

INTERFACE

Nutzerworkshop

<https://eodc.eu>

09:00	Data Discovery and Access via EODC services <i>Christoph Reimer (eodc)</i> <i>Vienna</i>	09:00 - 09:45
10:00	Demonstration of additional EODC services <i>Christoph Reimer (eodc)</i> <i>Vienna</i>	09:45 - 10:15
	Kaffeepause <i>Vienna</i>	10:15 - 10:45
11:00	INTERFACE - Hands-on (eodc & Partners) <i>Vienna</i>	10:45 - 12:00
12:00	Discussion, Closing <i>Vienna</i>	12:00 - 12:30

- Entwicklung und Betrieb von EO Services (downstream services)
- Insgesamt **12** Teammitglieder verantwortlich für 7+ Services

- Workshop Instruktoren

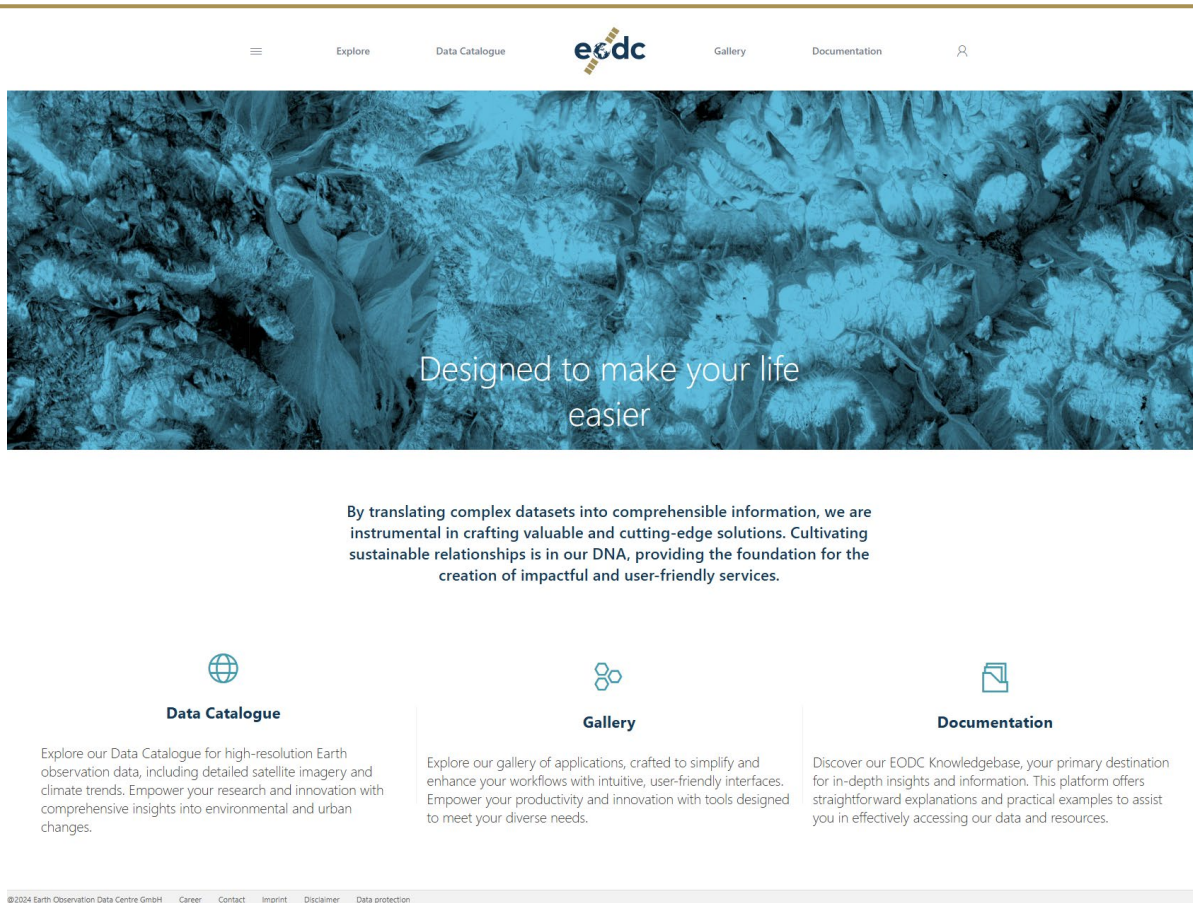


- Franziska KÖNIG – STAC Client für QGIS
- Stefan REIMOND – Einführung in STAC | STAC Browser | CQL2
- Tobias STACHL – Explorer | STAC Python Client
- Optional: OGC API Features und TiTiler

-
- Fokus auf Data Discovery and Access
 - In diesem Session Block werden hauptsächlich Slides verwendet
 - **JEDER ist eingeladen die beschriebenen Schritte selbst auf seinem Laptop auszuführen**
 - Fragen bez. Hands-on Support für bestimmte Services bitte im Block nach der Pause **[Zeitdruck]**

EODC Portal [pre-release]

<https://portal.services.eodc.eu>

The screenshot shows the EODC Portal pre-release interface. At the top, there is a navigation bar with the EODC logo and links for Explore, Data Catalogue, Gallery, and Documentation. Below the navigation bar is a large hero image with a teal overlay and the text "Designed to make your life easier". Underneath the hero image is a paragraph of text: "By translating complex datasets into comprehensible information, we are instrumental in crafting valuable and cutting-edge solutions. Cultivating sustainable relationships is in our DNA, providing the foundation for the creation of impactful and user-friendly services." Below this text are three columns, each with an icon and a title: "Data Catalogue" (globe icon), "Gallery" (network icon), and "Documentation" (book icon). Each column contains a brief description of its respective section. At the bottom of the page, there is a footer with copyright information and links for Career, Contact, Imprint, Disclaimer, and Data protection.

Designed to make your life easier

By translating complex datasets into comprehensible information, we are instrumental in crafting valuable and cutting-edge solutions. Cultivating sustainable relationships is in our DNA, providing the foundation for the creation of impactful and user-friendly services.

Data Catalogue

Explore our Data Catalogue for high-resolution Earth observation data, including detailed satellite imagery and climate trends. Empower your research and innovation with comprehensive insights into environmental and urban changes.

Gallery

Explore our gallery of applications, crafted to simplify and enhance your workflows with intuitive, user-friendly interfaces. Empower your productivity and innovation with tools designed to meet your diverse needs.

Documentation

Discover our EODC Knowledgebase, your primary destination for in-depth insights and information. This platform offers straightforward explanations and practical examples to assist you in effectively accessing our data and resources.

©2024 Earth Observation Data Centre GmbH Career Contact Imprint Disclaimer Data protection

EODC Portal

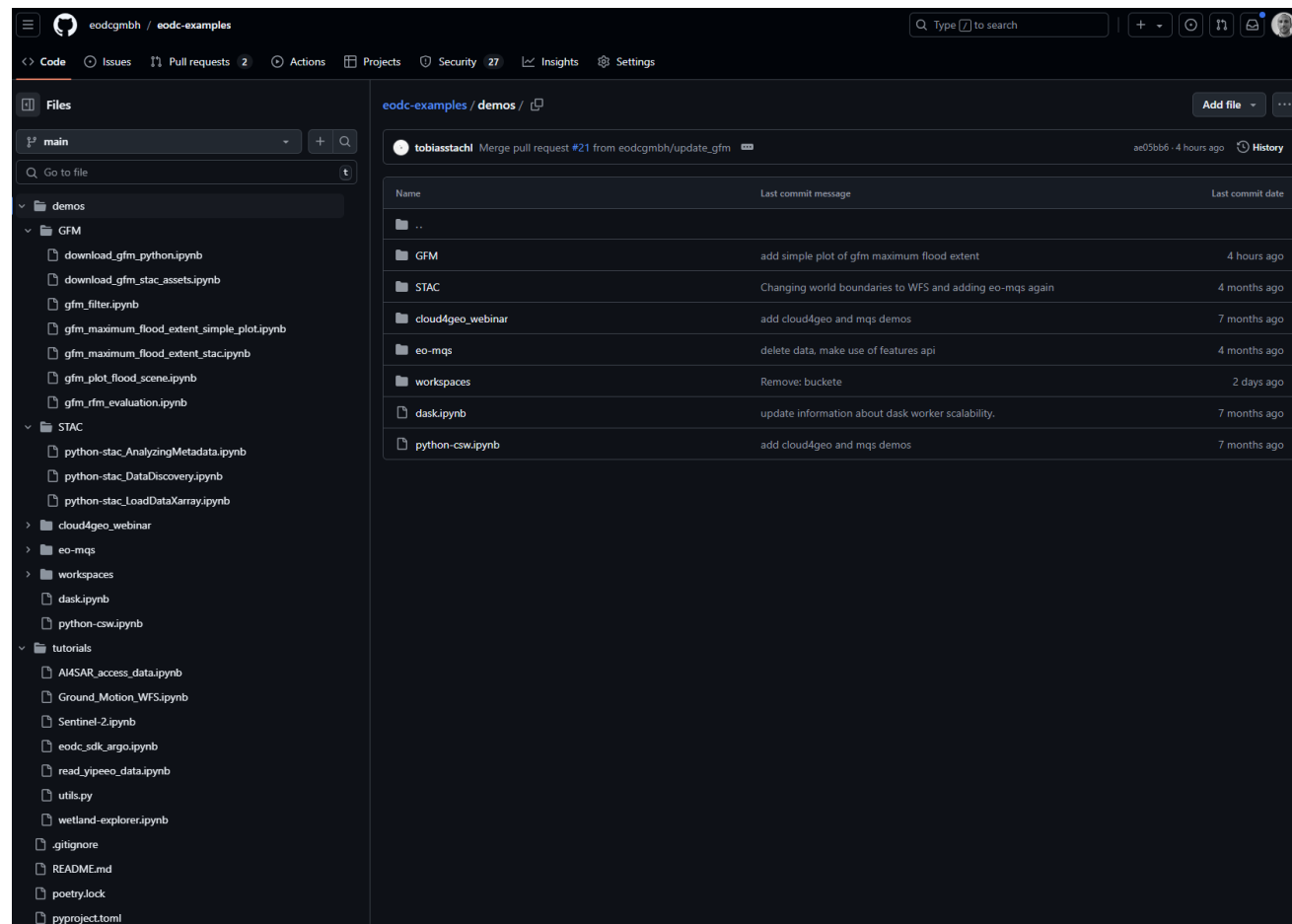
<https://portal.services.eodc.eu>



EODC Examples

<https://github.com/eodcgmbh/eodc-examples>





The screenshot shows the GitHub interface for the `eodcgmblh / eodc-examples` repository. The left sidebar displays the file tree with folders like `demos`, `GFM`, `STAC`, `cloud4geo_webinar`, `eo-mqs`, `workspaces`, and `tutorials`. The main area shows the `demos` folder selected, displaying a table of files and their commit history.

Name	Last commit message	Last commit date
..		
GFM	add simple plot of gfm maximum flood extent	4 hours ago
STAC	Changing world boundaries to WFS and adding eo-mqs again	4 months ago
cloud4geo_webinar	add cloud4geo and mqs demos	7 months ago
eo-mqs	delete data, make use of features api	4 months ago
workspaces	Remove: buckete	2 days ago
dask.ipynb	update information about dask worker scalability.	7 months ago
python-csw.ipynb	add cloud4geo and mqs demos	7 months ago



[Help](#) [Sponsors](#) [Log in](#) [Register](#)

eodc 2024.10.1

`pip install eodc`

 Latest version

Released: Oct 8, 2024

Navigation

- Project description**
- Release history
- Download files

Verified details

These details have been [verified by PyPI](#)

Project links

- [Homepage](#)
- [Repository](#)

GitHub Statistics

Maintainers

-  creimer_eodc
-  sean_eodc

Unverified details

These details have **not** been verified by PyPI

Meta

Project description

EODC SDK

status planning pypi v2024.10.1 python 3.9 3.10 3.11

Python SDK for interacting with EODC services.

Installation

Install the SDK with pip:

`pip install eodc`

Usage

Dask Clusters

```
from eodc import settings
from eodc.dask import EODCCluster

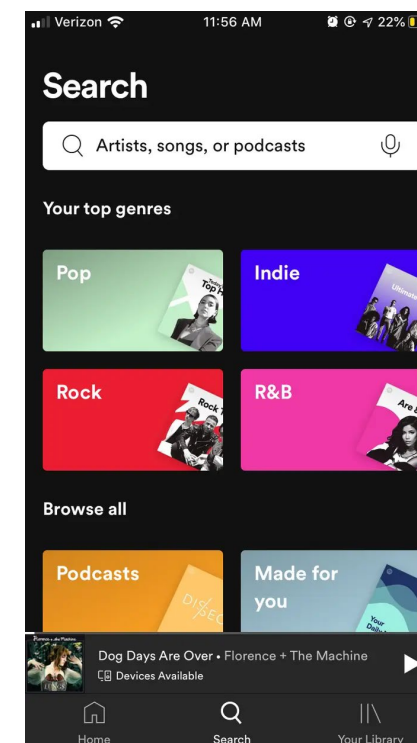
settings.DASK_URL = "<EODC dask_gateway endpoint>"

cluster = EODCCluster()
```

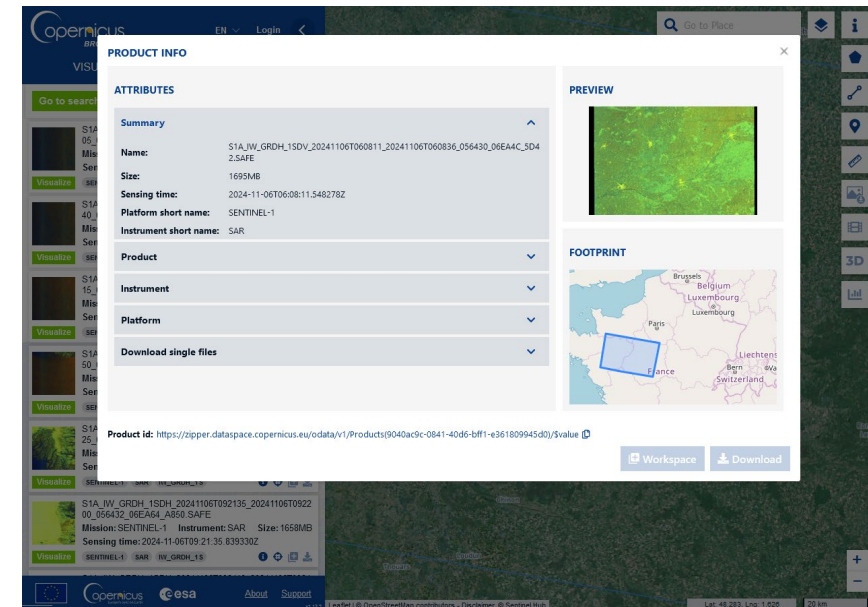
Metadaten & STAC

Wozu brauchen wir Metadaten?

- Metadaten sind Informationen über Daten.
- Metadaten erleichtern das Auffinden von Daten und das Entdecken von Ressourcen.
- Metadatenstandards bieten eine einheitliche Möglichkeit, Daten zu strukturieren und zu beschreiben.



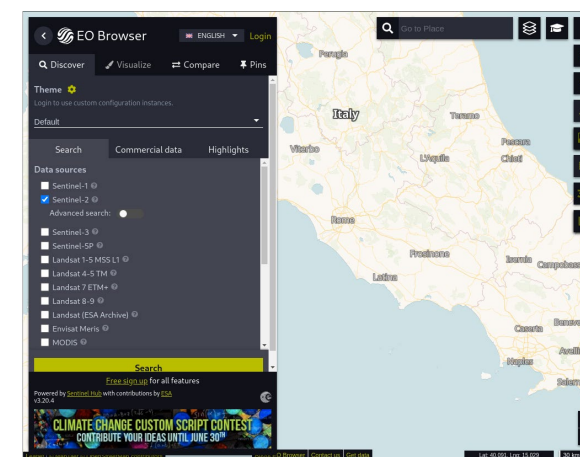
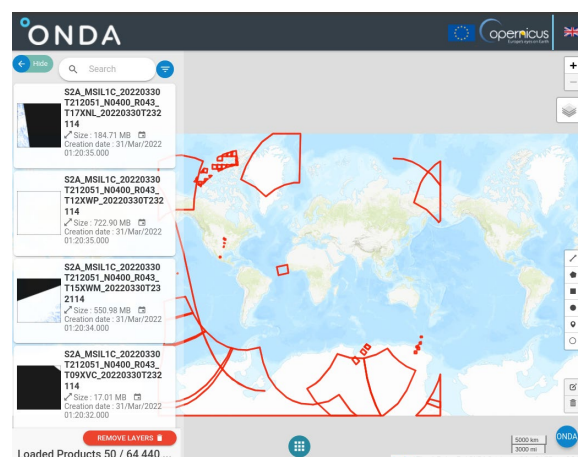
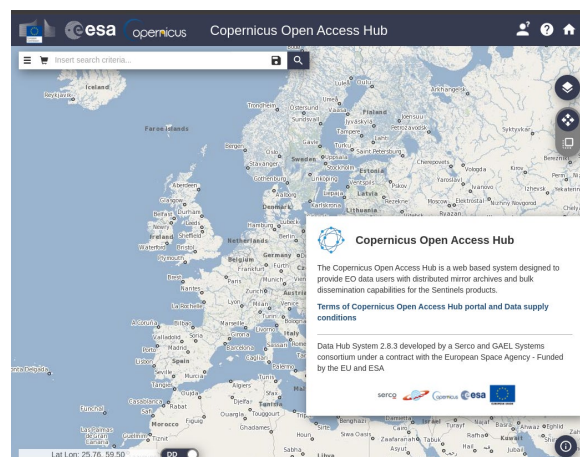
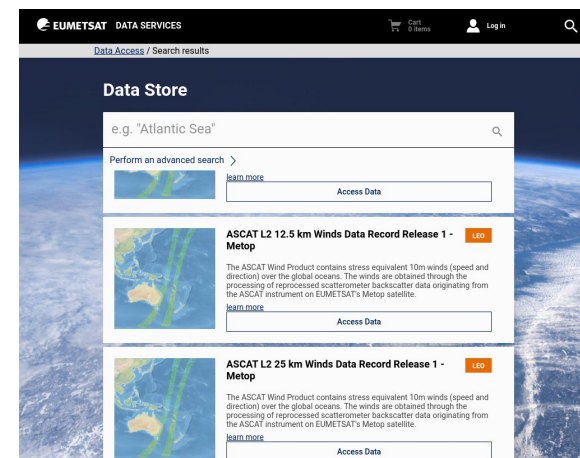
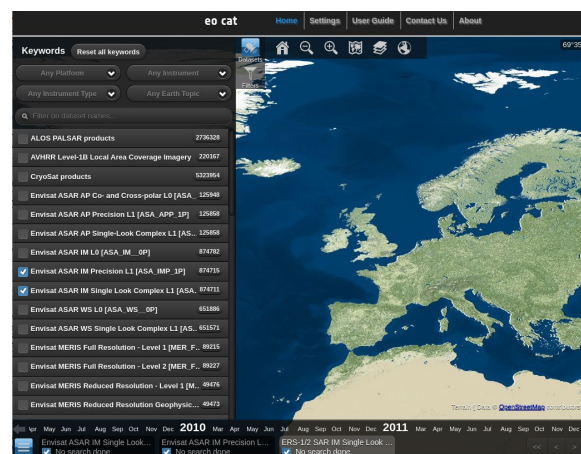
- Art von Metadaten, die auf geografische Daten und Informationen anwendbar sind
- Räumliche und zeitliche Referenzen, Genauigkeit, Orbitinformationen, Herkunft, ...
- Geodaten-Metadatenstandards werden von OGC, ISO, INSPIRE und anderen bereitgestellt
- OGC CSW @ EODC: <https://csw.eodc.eu>



Copernicus Browser (Copernicus Data Space Ecosystem)



STAC-Motivation: "There is no Google for EO Data"



- **Einfachheit:** STAC verwendet **JSON** für eine unkomplizierte Metadatenverwaltung.
- **Web-Kompatibilität:** Durch die Verwendung von JSON entspricht STAC den Webstandards und fördert die Interoperabilität.
- **Client-Unterstützung:** Unterstützt von einer Vielzahl von Client-Bibliotheken.

JSON vs XML

[< Previous](#)[Next >](#)

Both JSON and XML can be used to receive data from a web server.

The following JSON and XML examples both define an employees object, with an array of 3 employees:

JSON Example

```
{ "employees": [
  { "firstName": "John", "lastName": "Doe" },
  { "firstName": "Anna", "lastName": "Smith" },
  { "firstName": "Peter", "lastName": "Jones" }
]}
```

XML Example

```
<employees>
  <employee>
    <firstName>John</firstName> <lastName>Doe</lastName>
  </employee>
  <employee>
    <firstName>Anna</firstName> <lastName>Smith</lastName>
  </employee>
  <employee>
    <firstName>Peter</firstName> <lastName>Jones</lastName>
  </employee>
</employees>
```

JSON is Like XML Because

- Both JSON and XML are "self describing" (human readable)
- Both JSON and XML are hierarchical (values within values)
- Both JSON and XML can be parsed and used by lots of programming languages
- Both JSON and XML can be fetched with an XMLHttpRequest

JSON is Unlike XML Because

- JSON doesn't use end tag
- JSON is shorter
- JSON is quicker to read and write
- JSON can use arrays

The biggest difference is:

XML has to be parsed with an XML parser. JSON can be parsed by a standard JavaScript function.

- SpatioTemporal Asset Catalog
- STAC ist eine **Spezifikation** zur Beschreibung von Geoinformationen mittels JSON.
- Der Fokus von STAC liegt auf Search und Discovery.
- Die Philosophie von STAC ist, es einfach, aber flexibel und erweiterbar zu halten.
- STAC ist kein definitiver Metadatenstandard wie ISO oder OGC.
- STAC wurde zur Verwendung mit räumlichen Rasterdaten entwickelt.

- **STAC Catalog**
 - API oder statische JSON-Datei, die STAC-Items, STAC-Sammlungen oder andere STAC-Kataloge organisiert.
- **STAC Collection**
 - Ein STAC-Katalog mit umfangreichen Metadaten, einschließlich räumlicher und zeitlicher Ausdehnung (z.B. Sentinel-1 GRD).
- **STAC Item**
 - Ein spezifischer Geodatensatz als GeoJSON-Feature plus räumlicher und zeitlicher Komponente und Links (z.B. eine Sentinel-1 GRD-Szene).
 - Enthält **Assets**, die einzelne, herunterladbare/zugängliche Dateien darstellen.
- **STAC API**
 - Eine REST-API, spezifiziert in OpenAPI, die der *OGC API – Features* folgt, um STAC-Items zu durchsuchen. Besteht aus drei Unterspezifikationen:
 - STAC API – Core
 - STAC API – Collections and Features
 - STAC API – Item Search

- **STAC Core** definiert ein minimales Set an Elementen, das für Erweiterungen ausgelegt ist.
- **STAC-Extensions** fügen zusätzliche JSON-Felder für eine bessere Datenbeschreibung hinzu.
- Die Erweiterungen haben unterschiedliche Gültigkeitsbereiche: Catalog, Collection, Item, Asset
- **STAC-API-Extensions** verbessern die API-Funktionalität mit zusätzlichen Features.

- Wem nützt STAC?
 - **Datenanbieter:** Vereinheitlichte Bereitstellung räumlicher Daten.
 - **Entwickler:** Tools für verschiedene Sprachen und Hosting (z.B. PySTAC, rstac, STAC Server, ...).
 - **User:** Einfaches Finden und Erkunden von Geodaten (z.B. STAC Browser, QGIS STAC API Plugin, ...).
- Spielt eine zentrale Rolle in der Cloud Native Geospatial Zukunft (Cloud Optimized GeoTIFF (COG), ZARR).
- Einfach, erweiterbar, aktive Community, aber noch kein Standard.

- Vorstellung verschiedener Clients:
 - STAC Browser
 - STAC API & Docs
 - QGIS
 - Python libraries
 - EODC Portal & Explorer



EODC STAC API:
<https://stac.eodc.eu/api/v1>

- STAC Browser
 - **Durchsuchen:** Interaktives Erkunden des EODC-Datenkatalogs.
 - **Anzeigen:** Collections und Items auf Karten visualisieren.
 - **Filtern und Suchen:** Einfache Filter- und Suchoperationen durchführen.



EODC STAC Browser:
<https://services.eodc.eu/browser/>

Description

A STAC-compliant API to query for metadata within the EODC Data Catalogue.

Additional Resources

- [OpenAPI service description](#)
- [OpenAPI service documentation](#)

Collections

Catalogs

49

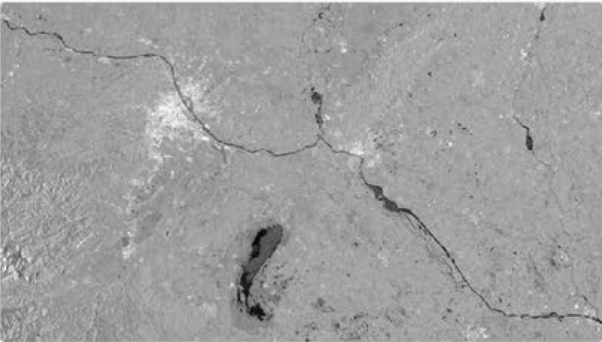
Tiles

List

Ascending

Descending

Filter catalogs by title



AI4SAR Despeckled Sentinel-1 Sigma0 (20m)

Sentinel-1 Despeckled Sigma Nought (SIG0) are produced using AI4SAR workflow developed within AI4SAR project.

10/1/2014, 12:00:00 AM UTC until present



Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Wolfsberg

Orthofotos des Flugblockes Wolfsberg

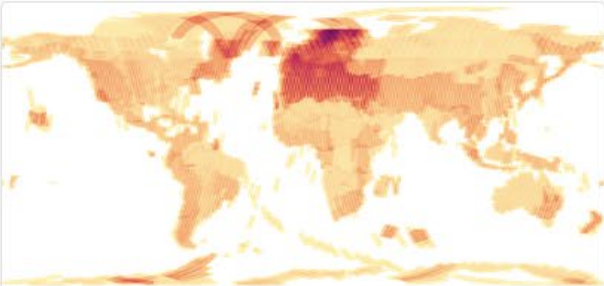
7/13/2022, 12:00:00 AM UTC - 7/21/2022, 12:00:00 AM UTC



Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock Windischgarsten

This collection comprises high-resolution digital orthophotos provided by the state of Styria, Austria. Flight block: Windischgarsten

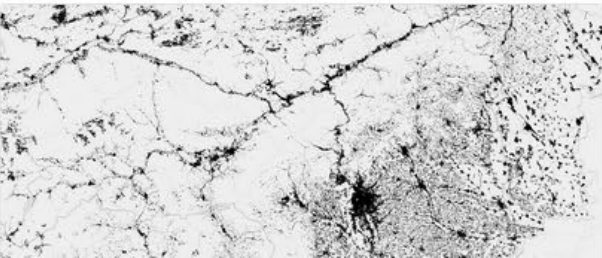
1/1/2016, 12:00:00 AM UTC - 12/31/2021, 11:59:59 PM UTC



Sentinel-1 Coverage Maps

Global archive of Sentinel-1 Coverage-Maps processed at EODC.

10/3/2014, 12:00:00 AM UTC until present



Drought Vulnerability

The map shows the average frequency of long-lasting droughts in Austria at a spatial resolution of 1km. The map can for example be used to calcula...



SENTINEL-1 Lacken Extent

Sentinel-1 Wetland Data: Lacken Extent

Description

A STAC-compliant API to query for metadata within the EODC Data Catalogue.

Catalogs

49

Tiles

List

Ascending

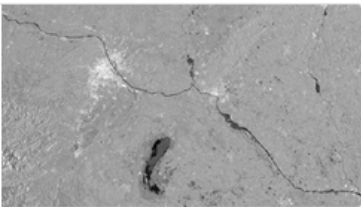
Descending

Filter catalogs by title

AI4SAR Despeckled Sentinel-1 Sigma0 (20m)

Sentinel-1 Despeckled Sigma Nought (SIG0) are produced using AI4SAR workflow developed within AI4SAR project.

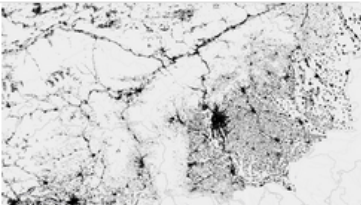
10/1/2014, 12:00:00 AM UTC until present



Austria Ground Motion

The EGMS dataset for Austria provides precise and consistent information on natural and anthropogenic ground motion within the country's borders, with millimeter-level accuracy.

1/1/2016, 12:00:00 AM UTC - 12/31/2023, 11:59:59 PM UTC



Austrian High Resolution DEM

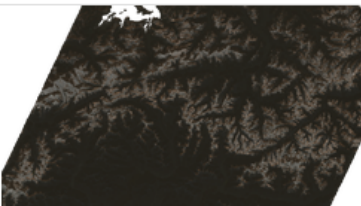
Austrian High Resolution DEM is generated from Airborne Laser Scanning data with a grid of 10m x 10m.

1/1/2018, 12:00:00 AM UTC until present

Bottom of Atmosphere Landsat-8 at 30m resolution.

Preprocessed analysis-ready-data (ARD) from Landsat-8 processed with FORCE. ARD data can only be combined with other ARD data or loaded results of previous processed jobs. ARD data cannot be combined with Level-1 collections! As this is Level-2 (ARD) data, ARD processes (ard_normalized_radar_backsc...

1/4/2015, 12:00:00 AM UTC - 12/26/2020, 12:00:00 AM UTC



Source Data

ID	stac-fastapi	
STAC Version	1.0.0	
Valid	✓	

The STAC metadata file is located at:

<https://stac.eodc.eu/api/v1>



Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock Mariazell

in EODC Data Catalogue

Up

Browse

Search

Description

This collection comprises high-resolution digital orthophotos provided by the state of Styria, Austria. Flight block: Mariazell

orthophotos orthoimage styria mariazell

License CC-BY-4.0

Temporal Extent 1/1/2016, 12:00:00 AM UTC - 12/31/2021, 11:59:59 PM UTC



Map

Thumbnails

Asset

> DOP_AUT_ST_MARIAZELL Colletion Thumbnail

THUMBNAIL

PNG

Providers

Land Steiermark

LICENSOR

PRODUCER

EODC

HOST

Collection Metadata

Source Data

ID	DOP_AUT_ST_MARIAZELL	Collection ID
STAC Version	1.0.0	
Valid	✓	

The STAC metadata file is located at:

https://stac.eodc.eu/api/v1/collections/DOP_AUT_ST_MARIAZELL



7327-29

COG

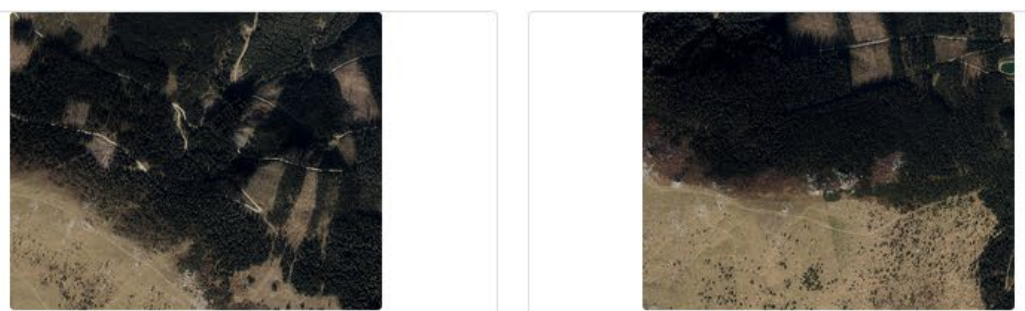
7/1/2017, 12:00:00 PM UTC

7327-41

COG

7/1/2017, 12:00:00 PM UTC

Items



7327-33

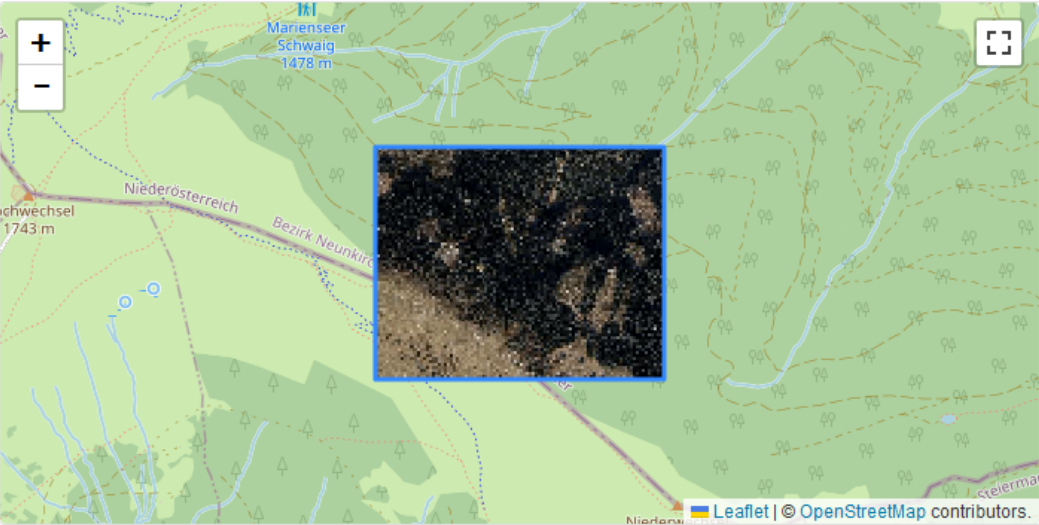
COG

7/1/2017, 12:00:00 PM UTC

7327-42

COG

7/1/2017, 12:00:00 PM UTC



Map

Thumbnails

Assets

> RGB Image	SHOWN DATA COG
> CIR3 Image	DATA COG
> RGB World File	METADATA TEXT
> CIR3 Auxiliary File	METADATA XML
> CIR3 World File	METADATA TEXT
> tilejson	METADATA JSON
> thumbnail	THUMBNAIL PNG

Item Assets → HREFs

Collection

Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock Mariazell

This collection comprises high-resolution digital orthophotos provided by the state of Styria, Austria. Flight block: Mariazell

1/1/2016, 12:00:00 AM UTC - 12/31/2021, 11:59:59 PM UTC

Item Metadata

General

Time of Data	7/1/2017, 12:00:00 PM UTC
--------------	---------------------------

Projection

EPSG Code	31256
WKT2	<pre>PROJCS["MGI / Austria GK East", GEOGCS["MGI", DATUM["Militar-Geographische_Institut", SPHEROID["Bessel 1841",6377397.155,299.1528128, AUTHORITY["EPSG","7004"]], AUTHORITY["EPSG","6312"]], PRIMEM["Greenwich",0, AUTHORITY["EPSG","8901"]], UNIT["degree",0.0174532925199433, AUTHORITY["EPSG","9122"]], AUTHORITY["EPSG","4312"]], PROJECTION["Transverse_Mercator"], PARAMETER["latitude_of_origin",0], PARAMETER["central_meridian",16.3333333333333], PARAMETER["scale_factor",1], PARAMETER["false_easting",0], PARAMETER["false_northing",-5000000], UNIT["metre",1, AUTHORITY["EPSG","9001"]], AXIS["Northing",NORTH],</pre>

Search

in EODC Data Catalogue

Browse

Search

STAC Browser Search

Search for Items

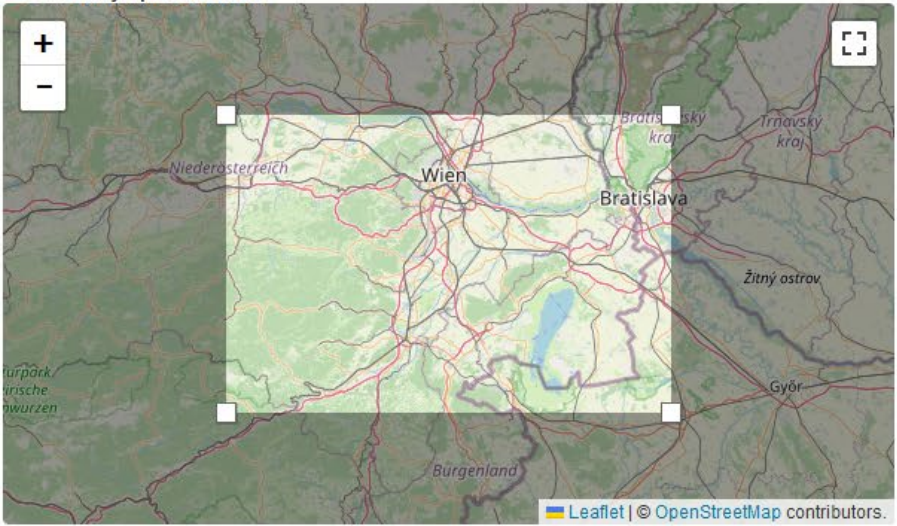
Temporal Extent

9/30/2020 ~ 4/29/2022

All times in Coordinated Universal Time (UTC).

Spatial Extent

☒ Filter by spatial extent



Collections

Sentinel-1 SAR L1 GRD Sentinel-2 MSI Products: Level-1C data

Item IDs

Enter one or more Item IDs...

Sort

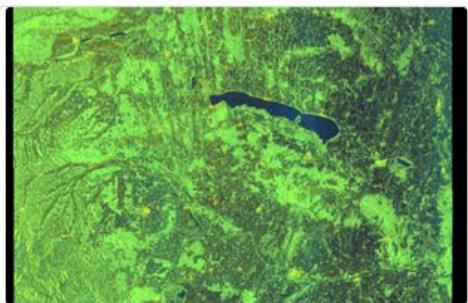


Items

< First

< Previous

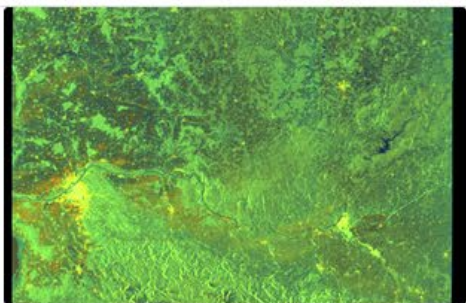
Next >



S1A_IW_GRDH_1SDV_20220407T164241_20220407T164306_042670_051751

GeoTiff ZIP

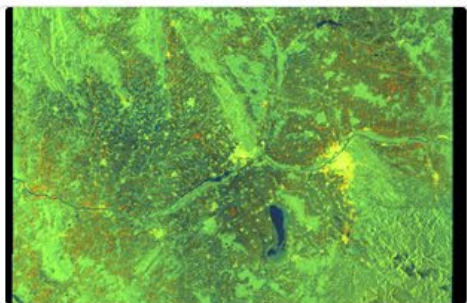
4/7/2022, 4:42:41 PM UTC - 4/7/2022, 4:43:06 PM UTC



S1A_IW_GRDH_1SDV_20220416T051011_20220416T051036_042794_051B8E

GeoTiff ZIP

4/16/2022, 5:10:11 AM UTC - 4/16/2022, 5:10:36 AM UTC



S1A_IW_GRDH_1SDV_20220423T050205_20220423T050230_042896_051EE7

GeoTiff ZIP

4/23/2022, 5:02:05 AM UTC - 4/23/2022, 5:02:30 AM UTC

- STAC API Docs (Swagger UI)
 - **Erkunden:** Interaktive Dokumentation der STAC API.
 - **Verstehen:** API-Endpunkte und deren Funktionen nachvollziehen.
 - **Testen:** API-Aufrufe direkt in der Benutzeroberfläche ausführen.



EODC API Docs:
<https://stac.eodc.eu/api/v1/docs>

EODC Data Catalogue 0.1 OAS 3.1

/api/v1/openapi.json

A STAC-compliant API to query for metadata within the EODC Data Catalogue.

Servers

/api/v1

API Endpunkte

default

GET	/	Landing Page	⌵
GET	/conformance	Conformance Classes	⌵
GET	/collections/{collection_id}/items/{item_id}	Get Item	⌵
GET	/search	Search	⌵
POST	/search	Search	⌵
GET	/collections	Get Collections	⌵
GET	/collections/{collection_id}	Get Collection	⌵
GET	/collections/{collection_id}/items	Get Itemcollection	⌵

Filter Extension

GET	/queryables	Queryables	⌵
GET	/collections/{collection_id}/queryables	Collection Queryables	⌵

Ausklappen zum Testen

GET

/search Search

HTTP GET Request

Endpoint.

Parameters

Cancel

Name

Description

collections

string

(query)

DOP_AUT_ST_MARIAZELL,SENTINEL1_SI

ids

string

(query)

ids

bbox

string

(query)

13.0,47.0,15.0,49.0

intersects

string

(query)

intersects

datetime

string

(query)

2020-01-01T00:00:00Z/..

limit

integer

(query)

10

query

string

(query)

query

sortby

string

(query)

-properties.datetime

fields

string

(query)

collection,properties.datetime

token



Query Parameters

<https://api.stacspec.org/v1.0.0-beta.4/item-search/#tag/Item-Search/operation/getItemSearch>

filter
string
(query)

Execute

Clear

Responses

Curl

```
curl -X 'GET' \
  'https://stac.eodc.eu/api/v1/search?collections=DOP_AUT_ST_MARIAZELL%2CSENTINEL1_SIG0_20M&bbox=13.0%2C47.0%2C15.0%2C49.0&datetime=2020-01-01T00%3A00%3A00Z%2F..&limit=10&sortBy=-properties.datetime' \
  -H 'accept: application/geo+json'
```



Request URL

```
https://stac.eodc.eu/api/v1/search?collections=DOP_AUT_ST_MARIAZELL%2CSENTINEL1_SIG0_20M&bbox=13.0%2C47.0%2C15.0%2C49.0&datetime=2020-01-01T00%3A00%3A00Z%2F..&limit=10&sortBy=-properties.datetime&fields=collection%2Cproperties.datetime
```

Server response

Code Details

200

Response body

```
{
  "type": "FeatureCollection",
  "context": {
    "limit": 10,
    "matched": 10226,
    "returned": 10
  },
  "features": [
    {
      "id": "SIG0_20221231T050326_D124_E051N012T3_EU020M_V1M1R1_S1AIWGRDH",
      "collection": "SENTINEL1_SIG0_20M",
      "properties": {
        "datetime": "2022-12-31T05:03:26Z"
      },
      "links": [
        {
          "rel": "collection",
          "type": "application/json",
          "href": "https://stac.eodc.eu/api/v1/collections/SENTINEL1_SIG0_20M"
        },
        {
          "rel": "parent",
          "type": "application/json",
          "href": "https://stac.eodc.eu/api/v1/collections/SENTINEL1_SIG0_20M"
        },
        {
          "rel": "root",
          "type": "application/json",
          "href": "https://stac.eodc.eu/api/v1/collections/SENTINEL1_SIG0_20M"
        }
      ]
    }
  ]
}
```



Download

Entsprechende Search URL

Results

GET /search Search

POST /search Search

HTTP POST Request

Endpoint.

Parameters

Cancel

Reset

No parameters

Request body required

application/json

```
{
  "collections": [
    "DOP_AVI_K_QSIIIRQL"
  ],
  "intersects": {
    "type": "Polygon",
    "coordinates": [
      [
        [
          12.372062383431427,
          47.09484266262032
        ],
        [
          12.507372629219475,
          46.857370745884
        ],
        [
          12.77864032478817,
          46.71904923844065
        ]
      ]
    ]
  }
}
```

Execute

Clear

Responses

Curl

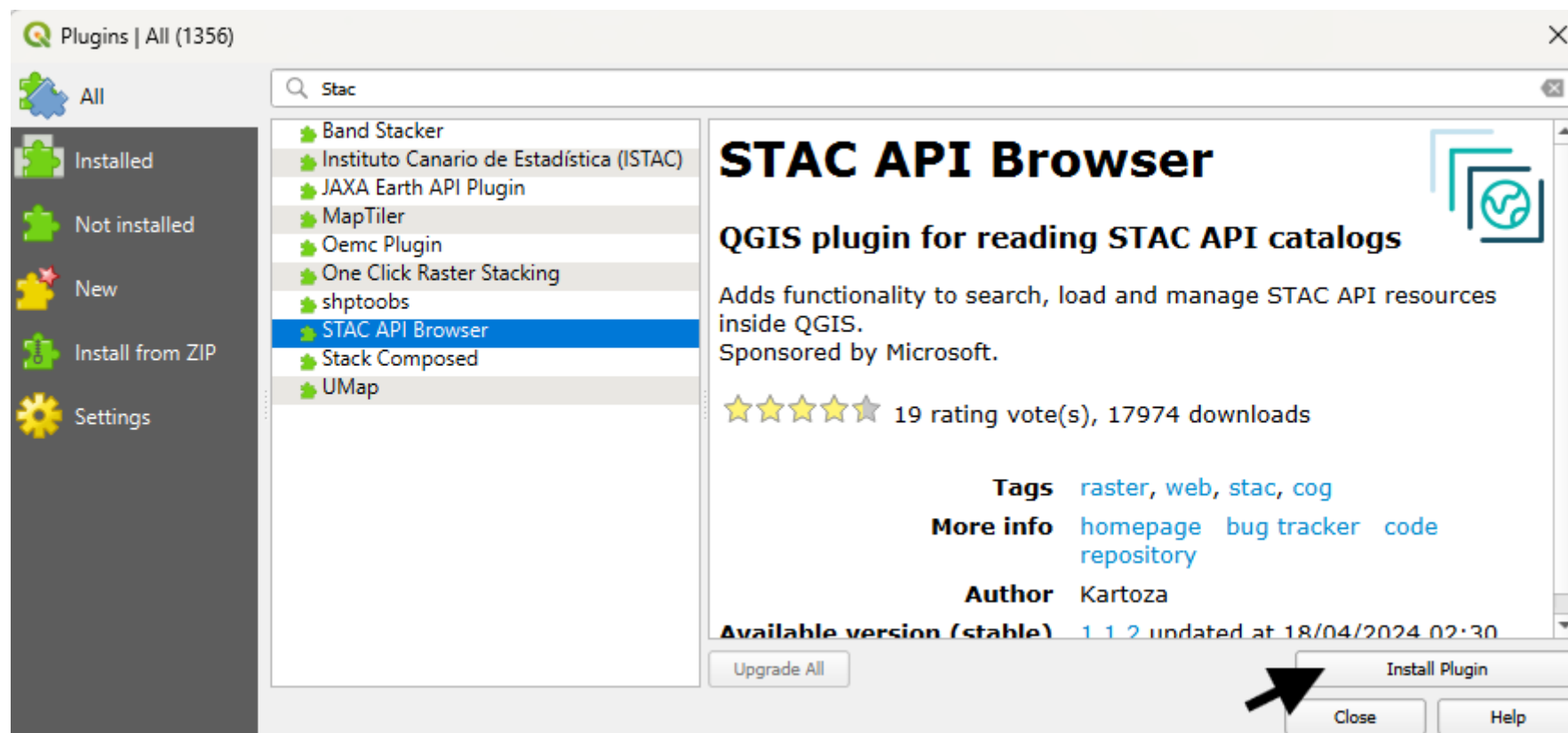
```
curl -X 'POST' \
  'https://stac.eodc.eu/api/v1/search' \
  -H 'accept: application/geo+json' \
  -H 'Content-Type: application/json' \
  -d '{
    "collections": [
```

STAC in QGIS

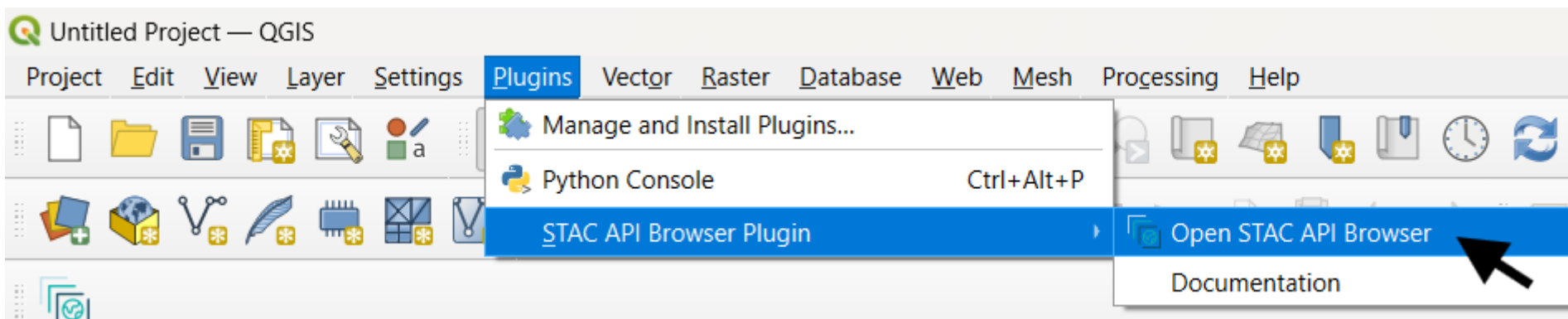
Warum das STAC-Plugin?

- Einfacher Zugriff auf vielfältige Daten
- Effizientes Datenmanagement und anpassbare Suchfunktionen
- Direkte Weiterverarbeitung der Daten ohne lokalen Download

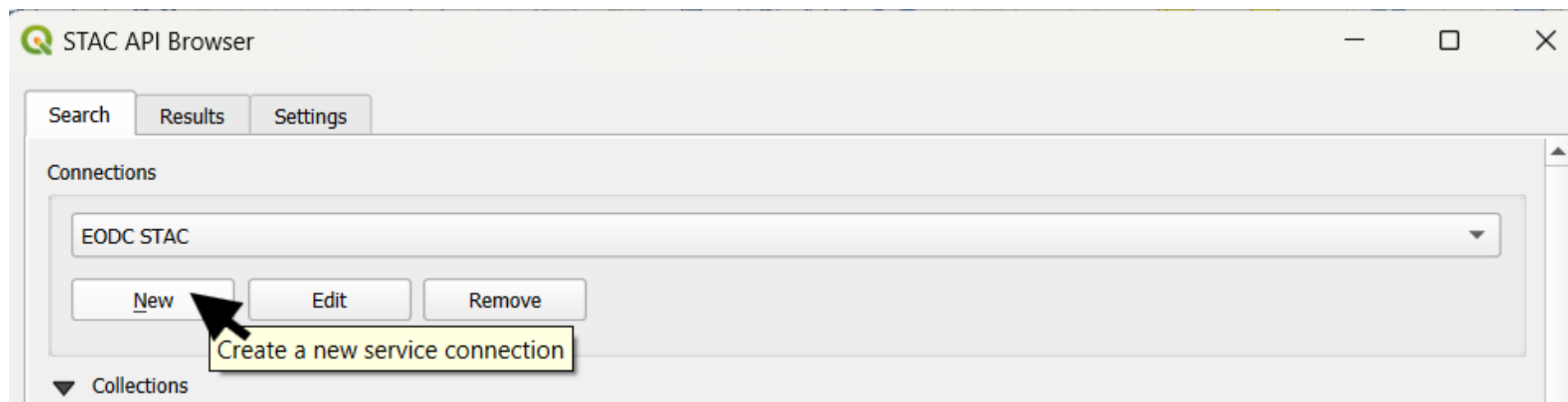
How to: eodc STAC in QGIS nutzen



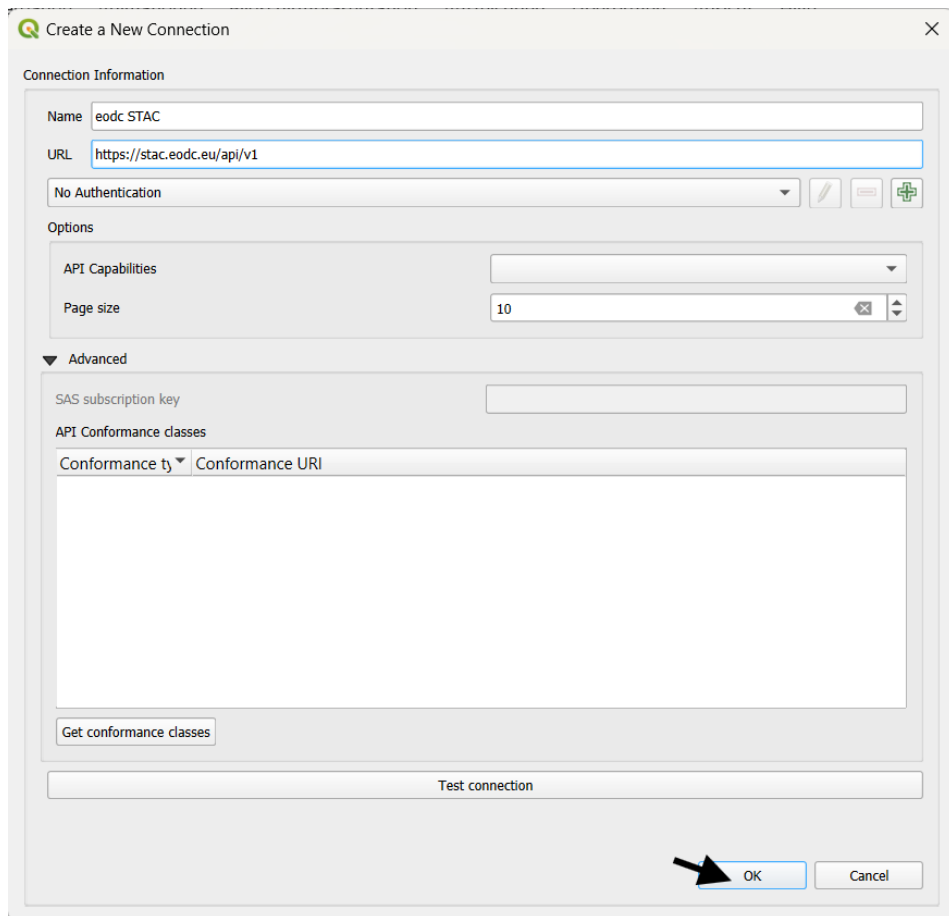
How to: eodc STAC in QGIS nutzen



How to: eodc STAC in QGIS nutzen



How to: eodc STAC in QGIS nutzen



Create a New Connection

Connection Information

Name: eodc STAC

URL: <https://stac.eodc.eu/api/v1>

No Authentication

Options

API Capabilities

Page size: 10

Advanced

SAS subscription key

API Conformance classes

Conformance type: Conformance URI

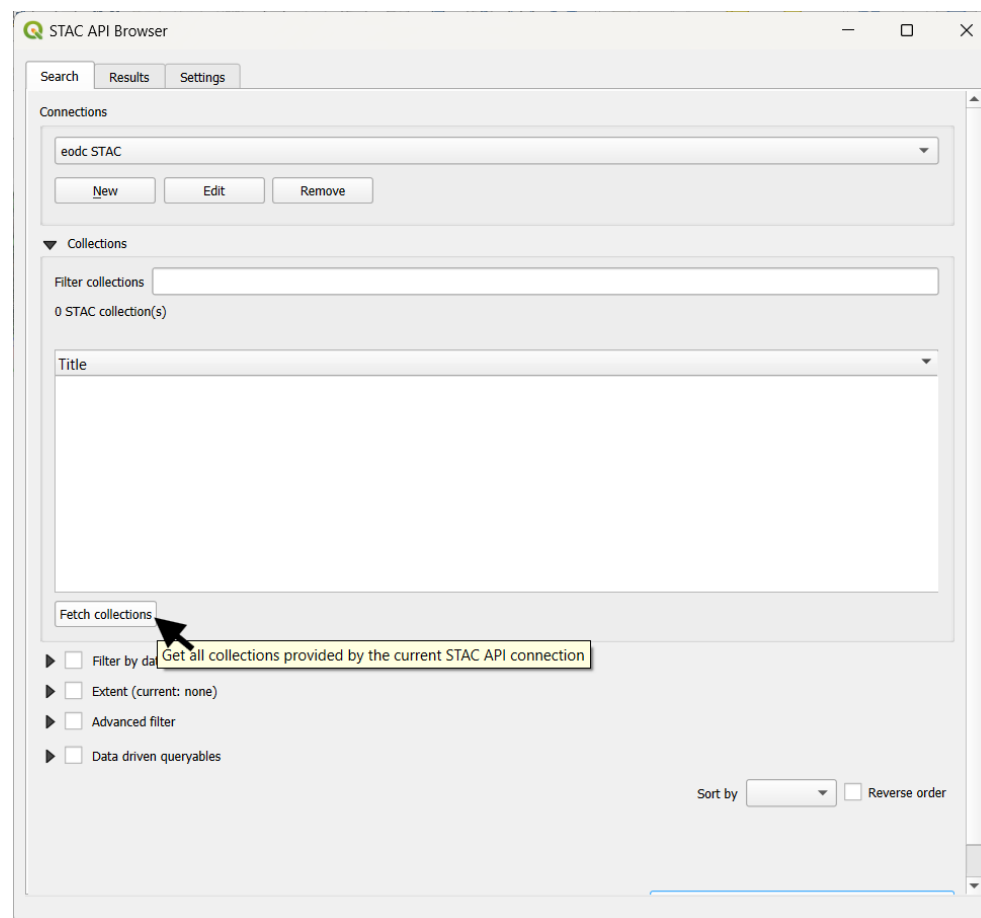
Get conformance classes

Test connection

OK Cancel

URL:
<https://stac.eodc.eu/api/v1>

How to: eodc STAC in QGIS nutzen



How to: eodc STAC in QGIS nutzen

▼ Collections

Filter collections

49 STAC collection(s)

Selected collections: **Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock Graz**

Title

- Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Zell am See
- Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Zeltweg
- Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock Bischofshofen
- Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock Graz**
- Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock Klagenfurt
- Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock Mariazell
- Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock Murtal
- Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock Suedburgenland
- Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock Villach

Fetch collections

☐ Filter by date

▼ ☒ Extent (current: map view)

North

West East

South

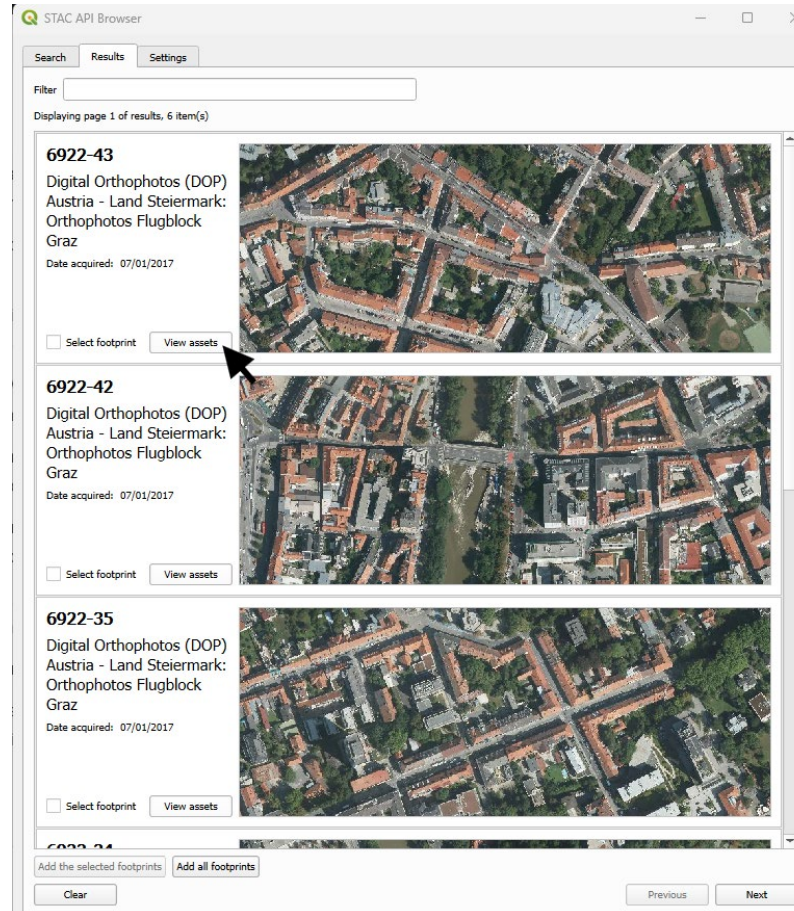
Calculate from

☐ Advanced filter

☐ Data driven queryables

Sort by ☐ Reverse order

How to: eodc STAC in QGIS nutzen



How to: eodc STAC in QGIS nutzen

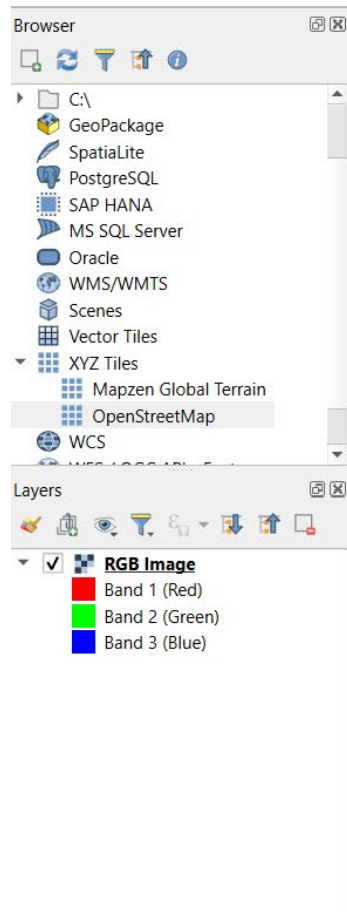
Assets

Item 6922-43
7 available asset(s)

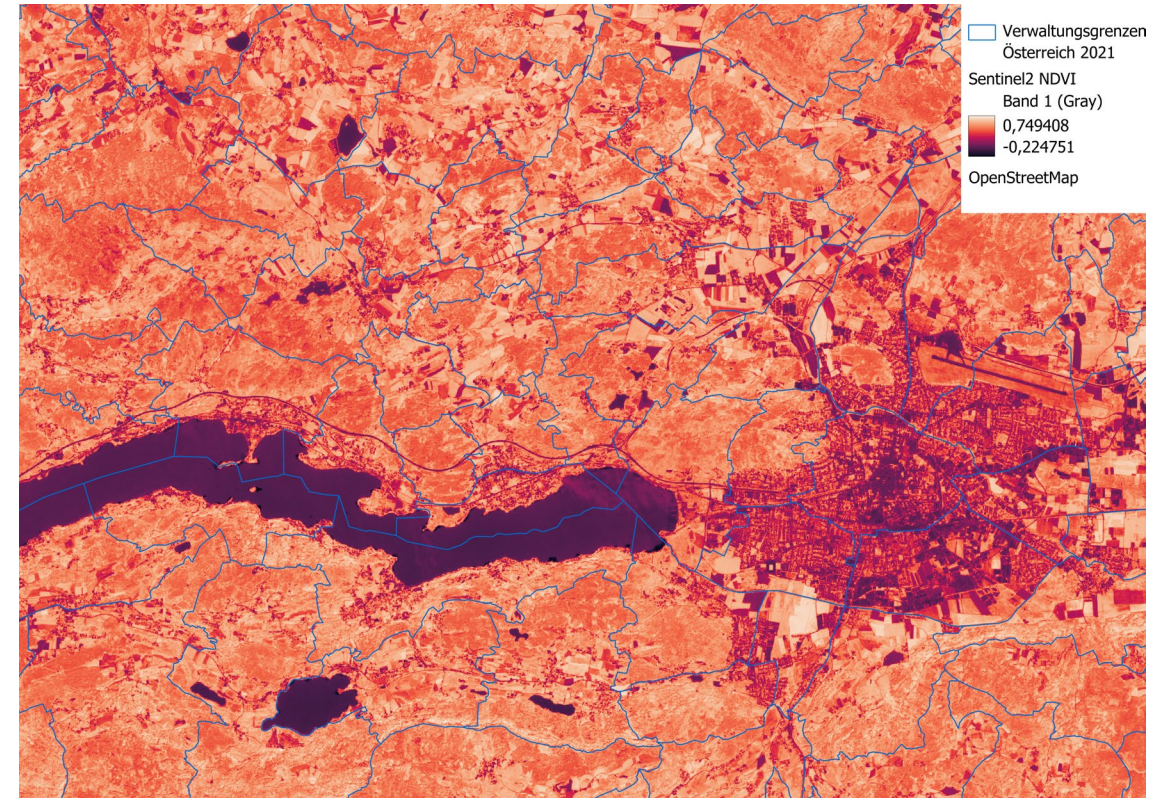
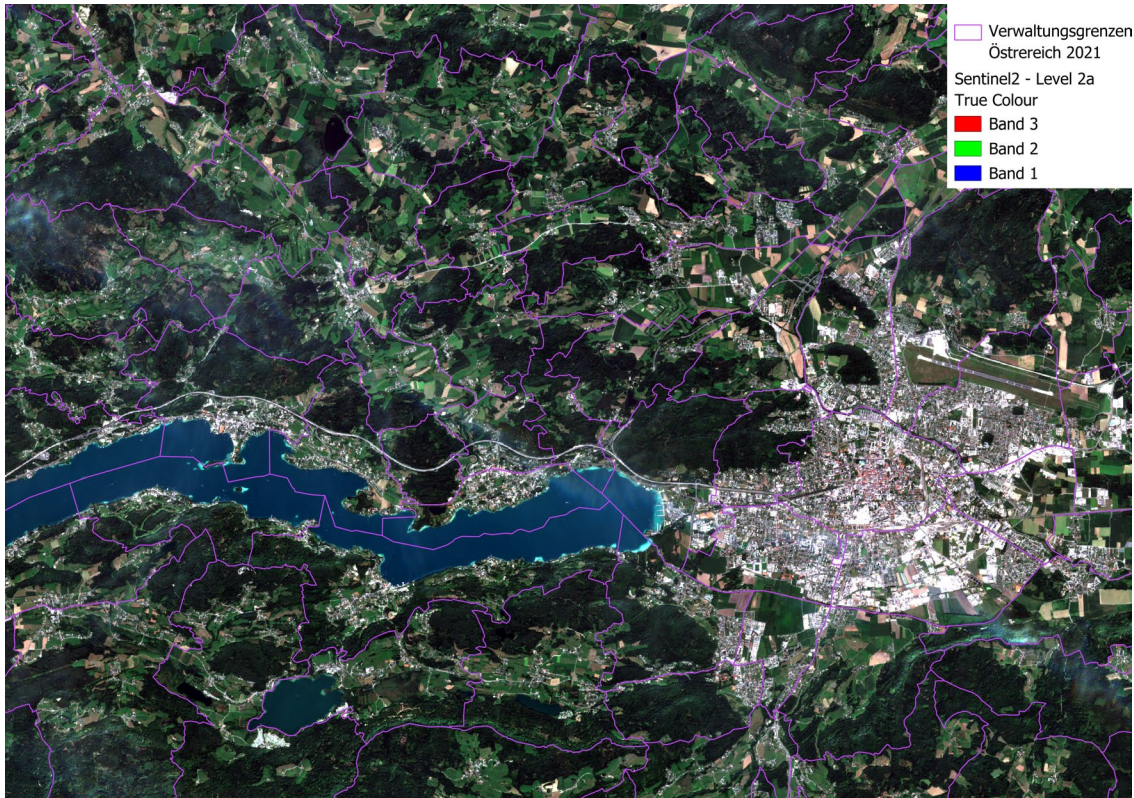
Name	Type		
RGB Image	image/tiff; application=geotiff; profile=cloud-optimized	☒ Select to add as a layer	☐ Select to download
CIR3 Image	image/tiff; application=geotiff; profile=cloud-optimized	☐ Select to add as a layer	☐ Select to download
RGB World File	text/plain	☐ Select to add as a layer	☐ Select to download
CIR3 Auxiliary File	application/xml	☐ Select to add as a layer	☐ Select to download
CIR3 World File	text/plain	☐ Select to add as a layer	☐ Select to download
tilejson	application/json	☐ Select to add as a layer	☐ Select to download
thumbnail	image/png	☐ Select to add as a layer	☐ Select to download

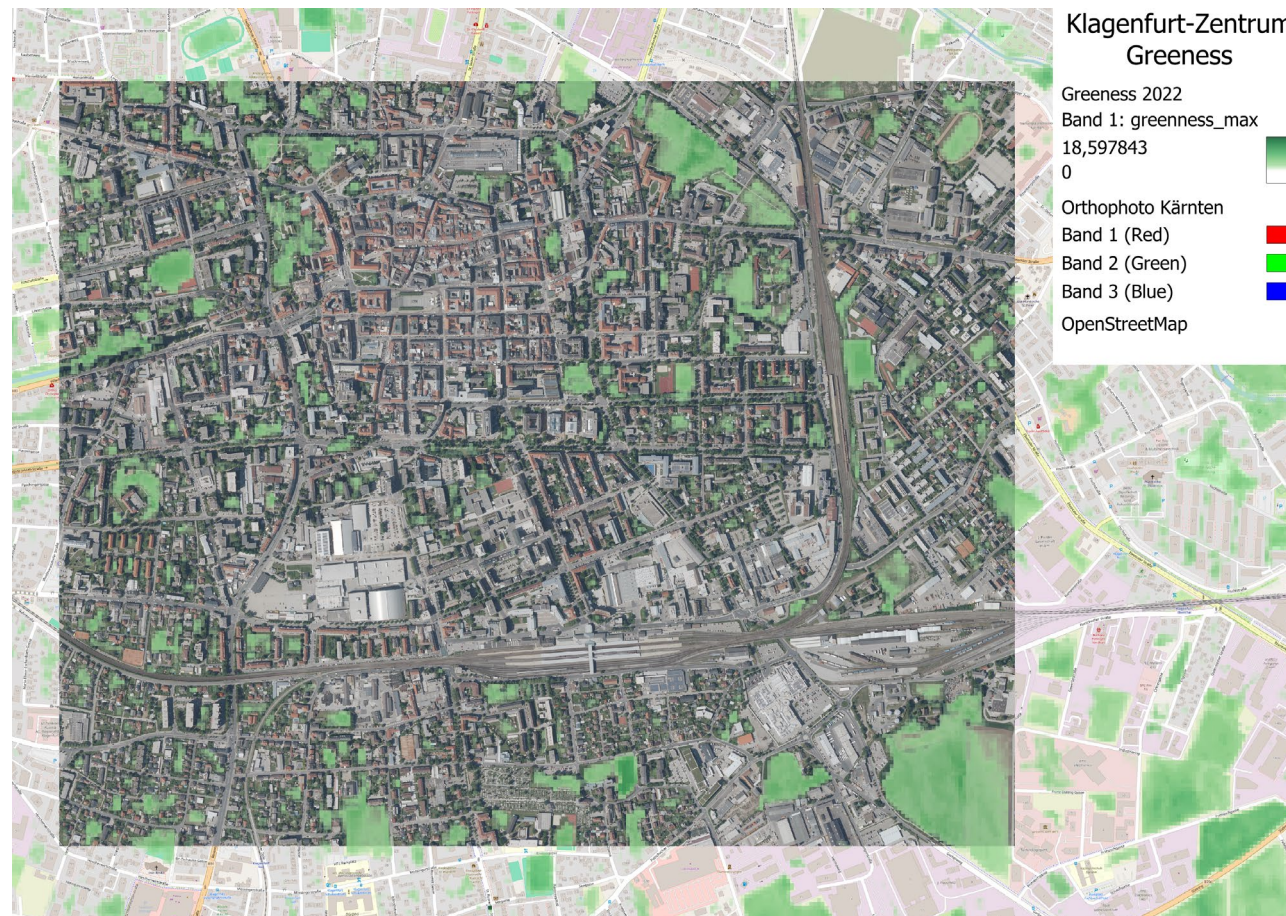
Add selected assets as layers (1) Download the assets

How to: eodc STAC in QGIS nutzen

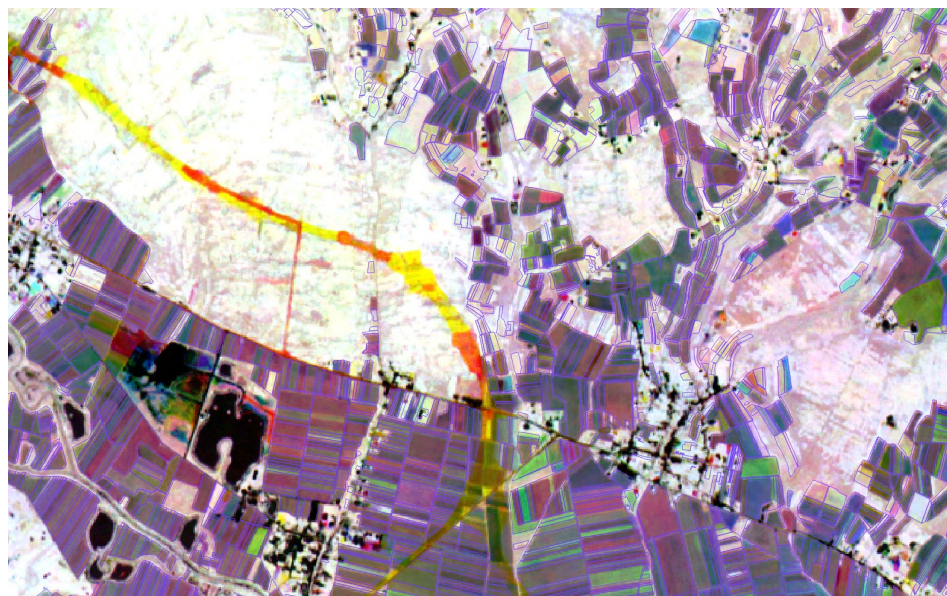


STAC in QGIS - Beispiele

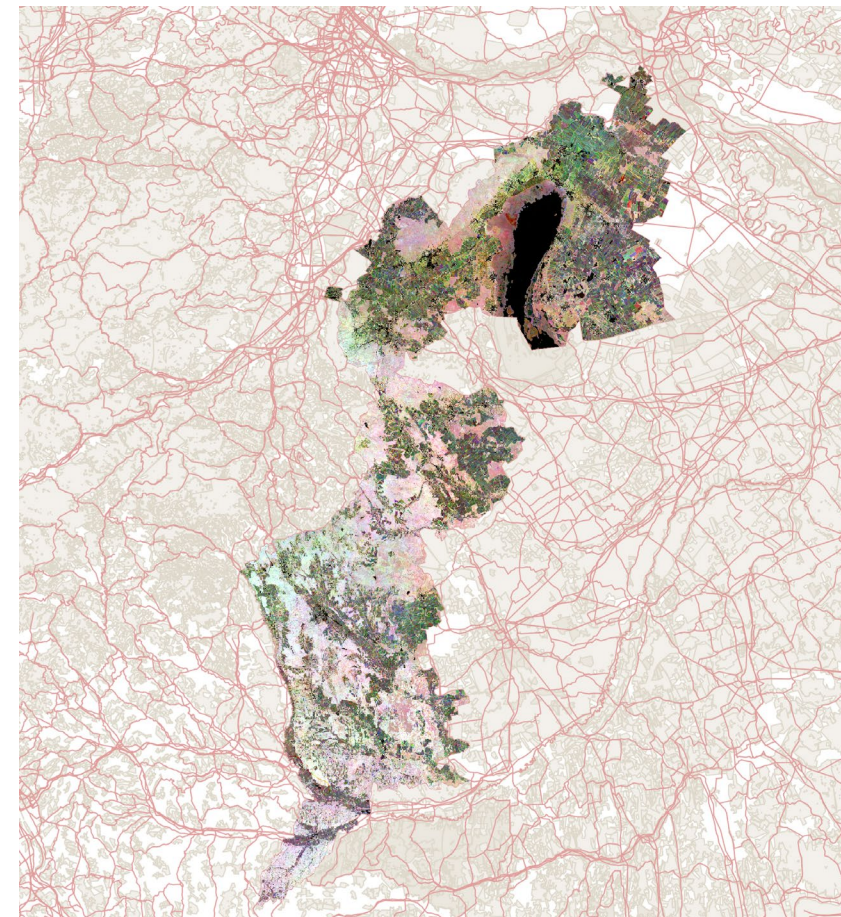
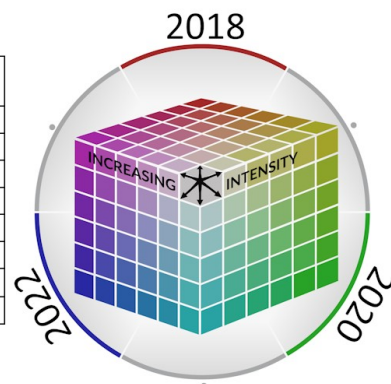


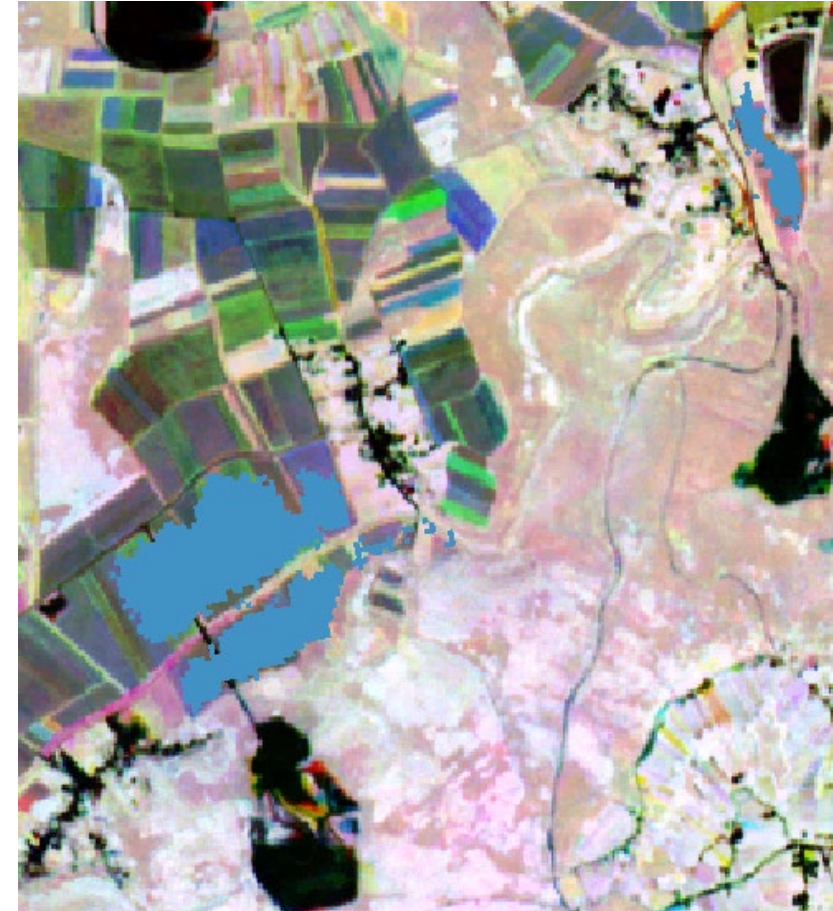
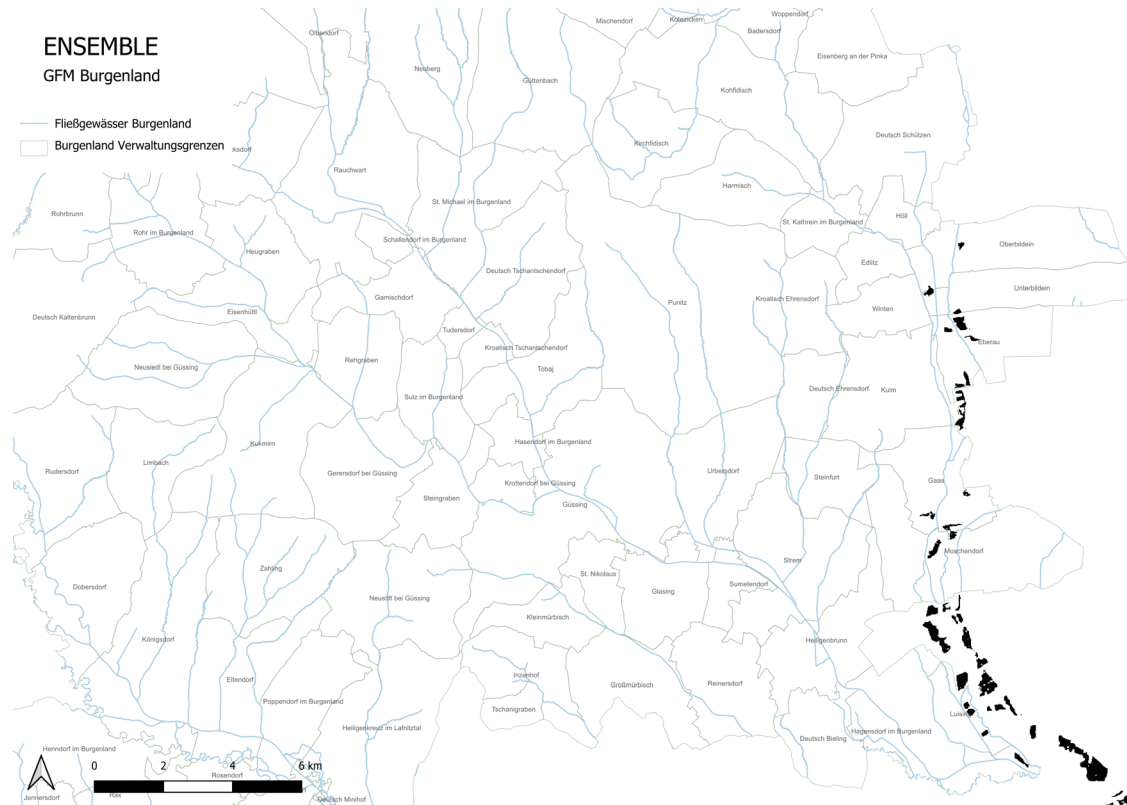


STAC in QGIS – Bodenversiegelung im Burgenland



	Vegetation observed in year			Interpretation
	2018	2020	2022	
	+	-	-	Vegetation loss after 2018
	+	+	-	Vegetation decreased (loss) after 2020
	-	+	-	Vegetation increased after 2018, but decreased after 2020
	-	+	+	Vegetation increased (regreening) after 2018
	-	-	+	Vegetation increased after 2020
	+	-	+	Vegetation loss after 2018, but regreening after 2020
	+	+	+	Bright colours – Vegetation observed in all years
	-	-	-	Vegetation not observed





EODC portal

EODC portal



Data Catalogue



Gallery



Service
Catalogue



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Explorer

DEMO

portal.services.eodc.eu

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Designed to make your life
easier

By translating complex datasets into comprehensible information, we are instrumental in crafting valuable and cutting-edge solutions. Cultivating sustainable relationships is in our DNA, providing the foundation for the creation of impactful and user-friendly services.



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Discover our EODC Knowledgebase, your primary destination for in-depth insights and information. This platform offers straightforward explanations and practical examples to assist you in effectively accessing our data and resources.

Data Catalog

The EODC Data Catalog includes petabytes of environmental monitoring data, in consistent, analysis-ready formats. All of the datasets below can be accessed via Azure Blob Storage, and can be used by developers whether you're working within or outside of our EODC Hub.

 Filter datasets

Featured

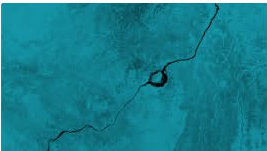
Featured

Orthofotos

Other

Sentinel-1

Sentinel-2



Sentinel 1

The Copernicus Sentinel-1 mission, part of the EU's Earth observation program, delivers vital radar imaging for environmental monitoring, disaster re...

Sentinel1 Imagery



Sentinel 2

The Copernicus Sentinel-2 mission, part of the European Union's Earth observation program, offers detailed optical imagery for environmental monitorin...

Sentinel2 Imagery

Orthofotos



Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Klagenfurt

Orthofotos des Flugblockes Klagenfurt

orthophotos orthoimage carinthia klagenfurt



Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Osttirol

Orthofotos des Flugblockes Osttirol

orthophotos orthoimage Osttirol east tyrol



Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Tamsweg

Orthofotos des Flugblockes Tamsweg

orthophotos orthoimage tamsweg carinthia

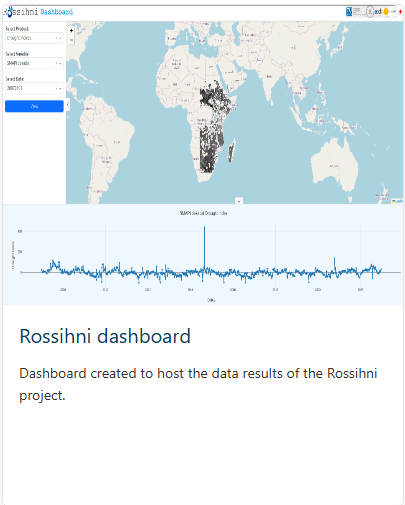


Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Villach

Orthofotos des Flugblockes Villach

Dashboard Gallery

Discover our ready-to-use applications that transform Earth observation data into actionable insights. Explore tools designed for intuitive analysis of environmental and geospatial information, making complex datasets clear and accessible. Enhance your decision-making with our powerful, data-driven dashboards.



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How to use STAC Data Catalogue

Preconditions

General

To access the desired data, there are three options:

1. EODC Catalog in the Browser: This can primarily be used to check if the desired data is available.
2. QGIS: Here, data with small spatial extents or from short time periods can be displayed.
3. JupyterLab: JupyterLab: To visualize large amounts of data, JupyterLab can be used in combination with QGIS.

EODC Catalogue in the Browser

Link: <https://services.eodc.eu/browser/#/?language=en>

All required data is stored in the EODC Catalogue. Here, the desired catalog with the requested data can be opened.

Filtering Data in the Browser

If only specific data from a catalog is needed, it can be searched using a filter. To do this, the desired catalog must be opened. On the right side, all layers are listed. By using the 'Show Filters' button, data can be filtered temporally or spatially. Under 'Temporal Extent' you can select the desired time period, and under 'Spatial Extent' you can choose the desired area.

Global Flood Monitoring

in EODC Data Catalogue

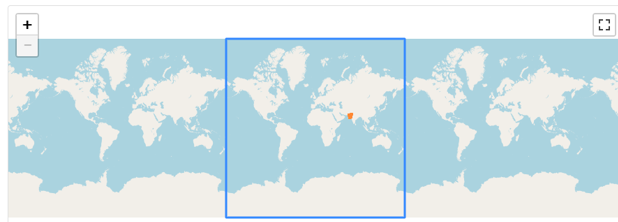
[Up](#) | [Browse](#) | [Search](#)

Description

The Global Flood Monitoring (GFM) product is a new component of the EU's Copernicus Emergency Management Service (CEMS) that provides continuous monitoring of floods worldwide, by processing and analysing in near real-time (NRT) all incoming Synthetic Aperture Radar (SAR) imagery acquired by the EU's Copernicus Sentinel-1 satellites, in Interferometric Wide Swath (IW) mode and as Ground Range Detected (GRD) products.

License
Temporal Extent

proprietary
1/1/2015, 12:00:00 AM UTC until present



Items

[First](#) | [Previous](#) | [Next](#) | [Show Filters](#)

ENSEMBLE_FLOOD_20220930T011735_VV_AS
020M_E021N027T3
9/30/2022, 1:17:35 AM UTC

ENSEMBLE_FLOOD_20220930T011825_VV_AS
020M_E018N024T3
9/30/2022, 1:18:25 AM UTC

ENSEMBLE_FLOOD_20220930T011800_VV_AS
020M_E015N027T3
9/30/2022, 1:18:00 AM UTC

ENSEMBLE_FLOOD_20220930T011825_VV_AS
020M_E018N027T3
9/30/2022, 1:18:25 AM UTC

ENSEMBLE_FLOOD_20220930T011800_VV_AS
020M_E018N024T3
9/30/2022, 1:18:00 AM UTC

ENSEMBLE_FLOOD_20220930T011850_VV_AS
020M_E015N021T3
9/30/2022, 1:18:50 AM UTC

QGIS

To open and display the data, QGIS is used. QGIS is an open-source geographic information system and can be downloaded from the following link: <https://www.qgis.org/en/site/forusers/download.html>

After successfully installing and opening QGIS, you have to create a new project. On the left side, you'll find the QGIS Browser. Under 'XYZ Tiles' you can right-click to select OpenStreetMap and add it to your map using the 'Add Layer to Project' option. You can zoom in and out of the map by rotating the mouse wheel and dragging the map is possible with the left mouse button. Alternatively, you can use the magnifying glasses in the toolbar at the top of the window for zooming.

*Untitled Project — QGIS

Project | Edit | View | Layer | Settings | Plugins | Vector | Raster | Database | Web | Mesh | Processing | Help

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[Preconditions](#)
[General](#)
[EODC Catalogue in the Browser](#)
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[QGIS](#)
[Filtering the data in QGIS](#)
[Ortophoto](#)
[Soil Sealing Identification](#)
[Wet Snow](#)

Select a dataset

🔍

Filter datasets



Featured

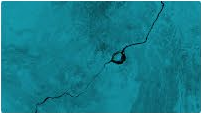
Featured

Orthofotos

Other

Sentinel-1

Sentinel-2



Sentinel 1

The Copernicus Sentinel-1 mission, part of the EU's Earth observation program, delivers vital radar imaging for environmental monitoring, disaster re...



Sentinel 2

The Copernicus Sentinel-2 mission, part of the European Union's Earth observation program, offers detailed optical imagery for environmental monitorin...

Orthofotos



Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Klagenfurt

Orthofotos des Flugblockes Klagenfurt



Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Osttirol

Orthofotos des Flugblockes Osttirol



Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Tamsweg

Orthofotos des Flugblockes Tamsweg



Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Villach

Orthofotos des Flugblockes Villach



Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Wolfsberg

Orthofotos des Flugblockes Wolfsberg



Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Zell am See

Orthofotos des Flugblockes Zell am See



Digital Orthophotos (DOP) Austria - Land Kärnten: Orthofotos Flugblock Zeltweg

Orthofotos des Flugblockes Zeltweg



Digital Orthophotos (DOP) Austria - Land Steiermark: Orthophotos Flugblock

Clear



Digital Orthophotos (DOP) Austria - Land Kärnten: Ort...

Filters

 Select filters

Acquired

09/02/2021 – 09/23/2021



Digital Orthophotos (DOP) Austria - Land Kärnten:
Orthofotos Flugblock Tamsweg

...

Showing the first 50 items that matched your filter.



4622-12

09/23/2021 00:00:00 UTC



4622-11

09/23/2021 00:00:00 UTC



4622-10

09/23/2021 00:00:00 UTC



4622-09

09/23/2021 00:00:00 UTC



4522-16

09/23/2021 00:00:00 UTC



4522-14

09/23/2021 00:00:00 UTC



4522-13

09/23/2021 00:00:00 UTC



4522-12

09/23/2021 00:00:00 UTC



5121-01

09/02/2021 00:00:00 UTC

Code snippet for search results

Clear



Digital Orthophotos (DOP) Austria - Land Kärnten: Ort...

Filters

 Select filters

Acquired

09/02/2021 – 09/23/2021



Digital Orthophotos (DOP) Austria - Land Kärnten:
Orthofotos Flugblock Tamsweg

Showing 30 items that matched your filter.



4622-51

09/02/2021 00:00:00 UTC



4622-50

09/02/2021 00:00:00 UTC



4622-49

09/02/2021 00:00:00 UTC



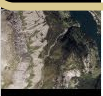
4622-43

09/02/2021 00:00:00 UTC



4622-42

09/02/2021 00:00:00 UTC



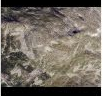
4622-41

09/02/2021 00:00:00 UTC



4622-35

09/02/2021 00:00:00 UTC



4622-34

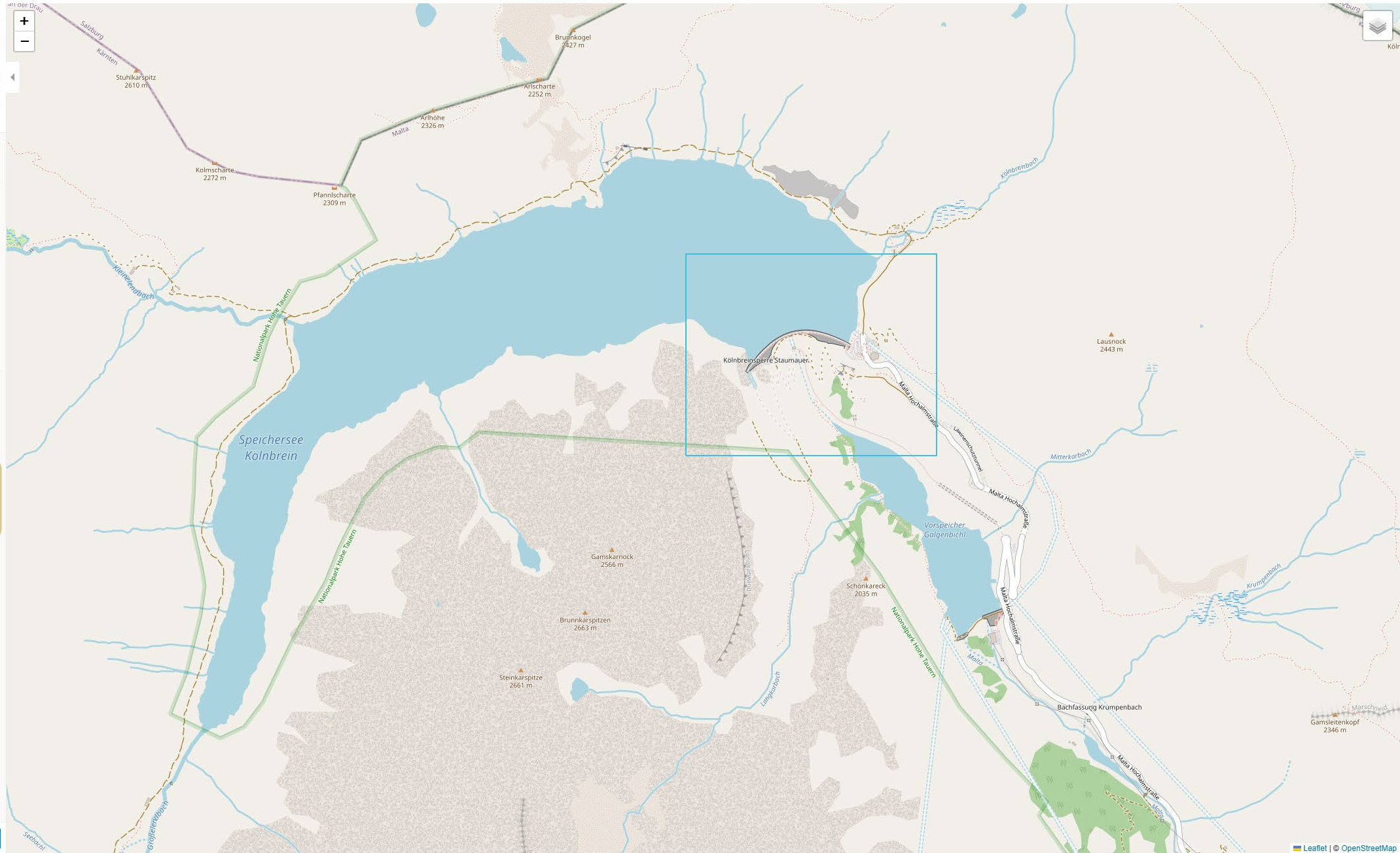
09/02/2021 00:00:00 UTC



4622-33

09/02/2021 00:00:00 UTC

Code snippet for search results



← Back to results

Digital Orthophotos (DOP) Austria - Land
Kärnten: Orthofotos Flugblock Tamsweg
4622-42

Metadata	Assets
Grenze	✖
Wolken	✖
Max Gsd	18.7
Min Gsd	12.8
Mission	2021360 Orthofotos Flugblock Tamsweg
Bruecken	✔
Datetime	09/02/2021 00:00:00 UTC
Meridian	31
Schatten	✖
Anmerkung	
EPSG Code	31255
Shape	[1250, 1000]
Schnittlinie	✖
Interpolation	bicub





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Explore datasets

Global Flood Monitoring

Filters

Acquired

09/18/2024 – 09/25/2024

Global Flood Monitoring

Showing 29 items that matched your filter.

ENSEMBLE_FLOOD_20240923T164431_VV_EU020M_E054N018T3

09/23/2024 16:44:31 UTC

ENSEMBLE_FLOOD_20240923T164431_VV_EU020M_E051N018T3

09/23/2024 16:44:31 UTC

ENSEMBLE_FLOOD_20240923T164406_VV_EU020M_E054N018T3

09/23/2024 16:44:06 UTC

ENSEMBLE_FLOOD_20240923T164406_VV_EU020M_E051N018T3

09/23/2024 16:44:06 UTC

ENSEMBLE_FLOOD_20240923T164341_VV_EU020M_E054N018T3

09/23/2024 16:43:41 UTC

ENSEMBLE_FLOOD_20240923T164341_VV_EU020M_E051N018T3

09/23/2024 16:43:41 UTC

ENSEMBLE_FLOOD_20240922T180256_VV_NA020M_E036N078T3

09/22/2024 18:02:56 UTC

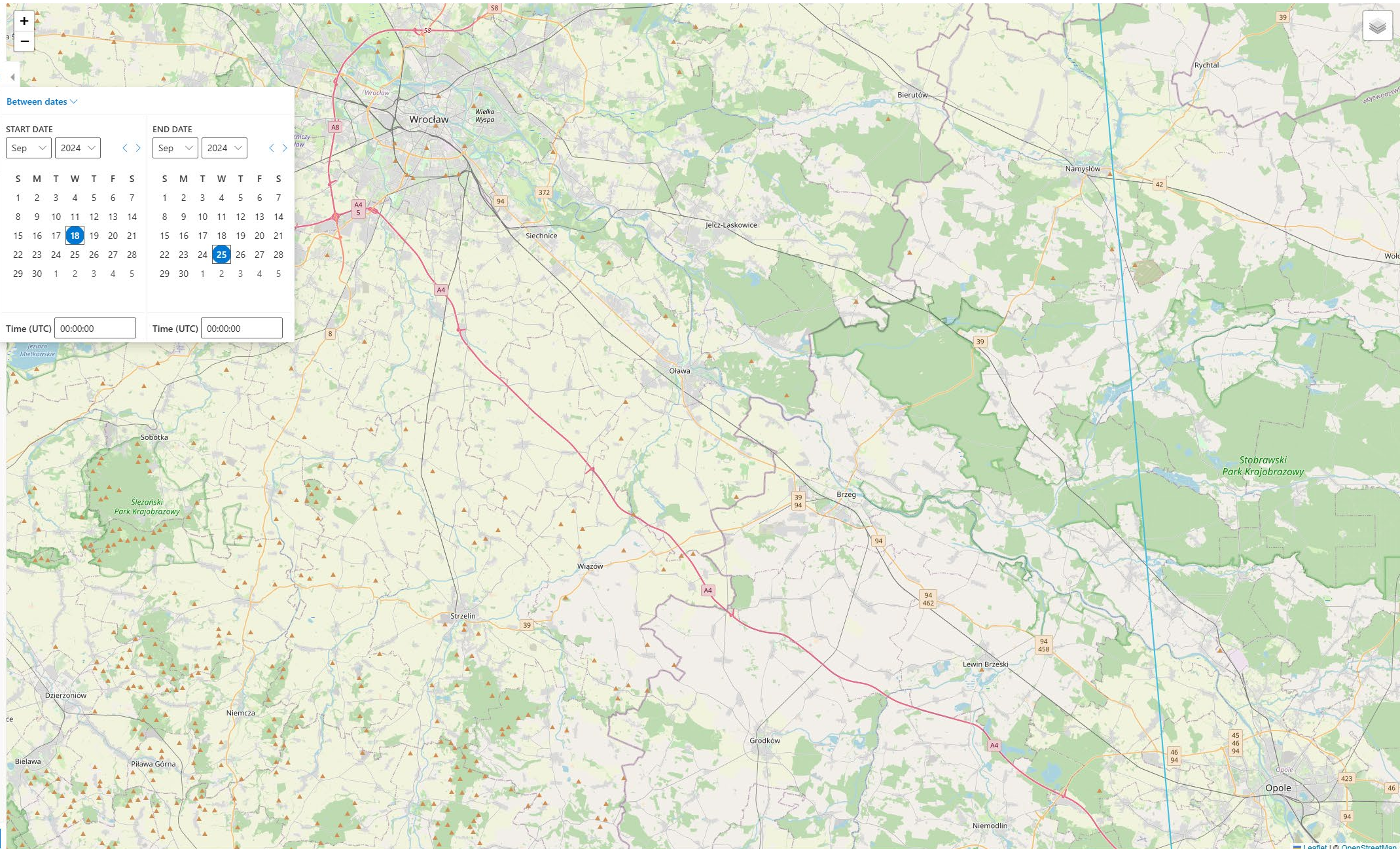
ENSEMBLE_FLOOD_20240922T180256_VV_NA020M_E036N075T3

09/22/2024 18:02:56 UTC

ENSEMBLE_FLOOD_20240922T045337_VV_EU020M_E054N018T3

09/22/2024 04:53:37 UTC

Code snippet for search results



← Back to results





Global Flood Monitoring

ENSEMBLE_FLOOD_20240923T164406_VV_EU020M_E051N018T3

Metadata	Assets
GSD 20 m	
Created 14/10/2024, 15:52:25 UTC	
Datetime 09/23/2024 16:44:06 UTC	
Equi7Tile EU020M_E051N018T3	
Blocksize <dl><dt>X</dt><dd>512</dd><dt>Y</dt><dd>512</dd></dl>	
Bounding Box [5100000, 1800000, 5400000, 2100000]	
WKT2 PROJCS["Azimuthal_Equidistant",GEOGCS["WGS 84",DATUM["WGS_1984",SPHEROID["WGS 84",6378137,298.257223563,AUTHORITY["EPSG","7030"]],AUTHORITY["EPSG","6326"]],PRIMEM["Greenwich",0],UNIT["degree",0.0174532925199433],AUTHORITY["EPSG","4326"]],PROJECTION["Azimuthal_Equidistant"],PARAMETER["latitude_of_center",53],PARAMETER["longitude_of_center",24],PARAMETER["false_easting",5837287.81977],PARAMETER["false_northing",2121415.69617],UNIT["metre",1,AUTHORITY["EPSG","9001"]]]	
Shape [15000, 15000]	
Constellation sentinel-1	
Flood Members <dl><dt>DLR</dt><dd>✔</dd><dt>TUV</dt><dd>✔</dd><dt>LIST</dt><dd>✔</dd></dl>	

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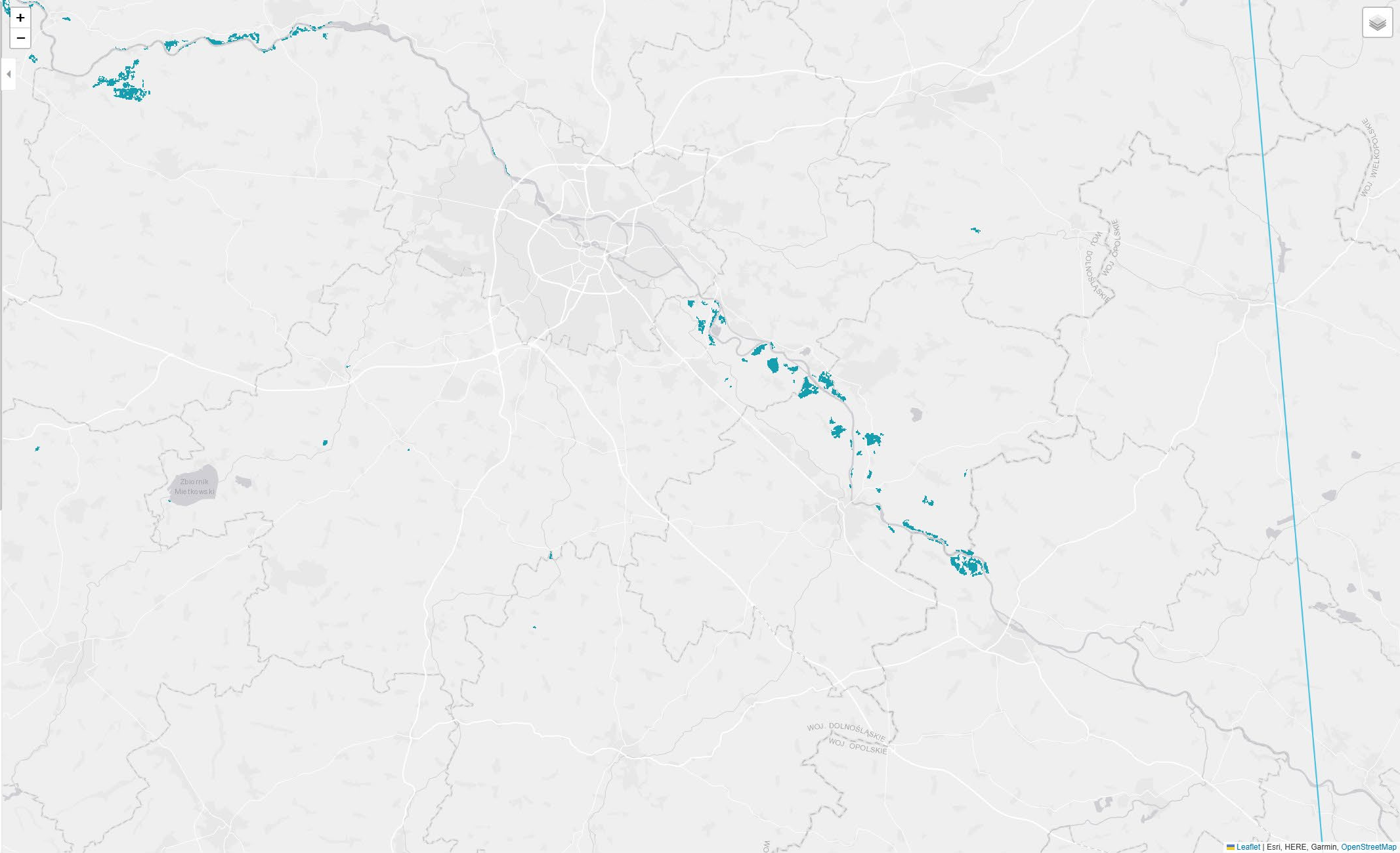
Career

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Clear

+

 Select filters



...



Explore datasets

Global Flood Monitoring

Filters

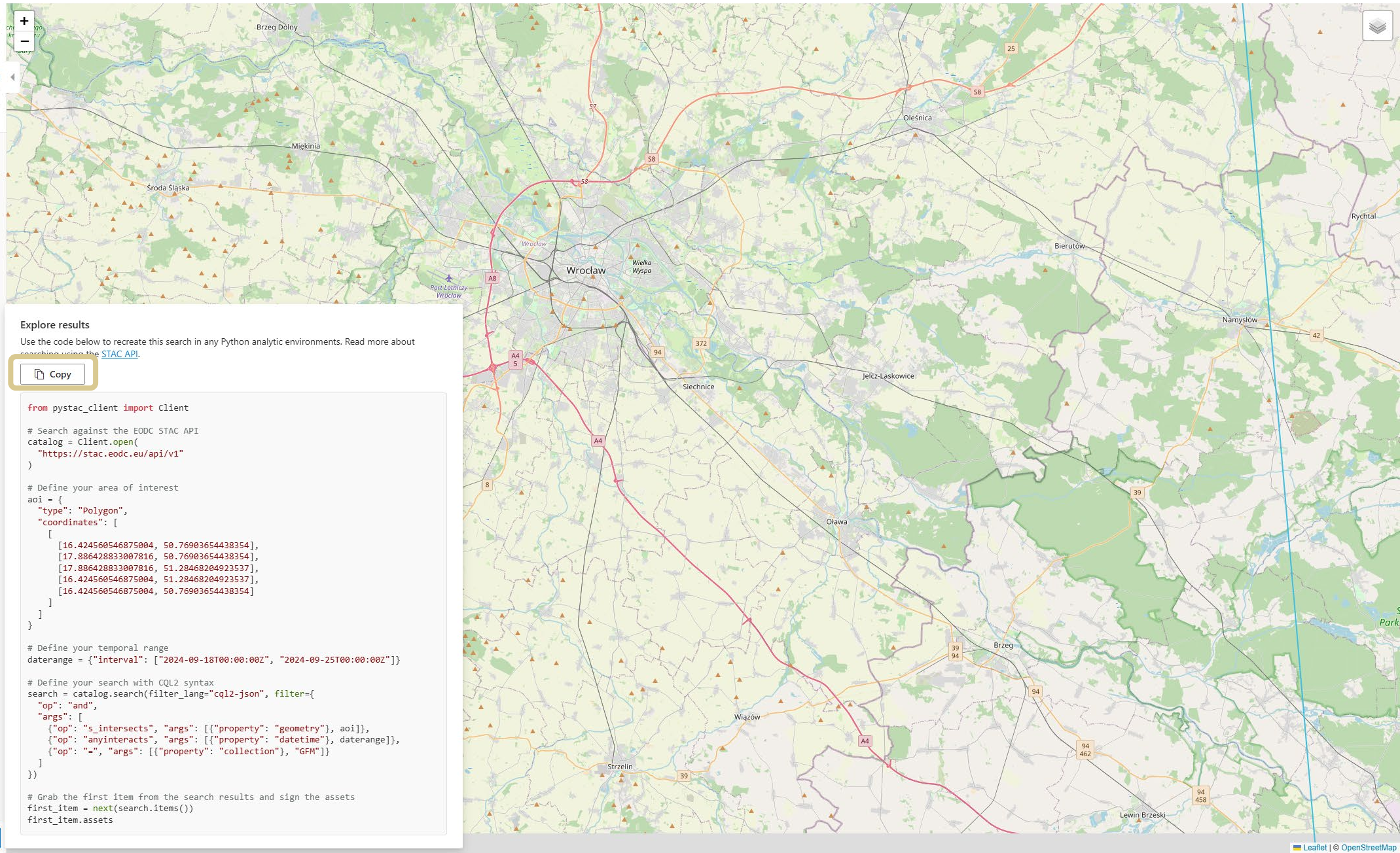
Acquired

09/18/2024 – 09/25/2024

Global Flood Monitoring

Showing 28 items that matched your filter.

	ENSEMBLE_FLOOD_20240923T164431_VV_E U020M_E054N018T3
	09/23/2024 16:44:31 UTC
	ENSEMBLE_FLOOD_20240923T164431_VV_E U020M_E051N018T3
	09/23/2024 16:44:31 UTC
	ENSEMBLE_FLOOD_20240923T164406_VV_ EU020M_E054N018T3
	09/23/2024 16:44:06 UTC
	ENSEMBLE_FLOOD_20240923T164406_VV_ EU020M_E051N018T3
	09/23/2024 16:44:06 UTC
	ENSEMBLE_FLOOD_20240923T164341_VV_E U020M_E054N018T3
	09/23/2024 16:43:41 UTC
	ENSEMBLE_FLOOD_20240923T164341_VV_E U020M_E051N018T3
	09/23/2024 16:43:41 UTC
	ENSEMBLE_FLOOD_20240922T180256_VV_ NA020M_E036N078T3
	09/22/2024 18:02:56 UTC
	ENSEMBLE_FLOOD_20240922T045337_VV_ EU020M_E054N018T3
	09/22/2024 04:53:37 UTC
	ENSEMBLE_FLOOD_20240922T045312_VV_ EU020M_E054N018T3
	09/22/2024 04:53:12 UTC
Code snippet for search results	



Explore results

Use the code below to recreate this search in any Python analytic environments. Read more about searching using the [STAC API](#).

Copy

```
from pystac_client import Client

# Search against the EODC STAC API
catalog = Client.open(
    "https://stac.eodc.eu/api/v1"
)

# Define your area of interest
aoi = {
    "type": "Polygon",
    "coordinates": [
        [
            [16.424560546875004, 50.76903654438354],
            [17.886428833007816, 50.76903654438354],
            [17.886428833007816, 51.28468204923537],
            [16.424560546875004, 51.28468204923537],
            [16.424560546875004, 50.76903654438354]
        ]
    ]
}

# Define your temporal range
daterange = {"interval": ["2024-09-18T00:00:00Z", "2024-09-25T00:00:00Z"]}

# Define your search with CQL2 syntax
search = catalog.search(filter_lang="cql2-json", filter={
    "op": "and",
    "args": [
        {
            "op": "s_intersects", "args": [{"property": "geometry"}, aoi],
            "op": "anyinteracts", "args": [{"property": "datetime"}, daterange],
            "op": "=", "args": [{"property": "collection"}, "GFM"]
        }
    ]
})

# Grab the first item from the search results and sign the assets
first_item = next(search.items())
first_item.assets
```

STAC in Python

Benötigte Python Bibliotheken

- pystac-client
- odc-stac (OpenDataCube)
- xarray
- pyproj
- matplotlib

DEMO

Jupyter notebook

```
# Necessary python imports

from pystac_client import Client
from odc import stac as odc_stac
import pyproj
import xarray as xr
from shapely.geometry import Polygon
import matplotlib.pyplot as plt
```

```
# Search against the EODC STAC API
catalog = Client.open(
    "https://stac.eodc.eu/api/v1"
)

# Define your area of interest
aoi = {
    "type": "Polygon",
    "coordinates": [
        [
            [16.432800292968754, 50.747318126029434],
            [17.87887573242188, 50.747318126029434],
            [17.87887573242188, 51.306150195330034],
            [16.432800292968754, 51.306150195330034],
            [16.432800292968754, 50.747318126029434]
        ]
    ]
}

# Define your temporal range
daterange = {"interval": ["2024-09-18T00:00:00Z", "2024-09-25T00:00:00Z"]}

# Define your search with CQL2 syntax
search = catalog.search(filter_lang="cql2-json", filter={
    "op": "and",
    "args": [
        {"op": "s_intersects", "args": [{"property": "geometry"}, aoi]},
        {"op": "anyintersects", "args": [{"property": "datetime"}, daterange]},
        {"op": "=", "args": [{"property": "collection"}, "GFM"]}
    ]
})

# Retrieve all found items
items = search.item_collection()
print("We found", len(items), "items, that match our filter criteria.")

# Prints:
# We found 28 items, that match our filter criteria.
```

```
# Derive Equi7Grid CRS from first found item
crs = pyproj.CRS.from_wkt(items[0].properties["proj:wkt2"])

# Define assets to load
assets = ["ensemble_flood_extent"]

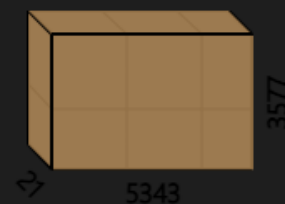
# Get bounding box from AOI
polygon = Polygon(aoi['coordinates'][0])

# Load asset data into xarray using odc-stac
# Adjust chunk size of x/y according to available RAM
xx = odc_stac.load(
    items,
    bbox=polygon.bounds,
    crs=crs,
    bands=assets,
    dtype="uint8",
    chunks={"x": 2000, "y": 2000, "time": -1},
    resolution=20)
```

xarray.DataArray 'ensemble_flood_extent' (time: 21, y: 3577, x: 5343)



	Array	Chunk
Bytes	382.76 MiB	80.11 MiB
Shape	(21, 3577, 5343)	(21, 2000, 2000)
Dask graph	6 chunks in 3 graph layers	
Data type	uint8 numpy.ndarray	



▼ Coordinates:

y	(y)	float64	1.961e+06 1.961e+06 ... 1.889e+06		
x	(x)	float64	5.304e+06 5.304e+06 ... 5.411e+06		
spatial_ref	()	int32	0		
time	(time)	datetime64[ns]	2024-09-18T05:25:52 ... 2024-09-...		

► Indexes: (3)

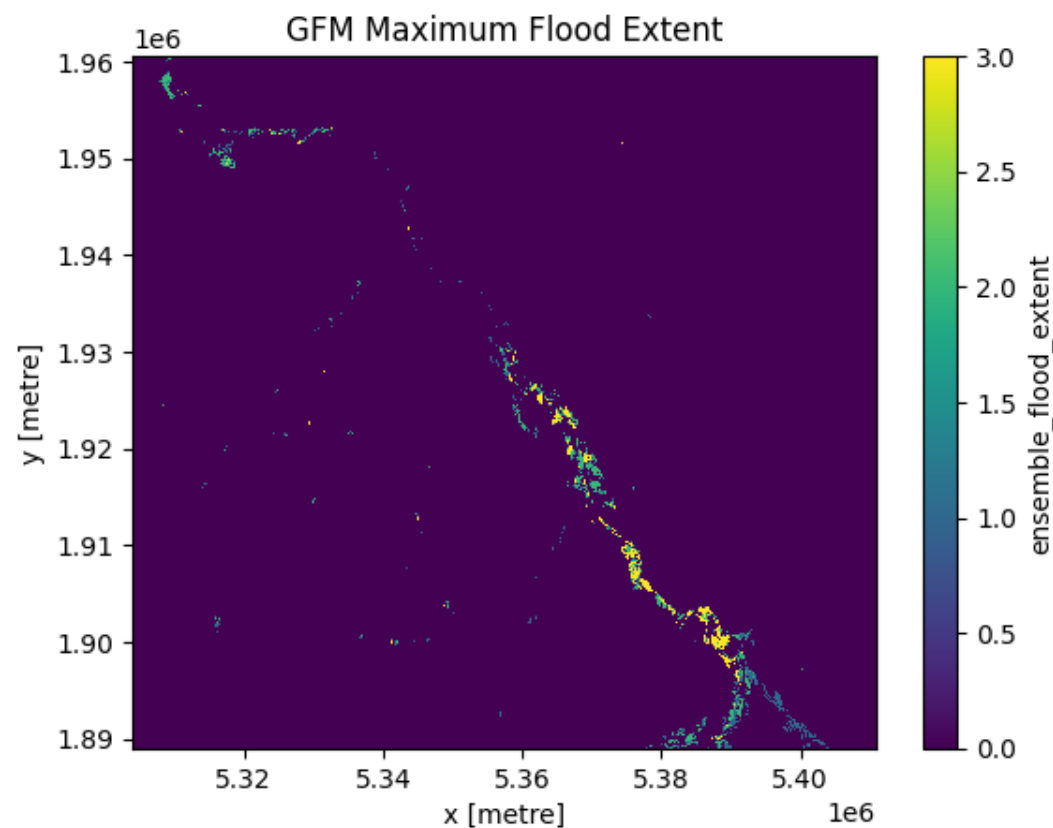
▼ Attributes:

nodata : 255

```
# Mask data which is nodata (255) and non-flood (0)
xx = xx.where((xx != 255) & (xx != 0))

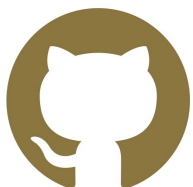
# Compute sum along time dimension
data = xx.sum(dim="time").astype("uint8")

# Plot data
data.ensemble_flood_extent.plot()
plt.title("GFM Maximum Flood Extent")
plt.show()
```





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Discussions



GitHub Discussions
<https://github.com/eodcgmbh/eodc-examples/discussions>

Feedback | Wünsche | Anregungen



Translating data
into knowledge

- Web Client / API Docs
 - <https://features.services.eodc.eu/>
- Jupyter Notebooks
 - https://github.com/eodcgmbh/eodc-examples/blob/main/tutorials/Ground_Motion_WFS.ipynb
- EODC Dokumentation
 - <https://portal.services.eodc.eu/docs/tutorials/wfs/>