

Welcome

Tim Newman

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U.S. Geological Survey
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*Landsat 8 – Operational Land Imager (OLI)
image taken May 28, 2013 of the
Copper River – Gulf of Alaska*

Sustainable Land Imaging Users Forum

Time (EDT)	Topic	Speaker
1:00-1:15	Opening	Tim Newman Program Coordinator USGS Land Remote Sensing Program
1:15-1:30	NASA Sustainable Land Imaging Study	David Jarrett Program Executive NASA Earth Science Division
1:30-2:00	Architecture Study Team Overview	Del Jenstrom AST Manager NASA Goddard Space Flight Center
2:00-2:30	User Requirements Process	John Crowe Requirements Project Sponsor USGS Land Remote Sensing Program
2:30-4:00	Operational Uses of Landsat Data	John Dwyer - Facilitator Landsat Project Scientist USGS Earth Resources Observation & Science Center Dr. Randy Wynne Virginia Tech Dr. Dorothy Hall NASA Goddard Space Flight Center Mr. Rick Mueller USDA National Agriculture Statistics Service Dr. Martha Anderson USDA Agriculture Research Service Dr. Curtis Woodcock Boston University
4:00-4:15	Closing Remarks	Tim Newman

What You'll Hear Today

- NASA's Sustainable Land Imaging Program
 - Administration has made long-term commitment
 - Seeking a cost-effective way to continue Landsat's legacy
- NASA's Architecture Study Team
 - Joint-agency team tasked to develop potential future observational strategies and architectures
- User Requirements process
 - The USGS has been developing a structured methodology for acquiring, cataloging, maintaining and evaluating Earth observation user requirements—National Land Imaging Requirements
- Panel Discussion
 - Users representing key application areas will briefly describe their work
 - 2012 Landsat Applications Survey
 - Identify opportunities and processes for providing input into our planning

Goals today:

- Seek community feedback on user requirements to be used in the development of system performance requirements for the Sustainable Land Imaging Architecture Study
- Establish an understanding within the user community of the Administration's plans and processes for assuring continuation of land observations far into the future
- Open a dialogue with users whom we may not otherwise hear from to learn of your applications, research, and the observational requirements you have in carrying out your work

NASA – USGS Collaboration for Land Imaging

- Study Phase
 - NASA will lead the overall system architecture study, utilizing its space systems engineering expertise
 - USGS will support all aspects of the study; USGS will represent the consolidated needs and desires of the Landsat user communities and provide expert analyses of the data processing and data dissemination aspects of the system
- Implementation Phase
 - NASA will be responsible for the overall system design, as well as the implementation, launch, and commissioning of the system's space-borne elements
 - USGS will provide unique expertise and guidance in the design of the operations, ground network, data processing (including integration of measurements from multiple sources), and data dissemination components of the complete system
 - USGS will be responsible for operating the space-borne assets after commissioning, as well as the downlink, ground processing, archiving, and distribution of the system's information and data products
 - The USGS will maintain the national archive of Landsat data, distribute data to users, and administer, on behalf of the U.S. Government, data acquisition by non-USG ground stations.

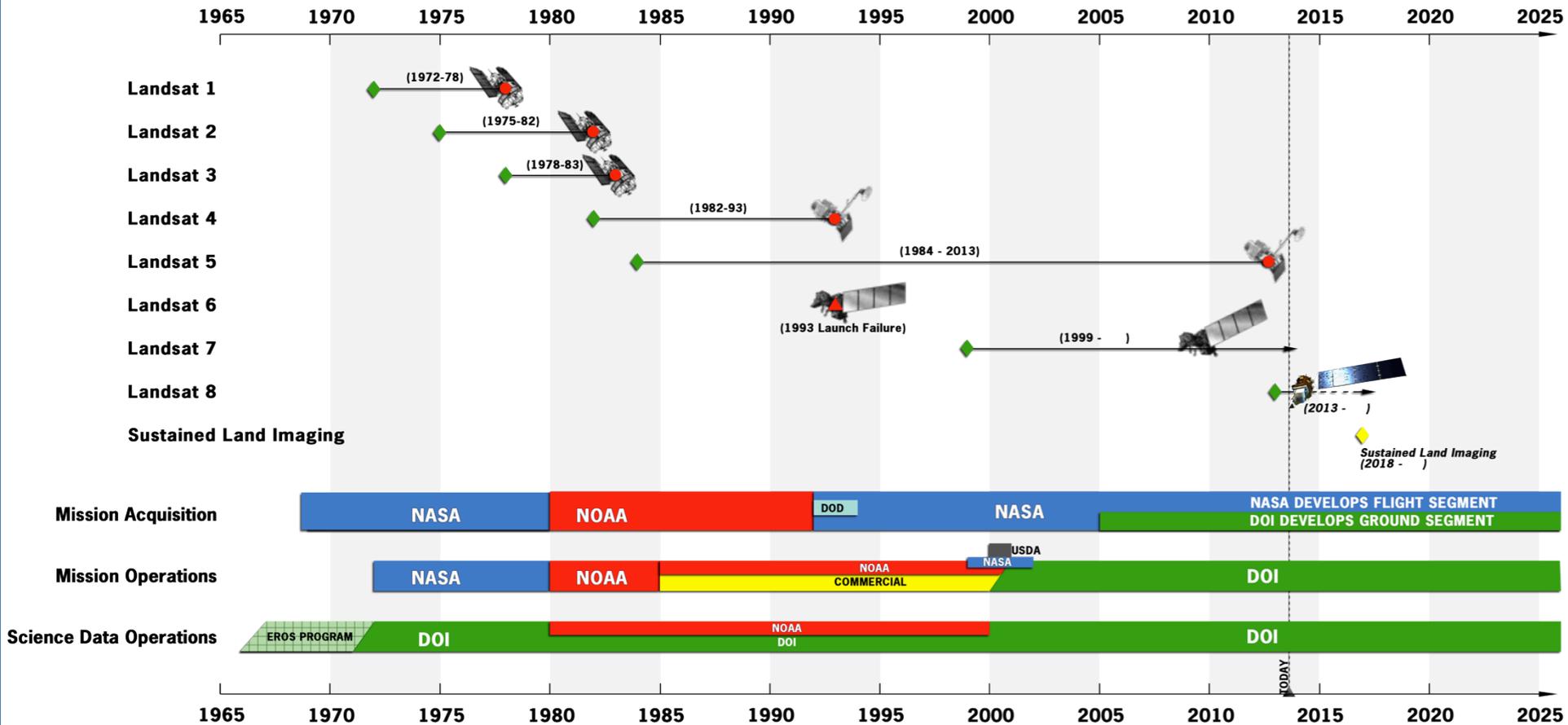
USGS Heritage on Landsat Requirements

- USGS and NASA provided initial remote-sensing training for Landsat users throughout 1970s and sponsored early course development at universities
- USGS/NASA-sponsored Pecora Symposium series was founded in 1975 as a user-based forum on data applications and requirements
- USGS EROS Center customer service staff and scientists have fielded user questions and unsolicited comments on requirements since 1972
- USGS responsibility for gathering Federal agency requirements was authorized by Presidential Decision Directive/NSTC-3, October 16, 2000
- USGS responsibility was broadened by National Space Policy in 2010:
“Determine the operational requirements for collection, processing, archiving, and distribution of land surface data to the United States Government and other users.”

USGS Land Remote Sensing Program

- The USGS Land Remote Sensing Program:
 - Collects, interprets, and provides the Nation with information from satellite and airborne instruments
 - Supports improved water resource management, agriculture, forest monitoring, urban planning, and disaster recovery throughout the world
 - These data also contribute to the scientific community's understanding of the impacts of, and feedbacks between, land use change and climate change
 - Provides a comprehensive, permanent, and impartial record of the planet's land surface through the National Satellite Land Remote Sensing Data Archive
 - Supports research on the uses of remotely-sensed data to assess ongoing changes to the Earth's land, land cover, and inland surface waters
 - Provides Federal civil agencies with access to commercial and classified Earth observing assets and supports the development of unclassified, derived information products from these assets
- The Landsat Program:
 - Acquires, archives, and distributes multispectral imagery affording global, synoptic, and repetitive coverage of the Earth's land surfaces at a scale where natural and human-induced changes can be detected, differentiated, characterized, and monitored over time
 - The importance of Landsat derives not only from current sensor observations, but also from long-term data archiving, a global data acquisition strategy, an open data policy, rigorous calibration, and a commitment to data continuity

USGS/NASA Landsat Partnership Since 1966



NASA/USGS Landsat Roles

NASA:

- Develops sensors, satellites, and launches land imaging space systems
- Co-chairs USGS-funded Landsat Science Team
- Performs Earth-system measurements and research using land-image data

USGS:

- Documents user land imaging requirements
- Develops ground systems for land imaging space systems
- Operates land imaging satellites
- Collects, processes, archives and disseminates land-image data
 - Establishes global land-coverage acquisition strategy
 - Coordinates International Partner ground receiving station network
 - Distributes data and information products at no charge
 - Develops new data products and applications

Operational Status

Landsat 8

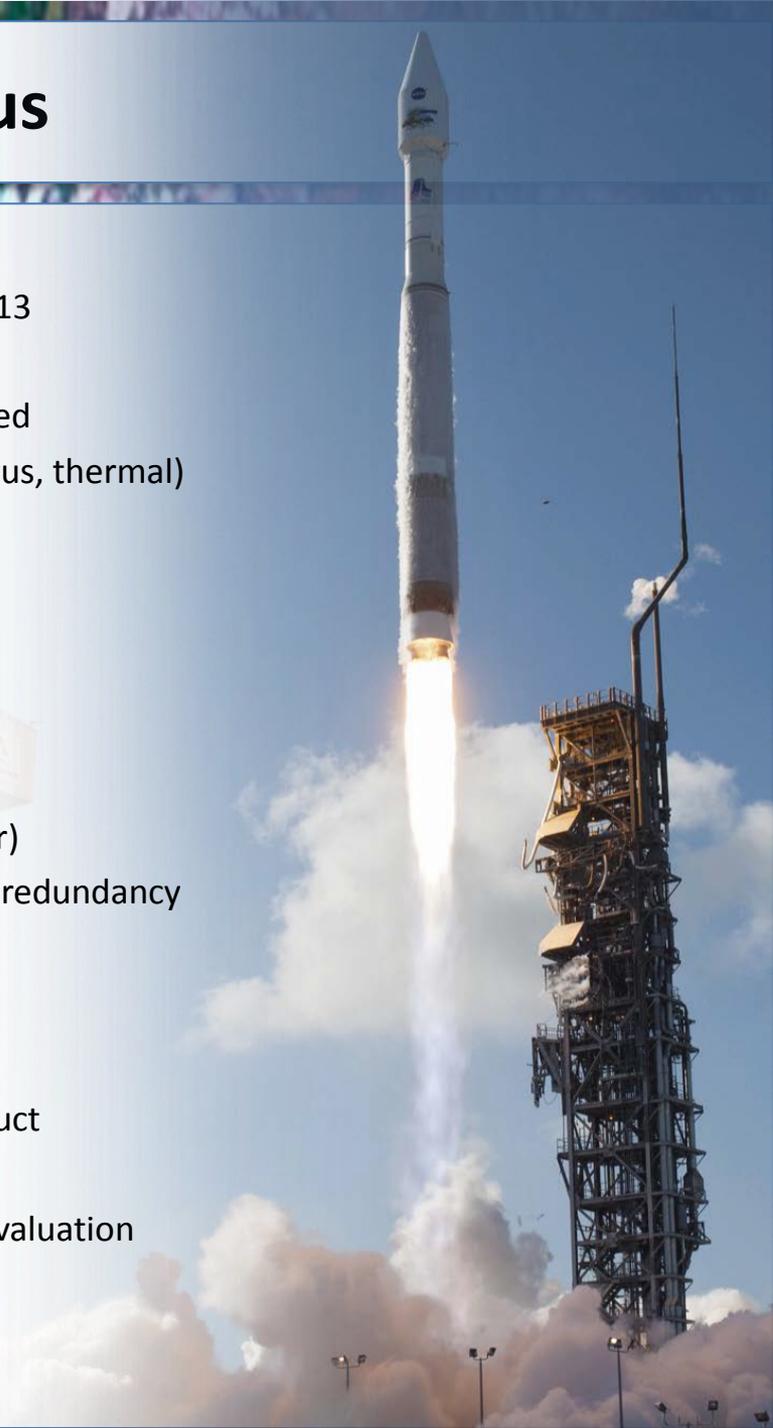
- USGS assumed operational responsibility from NASA on May 30, 2013
- Collecting well more than 500 new scenes per day
- Restored 8-day revisit cycle lost when Landsat 5 was decommissioned
- Improvements: better signal-to-noise, new bands (coastal blue, cirrus, thermal)
 - Better resolution of snow and ice-covered regions
 - Detection of water column constituents
 - Better cloud screening
 - More precise temperature measurements

Landsat 7

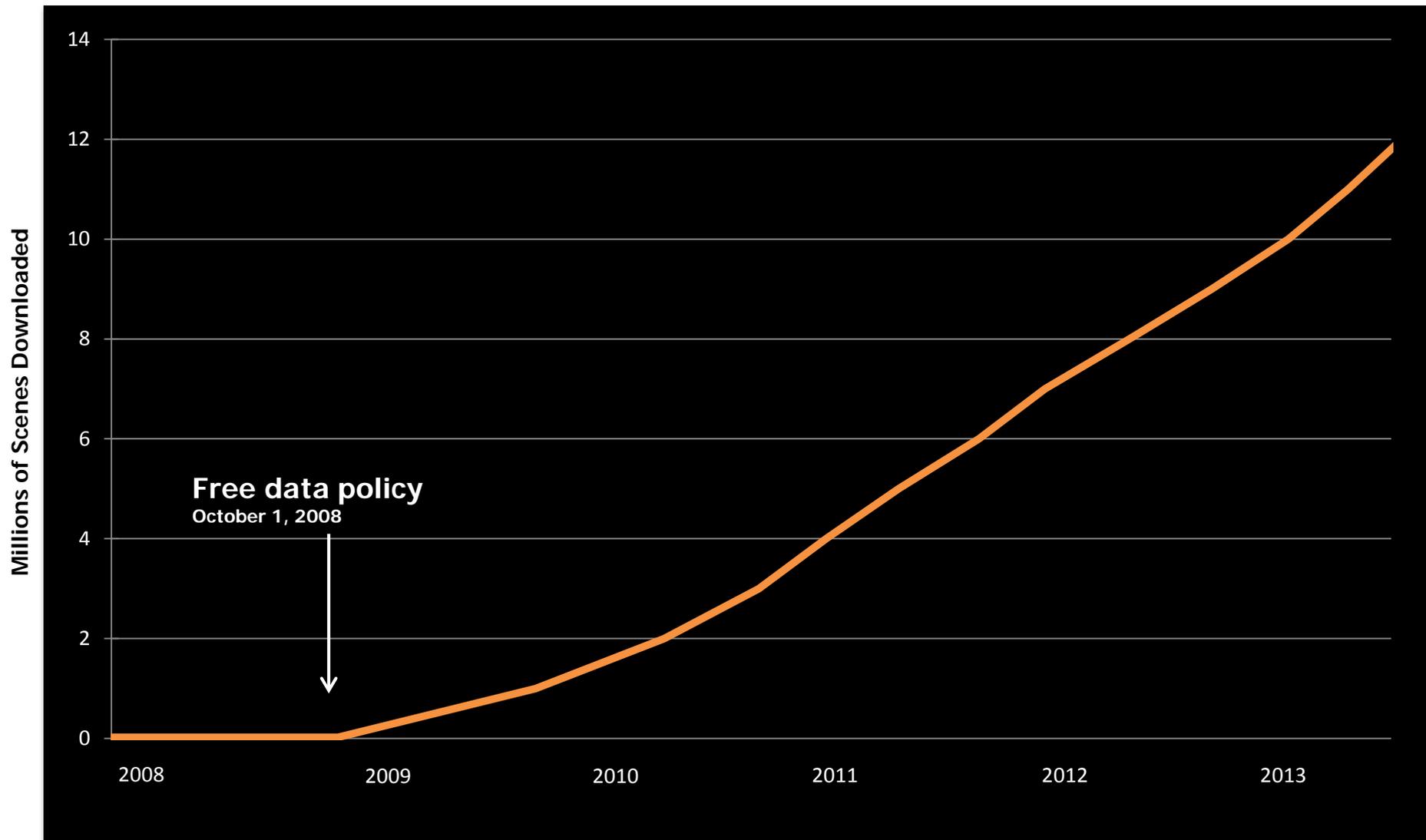
- Collecting more than 400 new scenes per day
- About 22% of pixels are missing per scene (faulty scan-line corrector)
- Sufficient fuel for a few more years of operation; limited subsystem redundancy

Landsat-based Information Products

- Standard orthorectified L1T calibrated radiance Landsat products
- LandsatLook (full-resolution JPEGs)
- New TM/ETM+ surface reflectance Climate Data Record (CDR) product
- New OLI surface temperature CDR in development
- Surface Water Extent, Burned Area Extent ECVs available soon for evaluation
- Snow-covered area Essential Climate Variable (ECV) late next year

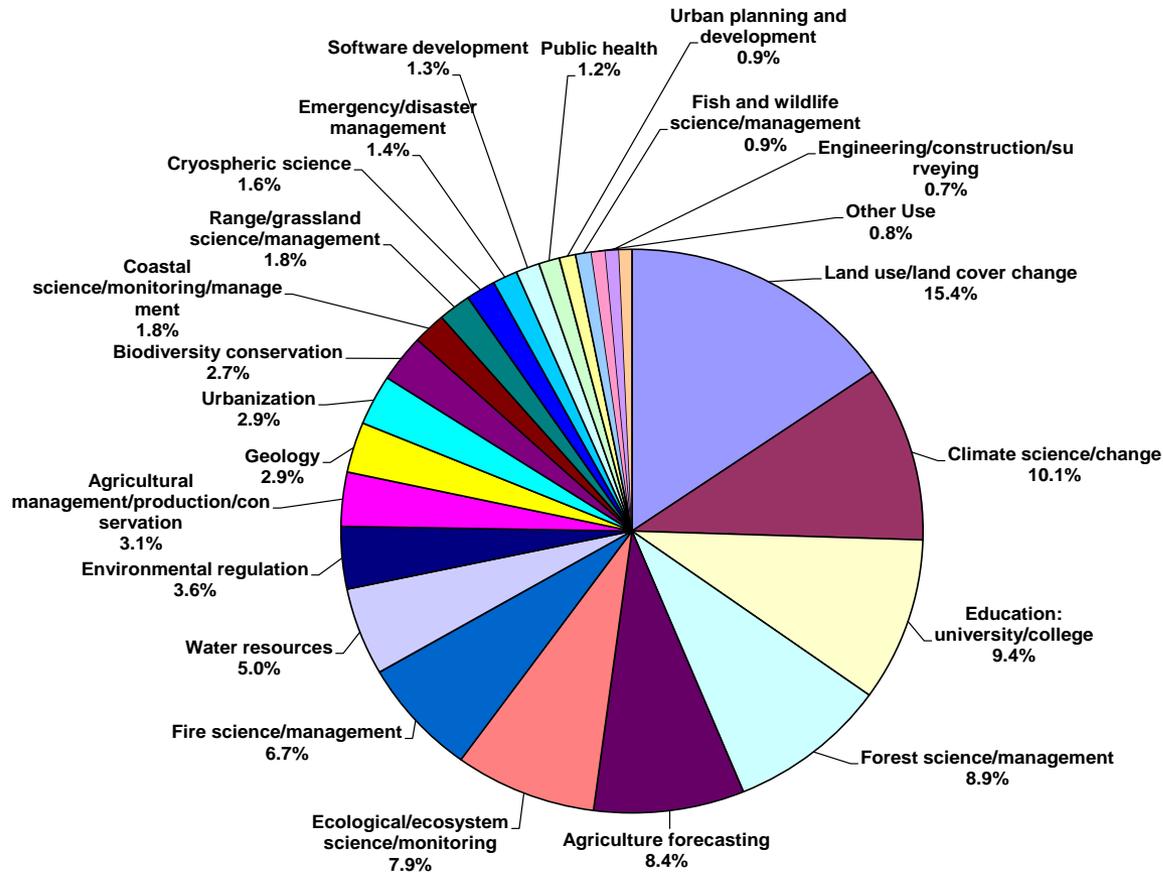


Increasing Demand for Free Landsat Data



Landsat Data Usages

Landsat Data Usages
(10/01/2012 through 09/30/2013)



Our Mission

- USGS and NASA are charged with the task of defining a strategy to extend Landsat's legacy of over 41 years of data collection
 - Nearly 5 million scenes in archive; 1000 new scenes/day
- 20-year view
- Solution flexible enough to assure continuity with the past, assured access in the present, and extensibility to meet the needs of tomorrow
- We're here to better understand the applications and research of today, so we'll better understand the challenges and user needs of the future

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