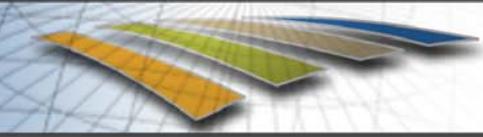


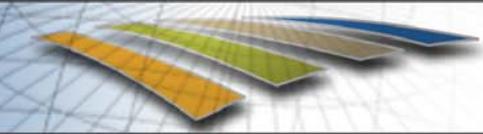
U.S Geological Survey Center for Earth Resources Observation and Science (EROS)



Mike Headley, PMP
USGS LDCM Project Manager
January 9, 2007

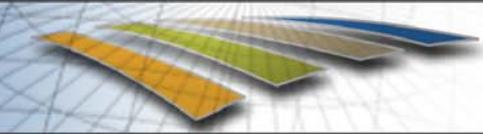
 Topics**LDCM**

- **USGS Center for EROS Overview**
- **EROS Support to the Landsat Program**
- **USGS LDCM Responsibilities and Ground System Requirements**

EROS Background**LDCM**

- Established in 1973 to support ERTS/Landsat
- Located 16 miles NE of Sioux Falls, SD on 318 acres; 300,000 sq ft. facility
- Central CONUS location supports earth resources satellite reception operations
- Staffed by 83 civil servants and 584 contract personnel
- Home to the National Satellite Land Remote Sensing Data Archive (NSLRSDA) and NASA's Land Processes Distributed Active Archive Center (LP DAAC)



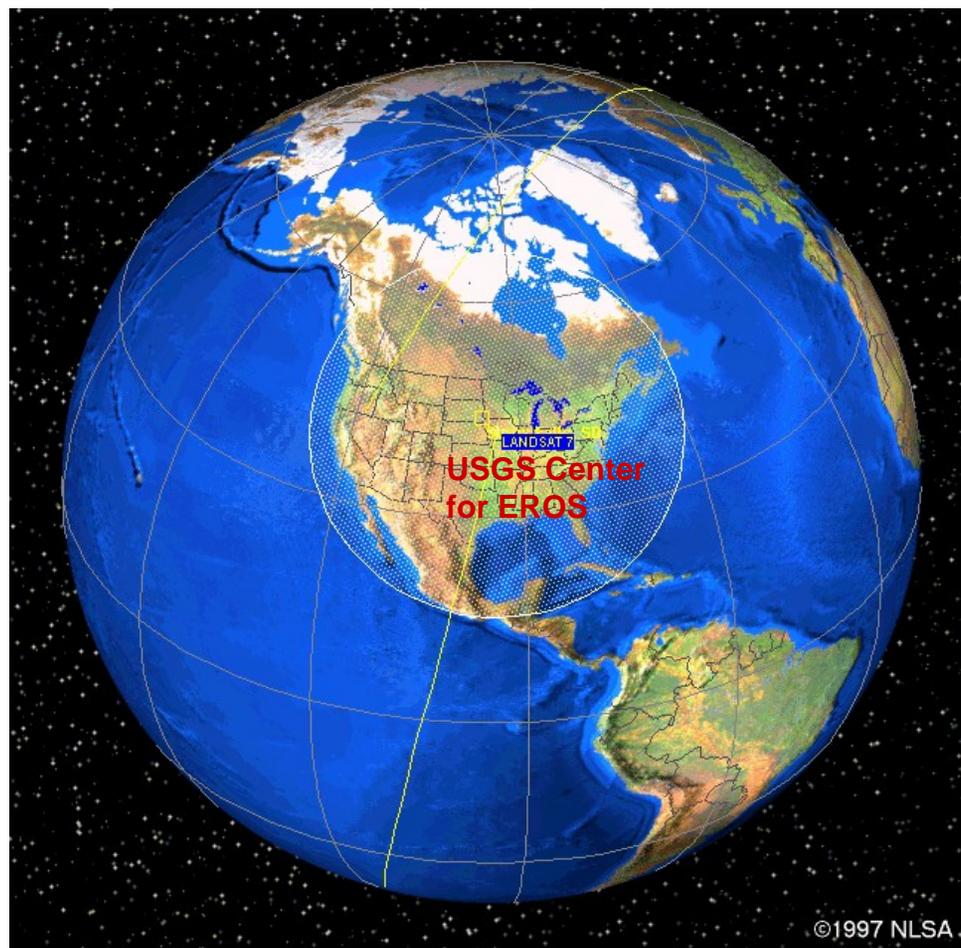
USGS Center for EROS Mission

LDCM

Science: To promote applications, uses, and knowledge of land information to better understand our planet

Data Access: To ensure that scientists, researchers, businesses, decision makers, and the public have ready access to land information

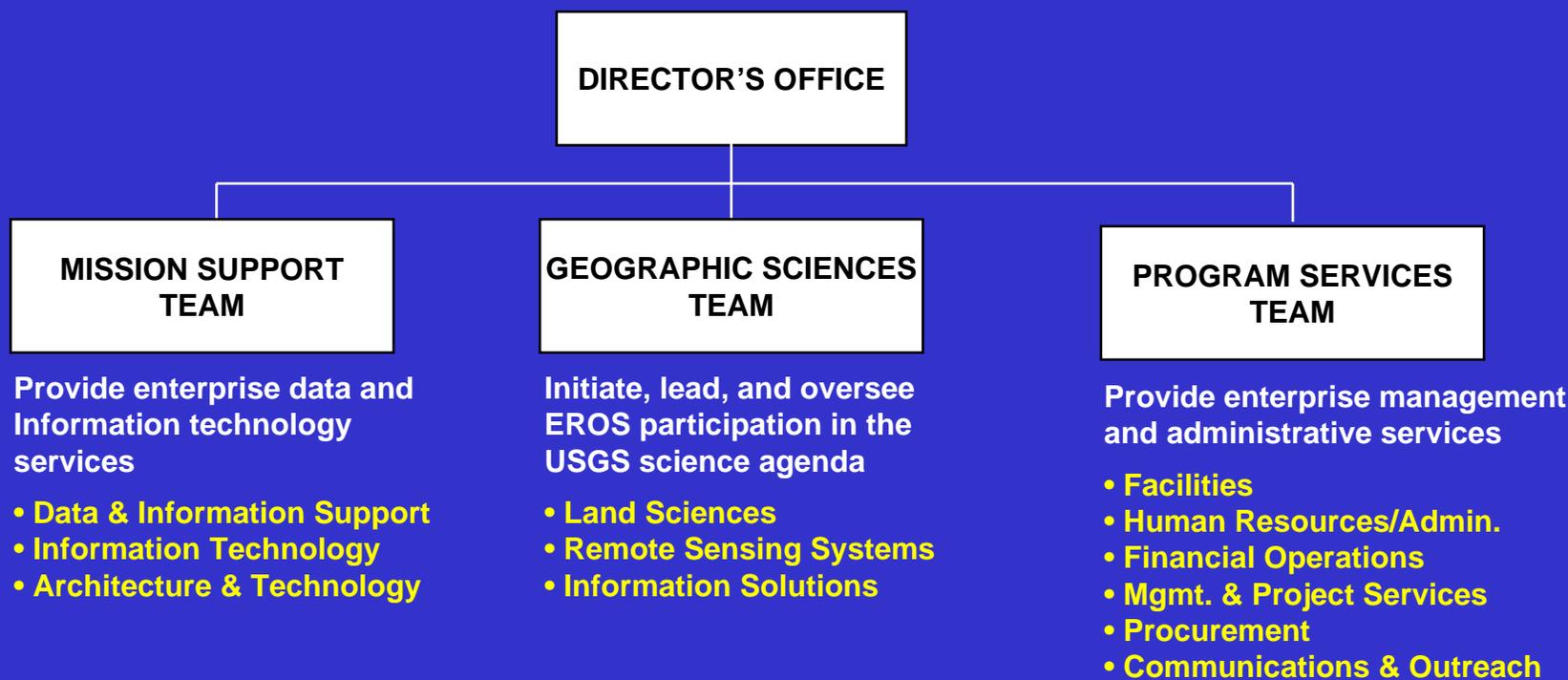
Data Archives: To safeguard and expand the national archive of remotely sensed land data

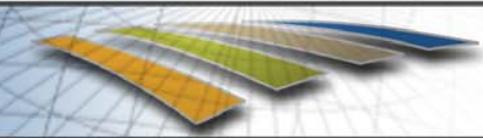


EROS USGS Organization

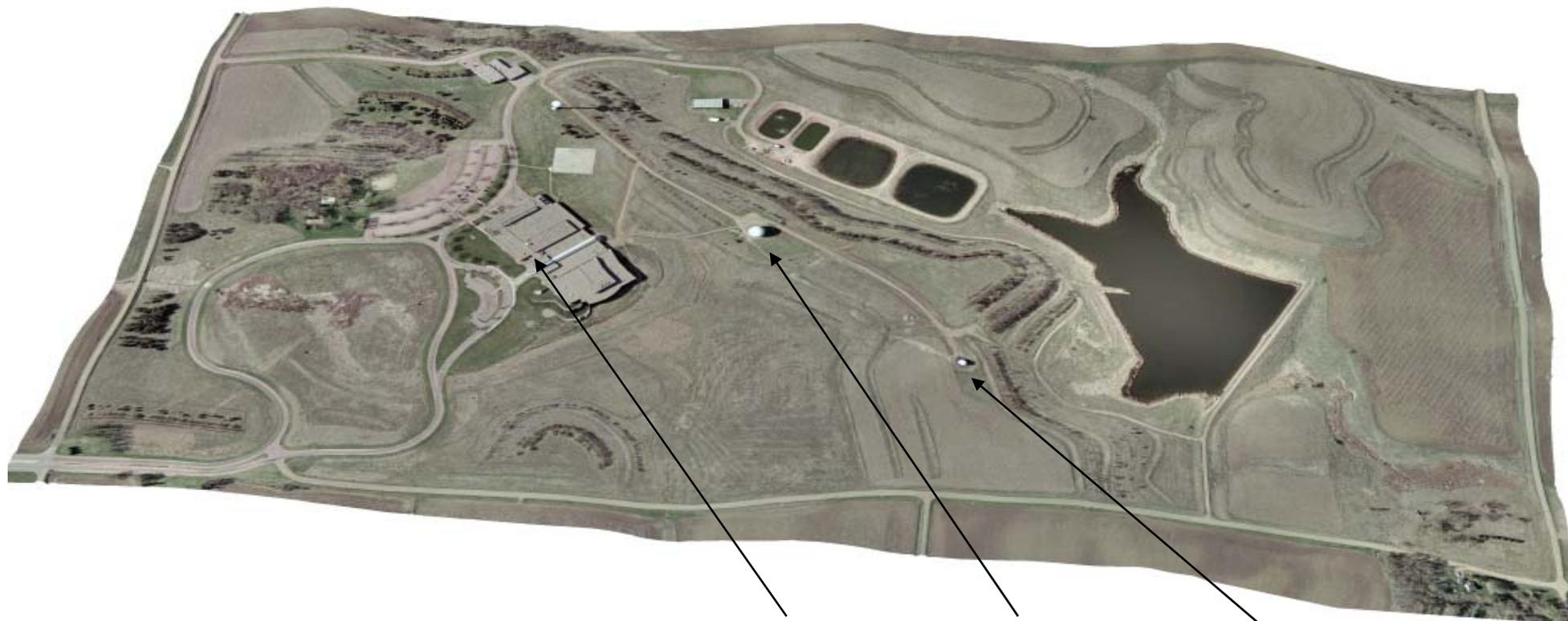
LDCM

EROS Government Organization



Current EROS Data Reception Antennas

LDCM



- **Three Full Motion Satellite Antennas (3M ViaSat / 10M Datron / 5.4M ViaSat)**
 - Initial site preparation work completed for an additional antenna

Archiving Earth Image Records

LDCM

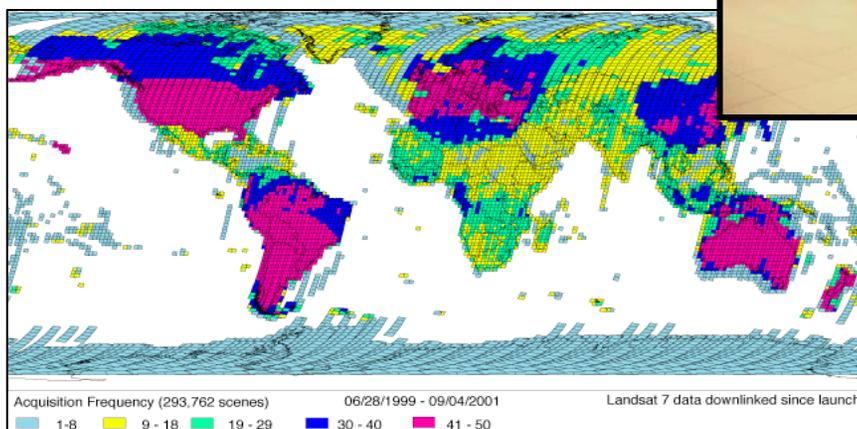
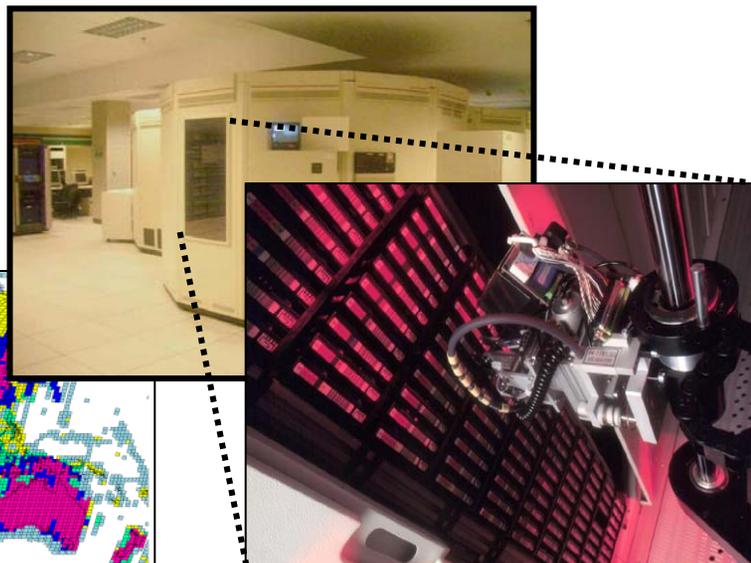
Film Archives

- 1939 to Present
- 24 Major Collections
- Multiple film formats/sizes
- Over 8.6 million frames



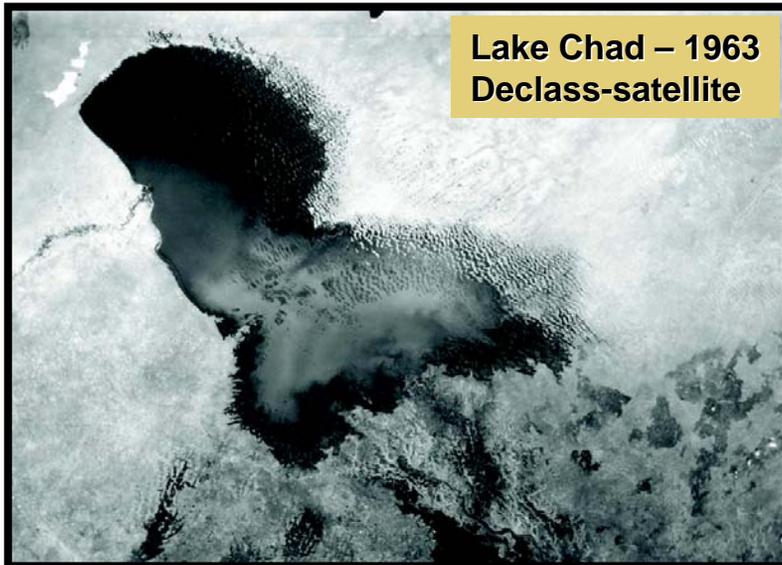
Digital Archives

- 1972 to Present
- 1 to 2 Terabytes / Day
- 2.8 Petabytes
- Over 21 million files



Earth Image Archive Depth

LDCM



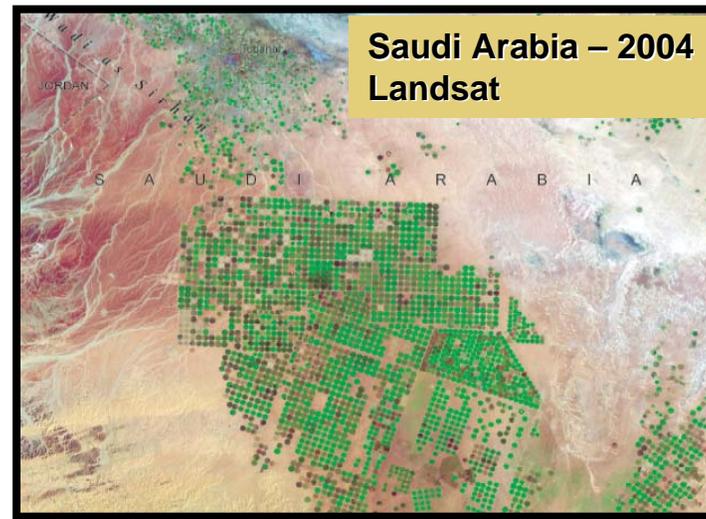
Lake Chad – 1963
Declass-satellite



New Orleans – 1980
Aerial



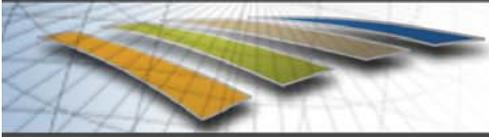
Washington D.C. – 2002
Aerial



Saudi Arabia – 2004
Landsat

EROS satellite operations activities

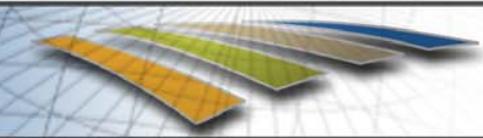
- **Ground station operations**
 - 19x7 operations schedule; 24x7 capable
 - X-band image data reception
 - S-Band TT&C communications
- **Active satellite data reception and processing missions**
 - Landsat 5 Thematic Mapper (TM)
 - Landsat 7 Enhanced Thematic Mapper (ETM+)
 - 1 Km AVHRR
- **Landsat 5 and 7 satellite operations**
 - Mission Operations Centers (MOCs) located in Maryland



Landsat Mission

LDCM

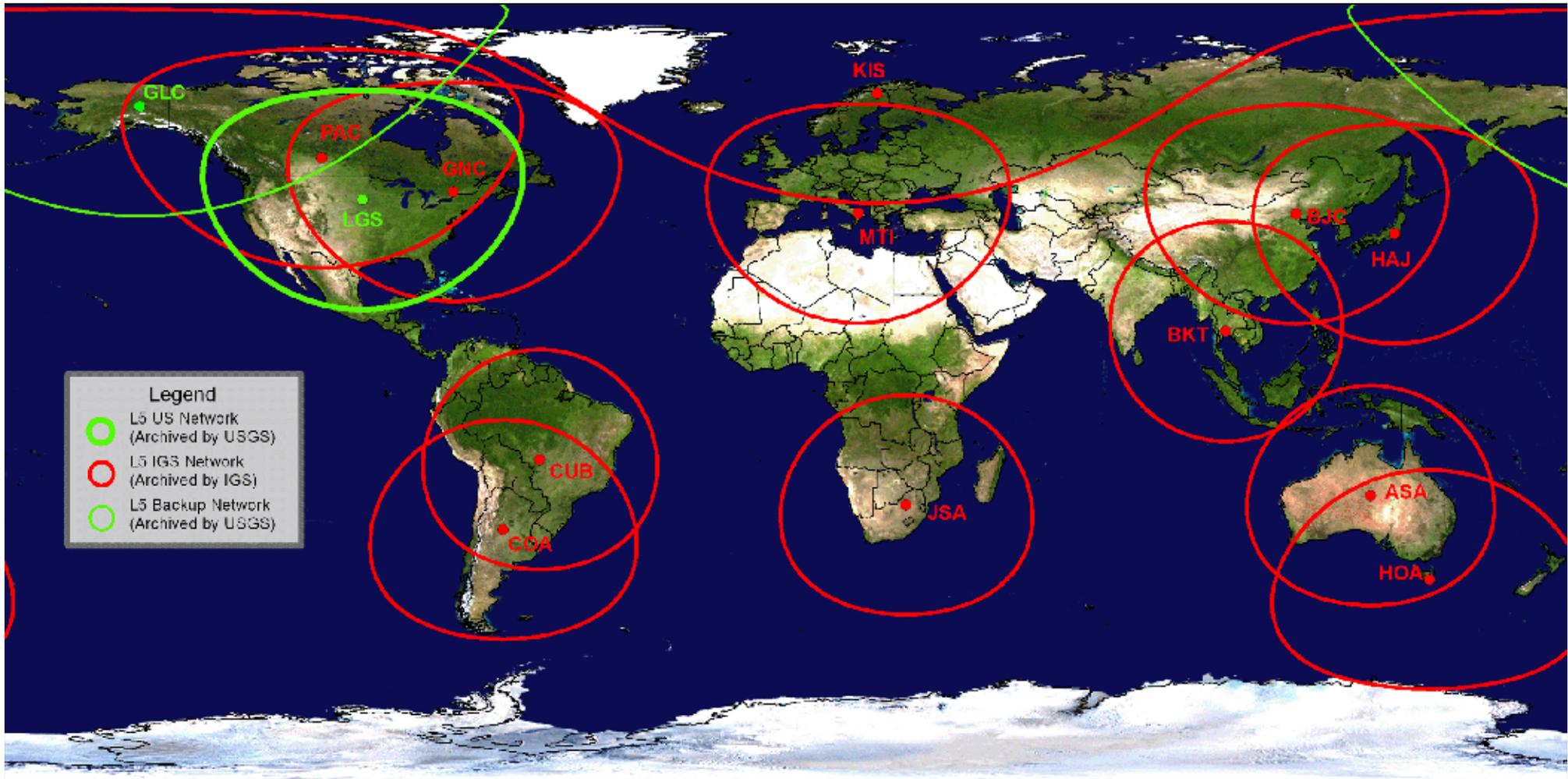
- **Ensure collection of consistently calibrated moderate resolution Earth science imagery**
 - Provide long term, repetitive observations of the Earth's land mass, coastal boundaries, and coral reefs
 - Detect and characterize natural and human induced change
- **Support applications in:**
 - Agriculture
 - Geology
 - Resource management
 - Mapping
 - Environmental monitoring and research

EROS Supports the Landsat Program Objectives**LDCM**

- **Maximize acquisition of global cloud-free Landsat observations**
 - **Populate U.S. archive to support global change science**
- **Distribute products at cost of fulfilling user requests**
- **Promote use of Landsat data for land remote sensing research and applications**
- **Establish and operate a global network of international cooperators**
- **Satisfy national and international Landsat science data requirements**
- **Support the USGS Emergency Response Program within the constraints of the Landsat system**

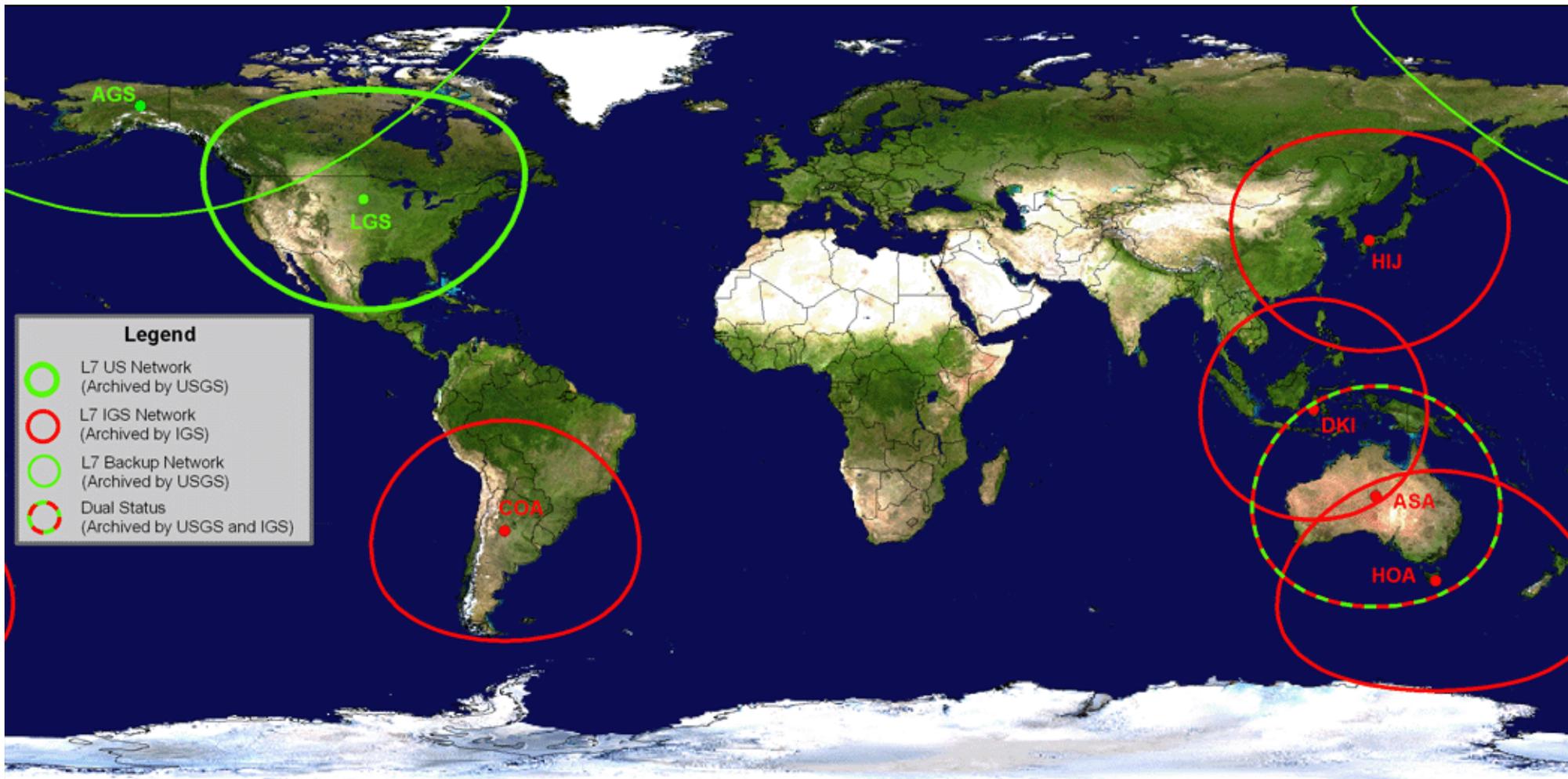
Landsat 5 International Cooperator Network

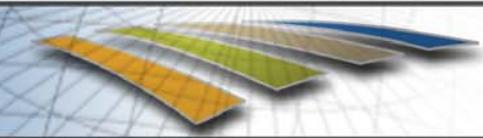
LDCM



Landsat 7 International Cooperator Network

LDCM

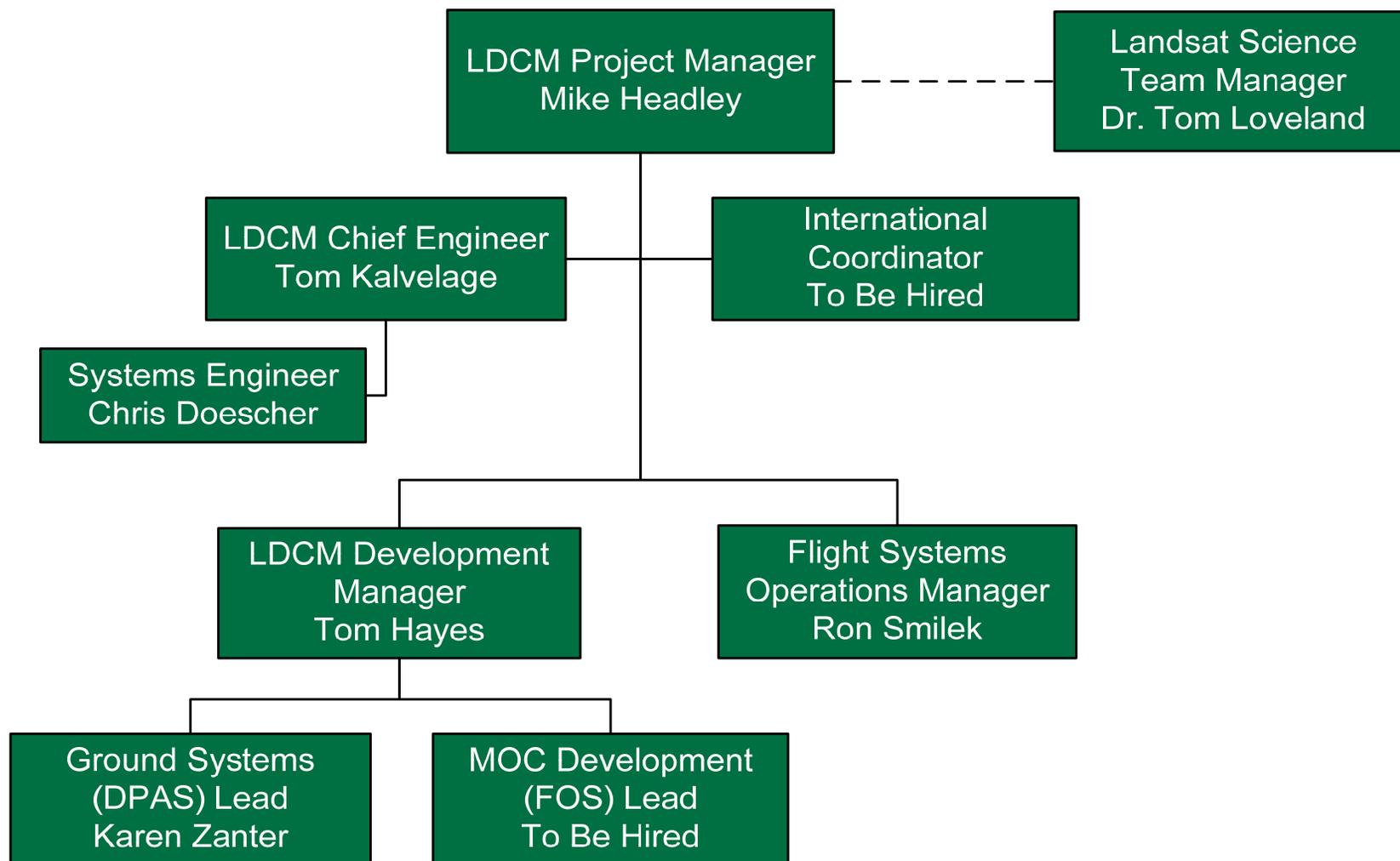


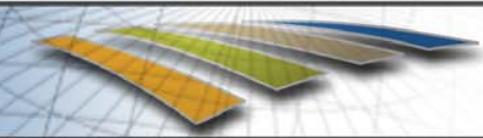
 NASA / USGS LDCM Responsibilities**LDCM**

- **NASA & USGS share responsibility for LDCM mission objectives**
- **NASA will:**
 - Acquire space segment, mission operations capabilities, launch services;
 - Perform overall mission systems engineering and integration;
 - Manage the LDCM observatory early on-orbit operations from launch through on-orbit acceptance; and
 - Transition mission operations capabilities and observatory operational and maintenance responsibility to USGS, following on-orbit acceptance.
- **USGS will:**
 - Acquire and operate the LDCM ground network, data archive, processing, and distribution systems;
 - Acquire and operate LDCM data collection scheduling capabilities;
 - Perform ground system integration and support overall mission integration;
 - Operate the LDCM observatory following on-orbit acceptance; and throughout the life of the mission.

USGS LDCM Organization

LDCM



LDCM Ground System Major Requirements**LDCM**

- Perform mission operations including data collection scheduling
- Ingest and archive 400 WRS-2 scenes / day to support observatory ops
- Make data available for search and order within 24 hours
- Provide “standard”, orthorectified data products within 24 hours of observation – for data with acceptable quality and cloud cover levels
- Provide “user specified” data products
- Ensure LDCM data are calibrated consistently with data from previous Landsat missions
- Distribute LDCM data products on a nondiscriminatory basis and at a price no greater than the incremental cost of fulfilling a user request