



Imagery Basemap Product Files and Metadata Specification

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Glossary

AOI	Area of interest
CE90	Circular error at 90% confidence
GEOJSON	An open standard designed for representing simple geographic features
GEOTIFF	Image format with geospatial metadata
GSD	Ground Sample Distance
HD	High Definition: A proprietary technique that improves the visual clarity of an image. HD does not increase resolution but rather enhances the visual acuity of an image.
MOSAIC	A single image layer created from multiple images
NATIVE RESOLUTION	The collected GSD of the source imagery. The native sensor resolution is fixed at the time of acquisition and remains consistent with that value.
PRODUCT GSD	The pixel size of the imagery basemap after production sampling, order parameters and the HD proprietary technique is applied.
Q1	Used in the order reference, it refers to the quarter in which the product was initially produced, with “Q” meaning “quarter” and the number being either 1, 2, 3, or 4.

1. Product Files

Each imagery basemap product file includes the product name (e.g., Vivid_Standard) and an order reference used for the delivery as follows.

<product>_<order ref>...

When the delivered area matches the block/area used in the initial production of the product, the order reference will include the production block/area name (e.g., NL01) and the date the block/area was produced (e.g., 21Q1). When applicable, the order reference may also include product parameter references (e.g., 30 for a 30cm build).

For customer defined AOIs, the order reference is a unique, alpha-numeric identifier assigned by the production system (e.g., 057725259010).

1.1 Overview

Each imagery basemap product delivery includes an overview file that describes the geographic extent of the area delivered. The overview file is formatted in GeoJSON and named as follows.

<product>_<order ref>_overview.geojson

The overview file includes the attributes shown in Table 1.

Table 1. Imagery Basemap Attributes

Name	Range	Precision	Units	Comments
product_name	Text	NA	NA	Vivid_Basic, Vivid_Standard, Vivid_Advanced, Vivid_Premium, Dynamic, Custom
product_gsd	NA	float	meters	Precision is floating /significant digits, e.g., 1, 0.5, 0.15
mosaic_accuracy	0.0 - 100.0	one decimal #.#	meters CE90	
mosaic_cloud_percent	0.0 - 100.0	one decimal #.#	percent	Percent of clouds in the mosaic
spectral_bands	RGB, BGRN	NA	NA	
youngest_image	YYYY-MM-DD	NA	NA	Date in ISO8601 format
oldest_image	YYYY-MM-DD	NA	NA	Date in ISO8601 format
processing_notes	Text	NA	NA	Processing notes for the mosaic, e.g., production date

1.2 Raster Tiles

Imagery basemap products are tiled into JPEG compressed, cloud optimized GeoTIFF raster files that contain 19,584 lines and 19,584 samples per line. The raster files are named as follows.

<product>_<order ref>_<quadkey>.tif

1.3 Metadata Tiles

For each raster tile in an imagery basemap product, there is an associated resolved geometry file. The file includes one to many polygons that correspond to the high-resolution seam lines for each portion of the image strip(s) used in the tile. The geometry files are formatted in GeoJSON and named as follows.

<product>_<order ref>_<quadkey>.geojson

Each tile includes the attributes shown in Table 2.

Table 2. Tile Metadata Attributes

Name	Range	Precision	Units	Comments
tileID	Text	NA	NA	Quadkey identifier, e.g., 020210103123
tile_accuracy	0.0 - 100.0	one decimal #.#	meters CE90	
tile_cloud_percent	0.0 - 100.0	one decimal #.#	percent	Percent of clouds in the tile
catalog_id	Text	NA	NA	Maxar catalog identifier for each source image within the tile, e.g., 103001006771ED00

1.4 Metadata Strips

Each imagery basemap product delivery includes a geometry file that provides an overview of the spatial distribution of the image strips in the mosaic. The file includes one to many polygons that correspond to the simplified seam lines for each portion of the image strip(s) used in the mosaic. The geometry and metadata are formatted as an ESRI shapefile dataset and include the following data files.

<product>_<order ref>.dbf *Database file*
 <product>_<order ref>.prj *Coordinate Projection File*
 <product>_<order ref>.shp *Spatial Geometry File*
 <product>_<order ref>.shx *Position Index file*

Each image strip polygon includes the attributes shown in Table 3. Note that additional attributes may also be present for reference purposes.

Table 3. Strip Metadata Attributes

Name	Range	Precision	Units	Comments
catalog_id	Text	NA	NA	Maxar catalog identifier for the image, e.g., 103001006771ED00
acq_date	YYYY-MM-DD	NA	NA	Source image acquisition date, in ISO8601 format
sensor	QB02, GE01, WV01, WV02, WV03, WV04	NA	NA	Sensor that acquired the image, using the standard naming convention for Maxar satellites
off_nadir	0.00 - 90.00	two decimals ###	degree	Source image off nadir angle
sun_elev	0.00 - 90.00	two decimals ###	degree	Source image sun elevation angle
native_res	NA	float	meters	Source image native (collected) resolution; precision is floating /significant digits, e.g., 0.5, 0.31
accuracy	0.0 – 100.0	one decimal ##	meters CE90	Placeholder for future strip accuracy; currently reports static product accuracy
proc_notes	Text	NA	NA	Processing notes for the strip, e.g., HD

2. Product File Layout

The imagery basemap product files are laid out according to the following directory tree structure.

```
<product>_<order ref>
  manifest.txt
  <product>_<order ref>_overview.geojson
  <product>_<order ref>_overview.geojson.md5sum
  metadata_strips
    <product>_<order ref>.dbf
    <product>_<order ref>.dbf.md5sum
    <product>_<order ref>.prj
    <product>_<order ref>.prj.md5sum
    <product>_<order ref>.shp
    <product>_<order ref>.shp.md5sum
    <product>_<order ref>.shx
    <product>_<order ref>.shx.md5sum
  metadata_tiles
    <product>_<order ref>_<quadkey>.geojson
    <product>_<order ref>_<quadkey>.geojson.md5sum
    ...
  raster_tiles
    <product>_<order ref>_<quadkey>.tif
    <product>_<order ref>_<quadkey>.tif.md5sum
    ...
```

As part of the layout process, a manifest (text) file is generated that outlines all the product files included in the delivery.

As part of the layout process, an md5 hash value is computed on each file to help ensure data integrity and detect unintentional data corruption. The hash value contained in each file is 128 bit and is computed using the Python filehash library (<https://pypi.org/project/filehash/>). Each file delivered with the imagery basemap product will have a corresponding md5 file with a “.md5sum” extension.

Appendix

A.1 Example Product File Layout

Vivid_Standard_057725259010

 Vivid_Standard_057725259010_overview.geojson

 metadata_strips

 Vivid_Standard_057725259010.dbf

 Vivid_Standard_057725259010.prj

 Vivid_Standard_057725259010.shp

 Vivid_Standard_057725259010.shx

 metadata_tiles

 Vivid_Standard_057725259010_021230032300.geojson

 Vivid_Standard_057725259010_021230032301.geojson

 Vivid_Standard_057725259010_021230032302.geojson

 Vivid_Standard_057725259010_021230032303.geojson

 Vivid_Standard_057725259010_021230032310.geojson

 Vivid_Standard_057725259010_021230032311.geojson

 Vivid_Standard_057725259010_021230032312.geojson

 Vivid_Standard_057725259010_021230032313.geojson

 raster_tiles

 Vivid_Standard_057725259010_021230032300.tif

 Vivid_Standard_057725259010_021230032301.tif

 Vivid_Standard_057725259010_021230032302.tif

 Vivid_Standard_057725259010_021230032303.tif

 Vivid_Standard_057725259010_021230032310.tif

 Vivid_Standard_057725259010_021230032311.tif

 Vivid_Standard_057725259010_021230032312.tif

 Vivid_Standard_057725259010_021230032313.tif

A.2 Example Overview file

```
{
  "type": "FeatureCollection",
  "name": "overview",
  "crs": {
    "type": "name",
    "properties": {
      "name": "urn:ogc:def:crs:OGC:1.3:CRS84"
    }
  },
  "features": [
    {
      "type": "Feature",
      "properties": {},
      "geometry": {
        "type": "Polygon",
        "coordinates": [ [
          [ 48.515625, 38.583984375 ],
          ...
        ] ]
      }
    }
  ],
  "metadata": {
    "product_name": "Vivid_Standard",
    "product_gsd": 0.5,
    "mosaic_accuracy": 5.0,
    "mosaic_cloud_percent": 0.0,
    "spectral_bands": "RGB",
    "youngest_image": "2020-03-10",
    "oldest_image": "2002-03-08",
    "processing_notes": "varies"
  }
}
```

A.3 Example Metadata Tiles File

```
{
  "type": "FeatureCollection",
  "metadata": {
    "tileID": "020210103123",
    "tile_accuracy": 5.0,
    "tile_cloud_percent": 0.0
  },
  "features": [
    {
      "type": "Feature",
      "geometry": {
        "type": "Polygon",
        "coordinates": [
          [
            [-121.781652113, 36.544903025],
            ...
          ]
        ]
      },
      "properties": {
        "catalog_id": "103001006771ED00"
      }
    }
  ]
}
```