



From Urban Morphological Zones (UMZ) to harmonised «urban objects » in Europe

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1. Toward a European urban database, stakes and approaches

A. General background: two main approaches

1. Bottom-up approach

Compilation of national definitions, *harmonization* through interactions between national expertise / recommendations by European instances

→ FUA (ESPON), LUZ (Urban Audit), City Core (Urban Audit)

2. Top-down approach

Same criteria at a European scale, generally based on automatic processes (satellite images), need urban expertise to *validate* results

→ GRUMP, Global Land cover, e-Geopolis, **UMZ**

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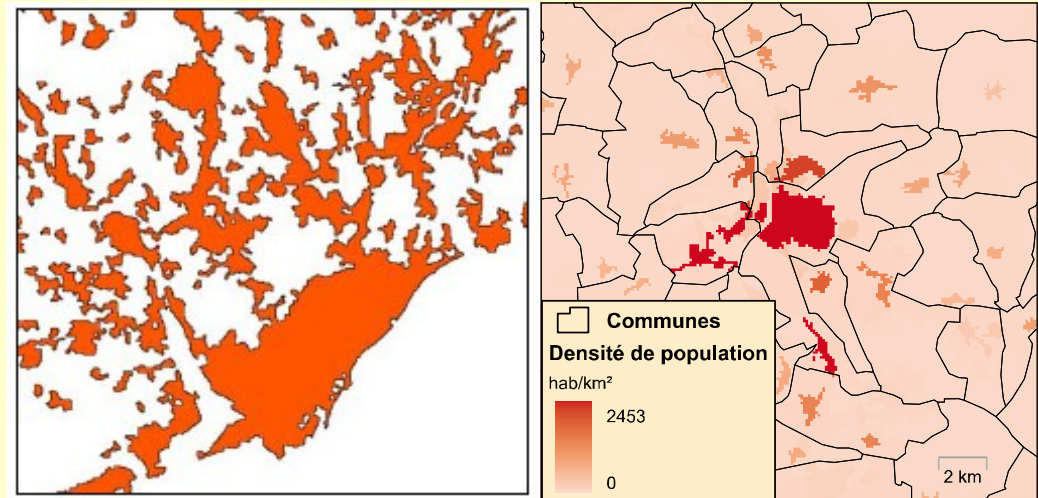
UMZ :

Created in 2004 by the Environment European Agency

Defined from Corine Land Cover classes contributing to the “urban tissue and function”, minimal resolution 10ha (300x300m)

Continuous built-up area (i.e. laying less than 200 m. apart)

Population density grid laying on built-up zone



Urban Morphological Zones 2000,
Available on EEA website



1. Toward a European urban database, stakes and approaches

B. Context and framework of our approach

1. Scale : urban **agglomerations** (>2000 inh.)

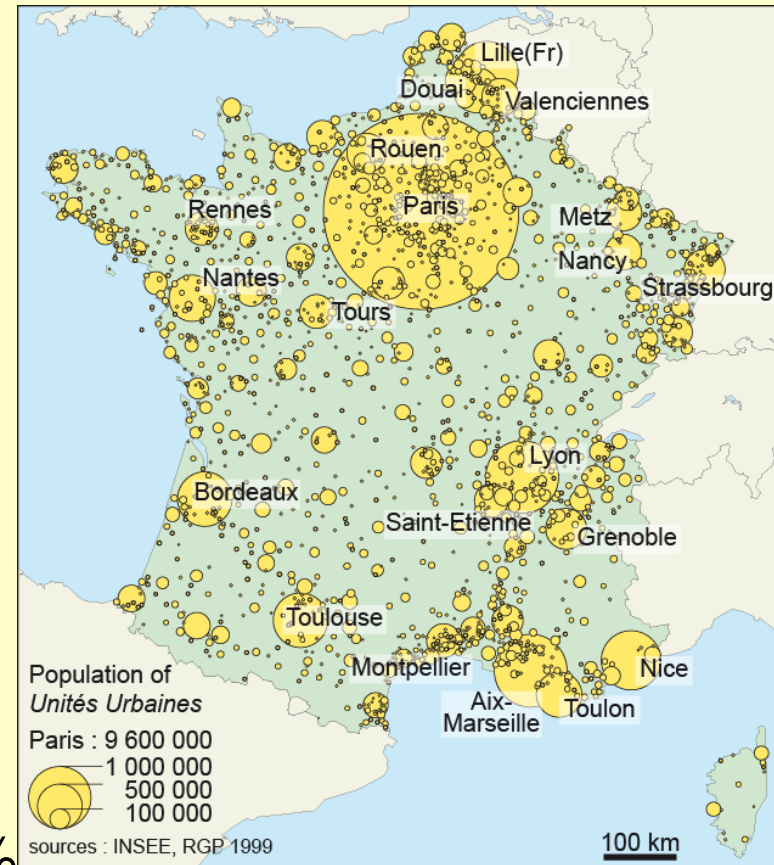
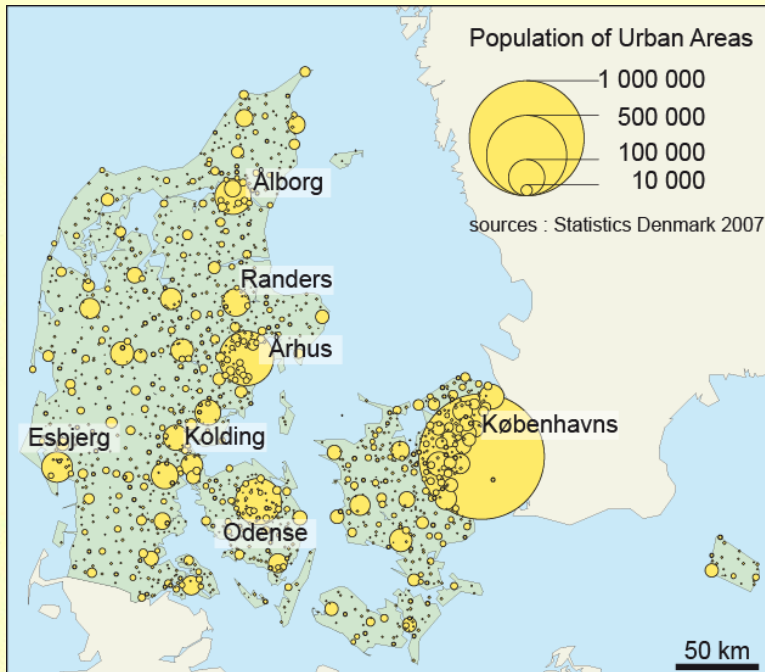
Results not usable for local studies (~~real estates, urban fringes...~~)

2. Perspectives: International **comparisons** (between European countries)

Comparing *urban* socio-economic indicators computed in two different countries raises the question of the city definitions (delineations) comparability

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Exemple of urbanisation level:

Denmark (**urban areas** > 2000 inh.) **62%**

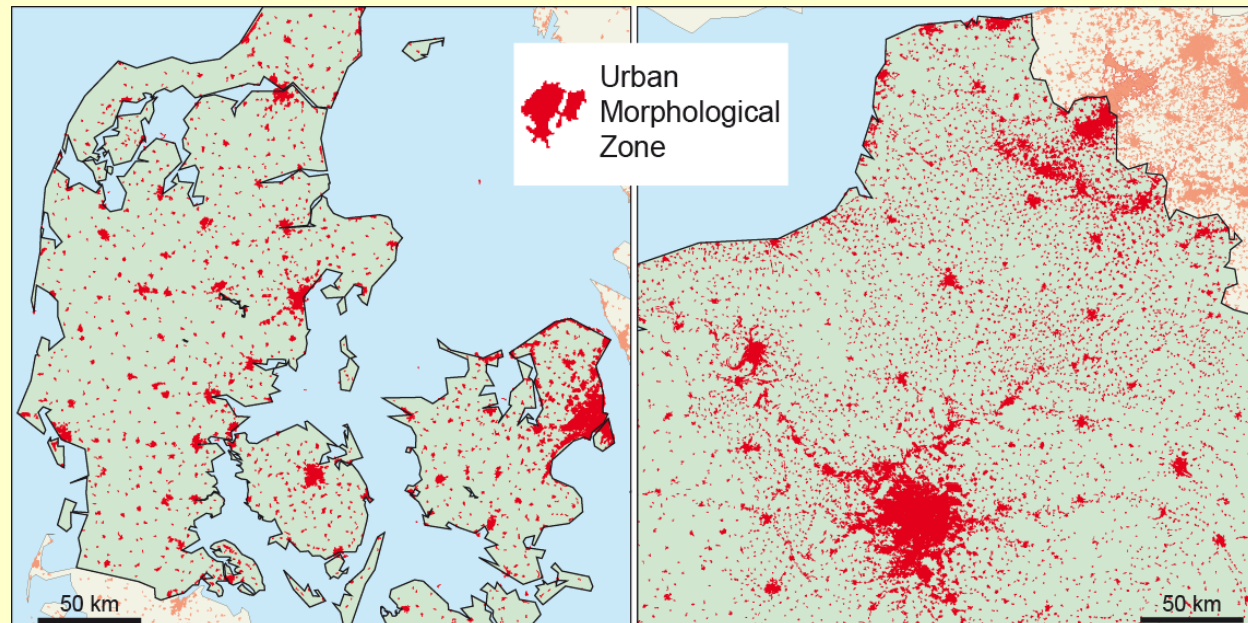
France (**unités urbaines** > 2000 inh.) **76%**

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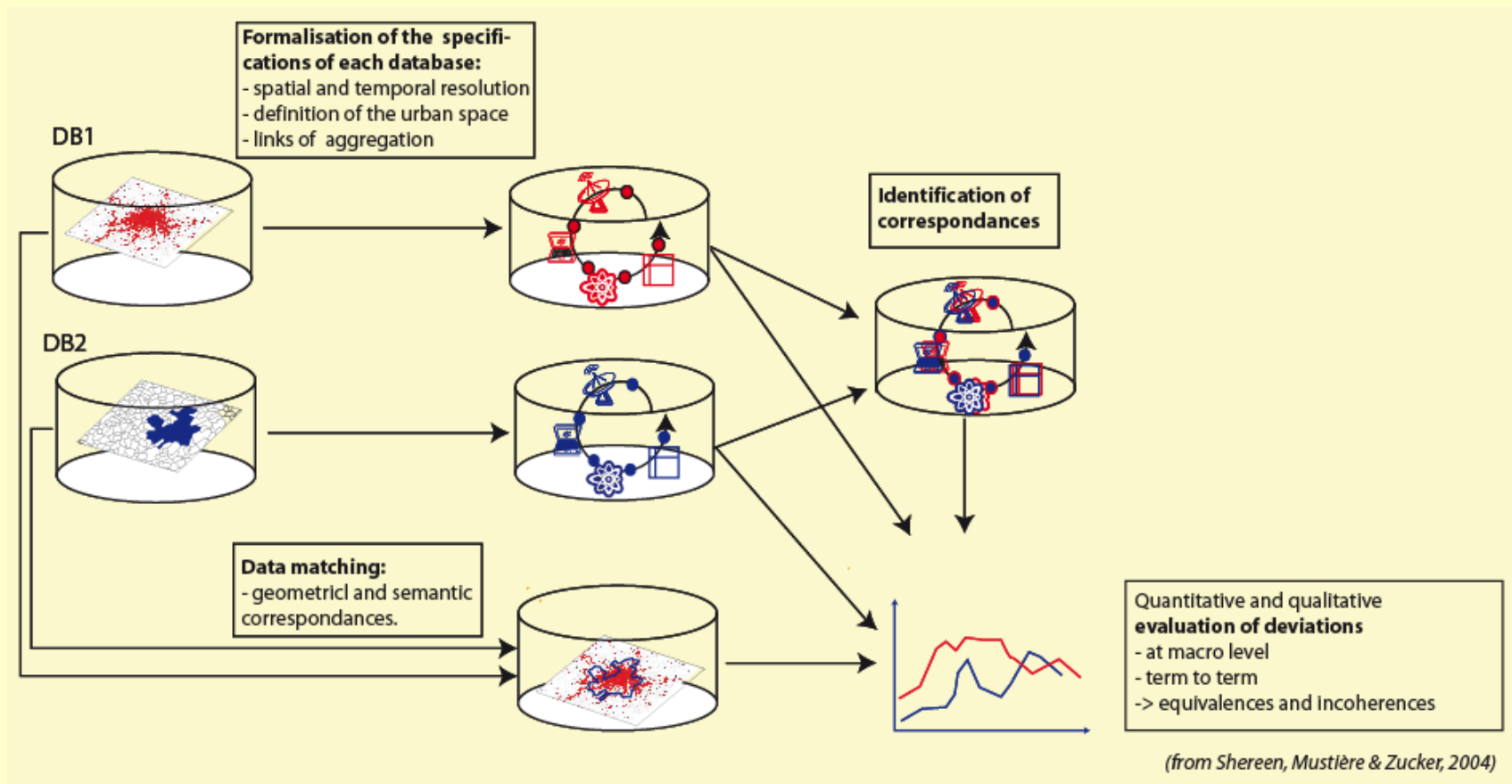
If we consider the UMZ database, urbanization level in Denmark raises to **65%** and goes down to **71%** in France. **BUT...**

- Are international criteria well adapted for so different settlement contexts?
- Are there some biases in the UMZ building processes (min. resolution, CLC classes interpretation process, population estimations by data grid etc.)?



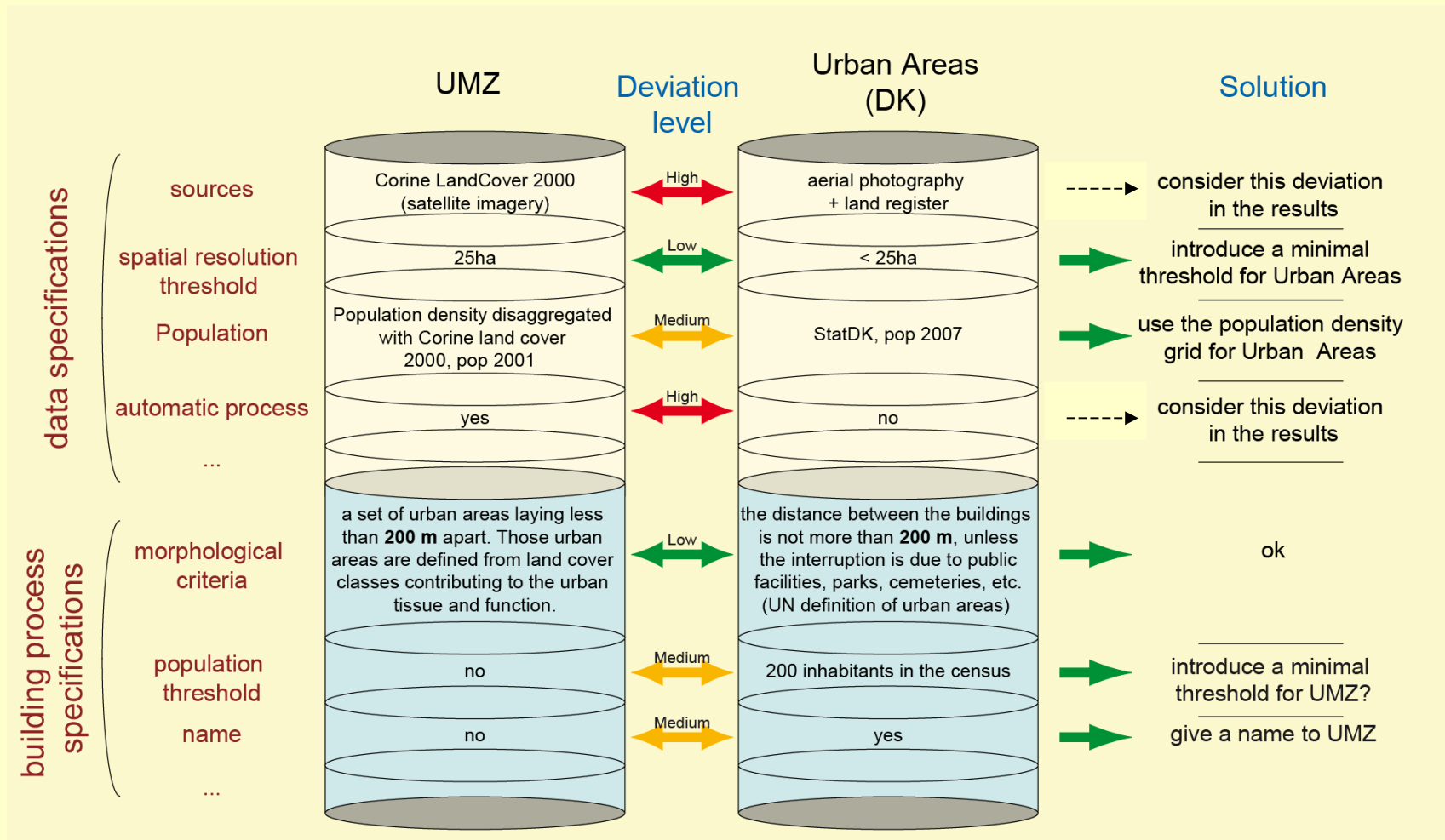
2. Methodology: data base integration and urban expertise

A. Main steps of the spatial databases integration process



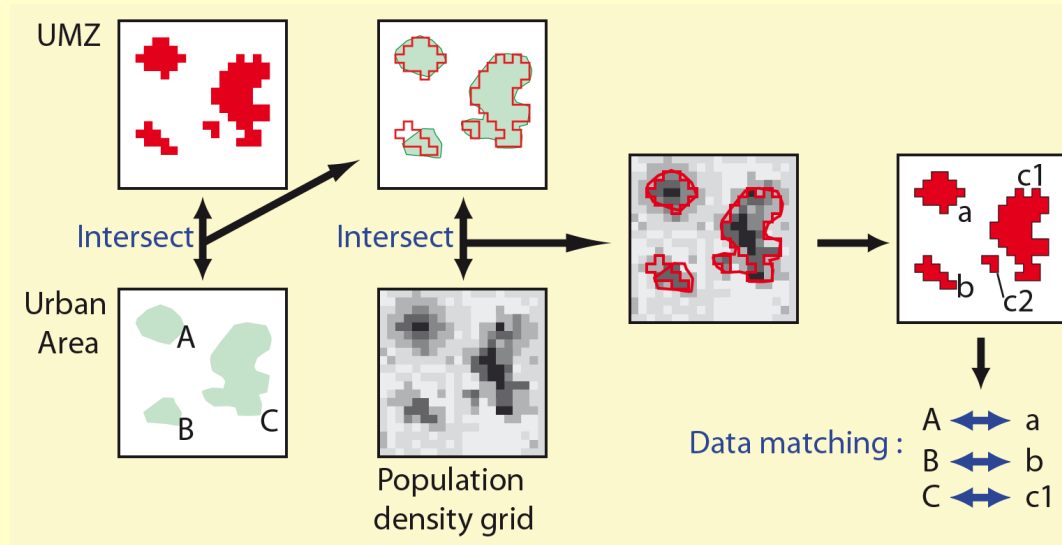
2. Methodology: data base integration and urban expertise

B. Schema integration & data fittings (Denmark)



2. Methodology: data base integration and urban expertise

C. Data matching for the term to term analysis



We have established a **1:1 relationship** between UMZ and Urban Areas on the criterion of the maximum overlaid population:

- An UMZ is linked to the Urban Area (**only one**) that holds the maximum of its population.
- If two UMZ are linked to the same Urban Area only the biggest is considered in the comparison

Aims: 3. Results

- Estimation of quantitative differences
- Looking for possible systematic biases
- Visual interpretation of the main differences

A. Global analysis

B. Term to term analysis

Unités Urbaines INSEE

id	name	population
1	Paris	9645
2	Marseille	1350
3	Lyon	1349
4	Lille	1001
5	Nice	889
6	Toulouse	761
7	Bordeaux	754
...

Unités Urbaines UMZ

id	name	population
1	Paris	9521
2	Lyon	1304
3	Lille	934
4	Marseille	911
5	Nice	833
6	Toulouse	653
7	Bordeaux	639
...

N
 1995 1846
 total population
 44 187 41 815
 mean population
 22 23
 mean deviation
 -5.4%

Unités Urbaines INSEE

id	name	population
1	Paris	9645
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Unités Urbaines UMZ

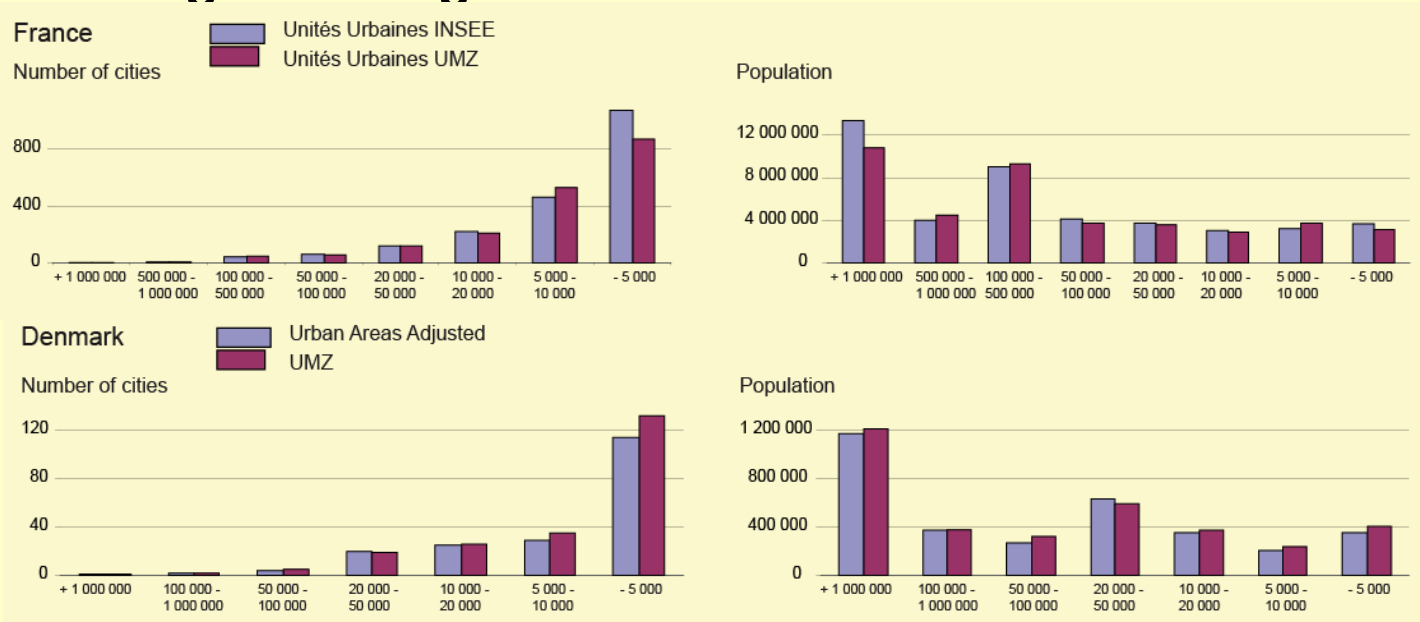
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...

-1.3%
 -32.5% -3.3%
 -6.7%
 -6.3%
 -14.2%
 -15.2%
 mean deviation
 -6.0%

A. Global analysis

3. Results

→ High convergence of the measures



Number of agglos. differences between National/UMZ databases = +/- 10%

Population differences between National/UMZ databases = +/- 5%

→ No systematic under/overestimation of urbanisation by UMZ from one country to another

B. Term to term analysis

3. Results

1. Integration quality : rather good (proportion of mismatches)

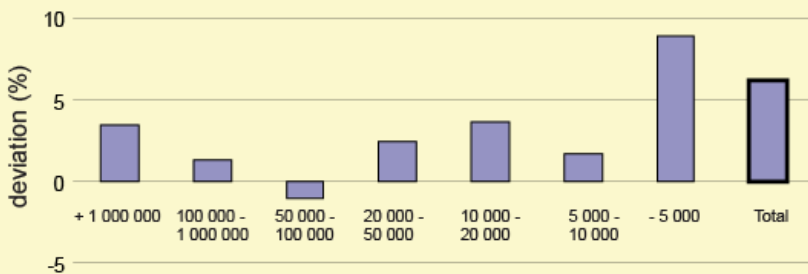
Denmark : 15% of UMZ couldn't match (mainly less than 5 000 inh.)

France : 18% of UMZ
(6 of them = large cities like Aix, Lens...)

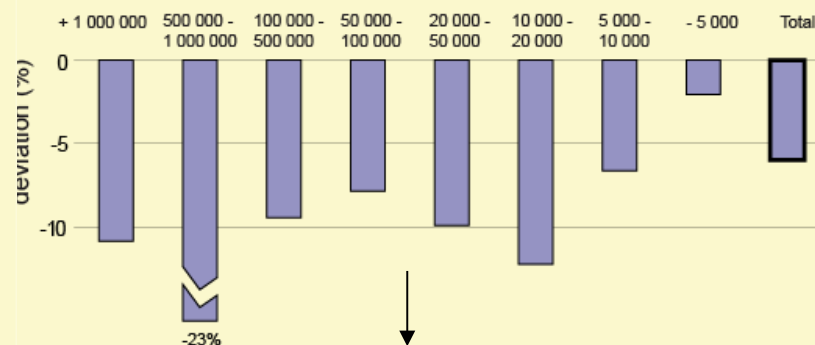
2. Average differences for matches

=> About **+/- 6%** in both countries

Deviation between UMZ and Urban Areas Adjusted (DK)



Deviation between *Unités Urbaines INSEE* (FR) and *Unités Urbaines UMZ*

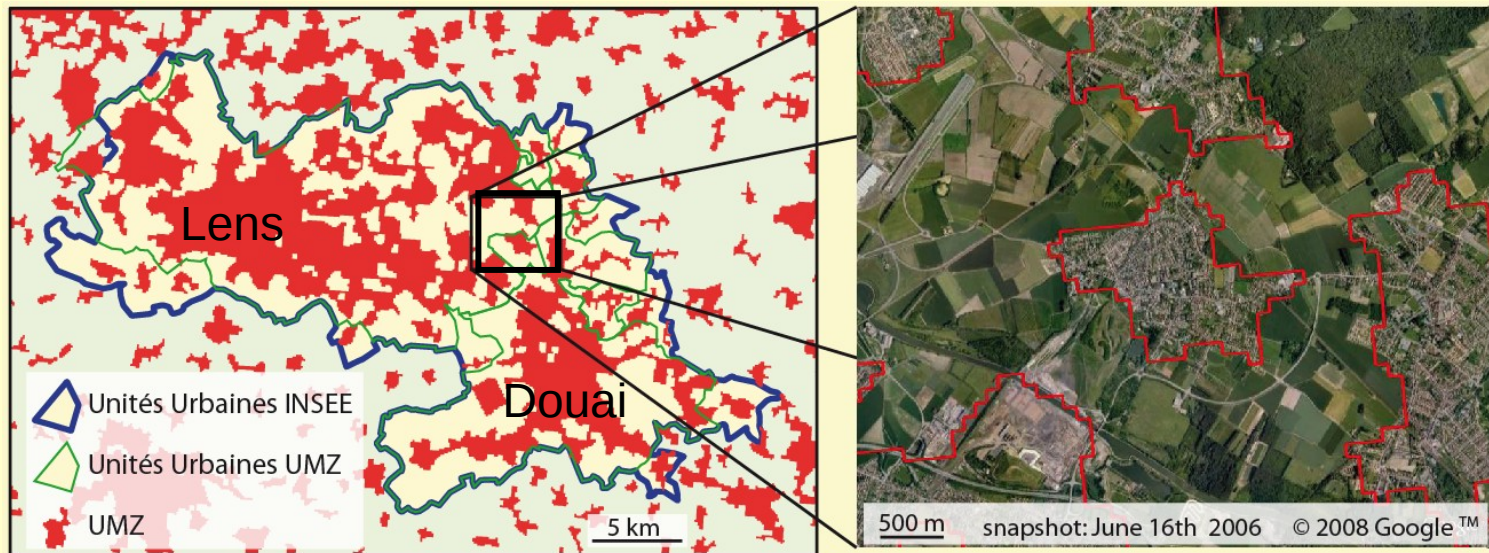


But in France, a much higher standard deviation, especially for some >100 000 inh Unités urbaines

B. **3. Results** term to term analysis

3. Typology of main differences (in French biggest *Unités Urbaines*)

- **Industrial conurbations** (Douai -73%, Valenciennes -42%)



- **Coastal conurbations** (Marseille -32%, Toulon -30%)

- **Monocentric cities** located in low density regions
(Toulouse -14%, Bordeaux -15%)

Conclusion and discussion

- **Better knowledge of UMZ and of the urban patterns displayed by UMZ**
- **Compatibility between UMZ/national databases ?**

= quite high at a macro level,

= depending on settlement patterns at the level of agglomerations

Denmark : limits of UMZ and Urban areas fit very well, even if UMZ are in average slightly more expanded than Urban areas

France : UMZ are less extensive and there are sometimes much larger differences between UMZ and Unités urbaines

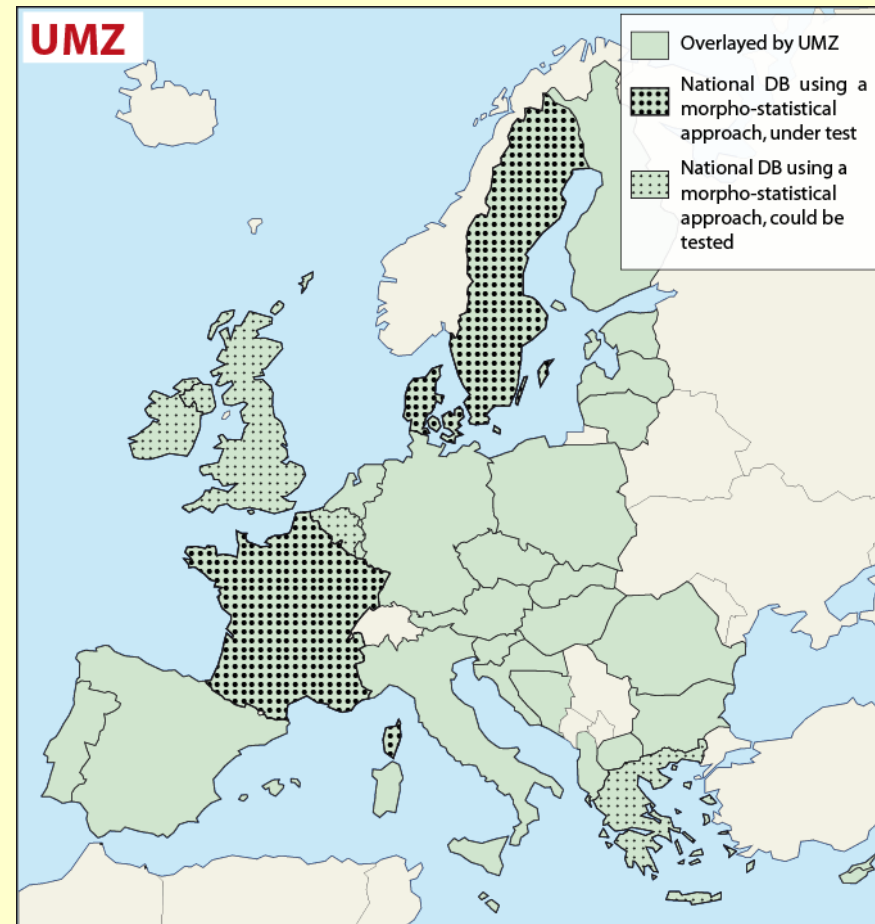
Conclusion and discussion


- No systematic bias => **not relevant to bring systematic corrections to UMZ** (ex: buffers)

Need to :

- **complete our typology**
- apply this **comparison protocol to other countries** where morpho-statistic agglomerations are available (ex: Sweden)

- Following step :
make UMZ more operational in countries where there is no national agglomeration database





Thank you for your attention.