

1.148 Analyses of the main sources of PM_{2.5} using bottom up and top down data in two metropolitan cities in Mexico: Mexico City Metropolitan Area and Toluca Metropolitan Area .

Presenting Author:

Beatriz Cardenas , Centro Mario Molina, Air Quality, Mexico City, Mexico ,
bcardenas@centromariomolina.org

Co-Authors:

Claudia Rivera-Cardenas , Universidad Nacional Autónoma de Mexico,
FAcultad de Quimica, Mexico City, Mexico

Alma Cabrera, Centro Mario Molina, Air Quality/GIS Group, Mexico City, Mexico,

Sergio Duarte, Centro Mario Molina, Air Quality, Mexico City, Mexico

Nancy Hernandez, Centro Mario Molina, Air Quality/GIS Group, Mexico City,
Mexico,

Abstract:

Although important improvements have been achieved in Mexico City Metropolitan Area (MCMA) air quality over the last three decades, ozone and PM_{2.5} are still above the national air quality standards and WHO recommendations. Air quality monitoring in other cities has been expanded in recent years; these data show that smaller cities and metropolitan areas, where air pollution was not perceived as a problem, are facing high levels of pollutants, with PM_{2.5} levels even two to three times higher than those registered in MCMA since 2003. Although PM_{2.5} health impacts are well evidenced, existing air pollution contingency programs in Mexican cities do not include PM_{2.5} yet, mainly because identification of effective control measures are still lacking. In this work, an analysis of the main PM_{2.5} emissions sources is presented using existing bottom-up inventories and when available, top-down emissions studies for two Mexican metropolitan areas: the Mexico City Metropolitan Area (MCMA) and Toluca Metropolitan Area (TMA). TMA is metropolitan area with 2.1 million habitants (2,203 km²) comprises 14 counties including the capital city of the State of Mexico and it is connected economically and physically with MCMA. Annual average levels for the TMA and MCMA were 42 µg/m³ (in 2012) and 27 µg/m³ (in 2014). PM_{2.5} levels in MCMA (18 million people/ 7,866 km²) have been maintained over the last decade in contrast to the increment in population and vehicular fleet. MCMA bottom up inventories indicate residential combustion and soil resuspension as the main PM_{2.5} sources (53%), top-down emissions identify other sources contribution. TMA bottom-up inventory indicates residential wood combustion (cooking) as the main PM_{2.5} emissions sources. In this work, a proposal of a top-down emission analyses integrated by a group of institutions including a field campaign and remote sensing measurements will be presented for TMA