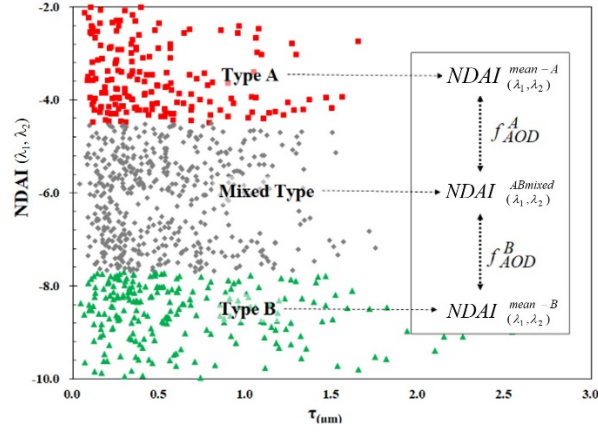**Supplementary Materials:**

Figure S1. Schematic of AOD fractions (*f*AOD) for dual–type aerosols (type A and B) based on NDAI values which defined by the normalized 1st–order derivative of spectral AOD in this study.
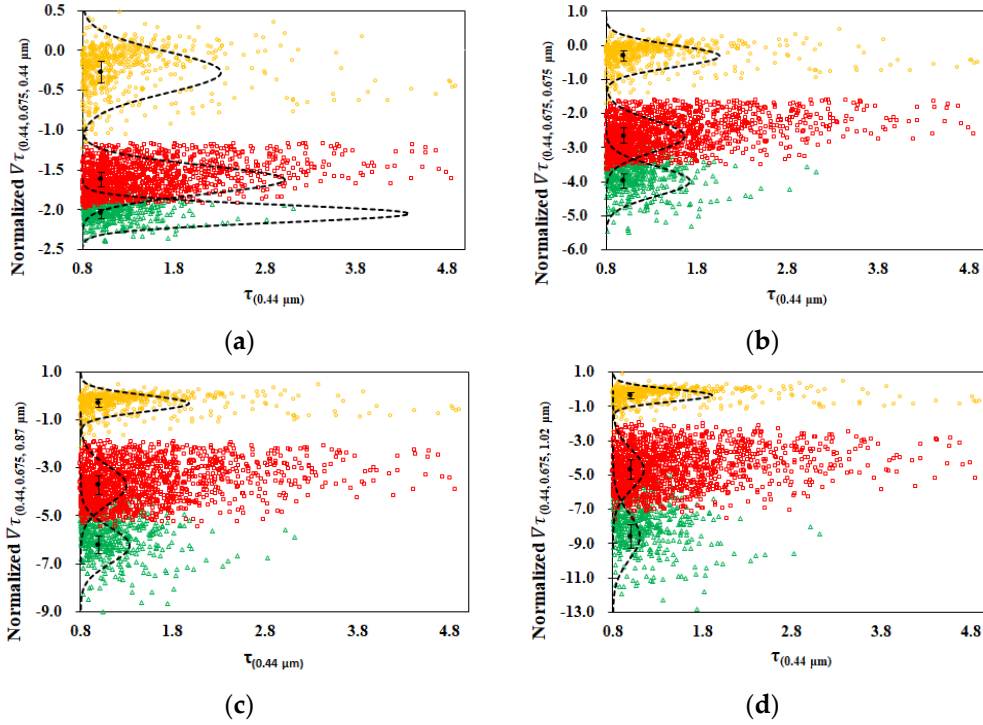

Figure S2. The 1st–order derivative of spectral AOD ($\nabla\tau$) between 0.44 μm and 0.675 μm, using normalization reference of (**a**) $AOD_{0.44\mu m}$, (**b**) $AOD_{0.675\mu m}$, (**c**) $AOD_{0.87\mu m}$ and (**d**) $AOD_{1.02\mu m}$ for DS (yellow), BB (green) and AP (red) aerosols against $AOD_{0.44\mu m}$. Based on the control dataset of AERONET measurements, the dashed lines indicate mappings with normal distribution and black dot for mean values.