Assessing the value of Landsat: What data and policy inputs are needed?

Sarah J Ryker, Matthew C Larsen

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ABSTRACT

The Landsat series of Earth-observing satellites originated forty years ago as a partnership between the U.S. Department of the Interior (DOI) and NASA. The U.S. Geological Survey (USGS), as DOI's Earth science agency, provides Landsat's ground systems and data and develops value-added science products and applications. In 2011 the Administration and Congress asked the USGS for an analysis of Landsat's future direction as an operational program. In the course of that analysis, the USGS has been asked a number of questions about the socioeconomic and scientific value of Landsat data. Given the current U.S. Federal budget climate, and the budget difficulties and potential data gaps faced by Earth observing systems around the globe, the answers to these questions will likely be useful to decision-makers for the next decade and more. This is a challenging time in which to address the value of Landsat. In 2008 DOI adopted a free and open data policy for all Landsat products. Since then, Landsat science and applications have expanded significantly in both existing and new fields, increasing both the number of users and the variety of applications. These trends indicate that the value of Landsat is increasing rapidly. In addition, the USGS is developing value-added products to make the data accessible to an even wider variety of sectors. There is a small but growing literature on the value of Landsat, developing through a variety of approaches. In some sectors the data stream's value has been partially quantified; in some sectors only qualitative information is available; and some sectors' uses are still emerging. One of the better quantified studies to date is from a single sector (irrigated agriculture); another study pre-dates the free data policy; and another is multi-sector and accordingly has large uncertainties around the overall valuation of the data stream. Some uses are well known but relatively unstudied, while other uses may be unknown to those providing the data at the USGS. The effort to chart a future course for Landsat provides new motivation to further develop these analyses, and to identify specific decision-supportive approaches to quantifying the value of Earth observations.