

# **Update on the Met One BAM: Cold, Warm, and Filter Media Issues**

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Cold Bam Concept: run a BAM as near to ambient Temp as possible  
To minimize volatilization of SVOC, Nitrate, etc.

NYC winter comparison with FDMS Team -- similar results

## Best Solution:

Replace or modify monitors that need substantial winter corrections  
“The best correction is no correction”™

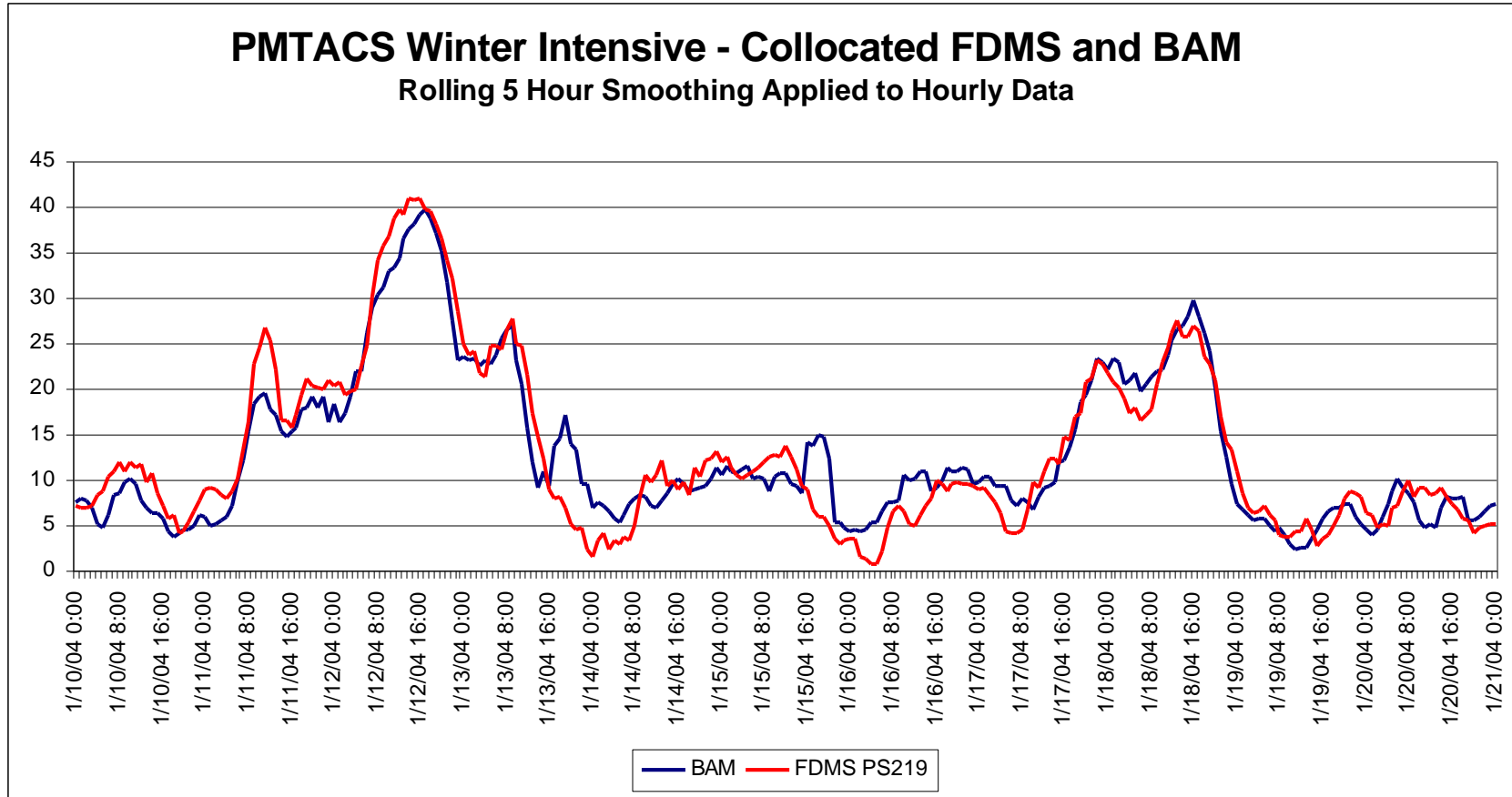
Current BAM technologies: noisier than TEOM for 1-hour mean  
BUT: AQI is 12-hour mean

BAM noise not an issue for AQI or daily mean measurements

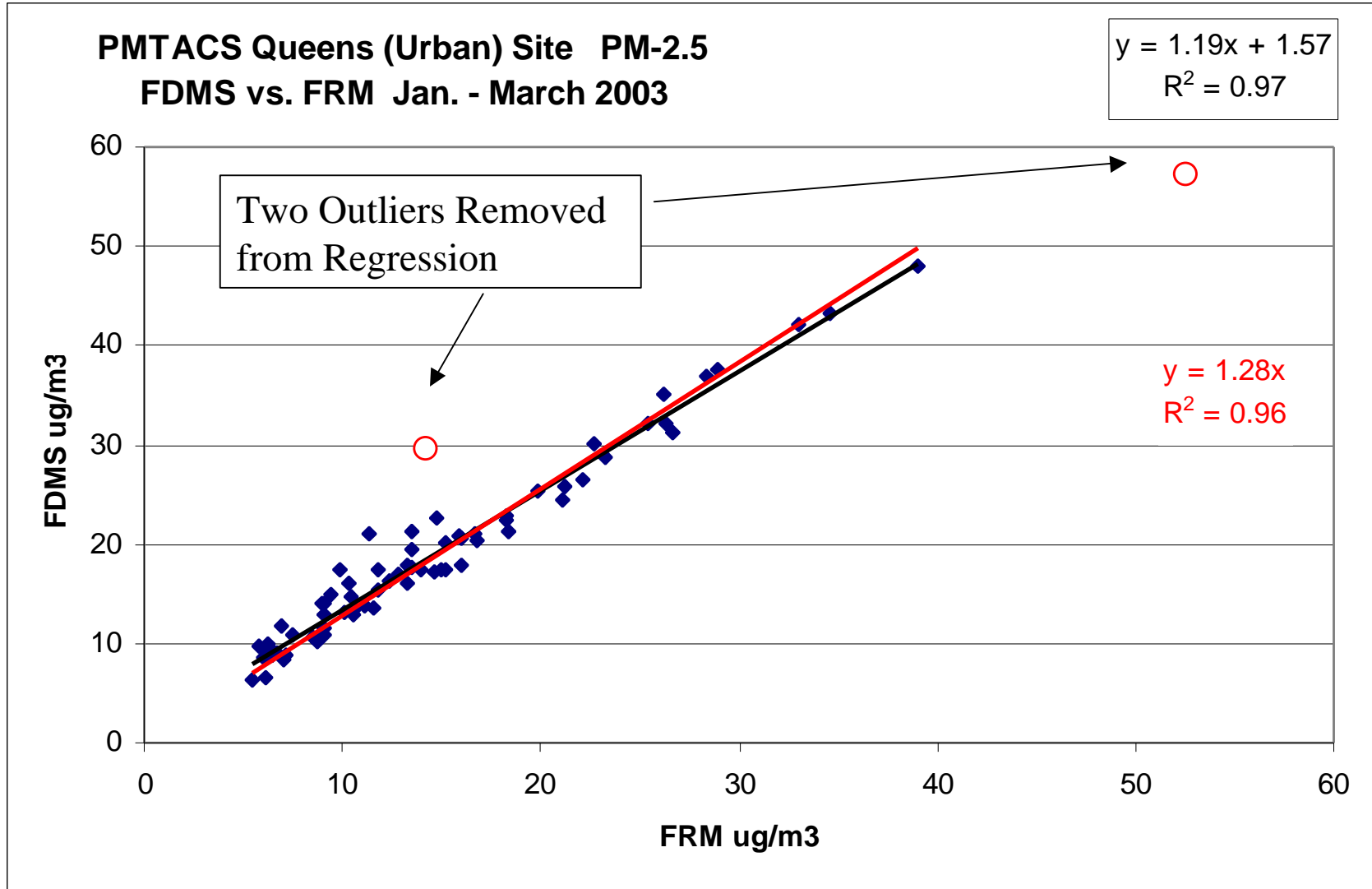
NYC winter “cold BAM”/ “fdms Teom” comparison @ PMTACS study:  
Shows good agreement between methods for 5-hour smoothed data  
BAM much simpler to run and 1/3 the price of FDMS Teom  
==> Concerns about summer FDMS Teom data being *high*

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Applying a Smoothing function: 5 hour centered on the hour makes the data more useful.  
Smoothed near real-time data is ideal for producing an AQI.  
Smoothed collocated precision: FDMS vs BAM ( $r^2$  is .8 - .9)



Removing two outliers reduced the offset and increased the slope.



Warm Met One BAM PM<sub>2.5</sub> seems to not lose semivolatile PM  
Does not have a significant seasonal factor relative to the FRM  
(Hanley's AIRNow comparison summary, other comparisons)  
WHY???

Filter Media: Glass Fiber, a basic material  
historically has potential for substantial acid gas artifact  
(SO<sub>2</sub>, HNO<sub>3</sub>, others)  
that's why we don't run glass fiber filters on HiVols...

But -- recent work by PA (George Mentzer) shows no artifact  
with moist SO<sub>2</sub> at 100 ppb  
Also ran pH on media - 7.8, not basic enough to be an issue  
(Concord Scientific Report from early 80's)  
Similar results on FDMS and Emfab media

WHY???

We don't know. Not a simple beta cal error!  
[Met One BAM seems to hold on to semi-volatile PM]

New BAM filter media will be available Summer 2004:

Teflon

Should improve the LOD by a factor of at least 2

Costs more than existing glass fiber media (3x?)

Met One BAM with Teflon media is a NEW method!  
can not assume same relationships with FRM

May benefit from being run cold!

MA DEP will evaluate at Roxbury (Boston) site this winter (04-05)  
collo BAMs and FRM