VGI IN AUTOMATIC INFORMATION RETRIEVAL FROM BIG RS DATA

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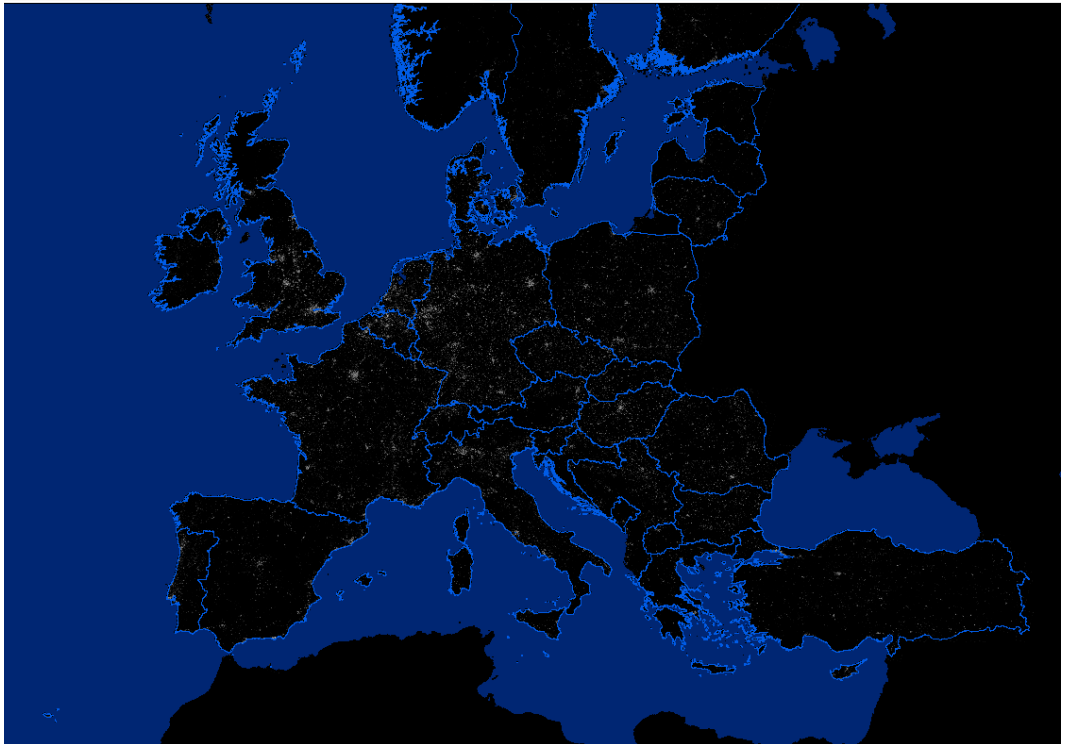

Role of Volunteered Geographic Information in Advancing Science: Effective Utilization
GIScience 2014 VGI Workshop,
Vienna, Austria,
Sept. 23 2014

http://ghslsys.jrc.ec.europa.eu/

http://www.ec.jrc.europa.eu/

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Global Human Settlement Layer (GHSL)

- Continuos map of Built-up structures

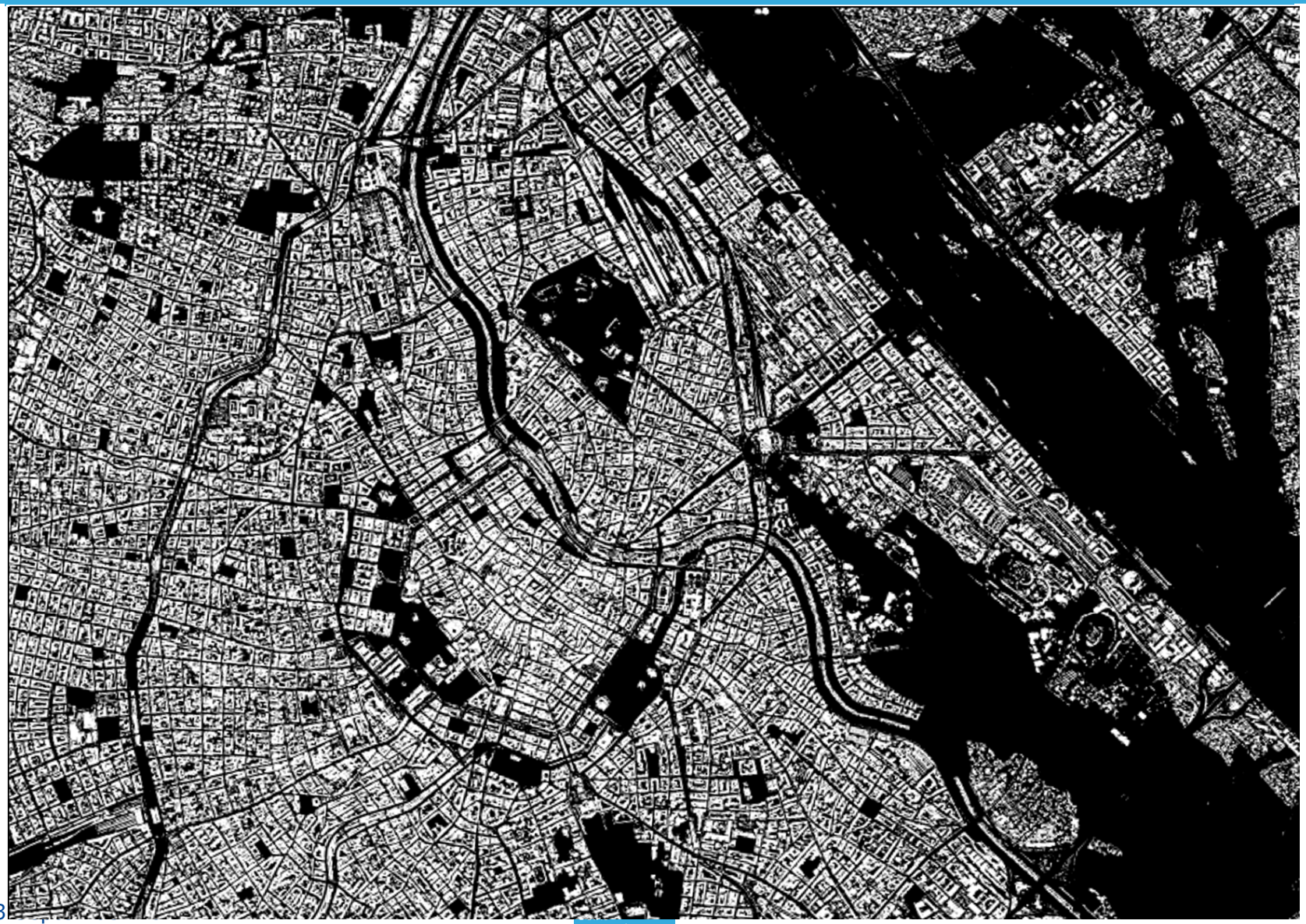
- VHR/HR input and operational approach
  - empirically verified <0.5m

- Novel approach to deal with existing universe of imagery

- Intensive use of global auxiliary datasets (core processing and post-processing)

VHR Imagery
Vienna

European (EU) GHSL
Vienna



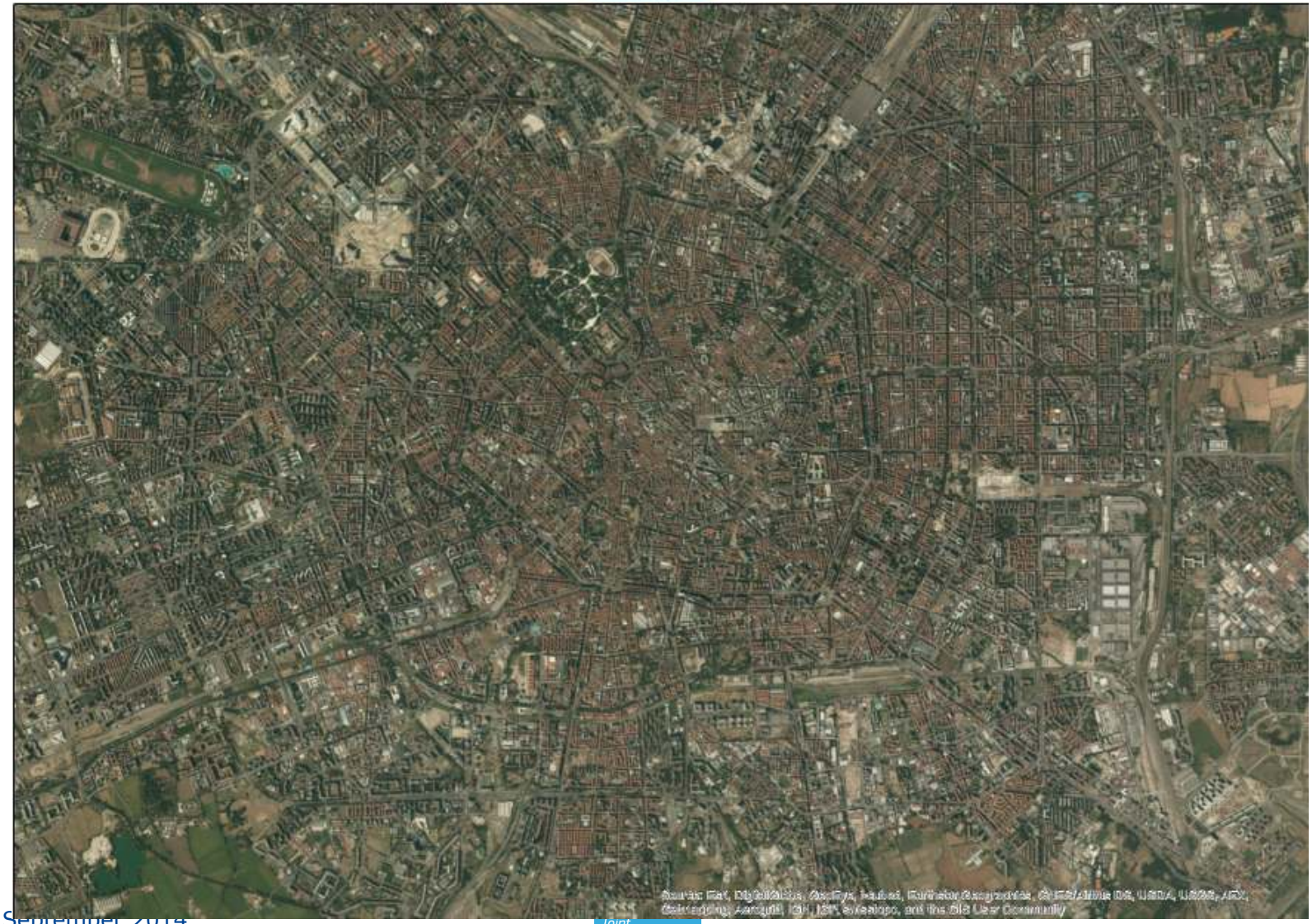
VGI auxiliary datasets

European Commission

- Thematic subsets (OSM)
  - Coastline
  - Roads
  - Railway
  - Roads

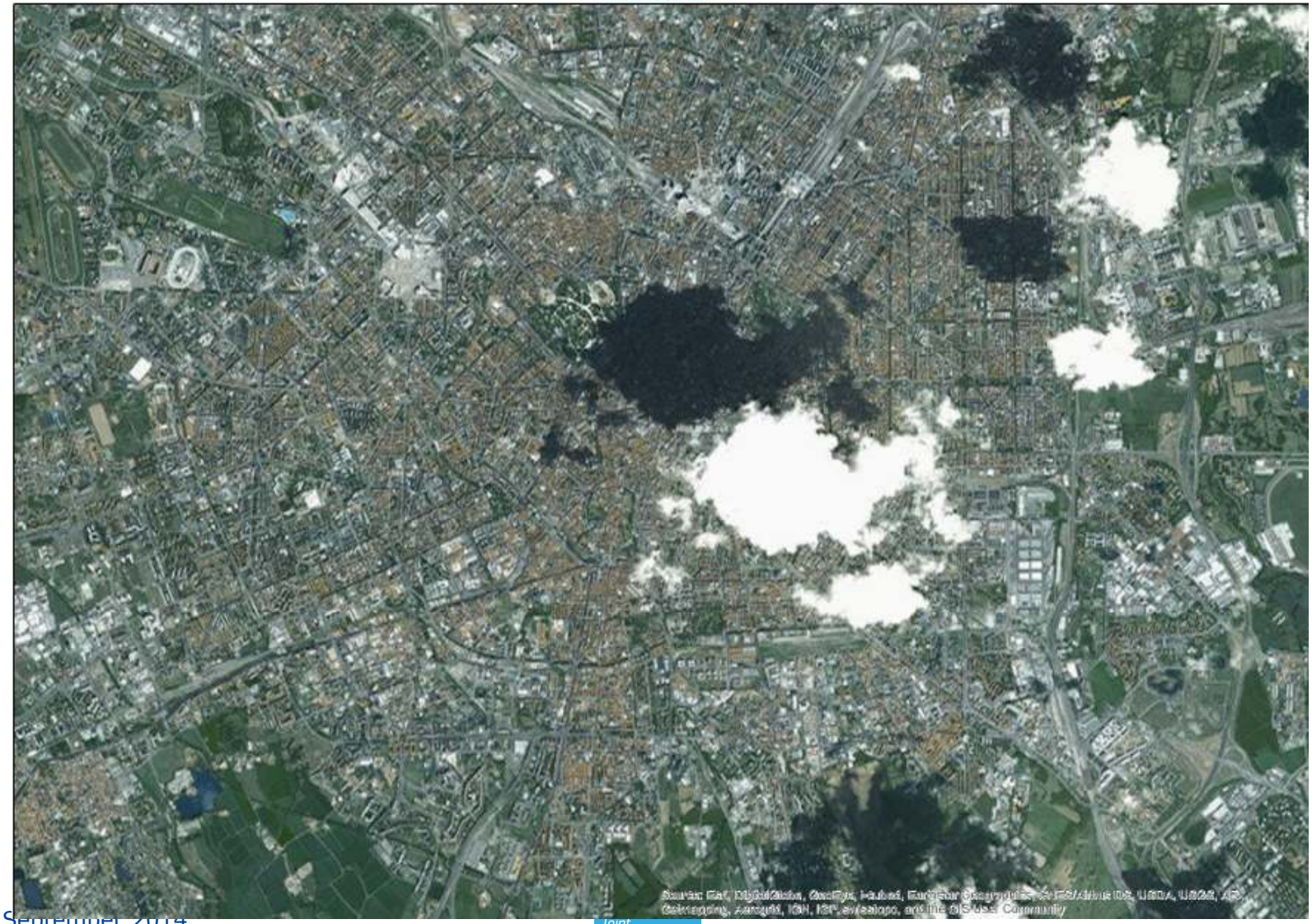
- Import and subset creation
  - OSM datasets: Global (2009&2013)
  - Geofabrik release: Europe (2014)

Milano center
VHR imagery

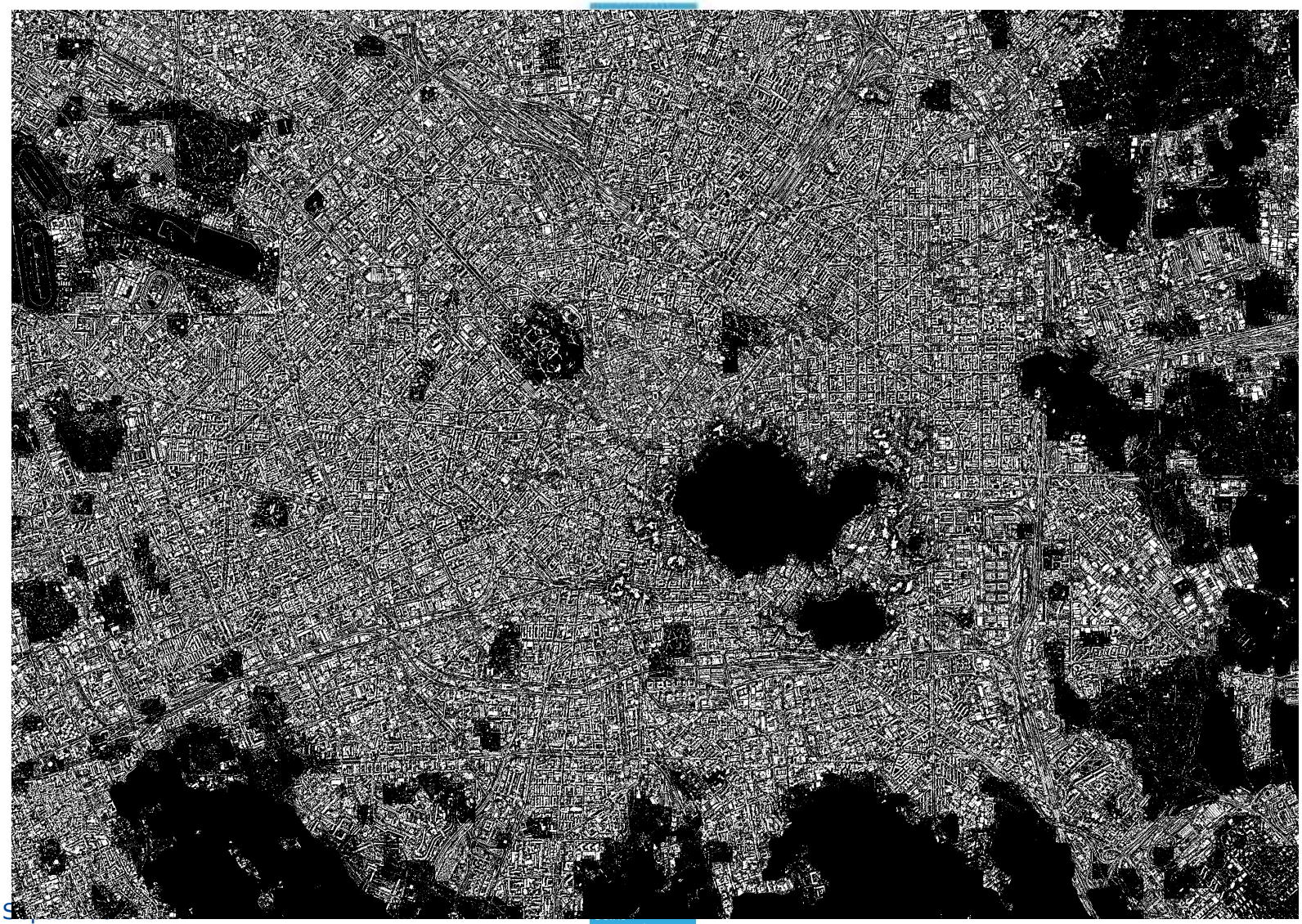


Milano center
SPOT-5 derived imagery (2.5m)

European Commission



EU GHSL for Milano (raw)
Roads, railways, clouds



EU GHSL (post-processing with OSM) Masking (roads)

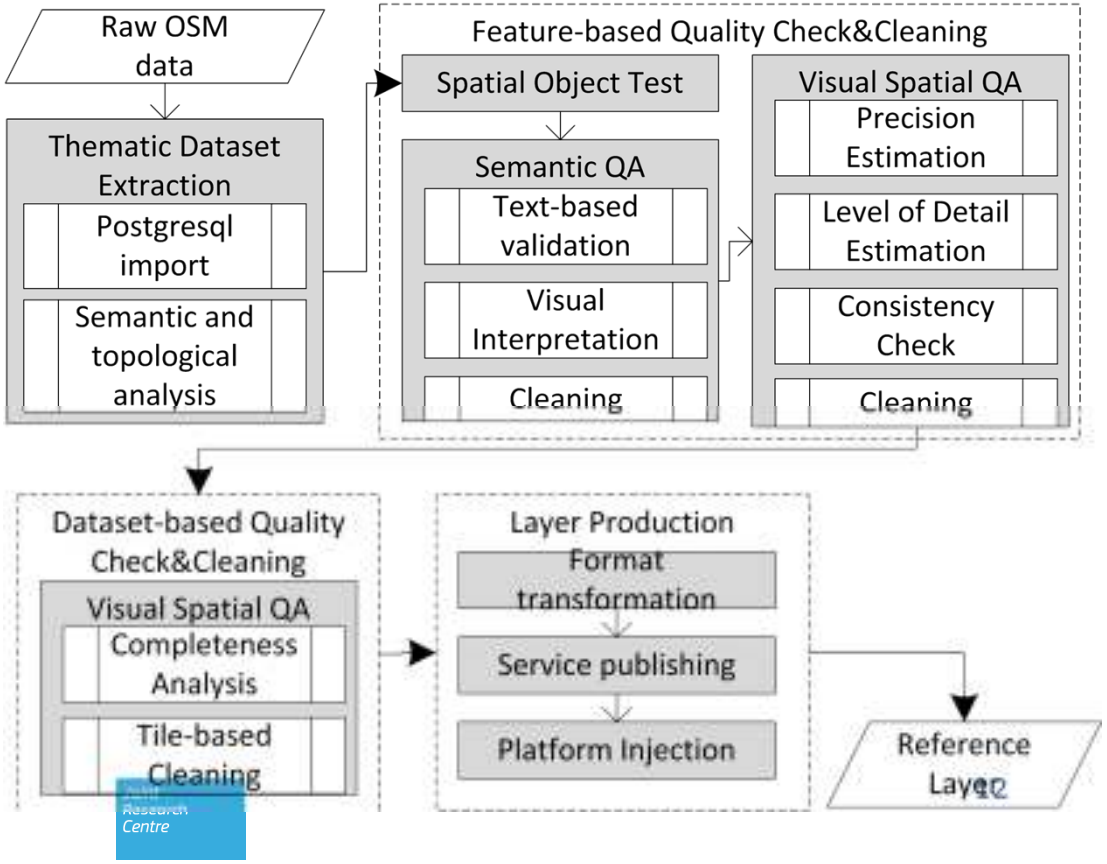
EU GHSL (post-processing with OSM) Masking (rails) & completing (Bu)

EU GHSL post-processing
Completing (~OSM)

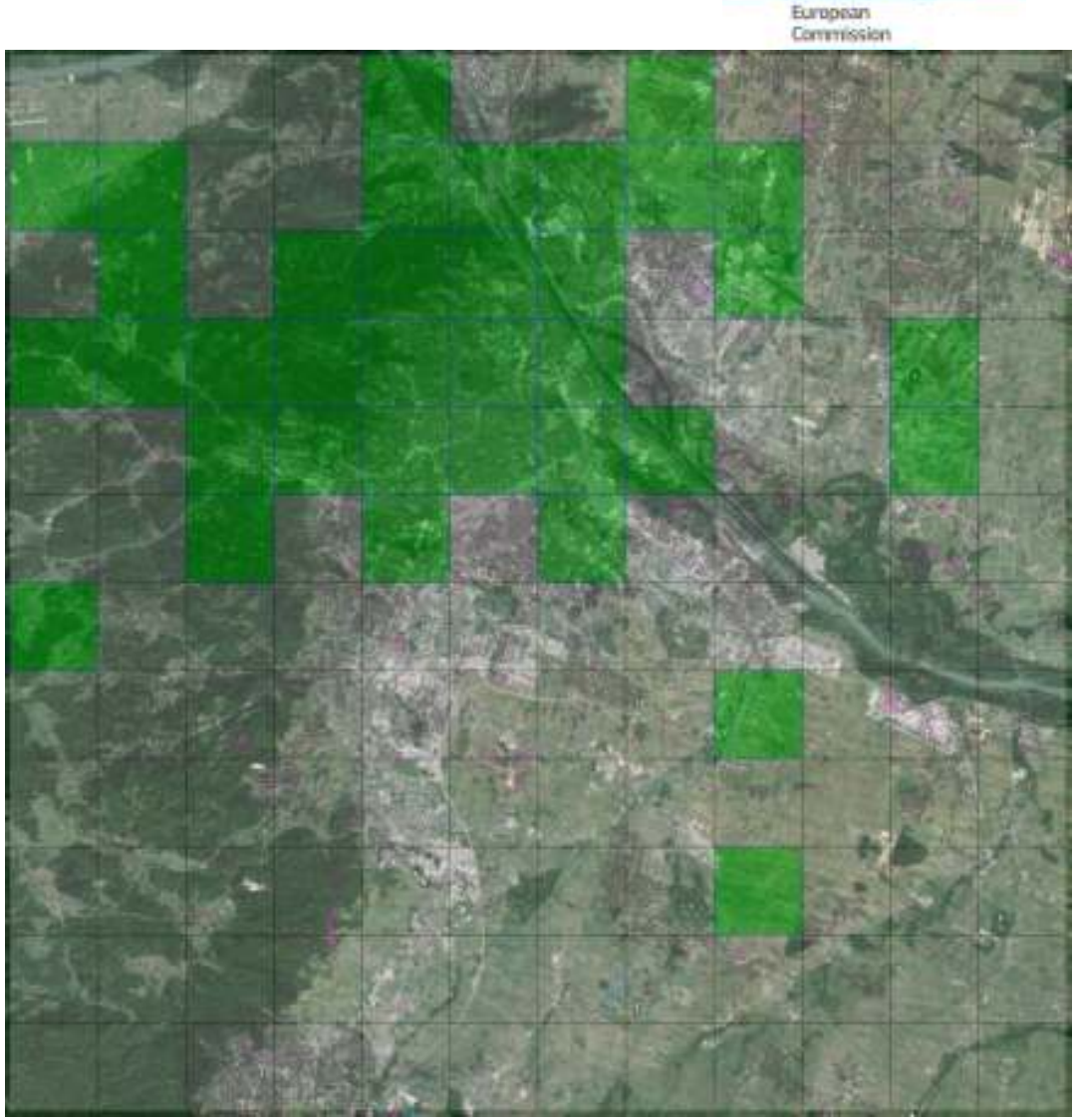
Reference layer production
OSM BU Quality

- Costly production
  - Mainly validation dataset

- OSM Netherlands
  - Imported building footprints
  - Still cleaning



OSM Completeness Vienna



- WGS84 Pseudo Mercator
- ~2.5km grid

BU area > 80%

- 12x12 tiles
- 1/4 pass

OSM Completeness Barcelona (2009)

European Commission

- WGS84 Pseudo Mercator
- ~2.5km grid

BU area > 80%

- > 500 tiles
- 4 pass

OSM Completeness
Barcelona 2009 (g) vs 2014 (v)

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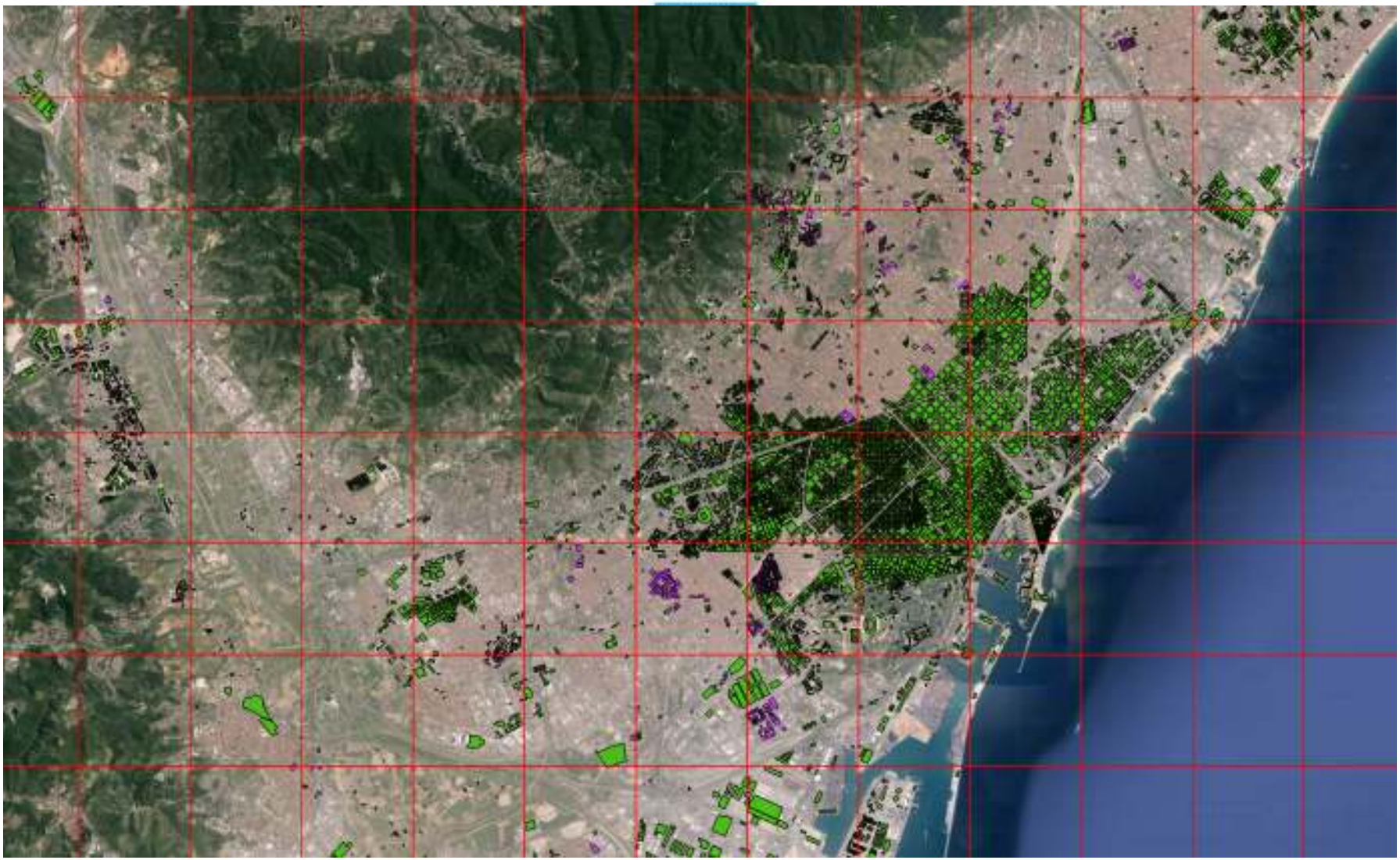

OSM LoD and Consistency Barcelona 2009 (g) vs 2014 (v)

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Summary

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EU GHSL

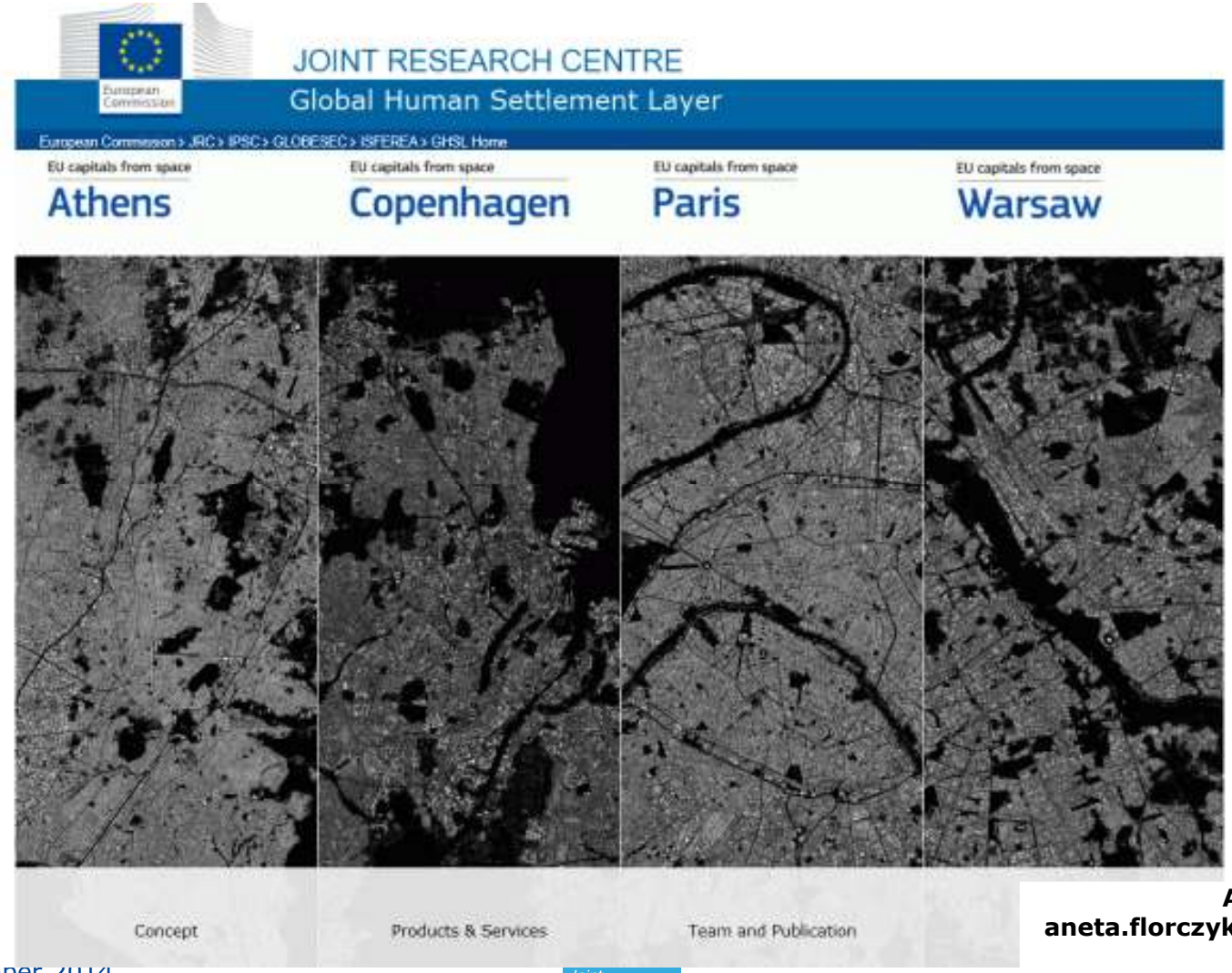
- Main source of costs
  - Completeness
  - Consistency in LoD
- Acceptable
  - Spatial accuracy

Hidden potential of OSM data, still…

- Marginal role in the applied spatial modelling
- Need for information about
  - Completeness
  - Temporal reference
  - Generalisation scale

Thank you!

http://ghslsys.jrc.ec.europa.eu/



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