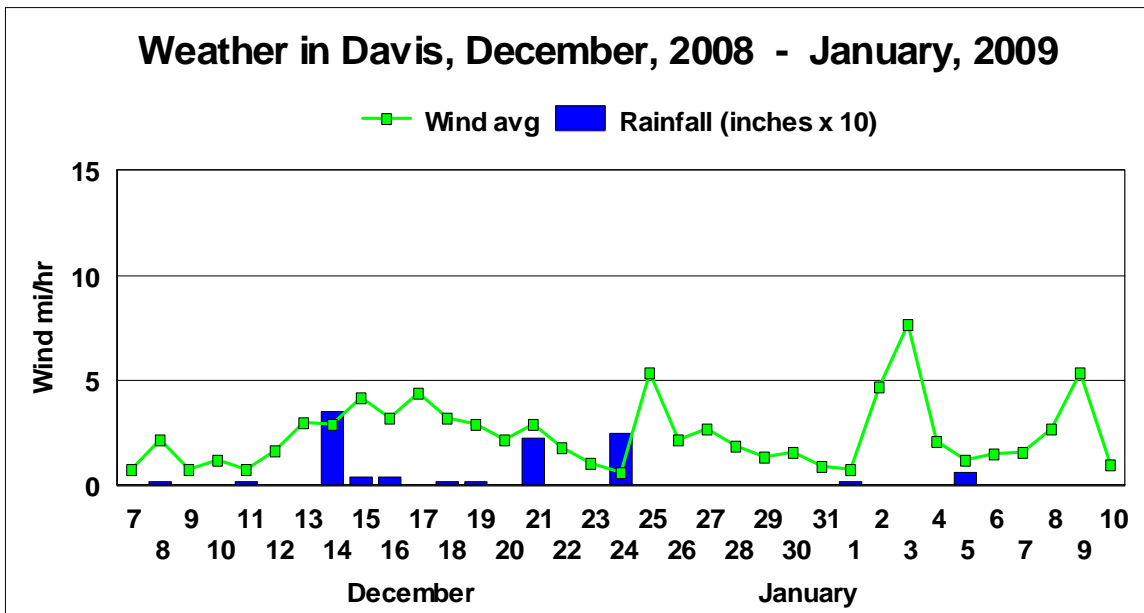
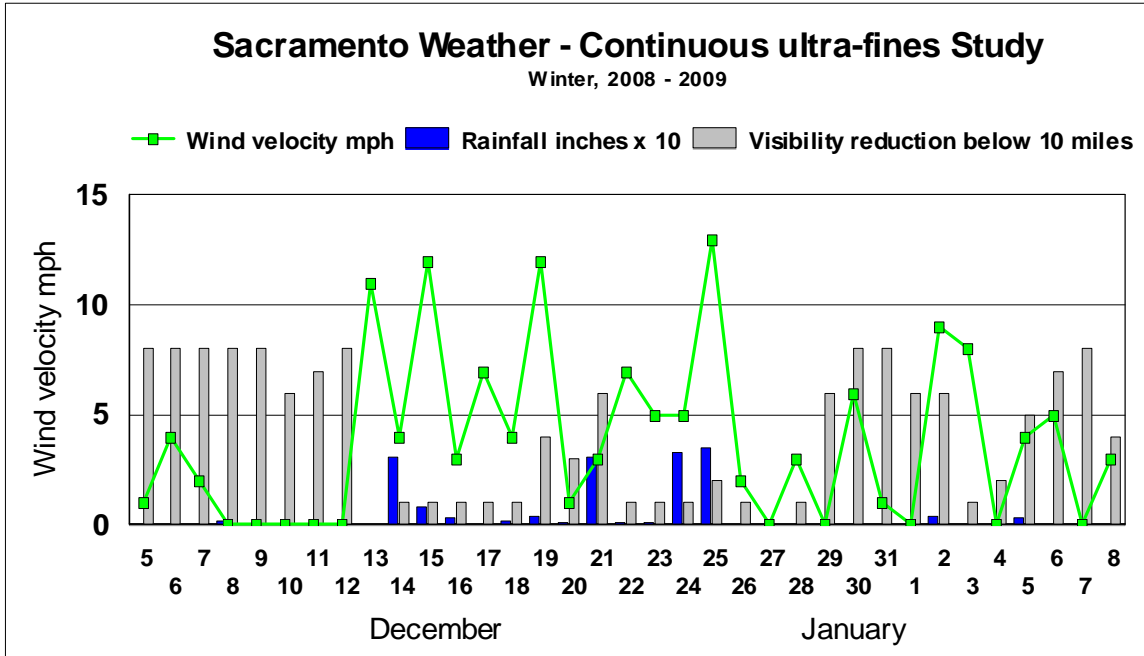


Supplemental information to the Natural Resources Commission on Davis aerosols in general and wood smoke in particular.

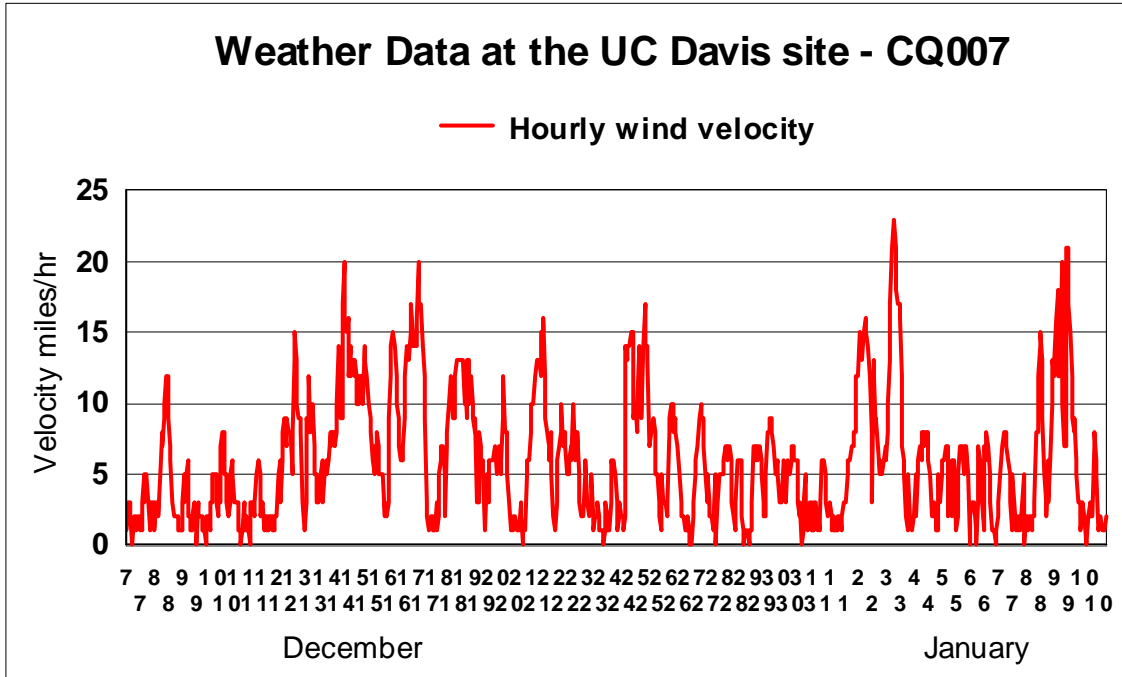
Tom Cahill, June 22, 2009

1. Wind velocities in Davis versus Sacramento Metropolitan (KSAC)

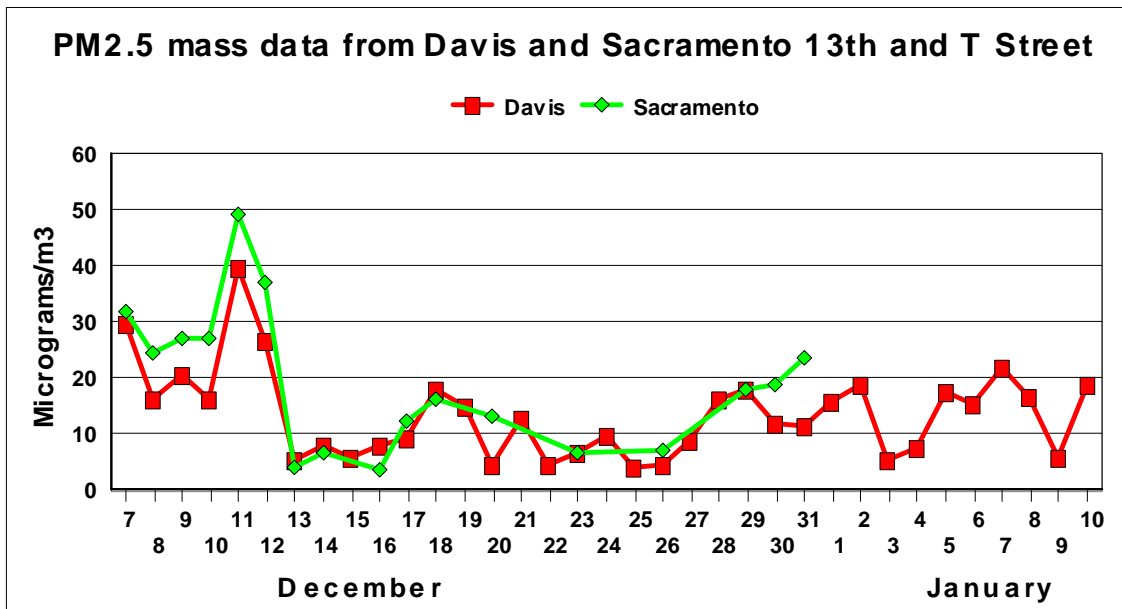


Comparison shows wind velocities at Davis, 8th and E Street, at only about ¾ of those measured at Sac Metro airport (KSAC). No haze data were available from the private Davis site.

The following data were kindly provided by Alan Pryor. Note that the wind velocities are higher than in Sacramento and much higher than in downtown Davis.

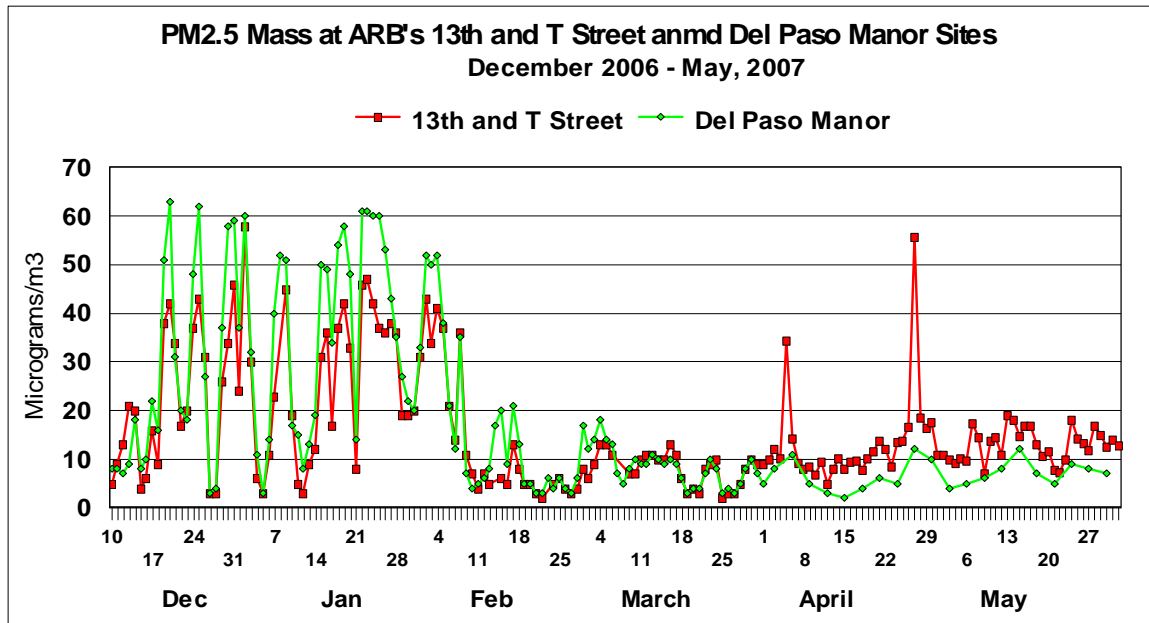
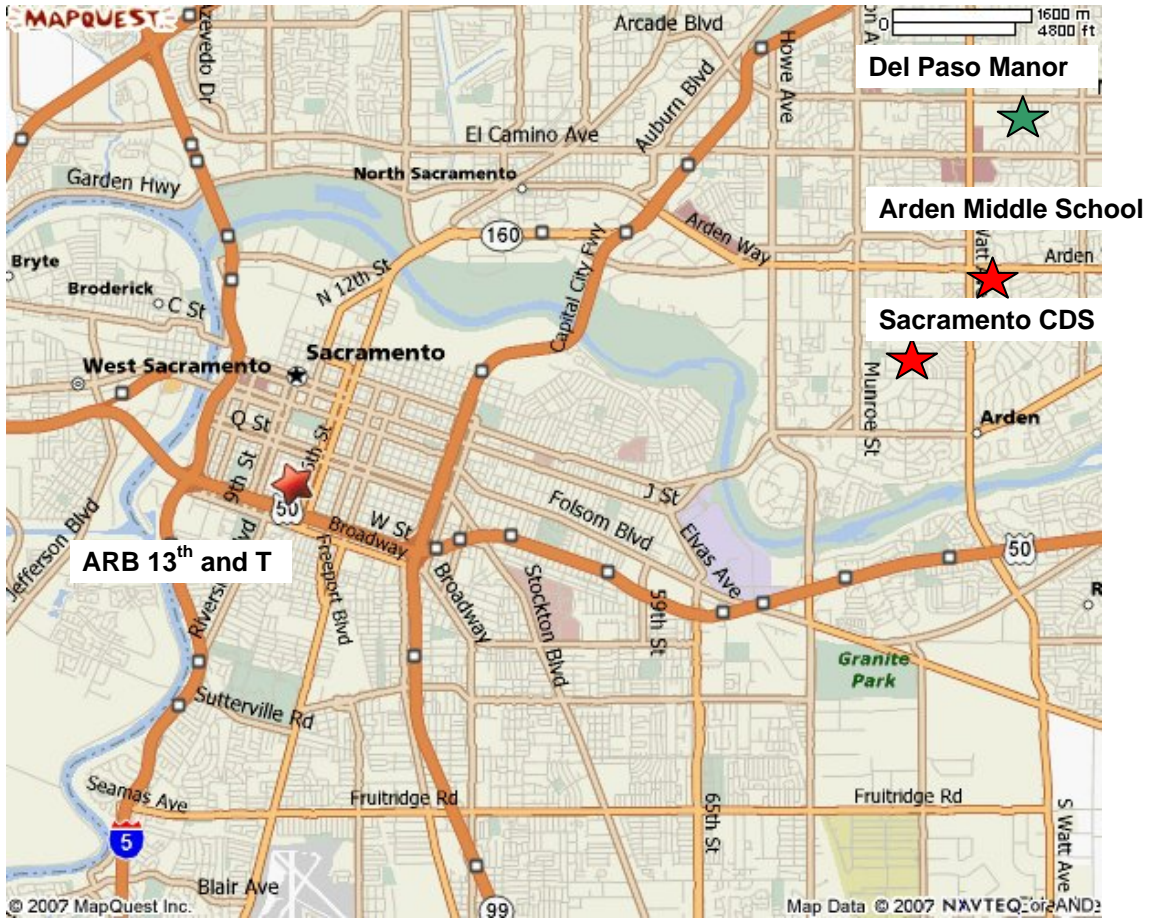


The PM_{2.5} mass data roughly track the wind velocities.



The agreement between Davis and Sacramento shows the regional nature of winter aerosols (the remaining Sacramento data have yet to be posted on ARB's ADAM site).

2. Regional nature of winter fine aerosols. The excess mass at Del Paso Manor is likely associated with wood burning sources upslope of the site.



24 hr PM_{2.5}, 13th and T Street and Del Paso Manor, winter – spring, 2007,

3. Preliminary results from the Breathe California Health Effects task Force and Sacramento Metropolitan AQMD study at Watt Avenue.

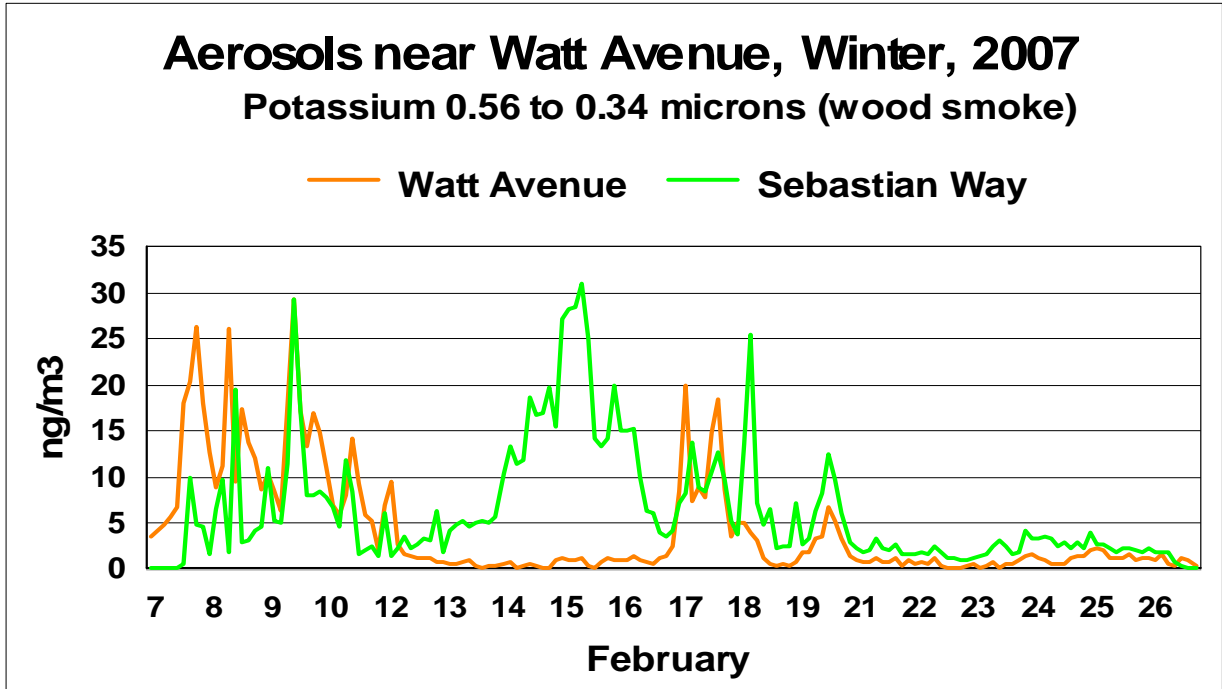


Figure 31 Accumulation mode potassium at Watt Ave and Sebastian Way.

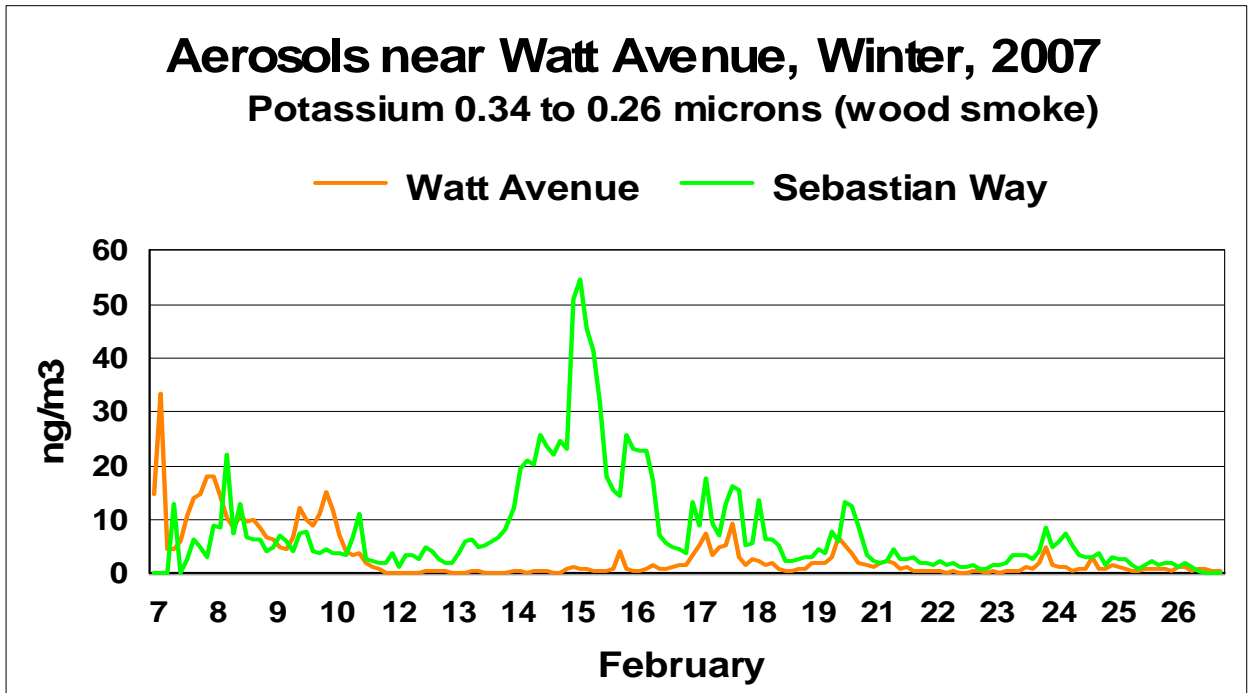


Figure 32 Accumulation and very fine mode potassium at Watt Ave and Sebastian Way.

These Sebastian Way residential background site was 504 m apart, and with the wind from the NW, the smoke at Sebastian Way would not arrive at Watt Avenue. The

lack on smoke on winds from the northwest was seen and reported repeatedly in the Davis study, and is confirmed in this work. The residence had an active fireplace, it was about 20 m NW of the Sebastian Way air sampler. Thus, we have a clear residential signature of the smoke. The average smoke mass over the three days was about $4 \mu\text{g}/\text{m}^3$.

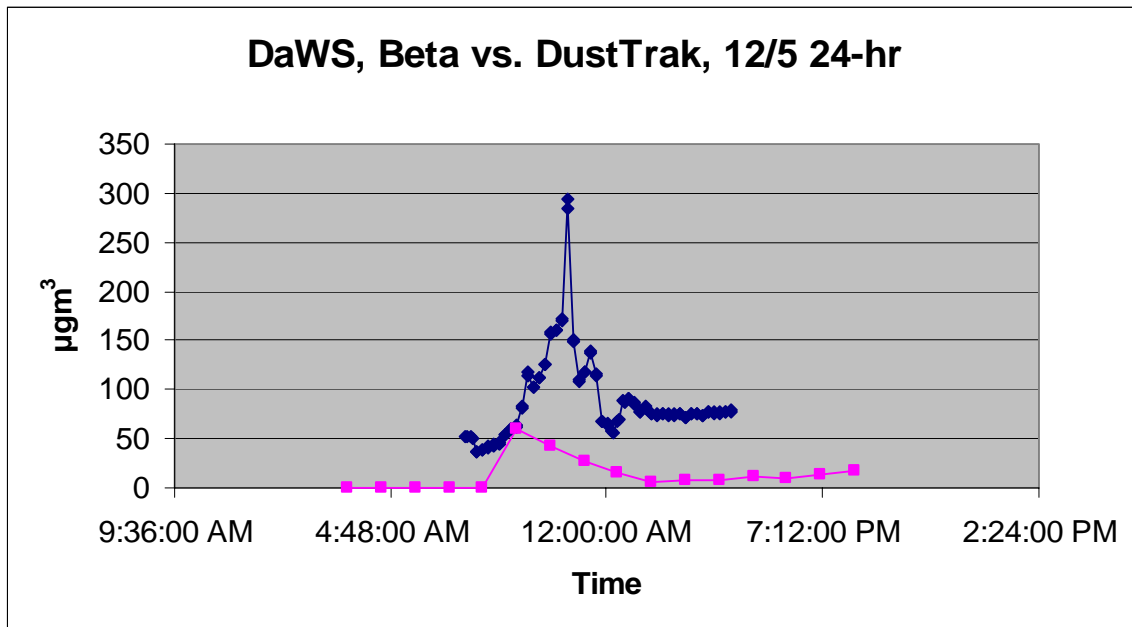
Other details of this study, including toxic components in the smoke, must await peer review by the Health Effects Task Force, meeting June 26, but with approval due on September 26.

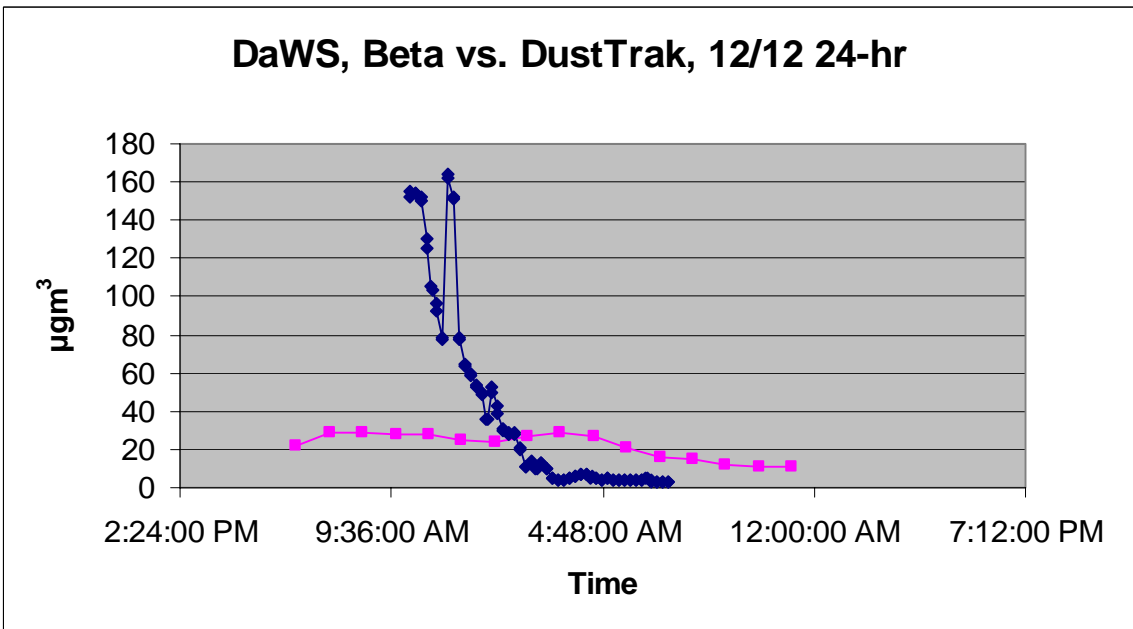
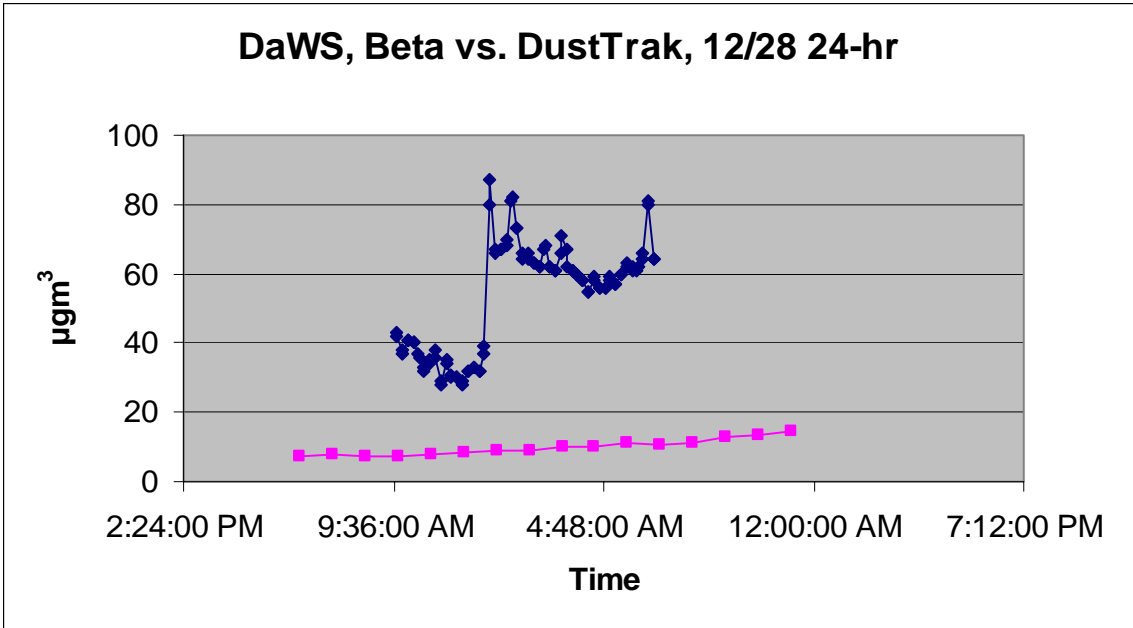
4. Example of the DustTrak mass values

The DustTrak mass values were in gross disagreement with the DRUM data in side by side tests. For this reason, they could not provide any data when driven around the city.

The reasons for this failure are under investigation, since we have used them successfully in stationary situations. The working hypothesis is that they are sensitive to vibration, and the mounting we used had the pump vibration present in the bike enclosure.

All three side by side tests we performed in the December – January period are shown below.





Thus, the minimum quality assurance requirement – that the DustTrak equal the well tested DRUM sampler, was not achieved in stationary side by side tests. We have a program this summer to study how the DustTraks can be used in a mobile mode, as we can use this capability ourselves.