



Source apportionment of ambient volatile organic compounds (VOCs) and their characteristics in Chengdu, southwest of China

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Chengdu, located in the largest basin region in the world, suffers from increasing ground-level ozone and aerosol pollutions. Volatile organic compounds (VOCs) are one of the prominent precursors of ground-level ozone and aerosols. Ambient VOCs were measured continuously using an online gas chromatography-mass spectrometry/flame ionization detector (GC-MS/FID) with a time resolution of 1 hour from 28 August 2016 to 7 October 2016 at Pixian in Chengdu. 99 measurements of VOCs were conducted including 28 alkanes, 11 alkenes, 16 aromatics, 13 oxygenated VOCs (OVOCs) and 29 halocarbons, acetylene, and acetonitrile. Based on the hourly average data, positive matrix factorization (PMF) was used to better understand the emission sources of VOCs in Chengdu. The average mixing ratios of alkanes, alkenes, aromatics, OVOCs, halocarbons, acetylene, and acetonitrile were respectively 14.49 ppbv, 4.92 ppbv, 5.14 ppbv, 9.74 ppbv, 7.77 ppbv, 3.56 ppbv, and 0.43 ppbv. Six sources were extracted by using PMF model. Liquefied petroleum gas, background and petrochemical industries contributed 28%, 19%, 18% to the total ambient VOCs, respectively. Biogenic emission (14%), Gasoline vehicles (13%), Solvent use (8%) were also identified as major sources of ambient VOCs at Pixian.