

Tailoring air quality actions for sustainable cities

EC, JRC, IES

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Stimulating innovation
Supporting legislation*



Why a city focus

In the EU, 72% of the total population lives in cities

Living in cities has:

- Pros (i.e. resource efficiency gains, ...)
- Cons (i.e. congestion, bad air quality, ...)

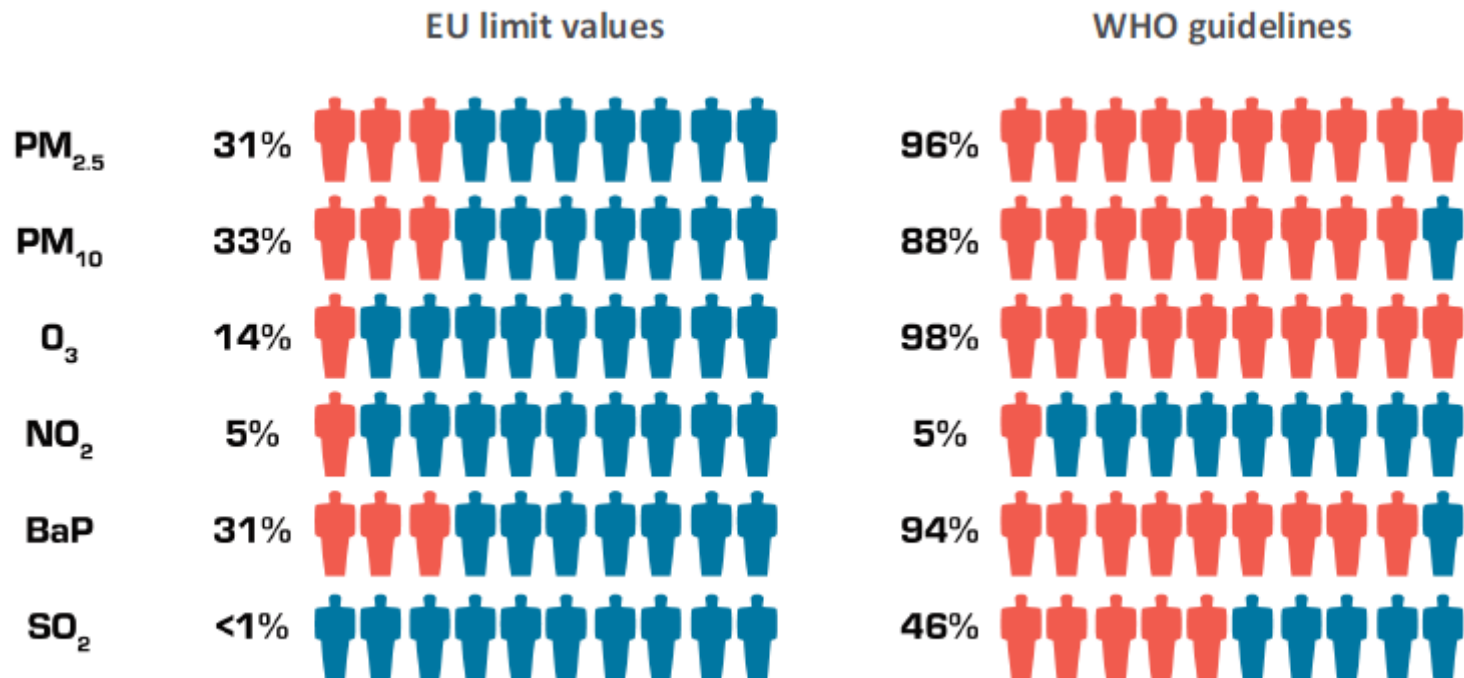
There is the need to improve environmental performances in urban areas acting on fields such as air and water quality, mobility, etc...

The “JRC Sustainable and resilient Urban Living project” is devoted to build a consistent modeling framework to evaluate and propose measures for sustainable urban development, focusing on land use change, **air** and water **management**,...

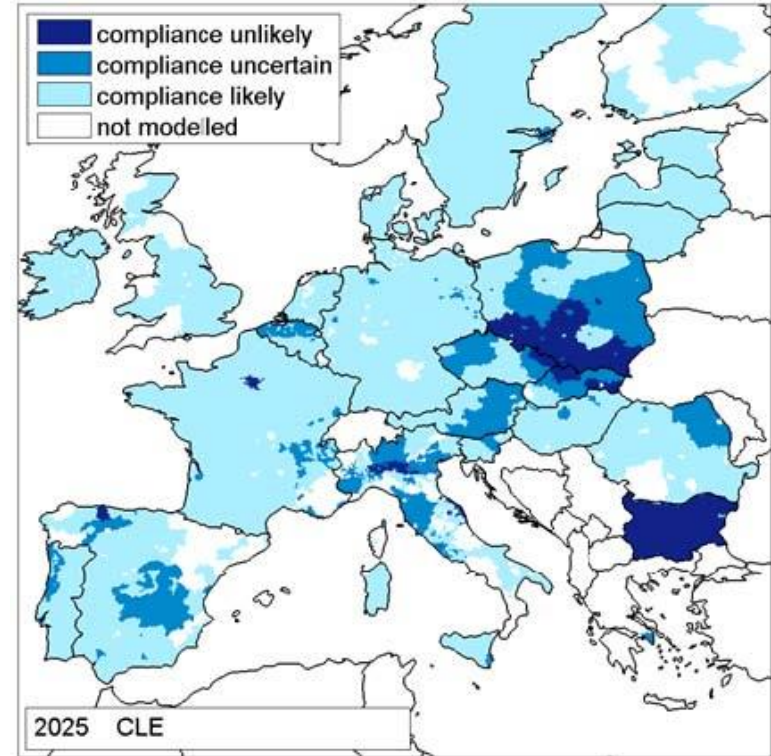
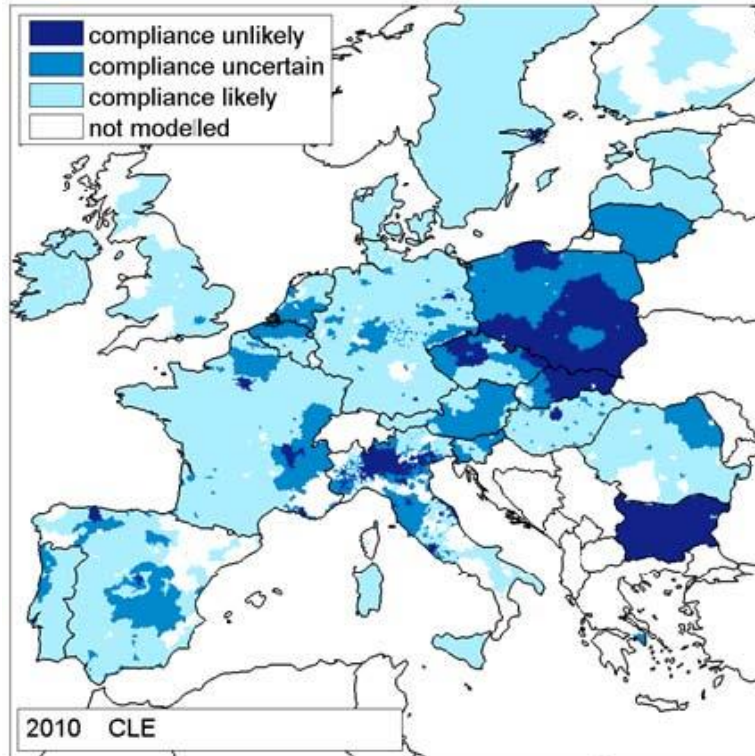
Outline

- **“why” we need a local approach to improve air quality**
- “how” the JRC supports the EU policy, Member States and regional/local authorities, through:
 - Integrated Assessment Modeling
 - Integrated approach for policy coherence
 - Networking

Emissions are decreasing...but still high exposure



Local hotspots still remain



Particulate Matter compliance issue
(still exceedances of threshold) at 2010 and 2025.



City compliance is an issue

EEA - Air Pilot Implementation project

- Almost three quarters of Europeans live in cities
- There are still 'gaps' in implementation of air quality policy
- Study on 12 European cities...but general conclusions

Some of the lessons learnt:

- Difficulties in estimating effect and cost/benefit of measures
- Challenges in implementation:
 - Governance issue, how competences are split between different levels (state/region/municipality).
 - Lack of management and assessment capacity
 - Air quality ranking in political agenda
 - Public acceptance

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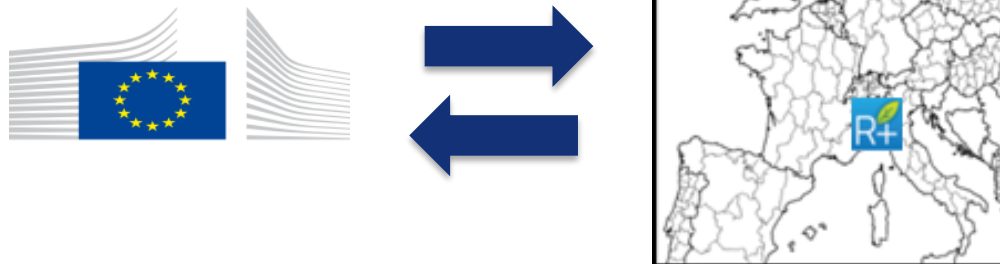
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Joint Research Centre role:

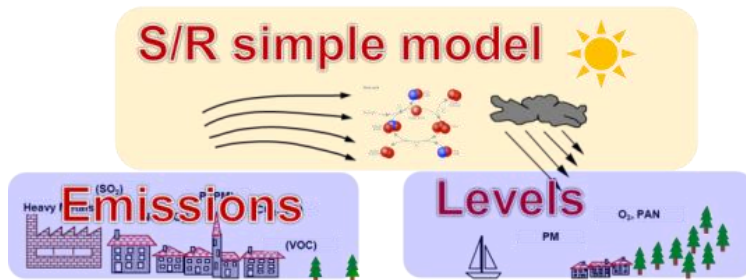
- providing knowledge/tools for air quality compliance, to support the Air Quality Management plans preparation
- sharing these knowledge/tools with Decision Makers, networking, facilitating the exchange of best practices

Member States/Regional authorities role:

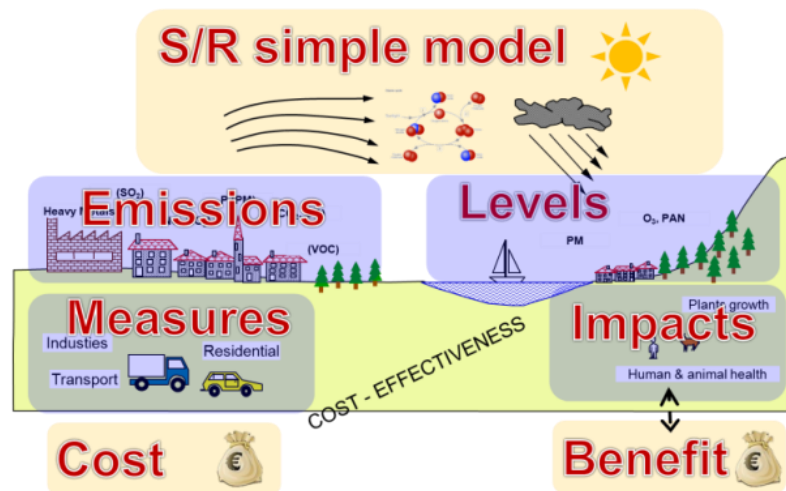
- Implementing “on the ground”



Applying IAM approaches (combining scientific knowledge to provide information for the management of AQ and its impacts)

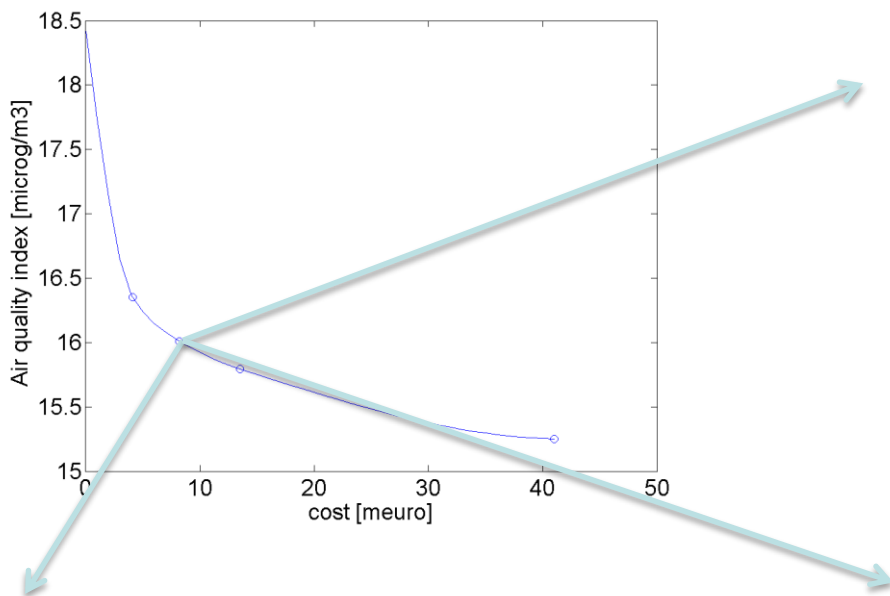


Simple approach: policy scenario (SHERPA)

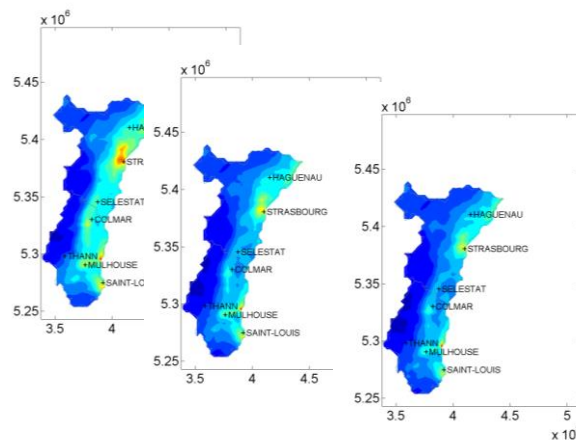


Complex approach: optimization of policies (RIAT+)

Examples



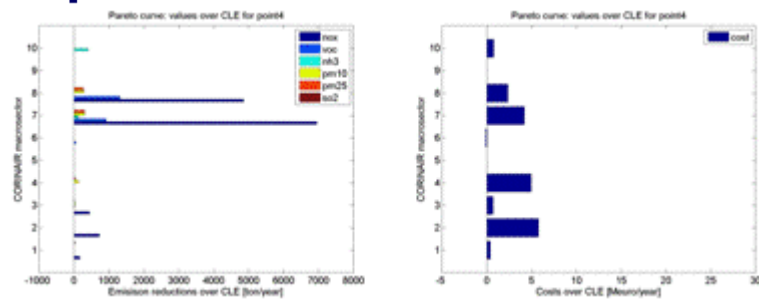
Optimal AQI and emissions maps



List of optimal measures to be applied

MS	sector	activity	technology	NO _x	VOC	NH ₃	PM10	PM2.5	SO ₂
2	Residential-commercial: fireplaces	Fuelwood direct	Fireplace improved	0	0.00002	0	1.4	0.4	0
8	Other transport: agriculture & forestry	Medium distillates (diesel, light fuel oil, includes biofuel)	Stage 3B control on construction and agriculture mobile sources	3	0.000008	0	0.5	0.1	0
4	Construction activities	No fuel use	Spraying water at construction places	0	0	0	0.4	0.02	0
3	Ind. Process: Aluminium production - secondary	No fuel use	High efficiency deduster-industrial processes	0	0	0	0.06	0.01	0

Optimal costs and emissions

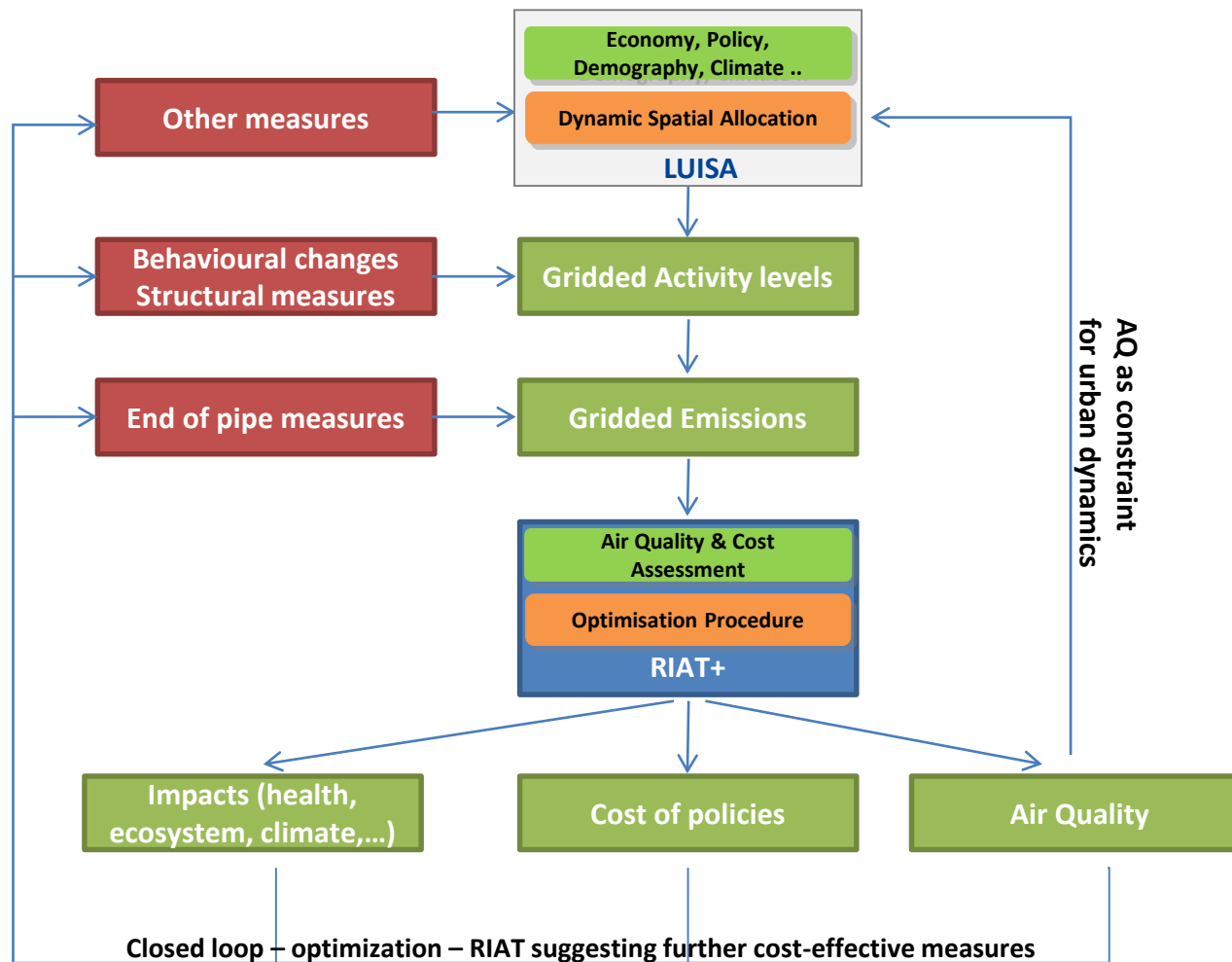


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Interactions with land use platform

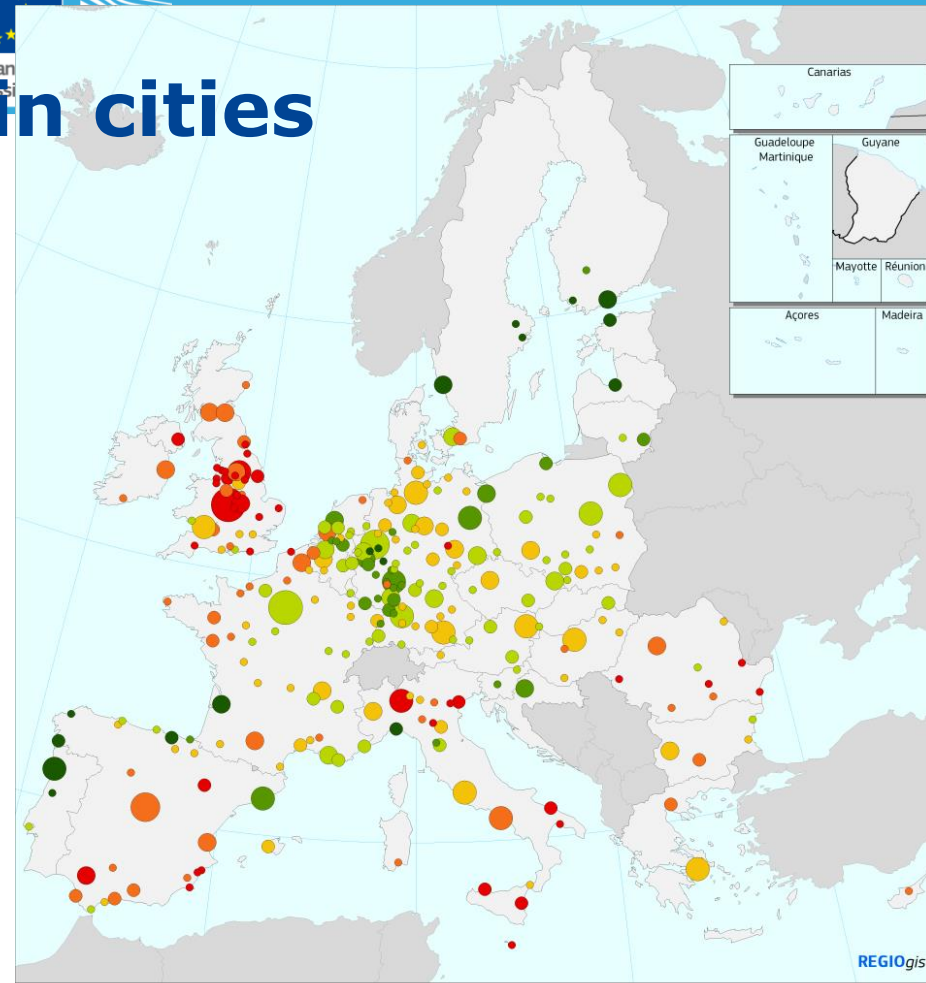
(for policy coherence, i.e. DG-ENV/REGIO...
for RIAT+ input data preparation...)



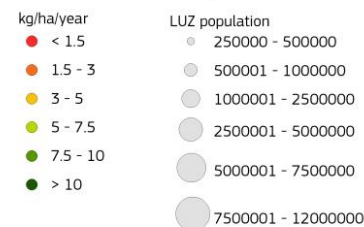
Air quality regulation in cities

Nature-based solutions

Rule of thumb:
One tree filters every year the
same amount of NO_x emitted
by a car driving 1000 km



NO2 Removal Capacity



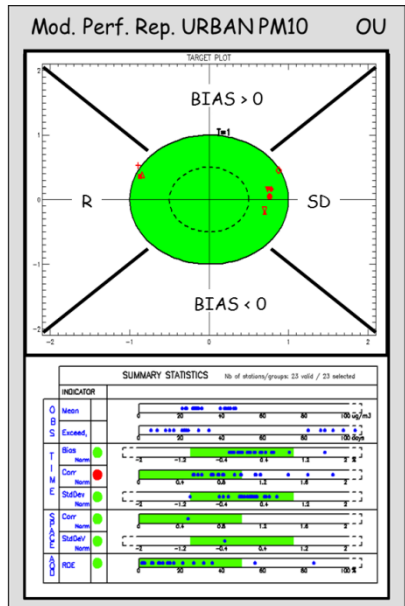
Sources: JRC

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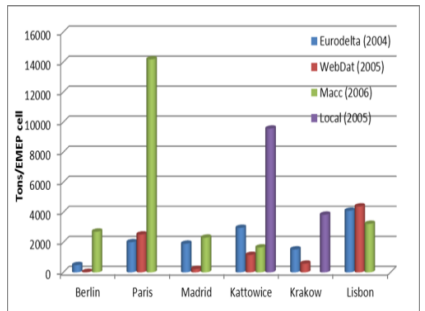
RIAT+ (i.e. training course, 2-3 December at Ispra)
 FAIRMODE (fairmode.jrc.ec.europa.eu)

WG1: Assessment



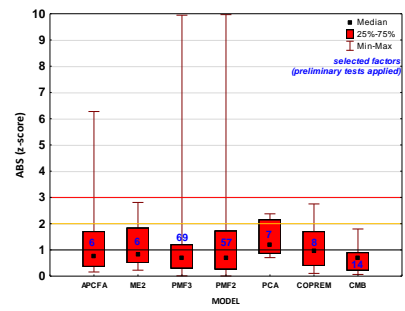
- Model Quality Obj.
- Perf. Report templ.
- DB repository
- Guidance / training

WG2: Emissions



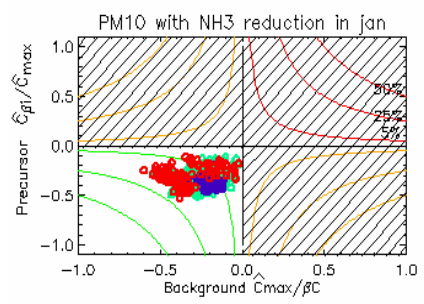
- Urban emissions
- Focus on traffic
- Review of compilation methodologies
- Benchmarking for selected cities

WG3: Src. App.



- Inter-comparisons (incl. CTM)
- Develop indicators for assessment
- Develop services (web-based data repository)
- Training activities to disseminate best practices.

WG4: Planning



- Review methodologies
- Develop a methodology and indicators to test model responses
- Template for reporting model performances

Conclusions

- There is the need for local actions on air quality, to tackle hotspots and reach Air Quality Directive compliance
- JRC actively supports EU policy, Member States and regional/local authorities, through:
 - Integrated Assessment Modeling
 - Integrated approach for policy coherence
 - Networking
- These approaches are possible tracks for future collaboration between CERTH and JRC