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Development of city level emission inventories for Abidjan and Modeling particulate pollution at this urban area.

West Africa suffers from poor air quality due to the influence of high local emission sources and transboundary emissions from the rest of Africa. A fine resolution of anthropogenic emissions inventory is a prerequisite for accurate air quality modelling. However, there is a lack of inventories for West African cities. In the framework of Air Pollution and Health in Urban Environments (PASMU) project, we have developed new fine-scale spatialized anthropogenic emission inventories at a resolution of 1km by 1km for Abidjan city in Cote d'Ivoire. This emissions inventory includes aerosols (BC, OC and PM_{2.5}) and gases (CO, NO_x, SO₂ and NMVOC) and takes into account six activity sectors (residential and commercial, industry, energy, transportation, open waste burning and re-suspended road dust). The methodology used to derive this emission inventory is based on national activity databases for traffic, residential/commercial and waste burning consumption estimates and on DACCIWA emission data (Keita et al., 2021) for industries and thermal power plant sources in Côte d'Ivoire. The spatial distribution keys used depend on the activity. For example, domestic fires (residential and commercial) used population density associated to poverty indexes while road density and occupancy are used for traffic. Such urban inventories will be presented and compared to previous regional inventories. We will discuss the relative contribution of different emission sources, highlighting mitigation actions for these sources to improve air quality as scheduled in our new APIMAMA project. Finally, we will present the result of the first modeling exercise that has been conducted using WRF-chem and the simplified GOCART aerosol model to simulate carbonaceous aerosols, sulphate, dust, and sea salt.

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