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OSMlanduse.org

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AK – Fernerkundung Bochum 29.- 30.09.2025

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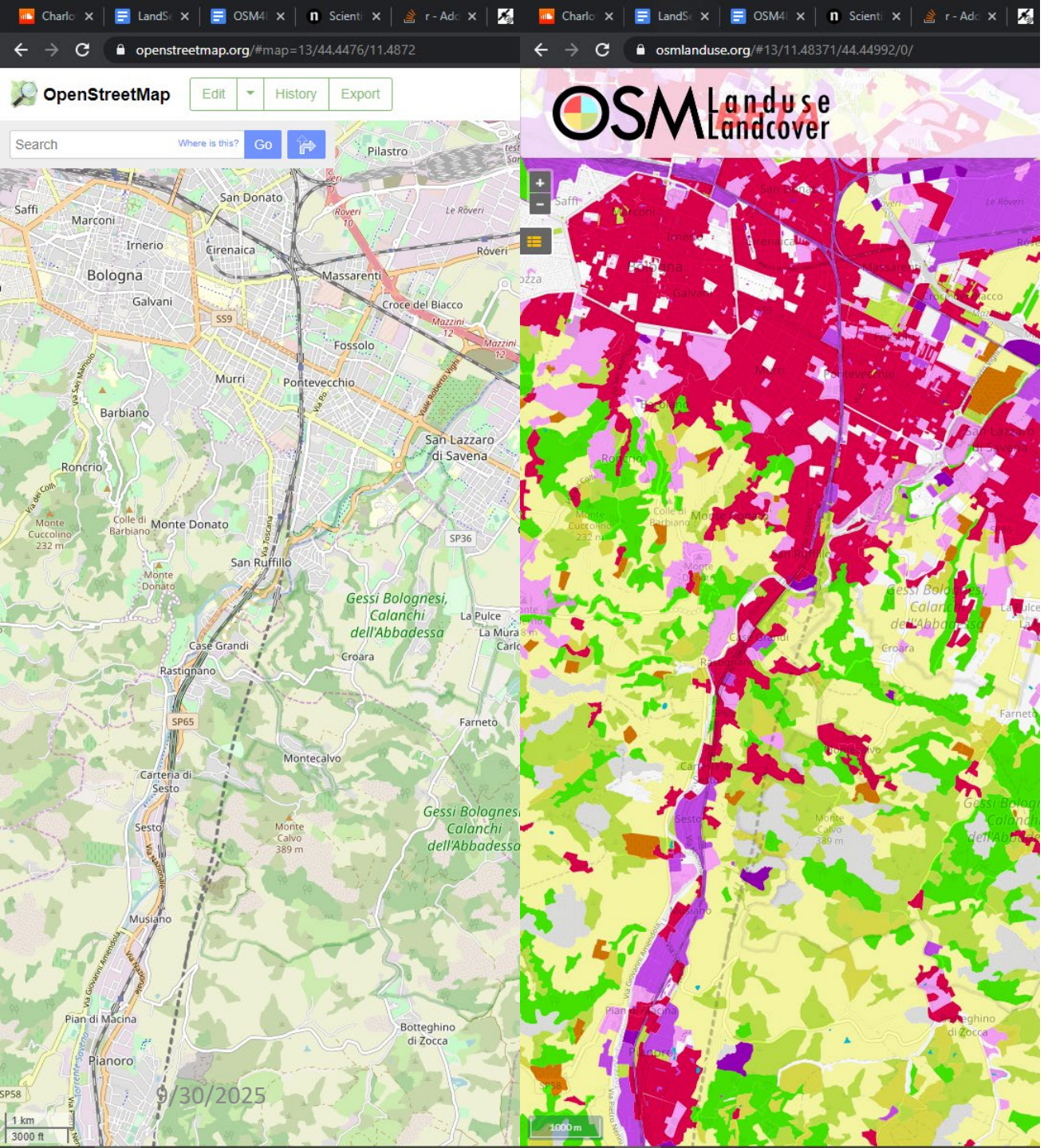
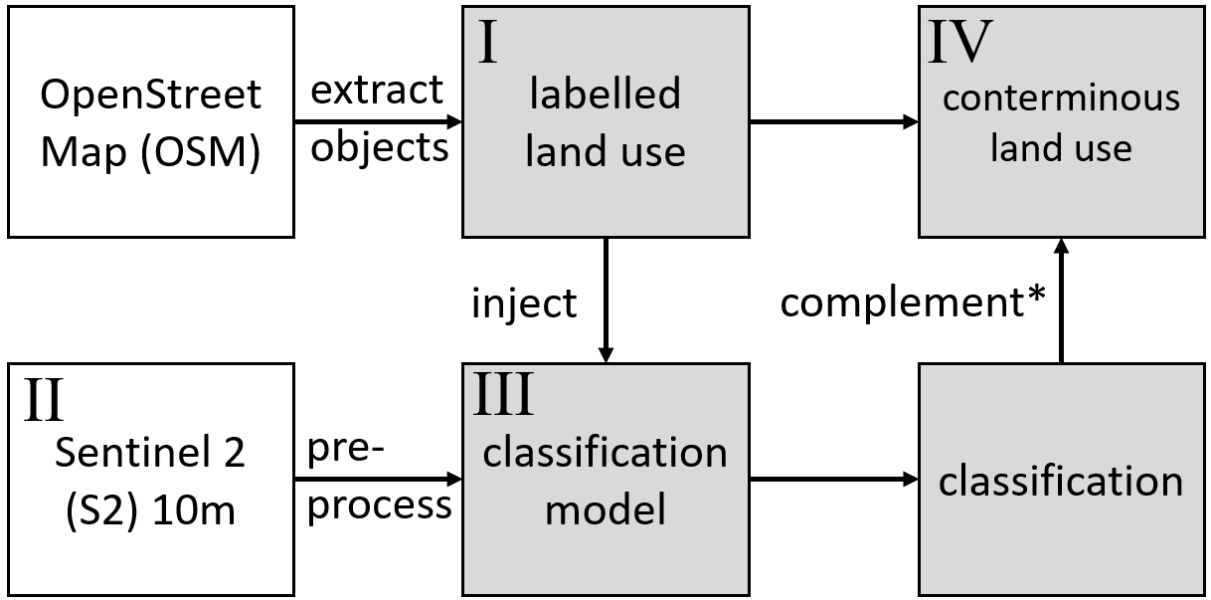
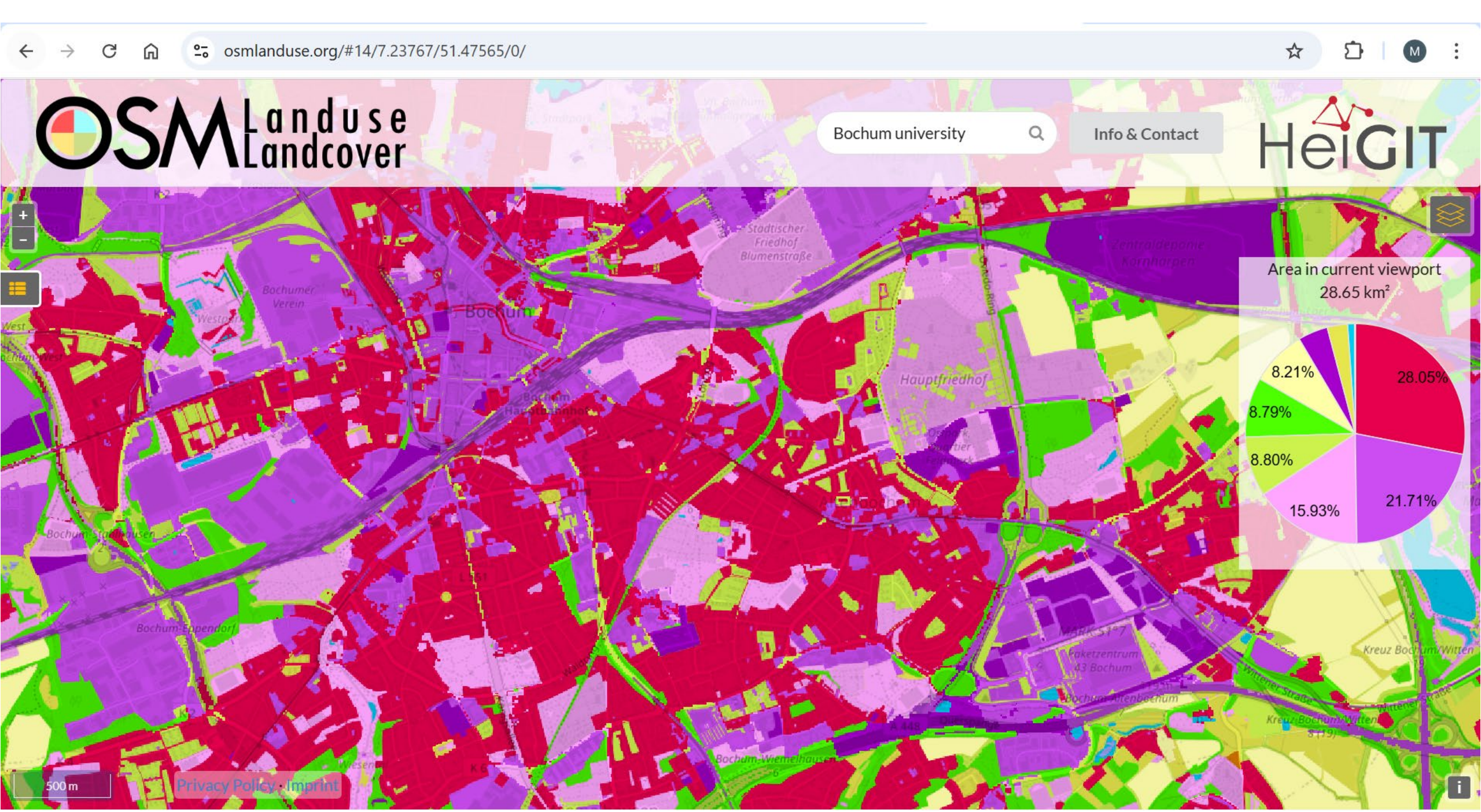
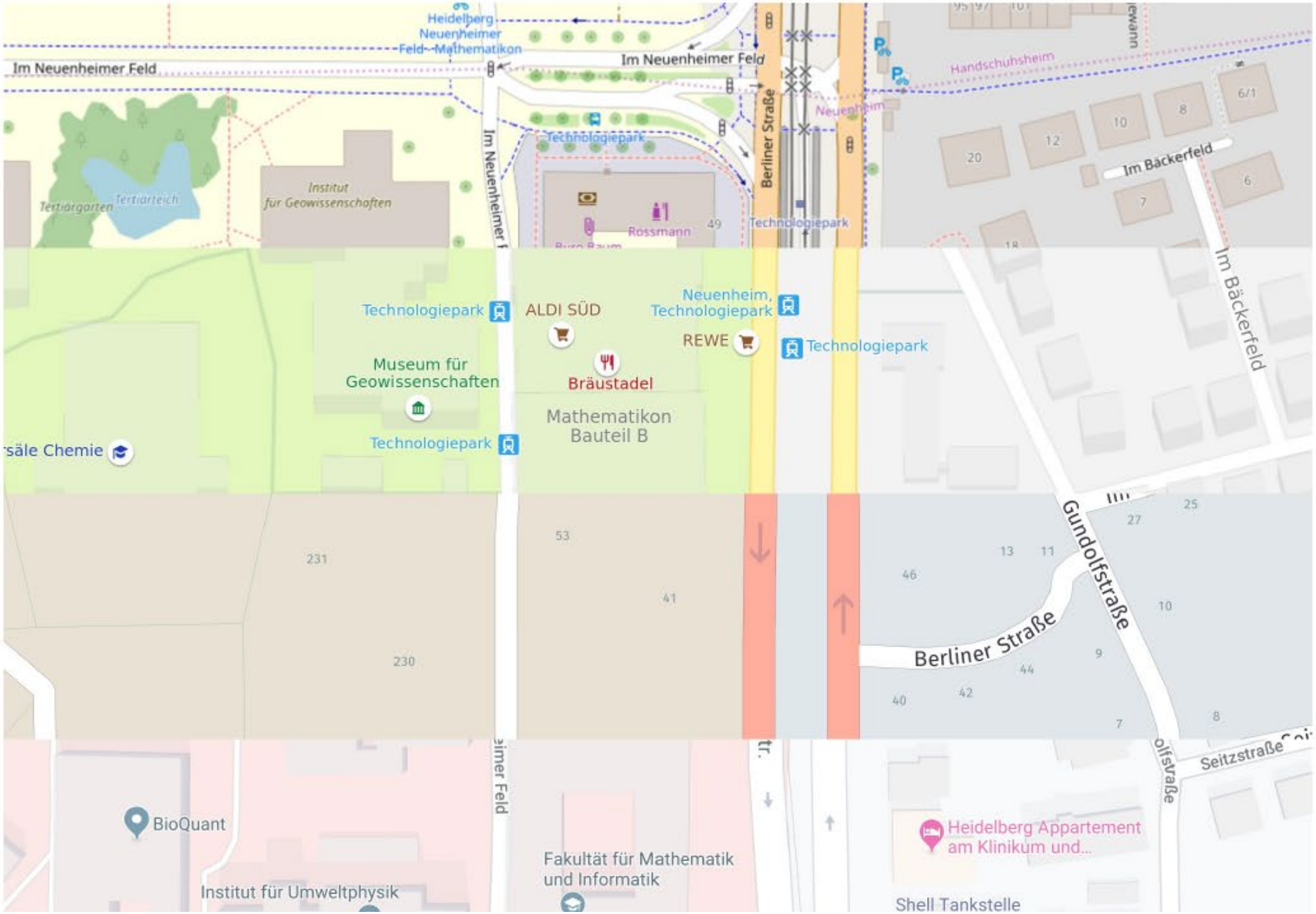


Method



https://www.nature.com/articles/s41597-025-04703-8 Schultz et al. 2025


osmlanduse.org/#14/7.23767/51.47565/0/
OSM Landuse Landcover
Bochum university
Info & Contact
HeiGIT
Area in current viewport
28.65 km²
28.05%
21.71%
15.93%
8.80%
8.79%
8.21%
500 m
Privacy Policy · Imprint



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HERE
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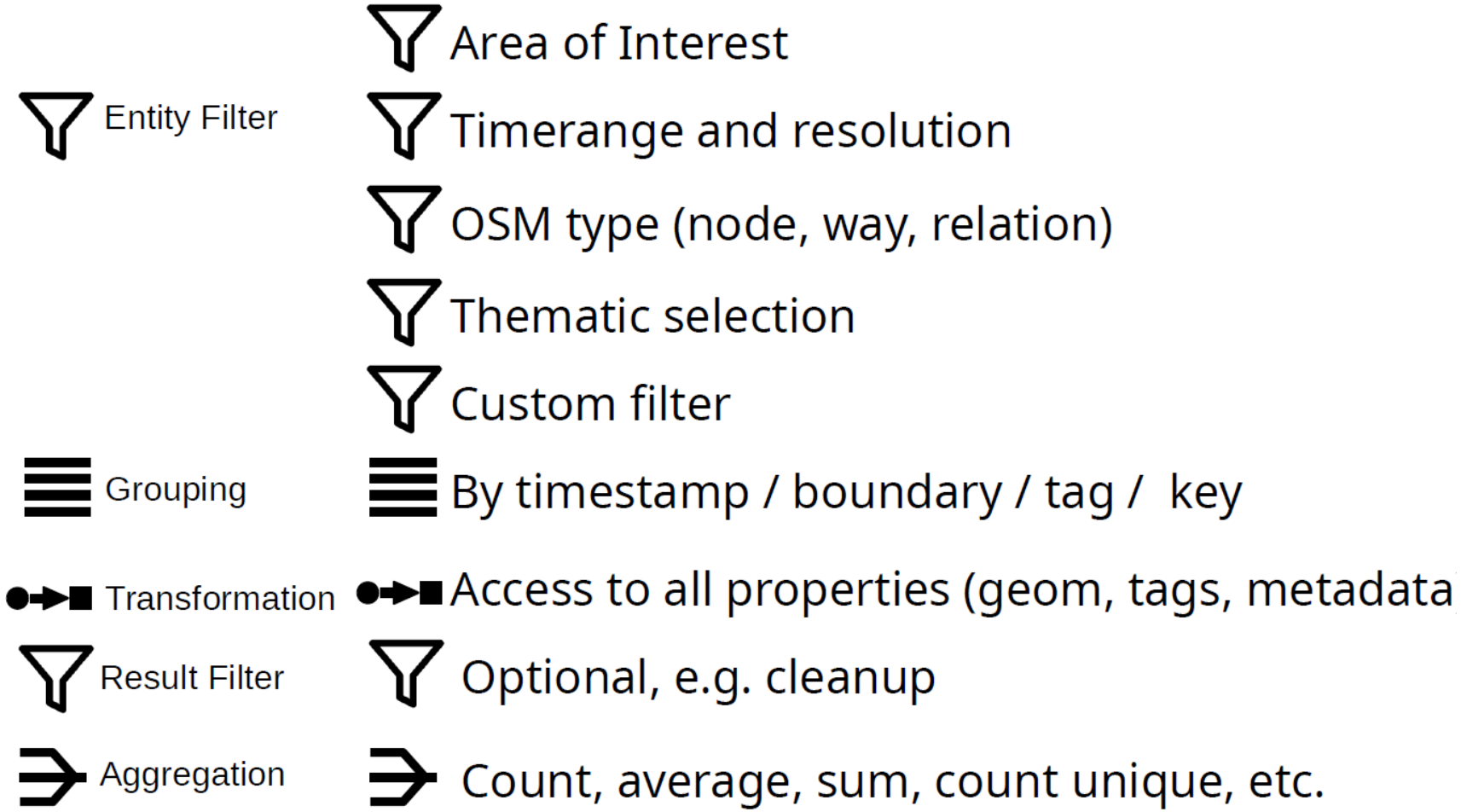
Extract training data from OSM query

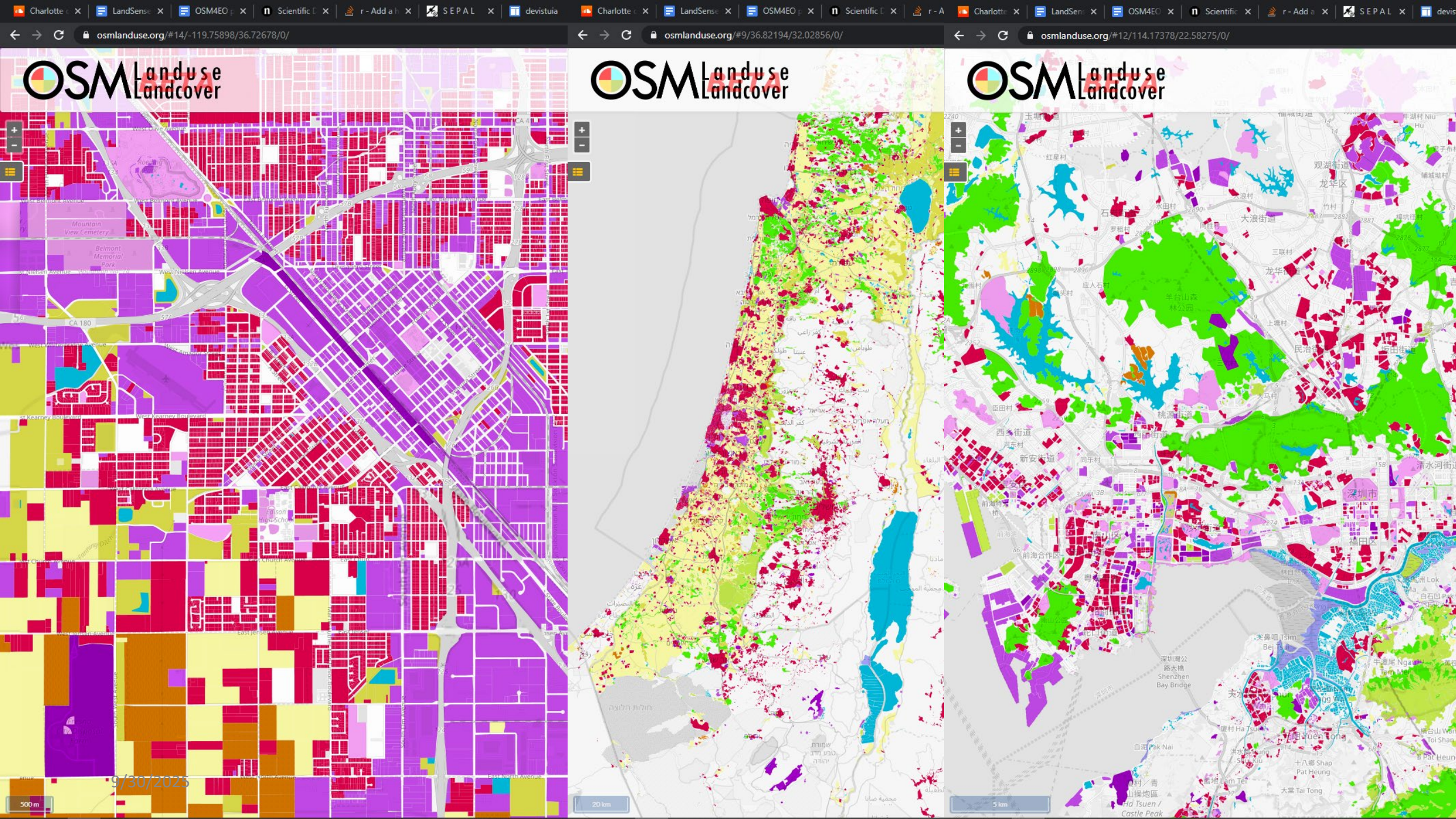


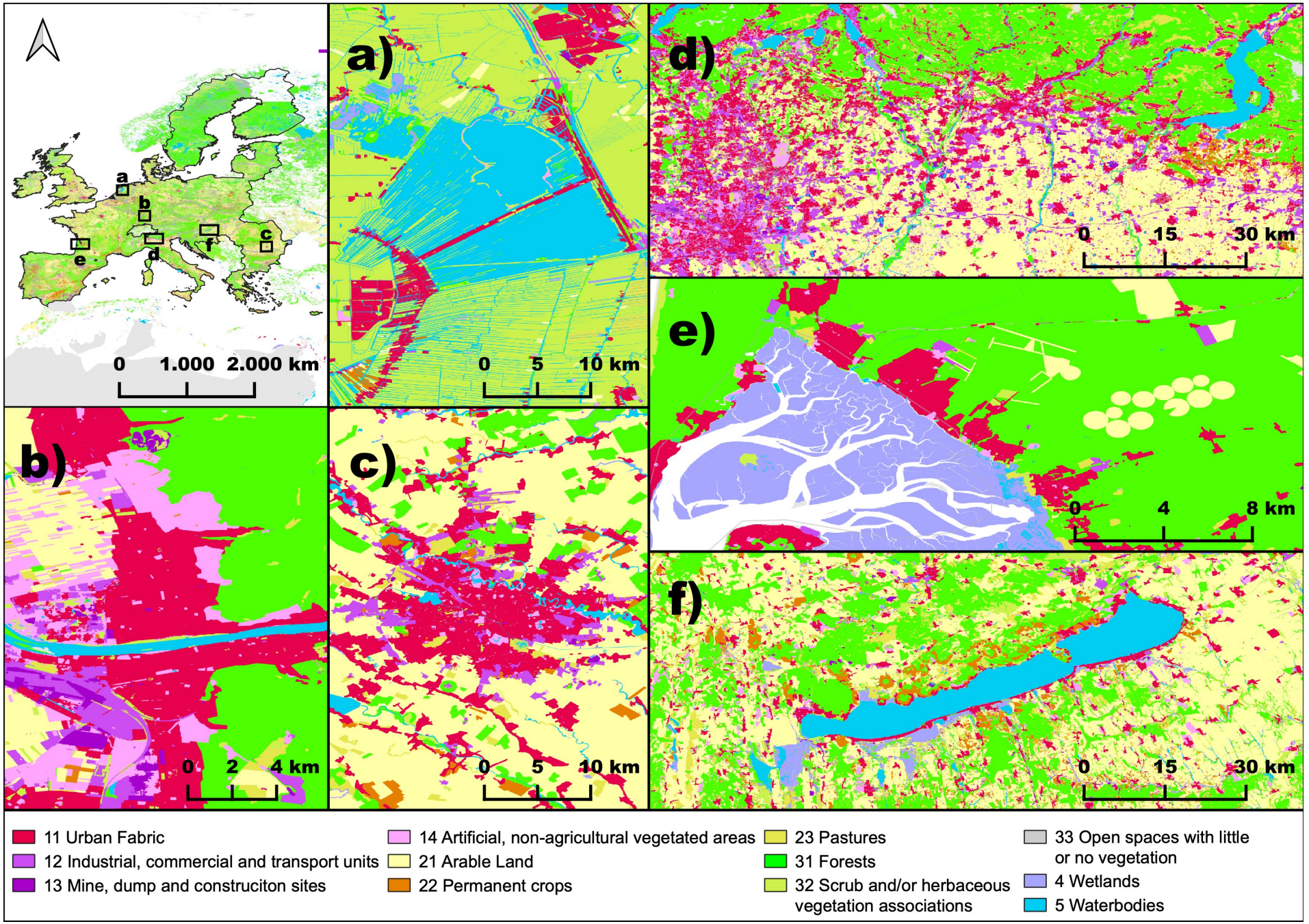
OSM key-value pair (tag) to annotation/label

Table 1
Legend harmonization between OSM tags and Corine Land Cover (CLC) classes, level two legend.

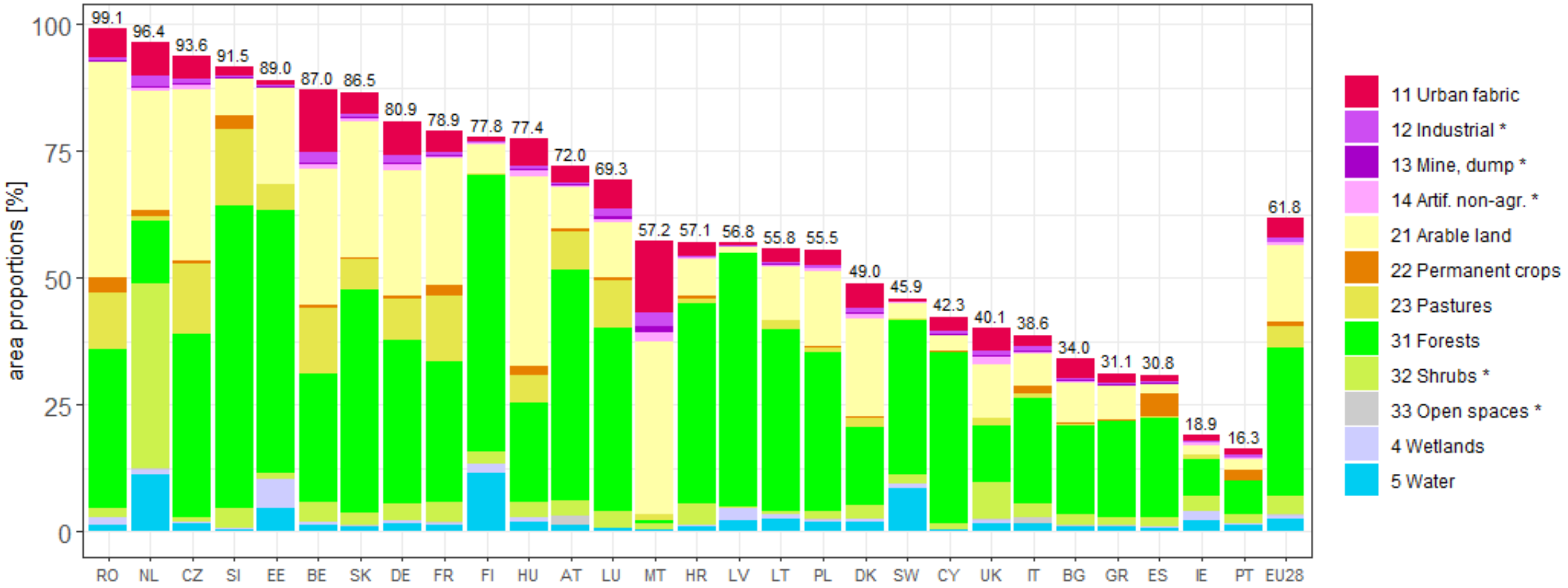
Class	CLC Class	CLC Class Name	Corresponding OSM tag
1	1.1	Urban fabric	residential
2	1.2	Industrial, commercial and transport units	industrial, commercial, retail, harbour, port, railway, lock, marina
3	1.3	Mine, dump and construction sites	quarry, construction, landfill, brownfield
4	1.4	Artificial non-agricultural vegetated areas	stadium, recreation_ground, golf_course, sports_center, common, allotments, cemetery, park, zoo, track, garden
5	2.1	Arable land	greenhose_horticulture, greenhouse, farmland, farm, farmyard
6	2.2	Permanent crops	vineyard, orchard
7	2.3	Pastures	meadow
8	2.4	Heterogeneous agricultural areas	
9	3.1	Forests	forest, wood
10	3.2	Shrub and/or herbaceous vegetation associations	grass, greenfield, scrub, heath, grassland
11	3.3	Open spaces with little or no vegetation	fell, sand, scree, beach, mud, glacier, rock, cliff
12	4.1	Inland wetlands	march, wetland
13	4.2	Coastal wetlands	salt_pond, tidal
14	5.0	Water bodies	water, riverbank, reservoir, basin, dock, canal, pond

https://www.sciencedirect.com/science/article/pii/S0303243417301605 Schultz et al. 2017


osmlanduse.org/#14/-119.75898/36.72678/0/
osmlanduse.org/#9/36.82194/32.02856/0/
osmlanduse.org/#12/114.17378/22.58275/0/
OSM Landuse Landcover
BETA
9/30/2025
500 m
20 km
5 km


a)
b)
c)
d)
e)
f)
0 1.000 2.000 km
0 5 10 km
0 2 4 km
0 5 10 km
0 15 30 km
0 4 8 km
0 15 30 km
11 Urban Fabric
12 Industrial, commercial and transport units
13 Mine, dump and construciton sites
14 Artificial, non-agricultural vegetated areas
21 Arable Land
22 Permanent crops
23 Pastures
31 Forests
32 Scrub and/or herbaceous vegetation associations
33 Open spaces with little or no vegetation
4 Wetlands
5 Waterbodies

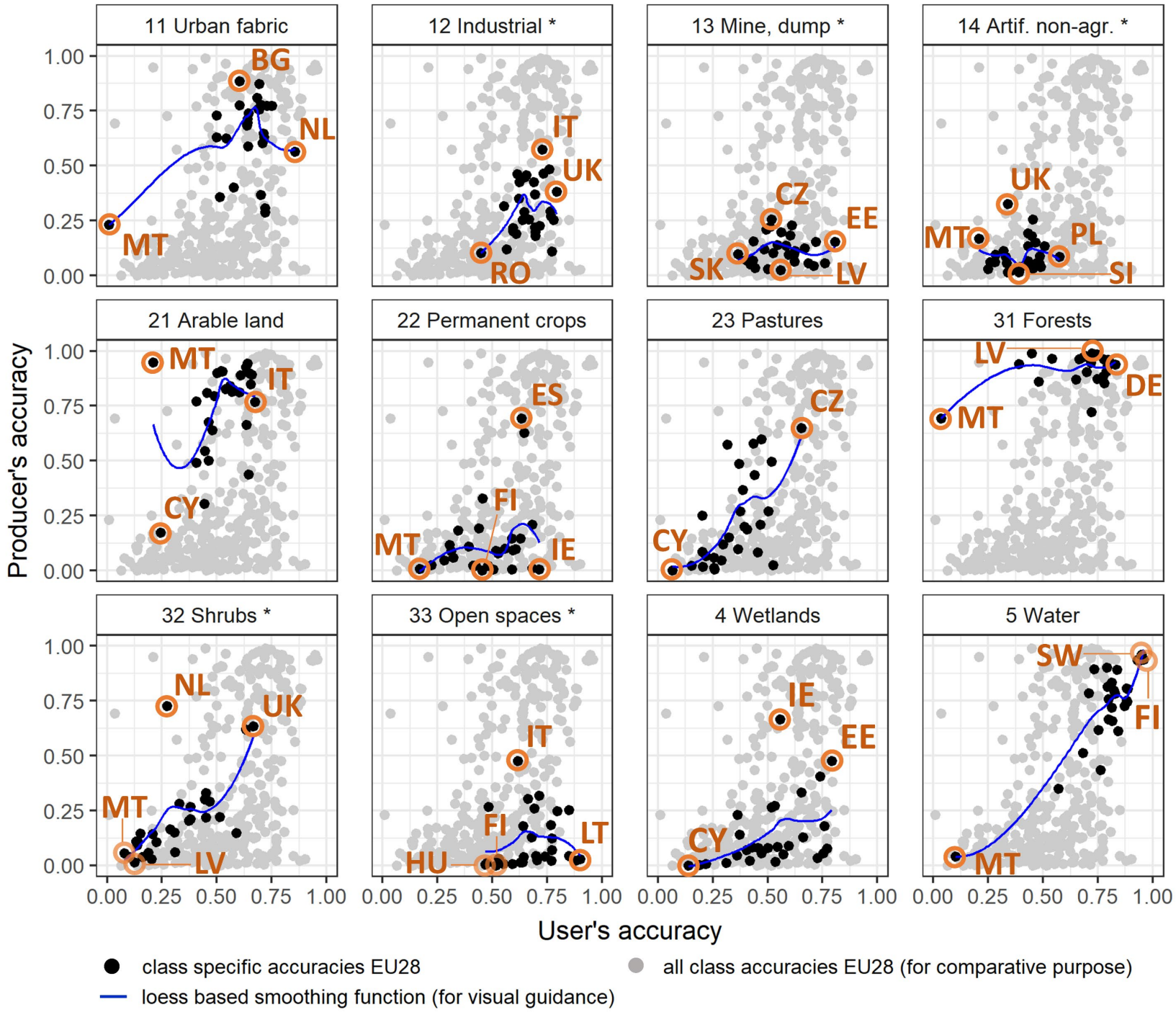
Training data availability



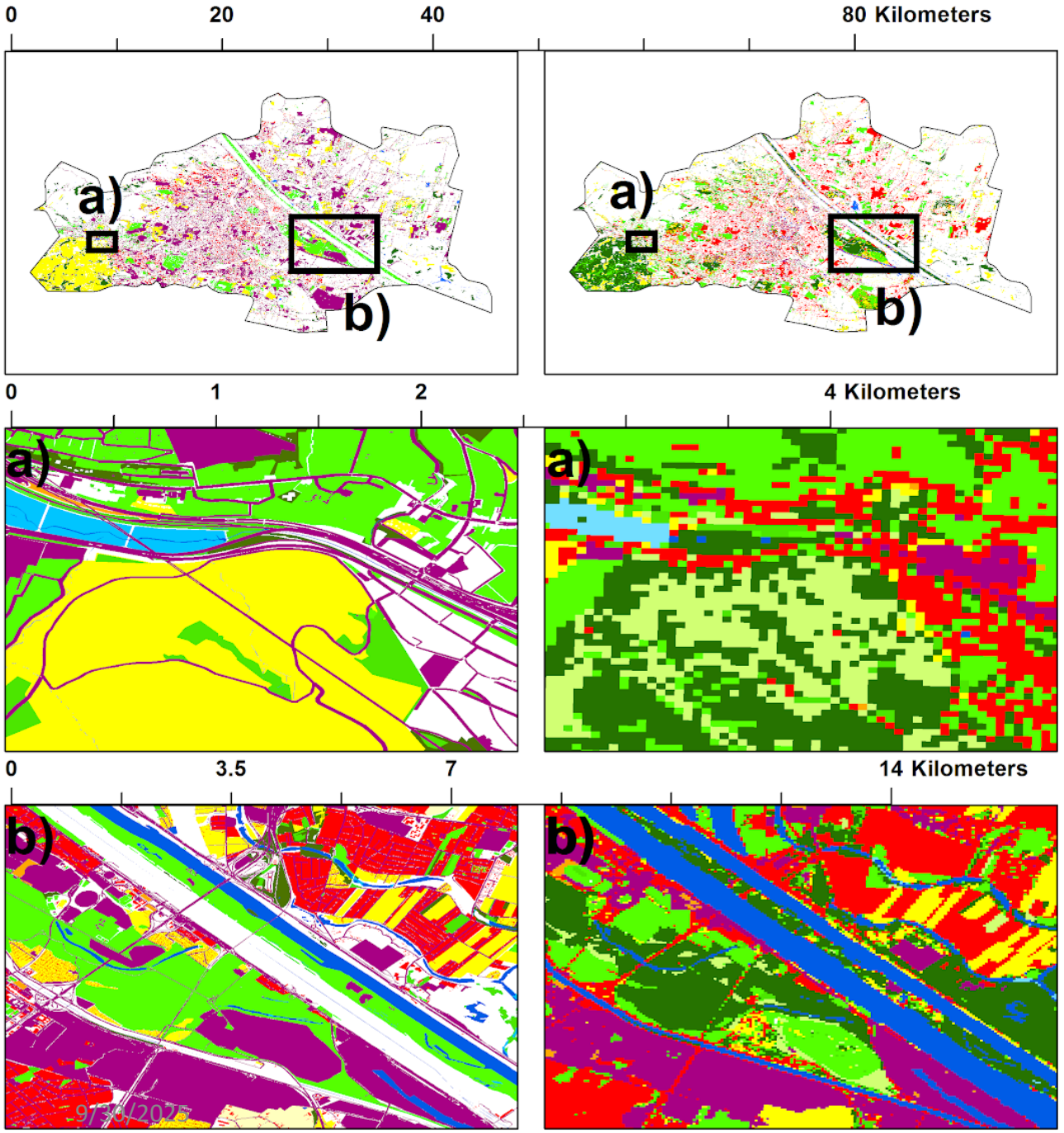
		Map			Σ	producer accuracy
		1 - Artificial surfaces	2 - Agricultural areas	3 - Forest and seminnatural areas		
Reference	1 - Artificial surfaces	1419	29	3	1451	0.977946
	2 - Agricultural areas	134	990	9	1133	0.873786
	3 - Forest and seminatural areas	283	43	1706	2032	0.839567
	Σ	1836	1062	1718		
	user accuracy	0.772876	0.932203	0.993015		0.891464

Table 2. Confusion matrix for a total of 4616 reference/validation points.

- Sampling design: stratified random sampling across map classes; sample size computed with standard stratified-sampling formula at α=0.95 and h=0.05, yielding 4616 independent reference points. Nature
  - Response design: for each point, manual visual interpretation using very-high-resolution imagery (<1 m) from Bing Aerial and Google Satellite (2019–2020), plus a 10 m Sentinel-2 RGB auxiliary layer from SentinelHub aligned to March 2020. Nature
  - Unit of interpretation: 10 m × 10 m box centered on each point; assign the land-use class occupying the majority of the box as ground truth. Nature
  - Outcome: independent reference dataset used to compute confusion matrix and accuracy metrics for the EU-wide product



- Class accuracies
- 4616 reference points collected through crowd sourcing (continuous)



variables

OSM query

- key value pair
- geometries (areas, lines, poi)

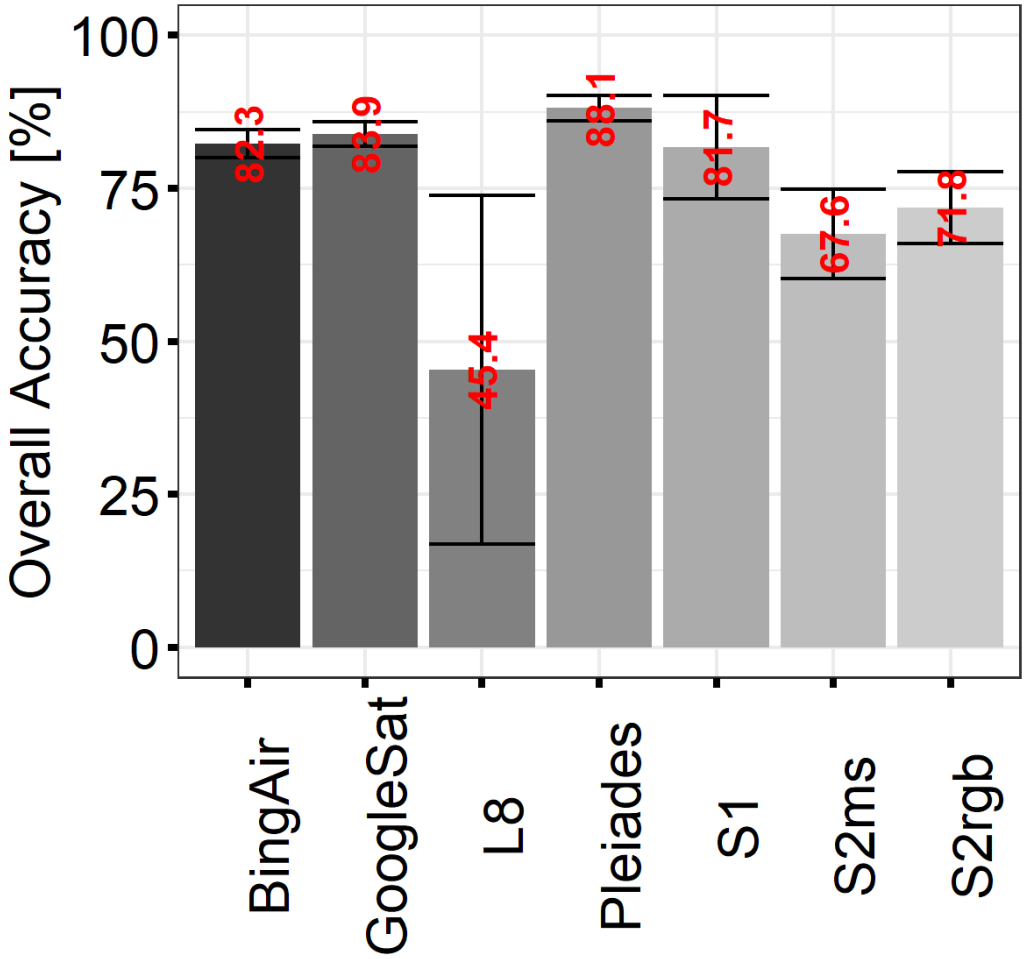
Translation of OSM extracts

- target legend
- legend conversation

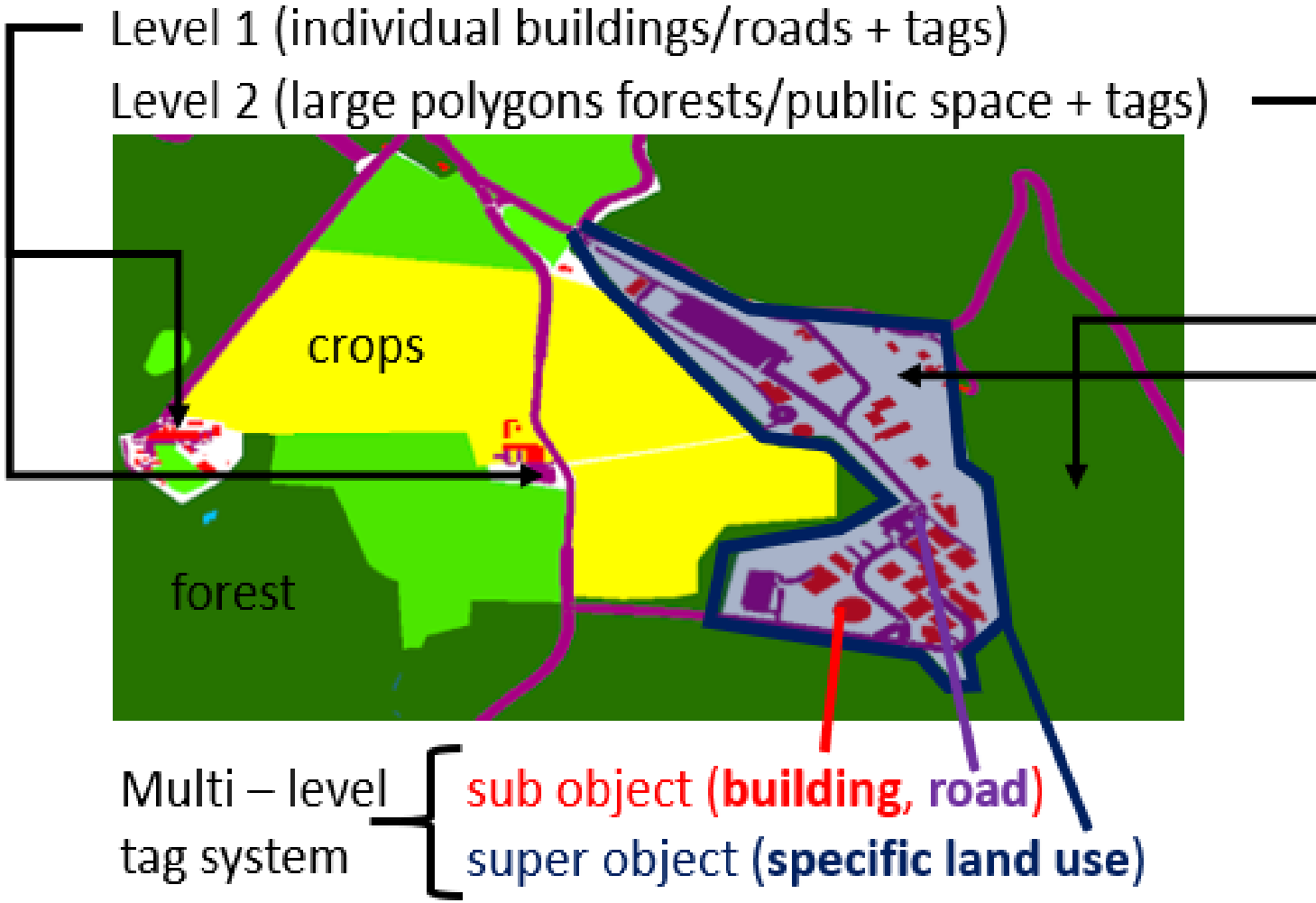
Other factors

- Remote sensing data
- Deep learning model

Different sensors



OSM access level



Conclusion – OSM use for remote sensing

- can be facilitated as training data and feature space
- Quality and availability varies widely
- Abundancy of filters and targets/phenomena possible for instance, GHG, LULC, special infrastructure
- Indirect use through simulation of trips, access functions (health care)
- Particularly the OSM road network is rather generic and global available
- Different access levels, using building footprints (VHR) or land use functions (HR – medium resolution)
- Can be facilitated for monitoring and change detection

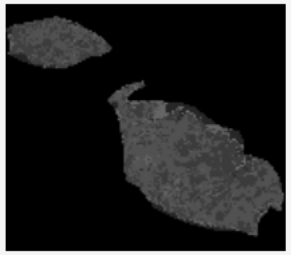
Access

- https://osmlanduse.org # web
- https://www.nature.com/articles/s41597-025-04703-8 # paper
- https://doi.org/10.11588/data/IUTCDN # data download

heiDATA > GIScience / Geoinformatics Research Group >

OpenStreetMap land use for Europe "Research Data"

Version 2.0



Schultz, Michael; Li, Hao; Wu, Zhaoyhan; Wiell, Daniel; Auer, Michael; Zipf, Alexander, 2024, "OpenStreetMap land use for Europe "Research Data"", https://doi.org/10.11588/DATA/IUTCDN, heiDATA, V2

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Dataset Metrics

1,728 Downloads

Description

OSMLanduse data is a scientific dataset generated within the scope of the Horizon 2020 - LandSense project. It is a classification of Sentinel-2 imagery using a deep learning model trained on OSM landuse and landcover features. The data might contain errorneous classifications. The classification values in the raster dataset correspond to a subset of the well-known CORINE LandCover

Data Descriptor | Open access | Published: 06 May 2025

OSMlanduse a dataset of European Union land use at 10 m resolution derived from OpenStreetMap and Sentinel-2

Michael Schultz, Hao Li, Zhaoyan Wu, Daniel Wiell, Michael Auer & Zipf Alexander

Scientific Data **12**, Article number: 750 (2025) | Cite this article

Abstract

Our map represents the first successful large-area fusion of OpenStreetMap and Copernicus data at a spatial resolution of 10 m or finer and can be applied globally. We addressed varying label noise and feature space quality, utilizing artificial intelligence and advanced

Vielen Dank

Thank You

धन्यवाद

谢谢

Merci à toi

Cảm ơn

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