GEOSTAT 2011 V 0.1 – and how it has been done

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GEOSTAT 1 - overview

Three iterations, from concepts to implementation

GEOSTAT 1A – develop guidelines

- **GEOSTAT 2006 data - proof of concept (completed in 2010)**

GEOSTAT 1B – test and refine guidelines, obtain real data, illustrate applications

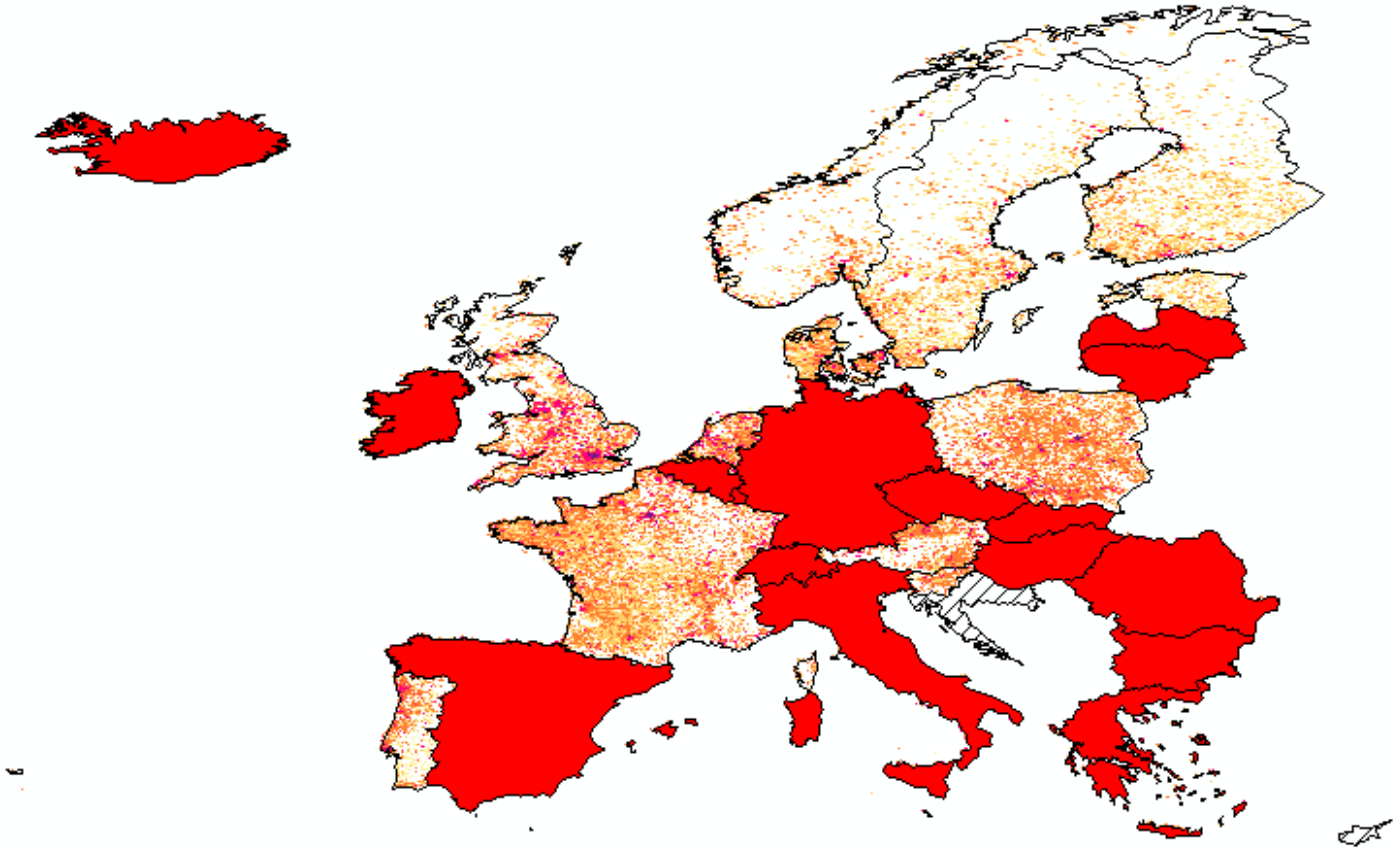
- **GEOSTAT 2011 data Version 1.0 (January 2014)**

GEOSTAT 1C – complete the data

- **GEOSTAT 2011 version 2.0 (January 2015)**

GEOSTAT 2 – preparing the 2020 Census

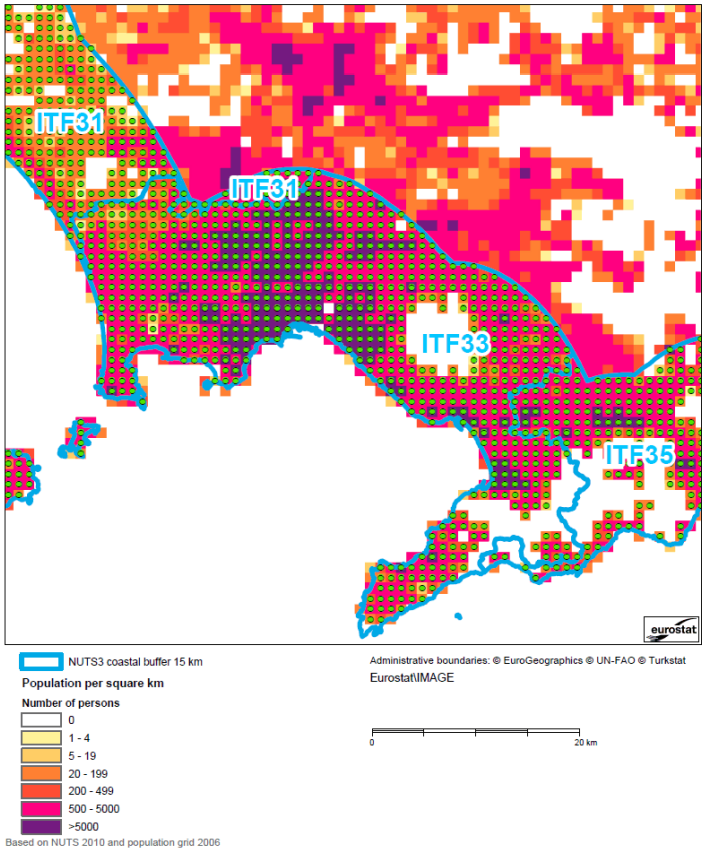
GEOSTAT 2006 data situation



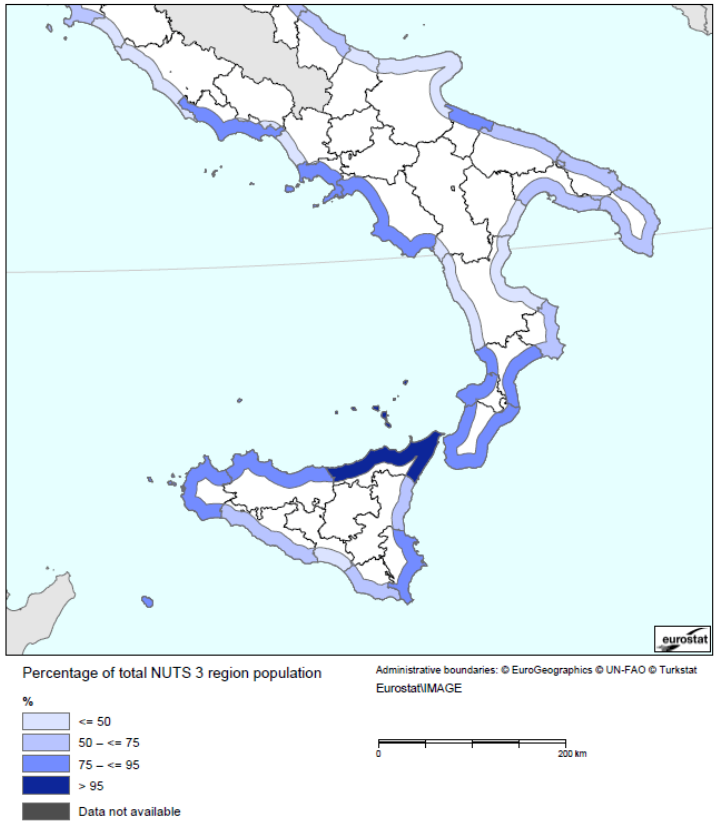
GEOSTAT 2006

Applications of GEOSTAT 2006

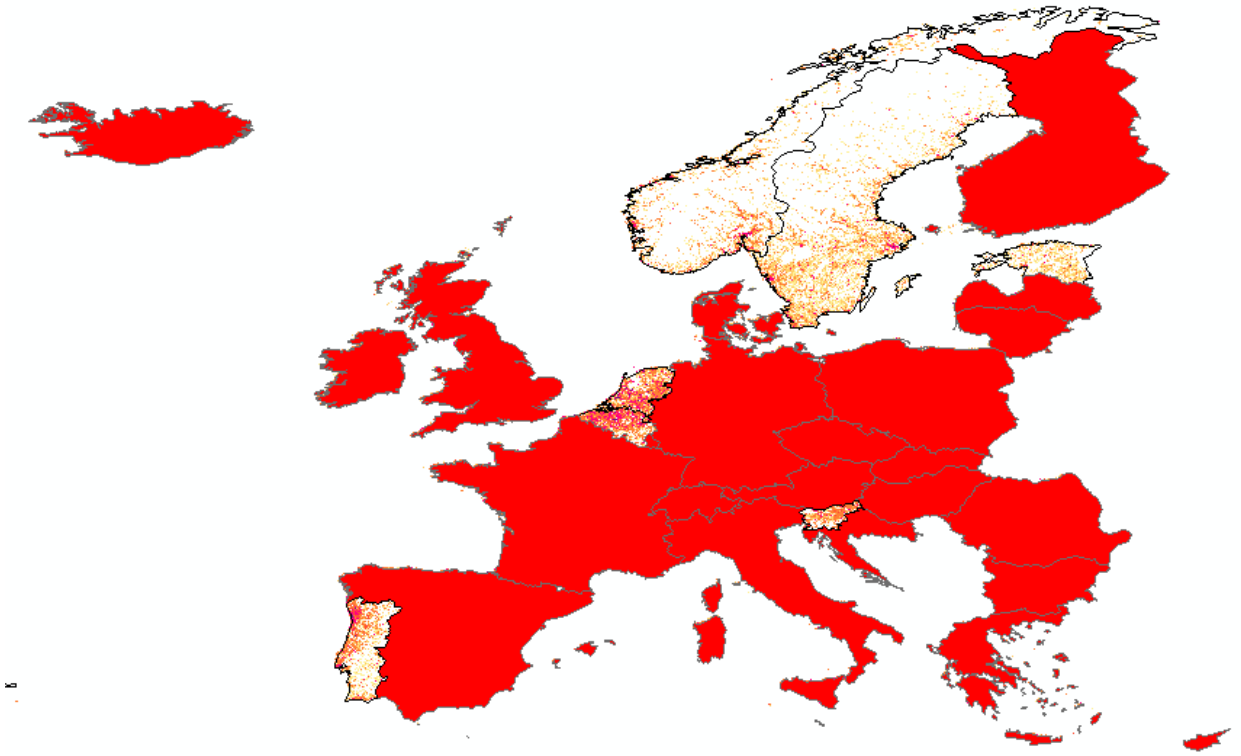
Population grid 2006: aggregation of point values per NUTS region



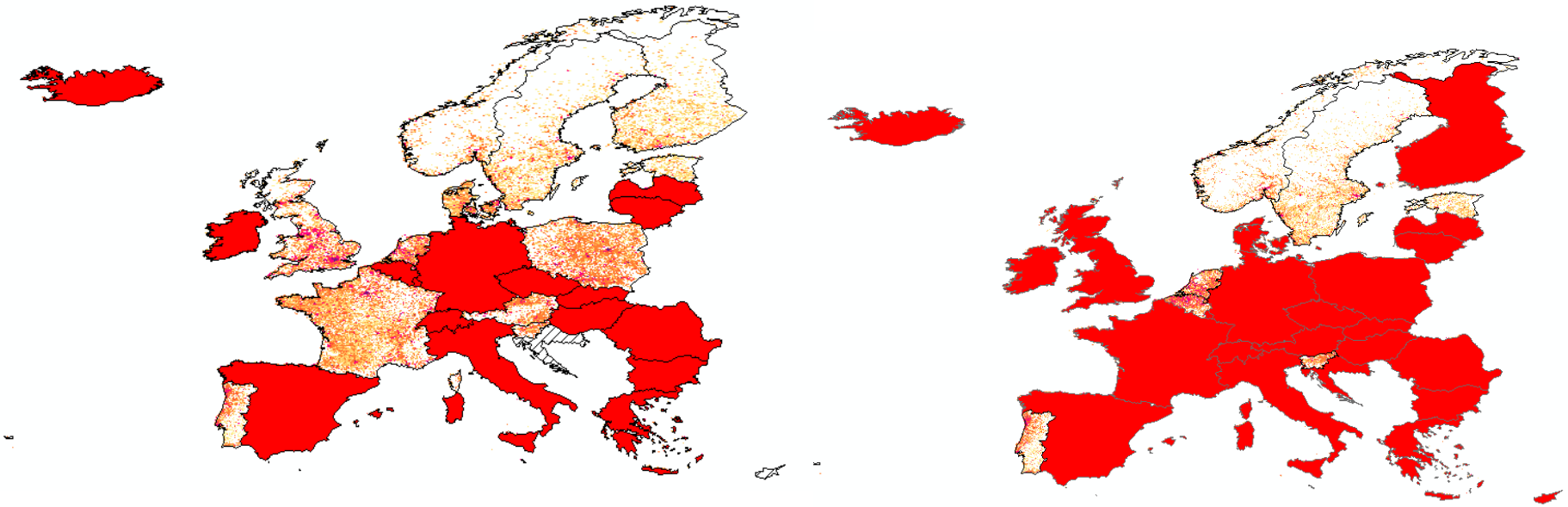
Share of population in coastal regions living within 15 km from the coastline by NUTS 3 regions



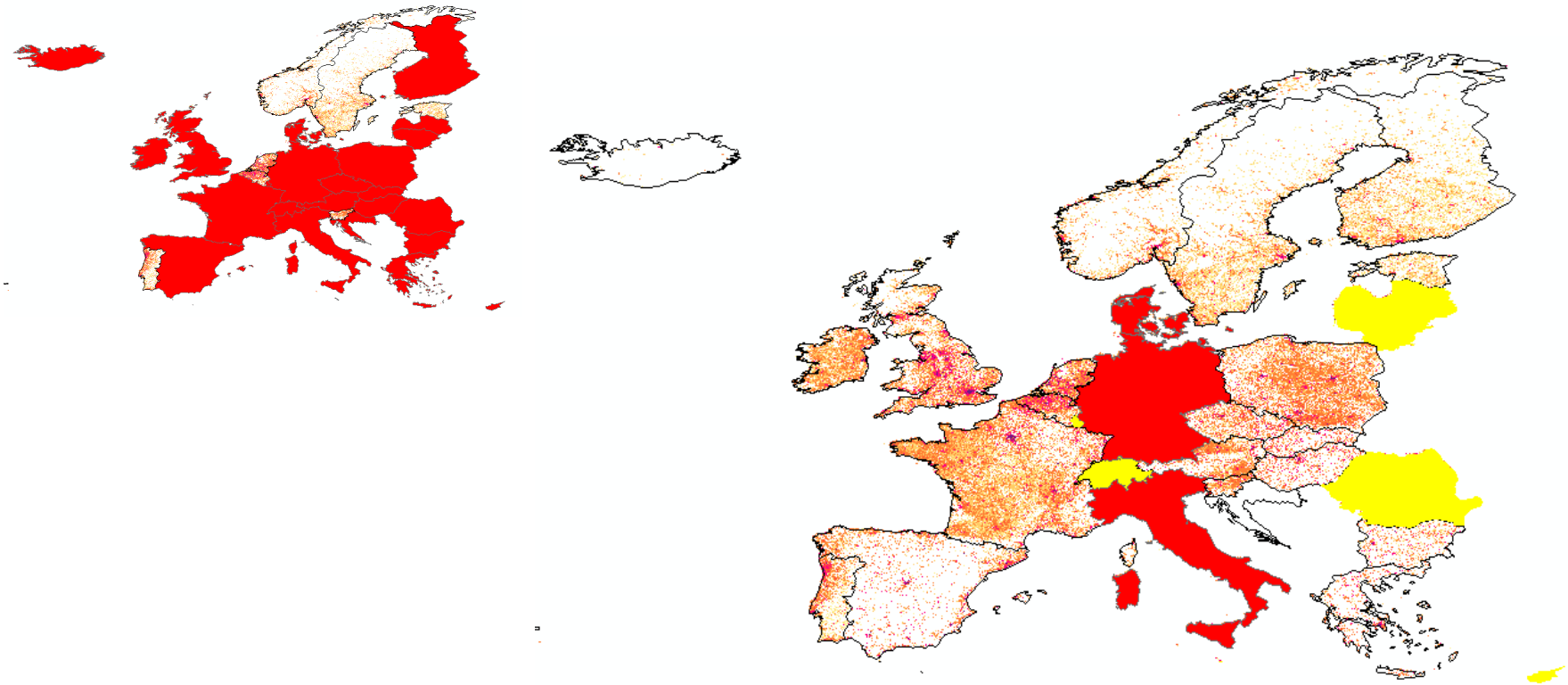
GEOSTAT 2011 V 0.1 data situation



GEOSTAT 2006 – GEOSTAT 2011 a step backward?



GEOSTAT 2011 V2.0 (end of 2014)



Support to disaggregation of population densities on grid nets – or: What shall we do if countries are missing?

EFGS conference, Sofia, 2013

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Input data

Data on degree of imperviousness

- **HR imperviousness layer 2009 (20m)**
- **Change layer (20m)**

Data for masking the imperviousness layer

- **CORINE Land Cover (CLC) 2006**
- **Open Street Map (OSM) transportation network (2011)**

Population data

- **LAU2 population data 2011 (few 2010 or 2012)**
- **LAU2 areas 2011**
- **For England and Wales „open areas" were used (2011)**

Methodology

Parameters

- **Population – global parameter on administrative units level**
- **Housing density – local parameter derived from imperviousness layer**

Spatial Disaggregation

- **Re-distributes population according to housing densities**
- **Results in local distribution of population**

Assumptions

- **Population density is proportional to housing density,**
- **no population resides outside housing areas, and**
- **relationship between population and housing density is constant within a region, but might differ between regions.**

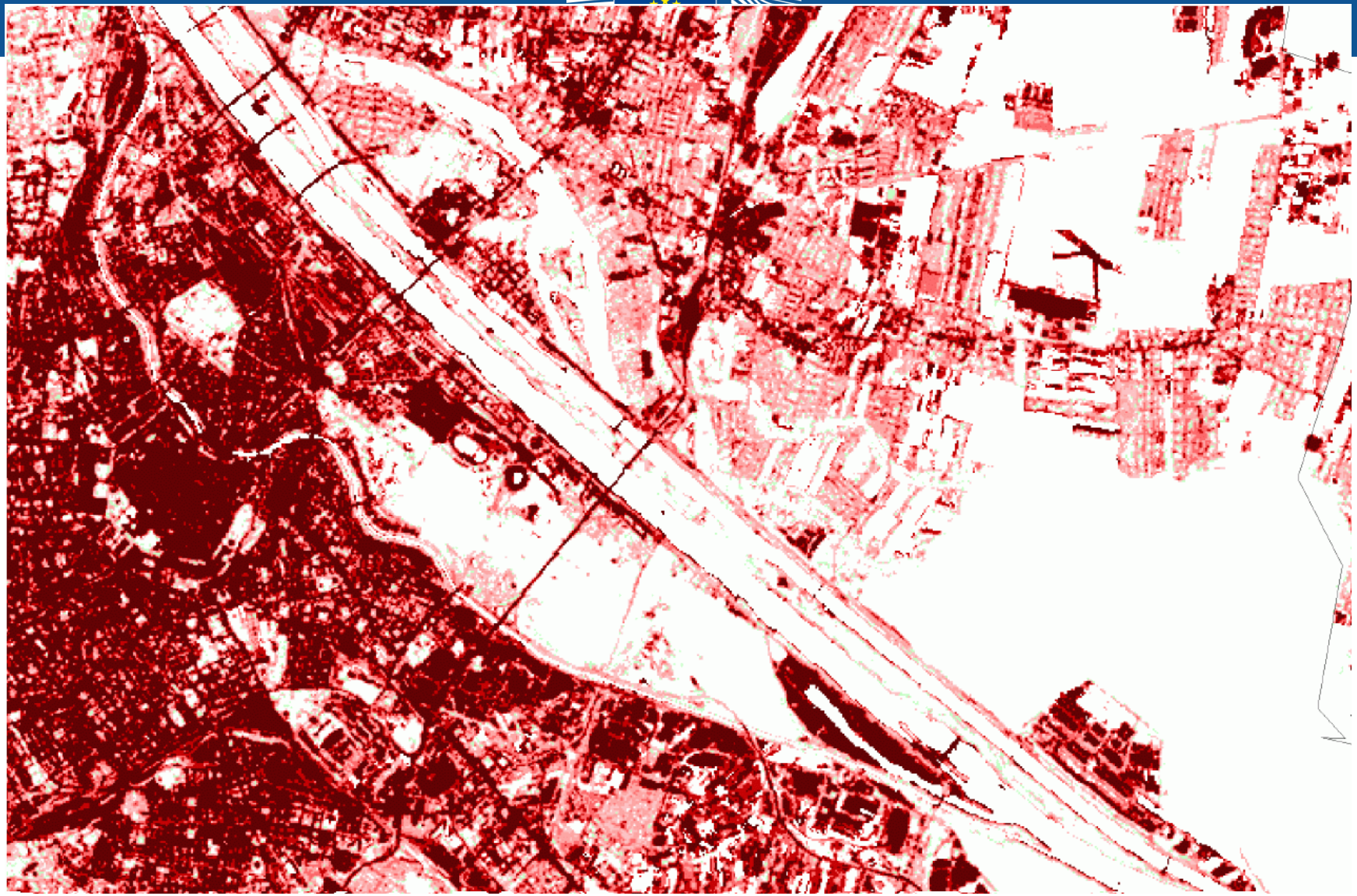
Housing density is proportional to degree of imperviousness

Masking

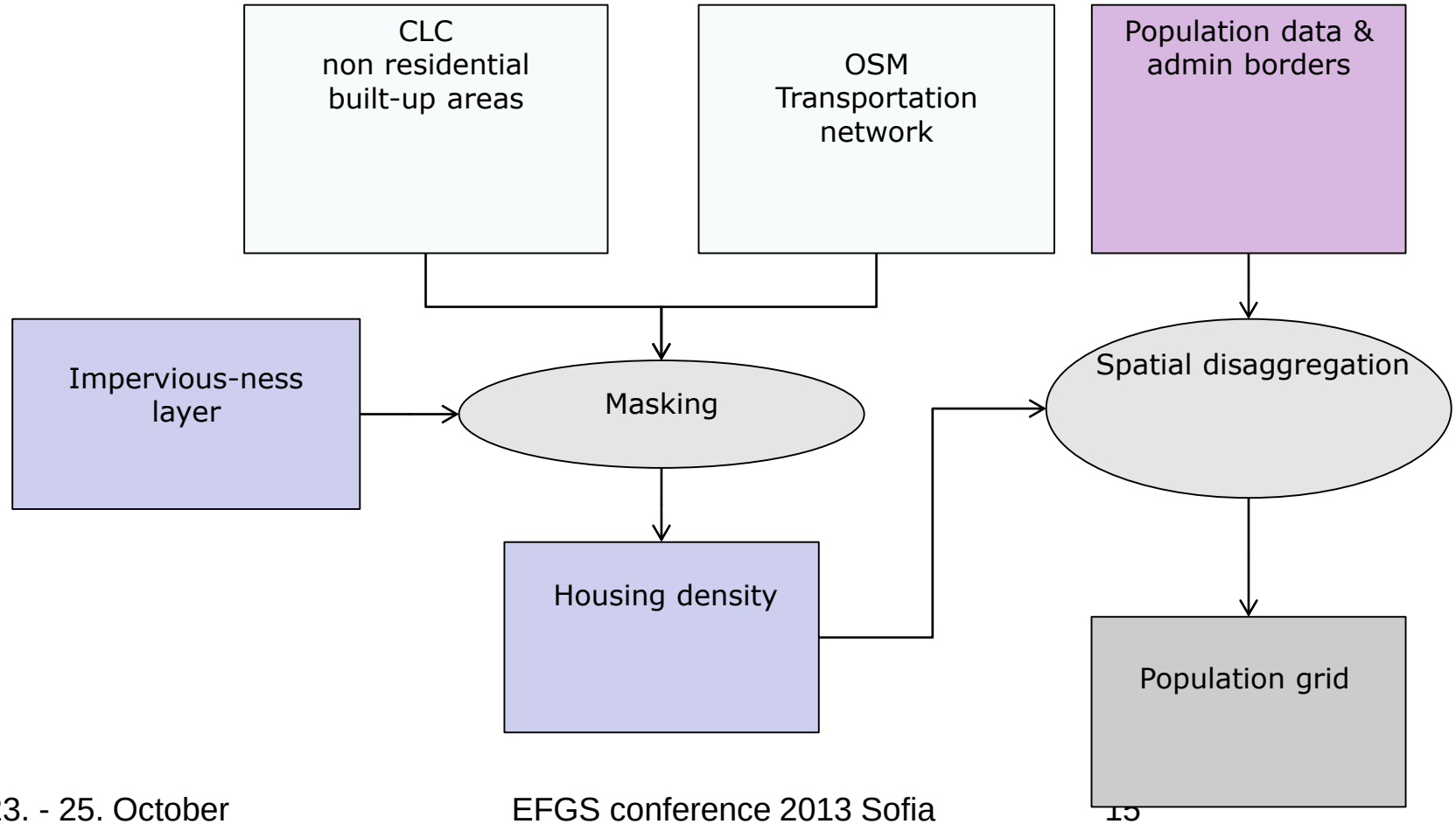
Mask for transport networks:

Mask for commercial and industrial areas:

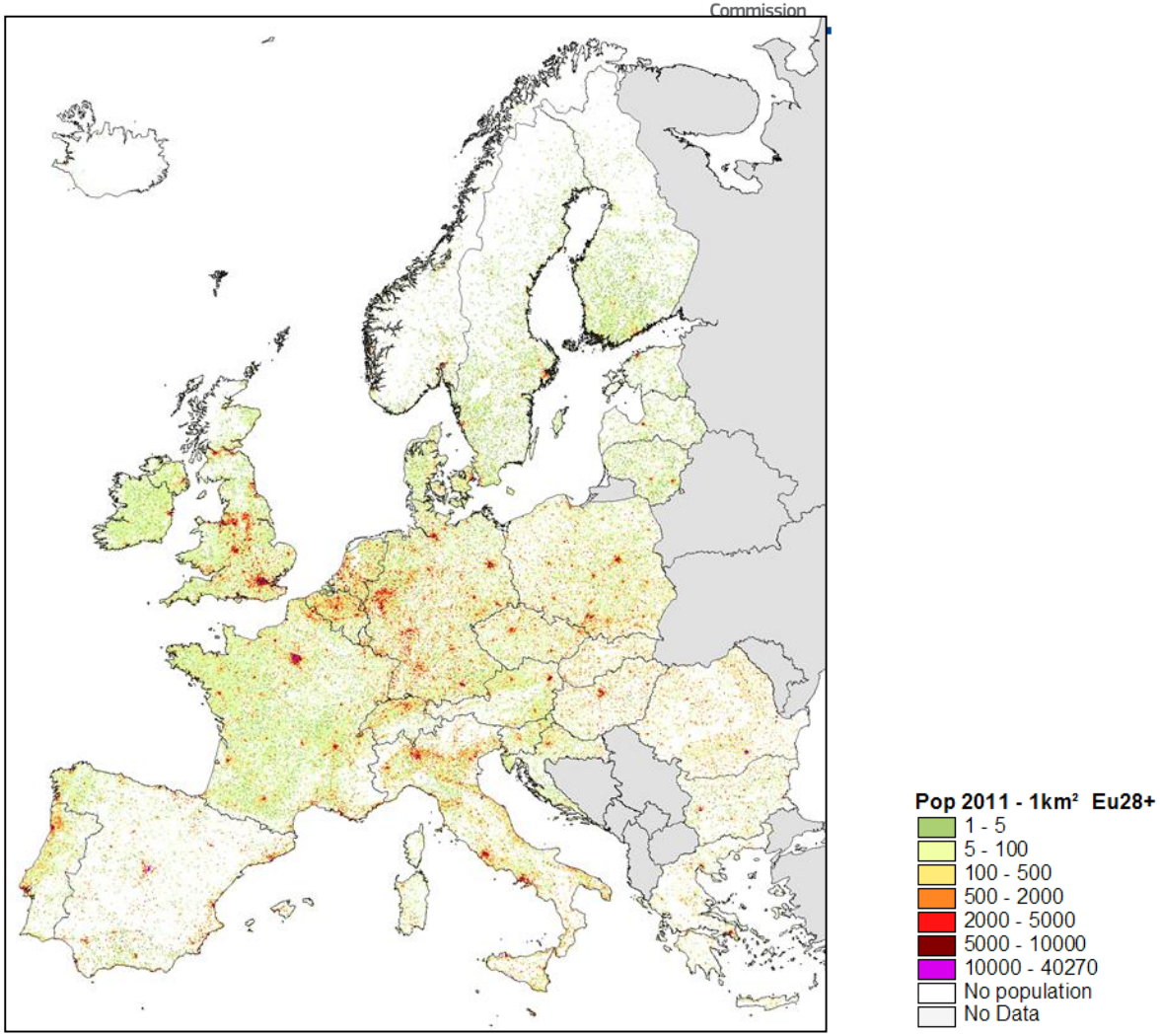
- **CLC classes 1.2 "industrial and commercial areas", 1.3 "mining areas", and 1.4 "green urban areas" (includes e.g. golf courses and cemeteries) were selected**



Methodology



Population grid data set (2011)



Quality assessment

Comparisons with bottom up grids

- **Estonia**
- **Netherlands**
- **Norway**
- **Slovenia**

- **Error measures**
  - **Total absolute error** $$TAE = \sum \left| Pop_{ref} - Pop_{dis} \right|$$
  - **Total relative error** $$TRE = \frac{TAE}{2 * \sum Pop_{ref}}$$
  - **Indication for comparison of different grids**
  - **No consideration of displacement of population**

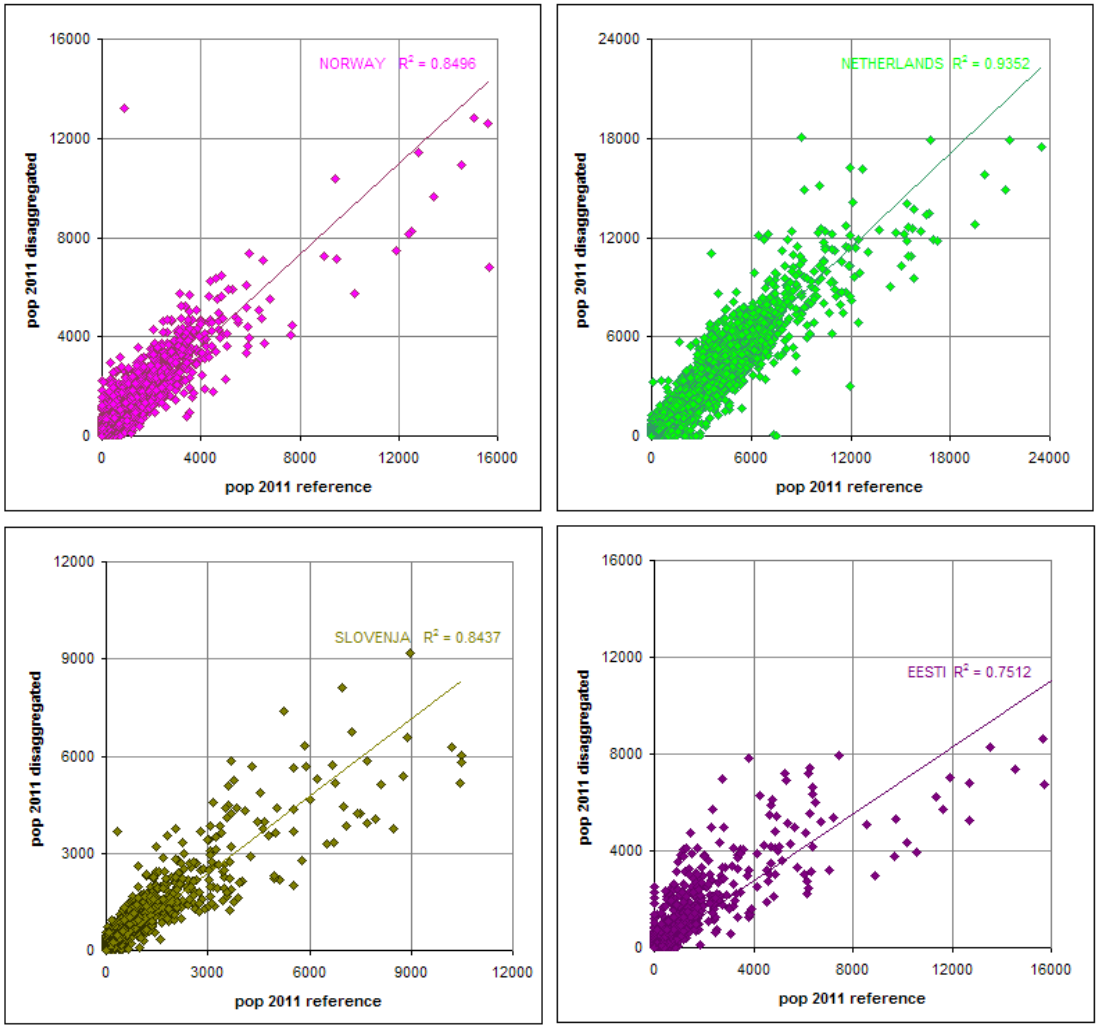
Quality assessment

TRE for 2011 population grid

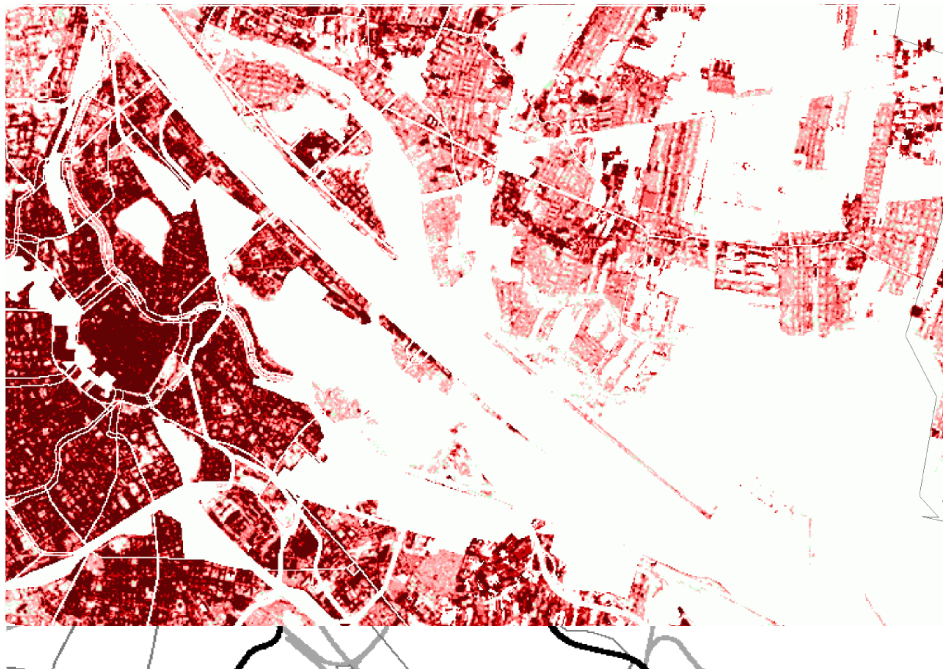
- **Estonia** **29,2%**
- **Netherlands** **11,3%** **(2006: 12,8%)**
- **Norway** **23,4%** **(2006: 35,1%)**
- **Slovenia** **18,7%**

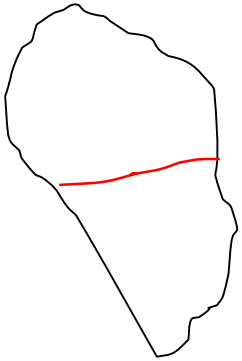
- **Comparison to 2006 population grid**
  - **Identical methodology**
  - **Improved masking**

Quality assessment



How to further improve the quality?





How to further improve the quality – the best solution

Aggregated microcata from point-based statistical information