Supplementary material for:

Source apportionment of elevated wintertime PAHs by compound specific radiocarbon analysis

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Table S1. Scheme of harvested PAH from particulate (GFF) and gas phase (PUF) extracts combined for CSRA.

	GFF			PUF	
Substance/sample	**23 Jan - 6 Feb**	**6 Feb -20 Feb**	**22 Feb -8 Mar**	**23-31 Jan**	**31 Jan - 6 Feb**
Phenantrene PUF				**X**	**X**
Phenanthrene GFF	**X**		**X**		
Fluoranthene	**X**	**X**	**X**		
Pyrene	**X**	**X**	**X**		
Benzo[b+k]fluoranthene composite	**X**	**X**	**X**		
B[b]fluoranthene	X	X	X		
B[k]fluoranthene	X	X	X		
Indeno[cd]pyrene + benzo[ghi]perylene composite	**X**	**X**	**X**		
Indeno[cd]pyrene		X			
Benzo[ghi]perylene	X	X	X		
Sum PAHs	**X**	**X**	**X**	**X**	**X**
Phenanthrene		X			
Anthracene	X	X	X	X	X
2-Methylanthracene	X	X	X	X	X
4H-Cyclopenta[def]-phenantrene plus 9-metylphenantrene	X	X	X	X	X
1-Methylanthracene	X	X	X	X	X
1-Metylphenantrene	X	X	X	X	X
2-Phenylnaphtalene	X	X	X	X	X
Fluoranthene				X	X
Pyrene				X	X
Benzo(a)flourene		X			
Benzo(e)flourene	X	X	X		
2-Methylpyrene	X	X	X		
X-Methylpyrene	X	X	X		
1-Metylpyrene	X	X	X		
Benzo[ghi]fluoranthene	X	X	X		
Benz[a]anthracene	X	X	X		
Chrysene	X	X	X		
Benzo[e]pyrene	X	X	X		
Benzo[a]pyrene	X	X	X		
Perylene	X	X	X		
Indeno[cd]pyrene	X		X		
Coronene	X	X	x		

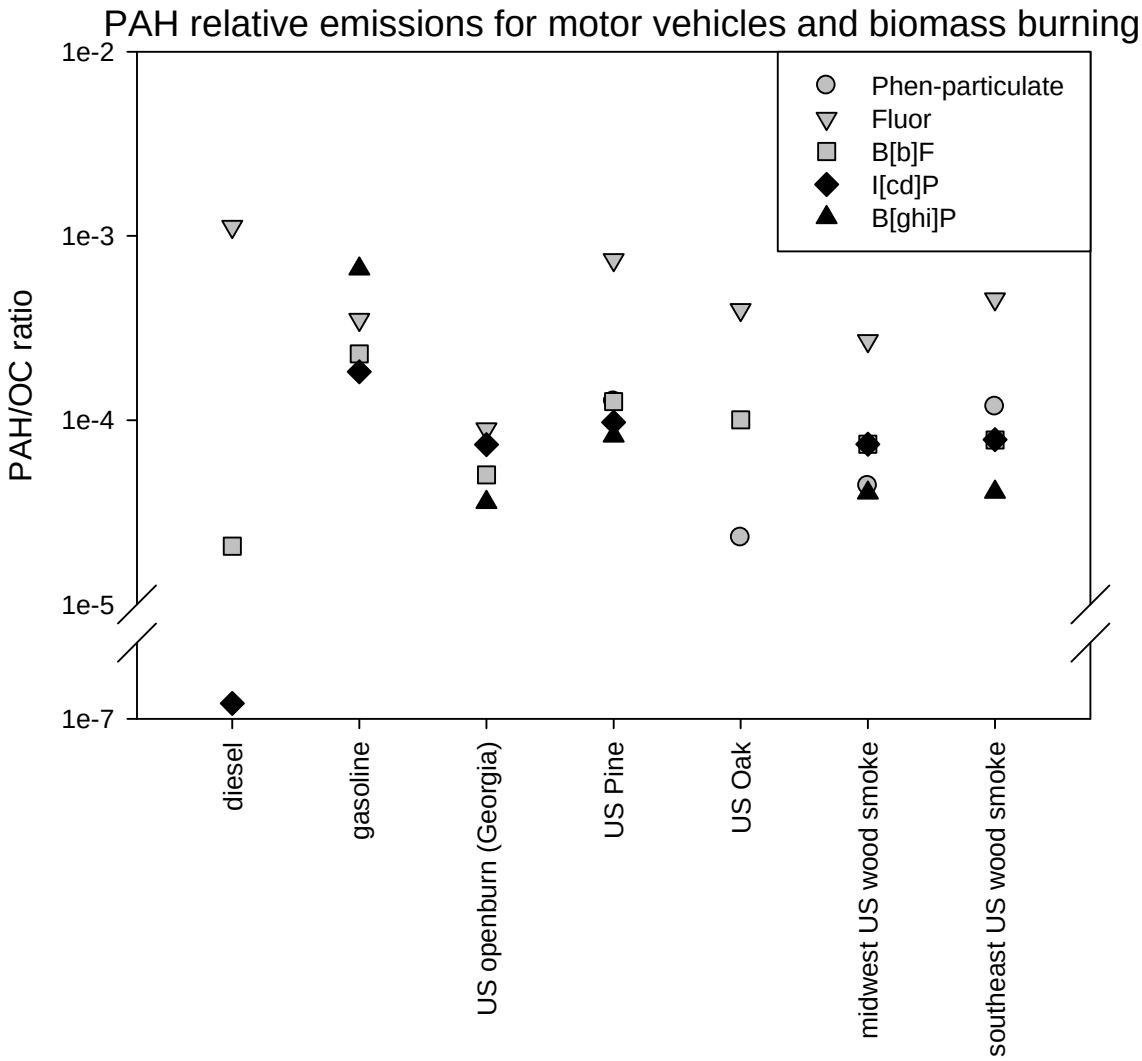
Compounds in bold were harvested for CSRA, while compounds in normal type have been pooled for compound class-specific radiocarbon analysis (CCSRA).
GFF is glass fiber filter which collects particle-phase material.
PUF is polyurethane foam which collects gas-phase organic components.

Table S2. PAH concentrations (ng m^{-3}) in the particulate (GFF) and gas (PUF) phases measured in Lycksele in winter 2006.

PAH	GFF[a]	PUF[b]	GFF+PUF
Phenanthrene	2.26	8.97	11.3
Anthracene	0.15	1.02	1.17
2-Methylanthracene	0.03	0.05	0.08
1-Methylphenanthrene	0.34	0.33	0.68
2-Phenylnaphthalene	0.44	0.37	0.83
1,7-Dimethylphenanthrene	0.10	0.12	0.22
Fluoranthene	3.87	1.27	5.22
Pyrene	3.67	0.86	4.60
Retene	1.41	0.36	1.77
Benzo[a]fluorene	0.83	0.09	0.93
Benzo[b]fluorene	0.35	0.03	0.38
2-Methylpyrene	0.16	0.02	0.18
1-Methylpyrene	0.20	0.02	0.22
Benzo[ghi]fluoranthene	1.13	0.06	1.18
Cyclopenta[cd]pyrene	0.53	0.01	0.54
Benzo[a]anthracene	0.95	ND	0.95
Chrysene	2.79	0.07	2.83
Benzo[b]fluoranthene	2.72	ND	2.71
Benzo[k]fluoranthene	3.29	ND	3.25
Benzo[e]pyrene	1.16	ND	1.15
Benzo[a]pyrene	1.13	0.02	1.15
Perylene	0.13	ND	0.13
Indeno[1,2,3-cd]pyrene	4.19	ND	4.15
Pentacene	0.31	ND	0.31
Dibenz[a,h]anthracene	0.95	ND	0.94
Benzo[ghi]perylene	6.38	ND	6.32
Coronene	1.26	ND	1.26

[a]Mean concentration normalized by sample duration, 23 Jan. – 8 Mar. [b]Mean concentration normalized by sample duration, 23 Jan. – 6 Feb. ND: not determined.

Figure S1. PAH/OC ratio for selected PAHs emitted by motor vehicles and biomass burning (OC is organic carbon as defined by the NIOSH 5040 method using the Sunset Labs thermal-optical instrument). Diesel and gasoline exhaust values are from Lough et al. (2007); openburn values represent average results from a prescribed field burn in Georgia, USA (Lee et al., 2005); pine and oak wood smoke profiles are from Schauer et al. (2001); Midwest and Southeast wood ratios are based on average profiles (Sheesley et al., 2007) for wood indigenous to the Midwest and Southeast regions in the USA (Fine et al., 2001, 2004, 2002).



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