

Welcome to WG4



Assessment



Emissions



Source
Apportionment



Planning

AGENDA

1. Are all methodologies (S. app. S. alloc., urb. Inc.) suited for planning purpose?
Guidance to IPR and recommendations.

Philippe

2. How should we care about model diversity for AQ planning?

Alexandra

Should we care about model diversity for AQ planning?

Baveno
26-27 Feb 2018

Alain Clappier
Philippe Thunis
Bart Degraeuwe
Alexandra Monteiro



Joint Research Centre

the European Commission's
in-house science service

WG4 Recommendations



- I. What is the purpose?
- II. Is my approach fit for the purpose?
- III. Do I apply it in the appropriate way?
- IV. Are my results of sufficient quality for policy?

I. **Purpose:** Provide information that is of direct relevance to assess the potential impacts of air quality plans

II. **Fit for purpose:**

- The incremental approach is not recommended, unless the validity of the underlying assumptions has been assessed (both for primary and secondary).
- For primary pollutants, src. apportionment is fit for the purpose but for secondary pollutants, it is not recommended.
- Scenario analysis based approaches (e.g. source allocation) are recommended

III. **Proper application:** For scenario-based approaches, an assessment of the associated non-linearities is recommended to provide information on their range of applicability.

WG4 2017-2019 Roadmap



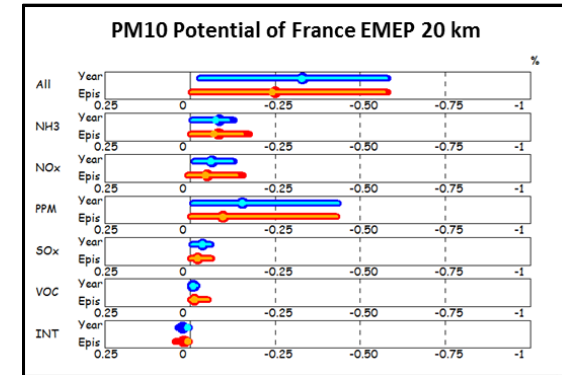
- ❑ Further develop the **dynamic benchmarking methodology** and generalize its application.
- ❑ **Develop methodologies to identify the spatial origin of air pollution.** These methodologies will be used to validate air quality model estimations.
- ❑ **Support the e-reporting** process, particularly with respect to the estimation of emission contributions from diverse activity sector from various spatial scales (e-Reporting channels H to K)
- ❑ Contribute to the harmonization of the specifications used to classify abatement measures
- ❑ To provide overall **support to model users** in their planning activities (measures, model scenarios).

Benchmarking methodologies, indicators and tools



Indicators to test dynamic behavior:

- in term of location
- across model versions
- in term of resolution
- across different models



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Indicators to support the dynamic evaluation of air quality models
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Quantification of non-linearities as a function of time averaging in regional air quality modeling applications
P. Thunis ^{a,*}, A. Clappier ^b, E. Pisoni ^a, B. Degraeuwe ^a

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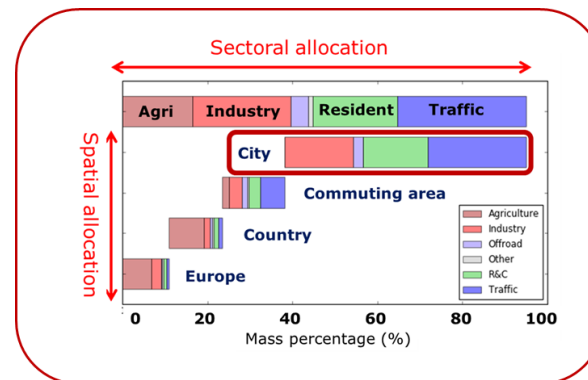
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Dynamic evaluation of air quality models over European regions
P. Thunis ^a, E. Pisoni ^{a,*}, B. Degraeuwe ^a, R. Kranenburg ^b, M. Schaap ^b, A. Clappier ^c

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Screening of the EMEP source receptor relationships: application to five European countries
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A new approach to design source–receptor relationships for air quality modelling
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Environmental Modelling & Software 9 (2015) 35–47

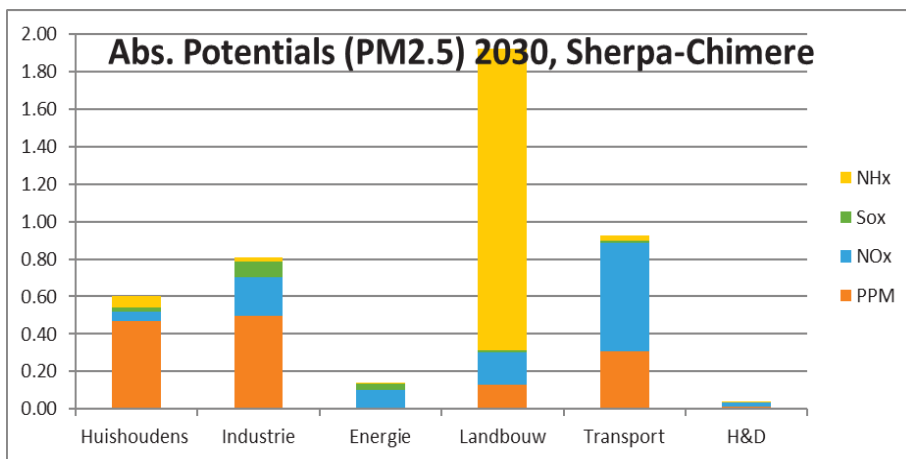
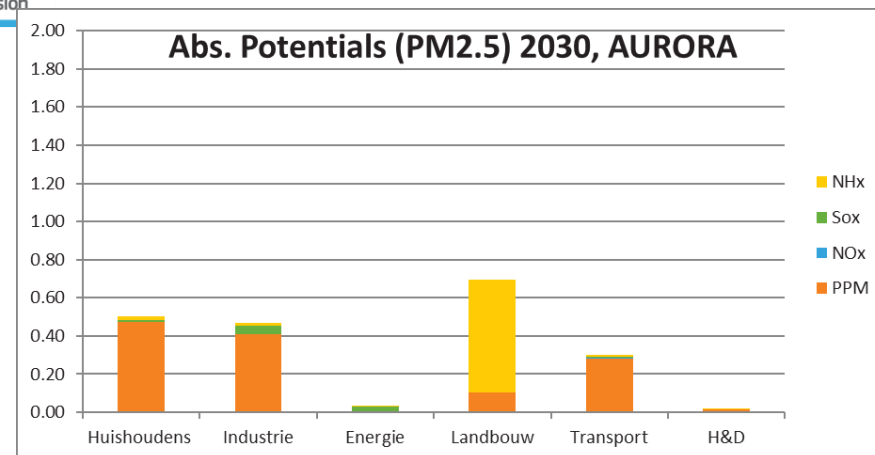
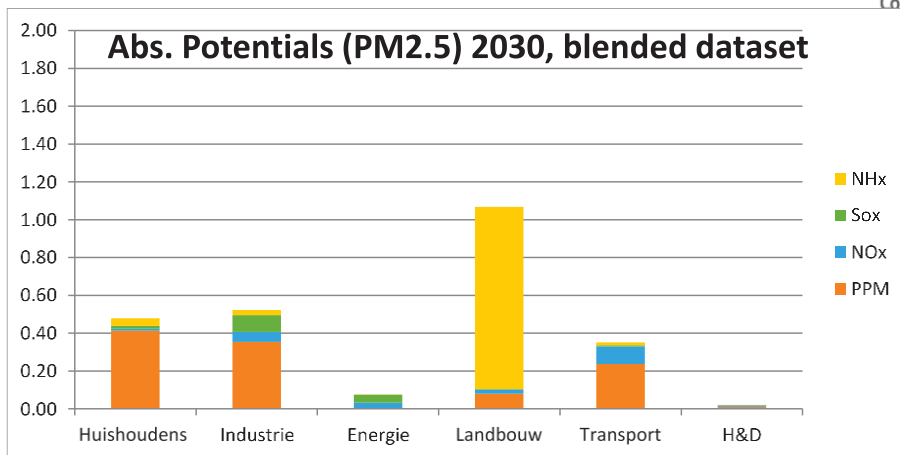
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Adding spatial flexibility to source–receptor relationships for air quality modelling
E. Pisoni ^{a,*}, A. Clappier ^b, B. Degraeuwe ^a, P. Thunis ^a

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What do we see?



Source: VITO (2017)

What do we see?

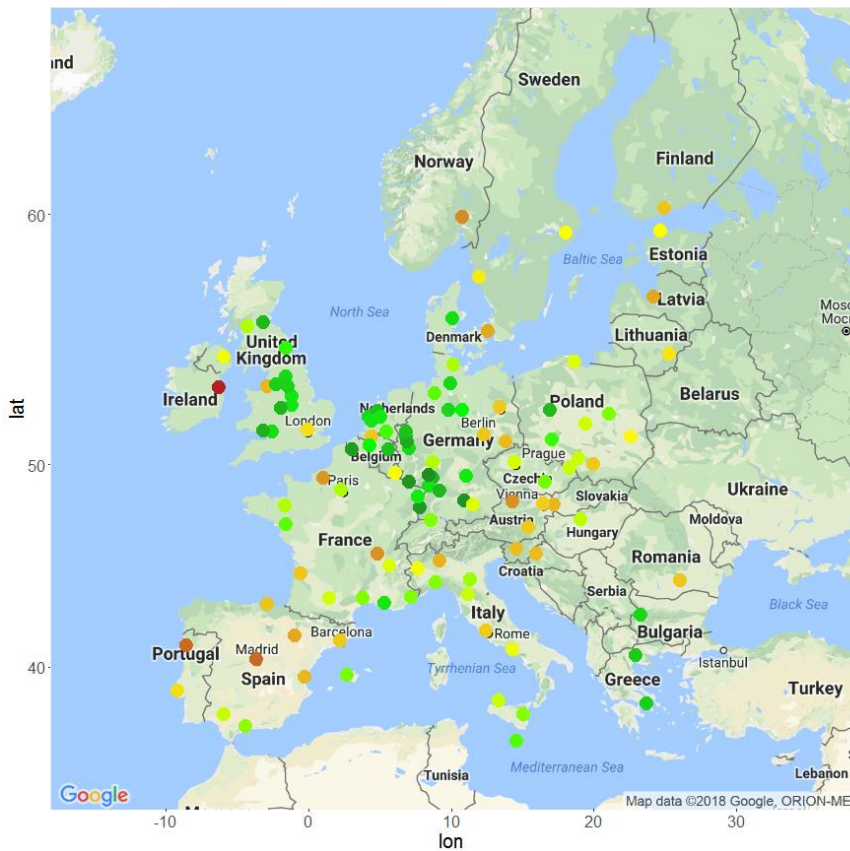


Sectors

(Transport-Industry-Residential-Agriculture-Other)

Areas

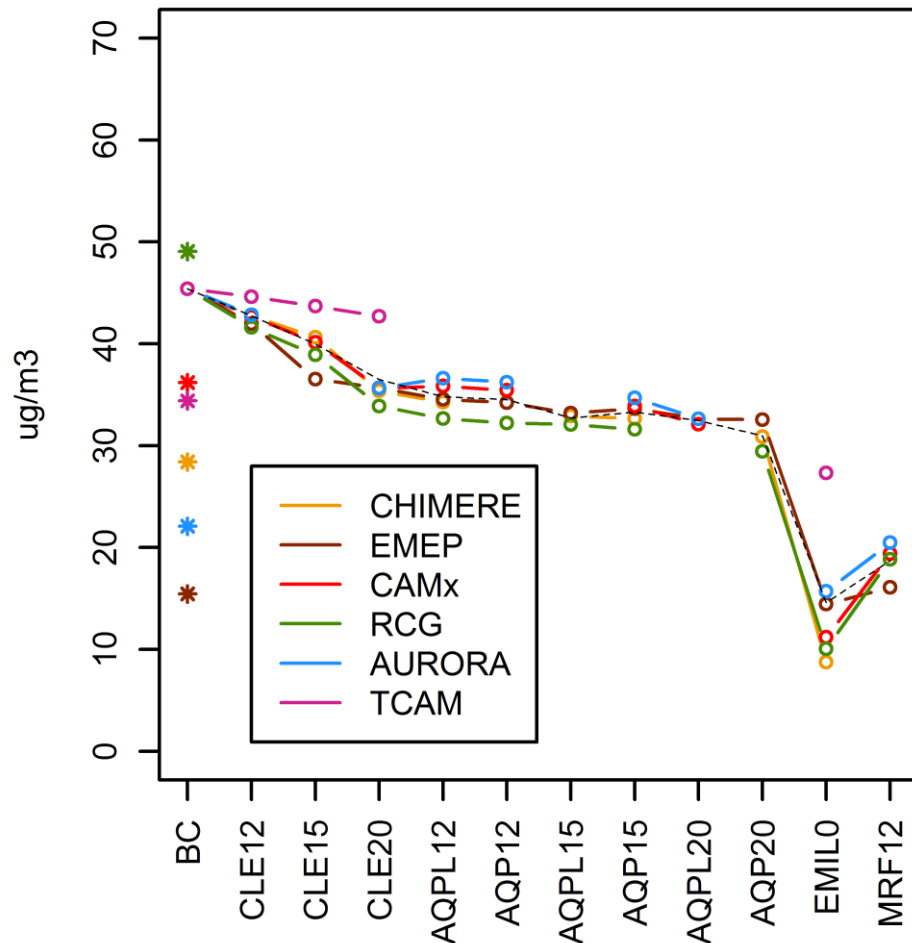
(city-FUA-National-International)



We can do it (past experiences)



PM
mean year U_LOM



Several models were applied to **Lombardy region**.

1st applied to a Base Case (BC)
-> large differences found

2nd models were adjusted and several scenarios simulated
-> normalized results are similar!

What shall we do?



☐ **We do not care!**

Differences (even though they can be large) are “normal” and can be due to emissions, meteorology... → **We should not use models for planning**



☐ **We care and report differences!**

Benchmarks (e.g. EMEP, CHIMERE) can be used to indicate a range of responses (no reference)

☐ **We care and try to understand the differences and improve data and model quality!**

Need for targeted inter-comparison exercises. → Motivation for that?



Model Inter-comparison exercise



☐ Common domain| study region?

Po Valley ??

Iberian Peninsula?

☐ How many scenarios|runs?

Min 10-15 runs

Pollutants: PM, NO₂

☐ Time plan? Publication?

Begin 2018

End 2019

