



Turkey experience in integrating statistical and geospatial information using geography

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General Command of Mapping

Outline

- ▶ The production activities in the General Command of Mapping
- ▶ The works done in the Turkish Statistical Institute
- ▶ Evaluation / Experiences



GENERAL COMMAND OF MAPPING



General Command of Mapping (GCM)



- ▶ **GCM is the national mapping agency of Turkey**
- ▶ **Even she is a military agency, serves both military side for the defense and security purposes and to the public side for the development purposes**
- ▶ **GCM is responsible for small scale topographic and thematic maps**
- ▶ **GCM is also responsible for establishing and maintaining the national geodetic networks of all kinds**

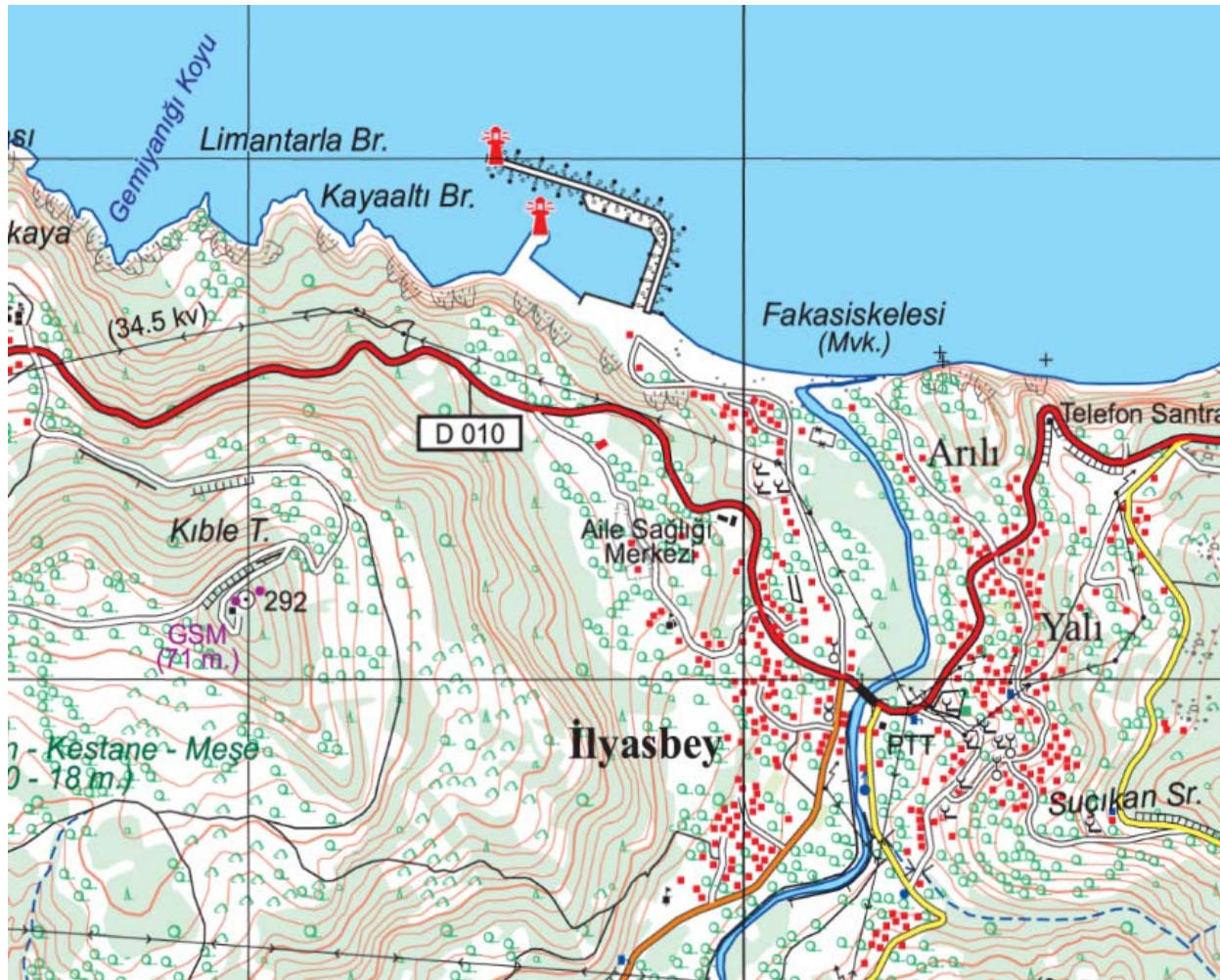
GCM



International Organizations

- ❖ International Union of Geodesy & Geophysics - **IUGG**
- ❖ International Society for Photogrammetry & Remote Sensing - **ISPRS**
- ❖ International Cartographic Association - **ICA**
- ❖ **EuroGeographics**
- ❖ NATO & PfP Geographic Conference - **NGC**
- ❖ Defence Geospatial Information Working Group - **DGIWG**
- ❖ Multi-National Geospatial Co-production Project - **MGCP**

GCM – Main Production



SCALE	SHEET
1:25.000	5535
1:50.000	1450
1:100.000	388
1:250.000	71
1:500.000	18

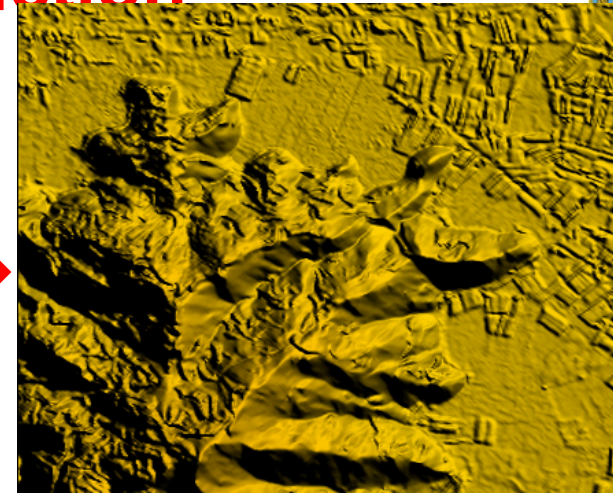
The base scale is 1:25.000

Larger scale (1:1.000 and 1:5.000) -> other governmental organizations

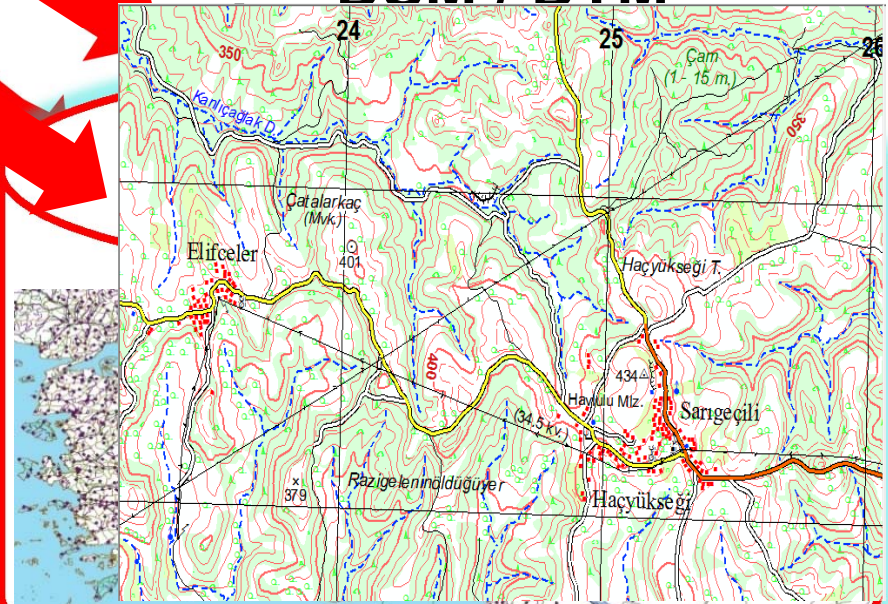
GCM – Main Production



2 aircraft and cameras



DSM / DTM



Cartographic vector data



3D vector data at 25.000
Geographic database
(30, 45cm GSD)

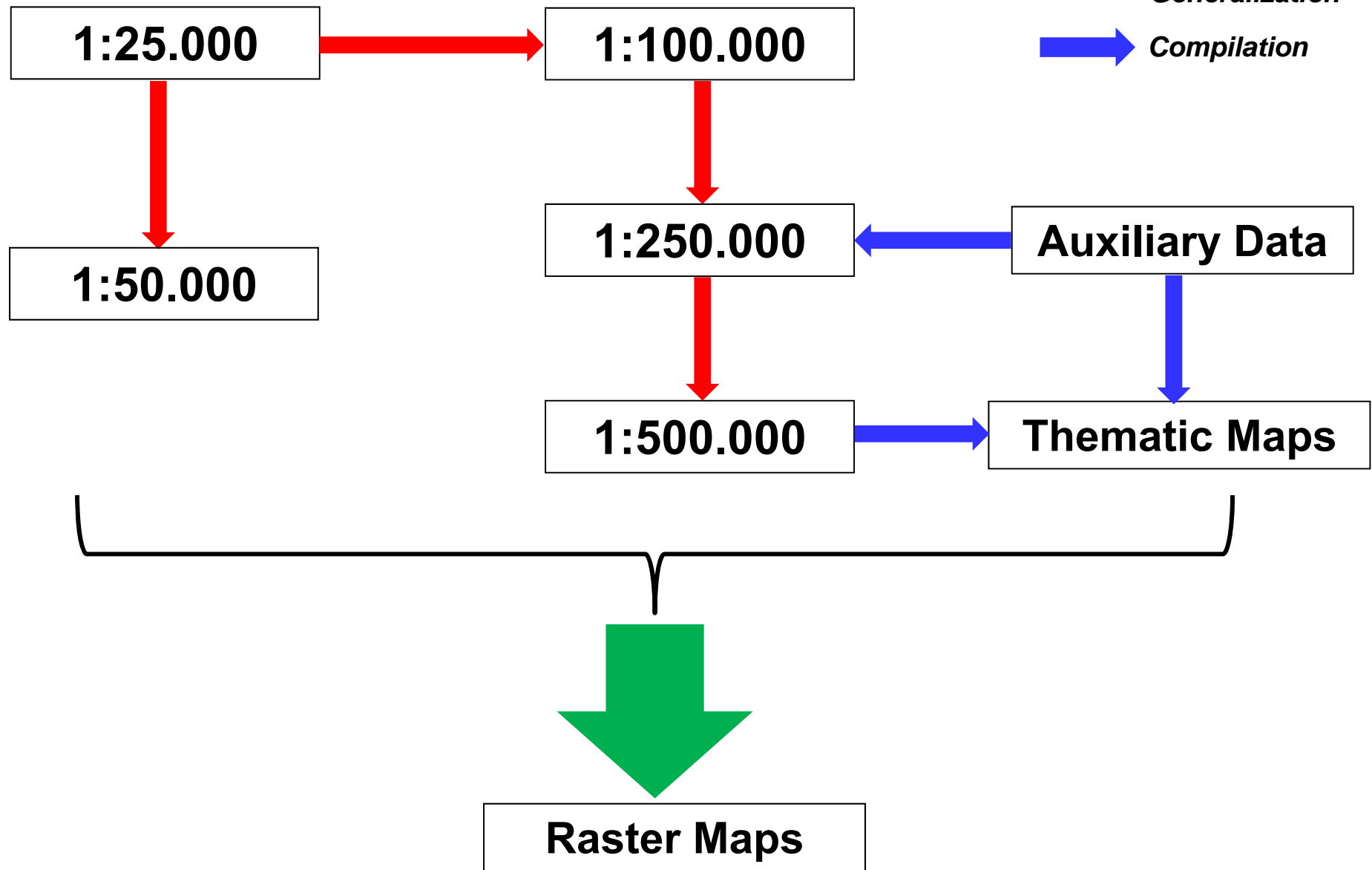


Orthophoto (30-45 cm GSD)

GCM – Main Production



 *Semi-automatic Generalization*
 *Compilation*



Other Products

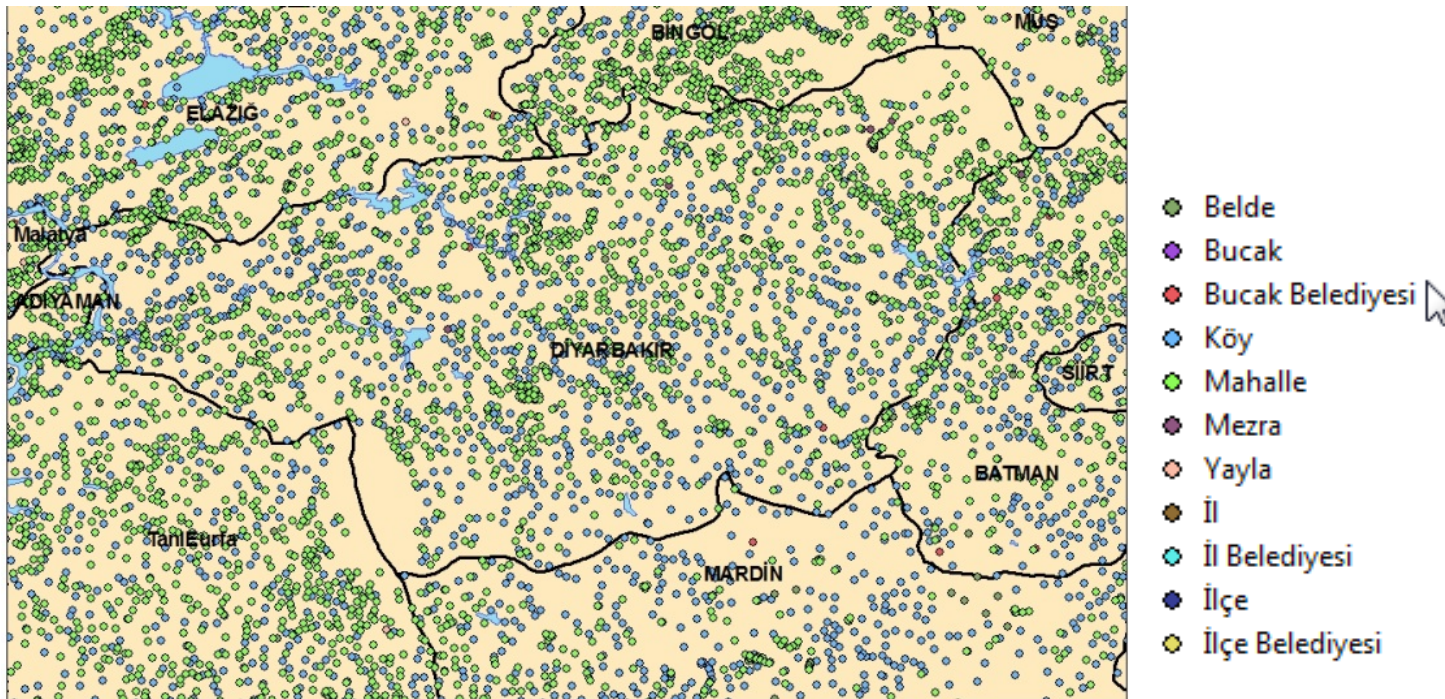


- ▶ **Populated Places Database**
- ▶ **International Boundary Line**
- ▶ **Administrative Division Boundaries**



Populated Places Database

- ▶ It is a database consists of location, population, hierarchical level and names of populated places in all levels including provinces, counties, districts, villages, etc.
- ▶ There are 118.524 **point** features in this database.





International Boundary Line

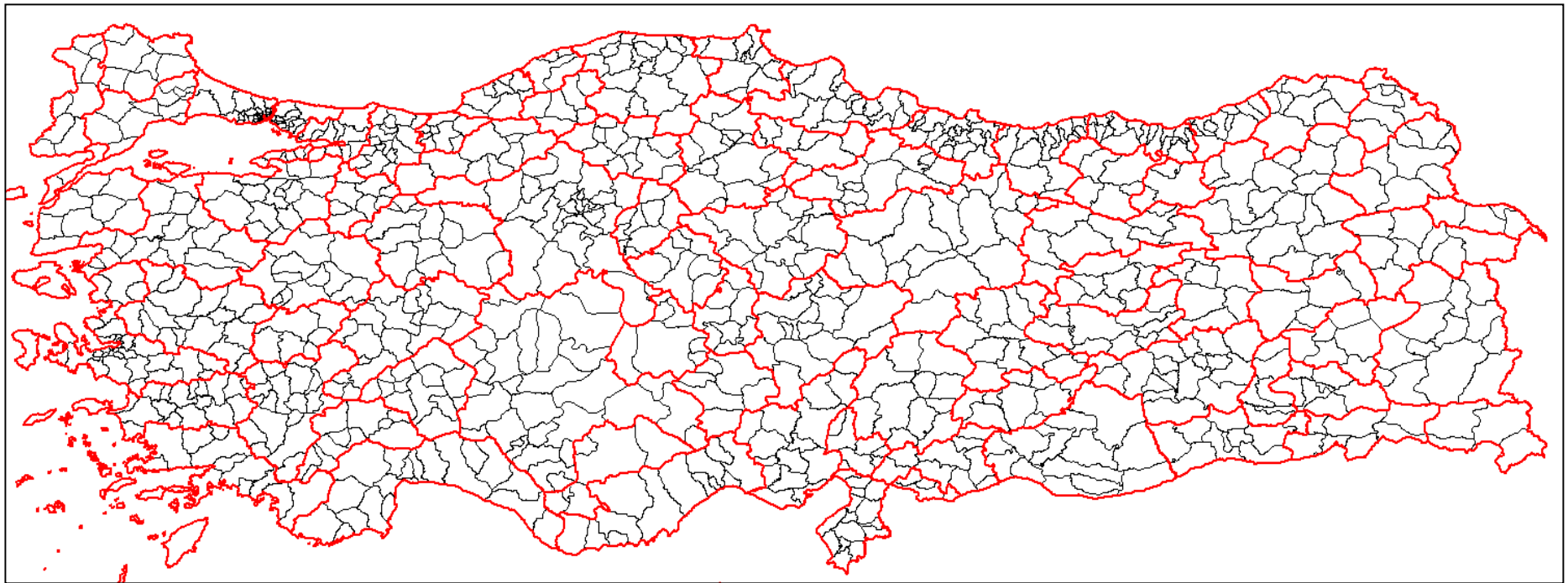
- ▶ GCM is the responsible agency for the demarcation of national borders.
- ▶ We have created land boundary line data in **1:25.000** scale accuracy.





Administrative Division Boundaries

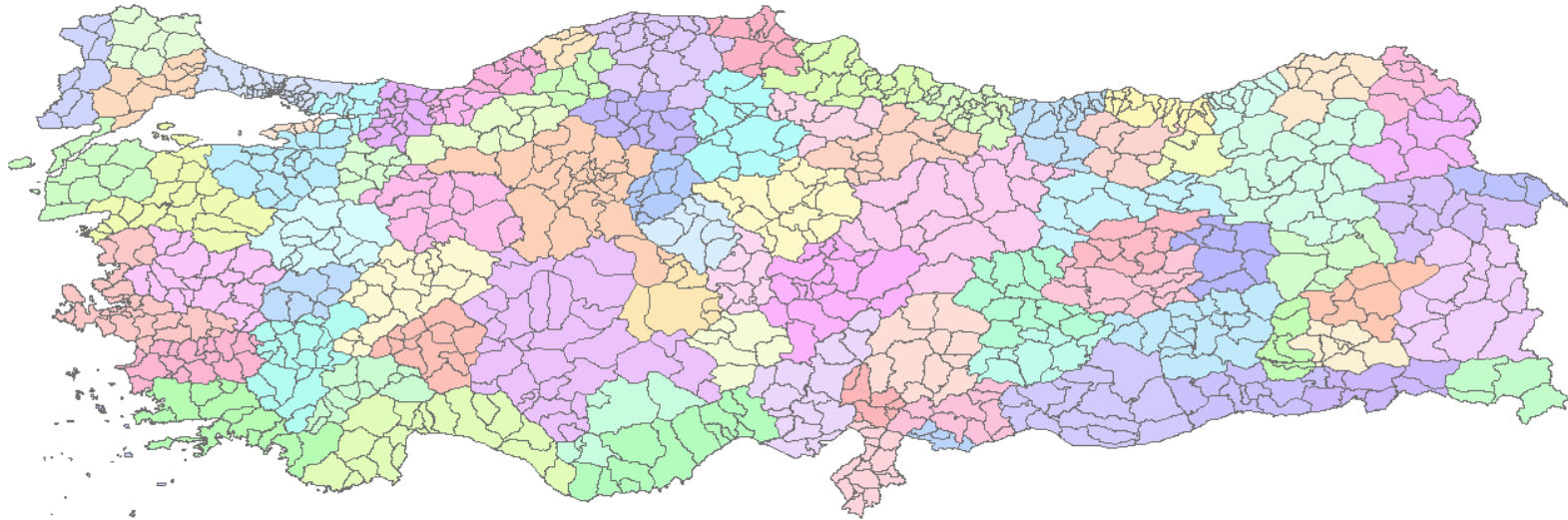
- ▶ GCM created administrative division boundary data in **1:100.000** scale accuracy. But this is **not an official** release
- ▶ For the time being this dataset is **the most reliable one**



Administrative Division Boundaries



We plan to integrate this data to Eurogeographics' **Euroboundary Map Data** - including NUTS (Nomenclature of Territorial Units for Statistics) data- product until the end of this year.

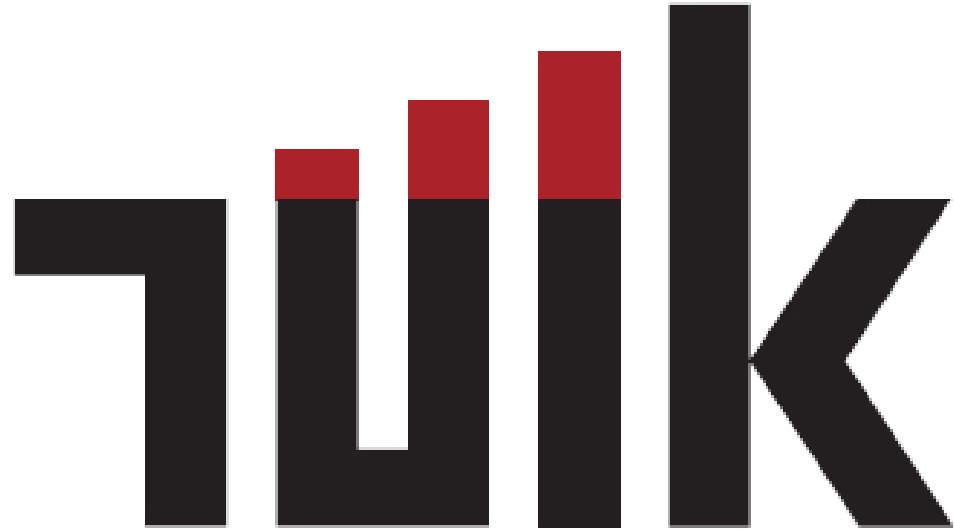


GCM



- ▶ GCM has also a very rich archive which includes aerial photos and topographic maps goes back to 1939
- ▶ GCM distributes her data to the customers via offline media or online OGC web services





TURKISH STATISTICAL INSTITUTE

Turkish Statistical Institute (TurkStat)



- ▶ to compile data and information, and produce, publish and provide necessary statistics in the areas the country needs
- ▶ to prepare the Official Statistics Programme
- ▶ to organise the statistical activities specified in the Programme and ensure their realisation

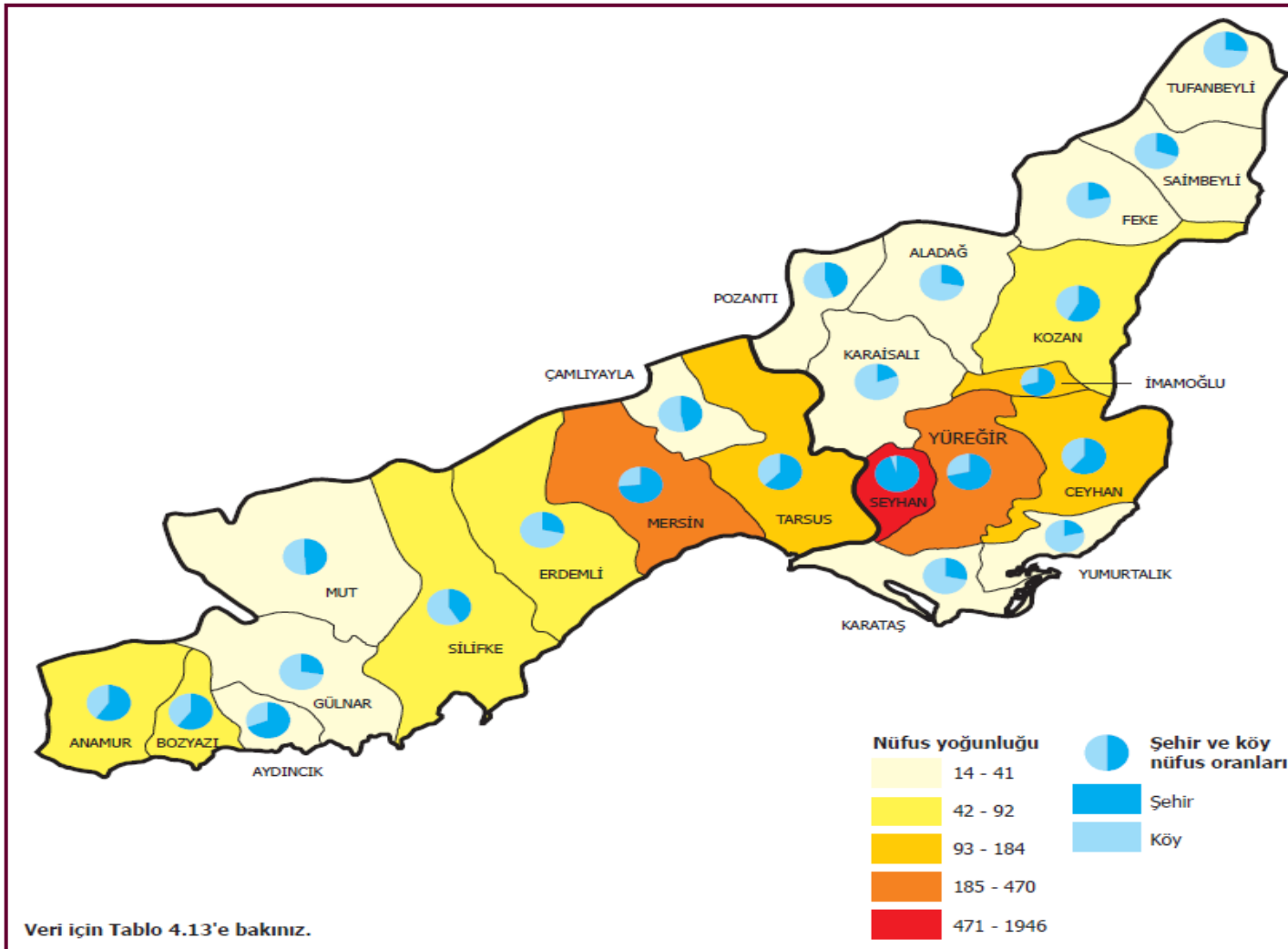
- ▶ **GIS unit, established in 1993.**
- ▶ **to support the statistical data collection activities**
- ▶ **to make geospatial and geostatistical query and analyses**
- ▶ **to disseminate statistical information by integrating geospatial information with online and offline tools**
- ▶ **TurkStat adopts EU based standards and procedures (Eurostat, EFGS)**

Classification of Statistical Regional Units

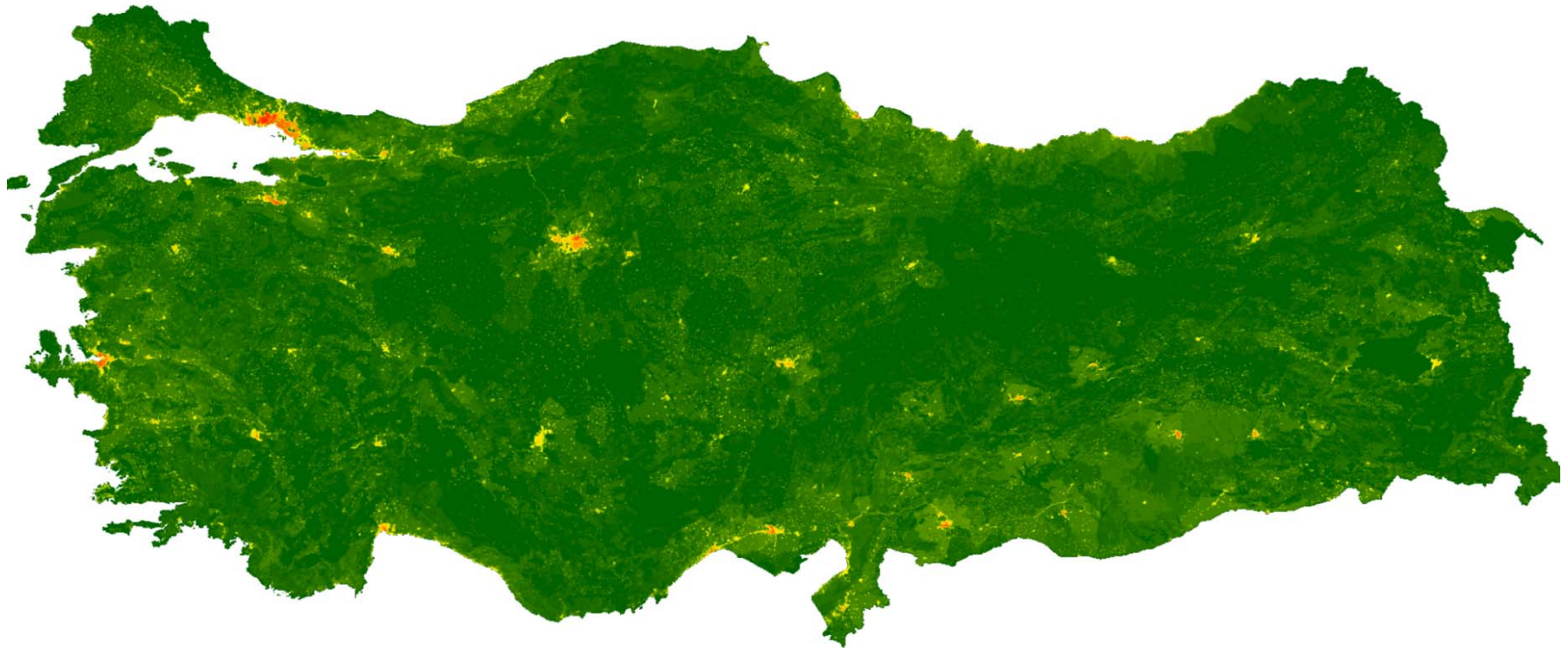
- ▶ Classification based administrative boundaries, before 2002
- ▶ EU Statistical Classification, after 2002
- ▶ Level 1: 12 regions
 - Level 2: 26 regions
 - Level 3: 81 regions (provinces)



► TurkStat produces various thematic maps expressing the outputs of statistical analyses.



► Population Density Map of Turkey was produced in 2013.



Method: Disaggregation, Dasimetric spatial enterpolation

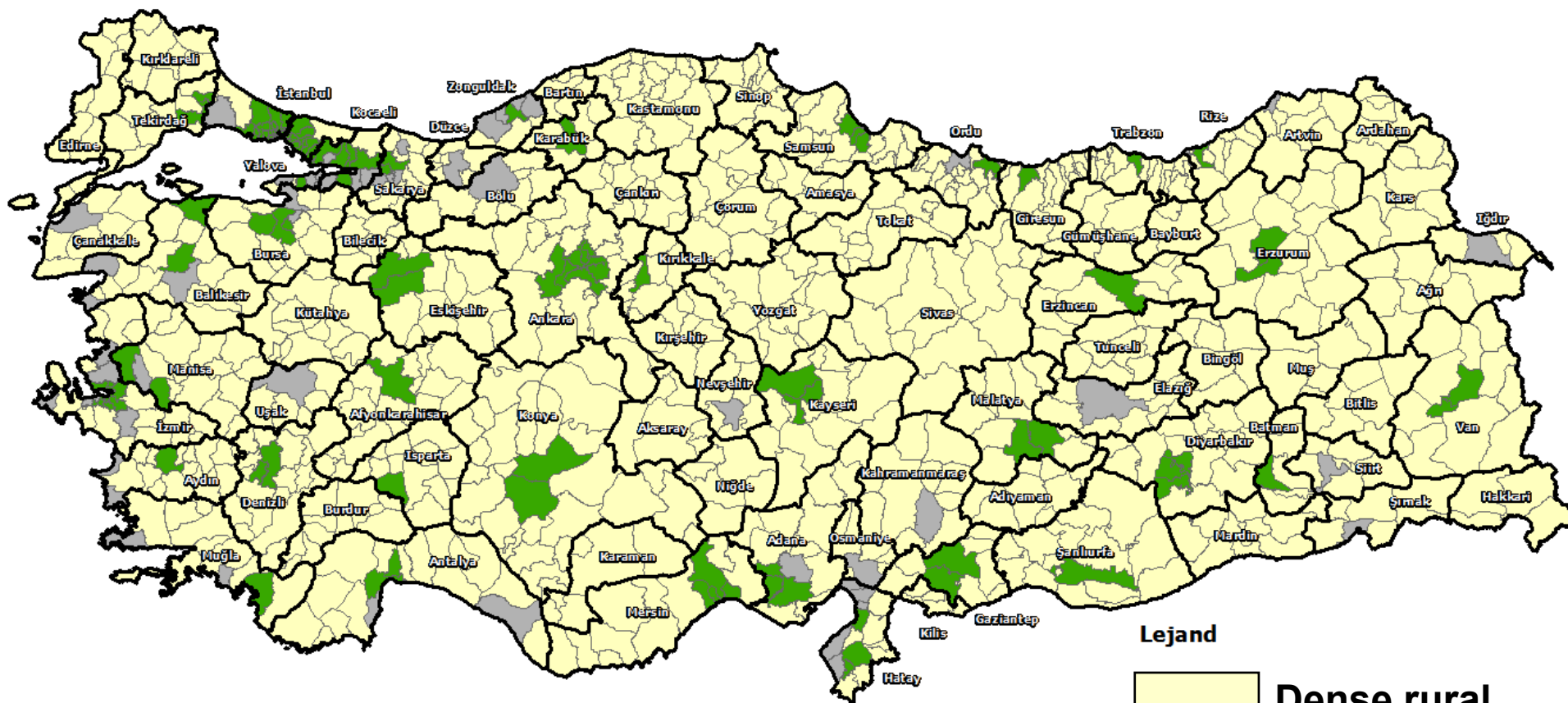
Spatial Resolution: 1 km²

Input Data: Population of counties and CORINE 2006

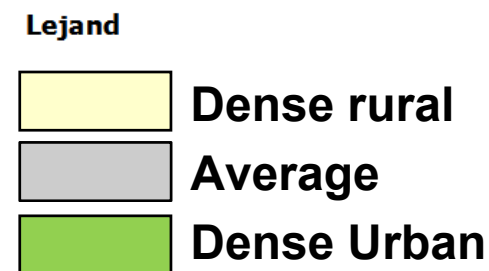
► Urban-Rural distinction map, produced by population density grid, based on province level (L3)



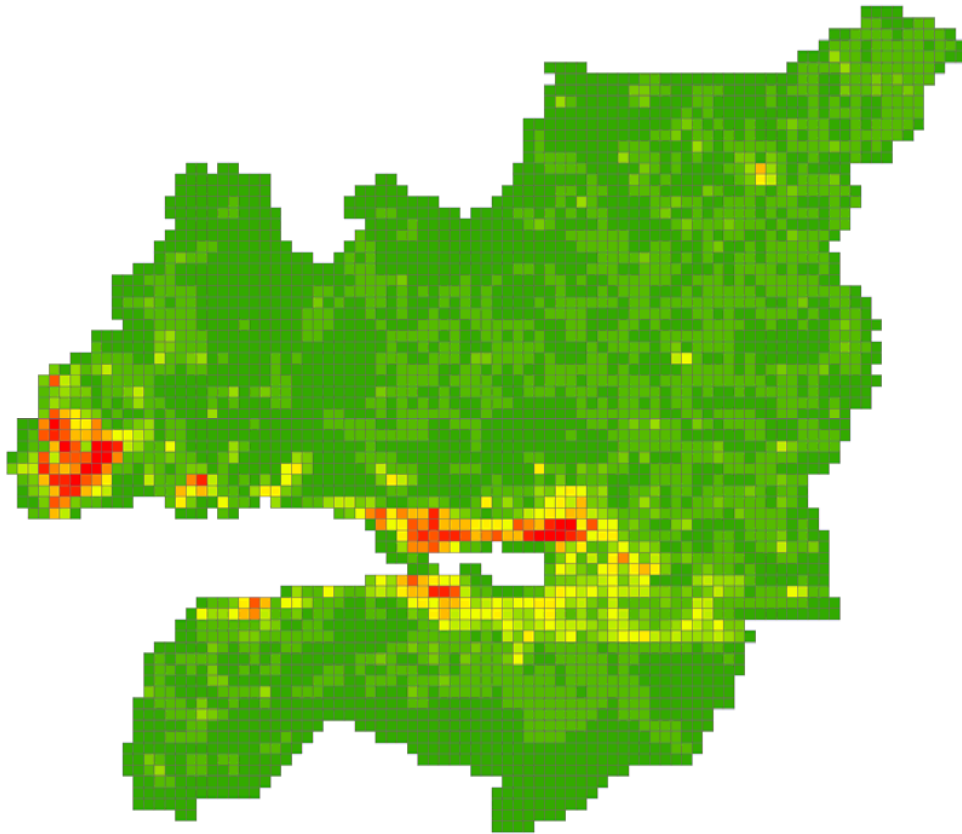
► Urban-Rural distinction map, produced by population density grid, based on county level



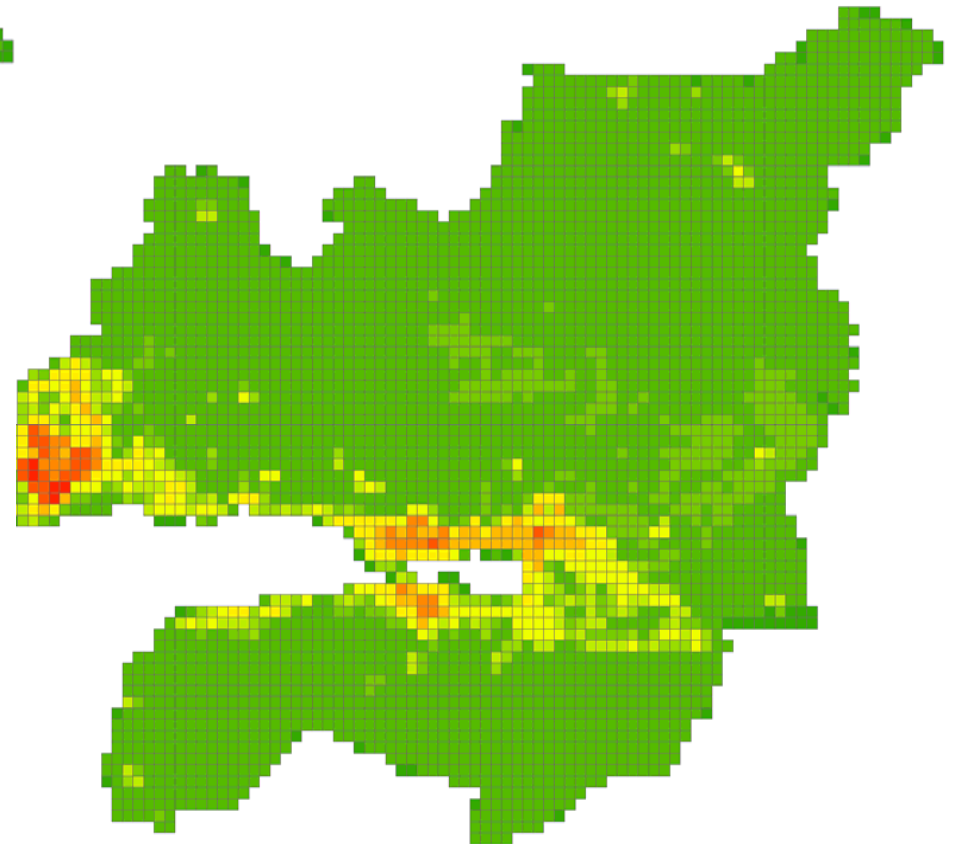
Threshold: 300 person/km²



► Population density grid by aggregation method for Kocaeli province.

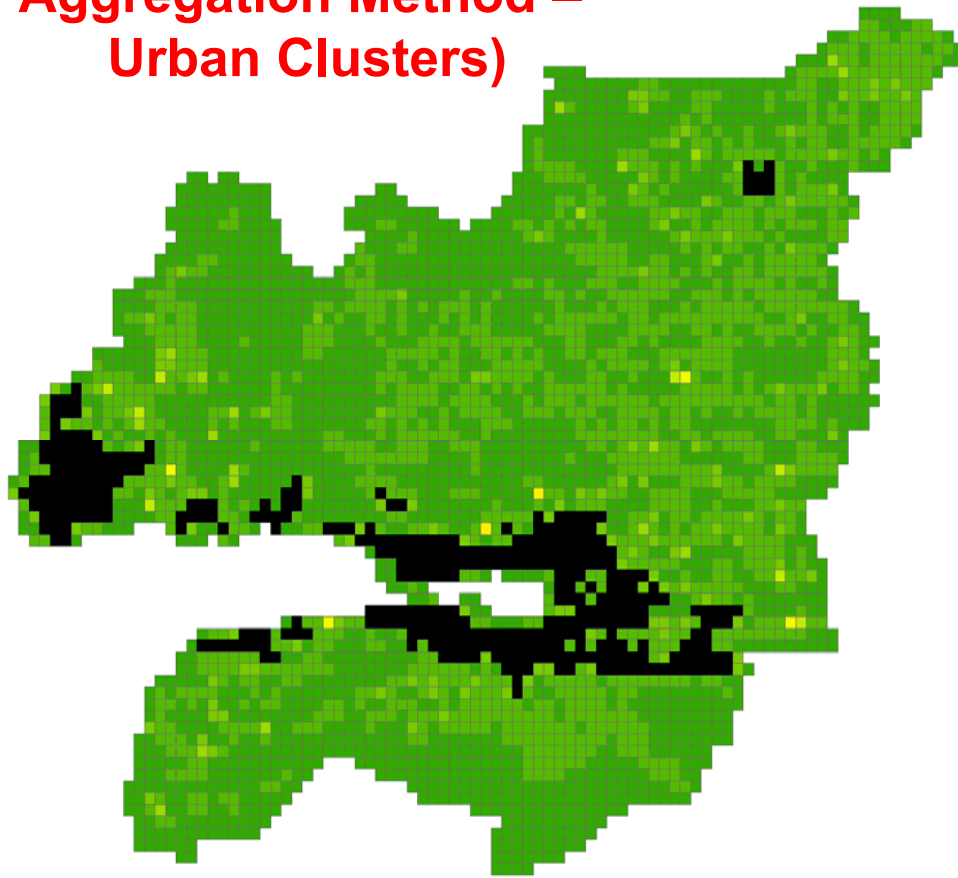


Aggregation Method



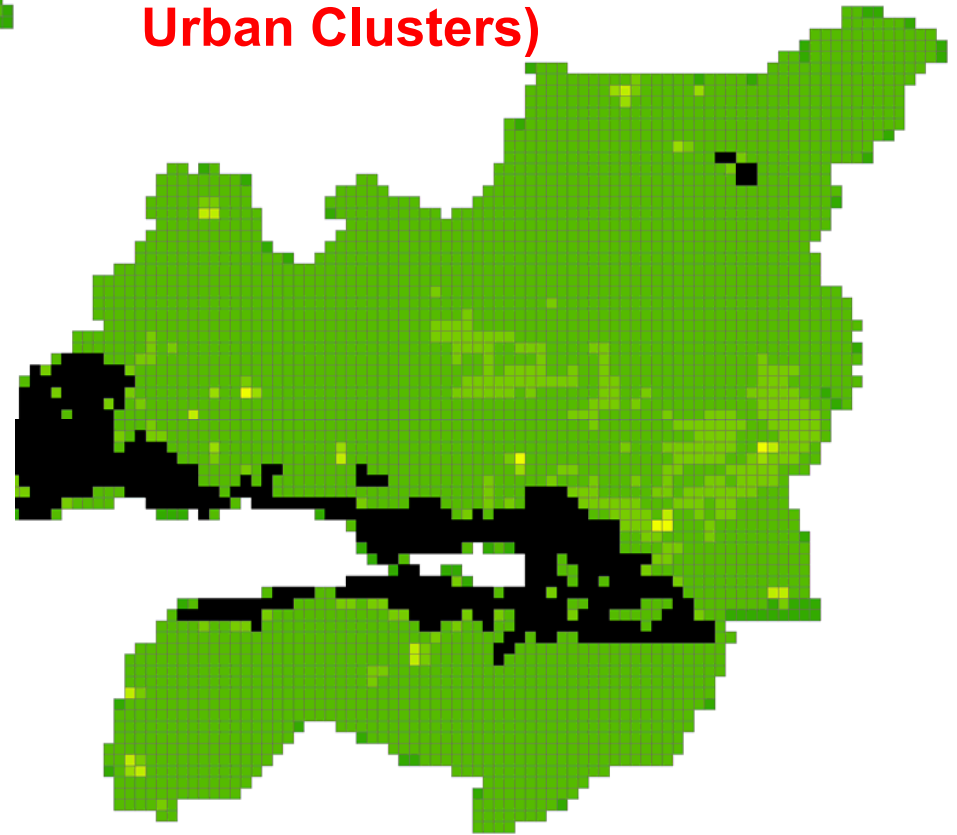
Disaggregation Method

Aggregation Method – Urban Clusters)



Urban Population	Rural Population
1.416.603	259.572
92,5	7,5

Disaggregation Method – Urban Clusters)



Urban Population	Rural Population
1.416.603	259.572
84,5	15,5

EVALUATION



GENERAL COMMAND OF MAPPING



TURKISH STATISTICAL INSTITUTE

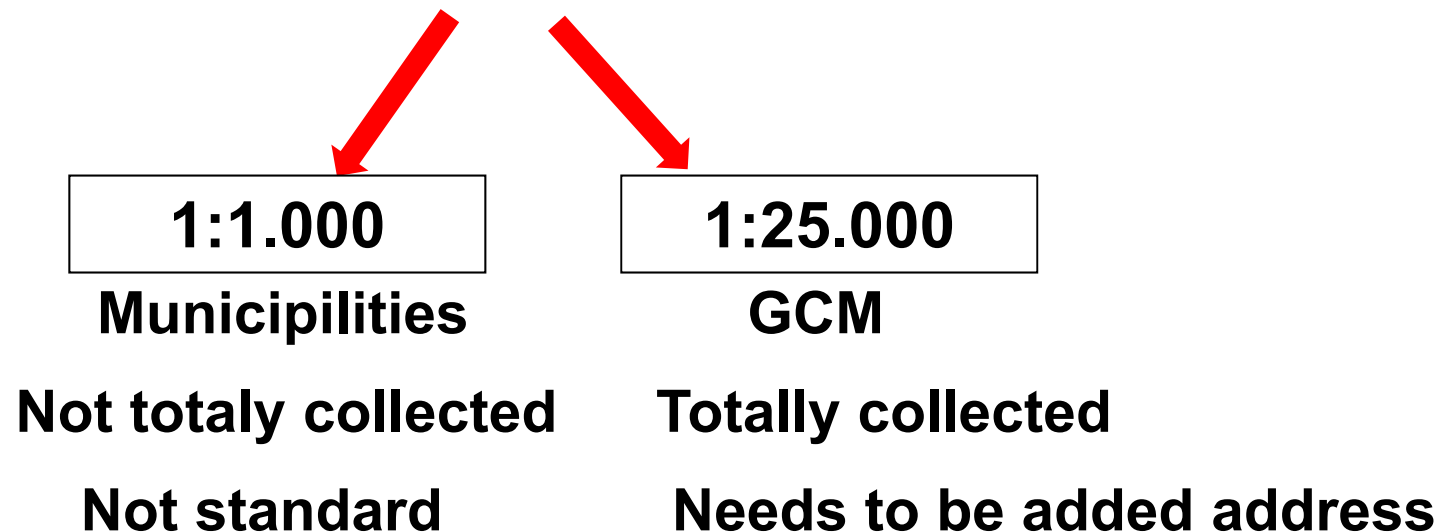
The Usage of the Products for Statistical Works

- ▶ **Basemap (background display)**
- ▶ **Input data for the production of CORINE Land Cover dataset**
- ▶ **Elevation models for analysis and visualization**
- ▶ **Vector Data for Analysis (eg. Usage of administrative division geometry for density calculations)**
- ▶ **There is no any address information (It is under the responsibility of Ministry of Interior)**

Experiences

- ▶ **Proof of concept works**
- ▶ **Disaggregation method is estimated, wants to implement aggregation method**

▶ **Need geocoded data**



Experiences

- ▶ **Turkish NSDI (TUCBS) works**
- ▶ **Plan: Have an address layer in the next 3 years**
- ▶ **Plan: Revise CORINE land use data next year**



contact

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