THIRD PARTY DATA IMPORT

Search, Order and Visualize Commercial Data with Sentinel Hub
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Last update: January 13, 2023
1 Preface

Sentinel Hub supports several commercial data constellations, which provide high resolution satellite data of up to 0.5 meters! One can choose between Airbus Pleiades, Airbus SPOT, PlanetScope, SkySat and Maxar WorldView data collections.

Searching, ordering and viewing commercial data has never been so easy! For individual orders, you can now do the whole process in EO Browser, and if you would like to integrate commercial data with your application, you can use the Requests Builder or Postman to build the requests. This tutorial provides step-by-step instructions for both approaches.

To get commercial data, go to the Billing section of the Configuration Utility, where you will find the commercial data packages, where you can purchase data you need. After you have a commercial data package purchased, you can order commercial data using the steps below.

Note that for large orders, discounts are available, and that you can get commercial data sponsored, if you are conducting research or precommercial exploitation, by submitting your proposal to the Network of Resources.

Purchasing a commercial package will give you a certain amount of km$^2$ you can use. Each constellation has its own package with different pricing. The amount of km$^2$ you have is called quota. You can check this by making a request to see your quota and the response will tell you how much quota (km$^2$) you have in total, how much you already used, and how much you have left, for each of the constellations you purchased. When your quota runs out, you won't be able to make requests anymore, and you will need to purchase additional quota. The guide below will show you how to check this out.

**NOTE:** It is technically possible to order more PlanetScope data than what you have already purchased. Make sure to check your area under management is in line with the HUM model in order to avoid overage fees.
Step By Step for Individual Orders

Ordering and visualizing individual orders can be easily done within EO Browser.

See the process in [this video](#).

2.1 Search for Data

In EO Browser, login and navigate to your area of interest. Search for Sentinel-2 data for easier navigation. Draw your polygon using the polygon tool (orange on the image below). If you’re not familiar with EO Browser, see the EO Browser webinar, where you will learn how to use it.

When done, go back to the Discover section and open the Commercial data tab. When logged in, you will see several sections - Query, Products, Create order/subscription, My orders and subscriptions, My quotas and Help.

Opening My quotas section will let you know how many km$^2$ you have available for each constellation you purchased. Your order will be priced in km$^2$, subtracting from your total available quota each time you order.
In **Query**, you will see several tools for drawing your area of interest, as selected in orange. You can choose to set the current display area as the BBOX, you can upload a geometry, or draw a polygon. However, it is easiest to do this beforehand on top of Sentinel-2 imagery, as demonstrated above. Once displayed, you will see the size of your area of interest in km².

Next, you can specify the time range for your search results, the constellation (Airbus Pleiades, Airbus SPOT, Planet PlanetScope, Planet SkySat or Maxar WorldView) and toggle on the **Advanced options**, such as maximum cloud coverage. Note that advanced options are specific to each constellation.

When all the search parameters are set, clicking **Search** will open the **Products** section, and all the data products (tiles) that are available based on your search criteria will show. They will be listed in the toolbar on the left, as well as display on the map.

Click on a magnifying glass symbol to view a product preview and see if it suits your needs. Expanding the product detail information will let you know additional information, such as what percentage of your AOI it covers. **Note that data products will be clipped to your AOI.**

Add the desired product to your order by clicking the **add** button.

When done, click **Prepare order**, which will bring up the **Create order/subscription** section.
2.2 Create order/subscription

Under Create order/subscription section, you will first enter the name of your order (anything you will recognize later).

Order type

- **Products** requires you to search for data and add products to your order by manually clicking on the add button, as described above. You can add as many products as you like, but note that this will increase the cost of your order (see order size below).

- **Query** option will automatically add all the available products within your selected time range to your order, so you don't have to search for data and add them manually. This is useful for ordering large time series, such as a full year of data for a specific geometry.

Order Size and Limit

The **Order size** gives you an estimate of your order size (the quota, you are about to use). In case you only order a single product, this will equal the area of your geometry in km². If you order 2 products, this will equal double your geometry area, unless one of the products does not have full coverage. Ordering by query, your quota can easily be very high, as you’re ordering many products, multiplying your area in km², resulting in a large quota.

This is why **order limit** can be useful - it is a safeguard you set in place, to prevent accidentally making orders too large. If your order is larger than your set order limit, you won’t be able to click the Create Order button.

Collection ID

When purchasing a commercial package for the first time, our team will create an empty collection in your Dashboard with a name connected to the constellation (e.g. My Pleiades data), and an equally named configuration with a preselected selection of layers, connected to the collection.

We strongly advise you to select this collection each time you order Pleiades data in EO Browser. If you do so, you will be able to order and view data directly in EO Browser without leaving the app and with no need to configure your layers.

In general, it’s advisable that you have one collection for a single constellation - one for PlanetScope data, one for Pleiades, etc. Each time you ingest a product, you ingest it into the same collection for that constellation, so that your collection will include all your tiles for that constellation. Of course, it’s up to you how to organize your collections; you can also create new collections, rename them, delete them, and copy tiles to other collections, to have full control over them.
2.3 Create and Confirm the Order

When happy with your settings, click the Create Order button. Doing so will prepare your order, but not yet execute it. At this stage, no quota will be subtracted. When you click on it, the order will appear in the Created Orders (Not Confirmed) section of My Orders and subscriptions.

You can see the quota the order will subtract, if you confirm the order, next to Size. The status of the order is set to CREATED, which means that the order was created, but not yet confirmed.

When you click on Confirm, the order will execute and your quota will be subtracted. The status will change to RUNNING and you will see the order under Running orders (middle image above). At this stage, the tiles are not yet ingested. Click the Refresh orders button to update the status and check if your order is done.

When the tiles are ingested, clicking the Refresh orders button will move your order under Finished orders and its status will change to DONE. All your finished orders will be stored here, if you ever want to revisit them (unless you delete them). You can see this on the right image above.

2.4 View Data

When the order is finished, and when there is at least one layer in your dashboard with the same collection ID the products were ingested into, you will see the Show data button displayed (right image above). Clicking this button will navigate to the processed AOI and display the first found layer with the same collection ID set. If you selected the collection our team prepared for you, as advised, you will see several preselected layers displayed right away. Otherwise you might have to set up the layers yourself - see the last chapter Visualize Data in EO Browser to learn how.
Each time you would like to order imagery for a new area, you will create a new order. You will be able to select the order for which you would like to view data from the finished orders section, and clicking on Show data will bring you to the AOI for that order. When you process each order of the same constellation into the collection our team prepared for you, you will see the same preprepared layers displayed for each of your orders. You will be able to easily switch between your locations (orders) and view commercial data you processed.

3 Step By Step for API Use

When interested in integrating commercial imagery into your own application, consider using Requests Builder, Python or Postman to build your requests. In this chapter, ordering using Requests Builder and Postman will be introduced. Finally, there's a chapter on creating custom configurations and viewing data in EO Browser.

Check our webinar on commercial data to learn how to use our API to search, order and visualize commercial data.

3.1 Order Commercial Data with Requests Builder

You can easily request third party data with our Requests Builder tool that supports all TPDI functionalities. Just log in with your Sentinel Hub user credentials, select the 3RD PARTY DATA mode at the top of the interface and you can start building your requests.

To try out the test examples in Requests Builder, log in and click on PLANET or AIRBUS links in the banner on top. This will set the request to the test example, and you will be able to run it cost free. However, the test examples only work, if you do not change any of the parameters of the request. If you do, it will cost you your quota, and if you don't have quota, it won't work.
Use convenient in-built features of the Requests Builder like time range selection and an interactive map for a straightforward and user-friendly selection of AOIs.

3.1.1 Search for Data

After having selected a time range and AOI for the request, you need to specify the third-party data provider via the dropdown menus on the left. In the case of Planet Scope, you will have to provide your Planet API Key to query for available datasets. In the example requests, you don’t need a planet API key.

After setting the maximum cloud coverage and searching for data, you will get a list of data products available. In the name, you can see the acquisition time of the product, and the product ID.
Clicking on the little green map icon on the right of the product, the product area (green) will be displayed on the map, covering your geometry (blue).

![Product Area on Map](image)

As you can see, the product area can be much bigger than your geometry. Don’t worry - the product will be clipped to your geometry. It’s possible that the product you chose does not cover your geometry fully. To check the coverage, see **Product geometry coverage** percentage.

To see how the product actually looks like, expand the thumbnail to examine it.

### 3.1.2 Order Options

To add the products to your order, you need to click on **Add to order** button. This will add the product ID to your order in the panel below.

![Order Options Panel](image)

In the Order Options panel, first, choose the name of your order. Next, choose the order type.
3.1.2.1 Order types

Order Products IDs requires for you to search for data and add products to your order by manually clicking on the Add to Order button, as displayed above. You can add as many products as you’d like, but only for one geometry per order. If you redraw your geometry, previously added products will be removed. This is a Requests Builder specific limitation - in Postman, you should be able to make multi-polygon orders.

Order using query option will automatically add all the available products within your selected time range to your order, so you don't have to search for data and add them manually. This is useful for ordering large time series, such as a full year of data for a specific geometry. This option is identical to the Postman’s step 3.4.4 Order using query.

3.1.2.2 Order Size and Limit

The Order size gives you an estimate of your order size (the quota, you are about to use). In case you only order a single product, this will equal the area of your geometry in km2. If you order 2 products, this will equal double your geometry area, unless one of the products does not have full coverage. Ordering by query, your quota can easily be very high, as you’re ordering many products, multiplying your area in km2, resulting in a large quota.

This is why order limit can be useful - it is a safeguard you set in place, to prevent accidentally making orders too large. If your order is larger than your set order limit, you won’t be able to click the Place Order button.
3.1.2.3 Collection ID

Before ordering, think about in which collection you would like your data to be ingested. You can choose to leave this field empty and create a new collection, or, you can select one of your existing collections from the dropdown menu.

In general, it’s advisable that you have one collection for a single constellation - one for PlanetScope data, one for Pleiades, and one for SPOT data. Each time you ingest a product, you ingest it into the same collection for that constellation, so that your collection will include all your tiles for that constellation. Of course, it’s up to you how to organize your collections; you can also create new collections, rename them, delete them, and copy tiles to other collections, to have full control over them.

3.1.3 Prepare and Confirm the Order

The Prepare Order button will prepare your order, but not yet execute it. At this stage, no quota will be subtracted. When you click on it, the order will appear in the Created Orders (Not Confirmed) section of My Orders on the right.

You can see the quota the order will subtract, if you confirm the order, next to Size. The status of the order is set to CREATED, which means that the order was created, but not yet confirmed.
When you click on Confirm Order, the following will happen:

- **Your quota will be subtracted** (unless you're working with test examples)
- A new collection will appear in your Dashboard, if you chose to create a new collection
- The order will move to the Running Orders section
- Status will change to RUNNING.

At this stage, the tiles are not yet ingested. You can check the status of all your tiles by clicking on Get Deliveries button.
When the tiles are ingested, the order will move to the Finished Orders section. At this stage, the tiles were successfully ingested into your collection and the order status will say DONE. You might have to click Refresh your Orders to see the order move.

All your finished orders will be stored here, if you ever want to revisit them (unless you delete them).
3.1.4 Request Previews

Note that requests builder has the request previews next to Quota, Search and Order sections. You can preview the request, that is being sent, and toggle between the request preview and the response.

Now that you have an idea of how to order third party data with our Requests Builder, see for yourself how convenient the ordering process is and give it a try. If you prefer to use Postman you could even copy the curl-request from the Request Preview panel and import your built request into Postman.

3.2 Order Commercial Data with Postman

In Postman, users can make API requests to retrieve data and directly examine the responses that are displayed inside the Postman user interface.

Running the provided examples is free of charge. However, we will need to authorize your Sentinel Hub account for the requests you will be making following our examples, so contact us if you want to give it a try. Please note that the available example data are locally restricted, and changing the example requests of this tutorial will make them invalid.

In the following sections, we provide step-by-step instructions on how to run the examples listed in our downloadable Postman Collection (follow the link, right-click + Save as...).
3.2.1 Authentication

The Sentinel Hub API uses OAuth2 Authentication and requires that you have an access token. In essence, this is a piece of information you add to your requests so the server can identify you as a user. These tokens do not last forever for security reasons, but you can get new ones when they expire from the Sentinel-Hub OAuth2 server at the token endpoint listed below. But first, if you do not have one already, you need to register an OAuth Client in your account settings. This is so the server can expect you to make such token requests. If you do not have a Sentinel-Hub account, you can sign up for a free trial account.

To register an OAuth Client, open the User settings in your dashboard and then click the green button on the OAuth clients card on the right.

To simply make requests, set the Client grant type to Client Credentials.
Name your OAuth client and after having clicked Create client, save the secret value from the prompt window as this will no longer be visible after creation! The OAuth client should appear on the dashboard card with an auto-generated client ID.

You need to provide these credentials (OAuth client ID & secret value) in postman to request tokens. It is very convenient and easy to request tokens in Postman since the software includes support for OAuth2 Client credentials. The tokens are needed later in the process. For now, you should just copy the credentials.

3.2.2 Import our example postman collection

This downloadable Postman Collection (Right-click + Save as...) contains the examples we are going to cover in this tutorial. So please download the JSON file with a right-click and save it to your computer.

Open Postman and inspect the user interface.

Click on Import to load our Postman collection.
Click on **Upload Files** in the opened **Import** window.

Select the Postman Collection from the download location on your computer and click **open**. You should see the Postman Collection in the **Import** window. Confirm by clicking **Import**.

The Collection is now listed in your sidebar in the **Collections** tab.
3.2.3 Set up our example Postman collection

To start sending requests, we need to set up authentication for the collection. This means we must insert our credentials for Postman to be able to communicate with the process API and use its functionalities.

Hover over the newly imported collection and click on the three dots to view more actions.

Click on Edit in the opened dropdown menu.
The *EDIT COLLECTION* window opens and displays some additional information and requirements for running the requests in the example collection.

In the *Authorization* tab, set the *Type* to OAuth 2.0 and *Add auth data* to *Request Headers*. Then click the *Get New Access Token* button.
Set the **Grant Type** to **Client Credentials**, the **Access Token URL** to the token endpoint “https://services.sentinelhub.com/oauth/token”, then set the Client ID and Client Secret to the values of your OAuth Client in your Dashboard (see the section on Authentication for instructions). Leave **Scope** blank and keep **Client Authentication** as **Send as Basic Auth header**. Click **Request Token**.

To use this token to authorize your requests, click **Use Token**.
In the Variables tab, you can insert your personal PLANET_API_KEY (if existing) under CURRENT VALUE and click Update. Except for the search request (step 3.2.4.2 Simple search), all our examples should run without providing a PLANET_API_KEY.

3.2.4 Running the requests

Expand your collection and the folder Check your quota and PlanetScope to look at the prepared requests.
If at any point of this tutorial you get the following error as a response, you need to request a new token because your previous one expired:

```json
{
  "error": {
    "status": 401,
    "reason": "Unauthorized",
    "message": "You are not authorized - accessToken signature expired.",
    "code": "COMMON_UNAUTHORIZED"
  }
}
```

The process is straight-forward and very convenient in Postman. Simply open the *EDIT COLLECTION* window again and click on Get New Access Token in the Authorization tab. Then Request Token as before with the credentials unchanged and click Use Token. You can delete the expired token or leave everything as it is. Click Update, so all requests in the edited collection can use the new token. Done!

### 3.2.4.1 Get your quota

Inspect the collection and open the first request, which is a GET request that simply retrieves data from the API and displays your available quota in the response.

The request is opened in a tab. Note the URL addressing the Sentinel Hub API and requesting information on quotas. Send the request by clicking on the Send button.
The response is displayed below, stating your quota for the available third party data. As we will not need any quota for the examples, we can proceed.

3.2.4.2 Simple search

As mentioned before, a valid PLANET_API_KEY is required (only) for this step of the tutorial! If you do not own a valid PLANET_API_KEY, please continue with step 3.2.4.3

Open the request named Simple search, which is a POST request as we are sending information in the form of search parameters to the API to get information about available datasets. Note that the request URL changed and contains the keyword search now. The simple search works in a unified manner across all data providers: it allows you to specify your area of interest, time period, maximal cloud coverage and a set of parameters specific for a data provider.

Search parameters are specified in the Body tab. In this example, we are searching for PlanetScope data from an area of interest (AOI) specified with a polygon. We also define the itemType as PSScene4Band, the time range, and the maximum cloud coverage.
After sending the request, the response contains all important metadata about the available datasets.

Here you can see an excerpt from the first available dataset with a unique ID.
3.2.4.3 **Order Products**

Open the *Order products* request, note the different request URL that contains *orders* now, and inspect the *Body*. If you do not provide a BYOC collection ID at the top of the request *Body* when creating an order, we will create a collection for you and name it with the order name specified.

**NOTE**: The easiest way of ordering products is to leave the *collectionId* field empty and then use the automatically created collection for all subsequent orders. (In case you want to set up a collection yourself and order products, please proceed to step 3.2.4.5 for instructions)

Scroll down to the bottom of the request *Body* to the data section where you as a user would have to insert the product IDs you would like to order. You will see that we already inserted the IDs of both available example datasets from our search requests in the data section under *itemIds*. Please note again that the available example data are locally restricted, and the requests are not working if you try to order data in a different area. Running the provided request examples unchanged is free of charge.
The received response contains the created order with a unique ID and states the quota in sqkm that will be used for this order. This is the last point where you could check how much data you are about to purchase and how much quota you would use for the order.

3.2.4.4 Order using query

You can also create an order using a query. Again, if you do not provide a BYOC collection id at the top of the request Body when creating an order, we will create a collection for you and name it with the order name specified at the top of the request Body. (Please proceed to step 3.2.4.5 for instructions about how to set up a collection yourself and order products)
Open the respective request and scroll down the **Body** to investigate the query parameters we also used in our search requests.

The received response contains the created order with a unique ID and states the quota in sqkm that will be used for this order. This is the last point where you could check how much data you are about to purchase and how much quota you would use for the order.

3.2.4.5 **Order products with Collection ID**

NOTE: The easiest way of ordering products is to leave the `collectionId` field empty and then use the automatically created collection for all subsequent orders.

If you want to provide your own collection ID in the requests, we need to create one first. In your Sentinel Hub dashboard, navigate to the **Bring your own COG** section and click on **New collection**.
Your collection must use the Amazon Web Services (AWS) S3 bucket with the following name and location: `sh.tpdi.byoc.eu-central-1` and AWS EU (Frankfurt).

After saving the collection, copy the collection ID as shown below.

Insert the collection ID in the **Body** of the request *Order products with Collection ID*, which orders the same products as in step 3.2.4.3, and click **Send**.
3.2.4.6 Confirm order

To start the import of the data you will need to confirm your order. This is to protect you from accidentally creating huge and expensive orders. See the general Workflow of third party data import requests below or a more detailed explanation in the Sentinel Hub Documentation.

Open the Confirm order request from the example collection. Postman will automatically add the latest generated order id to the variables in the collection.
Postman should automatically connect the fetched id with the placeholder `{{order_id}}`. You can check this by hovering over the placeholder in the URL as shown below. In case this does not work, insert the ID from your order in the Variables tab in the EDIT COLLECTION window or the request URL manually.

If you proceed, the order is confirmed, and the associated amount of your quota (in sqkm) would be spent. Since the example requests in this tutorial are free of charge, click Send.

In this example we confirmed an order we created without providing a collection ID (see step 3.2.4.5), so automatically a new collection was created in the dashboard (see collectionId in response), named according to the order name specified in step 3.2.4.5.
At the bottom of the response you can see that the order is being processed ("status": "RUNNING"). We can check the current status of our order with the GET request Get order until it reads "status": "DONE" at the bottom of the response. Note that you might have to insert the order ID in the request URL again.

You can check the automatically created collection in the Bring your own COG section of your dashboard.
We used *planet products* as the name for our example order in step 3.2.4.5, and a collection with the according name was automatically created.

In our example collection, you can see the ingested image tiles. In case you followed step 3.2.4.5, created your own collection and provided the collection ID when creating the order, the same image tiles are ingested in your collection.

We suggest you use collection IDs for all future purchases of the same kind of data from the same provider to avoid an accumulation of collections in your dashboard.

### 3.2.4.7 *Process True colour*

To have a look at the ordered image data, open the request *Process True colour* in Postman and click *Send*. Postman should automatically fetch and insert the latest given collection ID for the retrieval of image data. In case this does not work, copy the ID of the respective collection in the *Bring your own COG* section of your dashboard.
3.3 Visualize Data in EO Browser

You can visualize your purchased third-party data directly in EO Browser. Right after purchasing a package, a collection and a matching configuration will be created for you. When you order data into this collection, you will be able to view it right away. Additionally, you can create your own configurations and layers. See the steps below to learn how.

See this FAQ for a full demonstration of the process.

3.3.1 Create a new configuration and connect the BYOC collection

Go to the Configuration Utility section in your personal dashboard.

Click New configuration.
Add a name and for easiest workflow, select the configuration template, that matches your constellation (e.g. PlanetScope Template). When done, click Create configuration.

Add new configuration

Configuration name:

Planet

Create configuration based on:

PlanetScope template

Using a configuration template, a couple of chosen layers will be already created for you.

All the layers will have the wrong collection ID, consisting of a long string of zeroes. Replace it with the ID of the BYOC collection that contains your Planet data (in the Bring your own COG section of your dashboard). This will make the layers ready for use without the need to search for scripts or create new layers. Don't forget to save your layers.
If you would like to add additional layers, click on Add Layer. Add a name for the layer, as the Source select Bring Your Own COG and insert the collection ID. Then click on the editing symbol in Data processing as shown below.

To find the script to paste in, check the PlanetScope section of our custom script repository (there's also an Airbus Pleiades section, with scripts, that work the same for SPOT as well). Just open one of the scripts, click on show script on top, and copy paste it into the script editor.
Save the layer by clicking on the **Save** button. Change any other options in the configuration to your liking and save it.

### 3.3.2 Display imagery in EO Browser

Log into your Sentinel Hub account on [EO Browser](https://eo-browser.hub.seneca.ca/) and zoom to the area, where your data is ingested (if you're working with the example requests, search for **Zgornje Konjišče, Slovenia** using the search bar in the top right corner.)
On the bottom of the Search tab, select the configuration name you created in the previous step as the theme in the drop-down list.

Adjust the time range according to the acquisition date of the ingested image tiles, which is 27 April 2019 and click Search (left), then Visualize one of the results (right).

Zoom in until you can see the planet image on the map in EO Browser.
4 Future purchases

After following the provided examples in this tutorial, you learned how to search and order third party data in EO Browser, Requests Builder and Postman. You can now search and order third party data for your specific use case. To get access to this functionality, please see the [pricing section on our website](#) and contact us for an offer.