The Pysio-Chemical and Number Concentration Characteristics of Aerosol at the Ieodo Ocean Research Station in Korea

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To investigate the physio-chemical components and fluctuations of aerosol number concentration with different size in the boundary layer of marine area during summer season, aerosol particles were sampled at the Ieodo Ocean Research Station, which is located 419 km southwest of Marado, the southermost island of Korea from 24 June to 4 July, 2008. The aerosol shapes, sizes, and chemical components were analyzed by a SEM (Scanning Electron Microscope) and an EDX (Energy Dispersive X-ray). The Laser Particle Counter (LPC) which can count the size ranges of 0.3~0.5, 0.5~1, 1~3, 3~5, 5~10 ㎛ in the diameter was used to know aerosol particles size distribution. NCEP/NCAR data and sounding data were used to analyze the synoptic condition. As a result, Si, Al, Mg, K elements were shown at high frequencies as compared with others during whole period whereas, Fe, Ca, Cl components were especially shown at high frequencies during precipitation. The distribution of aerosol number concentration has a large variation at bigger particles than 3 ㎛ in diameter during precipitation. Smaller particles than 1 ㎛ in diameter had large variation with wind direction. An increase (decrease) of small aerosol (0.3~0.5 ㎛ in diameter) number concentration was caused by convergence (divergence) of the wind fields. It is considered that the larger particles would be more efficient for scavenging at marine boundary layer and the divergence of wind fields could be related with the occurrence and increasing mechanism of aerosol in marine boundary layer.

Keywords : Aerosol number concentration, Laser particle counter, Wind fields, Marine boundary layer, Ieodo Ocean Research Station

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