Results: Linear regressions and PDFs

Results (cont.) and Discussion

Conclusions

Key Results:
- While both racks were on the different inlets, all variables agree very well.
- For the time that the racks were on the same inlet, large discrepancies exist. This includes smaller values for scattering/absorption coefficients and sub-micron scattering fraction for both size cuts on the GMD rack.
- The linear regression for the scattering coefficient of the different inlet arrangement has values within ~1-4% of the 1/1 line, while the same inlet setup varies as much as ~40%.
- The PDFs of the Ångstrom exponent for PM1 vary considerably.

To summarize, while there is very good agreement between the instruments when the SPL and GMD racks were on different inlets for both size cuts, the same inlet configuration only agrees well while on the PM10 size cut.

While there are a handful of hypotheses that exist that could explain the behavior we see, there are only two that we cannot reject:

1. Particle bounce occurring inside the impactor for the SPL rack while on the same inlet.
2. The GMD impactor box being improperly assembled.

The particle bounce hypothesis is more likely to occur than the particle bounce occurring inside the impactor for the SPL rack while on the same inlet, since it was shown that the improper assembly of the impactor box had not been cleaned in many months in 2013.