Landsat Science Team: Issues and Priorities

- Curtis Woodcock (Boston University)
- Tom Loveland (USGS EDC)

Landsat Science Team

- Rich Allen (U Idaho) - thermal - water resources
- Martha Anderson (USGS ARS) - thermal - water resources
- Alan Belward (European Commission) - deforestation data policy and access
- Bob Bindschadler (NASA GSFC) cryosphere
- Warren Cohen (USFS PNW) - forests, carbon and change
- Feng Gao (ERT - GSFC) data fusion - international sensors
- Sam Goward (UMD) kitchen sink (LTAP, future sensors, forests, change …)
- Dennis Helder (SDSU) - calibration
- Eileen Helmer (USFS) - tropical forests - change
- Rama Nemani (NASA Ames) - LAI
- Lazaros Oreopoulos (UMBC) - Clouds
- John Schott (RIT) - Water Quality and Sensors
- Prasad Thenkabail (USGS) - Irrigated Agriculture
- Eric Vermote (UMD) - Atmosphere/Clouds
- James Vogleman (SAIC EDC) - Ecosystem Change
- Curtis Woodcock (BU) - operational land cover change
- Mike Wulder (CFS) - forests, carbon, land cover change
- Randy Wynne (VPI) - forest applications
- A number of Co-Is!!!!!

Overview

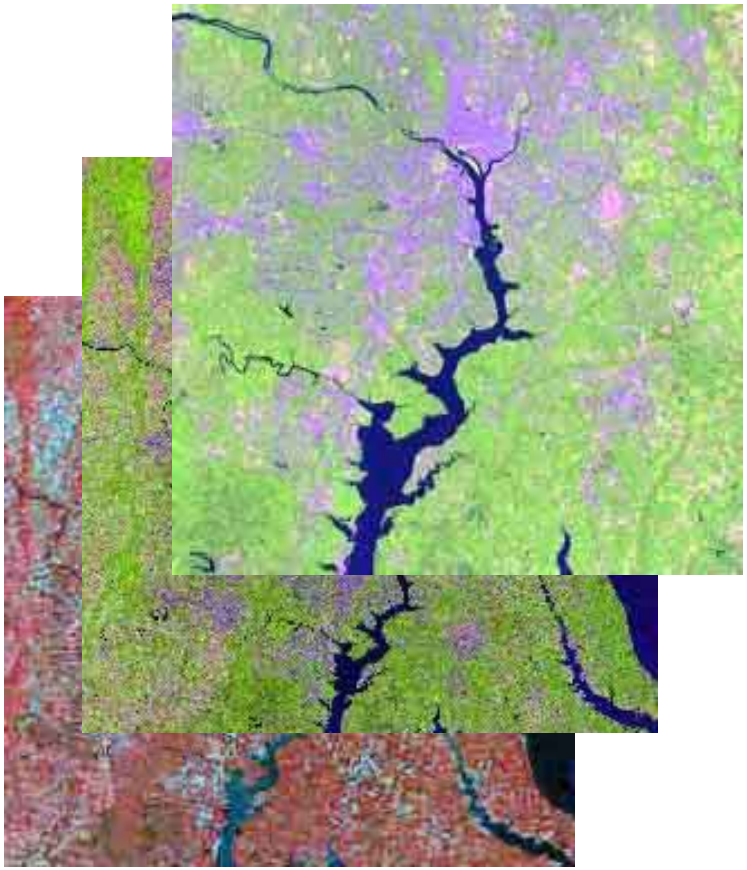
- Data Access
  - Policy
  - Current US Archive
  - Foreign Receiving Stations
  - LDCM era
- Products
- Future Missions

Data Access: All Landsat Data in the US Archive is Available for **free**!!!

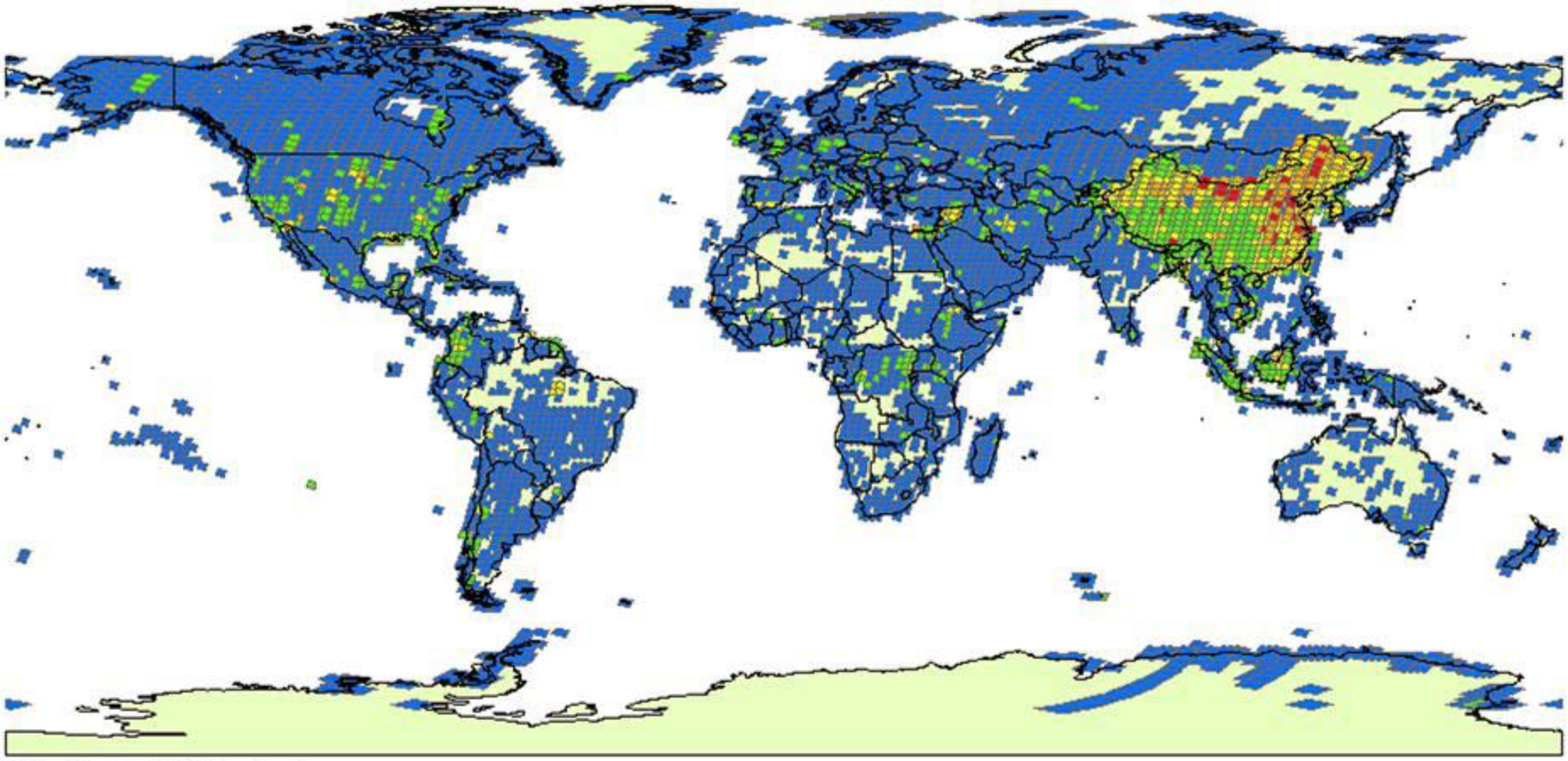
- Data Policy
  - new agreement signed in Jan 08 by both NASA and USGS
- Web-Enabled Access
  - System had to be simplified
    - http://glovis.usgs.gov
    - http://earthexplorer.gov
- Number of scenes delivered has gone up by a factor of about **50!**
- Downloadable vs orderable
  - A limited number of scenes can be kept online (downloadable)
  - Reprocessing is inevitable and will be done “on demand”
  - New mantras ***“when in doubt download it”*** - meaning that newer is always going to be better “***No reason to hoard data”***

U.S. Landsat Archive Overview
(Marketable Scenes through December 31, 2008)

- **ETM+: Landsat 7**
  - 892,051 scenes
  - 828 TB RCC and L0Ra Data
  - Archive grows by 260 GB Daily
- **TM: Landsat 4 & Landsat 5**
  - 780,191 scenes
  - 391 TB of RCC and L0Ra Data
  - Archive Grows by 40 GB Daily
- **MSS: Landsat 1 through 5**
  - 652,173 scenes
  - 20 TB of Data



Downloads through EE/Glovis (ETM+)



Slide from “free data lady” (Kristi Kline)

Standard Level-1T Products

Consistency with heritage Landsat products

- Pixel size: 15m/30m
- Media type: FTP
- Product type: Level-1T (precision, terrain correction)
- Output format: GeoTIFF
- Map projection: UTM (Polar Stereographic for Antarctica)
- Datum: WGS84
- Orientation: North up
- Resampling: Cubic convolution
- Accuracy: 12m circular error, 90% confidence

USGS

LANDSAT LDCM Data Continuity Mission

NASA

Slide from John Dwyer

Current Working Groups (issues)

- Future Missions
  - Recommendations for future missions - standards- requirements
  - What constitutes “operational”?
  - Long Term Goals and Purpose of Landsat Missions (Climate emphasis - land cover ECV)
- Data Gap Working Group
  - Recommendations for an operational plan for the USGS to acquire moderate resolution data during a data gap
- Global Consolidated Landsat Archive
  - More images outside the US Archive than within
  - Considerable overlap, but difficult to resolve
  - Provide guidance on priorities

Current Working Groups (issues)

- Cloud and Shadow Masking
  - Pursue methods for improved capabilities
  - Spatial, Temporal, Geographic Context
- Surface Reflectance and Temperature
  - Recommendations for standard products
- Carbon Mapping and Monitoring
  - White paper on state of the art

Future Issues (my take)

- Operational land cover change monitoring
  - Definition and implementation of a standard product
- Cloud screening the archive
  - Routinely cited as the primary impediment to more automated use of Landsat imagery over large areas/multiple time periods
- Reconstructing the history of the surface of Earth in the satellite era
  - A community agenda
- Definition of longer term sensing scenarios
  - What should happen after L9?