



As part of the Euro Data Cube (EDC) Consortium, Sentinel Hub is a cloud platform that provides versatile access to Earth Observation data in an Analysis Ready format. It supports advanced processing with user-defined algorithms, optimized for on-the-fly computation, producing the result whenever and in such form as the user requires, directly from original satellite data files without replication or pre-processing.

Complete archives of Copernicus datasets (Sentinel-1 GRD, Sentinel-2 L1C/L2A, Sentinel-3 OLCI and SLSTR, Sentinel-5P), Landsat, MODIS, as well as commercial missions from Planet and Airbus are available at a moment's notice. The service offers low-level API access for custom per-pixel processing, with both single-scene and multi-temporal capabilities, transformations, reprojections and outputs to the user defined format (image or array of pixels of GeoJSON for statistical processing).

Advanced features such as data-fusion, cloud masking and Batch Processing make the API perfect for global scale EO data processing.

Additional options of the Sentinel Hub include the possibility to process your data stored on your own S3 bucket. Make use of the Sentinel Hub Statistical API to perform statistical computations or use the EO-Browser to access the data to modify and execute custom scripts or develop your own scripts.

Batch processing option is available, ideal for large scale machine learning workflows, providing the data faster and consuming three times less processing units than the standard API.

Truck Algorithm

The Truck detection algorithm (full name: Truck detection – Sensing trade from space) was developed by Henrik Fisser in the context of the Euro Data Cube COVID-19 edition of Sentinel Hub's custom script contest. The Sentinel-2 based algorithm exploits the temporal offset between the acquisitions of the sensor's multispectral channels. Larger moving objects like trucks are recorded in different locations by each of the spectral channels. In a multiband RGB composite, these positional shifts appear as distinct blue, green and red pixel patterns (resembling rainbow colours). This effect allows the mapping and quantification of moving trucks in Sentinel-2 imagery.

The method works best for large vehicles moving at 50km/h or faster, so the intended area of application is highways, rather than inner-city traffic. Please note that the algorithm is optimised for European road surfaces (and performance may be degraded in other parts of the world).

For a given area of interest and time range the algorithm calculates road masks dependent on selectable OSM road categories/features. Subsequently a cloud detection is applied to the masked roads which also enables users to exclude acquisition dates on which the detected cloud cover exceeds a specified threshold. Users need to specify a set of required input parameters (see list below) to start the processing of the algorithm. Depending on the selected output format, the service provides the detected trucks as point geometries with

corresponding timestamps as a shapefile, GeoJSON, GeoPackage that is layered by date, or a GeoDataFrame in EDC's GeoDB service.

Sentinel-1 GRD CARD4L Normalised Radar Backscatter processing

Sentinel Hub provides the full archive of global Sentinel-1 GRD data, which can be processed based on [CARD4L NRB \(Normalised Radar Backscatter\)](#) requirements to reduce the complexity of SAR data. The satellite data is processed to a minimum set of requirements and organized into a form, that allows immediate analysis with minimum user effort. Through the EDC [Insights On Demand](#) service, you can trigger on-demand processing of CARD4L compliant Sentinel-1 GRD data through EDC Browser and have the products delivered to a specified S3 bucket.

Required input parameters:

- Area of interest
- Time range (start and end date)
- Bucket name (specifies the [accessible user s3 bucket](#) the output will be delivered to)

Based on the selected input parameters, an analysis is run to determine the number of datatakes, distinct dates and total area of the data to be processed. The processing is currently limited to 20 datatakes. For larger orders, customers should get in contact with Sentinel Hub support.

The on-demand CARD4L processing service provides the following CARD4L-compliant output products that will be delivered to the specified AWS S3 bucket:

- VV: VV backscatter (calibrated to gamma naught in linear power units)
- VH: VH backscatter (calibrated to gamma naught in linear power units)
- AREA: contributing scattering area
- ANGLE: local incidence angle
- MASK: combination of shadow mask and data mask
- userdata.json : intermediate metadata used to produce final CARD4L metadata
- metadata.json: STAC compliant CARD4L compliant general metadata
- metadata.xml: STAC compliant CARD4L compliant general metadata

Automatic Field Delineation processing

This service generates automatic contours for agriculture parcels, given Sentinel-2 images.

Input parameters:

- Area of interest
- Time period (recommended three months)

Output:

- Geopackage (.gpkg) with parcel contours, aggregated for the entire time period

Additional information about the algorithm:

- Algorithm source code (<https://github.com/sentinel-hub/field-delineation>)
- Algorithm technical description (<https://medium.com/sentinel-hub/parcel-boundary-detection-for-cap-2a316a77d2f6>)
- Algorithm webinar (<https://www.youtube.com/watch?v=czRCApJCYIo>)