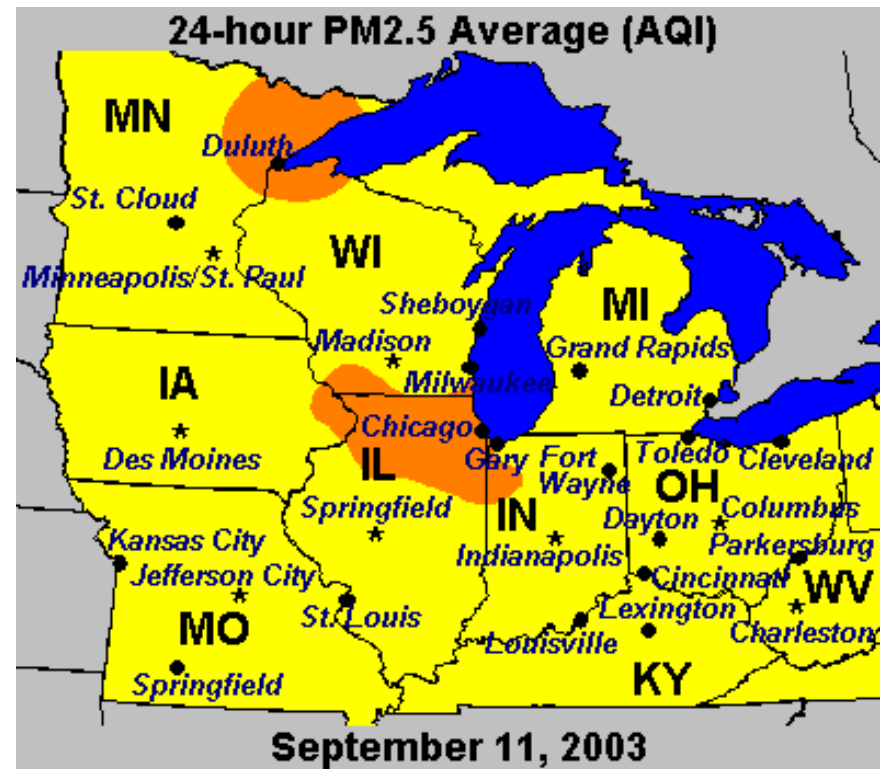
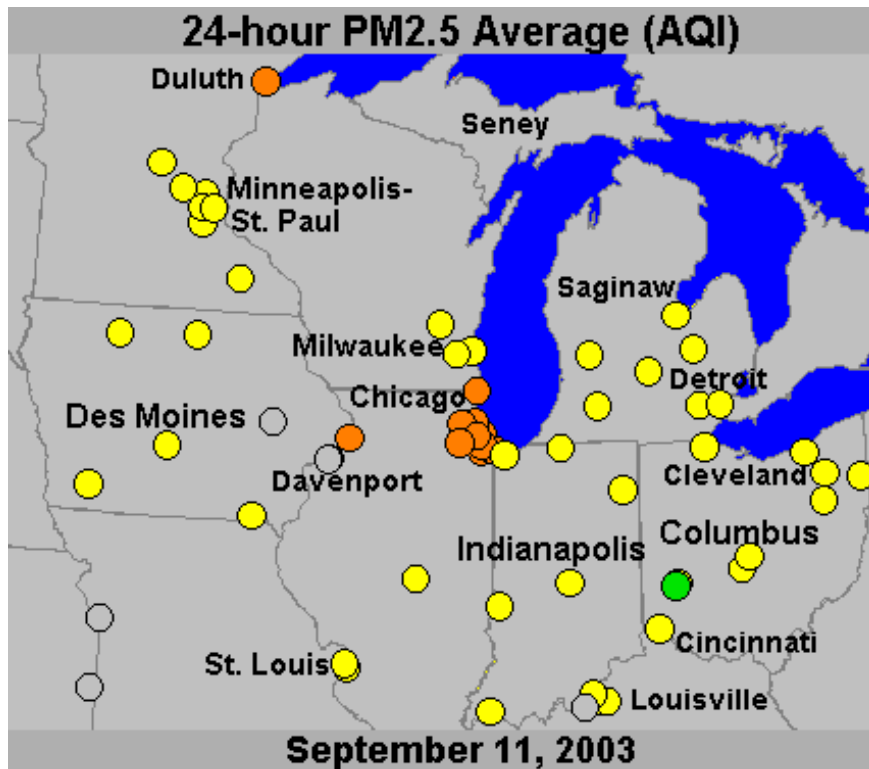


Reporting FRM-like PM_{2.5} Data in the Upper Midwest

Michael Koerber
October 17, 2003

PM_{2.5} Continuous Monitoring Sites

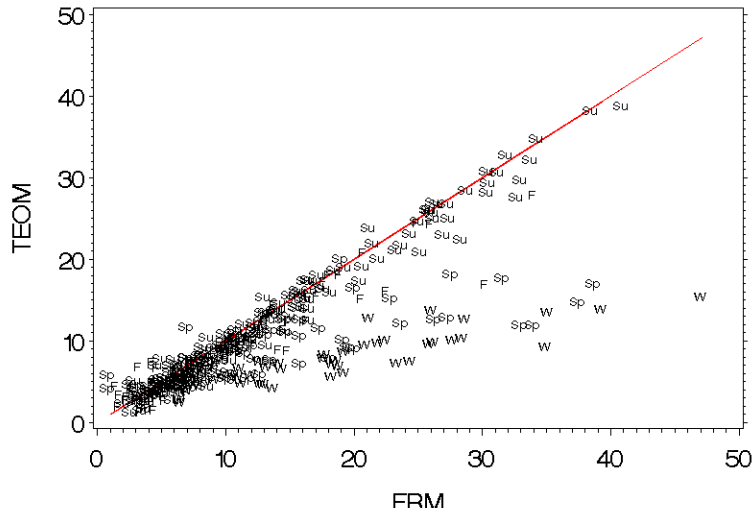


Issue

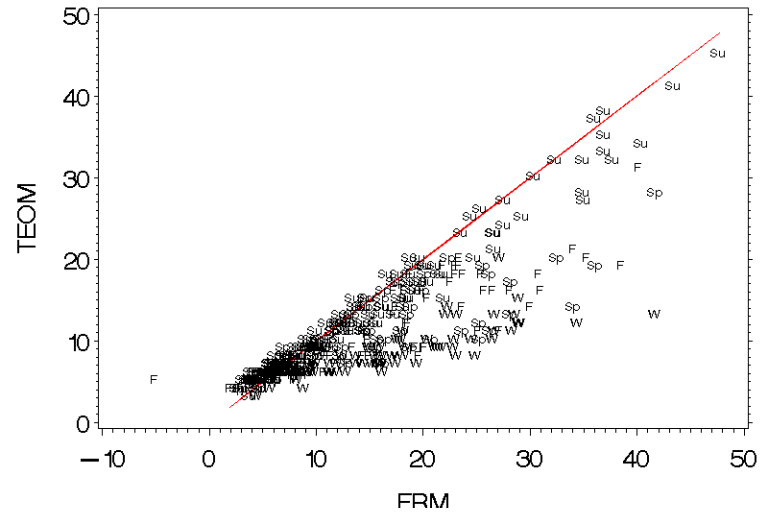
- TEOMs underestimate $PM_{2.5}$ mass (compared to FRMs) in winter (cooler temperatures)
 - Nitrate volatilization from TEOMs
- TEOMs w/FDMS agree closely with FRMs in winter
- TEOMs w/FDMS overestimate(?) $PM_{2.5}$ mass (compared to FRMs) in summer (warmer temperatures)
 - Volatilization from FRMs

TEOM v. FRM

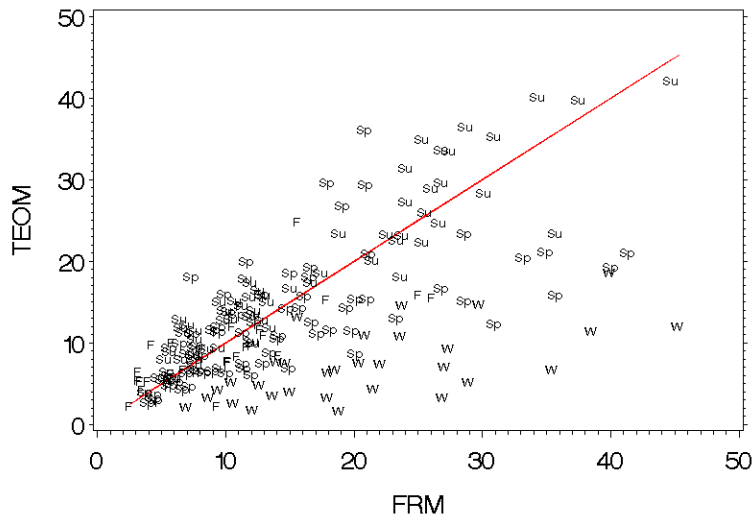
Seasonal Scatterplot, SERHQ



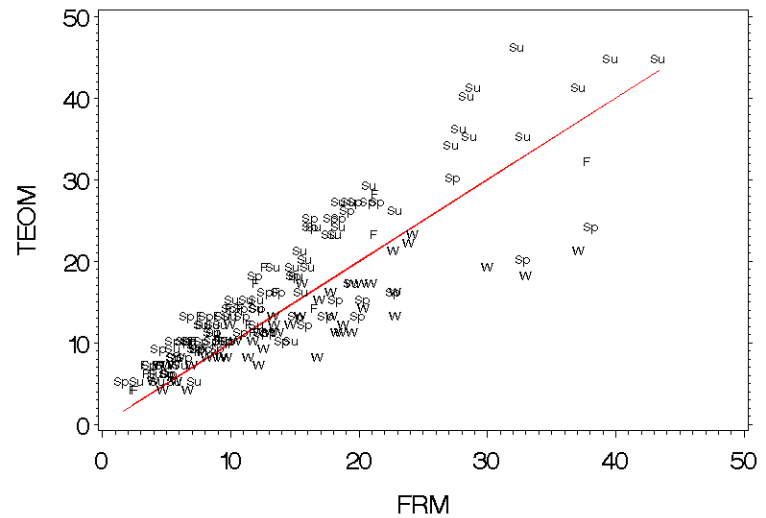
Seasonal Scatterplot, Grand Rapids



Seasonal Scatterplot, Waukesha



Seasonal Scatterplot, Lansing

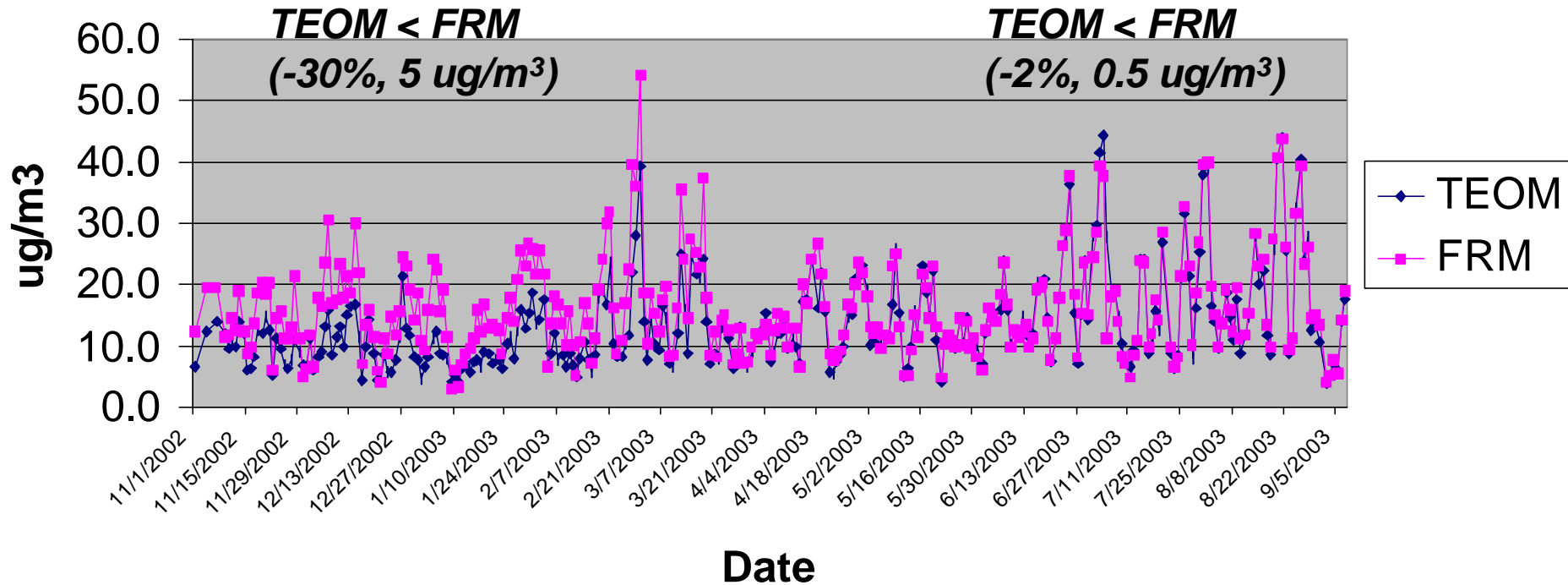


Indianapolis, Indiana



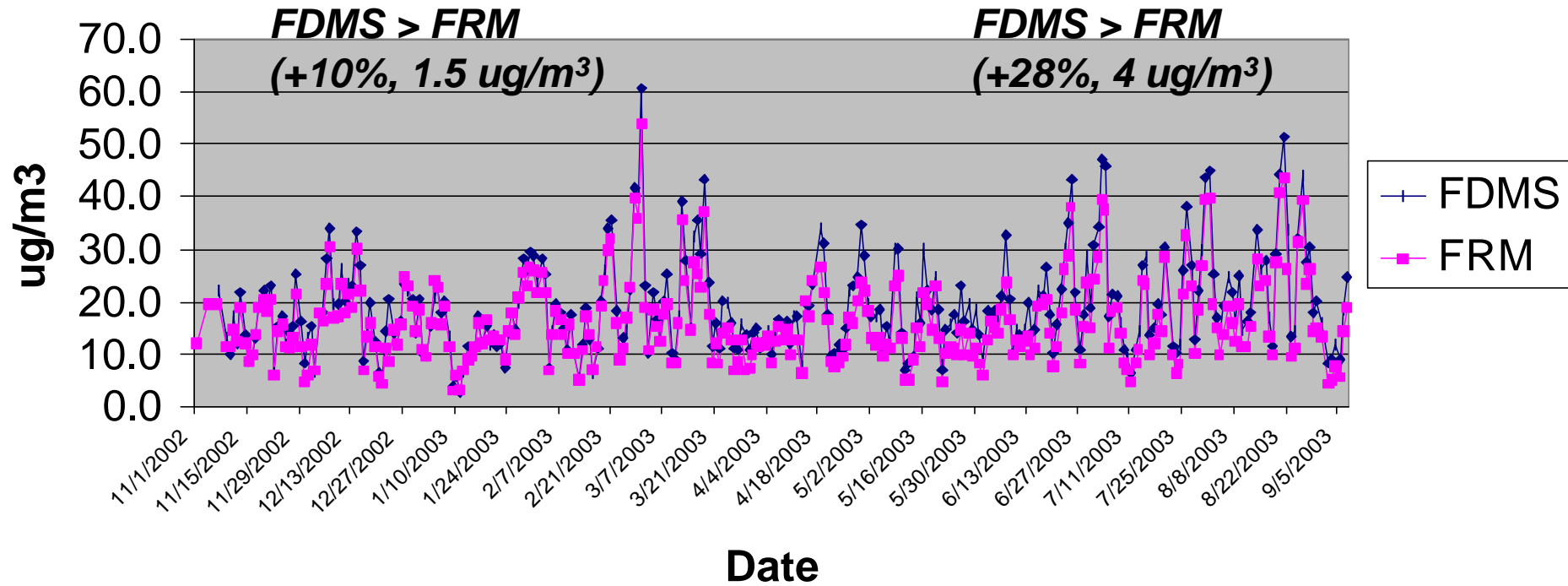
Indianapolis, Indiana

TEOM vs. FRM

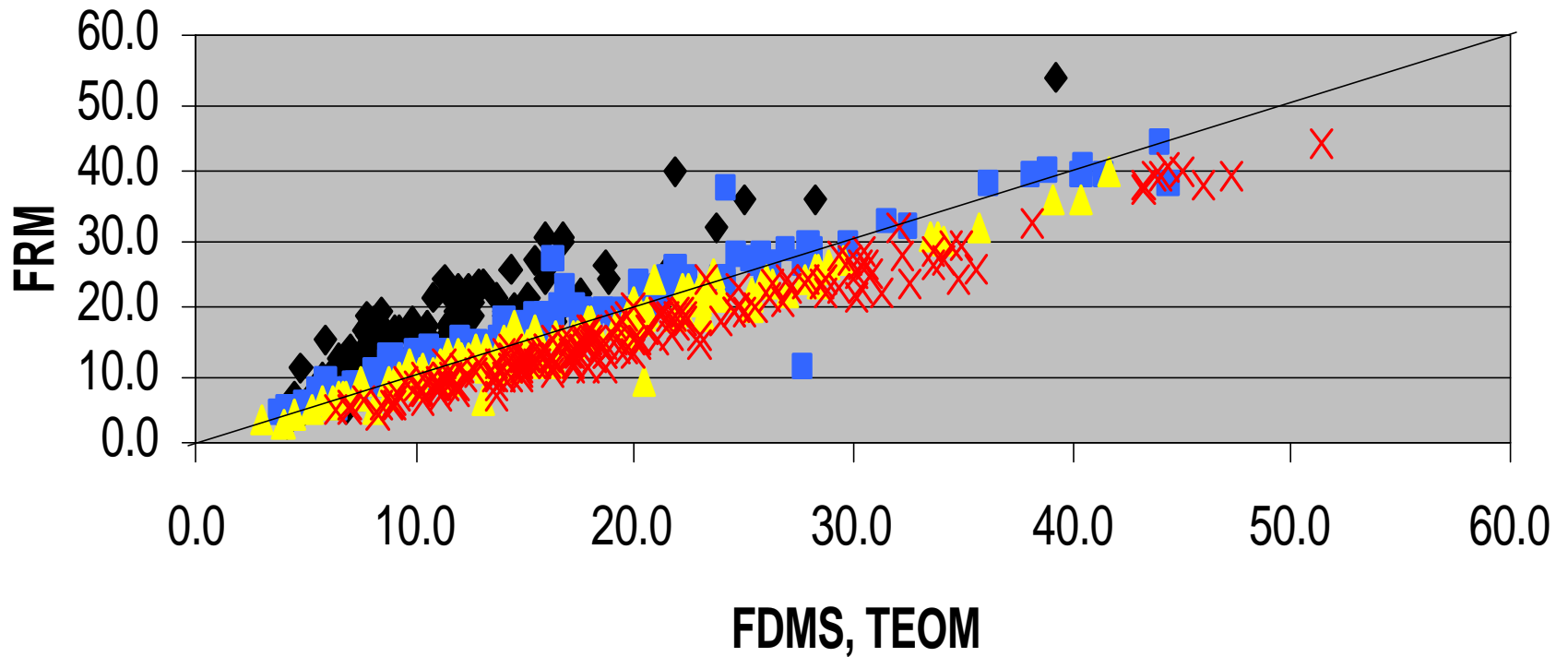


Indianapolis, Indiana

FDMS vs. FRM



Indianapolis, Indiana

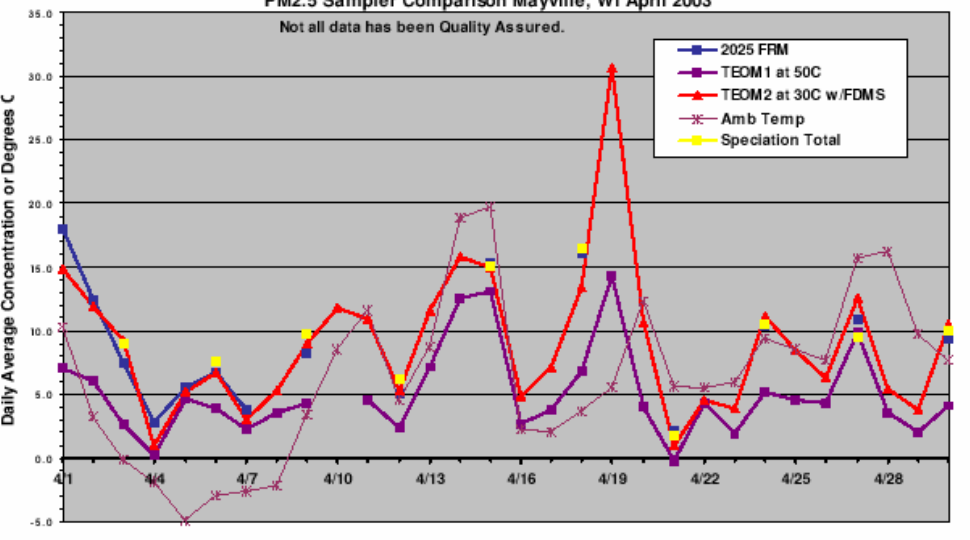


◆ TEOM-winter ■ TEOM-summer ▲ FDMS-winter × FDMS-summer

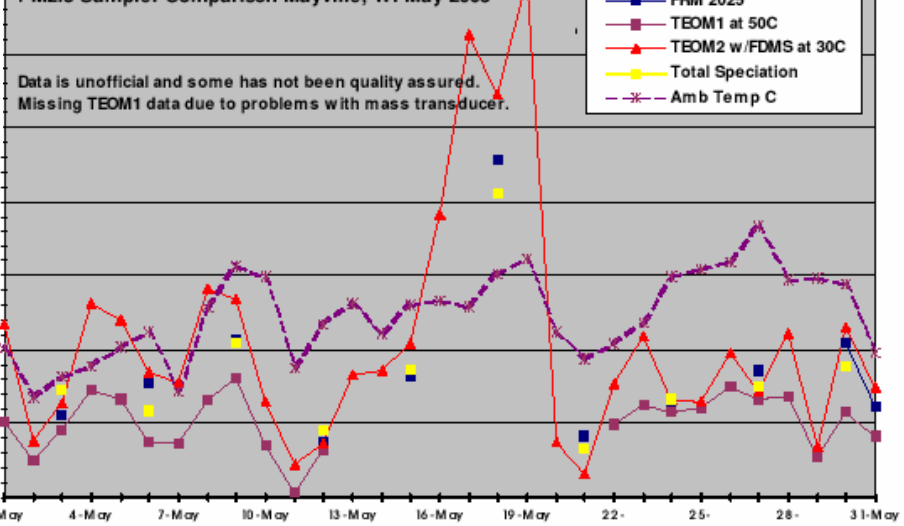
Mayville, Wisconsin



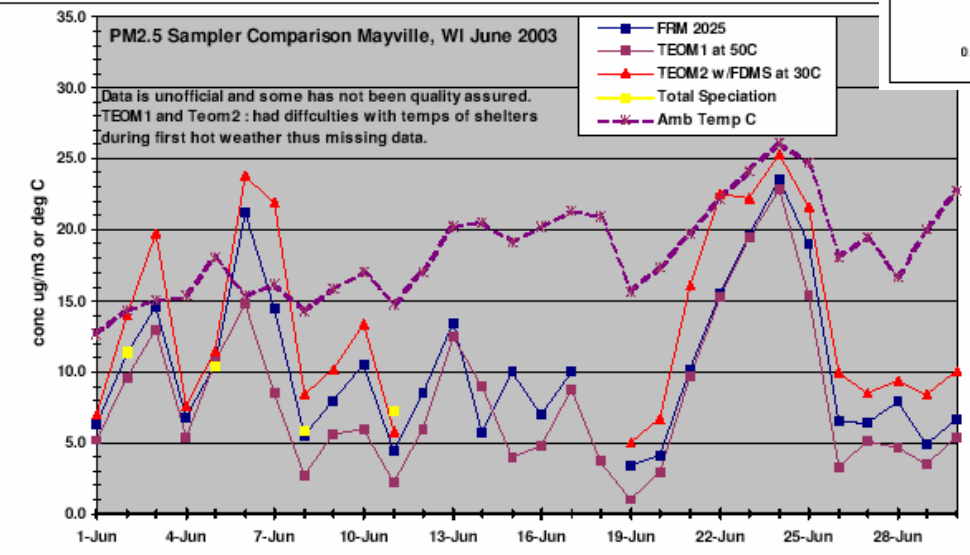
PM2.5 Sampler Comparison Mayville, WI April 2003



PM2.5 Sampler Comparison Mayville, WI May 2003



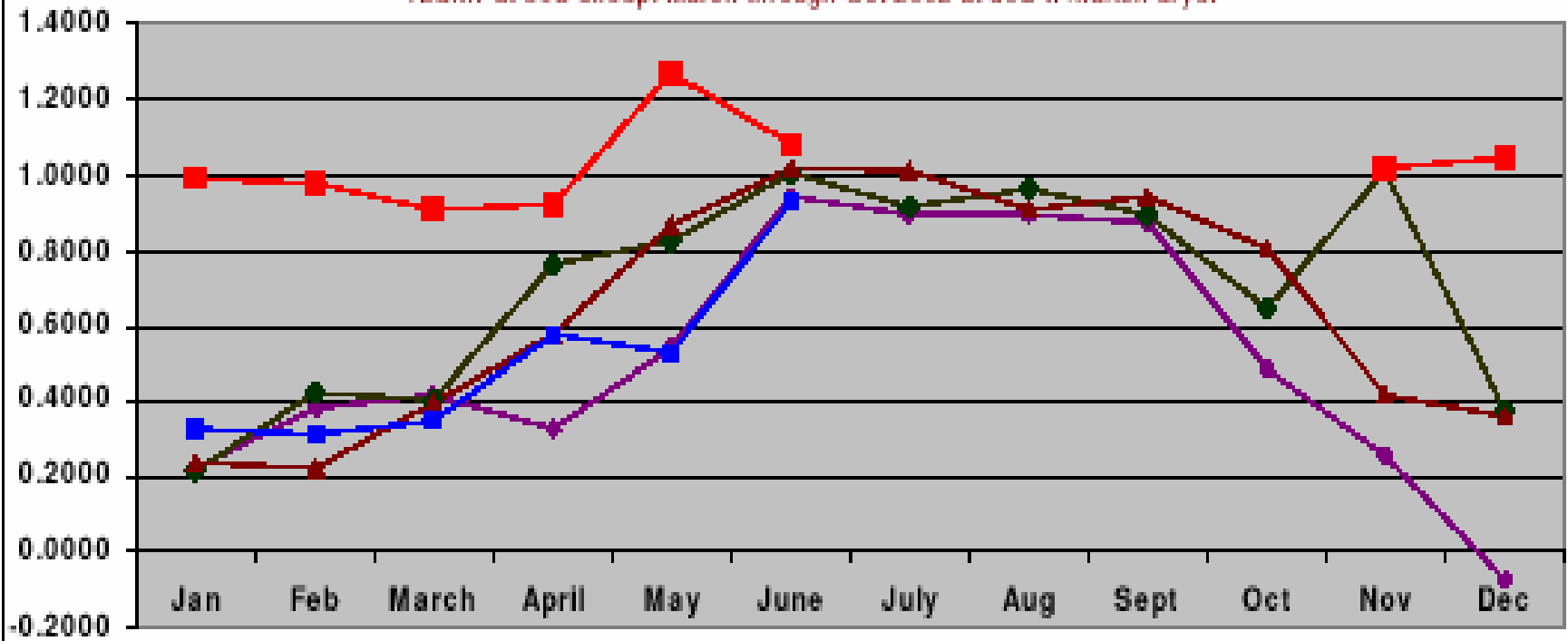
PM2.5 Sampler Comparison Mayville, WI June 2003



MAYVILLE SLOPE : FRM vs TEOM1 and FRM vs TEOM2

◆ 2000 ◆ 2001 ▲ 2002 ■ 2003 ■ TEOM2 w/FDMS

TEOM1 at 50C except March through Oct 2002 at 30C w inflation dryer

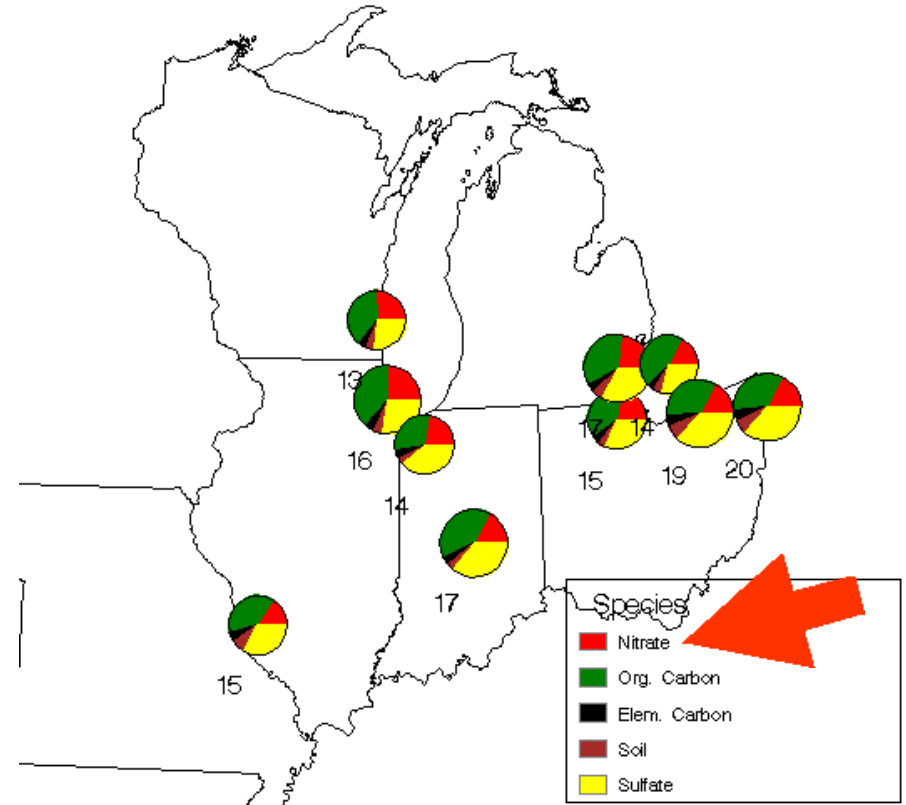
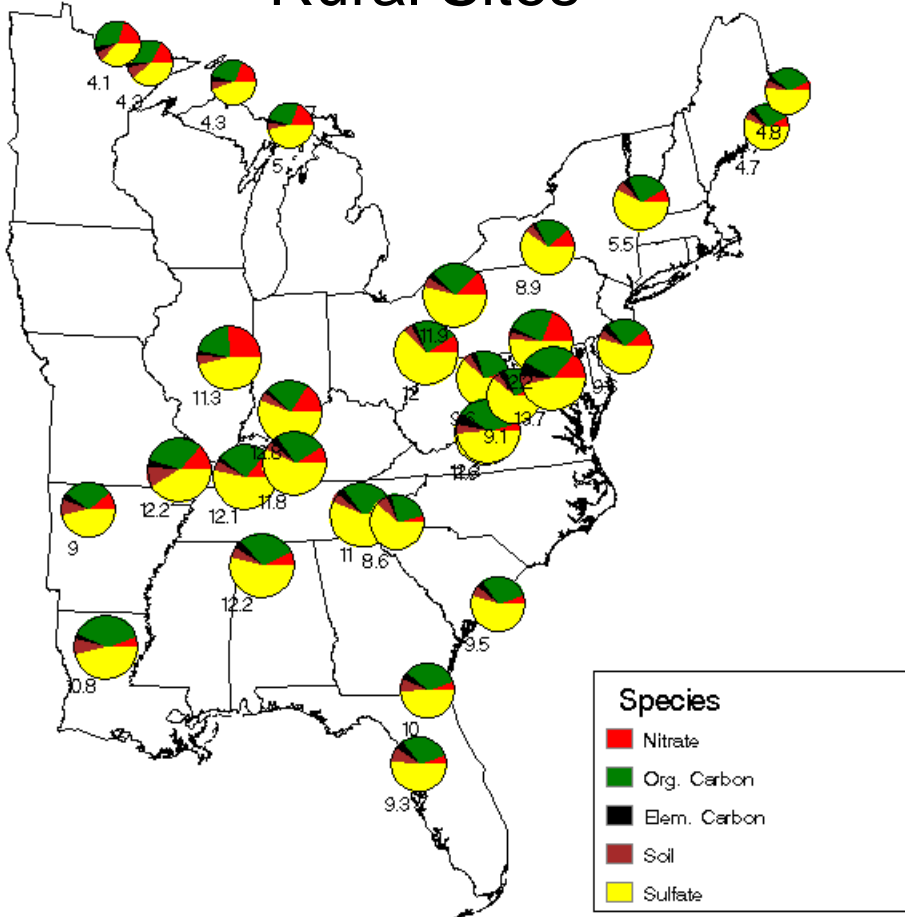


Question

- What should we do to provide FRM-like data (from TEOMs)?
 - FDMS
 - Not cheap
 - Good agreement during winter, *higher during summer*
 - Statistical adjustment equations (Rizzo and Scheff)
 - Not available for many sites

PM_{2.5} Chemical Composition

Rural Sites



Urban Sites