

Aerosol Physical and Optical properties using Aerodynamic Particle Sizer and Skyradiometer at Seoul in 2013~2014

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Physical and optical characteristics under four types aerosol distribution in Seoul was investigated using the Aerodynamic Particle Sizer(APS) and Skyradiometer . Four types classified by distinct difference of the high volume concentration ($> 100 \mu\text{m}^3\text{cm}^{-3}$). The volume size distribution for each event day was classified into four types: (1) Type1 had the high volume concentration for supermicron particles from 2.3 to 6.0 μm . (2) Type 2 represented the high volume concentration in the both size range of submicron (0.7 – 1.0 μm) and supermicron particles (2.1 – 4.1 μm). (3) Type 3 showed the high volume concentration in the size range of 0.5 – 3.5 μm . (4) Type 4 was characterized by the high volume concentration for the fine particles less than 1.2 μm (Fig 1)(Lee et al., 2007). Information of types are shown in Table 1.

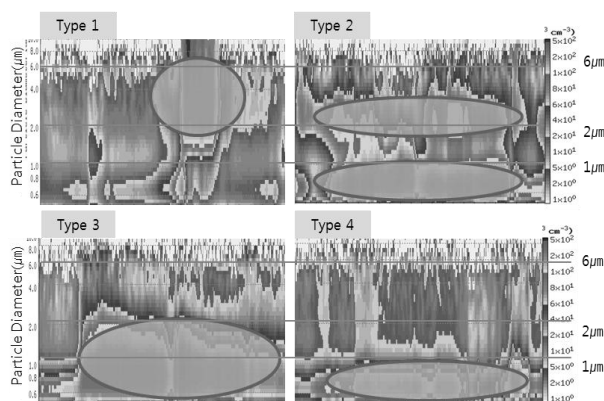


Figure 1. Volume size distribution of types

Table 1 Information of types.

Month	Measured density ($\mu\text{g}/\text{m}^3$)
Type 1	2014. 3. 18.-19 / 2014. 5. 26.-29, 2014. 11. 12.-13
Type 2	2013. 3. 7.-. 9 / 2014. 12. 29.-30
Type 3	2013. 1. 12.-16 / 2013. 1. 24, 2014. 3. 28 / 2014. 4. 15.-17, 2014. 7. 2,
Type 4	2013. 5. 22.-24 / 2014. 1. 21-22, 2014. 2. 21.-3. 1/ 2014. 4. 23.-24

Aerosol Optical Depth(AOD) is high in the order Type3, Type 4, Type 2 and Type 1. And Angstrom Exponent(AE) is high in the order Type4, Type2, Type3 and Type 4. Type 1 is clear distinction in coarse mode and type4 is fine mode. Aerosol size distribution

of four types was similar AOD and AE result. Single Scattering Albedo(SSA) of Type1 is the highest and type2 is the lowest. Type 2 is the most dominant form in both fine mode and coarse mode. The reason that the lowest SSA might be due to Absorption anthropogenic aerosol.

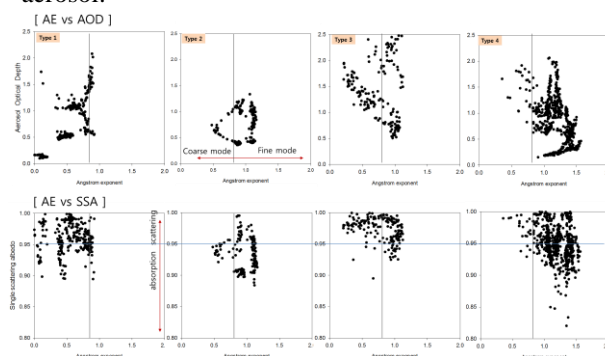


Figure 2. Scattering plots of the AOD versus AE(up) and AE versus SSA(down)

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References

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