Contribution of remote sensing and GIS to the research infrastructure for biodiversity research

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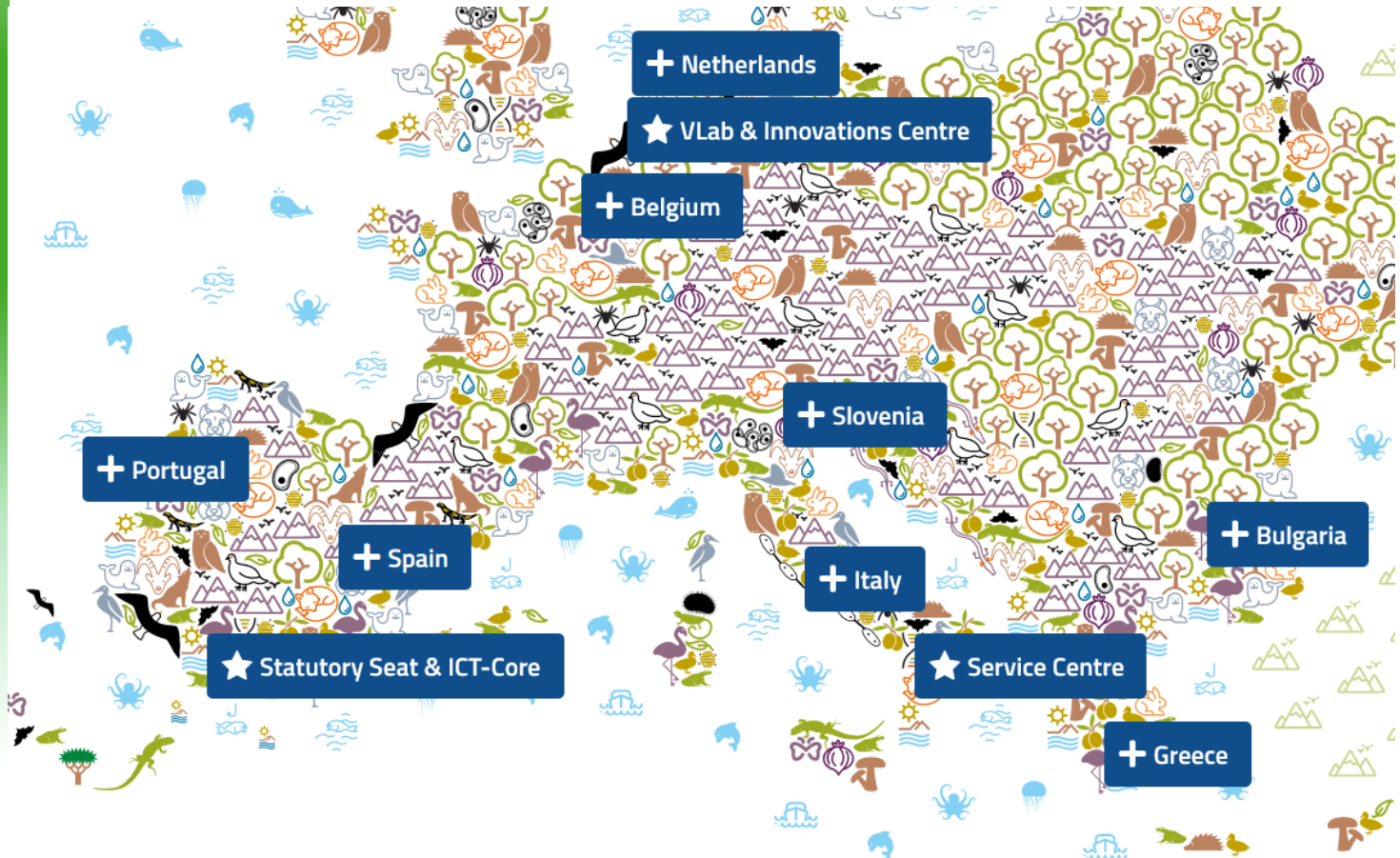
Avec le support de la Fédération Wallonie Bruxelles

Contribution of FWB to Lifewatch-ERIC

- Services towards systemic understanding of ecosystems
- Bottom up approach to provide all the ingredients of the cake



FWB's focus : geodata

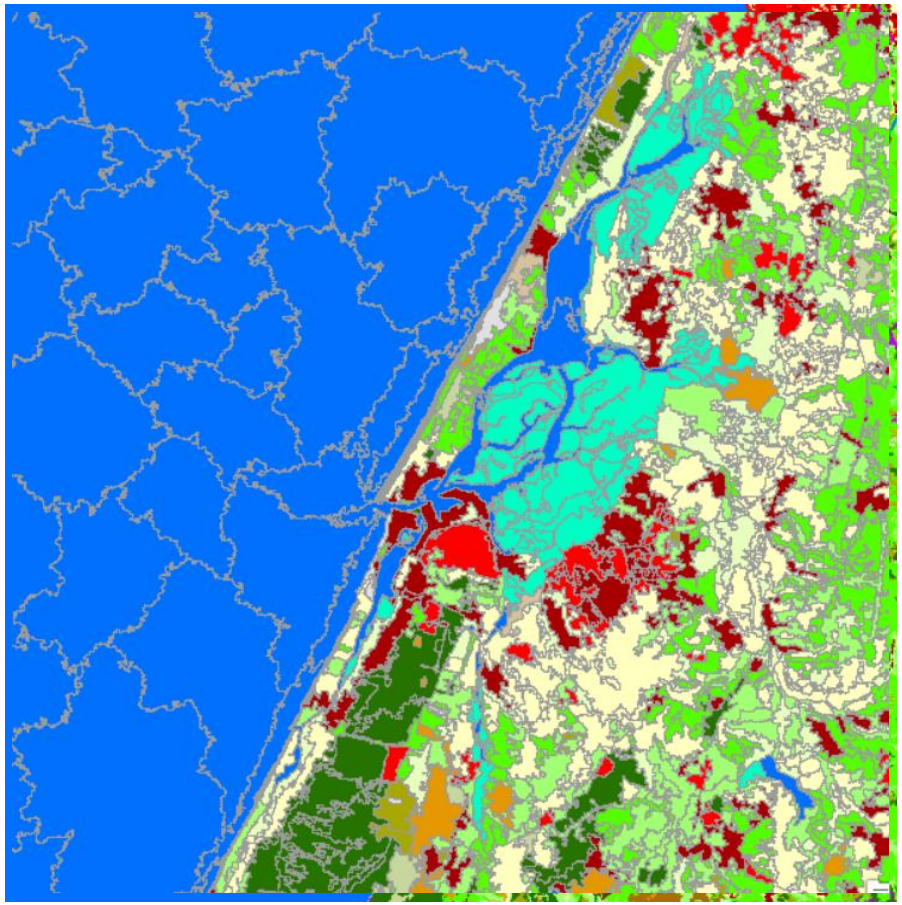
Collaboration in the era of openness

Processing chain

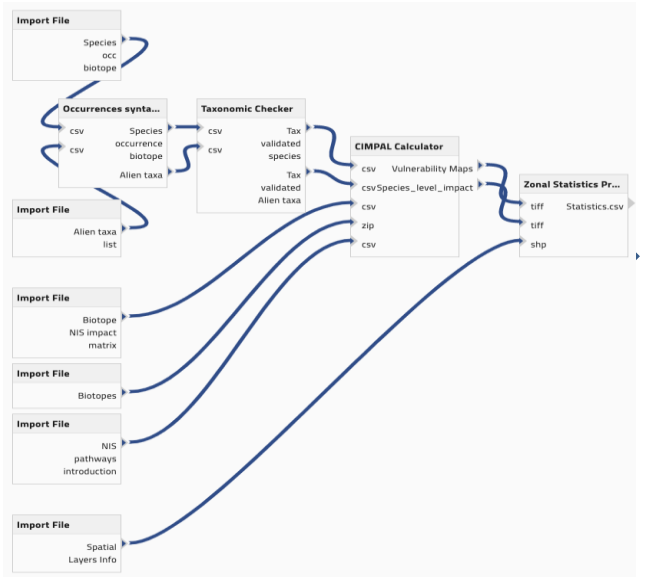
- Work together with TrIAS to develop IAS incidence and impact assessment tool
  - Shared tools, data and expertise
  - Operational workflow on Lifewatch-ICT core

- Get data from GBIF (TrIAS)
- Build datacube (TrIAS + Lifewatch)
- Compute incidence map (Lifewatch)
- Compute impact map (Lifewatch)

Sustaining existing spatial analyis workflows on ICT-Core

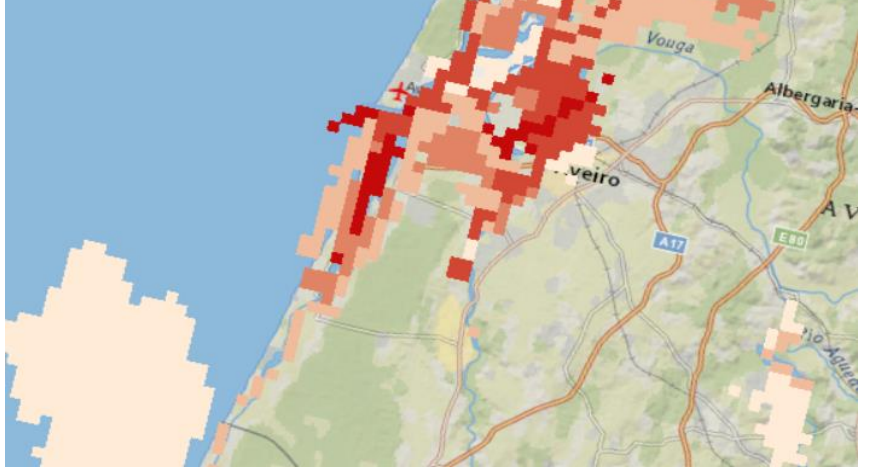


Ecopatches + species occurrences



NIS list + impact matrix

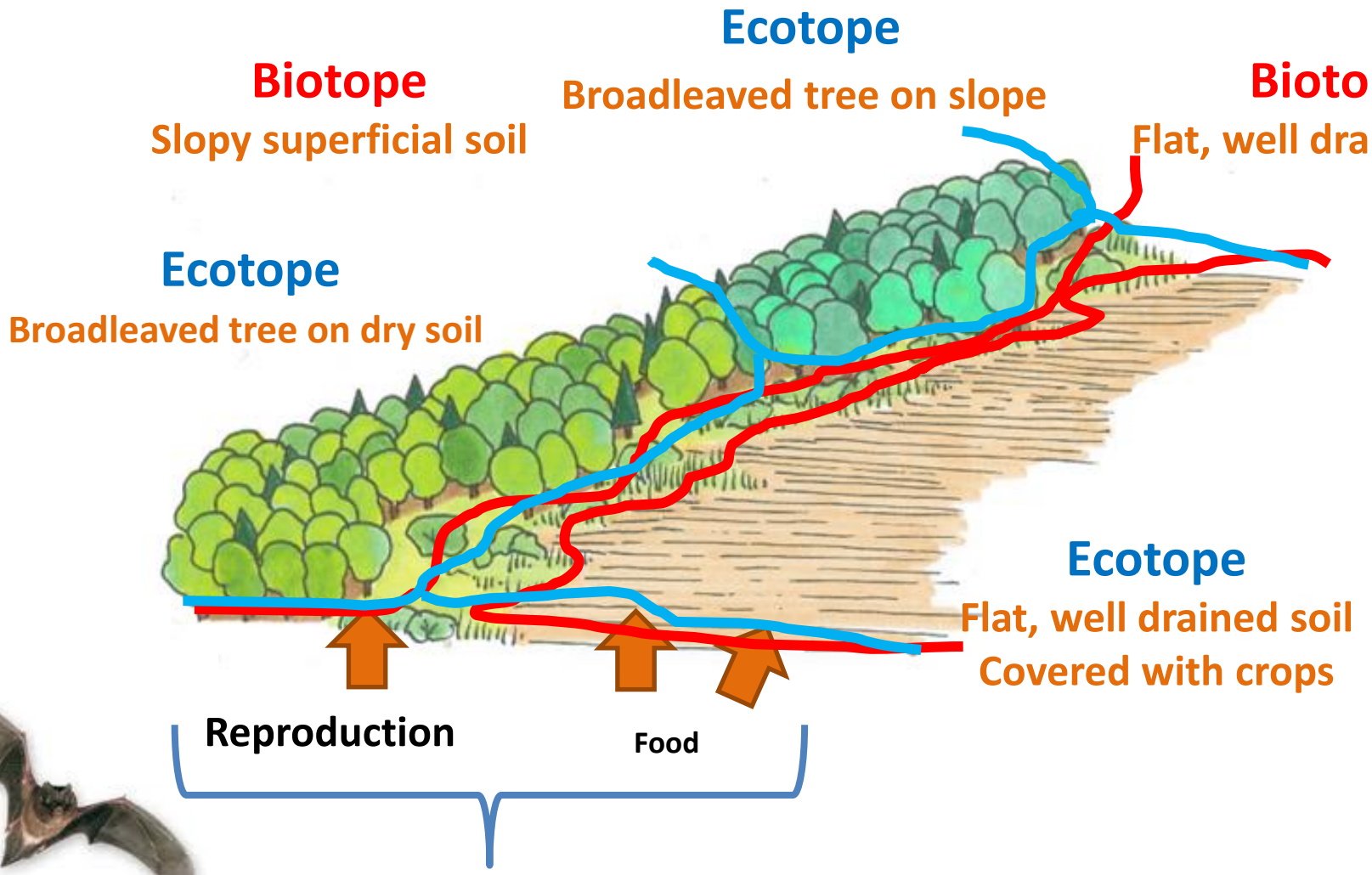
id_habitat	COUNT	AREA	MIN	MAX	RANGE	MEAN	STD	SUM
0	9	2250000	2	16	14	11,555556	5,397759	104
1	2	500000	2	2	0	2	0	4
2	5	1250000	2	2	0	2	0	10
3	1	250000	14	14	0	14	0	14
4	3	750000	1	16	15	8,333333	6,128259	25
5	6	1500000	2	16	14	9,166667	5,785518	55
7	14	3500000	2	38	36	17,142857	9,876792	240
8	5	1250000	2	6	4	3,2	1,6	16
9	4	1000000	2	18	16	9	6,403124	36
10	25	6250000	1	49	48	12,72	10,93808	318
11	1	250000	12	12	0	12	0	12
13	3	750000	6	20	14	14	5,887841	42



Sum of NIS impacts per patch

Building and curating open data

Different partitions of landscape in ecology

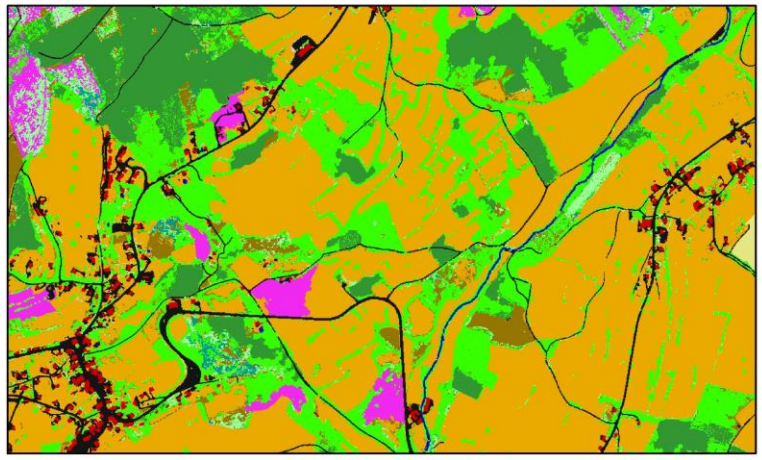


Habitat (e.g. for bats) **species specific**

Ecotopes: integrating land cover and biotopes variables

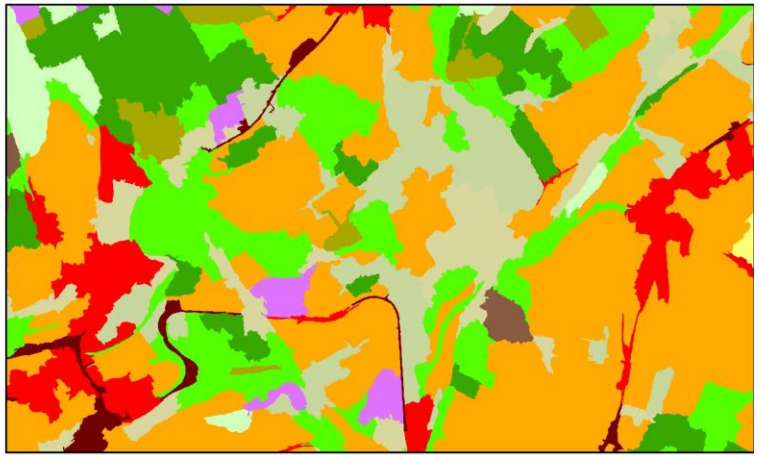
Automated image segmentation (topography and orthophotos)

Pixel-based land cover classification (2 m)



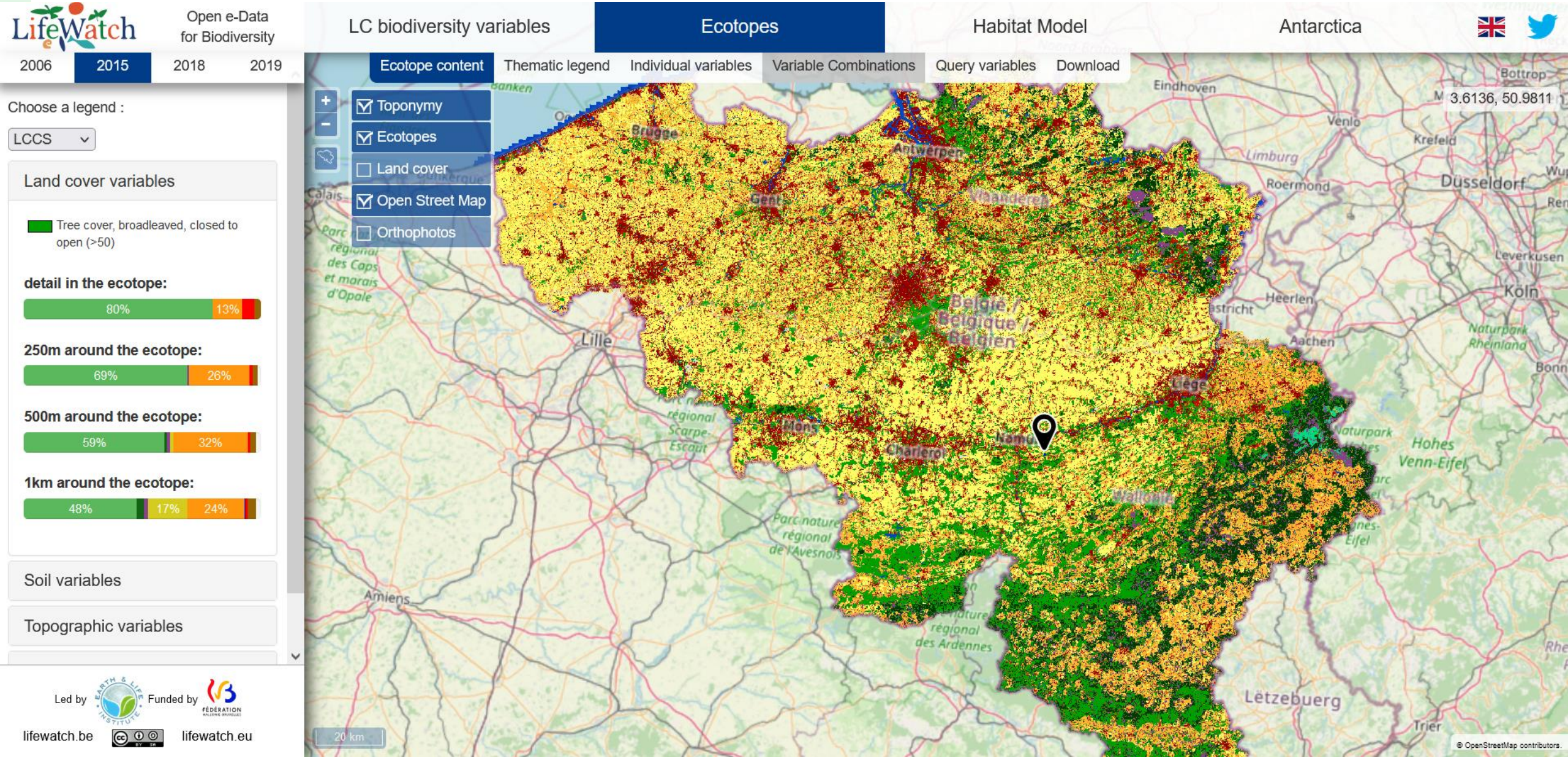
Built up | Grassland | Needleleaved | Broadleave | Water

Ecotopes (here with LCCS labels)

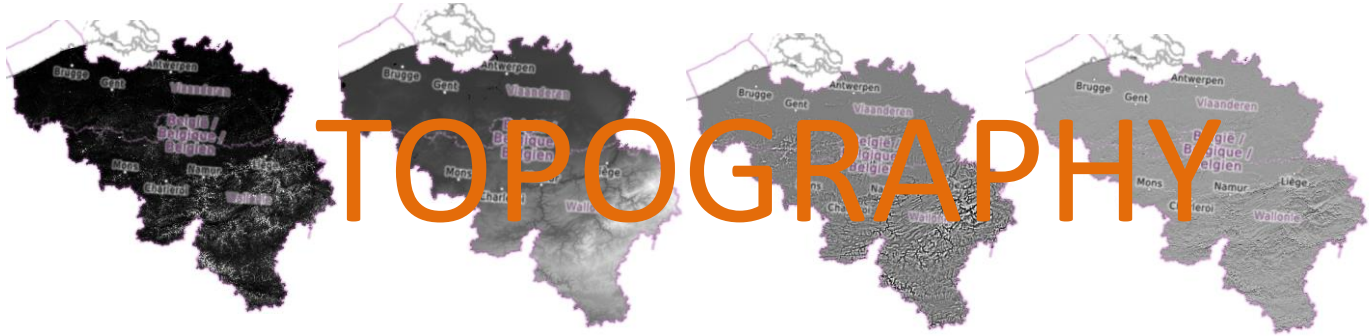


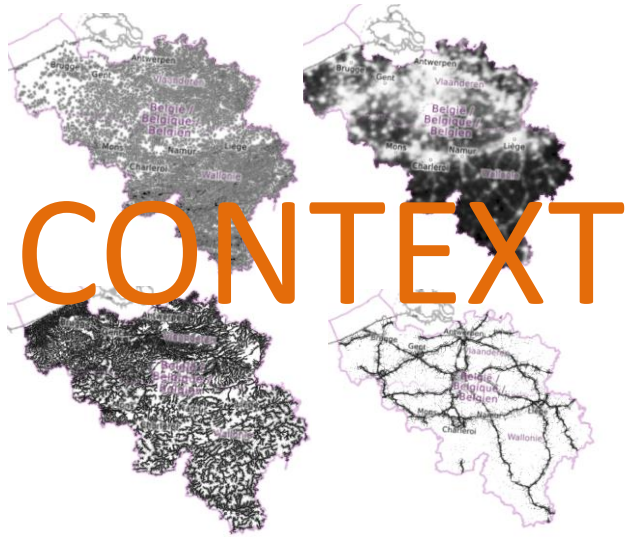
0 0,25 0,5 1 1,5 Kilometers

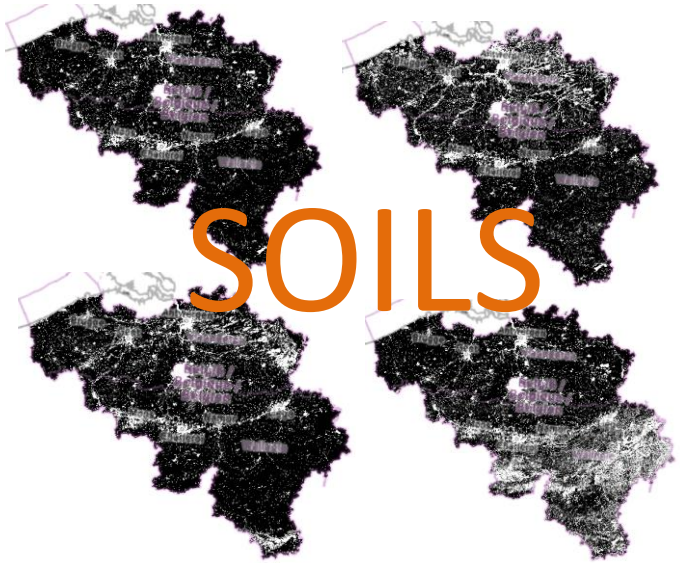
Each polygon is decribed with quantitative land cover information



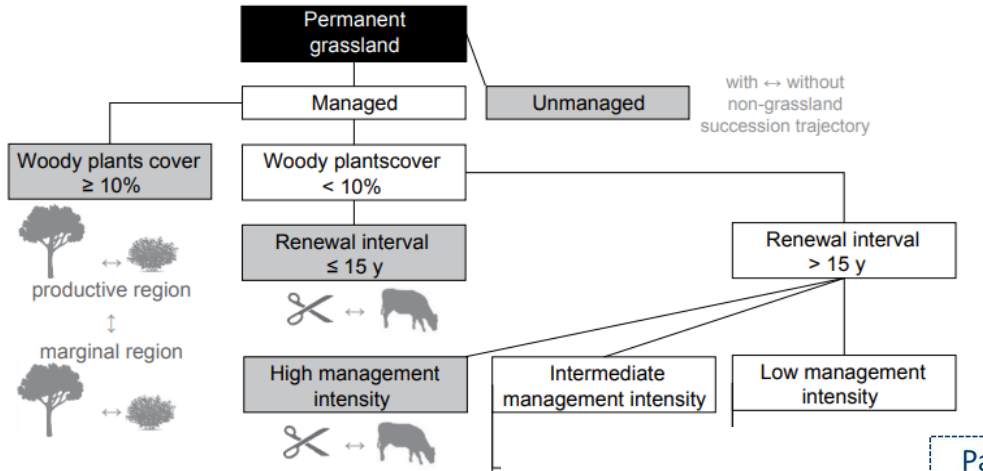
Ecotope description integrates 100+ variables



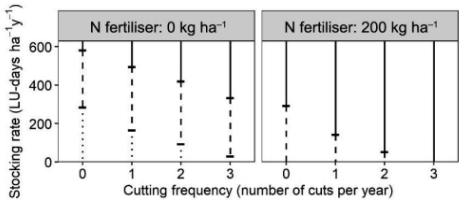




More than land cover thanks to Grassland Use Intensity



(EFG, Tonn et al., 2020)



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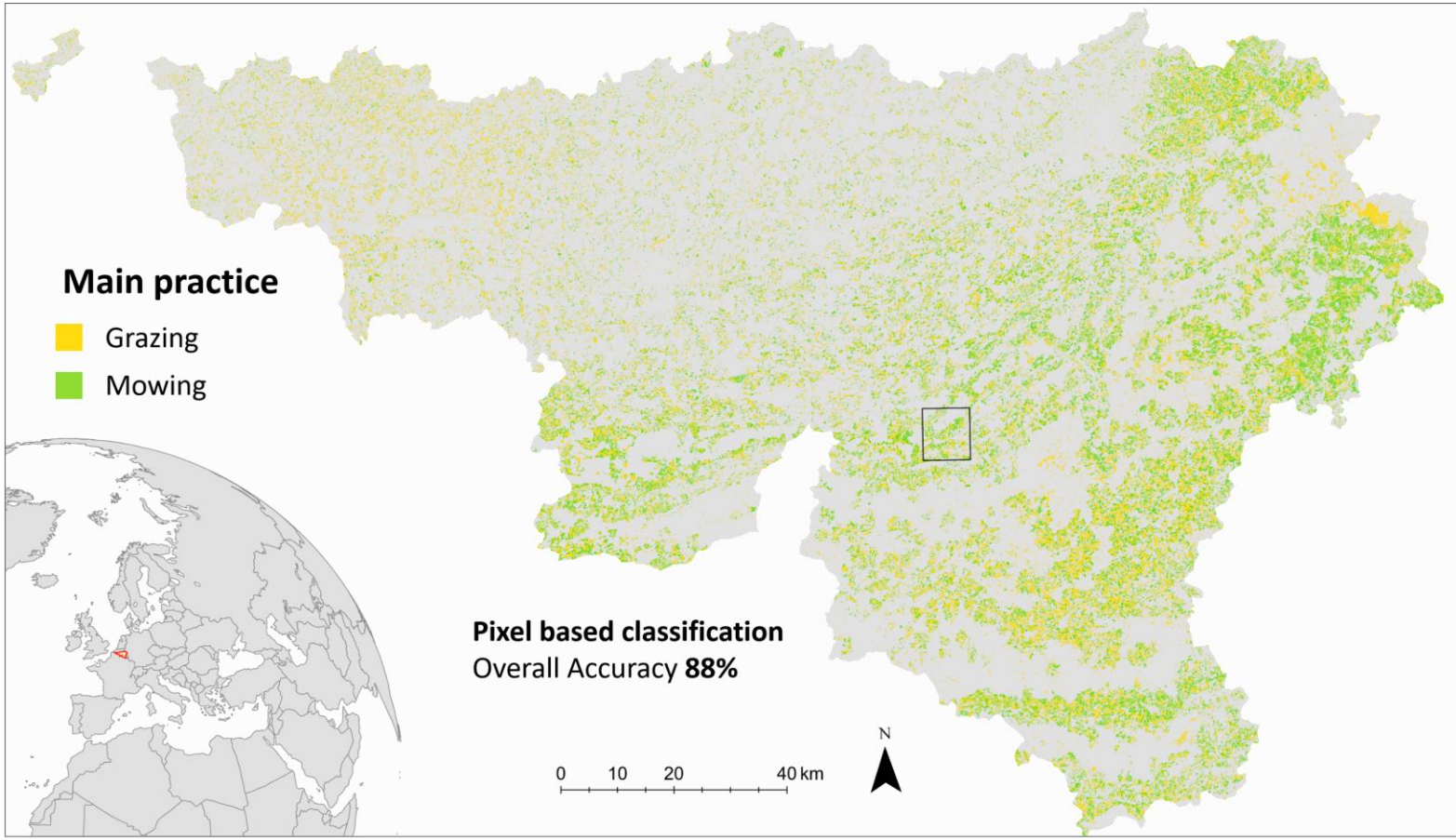
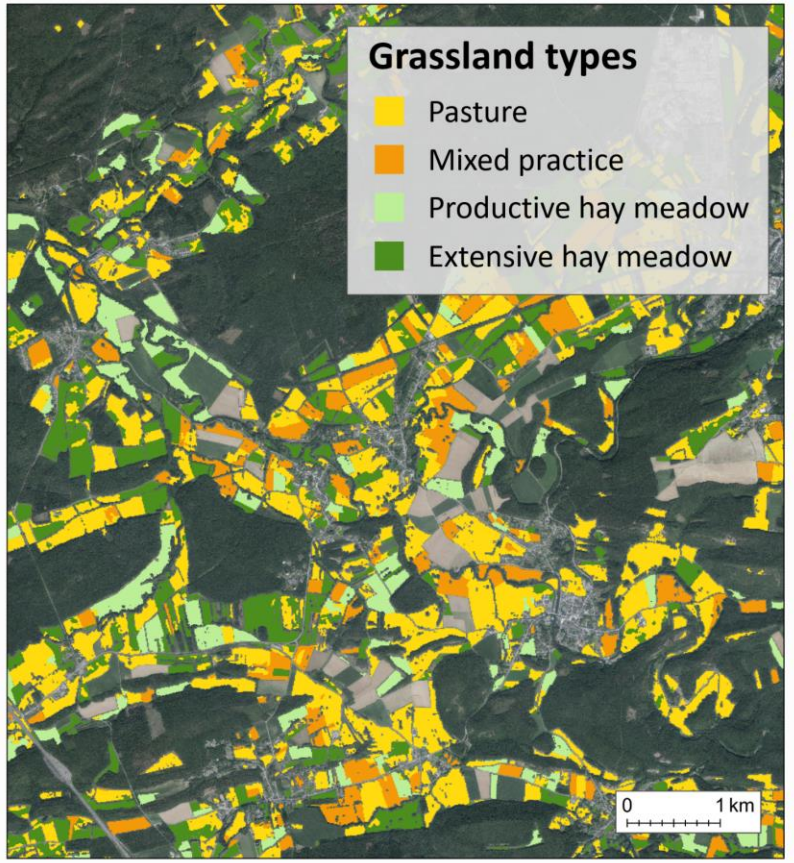
Pastures and mixed practices

Permanent extensive hay meadows

Mowing and grazing detection with « Sentinels »

Sentinel-1 (SAR) coherence data fill the gap of Sentinel-2 (optical) data

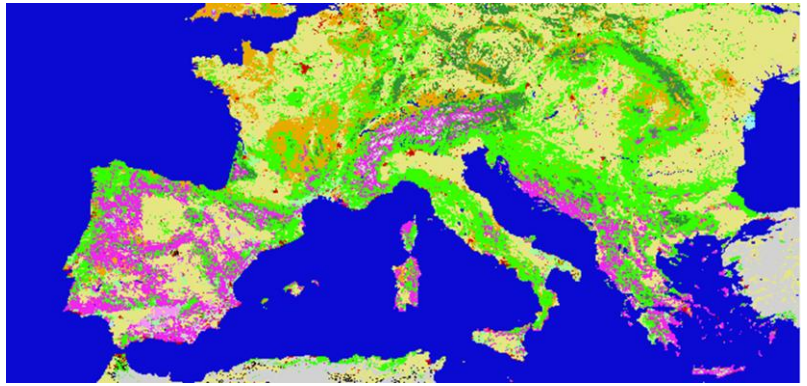




Now applying the ecotope concept in Europe

- Success with ecotope-based model in Belgium

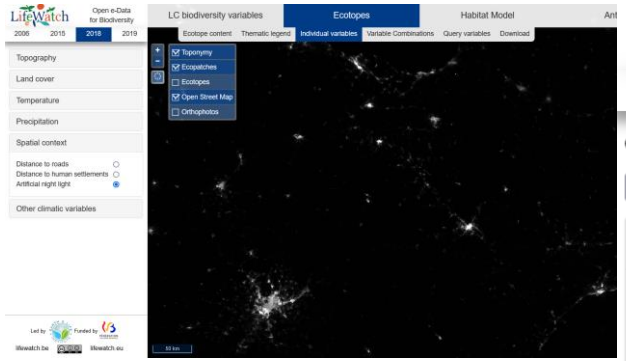
  (Delangre et al 2018, Bourdouxhe et al 2020, Radoux et al 2019)

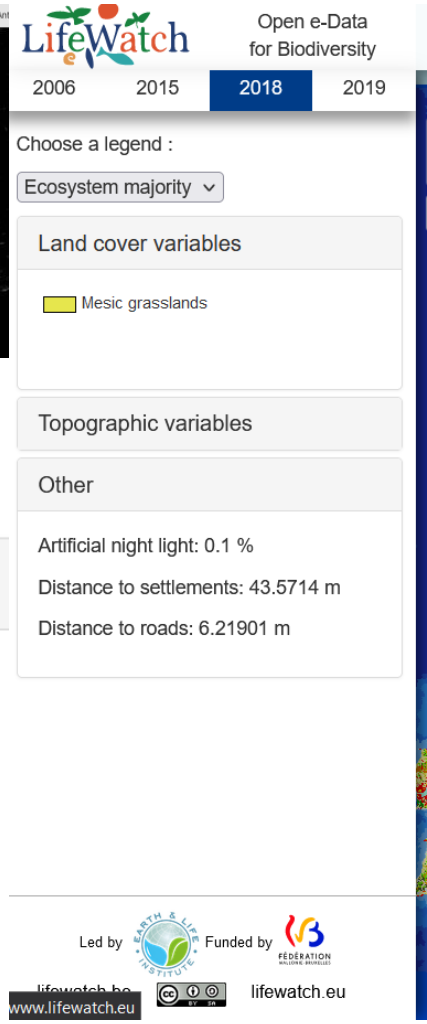


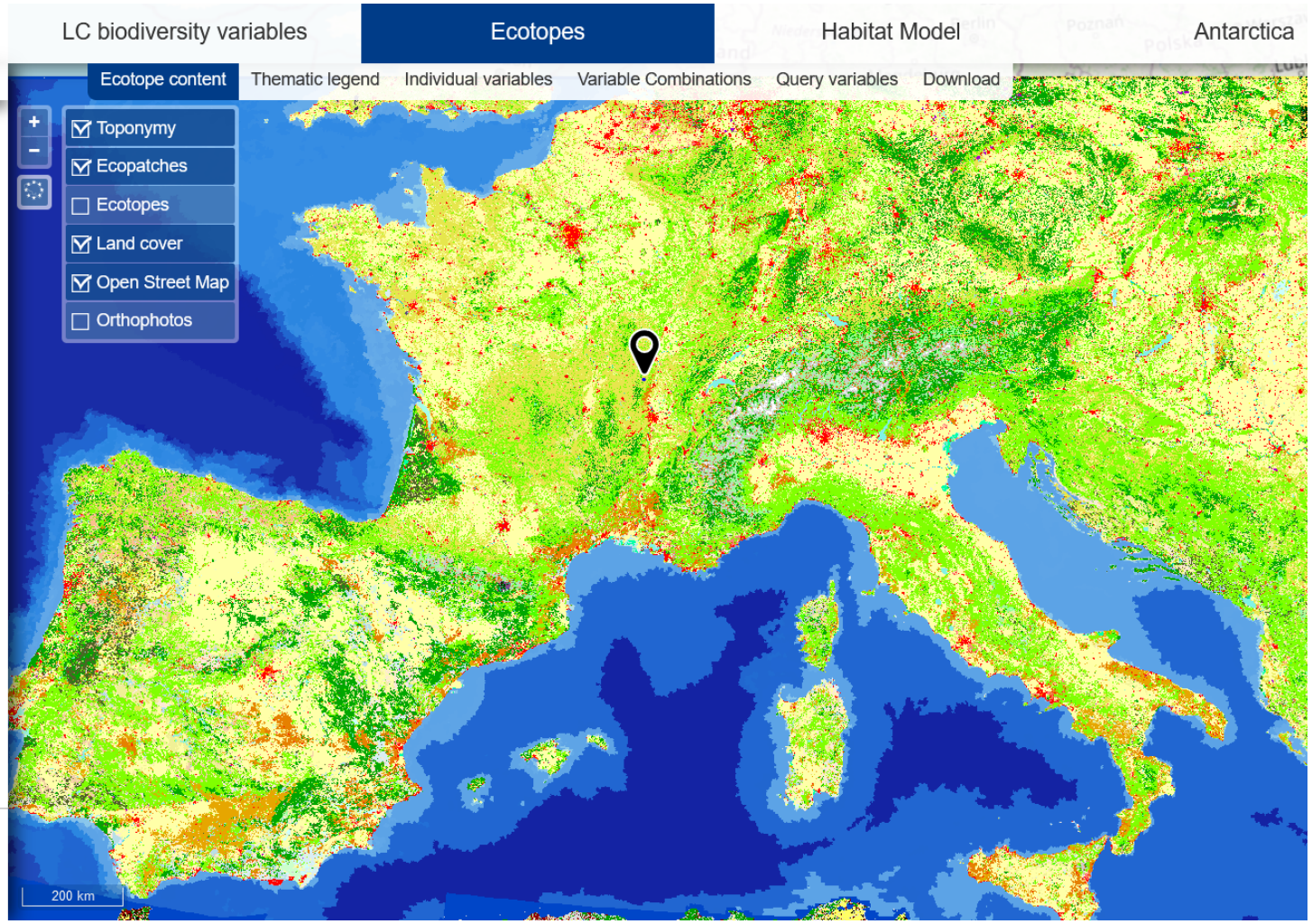
- Less precise data in Europe
  - Work at 10 m resolution
  - Less explanatory variables
- Plenty of data sources, but what do we take ?
  - Global products are not optimized for Europe
  - Copernicus high resolution layers are not complete

  ➔ Data fusion to take the best out of each dataset

Ecopatches available for South of Europe







Land cover variables

Mosaic natural vegetation (Tree, shrub, herbaceous cover) (>50%) / cropland (<50%)

detail in the ecopatch:

17% 57% 6 7

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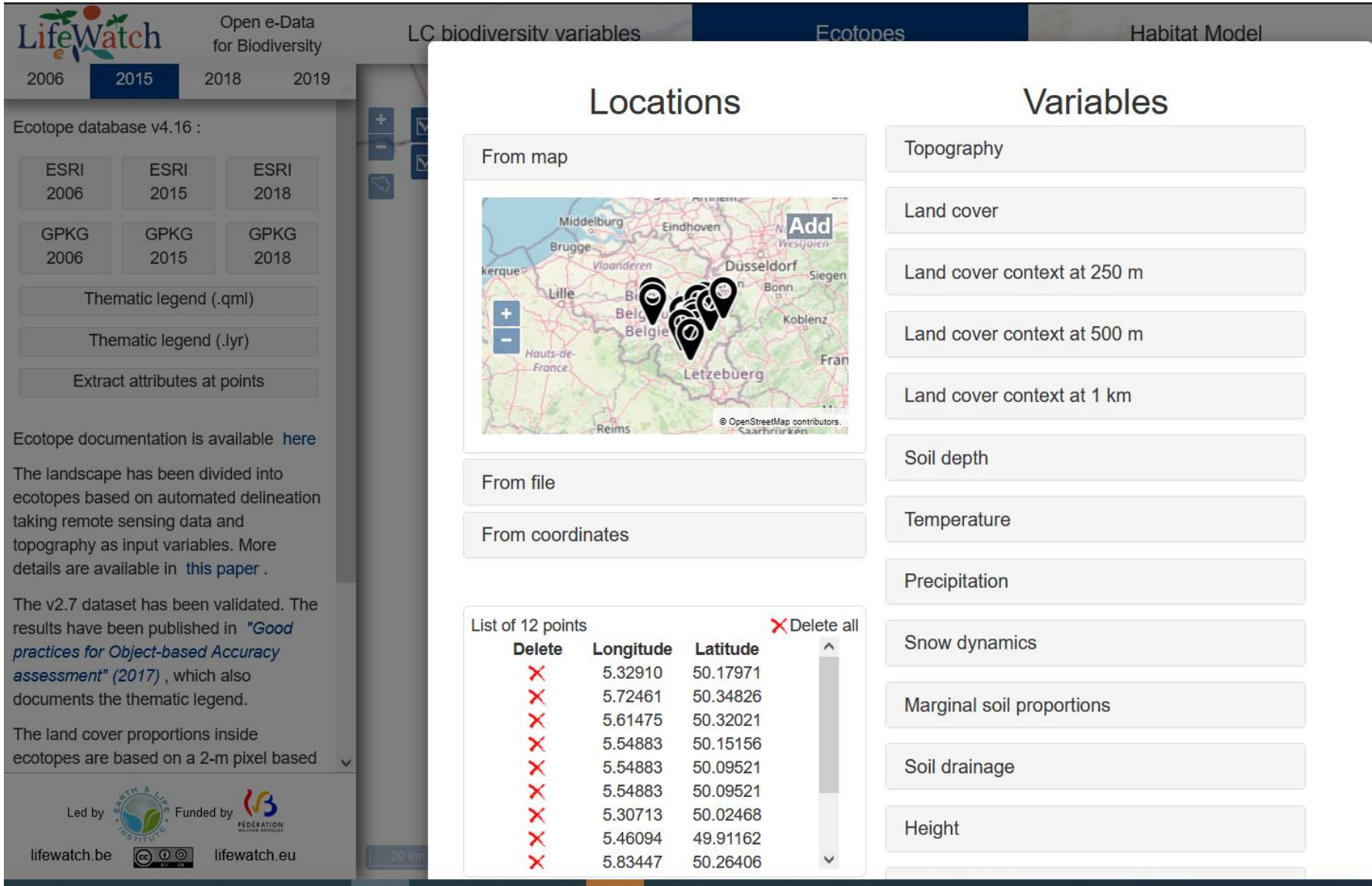
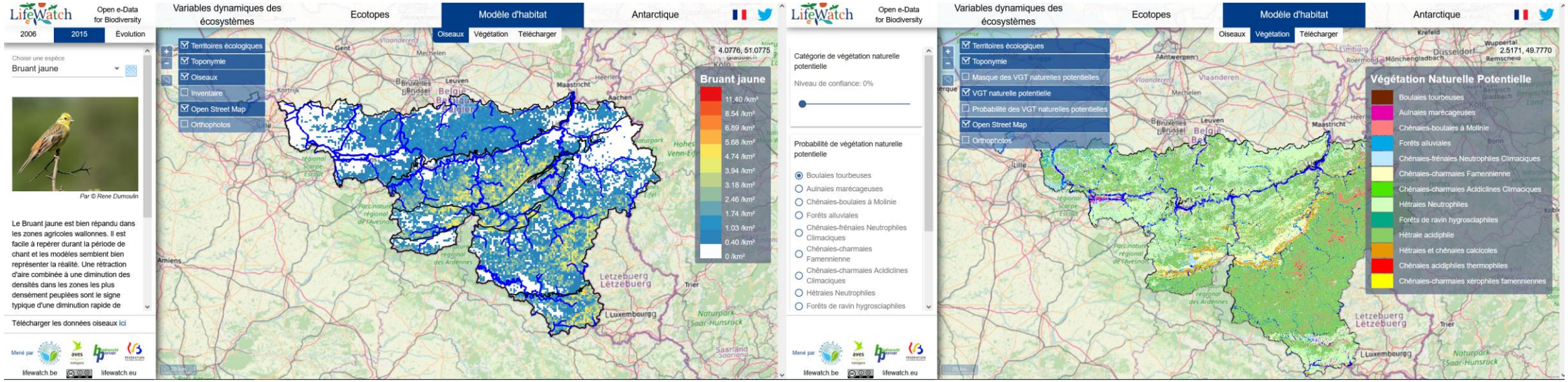
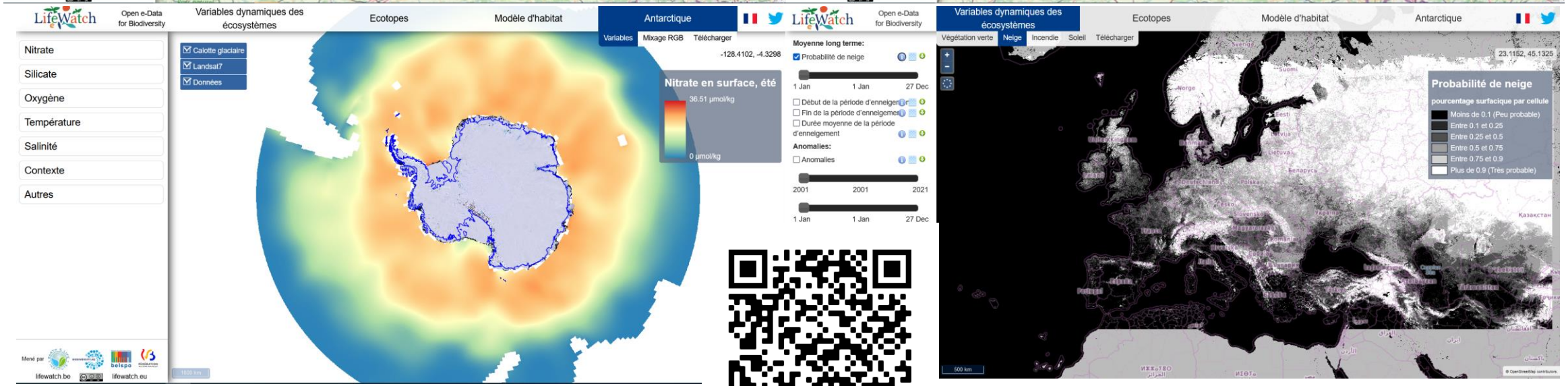
Services to visualize and extract data

- Bring your own csv file
- Select your variables
- Analyse the data on you computer
- Our tip: look at the data first



Much more on uclouvain.be/lifewatch





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