



Emissions and ageing of volatile organic compounds in West-Africa from their airborne observations

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Large world's urban areas are important pollutant emission sources. Several studies in mid-northern latitudes megacities characterized the importance and potential impacts of these emissions at larger scale, however, there are still missing observations in sensitive places like South America and Africa. The unplanned growth of urban conglomerations is the main issue in West Africa, aggravating health problems due to unregulated emissions and producing effects on atmospheric chemistry. Hence, the characterization, quantification and fate of these emissions, is a key input to improve the comprehension about the role of local sources over this region and to assess their impact on regional climate and air quality conditions.

During the Dynamics-Aerosol-Chemistry-Cloud Interactions in West Africa (DACCIIWA) project, an intensive airborne campaign was performed in summer 2016 with the purpose to quantify a large range of atmospheric components for the better understanding on the effect of African emissions on regional climate.

This study presents the results obtained on-board the French ATR42 French aircraft by a comprehensive suite of airborne measurement techniques, whereby volatile organic compounds (VOCs) together with simultaneous trace gas and aerosols measurements were analysed.

Here we examine primary VOCs emissions, their photochemical aging processes and their potential impacts on the local atmospheric composition near coastal urban agglomerates. Moreover, trace gases and VOCs contributions were compared with previous campaigns performed in the region. Differences and communalities are evaluated regarding the expected changes in regional emissions over the last decade. Finally, the comparison with previous airborne campaigns in other urban areas worldwide will be performed with the purpose of understand the implications of human emissions in this highly populated area of the developing world.