VALIDATION OF THE RIO-IFDM-OSPM MODEL CHAIN USING THE ANTWERP “CURIEZENEUZEN” CITIZEN SCIENCE MEASUREMENT CAMPAIGN

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THE “CURIEUZENEUZEN” CAMPAIGN

• Citizen science campaign
• About 2000 locations (Palmes tubes)
• Measurements during 4 weeks (May 2016)
• Attached to V-shaped cardboard systems
THE “CURIEUZENEUZEN” CAMPAIGN: 1ST CALIBRATION

• Also passive samplers at official measurement locations
• Calibrated using red line
• Large possible errors at low/high values

Hmmm..., not using the cardboard here

corrected = 1.43 * palmes
corrected = 0.98 * palmes + 10.58
THE “CURIEUZENEUZEN” CAMPAIGN: 2ND CALIBRATION

• Effect of cardboard panel?
• New calibration campaign July-August 2016 with 4 fixation systems

Extra calibration based on these measurements
THE “CURIEUZENEUZEN” CAMPAIGN

- Estimated uncertainty on measurements: 16% (in concentration interval covered by official stations)

- 2000 measurements => validation of model
THE RIO-IFDM-OSPM MODELCHAIN

• Combination of Land Use Regression model RIO (4x4 km²) with Gaussian Dispersion Model IFDM and Street Canyon Model OSPM
• Using local meteorology
• Same model chain as in Lefebvre et al. (2013)
CURIEUZENEUZEN: RESULTS

• Every dot = measurement location
Hmmm..., I’ve seen better
EARLIER STUDIES...

- Lefebvre et al., 2013
- Lefebvre et al., 2017

Graph showing a linear regression line with the equation $y = 1.21x - 6.58$ and $R^2 = 0.94$. The graph compares model output to measured values per station.
$y = 0.63 \times x + 9.63 \ (R^2 = 0.51)$
Furthermore:
• Uncertainties in height of the measurement
• Uncertainties in calibration
• Start-stop traffic
• Small calibration range
• Citizen science: exciting new opportunities but also challenges (deharmonization)

• Need of a good scientific knowledge within campaign in order to be useful for model validation