



Characteristics of trace gases and aerosols at top of urban canopy layer in Nanjing of China from one year observational study

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To understand the physical and chemical processes of air pollution formation in urban and their linkage with climate change in Yangtze River Delta(YRD), the fast developing area in China, a monitoring site was built on the top of a high building in the center of Nanjing. The site was set up to investigate the long term variations of trace gases and aerosols, which may play important roles in air pollution and climate change in regional scale. From one year measurement records, the annual average concentrations of ozone, sulfur dioxide, carbon monoxide, carbon dioxide, nitric oxide, total reactive nitrogen, water vapor are reported as 161.9 ± 19.4 ppb, 93.8 ± 8.9 ppb, 3856.7 ± 412.1 ppb, 565.1 ± 20.0 ppm, 173.6 ± 15.6 ppb, 230.8 ± 24.9 ppb, $34.76 \pm 7.2 \times 10^{-3}$, respectively. PM₁₀, PM_{2.5}, visibility, black carbon, back scattering of particles(BSP), single scattering albedo(SSA), aerosol optical depth(AOD) and Angstrom wavelength exponent (AWE) are 115 ± 113.1 $\mu\text{g}/\text{m}^3$, 54 ± 46.1 $\mu\text{g}/\text{m}^3$, 9780 ± 5594 m, 3055.9 ± 2102.3 ng/m^3 , 66.3 ± 97.5 Mm^{-1} , 0.5 ± 2.4 , 0.7 ± 0.38 and 1.22 ± 0.28 , respectively. Measurement show that the levels of air pollutants in YRD in East China are high compared to Pearl River Delta(PRD) in South China and Jing-Jin-Ji (JJJ) in North China, suggesting a possible stronger effect on atmospheric environment, climate change and human health in this region, which should be further addressed in the future study.