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Direct estimates of emissions from the megacity of Lagos

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Abstract. We report here top-down emissions estimates for an African megacity. A boundary layer circumnavigation of Lagos, Nigeria was completed using the FAAM BAe146 aircraft as part of the AMMA project. These observations together with an inferred boundary layer height allow the flux of pollutants to be calculated. Extrapolation gives annual emissions for CO, NO_x, and VOCs of 1.44 Tg yr⁻¹, 0.03 Tg yr⁻¹ and 0.37 Tg yr⁻¹ respectively with uncertainties of ⁺²⁵⁰/₋₆₀%. These inferred emissions are consistent with bottom-up estimates for other developing megacities and are attributed to the evaporation of fuels, mobile combustion and natural gas emissions.

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