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Gebruik van de nieuwe OGC API’s

Auteur Geonovum

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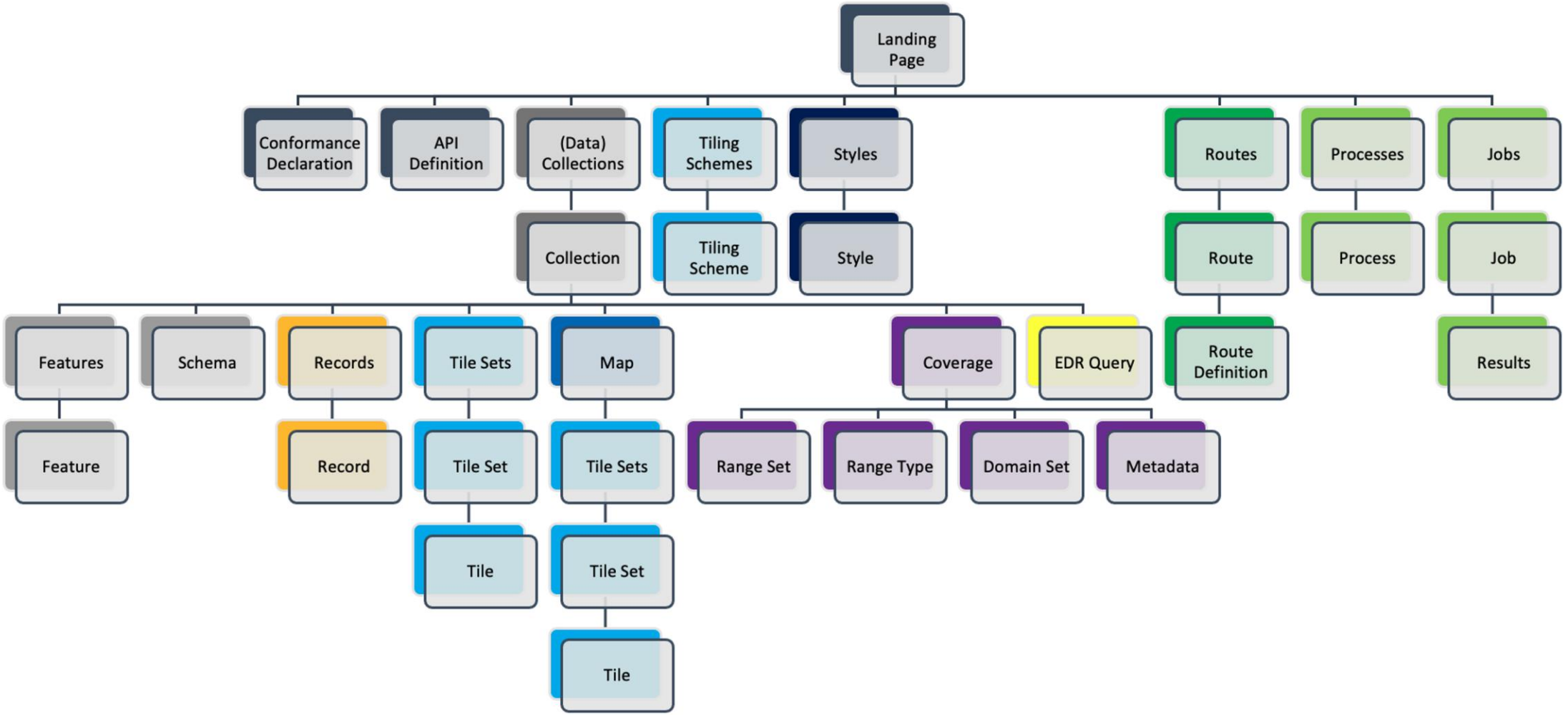
Uitgelichte API's

- Features
- Tiles
- Maps
- Records
- Processes

Resource architecture in OGC API



OGC API Features

- Landing page https://api.pdok.nl/lv/bgt/ogc/v1
- OAS https://api.pdok.nl/lv/bgt/ogc/v1/api
- Collections https://api.pdok.nl/lv/bgt/ogc/v1/collections
- Collection-id https://api.pdok.nl/lv/bgt/ogc/v1/collections/bak
- Items https://api.pdok.nl/lv/bgt/ogc/v1/collections/bak/items
- Item-id:

https://api.pdok.nl/lv/bgt/ogc/v1/collections/bak/items/5d394ef5-6a5d-5011-a729-29def1c51dd9

Parameters ?f=json of ?f=html

OGC API Tiles

- Landing page https://api.pdok.nl/lv/bgt/ogc/v1
- OAS https://api.pdok.nl/lv/bgt/ogc/v1/api
- Tiles https://api.pdok.nl/lv/bag/ogc/v1_0/tiles
- Tile Matrix Set

https://api.pdok.nl/lv/bag/ogc/v1_0/tiles/NetherlandsRDNewQuad

- URL template

https://api.pdok.nl/lv/bag/ogc/v1_0/tiles/NetherlandsRDNewQuad/{z}/{Y}/{X}?f=mvt

- Tile

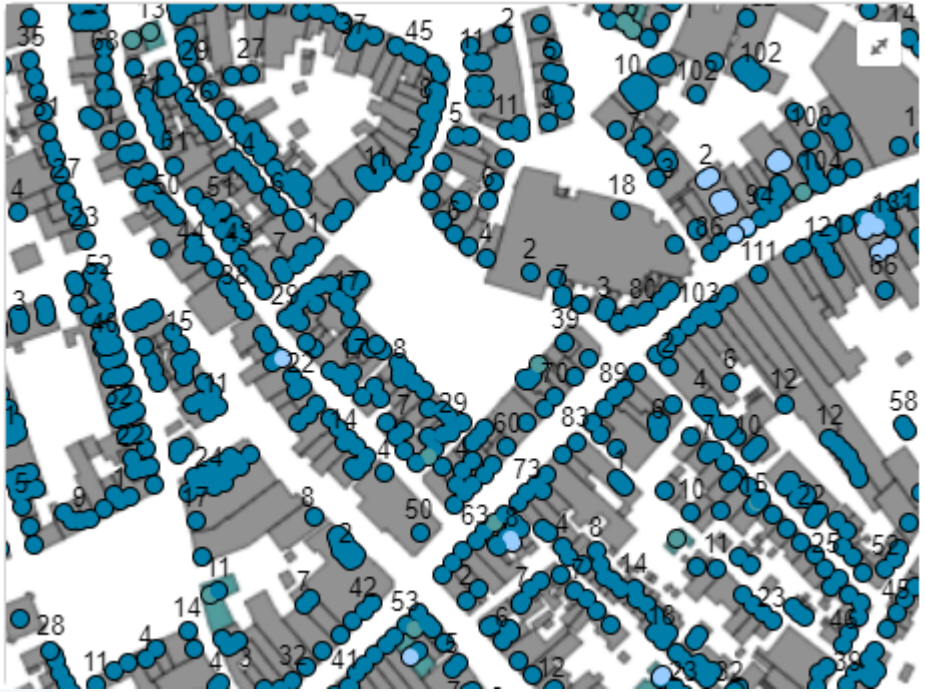
https://api.pdok.nl/lv/bag/ogc/v1_0/tiles/NetherlandsRDNewQuad/12/2046/2048?f=mvt

- Styles https://api.pdok.nl/lv/bag/ogc/v1_0/styles

Parameters ?f=json of ?f=html

BAG Vector Tiles: verschil in Matrixset

https://api.pdok.nl/lv/bag/ogc/v1_0/tiles/NetherlandsRDNewQuad/12/2046/2047?f=mvt



https://api.pdok.nl/lv/bag/ogc/v1_0/tiles/EuropeanETRS89_LAEAQuad/14/8237/7303?f=mvt

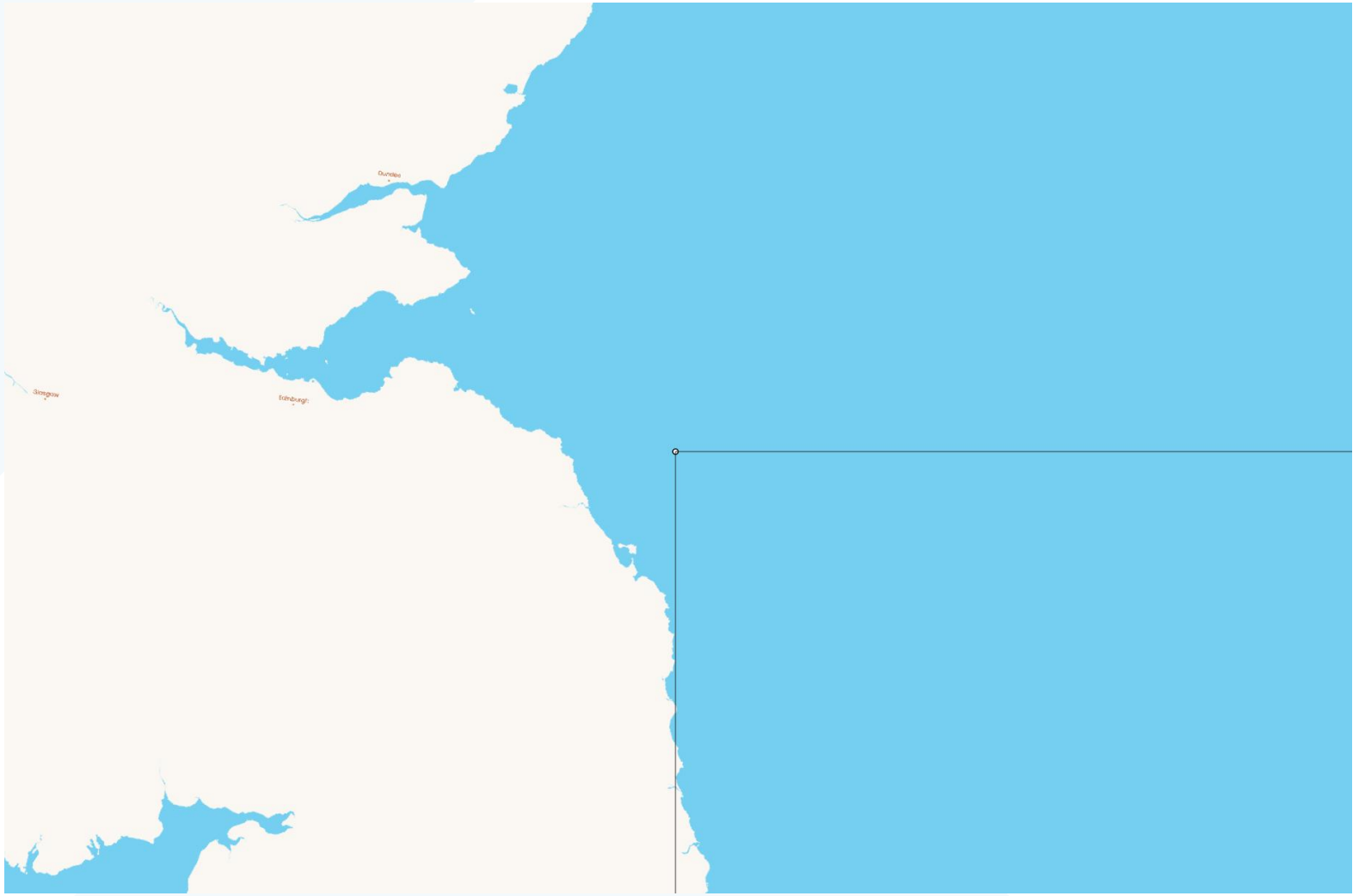
BAG Vector Tiles: verschil in Matrixset

https://api.pdok.nl/lv/bag/ogc/v1_0/tiles/NetherlandsRDNewQuad/12/2046/2047?f=mvt

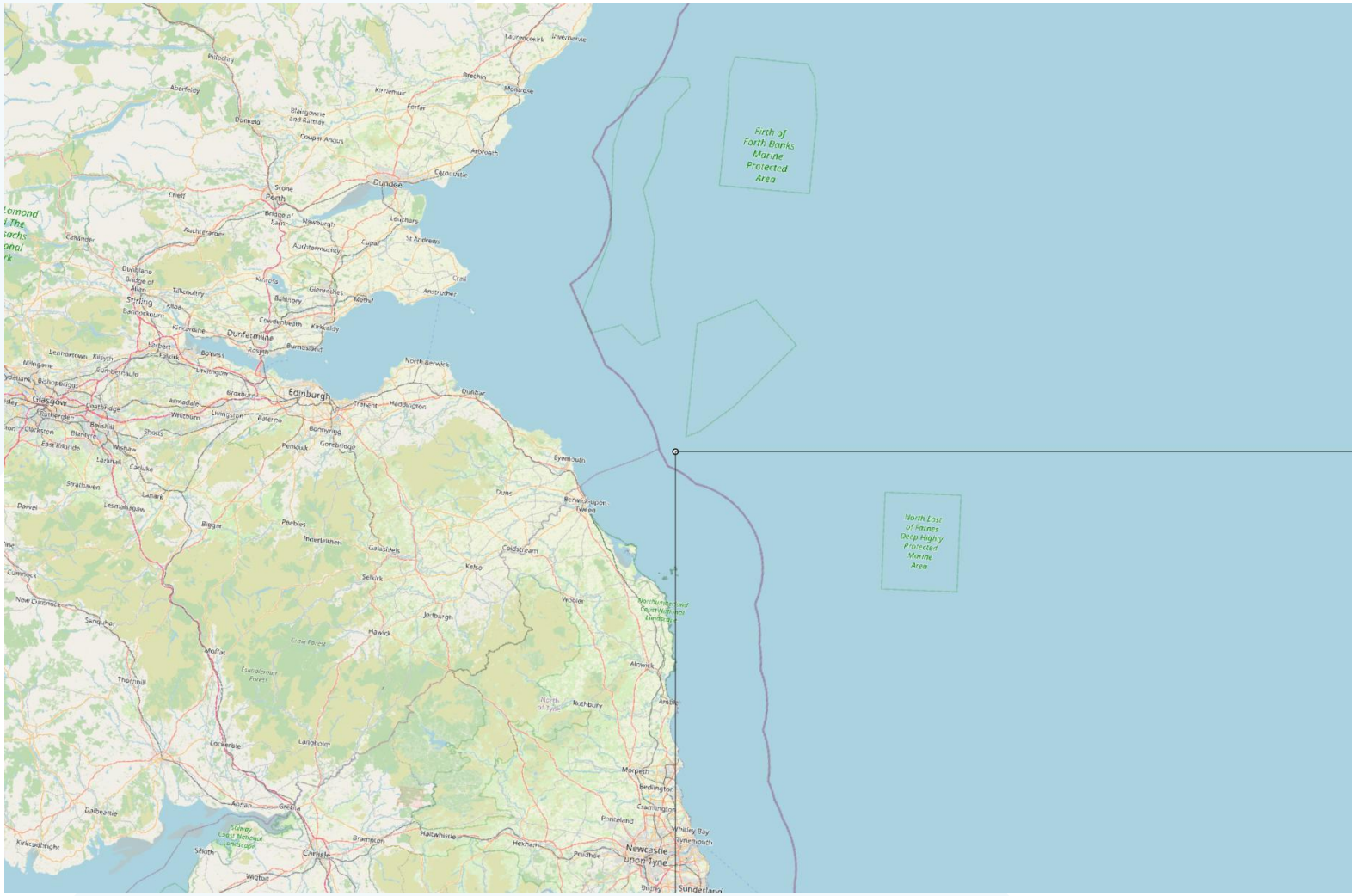
https://api.pdok.nl/lv/bag/ogc/v1_0/tiles/EuropeanETRS89_LAEAQuad/14/8237/7303?f=mvt

Point of origin

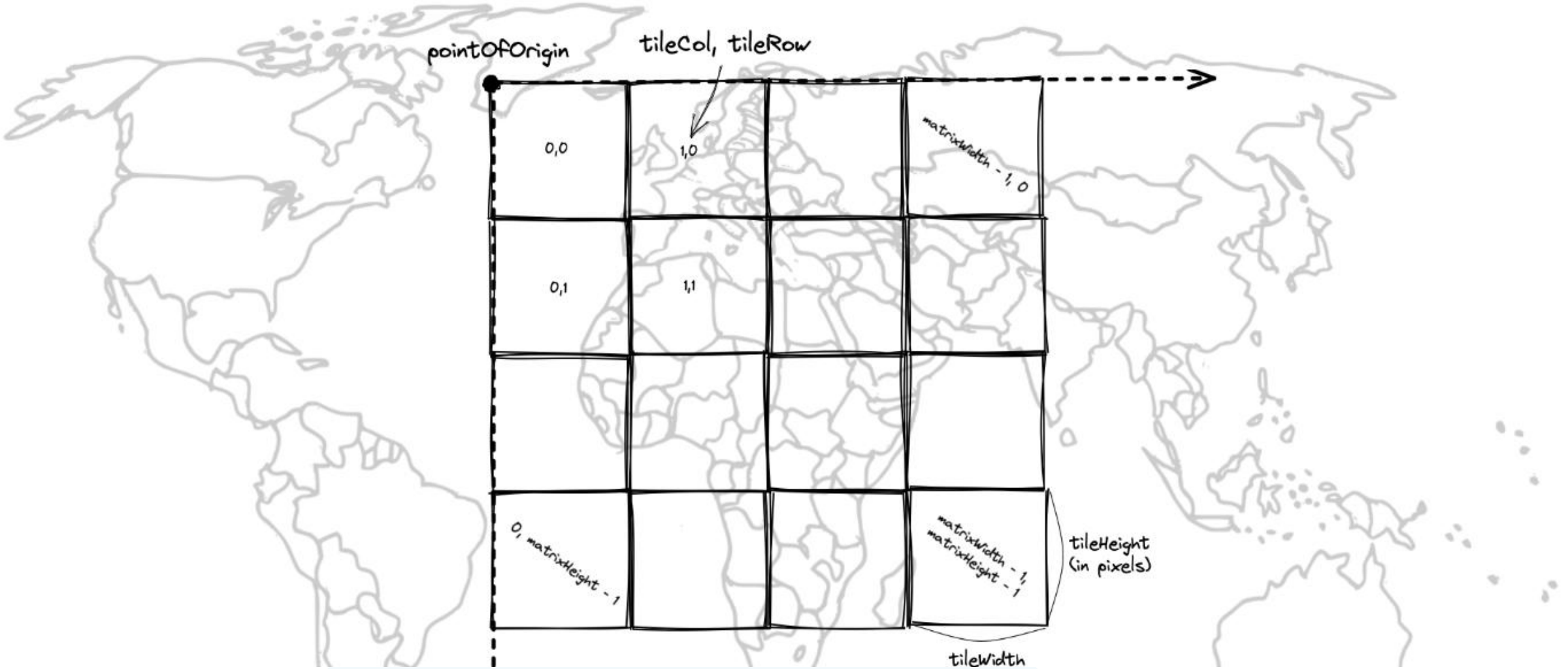
Point of origin



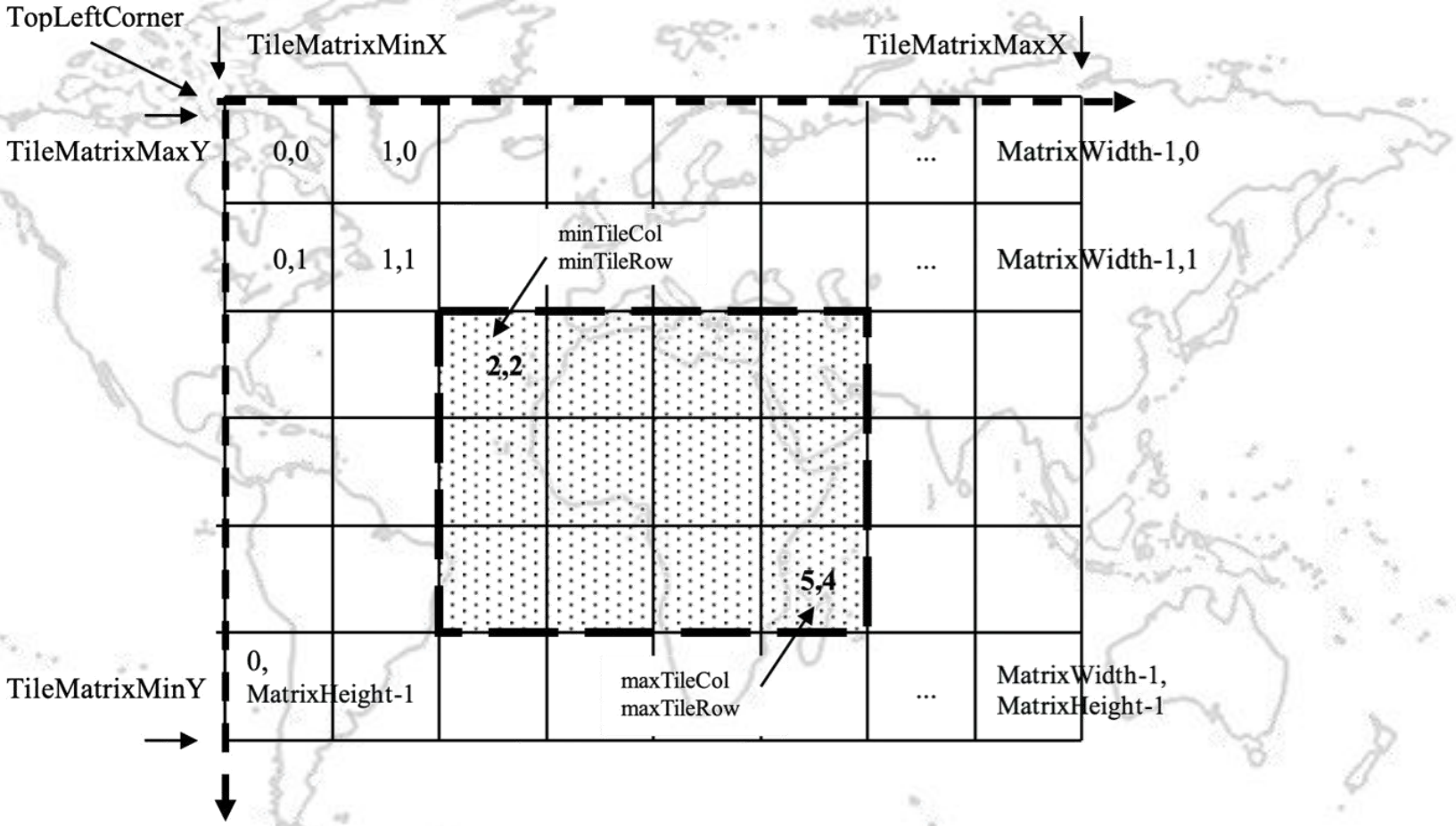
Point of origin



Tile matrix


pointOfOrigin
tileCol, tileRow
0,0
1,0
matrixWidth - 1, 0
0,1
1,1
0, matrixHeight - 1
matrixWidth - 1,
matrixHeight - 1
tileHeight
(in pixels)
tileWidth

Tile matrix set



https://docs.ogc.org/is/17-083r2/17-083r2.html

OGC API Maps

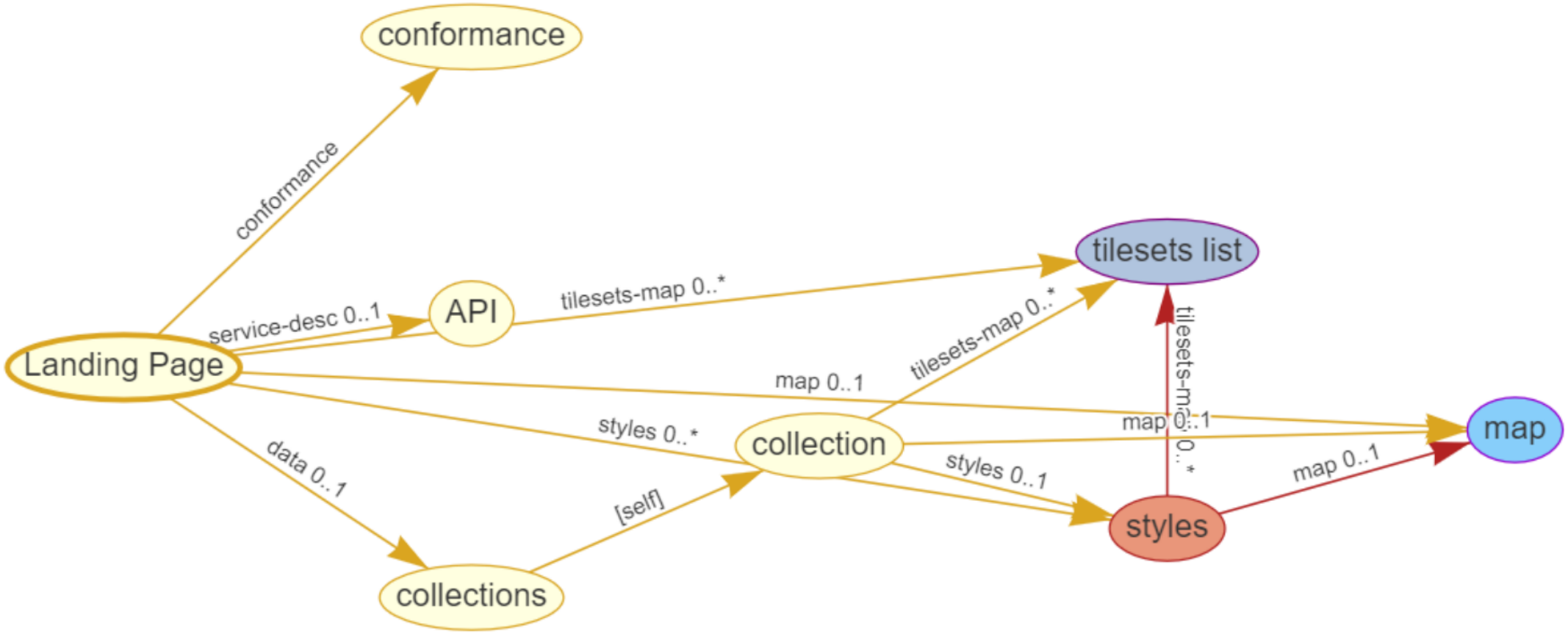


Figure 2. Resources and relations to them via links

OGC API Maps

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Resource name	Common path
Landing page[4]	{datasetRoot}/
Conformance declaration[4]	{datasetRoot}/conformance
Dataset Maps	
Dataset maps in the default style [1]	{datasetRoot}/map
Dataset maps[1,2]	{datasetRoot}/styles/{styleId}/map
Dataset map tiles[1,3]	{datasetRoot}/map/tiles/{tileMatrixSetId}/⋯
Geospatial data collections[5]	
Collections[5]	{datasetRoot}/collections
Collection[5]	{datasetRoot}/collections/{collectionId}
Collection maps in the default style	{datasetRoot}/collections/{collectionId}/map
Collection maps[2]	{datasetRoot}/collections/{collectionId}/styles/{styleId}/map
Collection map tiles[3]	{datasetRoot}/collections/{collectionId}/map/tiles/{tileMatrixSetId}/⋯

OGC API records

Specificatie om Metadata te vinden en te ontsluiten.

OGC API - Records supports 3 main deployment patterns:

- *Crawlable catalog: browse and navigation of a set of metadata records via links*
- *Searchable catalog: API capability to query and filter a collection of metadata records based on serch criteria (bbox, datetime, q, etc.)*
- *Local resources catalog: searchable catalog functionality applied at the collection level of an API*

Landing page	https://demo.pygeoapi.io/stable
OAS	https://demo.pygeoapi.io/stable/openapi?f=html (strikt genomen /api)
Collections	https://demo.pygeoapi.io/stable/collections
Collection-id	https://demo.pygeoapi.io/stable/collections/dutch-metadata
Items	https://demo.pygeoapi.io/stable/collections/dutch-metadata/items
Item-id	https: https://demo.pygeoapi.io/stable/collections/dutch-metadata/items/0ec79c96-898f-40da-adc7-673eb4749685

Parameters ?f=json of ?f=html

OGC API processes

- Voorbeeld processing list:https://demo.pygeoapi.io/stable/processes?f=html

Resource	Path	HTTP method	Information delivered
Landing page	/	GET	General information about the service, links to API endpoints
Conformance classes	/conformance	GET	List of conformance classes
Process list	/processes	GET	Process identifiers, links to process descriptions
Process description	/processes/{processID}	GET	Information about a process, e.g. inputs/outputs
Process Execution	/processes/{processID}/execution	POST	execute the process with input/output parameter
Job status info	/jobs/{jobID}	GET	Status info, links to results or exceptions
Job results	/jobs/{jobID}/results	GET	Job results
Job list	/jobs	POST/GET*	List of job ids and status info, links to results or exceptions

Gebruik

- Processes in python
- Features in QGIS
- Maps in QGIS
- Features in ArcGis Online
- Features in Leaflet
- Tiles in Maplibre in handson

Voorbeeld aanroepen process API in Python

```python
def calc_lof(feat):
    url = "http://localhost:5000/processes/localoutlier/execution"
    data = {"inputs": {"dataset": feat}}
    headers = {"Content-Type": "application/json"}
    response = requests.post(url, json=data, headers=headers)
    return handle_response(response)
```

n_neighbors en leaf_size hebben default values,
dus worden hier niet meegegeven...

Local outlier factor (LOF)

The local outlier factor (LOF) algorithm computes a score indicating the degree of abnormality of each input (observation), in a set of such observations. It measures the local density deviation of a given data point with respect to its neighbors. It considers as outliers the samples that have a substantially lower density than their neighbors.

local outliter factor | LOF | outlier detection

Id	Title	Data Type	Description
dataset	Dataset	string	geojson dataset of points, in one CRS, for which LOF scores should be computed.
n_neighbors	Number of neighbors		Number of neighbors to use by default for `kneighbors` queries. If `n_neighbors` is larger than the number of samples provided, all samples will be used.
leaf_size	Leaf size		Leaf size passed to BallTree or KDTree. This can affect the speed of the construction and query, as well as the memory required to store the tree. The optimal value depends on the nature of the problem.

Inputs

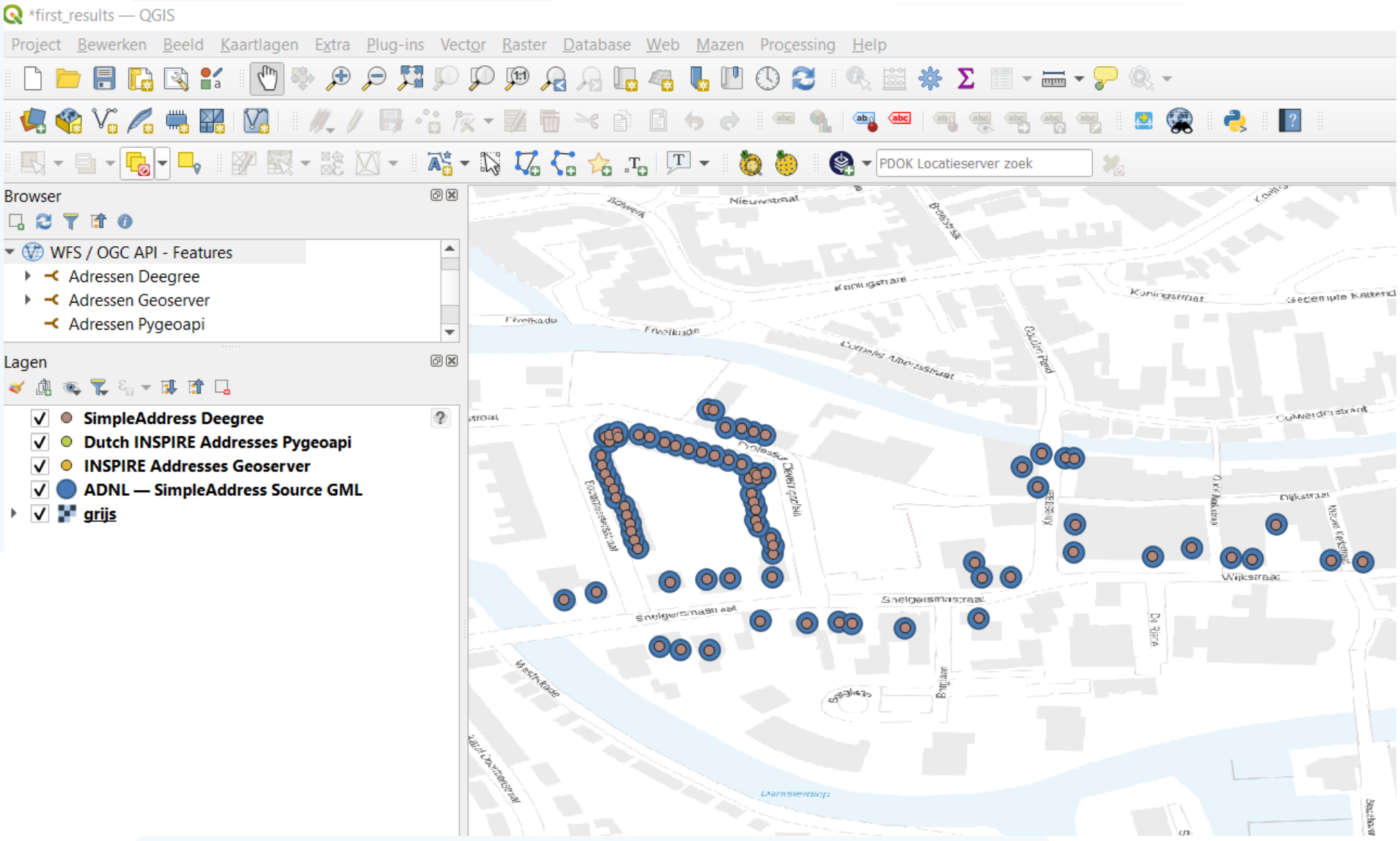
Id	Title	Description
output_dataset	Output Dataset	output

Outputs

```python
input = 'http://localhost/collections/knmi_meetstations/items?f=json&limit=1000'
result = calc_lof(input)
print(result)
```

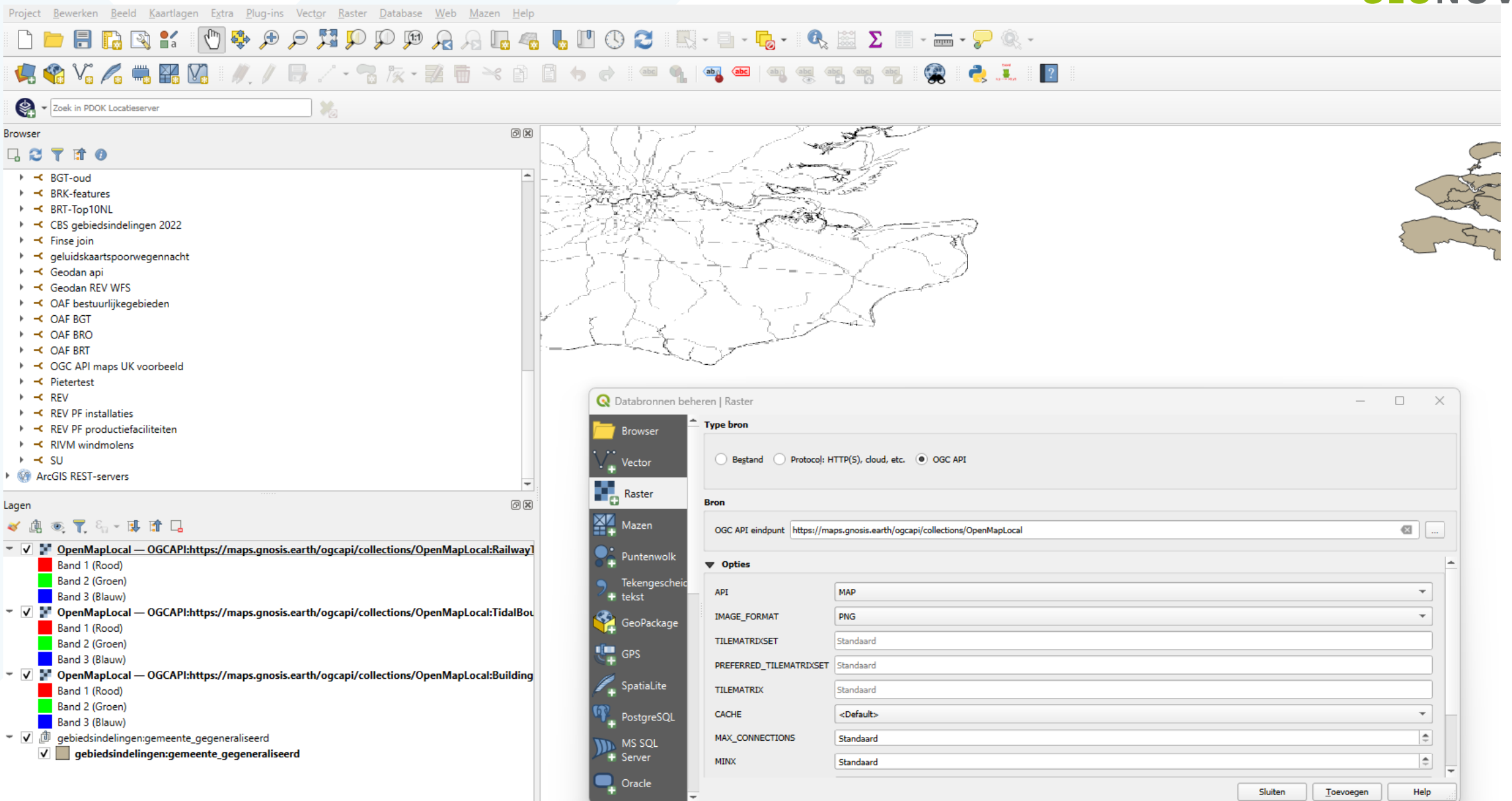
```
{'id': 'output_dataset', 'value': '{"type": "FeatureCollection", "features": [{"id": "0", "type": "Feature", "properties": {"STN": 201, "TYPE": "Platform/AWS", "abnormality": -1}, ...
```

Demo OGC-API-Features in QGIS

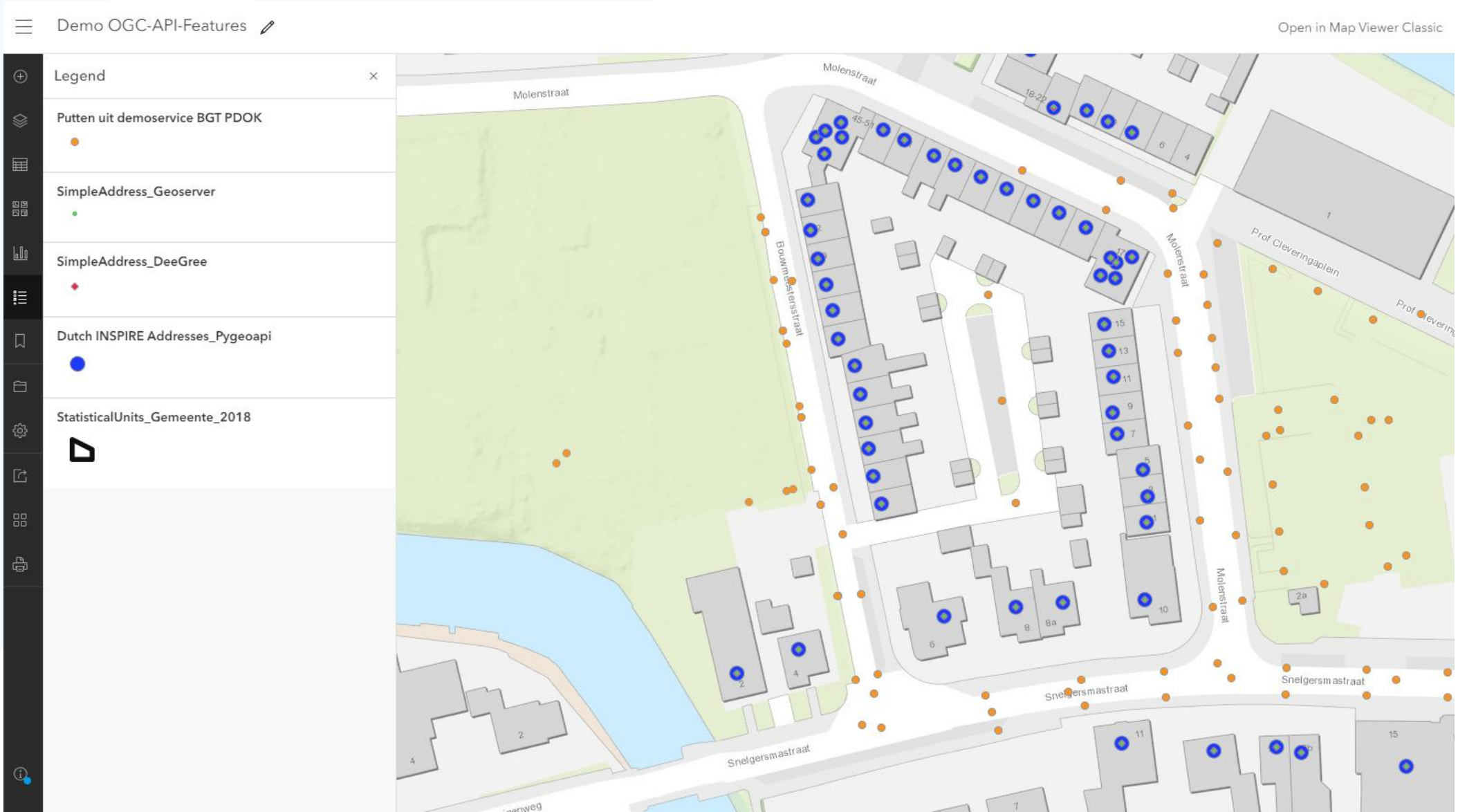


Demo OGC-API-Maps in QGIS

https://maps.gnosis.earth/ogcapi/collections/OpenMapLocal



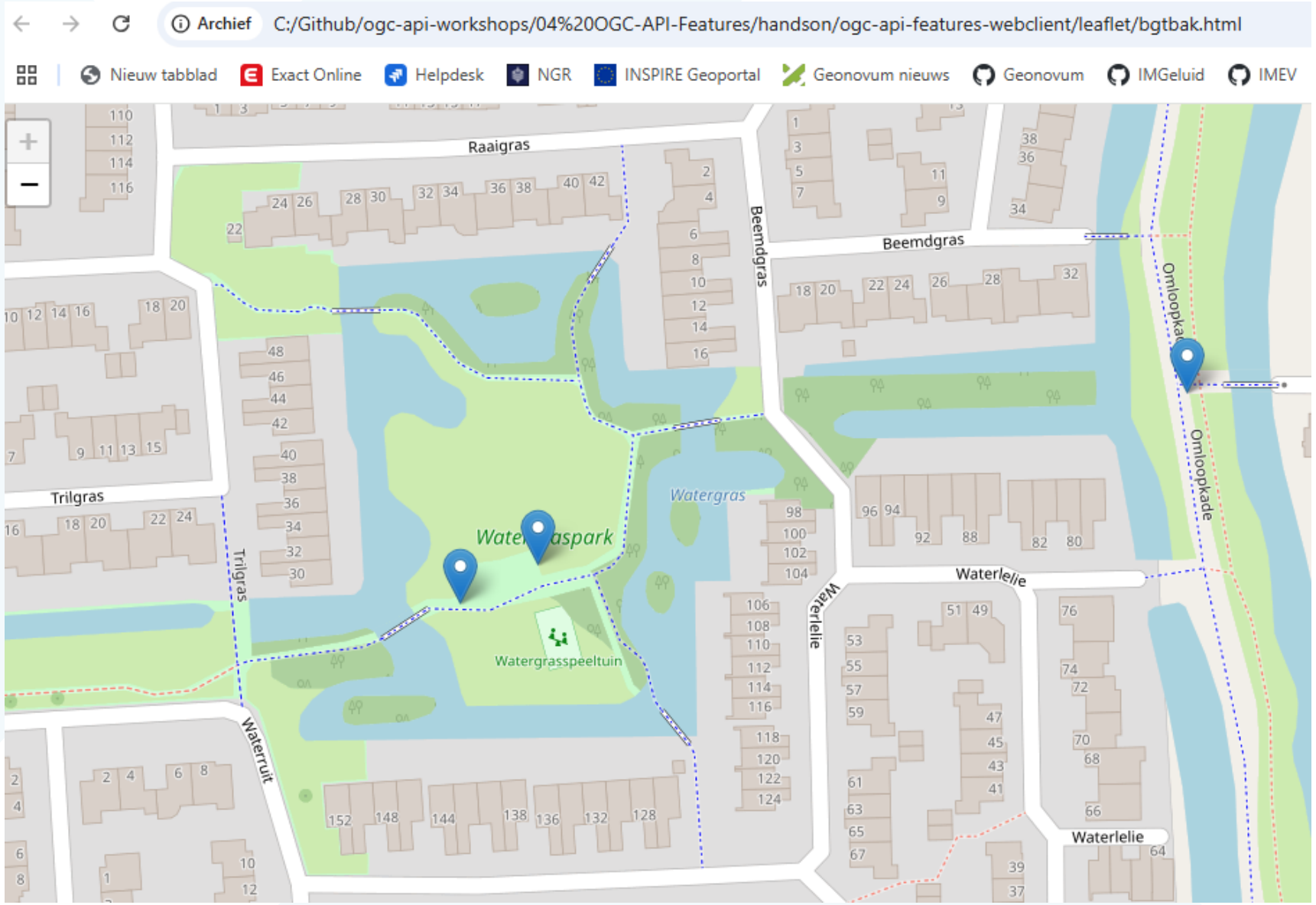
Demo OGC-API-features in ArcGIS Online



OGC-API-Features in Leaflet

```
<!DOCTYPE html>
<html>
<head>
    <title>BGT-bakken in Watergrasbuurt Gouda</title>
    <meta charset="utf-8" />
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <link rel="stylesheet" href="https://unpkg.com/leaflet@1.7.1/dist/leaflet.css" integrity="sha512-xodZBNTC5n17Xt2a
  <script src="https://unpkg.com/leaflet@1.7.1/dist/leaflet.js" integrity="sha512-XQoYMqMTK8LvdxXYG3nZ448hOEQiglfqk
    <style>
        html, body {
            height: 100%;
            margin: 0;
        }
    #map {
            width: 100%;
            height: 100%;
        }
  </style>
</head>
<body>

<div id='map'></div>

<script>
  var map = L.map('map').setView([52.031, 4.715], 17);

  L.tileLayer('https://{s}.tile.openstreetmap.org/{z}/{x}/{y}.png', {
    attribution: 'Map data &copy; <a href="https://www.openstreetmap.org/copyright">OpenStreetMap</a> contributors,
      'Contains OS data &copy; Crown copyright and database right 2021.'
  }).addTo(map);

  (async () => {
    const BGTbak = await fetch('https://api.pdok.nl/lv/bgt/ogc/v1/collections/bak/items?f=json&bbox=4.710,52.028,4.
        headers: {
        'Accept': 'application/geo+json'
      }
    }).then(response => response.json());

    L.geoJSON(BGTbak, {
      pointToLayer: function (feature, latlng) {
        return L.marker(latlng,
    );
      },
            onEachFeature: onEachFeature
    }).addTo(map);
  })();

    function onEachFeature(feature, layer) {
        var popupContent = "<a href='https://api.pdok.nl/lv/bgt/ogc/v1/collections/bak/items/" + feature.id + "' ta
        if (feature.popupContent) {
            popupContent += feature.popupContent;
        }
        layer.bindPopup(popupContent);
    }

</script>
```

OGC-API-Features in Leaflet



Dank voor de aandacht!

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