

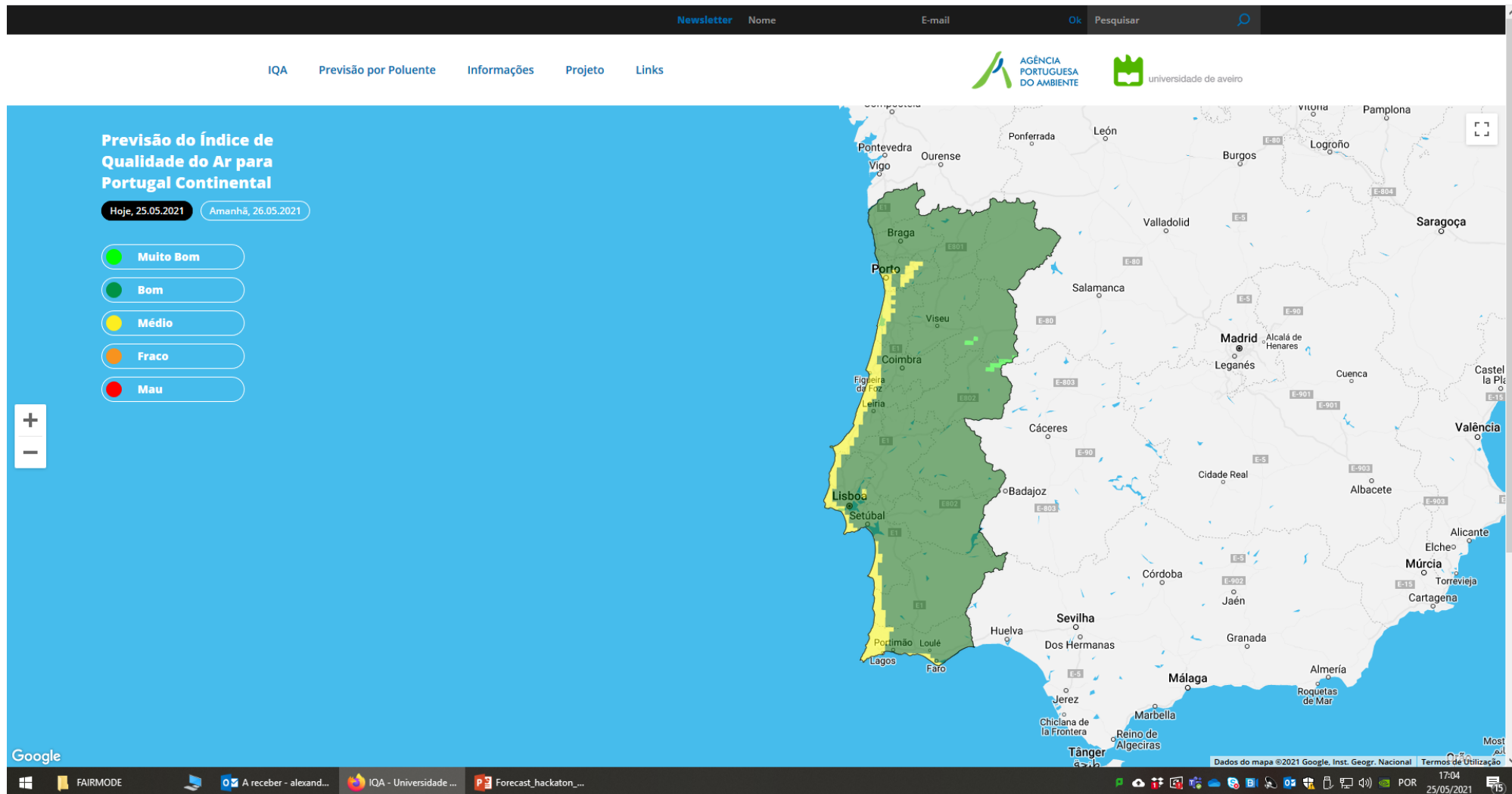
CT3 | Forecast hackaton

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University of Aveiro

26 May 2021

Our air quality forecast system

<http://previsao-qar.web.ua.pt/>



Some DT feedback/suggestions

DELTA TOOL MODcsv2cdf *** VERSION 1.1

CONV_DIR = C:\Users\Public\Documents\JRC_DELTA\delta\conversion\

ReadInfo >>

Select file type ☒ Model

STARTUP_FILE	C:\Users\Public\Documents\JRC_DELTA\delta\resource\startup_test.ini
INIT_RUN	20210101
END_RUN	20211231
INPUT_DIR	C:\Users\Public\Documents\JRC_DELTA\delta\data\modeling\mydata
INPUT_PREFIX	
INPUT_FILE_TEMPLATE	C:\Users\Public\Documents\JRC_DELTA\delta\data\modeling\%\$STATION\$.csv
OUTPUT_DIR	C:\Users\Public\Documents\JRC_DELTA\delta\data\modeling\mydata
YEAR	2021
MODEL_NAME	CHIMERE
POSTFIX	TIME.cdf
FULL_OUTPUT_FILE	C:\Users\Public\Documents\JRC_DELTA\delta\data\modeling\mydata\2021_CHIM_TIME.cdf

SaveInfo in File InfoMODcsv2cdf*.txt

Progress -

HELP
GO
EXIT

COMMENTS

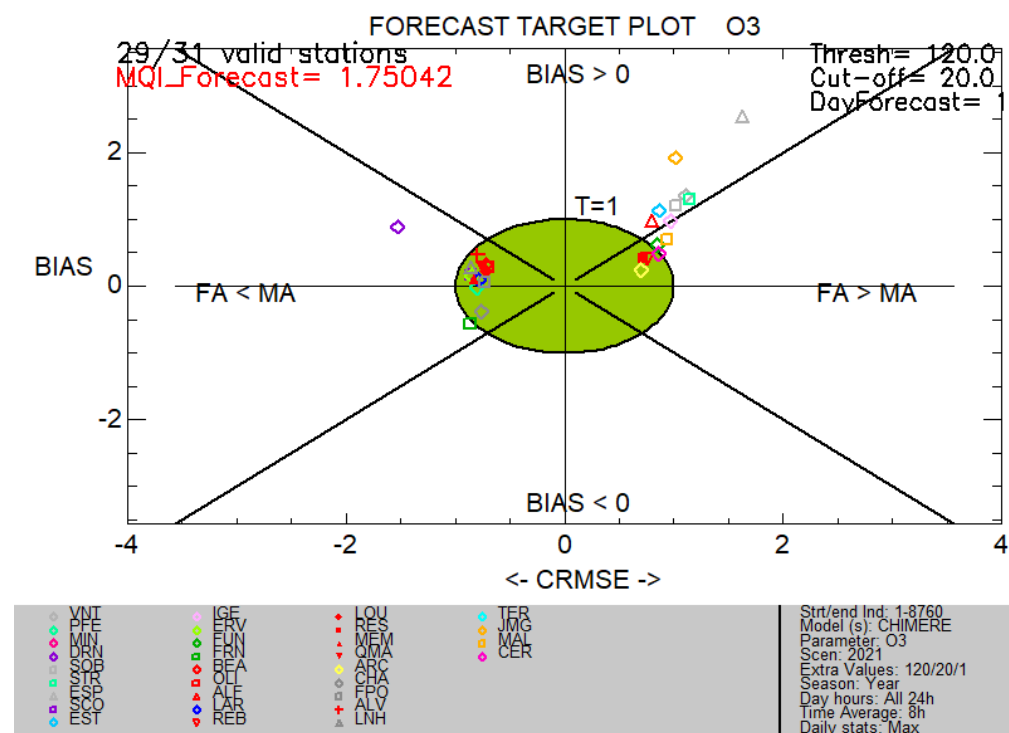
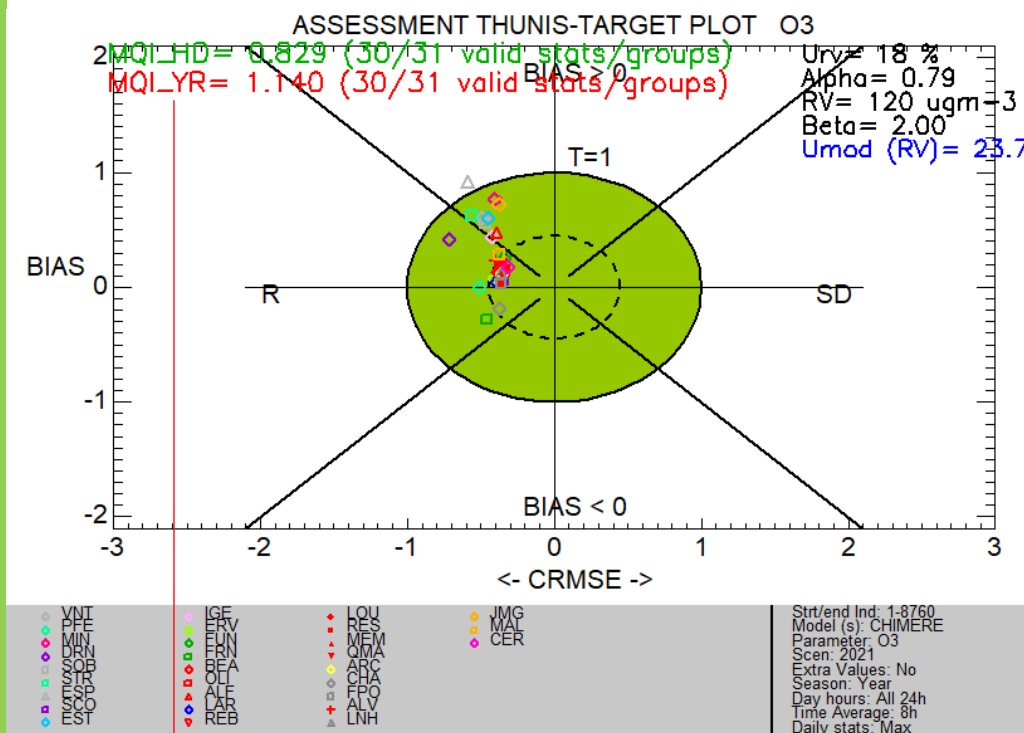
Need "ENTER" click to work!

O₃

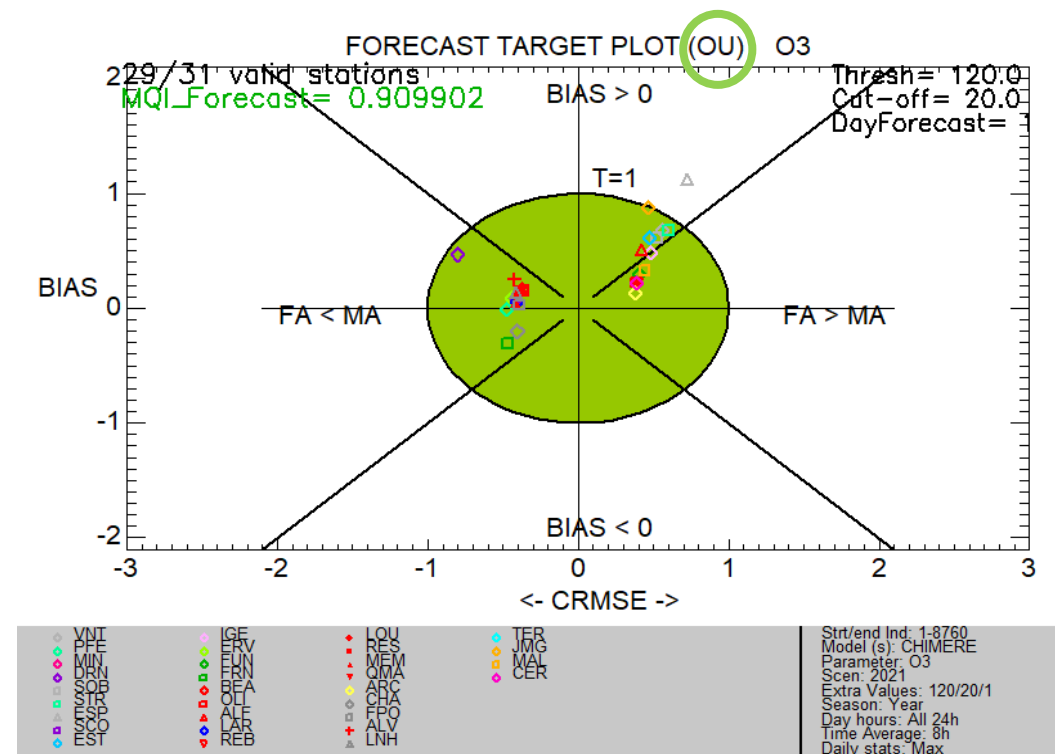
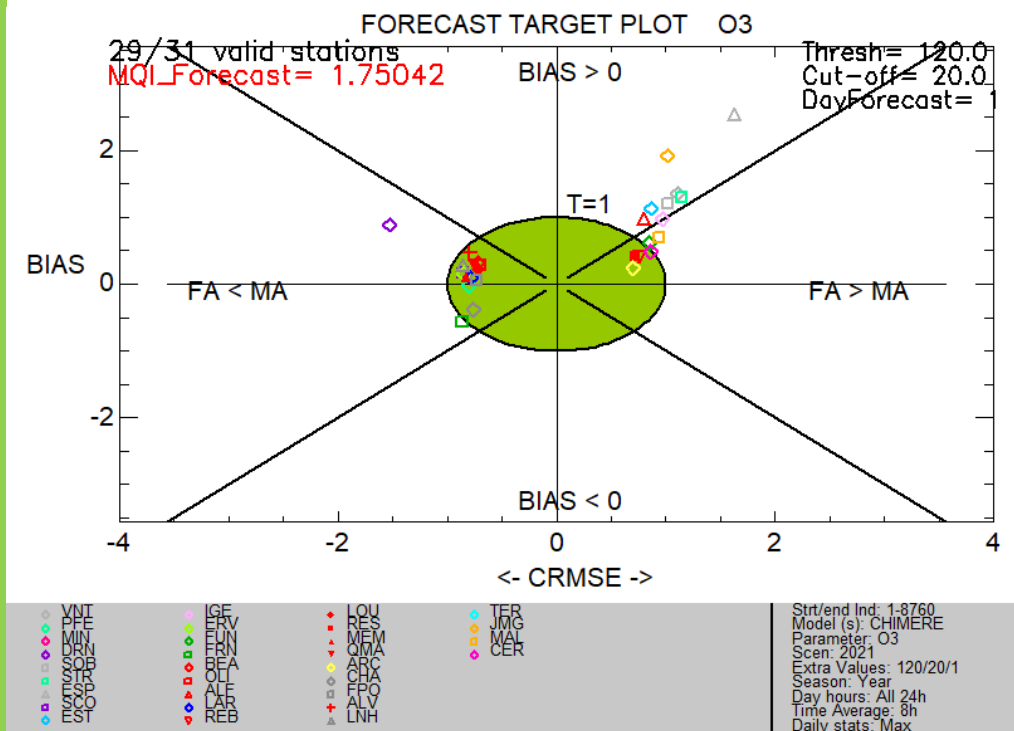
ASSESSMENT

vs

FORECAST

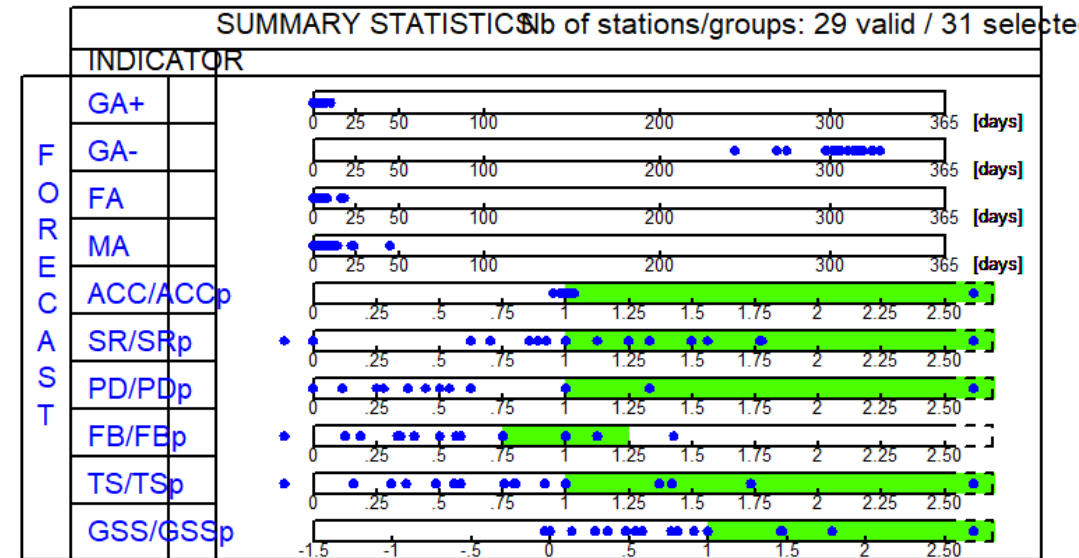
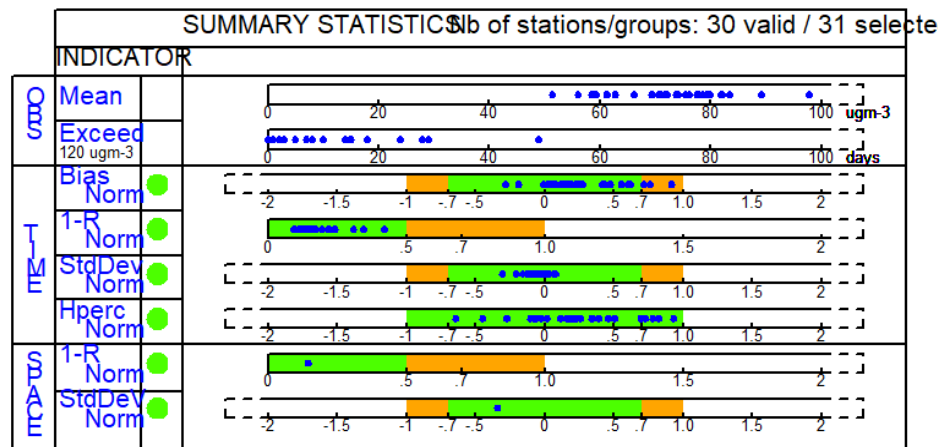


Yearly mean of O3?

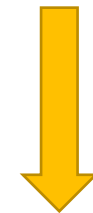
$$O_3$$


O₃

ASSESSMENT vs FORECAST



Performance Criteria satisfied
Performance Criteria satisfied; Error dominated by corresponding Indicator
TIME: >90% of stations fulfills the Performance Criteria
SPACE: Dot fulfills the Performance Criteria
TIME: <90% of stations fulfills the Performance Criteria
SPACE: Dot does not fulfill the Performance Criteria

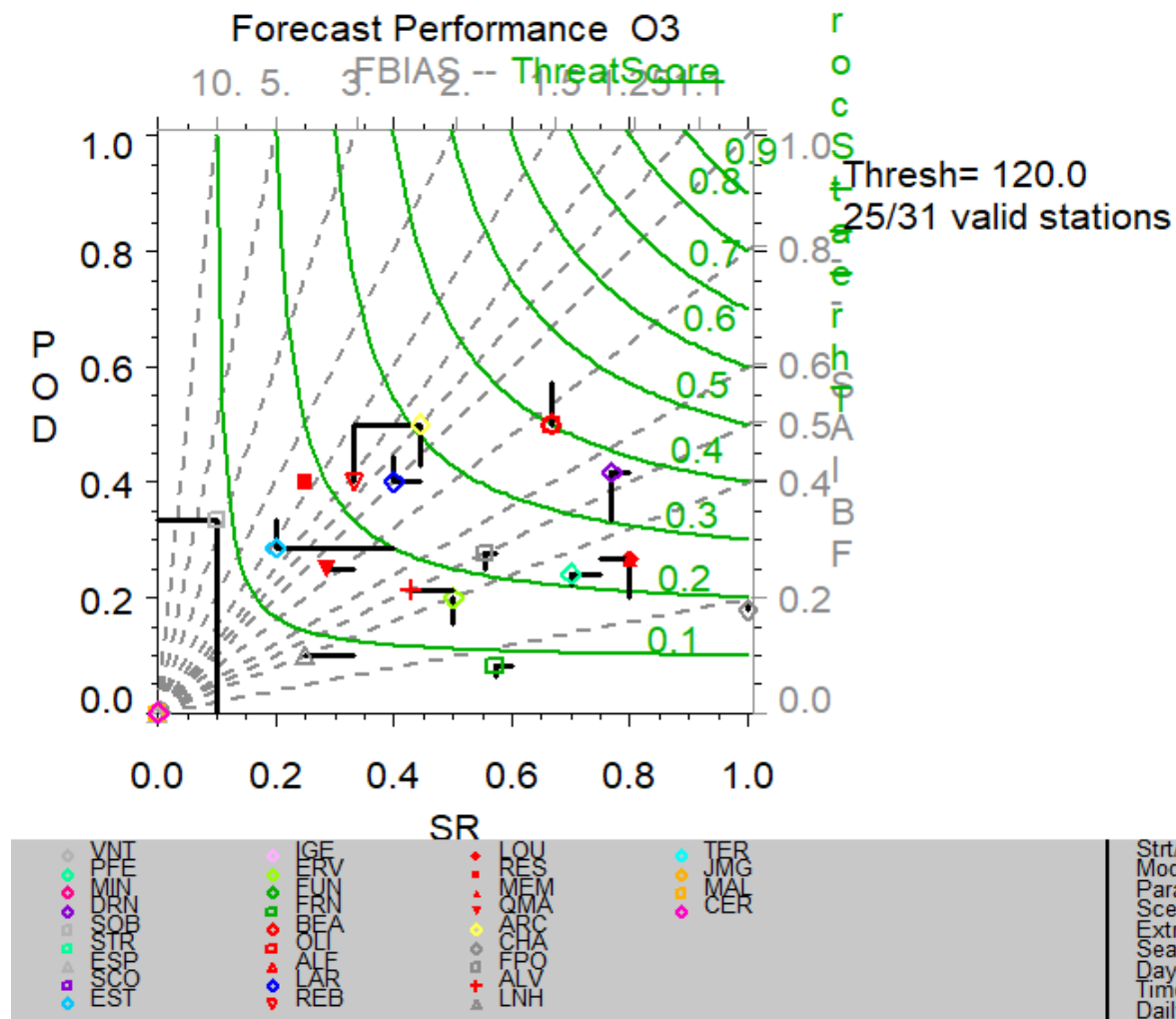


Orange range?

Performance classification

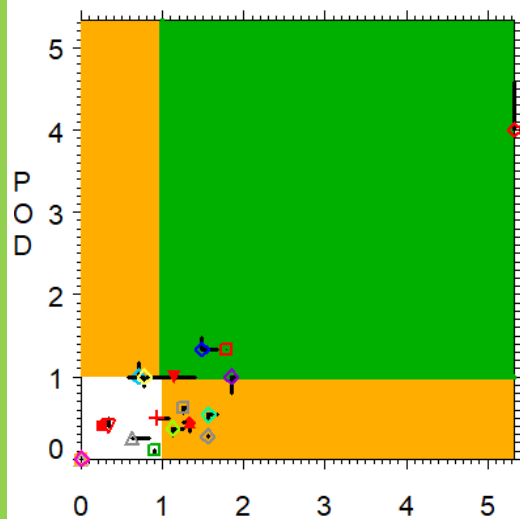


O₃



O₃

Forecast Performance Normalized O3

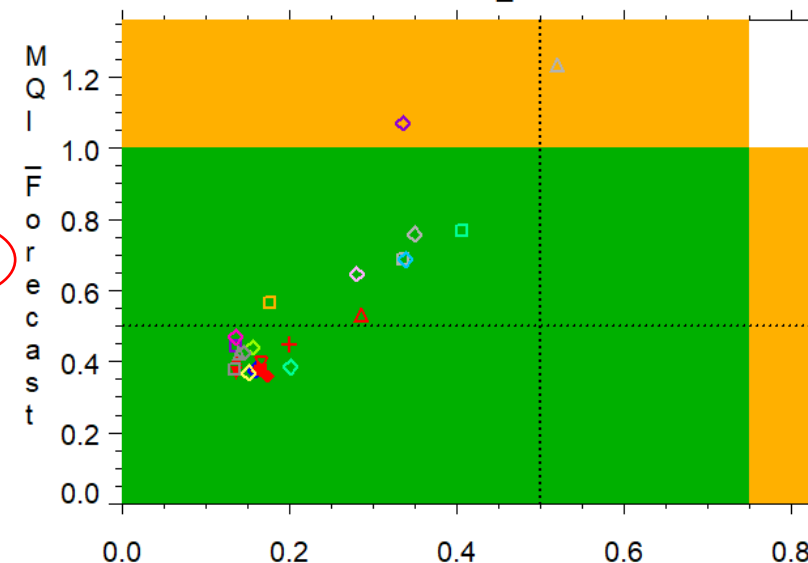


DayForecast= 1
Thresh= 120.0
MQI_(POD/PODp)= 0.000000
MQI_(SR/SRp)= 0.000000
25/31 valid stations
20 % of valid stations better than Per:

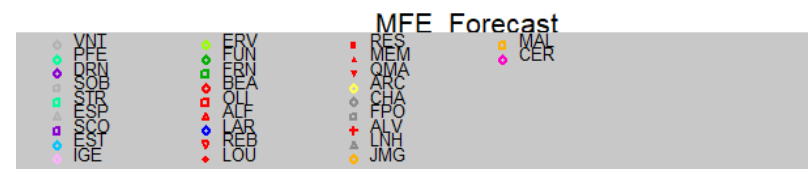


Strt/end Ind: 1-8760
Model (s): CHIMERE
Parameter: O3
Scen: 2021
Extra Values: 120/1
Season: Year
Day hours: All 24h
Time Average: 8h
Daily stats: Max

Forecast LINA_Plot O3



Forecast_Horiz= 2
GOAL_MFE= 0.5
CRIT_MFE= 0.8
GOAL_MQI= 0.5
BETA= 2.0
Valid Stations= 29/
OK= 89%

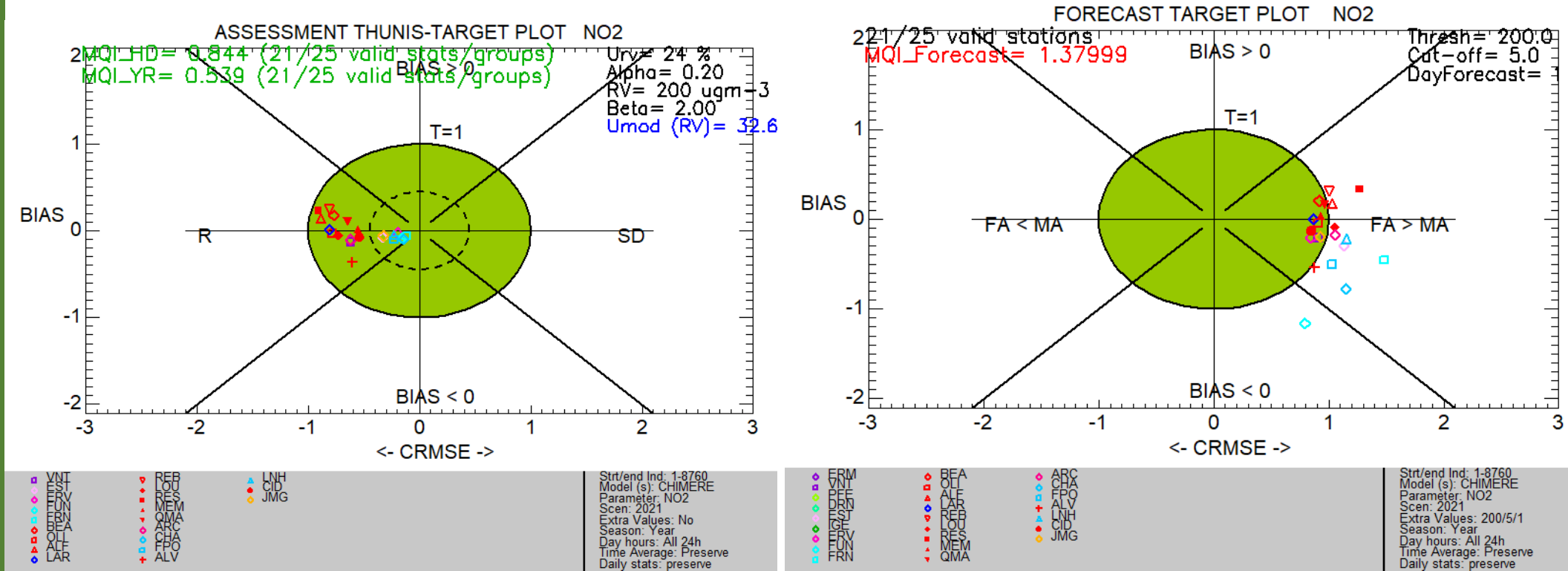


Strt/end Ind: 1-8760
Model (s): CHIMERE
Parameter: O3
Scen: 2021
Extra Values: 1/0.500/0.750/0.500
Season: Year
Day hours: All 24h
Time Average: 8h
Daily stats: Max

Why not also the % of valid stations better than persistence?

NO₂

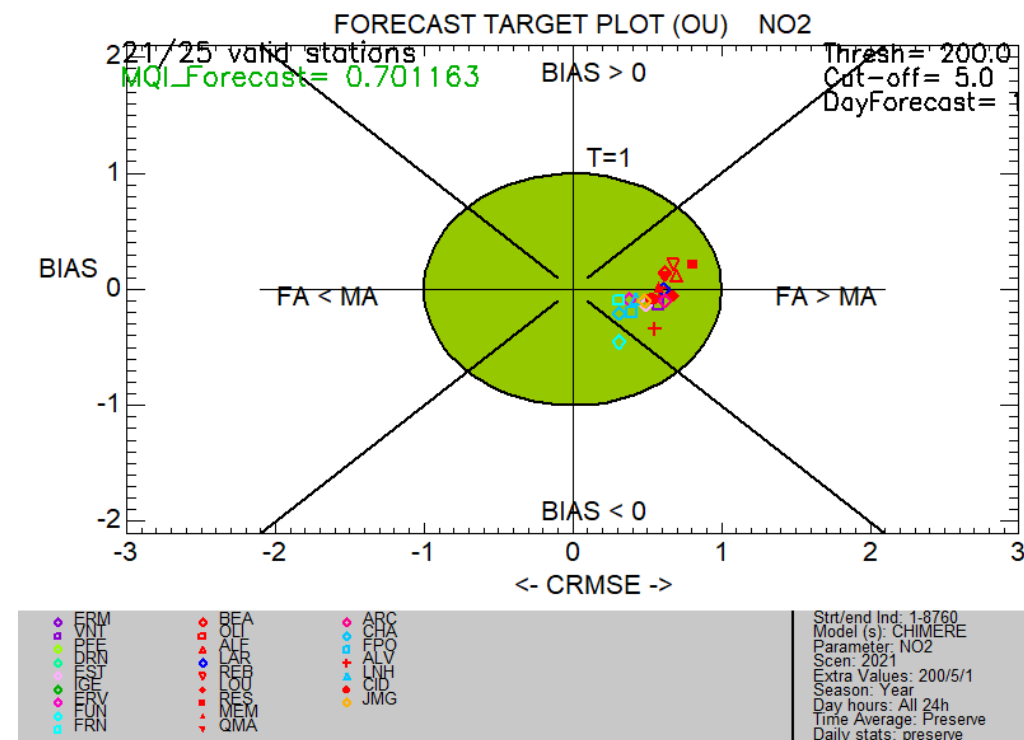
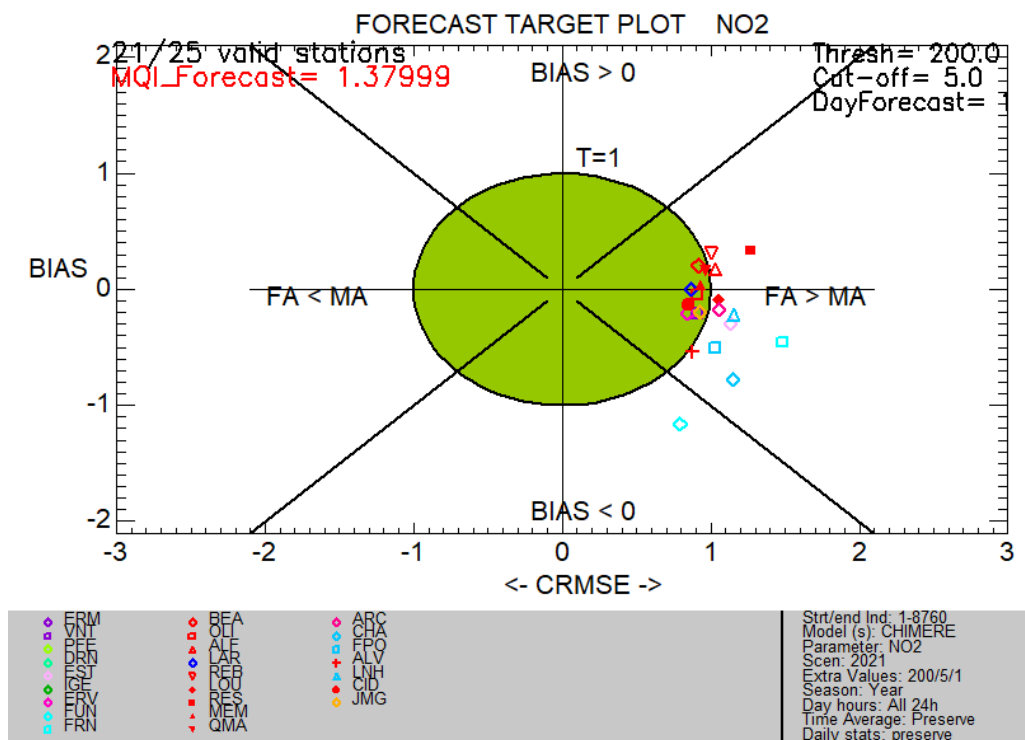
ASSESSMENT vs FORECAST



Daily Stats -> Preserve

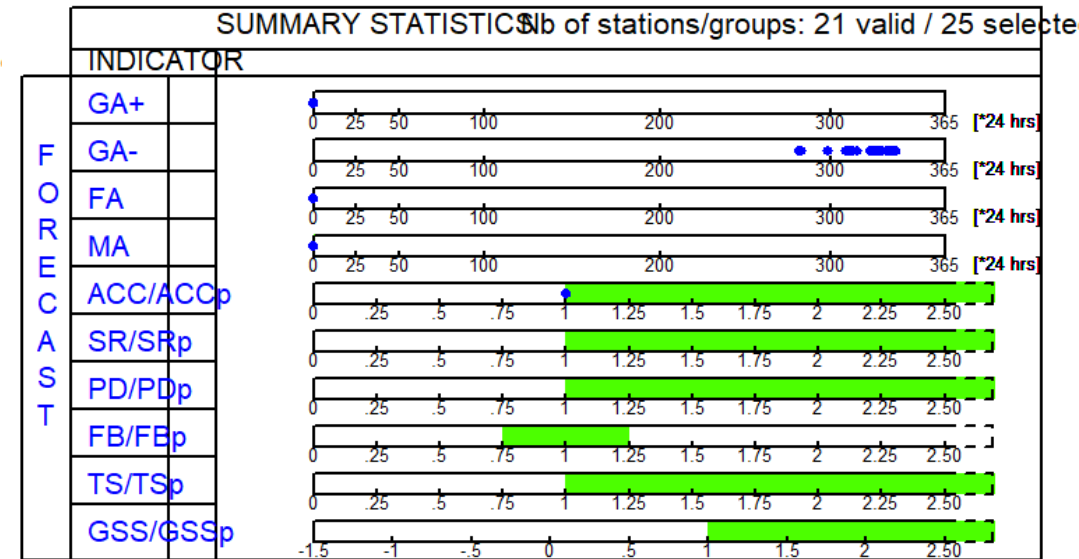
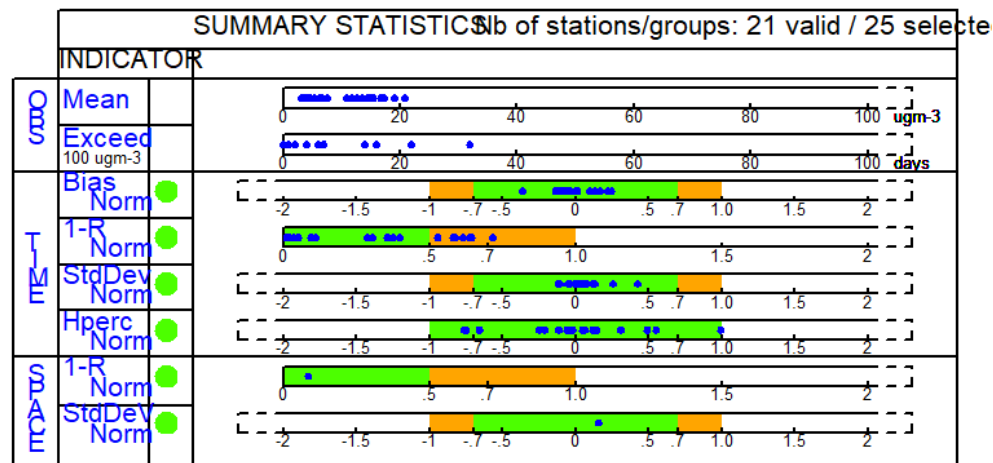
Day forecast=1 or 2?

NO₂



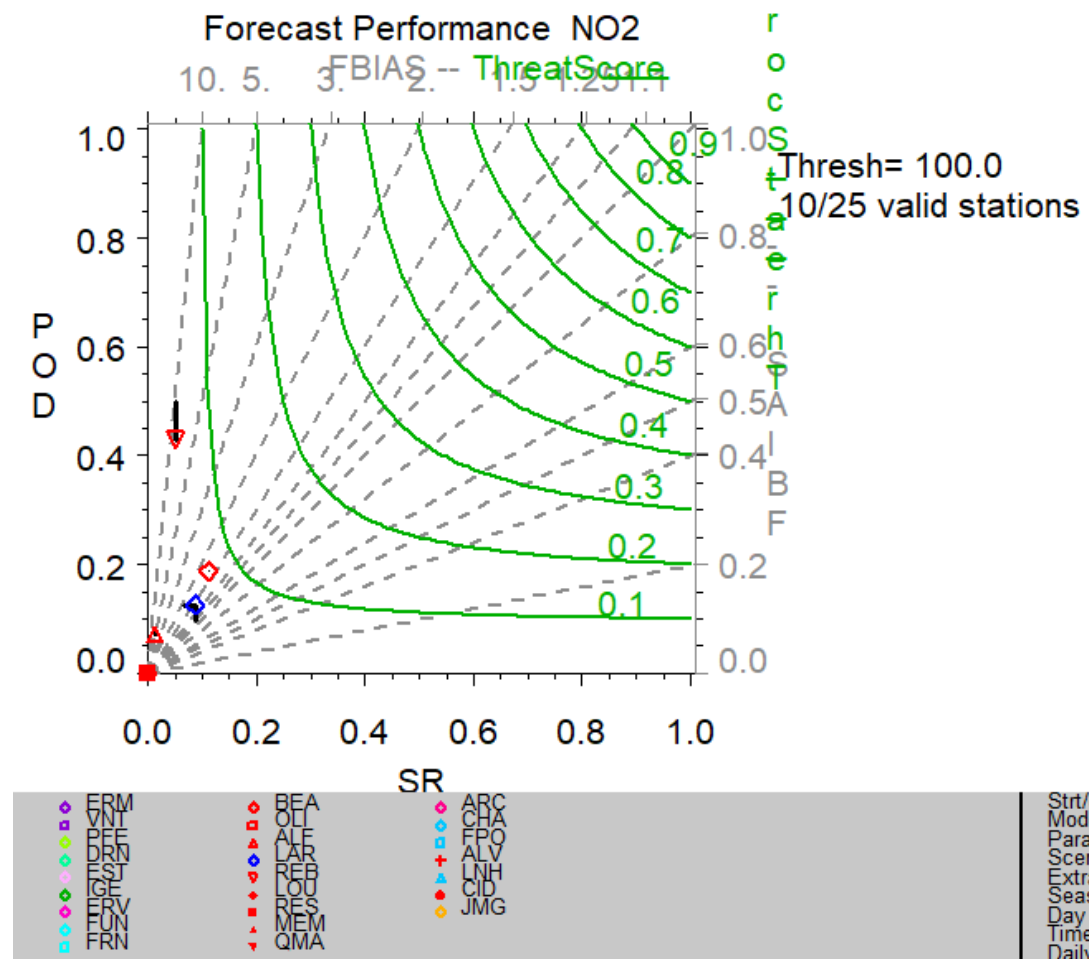
NO₂

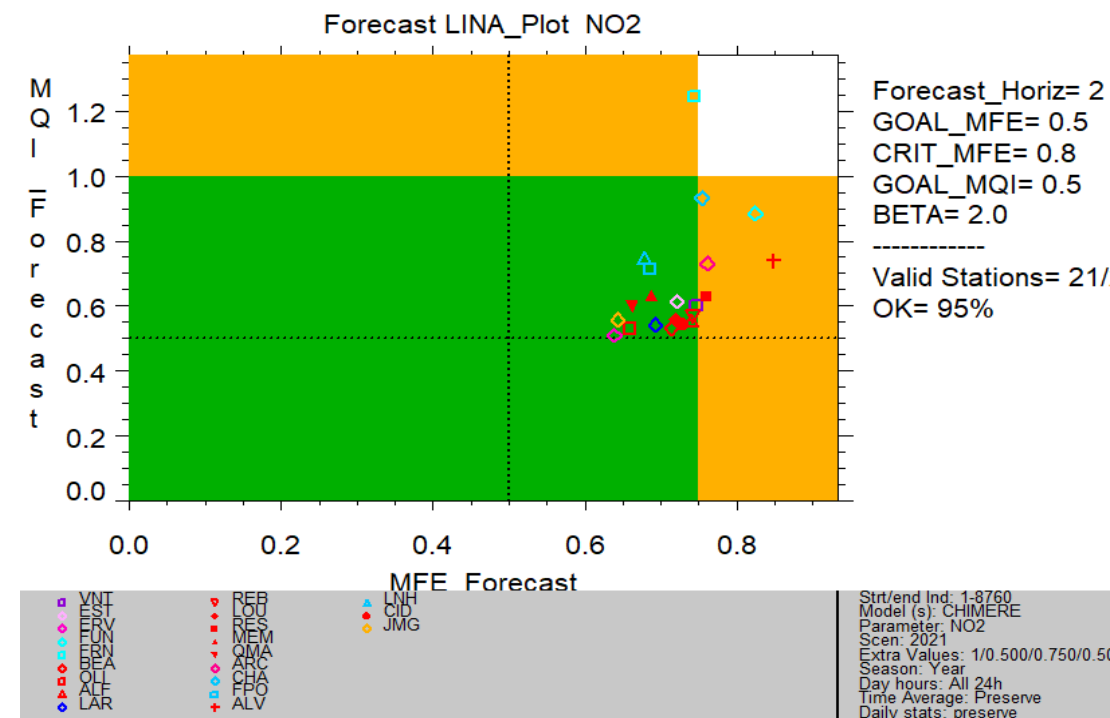
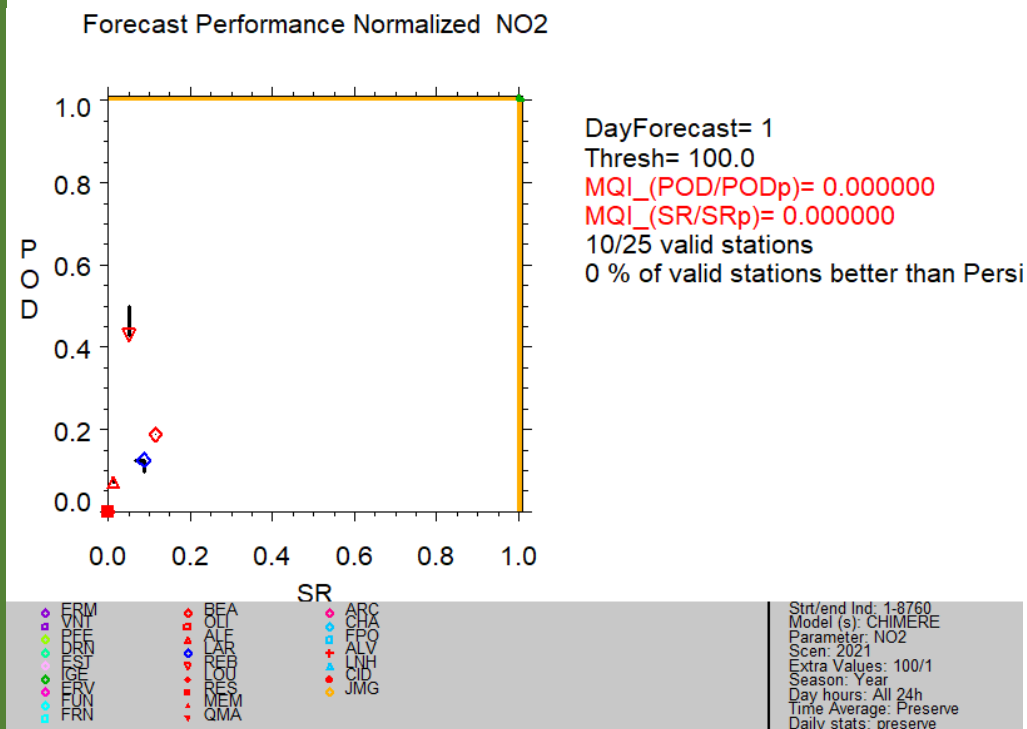
ASSESSMENT vs FORECAST



Performance Criteria satisfied
 Performance Criteria satisfied; Error dominated by corresponding Indicator
 TIME: >90% of stations fulfills the Performance Criteria
 SPACE: Dot fulfills the Performance Criteria
 TIME: <90% of stations fulfills the Performance Criteria
 SPACE: Dot does not fulfill the Performance Criteria

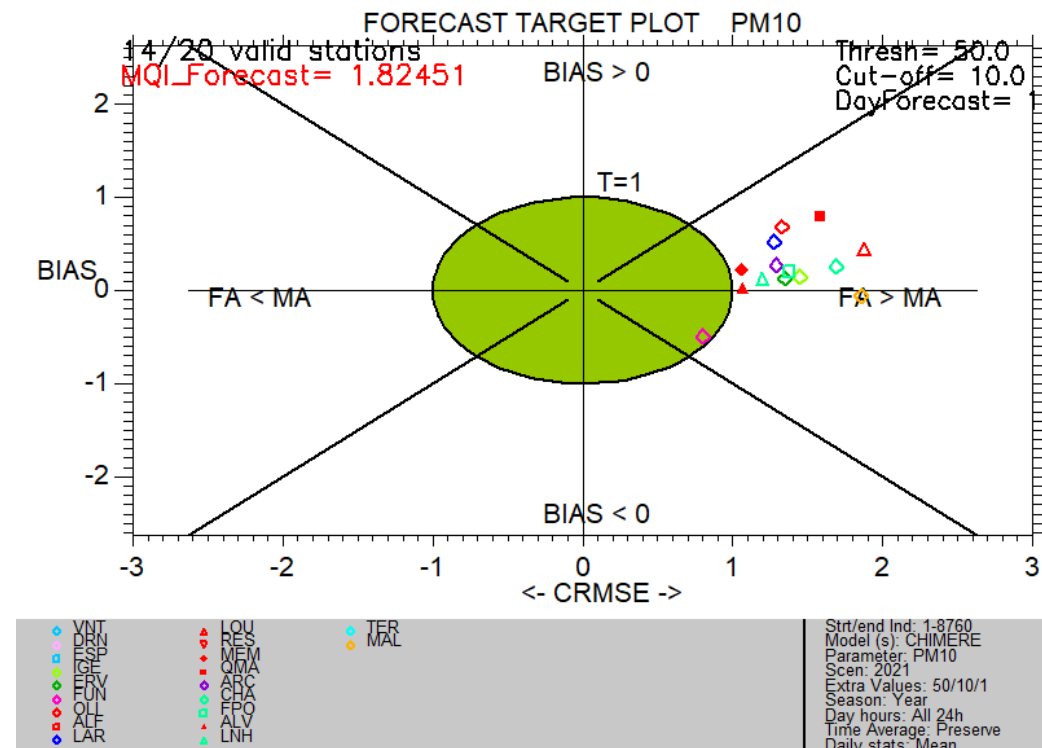
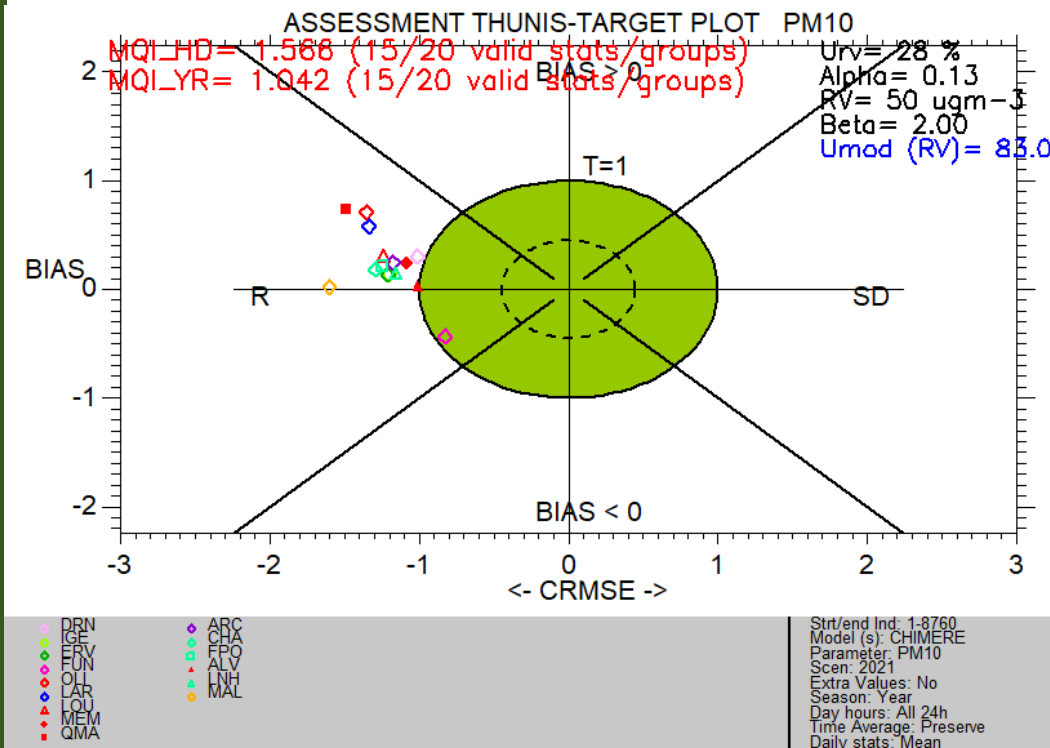
NO₂



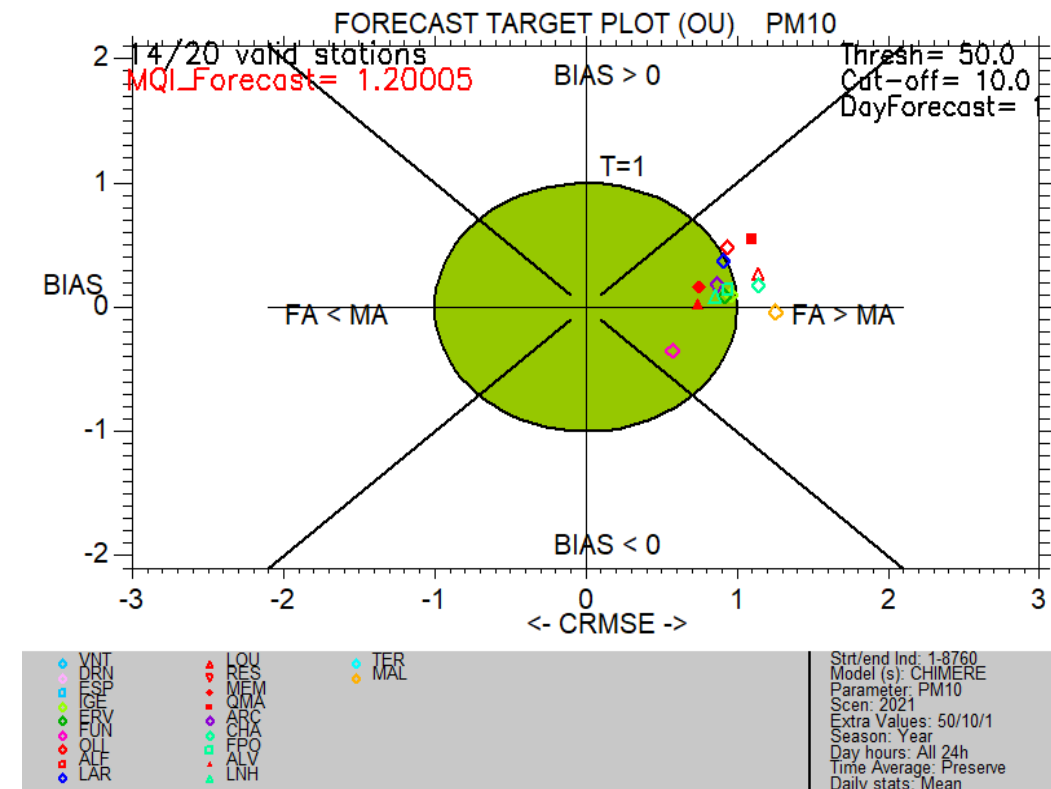
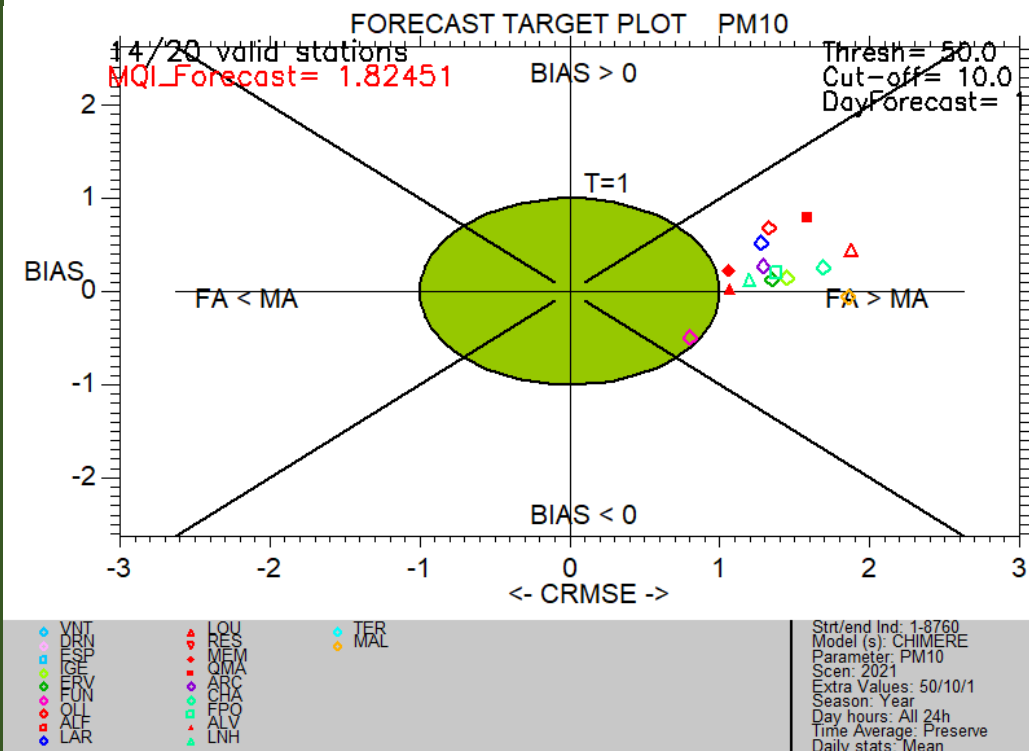
NO_2 

PM

ASSESSMENT vs FORECAST

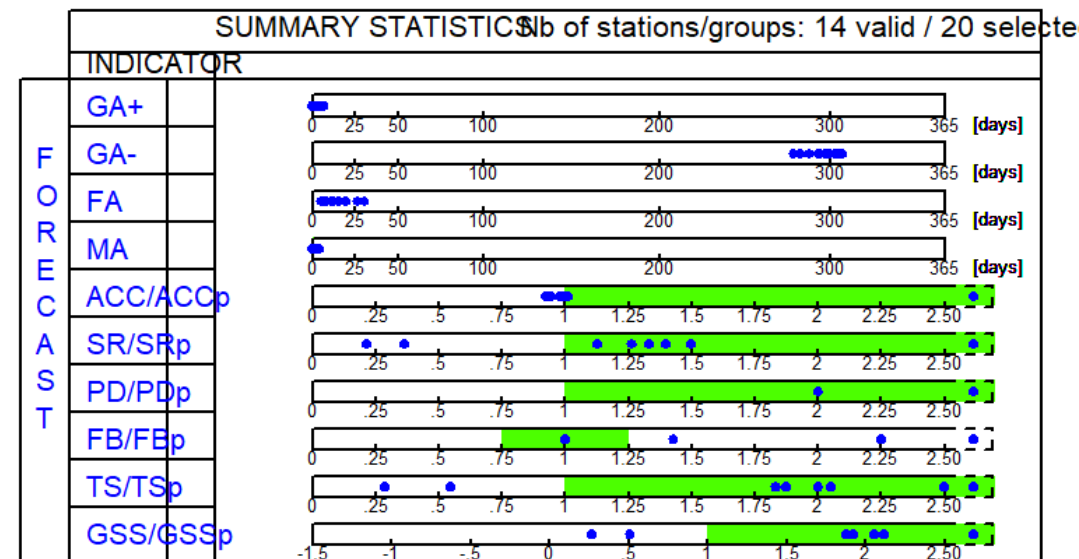
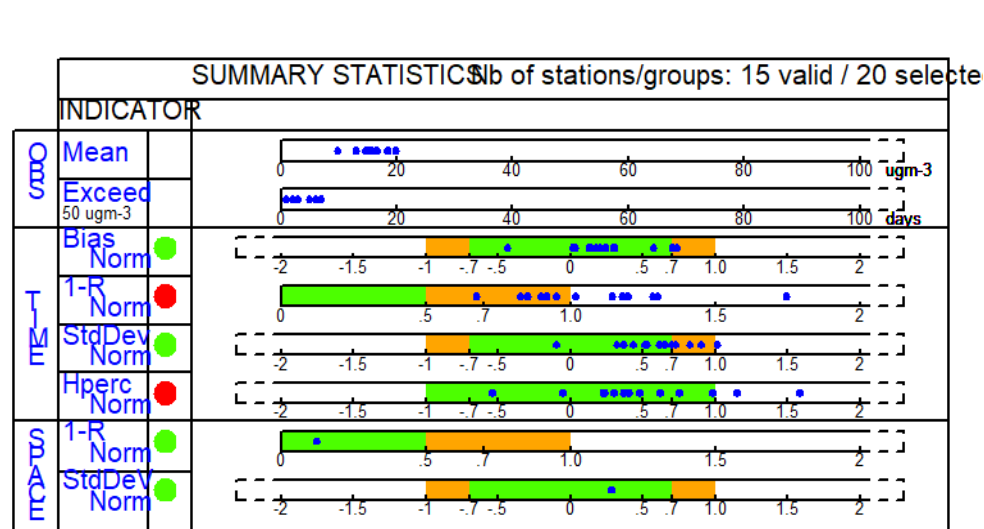


PM



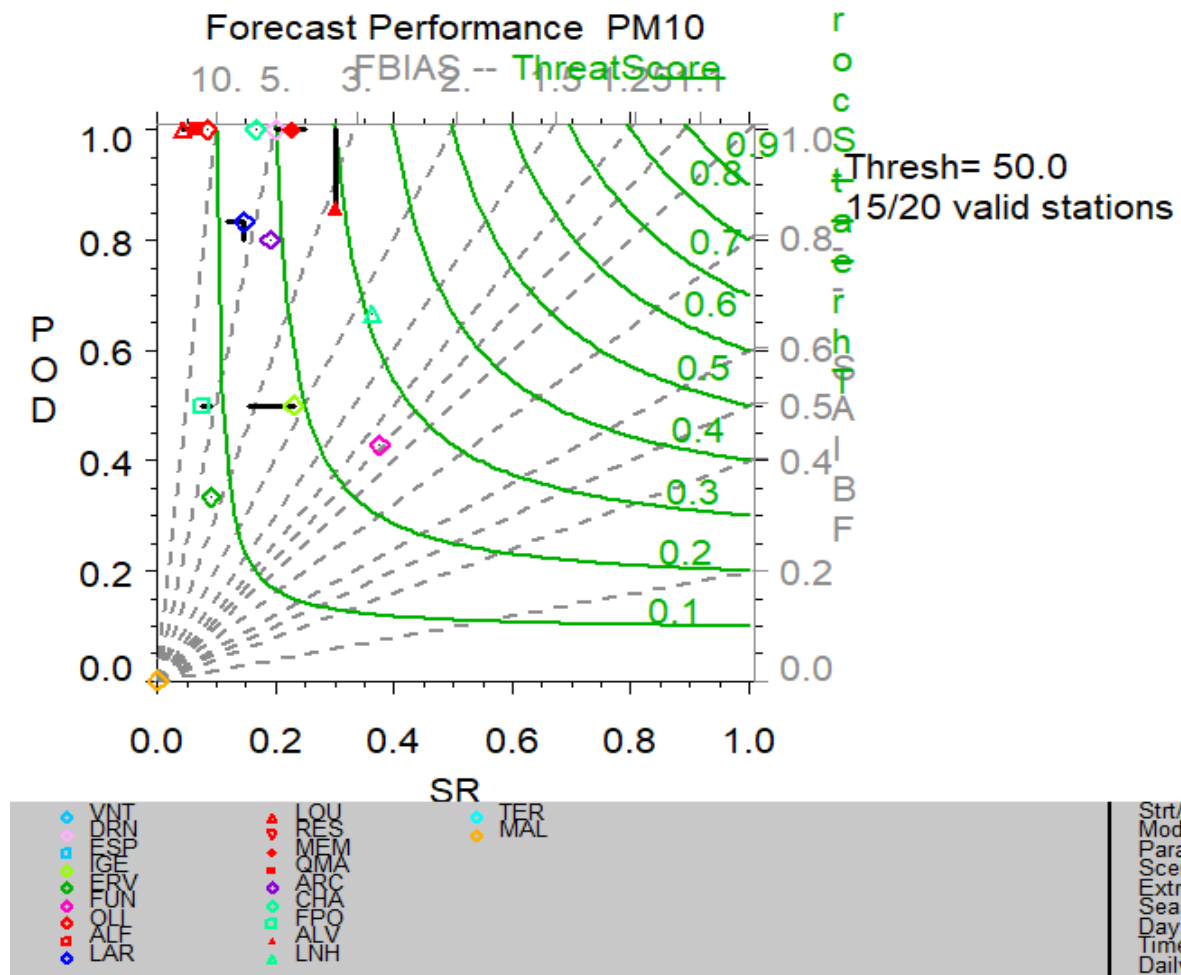
PM

ASSESSMENT vs FORECAST



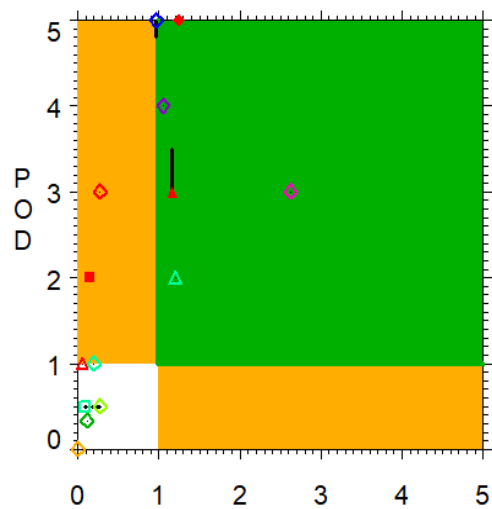
- Performance Criteria satisfied
- Performance Criteria satisfied; Error dominated by corresponding Indicator
- TIME: >90% of stations fulfills the Performance Criteria
- SPACE: Dot fulfills the Performance Criteria
- TIME: <90% of stations fulfills the Performance Criteria
- SPACE: Dot does not fulfill the Performance Criteria

PM



PM

Forecast Performance Normalized PM10



DayForecast= 1
Thresh= 50.0
MQI_(POD/PODp)= 0.400000
MQI_(SR/SRp)= 0.0633334
14/20 valid stations
35 % of valid stations better than Per:

SR

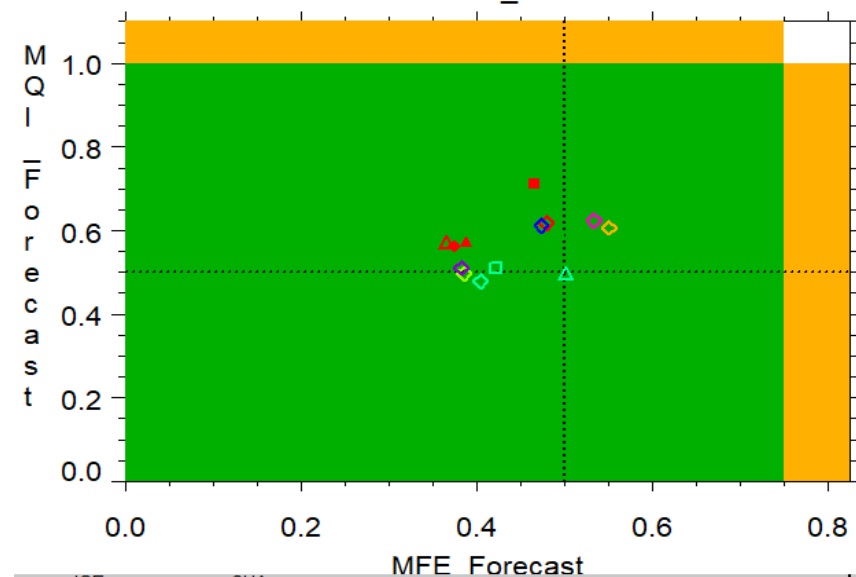
TER
MAL

VNT DRN ESP TGE ERV FUN OLL ALL LAR

LOU RES MEM QMA ARC CHA FPO ALV LNH

Strt/end Ind: 1-8760
 Model (s): CHIMERE
 Parameter: PM10
 Scen: 2021
 Extra Values: 50/1
 Season: Year
 Day hours: All 24h
 Time Average: Preserve
 Daily stats: Mean

Forecast LINA_Plot PM10



Forecast_Horiz= 2
GOAL_MFE= 0.5
CRIT_MFE= 0.8
GOAL_MQI= 0.5
BETA= 2.0

Valid Stations= 14/
OK= 100%

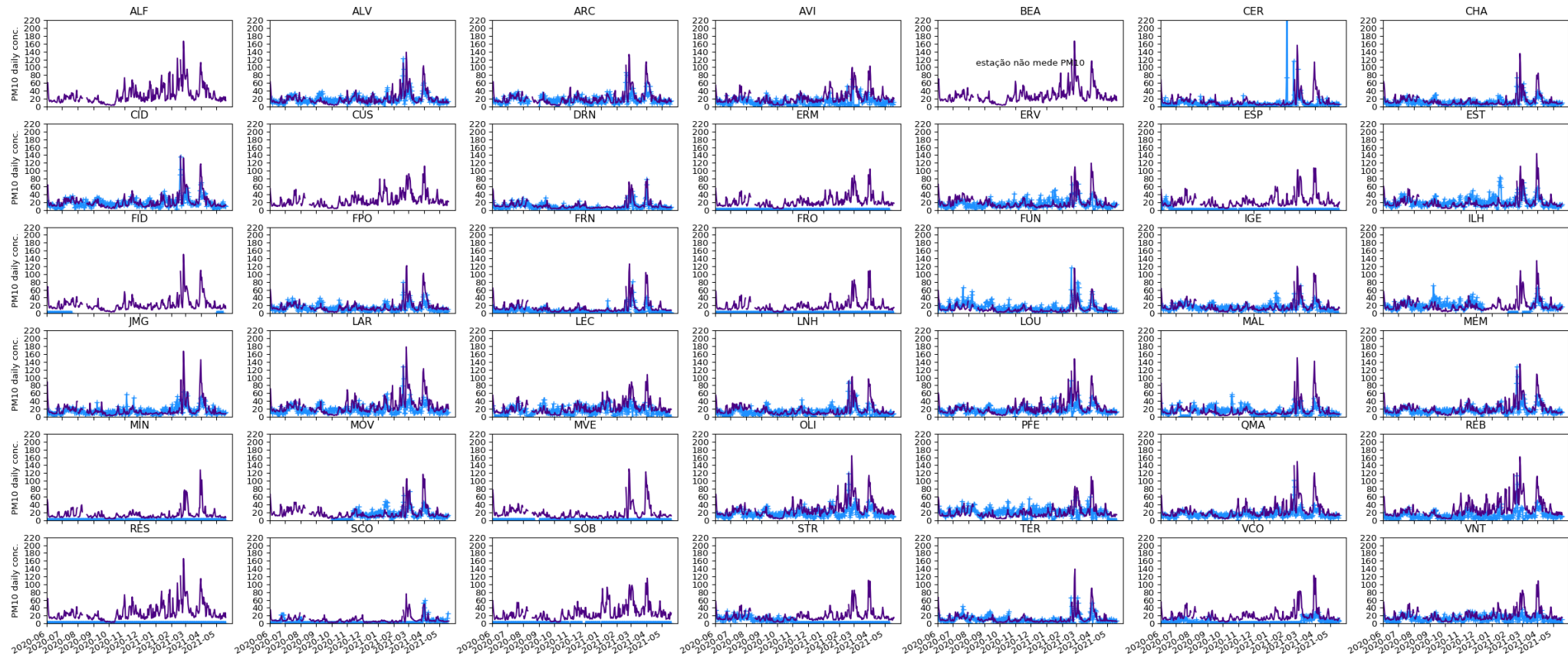
IGF
ERV
FUN
OLI
LAR
LOU
MEM
QMA
ARC

CHA
FPO
ALV
LNH
MAL

Strt/end Ind: 1-8760
Model (s): CHIMERE
Parameter: PM10
Scen: 2021
Extra Values: 1/0.500/0.750/0.5
Season: Year
Day hours: All 24h
Time Average: Preserve
Daily stats: Mean

We were not expecting so bad results...

PM



FORECAST AQI

JRC - Fair Mode

File Benchmark Mode Data selection Analysis Help

European Commission
Joint Research Centre
Institute for Environment and Sustainability

Analysis

Elaboration

Diagram

Google Earth
ForecastPerformance
Forecast_AQI
Forecast_LINA

Statistics

Forecast_AQI

Barplot for EEA_AQI, Extra value is Forecast horizon

☒ Need thresholds (v1#v2...) 1# 1

☐ Display criteria...

Multiple choice info

Max multiple choice for selected diagram is: 2

For selected statistic you may select (1):
1) observations.

Data

Time Avg

☒ preserve (none)
☐ 8h running
☐ N/A

Daily stats

☐ Preserve
☒ Mean
☐ Max
☐ Min
☐ N/A

Hour Day Month

Date 0 1 1

23 31 12

Season

☒ All
☐ Summer (JJA)
☐ Winter (DJF)
☐ N/A

Day

☒ All
☐ Day (08-19)
☐ Night (00-07/20-23)
☐ WeekDays (Mo-Fr)
☐ WeekEnd (Sa-Su)
☐ N/A

OK

JRC - Fair Mode

File Benchmark Mode Data selection Analysis Help

European Commission
Joint Research Centre
Institute for Environment and Sustainability

Run (Model/Scenario) Info

Models: CHIMERE*

Scenarios: 2021*

Runs: CHIMERE(2021)*

☐ MOD without OBS
☐ All available scenario(s)

Observation Info

single obs: PFE
DRN
ERV
FUN

group obs: No group*

View Details

Elaboration/Parameter Info

Statistic: Forecast_AQI

Diagram: Forecast_AQI

Var(s): PM25*

EXTRA

Extra val#: 1

☐ Goals/Criteria...

Stat: Mean Time: preserve (none)

Date/Period Selection

Warning

Array dimensions must be greater than 0.

OK

---DeltaTool version 6.0---Info about plot data---

---Info input data => [startup_mydata.ini \\modeling/mydata \\monitoring/mydata]

Last note:

This type of analysis (AQI) was requested by the PT agency to evaluate the forecast system...

Aglomeracao Sul

	prev	prev	prev	prev	prev
obs	76	59	19	1	1
obs	24	63	8	0	0
obs	2	4	32	2	3
obs	0	0	1	0	0
obs	0	0	0	0	0

Algarve

	prev	prev	prev	prev	prev
obs	95	46	7	4	0
obs	15	51	6	2	2
obs	3	6	41	0	0
obs	1	0	0	0	1
obs	0	1	0	0	0

Alentejo Interior

	prev	prev	prev	prev	prev
obs	131	90	36	3	0
obs	3	36	3	1	1
obs	0	3	7	1	1
obs	0	0	1	2	0
obs	0	0	0	0	0

Alentejo Litoral

	prev	prev	prev	prev	prev
obs	104	95	67	11	3
obs	2	23	2	1	1
obs	0	0	1	0	0
obs	0	0	0	0	0
obs	0	0	0	0	0

AML Norte

	prev	prev	prev	prev	prev
obs	55	40	6	6	1
obs	27	45	23	3	3
obs	0	5	41	9	1
obs	0	0	4	1	1
obs	0	0	0	0	1

AML Sul

	prev	prev	prev	prev	prev
obs	37	32	7	4	0
obs	39	36	19	2	2
obs	3	10	44	14	2
obs	0	1	0	3	0
obs	0	1	0	1	1

Aveiro/Ilhavo

	prev	prev	prev	prev	prev
obs	46	18	0	1	0
obs	47	20	3	1	1
obs	6	10	43	6	0
obs	0	0	4	1	1
obs	0	0	0	0	0

Centro Interior

	prev	prev	prev	prev	prev
obs	72	31	0	0	0
obs	43	16	3	0	0
obs	3	33	68	3	1
obs	0	1	2	3	1
obs	0	0	0	0	0

Centro Litoral

	prev	prev	prev	prev	prev
obs	41	17	4	0	0
obs	73	17	1	1	1
obs	29	31	59	11	2
obs	0	6	3	1	0
obs	0	0	0	0	0

Coimbra

	prev	prev	prev	prev	prev
obs	105	57	16	0	1
obs	11	37	6	2	2
obs	1	9	37	3	0
obs	0	2	0	3	0
obs	0	0	0	0	0

Entre Douro e Minho

	prev	prev	prev	prev	prev
obs	77	46	11	5	0
obs	36	61	10	2	2
obs	6	8	12	3	0
obs	0	3	2	2	0
obs	0	0	0	0	0

Litoral Noroeste do Baixo Vouga

	prev	prev	prev	prev	prev
obs	91	46	4	3	0
obs	31	42	5	1	1
obs	1	10	32	4	0
obs	2	9	6	3	3
obs	0	3	2	1	0

Norte Interior

	prev	prev	prev	prev	prev
obs	106	71	24	3	0
obs	27	22	1	0	0
obs	3	21	37	1	0
obs	0	0	1	2	0
obs	0	0	0	0	0

Norte Litoral

	prev	prev	prev	prev	prev
obs	137	61	54	12	2
obs	16	12	0	0	0
obs	6	3	9	0	0
obs	0	0	0	0	0
obs	0	0	0	0	0

Oeste, Vale do Tejo e Península de Setúbal

	prev	prev	prev	prev	prev
obs	81	29	1	0	0
obs	52	19	8	2	2
obs	7	15	61	3	0
obs	0	0	1	2	0
obs	0	0	0	0	0

Porto Litoral

	prev	prev	prev	prev	prev
obs	61	57	18	8	0
obs	29	56	17	1	1
obs	0	3	14	9	0
obs	0	1	2	2	0
obs	0	0	0	0	0

Setúbal

	prev	prev	prev	prev	prev
obs	38	36	4	4	0
obs	37	30	11	2	2
obs	6	14	49	6	0
obs	0	0	1	2	3
obs	0	0	0	0	0