



VOCs composition and reactivity during the combined pollution process at a comprehensive site in Guangzhou, China

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Guangzhou, one of China's megacities, is beset with frequent occurrence of high-concentration ozone and haze events. Volatile Organic Compounds (VOCs) were continuously monitored by online instrument at GPACS (the Guangzhou Panyu Atmospheric Composition Station) of the China Meteorological Administration during the two combined pollution processes from September 2th, 2011 to September 5th, 2011 (P_1) and from June 12th, 2012 to June 15th, 2012 (P_2) to determine the VOCs composition and reactivity of ozone formation and secondary organic aerosol (SOA) formation. The results showed that during P_1 and P_2 , alkanes occupied the largest proportion accounting for 57 and 57% of the VOC concentration, respectively, followed by aromatics (24 and 31%, respectively) and lastly alkenes (19 and 12%, respectively). As can be seen from the MIR-weighted concentrations, the alkenes and aromatics were dominant, accounting for 28 and 54% (P_1), respectively, as well as 22 and 61% (P_2), respectively. In terms of SOA formation potential by FAC estimation, alkanes, alkenes and aromatics were accounting for 13.2%, 21.4%, 65.4% (P_1), respectively, and 4.6%, 13.8%, 81.6% (P_2), respectively. Toluene, isoprene, ethylbenzene and m,p-Xylene had a high reactivity to the ozone and SOA formation during P_1 and P_2 . It should be noted that the concentration of isoprene was not high, but it had a very high reactivity. Therefore, the isoprene emissions need to be considered with respect to the control of ozone and PM in Guangzhou.