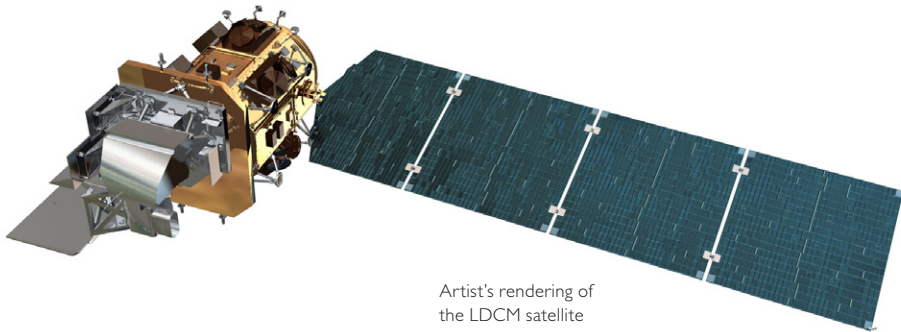




Landsat Data Continuity Mission (LDCM)

Earth Image Collection Satellite



Artist's rendering of the LDCM satellite

Mission Description

The Landsat Data Continuity Mission (LDCM) is a joint mission being formulated, implemented, and operated by the National Aeronautics and Space Administration (NASA) and the Department of Interior (DOI) United States Geological Survey (USGS) that builds upon previous Landsat missions. The LDCM is a remote sensing satellite mission providing coverage of the Earth's land surfaces, collecting multi-spectral land images, including infrared. LDCM will continue the more than 30 years of global data collection and distribution of the Earth's continental surfaces by the Landsat series of satellites to support global change research and applications. This data constitutes the longest continuous record of the Earth's surface as seen from space.

Spacecraft

Orbital is responsible for the design and manufacture of the LDCM spacecraft bus, the integration of the customer-furnished payload instruments, and full observatory testing, including environmental and EMI/EMC. To meet the performance and schedule challenges, a simple, robust design was utilized based on Orbital's flight-proven LEOStar-3 standard bus. This ensures that LDCM will continue the Landsat heritage, obtaining unique and valuable data and imagery to be used in agriculture, education, business, science, and government.

QUICK FACTS:

- LDCM will provide data continuity following Landsat 5 and 7
- 705 km Low Earth Orbit mission
- Simple, easily integrated design based on Orbital's flight-proven LEOStar-3 standard modular spacecraft architecture that reduces assembly and test cycle times
- Moving mechanisms were eliminated to improve reliability, simplify operations, and ensure service to the International Cooperators
- Landsat data products are available for free to the general public from the USGS, enabling a broad scope of scientific research and land management applications. Go to <http://landsat.usgs.gov/index.php>

Customer:

NASA Goddard Space Flight Center - Greenbelt, MD



LDCM is being designed, built, and tested at Orbital's 135,000 square foot satellite manufacturing and test facility in Gilbert, AZ.

LDCM Space Observatory

Specifications

Spacecraft

Launch Mass:	NTE 3085 kg (6801 lbm)
Solar Arrays:	Triple-junction GaAs cells, 3750 W EOL
Orbit:	705 km circular @ 98.2°
Stabilization:	3-axis, zero momentum bias, nadir pointing
Pointing Stability:	6.02 microradians
Data Storage:	4000 Gbits BOL
Data Downlink:	X-band, 384 Mbps (over two channels)
Propulsion:	395 kg (870 lbm) of blowdown monopropellant hydrazine with eight (8) 22N thrusters
Design Life:	5.25 years, 10 year goal

Instruments

Operational Land Imager (OLI)

The OLI collects land-surface data in the visible and near-infrared spectra, and features two additional spectral channels: one for coastal and aerosol studies, and another for cirrus cloud detection.

Thermal InfraRed Sensor (TIRS)

TIRS coincidentally collects data for two longwave (thermal) spectral bands not imaged by the OLI.

Launch

Launch Vehicle:	Atlas V - 401
Launch Site:	Vandenberg Air Force Base, CA
Date:	Early 2013

Key Mission Partners

Orbital Sciences Corporation

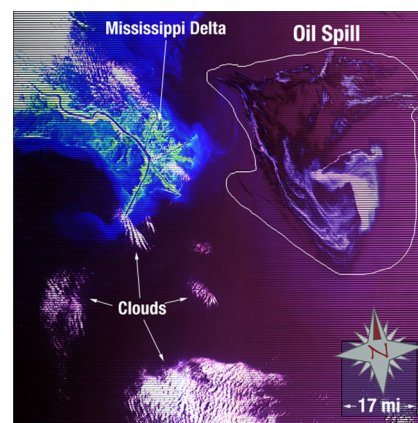
Prime contractor: Spacecraft design, observatory integration and test, launch and mission operations support

NASA/GSFC

Procuring agency, project/contract management, provision of payload instruments

United States Geological Survey (USGS)

Data processing and archiving, ground systems management, mission operations



The 2010 Gulf oil spill as seen from Landsat 7



The 2010 Haiti earthquake as seen from Landsat 5

LDCM: Continuing the Landsat Legacy

Because of Landsat's long history and unparalleled data record, data continuity with prior Landsat missions is paramount because the two most recent Landsat observatories, Landsat 5 and 7, have far exceeded their design lifetimes and are operating with degraded performance. NASA chose Orbital as their LDCM spacecraft partner in consideration of Orbital's legacy of exceptional performance and short delivery times.

The LDCM mission is charged with collecting data sufficiently consistent with data from early Landsat satellites to allow comparisons for regional and global change detection. LDCM has two new spectral bands, one tailored especially for detecting cirrus clouds and the other for coastal zone observation. Additionally, LDCM will return more than twice as many scenes per day than Landsat 7, increasing the probability of capturing cloud-free scenes of the global landmass.