International Transport Forum

Measuring urban access: the use of remote-sensing and openstreetmap data

OECD

3rd ITF Statistical Meeting, 17th March 2016

The challenge of access in cities…and of measuring it

- Planetary urbanisation and the need for transport policy to provide sustainable access
- Global benchmarks and comparable indicators are lacking
- Key challenges for measuring access:
  1. Data availability & processing power
  2. Analytical complexity
  3. Uncertainty of future mobility

ITF approach to urban access

- Urban access indicators for the ITF Transport Outlook 2017
  - Link to urban passenger demand and CO2 emissions
- Layered and global approach based on
  - Geographic areas of cities
  - Destinations
  - Transport characteristics
- Potential outreach and collaboration

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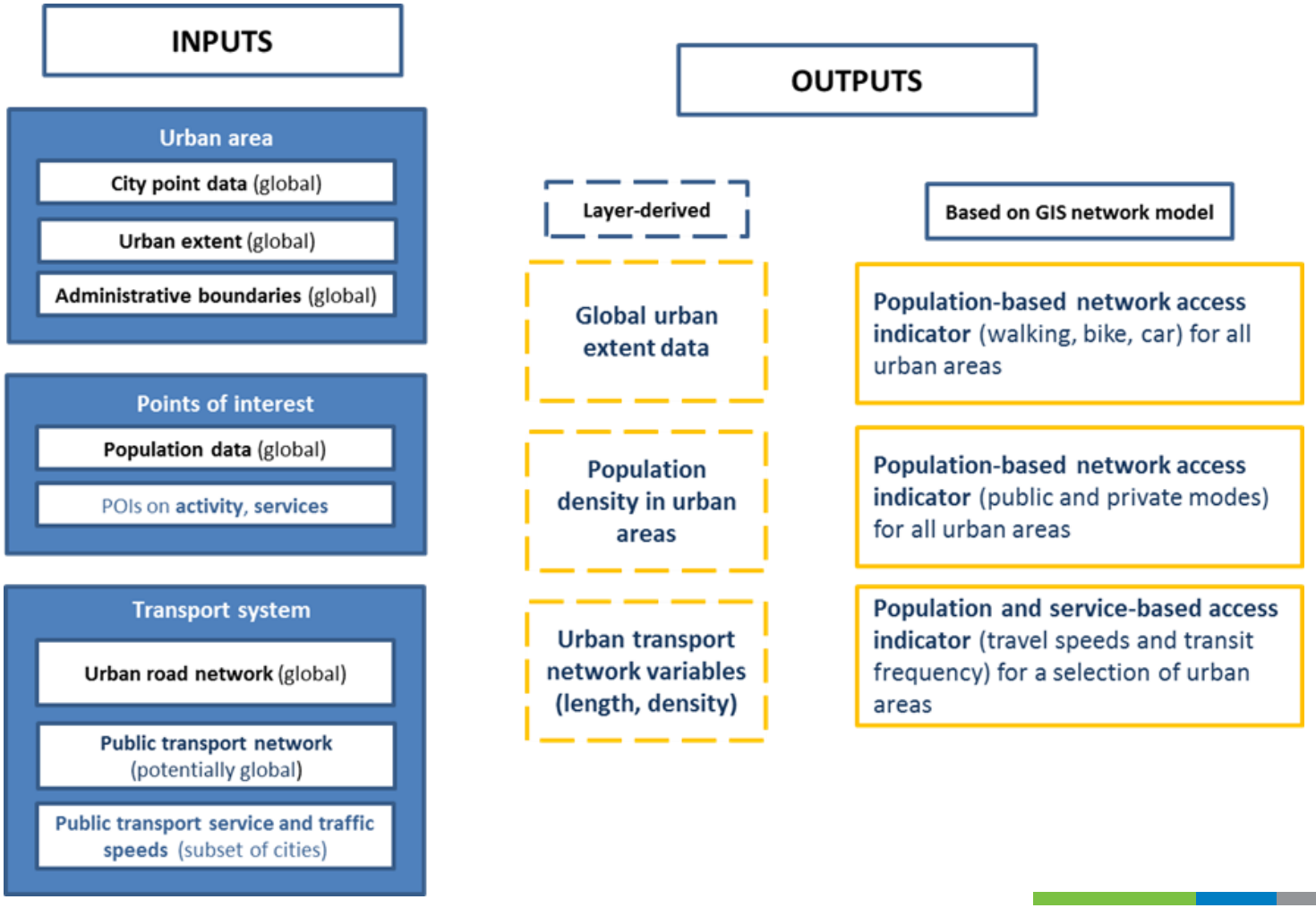
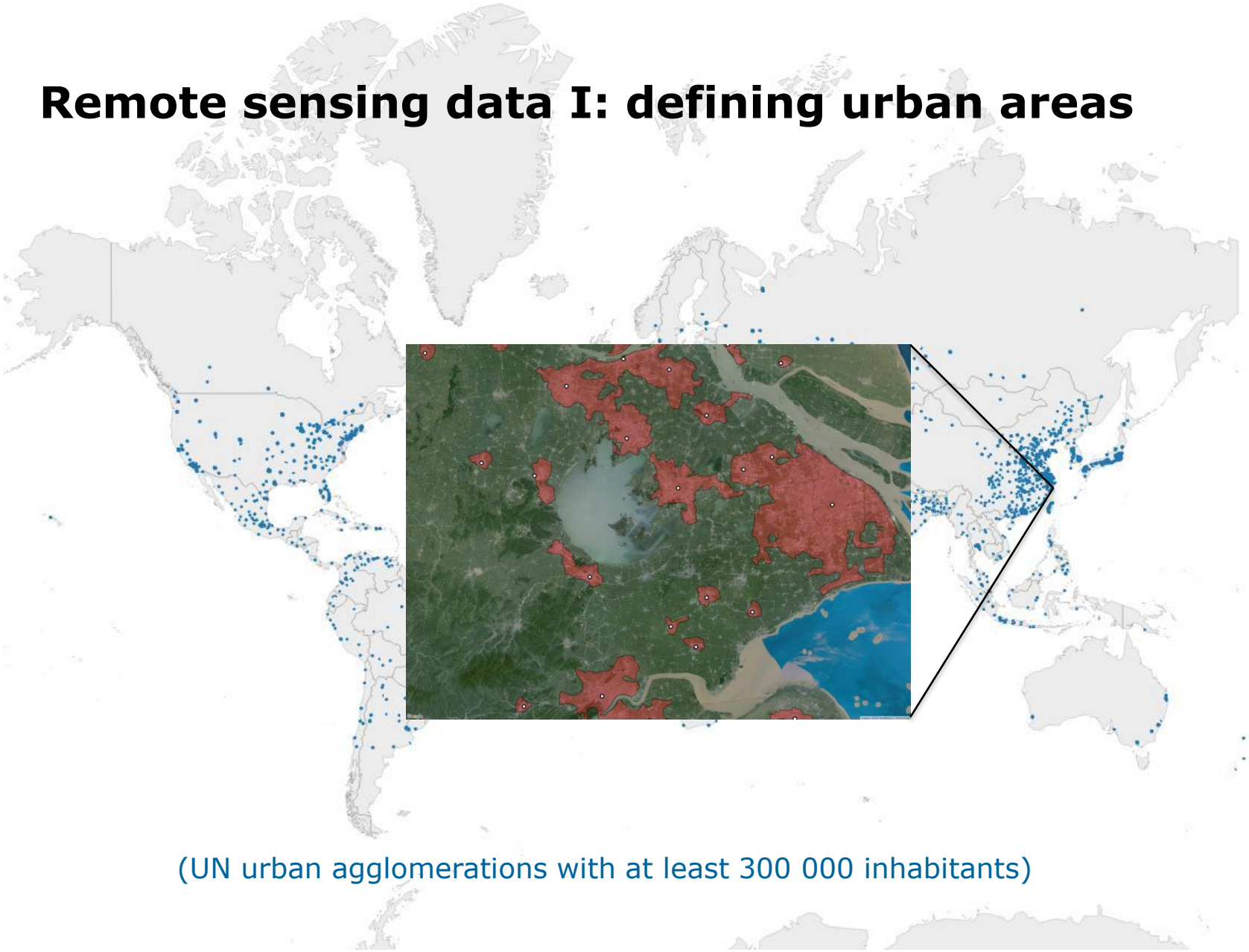
ITF approach to urban access



Remote sensing data I: defining urban areas



(UN urban agglomerations with at least 300 000 inhabitants)

Remote sensing data I: defining urban areas

Urban area

City point data

- Coordinates of UN urban agglomerations => 300K
- Matched with GRUMPv1 city points

Urban extent

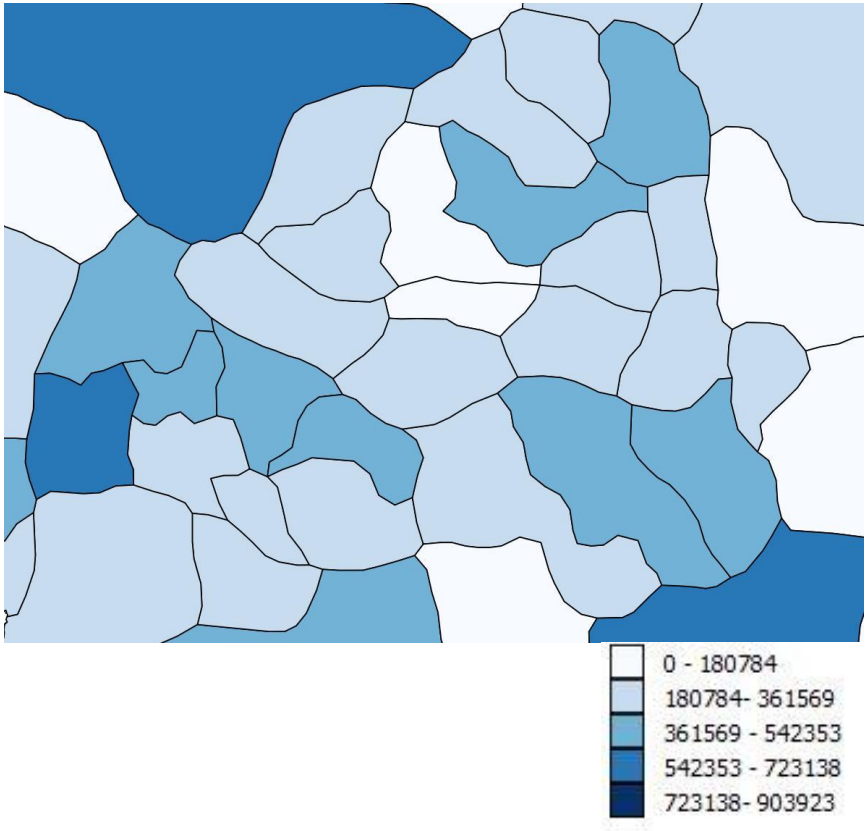
- GLC 30m, ca. 2010 (multispectral)
- ESA-Sentinel ~84m, ca. 2010 (SAR)
- **GHSL BUREF 2010**

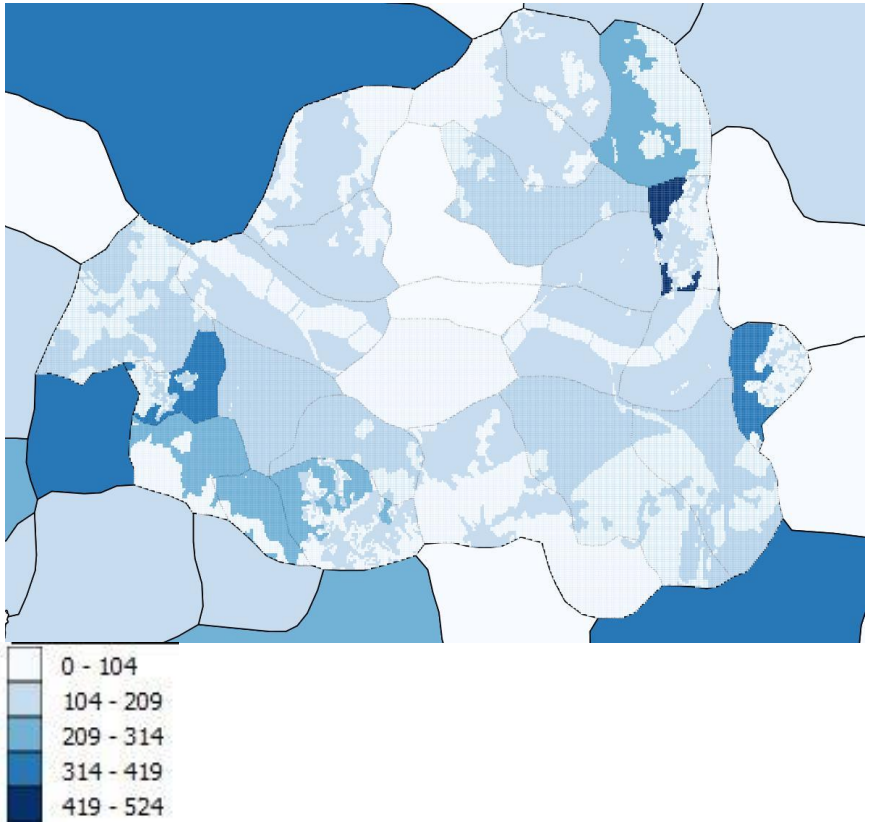
Boundaries

- Finest administrative level
- Global Administrative Area database

Current definition: contiguous built-up area containing/or in proximity of UN agglomeration points.

Remote sensing data II: population distribution





Remote sensing data II: population distribution

Points of interest

Population

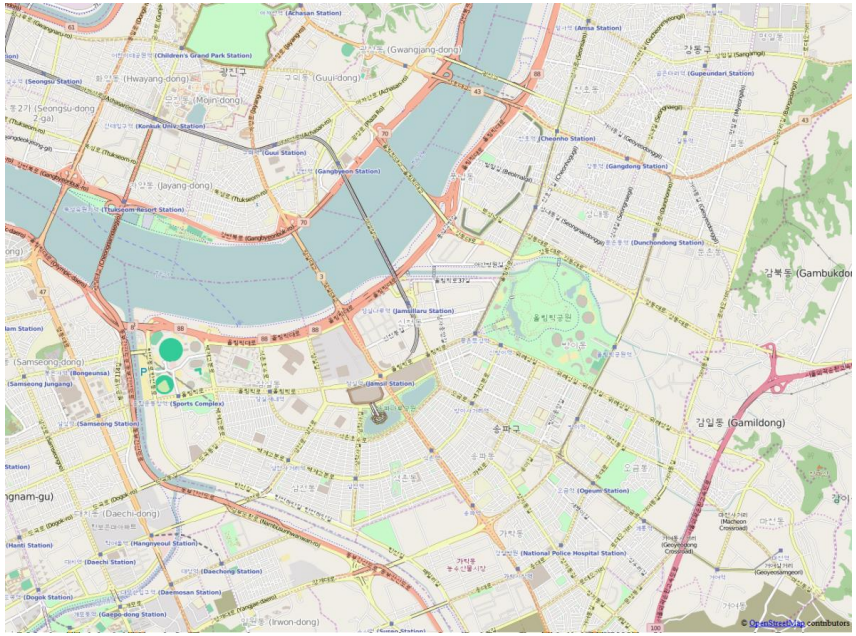
- Disaggregated population distribution grid, based on national census data
- WorldPop, ; ~100m; 2010/2015/2020; Asia, Africa, LATAM
- Add. sources for NorthAm, Europe

Points of Interest

- OSM Planet based;
- Points on cultural, social, educational, health, leisure and commercial services and amenities
- Add. Sources on job locations needed

- Population points as both origins and destinations at the moment
- OSM based POIs might be added as actual destinations
- Global job locations require collective and partner supported work

Openstreetmap and the transport network



Openstreetmap and the transport network

Transport system

Urban road network

- OSM planet based, 2015/16
- Routable road network for car, bicycle and walking;
- Assumed/average travel speeds

Public transport network

- OSM planet based, 2015/16
- Locations and tracks of public transport (rail/lightrail, subway, bus, tram, ferry)

PT services and traffic speeds

- GTFS services frequencies for selected cities
- Partner-based data on traffic speeds (tbc)

- Routing for car, bike and walking based on travel times (calc. on segment length and assumed travel speeds).
- No routing for public transport at the moment.

Remote sensing and OSM – potentials and pitfalls

- Helpful for international harmonisation
- Provides new data sources for measurement
- Open/public access of data/code

But:

- Lack of knowledge and recognition
- Variation in coverage and accuracy
- Need for more dialogue and comparison with official data

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Thank you for listening.

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