European Commission

FAIRMODE Recommendations WG3/WG4

&

Pilot Exercise

February 2019

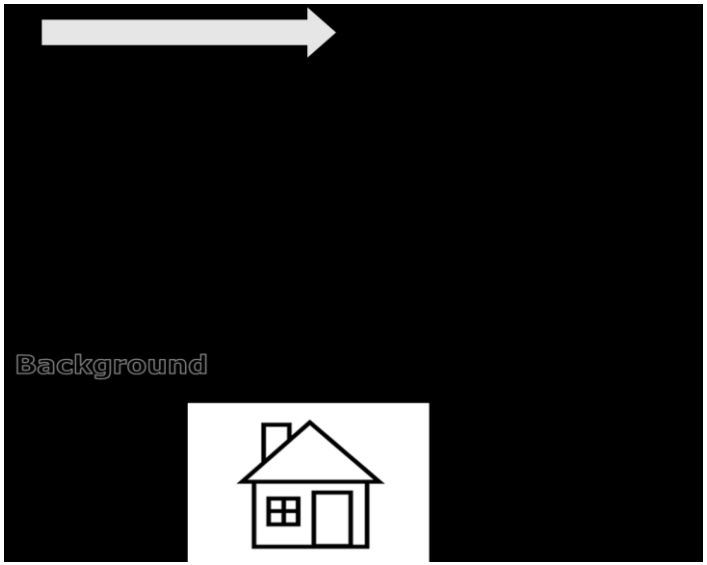
Joint Research Centre

Recommendations from WG3 / WG4

- **On the use of benchmarking tools**: FAIRMODE recommends applying proven methodologies to ensure fit-for-purpose and reliable quality when performing source apportionment and air quality planning applications.

- **On the nomenclature for classifying emission sources**: Following the recommendations from emissions, FAIRMODE recommends adopting the nomenclature used under the NEC Directive for reporting emissions as basis for the source apportionment activities under the AAQ Directive.

- **On the use and limitations of source apportionment methods**: For the specific purpose of providing information of direct relevance to support the design of air quality plans and assess their potential benefits:
  - The incremental approach is not recommended for air quality planning;
  - Methods based on mass-transfer precursor mass-ratios are suited for linear pollutants but not for non-linear pollutants;
  - Emission reduction potential (i.e. brute force) based approaches are recommended for air quality planning applications

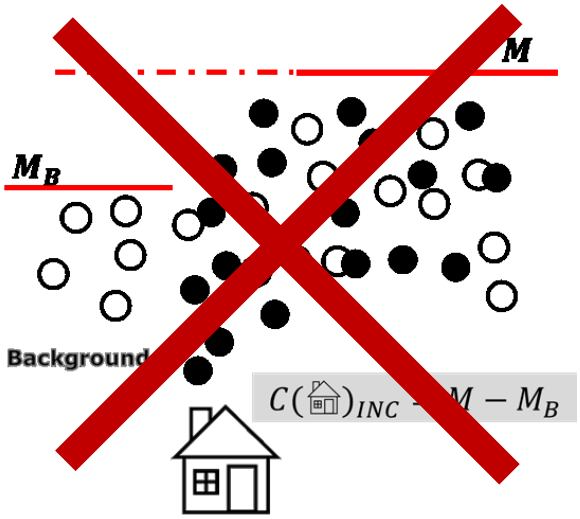


Fairmode recommendation

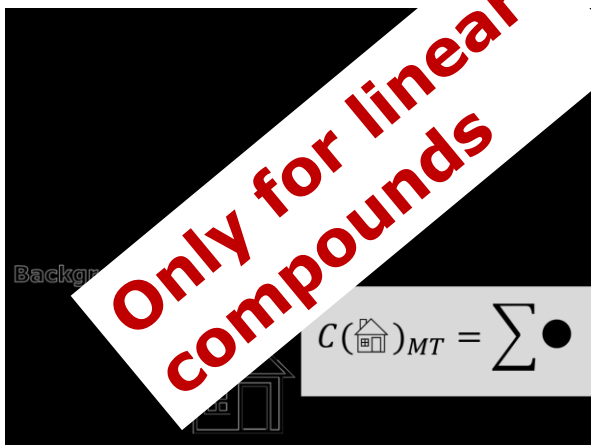
Fit-for-purpose approach to support AQP

C( )=?

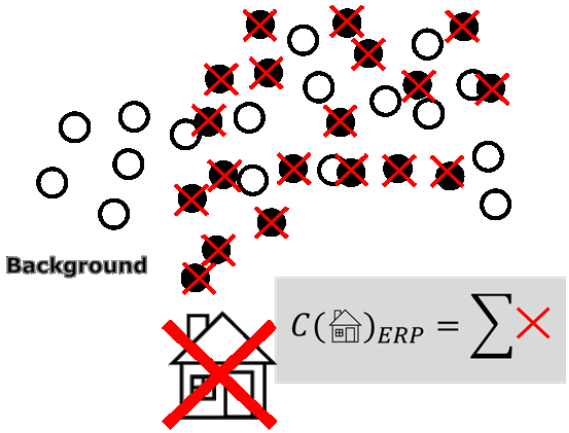
Incremental



Mass-transfer (tagging / receptor)



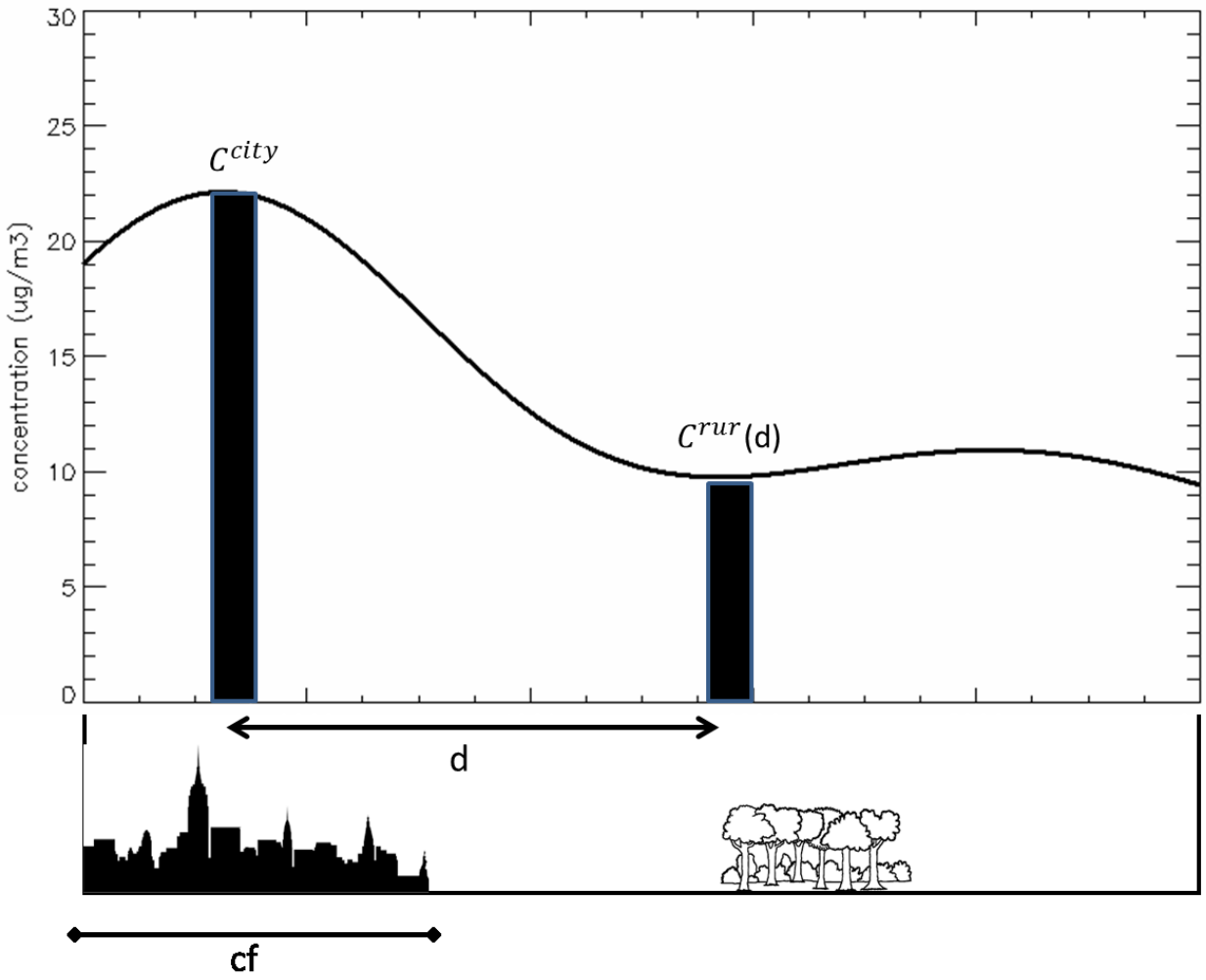
Emis. Red. Pot. (Brute force)



Then we may have an issue!

	Pollutant	Increment	Mass-transfer	Model scenarios	Type of model
Emilia Romagna	NO2, PM10	X		X	Eulerian
Hessen State	NO2, PM	X		X	Eulerian
Stockholm	NO2, PM10	X	X	X	Gaussian
Malopolska	NO2, PM10, PM2.5, BaP,			X	Eulerian
Helsinki	NO2, PM10, PM2.5, BaP	X		X	Gaussian
Athens	NOx, O3, PM10, PM2.5			X	Eulerian
Slovenia	NO2, PM10		X	X	Eulerian
Italy (Enea)	NO2, PM10, PM2.5, O3		X	X	Eulerian
Dublin	NO2, PM10, PM2.5, OZONE, BaP			X	Gaussian
Sofia	PM2.5, PM10	X		X	Gaussian

Urban impact & urban increment



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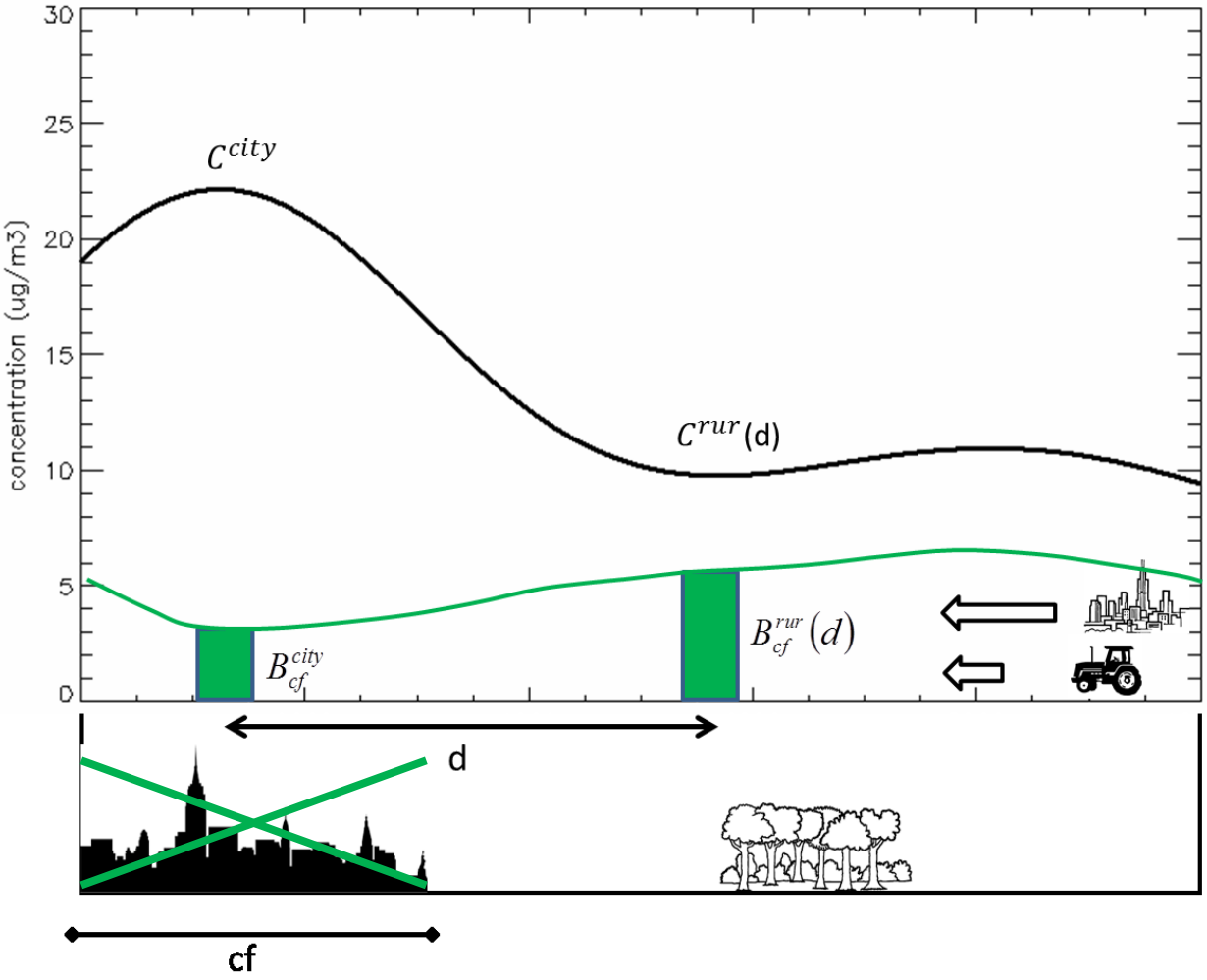
Urban impact & urban increment



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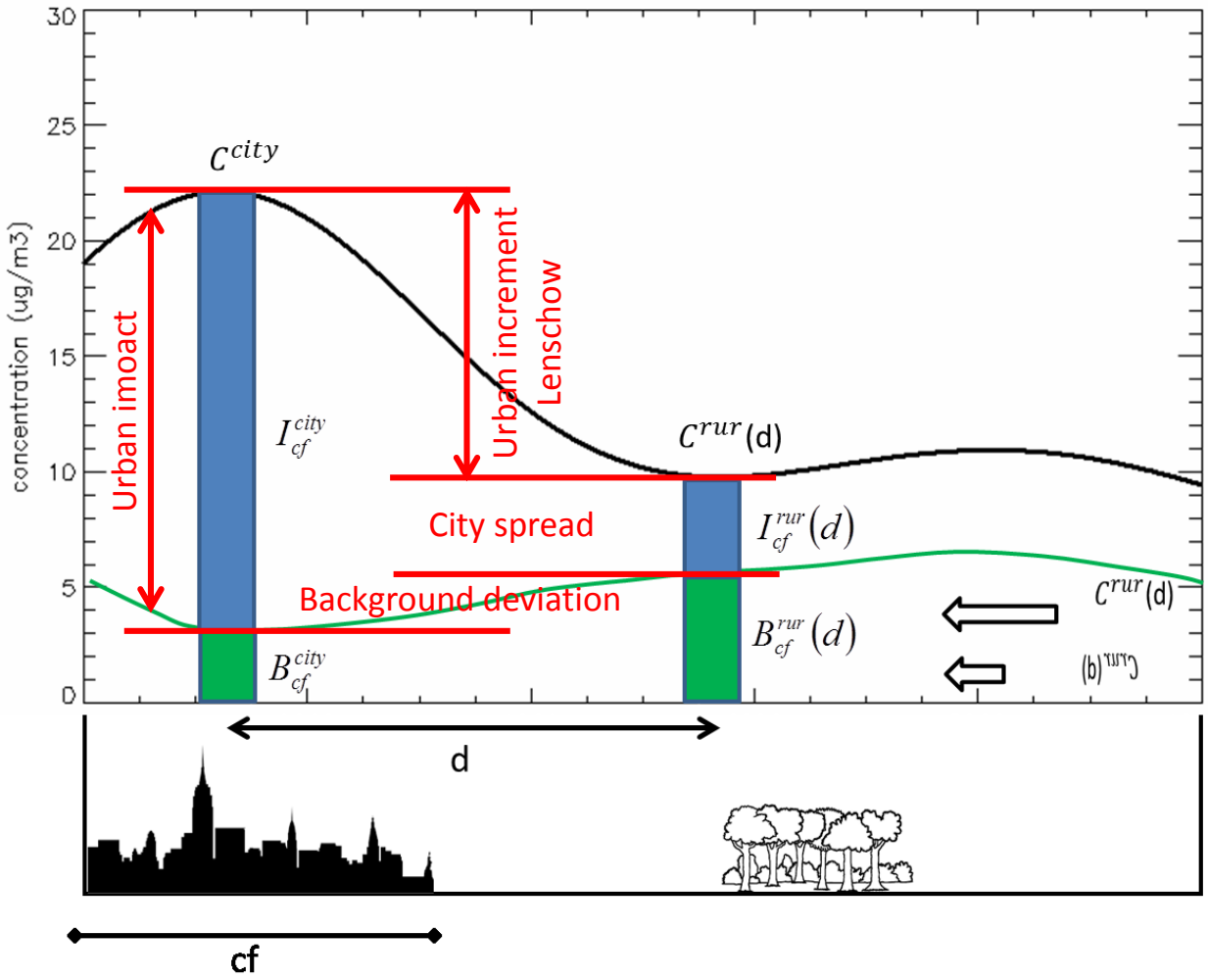
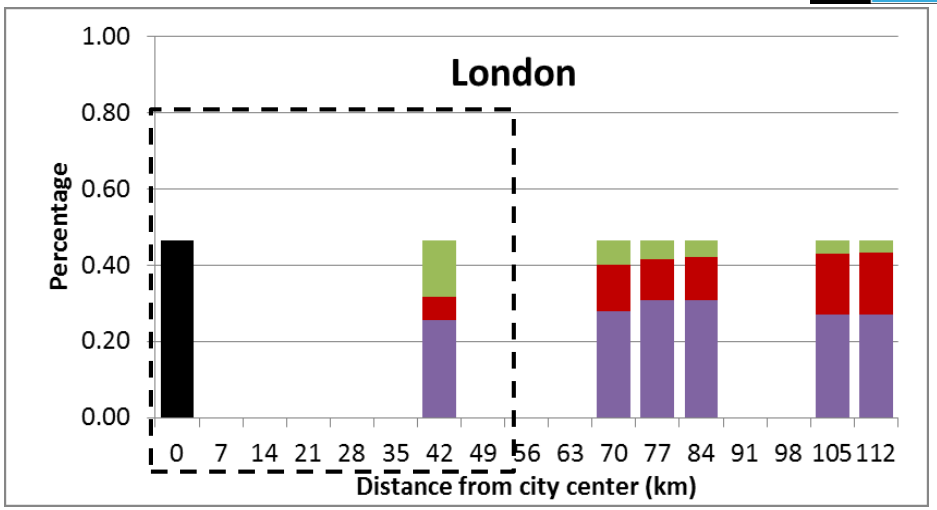
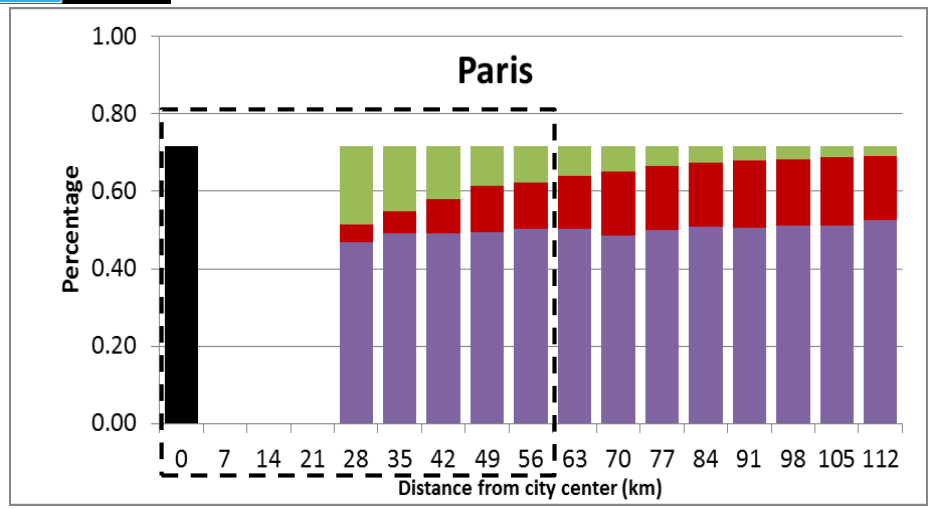
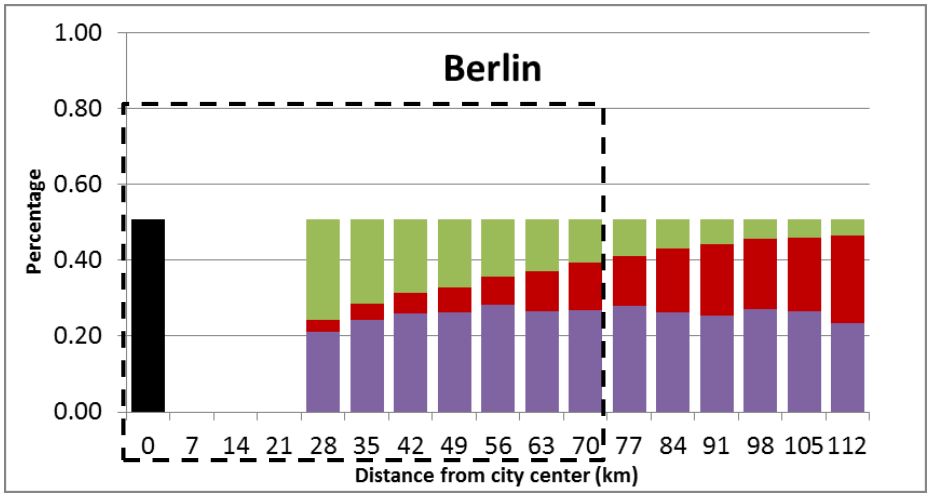
Urban impact & urban increment

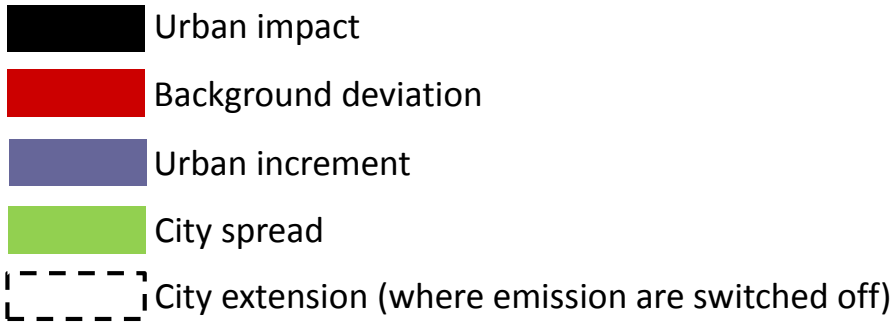


Comparison of the urban increment and urban impact for large city sizes (FUA)









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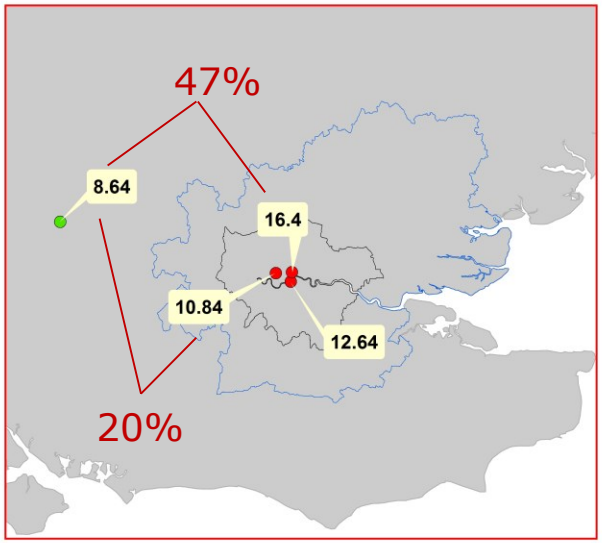
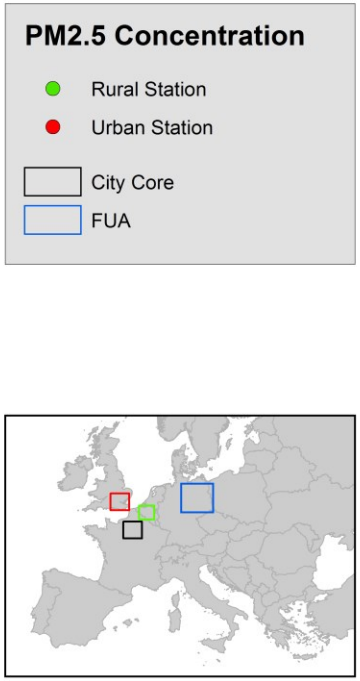
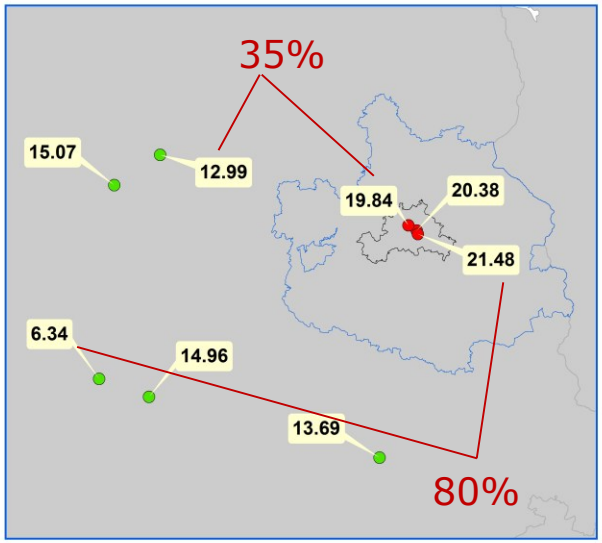
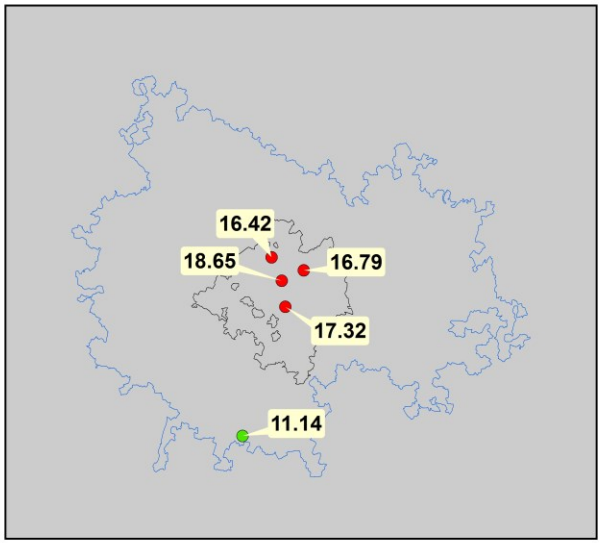
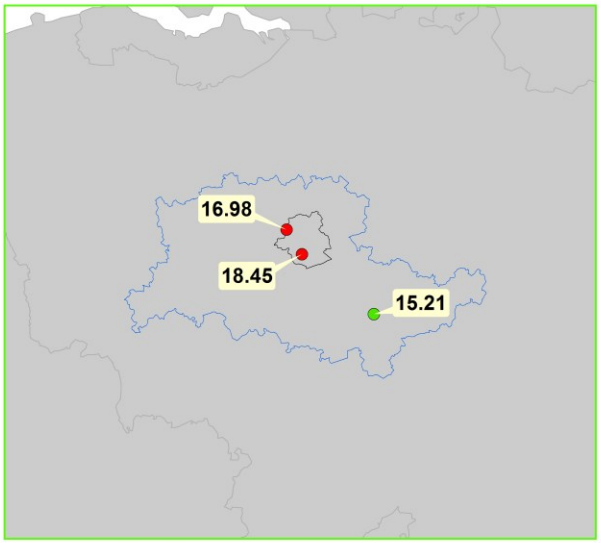
Observations based increments: Which stations pair to choose?



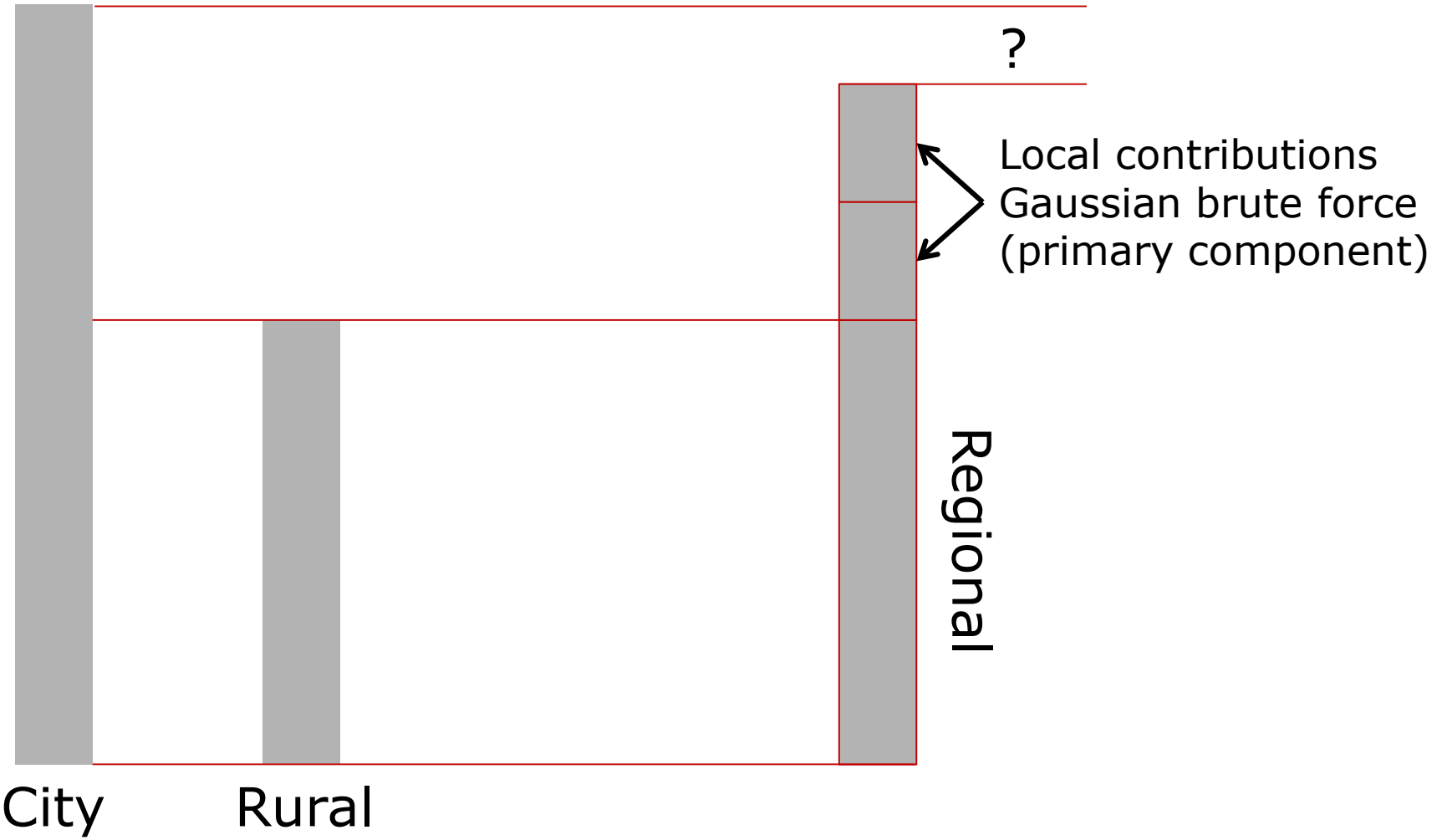








Hybrid approaches: Regional → increment & local → primary ERP



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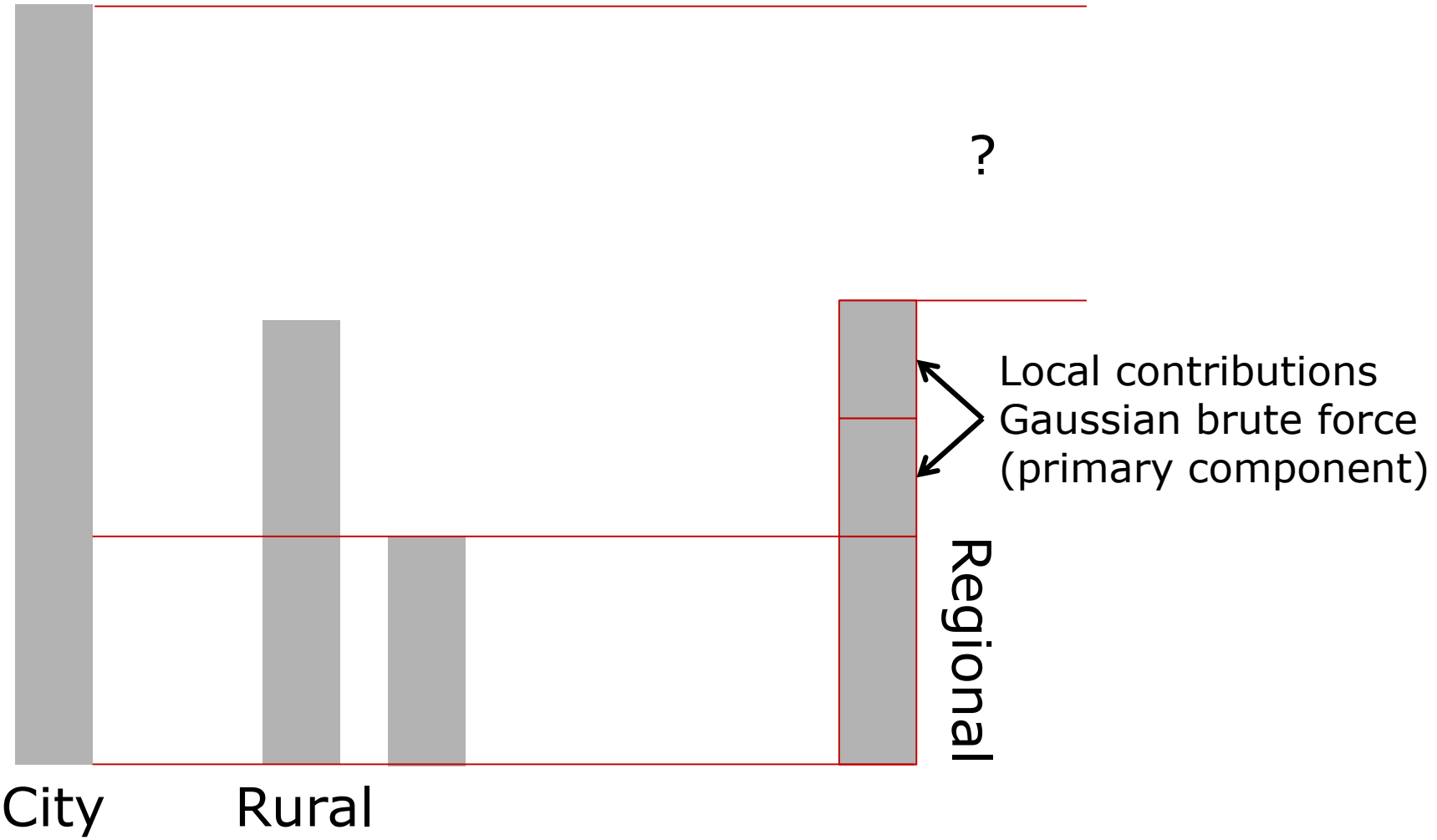

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Issues / questions

- How do you cope with the incremental variability?
- How do you assess the validity of neglecting the local production of secondary?
- How do you correct for missing emission sources / contributions?
- **Is there an interest of comparing your different "hybrid local approaches" on a common dataset?**