COMMENTS ON:
THE 2030 EARTH OBSERVATION DATA CHALLENGE:
INTERAGENCY OPERATIONAL EFFICIENCIES

A Report of the National Geospatial Advisory Committee
Landsat Advisory Group
April 2024

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.

3. **Cost savings**: The three agencies currently operate largely independently, which leads to duplication of effort and less efficient use of federal resources. Working together, the agencies could consolidate infrastructure and services, negotiate better deals with vendors, and eliminate redundant overhead costs. These efficiencies may result in cost avoidance of hundreds of millions of dollars annually.

Advancing Interagency Operational Efficiencies

The NGAC strongly supports the initiative to promote interagency operational efficiencies and encourages the agencies to take action to explore and implement this approach in an expeditious manner. The proposed collaboration between NASA, NOAA, and USGS is an ambitious but achievable goal. The three agencies should work together to develop a detailed plan for implementing the proposed collaboration. This plan should include specific goals, timelines, and milestones. The agencies should also engage with stakeholders and the scientific community to gather input and ensure that the plan is aligned with the needs of the global user-base community.

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.

Next Steps

The Landsat Advisory Group will work with the USGS National Land Imaging Program to further explore this proposed collaborative effort and provide additional feedback on the scope, goals, and objectives of this initiative as it is developed.

Acknowledgments

This paper was approved by the NGAC Landsat Advisory group (LAG) on March 26, 2024 and adopted by the NGAC on April 4, 2024. The LAG team members developing this paper included Anne Miglarese, *Miglarese Consulting*; Vasit Sagan, *St. Louis University Geospatial Institute*; and Frank Avila, *National Geospatial-Intelligence Agency*.