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A compilation of tropospheric measurements of gas-phase and aerosol chemistry in polar regions

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Abstract. Measurements of atmospheric chemistry in polar regions have been made for more than half a century. Probably the first Antarctic ozone data were recorded in 1958 during the International Geophysical Year. Since then, many measurement campaigns followed, and the results are now spread over many publications in several journals. Here, we have compiled measurements of tropospheric gas-phase and aerosol chemistry made in the Arctic and the Antarctic. It is hoped that this data collection is worth more than the sum of its components and serves as a basis for future analyses of spatial and temporal trends in polar atmospheric chemistry.

1 Introduction

Atmospheric chemists have been investigating several phenomena in the troposphere of polar regions. Early studies focused on ozone (Roscoe and Roscoe, 2006). Later, Arctic haze was a major research topic for several decades (Raatz, 1984; Quinn et al., 2007). More recently, bromine-induced ozone depletion events (Barrie et al., 1988; Simpson et al., 2007b) and mercury depletion events (Schroeder et al., 1998; Steffen et al., 2008) were discovered. Many measurements of tropospheric gas-phase and aerosol chemistry in polar regions have been made, and the main results have been summarized in several review papers (e.g. Grannas et al., 2007; Simpson et al., 2007b; Domine et al., 2008; Anderson and Neff, 2008; Abbatt et al., 2012). However, due to obvious size restrictions, these review papers could only show examples of representative measurements. In this work, we attempt to provide an overview of the large number of measurements published in miscellaneous journals. The tables do not claim completeness, but it is hoped they they can serve as a starting point when searching for data of a particular compound. This work is an update of the data compilation that was published as a supplement to Simpson et al. (2007b), which only contained measurements until 2007. In addition to the new publications, the updated list now also contains several additional papers from before 2007 that were previously overlooked. For more details about the measurement methods, the reader is referred to section 1.4 of Simpson et al. (2007b). Briefly, our list contains direct measurements (e.g. CIMS, Huey et al., 2004), remote sensing (e.g. DOAS, Hausmann and Platt, 1994), and also indirect methods (e.g. Cl atoms via the "hydrocarbon clock" method, Jobson et al., 1994).

2 Literature data

The collection includes chemical measurements in the troposphere of the polar regions. Abbreviations and acronyms used in the tables are defined in Table 1. The measurement sites are listed in Table 2. They are also shown in the map of Fig. 1. To facilitate the discrimination between the hemispheres, abbreviations for Arctic measurement sites are printed in black upper-case letters (e.g. "BA" for Barrow), while those for Antarctic sites are shown in red lower-case letters (e.g. "ha" for Halley).

Gas-phase data are shown in Table 3. The entries are sorted by elements in the following order:

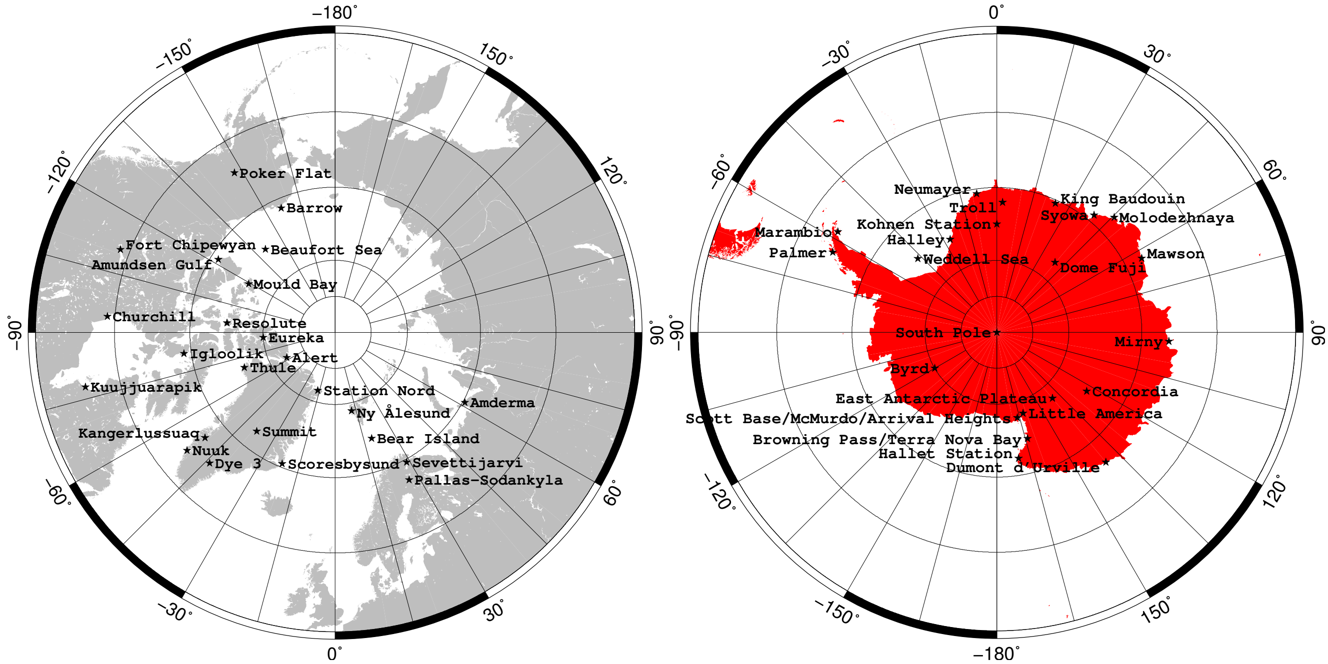

Figure 1. Measurement sites in the Arctic (left) and the Antarctic (right).

- oxygen and hydrogen (e.g. ozone, OH)
- nitrogen (e.g. NO_2)
- organic: C, H (alkanes)
- organic: C, H (unsaturated)
- organic: C, H, O (e.g. alcohols, aldehydes, acids)
- organic: C, H, O, N (e.g. PAN)
- fluorine (CFCs)
- chlorine (inorganic and organic)
- bromine (inorganic and organic)
- iodine (inorganic and organic)
- sulfur (inorganic and organic)
- mercury

Aerosol data are shown in Table 4. The entries are sorted by elements in the following order:

- nitrogen (e.g. NO_3^-)
- fluorine
- chlorine
- bromine
- iodine
- sulfur (SO_4^{2-}, MSA)
- black carbon, organic acids
- metals (alphabetically sorted by element symbol)

If the publication presents the mean, median or range of the measurements, these values are shown in the tables. Otherwise, the reader needs to refer to the original paper for more information. The units reported here are mostly the same as in the original publication. However, in a few cases concentrations in [$ng\,m^{-3}$] were converted to mixing ratios assuming a molar volume of $20\,L\,mol^{-1}$ for the cold air.

To keep the size of the collection within reasonable limits, the following data are excluded:

- Meteorological data (e.g. temperature, pressure, humidity, wind speed) are excluded. Only chemical measurements are listed.
- The compilation is restricted to atmospheric data; firn and snow chemistry are not included. For more information about these topics, the reader is referred to the firn air special issue at http://www.atmos-chem-phys.net/special_issue251.html and data provided at http://gcmd.nasa.gov and http://nsidc.org.
- Only tropospheric chemistry is included. Publications about stratospheric data, which are mostly related to ozone depletion and climate change, are excluded.
- CO_2 is not included because gathering all data for this species would be beyond the scope of this work.

Table 1. Abbreviations and acronyms used in the tables.

	Date	
spr	=	spring
sum	=	summer
fal	=	fall
win	=	winter
	Chemistry	
DMS	=	dimethyl sulfide, CH_3SCH_3
GEM	=	gaseous elemental mercury, Hg
MSA	=	methanesulfonic acid, CH_3SO_3H
PAN	=	peroxyacetyl nitrate, $CH_3CO_3NO_2$
PPN	=	peroxypropionyl nitrate, $C_2H_5CO_3NO_2$
RGM	=	reactive gaseous mercury
TGM	=	total gaseous mercury
	Other	
bgr	=	background air
DL	=	detection limit
NMHC	=	non-methane hydrocarbon
SCD	=	slant column density [molecules cm^{-2}]
VCD	=	vertical column density [molecules cm^{-2}]
ODE	=	ozone depletion event
non-ODE	=	data during ODE excluded

3 Data on the internet

In addition to the data presented in the literature, there are several web sites providing large data sets. The information presented here is mostly taken from their web pages:

- http://ds.data.jma.go.jp/gmd/wdcgg
  The World Data Centre for Greenhouse Gases (WDCGG) is established under the Global Atmosphere Watch (GAW) programme to collect, archive and provide data for greenhouse (CO_2, CH_4, CFCs, N_2O, etc.) and related (CO, NO_x, SO_2, VOC, etc.) gases and surface ozone in the atmosphere and ocean, measured under GAW and other programmes. From the web site, information including measurement data can be obtained that has been contributed by organizations and individual researchers in the world.

- http://www.gaw-wdca.org
  The World Data Centre for Aerosols (WDCA) is the data repository and archive for microphysical, optical, and chemical properties of atmospheric aerosol of the World Meteorological Organization's (WMO) Global Atmosphere Watch (GAW) programme.

- http://www.esrl.noaa.gov/gmd/ccgg/iadv/
  The Interactive Atmospheric Data Visualization web page provides data for CH_4, CO, CO_2, H_2, N_2O, SF_6, and other gases. The global coverage includes several Arctic and Antarctic stations.

- http://www-lgge.obs.ujf-grenoble.fr/CESOA/
  Aerosol data for Concordia and Dumont d'Urville (in French, registration required).

- http://saga.pmel.noaa.gov/data
  The Pacific Marine Environmental Laboratory (PMEL) Atmospheric Chemistry Data Server provides data sets for several cruises. Some of them include data from polar regions, e.g., RITS93, RITS94, ICEALOT.

- http://www.nilu.no/projects/ccc/emepdata.html
  The EMEP (European Monitoring and Evaluation Programme) web page contains some Arctic data sets, e.g. ozone, heavy metals, aerosol chemistry, and persistent organic pollutants (POPs) for Iceland and Spitzbergen.

- http://www.woudc.org/data_e.html
  The World Ozone and Ultraviolet Radiation Data Centre (WOUDC) contains ozone data measured by instruments located on ground-based, shipborne or airborne platforms. The archive includes lidar vertical profiles, ozonesonde vertical profiles, total column ozone (daily and monthly values), and more.

Table 2. List of measurement sites.

Abbrev.	Name (Northern Hemisphere)	Latitude	Longitude	Altitude above sea level (a.s.l.)
AG	Amundsen Gulf	≈ 71° N	≈ 122° W	
AL	Alert, Nunavut, Canada	82.45° N	62.52° W	210 m a.s.l.
AM	Amderma, Russia	69.72° N	61.62° E	
ARC	Arctic (miscellaneous sites)	–	–	
BA	Barrow, Alaska, USA	71.32° N	156.6° W	8 m a.s.l.
BI	Bear Island	74.5° N	19.0° E	
BS	Beaufort Sea	≈ 75° N	≈ 140° W	
CH	Churchill, Manitoba, Canada	59° N	94° W	
DY	Dye 3, Greenland	65.2° N	43.8° W	
EU	Eureka, Canada	80° N	86° W	
FC	Fort Chipewyan	58.78° N	111.12° W	232 m a.s.l.
IG	Igloolik, Nunavut, Canada	69° N	82° W	
KA	Kangerlussuaq (Søndre Strømfjord), Greenland	67° N	51° W	
KU	Kuujjuarapik, Hudson Bay, Quebec, Canada	55.5° N	77.7° W	
MB	Mould Bay, Nunavut, Canada	76.25° N	119.33° W	58 m a.s.l.
NA	Ny Ålesund Zeppelin Station, Spitzbergen, Norway	78.9° N	11.87° E	475 m a.s.l.
NO	Norwegian Arctic (miscellaneous sites)	–	–	
NU	Nuuk, Greenland	64.1° N	51.4° W	
NW	Narwhal ice floe camp, Arctic (140 km NW of Alert)	83.9° N	63.28° W	
PF	Poker Flat, Alaska, USA	64.18° N	147.72° W	501 m a.s.l.
PS	Pallas-Sodankylä, Finland	67.37° N	26.65° E	
RE	Resolute, Nunavut, Canada	75° N	95° W	
SC	Scoresbysund, Greenland	70.48° N	21.97° W	
SE	Sevettijarvi, Finland	69.58° N	28.83° E	130 m a.s.l.
SN	Station Nord, Greenland	81.6° N	16.67° W	
SU	Summit, Greenland	72.58° N	38.48° W	3238 m a.s.l.
SW	SWAN ice floe camp, Arctic (160 km N of Alert)	83.9° N	63.1° W	
TH	Thule, Greenland	76.527° N	68.83° W	
Abbrev.	Name (Northern Hemisphere)	Latitude	Longitude	Altitude above sea level (a.s.l.)
ant	Antarctic (miscellaneous sites)	–	–	
bp	Browning Pass, Ross Sea	74.6° S	163.93° E	
by	Byrd Station	80.00° S	120.00° W	
co	Concordia (Dome C)	75.1° S	123.33° E	3233 m a.s.l.
df	Dome Fuji	77.37° S	39.62° E	
du	Dumont d'Urville	66.67° S	140.02° E	40 m a.s.l.
ha	Halley	75.58° S	26.65° W	32 m a.s.l.
hs	Hallet Station	72.3° S	170.3° E	15 m a.s.l.
kb	King Baudouin	70.43° S	24.32° E	
ks	Kohnen Station	75° S	0° E	2892 m a.s.l.
la	Little America	78.18° S	162.17° E	44 m a.s.l.
ma	Marambio	64.2° S	57.7° W	
mi	Mirny	66.33° S	93.01° E	
mm	McMurdo station, Arrival Heights	77.82° S	166.58° E	11 m a.s.l.
mo	Molodezhnaya	67.4° S	45.5° E	
mw	Mawson	67.6° S	62.88° E	
nm	Neumayer Station	70.65° S	8.25° W	42 m a.s.l.
pa	Palmer Station	64.92° S	64° W	10 m a.s.l.
sb	Scott Base	77.85° S	166.75° E	
sp	South Pole	90° S	–	2810 m a.s.l.
sy	Syowa	69° S	39.58° E	
tn	Terra Nova Bay (Mario Zucchelli Station)	74.7° S	164.1° E	
tr	Troll Research Station	72.02° S	2.53° E	1275 m a.s.l.
ws	Weddell Sea	≈ 75° S	≈ 47° E	

Table 3: Gas phase data.

Species	Value	Date	Site	Reference
Oxygen and Hydrogen				
O_3		1957–1958	la	Wexler et al. (1960), Wisse and Meerburg (1969)
O_3		1958	du	Wisse and Meerburg (1969)
O_3		1958	ha	Roscoe and Roscoe (2006)
O_3		1958–1959	ha	Wisse and Meerburg (1969)
O_3		1961–1969	ant	Oltmans and Komhyr (1976)
O_3		1962	hs, sp	Aldaz (1965), Wisse and Meerburg (1969)
O_3		1962–2006	sp	Oltmans et al. (2008)
O_3		1965–1966	kb	Wisse and Meerburg (1969)
O_3	$< 10 \ldots 70$ nmol mol^{-1}	1965–1967	BA	Kelley (1973)
O_3		1966–2000	RE	Tarasick and Bottenheim (2002)
O_3		1973–1978	BA	Oltmans (1981)
O_3		1973–1984	BA	Oltmans and Komhyr (1986)
O_3		1973–2009	BA	Oltmans et al. (2012)
O_3		1973–2005	ARC, ant	Helmig et al. (2007b)
O_3		1974–2000	CH	Tarasick and Bottenheim (2002)
O_3		1975–1978	sp	Oltmans (1981)
O_3		1975–1984	sp	Oltmans and Komhyr (1986)
O_3		1975–2004	BA, sp	Oltmans et al. (2006)
O_3	monthly mean: $20 \ldots 35$ nmol mol^{-1}	1975–1989	sp	Schnell et al. (1991)
O_3	monthly mean: $18 \ldots 25$ nmol mol^{-1}	1975–1989 (Feb)	sp	Schnell et al. (1991)
O_3	monthly mean: $32 \ldots 38$ nmol mol^{-1}	1975–1989 (Aug)	sp	Schnell et al. (1991)
O_3		1979–1986	ARC	Oltmans et al. (1989)
O_3	$17 \ldots 37$ nmol mol^{-1}	Mar 1985	AL	Bottenheim et al. (1986)
O_3		Apr 1986	AL	Barrie et al. (1988); Mickle et al. (1989); Barrie et al. (1989)
O_3		1986–1987	AL	Barrie et al. (1988)
O_3		1987	ha	Jones et al. (2010)
O_3		1987–1988	mo, mi	Gruzdev et al. (1993)
O_3		1988–1990	BI	Taalas et al. (1993)
O_3		1988–1991	ma	Taalas et al. (1993)
O_3		1988–1991	PS	Taalas et al. (1993)
O_3		Sep–Oct 1988	ant	Yurganov (1990)
O_3		1989–1994	NA	Solberg et al. (1997b)
O_3	$14 \ldots 32$ nmol mol^{-1}	Sep–Oct 1989	mm	Sturges et al. (1993d)
O_3	$2 \ldots 48$ nmol mol^{-1}	Mar–Apr 1989	BA	Sturges et al. (1993c)
O_3		1989–1990	NA	Taalas et al. (1993)
O_3		1989–1990	sy	Murayama et al. (1992)
O_3		1989–1993	NA	Solberg et al. (1996b)
O_3		Mar–Apr 1990	BA	Sturges et al. (1993b)
O_3	seasonal cycle	1992–2001	NA	Eneroth et al. (2007)
O_3	$< 0.4 \ldots 20$ nmol mol^{-1}	Apr 1992	SW	Hopper et al. (1994a)

Table 3: Continued.

Species	Value	Date	Site	Reference
O_3	$< 0.5 \ldots 45$ nmol mol^{-1}	Apr 1992	AL[1]	Anlauf et al. (1994)
O_3	$0.9 \ldots 57.4$ nmol mol^{-1}	1992–1993	NA	Beine (1999)
O_3	trajectory analysis	1992–2000	ARC	Bottenheim and Chan (2006)
O_3		1993	nm	Wessel et al. (1998)
O_3	$0 \ldots 72$ nmol mol^{-1}	Mar–May 1993	PF	Beine et al. (1996b)
O_3		May–Jun 1993	SU	Bales et al. (1995b)
O_3		1993–1994	NA	Wessel et al. (1998)
O_3		1993–2000	EU	Tarasick and Bottenheim (2002)
O_3		1994–1996	SC	Rasmussen et al. (1997)
O_3		1994–1996	TH	Rasmussen et al. (1997)
O_3	$< 0.5 \ldots 36$ nmol mol^{-1}	spr 1994	NW	Ariya et al. (1998)
O_3		spr 1994	ARC	Galaktionov et al. (1997)
O_3	$4.0 \ldots 51.0$ nmol mol^{-1}	Feb–May 1994	NA	Beine et al. (1996a, 1997a,b)
O_3		Mar–Apr 1994	ARC	Hopper et al. (1998)
O_3		Mar–Jun 1994	ARC	Jaeschke et al. (1997)
O_3	$15 \ldots 45$ nmol mol^{-1}	1994–1996	NA	Beine and Krognes (2000)
O_3		Apr 1994	NW	Gong et al. (1997)
O_3		Jan–May 1995	KA	Miller et al. (1997)
O_3		Feb–Apr 1995	AL	Ariya et al. (1999)
O_3	bgr.: $30.0 \ldots 61.6$ nmol mol^{-1}	Mar–May 1995	PF	Beine et al. (1997a)
O_3	mean: 54 nmol mol^{-1}	May–Jul 1995	SU	Munger et al. (1999)
O_3		Sep 1995	mm	Kreher et al. (1997)
O_3		1995–1996	KA	Rasmussen et al. (1997)
O_3		1995–1996	NA	Martinez et al. (1999)
O_3		1995, 1996	NA	Tuckermann et al. (1997)
O_3		1995–2001	SN	Heidam et al. (2004)
O_3		Mar–May 1996	NA	Staebler et al. (1999)
O_3	$0 \ldots 49.8$ nmol mol^{-1}	1997–1999 (spr)	NA	Beine et al. (2001)
O_3		Apr–May 1998	AL	Boudries and Bottenheim (2000)
O_3		Jun 1998	NA	Sprovieri and Pirrone (2000)
O_3		1998, 2000	AL	Sumner et al. (2002)
O_3	$12 \ldots 21$ nmol mol^{-1}	Mar 1999	ant	Jacobi and Schrems (1999)
O_3	40.5 nmol mol^{-1}	sum 1999	SU	Yang et al. (2002)
O_3		1999–2000	nm	Frieß et al. (2004)
O_3		1999–2002	SN	Skov et al. (2004)
O_3	$1.28 \ldots 56.32$ nmol mol^{-1}	1999–2002	KU	Poissant and Pilote (2003)
O_3	51.9 nmol mol^{-1}	sum 2000	SU	Yang et al. (2002)
O_3		Feb–May 2000	AL	Bottenheim et al. (2002b)
O_3		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Ridley et al. (2007); Cantrell et al. (2003); Blake et al. (2003); Wang et al. (2003); Olson et al. (2012)
O_3		Jun 2000	SU	Helmig et al. (2002)
O_3		2000–2001	nm	Ebinghaus et al. (2002)
O_3		2000–2004	SU	Helmig et al. (2007c)
O_3	trajectory analysis	2000–2007	ARC	Hirdman et al. (2009)
O_3		spr 2001	KU	Hönninger et al. (2004)

[1]Measurements at two sites near Alert and vertical profiles are presented.

Table 3: Continued.

Species	Value	Date	Site	Reference
O_3		Apr 2001	ARC	Toyota et al. (2011)
O_3	median: 36.5 nmol mol^{-1}	Apr–May 2001	KU	Poissant and Pilote (2003); Poissant and Hoenninger (2004)
O_3	mean: 14.5 nmol mol^{-1}	Dec 2001	ant	Frey et al. (2005)
O_3		Mar 2002	SN	Ferrari et al. (2004)
O_3		Apr 2002	KU	Gauchard et al. (2005b)
O_3	mean: 19.3 nmol mol^{-1}	Dec 2002	ant	Frey et al. (2005)
O_3	mean: 27.9 nmol mol^{-1}	Jan 2003	sp	Frey et al. (2005)
O_3		Apr–May 2003	NA	Sprovieri et al. (2005a,b)
O_3	$<1\ldots52$ nmol mol^{-1}	Mar–Apr 2003	ARC	Jacobi et al. (2006, 2010)
O_3	$19\ldots42$ nmol mol^{-1}	Mar–Apr 2003	NA	Jacobi et al. (2006)
O_3		Aug–Oct 2003	ha	Jones et al. (2006)
O_3		Nov–Dec 2003	sp	Eisele et al. (2008)
O_3		Dec 2003	sp	Helmig et al. (2008a), Johnson et al. (2008)
O_3		2003–2005	SU	Helmig et al. (2007a)
O_3		Mar 2004	KU	Constant et al. (2007)
O_3	$15\ldots58$ nmol mol^{-1}	Apr–May 2004	NA	Amoroso et al. (2005)
O_3		spr 2004	AL	Morin et al. (2007)
O_3		spr 2004	AL[2]	Morin et al. (2005)
O_3		2004–2005	NA	Ferrari et al. (2008)
O_3	mean: 7.0 nmol mol^{-1}	2004–2005	ha	Bloss et al. (2010)
O_3	$18\ldots35$ nmol mol^{-1}	2004–2008	du	Legrand et al. (2009)
O_3		2005	BA	Simpson et al. (2007a)
O_3	median: 36 nmol mol^{-1}	Nov–Dec 2005	ant	Slusher et al. (2010)
O_3		Jan–Apr 2005	BA	Keil and Shepson (2006)
O_3		Mar–Apr 2005	BA	Tackett et al. (2007)
O_3	mean: 21.4 nmol mol^{-1}	Jul–Sep 2005	ARC	Sommar et al. (2010)
O_3		2006–2008	ARC	Bottenheim et al. (2009), Jacobi et al. (2010)
O_3		2007	ha	Jones et al. (2010)
O_3		Apr 2007	ARC	Prados-Roman et al. (2011)
O_3	mean: 55.6 pmol mol^{-1}	May–Jun 2007	SU	Ziemba et al. (2010)
O_3		Aug–Sep 2007	ha	Buys et al. (2012)
O_3		2007, 2008	SU	Liao et al. (2011a); Stutz et al. (2011)
O_3	$21\ldots35$ nmol mol^{-1}	2007–2008	co	Legrand et al. (2009)
O_3		2007–2011	NA	Pfaffhuber et al. (2012)
O_3		2007–2011	tr	Hansen et al. (2009), Pfaffhuber et al. (2012)
O_3		2008	ARC	Wespes et al. (2012); Olson et al. (2012)
O_3	mean: 30 nmol mol^{-1}	Feb–Mar 2008	KU	Edwards et al. (2011)
O_3	up to 46 nmol mol^{-1}	Mar–Apr 2008	AG	Pöhler et al. (2010); Nghiem et al. (2012); Seabrook et al. (2011)
O_3		Mar–Apr 2008	ARC	Gilman et al. (2010)

[2] Measurements above the Arctic Ocean sea ice, 5 km NNW of Alert, are also presented.

Table 3: Continued.

Species	Value	Date	Site	Reference
O_3	mean: 63 $nmol\,mol^{-1}$	Apr 2008	ARC	Liang et al. (2011); Neuman et al. (2010); Salawitch et al. (2010); Dupont et al. (2012); Liao et al. (2012a)
O_3	mean: 57 $nmol\,mol^{-1}$	Jun–Jul 2008	ARC	Liang et al. (2011)
O_3		2008–2009	ant	Bauguitte et al. (2011)
O_3	ozonesondes	2008–2009	BA	Oltmans et al. (2012)
O_3		Jan 2009	co	Dommergue et al. (2012)
H_2	mean: 546 $pmol\,mol^{-1}$	2004–2005	ha	Bloss et al. (2010)
OH	mean: 1.1×10^5 cm^{-3}	Feb 1994	pa	Jefferson et al. (1998); Davis et al. (1998)
OH		2000	sp	Mauldin III et al. (2004)
OH		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Mauldin III et al. (2003)
OH	median: 6.4×10^6 cm^{-3}	2003	SU	Sjostedt et al. (2008)
OH		Nov–Dec 2003	sp	Eisele et al. (2008)
OH	mean: 3.9×10^5 cm^{-3}	Jan–Feb 2005	ha	Bloss et al. (2007, 2010)
OH		2007, 2008	SU	Liao et al. (2011a)
OH		2008	ARC	Olson et al. (2012)
OH	noontime mean: 0.77×10^6 cm^{-3}	Feb–Mar 2008	KU	Edwards et al. (2011)
OH	mean: 0.04 $pmol\,mol^{-1}$	Apr 2008	ARC	Liang et al. (2011)
OH	mean: 0.13 $pmol\,mol^{-1}$	Jun–Jul 2008	ARC	Liang et al. (2011)
OH	mean: 2.1×10^6 cm^{-3}	2010–2011	du	Kukui et al. (2012)
HO_2	mean: 0.76 $pmol\,mol^{-1}$	Jan–Feb 2005	ha	Bloss et al. (2007, 2010)
HO_2	mean: 1.34×10^8 cm^{-3}	Feb–Mar 2008	KU	Edwards et al. (2011)
HO_2		2008	ARC	Olson et al. (2012)
HO_2	mean: 3.5 $pmol\,mol^{-1}$	Apr 2008	ARC	Liang et al. (2011)
HO_2	mean: 8.9 $pmol\,mol^{-1}$	Jun–Jul 2008	ARC	Liang et al. (2011)
H_2O_2	0.3...3.5 $nmol\,mol^{-1}$	Jun–Jul 1990	SU	Sigg et al. (1992)
H_2O_2		1992	AL	de Serves (1994)
H_2O_2	up to 0.5 $nmol\,mol^{-1}$	1993–1994	ant	Fuhrer et al. (1996)
H_2O_2		May–Jun 1993	SU	Bales et al. (1995b)
H_2O_2		May–Jul 1993	SU	Bales et al. (1995a)
H_2O_2		Aug 1994	SU	Dibb et al. (1996)
H_2O_2	mean: 1.4 $nmol\,mol^{-1}$	Jun 1996	SU	Hutterli et al. (2001)
H_2O_2	$<$ DL...0.91 $nmol\,mol^{-1}$	1997–1999	nm	Riedel et al. (2000)
H_2O_2	1.78 $nmol\,mol^{-1}$	sum 1999	SU	Yang et al. (2002)
H_2O_2	mean: 278 $pmol\,mol^{-1}$	Dec 2000	sp	Hutterli et al. (2004)
H_2O_2	mean: 321 $pmol\,mol^{-1}$	Dec 2000	ant	Frey et al. (2005)
H_2O_2		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Wang et al. (2003); Olson et al. (2012)
H_2O_2	80...1600 $pmol\,mol^{-1}$	Jun–Jul 2000	SU	Jacobi et al. (2002)
H_2O_2	mean: 650 $pmol\,mol^{-1}$	Dec 2001	ant	Frey et al. (2005)
H_2O_2	mean: 363 $pmol\,mol^{-1}$	Dec 2002	by	Frey et al. (2005)
H_2O_2	mean: 230 $pmol\,mol^{-1}$	Jan 2003	sp	Frey et al. (2005)
H_2O_2	mean: 1448 $pmol\,mol^{-1}$	Jun–Jul 2003	SU	Frey et al. (2009a)
H_2O_2		Nov–Dec 2003	sp	Eisele et al. (2008)

Table 3: Continued.

Species	Value	Date	Site	Reference
H_2O_2	mean: 278 pmol mol^{-1}	Dec 2003	sp	Frey et al. (2009a)
H_2O_2	mean: 204 pmol mol^{-1}	Mar–May 2004	SU	Frey et al. (2009a)
H_2O_2		2008	ARC	Olson et al. (2012)
H_2O_2	145...1000 pmol mol^{-1}	2010–2011	du	Preunkert et al. (2012)
Nitrogen				
NH_3		Jan 1994	du	Legrand et al. (1998)
NH_3		Aug 1994	SU	Dibb et al. (1996)
NH_3	0...4645.0 pmol mol^{-1}	1997–1999 (spr)	NA	Beine et al. (2001)
NH_3	monthly mean: 0.23...28 nmol mol^{-1}	2005–2010	du	Legrand et al. (2012)
N_2O	mean: 341 pmol mol^{-1}	1988–1989	DY	Davidson et al. (1993b,a)
N_2O		1997–2005	SU	Dibb et al. (2007)
NO	median: 225 pmol mol^{-1}	1989–1999	sp	Davis et al. (2001)
NO	bgr.: 0...43.4 pmol mol^{-1}	Feb–May 1994	NA	Beine et al. (1997a)
NO	0...1501.8 pmol mol^{-1}	Mar–May 1995	PF	Beine et al. (1997a)
NO	mean: 3 pmol mol^{-1}	Jan–Mar 1997	nm	Jones et al. (1999)
NO		Jul 1998	SU	Honrath et al. (1999)
NO		1998, 2000	sp	Davis et al. (2004)
NO	mean: 1.2 pmol mol^{-1}	Jan–Feb 1999	nm	Jacobi et al. (2000)
NO		Jul 1999	SU	Dibb et al. (2002)
NO	24.7 pmol mol^{-1}	sum 1999	SU	Yang et al. (2002)
NO	$<$ 1...7.6 pmol mol^{-1}	1999–2000	nm	Weller et al. (2002)
NO	16.0 pmol mol^{-1}	sum 2000	SU	Yang et al. (2002)
NO		Jun 2000	SU	Jacobi et al. (2004)
NO		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Ridley et al. (2007); Cantrell et al. (2003); Wang et al. (2003); Olson et al. (2012)
NO	0...24.7 pmol mol^{-1}	Feb–May 2000	AL	Beine et al. (2002)
NO		Nov–Dec 2003	sp	Eisele et al. (2008); Wang et al. (2007)
NO		Dec 2003	sp	Helmig et al. (2008b)
NO	mean: 7.3 pmol mol^{-1}	2004–2005	ha	Jones et al. (2011); Bloss et al. (2010); Anderson and Bauguitte (2007), Bauguitte et al. (2012)
NO	median: 95 pmol mol^{-1}	Nov–Dec 2005	ant	Slusher et al. (2010)
NO	median: 1.8 pmol mol^{-1}	Feb–Apr 2006	NA	Amoroso et al. (2010)
NO	mean: 10.9 pmol mol^{-1}	May–Jun 2007	SU	Ziemba et al. (2010)
NO		2007, 2008	SU	Liao et al. (2011a)
NO		2008	ARC	Olson et al. (2012)
NO	mean: 4 pmol mol^{-1}	Feb–Mar 2008	KU	Moller et al. (2010), Edwards et al. (2011)
NO	mean: 11 pmol mol^{-1}	Apr 2008	ARC	Liang et al. (2011)
NO	mean: 9 pmol mol^{-1}	Jun–Jul 2008	ARC	Liang et al. (2011)
NO	111 pmol mol^{-1}	2009–2010	co	Frey et al. (2012)
NO_2	17...97 pmol mol^{-1}	Mar 1985	AL	Bottenheim et al. (1986)

Table 3: Continued.

Species	Value	Date	Site	Reference
NO_2	85 $pmol\,mol^{-1}$	spr 1988	AL	Bottenheim et al. (1990)
NO_2		Mar–Apr 1988	AL	Bottenheim et al. (1993)
NO_2	SCD	1995	mm	Kreher et al. (1997)
NO_2		1995–1996	NA	Martinez et al. (1999)
NO_2		1995, 1996	NA	Tuckermann et al. (1997)
NO_2	0...358.3 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
NO_2	10...170 $ng\,m^{-3}$	May–Jun 1997	NA	Allegrini et al. (1999)
NO_2	10...300 $ng\,m^{-3}$	Dec 1997	tn	Allegrini et al. (1999)
NO_2	4.94...620.73 $ng\,m^{-3}$	1997–1999	tn	Ianniello et al. (2003)
NO_2		Jul 1998	SU	Honrath et al. (1999)
NO_2	mean: 3.2 $pmol\,mol^{-1}$	Jan–Feb 1999	nm	Jacobi et al. (2000)
NO_2		Jul 1999	SU	Dibb et al. (2002)
NO_2	32.7 $pmol\,mol^{-1}$	sum 1999	SU	Yang et al. (2002)
NO_2		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Ridley et al. (2007)
NO_2	0...38.8 $pmol\,mol^{-1}$	Feb–May 2000	AL	Beine et al. (2002)
NO_2		Jun 2000	SU	Jacobi et al. (2004)
NO_2	15.2 $pmol\,mol^{-1}$	sum 2000	SU	Yang et al. (2002)
NO_2	bgr.: 30 $pmol\,mol^{-1}$	Jul 2003	NA	Wittrock et al. (2004)
NO_2	mean: 4.3 $pmol\,mol^{-1}$	2004–2005	ha	Jones et al. (2011); Bloss et al. (2010); Anderson and Bauguitte (2007), Bauguitte et al. (2012)
NO_2	median: 20.2 $pmol\,mol^{-1}$	Feb–Apr 2006	NA	Amoroso et al. (2010)
NO_2	mean: 39 $pmol\,mol^{-1}$	Feb–Mar 2008	KU	Moller et al. (2010), Edwards et al. (2011)
NO_2	mean: 6 $pmol\,mol^{-1}$	Apr 2008	ARC	Liang et al. (2011)
NO_2	mean: 18 $pmol\,mol^{-1}$	Jun–Jul 2008	ARC	Liang et al. (2011)
NO_2	102 $pmol\,mol^{-1}$	2009–2010	co	Frey et al. (2012)
NO_x	$\leq$ 30 $pmol\,mol^{-1}$	spr 1992	AL	Muthuramu et al. (1994)
NO_x	$<$ 20...100 $pmol\,mol^{-1}$	Apr 1992	ARC	Leaitch et al. (1994)
NO_x	0...637.5 $pmol\,mol^{-1}$	Feb–May 1994	NA	Beine et al. (1996a)
NO_x	bgr.: 0...143.9 $pmol\,mol^{-1}$	Feb–May 1994	NA	Beine et al. (1997b)
NO_x	bgr.: 0...143.9 $pmol\,mol^{-1}$	Feb–May 1994	NA	Beine et al. (1997a)
NO_x	bgr.: 0...955.5 $pmol\,mol^{-1}$	Mar–May 1995	PF	Beine et al. (1997a)
NO_x		1998–1999	SU	Ford et al. (2002)
NO_x	$<$ 2...20.2 $pmol\,mol^{-1}$	Jan–Feb 1999	nm	Jacobi et al. (2000)
NO_x	49.4 $pmol\,mol^{-1}$	sum 1999	SU	Yang et al. (2002)
NO_x		Jun 2000	SU	Honrath et al. (2002); Jacobi et al. (2004)
NO_x	39.7 $pmol\,mol^{-1}$	sum 2000	SU	Yang et al. (2002)
NO_x		2000	sp	Oncley et al. (2004)
NO_x		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Ridley et al. (2007)
NO_x	mean: 25 $pmol\,mol^{-1}$	Apr 2008	ARC	Liang et al. (2011); Dupont et al. (2012)
NO_x	mean: 25 $pmol\,mol^{-1}$	Jun–Jul 2008	ARC	Liang et al. (2011)

Table 3: Continued.

Species	Value	Date	Site	Reference
NO_y		Mar–Apr 1988	AL	Bottenheim et al. (1993)
NO_y	mean: 300 $pmol\,mol^{-1}$	Feb–May 1994	NA	Solberg et al. (1997a)
NO_y	mean: 850 $pmol\,mol^{-1}$	May–Jul 1995	SU	Munger et al. (1999)
NO_y		1995	SU	Dibb et al. (1998)
NO_y	mean: 24 $pmol\,mol^{-1}$	Jan–Mar 1997	nm	Jones et al. (1999); Weller et al. (1999)
NO_y	100…600 $ng\,m^{-3}$	May–Jun 1997	NA	Allegrini et al. (1999)
NO_y	300…700 $ng\,m^{-3}$	Dec 1997	tn	Allegrini et al. (1999)
NO_y	14.58…701.20 $ng\,m^{-3}$	1997–1999	tn	Ianniello et al. (2003)
NO_y		Jul 1998	SU	Honrath et al. (1999)
NO_y		1998–1999	SU	Ford et al. (2002)
NO_y	46 $pmol\,mol^{-1}$	1999–2000	nm	Weller et al. (2002)
NO_y		Feb–Mar 2000	AL	Bottenheim et al. (2002b)
NO_y		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Wang et al. (2003)
NO_y	mean: 410 $pmol\,mol^{-1}$	Apr 2008	ARC	Liang et al. (2011)
NO_y	mean: 320 $pmol\,mol^{-1}$	Jun–Jul 2008	ARC	Liang et al. (2011)
HONO	0…≤ 240 $pmol\,mol^{-1}$	Apr 1992	AL	Hausmann and Platt (1994)
HONO	< 1.7…68 $pmol\,mol^{-1}$	win 1992	AL	Li (1994)
HONO	< 1.7…20 $pmol\,mol^{-1}$	spr 1992	AL	Li (1994)
HONO	mean: 5.5 $pmol\,mol^{-1}$	Mar–May 1996	NA	Staebler et al. (1999)
HONO	0…64.8 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
HONO		Jul 1999	SU	Dibb et al. (2002)
HONO	7.24 $pmol\,mol^{-1}$	sum 1999	SU	Yang et al. (2002)
HONO	12.7 $pmol\,mol^{-1}$	sum 2000	SU	Yang et al. (2002)
HONO		2000	sp	Dibb et al. (2004)
HONO		Feb–May 2000	AL	Zhou et al. (2001)
HONO		Jun 2000	SU	Honrath et al. (2002); Jacobi et al. (2004)
HONO	< DL…20 $pmol\,mol^{-1}$,	Feb–May 2001	NA	Beine et al. (2003)
HONO	see note[3]	Apr–May 2003	NA	Ianniello et al. (2007)
HONO	median: 5.8 $pmol\,mol^{-1}$, see note[4]	Nov–Dec 2003	sp	Liao et al. (2006)
HONO	0…48.3 $pmol\,mol^{-1}$	Apr–May 2004	NA	Amoroso et al. (2005)
HONO	0…7 $pmol\,mol^{-1}$	Nov 2004	bp	Beine et al. (2006)
HONO	mean: 7 $pmol\,mol^{-1}$, see note[5]	2004–2005	ha	Bloss et al. (2010)
HONO	mean: 10.2 $pmol\,mol^{-1}$	Jan 2005	ha	Clemitshaw (2006)
HONO	median: 4.2 $pmol\,mol^{-1}$	Feb–Apr 2006	NA	Amoroso et al. (2010)
HONO		2007, 2008	SU	Dibb et al. (2010); Liao et al. (2011a)
HONO	< 0.4…500 $pmol\,mol^{-1}$	Mar–Apr 2009	BA	Villena et al. (2011)
HONO	5…60 $pmol\,mol^{-1}$	2010–2011	co	Kerbrat et al. (2012)
HONO	2…10 $pmol\,mol^{-1}$	Feb 2011	du	Kerbrat et al. (2012)
HNO_3 (g+aq)	24…72 $pmol\,mol^{-1}$	Mar 1985	AL	Bottenheim et al. (1986)
HNO_3	3.5…180 $pmol\,mol^{-1}$	spr 1988	AL	Bottenheim et al. (1990)

[3] Means from denuder comparison: 23.4 and 19.2 $ng\,m^{-3}$.
[4] A comparison to mist chamber data shows a large discrepancy.
[5] Jones et al. (2011) state that this value likely represents an overestimate.

Table 3: Continued.

Species	Value	Date	Site	Reference
HNO_3		Mar–Apr 1988	AL	Bottenheim et al. (1993)
HNO_3	mean: 77 $ng\,m^{-3}$	May 1989	AL	Kieser et al. (1993)
HNO_3 (g+aq)		1990–2001	SN	Heidam et al. (2004)
HNO_3		Jan–Feb 1991	tn	Allegrini et al. (1994)
HNO_3	5...100 $pmol\,mol^{-1}$	win/spr 1992	AL	Barrie et al. (1994a)
HNO_3	$\leq$ 40...110 $pmol\,mol^{-1}$	Apr 1992	ARC	Leaitch et al. (1994)
HNO_3	mean: 0.9 $nmol\,m^{-3}$(STP)	Jun–Jul 1993	SU	Dibb et al. (1994)
HNO_3		1994–1995	SU	Dibb et al. (1998)
HNO_3		Mar–Jun 1994	ARC	Jaeschke et al. (1997)
HNO_3		Aug 1994	SU	Dibb et al. (1996)
HNO_3	mean: 7.4 $pmol\,mol^{-1}$	Mar–May 1996	NA	Staebler et al. (1999)
HNO_3	mean: 5 $pmol\,mol^{-1}$	Jan–Mar 1997	nm	Jones et al. (1999); Weller et al. (1999)
HNO_3	0...229.1 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
HNO_3	mean: 4.0 $pmol\,mol^{-1}$	Jan–Feb 1999	nm	Jacobi et al. (2000)
HNO_3	$<$ 1...24 $pmol\,mol^{-1}$	1999–2000	nm	Weller et al. (2002)
HNO_3		2000–2001	du	Jourdain and Legrand (2002)
HNO_3	mean: 14.5 $ng\,m^{-3}$	Feb 2000	AL	Ianniello et al. (2002)
HNO_3		Mar–Apr 2000	NA	Hara et al. (2002b)
HNO_3	mean: 54.9 $ng\,m^{-3}$	Apr–May 2000	AL	Ianniello et al. (2002)
HNO_3		Jun 2000	SU	Honrath et al. (2002); Jacobi et al. (2004)
HNO_3		2000	sp	Dibb et al. (2004)
HNO_3		2000	sp	Huey et al. (2004)
HNO_3		Feb–May 2000	ARC	Olson et al. (2012)
HNO_3	0.9...70 $pmol\,mol^{-1}$	Feb–May 2001	NA	Beine et al. (2003)
HNO_3	see note[6]	Apr–May 2003	NA	Ianniello et al. (2007)
HNO_3		Nov–Dec 2003	sp	Wang et al. (2007); Eisele et al. (2008)
HNO_3		2004–2005	ha	Jones et al. (2011, 2008)
HNO_3	median: 120 $pmol\,mol^{-1}$	Nov–Dec 2005	ant	Slusher et al. (2010)
HNO_3	median: 1.8 $pmol\,mol^{-1}$	Feb–Apr 2006	NA	Amoroso et al. (2010)
HNO_3		2007, 2008	SU	Dibb et al. (2010); Liao et al. (2011a)
HNO_3		2008	ARC	Wespes et al. (2012); Olson et al. (2012)
HNO_3	mean: 30 $pmol\,mol^{-1}$	Apr 2008	ARC	Liang et al. (2011)
HNO_3	mean: 70 $pmol\,mol^{-1}$	Jun–Jul 2008	ARC	Liang et al. (2011)
HNO_3 (g+aq)		2009–2010	BA	Morin et al. (2012)
HNO_4		Feb–May 2000	AL	Zhou et al. (2001)
HNO_4	mean: 25 $pmol\,mol^{-1}$	Dec 2000	sp	Slusher et al. (2002)
HNO_4		Nov–Dec 2003	sp	Eisele et al. (2008); Wang et al. (2007)
HNO_4	median: 64 $pmol\,mol^{-1}$	Nov–Dec 2005	ant	Slusher et al. (2010)

Organic: C, H (alkanes)

CH_4		Apr 1986	AL	Trivett et al. (1989)

[6]Means from denuder comparison: 80.4 and 36.1 $ng\,m^{-3}$.

Table 3: Continued.

Species	Value	Date	Site	Reference
CH_4	mean: 1780 nmol mol^{-1}	1988–1989	DY	Davidson et al. (1993b,a)
CH_4		1989–1990	AL	Hopper et al. (1994b)
CH_4	1800...1950 nmol mol^{-1}	win/spr 1992	AL	Worthy et al. (1994)
CH_4		Apr 1994	AL, NW	Ariya et al. (1998)
CH_4		Feb–Apr 1995	AL	Ariya et al. (1999)
CH_4		1997–2005	SU	Dibb et al. (2007)
CH_4	1800 nmol mol^{-1}	sum 1999	SU	Yang et al. (2002)
CH_4		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003)
CH_4	1816 nmol mol^{-1}	sum 2000	SU	Yang et al. (2002)
CH_4	mean: 1720 pmol mol^{-1}	2004–2005	ha	Bloss et al. (2010)
C_2H_6		1982, 1983	NO	Hov et al. (1984)
C_2H_6	mean: 370 pmol mol^{-1}	1982–1985	nm	Rudolph et al. (1989)
C_2H_6		1983–1986	NA	Hov et al. (1989)
C_2H_6		1989–1994	NA	Solberg et al. (1996a)
C_2H_6	2000...4300 pmol mol^{-1}	Mar 1989	BA	Doskey and Gaffney (1992)
C_2H_6	mean: 853 pmol mol^{-1}	Apr 1989	AL	Kieser et al. (1993)
C_2H_6	mean: 683 pmol mol^{-1}	May 1989	AL	Kieser et al. (1993)
C_2H_6	mean: 288 pmol mol^{-1}	1990–1996	sb	Clarkson et al. (1997)
C_2H_6	1500...4000 pmol mol^{-1}	win/spr 1992	AL	Jobson et al. (1994)
C_2H_6		Mar–Jun 1993	NA	Solberg et al. (1996b)
C_2H_6		Apr 1994	AL, NW	Ariya et al. (1998)
C_2H_6		Feb–Apr 1995	AL	Ariya et al. (1999)
C_2H_6	1366...2594 pmol mol^{-1}	Mar–May 1995	PF	Herring et al. (1997)
C_2H_6		1997–1998	SU	Swanson et al. (2003)
C_2H_6		1997–2004	SU	Dibb et al. (2007)
C_2H_6		Apr–May 1998	AL	Boudries and Bottenheim (2000)
C_2H_6		1998, 2000	AL	Bottenheim et al. (2002a)
C_2H_6		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Blake et al. (2003)
C_2H_6		Nov–Dec 2003	sp	Eisele et al. (2008)
C_2H_6	mean: 186 pmol mol^{-1}	2004–2005	ha	Read et al. (2007)
C_2H_6	median: 223 pmol mol^{-1}	Nov–Dec 2005	ant	Slusher et al. (2010)
C_2H_6	mean: 3194 pmol mol^{-1}	Feb–Mar 2008	KU	Edwards et al. (2011)
C_2H_6	mean: 1.694 nmol mol^{-1}	Mar–Apr 2008	ARC	Gilman et al. (2010)
C_3H_8		1982, 1983	NO	Hov et al. (1984)
C_3H_8	mean: 70 pmol mol^{-1}	1982–1985	nm	Rudolph et al. (1989)
C_3H_8		1983–1986	NA	Hov et al. (1989)
C_3H_8		1989–1994	NA	Solberg et al. (1996a)
C_3H_8	800...2200 pmol mol^{-1}	Mar 1989	BA	Doskey and Gaffney (1992)
C_3H_8	mean: 505 pmol mol^{-1}	Apr 1989	AL	Kieser et al. (1993)
C_3H_8	mean: 288 pmol mol^{-1}	May 1989	AL	Kieser et al. (1993)
C_3H_8	mean: 43 pmol mol^{-1}	1990–1996	sb	Clarkson et al. (1997)
C_3H_8	500...3000 pmol mol^{-1}	win/spr 1992	AL	Jobson et al. (1994)
C_3H_8		Mar–Jun 1993	NA	Solberg et al. (1996b)
C_3H_8		Apr 1994	AL, NW	Ariya et al. (1998)
C_3H_8		Feb–Apr 1995	AL	Ariya et al. (1999)
C_3H_8	188...1542 pmol mol^{-1}	Mar–May 1995	PF	Herring et al. (1997)
C_3H_8		1997–1998	SU	Swanson et al. (2003)
C_3H_8		1997–2004	SU	Dibb et al. (2007)

Table 3: Continued.

Species	Value	Date	Site	Reference
C_3H_8		Apr–May 1998	AL	Boudries and Bottenheim (2000)
C_3H_8		1998, 2000	AL	Bottenheim et al. (2002a)
C_3H_8		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Ridley et al. (2007); Cantrell et al. (2003); Blake et al. (2003); Olson et al. (2012)
C_3H_8	mean: 31 $pmol\,mol^{-1}$	2004–2005	ha	Read et al. (2007)
C_3H_8		2008	ARC	Olson et al. (2012)
C_3H_8	mean: 1841 $pmol\,mol^{-1}$	Feb–Mar 2008	KU	Edwards et al. (2011)
C_3H_8	mean: 0.654 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
n-C_4H_{10}		1982, 1983	NO	Hov et al. (1984)
n-C_4H_{10}		1983–1986	NA	Hov et al. (1989)
n-C_4H_{10}	460…910 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
n-C_4H_{10}	mean: 167 $pmol\,mol^{-1}$	Apr 1989	AL	Kieser et al. (1993)
n-C_4H_{10}	mean: 60 $pmol\,mol^{-1}$	May 1989	AL	Kieser et al. (1993)
n-C_4H_{10}		1989–1994	NA	Solberg et al. (1996a)
n-C_4H_{10}	100…1500 $pmol\,mol^{-1}$	win/spr 1992	AL	Jobson et al. (1994)
n-C_4H_{10}	19.6…126.2 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
n-C_4H_{10}		Mar–Jun 1993	NA	Solberg et al. (1996b)
n-C_4H_{10}		Apr 1994	AL, NW	Ariya et al. (1998)
n-C_4H_{10}		Feb–Apr 1995	AL	Ariya et al. (1999)
n-C_4H_{10}	22…912 $pmol\,mol^{-1}$	Mar–May 1995	PF	Herring et al. (1997)
n-C_4H_{10}		1997–1998	SU	Swanson et al. (2003)
n-C_4H_{10}		Apr–May 1998	AL	Boudries and Bottenheim (2000)
n-C_4H_{10}		1998, 2000	AL	Bottenheim et al. (2002a)
n-C_4H_{10}		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Blake et al. (2003)
n-C_4H_{10}	mean: 4.9 $pmol\,mol^{-1}$	2004–2005	ha	Read et al. (2007)
n-C_4H_{10}		Mar–Apr 2005	BA	Tackett et al. (2007)
n-C_4H_{10}	mean: 496 $pmol\,mol^{-1}$	Feb–Mar 2008	KU	Edwards et al. (2011)
n-C_4H_{10}	mean: 0.182 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
i-C_4H_{10}		1982, 1983	NO	Hov et al. (1984)
i-C_4H_{10}		1983–1986	NA	Hov et al. (1989)
i-C_4H_{10}		1989–1994	NA	Solberg et al. (1996a)
i-C_4H_{10}	140…350 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
i-C_4H_{10}	mean: 459 $pmol\,mol^{-1}$	Apr 1989	AL	Kieser et al. (1993)
i-C_4H_{10}	mean: 344 $pmol\,mol^{-1}$	May 1989	AL	Kieser et al. (1993)
i-C_4H_{10}	100…800 $pmol\,mol^{-1}$	win/spr 1992	AL	Jobson et al. (1994)
i-C_4H_{10}		Apr 1994	AL, NW	Ariya et al. (1998)
i-C_4H_{10}		Feb–Apr 1995	AL	Ariya et al. (1999)
i-C_4H_{10}	12…525 $pmol\,mol^{-1}$	Mar–May 1995	PF	Herring et al. (1997)
i-C_4H_{10}		1997–1998	SU	Swanson et al. (2003)
i-C_4H_{10}		Apr–May 1998	AL	Boudries and Bottenheim (2000)
i-C_4H_{10}		1998, 2000	AL	Bottenheim et al. (2002a)
i-C_4H_{10}		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003)
i-C_4H_{10}	mean: 3.2 $pmol\,mol^{-1}$	2004–2005	ha	Read et al. (2007)
i-C_4H_{10}	mean: 288 $pmol\,mol^{-1}$	Feb–Mar 2008	KU	Edwards et al. (2011)
i-C_4H_{10}	mean: 0.106 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)

Table 3: Continued.

Species	Value	Date	Site	Reference
n-C_5H_{12}		1982, 1983	NO	Hov et al. (1984)
n-C_5H_{12}		1983–1986	NA	Hov et al. (1989)
n-C_5H_{12}		1989–1994	NA	Solberg et al. (1996a)
n-C_5H_{12}	140…330 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
n-C_5H_{12}	20…600 $pmol\,mol^{-1}$	win/spr 1992	AL	Jobson et al. (1994)
n-C_5H_{12}		Apr 1994	AL, NW	Ariya et al. (1998)
n-C_5H_{12}		Feb–Apr 1995	AL	Ariya et al. (1999)
n-C_5H_{12}		Apr–May 1998	AL	Boudries and Bottenheim (2000)
n-C_5H_{12}		1998, 2000	AL	Bottenheim et al. (2002a)
n-C_5H_{12}		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003)
n-C_5H_{12}	mean: 0.051 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
i-C_5H_{12}		1982, 1983	NO	Hov et al. (1984)
i-C_5H_{12}		1983–1986	NA	Hov et al. (1989)
i-C_5H_{12}		1989–1994	NA	Solberg et al. (1996a)
i-C_5H_{12}	76…220 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
i-C_5H_{12}	20…600 $pmol\,mol^{-1}$	win/spr 1992	AL	Jobson et al. (1994)
i-C_5H_{12}	7.2…50.3 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
i-C_5H_{12}		Apr 1994	AL, NW	Ariya et al. (1998)
i-C_5H_{12}		Feb–Apr 1995	AL	Ariya et al. (1999)
i-C_5H_{12}		Apr–May 1998	AL	Boudries and Bottenheim (2000)
i-C_5H_{12}		1998, 2000	AL	Bottenheim et al. (2002a)
i-C_5H_{12}		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003)
i-C_5H_{12}	mean: 0.056 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
dimethylpropane		1983–1986	NA	Hov et al. (1989)
n-C_6H_{14}		1982, 1983	NO	Hov et al. (1984)
n-C_6H_{14}		1983–1986	NA	Hov et al. (1989)
n-C_6H_{14}	35…139 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
n-C_6H_{14}	7…200 $pmol\,mol^{-1}$	win/spr 1992	AL	Jobson et al. (1994)
n-C_6H_{14}		Apr 1994	AL, NW	Ariya et al. (1998)
n-C_6H_{14}		Feb–Apr 1995	AL	Ariya et al. (1999)
n-C_6H_{14}		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003)
n-C_6H_{14}	mean: 0.011 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
2-methylpentane		1982, 1983	NO	Hov et al. (1984)
2-methylpentane		1983–1986	NA	Hov et al. (1989)
2-methylpentane	7…200 $pmol\,mol^{-1}$	win/spr 1992	AL	Jobson et al. (1994)
2-methylpentane		Apr 1994	AL, NW	Ariya et al. (1998)
2-methylpentane		Feb–Apr 1995	AL	Ariya et al. (1999)
3-methylpentane		1982, 1983	NO	Hov et al. (1984)
3-methylpentane		1983–1986	NA	Hov et al. (1989)
3-methylpentane	42…98 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
3-methylpentane		Apr 1994	AL, NW	Ariya et al. (1998)
3-methylpentane		Feb–Apr 1995	AL	Ariya et al. (1999)
2,2-dimethylbutane		1983–1986	NA	Hov et al. (1989)
2,2-dimethylbutane	<2…82 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)

Table 3: Continued.

Species	Value	Date	Site	Reference
cyclohexane		1982, 1983	NO	Hov et al. (1984)
methylcyclopentane	23…60 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
n-C_7H_{16}	14…50 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
n-C_7H_{16}		Apr 1994	AL, NW	Ariya et al. (1998)
n-C_7H_{16}		Feb–Apr 1995	AL	Ariya et al. (1999)
methylhexane	24…60 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)

Organic: C, H (unsaturated)

C_2H_4	mean: 360 $pmol\,mol^{-1}$	1982–1985	nm	Rudolph et al. (1989)
C_2H_4		1982, 1983	NO	Hov et al. (1984)
C_2H_4		1983–1986	NA	Hov et al. (1989)
C_2H_4		1989–1994	NA	Solberg et al. (1996a)
C_2H_4	330…1000 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
C_2H_4	mean: 40 $pmol\,mol^{-1}$	Apr 1989	AL	Kieser et al. (1993)
C_2H_4	0…1000 $pmol\,mol^{-1}$	win/spr 1992	AL	Jobson et al. (1994)
C_2H_4		Mar–Jun 1993	NA	Solberg et al. (1996b)
C_2H_4	23…509 $pmol\,mol^{-1}$	Mar–May 1995	PF	Herring et al. (1997)
C_2H_4	mean: 26 $pmol\,mol^{-1}$	Mar–May 1996	NA	Ramacher et al. (1999)
C_2H_4		1998, 2000	AL	Bottenheim et al. (2002a)
C_2H_4		Feb–May 2000	ARC	Olson et al. (2012)
C_2H_4		2008	ARC	Olson et al. (2012)
C_2H_4	mean: 245 $pmol\,mol^{-1}$	Feb–Mar 2008	KU	Edwards et al. (2011)
C_3H_6		1982, 1983	NO	Hov et al. (1984)
C_3H_6	mean: 210 $pmol\,mol^{-1}$	1982–1985	nm	Rudolph et al. (1989)
C_3H_6		1983–1986	NA	Hov et al. (1989)
C_3H_6		1989–1994	NA	Solberg et al. (1996a)
C_3H_6	160…330 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
C_3H_6	mean: 94 $pmol\,mol^{-1}$	Apr 1989	AL	Kieser et al. (1993)
C_3H_6	mean: 117 $pmol\,mol^{-1}$	May 1989	AL	Kieser et al. (1993)
C_3H_6	18…169 $pmol\,mol^{-1}$	Mar–May 1995	PF	Herring et al. (1997)
C_3H_6	mean: 216 $pmol\,mol^{-1}$	Feb–Mar 2008	KU	Edwards et al. (2011)
1-butene	mean: 34 $pmol\,mol^{-1}$	Apr 1989	AL	Kieser et al. (1993)
1-butene	mean: 30 $pmol\,mol^{-1}$	May 1989	AL	Kieser et al. (1993)
cis-2-butene		1983–1986	NA	Hov et al. (1989)
trans-2-butene		1983–1986	NA	Hov et al. (1989)
isobutene		1983–1986	NA	Hov et al. (1989)
isobutene	mean: 77 $pmol\,mol^{-1}$	Apr 1989	AL	Kieser et al. (1993)
isobutene	mean: 115 $pmol\,mol^{-1}$	May 1989	AL	Kieser et al. (1993)
C_2H_2		1982, 1983	NO	Hov et al. (1984)
C_2H_2	mean: 11 $pmol\,mol^{-1}$	1982–1985	nm	Rudolph et al. (1989)
C_2H_2		1983–1986	NA	Hov et al. (1989)
C_2H_2		1989–1994	NA	Solberg et al. (1996a)
C_2H_2	900…1800 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
C_2H_2	mean: 53 $pmol\,mol^{-1}$	Apr 1989	AL	Kieser et al. (1993)
C_2H_2	mean: 80 $pmol\,mol^{-1}$	May 1989	AL	Kieser et al. (1993)

Table 3: Continued.

Species	Value	Date	Site	Reference
C_2H_2		1992–1999	NA	Albrecht et al. (2002)
C_2H_2	seasonal cycle	1992–2001	NA	Eneroth et al. (2007)
C_2H_2	0…1600 $pmol\,mol^{-1}$	win/spr 1992	AL	Jobson et al. (1994)
C_2H_2		Mar–Jun 1993	NA	Solberg et al. (1996b)
C_2H_2	bgr.: 123.0…939.0 $pmol\,mol^{-1}$	Feb–May 1994	NA	Beine et al. (1997b)
C_2H_2		Apr 1994	AL, NW	Ariya et al. (1998)
C_2H_2		Feb–Apr 1995	AL	Ariya et al. (1999)
C_2H_2	190…1080 $pmol\,mol^{-1}$	Mar–May 1995	PF	Herring et al. (1997)
C_2H_2	mean: 329 $pmol\,mol^{-1}$	Mar–May 1996	NA	Ramacher et al. (1999)
C_2H_2		1997–1998	SU	Swanson et al. (2003)
C_2H_2		1997–2004	SU	Dibb et al. (2007)
C_2H_2		Apr–May 1998	AL	Boudries and Bottenheim (2000)
C_2H_2		1998, 2000	AL	Bottenheim et al. (2002a)
C_2H_2		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Ridley et al. (2007); Blake et al. (2003); Wang et al. (2003)
C_2H_2	mean: 19 $pmol\,mol^{-1}$	2004–2005	ha	Read et al. (2007)
C_2H_2	median: 14 $pmol\,mol^{-1}$	Nov–Dec 2005	ant	Slusher et al. (2010)
C_2H_2	mean: 917 $pmol\,mol^{-1}$	Feb–Mar 2008	KU	Edwards et al. (2011)
C_2H_2	mean: 0.365 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
C_3H_4		1983–1986	NA	Hov et al. (1989)
isoprene	0.6…7.3 $pmol\,mol^{-1}$	Jan 1992	AL	Yokouchi et al. (1994)
isoprene	0.6…10.3 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
benzene		1982, 1983	NO	Hov et al. (1984)
benzene	390…470 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
benzene	200…400 $pmol\,mol^{-1}$	win/spr 1992	AL	Jobson et al. (1994)
benzene		Mar–Jun 1993	NA	Solberg et al. (1996b)
benzene		Apr 1994	AL, NW	Ariya et al. (1998)
benzene		Feb–Apr 1995	AL	Ariya et al. (1999)
benzene		1997–2004	SU	Dibb et al. (2007)
benzene		Feb–May 2000	AL	Boudries et al. (2002)
benzene		Feb–May 2000	ARC	Blake et al. (2003)
benzene	mean: 0.097 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
benzene	mean: 12 $pmol\,mol^{-1}$	Aug–Sep 2008	ARC	Sjostedt et al. (2012)
benzene		Apr 2009	BA	Gao et al. (2012)
toluene		1982, 1983	NO	Hov et al. (1984)
toluene	23…150 $pmol\,mol^{-1}$	Mar 1989	BA	Doskey and Gaffney (1992)
toluene		Apr 1994	AL, NW	Ariya et al. (1998)
toluene		Feb–Apr 1995	AL	Ariya et al. (1999)
toluene	mean: 4 $pmol\,mol^{-1}$	Aug–Sep 2008	ARC	Sjostedt et al. (2012)
total NMHC	5.6…15.7 $nmol\,C\,mol^{-1}$	Mar–May 1993	PF	Beine et al. (1996b)

Organic: C, H, O

Species	Value	Date	Site	Reference
CH_3OH		Feb–May 2000	AL	Boudries et al. (2002)

Table 3: Continued.

Species	Value	Date	Site	Reference
CH_3OH	see note[7]	Feb–May 2000	ARC	Jacob et al. (2005)
CH_3OH	see note[8]	Jul–Aug 2001	ARC	Jacob et al. (2005)
CH_3OH		Aug–Sep 2008	ARC	Sjostedt et al. (2012)
CH_3OH		Apr 2009	BA	Gao et al. (2012)
C_2H_5OH		Feb–May 2000	AL	Boudries et al. (2002)
HCHO	≤ 39 $pmol\,mol^{-1}$	spr 1988	AL	Bottenheim et al. (1990)
HCHO		1989–1994	NA	Solberg et al. (1996a)
HCHO	100…700 $pmol\,mol^{-1}$	win 1992	AL	de Serves (1994)
HCHO	30…600 $pmol\,mol^{-1}$	spr 1992	AL	de Serves (1994)
HCHO		1992–1999	NA	Albrecht et al. (2002)
HCHO	0.2…0.3 $nmol\,mol^{-1}$	1993–1994	ant	Fuhrer et al. (1996)
HCHO	mean: 0.3 $nmol\,mol^{-1}$	1993–1994	SU	Fuhrer et al. (1996)
HCHO	mean: 193 $pmol\,mol^{-1}$	Apr 1994	AL	Shepson et al. (1996)
HCHO	mean: 0.23 $nmol\,mol^{-1}$	Jun 1996	SU	Hutterli et al. (1999)
HCHO	0.03…0.7 $nmol\,mol^{-1}$	1997–1999	nm	Riedel et al. (1999)
HCHO	78…372 $pmol\,mol^{-1}$	Feb 1998	AL	Sumner and Shepson (1999)
HCHO	52…690 $pmol\,mol^{-1}$	Apr 1998	AL	Sumner and Shepson (1999)
HCHO		1998, 2000	AL	Sumner et al. (2002)
HCHO	0.74 $nmol\,mol^{-1}$	sum 1999	SU	Yang et al. (2002)
HCHO	mean: 103 $pmol\,mol^{-1}$	Dec 2000	sp	Hutterli et al. (2004)
HCHO	166 $pmol\,mol^{-1}$	2000	AL	Grannas et al. (2002)
HCHO		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Fried et al. (2003); Wang et al. (2003); Olson et al. (2012)
HCHO	30…420 $pmol\,mol^{-1}$	Jun–Jul 2000	SU	Jacobi et al. (2002)
HCHO	mean: 121 $pmol\,mol^{-1}$	Dec 2002	by	Frey et al. (2005)
HCHO	mean: 154 $pmol\,mol^{-1}$	Dec 2002	ant	Frey et al. (2005)
HCHO		Nov–Dec 2003	sp	Eisele et al. (2008)
HCHO	more than 600 $pmol\,mol^{-1}$, see note[9]	2003–2005	NA	Wittrock (2006)
HCHO	mean: 127 $pmol\,mol^{-1}$	2004–2005	ha	Salmon et al. (2008); Bloss et al. (2010)
HCHO		2008	ARC	Olson et al. (2012)
HCHO	mean: 363 $pmol\,mol^{-1}$	Feb–Mar 2008	KU	Edwards et al. (2011)
HCHO		Mar–Apr 2009	BA	Barret et al. (2011)
HCHO		Apr 2009	BA	Gao et al. (2012)
HCHO	70…500 $pmol\,mol^{-1}$	2010–2011	du	Preunkert et al. (2012)
CH_3CHO	65 $pmol\,mol^{-1}$	spr 1988	AL	Bottenheim et al. (1990)
CH_3CHO		1989–1994	NA	Solberg et al. (1996a)
CH_3CHO	mean: 93 $pmol\,mol^{-1}$	Apr 1994	AL	Shepson et al. (1996)
CH_3CHO	53 $pmol\,mol^{-1}$	2000	AL	Grannas et al. (2002)
CH_3CHO		Feb–May 2000	AL	Boudries et al. (2002)
CH_3CHO		Mar–May 2000	AL	Guimbaud et al. (2002)
CH_3CHO	mean: 0.065 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
CH_3CHO	bgr.: 80 $pmol\,mol^{-1}$	Jan 2011	du	Legrand et al. (2012)

[7]Unpublished data from TOPSE.
[8]Unpublished data from AOE-2001.
[9]Maximum values in May and June of each year.

Table 3: Continued.

Species	Value	Date	Site	Reference
C_2H_5CHO		Feb–May 2000	AL	Boudries et al. (2002)
C_2H_5CHO	mean: 0.029 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
C_3H_7CHO		Feb–May 2000	AL	Boudries et al. (2002)
C_3H_7CHO	mean: 0.013 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
CH_3COCH_3	393 $pmol\,mol^{-1}$	spr 1988	AL	Bottenheim et al. (1990)
CH_3COCH_3		1989–1994	NA	Solberg et al. (1996a)
CH_3COCH_3	901…1585 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
CH_3COCH_3	mean: 1730 $pmol\,mol^{-1}$	Apr 1994	AL	Shepson et al. (1996)
CH_3COCH_3	385 $pmol\,mol^{-1}$	2000	AL	Grannas et al. (2002)
CH_3COCH_3		Feb–May 2000	AL	Boudries et al. (2002)
CH_3COCH_3		Mar–May 2000	AL	Guimbaud et al. (2002)
CH_3COCH_3		Mar–Apr 2005	BA	Tackett et al. (2007)
CH_3COCH_3	mean: 0.476 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
CH_3COCH_3		Aug–Sep 2008	ARC	Sjostedt et al. (2012)
CH_3COCH_3		Apr 2009	BA	Gao et al. (2012)
CH_3COCH_3	bgr.: 128 $pmol\,mol^{-1}$	Jan 2011	du	Legrand et al. (2012)
$C_2H_5COCH_3$		Feb–May 2000	AL	Boudries et al. (2002)
$C_2H_5COCH_3$		Mar–Apr 2005	BA	Tackett et al. (2007)
$C_2H_5COCH_3$	mean: 0.070 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
HCOOH	mean: 49 $nmol\,m^{-3}$(STP)	Jun–Jul 1993	SU	Dibb et al. (1994)
HCOOH		1994–1995	SU	Dibb et al. (1998)
HCOOH	monthly mean: 60…311 $pmol\,mol^{-1}$	1997–2002	du	Legrand et al. (2004)
HCOOH		Jun 2000	SU	Jacobi et al. (2004)
HCOOH	mean: 159 $pmol\,mol^{-1}$	Dec 2000	SU	Dibb and Arsenault (2002)
HCOOH	mean: 460 $pmol\,mol^{-1}$	Jun–Jul 2000	SU	Dibb and Arsenault (2002)
HCOOH		Nov–Dec 2003	sp	Eisele et al. (2008)
HCOOH	monthly mean: 9…109 $pmol\,mol^{-1}$	2005–2010	du	Legrand et al. (2012)
HCOOH		Apr 2009	BA	Gao et al. (2012)
HCOOH	monthly mean: 3…143 $pmol\,mol^{-1}$	2009–2011	co	Legrand et al. (2012)
CH_3COOH	mean: 32 $nmol\,m^{-3}$(STP)	Jun–Jul 1993	SU	Dibb et al. (1994)
CH_3COOH		1994–1995	SU	Dibb et al. (1998)
CH_3COOH	monthly mean: 52…698 $pmol\,mol^{-1}$	1997–2002	du	Legrand et al. (2004)
CH_3COOH		Jun 2000	SU	Jacobi et al. (2004)
CH_3COOH	mean: 310 $pmol\,mol^{-1}$	Dec 2000	sp	Dibb and Arsenault (2002)
CH_3COOH	mean: 445 $pmol\,mol^{-1}$	Jun–Jul 2000	SU	Dibb and Arsenault (2002)
CH_3COOH		Nov–Dec 2003	sp	Eisele et al. (2008)
CH_3COOH	monthly mean: 10…717 $pmol\,mol^{-1}$	2005–2010	du	Legrand et al. (2012)
CH_3COOH		Apr 2009	BA	Gao et al. (2012)
CH_3COOH	monthly mean: 3…70 $pmol\,mol^{-1}$	2009–2011	co	Legrand et al. (2012)
CH_3OOH	< DL…0.89 $nmol\,mol^{-1}$	1997–1999	nm	Riedel et al. (2000)

Table 3: Continued.

Species	Value	Date	Site	Reference
CH_3OOH		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Wang et al. (2003); Olson et al. (2012)
CH_3OOH	mean: 317 $pmol\,mol^{-1}$	Dec 2001	ant	Frey et al. (2005)
CH_3OOH	mean: 426 $pmol\,mol^{-1}$	Dec 2002	by	Frey et al. (2005)
CH_3OOH	mean: 102 $pmol\,mol^{-1}$	Jan 2003	sp	Frey et al. (2005)
CH_3OOH	mean: 578 $pmol\,mol^{-1}$	Jun–Jul 2003	SU	Frey et al. (2009a)
CH_3OOH	mean: 138 $pmol\,mol^{-1}$	Dec 2003	sp	Frey et al. (2009a)
CH_3OOH	mean: 139 $pmol\,mol^{-1}$	Mar–May 2004	SU	Frey et al. (2009a)
CH_3OOH		2008	ARC	Olson et al. (2012)
CH_3OOH	75…550 $pmol\,mol^{-1}$	2010–2011	du	Preunkert et al. (2012)
$ROOH+H_2O_2$	10…40 $pmol\,mol^{-1}$	win 1992	AL	Yokouchi et al. (1994)
$ROOH+H_2O_2$	100…400 $pmol\,mol^{-1}$	spr 1992	AL	Yokouchi et al. (1994)
RO_2		Feb–May 2000	ARC	Cantrell et al. (2003); Ridley et al. (2003); Evans et al. (2003); Ridley et al. (2007); Wang et al. (2003)
RO_2+HO_2		2000	sp	Mauldin III et al. (2004)
RO_2+HO_2	median: 2.2×10^8 cm^{-3}	2003	SU	Sjostedt et al. (2008)
RO_2+HO_2		Nov–Dec 2003	sp	Eisele et al. (2008)
RO_2+HO_2		2007, 2008	SU	Liao et al. (2011a)
RO_2+HO_2	mean: 3.3×10^8 cm^{-3}	2010–2011	du	Kukui et al. (2012)
CO		1980–1982	BA	Khalil and Rasmussen (1983)
CO	mean: 131 $nmol\,mol^{-1}$	1988–1989	DY	Davidson et al. (1993b,a)
CO	52.3…302.0 $nmol\,mol^{-1}$	1992–1993	NA	Beine (1999)
CO	89…216 $nmol\,mol^{-1}$	Mar–May 1995	PF	Herring et al. (1997)
CO		1997–2005	SU	Dibb et al. (2007)
CO	90 $nmol\,mol^{-1}$	sum 1999	SU	Yang et al. (2002)
CO	110 $nmol\,mol^{-1}$	sum 2000	SU	Yang et al. (2002)
CO		Feb–Mar 2000	AL	Bottenheim et al. (2002b)
CO		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Ridley et al. (2007); Cantrell et al. (2003); Wang et al. (2003); Olson et al. (2012)
CO		Nov–Dec 2003	sp	Eisele et al. (2008)
CO	mean: 34.4 $nmol\,mol^{-1}$	2004–2005	ha	Bloss et al. (2010)
CO		2004–2005	ha	Jones et al. (2008)
CO	mean: 84.4 $nmol\,mol^{-1}$	Jul–Sep 2005	ARC	Sommar et al. (2010)
CO	median: 59 $pmol\,mol^{-1}$	Nov–Dec 2005	ant	Slusher et al. (2010)
CO		Apr 2007	ARC	Prados-Roman et al. (2011)
CO		2007	tr	Hansen et al. (2009)
CO		2008	ARC	Olson et al. (2012)
CO	mean: 169 $nmol\,mol^{-1}$	Feb–Mar 2008	KU	Edwards et al. (2011)
CO		Mar–Apr 2008	ARC	Gilman et al. (2010)
CO	mean: 144 $nmol\,mol^{-1}$	Apr 2008	ARC	Liang et al. (2011); Pommier et al. (2010); Dupont et al. (2012)
CO	mean: 103 $nmol\,mol^{-1}$	Jun–Jul 2008	ARC	Liang et al. (2011); Pommier et al. (2010)
CO	33…50 $nmol\,mol^{-1}$	2011	du	Preunkert et al. (2012)

Table 3: Continued.

Species	Value	Date	Site	Reference
Organic: C, H, O, N				
CH_3CN		Apr, Jun 2008	ARC	Corr et al. (2012)
CH_3CN		Aug–Sep 2008	ARC	Sjostedt et al. (2012)
PAN	189...234 $pmol\,mol^{-1}$	Mar 1985	AL	Bottenheim et al. (1986)
PAN	370...590 $pmol\,mol^{-1}$	Apr 1986	AL	Barrie et al. (1989)
PAN	200...500 $pmol\,mol^{-1}$	spr 1988	AL	Barrie and Delmas (1994)
PAN		Mar–Apr 1988	AL	Bottenheim et al. (1993)
PAN	150...600 $pmol\,mol^{-1}$	win/spr 1992	AL	Barrie et al. (1994a)
PAN	27...371 $pmol\,mol^{-1}$	Mar–May 1993	PF	Beine et al. (1996b)
PAN		Mar–Jun 1994	ARC	Jaeschke et al. (1997)
PAN	69.0...729.0 $pmol\,mol^{-1}$	Feb–May 1994	NA	Beine et al. (1997a)
PAN	19.7...1608.2 $pmol\,mol^{-1}$	1994–1996	NA	Beine and Krognes (2000)
PAN	bgr.: 2.9 ...739.0 $pmol\,mol^{-1}$	Mar–May 1995	PF	Beine et al. (1997a)
PAN	100...420 $pmol\,mol^{-1}$	Mar 1998	NA	Jacobi et al. (1999)
PAN		1998–1999	SU	Ford et al. (2002)
PAN		1998–1999	SU	Dassau et al. (2004)
PAN		1998,2000	AL	Dassau et al. (2004)
PAN	<5...47.9 $pmol\,mol^{-1}$	Feb 1999	nm	Jacobi et al. (2000)
PAN	mean: 18 $pmol\,mol^{-1}$	Mar 1999	ant	Jacobi and Schrems (1999)
PAN		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Wang et al. (2003)
PAN		Nov–Dec 2003	sp	Eisele et al. (2008)
PAN	<0.6...52.3 $pmol\,mol^{-1}$	2004–2005	ha	Mills et al. (2007); Jones et al. (2011)
PAN	mean: 205 $pmol\,mol^{-1}$	Apr 2008	ARC	Liang et al. (2011); Dupont et al. (2012)
PAN	mean: 210 $pmol\,mol^{-1}$	Jun–Jul 2008	ARC	Liang et al. (2011)
PPN	mean: 26 $pmol\,mol^{-1}$	Feb–May 1994	NA	Solberg et al. (1997a)
methyl nitrate	mean: 10 $pmol\,mol^{-1}$	Jan–Mar 1997	nm	Jones et al. (1999); Weller et al. (2002)
methyl nitrate		1997–1998	SU	Swanson et al. (2003)
methyl nitrate		1997–2004	SU	Dibb et al. (2007)
methyl nitrate	mean: 9.5 $pmol\,mol^{-1}$	Feb 1999	nm	Weller et al. (2002)
methyl nitrate	mean: 84 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
methyl nitrate		2000	sp	Swanson et al. (2004)
methyl nitrate		Feb–May 2000	ARC	Blake et al. (2003)
methyl nitrate		2004–2005	ha	Jones et al. (2011)
ethyl nitrate	mean: 3 $pmol\,mol^{-1}$	Jan–Mar 1997	nm	Jones et al. (1999); Weller et al. (2002)
ethyl nitrate		1997–1998	SU	Swanson et al. (2003)
ethyl nitrate		1997–2004	SU	Dibb et al. (2007)
ethyl nitrate	mean: 2.3 $pmol\,mol^{-1}$	Feb 1999	nm	Weller et al. (2002)
ethyl nitrate	mean: 4.6 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
ethyl nitrate		2000	sp	Swanson et al. (2004)
ethyl nitrate		Feb–May 2000	ARC	Blake et al. (2003)

Table 3: Continued.

Species	Value	Date	Site	Reference
ethyl nitrate		2004–2005	ha	Jones et al. (2011)
1-propyl nitrate	3.14. . . 3.33 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
1-propyl nitrate		1997–1998	SU	Swanson et al. (2003)
1-propyl nitrate	mean: 1.1 $pmol\,mol^{-1}$	Feb 1999	nm	Weller et al. (2002)
1-propyl nitrate	mean: 1.1 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
1-propyl nitrate		2004–2005	ha	Jones et al. (2011)
2-propyl nitrate	12.44. . . 13.08 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
2-propyl nitrate		1997–1998	SU	Swanson et al. (2003)
2-propyl nitrate		1997–2004	SU	Dibb et al. (2007)
2-propyl nitrate	mean: 1.2 $pmol\,mol^{-1}$	Feb 1999	nm	Weller et al. (2002)
2-propyl nitrate	mean: 0.7 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
2-propyl nitrate		2000	sp	Swanson et al. (2004)
2-propyl nitrate		Feb–May 2000	ARC	Blake et al. (2003)
2-propyl nitrate		2004–2005	ha	Jones et al. (2011)
1-butyl nitrate	1.18. . . 1.7 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
1-butyl nitrate	mean: 0.03 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
2-butyl nitrate	13.73. . . 18.41 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
2-butyl nitrate		1997–1998	SU	Swanson et al. (2003)
2-butyl nitrate		1997–2004	SU	Dibb et al. (2007)
2-butyl nitrate	mean: 0.5 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
2-butyl nitrate		Feb–May 2000	ARC	Blake et al. (2003)
1-pentyl nitrate	0.53. . . 1.01 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
1-pentyl nitrate	mean: 0.7 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
2-pentyl nitrate	2.47. . . 5.44 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
2-pentyl nitrate	mean below DL	Feb 1999	nm	Fischer et al. (2002)
3-pentyl nitrate	2.31. . . 4.31 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
3-pentyl nitrate	mean: 0.03 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
2-methyl-1-butyl nitrate	0.39. . . 0.77 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
3-methyl-1-butyl nitrate	0.30. . . 0.55 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
3-methyl-2-butyl nitrate	2.32. . . 4.84 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
1-hexyl nitrate	mean: 0.5 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
2-hexyl nitrate	0.98. . . 2.46 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
2-hexyl nitrate	mean: 1.0 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
3-hexyl nitrate	1.65. . . 4.27 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
3-hexyl nitrate	mean: 0.08 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
2-heptyl nitrate	0.56. . . 1.45 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)
2-heptyl nitrate	mean: 0.18 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
3-heptyl nitrate	0.68. . . 1.86 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Muthuramu et al. (1994)

Table 3: Continued.

Species	Value	Date	Site	Reference
4-heptyl nitrate	mean: 0.02 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
alkyl nitrates	11…66 $pmol\,mol^{-1}$	Mar–May 1993	PF	Beine et al. (1996b)
organic nitrates		Mar–Apr 1988	AL	Bottenheim et al. (1993)
organic nitrates	0…2828.0 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
organic nitrates	mean: 1038.8 $ng\,m^{-3}$	Apr–May 2000	AL	Ianniello et al. (2002)
organic nitrates	mean: 309 $ng\,m^{-3}$	Feb 2000	AL	Ianniello et al. (2002)
hydroxy nitrates	mean: 1.1 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
organic dinitrates	mean: 4.6 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
alkyl nitrates	mean: 20 $pmol\,mol^{-1}$	Jun–Jul 2008	ARC	Liang et al. (2011)
Fluorine (CFCs)				
$CFCl_3$ (F11)		1980–1982	BA	Khalil and Rasmussen (1983)
$CFCl_3$ (F11)		1982, 1983	NO	Hov et al. (1984)
$CFCl_3$ (F11)	mean: 285 $pmol\,mol^{-1}$	1988–1989	DY	Davidson et al. (1993b,a)
CF_2Cl_2 (F12)		1980–1982	BA	Khalil and Rasmussen (1983)
CF_2Cl_2 (F12)		1982, 1983	NO	Hov et al. (1984)
CF_2Cl_2 (F12)	mean: 465 $pmol\,mol^{-1}$	1988–1989	DY	Davidson et al. (1993b,a)
$C_2F_3Cl_3$ (F113)		1982, 1983	NO	Hov et al. (1984)
$C_2F_3Cl_3$ (F113)	mean: 44.6 $pmol\,mol^{-1}$	1988–1989	DY	Davidson et al. (1993b,a)
$C_2F_4Cl_2$ (F114)		1982, 1983	NO	Hov et al. (1984)
CHF_2Cl		1980–1982	BA	Khalil and Rasmussen (1983)
Chlorine (inorganic)				
inorg-Cl	0…500 $pmol\,mol^{-1}$	win/spr 1992	AL	Barrie et al. (1994a)
photolyzable Cl	$<$ 9…100 $pmol\,mol^{-1}$	Feb–Apr 1995	AL	Impey et al. (1997)
photolyzable Cl		Mar–Apr 1997	AL	Impey et al. (1999)
gaseous Cl		1996–1999	NA	Hara et al. (2002a)
gaseous Cl	annual mean: 1.20 $nmol\,m^{-3}$	1997–1998	sy	Hara et al. (2004)
gaseous Cl		Mar–Apr 2000	NA	Hara et al. (2002b)
HCl	0…303.6 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
HCl	mean: 11.3 $ng\,m^{-3}$	Feb 2000	AL	Ianniello et al. (2002)
HCl	mean: 32.7 $ng\,m^{-3}$	Apr–May 2000	AL	Ianniello et al. (2002)
HCl		2000–2001	du	Jourdain and Legrand (2002)
HCl	see note[10]	Apr–May 2003	NA	Ianniello et al. (2007)
Cl atoms	$3.9\times10^3 \ldots 7.7\times10^4$ cm^{-3}	spr 1992	AL	Jobson et al. (1994)
Cl atoms	$3.8\times10^3 \ldots 1.0\times10^4$ cm^{-3}	spr 1992	AL	Muthuramu et al. (1994)
Cl atoms	4.5×10^3 cm^{-3}	spr 1994	NW	Ariya et al. (1998)
Cl atoms	7.5×10^4 cm^{-3}	Apr–May 1998	AL	Boudries and Bottenheim (2000)
Cl atoms	$1.7\times10^3 \ldots 3.4\times10^4$ cm^{-3}	2004–2005	ha	Read et al. (2007)

[10] Means from denuder comparison: 55.6 and 123.6 $ng\,m^{-3}$.

Table 3: Continued.

Species	Value	Date	Site	Reference
Cl atoms	up to 4×10^5 cm^{-3}	Mar 2009	BA	Stephens et al. (2012)
ClO		1995, 1996	NA	Tuckermann et al. (1997)
ClO	below DL	Mar–Apr 2008	AG	Pöhler et al. (2010)
OClO	SCD	1995	mm	Kreher et al. (1997)
OClO		Jan–May 1995	KA	Miller et al. (1997)
OClO	up to 24 $pmol\,mol^{-1}$	Mar–Apr 2008	AG	Pöhler et al. (2010)
Cl_2	below DL of 2 $pmol\,mol^{-1}$	Feb–Mar 2000	AL	Foster et al. (2001); Spicer et al. (2002)

Chlorine (organic)

Species	Value	Date	Site	Reference
org-Cl	1200…3400 $pmol\,mol^{-1}$	win/spr 1992	AL	Barrie et al. (1994a)
CH_3Cl		1980–1982	BA	Khalil and Rasmussen (1983)
CH_3Cl		1982, 1983	NO	Hov et al. (1984)
CH_2Cl_2		1982, 1983	NO	Hov et al. (1984)
CH_2Cl_2	53.4…69.8 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
$CHCl_3$		1982, 1983	NO	Hov et al. (1984)
$CHCl_3$	mean: 23.0 $pmol\,mol^{-1}$	1988–1989	DY	Davidson et al. (1993b,a)
$CHCl_3$	9.7…15.8 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
CCl_4		1982, 1983	NO	Hov et al. (1984)
CCl_4	mean: 125 $pmol\,mol^{-1}$	1988–1989	DY	Davidson et al. (1993b,a)
CCl_4	mean: 95 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
CH_3CCl_3		1980–1982	BA	Khalil and Rasmussen (1983)
CH_3CCl_3		1982, 1983	NO	Hov et al. (1984)
CH_3CCl_3	mean: 211$pmol\,mol^{-1}$	1988–1989	DY	Davidson et al. (1993b,a)
CH_3CCl_3	mean: 75 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
CH_3CCl_3	median: 20 $pmol\,mol^{-1}$	Nov–Dec 2005	ant	Slusher et al. (2010)
C_2Cl_6	mean: 0.06 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
$C_2H_2Cl_2$	mean: 0.05 $pmol\,mol^{-1}$	1992–1994	AL	Yokouchi et al. (1996)
C_2HCl_3		1980–1982	BA	Khalil and Rasmussen (1983)
C_2HCl_3		1982, 1983	NO	Hov et al. (1984)
C_2HCl_3	5.4…11.5 $pmol\,mol^{-1}$	Jan 1992	AL	Yokouchi et al. (1994)
C_2HCl_3	0.5…4.3 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
C_2HCl_3	0.1…1.2 $pmol\,mol^{-1}$	Apr 1992	SW	Hopper et al. (1994a)
C_2HCl_3	0.17…4.77 $pmol\,mol^{-1}$	Apr 1992	ARC	Leaitch et al. (1994)
C_2HCl_3	mean: 2.3 $pmol\,mol^{-1}$	1992–1994	AL	Yokouchi et al. (1996)
C_2HCl_3	mean below DL	Feb 1999	nm	Fischer et al. (2002)
C_2Cl_4		1980–1982	BA	Khalil and Rasmussen (1983)
C_2Cl_4		1982, 1983	NO	Hov et al. (1984)
C_2Cl_4	6.6…9.7 $pmol\,mol^{-1}$	Jan 1992	AL	Yokouchi et al. (1994)
C_2Cl_4	4.3…9.5 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
C_2Cl_4	6.08…15.05 $pmol\,mol^{-1}$	Apr 1992	ARC	Leaitch et al. (1994)
C_2Cl_4	mean: 8.1 $pmol\,mol^{-1}$	1992–1994	AL	Yokouchi et al. (1996)
C_2Cl_4		1997–2004	SU	Dibb et al. (2007)
C_2Cl_4	mean: 0.3 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)

Table 3: Continued.

Species	Value	Date	Site	Reference
chloroacetaldehyde		Jan–Apr 2005	BA	Keil and Shepson (2006)
chloroacetone		Jan–Apr 2005	BA	Keil and Shepson (2006)
Bromine (inorganic)				
gaseous Br	7.4 $ng\,m^{-3}$(STP)	Nov–Dec 1970	sp	Duce et al. (1973)
gaseous Br	7.9 $ng\,m^{-3}$(STP)	Nov–Dec 1970	mm	Duce et al. (1973)
gaseous Br		1976–1980	BA	Berg et al. (1983)
gas-Br_x	0.3...61 $pmol\,mol^{-1}$	spr 1988	AL	Bottenheim et al. (1990)
inorg-Br	0...45 $ng\,m^{-3}$	Mar–Apr 1989	BA	Sturges et al. (1993c)
inorg-Br		Mar–Apr 1990	BA	Sturges et al. (1993b)
inorg-Br	$<$5...80 $pmol\,mol^{-1}$	win/spr 1992	AL	Barrie et al. (1994a)
photolyzable Br	$<$4...38 $pmol\,mol^{-1}$	Feb–Apr 1995	AL	Impey et al. (1997)
inorg-Br	mean: 5.9 $pmol\,mol^{-1}$	Mar–May 1996	NA	Staebler et al. (1999)
gaseous Br		1996–1999	NA	Hara et al. (2002a)
gaseous Br	up to 1.38 $nmol\,m^{-3}$	1997–1998	sy	Hara et al. (2004)
soluble bromide (g+aq)		Feb–May 2000	ARC	Ridley et al. (2003); Evans et al. (2003); Ridley et al. (2007)
soluble bromide		2007, 2008	SU	Dibb et al. (2010)
HBr	0...16.5 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
HBr	mean: 16.7 $ng\,m^{-3}$	Feb 2000	AL	Ianniello et al. (2002)
HBr	mean: 41.5 $ng\,m^{-3}$	Apr–May 2000	AL	Ianniello et al. (2002)
Br atoms	3.0×10^6... 6.1×10^7 cm^{-3}	spr 1992	AL	Jobson et al. (1994)
Br atoms	1.4×10^7 cm^{-3}	Apr–May 1998	AL	Boudries and Bottenheim (2000)
Br atoms	4.8×10^6... 9.6×10^7 cm^{-3}	2004–2005	ha	Read et al. (2007)
Br atoms	up to 1.6×10^9 cm^{-3}	Mar 2009	BA	Stephens et al. (2012)
BrO	$<$4...17 $pmol\,mol^{-1}$	Apr 1992	AL	Hausmann and Platt (1994)
BrO	SCD	1995	mm	Kreher et al. (1997)
BrO		Jan–May 1995	KA	Miller et al. (1997)
BrO		1995, 1996	NA	Tuckermann et al. (1997)
BrO		1995–1996	NA	Martinez et al. (1999)
BrO	0...15 $pmol\,mol^{-1}$	Apr–May 1996	NA	Avallone et al. (2003)
BrO		Sep 1996	ant	Wagner and Platt (1998)
BrO	VCD	1997	ARC	Richter et al. (1998)
BrO	VCD	1997	ARC	Chance (1998)
BrO	VCD	1997	ARC, ant	Wagner et al. (2001)
BrO		Apr–May 1997	ARC	McElroy et al. (1999)
BrO		1999–2000	nm	Frieß et al. (2004)
BrO		1999–2000	ARC, ant	Richter et al. (2002)
BrO		Apr–May 2000	AL	Hönninger and Platt (2002)
BrO	0...30 $pmol\,mol^{-1}$	Apr–May 2000	AL	Avallone et al. (2003)
BrO	VCD	Apr 2001	ARC	Toyota et al. (2011)
BrO	median: 0.35 $pmol\,mol^{-1}$	Apr–May 2001	KU	Poissant and Hoenninger (2004), Hönninger et al. (2004)
BrO	SCD	Sep–Oct 2002	mm	Schofield et al. (2006)
BrO		Mar–Apr 2003	BA	Brooks et al. (2006)

Table 3: Continued.

Species	Value	Date	Site	Reference
BrO	0...15 $pmol\,mol^{-1}$	spr 2004	AL[11]	Morin et al. (2005)
BrO		2004–2005	NA	Ferrari et al. (2008)
BrO		2004–2005	ha	Saiz-Lopez et al. (2007b)
BrO	mean: 2.5 $pmol\,mol^{-1}$	2004–2005	ha	Bloss et al. (2010)
BrO	VCD	2004–2009	ant	Schönhardt et al. (2012)
BrO	SCD	2005	BA	Simpson et al. (2007a)
BrO	SCD	Jun–Aug 2006	ant	Wagner et al. (2007)
BrO		Mar 2007	ARC	Begoin et al. (2010)
BrO		Apr 2007	ARC	Prados-Roman et al. (2011)
BrO	up to 13 $pmol\,mol^{-1}$	Aug–Sep 2007	ha	Buys et al. (2012)
BrO	VCD	Oct 2007	ant	Jones et al. (2009)
BrO	VCD	2007–2010	ARC	Sihler et al. (2012)
BrO	VCD	2007–2008	ARC	Theys et al. (2011)
BrO		2007, 2008	SU	Stutz et al. (2011); Liao et al. (2011a)
BrO		2008	ARC	Olson et al. (2012)
BrO	mean: < 1 $pmol\,mol^{-1}$	Feb–Mar 2008	KU	Edwards et al. (2011)
BrO	up to 41 $pmol\,mol^{-1}$	Mar–Apr 2008	AG	Pöhler et al. (2010); Nghiem et al. (2012)
BrO		Apr 2008	ARC	Choi et al. (2012); Neuman et al. (2010); Salawitch et al. (2010); Liao et al. (2012a)
BrO	VCD	2008–2009	ARC	Nghiem et al. (2012)
BrO	0...40 $pmol\,mol^{-1}$	spr 2009	BA	Liao et al. (2011b)
BrO		spr 2009	BA	Frieß et al. (2011)
OBrO	below DL	Mar–Apr 2008	AG	Pöhler et al. (2010)
HOBr		Mar–Apr 1997	AL	Impey et al. (1999)
HOBr ("active or soluble bromine")		Apr 2008	ARC	Neuman et al. (2010); Salawitch et al. (2010); Liao et al. (2012a)
HOBr	daytime mean: 10 $pmol\,mol^{-1}$	Mar–Apr 2009	BA	Liao et al. (2012b)
Br_2		Mar–Apr 1997	AL	Impey et al. (1999)
Br_2	up to 25 $pmol\,mol^{-1}$	Feb–Mar 2000	AL	Foster et al. (2001); Spicer et al. (2002)
Br_2	up to 45 $pmol\,mol^{-1}$	Aug–Sep 2007	ha	Buys et al. (2012)
Br_2	below DL	Mar–Apr 2008	AG	Pöhler et al. (2010)
Br_2	nighttime mean: 13 $pmol\,mol^{-1}$	Mar–Apr 2009	BA	Liao et al. (2012b)
BrCl	up to 35 $pmol\,mol^{-1}$	Feb–Mar 2000	AL	Foster et al. (2001); Spicer et al. (2002)
BrCl	up to 6 $pmol\,mol^{-1}$	Aug–Sep 2007	ha	Buys et al. (2012)
BrCl		Apr 2008	ARC	Neuman et al. (2010)
Bromine (organic)				
org-Br		Mar–Apr 1990	BA	Sturges et al. (1993b)
org-Br	9...80 $pmol\,mol^{-1}$	win/spr 1992	AL	Barrie et al. (1994a)

[11] Measurements above the Arctic Ocean sea ice, 5 km NNW of Alert, are also presented.

Table 3: Continued.

Species	Value	Date	Site	Reference
CH_3Br		1982, 1983	NO	Hov et al. (1984)
CH_3Br	11 $pmol\,mol^{-1}$	spr 1983	ARC	Berg et al. (1984)
CH_3Br	9.1…14.7 $pmol\,mol^{-1}$	all 1983	BA	Rasmussen and Khalil (1984)
CH_3Br		1985–1987	BA	Cicerone et al. (1988)
CH_3Br	7.5…9.5 $pmol\,mol^{-1}$	Nov 1989	mm	Sturges et al. (1993d)
CH_3Br		Feb–May 2000	ARC	Wingenter et al. (2003); Ridley et al. (2007)
CH_2Br_2	15 $pmol\,mol^{-1}$	spr 1983	ARC	Berg et al. (1984)
CH_2Br_2	4.7…5.6 $pmol\,mol^{-1}$	all 1983	BA	Rasmussen and Khalil (1984)
CH_2Br_2	0.1…1.48 $pmol\,mol^{-1}$	spr 1988	AL	Bottenheim et al. (1990)
CH_2Br_2	$\leq$ 0.1…1 $pmol\,mol^{-1}$	win/spr 1992	AL	Li et al. (1994)
CH_2Br_2	0.5…1.0 $pmol\,mol^{-1}$	Jan 1992	AL	Yokouchi et al. (1994)
CH_2Br_2	0.6…1.0 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
CH_2Br_2	0.7…1.67 $pmol\,mol^{-1}$	Apr 1992	ARC	Leaitch et al. (1994)
CH_2Br_2	mean: 0.45 $pmol\,mol^{-1}$	Sep 1992	NA	Schall and Heumann (1993)
CH_2Br_2	mean: 0.8 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
CH_2Br_2	mean: 1.1 $pmol\,mol^{-1}$	Jan–Mar 2009	ws	Atkinson et al. (2012)
$CHBr_3$	15 $pmol\,mol^{-1}$	spr 1983	ARC	Berg et al. (1984)
$CHBr_3$	4…8 $pmol\,mol^{-1}$	all 1983	BA	Rasmussen and Khalil (1984)
$CHBr_3$		1984–1987	ARC	Oltmans et al. (1989)
$CHBr_3$		1984–1987	BA	Cicerone et al. (1988)
$CHBr_3$		1986–1987	AL	Barrie et al. (1988)
$CHBr_3$	0.90…4.13 $pmol\,mol^{-1}$	spr 1988	AL	Bottenheim et al. (1990)
$CHBr_3$	0.36…2.0 $pmol\,mol^{-1}$	Nov 1989	mm	Sturges et al. (1993d)
$CHBr_3$	0…18 $pmol\,mol^{-1}$	Mar–Apr 1989	BA	Sturges et al. (1993c)
$CHBr_3$	0.6…5 $pmol\,mol^{-1}$	win/spr 1992	AL	Li et al. (1994)
$CHBr_3$	2.0…3.7 $pmol\,mol^{-1}$	Jan 1992	AL	Yokouchi et al. (1994)
$CHBr_3$	0.9…3.2 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
$CHBr_3$	0.93…3.1 $pmol\,mol^{-1}$	Apr 1992	ARC	Leaitch et al. (1994)
$CHBr_3$	mean: 0.45 $pmol\,mol^{-1}$	Sep 1992	NA	Schall and Heumann (1993)
$CHBr_3$	mean: 1.9 $pmol\,mol^{-1}$	1992–1994	AL	Yokouchi et al. (1996)
$CHBr_3$	mean: 0.3 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
$CHBr_3$		2000	sp	Swanson et al. (2004)
$CHBr_3$	non-ODE median: 1.1 $pmol\,mol^{-1}$	Mar–Apr 2000	ARC	Ridley et al. (2007)
$CHBr_3$		Mar 2004	KU	Carpenter et al. (2005)
$CHBr_3$	mean: 0.002 $nmol\,mol^{-1}$	Mar–Apr 2008	ARC	Gilman et al. (2010)
$CHBr_3$	mean: 3.3 $pmol\,mol^{-1}$	Jan–Mar 2009	ws	Atkinson et al. (2012)
$C_2H_4Br_2$	0.10…0.25 $pmol\,mol^{-1}$	spr 1988	AL	Bottenheim et al. (1990)
CH_2BrCH_2Br	11 $pmol\,mol^{-1}$	spr 1983	ARC	Berg et al. (1984)
CH_2BrCH_2Br	1.0…1.9 $pmol\,mol^{-1}$	all 1983	BA	Rasmussen and Khalil (1984)
CH_2BrCH_2Br	mean: 0.1 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
bromoacetaldehyde		Jan–Apr 2005	BA	Keil and Shepson (2006)
bromoacetone		Jan–Apr 2005	BA	Keil and Shepson (2006)
CH_2BrCl	2.3…3.1 $pmol\,mol^{-1}$	all 1983	BA	Rasmussen and Khalil (1984)
CH_2BrCl	$\leq$ 0.2 $pmol\,mol^{-1}$	win/spr 1992	AL	Li et al. (1994)
CH_2BrCl	0.15…0.34 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
CH_2BrCl	mean: 0.16 $pmol\,mol^{-1}$	1992–1994	AL	Yokouchi et al. (1996)

Table 3: Continued.

Species	Value	Date	Site	Reference
$CHBr_2Cl$	0.17…0.53 $pmol\,mol^{-1}$	spr 1988	AL	Bottenheim et al. (1990)
$CHBr_2Cl$	0…1.6 $pmol\,mol^{-1}$	Mar–Apr 1989	BA	Sturges et al. (1993c)
$CHBr_2Cl$	0.06…0.4 $pmol\,mol^{-1}$	win/spr 1992	AL	Li et al. (1994)
$CHBr_2Cl$	0.1…0.5 $pmol\,mol^{-1}$	Jan 1992	AL	Yokouchi et al. (1994)
$CHBr_2Cl$	0.1…0.4 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
$CHBr_2Cl$	0.16…0.36 $pmol\,mol^{-1}$	Apr 1992	ARC	Leaitch et al. (1994)
$CHBr_2Cl$	mean: 0.33 $pmol\,mol^{-1}$	Sep 1992	NA	Schall and Heumann (1993)
$CHBr_2Cl$	mean: 0.24 $pmol\,mol^{-1}$	1992–1994	AL	Yokouchi et al. (1996)
$CHBr_2Cl$	mean: 0.02 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
$CHBr_2Cl$	mean: 0.4 $pmol\,mol^{-1}$	Jan–Mar 2009	ws	Atkinson et al. (2012)
$CHBrCl_2$	0…1.6 $pmol\,mol^{-1}$	Mar–Apr 1989	BA	Sturges et al. (1993c)
$CHBrCl_2$	0.11…0.39 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)
$CHBrCl_2$	0.3…1.3 $pmol\,mol^{-1}$	win/spr 1992	AL	Li et al. (1994)
$CHBrCl_2$	0.38…0.73 $pmol\,mol^{-1}$	Apr 1992	ARC	Leaitch et al. (1994)
$CHBrCl_2$	mean: 0.12 $pmol\,mol^{-1}$	Sep 1992	NA	Schall and Heumann (1993)
$CHBrCl_2$	mean: 0.05 $pmol\,mol^{-1}$	Feb 1999	nm	Fischer et al. (2002)
$CBrClF_2$	0.9…1.2 $pmol\,mol^{-1}$	all 1983	BA	Rasmussen and Khalil (1984)

Iodine (inorganic)

Species	Value	Date	Site	Reference
gaseous I	2.2 $ng\,m^{-3}$(STP)	Nov–Dec 1970	mm	Duce et al. (1973)
gaseous I	2.7 $ng\,m^{-3}$(STP)	Nov–Dec 1970	sp	Duce et al. (1973)
I_2	mean: 5.8 $pmol\,mol^{-1}$	Jan–Mar 2009	ws	Atkinson et al. (2012)
IO		1995–1996	NA	Tuckermann et al. (1997)
IO		1995–1998	NA	Wittrock et al. (2000)
IO	up to 10 $pmol\,mol^{-1}$	1999	nm	Frieß et al. (2001)
IO		May 2000	AL	Hönninger (2002)
IO		2004–2005	ha	Saiz-Lopez et al. (2007b)
IO	mean: 3.3 $pmol\,mol^{-1}$	2004–2005	ha	Bloss et al. (2010)
IO	VCD	2004–2009	ant	Schönhardt et al. (2012)
IO	VCD $<$ DL of $\approx 2\times10^{12}$ cm^{-2}	Oct 2005	ARC	Saiz-Lopez et al. (2007a)
IO	VCD	Oct 2005	ant	Saiz-Lopez et al. (2007a)
IO	VCD $<$ DL of $\approx 5\times10^{12}$ cm^{-2}	2005–2006	ARC	Schönhardt et al. (2008)
IO	VCD	2005–2006	ant	Schönhardt et al. (2008)
IO	up to 3.4 $pmol\,mol^{-1}$	Feb–Mar 2008	KU	Mahajan et al. (2010); Edwards et al. (2011)
IO	below DL, see note[12]	Mar–Apr 2008	AG	Pöhler et al. (2010)
IO	mean: 5.1 $pmol\,mol^{-1}$	Jan–Mar 2009	ws	Atkinson et al. (2012)

Iodine (organic)

Species	Value	Date	Site	Reference
CH_3I		1982, 1983	NO	Hov et al. (1984)
CH_3I	mean: 2.4 $pmol\,mol^{-1}$	Oct–Dec 1987	ant	Reifenhäuser and Heumann (1992)
CH_3I	0.9…1.4 $pmol\,mol^{-1}$	Jan 1992	AL	Yokouchi et al. (1994)
CH_3I	0.2…0.6 $pmol\,mol^{-1}$	Apr 1992	AL	Yokouchi et al. (1994)

[12] The DL varied between 0.3 and 2.5 $pmol\,mol^{-1}$.

Table 3: Continued.

Species	Value	Date	Site	Reference
CH_3I	mean: 1.04 pmol mol^{-1}	Sep 1992	NA	Schall and Heumann (1993)
CH_3I		2000	sp	Swanson et al. (2004)
CH_3I	up to 3.83 pmol mol^{-1}	Feb–Mar 2008	KU	Mahajan et al. (2010)
CH_3I	mean: 0.1 pmol mol^{-1}	Jan–Mar 2009	ws	Atkinson et al. (2012)
CH_2I_2	mean: 0.46 pmol mol^{-1}	Sep 1992	NA	Schall and Heumann (1993)
CH_2I_2	up to 1.4 pmol mol^{-1}	Mar 2004	KU	Carpenter et al. (2005)
CH_2I_2	below DL of 0.05 pmol mol^{-1}	Feb–Mar 2008	KU	Mahajan et al. (2010)
CH_2ICl	mean: 0.07 pmol mol^{-1}	Sep 1992	NA	Schall and Heumann (1993)
CH_2ICl	mean: 0.01 pmol mol^{-1}	1992–1994	AL	Yokouchi et al. (1996)
CH_2ICl		Mar 2004	KU	Carpenter et al. (2005)
CH_2ICl	up to 0.165 pmol mol^{-1}	Feb–Mar 2008	KU	Mahajan et al. (2010)
CH_2ICl	mean: 0.07 pmol mol^{-1}	Jan–Mar 2009	ws	Atkinson et al. (2012)
CH_2IBr	up to 3.7 pmol mol^{-1}	Mar 2004	KU	Carpenter et al. (2005)
CH_2IBr	up to 0.11 pmol mol^{-1}	Feb–Mar 2008	KU	Mahajan et al. (2010)
CH_2IBr	mean: 0.03 pmol mol^{-1}	Jan–Mar 2009	ws	Atkinson et al. (2012)
C_2H_5I	mean: 0.2 pmol mol^{-1}	Jan–Mar 2009	ws	Atkinson et al. (2012)
1-C_3H_7I	mean: 0.20 pmol mol^{-1}	Sep 1992	NA	Schall and Heumann (1993)
1-C_3H_7I	mean: 0.07 pmol mol^{-1}	Jan–Mar 2009	ws	Atkinson et al. (2012)
2-C_3H_7I	mean: 2.00 pmol mol^{-1}	Sep 1992	NA	Schall and Heumann (1993)
2-C_3H_7I	mean: 0.03 pmol mol^{-1}	Jan–Mar 2009	ws	Atkinson et al. (2012)
Sulfur (inorganic)				
SO_2	5…100 pmol mol^{-1}	Jun–Aug 1980	NO	Ockelmann and Georgii (1984)
SO_2	5…100 pmol mol^{-1}	Jun–Aug 1980	ARC	Ockelmann and Georgii (1984)
SO_2	100…200 pmol mol^{-1}	Nov/Dec 1981	IG	Hoff et al. (1983)
SO_2	700…1300 pmol mol^{-1}	Feb 1982	IG	Hoff et al. (1983)
SO_2	$<$ 110…590 pmol mol^{-1}	Apr 1982	IG	Barrie and Hoff (1984)
SO_2	0…>1000 pmol mol^{-1}	Apr 1983	BA	Radke et al. (1984)
SO_2	mean: 0.36 nmol m^{-3}	Mar–Apr 1986	ant	Pszenny et al. (1989)
SO_2	11 pmol mol^{-1}	Mar–Apr 1986	ant	Berresheim (1987)
SO_2	140…480 pmol mol^{-1}	Apr 1986	AL	Barrie et al. (1989)
SO_2	6…1600 pmol mol^{-1}	spr 1988	AL	Bottenheim et al. (1990)
SO_2		Mar–Apr 1988	AL	Bottenheim et al. (1993)
SO_2		Jun 1990	ARC	Ferek et al. (1995)
SO_2		1990–2001	SN	Heidam et al. (2004)
SO_2		Jan–Feb 1991	tn	Allegrini et al. (1994)
SO_2		May–Oct 1991	BA	Ferek et al. (1995)
SO_2	0.042 …1.7 nmol m^{-3}	Aug–Oct 1991	ARC	Leck and Persson (1996)
SO_2	0…5000 pmol mol^{-1}	win/spr 1992	AL	Barrie et al. (1994a)
SO_2		Apr 1992	ARC	Ferek et al. (1995)
SO_2	mean: 0.9 nmol m^{-3}(STP)	Jun–Jul 1993	SU	Dibb et al. (1994)
SO_2		Mar–Jun 1994	ARC	Jaeschke et al. (1997)
SO_2		Aug 1994	SU	Dibb et al. (1996)
SO_2		1995–1996	NA	Martinez et al. (1999)

Table 3: Continued.

Species	Value	Date	Site	Reference
SO_2		1995, 1996	NA	Tuckermann et al. (1997)
SO_2	mean: 77 $pmol\,mol^{-1}$	Mar–May 1996	NA	Staebler et al. (1999)
SO_2	0...2592.7 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
SO_2		1998–1999	du	Jourdain and Legrand (2001); Legrand et al. (2001)
SO_2		Mar–Apr 2000	NA	Hara et al. (2002b)
SO_2	mean: 1487.5 $ng\,m^{-3}$	Feb 2000	AL	Ianniello et al. (2002)
SO_2		Feb–May 2000	ARC	Weber et al. (2003)
SO_2	mean: 280.0 $ng\,m^{-3}$	Apr–May 2000	AL	Ianniello et al. (2002)
SO_2		2000	sp	Huey et al. (2004)
SO_2		2002–2005	NU	Skov et al. (2006b)
SO_2	see note[13]	Apr–May 2003	NA	Ianniello et al. (2007)
SO_2		Nov–Dec 2003	sp	Eisele et al. (2008)
SO_2	median: 10 $pmol\,mol^{-1}$	Nov–Dec 2005	ant	Slusher et al. (2010)
SO_2	mean: 7.4 $nmol\,m^{-3}$	fal 2007	ARC	Rempillo et al. (2011)
SO_2		Apr 2008	ARC	Dupont et al. (2012)
SO_2	mean: 2.0 $nmol\,m^{-3}$	fal 2008	ARC	Rempillo et al. (2011)
H_2SO_4	mean: 1.61×10^6 cm^{-3}	Feb 1994	pa	Jefferson et al. (1998); Davis et al. (1998)
H_2SO_4		2000	sp	Mauldin III et al. (2004)
H_2SO_4		Feb–May 2000	ARC	Mauldin III et al. (2003); Weber et al. (2003)
H_2SO_4		Nov–Dec 2003	sp	Eisele et al. (2008)
H_2SO_4	mean: 1.32×10^6 cm^{-3}	May–Jun 2007	SU	Ziemba et al. (2010)
SF_6		1997–2005	SU	Dibb et al. (2007)

Sulfur (organic)

Species	Value	Date	Site	Reference
CH_3SH	<0.04 $nmol\,m^{-3}$	Mar–Apr 1986	ant	Berresheim (1987)
DMS	96 $pmol\,mol^{-1}$	Mar–Apr 1986	ant	Berresheim (1987)
DMS		Jun 1990	ARC	Ferek et al. (1995)
DMS		May–Oct 1991	BA	Ferek et al. (1995)
DMS	0.047...17 $nmol\,m^{-3}$	Aug–Oct 1991	ARC	Leck and Persson (1996)
DMS	<0.3 $pmol\,mol^{-1}$	Jan–Apr 1992	AL	Yokouchi et al. (1994)
DMS		Apr 1992	ARC	Ferek et al. (1995)
DMS	0.2...74.5 $pmol\,mol^{-1}$	1992–1993	nm	Kleefeld (1998)
DMS	mean: 119 $pmol\,mol^{-1}$	Jan–Feb 1994	pa	Berresheim et al. (1998)
DMS	0.1...89.6 $pmol\,mol^{-1}$	Mar–Apr 1994	NA	Kleefeld (1998)
DMS	0.5...138.9 $pmol\,mol^{-1}$	Apr 1995	NA	Kleefeld (1998)
DMS		1998–1999	du	Jourdain and Legrand (2001); Legrand et al. (2001)
DMS		1999–2003	du	Preunkert et al. (2007)
DMS		2000	sp	Swanson et al. (2004)
DMS		Nov–Dec 2003	sp	Eisele et al. (2008)
DMS	mean: 38.1 $pmol\,mol^{-1}$	2004–2005	ha	Read et al. (2008)
DMS		2007	du	Preunkert et al. (2008)
DMS		2007	co	Preunkert et al. (2008)

[13]Means from denuder comparison: 145.7 and 97.0 $ng\,m^{-3}$.

Table 3: Continued.

Species	Value	Date	Site	Reference
DMS	mean: 0.44 $nmol\,m^{-3}$	fal 2007	ARC	Rempillo et al. (2011)
DMS		Aug–Sep 2008	ARC	Sjostedt et al. (2012)
DMS	mean: 1.3 $nmol\,m^{-3}$	fal 2008	ARC	Rempillo et al. (2011); Chang et al. (2011b)
CH_3SOCH_3		Jan 1994	pa	Davis et al. (1998)
CH_3SOCH_3	mean: 2.3 $pmol\,mol^{-1}$	Jan–Feb 1994	pa	Berresheim et al. (1998)
CH_3SOCH_3		1998–1999	du	Jourdain and Legrand (2001); Legrand et al. (2001)
CH_3SOCH_3		1999–2003	du	Preunkert et al. (2007)
$CH_3SO_2CH_3$		Jan 1994	pa	Davis et al. (1998)
$CH_3SO_2CH_3$	mean: 1.7 $pmol\,mol^{-1}$	Jan–Feb 1994	pa	Berresheim et al. (1998)
OCS		1982, 1983	NO	Hov et al. (1984)
MSA (gaseous)	mean: 9.5×10^5 cm^{-3}	Feb 1994	pa	Jefferson et al. (1998); Davis et al. (1998)
MSA (gaseous)		Feb–May 2000	ARC	Mauldin III et al. (2003)
MSA (gaseous)		Nov–Dec 2003	sp	Eisele et al. (2008)
Mercury				
Hg (TGM)	trend analysis	1977–2000	ARC, ant	Slemr et al. (2003)
Hg (TGM)	mean: 0.55 $ng\,m^{-3}$	1985–1989	ant	de Mora et al. (1993)
Hg (TGM)	mean: 1.47 $ng\,m^{-3}$	1992–1993	AL	Schroeder et al. (1995)
Hg (GEM)	seasonal cycle	1992–2001	NA	Eneroth et al. (2007)
Hg	annual mean: 1.50…1.79 $ng\,m^{-3}$	1994–2002	NA	Berg et al. (2004)
Hg (TGM)		1995	AL	Schroeder et al. (1998)
Hg (GEM)		1995–1999	AL	Banic et al. (2003)
Hg (GEM)	mean: 1.55 $ng\,m^{-3}$	1995–2000	AL	Temme et al. (2004)
Hg (GEM)	mean: 1.55 $ng\,m^{-3}$	1995–2001	AL	Kim et al. (2005)
Hg (GEM)	median: 1.58 $ng\,m^{-3}$	1995–2002	AL	Steffen et al. (2005)
Hg (TGM)	mean: 1.55 $ng\,m^{-3}$	1995–2005	AL	Temme et al. (2007); Sprovieri et al. (2010)
Hg (GEM)	decreasing trend	1995–2007	AL	Cole and Steffen (2010)
Hg	mean: 1.26 $ng\,m^{-3}$	1996–1997	PS	Berg et al. (2001)
Hg	mean: 1.43 $ng\,m^{-3}$	1996–1997	NA	Berg et al. (2001)
Hg (TGM)	mean: 1.55 $ng\,m^{-3}$	1997–1998	AL	Kellerhals et al. (2003)
Hg (GEM)		Apr–May 1998	AL	Lu et al. (2001)
Hg (GEM)		Apr 1998	BS	Banic et al. (2003)
Hg (TGM)		Jun 1998	NA	Sprovieri and Pirrone (2000)
Hg (GEM)		1998–2002	SN	Skov et al. (2004)
Hg (TGM)		Nov 1999	tn	Sprovieri and Pirrone (2000)
Hg (GEM)	median: 1.8 $ng\,m^{-3}$	1999–2000	KU	Steffen et al. (2005)
Hg (GEM)		1999–2000	BA	Lindberg et al. (2001)
Hg (GEM)		1999–2001	BA	Lindberg et al. (2002)
Hg (GEM)		1999–2001	SN	Heidam et al. (2004)
Hg (TGM)	0.29…3.17 $ng\,m^{-3}$	1999–2002	KU	Poissant and Pilote (2003)
Hg (GEM)	median: 1.47 $ng\,m^{-3}$	2000	NA	Berg et al. (2003)
Hg (GEM)		Feb–May 2000	AL	Steffen et al. (2002)
Hg		Feb–Mar 2000	AL	Bottenheim et al. (2002b)

Table 3: Continued.

Species	Value	Date	Site	Reference
Hg (GEM)	mean: 0.9 $ng\,m^{-3}$	2000–2001	tn	Sprovieri et al. (2002); Dommergue et al. (2010)
Hg (TGM)	mean: 1.08 $ng\,m^{-3}$	2000–2001	nm	Ebinghaus et al. (2002); Temme et al. (2003); Dommergue et al. (2010)
Hg (TGM)	mean: 1.36 $ng\,m^{-3}$	2000–2001	FC	Temme et al. (2007); Sprovieri et al. (2010)
Hg (GEM)	trajectory analysis	2000–2007	ARC	Hirdman et al. (2009)
Hg (TGM)	median: 1.93 $ng\,m^{-3}$	Apr–May 2001	KU	Poissant and Pilote (2003); Poissant and Hoenninger (2004)
Hg (GEM)	median: 1.7 $ng\,m^{-3}$	2001–2003	AM	Steffen et al. (2005)
Hg (GEM)		Mar 2002	SN	Ferrari et al. (2004)
Hg (GEM)		Apr 2002	AL	Steffen et al. (2003)
Hg (GEM)		Apr 2002	KU	Lahoutifard et al. (2006); Gauchard et al. (2005b); Dommergue et al. (2003a,b)
Hg (TGM)		Apr–May 2002	NA	Sommar et al. (2007)
Hg (GEM)		Apr–May 2003	NA	Sprovieri et al. (2005a,b)
Hg (GEM)		Apr–May 2003	NA	Aspmo et al. (2005); Gauchard et al. (2005a)
Hg (GEM)	mean: 1.20 $ng\,m^{-3}$	Oct–Nov 2003	mm	Brooks et al. (2008b)
Hg (GEM)	mean: 0.539 $ng\,m^{-3}$	Nov–Dec 2003	sp	Brooks et al. (2008a)
Hg (TGM)		Mar 2004	KU	Carpenter et al. (2005); Constant et al. (2007)
Hg (GEM)		Apr–Aug 2004	CH	Kirk et al. (2006)
Hg (GEM)		2004–2005	NA	Ferrari et al. (2008)
Hg (GEM)	mean: 1.0 $ng\,m^{-3}$	Feb–Jun 2005	AL	Cobbett et al. (2007)
Hg (GEM)		Mar–Apr 2005	BA	Tackett et al. (2007)
Hg (TGM)	mean: 1.73 $ng\,m^{-3}$	Jul–Sep 2005	ARC	Sommar et al. (2010)
Hg (GEM)	mean: 1.31 $ng\,m^{-3}$	2007	SU	Brooks et al. (2011)
Hg (GEM)	mean: 1.45 $ng\,m^{-3}$	2008	SU	Brooks et al. (2011)
Hg (GEM)		Feb–Jun 2008	NA	Steen et al. (2009)
Hg (GEM)		Mar 2008	AG	Nghiem et al. (2012)
Hg (TGM)		Mar 2009	BA	Sherman et al. (2012)
Hg (GEM)		Mar 2009	BA	Stephens et al. (2012)
Hg (GEM)	mean: 1.57 $ng\,m^{-3}$	2007–2011	NA	Pfaffhuber et al. (2012)
Hg (GEM)	mean: 0.93 $ng\,m^{-3}$	2007–2011	tr	Pfaffhuber et al. (2012)
Hg (GEM)	0.2 . . . 2.3 $ng\,m^{-3}$	Jan 2009	co	Dommergue et al. (2010, 2012)
Hg (RGM)		1999–2000	BA	Lindberg et al. (2001)
Hg (RGM)		1999–2001	BA	Lindberg et al. (2002)
Hg (RGM)		2000	NA	Berg et al. (2003)
Hg (RGM)		2000–2001	nm	Temme et al. (2003); Dommergue et al. (2010)
Hg (RGM)	mean: 116.2 $pg\,m^{-3}$	2000–2001	tn	Sprovieri et al. (2002); Dommergue et al. (2010)
Hg (RGM)	median: 22 $pg\,m^{-3}$	Apr–May 2001	KU	Poissant and Pilote (2003); Poissant and Hoenninger (2004)
Hg (RGM)		2001–2004	BA	Skov et al. (2006a)
Hg (RGM)		Apr 2002	AL	Steffen et al. (2003)

Table 3: Continued.

Species	Value	Date	Site	Reference
Hg (RGM)		Apr 2002	KU	Lahoutifard et al. (2006); Gauchard et al. (2005b); Dommergue et al. (2003a,b)
Hg (RGM)		Apr–May 2002	NA	Sommar et al. (2007)
Hg (RGM)		Mar–Apr 2003	BA	Brooks et al. (2006)
Hg (RGM)		Apr–May 2003	NA	Sprovieri et al. (2005a,b)
Hg (RGM)		Apr–May 2003	NA	Aspmo et al. (2005); Gauchard et al. (2005a)
Hg (RGM)	mean: 116 $pg\,m^{-3}$	Oct–Nov 2003	mm	Brooks et al. (2008b)
Hg (RGM)	mean: 344 $pg\,m^{-3}$	Nov–Dec 2003	sp	Brooks et al. (2008a)
Hg (RGM)		Apr–Aug 2004	CH	Kirk et al. (2006)
Hg (RGM)		2004–2005	NA	Ferrari et al. (2008)
Hg (RGM)	mean: 44.4 $pg\,m^{-3}$	Feb–Jun 2005	AL	Cobbett et al. (2007)
Hg (RGM)	mean: 3.2 $pg\,m^{-3}$	Jul–Sep 2005	ARC	Sommar et al. (2010)
Hg (RGM)	mean: 41.6 $pg\,m^{-3}$	2007	SU	Brooks et al. (2011)
Hg (RGM)	mean: 13.2 $pg\,m^{-3}$	2008	SU	Brooks et al. (2011)

Table 4: Aerosol data.

Species	Value	Date	Site	Reference
		Nitrogen		
NH_4^+		1979–1984	ARC	Barrie and Hoff (1985)
NH_4^+		1980–1995	AL	Sirois and Barrie (1999)
NH_4^+		Apr–May 1980	MB, IG	Barrie et al. (1981)
NH_4^+	115...1030 $ng\,m^{-3}$	Feb 1982	IG	Hoff et al. (1983)
NH_4^+	mean: 6.2 $ng\,m^{-3}$	1983–2005	nm	Weller and Wagenbach (2007)
NH_4^+		Mar–May 1986	BA	Li and Winchester (1989a,b)
NH_4^+		Apr 1986	AL	Barrie et al. (1989)
NH_4^+	20...701 $ng\,m^{-3}$	spr 1988	AL	Bottenheim et al. (1990)
NH_4^+	mean: 180 $ng\,m^{-3}$	May 1989	AL	Kieser et al. (1993)
NH_4^+	0.030 ...3.9 $nmol\,m^{-3}$	Aug–Oct 1991	ARC	Leck and Persson (1996)
NH_4^+		1990–2001	SN	Heidam et al. (2004)
NH_4^+		1991–1995	du	Legrand et al. (1998)
NH_4^+		1991–1995	nm	Legrand et al. (1998)
NH_4^+		1991–1999	du	Jourdain and Legrand (2002)
NH_4^+		1992–1994	SE	Virkkula et al. (1999)
NH_4^+	mean: 69 $ng\,m^{-3}$	May–Jul 1993	SU	Bergin et al. (1995)
NH_4^+		Jan 1994	du	Legrand et al. (1998)
NH_4^+		Aug 1994	SU	Dibb et al. (1996)
NH_4^+	mean: 160 $pmol\,mol^{-1}$	Mar–May 1996	NA	Staebler et al. (1999)
NH_4^+	0...969.6 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
NH_4^+	mean: 161 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
NH_4^+	decreasing trend in winter	1997–2008	BA	Quinn et al. (2009)
NH_4^+	mean: 124.5 $ng\,m^{-3}$	Feb 2000	AL	Ianniello et al. (2002)
NH_4^+	mean: 89.9 $ng\,m^{-3}$	Apr–May 2000	AL	Ianniello et al. (2002)
NH_4^+	sum mean 9.2...14.8 $ng\,m^{-3}$	2000–2002	ks	Piel et al. (2006)
NH_4^+	mean: 105 $ng\,m^{-3}$	Apr–May 2001	NA	Teinilä et al. (2003)

Table 4: Continued.

Species	Value	Date	Site	Reference
NH_4^+	mean: 108 $ng\,m^{-3}$	Feb–Mar 2001	NA	Teinilä et al. (2003)
NO_2^-	< 23 $ng\,m^{-3}$	win/spr 1992	AL	Li (1994)
NO_2^-		Mar–Apr 1995	AL	Anastasio and Jordan (2004)
NO_2^-	mean: 14 $pmol\,mol^{-1}$	Mar–May 1996	NA	Staebler et al. (1999)
NO_2^-	mean: 1.41 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
NO_2^-	0...260.1 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
NO_2^-	< DL...20 $pmol\,mol^{-1}$	Feb–May 2001	NA	Beine et al. (2003)
NO_3^-		1979–1984	ARC	Barrie and Hoff (1985)
NO_3^-		Apr–May 1980	MB, IG	Barrie et al. (1981)
NO_3^-	10...100 $ng\,m^{-3}$	1980–1988	AL	Barrie and Delmas (1994)
NO_3^-		1980–1995	AL	Sirois and Barrie (1999)
NO_3^-	trend analysis	1980–2004	ARC	Quinn et al. (2007)
NO_3^-	17...260 $ng\,m^{-3}$	Feb 1982	IG	Hoff et al. (1983)
NO_3^-	mean: 42 $ng\,m^{-3}$	1983–2005	nm	Weller and Wagenbach (2007)
NO_3^-		1983–2007	nm	Weller et al. (2011)
NO_3^-	30 $ng\,m^{-3}$	Apr 1983	BA	Radke et al. (1984)
NO_3^-		1983–1996	nm	Wagenbach et al. (1998b)
NO_3^-		Mar–May 1986	BA	Li and Winchester (1989a,b)
NO_3^-		Apr 1986	AL	Barrie et al. (1989)
NO_3^-	7.1...245.7 $ng\,m^{-3}$	spr 1988	AL	Bottenheim et al. (1990)
NO_3^-		Mar–Apr 1988	AL	Bottenheim et al. (1993)
NO_3^-	mean: 189 $ng\,m^{-3}$	May 1989	AL	Kieser et al. (1993)
NO_3^-		Jan–Feb 1991	tn	Allegrini et al. (1994)
NO_3^-		1991–1995	du	Wagenbach et al. (1998b)
NO_3^-		1991–2001	du	Jourdain and Legrand (2002)
NO_3^-		1991–2007	du	Weller et al. (2011)
NO_3^-	30...400 $ng\,m^{-3}$	win/spr 1992	AL	Barrie et al. (1994a)
NO_3^-		1992–1994	SE	Virkkula et al. (1999)
NO_3^-	mean: 26 $ng\,m^{-3}$	May–Jul 1993	SU	Bergin et al. (1995)
NO_3^-	mean: 0.06 $nmol\,m^{-3}$(STP)	Jun–Jul 1993	SU	Dibb et al. (1994)
NO_3^-		Jan 1994	du	Legrand et al. (1998)
NO_3^-		Mar–Jun 1994	ARC	Jaeschke et al. (1997)
NO_3^-		Aug 1994	SU	Dibb et al. (1996)
NO_3^-		Mar–Apr 1995	AL	Anastasio and Jordan (2004)
NO_3^-	mean: 34.0 $pmol\,mol^{-1}$	Mar–May 1996	NA	Staebler et al. (1999)
NO_3^-		1996–1999	NA	Hara et al. (2002a)
NO_3^-	mean: 4 $pmol\,mol^{-1}$	Jan–Mar 1997	nm	Jones et al. (1999)
NO_3^-	mean: 69.4 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
NO_3^-	0...3537.1 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
NO_3^-	mean: 39 $ng\,m^{-3}$	1998–1999	sp	Arimoto et al. (2001)
NO_3^-		1998, 2000	sp	Arimoto et al. (2004a)
NO_3^-	mean: 4.2 $pmol\,mol^{-1}$	Jan–Feb 1999	nm	Jacobi et al. (2000)
NO_3^-	mean: 81.3 $ng\,m^{-3}$	Feb 2000	AL	Ianniello et al. (2002)
NO_3^-		Mar–Apr 2000	NA	Hara et al. (2002b)
NO_3^-	mean: 137.4 $ng\,m^{-3}$	Apr–May 2000	AL	Ianniello et al. (2002)
NO_3^-	sum mean 20.3...52.7 $ng\,m^{-3}$	2000–2002	ks	Piel et al. (2006)
NO_3^-		2001	du	Savarino et al. (2007)
NO_3^-		Jan–Dec 2001	ha	Rankin and Wolff (2003)
NO_3^-	mean: 59 $ng\,m^{-3}$	Feb–Mar 2001	NA	Teinilä et al. (2003)
NO_3^-	7...80 $pmol\,mol^{-1}$	Feb–May 2001	NA	Beine et al. (2003)

Table 4: Continued.

Species	Value	Date	Site	Reference
NO_3^-	mean: 65 $ng\,m^{-3}$	Apr–May 2001	NA	Teinilä et al. (2003)
NO_3^-		Nov–Dec 2003	sp	Eisele et al. (2008)
NO_3^-	mean: 25 $ng\,m^{-3}$	2003–2005	ks	Weller and Wagenbach (2007)
NO_3^-		spr 2004	AL	Morin et al. (2007)
NO_3^-		2004–2005	ha	Jones et al. (2011, 2008); Wolff et al. (2008)
NO_3^-	Nov–May 140 $ng\,m^{-3}$, Jun–Oct 40 $ng\,m^{-3}$	2005–2006	AL	Morin et al. (2008)
NO_3^-		Feb–Apr 2006	NA	Morin et al. (2009)
NO_3^-		Sep–Oct 2006	ws	Morin et al. (2009)
NO_3^-	up to 142 $ng\,m^{-3}$	2007–2008	co	Frey et al. (2009b)
NO_3^-	2...298 $ng\,m^{-3}$	Mar 2009	SN	Fenger et al. (2012)
		Fluorine		
F		1979–1984	ARC	Barrie and Hoff (1985)
F^-		Apr 1986	AL	Barrie et al. (1989)
F^-	mean: 0.9 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
		Chlorine		
Cl	$<$ 20...4000 $ng\,m^{-3}$(STP)	Jan 1965	BA	Duce et al. (1966)
Cl	$<$ 0.01 $ng\,m^{-3}$(STP)	Nov–Dec 1970	sp	Duce et al. (1973)
Cl	0.07 $ng\,m^{-3}$(STP)	Nov–Dec 1970	mm	Duce et al. (1973)
Cl	sum 68 000, win 6600 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Cl	mean: 2600 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Cl		1976–1980	BA	Berg et al. (1983)
Cl		1979–1980	ARC	Heidam (1985)
Cl	sum 9.6, win 38 $ng\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Cl		1979–1984	ARC	Barrie and Hoff (1985)
Cl^-		Apr–May 1980	MB, IG	Barrie et al. (1981)
Cl^-		1980–1995	AL	Sirois and Barrie (1999)
Cl		1982	sp	Bodhaine et al. (1986)
Cl	87.9...411 $ng\,m^{-3}$	Feb 1982	IG	Hoff et al. (1983)
Cl^-	149...563 $ng\,m^{-3}$	Feb 1982	IG	Hoff et al. (1983)
Cl^-	230 $ng\,m^{-3}$	Apr 1983	BA	Radke et al. (1984)
Cl		spr 1983	ARC	Winchester et al. (1985)
Cl	$<$ 20...302 $ng\,m^{-3}$	spr 1983	ARC	Cahill and Eldred (1984)
Cl		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
Cl		1983–1986	NA, NO	Maenhaut et al. (1989)
Cl^-		1983–1996	nm	Wagenbach et al. (1998a)
Cl^-	mean: 480 $ng\,m^{-3}$	1983–2005	nm	Weller and Wagenbach (2007)
Cl		1984–1987	PF	Sturges and Shaw (1993)
Cl^-		Mar–May 1986	BA	Li and Winchester (1989a,b)
Cl^-		Apr 1986	AL	Barrie et al. (1989)
Cl	21...2575 $ng\,m^{-3}$	spr 1988	AL	Bottenheim et al. (1990)
Cl	0.028...55 $ng\,m^{-3}$	1988–1989	DY	Mosher et al. (1993)
Cl	0.53...20 $ng\,m^{-3}$	1988–1989	SU	Mosher et al. (1993)

Table 4: Continued.

Species	Value	Date	Site	Reference
Cl^-	mean: 286 $ng\,m^{-3}$	May 1989	AL	Kieser et al. (1993)
Cl^-	median: 0.16 $nmol\,m^{-3}$(STP)	1990–1991	ant	de Mora et al. (1997)
Cl^-		1991–1993	ha	Wagenbach et al. (1998a)
Cl^-		1991–1995	du	Wagenbach et al. (1998a)
Cl^-		1991–2001	du	Jourdain and Legrand (2002)
Cl	0...1200 $ng\,m^{-3}$	win/spr 1992	AL	Barrie et al. (1994b)
Cl		1992–1994	SE	Virkkula et al. (1999)
Cl^-		Jan 1994	du	Legrand et al. (1998)
Cl^-		Aug 1994	SU	Dibb et al. (1996)
Cl^-		Mar–Apr 1995	AL	Anastasio and Jordan (2004)
Cl^-	mean: 130 $pmol\,mol^{-1}$	Mar–May 1996	NA	Staebler et al. (1999)
Cl^-		1996–1999	NA	Hara et al. (2002a)
Cl^-		1997–1998	sy, df	Hara et al. (2004)
Cl^-	mean: 379 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
Cl^-	0...1391.0 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
Cl	mean: 34 $ng\,m^{-3}$	1998–1999	sp	Arimoto et al. (2001)
Cl^-		1998, 2000	sp	Arimoto et al. (2004a)
Cl^-	mean: 73.9 $ng\,m^{-3}$	Feb 2000	AL	Ianniello et al. (2002)
Cl^-	mean: 220.9 $ng\,m^{-3}$	Apr–May 2000	AL	Ianniello et al. (2002)
Cl^-	sum mean 4.3...28.3 $ng\,m^{-3}$	2000–2002	ks	Piel et al. (2006)
Cl^-		Jan–Dec 2001	ha	Rankin and Wolff (2003)
Cl^-	mean: 449 $ng\,m^{-3}$	Feb–Mar 2001	NA	Teinilä et al. (2003)
Cl^-	mean: 373 $ng\,m^{-3}$	Apr–May 2001	NA	Teinilä et al. (2003)
Cl	mean: 519.43 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
Cl^-	mean: 38 $ng\,m^{-3}$	2003–2005	ks	Weller and Wagenbach (2007)
Cl^-		2007	tr	Hansen et al. (2009)
Cl^-	53...507 $ng\,m^{-3}$	Mar 2009	SN	Fenger et al. (2012)
Bromine[14]				
Br	1...30 $ng\,m^{-3}$(STP)	Jan 1965	BA	Duce et al. (1966)
Br	0.43 $ng\,m^{-3}$(STP)	Nov–Dec 1970	sp	Duce et al. (1973)
Br	0.96 $ng\,m^{-3}$(STP)	Nov–Dec 1970	mm	Duce et al. (1973)
Br	0.63 $ng\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)
Br	sum 320, win 800 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Br	see note[15]	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Br		1976–1980	ARC	Oltmans et al. (1989)
Br		1976–1980	BA	Berg et al. (1983)
Br		1977–1978	NA	Berg et al. (1983)
Br		1979–1980	ARC	Heidam (1985)
Br	see note[16]	1979–1983	sp	Tuncel et al. (1989)
Br	4.2...10.4 $ng\,m^{-3}$	win 1979–84	AL	Sturges and Barrie (1988)
Br	9.0...27.8 $ng\,m^{-3}$	spr 1979–84	AL	Sturges and Barrie (1988)
Br	0.5...0.7 $ng\,m^{-3}$	Jun–Nov 1979–84	AL	Sturges and Barrie (1988)
Br	3.8...21.1 $ng\,m^{-3}$	win 1979–84	IG	Sturges and Barrie (1988)

[14] Many measurements of aerosol bromine refer to "filterable Br" which may also include gaseous Br (mainly HBr).
[15] Different values for Whatman filters and Nuclepore filters: 1370 and 2600 $pg\,m^{-3}$(STP), respectively.
[16] Different values for Whatman filters and Fluoropore filters: sum 610 and 140, and win 110 and 90 $pg\,m^{-3}$, respectively.

Table 4: Continued.

Species	Value	Date	Site	Reference
Br	13.0...30.4 ng m^{-3}	spr 1979–84	IG	Sturges and Barrie (1988)
Br	1.4...3.8 ng m^{-3}	Jun–Nov 1979–84	IG	Sturges and Barrie (1988)
Br	3.4...14.5 ng m^{-3}	win 1979–84	MB	Sturges and Barrie (1988)
Br	20.5...54.6 ng m^{-3}	spr 1979–84	MB	Sturges and Barrie (1988)
Br		1979–1984	ARC	Barrie and Hoff (1985)
Br	< 0.5...1.8 ng m^{-3}	Jun–Nov 1979–84	MB	Sturges and Barrie (1988)
Br		1980–1986	AL	Barrie and Barrie (1990)
Br		1980–1995	AL	Sirois and Barrie (1999)
Br	16.9...39.2 ng m^{-3}	Feb 1982	IG	Hoff et al. (1983)
Br	25...63 ng m^{-3}	Mar 1983	BA	Hansen and Rosen (1984)
Br		1983–1986	NA, NO	Maenhaut et al. (1989)
Br^-		1983–1996	nm	Wagenbach et al. (1998a)
Br	monthly mean: 0...5 ng m^{-3}	1984–1987	PF	Sturges and Shaw (1993)
Br^-	see note[17]	Mar–Apr 1986	ant	Pszenny et al. (1989)
Br^-		Mar–May 1986	BA	Li and Winchester (1989a,b)
Br^-		Apr 1986	AL	Barrie et al. (1988, 1989)
Br^-	1...54 ng m^{-3}	spr 1988	AL	Bottenheim et al. (1990)
Br	3.1...84.5 ng m^{-3}	spr 1988	AL	Bottenheim et al. (1990)
Br	0.02...5.0 ng m^{-3}	1988–1989	DY	Mosher et al. (1993)
Br	0.17...1.6 ng m^{-3}	1988–1989	SU	Mosher et al. (1993)
Br	0...260 ng m^{-3}	Mar–Apr 1989	BA	Sturges et al. (1993c)
Br^-	mean: 45 ng m^{-3}	May 1989	AL	Kieser et al. (1993)
Br		Mar–Apr 1990	BA	Sturges et al. (1993b)
Br^-		1991–1995	du	Wagenbach et al. (1998a)
Br^-	10...20 ng m^{-3}	win 1992	AL	Li et al. (1994)
Br^-	20...120 ng m^{-3}	spr 1992	AL	Li et al. (1994)
Br	4...100 ng m^{-3}	win/spr 1992	AL	Barrie et al. (1994a)
Br		1992–1994	SE	Virkkula et al. (1999)
Br^-		Mar–Apr 1995	AL	Anastasio and Jordan (2004)
Br^-	mean: 1.4 pmol mol^{-1}	Mar–May 1996	NA	Staebler et al. (1999)
Br		1996	NA	Martinez et al. (1999)
Br^-		1996–1999	NA	Hara et al. (2002a)
Br^-		1997–1998	sy, df	Hara et al. (2004)
Br^-	mean: 1.0 ng m^{-3}	1997–1999	SE	Ricard et al. (2002)
Br		1999–2002	SN	Skov et al. (2004)
Br^-	mean: 5.2 ng m^{-3}	Feb 2000	AL	Ianniello et al. (2002)
Br^-	mean: 13.1 ng m^{-3}	Apr–May 2000	AL	Ianniello et al. (2002)
Br	mean: 0.72 ng m^{-3}	2002–2005	NU	Skov et al. (2006b)
BrO_3^-		1996–1999	NA	Hara et al. (2002a)

Iodine

I	0.3...10 ng m^{-3}(STP)	Jan 1965	BA	Duce et al. (1966)
I	0.49 ng m^{-3}(STP)	Nov–Dec 1970	sp	Duce et al. (1973)
I	0.93 ng m^{-3}(STP)	Nov–Dec 1970	mm	Duce et al. (1973)
I	sum 180, win 80 pg m^{-3}	1971–1978	sp	Cunningham and Zoller (1981)

[17] Data available in supplement of Sander et al. (2003).

Table 4: Continued.

Species	Value	Date	Site	Reference
I	see note[18]	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
I		1976–1980	BA	Berg et al. (1983)
I	sum 260, win 130 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
I		1979–1984	ARC	Barrie and Hoff (1985)
I		1980–1986	AL	Barrie and Barrie (1990)
I		1980–1995	AL	Sirois and Barrie (1999)
I	0.28…1.11 $ng\,m^{-3}$	Feb 1982	IG	Hoff et al. (1983)
I		1983–1986	NA, NO	Maenhaut et al. (1989)
I	monthly mean: 0…1 $ng\,m^{-3}$	1984–1987	PF	Sturges and Shaw (1993)
I		Apr 1986	AL	Barrie et al. (1989)
I	0.34…2.62 $ng\,m^{-3}$	spr 1988	AL	Bottenheim et al. (1990)
I	0.017…1.2 $ng\,m^{-3}$	1988–1989	DY	Mosher et al. (1993)
I	0.14…0.89 $ng\,m^{-3}$	1988–1989	SU	Mosher et al. (1993)
I	0.3…2 $ng\,m^{-3}$	win/spr 1992	AL	Barrie et al. (1994b)
I		1992–1994	SE	Virkkula et al. (1999)
I		1996	NA	Martinez et al. (1999)

Sulfur

Species	Value	Date	Site	Reference
S	sum 29, win 76 $ng\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
S	mean: 49 000 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
nss-SO_4^{2-}		1976–2008	BA	Quinn et al. (2009)
S		1979–1980	ARC	Heidam (1985)
S	sum 45, win 10 $ng\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
SO_4^{2-}		1979–1984	ARC	Barrie and Hoff (1985)
SO_4^{2-}		Apr–May 1980	MB, IG	Barrie et al. (1981)
SO_4^{2-}		1980–1995	AL	Barrie and Barrie (1990); Li and Barrie (1993); Sirois and Barrie (1999); Norman et al. (1999)
SO_4^{2-}	trend analysis	1980–2004	ARC	Quinn et al. (2007)
SO_4^{2-}	360…540 $ng\,m^{-3}$	Nov/Dec 1981	IG	Hoff et al. (1983)
S		1982	sp	Bodhaine et al. (1986)
SO_4^{2-}	560…2730 $ng\,m^{-3}$	Feb 1982	IG	Hoff et al. (1983)
SO_4^{2-}	1460…3810 $ng\,m^{-3}$	Apr 1982	IG	Barrie and Hoff (1984)
SO_4^{2-}	384…4380 $ng\,m^{-3}$	Feb 1982	IG	Hoff et al. (1983)
S		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
S	185…1070 $ng\,m^{-3}$	spr 1983	ARC	Cahill and Eldred (1984)
S		spr 1983	ARC	Winchester et al. (1985)
SO_4^{2-}	mean: 3200 $ng\,m^{-3}$	Mar–Apr 1983	BA	Lazrus and Ferek (1984)
SO_4^{2-}	2600 $ng\,m^{-3}$	Apr 1983	BA	Radke et al. (1984)
S		1983–1986	NA, NO	Maenhaut et al. (1989)
nss-SO_4^{2-}		1983–1994	nm	Minikin et al. (1998)
nss-SO_4^{2-}		1983–1995	nm	Legrand and Pasteur (1998)
SO_4^{2-}		1983–1996	nm	Wagenbach et al. (1998a)
SO_4^{2-}	mean: 150 $ng\,m^{-3}$	1983–2005	nm	Weller and Wagenbach (2007)

[18] Different values for Whatman filters and Nuclepore filters: 83 and 740 $pg\,m^{-3}$(STP), respectively.

Table 4: Continued.

Species	Value	Date	Site	Reference
nss-SO_4^{2-}		1983–2007	nm	Weller et al. (2011)
nss-SO_4^{2-}	mean: 0.34 nmol m^{-3}	Mar–Apr 1986	ant	Pszenny et al. (1989)
nss-SO_4^{2-}	0.31 nmol m^{-3}	Mar–Apr 1986	ant	Berresheim (1987)
SO_4^{2-}		Mar–May 1986	BA	Li and Winchester (1989a,b)
SO_4^{2-}	1.6...4.5 ng m^{-3}	Apr 1986	AL	Barrie et al. (1989)
nss-SO_4^{2-}	mean: 90 ng m^{-3}	1987–1989	mw	Prospero et al. (1991)
SO_4^{2-}	440...5870 ng m^{-3}	spr 1988	AL	Bottenheim et al. (1990)
SO_4^{2-}		Mar–Apr 1988	AL	Bottenheim et al. (1993)
SO_4^{2-}	mean: 82 ng m^{-3}	1988–1989	DY	Davidson et al. (1993b,a); Jaffrezo et al. (1994)
SO_4^{2-}		1989–2002	AL	Sharma et al. (2004)
SO_4^{2-}	mean: 1450 ng m^{-3}	May 1989	AL	Kieser et al. (1993)
nss-SO_4^{2-}		Jun 1990	ARC	Ferek et al. (1995)
nss-SO_4^{2-}	median: 0.88 nmol m^{-3}(STP)	1990–1991	ant	de Mora et al. (1997)
SO_4^{2-}		1990–1991	SU	Jaffrezo et al. (1994)
nss-SO_4^{2-}		1990–1992	NA	Heintzenberg and Leck (1994)
SO_4^{2-}		1990–2001	SN	Heidam et al. (2004)
SO_4^{2-}		Jan–Feb 1991	tn	Allegrini et al. (1994)
nss-SO_4^{2-}	0.028 ... 6.9 nmol m^{-3}	Aug–Oct 1991	ARC	Leck and Persson (1996)
nss-SO_4^{2-}		1991–1992	ha	Minikin et al. (1998)
nss-SO_4^{2-}		1991–1992	ha	Legrand and Pasteur (1998)
SO_4^{2-}		1991–1993	ha	Wagenbach et al. (1998a)
nss-SO_4^{2-}		1991–1995	du	Minikin et al. (1998)
SO_4^{2-}		1991–1995	du	Wagenbach et al. (1998a)
nss-SO_4^{2-}		1991–1995	nm	Legrand et al. (1998)
nss-SO_4^{2-}		1991–1996	du	Legrand and Pasteur (1998)
SO_4^{2-}		1991–2001	du	Jourdain and Legrand (2002)
nss-SO_4^{2-}		1991–2003	du	Preunkert et al. (2007)
S		1992–1994	SE	Virkkula et al. (1999)
SO_4^{2-}	720...7700 ng m^{-3}	win/spr 1992	AL	Barrie et al. (1994a)
nss-SO_4^{2-}		Apr 1992	ARC	Ferek et al. (1995)
SO_4^{2-}	mean: 120 ng m^{-3}	Jun–Jul 1992	SU	Bergin et al. (1994)
SO_4^{2-}		Jul–Dec 1992	sp	Harder et al. (2000)
SO_4^{2-}		1992–1994	SE	Virkkula et al. (1999)
SO_4^{2-}		Mar–Jun 1993	NA	Solberg et al. (1996b)
SO_4^{2-}	mean: 402 ng m^{-3}	May–Jul 1993	SU	Bergin et al. (1995)
SO_4^{2-}	mean: 3.0 nmol m^{-3}(STP)	Jun–Jul 1993	SU	Dibb et al. (1994)
SO_4^{2-}		Jan 1994	du	Legrand et al. (1998)
nss-SO_4^{2-}	mean: 69.1 pmol mol^{-1}	Jan–Feb 1994	pa	Berresheim et al. (1998)
SO_4^{2-}		Mar–Jun 1994	ARC	Jaeschke et al. (1997)
SO_4^{2-}		Aug 1994	SU	Dibb et al. (1996)
SO_4^{2-}		Mar–Apr 1995	AL	Anastasio and Jordan (2004)
SO_4^{2-}	mean: 350 pmol mol^{-1}	Mar–May 1996	NA	Staebler et al. (1999)
nss-SO_4^{2-}		Jul–Aug 1996	ARC	Kerminen and Leck (2001)
SO_4^{2-}	0...611.1 pmol mol^{-1}	1997–1999 (spr)	NA	Beine et al. (2001)
nss-SO_4^{2-}	mean: 1143 ng m^{-3}	1997–1999	SE	Ricard et al. (2002)
nss-SO_4^{2-}		1998–1999	du	Jourdain and Legrand (2001); Legrand et al. (2001)
SO_4^{2-}	mean: 224 ng m^{-3}	1998–1999	sp	Arimoto et al. (2001)
SO_4^{2-}		1998, 2000	sp	Arimoto et al. (2004a)
SO_4^{2-}	mean: 1111.1 ng m^{-3}	Feb 2000	AL	Ianniello et al. (2002)

Table 4: Continued.

Species	Value	Date	Site	Reference
SO_4^{2-}		Feb–May 2000	ARC	Scheuer et al. (2003)
SO_4^{2-}	mean: 746.3 $ng\,m^{-3}$	Apr–May 2000	AL	Ianniello et al. (2002)
SO_4^{2-}		Mar–Apr 2000	NA	Hara et al. (2002b)
SO_4^{2-}	sum mean 164...353 $ng\,m^{-3}$	2000–2002	ks	Piel et al. (2006)
nss-SO_4^{2-}		Jan–Dec 2001	ha	Rankin and Wolff (2003)
nss-SO_4^{2-}	mean: 929 $ng\,m^{-3}$	Feb–Mar 2001	NA	Teinilä et al. (2003)
nss-SO_4^{2-}	mean: 1430 $ng\,m^{-3}$	Apr–May 2001	NA	Teinilä et al. (2003)
S	mean: 119.31 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
SO_4^{2-}		Nov–Dec 2003	sp	Eisele et al. (2008)
SO_4^{2-}	mean: 90 $ng\,m^{-3}$	2003–2005	ks	Weller and Wagenbach (2007)
nss-SO_4^{2-}		2005–2006	du	Preunkert et al. (2008)
nss-SO_4^{2-}		2005–2006	co	Preunkert et al. (2008)
nss-SO_4^{2-}	mean: 3.0 $nmol\,m^{-3}$	fal 2007	ARC	Rempillo et al. (2011)
nss-SO_4^{2-}	mean: 0.4 $nmol\,m^{-3}$	fal 2008	ARC	Rempillo et al. (2011)
SO_4^{2-}	up to 0.42 $\mu g\,m^{-3}$	Aug–Sep 2008	ARC	Chang et al. (2011a)
SO_4^{2-}	535...1087 $ng\,m^{-3}$	Mar 2009	SN	Fenger et al. (2012)
MSA		1980–1995	AL	Sirois and Barrie (1999); Li and Barrie (1993); Norman et al. (1999)
MSA	trend analysis	1980–2003	ARC	Quinn et al. (2007)
MSA		1983–1994	nm	Minikin et al. (1998)
MSA		1983–1995	nm	Legrand and Pasteur (1998)
MSA	mean: 44 $ng\,m^{-3}$	1983–2005	nm	Weller and Wagenbach (2007)
MSA		1983–2007	nm	Weller et al. (2011)
MSA	mean: 0.22 $nmol\,m^{-3}$	Mar–Apr 1986	ant	Pszenny et al. (1989)
MSA	0.27 $nmol\,m^{-3}$	Mar–Apr 1986	ant	Berresheim (1987)
MSA		Mar–May 1986	BA	Li and Winchester (1989a,b)
MSA	0.3...6 $pmol\,mol^{-1}$	1986–1988	AL	Li et al. (1993)
MSA	mean: 20 $ng\,m^{-3}$	1987–1989	mw	Prospero et al. (1991)
MSA		sum 1988	ARC	Li et al. (1993)
MSA	mean: 0.58 $ng\,m^{-3}$	1988–1989	DY	Davidson et al. (1993b,a); Jaffrezo et al. (1994); Li et al. (1993)
MSA	1...25 $pmol\,mol^{-1}$	Mar–Apr 1989	BA	Li et al. (1993)
MSA	median: 0.14 $nmol\,m^{-3}$(STP)	1990–1991	ant	de Mora et al. (1997)
MSA		1990–1991	SU	Jaffrezo et al. (1994)
MSA		1990–1992	NA	Heintzenberg and Leck (1994)
MSA		1991–1992	ha	Minikin et al. (1998)
MSA		1991–1992	ha	Legrand and Pasteur (1998)
MSA		1991–1995	du	Minikin et al. (1998)
MSA		1991–1995	nm	Legrand et al. (1998)
MSA		1991–1996	du	Legrand and Pasteur (1998)
MSA		1991–2003	du	Preunkert et al. (2007)
MSA		Jul–Aug 1996	ARC	Kerminen and Leck (2001)
MSA		1991–2001	du	Jourdain and Legrand (2002)
MSA	0.002 ... 1.4 $nmol\,m^{-3}$	Aug–Oct 1991	ARC	Leck and Persson (1996)
MSA	mean: 3.2 $ng\,m^{-3}$	Jun–Jul 1992	SU	Bergin et al. (1994)
MSA	mean: 5.6 $ng\,m^{-3}$	May–Jul 1993	SU	Bergin et al. (1995)
MSA		Jan 1994	du	Legrand et al. (1998)
MSA	mean: 42.3 $pmol\,mol^{-1}$	Jan–Feb 1994	pa	Berresheim et al. (1998)

Table 4: Continued.

Species	Value	Date	Site	Reference
MSA	mean: 19.6 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
MSA	increasing trend in summer	1997–2008	BA	Quinn et al. (2009)
MSA		1998–1999	du	Jourdain and Legrand (2001); Legrand et al. (2001)
MSA	mean: 12 $ng\,m^{-3}$	1998–1999	sp	Arimoto et al. (2001)
MSA		1998, 2000	sp	Arimoto et al. (2004a)
MSA	sum mean 19.0...74.5 $ng\,m^{-3}$	2000–2002	ks	Piel et al. (2006)
MSA		Jan–Dec 2001	ha	Rankin and Wolff (2003)
MSA	mean: 50 $ng\,m^{-3}$	Apr–May 2001	NA	Teinilä et al. (2003)
MSA		Nov–Dec 2003	sp	Eisele et al. (2008)
MSA	mean: 17 $ng\,m^{-3}$	2003–2005	ks	Weller and Wagenbach (2007)
MSA	mean: 42 $ng\,m^{-3}$	2004–2005	ha	Read et al. (2008)
MSA		2005–2006	du	Preunkert et al. (2008)
MSA		2005–2006	co	Preunkert et al. (2008)
MSA	mean: 0.04 $nmol\,m^{-3}$	fal 2007	ARC	Rempillo et al. (2011)
MSA	mean: 0.06 $nmol\,m^{-3}$	fal 2008	ARC	Rempillo et al. (2011)
MSA	up to 0.08 $\mu g\,m^{-3}$	Aug–Sep 2008	ARC	Chang et al. (2011a)

Black carbon, organic acids

Species	Value	Date	Site	Reference
black carbon	206...295 $ng\,m^{-3}$	Mar 1983	BA	Hansen and Rosen (1984)
black carbon	mean: 0.65 $ng\,m^{-3}$	1987–1990	sp	Bodhaine (1995)
black carbon	mean: 41 $ng\,m^{-3}$	1988–1993	BA	Bodhaine (1995)
black carbon		1989–1990	AL	Hopper et al. (1994b)
black carbon		1989–2002	AL	Sharma et al. (2004)
black carbon		1989–2003	AL	Sharma et al. (2006)
black carbon		1989–2003	BA	Sharma et al. (2006)
black carbon	trend analysis	1990–2001	AL	Quinn et al. (2007)
black carbon		1992–1994	SE	Virkkula et al. (1999)
black carbon		1992–1995	ha	Wolff and Cachier (1998)
black carbon	mean: 146 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
black carbon		Feb–Mar 2000	AL	Bottenheim et al. (2002b)
black carbon	7 $ng\,m^{-3}$	May–Jul 2006	SU	Hagler et al. (2007, 2008)
black carbon	mean: 20 $ng\,m^{-3}$	May–Dec 2006	SU	von Schneidemesser et al. (2009)
black carbon		Apr 2008	ARC	Dupont et al. (2012)
black carbon		Apr, Jun 2008	ARC	Corr et al. (2012)
formate		Mar–May 1986	BA	Li and Winchester (1989a,b)
formate	mean: 1.05 $nmol\,m^{-3}$(STP)	Jun–Jul 1993	SU	Dibb et al. (1994)
formate		Aug 1994	SU	Dibb et al. (1996)
formate		1998–2002	du	Legrand et al. (2004)
acetate		Mar–May 1986	BA	Li and Winchester (1989a,b)
acetate	mean: 0.16 $nmol\,m^{-3}$(STP)	Jun–Jul 1993	SU	Dibb et al. (1994)
acetate		Aug 1994	SU	Dibb et al. (1996)
acetate		1998–2002	du	Legrand et al. (2004)
propanoate		Mar–May 1986	BA	Li and Winchester (1989a,b)
oxalic acid		1991–1995	du	Legrand et al. (1998)
oxalic acid		1991–2001	du	Jourdain and Legrand (2002)

Table 4: Continued.

Species	Value	Date	Site	Reference
oxalic acid		Jan 1994	du	Legrand et al. (1998)
oxalic acid		Aug 1994	SU	Dibb et al. (1996)
oxalic acid	mean: 8.6 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
oxalic acid		Feb–May 2000	AL	Narukawa et al. (2002)
oxalic acid	mean: 8.6 $ng\,m^{-3}$	Apr–May 2001	NA	Teinilä et al. (2003)
oxalic acid	mean: 9.0 $ng\,m^{-3}$	Feb–Mar 2001	NA	Teinilä et al. (2003)
oxalic acid	up to 20 $ng\,m^{-3}$	2005–2010	du	Legrand et al. (2012)
malonic acid	mean: 1.5 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
malonic acid		Feb–May 2000	AL	Narukawa et al. (2002)
succinic acid	mean: 2.9 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
succinic acid		Feb–May 2000	AL	Narukawa et al. (2002)
glutaric acid	mean: 2.5 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
glutaric acid		Feb–May 2000	AL	Narukawa et al. (2002)
adipic acid		Feb–May 2000	AL	Narukawa et al. (2002)
pimelic acid		Feb–May 2000	AL	Narukawa et al. (2002)
suberic acid		Feb–May 2000	AL	Narukawa et al. (2002)
azelaic acid		Feb–May 2000	AL	Narukawa et al. (2002)
sebacic acid		Feb–May 2000	AL	Narukawa et al. (2002)
undecanedioic acid		Feb–May 2000	AL	Narukawa et al. (2002)
methylmalonic acid		Feb–May 2000	AL	Narukawa et al. (2002)
methylsuccinic acid		Feb–May 2000	AL	Narukawa et al. (2002)
2-methylglutaric acid		Feb–May 2000	AL	Narukawa et al. (2002)
4-ketopimelic acid		Feb–May 2000	AL	Narukawa et al. (2002)
maleic acid		Feb–May 2000	AL	Narukawa et al. (2002)
fumaric acid		Feb–May 2000	AL	Narukawa et al. (2002)
methylmaleic acid		Feb–May 2000	AL	Narukawa et al. (2002)
methylfumaric acid		Feb–May 2000	AL	Narukawa et al. (2002)
phthalic acid	mean: 1.1 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
phthalic acid		Feb–May 2000	AL	Narukawa et al. (2002)
malic acid	mean: 3.3 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
pyruvic acid		Mar–May 1986	BA	Li and Winchester (1989a,b)
glycolic acid	mean: 1.7 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
glyoxylic acid	mean: 1.0 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)

Table 4: Continued.

Species	Value	Date	Site	Reference
organic acids		1987–1988	AL	Kawamura and Kasukabe (1996)
		Metals		
Al	0.57 $ng\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)
Al	sum < 300, win 830 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Al		1973–1978	ARC	Rahn (1981)
Al	mean: 820 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Al	mean: 30 $ng\,m^{-3}$	1976–1978 (win)	BA	Rahn and McCaffrey (1979)
Al		1979–1980	ARC	Heidam (1985)
Al	sum 730, win 320 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Al		1979–1984	ARC	Barrie and Hoff (1985)
Al		1980–1986	AL	Barrie and Barrie (1990)
Al		1980–1995	AL	Sirois and Barrie (1999)
Al		1980–2000	AL	Gong and Barrie (2005)
Al		Apr–May 1980	MB, IG	Barrie et al. (1981)
Al		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
Al		1983–1986	NA, NO	Maenhaut et al. (1989)
Al		1984–1987	PF	Sturges and Shaw (1993)
Al		Apr 1986	AL	Barrie et al. (1989)
Al	15…976 $ng\,m^{-3}$	spr 1988	AL	Bottenheim et al. (1990)
Al	mean: 4.2 $ng\,m^{-3}$	1988–1989	DY	Davidson et al. (1993b,a)
Al	mean: 5.5 $ng\,m^{-3}$	1988–1989	DY	Davidson et al. (1993b,a)
Al	0.29…260 $ng\,m^{-3}$	1988–1989	DY	Mosher et al. (1993)
Al	1.1…48 $ng\,m^{-3}$	1988–1989	SU	Mosher et al. (1993)
Al		1990–2001	SN	Heidam et al. (2004)
Al		1992–1994	SE	Virkkula et al. (1999)
Al	mean: 1.0 $ng\,m^{-3}$	1999–2003	nm	Weller et al. (2008)
Al	mean: 44.36 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
As	sum 17, win 8.4 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
As	see note[19]	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
As	sum 11, win 11 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
As		1984–1987	PF	Sturges and Shaw (1993)
As		Apr 1986	AL	Barrie et al. (1989)
As		1990–2001	SN	Heidam et al. (2004)
As		1992–1994	SE	Virkkula et al. (1999)
As	mean: 0.02 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
Ba	sum 20, win 19 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Ba	mean: 16 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Ba	sum 40, win 50 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Ba		1979–1984	ARC	Barrie and Hoff (1985)

[19] Different values for Whatman filters and Nuclepore filters: 7.1 or 31 $pg\,m^{-3}$(STP), respectively.

Table 4: Continued.

Species	Value	Date	Site	Reference
Ba		1980–2000	AL	Gong and Barrie (2005)
Ba		1983–1986	NA, NO	Maenhaut et al. (1989)
Be		1983–2008	nm	Elsässer et al. (2011)
Ca	0.5 $ng\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)
Ca	sum 1900, win 550 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Ca	mean: 490 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Ca	mean: 55 $ng\,m^{-3}$	1976–1978 (win)	BA	Rahn and McCaffrey (1979)
Ca		1979–1980	ARC	Heidam (1985)
Ca	sum 1000, win 1800 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Ca		1979–1984	ARC	Barrie and Hoff (1985)
Ca		1980–1995	AL	Sirois and Barrie (1999)
Ca		1980–2000	AL	Gong and Barrie (2005)
Ca		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
Ca^{2+}		1983–1996	nm	Wagenbach et al. (1998a)
Ca^{2+}	mean: 12.5 $ng\,m^{-3}$	1983–2005	nm	Weller and Wagenbach (2007)
Ca		1983–1986	NA, NO	Maenhaut et al. (1989)
Ca^{2+}	mean: 15.9 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
Ca	19…915 $ng\,m^{-3}$	spr 1988	AL	Bottenheim et al. (1990)
Ca	mean: 2.7 $ng\,m^{-3}$	1988–1989	DY	Davidson et al. (1993b,a)
Ca	mean: 4.2 $ng\,m^{-3}$	1988–1989	DY	Davidson et al. (1993b,a)
Ca	0.095…170 $ng\,m^{-3}$	1988–1989	DY	Mosher et al. (1993)
Ca	0.5…110 $ng\,m^{-3}$	1988–1989	SU	Mosher et al. (1993)
Ca		1990–2001	SN	Heidam et al. (2004)
Ca^{2+}		1991–1995	du	Wagenbach et al. (1998a)
Ca^{2+}		1991–1999	du	Jourdain and Legrand (2002)
Ca		1992–1994	SE	Virkkula et al. (1999)
Ca^{2+}	mean: 29 $ng\,m^{-3}$	May–Jul 1993	SU	Bergin et al. (1995)
Ca^{2+}		Jan 1994	du	Legrand et al. (1998)
Ca^{2+}		Aug 1994	SU	Dibb et al. (1996)
Ca^{2+}	mean: 84 $pmol\,mol^{-1}$	Mar–May 1996	NA	Staebler et al. (1999)
nss-Ca^{2+}	trend analysis	1997–2004	ARC	Quinn et al. (2007)
Ca	mean: 15 $ng\,m^{-3}$	1999–2003	nm	Weller et al. (2008)
Ca^{2+}	sum mean 2.1…3.8 $ng\,m^{-3}$	2000–2002	ks	Piel et al. (2006)
nss-Ca^{2+}	mean: 32 $ng\,m^{-3}$	Apr–May 2001	NA	Teinilä et al. (2003)
nss-Ca^{2+}	mean: 8.7 $ng\,m^{-3}$	Feb–Mar 2001	NA	Teinilä et al. (2003)
Ca	mean: 51.66 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
Ca^{2+}	mean: 1.3 $ng\,m^{-3}$	2003–2005	ks	Weller and Wagenbach (2007)
Cd	sum <200, win 49 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Cd	mean: <15 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977)
Cd	mean: ≤ 18 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut et al. (1979)
Cd	mean: 0.37 $ng\,m^{-3}$	1976–1978 (win)	BA	Rahn and McCaffrey (1979)
Cd	sum 110, win 50 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Cd		1992–1994	SE	Virkkula et al. (1999)
Cd	annual mean: 0.01…0.03 $ng\,m^{-3}$	1994–2002	NA	Berg et al. (2004)
Co	0.84 $pg\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)

Table 4: Continued.

Species	Value	Date	Site	Reference
Co	sum 0.40, win 0.60 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Co	mean: 0.49 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Co	sum 0.77, win 0.45 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Co		Apr 1986	AL	Barrie et al. (1989)
Co		1992–1994	SE	Virkkula et al. (1999)
Co	annual mean: 0.055...0.14 $ng\,m^{-3}$	1994–2002	NA	Berg et al. (2004)
Cr	5.3 $pg\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)
Cr	sum 11, win 13 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Cr	mean: <40 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Cr		1979–1980	ARC	Heidam (1985)
Cr	sum 29, win 20 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Cr		1979–1984	ARC	Barrie and Hoff (1985)
Cr		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
Cr		1983–1986	NA, NO	Maenhaut et al. (1989)
Cr		1992–1994	SE	Virkkula et al. (1999)
Cr	annual mean: 0.04...0.9 $ng\,m^{-3}$	1994–2002	NA	Berg et al. (2004)
Cr	mean: 0.11 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
Cu	36 $pg\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)
Cu	sum 79, win 59 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Cu	mean: 29 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Cu		1979–1980	ARC	Heidam (1985)
Cu	sum 190, win 130 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Cu		1979–1984	ARC	Barrie and Hoff (1985)
Cu		Apr–May 1980	MB, IG	Barrie et al. (1981)
Cu		1980–1995	AL	Sirois and Barrie (1999)
Cu		1980–2000	AL	Gong and Barrie (2005)
Cu		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
Cu		1983–1986	NA, NO	Maenhaut et al. (1989)
Cu		1990–2001	SN	Heidam et al. (2004)
Cu		1992–1994	SE	Virkkula et al. (1999)
Cu	annual mean: 0.25...0.41 $ng\,m^{-3}$	1994–2002	NA	Berg et al. (2004)
Cu	mean: 0.36 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
Fe	0.84 $ng\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)
Fe	sum 250, win 680 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Fe	mean: 620 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Fe		1979–1980	ARC	Heidam (1985)
Fe	sum 660, win 280 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Fe		1979–1984	ARC	Barrie and Hoff (1985)
Fe		1980–2000	AL	Gong and Barrie (2005)
Fe		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
Fe		1983–1986	NA, NO	Maenhaut et al. (1989)

Table 4: Continued.

Species	Value	Date	Site	Reference
Fe		Apr 1986	AL	Barrie et al. (1989)
Fe	0.1…260 $ng\,m^{-3}$	1988–1989	DY	Mosher et al. (1993)
Fe	0.45…44 $ng\,m^{-3}$	1988–1989	SU	Mosher et al. (1993)
Fe		1990–2001	SN	Heidam et al. (2004)
Fe		1992–1994	SE	Virkkula et al. (1999)
Fe	mean: 33.42 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
Ga	mean: <1.1 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977)
Ga		1992–1994	SE	Virkkula et al. (1999)
Ga	mean: 0.02 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
Hg	mean: <0.4 $ng\,m^{-3}$	1976–1978 (win)	BA	Rahn and McCaffrey (1979)
Hg	mean: 1.44 $pg\,m^{-3}$	1996–1997	PS	Berg et al. (2001)
Hg	mean: 2.67 $pg\,m^{-3}$	1996–1997	NA	Berg et al. (2001)
Hg		Apr–May 1998	AL	Lu et al. (2001)
Hg		Nov 1999	tn	Sprovieri and Pirrone (2000)
Hg		2000	sp	Arimoto et al. (2004b)
Hg		2000	NA	Berg et al. (2003)
Hg		Apr–Jun 2001	BA	Lindberg et al. (2002)
Hg	median: 183 $pg\,m^{-3}$	Apr–May 2001	KU	Poissant and Pilote (2003); Poissant and Hoenninger (2004)
Hg		Apr 2002	AL	Steffen et al. (2003)
Hg		Apr 2002	KU	Gauchard et al. (2005b)
Hg		Apr–May 2002	NA	Sommar et al. (2007)
Hg		Apr–May 2003	NA	Sprovieri et al. (2005a,b)
Hg		Apr–May 2003	NA	Aspmo et al. (2005); Gauchard et al. (2005a)
Hg	mean: 49 $pg\,m^{-3}$	Oct–Nov 2003	mm	Brooks et al. (2008b)
Hg	mean: 224 $pg\,m^{-3}$	Nov–Dec 2003	sp	Brooks et al. (2008a); Eisele et al. (2008)
Hg		Apr–Aug 2004	CH	Kirk et al. (2006)
Hg		2004–2005	NA	Ferrari et al. (2008)
Hg	mean: 102.6 $pg\,m^{-3}$	Feb–Jun 2005	AL	Cobbett et al. (2007)
Hg	mean: 1.0 $pg\,m^{-3}$	Jul–Sep 2005	ARC	Sommar et al. (2010)
Hg	mean: 37.2 $pg\,m^{-3}$	2007	SU	Brooks et al. (2011)
Hg	mean: 6.7 $pg\,m^{-3}$	2008	SU	Brooks et al. (2011)
Hg	up to 370 $pg\,m^{-3}$	Feb–Jun 2008	NA	Steen et al. (2009)
K	0.3 $ng\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)
K	sum 1300, win 610 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
K	mean: 680 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
K		1979–1980	ARC	Heidam (1985)
K	sum 740, win 1600 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
K^+		1980–1995	AL	Sirois and Barrie (1999)
K		1980–2000	AL	Gong and Barrie (2005)
K		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
K^+		1983–1996	nm	Wagenbach et al. (1998a)
K		1983–1986	NA, NO	Maenhaut et al. (1989)
K^+	mean: 11 $ng\,m^{-3}$	1983–2005	nm	Weller and Wagenbach (2007)

Table 4: Continued.

Species	Value	Date	Site	Reference
K^+		Mar–May 1986	BA	Li and Winchester (1989a,b)
K		Apr 1986	AL	Barrie et al. (1989)
K^+	3.6…62.8 ng m^{-3}	spr 1988	AL	Bottenheim et al. (1990)
K^+	mean: 37 ng m^{-3}	May 1989	AL	Kieser et al. (1993)
K		1990–2001	SN	Heidam et al. (2004)
K^+		1991–1995	du	Wagenbach et al. (1998a)
K^+		1991–1999	du	Jourdain and Legrand (2002)
K		1992–1994	SE	Virkkula et al. (1999)
K^+	mean: 3.4 ng m^{-3}	May–Jul 1993	SU	Bergin et al. (1995)
K^+		Jan 1994	du	Legrand et al. (1998)
K^+		Aug 1994	SU	Dibb et al. (1996)
K^+	mean: 5.0 pmol mol^{-1}	Mar–May 1996	NA	Staebler et al. (1999)
K^+	mean: 22.0 ng m^{-3}	1997–1999	SE	Ricard et al. (2002)
nss-K^+	trend analysis	1997–2004	ARC	Quinn et al. (2007)
K	mean: 16 ng m^{-3}	1999–2003	nm	Weller et al. (2008)
K^+	sum mean 0.4…2.1 ng m^{-3}	2000–2002	ks	Piel et al. (2006)
nss-K^+	mean: 6.0 ng m^{-3}	Apr–May 2001	NA	Teinilä et al. (2003)
nss-K^+	mean: 8.8 ng m^{-3}	Feb–Mar 2001	NA	Teinilä et al. (2003)
K	mean: 42.89 ng m^{-3}	2002–2005	NU	Skov et al. (2006b)
K^+	mean: 2.7 ng m^{-3}	2003–2005	ks	Weller and Wagenbach (2007)
nss-K^+	up to 100 ng m^{-3}	2005–2010	du	Legrand et al. (2012)
K^+		2007	tr	Hansen et al. (2009)
Mg	1.0 ng m^{-3}(STP)	1971	sp	Zoller et al. (1974)
Mg	sum 5700, win 930 pg m^{-3}	1971–1978	sp	Cunningham and Zoller (1981)
Mg	mean: 720 pg m^{-3}(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Mg	mean: 160 ng m^{-3}	1976–1978 (win)	BA	Rahn and McCaffrey (1979)
Mg	sum 1600, win 4600 pg m^{-3}	1979–1983	sp	Tuncel et al. (1989)
Mg		1979–1984	ARC	Barrie and Hoff (1985)
Mg		1980–1995	AL	Sirois and Barrie (1999)
Mg		1980–2000	AL	Gong and Barrie (2005)
Mg		1983–1986	NA, NO	Maenhaut et al. (1989)
Mg^{2+}		1983–1996	nm	Wagenbach et al. (1998a)
Mg^{2+}	mean: 41 ng m^{-3}	1983–2005	nm	Weller and Wagenbach (2007)
Mg	13…262 ng m^{-3}	spr 1988	AL	Bottenheim et al. (1990)
Mg	0.69…92 ng m^{-3}	1988–1989	DY	Mosher et al. (1993)
Mg	2.5…27 ng m^{-3}	1988–1989	SU	Mosher et al. (1993)
Mg^{2+}		1991–1993	ha	Wagenbach et al. (1998a)
Mg^{2+}		1991–1995	du	Wagenbach et al. (1998a)
Mg		1992–1994	SE	Virkkula et al. (1999)
Mg^{2+}	mean: 6.8 ng m^{-3}	May–Jul 1993	SU	Bergin et al. (1995)
Mg^{2+}		Jan 1994	du	Legrand et al. (1998)
Mg^{2+}		Aug 1994	SU	Dibb et al. (1996)
Mg^{2+}	mean: 24 pmol mol^{-1}	Mar–May 1996	NA	Staebler et al. (1999)
Mg^{2+}	mean: 34 ng m^{-3}	1997–1999	SE	Ricard et al. (2002)
nss-Mg^{2+}	trend analysis	1997–2004	ARC	Quinn et al. (2007)
Mg	mean: 52 ng m^{-3}	1999–2003	nm	Weller et al. (2008)
Mg^{2+}	sum mean 0.5…1.7 ng m^{-3}	2000–2002	ks	Piel et al. (2006)
nss-Mg^{2+}	mean: 7.3 ng m^{-3}	Apr–May 2001	NA	Teinilä et al. (2003)

Table 4: Continued.

Species	Value	Date	Site	Reference
nss-Mg^{2+}	mean: 7.7 $ng\,m^{-3}$	Feb–Mar 2001	NA	Teinilä et al. (2003)
Mg^{2+}	mean: 3.9 $ng\,m^{-3}$	2003–2005	ks	Weller and Wagenbach (2007)
Mn	10.3 $pg\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)
Mn	sum 6.7, win 14 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Mn		1973–1978	ARC	Rahn (1981)
Mn	mean: 13.3 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Mn	mean: 1.12 $ng\,m^{-3}$	1976–1978 (win)	BA	Rahn and McCaffrey (1979)
Mn		1979–1980	ARC	Heidam (1985)
Mn	sum 8.9, win 4.2 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Mn		1979–1984	ARC	Barrie and Hoff (1985)
Mn		Apr–May 1980	MB, IG	Barrie et al. (1981)
Mn		1980–1995	AL	Sirois and Barrie (1999)
Mn		1980–2000	AL	Gong and Barrie (2005)
Mn		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
Mn		1983–1986	NA, NO	Maenhaut et al. (1989)
Mn		Apr 1986	AL	Barrie et al. (1989)
Mn	0.19…6.7 $ng\,m^{-3}$	spr 1988	AL	Bottenheim et al. (1990)
Mn	0.004…3.3 $ng\,m^{-3}$	1988–1989	DY	Mosher et al. (1993)
Mn	0.052…0.84 $ng\,m^{-3}$	1988–1989	SU	Mosher et al. (1993)
Mn		1990–2001	SN	Heidam et al. (2004)
Mn		1992–1994	SE	Virkkula et al. (1999)
Mn	annual mean: 0.24…0.57 $ng\,m^{-3}$	1994–2002	NA	Berg et al. (2004)
Mn	mean: 0.60 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
Mn		1976–2008	BA	Quinn et al. (2009)
Na	7.2 $ng\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)
Na	sum 40 000, win 5100 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Na	mean: 3300 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Na	mean: 770 $ng\,m^{-3}$	1976–1978 (win)	BA	Rahn and McCaffrey (1979)
Na		1976–1980	BA	Berg et al. (1983)
Na	sum 8.7, win 31 $ng\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Na		1979–1984	ARC	Barrie and Hoff (1985)
Na^+		1980–2000	AL	Barrie and Barrie (1990); Li and Barrie (1993); Sirois and Barrie (1999); Gong and Barrie (2005); Norman et al. (1999)
Na^+		Apr–May 1980	MB, IG	Barrie et al. (1981)
Na		1982	sp	Bodhaine et al. (1986)
Na^+	74…289 $ng\,m^{-3}$	Feb 1982	IG	Hoff et al. (1983)
Na	14…188 $ng\,m^{-3}$	Feb 1982	IG	Hoff et al. (1983)
Na	$<$ 40…236 $ng\,m^{-3}$	spr 1983	ARC	Cahill and Eldred (1984)
Na		1983–1986	NA, NO	Maenhaut et al. (1989)
Na^+		1983–1996	nm	Wagenbach et al. (1998a)
Na^+	mean: 270 $ng\,m^{-3}$	1983–2005	nm	Weller and Wagenbach (2007)
Na^+		1983–2007	nm	Weller et al. (2011)
Na		1984–1987	PF	Sturges and Shaw (1993)

Table 4: Continued.

Species	Value	Date	Site	Reference
Na	see note[20]	Mar–Apr 1986	ant	Pszenny et al. (1989)
Na^+		Mar–May 1986	BA	Li and Winchester (1989a,b)
Na^+		Apr 1986	AL	Barrie et al. (1989)
Na	24...1240 $ng\,m^{-3}$	spr 1988	AL	Bottenheim et al. (1990)
Na	0.1...300 $ng\,m^{-3}$	1988–1989	DY	Mosher et al. (1993)
Na	0.52...17.4 $ng\,m^{-3}$	1988–1989	SU	Mosher et al. (1993)
Na	mean: 8.0 $ng\,m^{-3}$	1988–1989	DY	Davidson et al. (1993b,a)
Na^+	mean: 117 $ng\,m^{-3}$	May 1989	AL	Kieser et al. (1993)
Na^+	median: 0.33 $nmol\,m^{-3}$(STP)	1990–1991	ant	de Mora et al. (1997)
Na^+		1990–1992	NA	Heintzenberg and Leck (1994)
Na^+		1991–1993	ha	Wagenbach et al. (1998a)
Na^+		1991–1995	du	Wagenbach et al. (1998a)
Na^+		1991–1999	du	Jourdain and Legrand (2002)
Na^+		Jul–Dec 1992	sp	Harder et al. (2000)
Na		1992–1994	SE	Virkkula et al. (1999)
Na^+	mean: 14 $ng\,m^{-3}$	May–Jul 1993	SU	Bergin et al. (1995)
Na^+		Jul–Aug 1996	ARC	Kerminen and Leck (2001)
Na^+		1996–1999	NA	Hara et al. (2002a)
Na^+		1997–1998	sy, df	Hara et al. (2004)
Na^+	mean: 289 $ng\,m^{-3}$	1997–1999	SE	Ricard et al. (2002)
Na^+	0...1062.0 $pmol\,mol^{-1}$	1997–1999 (spr)	NA	Beine et al. (2001)
Na	mean: 45 $ng\,m^{-3}$	1998–1999	sp	Arimoto et al. (2001)
Na^+		1998, 2000	sp	Arimoto et al. (2004a)
Na	mean: 330 $ng\,m^{-3}$	1999–2003	nm	Weller et al. (2008)
Na^+	mean: 339.3 $ng\,m^{-3}$	Apr–May 2000	AL	Ianniello et al. (2002)
Na^+	mean: 69.1 $ng\,m^{-3}$	Feb 2000	AL	Ianniello et al. (2002)
Na		Mar–Apr 2000	NA	Hara et al. (2002b)
Na^+	sum mean 2.4...12.0 $ng\,m^{-3}$	2000–2002	ks	Piel et al. (2006)
Na		Jan–Dec 2001	ha	Rankin and Wolff (2003)
Na^+	mean: 312 $ng\,m^{-3}$	Feb–Mar 2001	NA	Teinilä et al. (2003)
Na^+	mean: 261 $ng\,m^{-3}$	Apr–May 2001	NA	Teinilä et al. (2003)
Na^+		Nov–Dec 2003	sp	Eisele et al. (2008)
Na^+	mean: 24 $ng\,m^{-3}$	2003–2005	ks	Weller and Wagenbach (2007)
Na		2004–2005	ha	Wolff et al. (2008)
Na^+	up to 40 $ng\,m^{-3}$	2006	co	Jourdain et al. (2008)
Na^+		2007	tr	Hansen et al. (2009)
Ni		1979–1980	ARC	Heidam (1985)
Ni		1979–1984	ARC	Barrie and Hoff (1985)
Ni		Apr–May 1980	MB, IG	Barrie et al. (1981)
Ni		1980–2000	AL	Gong and Barrie (2005)
Ni		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
Ni		1983–1986	NA, NO	Maenhaut et al. (1989)
Ni		1990–2001	SN	Heidam et al. (2004)
Ni		1992–1994	SE	Virkkula et al. (1999)
Ni	annual mean: 0.07...0.19 $ng\,m^{-3}$	1994–2002	NA	Berg et al. (2004)
Ni	mean: 0.17 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
Pb	0.63 $ng\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)

[20]Data available in supplement of Sander et al. (2003).

Table 4: Continued.

Species	Value	Date	Site	Reference
Pb	see note[21]	1974–1975	sp	Maenhaut et al. (1979)
Pb		1979–1980	ARC	Heidam (1985)
Pb		1979–1984	ARC	Barrie and Hoff (1985)
Pb		Apr–May 1980	MB, IG	Barrie et al. (1981)
Pb		1980–1986	AL	Barrie and Barrie (1990)
Pb		1980–1995	AL	Sirois and Barrie (1999)
Pb		1980–2000	AL	Gong and Barrie (2005)
Pb		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
Pb		1983–1986	NA, NO	Maenhaut et al. (1989)
^{210}Pb		1983–2008	nm	Elsässer et al. (2011)
Pb		Feb–Mar 1990	BA	Sturges et al. (1993a)
Pb		1990–2001	SN	Heidam et al. (2004)
Pb		1992–1994	SE	Virkkula et al. (1999)
Pb	annual mean: 0.48…0.83 ng m^{-3}	1994–2002	NA	Berg et al. (2004)
Pb		2000	sp	Arimoto et al. (2004b)
Pb	mean: 0.48 ng m^{-3}	2002–2005	NU	Skov et al. (2006b)
Rb	sum 3.0, win <4 pg m^{-3}	1971–1978	sp	Cunningham and Zoller (1981)
Rb	mean: 1.9 pg m^{-3}(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Rb	sum 2.4, win 1.3 pg m^{-3}	1979–1983	sp	Tuncel et al. (1989)
Rb	mean: 0.11 ng m^{-3}	2002–2005	NU	Skov et al. (2006b)
Se	5.6 pg m^{-3}(STP)	1971	sp	Zoller et al. (1974)
Se	sum 6.9, win 6.3 pg m^{-3}	1971–1978	sp	Cunningham and Zoller (1981)
Se	see note[22]	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Se	sum 8.4, win 4.8 pg m^{-3}	1979–1983	sp	Tuncel et al. (1989)
Se		1983–1986	NA, NO	Maenhaut et al. (1989)
Se	monthly mean: 0.03…0.08 ng m^{-3}	1984–1987	PF	Sturges and Shaw (1993)
Se		Apr 1986	AL	Barrie et al. (1989)
Se		1992–1994	SE	Virkkula et al. (1999)
Se	mean: 19 pg m^{-3}	1999–2003	nm	Weller et al. (2008)
Se	mean: 0.05 ng m^{-3}	2002–2005	NU	Skov et al. (2006b)
Si		1990–2001	SN	Heidam et al. (2004)
Si		1992–1994	SE	Virkkula et al. (1999)
Si	mean: 143.46 ng m^{-3}	2002–2005	NU	Skov et al. (2006b)
Sr	sum <150, win 31 pg m^{-3}	1971–1978	sp	Cunningham and Zoller (1981)
Sr	mean: <52 pg m^{-3}(STP)	1974–1975	sp	Maenhaut and Zoller (1977)
Sr		1979–1980	ARC	Heidam (1985)
Sr		1979–1984	ARC	Barrie and Hoff (1985)
Sr		1983–1986	NA, NO	Maenhaut et al. (1989)
Sr		1990–2001	SN	Heidam et al. (2004)
Sr		1992–1994	SE	Virkkula et al. (1999)
Sr	mean: 0.29 ng m^{-3}	1999–2003	nm	Weller et al. (2008)

[21]Different values for Whatman filters and Nuclepore filters: 27 or 76 pg m^{-3}(STP), respectively.
[22]Different values for Whatman filters and Nuclepore filters: 6.2 or 840 pg m^{-3}(STP), respectively.

Table 4: Continued.

Species	Value	Date	Site	Reference
Sr	mean: 0.79 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
Ti	sum 180, win 110 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Ti	mean: 100 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Ti	sum 290, win 160 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Ti		1979–1984	ARC	Barrie and Hoff (1985)
Ti		1980–2000	AL	Gong and Barrie (2005)
Ti		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
Ti		1983–1986	NA, NO	Maenhaut et al. (1989)
Ti		1990–2001	SN	Heidam et al. (2004)
Ti		1992–1994	SE	Virkkula et al. (1999)
Ti	mean: 3.09 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
V	1.5 $pg\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)
V	sum 0.9, win 1.6 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
V		1973–1978	ARC	Rahn (1981)
V	mean: 1.33 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
V	mean: 0.65 $ng\,m^{-3}$	1976–1978 (win)	BA	Rahn and McCaffrey (1979)
V	sum 1.1, win 0.42 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
V		1979–1984	ARC	Barrie and Hoff (1985)
V		Apr–May 1980	MB, IG	Barrie et al. (1981)
V		1980–1995	AL	Sirois and Barrie (1999)
V		1980–2000	AL	Gong and Barrie (2005)
V		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
V		1983–1986	NA, NO	Maenhaut et al. (1989)
V		1984–1987	PF	Sturges and Shaw (1993)
V		Apr 1986	AL	Barrie et al. (1989)
V	0.05…1.72 $ng\,m^{-3}$	spr 1988	AL	Bottenheim et al. (1990)
V	0.014…5.5 $ng\,m^{-3}$	1988–1989	DY	Mosher et al. (1993)
V	0.006….25 $ng\,m^{-3}$	1988–1989	SU	Mosher et al. (1993)
V		1990–2001	SN	Heidam et al. (2004)
V		1992–1994	SE	Virkkula et al. (1999)
V	annual mean: 0.07…0.20 $ng\,m^{-3}$	1994–2002	NA	Berg et al. (2004)
V	mean: 0.17 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
V	decreasing trend	1976–2008	BA	Quinn et al. (2009)
Zn	30 $pg\,m^{-3}$(STP)	1971	sp	Zoller et al. (1974)
Zn	sum 77, win 35 $pg\,m^{-3}$	1971–1978	sp	Cunningham and Zoller (1981)
Zn	mean: 33 $pg\,m^{-3}$(STP)	1974–1975	sp	Maenhaut and Zoller (1977); Maenhaut et al. (1979)
Zn	mean: 14.8 $ng\,m^{-3}$	1976–1978 (win)	BA	Rahn and McCaffrey (1979)
Zn		1979–1980	ARC	Heidam (1985)
Zn	sum 250, win 170 $pg\,m^{-3}$	1979–1983	sp	Tuncel et al. (1989)
Zn		1979–1984	ARC	Barrie and Hoff (1985)
Zn		Apr–May 1980	MB, IG	Barrie et al. (1981)
Zn		1980–1995	AL	Sirois and Barrie (1999)
Zn		1980–2000	AL	Gong and Barrie (2005)

Table 4: Continued.

Species	Value	Date	Site	Reference
Zn		Aug–Sep 1983	ARC	Pacyna and Ottar (1985)
Zn		1983–1986	NA, NO	Maenhaut et al. (1989)
Zn		Apr 1986	AL	Barrie et al. (1989)
Zn	mean: 0.63 $ng\,m^{-3}$	1988–1989	DY	Davidson et al. (1993b,a)
Zn		1990–2001	SN	Heidam et al. (2004)
Zn		1992–1994	SE	Virkkula et al. (1999)
Zn	annual mean: 1.2...1.9 $ng\,m^{-3}$	1994–2002	NA	Berg et al. (2004)
Zn	mean: 2.62 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)
Zr	mean: 0.10 $ng\,m^{-3}$	2002–2005	NU	Skov et al. (2006b)

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