Siting of Air Monitoring Stations in San Joaquin Valley

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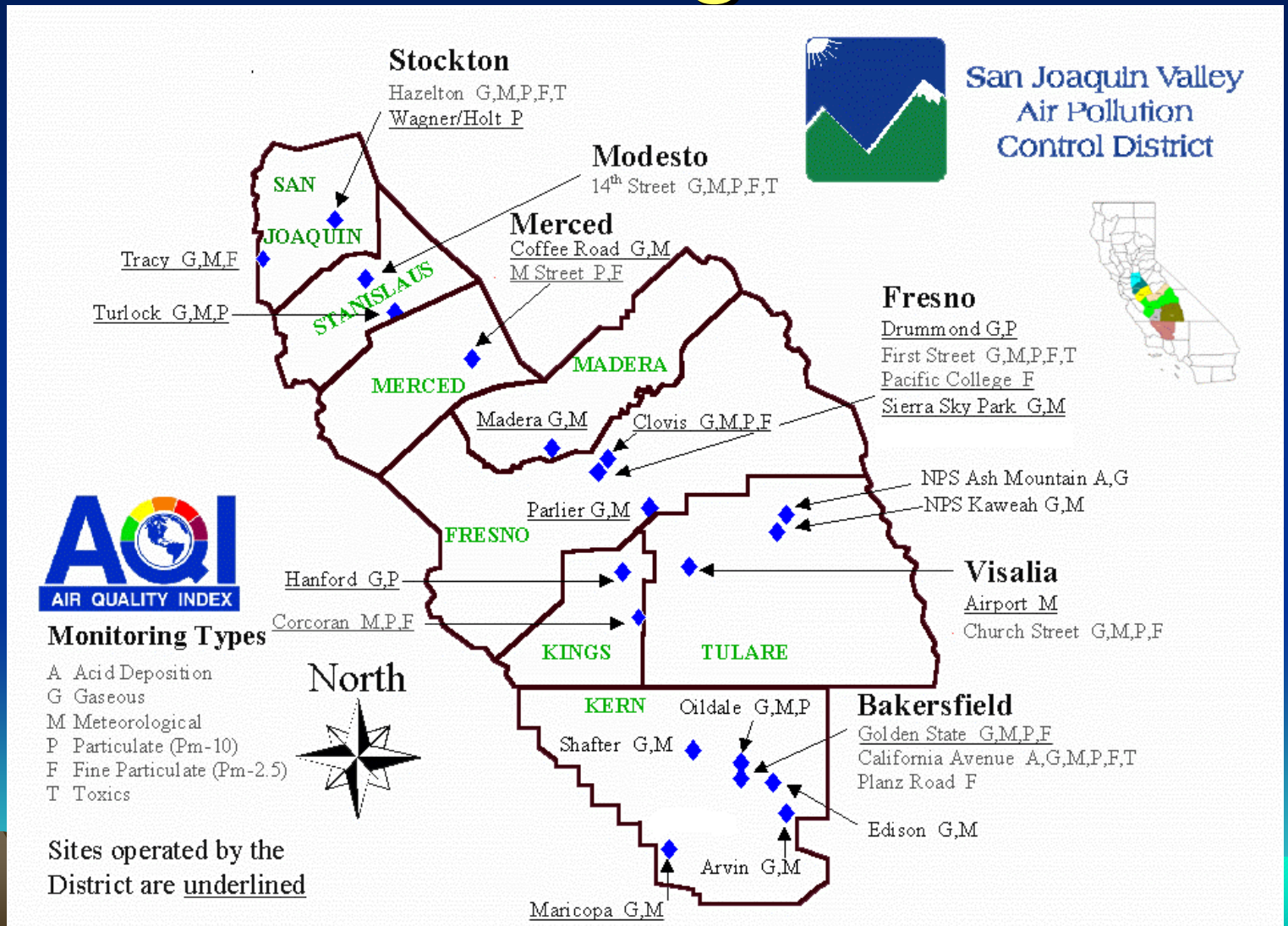
Overview Air Monitoring Networks

- Existing network
- Regulatory requirements
- Types of sites
- Scientific analyses of networks

Existing SJV Routine Air Monitoring Network



Monitoring Sites In SJV

- Regulatory needs
- Analyses and research
- Forecasting and reporting

Criteria Pollutants

- Ozone
- PM10
- PM2.5
- Nitrogen Dioxide
- TSP
- Pb
- SO2
- CO

Meteorology and Chemical Measurements Supporting Air Control Programs

- Surface meteorology
- Aloft meteorology with profilers
- Ozone and PM precursors
  - NOx
  - VOC
  - NH3

Monitoring Site Purpose

- Population Exposure
- Highest Concentration
- Major Pollutant Sources
- Analyses and Modeling
- Special
- Background

Monitoring Spatial Scale

- Micro
- Middle
- Neighborhood
- Urban
- Regional

Types of Air Monitoring Sites Required by Regulations

- State and Local Air Monitoring Sites (SLAMS)
- Photochemical Assessment Monitoring Sites (PAMS)
- NCOR (NAMS Replacement)
- Special Purpose Monitors (SPM)

Federal Regulations – Ozone, PM2.5, PM10 Monitoring

- Metropolitan Statistical Area population and ….
- Ozone and PM2.5 - Design value criteria < >= 85% of NAAQS
- PM10 – High, Low, Medium Concentrations related to NAAQS

Ozone Sites Required by Regulation and Existing Monitors (Preliminary)

	Population	# of required	# of existing
MSA*	1/1/2006	monitors	monitors
FRESNO/MAD**	1,043,910	3	6
BAKERSFIELD	779,869	2	6
HANFORD-CORCORON	147,729	1	1
MERCED	246,751	1	1
STOCKTON	668,265	2	2
MODESTO	514,370	2	2
VIS-TUL-PORT***	420,619	2	3

*Metropolitan Statistical Area
**Fresno/Madera
***Visalia-Tulare-Porterville

PM2.5 Sites Required by Regulation and Existing Monitors (Preliminary)

MSA*	Population 1/1/2006	# of required monitors	# of existing monitors
FRESNO/MAD**	1,043,910	3	3
BAKERSFIELD	779,869	2	3
HANFORD-CORCORON	147,729	1	1
MERCED	246,751	1	1
STOCKTON	668,265	1	1
MODESTO	514,370	2	1
VIS-TUL-PORT***	420,619	1	1

*Metropolitan Statistical Area
**Fresno/Madera
***Visalia-Tulare-Porterville

Ozone Monitoring

- 22 Sites
- Population monitoring required by regulation
- SLAMS generally meet regulations
- Sites around Fresno and Bakersfield Upwind, Urban Core, and Downwind Monitors

SJV PM2.5 Monitoring Sites

Filter Based & Real-time

- Clovis
- Fresno (3)
- Bakersfield (3)
- Corcoran
- Stockton
- Modesto
- Visalia

Additional Real-time

- Tracy
- Springville (USFS)
- Turlock

Photochemical Assessment Monitoring Sites

- VOC species for modeling and control assessment
- Lower air profilers for pollutant transport assessment
- Upwind (Type 1)
- Source area (Type 2)
- Downwind (Type 3)

Current SJV PAMS Sites

- Type 1 – Shafter, Madera
- Type 2 – Clovis, Bakersfield-Golden
- Type 3 – Parlier, Arvin
- Profiler Sites – Visalia, Tracy

PAMS Profiler and VOC Measurements

NCOR Sites
Fresno-Supersite

- **1. Public Reporting – S/L/T Web Sites, AIRNow…**
- **2. Support for development of emission strategies** through air quality model evaluation and other observational methods
- **3. Accountability of emission strategy progress** through tracking long term trends of criteria and non-criteria pollutants and their precursors
- **4. Support for long term health assessments** that contribute to ongoing reviews of NAAQS
- **5. Compliance** through establishing non-attainment/attainment areas through comparison with NAAQS
- **6. Support to scientific studies** ranging across technological, health and atmospheric process disciplines
- **7. Support to ecosystem assessments** recognizing that national air quality networks benefit ecosystem assessments and, in turn, benefit from data specifically designed to address ecosystem analyses.

Fresno-First Street Research Supersite

Special Study Sites

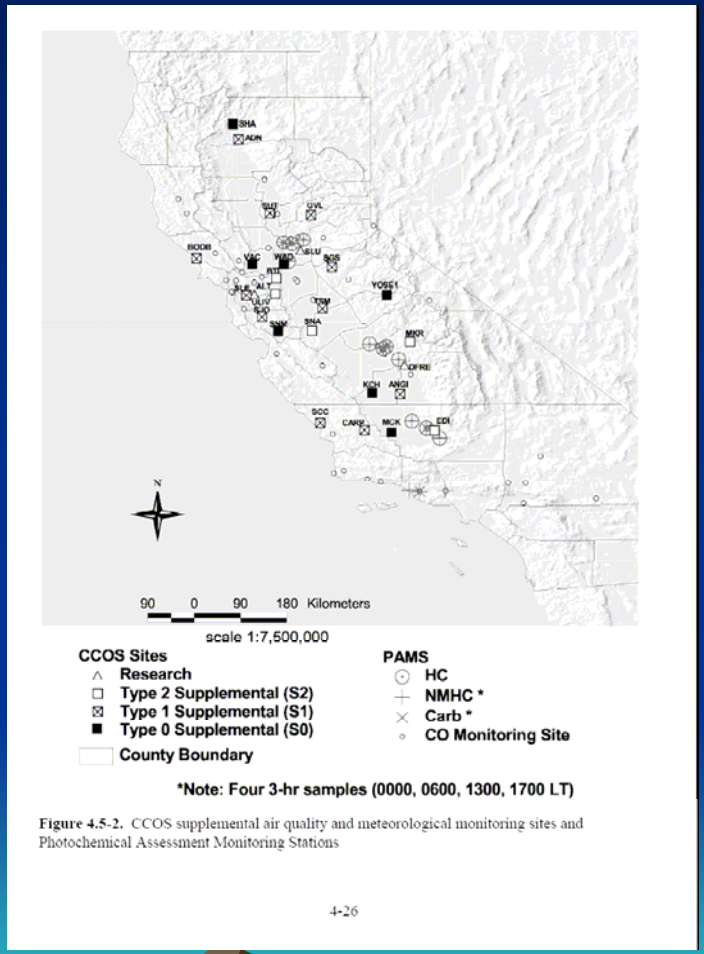


Figure 4.5-2. CCOS supplemental air quality and meteorological monitoring sites and Photochemical Assessment Monitoring Stations

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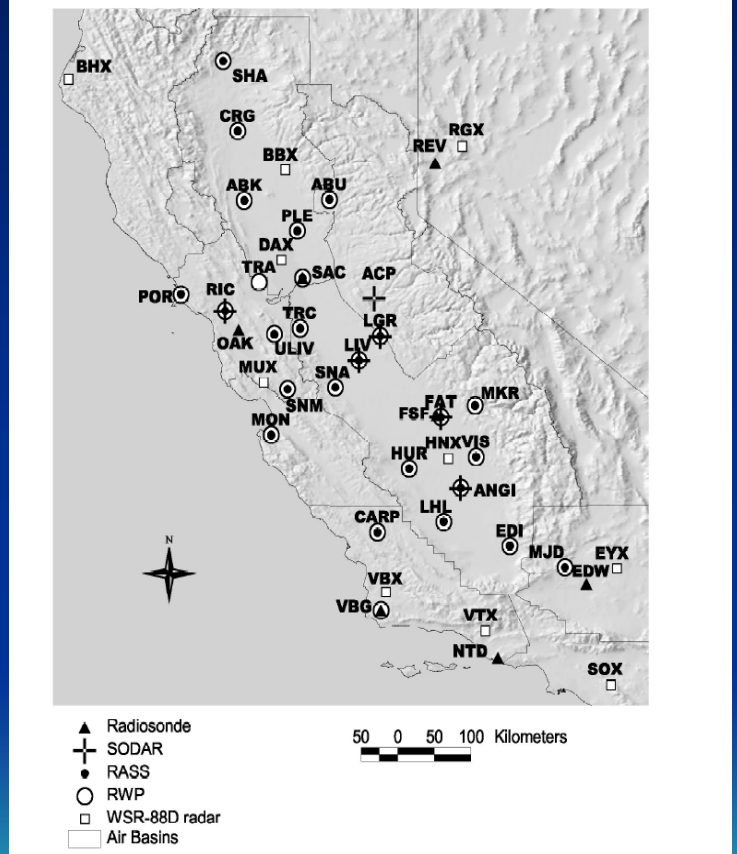


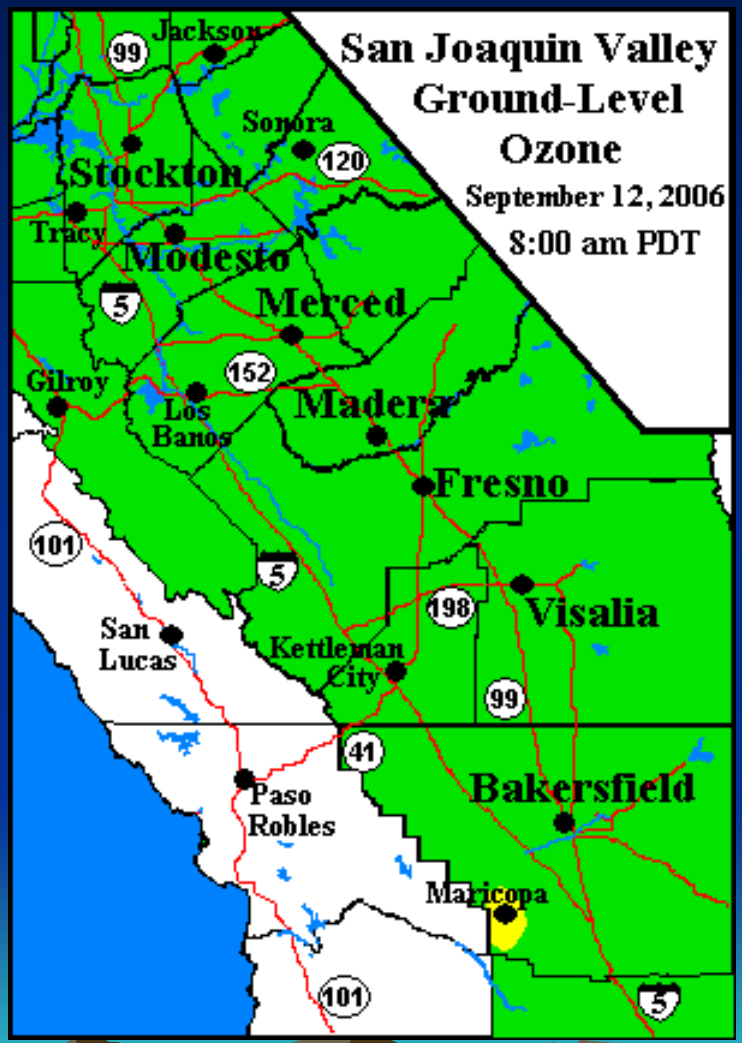
Scientific and Representative Site Considerations

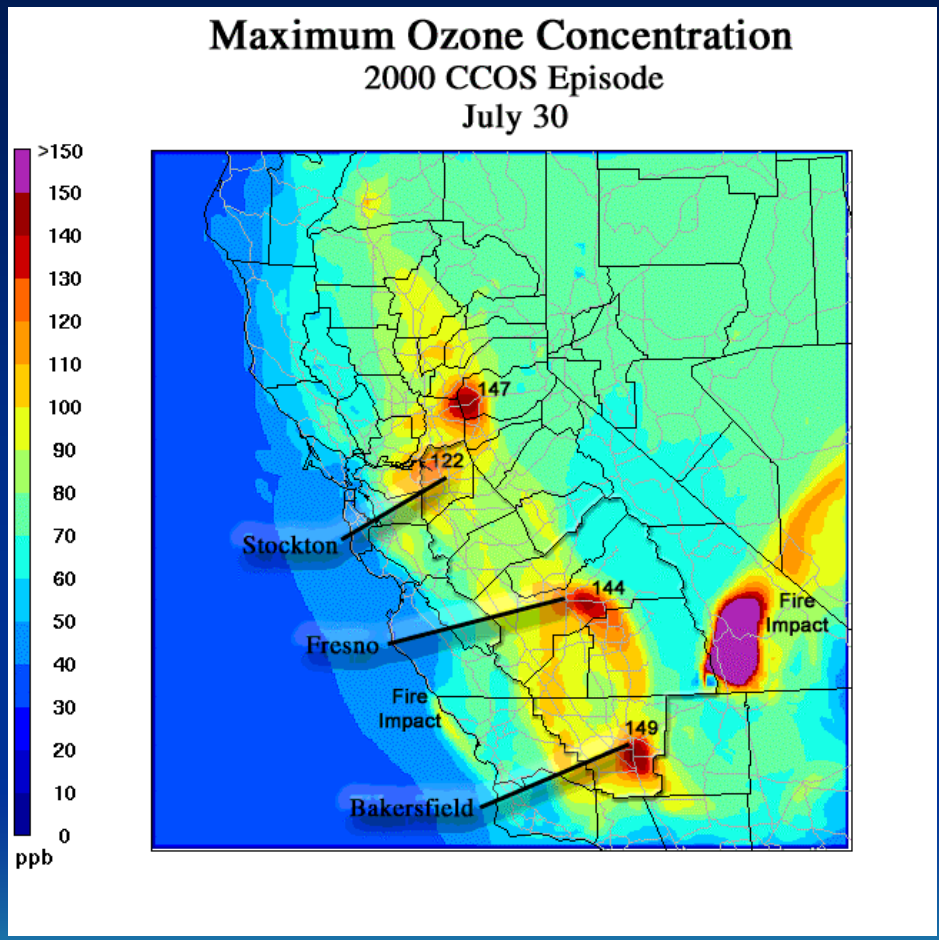
- Emission patterns
- Pollutant patterns
- Wind and dispersion patterns
- Location of sources
- Spatial and temporal coverage

Use of Special Studies to Site Routine Monitors

- SJVAQS (1986, 1990)
- CCOS (2000)
- CRPAQS (2001)
- Fresno-First Research Site
- NOAA Profilers

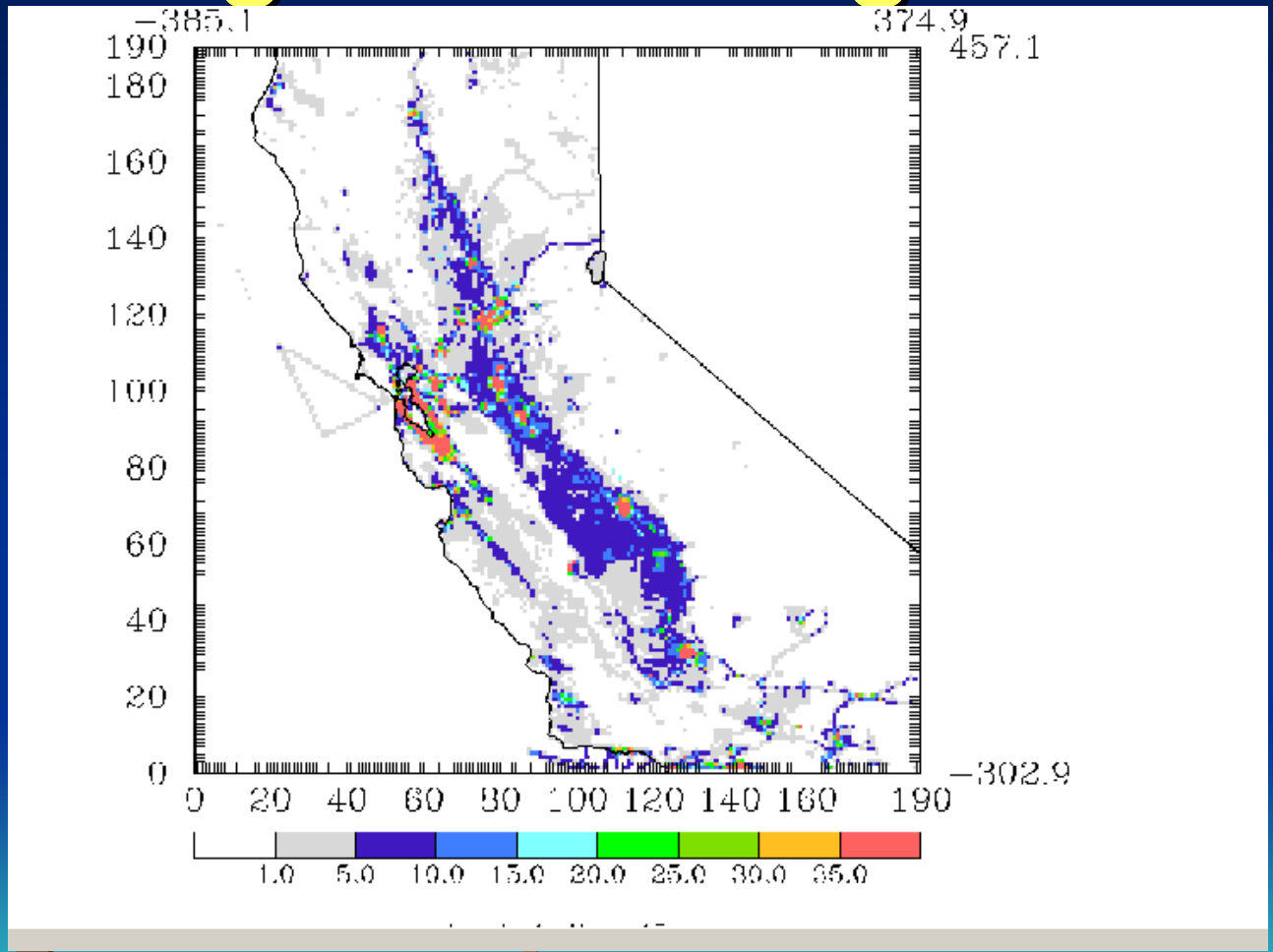
Ozone Spatial and Temporal Patterns

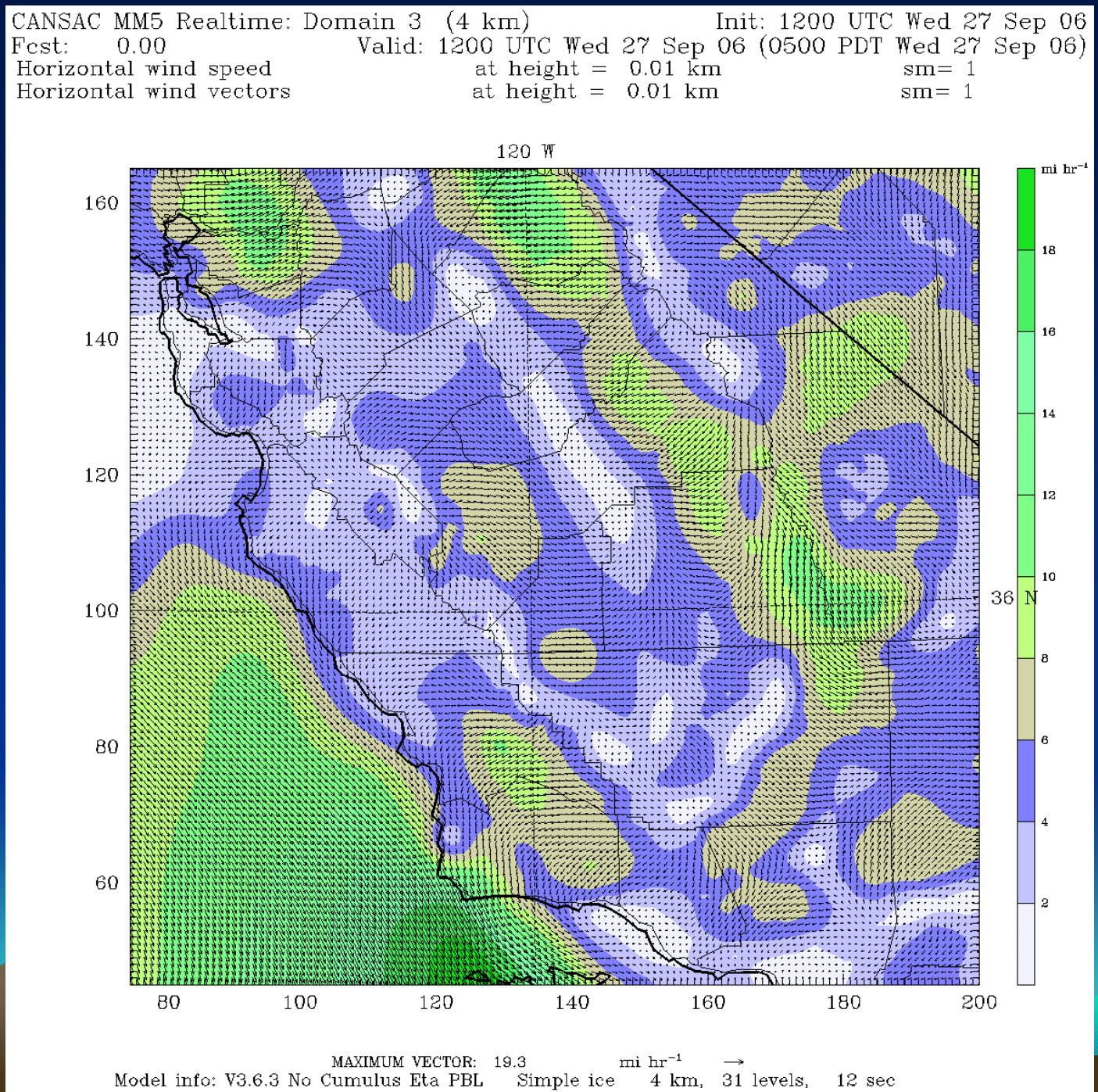




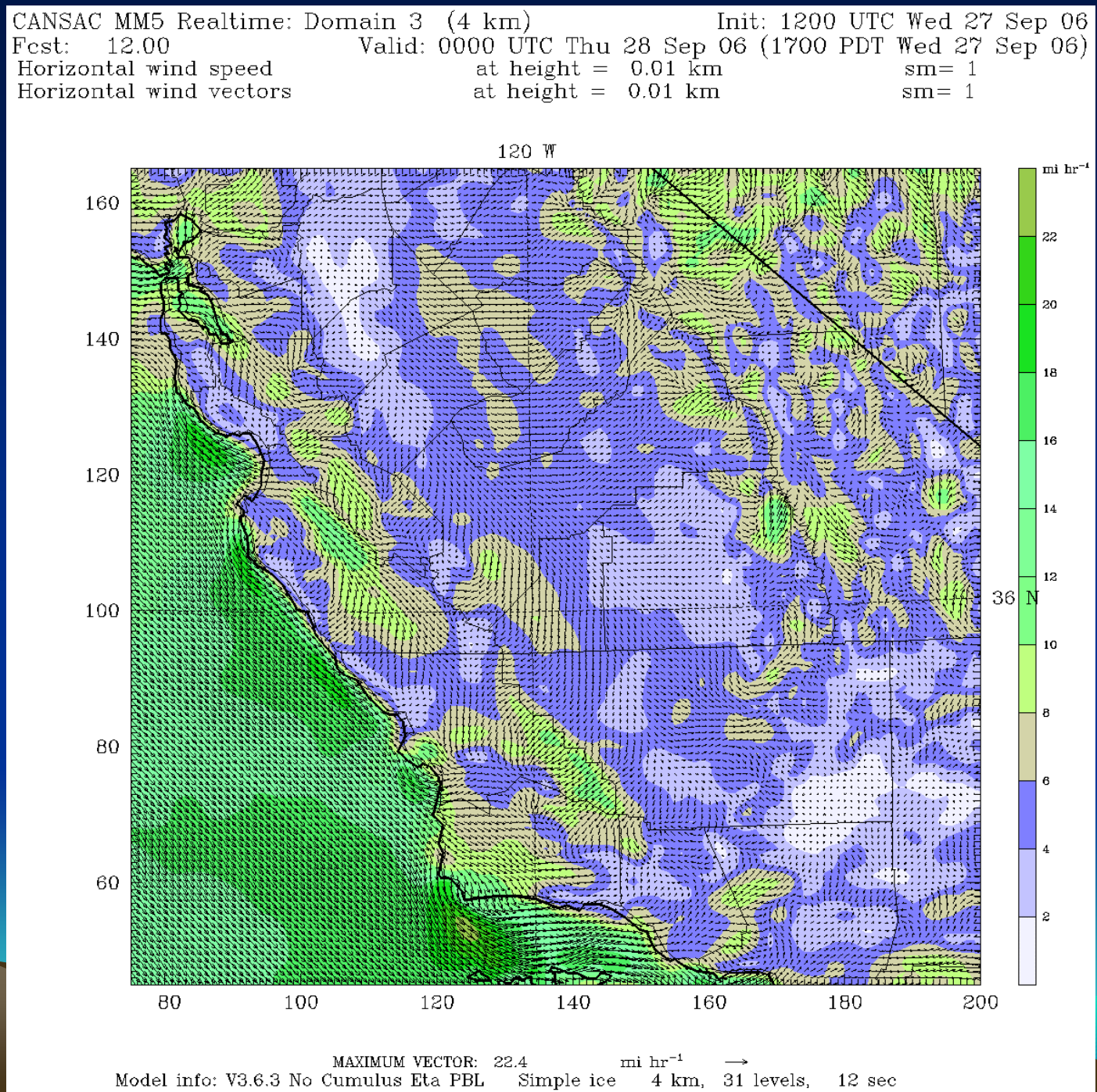
PM2.5 Spatial and Temporal Patterns

Use of Emissions Inventory for Siting Monitoring Stations





Morning Wind Field During High Ozone 9/27/06



After-Noon Wind Field During High Ozone 9/27/06

New SJV Monitoring

- Westside Site
  - Minimal Historical Monitoring
  - Full Site Near Tranquillity
  - PM2.5 Site at Huron
  - Assess Population Exposure
  - Interpolate From Urban Area
- PM Coarse ($PM_{10-2.5}$)

Summary

- Regulations address the minimum number of monitoring sites
- SJVAPCD generally meets or exceeds the regulations
- Siting is done for multiple purposes