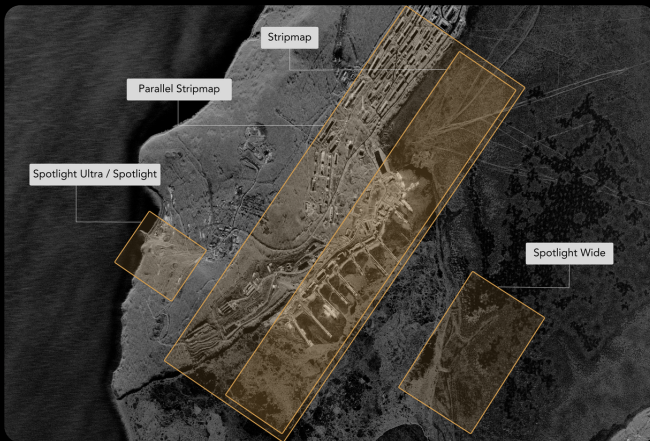


Technical Guide: Capella SAR Data

Amplify Intelligence™

Capella Space's high-quality, high-resolution SAR data offers all weather, all night imagery and tasking a continuous view of the world with the power to explore your areas of interest for actionable information and more informed decision-making.

- **Revisit & Capacity:** High revisit from combined SSO + MIO, amplified by extended duty cycles (more imaging per pass).
- **Automated & Global Tasking:** Cloud-native, API-first platform with constellation-optimized coverage enabling reduced latency and more reliable collections worldwide.
- **Security & Trust:** US-based, cleared company with end-to-end encryption ensuring rigorous compliance and operational discipline.



SAR Collection Types

Capella's collection types are carefully curated to meet a variety of mission needs. We provide:

- **Clarity:** High resolution, low-noise imagery that reveals activity and change precisely.
- **Speed:** Automated tasking and 15-minute scheduling cycles for timely insights.
- **Access:** Seamless integration through Capella Console, API, and AWS delivery.

Technical Collection Specs

Each collection type has a predefined set of imaging acquisition parameters to provide the optimal performance of the Capella constellation.

Key Use Case	Spotlight Ultra	Spotlight	Spotlight Wide	Stripmap	Parallel Stripmap
	Fine-detail detection of small targets and manmade activity	High-resolution monitoring and change detection	Regional monitoring and environmental change	Broad-area coverage and baseline mapping	Ultra-broad, double coverage stripmap with uniform geometry for extended AOIs
Look Angle	15° - 50°				
Grazing Angle	73.5 - 33°				
Scene Size (km)	5 x 5		10 x 20	5, 10 x 20, 50, 100	20 x 20, 50, 100
Dwell (sec)	28 to 52	8 to 16	15 to 18	4 to 17	
Slant Range Resolution (m)	0.25		0.5	0.75	
Ground Range Resolution (m)	0.38 - 1.12		0.76 to 2.23	1.13 to 3.37	
Azimuth Resolution (m)	0.25	0.5	1.0	1.2	
Looks	5	3		1	
Squint Angle Range	+ / - 30°		+ / - 0°	+ / - 35°	

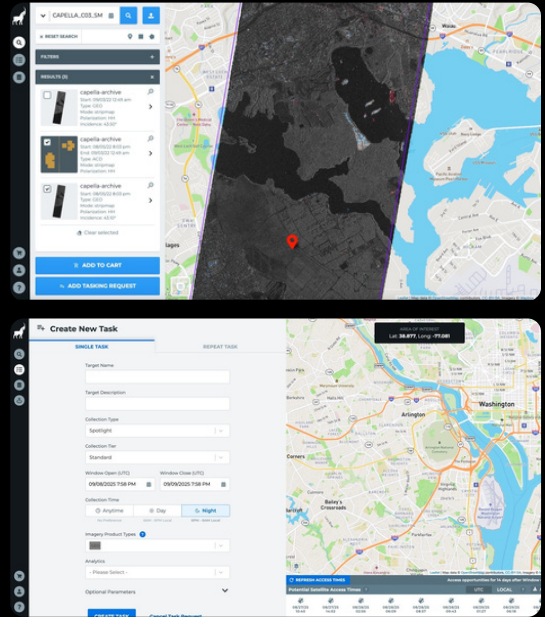
Here's how we deliver that data to you:

Capella prioritizes automation across our platform and satellite operations so customers can efficiently access actionable information where and when it's needed most. Easily incorporate Capella's high-resolution SAR imagery into existing workflows for comprehensive intelligence and dynamic tip and cue operations.

Capella Console & API

Search, order and download imagery through Capella's self-service platform for easy access to mission-critical information.

- View available satellite access for acquiring new images
- Submit tasking orders and receive automated status updates
- Request single, area, or repeat tasking
- Use AOI monitoring for more streamlined ingest of new data
- Leverage REST API to integrate with online platforms, enterprise systems, and government architectures as needed
- You can push to AWS S3 and access options to configure the imagery product types (e.g. data format) which can lower latency and streamline delivery.



Collection types can be delivered with Complex and Detected data, configured for rapid insight generation and integration with software providers including SOCET GXP, G-EGD, ArcGIS Pro and more.

Complex (Amplitude and Phase)

Single Look Complex (SLC)

A focused radar image that keeps both the amplitude (signal strength) and phase (timing). It's in slant-range geometry data meaning it shows the scene from the radar's angled view.

- Contains both amplitude and phase of the original radar signal
- Range-compressed and focused SAR image in slant-range geometry
- Georeferenced using orbit data and range-Doppler projected

Sensor Independent Complex Data (SICD)

SLC data stored in the US National Geospatial Intelligence Agency (NGA) format that uses the National Imagery Transmission Format (NTIF) container.

- Contains both amplitude and phase of the original radar signal
- Range compressed and focused SAR image in slant-range geometry

Compensated Phase History Data (CPHD)

The rawest radar data, recording the radars "echoes" over time (phase history), corrected for hardware timing and motion.

- Raw, unfocused radar data (phase history)
- Preserves full amplitude + phase
- Calibrated for motion and timing

Detected (Amplitude only)

Sensor Independent Derived Data (SIDD)

A detected (amplitude only) image that's stored in the US National Geospatial Intelligence Agency (NGA) format that uses the National Imagery Transmission Format (NTIF) container.

- Multi-looked, range compressed and focused image
- Planar gridded display (PGD) projection

Geocoded Ellipsoid Corrected (GEC)

A map-projected radar image aligned to ellipsoid earth model. Nothing is adjusted for elevation.

- Multi-looked, range compressed, and focused SAR image
- Geocoded and projected onto the WGS85 ellipsoid

Geocoded Terrain Corrected (GEO)

A terrain-corrected map image that accounts for real elevation using a digital elevation model.

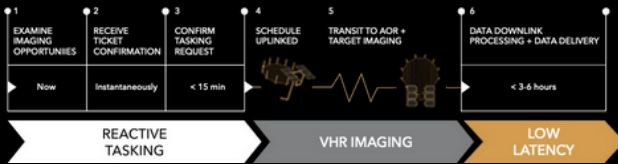
- Multi-looked range compressed and focused SAR image
- Geocoded and terrain height corrected using a high-resolution Digital Elevation Model (DEM)
- Universal transverse Mercator (UTM) and universal polar stereographic (UPS) projections

Colorized Subaperture Imagery (CSI)

A colorized, terrain corrected radar image combining three radar "sub apertures" at different angles.

- 3-band image with colored backscatter received for different sub-apertures (red, blue, and green)
- Geocoded and terrain height corrected using a high-resolution digital elevation model (DEM)
- Universal transverse Mercator (UTM) and universal polar stereographic projects (UPS)

Capella Tasking System



- Near real-time tasking powered by communication with GEO relay satellites
- New task scheduling completed every 15 minutes
- End-to-end encryption based on U.S. NIST 800 - 171 requirements
- No bumping policy
- Constellation-optimized tasking ensures superior coverage and capture accuracy.

Optimize Your Orders with Tasking Tiers

Single Area Tasking

Urgent	Designed for time-sensitive situations where rapid collection speed is mission critical.
Priority	Optimal minimum acquisition window for situations when precise imaging geometries matter
Standard	Provides assured data collection upon acceptance.
Flexible	Ideal for leveraging variations in capacity without the risk of interfering with tasks of higher importance.

- Users are required to submit a window open and window close date/time for each tasking request. This window does not include the time from collection to delivery.

Repeat Tasking

Routine	Get coverage on a regular basis at daily, weekly, monthly or custom cadences.
Flexible	Ideal for leveraging variations in capacity without the risk of interfering with tasks of higher importance.

- Users are required to submit a task start date/time and task end for each order. Task end can be "until canceled," by number of collects, or after a specific date/time.

Capella Archive

Search one of the largest collections of high-quality, high-resolution commercial SAR imagery. Leverage Capella's continuously growing archive for historical data and context alongside current data at mission-critical locations globally. Additionally:

- Access thousands of **feature-rich imagery** for baseline or time-series analysis
- Apply **advanced analytics Vessel Classification** and train models on historical imagery
- Leverage **subscription packages for continuous monitoring** of specific AOIs and machine learning model development



Access Capella's Open Datasets:
capellaspace.com/opendata

GET STARTED:

capellaspace.com

