

## ON THE DISTRIBUTION OF AEROSOL OVER THE GREATER ATHENS AREA

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### EXTENDED ABSTRACT

In this study an attempt is made to study the aerosol number and volume size distribution at different heights over the Greater Athens area (GAA) under calm conditions and clear sky and to further discuss possible implications for aerosol formation and chemistry.

The data used are airborne measurements being collected during two flights of a research aircraft Falcon 20-E5 that were performed within the context of the STAAARTE experimental campaign in 13 June 1997. The research aircraft was equipped with: a) two light scattering probes under the aircraft wings, the Passive Cavity Aerosol Spectrometer Probe (PCASP) that provides measurements of particle size between 0.1 and 3  $\mu\text{m}$  in 15 unequally spaced channels and the Forward Scattering Spectrometer Probe (FSSP) providing four different size ranges with 15 equally spaced channels from 3.5 to 45.5  $\mu\text{m}$ . b) probes for measurements of basic meteorological parameters (temperature, humidity, horizontal wind speed, vertical velocity and radiation). The first flight was performed between 0916-1230 LST, initially at a height of 4000 m and then at lower altitudes (mainly lower than 1000 m) and the second one between 1530-1650 LST at a height of about 1100-1600m. The airborne measurements were combined with surface meteorological data and air quality data.

It was found that the size distribution of aerosols over GAA at flight altitudes of 4000 m appeared to be unimodal with a maximum at 0.11 $\mu\text{m}$ . At lower altitudes the distribution exhibits bimodality, with mode peaks at 0.13 and 0.225  $\mu\text{m}$ , indicating enhanced physical and chemical processes that favour the growth of smaller particles to larger sizes. The relative humidity seems to affect the aerosol concentration through the condensation process.

**Key words:** aerosol, particle size distribution, Athens, airborne measurements.