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Supplement of

Shipborne measurements of total OH reactivity around the Arabian Peninsula and its role in ozone chemistry

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Supplementary Information

S1. Laboratory characterizations of NO, NO₂ and ozone interferences

S1.1 NO interference

To quantify the NO interference, NO from a standard gas cylinder (Air Liquide, Krefeld, Germany) was added to the CRM system running in C2 mode at pyrrole/OH \approx 2.0. The mixing ratios of the added NO were ~0, 5, 10, 15, 20, 30, 90, 140, 170, 220, 350 ppb. The resulting decrease in pyrrole mixing ratio (Δ C3 in ppb) vs. the NO mixing ratio resulted in a polynomial relationship of the form Δ C3 = a[NO]² + b[NO]. During AQABA: a \approx -3E-4; b \approx 0.17.

S1.2 NO₂ interference

To quantify the NO₂ interference, NO₂ from a standard gas cylinder (Westfalen AG, Münster, Germany) was added to the CRM system running in C2 mode at pyrrole/OH \approx 2.0. All tubes were flushed with NO₂ for several hours and the contact of the NO₂ with metal surfaces (pressure reducer, mass flow controller) was reduced to a minimum to avoid losses. To quantify the amount of NO₂ lost/converted to NO in the setup used, conversion to NO was monitored by an NO/NO₂ analyzer (Two-channel-chemiluminescence detector). 8–12 % of the NO₂ was converted to NO depending on the flows and mixing ratios used. This loss was corrected for when calculating the NO₂ mixing ratios in the reactor. The mixing ratios of the added NO₂ were ~0, 20, 40, 60, 100 ppb. The resulting decrease in pyrrole mixing ratio (Δ C3 in ppb) vs. the NO₂ mixing ratio resulted in a polynomial relationship of the form Δ C3 = a[NO₂]² + b[NO₂]. During AQABA: a \approx -2E-4; b \approx 0.08.

S1.3 Ozone interference

Using an ozone generator (Thermo 49C O3 Calibrator, Thermo Environmental Instruments LLC, Franklin, USA), ozone was added to the CRM system running in C2 mode at pyrrole/OH \approx 2.0. Ozone mixing ratios used were ~0, 20, 30, 45, 90, 130, 180, 260, 350 ppb. The resulting decrease in pyrrole mixing ratio (Δ C3 in ppb) vs. the O₃ mixing ratio resulted in a linear relationship of the form Δ C3 = a[O₃]. During AQABA: a \approx 0.0058.

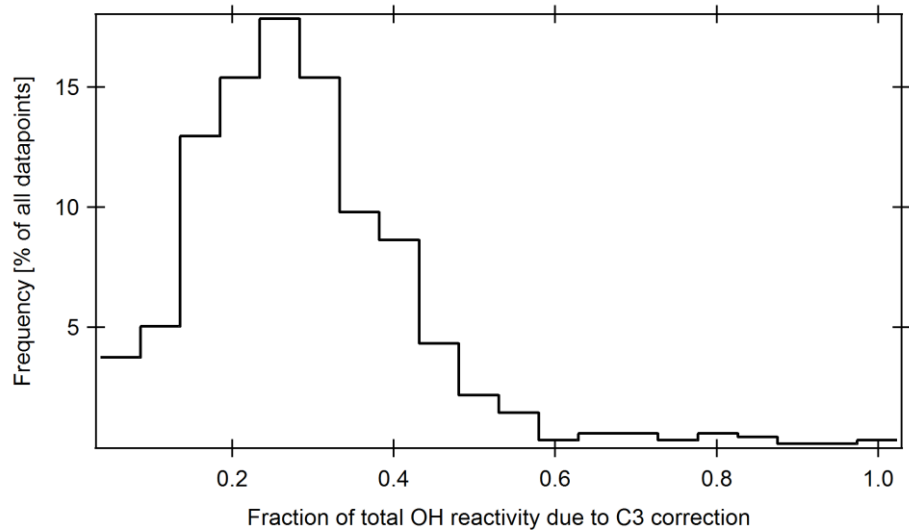


Figure S1. Frequency distribution of total OH reactivity fractions due to the NO, NO₂ and ozone corrections (C3 correction) for all datapoints in 50 min time resolution.

Table S1: Chemical species used for calculating speciated OH reactivity

Compound/ protonated mass (grey shaded compounds are gas standard calibrated with low uncertainty)	Chemical formula	k_{M+OH} [cm ³ molecules ⁻¹ s ⁻¹]	Instrument	Compounds attributed to protonated mass	If no unambiguous compound identification: reaction rate coefficient derived from...	Literature reference for reaction rate coefficient	Max. OH reactivity during AQABA [s ⁻¹]	Comment
Alkanes								
Methane	CH ₄	6.45E-15	Picarro Cavity ring-down spectroscopy instrument			IUPAC preferred value	0.35	
Ethane	C ₂ H ₆	2.40E-13	GC-FID			IUPAC preferred value	0.26	
Propane	C ₃ H ₈	1.10E-12	GC-FID			IUPAC preferred value	1.33	
2-Methylpropane	C ₄ H ₁₀	2.12E-12	GC-FID			Atkinson and Arey, 2003	0.68	
n-Butane	C ₄ H ₁₀	2.35E-12	GC-FID			IUPAC preferred value	1.42	
2-Methylbutane	C ₅ H ₁₂	3.60E-12	GC-FID			Atkinson and Arey, 2003	0.92	
n-pentane	C ₅ H ₁₂	3.80E-12	GC-FID			Atkinson and Arey, 2003	1.03	
2-Methylpentane	C ₆ H ₁₄	5.20E-12	GC-FID			Atkinson and Arey, 2003	0.11	
n-hexane	C ₆ H ₁₄	5.20E-12	GC-FID			Atkinson and Arey, 2003	0.16	
2,2,4- Trimethylpentane	C ₈ H ₁₈	3.34E-12	GC-FID			Atkinson and Arey, 2003	0.004	
n-heptane	C ₇ H ₁₆	6.76E-12	GC-FID			Atkinson and Arey, 2003	0.06	
Octane	C ₈ H ₁₈	8.11E-12	GC-FID			Atkinson and Arey, 2003	0.04	
Alkenes and Alkynes								
Ethene	C ₂ H ₄	7.50E-12	GC-FID			IUPAC preferred value	2.26	
Propene	C ₃ H ₆	2.90E-11	GC-FID			IUPAC preferred value	1.11	
trans-2-butene	C ₄ H ₈	6.40E-11	GC-FID			IUPAC preferred value	0.11	
1-Butene	C ₄ H ₈	3.14E-11	GC-FID			IUPAC preferred value	0.26	
1-Pentene	C ₅ H ₁₀	3.14E-11	GC-FID			Atkinson and Arey, 2003	0.10	
Isoprene	C ₅ H ₈	1.00E-10	GC-FID			IUPAC preferred value	0.76	
27.023	C ₂ H ₂	7.50E-13	PTR-ToF-MS	Ethyne		IUPAC preferred value	0.001	
41.0386	C ₃ H ₄	6.95E-13	PTR-ToF-MS	Propyne; 1,2-Propadiene	average	Warnatz, 1984; Atkinson and Arey, 2003	0.27	
67.0543	C ₅ H ₆	5.16E-11	PTR-ToF-MS	1,3-Cyclopentadiene; 3-penten-2-yne	average	Grosjean and Williams, 1992; Boodaghians et al., 1987	0.35	

69.0699	C ₅ H ₈	5.10E-11	PTR-ToF-MS	1-Pentyne; 1,2-Pentadiene; 1,4-Pentadiene; 1,3-Pentadiene; Cyclopentene	average	Boodaghians et al., 1987; Rogers, 1989; Ohta, 1983; Atkinson and Arey, 2003	1.92	C ₅ dienes. Isoprene measured by GC-FID was subtracted
83.0856	C ₆ H ₁₀	8.69E-11	PTR-ToF-MS	Cyclohexene, 1-methyl-cyclopentene; 2,3-dimethylbutadiene; 2-methyl-pentadiene; hexyne; 2-methyl-1,4-pentadiene; 3-methyl-1,3-pentadiene; 4-methyl-1,3-pentadiene; 1,2-hexadiene; 2-4-hexadiene; 1,4-hexadiene; 1,3-hexadiene; 1,5-Hexadiene	average	Atkinson and Arey, 2003; Boodaghians et al., 1987	3.13	C ₆ dienes
85.1012	C ₆ H ₁₂	6.63E-11	PTR-ToF-MS	2-Methyl-2-pentene; 2-Methyl-1-pentene; 3-Methyl-2-pentene; 2-Ethyl-1-butene; 2,3-Dimethyl-2-butene; 1-Hexene; 2-Hexene; 3-Hexene; 4-Methyl-2-pentene	average	Atkinson and Arey, 2003 Ohta, 1983; Grosjean and Williams, 1992	0.57	C ₆ alkenes
95.0856	C ₇ H ₁₀	4.68E-11	PTR-ToF-MS	2-Norbornene		Atkinson et al., 1983	0.76	
97.1012	C ₇ H ₁₂	7.98E-11	PTR-ToF-MS	1-methyl-cyclohexene; cycloheptene; 2-methyl-1,5-hexadiene; 2,4-dimethyl-1,3-pentadiene	average	Aschmann et al., 2012; Atkinson and Arey, 2003; Grosjean and Williams, 1992	2.27	C ₇ dienes
109.1012	C ₈ H ₁₂	1.07E-10	PTR-ToF-MS	Bicyclo[2.2.2]oct-2-ene; 1,2,3-Trimethylcyclopentadiene	average	Atkinson and Arey, 2003; Grosjean and Williams, 1992	3.82	
111.1169	C ₈ H ₁₄	1.20E-10	PTR-ToF-MS	Z-Cyclooctene; 2,5-Dimethyl-2,4-hexadiene; 2,5-Dimethyl-1,5-hexadiene		Aschmann et al., 2012; Atkinson and Arey, 2003	1.89	C ₈ dienes
137.1325	C ₁₀ H ₁₆	3.73E-10	PTR-ToF-MS	1,3,7-Octatriene; α -Pinene	average	IUPAC preferred value; Peeters et al., 2007	3.07	
205.1951	C ₁₅ H ₂₄	1.01E-10	PTR-ToF-MS	β -caryophyllene; α -copaene; α -cedrene; α -humulene; E- β -farnesene; Longifolene		Atkinson and Arey, 2003; IUPAC preferred values	1.10	Sesquiterpenes
Aromatic Compounds								
m- and p-Xylene	C ₈ H ₁₀	1.87E-11	GC-FID		average	Atkinson and Arey, 2003	0.26	

69.0335	C ₄ H ₄ O	4.04E-11	PTR-ToF-MS	Furan		Atkinson, 1986	0.28	
Benzene	C ₆ H ₆	1.20E-12	GC-FID			IUPAC preferred value	0.03	
80.0495	C ₅ H ₅ N	5.31E-13	PTR-ToF-MS	Pyridine		Yeung and Elrod, 2003	0.002	
83.0492	C ₅ H ₆ O	9.00E-11	PTR-ToF-MS	3-methyl-furan		Atkinson et al., 1989	0.79	
Toluene	C ₇ H ₈	5.60E-12	GC-FID			IUPAC preferred value	0.23	
94.0652	C ₆ H ₇ N	5.68E-11	PTR-ToF-MS	Aniline; 4-methyl-pyridine; 3-methyl-pyridine; 2-methyl-pyridine	average of methylpyridines and aniline rate coefficients	Witte et al., 1986; Yeung and Elrod, 2003	0.32	
95.0492	C ₆ H ₆ O	2.80E-11	PTR-ToF-MS	Phenol		IUPAC preferred value	0.87	
97.0648	C ₆ H ₈ O	1.25E-10	PTR-ToF-MS	2,5-dimethylfuran		Aschmann et al., 2011	0.86	
105.0731	C ₈ H ₈	5.80E-11	PTR-ToF-MS	Styrene		Atkinson and Arey, 2003	0.66	
107.0492	C ₇ H ₆ O	1.26E-11	PTR-ToF-MS	Benzaldehyde		IUPAC preferred value	0.23	
107.0855	C ₈ H ₁₀	1.36E-11	PTR-ToF-MS	o-Xylene		Atkinson and Arey, 2003	0.35	m- and p-Xylene mixing ratios measured by GC-FID were subtracted
108.0808	C ₇ H ₉ N	9.60E-12	PTR-ToF-MS	2,6-dimethylpyridine; 2,4-dimethylpyridine; 2,3-dimethylpyridine; 2,5-dimethylpyridine	average	Yeung and Elrod, 2003	0.20	
119.0856	C ₉ H ₁₀	5.95E-11	PTR-ToF-MS	α-methylstyrene; β-methylstyrene	average	Bignozzi et al., 1981	0.72	
121.0648	C ₈ H ₈ O	1.61E-11	PTR-ToF-MS	4-methylbenzaldehyde; 3-methylbenzaldehyde; 2-methylbenzaldehyde; acetophenone	average	Clifford et al., 2005; Aschmann et al., 2010	0.20	
121.1012	C ₉ H ₁₂	5.70E-11	PTR-ToF-MS	1,3,5-trimethylbenzene		Atkinson and Arey, 2003	0.91	
123.0441	C ₇ H ₆ O ₂	1.20E-12	PTR-ToF-MS	benzoic acid	rate coefficient of benzene	IUPAC preferred value	0.005	
125.0961	C ₈ H ₁₂ O	4.04E-11	PTR-ToF-MS	2,3,4,5-tetramethylfuran	rate coefficient of furan	Atkinson, 1986	0.14	
129.0699	C ₁₀ H ₈	2.30E-11	PTR-ToF-MS	Naphthalene		Atkinson and Arey, 2003	0.07	
131.0856	C ₁₀ H ₁₀	2.30E-11	PTR-ToF-MS	Dihydronaphthalene	rate coefficient of naphthalene	Atkinson and Arey, 2003	0.07	

133.1012	C ₁₀ H ₁₂	3.37E-11	PTR-ToF-MS	Tetralin; 2-methyl-1-propenylbenzene	average	Atkinson and Arey, 2003; Chiorboli et al., 1983	0.19	
135.0805	C ₉ H ₁₀ O	3.0E-11	PTR-ToF-MS	Dimethylbenzaldehyde	average	Tse et al., 1997; Aschmann et al., 2010	0.18	
135.1169	C ₁₀ H ₁₄	3.70E-11	PTR-ToF-MS	tert-butylbenzene; p-cymene; 1,2,3,5-tetramethylbenzene; 1,2,3,4-tetramethylbenzene	average	Alarcón et al., 2015; Atkinson and Arey, 2003	1.02	
143.0856	C ₁₁ H ₁₀	5.08E-11	PTR-ToF-MS	2-methyl-Naphthalene; 1-methyl-naphthalene	average	Atkinson and Aschmann, 1986; Phouongphouang and Arey, 2002	0.94	
147.1169	C ₁₁ H ₁₄	5.80E-11	PTR-ToF-MS	4-isopropyl styrene; 3-pentenyl benzene	rate coefficient of styrene	Atkinson and Arey, 2003	1.15	
149.1325	C ₁₁ H ₁₆	1.10E-10	PTR-ToF-MS	Pentamethylbenzene		Alarcón et al., 2015	2.23	
161.1325	C ₁₂ H ₁₆	5.80E-11	PTR-ToF-MS	4-tert-butylstyrene	rate coefficient of styrene	Atkinson and Arey, 2003	1.31	
163.1482	C ₁₂ H ₁₈	1.13E-10	PTR-ToF-MS	Hexamethylbenzene		Atkinson and Arey, 2003	1.30	
175.1482	C ₁₃ H ₁₈	3.85E-11	PTR-ToF-MS	1-2,2-dimethyl-1-methylenepropyl-4-methylbenzene; 2-tert-butyl-indan	average of indan and styrene rate coefficients	Atkinson and Arey, 2003	1.02	
189.1638	C ₁₄ H ₂₀	4.60E-11	PTR-ToF-MS	3,5-dimethyl-t-butylstyrene; 1-t-butyltetralin	average of styrene and tetralin rate coefficients	Atkinson and Arey, 2003	0.591	
197.1325	C ₁₅ H ₁₆	4.15E-12	PTR-ToF-MS	1,1'-1,3-propanediylbis-Benzene; 4-1-methylethyl-1,1'-Biphenyl	average of benzene and biphenyl	Atkinson and Arey, 2003; IUPAC preferred value	0.003	
199.1482	C ₁₅ H ₁₈	2.30E-11	PTR-ToF-MS	substituted naphthalenes	rate coefficient of naphthalene	Atkinson and Arey, 2003	0.05	
OVOCs								
Formaldehyde	HCHO	8.50E-12	Aerolaser Hantzsch			IUPAC preferred value	2.33	
33.0335	CH ₃ OH	9.00E-13	PTR-ToF-MS	Methanol		IUPAC preferred value	0.24	
45.0335	C ₂ H ₄ O	1.50E-11	PTR-ToF-MS	Acetaldehyde		IUPAC preferred value	2.21	
47.0128	HCOOH	4.50E-13	PTR-ToF-MS	Formic acid		IUPAC preferred value	0.07	
57.0335	C ₃ H ₄ O	1.13E-11	PTR-ToF-MS	Acrolein		Atkinson and Arey, 2003	1.51	
59.0491	C ₃ H ₆ O	1.80E-13	PTR-ToF-MS	Acetone		IUPAC preferred value	0.16	
61.0285	C ₂ H ₄ O ₂	6.90E-13	PTR-ToF-MS	Acetic acid		IUPAC preferred value	0.13	
63.0441	C ₂ H ₆ O ₂	1.45E-11	PTR-ToF-MS	1,2-ethanediol		IUPAC preferred value	0.18	

65.0233	CH ₄ O ₃	7.10E-12	PTR-ToF-MS	Hydroxymethyl hydroperoxide		Allen et al., 2018	0.14	
71.0491	C ₄ H ₆ O	2.45E-11	PTR-ToF-MS	Methyl vinyl ketone; methacroleine; isoprene hydroxy hydroperoxide	average	IUPAC preferred values; St Clair et al., 2016	0.42	
73.0284	C ₃ H ₄ O ₂	1.30E-11	PTR-ToF-MS	Methyl glyoxal		IUPAC preferred value	0.21	
73.0648	C ₄ H ₈ O	4.87E-11	PTR-ToF-MS	Butanal; 2-methyl-propanal; tetrahydrofuran; 2-butanone (MEK); ethoxy ethene	average	IUPAC preferred value; Moriarty et al., 2003; Audley et al., 1981; Zhou et al., 2006	1.80	C ₄ carbonyls
75.0441	C ₃ H ₆ O ₂	2.85E-12	PTR-ToF-MS	Hydroxyacetone; propanoic acid	average	IUPAC preferred values	0.10	
77.0598	C ₃ H ₈ O ₂	1.62E-11	PTR-ToF-MS	2-methoxyethanol; 1,2-propanediol		IUPAC preferred value, Porter et al., 1997	0.07	
85.0648	C ₅ H ₈ O	4.43E-11	PTR-ToF-MS	Cyclopentanone; E-2-pentenal; 3-methyl-3-buten-2-one; E-2-methyl-2-butenal; 3-methyl-2-butenal; 3-penten-2-one; 1-penten-3-one; 3,6-dihydro-2H-pyran	average	Atkinson and Arey, 2003; Grosjean and Williams, 1992; Jiménez et al., 2009; Davis et al., 2007	0.52	
87.0441	C ₄ H ₆ O ₂	2.40E-11	PTR-ToF-MS	2,3-Butanedione; acetic acid ethenyl ester; 2-propenoic acid methyl ester; 4-hydroxy-2-butenal	average	Baker et al., 2005a; Teruel et al., 2006; Blanco et al., 2009; Dagaut et al., 1988	0.61	C ₄ dioxygenates
87.0805	C ₅ H ₁₀ O	4.63E-11	PTR-ToF-MS	Pentanal; 3-methyl-2-butanone; 3-pentanone; 2-pentanone; 1-vinyloxypropane; 2-Methyl-3-buten-2-ol MBO; 3-methyl-3-buten-1-ol; 2-methylbutanal; 3-methylbutanal; 1-penten-3-ol; Z-2-penten-1-ol	average	Zhou et al., 2006; IUPAC; Cometto et al., 2008; Atkinson and Arey, 2003; Orlando et al., 2001	2.48	
89.0234	C ₃ H ₄ O ₃	1.20E-13	PTR-ToF-MS	Pyruvic acid		IUPAC preferred value	0.001	
89.0598	C ₄ H ₈ O ₂	6.47E-12	PTR-ToF-MS	1,4-dioxane; formic acid 1-methylethyl ester; ethyl acetate; butyric acid; acetoin; 1-hydroxy-3-butanone	average	Picquet et al., 1998; Aschmann et al., 2000; IUPAC; Moriarty et al., 2003; Pimentel et al., 2010	0.10	
91.039	C ₃ H ₆ O ₃	9.85E-13	PTR-ToF-MS	carbonic acid dimethyl ester; methoxymethyl formate	average	Katrib et al., 2002; O'Donnell et al., 2004	0.003	
99.0805	C ₆ H ₁₀ O	4.76E-11	PTR-ToF-MS	Cyclohexanone; 5-hexen-2-	average	Atkinson and Arey, 2003;	0.59	

				one; z-3-methyl-3-penten-2-one; 4-methyl-3-penten-2-one; E-2-hexenal; Z-3-hexenal; 2-ethyl-2-butenal; E-4-hexene-3-one		Grosjean and Williams, 1992; Wang et al., 2010; Gao et al., 2009; Xing et al., 2012		
101.0598	C ₅ H ₈ O ₂	3.17E-11	PTR-ToF-MS	Methyl methacrylate; E-2-butenic acid methyl ester; acetylacetone; 2-propenoic acid ethyl ester; glutaraldehyde; vinyl propionate; isopropenyl acetate; n-propenyl acetate	average	Teruel et al., 2006; Teruel et al., 2012; Rogers, 1989; Ferrari et al., 1996; Dagaut et al., 1988	1.52	C ₅ dioxygenates
101.0961	C ₆ H ₁₂ O	4.11E-11	PTR-ToF-MS	Oxepane; 2-hexanone; hexanal; t-butyl vinyl ether; 2-methylpentanal; 3-methylpentanal; 4-methylpentanal; 3,3-dimethylbutanal; 2-ethylbutanal	average	Moriarty et al., 2003; Atkinson and Arey, 2003; Zhou et al., 2012; Le Calvé et al., 1998	0.95	C ₆ oxygenates/ carbonyls
103.0754	C ₅ H ₁₀ O ₂	8.71E-12	PTR-ToF-MS	Butanoic acid methyl ester; n-propyl acetate; 1-hydroxy-2-methyl-3-butanone; 1-hydroxy-3-methyl-2-butanone; 1,2-dioxepane; 5-hydroxy-2-pentanone	average	Schütze et al., 2010; Ferrari et al., 1996; Moriarty et al., 2003; Aschmann et al., 2000; Baker et al., 2005b	0.14	
113.0598	C ₆ H ₈ O ₂	5.80E-11	PTR-ToF-MS	E-hexendione; Z-hexendione	average	Tuazon et al., 1985	0.23	
113.0961	C ₇ H ₁₂ O	2.52E-11	PTR-ToF-MS	E-2-Hepten-1-al; cycloheptanone	average	Davis et al., 2007; Atkinson and Arey, 2003	0.16	
115.0754	C ₆ H ₁₀ O ₂	3.40E-11	PTR-ToF-MS	2,5-hexanedione; ethyl-2-butenate; methacrylic acid ethyl ester	average	Dagaut et al., 1988; Teruel et al., 2012; Blanco et al., 2006	0.97	
117.0911	C ₆ H ₁₂ O ₂	7.42E-12	PTR-ToF-MS	4-hydroxy-3-hexanone; acetic acid butyl ester; butanoic acid ethyl ester; methyl valerate	average	Schütze et al., 2010; Aschmann et al., 2000; Veillerot et al., 1996; Ferrari et al., 1996	0.13	
127.1118	C ₈ H ₁₄ O	9.88E-11	PTR-ToF-MS	E-2-octenal; cyclooctanone; 6-methyl-5-hepten-2-one	average	Gao et al., 2009; Smith et al., 1996	1.87	

129.1274	C ₈ H ₁₆ O	1.10E-11	PTR-ToF-MS	2-octanone		Atkinson and Arey, 2003	0.03	
141.1274	C ₉ H ₁₆ O	4.35E-11	PTR-ToF-MS	Nonenal		Gao et al., 2009	0.07	
143.1067	C ₈ H ₁₄ O ₂	7.08E-11	PTR-ToF-MS	Butyl methacrylate		Blanco et al., 2009	1.14	
143.1431	C ₉ H ₁₈ O	2.41E-11	PTR-ToF-MS	Nonanal, 1-nonanone	average	Bowman et al., 2003; Wallington and Kurylo, 1987	0.11	
201.1485	C ₁₁ H ₂₀ O ₃	7.35E-12	PTR-ToF-MS	C ₁₁ oxo esters e.g. 9-oxo-nonanoic acid ethyl ester	rate coefficient of acetic acid n-pentyl ester	Williams et al., 1993	0.06	
Sulfur-containing VOCs								
63.0263	C ₂ H ₆ S	4.80E-12	PTR-ToF-MS	Dimethyl sulfide		IUPAC preferred value	0.06	
80.9879	CH ₄ S ₂	3.30E-11	PTR-ToF-MS	Methanedithiol	Rate constant of methanethiol	Atkinson et al., 2004	0.10	
NVOCs								
42.0338	C ₂ H ₃ N	2.20E-14	PTR-ToF-MS	Acetonitrile		IUPAC preferred value	0.001	
46.0288	CH ₃ NO	1.50E-12	PTR-ToF-MS	Formamide		Nizamov and Dagdigian, 2003	0.02	
54.0339	C ₃ H ₃ N	4.04E-12	PTR-ToF-MS	Acrylonitrile		Harris et al., 1981	0.01	
56.0495	C ₃ H ₅ N	2.56E-13	PTR-ToF-MS	Propanenitrile		Sun et al., 2008	0.01	
60.0444	C ₂ H ₅ NO	6.05E-12	PTR-ToF-MS	Acetamide; N-methyl-formamide	average	Solignac et al., 2005; Barnes et al., 2010	0.41	
62.0237	CH ₃ NO ₂	2.60E-13	PTR-ToF-MS	Methyl nitrite		Nielsen et al., 1991	0.01	
70.0652	C ₄ H ₇ N	2.56E-13	PTR-ToF-MS	butanenitrile	rate coefficient of propanenitrile	Sun et al., 2008	0.001	
74.0601	C ₃ H ₇ NO	1.25E-11	PTR-ToF-MS	N,N-dimethyl formamide, N-methyl acetamide	average	Solignac et al., 2005; Barnes et al., 2010	0.08	
84.0808	C ₅ H ₉ N	2.56E-13	PTR-ToF-MS	Pentanenitrile	rate coefficient of propanenitrile	Sun et al., 2008	0.001	
136.1121	C ₉ H ₁₃ N	1.11E-10	PTR-ToF-MS	N-Ethyl-N-methylaniline	rate coefficient of aniline	Witte et al., 1986	0.35	
150.1278	C ₁₀ H ₁₅ N	1.48E-10	PTR-ToF-MS	Benzenamine, N,N,2,6-tetramethyl-	rate coefficient of N-N-dimethylbenzenamine	Atkinson et al., 1987	0.33	
Halogenated VOCs								

99.0053	CF ₃ CHO	1.50E-11	PTR-ToF-MS	Trifluoroacetaldehyde	rate coefficient of acetaldehyde	IUPAC preferred value	0.16	
101.0209	C ₂ H ₃ F ₃ O	1.23E-13	PTR-ToF-MS	2,2,2-trifluoroethanol		Sellevåg et al., 2004	0.002	
113.0153	C ₆ H ₅ Cl	6.02E-13	PTR-ToF-MS	Chlorobenzene		Bryukov et al., 2009	0.003	
129.0102	C ₆ H ₅ ClO	1.32E-11	PTR-ToF-MS	2-chlorophenol; 3-chlorophenol; 4-chlorophenol	average	Kiliç et al., 2007	0.07	
NO_x								
Nitric oxide	NO	9.70E-12	Two-channel CLD			IUPAC preferred value	29.3	
Nitrogen dioxide	NO ₂	9.80E-12	Two-channel CLD			IUPAC preferred value	6.94	
Other inorganic compounds								
Ozone	O ₃	7.30E-14	UV Photometric O ₃ Analyzer			IUPAC preferred value	0.26	
Nitrous acid	HONO	6.00E-12	Long Path Absorption Photometer			IUPAC preferred value	0.13	
Sulfur dioxide	SO ₂	9.30E-13	Chemical Ionization Mass Spectrometer			IUPAC preferred value	0.33	
Carbon monoxide	CO	1.44E-13	Picarro Cavity ring-down spectroscopy instrument			IUPAC preferred value	1.16	

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