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# **Landsat Advisory Group (LAG) Status Report**

## **NGAC Meeting** September 28, 2016

**Frank Avila**  
**LAG Vice-Chair**

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# LAG Purpose

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 2016 Membership

Name	Organization
Joanne Gabrynowicz (LAG Chair, NGAC Member)	University of Mississippi
Frank Avila * (LAG Vice-Chair, NGAC Member)	National Geospatial-Intelligence Agency (NGA)
Roger Mitchell (NGAC Member)	MDA Information Systems, Inc.
Rebecca Moore (NGAC Member)	Google, Inc.
Kass Green	Kass Green & Associates
Peter Becker	ESRI
Roberta Lenczowski	AmericaView
Tony Willardson	Western States Water Council
Steven Brumby *	Descates Labs
Walter Scott *	DigitalGlobe
Jed Sundwall *	Amazon Web Services

\* New Members

Federal Contact: Tim Newman and Peter Doucette (USGS)

# Status

- Initial LAG meeting held on August 2, 2016
  - Introduction of Team Members
  - Review and discussion of Study Tasks
  - Team member topic selections
- Discussion held post-meeting to propose team lead assignments
  - Proposed lead should be a previous LAG team member

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# LAG Task #1 – Revisit Smallsat Investigation

- Topic is a carry-over from 2015 study question

*“Regarding Sentinel and **new commercial smallsats and microsats**: identify success non-Federal users are having with data access and delivery mechanisms, data-use policies, and data applications. The USGS would also be interested in hearing what recommendations the LAG may have for USGS actions associated with these systems.”*

- Team *“determined the current [smallsat] industry was insufficiently mature to make any meaningful assessment at this time.”*

*“While early entrants such as SkyBox, UrtheCast, and Planet Labs have operational satellites, none had firm offerings of commercial data access.”*

# LAG Task #1 – Revisit Smallsat Investigation

- On the subject of smallsats... USGS is requesting that the LAG formulate a comprehensive narrative on the pros and cons of *existing* smallsat technology juxtaposed with Landsat 8 and Landsat 9 capabilities...in regards to capabilities related to:
  - ❑ Spectral collection capabilities and user needs, e.g., visible and near-IR, versus shortwave and thermal IR wavelengths
  - ❑ Radiometric and geometric calibration needs to support robust change analysis from a continuity of collection over time
  - ❑ Collection tradeoffs among swath width, spatial resolution, and area coverage
  - ❑ Support to different mission needs, e.g., situational awareness versus science driven; tactical versus strategic monitoring; spatial and temporal scales of the process being monitored; etc.

# LAG Task #1 – Revisit Smallsat Investigation

- Team Members -

Name	Organization
Kass Green – <b>TEAM LEAD</b>	Kass Green & Associates
Roger Mitchell (NGAC Member)	MDA Information Systems, Inc.
Peter Becker	ESRI
Roberta Lenczowski	AmericaView
Steven Brumby *	Descates Labs
Walter Scott *	DigitalGlobe

- First Team meeting scheduled on October 3, 2016
- Proposed Report Due Date – March 31, 2017

# LAG Task #2 – Temporal Data Cube Study

- Study the feasibility and utility of implementing temporal data cubes to support projection or ‘forecast’ models of land change trends
- It remains unclear whether a deeper market demand for forecasting land change will develop. To that end, the following questions are posed for further study:
  - In addition to Landsat, what other data sources (to include EO, SAR, and LIDAR) are optimally suited for leveraging (e.g., co-registered) to support data cube implementations for land change analysis and forecast modeling?
  - What kinds of Landsat time-series products would have the broadest community use, or most impactful contribution in specific areas?
  - Which organizations with expertise in forecast modeling are best postured to evaluate and demonstrate the forecast potential from a Landsat-based temporal data cube?
  - How far back in time into the Landsat archive should the staging of ‘analysis ready data’ be considered? E.g., early data collections such as multi-spectral scanner (MSS) data are less equipped (in terms of metadata) to support rigorous geometric and radiometric calibration compared to later collections.
  - How could efficient synergy be realized among government and commercial roles for data cube development, and operations (processing, storage, distribution) to satisfy broad community needs?

# LAG Task #2 – Temporal Data Cube Study

- Team Members –

Name	Organization
Roberta Lenczowski - <b>TEAM LEAD</b>	AmericaView
Rebecca Moore (NGAC Member)	Google, Inc.
Peter Becker	ESRI
Tony Willardson	Western States Water Council
Steven Brumby *	Descates Labs
Jed Sundwall *	Amazon Web Services
Frank Avila * (NGAC Member)	NGA

- First Team meeting held on September 9, 2016
- Proposed Report Due Date – June 30, 2017

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# LAG Task #3 – Data Continuity Mission Enhancements

- To what extent could ‘significant’ sensor enhancements be made in future Landsat missions, while maintaining acceptable backward compatibility? What would be the suggested methods for data aggregation and validation?
  - A working premise of the data continuity mission is that future collection sensor specifications maintain a level of ‘backward compatibility’ with past missions to facilitate time-series analysis over the entire record. For this reason, Landsat sensor specifications have evolved deliberately over time.
  - However, the impact to the data continuity mission from ‘significant’ sensor design enhancements, e.g., spectral and/or spatial resolution, needs to be better understood. This issue applies to future Landsat mission design, as well as integrating continuity data from third party sensors.

# LAG Task #3 – Data Continuity Mission Enhancements

- Team Members -

Name	Organization
Joanne Gabrynowicz (LAG Chair)	University of Mississippi
Kass Green	Kass Green & Associates
Tony Willardson	Western States Water Council
Walter Scott *	DigitalGlobe

- Task work-off will be deferred to a later date due to topic complexity and lack of a Team Lead
- Proposed Report Due Date – September 30, 2017

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# Australia Adopts LAG Survey

- The Australian Earth Observation Community Coordination Group is using the 2015 LAG-developed survey to capture Landsat-10 user requirements
- Results will be presented to USGS/NASA through Australia's Landsat Science Team member