

Mapping urban cooking emission sources in West Africa cities: Case of the Yopougon district (Abidjan - Côte d'Ivoire)

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Abstract

Urban pollution has significant impacts on both human health and climate especially in the developing world. The use of an urban model to study pollutant dispersion and their local effects within a city area requires high-resolution emission sources. Our focus is on the Yopougon district (5.34° N and 4.01° W), located in the northwest of Abidjan city (Côte d'Ivoire). Yopougon is an industrialized area characterized by a high population density with intense human activities which strongly influence pollution levels. In this study, we will present domestic (cooking) and commercial activity (food smoking, street food vendors, restaurants) emission sources that we have been developed for the Yopougon district. For such a purpose, field measurements and data on biofuel consumption (e.g. fuel type and amount by household and commercial sector) were collected to assess spatial and temporal distribution of fuel consumption. Such data were then linked to local emission factors (Keita et al., 2018) to derive emission inventories for BC, OC, CO, NO_x, SO₂ and NMVOC. Our results show that biofuel emissions are mostly due wood consumption in the household and commercial sectors for all pollutants, excepted in the commercial sector where charcoal is predominant for NO_x. Similar OC emissions are found for traffic and household sectors whereas household CO emissions are three times higher than traffic CO emissions. Finally, note that commercial activity roughly represents 16% of biofuel emissions for CO and NMVOC, and 23 % of OC.

Early Career Scientist

YES, I am an early career scientist.

IGAC Activities

GEIA: Global Emissions Initiative, BBURNED: Biomass Burning Uncertainty: ReactionNs, Emissions and Dynamics, AMIGO: Analysis of eMIssions usinG Observations, Allin-Wayra: Small Sensors for Atmospheric Science, MAP-AQ: Monitoring, Analysis and Prediction of Air Quality

IGAC Regional Working Groups

ANGA: African Group on Atmospheric Sciences