# Satellite EO for Digital Public Infrastructure

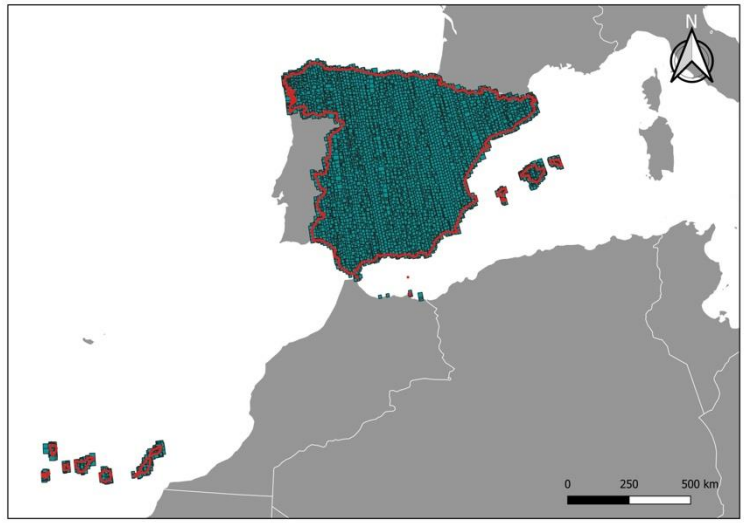
**GKI Summit – GWF 2026**

# DATA ACQUISITION

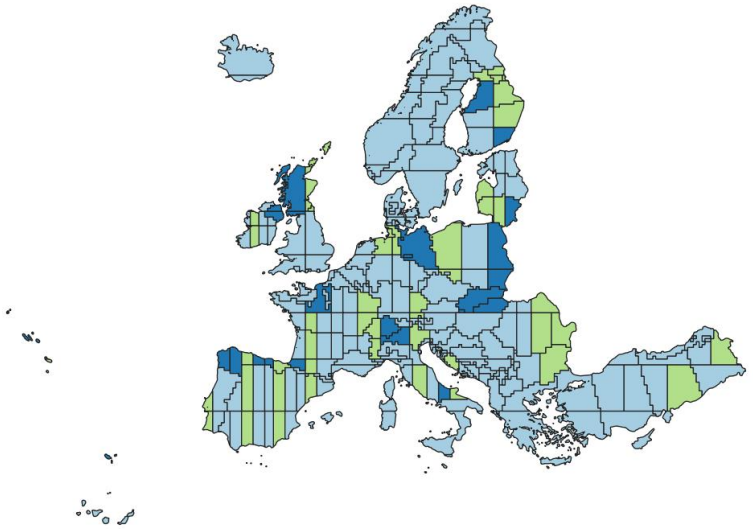
Satellite imagery advantages:

- Increased frequency of data over territory to complement multi-year aerial coverages.
- Cost-effective
- Acquisitions on short notice, emergencies, no need for flight permits and planning.
- Delivery of data in less than 1h from acquisition in case of emergencies.

A simple, practical licensing model is required to ensure data accessibility and usability across government.




GEOSAT 2 coverage of Spain



European satellites coverage of Europe

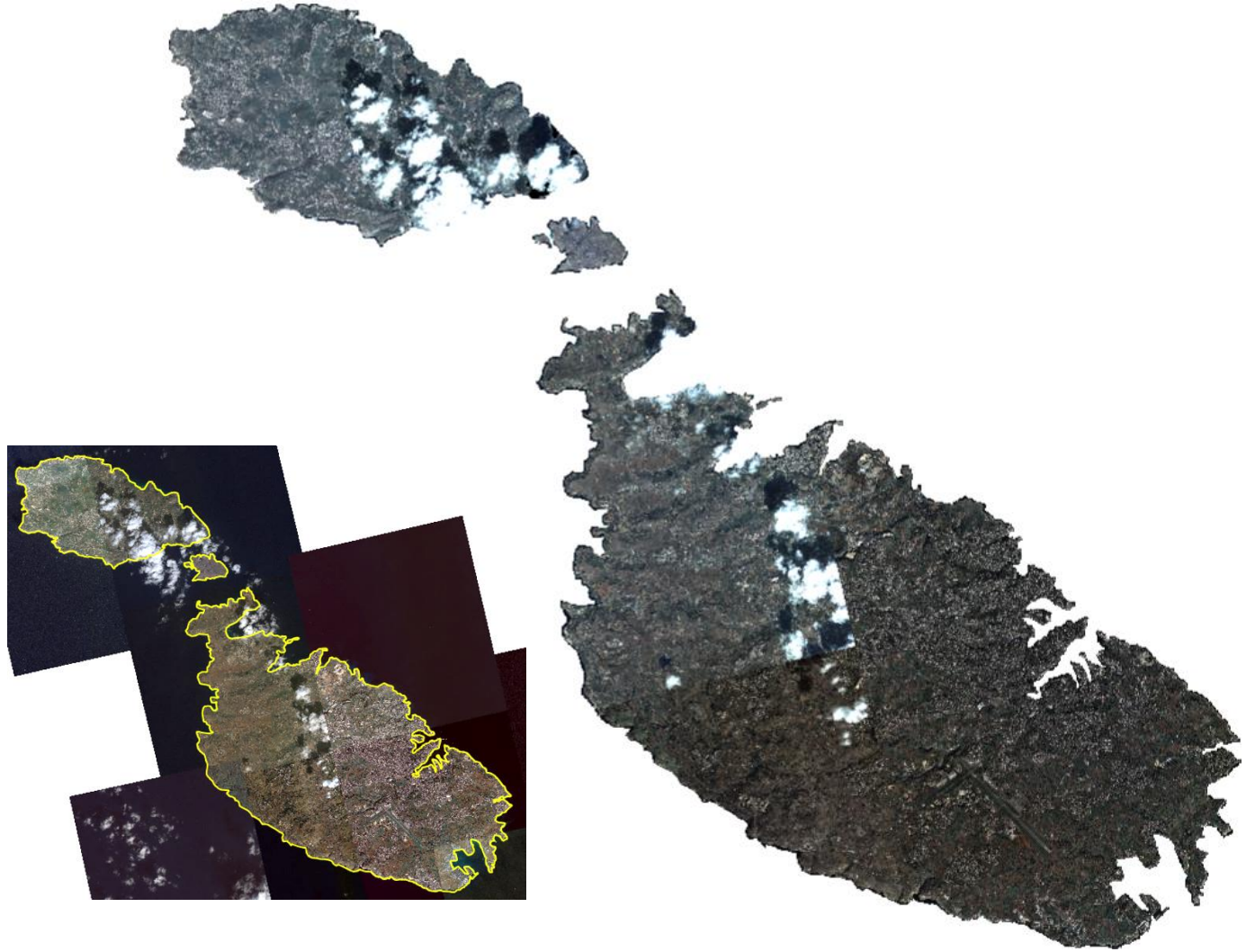
# MOSAIC GENERATION

## INTEGRATION OF MULTIPLE IMAGES

Satellite image mosaicking enables the seamless integration of multiple images to create a continuous representation of large geographic areas.

Mosaic generation is challenging due to differences in image conditions across different acquisitions (in years, stations, etc.)

**GEOSAT solution**: An auto-adapting-global-to-local color balancing method is used. The result is a seamless, radiometrically consistent mosaic where color differences between adjacent satellite images are effectively minimized, ensuring uniform appearance without introducing distortions.



# GEOSATLAS

## LAND USE LAND COVER

- LULC information layer obtained from GEOSAT 2 images for a city of interest.
- Layers can be customized based on needs.
- Critical tool for urban planners, researchers and policy makers aiming to understand, manage and monitor urban environments
- Urban high resolution land use mapping
- Applications:
    - Urban planning and management
    - Environmental impact assessment
    - Climate change adaptation
    - Transportation planning
    - Socioeconomic studies

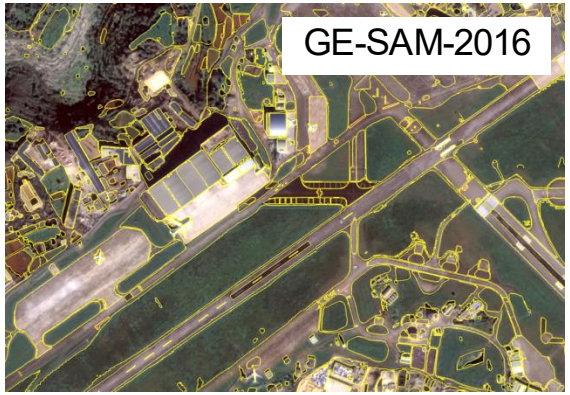
# SAM - SEGMENTATION ANYTHING MODEL

## SATELLITE IMAGE SEGMENTATION

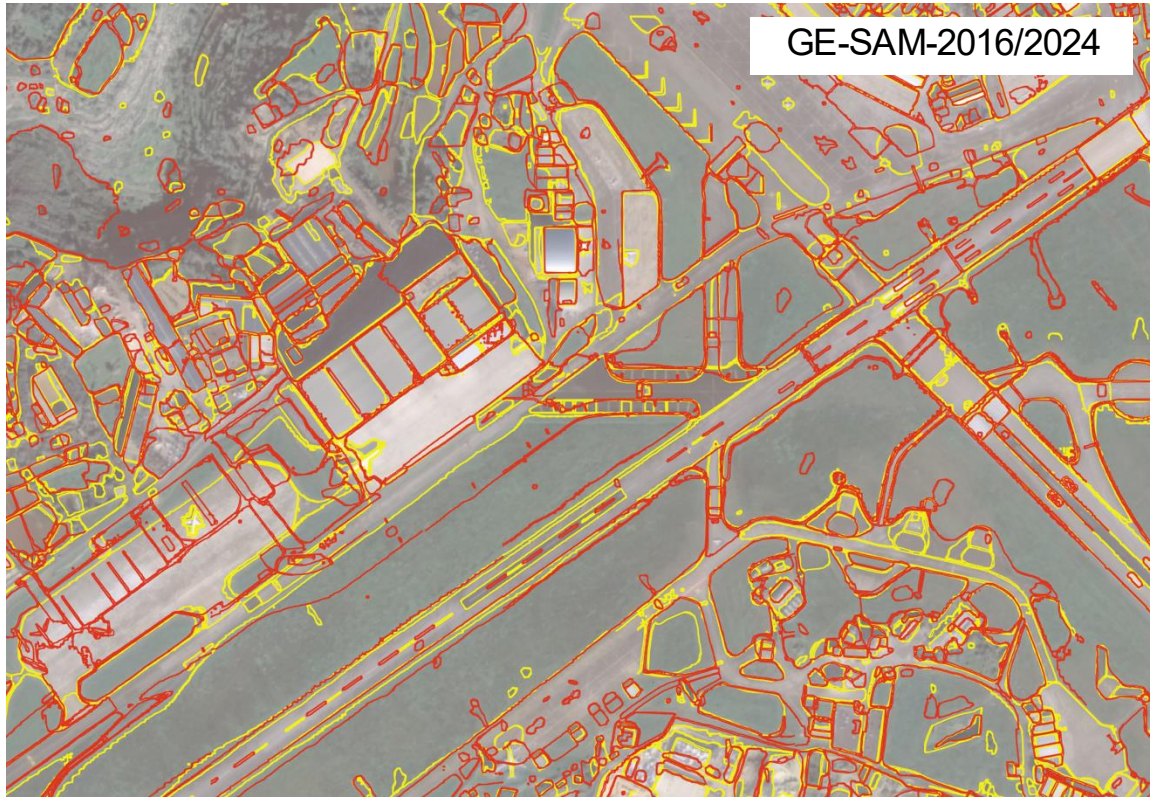
AI model to segment objects, land features and/or areas of interest in satellite images.

Applications:

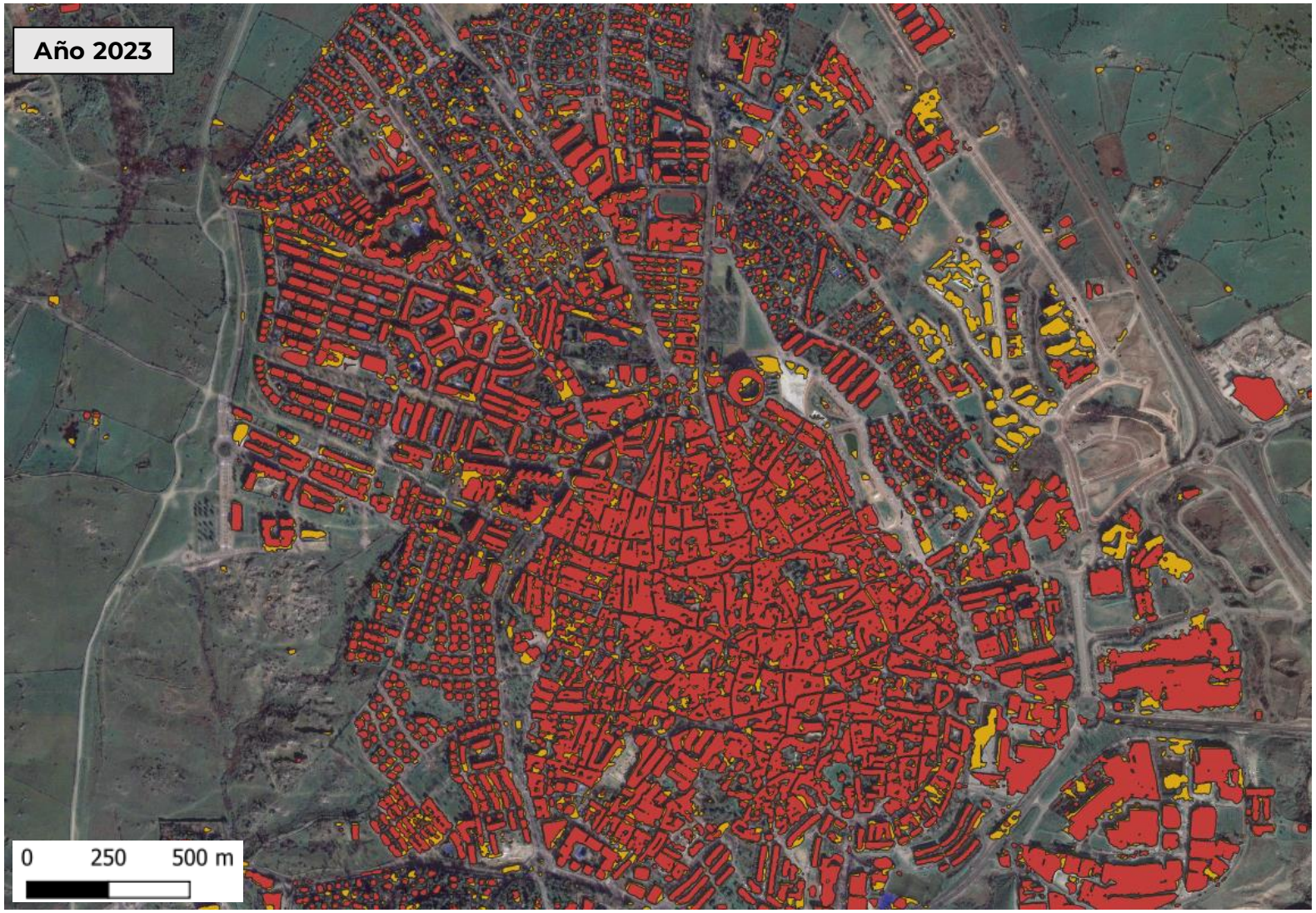
- Urban planning
- Land cover classification
- Disaster response
- Agriculture







# Construction change detection




Urban area
Colmenar Viejo - Madrid

Constructions detected 2019

Constructions detected 2023

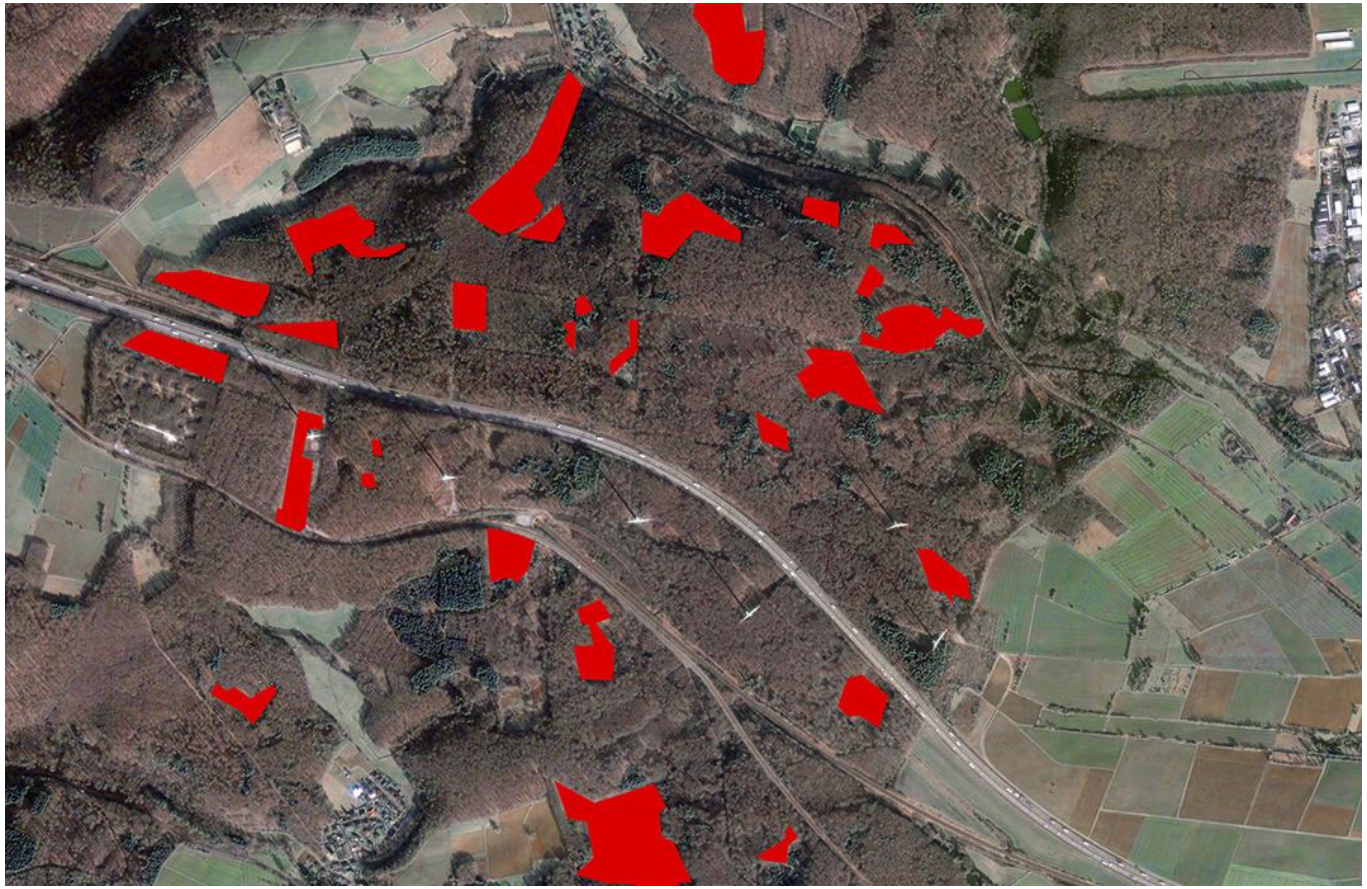
Cross data with cadastral registries to verify legality of constructions.

# Swimming pool detection




28 pools detected 2019
40 pools detected 2023
12 new pools detected in 4 years

# Deforestation tracking




# Road detection

## IMAGE

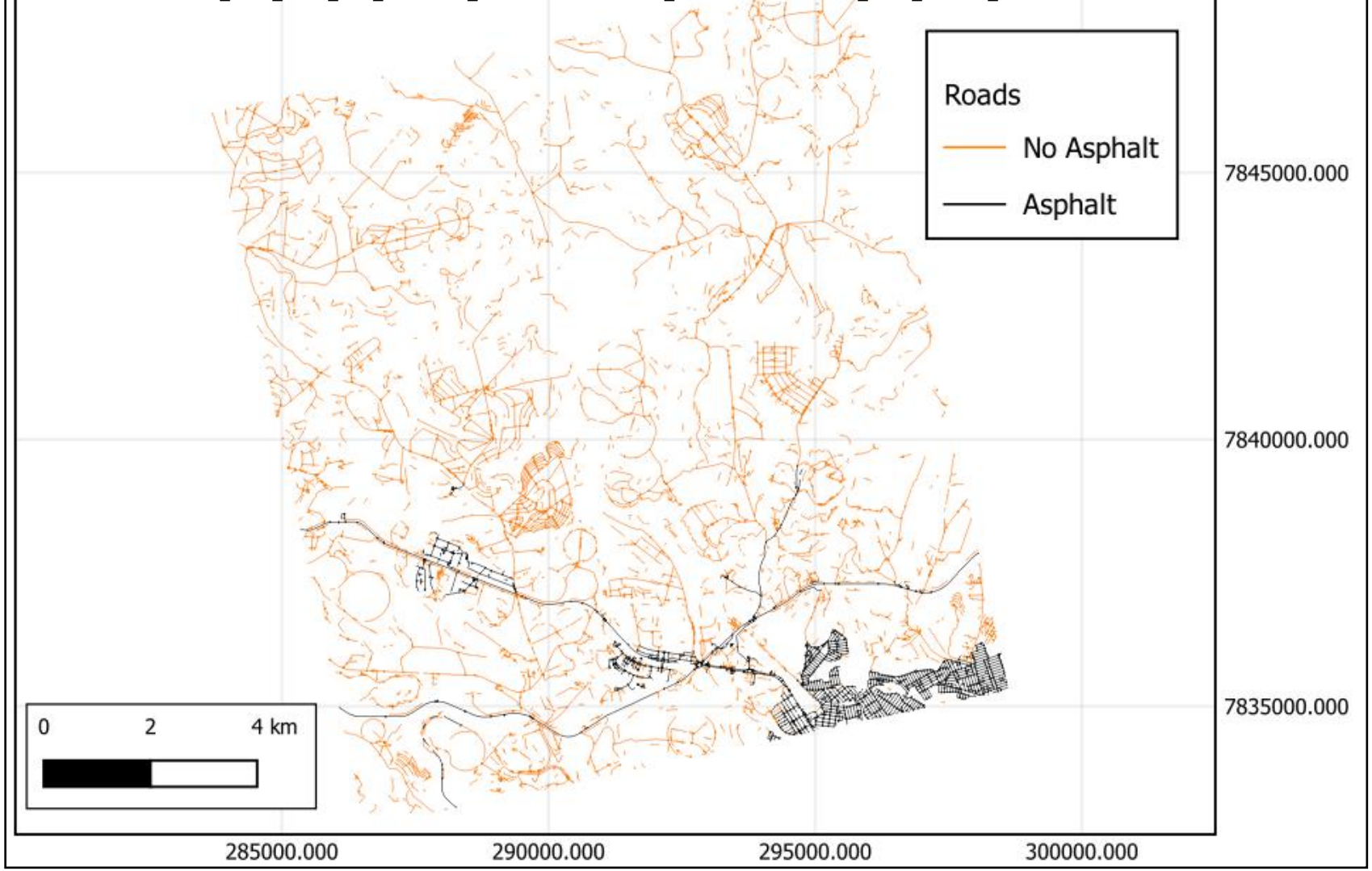
DE2_PS3_L1D_000000_20250509T125520_20250509T125522_DE2_59040_55C9

## Road detection product

- ROADS_DE2_PSH_L1C_000000_20250509T125520_20250509T125522_DE2_59040_55C9.zip
- ROADS_DE2_PSH_L1C_000000_20250509T125520_20250509T125522_DE2_59040_55C9.cpg
- ROADS_DE2_PSH_L1C_000000_20250509T125520_20250509T125522_DE2_59040_55C9.dbf
- ROADS_DE2_PSH_L1C_000000_20250509T125520_20250509T125522_DE2_59040_55C9.prj
- ROADS_DE2_PSH_L1C_000000_20250509T125520_20250509T125522_DE2_59040_55C9.shp
- ROADS_DE2_PSH_L1C_000000_20250509T125520_20250509T125522_DE2_59040_55C9.shx

## Results

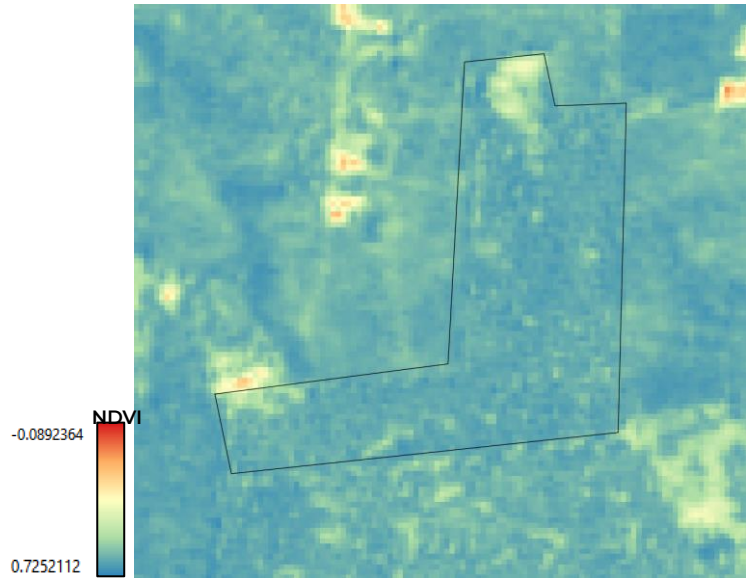
ROADS_DE2_PSH_L1C_000000_20250509T125520_20250509T125522_DE2_59040_55C9



# Forest management

Combination of NDVI indexes with segmentation models and LULC models to identify forest coverage and count trees.





Thank you

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