

## **The use of fractal theory to characterize aerosol size distribution of experimental data**

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The study of the multi-scale problem of atmospheric particles is based on the underlying growth mechanisms of sub-micron particles. These complex mechanisms depend on several variables, such as particle chemical composition, gas phase concentration, and meteorological variables. As an alternative, in this work the use of fractal theory is explored as a potential tool to characterize time variation of the aerosols size distribution observations. Specifically, the Hurst coefficient and Lacunarity were calculated to characterize changes on air masses passing the monitoring site. In order to do this, during the MILAGRO field campaign in 2006, aerosol size distribution were measured using a SMPS (Model 3936 TSI) at the Jasso monitoring station, located 60 km Northwest from Mexico City, approximately. Results show that Hurst and Lacunarity coefficients can clearly identify important changes on time variation in concentration and size of particles. As an example, Hurst coefficient ranged between 0.6 and 0.9, indicating *smooth* distributions that can be treated as a fractional Brownian motion (fBm).