



Nepal Ambient Monitoring and Source Testing Experiment (NAMaSTE): Emissions of particulate matter from wood and dung cooking fires, brick kilns, generators, trash and crop residue burning

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The Nepal Ambient Monitoring and Source Testing Experiment (NAMASTE) field campaign targeted the in situ characterization of widespread and under-sampled combustion sources. In Kathmandu and the Terai, southern Nepal's flat plains, samples of fine particulate matter (PM_{2.5}) were collected from wood and dung cooking fires (n = 22), generators (n = 2), groundwater pumps (n = 2), clamp kilns (n = 3), zig-zag kilns (n = 3), trash burning (n = 4), one heating fire, and one crop residue fire. Co-located measurements of carbon dioxide, carbon monoxide, and volatile organic compounds allowed for the application of the carbon mass balance approach to estimate emission factors for PM_{2.5}, elemental carbon, organic carbon, and water-soluble inorganic ions. Organic matter was chemically speciated using gas chromatography – mass spectrometry for polycyclic aromatic hydrocarbons, sterols, n-alkanes, hopanes, steranes, and levoglucosan, which accounted for 2-8% of the measured organic carbon. These data were used to develop molecular-marker based profiles for use in source apportionment modeling. This study provides quantitative emission factors for particulate matter and its constituents for many important combustion sources in Nepal and South Asia.