



*Supplement of*

**Measurement report: Source apportionment of carbonaceous aerosol using dual-carbon isotopes ( $^{13}\text{C}$  and  $^{14}\text{C}$ ) and levoglucosan in three northern Chinese cities during 2018–2019**

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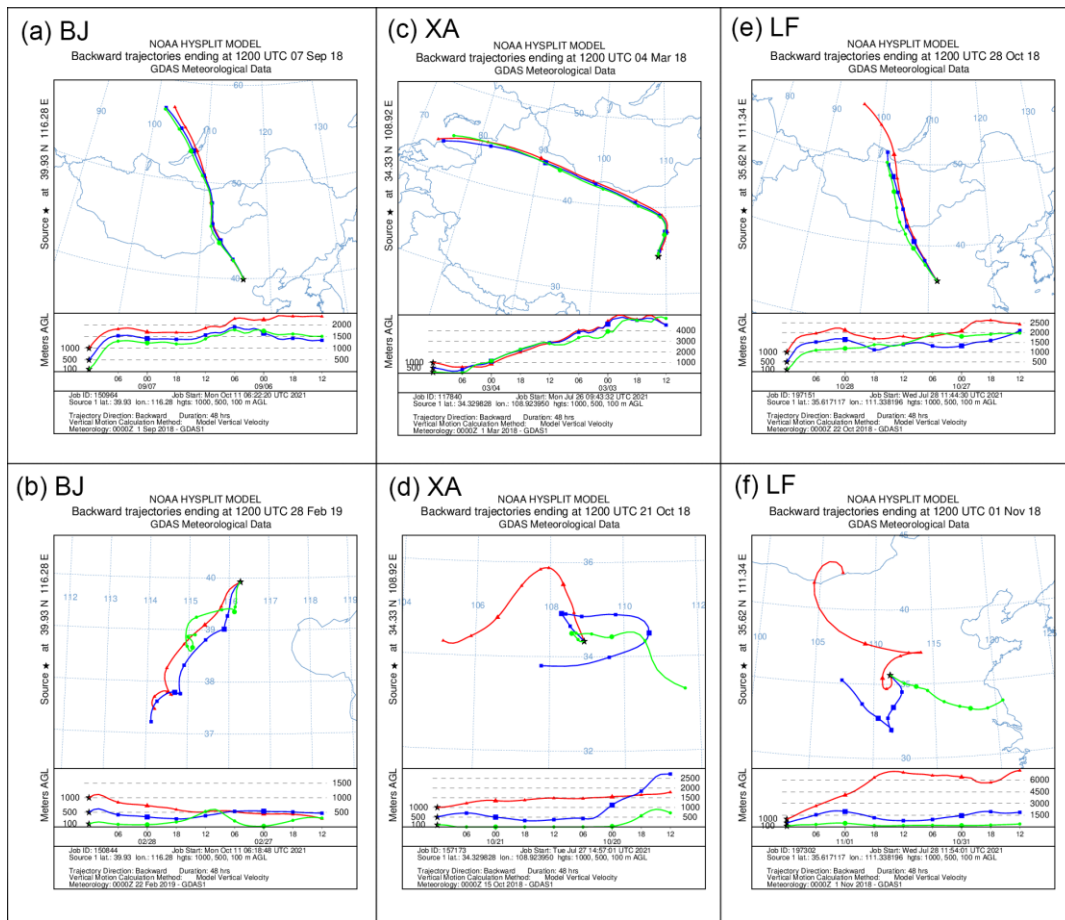


Fig. S1 48-h HYSPLIT air mass backward trajectories at 12:00 UTC on several days in Beijing (BJ), Xi'an (XA) and Linfen (LF), China (<http://www.ready.noaa.gov/index.php>, last access 20/04/2022). China adopts BJS (UTC+8).

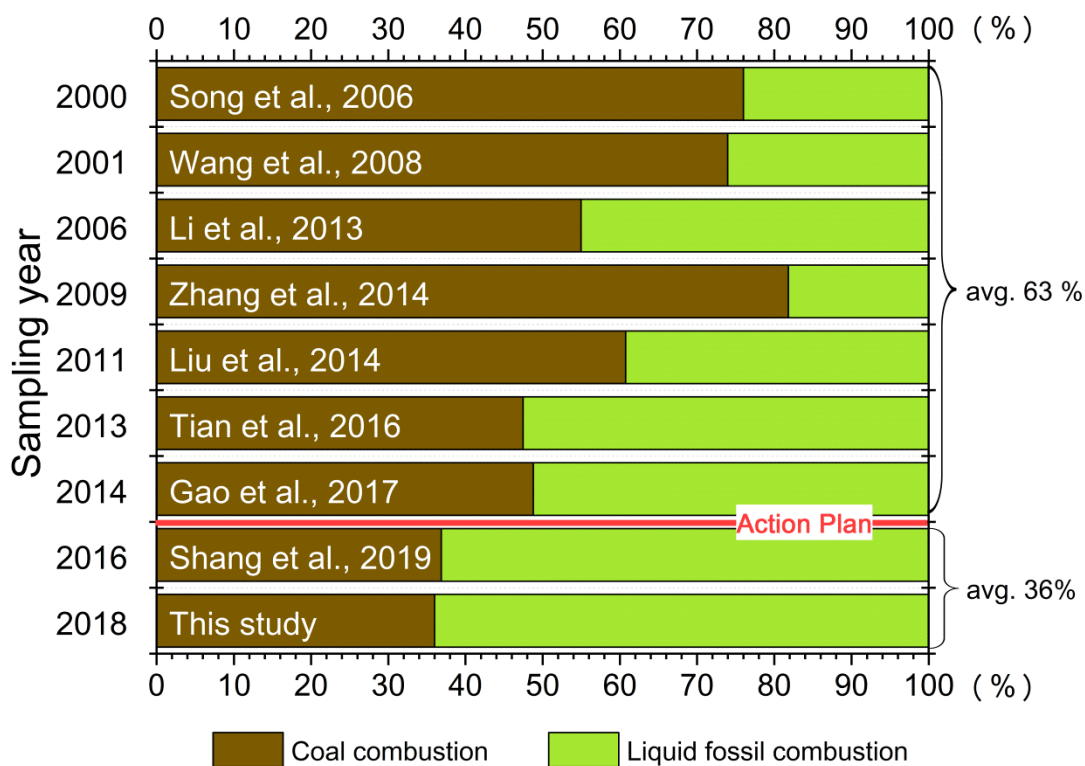


Fig. S2 Comparison of the proportions of coal combustion and liquid fossil combustion in aerosol in some studies in Beijing. Some results were calculated based on raw data published by the studies (Gao et al., 2018; Li et al., 2013; Liu et al., 2014; Shang et al., 2019; Song et al., 2006; Tian et al., 2016; Wang et al., 2008; Zhang et al., 2013).

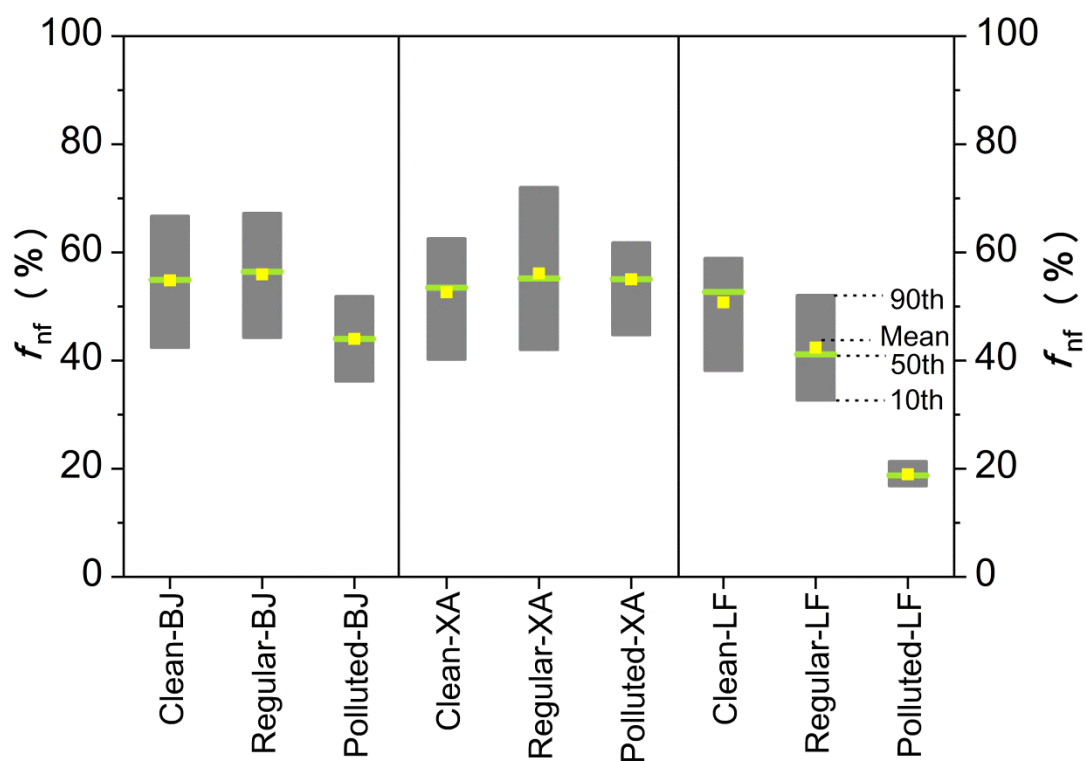


Fig. S3 Distribution of biomass-burning source Lev concentration in carbonaceous aerosols at the sampling sites in Beijing (BJ), Xi'an (XA) and Linfen (LF).

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