Rijksinstituut voor Volksgezondheid
en Milieu
*Ministerie van Volksgezondheid,
Welzijn en Sport*

National Institute for Public Health and
the Environment
Ministry of Health, Welfare and Sport

Benchmarking in the Netherlands using the Deltatool

Contents

- Experiences with the Deltatool in the Netherlands
- Results for NO2 and PM10 (and some others)
- Deltatool: Need to have
- Deltatool: Nice to have
- Conclusions

Deltatool version 3.6

- No problems with the installation.
- Found a bug in the calculation of the “Crit(T=1)”
- During the new tests some errors occurred in the input. The Deltatool is ***not*** very understanding and/or forgiving.

Deltatool Input / output

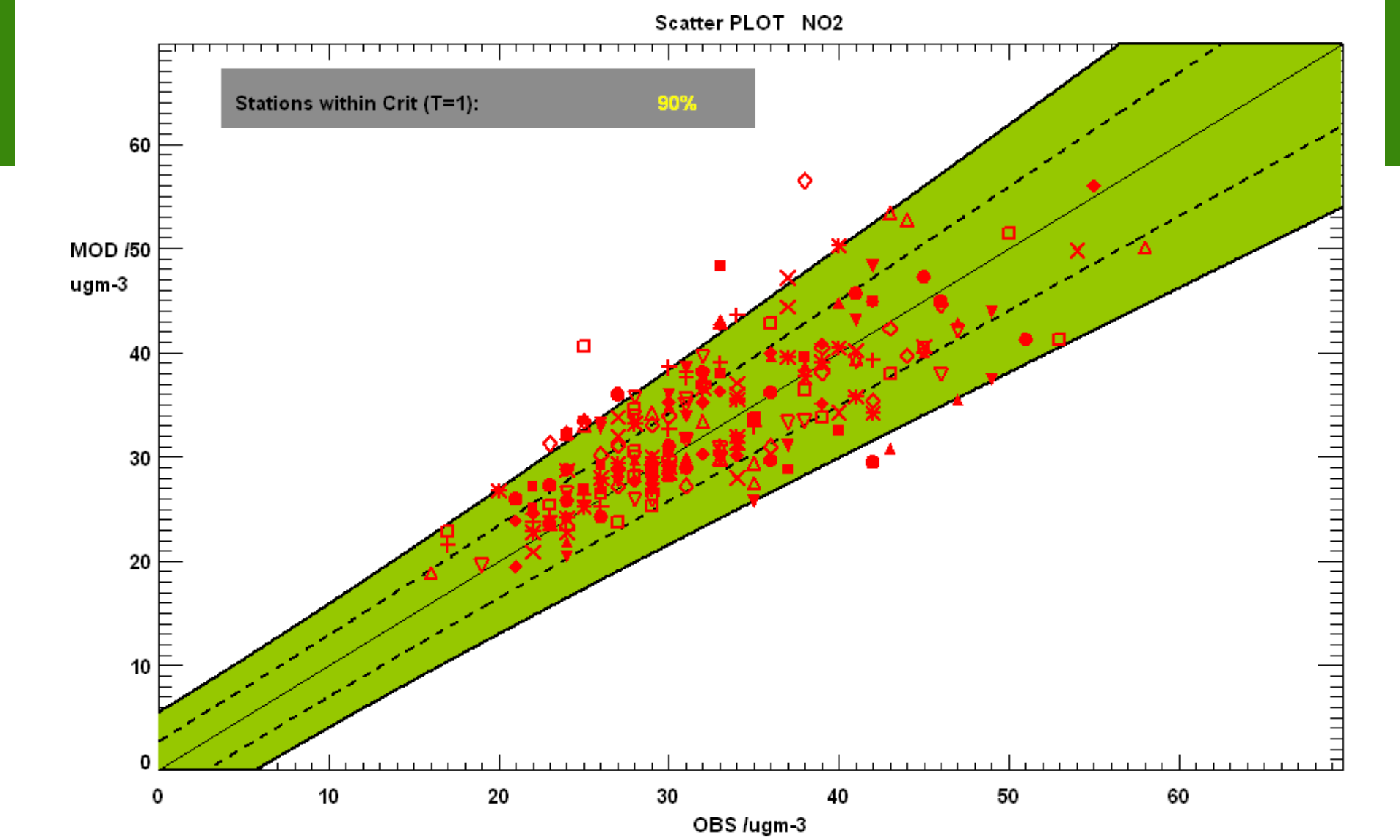
- Model calculations available for
  - NO2: 2010-2013
  - PM10: 2010-2011
  - Benzene, CO, SO2: 2010-2011

- In the Netherlands strong focus on yearly average NO2 and PM10 concentrations.

- There are no measured exceedances of the hourly limit value for NO2.

- Daily exceedances for PM10 are derived from the yearly average concentrations and the statistical distribution of the concentrations.

Some results ……


Scatter PLOT NO2
Stations within Crit (T=1): 90%
MOD /50
ugm-3
OBS /ugm-3
0
10
20
30
40
50
60
Stat_12000005
Stat_12000006
Stat_12000007
Stat_12000008
Stat_12000009
Stat_12000010
Stat_12000011
Stat_12000012
Stat_12000026
Stat_12000027
Stat_12000028
Stat_12000029
Stat_12000030
Stat_12000031
Stat_12000032
Stat_12000136
Stat_12000236
Stat_12000237
Stat_12000448
Stat_12000537
Stat_12000636
Stat_12000639
Stat_12000641
Stat_12000741
Stat_12000937
Stat_12001002
Stat_12001003
Stat_12001005
Stat_12001012
Stat_12001016
Stat_12001019
Stat_12001020
Stat_12001021
Stat_12001022
Stat_12001024
Stat_12001034
Stat_12001039
Stat_12001040
Stat_12001041
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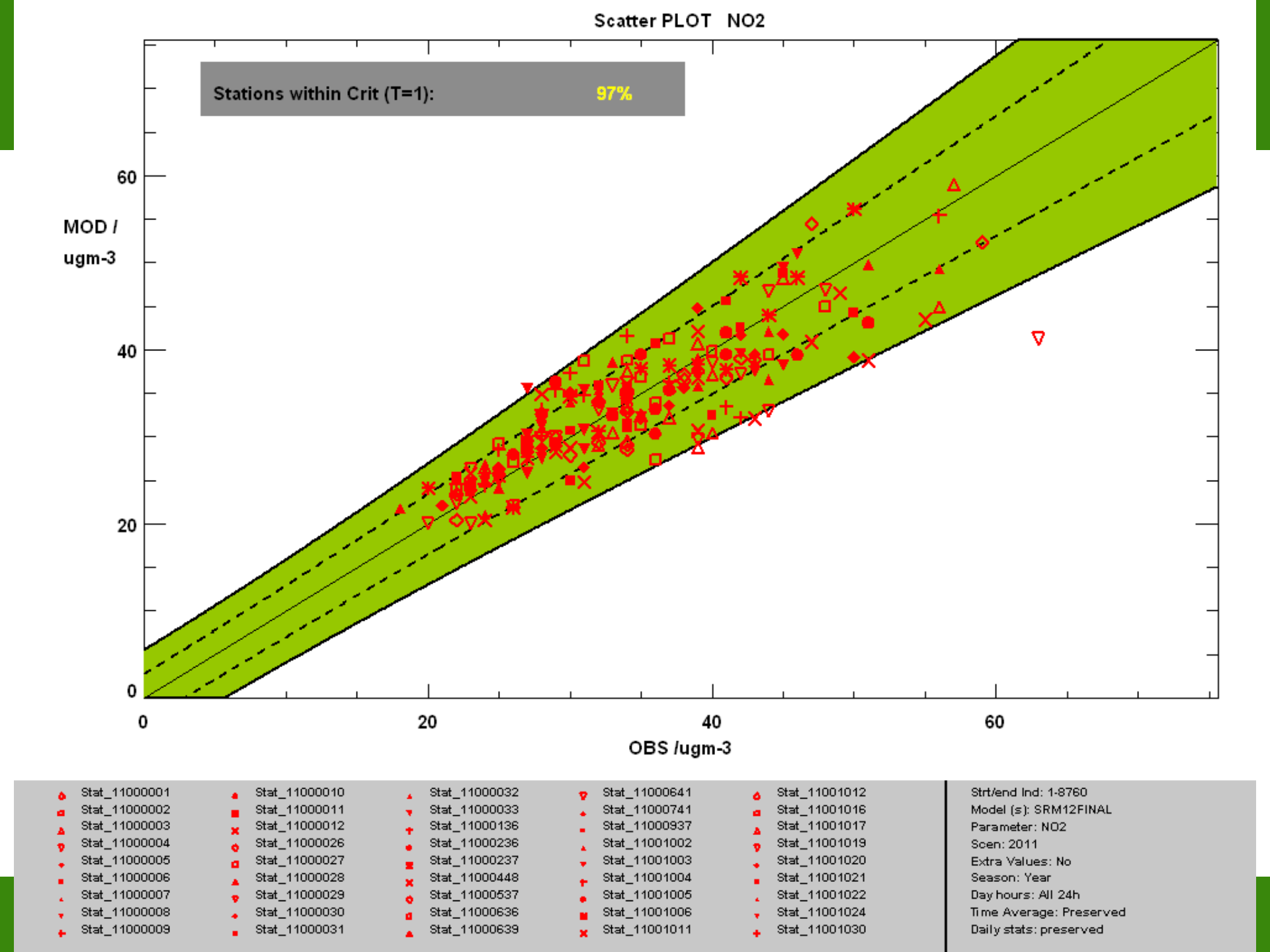
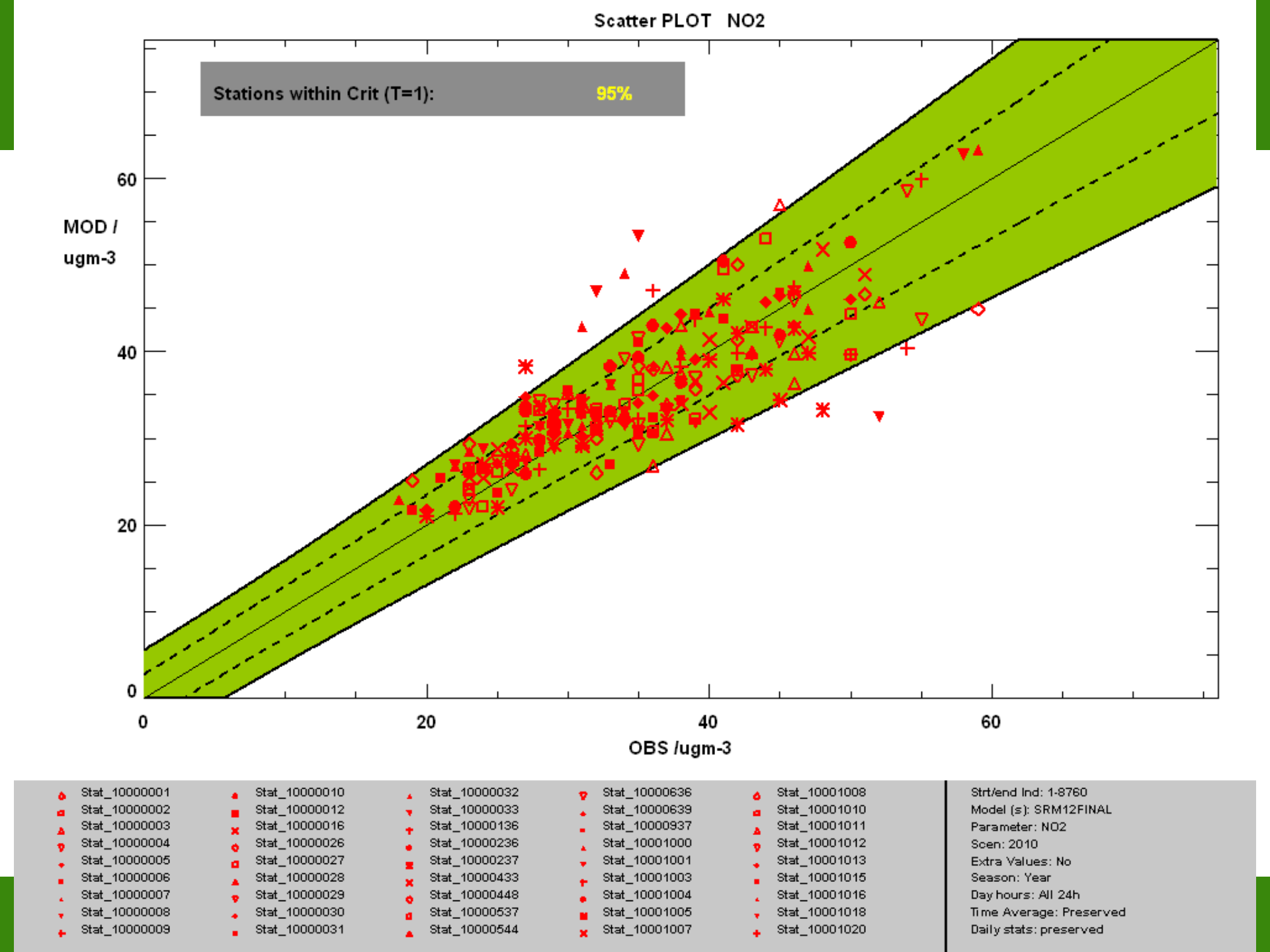
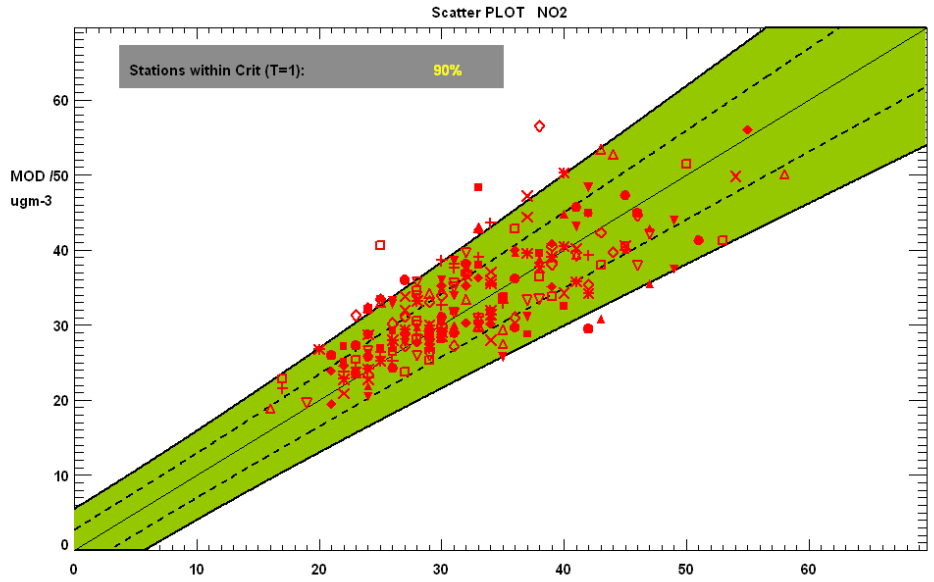
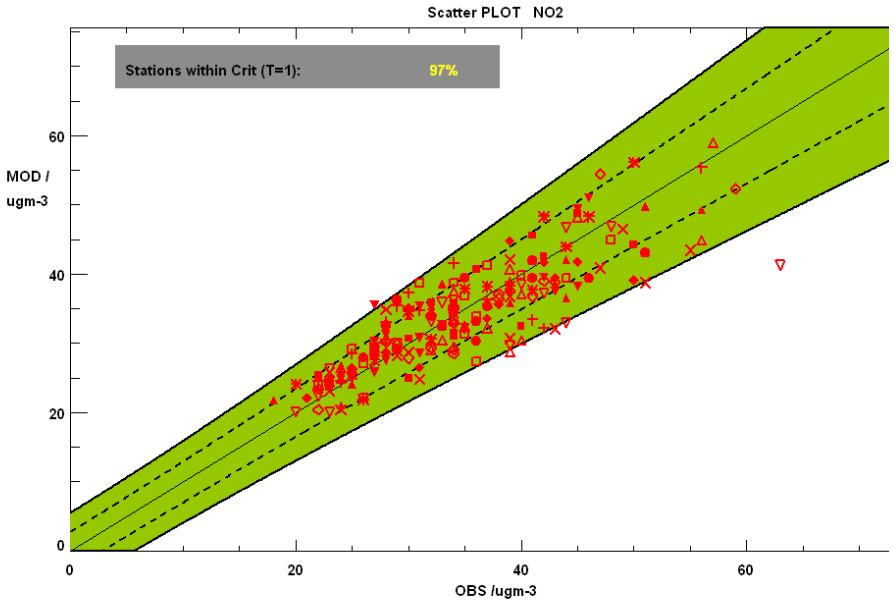
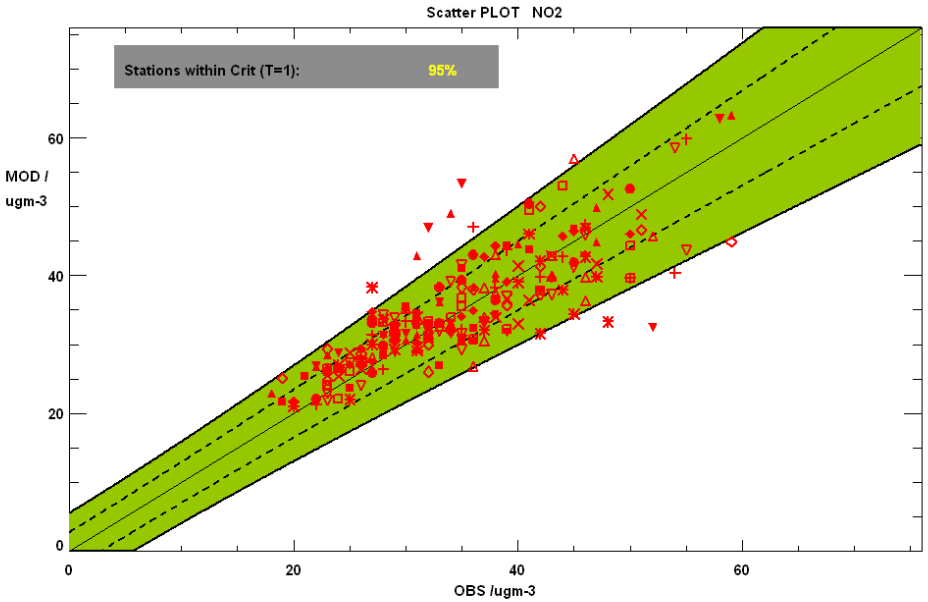
Stat_12001043
Stat_12001044
Stat_12001045
Stat_12001050
Stat_12001053
Strt/end Ind: 1-8784
Model (s): SRM12FINAL
Parameter: NO2
Scen: 2012
Extra Values: No
Season: Year
Day hours: All 24h
Time Average: Preserved
Daily stats: preserved


Scatter PLOT NO2
Stations within Crit (T=1): 97%
MOD / ugm-3
OBS /ugm-3
0
20
40
60
Stat_11000001
Stat_11000002
Stat_11000003
Stat_11000004
Stat_11000005
Stat_11000006
Stat_11000007
Stat_11000008
Stat_11000009
Stat_11000010
Stat_11000011
Stat_11000012
Stat_11000026
Stat_11000027
Stat_11000028
Stat_11000029
Stat_11000030
Stat_11000031
Stat_11000032
Stat_11000033
Stat_11000136
Stat_11000236
Stat_11000237
Stat_11000448
Stat_11000537
Stat_11000636
Stat_11000639
Stat_11000641
Stat_11000741
Stat_11000937
Stat_11001002
Stat_11001003
Stat_11001004
Stat_11001005
Stat_11001006
Stat_11001011
Stat_11001012
Stat_11001016
Stat_11001017
Stat_11001019
Stat_11001020
Stat_11001021
Stat_11001022
Stat_11001024
Stat_11001030
Strt/end Ind: 1-8760
Model (s): SRM12FINAL
Parameter: NO2
Scen: 2011
Extra Values: No
Season: Year
Day hours: All 24h
Time Average: Preserved
Daily stats: preserved


Scatter PLOT NO2
Stations within Crit (T=1): 95%
MOD / ugm-3
OBS /ugm-3
0
20
40
60
Stat_10000001
Stat_10000002
Stat_10000003
Stat_10000004
Stat_10000005
Stat_10000006
Stat_10000007
Stat_10000008
Stat_10000009
Stat_10000010
Stat_10000012
Stat_10000016
Stat_10000026
Stat_10000027
Stat_10000028
Stat_10000029
Stat_10000030
Stat_10000031
Stat_10000032
Stat_10000033
Stat_10000136
Stat_10000236
Stat_10000237
Stat_10000433
Stat_10000448
Stat_10000537
Stat_10000544
Stat_10000636
Stat_10000639
Stat_10000937
Stat_10001000
Stat_10001001
Stat_10001003
Stat_10001004
Stat_10001005
Stat_10001007
Stat_10001008
Stat_10001010
Stat_10001011
Stat_10001012
Stat_10001013
Stat_10001015
Stat_10001016
Stat_10001018
Stat_10001020
Strt/end Ind: 1-8760
Model (s): SRM12FINAL
Parameter: NO2
Scen: 2010
Extra Values: No
Season: Year
Day hours: All 24h
Time Average: Preserved
Daily stats: preserved


Scatter PLOT NO2
Stations within Crit (T=1): 90%
MOD /50
ugm-3
0
10
20
30
40
50
60


Scatter PLOT NO2
Stations within Crit (T=1): 97%
MOD /
ugm-3
OBS /ugm-3
0
20
40
60


Scatter PLOT NO2
Stations within Crit (T=1): 95%
MOD /
ugm-3
OBS /ugm-3
0
20
40
60


Stat_11000001
Stat_11000002
Stat_11000003
Stat_11000004
Stat_11000005
Stat_11000006
Stat_11000007
Stat_11000008
Stat_11000009
Stat_11000010
Stat_11000011
Stat_11000012
Stat_11000026
Stat_11000027
Stat_11000028
Stat_11000029
Stat_11000030
Stat_11000031
Stat_11000032
Stat_11000033
Stat_11000136
Stat_11000236
Stat_11000237
Stat_11000448
Stat_11000537
Stat_11000636
Stat_11000639
Stat_11000641
Stat_11000741
Stat_11000937
Stat_11001002
Stat_11001003
Stat_11001004
Stat_11001005
Stat_11001006
Stat_11001011
Stat_11001012
Stat_11001016
Stat_11001017
Stat_11001019
Stat_11001020
Stat_11001021
Stat_11001022
Stat_11001024
Stat_11001030
Strt/end Ind: 1-8760
Model (s): SRM12FINAL
Parameter: NO2
Scen: 2011
Extra Values: No
Season: Year
Day hours: All 24h
Time Average: Preserved
Daily stats: preserved
Stat_10000001
Stat_10000002
Stat_10000003
Stat_10000004
Stat_10000005
Stat_10000006
Stat_10000007
Stat_10000008
Stat_10000009
Stat_10000010
Stat_10000012
Stat_10000016
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Stat_10000030
Stat_10000031
Stat_10000032
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Stat_10000136
Stat_10000236
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Stat_10000544
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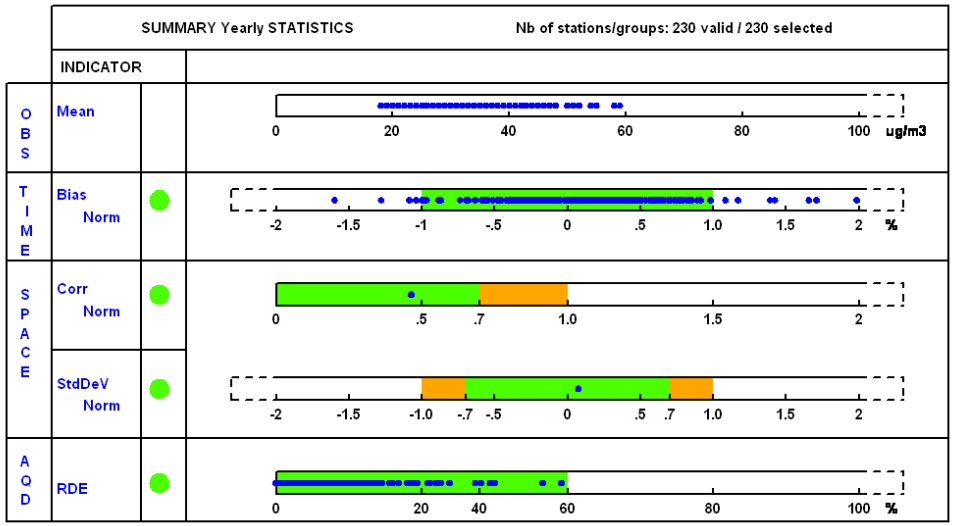
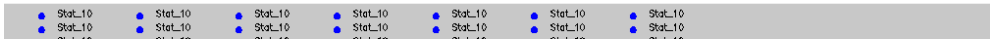
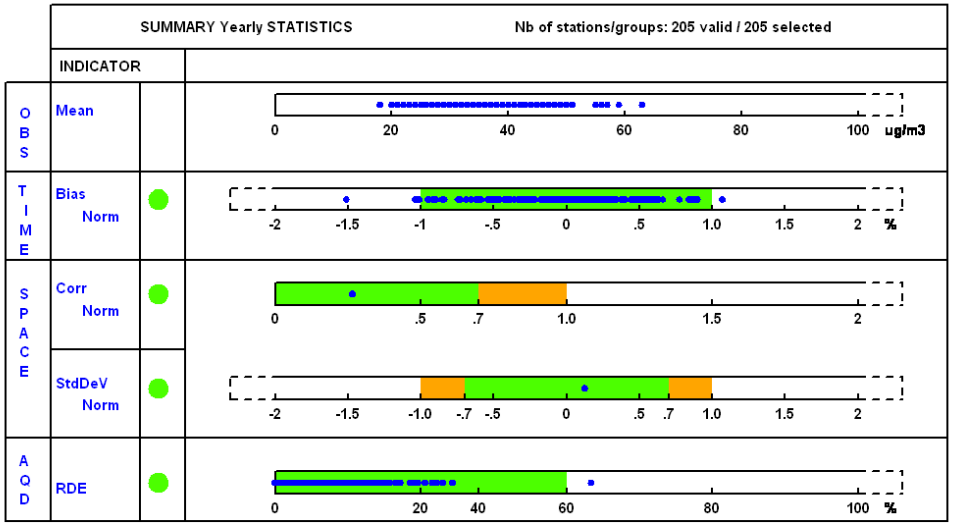
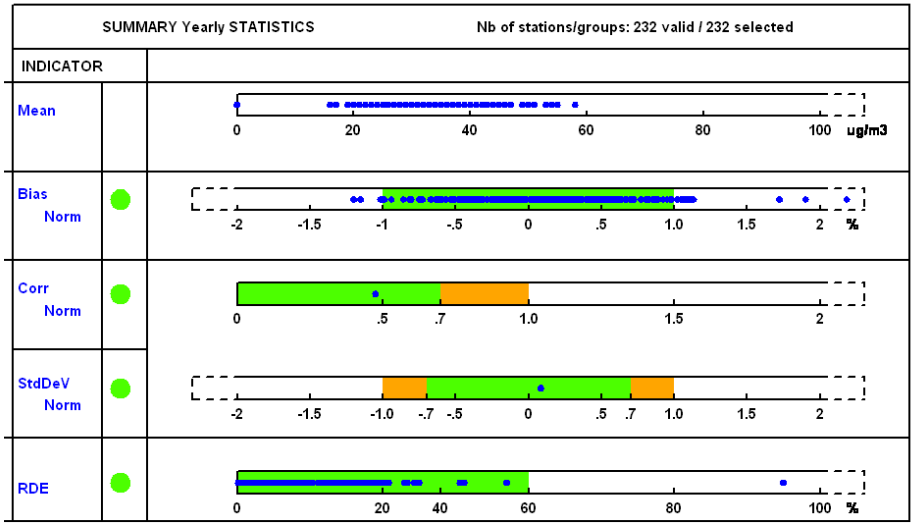
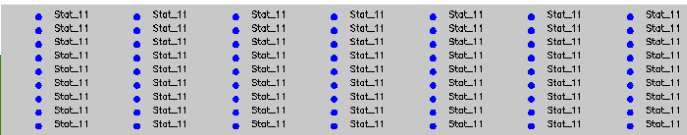
Stat_10000639
Stat_10000937
Stat_10001000
Stat_10001001
Stat_10001003
Stat_10001004
Stat_10001005
Stat_10001007
Stat_10001008
Stat_10001010
Stat_10001011
Stat_10001012
Stat_10001013
Stat_10001015
Stat_10001016
Stat_10001018
Stat_10001020
Strt/end Ind: 1-8760
Model (s): SRM12FINAL
Parameter: NO2
Scen: 2010
Extra Values: No
Season: Year
Day hours: All 24h
Time Average: Preserved
Daily stats: preserved

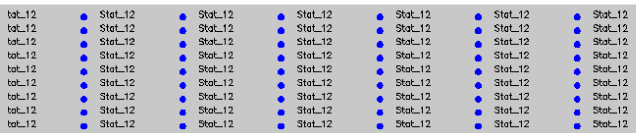

SUMMARY Yearly STATISTICS
Nb of stations/groups: 230 valid / 230 selected
INDICATOR
OBS
Mean
0 20 40 60 80 100 ug/m3
TIME
Bias
Norm
-2 -1.5 -1 -.5 0 .5 1.0 1.5 2 %
SPACE
Corr
Norm
0 .5 .7 1.0 1.5 2
StdDeV
Norm
-2 -1.5 -1.0 -.7 -.5 0 .5 .7 1.0 1.5 2
AQD
RDE
0 20 40 60 80 100 %

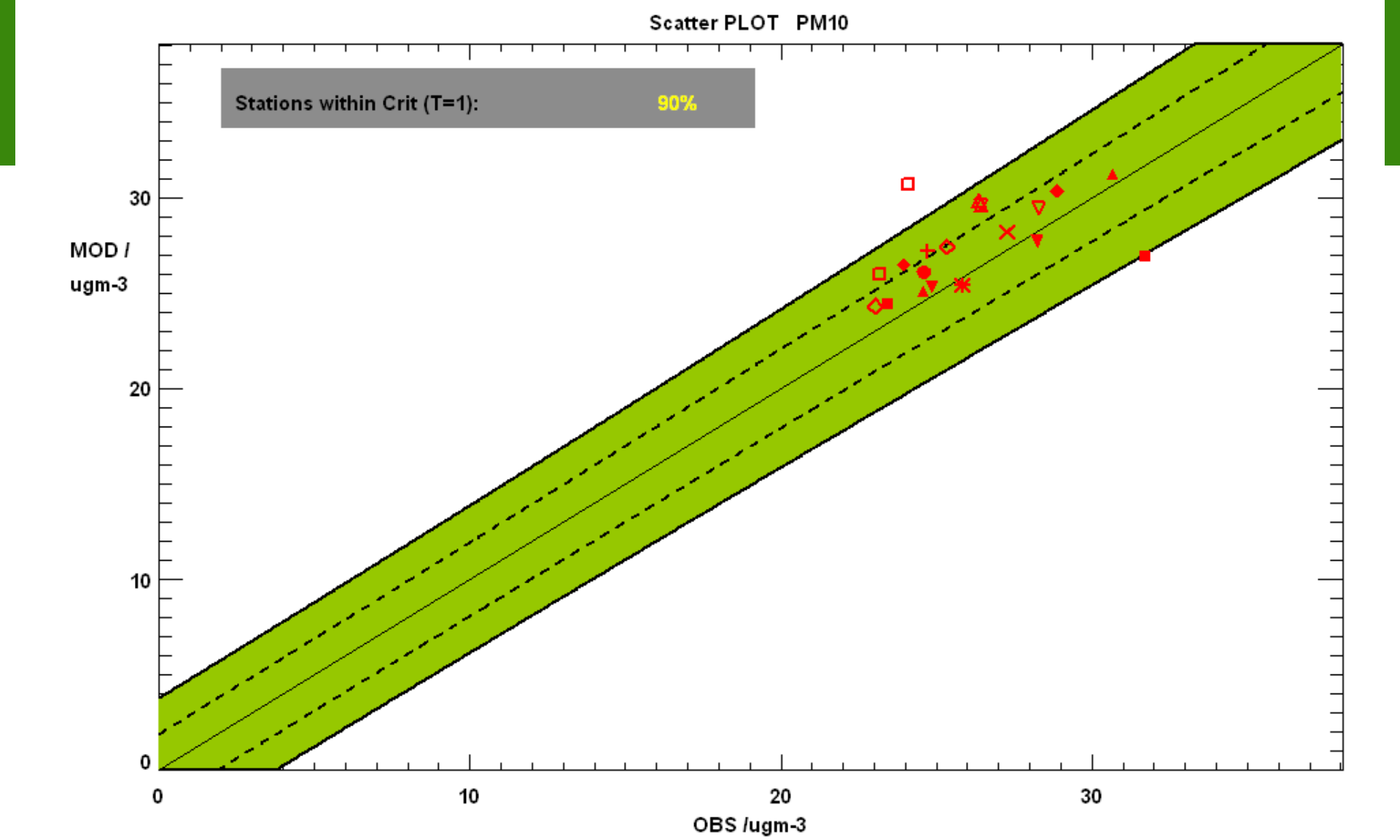

Stat_10


SUMMARY Yearly STATISTICS
Nb of stations/groups: 205 valid / 205 selected
INDICATOR
OBS
Mean
0 20 40 60 80 100 ug/m3
TIME
Bias
Norm
-2 -1.5 -1 -.5 0 .5 1.0 1.5 2 %
SPACE
Corr
Norm
0 .5 .7 1.0 1.5 2
StdDeV
Norm
-2 -1.5 -1.0 -.7 -.5 0 .5 .7 1.0 1.5 2
AQD
RDE
0 20 40 60 80 100 %


SUMMARY Yearly STATISTICS
Nb of stations/groups: 232 valid / 232 selected
INDICATOR
Mean
0 20 40 60 80 100 ug/m3
Bias
Norm
-2 -1.5 -1 -.5 0 .5 1.0 1.5 2 %
Corr
Norm
0 .5 .7 1.0 1.5 2
StdDeV
Norm
-2 -1.5 -1.0 -.7 -.5 0 .5 .7 1.0 1.5 2
RDE
0 20 40 60 80 100 %

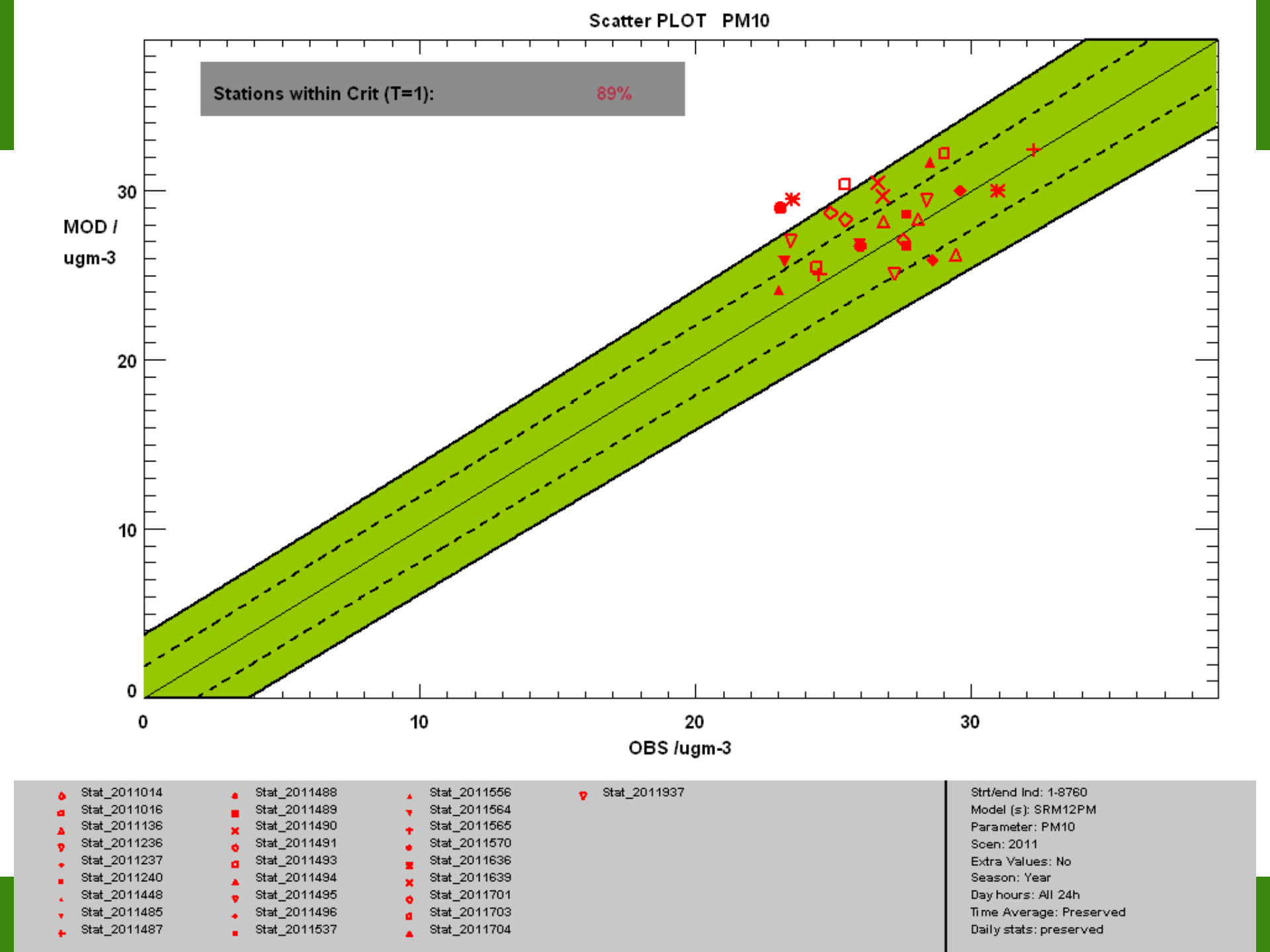

Stat_11


Stat_12

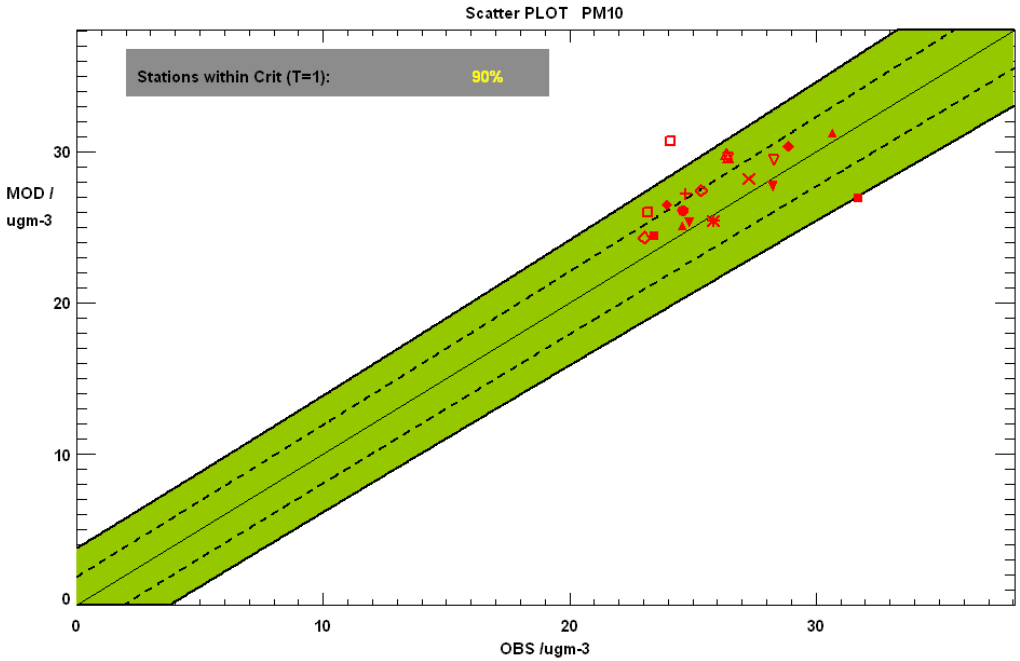


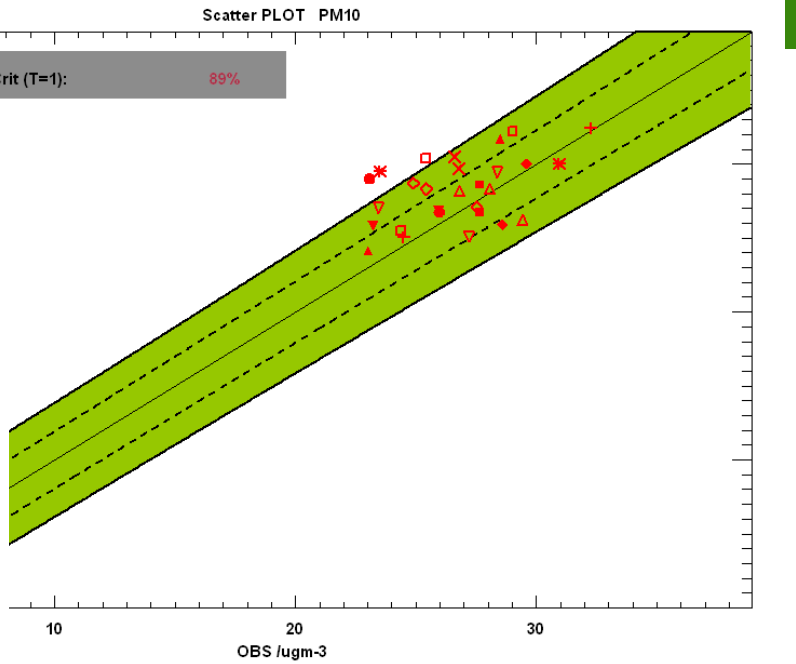
Stat_2010014
Stat_2010016
Stat_2010136
Stat_2010236
Stat_2010237
Stat_2010240
Stat_2010448
Stat_2010491
Stat_2010494
Stat_2010495
Stat_2010496
Stat_2010537
Stat_2010564
Stat_2010570
Stat_2010636
Stat_2010639
Stat_2010701
Stat_2010703
Stat_2010704
Stat_2010937

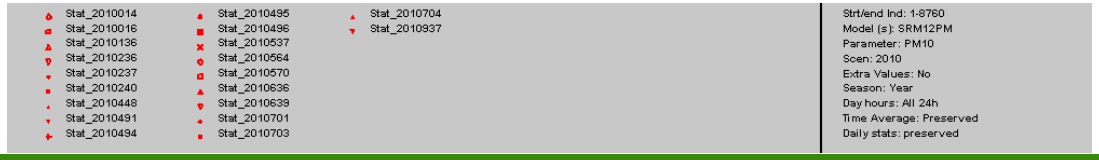
Strt/end Ind: 1-8760
Model (s): SRM12PM
Parameter: PM10
Scen: 2010
Extra Values: No
Season: Year
Day hours: All 24h
Time Average: Preserved
Daily stats: preserved


Scatter PLOT PM10
Stations within Crit (T=1): 89%
MOD / ugm-3
OBS /ugm-3
0
10
20
30
Stat_2011014
Stat_2011016
Stat_2011136
Stat_2011236
Stat_2011237
Stat_2011240
Stat_2011448
Stat_2011485
Stat_2011487
Stat_2011488
Stat_2011489
Stat_2011490
Stat_2011491
Stat_2011493
Stat_2011494
Stat_2011495
Stat_2011496
Stat_2011537
Stat_2011556
Stat_2011564
Stat_2011565
Stat_2011570
Stat_2011636
Stat_2011639
Stat_2011701
Stat_2011703
Stat_2011704
Stat_2011937
Strt/end Ind: 1-8760
Model (s): SRM12PM
Parameter: PM10
Scen: 2011
Extra Values: No
Season: Year
Day hours: All 24h
Time Average: Preserved
Daily stats: preserved

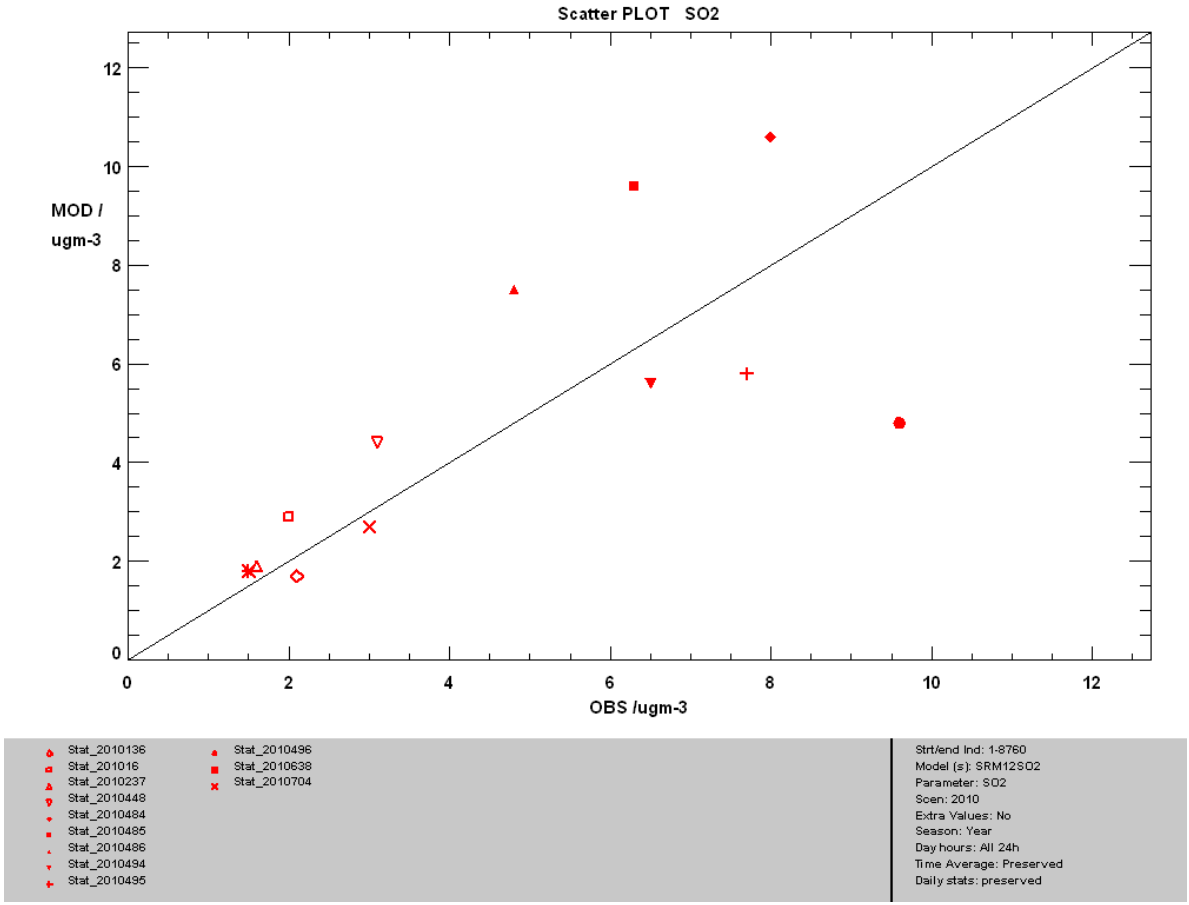
PM10


Scatter PLOT PM10
Stations within Crit (T=1): 90%
MOD / ugm-3
OBS /ugm-3
0
10
20
30

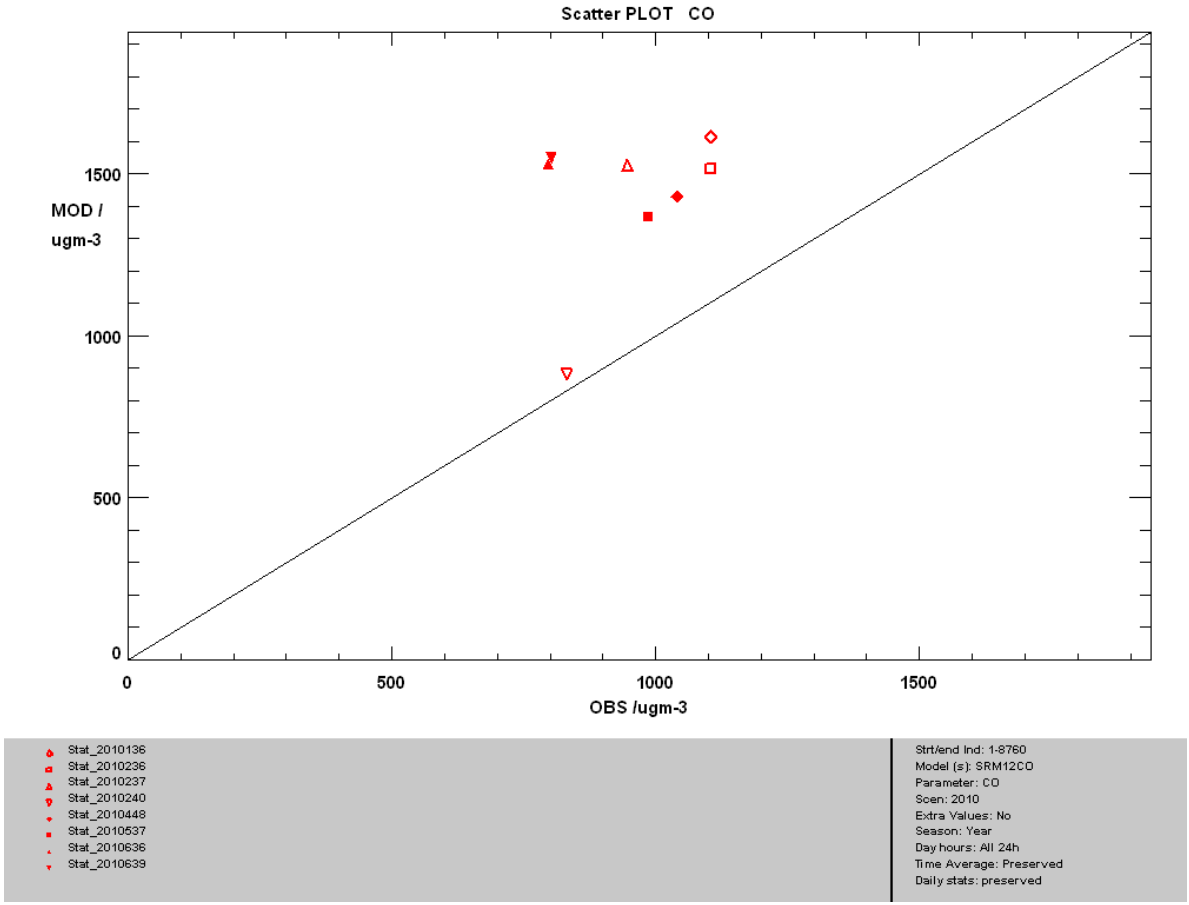

Scatter PLOT PM10
Stations within Crit (T=1): 89%
MOD / ugm-3
OBS /ugm-3
10
20
30
Stat_2011556
Stat_2011564
Stat_2011565
Stat_2011570
Stat_2011636
Stat_2011639
Stat_2011701
Stat_2011703
Stat_2011704
Stat_2011937
Strt/end Ind: 1-8760
Model (s): SRM12PM
Parameter: PM10
Scen: 2011
Extra Values: No
Season: Year
Day hours: All 24h
Time Average: Preserved
Daily stats: preserved


Stat_2010014
Stat_2010016
Stat_2010136
Stat_2010236
Stat_2010237
Stat_2010240
Stat_2010448
Stat_2010491
Stat_2010494
Stat_2010495
Stat_2010496
Stat_2010537
Stat_2010564
Stat_2010570
Stat_2010636
Stat_2010639
Stat_2010701
Stat_2010703
Stat_2010704
Stat_2010937
Strt/end Ind: 1-8760
Model (s): SRM12PM
Parameter: PM10
Scen: 2010
Extra Values: No
Season: Year
Day hours: All 24h
Time Average: Preserved
Daily stats: preserved

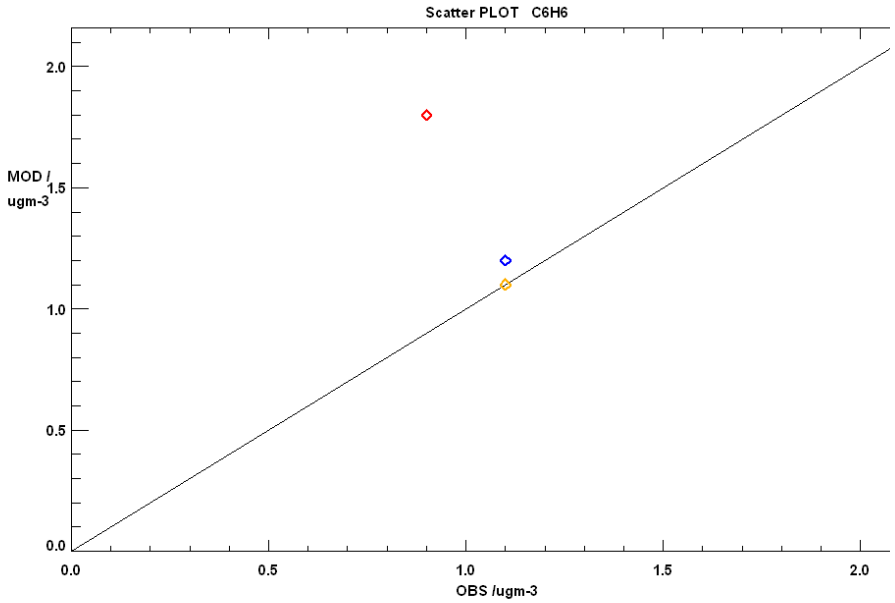
Sulphurdioxide, 2010

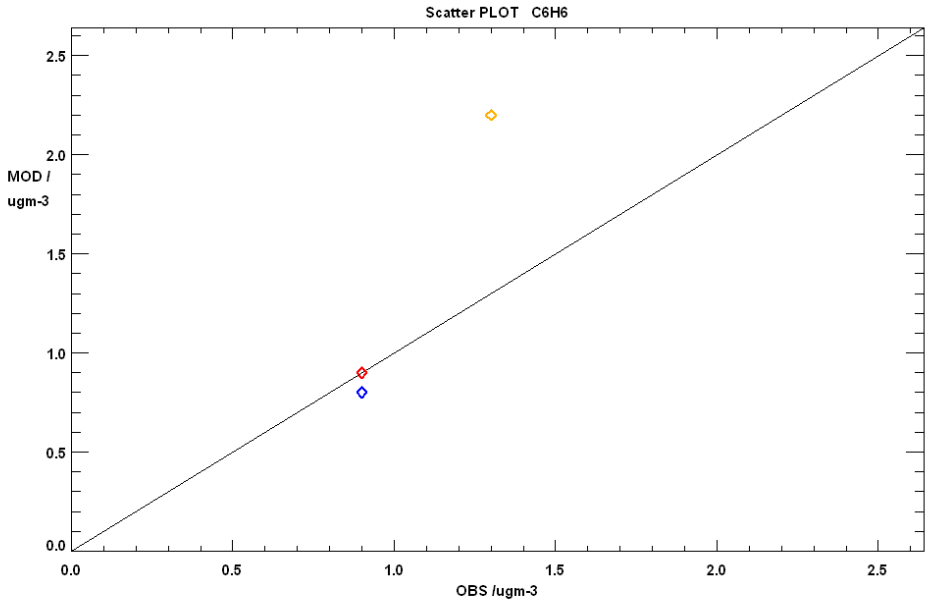


Carbonmonoxide, 2010



Benzene, 2010 / 2011





Stat_2010485
Stat_2010491
Stat_2010495

Strt/end Ind: 1-8760
Model (s): SRM12C6H6
Parameter: C6H6
Scen: 2010
Extra Values: No
Season: Year
Day hours: All 24h
Time Average: Preserved
Daily stats: preserved

Stat_2011489
Stat_2011495
Stat_2011638

Strt/end Ind: 1-8760
Model (s): SRM12C6H6
Parameter: C6H6
Scen: 2011
Extra Values: No
Season: Year
Day hours: All 24h
Time Average: Preserved
Daily stats: preserved

Compliance with MQO ……

- For NO2 in 2010, 2011, 2012 the Netherlands complies with the new MQO.
- For PM10 in 2010, 2011 the Netherlands just (2010) / don't (2011) complies with the new MQO.
- SO2 seems to comply in 2010, no other data available.
- No serious data available for benzene.

Deltatool: Need to have

- More quality control.
- User-friendly options to run the tool with different substances and for different years.
- Error messages that can be understood.
- Don’t crash when a file is not found!

Deltatool: Nice to have

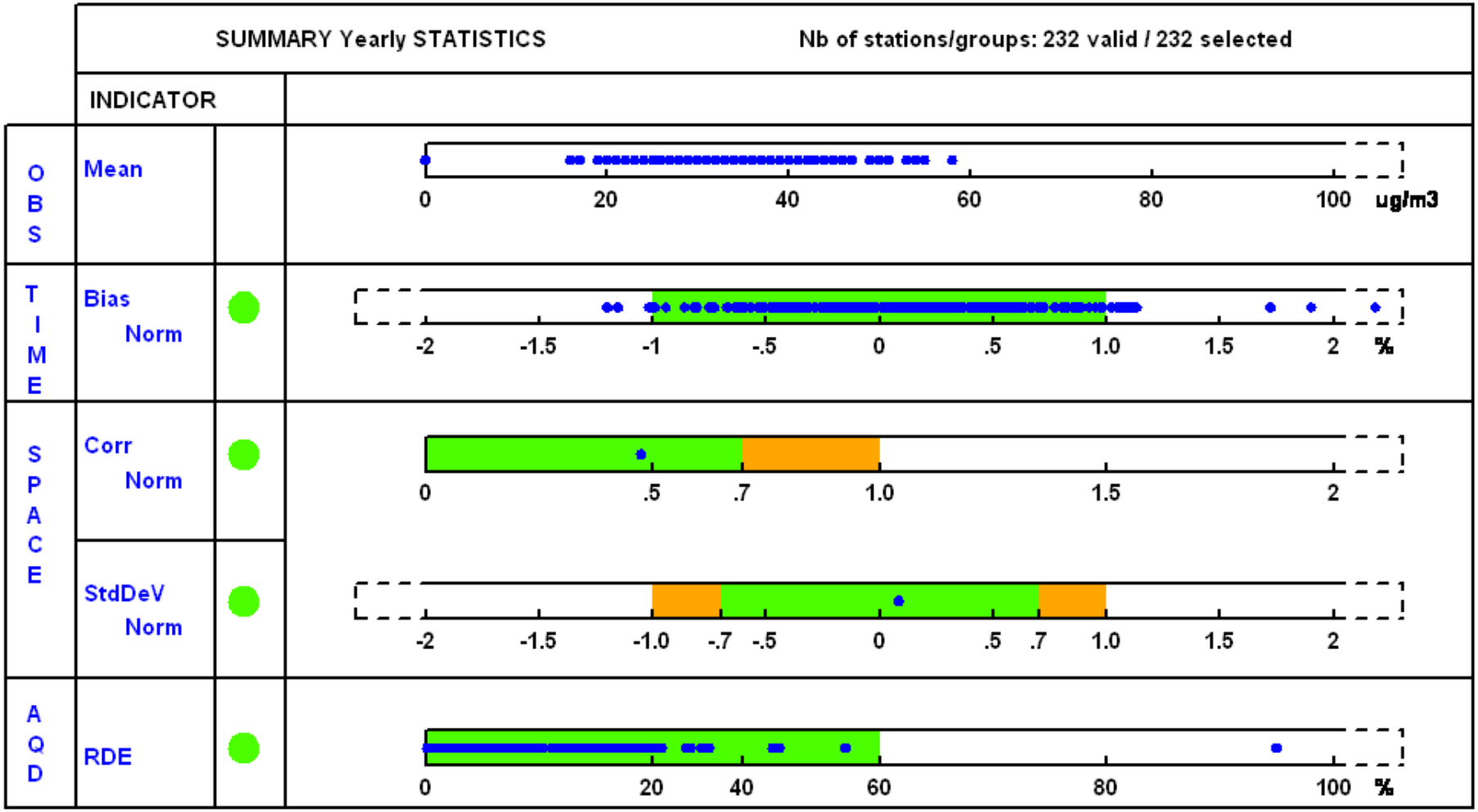
- Possibility to combine the yearly averaged monitoring results in one input file.
- Some kind of simple log-file?
- Can’t get “Benchmark → Assessment → YearlyNO2” working.

Conclusions

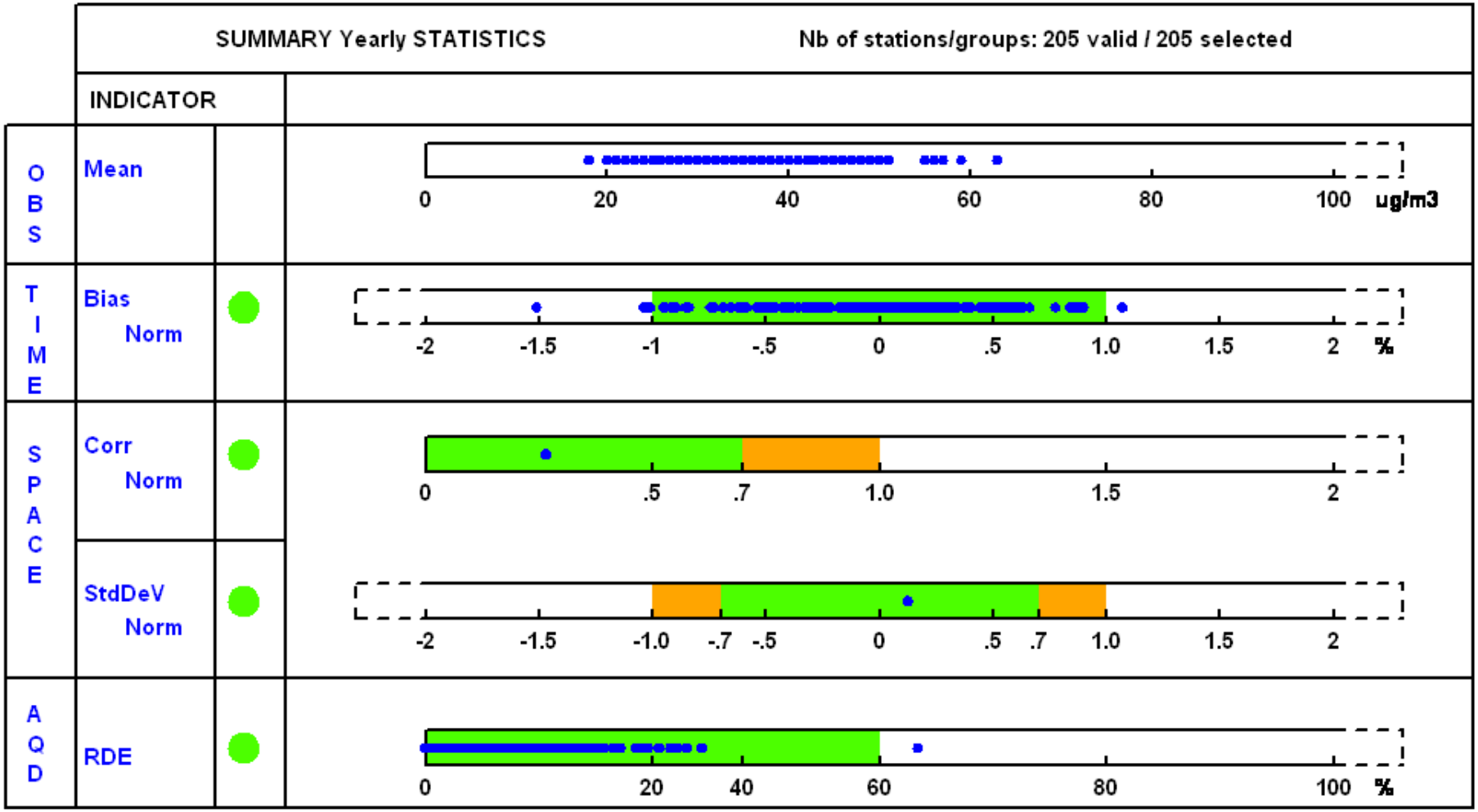
- Compliance:
  - NO2 → OK
  - PM10 → ?OK
  - SO2/C6H6

- There are some serious requests / issue with regards to the Deltatool.

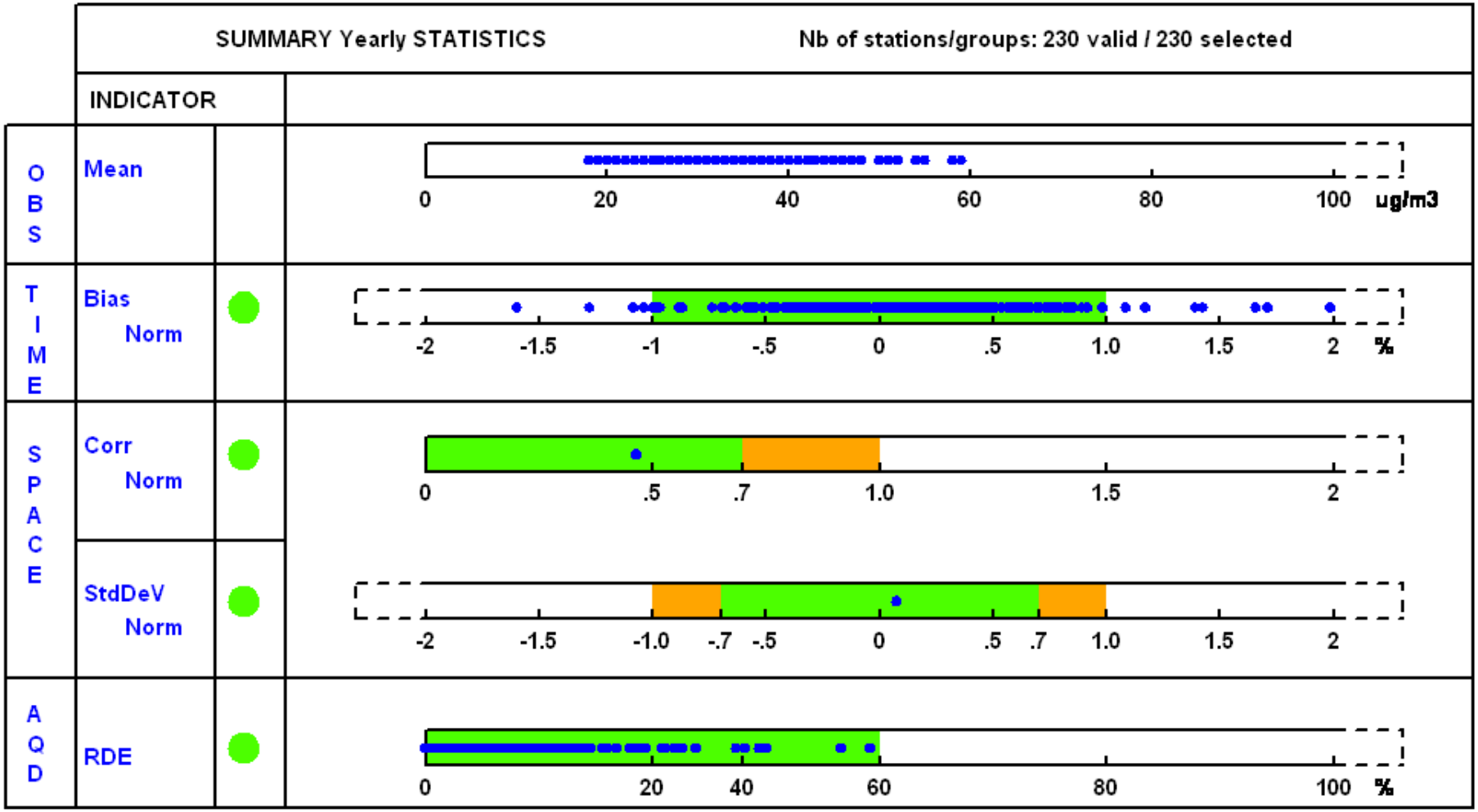
THANK YOU


SUMMARY Yearly STATISTICS
Nb of stations/groups: 232 valid / 232 selected
INDICATOR
OBS
Mean
0 20 40 60 80 100 ug/m3
TIME
Bias
Norm
-2 -1.5 -1 -.5 0 .5 1.0 1.5 2 %
SPACE
Corr
Norm
0 .5 .7 1.0 1.5 2
StdDeV
Norm
-2 -1.5 -1.0 -.7 -.5 0 .5 .7 1.0 1.5 2
AQD
RDE
0 20 40 60 80 100 %

Stat_12


SUMMARY Yearly STATISTICS
Nb of stations/groups: 205 valid / 205 selected
INDICATOR
OBS
Mean
0 20 40 60 80 100 ug/m3
TIME
Bias Norm
-2 -1.5 -1 -.5 0 .5 1.0 1.5 2 %
SPACE
Corr Norm
0 .5 .7 1.0 1.5 2
StdDeV Norm
-2 -1.5 -1.0 -.7 -.5 0 .5 .7 1.0 1.5 2
AQD
RDE
0 20 40 60 80 100 %

Stat_11


SUMMARY Yearly STATISTICS
Nb of stations/groups: 230 valid / 230 selected
INDICATOR
OBS
Mean
0 20 40 60 80 100 ug/m3
TIME
Bias Norm
-2 -1.5 -1 -.5 0 .5 1.0 1.5 2 %
SPACE
Corr Norm
0 .5 .7 1.0 1.5 2
StdDeV Norm
-2 -1.5 -1.0 -.7 -.5 0 .5 .7 1.0 1.5 2
AQD
RDE
0 20 40 60 80 100 %

Stat_10