

NEWS

Contingency Plans Set for Landsat 5 and 7

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With the Landsat 5 Earth observation satellite failing due to a rapidly degrading electronic component, the U.S. Geological Survey (USGS) is exploring ways to alleviate a data gap if both Landsat 5 and 7 fail prior to the planned launch of Landsat 8—known as the Landsat Data Continuity Mission—in 2013.

USGS director Marcia McNutt told *Eos* that although the satellite's engineering team has "brought Landsat 5 back from death's doorstep several times over the last 27 years" during its mission—which has extended far beyond its design life—"another miracle recovery is becoming less likely." She added that the survey is looking forward to a successful launch of Landsat 8 "and to establishing a more consistent land imaging program."

One way USGS is preparing for a possible scenario of Landsat 5 and 7 both failing is to establish contracts with other satellite providers. "There is no single substitute for Landsat data in regard to spectral content and routine global coverage," the agency noted in a 27 December statement.

"However, these contracts will supplement, if needed, the near-real time imagery that has been consistently available to scientific researchers and land managers since 1972. In the meantime, the USGS-operated Landsat 7 still collects daily imagery around the world, and the satellite has sufficient fuel to continue collecting data until 2017. However, the quality of Landsat 7 imagery is partially compromised for some applications."

If both Landsat 5 and 7 fail prior to the launch of Landsat 8, there would be a Landsat data gap for the first time since 1972, according to USGS.

"Other than Landsat 8, no current or planned satellite mission is designed to duplicate the spectral content and temporal global coverage provided by Landsat," Matthew Larsen, USGS associate director for climate and land use change, told *Eos*. "At best, data acquired from two or more other satellite systems (most likely foreign) would be needed to partially mitigate a Landsat data gap."

Larsen echoed that "there is no substitute for Landsat data." He added, "USGS has evaluated many civil, commercial, and foreign data sets and found that none of them meets the

basic requirements of the Landsat program." Regarding specific contracts, he noted that USGS has established a contract with Astrium Services to provide Satellite Pour l'Observation de la Terre (SPOT) 4 and 5 data over the United States, although nine SPOT scenes are required to fill the area of a single Landsat scene, and SPOT lacks a thermal sensor and the full range of Landsat multispectral data. USGS also will be reestablishing contracts with other commercial vendors, such as GeoEye and Digital Globe, to purchase data to augment Landsat data, Larsen said, adding that none of the contracts will affect current USGS data policy of providing Landsat data at no cost and with no user restrictions.

Landsat 5 currently is undergoing an initial 90-day image-suspension period that will end in mid-February; this is allowing the satellite's flight operations team to explore options for restoring Landsat 5 operations. The team already has attempted several measures to repair the satellite. A remaining task is to try to restart the multispectral scanner (MSS) instrument on board the satellite. "The current plan is to resume Thematic Mapper (TM) imaging in time to support, for as long as possible, 2012 growing season activities in the Northern Hemisphere," Larsen said. "If TM imaging is not possible but MSS images can be captured, the Landsat 5 mission could conceivably continue through 2013, after which the satellite's fuel supply is projected to be expended."

—RANDY SHOWSTACK, Staff Writer