

# Smoke Density Hazard Mapping

Smoke Management Workshop  
*November 17, 2010*  
Fresno, California

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South Coast Air Quality Management District



# Topics

- Smoke Density Mapping
- Asbestos and Fire

# Wildfire With Strong Santa Ana Winds



November 15, 2008 ~1030 PST

NASA MODIS Terra Satellite True Color Image





# Hazard Mapping System Fire and Smoke Product

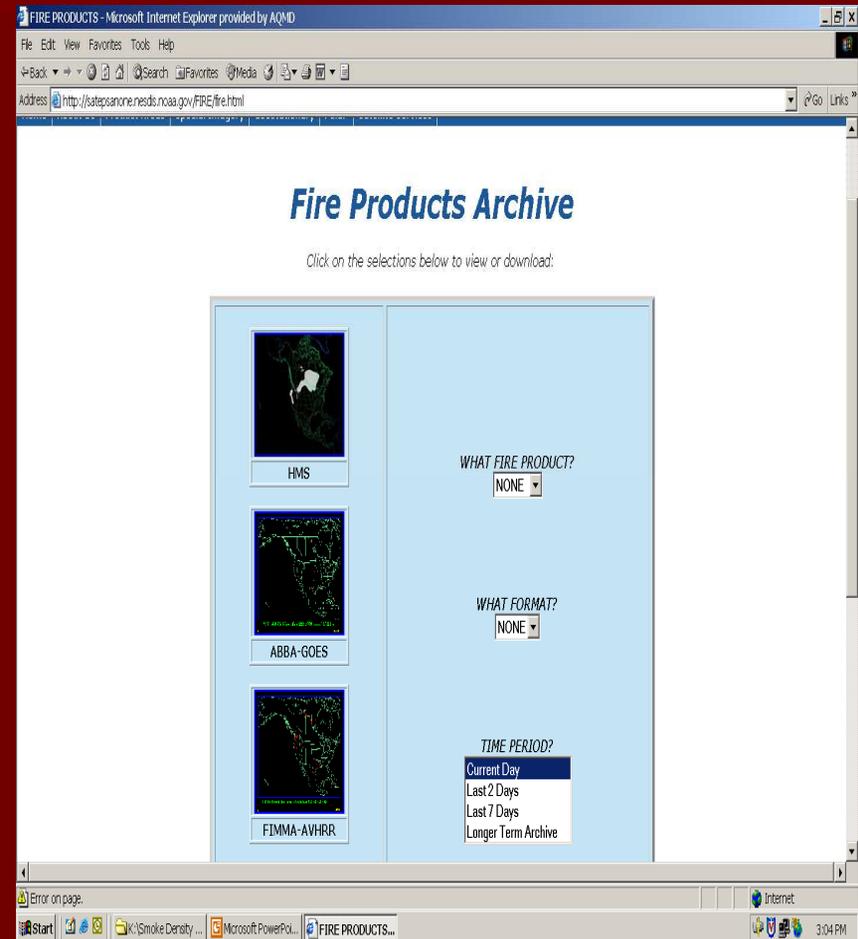
<http://www.osdpd.noaa.gov/ml/land/hms.html>

- Uses satellite programs to analyze and integrate smoke data.
  - AVHRR (Advanced Very High Resolution Radiometer)
  - MODIS (Moderate Resolution Imaging Spectroradiometer Fire Algorithm)
  - DMSP/OLS (Defense Meteorological Satellite Program / Operational Linescan System)
- Displays significant fire and smoke plumes in a given area.
- Data is available for direct download from the website.



# How to download smoke files:

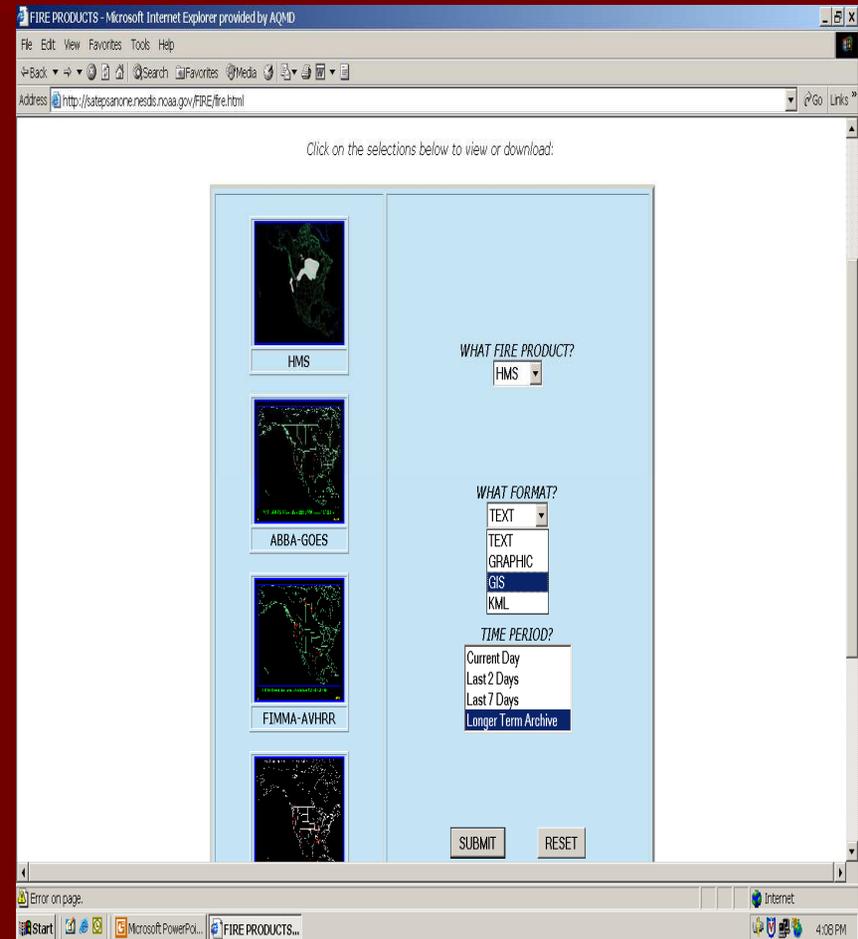
- Access the website from the previous slide.
- Click on "Download most current files."
- Specify the fire product and format to use as well as the time period in question and click submit.
- Left click to view the file and right click to save it.





# How to download smoke files: (cont'd)

- In order to open files with ArcGIS software:
  - Select HMS from Fire Product and GIS from Format.
  - Make sure to download the .shp, .shx and .dbf files associated with the data in question.
  - Open up the .shp file in an ArcGIS application:
    - ArcMap
    - ArcExplorer
    - ArcView





# Interactive Hotspot Map

- <http://www.osdpc.noaa.gov/ml/land/hms.html>
  - Provides up-to-date locations of fire hotspots throughout the United States.
  - Map is interactive and allows user to analyze different categories of smoke (i.e. thin, moderately dense, dense and significant).
  - Also allows user to focus on a specific region in which hotspots and smoke plumes are most prevalent.



# Smoke from Freeway Complex Fire

Looking South from Diamond Bar

November 16, 2008 ~Noon



Photo Courtesy Denny Shaw, SCAQMD



# Fumigation of Coastal Plain

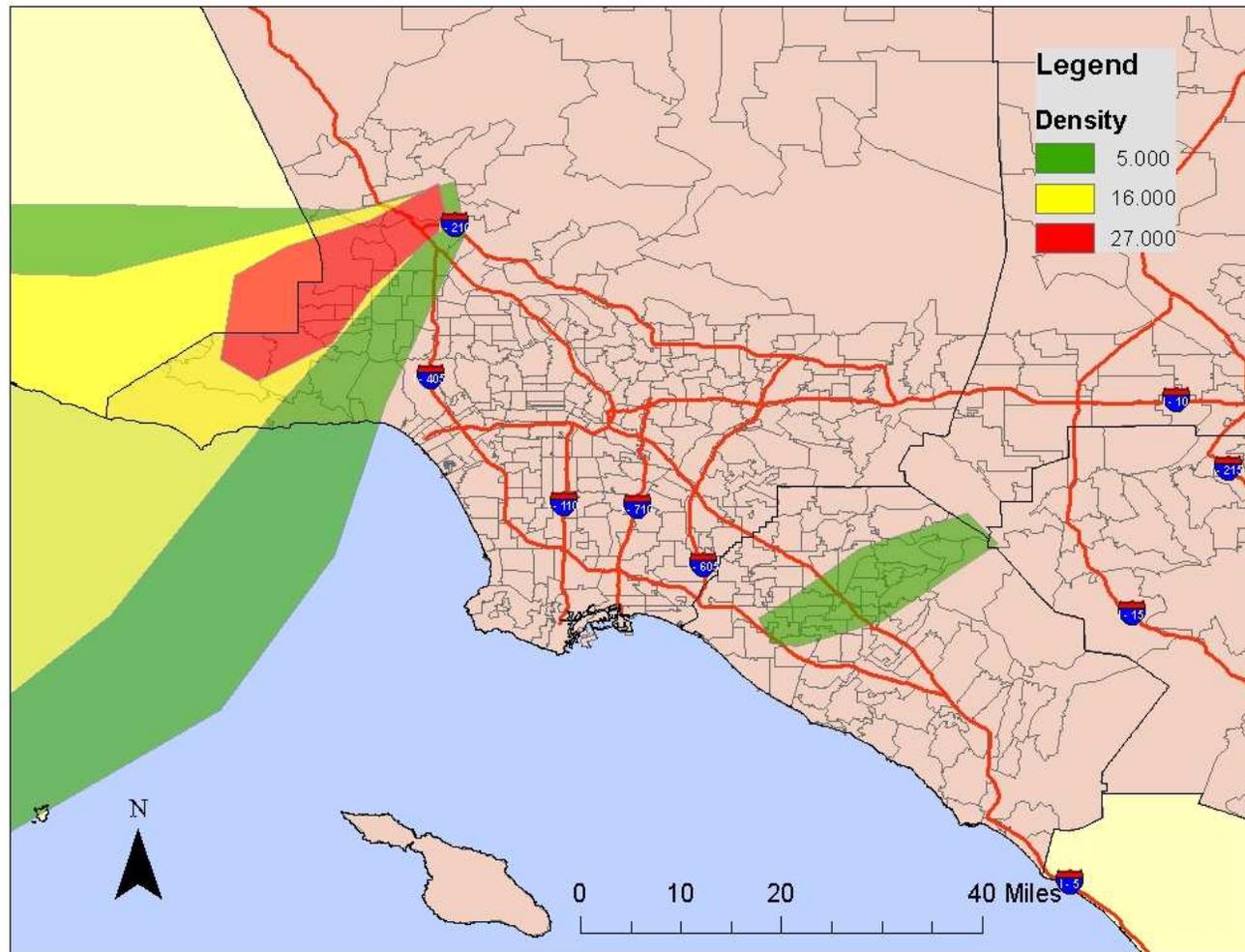
November 16, 2008 ~1330 PST

NASA MODIS Aqua Satellite True Color Image





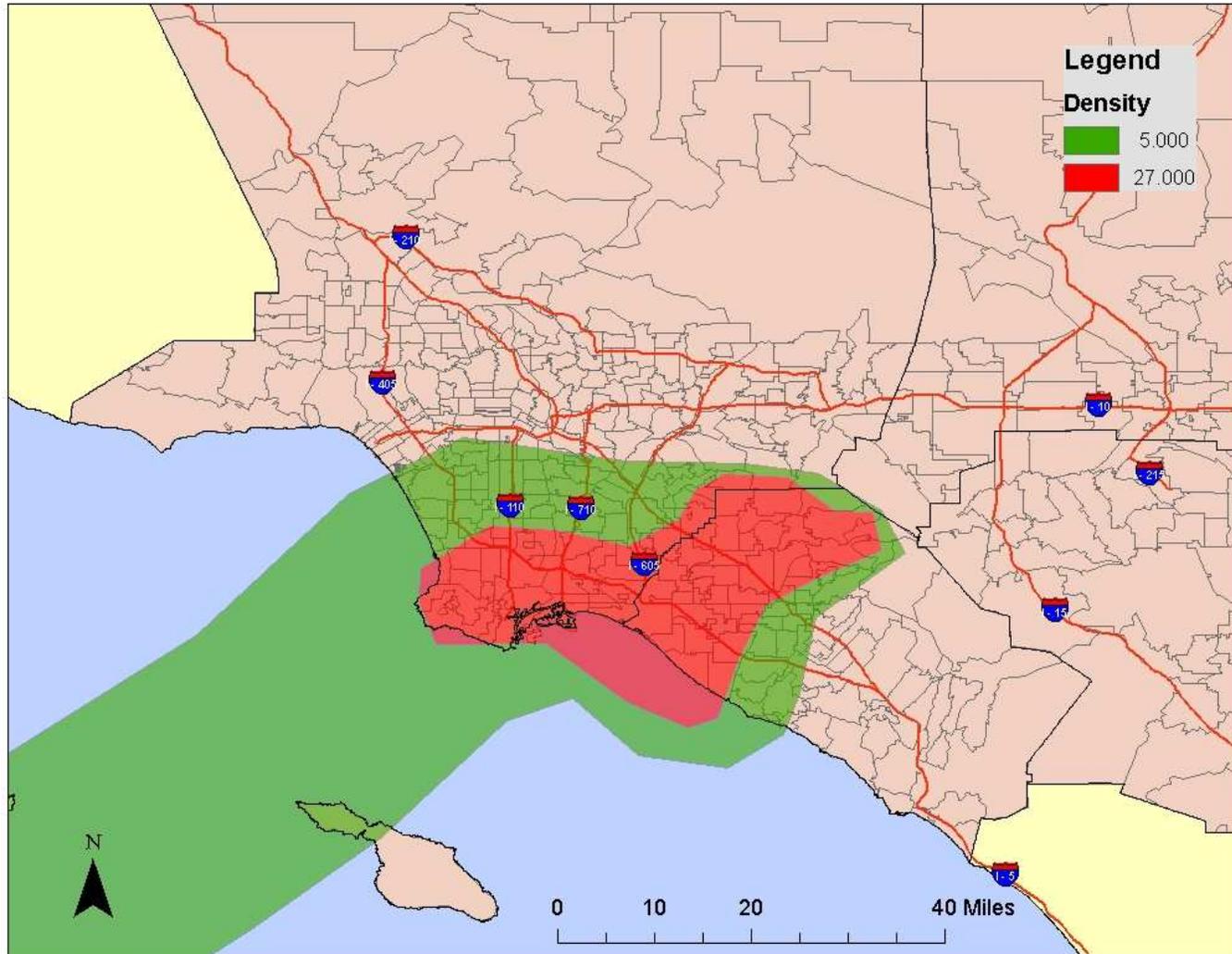
# November 15, 2008 3:30 p.m. – 6:45 p.m.







# November 15, 2008 8:45 p.m. – 10:15 p.m.





# Ontario Fire on March 17, 2009

- Fire was discovered at 5:14 p.m. at a plastic collections facility in Ontario.
- Recycled plastics and hay were discovered burning in a 5,000 square foot area.



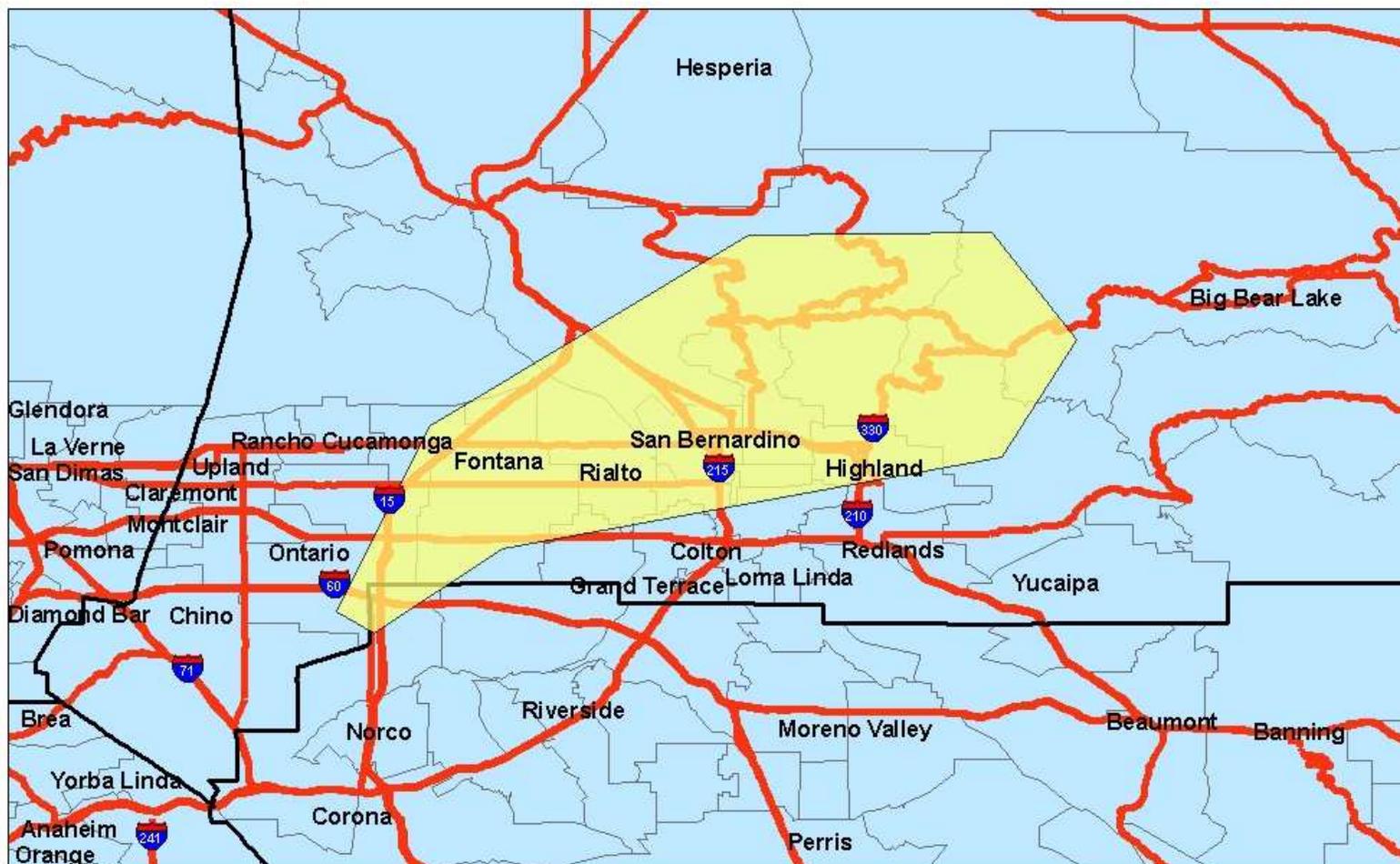


# Ontario Fire – March 17, 2009





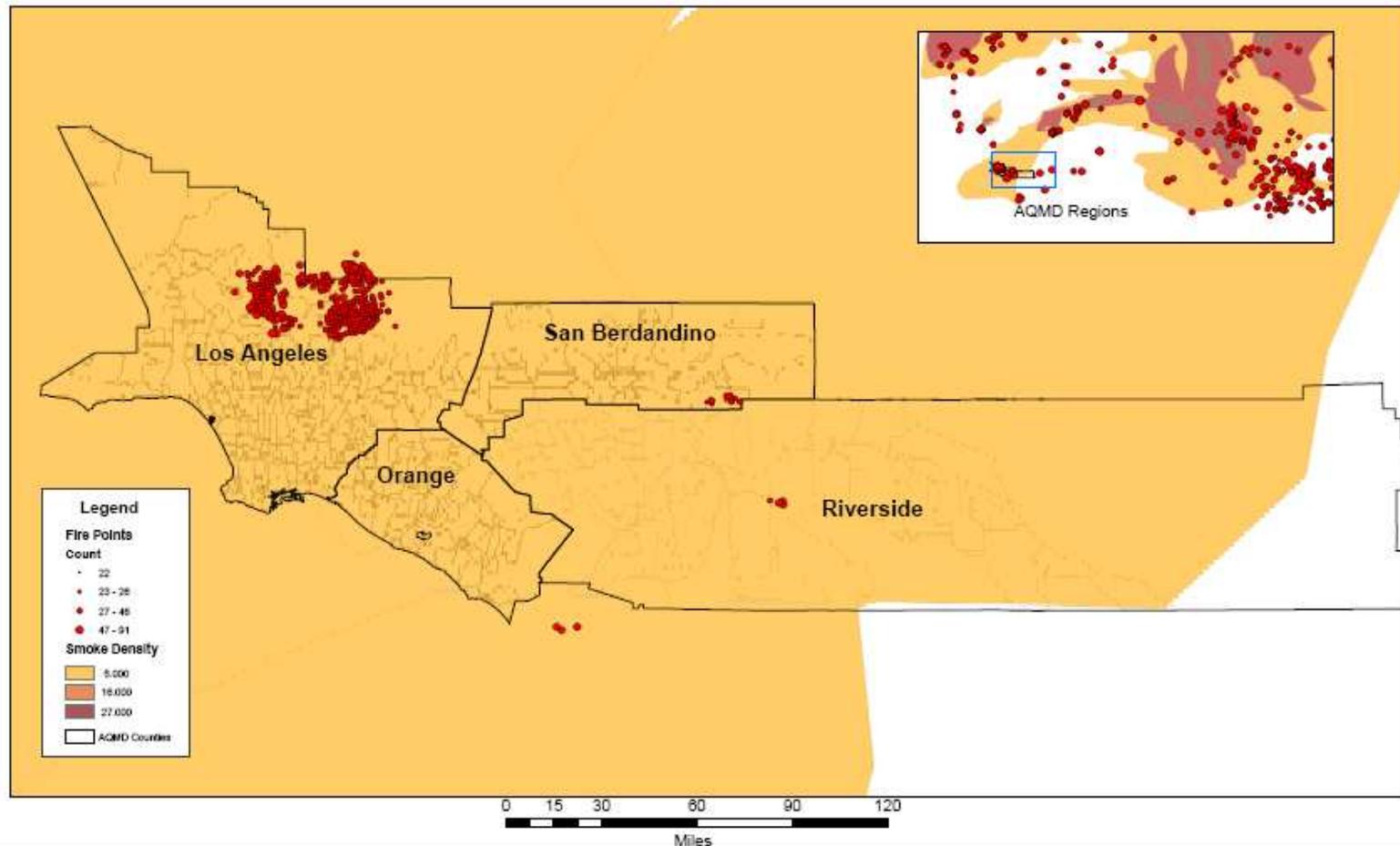
# Smoke Density on March 17, 2009 9:15 p.m. - 10:45 p.m.





# September Wildfires Station Fire

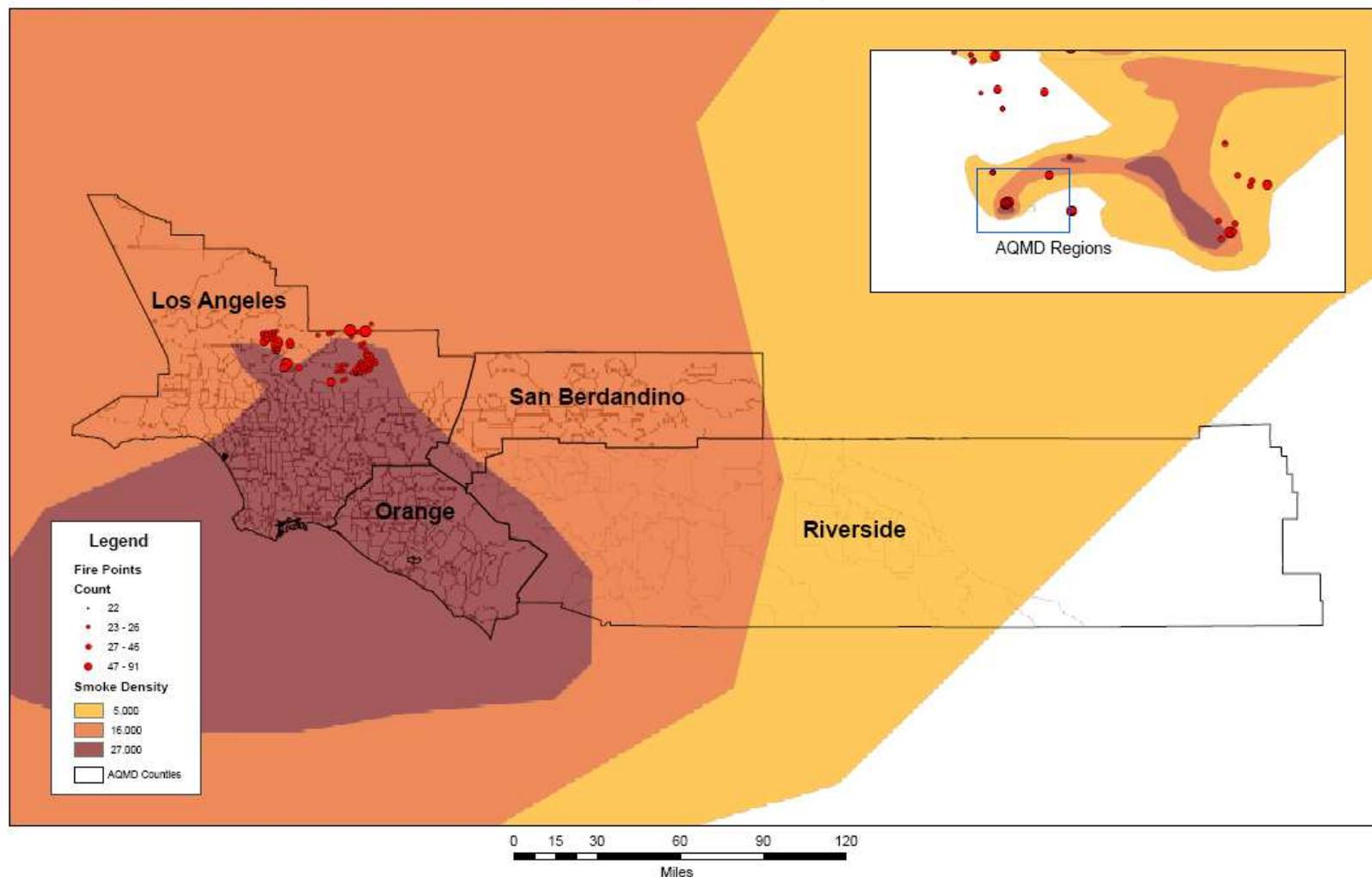
Smoke Densities in AQMD Regions on September 1, 2009  
1:00 p.m. - 10:15 p.m.





# September Station Wildfires

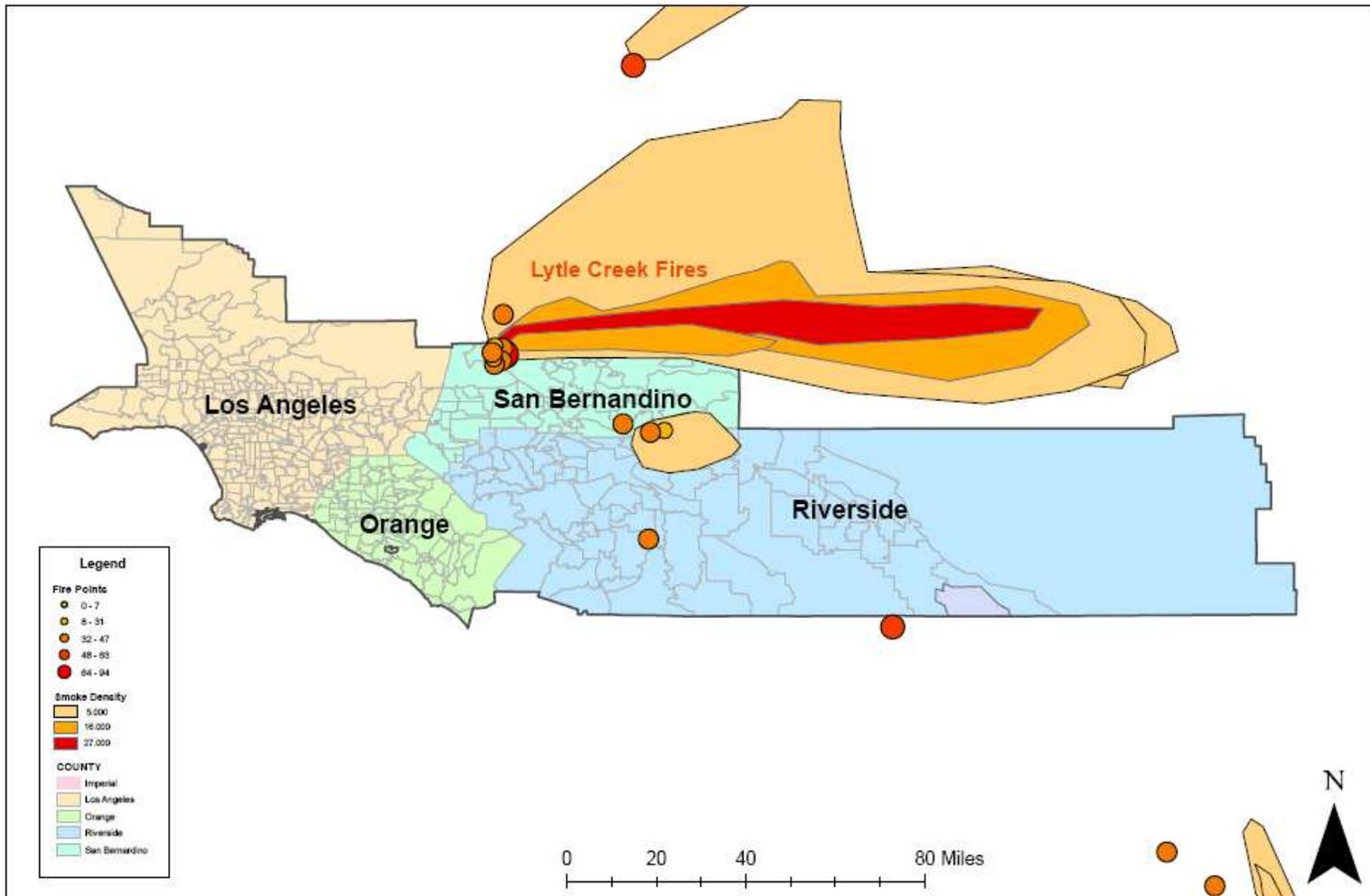
Smoke Densities in AQMD Regions on September 2, 2009  
12:30 p.m. - 4 p.m.





# Lytle Creek Fire

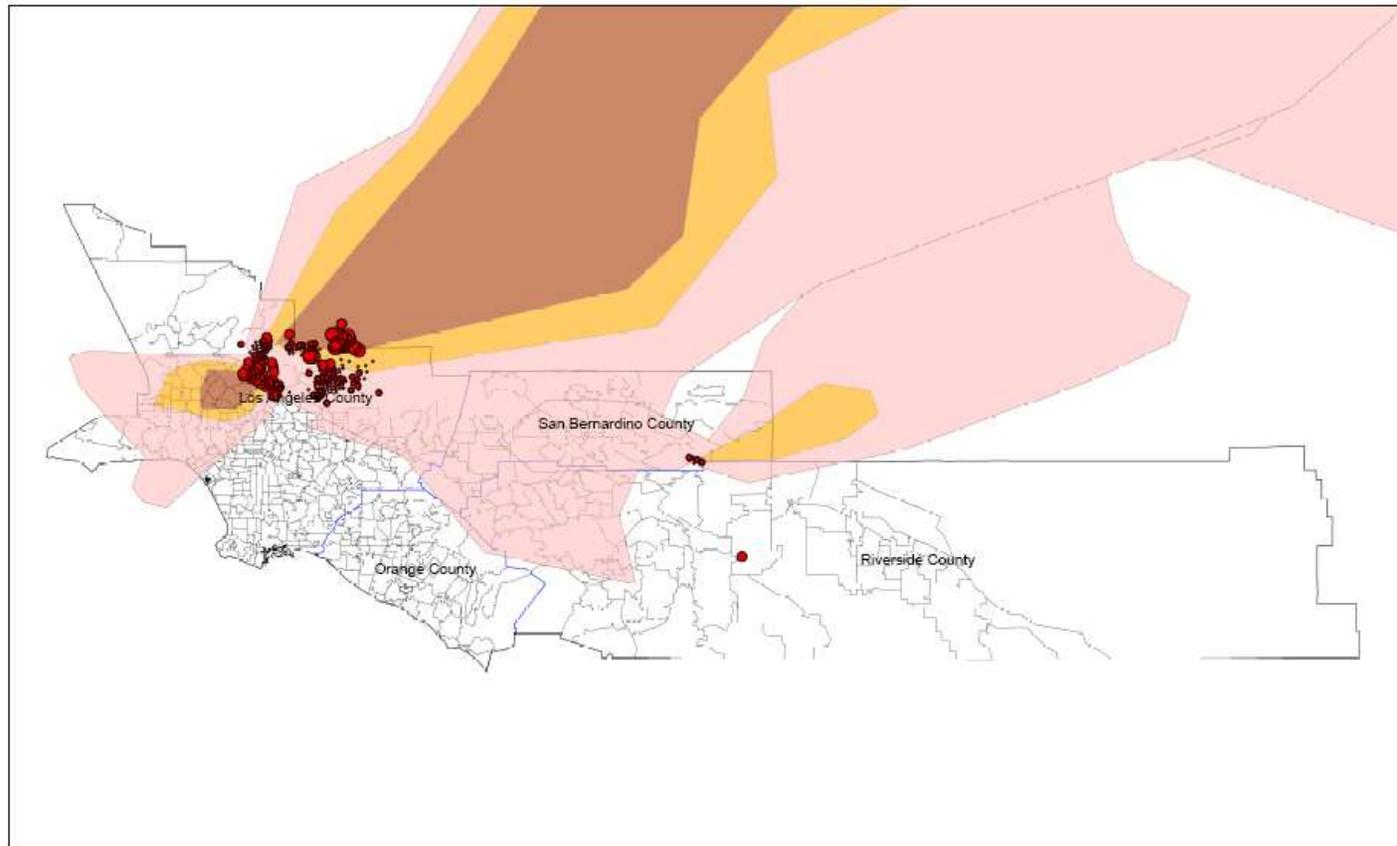
Lytle Creek Fire in Riverside County October 3, 2009  
7:00 P.M. - 11:45 PM





# August Station Fire

Wildfire and Smoke Coverage in AQMD Regions  
August 31st 2009



**Legend**

Aug 31st Wild Fires  
Ecosys

- 0 - 24
- 25 - 38
- 39 - 63
- 64 - 94

August 31st Smk Cov.  
Density

- 5,000
- 16,000
- 27,000
- AQMD Boundary
- ZIP

0 15 30 60 90 120 Miles



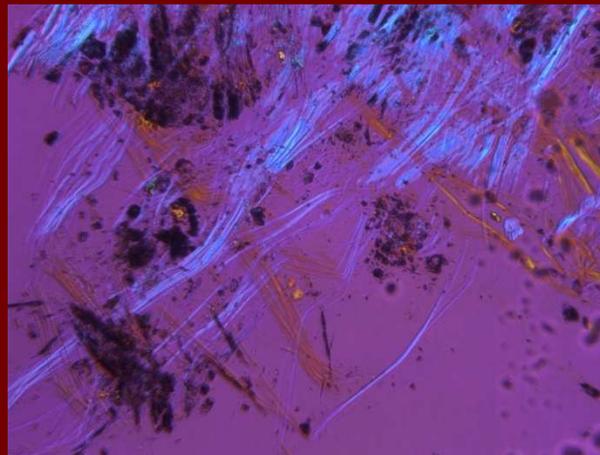
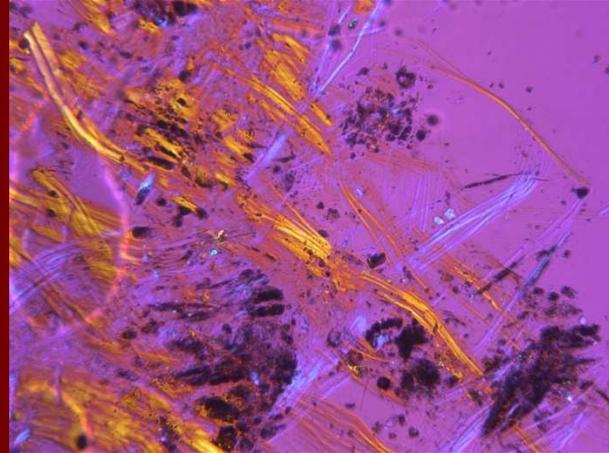
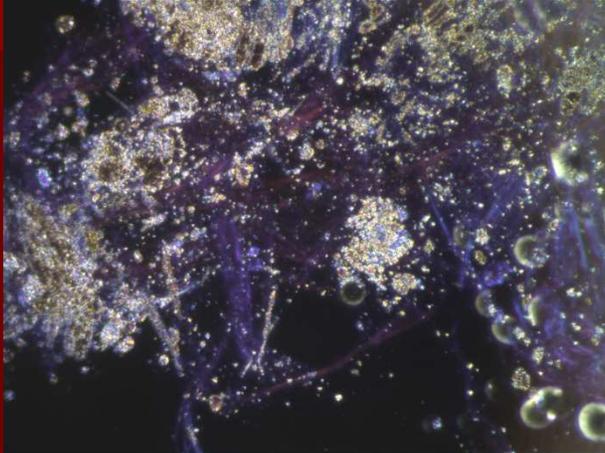


# Potential Uses

- Identify areas to locate air monitoring equipment
- Evaluate if monitors are located at proper locations for collecting representative samples
- Use to back up Notice of Violations issued for Public Nuisance as a result of fires



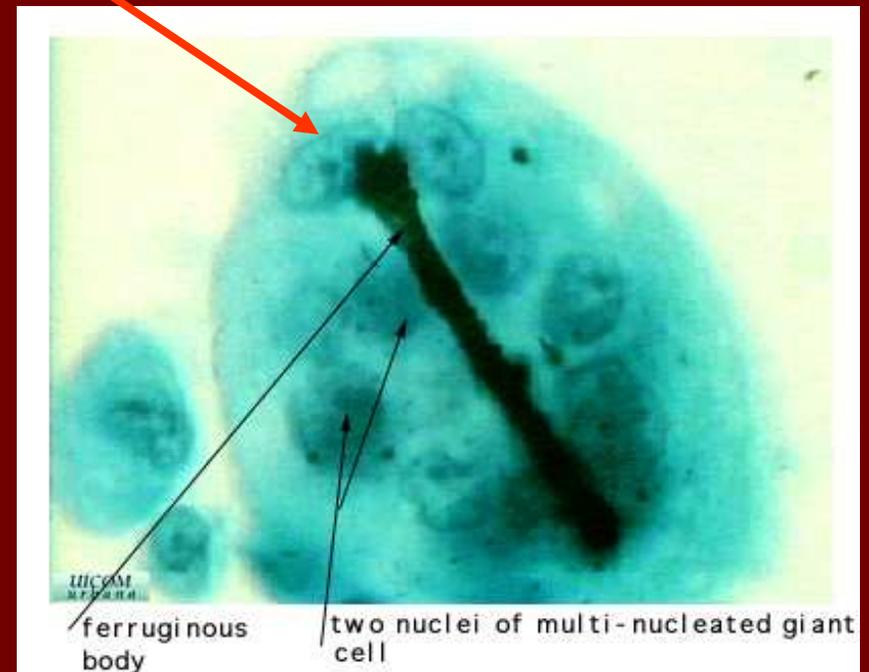
# Asbestos





## Exposure to Asbestos

Each fiber is a foreign body, like a splinter in the finger and the body tries to encapsulate the asbestos fibers - Ferruginous Bodies





## Exposure to Asbestos

Inflammation develops as the body tries to neutralize, break down or move the sharp, irritating fiber - leads to the development of asbestos-caused diseases

Ferruginous  
Bodies



Fibers





# Homes Damaged by Fire





# Fire and Asbestos

- Asbestos containing materials in older buildings (pre-1984)
- Safe handling and disposal of asbestos if known or suspected
- Licensed asbestos abatement contractor
- Send notifications to the district to comply with NESHAP requirements
- State declared emergency and Executive Order to waive fees and certain provisions of rules



# AQMD Response

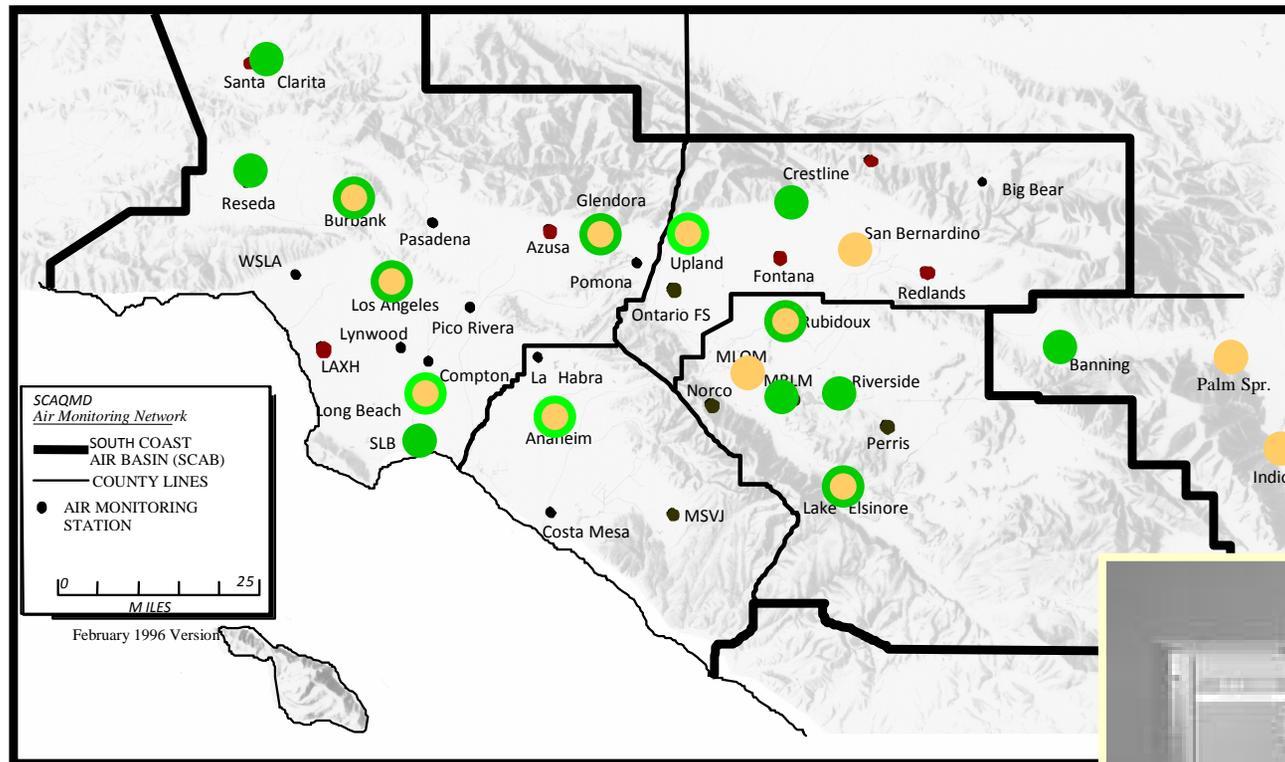
- Air Monitoring
- Forecasting
- Distribute Advisory Information and Alerts
- & Wildfire Kits
- Emergency Rule Considerations

The screenshot displays the AQMD homepage with the following elements:

- Header:** South Coast Air Quality Management District logo and tagline "Cleaning the air that we breathe...". Navigation links include Home, Inside AQMD, Community, Business, Technology, Health & Education, and Governing Board. Language options for Spanish, Chinese, and Korean are also present.
- Main Content:**
  - Air Quality Forecast/Advisories:** A section for current hourly air quality and advisories, featuring a map of the South Coast region.
  - Daily Forecast:** Links for "Today", "Tomorrow", "PDF version", and "Sign-up for AQ Forecasts by E-mail".
  - Headlines:** Several news items, including "AQMD News: AQMD Chairman William Burke welcomes hundreds at AQMD's Green Tech Connect Forum" and "AQMD News: AQMD needs your help in reporting suspected air quality violations".
  - QUICK LINKS:** A list of links such as "AQMD Newsroom", "Budgets/Audited Financial Reports", "Calendar of Events", "CEQA", "Certification Programs/Certified Equip", "Compliance Information", "Employment/Business Opportunities", "Frequently Asked Questions", "Funding Incentives/Opportunities", "Governing Board", and "Health Studies".
- Right Side:** Promotional banners for "HEALTHY HEARTHS \$125.00 Discount on Gas Log Set" and "GREEN TECH CONNECT FORUM Register Now".
- Footer:** A search bar and a "GO" button.



# Air Monitoring: Real-time (hourly) PM measurements





# Mobile Continuous Monitors

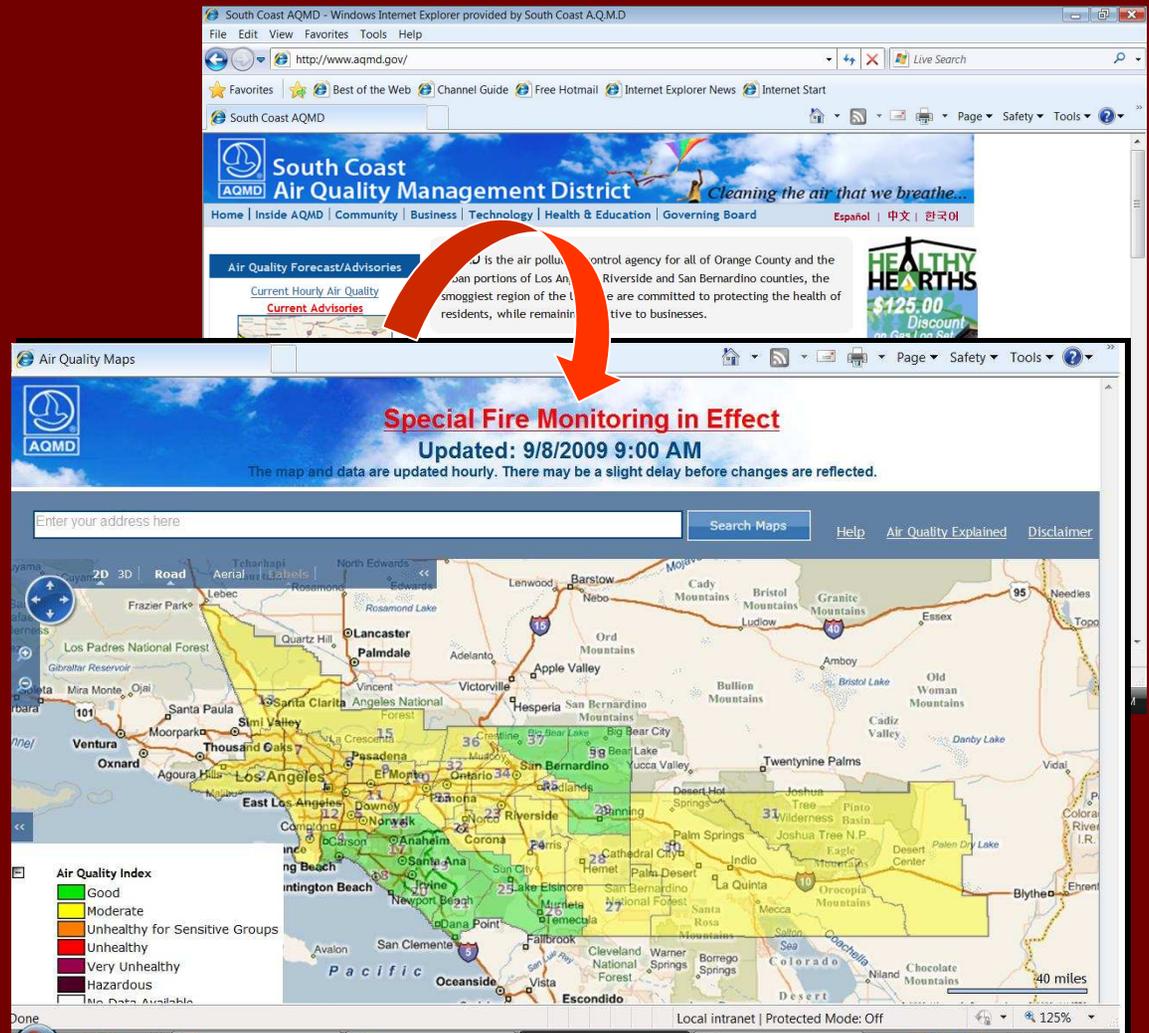
- Fills gaps in PM network according to fire and smoke locations
- 1-hour data comparable to fixed site monitors
- Rapidly and easily deployable units
- Self-contained power and telemetry





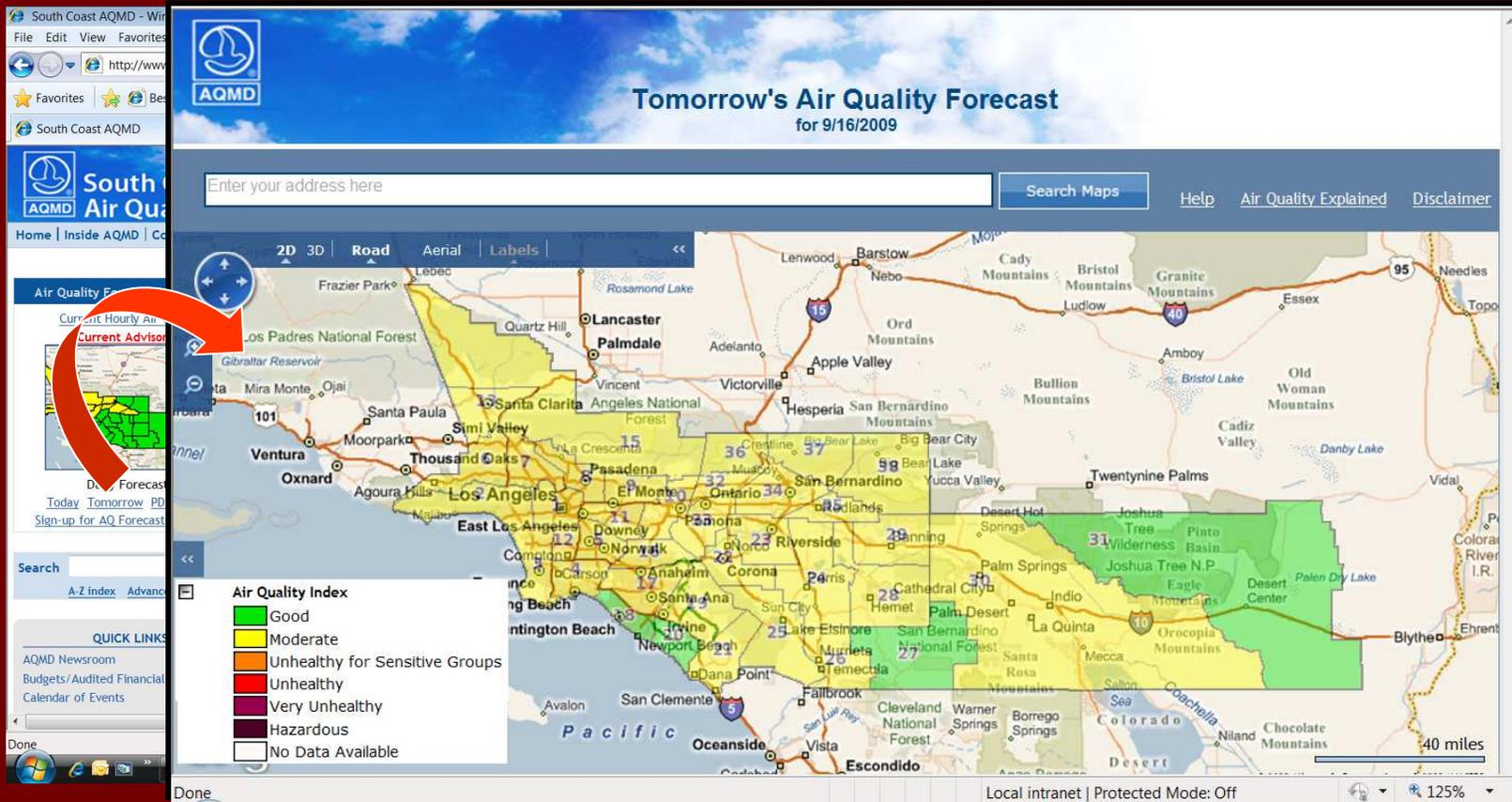
# Interactive Air Quality Map

- Incorporates data from station and mobile monitors
- Averaging method to predict levels in unmonitored areas
- More responsive hourly PM data rather than moving 24-hour averages
- Color-coded to Air Quality Index





# Forecast



Website Address: [www.aqmd.gov/smog](http://www.aqmd.gov/smog)



# Smoke Advisory

South Coast AQMD - Windows Internet Explorer provided by South Coast A.Q.M.D.  
File Edit View Favorites Tools Help  
http://www.aqmd.gov/  
South Coast AQMD

**South Coast Air Quality Management District**  
Home | Inside AQMD | Community | Business | Technology | Health & Education | Go

**Air Quality Forecast/Advisories**  
[Current Hourly Air Quality](#)  
**Current Advisories**

Daily Forecast:  
[Today](#) [Tomorrow](#) [PDF version](#)  
[Sign-up for AQ Forecasts by E-mail](#)

Search  GO  
[A-Z index](#) [Advanced Search](#)

**QUICK LINKS**  
AQMD Newsroom  
Budgets/Audited Financial Reports  
Calendar of Events

**AQMD News**  
 **AQMD monitors air quality at season-opener**  
September 3, 2009 - UCLA fans despite of ongoing wildfires, they Diego State on Saturday, Sept. recent air quality measurements from a monitor



## SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

### SMOKE ADVISORY MONDAY, AUGUST 31, 2009

Smoke from the Station Fire in the Angeles National Forest has caused **Unhealthy to Hazardous** air quality at times in the San Gabriel Mountains (Area 15) and the West San Gabriel Valley (Area 8). Very high concentrations of fine particulates are occurring in areas of direct smoke impacts near the fire, especially the foothill communities of Altadena, La Canada, Flintridge, La Crescenta, Tujunga, Sunland, Montrose, Altadena and Acton. The Oak Glen and Pendleton Fires near Yucaipa have also caused areas of **Unhealthy** air quality. Everyone should avoid physical activity in areas heavily impacted by smoke.

Smoke has settled into the valleys of Los Angeles County overnight near the fires, as well as in the eastern San Bernardino Valley. Onshore ocean breezes during the afternoon are expected to move smoke into the mountains and inland valleys. Prior to the onshore flow clearing the western Basin, smoke will linger in much of Los Angeles County and in the eastern San Bernardino Valley.

Air quality will reach **Unhealthy** levels, or higher, in smoke impacted areas, especially near the fires. These areas will likely include:

- the San Gabriel Mountains (Area 15);
- the West San Gabriel Valley (Area 8);
- the West San Bernardino Mountains (Area 36);
- the Santa Clarita Valley (Area 13);
- the San Fernando Valley (Areas 6 and 7);
- the East San Gabriel Valley (Area 9);
- East San Bernardino Valley (Area 35);
- East San Bernardino Mountains (Area 38);
- Banning/San Geronimo Pass (Area 29).

**In any area impacted by smoke:** Everyone should avoid any vigorous outdoor or indoor exertion; people with respiratory or heart disease, the elderly, and children should remain indoors. Keep windows and doors closed or seek alternate shelter. Run your air conditioner if you have one. Keep the fresh air intake closed and the filter clean to prevent bringing additional smoke inside.

To view current air quality conditions by region in an interactive map, see <http://www2.aqmd.gov/webapp/riaq/VEMap3D.aspx>.

For more tips on avoiding health impacts from smoke, see [http://www.aqmd.gov/ei/CAChildfire\\_safety\\_tips.htm](http://www.aqmd.gov/ei/CAChildfire_safety_tips.htm) on AQMD's website.

Daily Air Quality Forecasts and Advisories by Email: <http://www.aqmd.gov/airquality/subscribe.html>  
Current AQMD Air Quality Measurements, Forecasts and Advisories can also be obtained from the AQMD Web Site: <http://www.aqmd.gov/> or by Telephone with our Interactive Voice Response System: 1-800-CUT-3MOG (1-800-299-7664).  
Contact AQMD: 1-800-CUT-3MOG or (909) 598-2000



# Other Public Alerts

- Smoke Advisory
  - Distributed to Clean Air Congress List
  - Air quality forecast list
- Press Releases
- Interactive Voice Response
  - 1-800-CUT-SMOG, Option 1
- Local Public Health Notified
- Media Interviews



South Coast  
Air Quality Management District  
21885 Copley Drive, Diamond Bar, CA 91785  
<http://www.aqmd.gov>

**NEWS**

FOR IMMEDIATE RELEASE  
Sept. 1, 2009

CONTACT: Sam Arwood  
At AQMD (909) 396-3456  
Cell: (909) 720-9056

## WILDFIRE SMOKE CONTINUES TO CAUSE UNHEALTHY TO HAZARDOUS AIR QUALITY IN FOOTHILL AND MOUNTAIN AREAS NEAR FIRES

Smoke from the Station Fire near La Canada continues to cause Unhealthy to Hazardous air quality in the San Gabriel Mountains and the West San Gabriel Valley. Very high concentration of fine particulates are occurring in areas of direct smoke impacts near the fire, especially in the foothill communities of Altadena, La Canada Flintridge, La Crescenta, Tujunga, Sunland, Montrose and Acton. Everyone should avoid physical activity in these areas.

*All individuals are urged to exercise caution and avoid unnecessary outdoor activities in any area directly impacted by smoke. This includes areas where residents can see or smell smoke.*

Air quality will reach **Unhealthy** levels, or higher, in smoke impacted areas, especially near the fires. These areas will likely include:

- the San Gabriel Mountains;



# State of Emergency: SCAQMD Rule 118(d)(1)

- Executive Order to temporarily suspend provisions that could delay critical procedures in emergency situations
  - Asbestos notification
  - Demolitions activity
  - Renovation information
  - Requirement for a permit
  - Requirements for New Source Review
  - Requirements for gasoline transfer into Vehicle Fuel Tanks, Phase II Vapor Recovery  
(Excerpts from SCAQMD Rules 301, 1403, 203, 1110.2, 1303, 1401 and 461)

