1.004 Air pollution in Rwanda, a growing East African country.

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Abstract:

The Rwanda Climate Observatory Project, located on the summit of Mt. Mugogo, a 2.5 km peak in the Virunga mountain range, has begun measurements of black carbon aerosol concentration, ozone and carbon monoxide gas concentration, and solar intensity. Black carbon levels close to those in major US cities were found in this rural region, likely from local and transported biomass burning. Major sources of air pollution include agricultural burning, cook fires, charcoal making, kerosene lightning, brick kilns, and older diesel generators/vehicles. CO and O_3 measurements were used in conjunction with BC aerosol data and HYSPLIT back trajectories were also used to help discriminate between periods of heavy burning and periods of pollution transport from Kigali, Kampala, and other large East African cities, which may have more black carbon contribution from diesel vehicles and generators. Additionally, low-cost air quality monitors will be deployed in different areas of Kigali, the capitol of Rwanda, to determine approximate PM2.5 concentrations near different sources within the city to compare with rural data. Rwanda is one of the least-urbanized nations in Africa, though the government is pushing for higher urbanization rates. It is also the most densely populated country in Africa, and its rural areas are filled with small households. Currently, initiatives to supply more-efficient cookstoves to lower income households, development of cleaner-burning fuel from recycled agricultural waste, and new regulations on vehicle emissions and importation are underway. These new initiatives seek to help Rwanda grow and urbanize in the greenest way possible; however, little ambient data on local air quality is available in different regions of Rwanda for a baseline study before and after these initiatives. With this work, we seek to understand major pollution sources in the region to increase the efficiency of government policy initiatives.