VIIRS in RTG SST HR

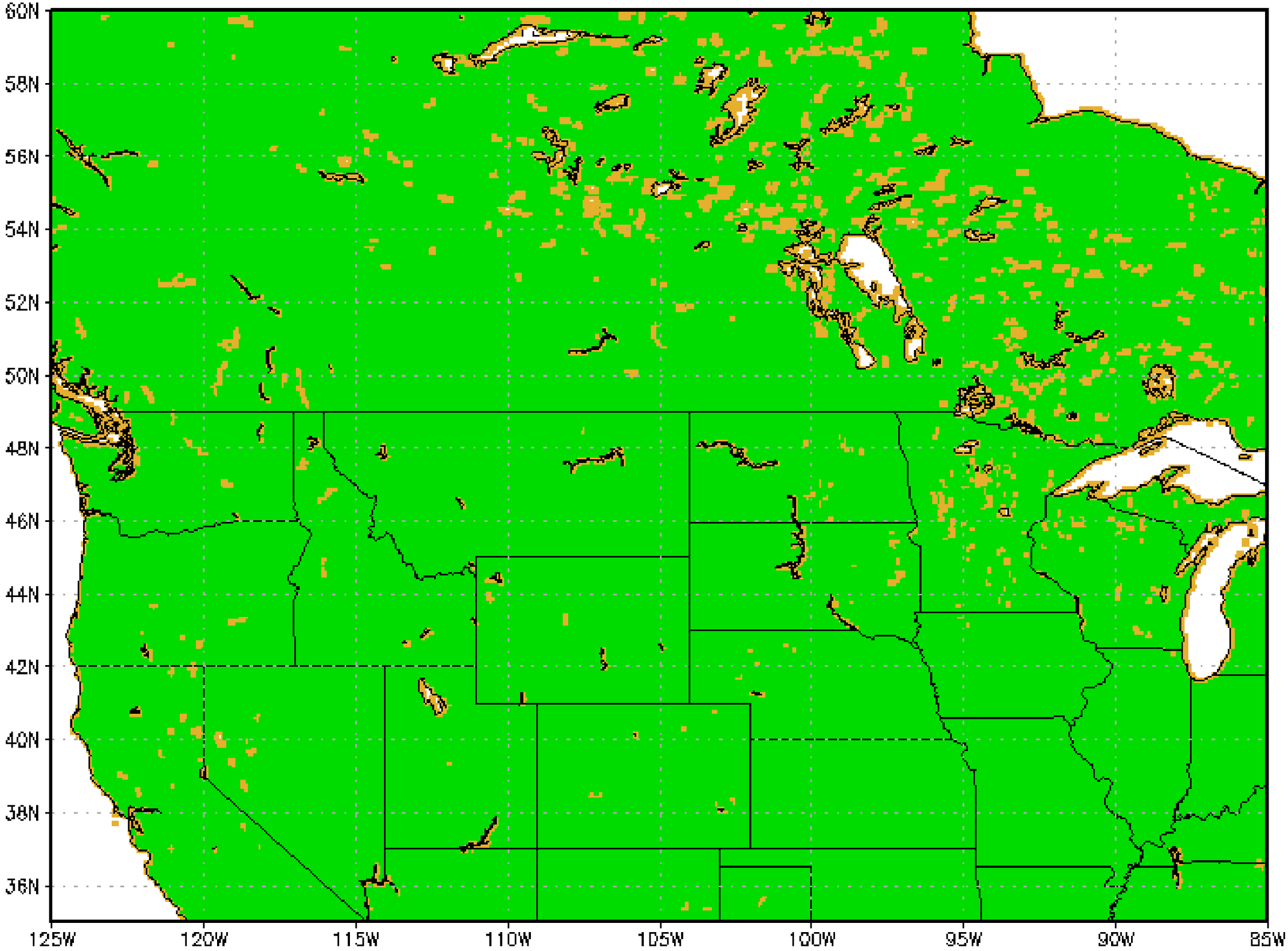
Robert Grumbine, Bert Katz

RTG Data Sources

- In Situ
  - Buoys, Ships, CMAN, (to come: ARGO, Walrus,)…
- Satellite
  - AVHRR — L1b — physical retrievals (NOAA-18, 19; Metop A, B)
  - GOES-13,15 — L3 — NESDIS composited retrievals
  - VIIRS — L2 (to come) — High resolution retrievals (~1 km)
  - AMSR2 — L2 (to come+1) — Microwave (large footprint, but see through clouds)

RTG Analysis Grids

- Being retired — half degree
- Operational — 1/12th degree, 5 arcmin, ~10 km
  - Future — N. America at 2.5 km?
- Masking via bounding curves to arbitrary target
- Daily average, buoy depth
  - Future — buoy depth and ?skin temperature
  - Future — resolve diurnal cycle (6 hrs or more frequent analysis)


60N
58N
56N
54N
52N
50N
48N
46N
44N
42N
40N
38N
36N
125W
120W
115W
110W
105W
100W
95W
90W
85W
0
150
190
220

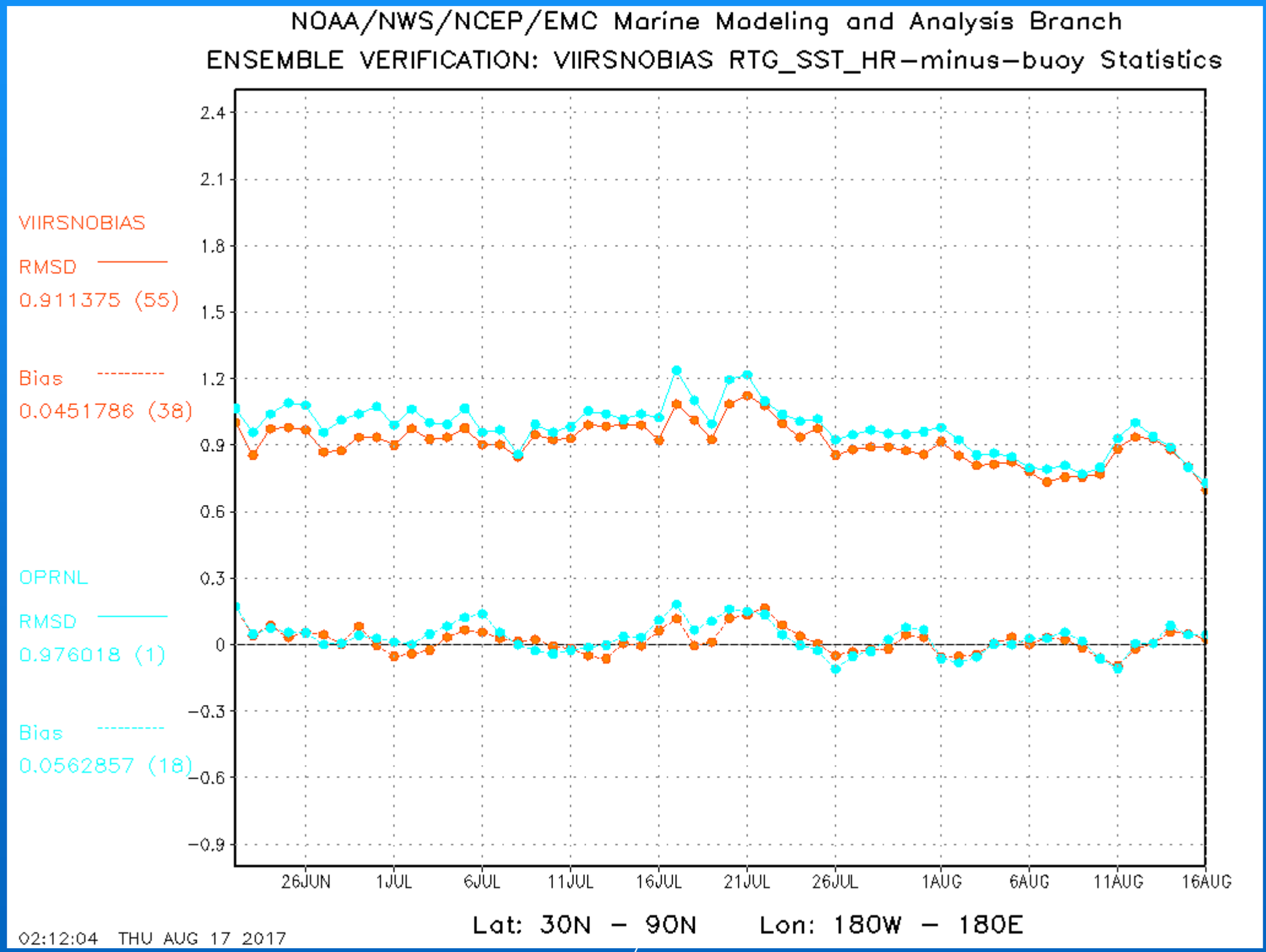
VIIRS

L2 ACSPO -- SST Retrievals
- GHRSST (CF 2.0) NetCDF
  - Rely on SSES
- BUFR
  - NWS Operations
  - Challenges of volume + format

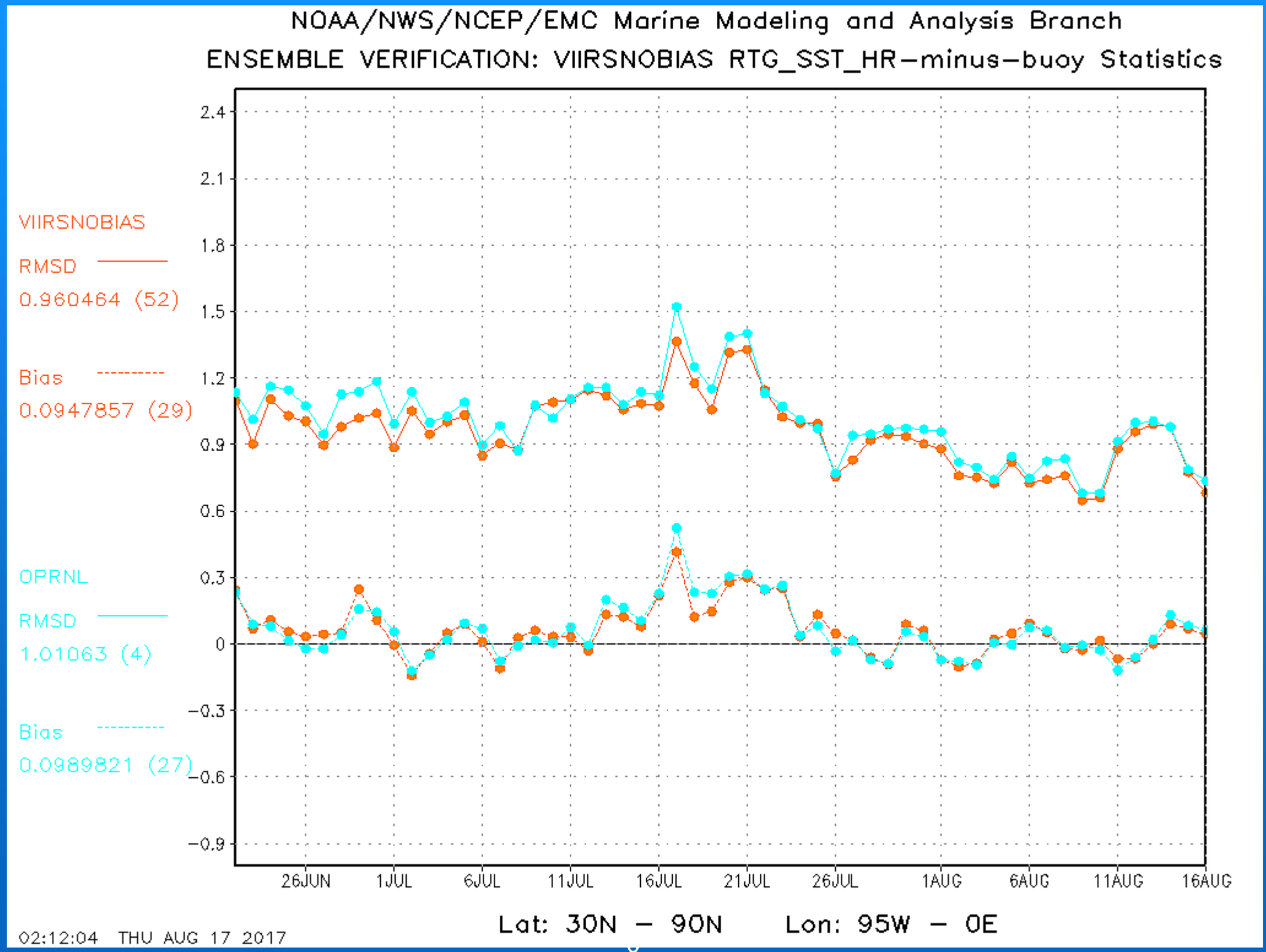
Verification

33 subdomains
5 repeated, independent, analyses with 20% of in situ withheld
Score against withheld data
Bernoulli trial assessment

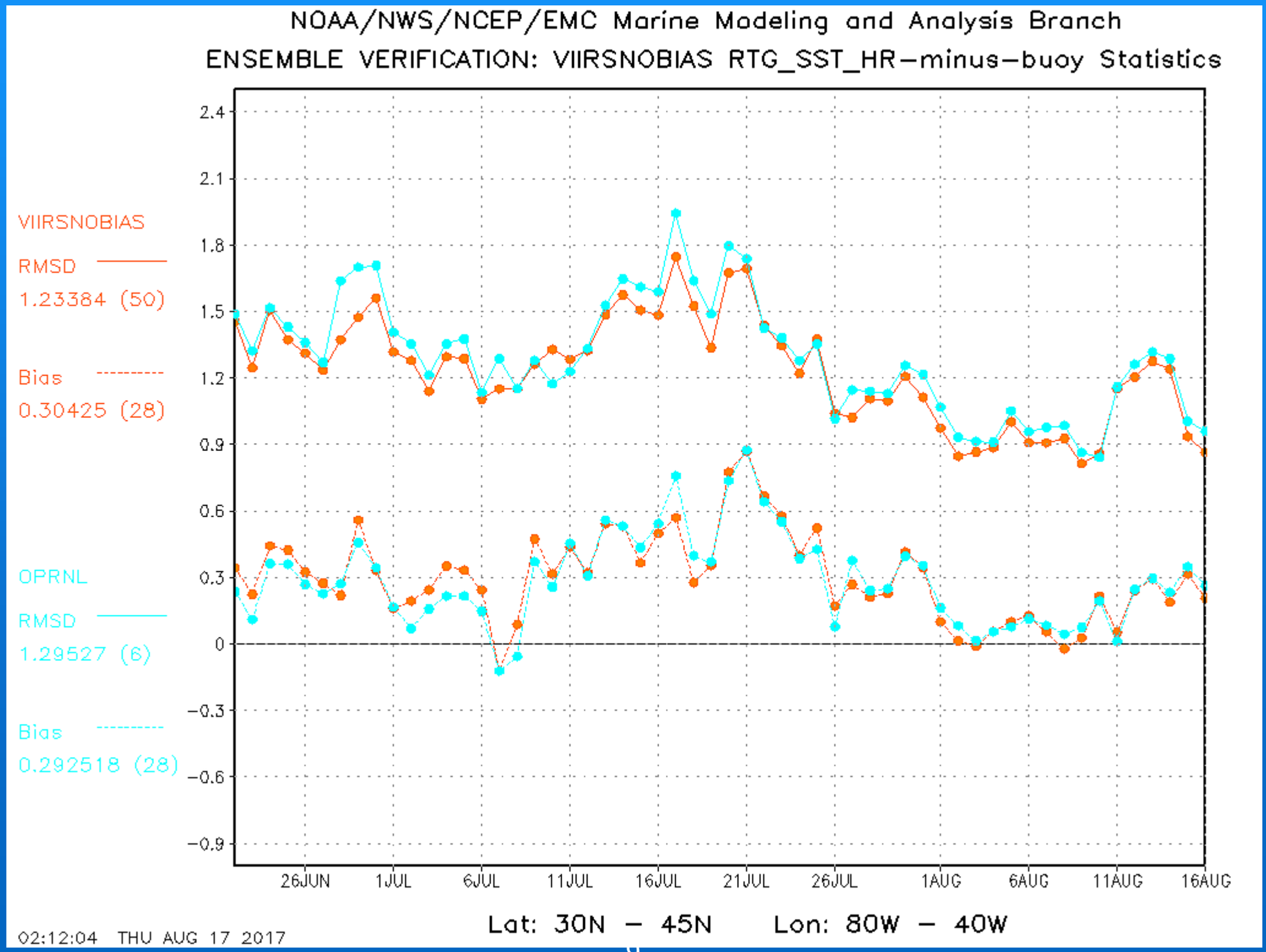
Verification -- NH extratropical



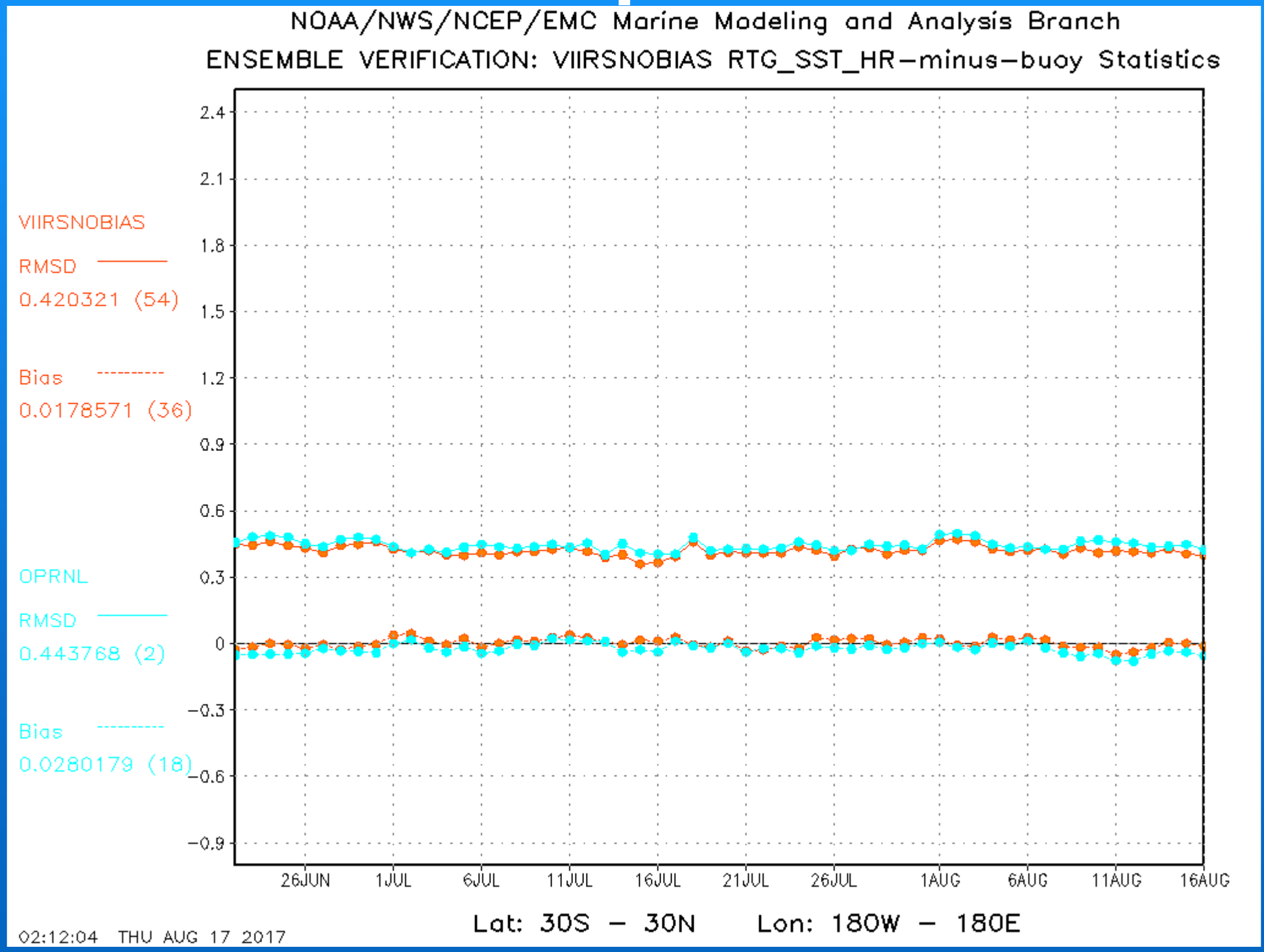
N. Atlantic


NOAA/NWS/NCEP/EMC Marine Modeling and Analysis Branch
ENSEMBLE VERIFICATION: VIIRSNOBIAS RTG_SST_HR−minus−buoy Statistics
VIIRSNOBIAS
RMSD
0.960464 (52)
Bias
0.0947857 (29)
OPRNL
RMSD
1.01063 (4)
Bias
0.0989821 (27)
2.4
2.1
1.8
1.5
1.2
0.9
0.6
0.3
0
−0.3
−0.6
−0.9
26JUN
1JUL
6JUL
11JUL
16JUL
21JUL
26JUL
1AUG
6AUG
11AUG
16AUG
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Lat: 30N − 90N Lon: 95W − 0E

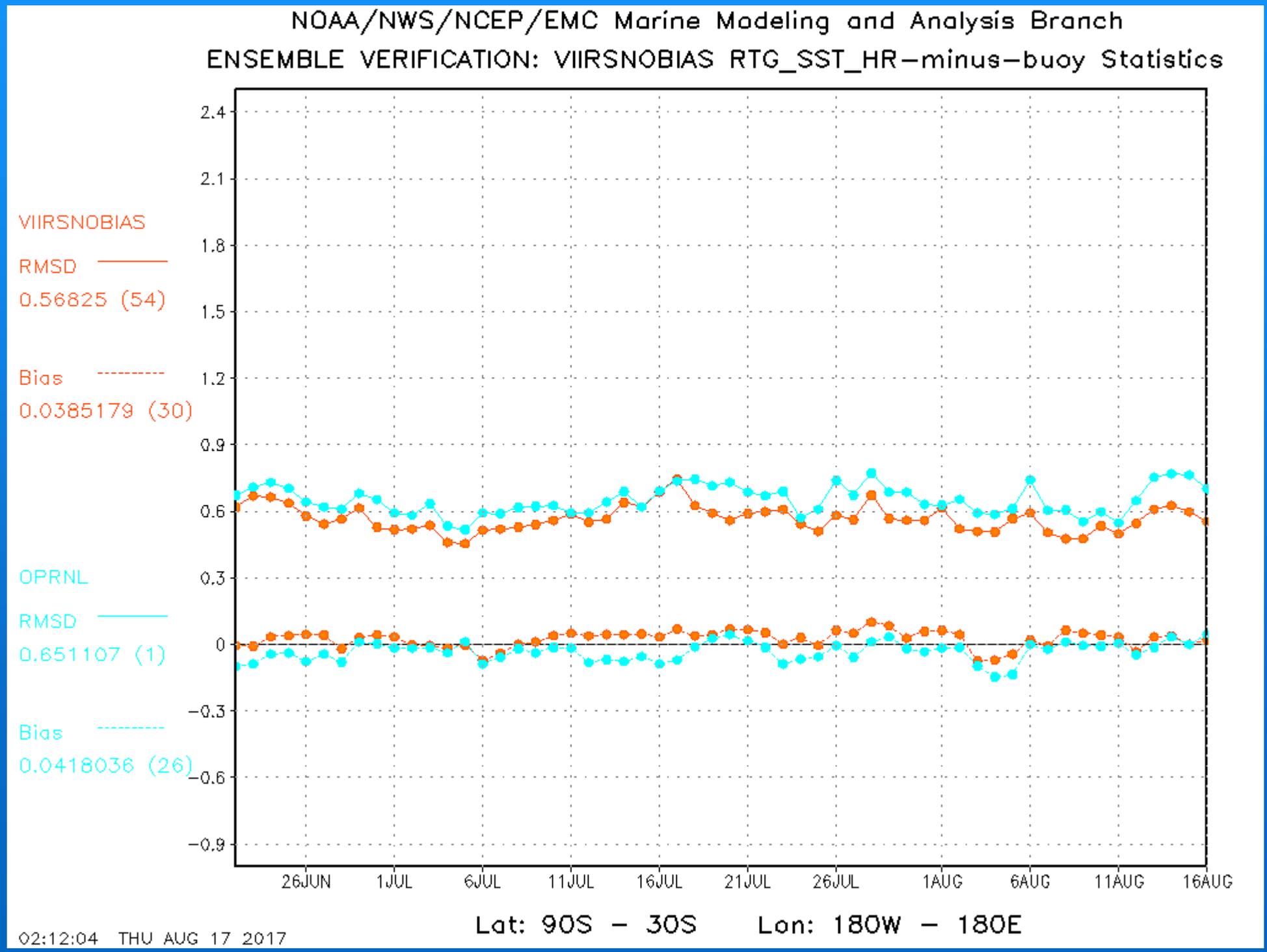
NW Atlantic


NOAA/NWS/NCEP/EMC Marine Modeling and Analysis Branch
ENSEMBLE VERIFICATION: VIIRSNOBIAS RTG_SST_HR−minus−buoy Statistics
VIIRSNOBIAS
RMSD
1.23384 (50)
Bias
0.30425 (28)
OPRNL
RMSD
1.29527 (6)
Bias
0.292518 (28)
2.4
2.1
1.8
1.5
1.2
0.9
0.6
0.3
0
−0.3
−0.6
−0.9
26JUN
1JUL
6JUL
11JUL
16JUL
21JUL
26JUL
1AUG
6AUG
11AUG
16AUG
02:12:04 THU AUG 17 2017
Lat: 30N − 45N
Lon: 80W − 40W

Tropics


NOAA/NWS/NCEP/EMC Marine Modeling and Analysis Branch
ENSEMBLE VERIFICATION: VIIRSNOBIAS RTG_SST_HR−minus−buoy Statistics
VIIRSNOBIAS
RMSD
0.420321 (54)
Bias
0.0178571 (36)
OPRNL
RMSD
0.443768 (2)
Bias
0.0280179 (18)
2.4
2.1
1.8
1.5
1.2
0.9
0.6
0.3
0
−0.3
−0.6
−0.9
26JUN
1JUL
6JUL
11JUL
16JUL
21JUL
26JUL
1AUG
6AUG
11AUG
16AUG
02:12:04 THU AUG 17 2017
Lat: 30S − 30N Lon: 180W − 180E

SH Extratropical



Conclusions

Clear winner

Implementation ~Fall 2017

Thank you