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Stable carbon isotope ratio analysis of biomass burning tracers in ambient aerosol

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Due to the potential to fingerprint emissions as well as chemical and physical processes in the atmosphere, stable isotopes are considered as a promising tool to improve our understanding of sources and atmospheric fate of organic aerosol.

In this study, compound specific isotopic measurements of levoglucosan by employing Thermal Desorption – Two Dimensional Gas Chromatography – Isotopic Ratio Mass Spectrometry (TD–2DGC–IRMS) are presented for ambient aerosol sampled during biomass burning episodes at rural, suburban and urban sites in Guangdong province, China. Further, information on the origin and pathways of the probed air masses is given, based on back trajectories calculated with the Lagrangian particle dispersion model FLEXPART from ECMWF meteorological data.

The results combining observed $\delta^{13}\text{C}$ for levoglucosan with back trajectory analyses will be discussed in relation to the potential of using compound specific $\delta^{13}\text{C}$ measurements for improved source apportionment and determining the photochemical age of organic molecular markers.