S1 SPEX airborne and SPEXone: additional comparisons

In the main body we directly compare the SPEX airborne and SPEXone retrievals for a number of aerosol properties. Although we believe the results shown effectively communicate the degree of agreement between these two instruments, a more exhaustive look may be of interest to some. As such, we provide a number of additional comparisons (produced in the same way as the main body figures) in this supplement.

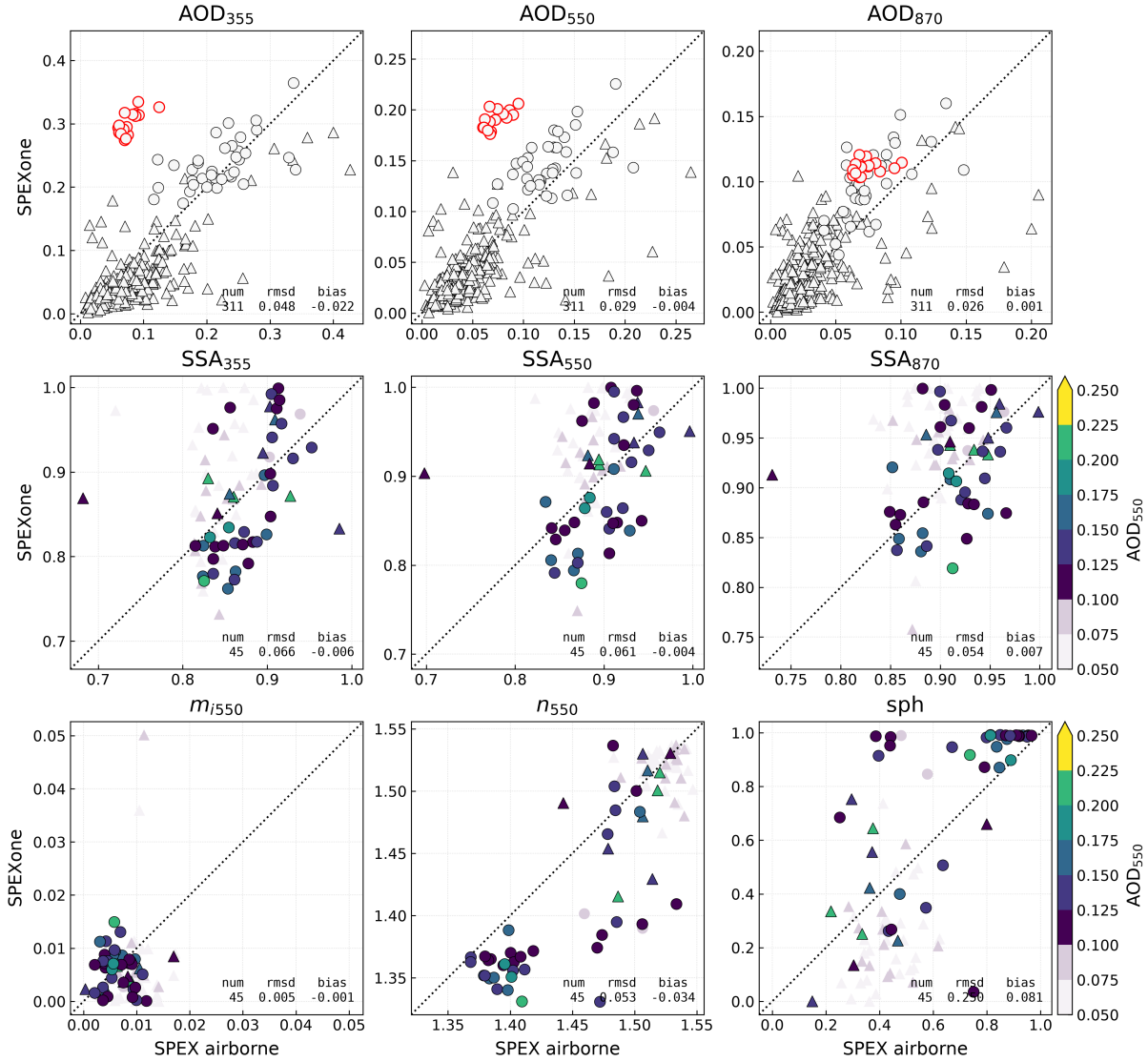


Figure S1: Comparisons between SPEXone and SPEX airborne for properties beyond the scope of the main body. The top row shows the AOD at 355, 550, and 870 nm respectively, with the collocations on September 30 marked in red, as outlined in the main body. It is worth noting that 355 nm and 870 nm fall outside of the spectral range of the instruments, and that the corresponding data are therefore extrapolated. These points are excluded from the remainder of the comparisons, and ignored for the RMSD and bias calculations. The second row shows the SSA at the same three wavelengths, and the third row shows the imaginary and real parts of the refractive index (m_i and n respectively) at 550 nm, and the spherical fraction. Triangles and circles denote retrievals over land and ocean respectively, and points are coloured by the mean AOD between SPEXone and SPEX airborne. Collocations with $\mathrm{AOD}_{550} < 0.1$ are shown in lighter colours, but are nominally excluded from analysis.

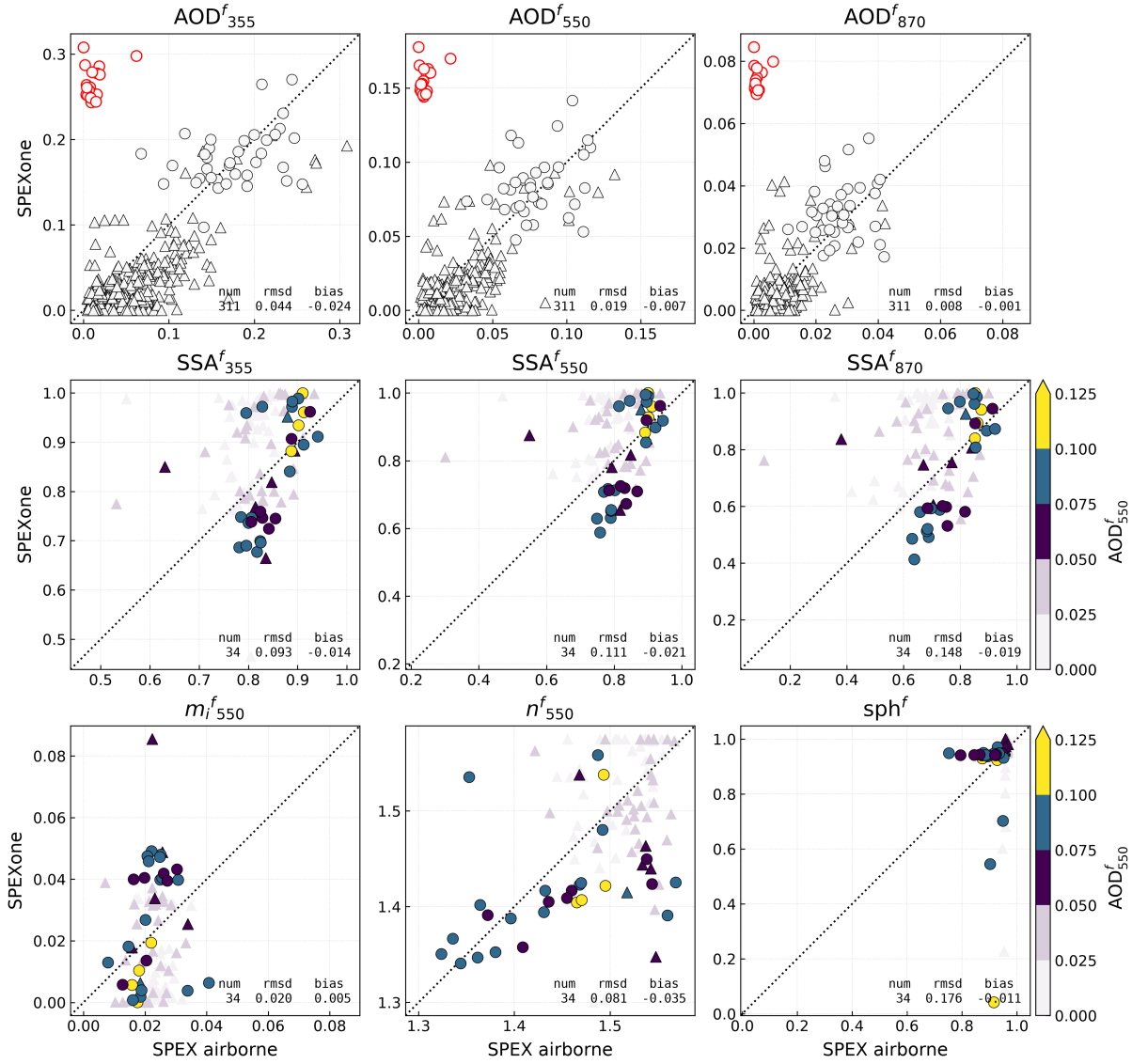


Figure S2: Same as fig. S1, but only for the fine mode. These are filtered by a minimum fine mode AOD of 0.05 and a fine mode AOD fraction greater than 0.5, as in the main body.

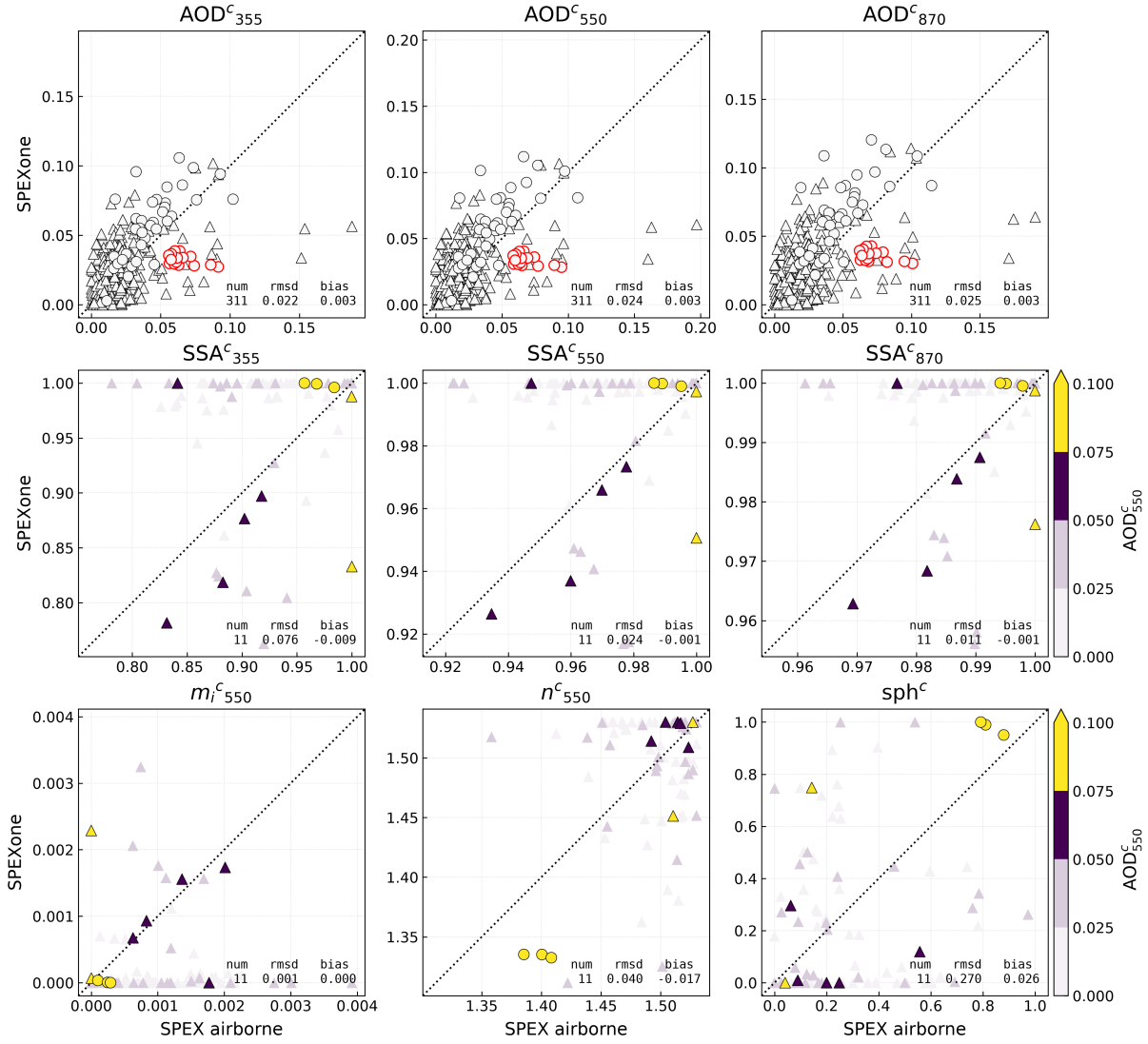


Figure S3: Same as fig. S1, but only for the coarse mode. These are filtered by a minimum coarse mode AOD of 0.05 and a fine mode AOD fraction below 0.5.

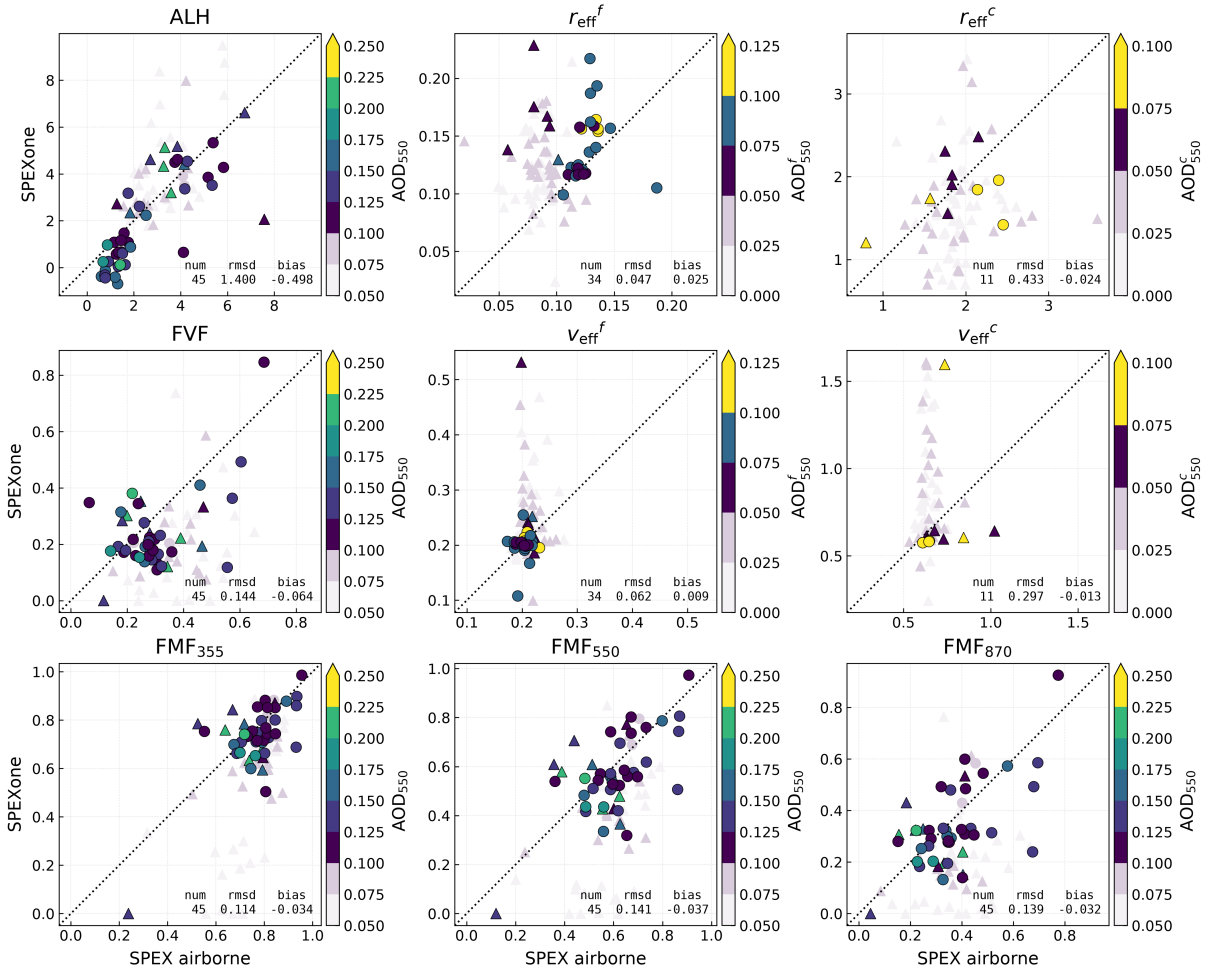


Figure S4: Comparisons between SPEXone and SPEX airborne for properties beyond the scope of the main body. From left to right, the top row shows the aerosol layer height (ALH) in km, and the fine and coarse mode effective radius (r^f_{eff} and r^c_{eff}) in micron. The second row shows the fine mode volume fraction (FVF), followed by the fine and coarse mode effective variance (v^f_{eff} and v^c_{eff}). The bottom row shows the fine mode AOD fraction (FMF) at 355, 550, and 870 nm. As before, shapes denote the surface type, circles meaning ocean and triangles land. The colours denote the SPEXone/SPEX airborne mean AOD in the respective mode (fine/coarse/total), and points within 0.05 of the minimum AOD are included in lighter shades.