The European Commission's science and knowledge service

Joint Research Centre

GEO Human Planet Initiative

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European Commission

Global Human Settlement datasets for SDG's
Focus on Human Settlements

Daniele Ehrlich and GHSL team of the Joint Research Centre

Session Title: Geospatial Information for Urban Sustainable Development

United Nations World Geospatial Information Congress

DEQING, CHINA

19-21 November 2018

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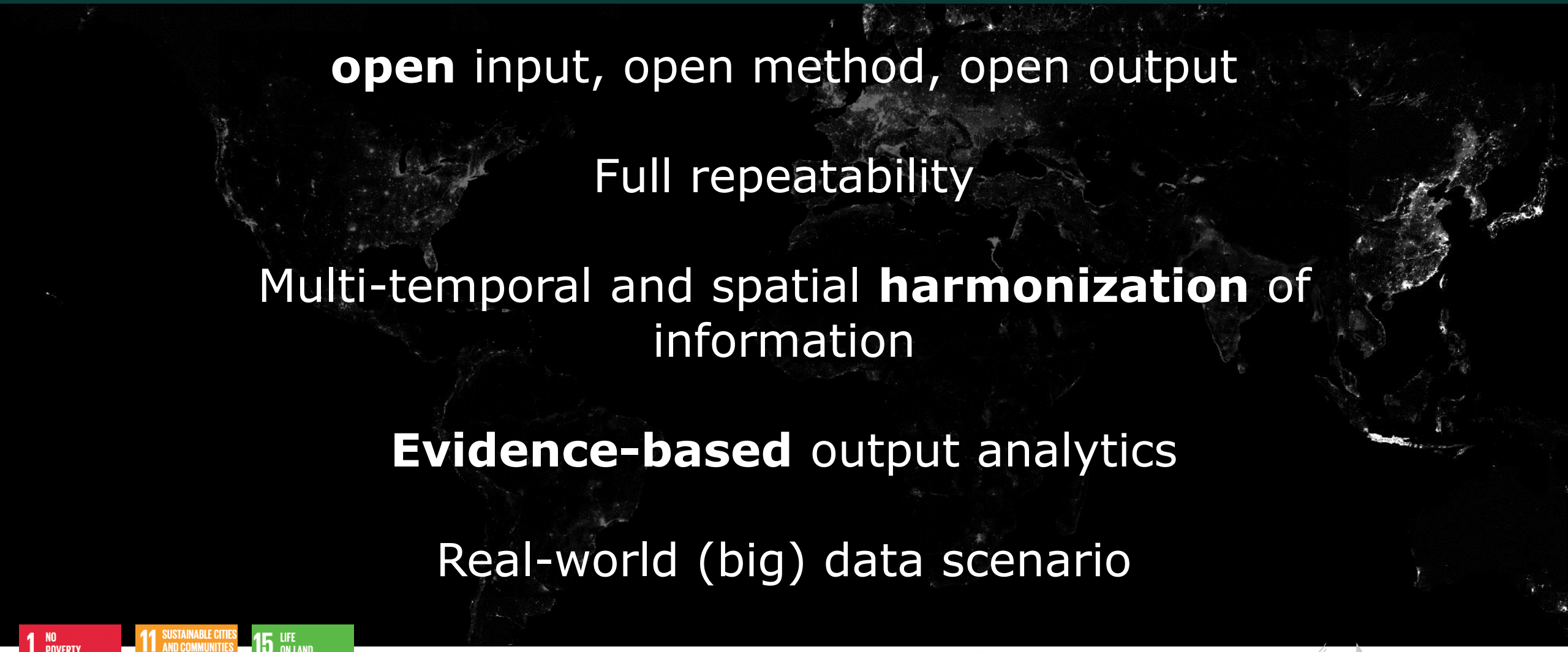
The Global Human Settlement Layer



open input, open method, open output

Full repeatability

Multi-temporal and spatial **harmonization** of information

Evidence-based output analytics

Real-world (big) data scenario

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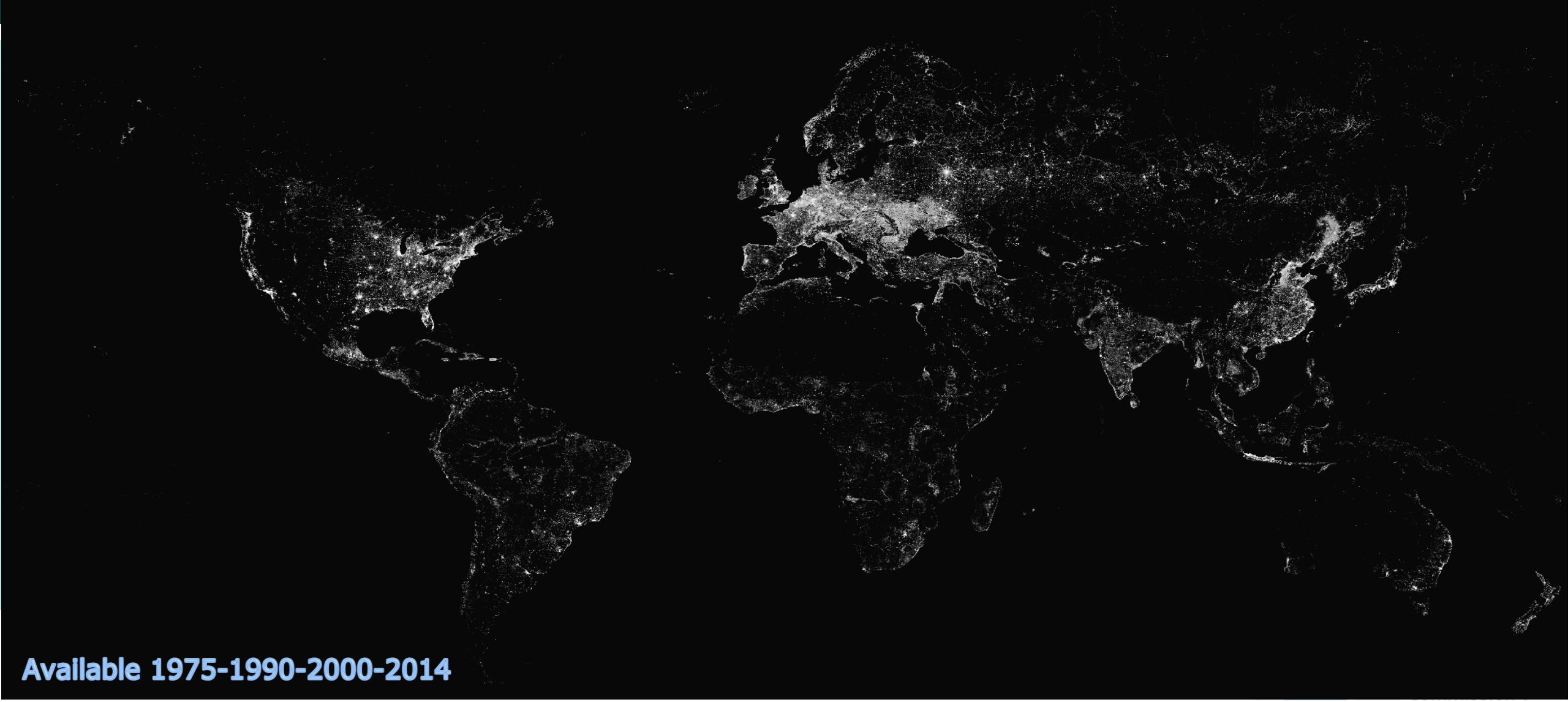
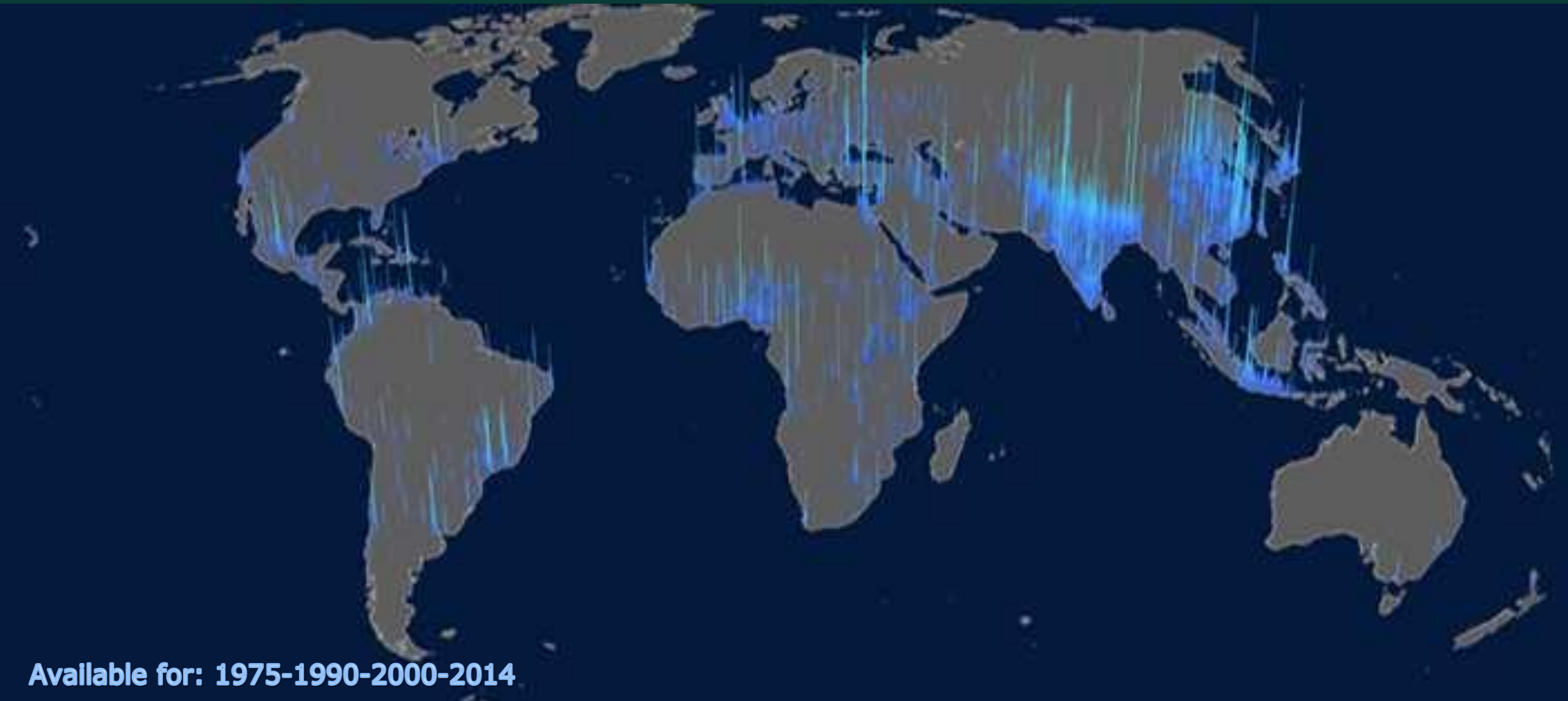
GHSL Landsat

First available multi-temporal assessment of human settlements



Available 1975-1990-2000-2014

Population density map



Available for: 1975-1990-2000-2014

EO4SDGs

These Urban SDG indicators are very sensitive to the city boundaries

- 11.2.1 Proportion of population that has convenient access to public transport
- 11.3.1 Ratio of land consumption rate to population growth rate
- 11.6.2 Annual mean levels of fine particulate matter (e.g. PM2.5 and PM10) in cities
- 11.7.1 Average share of the built-up area of cities that is open space for public use for all

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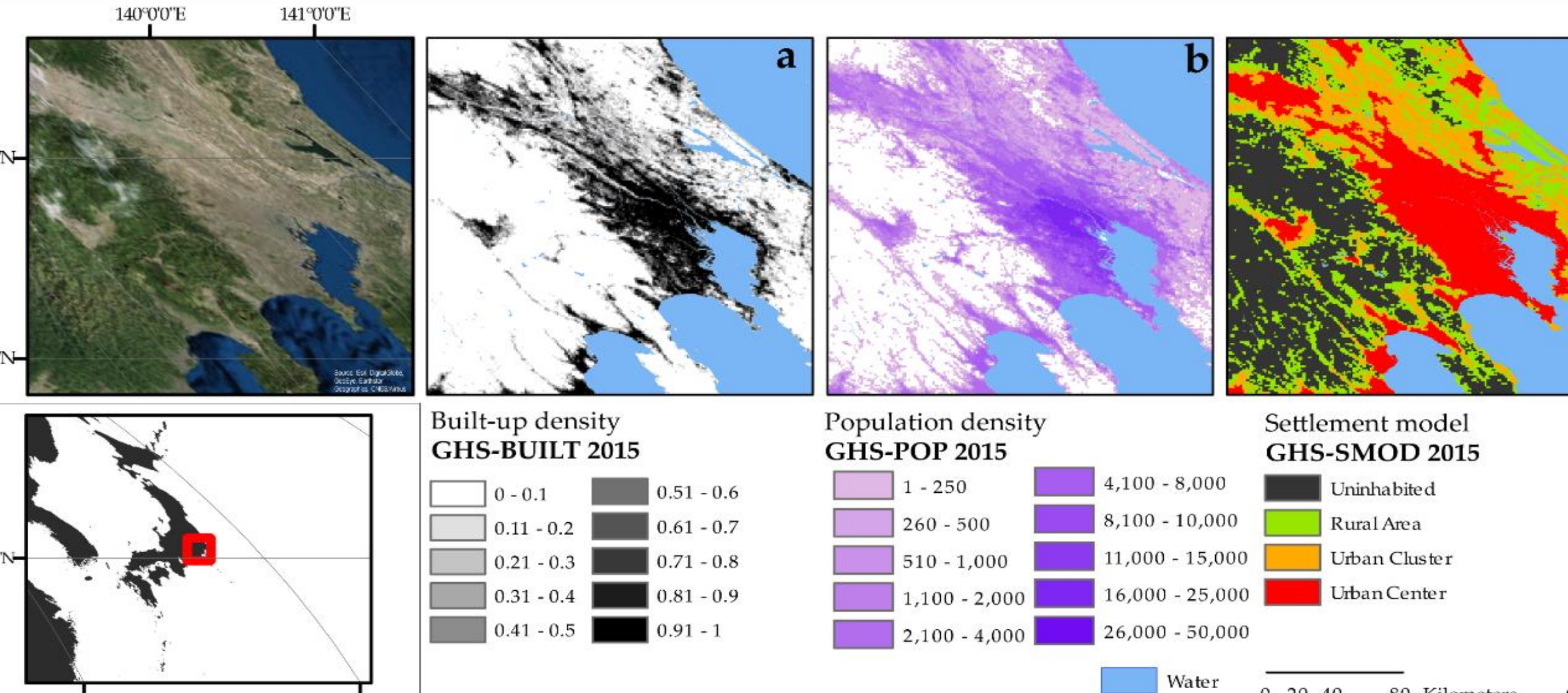
Built-up and Population density, city outline



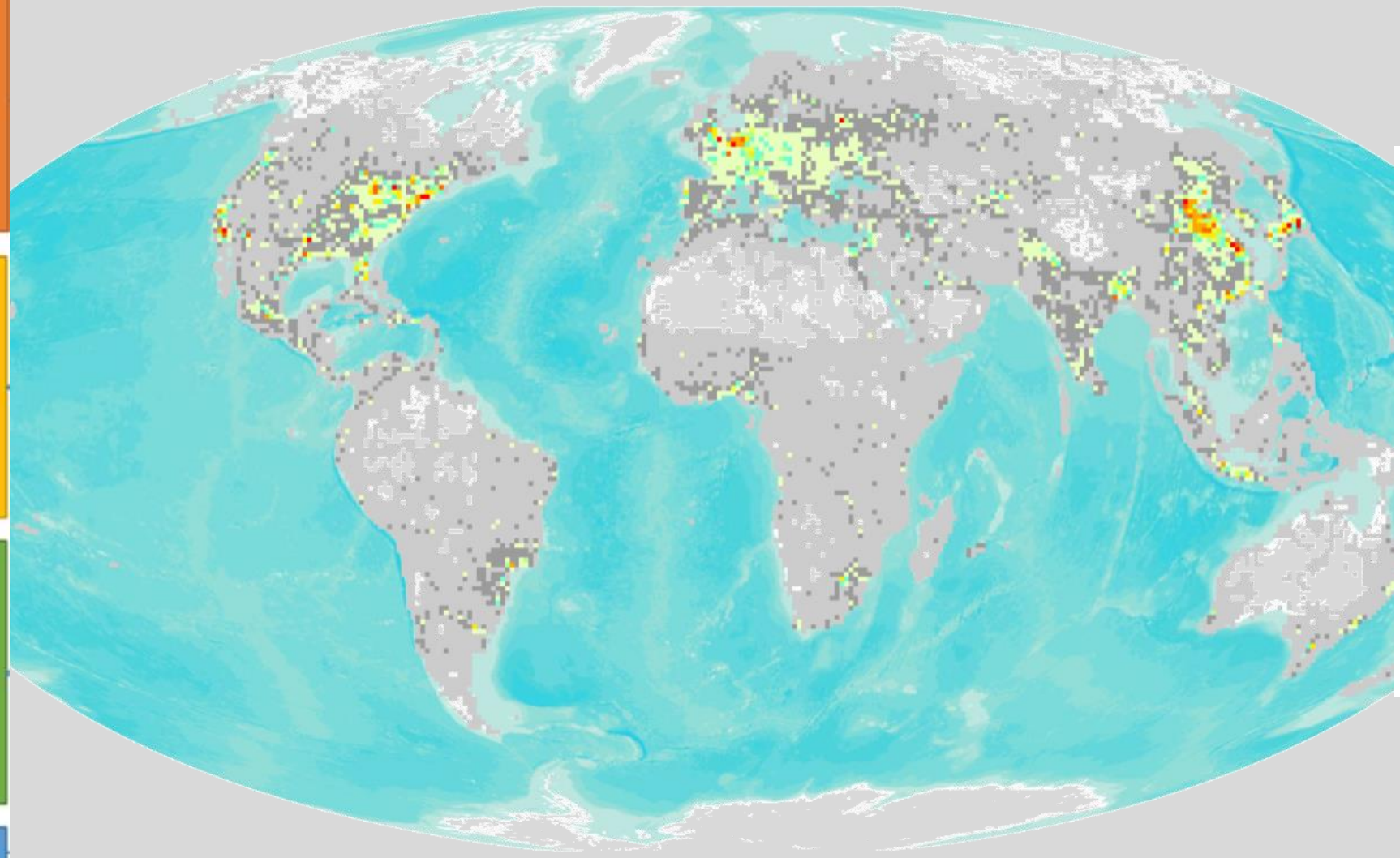
New degree of urbanization map

Urban Centre (HDC)

Urban Cluster (LDC)

Rural Grid Cells

Not land surface



Cooperation

1 European Commission

2 OECD

3 UN Habitat

4 World Bank

5 FAO

13,000 Cities

GHSL – City Centre Database

Geography
- Elevation
- Travel time to capital
- River basin
- Income class
- Name of the center
- etc.

Environment
- Climate
- Biome
- Temperature
- Precipitation
- Greenness
- CO_2 concentration
- PM2.5 emission

DRR – exposure to
- Flood
- Earthquake
- Storm surge
- Heatwave

Socio-economic
- Population
- Built-up areas
- GDP
- HDI
- Nighttime lights
- area

Estimate **3 SDG** indicators

Multi-temporal information
1975-**1990-2000-2015**

http://ghsl.jrc.ec.europa.eu/ccdb2016Overview.php

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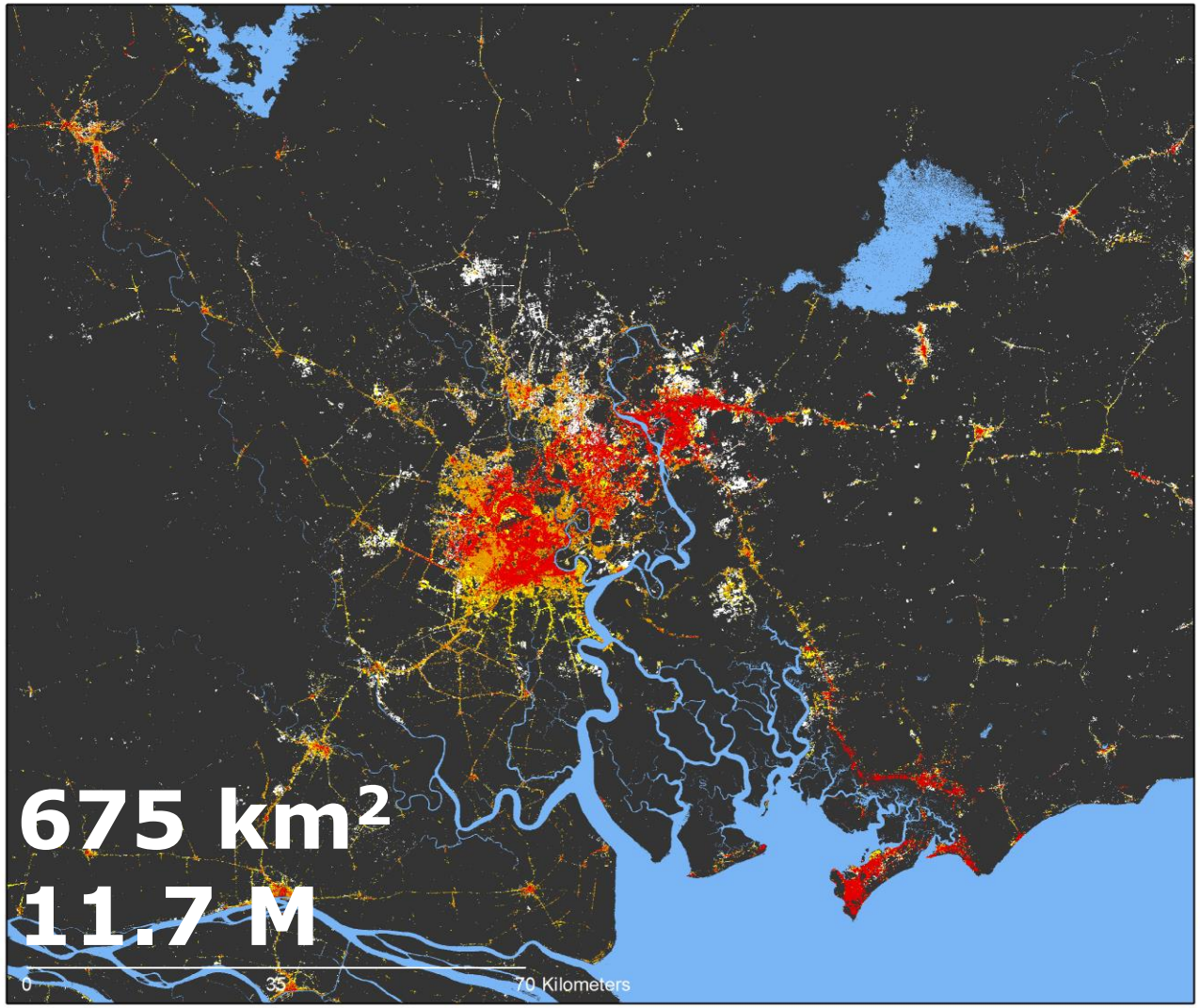
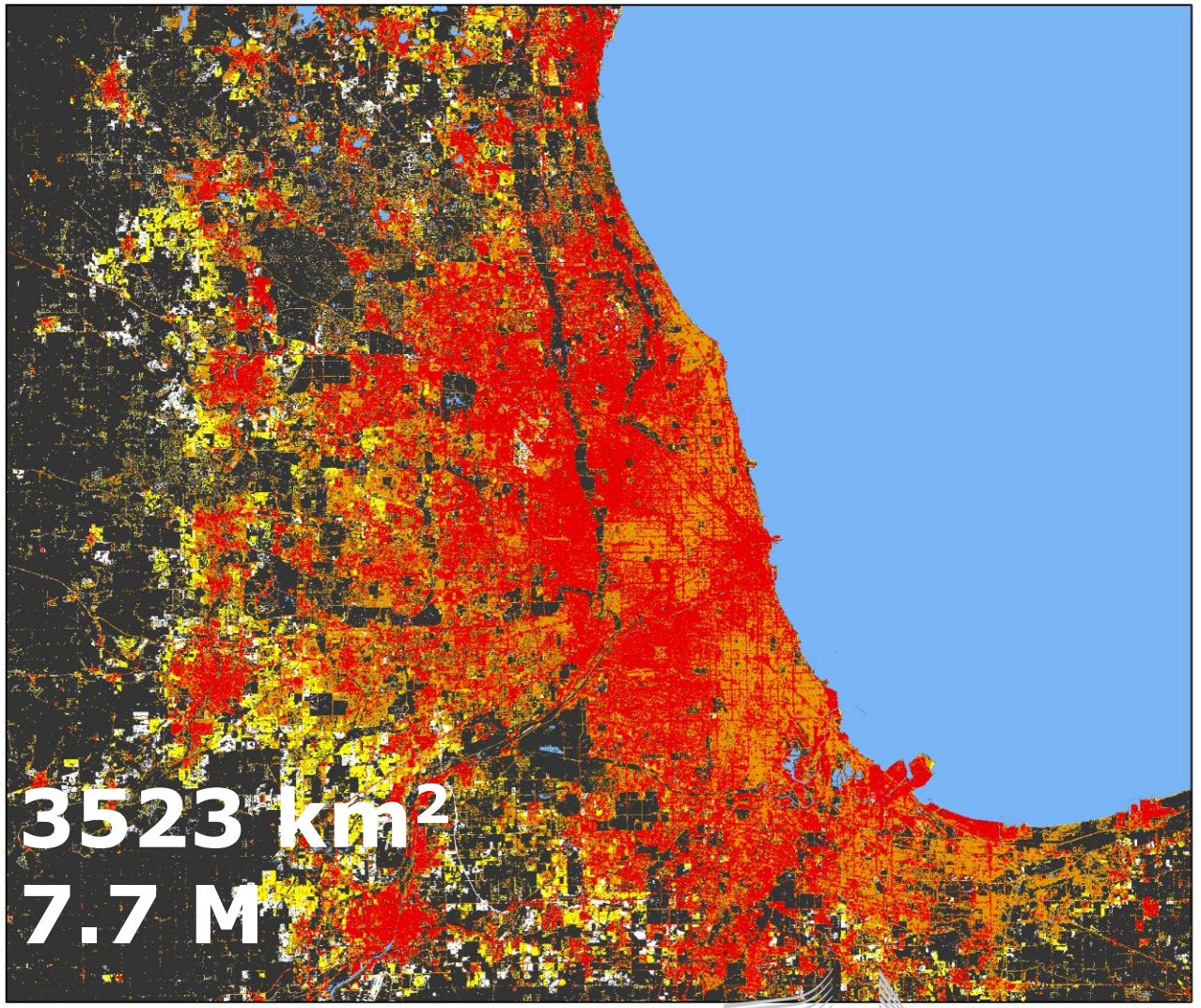
Comparisons



Ho Chi Minh City, Viet Nam



Chicago, USA

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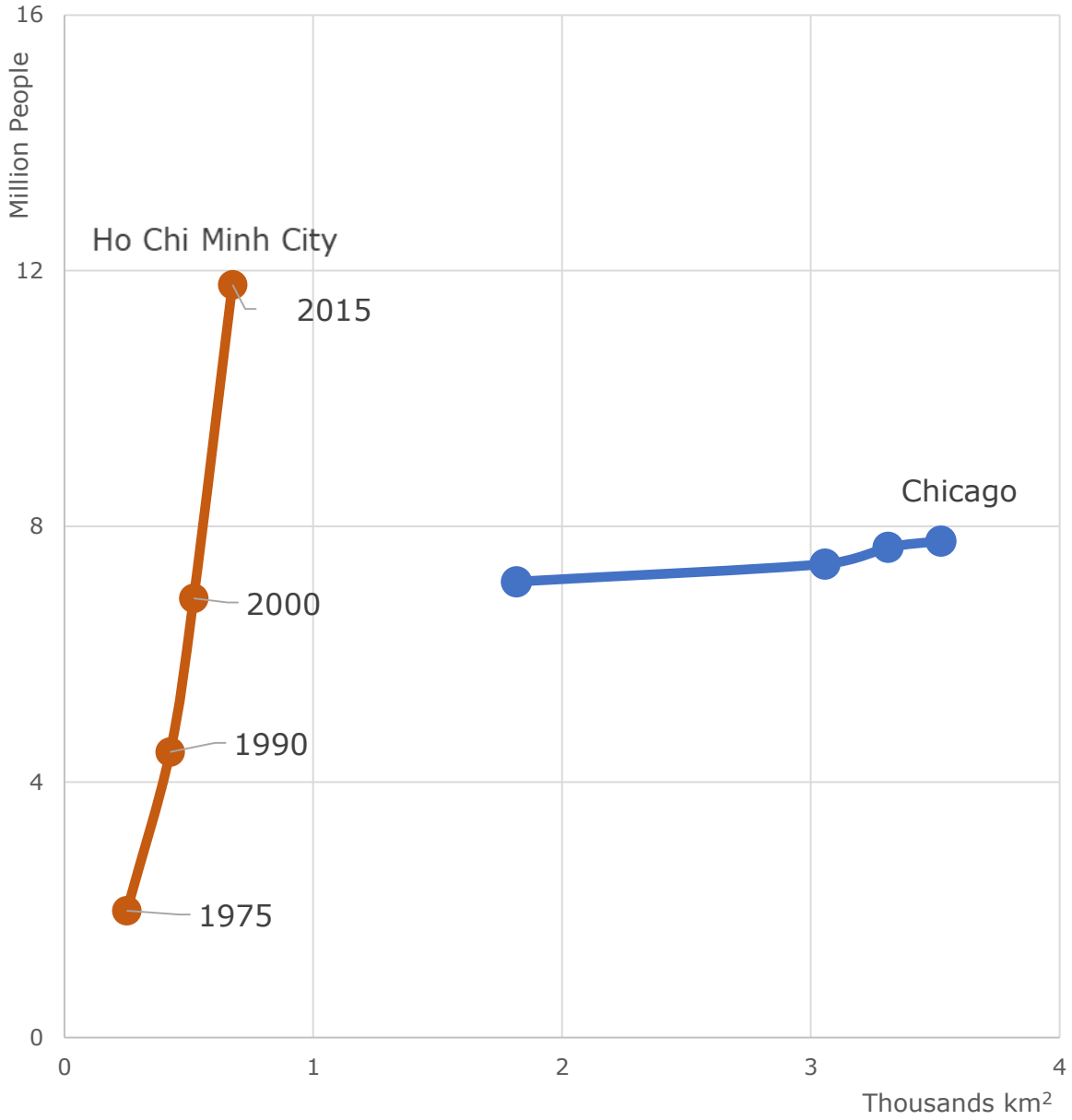
Sociospatial patterns of change 1975-2015

	Population	Built-up Areas
Ho Chi Minh City	6x	3x
Chicago	1x	2x



11 SUSTAINABLE CITIES AND COMMUNITIES

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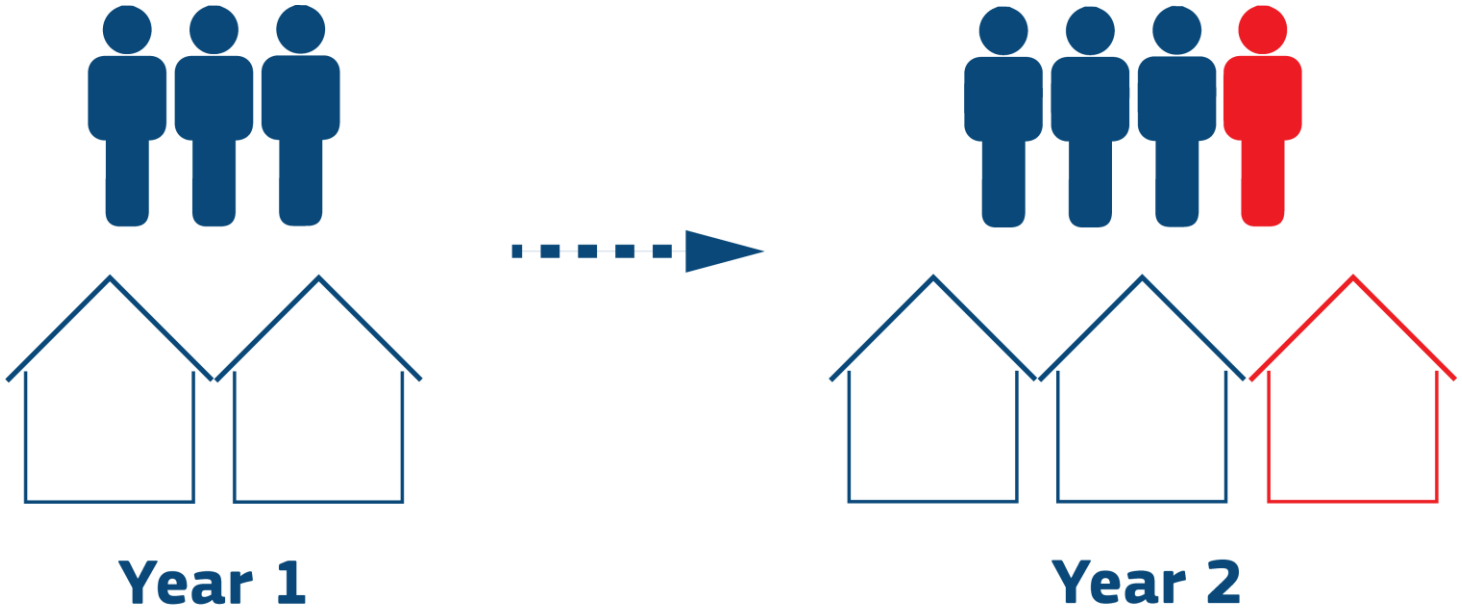
SDG 11.3.1



$$\frac{\ln\left(\frac{\text{land}}{\text{land}}\right)}{\ln\left(\frac{\text{pop}}{\text{pop}}\right)} = \textbf{LUE}$$

11 SUSTAINABLE CITIES AND COMMUNITIES

Ratio of **land consumption** rate to **population growth** rate

Tier II indicator

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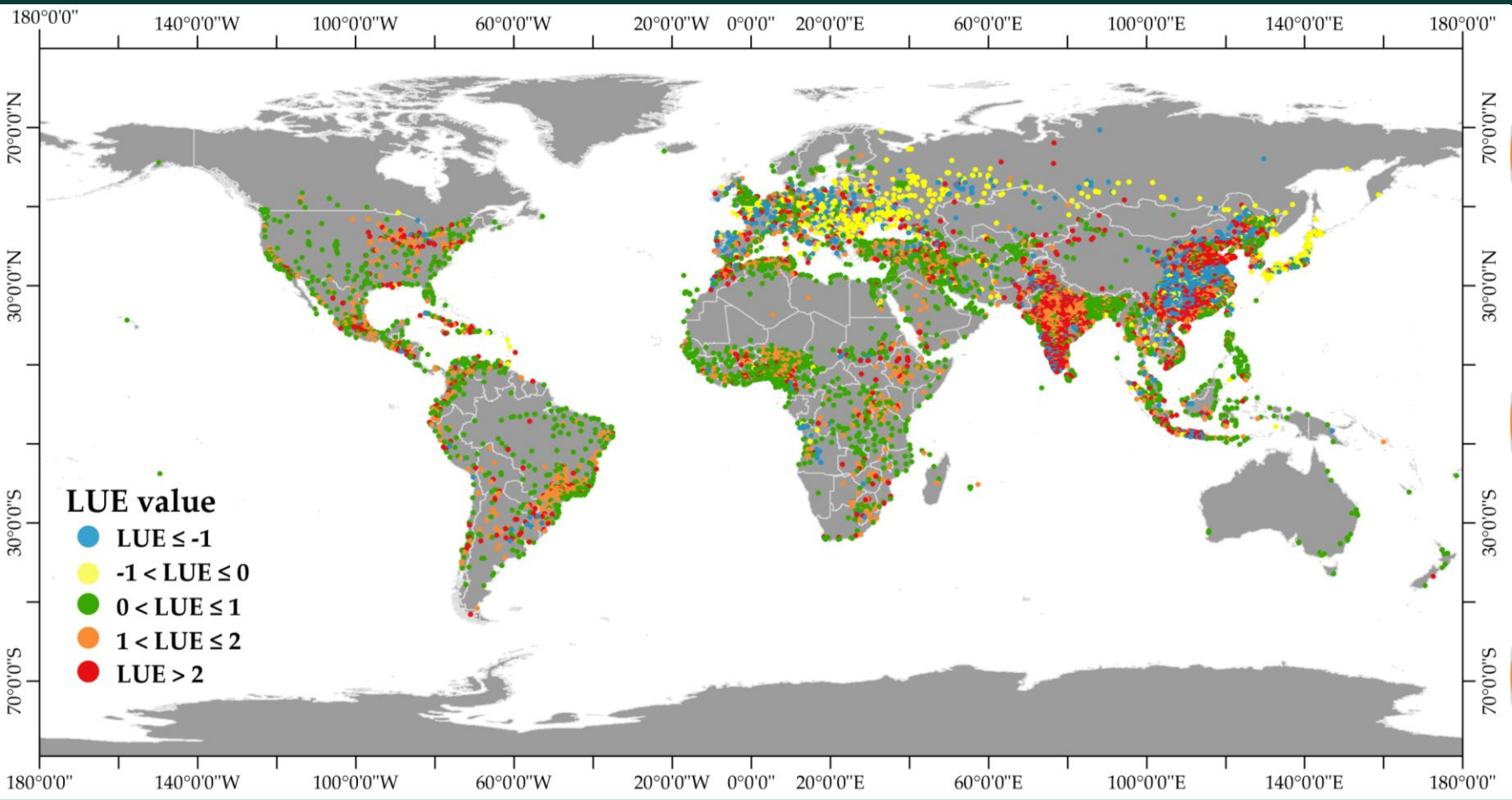
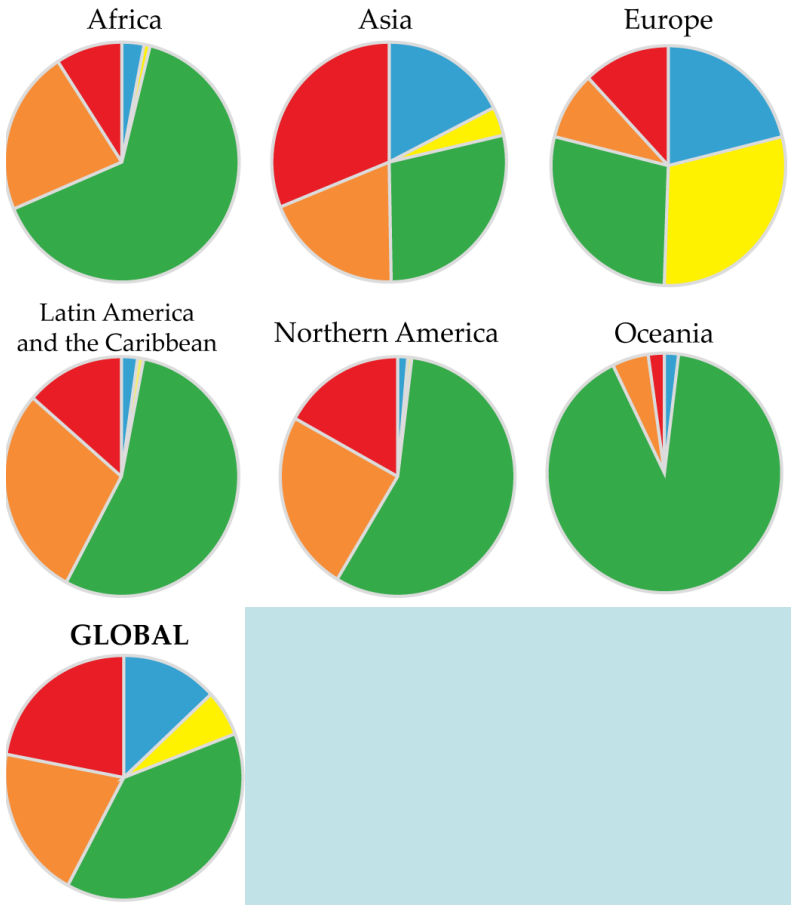
Land Use Efficiency





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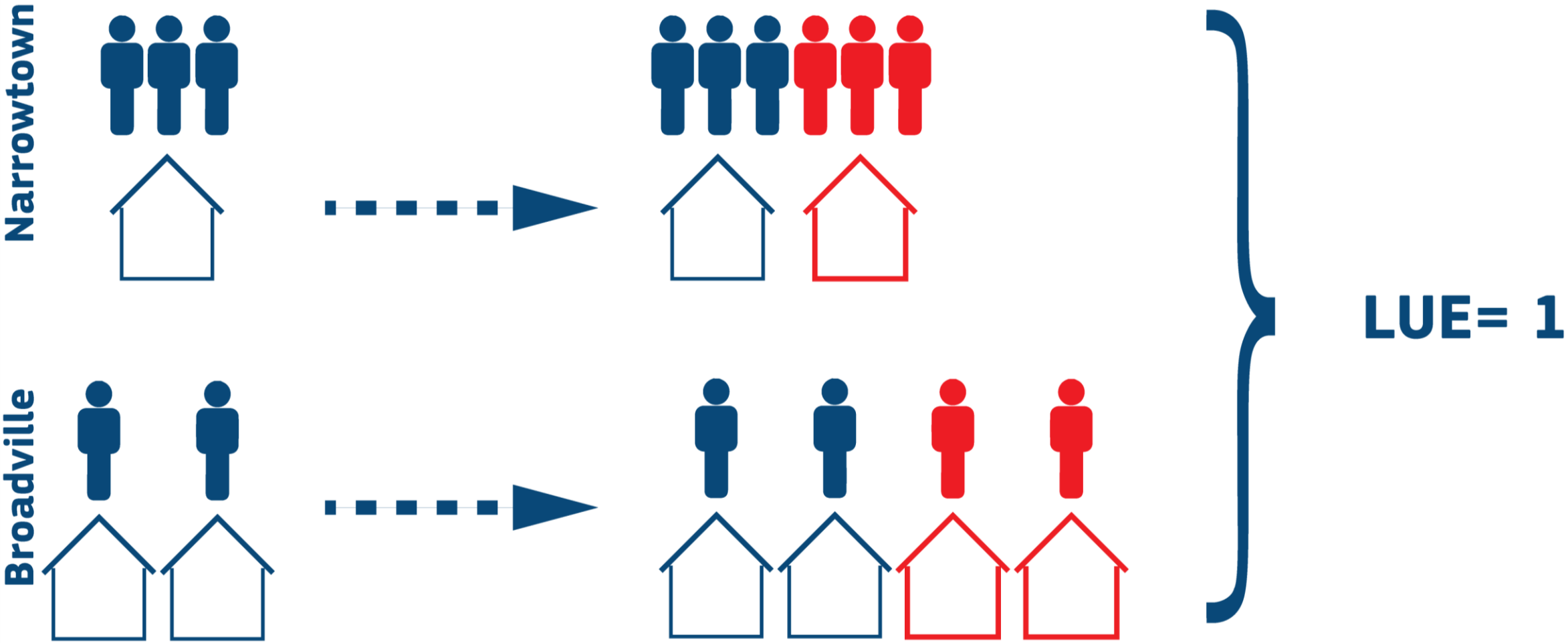
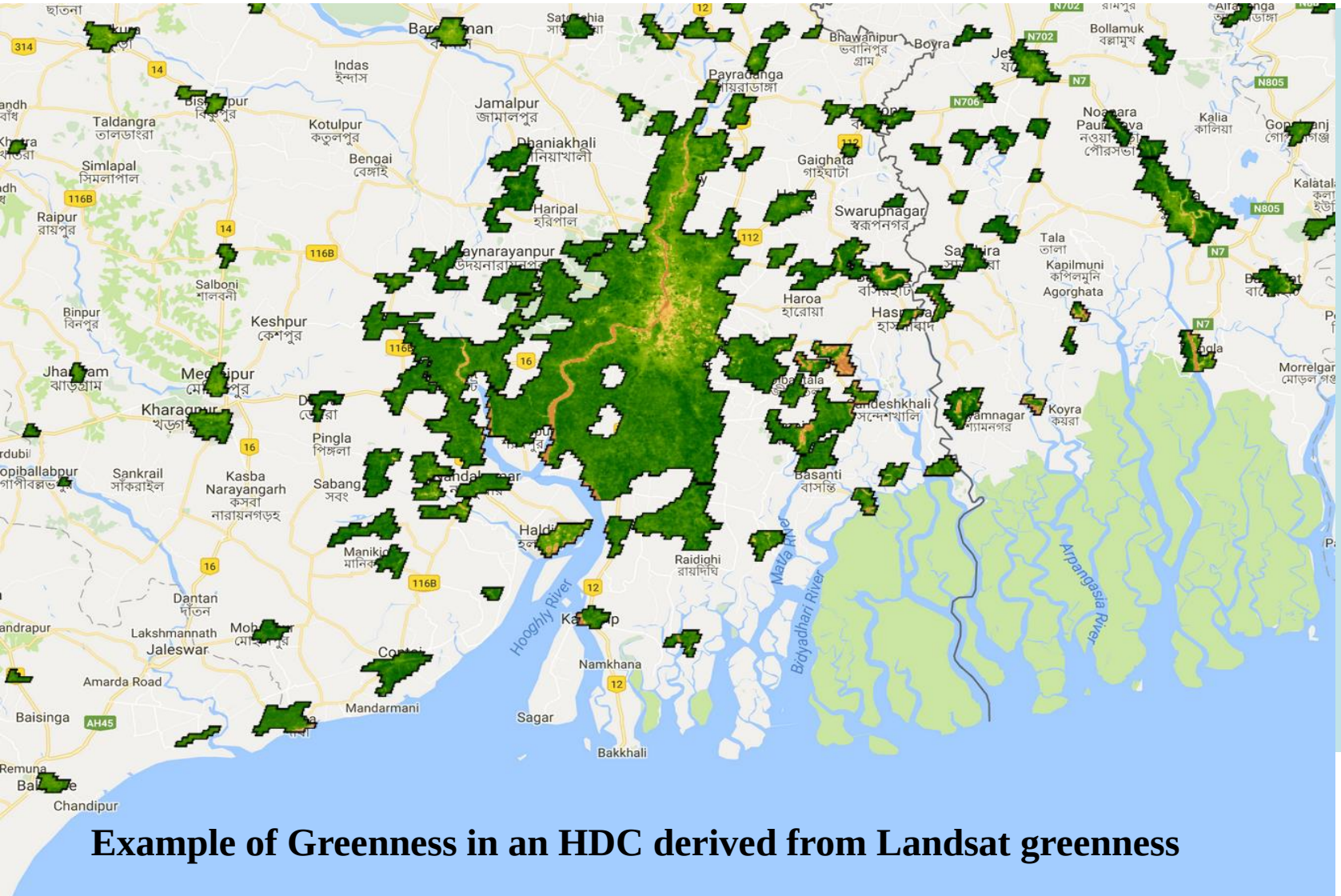
Comparisons



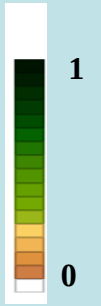
AbstractAchievedPopulationDensityinExpansionArea (AAPDEA)

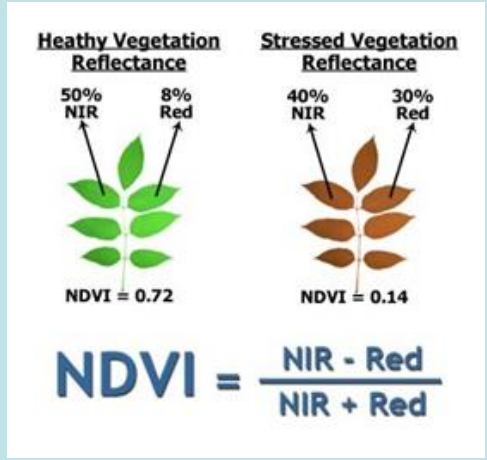
13,000 Cities

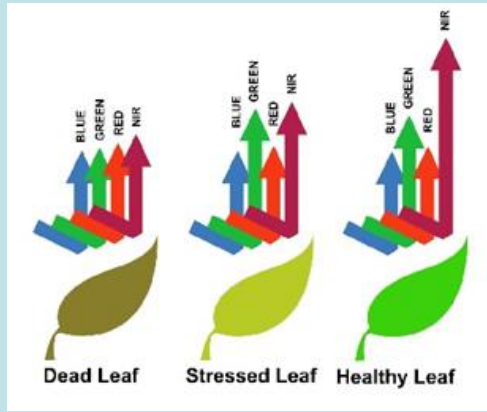
Urban centers greenness



Example of Greenness in an HDC derived from Landsat greenness







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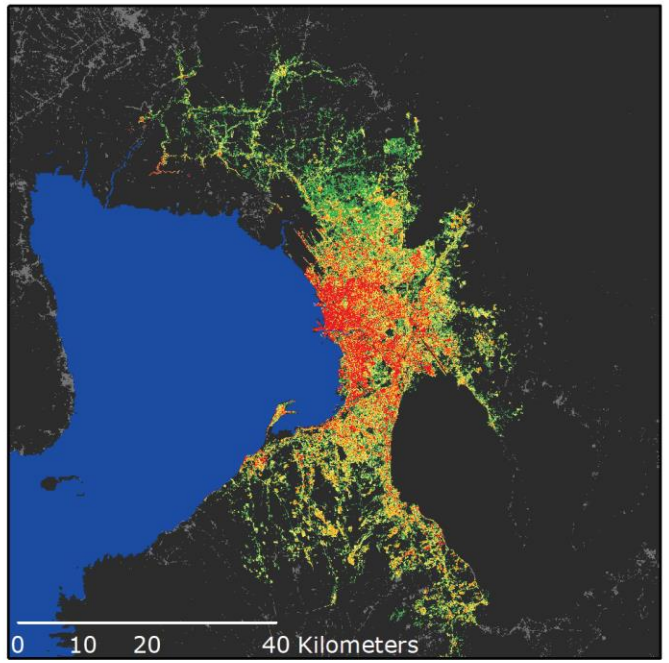
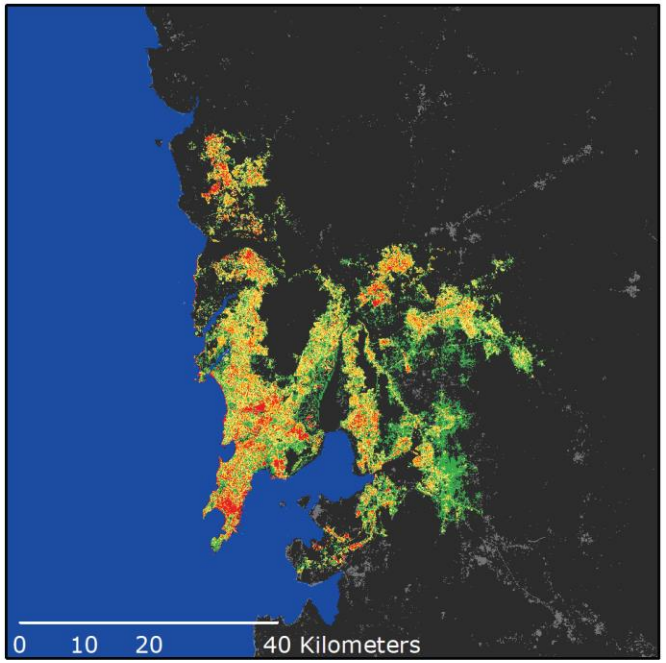
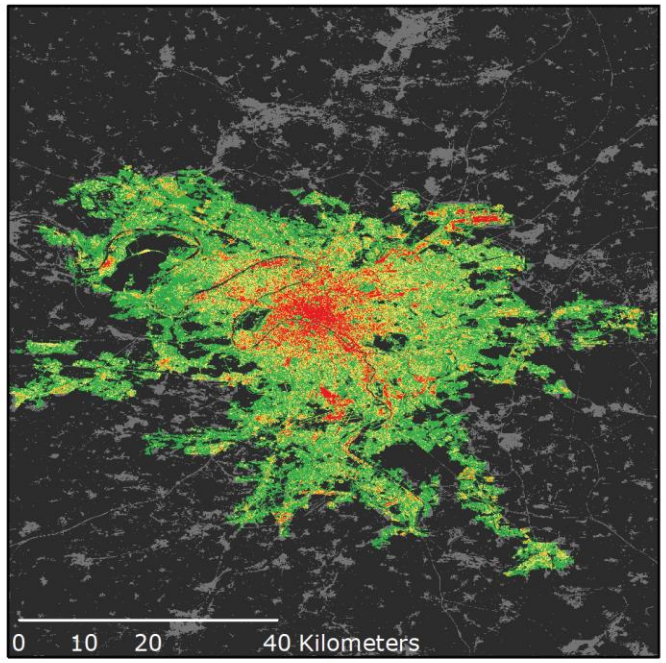


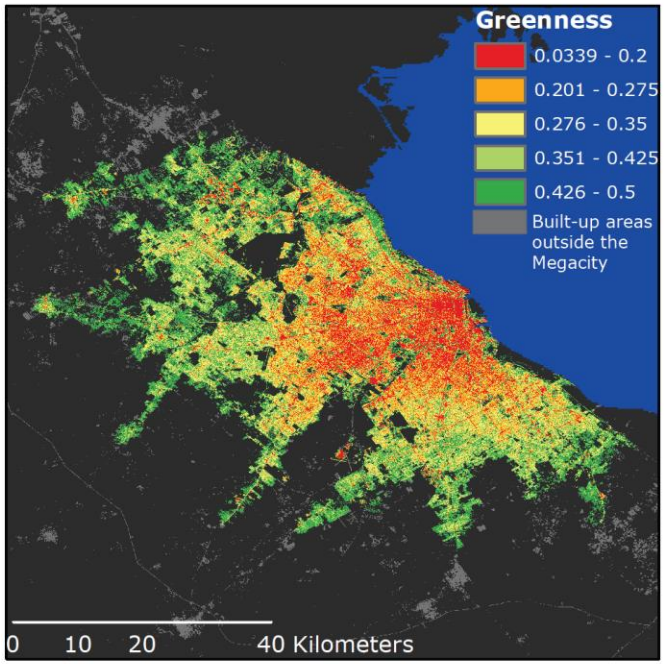
Manila, Philippines



Mumbai, India



Paris, France



Buenos Aires, Argentina

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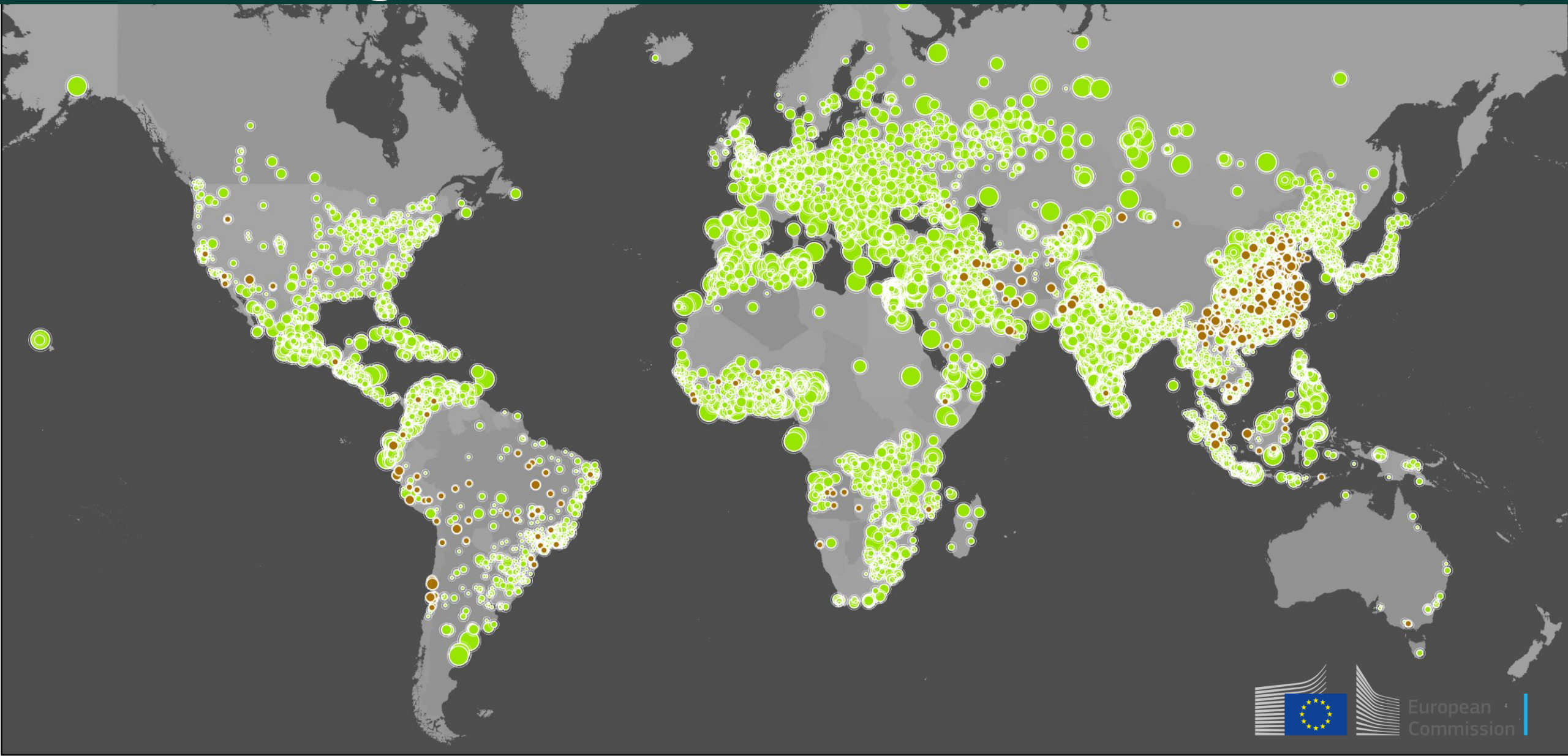
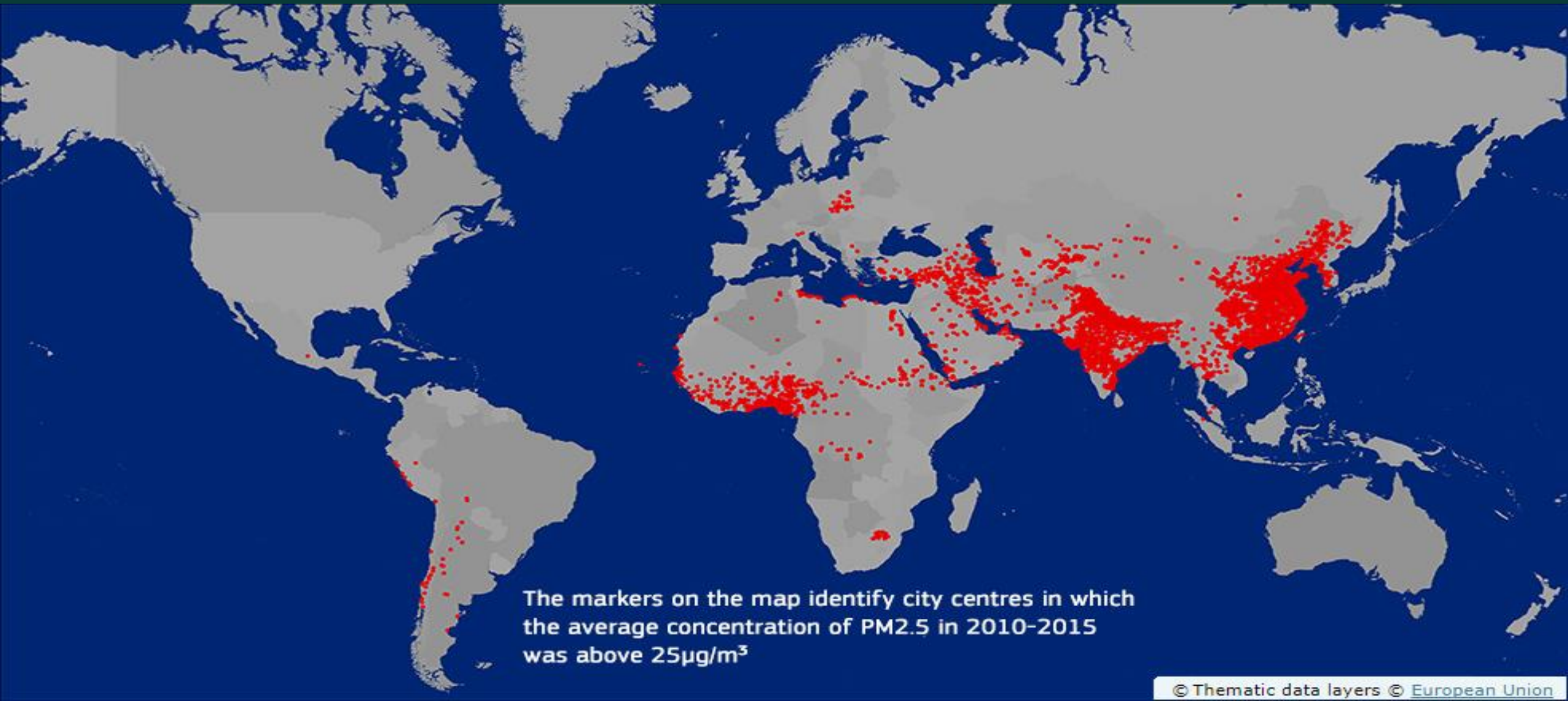
Greening Urban Centres



PM2.5 concentration



Global Human Settlement Layer (GHSL)

The most complete, consistent, global, free and open data set on human settlements. from the village to the megacity, for the epochs 1975 – 1990 – 2000 – 2015

Full open free data and tools at http://ghsl.jrc.ec.europa.eu
http:/www.geoportal.org/

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