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Landsat Data Continuity Mission (LDCM)

Data Policy

December 10, 2002

I. INTRODUCTION

This document establishes policy for acquiring, archiving, and distributing land remote sensing data and data products purchased, licensed, or otherwise procured by the United States Government for the Landsat Data Continuity Mission (LDCM). The LDCM is being planned to succeed Landsat 7. Section 401 of Public Law 102-555, The Land Remote Sensing Policy Act of 1992, directs Landsat Program Management to assess options for successor missions to Landsat 7 that "encourage the development, launch, and operation of a land remote sensing system that maintains data continuity with the Landsat system." Presidential Decision Directive NSTC-3 (signed May, 1994 and revised October 16, 2000) directs the National Aeronautics and Space Administration (NASA) and the Department of the Interior's (DOI) United States Geological Survey (USGS) to work together "and with other relevant agencies to develop a strategy for maintaining continuity of the Landsat-type data beyond Landsat 7 that is consistent with each agency's expertise and mission." NASA and DOI/USGS are implementing these laws and directives through the LDCM.

Section 401 of Public Law 102-555 also states that "preference should be given to the development of such a system by the private sector" in reference to the Landsat 7 successor system. Since these data are not readily available for procurement from the commercial market, NASA and DOI/USGS intend to purchase or license these data through a government-industry cooperative procurement, in accordance with this guidance. It is NASA's and DOI/USGS's intent that the remote sensing system acquiring these data will be privately owned and privately operated.

II. SCOPE

This Policy is applicable to the user community, both government agencies involved in LDCM (NASA and DOI/USGS), and the developer/owner/operator of the LDCM remote sensing system (hereinafter referred to as the LDCM Contractor). The intent of this Policy is to define the protections, limitations, and rights of the user community, the Government, and the LDCM Contractor related to all data acquired by the remote sensing system supplying LDCM data, to data products that may be produced by the Government or the LDCM Contractor, and to the distribution of these data and data products. The characteristics of individual LDCM Data Products are defined in the LDCM Data Specification.

III. POLICY GOALS

The LDCM Data Policy defines and promotes NASA and DOI/USGS goals for the LDCM. To ensure continuity, this Policy also extends the relevant goals of the Landsat 7 Data Policy.

The following goals were originally established in Section 105 of Public Law 102-555:

1. "Ensure that unenhanced data are available to all users at the cost of fulfilling user requests;"

2. "Ensure timely and dependable delivery of unenhanced data to the full spectrum of civilian, national security, commercial, and foreign users and the National Satellite Land Remote Sensing Data Archive;"

3. "Support the development of the commercial market for remote sensing data;" and

4. "Ensure that the provision of commercial value-added services based on remote sensing data remains exclusively the function of the private sector."

It is noted that the National Satellite Land Remote Sensing Data Archive (NSLRSDA) is operated by the DOI/USGS for the U.S. Government.

NASA and DOI/USGS have three additional goals:

5. To minimize the price of LDCM Data Products to promote their use by the broadest group of users,

6. To promote the free and open redistribution of unenhanced LDCM data products purchased by users, and

7. To continue the Landsat 7 data acquisition strategy for the LDCM.

The LDCM data acquisition specifications are based on continuing the Landsat 7 global-acquisition strategy. Landsat 7 operates as a global survey mission, and as such is based on a long-term data acquisition, archive, and distribution strategy to provide systematic, seasonal, global coverage of the Earth's land mass. This strategy is in contrast to a single-user focused acquisition strategy that solely fulfills individual user data requests.

IV. DEFINITIONS

Land Remote Sensing:

> Public Law 102-555 defines "land remote sensing" as: "…the collection of data which can be processed into imagery of surface features of the Earth from an unclassified satellite or satellites, other than an operational United States Government weather satellite."

Landsat Program Management:

> Landsat Program Management consists of the Administrator of NASA and the Secretary of the Interior. The October 16, 2000 Amendment to Presidential Decision Directive/NSTC-3 states that "the Secretary of the Interior and the Administrator of NASA are hereby designated as members of the Landsat Program Management in accordance with section 101(b) of the Land Remote Sensing Policy Act of 1992." The Amendment further assigns NASA and DOI/USGS the responsibility for "maintaining continuity of Landsat-type data beyond Landsat 7" under direction of Landsat Program Management.

LDCM Contractor:

> The LDCM Contractor is the private owner of the remote sensing system from which NASA and DOI/USGS intend to purchase and/or license land remote sensing data for the LDCM. This private organization will be selected competitively through a joint NASA-USGS procurement.

LDCM Sensors:

> LDCM Sensors are the contractor-owned instruments that acquire and generate the land remote sensing data that will be procured by NASA and DOI/USGS under the LDCM.

LDCM Sensor Data:

> LDCM Sensor Data are the originally measured detector or detector column output counts at the native spatial and spectral resolution from the LDCM Sensor(s), possibly adjusted by reversible offset and scale corrections. A detector column is a set of physical detectors imaging the same spatial locations.

Wideband Data:

> The Wideband Data are the downlinked data containing LDCM sensor data and ancillary data that may have been processed and formatted for efficient data transmission. Examples of wideband data processing steps for LDCM purposes include lossless compression, error detection and correction coding, pseudo-noise encoding, etc. Examples of wideband data formatting include packet and frame-level organization of the LDCM sensor and ancillary data.

Ancillary Data:

> Ancillary Data consist of satellite and sensor housekeeping data, calibration data and any other supplementary data required to generate the specified higher-level data products. Ancillary data typically include relevant instrument parameters, spacecraft attitude and ephemeris, etc.

Metadata:

Metadata are descriptive information about a scene and the parent sub-interval that provides a user with geographic coverage, date of acquisition, sun angles, cloud cover, gain states, and other quality measurements.

Level 0 Digital Image Data:

Level 0 Digital Image Data are LDCM Sensor Data that have undergone Level 0 processing.

Level 0 Processing:

Level 0 Processing is the processing of the wideband data that removes or corrects all transmission and formatting artifacts, provides time, spatial, and band sequential ordered LDCM Sensor Data and all specified ancillary data and/or metadata as output.

Unenhanced Data:

Public Law 102-555 defines unenhanced data as: "…land remote sensing signals or imagery products that are unprocessed or subject only to data preprocessing."

Preprocessing:

Preprocessing includes the steps that may be applied to Level 0 Digital Image Data including radiometric correction, geometric correction, and/or geolocation, to prepare for delivery to an archive or to generate unenhanced data products.

Public Law 102-555 states that "the term 'data preprocessing' may include –

(A) rectification of system and sensor distortions in land remote sensing data as it is received directly from the satellite in preparation for delivery to a user;

(B) registration of such data with respect to features of the Earth; and

(C) calibration of spectral response with respect to such data, but does not include conclusions, manipulations, or calculations derived from such data, or a combination of such data with other data."

Level A Digital Image Data:

Level A Digital Image Data are the Level 0 image data that have been aggregated to LDCM-specified ground sample distances and may have undergone radiometric preprocessing.

LDCM Data Packages:

LDCM Data Packages are data sets produced by the LDCM Contractor and delivered to the USGS Earth Resources Observation System (EROS) Data Center (EDC).

Active Archive Data Package:

Active Archive Data Packages consist of Level A Digital Image Data and/or Level 0 Digital Image Data, and associated metadata and ancillary data for the LDCM scenes delivered to the USGS/EDC Active Archive by the LDCM Contractor.

NSLRSDA Data Package:

The NSLRSDA Data Package consists of Level 0 Digital Image Data, metadata, and ancillary data delivered to NSLRSDA by the LDCM Contractor.

LDCM Data Products:

LDCM Data Products are produced from LDCM Data Packages and distributed in accordance with this Data Policy.

- Level 0 LDCM Data Products contain Level 0 Digital Image Data and corresponding metadata and ancillary data. Level 0 LDCM Data Products may be proprietary and therefore subject to limited distribution.

- Level 1 LDCM Data Products contain preprocessed Level 0 or Level A Digital Image Data, and their corresponding metadata and ancillary data. Level 1 LDCM Data Products include Level 1R, 1Gs, 1Gp, 1G-ortho, and 1Gt Data Products. Level 1 LDCM Data Products meet the definitions of unenhanced data products and are in the public domain.

National Satellite Land Remote Sensing Data Archive (NSLRSDA):

Public Law 102-555 defines the "National Satellite Land Remote Sensing Data Archive" as: "…the archive established by the Secretary of the Interior pursuant to the archival responsibilities defined in section 502." NSLRSDA is currently managed by DOI's USGS EROS Data Center.

Section 502 states: "The Secretary of the Interior, in consultation with the Landsat Program Management, shall provide for long-term storage, maintenance, and upgrading of a basic, global, land remote sensing data set (hereinafter referred to as the 'basic data set') and shall follow reasonable archival practices to assure proper storage and preservation of the basic data set and timely access for parties requesting data." It further states that "after the expiration of any exclusive right to sell, or after relinquishment of such right, the data provided to the National Satellite Land Remote

Sensing Data Archive shall be in the public domain and shall be made available to requesting parties by the Secretary of the Interior at the cost of fulfilling user requests."

Value-Added Data Products:

Value-added data products are any products derived from LDCM Data Products processed or otherwise enhanced beyond the steps defined above as "preprocessing."

V. LDCM DATA

NASA and DOI/USGS will specify the characteristics and quantity of data required to maintain Landsat data continuity, as directed by Public Law. Under the LDCM procurement, the Government will either purchase or license data on terms consistent with this policy. The LDCM Contractor shall deliver these data to the Government in the form of LDCM Data Packages. The LDCM Contractor may use these data for commercial purposes.

NASA and DOI/USGS will require archival of the delivered NSLRDSA Data Packages to ensure long-term continuity with existing Landsat data in NSLRSDA.

NASA and DOI/USGS will require delivery of the Active Archive Data Packages to the USGS/EDC Active Archive. The general public will be able to search this active archive for the purposes of selecting and ordering Level 1 LDCM Data Products. Such access will be provided in a manner that maximizes efficiency, such as via the Internet or other global network.

NASA and DOI/USGS will require access to, and/or distribution of, Level 0 Digital Image Data to designated officials and employees of the two agencies and their Government contractors and consultants, all subject to appropriate safeguards against unauthorized use or disclosure, for the purposes of assuring data and data product quality and accuracy, performing sensor calibration and data validation, troubleshooting problems with the data, correcting problems in data processing, etc. The U.S. Government will not publicly distribute proprietary Level 0 Digital Image Data without NASA, the DOI/USGS, and the LDCM Contractor mutually agreeing to a wider distribution.

The provisions of this data policy and OMB Circular A-130 regarding proprietary Level 0 Digital Image Data are binding upon NSLRSDA.

VI. LDCM DATA PRODUCTS

NASA and DOI/USGS will specify the characteristics, quantity and format of LDCM Data Products required for the LDCM. Level 1 LDCM Data Products specified by NASA and DOI/USGS meet the definition of unenhanced data per Public Law 102-555.

Level 1 LDCM Data Products shall be available for distribution without restriction on a nondiscriminatory basis to all Landsat data users and the general public. NASA and DOI/USGS

will require distribution of these products at the lowest possible prices in a timely manner that facilitates the widest possible access, such as via the Internet or other global network.

Neither NASA nor DOI/USGS nor the LDCM Contractor shall place any restrictions, limitations, or constraints on the use, resale, secondary distribution, or sharing of Level 1 LDCM Data Products initially distributed to a third party consistent with Office of Management and Budget (OMB) Circular A-130.

Neither NASA nor DOI/USGS nor the LDCM Contractor shall impose licensing or royalty fees on any subsequent resale of Level 1 LDCM Data Products initially distributed to a third party in accordance with OMB Circular A-130.

Level 0 LDCM Data Products may be proprietary and thus not available for distribution to Landsat data users and the general public. The Government shall have timely access to Level 0 LDCM Data Products for the purposes of assuring data and data product quality and accuracy, performing sensor calibration and data validation, troubleshooting problems with the data, correcting problems in data processing, etc. Unless these data are in the public domain, access is limited to appropriate officers and employees of NASA and DOI/USGS and their Government contractors and consultants, all subject to appropriate safeguards against unauthorized use or disclosure. NASA, the DOI/USGS, and the LDCM Contractor may mutually agree to a wider distribution.

The Government will produce Level 1 LDCM Data Products in a timely manner following the placement of an order. The LDCM product distribution system will maintain or improve upon the performance of the current DOI/USGS-operated Landsat product distribution system, which is widely accepted by the Landsat data user community.

VII. PRICING

LDCM Data Products shall be provided at the lowest possible price. As a first principle, the price shall be no more than the cost of fulfilling a user request in accordance with OMB Circular A-130.

VIII. VALUE-ADDED DATA PRODUCTS

NASA and DOI/USGS will treat enhanced, value-added data products produced by private industry as proprietary commercial property.

NASA and DOI/USGS will impose no restrictions, limitations, conditions, or provisions on the sale and pricing of value-added data products generated by the LDCM Contractor using LDCM data.

Neither NASA and DOI/USGS, nor the LDCM Contractor will restrict, limit, or otherwise constrain the sale and pricing of value-added data products derived from non-proprietary LDCM Data Products by any third party.

Neither NASA and DOI/USGS nor the LDCM Contractor will impose licensing or royalty fees on any value-added data products derived from non-proprietary LDCM Data Products by any third party.

IX. OTHER DATA ACQUIRED OR PRODUCED BY THE LDCM CONTRACTOR

Land remote sensing data acquired by the LDCM Contractor beyond that purchased or licensed by NASA and DOI/USGS for the LDCM will be considered the LDCM Contractor's property and will not be subject to the policies contained herein for LDCM Data and LDCM Data Products.

NASA and DOI/USGS will impose no restrictions, limitations, conditions, or provisions on the sale and pricing of data acquired by the LDCM Contractor beyond that purchased or licensed by NASA and DOI/USGS. NASA and DOI/USGS will impose no restrictions, limitations, conditions, or provisions on the sale and pricing of data products derived from these data, with the exception of restrictions imposed by licensing under Title II of Public Law 102-555.

NASA and DOI/USGS will impose no restrictions, limitations, conditions, or provisions on the sale and pricing by the LDCM Contractor of unenhanced or enhanced data products that exceed NASA and DOI/USGS LDCM Data Specifications with respect to spatial, spectral, or temporal resolution.

X. INTERNATIONAL COOPERATORS

It is in the Government's interest to continue providing access to Landsat-type data for International Cooperators, particularly those who have received Landsat data in the past as members of the Landsat 5/Landsat 7 ground-station network. Such stations are typically government owned, non-profit entities.

XI. REFERENCES

- Landsat 7 Data Policy, February 9, 2000
- Presidential Decision Directive NSTC-3 (signed May, 1994 and revised October 16, 2000)
- Land Remote Sensing Policy Act of 1992

- LDCM Implementation Phase Data Specification
- Executive Office of the President, Data Management for Global Change Research Policy Statements, 1991
- OMB Circular No. A-16, Coordination of Surveying and Mapping Activities, 1990
- OMB Circular No. A-130, Management of Federal Information Resources, 1996
- LDCM Implementation Phase Acronym List and Lexicon
- United Nations Principles on Remote Sensing of the Earth from Space, United Nations Resolution 41/65, 3 December 1986.

APPROVED:

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