

StatE0

5-7 May 2026 | ESA-ESRIN | Frascati (Rome), Italy



LULC time series for GHG reporting: the case of Wallonia (Belgium)

Where is the forest ?

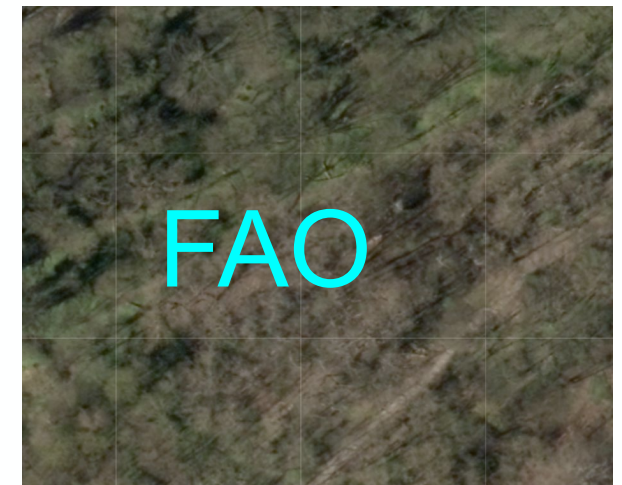


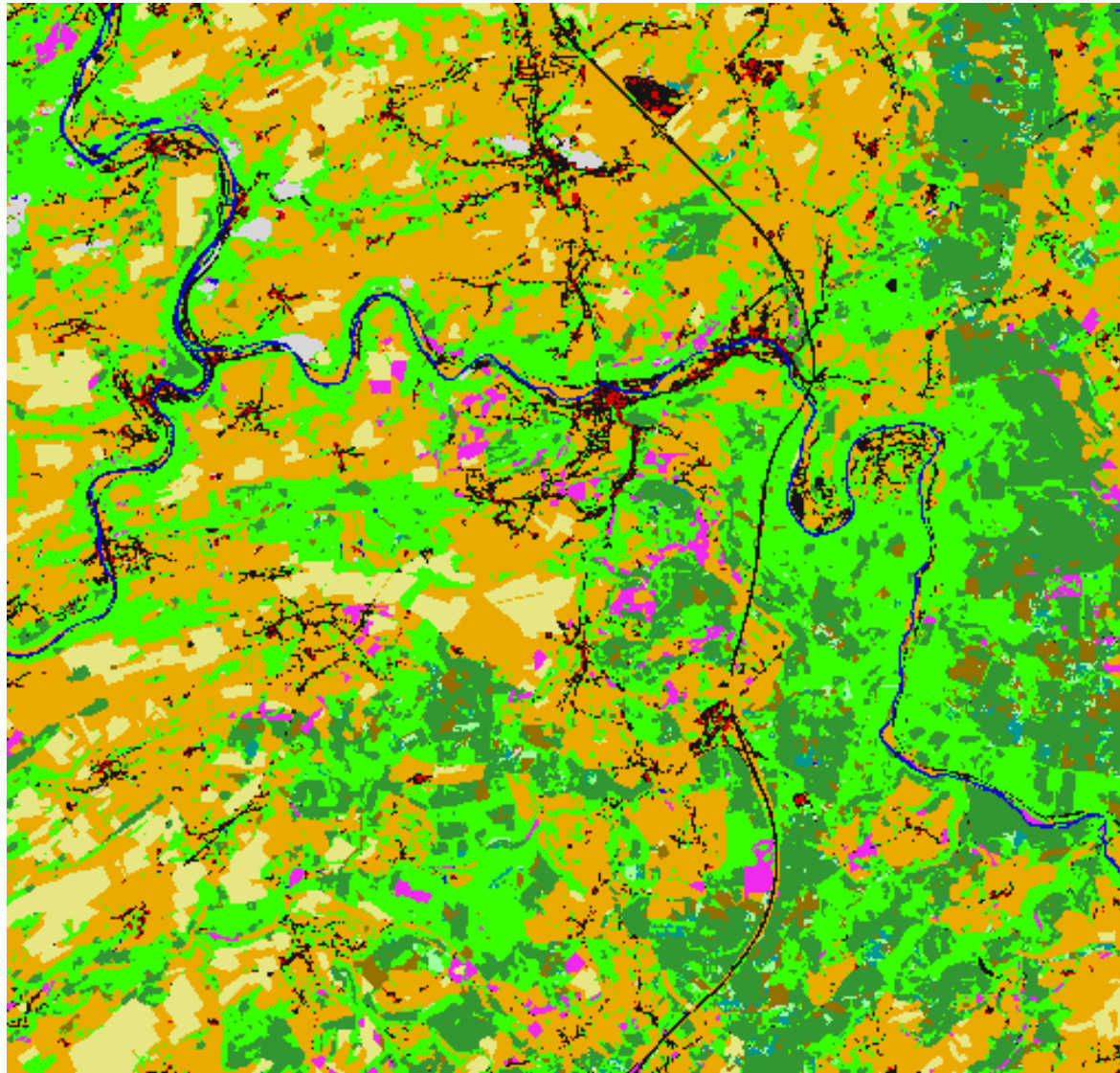
Everything starts with definitions

Don't trust yourself on the class names

Stakeholder discussion before mapping

Legend is not harmonized between countries





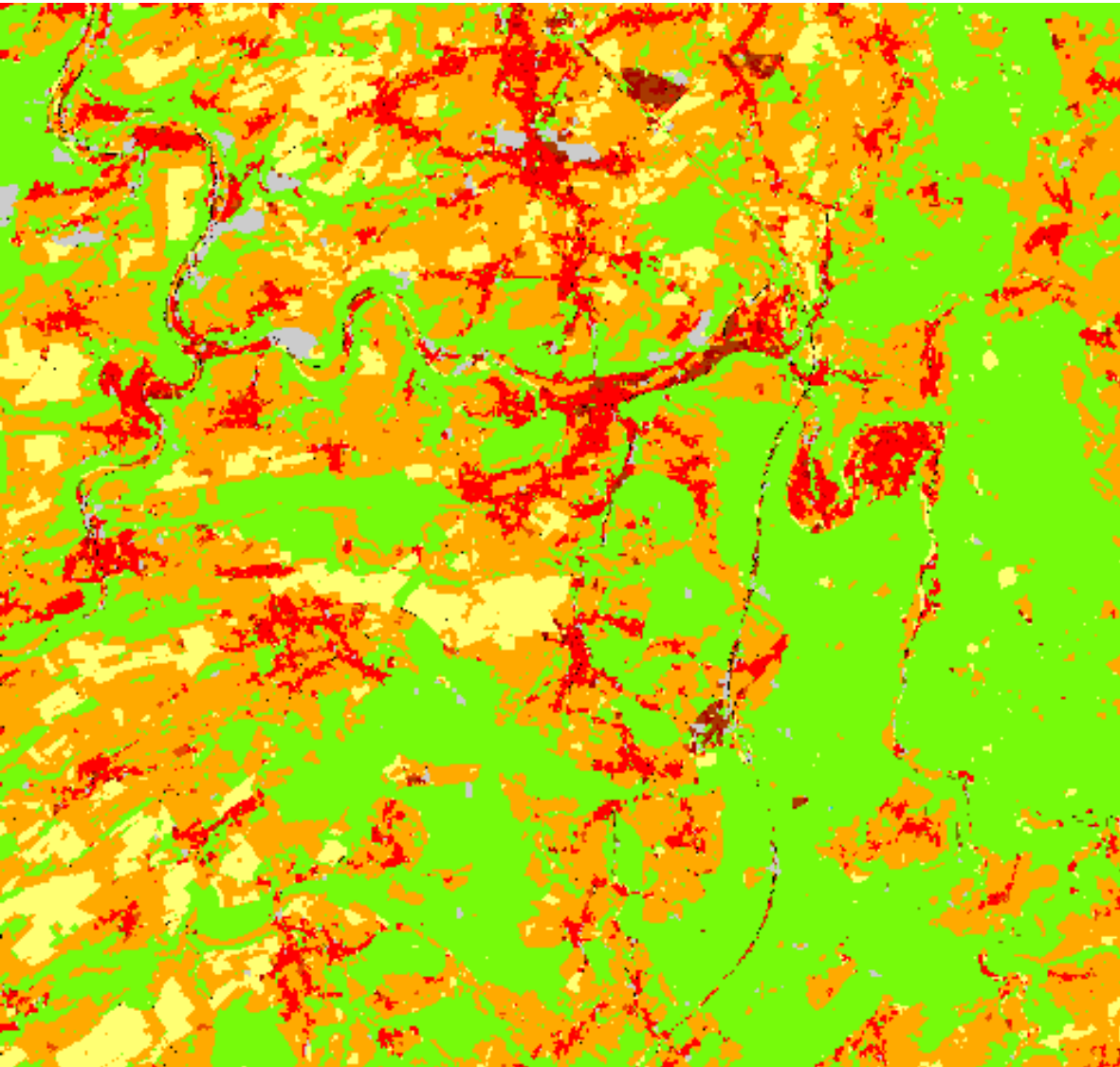
Yearly orthophotos (resampled at 50 cm)

Sentinel-2 time series (for leaf phenology and crop mask)

LiDAR (50 cm)

=> Ensemble classification (including ML, RF and DL)

Land use types from HLUCS, tuned for LULCC regulation



Lands under forest management include mature stands, clear cuts, natural regeneration and tree plantations

Residential areas include houses and garden

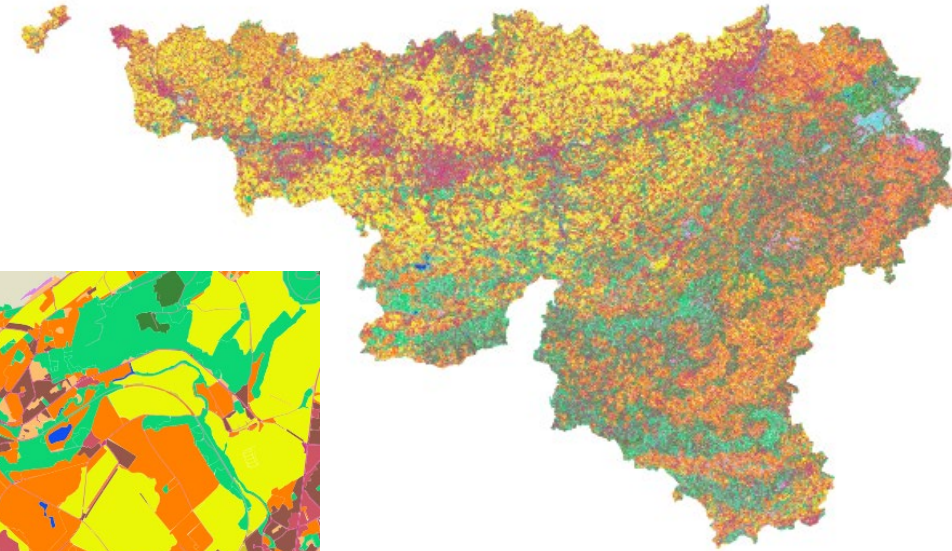
Multiresolution segmentation (Baatz and Schape)

Conflation with existing datasets

- Road network
- Building footprints
- LiDAR (only 2 year)
- Cadastral parcels
- LPIS

Decision rules

- Parcels integrity
- Applying classification system



Time series classification must prioritize consistency

Temporal consistency by year to year consolidation

With very high resolution images, small geometric errors can have large impact

Small change detection errors

Completeness

- Any mapped location must have a chance to be visited
- But not necessarily the same chance

Independance

- Sampling
- Data source

High quality in situ guarantees high accuracy

Response design errors can be limited by comprehensive definitions

Dual legends (e.g. EAGLES) are needed to describe the landscape

My three messages

- Geometric uncertainty is a large source of error in VHR time series
- Well described legends help
- For accurate results, validation must be