

Number concentration of desert aerosols in the south of the Taklimakan Desert, China

MASAO MIKAMI¹, TERUO AOKI¹, MASAHIDE ISHIZUKA², YUTAKA YAMADA³, SADAYO YABUKI³, WEIDONG GAO⁴ and FANJIANG ZENG⁴

¹Meteorological Research Institute ²Wakayama University ³RIKEN ⁴Xinjiang Institute of Ecology and Geography, CAS

Observation of number concentration of aerosol particles in the south of the Taklimakan Desert, China, was conducted using optical particle counter (OPC). Observations were made in the edge of the small oasis Qira, which is located in the southern Tarim Basin, during the springtime in 2002, 2003, and 2004. For the comparison of regional changes, observation at gobi desert, which is 13.7 km southeast of the oasis site, was also conducted in July 2002. It was found that the number concentration of aerosol particles, especially in the coarse particles, showed significant increases after the duststorm. Averaged number concentrations of aerosol particles in April 2002, March 2003, and March to April 2004 indicate that 1) a local maximum number concentration at 2 to 3 µm diameter is commonly found and 2) the coarse particle larger than 5 µm diameter is dominant in the each volume size distribution. However, annual variation of number concentrations during springtime is large. This is because the emission of dust particle of each year strongly depending on the magnitude and the number of duststorm event. The time variations of number concentration of aerosol particles at the oasis site and the gobi site showed a good coincidence with those of coarse particles larger than 1 µm diameter. It is suggested that these variations are not controlled by the local circulation induced by the oasis effect but by the diurnal circulation between the Kunlun Mountains and the Tarim Basin.