Supplementary Material

Pan-Arctic seasonal cycles and long-term trends of aerosol properties from ten observatories

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Table S1. Data coverage and trends. The grey bars on the right side indicate data availability per station and variable. The p-values and slopes on the left side indicate the overall trends characteristics per station and variables separated by season (JFMA and JJAS). Decadal trend significance and direction are given by numerical values only in the respective time period. The two left (right) values correspond to JFMA (JJAS). Chemical compounds were derived from the following size ranges (see also Table 1 in the main text): TSP for Alert and Villum, PM_{10} for Zeppelin, and PM_1 for Barrow.

		all years JFMA		all years JJAS		JFMA		JJAS		JFMA		JJAS		JFMA		JJAS	
		1980 1981 1982 1983 1984 1985 1986 1987 1988 1989								1990 1991 1992 1993 1994 1995 1996 1997 1998 1999				2000 2001 2002 2003 2004 2005 2006 2007 2008 2009				2010 2011 2012 2013 2014 2015 2016 2017 2018 2019			
species	station	p-value	slope	p-value	slope	p-value	slope	p-value	slope	p-value	slope	p-value	slope	p-value	slope	p-value	slope	p-value	slope	p-value	slope
EBC	Alert	0.00	-2.61E-03	0.19		JFMA		JJAS		0.00	-1.34E-02	0.00	-1.00E-03	0.93		0.02	5.00E-04	0.71		0.67	
µg m^{-3}	Barrow	0.09	-1.22E-03	0.17						0.05	-9.66E-03	1.00		0.06	-3.54E-03	0.58		0.59		0.20	
	Zeppelin	0.03	-1.05E-03	0.44										0.46		0.74		0.22		0.89	
	Gruve	0.80		0.26														0.80		0.26	
	Kevo	0.00	-5.71E-03	0.00	-3.75E-03	0.53		0.79		0.24		0.33		0.65		0.01	-5.40E-03				
	Tiksi	0.32		0.85														0.32		0.85	
SO_4^{2-}	Alert	0.00	-3.67E-02	0.09	-7.50E-04	0.65		0.79		0.00	-1.11E-01	0.13		0.33		0.09	6.65E-04				
µg m^{-3}	Barrow	0.57		0.79										0.53		0.04	8.27E-03				
	Zeppelin	0.01	-2.33E-02	0.02	7.50E-03					0.06	-3.21E-02	0.27		0.54		0.12					
	Gruve	0.83		0.05	9.29E-03													0.83		0.05	9.29E-03
	Villum	1.00		0.45		(1992 - 2002)				0.68		0.40		0.33		0.14		0.80		0.14	
	Villum	0.13		0.02	-6.86E-03	(2008 - 2017)															
	Thule	0.28		0.65	5.00E-03													0.28		0.65	
NO_3^-	Alert	0.00	1.38E-03	0.00	4.66E-04	0.68		0.40		0.65		0.33		0.06	4.58E-03	0.79					
µg m^{-3}	Barrow	0.59		0.07	1.67E-04									1.00		0.18					
	Gruve	1.00		1.00														0.91		0.53	
	Villum	0.10	2.89E-03	0.14						0.14		0.33		0.62		0.19		0.35		0.88	
	Thule	0.30		0.70														0.15		0.70	
NH_4^+	Alert	0.00	-3.02E-03	0.70		0.53		0.33		0.06	-9.64E+00	0.65		0.79		0.53		0.80		0.14	
µg m^{-3}	Barrow	0.97		0.16										0.42		0.24					
	Villum	0.09	-1.42E-03	0.55						0.30		0.53		0.14		0.19		0.35		0.05	-2.85E-03
MSA	Alert	0.02	-3.29E-04	0.00	-2.80E-04	till 1999	0.68	0.40		0.53		0.13		0.03	7.30E-04	0.18		0.62		0.62	
µg m^{-3}	Alert	0.79		0.14		from 2000															
	Barrow	0.04	-1.00E-04	0.79										n/a		0.09	-2.33E-04				
	Zeppelin	0.17		0.55						0.33		0.09	1.55E-03								
	Gruve	0.14		0.14														0.14		0.14	
	Thule	NA		0.60														1.00		0.26	
Na^+	Alert	0.36		0.97		0.30		0.79		0.24		0.42		0.42		0.79		0.22		0.22	
µg m^{-3}	Barrow	0.57		0.97										0.79		0.24					
	Zeppelin	0.98		0.33						0.36		0.22		0.41		0.78		0.85		0.19	
	Villum	0.37		0.75						0.53		0.53		not enough data				0.80		0.45	
$nssCa^{2+}$	Alert	0.42		0.00	-2.15E-03	0.30		0.09	###	0.65		0.53		0.94		0.14					
µg m^{-3}	Barrow	0.38		0.82										0.53		0.93					
	Zeppelin	0.82		0.58						0.29		0.37		0.10		0.18		0.09	-9.27E-04	0.92	
	Villum	0.76		0.81						0.05	2.12E+00	0.05	1.81E+00					0.29		0.57	
$nssK^+$	Alert	0.10		0.97		0.09	###	0.14		0.82		0.39		0.93		0.18		0.22		0.14	
µg m^{-3}	Barrow	0.82		0.15										0.53		0.65					
	Villum	0.33		0.22						0.07	9.88E-01	0.05	9.25E-01					0.65		0.19	
Fe, µg m^{-3}	Alert	0.00	-4.73E-04	0.02	-5.54E-04	0.83		0.42		0.01	-1.93E+00	0.24		0.62		0.88					
Scat	Alert	0.12		0.11										1.00		0.17		0.06	-6.15E-01	0.30	
Mm^{-1}	Barrow	0.01	-1.75E-01	0.67										0.79		0.53		0.02	-4.58E-01	0.03	-1.23E-01
	Zeppelin	0.01	1.79E-01	0.00	5.48E-02									0.02	2.50E-01	0.01	6.16E-02	0.85		0.88	
	Summit	0.46		0.62														0.46		0.62	
	Tiksi	NA		NA																	
	Pallas	0.14		0.24										0.10	-1.21E-01	0.46		0.06	1.76E-01	0.42	
Abs	Alert	0.09	-1.50E-02	0.38										0.14		0.62		0.21		0.66	
Mm^{-1}	Barrow	0.00	-1.37E-02	0.56										0.53		0.93		0.75		0.30	
	Zeppelin	0.02	-7.84E-03	0.80										0.46		0.83		0.22		0.32	
	Summit	0.14		0.32														0.14		0.32	
	Pallas	0.39		0.71														0.53		0.33	
	Tiksi	0.28		0.77														0.83		0.60	
SSA	Alert	0.81		0.81										0.33		0.62		0.46		0.62	
	Barrow	0.05	9.18E-04	0.24										0.33		0.14		0.30		0.30	
	Zeppelin	0.11		0.01	2.82E-03									1.00		0.14		1.00		0.85	
	Pallas	0.39		0.39														0.53		0.53	
	Tiksi	NA		NA																	
	Summit	0.88		0.14														0.88		0.14	
SAE	Alert	0.10	-3.65E-02	0.11										0.35		0.70		0.35		0.57	
	Barrow	0.90		0.07	-1.32E-02									0.33		0.93		0.10	-1.74E-02	0.10	-7.48E-02
	Pallas	0.75		0.26										0.79		0.01	-2.62E-02	0.21		0.53	
	Tiksi	NA																			
	Zeppelin	0.00	-6.63E-02	0.00	-8.43E-02									0.04	-1.12E-01	0.00	-1.31E-01	0.65		0.10	-7.48E-02