NOAA Air Quality Forecast Feedback for 2014 Ozone Season

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South Coast Air Quality Management District

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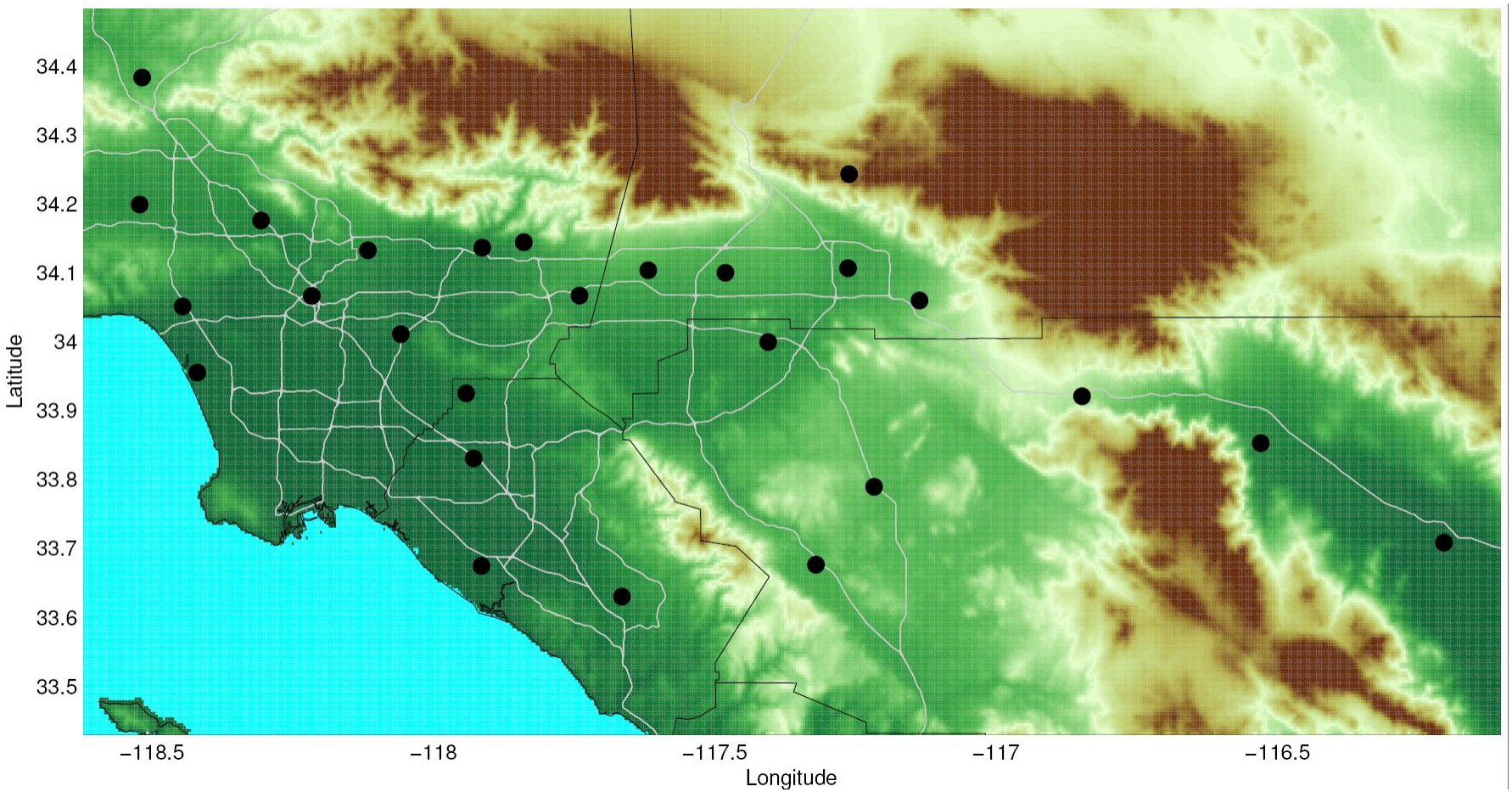
NOAA Forecast Product

- GRIB file downloaded from
  - ftp://ftp.emc.ncep.noaa.gov/mmb/aq/for_NDGD_5x_expr/
  - **12z cycle** was the primary focus of our analysis
  - Available files are
    - aqm.t12z.grib2_1hr.227
    - aqm.t12z.grib2_8hr.227
    - aqm.t12z.grib2_5xpmnmmb.227
  - The period was from May 1 to August 24
  - New CMAQ 4.6.3 has been used to produce since August 5

The Greater Los Angeles Area



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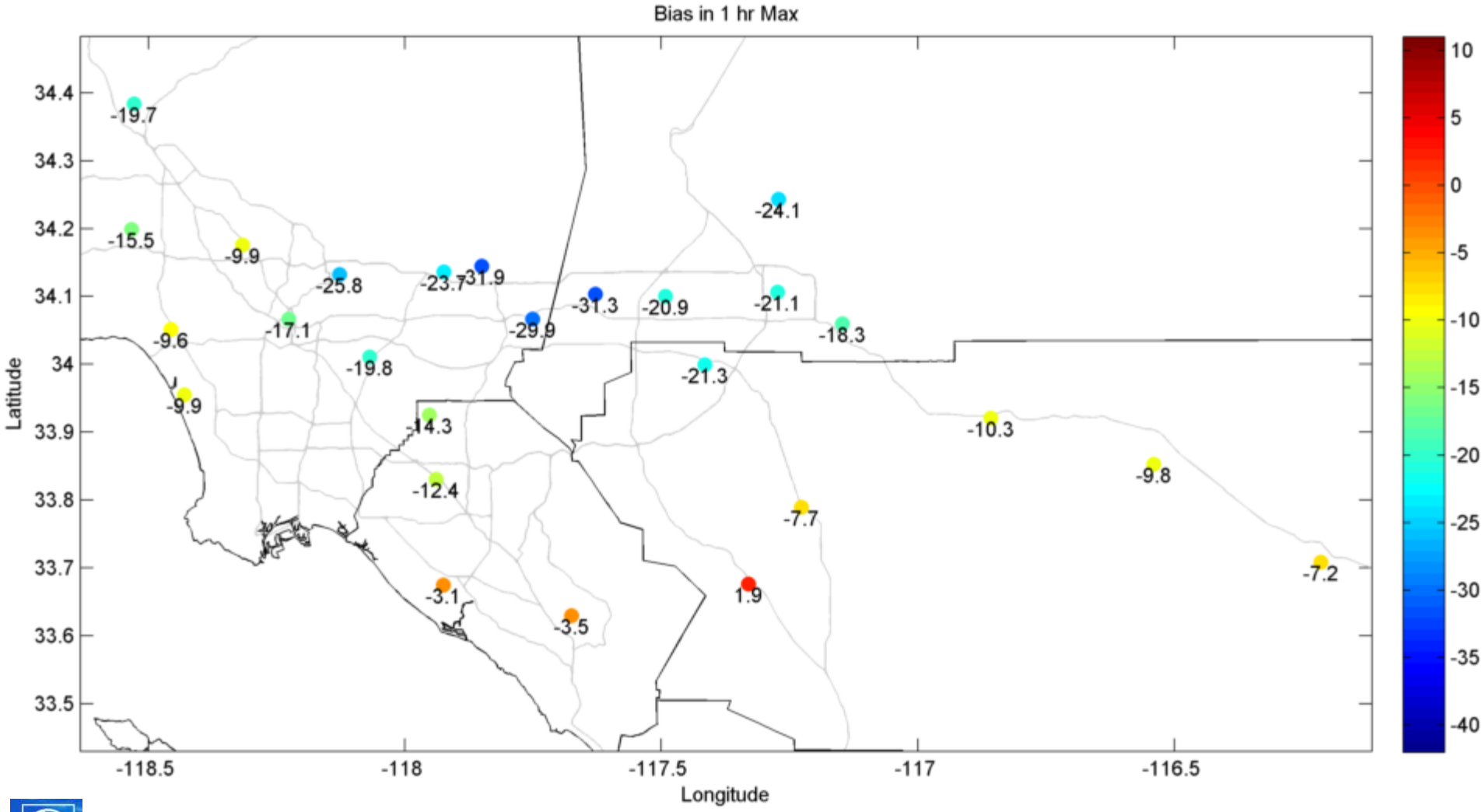
1 hr Ozone Bias for May - August



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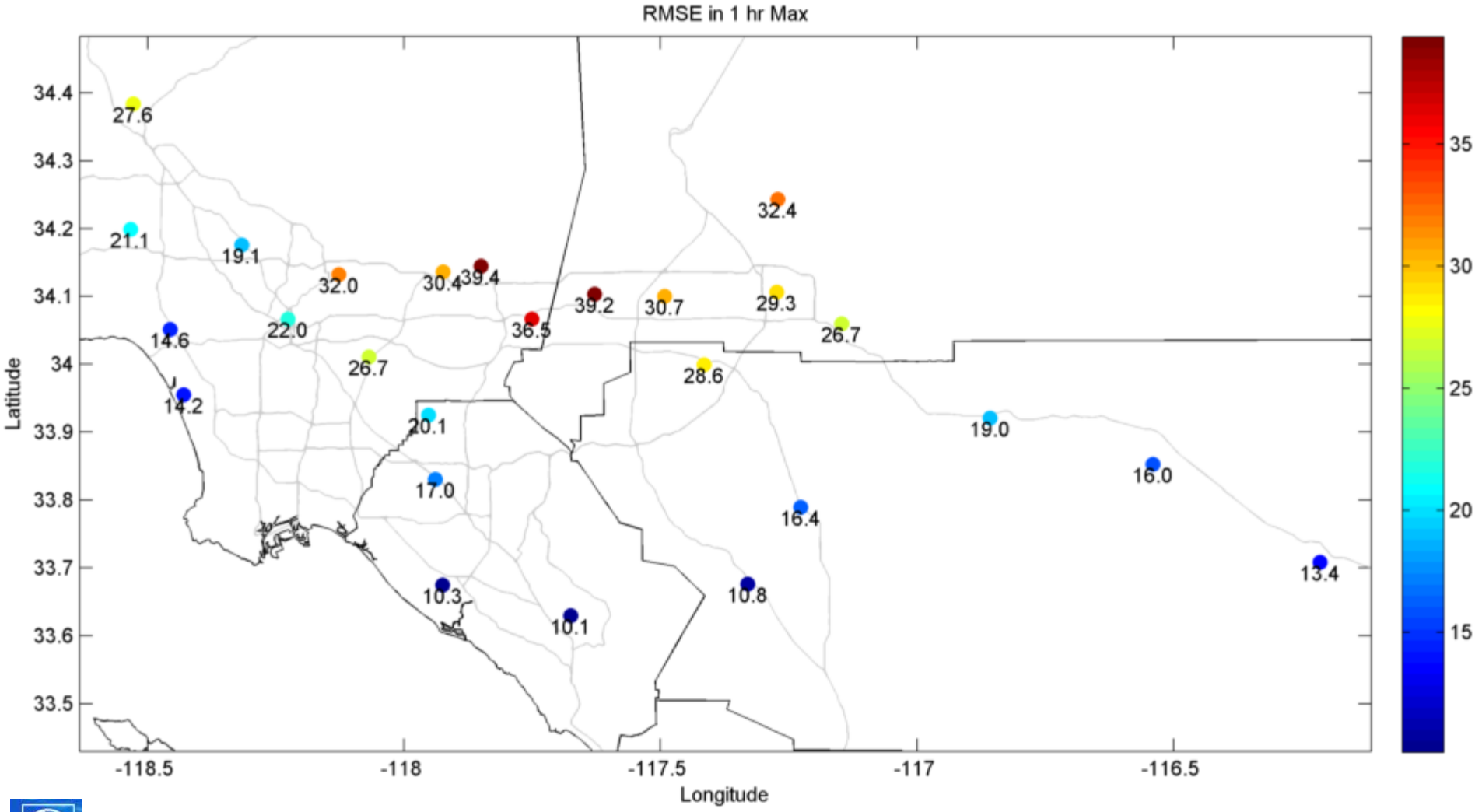
1 hr Ozone RMSE



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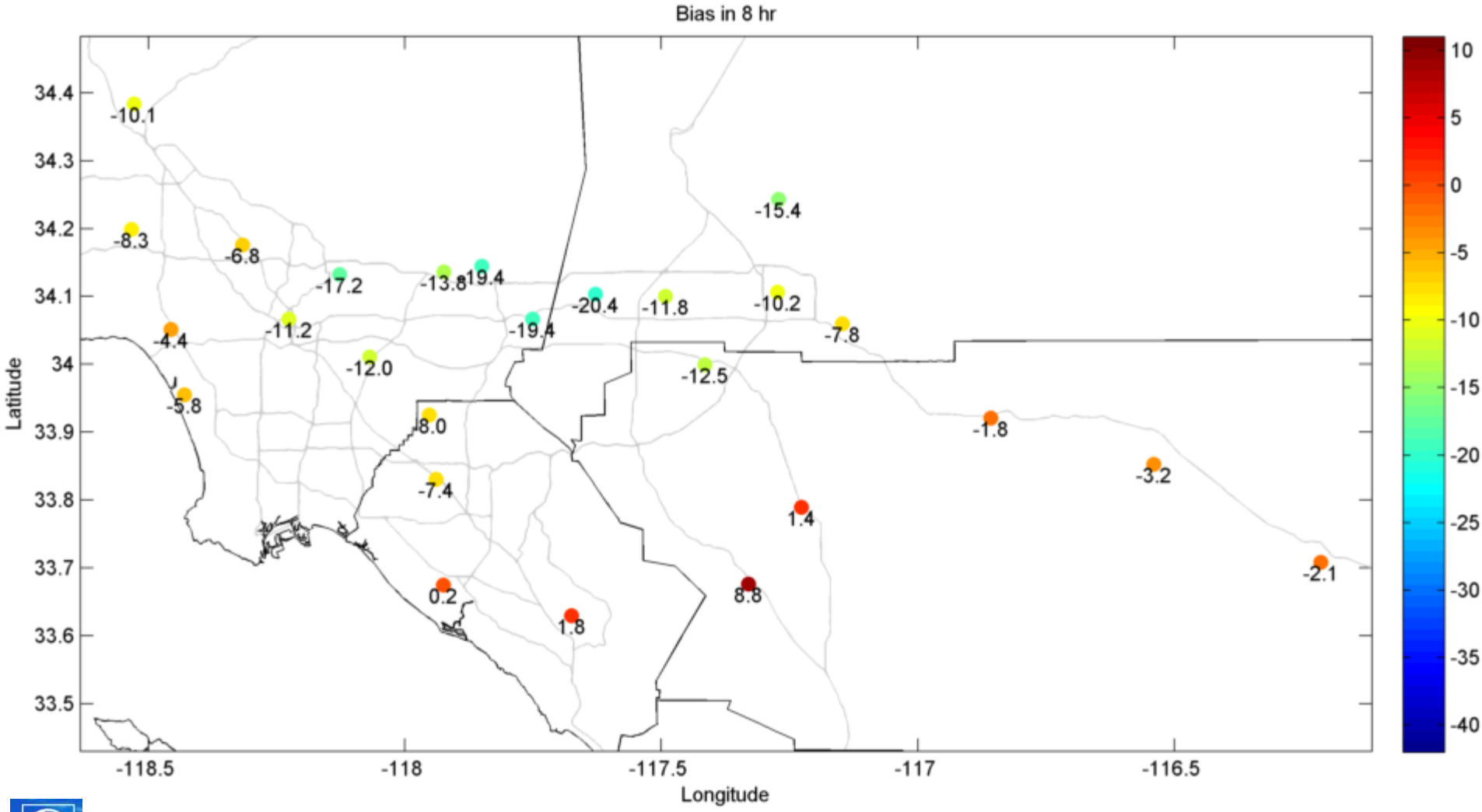
8 hr Ozone Bias for May - August



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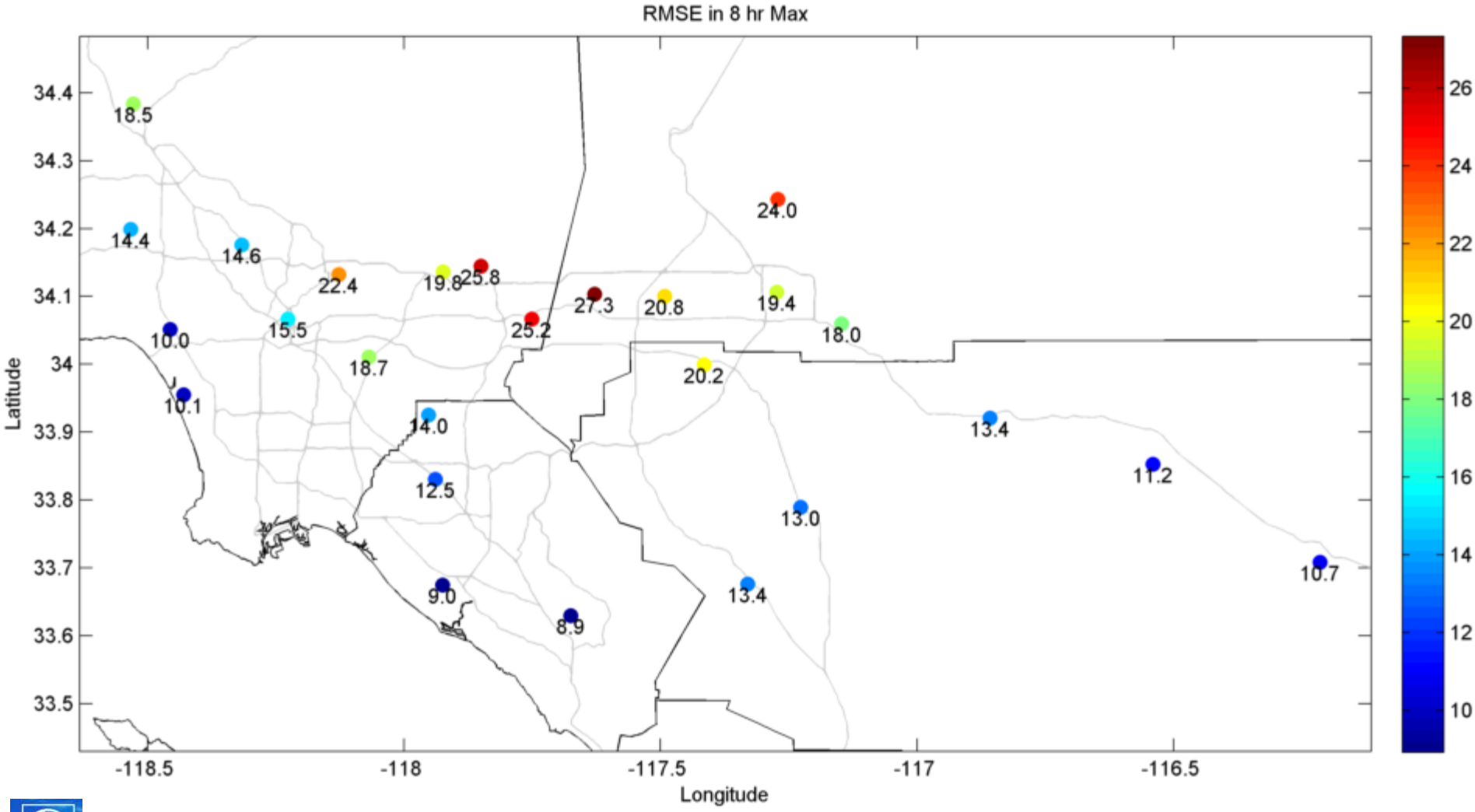
8 hr Ozone RMSE



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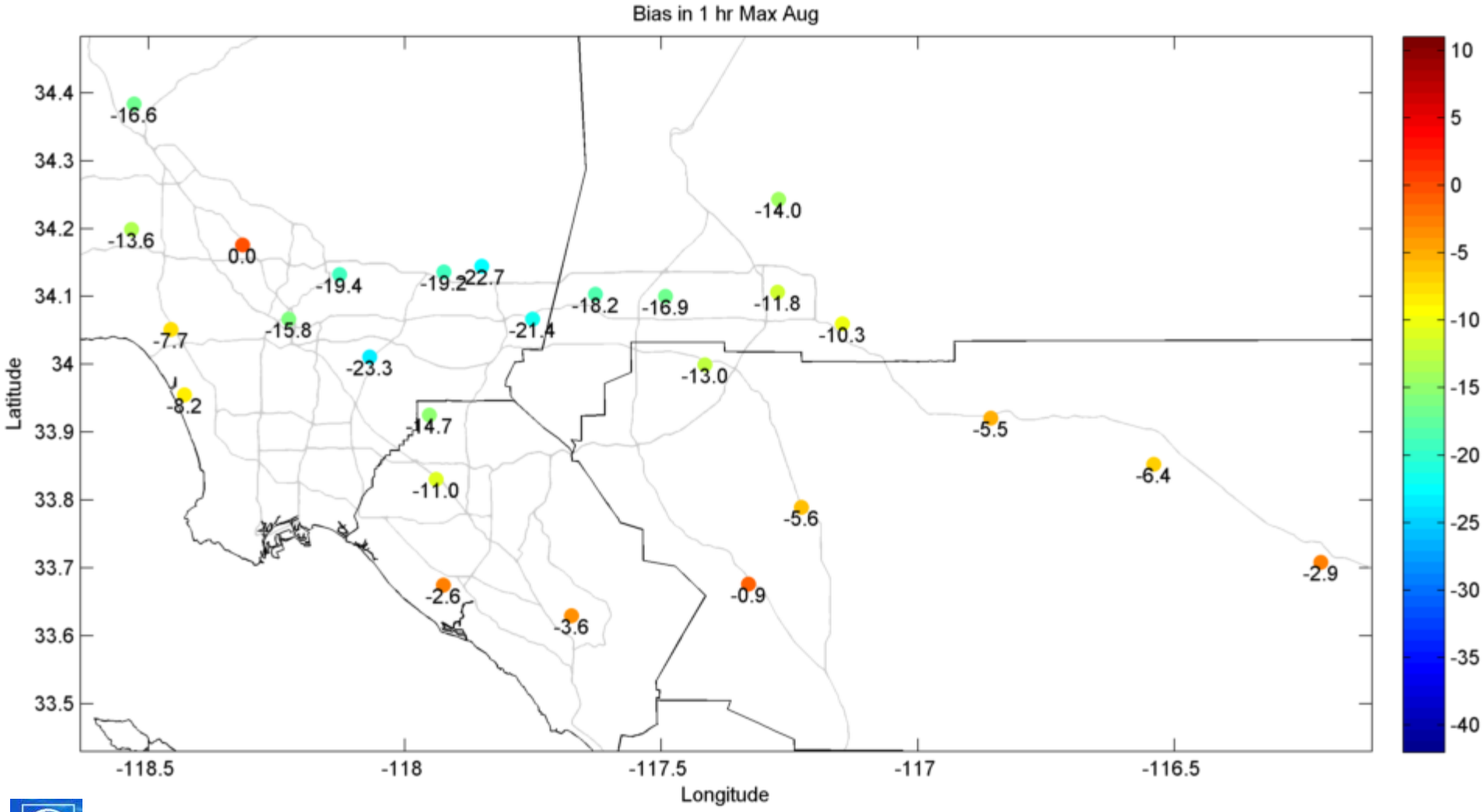
1 hr Ozone Bias for August 1-24



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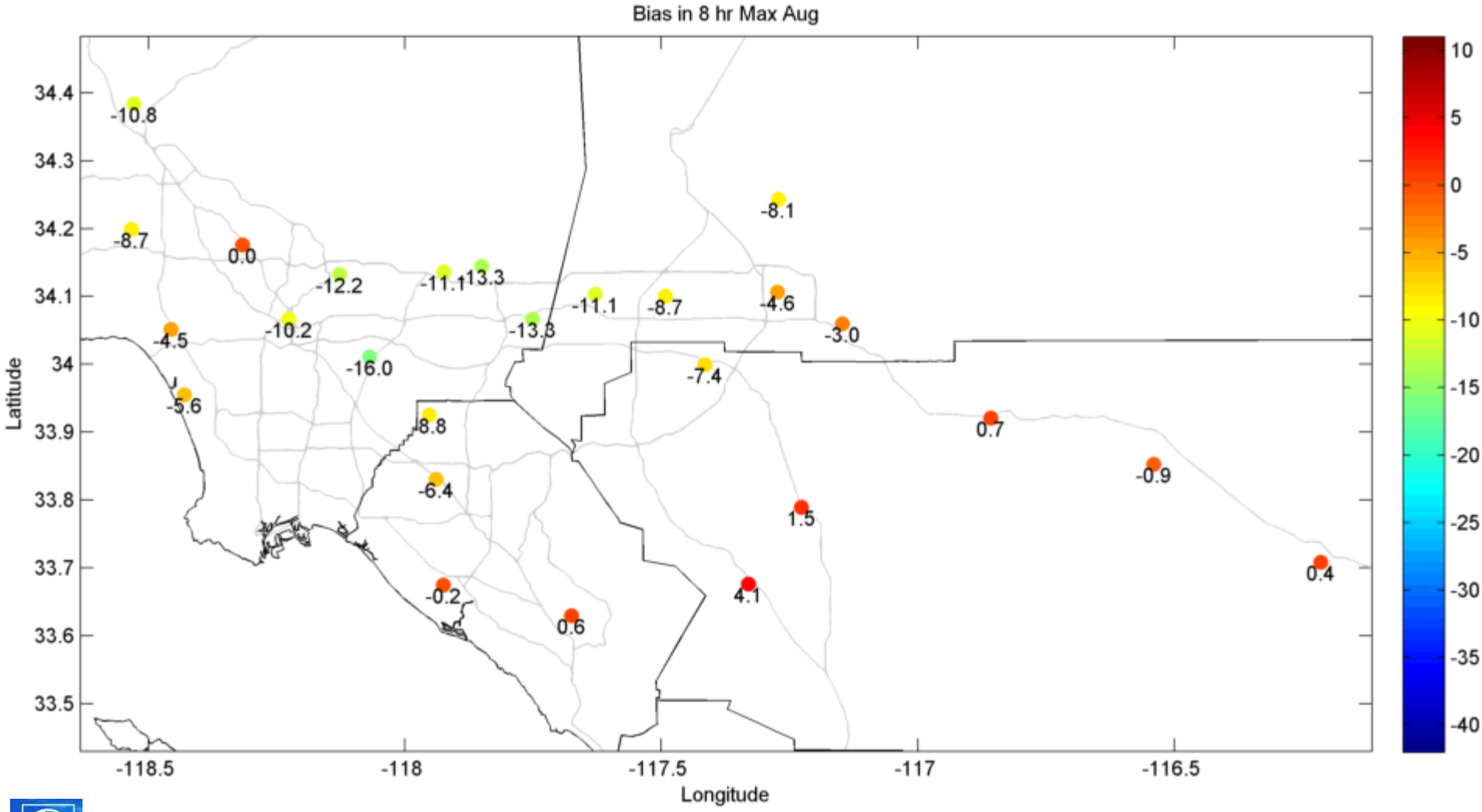
8 hr Ozone Bias for August 1-24



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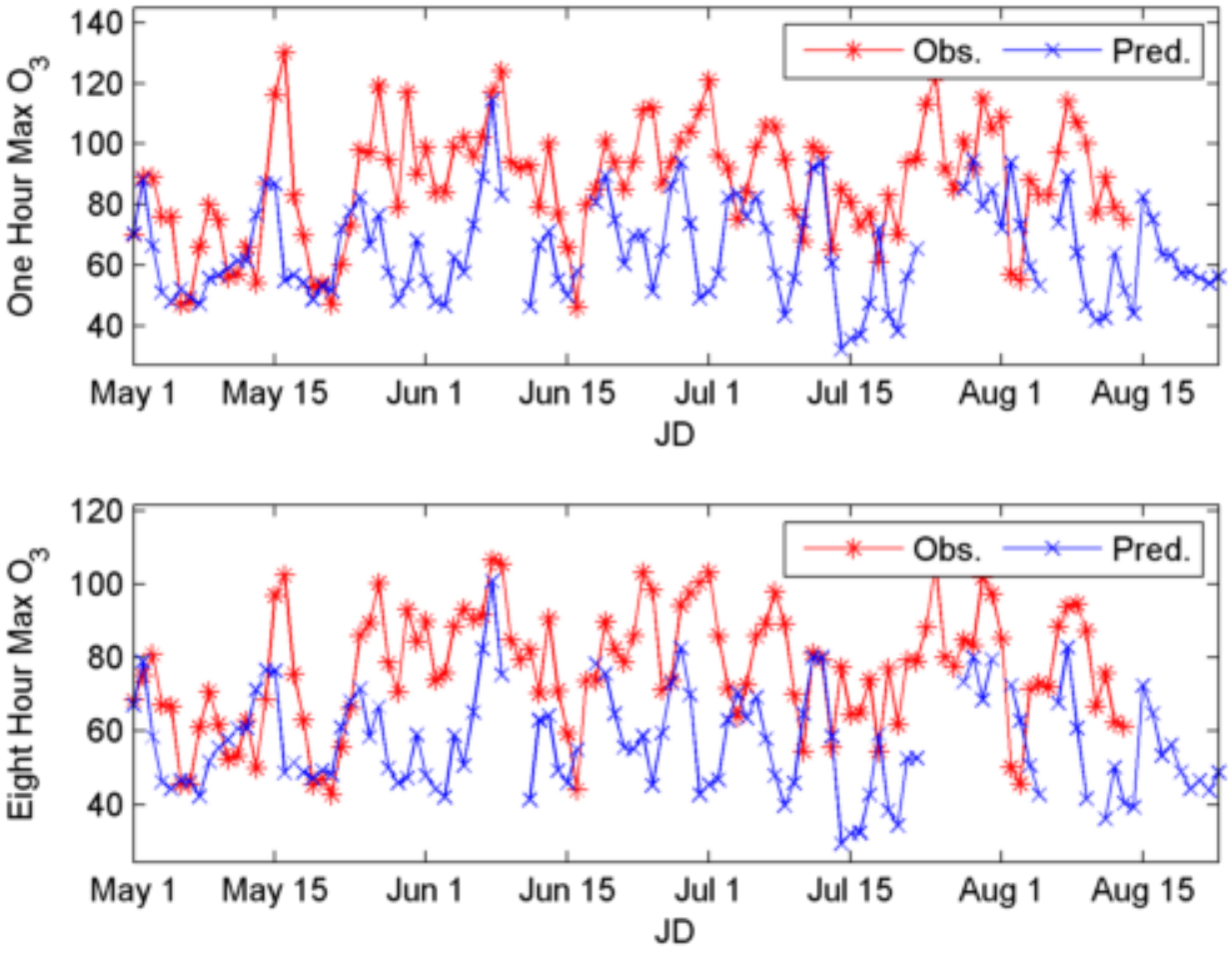
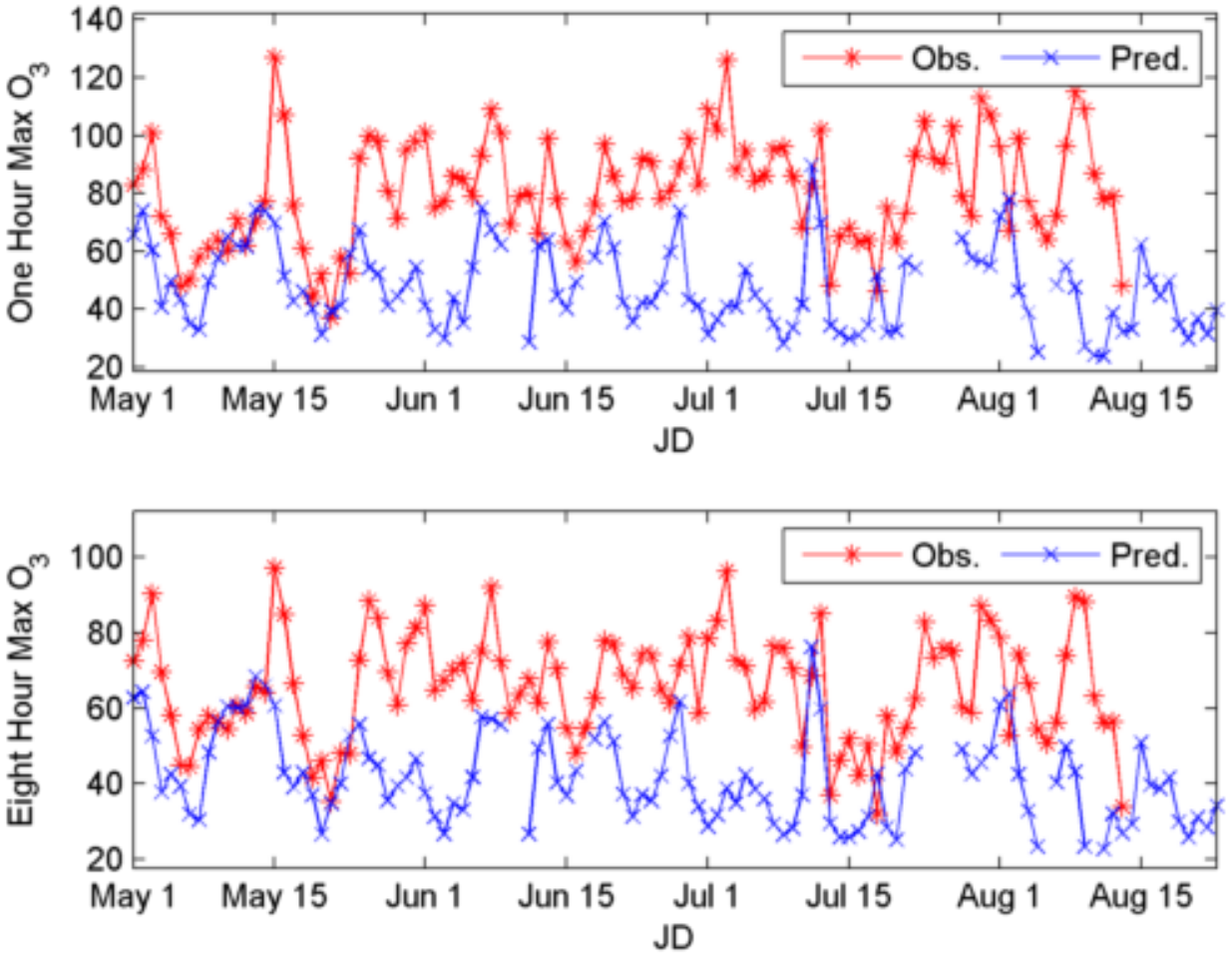
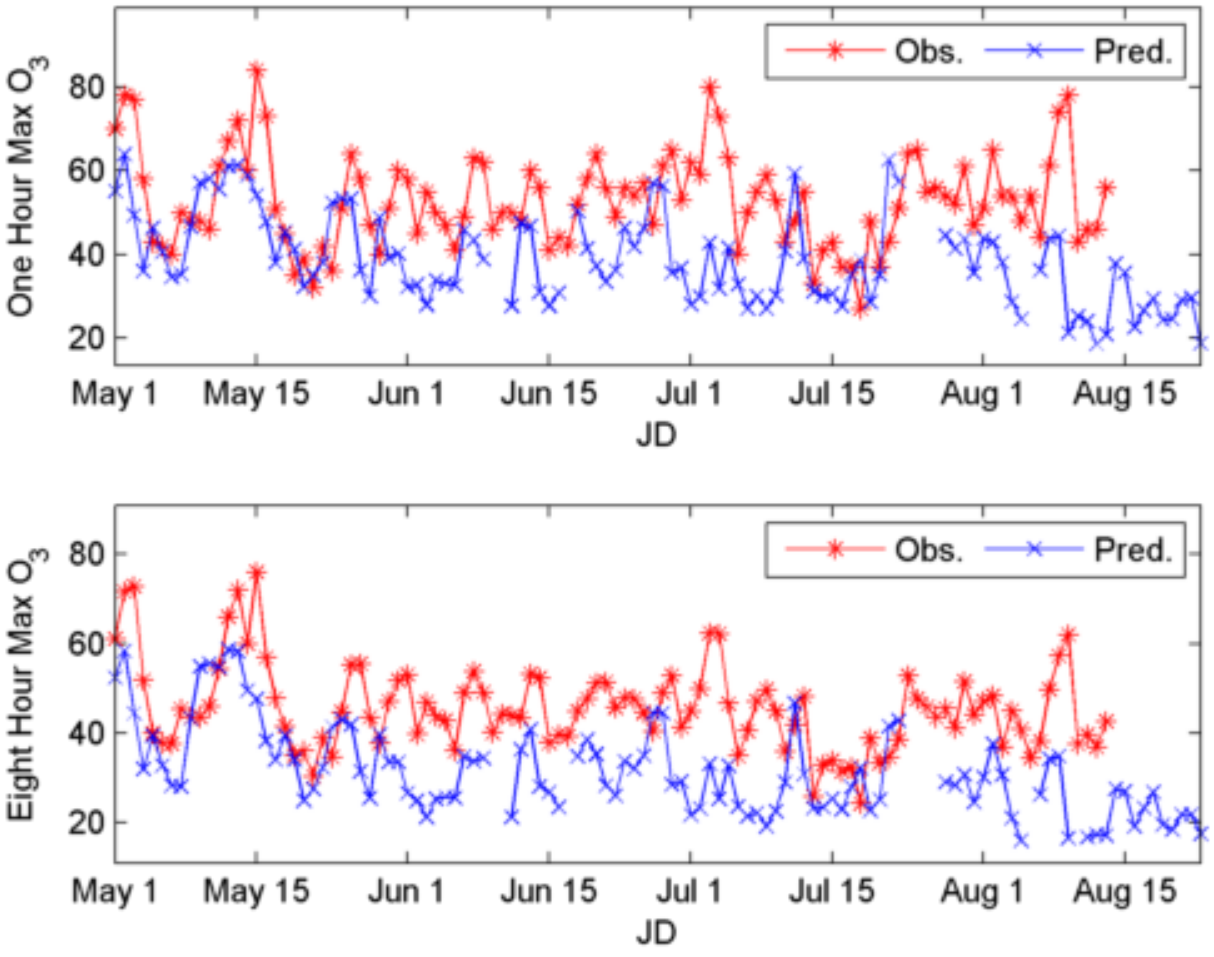
Crestline (aqm.t12z.grib2_1hr.227)



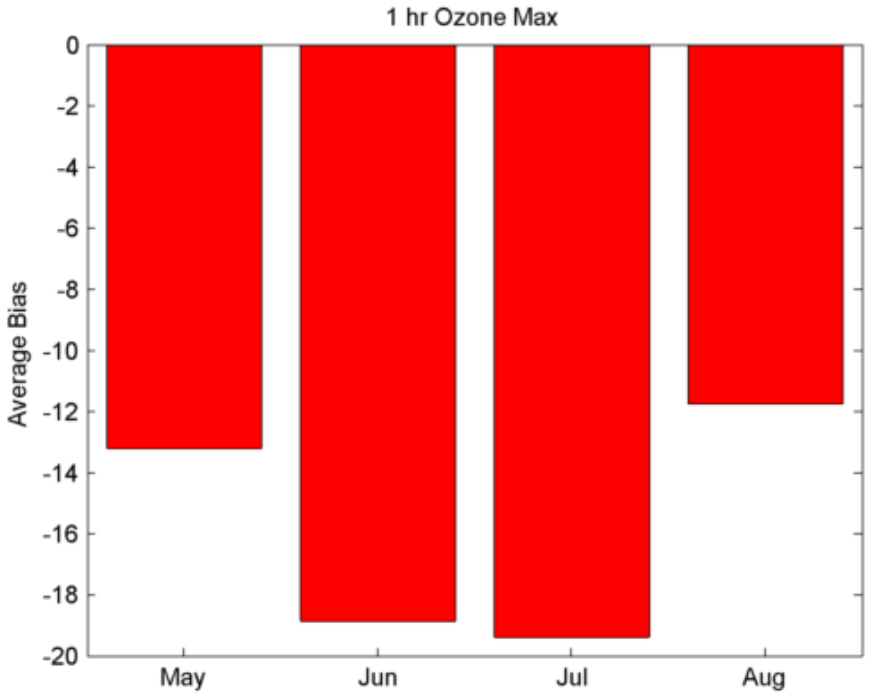
Glendora

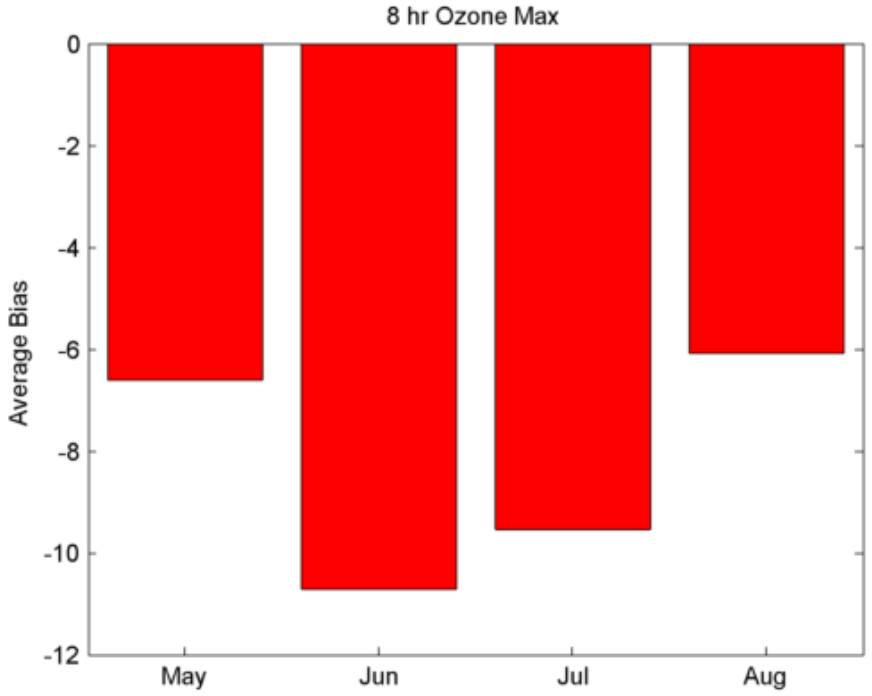

One Hour Max O_3
140
120
100
80
60
40
20
Obs.
Pred.
May 1
May 15
Jun 1
Jun 15
Jul 1
Jul 15
Aug 1
Aug 15
JD
Eight Hour Max O_3
100
80
60
40
20
Obs.
Pred.
May 1
May 15
Jun 1
Jun 15
Jul 1
Jul 15
Aug 1
Aug 15
JD

Central Los Angeles



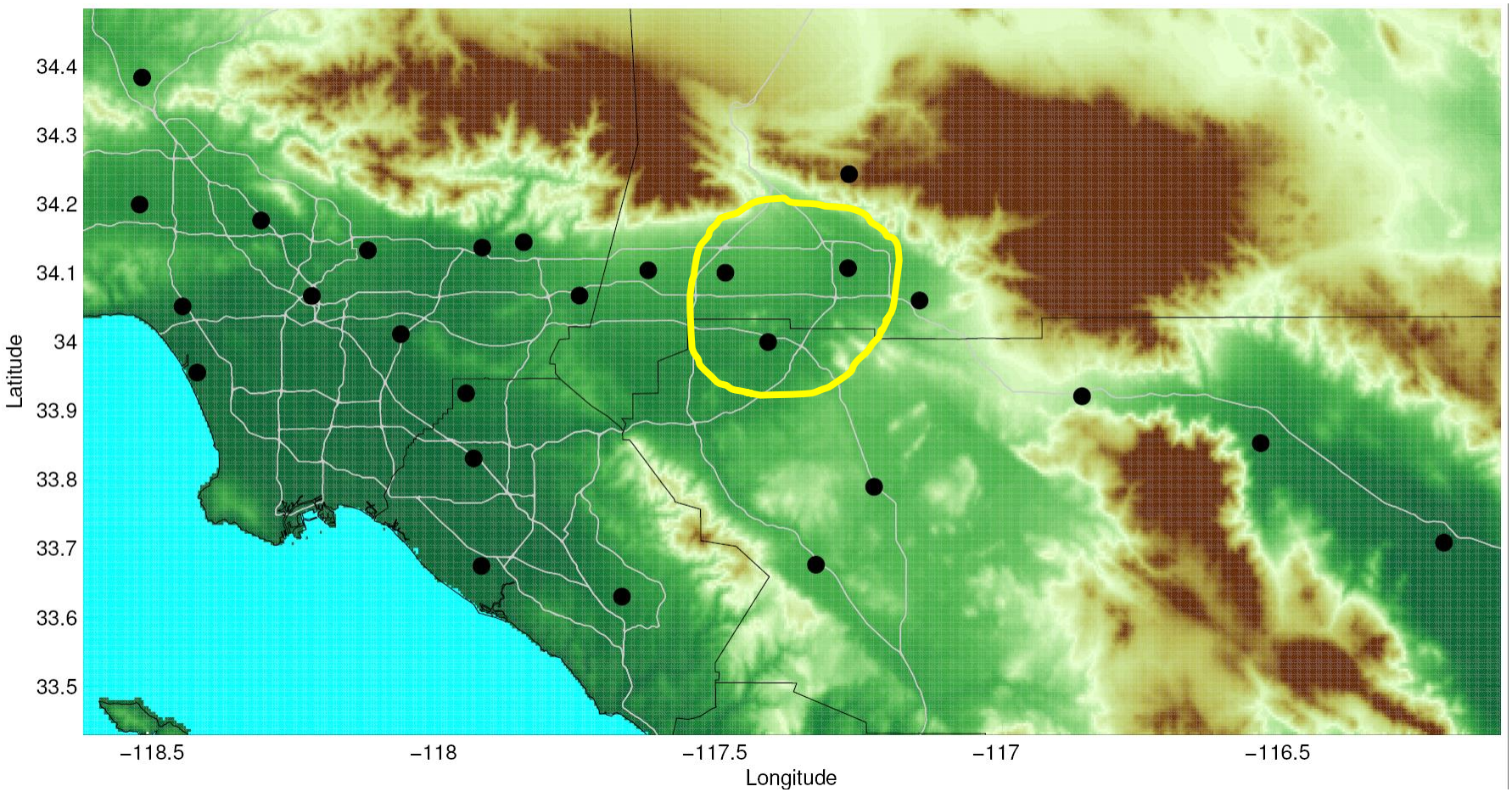
Basin Average Bias per month





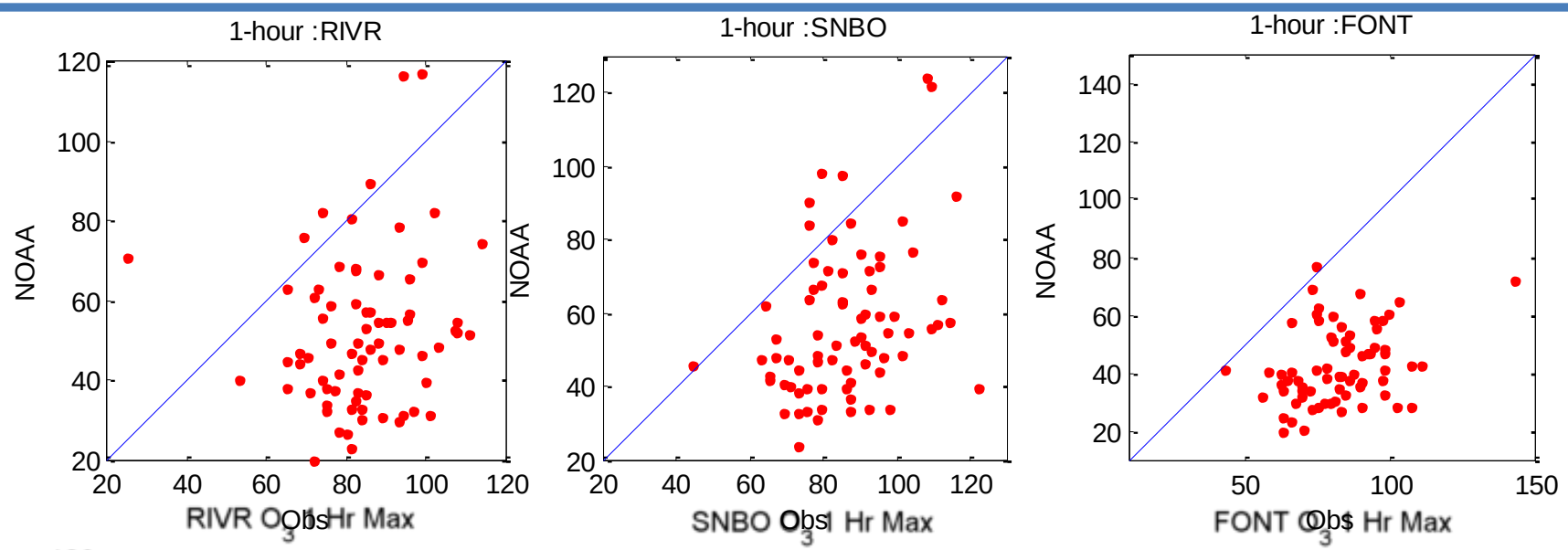
COMPARISON TO THE SEASON 2010

Inland Downwind Stations

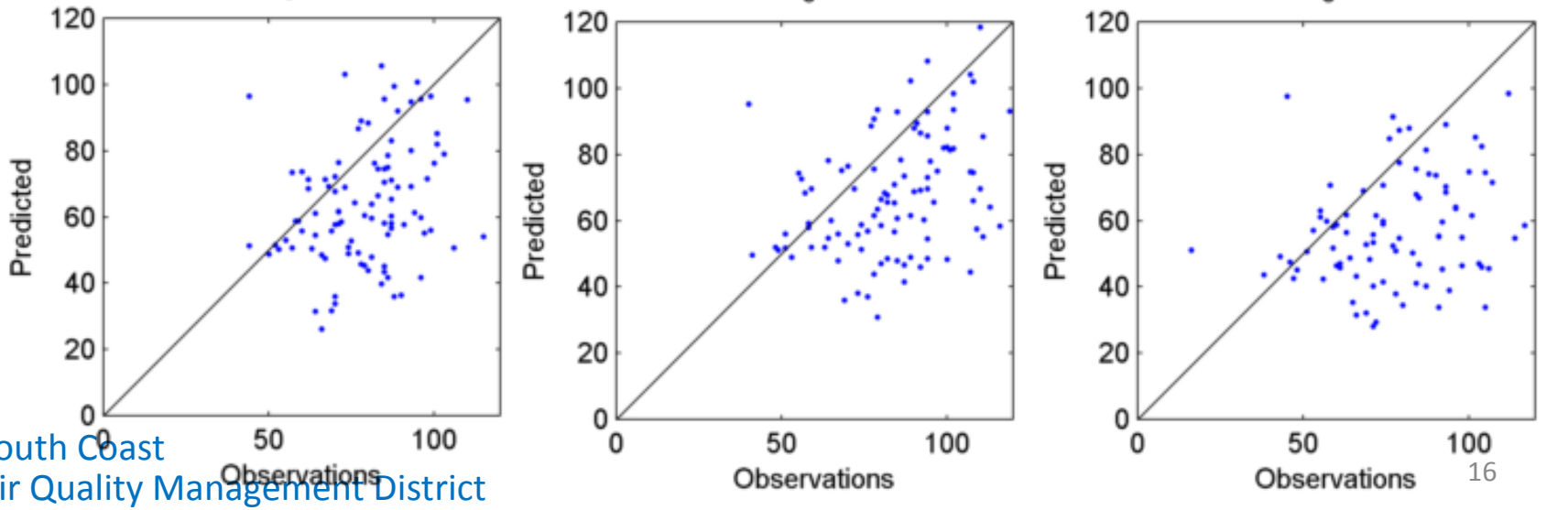


1hr O3 for '2010 vs '2014

2010

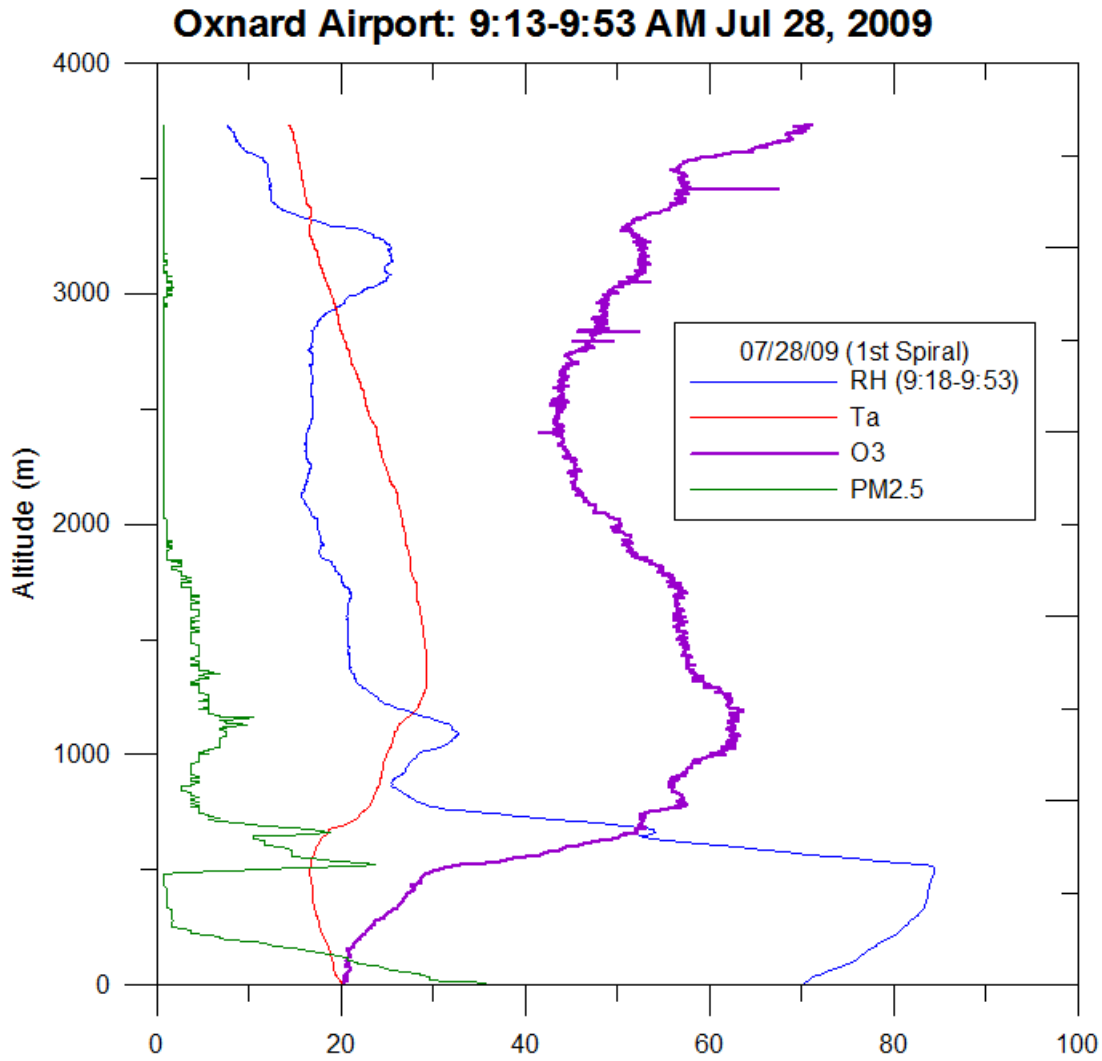


2014



MODELING EFFORTS IN SCAQMD

Sea breeze return component laden with elevated O3 & PM2.5



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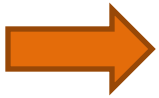
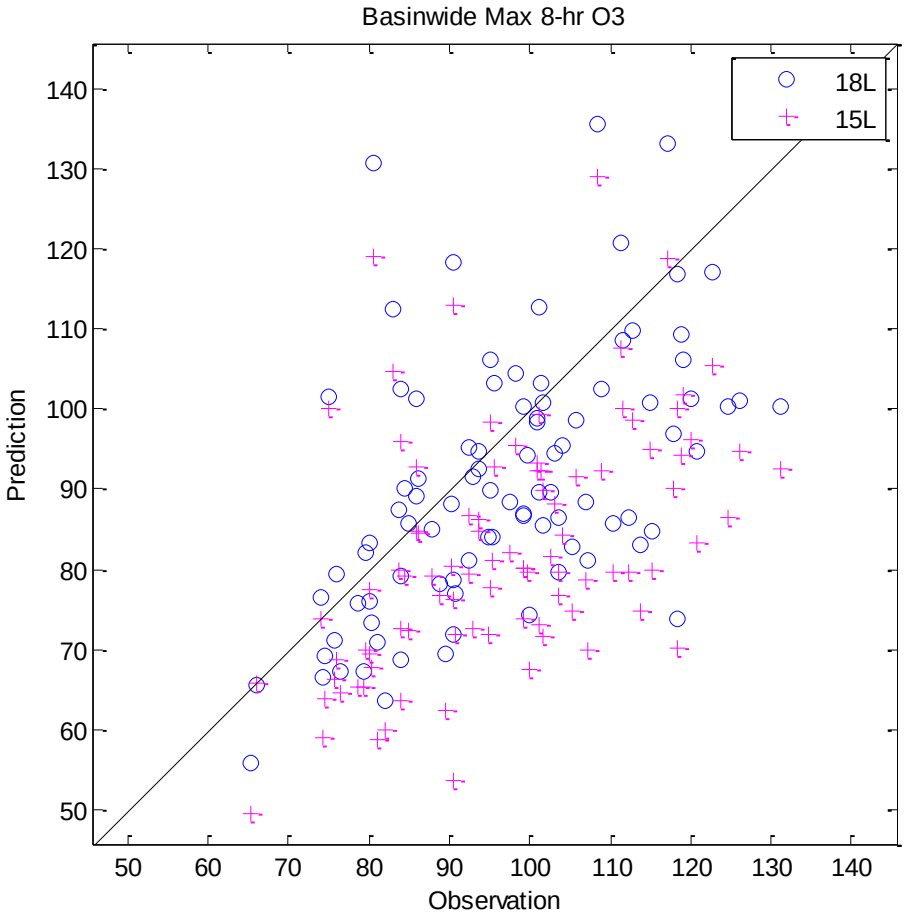
The Number of Vertical Layers

Layer Index	Mid Point Height (m)
30	19268
29	17355
28	15755
27	14337
26	13028
25	11791
24	10598
23	9429
22	8271
21	7118
20	5994
19	4992
18	4153
17	3449
16	2858
15	2361
14	1944
13	1595
12	1302
11	1057
10	851
9	681
8	538
7	418
6	318
5	235
4	165
3	107
2	59
1	18



Layer Index	Mid Point Height (m)
18	19268
17	14337
16	8271
15	3449
14	1944
13	1595
12	1302
11	1057
10	851
9	681
8	538
7	418
6	318
5	235
4	165
3	107
2	59
1	18

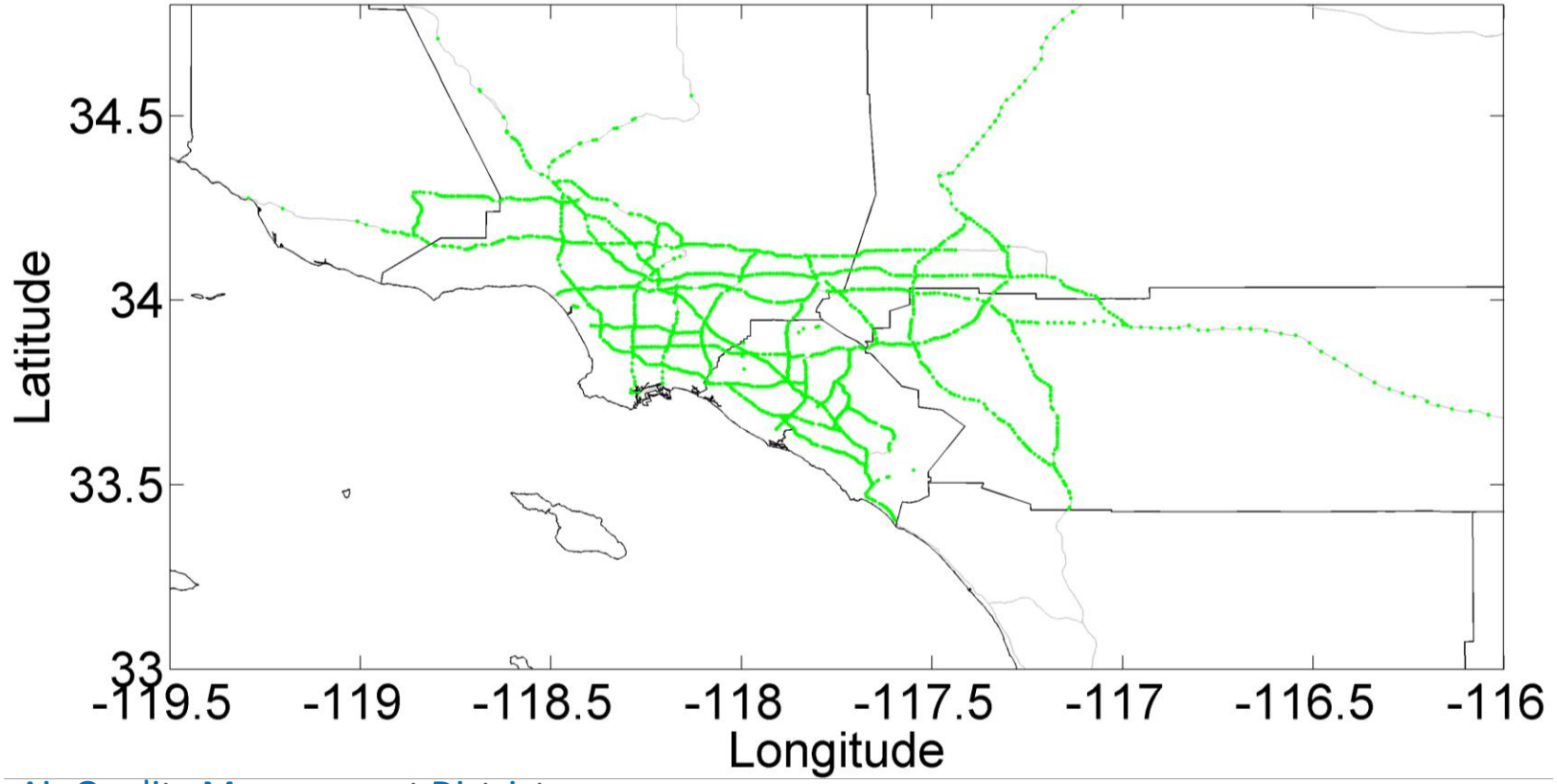
Max 8-Hr O3 from Layer Collapsed Runs



15 Layer structure over diluted ground 8hr O3 by a few to 10 ppb

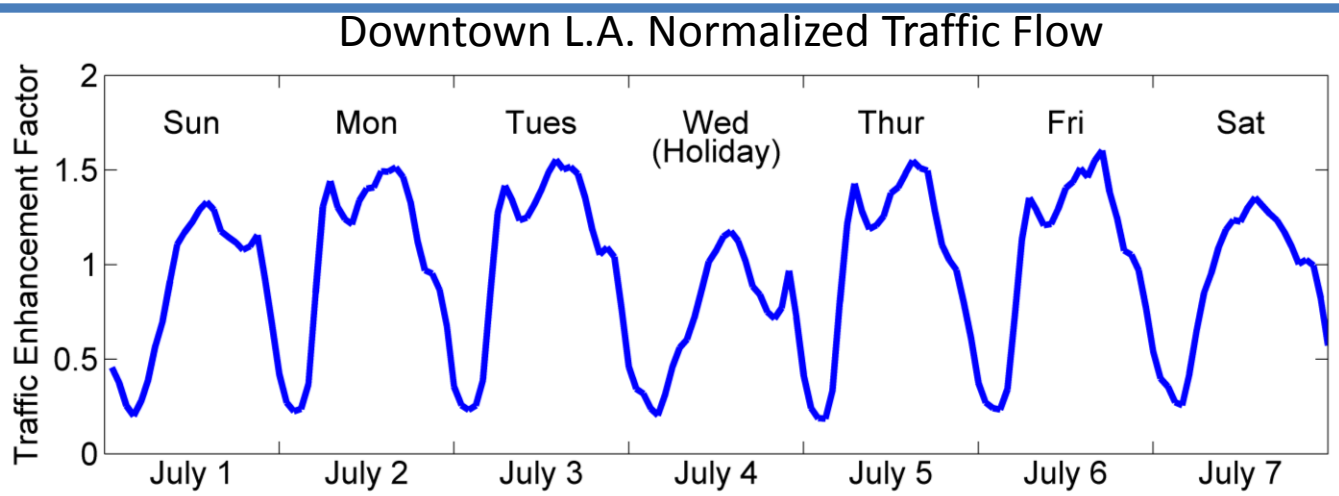
Real-Tim Traffic to construct Emissions

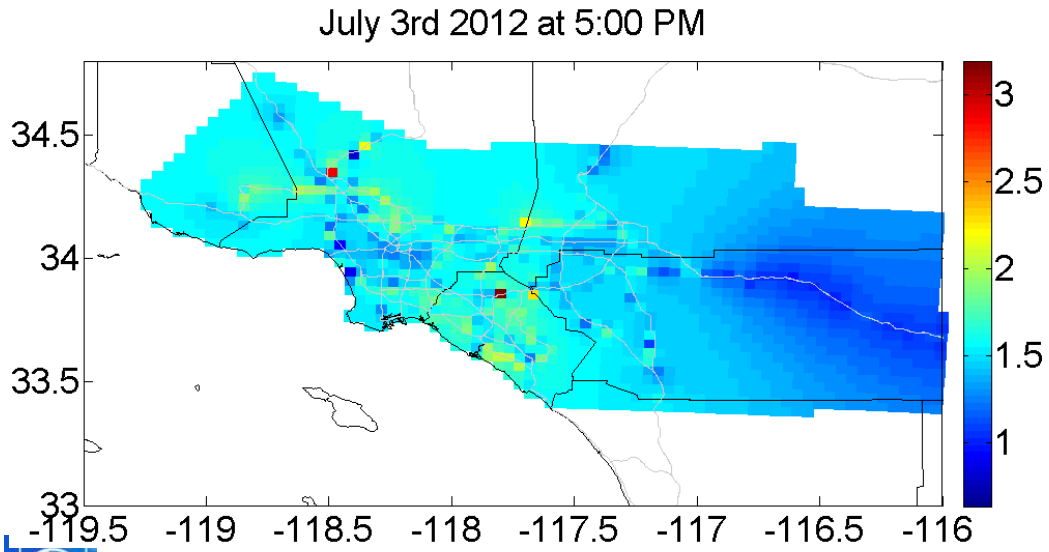
- Analyzed CalTrans PEMS data for 2012
- > 9,000 traffic monitoring stations in South Coast Air Basin
- Extracted traffic flow from each of the stations



Real-Tim Traffic to construct Emissions

- We calculated normalized traffic flow for every grid cell within the basin for every day in 2012





- These traffic profiles capture spatial and temporal variability within the Basin
  - ✓ Special events
  - ✓ Seasonal traffic patterns
  - ✓ Holidays