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Regional Air Quality in central México and emissions inventories

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Four air quality field campaigns, from 2009 to 2012, during March-April were carried out in several sites in urban, rural and semi-rural sites in Central México. One of the sites was in the Chalco Gap southeast of MCMA (2011), another in the state of Morelos (2011), other two in the state of Puebla (2009 and 2012). All these sites are South and East of the Mexico Basin. The main object of those campaigns was to document regional air quality, mainly in rural and periurban sites, including the photochemical age of regional polluted plumes as they were transported away from the main metropolitan areas within the region.

In this paper, we focus on comparisons between observed CO/NO_x, and CO/SO_2 ratios with those from the National Emissions Inventory and form local inventories reported in state air quality management programs. Comparisons were made with data between 05:00 to 08:00 h to minimize effects photochemical activity and the fast evolution of MLH occurring between 08:00 and 09:00 due to high insolation.
Comparisons among observed ratios show a fairly consistent ratio, whereas ratios from emissions inventory are widely variable and only in few sites compare reasonable well with observed ones, indicating the need for homologation of emissions inventories in the country.

Also Ozone, CO, NO_x and NO_y observed time series are compared with WRF-Chem model results for the same campaign periods to evaluate its performance outside MCMA. In addition, observed surface wind speeds and early morning MLH obtained with a tethered balloon are also compared with modeled values to help understanding discrepancies in the trace gases comparisons.