6.119 Study of methane variability in Mexico City from total column and surface measurements.

Early Career Scientist

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Abstract:

Methane is one of the most important green house gasses due to its warming potential and fast growing increase in the atmosphere. Although the CH_4 concentration in the atmosphere and trend is well known in the global scale, the amounts attributed to specific local sources have large uncertainties and is of great relevance for chemical processes. For example, the emissions within megacities are not well understood and some studies suggest that CH_4 emissions in urban areas could be greater than previously estimated.
The total column of CH_4 and its surface concentration is being constantly measured South of Mexico City at the UNAM campus (N 19.32°,W 99.17°, 2260 m.a.s.l.). The total columns were retrieved from five years of ground-based solar absorption measurements with an FTIR spectrometer (VERTEX 80) and in situ measurements at the surface have been made with a commercial cavity ring-down spectrometer (Picarro G2401) for the past three years. In this work we present results from the evaluated data during this period in order to identify patterns and trends focusing on events with large concentrations. The co-location of both instruments gives us the opportunity of study the variability of the methane in a megacity using two different approaches.