



Measurement of ozone formation from wildfires

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Tropospheric ozone (O_3) can adversely affect human health and environmental ecosystems and it is therefore vitally important to understand its formation pathways from both natural and anthropogenic precursors. Wildfires are an important source of these precursors (both VOCs and NO_x) and it is likely that the prevalence of wildfires will increase in a warming climate. Here we present measurements of O_3 and its precursors taken from aircraft flights in wildfires in the Amazon rainforest in Brazil, scrublands in Senegal and moorland peat fires in the UK. A range of O_3 enhancement ratios ($\Delta[O_3] / \Delta[CO]$) are reported, ranging from 0.05 when sampling within 1-2 hours transport time from the all 3 types of fire, to 0.3 when sampling up to 24 hours away from the Senegalese fires. VOC composition of the plumes is also investigated. Ratios of different VOCs to CO are examined in order to derive emission ratios that could be used to provide emission estimates of VOCs from wildfires. OH reactivity calculations in the plumes are used to assess the potential contribution of different VOCs to O_3 formation.