

Landsat



A single Landsat image revealing the boundary between Targhee National Forest (*left*) showing forest clear cut areas and Yellowstone National Park (*right*)

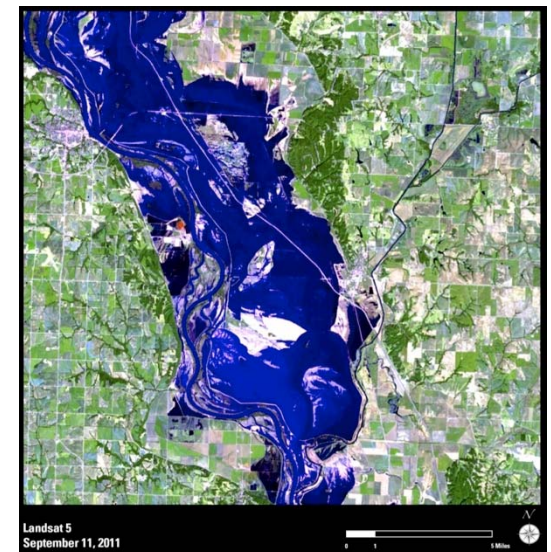
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Why Landsat?

- Weather satellites are indispensable; they indicate what will affect land surfaces over the coming days
- Land imaging satellites are indispensable; they record and measure land-surface changes over weeks, months, and decades

Missouri River: Flooding near Hamburg, Iowa



The Landsat Mission

Objective:

- Acquire, archive, and distribute 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.

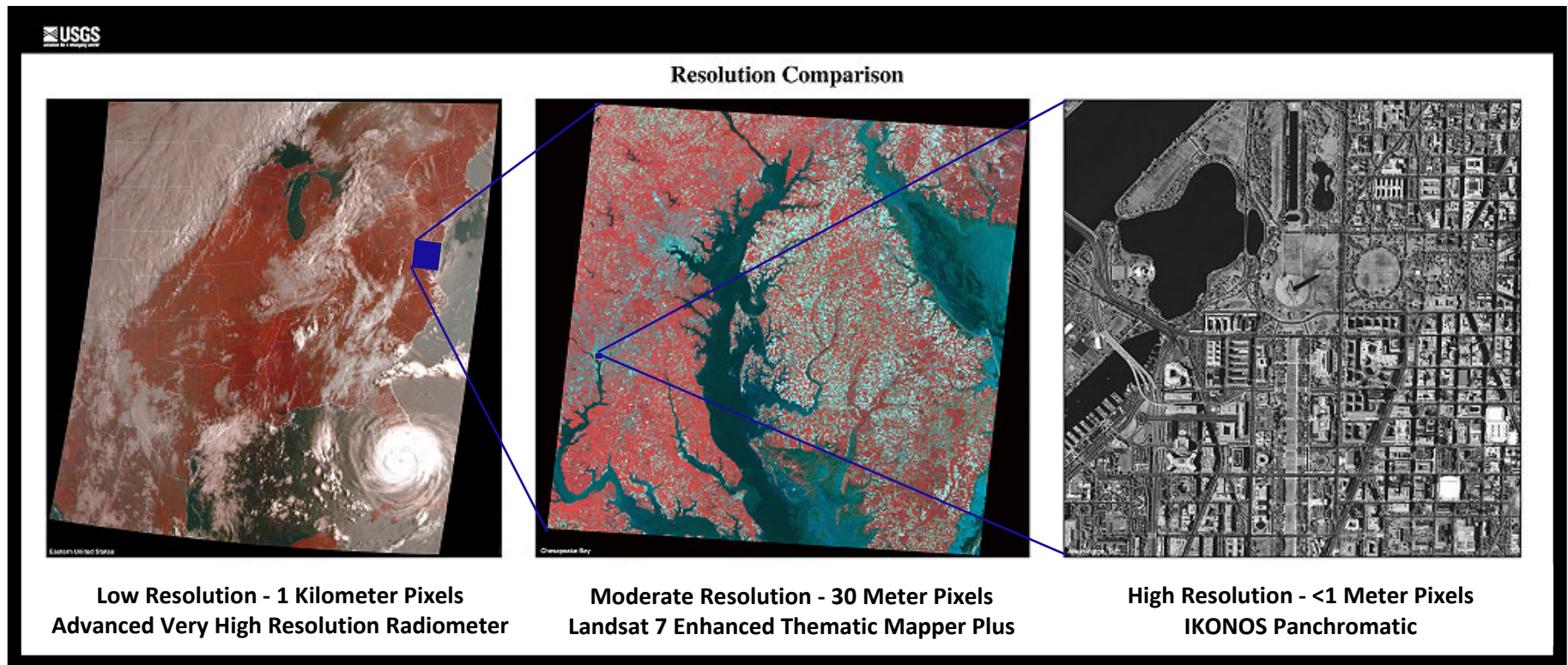
Importance:

- 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.***

Operational Continuity:

- Following four decades of successful imaging under changing program management structure and objectives, one-off satellite builds, and uncertainty about the future, we are now on a path toward sustained land imaging.

Landsat Compared to Other Imaging Satellites



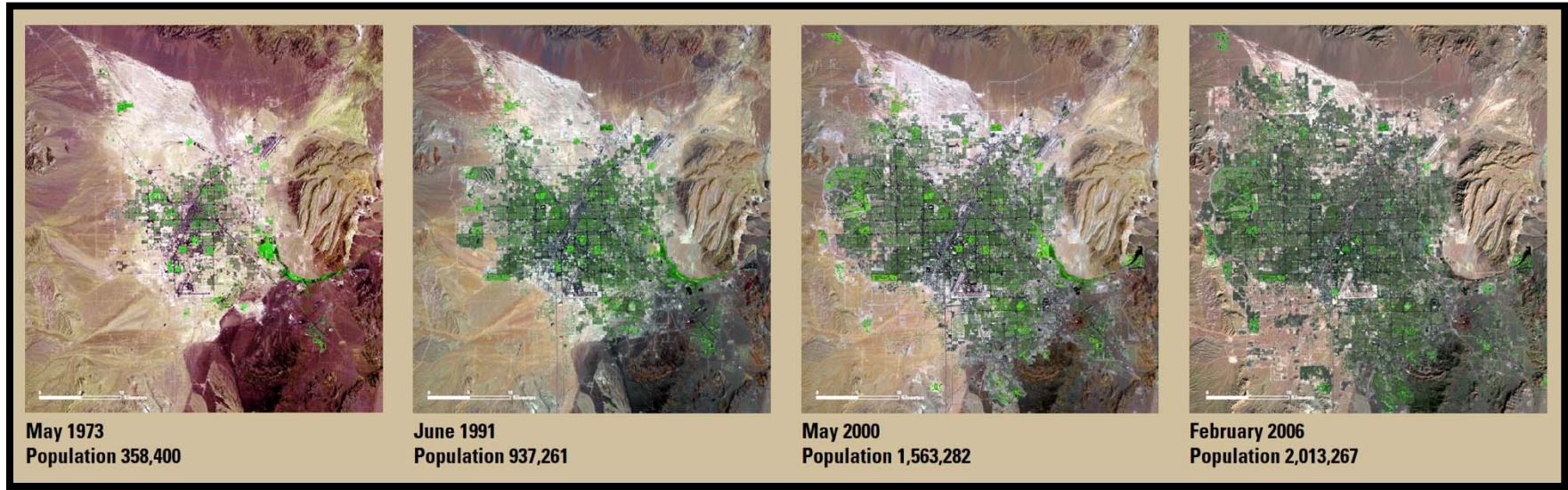
Land images from weather-satellite sensors are used for continental or global observations.

Landsat images are used for regional, continental, or global observations.

High-resolution satellite and aerial images are ideal for local observations.

Landsat Tracks Long and Short-Term Change

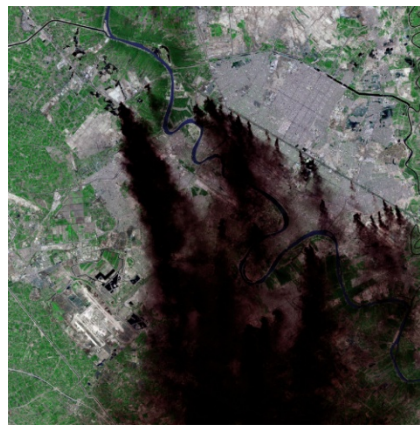
Urban Growth of Las Vegas, Nevada



Oil fires in Baghdad, Iraq



March 2003



Early April 2003



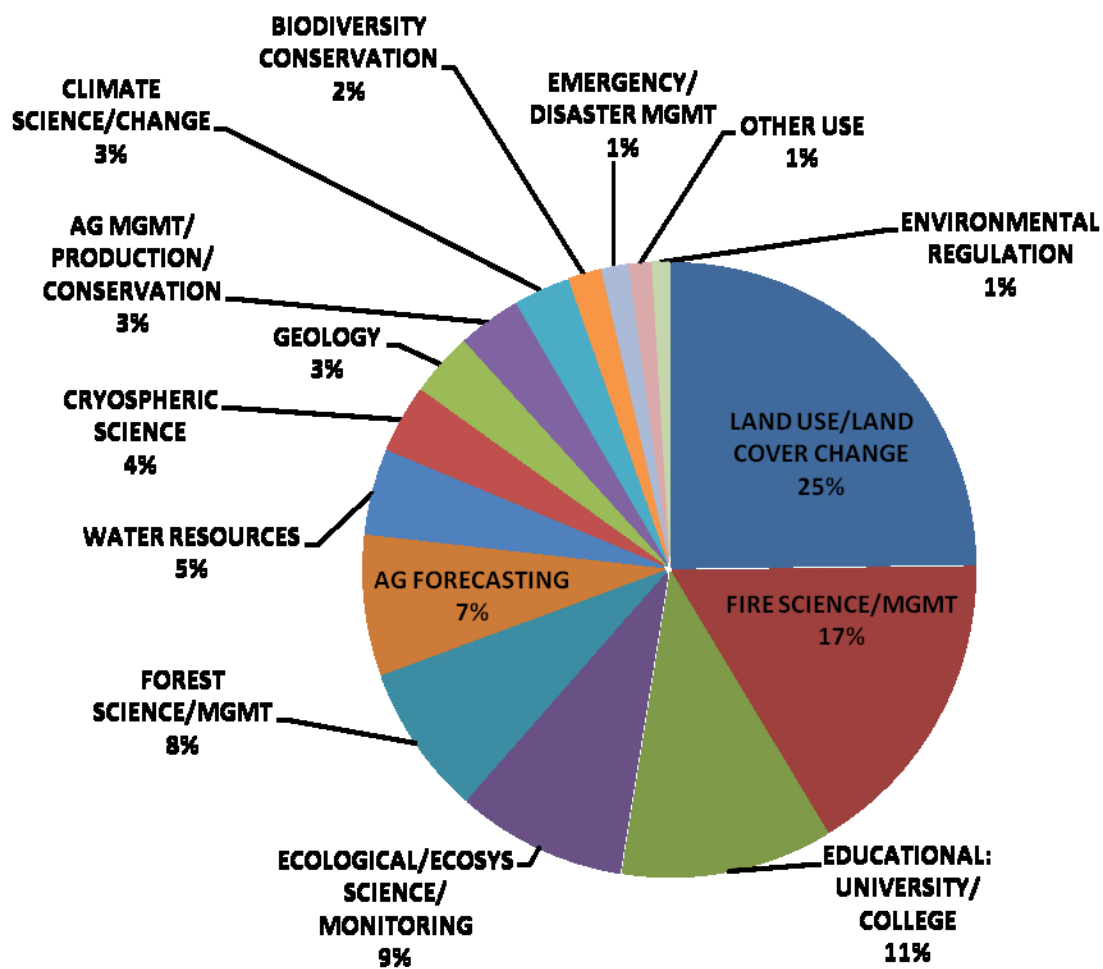
Late April 2003

Mesa Verde National Park Fire Atlas



Landsat Data User Preferences

Oct. 2012 – Apr. 2013



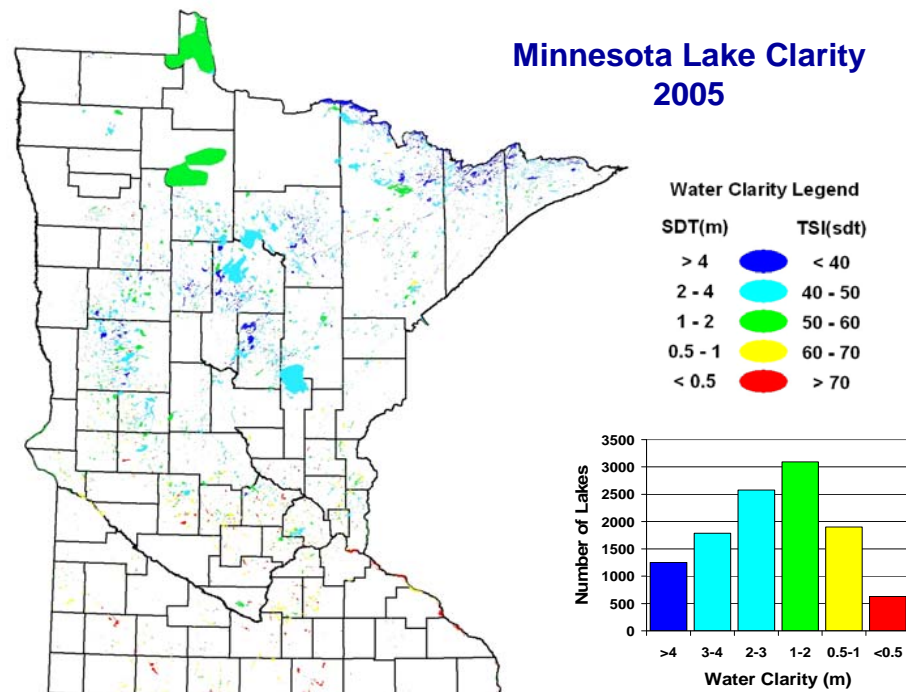
Federal Agencies Use Landsat

- U.S. Department of Agriculture estimates domestic and global crop yields
- National Oceanic and Atmospheric Administration detects and analyzes coastal change
- Bureau of Land Management maps land cover in Alaska and monitors rangeland conditions throughout the West
- Bureau of Reclamation maps irrigated crop types to model and monitor water demand
- U.S. Fish and Wildlife Service maps and monitors wildlife habitat in Alaska
- National Park Service produces burn severity maps within 30 million acres distributed across over 270 parks
- USGS conducts national assessments of land use and land cover change



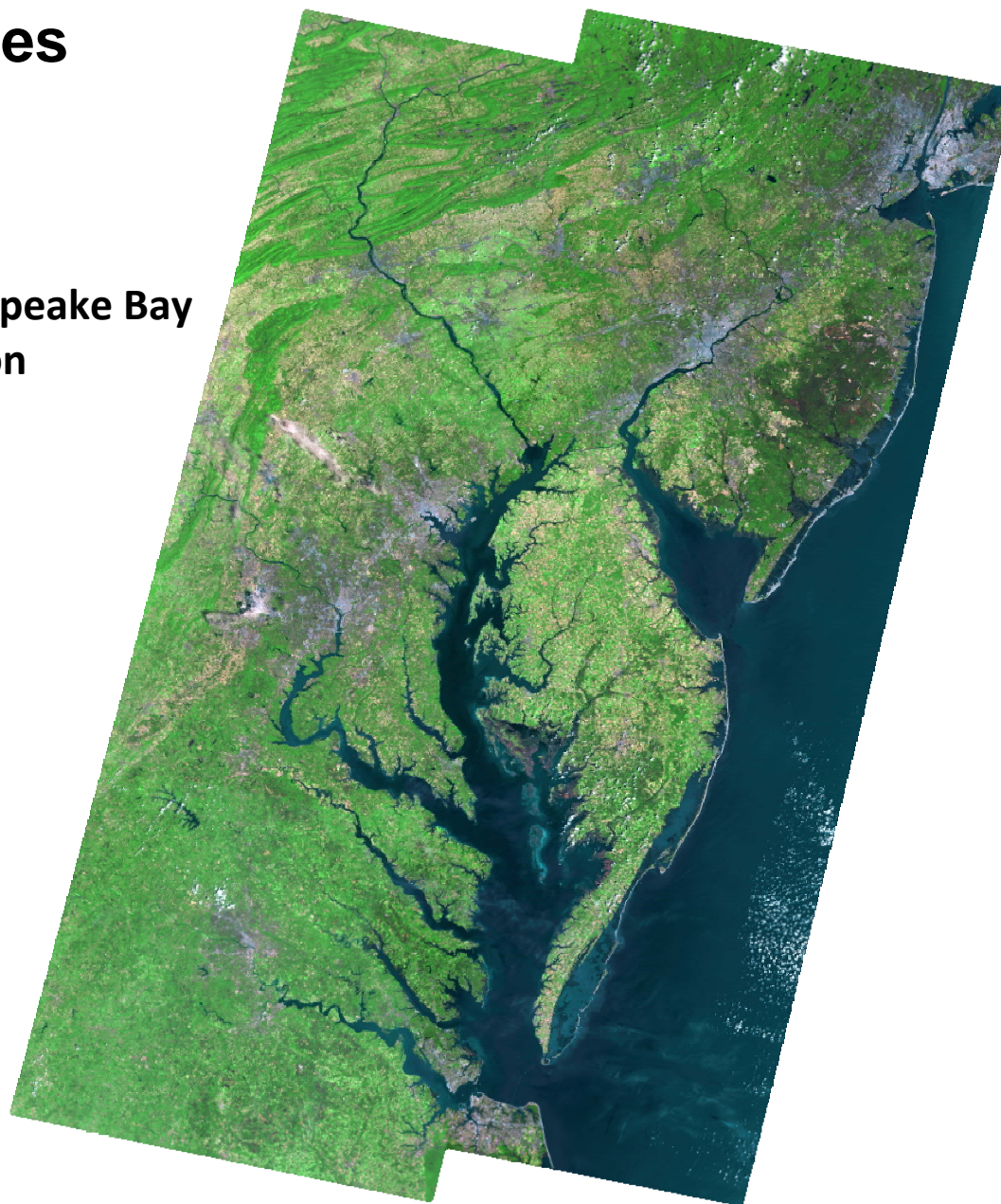
All States Use Landsat

- Arkansas tracks land use/land cover change
- Kansas inventories and monitors unpermitted dams
- Louisiana plans and monitors coastal restoration
- Minnesota monitors the clarity of 10,000+ lakes
- Nebraska maps agricultural patterns
- Ohio develops environmental compliance-monitoring tools
- Texas conducts annual forest inventories
- Wisconsin develops disaster-recovery map products, etc.



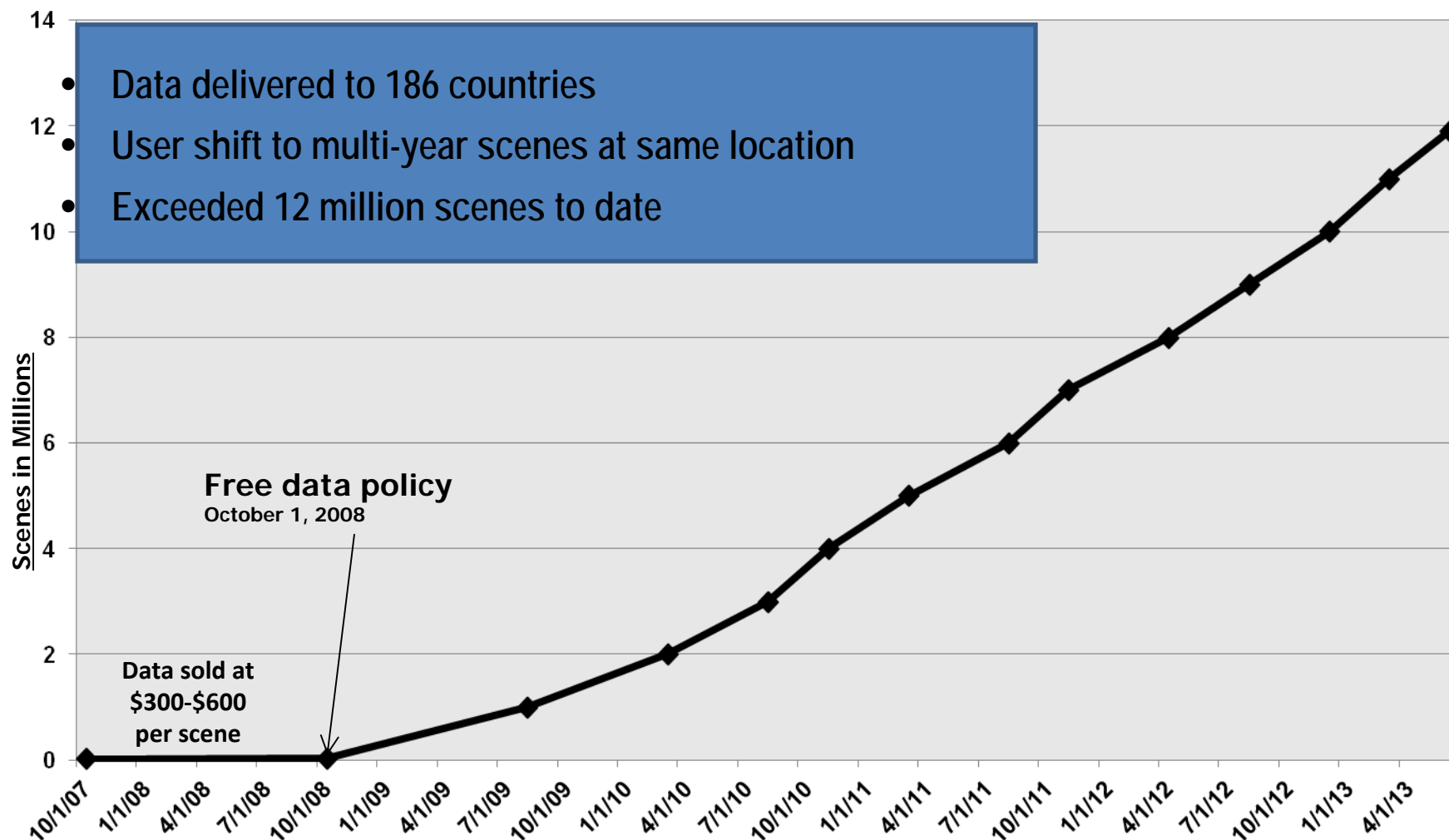
Regional Studies

Greater Chesapeake Bay Region



Free, Web-Enabled Landsat Data

Each downloaded scene covers over 12,000 square miles



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

USGS/NASA Landsat Partnership Since 1966

