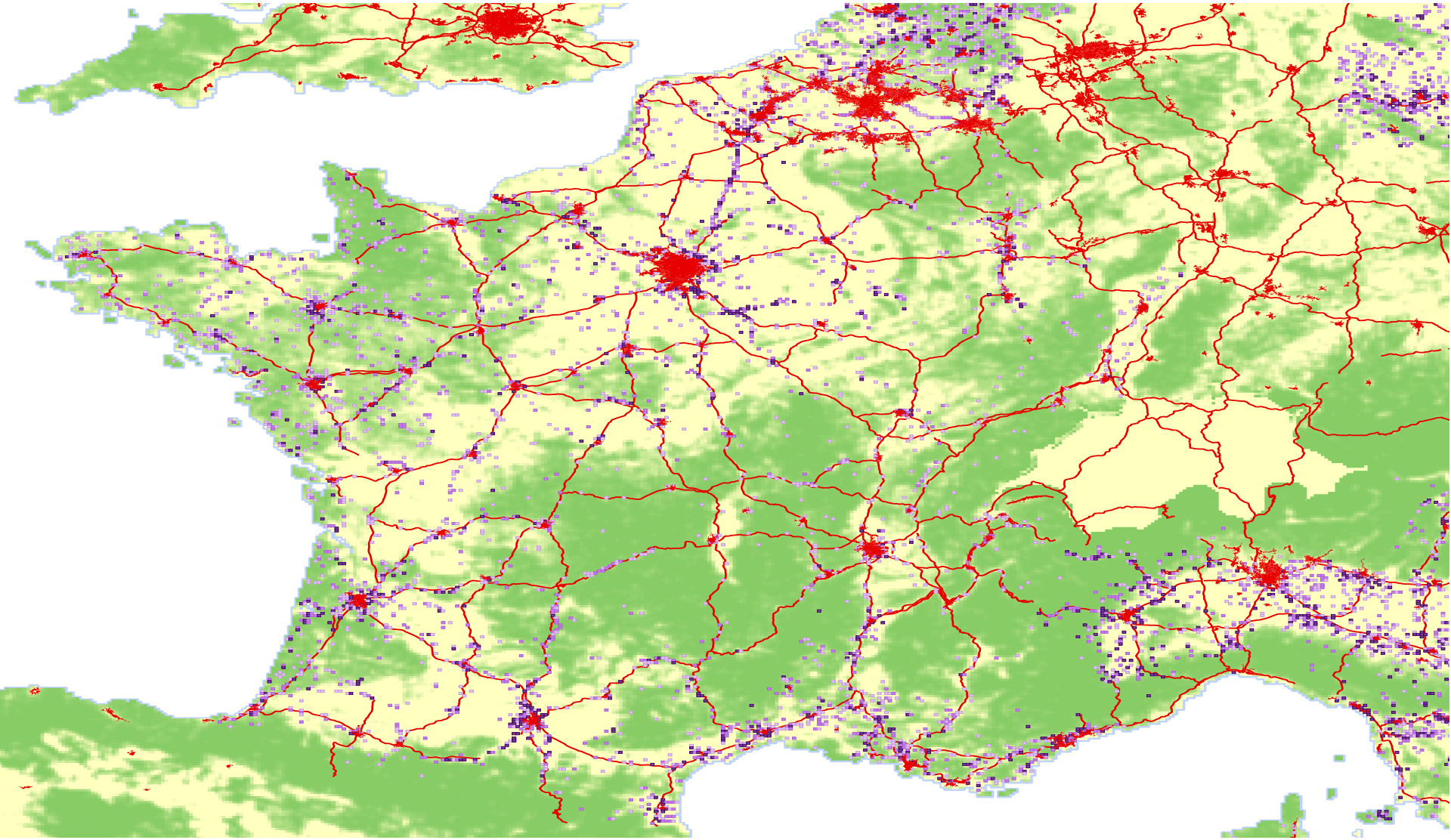
European Topic Centre
Spatial Information and Analysis

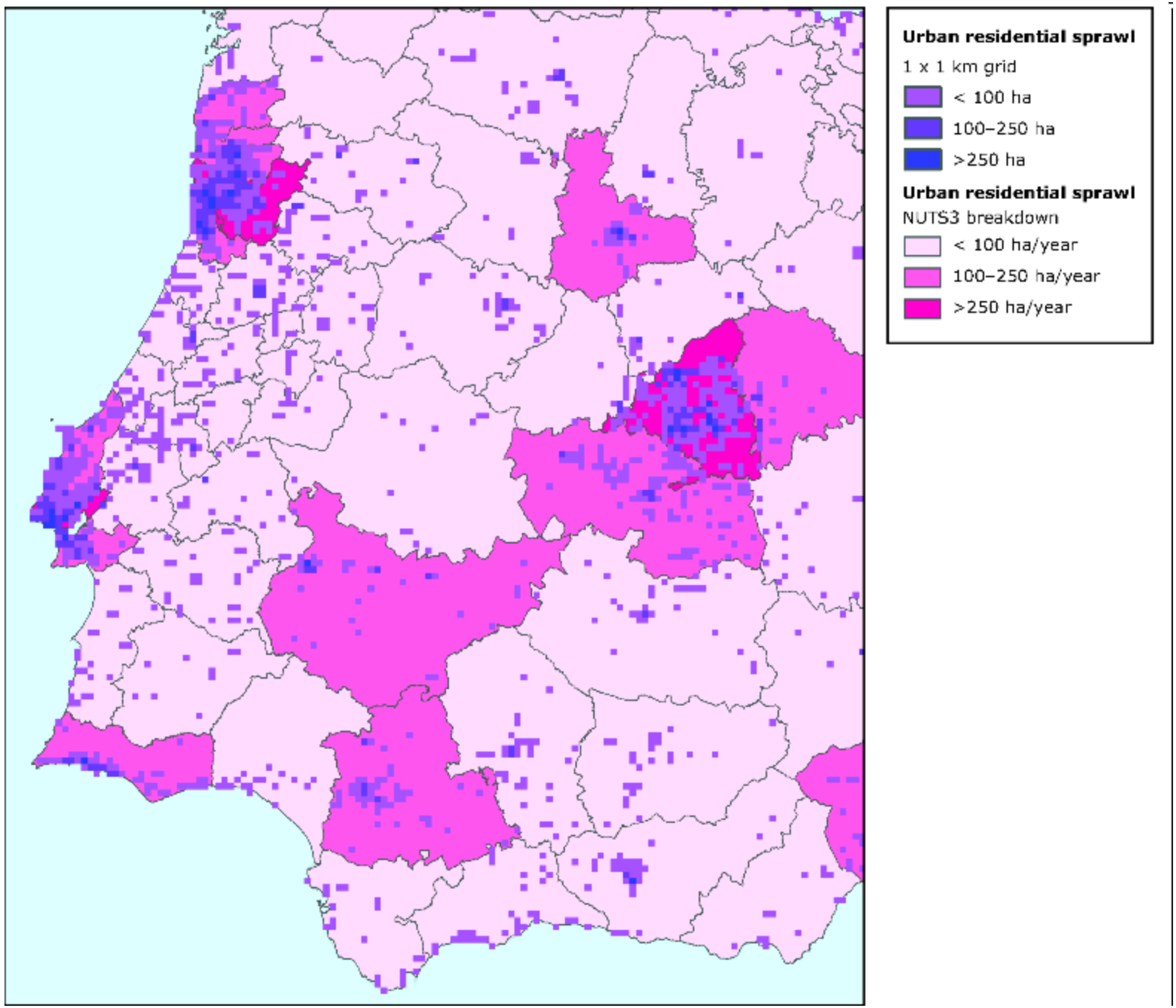
Characterisation of urban sprawl in Eruope

Jaume Fons-Esteve (UAB), Mirko Gregor (GeoVille)

ESPON Scientific Conference , 12 September, 2013

What is the unit of analysis?

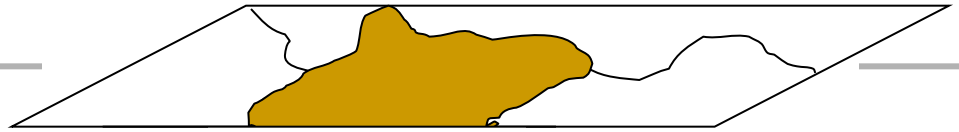



Urban residential sprawl
1 x 1 km grid
< 100 ha
100–250 ha
>250 ha
Urban residential sprawl
NUTS3 breakdown
< 100 ha/year
100–250 ha/year
>250 ha/year

How to characterise urban sprawl?

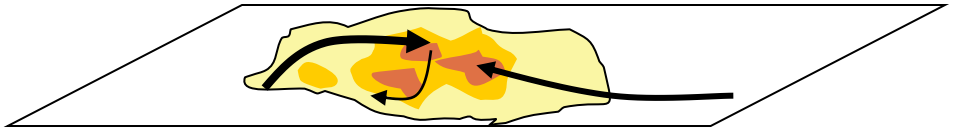
Delineation of cities

Administrative



Agglomerations (END - DG ENV)

Functional

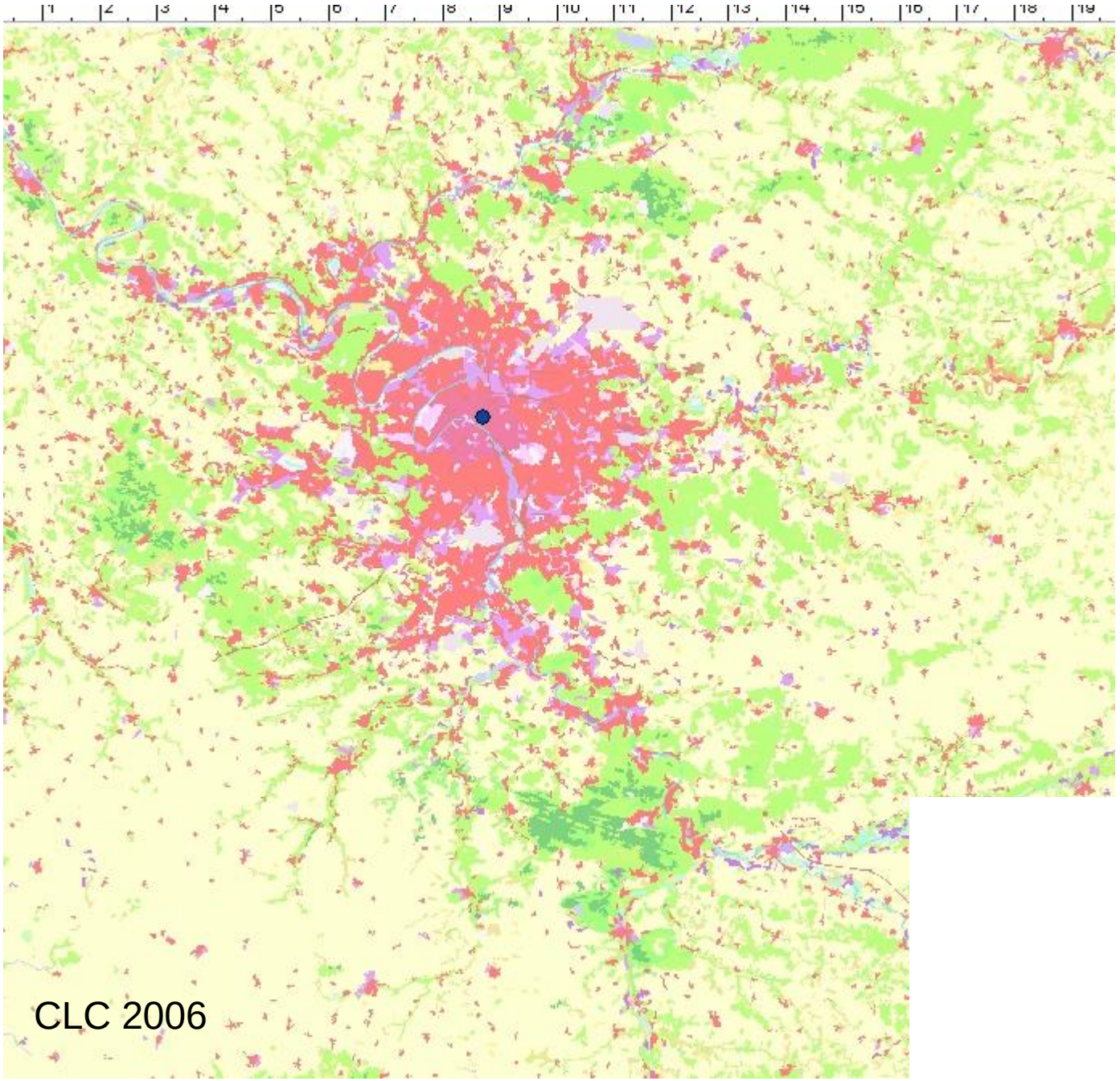


Urban Audit (Eurostat)

Morphological

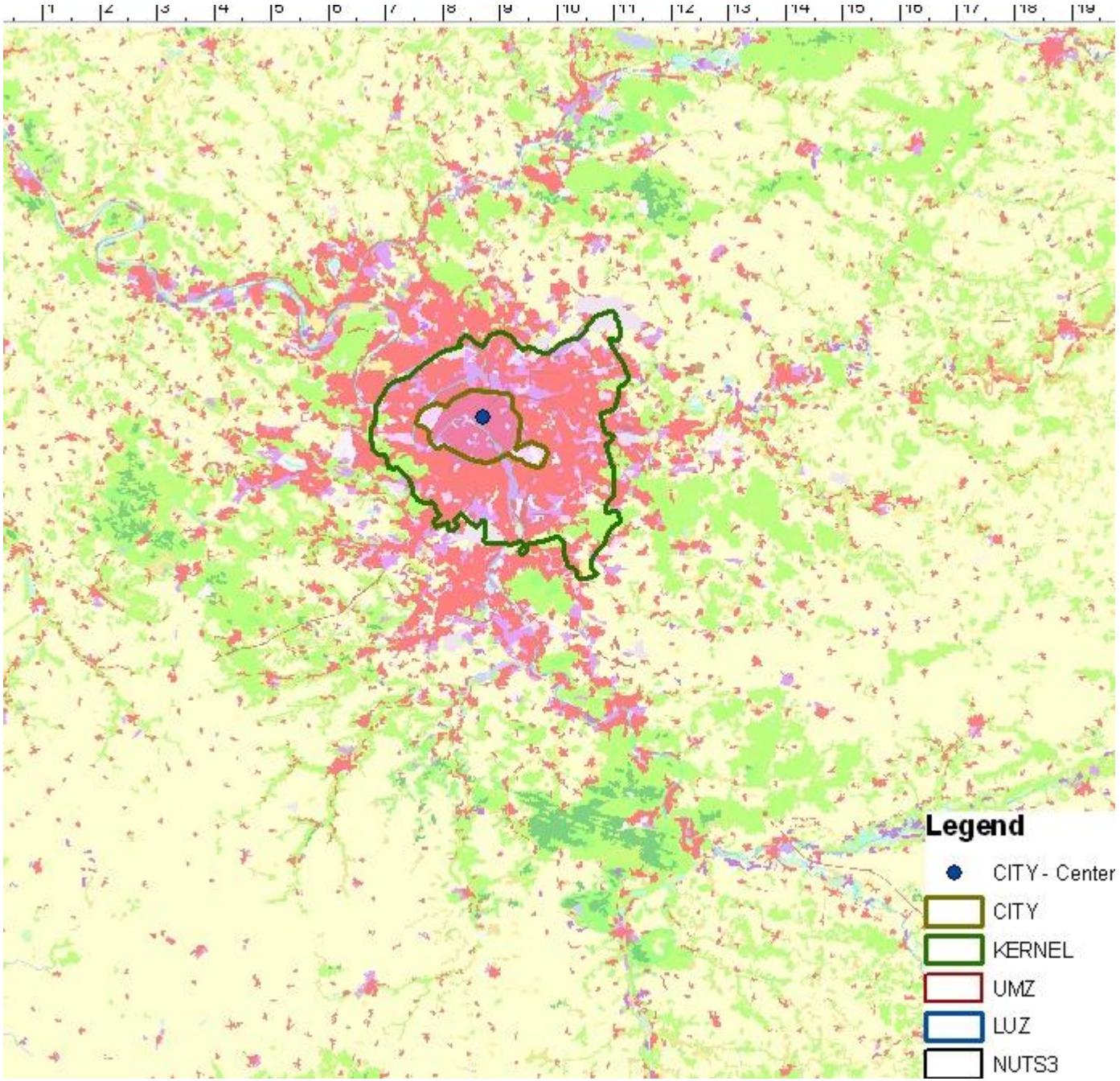
UMZ (EEA)

Paris



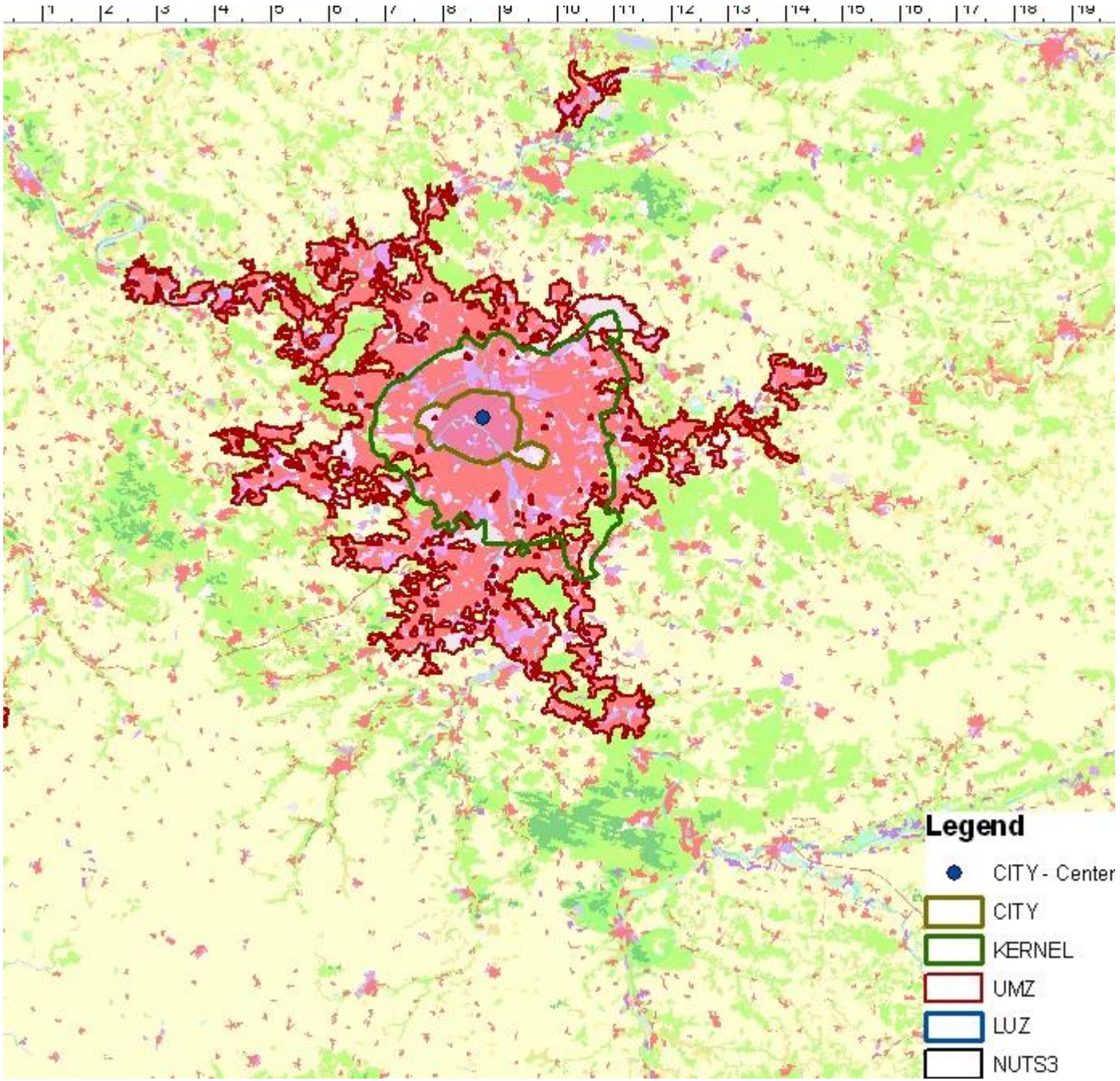
City center (UA)

Paris



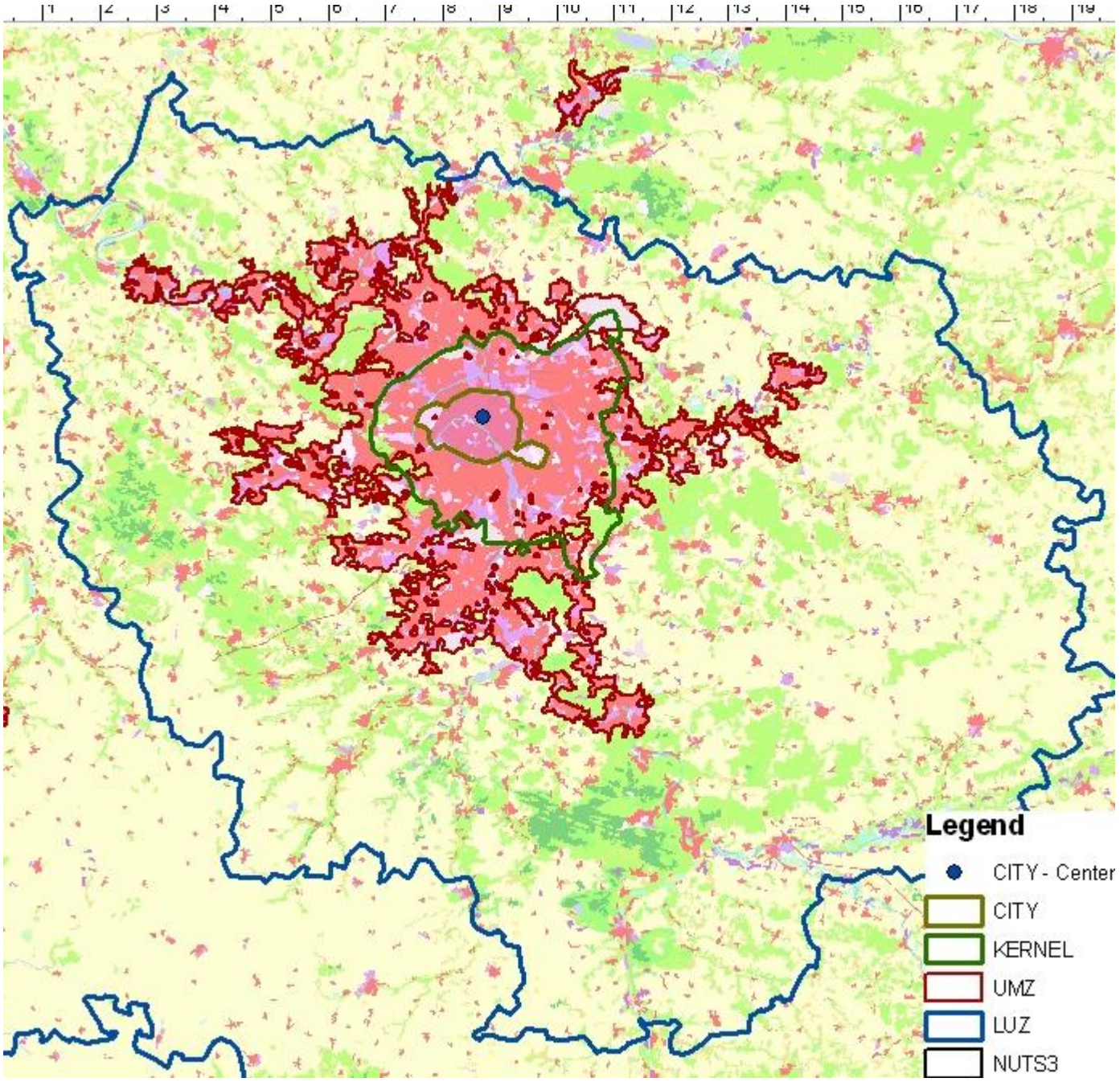
City center (UA)
City (UA)
Kernel (UA)

Paris



City center (UA)
City (UA)
Kernel (UA)
UMZ

Paris



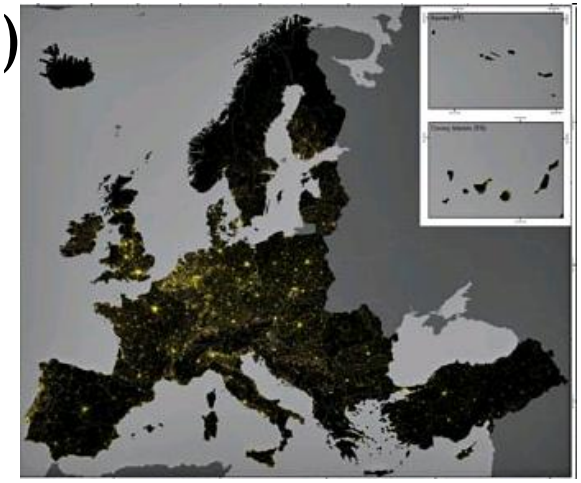
City center (UA)
City (UA)
Kernel (UA)
UMZ
LUZ (UA)

How to characterise urban sprawl?

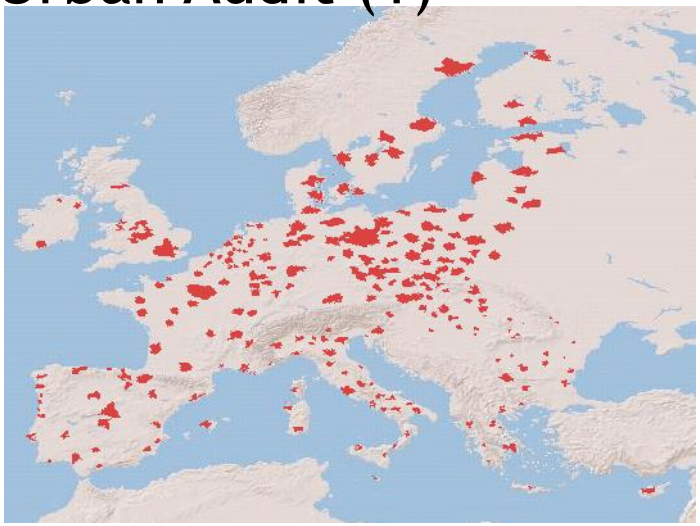
Data

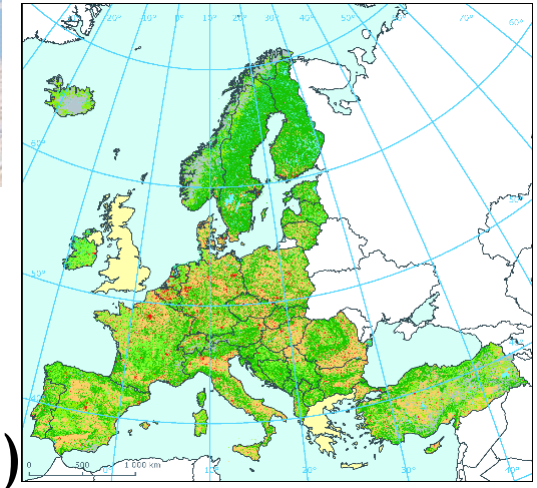
Resolution

Soil sealing (1)



Urban Audit (1)

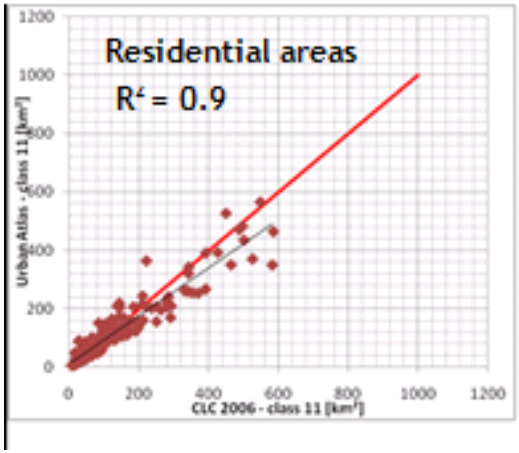


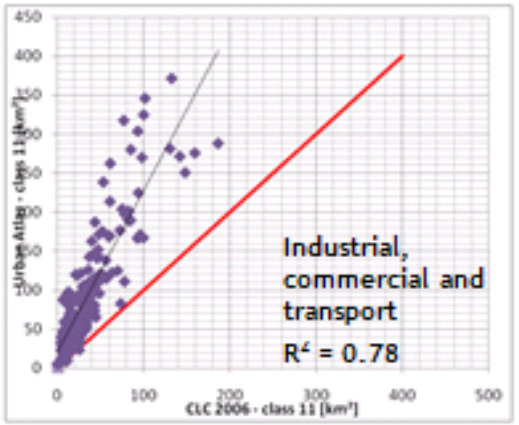


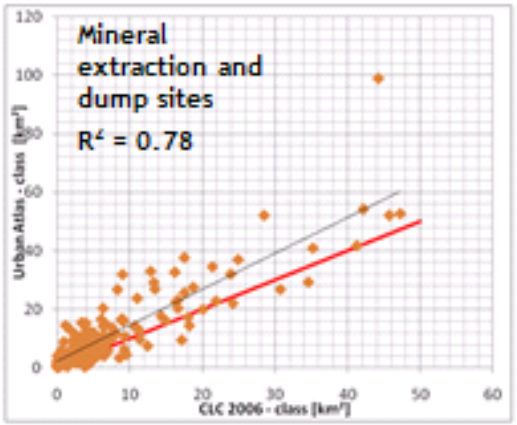
CLC (3)

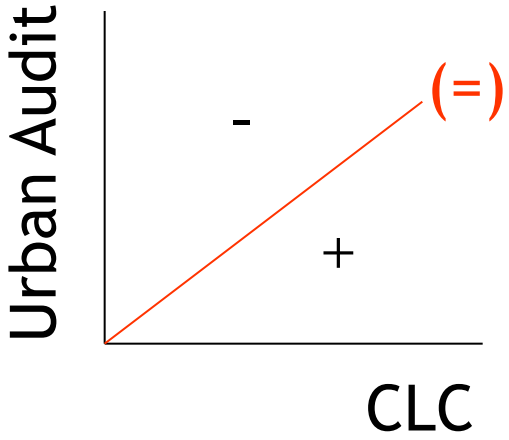
Extension & Coverage

Implications of different resolution







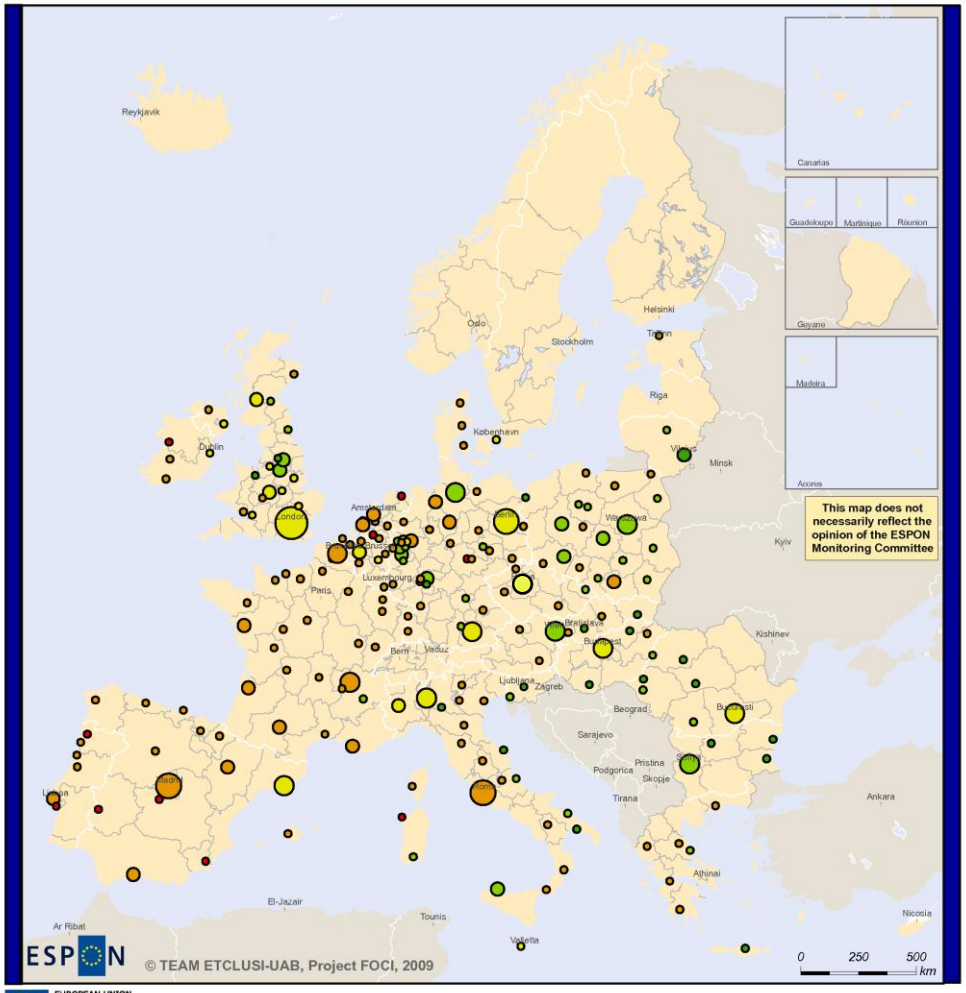


Urban sprawl

- Urban form/pattern
  - Percentage of built-up area
  - Soil sealing per capita
  - Compacity index
  - Mixed uses
  - Proximity: distance of patches to city centre (normalised accumulated distance)
- Dynamics (absolute and comparison centre-peryphery)
  - Relative increase of built-up area
  - Land take per capita
  - Degree of redevelopment
  - Use of new built-up areas

Dynamics

Typologies of urban development (1990-2000)



Class

- Slowly growing cities
- Rapidly growing cities
- Very rapidly growing cities

Population

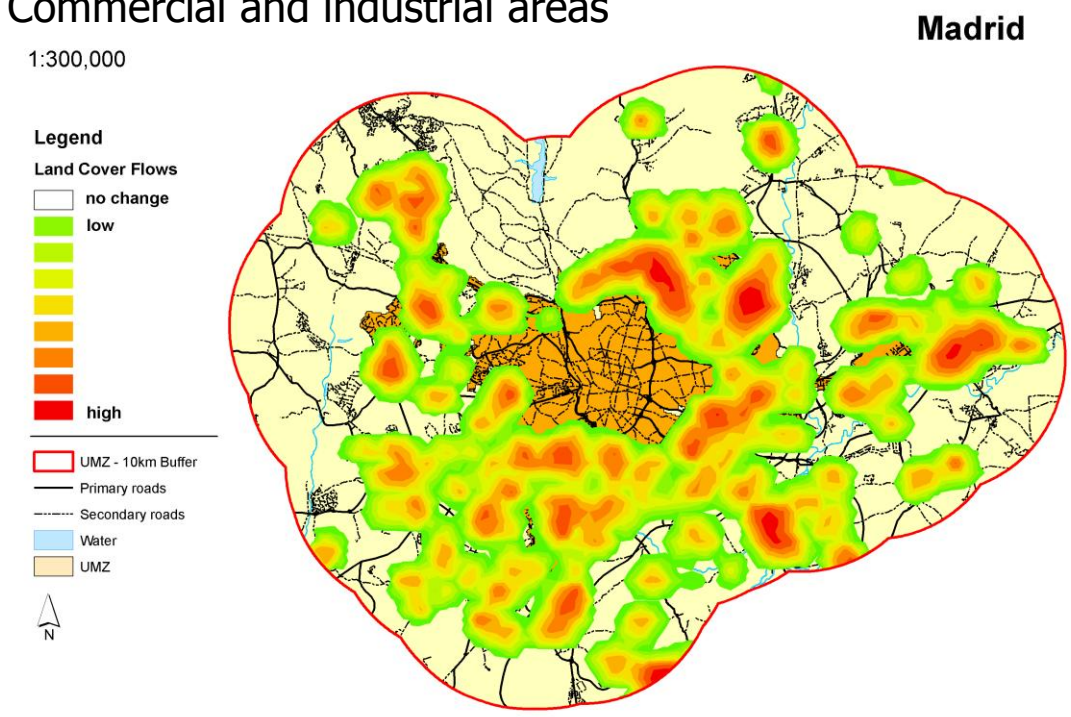
- 0 - 500000
- 500000 - 1000000
- 1000000 - 2000000
- 2000000 - 3500000
- 3500000 - 8000000

Urban form

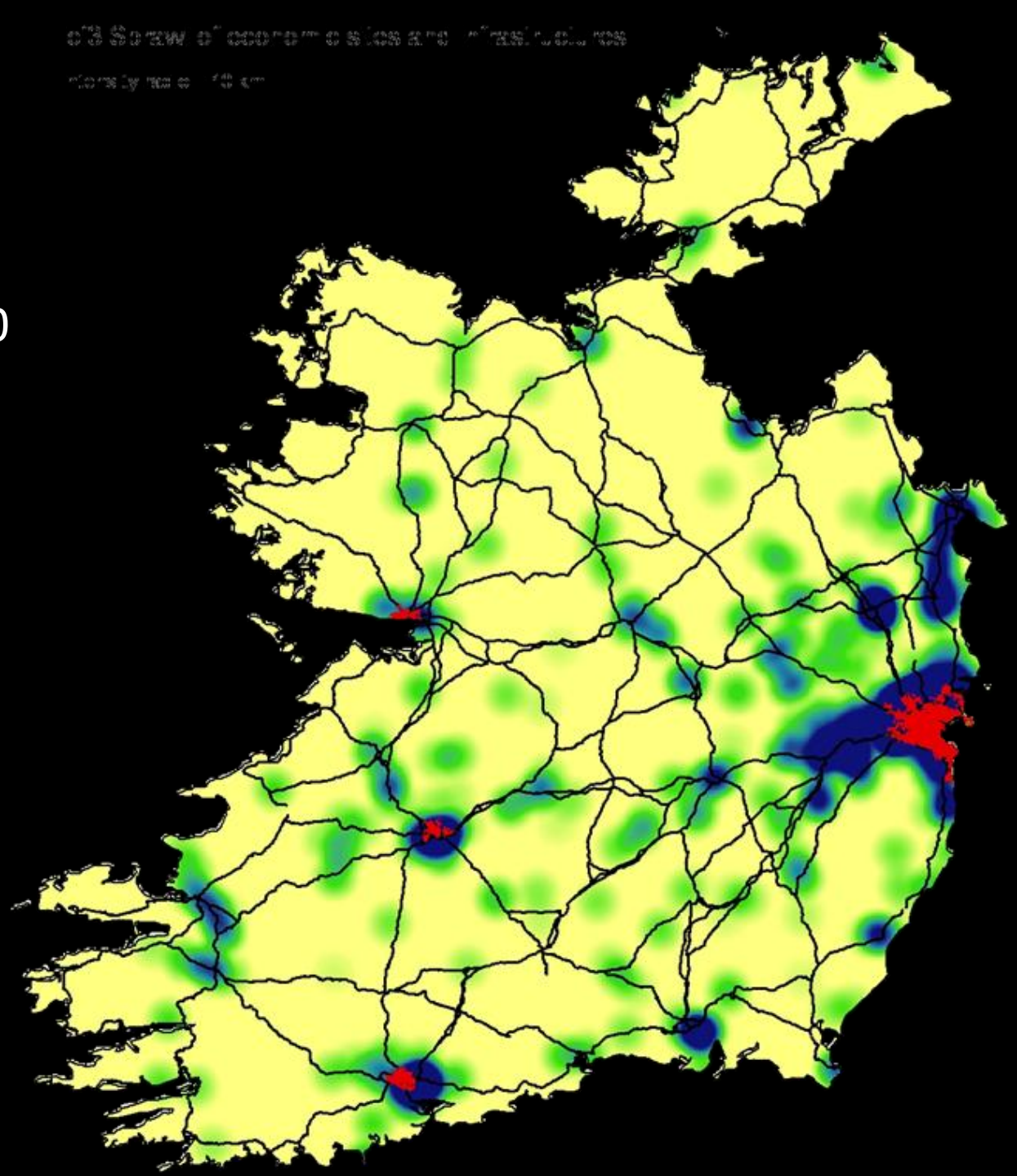
Compact class	Percentage of journeys to work by car and motorcycle	Percentage of journeys to work by foot or cycling	Percentage of journeys to work by public transport	Annual average concentration of PM_{10}	Annual average concentration of NO_2
1. Large irregular cities	64	12	24	34	32
2. Large irregular cities with intensive land use	62	10	28	31	27
3. Intermediate compact cities	57	11	32	30	26
4. Compact cities	56	10	34	25	22

Differential urban patterns: Madrid

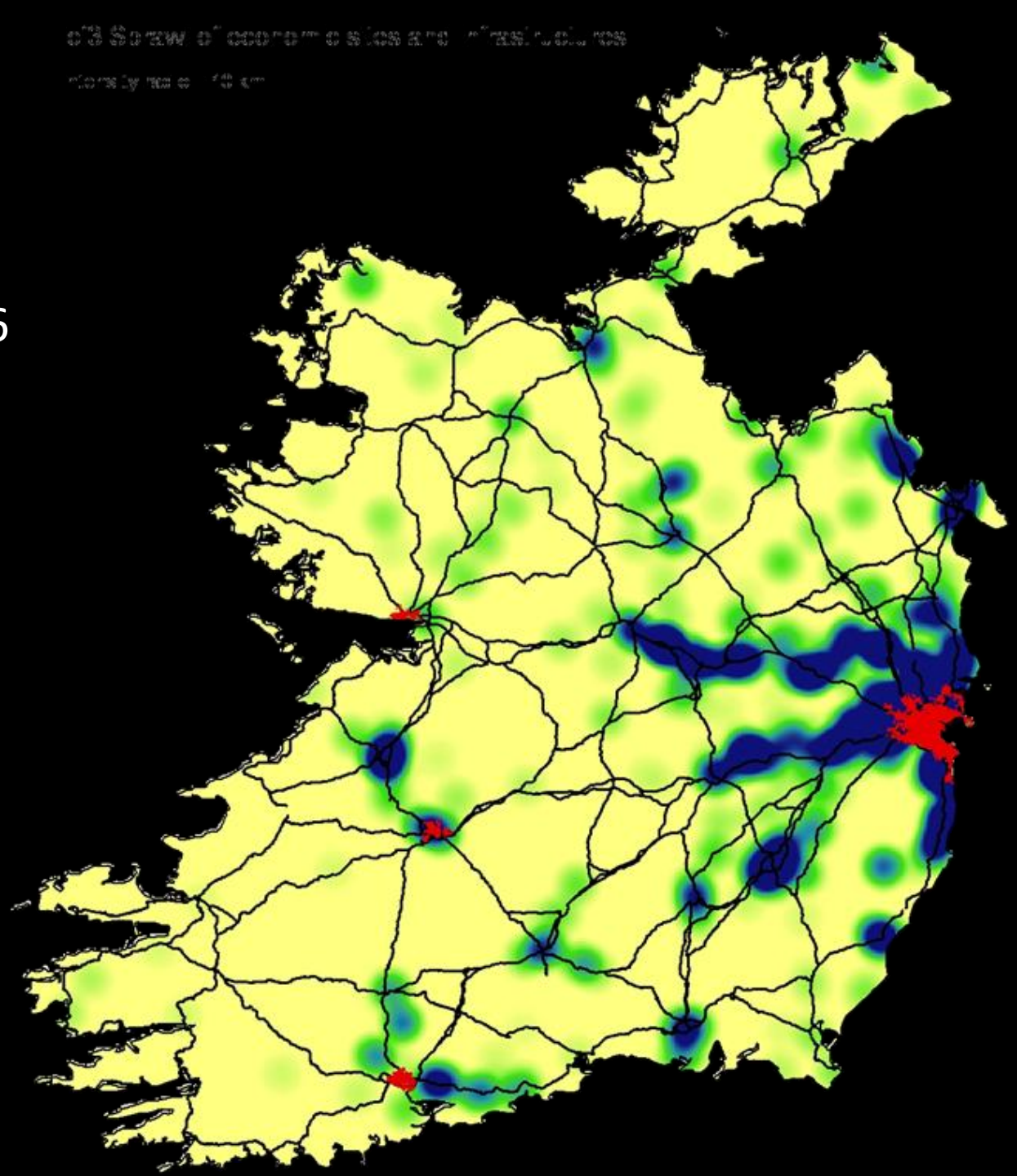
Commercial and industrial areas



1990-2000



2000-2006



Conclusions

- Need to improve our understanding of scale dependency of process (not simple aggregation)
- It’s very important to use the right delienation fit to purpose of analysis
- Data: socio-economic data available at grid level
- New visualization tools for dynamic process