



National Aeronautics and
Space Administration

NASA earth

Commercial SmallSat Data Acquisition (CSDA) Program Update

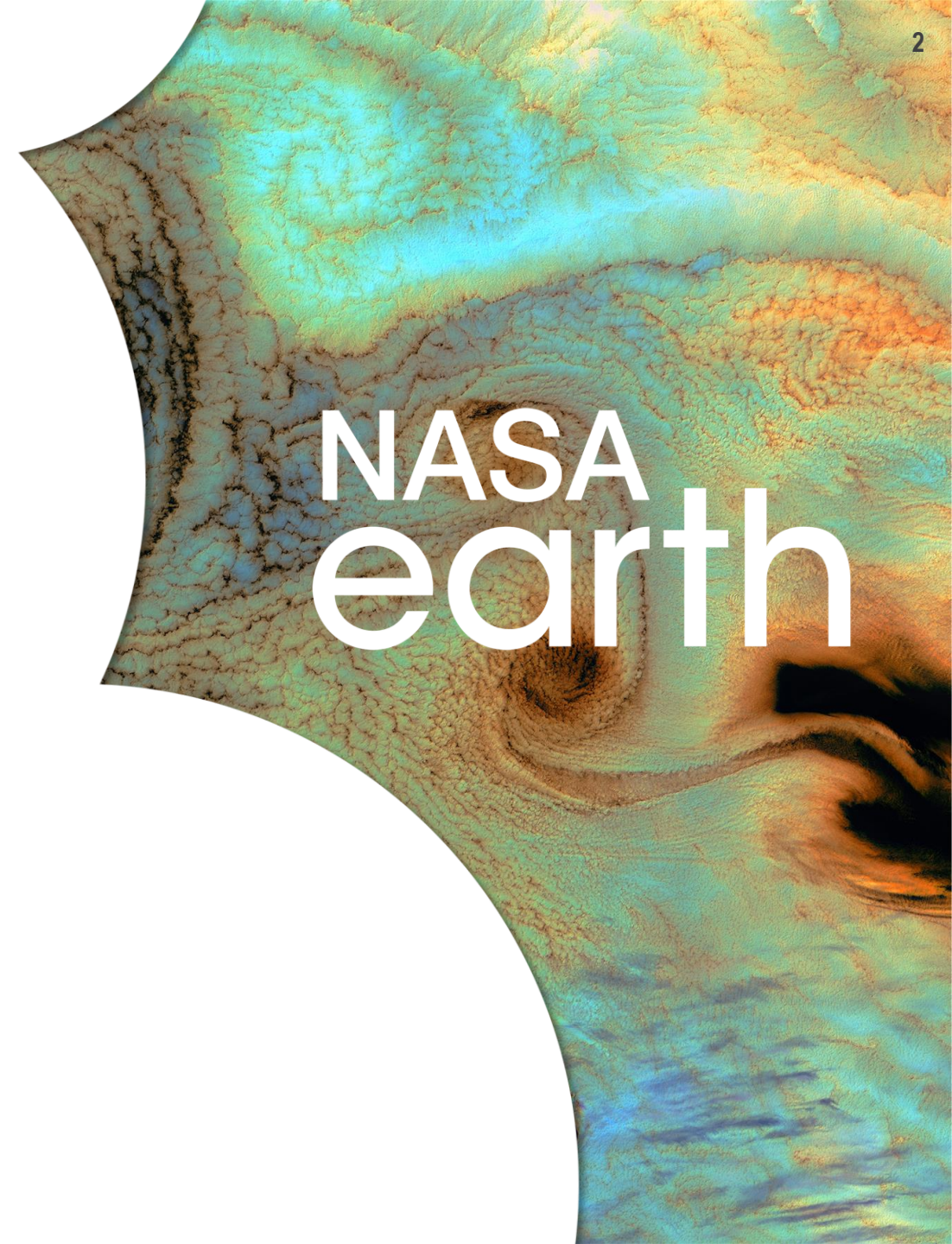
Dana Ostrenga
CSDA Project Manager
Earth Science Division
NASA Goddard Space Flight Center

Aaron Kaulfus
CSDA Data Manager
Earth Science Division
NASA Marshall Space Flight Center



Today's Discussion

03	Introduction	04	CSDA Program
08	Earth Science to Action Strategy	12	End User License Agreement
12	Partnerships	13	Guidelines & Evaluations
19	Science	22	Data Management
24	Data Access	28	Data Availability





Why buy commercial data?

- **Enhances our science and makes unique contributions to our mission.**

Complements existing NASA/US Gov satellite fleet with shorter revisit times, higher spatial resolution, and complementary or unique measurements.

What is NASA's role?

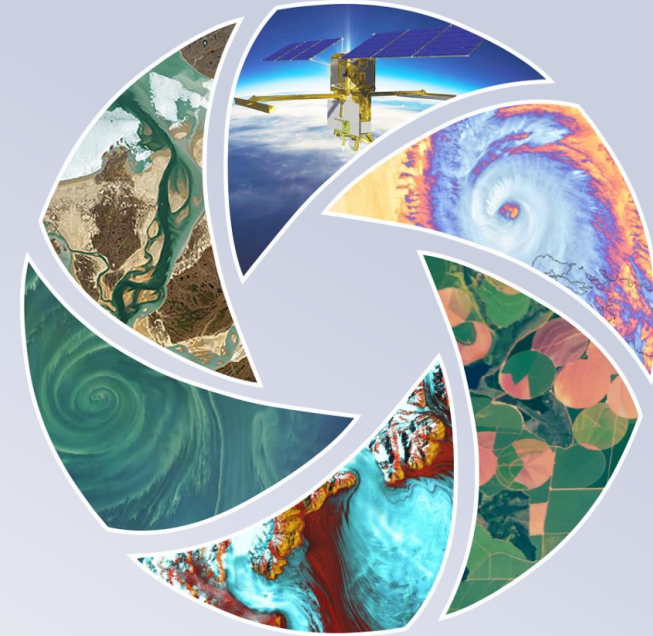
- **Acquiring, evaluating, using, and archiving the data.**

NASA has broad expertise in the techniques as well as the research & application fields.

Partnering with other federal agencies to maximize the value of commercial data.

CSDA Program Mission

Identify, evaluate, and acquire commercial satellite data that support NASA's Earth science research & application goals.



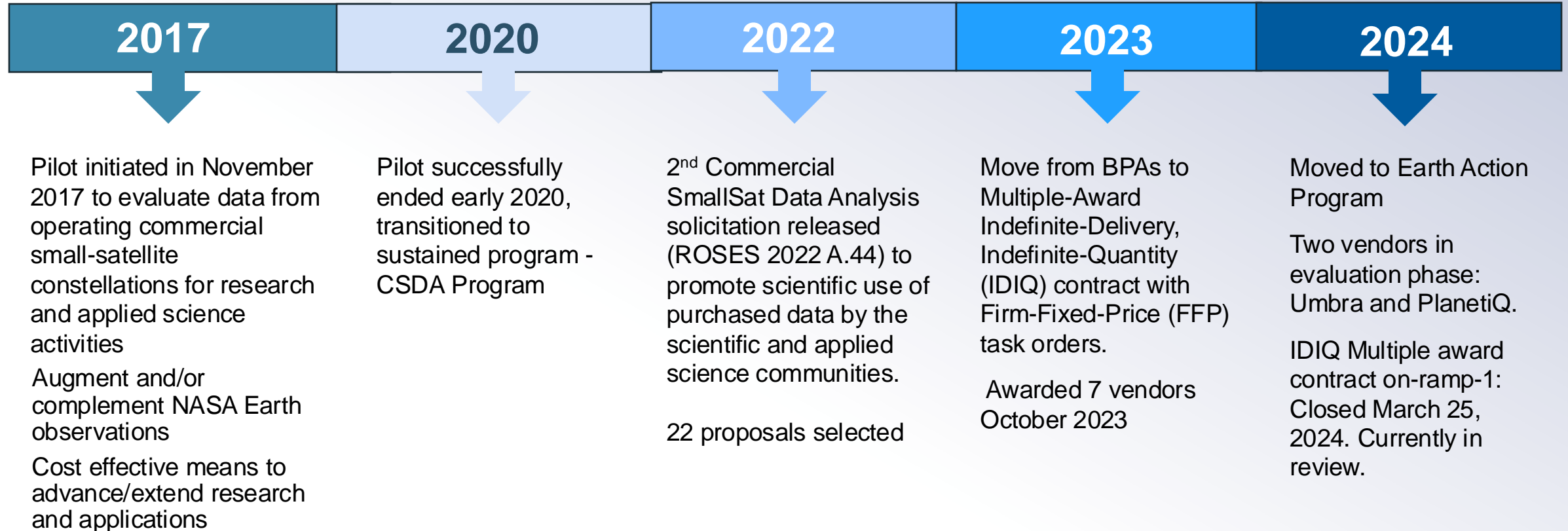
CSDA Program Goals

- Establish a continuous and repeatable process to on-ramp new commercial data vendors.
- Enable sustained use of purchased data for broader use and dissemination by NASA scientific community.
- Ensure long-term data preservation, access and distribution of purchased data and long-term access for scientific reproducibility.
- Coordinate with other US Government agencies and international partners on the evaluation and scientific use of commercial data.
- Compliance with 2003 US Commercial Remote Sensing Space Policy

[Commercial Smallsat Data Acquisition \(CSDA\) Program | Earthdata \(nasa.gov\)](https://www.earthdata.nasa.gov/esds/csda/commercial-datasets)

<https://www.earthdata.nasa.gov/esds/csda/commercial-datasets>

Program Timeline



What Does it Mean Scientific Use?

Scientific Non-Commercial Use is defined as Licensed Users of the Data pursuant to a government initiated, U.S. Government-funded and/or U.S. Government-peer reviewed investigation established through a Government Research Announcement or similar public notice of opportunity, and performed for the sole purpose of conducting experiments, evaluation, research, and/or development, including basic and applied research under a Government Science Program. The minimum data rights stated shall apply to all phases of the CSDA Program.

.....Can this change?



Supporting Science

Air Quality

Poor air quality is one of the largest global environmental and health threats.

Disasters

For emergency managers, decision makers, and anyone interested in using NASA data to understand the vulnerability and exposure of a community to a disaster.

Agriculture

Directed toward agricultural and water resource managers, decision makers, and anyone interested in using NASA data to monitor crop production and water availability.

Biological Diversity

Data to monitor biodiversity and forecast changes to ecological communities.

Greenhouse Gases

Researchers, decision makers, and applications in need of satellite data on climate-warming gases.

Water Management

Resource managers and researchers who have a critical need to monitor bodies of water locally, regionally, and globally.

Sea Level Change

For city planners, decision makers, and others interested in using data to monitor changes and assess impacts, and risks associated with changing sea level.



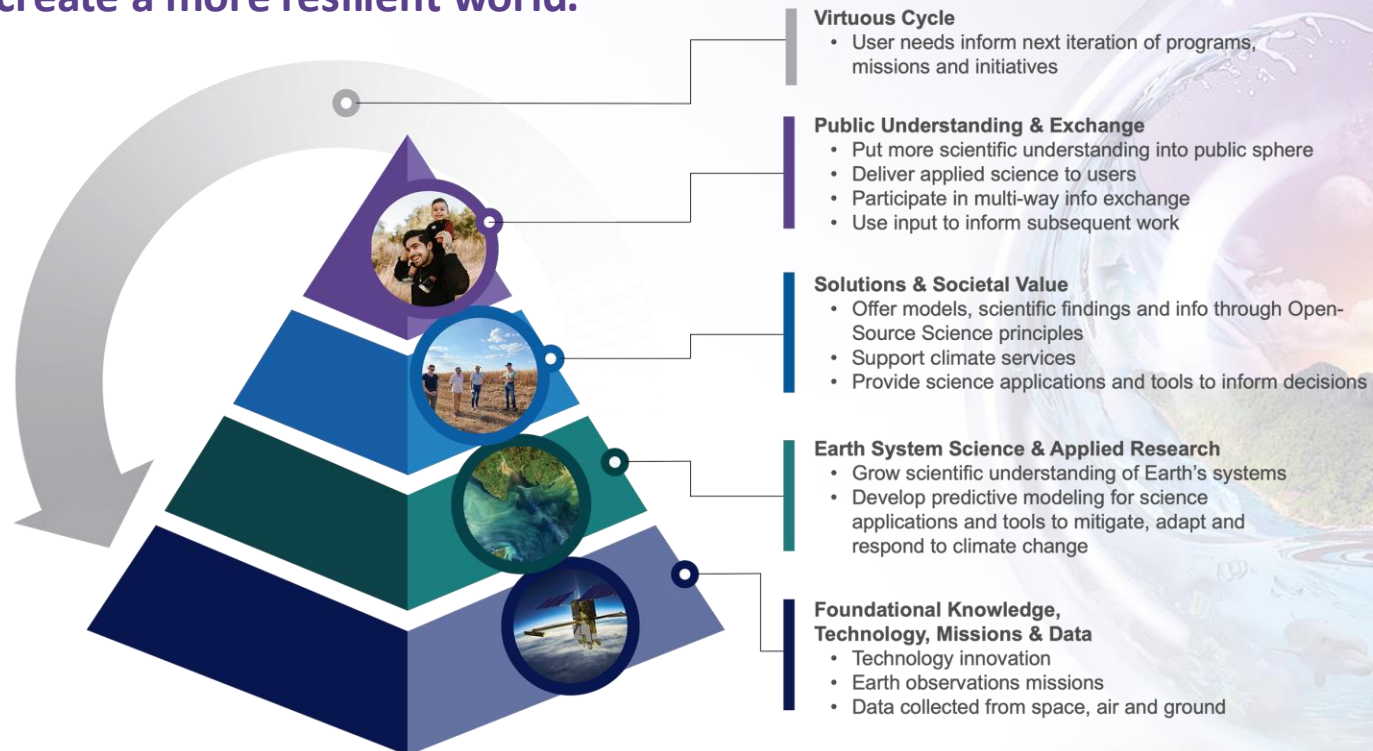
Earth Science to Action Strategy

Strategic Goal

To achieve our vision and mission with a sense of urgency, while tackling the complexities associated with the global challenges of our changing planet, we have adopted a single strategic goal:

NASA EARTH SCIENCE STRATEGIC GOAL:

Within a decade, we will advance and integrate Earth science knowledge to empower humanity to create a more resilient world.



Earth Science to Action Strategy Objectives

Objective 1:

Holistically Observe, Monitor, and Understand the Earth System

- Key Result 1.1** **The most advanced Earth observing system in the world:** We will develop a holistic and integrated system of observing systems.
- Key Result 1.2** **Cutting-edge technology:** We will pursue a set of innovative technology demonstrations and continuously modernize our assets.
- Key Result 1.3** **Integrated and trusted Earth system data:** Working with partners nationally and internationally, we will integrate data from various sources and calibrate and validate them to provide a reliable source of consistent and trusted Earth system data and to simultaneously facilitate a seamless continuity of critical observations.
- Key Result 1.4** **Scientific breakthroughs to better understand Earth:** We will advance Earth science knowledge by addressing the various science questions posed by the science community, through formalized and structured processes, such as the decadal surveys and other community efforts.

Objective 2:

Deliver Trusted Information to Drive Earth Resilience Activities







- Key Result 2.1** **Models that capture the intricacies of the Earth system:** We will develop an advanced and integrated end-to-end Earth system modeling capability
- Key Result 2.2** **Co-designed solutions and tools to support users:** We will co-develop user-centered solutions options and solutions-oriented applications and support tools with various partners and stakeholders.
- Key Result 2.3** **Science-based information we can trust and act on:** We will provide trusted, actionable, and science-based information. Engaging and working jointly with various partners, nationally and internationally, we will generate fit-for-purpose, trusted information combining environmental observations, past and current, with other datasets and with model projections generated from various sources, including from space, airborne platforms, or ground-based systems.
- Key Result 2.4** **Promotion of Earth information as a national asset:** We will scale up information sharing, dissemination, and outreach to enhance awareness.



Recent Changes

- CSDA Program moved from Earth Science Data Systems Program to the Earth Action Program
- New leadership in 2024:
 - *Melissa Martin, NASA HQ, CSDA Program Manager*
 - *Dana Ostrenga, NASA GSFC, CSDA Project Manager*
- All new business is on-ramped via Indefinite Delivery Indefinite Quantity (IDIQ) process. Competitive task orders will be issued for vendors to propose
- CSDA Program Indefinite Delivery Indefinite Quantity (IDIQ) On-Ramp 1 - Request for Proposals (RFP), closed March 25, 2024. Currently in review process.
- Established a new EULA structure, a three-tiers of End User License Agreement (EULAs)
- CSDA-acquired data now discoverable through Earthdata Search with more being integrated
- Two new vendors are in evaluation phase: PlanetiQ and Umbra
- Development of an CSDA Executive Board to provide guidance on future data buys

Three-Tiers of End User License Agreements (EULAs)

Authorized User Community	Type of EULA		
	Public Release	U.S. Gov Plus	U.S. Gov
U.S. Federal Government including: <ul style="list-style-type: none"> • U.S. State/Local/Tribal Government; Contractors and Grantees associated with a Government Agency; NGO's and Non-Profit Organizations working with USG 			
U.S. Federal Government as stated above, Foreign Civil Partners for USG purposes			
Public Release., Open			

USG license is minimum level for CSDA

Scientific Non-Commercial Use License

Modeled after National Reconnaissance Office (NRO) Geospatial Intelligence Systems Acquisition Directorate Commercial Systems Program Office (CSPO) common, standardized family of EULAs.

Partnerships

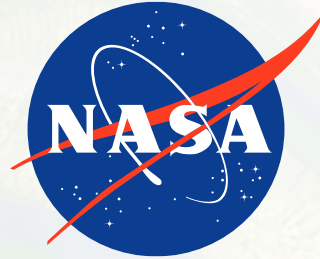
Building new partnerships and improving data sharing possibilities

- Working closely with U.S. Government agencies to align and share data acquisitions, share evaluation processes, share data requirements and needs.



- Continuing our collaboration with international partners in developing guidelines, data evaluations, and programmatic and technological processes.





ESA-NASA Joint EO Mission Quality Assessment Framework

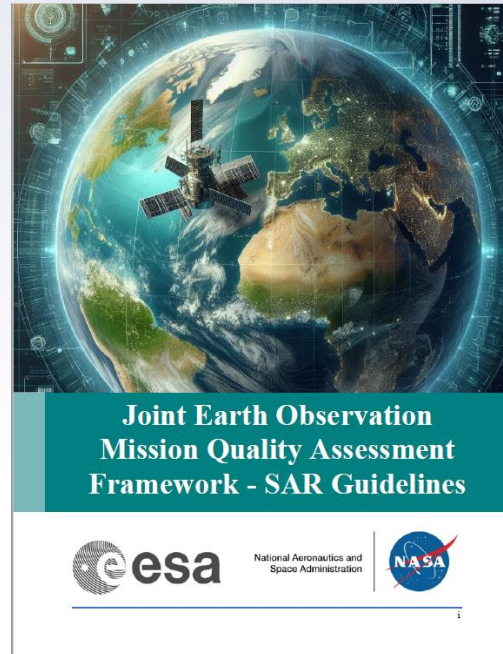
ESA's Earthnet Data Assessment Project (EDAP) succeeded in establishing such an EO mission quality assessment framework, which was also later customised for several different sensor domains.

CSDA created an evaluation process to assess the quality and the integration into various research and applications supporting different thematic areas.

To ensure that decisions on acquisition of commercial data can be made with confidence, it is generally acknowledged that there is a need for an objective framework with which to assess the data quality of these commercial sources.

Data Provider Documentation Review			Validation Summary
Product Information	Metrology	Product Generation	
Product Details	Radiometric Calibration & Characterization	Radiometric Calibration Algorithm	Radiometric Validation Method
Availability & Accessibility	Geometric Calibration & Characterization	Geometric Processing	Radiometric Validation Results Compliance
Product Format, Flags & Metadata	Metrological Traceability Documentation	Mission Specific Processing	Geometric Validation Method
User Documentation	Uncertainty Characterization		Geometric Validation Results Compliance
	Ancillary Data		

ESA-NASA signature of the SAR Guidelines



NASA's Melissa Yang Martin (Commercial Smallsat Data Acquisition Program Manager) and ESA's Henri Laur (Head of Mission Management and Product Quality Division), at official signature of the *ESA-NASA's Joint EO Mission Quality Assessment Framework – SAR Guidelines*, in June 2024

From this moment onwards, with this ESA-NASA signature and agreement, the framework is now officially further developed as a collaboration between ESA and NASA, and released in the form of guidelines that are domain-specific (i.e., SAR guidelines, Optical guidelines, etc...).

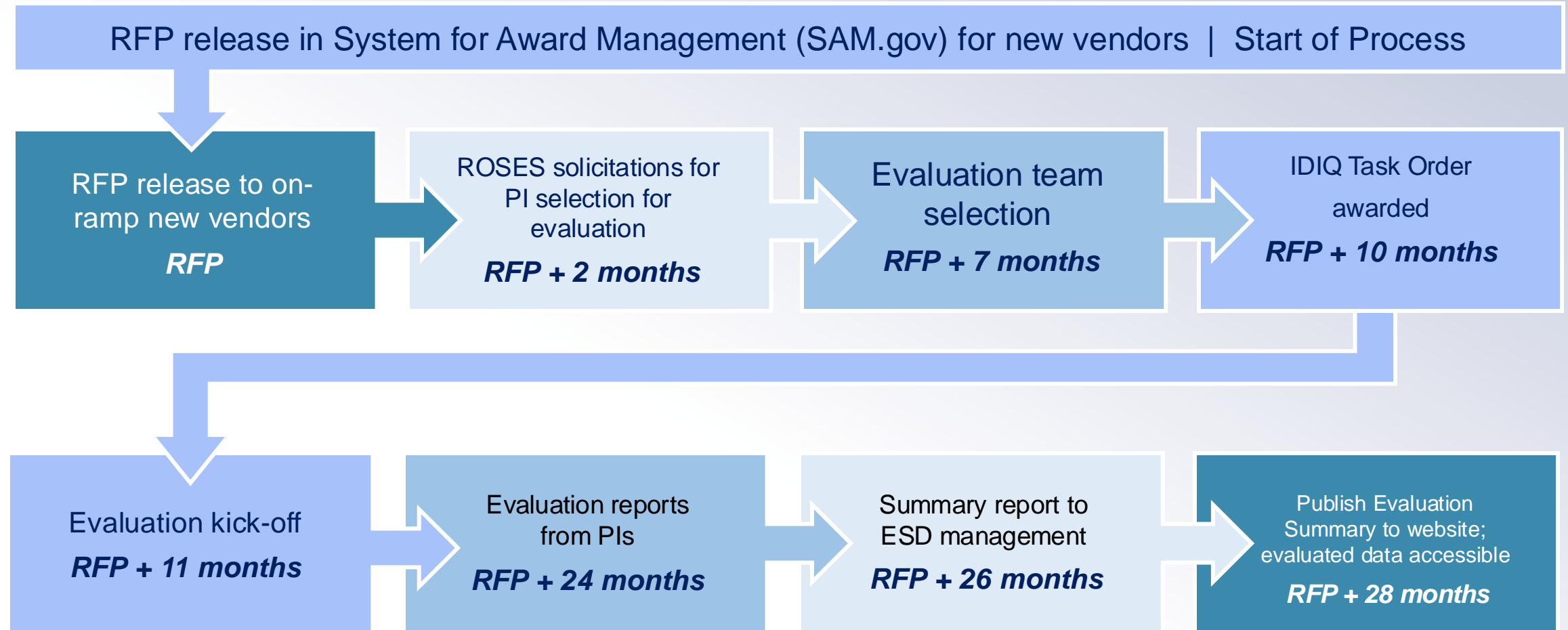
Data Evaluation Criteria

1. Accessibility of vendor supplied imagery and data
Ease and efficiency of search, discover, and download from vendor systems.
2. Accuracy and completeness of metadata
Accuracy and completeness of metadata provided by vendor.
3. Quality of User Support Services
Availability, responsiveness, and technical expertise required to answer PI inquiries.
4. Usefulness of data for advancing Earth system science research and applications
Ability of data to support Earth system science research and applications activities.
5. Quality of vendor supplied imagery and/or data
Data attributes such as geolocation accuracy, radiometric accuracy, and platform intercalibration. Data quality evaluation will use the ESA-NASA Evaluation Guidelines.



NASA is working to decrease the time it takes to complete evaluations while maintaining the high levels of evaluation and reporting.

Evaluation Process



We recognize that this process is slow and are working to make it more efficient.

Note: approximate times

Upcoming Changes

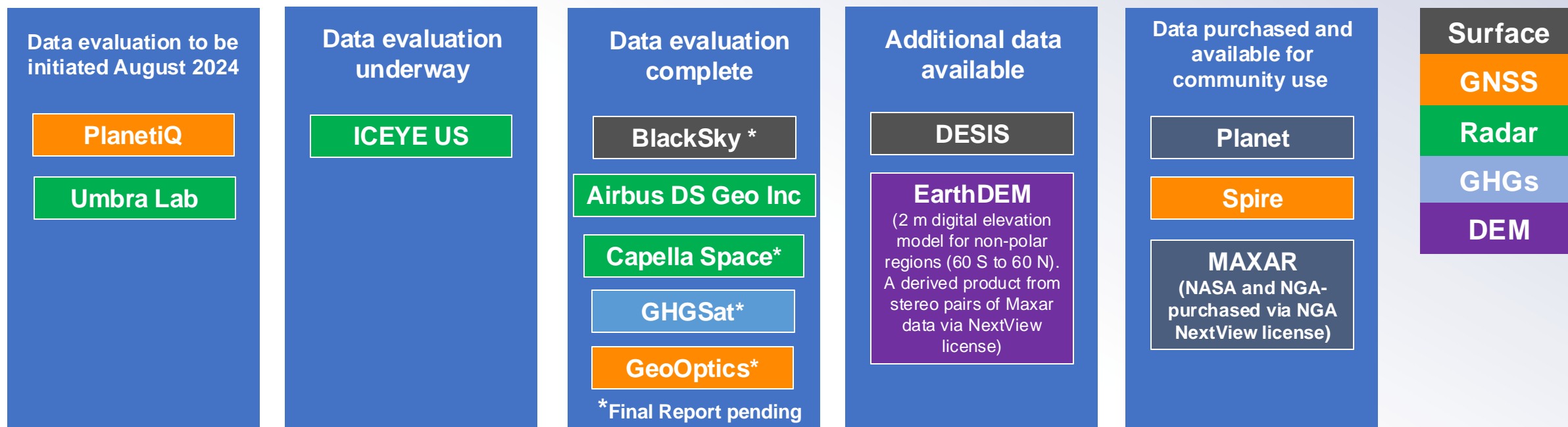
- New data evaluation process:
 - Data quality evaluation to be completed by NASA CSDA SMEs
 - Upon completion, Vendor will be considered in sustained phase and will be able to respond to competitive task orders
 - Data utility will be assessed through a two-year funded ROSES call that will solicit proposals that will show how CSDA data will provide new or supplemental scientific knowledge or capabilities beyond work being formed under existing NASA Earth Science focus areas and programs. The work proposed will characterize the utility of the CSDA data holdings in the context of NASA Earth Science research and applications. **ROSES.48 ~November 2024**
- Expansion of use of NASA Commercial Data:
 - Exploring options to support operational use of CSDA data, but with priorities continued to be aligned to NASA science research and applications
- New communication strategy
 - Webinars, website updates, vendor highlights, development of tools

Scope of Program & Vendor Status

Hyperspectral, Optical/Multispectral, Radar/Microwave, Radio Occultation, Digital Elevation Models

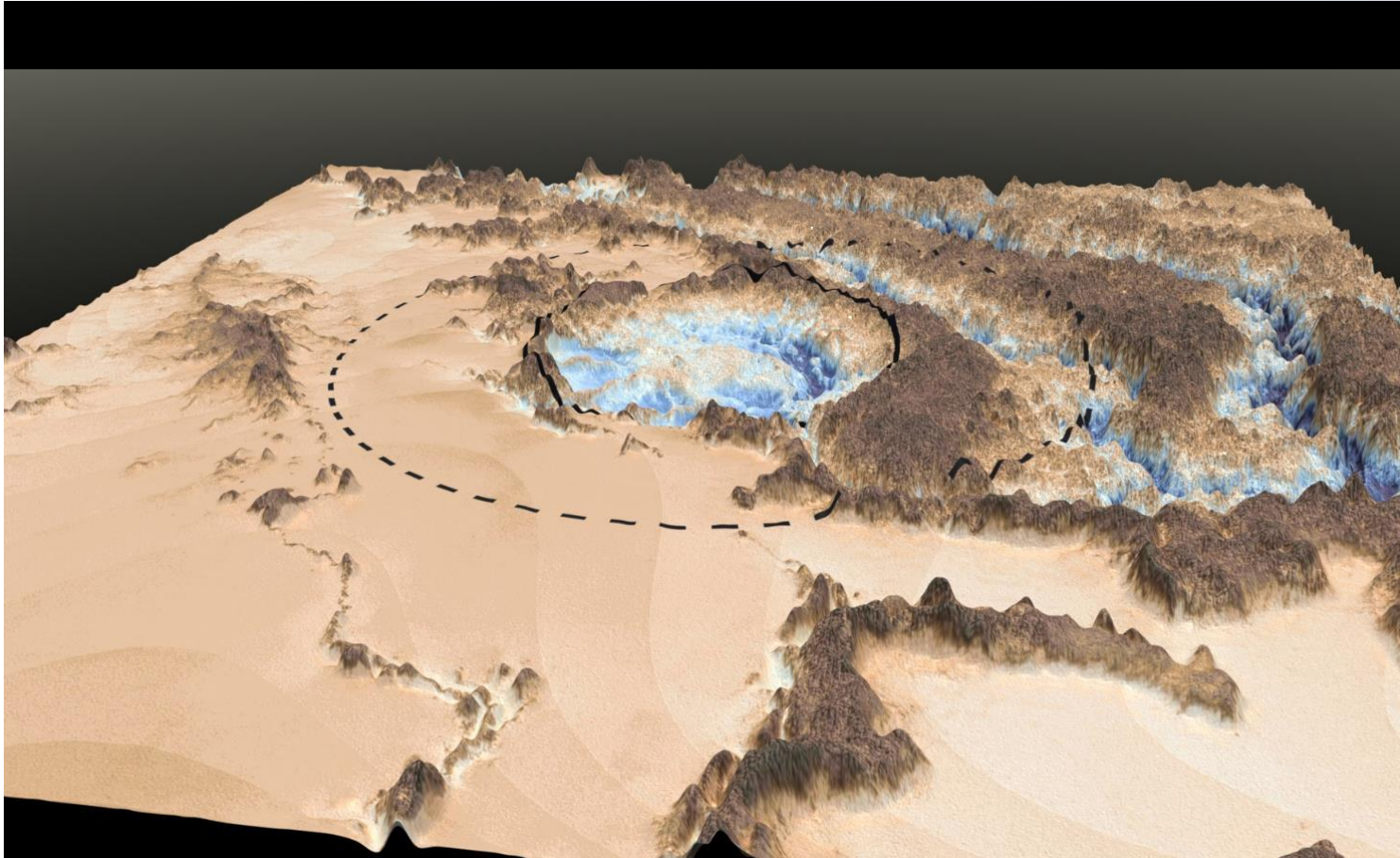
Evaluations are continuing with teams assessing BlackSky, GHGSat, GeoOptics, Capella Space, and ICEYE US. Expected completion date is end of CY 2024

Two new vendors are entering science data evaluation phase: PlanetiQ and Umbra



CSDA Planet DEMs

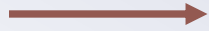
Iturralde Bolivia: Inner Ring 8 km; Outer Ring 17 km



- Planet Dove Classic 4 m x-y DEMs can be produced even in the tropics where cloud cover is a problem.
- Registration to ICESat-2 & GEDI provide calibration & accuracy.
- Because of daily revisit, Planet DEMs can be produced where EarthDEM DEMs are absent or not current.

Airbus DS Geo Inc Science Results

Lewotolok, Indonesia lava flow and explosion crater
Jan-Jul 2021 Spotlight mode



22-day pair in S. California, showing coherence and signals in agricultural fields and clear signal at geothermal plant.



Includes copyrighted material of © 2020-2021 Airbus DS Geo Inc, USG,
All rights reserved.

CSDA Tree Carbon Work in Semi-Arid Africa





CSDA Data Management

Aaron Kaulfus

Data Management Strategy

Evaluation

- PIs directly interact with vendors to request and access data.
- Vendors provide an inventory of requested data.
- NASA mirrors data.

Sustained Use

- Manage and archive **mirrored** data in NASA cloud
- Provide search and access to the data (SDX)
- Make data available to approved researchers
 - Verify users
 - Validate quotas

Long-term Preservation

- Users first search whether the desired data is already available in NASA catalog.
- Users will directly interact with vendors for new orders.
- Earthdata cloud will host the data long-term and provide an egress solution.
- Make data available to approved researchers

Data Access and Use

Access

- Approaches currently vary with vendors
<https://www.earthdata.nasa.gov/esds/csda/commercial-datasets>
- Eligibility to download validated through USG grant license or NASA email – validation and additional download support by NASA CSDA MSFC team.

Limits on data use

- No research limits under licenses
- No publication limits in contract statements of work (Maxar has an additional permission step)
- Sharing of data limits exist – e.g., cannot put data out on anonymous FTP
- Sharing of derived data products not limited if manipulated in a nonreversible way
- **Licensing is for science use only—restricted from use for Operations (as of August 2024)**

Derived vs Value-Added Product

Derived Product

- Irreversible modification of Licensed Material such that extraction of the principal features and characteristics of the source Licensed Material is impracticable.
- *Users may generate unlimited Derived Products from the data and share according to the license of the source data.*

Value Added

- Modification of Licensed Material through technical manipulation and/or addition of data where the principal features of characteristics of the source Licensed Material are retained and extractable through technical means.
- *Value Added Products may only be shared with Licensed Users*

Copyright and Acknowledgments

All visualize representations should be marked with a copyright statement

- Data products: "@ <vendor> YYYY. All rights reserved"
- Derived Products: "Includes copyrighted materials of <vendor>. All rights reserved"
- Joint copyright statements may be used as appropriate

CSDA Acknowledgement

- We request that acknowledgement of data use be given
- "This work utilized data made available through the NASA Commercial SmallSat Data Acquisition (CSDA) Program"

Please notify CSDA when results are published!

How to Request Access

All prospective users are subject to authorization prior to being provided access to data

User must:

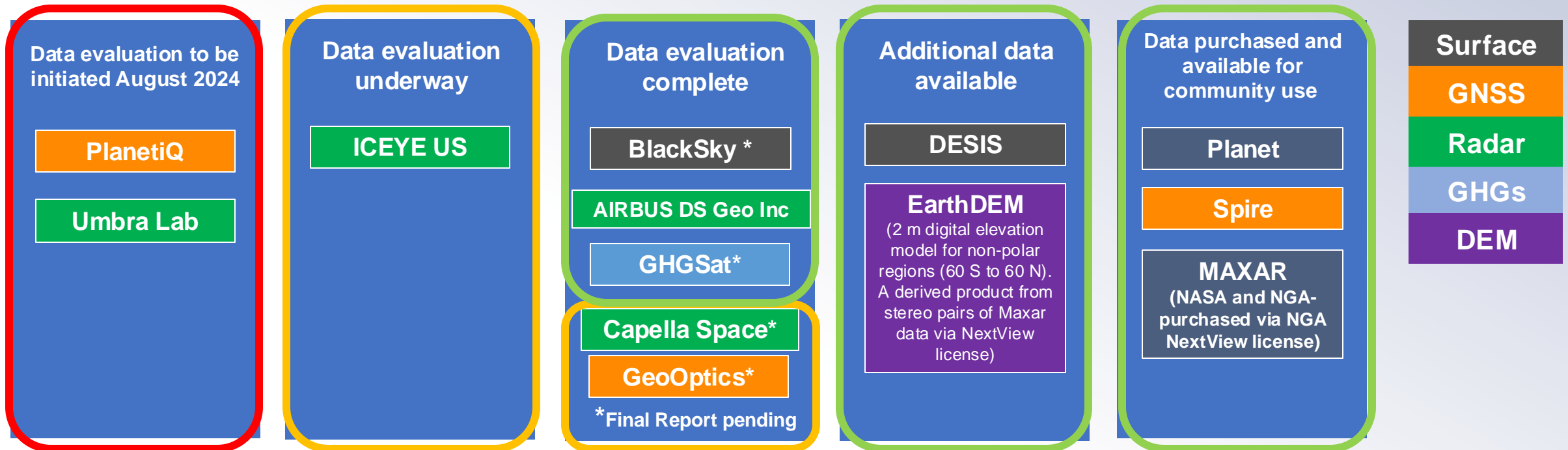
- Provide basic contact information (name, email, affiliation)
- Provide high-level description of the *science* the data will support
- Concur that you have read and agree to the provided vendor-specific EULAs

Signup form: <https://csdap.earthdata.nasa.gov/signup>

Once approved, users will receive email notification with data access details

Earthdata Username	<input type="text"/>
	<small>An Earthdata profile is required for ordering data through the Smallsat Data Explorer. If you don't already have one, you can register here.</small>
Title	<input type="text"/>
First Name*	<input type="text"/>
Last Name*	<input type="text"/>
Email Address*	<input type="text"/> <small>Please provide a nasa.gov (preferred) or institutional email</small>
Position	<input type="text"/>
Affiliation / Supporting Institution*	<input type="text"/> <small>Please expand all acronyms or abbreviations. For example: University of Alabama in Huntsville or Goddard Space Flight Center.</small>
Government Funding Agency*	<input type="text" value="Bureau of Land Management"/>
Department	<input type="text"/> <small>Please expand all acronyms or abbreviations. Examples include university departments and programs or subagency of the supporting institution.</small>
Are you a US Government Civil Servant?*	<input type="radio"/> Yes <input checked="" type="radio"/> No
Please provide the Grant or Contract Number under which this work will be performed*	<small>A grant or contract number is required unless you are a Civil Servant.</small> <input type="text" value="Grant or Contract Number"/> <input type="text" value="Grant Start Date (Optional)"/> <input type="text" value="Grant End Date (Required)"/> + Add another grant
Research Area*	<input type="text"/>
Please provide a detailed description of how you will use the data*	<input type="text"/>
Select Vendor(s)/Product*	<input type="checkbox"/> Maxar (NASA only) <input type="checkbox"/> Maxar - WorldView 4 (NASA only) <input type="checkbox"/> Maxar IKONOS (NASA only) <input type="checkbox"/> EarthDEM <input type="checkbox"/> Teledyne Brown Engineering, Inc. <input type="checkbox"/> Planet <input type="checkbox"/> Spire Global, Inc. <input type="checkbox"/> Airbus U.S. <small>For additional details on available data, please see the CSDA Program commercial data and frequently asked questions websites.</small>
I have read the Non-Disclosure Agreement(s) and End User License Agreement(s) above and agree to follow all policies and guidelines contained.*	<input type="checkbox"/>
<small>Scientific use: use by Licensed Users of the data products pursuant to a NASA-initiated, U.S. Government-funded, and/or U.S. Government-peer reviewed investigation established through a NASA Research Announcement or similar public notice of opportunity, and performed for the sole purpose of conducting experiments, evaluation, research, and/or development, including basic and applied research under a Government Science Program. Scientific use is not intended for the development of commercial products or services and does not include activities funded or sponsored by non-governmental organizations or activities outside of U.S. Government.</small>	
I have read the Scientific Use definition and acknowledge data acquired through the CSDA Program will be used in accordance with this definition as specified in the End User License Agreement(s)*	<input type="checkbox"/>

Data Availability Overview



Planet Labs, PBC

Multispectral / Optical

Available Products

- PlanetScope, RapidEye
 - Surface and Top of Atmosphere Reflectance
 - Full archive
 - Accessed through Planet Explorer
- SkySat
 - Scenes and Videos
 - Limited archive
 - Accessed through SDX

Who

- U.S. Federal Civil Agency funded researchers

<https://www.earthdata.nasa.gov/esds/csda/csda-vendor-planet>

	Planet Labs, PBC	
Constellation / Product	PlanetScope, RapidEye	SkySat
Product Type	Multispectral (RGB, NIR)	
Processing Levels	Surface Reflectance (SR) and Top of Atmosphere (TOA) Radiance; Basic and orthorectified	
Availability Dates	12/31/2005 - Present	3/10/2015 – 12/12/2019
Spatial Resolution	3 - 6.5 m	< 1 m



Includes copyrighted material of Planet Labs PBC. All rights reserved.

Maxar

Multispectral / Optical

Available Products

- IKONOS, GeoEye, QuickBird, Worldview 1-4
 - Surface and Top of Atmosphere Reflectance
 - Full unclassified archive
 - Access by request

Who

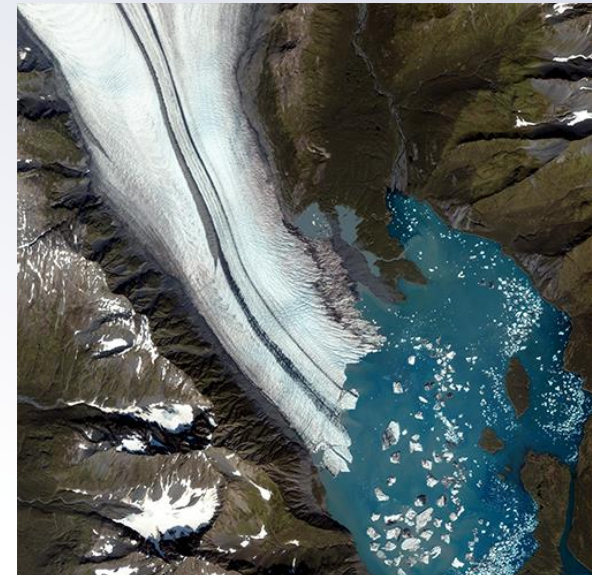
- NASA funded researchers

Public use of data is subject to approval:

<https://csdap.earthdata.nasa.gov/signup/maxar/data-public-use-form/>

<https://www.earthdata.nasa.gov/esds/csda/csda-vendor-maxar>

	Maxar
Constellation / Product	Worldview 1-4, GeoEye-1, QuickBird, IKONOS
Product Type	Multispectral, Panchromatic
Processing Levels	Surface reflectance (SR) and Top-of-atmosphere (TOA); Un-projected, projected, and orthorectified
Availability Dates	10/24/1999 - Present
Spatial Resolution	0.31 - 4.0 m



©2005 Maxar. All rights reserved.

Polar Geospatial Center

Digital Elevation Model

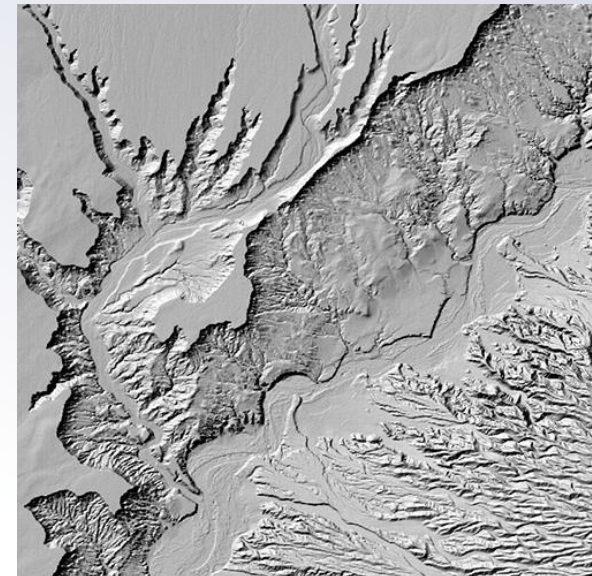
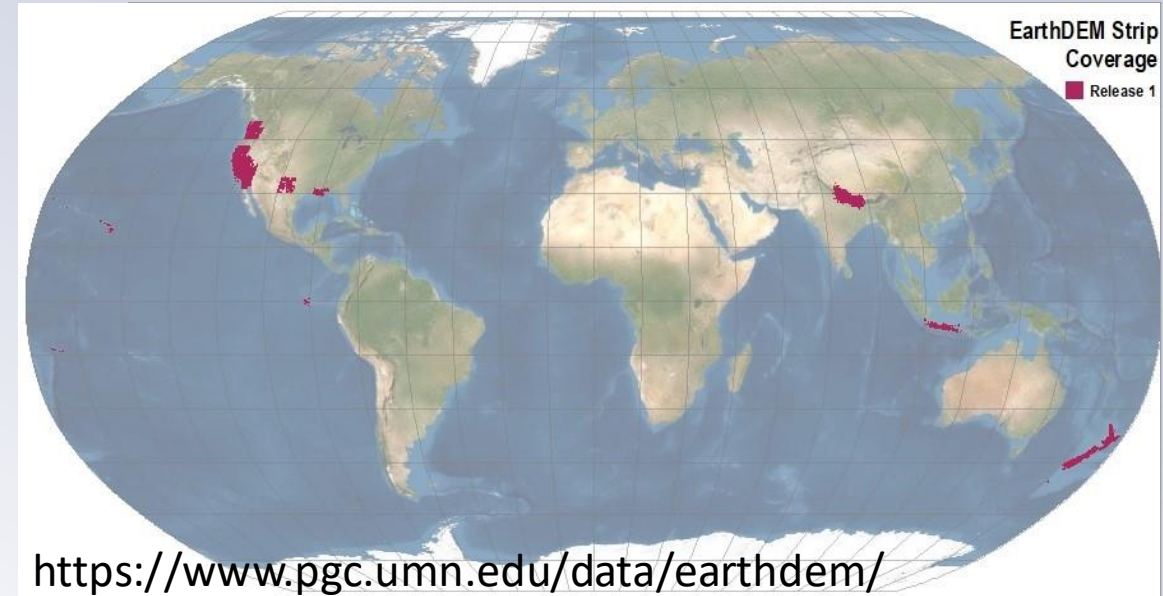
Available Products

- EarthDEM
 - DEM strips and mosaics derived from Maxar imagery
 - Limited Release
 - Accessed through SDX

Who

- U.S. Government funded researchers
- DEMs derived from Maxar data are not considered derived products

<https://www.earthdata.nasa.gov/esds/csda/csda-vendor-polar-geospatial-center>



DEM(s) created by the Polar Geospatial Center from Maxar imagery

Spire Global, Inc.

Radio Occultation

Available Products

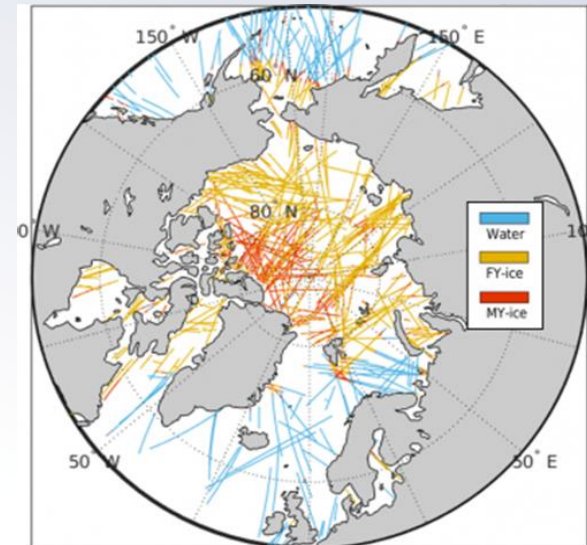
- Low Earth Multi-Use Receiver (LEMUR)
 - Radio Occultation, Reflectometry, Bistatic radar, Ionospheric electron profiles
 - Full archive
 - Accessed through SDX

Who

- U.S. Government funded researchers

<https://www.earthdata.nasa.gov/esds/csda/csda-vendor-spire>

	Spire Global, Inc
Constellation / Product	GNSS Radio Occultation and Grazing Angle Reflectometry Receivers
Product Type	Satellite orbit, radio occultation, reflectometry, ionosphere products
Processing Levels	Raw (L0), L1, Geophysical products (L2)
Availability Dates	9/24/2018 - 4/18/2019 (partial) 11/1/2019 - 6/2024 (all)
Spatial Resolution	



Includes copyrighted material of Spire Global. All rights reserved.

Teledyne Brown Engineering

Hyperspectral

Available Products

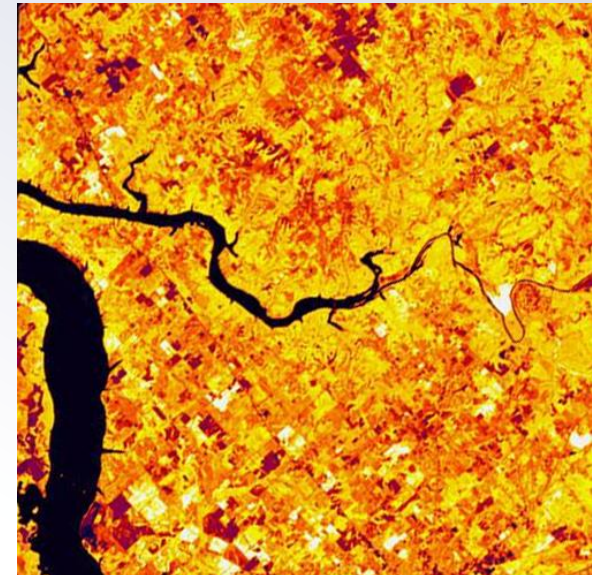
- Top of Atmosphere and Surface Reflectance
- DLR Earth Sensing Imaging Spectrometer (DESI)
 - Limited archive
 - Accessed through SDX (Fall 2024)

Who

- U.S. Government funded researchers

<https://www.earthdata.nasa.gov/esds/csda/csda-vendor-teledyne-brown-engineering>

	TBE
Constellation / Product	DESI (MUSES platform on ISS)
Product Type	Hyperspectral (shortwave and near-infrared)
Processing Levels	Orthorectified Top of Atmosphere and Surface Reflectance
Availability Dates	11/21/2018 - Present
Spatial Resolution	30 m



Includes copyrighted material of Teledyne Brown Engineering, Inc., All Rights Reserved.

Airbus DS Geo Inc

Radar / Microwave

Available Products

- TerraSAR-X, TanDEM-X, PAZ
 - Single Look Slant Range Complex (SSC), Geocoded Ellipsoid Corrected (GEC), Enhanced Ellipsoid Corrected (EEC), Coregistered Single Look Slant Range (CoSSC)
 - Limited archive
 - Accessed through SDX
- SPOT 6 and 7; Pléiades 1A and 1B, and Pléiades Neo 3 and 4 Constellation
 - Optical data (not archived but can be purchased)

Who

- U.S. Government funded researchers

<https://www.earthdata.nasa.gov/esds/csda/csda-vendor-airbus>

	Airbus DS Geo Inc
Constellation / Product	TerraSAR-X, TanDEM-X, PAZ X
Product Type	X-band Synthetic Aperture Radar (SAR)
Processing Levels	Single Look Slant Range Complex (SSC), Geocoded Ellipsoid Corrected (GEC), Enhanced Ellipsoid Corrected (EEC), Coregistered Single Look Slant Range Complex (CoSSC)
Availability Dates	11/19/2007 to 11/25/2022
Spatial Resolution	<1 - 40 m



Includes copyrighted material of Airbus DS Geo Inc All rights reserved.

BlackSky

Optical Imagery

Available Products

- BlackSky Constellation
 - Anthro and Ortho processing
 - Limited archive
 - Accessed through SDX

Who

- U.S. Government funded researchers

<https://www.earthdata.nasa.gov/esds/csda/csda-vendor-blacksky>

	BlackSky
Constellation / Product	Global
Product Type	Multispectral (RGB), Panchromatic
Processing Levels	Anthro and Ortho
Availability Dates	11/19/2007 to 11/4/2022
Spatial Resolution	<1 - 50 m



Includes copyrighted material of BlackSky Inc. All rights reserved.

GHGSat

Multispectral / Optical

Available Products

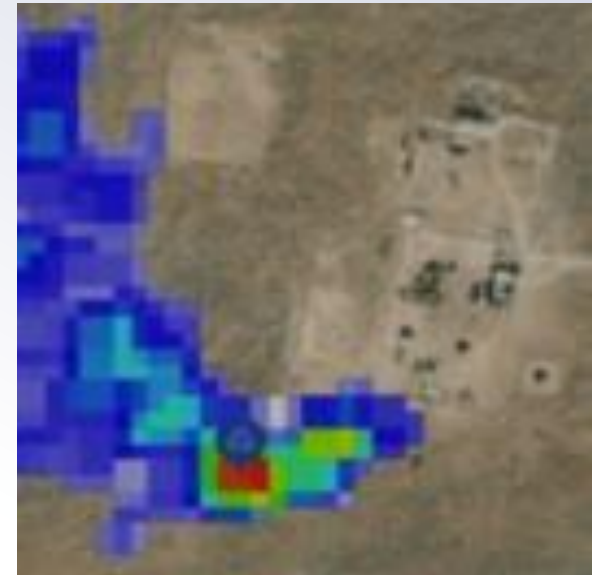
- Methane observing GHGSat constellation
 - Methane Abundance, Concentration, Emission Rates
 - Limited archive
 - Accessed through SDX

Who

- U.S. Government funded researchers

<https://www.earthdata.nasa.gov/esds/csda/csda-vendor-ghgsat>

	GHGSat
Constellation / Product	GHGSat-D, C1, C2
Product Type	Spectrometry (SWIR)
Processing Levels	Methane Abundance, Concentration Maps, Emission Rates
Availability Dates	1/3/2021 - 5/23/2024
Spatial Resolution	<30 m



Includes copyrighted material of GHGSat Inc. All rights reserved.

GeoOptics

Radio Occultation

Available Products

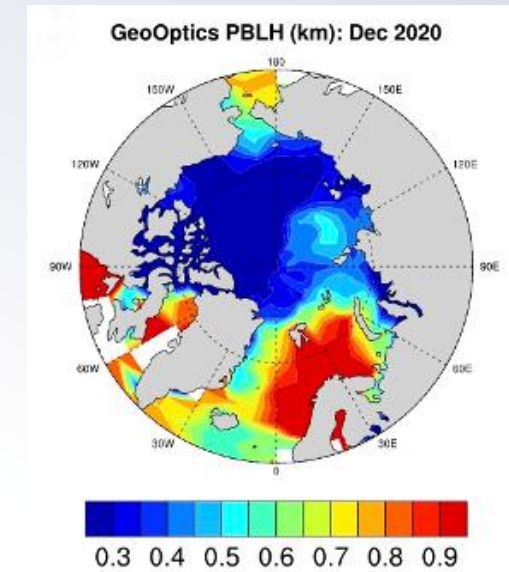
- Neutral Atmosphere Radio Occultation and Ionosphere Data Products
- Community Initiative for Cellular Earth Remote Observations (CICERO)
 - Full archive
 - Accessed through SDX

Who

- U.S. Government funded researchers

Coming Soon!

	GeoOptics
Constellation / Product	Radio Occultation
Product Type	Radio occultation, Satellite orbit, Ionosphere
Processing Levels	L1A, L1B, L2
Availability Dates	1/1/2020 - 4/30/2021
Spatial Resolution	



Includes copyrighted material of GeoOptics. All rights reserved.

Capella Space

Radar / Microwave

Available Products

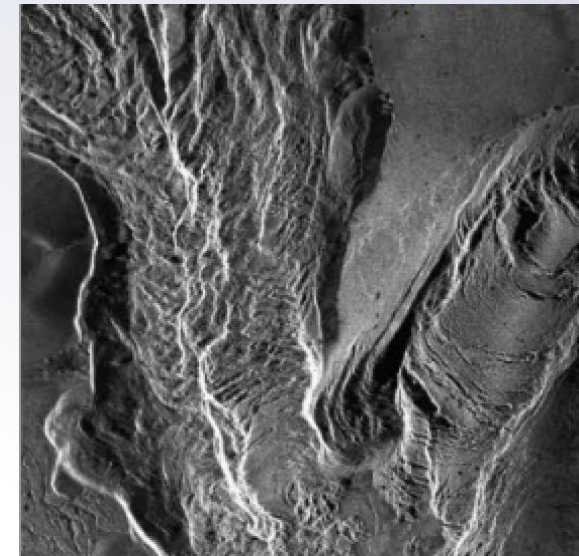
- X-band SAR Constellation
 - Single Look Complex (SLC), Geocoded Ellipsoid Corrected (GEC), Geocoded Terrain Corrected (GTC), Sensor Independent Complex Data (SICD), Compensated Phase History Data (CPHD)
 - Limited Archive
 - Available through SDX (fall 2024)

Who

- U.S. Government funded researchers

Coming Soon!

	Capella Space
Constellation / Product	Synthetic Aperture Radar
Product Type	X-Band SAR
Processing Levels	Single Look Complex (SLC), Geocoded Ellipsoid Corrected (GEC), Geocoded Terrain Corrected (GTC), Sensor Independent Complex Data (SICD), Compensated Phase History Data (CPHD)
Availability Dates	02/2021 - 06/2024
Spatial Resolution	0.5 - 11.5m



Includes copyrighted material of Capella Space. All rights reserved.

ICEYE U.S.

Radar / Microwave

Available Products

- X-band SAR Constellation
 - Single Look Complex (SLC), Ground Range Detected (GRD)
 - Limited Archive
 - Available through SDX (fall 2024)

Who

- U.S. Government funded researchers

Coming Soon!

	ICEYE US
Constellation / Product	Synthetic Aperture Radar
Product Type	X-Band SAR
Processing Levels	Single Look Complex (SLC), Ground Range Detected (GRD)
Availability Dates	10/17/2019 - 7/11/2024
Spatial Resolution	1 - 15m



Includes copyrighted material of ICEYE US. All rights reserved.

SmallSat Data Explorer (SDX)

Web interface for central search, discovery, and distribution of CSDA data

The interface is divided into several sections:

- Menu:** Located on the left side of both screenshots.
- Spatial Heatmap:** A world map showing data density by region.
- Temporal Distribution:** A bar chart showing the number of records over time for all years.
- Filters:** A panel on the right side of the right screenshot, allowing users to filter data by imagery collection type, area of interest, date, cloud coverage, and product type.
- Results:** A table listing search results with columns for Item (grouped by), Title, Type, File Size, Area Size, and Actions.
- Faceted Search Options:** A vertical sidebar on the right side of the right screenshot.
- Data Download:** A vertical sidebar on the right side of the right screenshot.

Results Table (Left Screenshot):

Item (grouped by)	Title	Type	File Size	Area Size	Actions
> PSScene3Band-20160625_143239_0b0f	6 assets	5 distinct types	41.0 MB total	42 km ² total	🗑️
> PSScene3Band-20160626_220745_0c68	6 assets	5 distinct types	113.1 MB total	200 km ² total	🗑️
> PSScene3Band-20160626_220747_0c68	6 assets	5 distinct types	116.5 MB total	200 km ² total	🗑️
> PSScene3Band-20160709_143710_0c11	16 assets	5 distinct types	235.4 MB total	131 km ² total	🗑️

Results Table (Right Screenshot):

Item (grouped by)	Title	Type	File Size	Area Size	Actions
☑️ SkySatScene-20180606_160258_ssc1d1_0002	4 assets	4 distinct types	4.4 MB total	3 km ² total	🗑️
☑️ thumbnail			n/a	3 km ²	🗑️
☑️ json_metadata		application/json	702 Bytes	3 km ²	📄
☑️ basic_11a_panchromatic_dn		image/tiff	4.4 MB	3 km ²	📄

CSDA Smallsat Data Explorer (SDX) with thumbnails from Planet Labs, Inc. displayed

<https://csdap.earthdata.nasa.gov>

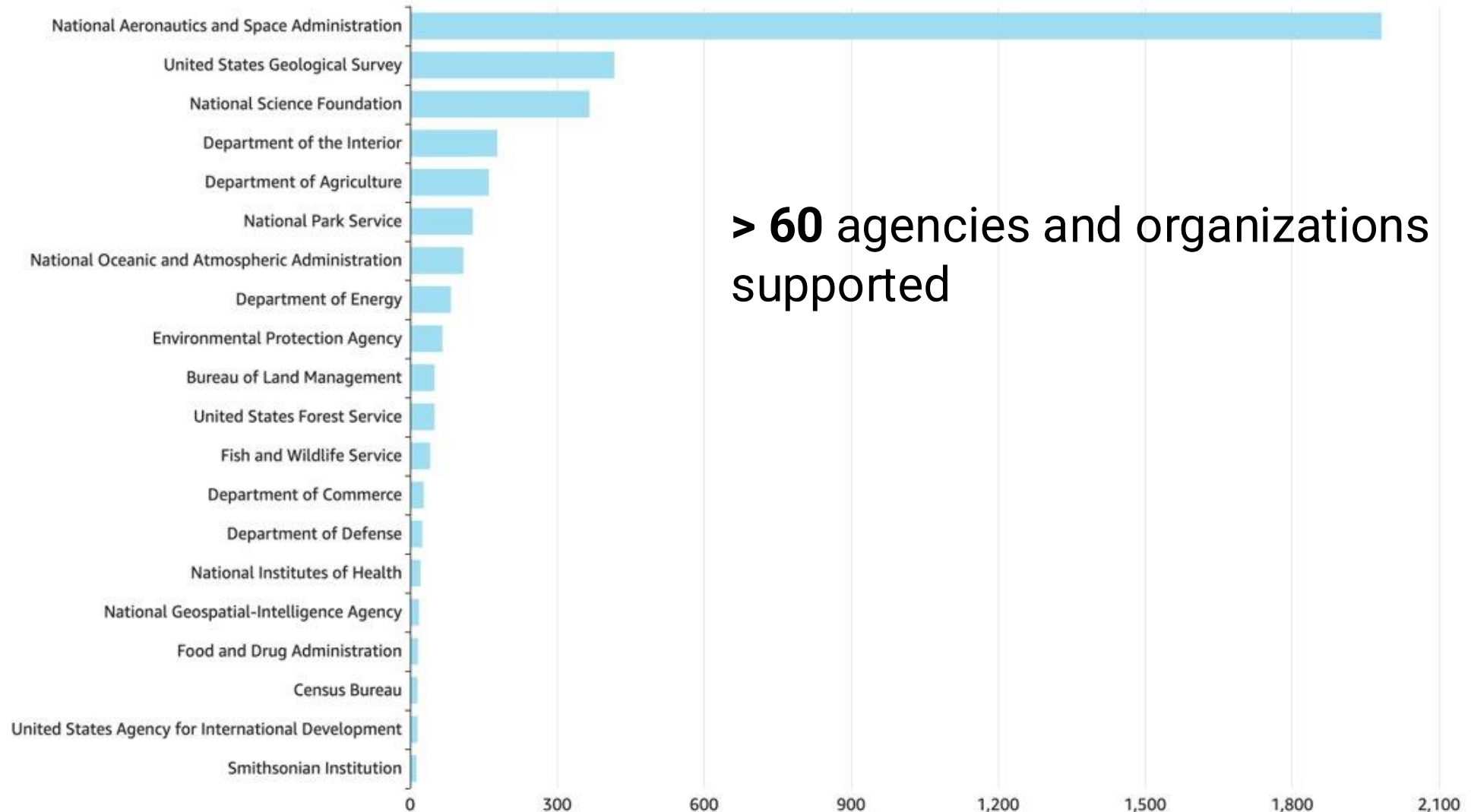
CSDA Metrics

Vendor	Number of Agencies Supported	Number of Approved Users	Volume Archived
Planet Labs, PBC	40	1804	3.7 PB
Spire Global, Inc	37	595	98.9 TB
Teledyne Brown Engineering, Inc	41	660	24.4 TB
Maxar	1	257	13.4 PB
Polar Geospatial Center	27	568	13.8 TB
Airbus DS Geo Inc	17	103	4.1 TB
Total		3987	17.2 PB

Total Volume Distributed: **>500TB**

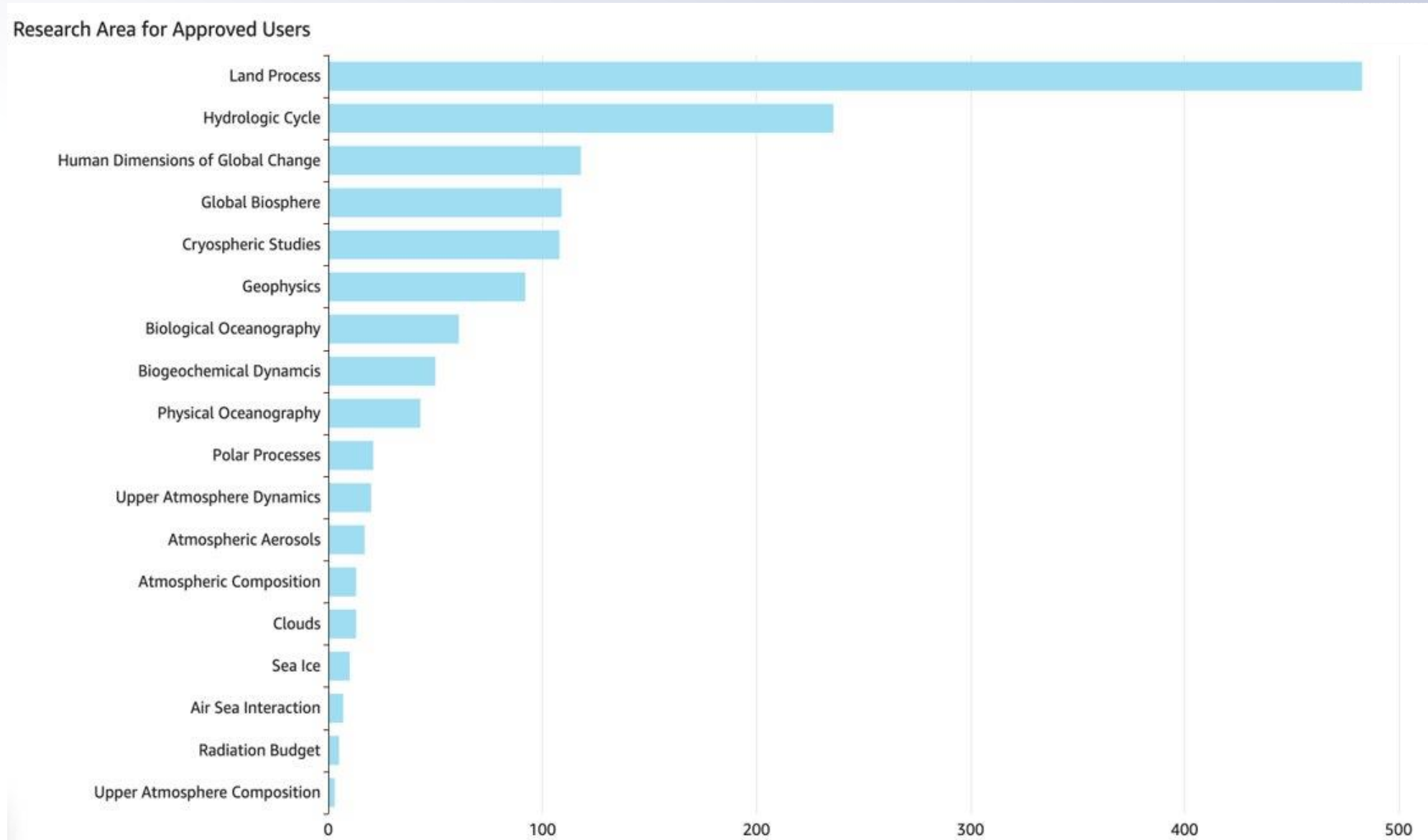
CSDA Metrics

Approved User Agencies of the CSDA Program



> 60 agencies and organizations supported

CSDA Metrics



Summary

- Tremendous value in commercial data to augment NASA/U.S. satellite fleet.
- Scientific evaluation process is unique to NASA and critical to procurement.
- NASA is working with other agencies on licensing agreements to maximize data use within budgetary constraints.
- **We have opportunities at NASA to support the scientific research and application use of commercial data.**

Accessing and Requesting Commercial Smallsat Data FAQ:
<https://earthdata.nasa.gov/esds/small-satellite-data-buy-program/faq-commercial-data>

Continuing the Webinars.....

The CSDA Program will continue the webinar series on a regular basis, with a focus on:

Vendors

- Presenting on their current constellation
- Instrumentation updates
- Data Products
- Science Uses and Applications

Researchers

- How the data is being used in scientific research and application
- Challenges encountered when using the data

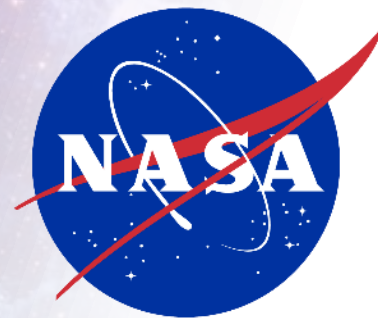


Learn more about CSDA



<https://earthdata.nasa.gov/csda>





NASA
earth

science.nasa.gov/earth

Your Home. Our Mission.