Landsat Data Continuity Mission

Improving and expanding an unparalleled record of Earth’s changing landscapes...for everyone’s benefit.

NASA and USGS Partnership for Mission Excellence
LDCM will be a free-flyer satellite, acquired and launched by NASA, and thereafter operated by USGS in accordance with the December 23, 2005 directive from the U.S. Office of Science and Technology Policy.

NASA leads
- Development of space segment—spacecraft and instrument(s)
- Mission systems engineering
- Pre-launch calibration
- Launch
- In-orbit check-out of space segment

USGS leads
- Development of ground segment
- Post-launch calibration
- Satellite operations
- Data product generation
- Data archiving
- Landsat science team

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About the cover: An EO-1 image of San Diego area fires collected on October 23, 2007.
Operational Land Imager (OLI)

The Operational Land Imager (OLI) improves on past Landsat sensors. OLI uses a technical approach demonstrated by a sensor used on NASA’s experimental EO-1 satellite.

About OLI
- Push-broom VIS/SWIR sensor
- Four mirror telescope
- 12-bit quantization

Data unmatched in quality, detail, coverage and value

The spectral, geometric, and radiometric quality of Landsat’s imagery is unsurpassed, and its coverage across several key spectral bands is unique among the world’s satellites. This consistently high quality is made possible by continuous improvements in technical quality of the Landsat instruments.

Data Record

Pixel by pixel, consistently gathering data about our planet

Consistency in data acquisition, format, geometry, spatial resolution, calibration, coverage, and spectral characteristics is critical for the continued success of the Landsat program, and forms the basis for the LDCM requirements.

Recording the entire global land surface, every season, every year

The U.S. Landsat archive provides the world’s longest, continuous global record of changes on Earth’s land surface, beginning in 1972. This valuable data resource is managed by the U.S. Geological Survey Earth Resources Observation and Science (EROS) Center.

New USGS Data Policy

USGS will now process any Landsat archived scene selected by a user at no charge to a standard product recipe, and stage it for electronic retrieval.

LDCM will build on the existing archive, and ensure continued availability of the entire suite of Landsat data.

ETM+ and OLI Spectral Bands

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<th>L7 ETM+ Bands</th>
<th>LDCM OLI Band Requirements</th>
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<td>30 m, Coastal/Aerosol, 0.433-0.453 µm (*A) Band 1</td>
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<td>Band 2 30 m, Green, 0.525 - 0.690</td>
<td>30 m, Blue, 0.450-0.515 µm Band 2</td>
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<td>Band 3 30 m, Red, 0.630 - 0.660</td>
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<td>Band 4 30 m, Near-IR, 0.770 - 0.900</td>
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<td>Band 5 30 m, SWIR-1, 1.550 - 1.750</td>
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<td>Band 6 60 m, LWIR, 10.00 - 12.50</td>
<td>N/A (*B) Band 6</td>
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<td>Band 7 30 m, SWIR-2, 2.090 - 2.350</td>
<td>N/A</td>
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<tr>
<td>Band 8 15 m, Pan, 0.520 - 0.900</td>
<td>30 m, SWIR-2, 2.100-2.300 µm Band 7</td>
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<tr>
<td>Band 9 15 m, Pan, 0.520-0.680 µm</td>
<td>15 m, Pan, 0.500-0.680 µm Band 8</td>
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<tr>
<td>Band 9 30 m, Cirrus, 1.380-1.390 µm (*C)</td>
<td>30 m, Cirrus, 1.380-1.390 µm Band 9</td>
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* Explanation of Differences
A. Coastal Band added at request of ocean color investigators requiring higher resolution of coastal waters relative to MODIS and SeaWiFS
B. NASA is considering the addition of a Thermal Infrared Sensor (TIRS) to the LDCM payload; two spectral bands, 120 m spatial resolution
C. Cirrus Band added to detect cirrus contamination in other channels. Bandwidth refinements made to avoid atmospheric absorption features (enabled by the higher signal-to-noise ratio inherent in push-broom instrument architecture)