

NGAC Landsat Advisory Group (LAG) Subcommittee Report



NGAC Meeting
June 20, 2024

Frank Avila, LAG Chair
Vasit Sagan, LAG Vice-Chair

LAG Mission

***Provide advice** to the Federal Government, through the Department of the Interior National Geospatial Advisory Committee, **on the requirements, objectives and actions of the Landsat Program** as they apply to continued delivery of societal benefits for the Nation and the global Earth observation community*

LAG was established in April 2012 as a subcommittee under the NGAC.

LAG Membership – April 2024

Name	Organization
Frank Avila (Chair)*	National Geospatial-Intelligence Agency (NGA)
Vasit Sagan (Vice Chair)*	St. Louis University
Holli Howard*	Google Maps
Devaki Raj*	Saab, Inc.
Keith Masback	Plum Run LLC
Anne Miglarese	Miglarese Consulting
Mariel Borowitz	Georgia Institute of Technology
Federal Contacts: Tim Newman, Tim Stryker, Greg Snyder, Peter Doucette <i>USGS/National Land Imaging Program</i>	

***NGAC Members**

Published LAG Reports

[Resolution on the 2030 Earth Observation Data Challenge: Interagency Operational Efficiencies – April 2024](#)

[Water's Edge of National Land Imaging Program Scope – September 2022](#)

[Landsat in the Cloud – May 2022](#)

[Revisiting the Land Remote Sensing Policy Act of 1992 – April 2021](#)

[Formulating a Big Data Science Challenge for Land Imaging Time-Series Data – April 2021](#)

[Landsat Data: Community Standard for Data Calibration – October 2020](#)

[Evaluation of a Range of Landsat Data Cost Sharing Models – June 2019](#)

[Landsat Future Mission Recommendations – April 2018](#)

[Landsat Data Cube Feasibility for Forecasting – April 2018](#)

[Analysis of Non-Federal Landsat User Requirements – June 2016](#)

[Sentinel Data Use Policies – December 2015](#)

[The Value Proposition for Landsat Applications – December 2014](#)

[Cloud Computing: Potential New Approaches to Data Management and Distribution – December 2013](#)

[Comments on NRC Report: Landsat and Beyond: Sustaining and Enhancing the Nation's Land Imaging Program – December 2013](#)

[Product Improvement – Advice USGS on Potential Means of Modifying the Current Products to Make Them More Useful to Commercial](#)

[Information Providers and Value-added Analysts – December 2013](#)

[Statement on Landsat Data Use and Charges – September 2012](#)

[The Value Proposition for Ten Landsat Applications – September 2012](#)

*18 reports in
12 years!*

Documents can be accessed at www.fgdc.gov/ngac/key-documents

LAG Task 1 - NLI Future Data Products



2023 LAG Task 1: NLI Program Future Data Products

- Reflect on the content of the Landsat archive and its continuing acquisitions, along with contributions from international and commercial vendors
- Examine any evolution or new trends in what data “products” are being requested by users, particularly in the “Cloud” era (images, pixels, time series, ...)
- Consider recommendations on what the National Land Imaging Program should offer to users in the 2030 timeframe. (content, format, delivery)

2023 LAG Tasks 1 : Progress Status

Current Status: LAG Members working on completing draft of recommendation paper

Task Lead: Keith Masback

Goal: Present final report to NGAC at October 2024 meeting

Current Status: First draft was created, needs members' input

2023 LAG Tasks 1 : Change of Scope

Change of Scope: Based on recommendations from USGS, we decided to develop our LAG Task 1 paper based on the Water's Edge paper published in 2022 ([link](#)) and incorporate new data, as well as Level 3 or 4 products to be generated from Landsat Next.

Task Lead: Vasit Sagan

Goal: Present final report to NGAC at Spring 2025 meeting

Current Status: Review past LAG papers, future data products, and scoping the paper

LAG Task 2 - Interagency Operational Efficiencies



2023 LAG Task 2 : Interagency Operational Efficiencies

USGS requested the LAG review and provide comments on the vision and plan to proposed interagency operational efficiencies to address the challenges of acquiring, managing, and publishing the vast amount of Earth observation (EO) data

- Current USGS Landsat archive is \approx 20PB (NASA's archive \approx 125PB)
- By 2030, the USGS Landsat archive will have grown to 35PB (NASA's archive \approx 325PB)
- In 2031, one year after Landsat Next operations begins, the USGS Landsat archive will be close to 50PB
- NASA, NOAA and USGS together spend billions of dollars each year on EO satellite missions. Yet they largely conduct satellite flight operations, data dissemination/access and user needs collection completely independently of each other

2023 LAG Tasks 2 : Progress Status

Task 2/Part 1 – Develop a resolution that provides an overview and endorses the interagency operational efficiencies concept.

- **Task Lead:** Anne Miglaresse
- **Current Status:** Completed - this paper was approved by the NGAC Landsat Advisory group (LAG) on March 26, 2024 and adopted by the NGAC on April 4, 2024.

Task 2/Part 2 – This paper will be a more detailed review of the interagency operational efficiencies concept with additional recommendations.

- **Task Lead:** Vasis Sagan
- **Current Status:** Paper outline and scope is under development
- **Goal:** Since the focus shifted to Revised Task 1 paper, we will reshape the scope of this paper based on the developments of the Task 1 paper.

LAG Endorsement - 2030 Earth Observation Data Challenge

- LAG endorses proposed collaborative approach by three agencies to address the challenges of acquiring, managing, and publishing the vast amount of Earth observation data that will be collected in the coming decades.
- Approach should investigate all aspects of common activities with a focus on improving access, the quality of the data, and reducing costs.
- The proposed collaboration would focus on three key areas:
 - Common services
 - Interoperability and ease of use
 - Cost savings
- By working together, the three agencies could address the challenges of managing and utilizing the vast amounts of Earth observation data that will be collected in the coming decades. This collaboration should lead to significant benefits for science, society, and the economy.

National Geospatial Advisory Committee – Landsat Advisory Group Comments on: The 2030 Earth Observation Data Challenge: Interagency Operational Efficiencies

The Landsat Advisory Group (LAG) provides the National Geospatial Advisory Committee (NGAC) initial comments on the proposed collaborative effort between NASA, NOAA, and USGS to address the challenges of acquiring, managing, and publishing the vast amount of Earth observation data that will be collected in the coming decades. At present, the 50-year USGS Landsat archive includes 20 petabytes (PB) of data, with an expected growth to an estimated 50 PB by 2031. Similarly, the NASA archive is now at 125 PB and is anticipated to grow to 325 PB by 2031. The resources and workflows necessary to effectively manage, store, and publish this vast amount of information simply do not exist today in any one of the three agencies.

Investments by the Federal Government in Earth observation satellite systems have increased significantly over the past five years. The primary focus and budgeting to date has been dedicated to the space segment. Now attention must be paid to the operational portion of the mission to transmit, manage, archive, and distribute these important national assets. The primary purpose of these missions is to acquire data and share it as broadly as possible with scientists, academics, and practitioners around the globe. At present there are significant inefficiencies driven by the stove pipes that result from multiple agencies managing the operational components of these missions. The three agencies are exploring a collaborative approach which should investigate all aspects of common activities with a focus on improving access, the quality of the data, and reducing costs. These activities should include:

- Flight Operations
- Ground Reception
- Initial Processing
- Archiving
- Cloud Storage
- Database Architecture (Database System)
- Data Access and Dissemination

The proposed collaboration would focus on three key areas:

1. **Common services:** By developing common standards and protocols, the agencies could make it easier for scientists and other users to access and utilize data from all three sources. This would lead to more integrated and comprehensive research, as well as more efficient and effective use of government-funded resources.
2. **Interoperability and ease of use:** The agencies currently have different systems for storing, processing, and distributing data. This makes it difficult for users to access and utilize data from all three sources. By developing common formats and interfaces, the agencies could make it easier for users to work with data from all sources. Scientists would be able to conduct more integrated and comprehensive research, leading to new discoveries and innovations. A common operational platform for data management and dissemination should promote development of harmonized, normalized, and geocoded time series data using open data cube concept.