



Retrieval of CHOCHO from MAX-DOAS measurements in the Beijing area

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Glyoxal (CHOCHO) is one of the most important carbonyl compounds in the atmosphere. It is produced mainly by the oxidation of biogenic and anthropogenic non-methane volatile organic compounds (NMVOCs) which participate to the formation of tropospheric ozone and secondary organic aerosols. CHOCHO is also directly released by biomass burning and fossil fuel combustion. Measuring this species is therefore of major importance for air quality monitoring, especially given the scarcity of available CHOCHO observational data sets.

In this presentation, CHOCHO vertical profiles and corresponding column densities are retrieved from MAX-DOAS measurements in the Beijing city center and at the suburban site of Xianghe located at 60km East of Beijing. The periods covered by the observations are June 2008-April 2009 in Beijing and March 2010-December 2014 in Xianghe. We first investigate the capability of the MAX-DOAS technique to measure this species in such highly-polluted environment. Then the diurnal and seasonal cycles of CHOCHO near-surface concentrations and vertical column densities as well as the corresponding CHOCHO/HCHO ratios are examined on a long-term basis at both locations. The CHOCHO/HCHO ratios are derived from MAX-DOAS HCHO vertical profiles retrieved in parallel to the CHOCHO profiles. These diurnal and seasonal cycles are further assessed using simulations from the 3D-CTM IMAGES and observations from the OMI and GOME-2 satellite nadir instruments. The impact of these results on our knowledge about the CHOCHO budget is discussed.