

Landsat International Cooperators and Global Archive Consolidation

Landsat missions have always been an important component of U.S. foreign policy, as well as science and technology policy. The Landsat program's longstanding network of International Cooperators (ICs), which operates numerous International Ground Stations (IGSs) around the world, embodies the United States' policy of peaceful use of outer space and the

worldwide dissemination of civil space technology for public benefit. Thus, the ICs provide an essential dimension to the Landsat mission.

Historically, IGS reception capabilities have augmented data collection capacity of the Landsat missions above and beyond

those provided by the satellite onboard recorders. The historical data downlinked to the IGSs are currently being added to the U.S. Geological Survey (USGS) Landsat archive by way of the Landsat Global Archive Consolidation (LGAC) initiative (<https://www.usgs.gov/landsat-missions/landsat-global-archive-consolidation>).

Landsat International Cooperator Network

The current Landsat 8 and Landsat 9 IGSs provide contingency data collection capacity to the Landsat Ground Network (LGN) in the event of a spacecraft anomaly or malfunction, and ICs augment the global data distribution and exploitation of Landsat data (fig. 1). Additionally, the expertise of ICs in applying Landsat data to local and regional user needs can facilitate further

USGS scientific and applications development for Landsat data in the United States and worldwide.

The USGS meets with the Landsat ICs twice per year to discuss operational management and technical matters through the Landsat Ground Station Operators Working Group (LGSOWG) and Landsat

Technical Working Group (LTWG). The LGSOWG and LTWG meetings are an essential forum for global Landsat cooperation and collaboration. More information about the IC network is provided on the Landsat Missions website (<https://landsat.usgs.gov/igs-network>).



Figure 1. Landsat 8 and Landsat 9 International Ground Stations and Landsat Ground Network (current as of January 2023).

Landsat Global Archive Consolidation

Landsat satellites have acquired data from across the globe for more than five decades. Throughout the years, data have been downlinked not only to the USGS Ground Stations, but also to numerous IGSs. Because of recording limitations on early Landsat satellites, significant amounts of data downlinked to and archived at IGSs are unique, relative to each station's area of coverage, and are not duplicated in the USGS Landsat archive (<https://landsat.usgs.gov/historical-international-ground-stations>).

In 2010, the Landsat Global Archive Consolidation (LGAC) initiative began, with goals to consolidate the Landsat data archives of all IGSs, make the data more accessible to the global Landsat user community, and

significantly increase the frequency of observations over a given area of interest to contribute to the understanding of a changing Earth.

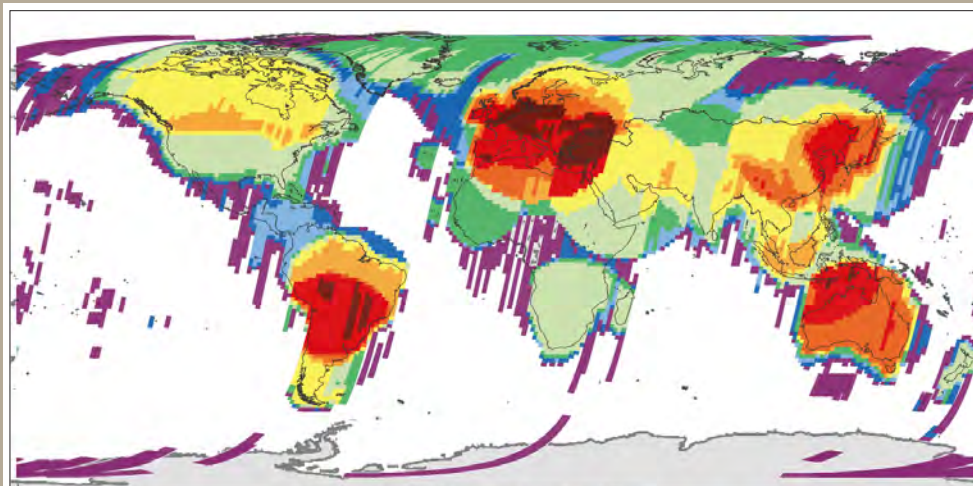
Bringing Landsat data from many IGSs to one archive includes several challenges:

- Various or unknown data formats and processing methods
- Stations that are no longer active
- Media storage age and conditions
- Various or obsolete technologies used to ingest data.

Although some data may not be recoverable, every available technological approach will be explored. The number of scenes added

to the USGS archive since the start of the LGAC initiative is more than 6.6 million (figs. 2 and 3).

As this effort to systematically acquire, reconcile, and ingest all recoverable IGS data continues, all data successfully ingested into the USGS Landsat archive become available from USGS data access portals and the commercial cloud (<https://www.usgs.gov/landsat-missions/landsat-data-access>). For more information on the LGAC initiative and reconciliation status, please visit the Landsat missions website (<https://www.usgs.gov/landsat-missions/landsat-global-archive-consolidation>).

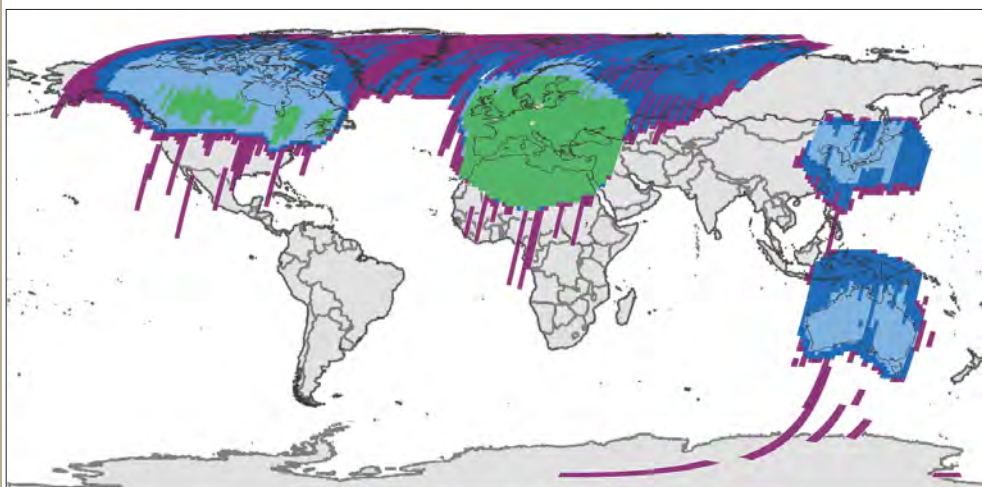


EXPLANATION

Number of scenes

1-10	501-750
11-50	751-1,000
51-100	1,001-1,250
101-250	1,251-1,500
251-500	1,501-2,000

Figure 2. The colors on this map indicate the number of Landsat 4–7 scenes that have been added to the Landsat archive by way of the Landsat Global Archive Consolidation initiative. More than 6.2 million scenes have been added as of January 2023.



EXPLANATION

Number of scenes

1-10
11-50
51-100
101-250
251-500

Figure 3. The colors on this map indicate the number of Landsat 1–3 scenes that have been added to the Landsat archive by way of the Landsat Global Archive Consolidation initiative. More than 400,000 scenes have been added as of January 2023.

For More Information

Please direct questions about the Landsat IC Network and LGAC to:
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Visit <https://www.usgs.gov> for more information about the USGS and <https://www.usgs.gov/programs/national-land-imaging-program> for specifics about the National Land Imaging Program.

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