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Chemical characterization of PM2.5 particles in cities of Mexico and Costa Rica: comparation between megacities and less developed urban centers

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Chemical composition and morphological properties of PM 2.5 particles collected during field campaigns in a megacity, such as the Mexico Metropolitan Zone as well as other medium size urban centers such as Guadalajara (Jalisco, México) and San Jose (Costa Rica) were determined. Particle concentrations, metals, inorganics ions and organic/elemental carbon concentrations were analized.

From the obtained results, differences between emission source contributions to the particle chemical composition and the impact of air quality management programs, as a mechanism to reduce the atmospheric pollution can be well identified.

Based on the source contribution analyses and effectiveness evaluation of implemented air quality policies, key areas for intervention are discussed. It was determined that medium size cities with an important dynamic growth, could have worse air quality conditions compared to some megacities due to the absence of clear governmental policies related to air quality measures.