Data Guide

Let's discover **Wyvern's Data Product Guide**!

If you have any questions, please reach out to sales@wyvern.space.

🚀 Data Product Guide

Wyvern's data product guides have details on Wyvern's hyperspectral data products. They contain information about products specifications, formats, and constellation performance.

The current product guide supports version 1.7 of our data product. To view previous versions, you can select versions in the top-right corner of the page.

Take the Guide Offline

Wyvern's data product guide can be used offline using two methods:

PDF

Download the PDF version of the guide from the downloads page.

Progressive Web App

What is a Progressive Web App (PWA)?

A Progressive Web App (PWA) is a type of application delivered through the web, built using standard web technologies like HTML, CSS, and JavaScript. PWAs are designed to work on any platform that uses a standards-compliant browser, offering a native app-like experience.

Benefits of PWAs:

- **Offline Access**: PWAs can cache content, allowing users to access the app even without an internet connection.
- **No Installation Required**: Users can add PWAs to their home screen without going through an app store.
- **Automatic Updates**: PWAs update automatically in the background, ensuring users always have the latest version.

Chrome

1. Open the Wyvern Data Product Guide in Chrome.
2. Click the three-dot menu in the top-right corner.
3. Select **Cast, save, and share > Create shortcut**.
4. Click **Create**.

Edge

1. Open the Wyvern Data Product Guide in Edge.
2. Click the three-dot menu in the top-right corner.
3. Select **Apps > Install Wyvern Data Product Guide**.
4. Follow the prompts to install the PWA.

Unsupported Browsers

The following browsers do not support PWAs:

- Firefox
- Internet Explorer

Enjoy offline access to Wyvern's data product guides!

Frequently Asked Questions (FAQ)

Welcome to the Wyvern Data Product Guide FAQ! Below you'll find answers to common questions.

Sample Imagery

Can I see sample data?

See our Open Data Program for sample imagery.

Tasking Imagery

What tasking offerings are available?

- **Constellation Tasking:** Standard and Premium tasking for new imagery collection. See Constellation Tasking.
- **Assured Capacity:** Highest-priority, pre-reserved imaging capacity. See Assured Capacity.

How do I place an order?

Order Form

Orders are placed by submitting a tasking order form and area-of-interest (AOI) file to orders@wyvern.space. See Ordering Process.

Tasking API

We have a Tasking API which will allow customers to place, monitor, and download orders. If you're interested in our API contact sales@wyvern.space.

What is the minimum order size?

- **Standard Tasking:** 100 km²
- **Premium Tasking:** 50 km²
- **Assured Capacity:** Full image scenes required to cover AOI
- See Constellation Tasking and Assured Capacity.

What is the cloud cover policy?

- **Standard/Premium Tasking:** <20% cloud cover within AOI. See Constellation Tasking.
- **Assured Capacity:** No cloud cover limit; all collected data delivered. See Assured Capacity.

What is the order cancellation policy?

- **Standard Tasking:** Cancel >72 hours before acquisition start.
- **Premium Tasking:** Cancel >48 hours before acquisition start.
- **Assured Capacity:** No cancellations (pre-reserved capacity).
- See Constellation Tasking and Assured Capacity.

Archive Library

How do I order Archive Library data?

1. Search Wyvern's archive for available scenes.
2. Submit a request to orders@wyvern.space with the scenes you wish to order.
3. Receive your data bundle via secure download link.

For more information, see the Archive Library.

Where can I see a map of your archive data?

Search Wyvern's archive for available scenes!

How much data do you have in your archive?

Our first satellite launched in April 2024 and we've been collecting data since!

Data Products & Delivery

What file formats are delivered?

- **Imagery:** Cloud-Optimized GeoTIFF (COG). See Image Data
- **Metadata:** STAC JSON. See STAC Metadata
- **Masks:** Usable Data Mask and Pixel Quality Mask (GeoTIFF). See Usable Data Mask and Pixel Quality Mask
- **Previews:** PNG images

How are products delivered?

Products are delivered as a ZIP bundle with download links sent via email. See Product Delivery.

API users can download their data products from the API.

What is the naming convention for delivered files?

See Naming Convention. See our Open Data Program for sample imagery.

Are there cloud or quality masks?

Cloud and pixel quality masks are delivered with your data. See Usable Data Mask, and Pixel Quality Mask

---

Specifications & Quality

What is the spatial resolution?

5.3 meters ground sample distance (GSD) at nadir. See Product Specifications.

What is the spectral range?

- **Standard VNIR** 503–799 nm (23 bands)
- **Extended VNIR** 445–870 nm (31 bands) See Product Specifications and Dragonette Constellation.

What is the geolocation accuracy?

25–100 meters CE90 over land with <20% cloud cover. See Quality Assurance.

What are your Relative Spectral Responses (RSR)?

The Dragonette RSRs can be found on our GitHub.

Processing & Metadata

What processing level is delivered?

Level-1B: Georeferenced and radiometrically corrected to at-sensor radiance. See Processing Levels.

Do you do atmospheric correction?

Our Level-1B data is Top-of-Atmosphere radiance. Customers must perform their own atmospheric correction; however, we are planning on releasing a processing level with atmospheric correction applied. See Data Processing. For more information on atmospheric correction, see Wyvern's Knowledge Centre.

Do you have a Level-2A processing level?

We are building a processing level that will include atmospheric correction but it is not yet available. See Processing Levels.

What metadata is included?

STAC-compliant JSON files with acquisition, sensor, geolocation, and processing details. See STAC Metadata.

Analytics

Do you provide analytics?

Wyvern only delivers data and doesn't deliver analytics.

Can I derive indices from your data?

You can deliver many common indicies from Dragonette data including, but not limited to, NDVI and RENDVI. See our Knowledge Center.

Offline Access

Can I use the guide offline?

Yes! Wyvern's Data Product Guide can be accessed offline in two ways:

1. Download the PDF version of the guide.
2. Install the Progressive Web App (PWA).

For detailed instructions, see the Offline Access section of the Data Guide.

Support

Who do I contact for support?

For sales or technical questions, email sales@wyvern.space.

If your question is not answered here, please reach out to our support team for assistance.

About Wyvern

Wyvern is a Canadian aerospace company and Earth observation satellite imagery data provider headquartered in Edmonton, Alberta. Wyvern is the leading provider of high-quality hyperspectral imagery data products collected by a spaceborne constellation of satellites.

Wyvern's mission is to serve our clients satellite imagery using cutting-edge innovative sensor technology while focusing on affordability, capability, and convenience. Wyvern's hyperspectral imagery data reveals invisible insights and enables novel analytical use case applications across a wide variety of industries including precision agriculture, forestry, land administration, energy, mining, oil & gas, environmental sustainability, civil infrastructure, finance, mobility & logistics, insurance, peace & security, and regulatory compliance.

Wyvern Hyperspectral Imagery: Value Propositions

Wyvern's hyperspectral imagery data products and associated offerings deliver unique value across several key dimensions:

✅ High-Quality

- High spatial resolution
- Precise spectral accuracy
- Optimal signal-to-noise ratio for precise measurements

🔄 Reliable

- Designed for data consistency
- Supports advanced site monitoring analytics
- Enables derived information generation and novel intelligence insights

🌈 Comprehensive

- Full coverage of the Visible Near-Infrared (VNIR) spectrum
- Enables complete spectral measurements of the Earth's surface

🔗 Shareable

- Flexible data licensing options for commercial businesses
- Unclassified data can be shared with international mission partners

Calibration and Validation

The calibration of Earth observation imaging sensors hosted on satellite platforms is vital to generate radiometrically and geometrically corrected imagery data that can be scientifically analysed in a consistent manner with ability to perform relative comparison between datasets. A consistent radiometric and geometric correction of imagery data products must be achieved to perform change detection analysis of spatiotemporal collections over time from the same satellite, across multiple satellites in the Wyvern Dragonette constellation, and inter-platform comparisons of datasets acquired from other commercial or science mission satellites (e.g., Landsat, Sentinel, PRISMA, etc.). Consequently, Wyvern has performed a rigorous calibration and validation (cal/val) refinement of each operational satellite in the Dragonette constellation to ensure the best possible quality for every imagery data product.

Wyvern's calibration and validation (cal/val) process involves a radiometric vicarious calibration converting the imagery data pixel units to top-of-atmosphere (TOA) radiance via radiative transfer models and relative TOA reflectance data comparisons. This vicarious calibration approach involves using ground-truth reference imagery over well-characterized calibration sites including PICS, ECCOE, CEOS, CSIRO, RadCalNet and AERONET. Wyvern's radiometric calibration methodology involves routine dark frame snapshot collection with dark signal correction taken at varying exposure and frame intervals to generate results at different sensor temperatures. The pixel bias offsets for each wavelength are computed at 0.1 millisecond integration time. The absolute gain is characterized by converting image pixel units from digital number (DN) into at-sensor radiance. In addition, the cal/val process includes cross-platform radiometric normalization efforts to provide the best possible alignment of Wyvern imagery data products with datasets from the Landsat-8/9 and Sentinel-2 science mission platforms.

In addition to radiometric calibration and normalization efforts, Wyvern's cal/val process includes geometric correction of the data using ground control and reference basemap imagery to achieve best possible independent geolocation accuracy for each individual imagery data product. The consistent georeferencing of imagery data products within standard product specifications for geolocation accuracy enables accurate spatiotemporal

analysis of multiple datasets collected over time such as fully-automated change detection and predictive trend analysis.
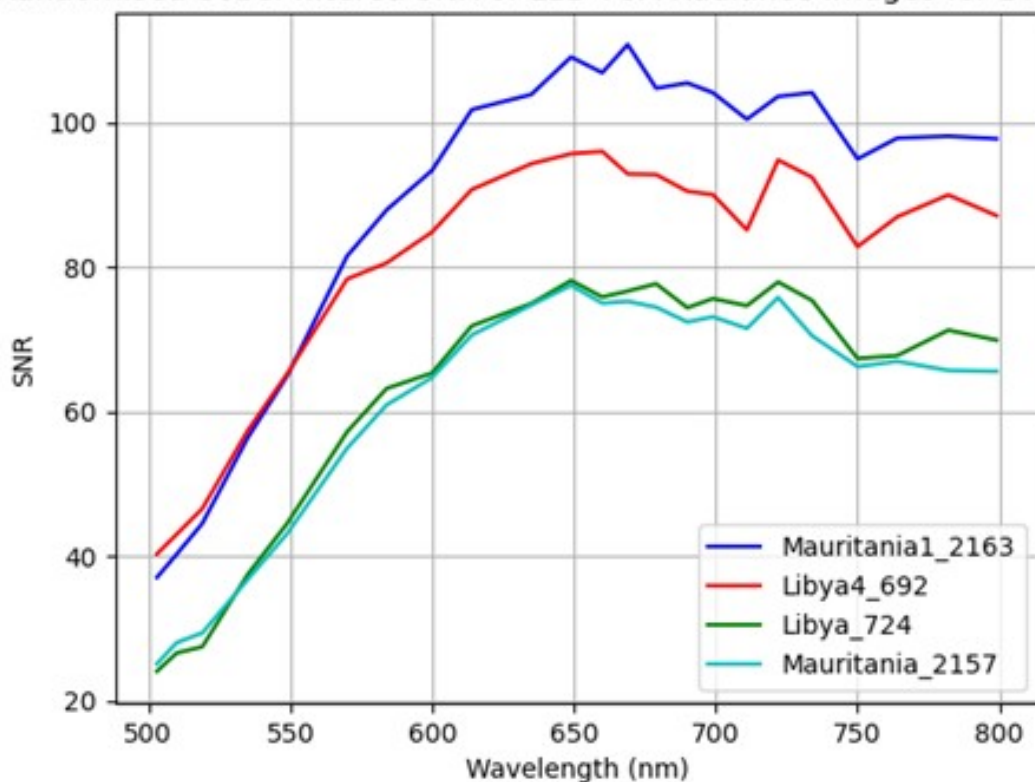
Signal-to-Noise Ratio (SNR)

In the context of imaging, the Signal-to-Noise Ratio (SNR) is a fundamental measure that quantifies the quality of an image by comparing the level of the desired signal (the actual image information) to the level of background noise (random, unwanted fluctuations). A higher SNR indicates a cleaner image where the true image features are more distinct from the noise, while a lower SNR means the noise is more prominent, potentially obscuring details and degrading image quality.

Below is the SNR for each Dragonette satellite for a selection of Pseudo-Invariant Calibration Site (PICS) sites.
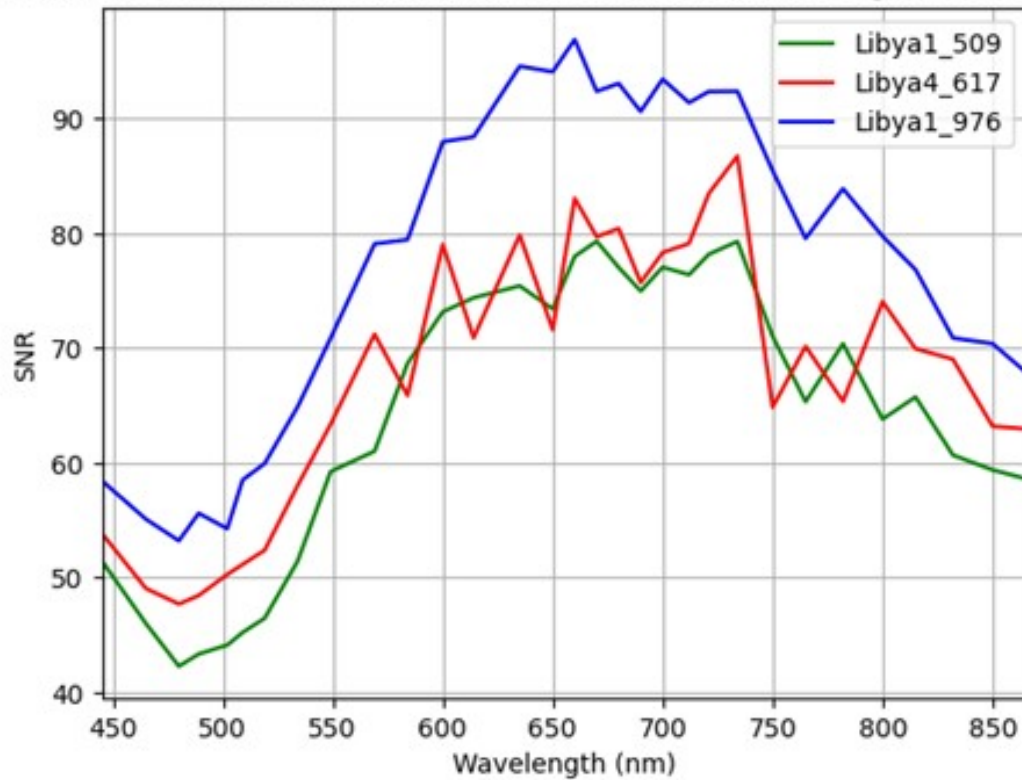
Dragonette-1

Measured signal-to-noise ratio for the Dragonette-1 satellite

Dragonette-2

Measured signal-to-noise ratio for the Dragonette-2 satellite

Dragonette-3
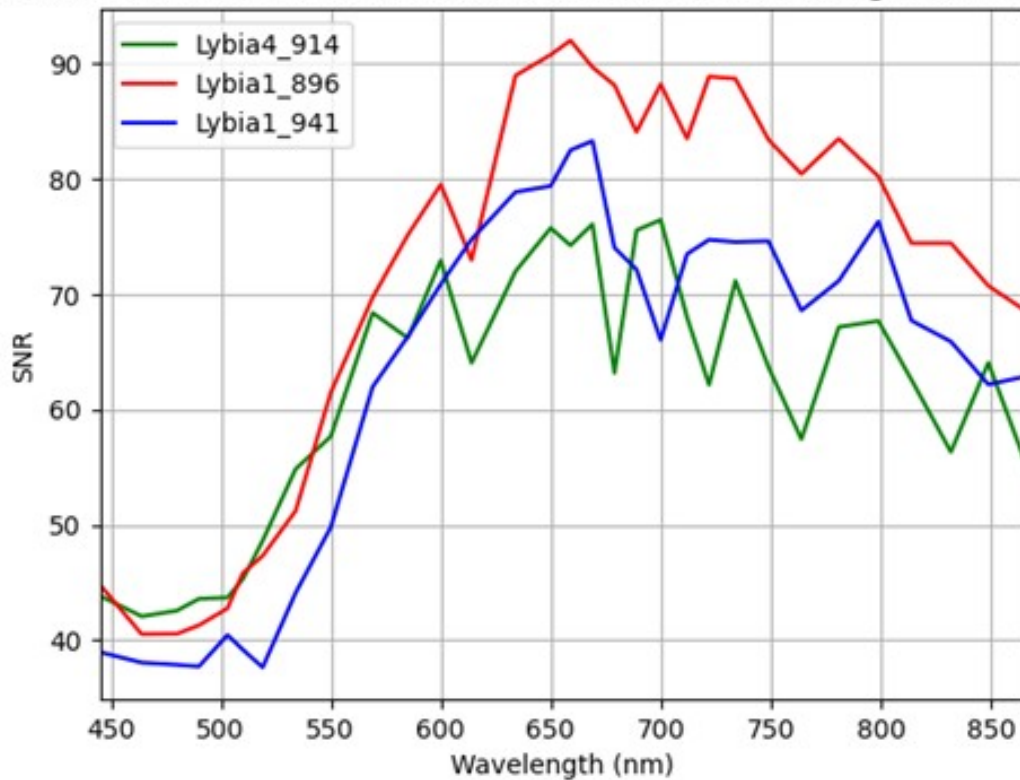
Measured signal-to-noise ratio for the Dragonette-3 satellite

Relative Spectral Response (RSR)

Details about the Dragonette relative spectral responses can be found on our GitHub.
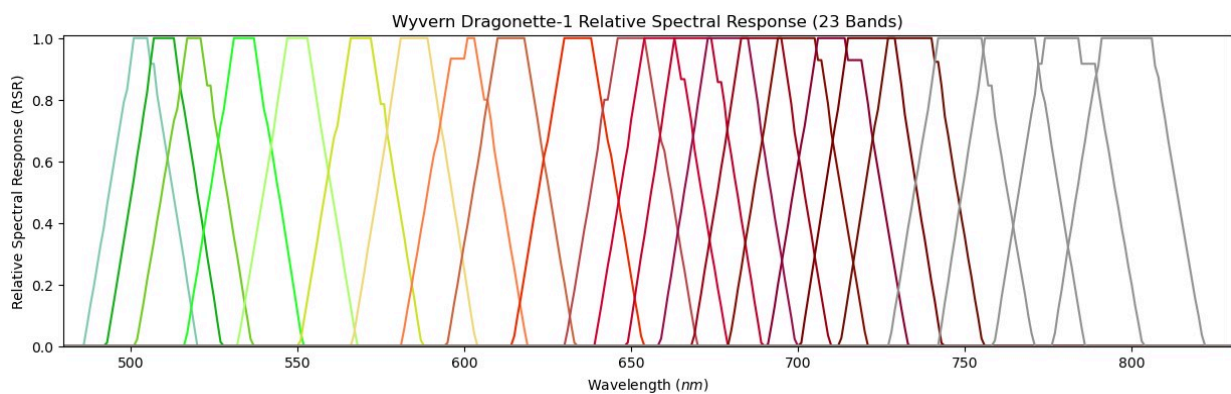
Relative spectral response for Dragonette-1 satellite

Relative spectral response for the Dragonette-2 satellite

Relative spectral response for the Dragonette-3 satellite

Relative spectral response for the Dragonette-4 satellite

Dragonette Constellation

Wyvern's operational Dragonette constellation consists of 6U cubesat satellites that were launched into low Earth orbit (LEO). All satellites in the Dragonette constellation operate in sun-synch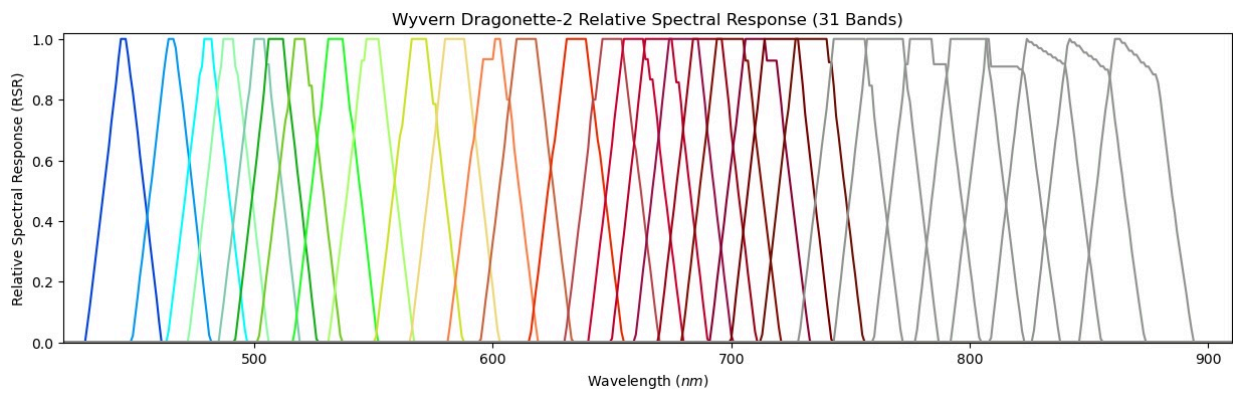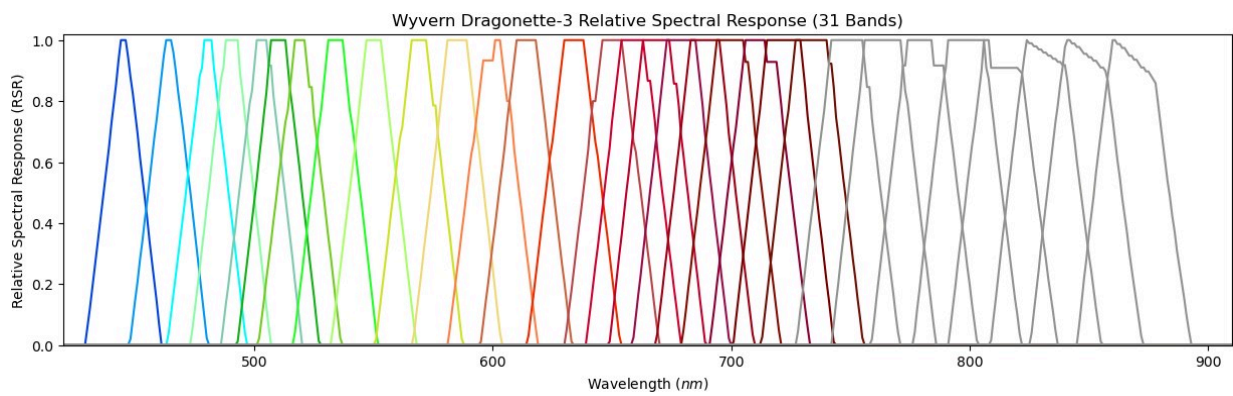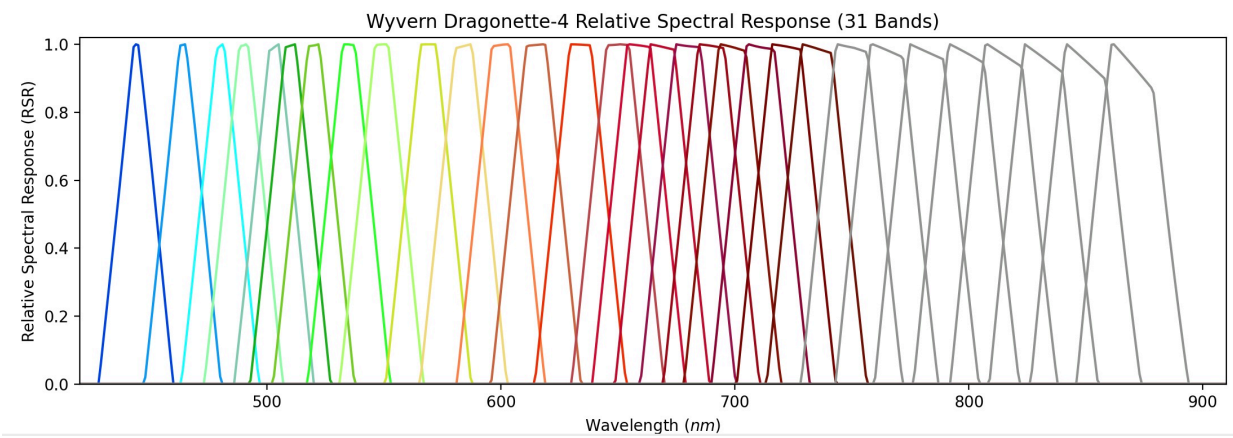ronous orbit (SSO) and provide hyperspectral imaging in the visible and near-infrared (VNIR) wavelengths. Each Dragonette satellite has an orbital period of approximately 15 orbits per day with approximately 24° of longitude ground-track separation between orbital passes at the equator. The imageable latitude range for the Dragonette satellites in SSO is within the range of +82°N to -82°S but at extreme high latitudes imaging is only available for a limited number of days near the summer solstice.

The orbital parameters for the Dragonette satellites for epoch date 2025-08-11 UTCG are in the table below.

Satellite Name	Launch Date	Altitude (km)	Orbit Period (minutes)	Orbit Inclination (degrees)	Crossing Node (time)	Nadir Repeat (days)
Dragonette-1	2023-04-15	534.3	95.2	97.4°	09:39 LTAN	15.13
Dragonette-2	2023-06-12	514.2	94.8	97.8°	14:33 LTDN	15.19
Dragonette-3	2023-11-11	525.4	95.0	97.4°	09:50 LTDN	15.16
Dragonette-4	2025-03-15	543.3	95.4	97.7°	10:31 LTAN	15.09

Orbital parameters for operational satellites in the Dragonette constellation

Wyvern's current Dragonette constellation has an average revisit time of 1.6 days at the equator with an at-nadir repeat cycle of approximately 15 days per individual satellite. While the satellites in the Dragonette constellation can collect imagery over open water their imaging operations are optimized and most well-suited for acquisition of HSI data over land.
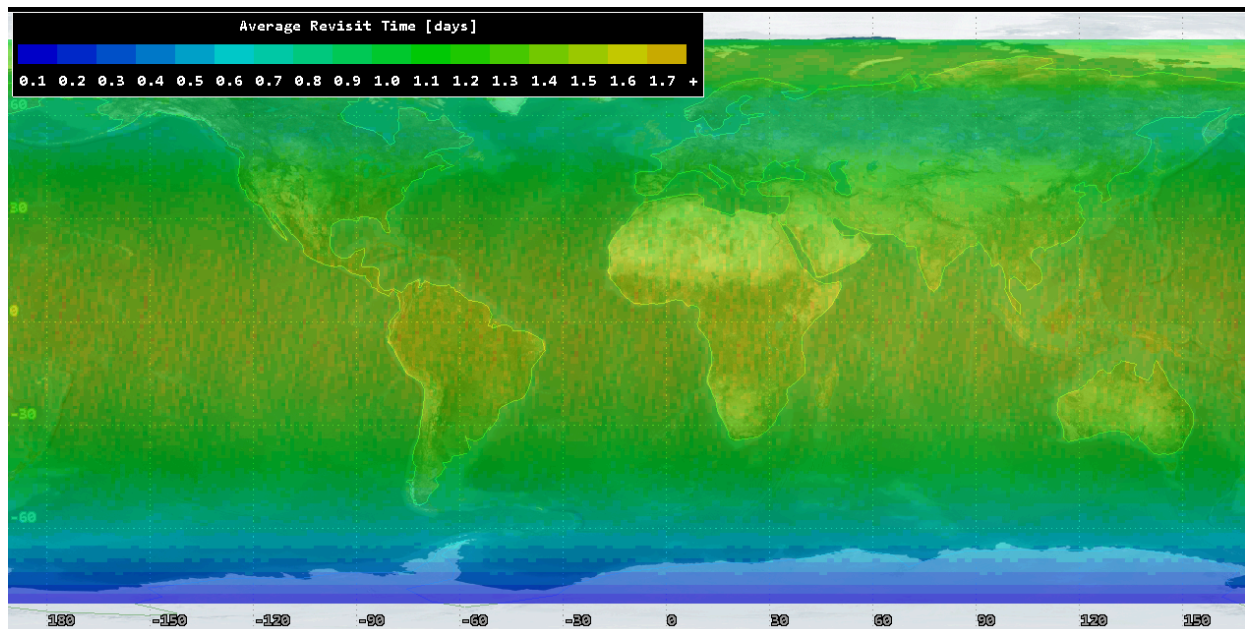
Average revisit time for current Dragonette satellite constellation

Dragonette satellites are operated under spaceborne data-as-a-service (DaaS) agreements in partnership with AAC Clyde Space and Loft Orbital with additional uplink & downlink communication services provided by Kongsberg Satellite Services (KSAT). Furthermore, the order management workflow, data processing pipeline, imagery product generation and online HSI data product delivery are all hosted within Wyvern's secure AWS cloud infrastructure. The full order-to-delivery information management flow and data transmission pixel path for processing of tasking requests and collected raw data acquired by Dragonette satellites is illustrated in the figure below. Based on Wyvern's partnerships for space satellite communications and ground segment operations the HSI data collected by our Dragonette satellites is downlinked to various KSAT ground stations at strategic locations around the globe such as Svalbard and Troll. Wyvern has implemented rigorous operational protocols for Security & Confidentiality which includes strict privacy practices where no identifiable information is shared with any of our strategic space & ground segment mission partners.
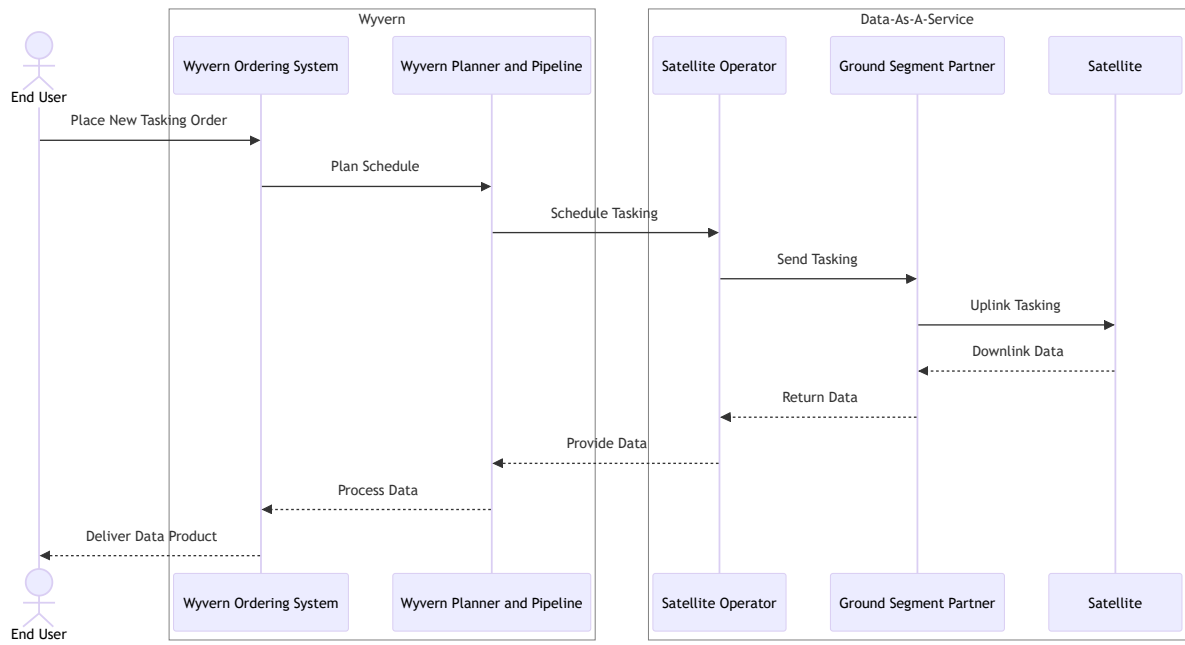
Hyperspectral Imaging

To effectively monitor and map the vast surface of the Earth, satellite-based remote sensing data collection and analysis is required. Wyvern's constellation of Earth observation satellites, ground segment, and product generation system is designed to provide the highest quality high-resolution, accurate, and timely electro-optical imagery. Wyvern's satellites are equipped with hyperspectral imaging (HSI) sensors that collect imagery data in many narrow spectral bands that enables the identification of unique chemical and physical properties of the Earth's surface unlocking novel spectroscopy analysis from space.

Wyvern's satellites in the Dragonette constellation are equipped with an advanced state of the art high-resolution hyperspectral imaging sensor that collects data in the visible to near-infrared (VNIR) spectral range of the electromagnetic spectrum. Each satellite's imaging sensor is a hyperspectral pushbroom line scan sensor with linear variable bandpass filter primarily designed for Earth Observation (EO) applications as a payload for CubeSats. It is based on a CMOS image sensor and custom continuously variable optical filter in the visible and near-infrared (VNIR) spectral range. The imaging sensor collects sunlight reflected from the Earth's surface then converts this electromagnetic radiation into electrical signals that are recorded via line-scan imaging with 12-bit pixel bit depth. The optical front-end which is used to focus the incoming light onto the focal plane has a large aperture diameter and long focal length within a compact form factor resulting in a high-resolution ground sampling distance (GSD) at operational orbital height altitudes.
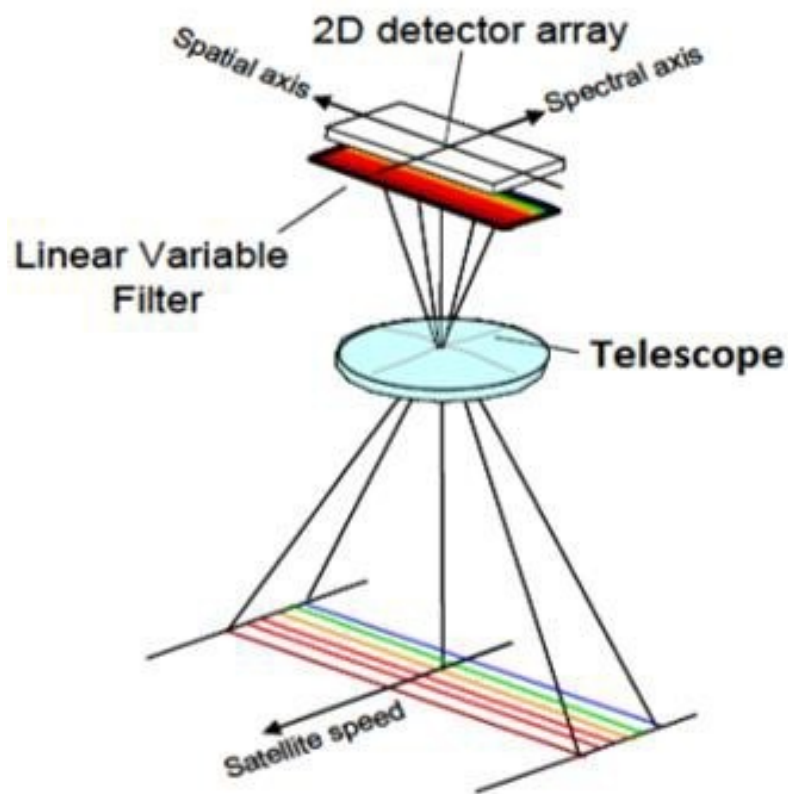
Dragonette satellites are equipped with linear variable bandpass filter pushbroom line scan sensors with digital time delay integration. Graphic from Delauré, B. et al. - 2013

Wyvern is using a constellation of small cube satellites (CubeSats) to deliver hyperspectral Earth observation imagery which differs from traditional satellite imagery such as RGB colour imagery or multispectral data as HSI data products have significantly more spectral information. Hyperspectral remote sensing is an imaging spectroscopy technique that collects electro-optical imagery data across dozens of contiguous spectral bands with narrow bandwidths. Hyperspectral imaging sensors capture sunlight reflected from the surface of the Earth in dozens of spectrally narrow bands across VNIR range of the electromagnetic spectrum where natural and anthropogenic materials exhibit distinct spectral signatures.

Consequently, HSI data products enable spectroscopy analytical techniques not available with multispectral imaging (MSI) more commonly available from existing satellite platforms.

Security and Confidentiality

Wyvern provides access to high-quality Earth observation imagery data products in a highly secure and confidential manner that aligns with the requirements of extremely sensitive missions. Wyvern has implemented industry-standard security measures while maintaining strict privacy protocols that ensure our client's identity, information and data is strictly confidential. Consequently, Wyvern has taken the necessary measures to ensure that the systems, infrastructure, facilities, people, and information are protected to the highest industry standards.

Wyvern has implemented rigorous operational security controls for all cloud-based infrastructure, online platform, enterprise computing systems, ground segment, space communications network, personnel, and facilities. Wyvern's order management, data processing, product generation and online delivery systems are built in Amazon Web Services (AWS) cloud infrastructure in alignment with standard cybersecurity measures and architectural design with end-to-end encryption per U.S. NIST AES-256 standards with cryptographic keys maintained in U.S. FIPS 140-3 (Revision 1) compliant storage. All of Wyvern's cloud-based infrastructure follows the AWS Best Practices for Security, Identity, & Compliance with very strong cybersecurity at all levels based on the AWS Well-Architected Framework. This security posture provides the confidence that Wyvern is performing the due diligence required to protect information and data at every moment of creation, transport, and rest. Finally, Wyvern's operational security controls also include a robust incident response plan for detection, analysis, containment, eradication, and recovery.

Wyvern has a rigorous stance on maintaining strict privacy practices with full client confidentiality. Consequently, Wyvern never shares client identity information with any of our operational service providers or space & ground segment mission partners. This strict confidentiality posture includes rigorous controls on our client's personal and organizational identity associated with all imagery data product orders across all of Wyvern's offerings. All client end-user and organizational identification is obfuscated into anonymous randomly generated universally unique identifiers (UUIDs) before satellite tasking order imaging collection instructions are sent to our operational space & ground segment mission partners. All interactions within Wyvern's systems are performed using the anonymized

UUIDs for both organization and end-user so that no connection can be made back to client's personal identity. Finally, all personal and organizational identifying information is stored in a separated isolated system with full encryption in alignment with standard security protocols.

Image Data

All imagery data products are delivered with the hyperspectral imagery data stored in a Cloud-Optimized GeoTIFF (COG) format raster file with LZW compression that has 32-bit floating-point (float32) data type and standard GeoTIFF tags for both radiometric and geometric parameters.

Field Name	Type	Description
Description	ASCII Text	The name of the band
FWHM	ASCII Text	The Full Width at Half Maximum of the band
GDAL_METADATA	ASCII Text	An XML list describing information for each band
GDAL_NODATA	ASCII Text	Contains an ASCII text encoded NoData background pixel value
GeoKeyDirectoryTag	SHORT	Describes the model coordinate system
ModelPixelScaleTag	DOUBLE	The size of raster pixel spacing
Wavelength	ASCII Text	The wavelength of the band
Wavelength_Units	ASCII Text	The units of the band's wavelength

Pixel Quality Mask

Products are delivered with a pixel quality mask raster file generated by Wyvern's QA system in Cloud-Optimized GeoTIFF (COG) format raster file with LZW compression that has unsigned 8-bit byte (uint8) data type. The pixel quality mask raster has the same number of bands as the image data GeoTIFF (i.e. 23-bands for Dragonette-001 and 31-bands for other Dragonette satellites).

Each band of the pixel quality mask raster indicates whether the corresponding pixel in the image data raster has a known pixel quality condition. The value of the pixel indicates which quality condition is present.

Pixel Value	Description
0	No documented pixel quality condition
1	The pixel is interpolated
255	NoData
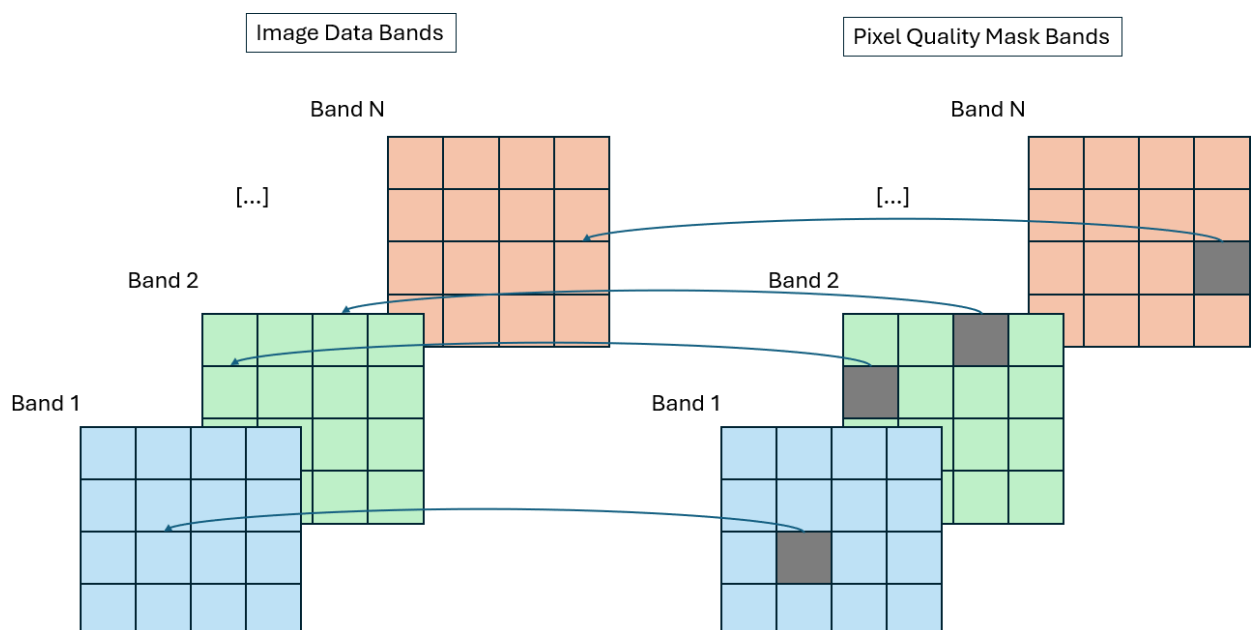
Relationship between bands and pixels in the pixel quality mask raster and the image data raster

Product Delivery

All imagery data products are delivered as a single ZIP file bundle that contains all imagery data and metadata files packaged together for each individual HSI data product. The name of the ZIP archive file is Wyvern's globally unique identifier (GUID) for the tasking order imaging collection attempt that generated the resulting imagery data product. The ZIP archive file for any given HSI data product contains the following files:

- Folder named by GUID containing all of the imagery data product files
    - STAC Catalog File (This file is a STAC catalog file for a catalog with a single item. The path to that item's STAC JSON file can be located in the list of links.)
- Subfolder named by File Naming Convention containing the following files:
    - Hyperspectral Imagery Data Raster TIFF File
    - STAC Metadata Text JSON File
    - Usable Data Mask Raster TIFF File (includes a cloud mask band)
    - Pixel Quality Mask Raster TIFF File
    - Preview Image PNG File (full resolution RGB colour representation)
    - Thumbnail Image PNG File (8x downsampled of the Preview Image)

Naming Convention

The data & metadata files delivered for any given imagery data product have a consistent naming convention that aligns with the following file naming pattern:

```
wyvern_<platform_name>_<capture_date_time>_<collection_id>_<auxiliary_file_type>.<file_extension>
```

where:

- `<platform_name>` is one of the satellites in the Dragonette constellation
- `<capture_date_time>` is acquisition time in UTC format [YYYY][MM][DD]T[hh][mm][ss]
- `<collection_id>` is the first 8 characters of the globally unique identifier.

- `<auxiliary_file_type>` is auxiliary delivery files such as 'preview', 'thumbnail', 'data_mask'
- `<file_extension>` is common format file extensions (e.g., '.tiff', '.json', '.png')

STAC Metadata

All imagery data products are delivered with acquisition time, radiometric, geometric, and other various metadata properties delivered in a JavaScript Object Notation (JSON) format ASCII text file that aligns with the SpatioTemporal Asset Catalog (STAC) open geospatial standard. For more background information please visit the STAC specification website.

Catalog File Contents

The catalog file is a STAC catalog file for a catalog with a single item. The path to that item's STAC JSON file can be located in the list of links. The item has a 'rel' value of 'item' and can be used to locate the items STAC metadata description.

General Information

The following describes general information fields.

Field Name	Type	Description
type	string	Describes the type of item
stac_version	string	STAC version
id	string	STAC unique identifier
created	string	Creation datetime of this file as ISO 8601 formatted datetime, in UTC (YYYY-MM- DDTHH:MM:SSZ)
updated	string	Last update datetime of this file as ISO 8601 formatted datetime, in UTC (YYYY-MM- DDTHH:MM:SSZ)
stac_extensions	[string]	List of STAC extensions included in this file

Sensor Information

The following describes the type of sensor used to capture the images.

Field Name	Type	Description
sensor_mode	string	Operation mode of the sensor
sensor_type	string	Type of the sensor
product_type	string	Output product

License & Provider

The following describes the license and provider information.

Field Name	Type	Description
license	string	The type of license. Full license provided in links
providers	[Provider Object]	Information describing Wyvern as data provider
links	[Link Object]	List of resource link objects and related URLs
License Link Object		
rel	string	Relationship between the current document and the linked document
href	string	The actual link in the format of an URL
title	string	Human-readable title

Field Name	Type	Description
Providers Object		
name	string	Name of the organization
roles	[string]	Roles of the provider
url	string	Homepage of the provider

Satellite Information

The following describes the satellite and constellation that captured the imagery.

Field Name	Type	Description
constellation	string	The name of the constellation
platform	string	The name of the satellite
instruments	[string]	Name of instrument used
sat:platform_international_designator	string	The International Designator

Capture Timestamps

The following describes the timestamps of the image capture.

Field Name	Type	Description
datetime	string	The mid-way time of the capture as ISO 8601 formatted datetime, in UTC (YYYY-MM- DDTHH:MM:SSSSSSZ)

Field Name	Type	Description
start_datetime	string	The start time of the capture as ISO 8601 formatted datetime, in UTC (YYYY-MM- DDTHH:MM:SSSSSSZ)
end_datetime	string	The end time of the capture as ISO 8601 formatted datetime, in UTC (YYYY-MM- DDTHH:MM:SSSSSSZ)

Processing Information

The following describes information about the processing chain.

Field Name	Type	Description
processing:level	string	The processing level of the delivered data product
processing:facility	string	The name of the facility that produced the data
processing:version	string	The version of the primary processing software or processing chain that produced the data

View Geometry Information

The following describes the position of both the satellite and sun during imaging collection.

Field Name	Type	Description
view:off_nadir	number	The angle from the sensor between nadir (straight down) and the scene centre measured in degrees (0° to 20°)

Field Name	Type	Description
view:incidence_angle	number	The incidence angle is the angle between the vertical (normal) to the intercepting surface and the line of sight back to the satellite at the scene centre measured in degrees (0° to 20°)
view:azimuth	number	Viewing azimuth angle. The angle measured from the sub-satellite point (point on the ground below the platform) between the scene centre and true north. Measured clockwise from north in degrees (0° to 360°)
view:sun_azimuth	number	Sun azimuth angle. From the scene centre point on the ground, this is the angle between truth north and the sun. Measured clockwise in degrees (0° to 360°)
view:sun_elevation	number	Sun elevation angle. The angle from the tangent of the scene centre point to the sun. Measured from the horizon in degrees (15° to 90°)

Projection and Geospatial Data

The following describes how to interpret any geospatial data in this file or in the associated Cloud-Optimized GeoTIFF file.

Field Name	Type	Description
gsd	number	Ground sample distance measured in metres (m)
geometry	GeoJSON Geometry Object of type Polygon	The footprint of the item

Field Name	Type	Description
bbox	[number]	Image bounding box in product Coordinate Reference System [xmin, ymin, xmax, ymax]
proj:epsg	number	EPSG code
proj:shape	[integer]	Number of pixels in Y and X directions for the default grid

Electro-Optical Information

The following describes data that represents a snapshot of the Earth for assets.

Field Name	Type	Description
eo:cloud_cover	number	Estimate of cloud cover, in %
eo:bands	[Band Object]	An array of available bands where each object is a Band Object
Band Object		
name	string	The name of the band, as "Band_<centre wavelength in nanometres>nm"
common_name	string	The name commonly used to refer to the band
centre_wavelength	number	Centre wavelength of the band in micrometres (μm)
full_width_half_max	number	The full width at half-maximum (FWHM) for this band in micrometres (μm)
solar_illumination	number	The solar illumination for each band which represents the ESUN solar irradiance generated

Field Name	Type	Description
		using Thuillier 2003 dataset as measured at half the maximum transmission in units of 'W / (m2 * µm)'

Raster Information

The following describes the included raster assets.

Field Name	Type	Description
raster:bands	[Raster Band Object]	An array of available bands where each object is a [Band Object]
Raster Band Object		
nodata	number	Pixel values used to identify pixels that are nodata in the band
sampling	string	Indicates whether a pixel value should be assumed to represent a sampling over the region of the pixel or a point sample at the centre of the pixel
data_type	string	The data type of the pixels in the band
unit	string	Unit denomination of the pixel value
scale	number	Multiplicator factor of the pixel value to transform into the value. Used for hyperspectral files only.
offset	number	Number to be added to the pixel value (after scaling) to transform into the value. Used for hyperspectral files only.

Field Name	Type	Description
classification:classes	[Classification Class Object]	An array of available classes where each object is a [Class Object]
Class Object		
value	integer	Value of the class
name	string	Short name of the class for machine readability
title	string	Human-readable name for use in, e.g. a map legend
description	string	Description of the class
nodata	boolean	If set to true classifies a value as a no-data value. Only present in the nodata class object

Wyvern-Specific Information

The following describes the information specific to Wyvern data.

Field Name	Type	Description
wyvern:radiometric_resolution	number	The radiometric resolution of the image, specified in bits

Asset File Information

The following describes the asset file information.

Field Name	Type	Description
href	string	URI to the asset object
type	string	Media type of the asset
title	string	The asset title
description	string	A description of the asset
file:checksum	string	File checksum
file:size	integer	The file size, specified in bytes
roles	[string]	The semantic roles of the asset

Usable Data Mask

Products are delivered with a usable data mask raster file generated by Wyvern's QA system in Cloud-Optimized GeoTIFF (COG) format with LZW compression and unsigned 8-bit byte (uint8) data type. The usable data mask raster has four bands:

- **Band 1: Clear Mask**
  - 1 = Pixel is clear (only if clear in all other useable data mask bands)
  - 0 = Pixel is not clear (cloud, cloud-shadow, or haze)
- **Band 2: Cloud Mask**
  - 1 = Pixel is cloudy
  - 0 = Pixel is not cloudy
- **Band 3: Haze Mask**
  - 1 = Pixel is hazy
  - 0 = Pixel is not hazy
- **Band 4: Cloud-Shadow Mask**
  - 1 = Pixel is cloud-shadowed
  - 0 = Pixel is not cloud-shadowed

All mask bands are binary (1 = present, 0 = not present) with 255 as NoData. The clear mask (Band 1) is only 1 if the pixel is clear in all other bands.
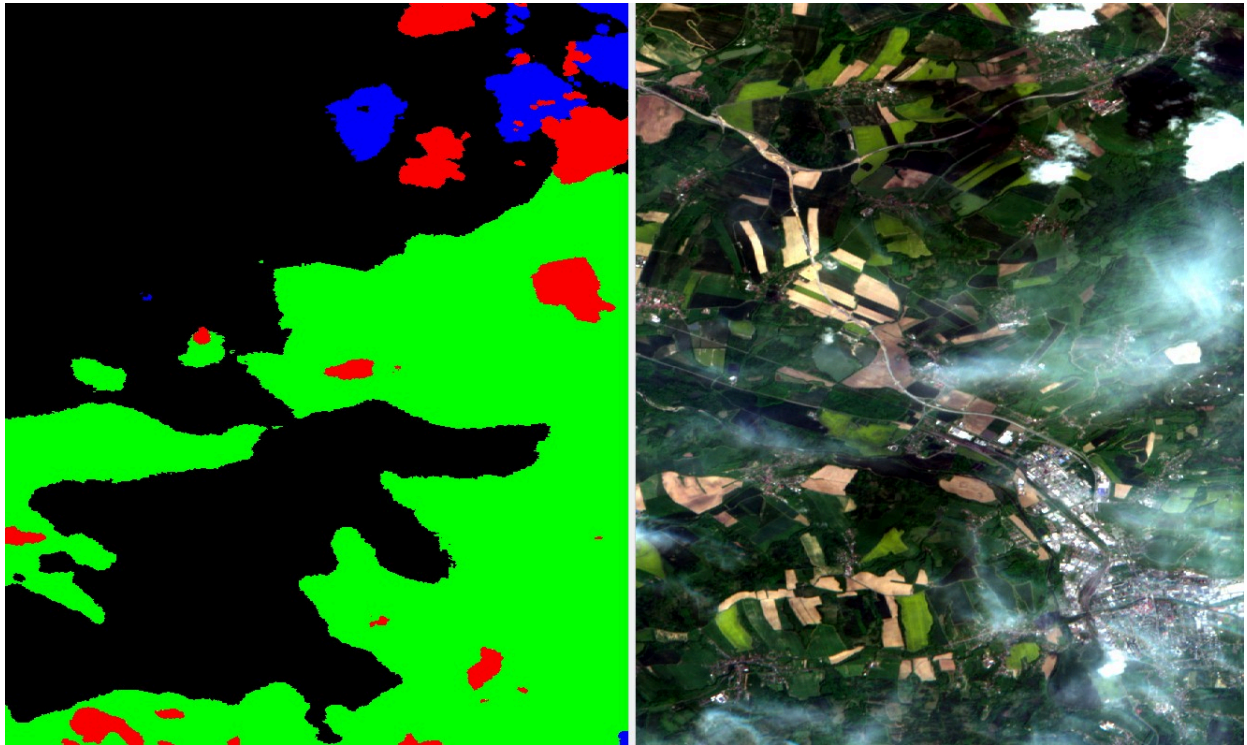
Usable data mask (left) showing cloud (red), haze (green), and cloud-shadow (blue). Natural color RGB (right)

Metadata Example

```
"Data Mask": {
  "href": "./wyvern_dragonette-003_20250508T092313_a60915a4_data_mask.ti
  "type": "image/tiff; application=geotiff; profile=cloud-optimized",
  "title": "Data Mask",
  "description": "A mask containing clear/usable data.",
  "eo:bands": [
    {
      "name": "QA_CLEAR_MASK",
      "description": "Boolean clear mask, 1 == Clear pixel"
    },
    {
      "name": "QA_CLOUD_MASK",
      "description": "Boolean cloud mask, 1 == Cloudy pixel"
    },
    {
      "name": "QA_HAZE_MASK",
      "description": "Boolean haze mask, 1 == Hazy pixel"
    },
    {
```

```json
        "name": "QA_CLOUD_SHADOW_MASK",
        "description": "Boolean cloud-shadow mask, 1 == Cloud-shadowed pix
      }
    ],
    "raster:bands": [
      {
        "nodata": 255,
        "sampling": "area",
        "data_type": "uint8"
      },
      {
        "nodata": 255,
        "sampling": "area",
        "data_type": "uint8"
      },
      {
        "nodata": 255,
        "sampling": "area",
        "data_type": "uint8"
      },
      {
        "nodata": 255,
        "sampling": "area",
        "data_type": "uint8"
      }
    ],
    "file:checksum":
"c0e402407fd67d8bb1d9ff546a95eea917b9af72c16c827f4d3b3a270439a6f075acfa70d4f
    "file:size": 1328021,
    "roles": [
      "data-mask",
      "clear",
      "cloud",
      "haze",
      "cloud-shadow"
    ]
  }
```

Archive Library

Search Wyvern's archive for available scenes!

The existing on-the-shelf hyperspectral imagery data products from previous Dragonette satellite imaging collections are available via the Archive Library offering. All existing HSI data products that were previously collected by Wyvern, or ordered by clients via one of the constellation tasking offerings without Permanent Image Exclusivity, is available within the Archive Library catalog for exploration and purchase after the default 30-day archive holdback period. In other words, all imagery data products available in the Archive Library are always at least 30 days old, if more recent imagery is required then orders must be placed using the appropriate constellation tasking offering. The archive holdback period is defined as 30 days from the exact acquisition date + time when any given imagery data product is collected by a Dragonette satellite. The product framing for the Archive Library offering is scene-based where full image scenes are delivered and invoiced based on the pricing for the selected product licensing EULA which applies to the total area size of the valid imagery pixels within the full image scene.

There is no set cloud cover policy for Archive Library offering since each individual imagery data product has an overview thumbnail and preview image that can be reviewed by clients in advance of purchase to determine if the archive imagery data product is suitable for their needs. Once an Archive Library imagery product is purchased there are no returns allowed with refund or credit since cloud cover can be assessed by clients before purchasing any given archive imagery data product.

Assured Capacity

Assured Capacity is Wyvern's premium offering for clients who require the highest top priority of new tasking imagery data collection. For those clients who require definitive collection of new imagery data products with strict requirements on specific acquisition date range the Assured Capacity offering is the only way to acquire dedicated capacity via pre-reservation of future new imaging collection opportunities capacity.

Offering Description	Assured Capacity
Tasking Priority	Highest Top Priority
Minimum Order Size (MOS)	Full Image Scenes Required To Cover AOI
Maximum AOI Size Per Order	n / a
Minimum Collection Window	Varies By AOI Location
Product Framing Logic	Scene-Based
Cloud Cover Policy	None (client assumes all cloud risk)
Definite Collection Schedule	Yes
Cloudy Collection Retasking	n / a
Delivery Priority	Highest Expedited Priority
Order Cancellation Policy	n / a
Archive Holdback Period	Perpetual
Collect-to-Delivery Latency	Average 48 Hours Objective

Offering Description	Assured Capacity
Order Options	Assured Capacity
Data Licensing EULA	Internal Use or Public Release
Permanent Image Exclusivity	Included
Spectral Range	Standard VNIR or Extended VNIR

Description and optional configurations for the assured capacity offering

The Assured Capacity offering provides definitive acquisition of new hyperspectral imagery data covering a client's specific area-of-interest (AOI) over a designated time-of-interest (TOI) period. The Assured Capacity offering has a first-come first-served basis business logic and Assured Capacity provides the highest tasking priority available from Wyvern.

Since the future imaging capacity is being pre-reserved this effectively means the Assured Capacity imaging collection attempts are given the highest top scheduling priority and cannot be preempted or bumped by other client orders. Consequently, constellation tasking orders that are placed using the lower priority Standard Tasking or Premium Tasking offerings can be preempted by Assured Capacity orders. The Assured Capacity offering also includes the highest expedited delivery priority with Permanent Image Exclusivity (perpetual archive library withhold) for all new tasking imagery data products so clients have exclusive access to their HSI data products.

Assured Capacity – Data Collection Operations

The product ordering methodology for the Assured Capacity offering involves clients first sharing their AOIs and TOIs with Wyvern, a feasibility analysis study is executed by Wyvern to determine amount of available imaging capacity over the future time period, then a contractual agreement is executed in order to finalize the client's purchase of the future imaging capacity. The product framing for the Assured Capacity offering is scene-based where the full image scenes collected to cover the client's areas-of-interest (AOIs) are

delivered and product pricing applies to the total area size of the valid imagery pixels within the full image scene. For the Assured Capacity offering the full image scenes that cover the rectangular area of imagery required to cover the AOIs are delivered and invoiced based on the total square kilometres area of the full scene. The dimensions of any given Assured Capacity imagery data product scene may vary depending on optimization of new imaging collection to cover client's AOIs and TOIs. Furthermore, as determined during the feasibility study Wyvern may propose collection of extended swath length scenes to cover multiple AOIs geographically clustered near one another with a single long image scene strip of data. Assured Capacity clients get access to Wyvern's highest level of customer service support and all collected imagery data products are delivered regardless of cloud cover.

Assured Capacity – Cloud Cover Policy

The cloud cover policy for Assured Capacity offering is that all collected tasking imagery data products that pass other quality assurance checks and align with documented standard product specifications are delivered regardless of image cloud cover. The Assured Capacity offering provides the highest priority of tasking via pre-reservation of future imaging capacity. These are collection opportunities designed for persistent monitoring. Therefore, all new imagery data products collected are delivered in order to maintain predictable and persistent image collection schedule. Consequently, imagery data products that are collected for the Assured Capacity offering with up to 100% cloud cover including saturated white pixels will constitute valid imagery data products that are delivered and invoiced accordingly.

Assured Capacity – Order Cancellation Policy

Since the Assured Capacity offering involves the pre-reservation of future imaging collection opportunities the product ordering terms & conditions are delineated in the associated contractual agreement and ad hoc order cancellations are not allowed by default since Wyvern must dedicate future imaging capacity across the satellites in the Dragonette constellation.

Constellation Tasking

For those clients who require collection and delivery of fresh new imagery data products of a geospatial area-of-interest (AOI) during a specific time-of-interest (TOI) there are two constellation tasking offerings available (Standard Tasking & Premium Tasking). The current order submission methodology for constellation tasking offerings involves the end-user completing Wyvern's new tasking imagery order form then sending the completed form along with area-of-interest (AOI) vector geometry file as attachments to the official "orders@wyvern.space" email address. Wyvern's constellation tasking offerings have a best possible effort business logic where once a tasking order is accepted it will enter a queue then be considered for potential image collection scheduling once the acquisition start date approaches. When a new tasking imagery order is considered, there are a variety of factors that impact whether an upcoming imaging collection opportunity is scheduled including offering tasking priority, upcoming weather forecast, available imaging capacity and competition with other tasking orders. Consequently, Wyvern will make the best possible effort to collect and deliver imagery data products to fulfill the tasking order but there is no guarantee of new imagery data product collection for either constellation tasking offerings. Furthermore, scheduled imaging collection attempts may be automatically rescheduled by the Wyvern system within the time-of-interest (TOI) acquisition window for any given tasking order or cancelled if an imaging restriction is imposed in relation to our commercial remote sensing space system operational license.

Description	Constellation Tasking	Constellation Tasking
Offering Description	Standard Tasking	Premium Tasking
Tasking Priority	Low Priority	High Priority
Minimum Order Size (MOS)	100 km^2	50 km^2

Description	Constellation Tasking	Constellation Tasking
Maximum AOI Size Per Order	5,000 km^2	5,000 km^2
Minimum Collection Window	1 Month	1 Week
Product Framing Logic	Area-Based	Area-Based
Cloud Cover Policy	< 20 %	< 20 %
Definite Collection Schedule	No (can be bumped by Premium Tasking)	Only If Scheduled
Delivery Priority	Regular Priority	Rush Priority
Order Cancellation Policy	Cancel > 72 Hours	Cancel > 48 Hours
Default Archive Holdback	30 Days	30 Days (perpetual available via upgrade)
Collect-to-Delivery Latency	Average 96 Hours Objective	Average 72 Hours Objective

Order Options	Standard Tasking	Premium Tasking
Data Licensing EULA	Internal Use or Public Release	Internal Use or Public Release
Permanent Image Exclusivity	Not Available	Available Via Upgrade

Order Options	Standard Tasking	Premium Tasking
Spectral Range	Standard VNIR or Extended VNIR	Standard VNIR or Extended VNIR

Description and optional configurations for the constellation tasking offerings

Each of the constellation tasking offerings have varying imaging collection parameters and optional order configurations in order to accommodate the varying needs of our clients as delineated in the table below. The two primary parameters for constellation tasking orders are the client's designation of their area-of-interest (AOI) and time-of-interest (TOI) for any given tasking order. The AOI for constellation tasking orders must be single-polygon vector geometry with a total single polygon area that is at least the minimum order size (MOS) for each constellation tasking offering. For the area-of-interest (AOI) definition Wyvern accepts AOIs defined as single-polygon geometry in KML/KMZ, Shapefile, or GeoJSON file formats.

For the time-of-interest (TOI) definition Wyvern accepts constellation tasking orders up to one year out into the future with a lead time of at least 3 days in advance notice after any given order is submitted. In other words, the acquisition start date for any given constellation tasking order must be at least 3 days in advance at the time when new constellation tasking order is submitted to Wyvern. Furthermore, the acquisition end date for any given constellation tasking order cannot exceed one year out into the future at the time when new constellation tasking order is submitted to Wyvern. Since the full order-to-delivery time frame is heavily dependent on varying satellite orbital characteristics such as constellation revisit rate Wyvern does not guarantee any specific order-to-delivery time frames and we encourage all clients to submit their future constellation tasking orders well in advance of the desired acquisition date with a general recommendation that clients submit tasking orders at least one week in advance.

All imagery data products that are generated as a result of product orders for either of the constellation tasking offerings (Standard Tasking & Premium Tasking) are subject to a baseline 30-day archive holdback period before they are cataloged and made available for exploration or purchase by other clients in the Archive Library offering. The constellation tasking offerings have the following tasking priority and imaging collection schedule logic:

- **Standard Tasking:** Low tasking priority with no definite collection schedule and tasking request can be preempted or bumped by Premium Tasking orders.

- **Premium Tasking:** High tasking priority with definite collection schedule only if Wyvern successfully schedules a tentative imaging collection attempt with product delivered only after QA with cloud cover assessment.

Both of the constellation tasking offerings are area-based which means the ordering methodology and product framing is based on area measurement in units of square kilometres (km^2). For constellation tasking offerings (Standard Tasking & Premium Tasking) the imagery data products are ordered and delivered based on single polygon area-of-interest (AOI) per order using area-based product framing. Consequently, Wyvern's product pricing for constellation tasking offerings is characterized as $ / km^2 and unit prices must be multiplied by the total square kilometres area of all imagery data (including any cloudy pixels) within the designated AOI for any given constellation tasking order.

Each of the constellation tasking offerings are subject to a minimum order size (MOS) which is defined as the minimum square kilometres (km^2) area required for any given individual discrete tasking order. The minimum order size (MOS) for Standard Tasking & Premium Tasking offering orders is defined as the minimum area size for each individual area-of-interest (AOI) single polygon geometry for any given new tasking imagery order. The minimum order size (MOS) area constraint cannot be satisfied by submitting constellation tasking orders with multiple separate AOI polygons that cumulatively add up to an area size greater than the MOS even if these AOIs are relatively nearby one another geographically. Furthermore, if the size of a new constellation tasking order's AOI is smaller than the MOS for the designated offering then Wyvern will generate a polygon expansion buffer zone that enlarges the AOI to meet the MOS area size requirements. When configuring any given constellation tasking order the end-user has the ability to specify the desired the acceptable Spectral Range based on the hyperspectral imaging capabilities of various satellites in the Dragonette constellation:

- **Standard VNIR:** default for best likelihood of tasking collection success leveraging all satellites in the Dragonette constellation including Dragonette-1 which provides 23-band HSI data products and Dragonette-2/3 satellites which provide 31-band HSI data products across the 'Standard' range of the VNIR wavelengths.
- **Extended VNIR:** optional constraint of tasking collection limited to only Dragonette satellites that can provide 31-band HSI data products across the 'Extended' range of the VNIR wavelengths.

Data Collection Operations

A new constellation tasking order for an area-of-interest (AOI) that can be covered by one individual image scene resulting from a single imaging collection attempt is acquired and delivered in the most efficient manner. Since both of the constellation tasking offerings (Standard Tasking & Premium Tasking) have area-based product framing the region of the resulting imagery product raster dataset with real imagery data pixels is clipped to the spatial extent of the AOI. Furthermore, the cloud cover policy also applies to the area of real imagery data within the AOI spatial extent for any given constellation tasking order. In this scenario Wyvern's invoice billing logic is based on the total area of the imagery data successfully collected and delivered within the AOI (including any cloudy pixels).

For a constellation tasking order of an area-of-interest (AOI) of a fairly large area Wyvern will collect multiple image scenes over the product order time-of-interest (TOI) period via multiple collection attempts in order to deliver several separate image scenes to cover the relatively large AOI. In order to acquire new imagery over the entire large AOI multiple image scenes are collected in a manner that covers the large area in the most efficient manner possible which may involve multiple scenes with varying size from minimum scene size up to maximum scene size extended strips and spatial overlap of scenes of approximately 10% but the size of the scene overlap area will vary for any given constellation tasking order. In this scenario Wyvern's invoice billing logic is based on the total area of the imagery data successfully collected and delivered within the AOI (including any cloudy pixels) where clients are only charged once for imagery within any scene overlap regions.

Furthermore, for any given large AOI tasking order the same Cloud Cover < 20% policy still applies where Wyvern will make a best possible effort to deliver at least 80% of the ordered AOI as cloud free as determined by Wyvern's quality assurance (QA) system. In the case when multiple image scenes are delivered to cover the large AOI the cloud cover policy still applies to the overall AOI where all cloud-free pixels delivered across all separate image scenes are considered as valid imagery data to satisfy the cloud cover policy requirement.

Finally, if the tasking order Acquisition End Date is reached before Wyvern is able to collect & deliver enough cloud-free imagery data to cover the AOI in alignment with product specifications and cloud cover policy then Wyvern's customer operations will contact the client to discuss a possible extension of the tasking order collection period. If the large AOI

is not collected in full before the conclusion of the tasking order collection timeframe then Wyvern will only invoice for the area of the imagery product scenes successfully delivered.

Cloud Cover Policy

Images will be delivered if cloud cover is less than 20% as measured by Wyvern QA within the tasked AOI.

If an image exceeds 20% cloud cover:

- Clients can review a thumbnail image.
- If desired, clients may accept and purchase the imagery anyway.

If no imagery meets the < 20% cloud cover policy by the tasking order Acquisition End Date:

- The order expires unfulfilled.
- To try again, submit a new tasking order.

Order Cancellation Policy

Wyvern's order cancellation policy applies to both constellation tasking offerings (Standard Tasking & Premium Tasking) and does not apply to other offerings (e.g., order cancellation is not applicable to Archive Library orders). The order cancellation policy is defined as the minimum notice time frame before any order's acquisition start date that an order cancellation must be submitted to Wyvern for the order to be canceled and not charged.

Order cancellation requests must be sent via email to 'orders@wyvern.space' before the cancellation policy cutoff time frame. Order cancellations submitted after the minimum notice time frame will not be honoured and any tasking imagery data products that are collected for the order are delivered and invoiced accordingly. The order cancellation policy for each constellation tasking offering is the following:

- **Standard Tasking:** order cancellation must be received > 72 hours before acquisition start date

- **Premium Tasking:** order cancellation must be received > 48 hours before acquisition start date

Data Processing & Product Generation

To deliver hyperspectral imagery data products in a consistent, scalable, reliable, and timely manner Wyvern has built a cloud-based data processing pipeline that converts raw sensor data and platform ephemeris metadata into usable output imagery data products that are delivered to end-users. The data processing pipeline includes spectral band co-registration at a < 25% subpixel level to ensure the best possible spectral purity in each pixel thereby enabling robust spectral analysis of the HSI data products.
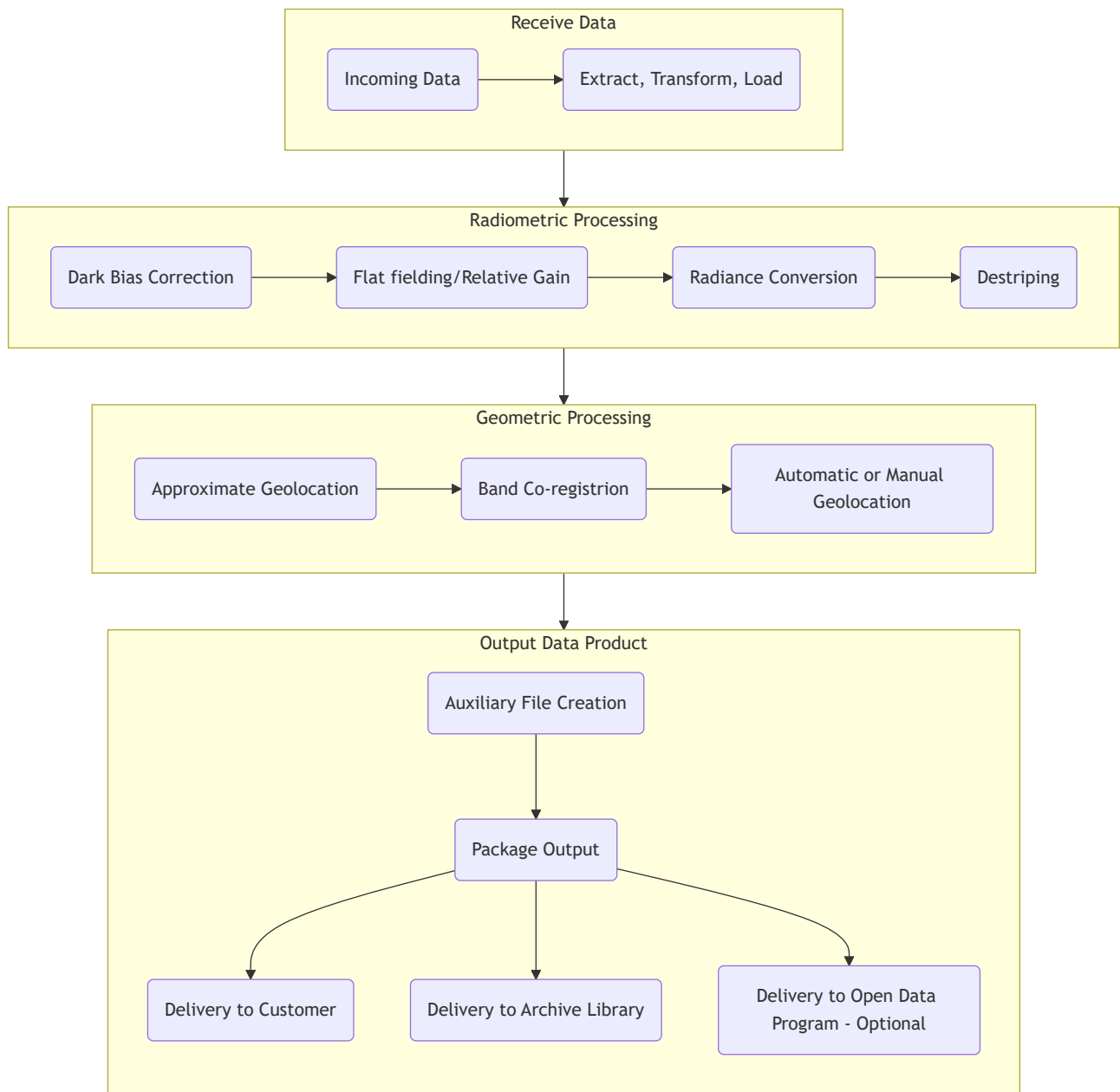
Wyvern's cloud-based data processing and imagery product generation pipeline

Furthermore, the data processing pipeline for Wyvern's hyperspectral imagery data products requires that a significant portion of any given image includes unobstructed land with heterogeneous features in order to perform the georeferencing step that enables the standard geolocation accuracy specification. Consequently, the designated geolocation accuracy specification CE90 performance is only provided for imaging collections over unobstructed land that generate imagery data products with < 20% cloud cover. For any imagery data products collected over open water or with higher levels of cloud cover Wyvern does not offer a designated geolocation accuracy specification. Instead, each HSI data product over open water, homogeneous features or high cloud cover will have a

geolocation characteristic that is limited to the inherent pointing accuracy of the Dragonette satellites which varies by imaging collection in the approximate range of several kilometres.

Processing Levels

Level-1B

Wyvern's hyperspectral imagery data products that are delivered in Level-1B (basic) processing level are both geometrically corrected via georeferencing to map-projected north-up Geographic WGS84 (EPSG:4326) coordinate system and radiometrically corrected to at-sensor radiance pixel units based on spacecraft location plus pointing along with solar conditions at time of data acquisition. Wyvern's Level-1B (L1B) processing level imagery product is delivered as a raster dataset with 32-bit floating point (float32) data type where the pixels represent at-sensor top-of-atmosphere (TOA) radiance that is already in units of 'W / (m2 * sr * μm)' with no need to apply any scaling factor. Wyvern's initial Level-1B (L1B) imagery product is being delivered with adequate metadata to enable industry-standard radiometric & geometric data processing along with advanced analytical techniques such as deep learning, machine learning, spectral indices, classification, anomaly detection, material identification, sub-pixel mixture analysis, and spectral target detection. Wyvern strives to deliver all imagery data products in a manner that preserves as much of the ground sample distance (GSD) and inherent resolving capability of the imaging system on the Dragonette satellites as possible. Since the L1B imagery data product is delivered in Geographic WGS84 (EPSG 4326) coordinate system the spatial X & Y cell size of any given image pixel is defined in angular Longitude & Latitude degree units. In order to preserve the inherent GSD the pixel cell size for any given imagery data product is set as the Longitude & Latitude angular degree equivalents of X = 5.0 m x Y = 5.0 m spatial size for the latitude location of the center of the image scene. Consequently, the pixel cell size in Lon & Lat degree units will be non-square and vary based on the latitude location of any given imagery data product (e.g., at 40°N latitude X = 5.0 m x Y = 5.0 m in cartesian map distance translates to Lon=0.0000586° x Lat=0.0000450° in geographic angular degrees).

Product Delivery

Wyvern delivers imagery data products via Amazon Web Services (AWS) Simple Storage Service (S3) bucket storage and all imagery data products are deemed accepted upon delivery. Each individual client organization will have their own dedicated isolated S3 bucket for imagery data product delivery ensuring confidentiality and privacy is maintained via organizational data isolation while following standard cloud cybersecurity protocols. All the separate image data and metadata files for any given imagery data product are packaged into a ZIP bundle package .zip file that represents the delivered product. The ZIP file name matches Wyvern's globally unique identifier (GUID) for the imaging collection attempt that generated the imagery data product. Once imagery data products are delivered to a client's dedicated S3 bucket within Wyvern's AWS cloud infrastructure an email notification is sent with temporary download links that expire after 7 days. However, any given imagery data product delivery can be re-fulfilled upon request to Wyvern.

We could not find what you were looking for.

Please contact the owner of the site that linked you to the original URL and let them know their link is broken.

Quality Assurance

Wyvern has built an advanced proprietary image quality assurance (QA) system to confirm that imagery data products align with the documented standard product specifications and the offering's cloud cover policy. If the quality assurance system determines that a new tasking imagery data product does not meet the standard performance specifications or cloud cover policy and there is available imaging capacity the Wyvern constellation tasking system will automatically re-schedule a new imaging collection attempt within the tasking order's time-of-interest (TOI) acquisition date range. This automatic QA standard performance specifications misalignment retasking applies to both Standard Tasking and Premium Tasking offerings where available imaging capacity for re-schedule is offering-dependent. New tasking attempts will continue until an imagery data product is acquired that aligns with standard product specifications or the constellation tasking order's acquisition date range expires. Furthermore, for Premium Tasking orders with automatic cloudy collection retasking if an imagery data product does not align with the cloud cover policy the Wyvern constellation tasking system will automatically re-schedule a new tasking request to attempt another imaging collection within the order's acquisition date range based on available Premium Tasking capacity and upcoming weather forecast (automatic cloudy collection retasking is not available for Standard Tasking which is a single shot offering).

Wyvern's quality assurance (QA) system includes an advanced proprietary cloud detection algorithm based on a machine learning (ML) model that identifies pixels within the imagery data product where the ground is significantly obscured by clouds. Wyvern defines a cloudy pixel as one where either a cumuliform cloud completely obscures the ground surface or part of a stratiform or cirrus cloud obscures at least a minimum of > 25% of the total reflected sunlight in that pixel. If a pixel has light haze or other atmospheric aerosols but at least ≥ 75% of the data signal is sunlight reflected from the surface of the Earth then that pixel is considered suitable for analysis and is not considered cloudy. Wyvern delivers a usable data mask raster file with every imagery data product including a cloud mask band that reflects the binary result of the cloud detection algorithm assessment. Once cloudy pixels have been identified the total percentage of cloudy pixels within the constellation tasking order's area-of-interest (AOI) is measured in relation to the offering's cloud cover

policy to determine if the imagery data product has passed QA checkout to be delivered with subsequent billing invoice based on the area of imagery data pixels within the AOI.

Spectral Bands

The tables below delineate the spectral characteristics of the hyperspectral imaging sensor on each of the Dragonette satellites. Wyvern strategically operates the hyperspectral imaging sensor on each Dragonette satellite to collect HSI data products with band centre wavelengths that are aligned with existing commercial (e.g., PlanetScope) and science mission (e.g., Landsat, Sentinel, etc.) satellite remote sensing data sources.

Dragonette Spectral Bands Overview

0 nm   900 n
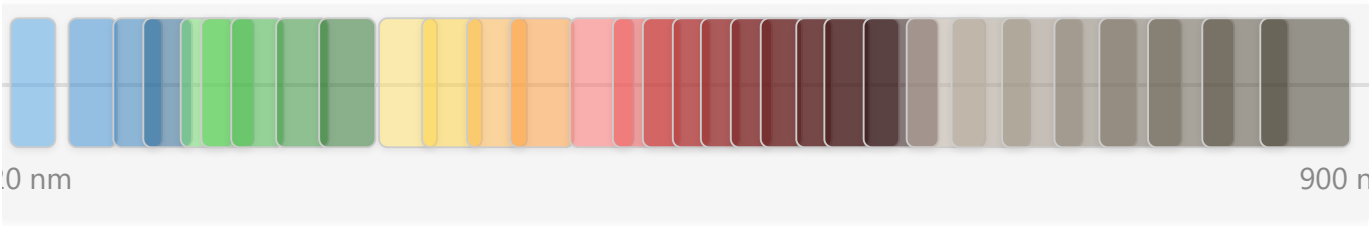
Constellation Spectral Bands

Dragonette-1 Band Centre Wavelength (CWL) (nm)	Dragonette-1 Full Width at Half Maximum (FWHM) (nm)	Extended VNIR (Dragonette-2/3/4) Band Centre Wavelength (CWL)* (nm)	Extended VNIR (Dragonette-2/3/4) Full Width at Half Maximum (FWHM) (nm)
n / a	n / a	445	15.6
n / a	n / a	465	16.3
n / a	n / a	480	16.8

Dragonette-1 Band Centre Wavelength (CWL) (nm)	Dragonette-1 Full Width at Half Maximum (FWHM) (nm)	Extended VNIR (Dragonette-2/3/4) Band Centre Wavelength (CWL)* (nm)	Extended VNIR (Dragonette-2/3/4) Full Width at Half Maximum (FWHM) (nm)
n / a	n / a	490	17.2
503	20.1	503	17.6
510	20.4	510	17.9
519	20.8	520	18.2
535	21.4	535	18.7
549	22.0	550	19.3
570	22.8	570	20.0
584	23.4	585	20.5
600	24.0	600	21.0
614	24.6	615	21.5
635	25.4	635	22.2
649	26.0	650	22.8
660	26.4	660	23.1
669	26.8	670	23.5
679	27.2	680	23.8
690	27.6	690	24.2
699	28.0	700	24.5

Dragonette-1 Band Centre Wavelength (CWL) (nm)	Dragonette-1 Full Width at Half Maximum (FWHM) (nm)	Extended VNIR (Dragonette-2/3/4) Band Centre Wavelength (CWL)* (nm)	Extended VNIR (Dragonette-2/3/4) Full Width at Half Maximum (FWHM) (nm)
711	28.4	712	24.9
722	28.9	722	25.3
734	29.4	735	25.7
750	30.0	750	26.3
764	30.6	765	26.8
782	31.3	782	27.4
799	32.0	800	28.0
n / a	n / a	815	28.5
n / a	n / a	832	29.1
n / a	n / a	850	29.8
n / a	n / a	870	30.5

The spectral characteristics of the Dragonette satellites imaging sensor.

*Extended VNIR band center wavelengths are within +/- 1 nm from these values. Individual satellites have consistent band center wavelengths.

Individual Satellite Spectral Bands

Dragonette-1 Band Centre Wavelength (CWL) (nm)	Dragonette-2 Band Centre Wavelength (CWL) (nm)	Dragonette-3 Band Centre Wavelength (CWL) (nm)	Dragonette-4 Band Centre Wavelength (CWL) (nm)
n / a	445	445	444
n / a	465	464	464
n / a	480	480	480
n / a	490	490	490
503	503	503	503
510	510	510	510
519	520	519	520
535	535	534	535
549	550	550	549
570	570	569	569
584	585	585	584
600	600	600	600
614	615	614	615
635	635	634	634
649	650	650	650
660	660	659	659
669	670	669	669
679	680	679	680

Dragonette-1 Band Centre Wavelength (CWL) (nm)	Dragonette-2 Band Centre Wavelength (CWL) (nm)	Dragonette-3 Band Centre Wavelength (CWL) (nm)	Dragonette-4 Band Centre Wavelength (CWL) (nm)
690	690	689	690
699	700	700	699
711	712	712	711
722	722	722	722
734	735	734	735
750	750	749	750
764	765	764	765
782	782	781	782
799	800	799	799
n / a	815	814	815
n / a	832	832	832
n / a	850	849	850
n / a	870	869	870

The spectral characteristics of the each Dragonette satellites.