

Prototype\*  
of an

# Emissions Benchmarking Visualization Tool

JRC and ex-JRC

\* A Prototype is an early sample, model or release of a product built to test a concept or methodology or to act as an object to be learned from.

# BU\_POValley\_info.csv

Shape	7			
ITA-Region-VDA				
ITA-Region-PMN				
ITA-Region-LMB				
ITA-Region-TAA				
ITA-Region-VEN				
ITA-Region-FVG				
ITA-Region-ERM				
2006				Year
#Species	BU sectors	BU sectors	Correspondance with SNAP	Totals
NOx	DOM	Domestic	S2	30
NOx	TRA	Traffic	S7	300
NOx	zOTH	Others	S1+S4+S5+S6+S3+S8+S9+S10	116
PM25	DOM	S2	S2	10
PM25	TRA	S3	S7	11
PM25	zOTH	Others	S1+S4+S5+S6+S3+S8+S9+S10	12
VOC	DOM	S2	S2	25
VOC	TRA	S3	S7	140
VOC	zOTH	Others	S1+S4+S5+S6+S3+S8+S9+S10	350
END				

Number of shapes  
The 7 shapes

Data:  
Species, Namings, SNAP, Total

# BU\_FRANCE#ALSACE\_info.csv

Shape	1			
FRA-Region-ALS				
2006				
#Species	UserSecto	UserSectors	SNAP	Total
NOx	TRA	Traffic	S7	10
NOx	DOM	Domestic	S2	2
NOx	PTS	PointSources	$0.5*S3+S1$	3
NOx	zOTH	Others	$0.5*S3+S4+S5$	1
VOC	TRA	Traffic	S7	8
VOC	DOM	Domestic	S2	6
VOC	PTS	PointSources	$0.5*S3+S1$	0.5
VOC	zOTH	Others	$0.5*S3+S4+S5$	3
END				

Number of shapes  
The 1 shapes

Data:  
Species, Namings, SNAP, Total

# BU\_SQREGION\_info.csv

Shape	0			
lon	2.2	4.1	4.1	2.2
lat	40.5	40.5	42.6	42.6
1999				
#Species	UserSectors	UserSectors	SNAP	Total
NOx	TRA	Traffic	S7	10
NOx	DOM	Domestic	S2	1
NOx	PTS	PointSources	$0.5*S3+S1$	40
NOx	zOTH	Others	$0.5*S3+S4+S5$	9
VOC	TRA	Traffic	S7	14
VOC	DOM	Domestic	S2	8
VOC	PTS	PointSources	$0.5*S3+S1$	0.5
VOC	zOTH	Others	$0.5*S3+S4+S5$	2
END				

Number of shapes 0

Longitudes

Latitudes

Data:

Species, Namings, SNAP, Total

# ShapeFiles

- Shape\_FRA.dat 43 Countries
- Shape\_FRA-Region-IDF.dat 321 Regions
- Shape\_FRA-City-Rennes.dat 473 Cities

FRA-Rennes

Nparts 2

lon 5

-1.673806 -1.683806 -1.683806 -1.673806 -1.673806

lat 5

48.142250 48.142250 48.152252 48.152252 48.142250

lon 41

-1.673806 -1.663806 -1.653806 -1.643806 -1.643806 -1.633806 -1.633806 -1.623806

-1.613806 -1.603806 -1.603806 -1.613806 -1.613806 -1.613806 -1.613806 -1.623806

-1.623806 -1.633806 -1.633806 -1.633806 -1.643806 -1.653806 -1.663806 -1.673806

-1.673806 -1.683806 -1.693806 -1.703806 -1.713806 -1.713806 -1.723806 -1.723806

-1.723806 -1.723806 -1.713806 -1.713806 -1.703806 -1.693806 -1.683806 -1.673806

-1.673806

lat 41

48.142250 48.142250 48.142250 48.142250 48.132252 48.132252 48.122250

48.122250 48.122250 48.122250 48.112251 48.112251 48.102249 48.092251

48.082249 48.082249 48.092251 48.092251 48.082249 48.072250 48.072250

48.072250 48.072250 48.072250 48.082249 48.082249 48.082249 48.082249

48.082249 48.092251 48.092251 48.102249 48.112251 48.122250 48.122250

48.132252 48.132252 48.132252 48.132252 48.132252 48.142250

# Other Input Files

MACC\_emissions\_2006.cdf:

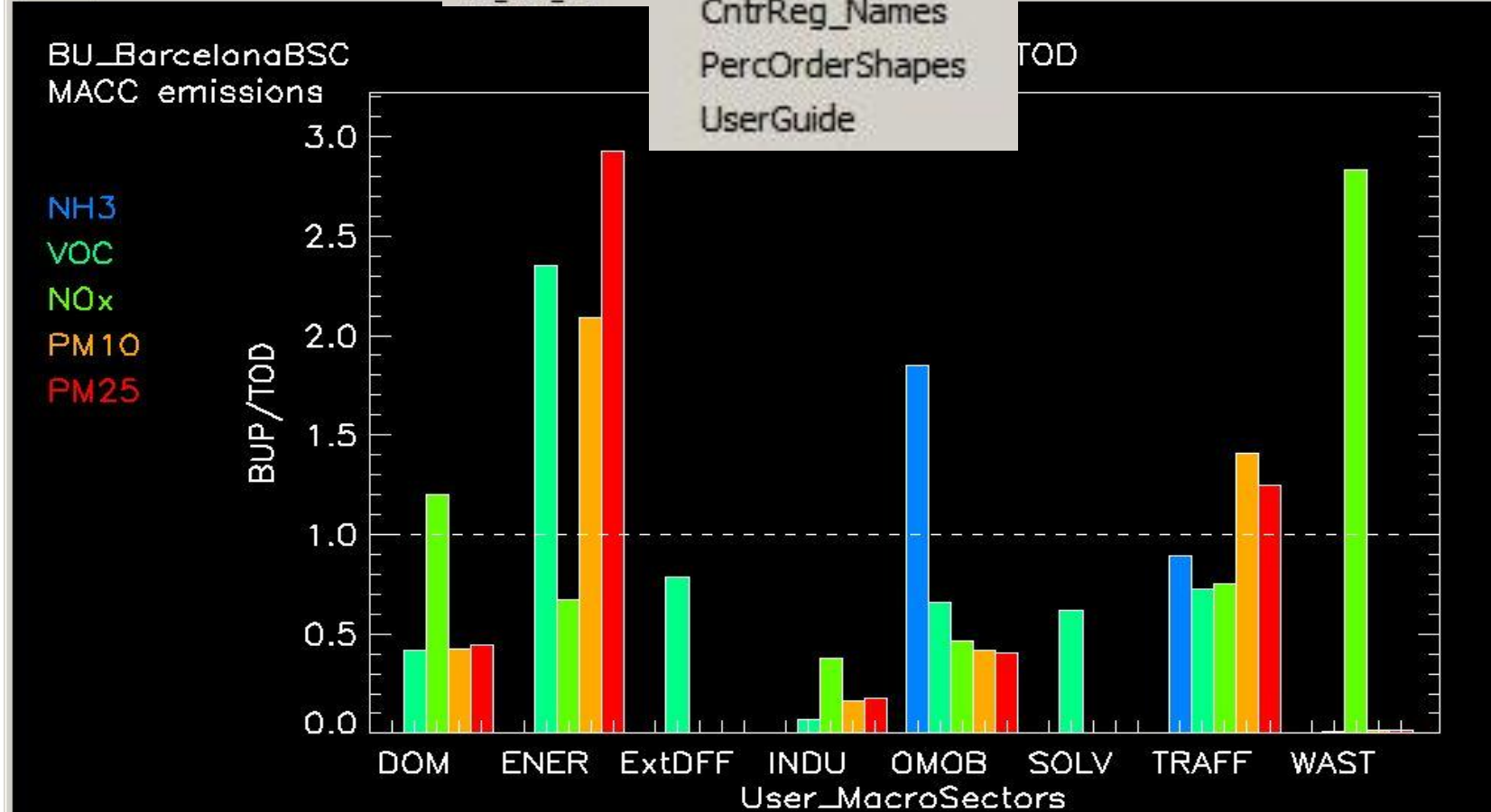
- 7 species CO<sub>x</sub>, NH<sub>3</sub>, VOC, NO<sub>x</sub>, PM<sub>10</sub>, PM<sub>25</sub>, SO<sub>2</sub>
- 10 SNAP sectors

Pop5x5km.cdf



Pollutant selection

Sector selection

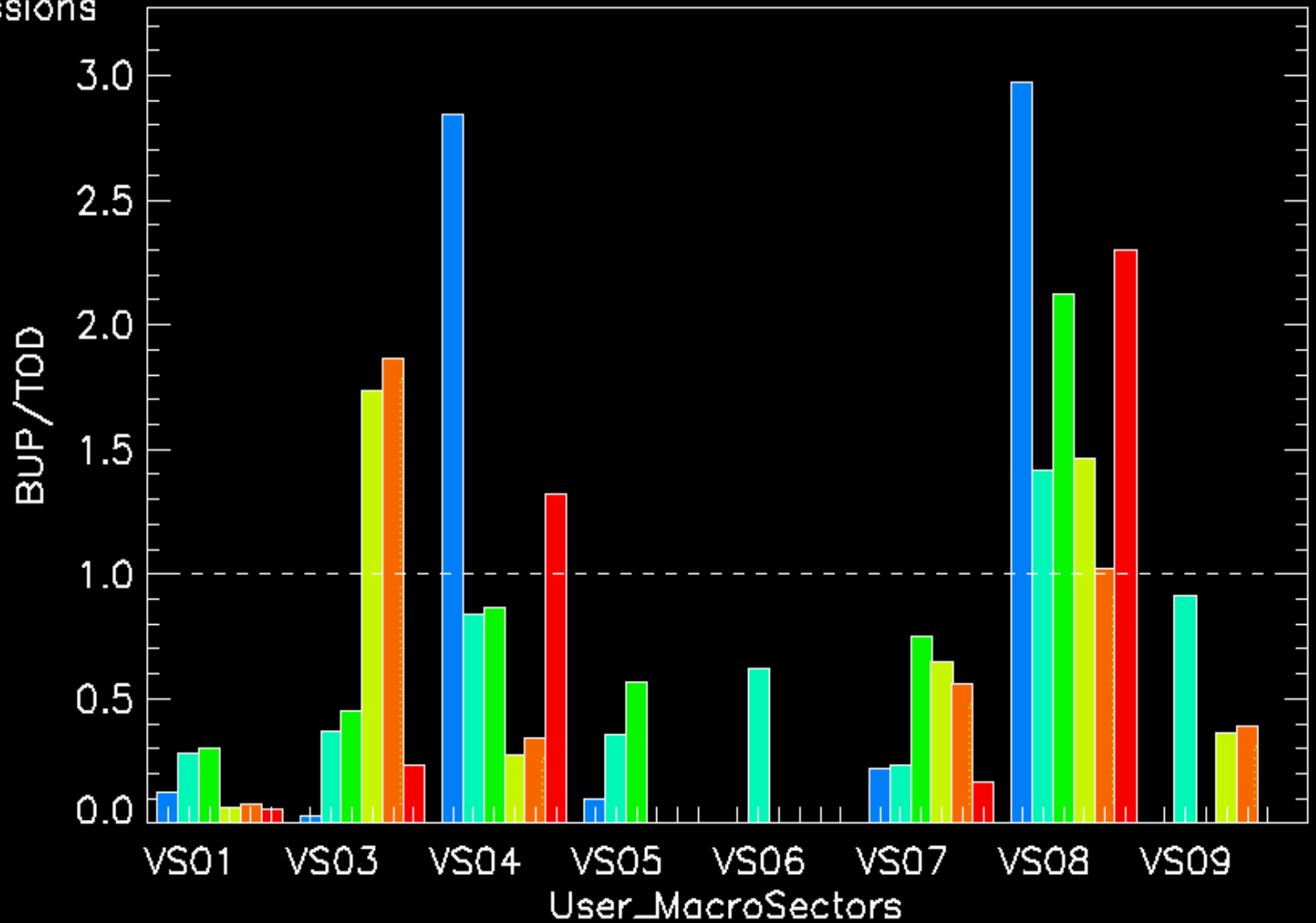


# Flanders VITO

BU\_FlandersVITO\_info  
MACC emissions

Emission BUP/TOD

CO<sub>x</sub>  
VOC  
NO<sub>x</sub>  
PM<sub>10</sub>  
PM<sub>25</sub>  
SO<sub>2</sub>



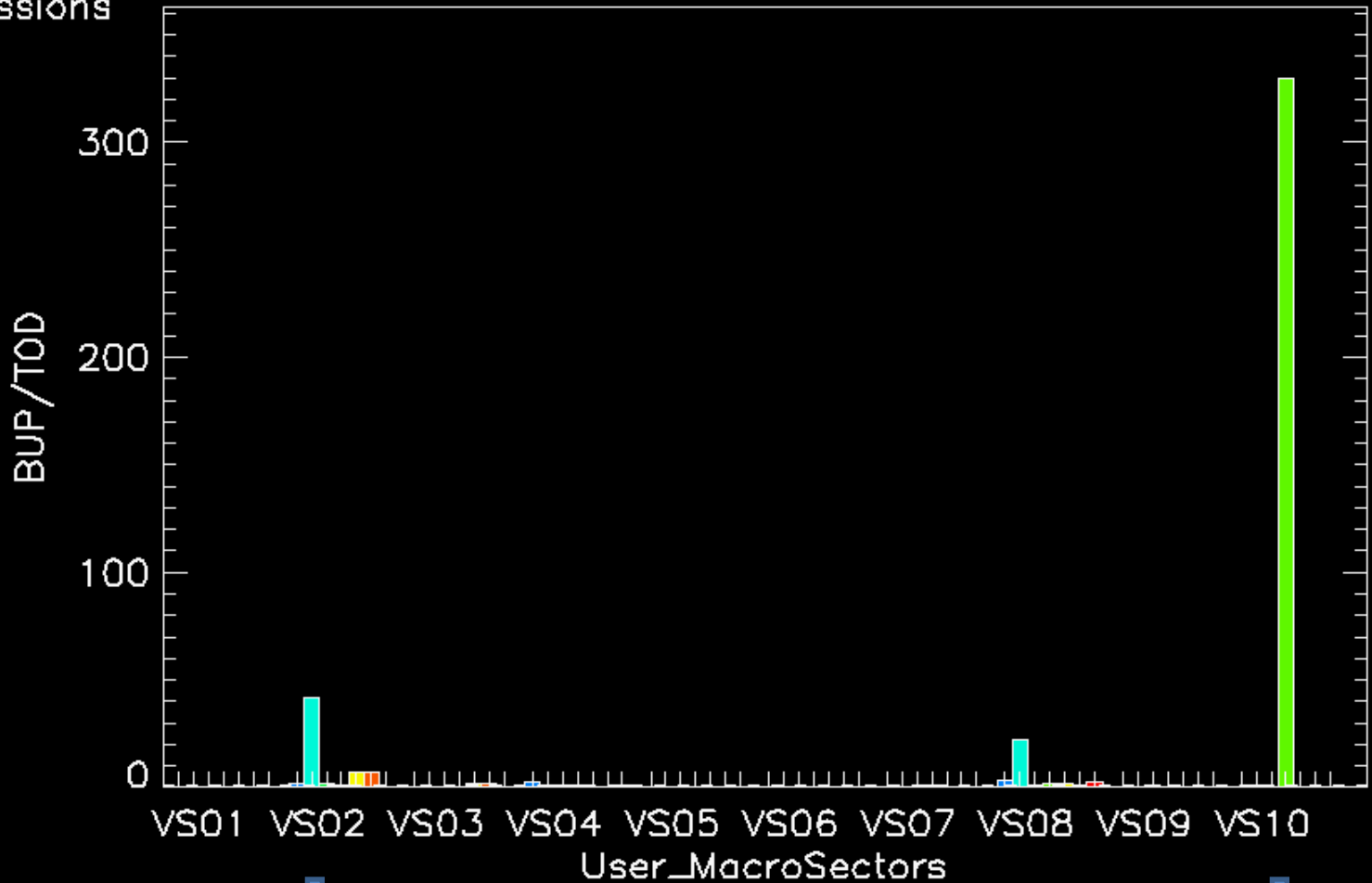


# Flanders VITO

BU\_FlandersVITO\_info  
MACC emissions

Emission BUP/TOD

CO<sub>x</sub>  
NH<sub>3</sub>  
VOC  
NO<sub>x</sub>  
PM<sub>10</sub>  
PM<sub>25</sub>  
SO<sub>2</sub>

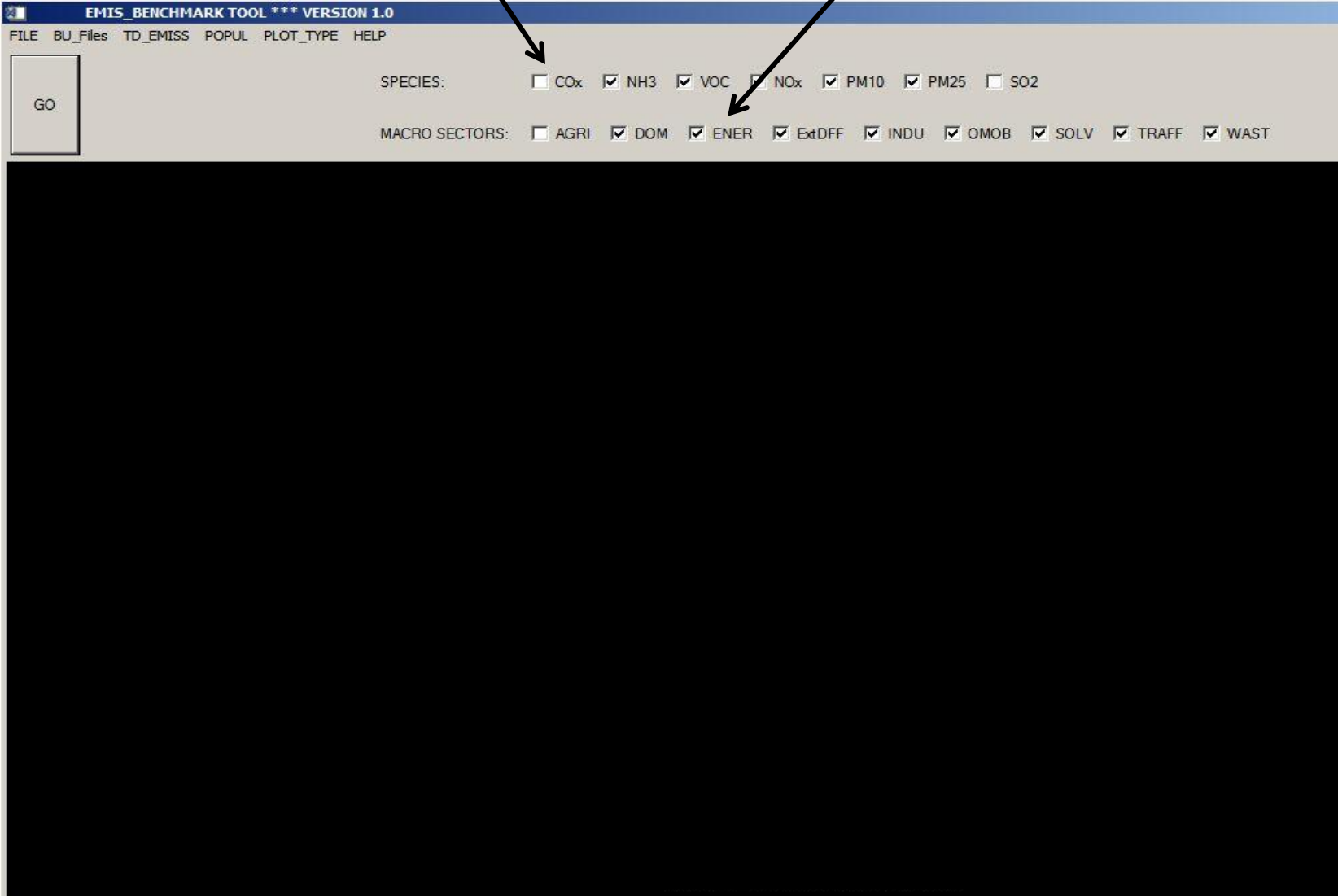


NH<sub>3</sub>: BUP=2.30 & TOD=0.055

NO<sub>x</sub>: BUP=7.40 & TOD=0.0224

Pollutant selection

Sector selection



# Flanders VITO

BU\_FlandersVITO\_info

BUP(PoI1/PoI2) / TOD(PoI1/PoI2)

MACC emissions

User MacroSectors	VOC/NO <sub>x</sub>	VOC/PM10	NO <sub>x</sub> /PM10
VS09		2.50870	
VS08	0.666228	0.967504	1.45221
VS07	0.306442	0.355157	1.15897
VS06			
VS05	0.630203	432.850	686.842
VS04	0.966729	3.06170	3.16707
VS03	0.808790	0.211428	0.261413
VS01	0.924108	4.45572	4.82165

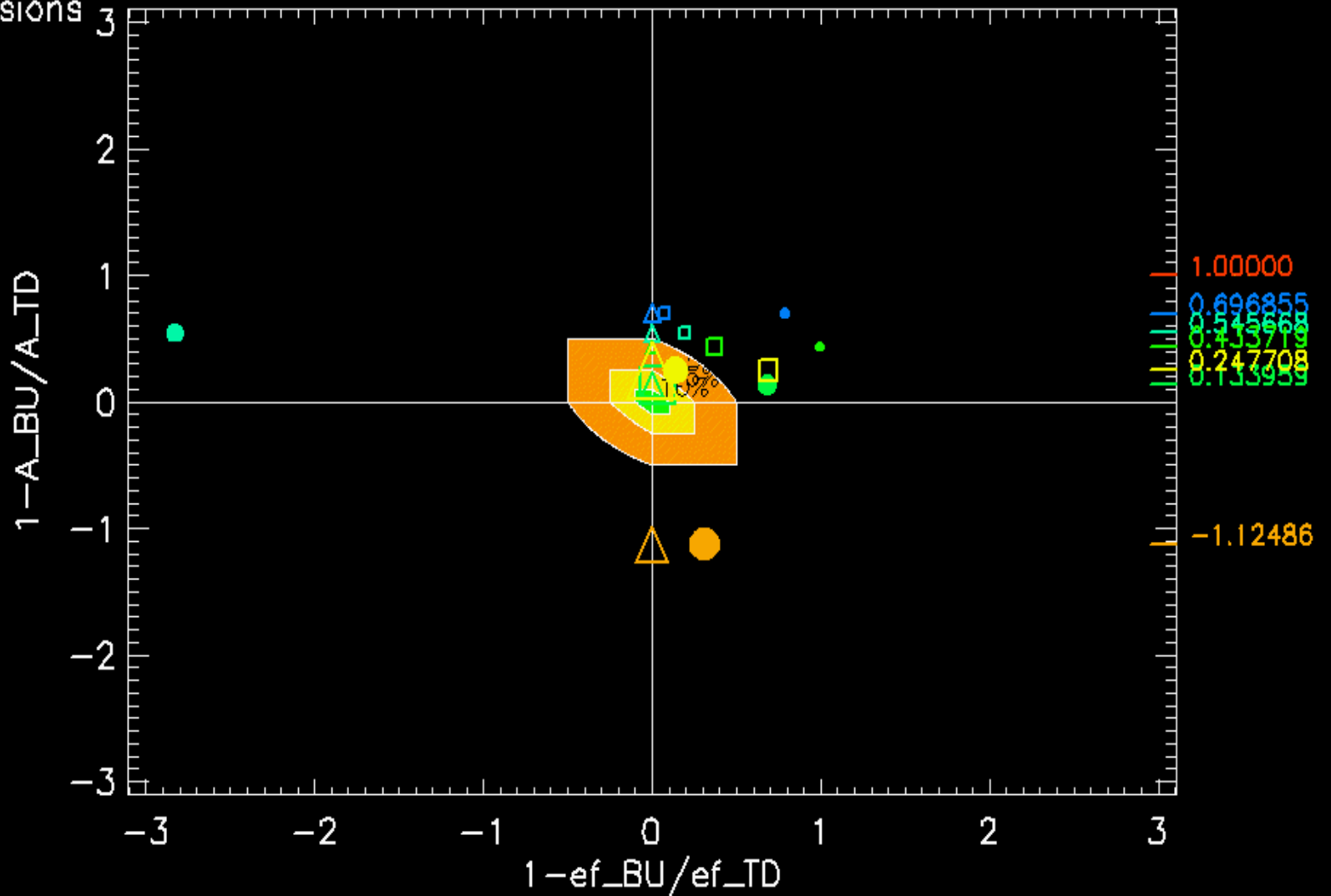
- Value < .75
- .75 < Value < 1.25
- Value > 1.25

# Flanders VITO

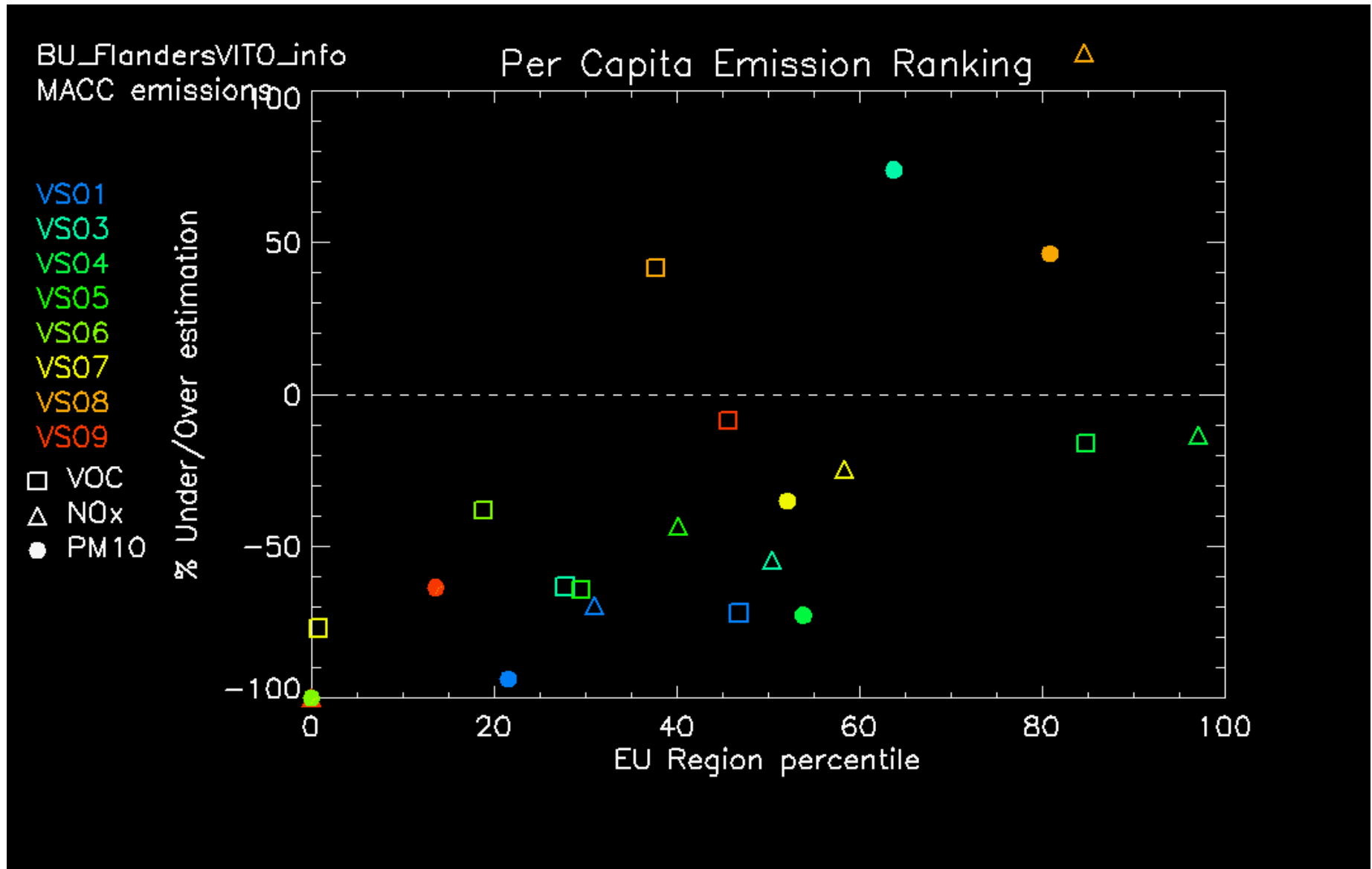
BU\_FlandersVITO\_info

Emission Benchmark

MACC emissions



# Flanders VITO



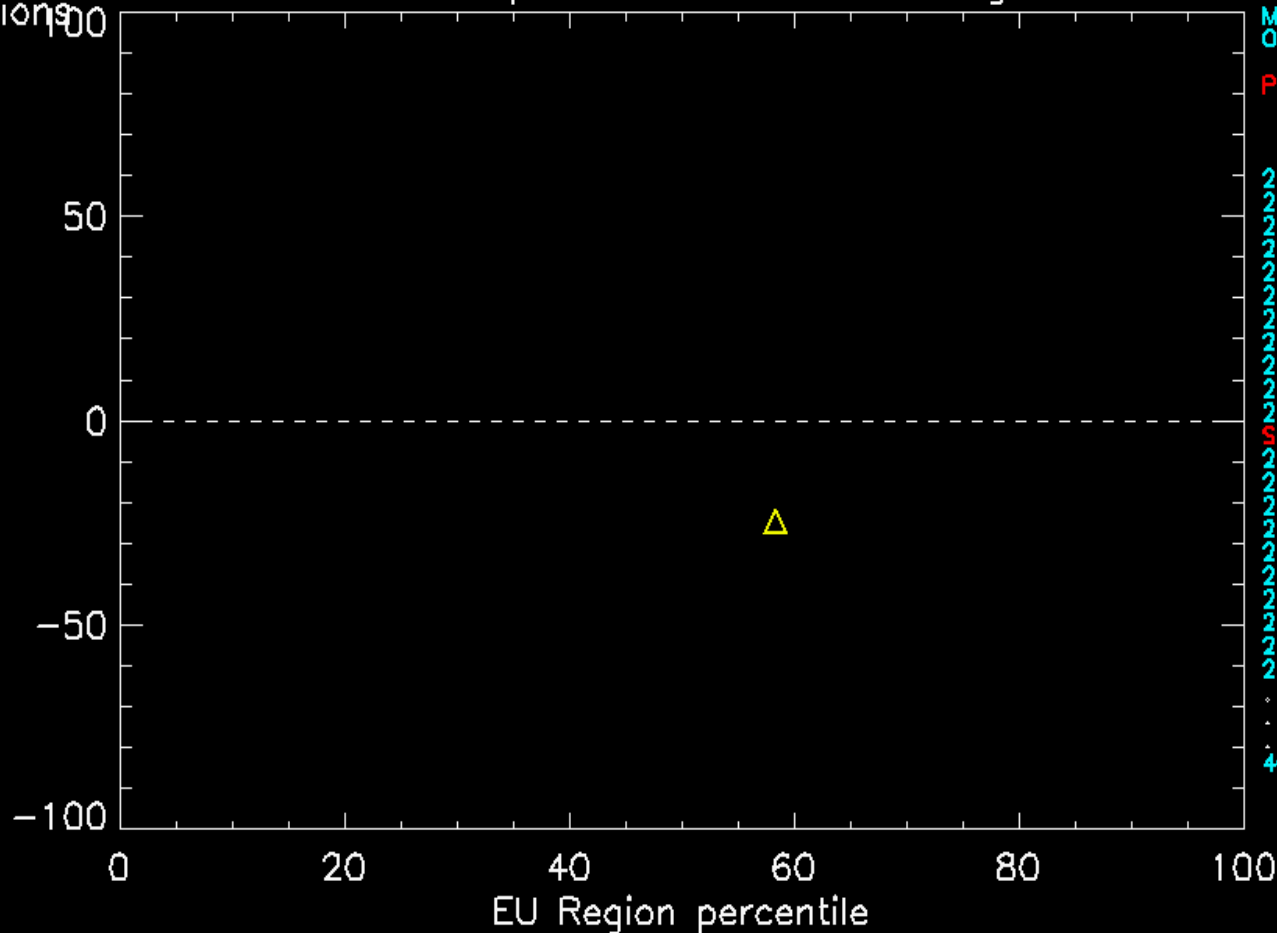
# Flanders VITO

BU\_FlandersVITO\_info  
MACC emissions

## Per Capita Emission Ranking

% Under/Over estimation

VS07  
Δ NOx

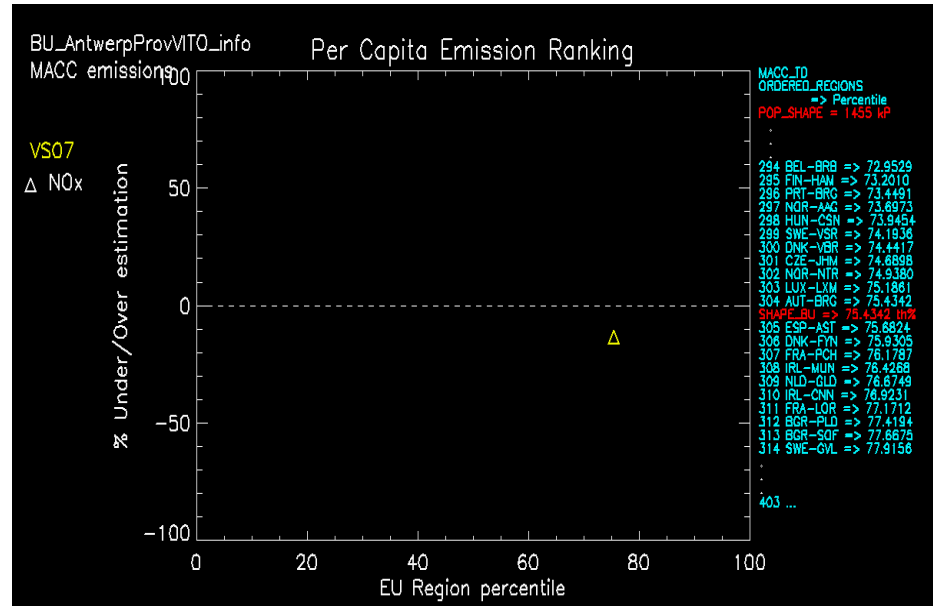
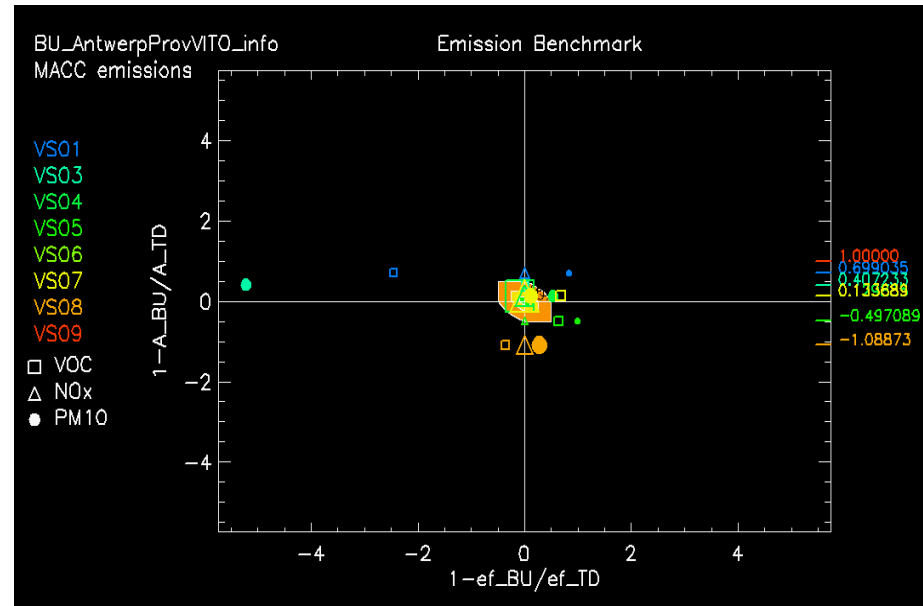
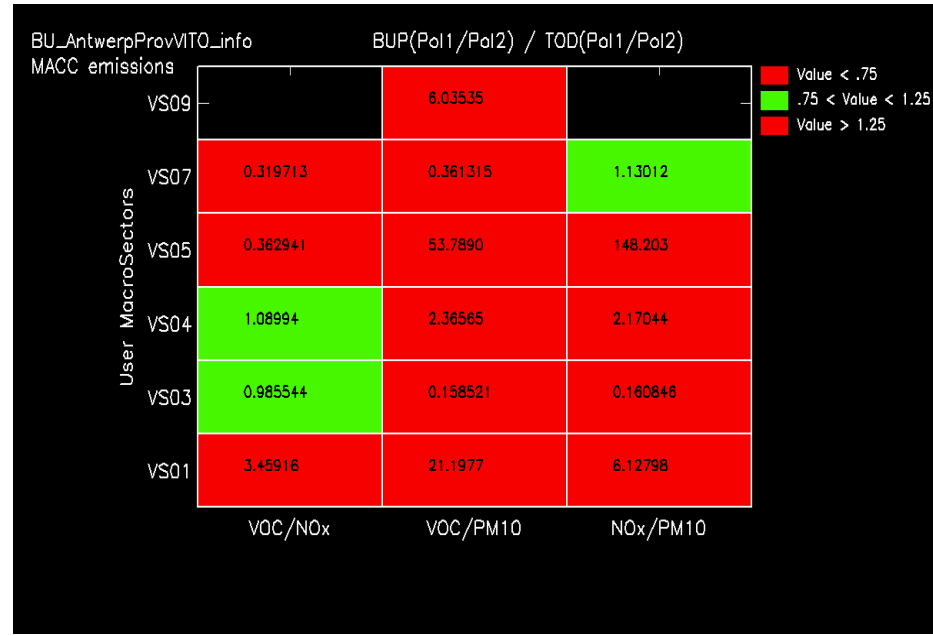
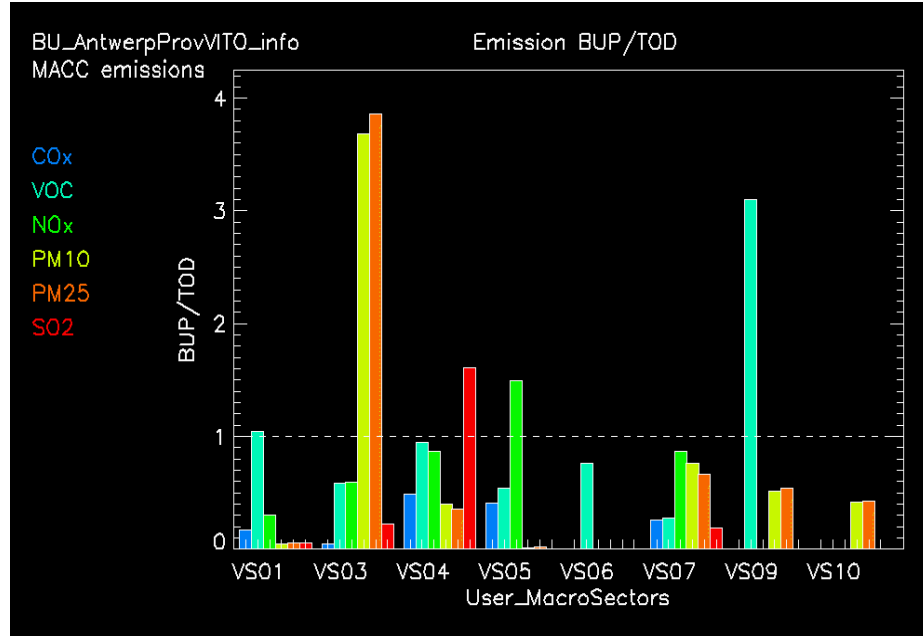


MACC\_TD  
ORDERED\_REGIONS  
=> Percentile  
POP\_SHAPE = 6560 kP

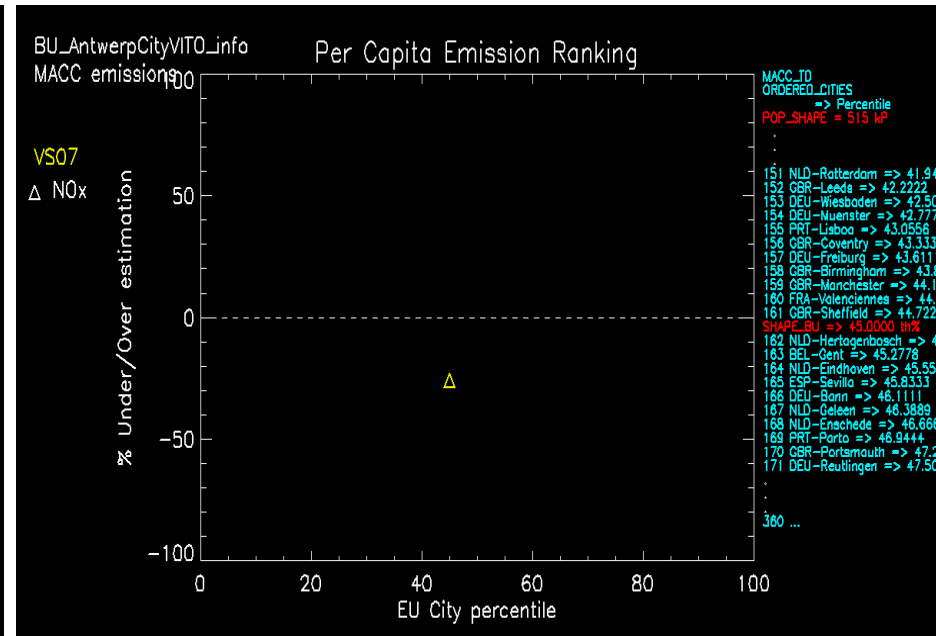
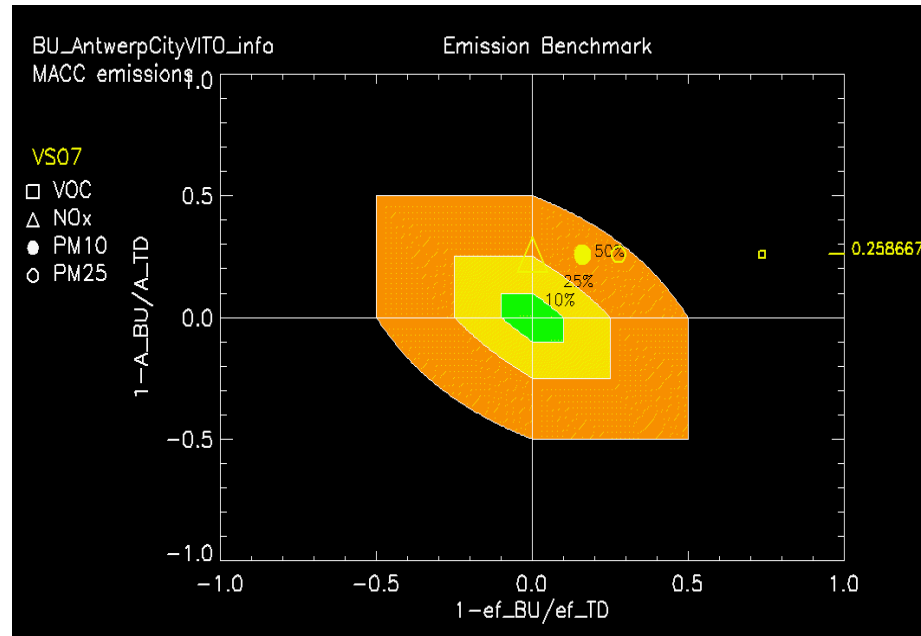
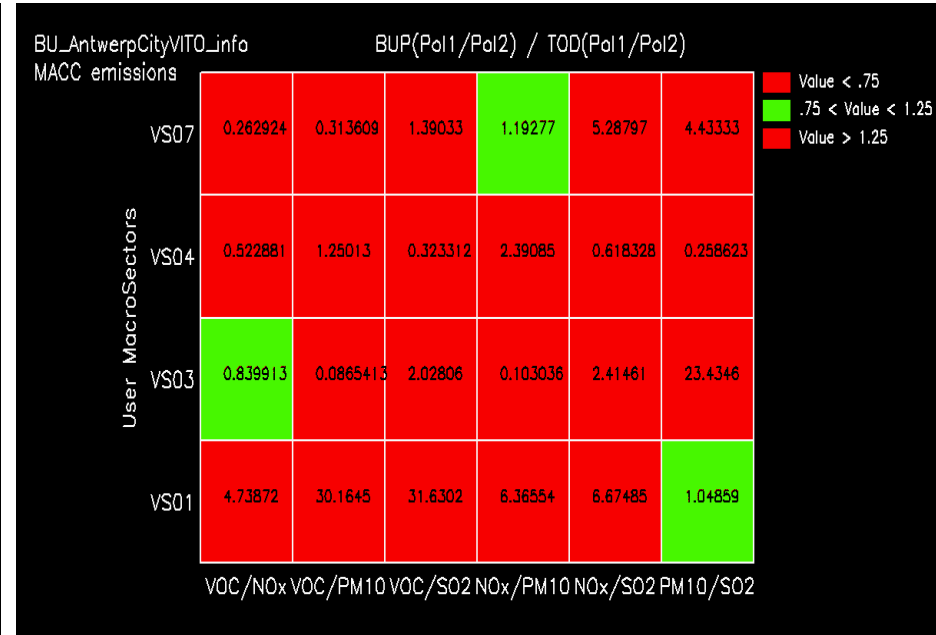
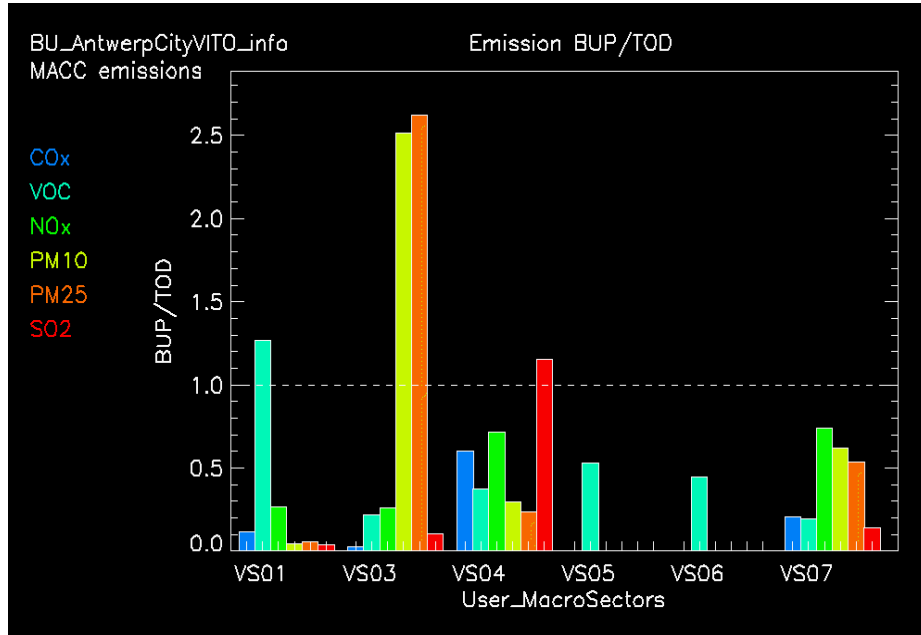
224 ESP-GLC => 55.5831  
225 HUN-BEK => 55.8313  
226 ITA-LIG => 56.0794  
227 ITA-PMN => 56.3275  
228 FRA-BNR => 56.5757  
229 PRT-POR => 56.8238  
230 PRT-VIS => 57.0720  
231 PRT-LIS => 57.3201  
232 DEU-HSS => 57.5682  
233 GRC-THR => 57.8164  
234 BEL-LIE => 58.0645  
SHAPE\_BU => 58.3127 th%  
235 AUT-VRR => 58.3127  
236 ITA-LMB => 58.5608  
237 ALB-LBR => 58.8089  
238 DNK-SKB => 59.0571  
239 FRA-RHA => 59.3052  
240 FRA-PAC => 59.5533  
241 BGR-LVC => 59.8015  
242 HUN-SSZ => 60.0496  
243 GBR-ENG => 60.2978  
244 ESP-PSV => 60.5459

403 ...

# AntwerpProv VITO

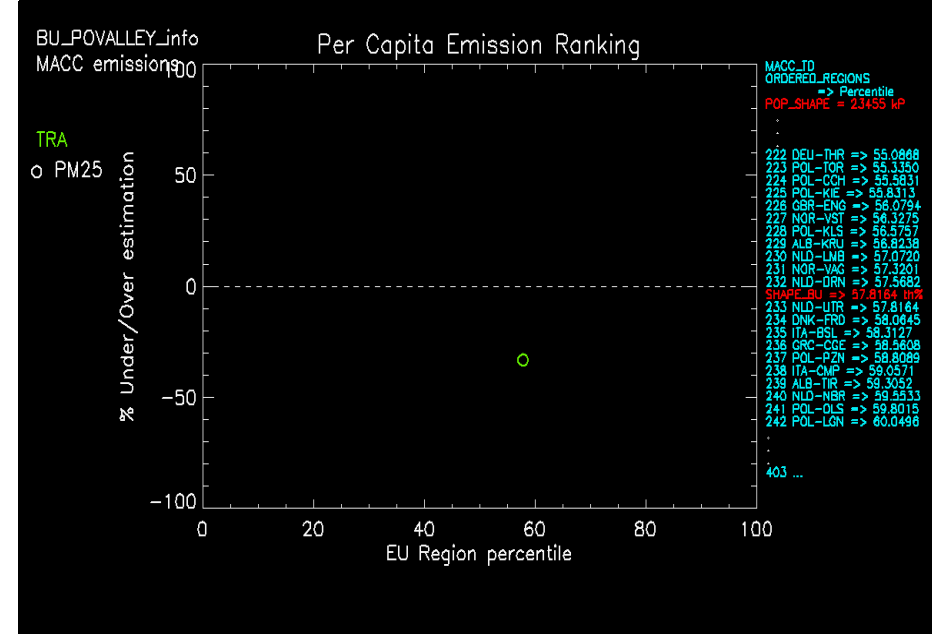
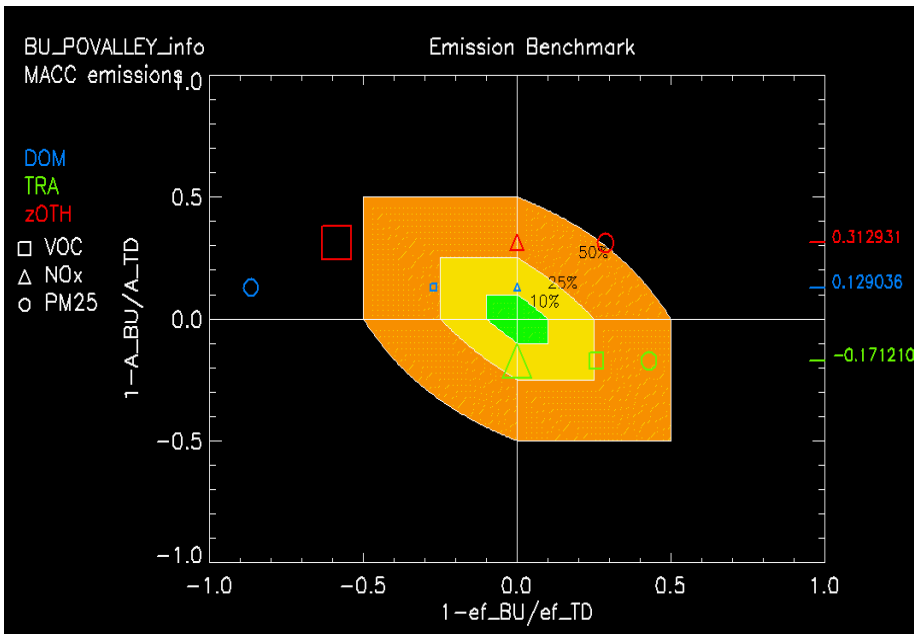
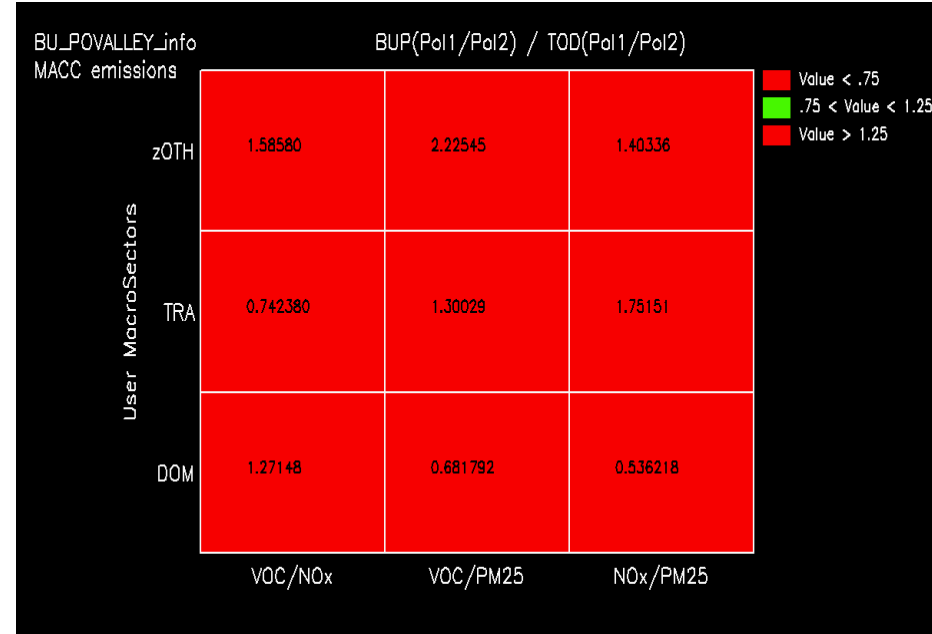
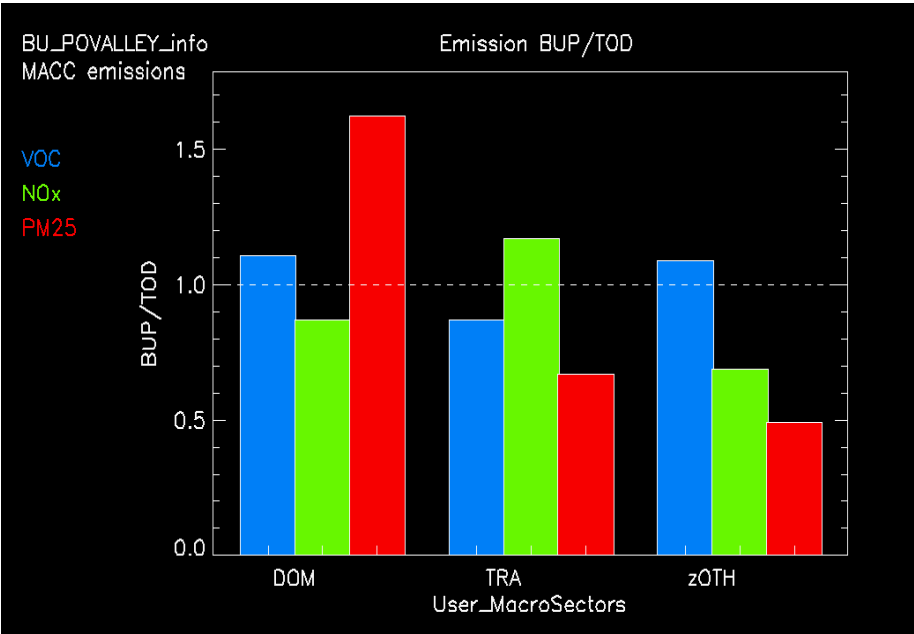


# AntwerpCity VITO

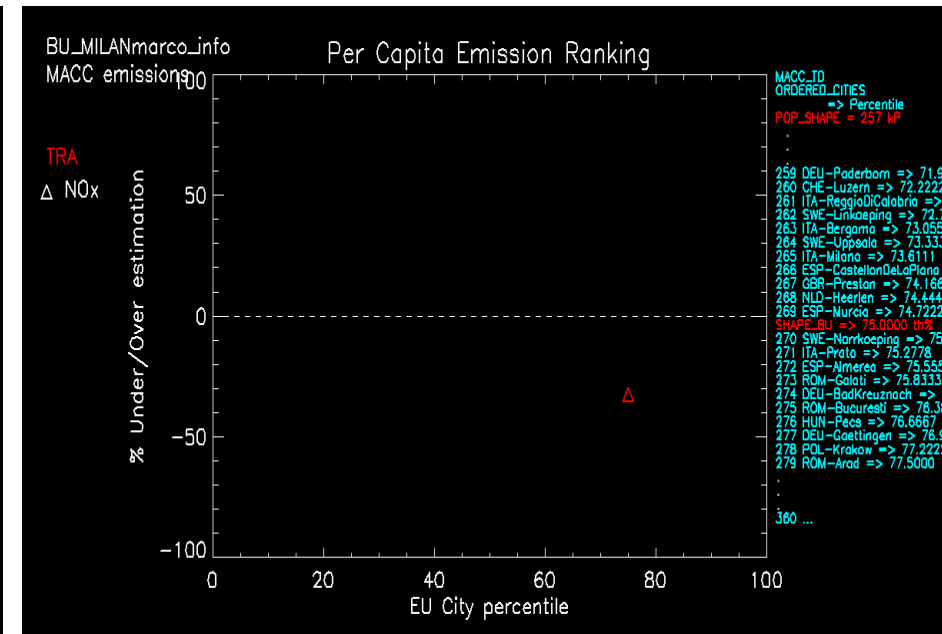
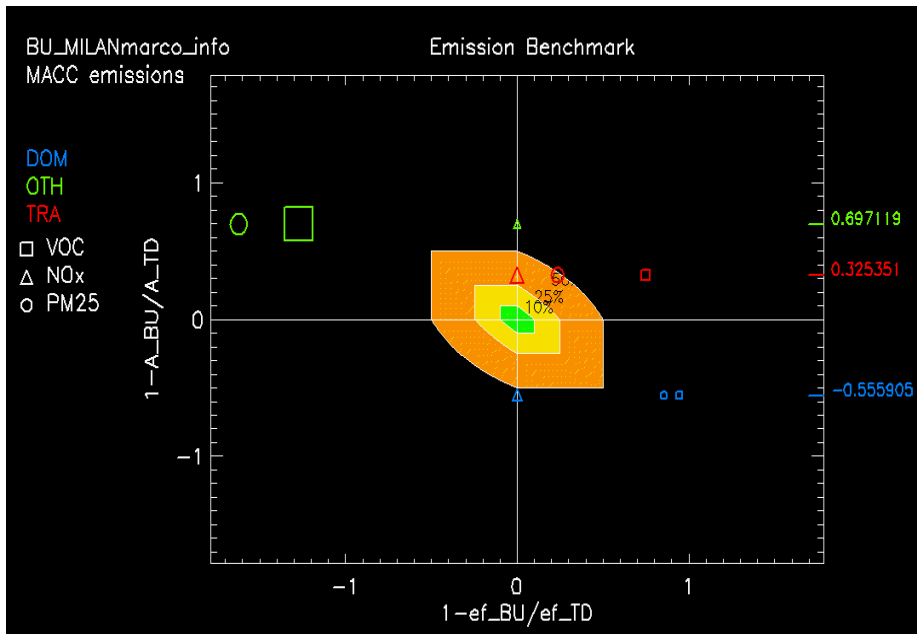
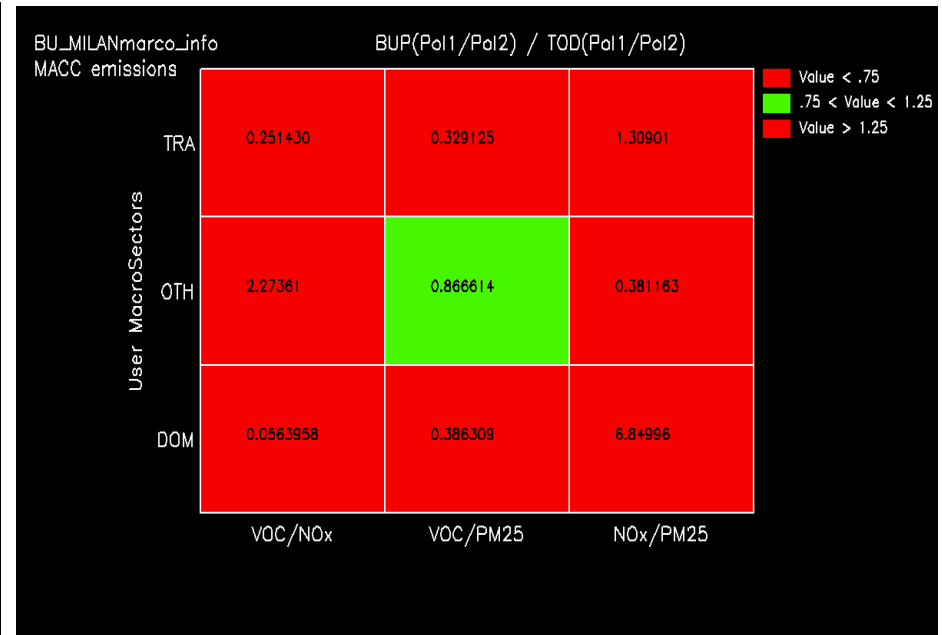
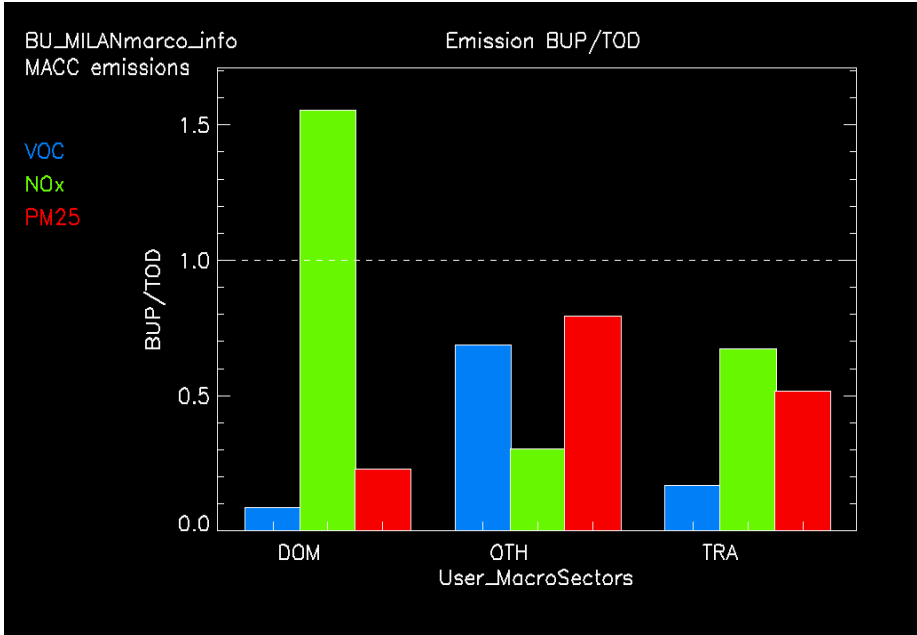




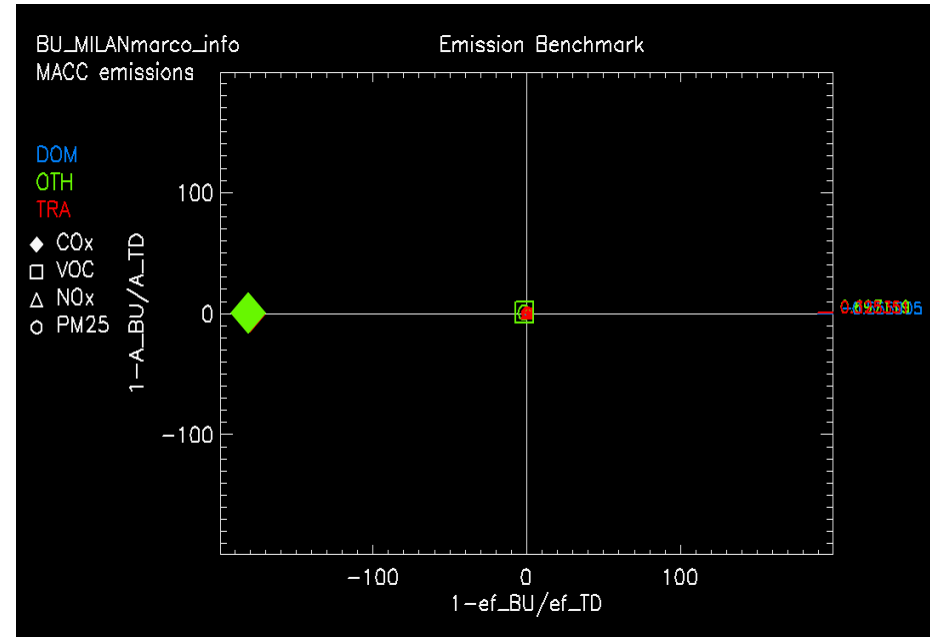
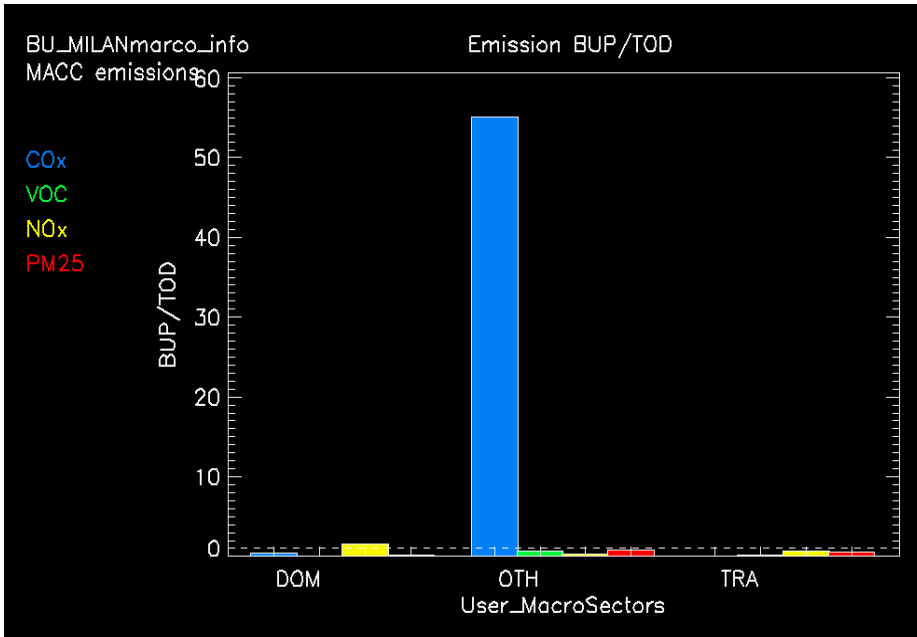
# POValley



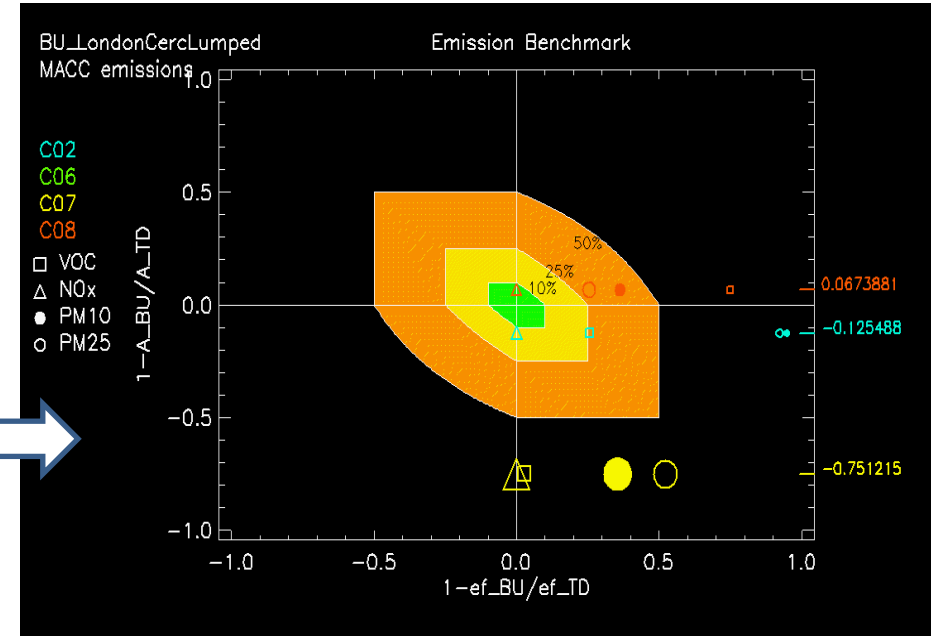
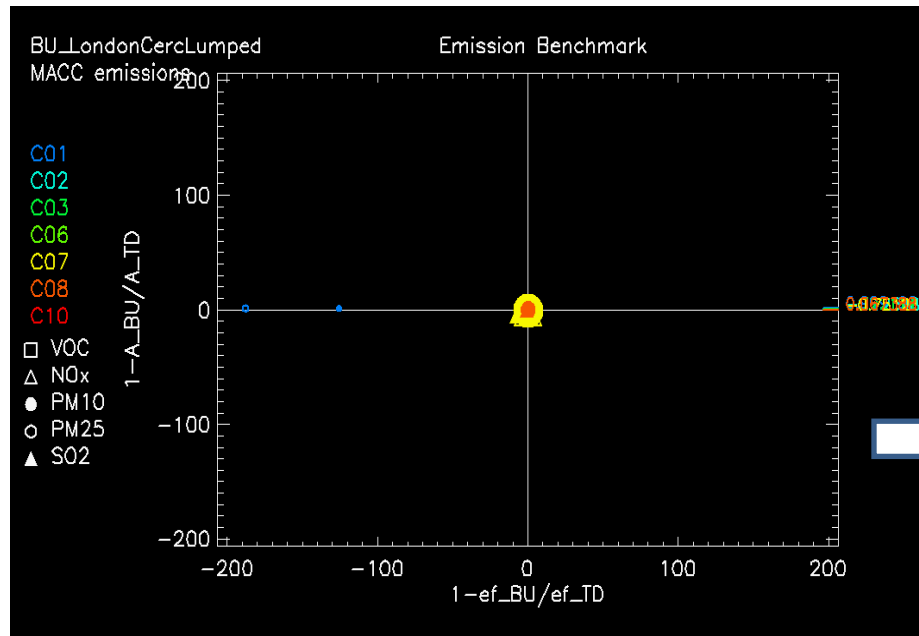
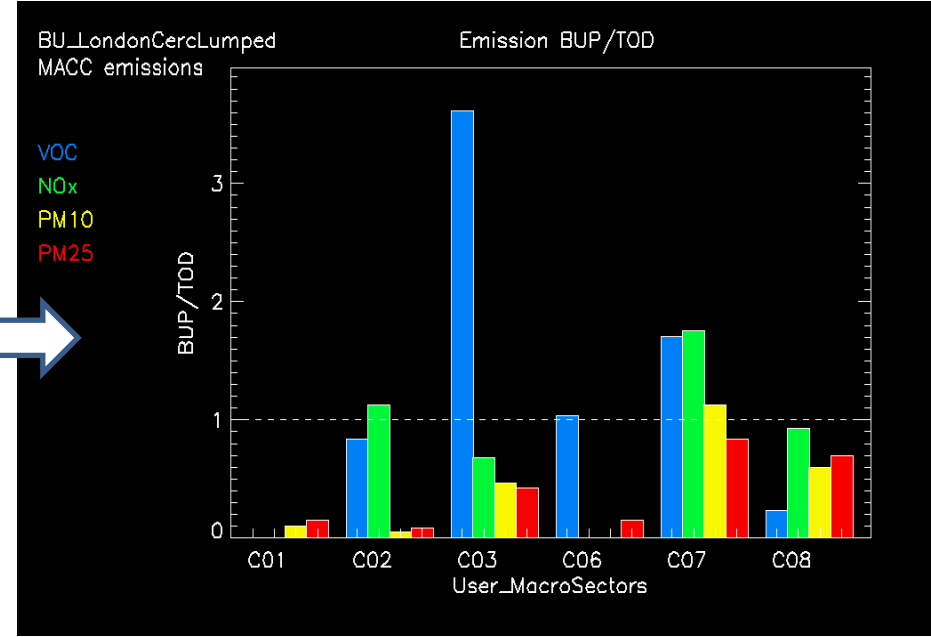
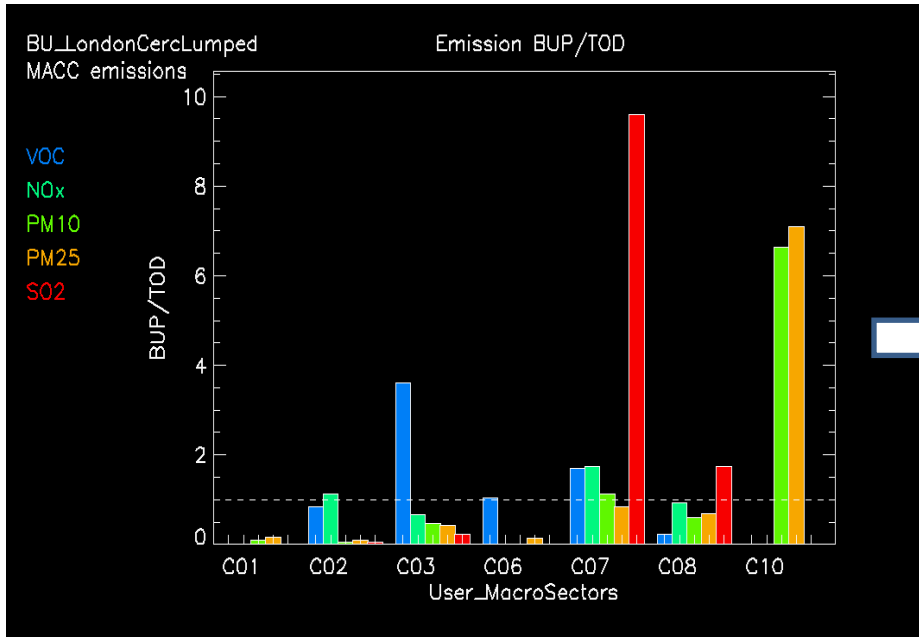
# MILAN Marco



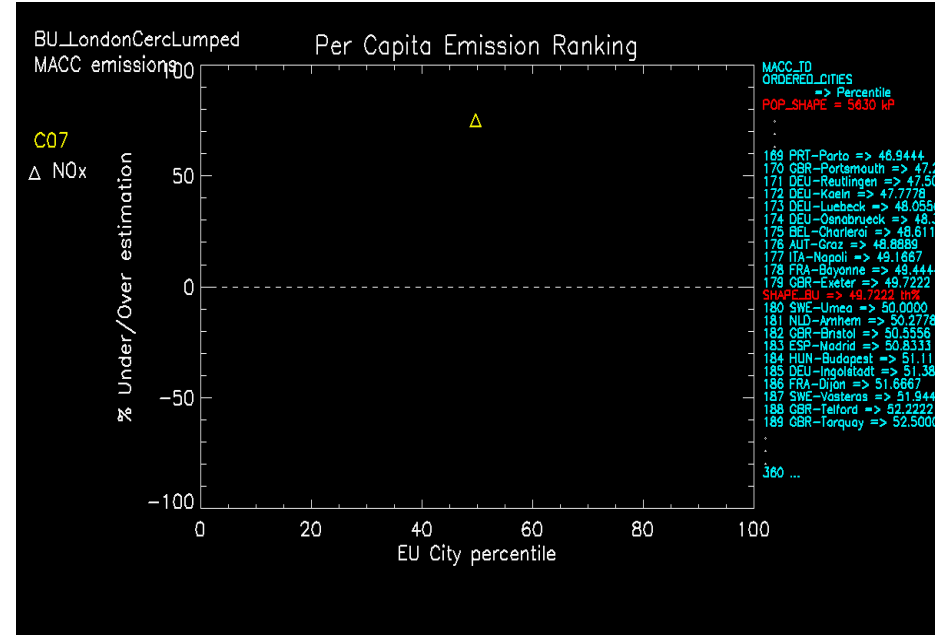
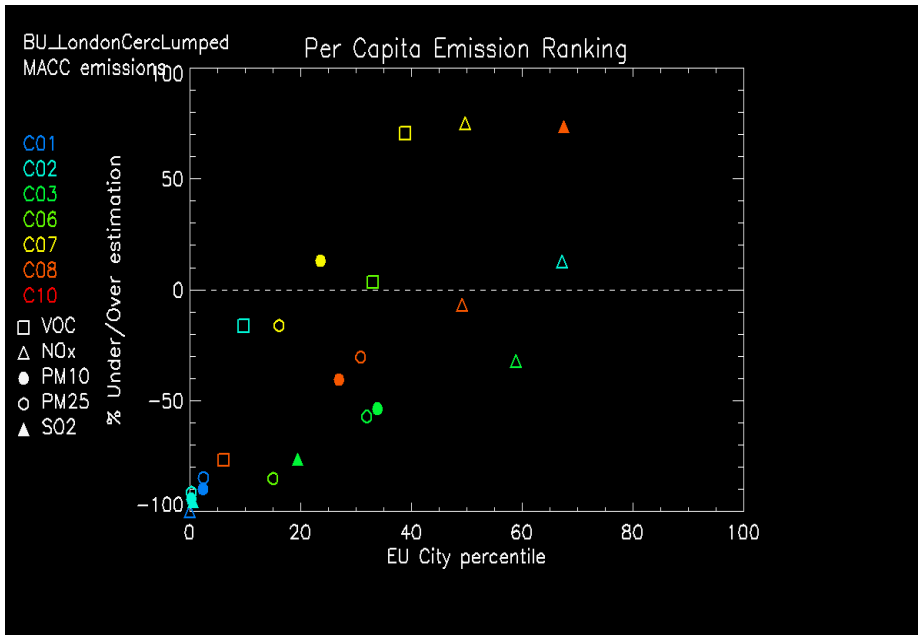
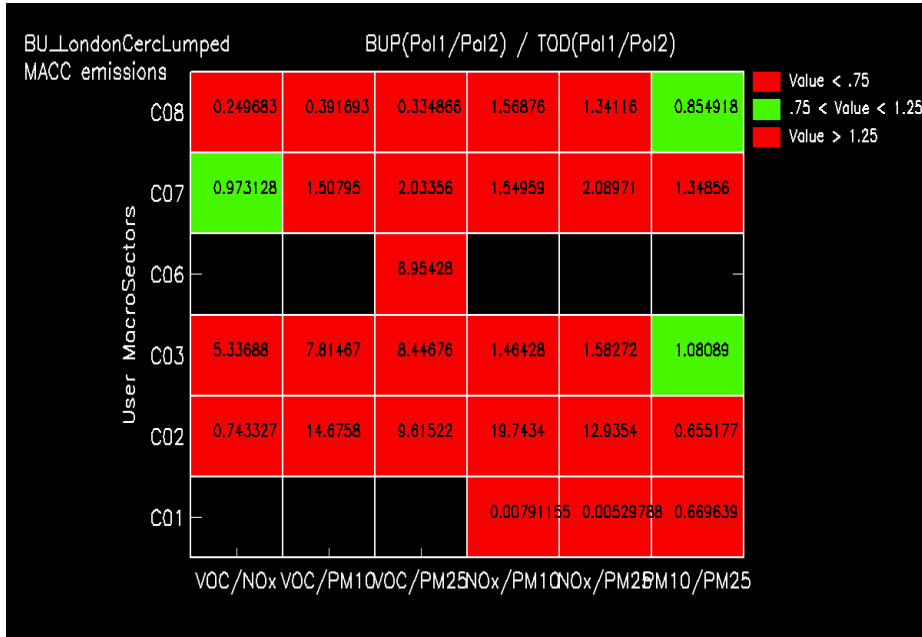
# MILAN Marco



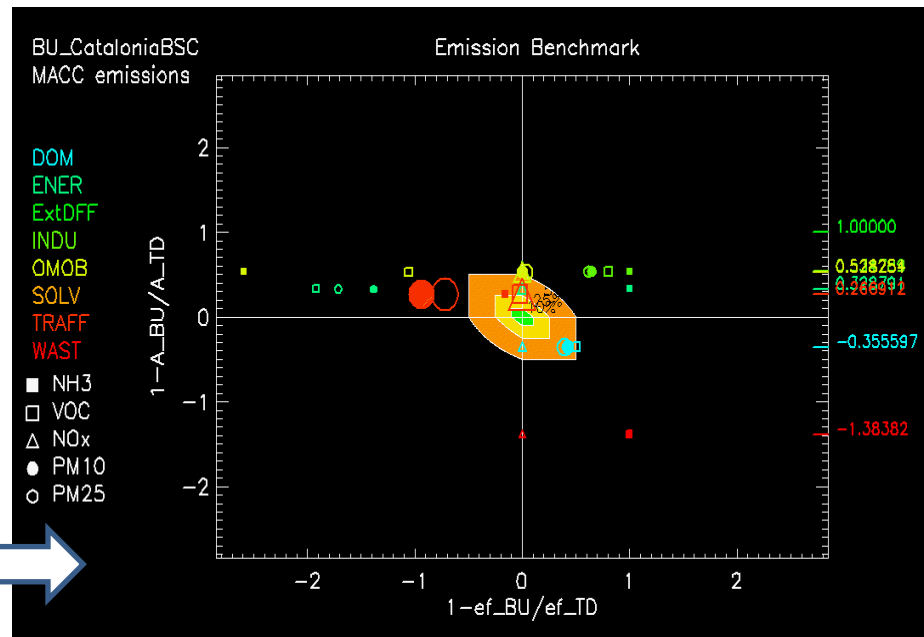
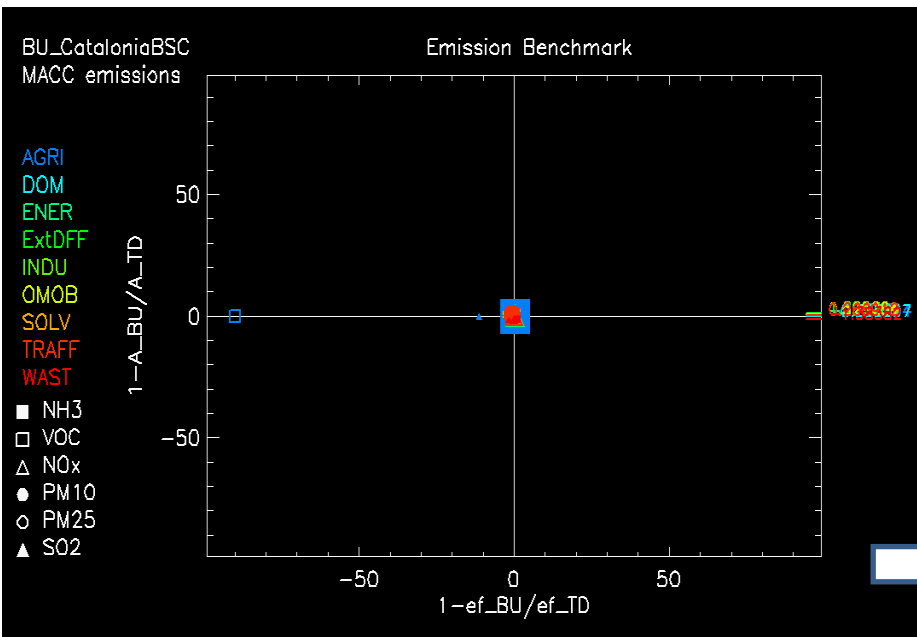
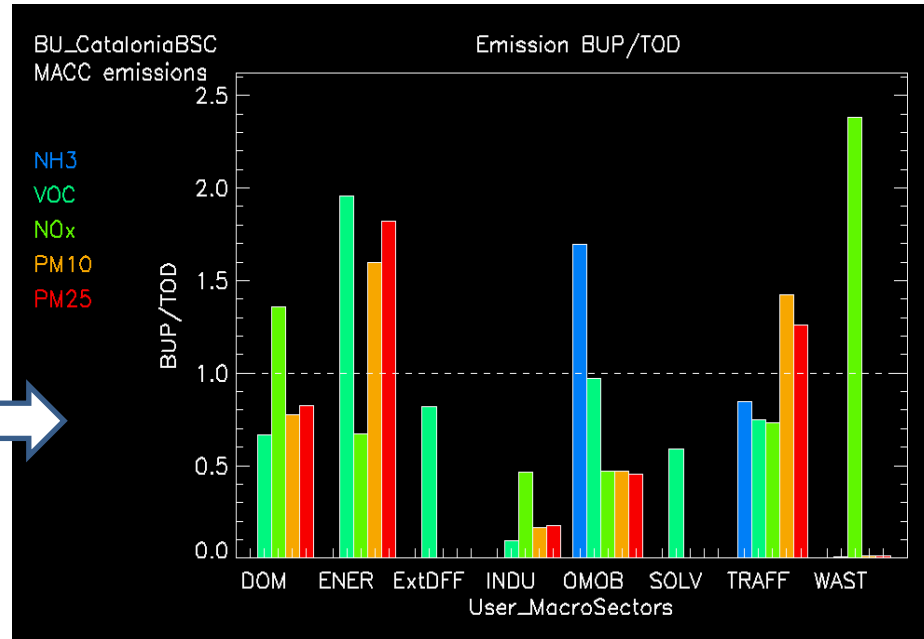
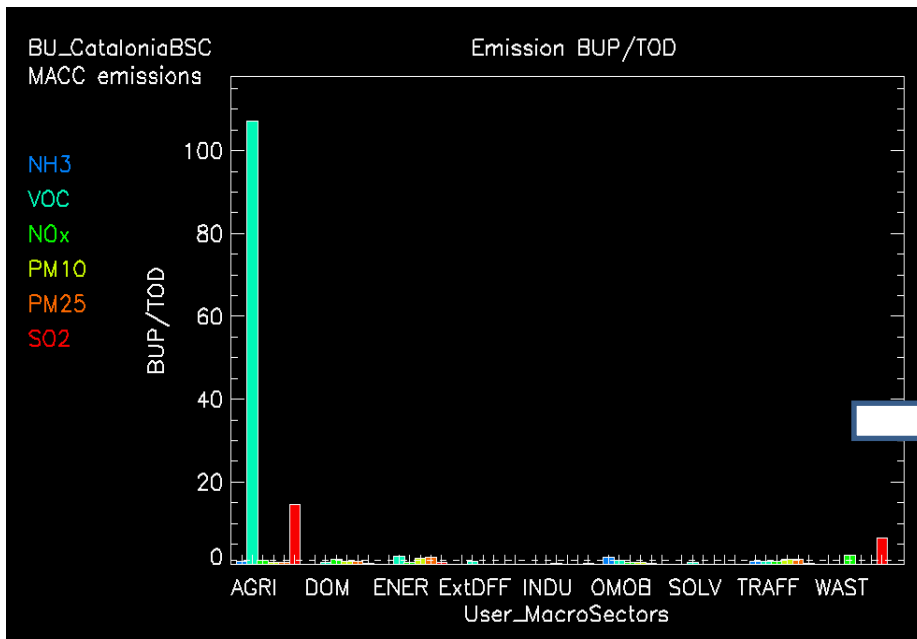
# LONDON CERC



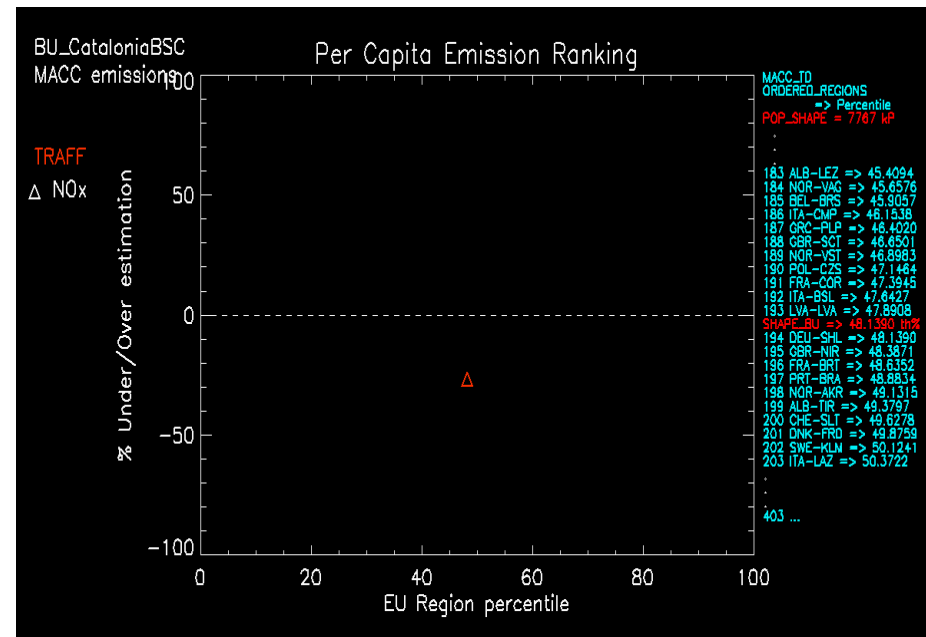
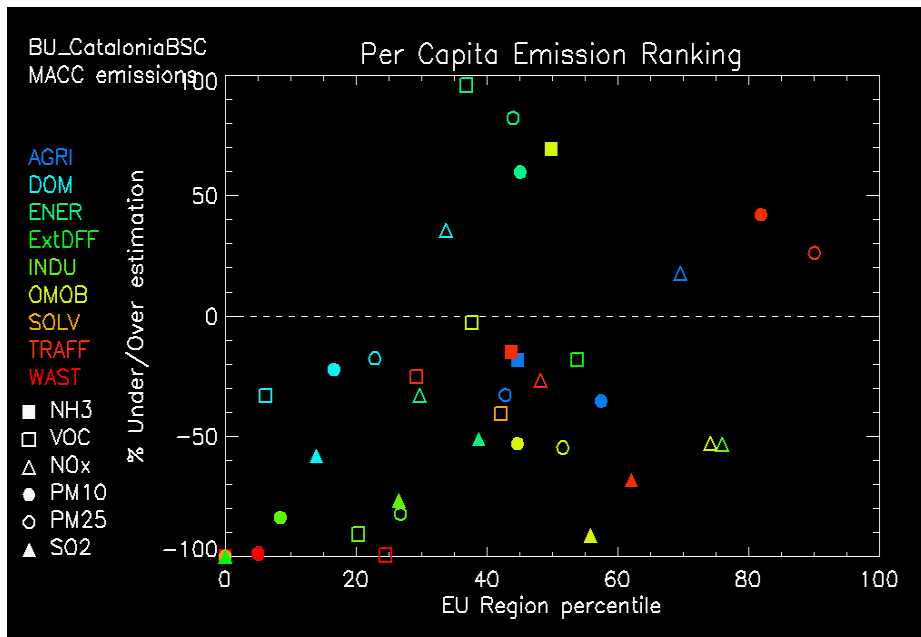
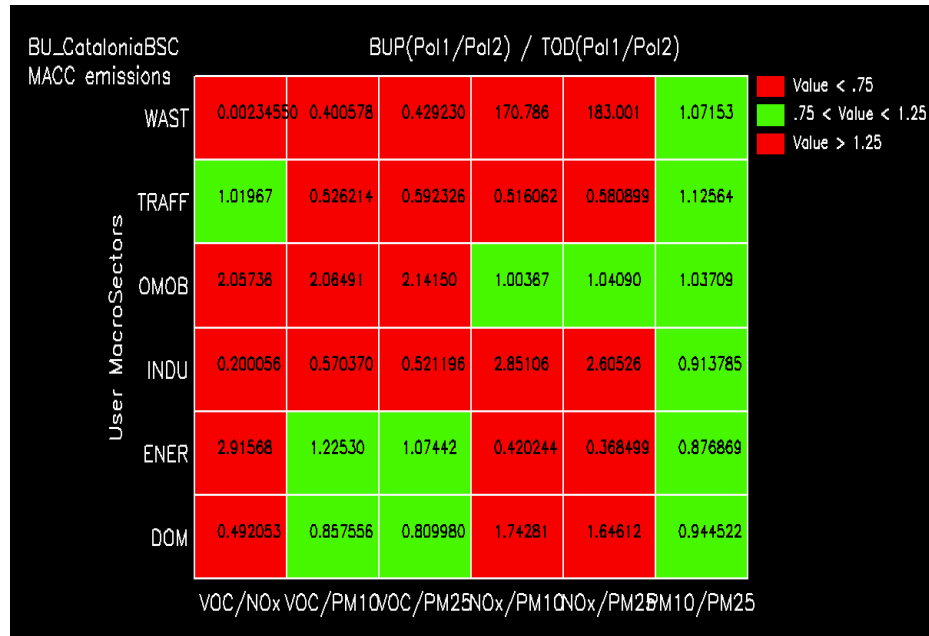
# LONDON CERC



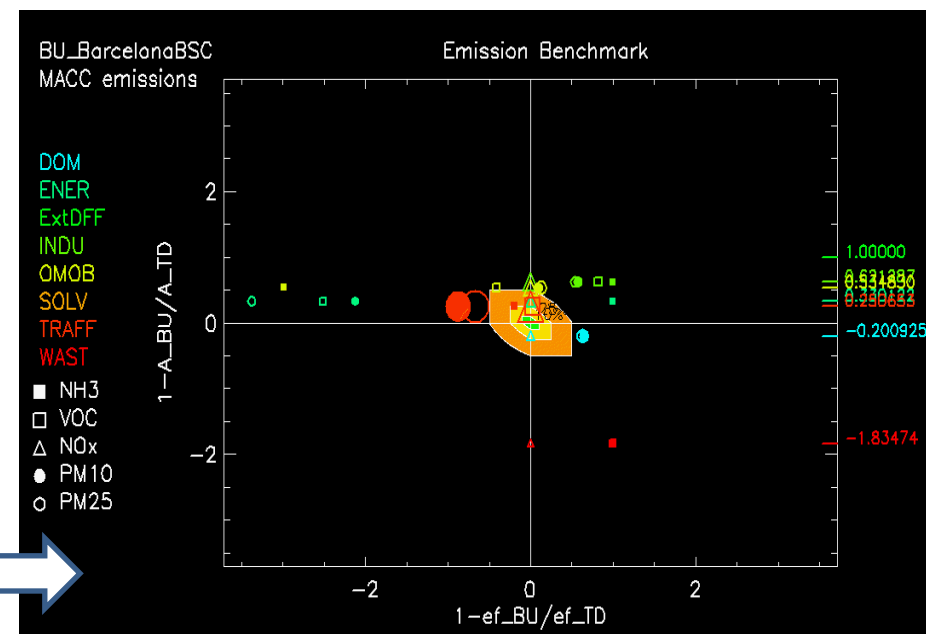
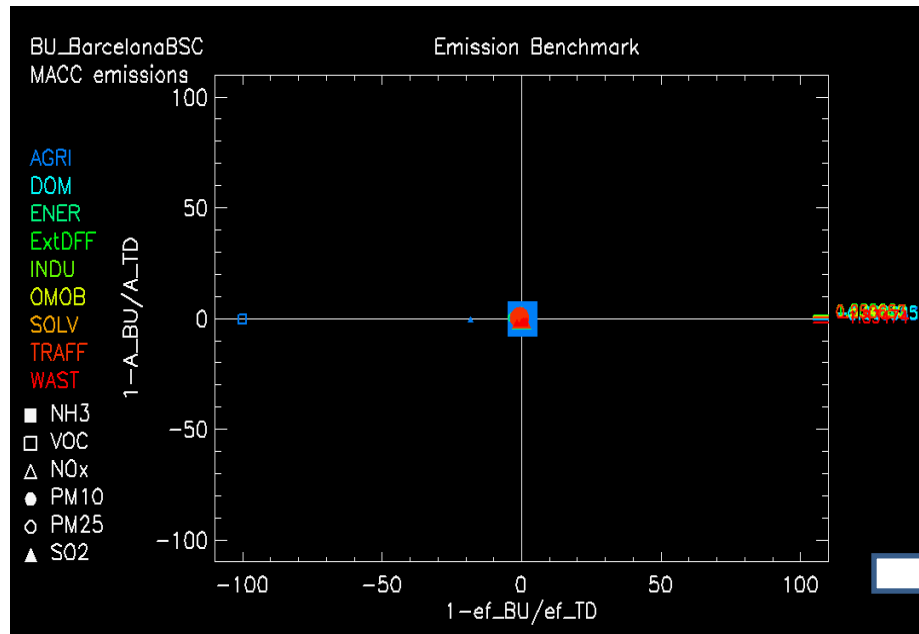
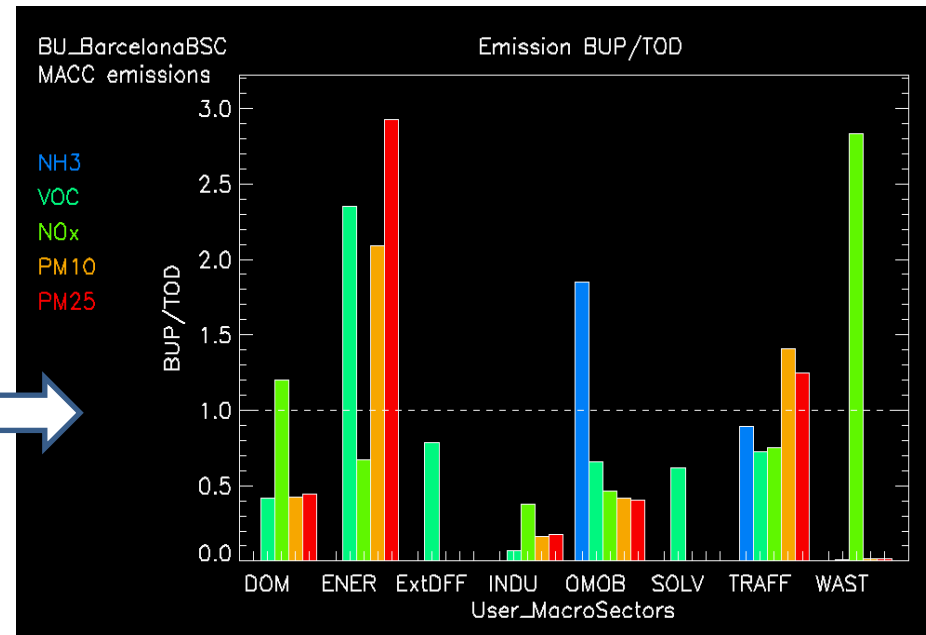
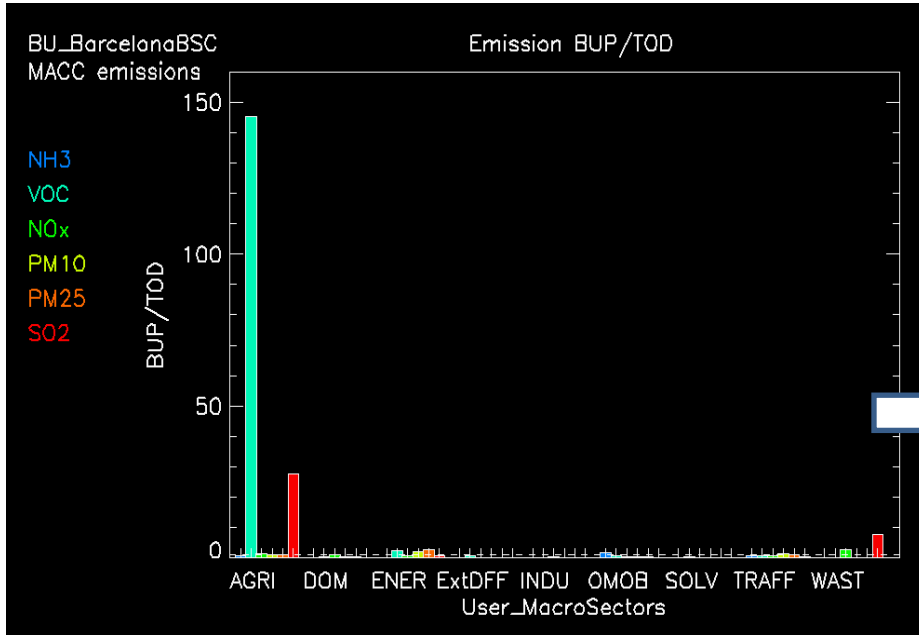
# CATALONIA BSC



# CATALONIA BSC



# BARCELONA BSC





# BARCELONA BSC

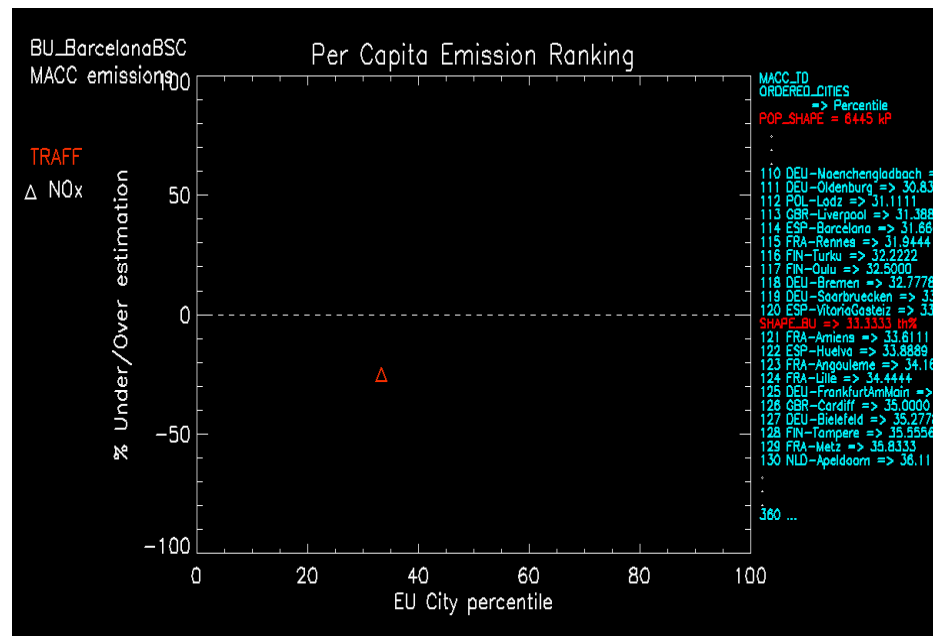
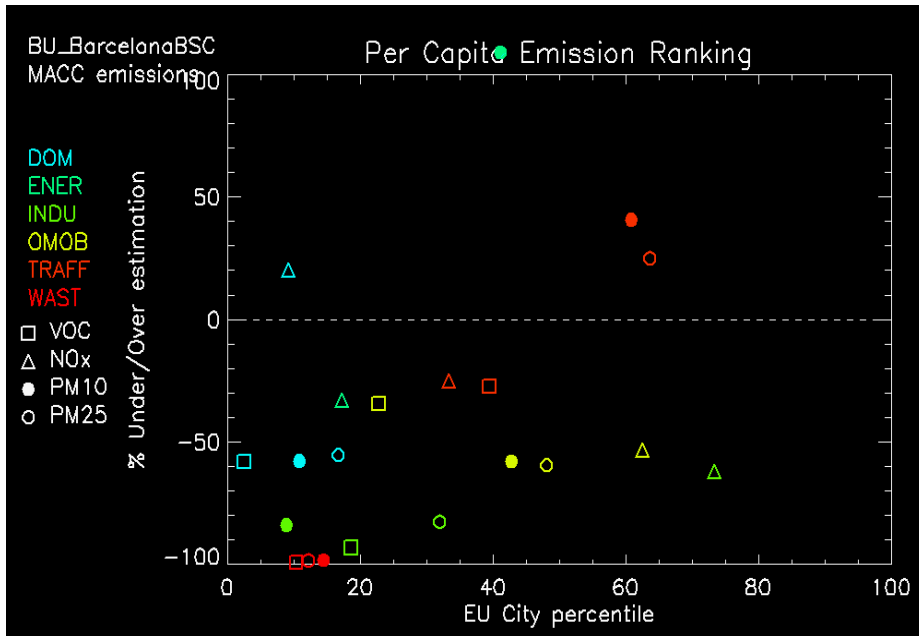
BU\_BarcelonaBSC  
MACC emissions

BUP(Pol1/Pol2) / TOD(Pol1/Pol2)

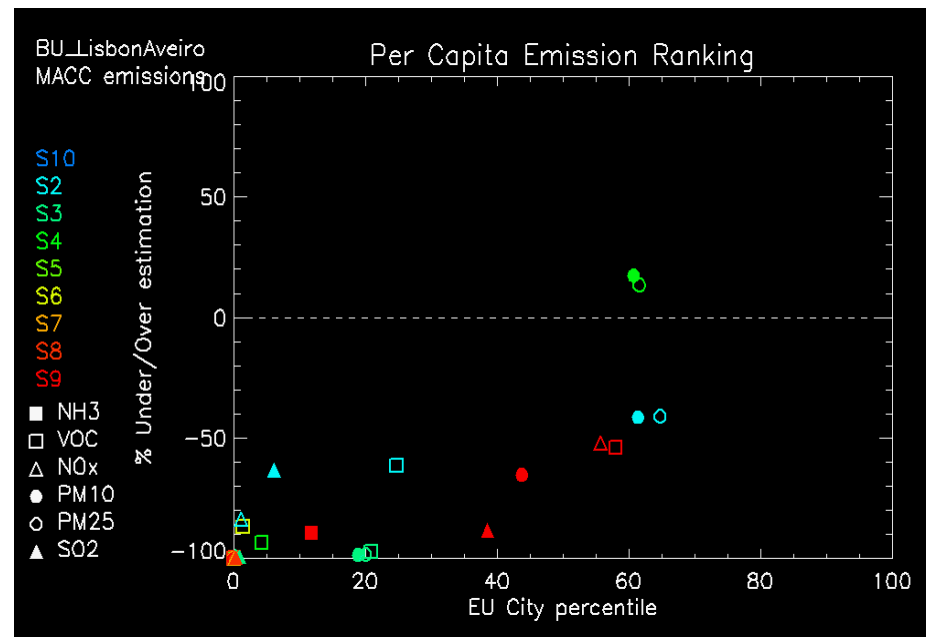
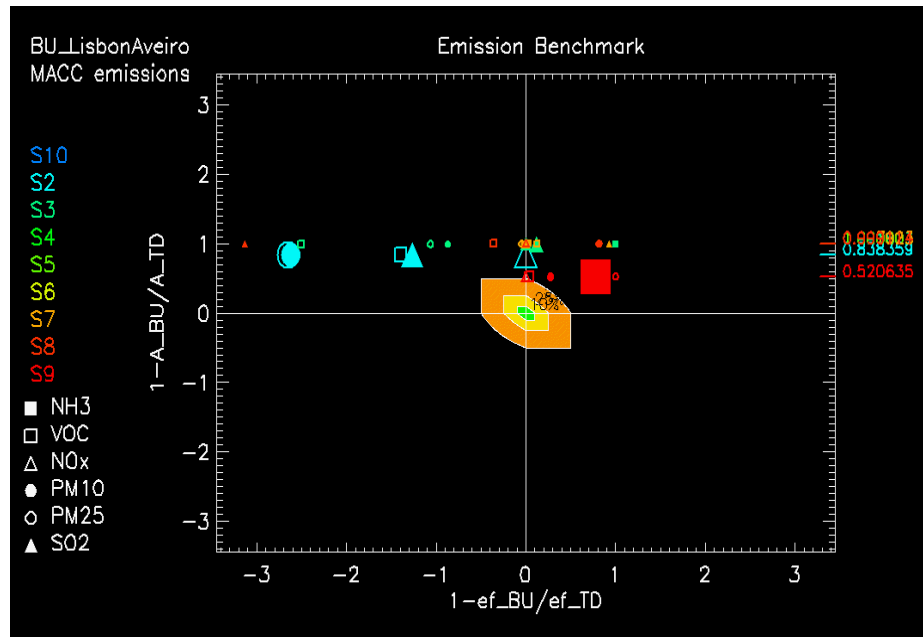
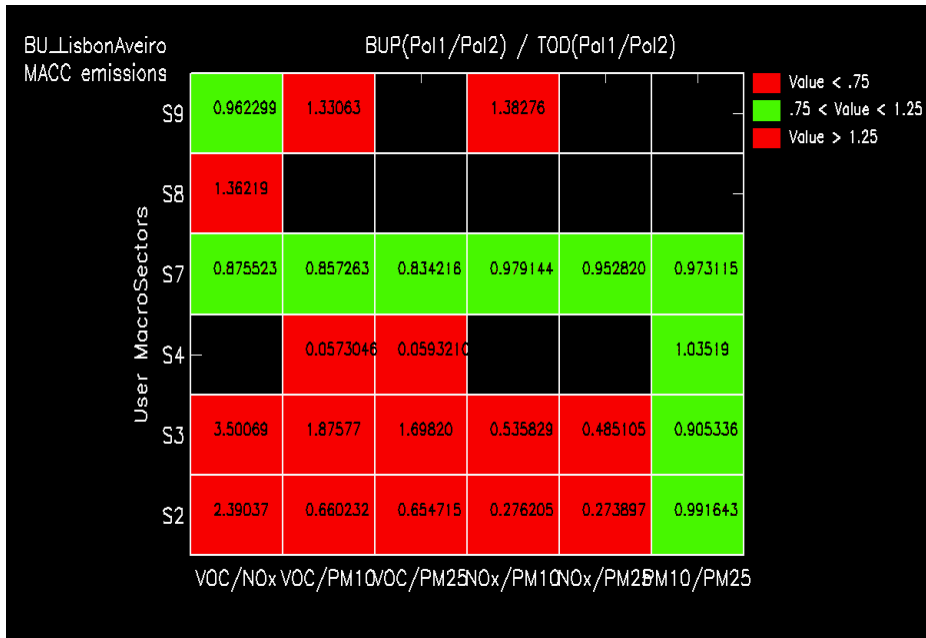
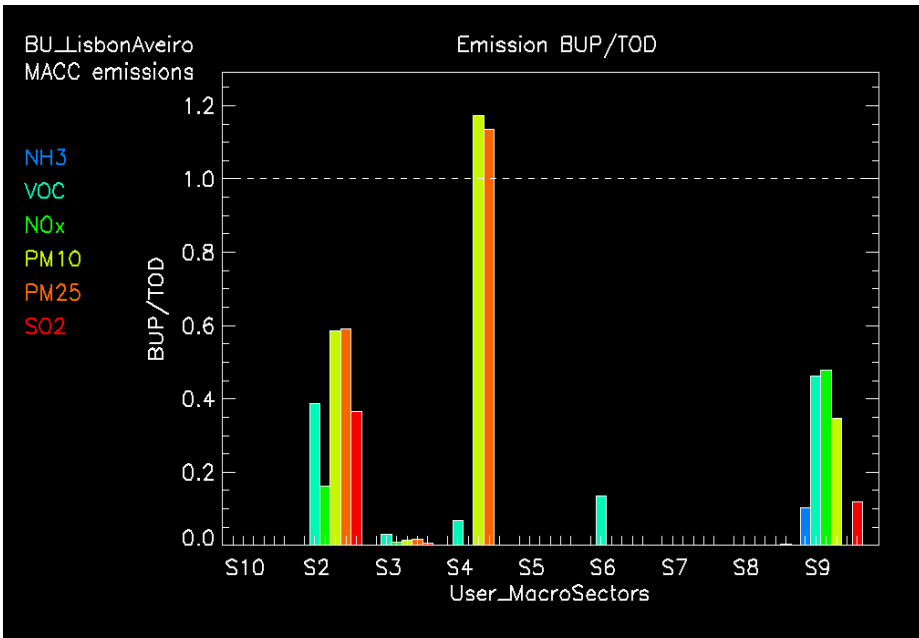
User MacroSectors	VOC	NOx	PM10	PM25	NOx	PM10	PM25
WAST	0.00241376	0.399005	0.427545	165.304	177.128	1.07153	
TRAFF	0.970809	0.517240	0.582552	0.532792	0.600068	1.12627	
OMOB	1.41010	1.56041	1.62114	1.10659	1.14966	1.03892	
INDU	0.179807	0.423259	0.390604	2.35396	2.17235	0.922848	
ENER	3.50665	1.12414	0.801698	0.320573	0.228622	0.713168	
DOM	0.350034	0.997218	0.942819	2.84892	2.69350	0.945449	
AGRI	100.940	148.654	133.266	1.47270	1.32025	0.896483	

VOC/NOx VOC/PM10 VOC/PM25 NOx/PM10 NOx/PM25 PM10/PM25

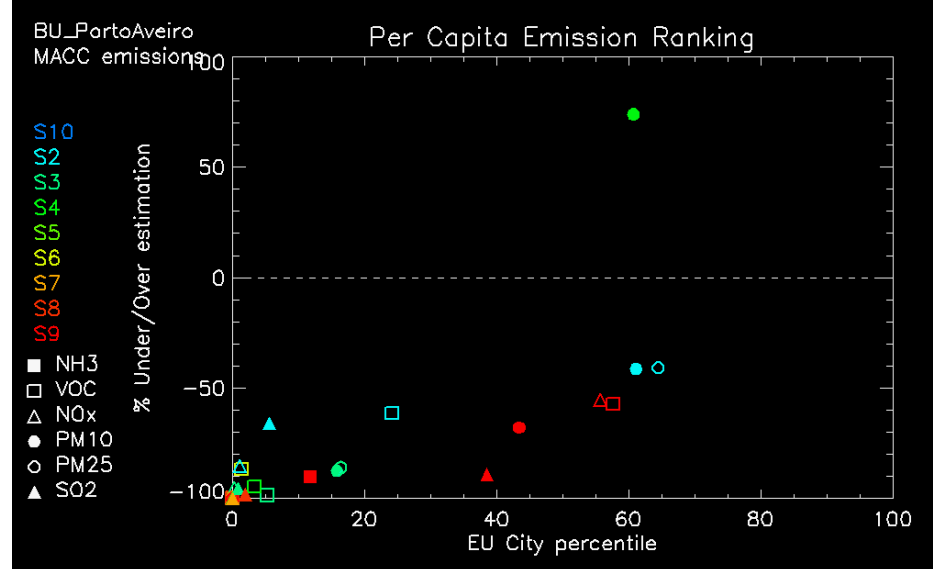
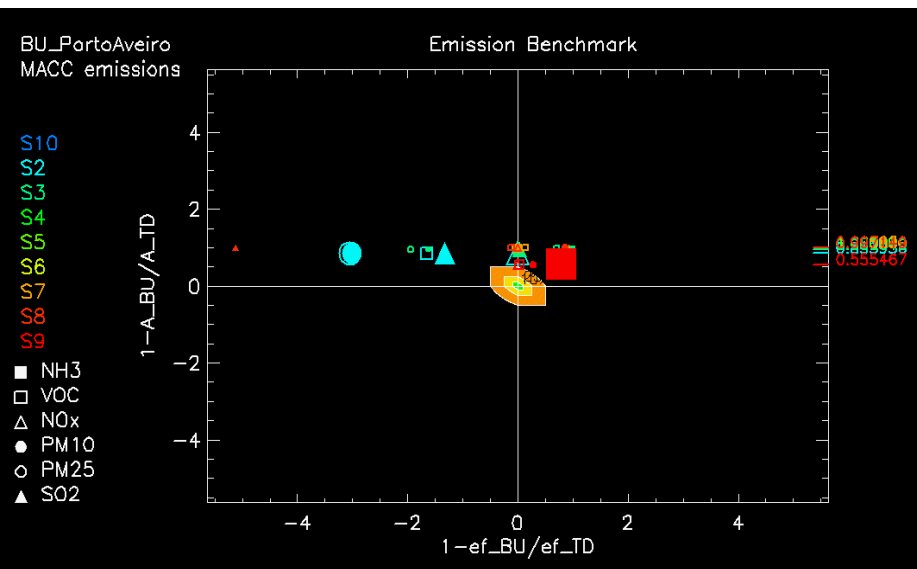
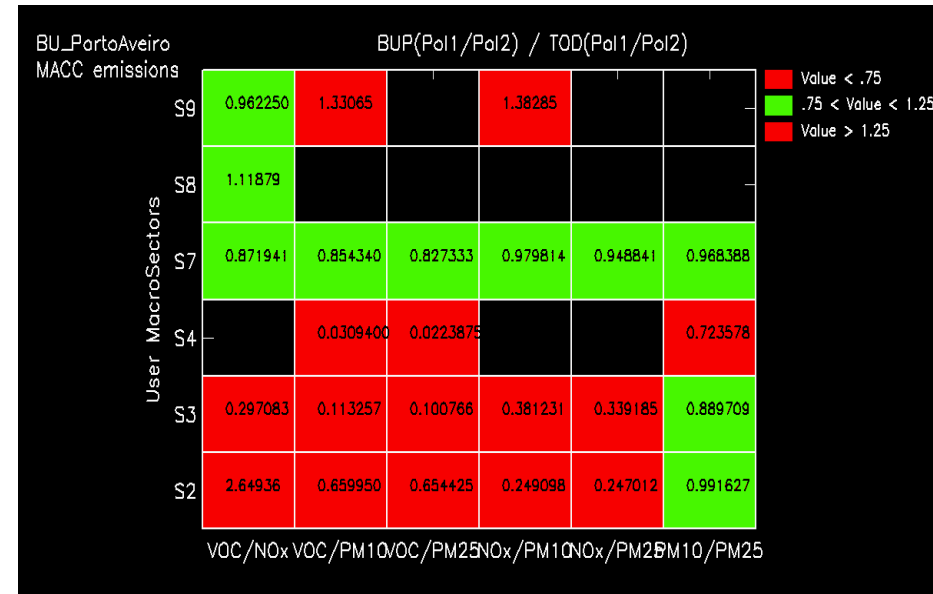
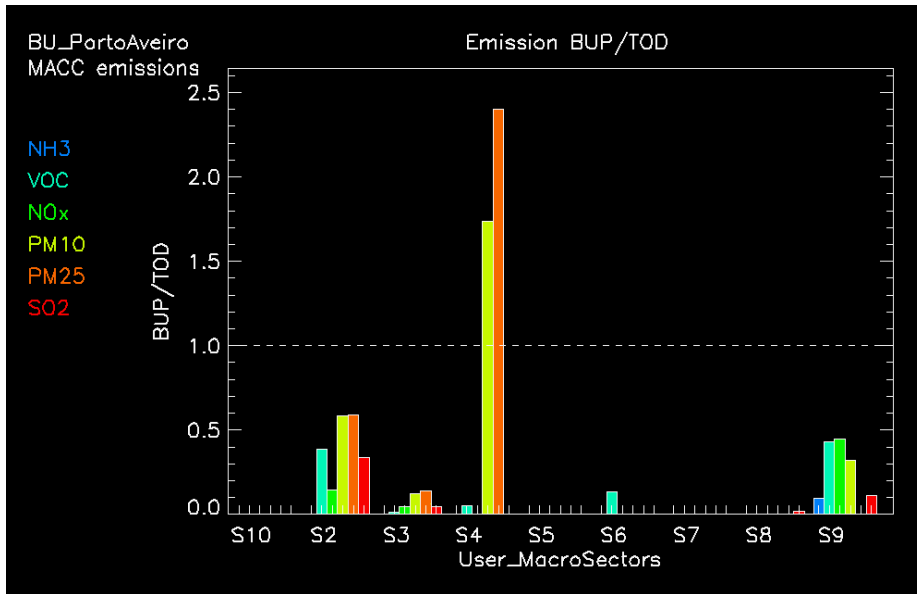
Value < .75  
.75 < Value < 1.25  
Value > 1.25



# LISBON UnivAVEIRO



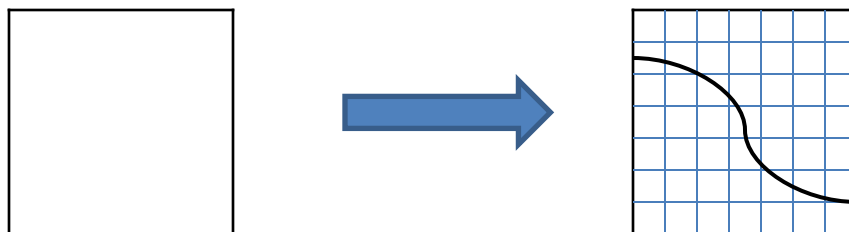
# PORTO UnivAVEIRO



**OSLO NILU**

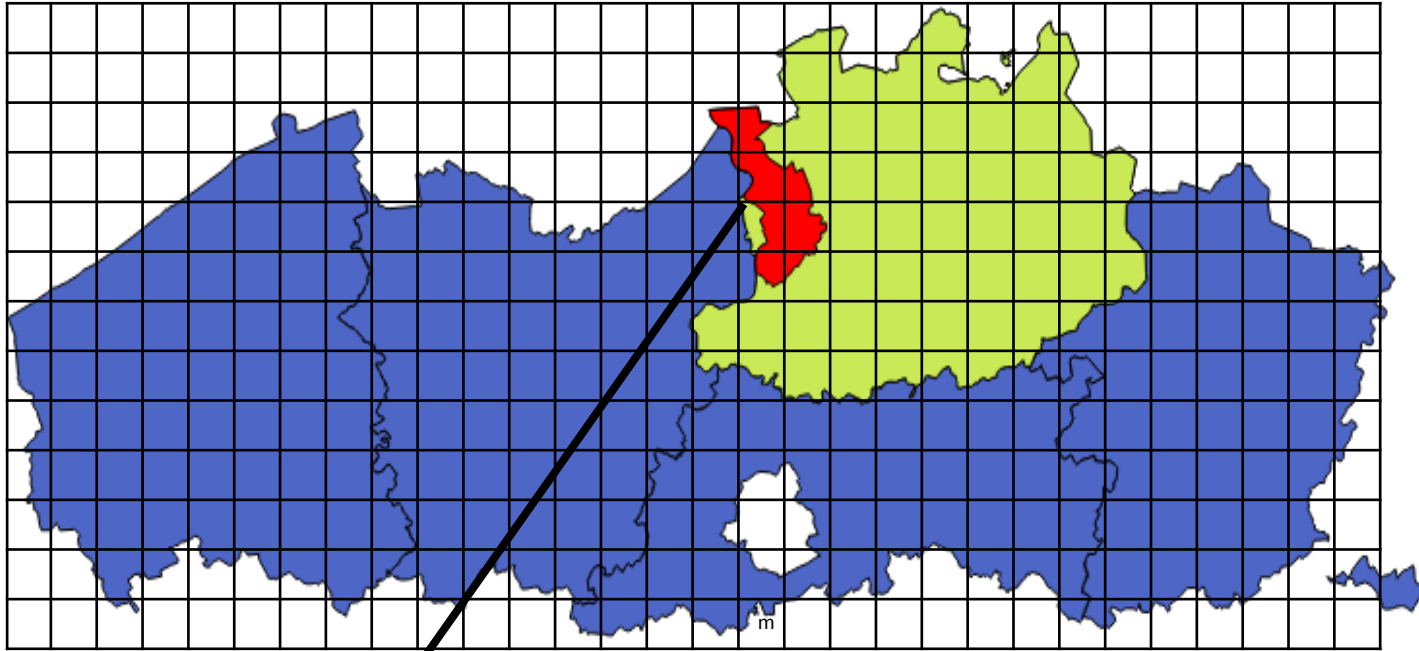
# Remarks

- MACC emissions: 7x7 km<sup>2</sup> – Need refinement to 1x1 km<sup>2</sup>



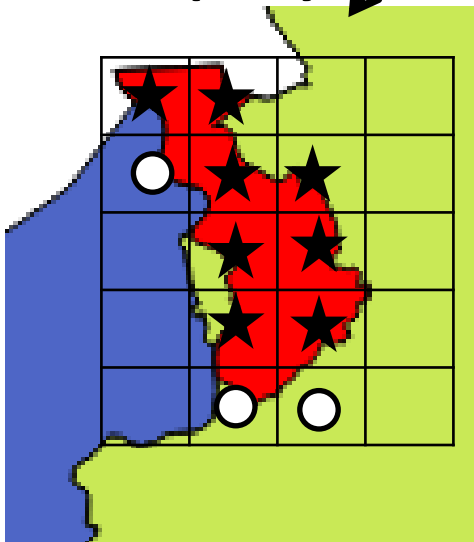
- Comparison with EMEP emissions.
- Emissions at level 1, 2, ... ? SNAP7, 7.1, 7.2 etc
- Population 1x1 km<sup>2</sup>: EEA – not all European countries  
Complement with 5x5 km<sup>2</sup>  
Need help of GIS expert.
- ESRI shape files
  - .shp – shape format
  - .shx – shape index format
  - .dbf – attribute format
  - .prj – projection format
- How to implement this into the IDL Tool ?

# Flanders

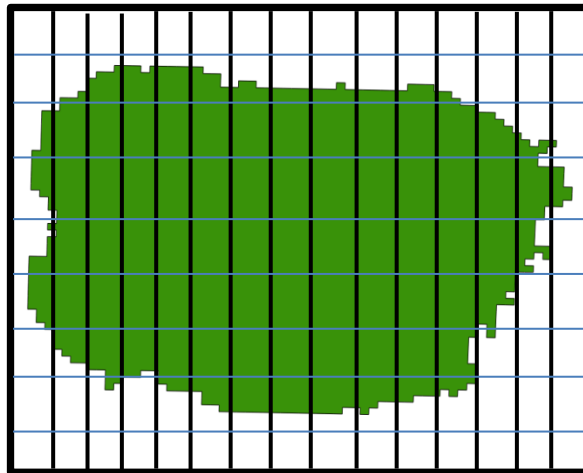


7x7 km  
MACC grid

AntwerpCity



LondonCity



PortoCity

