Supplement of

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

Zhao et al.

Correspondence to: Zhenchuan Niu (niuzc@ieeas.cn) and Weijian Zhou (weijian@loess.llqg.ac.cn)
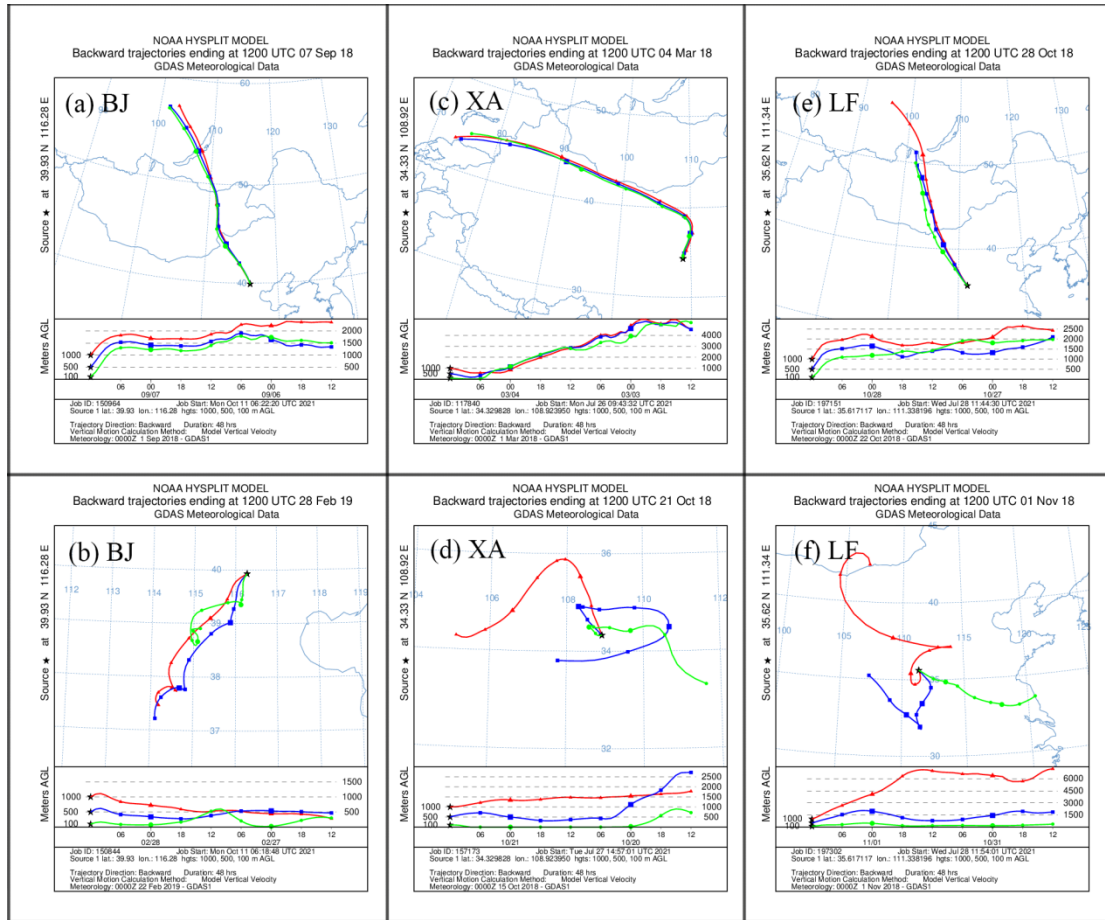
Fig. S1 48-h HYSPLIT air mass backward trajectories at 12:00 UTC on several days in Beijing (BJ), Xi'an (XA) and Linfen (LF), China (http://www.ready.noaa.gov/index.php). China adopts BJS (UTC+8).
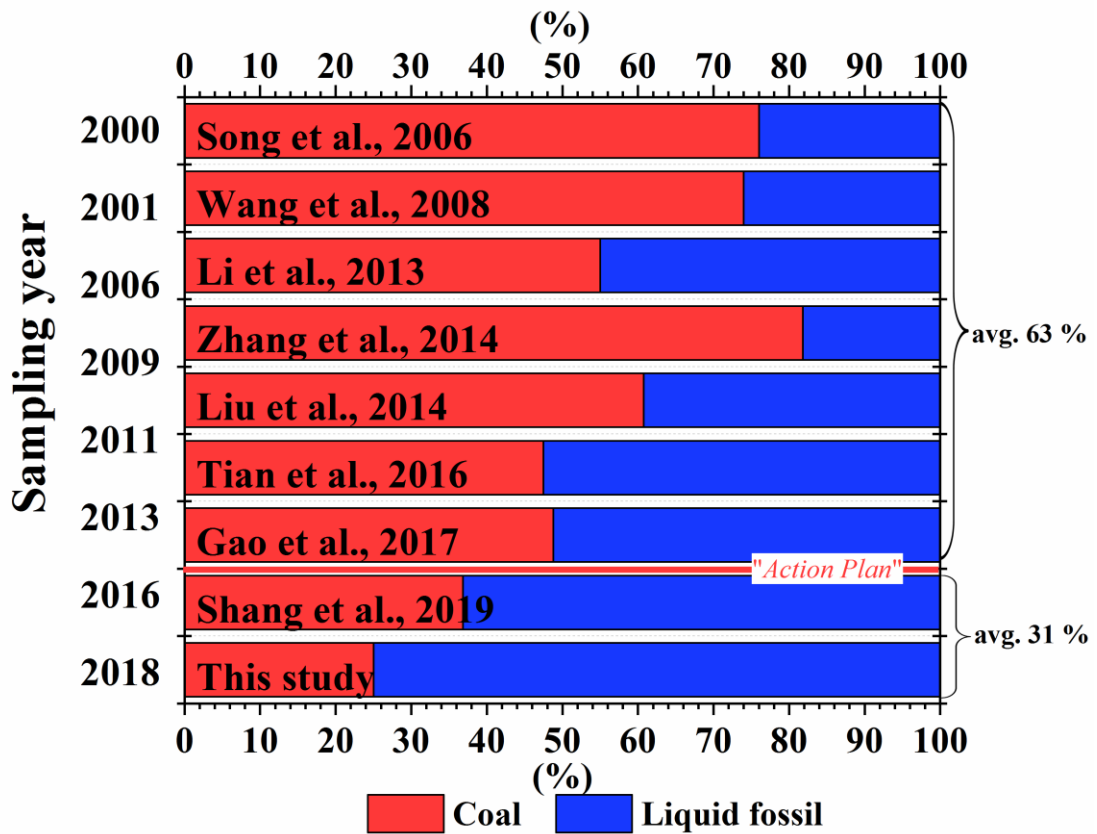
Fig. S2 Comparison of the proportions of coal combustion and liquid fossil combustion in aerosol in some studies in Beijing. The data has been converted. (Gao et al., 2018; Li et al., 2013; Liu et al., 2014; Shang et al., 2019; Song et al., 2006; Tian et al., 2016; Wang et al., 2008; Zhang et al., 2014).
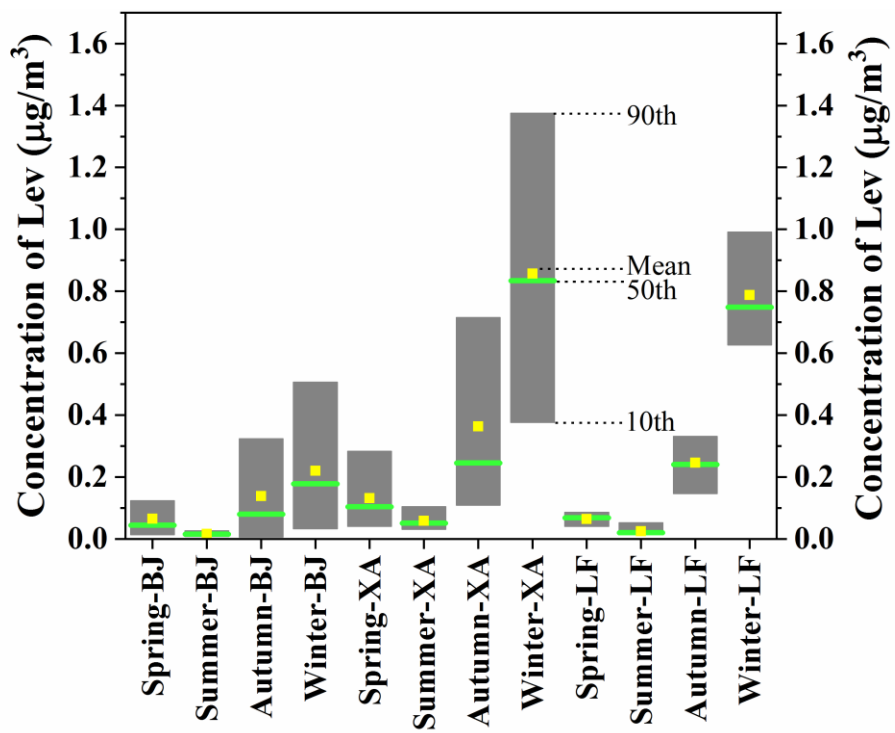
Fig. S3 Distribution of Lev concentration in carbonaceous aerosols at the sampling

sites in Beijing (BJ), Xi'an (XA) and Linfen (LF).

References

Gao, J., Wang, K., Wang, Y., Liu, S., Zhu, C., Hao, J., Liu, H., Hua, S., and Tian, H.: Temporal-spatial characteristics and source apportionment of PM2.5 as well as its associated chemical species in the Beijing-Tianjin-Hebei region of China, Environmental pollution, 233, 714-724, https://doi.org/10.1016/j.envpol.2017.10.123, 2018.

Li, X., Wang, Y., Guo, X., and Wang, Y.: Seasonal variation and source apportionment of organic and inorganic compounds in PM2.5 and PM10 particulates in Beijing, China, Journal of Environmental Sciences, 25, 741-750, https://doi.org/10.1016/S1001-0742(12)60121-1, 2013.

Liu, Z., Hu, B., Liu, Q., Sun, Y., and Wang, Y.: Source apportionment of urban fine particle number concentration during summertime in Beijing, Atmospheric Environment, 96, 359-369, https://doi.org/10.1016/j.atmosenv.2014.06.055, 2014.

Shang, J., Khuzestani, R., Tian, J., Schauer, J., Hua, J., Zhang, Y., Cai, T., Fang, D., An, J., and Zhang, Y.: Chemical characterization and source apportionment of PM2.5 personal exposure of two cohorts living in urban and suburban Beijing, Environmental Pollution, https://doi.org/10.1016/j.envpol.2018.11.076, 2019.

Song, Y., Zhang, Y., Xie, S., Zeng, L., Zheng, M., Salmon, L., Shao, M., and Slanina, S.: Source apportionment of PM2.5 in Beijing by positive matrix factorization, Atmospheric Environment, 40, 1526-1537, https://doi.org/10.1016/j.atmosenv.2005.10.039, 2006.

Tian, S., Pan, Y., and Wang, Y.: Size-resolved source apportionment of particulate matter in urban Beijing during haze and non-haze episodes, Atmospheric Chemistry & Physics, 16, 9405-9443, https://doi.org/10.5194/acp-16-1-2016, 2016.

Wang, H., Zhuang, Y., Wang, Y., Yuan, Y., and Zhuang, G.: Long-term monitoring and source apportionment of PM2.5/PM10 in Beijing, China, Journal of Environmental Sciences, 20, 1323-1327, https://doi.org/10.1016/S1001-0742(08)62228-7, 2008.

Zhang, R., Jing, J., Tao, J., Hsu, S., Wang, G., Cao, J., Lee, C., Zhu, L., Chen, Z., and Zhao, Y.: Chemical characterization and source apportionment of PM2.5 in Beijing: seasonal perspective, Atmospheric Chemistry & Physics, 13, 7053-7074, https://doi.org/10.5194/acp-14-175-2014, 2014.