We would like to again thank Dr. Boone for his close reading of the manuscript and valuable feedback. Our responses are provided below (blue) to the reviewer's comments (black).

Line 330: time -> times
Corrected

Line 363: "product of resonances in the Mie scattering"
I felt it could be specified that the resonances visible in the figure were for r_2 = lambda and 2*lambda
The requested detail was added to the text.

Looking at r_m in Table 9, the percent difference in P_50 tells us that the median value determined for mode radius is larger when using cond0 (by about 28% in the NH and 15% in the SH). Using cond0 appears to dramatically overestimate r_m for small particles (P_10, the radius for which 10% of the measured values are smaller, is about a factor of three larger for cond0). Does the value of P_90 (the radius for which 90% of the measurements were smaller) indicate a low bias for the largest aerosol radii when using cond0 (the value of P_90 for r_m is 21% higher in the NH and 24% higher in the SH when using cond0)? The text suggests there is "good" agreement for larger particles, so that equates to agreement within 25% is deemed to be good agreement? I'm not saying it isn't, just pondering the implications.

This comment, as I read it, takes into question what qualifies as "good" agreement. Historically, aerosol comparisons that fall within ±25% have been categorized as "good" agreement. Personally, I find this level of agreement to be wanting, but I also recognize the difficulties in doing aerosol comparison. That said, these "historical" comparisons were done with differing instruments and differing sampling volumes whereas here we have the *exact same data* so it is not unreasonable to expect very similar results. However, one must realize the limited information content we are working with when using cond0, which results in a under-constrained problem, which leads the differences shown in Table 9. I would argue that further evaluation of the cond0 performance may be warranted in order to better define the applicability of this algorithm to SAGE II data under non-elevated conditions. What this table demonstrates is the same conclusion drawn by Thomason et al. 2008: this type of algorithm tends to work well under elevated aerosol load but struggles under background conditions. Finally, Dr. Boone's interpretation of the table is correct, that there is an apparent low bias in cond0 when particles are large.