National Aeronautics and Space Administration

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Commercial SmallSat Data Acquisition (CSDA) Program Update

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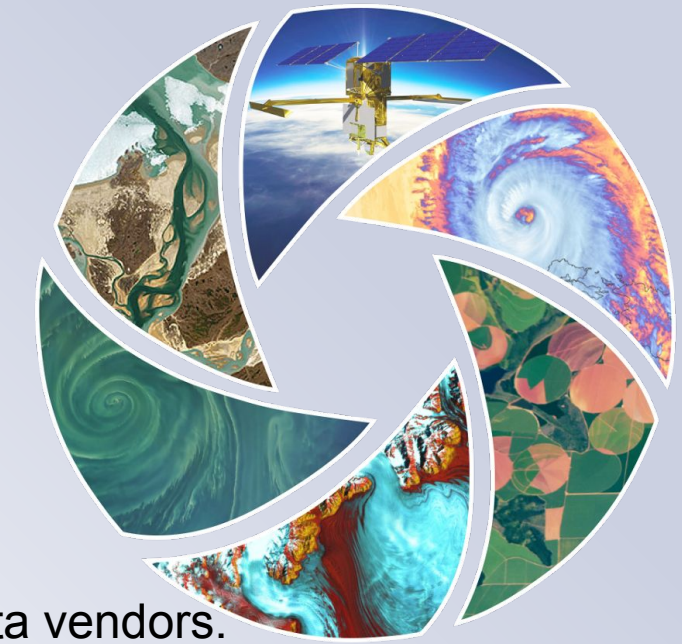
CSDA Program Mission

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

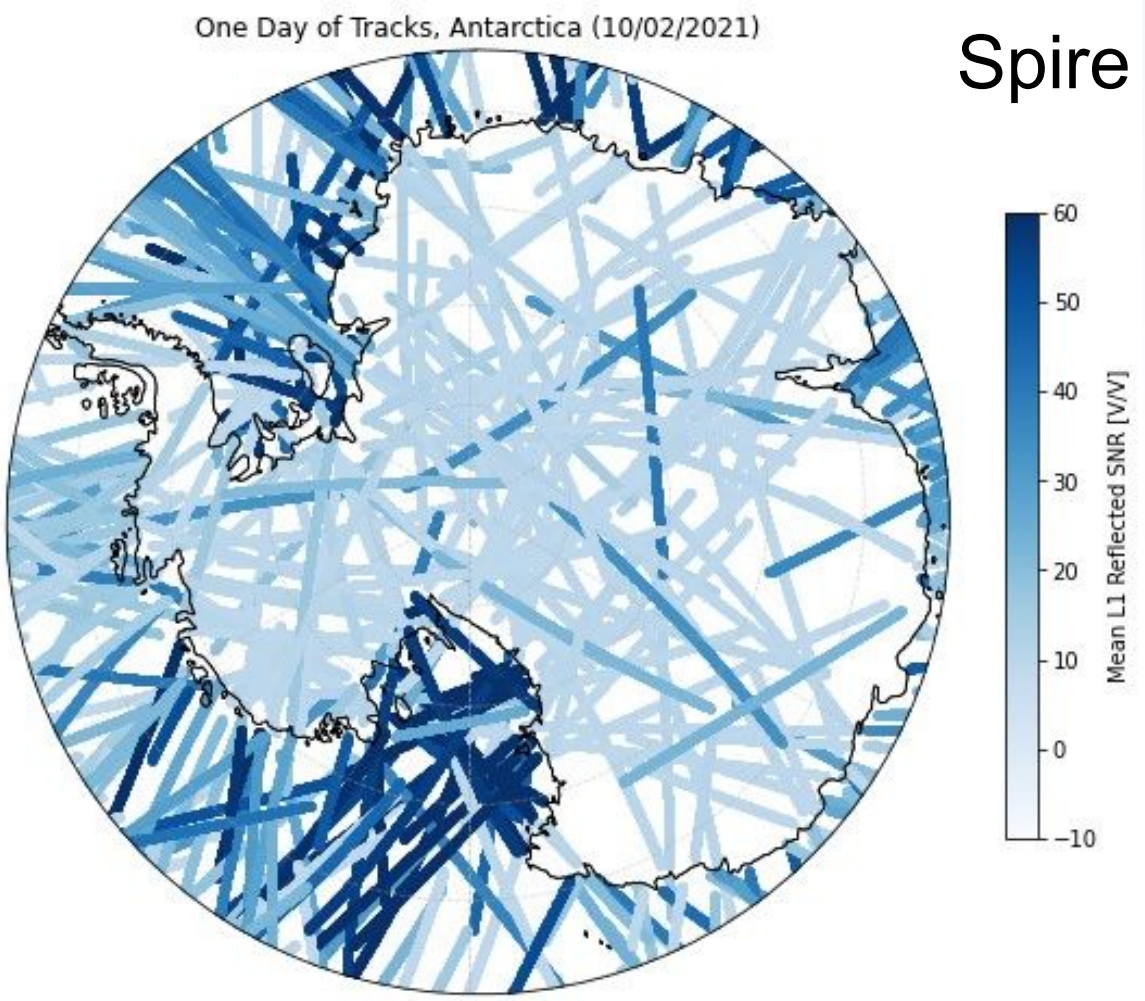


CSDA Program Goals

- 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 Policy

Commercial Smallsat Data Acquisition (CSDA) Program | Earthdata (nasa.gov)

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



Spire GNSS-R data for Land Ice Mapping

- Land ice is an early-stage application for GNSS-R, with potential for widespread use
- Surface roughness measurements
- Precision altimetry
- Identified empirical thresholds for sufficient coherency for altimetry.
- Identified a seasonal trend

Credit – Jade Morton, U. Colorado

Recent Changes

- CSDA Program moved from Data to Earth Action
- New leadership in CSDA:
    - 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. New Vendor awards were announced on September 6, 2024.
- Established a new EULA structure, a three-tiers of End User License Agreement (EULAs): Public Release, U.S. Federal Government Plus, U.S. Federal Government
- CSDA-acquired data now discoverable through Earthdata Search
- Two new vendors are in evaluation phase: PlanetiQ and Umbra

IDIQ On-ramp 1 Award

- Contract Type: Multiple Award, Indefinite Delivery Indefinite Quantity (IDIQ), Fixed-Price Contract
- CSDA Program Indefinite Delivery Indefinite Quantity (IDIQ) On-Ramp 1 - Request for Proposals (RFP), closed March 25, 2024
- Under IDIQ, NASA only buys what it needs through competitive task orders; fair and consistent process.
- On **Sept 6, 2024**, NASA awarded **8** new vendors under the IDIQ contract on-ramp 1:
  - BlackSky Geospatial Solutions, Inc. in Herndon, Virginia (Multispectral)
  - ICEYE US Inc. in Irvine, California (SAR)
  - MDA Geospatial Service Inc. in Richmond, British Columbia, Canada (SAR)
  - Pixxel Space Technologies, Inc in El Segundo, California (Hyperspectral)
  - Planet Labs Federal, Inc. in Arlington, Virginia (optical, Multispectral (RGB, NIR) | Surface Reflectance (SR) and Top of Atmosphere (TOA) Radiance; Basic and orthorectified)
  - Satellogic Federal, LLC in Davidson, North Carolina (Multispectral)
  - Teledyne Brown Engineering, Inc. in Huntsville, Alabama (Hyperspectral)
  - The Tomorrow Companies Inc. in Boston (Precipitation Radar)
- The period of performance is through Nov 15, 2028.

Program Timeline

2017

Pilot initiated in November 2017 to evaluate data from operating commercial small-satellite constellations for research and applied science activities

Augment and/or complement NASA Earth observations

Cost effective means to advance/extend research and applications

2020

Pilot successfully ended early 2020, transitioned to sustained program - CSDA Program

2022

2nd Commercial SmallSat Data Analysis solicitation released (ROSES 2022 A.44) to promote scientific use of purchased data by the scientific and applied science communities.

22 proposals selected

2023

Move from BPAs to Multiple-Award Indefinite-Delivery, Indefinite-Quantity (IDIQ) contract with Firm-Fixed-Price (FFP) task orders.

Awarded 7 vendors October 2023

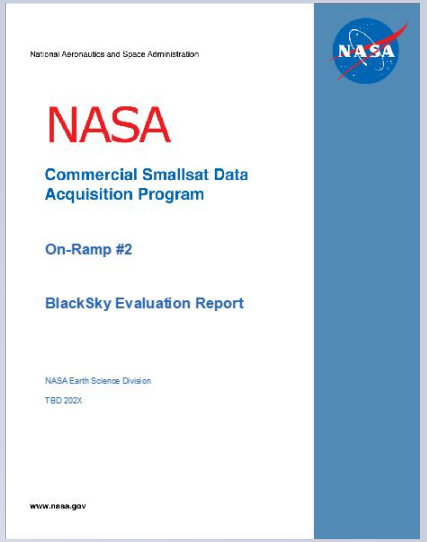
2024

Two vendors in evaluation phase: Umbra and PlanetiQ.

IDIQ Multiple award contract on-ramp-1 awards 8 new vendors

CSDA's tiered End User License Agreement (EULA) approach is modeled after National Reconnaissance Office (NRO) Geospatial Intelligence Systems Acquisition Directorate Commercial Systems Program Office (CSPO) common, standardized family of EULAs.

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.

Three-Tiers of End User License Agreements (EULAs)

Authorized User Community	Type of EULA		
	Public Release	U.S.G. Plus	U.S.G.
U.S. Federal Government including: ○ U.S. State/Local/Tribal Government; Academia; Contractors and Grantees associated with Government Agency			X
U. S. Federal Government, Foreign Civil Partners		X	X
Public Release	X	X	X

USG license is minimum level for CSDA
Scientific Non-Commercial Use License

Upcoming Changes

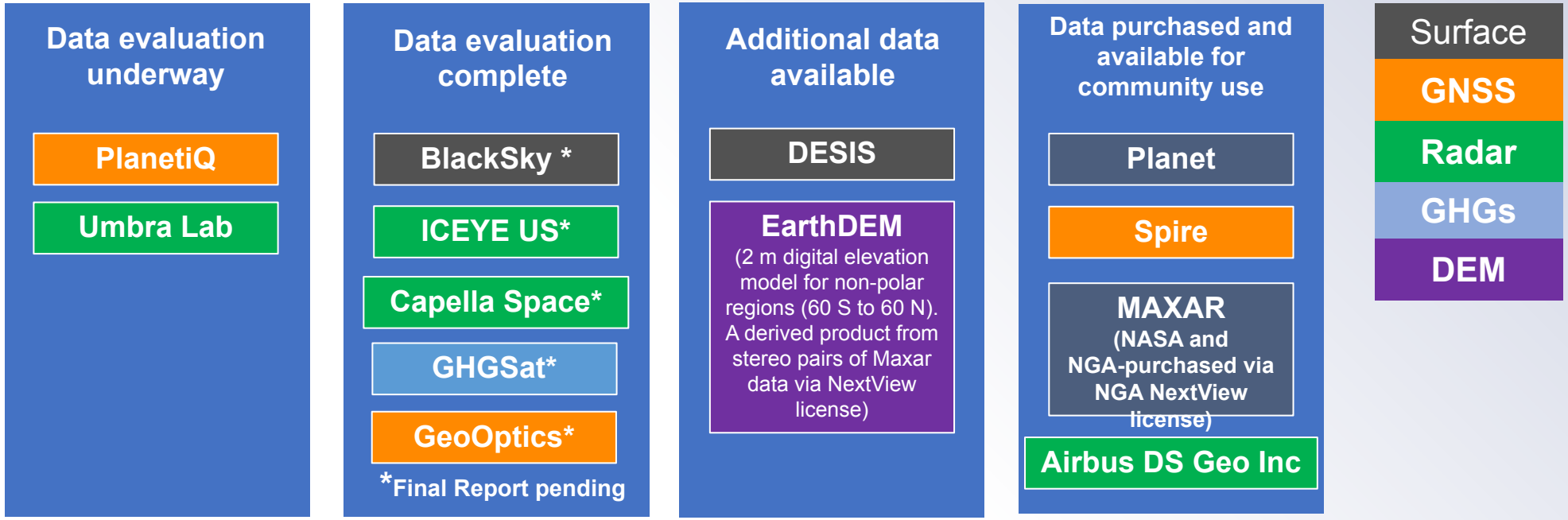
- New data evaluation process:
  - Data quality evaluation to be completed by NASA CSDA SMEs
    - Upon completion, Vendor will be considered in sustained phase and will be able to respond to competitive task orders
  - Data utility will be assessed through a two-year funded ROSES call that will solicit 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, Methane Emissions, Digital Elevation Models

Evaluation reports in draft for BlackSky, GHGSat, GeoOptics, Capella Space, and ICEYE US. Expected completion date is end of CY 2024

Two new vendors in science data evaluation phase: PlanetiQ and Umbra

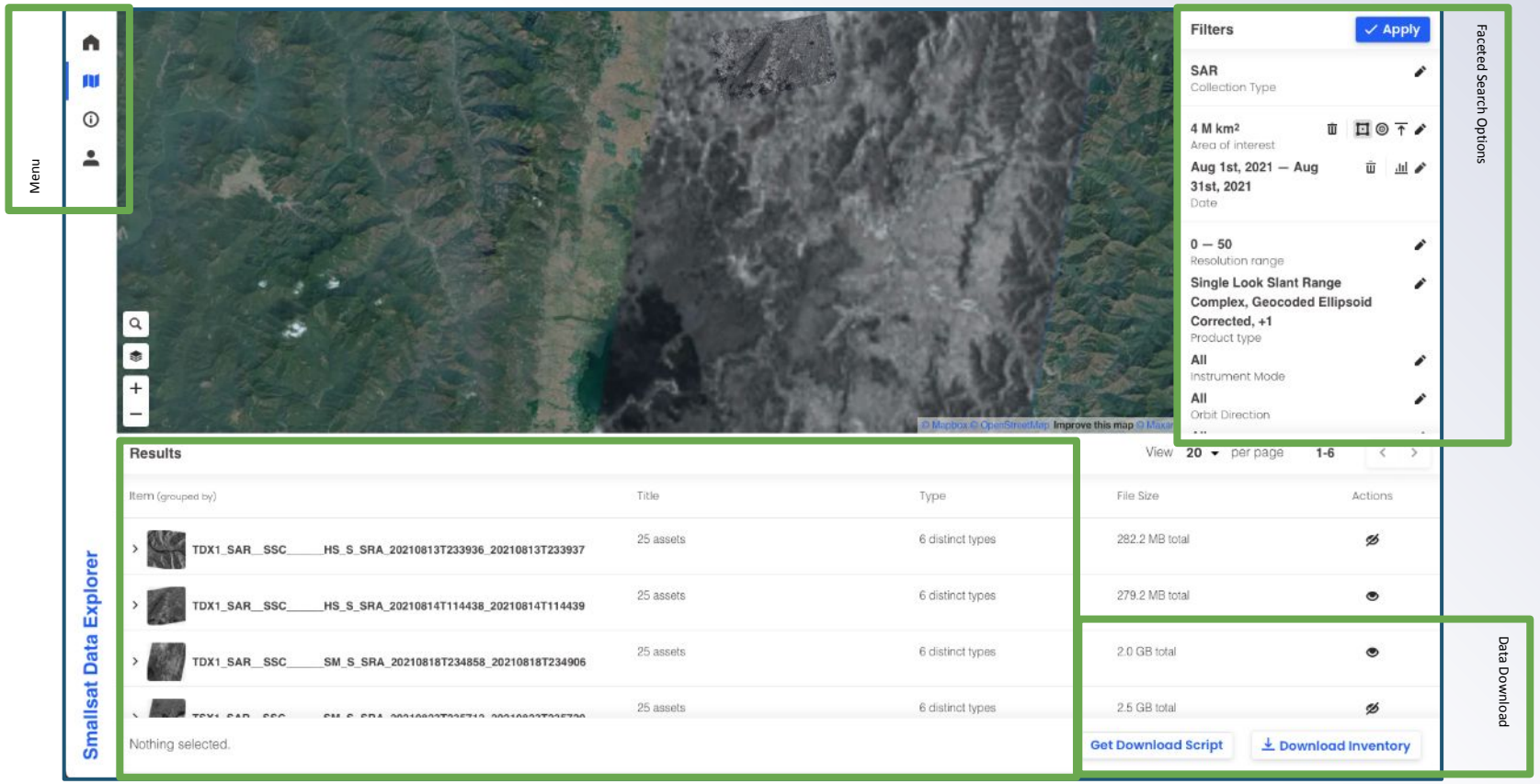


CSDA Data Holdings

Vendor	Data Available	Date Range	Who is authorized to use the data	Scientific use only	Where to get archived data	EULA
Planet	PlanetScope	6/29/2014-Present	U.S. Federal civil agencies (including NSF) and their funded researchers	Yes	Planet Explorer	Planet Expanded EULA
	RapidEye	2/1/2009-12/31/2019				
	SkySat	3/10/2015-12/12/2019			SDX	
Maxar (formerly DigitalGlobe)	WorldView 1	09/18/2007-Present	NASA (funded) researchers	Yes	CSDA data team	Commercial Data/Imagery EULAs Fact Sheet
	WorldView 2	10/8/2009-Present				
	WorldView 3	8/13/2014-Present				
	GeoEye-1	9/6/2008-Present				
	QuickBird	10/18/2001-1/27/2015				
	IKONOS	10/24/1999-3/31/2015				NextView License
	WorldView 4	12/1/2016- 1/7/2019				Maxar EULA
BlackSky	Spaceview-24	11/29/2018- 07/31/2023	U.S. Government (funded) researchers	Yes	SDX	USG EULA
GHGSat	Methane Abundance and Emission Rates	06/01/2016- 04/31/2024	U.S. Government (funded) researchers	Yes	SDX	USG EULA
Teledyne Brown Engineering, Inc.	DESIS	11/21/2018- 05/31/2024	U.S. Government (funded) researchers	Yes	For available archived data contact: support-csda@earthdata.nasa.gov	DESIS EULA
Polar Geospatial Center	EarthDEM		U.S. Government (funded) researchers	N/A For further information contact pgc-support@umn.edu	SDX	Commercial Data/Imagery EULAs Fact Sheet

Vendor	Data Available	Date Range	Who is authorized to use the data	Scientific use only	Where to get archived data	EULA
Airbus DS Geo Inc	TerraSAR-X	11/19/2007-11/25/2022	U.S. Government (funded) researchers	Yes	SDX	Airbus U.S. USG EULA.
	TanDEM-X	2/3/2011-11/4/2022				
	PAZ	9/20/2018-10/2/2022				
Spire	GNSS Radio Occultation	9/24/2018 - 12/9/2018; 12/14/2018 - 3/8/2019; 11/1/2019-Present	U.S. Government (funded) researchers	Yes	SDX	Spire USG EULA
	GNSS Grazing Angle Reflectometry	1/9/2019-4/18/2019; 11/1/2019-Present				
	GNSS Grazing Angle Reflectometry Sea Ice	3/1/2020-Present				
	GNSS Grazing Angle Reflectometry Altimetry	6/16/2020-Present				
	GNSS-R Level-1 Bistatic RCS	5/1/2021-Present				
	Ionospheric Profiles	11/1/2019-Present				
	Magnetometer	11/1/2019-Present			Request authorization By request (PDF)	
	Raw Radio Occultation	6/17/2020-9/8/2020				
	Satellite Precise Orbital Determination (POD) and Satellite Attitude	9/24/2018-4/18/2019; 11/1/2019 -Present				
	Scintillation	11/1/2019-Present				
	Total Electron Content	11/1/2019-Present				
	Ocean Winds and MSS	5/1/2021-Present				

CSDA Data Holdings & SDX (Smallsat Data Explorer)



CSDA Smallsat Data Explorer (SDX) with thumbnails from Airbus U.S. displayed

https://csdap.earthdata.nasa.gov/explore/

Web application to search, discover, and download NASA acquired commercial data

Available archive [increase since last year]

SDX

- Planet* - 2.7 M km^2 [2.2 M km^2]
- Spire - 78 TB [31.65 TB]
- EarthDEM - 13.8 TB [0 TB]
- Airbus U.S. - 4.1 TB [4.1TB]

*Only SkySat data available through SDX

Data Access and Use

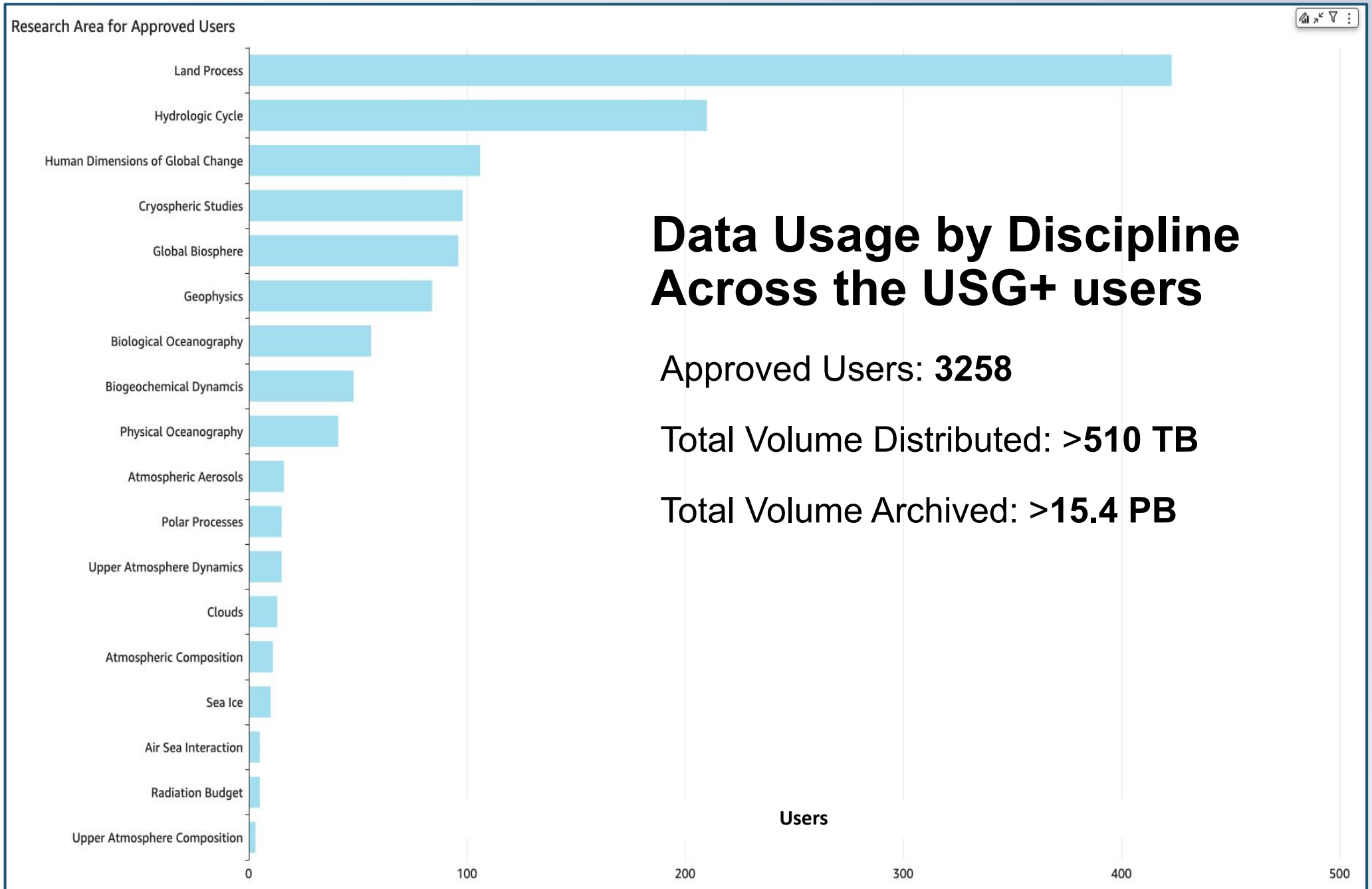
All commercial data access for NASA should occur through the NASA CSDA Program

Access

- Access through NASA ESDIS, where approaches currently vary with vendors https://www.earthdata.nasa.gov/esds/csda/commercial-datasets
- Eligibility to download validated through 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)**



Data Usage by Discipline Across the USG+ users

Approved Users: **3258**

Total Volume Distributed: >**510 TB**

Total Volume Archived: >**15.4 PB**

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

Learn more about CSDA

https://earthdata.nasa.gov/csda

NASA earth

science.nasa.gov/earth

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Publishing with NASA Commercial Data

Publications

- All visual representations of data should be marked with a copyright statement which for the Program is
  - For data products: “© <vendor> YYYY. All rights reserved.” (e.g.: “© Spire Global, Inc. YYYY. All rights reserved.”)
  - For derivatives: “Includes copyrighted material of <vendor>. All rights reserved.” (e.g.: “Includes copyrighted material of Spire Global, Inc. All rights reserved.”)
  - A joint copyright notice may be used as appropriate.
- These statements are available for each vendor on the website (e.g. https://www.earthdata.nasa.gov/esds/csda/csda-vendor-airbus)
- We also ask that that an acknowledgment be included: "This work utilized data made available through the NASA Commercial SmallSat Data Acquisition (CSDA) Program."

Data availability statements with publications:

- PIs may simply point to the CSDA and the respective license agreements on the website as further means to indicate these data cannot be made public.
- It should also be noted that derived products can be shared without restrictions according to the EULA.

NASA SPD-41a

CSDA data is an exception to NASA SPD-41a, where Section B indicates that data shall be publicly available “to the extent allowed by applicable law and existing NASA policies”. CSDA purchased raw data being restricted by license agreements is one of those exceptions.