

Upcoming Challenges for the Air Monitoring Community

Eric Stevenson, Bay Area Air Quality Management District

PQAO Training, UC Davis

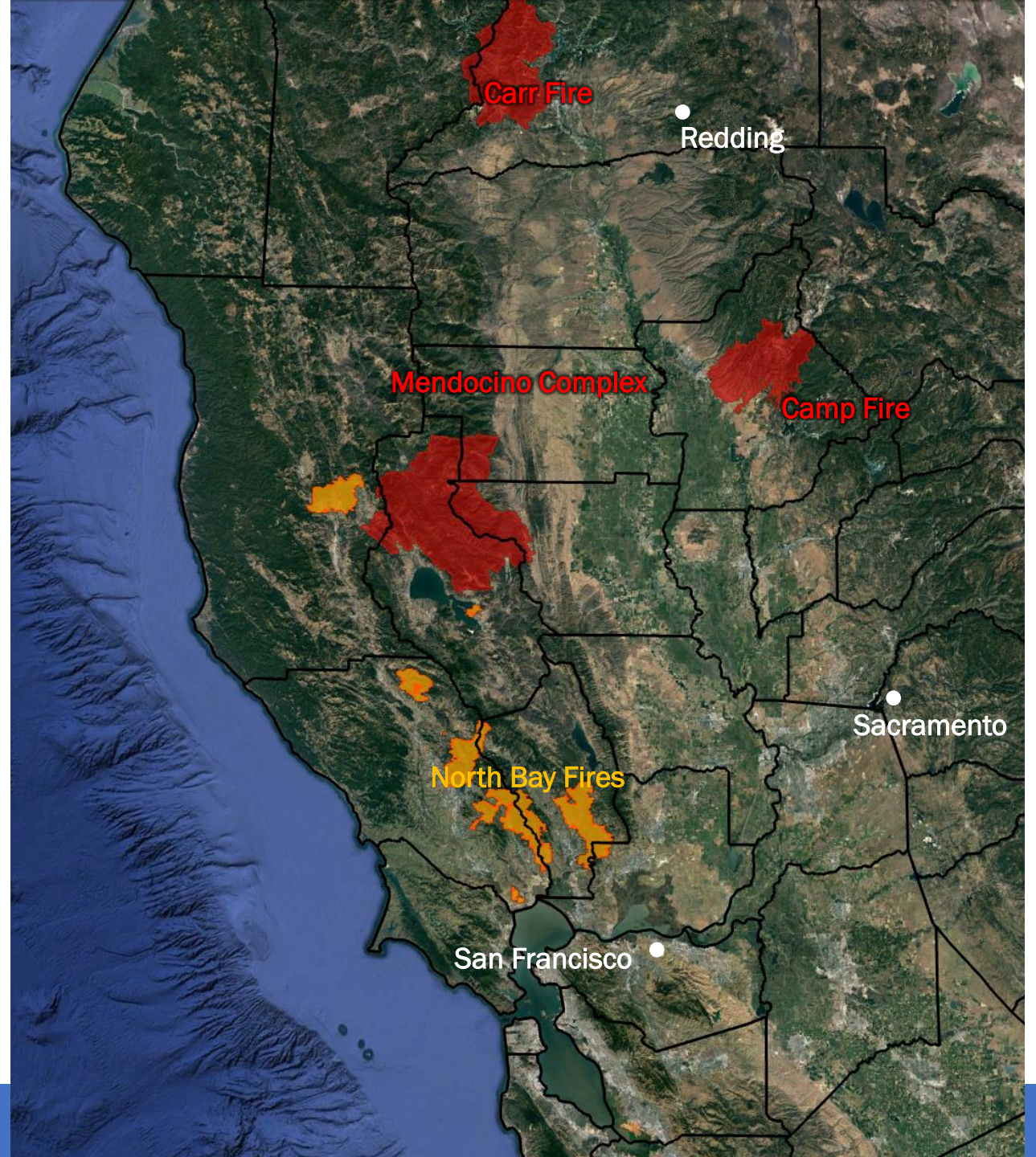
June 4 - 6, 2019



2017 and 2018 Wildfires in Northern California

- 2017 Napa, Sonoma and Mendocino
- 2018 Carr, Mendocino Complex and Camp

Demonstrates need for more
prescribe burns
(EO-52-18 and SB 1260)



2018 Community Recommendations

Assembly Bill 617 Communities throughout California



North Bay Fires

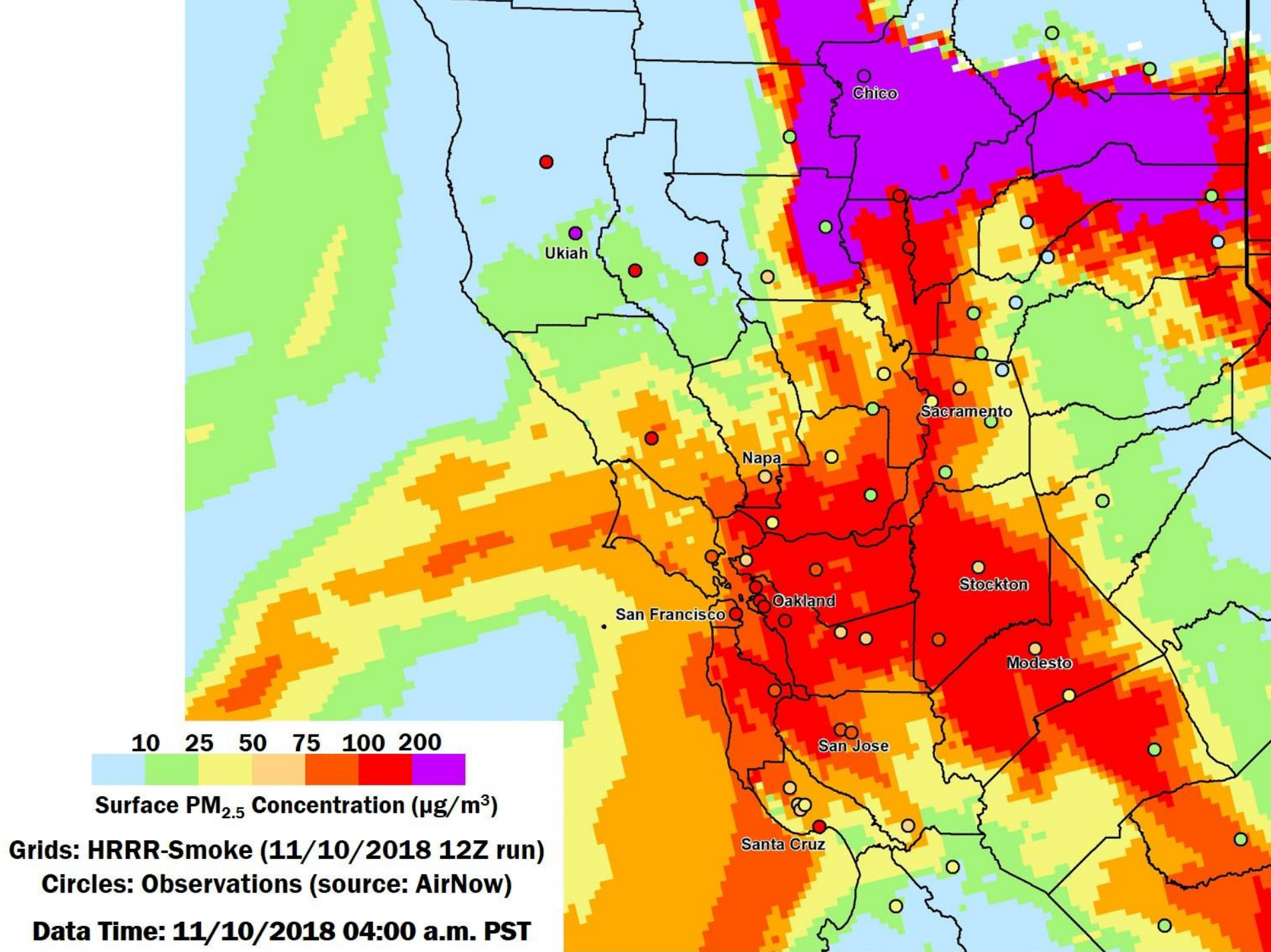
- Proximity of the fires and their resulting narrow but dense smoke plumes resulted in highly-variable air quality conditions day to day and hour to hour



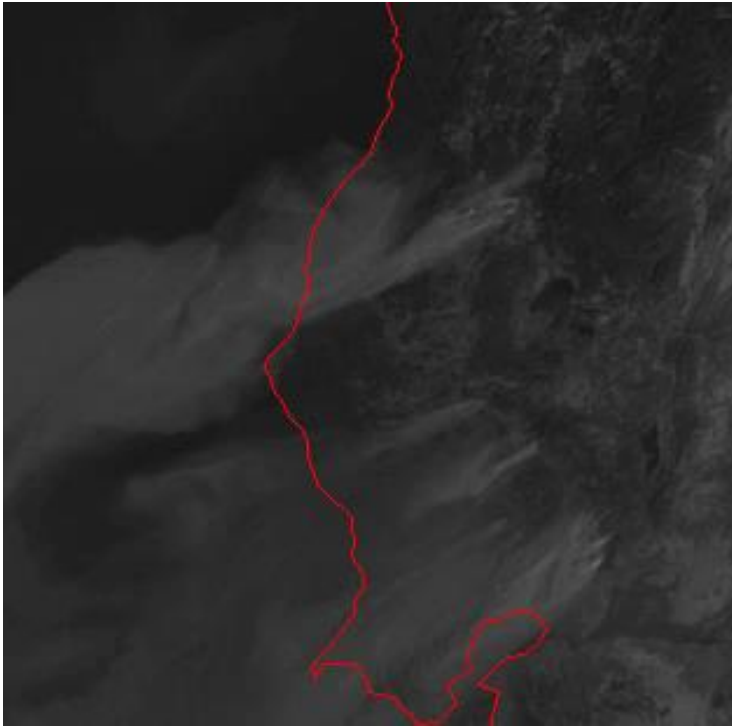
GOES-16 visible satellite loop from Thursday 10/12/2017

Camp Fire: GOES-16 Imagery (November 8-12, 2018)

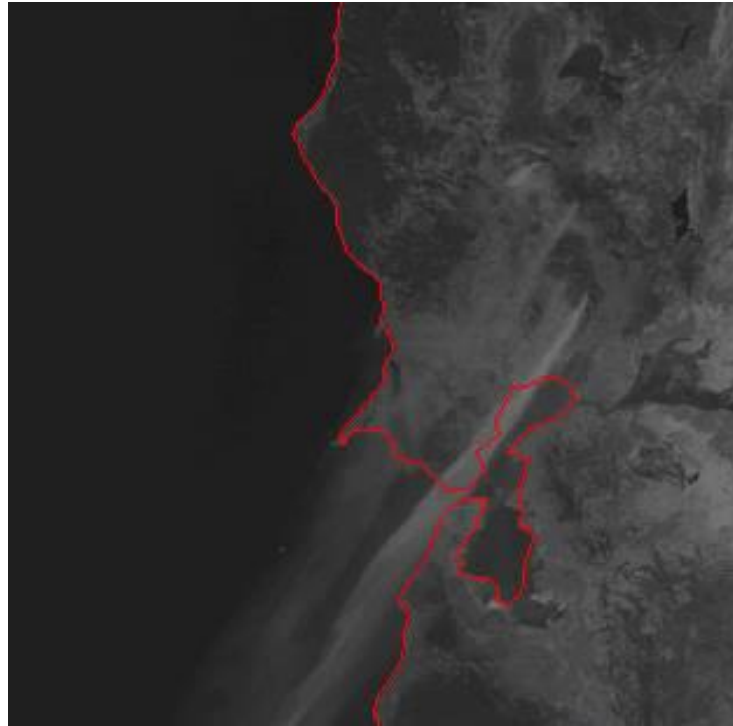




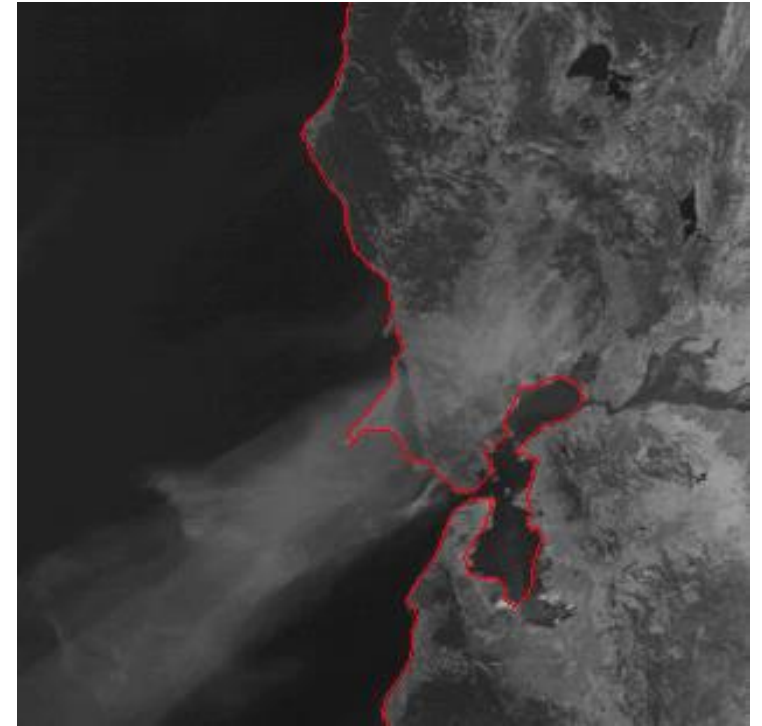
North Bay Fires: GOES-16 Imagery



Monday 10/09/2017

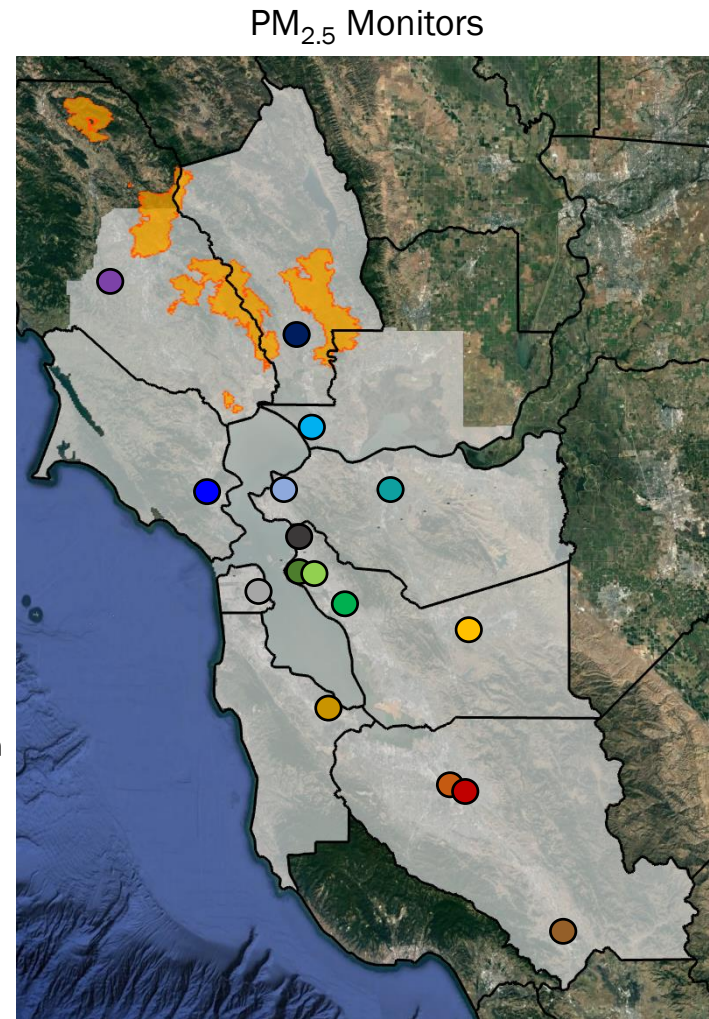
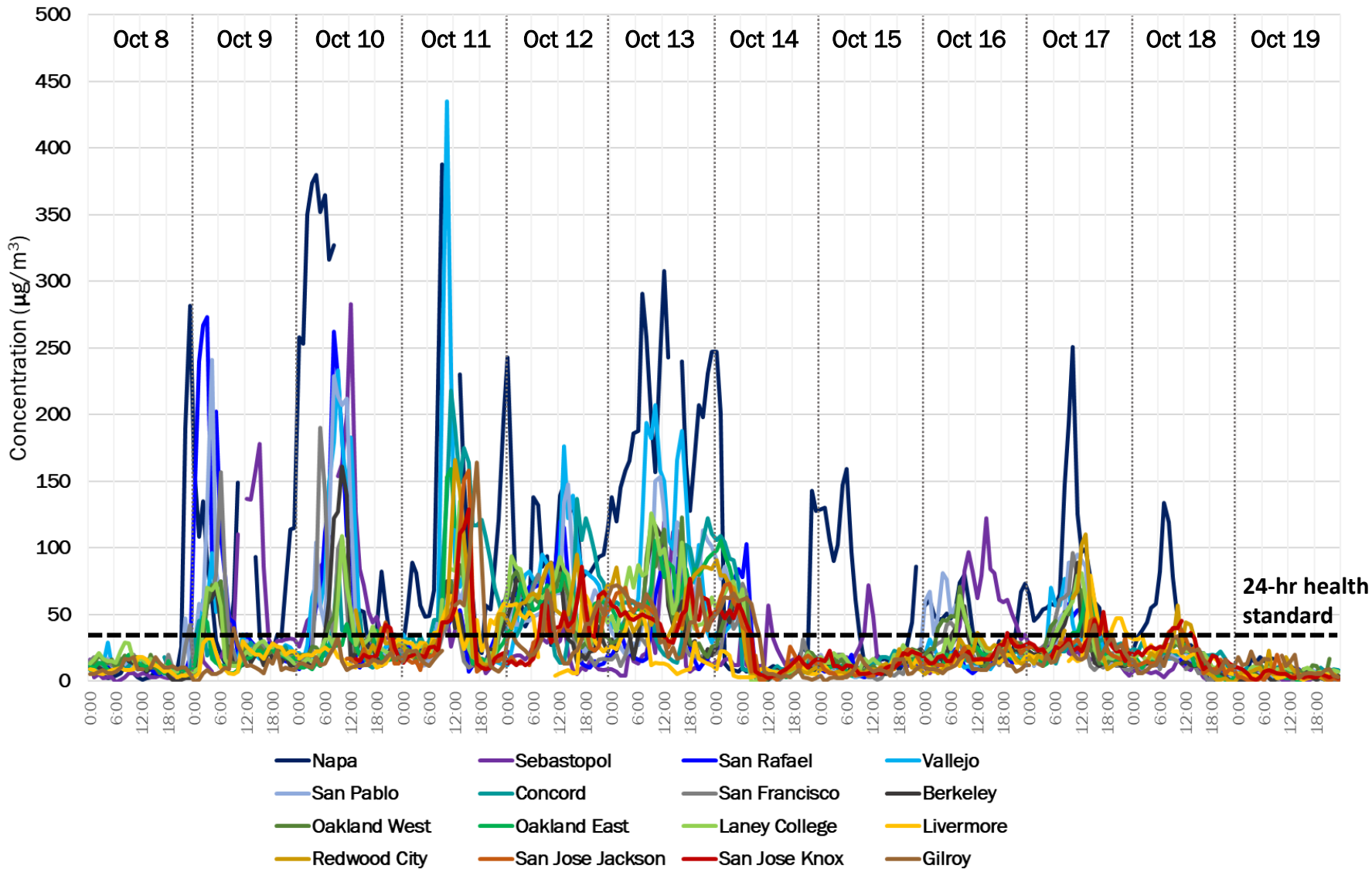


Thursday 10/12/2017



Saturday 10/14/2017

Hourly PM_{2.5} Concentrations During the North Bay Fires



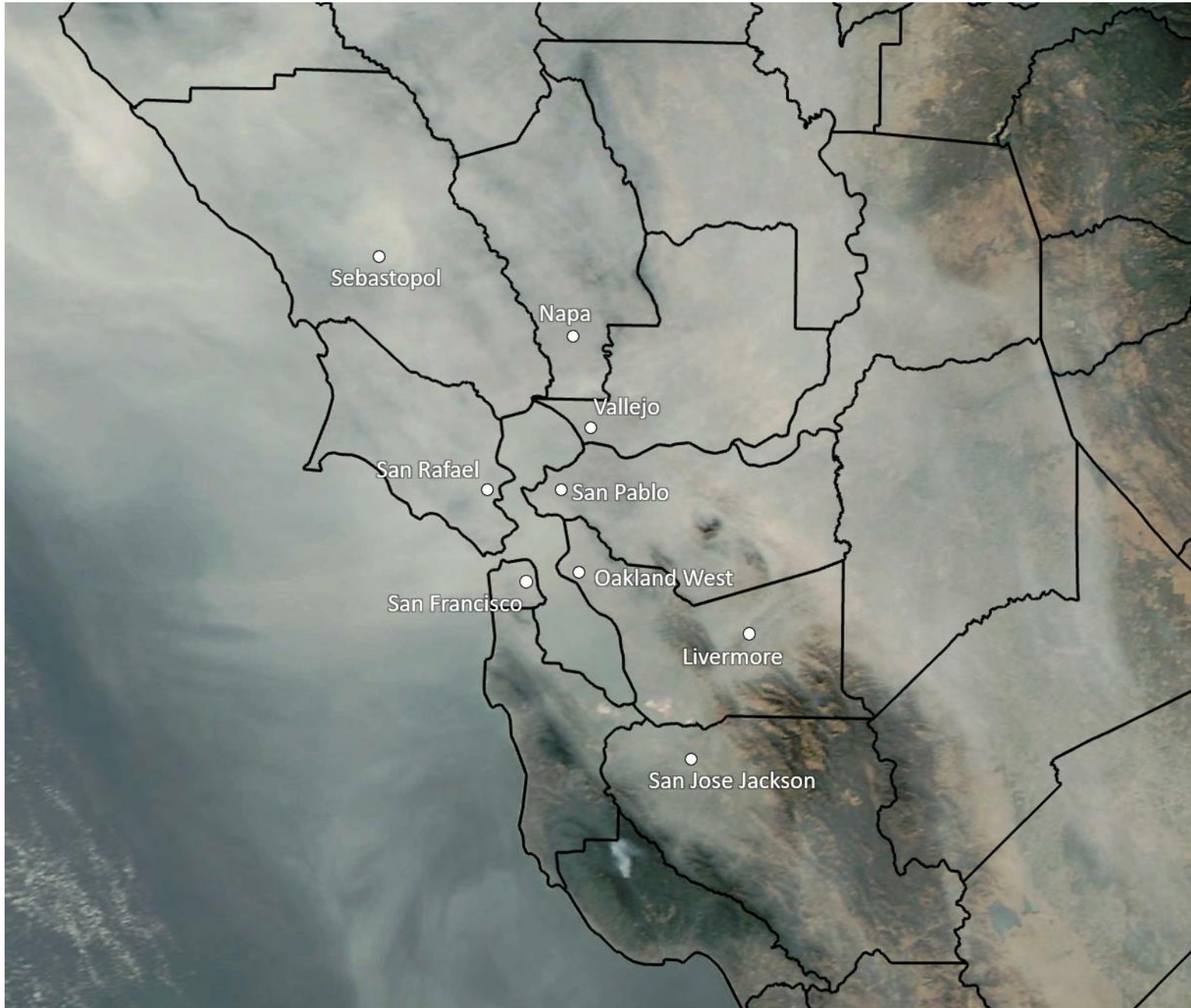
Substantial variability in hourly concentrations over time and distance as smoke plumes pivoted across the Bay Area over several days (cool colors farther north, warm colors farther south)

Localized Fire Impacts Seen on October 12, 2017 –



Station	24-hour Avg. Concentration ($\mu\text{g}/\text{m}^3$)	1-hour Max. Concentration ($\mu\text{g}/\text{m}^3$)
Sebastopol	20	46
Napa	113	323
Vallejo	80	176
San Rafael	56	120
San Pablo	59	148
Oakland West	55	82
San Francisco	50	88
Livermore	34	64
San Jose Jackson	34	80

Camp Fire Impacts November 16, 2018



Station	24-hour Avg. Concentration ($\mu\text{g}/\text{m}^3$)	1-hour Max. Concentration ($\mu\text{g}/\text{m}^3$)
Sebastopol	89	104
Napa	118	154
Vallejo	197	245
San Rafael	168	218
San Pablo	195	301
Oakland West	169	210
San Francisco	178	241
Livermore	172	287
San Jose Jackson	131	151

- Prescribed burns will increase in frequency

Needs

- Monitoring
- Predict and minimize impacts
- Better emission inventory



AB 617 program components

- Community selection
- Monitoring
- Emission reduction action plans
- Emissions inventory
- Incentives
- BARCT Update/Clearinghouse

Community Monitoring: Screening

- Can be conducted by district or communities
- Can include observations other than pollution concentrations
- Mobile monitoring to identify persistent relative differences in cumulative exposure for some pollutants
- Dense network of low-cost sensors
- Satellite observations
- Require fixed-site high-quality data collected simultaneously as an 'anchor'



Community

Monitoring: Special Studies

- Use advanced techniques to understand issues
 - determine source contribution
 - need speciation of PM or toxics to differentiate sources
 - combination of ambient and source monitoring
- Fixed-site monitoring for ongoing comparisons with well-documented methods



Community

Monitoring: Challenges

- Work with each community to design a unique monitoring plan
- Data must be available to the public
- Leads to more complex data collection, communications, and management
- Requires ongoing planning and evaluation to ensure effectiveness





Questions?



BAY AREA
AIR QUALITY
MANAGEMENT
DISTRICT