

Aircraft measurements of Aerosols, CCN, and Cloud Droplet over the Beijing region during 2006-2012

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Abstract

The Beijing region is located in the North China Plain (NCP), and is one of the most polluted regions in the world, with extremely high maximum of aerosol concentrations. The high aerosol concentrations have important effects on cloud formation, precipitation, climate, and atmospheric chemistry. In the last 6 years (2006-2012), in-situ aircraft measurement was carried out by Beijing Meteorological Bureau over this region. The measurements include cloud droplets, aerosol particles (size distribution and composition), cloud condensation nuclei (CCN), and some trace gases. The instruments in the aircraft including Passive Cavity Aerosol Spectrometer Probe (PCASP-200, DMT), Cloud, Aerosol and Precipitation Spectrometer(CAPS, DMT), CCN counter (DMT), Aerosol Mass Spectrometers (Aerodyne), Scanning Mobility Particle Sizer Spectrometer (TSI), Single Particle Soot Photometer (SP2) (DMT). The instruments for trace gases and meteorological parameters are also amounted in the aircraft.

This talk will focus on: 1) Vertical profile of aerosols over North China; 2) Variation of aerosol composition with altitude; 3) CCN activation of aerosols and the influence of particles size and composition; 4) Effect of aerosols on cloud and fog; and, 5) Effect of heavy aerosols loading on atmospheric chemistry over North China.