Air Quality Impacts of Recreational Beach Fires: Preliminary Assessment

Huntington Beach Public Meeting
May 17, 2013

Agency Positions on Wood Smoke

- California Air Resources Board
  - Wood smoke a serious threat to public health
  - Aggravates lung and heart disease
  - Can cause 10% increase in children's hospital admissions for respiratory symptoms
- U.S. Environmental Protection Agency
  - Wood smoke can affect everyone
    - Children, persons with existing health conditions most vulnerable
  - Health risks can be reduced by switching to gaseous fuels

Beach Fire Pit Emissions

- Assessed the emissions of a single fire ring for one evening
  - One fire event assumed to burn 2 bundles of wood (approx. 32 lbs total)
  - Assumed CARB fireplace emission factor
  - Compared emissions to that of an average on-road 2013 Heavy Duty Diesel Vehicle (HDDV)
- **One fire pit in one evening estimated to emit as much PM2.5 as one Heavy-Duty Diesel Truck driving 564 miles**

SCAQMD Monitoring Studies

- Purpose
  - Assess potential for human exposure to wood smoke from beach fires
- Approach
  - Deploy a combination of monitoring technologies and sampling strategies
- Other Considerations
  - Shifting meteorology, variable activity levels, technology limitations

Gradient Surveys

Objective:

Assess the PM impacts of the Beach Fires at multiple locations downwind over the course of an evening

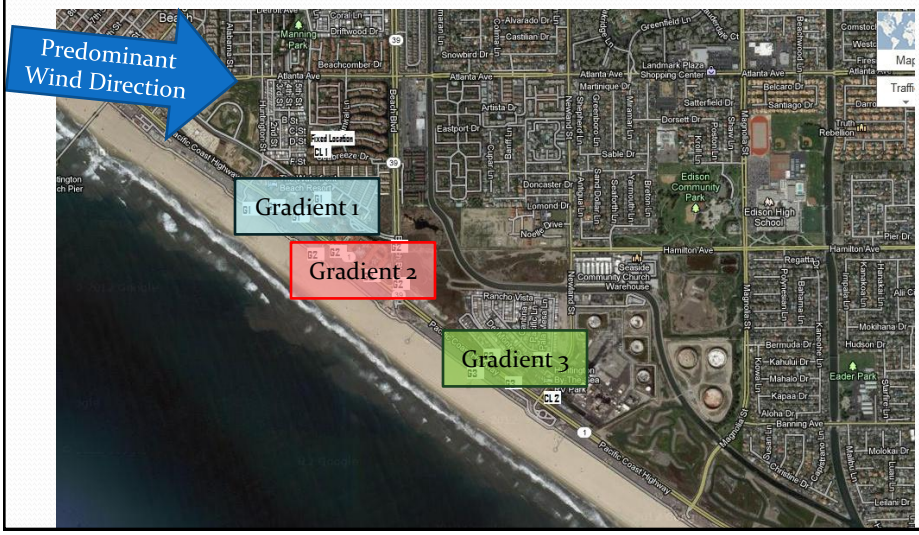
Methods:

TSI Inc. DustTrak DRX – Measures PM1, PM2.5, PM10 on a second-by-second basis

Advantages: small, portable, high time resolution, good survey tool for relative measurements

Limitations: not certified to federal reference method criteria. A drying inlet implemented to remove humidity effects

Preliminary Results: Huntington Beach 4/27/13



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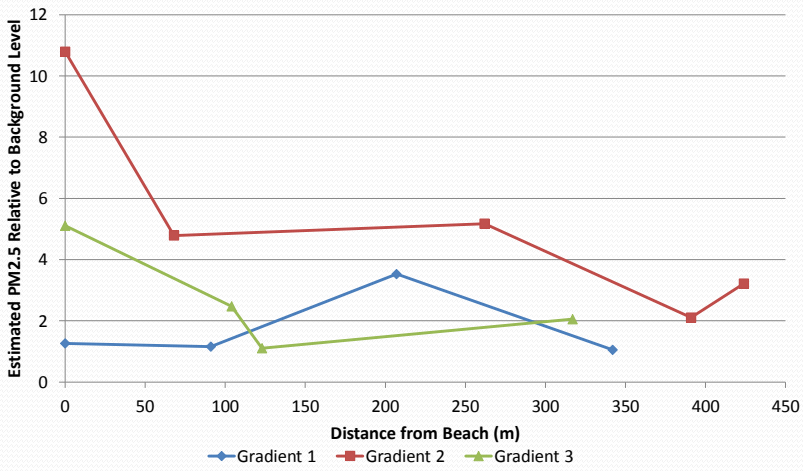


Fixed-Site Monitoring

Objective:

Assess the PM impacts of the Beach Fires at a fixed locations, continuously over time

Methods:

E-BAM – Measures PM2.5 on an hourly basis

Advantages: portable, low power, same measurement principle as a Federal Equivalent Method

Limitations: less accurate at low levels

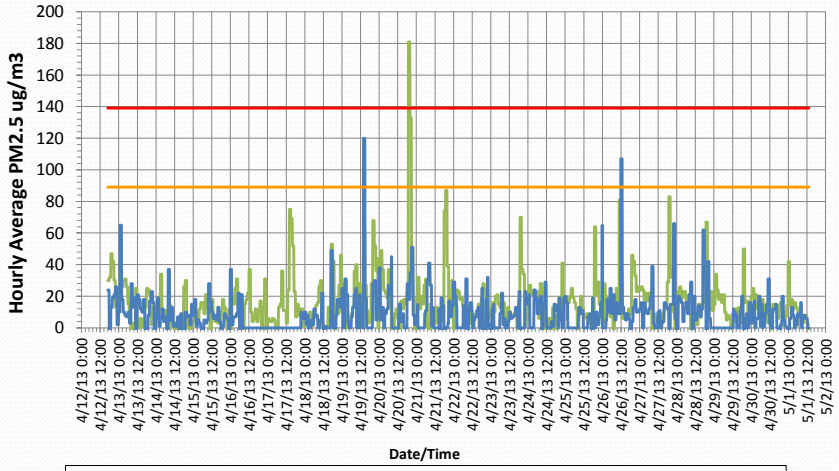
Aethalometer – Measures Black Carbon, an indicator of combustion, on a continuous basis

Condensation Particle Counter (CPC) - Measures Ultrafine particles, indicative of nearby sources of combustion

Fixed Site Monitoring: Huntington Beach

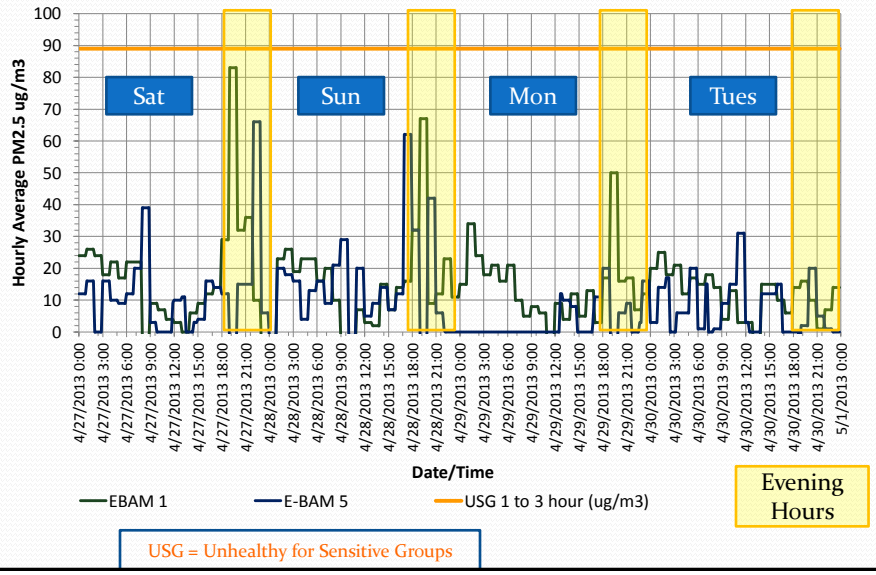
- EBAM
- Aethalometer
- CPC
- PM2.5 Filter Sampling

Huntington Beach Preliminary Data: 4/13 to 5/1
PM2.5 Hourly Average Time Series



USG = Unhealthy for Sensitive Groups
Unhealthy – "consider canceling public events, based on public health and travel considerations"

Preliminary Data: Huntington Beach 4/27 to 5/1
PM2.5 Hourly Average Time Series



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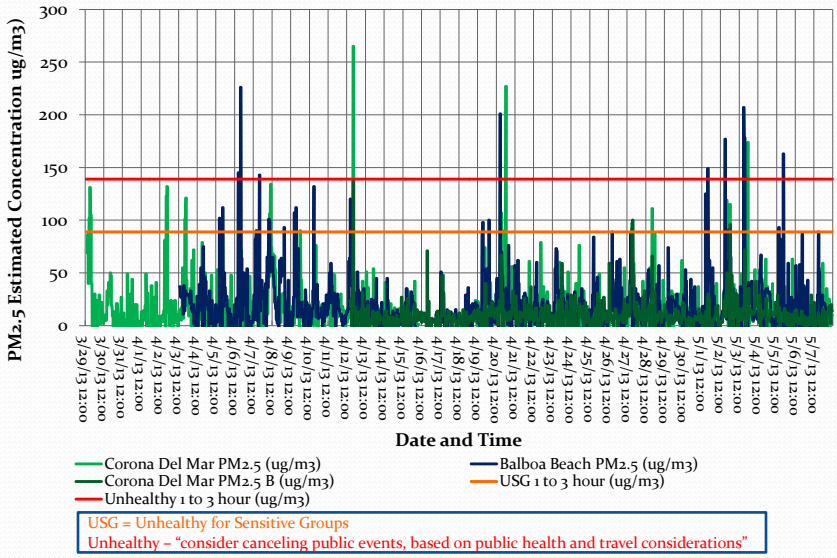
Preliminary Results: Corona Del Mar and Balboa Beach PM2.5 Time Series



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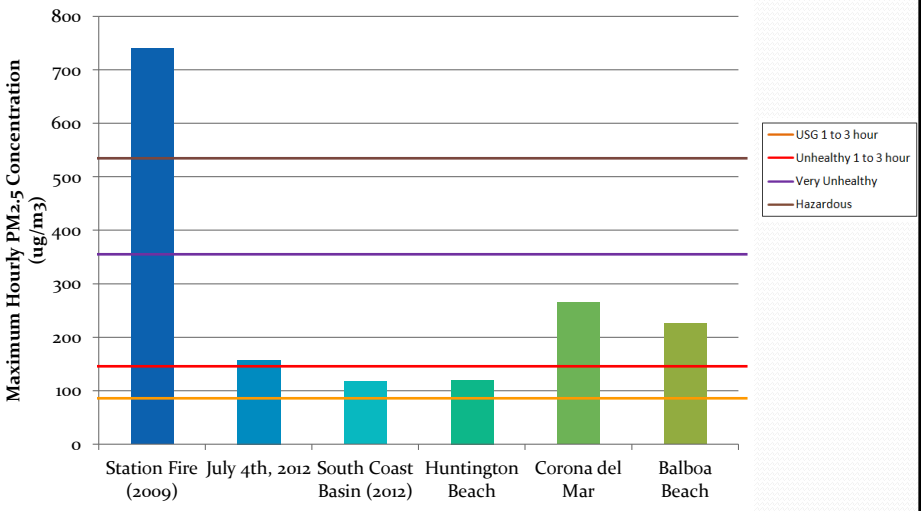
Preliminary Results: Maximum Hourly PM2.5 Concentration Comparison



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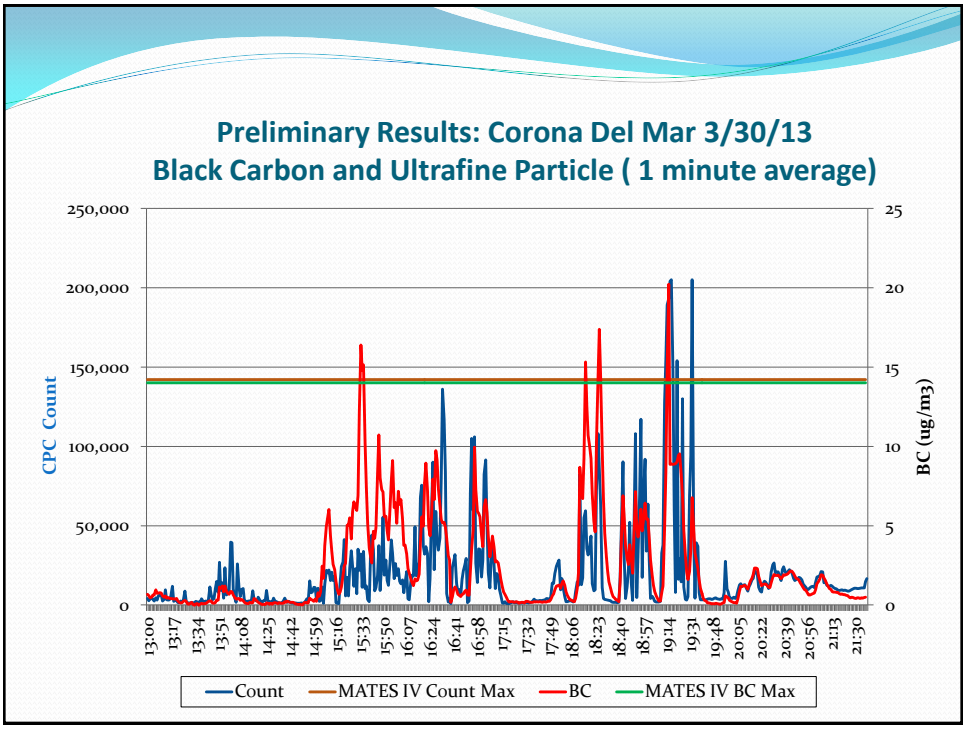


Preliminary Conclusions

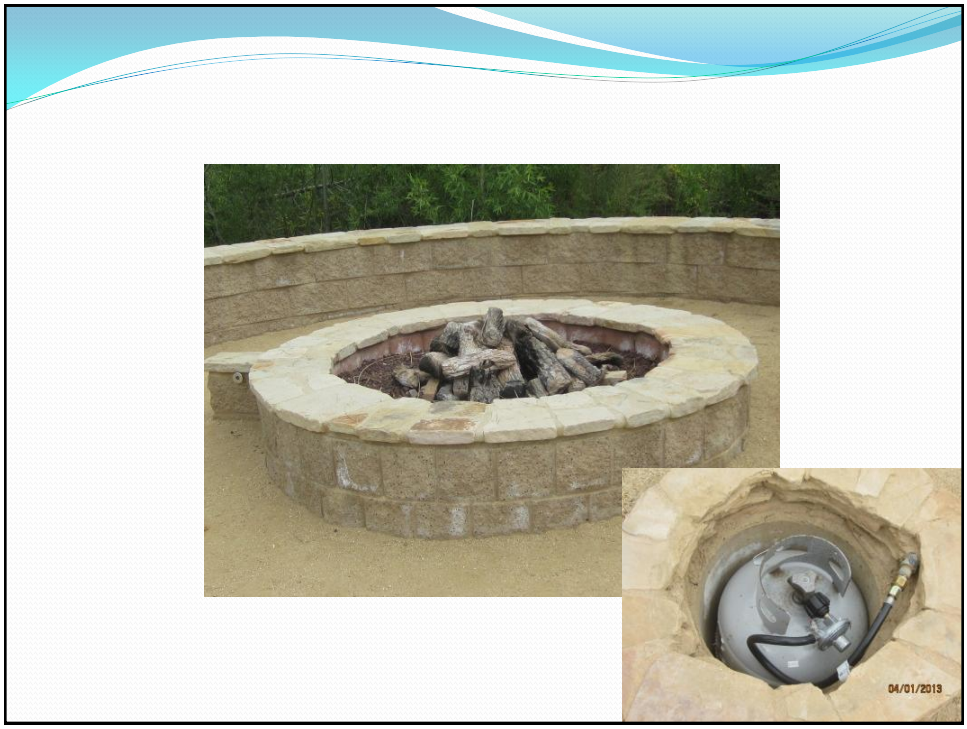
- Beach fire activity is impacting PM2.5 levels at the beach and extending into neighboring communities
- Concentrations can be up to 10 times background levels for short periods of time in beach parking areas, up to 3 times background at residential locations
- 1-hour average PM concentrations can exceed public health guidance levels
- Some measurements are higher than observed across the Basin over a whole year

Next steps

- Continue field sampling
- Consider deployment of federal equivalent methods
- Continue to report findings to public as they become available
- Continue to work with potentially impacted cities and state parks
- Continue to evaluate propane and natural gas options

Options Being Evaluated

- Buffer zone to nearest residence
- No burn days during unfavorable meteorology
- Increase distance between fire pits
- Joint enforcement programs to monitor the burning of inappropriate materials
- Enhanced education regarding wood smoke and options for susceptible individuals
- Cooperative participation in clean technology demonstration programs (propane/CNG)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