State of the State's Air Quality

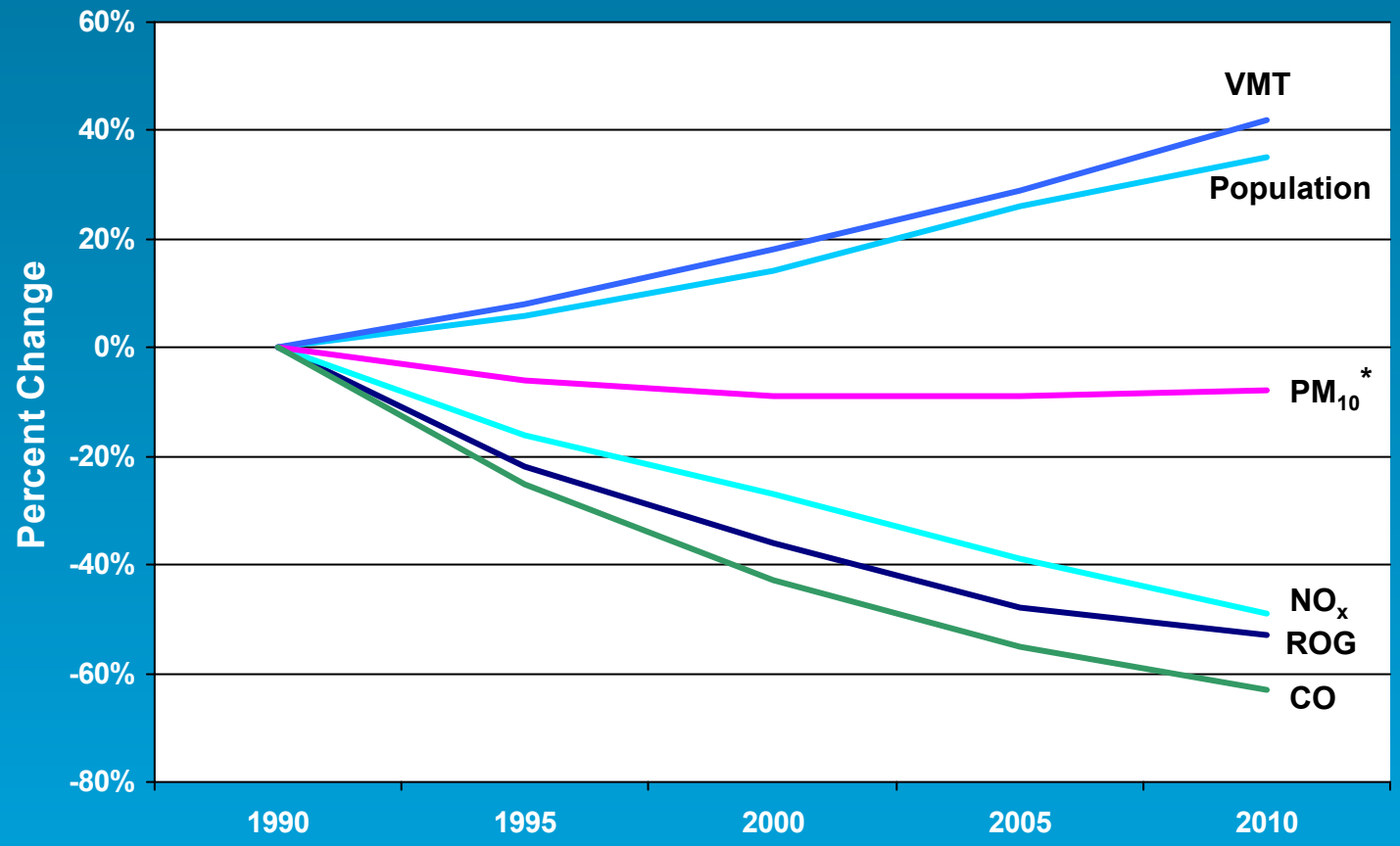
January 22, 2004

Purpose of Presentation

- Discuss statewide progress since 1990 Federal Clean Air Act
- Present California's Federal and State Air Quality Standards
- Highlight progress towards State Standards
- Show reduced statewide exposure to air toxics

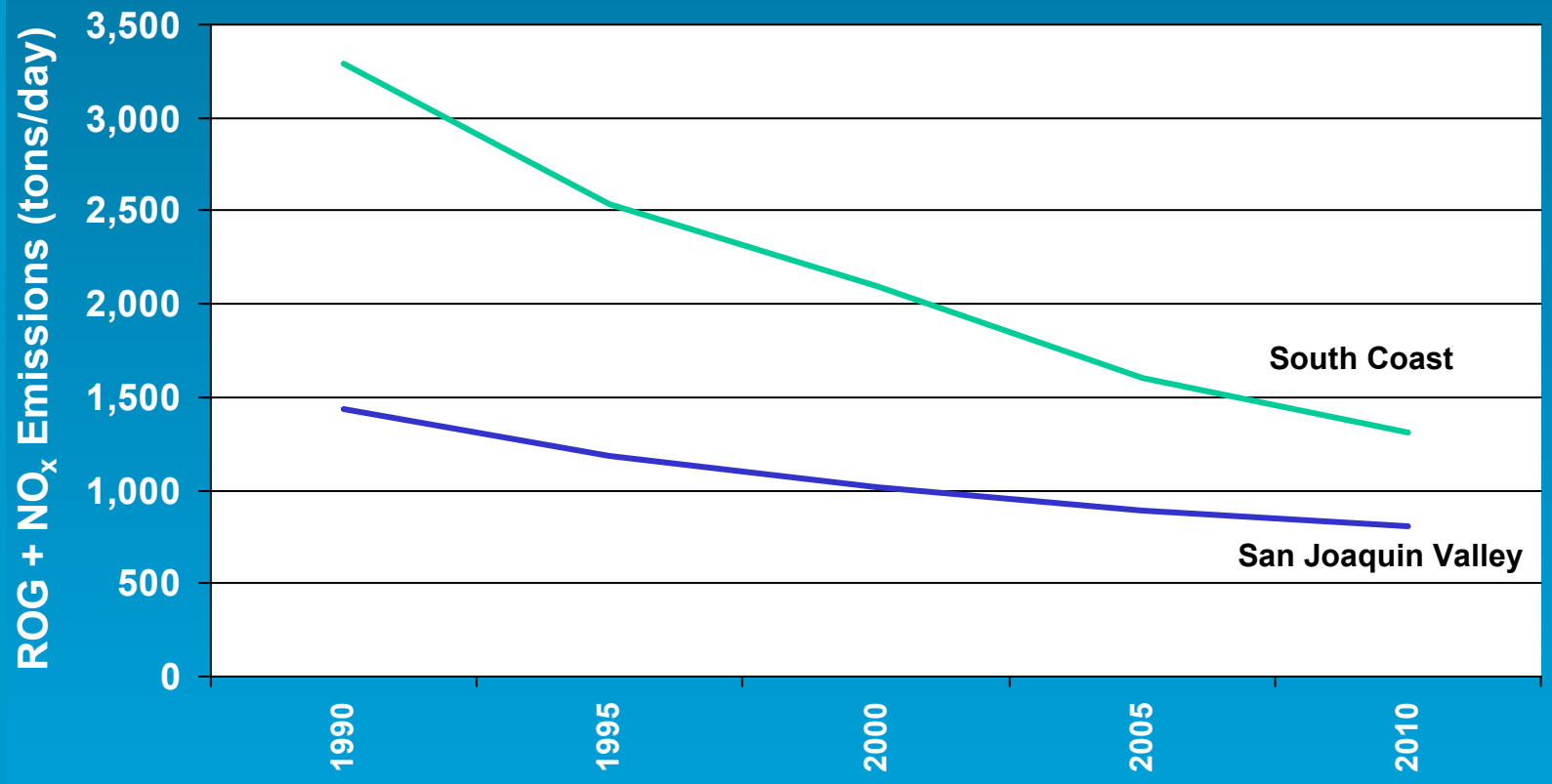
Background

Statewide Emissions & Growth Trends



* Weighted based on source apportionment for typical urban area in California, assuming 50:50 direct:secondary split

South Coast & San Joaquin Valley Emission Trends (ROG + NOx)



Federal
Ozone Air Quality Standards

What are the Ozone Standards?

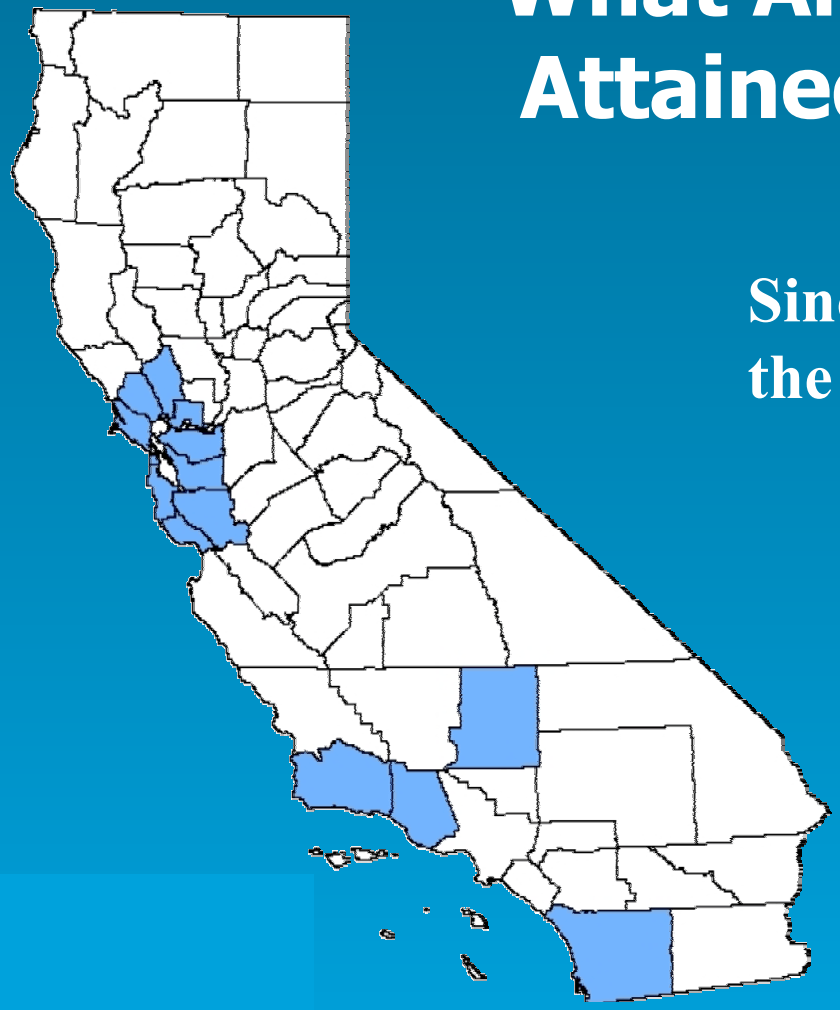
- Federal
  - 1 Hour (0.12 ppm)
  - 8 Hour (0.08 ppm)
- State
  - 1 Hour (0.09 ppm)
- Current air quality plans address Federal and State standards

How Do We Assess Progress?

- Monitor peak concentrations
- Track the number of days over the standard
- Look at how widespread the violations are geographically
- Use “Design Value” for planning

1-Hour Federal Ozone Standard

What Areas Have Recently Attained the Federal 1-Hr Standard?



Since 1990, 6 new areas have met the standard

- San Francisco Air Basin 2003
- Ventura County 2002
- San Diego County 2001
- Eastern Kern County 2001
- Santa Barbara County 1999
- Monterey County 1990

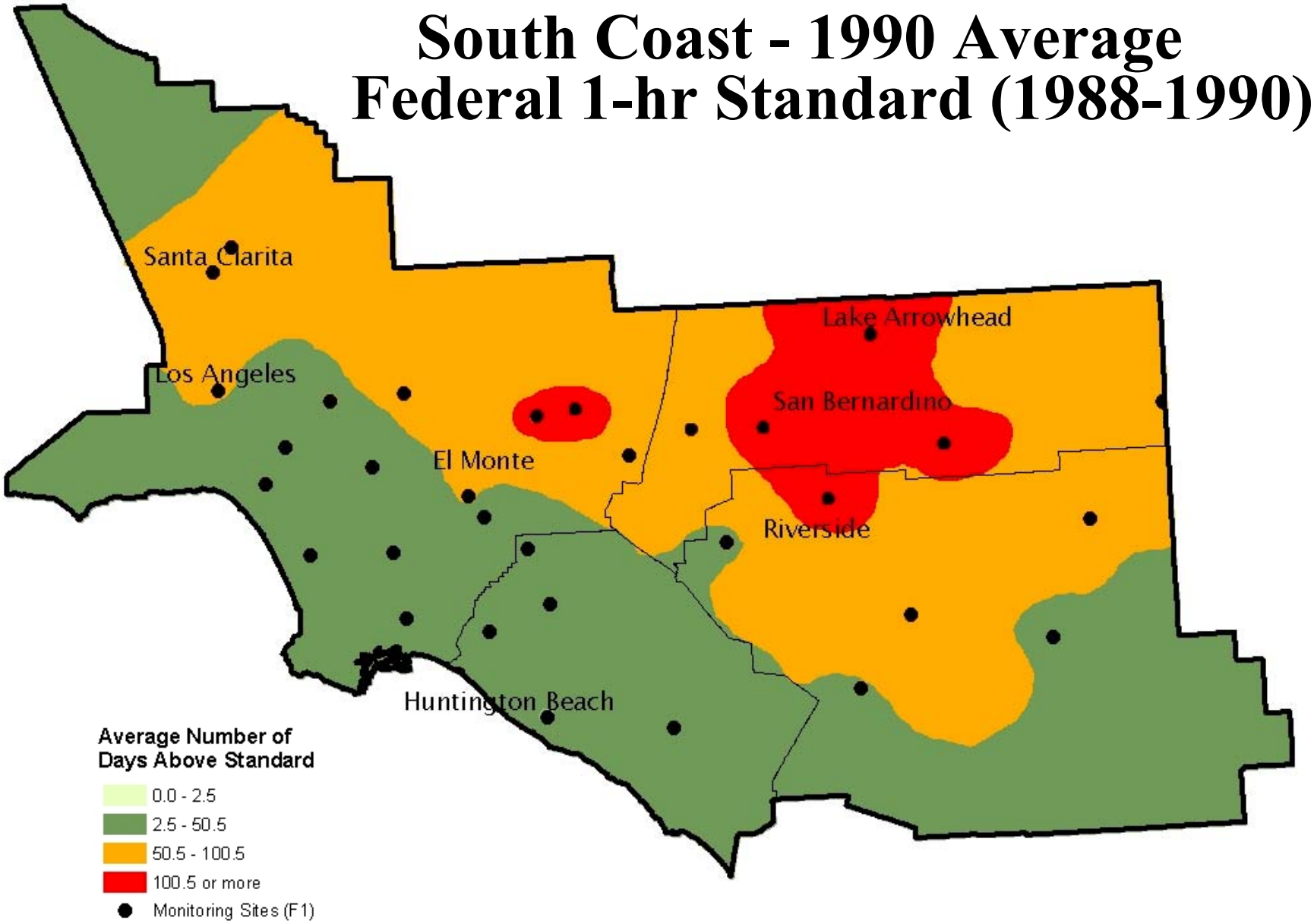
What Are the Remaining Nonattainment Areas?

- The major remaining nonattainment areas are:
  - South Coast Air Basin and Southeast Desert
  - San Joaquin Valley
  - Sacramento Region
- More progress made in South Coast but less progress has occurred in inland valleys
- Imperial County

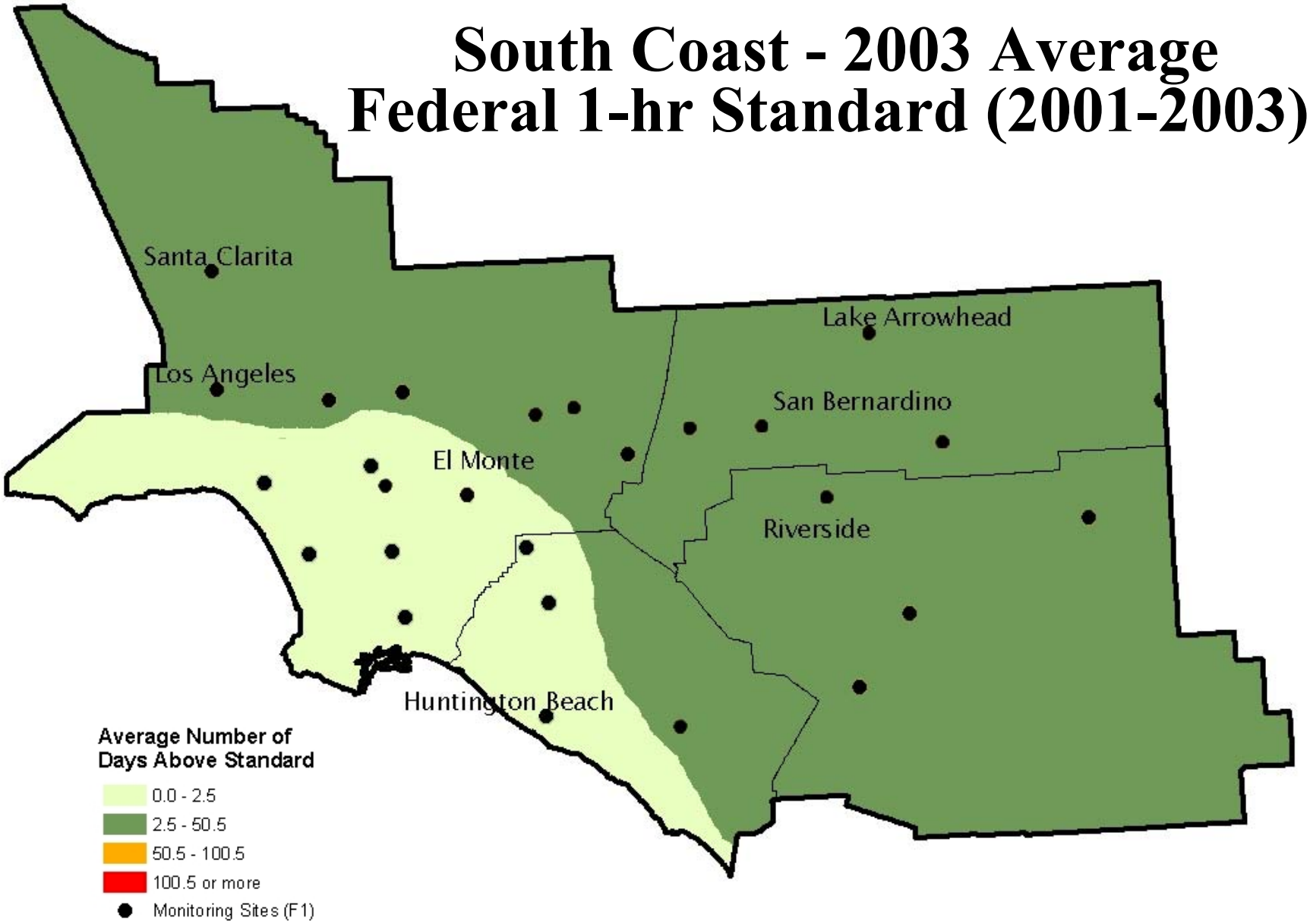
What Progress Has Been Made in the South Coast Air Basin?

- Significant reduction in peak levels
- Coastal areas close to attainment
- Inland exceedance days and peaks have declined
- Some areas still have relatively high peaks
  - Santa Clarita
  - Eastern portion of basin

South Coast - 1990 Average Federal 1-hr Standard (1988-1990)

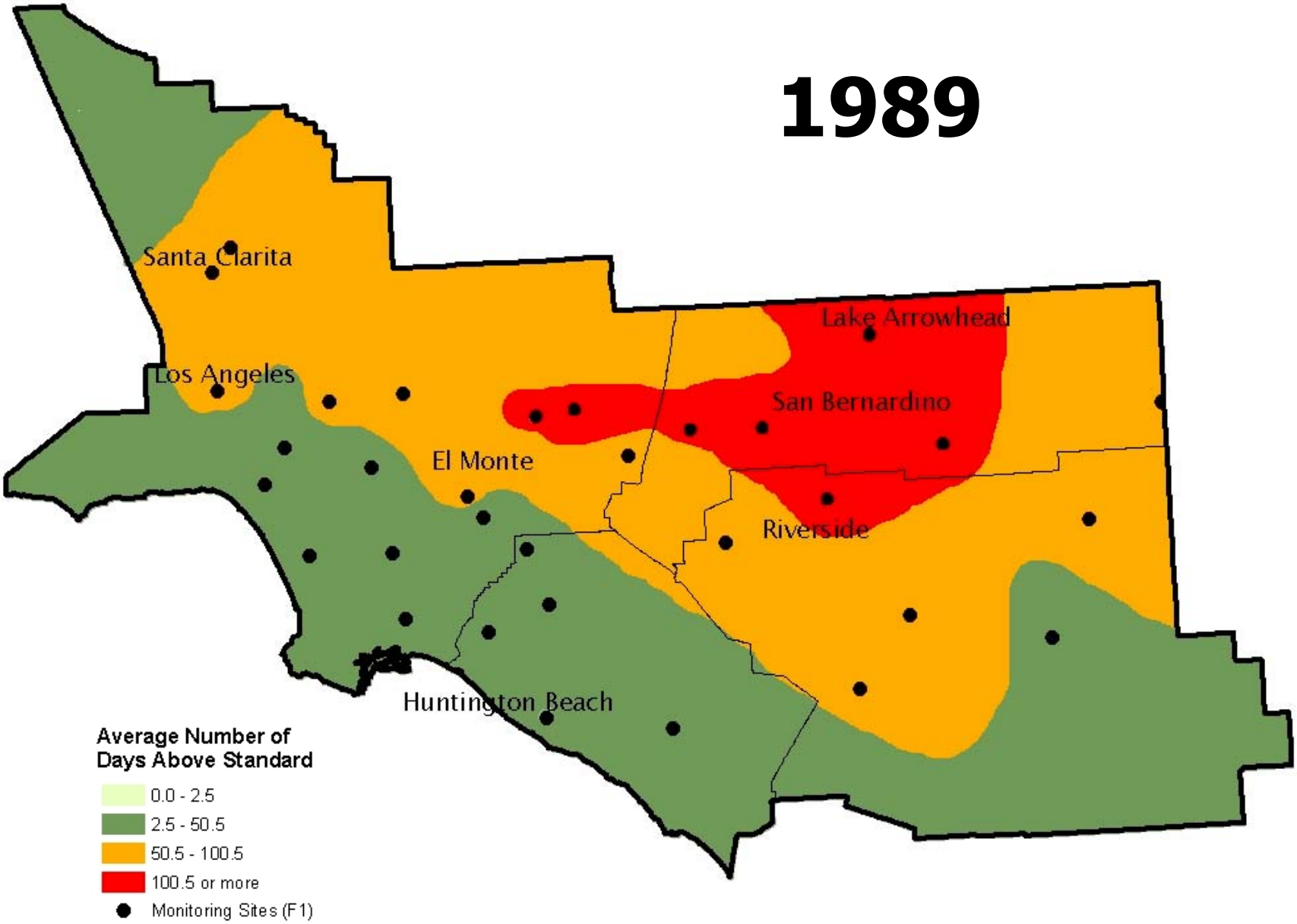


South Coast - 2003 Average Federal 1-hr Standard (2001-2003)



Why Did This Progress Occur?

- Progress is a result of comprehensive emission control programs
- Year to year variations in weather also affect ozone levels
- Series of maps illustrates the combination of emission reductions and weather influences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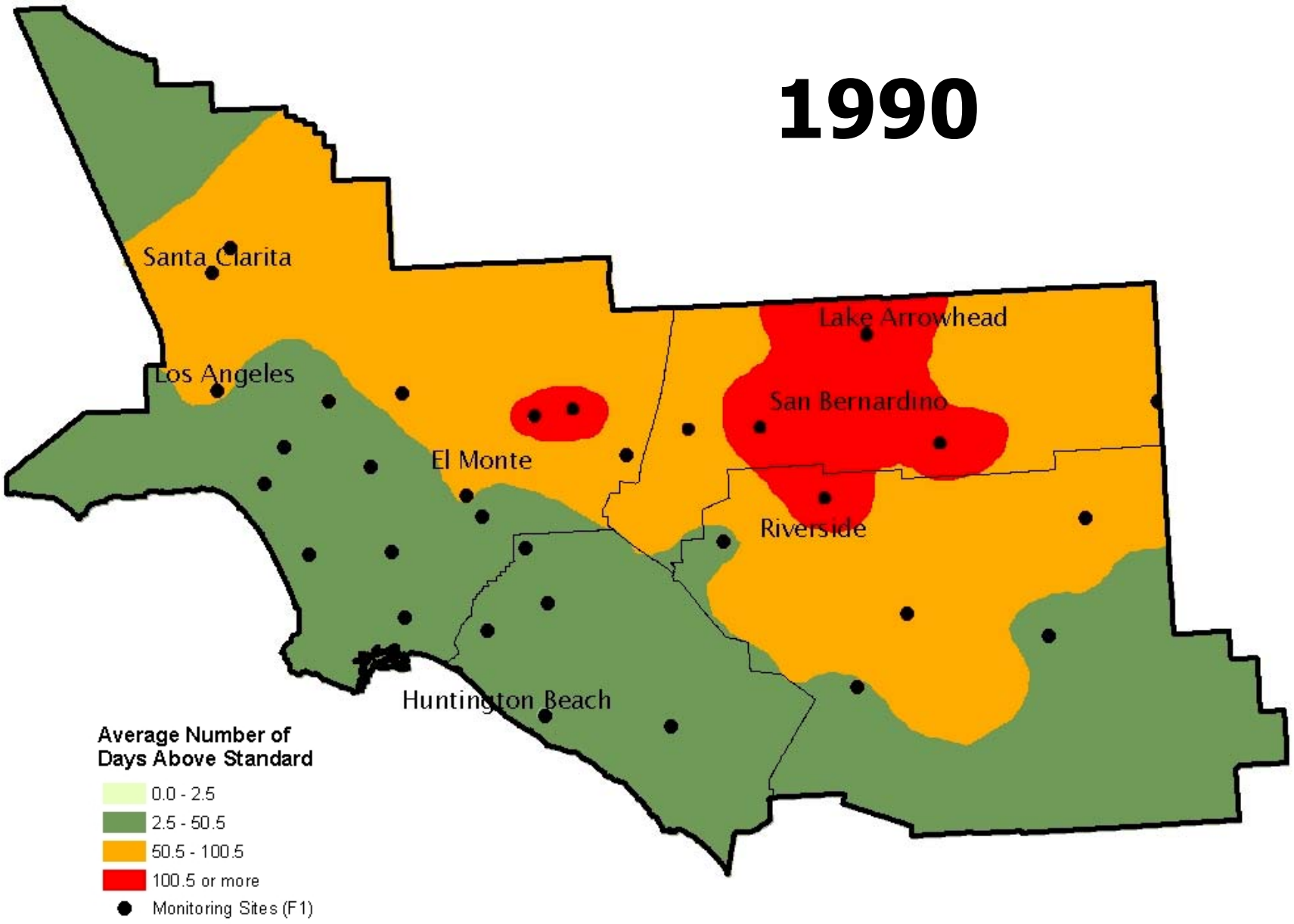
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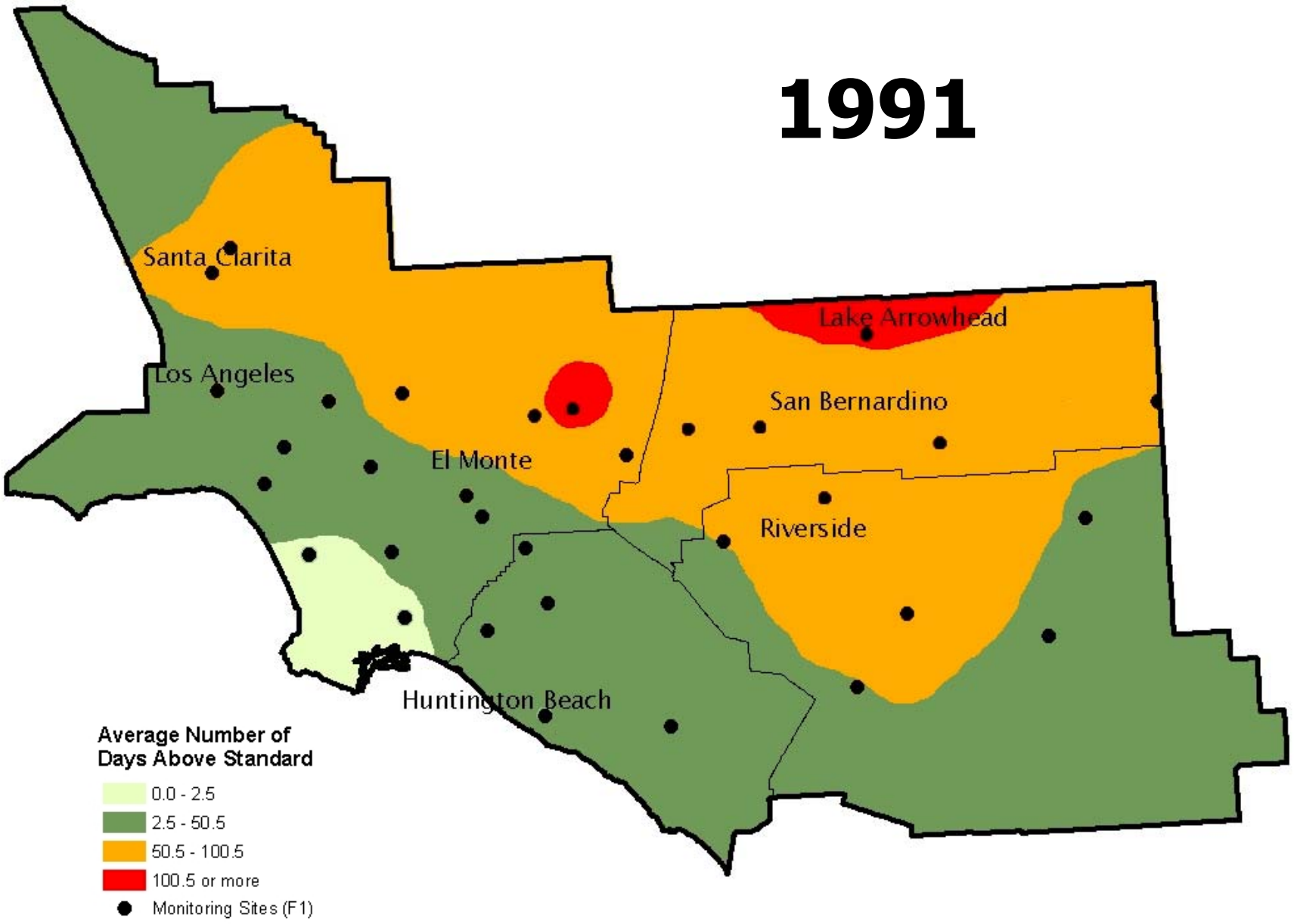
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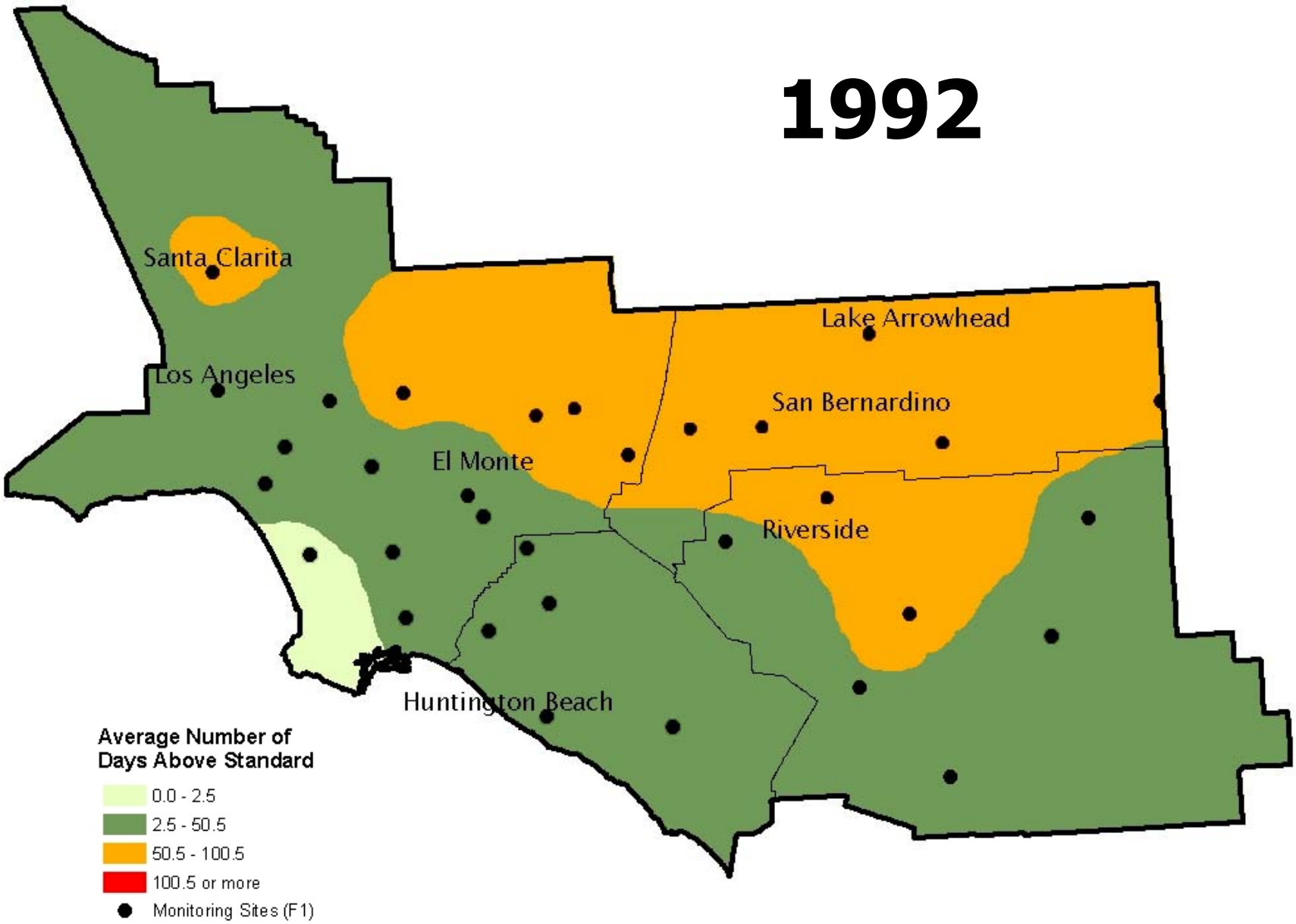
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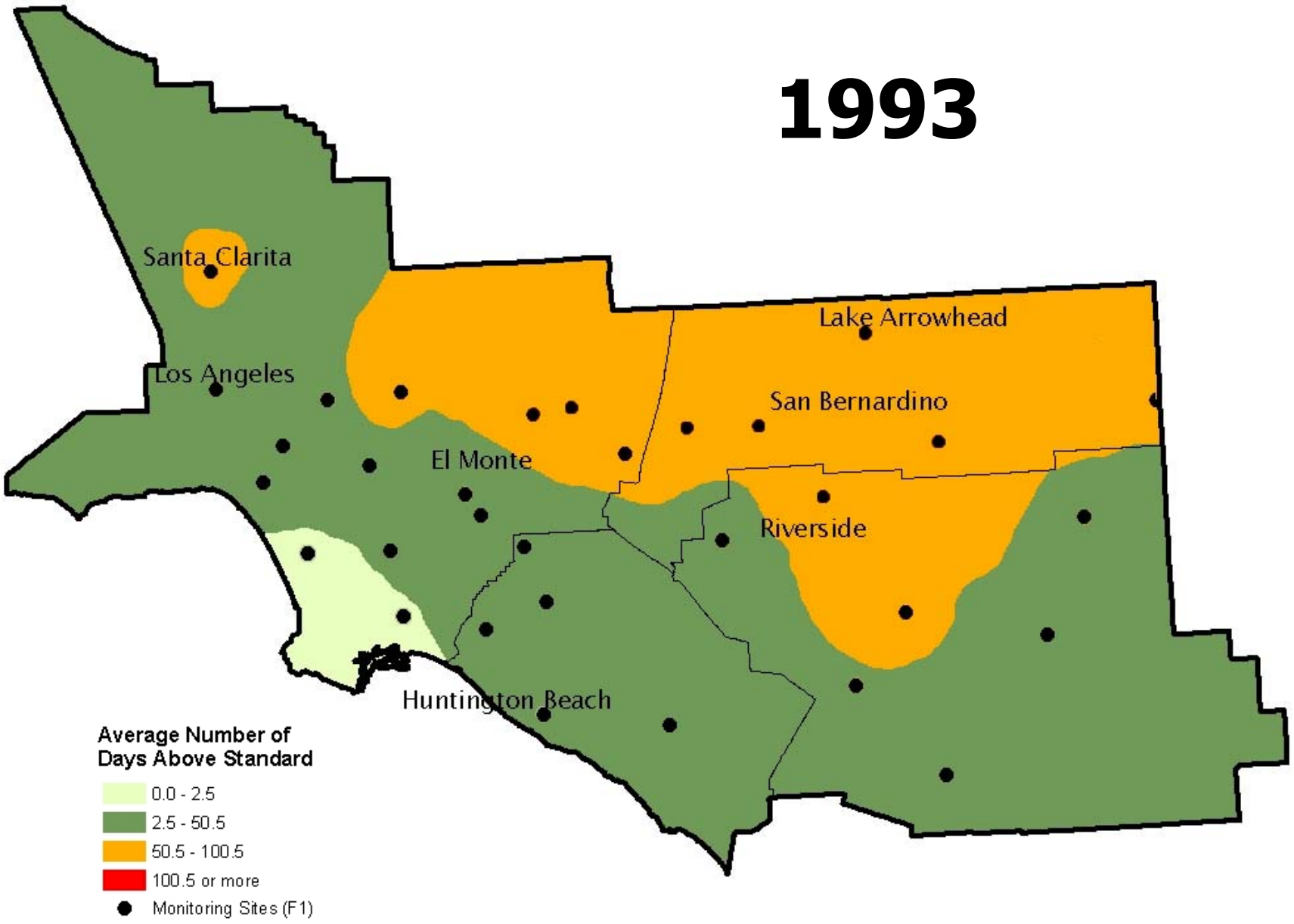
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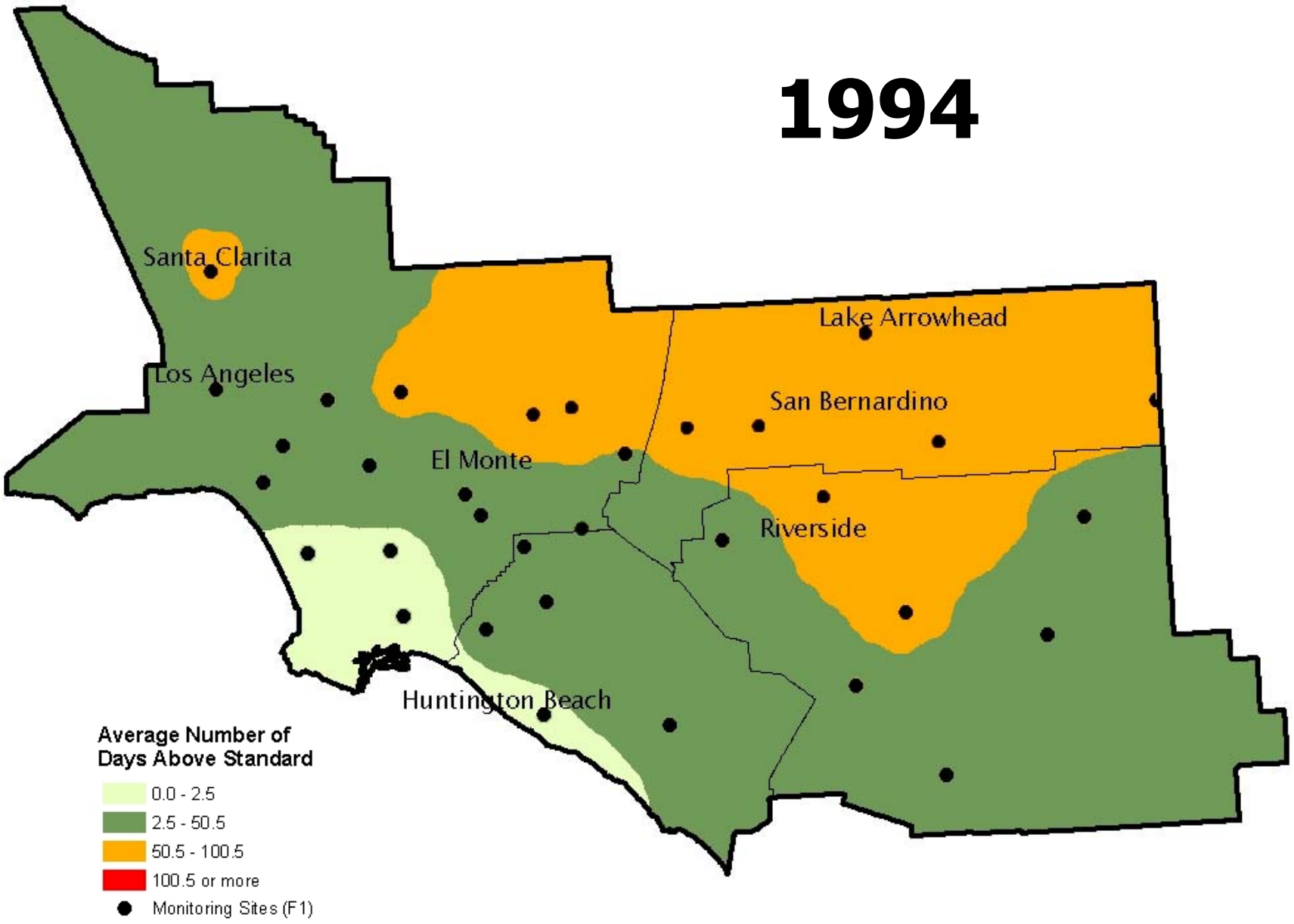
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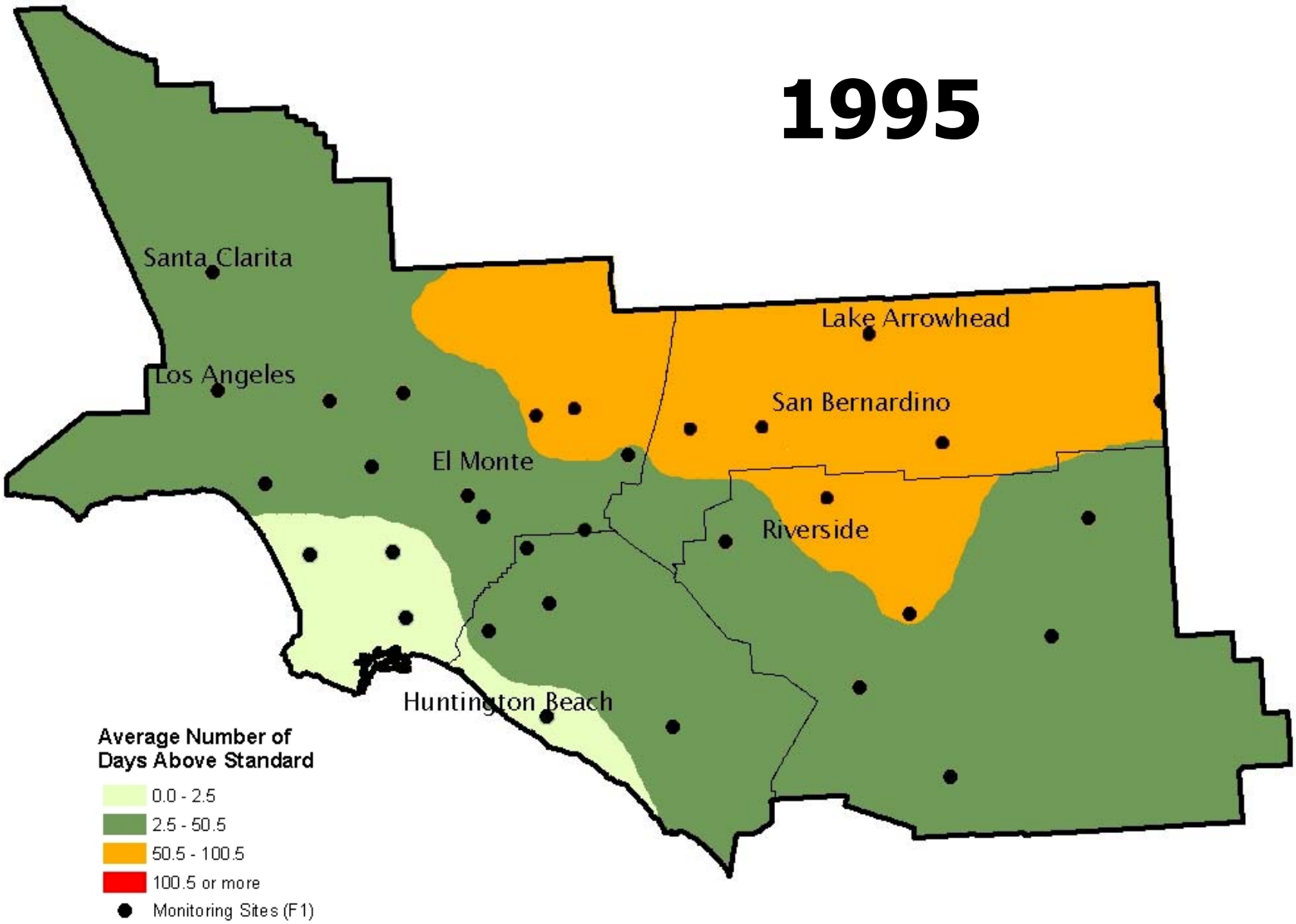
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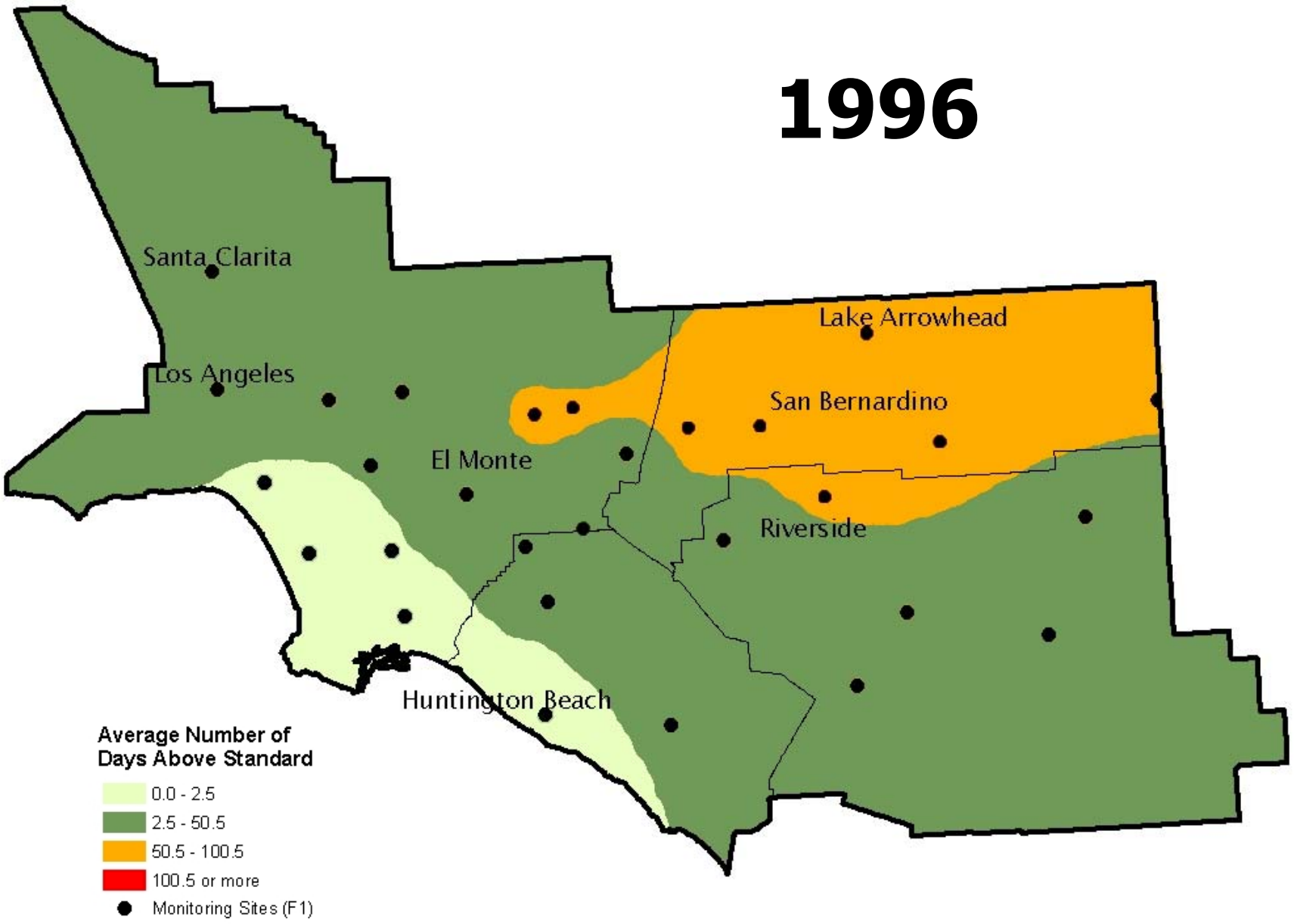
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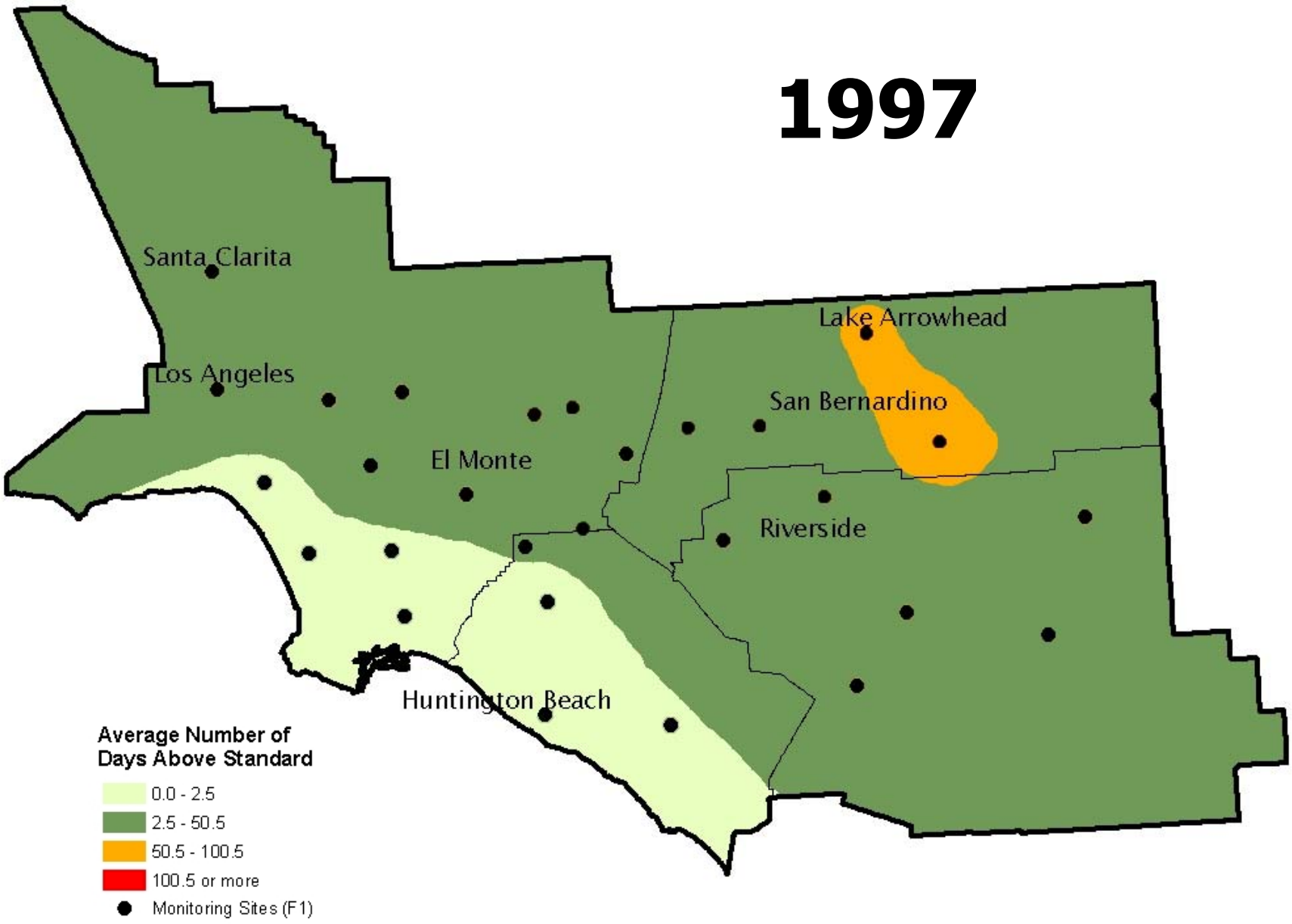
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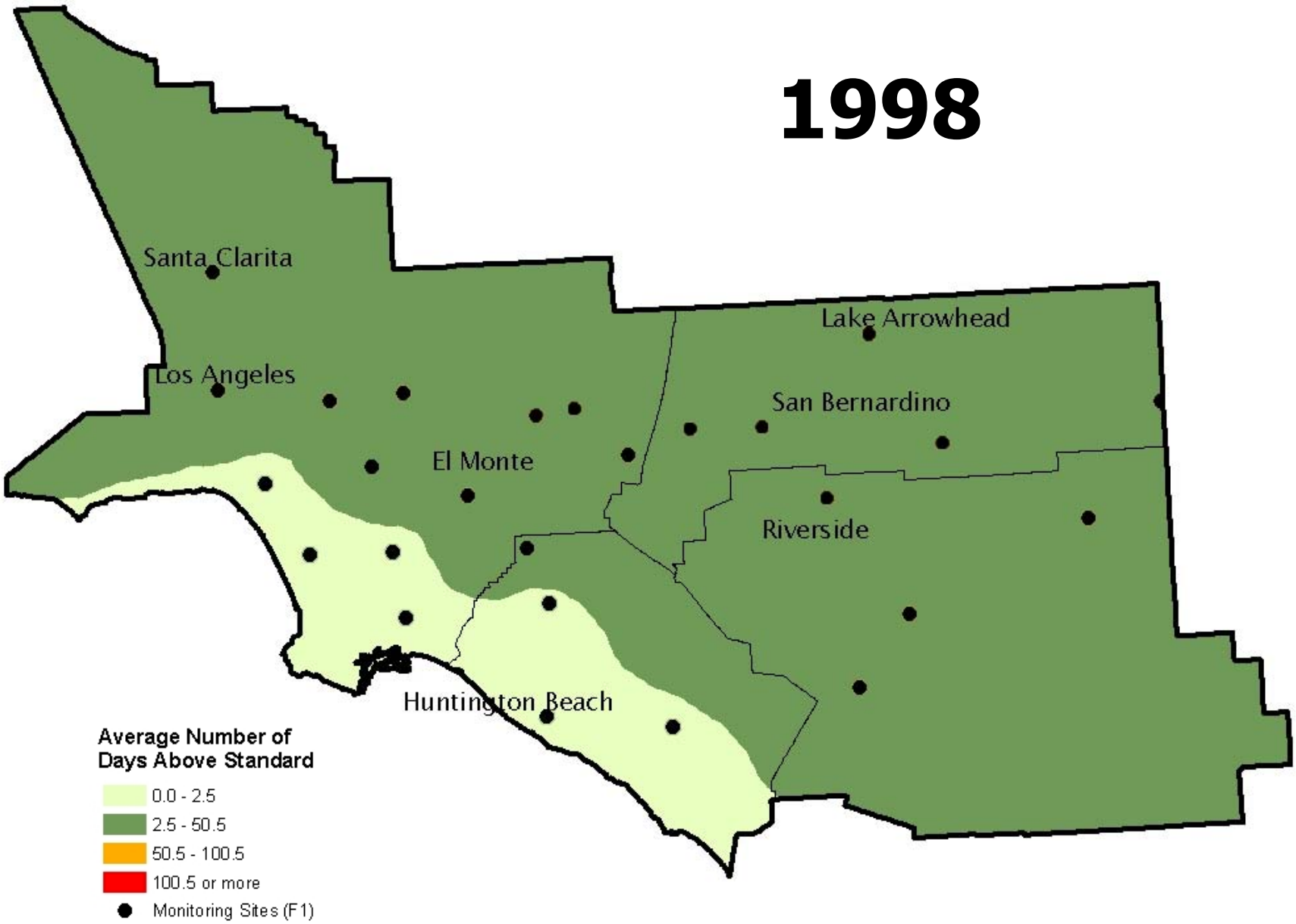
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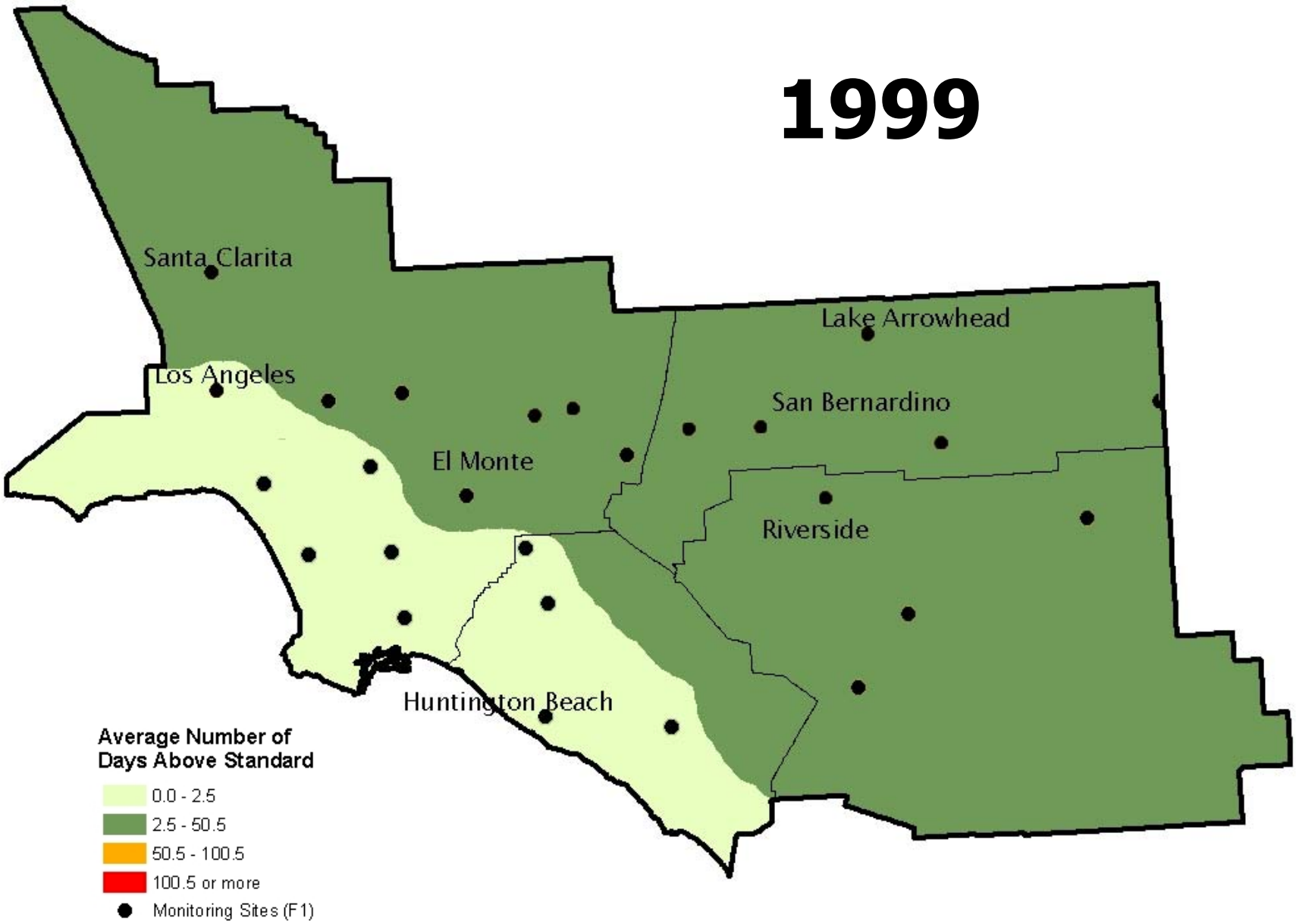
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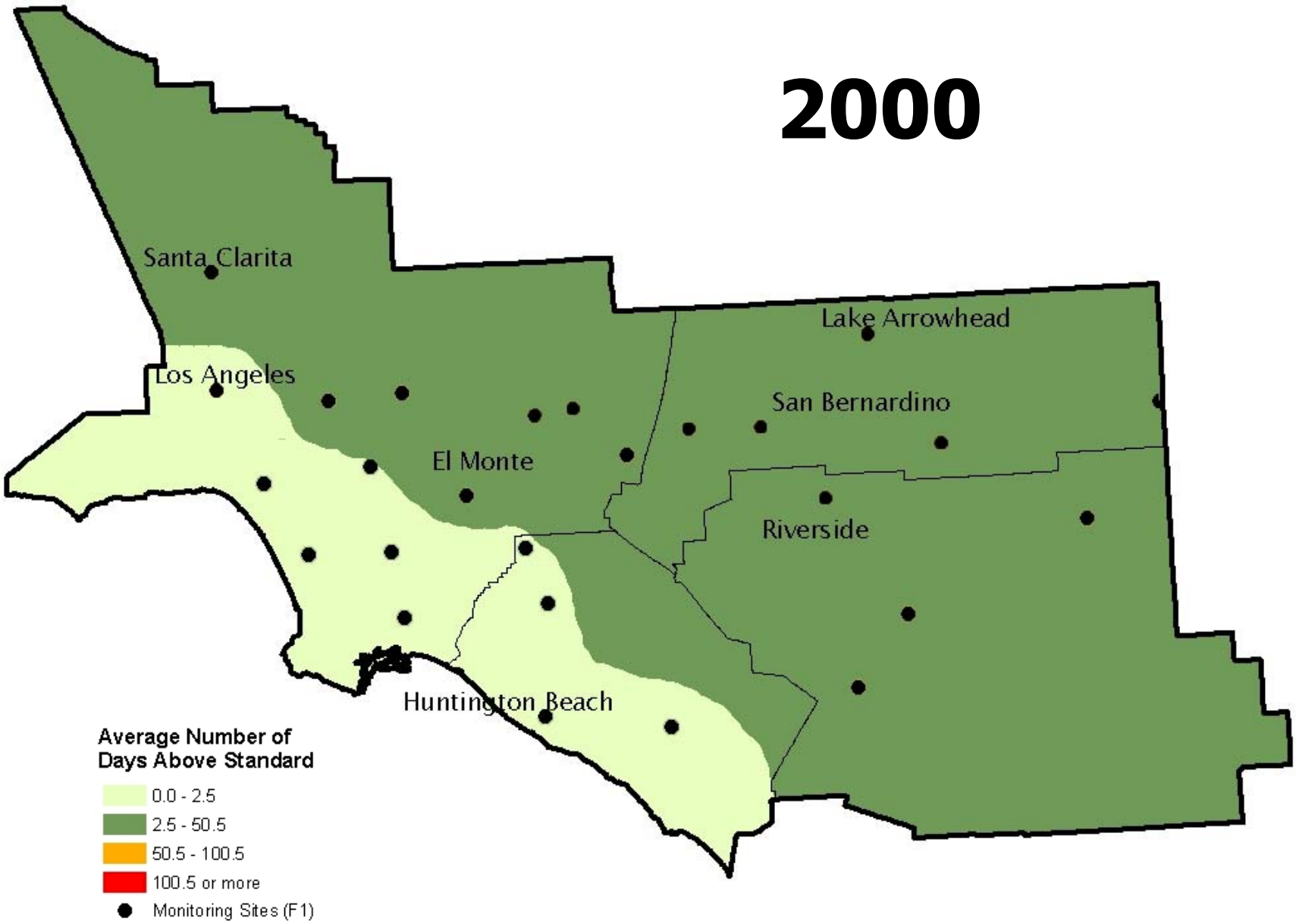
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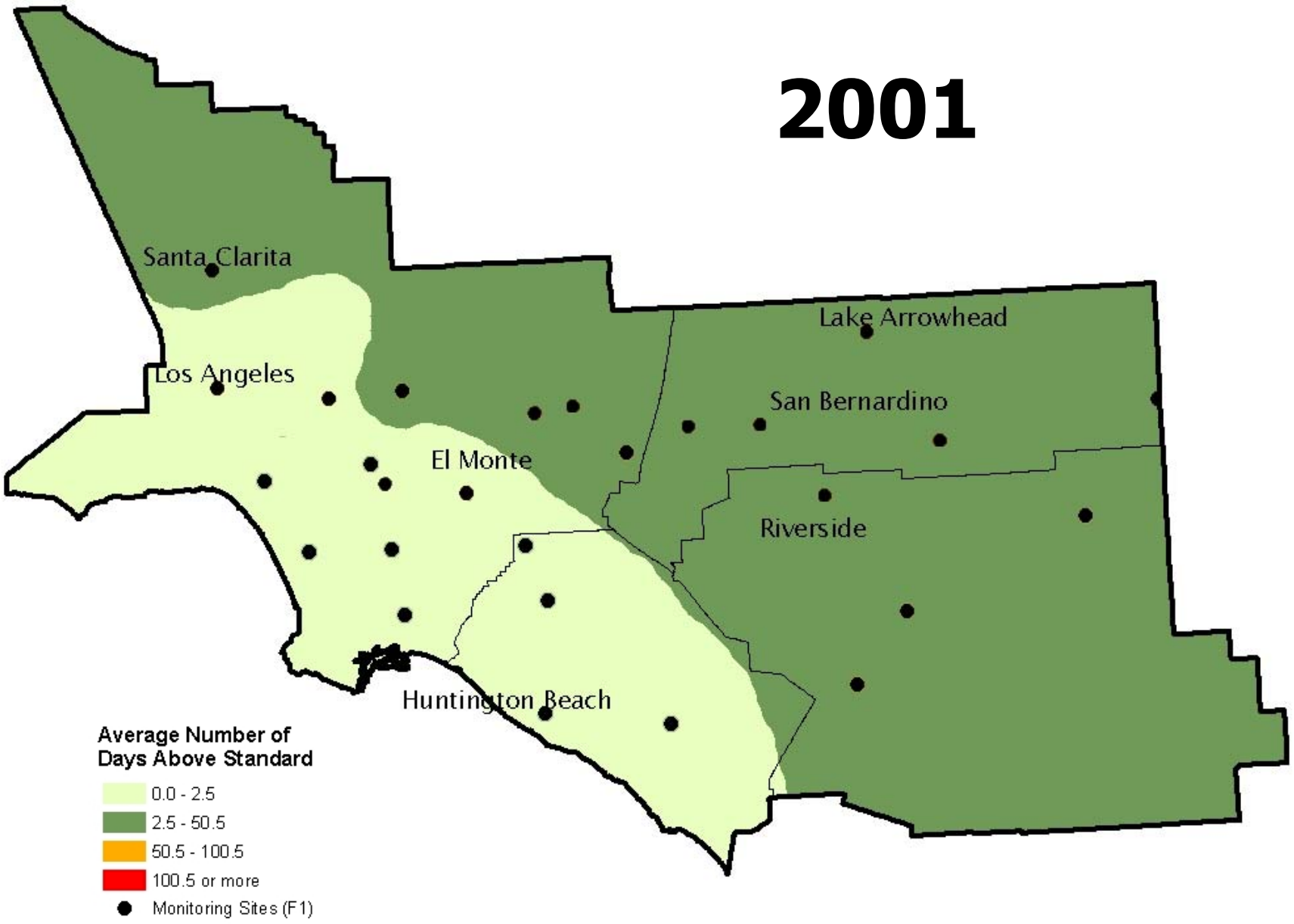
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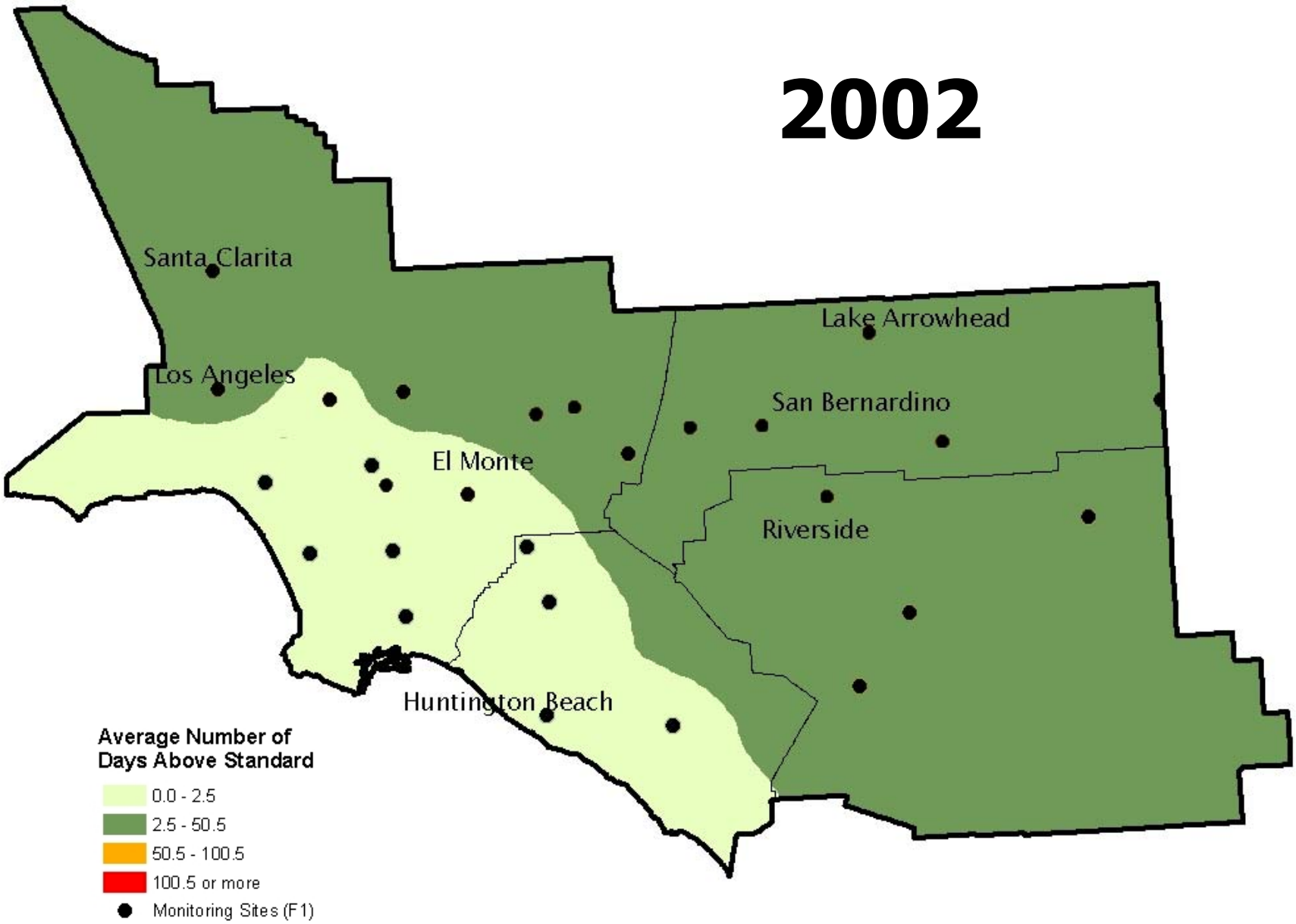
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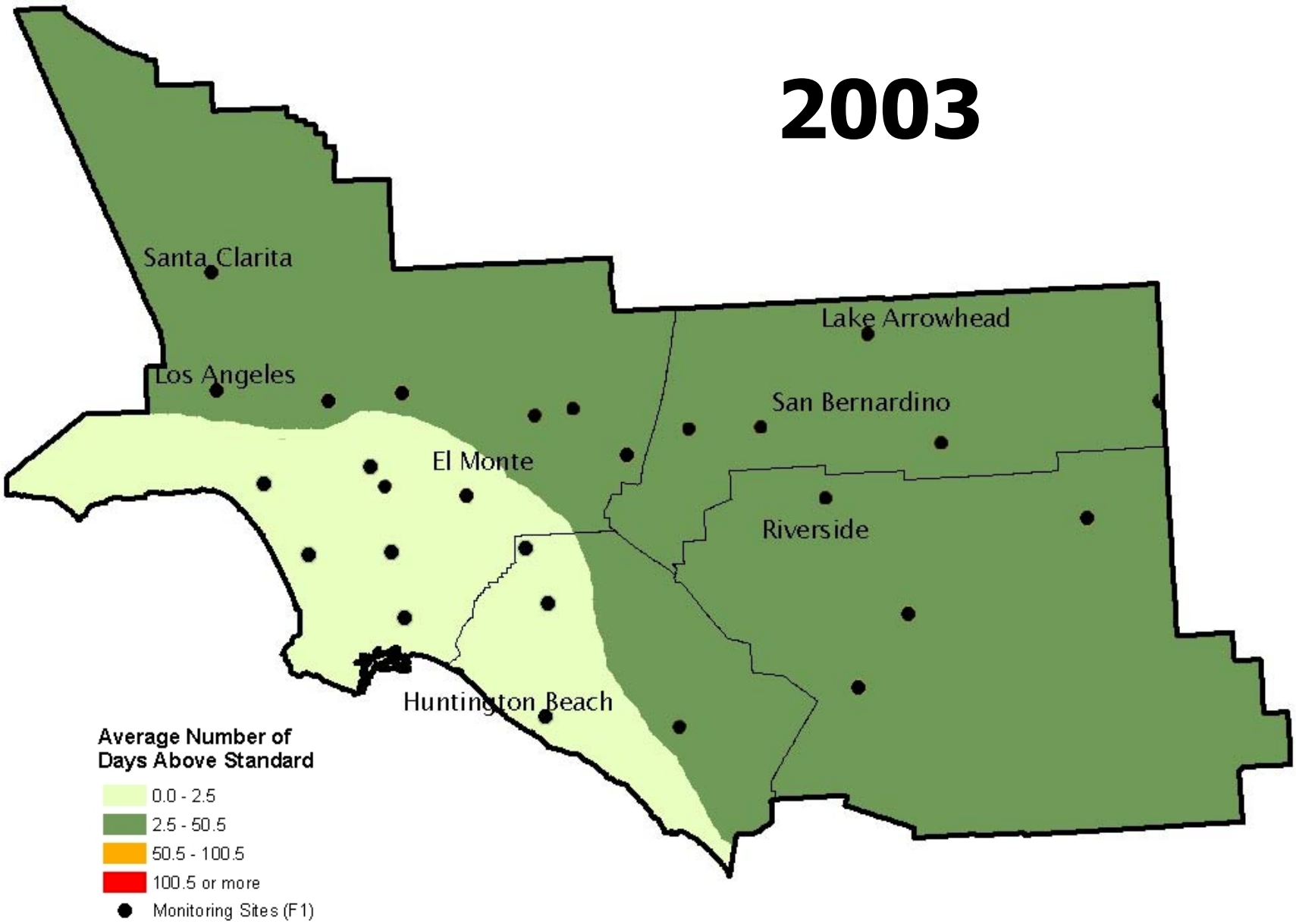
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What Happened in the South Coast in 2003?

- Apparent reversal of progress
- More days above the standard than previous five years
- First Stage I alert since 1998
- Uncommonly severe weather

What Weather Conditions Lead to High Ozone?

- Intense sunlight
- Hot temperatures
- Calm or light winds
- Low inversions
- Few or no clouds to block sunlight

How Did 2003 Compare to Previous Years?

- 2003 had more ozone-conducive days than the last 24 years
- 1998 and 2003 each had a Stage I alert under similar weather conditions
  - Extreme weather in both cases
  - Peak was lower in 2003
- In addition, 1998 had 5 more Stage I alerts

Summary of Progress in South Coast

	1990*	2003**
Days over Standard	156	49
Peak levels (ppm)	0.34	0.18
2003 "Design Value"	--	0.17

* Annual average for 1988 - 1990
** Annual average for 2001 - 2003
2003 data are preliminary

What Progress Has Been Made in the San Joaquin Valley?

- Number of days over the standard dropped about 40% in the last decade
- Relatively high peaks remain
- Both major urban areas exceed the standard -- Fresno and Bakersfield
- Geography and climate pose significant challenge
- District requested new reclassification to ‘extreme’

Summary of Progress in San Joaquin Valley

	1990*	2003**
Days over Standard	58	35
Peak levels (ppm)	0.18	0.17
2003 "Design Value"	--	0.15

* Annual average for 1988 - 1990
** Annual average for 2001 - 2003
2003 data are preliminary

What Progress Has Been Made in the Sacramento Region?

- Number of days over the standard declined about 60% in the last decade
- Highest peaks are found downwind of Sacramento Metropolitan area
- As areas approach the standard, annual variation in weather can play a large role
- Attainment by 2005 is too close to call

Summary of Progress in the Sacramento Region

	1990*	2003**
Days over Standard	19	6
Peak levels	0.16	0.16
2003 "Design Value"	--	0.14

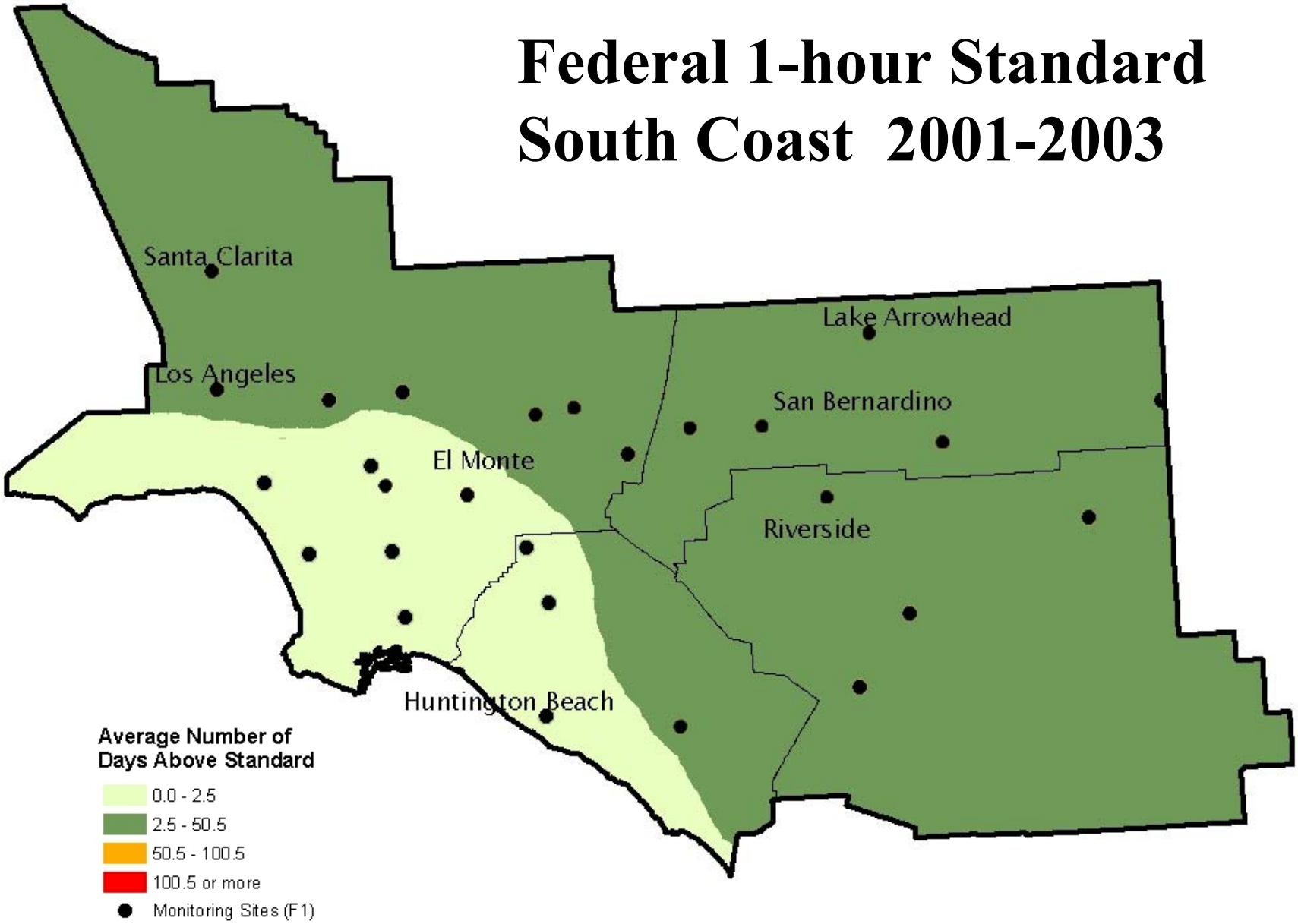
* Annual average for 1988 - 1990
** Annual average for 2001 - 2003
2003 data are preliminary

8-Hour Federal Ozone Standard

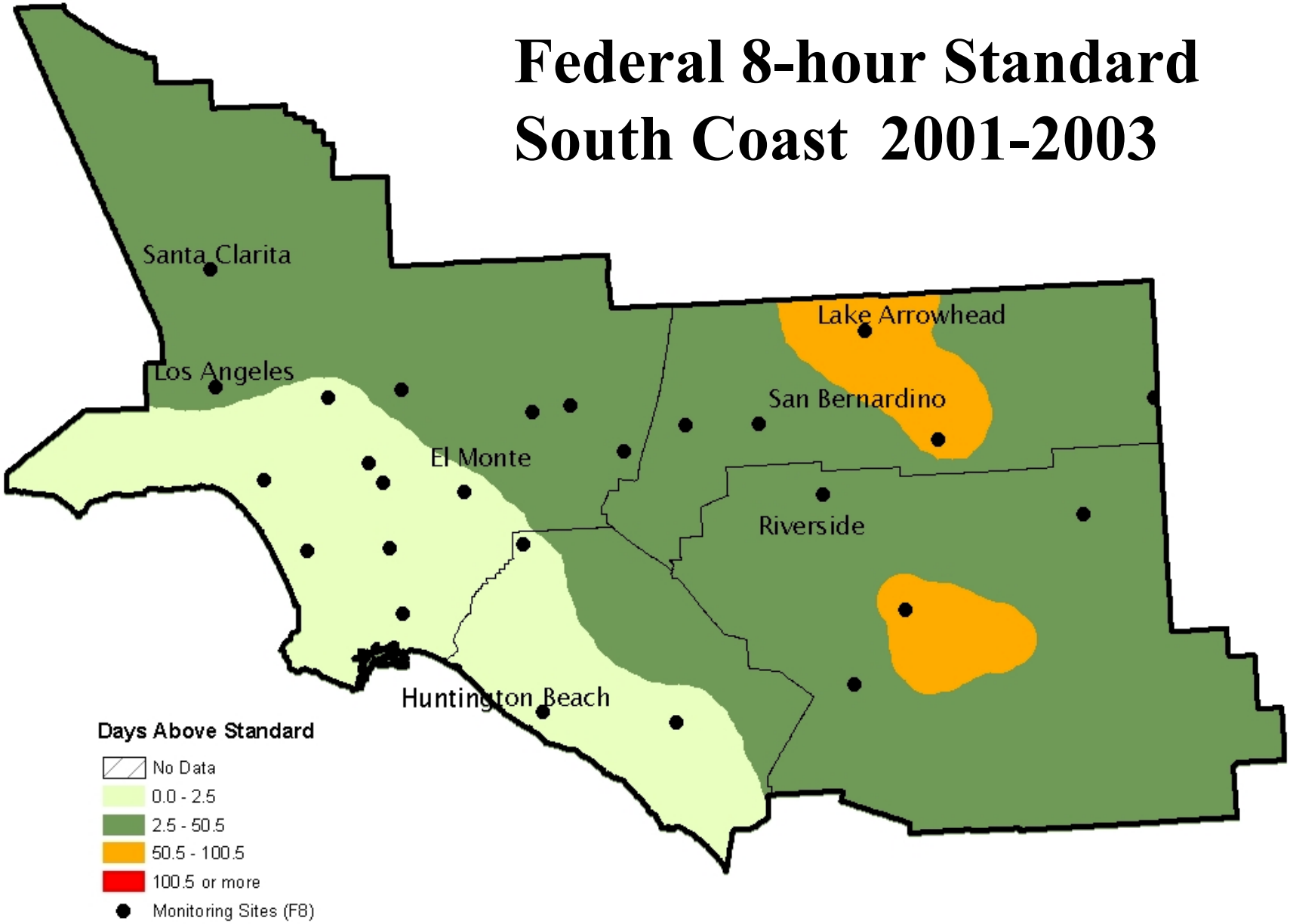
How Do the Federal 8-Hour and 1-Hour Standards Compare?

- 8-hour standard (0.08 ppm) more health protective
- More emissions reductions needed
- Attainment deadlines will be post-2010
- State Implementation Plans will be due in 2007

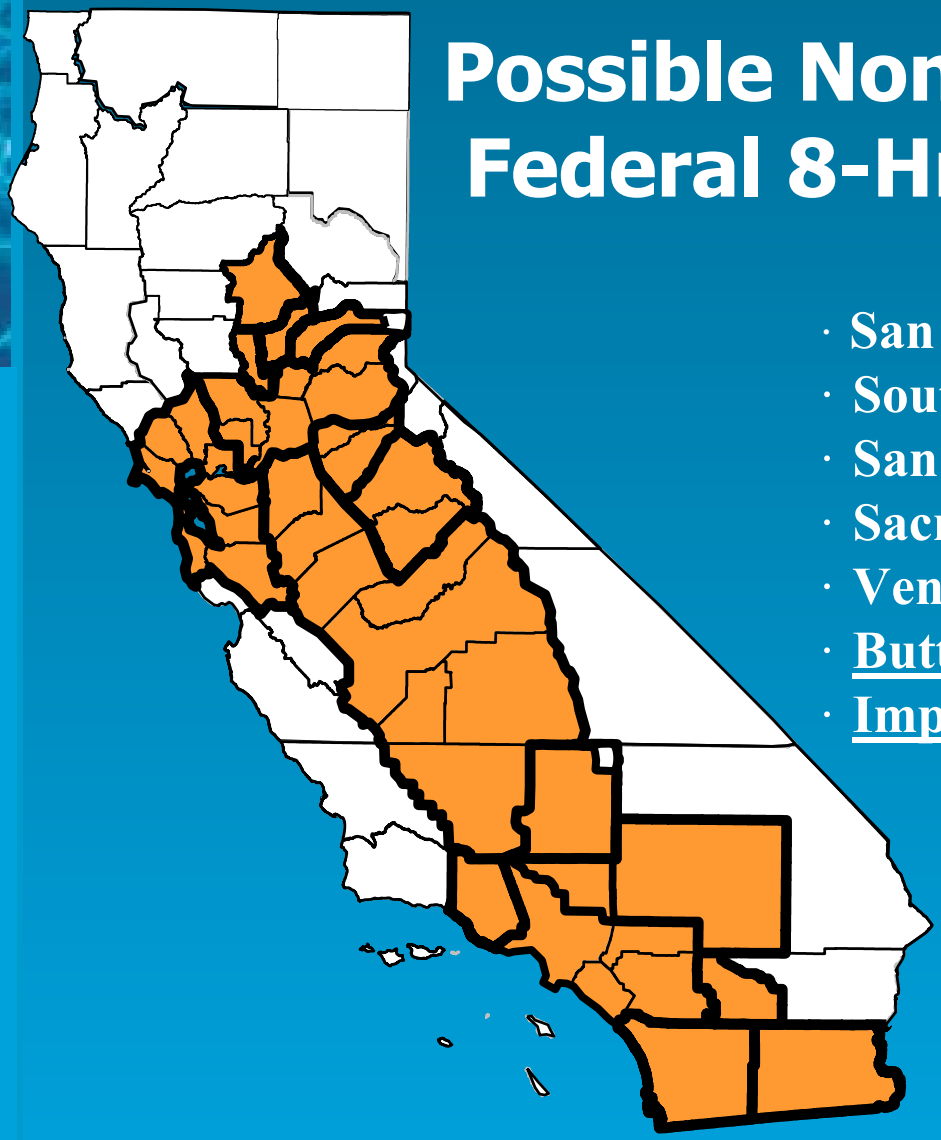
Federal 1-hour Standard South Coast 2001-2003



Federal 8-hour Standard South Coast 2001-2003



Possible Nonattainment Areas Federal 8-Hr Ozone Standard



- San Francisco Bay Area
- South Coast and Desert Areas
- San Joaquin Valley
- Sacramento Region
- Ventura and San Diego Counties
- <u>Butte, Sutter, and Yuba Counties</u>
- <u>Imperial and Mountain Counties</u>

Areas that are underlined are new to the Federal ozone planning process

Summary of Progress Toward Federal Ozone Standards

- 6 new areas now meet the Federal 1-hr standard
- 3 major areas still exceed the Federal 1-hr standard
- Attaining 8-hour standard will be a considerable challenge
- Control strategies for 1-hour standard have contributed to progress on 8-hr standard

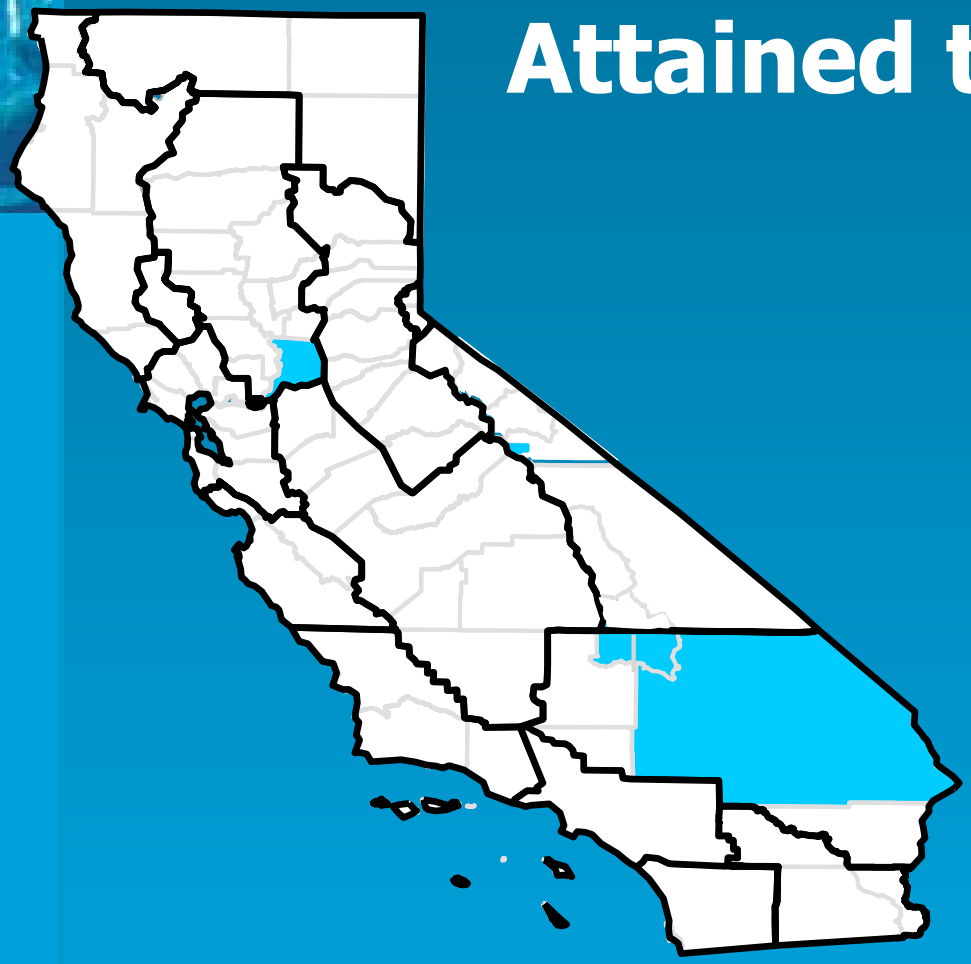
Federal Particulate Matter Standards (PM10 & PM2.5)

What are the Particulate Matter Standards?

- Multiple standards address the complexity of particulate matter pollution
- Standards encompass:
  - Both State and Federal Standards
  - 24-hour and annual averaging times
  - PM2.5 and PM10 size fractions
  - PM2.5 is a component of PM10

Federal PM10 Standards

What Areas Have Recently Attained the Standard?



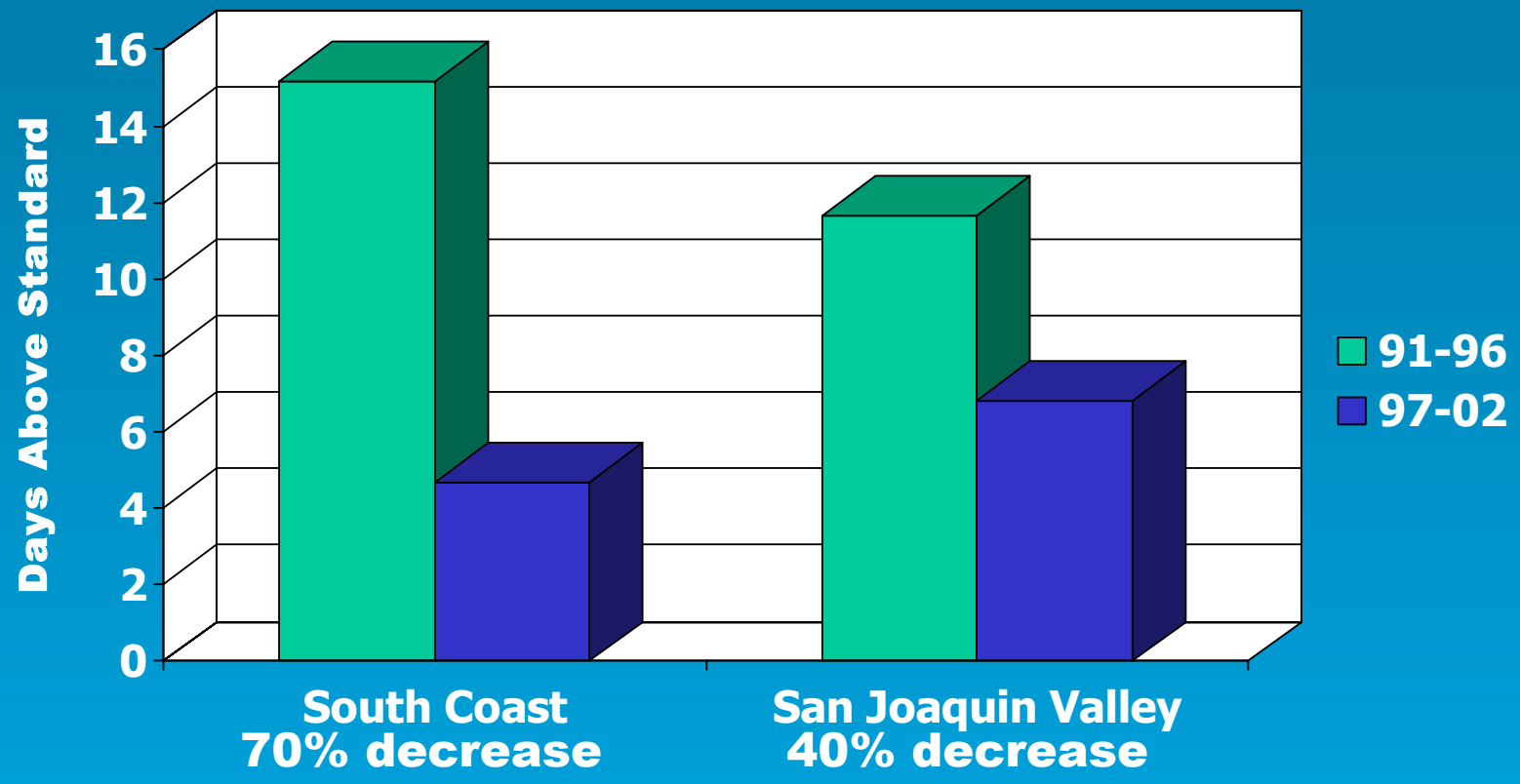
Since 1990, 4 areas now meet Federal PM10 standards

- Sacramento County
- Mammoth Lakes
- 2 Areas in Searles Valley
- Portion of San Bernardino County

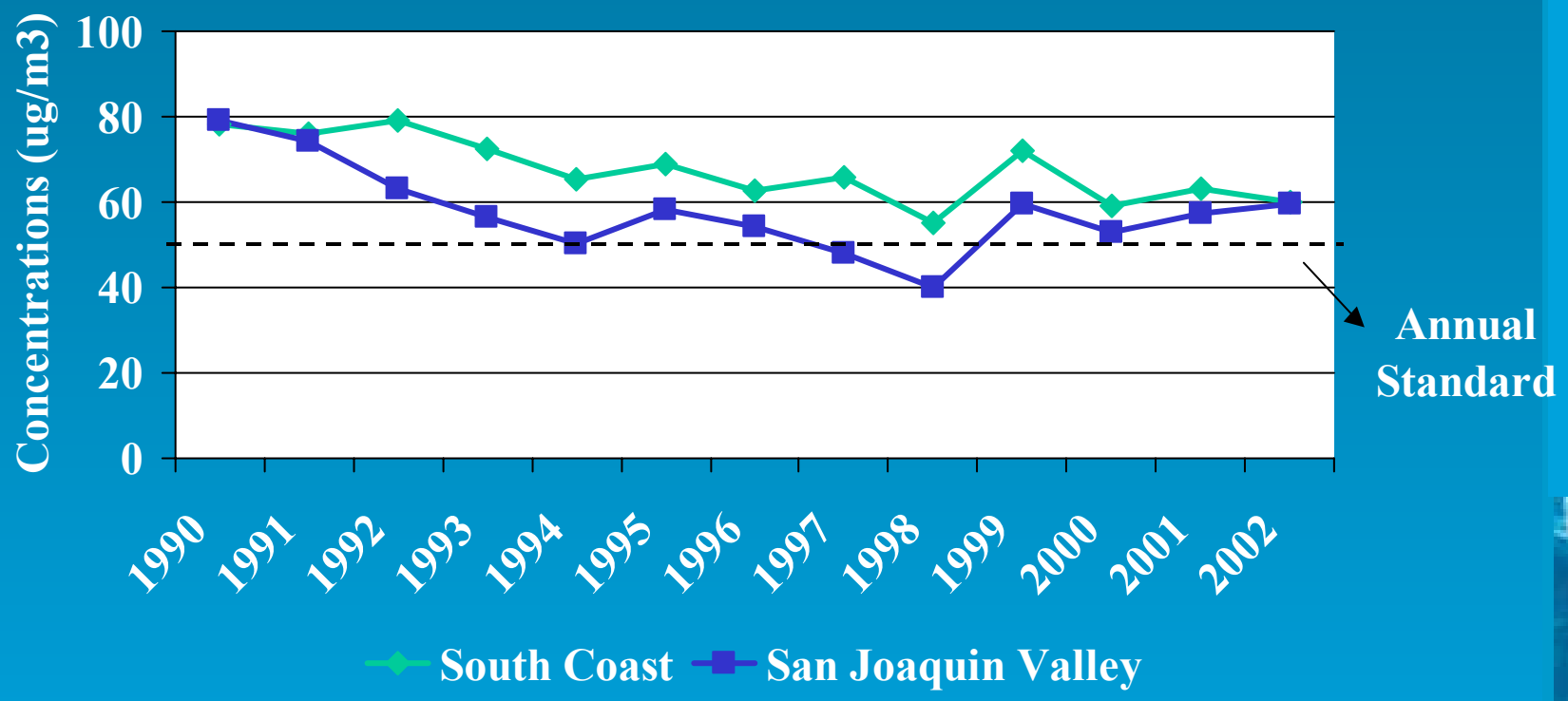
What are the Remaining PM10 Nonattainment Areas?

- Owens Lake and Coso Junction, Mono Lakes and Coachella Valley
  - Fugitive dust measures underway
- Imperial County
  - Fugitive dust and transport from Mexico need to be addressed
- South Coast, San Joaquin Valley
  - Complex particulate matter problems
  - SIPs updated in 2003 with variety of control measures

What Progress Has Been Made Toward Attaining the 24-Hr PM10 Standard?



What Progress Has Been Made Toward Attaining the Annual PM10 Standard?



Federal PM2.5 Standards

What Progress Has Been Made Toward Attaining the PM2.5 Standards?

- 20% - 30% reduction in PM2.5 since 1988
- Reduction in precursor emissions have reduced the secondary component of particulate matter
- More extensive monitoring for PM2.5 began in 1999

What are the Expected Federal PM2.5 Nonattainment Areas?

- San Joaquin Valley
- South Coast
- San Diego
- City of Calexico

How Severe is the PM2.5 Problem?

- **San Joaquin Valley**
  - far above annual and 24-hour standards
- **South Coast**
  - far above annual standard and slightly above 24-hour standard
- **San Diego**
  - slightly above annual standard
- **City of Calexico**
  - slightly above annual standard

What are the PM2.5 Planning Timeframes?

- U.S. EPA expected to designate by December 2004
- State Implementation Plans due 3 years later - 2007
- Attainment deadlines - 2009-2014

Summary of Particulate Matter Progress

- Federal PM10 standards attained in several fugitive dust areas
- Progress shown towards 2006 attainment in South Coast and 2010 attainment in San Joaquin
- Average statewide reduction in PM2.5 of 20-30% since 1988

State Standards

How Do State Standards Compare With Federal Standards?

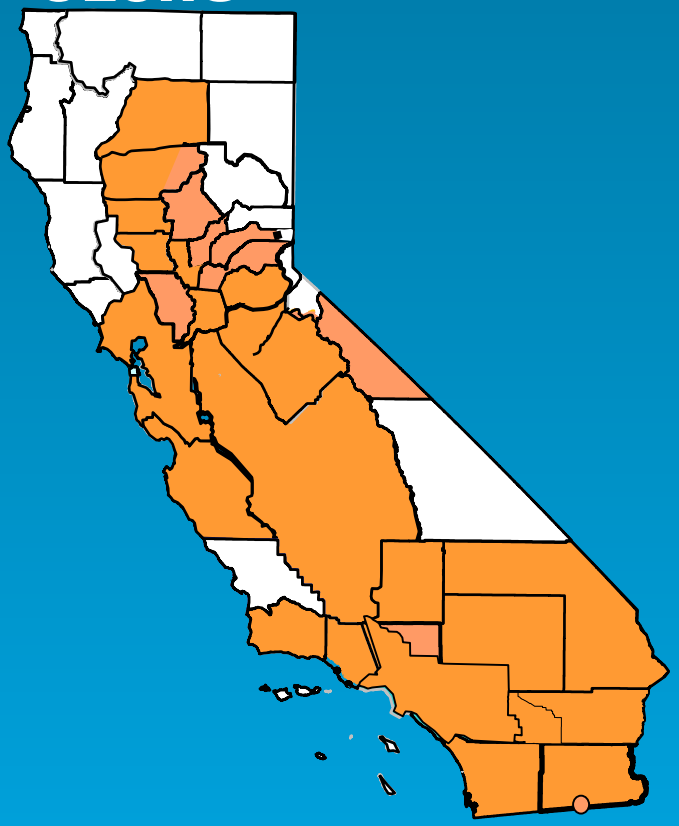
- California standards are more health protective
- Board recently revised PM10 and adopted new PM2.5 standards
- Ozone and NO_2 standards scheduled for review within the next 2 years

What is the Attainment Status for State Standards?

- Most urban areas exceed State ozone standard
- Most of State exceeds State PM10 standard
- CO Standard attained statewide except for localized area in South Coast and Calexico
- NO_2 standard attained statewide

What are the State Ozone & PM Nonattainment Areas?

Ozone



PM10

What Progress Has Been Made Since 1990?

- 3 new areas have attained the State ozone standard
  - North Coast Air Basin, San Luis Obispo, and South Lake Tahoe
- Most progress on the State Standards has occurred in the South Coast
- Less progress in other urban areas

What are the State Standard Timeframes?

- No specific attainment deadline
- Attain expeditiously as possible
- All feasible measures in California Clean Air Act Plans
- ARB approves triennial plans

Toxics

Toxics Statewide

- Statewide cancer risk is driven by 3 pollutants:
  - Diesel Particulate Matter
  - Benzene
  - 1, 3 Butadiene
- Diesel Particulate Matter is about 70% of risk
- Other pollutants are near source pollutants

What Statewide Progress Has Been Made in Air Toxics Since 1990?

- Statewide Reductions:
  - Diesel Particulate Matter* - 56%
  - Benzene - 75%
  - 1,3 Butadiene - 55%
  - Perchloroethylene - 70%

*Diesel estimate is emissions based

Summary

- Statewide air quality has improved
- Ozone, particulate matter, and toxics exposures have declined
- New areas attain our air quality standards
- Less improvement occurred in inland valleys for ozone and PM10
- Improvement was made despite growth in population and vehicle miles traveled

Looking Ahead

- Focus on
  - Reducing air pollution by 50%
  - Attaining State and Federal Standards
  - Reducing air toxics