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STATISTICAL ANALYSIS OF THE CORRELATION BETWEEN PARTICLE NUMBER CONCENTRATION, METEOROLOGICAL CONDITIONS AND TRACE GASES CONCENTRATION

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Particulate matter is the main air pollutant in most of the sites with air quality monitoring in Colombia. Urban PM pollution was associated with more than 10,000 premature death cases and 68 million reported symptoms and hospital visits in 2015, accounting for 1.93% of the National GDP. Despite its importance, PM has not been well characterized. Chemical speciation has been scarce, for a few source apportionment studies, and particle size distribution has been measured only in a couple of studies. In this study, we will show a correlation between particle number concentrations (PC), meteorological parameters (wind speed and direction, global radiation, environmental temperature and relative humidity) and trace gases concentration (SO_2 and O_3) at two sites with different features. The study was conducted in Bogota, a city with eight million inhabitants and nearly two-million vehicles and motorcycles, considered as one of the most densely populated cities in Latin America. The first site is an urban-background area and the other was affected by traffic and industrial emissions. We used an Electrical Low-Pressure Impactor-ELPI + (Dekati, Finland) to examine weekly and diurnal cycles of PC and changes in PNSD that show the influence of different sources and atmospheric effects. Preliminary results show that PC in Bogota's urban background is between 3,637 and 23,040 particles in airborne, with an arithmetic average of 10,910 and peaks during traffic rush hours.

Biography

L Mateus is a PhD student at Universidad Nacional de Colombia. Her thesis is about particle size distribution in urban areas in Colombia, a country in South America. Also, she is studying the effect on air quality of cane sugar burning in Cauca River Valley, a region with 230.000 hectares of cane sugar plantation. She is a Chemical Engineer and she has worked as Professor in Chemical and Environmental Programs at Colombia Universities.

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