Table 2. A summary of atmospheric chemistry instrumentation used aboard the FAAM BAe 146-301 ARA during the ACSIS flights. NA denotes not available, whereas X denotes available. CE1

Measurement	Instrumentation	Time resolution	Precision 3σ	Uncertainty	Timescale	Data available in merged file
O_3	Thermo Scientific Model 49i ozone photometer	4 s	6 ppb	3 ppb/3 %	2017–2021	X
O_3	2B Technologies Model 205 ozone photometer	2 s	4 nmol mol^{-1}	5 ppb/3 % for O_3 > 100 nmol mol^{-1}	2022–present	X
CO	Aero-Laser AL5002 (VUV RF)	1 s	6 ppb	2 ppb	2005–2019	X
CO_2	Los Gatos Research FGGA (OA-ICOS)	1 s	1.5 ppm	0.5 ppm	2011–present	X
CH_4	Los Gatos Research FGGA (OA-ICOS)	1 s	6 ppb	3 ppb	2011–present	X
NO	Chemiluminescence instrument, Air Quality Design Inc.	10 s	10 ppt	24 %	2009–2019	X
NO_2	Chemiluminescence instrument, Air Quality Design Inc.	10 s	13 ppt	41 %	2009–2019	X
NO	Chemiluminescence instrument, Air Quality Design Inc. (upgraded)	0.1 s	30 ppt	24 %	2019–present	X
NO_2	Chemiluminescence instrument, Air Quality Design Inc. (upgraded)	0.1 s	60 ppt	41 %	2019–present	X
SO_2	University of York laser-induced fluorescence sulfur dioxide detector (LIF-SO2)	1 s	225 ppt	15 %	2022–present	X
Solar actinic flux	Ocean Optics QE Pro, up- and downward-facing UV–Vis (280-700 nm) spectrometers	1 s	TBC CE2	5 %	2019–present	X
HCHO	LIF pulsed 353.370 nm spectrometer, Thermo Scientific Model TFL 3000 (NovaWave)	1 s	NA	NA	2019–present	
VOCs	Whole-air samples and offline analysis by GC-FID or GC-MS	NA			2005–present	
Other gases	*University of Manchester high-resolution time-of-flight chemical ionization mass spectrometer (ToF-CIMS)*	*0.25 s*		*10 %–20 %*	*2019–present*	
HONO	ToF-CIMS	0.25 s	NA	20 %		
HCN	ToF-CIMS	0.25 s		30 %		X
BrO	ToF-CIMS	0.25 s	NA	40 %		
BrCl	ToF-CIMS	0.25 s	NA	40 %		
$ClNO_2$	ToF-CIMS	0.25 s		30 %		X
Cl_2	ToF-CIMS	0.25 s	NA	20 %		
ClO	ToF-CIMS	0.25 s	NA	40 %		
HPMTF[a]	ToF-CIMS	0.25 s	NA	NA		
Urea	ToF-CIMS	0.25 s	30 ppt	25 %		X
Submicron aerosol composition	*University of Manchester aerosol mass spectrometer (AMS)*				*2019–present (excluding 2020)*	
Organic	AMS	8–15 s	0.03 µg m^{-3}	38 %		X
SO_4	AMS	8–15 s	0.03 µg m^{-3}	36 %		X
NH_4	AMS	8–15 s	0.03 µg m^{-3}	34 %		X
NO_3	AMS	8–15 s	0.03 µg m^{-3}	34 %		X
nss-Cl[b]	AMS	8–15 s	0.03 µg m^{-3}	NA		X

[a] Hydroperoxymethyl thioformate. [b] Non-sea salt chloride. Undefined abbreviations used in the table are as follows: VUV RF – vacuum UV resonance fluorescence; FGGA – Fast Greenhouse Gas Analyser; OA-ICOS – off-axis integrated cavity output spectroscopy; ppt – parts per thousand; GC-FID – gas chromatography flame ionization detector; GC-MS – gas chromatography mass spectroscopy. CE3