Fresno Supersite Quarterly Report
June 30, 2000

1. INTRODUCTION

The Fresno Supersite intends to: 1) test and evaluate non-routine monitoring methods, with the intent to establish their comparability with existing methods and determine their applicability to air quality planning, exposure assessment, and health impact determination; 2) increase the knowledge base of aerosol characteristics, behavior, and sources so regulatory agencies can develop standards and strategies that protect public health; and 3) acquire measurements that can be used to evaluate relationships between aerosol properties, co-factors, and observed health end-points. Supersite observables include *in-situ*, continuous, short duration measurements of: 1) $PM_{2.5}$, PM_{10}, and coarse (PM_{10} minus $PM_{2.5}$) mass; 2) $PM_{2.5}$ sulfate, nitrate, carbon, light absorption, and light extinction; 3) numbers of particles in discrete size bins ranging from 0.005 to ~10 µm; 4) criteria pollutant gases (O_3, CO, NO_x); 5) reactive gases (NO_y, HNO_3, NH_3); and 6) single particle characterization by time of flight mass spectrometry. Field sampling and laboratory analysis are applied for: 1) gaseous and particulate organic compounds (light hydrocarbons, heavy hydrocarbons, carbonyls, polycyclic aromatic hydrocarbons [PAH] and other semi-volatiles); and 2) $PM_{2.5}$ mass, elements, ions, and carbon. Observables common to other Supersites, including: 1) daily $PM_{2.5}$ 24-hour average mass with Federal Reference Method (FRM) samplers; 2) continuous hourly and five minute average $PM_{2.5}$ and PM_{10} mass with Beta Attenuation Monitors (BAM) and Tapered Element Oscillating Microbalances (TEOM); 3) $PM_{2.5}$ chemical speciation with an EPA speciation monitor and protocol; 4) coarse particle mass by dichotomous sampler and difference between PM_{10} and $PM_{2.5}$ BAM and TEOM measurements; 5) coarse particle chemical composition; and 6) high sensitivity and time resolution scalar and vector wind speed, wind direction, temperature, relative humidity, barometric pressure, and solar radiation. The Fresno supersite is coordinated with health studies that will use these data in establishing relationships with asthma, other respiratory disease, and cardiovascular changes in animal subjects.

2. ACCOMPLISHMENTS

- Participated in Supersite coordination meeting in Research Triangle Park, NC, on March 22 & 23, 2000.

- Participated in Central California Asthma Study planning and review meeting in Berkeley, CA on June 12 &13, 2000.

- Revised “Air Quality Measurements from the Fresno Supersite” in response to reviewer comments. The paper was accepted for publication in the Journal of the Air and Waste Management Association

- Continued operation of monitoring instruments described in “Air Quality Measurements from the Fresno Supersite”.

- Assembled and validated continuous monitoring data through May, 2000.

- Assembled and validated substrate monitoring data through March, 2000.

3. FUTURE PLANS

- Finalize variable names and submit Phase I Fresno continuous measurements to the ARB-sponsored CRPAQS data base.

- Complete revisions to Standard Operating Procedures.

- Install and operate the R&P commercial nitrate monitor alongside the ADI prototype monitor and evaluate its performance prior to removing the prototype.

- Evaluate continuous ammonia monitors.

- Evaluate the luminol NO_2/PAN monitor modified by UC Riverside for operation beginning in November.

- Install and operate a $PM_{2.5}$ Radiance nephelometer.

- Upgrade the LABVIEW based data acquisition system to integrate additional instruments.