

LOCAL SOURCE ALLOCATION

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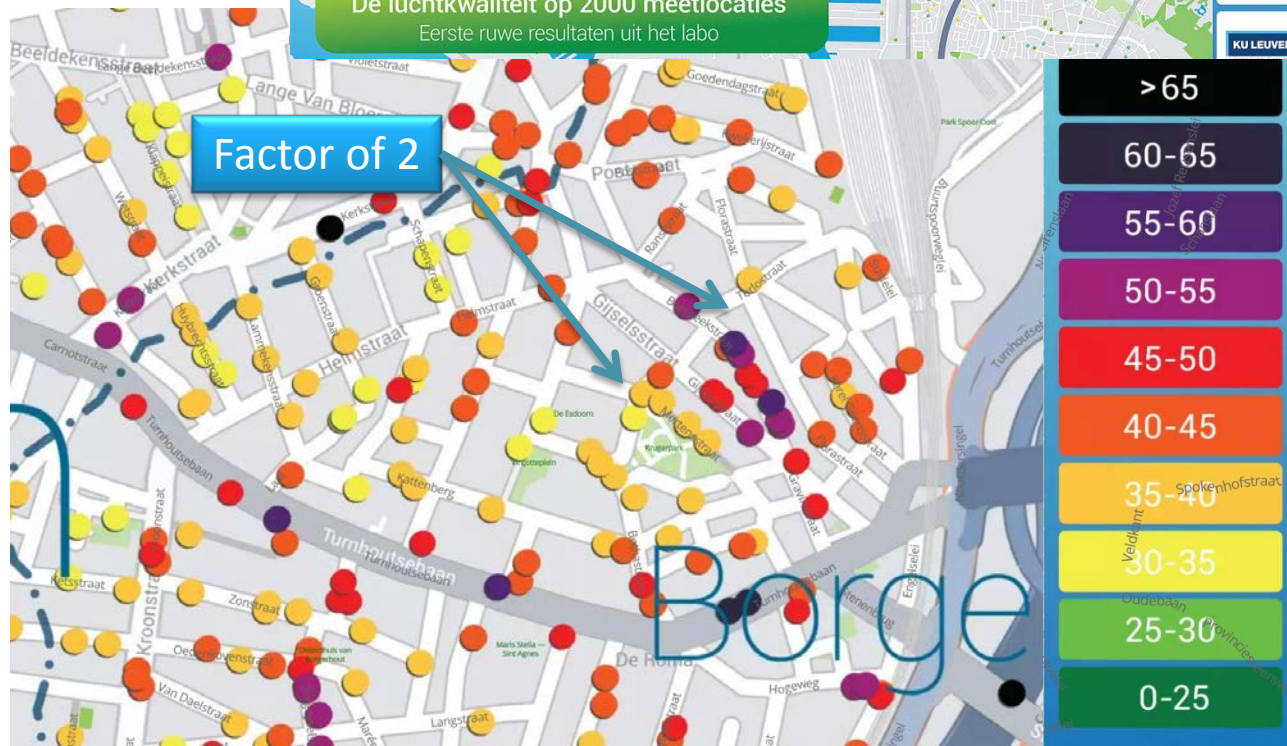
OUTLINE

- Motivation
- Methodology
- Software tool



MOTIVATION

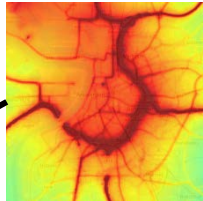
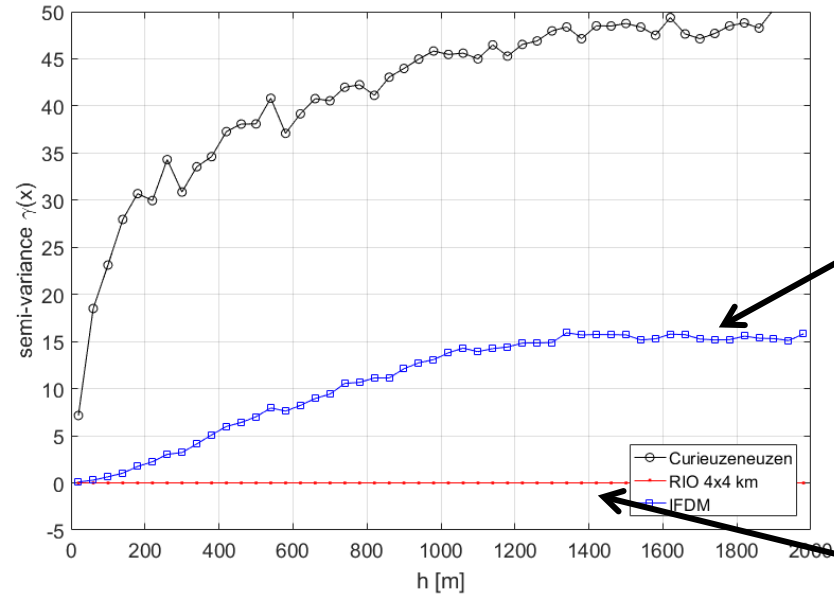
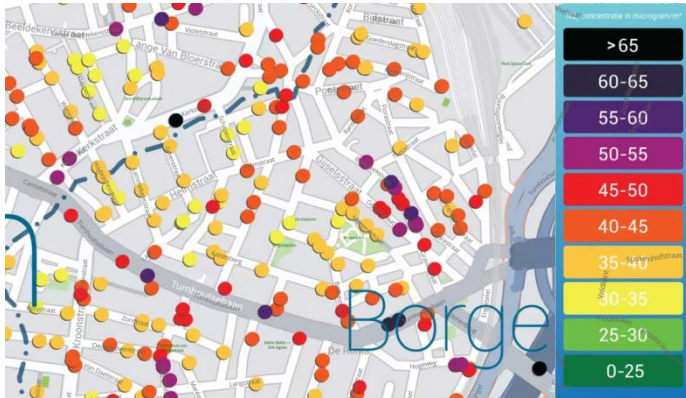
- Spatial variability of inner-urban concentrations is very high !



CAPTURING SPATIAL VARIABILITY ?

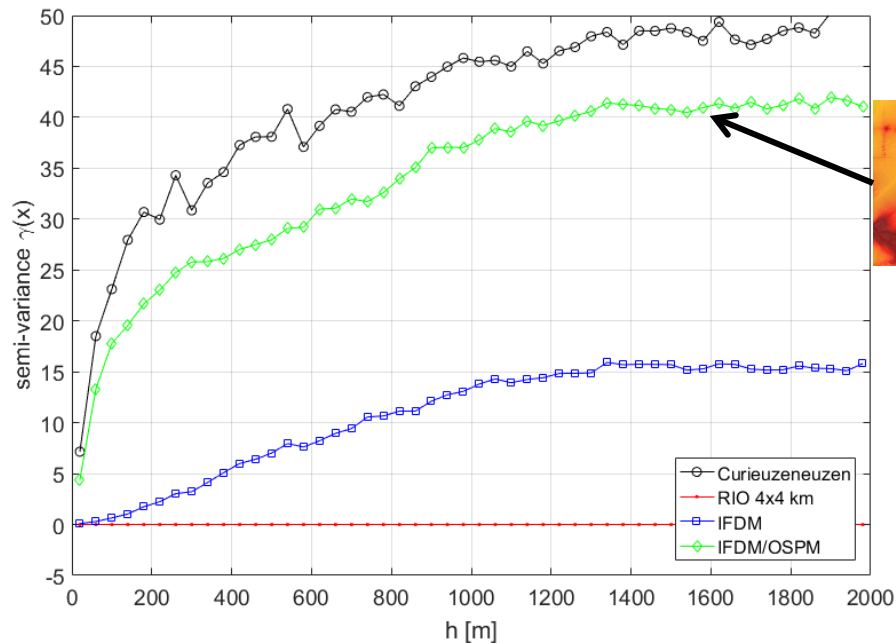
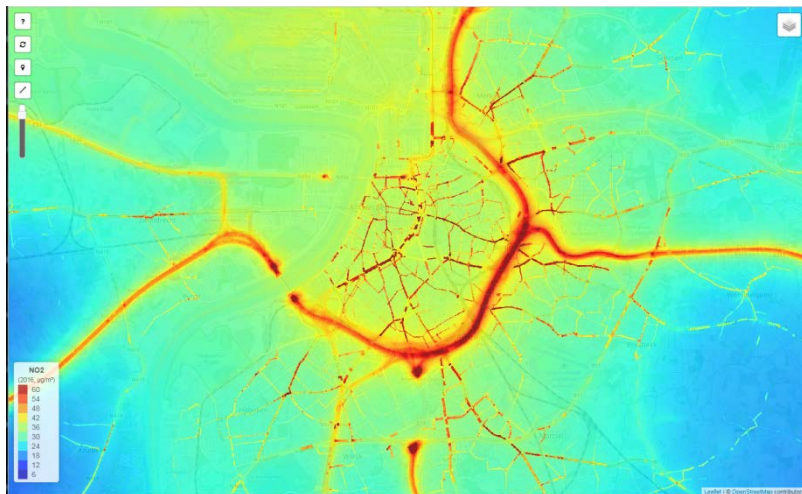
- Curieuzeneuzen-Antwerp !
- Semi variance

$$\gamma(h) = \frac{1}{2N(h)} \sum_{i,j \in N(h)} [Z(x_i) - Z(x_j)]^2$$



STREET CANYON CONTRIBUTION

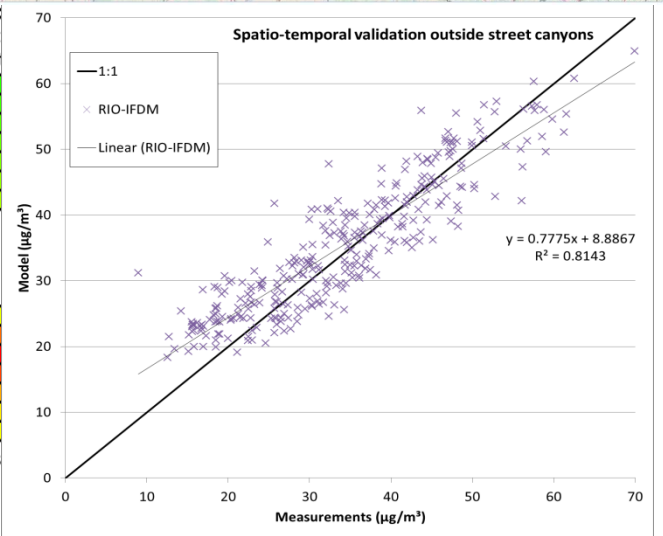
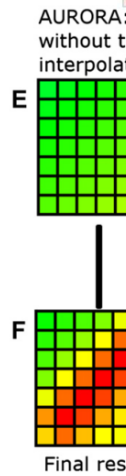
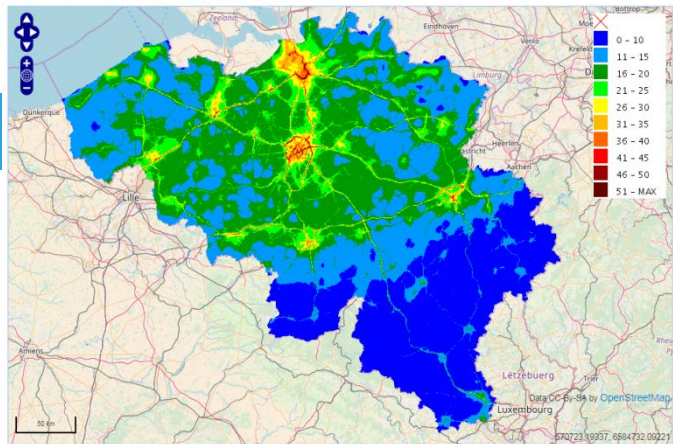
- Addition of OSPM-model (Berkowicz, 2000) for street canyons



METHODOLOGY

- Policy support chain in Flanders
- Combining CTM/LUR & dispersion modelling
- RIO : Large scale (4x4 km concentrations) : hourly land-use regression model
 - Hooyberghs et al., 2006; Janssen et al., 2008
- Local scale :
 - IFDM (Gaussian Plume model) : road-side increment
 - Lefebvre et al., 2013
 - OSPM (Berkowicz, 2000) : street canyon increment
- Double counting correction

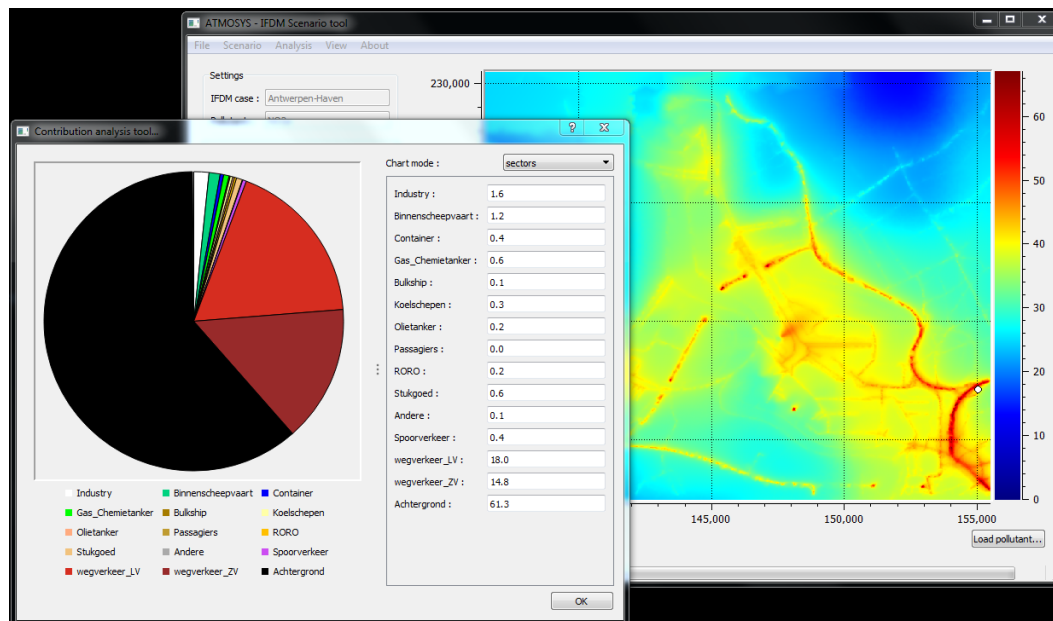
2013 air quality map: NO₂ - Average (µg/m³)



METHODOLOGY

- Source contributions : scenario analysis
 - Decide on what sectors & source area's are to be taken into account
 - calculate full map
 - for sector in sector_list:
 - for source in source_list:
 - reduce sector/source emissions by 100%
 - run the model chain
 - contrib(sector, source) := difference with full map
- Evaluation of non-linearity → t.b.d.

DESKTOP TOOL : ATMOSYS SOURCE ALLOCATION TOOL



FOOD FOR THOUGHT

- Recommendations for local scale source allocation ?
- Ways to treat non-linearities in local scale models .. PM