Global Landsat Archive Consolidation

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Presented By:

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Agenda

- Background
- Intent of this Activity
- Historical Perspective
- Challenges
- Next Steps

Background

- **The USGS is evaluating the process, cost and relative merit for consolidating a copy of the global archive of historical Landsat imagery at EROS**
  - There is growing concern about the state of historical archives, especially at inactive stations where we have no active contacts
  - At this point, it is not known exactly what the global historical archive extent is
  - There is an increasing interest from user community and USGS/NASA for more frequent surveys
  - New tools such as LASSI are being developed and made available to support large scale scene selections/data mining
  - A consolidated archive would better support/facilitate global change analysis and assessment

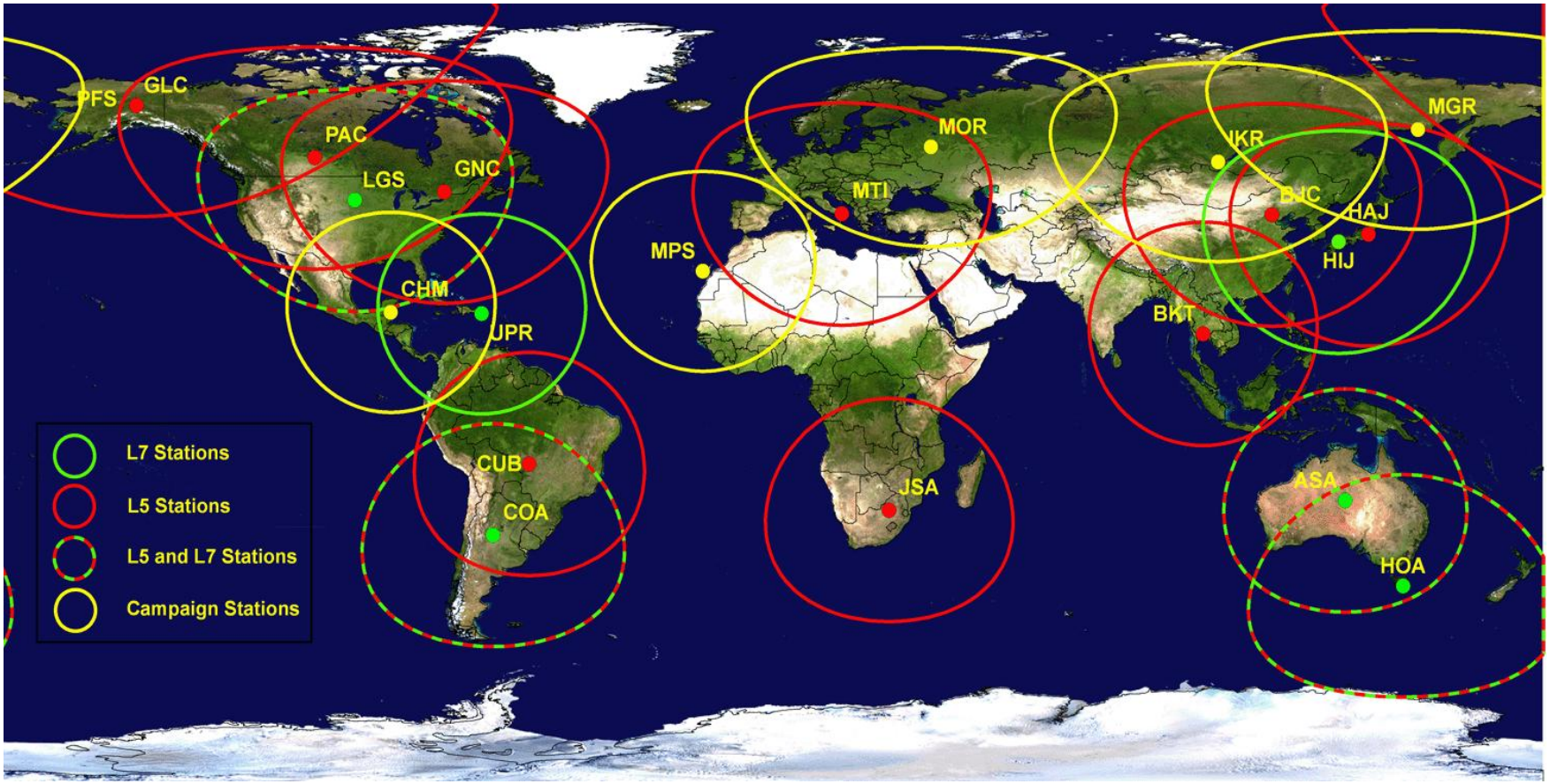
Goal of the Activity

- Describe the initiative to the International Cooperators (IC) and determine their willingness to participate in this effort
- Determine the location, extent and condition of the historical Landsat archives around the world
- Generate a list of the instrument (RBV, MSS, TM, ETM+), data format and media type at each location
- Assess the equipment, software, logistics and level of effort necessary to acquire, ingest, process and archive the data
- Develop an estimated cost and schedule for project
- Report back to the Landsat Science Team and USGS management on the findings

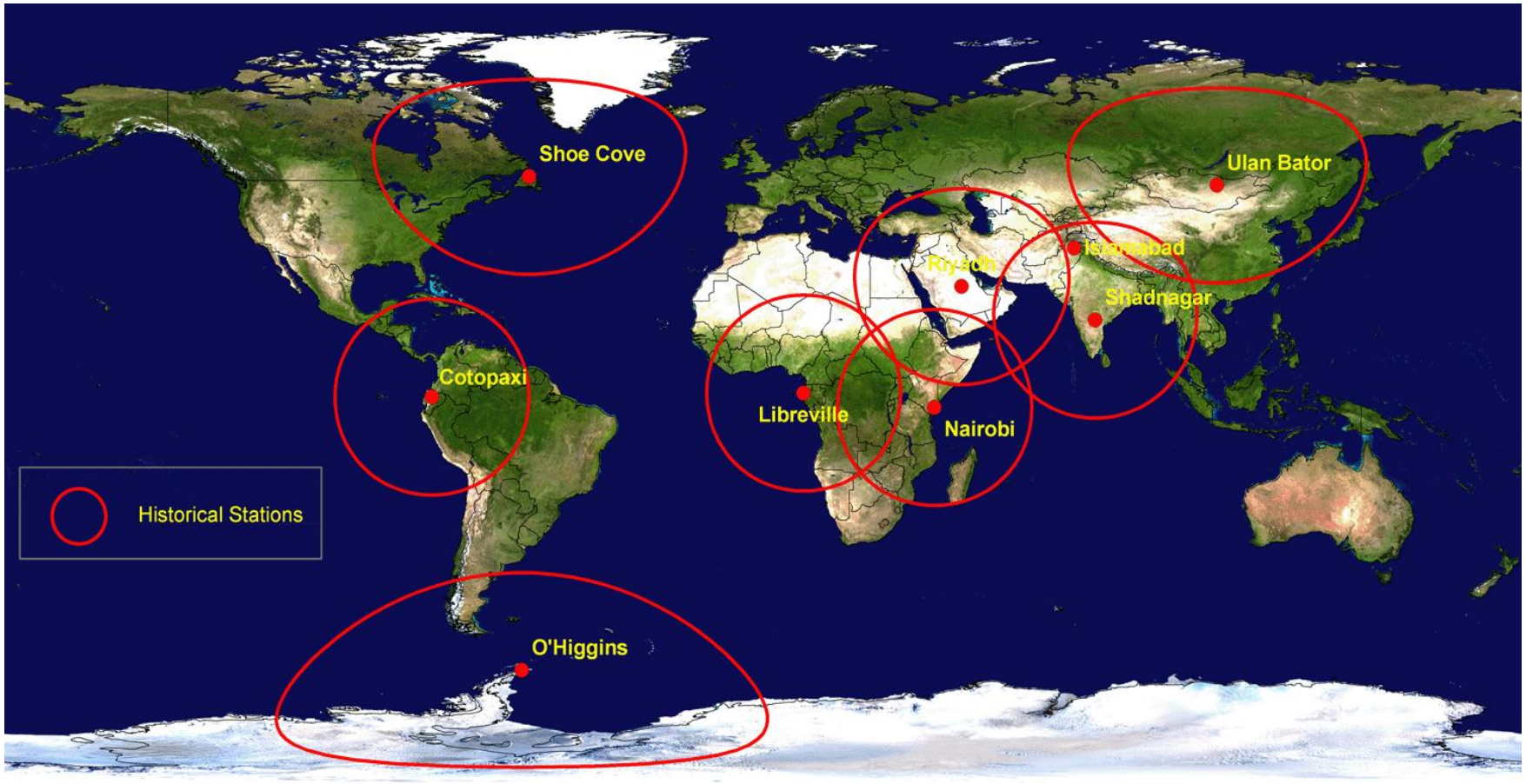
Historical Perspective

- Over the past 35 years, over 50 ground stations have been configured to receive Landsat data
- Currently, there are 24 ground stations around the world that are configured to operationally receive Landsat data (19 currently active)
- Beyond the current stations, there are 9 historical collection sites operated by 7 organizations that we believe could have a significant, unique historical archive

Current Stations



Historical Stations



Are there other stations we should be considering?

Content of the U.S. archive

USGS Archive Content

Satellite	Sensor	Date Range	Data Format	Scenes	Volume	Media
L1 - 3	MSS	Jul 23, 1972 – Sep 7, 1983	MSS-X, WBV	199,319	6.01 TB	DLT 7000
L2 - 3	MSS	Jan 22, 1975 – Sep 7, 1983	MSS-P, RCC	61,601	1.82 TB	9940B
L2 - 5	MSS	Jan 22, 1975 – Oct 15, 1992	MSS-A, RCC	261,046	7.88 TB	9940B
L4	TM	Aug 17, 1982 – Nov 18, 1993	TM-A, TM-R, RCC	58,457	29 TB	9940B
L5	TM	Mar 1, 1984 – Current	TM-A, TM-R, RCC	668,296	335 TB	9940B
L7	ETM+	Apr 15, 1999 – Current	L0Ra, RCC	755,401	701 TB	9940B
				2,004,120	1,081 TB	

Content of the foreign archives

Archive Content of Australia, Canada, China, Hiroshima IT

Satellite	Sensor	Date Range	Data Format	Scenes	Volume	Media
L1 - 3	MSS	1972 – 1995	MSS	397,000	30 TB	DLT 7000 Sony SD-1 HDDT
L4/L5	TM	Aug 17, 1982 – Nov 18, 1993	TM-A, TM-R, RCC	811,000	263 TB	DLT 7000 Sony SD-1
L7	ETM+	Apr 15, 1999 – Current	L0Ra, RCC	320,000	137 TB	DLT 7000 Sony SD-1 SAIT1-500 HDD
				1,228,000	430 TB	

Challenges

- **Communications**
  - Reestablishing contact with older, possibly inactive stations
- **Technical**
  - Working equipment compatible with older media
  - Media in poor or unstable condition due to age or storage conditions
  - Determining data tape formats
  - Determining image data formats
  - Assembling/determining necessary ancillary information to successfully process the imagery
- **Programmatic**
  - Costs and logistics of retrieving the global archive
  - Cost of engineering, software, ingestion and storage

Next Steps…

- ✓ **Used downlink records to estimate likely archive locations and extent**
- ✓ **Delivered a presentation to the active ICs at a the last Landsat Ground Station Operations Working Group meeting discussing the project**
  - ✓ All station present expressed support for the activity
- **Develop partial list of data types, formats, medias and interest**
  - Need to initiate contact with historical IC station operators
- **Develop an initial estimate on the state of the global Landsat archive held by the IC community**
- **Create a high-level plan for consolidating a copy of that archive at EROS**
  - Include technical challenges, level of effort estimates, a coarse schedule and costs
- **Present the plan to USGS and Science Team**
- **Wait for authorization and funding to proceed**