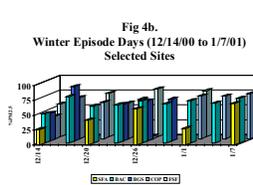
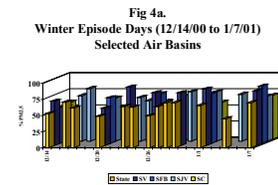
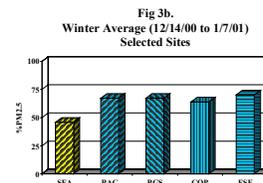
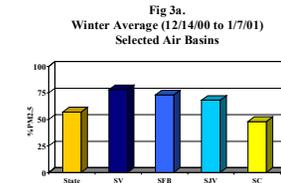
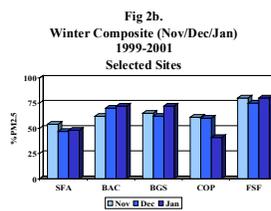
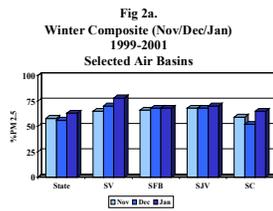
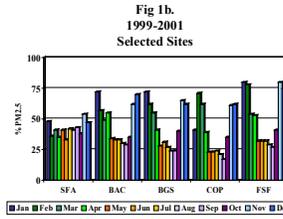
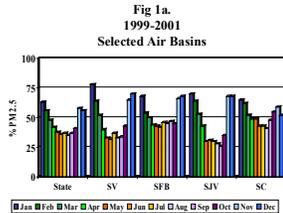
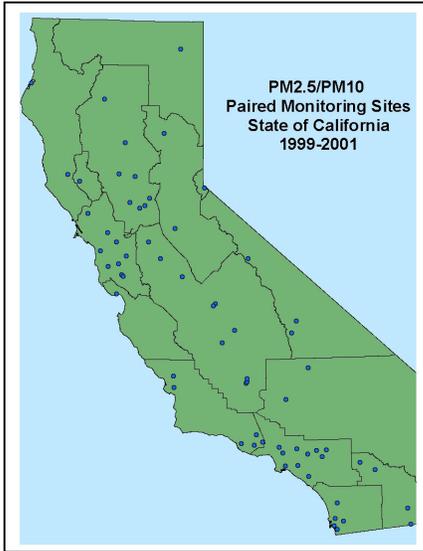


# Relationship between PM<sub>10</sub> and PM<sub>2.5</sub> during CRPAQS

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• Annual trends (Fig 1) show PM<sub>2.5</sub> contribution similar to the overall PM concentration trend (Fig 5) but with a more abrupt increase from October to November. This increase is likely due to a shifting meteorological regime (Fig 6) as well as changes in source contributions (not shown).

• Coastal air basins (such as the South Coast) and sites (such as San Francisco-Arkansas) exhibit far less variability in the percentage of PM<sub>2.5</sub> in total mass concentrations (Figs 1 and 2)

• Percent of PM<sub>2.5</sub> in winter is higher in the Central Valley (Fig 2), with the winter episode of December 14, 2000 to January 7, 2001 (Figs 3 and 4) showing a slightly elevated PM<sub>2.5</sub> contribution.

• Variation in the ratios of the combinations of PM<sub>2.5</sub> and PM<sub>10</sub> average PM concentrations at Bakersfield - California. The annual pattern of

concentrations increasing in the fall and winter, and decreasing in the spring and summer are clearly evident.

Fig 5. Monthly Average PM Concentrations Bakersfield, CA - 1999

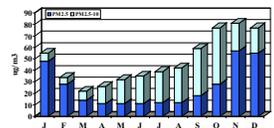
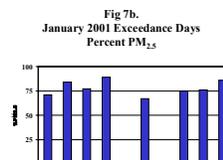
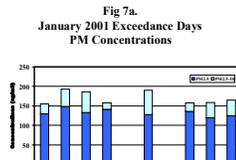


Figure 7 shows the January 2001 exceedance days. The percent of PM mass that is PM<sub>2.5</sub> exceeded 60% on all days, with Oildale (OLD) showing a high of 89% on January 1, 2001.



## Abstract

The ratio of PM<sub>2.5</sub> to PM<sub>10</sub> depends on factors which vary both spatially and temporally. In the San Joaquin Valley, these variations can be extreme. Peak PM<sub>10</sub> values are reached in the fall and early winter, with PM<sub>2.5</sub> reaching maximum levels primarily in the winter months. Ambient data collected from the routine and CRPAQS networks were used to analyze these variations. Over 140 paired monitors (11 pair combinations) at 76 monitoring sites were evaluated. Several techniques were used to help identify the meteorological and source emission characteristics associated with ratio differences. These techniques included statistical analysis of meteorological conditions and source contribution estimates, and temporal and spatial cluster analysis.

Legend:	
Sites	Air Basins
BAC - Bakersfield-California	SV - Sacramento Valley
BGS - Bakersfield-Golden	SFB - San Francisco Bay
CL - Clovis	SJV - San Joaquin Valley
COP - Clovis-Patterson	SC - South Coast
FSF - Fresno-First St	
M14 - Modesto-14th St	
OLD - Oildale	
SFA - San Francisco-Arkansas	

Figure 6 shows monthly average temperatures and relative humidity (RH) at Bakersfield. The decrease in temperature and increase in humidity in November correspond with a noticeable increase in PM (and percentage of PM<sub>2.5</sub>).

Fig 6. Average Relative Humidity and Temperature Bakersfield, CA - 1999-2000

