Air Quality Simulations for the San Joaquin Valley

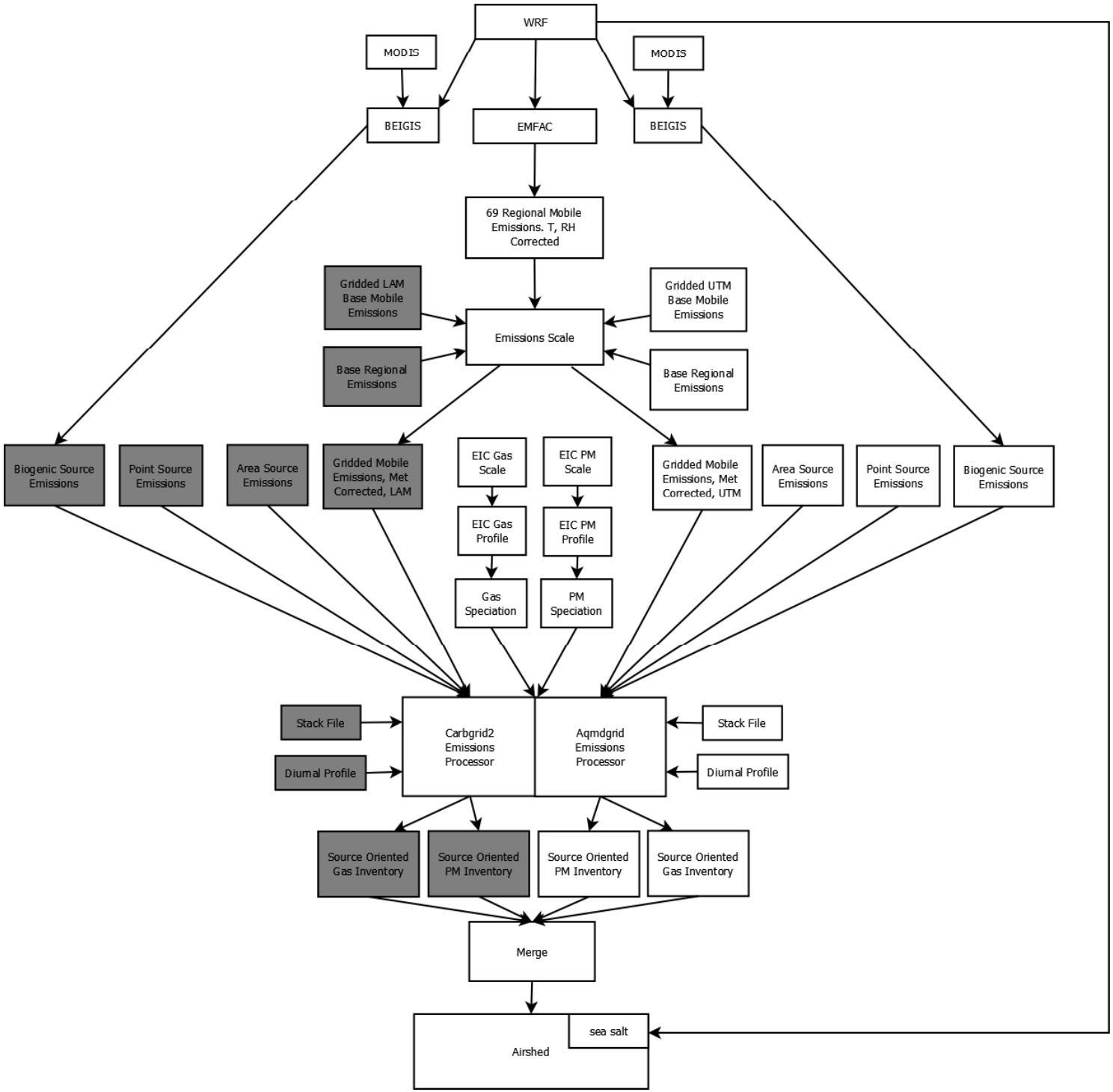
Michael J. Kleeman
Department of Civil and Environmental Engineering
UC Davis

Emissions Modeling System for California

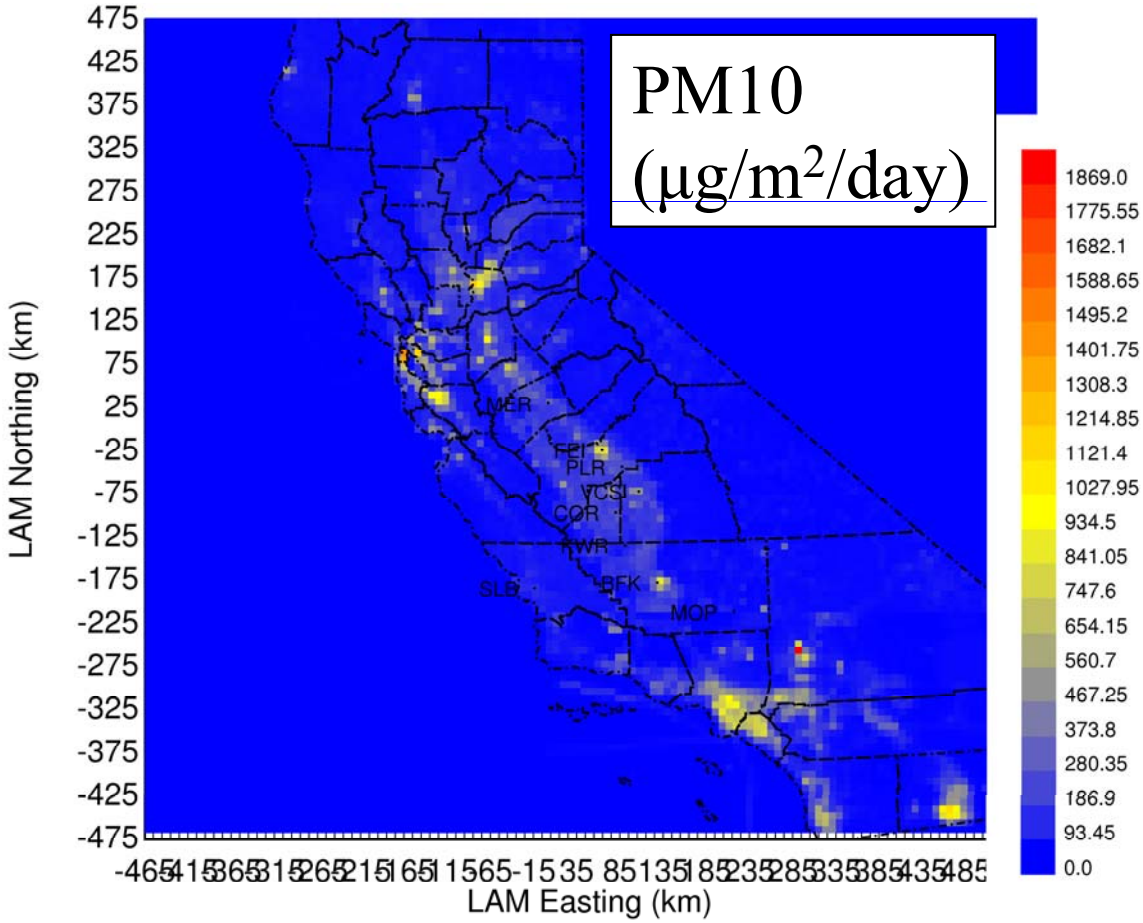
Fully Source-Oriented:

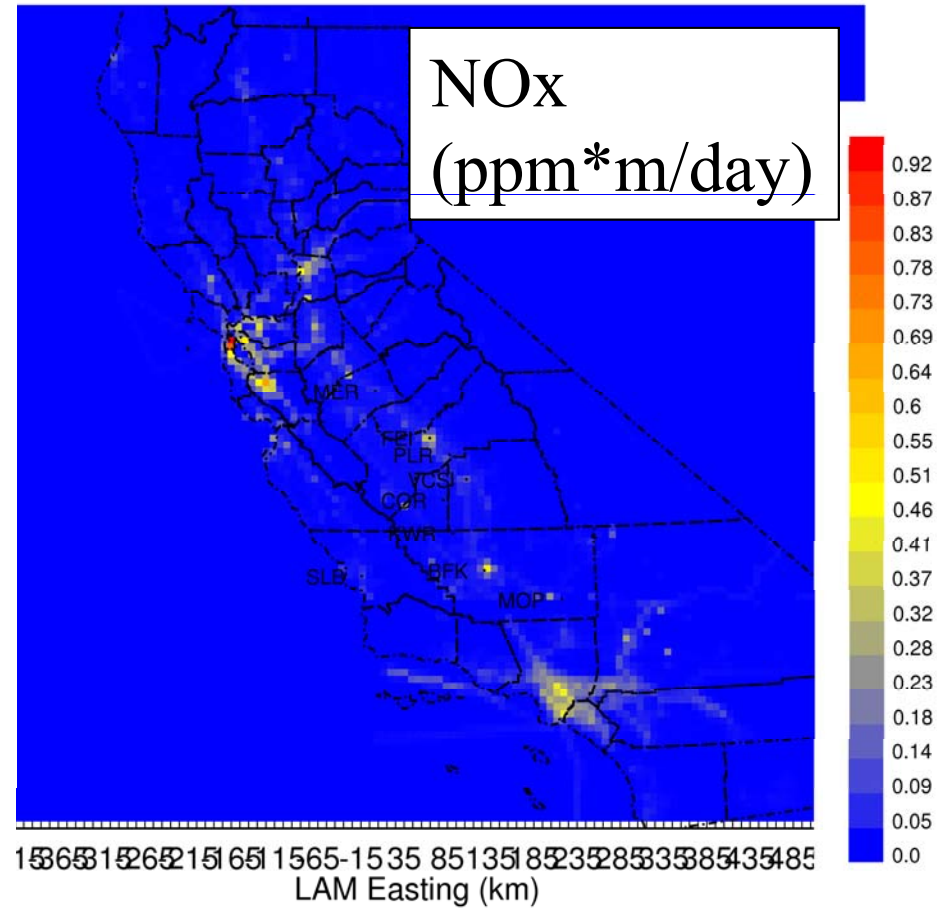
Separate emissions inventories for target categories

Select target sources based on the emissions profile they are assigned

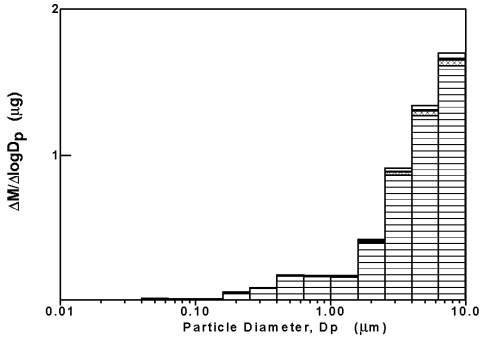


Basecase Emissions

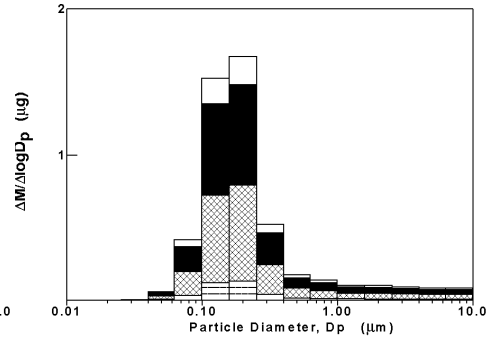




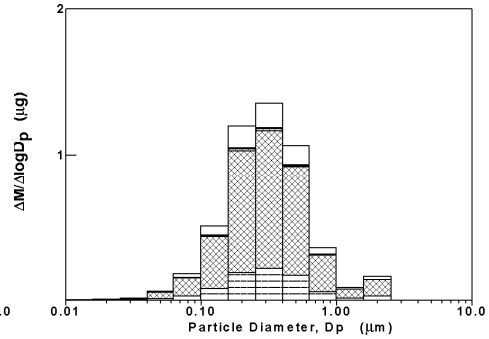
Crustal

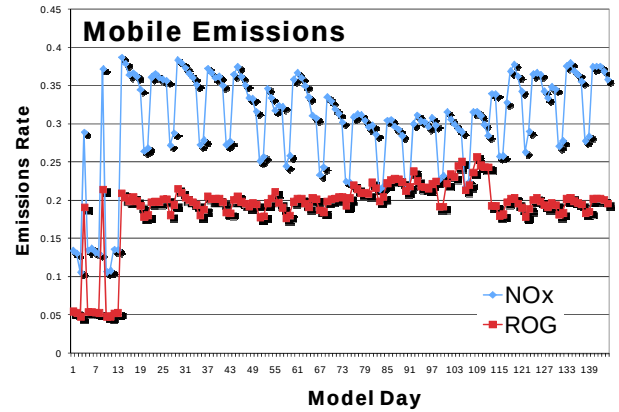


Diesel

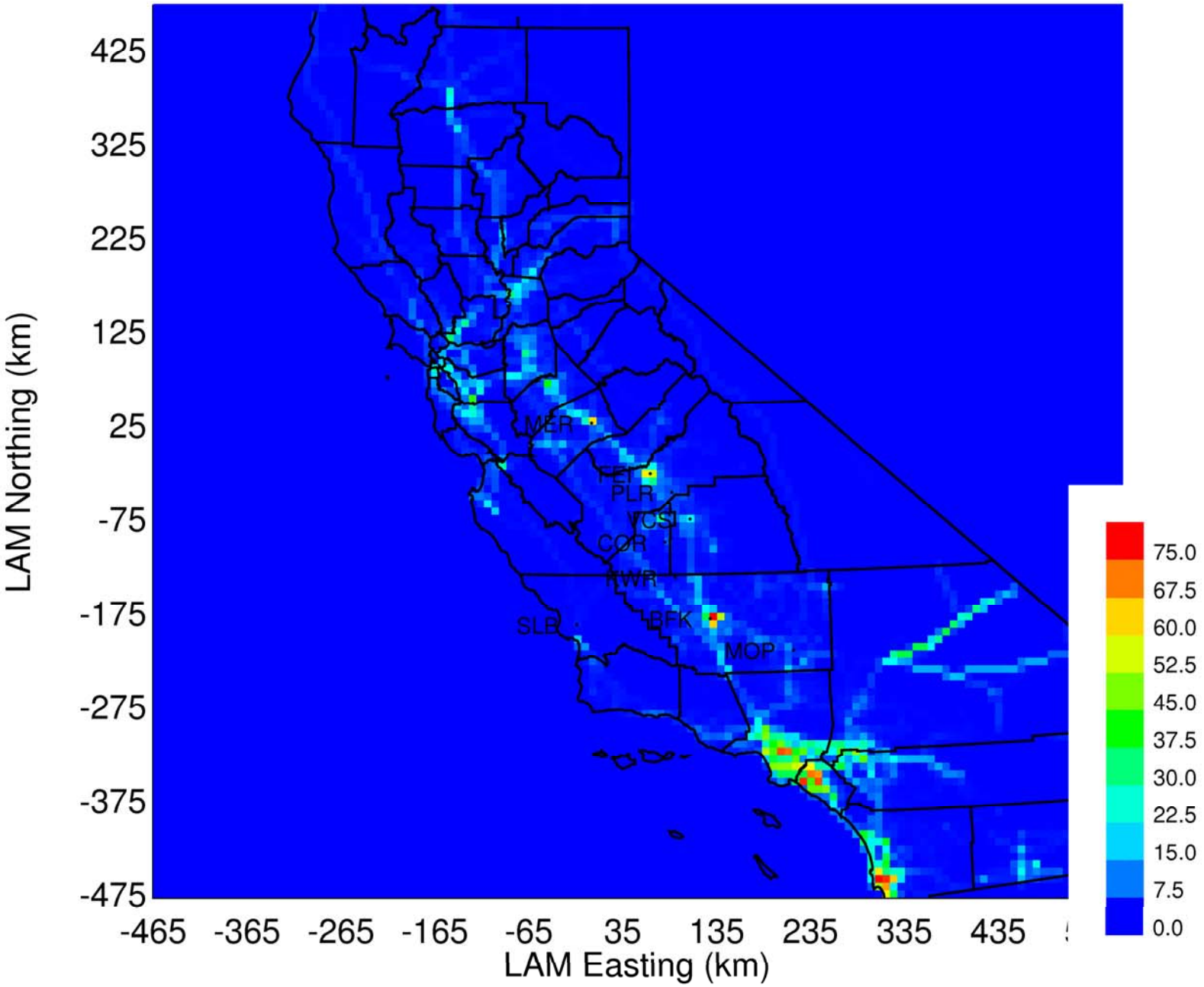


Food

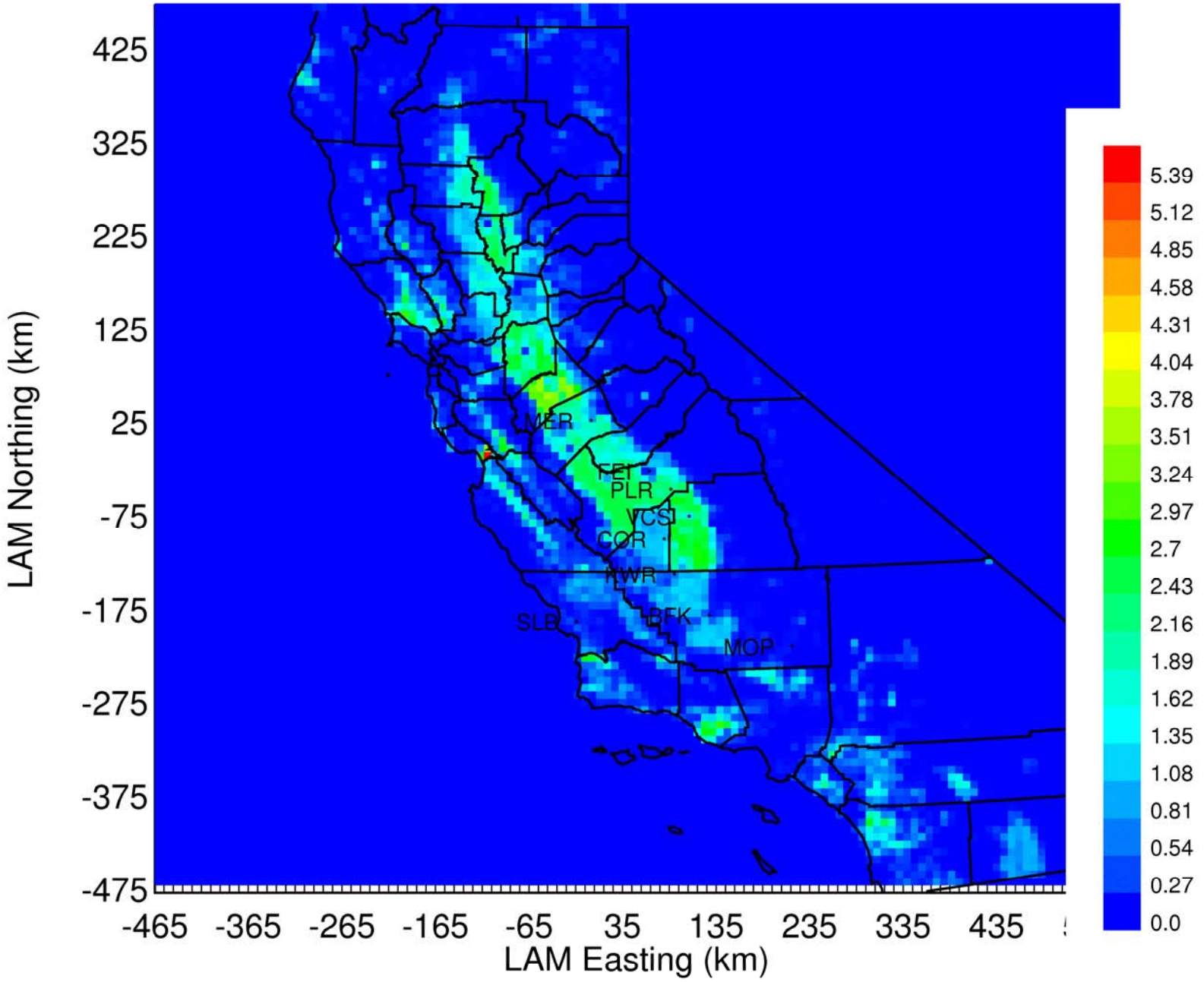


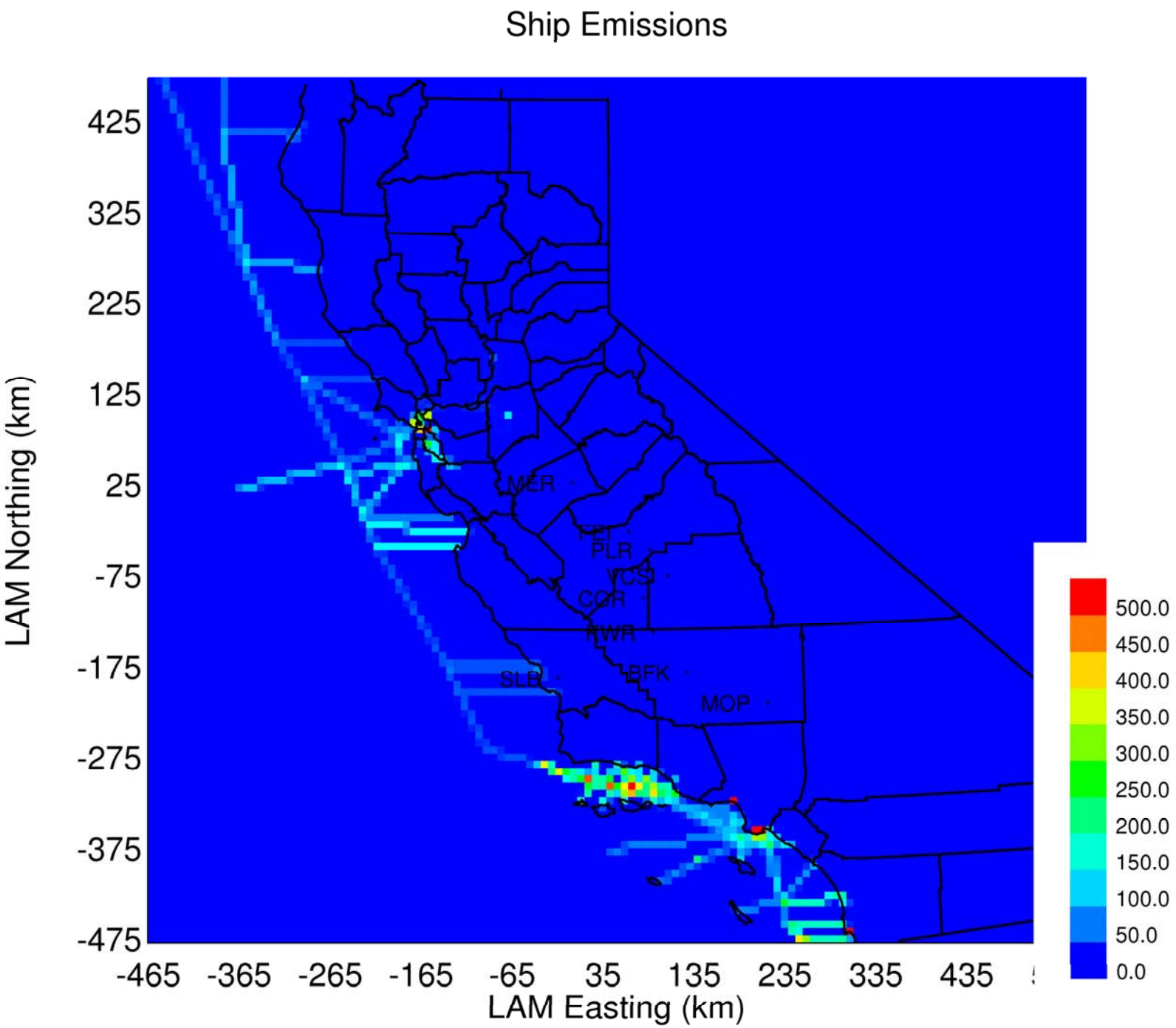


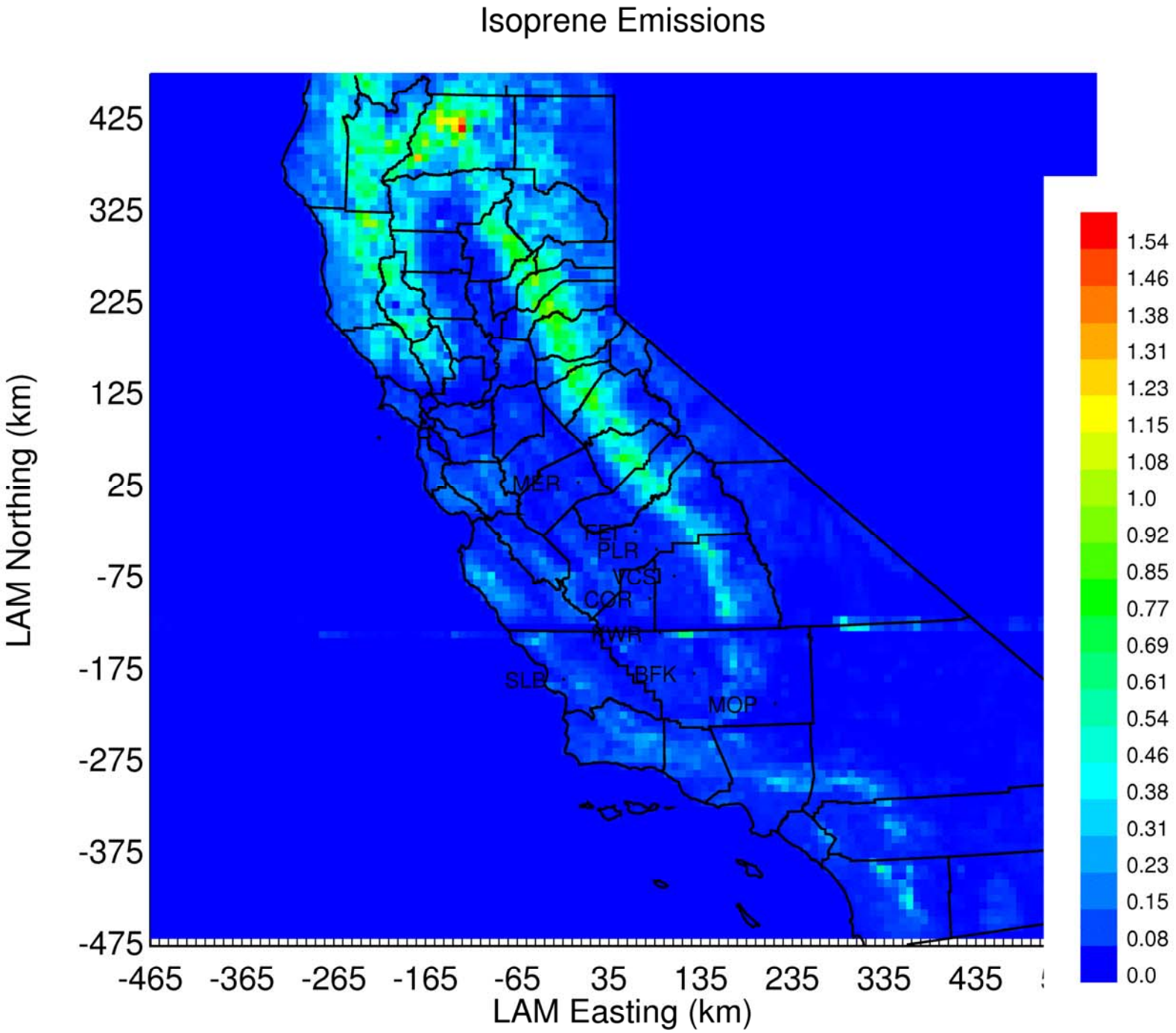
On-Road Mobile Sources - Diesel Engines



Agricultural Emissions Diesel Tractors




Ship Emissions
LAM Northing (km)
425
325
225
125
25
-75
-175
-275
-375
-475
-465
-365
-265
-165
-65
35
135
235
335
435
LAM Easting (km)
MER
FET
PLR
VCS
CQR
RWR
SLB
BFK
MOP
500.0
450.0
400.0
350.0
300.0
250.0
200.0
150.0
100.0
50.0
0.0


Isoprene Emissions
LAM Northing (km)
LAM Easting (km)
425
325
225
125
25
-75
-175
-275
-375
-475
-465
-365
-265
-165
-65
35
135
235
335
435
MER
EL
PLR
VCS
COR
RWR
SLB
BFK
MOP
1.54
1.46
1.38
1.31
1.23
1.15
1.08
1.0
0.92
0.85
0.77
0.69
0.61
0.54
0.46
0.38
0.31
0.23
0.15
0.08
0.0

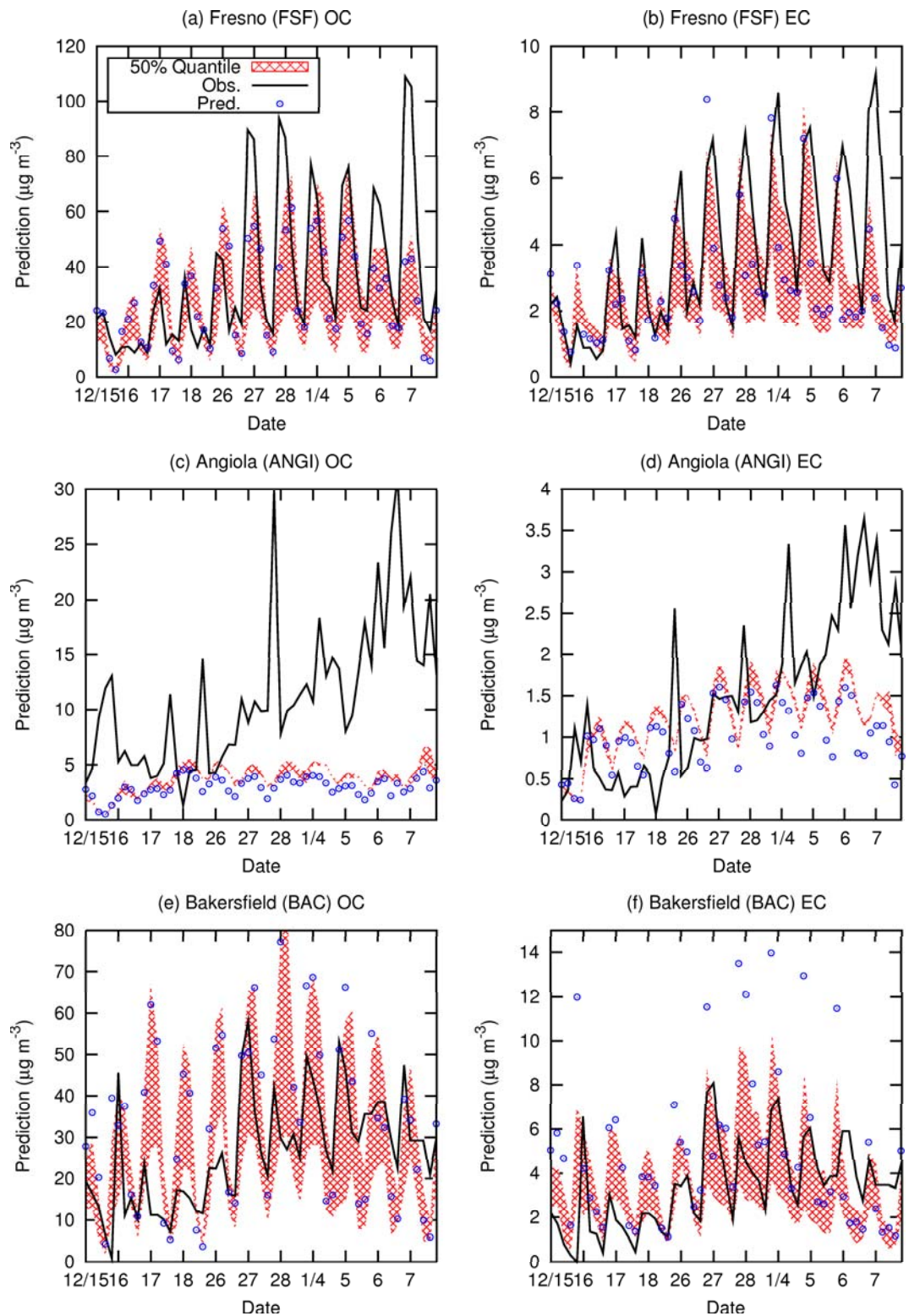
PM2.5 OC + EC

Black lines = measurements
Blue circles = predictions
Red Shading – Mid 50% Quantile within 10km of monitor

Diurnal pattern predicted correctly at urban sites

Peak values at urban sites show reasonable agreement, especially considering the sharp gradients

Rural Angiola predictions are low. Where is the EC+OC coming from?

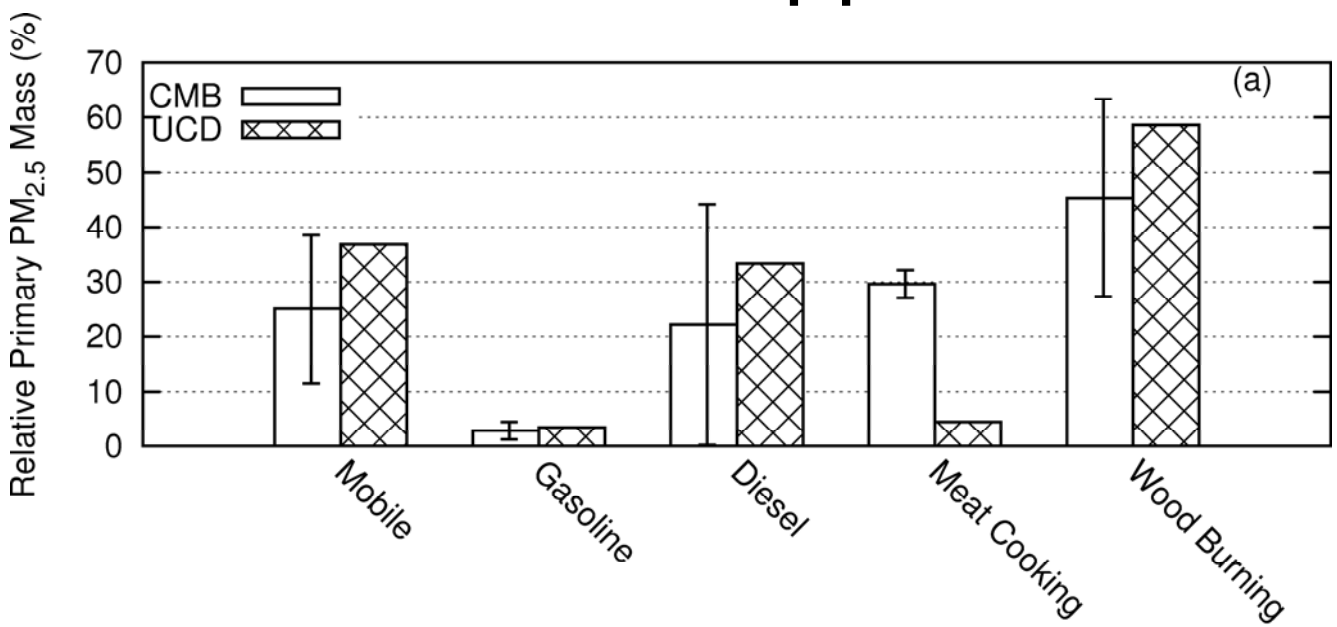


Source: Q. Ying, J. Lu, P. Allen, P. Livingstone, A. Kaduwela, and M. Kleeman "Modeling Air Quality During the California Regional PM10/PM2.5 Air Quality Study (CRPAQS) Using the UCD/CIT Source-Oriented Air Quality Model – Part I. Base Case Model Results.", Atmos. Env., in press, 2008.

Grid Model vs. CMB Source Apportionment

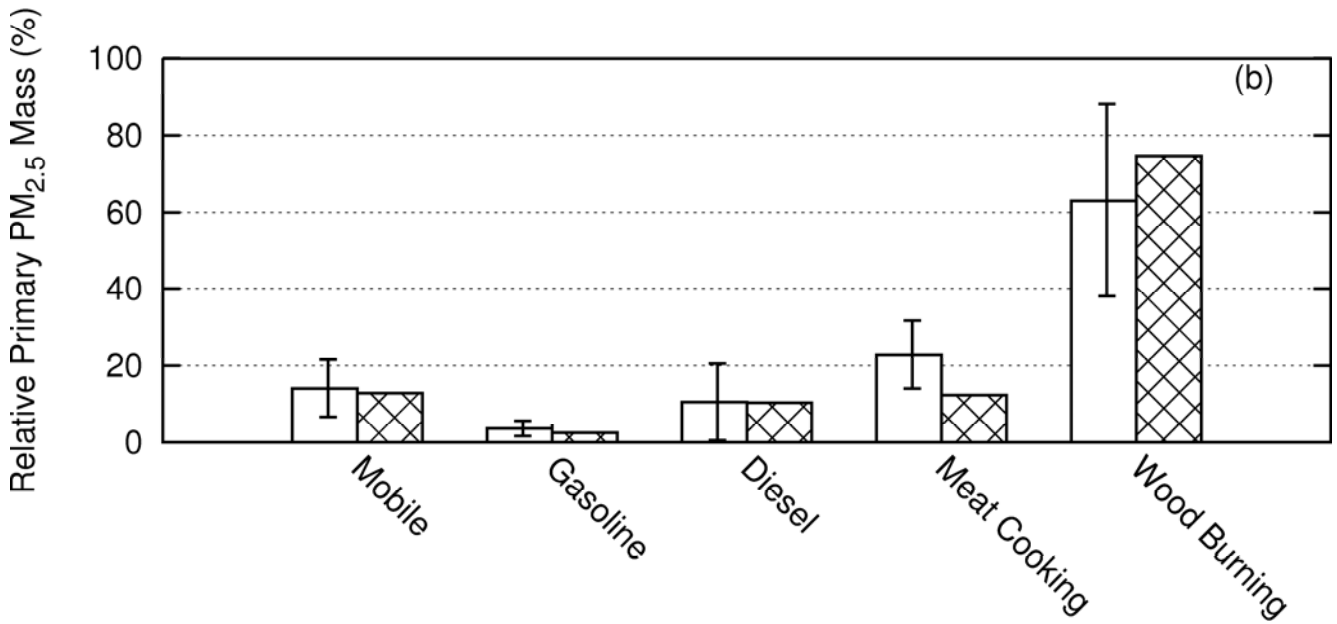
Angiola

**Dust sources removed from grid model



Fresno

**Dust sources removed from grid model



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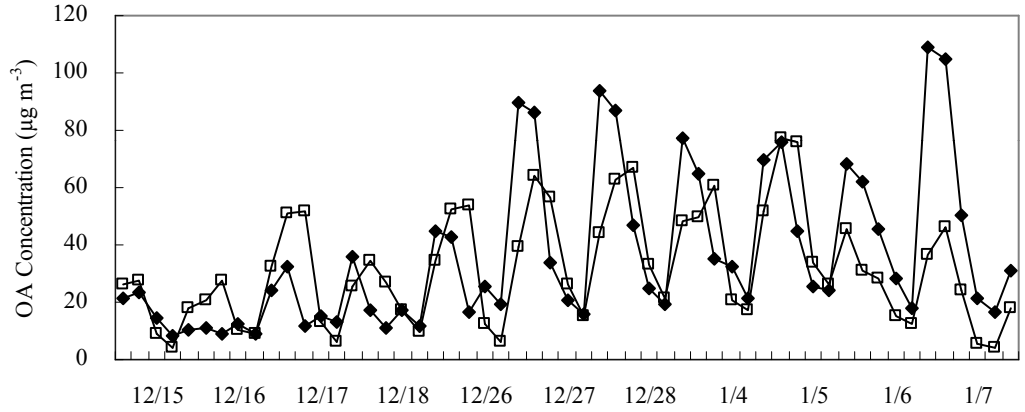
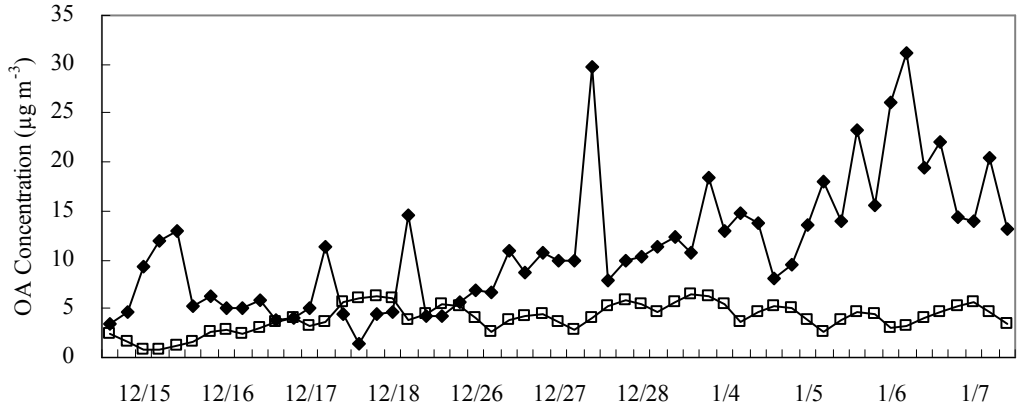
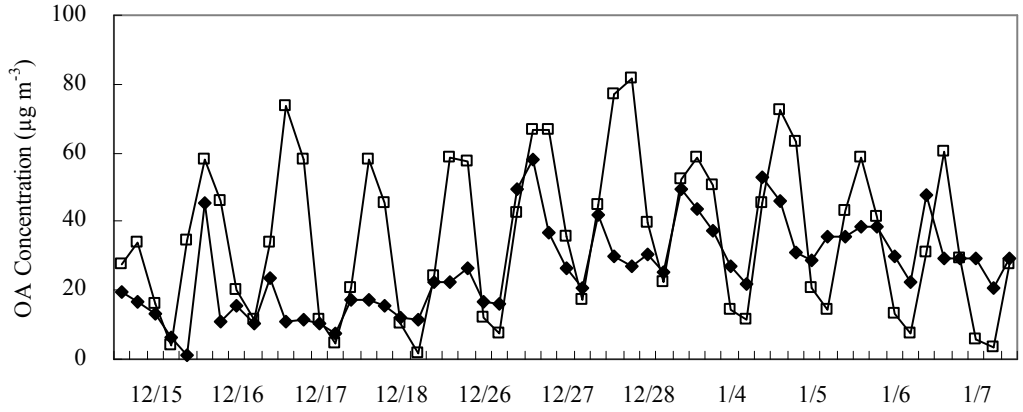
Predicted (open squares) and Observed OC (solid diamonds) using CACM



a.) Fresno

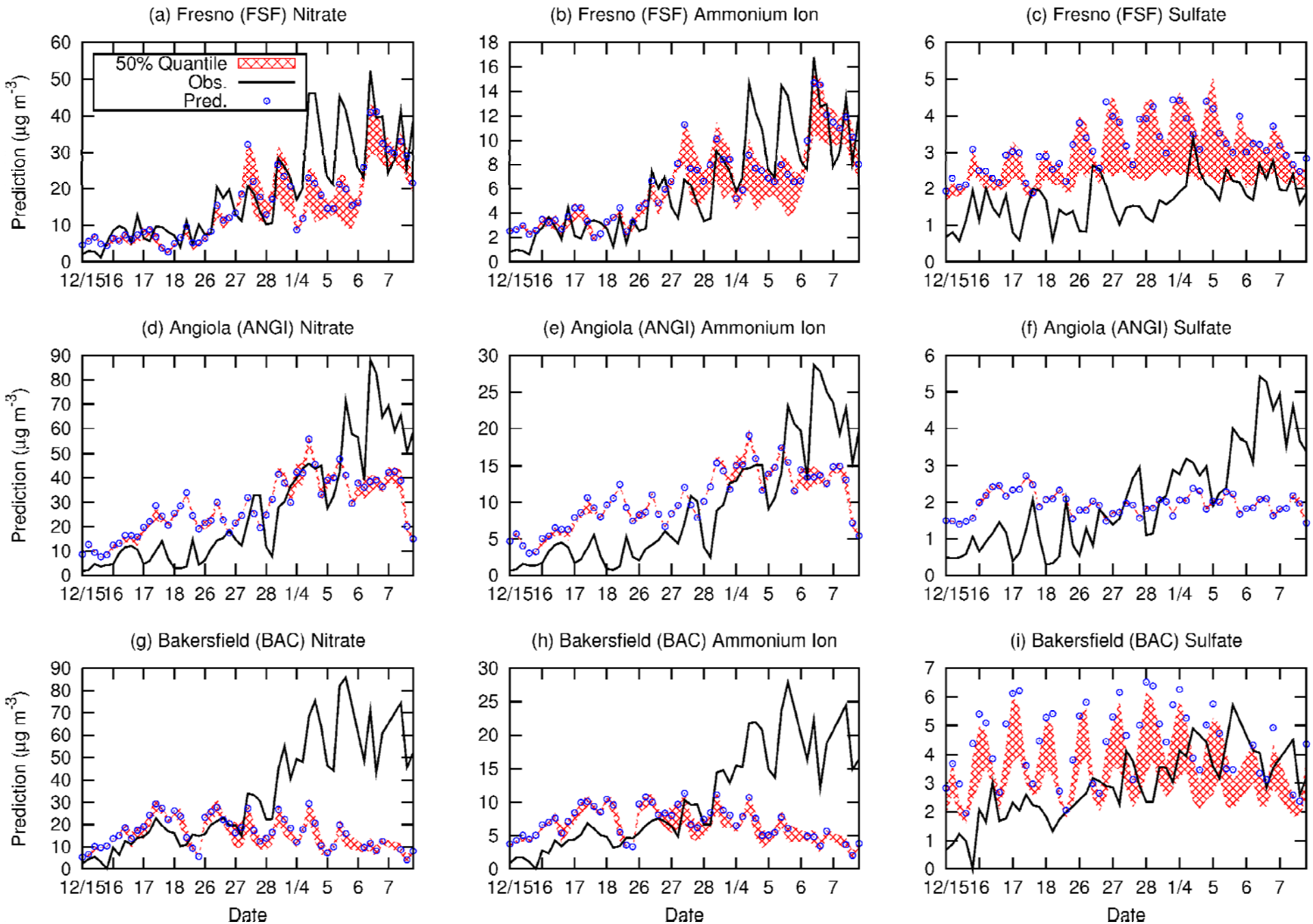


b.) Angiola



c.) Bakersfield

PM2.5 Nitrate, Ammonium, Sulfate



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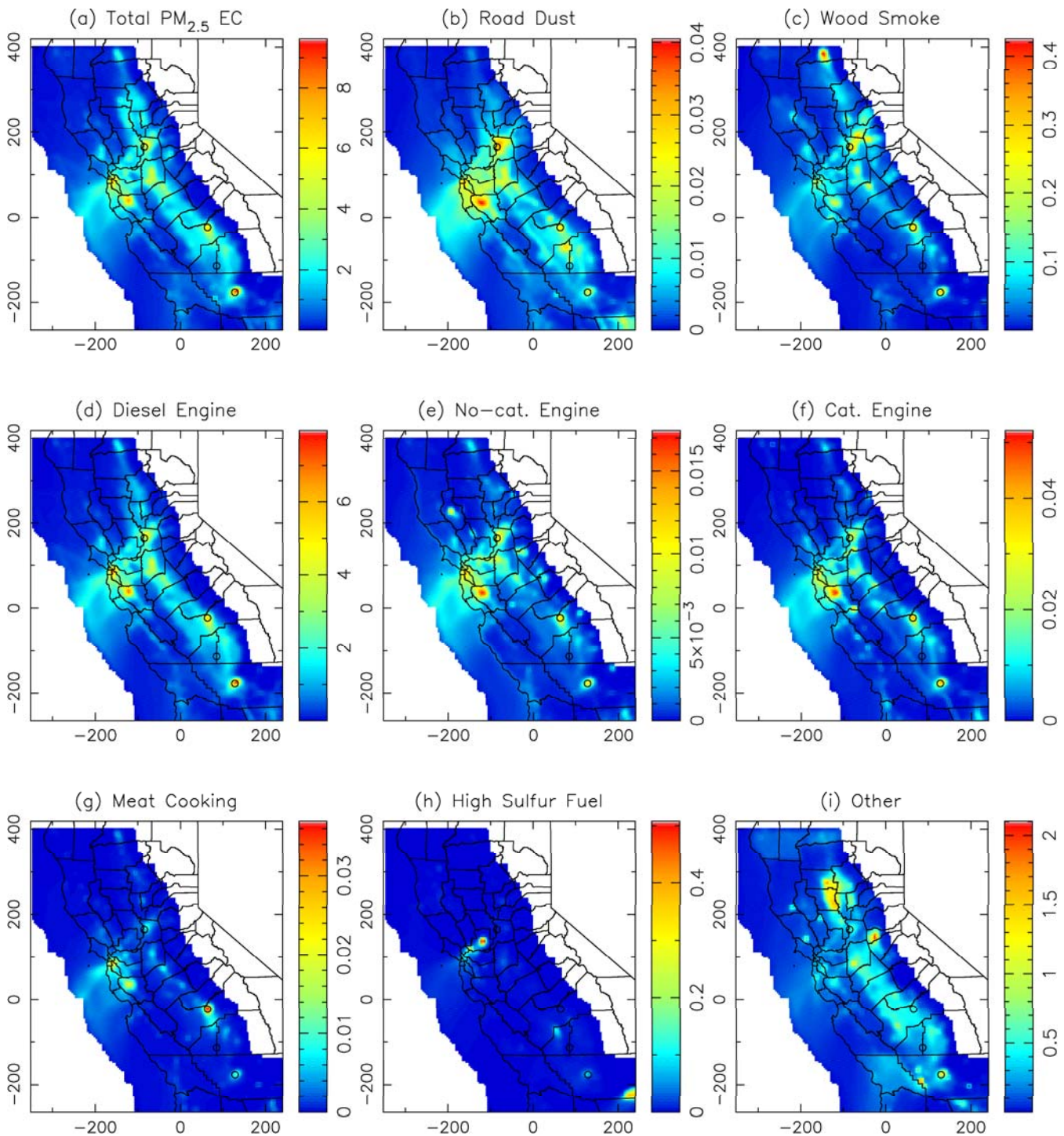
Regional EC Source Contributions



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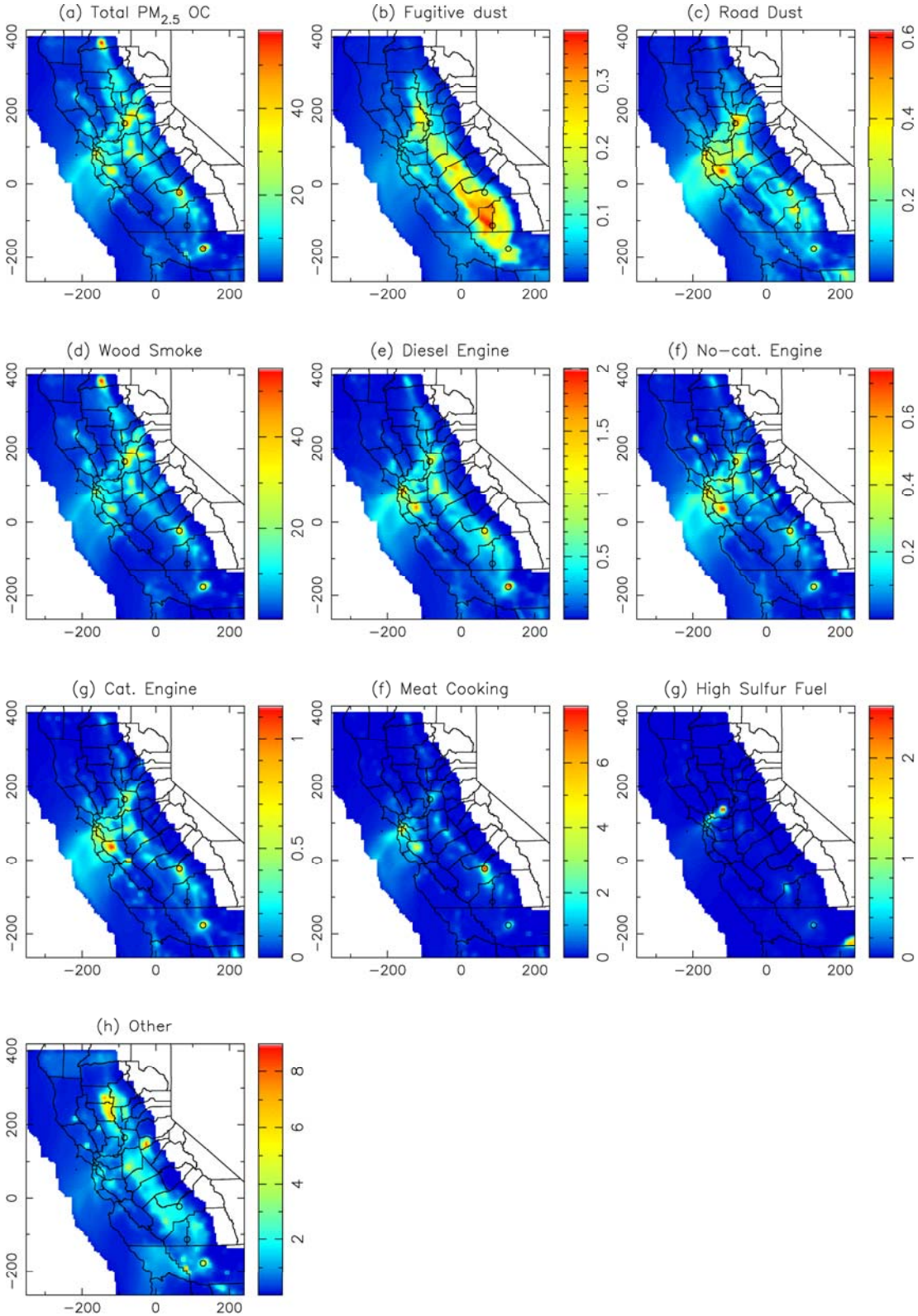
Regional OC Source Contributions



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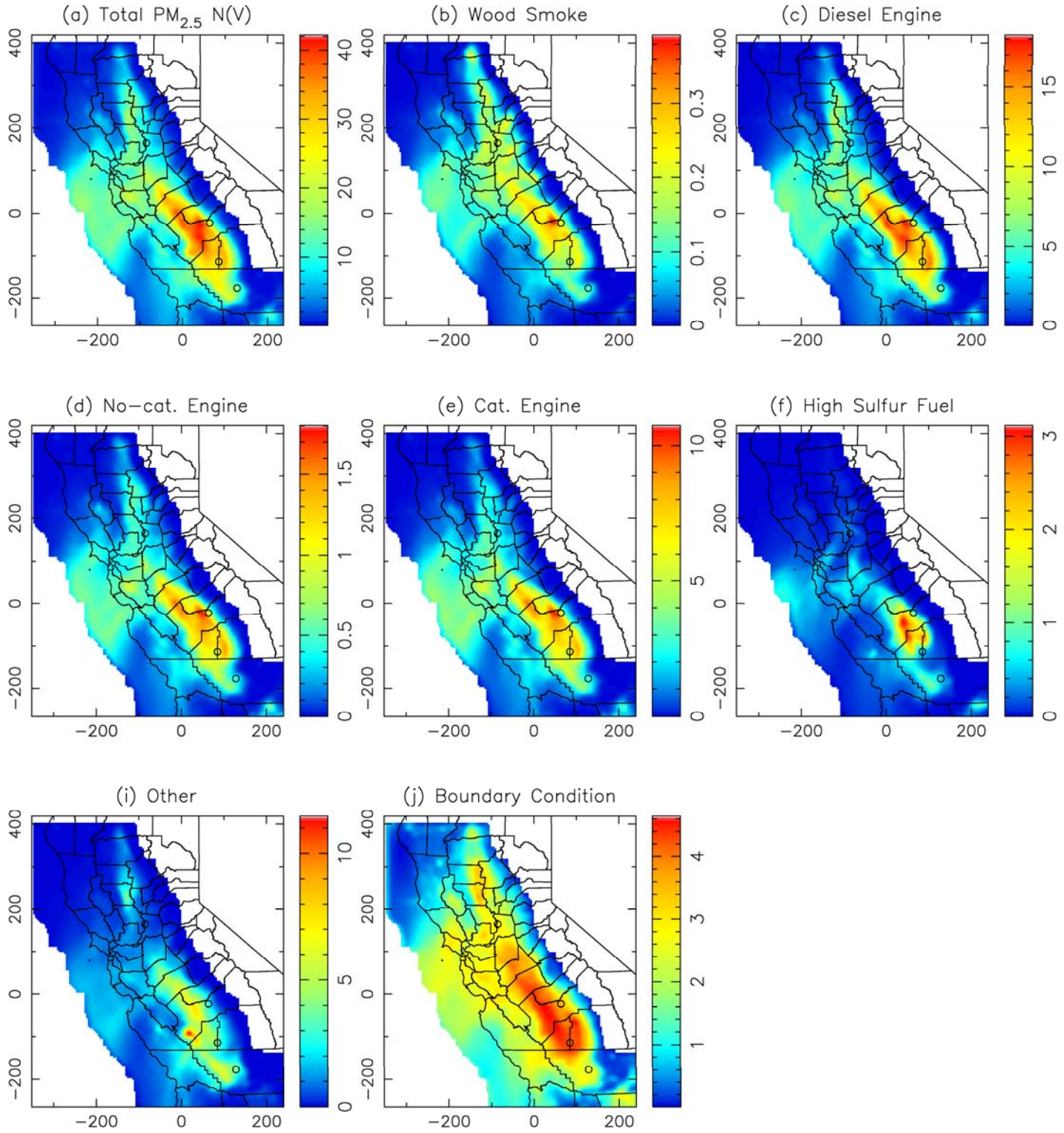
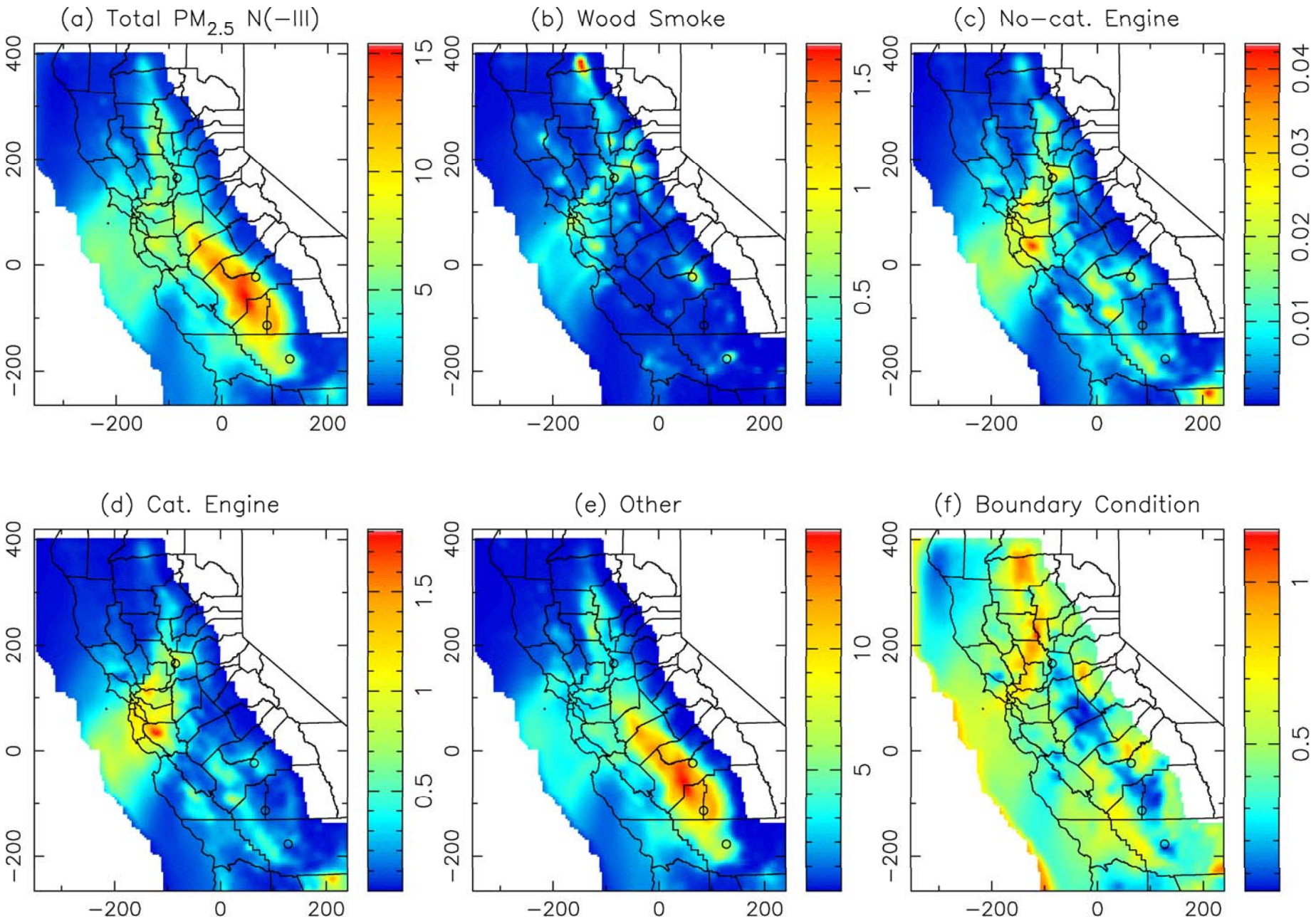
Regional Nitrate Source Contributions



Regional NH4+ Source Contributions



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