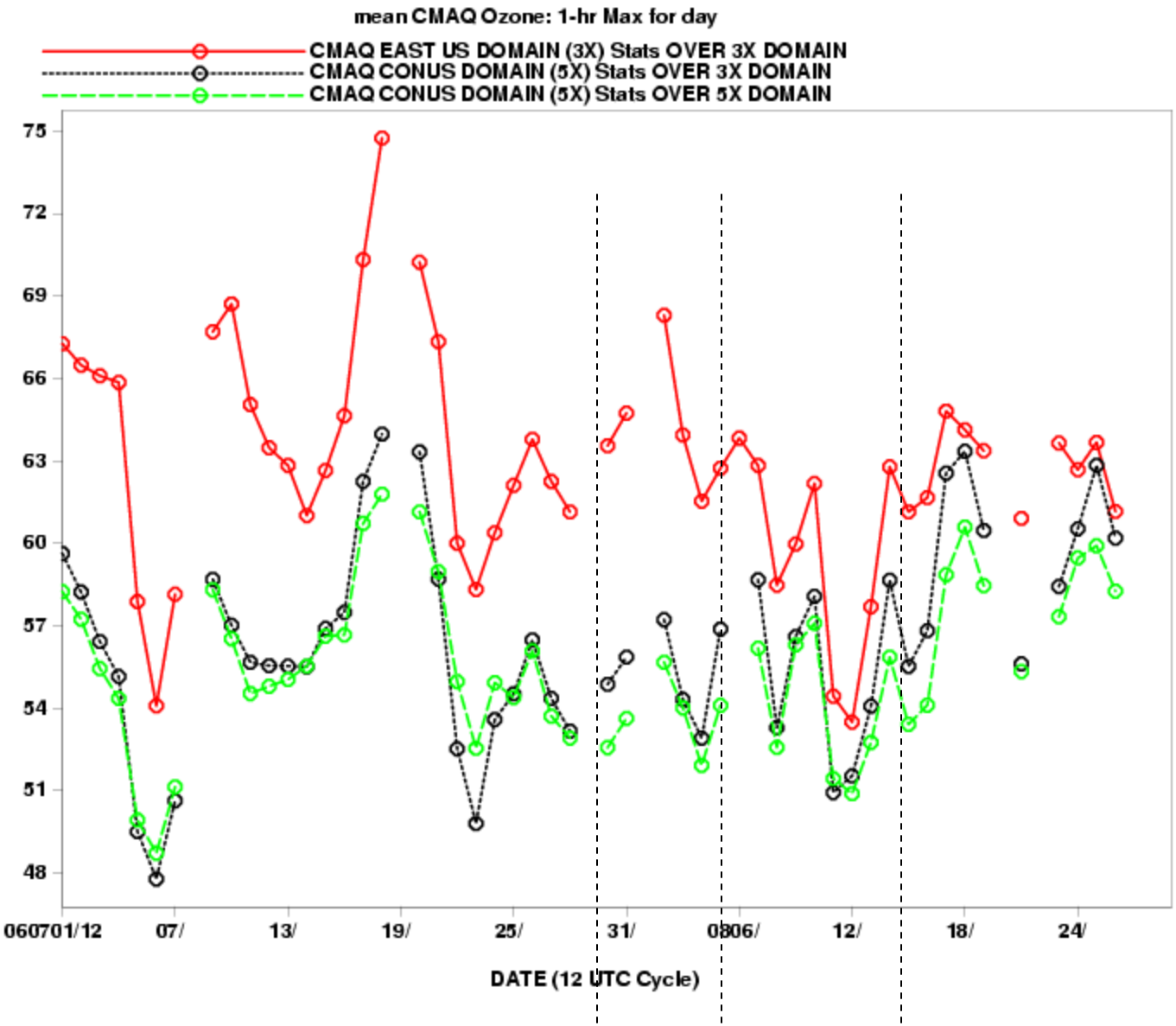
OZONE AND PBL VERIFICATION FOR JULY-AUGUST 2006

Marina Tsidulko, Jeff McQuenn, Pius Lee
Geoff DiMego, Michel Ek
NOAA/NCEP/EMC

1-Hr Max

Mean



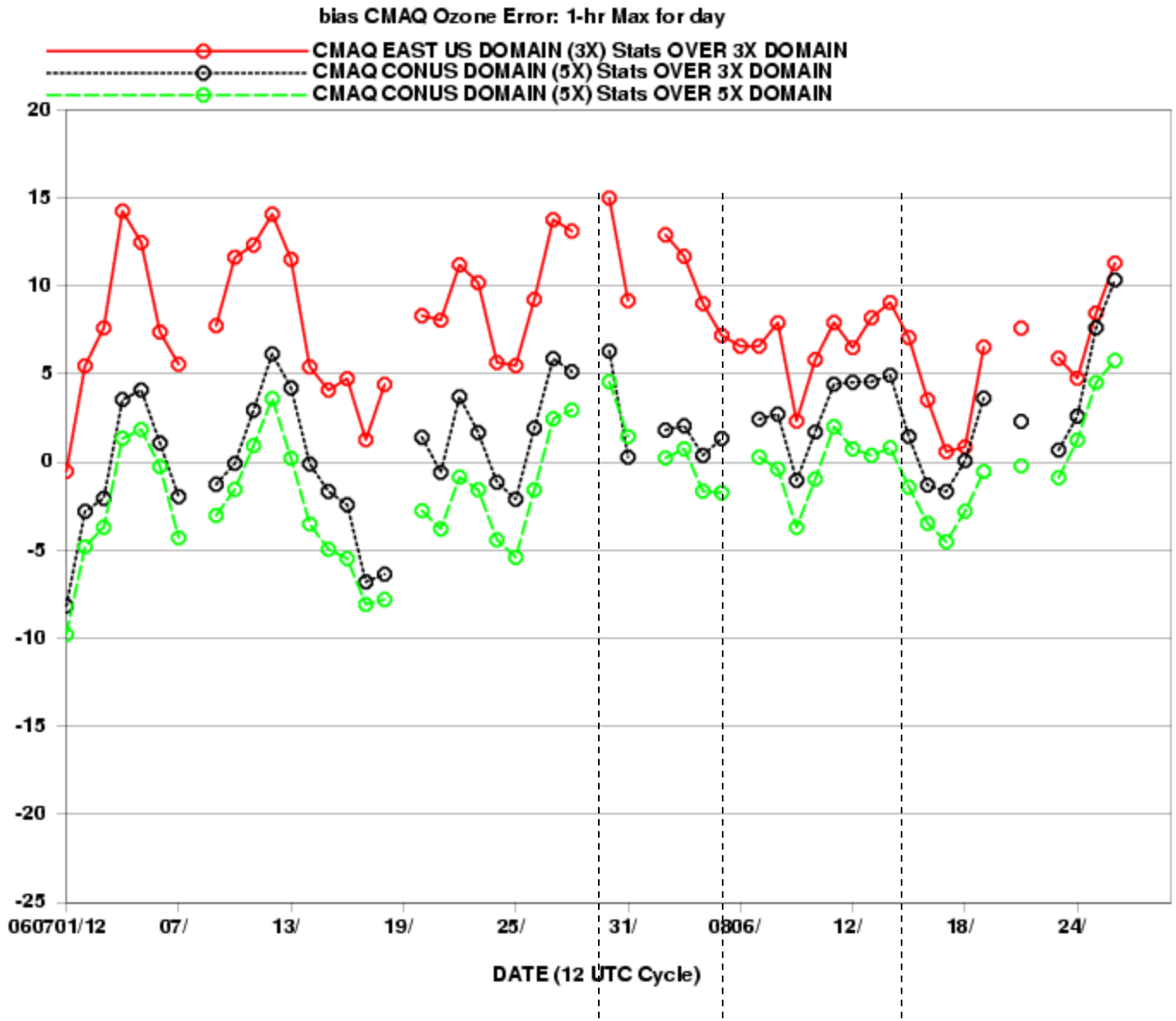
Temp interpolation Bug fixed

Isoprene fixed

NAMY

1-Hr Max

Bias

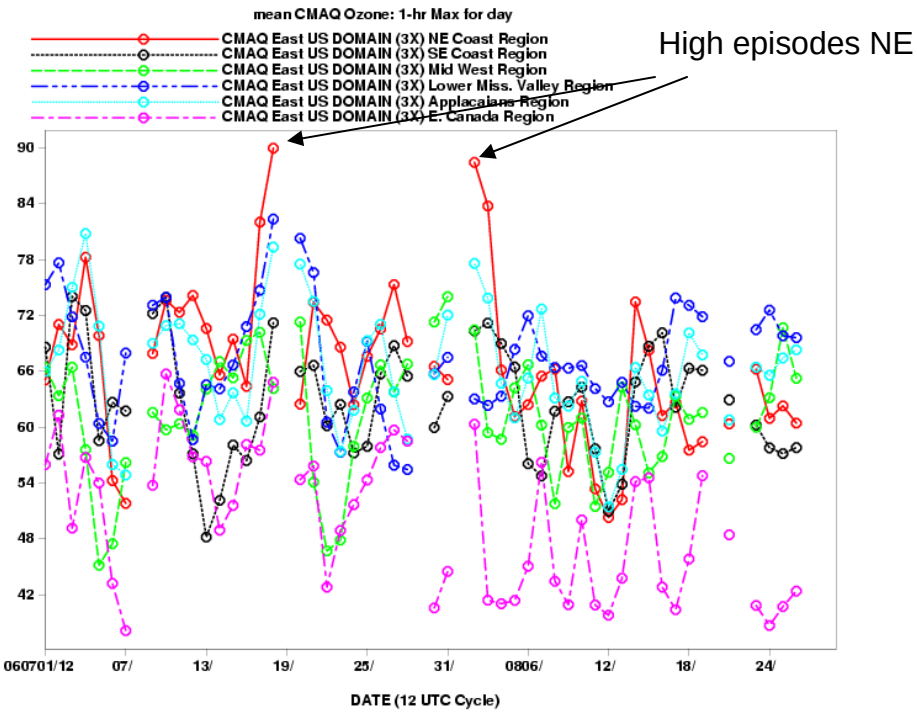


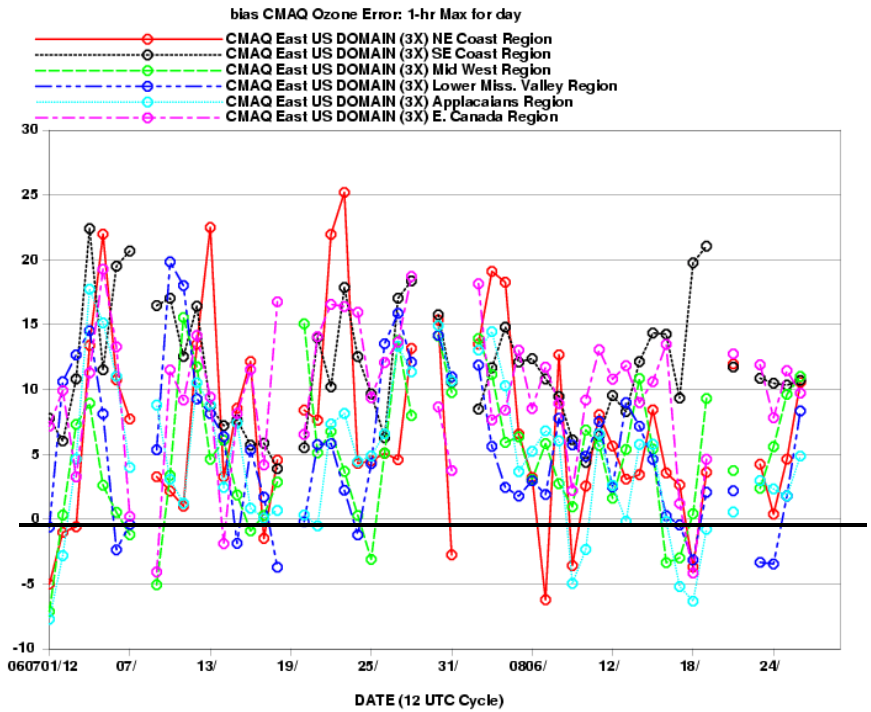
Temp interpolation Bug fixed

Isoprene fixed

NAMY

1-Hr Max Operational run: 3x subregions



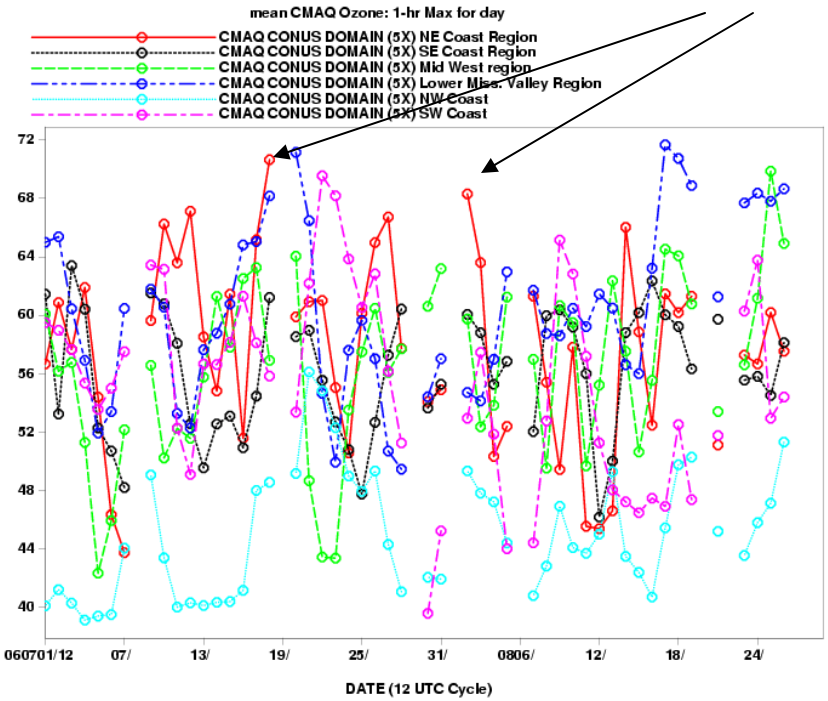


Mean

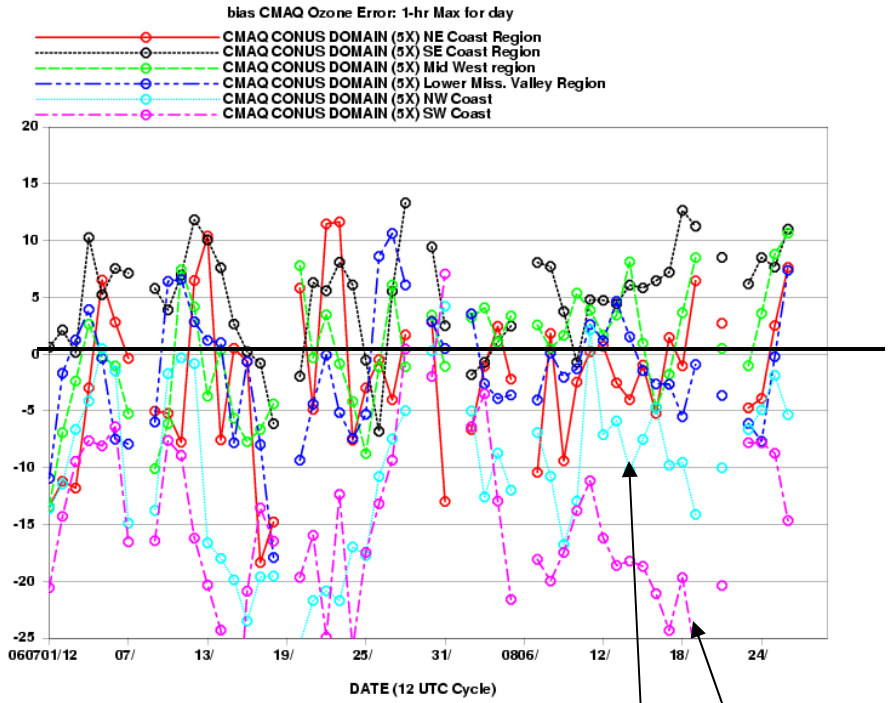
Bias

1-Hr Max Parallel run: 5x subregions

High episodes NE



Mean



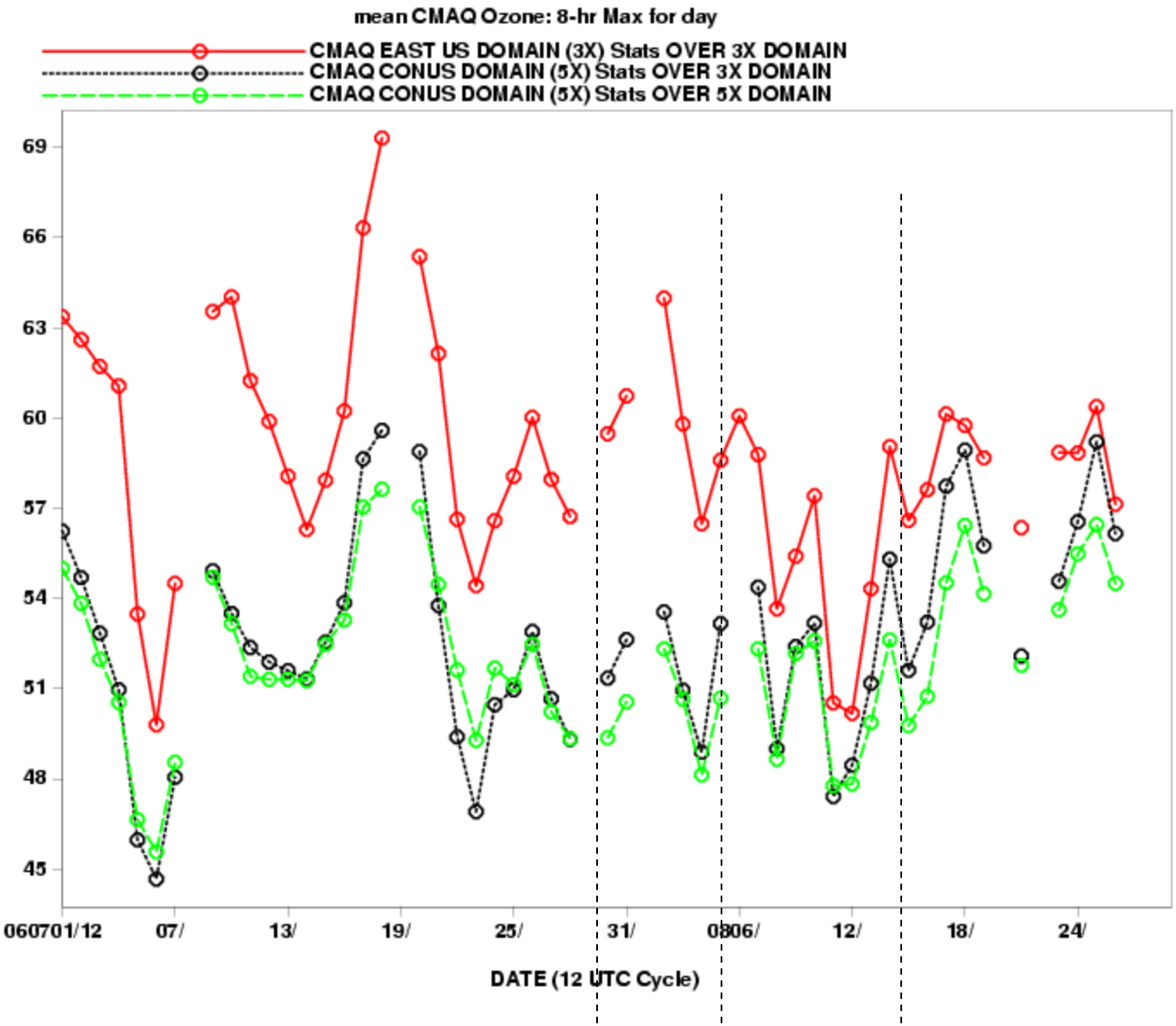
Bias

NW

SW

8-Hr Max

Mean

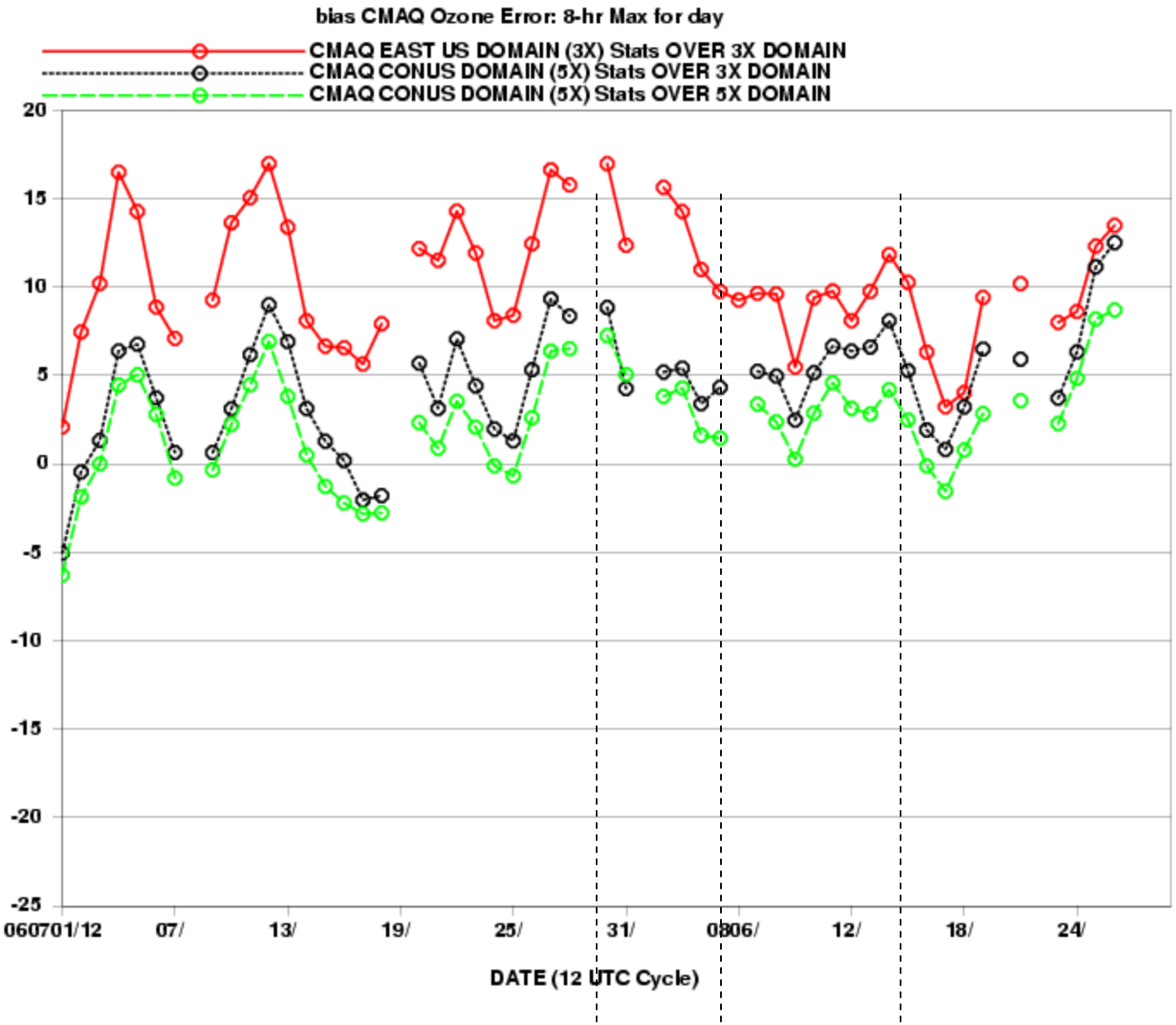


Temp interpolation Bug fixed

Isoprene fixed

NAMY

8-Hr Max



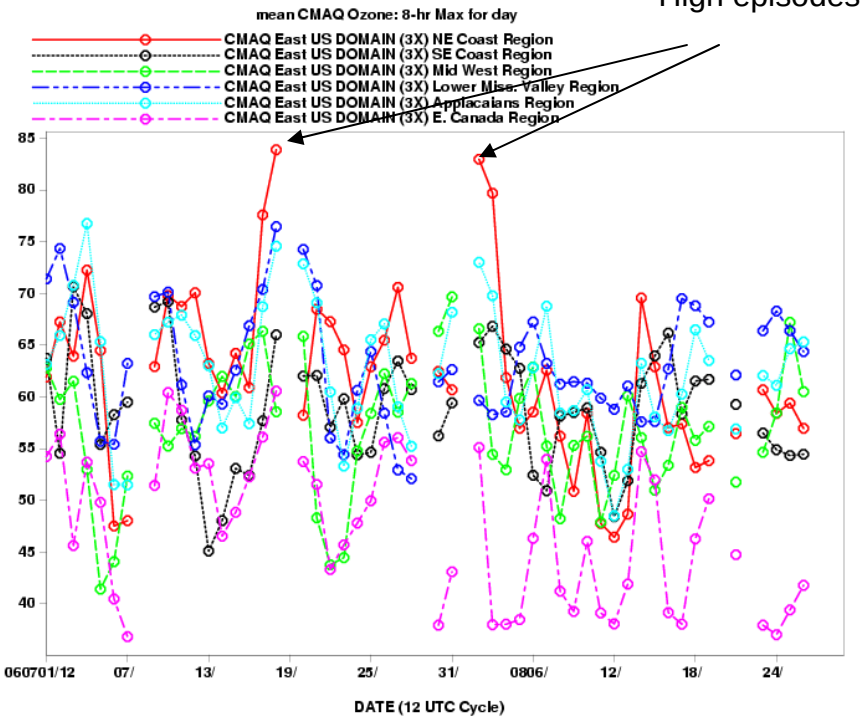
Temp interpolation Bug fixed

Isoprene fixed

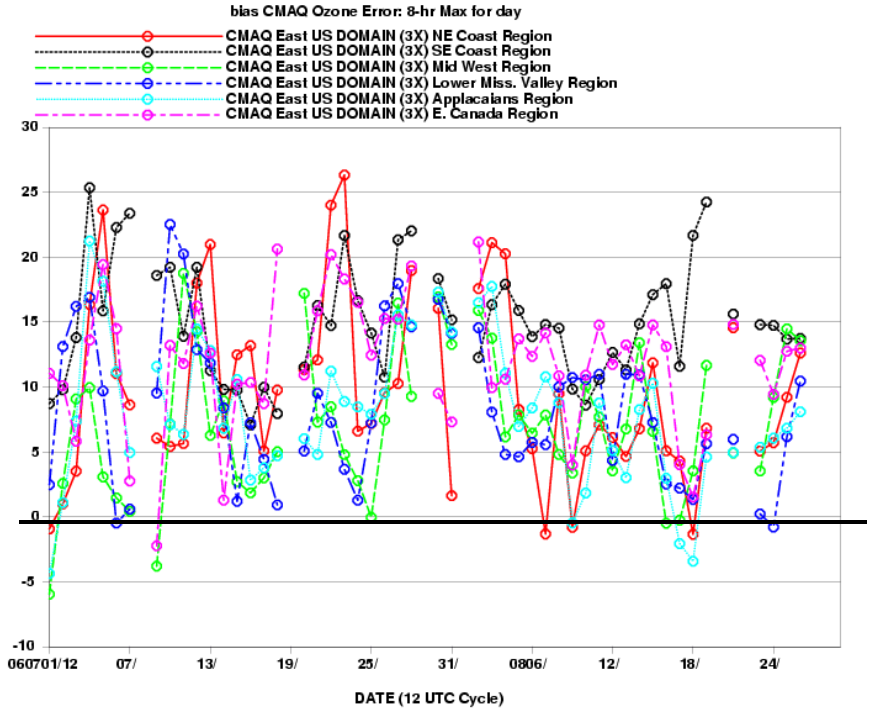
NAMY

8-Hr Max Operational run: 3x subregions

High episodes NE

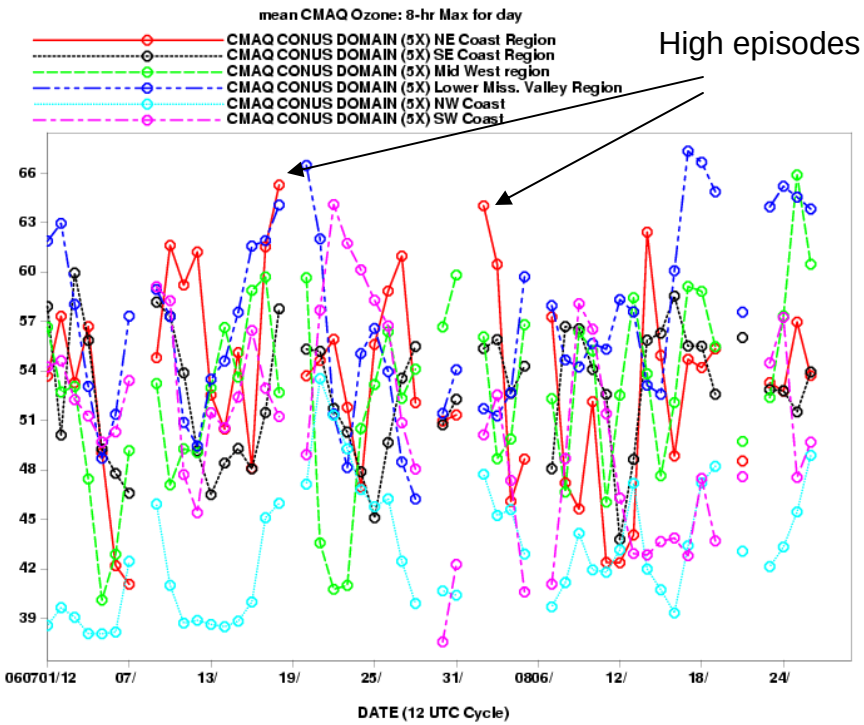


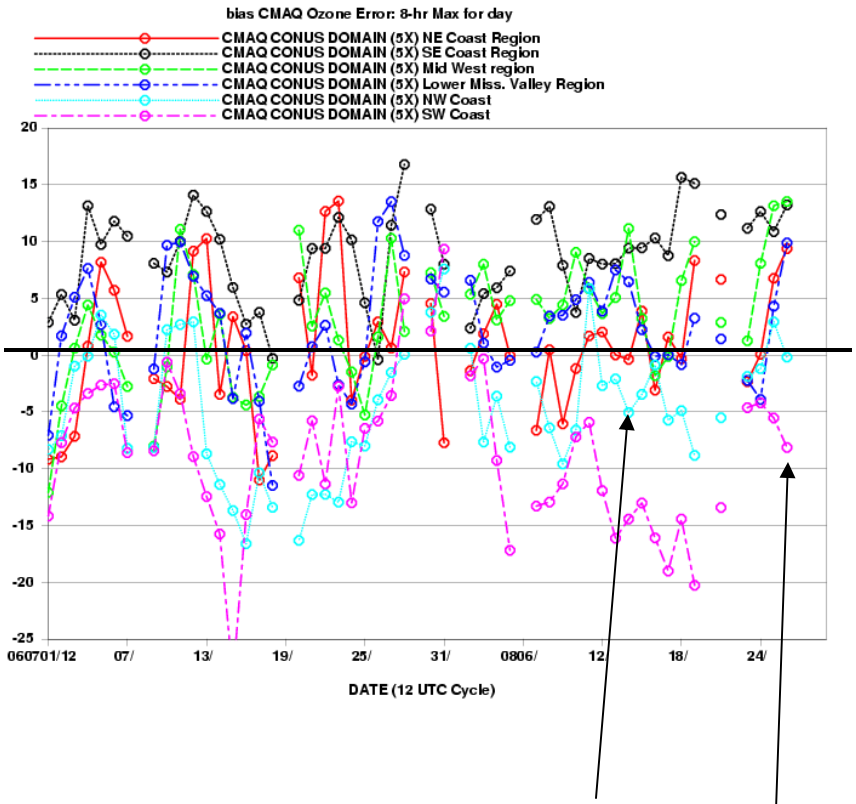
Mean



Bias

8-Hr Max Parallel run: 5x subregions





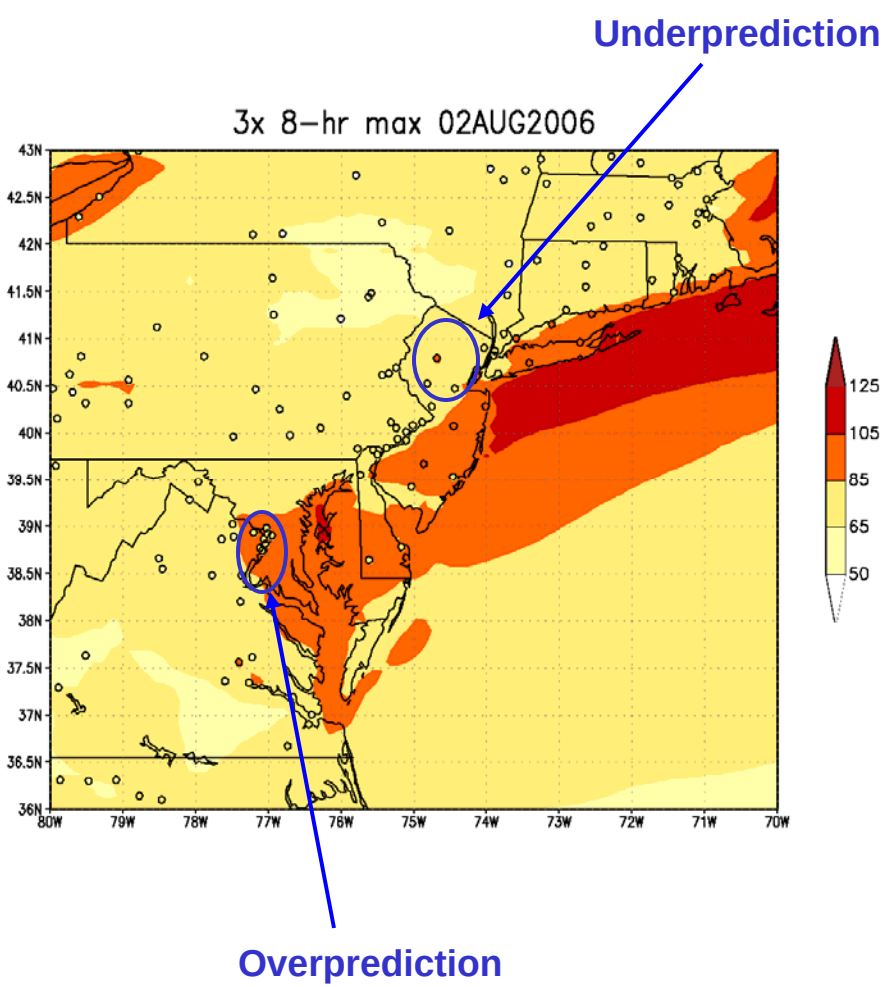
Mean

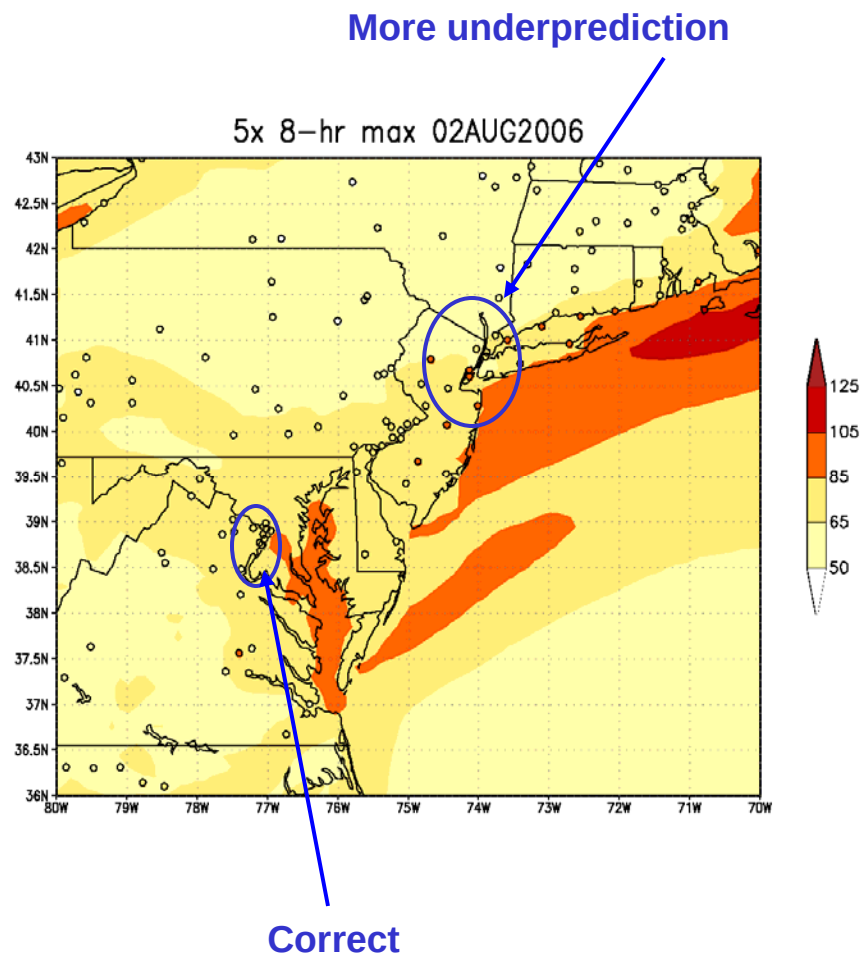
Bias

NW

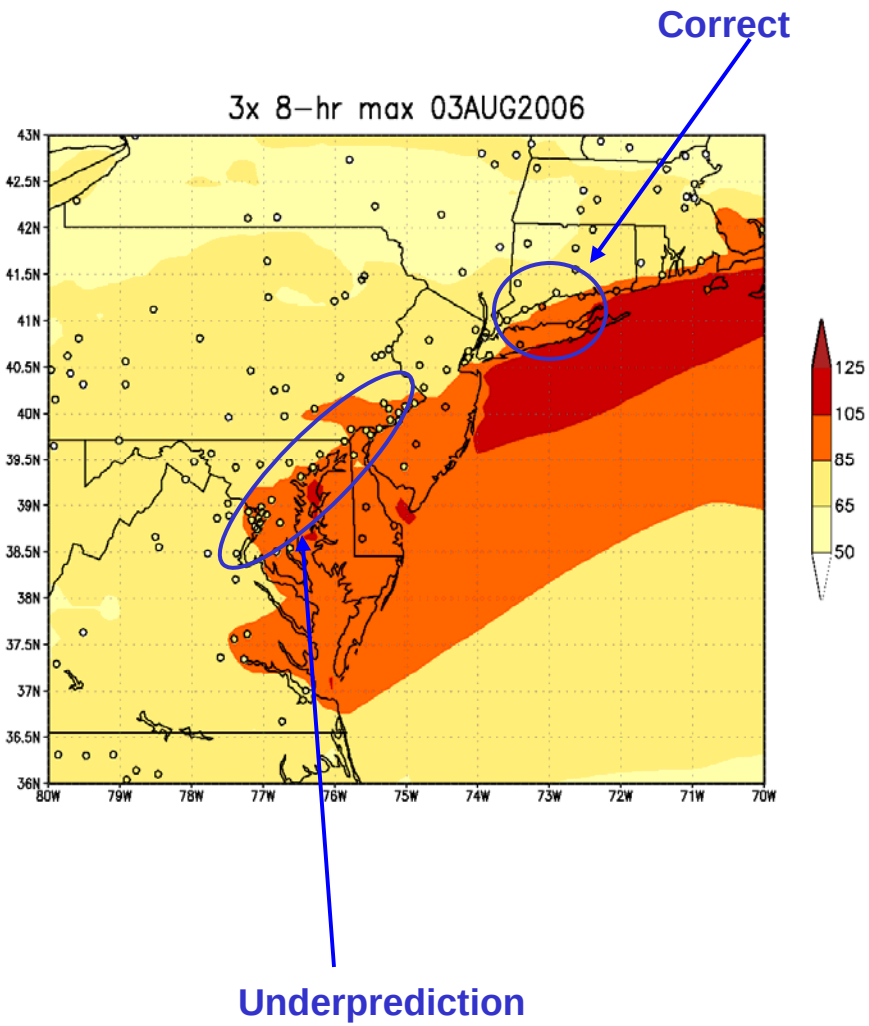
SW

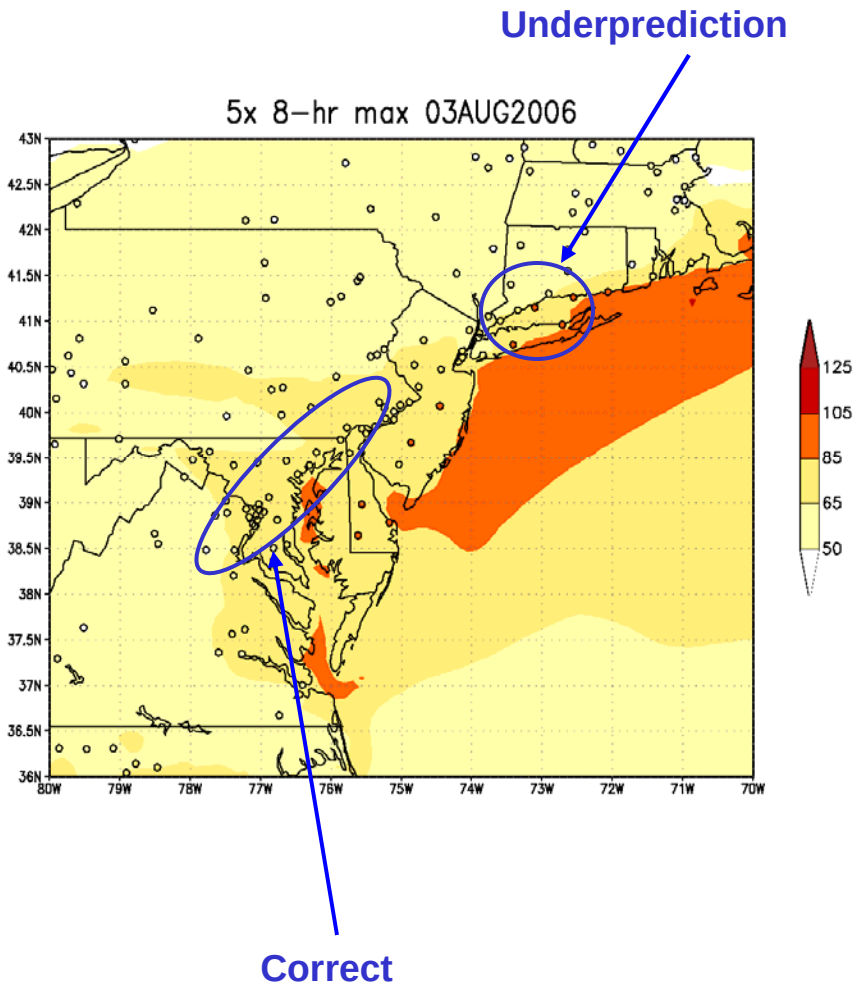
NE High Episodes



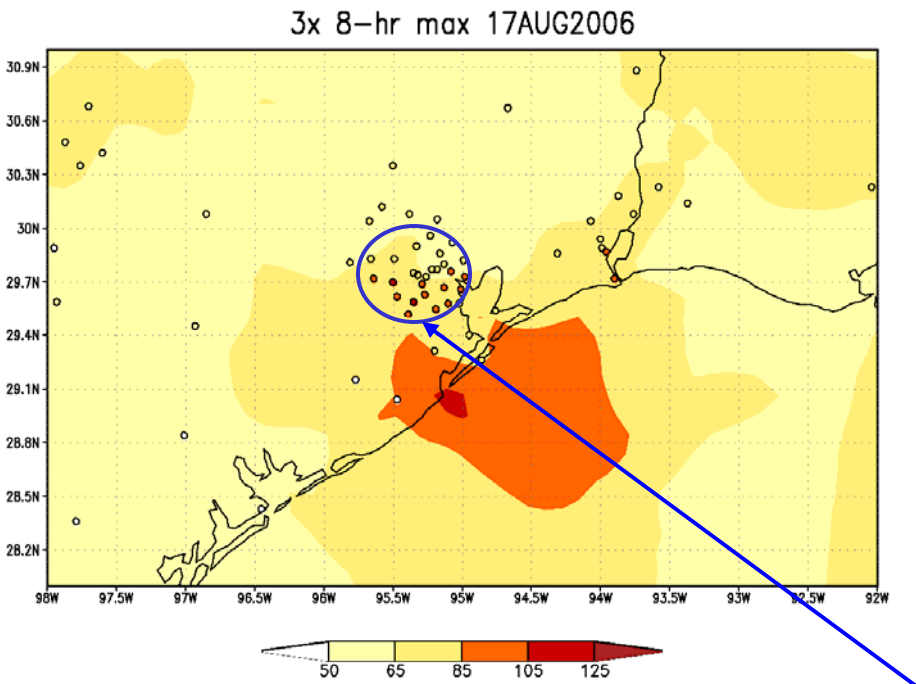


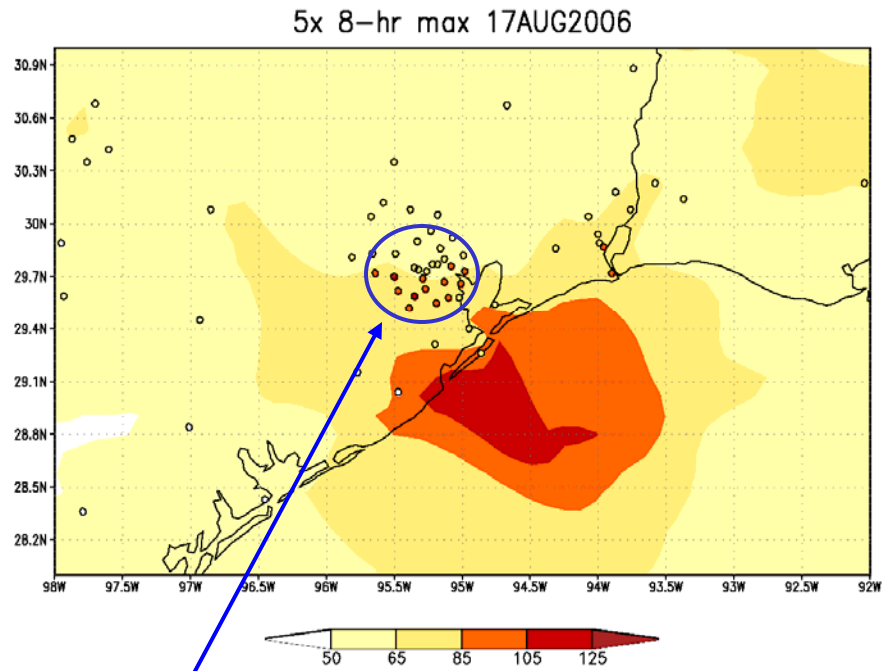
NE High Episodes





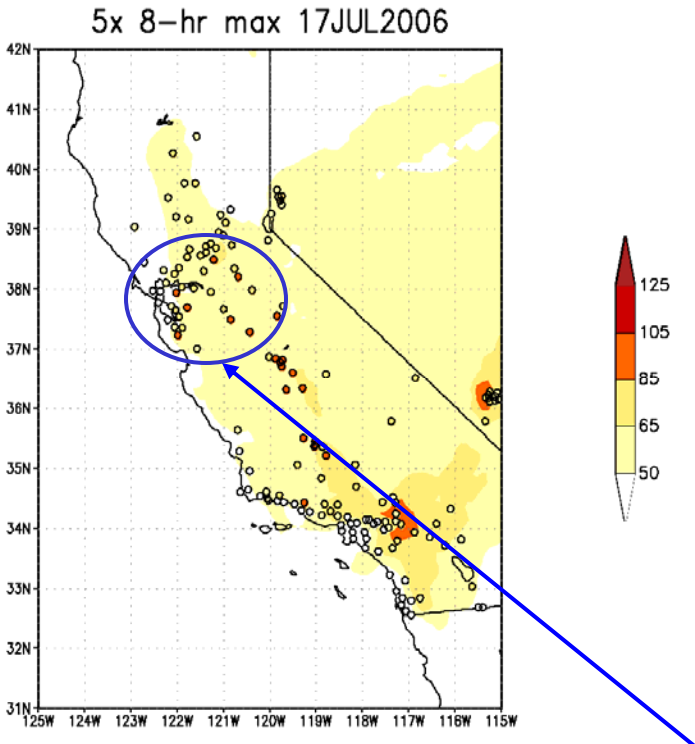
Gulf High Episode

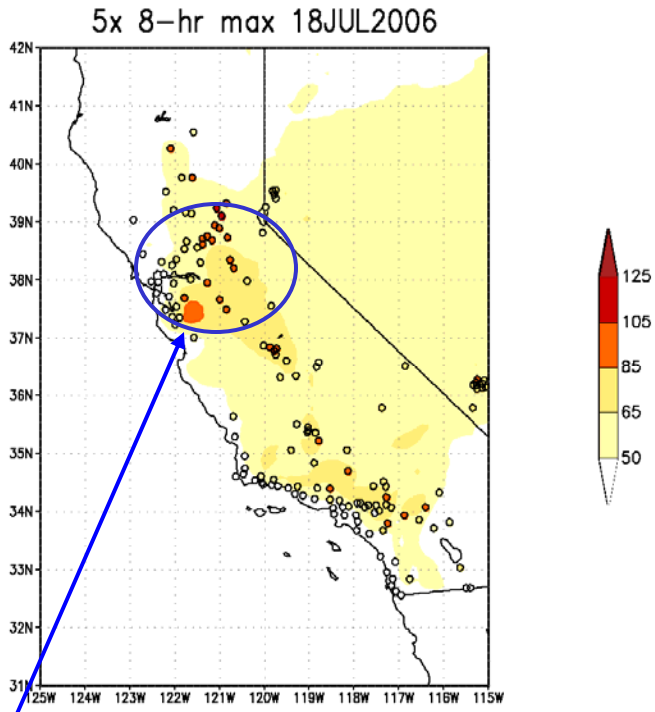




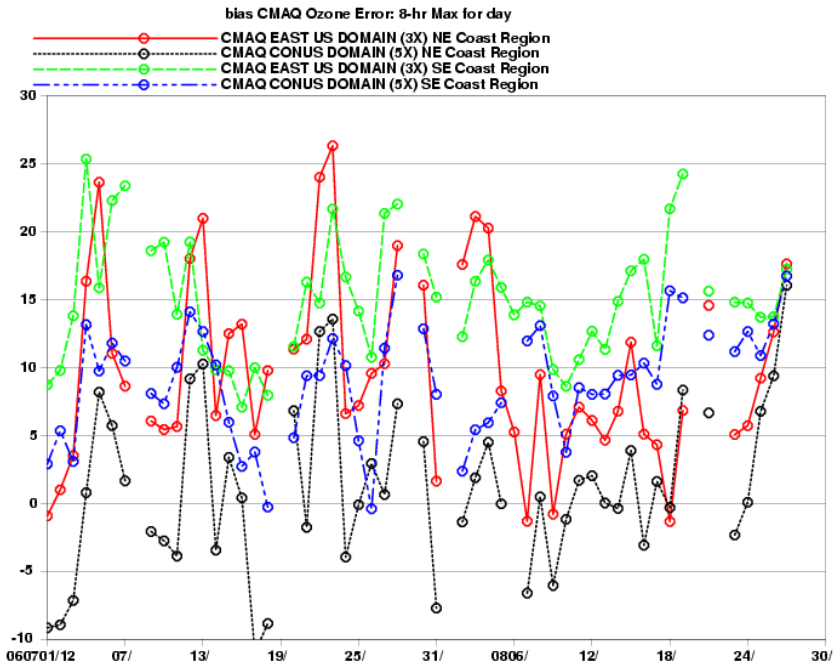
Both models underpredict

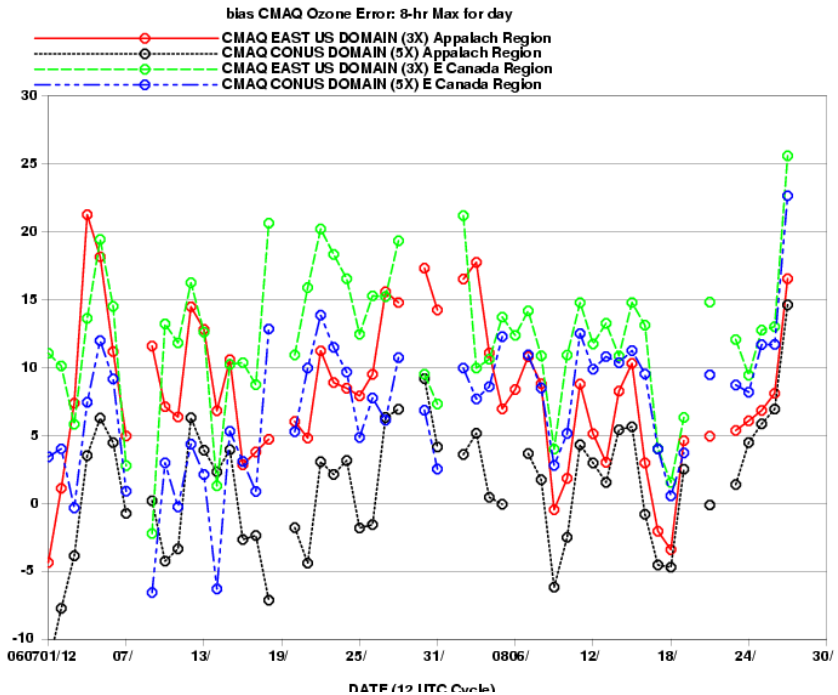
California High Episode





Strong underprediction


bias CMAQ Ozone Error: 8-hr Max for day
CMAQ EAST US DOMAIN (3X) NE Coast Region
CMAQ CONUS DOMAIN (5X) NE Coast Region
CMAQ EAST US DOMAIN (3X) SE Coast Region
CMAQ CONUS DOMAIN (5X) SE Coast Region
30
25
20
15
10
5
0
-5
-10
060701/12
07/
13/
19/
25/
31/
0806/
12/
18/
24/
30/


bias CMAQ Ozone Error: 8-hr Max for day
CMAQ EAST US DOMAIN (3X) Appalach Region
CMAQ CONUS DOMAIN (5X) Appalach Region
CMAQ EAST US DOMAIN (3X) E Canada Region
CMAQ CONUS DOMAIN (5X) E Canada Region
30
25
20
15
10
5
0
-5
-10
060701/12
07/
13/
19/
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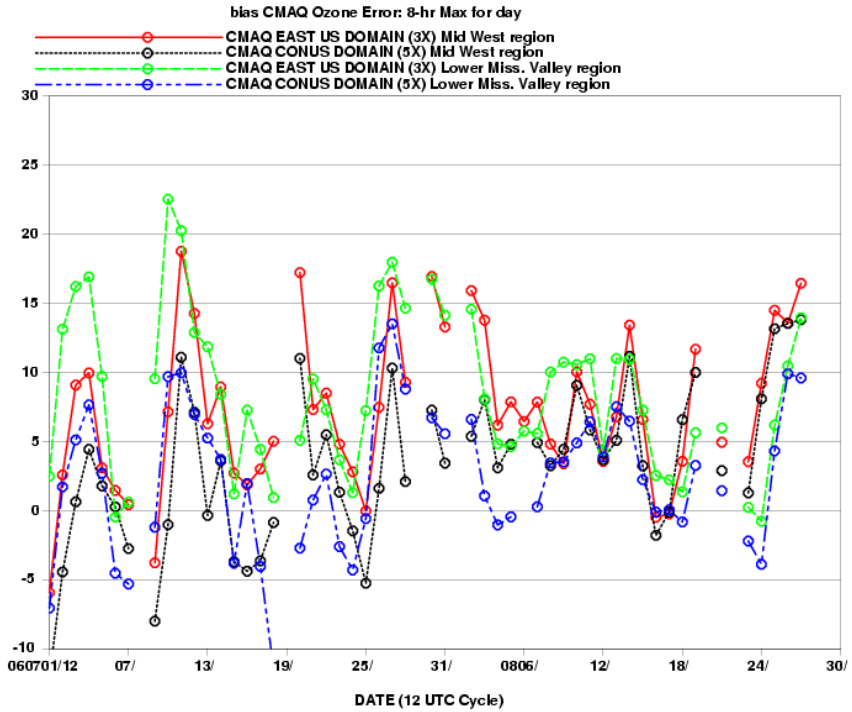
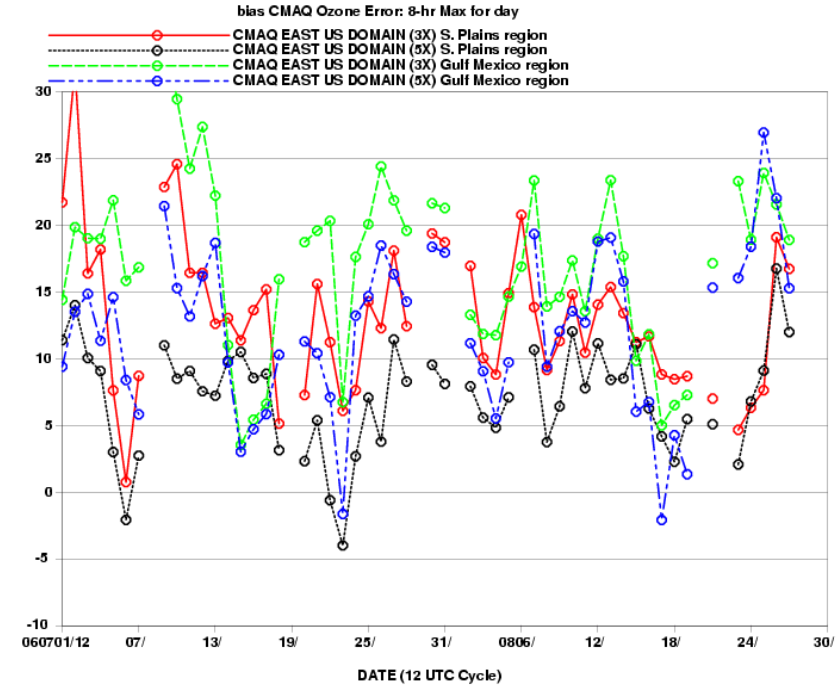
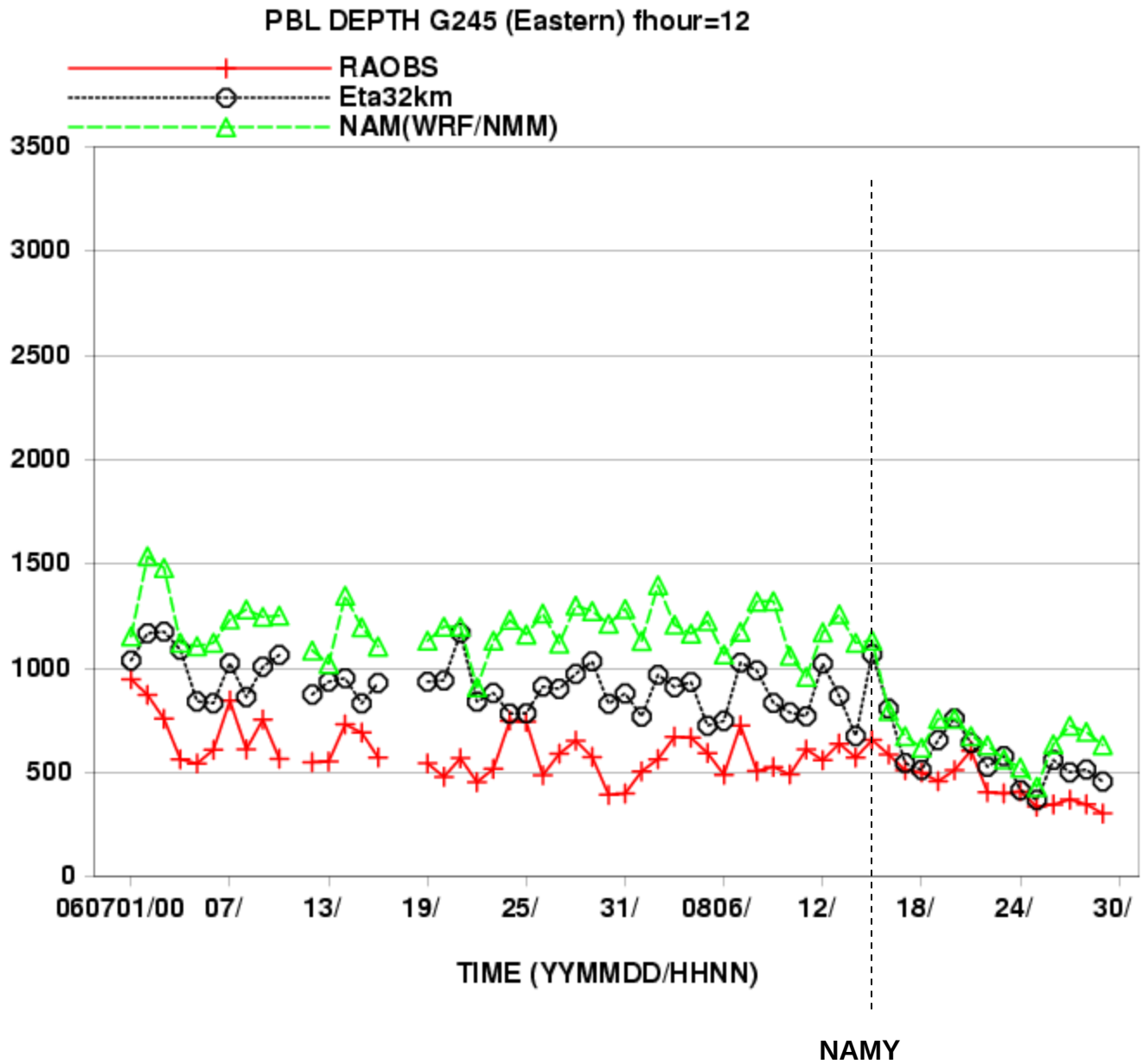
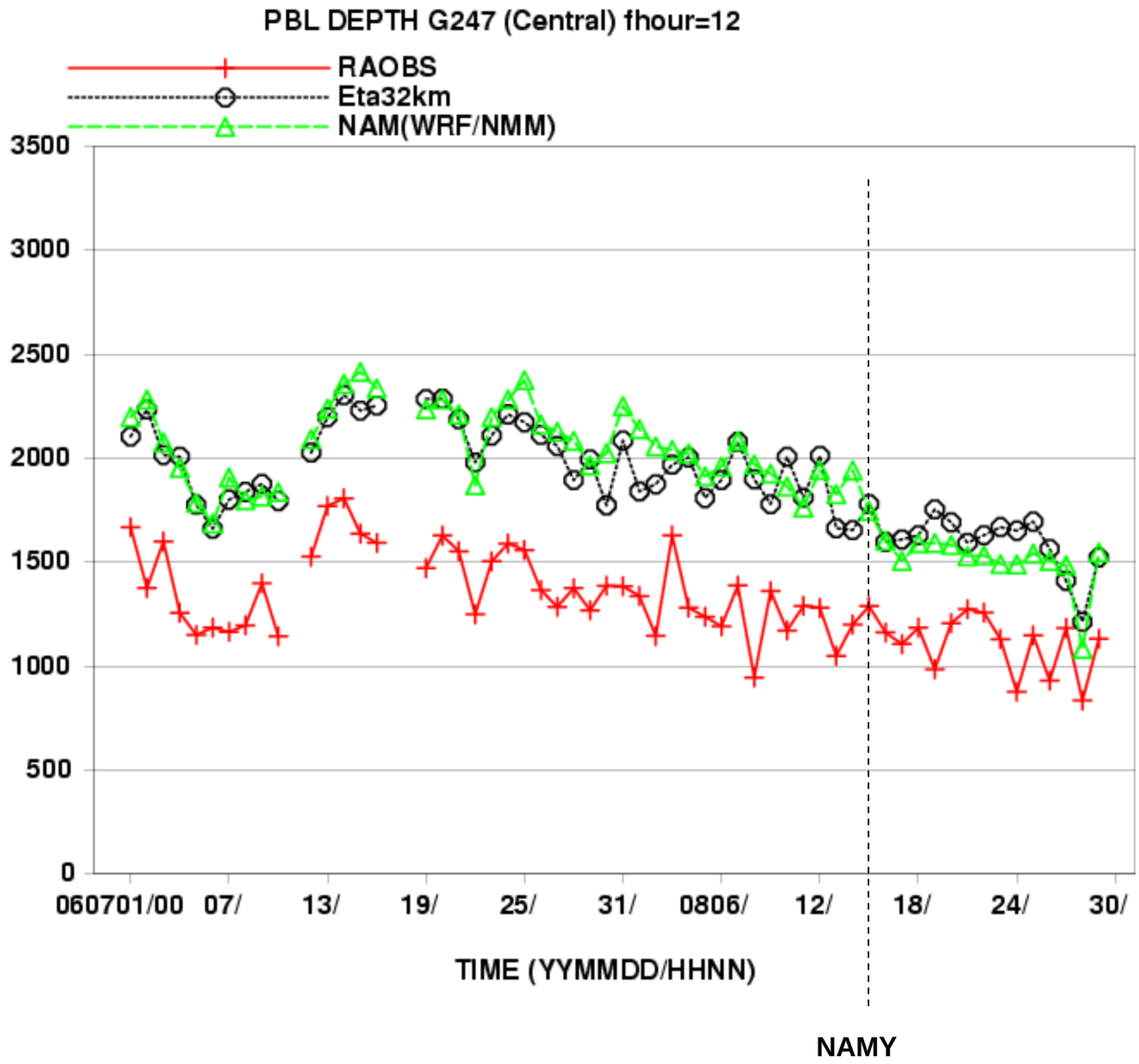
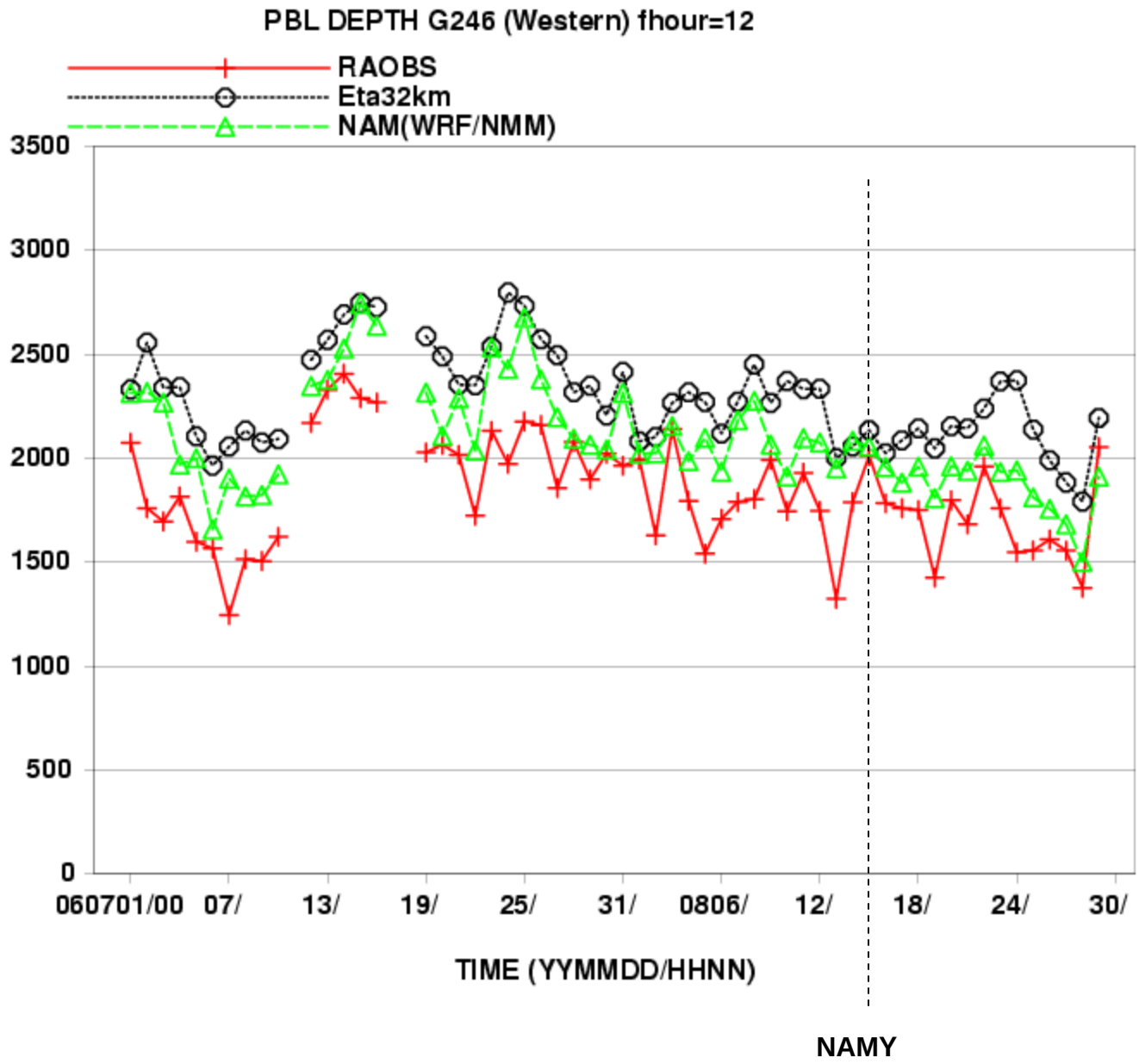
31/
0806/
12/
18/
24/
30/


bias CMAQ Ozone Error: 8-hr Max for day
CMAQ EAST US DOMAIN (3X) Mid West region
CMAQ CONUS DOMAIN (5X) Mid West region
CMAQ EAST US DOMAIN (3X) Lower Miss. Valley region
CMAQ CONUS DOMAIN (5X) Lower Miss. Valley region
30
25
20
15
10
5
0
-5
-10
060701/12
07/
13/
19/
25/
31/
0806/
12/
18/
24/
30/
DATE (12 UTC Cycle)


bias CMAQ Ozone Error: 8-hr Max for day
CMAQ EAST US DOMAIN (3X) S. Plains region
CMAQ EAST US DOMAIN (5X) S. Plains region
CMAQ EAST US DOMAIN (3X) Gulf Mexico region
CMAQ EAST US DOMAIN (5X) Gulf Mexico region
30
25
20
15
10
5
0
-5
-10
060701/12
07/
13/
19/
25/
31/
0806/
12/
18/
24/
30/
DATE (12 UTC Cycle)


PBL DEPTH G245 (Eastern) fhour=12
RAOBS
Eta32km
NAM(WRF/NMM)
3500
3000
2500
2000
1500
1000
500
0
060701/00
07/
13/
19/
25/
31/
0806/
12/
18/
24/
30/
TIME (YYMMDD/HHNN)
NAMY


PBL DEPTH G247 (Central) fhour=12
RAOBS
Eta32km
NAM(WRF/NMM)
3500
3000
2500
2000
1500
1000
500
0
060701/00
07/
13/
19/
25/
31/
0806/
12/
18/
24/
30/
TIME (YYMMDD/HHNN)
NAMY


PBL DEPTH G246 (Western) fhour=12
RAOBS
Eta32km
NAM(WRF/NMM)
3500
3000
2500
2000
1500
1000
500
0
060701/00
07/
13/
19/
25/
31/
0806/
12/
18/
24/
30/
TIME (YYMMDD/HHNN)
NAMY

SUMMARY:

• Temperature interpolation bug fix improved forecast at several points but is not seen in large area statistics

• After isoprene fix and NAM to NAMY change parallel 5x in much closer to operational 3x

• All 3x subdomains have positive bias, while for 5x configuration Eastern and Central subdomains have positive or small negative bias; and the West is strongly underpredicted

• For the Eastern US subdomains, 5x is very close to 3x or better

• For PBL verification, there is evident impact of NAM to NAMY change: better agreement with RAOBS data