

Obama, Congress To Shut Landsat's Eyes

by Marsha Freeman

Feb. 18—For the past 40 years, the Landsat series of Earth remote-sensing satellites, a direct spinoff of President John F. Kennedy's "science driver" mission to the Moon, has provided farmers, hydrologists, urban planners, natural resource experts, disaster responders, law enforcement agencies, and dozens of other kinds of experts, with vital data that could only be obtained from space. Using the images created from the data collected by sensors aboard Landsat satellites, the conditions for potential outbreaks of disease in Africa have been identified from Earth orbit. Drug-traffickers in Ibero-America have been apprehended, using Landsat data identifying the cultivation of illicit crops, and the location of the laboratories processing them. Warnings to farmers of too little rain, or too much, and of stress on crops from pests or disease, have greatly increased the productivity of food production.

One key to the success of Landsat has been the continuity of images, which has created a multi-decade time sequence of changes on the man-altered Earth. With this record of achievement, and incalculable economic benefit, it would seem inconceivable that the availability of Landsat data could be under threat. But under President Obama and a complicit Congress, there is the proposed sabotage of this critical capability.

The fiscal year 2013 budget that the Administration released on Feb. 13 threatens to create a gap in Landsat data, for the first time in its history. Currently, Landsat 5, launched in 1984, and Landsat 7, launched in 1999 are, remarkably, still operational, although data collection from Landsat 5 was halted in November, due to technical problems. The next in the series, Landsat 8, is scheduled for launch next January, an incredible 14 years after the previous one. If we are lucky, Landsat 7, already years past its design life, will not fail before then. Since it takes five or six years to design, engineer, build, and launch a satellite, the

focus now must be an intensive effort to ready the follow-on, Landsat 9.

Instead, the Obama Administration proposed last year to disrupt the highly successful management of the program, with NASA building and launching the satellites, and the U.S. Geological Survey (USGS), under the Department of the Interior, managing the data processing, archiving, and distribution of the images. The White House proposed a \$48 million budget to remove Landsat from NASA and create a new agency in the Interior Department to handle the program. Instead, the Congress appropriated \$2 million, for Landsat 9 "studies," with the instruction that a cheaper way of collecting the data be found.

For FY13, the White House did the Congress one better—it is requesting *one-eighth* of last year's funding level, or \$250,000, for Landsat 9 studies, with *no* apparent perspective of ever actually building the satellite. The possibility that collection of Earth remote-sensing data from Landsat will continue without interruption is getting dimmer and dimmer.

A History of Failed Policies

This is not the first time Landsat has been under threat of extinction. Its history is a prime example of the most vicious disregard for the welfare and economic well being of the population of the United States, and the world.

The first Landsat satellite, launched in 1972, was developed by NASA as a spinoff from the remote-sensing technology that was used on the unmanned Ranger spacecraft that looked for sites for the Apollo manned landings on the Moon. The idea for this application was a result of photography experiments carried out by astronauts during the 1960s Mercury, Gemini, and early Apollo Earth orbital missions. Studying the photos taken by the astronauts, scientists at the USGS saw the utility of looking at the resources of the Earth, from space. In 1975, NASA Administrator Dr. James Fletcher predicted that if there were one space-age development that would "save the world," it would be Landsat.

The initial application for Earth remote sensing was the monitoring of agriculture. With the ability to image croplands at a half-acre resolution, a farmer could see in one image what it would take him days to examine on the ground. Beyond the visible, Landsat can "see" in the infrared, measuring subtle changes in the temperature



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The Landsat satellites have, for 40 years, provided data and imagery invaluable to farmers, hydrologists, law enforcement agencies, and others. Now, the program is jeopardized by the budget axe. Shown: an artist's concept of a Landsat satellite.

of the soil and crops, alerting the farmer to changes in soil moisture and plant health. Since the 1970s, advances in sensor technology have added water resource, natural resource, and many other applications to its abilities.

But a mere seven years after the first Landsat launch, President Jimmy Carter (1977-81) signed Presidential Directive 54, instructing that Landsat become a “commercial” system. In 1981, the free-market Reagan Administration accelerated and implemented this misguided policy, slashing the FY81 Landsat budget, eliminating funding for Landsats 6 and 7.

In 1984, Congress passed the Land Remote-Sensing Commercialization Act; under that measure, even NASA R&D for more advanced sensors for proposed future commercial satellites was slated for elimination. Under this commercialization scheme, the purchase and operation of the satellites, and the marketing of the data, was turned over to Eosat (Earth Observation Satellite Company).

Finally, in 1992, when the price of images had increased from \$650 to \$4,400, so Eosat could make a

profit, and predictably, the customer base shrank proportionately, Congress passed the Land Remote Sensing Policy Act, which repealed the 1984 law, and turned the funding and development of the next satellite back to NASA.

But as a result of this sabotage, it took nine years to launch Landsat 6 (which launch actually failed), inviting the possibility of a gap in coverage. Landsat 5 was designed with a five-year lifetime, and no replacement for the failed Landsat 6 was in the pipeline. It is only by the stroke of good fortune, and “over-engineering,” that Landsat 5, launched in 1984, continued to function during this launch hiatus. It was 1999 before the follow-on satellite was launched. And Landsat 7, launched more than a dozen years ago, is, almost miraculously, still functioning today.

The George H.W. Bush Administration pushed this policy even one step further in 1989, by trying to eliminate the measly \$9 million

needed to continue to operate the already orbiting satellites, instructing that the two operating Landsat satellites be shut down. An uproar from both domestic and foreign users of the data reversed this proposal. The 1992 law provided funding for the next, Landsat 7 satellite, and in 2001, the privately owned satellites were finally turned back to the U.S. government. The USGS then priced the images at their cost, and in 2008, a new policy made Landsat images available free of charge.

Now, we are faced, once again, with the possibility that we will lose the continuity of four decades of remote-sensing data and images. There is no rational excuse for this. Even using the most sense-certainty-based cost-benefit criteria to evaluate the effectiveness of the Landsat program, it has paid for itself many times over, by providing data needed for myriad applications.

Only policymakers who believe that man’s most advanced technologies should be denied to the world’s population—and millions be left to die at the mercy of the elements—can support such a suicidal policy.