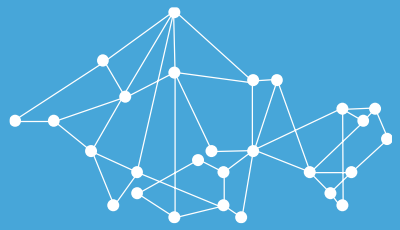
FAIRMODE
Forum for air quality modelling in Europe



WG1: FIT FOR PURPOSE RECOMMENDATIONS

STIJN JANSSEN

PURPOSE: EXCEEDANCE ESTIMATES & THE AQD

- Reporting of an exceedance situation according to implementing decision 2011/850/EC
  - *6. Estimate of the **surface area** where the level was above the environmental objective*
  - *7. Estimate of the **length of road** where the level was above the environmental objective*
  - *10. Estimate of the total resident **population** in the exceedence area*

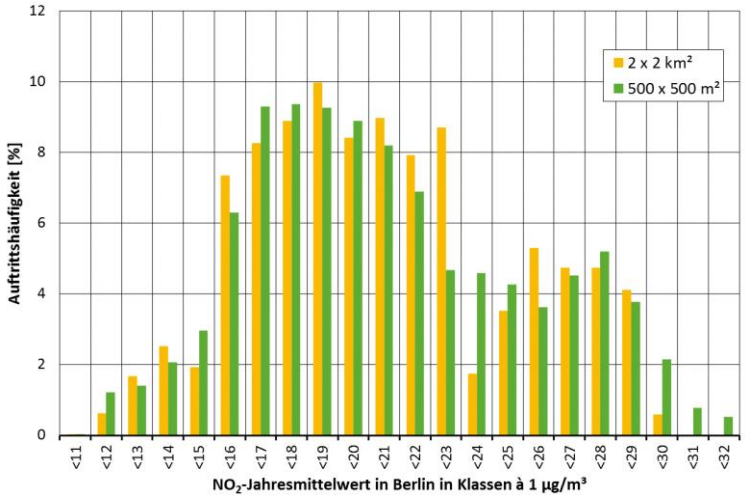
- When is a model "fit" to estimate these numbers?

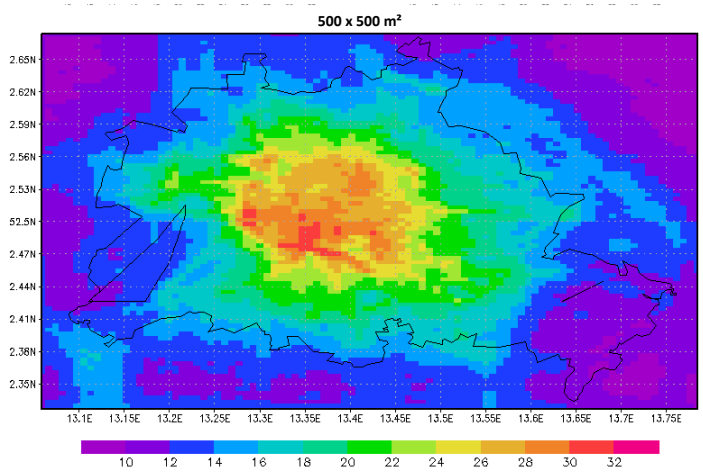
FITNESS FOR PURPOSE – ALREADY COVERED WITHIN FAIRMODE

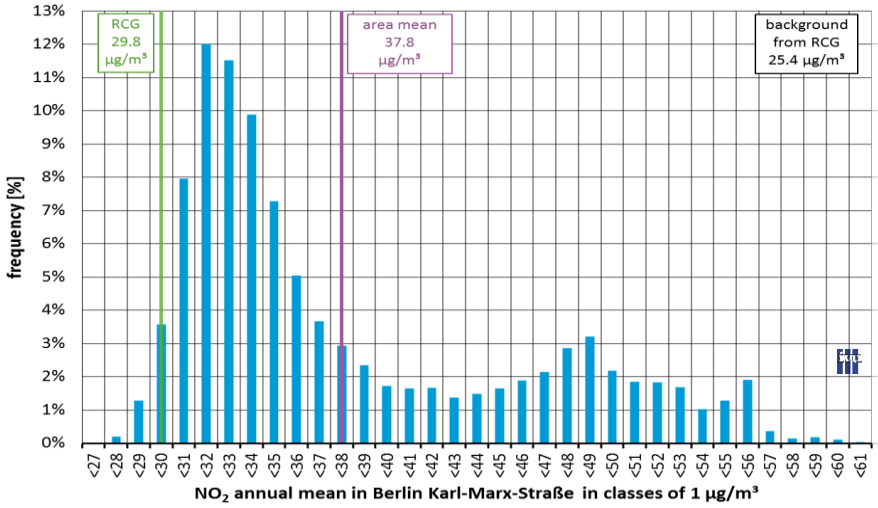
- Criteria to assess fitness-for-purpose:
  - FAIRMODE's MQO
    → min. quality objective
  - Spatial variability of the environmental objective
    → min. spatial scale
  - Temporal scale of the environmental objective
    → min. temporal scale

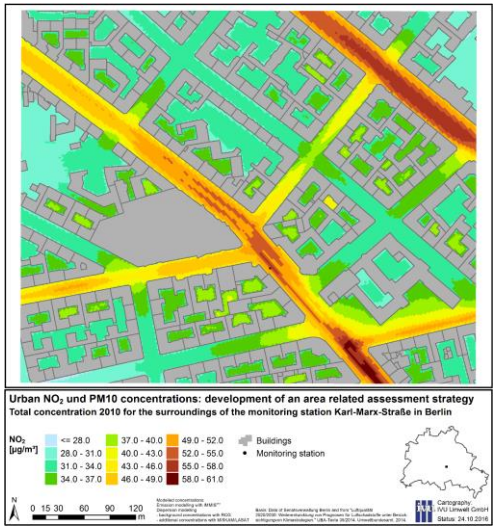
- Additional considerations:
  - Model type
  - Data assimilation / data fusion
  - Output frequency

VARIABILITY IN CONCENTRATIONS AT VARIOUS SCALES









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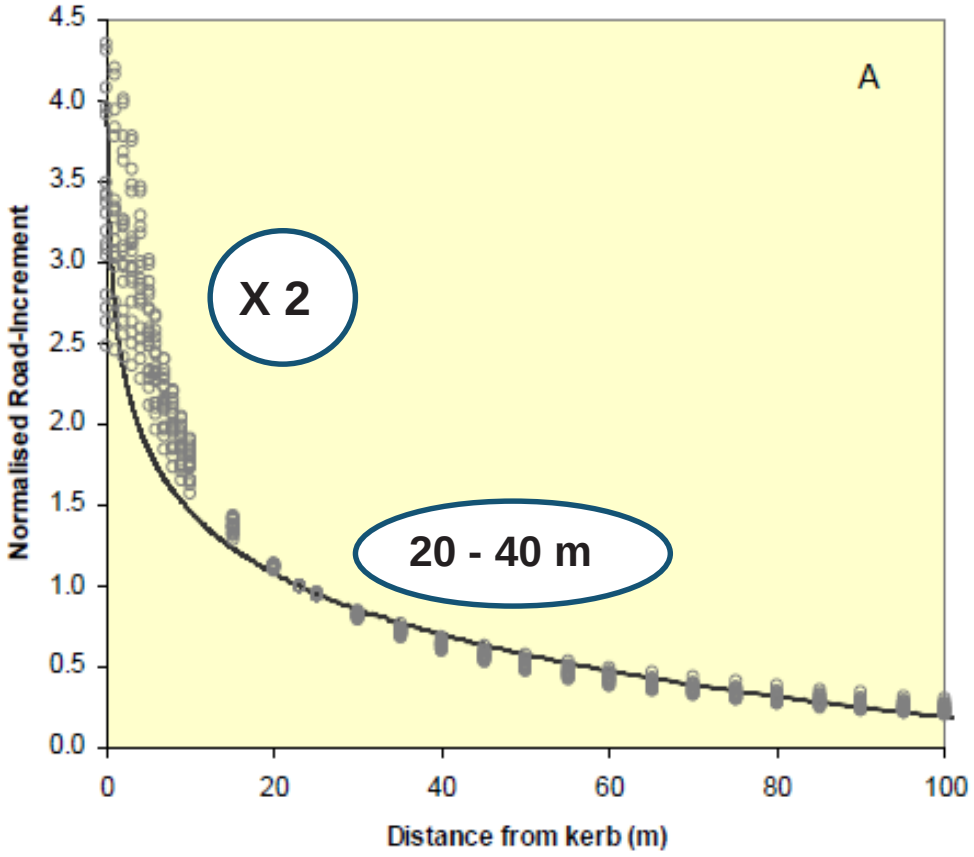
European Commission

Source: Stefan Nordmann

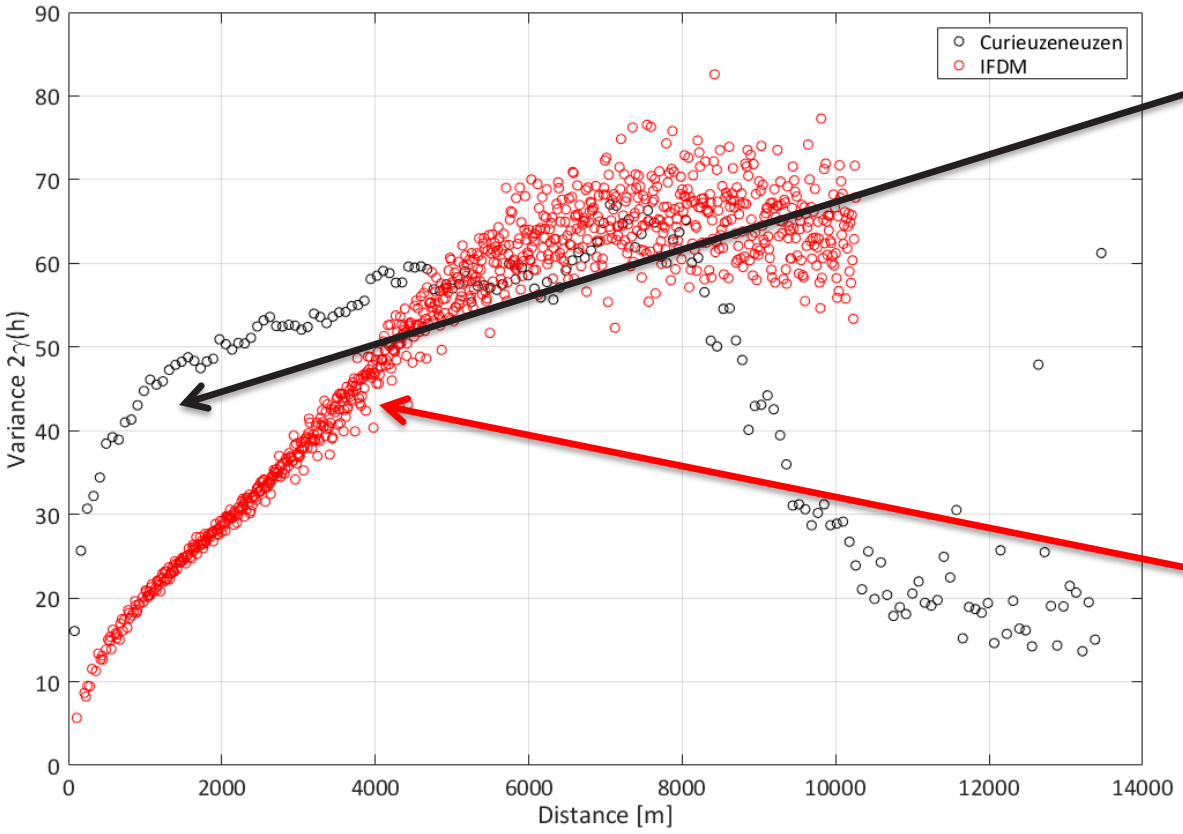
VARIABILITY IN CONCENTRATIONS FROM KERBSIDE

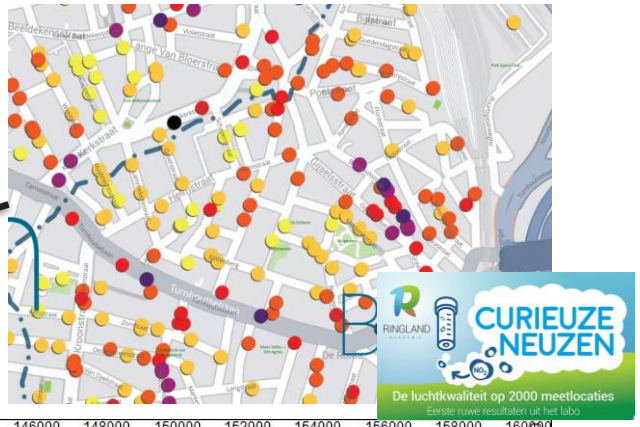


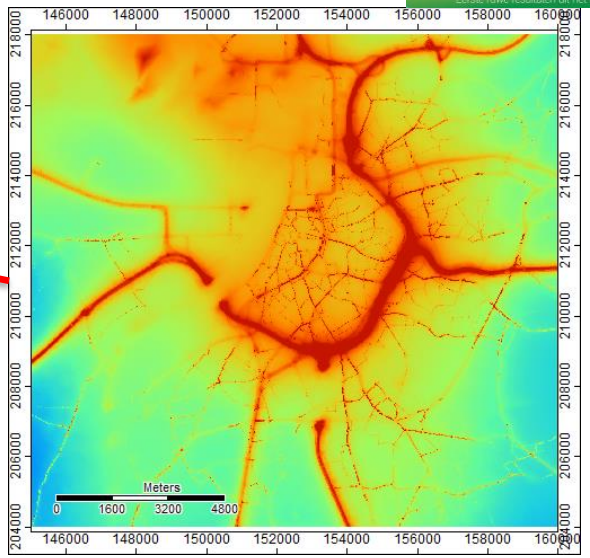
Factor of 2 difference within 10s of m – so need 10 m resolution

Source: Jenny Stocker

VARIABILITY IN CONCENTRATIONS AT URBAN SCALE







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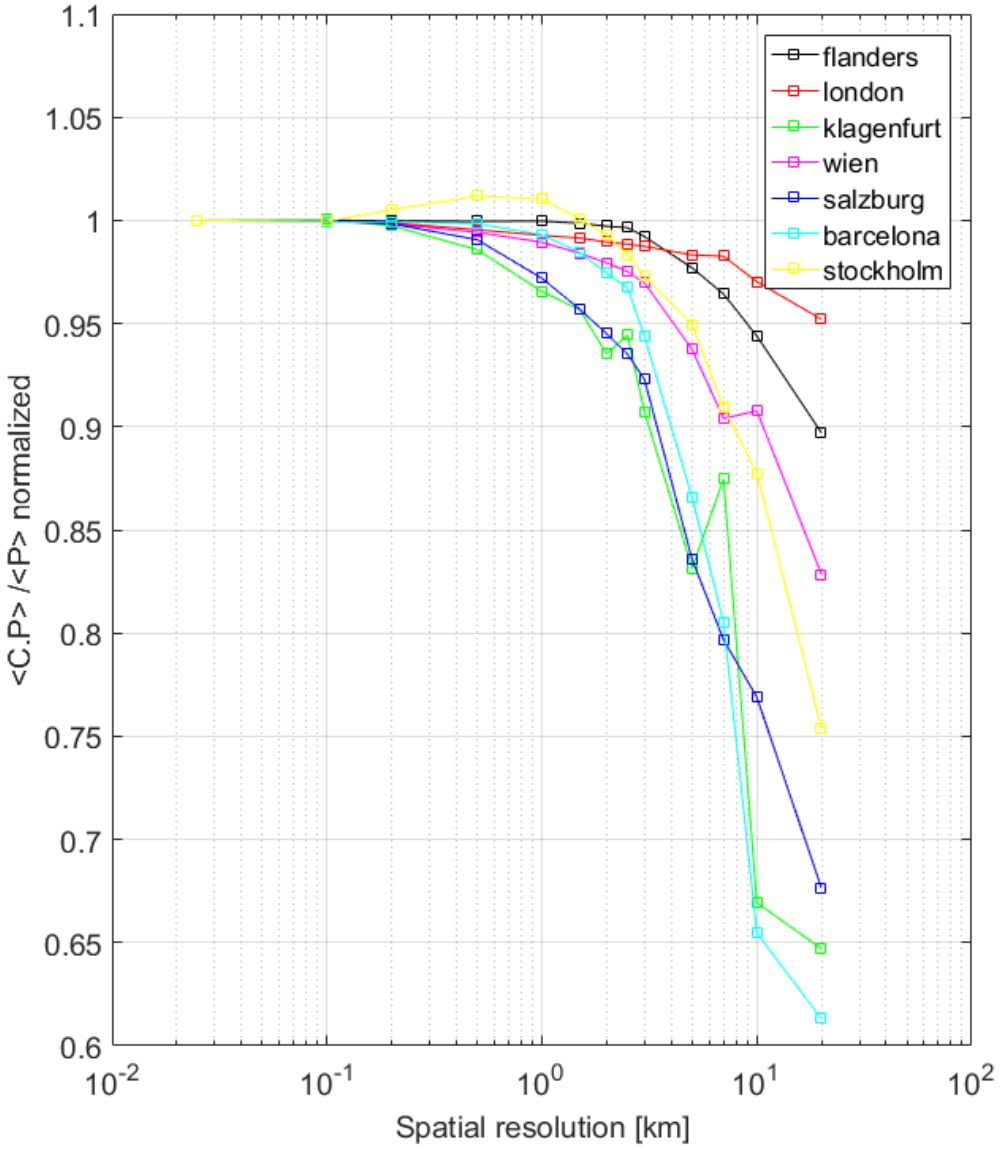
European Commission

Source: Bino Maiheu

POPULATION EXPOSURE AS A FUNCTION OF SPATIAL RESOLUTION



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Forum for air q

Source: Bino Maiheu

RECOMMENDATIONS ON SPATIAL SCALE

What is a appropriate spatial scale for exceedance modelling?

- What is the purpose?

- **Compliance checking**
  - Real world shows variations at the "few meter" resolution → **10m resolution** is (probably) required

- **Static health impact assessment** studies
  - Concentration overlay with static population density maps → **100m** seems sufficient and canyons are not required
  - Why do we assess at street level? Why do we have traffic stations?
  - Why do we have to assess e.g. length of roads above the limit value?

- However, future health impact assessment studies based on **dynamic exposure**
  - Street canyon concentrations become important → 10m resolution?
  - Guidance from the health community required!