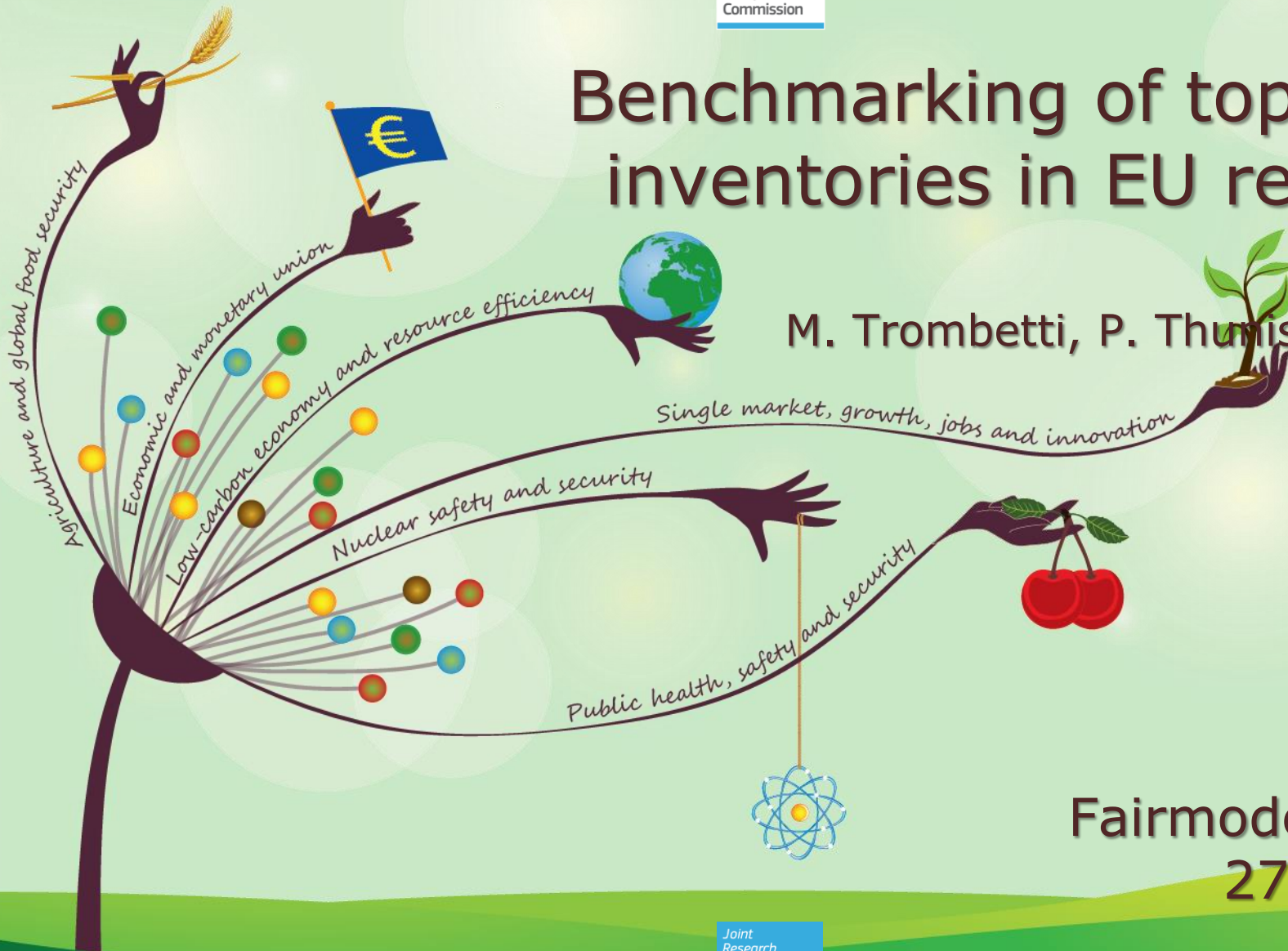


# Benchmarking of top-down inventories in EU regions

M. Trombetti, P. Thunis

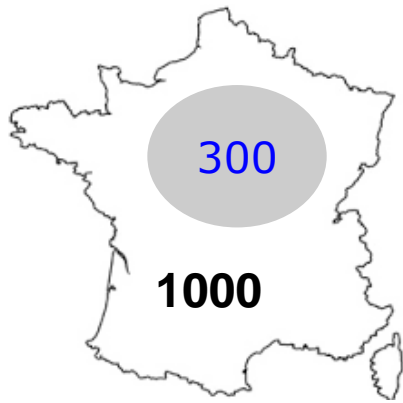


Fairmode, Zagreb  
27/06/2016

# Objectives

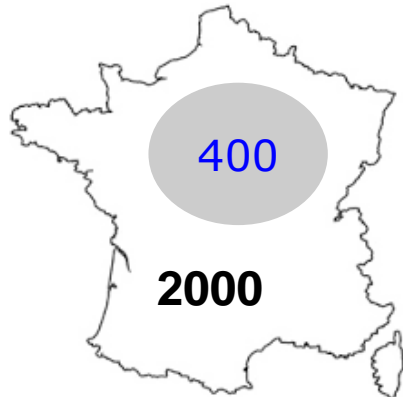
- ❑ Screen various “top-down” inventories in a range of EU regions to identify the main causes of inconsistencies
- ❑ Test the strengths and weaknesses of the diamond approach
- ❑ Focus on the spatial disaggregation of the emissions and check how emissions are distributed within a country to its cities/regions.

# Normalisation with country totals

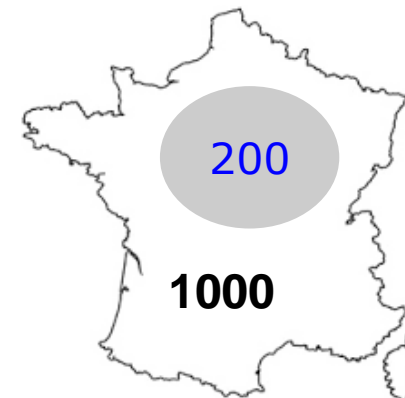


Inventory 1

$$\frac{E_{2n}^{reg}}{E_{2n}^{cnt}} \neq \frac{E_1^{reg}}{E_1^{cnt}}$$



Inventory 2



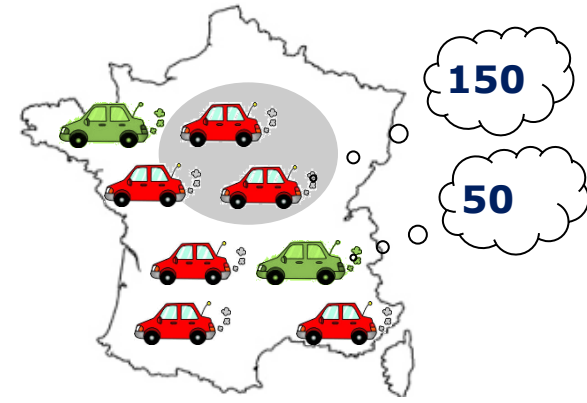
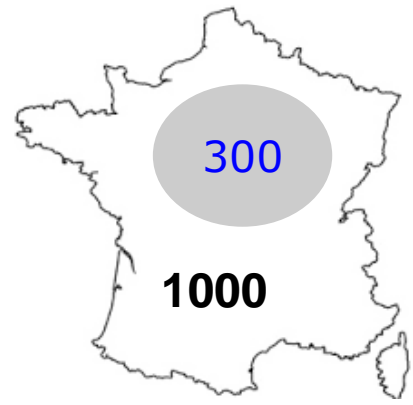
Inventory 2n

## Emission regional allocation

## Total activity

## Activity shares & emission factors

Inventory 1

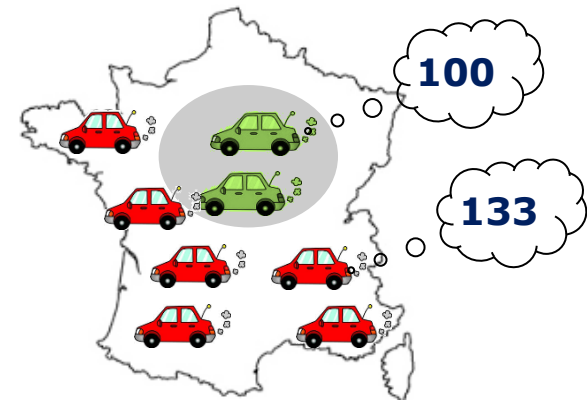
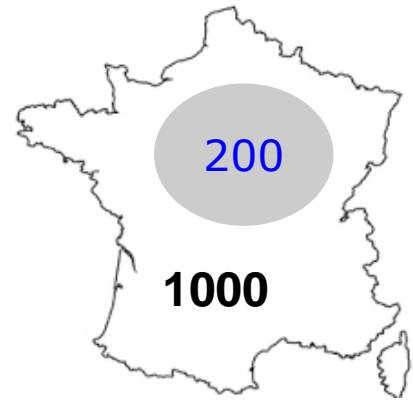


?

$$\frac{A_{2n}^{reg}}{A_{2n}^{cnt}} \neq \frac{A_1^{reg}}{A_1^{cnt}}$$

$$\frac{\tilde{e}_{2n}^{reg}(blue)}{\tilde{e}_{2n}^{cnt}(blue)} \neq \frac{\tilde{e}_{1n}^{reg}(blue)}{\tilde{e}_{1n}^{cnt}(blue)}$$

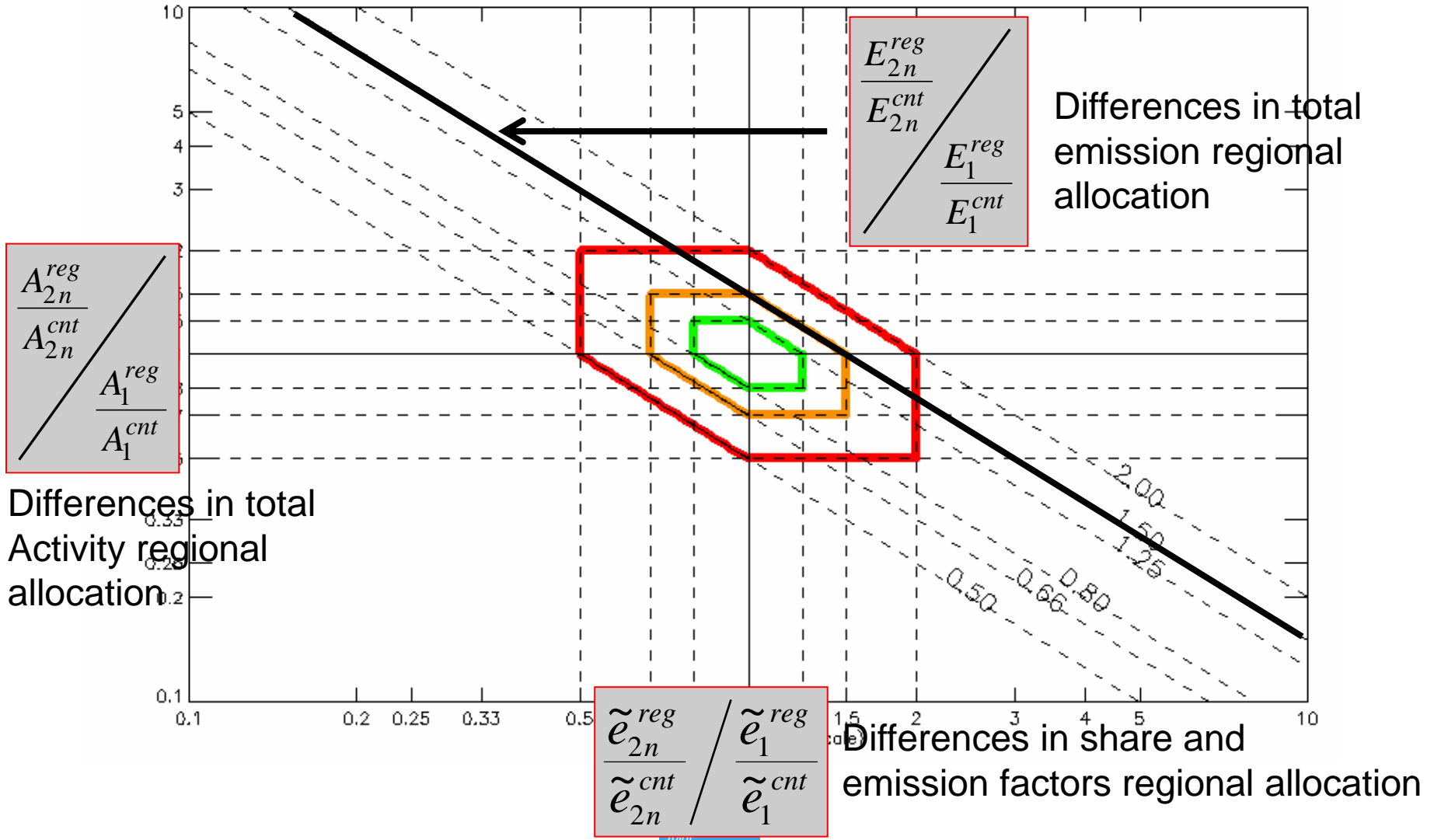
Inventory 2n



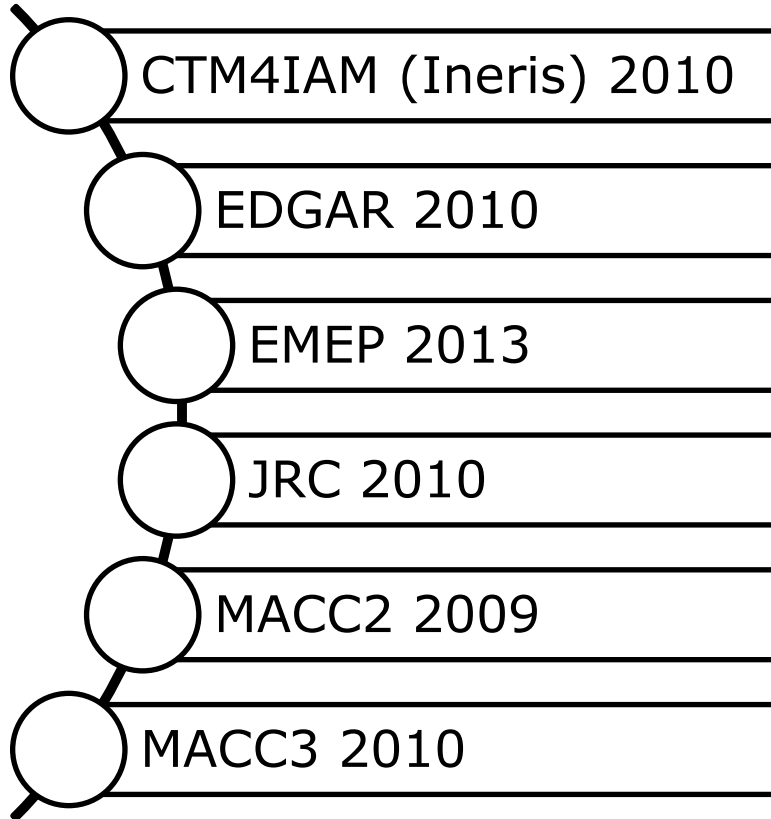


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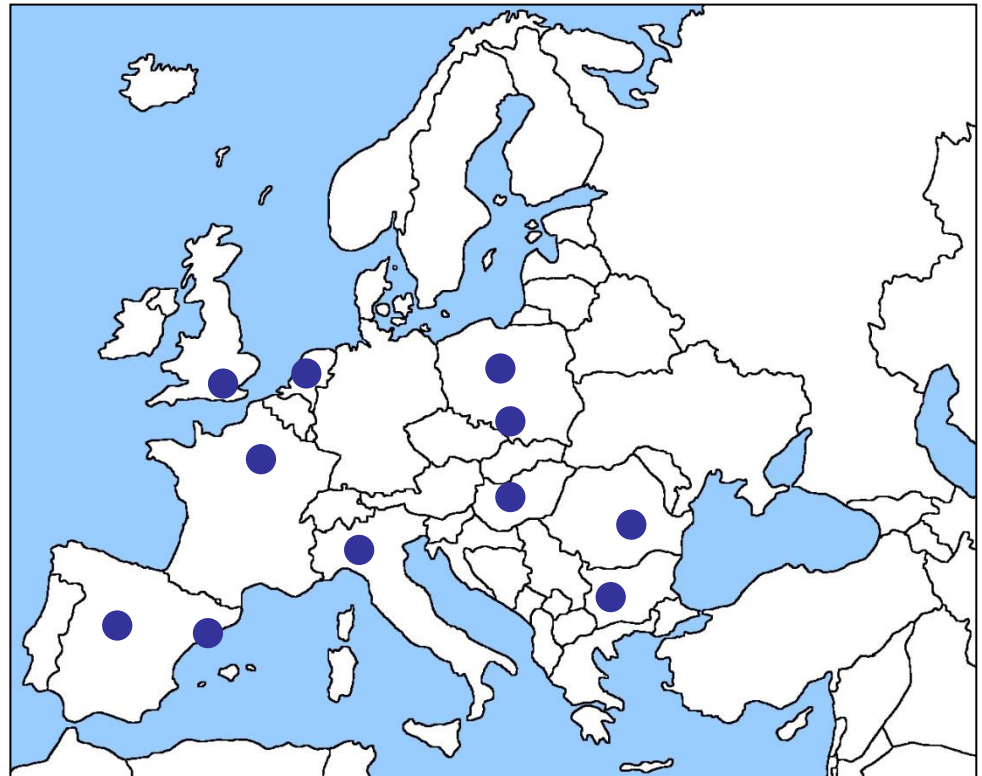
Emission Benchmark

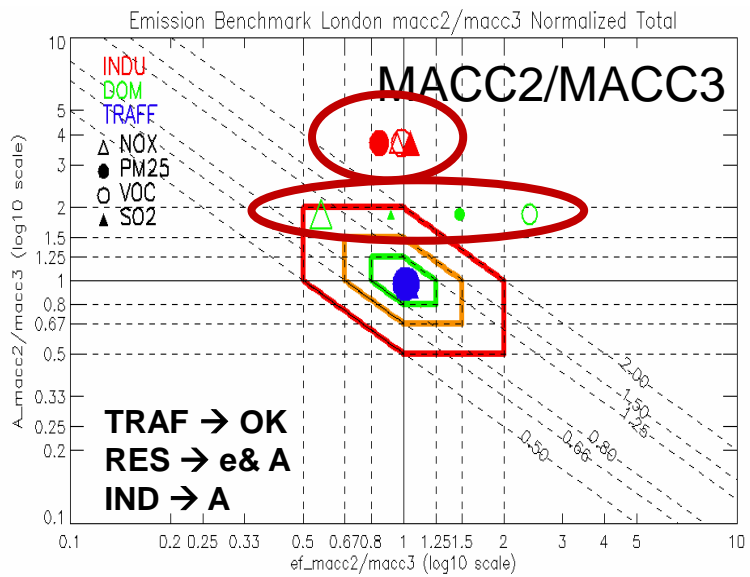
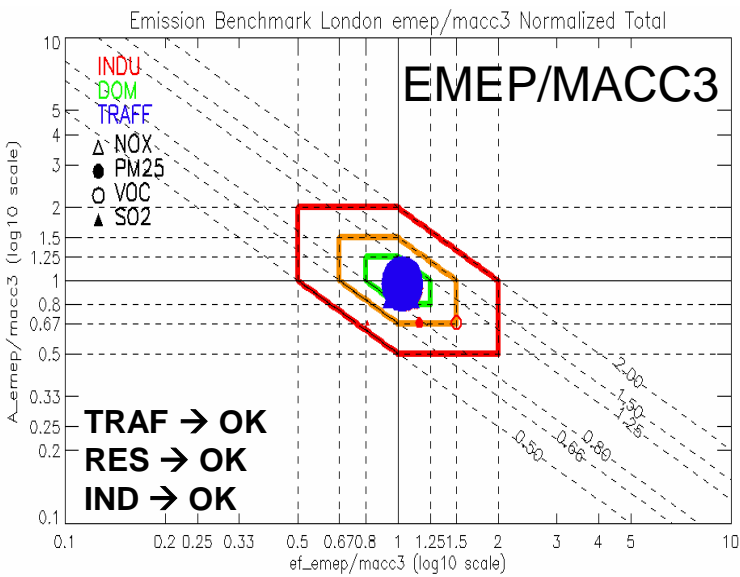
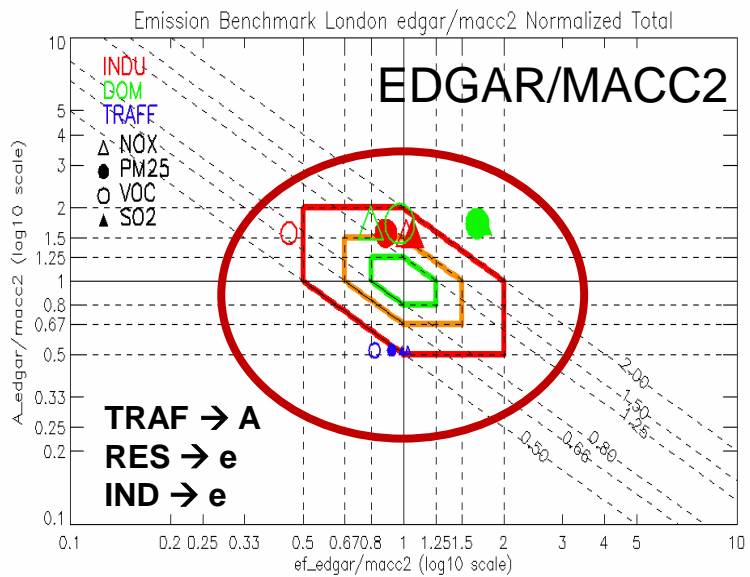
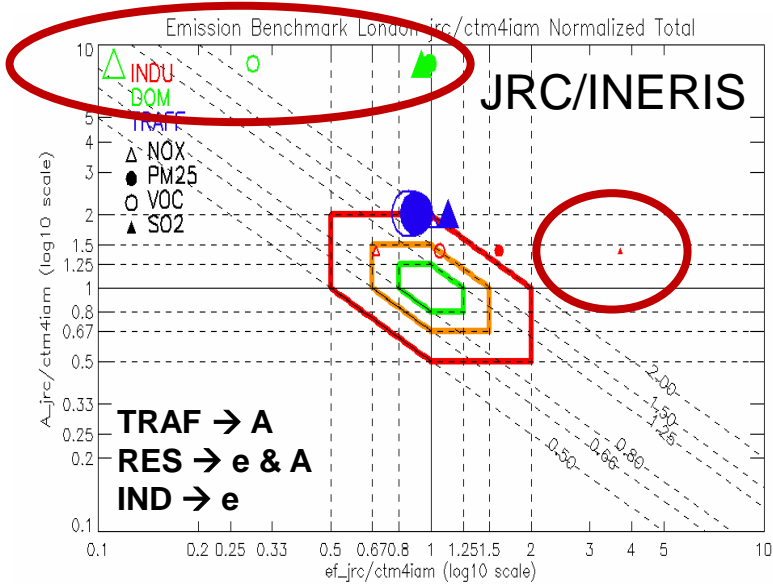


## Inventories



## Regions









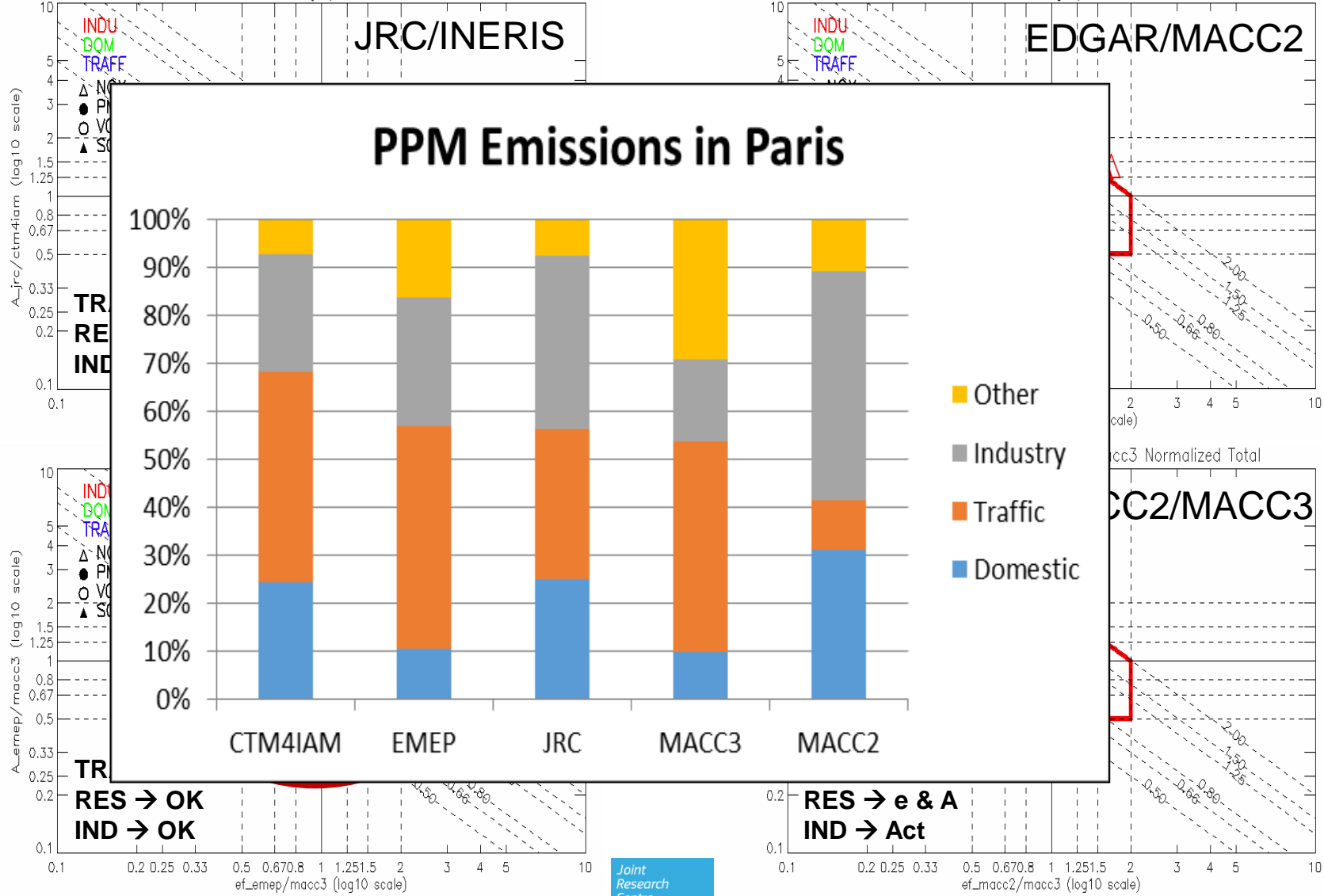
Emission Benchmark Paris jrc/ctm4iam Normalized Total

JRC/INERIS

Emission Benchmark Paris edgar/macc2 Normalized Total

EDGAR/MACC2

# PPM Emissions in Paris



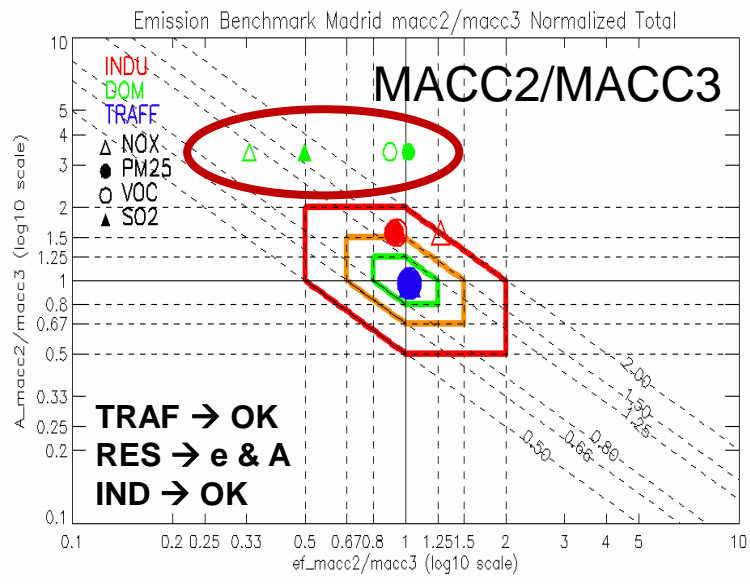
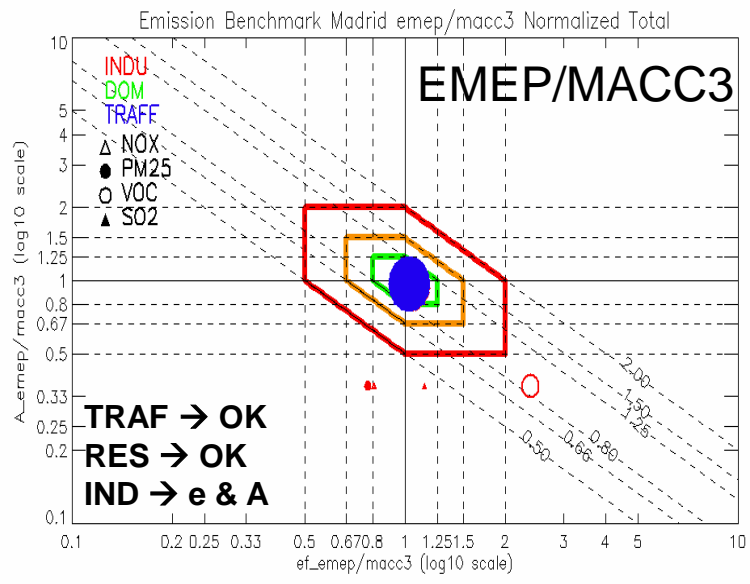
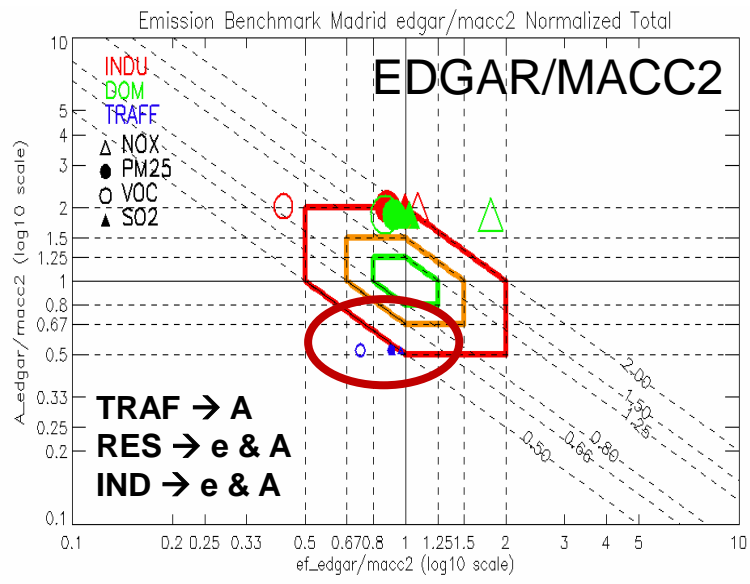
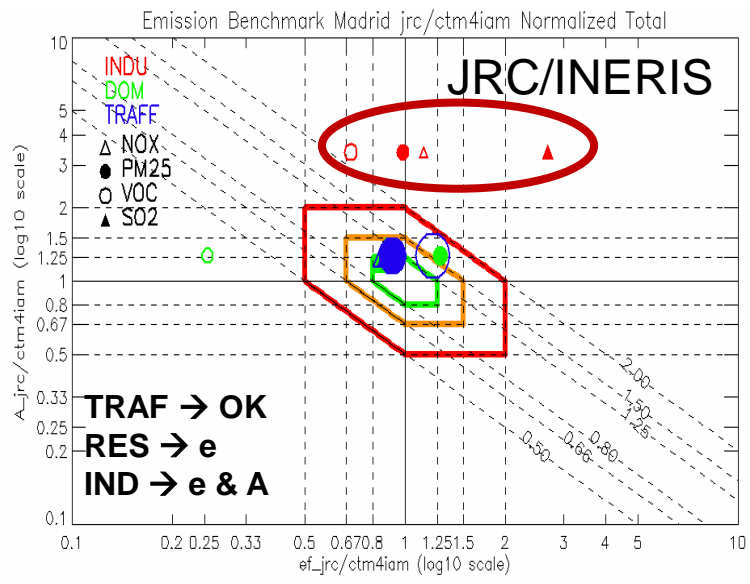
RES → OK  
IND → OK

RES → e & A  
IND → Act



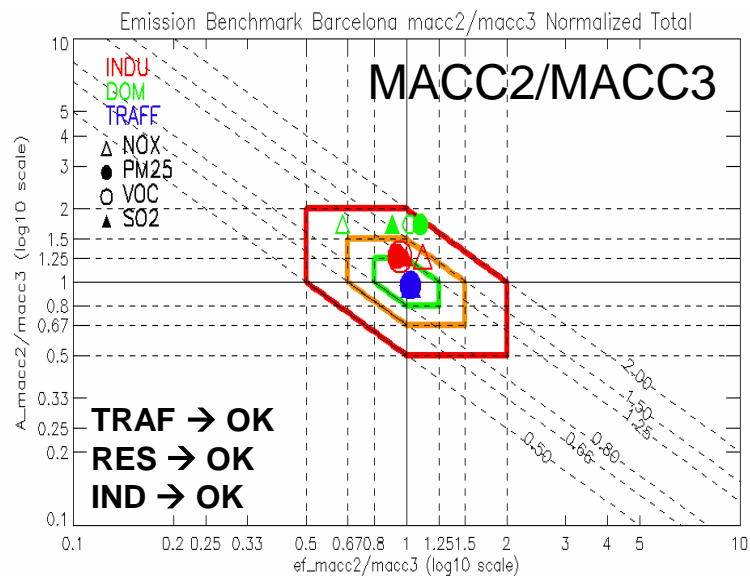
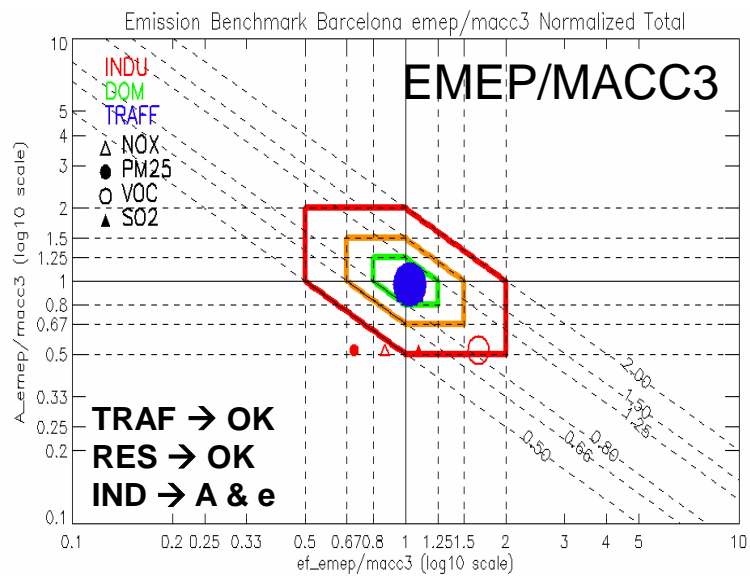
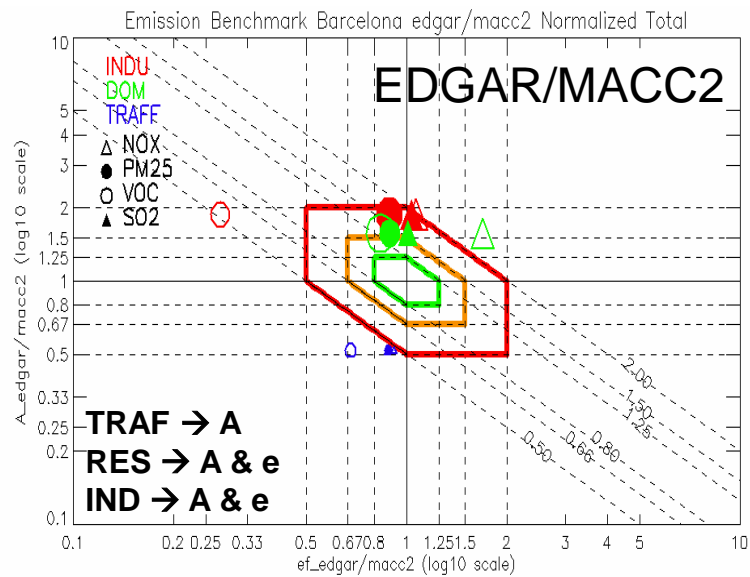
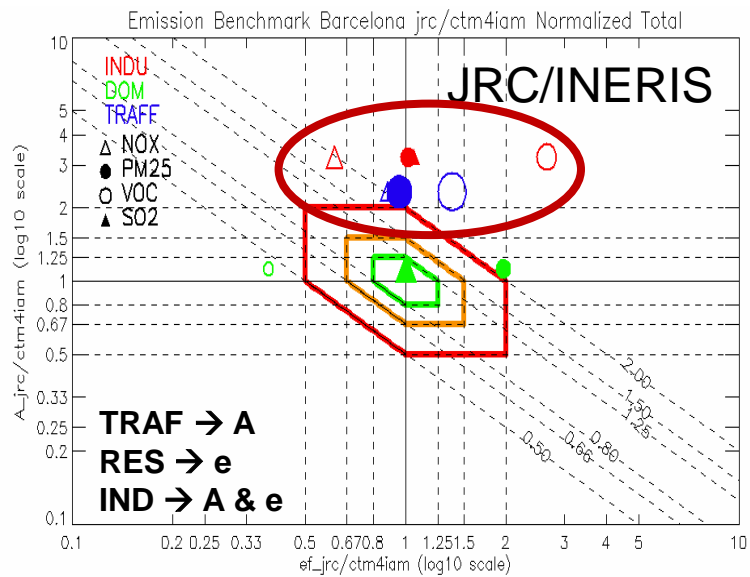


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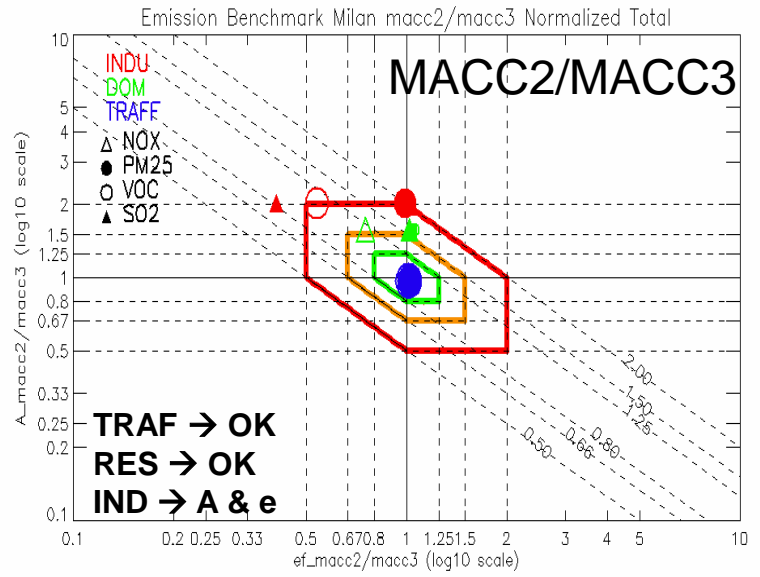
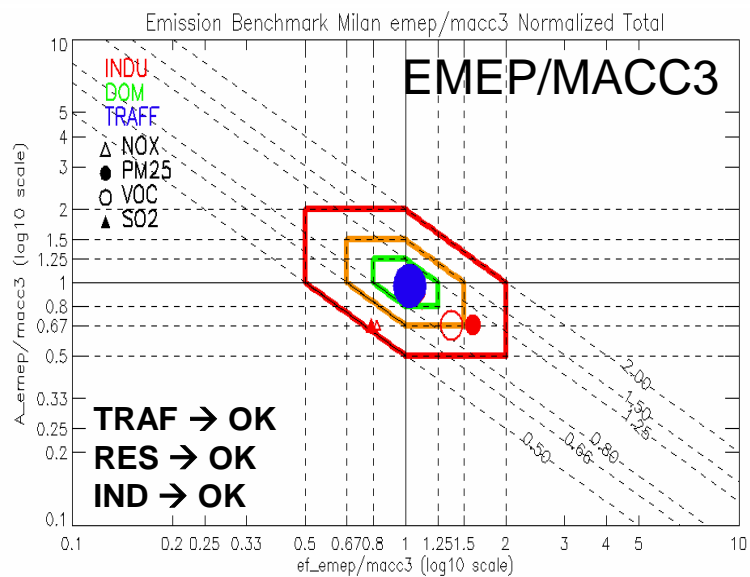
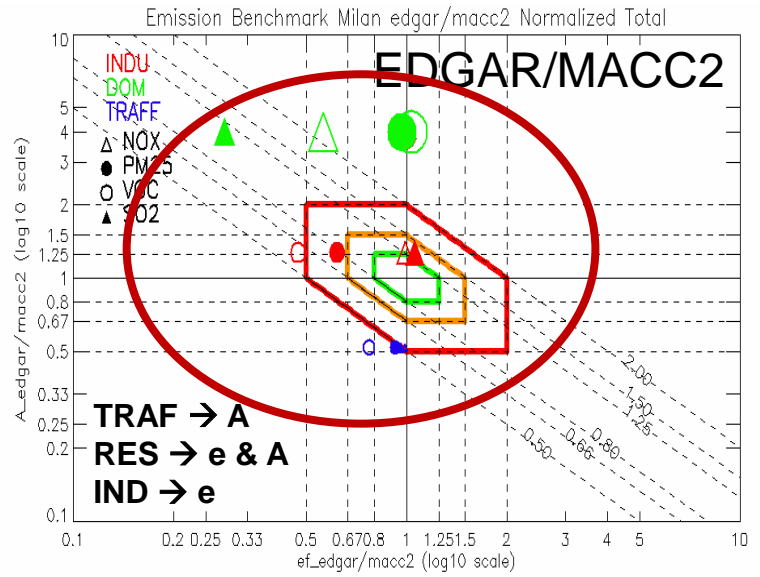
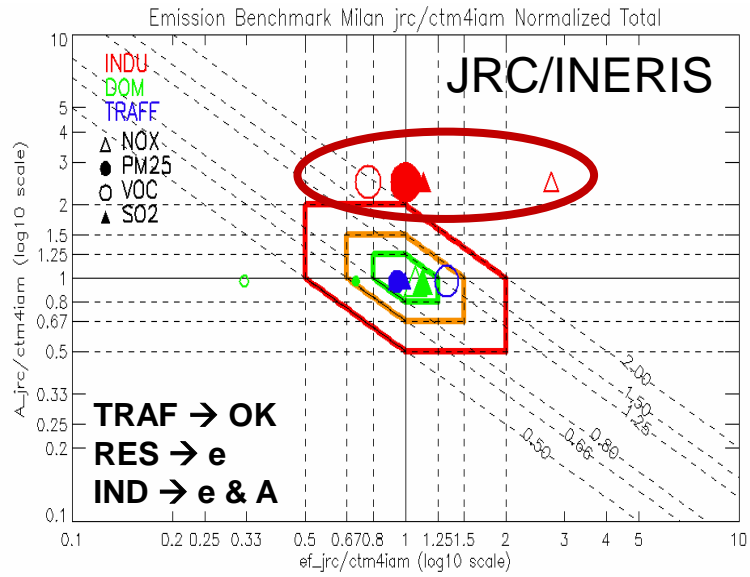


European Commission



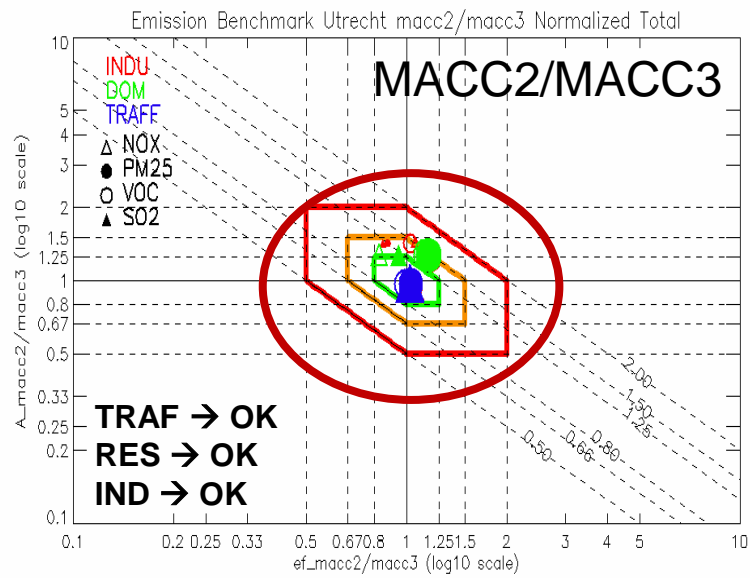
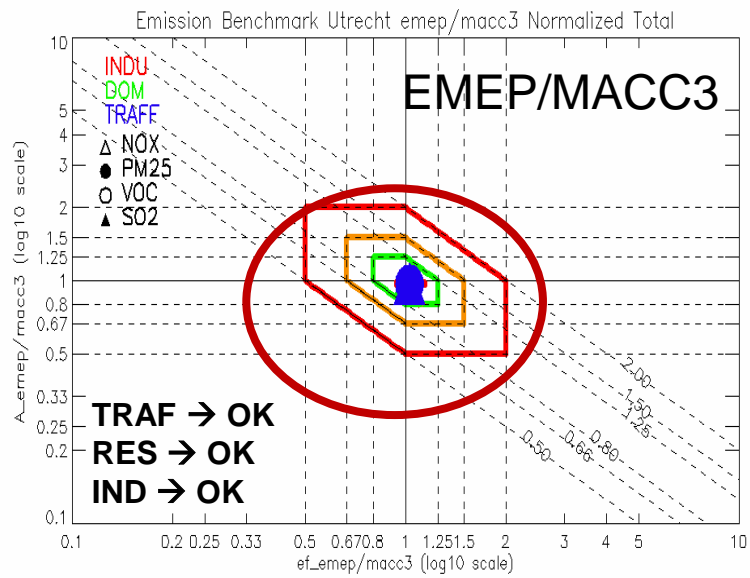
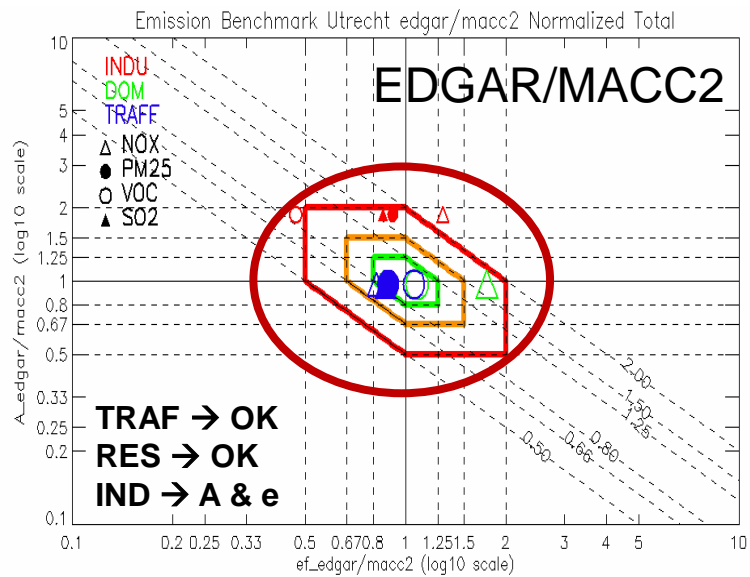
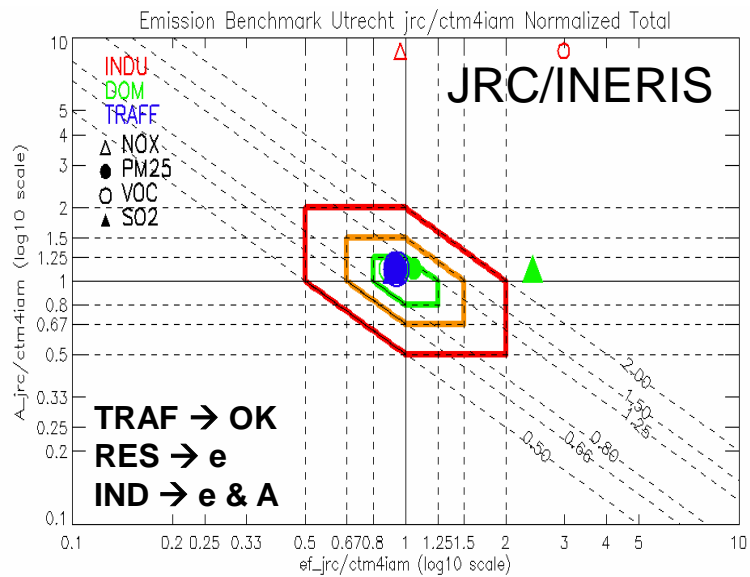


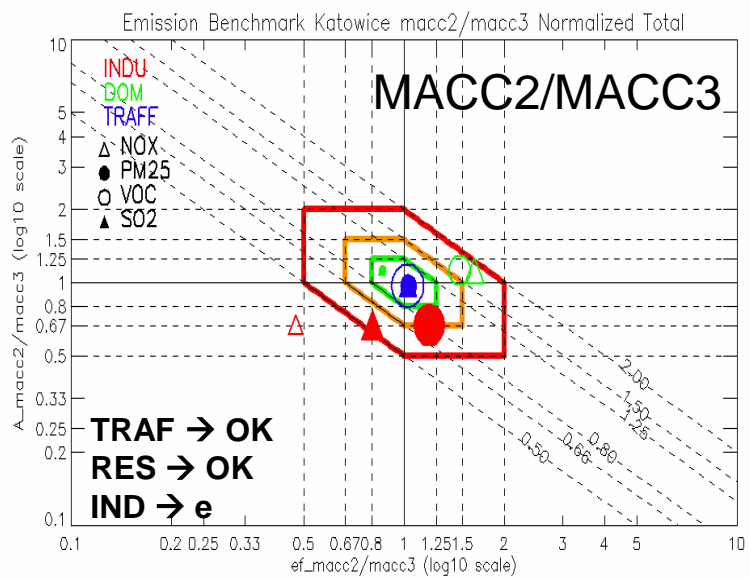
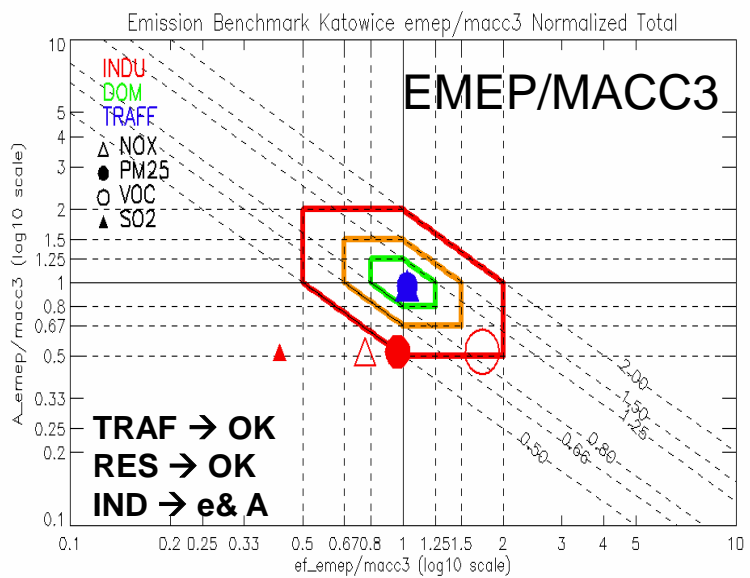
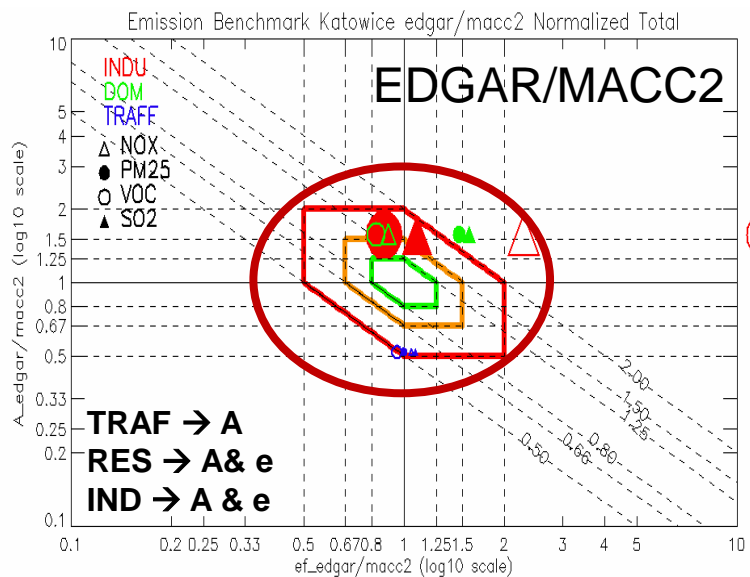
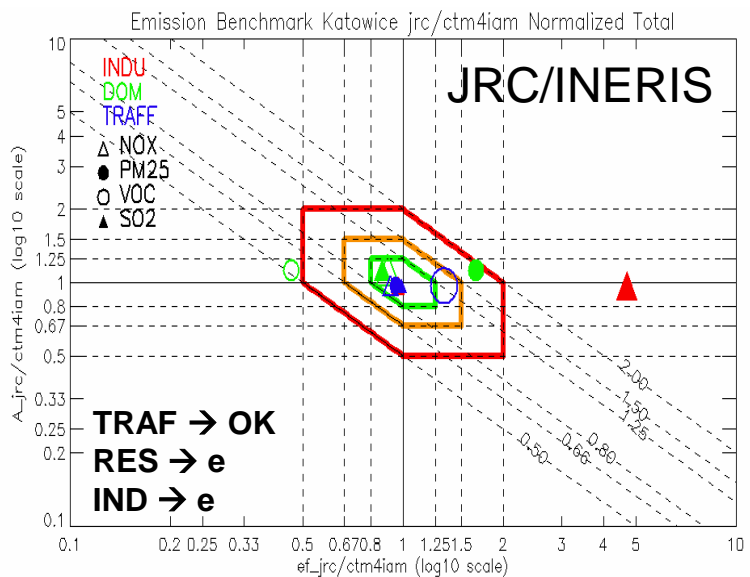
European Commission





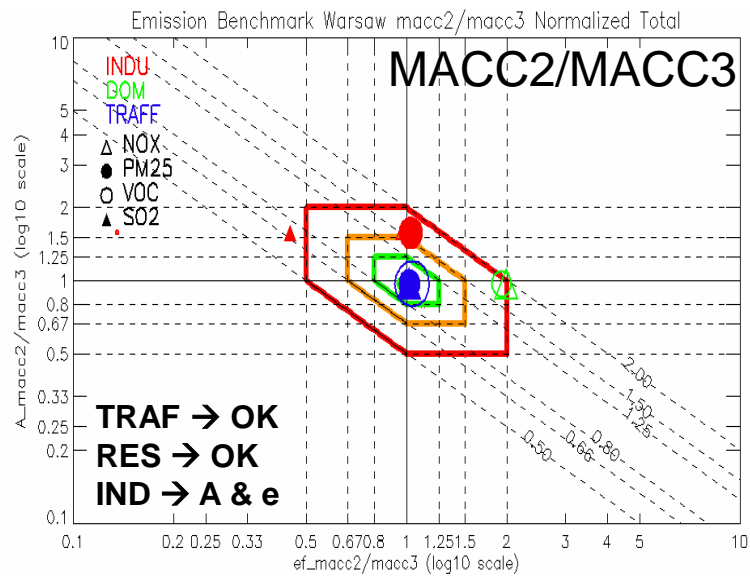
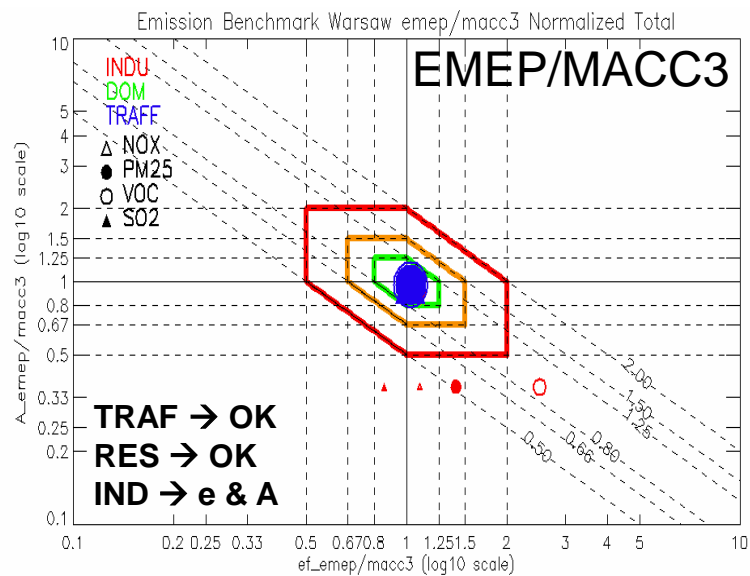
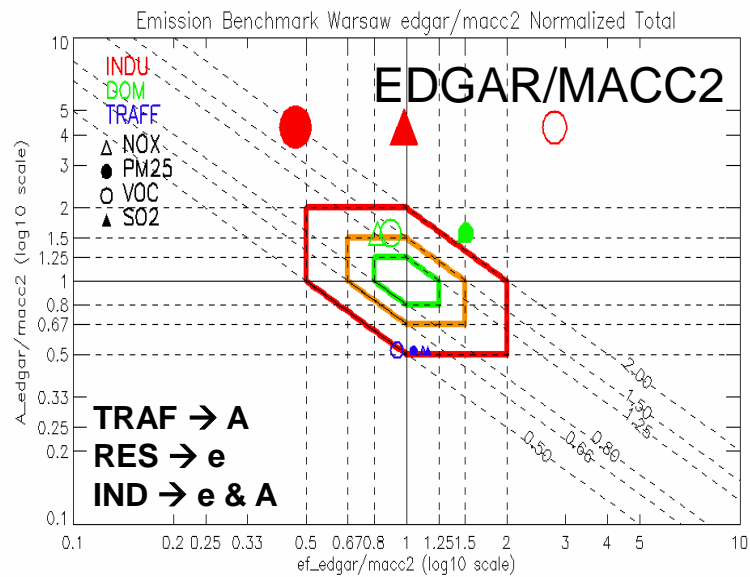
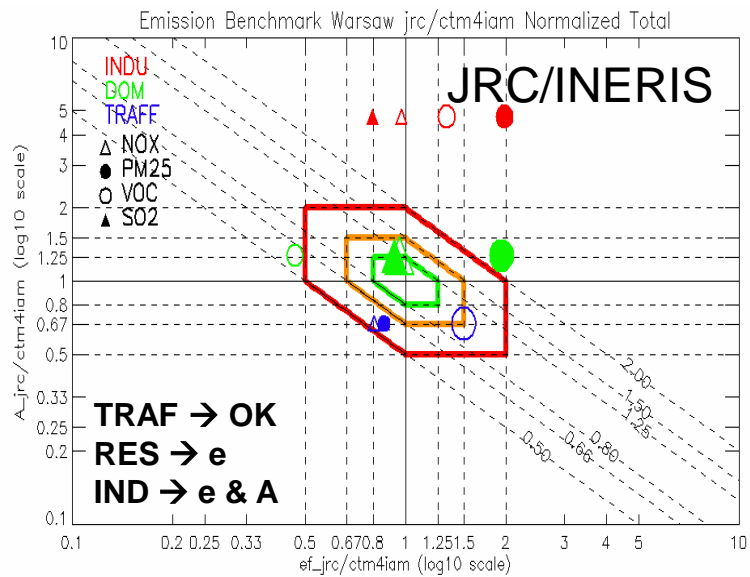
European Commission





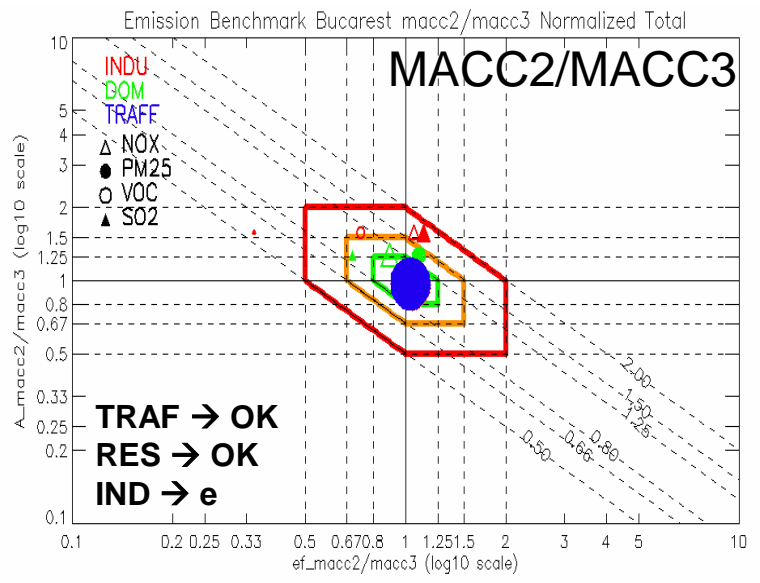
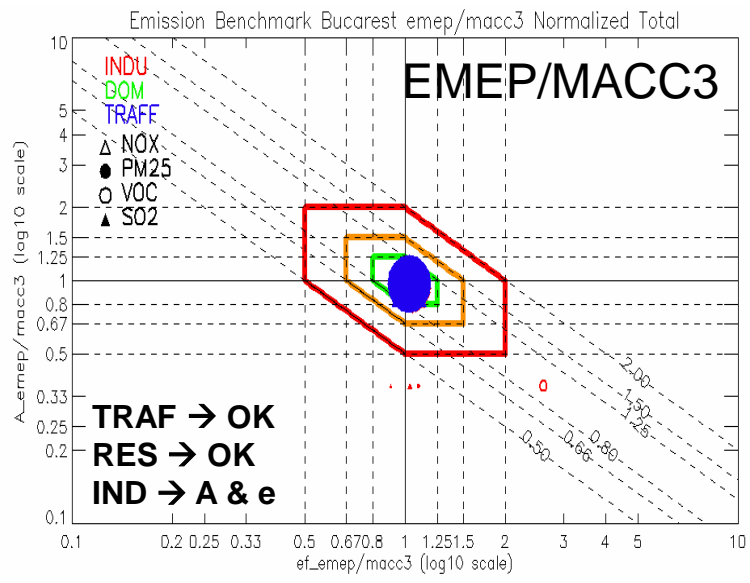
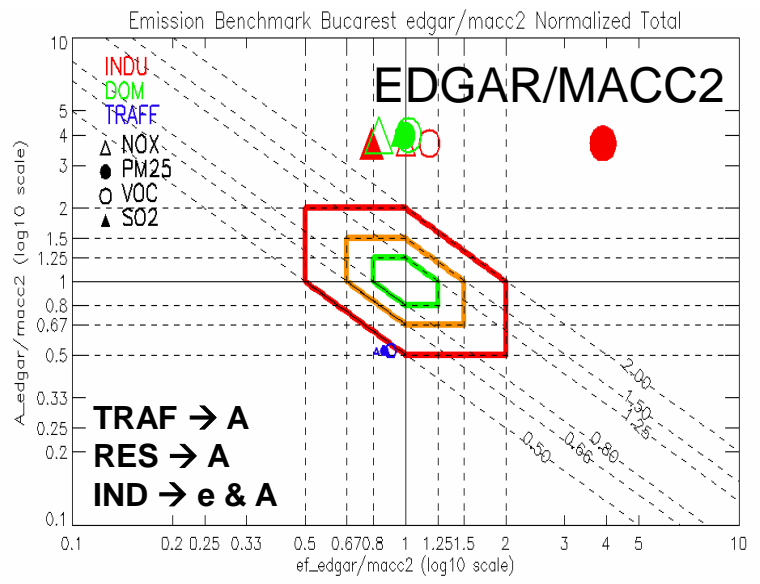
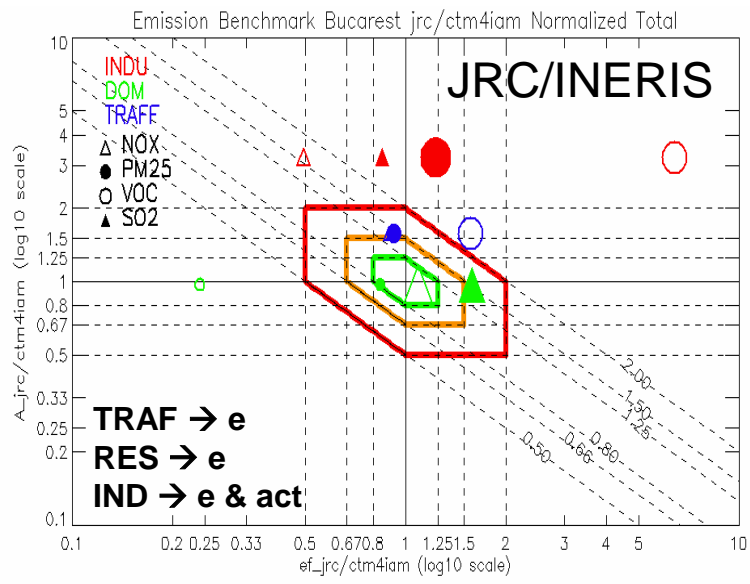


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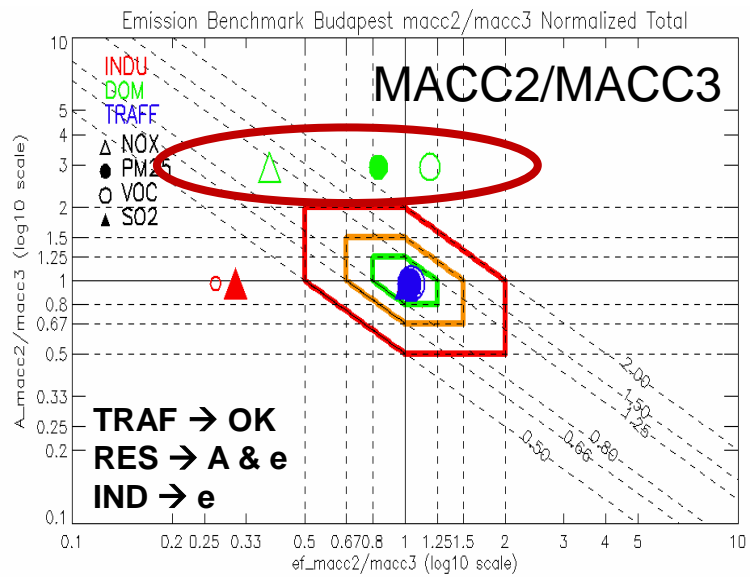
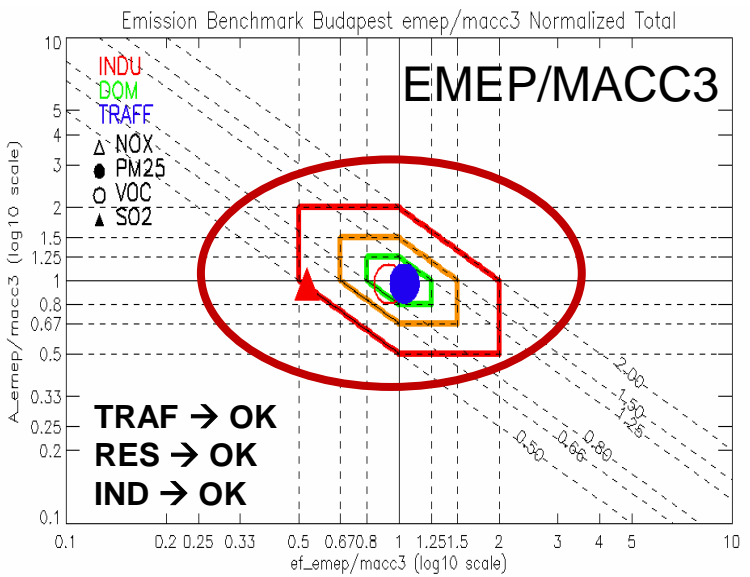
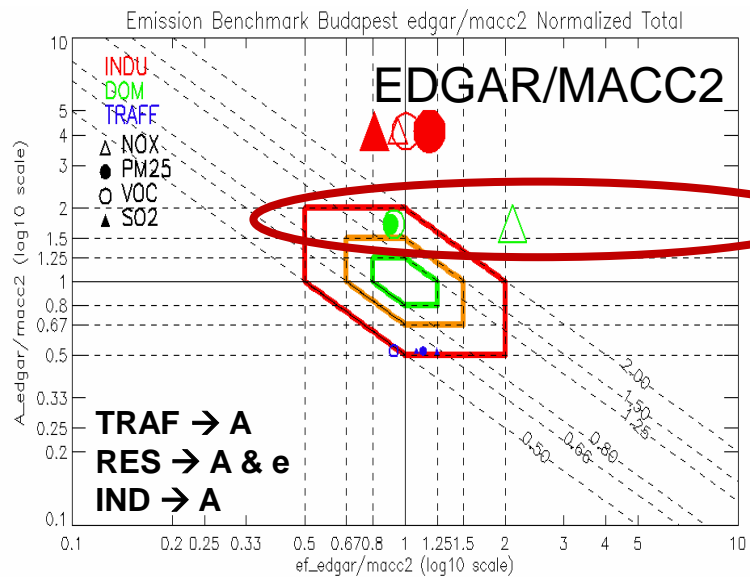
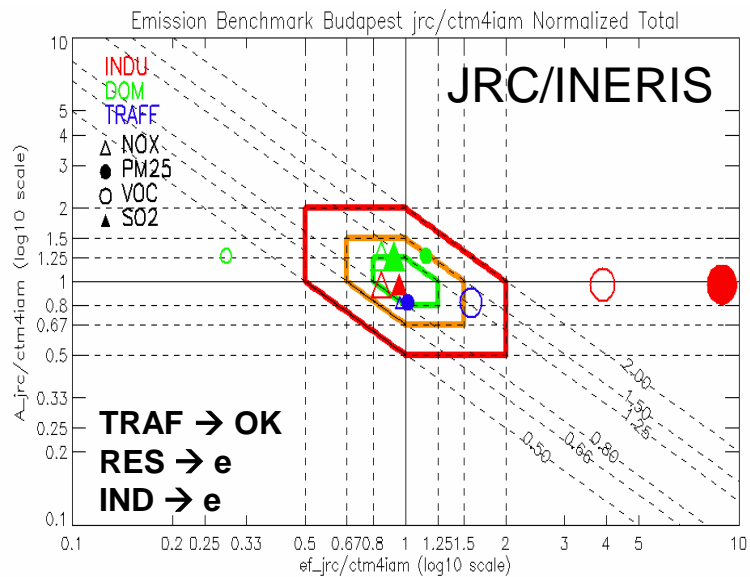




# Budapest

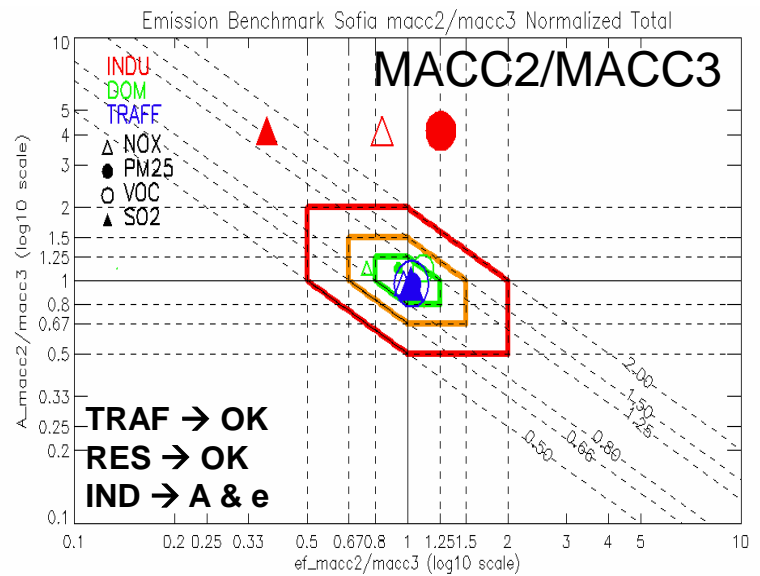
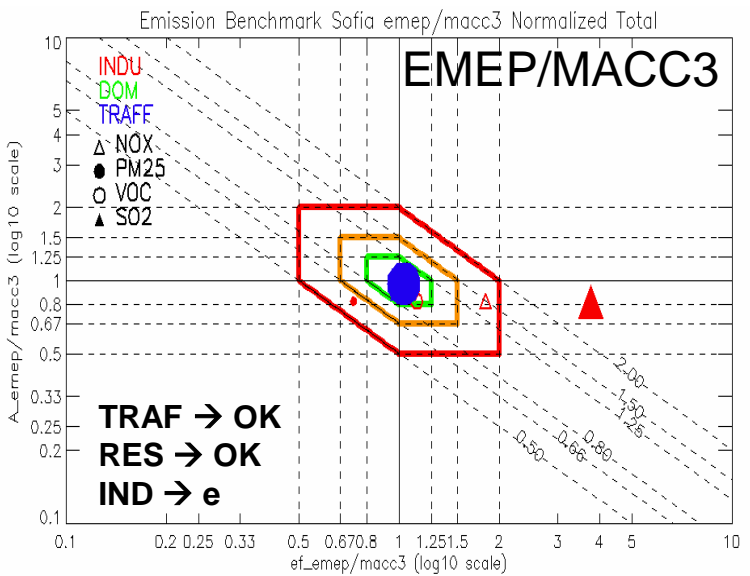
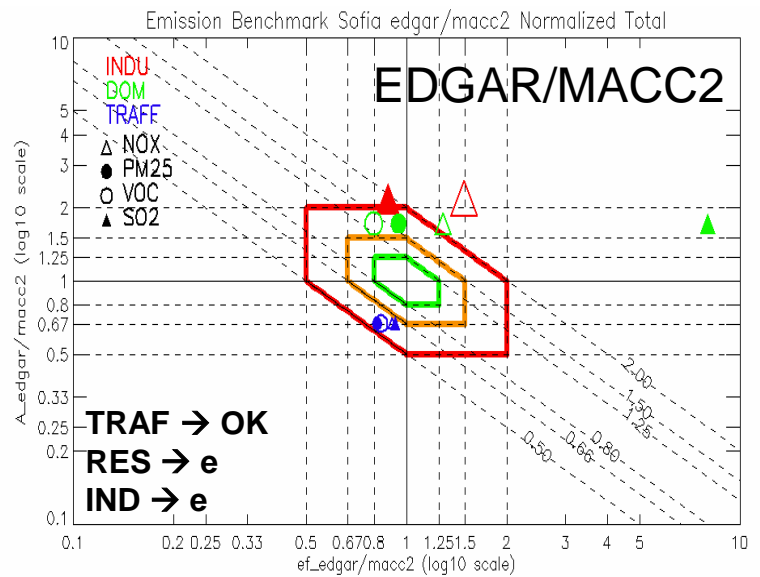
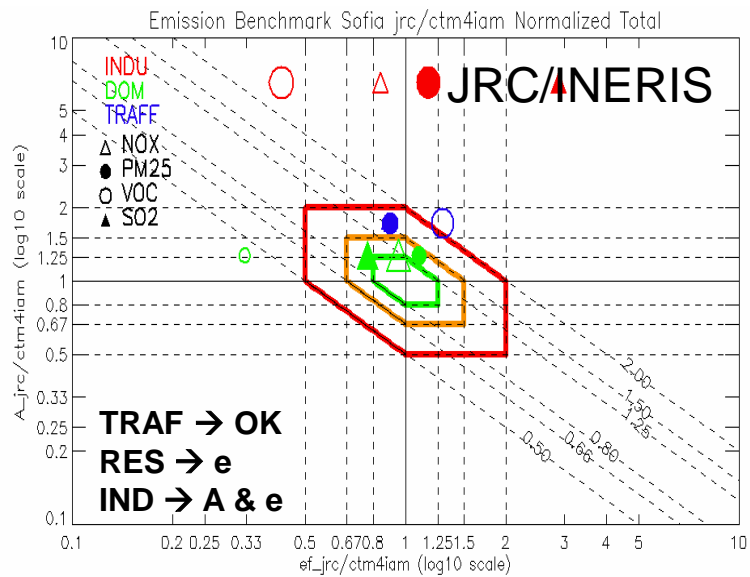


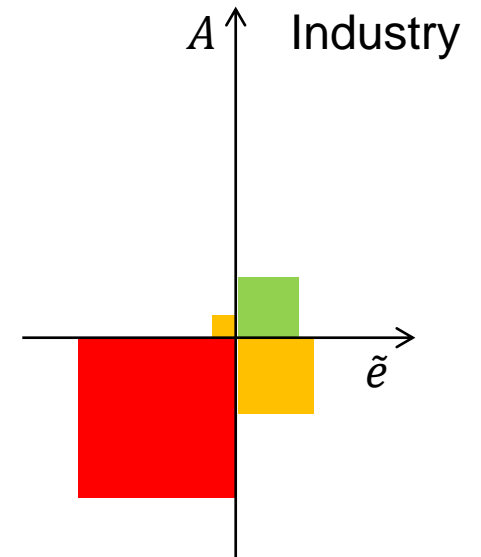
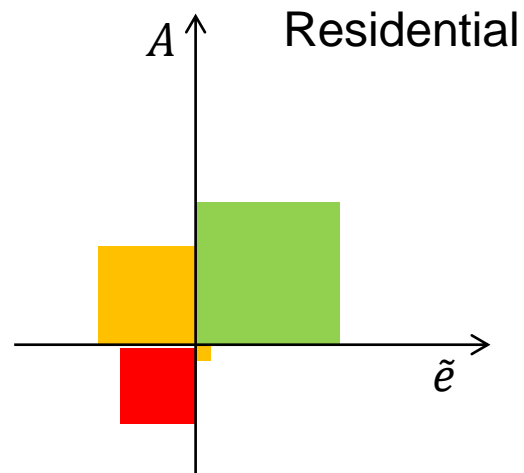
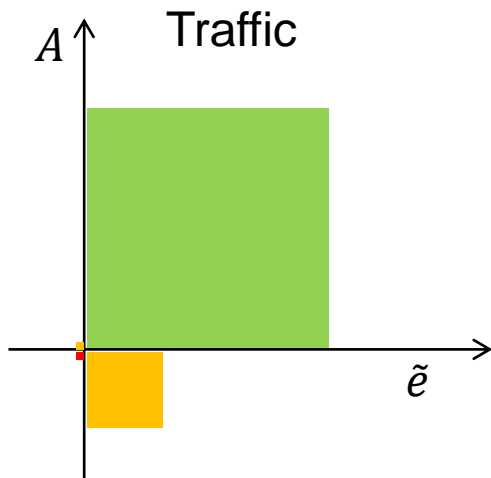
European Commission





European Commission





# Conclusions

- Most inconsistencies arise for industry and residential while traffic shows to be more consistent
- The JRC inventory has mostly problems with the industry sector with respect to the EC4MACS inventory.
- Residential inconsistencies are mostly on activity levels (change in PM and VOC emission factors)
- EDGAR shows the largest differences and is quite different from all others, especially in the share among sectors (industry & residential vs. traffic)
- Uncertainties in version updates can be quite large for residential (10 in Paris, 3-4 in Madrid) but not relevant for traffic. Industry uncertainty are more on activities than emission factors