Harbor Community Monitoring Study
Saturation Monitoring of Air Toxics

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Acknowledgments

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  - California Air Resources Board
  - South Coast Air Quality Management District
- **Support**
  - DRI Organic Analytical Laboratory: Barbara Zielinska, Brooks Mason, and Anna Cunningham
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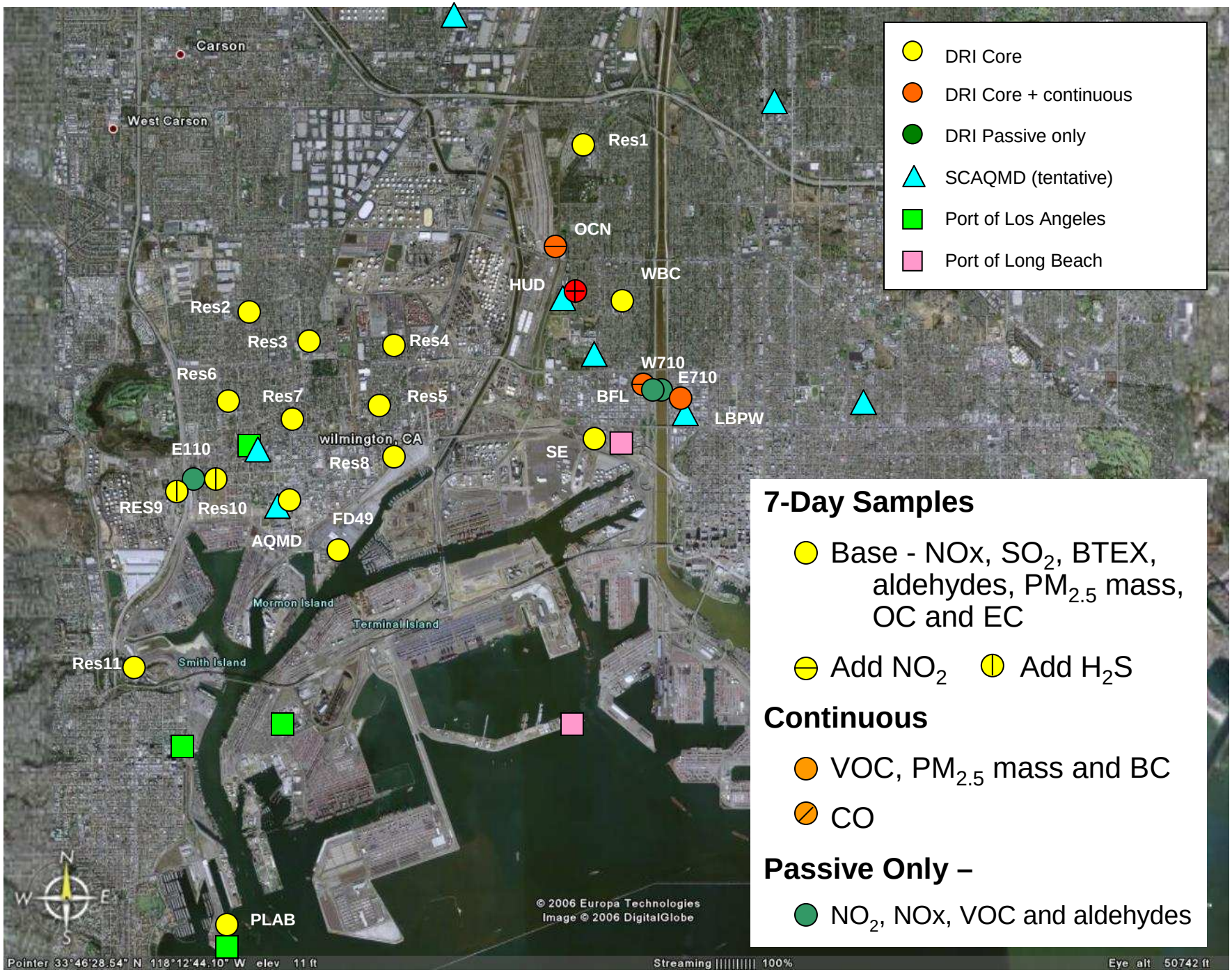
  - Community Volunteers
  - Mr. Jesse Marquez
  - Mr. John Cross
  - South Coast Air Quality Management District
  - City of Long Beach
  - Port of Los Angeles


DRI Core
DRI Core + continuous
DRI Passive only
SCAQMD (tentative)
Port of Los Angeles
Port of Long Beach
Carson
West Carson
Res1
OCN
WBC
HUD
Res2
Res3
Res4
Res6
Res7
Res5
W710
E710
BFL
LBPW
wilmington, CA
E110
Res8
SE
RES9
Res10
FD49
AQMD
Mormon Island
Terminal Island
Res11
Smith Island
PLAB
© 2006 Europa Technologies
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Pointer 33°46'28.54" N 118°12'44.10" W elev 11 ft
Streaming 100%
Eye alt 50742 ft
7-Day Samples
Base - NOx, SO_2, BTEX, aldehydes, $PM_{2.5}$ mass, OC and EC
Add NO_2
Add H_2S
Continuous
VOC, $PM_{2.5}$ mass and BC
CO
Passive Only –
NO_2, NOx, VOC and aldehydes

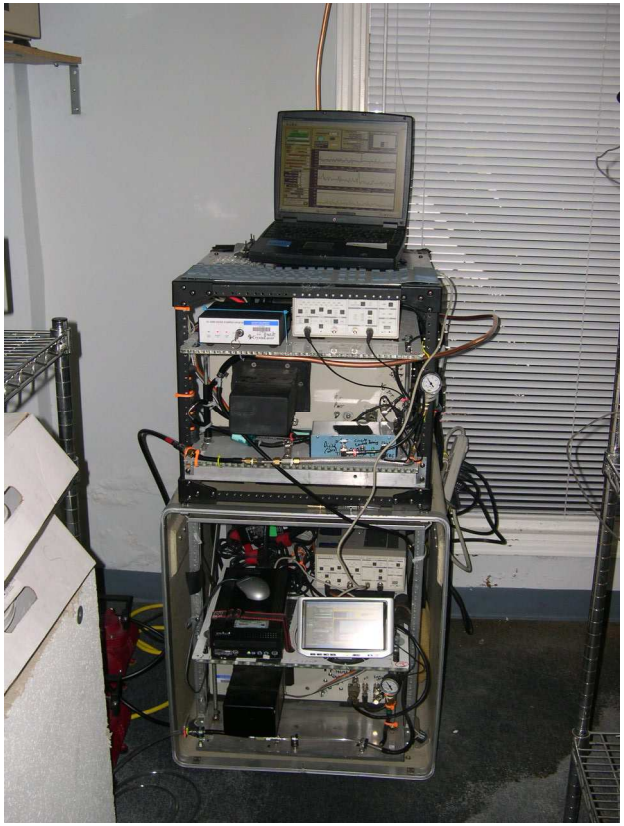
Seven-Day Time-Integrated Samplers

AirMetric Minivol Aerosol Sampler
(20” long by 7” in diameter)

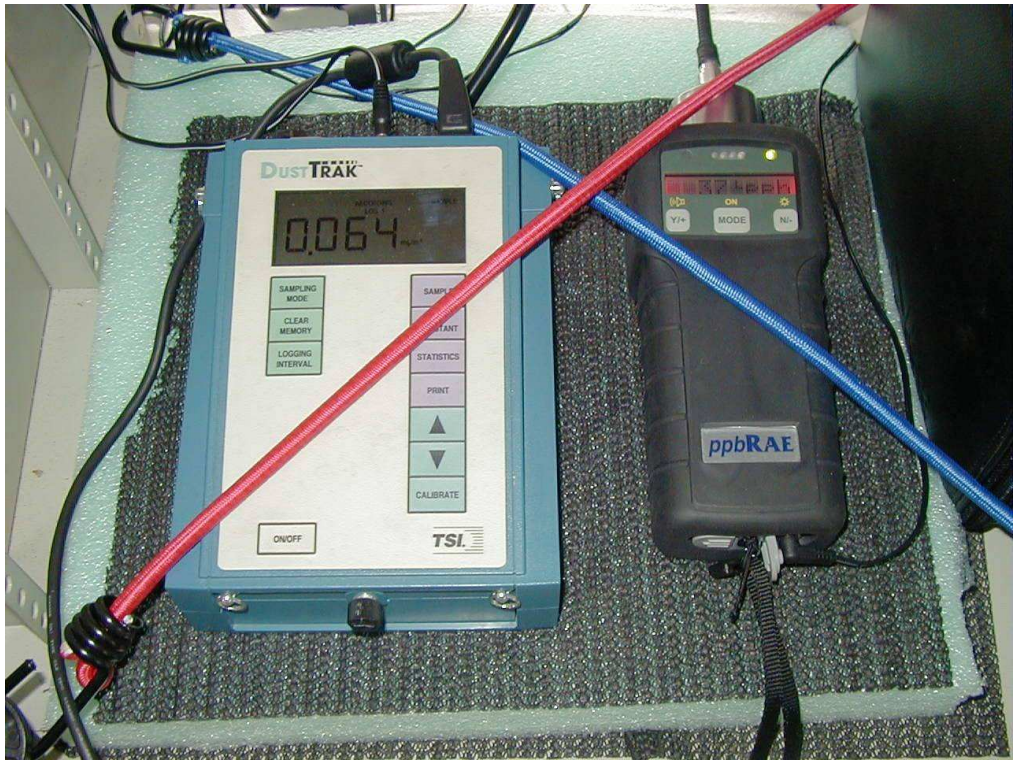
Ogawa passive samplers
for NOx and SO_2
(thumb size in cup shield)

Radiello passive samplers for VOC, aldehydes and H_2S
(size of a roll of pennies)

Continuous Instruments



DRI Photoacoustic
black carbon



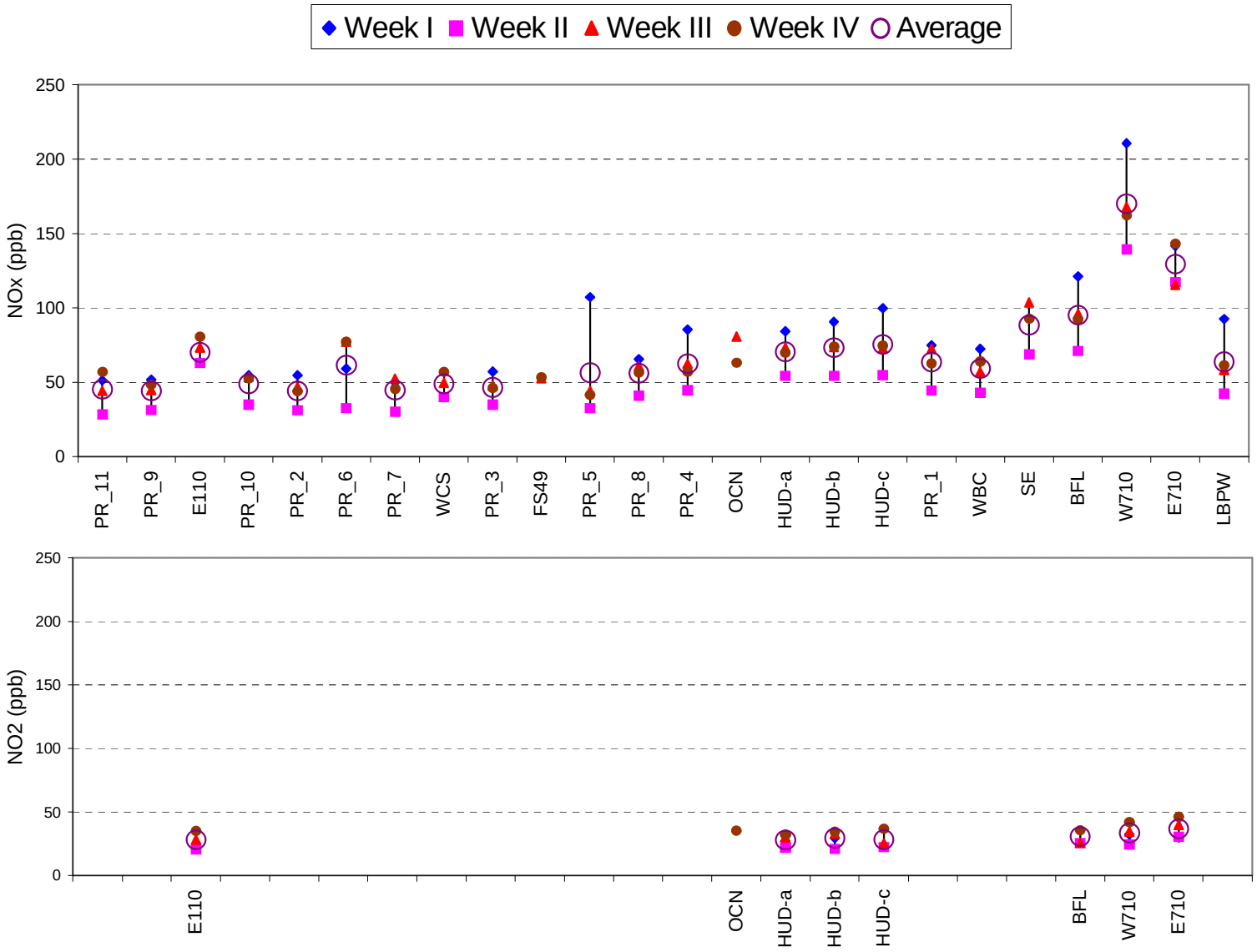
TSI DustTrak
$PM_{2.5}$ Mass

RAE System ppbRAE
Portable Photoionization Detector
VOC

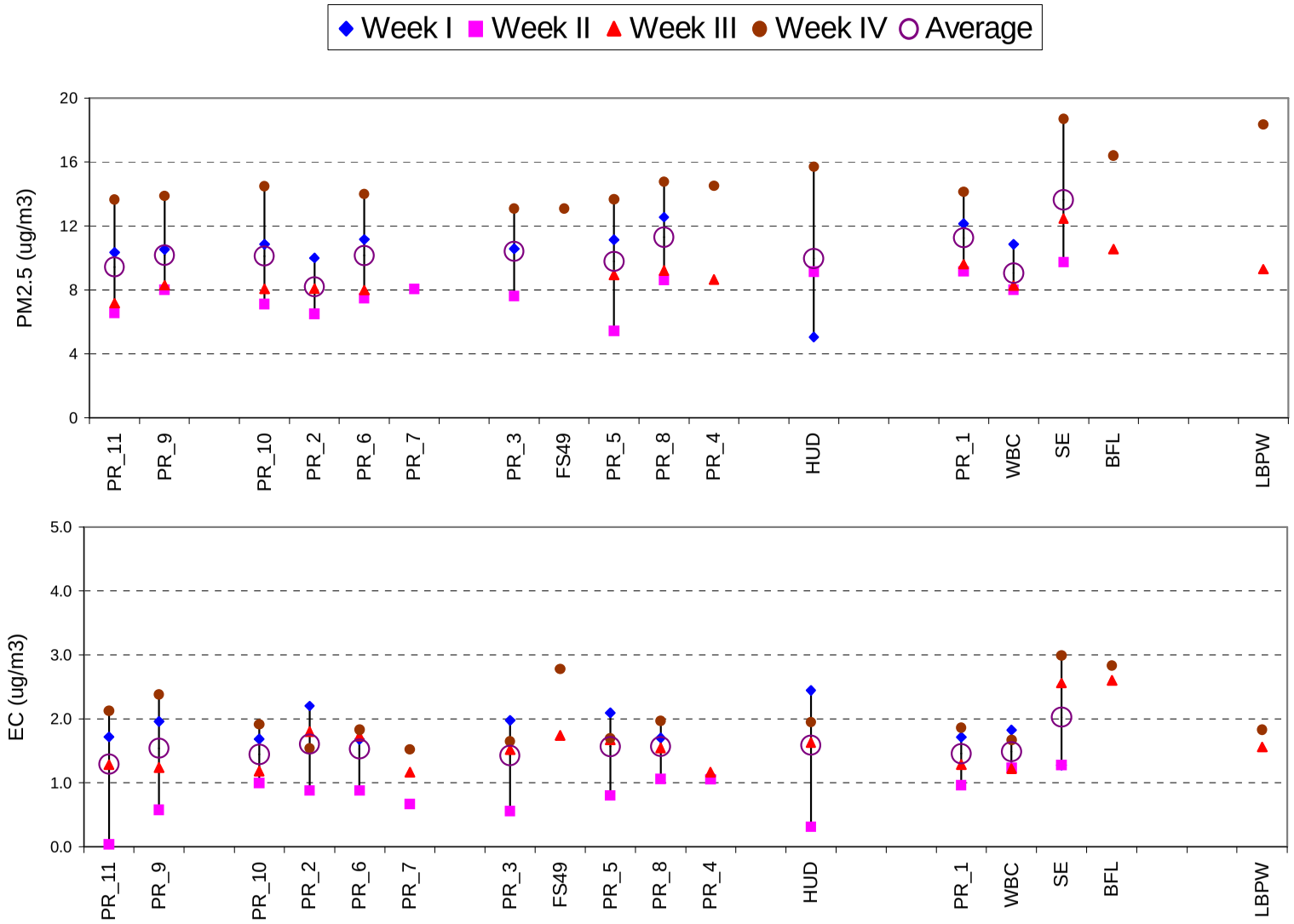
Harbor Community Monitoring Study
Saturation Monitoring

- **Objectives**
  - Characterize the spatial gradients in concentrations of air toxics within the community.
  - Evaluate adequacy of existing routine air quality monitoring to characterize exposure concentrations within the community.
  - Correlate ambient concentrations of black carbon with proximity to truck traffic and day-of-week variations in diesel truck traffic volume.
  - Evaluate and compare passive monitoring methods to conventional monitoring methods.
- **Monitoring Periods**
  - 2/13/07 to 3/13/07 (winter)
  - 5/15/07 to 6/12/07 (spring)
  - 7/31/07 to 8/28/07 (summer)
  - Nov/Dec, 2007 (fall)

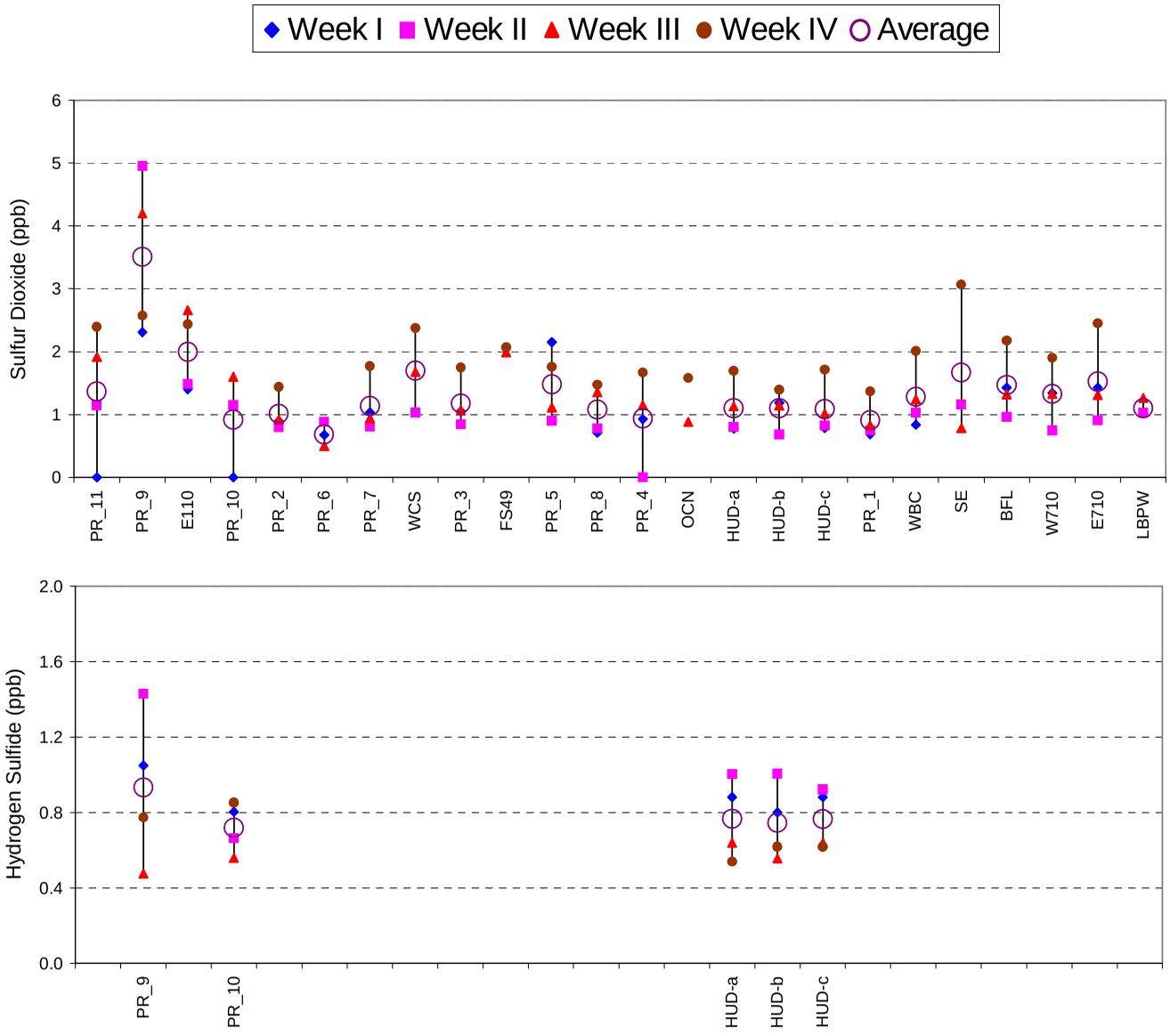
NO_x and NO_2, 2/13/07 to 3/13/07



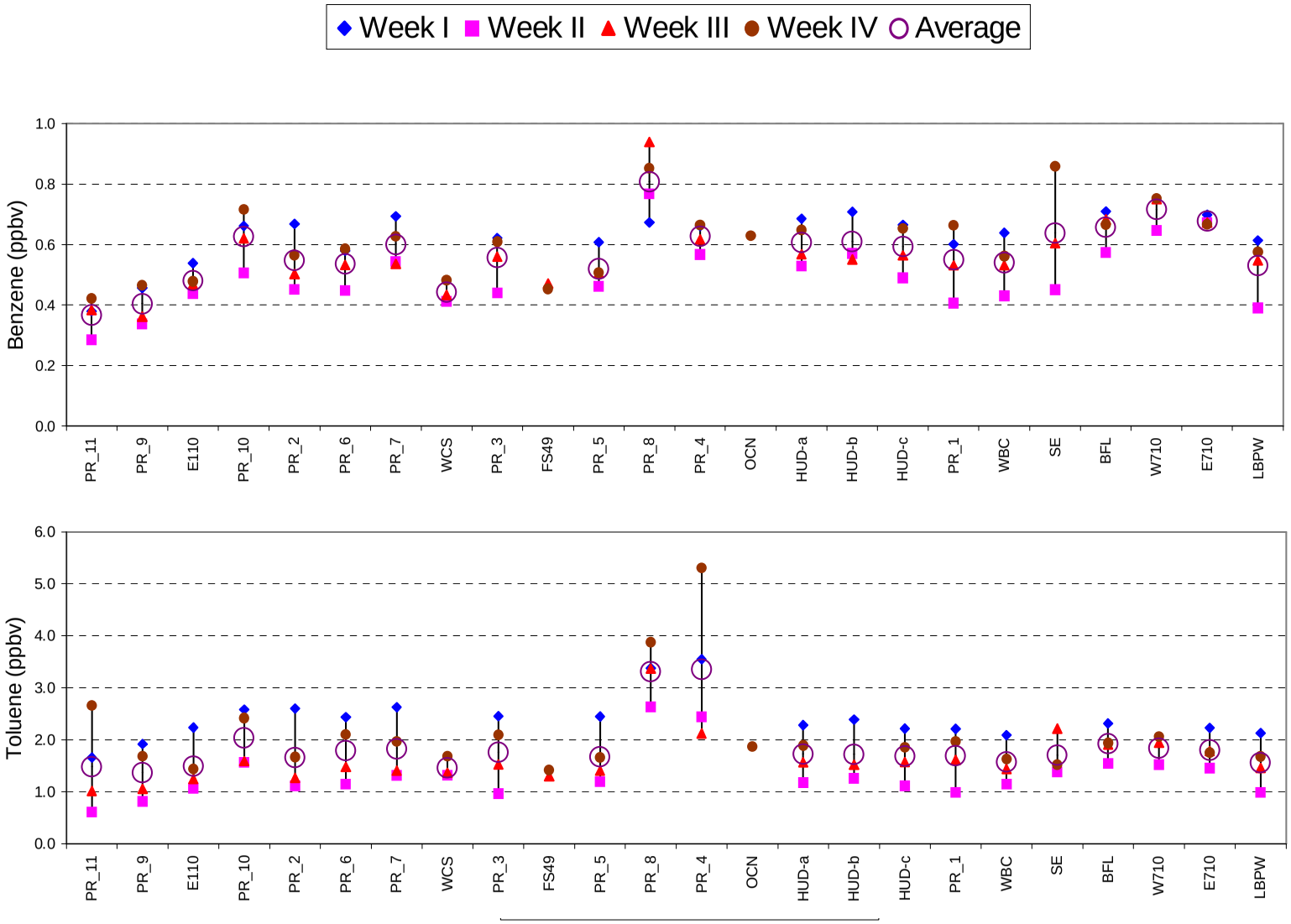
$PM_{2.5}$ and EC, 2/13/07 to 3/13/07



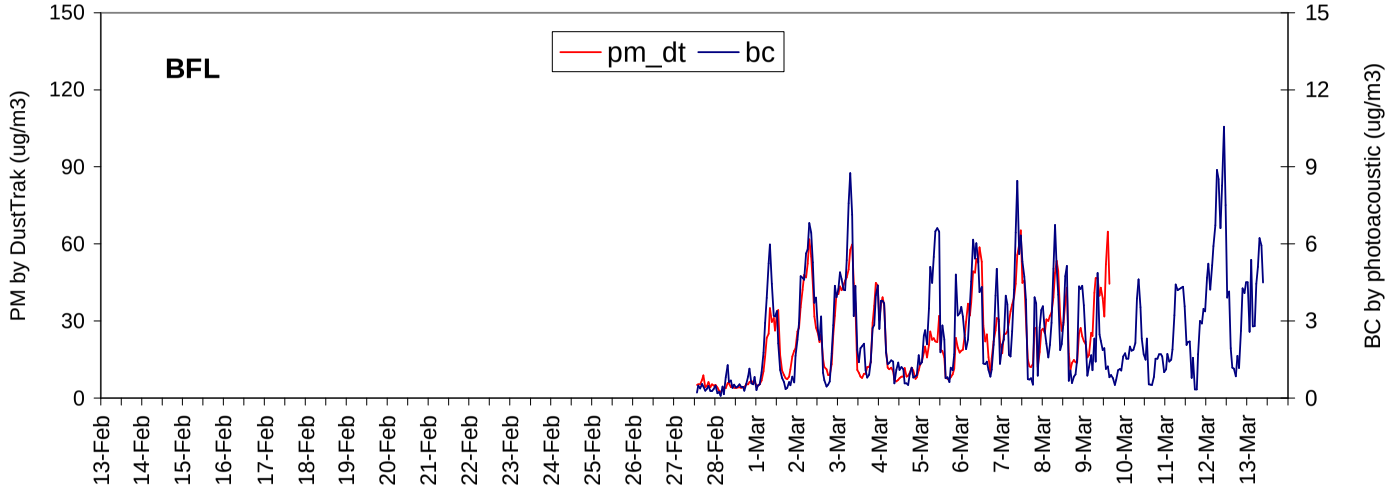
SO_2 and H_2S, 2/13/07 to 3/13/07

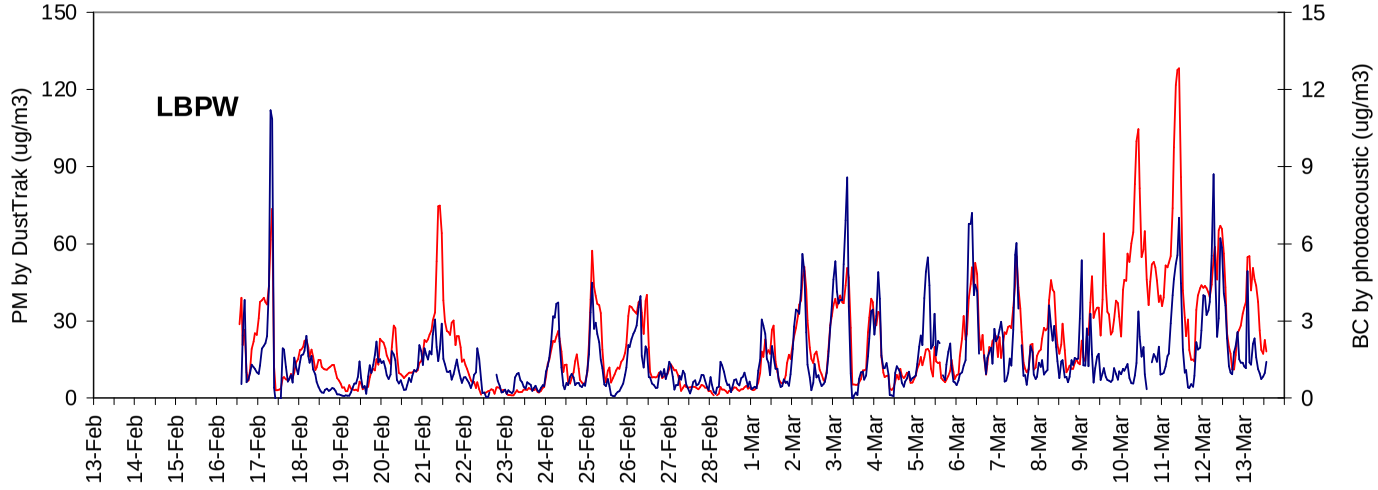


Benzene and Toluene, 2/13/07 to 3/13/07

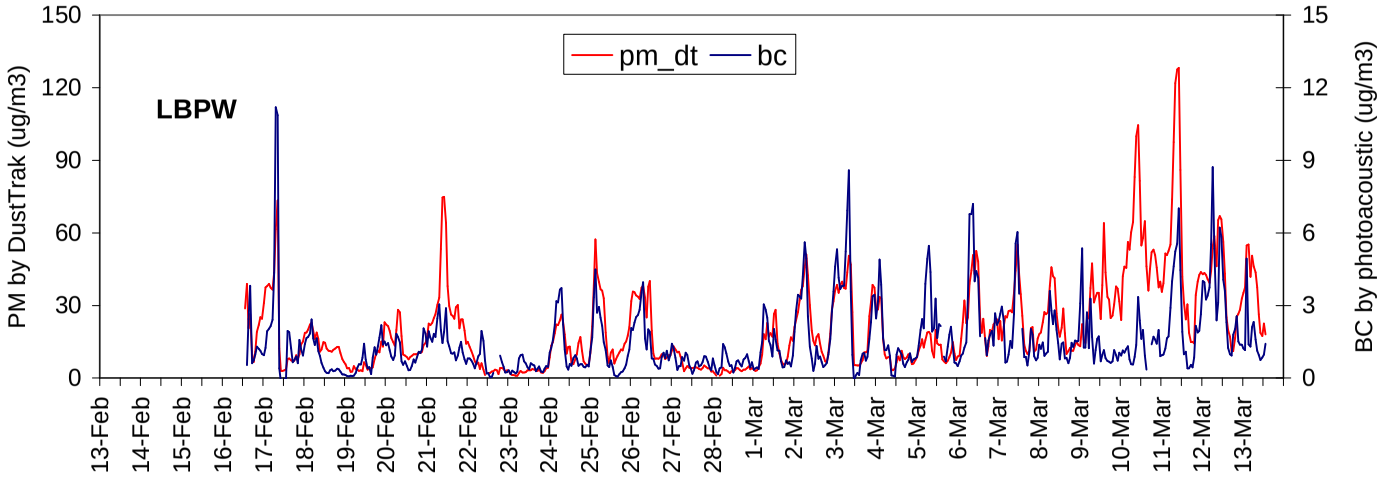


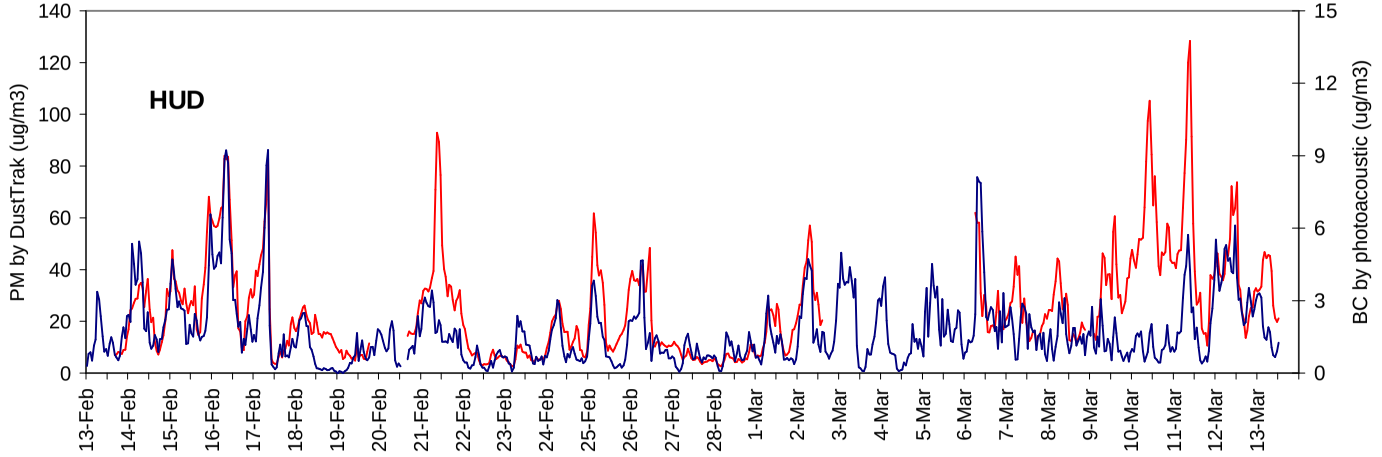
Hourly Average $PM_{2.5}$* and Black Carbon, 2/13/07 to 3/13/07



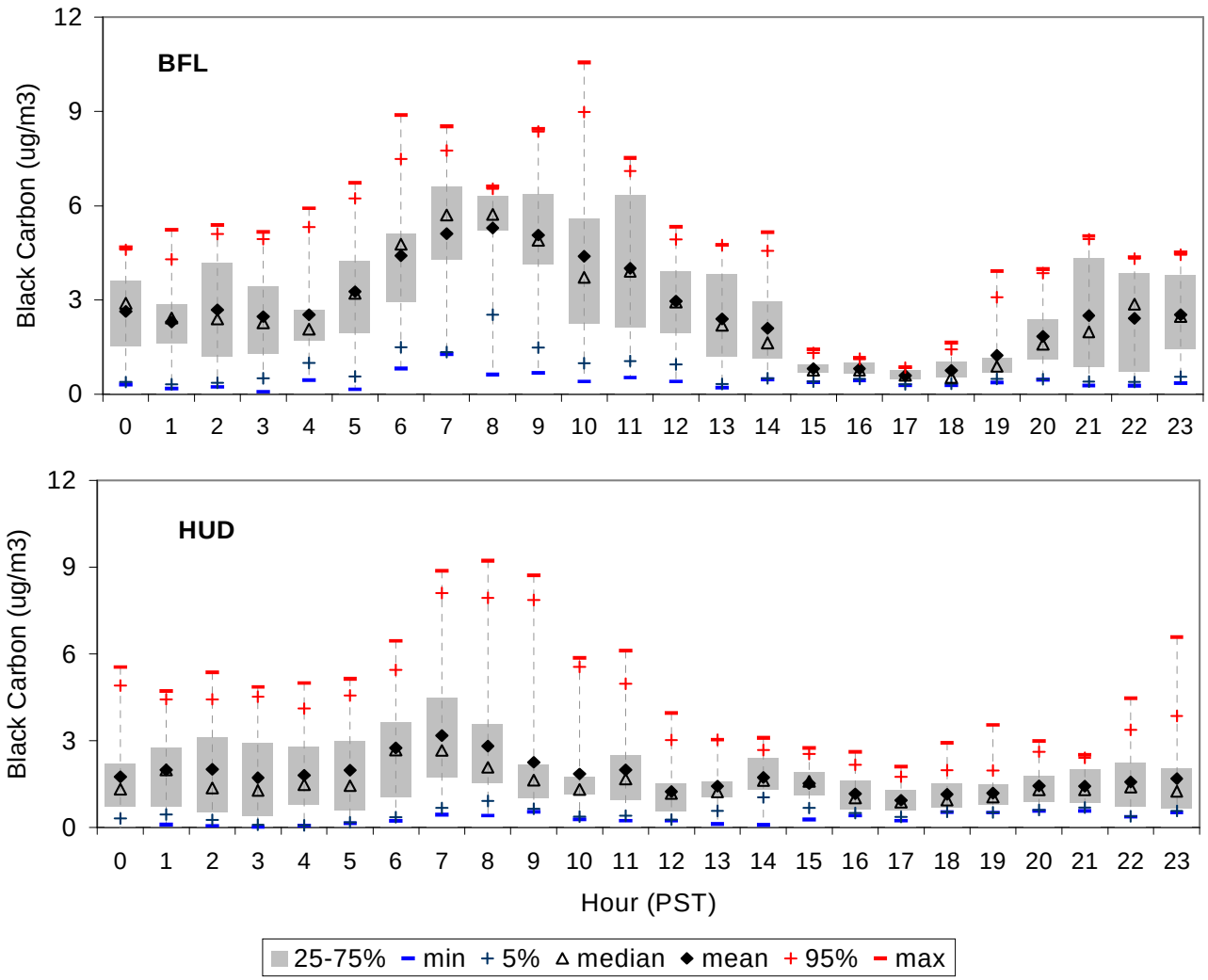


Hourly Average $PM_{2.5}$* and Black Carbon, 2/13/07 to 3/13/07





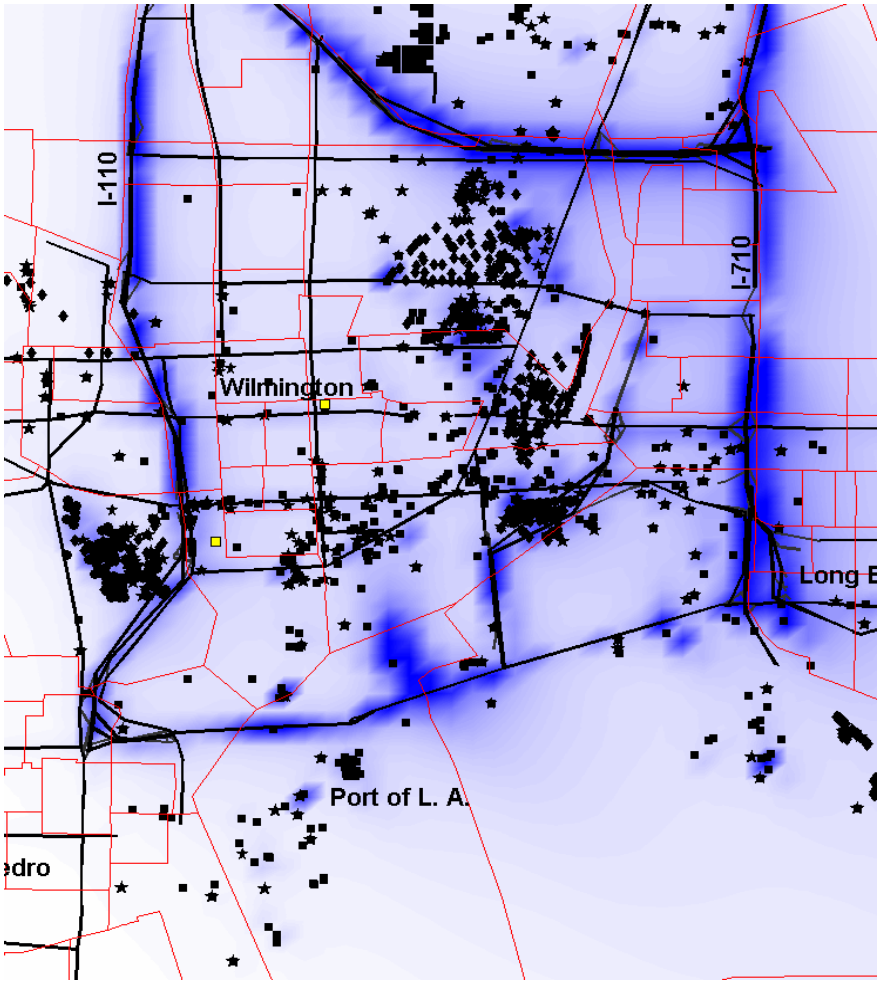
Diurnal Variations in Black Carbon, 2/13/07 to 3/13/07

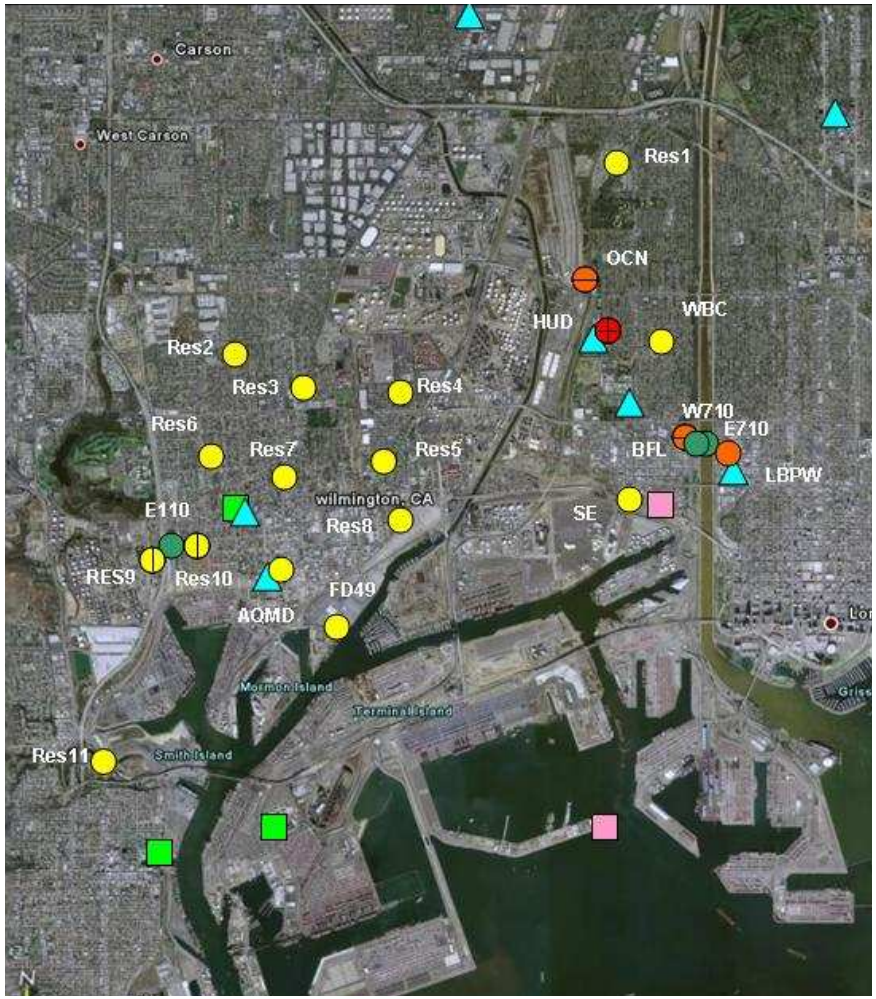
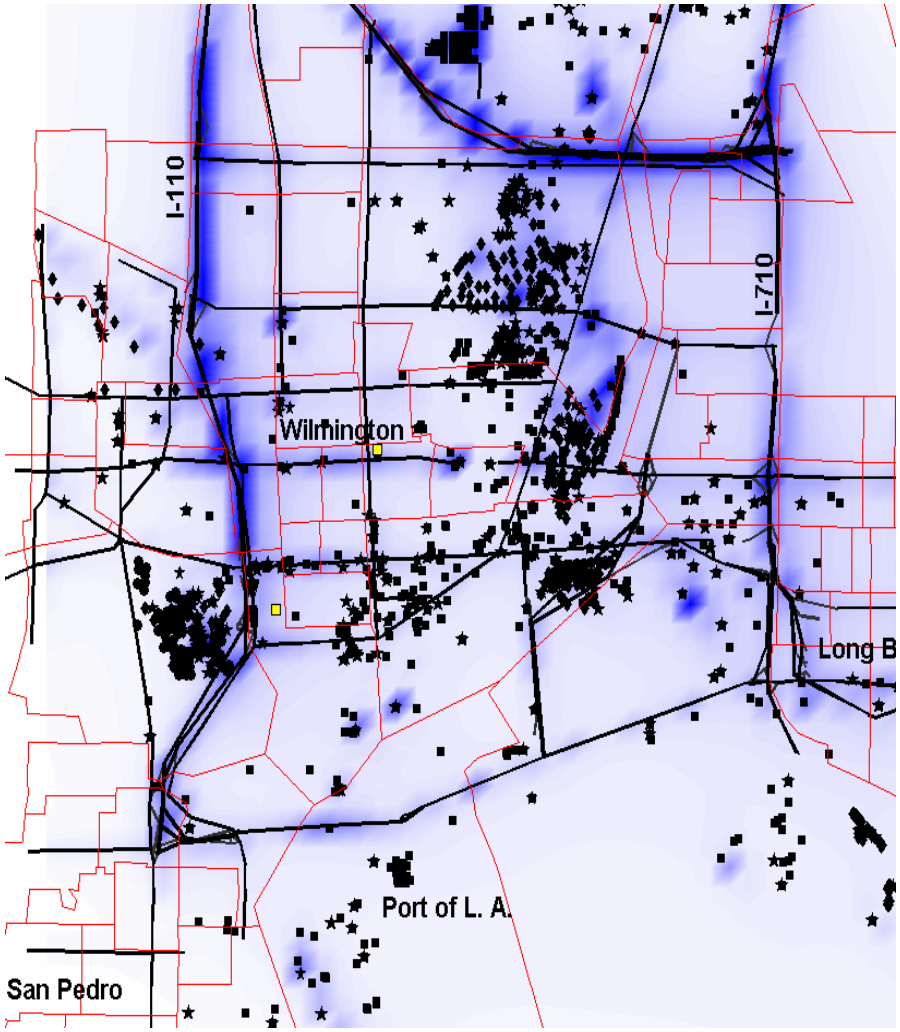
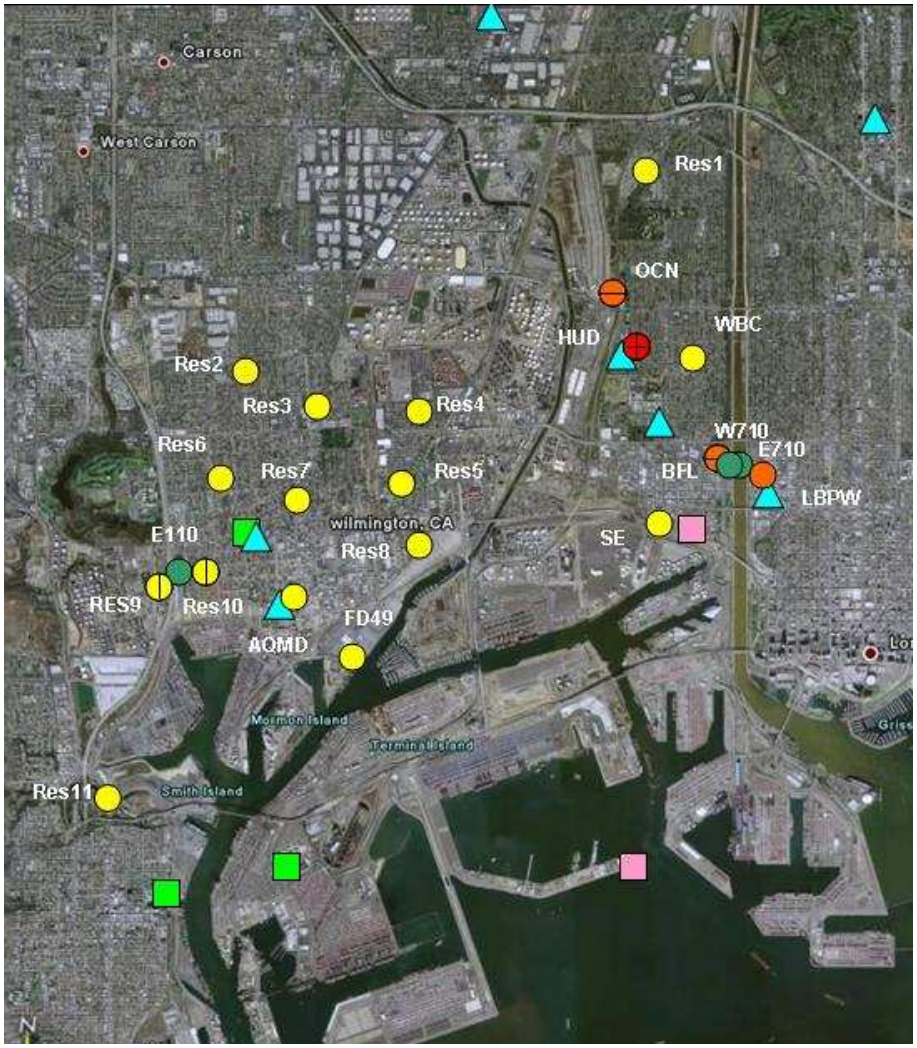


Preliminary Results

- Higher pollutant concentrations were measured closer to roadways, especially for NO, black carbon and PM.
- SO_2 and H_2S were highest adjacent to the east boundary of the Conoco Refinery. However no corresponding increase in benzene or other aromatic hydrocarbons.
- Higher week-to-week than site-to-site variability in concentrations of most pollutants.
- Episodes of higher PM occurred when regional contributions were apparently significant. Data from the remaining three seasons may provide a more definitive conclusion.

HCMS Sites Versus Spatial Variations of Diesel PM from Modeled Estimates





HCMS Sites Versus Spatial Variations of Benzene from Modeled Estimates