving competitive opportunities for medium-size Earth science missions, should target three of the following seven observables: greenhouse gases, ice elevation, ocean surface winds and currents, ozone and trace gasses, snow depth, terrestrial ecosystem structure, and atmospheric winds. Another new "Incubation" program element would invest in instruments, missions, or other technologies for priority observation opportunities that need to be advanced prior to cost-effective implementation. The report also recommends the addition of a new Venture-Continuity component known as "Earth Venture" to provide opportunity for low-cost sustained observations.

While most of the report focuses on NASA missions, the report also provides specific recommendations to NOAA and USGS. The report recommends that NOAA should make it easier for satellite data to be used beyond weather applications, further U.S. and international government partner observations, be a leader in utilizing commercial observations, and improve technology transfer from NASA. In regard to Landsat, the USGS is urged to continue to ensure that user needs are understood and addressed, reduce development costs, and leverage Landsat-related partnerships including international complements.

Sources: National Academies of Sciences, Engineering, and Medicine, Space News