Changes in the concentration of atmospheric ions in the planetary boundary layer, in Naguanagua and San Diego (Carabobo State - Veneuela)

Session Topic: Atmospheric Ions, Clusters, and Nanoparticles

Amilkar Quintero (Physics Department, Kent State University, USA; aaqs01@gmail.com) José Jimenez, Nelson Falcón (Laboratory of Physics of the Atmosphere and Outer Space, Department of Physics, University of Carabobo FACYT PO Box 129 avda Bolivar Norte Valencia Edo. Carabobo Venezuela; nelsonfalconv@gmail.com)

Aerosols and particulates temporarily dissolved at the interface between the land surface and the atmosphere, are usually influenced by ionization processes, inelastic collisions, driving electro atmospheric electric field due to the photo and dissociation; was becoming ions (free charges) and the permanence and concentration in the atmosphere, locally and temporarily varies along the natural cycles (day-night cycle, seasonal, etc..). In this paper we present the results of the variation of free ions to the surface, measured in San Diego and Naguanagua (Carabobo State- Venezuela) ,using Gerdien type counters, consisting of a variable capacitor parallel-plate, rotating at 2500 rpm,the sensor plates are amplified by an operational circuit. The calibration was performed with constant fields generated by a DC source up to 1000 V and generator type Van Der Graff . The results show that the ion concentration varies temporally, so inter-daily, with altitude and local weather conditions, with a relative maximum at 18 hours HLV, 7500 ions/cm3 order. We conclude that the local concentration of atmospheric ions is related to the variation of the local electric field and vertical variation in the atmosphere follow an exponential decay law.

Keywords: Ion atmospheric, condenser Gerdien, planetary boundary layer