

Supplementary

Table S1. Typical aerosol model (WS: Water-soluble, BB: Biomass burning, DU: Dust) parameters and relative humidity.

| Type | r_1 | r_2 | σ_1 | σ_2 | C_1/C_2 | n_f | $k_{f,440}$ | k_f | n_c | $k_{c,440}$ | k_c | RH |
|-----------|-------|-------|------------|------------|-----------|-------|-------------|--------|-------|-------------|-------|------|
| WS | 0.118 | 1.17 | 0.6 | 0.6 | 2 | 1.45 | 0.0035 | 0.0035 | 1.53 | 0.008 | 0.008 | 70% |
| BB | 0.132 | 4.50 | 0.4 | 0.6 | 4 | 1.52 | 0.025 | 0.025 | 1.53 | 0.008 | 0.008 | 55% |
| DU | 0.100 | 3.40 | 0.6 | 0.8 | 0.066 | 1.53 | 0.008 | 0.008 | 1.53 | 0.008 | 0.008 | 35% |

Table S2. Typical uncertainties ($\pm\Delta$) on the estimated complex refractive indices of fine and coarse modes and relative humidity.

| Type | Δn_f | $\Delta k_{f,440}$ | Δk_f | Δn_c | $\Delta k_{c,440}$ | Δk_c | ΔRH |
|------|--------------|--------------------|--------------|--------------|--------------------|--------------|-------------|
| WS | 0.0197 | 0.0015 | 0.0004 | 0.0667 | 0.0036 | 0.0029 | 10% |
| BB | 0.0270 | 0.0039 | 0.0030 | 0.0500 | 0.0016 | 0.0016 | 10% |
| DU | 0.0780 | 0.0036 | 0.0040 | 0.0447 | 0.0016 | 0.0036 | 10% |