

LANDSAT



For more than 45 consecutive years, Landsat satellites have enabled us to monitor our changing planet, creating an archive unmatched in quality, detail, coverage and length. Ball Aerospace contributes to this multispectral imagery by providing highly calibrated data from our Operational Land Imager (OLI) instruments.



*Pribilof Islands, Alaska, Landsat 8
(Credit: USGS/NASA Landsat)*



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Overview

The Landsat program is a series of Earth-observing satellite missions jointly managed by NASA and the U.S. Geological Survey. The program enables the nation to manage its natural resources effectively, including making routine drought assessments; planning fire prevention; monitoring land changes; effectively planning land uses; and understanding the Earth's ecosystem.

Our Role

Operational Land Imager

Ball built OLI for Landsat 8 and delivered OLI-2 for Landsat 9 on schedule and under budget. These instruments represent significant advancements in Landsat sensor technology. The instrument's sensitivity ultimately provides improved land surface information with fewer moving parts. OLI's 14-module detector array enables it to scan with a push-broom method rather than the older sweeping method. The OLI instrument provides 15-meter (49 ft.) panchromatic and 30-meter (98 ft.) multi-spectral spatial resolutions along a 185 km (115 miles) wide swath, allowing the entire globe to be imaged every 16 days.

Thermal Infrared Sensor Cryocooler

In addition to OLI, we provided the Thermal Infrared Sensor (TIRS) cryocooler for Landsat 8 and delivered the TIRS-2 cryocooler for Landsat 9. The cryocooler chills the TIRS instrument's infrared photodetectors to a frigid 40 Kelvin. Radiometric performance from OLI and TIRS represent substantial improvements over previous Landsat sensors.

Sustainable Land Imaging-Technology Program

Together, with NASA's Sustainable Land Imaging-Technology program, we are leveraging our expertise in earth observation technologies to reinvent the future of land imaging, delivering sustainable, reliable and continuous data for many years to come. NASA's Earth Science Technology Office (ESTO) selected two Ball proposals for development and demonstration: the Compact Hyperspectral Prism Spectrometer (CHPS) and the Reduced Envelope Multi-Spectral Imager (REMI). Both programs aim to maintain continuity of the Landsat data record and provide flexibility for new technology insertion while reducing program costs.

Quick Facts

- OLI's sensitivity ultimately provides improved land surface information with fewer moving parts
- OLI is designed as a push-broom sensor with a four-mirror telescope and collects data in the visible, near infrared and shortwave infrared, as well as a panchromatic band
- OLI also provides two spectral bands that allow for coastal water and aerosol studies and cirrus cloud detection
- Landsat 8 launched February 11, 2013, from Vandenberg Air Force Base aboard an Atlas V
- Landsat 8 is required to return 400 scenes per day but has averaged 725 scenes per day



*Operational Land Imager (OLI)-2;
Thermal Infrared Sensor (TIRS) Cryocooler.*



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