

**Comparison of Monitoring Data to  
Model Estimates at a DRR source in  
Shelby County, Alabama**

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ADEM has obtained the actual, quality-assured monitor data for the first six months of 2017 near a DRR source in Shelby County, AL. We assembled a met data set and ran the AERMOD model (v16216r) to provide data for a comparison of reality versus model. We did not add any background concentrations to the model results, which means that the model data is underestimated by a few  $\mu\text{g}/\text{m}^3$  for conservatism. The NAAQS for  $\text{SO}_2$  is  $196 \mu\text{g}/\text{m}^3$ , 4<sup>th</sup> high, averaged over three years. The number of hours available for comparison varies because of calibration downtimes at the monitor.

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Highest 1-hour concentration of the 4344 hours in the six months as predicted by the model: **1937**  $\mu\text{g}/\text{m}^3$

Highest 1-hour concentration as measured by the monitor: **113**  $\mu\text{g}/\text{m}^3$

Difference: Model overpredicts by a factor of **17x**.

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4<sup>th</sup> highest concentration from modeling: **1229**  $\mu\text{g}/\text{m}^3$

4<sup>th</sup> highest concentration from monitor: **58.9**  $\mu\text{g}/\text{m}^3$

Difference: Model overpredicts by a factor of **21x**.

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Average of all hours (4344) in the six month period as predicted by model: **28.38**  $\mu\text{g}/\text{m}^3$

Average of all hours (3811) as measured by the monitor: **0.98**  $\mu\text{g}/\text{m}^3$

Model overpredicts by a factor of **29x**.

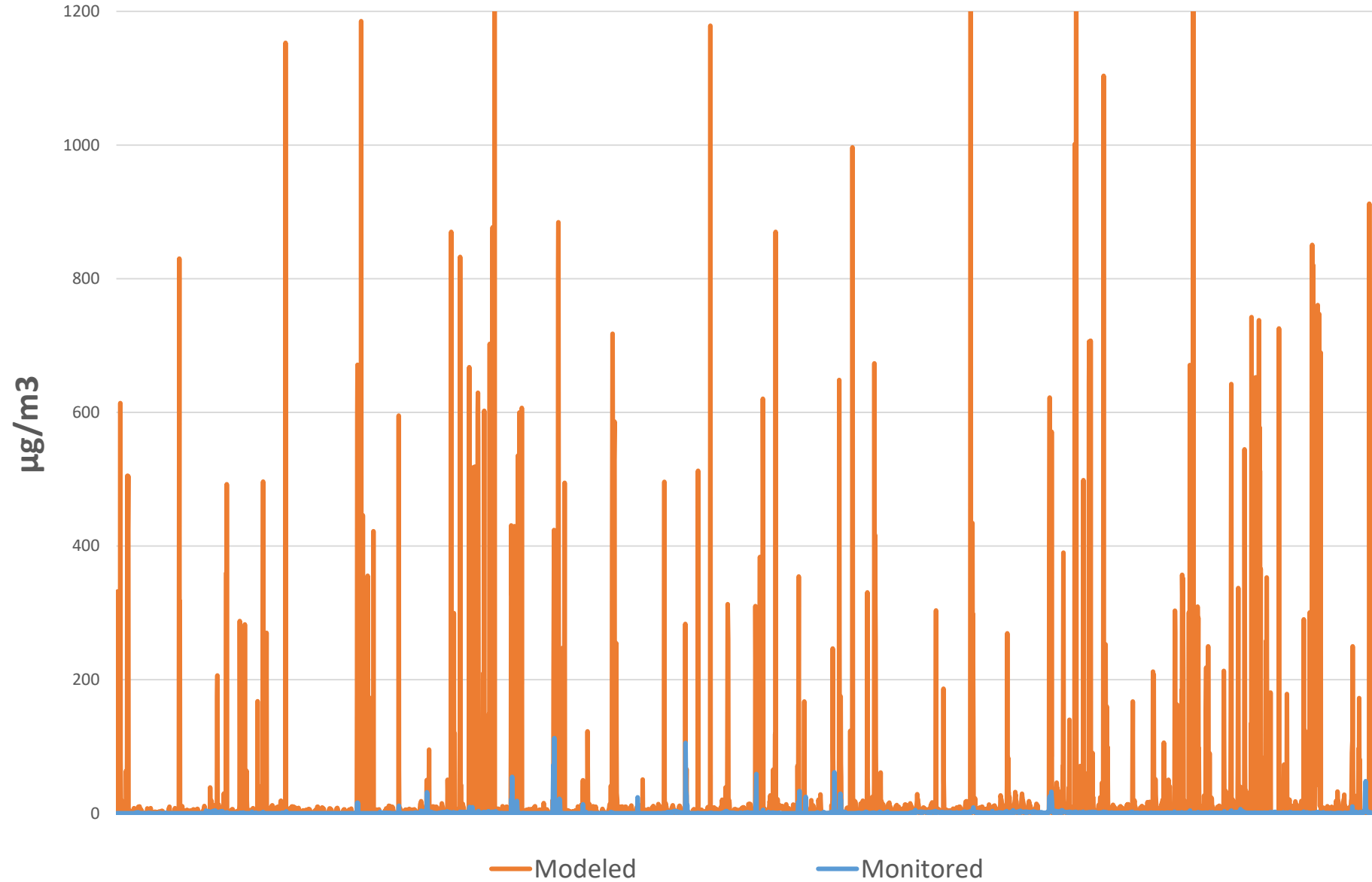
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Out of 3811 hours, the number of hours the model overpredicts versus monitoring: **2695**, or **70.7%**

Out of 3811 hours, the number of hours the model underpredicts versus monitoring: **863**, or **22.6 %**

# Model vs Monitor Concentrations January- June 2017



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The reason that a monitor is installed and operating near this source is that the full 3-year model predicted a NAAQS violation. The above data show that an actual violation is unlikely, and that the model tends to be very conservative.