



UP42

Satellite Imagery for road quality assessments

Pre-Sales Engineer Challenge by
Nisleida Morales Ruiz

<https://github.com/urbanis/up-42-challenge>



Business Specifications



- The preference is for 30cm data where possible and filling in with 50cm when needed.
- Data from May-2023 to the end of September-2023.
- Available catalog data over a road alignment (*road_alignment.geojson*)
- The AOI is a corridor that is 500m wide (250m buffer).

Workflow



- Exploring available catalogs
- Retrieving catalog data
- Exporting and plotting search results
- Estimating credits
- Computing coverage for remaining areas not covered by catalog data
- Providing suggestions for areas that are not covered by API-integrated catalog data

Available catalog data

50

Catalogs available

22

Match with the filters

2

Have data within
the specified date range

Filters:



Optical or SAR



Unrestricted



≤ 50 cm
resolution



Archive
Data



May –
September
2023

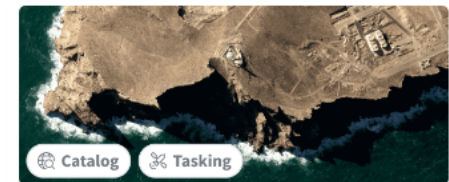
Final catalogs:



Pléiades
Airbus

Very high resolution 50 cm optical satellite imagery, acquired worldwide with a daily revisit rate. The collection contains data from 2012 to the present.

Product_ID : '17745de8-6e7d-4751-99cd-3f8e9e9d290e'



Pléiades Neo
Airbus

Very high resolution 30 cm optical satellite imagery, acquired worldwide with a revisit rate of 2 times a day. The collection contains data from 2021 to the present.

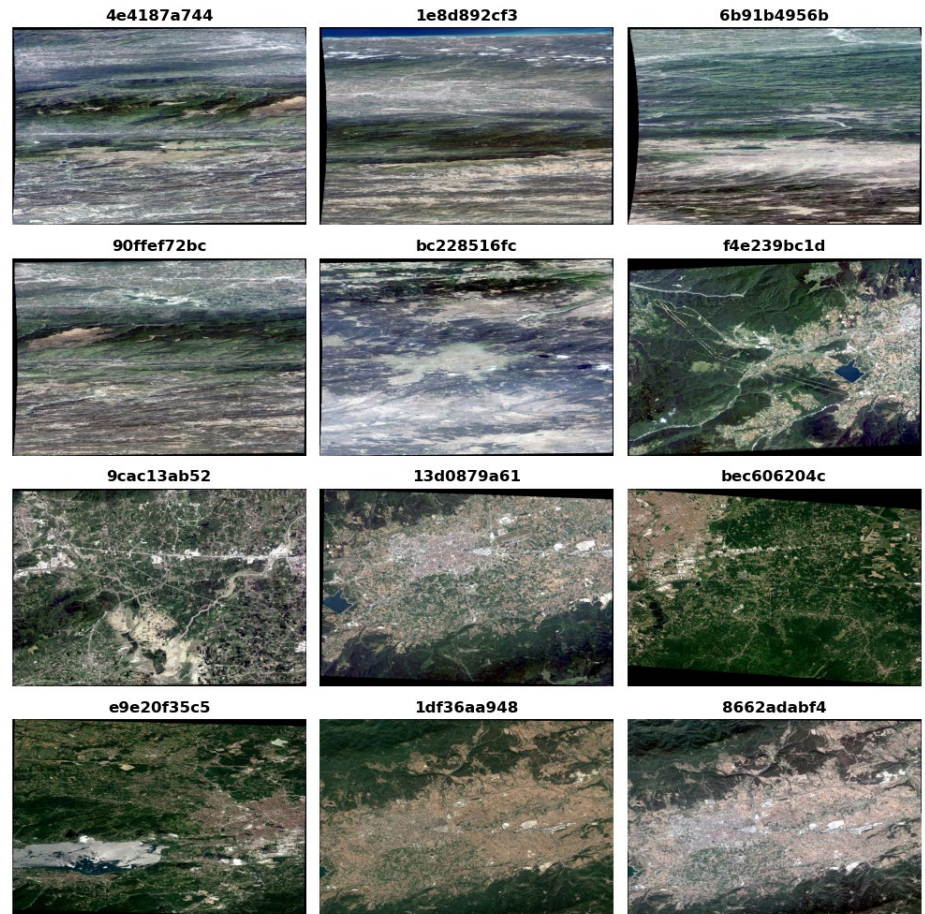
Product_ID : '647780db-5a06-4b61-b525-577a8b68bb54'

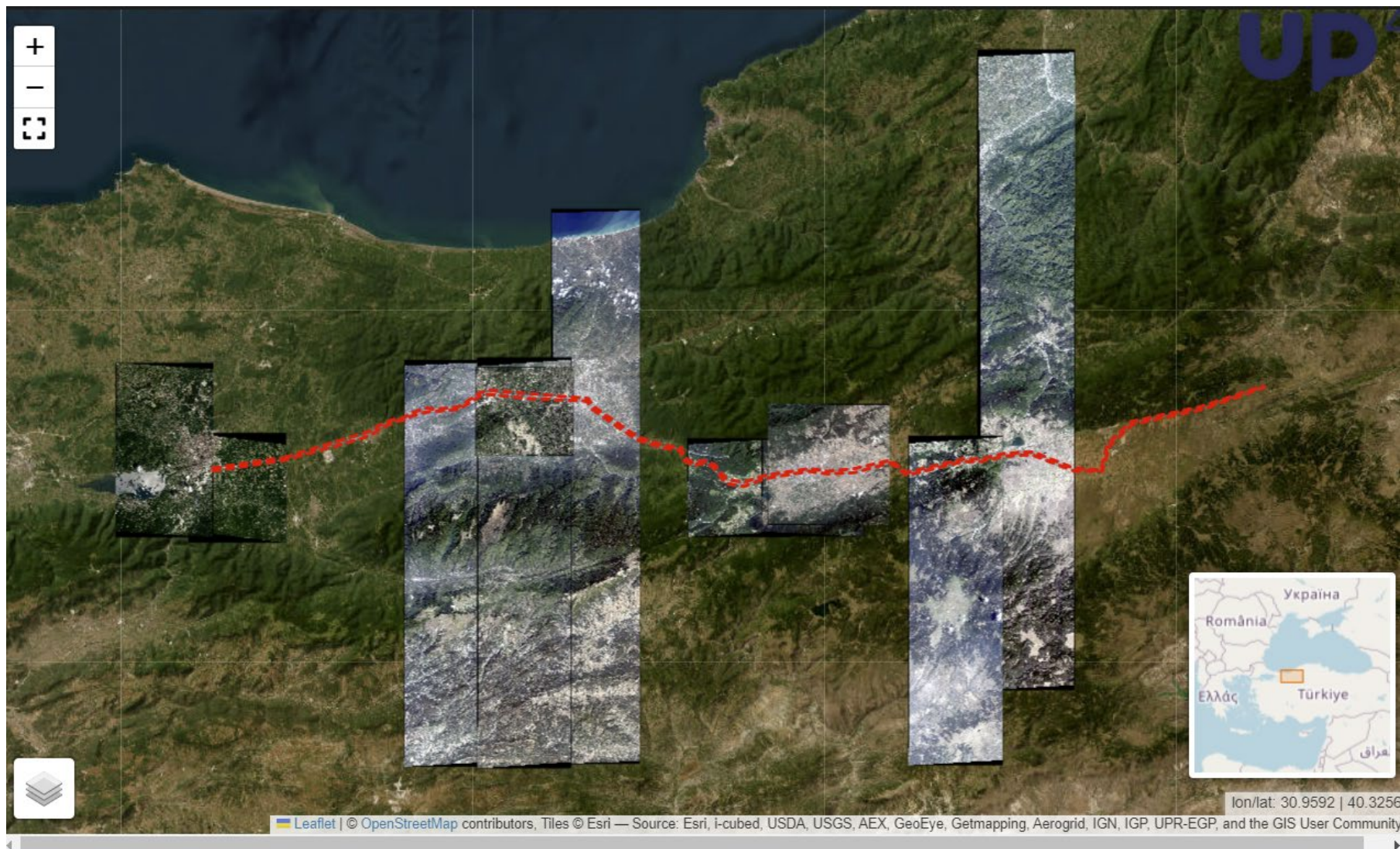
Available catalog data

12
available data

10
from Pléiades Neo

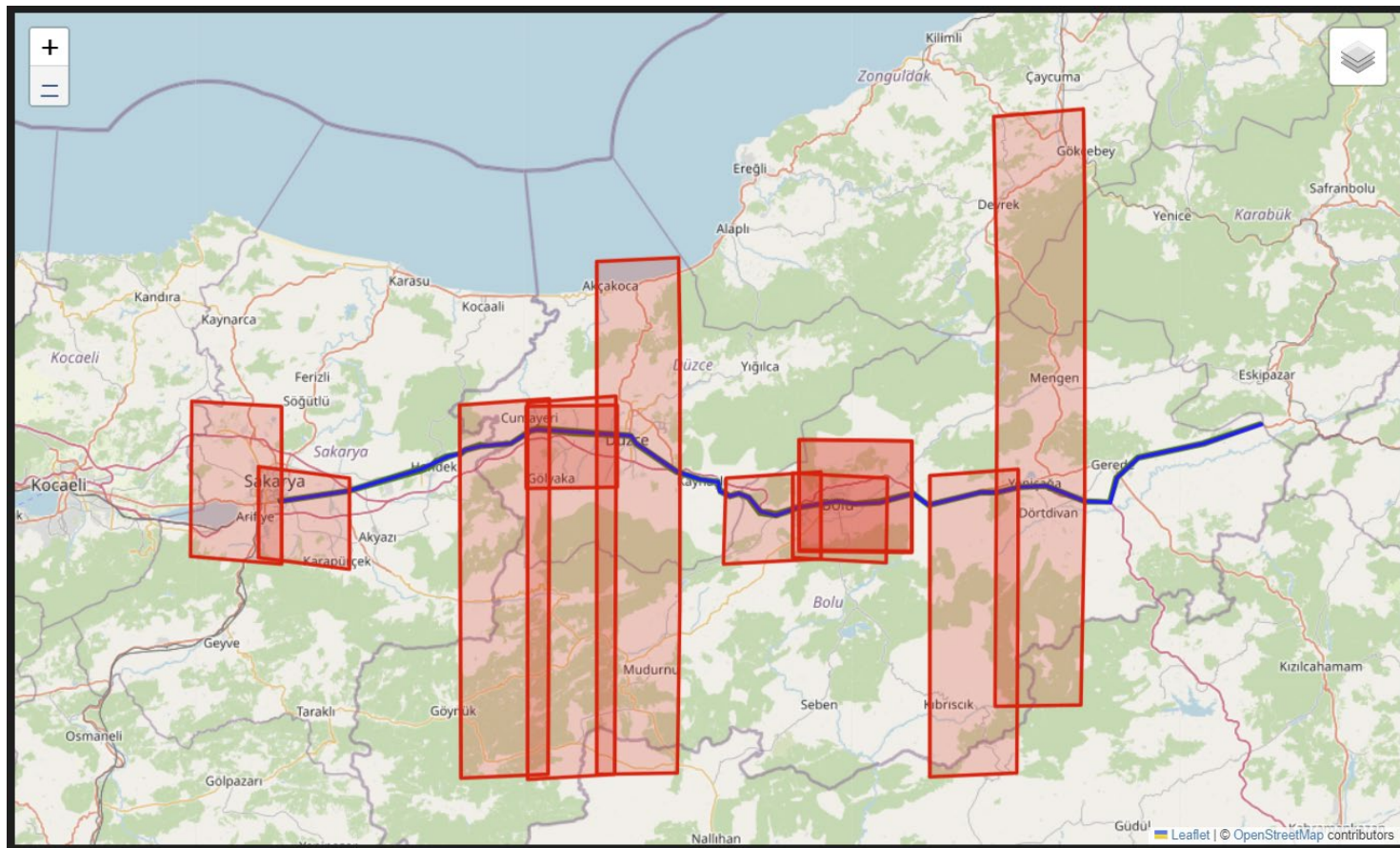
2
from Pléiades





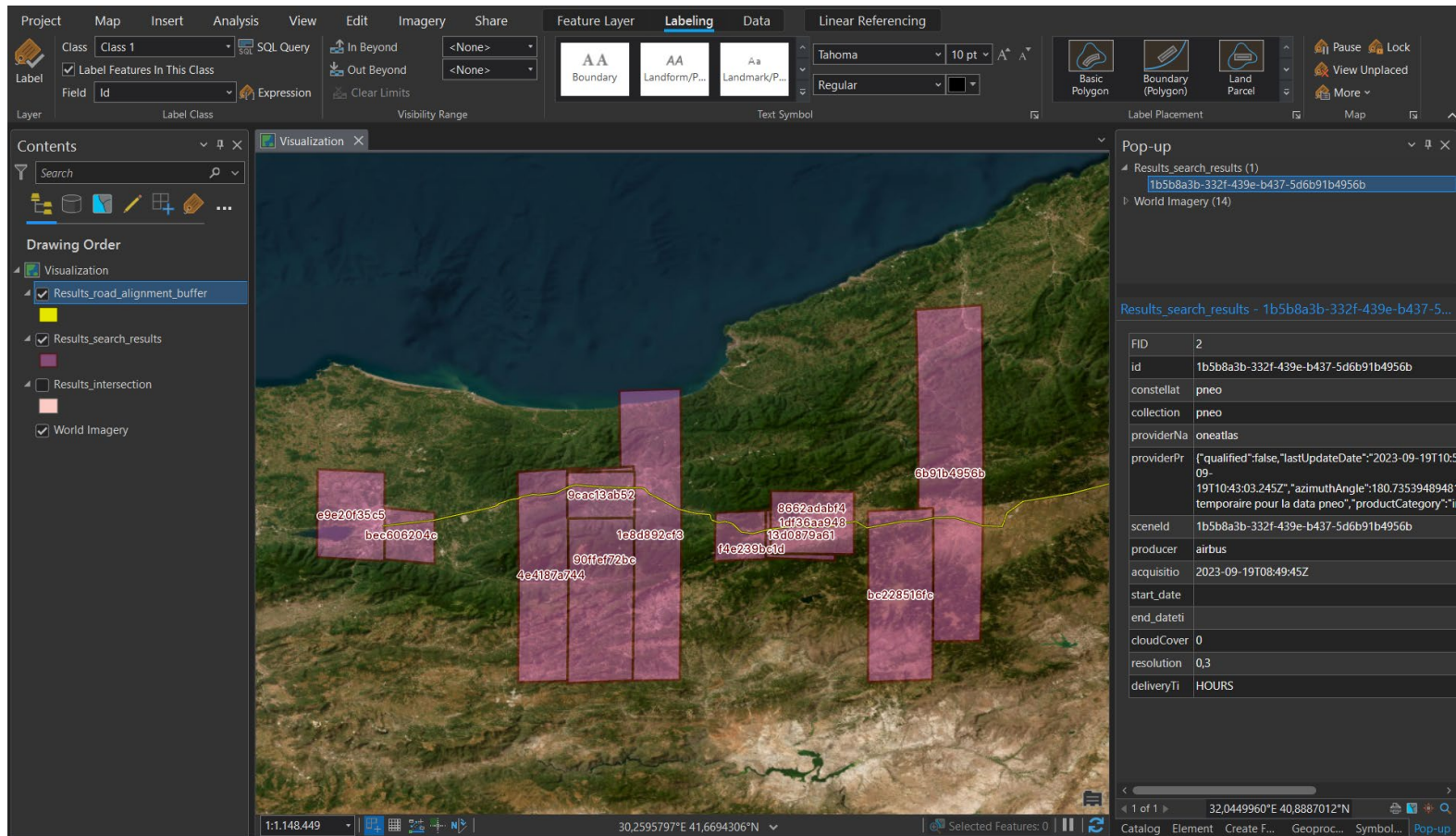
Search results as vector file

Geojson in Jupyter Notebook



Search results as vector file

Geojson in GIS software



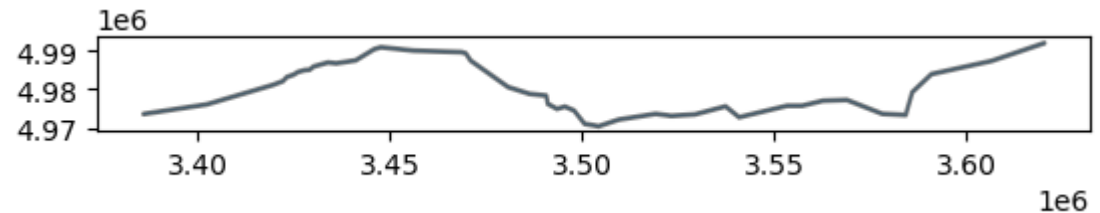
Coverage and Remaining from available data

Length of the road

255.49 km

Area of Interest

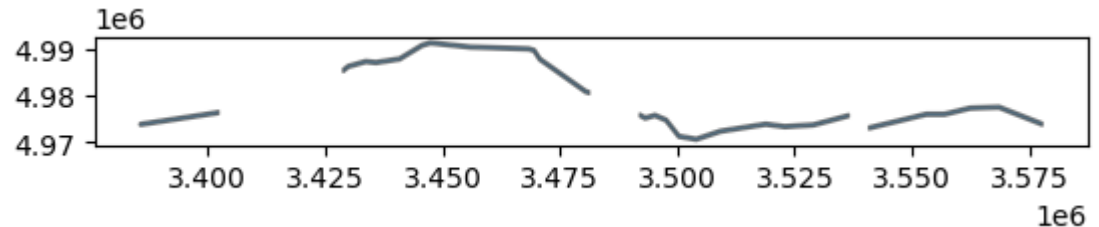
164.02 km²



Coverage Area

Coverage area: 103.13 km²

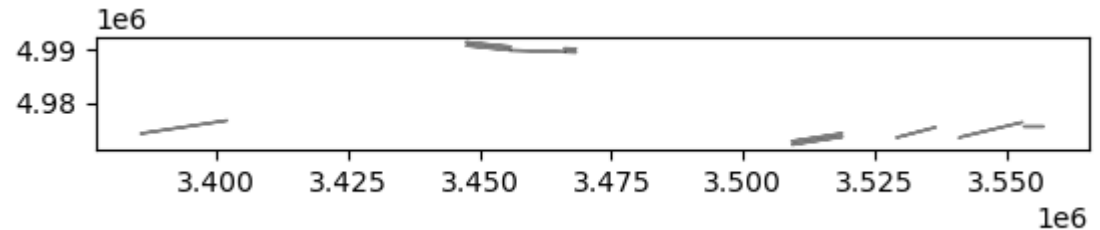
Coverage %: 62.88 %



Remaining Area

Remaining area: 60.89 km²

Remaining %: 37.12 %



Credits and Cost Estimation

Credit and cost estimated per scene

Pléiades Neo CATALOG

Scene	Credit Estimate	Cost (Euros)*
775c7747-e9aa-4b62-ae2c-864e4187a744	14958	149,58 €
84c8319e-b4ed-4545-b6f0-4d1e8d892cf3	14670	146,70 €
1b5b8a3b-332f-439e-b437-5d6b91b4956b	14562	145,62 €
345d8a62-d91c-412c-97e9-c790ffef72bc	14544	145,44 €
408958c2-18b0-4bac-b356-d3bc228516fc	14472	144,72 €
f1436243-70b7-49a9-8aaa-25f4e239bc1d	16704	167,04 €
1024182c-172b-4dd7-afeb-729cac13ab52	14832	148,32 €
a71e31b7-f8df-4bbb-9a71-0613d0879a61	15462	154,62 €
208ea680-1a79-45ca-9dd3-43bec606204c	11502	115,02 €
152a68a0-c1a7-479f-9f1f-c5e9e20f35c5	468	4,68 €
	132174	1.321,74 €

1.526,04 €

Total Cost

152.604

Total Credits

Pléiades CATALOG

Scene	Credit Estimate	Cost (Euros)*
efefde7e-966e-4a67-8b1d-c21df36aa948	10220	102,2 €
03cb4b1c-8567-4312-a9c8-d38662adabf4	10210	102,1 €
	20430	204,3 €

* 100 credits = €1