

Supplement 2 to **Version 8 IMK/IAA MIPAS measurements of CFC-11, CFC-12, and HCFC-22**

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This document serves as reference for the definitions of the representative atmospheres used for the calculation of CFC-11 error budgets, as listed in Tab. S1, and as collection of the respective error budgets for FR data (2002-2004), which are listed in tables S2–S35 and depicted in figures

S1–S34, and the respective error budgets for RR data (2005-2012), which are listed in tables S36–S69 and depicted in figures S35–S68, and in the MIPAS middle atmosphere measurement mode, which are listed in tables S70–S103 and depicted in figures S69–S102.

The errors are presented as absolute errors in pptv.

Table S1. Labels and definitions of the representative atmospheric conditions which were used to calculate the error budget for FR and RR nominal measurement mode data ($\beta_{\max} = 95^\circ$) and RR middle atmosphere measurement mode data ($\beta_{\max} = 98^\circ$).

representative atmosphere label	month(s) used	latitude range	solar zenith angle range
Northern polar winter day	Jan, Feb	$65^\circ\text{N} - 90^\circ\text{N}$	$< 90^\circ$
Northern polar winter night	Jan, Feb	$65^\circ\text{N} - 90^\circ\text{N}$	$> \beta_{\max}$
Northern polar spring day	Apr	$65^\circ\text{N} - 90^\circ\text{N}$	$< 90^\circ$
Northern polar spring night	Apr	$65^\circ\text{N} - 90^\circ\text{N}$	$> \beta_{\max}$
Northern polar summer day	Jul, Aug	$65^\circ\text{N} - 90^\circ\text{N}$	$< 90^\circ$
Northern polar summer night	Jul, Aug	$65^\circ\text{N} - 90^\circ\text{N}$	$> \beta_{\max}$
Northern polar autumn day	Oct	$65^\circ\text{N} - 90^\circ\text{N}$	$< 90^\circ$
Northern polar autumn night	Oct	$65^\circ\text{N} - 90^\circ\text{N}$	$> \beta_{\max}$
Northern midlatitude winter day	Jan, Feb	$40^\circ\text{N} - 60^\circ\text{N}$	$< 90^\circ$
Northern midlatitude winter night	Jan, Feb	$40^\circ\text{N} - 60^\circ\text{N}$	$> \beta_{\max}$
Northern midlatitude spring day	Apr	$40^\circ\text{N} - 60^\circ\text{N}$	$< 90^\circ$
Northern midlatitude spring night	Apr	$40^\circ\text{N} - 60^\circ\text{N}$	$> \beta_{\max}$
Northern midlatitude summer day	Jul, Aug	$40^\circ\text{N} - 60^\circ\text{N}$	$< 90^\circ$
Northern midlatitude summer night	Jul, Aug	$40^\circ\text{N} - 60^\circ\text{N}$	$> \beta_{\max}$
Northern midlatitude autumn day	Oct	$40^\circ\text{N} - 60^\circ\text{N}$	$< 90^\circ$
Northern midlatitude autumn night	Oct	$40^\circ\text{N} - 60^\circ\text{N}$	$> \beta_{\max}$
Tropics day	Apr	$20^\circ\text{S} - 20^\circ\text{N}$	$< 90^\circ$
Tropics night	Apr	$20^\circ\text{S} - 20^\circ\text{N}$	$> \beta_{\max}$
Southern midlatitude winter day	Jul, Aug	$40^\circ\text{S} - 60^\circ\text{S}$	$< 90^\circ$
Southern midlatitude winter night	Jul, Aug	$40^\circ\text{S} - 60^\circ\text{S}$	$> \beta_{\max}$
Southern midlatitude spring day	Oct	$40^\circ\text{S} - 60^\circ\text{S}$	$< 90^\circ$
Southern midlatitude spring night	Oct	$40^\circ\text{S} - 60^\circ\text{S}$	$> \beta_{\max}$
Southern midlatitude summer day	Jan, Feb	$40^\circ\text{S} - 60^\circ\text{S}$	$< 90^\circ$
Southern midlatitude summer night	Jan, Feb	$40^\circ\text{S} - 60^\circ\text{S}$	$> \beta_{\max}$
Southern midlatitude autumn day	Apr	$40^\circ\text{S} - 60^\circ\text{S}$	$< 90^\circ$
Southern midlatitude autumn night	Apr	$40^\circ\text{S} - 60^\circ\text{S}$	$> \beta_{\max}$
Southern polar winter day	Jul, Aug	$65^\circ\text{S} - 90^\circ\text{S}$	$< 90^\circ$
Southern polar winter night	Jul, Aug	$65^\circ\text{S} - 90^\circ\text{S}$	$> \beta_{\max}$
Southern polar spring day	Oct	$65^\circ\text{S} - 90^\circ\text{S}$	$< 90^\circ$
Southern polar spring night	Oct	$65^\circ\text{S} - 90^\circ\text{S}$	$> \beta_{\max}$
Southern polar summer day	Jan, Feb	$65^\circ\text{S} - 90^\circ\text{S}$	$< 90^\circ$
Southern polar summer night	Jan, Feb	$65^\circ\text{S} - 90^\circ\text{S}$	$> \beta_{\max}$
Southern polar autumn day	Apr	$65^\circ\text{S} - 90^\circ\text{S}$	$< 90^\circ$
Southern polar autumn night	Apr	$65^\circ\text{S} - 90^\circ\text{S}$	$> \beta_{\max}$

Table S2. CFC-11 error budget for Northern polar winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	300.41	11.09	2.22	0.35	4.62	1.73	17.15	7.90	8.88	18.22	15.99	24.24
8	257.25	5.83	1.48	0.24	2.89	5.10	12.37	4.65	5.40	11.15	12.25	16.56
11	224.32	2.91	1.38	0.17	2.05	3.52	12.06	3.54	3.73	7.00	12.25	14.11
14	170.40	2.92	4.44	0.42	1.69	3.04	14.50	3.82	3.23	7.98	14.56	16.60
17	92.28	2.52	4.46	0.62	1.70	2.06	11.24	2.79	3.80	6.69	11.73	13.50
20	33.64	2.61	1.74	0.21	1.87	1.06	6.12	1.47	4.98	7.34	5.01	8.89
23	14.95	2.60	0.38	0.11	2.13	0.38	2.08	0.72	6.47	7.46	1.60	7.63
26	9.19	2.59	0.19	0.04	2.34	0.13	1.04	0.44	8.08	8.86	0.51	8.88
29	13.02	2.23	0.16	0.04	2.48	0.14	1.11	0.32	9.89	10.48	0.64	10.50
32	10.50	1.68	0.19	0.05	2.69	0.13	1.02	0.31	11.78	12.23	0.66	12.25
35	6.75	1.33	0.14	0.05	3.26	0.11	0.93	0.22	13.87	14.33	0.69	14.35
38	8.60	1.18	0.21	0.04	4.95	0.11	1.65	0.20	15.63	16.45	1.47	16.52
41	9.86	1.20	0.26	0.04	8.49	0.13	1.95	0.21	17.56	19.55	1.82	19.64

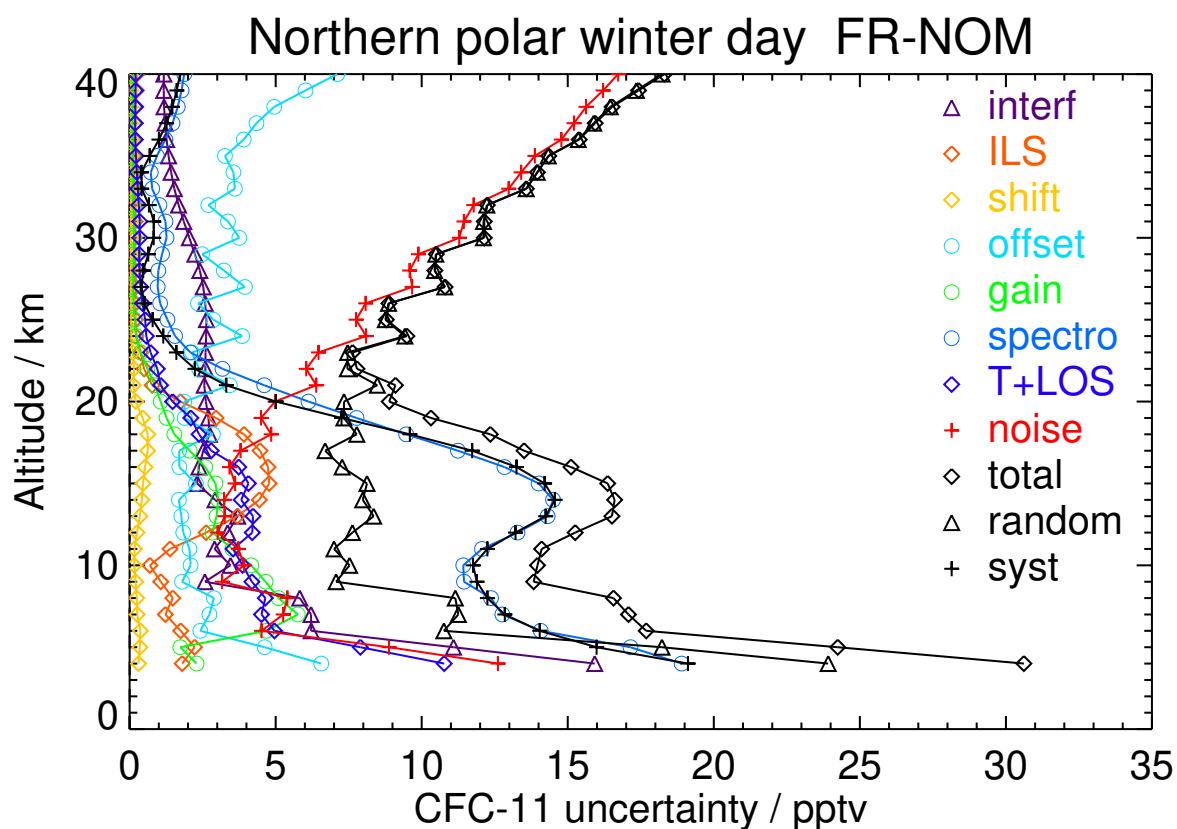
**Figure S1.** V8H_F-11_61 Northern polar winter day

Table S3. CFC-11 error budget for Northern polar winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	298.97	11.81	3.60	0.24	5.13	3.25	16.50	8.20	9.69	19.05	16.12	24.96
8	235.39	2.55	2.55	0.36	3.11	6.59	10.05	3.07	5.67	8.96	11.34	14.45
11	236.10	3.89	1.82	0.15	2.20	2.76	12.93	4.03	3.93	7.83	12.98	15.16
14	160.40	1.77	4.49	0.45	1.59	3.46	14.78	4.00	3.32	6.82	15.39	16.83
17	82.84	2.95	4.29	0.42	1.35	1.42	11.02	3.14	3.70	6.83	11.38	13.27
20	25.49	2.35	1.99	0.24	1.30	0.90	5.75	1.71	4.84	6.85	4.95	8.45
23	13.25	2.74	0.55	0.15	1.53	0.31	1.88	0.76	6.33	7.31	1.00	7.38
26	9.70	2.69	0.21	0.05	1.91	0.13	1.32	0.47	7.99	8.72	0.81	8.76
29	11.86	2.37	0.18	0.05	2.22	0.13	0.98	0.35	9.53	10.11	0.48	10.13
32	11.06	1.81	0.28	0.06	2.70	0.11	1.02	0.29	11.30	11.80	0.45	11.81
35	9.25	1.40	0.18	0.05	3.42	0.10	0.87	0.24	13.34	13.87	0.50	13.88
38	2.34	1.23	0.15	0.04	4.51	0.11	1.25	0.21	15.16	15.88	1.04	15.92
41	-2.94	1.23	0.20	0.04	7.46	0.13	1.73	0.22	16.63	18.29	1.56	18.36

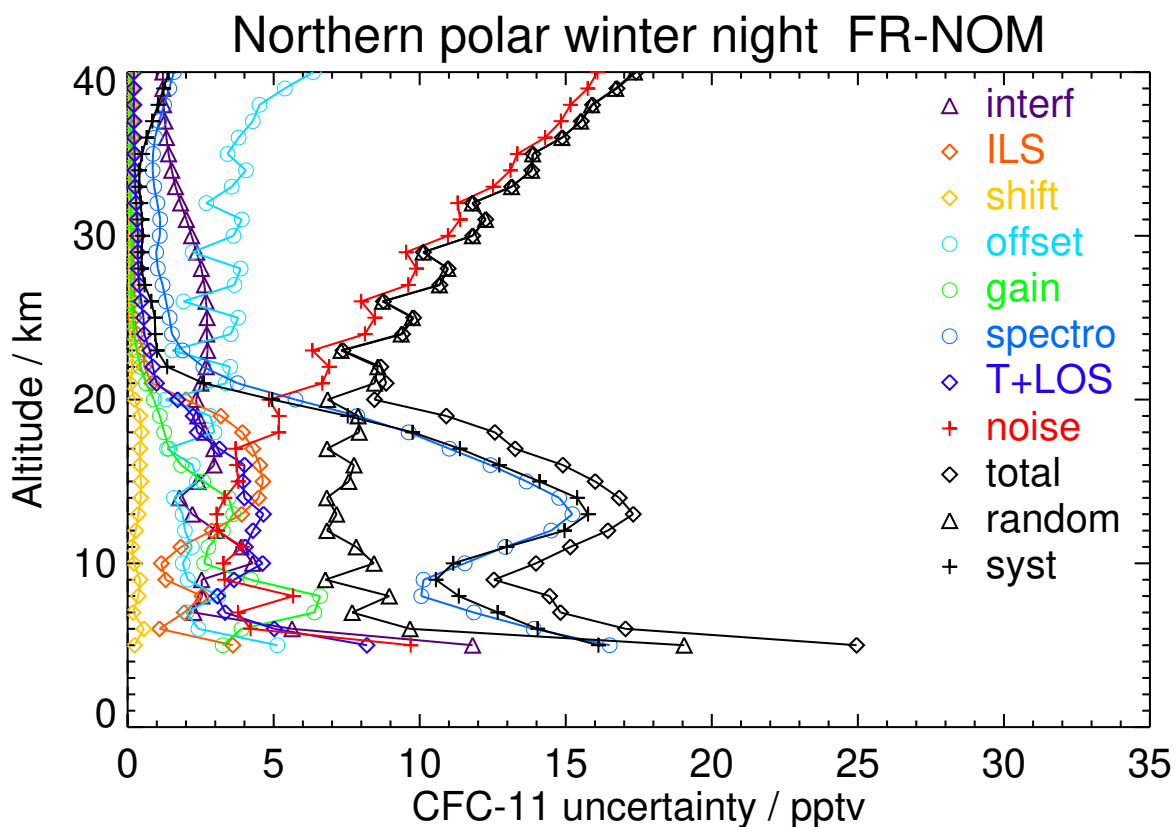
**Figure S2.** V8H_F-11_61 Northern polar winter night

Table S4. CFC-11 error budget for Northern polar spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	245.61	4.62	0.83	0.23	1.87	5.07	14.36	4.61	3.18	8.40	14.78	16.99
11	209.93	3.98	0.65	0.09	1.76	2.81	10.64	3.73	2.77	7.10	10.56	12.73
14	135.43	2.44	4.92	0.33	2.05	3.06	15.45	4.03	2.82	6.79	16.14	17.52
17	53.07	2.92	3.24	0.42	2.54	1.12	7.27	2.07	3.61	6.88	7.05	9.85
20	28.12	2.57	1.25	0.22	3.24	0.65	3.38	0.96	4.87	6.91	2.73	7.43
23	14.45	2.64	0.28	0.11	3.99	0.34	1.84	0.57	6.39	8.14	1.14	8.22
26	9.28	2.58	0.16	0.03	4.51	0.14	1.01	0.40	8.07	9.64	0.65	9.66
29	5.41	2.31	0.22	0.04	4.62	0.12	0.88	0.32	9.59	10.91	0.69	10.93
32	2.37	1.71	0.16	0.07	4.37	0.09	0.70	0.23	10.93	11.92	0.21	11.92
35	4.06	1.30	0.12	0.07	3.79	0.11	0.95	0.17	12.60	13.24	0.77	13.26
38	6.31	1.10	0.14	0.06	4.04	0.18	1.27	0.17	14.20	14.82	1.11	14.86
41	4.76	1.17	0.18	0.05	5.32	0.19	1.58	0.19	15.51	16.45	1.42	16.52

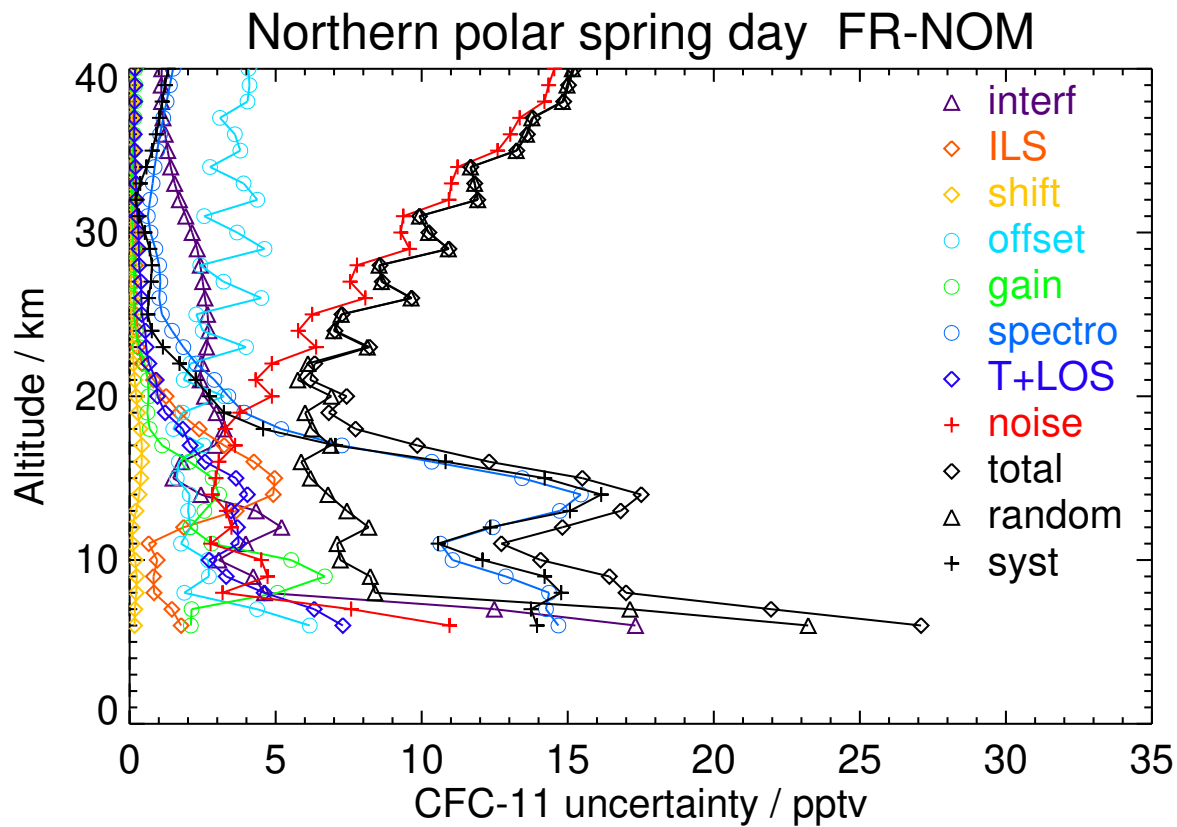


Figure S3. V8H_F-11_61 Northern polar spring day

Table S5. CFC-11 error budget for Northern polar spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	252.76	5.42	1.44	0.31	2.03	4.56	14.97	5.06	3.40	9.11	15.33	17.83
11	202.35	3.33	1.08	0.11	1.76	2.88	11.13	3.50	2.76	6.81	11.00	12.94
14	142.51	2.86	4.55	0.35	2.06	2.71	14.33	3.74	2.86	7.13	14.74	16.38
17	69.53	2.68	3.75	0.48	2.57	1.31	9.03	2.20	3.73	7.30	8.76	11.40
20	31.64	2.66	1.57	0.20	3.24	0.83	4.69	1.06	5.02	7.51	3.56	8.31
23	14.52	2.59	0.34	0.10	3.93	0.35	1.92	0.56	6.56	8.25	1.18	8.33
26	10.07	2.57	0.17	0.04	4.46	0.21	1.23	0.40	8.27	9.79	0.78	9.83
29	5.18	2.28	0.19	0.05	4.46	0.14	0.97	0.32	9.80	11.04	0.73	11.06
32	0.95	1.71	0.17	0.07	4.00	0.07	0.63	0.24	11.20	12.03	0.26	12.04
35	1.22	1.26	0.13	0.09	3.56	0.12	0.92	0.18	12.83	13.39	0.74	13.41
38	8.79	1.11	0.18	0.08	3.88	0.18	1.34	0.18	14.46	15.03	1.19	15.08
41	5.34	1.23	0.21	0.06	5.48	0.18	1.65	0.18	15.77	16.75	1.51	16.82

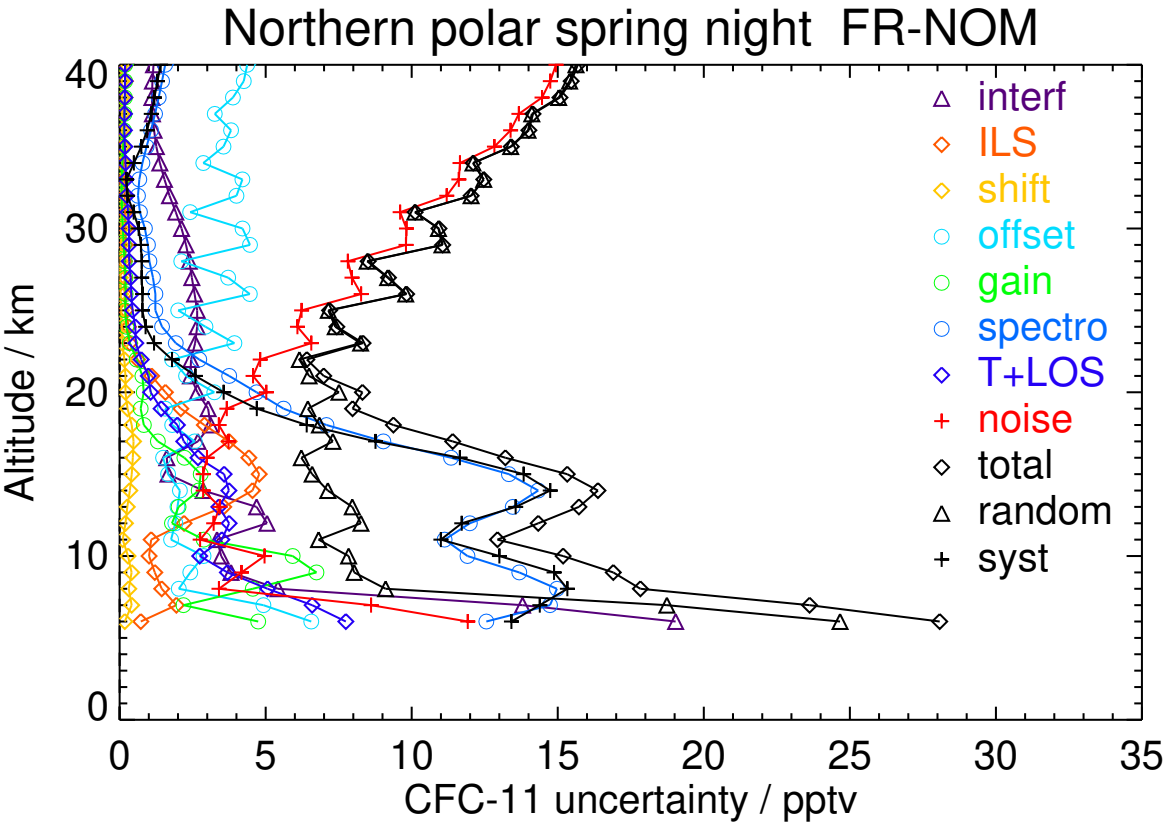


Figure S4. V8H_F-11_61 Northern polar spring night

Table S6. CFC-11 error budget for Northern polar summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	249.17	11.39	1.25	0.32	3.71	2.47	9.42	3.58	7.39	15.51	8.18	17.54
11	229.31	2.94	1.45	0.17	2.30	5.43	11.36	2.73	4.51	7.46	12.11	14.22
14	218.52	4.17	1.94	0.14	1.60	2.49	11.03	3.03	3.18	6.64	11.26	13.08
17	163.62	2.03	5.48	0.74	1.27	3.34	14.46	3.18	3.03	5.42	15.70	16.61
20	72.48	2.81	3.11	0.34	1.28	1.46	9.88	2.16	3.79	5.64	10.31	11.75
23	23.63	2.44	0.44	0.38	1.51	0.71	2.93	1.07	4.95	5.91	2.91	6.59
26	7.80	2.56	0.22	0.06	1.88	0.16	1.15	0.57	6.46	7.27	0.88	7.32
29	3.34	2.26	0.15	0.04	2.21	0.09	0.77	0.38	8.10	8.73	0.46	8.74
32	2.81	1.63	0.16	0.06	2.40	0.08	0.70	0.28	9.75	10.19	0.29	10.20
35	7.13	1.30	0.11	0.12	2.65	0.14	0.66	0.22	11.52	11.91	0.35	11.92
38	4.11	1.09	0.14	0.13	2.91	0.18	1.07	0.22	13.54	13.91	0.90	13.94
41	0.55	1.05	0.17	0.10	3.73	0.20	1.61	0.19	14.55	15.07	1.56	15.15

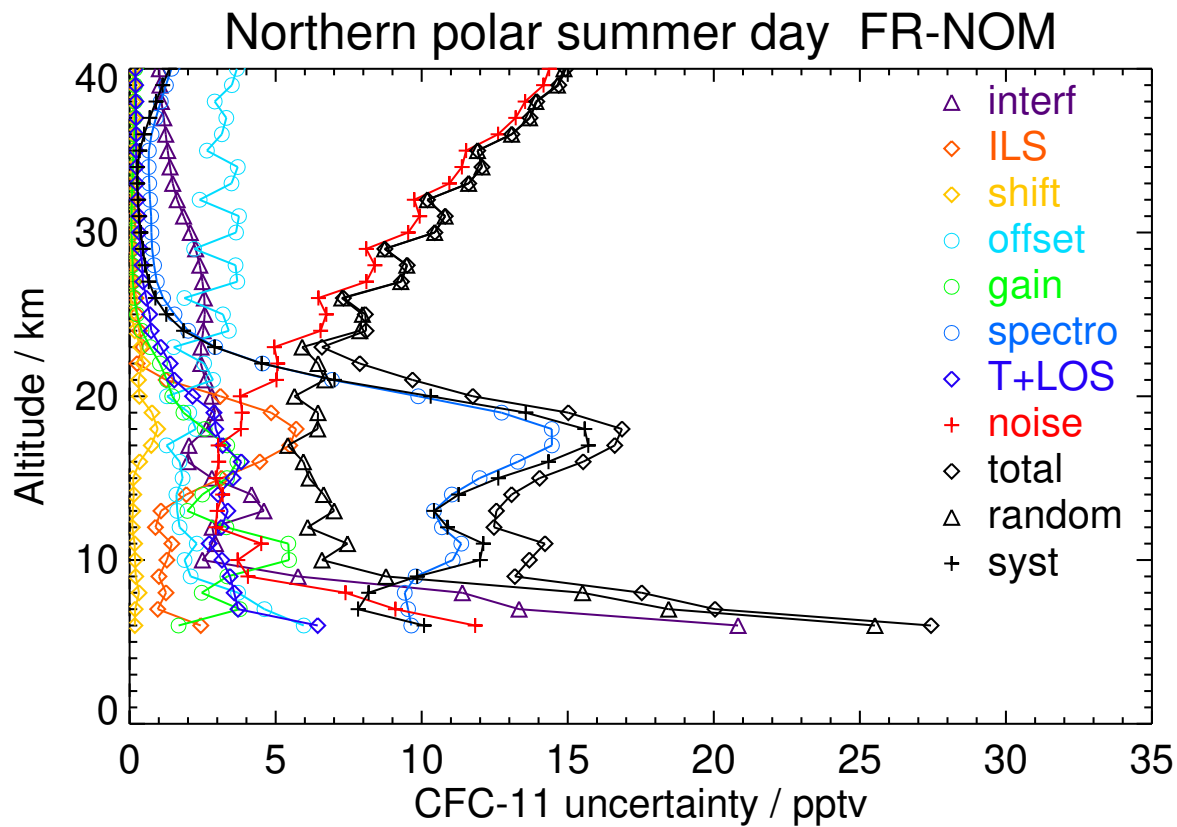


Figure S5. V8H_F-11_61 Northern polar summer day

Table S7. CFC-11 error budget for Northern polar summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	262.23	13.09	0.84	0.17	4.62	2.88	8.94	4.22	9.27	17.55	8.78	19.62
11	228.75	3.02	0.64	0.11	2.36	6.03	11.54	2.75	4.82	7.22	12.77	14.68
14	226.54	4.37	1.50	0.08	1.63	2.20	10.66	3.10	3.37	6.76	10.86	12.79
17	168.73	2.00	5.73	0.50	1.13	3.57	15.16	3.44	3.02	5.31	16.55	17.38
20	77.50	2.68	3.73	0.33	0.97	1.50	10.60	2.44	3.72	5.48	11.25	12.51
23	21.33	2.53	0.39	0.38	1.09	0.74	3.38	1.23	4.87	5.84	3.32	6.72
26	7.29	2.52	0.24	0.06	1.46	0.15	1.06	0.62	6.45	7.14	0.82	7.19
29	5.71	2.33	0.12	0.04	1.87	0.07	0.79	0.39	8.21	8.76	0.56	8.78
32	2.03	1.60	0.20	0.07	2.27	0.08	0.66	0.31	9.95	10.35	0.35	10.36
35	1.23	1.22	0.08	0.10	2.66	0.09	0.79	0.20	11.78	12.14	0.68	12.16
38	3.45	1.15	0.19	0.10	3.01	0.10	1.37	0.18	13.79	14.17	1.30	14.23
41	-0.01	1.05	0.23	0.08	3.96	0.13	1.72	0.18	14.83	15.39	1.67	15.48

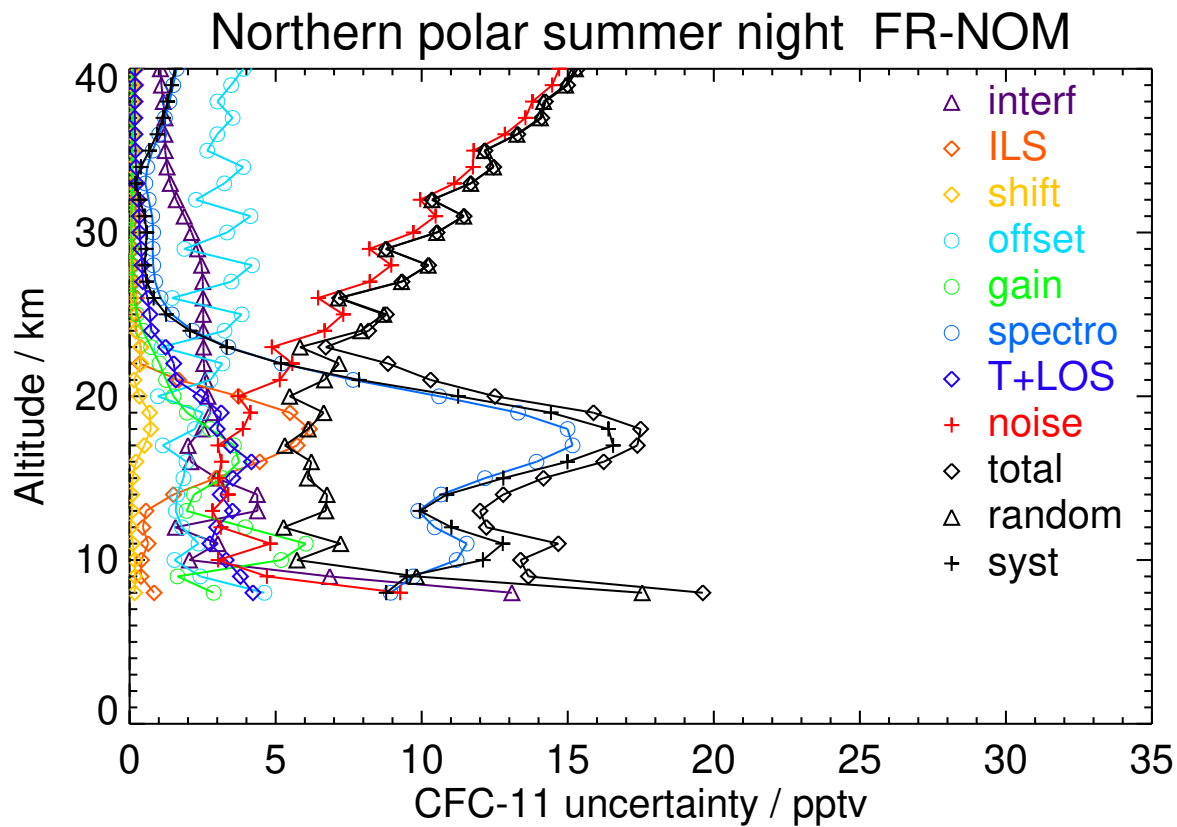


Figure S6. V8H_F-11_61 Northern polar summer night

Table S8. CFC-11 error budget for Northern polar autumn day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	246.26	3.14	1.00	0.80	2.15	6.41	11.05	3.26	3.74	7.27	12.29	14.28
11	244.60	4.39	0.47	0.32	1.89	2.81	10.59	3.87	3.13	7.42	10.63	12.97
14	208.24	2.31	2.12	0.23	1.83	4.31	12.82	3.77	2.82	6.10	13.46	14.77
17	147.46	3.06	3.91	0.51	2.07	2.81	13.11	3.67	3.34	6.62	13.77	15.28
20	60.57	2.43	3.68	0.36	2.55	1.66	10.16	2.41	4.53	7.07	10.40	12.58
23	17.67	2.53	0.35	0.07	3.33	0.46	3.02	1.00	6.42	7.87	2.69	8.31
26	6.18	2.46	0.19	0.05	3.97	0.18	1.48	0.53	8.60	9.86	1.07	9.92
29	6.95	2.19	0.16	0.05	4.19	0.13	1.28	0.38	10.68	11.73	0.81	11.76
32	6.37	1.60	0.13	0.05	3.76	0.12	0.92	0.32	12.62	13.29	0.57	13.30
35	1.67	1.19	0.15	0.05	3.98	0.12	0.94	0.25	14.68	15.28	0.40	15.28
38	-0.62	1.05	0.16	0.05	5.62	0.14	1.44	0.22	16.50	17.48	1.29	17.53
41	2.52	1.14	0.24	0.05	9.08	0.10	2.02	0.22	17.97	20.17	1.96	20.27

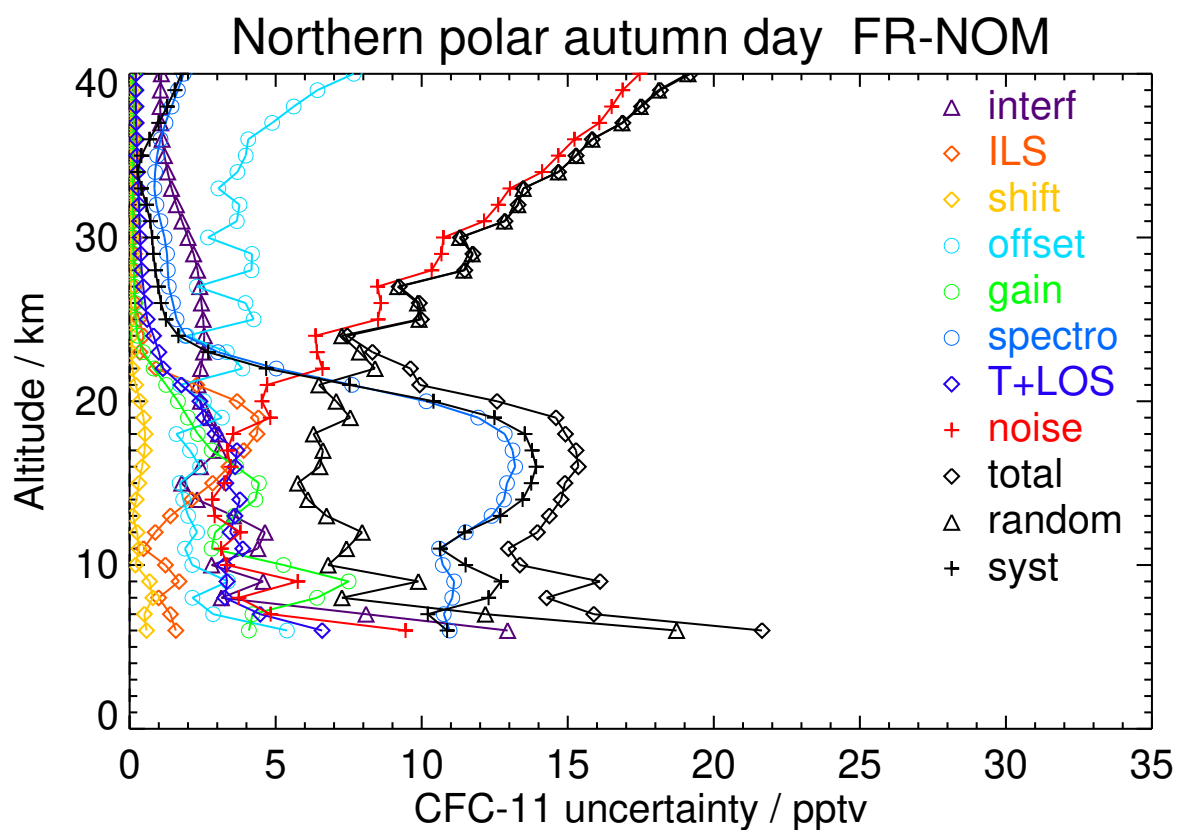
**Figure S7.** V8H_F-11_61 Northern polar autumn day

Table S9. CFC-11 error budget for Northern polar autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	249.00	2.96	0.90	0.26	2.00	6.11	12.19	3.70	3.50	7.02	13.28	15.02
11	238.34	4.10	0.55	0.10	1.80	2.47	10.17	3.83	2.88	6.92	10.24	12.36
14	201.81	2.04	2.51	0.24	1.95	4.27	13.69	3.94	2.85	6.22	14.32	15.61
17	119.28	3.08	3.99	0.51	2.31	2.44	12.80	3.64	3.54	6.83	13.41	15.05
20	41.10	2.39	2.97	0.22	2.98	1.30	7.70	2.02	5.00	7.05	7.99	10.65
23	9.20	2.56	0.42	0.05	3.82	0.29	2.26	0.80	6.90	8.49	1.65	8.65
26	5.74	2.50	0.25	0.05	4.44	0.11	1.09	0.47	9.07	10.45	0.76	10.48
29	10.45	2.23	0.15	0.04	4.41	0.14	1.21	0.39	10.96	12.06	0.90	12.09
32	6.02	1.63	0.17	0.04	3.92	0.12	0.86	0.33	12.70	13.41	0.54	13.43
35	2.97	1.23	0.15	0.05	4.11	0.09	0.92	0.26	14.55	15.19	0.56	15.20
38	1.31	1.09	0.20	0.05	5.48	0.08	1.54	0.25	16.32	17.27	1.43	17.33
41	-4.33	1.17	0.23	0.05	8.79	0.07	2.03	0.26	17.76	19.86	1.99	19.96

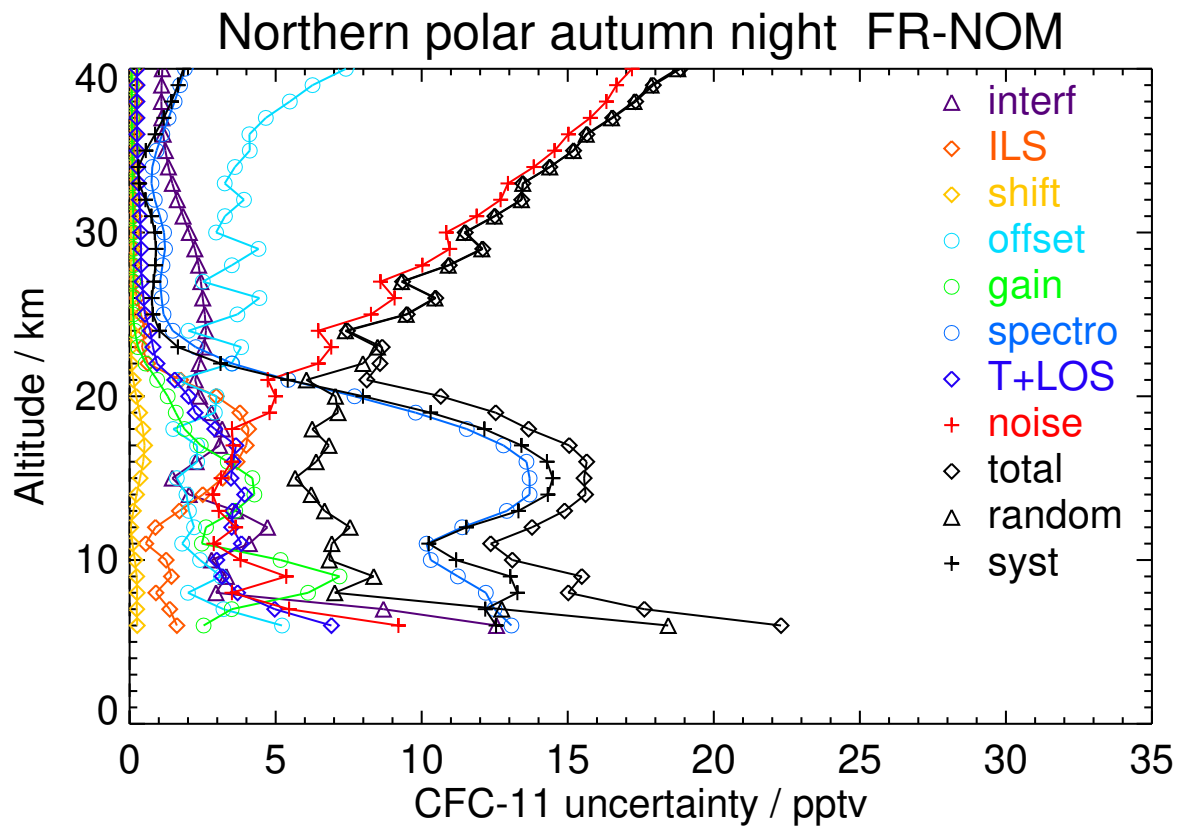


Figure S8. V8H_F-11_61 Northern polar autumn night

Table S10. CFC-11 error budget for Northern midlatitude winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	291.30	10.93	1.72	0.20	5.21	1.68	15.25	8.05	9.41	18.45	14.06	23.20
8	253.37	4.50	1.58	0.22	3.28	5.83	11.01	4.07	5.77	10.52	11.31	15.45
11	230.70	3.20	1.05	0.25	2.18	3.33	12.24	3.76	3.92	7.19	12.45	14.37
14	184.82	2.54	2.85	0.35	1.60	3.45	12.78	3.57	3.16	6.51	13.15	14.67
17	129.11	2.72	4.48	0.67	1.47	2.26	12.04	2.84	3.51	6.44	12.61	14.16
20	62.83	2.57	2.54	0.22	1.67	1.31	8.46	1.83	4.58	6.81	8.19	10.65
23	25.64	2.62	0.36	0.19	1.89	0.62	3.22	0.97	6.02	7.08	2.90	7.65
26	9.78	2.53	0.26	0.04	2.01	0.22	1.62	0.58	7.68	8.43	1.18	8.51
29	10.28	2.27	0.17	0.05	2.12	0.13	1.13	0.39	9.43	9.98	0.76	10.01
32	7.73	1.70	0.20	0.05	2.38	0.09	0.96	0.32	11.31	11.71	0.54	11.73
35	7.04	1.29	0.12	0.05	2.94	0.11	0.97	0.22	13.26	13.66	0.68	13.68
38	6.15	1.15	0.21	0.05	4.10	0.13	1.63	0.20	15.03	15.64	1.49	15.71
41	5.43	1.25	0.25	0.04	6.85	0.11	1.97	0.20	16.50	17.92	1.90	18.02

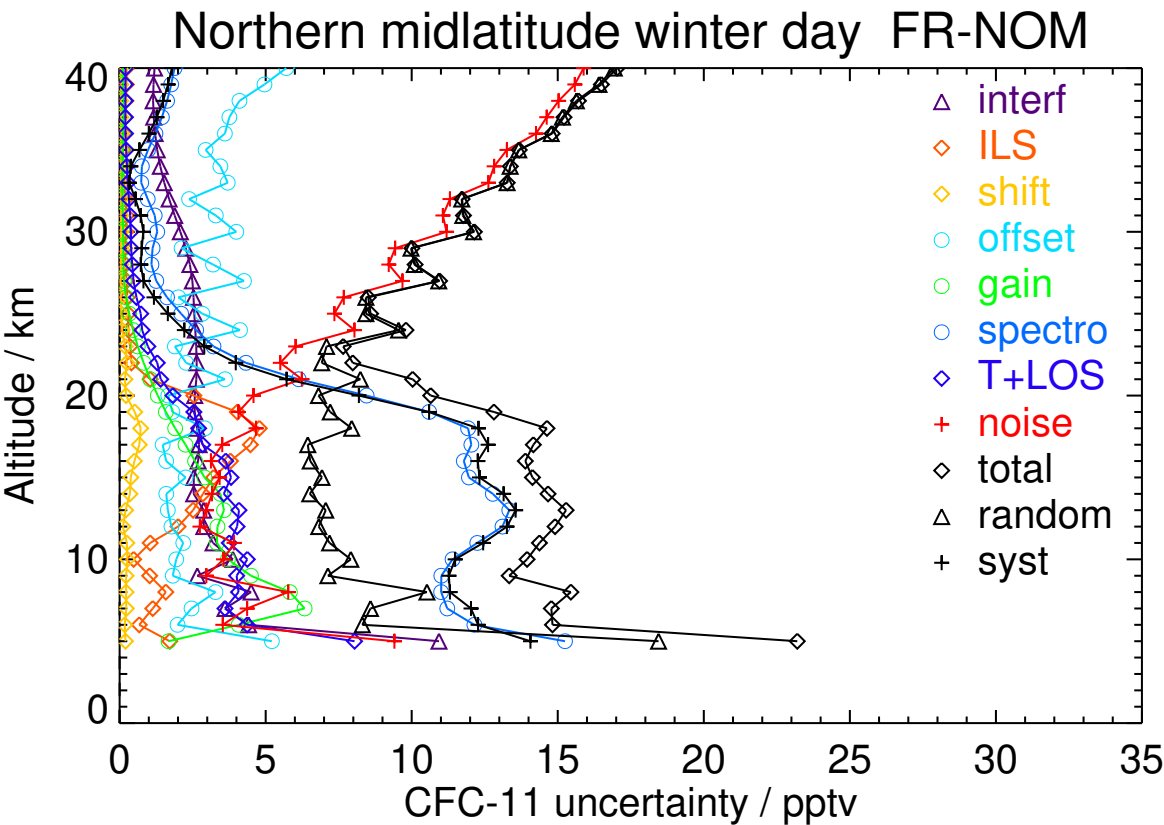


Figure S9. V8H_F-11_61 Northern midlatitude winter day

Table S11. CFC-11 error budget for Northern midlatitude winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	296.14	11.70	2.18	0.30	6.94	4.21	13.06	8.52	9.71	20.32	11.49	23.34
8	243.08	2.56	1.80	0.25	3.30	7.28	16.55	3.39	5.05	13.40	14.32	19.61
11	235.35	3.83	1.27	0.14	2.05	2.79	13.84	4.37	3.50	9.64	12.58	15.85
14	168.85	1.98	3.25	0.22	1.40	3.75	14.56	3.73	2.88	9.27	13.37	16.27
17	122.41	3.03	3.55	0.53	1.03	1.88	11.12	2.88	3.03	7.90	10.26	12.95
20	60.09	2.48	3.07	0.48	0.95	1.38	7.70	1.96	3.84	5.92	7.84	9.82
23	26.08	2.70	0.53	0.22	1.22	0.50	4.16	1.00	5.19	6.91	2.61	7.39
26	11.43	2.51	0.20	0.07	1.68	0.24	1.31	0.58	6.95	7.66	1.01	7.72
29	12.99	2.21	0.21	0.04	2.34	0.17	1.32	0.38	9.00	9.62	0.79	9.66
32	8.68	1.59	0.22	0.05	2.84	0.14	1.16	0.36	11.21	11.71	0.86	11.74
35	6.19	1.26	0.18	0.05	3.20	0.09	0.83	0.25	13.24	13.70	0.46	13.71
38	2.51	1.11	0.18	0.05	3.92	0.11	1.64	0.20	15.03	15.60	1.41	15.66
41	1.11	1.20	0.26	0.04	6.31	0.10	2.25	0.20	16.20	17.46	1.98	17.57

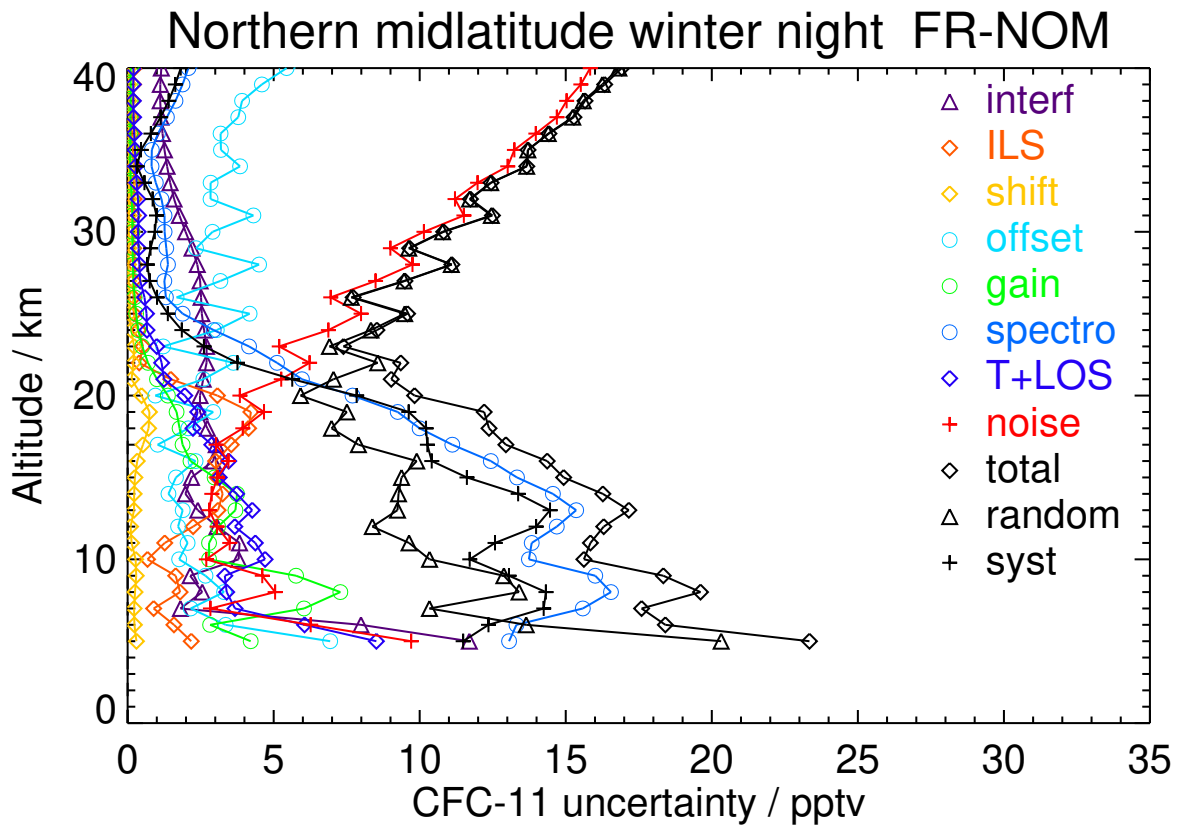
**Figure S10.** V8H_F-11_61 Northern midlatitude winter night

Table S12. CFC-11 error budget for Northern midlatitude spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	252.49	4.56	0.64	0.21	1.93	4.48	11.64	3.91	3.23	8.11	11.85	14.36
11	221.77	3.49	0.71	0.07	1.89	3.52	10.21	3.55	2.86	6.72	10.41	12.40
14	193.44	2.59	2.86	0.18	2.19	3.16	12.40	3.87	2.94	6.95	12.60	14.39
17	145.54	2.82	4.92	0.74	2.81	2.19	13.73	3.27	3.86	7.39	14.31	16.11
20	63.68	2.58	2.85	0.29	3.58	1.55	9.76	2.02	5.24	8.31	9.38	12.53
23	24.10	2.58	0.36	0.18	4.31	0.58	3.26	0.92	6.89	8.84	2.54	9.20
26	13.75	2.56	0.32	0.06	4.79	0.23	1.81	0.58	8.62	10.28	1.33	10.37
29	6.09	2.29	0.26	0.07	4.65	0.15	1.11	0.41	9.99	11.29	0.85	11.32
32	2.54	1.77	0.25	0.09	4.28	0.07	0.65	0.26	11.42	12.34	0.26	12.34
35	2.70	1.31	0.15	0.10	3.87	0.10	1.11	0.21	12.88	13.53	0.90	13.56
38	4.01	1.16	0.16	0.09	4.20	0.13	1.51	0.19	14.29	14.95	1.44	15.02
41	1.74	1.30	0.22	0.06	5.69	0.13	1.86	0.20	15.56	16.64	1.77	16.73

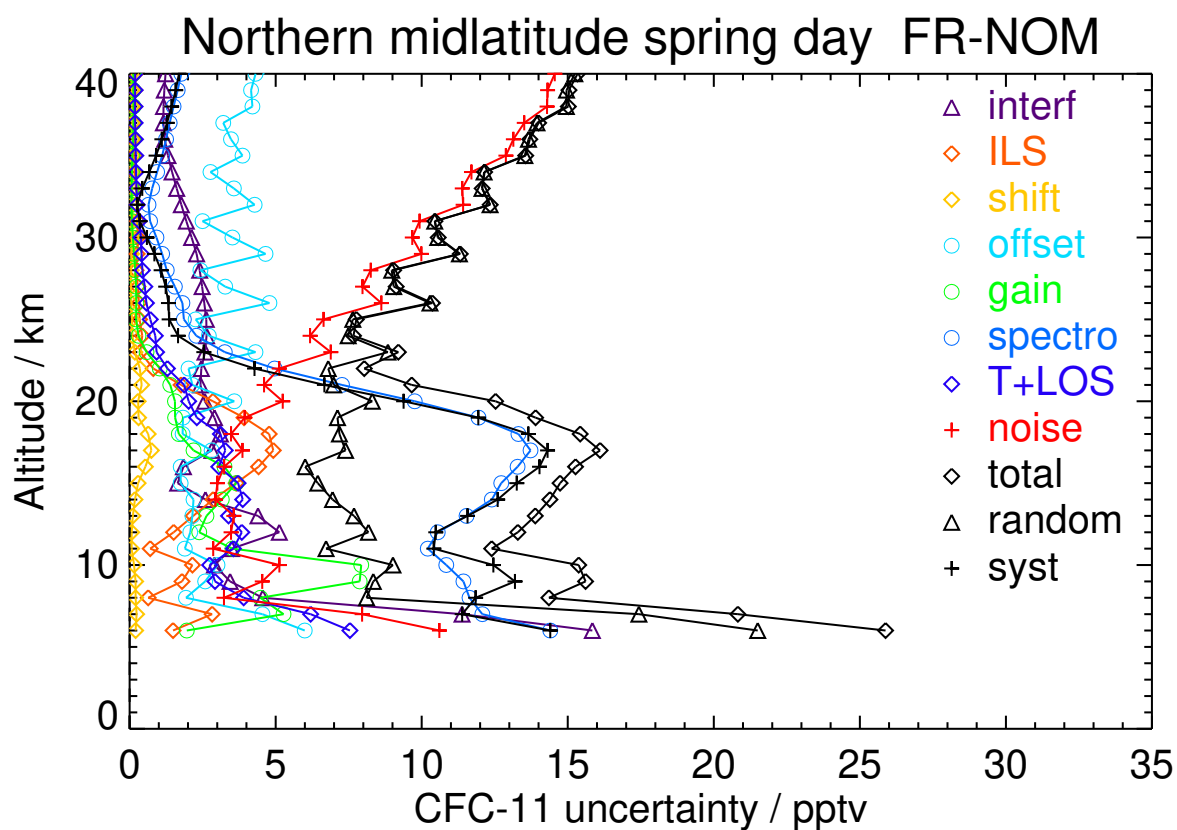
**Figure S11.** V8H_F-11_61 Northern midlatitude spring day

Table S13. CFC-11 error budget for Northern midlatitude spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	256.61	6.30	0.81	0.25	2.32	3.54	13.32	4.51	3.83	9.55	13.40	16.46
11	210.58	2.78	0.93	0.09	1.86	3.51	10.32	3.10	2.91	6.33	10.43	12.20
14	183.12	2.94	2.64	0.19	2.00	2.77	11.97	3.48	2.86	7.03	11.90	13.82
17	129.50	2.59	4.73	0.78	2.47	2.03	12.74	2.85	3.64	6.95	13.24	14.95
20	56.72	2.62	2.27	0.17	3.17	1.31	7.66	1.67	4.90	7.61	7.17	10.45
23	28.07	2.59	0.33	0.19	3.86	0.59	3.21	0.85	6.49	8.28	2.60	8.67
26	12.86	2.55	0.29	0.04	4.34	0.25	1.80	0.56	8.18	9.68	1.52	9.79
29	6.64	2.29	0.20	0.04	4.39	0.14	0.99	0.36	9.69	10.92	0.66	10.94
32	2.54	1.73	0.18	0.09	3.95	0.08	0.69	0.27	11.13	11.96	0.25	11.96
35	2.51	1.26	0.12	0.12	3.50	0.14	0.98	0.20	12.64	13.19	0.77	13.22
38	3.38	1.15	0.19	0.09	3.85	0.13	1.57	0.19	14.19	14.76	1.51	14.84
41	8.30	1.27	0.26	0.07	5.41	0.13	2.00	0.18	15.36	16.34	1.95	16.46

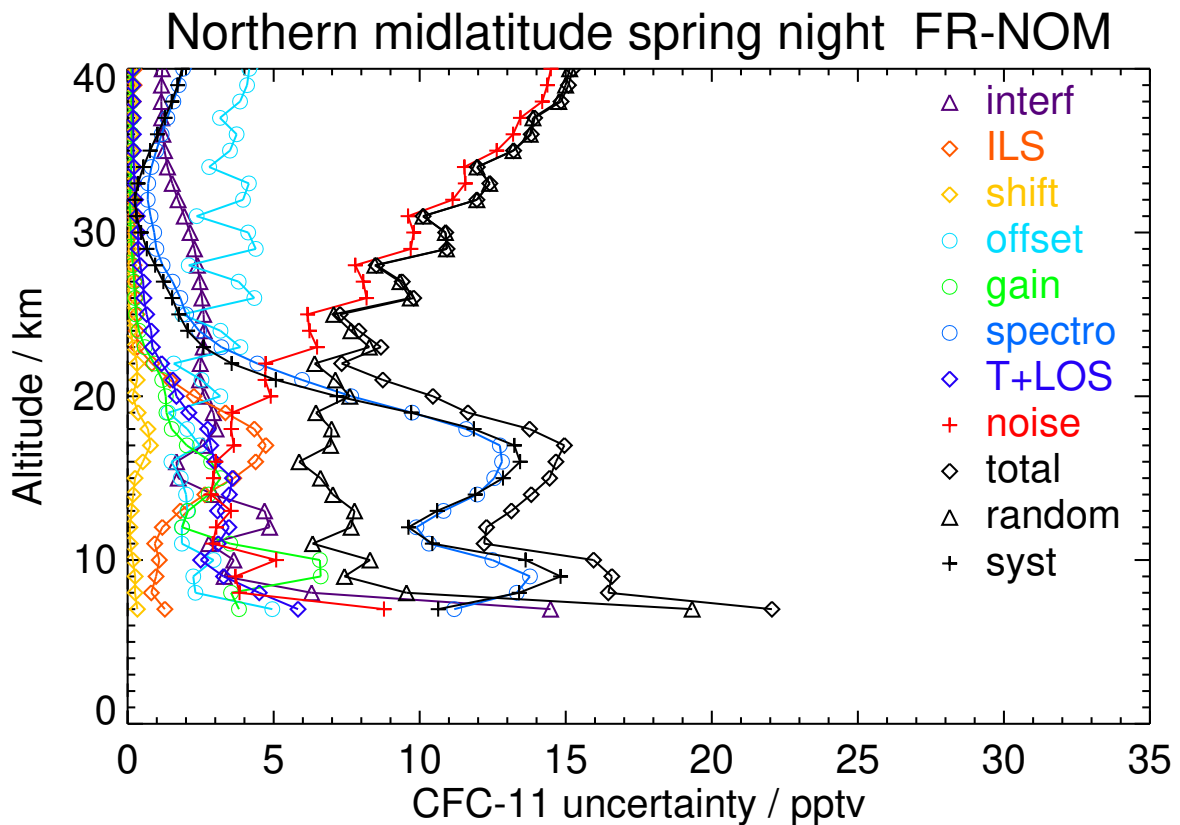
**Figure S12.** V8H_F-11_61 Northern midlatitude spring night

Table S14. CFC-11 error budget for Northern midlatitude summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	257.37	10.16	2.05	0.18	4.26	3.42	7.80	4.90	8.54	15.26	7.89	17.18
11	253.92	2.09	1.74	0.11	2.81	6.78	11.97	2.83	5.52	7.80	13.50	15.59
14	236.95	3.88	1.70	0.13	1.96	2.86	10.76	3.61	3.78	7.47	10.83	13.16
17	211.71	2.02	5.90	0.74	1.49	3.29	16.35	3.68	3.53	6.14	17.55	18.60
20	123.68	2.71	5.07	0.24	1.41	1.93	15.45	3.02	4.15	6.65	16.12	17.44
23	42.03	2.58	0.38	0.58	1.58	1.19	6.18	1.75	5.31	6.56	6.12	8.97
26	13.58	2.57	0.65	0.07	1.84	0.24	2.30	0.89	6.72	7.58	2.08	7.86
29	2.70	2.39	0.17	0.03	2.02	0.07	0.80	0.47	8.23	8.84	0.40	8.85
32	2.52	1.64	0.17	0.06	2.15	0.06	0.54	0.26	9.78	10.16	0.25	10.16
35	1.26	1.31	0.10	0.11	2.38	0.07	0.96	0.20	11.54	11.87	0.81	11.89
38	0.20	1.17	0.15	0.09	2.97	0.07	1.51	0.18	13.49	13.87	1.45	13.95
41	0.67	1.08	0.18	0.05	4.12	0.11	1.84	0.19	14.58	15.20	1.79	15.30

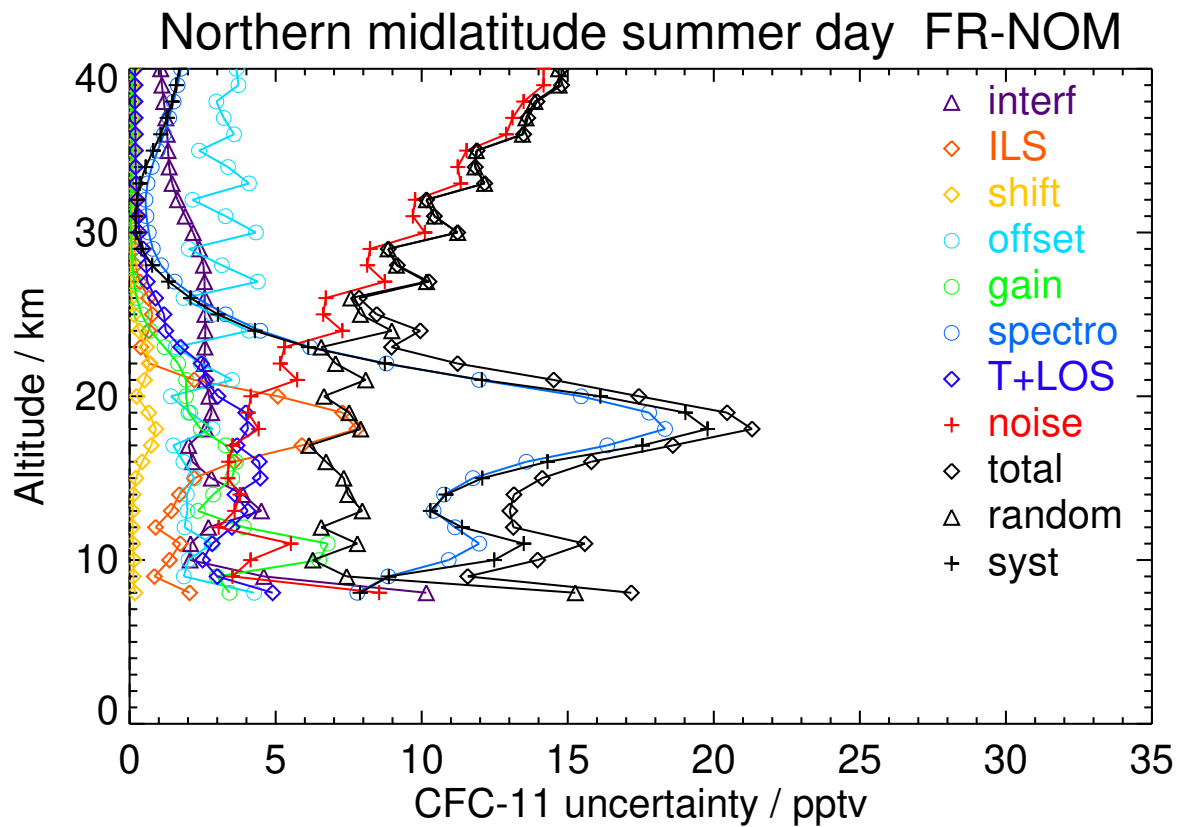


Figure S13. V8H_F-11_61 Northern midlatitude summer day

Table S15. CFC-11 error budget for Northern midlatitude summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	271.36	10.85	1.52	0.19	4.51	2.69	9.31	5.79	9.34	16.67	8.78	18.84
11	248.02	2.20	1.43	0.13	2.76	6.54	11.78	2.87	5.51	7.62	13.29	15.32
14	239.51	4.09	1.50	0.16	1.88	2.39	10.89	3.79	3.77	7.34	11.02	13.25
17	208.55	1.81	4.93	0.50	1.20	3.36	15.03	3.85	3.34	5.83	16.08	17.10
20	119.48	2.80	5.55	0.19	0.96	1.53	15.12	3.28	3.92	6.55	15.93	17.22
23	36.55	2.53	0.31	0.50	0.97	1.10	6.06	1.88	5.06	6.27	5.95	8.64
26	11.79	2.59	0.53	0.05	1.31	0.20	1.79	0.88	6.55	7.30	1.54	7.46
29	6.25	2.37	0.17	0.03	1.71	0.09	0.96	0.46	8.19	8.74	0.62	8.76
32	0.41	1.66	0.17	0.07	2.09	0.05	0.58	0.29	9.91	10.28	0.21	10.29
35	3.44	1.26	0.11	0.11	2.56	0.08	1.01	0.19	11.72	12.08	0.85	12.11
38	5.56	1.18	0.15	0.10	2.98	0.09	1.44	0.19	13.81	14.18	1.37	14.25
41	1.58	1.10	0.18	0.07	4.15	0.12	1.79	0.19	14.76	15.38	1.74	15.48

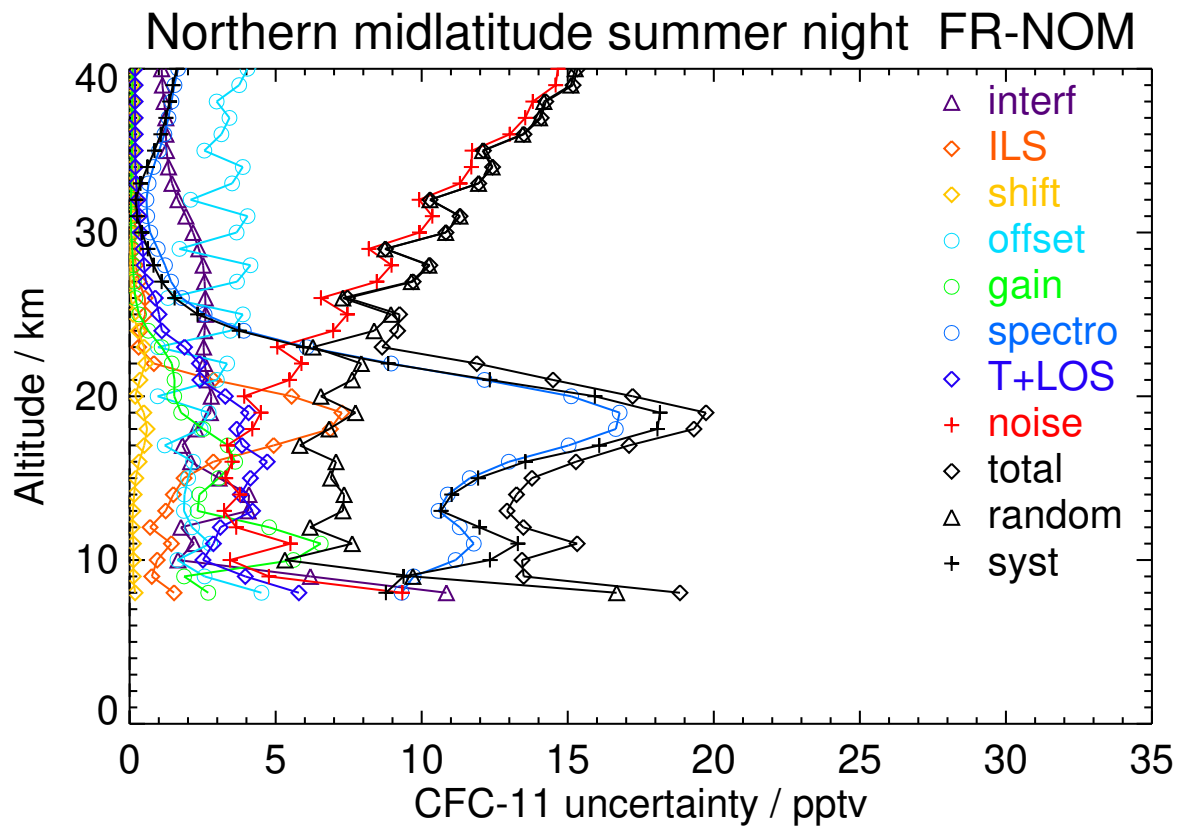


Figure S14. V8H_F-11_61 Northern midlatitude summer night

Table S16. CFC-11 error budget for Northern midlatitude autumn day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	275.27	8.86	6.06	0.13	3.38	3.96	13.46	4.76	5.83	14.57	12.96	19.50
11	242.67	2.42	1.68	0.09	2.27	5.17	10.76	2.59	4.14	6.85	11.54	13.42
14	245.20	4.49	2.18	0.19	1.91	2.53	12.12	4.17	3.47	7.99	12.14	14.53
17	188.66	1.99	5.60	0.56	1.62	3.30	17.76	4.67	3.38	6.96	18.69	19.94
20	85.81	2.79	6.00	0.25	1.77	1.32	14.08	3.35	4.16	7.79	14.65	16.59
23	24.53	2.49	0.68	0.22	2.12	0.70	4.61	1.53	5.51	7.19	3.73	8.11
26	11.21	2.61	0.40	0.05	2.53	0.18	1.78	0.70	7.12	8.10	1.45	8.23
29	5.66	2.26	0.17	0.04	2.87	0.09	0.88	0.41	8.86	9.63	0.46	9.64
32	9.43	1.73	0.20	0.06	3.02	0.07	0.79	0.30	10.68	11.26	0.37	11.26
35	3.50	1.23	0.12	0.07	3.23	0.06	0.86	0.24	12.53	13.02	0.59	13.03
38	4.19	1.05	0.18	0.07	3.70	0.10	1.48	0.18	14.42	14.93	1.42	15.00
41	2.79	1.17	0.23	0.05	5.50	0.09	1.92	0.20	15.62	16.60	1.88	16.71

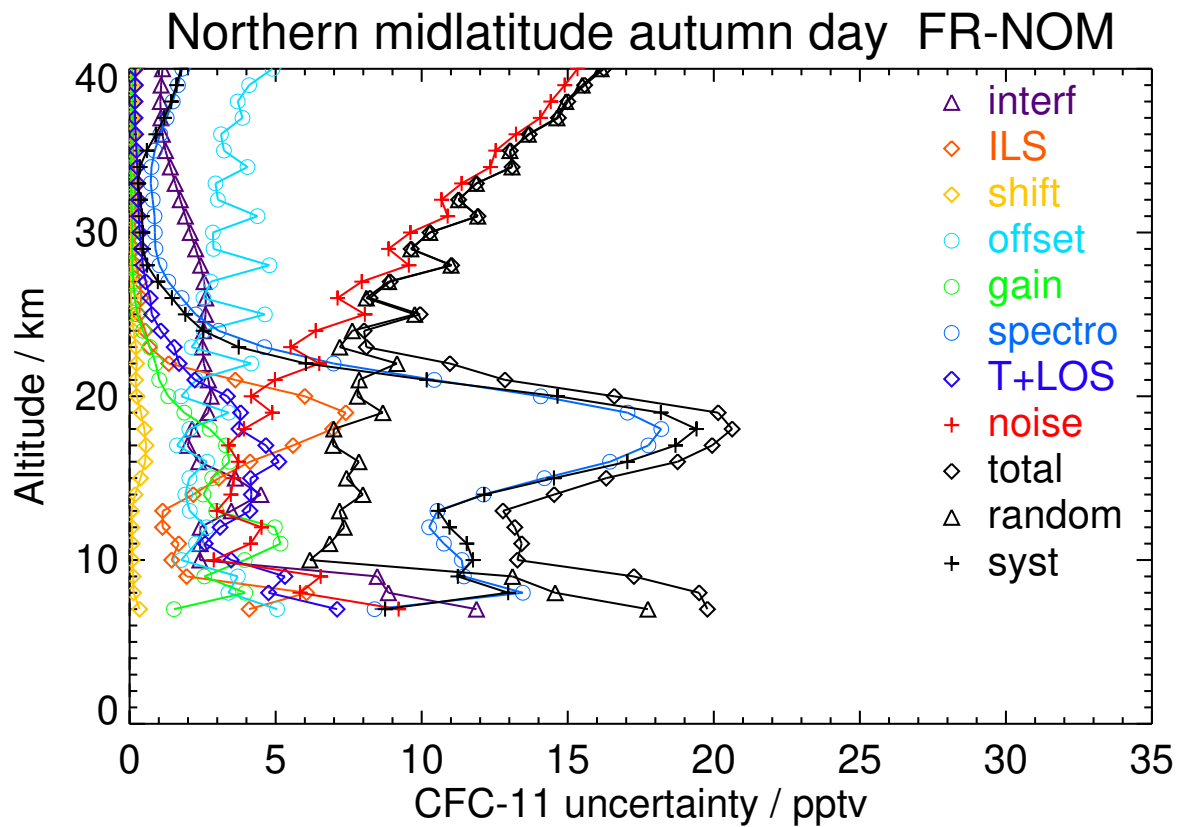


Figure S15. V8H_F-11_61 Northern midlatitude autumn day

Table S17. CFC-11 error budget for Northern midlatitude autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	255.18	3.26	1.48	0.21	1.90	6.44	13.15	3.30	3.47	7.68	13.95	15.93
11	243.21	3.00	0.85	0.14	1.86	4.39	10.73	3.28	3.18	6.70	11.12	12.98
14	231.02	3.18	1.91	0.18	1.85	3.31	12.44	3.79	2.96	6.70	12.69	14.35
17	173.00	2.52	4.69	0.54	2.06	2.94	14.77	4.17	3.44	7.09	15.44	16.99
20	82.79	2.60	4.86	0.23	2.45	1.62	11.93	2.84	4.57	7.48	12.42	14.50
23	27.53	2.57	0.50	0.16	3.05	0.72	5.02	1.38	6.09	7.93	4.24	8.99
26	8.73	2.56	0.31	0.05	3.60	0.24	1.97	0.69	7.81	9.13	1.32	9.22
29	6.16	2.29	0.13	0.04	3.94	0.10	0.84	0.36	9.61	10.66	0.55	10.68
32	6.21	1.68	0.17	0.06	3.73	0.06	0.67	0.27	11.26	12.00	0.27	12.01
35	7.92	1.22	0.13	0.06	3.74	0.08	0.93	0.20	12.94	13.54	0.68	13.56
38	9.13	1.08	0.18	0.06	4.00	0.11	1.47	0.19	14.76	15.35	1.28	15.40
41	6.13	1.18	0.23	0.05	5.83	0.08	1.88	0.20	15.85	16.95	1.77	17.04

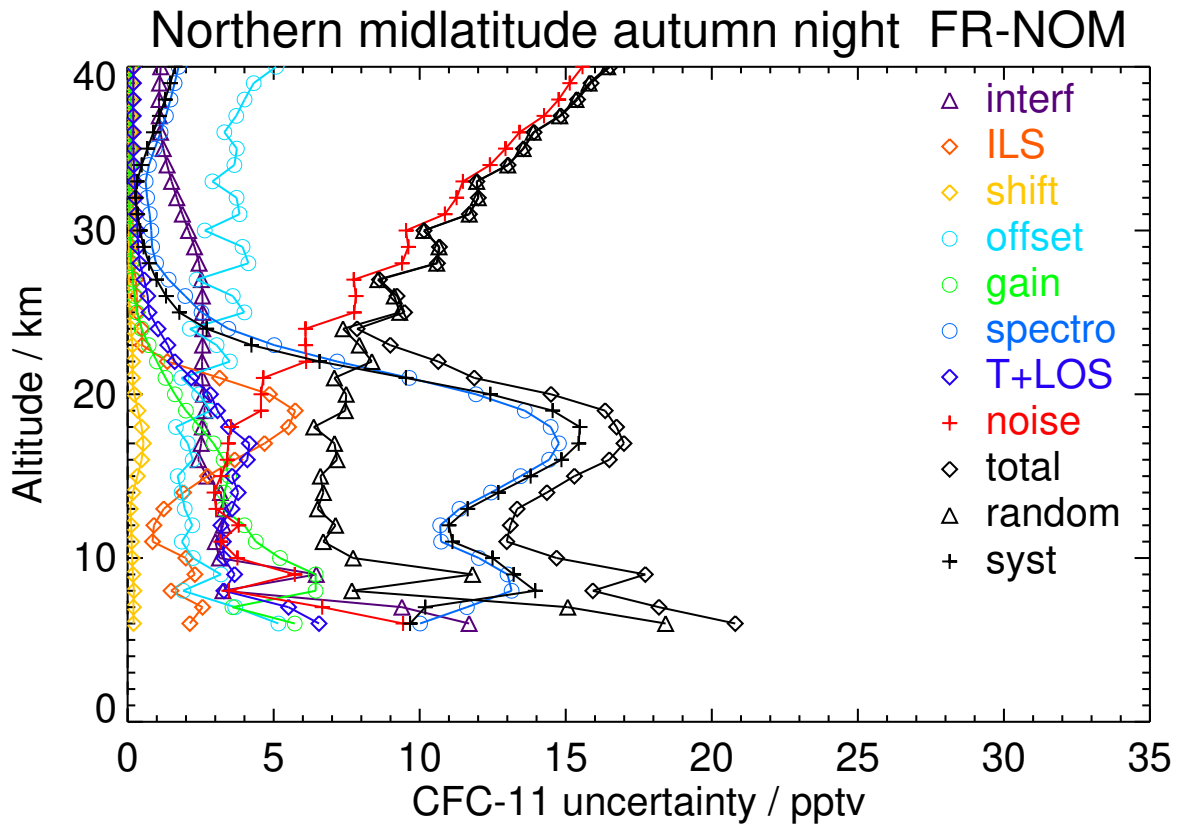
**Figure S16.** V8H_F-11_61 Northern midlatitude autumn night

Table S18. CFC-11 error budget for Tropics day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	266.24	7.36	2.80	0.30	2.77	4.66	10.28	4.32	5.15	11.69	10.29	15.57
11	255.57	3.52	1.56	0.20	2.30	5.20	9.10	3.01	3.90	7.64	9.79	12.42
14	262.87	2.66	1.50	0.43	2.53	4.67	9.63	4.33	3.76	7.36	10.45	12.78
17	251.59	2.94	7.52	0.30	3.18	2.62	16.55	5.26	5.00	9.21	18.00	20.22
20	190.73	2.36	4.58	0.56	3.41	2.15	15.73	3.90	5.77	8.60	16.28	18.41
23	131.08	2.60	1.58	0.76	3.91	1.60	11.78	2.88	6.92	9.05	11.86	14.92
26	62.44	2.61	2.03	0.31	4.32	0.85	8.54	1.90	8.28	10.03	8.66	13.25
29	12.24	2.51	0.87	0.09	4.38	0.22	2.67	0.85	9.62	10.96	2.55	11.26
32	5.00	1.77	0.32	0.09	4.20	0.07	0.77	0.36	10.94	11.88	0.34	11.89
35	3.04	1.30	0.13	0.11	3.69	0.12	0.98	0.24	12.47	13.09	0.84	13.11
38	4.40	1.17	0.13	0.09	3.96	0.10	1.46	0.24	13.90	14.51	1.36	14.57
41	2.37	1.18	0.14	0.07	5.59	0.12	1.77	0.28	15.22	16.27	1.70	16.36

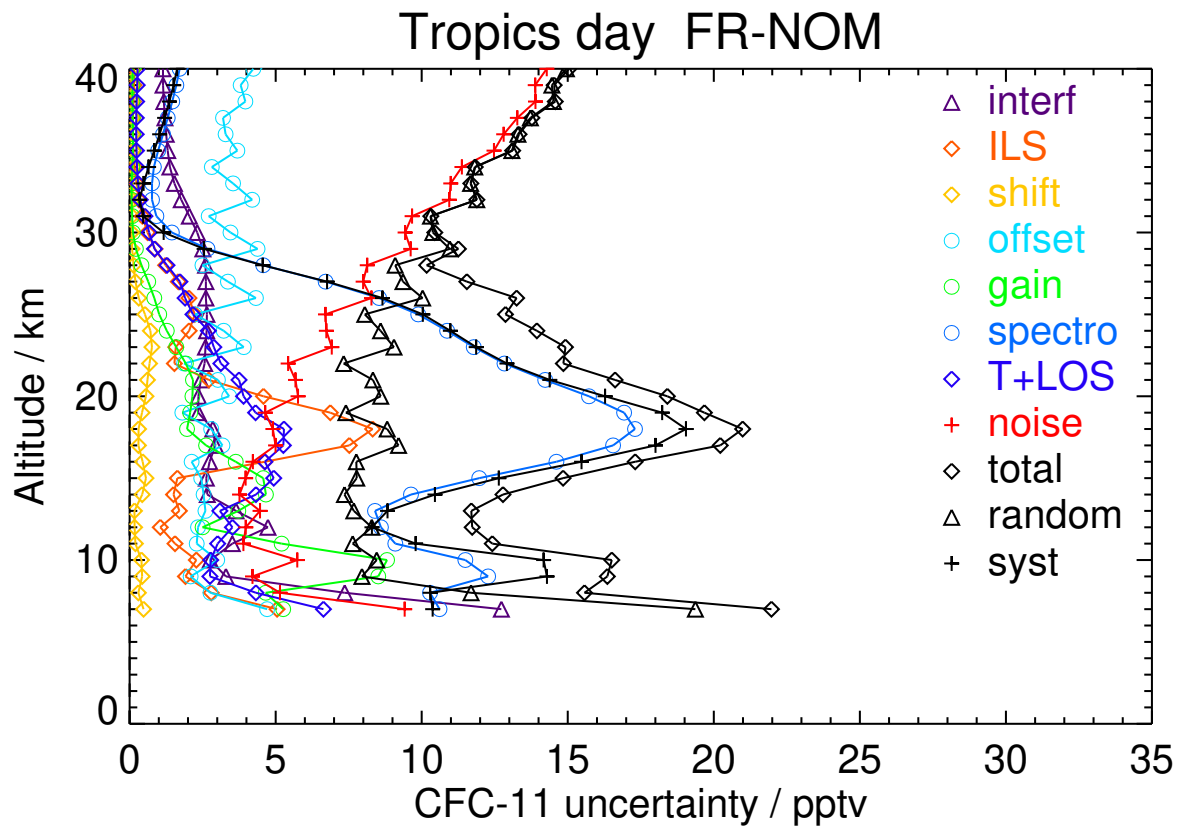


Figure S17. V8H_F-11_61 Tropics day

Table S19. CFC-11 error budget for Tropics night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	257.23	3.55	1.44	0.26	1.70	4.01	10.22	2.88	2.93	6.41	10.68	12.45
11	254.75	3.62	1.99	0.20	1.88	3.03	11.07	3.13	2.96	7.43	10.76	13.07
14	264.96	2.73	1.71	0.49	2.54	4.62	9.45	4.66	3.57	7.40	10.36	12.73
17	248.49	2.88	8.17	0.21	3.50	1.97	16.47	5.18	5.20	8.97	18.33	20.40
20	208.01	2.34	2.87	0.49	3.93	2.37	15.70	4.09	6.15	8.92	16.02	18.34
23	138.65	2.64	2.30	1.10	4.37	1.72	12.91	3.26	7.24	9.67	13.10	16.28
26	67.25	2.56	2.05	0.29	4.75	0.81	8.62	1.99	8.51	10.36	8.79	13.59
29	15.12	2.49	0.94	0.08	4.78	0.17	2.90	0.88	9.80	11.27	2.87	11.63
32	3.23	1.71	0.18	0.11	4.43	0.06	0.71	0.33	11.11	12.10	0.36	12.11
35	2.82	1.29	0.14	0.11	3.90	0.09	1.26	0.21	12.60	13.27	1.10	13.31
38	9.77	1.15	0.12	0.09	3.97	0.10	1.44	0.20	13.98	14.59	1.34	14.65
41	6.92	1.14	0.13	0.08	5.28	0.13	1.62	0.25	15.11	16.06	1.51	16.13

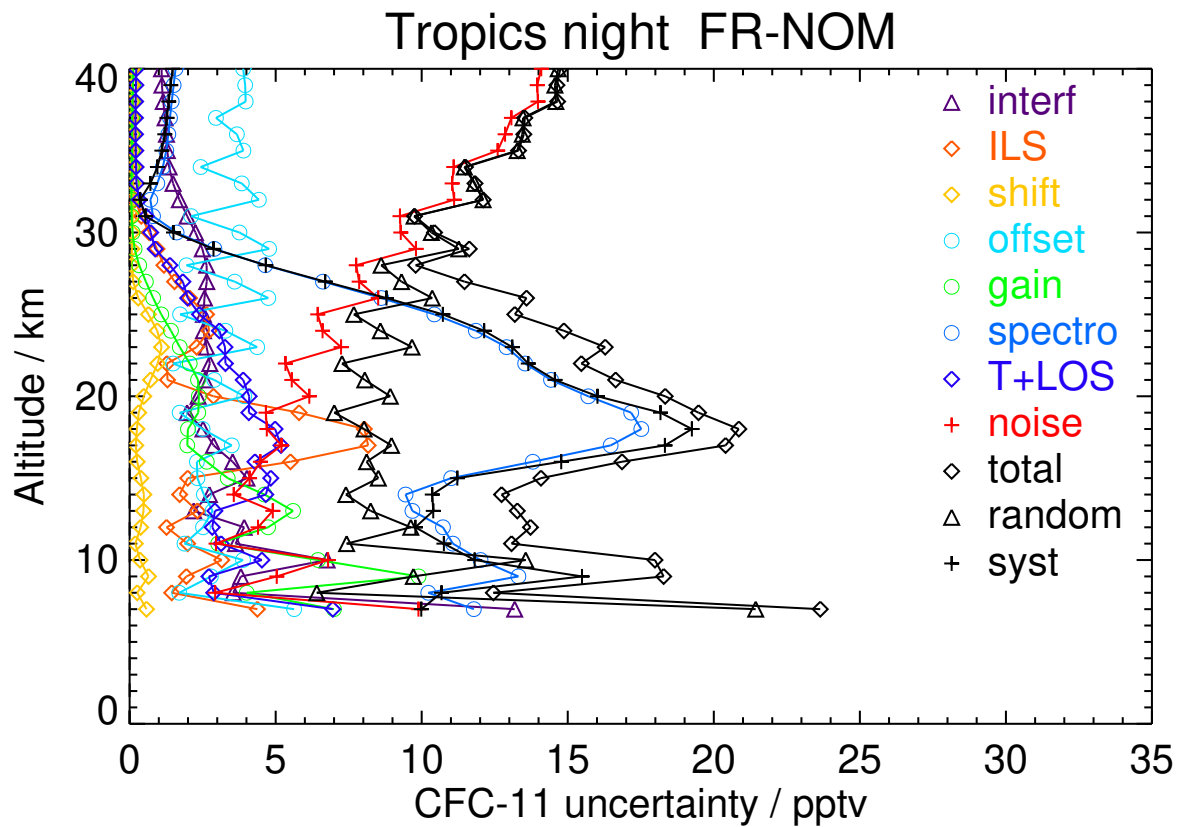


Figure S18. V8H_F-11_61 Tropics night

Table S20. CFC-11 error budget for Southern midlatitude winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	282.88	11.68	2.07	0.23	5.16	3.60	9.75	8.99	9.89	19.68	8.17	21.31
8	240.08	2.44	1.61	0.88	2.59	7.23	12.80	3.06	4.66	7.96	14.14	16.22
11	240.33	4.43	0.84	0.40	1.99	2.55	11.00	4.45	3.56	8.26	10.77	13.58
14	197.92	2.17	2.71	0.28	1.61	3.93	14.22	3.99	2.97	6.62	14.61	16.04
17	147.12	2.98	3.54	0.41	1.56	2.30	12.78	3.60	3.36	6.89	13.02	14.73
20	69.40	2.42	3.57	0.24	1.83	1.73	10.38	2.51	4.58	6.89	10.61	12.65
23	30.34	2.60	0.37	0.12	2.42	0.57	3.90	1.20	6.43	7.64	3.55	8.43
26	9.65	2.56	0.24	0.06	3.06	0.32	2.52	0.73	8.74	9.70	2.30	9.97
29	4.07	2.30	0.17	0.05	3.22	0.11	1.04	0.43	10.84	11.57	0.74	11.60
32	7.04	1.67	0.16	0.07	3.23	0.08	0.76	0.31	12.82	13.35	0.28	13.36
35	-0.02	1.27	0.15	0.07	3.83	0.10	0.91	0.27	14.72	15.28	0.67	15.29
38	-2.63	1.24	0.18	0.07	5.22	0.19	1.68	0.27	16.28	17.16	1.60	17.23
41	-1.83	1.43	0.24	0.08	8.18	0.34	2.34	0.35	17.46	19.35	2.24	19.48

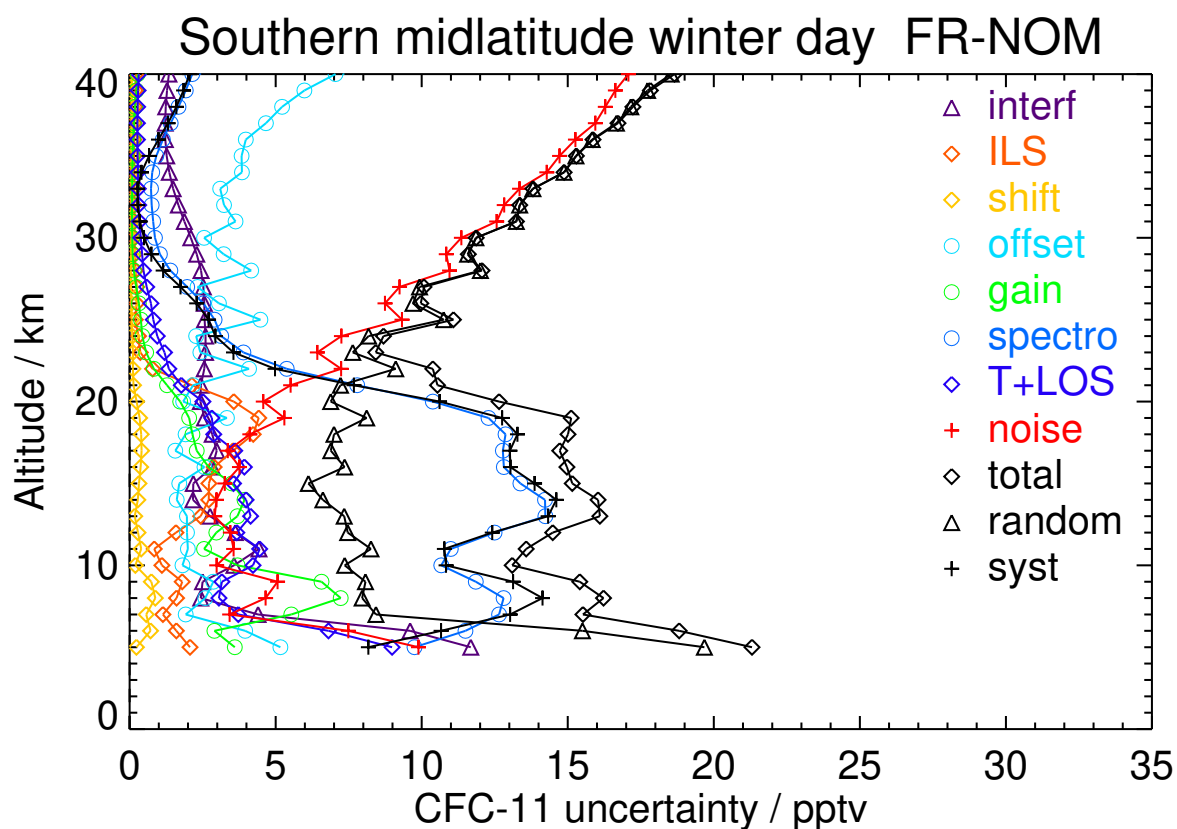
**Figure S19.** V8H_F-11_61 Southern midlatitude winter day

Table S21. CFC-11 error budget for Southern midlatitude winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	290.82	11.36	1.93	0.17	4.52	2.01	13.39	8.36	8.91	18.59	11.83	22.04
8	240.42	2.90	1.62	0.16	2.74	6.49	10.16	3.24	5.45	8.85	11.22	14.29
11	242.89	4.45	0.90	0.11	2.18	2.80	10.49	4.51	4.01	8.75	10.15	13.41
14	203.99	1.90	2.36	0.29	1.67	3.96	13.27	3.98	3.23	6.96	13.48	15.17
17	150.16	2.92	4.07	0.49	1.61	2.25	12.91	3.67	3.57	6.79	13.41	15.03
20	66.70	2.35	3.94	0.31	1.85	1.54	10.64	2.55	4.76	7.47	10.66	13.01
23	24.84	2.58	0.41	0.18	2.27	0.46	3.56	1.18	6.46	7.64	3.10	8.25
26	6.43	2.55	0.29	0.06	2.86	0.25	1.93	0.63	8.53	9.44	1.64	9.58
29	6.66	2.30	0.16	0.05	3.30	0.11	1.16	0.41	10.54	11.32	0.79	11.35
32	3.84	1.72	0.16	0.06	3.49	0.07	0.70	0.28	12.45	13.07	0.27	13.07
35	5.78	1.33	0.14	0.07	3.87	0.08	1.01	0.21	14.38	14.97	0.86	14.99
38	8.38	1.21	0.19	0.06	4.98	0.10	1.55	0.21	15.93	16.75	1.46	16.81
41	5.02	1.31	0.26	0.06	7.67	0.11	1.92	0.23	17.07	18.77	1.84	18.86

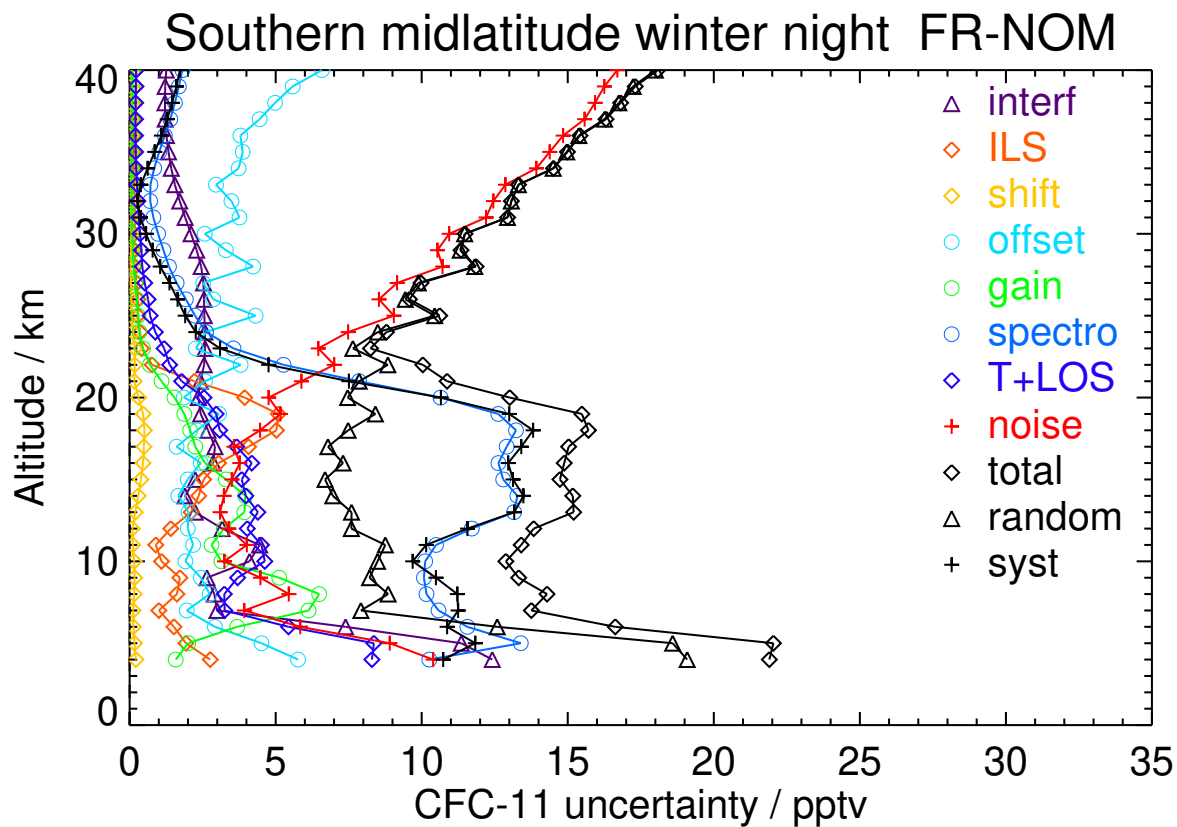


Figure S20. V8H_F-11_61 Southern midlatitude winter night

Table S22. CFC-11 error budget for Southern midlatitude spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	249.24	2.95	1.30	0.19	1.93	6.59	12.90	3.34	3.54	7.34	13.92	15.74
11	229.95	4.49	1.21	0.11	1.86	2.47	11.60	4.52	3.08	8.16	11.36	13.99
14	185.07	2.02	4.88	0.30	1.93	3.26	14.88	4.30	2.95	8.79	14.62	17.06
17	119.98	3.08	4.89	0.44	2.24	1.80	12.97	3.40	3.54	8.42	12.77	15.30
20	51.27	2.39	3.49	0.46	2.72	1.11	7.92	2.02	4.67	7.87	7.30	10.73
23	27.88	2.69	0.40	0.18	3.38	0.45	2.98	0.94	6.16	7.79	2.46	8.17
26	12.05	2.59	0.31	0.06	3.90	0.27	1.71	0.62	7.68	9.08	1.38	9.18
29	9.64	2.41	0.22	0.05	4.19	0.12	0.98	0.40	9.21	10.45	0.59	10.46
32	2.25	1.75	0.21	0.08	4.21	0.07	0.56	0.28	10.85	11.79	0.27	11.79
35	4.94	1.33	0.15	0.10	4.10	0.10	0.91	0.21	12.33	13.09	0.61	13.10
38	5.27	1.19	0.15	0.09	3.86	0.14	1.36	0.19	14.10	14.69	1.23	14.74
41	4.87	1.22	0.18	0.06	4.90	0.15	1.63	0.19	15.20	16.03	1.51	16.10

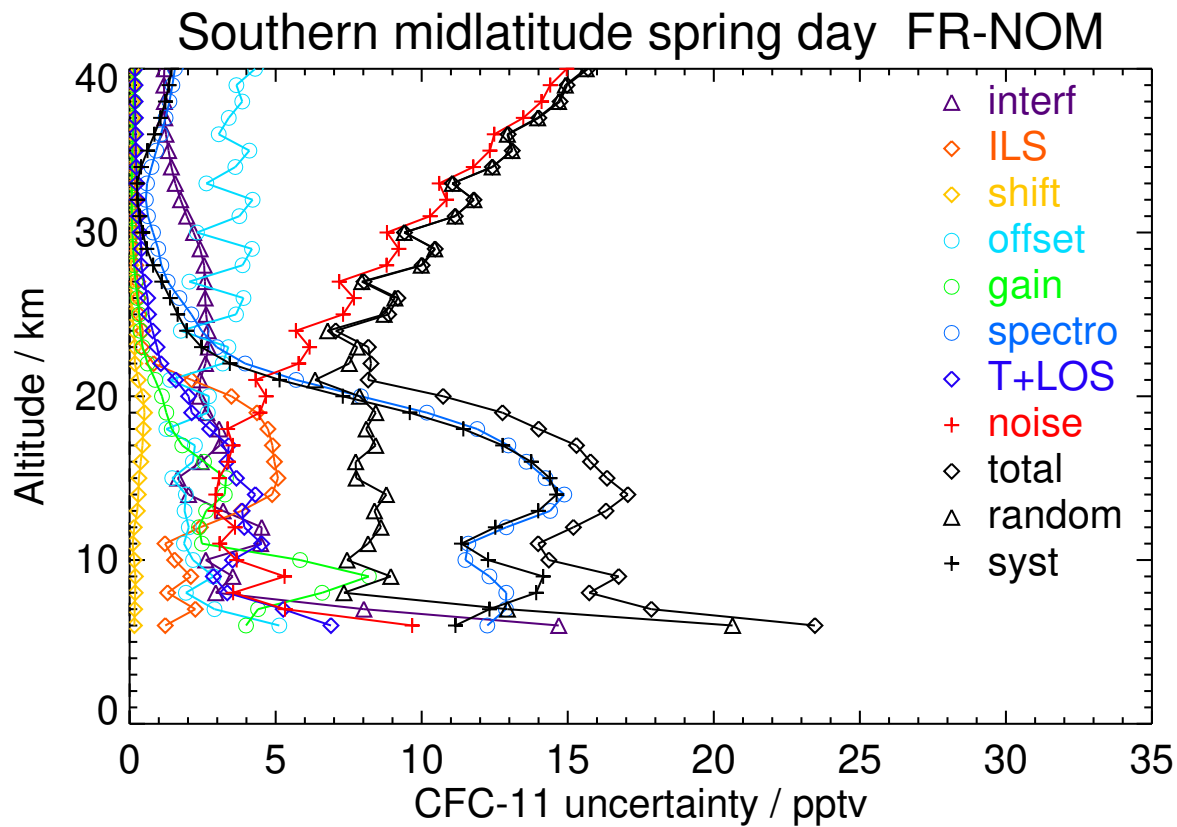


Figure S21. V8H_F-11_61 Southern midlatitude spring day

Table S23. CFC-11 error budget for Southern midlatitude spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	244.53	3.92	1.46	0.19	2.41	8.01	12.85	3.23	4.35	8.70	14.36	16.79
11	226.56	5.37	1.10	0.13	1.94	2.01	10.21	4.34	3.33	8.78	9.74	13.12
14	190.42	1.62	3.26	0.20	1.78	4.23	12.93	3.83	2.81	6.47	13.49	14.96
17	129.27	3.46	4.36	0.39	1.98	2.17	11.36	3.47	3.18	7.13	11.84	13.82
20	66.23	2.28	3.66	0.49	2.48	1.61	8.03	2.17	4.18	6.75	8.29	10.69
23	33.75	2.75	0.37	0.19	3.25	0.60	3.36	1.10	5.67	7.31	3.14	7.96
26	15.71	2.51	0.37	0.04	3.95	0.38	2.00	0.68	7.36	8.83	1.68	8.99
29	11.76	2.29	0.17	0.03	4.50	0.17	0.95	0.39	9.18	10.51	0.55	10.53
32	5.48	1.59	0.17	0.05	4.43	0.12	0.71	0.27	10.93	11.92	0.32	11.93
35	3.88	1.14	0.10	0.08	4.10	0.11	0.69	0.19	12.61	13.32	0.45	13.33
38	5.50	1.02	0.15	0.08	3.83	0.13	1.24	0.19	14.39	14.94	1.13	14.98
41	5.36	1.11	0.23	0.06	4.93	0.10	1.72	0.23	15.52	16.33	1.67	16.41

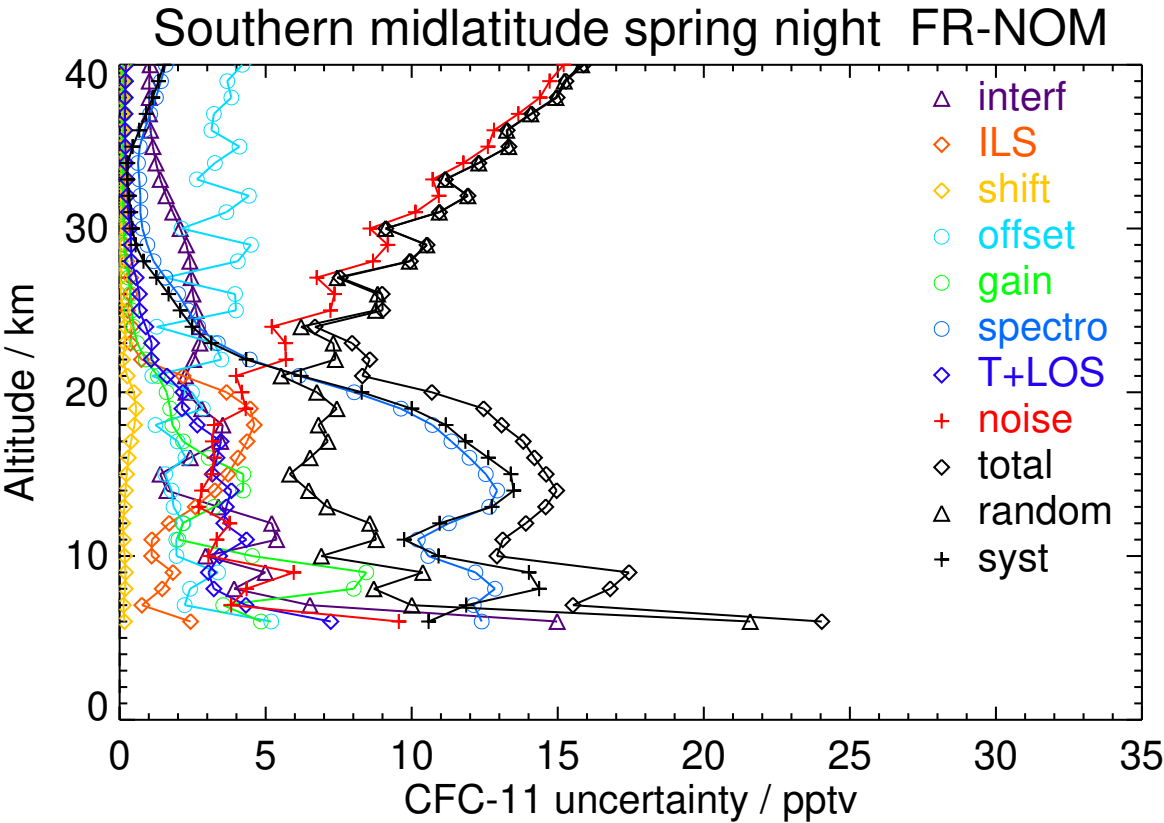


Figure S22. V8H_F-11_61 Southern midlatitude spring night

Table S24. CFC-11 error budget for Southern midlatitude summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	256.27	11.47	1.28	0.21	4.81	4.32	9.94	7.45	10.02	17.99	10.30	20.73
8	246.67	2.95	1.81	0.79	2.84	8.33	12.89	3.20	5.30	8.41	14.96	17.16
11	232.35	4.19	0.53	0.41	2.07	2.59	10.25	4.22	3.79	8.12	10.02	12.89
14	200.54	1.91	2.18	0.23	1.51	3.56	11.41	3.50	3.01	6.02	11.77	13.22
17	161.05	3.02	4.79	0.43	1.24	1.96	12.36	3.43	3.10	6.04	13.24	14.56
20	73.26	2.34	5.17	0.23	1.32	1.34	10.78	2.64	3.92	6.09	11.71	13.20
23	23.93	2.72	0.54	0.37	1.70	0.49	3.16	1.25	5.19	6.35	3.03	7.03
26	9.36	2.62	0.37	0.06	2.14	0.17	1.33	0.63	6.69	7.57	1.08	7.65
29	7.22	2.35	0.14	0.03	2.59	0.08	0.72	0.40	8.30	9.04	0.40	9.05
32	2.44	1.76	0.25	0.09	2.95	0.07	0.55	0.29	9.97	10.56	0.28	10.57
35	4.97	1.51	0.09	0.13	3.31	0.07	0.97	0.19	11.78	12.34	0.85	12.37
38	3.20	1.18	0.16	0.12	3.18	0.11	1.44	0.19	13.57	14.00	1.35	14.06
41	0.55	1.20	0.18	0.09	3.90	0.13	1.68	0.19	14.60	15.17	1.63	15.25

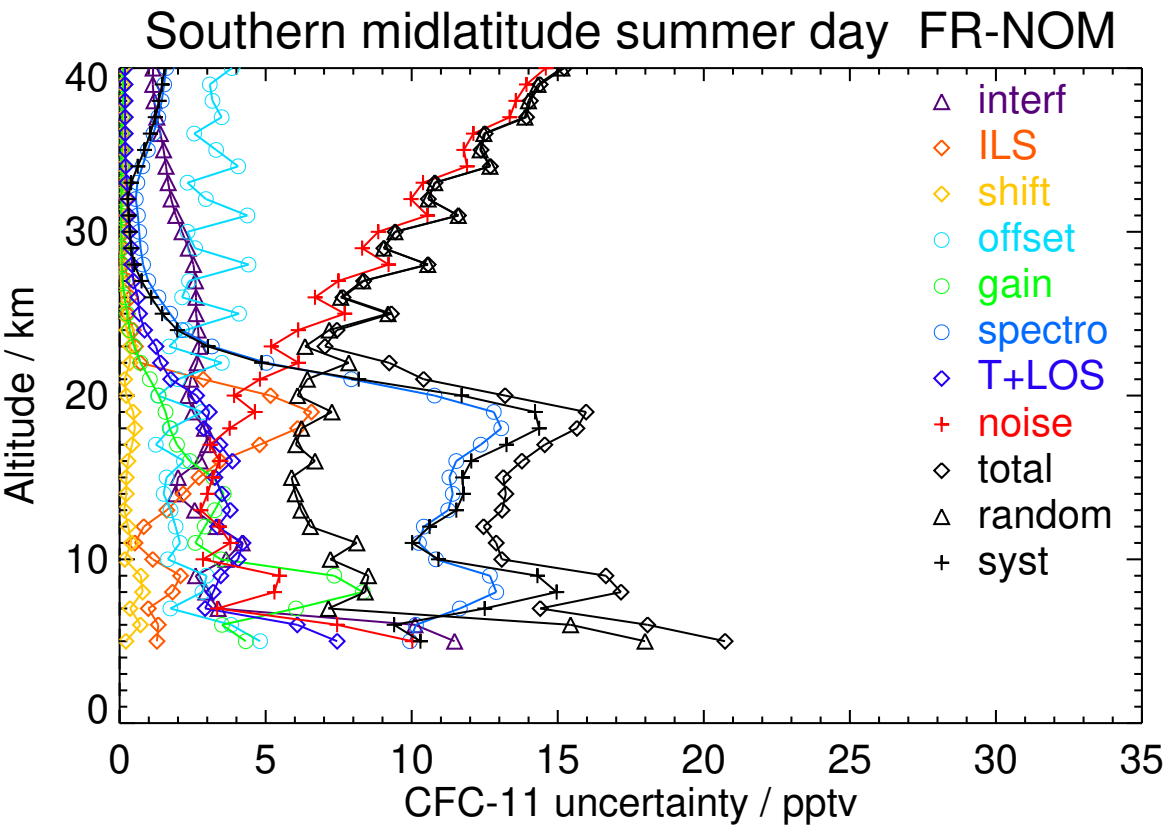


Figure S23. V8H_F-11_61 Southern midlatitude summer day

Table S25. CFC-11 error budget for Southern midlatitude summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	292.48	12.76	2.56	0.23	5.40	5.21	12.82	8.27	10.73	21.27	11.02	23.95
8	255.80	8.13	2.49	0.14	3.59	5.93	10.48	4.65	6.86	13.64	10.61	17.29
11	232.25	3.10	1.68	0.17	2.46	4.49	11.18	3.12	4.56	8.06	11.37	13.94
14	219.74	3.67	3.07	0.24	1.74	3.40	12.70	3.61	3.40	7.16	13.12	14.95
17	168.04	2.38	6.35	0.57	1.40	2.72	15.49	3.61	3.35	6.53	16.65	17.89
20	82.29	2.70	4.84	0.23	1.39	1.50	11.27	2.63	4.11	6.38	12.04	13.63
23	24.35	2.57	0.47	0.43	1.70	0.77	3.98	1.37	5.34	6.55	3.73	7.53
26	6.02	2.67	0.45	0.06	2.09	0.14	1.26	0.68	6.80	7.67	1.09	7.74
29	4.42	2.33	0.14	0.04	2.47	0.05	0.59	0.37	8.36	9.05	0.21	9.05
32	7.61	1.75	0.22	0.08	2.82	0.08	0.60	0.25	9.93	10.48	0.36	10.49
35	6.69	1.47	0.11	0.14	3.06	0.08	0.88	0.20	11.67	12.17	0.68	12.19
38	2.61	1.14	0.15	0.11	3.05	0.11	1.38	0.18	13.47	13.87	1.32	13.93
41	4.05	1.23	0.20	0.07	3.90	0.13	1.69	0.18	14.48	15.06	1.66	15.15

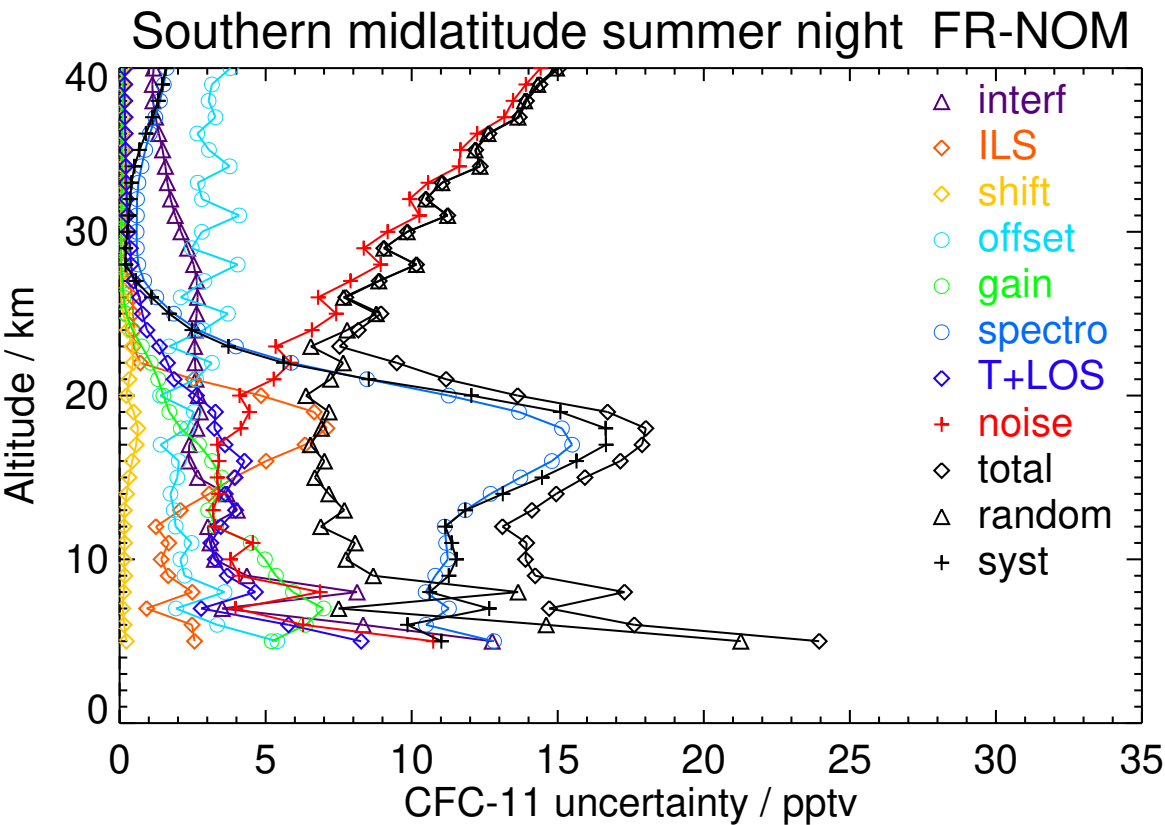


Figure S24. V8H_F-11_61 Southern midlatitude summer night

Table S26. CFC-11 error budget for Southern midlatitude autumn day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	277.33	9.13	1.36	0.15	4.16	1.60	12.11	7.32	7.28	14.40	12.29	18.93
8	258.54	7.32	1.25	0.18	2.68	4.48	12.54	4.44	4.60	11.01	12.62	16.75
11	236.24	2.74	0.85	0.08	2.12	4.10	9.77	3.20	3.34	6.51	10.20	12.10
14	221.75	3.11	2.82	0.21	2.02	3.52	13.68	3.80	3.00	6.76	14.10	15.64
17	153.43	2.39	5.30	0.78	2.38	2.67	14.72	3.03	3.66	6.50	15.63	16.93
20	76.23	2.70	2.13	0.20	2.98	1.72	10.73	1.94	4.89	7.80	10.28	12.90
23	19.11	2.57	0.46	0.19	3.51	0.65	3.81	1.00	6.44	8.07	3.40	8.75
26	12.88	2.53	0.17	0.03	3.79	0.16	1.42	0.54	8.04	9.30	1.12	9.37
29	6.61	2.19	0.13	0.04	3.70	0.13	1.04	0.39	9.70	10.64	0.88	10.67
32	7.65	1.64	0.12	0.04	3.41	0.08	0.59	0.29	11.33	11.96	0.33	11.97
35	4.20	1.24	0.09	0.05	3.29	0.10	0.78	0.23	13.23	13.70	0.59	13.71
38	-2.10	1.06	0.19	0.05	4.16	0.10	1.62	0.20	14.89	15.51	1.55	15.58
41	0.33	1.14	0.28	0.04	6.75	0.09	2.27	0.20	16.32	17.70	2.24	17.84

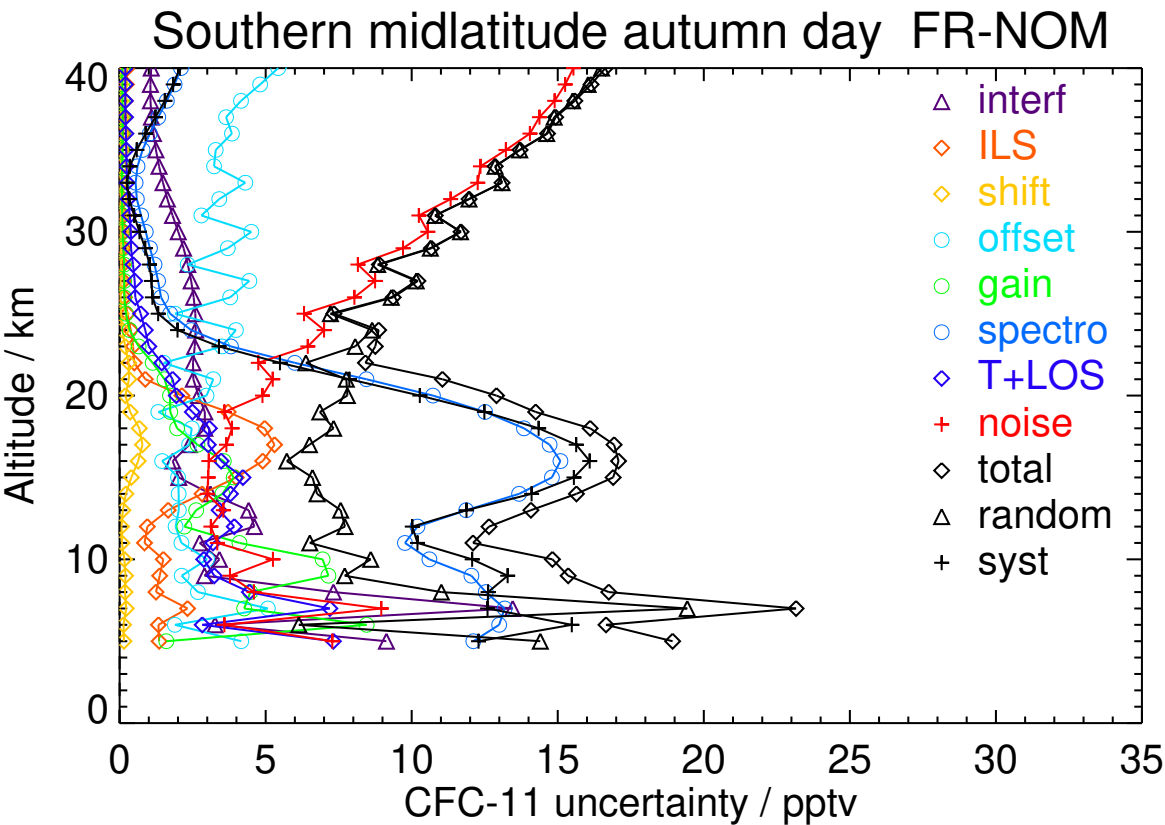


Figure S25. V8H_F-11_61 Southern midlatitude autumn day

Table S27. CFC-11 error budget for Southern midlatitude autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	249.18	3.46	1.11	0.15	1.76	5.10	11.27	3.23	3.05	6.98	11.84	13.75
11	245.97	3.58	1.15	0.11	1.90	3.08	9.87	3.79	2.81	7.13	9.80	12.12
14	229.23	2.60	2.65	0.20	2.23	3.56	13.73	4.24	2.96	7.31	13.90	15.71
17	175.90	2.65	5.77	0.91	2.84	2.39	16.75	3.44	3.95	7.38	17.57	19.05
20	87.23	2.65	1.78	0.30	3.57	1.85	11.36	2.17	5.33	7.84	11.28	13.74
23	27.45	2.56	0.50	0.25	4.16	0.81	4.80	1.10	6.90	8.82	4.34	9.83
26	9.61	2.56	0.25	0.05	4.41	0.16	1.53	0.58	8.39	9.88	1.21	9.96
29	8.17	2.25	0.17	0.04	4.10	0.10	1.06	0.40	9.81	10.90	0.77	10.93
32	4.41	1.70	0.16	0.06	3.52	0.06	0.74	0.30	11.24	11.93	0.34	11.93
35	3.40	1.22	0.12	0.07	3.20	0.08	0.91	0.21	13.00	13.46	0.72	13.48
38	5.24	1.07	0.18	0.05	3.99	0.11	1.55	0.18	14.72	15.30	1.48	15.38
41	5.45	1.22	0.22	0.04	6.24	0.10	1.98	0.20	16.01	17.23	1.93	17.34

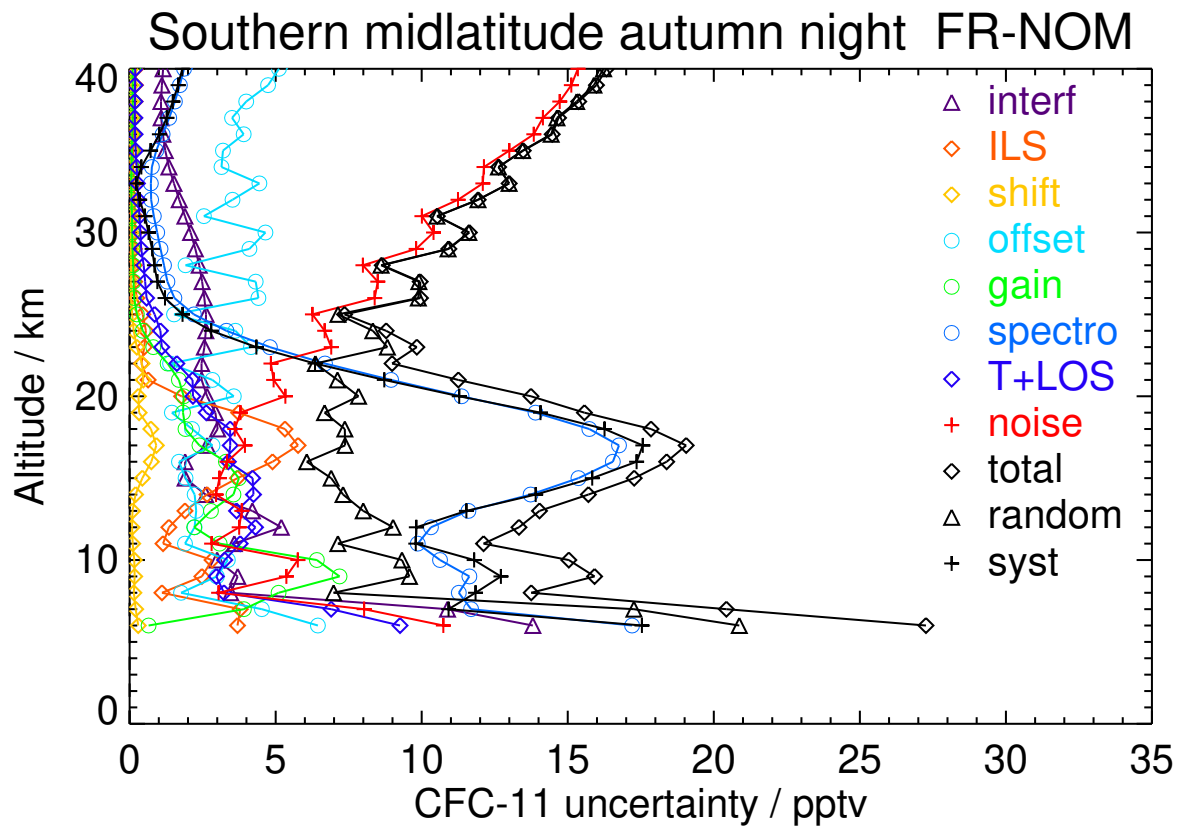


Figure S26. V8H_F-11_61 Southern midlatitude autumn night

Table S28. CFC-11 error budget for Southern polar winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	284.88	8.86	2.89	0.38	4.94	0.12	12.89	8.90	9.86	16.72	13.21	21.31
8	253.50	5.80	1.34	0.10	3.54	4.16	12.39	5.42	6.46	11.68	12.39	17.03
11	225.56	2.15	3.33	0.21	2.25	3.34	18.23	4.78	4.13	8.11	18.39	20.10
14	139.32	2.90	5.29	0.30	1.91	1.87	22.59	6.53	3.79	9.15	22.96	24.72
17	23.77	2.34	2.51	0.23	1.54	0.90	9.28	3.20	4.68	7.18	9.04	11.54
20	1.77	2.54	0.76	0.10	2.10	0.20	2.78	1.00	6.88	8.22	0.22	8.22
23	-3.00	2.57	0.23	0.06	3.03	0.05	0.94	0.38	9.36	10.21	0.41	10.22
26	0.82	2.59	0.13	0.05	3.19	0.08	1.07	0.29	11.41	12.16	0.75	12.18
29	5.52	2.32	0.20	0.06	3.21	0.08	0.88	0.28	12.81	13.43	0.44	13.44
32	3.99	1.80	0.22	0.08	3.57	0.07	0.77	0.25	14.43	14.99	0.25	14.99
35	1.78	1.47	0.23	0.07	4.60	0.07	0.85	0.23	16.06	16.79	0.39	16.80
38	1.82	1.41	0.24	0.07	6.55	0.09	1.17	0.23	17.28	18.55	0.91	18.57
41	-1.32	1.52	0.18	0.06	9.99	0.12	1.55	0.24	18.30	20.91	1.45	20.96

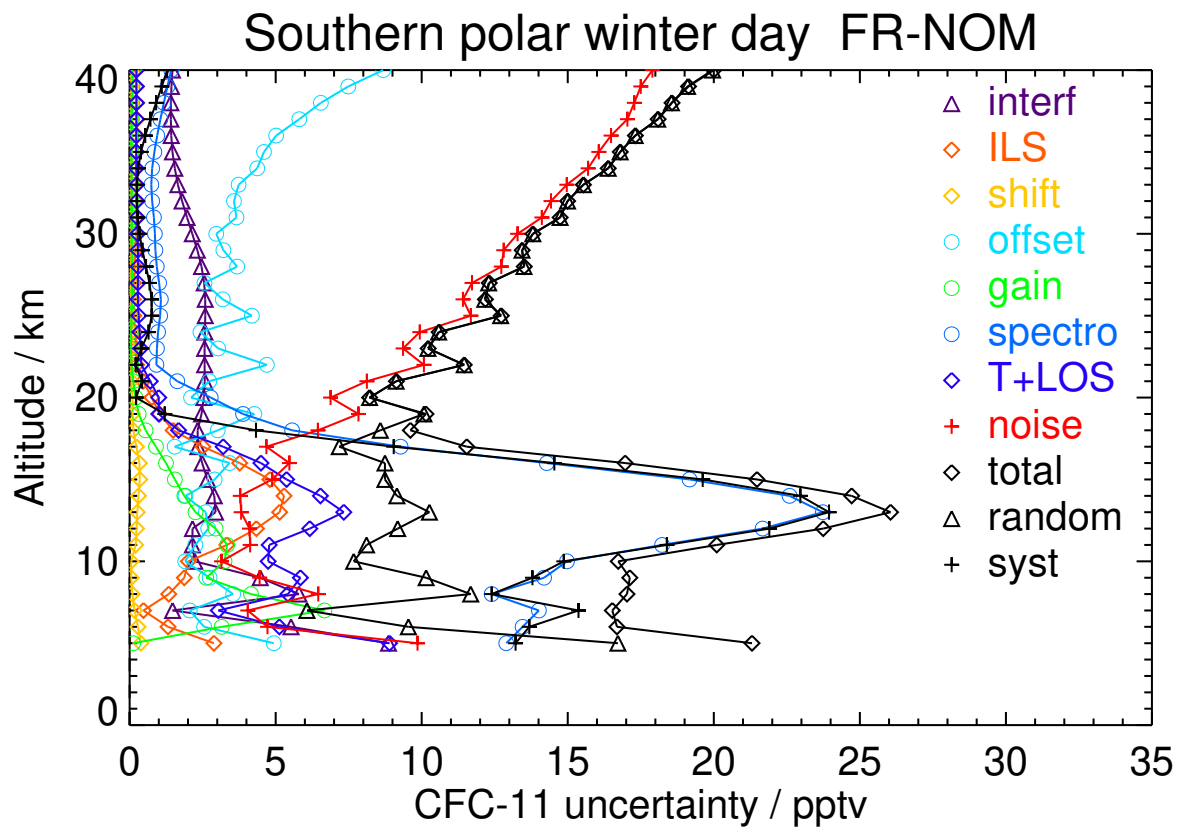


Figure S27. V8H_F-11_61 Southern polar winter day

Table S29. CFC-11 error budget for Southern polar winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	281.74	9.88	2.35	0.21	4.55	2.32	16.94	8.05	8.40	16.56	16.66	23.49
8	241.98	3.86	1.25	0.10	3.08	4.72	9.24	3.89	5.33	9.34	9.49	13.31
11	243.37	3.30	1.56	0.09	2.42	3.55	13.32	4.46	4.17	7.76	13.65	15.70
14	146.59	2.26	4.33	0.31	2.03	3.18	19.33	5.49	3.92	8.53	19.61	21.39
17	36.82	2.47	2.61	0.17	1.88	1.03	9.20	3.10	4.74	7.16	9.12	11.59
20	1.20	2.37	0.74	0.07	2.30	0.23	2.89	1.15	6.70	7.99	1.47	8.13
23	-2.57	2.53	0.37	0.07	3.03	0.10	1.07	0.48	9.16	10.04	0.36	10.05
26	3.41	2.59	0.14	0.05	3.48	0.05	1.30	0.35	11.57	12.39	1.06	12.43
29	0.35	2.33	0.29	0.05	3.53	0.08	1.23	0.36	13.31	14.01	0.83	14.03
32	3.31	1.77	0.27	0.06	3.82	0.09	0.74	0.26	14.90	15.50	0.33	15.50
35	5.88	1.40	0.27	0.06	5.04	0.09	1.01	0.24	16.50	17.33	0.64	17.34
38	3.30	1.33	0.29	0.07	7.22	0.07	1.27	0.27	17.69	19.18	0.92	19.20
41	-0.20	1.47	0.33	0.08	11.05	0.14	1.63	0.31	18.91	21.97	1.39	22.01

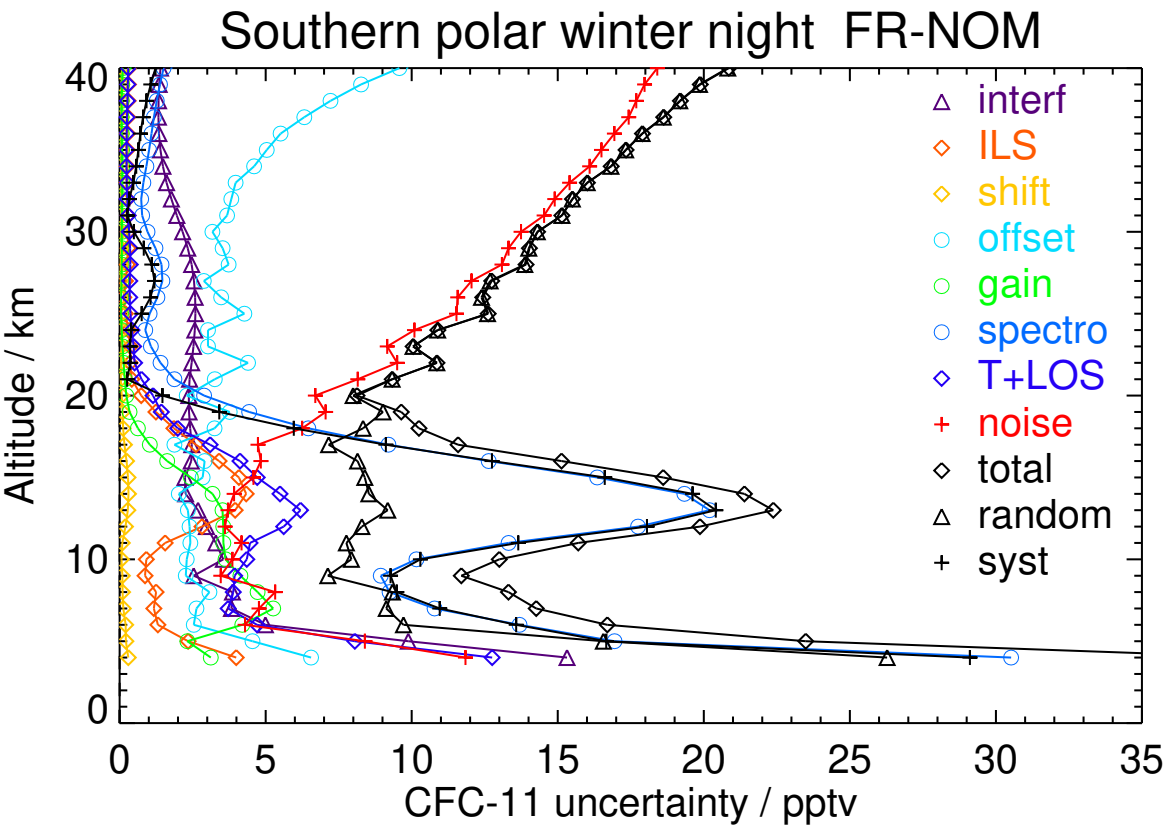


Figure S28. V8H_F-11_61 Southern polar winter night

Table S30. CFC-11 error budget for Southern polar spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	246.56	1.87	1.71	0.19	2.11	4.76	13.72	3.35	3.58	7.49	13.77	15.68
11	242.38	4.12	5.09	0.48	2.31	1.38	15.32	6.76	3.66	10.02	15.62	18.56
14	130.52	1.98	15.50	0.81	2.76	0.81	24.37	6.87	3.99	9.46	28.65	30.17
17	-0.48	2.69	4.13	0.47	3.37	0.31	4.50	2.15	5.20	7.38	5.78	9.37
20	-0.42	2.46	1.08	0.14	3.96	0.12	1.61	0.71	6.39	8.00	1.72	8.18
23	6.50	2.94	0.34	0.07	4.33	0.09	0.82	0.49	7.39	9.10	0.29	9.11
26	6.68	3.02	0.50	0.17	4.52	0.08	1.35	0.54	8.38	10.04	1.18	10.11
29	3.01	2.85	0.57	0.09	4.58	0.10	0.75	0.39	9.40	10.88	0.50	10.89
32	2.43	2.16	0.33	0.09	4.55	0.08	0.81	0.25	10.55	11.71	0.73	11.73
35	1.27	1.58	0.19	0.13	4.42	0.13	0.82	0.22	11.79	12.70	0.73	12.72
38	-1.17	1.28	0.13	0.12	4.07	0.17	0.93	0.20	13.43	14.10	0.88	14.13
41	-1.66	1.16	0.13	0.09	4.44	0.24	1.06	0.22	14.81	15.51	1.02	15.54

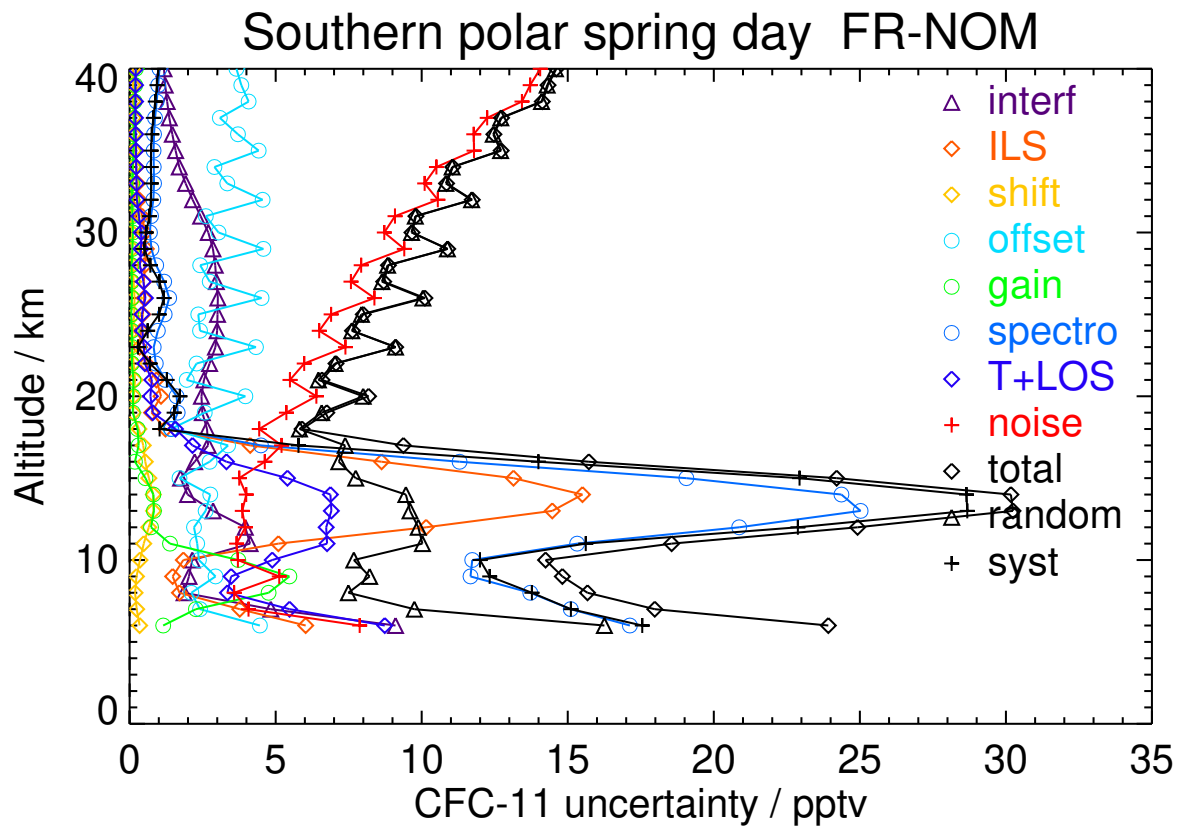


Figure S29. V8H_F-11_61 Southern polar spring day

Table S31. CFC-11 error budget for Southern polar spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	242.62	2.50	1.61	0.29	2.35	5.94	10.15	3.18	4.09	7.34	11.21	13.40
11	241.14	4.69	3.61	0.29	2.21	2.38	14.30	5.74	3.59	9.72	14.19	17.20
14	135.29	1.83	11.26	0.52	2.21	2.33	20.90	6.09	3.42	10.71	22.62	25.02
17	25.92	2.94	4.20	0.68	2.64	0.69	6.31	2.59	4.37	7.49	6.61	9.99
20	11.47	2.44	1.45	0.25	3.49	0.48	2.59	0.85	5.92	7.92	0.59	7.94
23	10.12	2.83	0.34	0.12	4.25	0.26	1.56	0.45	7.36	9.10	0.52	9.12
26	7.68	2.85	0.27	0.11	4.62	0.16	1.08	0.42	8.59	10.22	0.64	10.23
29	9.62	2.74	0.43	0.11	4.66	0.15	0.97	0.39	9.78	11.21	0.67	11.23
32	3.22	2.02	0.47	0.14	4.52	0.16	0.71	0.30	10.88	11.99	0.43	11.99
35	3.92	1.58	0.18	0.12	4.36	0.16	0.89	0.20	12.11	12.98	0.75	13.00
38	4.12	1.32	0.17	0.11	4.07	0.19	1.14	0.21	13.79	14.45	1.03	14.49
41	0.33	1.17	0.17	0.09	4.86	0.24	1.21	0.21	14.99	15.82	1.15	15.86

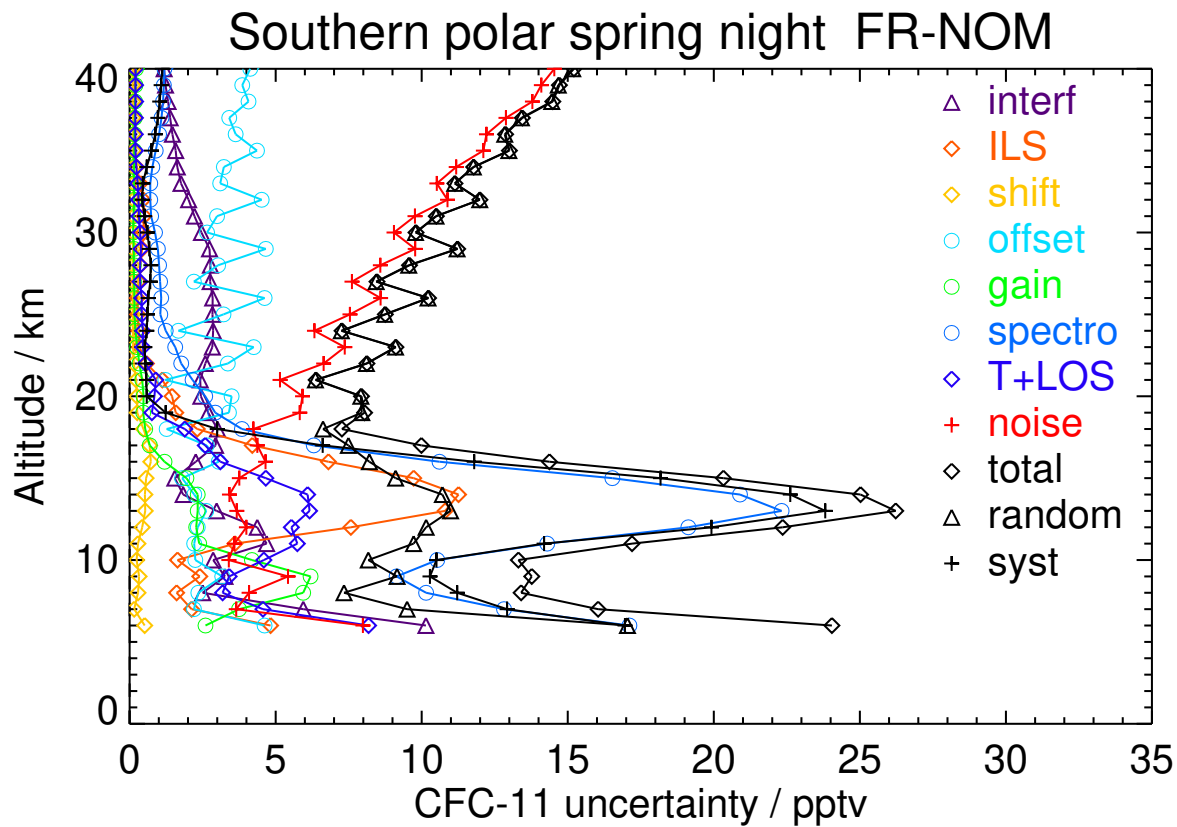


Figure S30. V8H_F-11_61 Southern polar spring night

Table S32. CFC-11 error budget for Southern polar summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	266.57	12.48	1.16	0.17	5.69	3.59	9.46	7.49	10.11	19.56	8.22	21.22
8	244.98	3.43	1.67	0.26	3.15	8.43	12.79	3.57	5.87	10.07	14.32	17.51
11	220.97	4.28	0.45	0.06	1.98	2.35	11.12	4.04	3.72	7.90	10.93	13.48
14	188.58	1.75	2.33	0.09	1.41	3.41	11.03	3.28	2.89	5.29	11.62	12.76
17	134.51	3.16	5.28	0.35	1.17	1.87	12.17	3.19	2.88	5.78	13.27	14.47
20	52.61	2.42	3.57	0.36	1.35	1.24	8.01	2.10	3.64	5.35	8.67	10.19
23	15.41	2.72	0.58	0.33	1.90	0.33	1.90	0.92	4.96	6.12	1.79	6.37
26	3.63	2.53	0.19	0.07	2.63	0.15	0.90	0.49	6.66	7.64	0.55	7.66
29	5.65	2.32	0.15	0.06	3.29	0.09	0.81	0.37	8.34	9.30	0.42	9.31
32	2.69	1.91	0.30	0.08	3.68	0.07	0.57	0.31	10.09	10.92	0.41	10.93
35	4.25	1.45	0.11	0.13	3.74	0.06	0.57	0.22	11.68	12.36	0.39	12.36
38	2.52	1.18	0.12	0.14	3.39	0.14	1.14	0.18	13.31	13.80	1.07	13.84
41	3.63	1.32	0.15	0.12	3.79	0.14	1.52	0.20	14.43	14.98	1.48	15.06

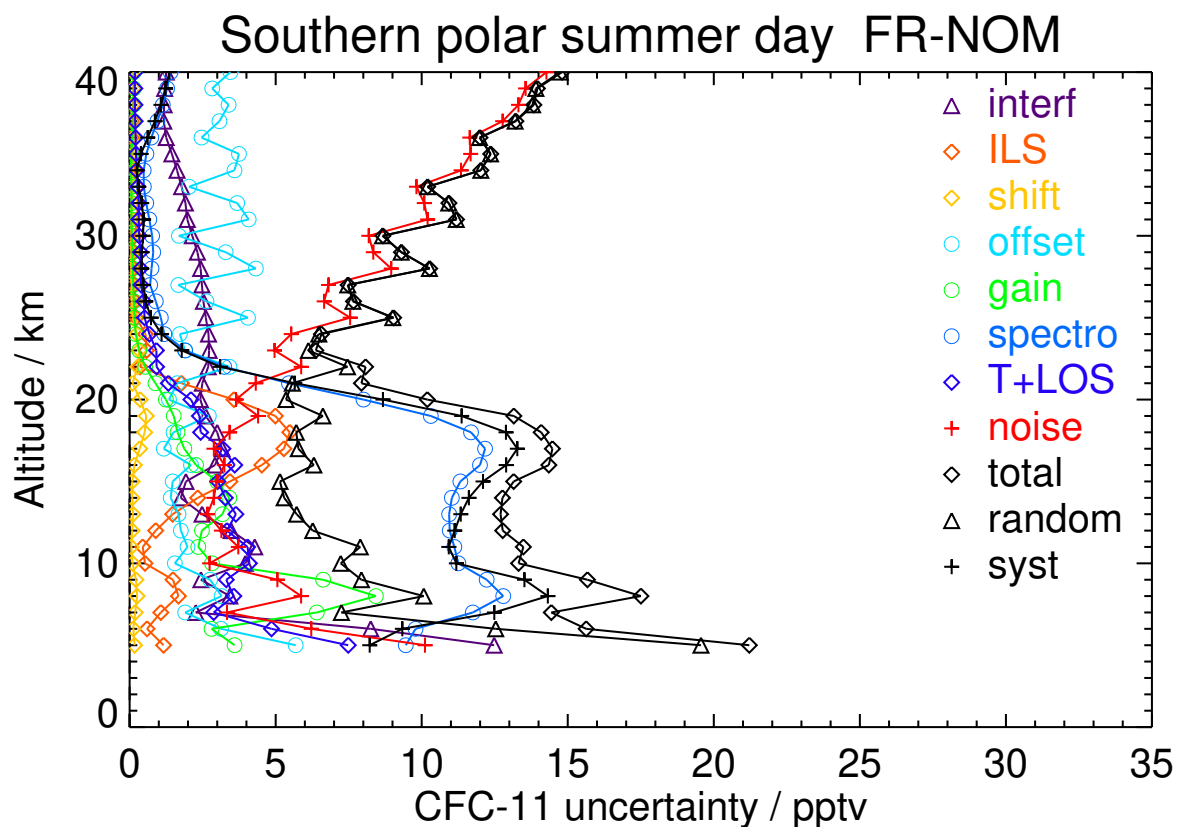
**Figure S31.** V8H_F-11_61 Southern polar summer day

Table S33. CFC-11 error budget for Southern polar summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	282.19	9.91	0.95	0.20	4.27	0.30	10.74	7.66	9.23	16.13	10.79	19.41
8	250.63	9.37	0.76	0.18	3.12	2.03	10.13	4.25	6.29	13.01	9.66	16.20
11	225.43	2.25	0.51	0.06	2.07	4.74	10.72	2.67	4.06	6.07	11.56	13.06
14	206.43	3.92	2.68	0.12	1.59	2.54	12.13	3.08	3.19	6.37	12.56	14.08
17	139.85	2.11	5.65	0.68	1.36	2.96	13.75	2.85	3.27	5.42	15.03	15.98
20	57.11	2.83	2.77	0.28	1.37	1.16	8.30	1.82	4.08	5.67	8.70	10.39
23	15.29	2.45	0.45	0.31	1.44	0.53	2.22	0.91	5.27	6.12	2.16	6.49
26	6.91	2.59	0.17	0.06	1.54	0.11	0.98	0.52	6.74	7.43	0.77	7.47
29	5.07	2.28	0.11	0.05	1.93	0.06	0.80	0.36	8.43	8.97	0.52	8.99
32	4.56	1.63	0.22	0.07	2.46	0.08	0.72	0.31	10.25	10.69	0.44	10.70
35	-0.63	1.34	0.11	0.10	2.92	0.07	0.73	0.21	12.25	12.67	0.53	12.69
38	1.48	1.14	0.18	0.09	3.10	0.09	1.35	0.18	14.17	14.55	1.27	14.61
41	4.47	1.12	0.23	0.07	4.09	0.13	1.75	0.19	15.17	15.76	1.71	15.85

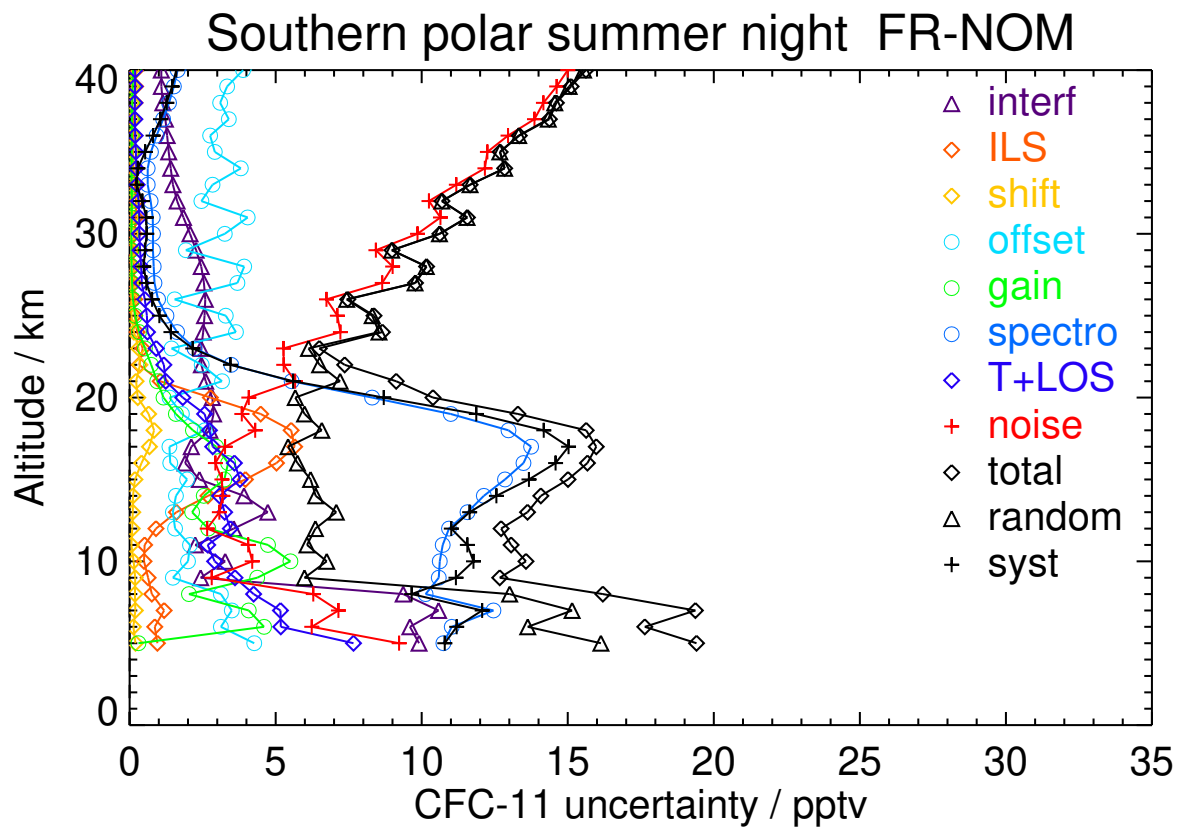


Figure S32. V8H_F-11_61 Southern polar summer night

Table S34. CFC-11 error budget for Southern polar autumn day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	267.01	7.03	1.01	0.20	3.42	3.72	15.51	6.57	5.60	11.84	15.84	19.77
8	248.87	4.28	1.20	0.26	2.06	4.94	14.43	4.61	3.33	8.35	14.81	17.00
11	223.82	3.15	0.54	0.11	1.87	2.66	9.65	3.17	2.78	6.06	9.74	11.48
14	193.32	2.79	3.25	0.33	2.22	3.69	14.89	3.88	2.98	6.32	15.58	16.81
17	94.82	2.62	4.43	0.54	2.84	2.31	13.45	2.66	4.04	6.63	14.16	15.64
20	24.66	2.61	0.85	0.07	3.55	0.86	5.41	1.16	5.61	7.48	5.18	9.10
23	4.63	2.48	0.39	0.05	4.03	0.19	1.26	0.59	7.38	8.84	0.89	8.88
26	10.21	2.52	0.16	0.04	3.93	0.11	1.28	0.47	9.09	10.26	1.01	10.31
29	5.71	2.23	0.11	0.05	3.48	0.10	1.40	0.42	10.78	11.57	1.24	11.64
32	2.24	1.64	0.15	0.04	3.32	0.08	0.85	0.33	12.60	13.16	0.44	13.17
35	1.16	1.19	0.12	0.04	3.79	0.09	1.05	0.23	14.71	15.25	0.90	15.28
38	2.94	1.08	0.23	0.05	5.35	0.10	1.84	0.22	16.28	17.19	1.76	17.28
41	3.11	1.22	0.29	0.05	8.72	0.07	2.35	0.25	17.76	19.83	2.28	19.96

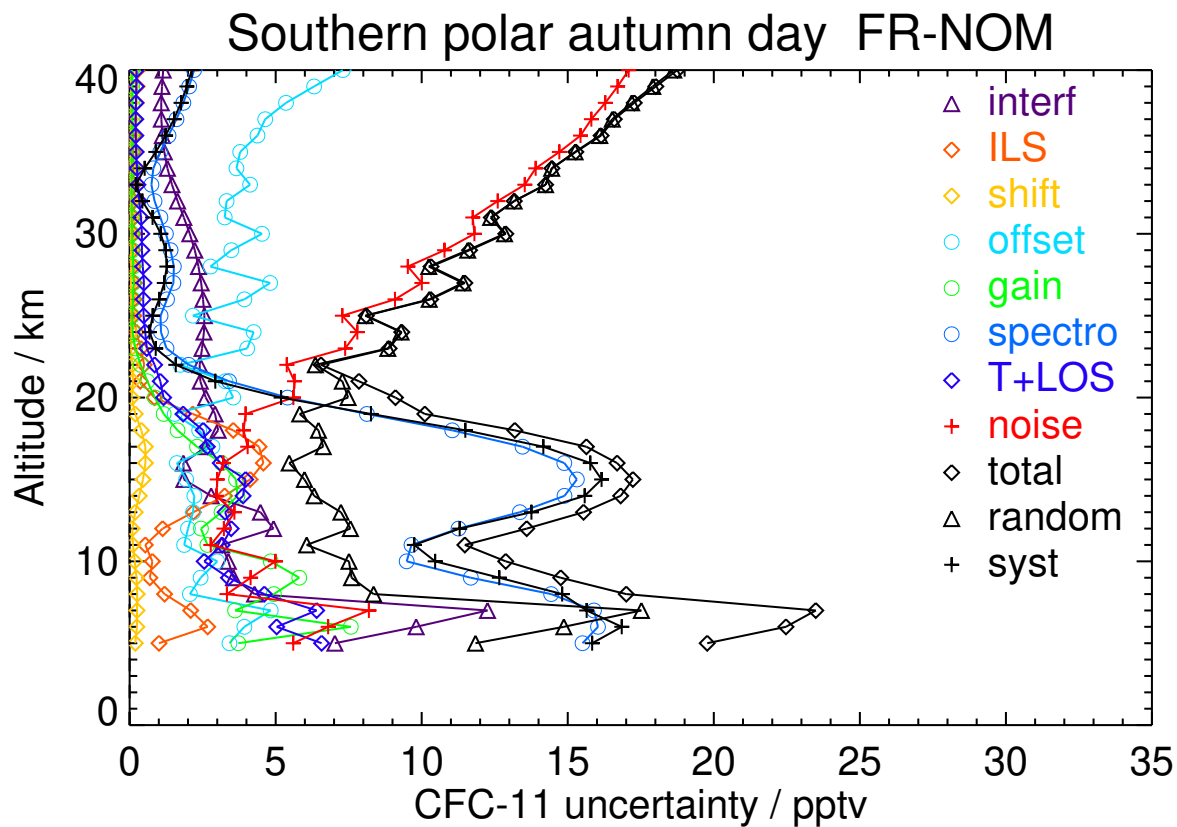


Figure S33. V8H_F-11_61 Southern polar autumn day

Table S35. CFC-11 error budget for Southern polar autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	267.96	6.91	1.47	0.21	3.35	4.28	14.92	6.19	5.58	11.84	15.20	19.27
8	244.55	4.82	1.38	0.22	2.70	4.39	11.61	3.77	4.32	9.09	11.69	14.81
11	227.73	3.03	0.62	0.07	2.13	3.14	10.38	3.18	3.28	6.16	10.71	12.35
14	192.39	2.74	2.58	0.35	2.14	3.67	13.84	3.55	3.22	6.37	14.36	15.71
17	100.04	2.54	4.38	0.52	2.44	2.30	13.73	2.78	4.02	6.55	14.38	15.80
20	22.25	2.56	1.29	0.10	2.73	0.83	5.72	1.39	5.41	6.93	5.68	8.96
23	7.86	2.48	0.54	0.06	2.82	0.16	1.05	0.62	7.05	8.07	0.73	8.10
26	12.62	2.50	0.15	0.05	2.80	0.16	1.64	0.47	8.90	9.71	1.40	9.81
29	7.16	2.18	0.16	0.05	2.92	0.15	1.90	0.49	11.00	11.64	1.63	11.75
32	-1.23	1.64	0.17	0.04	3.28	0.08	0.91	0.37	13.21	13.74	0.55	13.75
35	-2.94	1.22	0.11	0.04	4.22	0.07	1.00	0.23	15.38	16.01	0.83	16.03
38	-1.56	1.12	0.21	0.05	6.23	0.07	1.83	0.24	16.99	18.14	1.73	18.23
41	-1.10	1.23	0.30	0.06	10.11	0.09	2.39	0.27	18.55	21.17	2.33	21.30

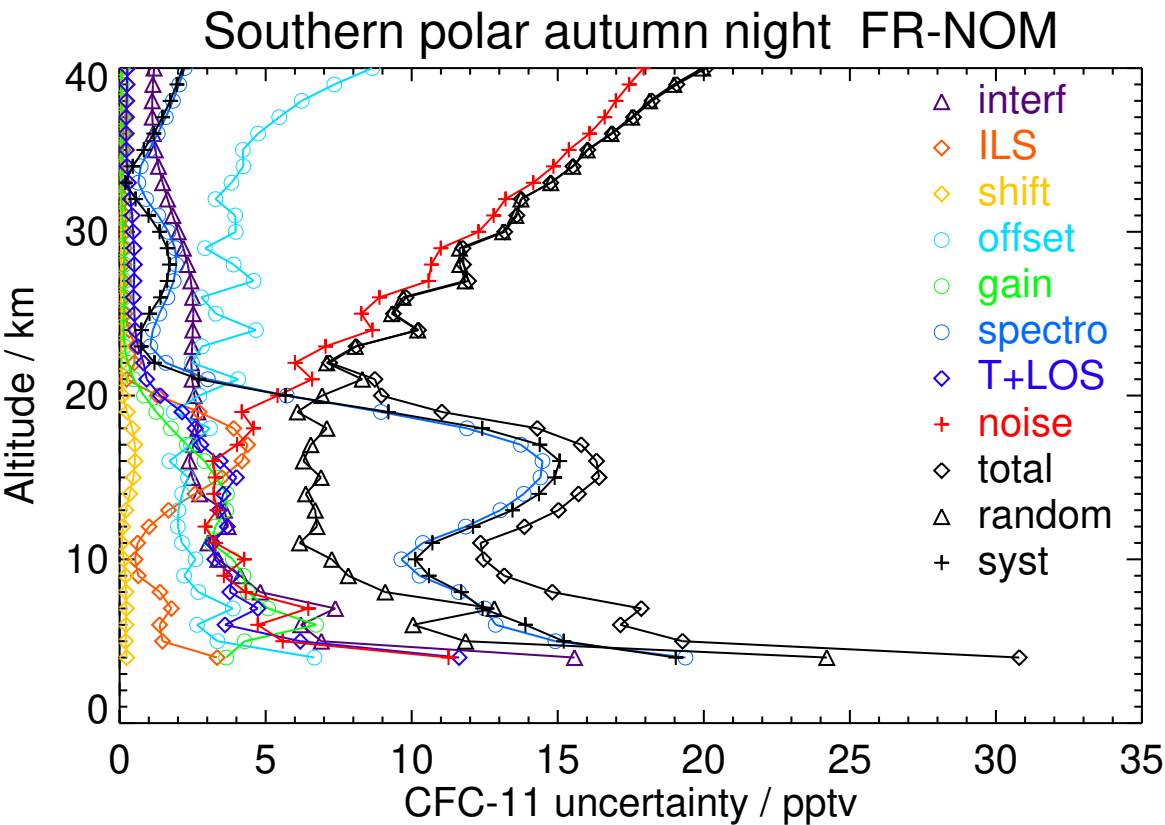


Figure S34. V8H_F-11_61 Southern polar autumn night

Table S36. CFC-11 error budget for Northern polar winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	251.10	2.90	2.55	0.26	1.74	3.34	12.46	6.41	5.42	9.87	12.54	15.96
11	214.22	3.11	4.64	0.28	1.14	2.88	14.26	4.29	4.50	8.15	14.71	16.82
14	147.28	2.41	6.64	0.32	1.61	2.57	13.86	3.62	4.62	8.52	14.59	16.90
17	83.50	2.55	2.74	0.10	1.66	1.92	9.09	2.42	5.32	8.65	7.90	11.71
20	48.75	2.59	1.41	0.12	0.59	1.18	5.74	1.50	5.80	7.80	4.30	8.90
23	23.04	2.49	0.22	0.03	1.44	0.36	1.99	0.52	6.92	7.60	1.69	7.78
26	15.72	2.45	0.30	0.02	1.54	0.15	1.20	0.35	7.88	8.46	0.72	8.49
29	14.99	2.05	0.24	0.05	1.69	0.15	1.37	0.26	9.42	9.85	0.80	9.89
32	14.66	1.39	0.29	0.08	2.38	0.21	1.19	0.25	11.16	11.54	0.77	11.56
35	9.87	1.08	0.17	0.05	3.01	0.18	1.09	0.19	13.77	14.17	0.59	14.19
38	4.77	0.96	0.15	0.03	3.85	0.13	1.65	0.17	15.89	16.40	1.43	16.46
41	1.40	1.00	0.19	0.03	6.94	0.11	2.00	0.17	18.31	19.62	1.87	19.71

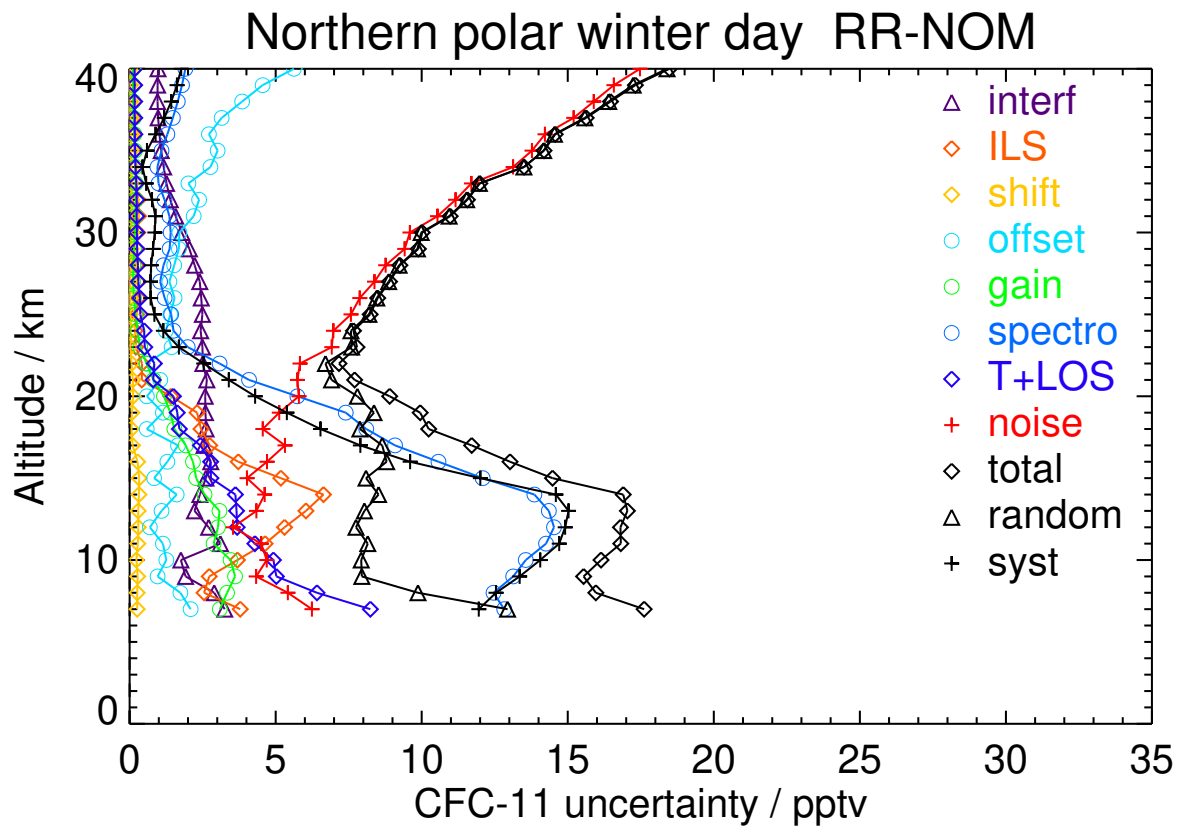


Figure S35. V8R_F-11_261 Northern polar winter day

Table S37. CFC-11 error budget for Northern polar winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	247.76	2.33	2.05	0.18	2.06	3.01	11.18	6.79	5.88	9.87	11.45	15.12
11	228.29	2.82	4.64	0.19	1.06	2.90	14.32	4.75	4.72	8.09	14.95	17.00
14	159.11	2.44	6.76	0.23	1.38	2.21	14.42	3.82	4.72	8.61	15.14	17.42
17	69.80	2.48	3.26	0.11	1.41	1.29	8.99	2.64	5.50	7.40	9.15	11.77
20	31.21	2.48	1.20	0.06	0.74	0.92	4.64	1.20	5.83	7.38	3.39	8.12
23	12.84	2.53	0.37	0.05	1.62	0.27	1.52	0.51	7.74	8.41	0.95	8.47
26	16.80	2.73	0.36	0.03	1.17	0.11	0.84	0.30	7.40	8.01	0.55	8.03
29	16.00	2.43	0.40	0.06	1.80	0.12	1.08	0.25	9.38	9.91	0.58	9.92
32	14.62	2.06	0.63	0.11	2.26	0.19	0.91	0.25	10.17	10.66	0.68	10.68
35	9.28	1.73	0.30	0.07	2.93	0.14	1.15	0.19	12.06	12.56	0.82	12.59
38	6.28	1.47	0.22	0.04	3.16	0.09	1.60	0.18	13.77	14.22	1.47	14.30
41	6.16	1.42	0.23	0.04	4.27	0.08	1.68	0.17	15.55	16.20	1.56	16.28

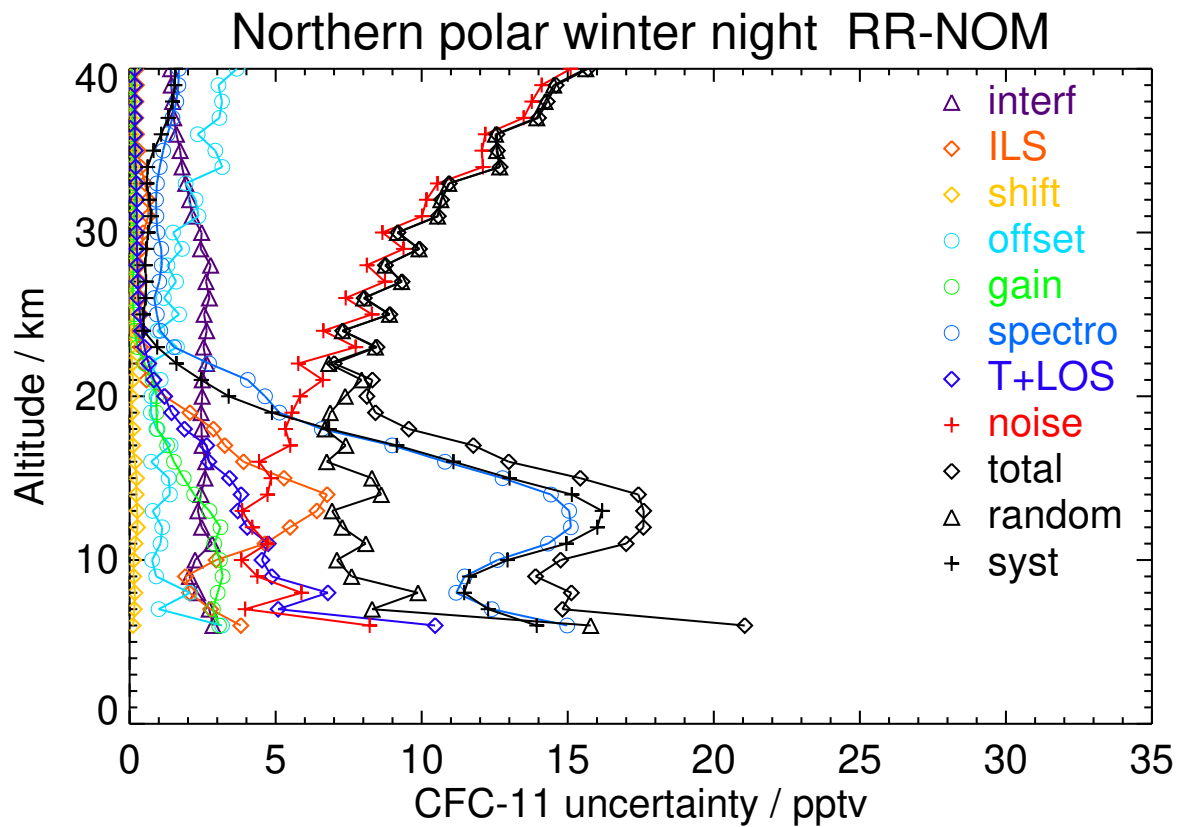


Figure S36. V8R_F-11_261 Northern polar winter night

Table S38. CFC-11 error budget for Northern polar spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	235.09	2.84	2.74	0.20	1.05	3.17	12.48	5.93	4.43	9.19	12.36	15.40
11	195.05	2.59	2.99	0.16	0.72	2.85	11.28	3.83	3.67	6.59	11.67	13.40
14	161.62	2.30	4.20	0.22	0.79	2.83	13.36	3.31	4.04	6.29	14.07	15.41
17	88.80	2.49	2.35	0.08	0.70	1.80	9.87	2.29	4.76	6.40	9.99	11.86
20	31.22	2.52	0.68	0.10	0.80	0.83	4.79	1.13	5.76	6.72	4.51	8.10
23	14.64	2.30	0.17	0.05	1.34	0.22	1.70	0.50	7.61	8.15	1.33	8.26
26	4.29	2.40	0.20	0.02	1.41	0.15	1.16	0.28	8.93	9.42	0.66	9.44
29	3.68	2.11	0.28	0.06	1.67	0.11	0.90	0.22	10.67	11.03	0.60	11.05
32	0.90	1.49	0.30	0.07	2.21	0.14	0.60	0.17	12.64	12.94	0.30	12.94
35	6.30	1.17	0.13	0.04	2.82	0.17	1.16	0.15	14.91	15.24	0.95	15.26
38	13.70	1.28	0.16	0.02	3.48	0.14	1.75	0.17	16.52	16.95	1.63	17.03
41	15.92	1.65	0.25	0.02	4.96	0.10	2.11	0.18	17.66	18.43	2.02	18.54

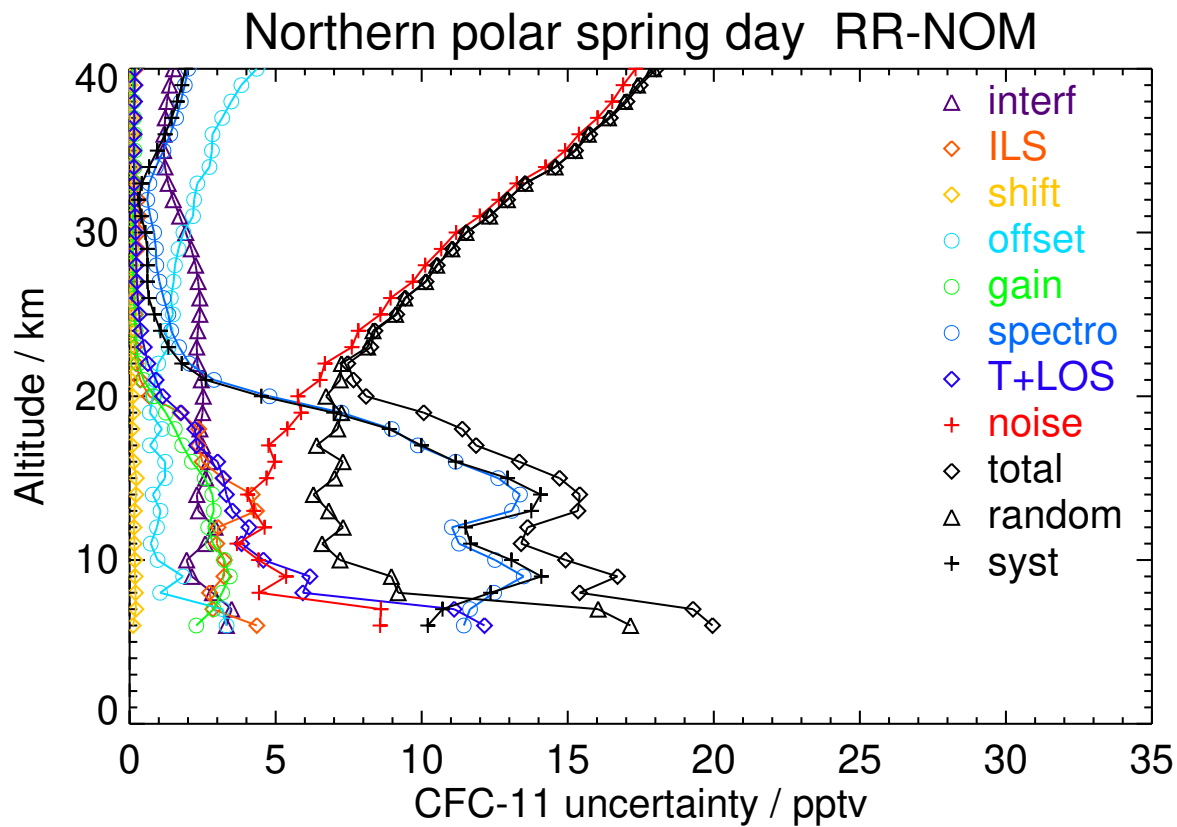


Figure S37. V8R_F-11_261 Northern polar spring day

Table S39. CFC-11 error budget for Northern polar spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	242.25	3.24	2.88	0.28	2.40	3.01	12.80	8.51	6.76	12.38	12.75	17.77
11	201.16	2.25	3.44	0.25	1.01	2.93	12.22	4.31	4.24	7.21	12.66	14.57
14	171.07	2.23	4.14	0.28	0.86	2.50	12.17	3.40	4.43	7.04	12.61	14.44
17	112.86	2.58	3.13	0.19	1.16	2.24	12.51	2.93	5.23	7.41	12.66	14.67
20	38.92	2.43	1.18	0.14	0.73	1.03	6.01	1.50	5.96	7.09	5.70	9.10
23	13.49	2.33	0.32	0.05	1.49	0.32	2.44	0.54	7.91	8.56	1.83	8.76
26	5.58	2.39	0.18	0.02	1.51	0.13	1.06	0.29	8.81	9.29	0.76	9.33
29	1.33	2.08	0.31	0.06	1.71	0.10	0.82	0.20	10.77	11.13	0.56	11.14
32	3.98	1.52	0.23	0.06	2.27	0.11	0.61	0.15	12.52	12.83	0.36	12.83
35	7.10	1.19	0.11	0.04	2.90	0.12	1.22	0.14	14.79	15.13	1.11	15.17
38	7.64	1.25	0.17	0.02	3.49	0.11	1.84	0.16	16.37	16.79	1.79	16.88
41	7.51	1.62	0.31	0.01	5.12	0.11	2.31	0.18	17.62	18.43	2.27	18.57

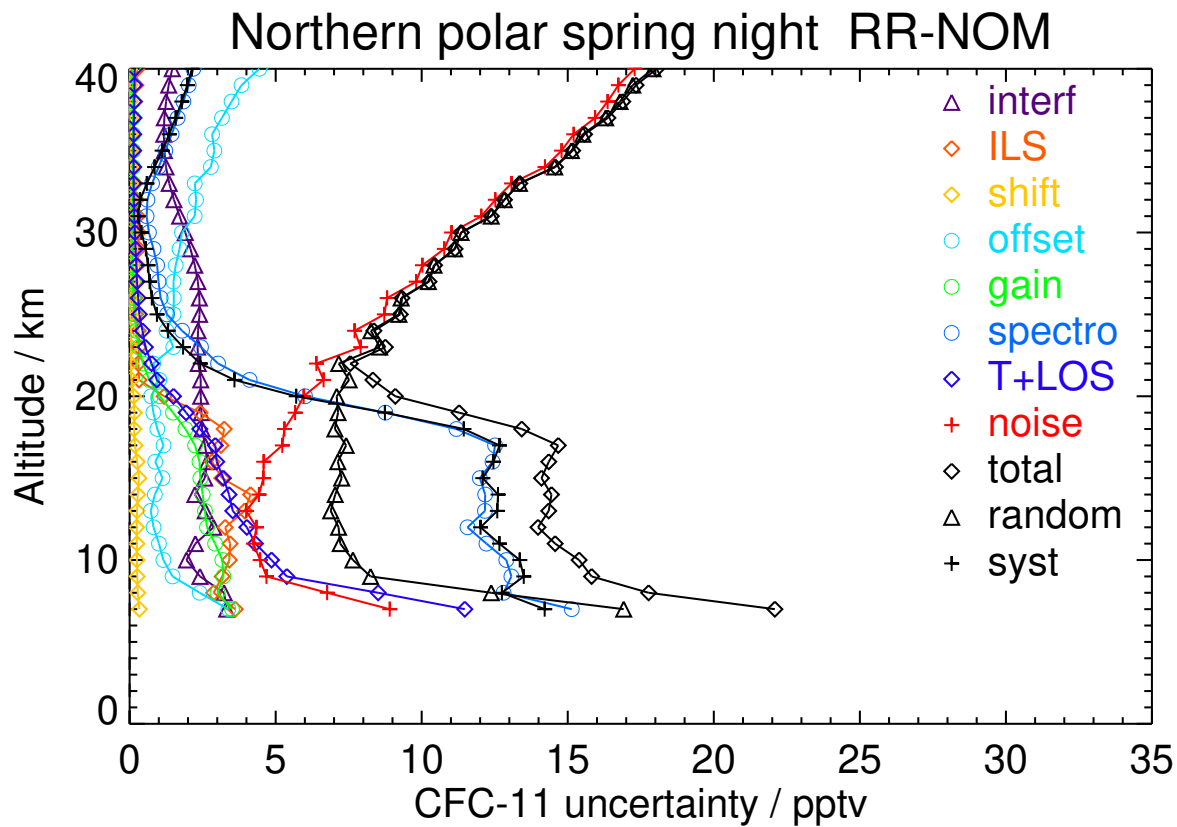


Figure S38. V8R_F-11_261 Northern polar spring night

Table S40. CFC-11 error budget for Northern polar summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	230.57	2.65	1.88	0.08	1.40	1.51	7.05	5.56	5.24	8.21	7.45	11.09
11	225.14	1.91	2.59	0.22	1.49	3.12	11.07	4.64	4.84	7.45	11.59	13.78
14	212.35	2.89	4.54	0.07	0.56	2.12	10.71	3.69	4.13	6.62	11.63	13.38
17	172.56	2.78	4.39	0.18	0.87	2.69	14.49	2.95	4.47	6.58	15.18	16.55
20	81.55	2.45	1.38	0.08	0.94	1.80	9.65	1.89	4.77	6.21	9.64	11.47
23	27.40	2.39	0.59	0.02	1.65	0.57	3.78	0.89	7.45	8.16	3.62	8.93
26	11.46	2.46	0.19	0.07	0.87	0.11	1.07	0.37	6.74	7.27	0.85	7.32
29	5.68	2.06	0.49	0.03	1.79	0.05	0.83	0.25	9.23	9.65	0.68	9.68
32	4.20	1.70	0.43	0.09	1.81	0.06	0.52	0.20	9.81	10.14	0.46	10.15
35	0.37	1.68	0.16	0.08	2.30	0.12	0.79	0.16	11.47	11.83	0.64	11.85
38	2.59	1.28	0.15	0.03	2.42	0.08	1.57	0.15	13.00	13.30	1.50	13.38
41	4.02	1.66	0.34	0.03	2.90	0.15	2.02	0.16	14.53	14.92	1.97	15.05

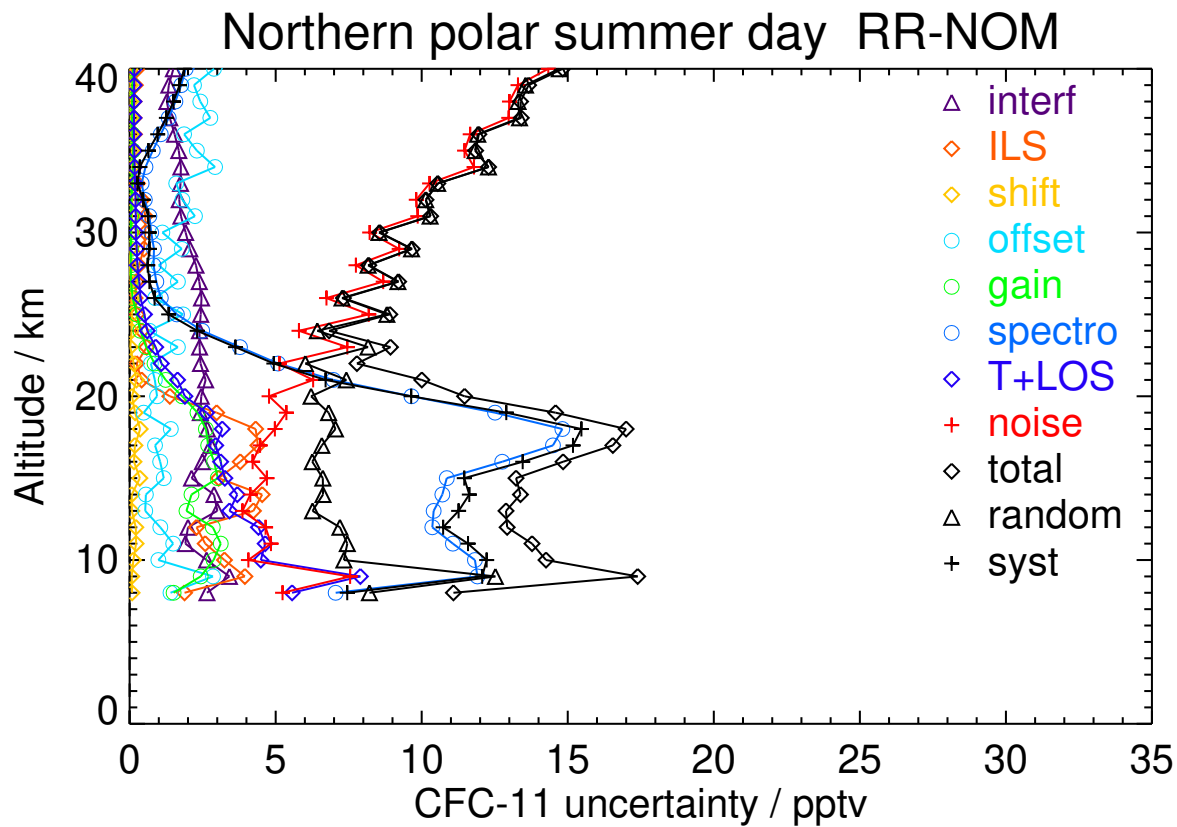


Figure S39. V8R_F-11_261 Northern polar summer day

Table S41. CFC-11 error budget for Northern polar summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
14	216.28	2.43	4.05	0.08	1.88	2.45	12.19	4.28	5.41	7.77	12.95	15.10
17	167.47	2.71	3.07	0.13	0.51	2.71	13.83	3.39	5.27	7.06	14.32	15.97
20	82.39	2.42	2.02	0.07	0.63	1.91	10.17	2.31	5.46	6.68	10.40	12.35
23	21.97	2.37	0.43	0.04	1.51	0.51	3.47	0.81	7.34	7.95	3.41	8.65
26	6.76	2.45	0.14	0.04	1.25	0.09	0.90	0.38	7.49	8.02	0.69	8.04
29	2.43	2.16	0.27	0.04	1.60	0.04	0.62	0.21	9.37	9.77	0.28	9.78
32	5.59	1.51	0.33	0.09	2.06	0.09	0.69	0.17	10.36	10.69	0.37	10.70
35	5.72	1.26	0.17	0.08	2.64	0.10	0.76	0.16	12.39	12.74	0.57	12.75
38	-0.38	1.28	0.16	0.03	2.81	0.06	1.55	0.16	13.98	14.33	1.49	14.41
41	2.25	1.22	0.25	0.02	3.17	0.08	1.99	0.17	15.49	15.87	1.97	15.99

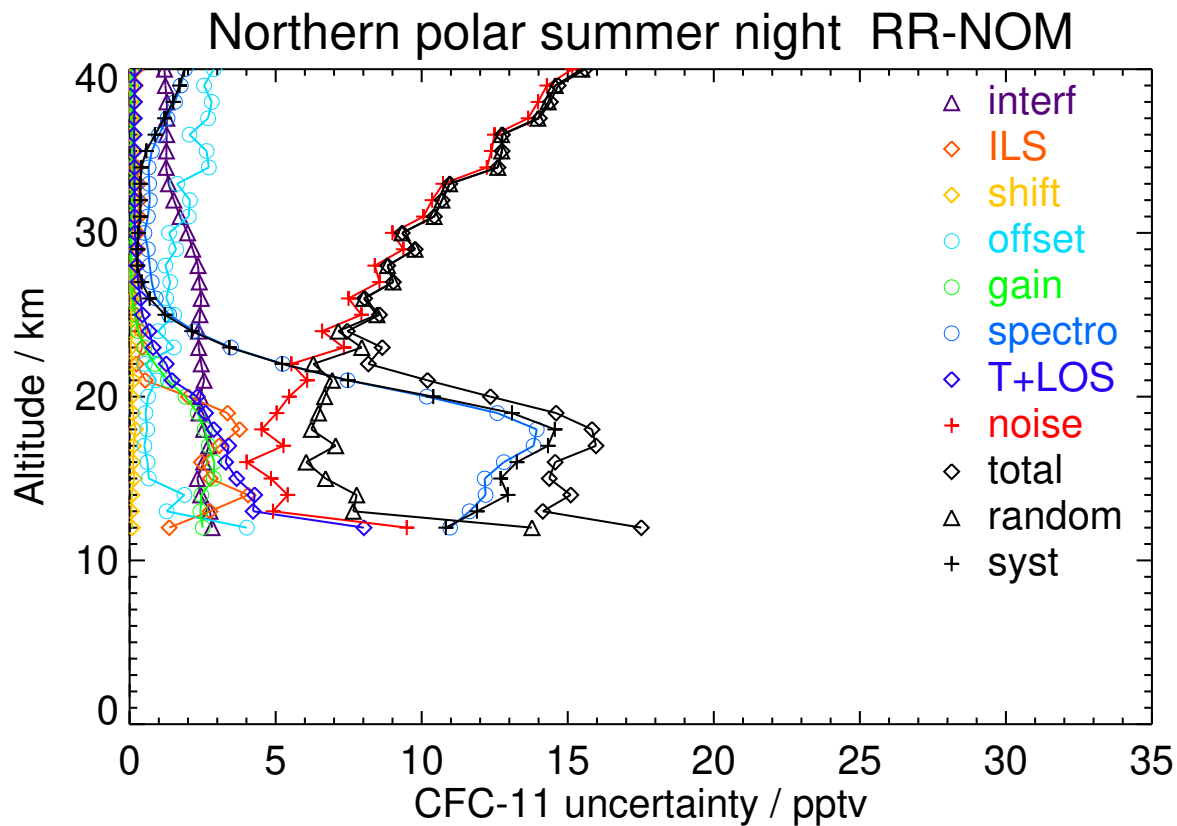


Figure S40. V8R_F-11_261 Northern polar summer night

Table S42. CFC-11 error budget for Northern polar autumn day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	267.07	3.28	1.71	0.39	3.17	2.46	15.15	8.64	8.24	12.79	15.44	20.05
11	227.08	2.78	2.56	0.22	3.27	2.60	12.05	7.43	8.43	12.81	11.79	17.41
14	208.03	2.31	5.01	0.31	0.85	2.57	14.73	4.42	5.03	7.51	15.60	17.31
17	124.01	2.50	3.28	0.18	0.95	2.22	13.87	3.22	5.24	7.10	14.23	15.90
20	44.22	2.48	1.82	0.16	0.82	1.10	7.37	1.88	6.29	7.83	6.89	10.43
23	12.88	2.36	0.25	0.05	1.39	0.28	2.38	0.61	7.72	8.34	1.90	8.56
26	5.26	2.40	0.17	0.02	1.54	0.10	1.08	0.34	8.90	9.38	0.78	9.41
29	10.72	2.01	0.22	0.05	1.72	0.13	1.07	0.25	10.60	10.96	0.69	10.98
32	7.81	1.53	0.25	0.06	2.34	0.10	0.78	0.21	12.49	12.82	0.37	12.83
35	3.38	1.22	0.12	0.04	3.05	0.08	1.23	0.16	15.00	15.37	1.08	15.41
38	2.45	1.15	0.16	0.02	3.98	0.08	1.94	0.18	16.84	17.36	1.86	17.46
41	0.96	1.28	0.25	0.02	6.31	0.08	2.41	0.20	18.46	19.56	2.36	19.70

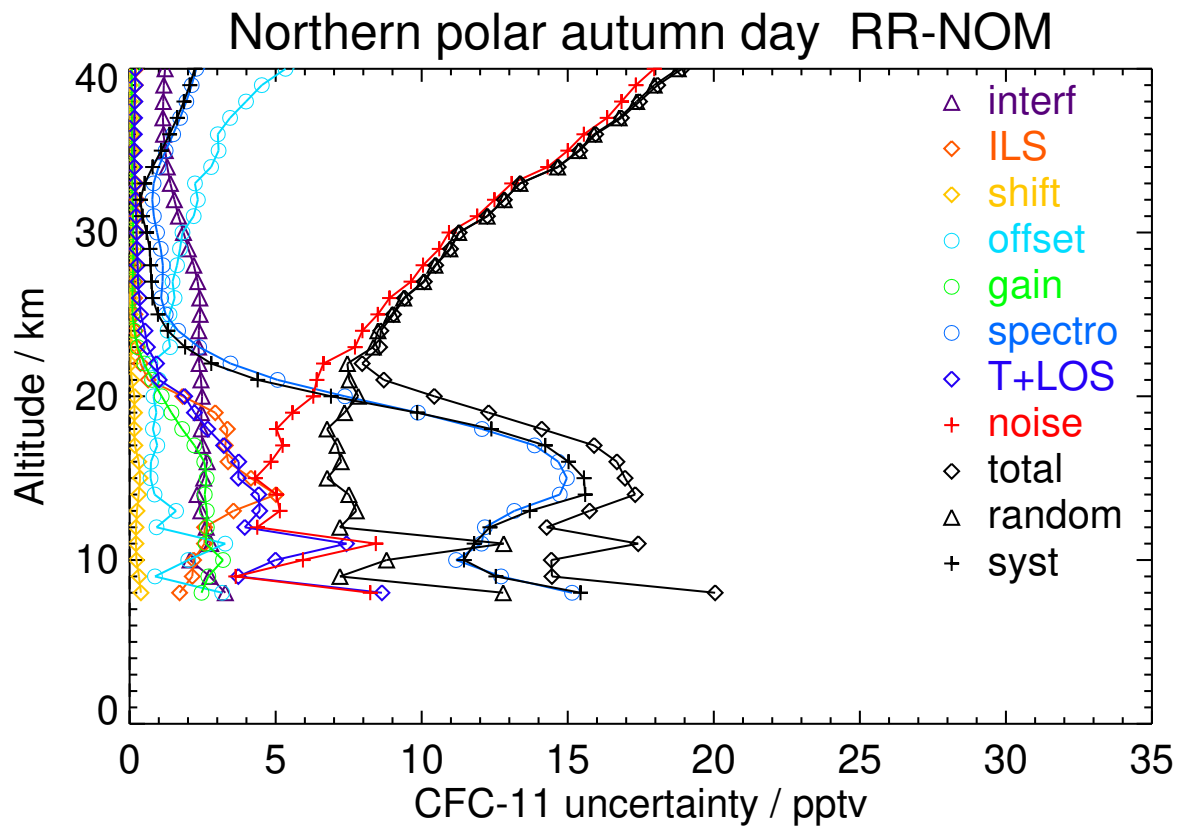


Figure S41. V8R_F-11_261 Northern polar autumn day

Table S43. CFC-11 error budget for Northern polar autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	250.69	2.88	1.83	0.22	2.85	2.51	12.72	7.80	7.32	11.45	13.08	17.39
11	225.92	2.83	2.77	0.23	3.28	2.73	12.56	7.20	8.13	12.19	12.69	17.60
14	203.15	2.35	5.24	0.35	0.86	2.71	14.60	4.32	4.89	7.48	15.53	17.24
17	113.95	2.51	3.20	0.20	0.83	2.35	13.38	3.09	5.23	7.12	13.72	15.45
20	42.58	2.45	1.53	0.15	0.75	1.10	6.72	1.73	6.22	7.76	6.07	9.85
23	10.75	2.37	0.33	0.05	1.45	0.32	2.38	0.59	7.80	8.49	1.64	8.65
26	10.99	2.39	0.21	0.02	1.52	0.12	1.25	0.35	8.87	9.36	0.91	9.40
29	4.80	2.04	0.40	0.08	1.75	0.11	1.17	0.30	10.63	10.99	0.97	11.04
32	-2.53	1.53	0.19	0.05	2.33	0.07	0.67	0.18	12.34	12.66	0.48	12.67
35	3.74	1.20	0.13	0.03	3.01	0.09	1.40	0.16	14.84	15.20	1.27	15.25
38	3.90	1.11	0.21	0.01	3.83	0.10	1.90	0.18	16.74	17.22	1.81	17.31
41	1.20	1.24	0.29	0.01	5.99	0.09	2.29	0.20	18.36	19.36	2.24	19.49

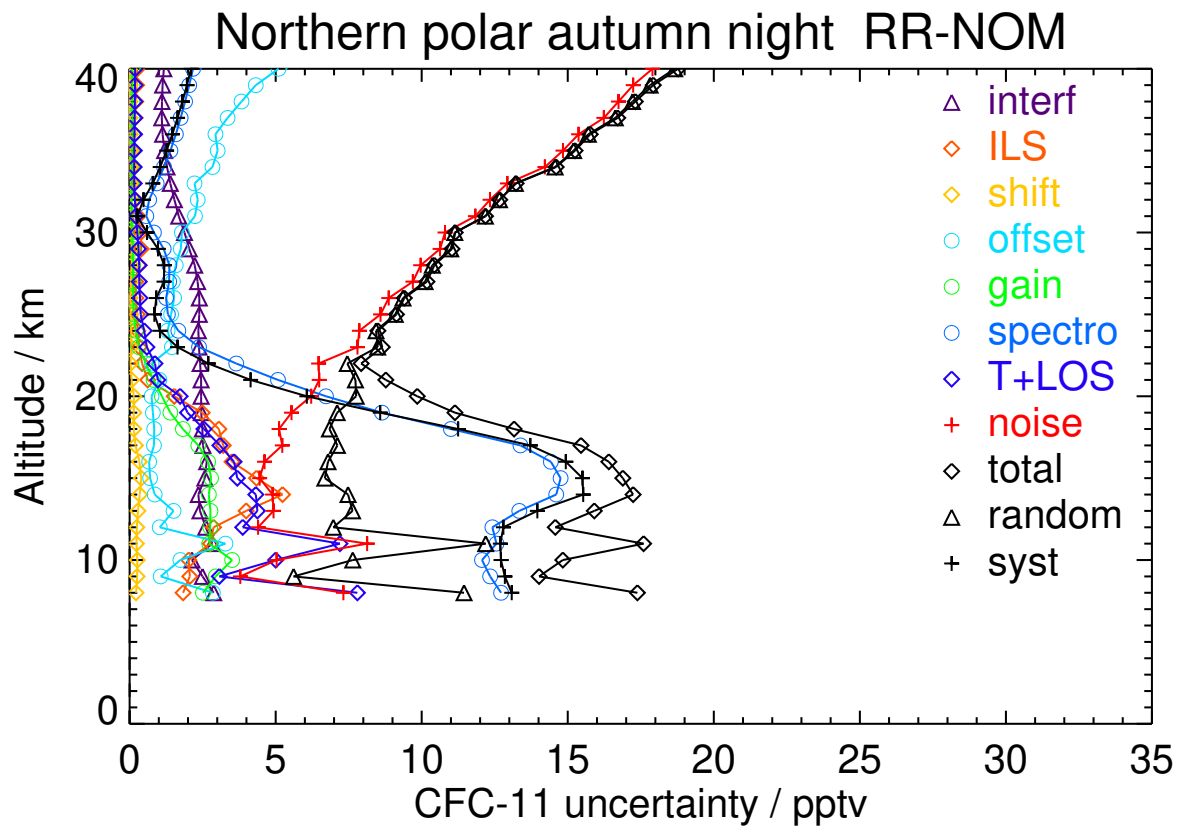


Figure S42. V8R_F-11_261 Northern polar autumn night

Table S44. CFC-11 error budget for Northern midlatitude winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	252.25	2.54	1.84	0.19	1.45	3.10	11.72	5.66	4.89	8.89	11.66	14.66
11	234.08	2.76	2.96	0.22	1.53	2.91	12.20	4.58	4.66	8.04	12.42	14.79
14	191.87	2.38	4.43	0.27	1.51	2.64	12.33	3.75	4.53	7.41	12.90	14.88
17	151.95	2.56	2.95	0.13	1.04	2.41	13.28	2.98	5.10	7.58	13.26	15.28
20	65.63	2.49	2.18	0.20	0.97	1.37	8.02	1.91	5.87	7.57	7.68	10.78
23	41.10	2.49	0.87	0.06	0.85	0.55	4.47	0.90	6.95	7.95	3.74	8.79
26	11.21	2.41	0.39	0.03	1.18	0.18	1.70	0.43	7.72	8.25	1.42	8.37
29	9.64	2.38	0.49	0.08	1.51	0.09	1.12	0.26	9.40	9.87	0.59	9.89
32	11.20	1.68	0.39	0.10	2.04	0.09	0.90	0.20	10.45	10.82	0.45	10.83
35	8.06	1.44	0.16	0.05	2.66	0.11	1.12	0.17	12.69	13.07	0.84	13.10
38	2.90	1.44	0.13	0.02	3.00	0.10	1.74	0.16	14.60	14.99	1.62	15.08
41	0.19	1.54	0.19	0.02	4.26	0.11	2.12	0.17	16.27	16.90	2.06	17.03

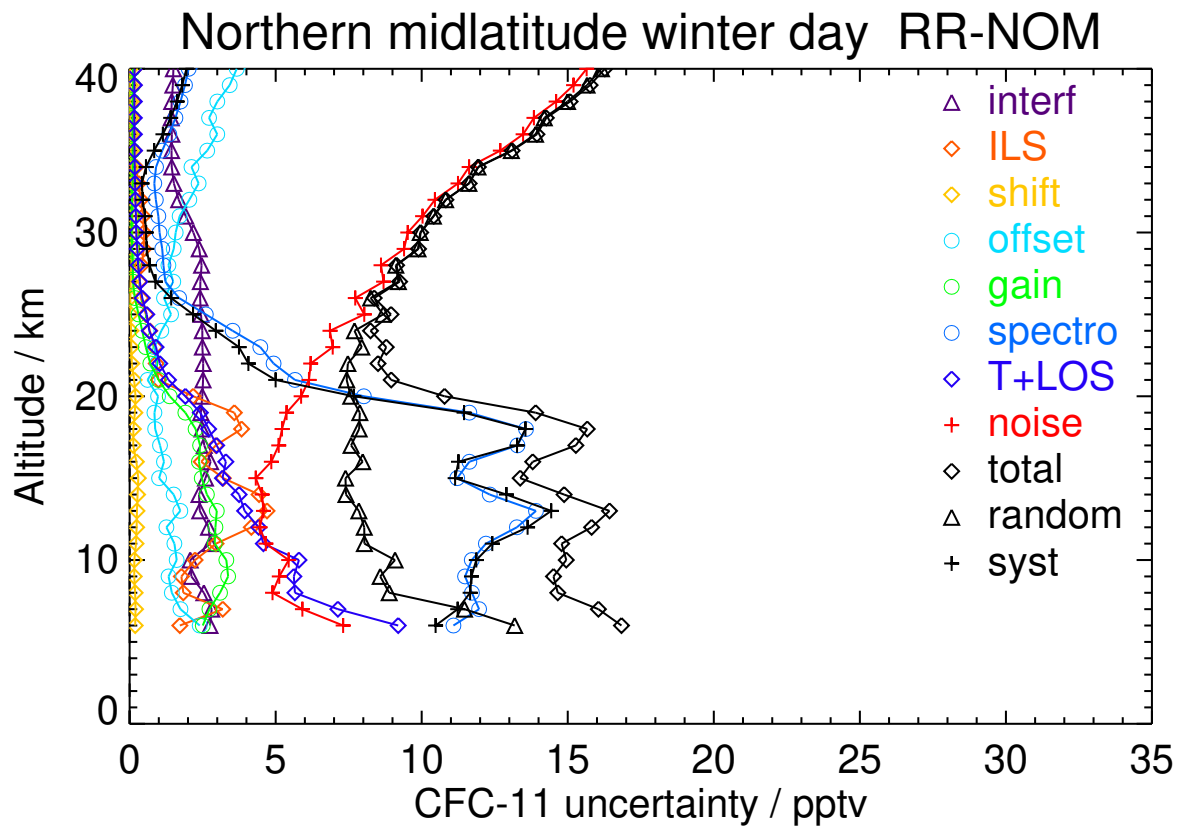


Figure S43. V8R_F-11_261 Northern midlatitude winter day

Table S45. CFC-11 error budget for Northern midlatitude winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	247.58	2.68	1.18	0.24	1.55	3.11	11.24	5.66	4.91	8.52	11.43	14.26
11	231.18	2.87	2.84	0.22	0.91	2.92	12.62	4.44	4.29	7.48	12.92	14.93
14	208.49	2.49	4.02	0.25	1.33	2.57	11.86	3.73	4.47	7.33	12.31	14.33
17	158.02	2.48	3.26	0.16	1.22	2.68	14.29	3.31	5.22	8.02	14.27	16.37
20	75.60	2.44	2.58	0.20	0.94	1.46	8.94	2.03	5.93	8.15	8.27	11.61
23	38.38	2.49	0.72	0.07	0.86	0.48	4.36	0.92	7.01	7.84	3.91	8.76
26	15.43	2.41	0.45	0.03	1.23	0.19	1.96	0.43	7.79	8.35	1.56	8.50
29	9.86	2.39	0.42	0.07	1.51	0.07	0.92	0.26	9.55	9.99	0.67	10.01
32	12.81	1.73	0.43	0.10	2.00	0.08	0.91	0.20	10.37	10.73	0.53	10.75
35	8.82	1.56	0.19	0.06	2.62	0.09	0.98	0.17	12.57	12.95	0.75	12.97
38	3.73	1.62	0.19	0.02	2.95	0.16	1.71	0.16	14.29	14.70	1.62	14.78
41	3.92	1.73	0.24	0.02	3.98	0.16	2.13	0.18	15.82	16.41	2.08	16.54

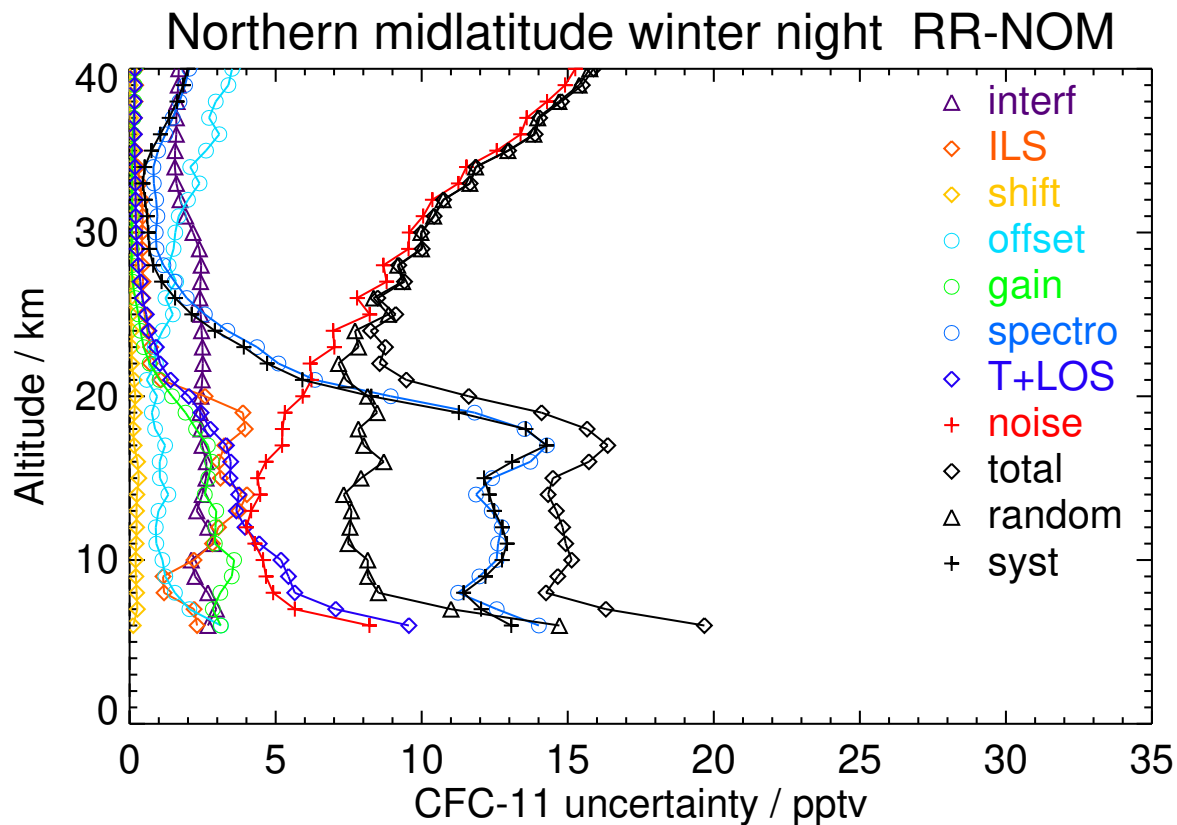


Figure S44. V8R_F-11_261 Northern midlatitude winter night

Table S46. CFC-11 error budget for Northern midlatitude spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	249.27	3.13	1.82	0.17	1.86	2.83	11.26	7.25	6.26	11.18	10.87	15.59
11	217.54	2.16	2.66	0.19	1.33	3.33	11.63	4.92	5.04	8.24	11.90	14.48
14	207.10	2.34	3.94	0.23	1.21	2.79	12.32	3.56	4.44	7.20	12.76	14.65
17	160.67	2.67	3.05	0.07	0.97	2.45	13.19	3.08	5.06	7.43	13.32	15.25
20	81.64	2.43	2.26	0.20	0.82	1.76	10.36	2.00	5.92	7.87	9.96	12.70
23	29.35	2.42	0.63	0.08	0.84	0.52	4.44	0.90	6.73	7.60	3.91	8.54
26	10.38	2.46	0.36	0.03	1.34	0.18	1.76	0.41	8.51	9.02	1.51	9.15
29	1.60	2.25	0.36	0.06	1.42	0.08	0.72	0.22	9.57	9.96	0.37	9.97
32	5.26	1.65	0.30	0.07	2.07	0.08	0.66	0.15	11.14	11.46	0.50	11.47
35	7.61	1.45	0.14	0.05	2.70	0.10	1.34	0.15	13.20	13.57	1.17	13.62
38	8.79	1.55	0.18	0.02	3.05	0.11	1.96	0.16	14.80	15.20	1.88	15.32
41	11.73	1.69	0.29	0.02	4.01	0.17	2.16	0.17	16.21	16.79	2.11	16.93

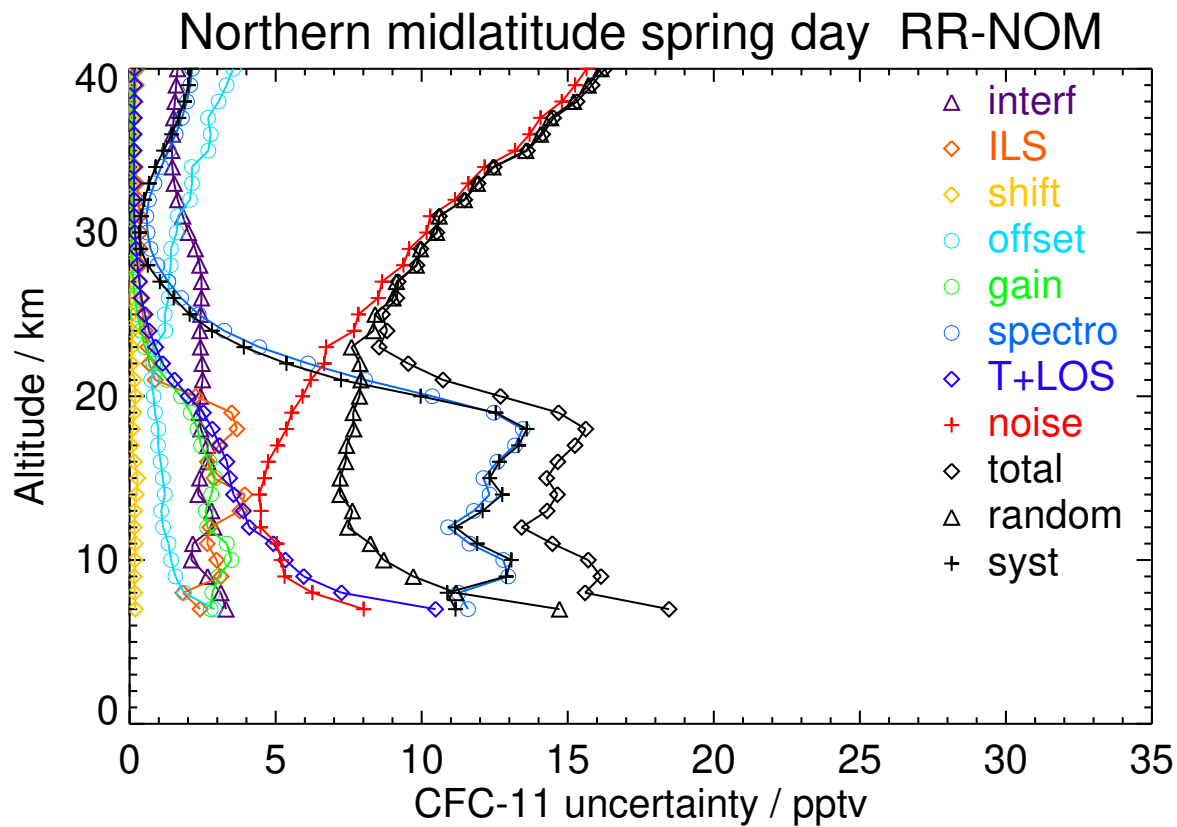


Figure S45. V8R_F-11_261 Northern midlatitude spring day

Table S47. CFC-11 error budget for Northern midlatitude spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	246.71	3.09	2.58	0.23	2.13	2.82	12.31	7.60	6.30	11.51	12.05	16.67
11	219.95	2.14	2.76	0.19	0.98	3.17	11.55	4.52	4.38	7.72	11.69	14.01
14	200.41	2.28	4.52	0.25	0.88	2.94	12.96	3.53	4.25	6.83	13.67	15.28
17	141.64	2.58	2.91	0.07	0.91	2.24	12.37	2.88	4.92	7.22	12.43	14.38
20	74.91	2.49	1.59	0.20	0.74	1.56	8.81	1.77	5.80	7.50	8.36	11.23
23	28.41	2.43	0.62	0.09	0.87	0.55	4.02	0.81	6.76	7.56	3.58	8.36
26	14.22	2.47	0.34	0.02	1.33	0.17	1.58	0.39	8.34	8.85	1.33	8.95
29	2.45	2.21	0.49	0.07	1.47	0.06	0.88	0.24	9.64	10.03	0.64	10.05
32	3.65	1.60	0.34	0.08	1.99	0.08	0.78	0.17	11.01	11.33	0.43	11.34
35	5.71	1.42	0.14	0.05	2.57	0.09	1.20	0.15	13.04	13.38	1.09	13.43
38	3.09	1.46	0.17	0.02	2.92	0.09	1.84	0.16	14.80	15.17	1.75	15.27
41	5.33	1.69	0.29	0.02	3.99	0.14	2.19	0.18	16.24	16.82	2.13	16.95

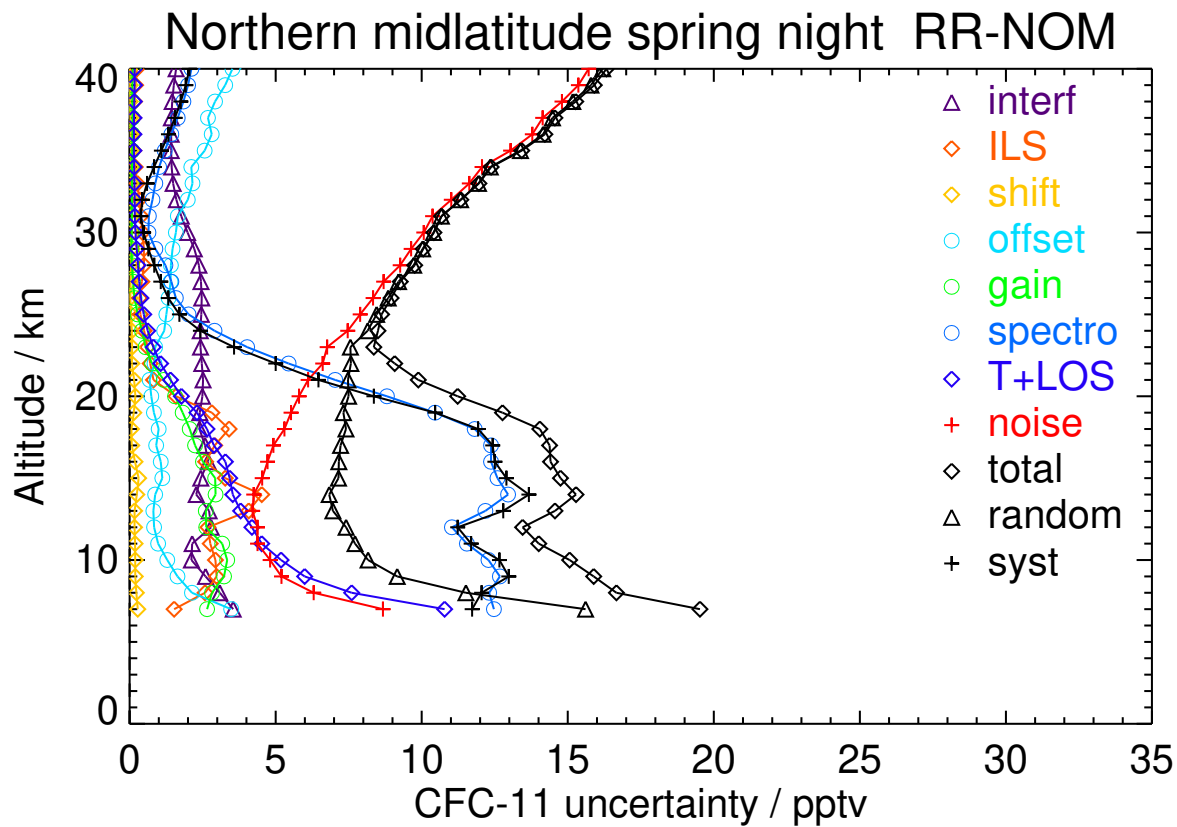


Figure S46. V8R_F-11_261 Northern midlatitude spring night

Table S48. CFC-11 error budget for Northern midlatitude summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	239.99	2.94	0.94	0.13	2.62	2.03	10.01	7.91	7.21	12.24	9.25	15.34
11	245.11	1.94	1.30	0.15	1.48	3.78	9.49	4.98	5.02	7.80	10.06	12.73
14	249.15	2.25	2.28	0.23	1.50	3.58	11.06	3.74	4.87	6.99	11.69	13.62
17	236.39	2.66	1.90	0.08	1.20	3.64	13.39	3.97	5.52	7.67	13.86	15.84
20	152.74	2.33	4.74	0.31	1.12	2.83	16.43	3.04	6.12	7.54	17.24	18.81
23	49.04	2.58	1.29	0.07	0.80	0.80	7.88	1.54	7.11	8.00	7.79	11.17
26	11.87	2.44	0.65	0.03	1.01	0.14	2.16	0.52	7.44	8.00	1.92	8.23
29	5.79	2.46	0.41	0.06	1.36	0.12	0.86	0.26	9.26	9.72	0.36	9.73
32	4.02	1.63	0.25	0.07	1.89	0.05	0.71	0.16	10.20	10.53	0.38	10.53
35	3.16	1.28	0.12	0.06	2.51	0.07	1.15	0.14	12.40	12.73	1.03	12.77
38	6.40	1.43	0.16	0.03	2.71	0.12	1.77	0.17	14.01	14.35	1.71	14.45
41	2.74	1.44	0.23	0.02	3.34	0.13	2.09	0.19	15.51	15.94	2.05	16.08

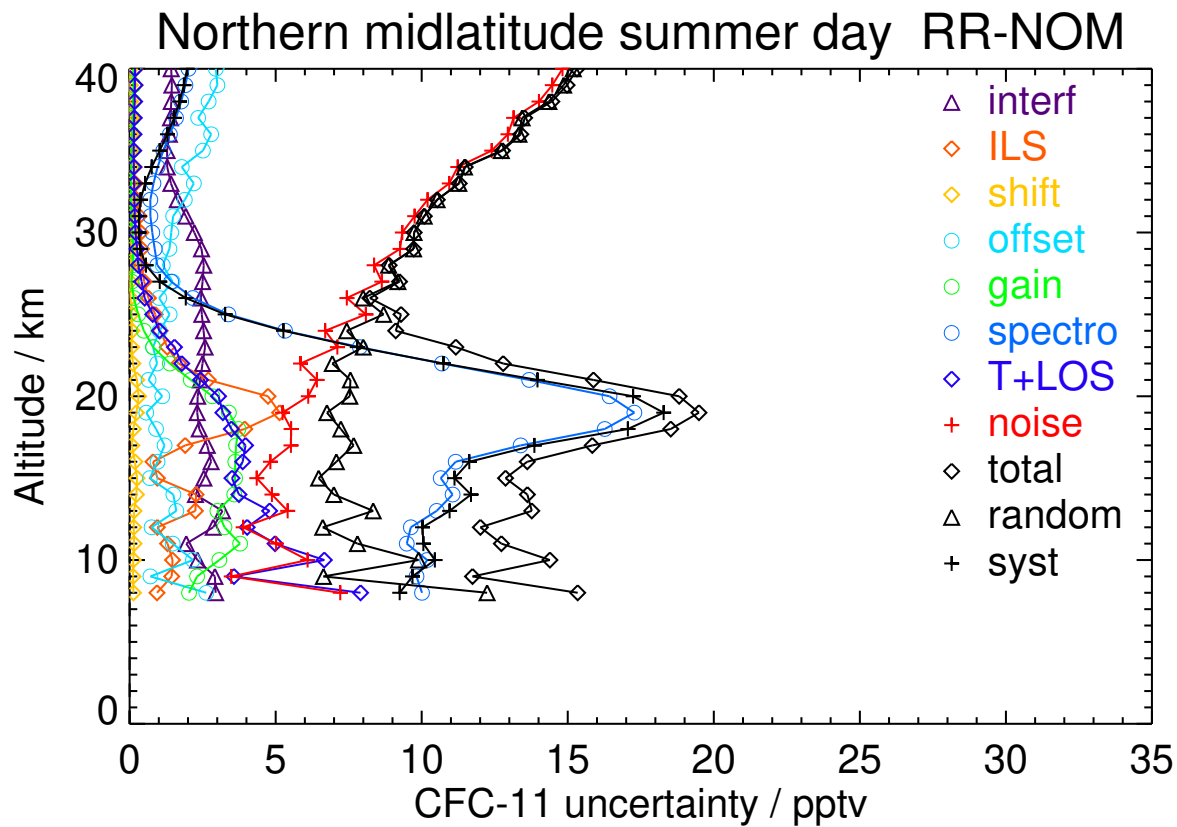


Figure S47. V8R_F-11_261 Northern midlatitude summer day

Table S49. CFC-11 error budget for Northern midlatitude summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	256.97	3.39	1.29	0.12	3.08	2.57	11.30	8.56	7.32	12.30	11.51	16.85
11	248.37	2.32	1.06	0.15	1.53	3.06	10.17	4.86	4.98	7.80	10.45	13.04
14	245.15	2.63	2.96	0.22	0.81	3.16	11.17	4.15	4.72	7.14	11.82	13.81
17	223.63	2.42	2.18	0.05	0.94	3.19	13.09	3.69	5.13	7.22	13.45	15.27
20	146.48	2.38	3.91	0.27	0.97	2.34	14.92	2.80	5.86	7.40	15.41	17.09
23	53.35	2.58	1.32	0.09	0.80	0.80	7.97	1.50	6.75	7.61	7.95	11.00
26	8.20	2.43	0.63	0.05	1.17	0.11	2.18	0.55	7.72	8.23	2.14	8.50
29	4.68	2.42	0.28	0.04	1.37	0.10	0.84	0.20	9.15	9.59	0.48	9.60
32	11.33	1.61	0.30	0.07	1.88	0.08	0.82	0.16	10.18	10.51	0.41	10.52
35	5.24	1.40	0.23	0.08	2.42	0.07	1.01	0.16	12.34	12.68	0.75	12.70
38	6.68	1.39	0.20	0.04	2.65	0.08	1.78	0.17	13.99	14.32	1.67	14.42
41	8.25	1.40	0.26	0.02	3.26	0.07	2.14	0.18	15.41	15.82	2.11	15.96

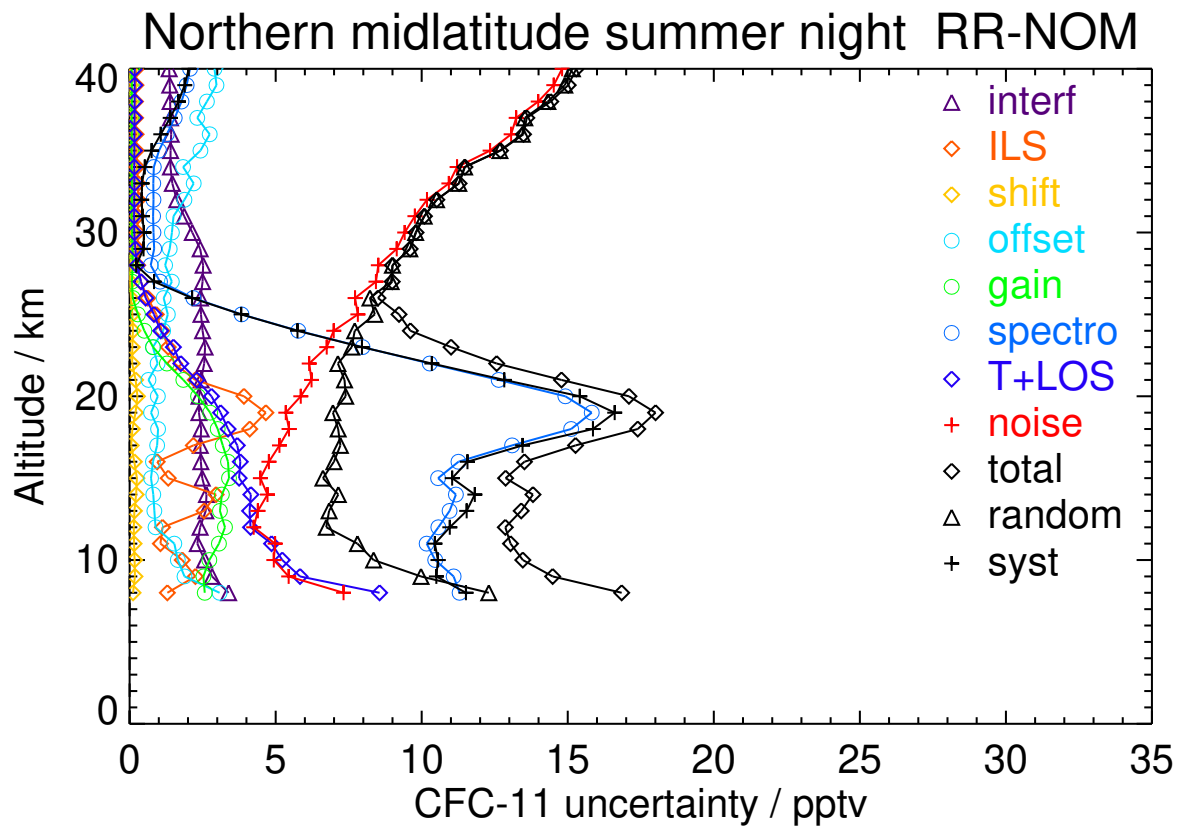


Figure S48. V8R_F-11_261 Northern midlatitude summer night

Table S50. CFC-11 error budget for Northern midlatitude autumn day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	239.15	2.82	2.23	0.19	2.80	2.08	10.59	8.40	7.83	12.94	10.08	16.40
11	245.31	2.01	0.82	0.20	1.02	3.51	10.32	4.32	4.77	7.16	10.72	12.89
14	247.97	2.64	2.52	0.27	1.51	3.12	11.92	3.93	4.77	7.18	12.41	14.34
17	224.29	2.67	2.37	0.15	1.21	3.20	14.03	3.82	5.55	7.66	14.42	16.33
20	140.70	2.37	4.30	0.36	1.10	2.54	15.80	2.93	6.29	7.81	16.39	18.16
23	49.64	2.44	1.27	0.06	0.89	0.77	7.84	1.44	7.43	8.40	7.56	11.30
26	14.09	2.49	0.60	0.02	1.06	0.16	2.49	0.54	7.74	8.29	2.33	8.61
29	5.50	2.21	0.34	0.07	1.50	0.05	0.90	0.25	10.00	10.38	0.56	10.39
32	6.52	1.68	0.24	0.08	1.95	0.05	0.71	0.18	11.00	11.32	0.28	11.33
35	1.05	1.30	0.14	0.04	2.51	0.07	1.08	0.15	13.28	13.59	0.94	13.62
38	3.67	1.20	0.22	0.02	2.92	0.09	1.83	0.16	15.20	15.53	1.77	15.63
41	5.62	1.44	0.38	0.02	4.27	0.16	2.36	0.19	16.69	17.30	2.34	17.46

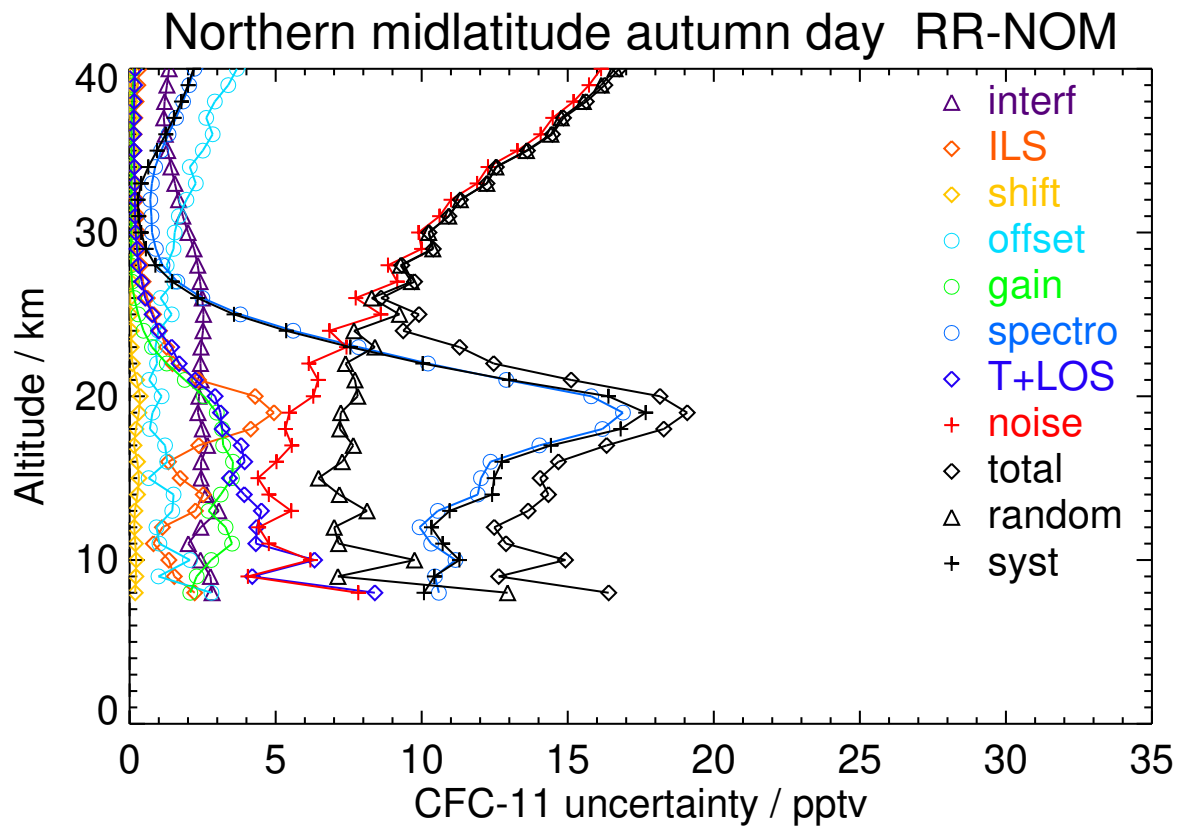


Figure S49. V8R_F-11_261 Northern midlatitude autumn day

Table S51. CFC-11 error budget for Northern midlatitude autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	242.81	2.95	1.41	0.18	2.70	2.31	10.84	7.97	7.05	12.15	10.31	15.93
11	243.28	2.12	1.34	0.21	0.99	3.62	10.88	4.41	4.52	7.25	11.23	13.36
14	243.68	2.42	2.68	0.28	0.94	3.23	11.85	3.92	4.69	6.98	12.39	14.22
17	214.42	2.57	2.62	0.15	1.06	3.08	13.86	3.67	5.35	7.45	14.24	16.07
20	126.96	2.42	3.85	0.33	0.99	2.34	14.58	2.70	6.10	7.66	15.02	16.86
23	43.98	2.44	1.31	0.06	0.93	0.75	7.55	1.35	7.19	8.39	7.03	10.94
26	7.94	2.50	0.56	0.02	1.16	0.15	2.10	0.48	7.94	8.53	1.67	8.69
29	6.70	2.20	0.35	0.07	1.51	0.05	0.87	0.24	9.86	10.25	0.56	10.26
32	3.65	1.67	0.27	0.07	1.97	0.06	0.59	0.17	11.03	11.34	0.31	11.35
35	4.85	1.27	0.13	0.04	2.54	0.05	1.10	0.13	13.27	13.58	1.01	13.62
38	7.23	1.17	0.22	0.02	2.85	0.08	1.85	0.15	15.11	15.43	1.80	15.53
41	8.10	1.44	0.38	0.02	4.12	0.13	2.29	0.18	16.54	17.12	2.27	17.27

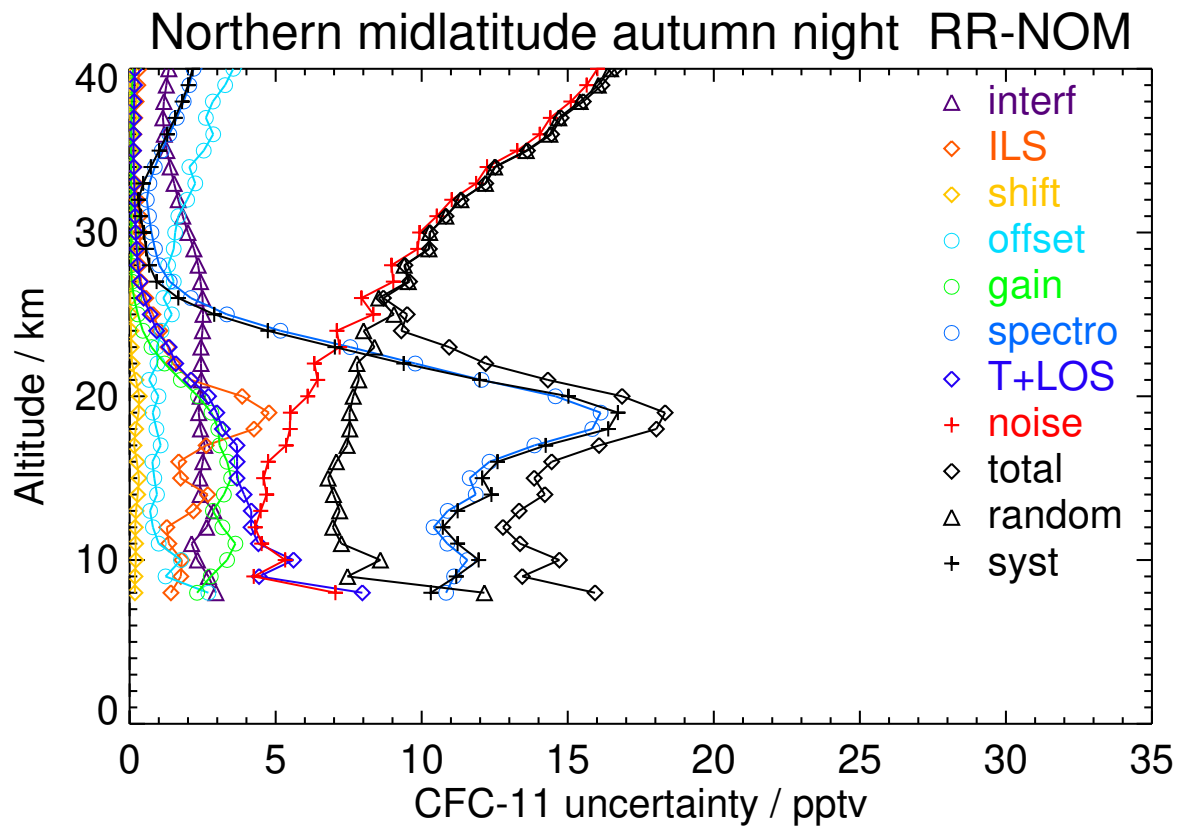


Figure S50. V8R_F-11_261 Northern midlatitude autumn night

Table S52. CFC-11 error budget for Tropics day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
11	245.06	2.74	1.62	0.12	2.16	2.34	11.27	6.27	6.31	10.22	11.04	15.05
14	251.33	2.68	1.63	0.18	1.11	2.88	9.97	4.08	5.37	7.70	10.25	12.82
17	241.14	2.42	2.09	0.07	1.04	3.31	13.18	4.31	5.64	7.86	13.58	15.69
20	201.26	2.31	3.63	0.21	0.69	2.13	13.86	2.66	6.24	7.62	14.27	16.18
23	123.52	2.46	1.96	0.27	0.88	1.24	11.76	2.03	6.93	7.88	11.86	14.24
26	62.76	2.50	2.21	0.08	1.15	0.35	7.14	1.18	7.76	8.79	6.92	11.19
29	20.90	2.47	1.69	0.22	1.49	0.14	2.92	0.62	9.35	9.93	2.99	10.37
32	3.79	1.65	0.51	0.13	1.65	0.05	0.70	0.25	10.48	10.76	0.47	10.77
35	4.03	1.33	0.13	0.07	2.20	0.05	1.17	0.16	11.91	12.19	1.08	12.24
38	1.11	1.36	0.10	0.04	2.87	0.06	1.59	0.19	13.86	14.22	1.53	14.30
41	2.93	1.39	0.15	0.03	3.56	0.07	1.82	0.21	15.51	15.98	1.76	16.08

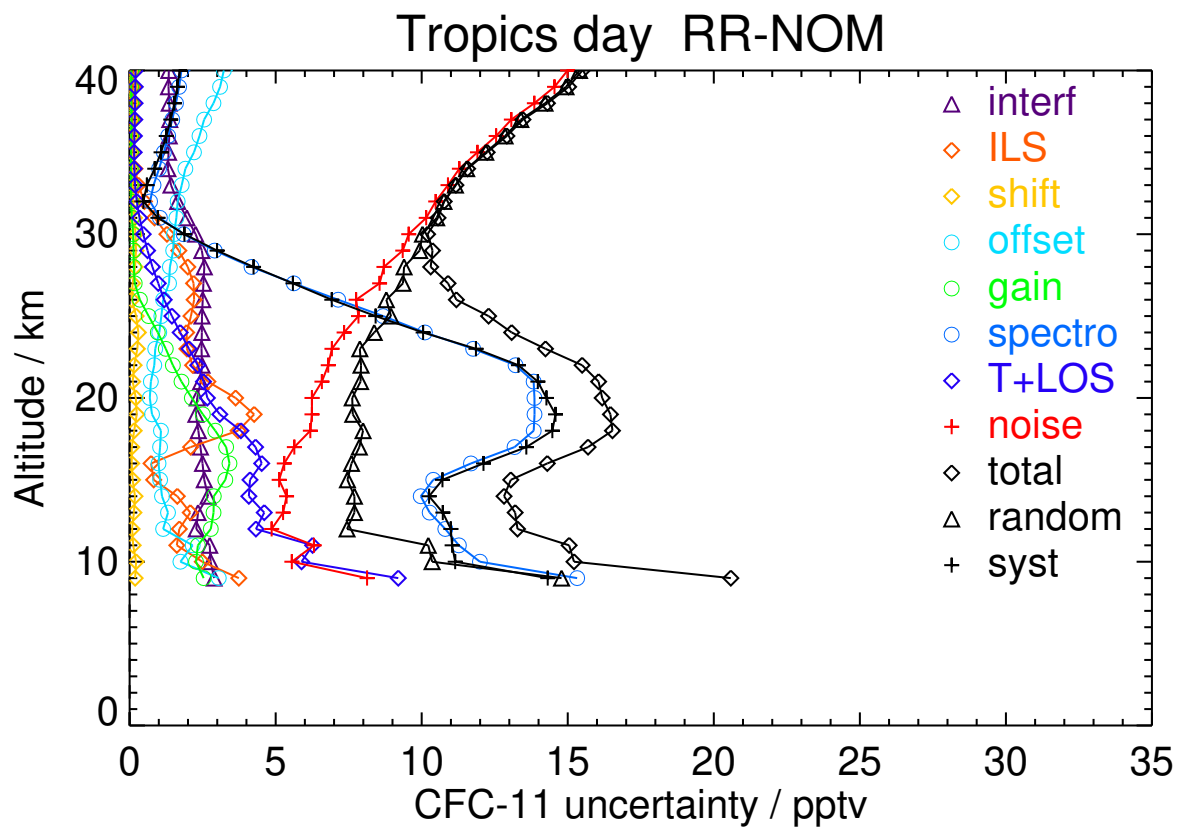


Figure S51. V8R_F-11_261 Tropics day

Table S53. CFC-11 error budget for Tropics night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
11	244.09	2.74	2.02	0.24	1.98	2.36	11.28	5.96	5.93	9.80	11.09	14.80
14	256.73	2.66	1.24	0.16	1.16	3.01	10.17	4.15	5.42	7.65	10.51	13.00
17	238.42	2.40	1.78	0.09	1.17	3.42	12.35	4.47	5.75	7.98	12.80	15.08
20	199.34	2.33	3.61	0.13	0.68	2.29	14.18	2.78	6.34	7.60	14.68	16.53
23	117.35	2.48	1.90	0.27	0.87	1.13	11.02	2.05	6.99	8.03	11.04	13.65
26	60.45	2.49	1.99	0.04	1.11	0.42	6.61	1.15	7.81	8.62	6.57	10.84
29	20.59	2.46	1.42	0.20	1.45	0.08	2.61	0.59	9.30	9.82	2.72	10.19
32	4.88	1.66	0.46	0.12	1.64	0.04	0.72	0.25	10.59	10.87	0.45	10.88
35	1.32	1.28	0.14	0.05	2.17	0.06	1.25	0.16	11.96	12.24	1.12	12.29
38	6.75	1.35	0.14	0.02	2.83	0.07	1.59	0.19	13.93	14.29	1.51	14.37
41	10.31	1.40	0.17	0.02	3.55	0.08	1.66	0.21	15.67	16.14	1.56	16.21

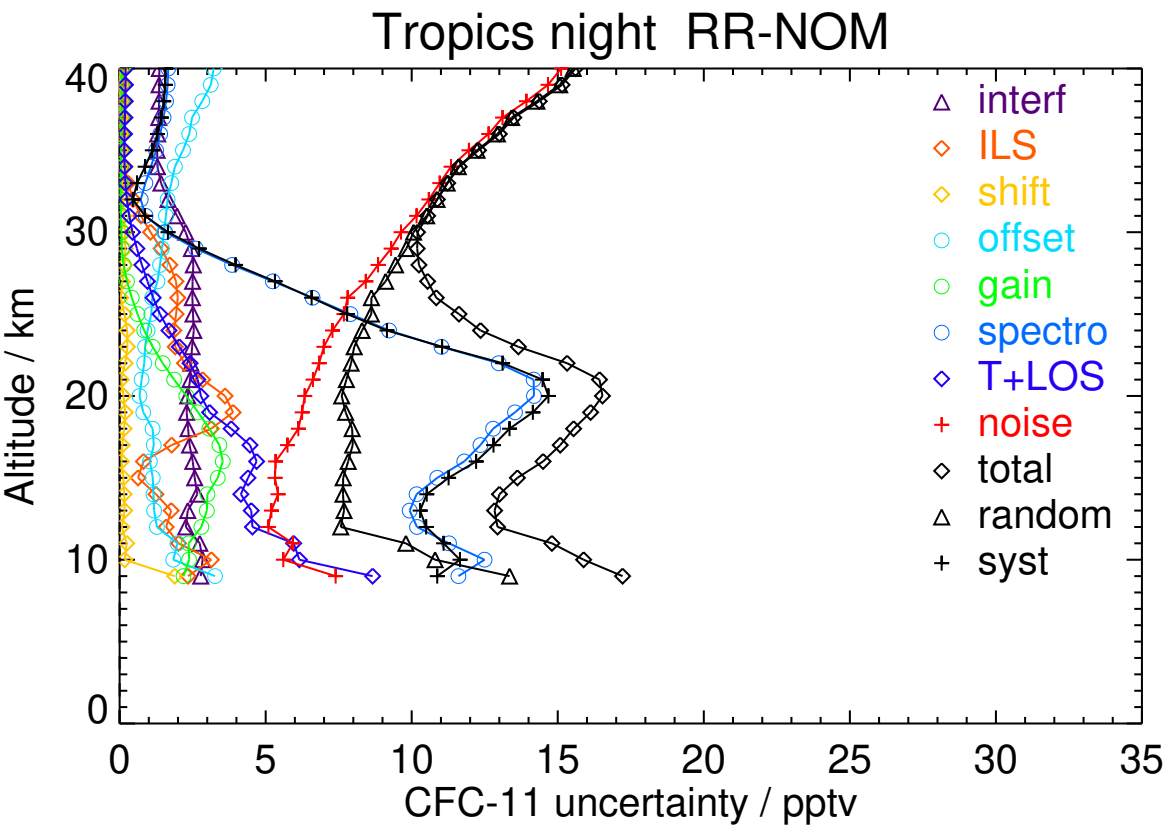


Figure S52. V8R_F-11_261 Tropics night

Table S54. CFC-11 error budget for Southern midlatitude winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	241.41	2.32	0.99	0.21	1.59	3.41	11.64	5.91	5.08	9.15	11.54	14.73
11	228.43	3.00	2.18	0.26	1.07	3.16	12.06	4.53	4.51	7.62	12.38	14.53
14	201.04	2.68	3.24	0.28	1.11	2.91	12.62	3.67	4.43	7.04	13.05	14.83
17	141.52	2.48	2.52	0.14	0.91	2.77	12.98	2.89	5.21	7.06	13.24	15.00
20	68.66	2.41	1.72	0.16	0.88	1.62	8.78	1.79	6.31	7.56	8.66	11.50
23	23.74	2.39	0.50	0.05	1.02	0.53	4.13	0.81	7.43	8.20	3.59	8.95
26	8.04	2.36	0.33	0.04	1.53	0.24	2.08	0.43	9.48	9.97	1.75	10.12
29	1.83	2.13	0.27	0.07	1.90	0.11	1.17	0.31	11.36	11.73	1.05	11.78
32	1.42	1.47	0.17	0.05	2.53	0.13	0.62	0.19	13.44	13.77	0.29	13.77
35	5.00	1.08	0.14	0.03	3.30	0.18	1.35	0.19	15.81	16.20	1.19	16.24
38	8.57	1.13	0.28	0.01	4.55	0.17	2.15	0.22	17.88	18.50	2.04	18.61
41	9.62	1.49	0.39	0.02	7.09	0.20	2.73	0.24	19.26	20.59	2.65	20.76

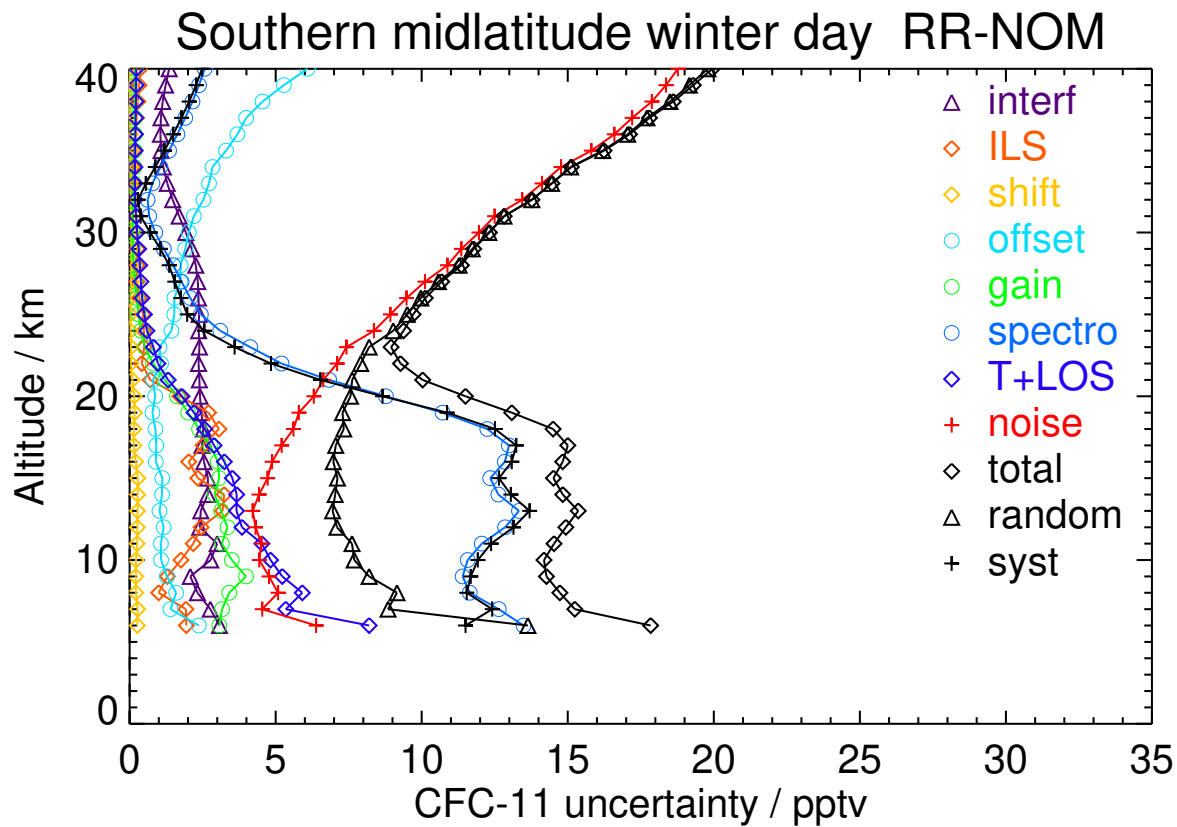


Figure S53. V8R_F-11_261 Southern midlatitude winter day

Table S55. CFC-11 error budget for Southern midlatitude winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	244.83	2.19	1.14	0.16	1.56	3.23	9.96	5.87	5.24	8.76	10.16	13.42
11	231.97	3.08	1.82	0.22	1.68	2.80	11.40	5.01	5.15	8.46	11.56	14.32
14	203.61	2.45	3.29	0.30	1.47	2.72	12.09	3.76	4.67	7.05	12.61	14.45
17	146.36	2.39	2.71	0.15	0.99	2.53	12.78	2.96	5.28	7.16	13.00	14.85
20	76.06	2.40	2.07	0.18	0.99	1.52	9.14	1.97	6.31	7.67	9.04	11.86
23	21.15	2.34	0.41	0.06	1.09	0.45	4.39	0.88	7.76	8.39	4.11	9.34
26	1.25	2.34	0.18	0.03	1.47	0.13	1.38	0.38	9.03	9.49	1.08	9.55
29	4.16	2.08	0.18	0.06	1.88	0.10	0.94	0.25	11.65	11.99	0.87	12.02
32	3.69	1.52	0.19	0.06	2.37	0.10	0.63	0.19	13.07	13.39	0.27	13.39
35	3.01	1.18	0.11	0.03	3.04	0.09	1.20	0.17	15.18	15.54	1.10	15.58
38	2.17	1.27	0.19	0.02	4.41	0.08	2.01	0.19	17.30	17.90	1.96	18.01
41	2.20	1.59	0.28	0.02	6.94	0.16	2.55	0.22	18.88	20.19	2.50	20.35

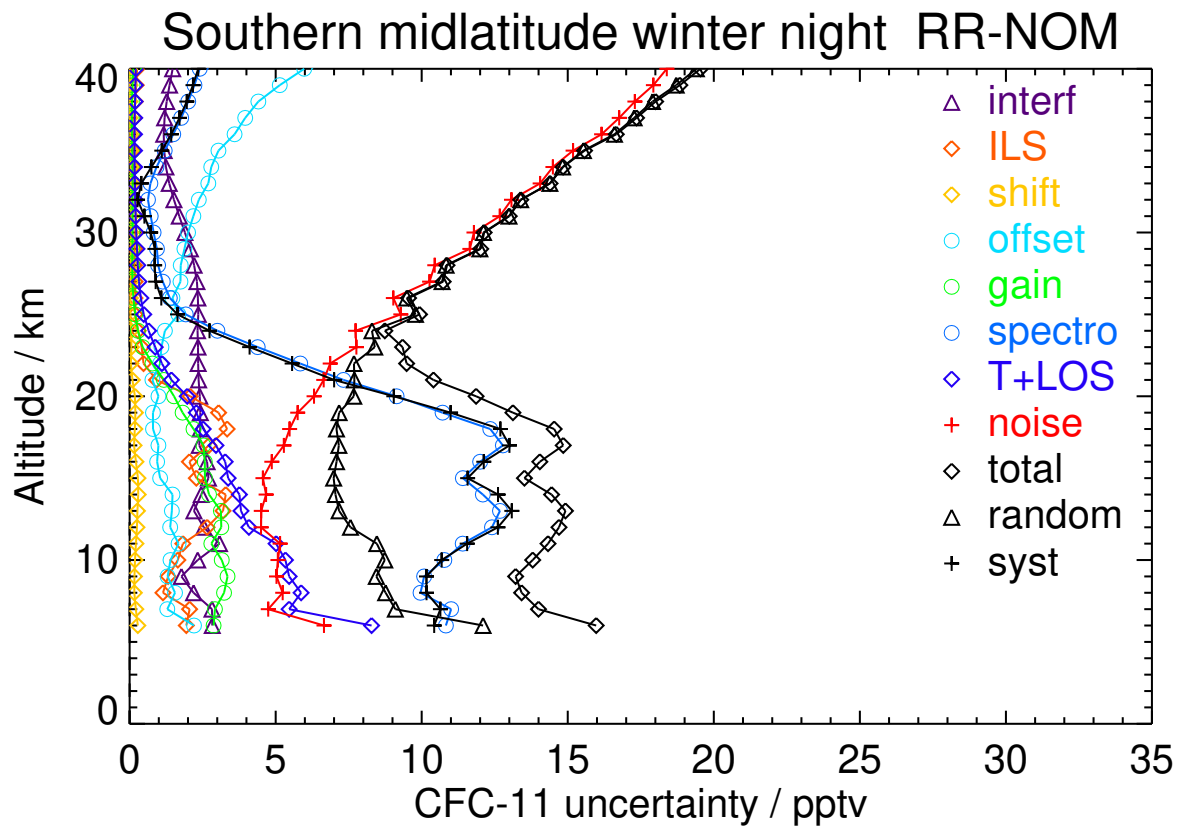


Figure S54. V8R_F-11_261 Southern midlatitude winter night

Table S56. CFC-11 error budget for Southern midlatitude spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	243.47	2.31	1.78	0.21	1.74	3.18	11.30	6.06	5.44	9.40	11.29	14.69
11	220.41	2.76	3.97	0.26	1.00	3.09	13.26	4.43	4.53	8.05	13.61	15.81
14	189.43	2.54	5.21	0.24	1.16	2.47	13.13	3.69	4.46	9.33	12.64	15.71
17	120.99	2.54	3.48	0.11	1.02	2.47	13.36	2.74	5.03	9.31	12.26	15.39
20	49.33	2.52	1.71	0.13	0.84	1.31	7.60	1.50	5.62	8.10	6.13	10.16
23	25.92	2.56	0.37	0.05	0.73	0.32	2.55	0.70	6.59	7.28	2.16	7.60
26	17.67	2.57	0.25	0.02	1.18	0.15	1.57	0.35	7.79	8.35	1.25	8.44
29	7.81	2.35	0.35	0.06	1.45	0.07	0.75	0.23	9.47	9.89	0.50	9.90
32	6.57	1.63	0.23	0.06	1.88	0.08	0.80	0.16	10.69	11.01	0.41	11.01
35	7.56	1.21	0.11	0.04	2.46	0.13	1.08	0.14	12.99	13.29	0.87	13.32
38	8.94	1.24	0.10	0.02	2.67	0.14	1.61	0.15	14.73	15.04	1.44	15.11
41	4.53	1.53	0.21	0.02	3.70	0.15	2.01	0.16	16.24	16.74	1.92	16.85

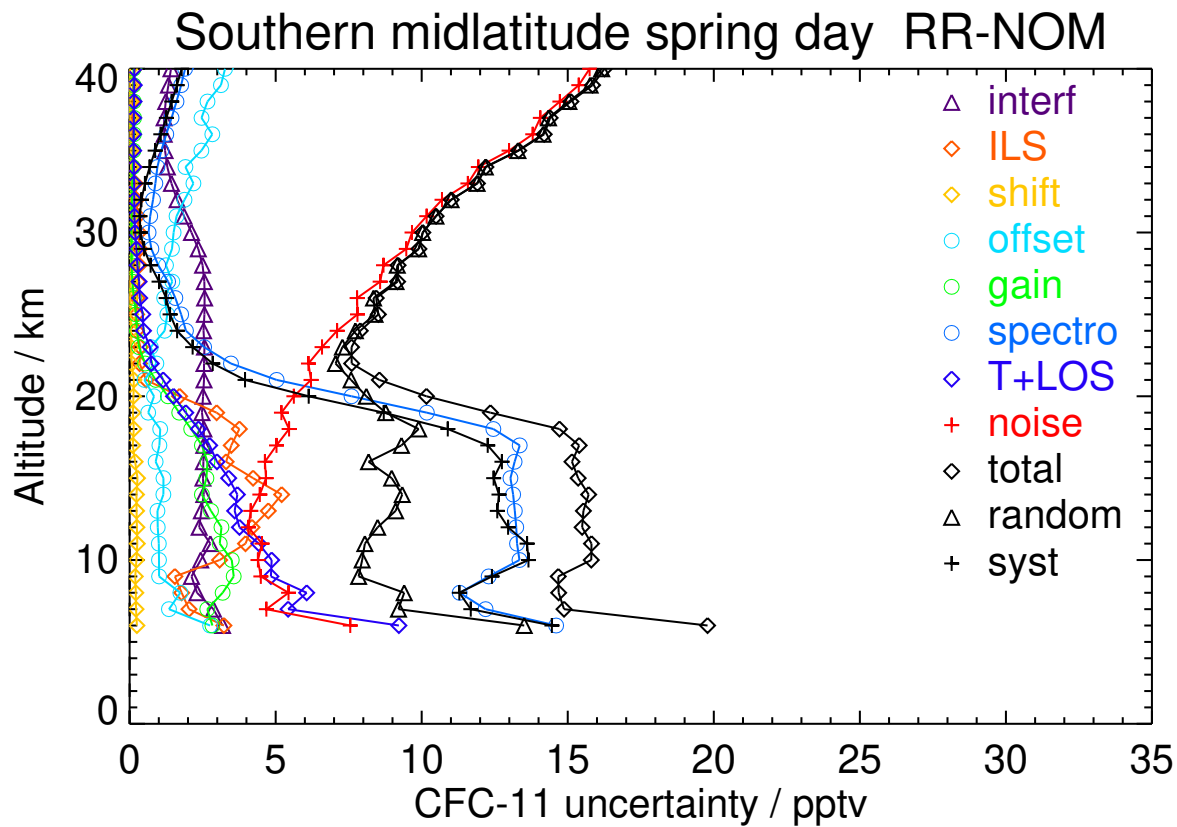


Figure S55. V8R_F-11_261 Southern midlatitude spring day

Table S57. CFC-11 error budget for Southern midlatitude spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	247.86	2.25	1.70	0.16	1.43	3.18	10.28	5.78	5.04	9.00	10.18	13.59
11	225.75	2.85	2.70	0.24	1.40	3.03	10.99	4.71	4.99	8.28	11.23	13.95
14	204.90	2.44	4.58	0.28	1.30	3.00	13.33	3.78	4.55	7.70	13.82	15.82
17	124.08	2.48	4.09	0.12	0.87	2.62	14.02	2.92	5.17	7.92	14.13	16.20
20	33.95	2.45	1.87	0.16	0.88	1.34	7.09	1.46	5.99	8.36	5.52	10.02
23	24.72	2.57	0.41	0.03	0.79	0.32	2.11	0.59	6.93	7.60	1.56	7.76
26	11.54	2.55	0.48	0.03	1.17	0.18	1.56	0.36	7.85	8.40	1.34	8.50
29	9.74	2.41	0.38	0.06	1.42	0.07	0.86	0.21	9.49	9.93	0.44	9.94
32	9.22	1.77	0.27	0.06	1.85	0.07	0.78	0.16	10.50	10.83	0.53	10.84
35	6.62	1.40	0.15	0.04	2.38	0.10	1.02	0.15	12.76	13.07	0.85	13.10
38	5.63	1.33	0.16	0.03	2.67	0.13	1.49	0.16	14.57	14.89	1.38	14.95
41	3.60	1.56	0.26	0.02	3.67	0.17	1.84	0.17	16.12	16.63	1.74	16.72

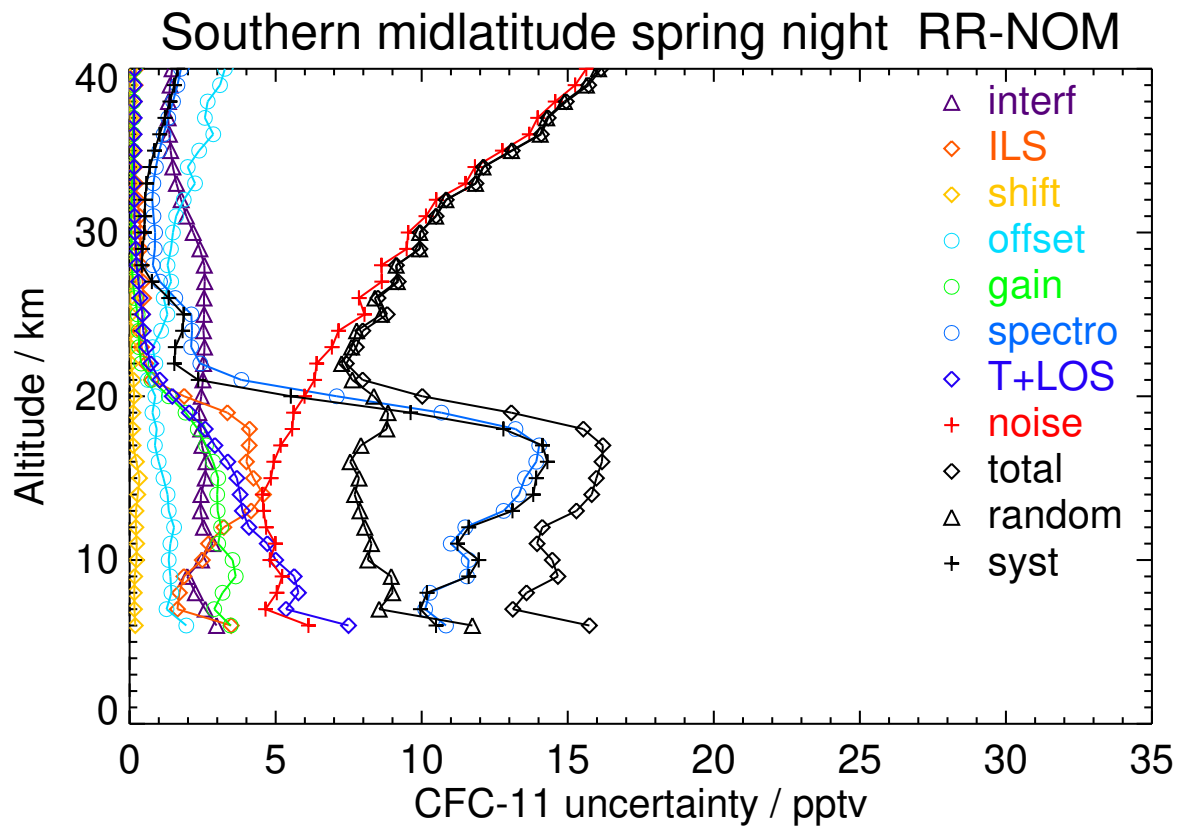


Figure S56. V8R_F-11_261 Southern midlatitude spring night

Table S58. CFC-11 error budget for Southern midlatitude summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	240.43	2.52	1.62	0.25	1.56	3.11	11.06	5.61	4.84	8.84	10.96	14.08
11	228.52	2.81	3.42	0.25	1.04	3.26	12.18	4.42	4.29	7.95	12.43	14.76
14	202.19	2.50	4.63	0.23	1.27	2.48	11.53	3.59	4.37	8.53	11.30	14.15
17	165.57	2.45	3.62	0.09	1.21	2.63	13.22	3.25	5.10	8.06	13.18	15.45
20	98.36	2.44	3.16	0.21	0.97	1.64	11.31	2.23	5.74	9.19	10.05	13.62
23	37.27	2.46	1.34	0.07	0.87	0.56	6.00	1.15	6.86	7.84	5.64	9.66
26	6.45	2.58	0.39	0.04	1.08	0.11	1.38	0.41	7.24	7.84	1.00	7.91
29	7.71	2.33	0.36	0.05	1.47	0.08	0.62	0.20	9.23	9.65	0.33	9.66
32	5.45	1.67	0.32	0.08	1.62	0.05	0.67	0.15	9.62	9.92	0.41	9.93
35	9.65	1.80	0.17	0.05	2.26	0.14	1.08	0.16	11.65	12.01	0.94	12.05
38	7.38	1.47	0.13	0.03	2.48	0.09	1.46	0.15	13.21	13.53	1.40	13.60
41	-1.52	1.75	0.27	0.02	3.10	0.20	1.84	0.16	14.87	15.30	1.80	15.41

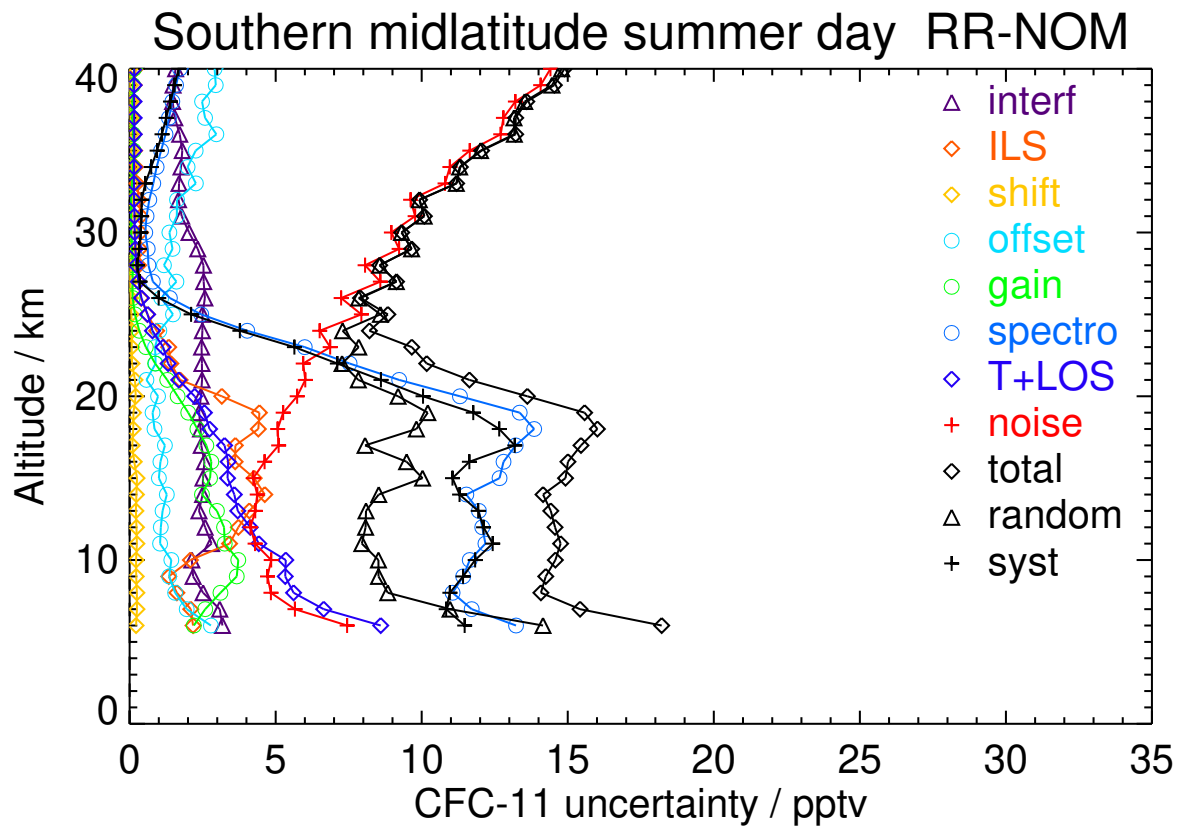


Figure S57. V8R_F-11_261 Southern midlatitude summer day

Table S59. CFC-11 error budget for Southern midlatitude summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	250.56	2.61	1.99	0.17	1.59	3.00	10.14	5.83	5.10	9.07	10.14	13.61
11	221.02	2.75	3.24	0.26	1.60	3.26	11.61	4.81	4.86	8.54	11.83	14.59
14	207.31	2.40	5.50	0.23	1.47	3.09	13.15	3.74	4.55	9.23	13.05	15.98
17	163.07	2.57	3.40	0.11	1.18	2.82	13.47	3.06	5.03	9.48	12.41	15.61
20	102.89	2.46	2.75	0.20	1.01	1.98	11.65	2.22	5.69	8.38	11.02	13.84
23	32.69	2.43	1.33	0.10	0.92	0.65	5.54	1.12	6.82	7.87	5.05	9.35
26	9.01	2.60	0.36	0.05	1.05	0.11	1.22	0.42	7.28	7.88	0.80	7.92
29	7.21	2.32	0.47	0.06	1.43	0.09	0.73	0.23	9.10	9.53	0.48	9.54
32	2.05	1.68	0.37	0.08	1.57	0.04	0.63	0.17	9.54	9.83	0.39	9.84
35	5.15	1.74	0.20	0.04	2.09	0.17	1.20	0.15	11.47	11.80	1.12	11.85
38	8.98	1.46	0.21	0.02	2.38	0.10	1.61	0.15	13.04	13.34	1.55	13.43
41	7.88	1.81	0.35	0.02	3.07	0.22	1.75	0.16	14.64	15.08	1.73	15.17

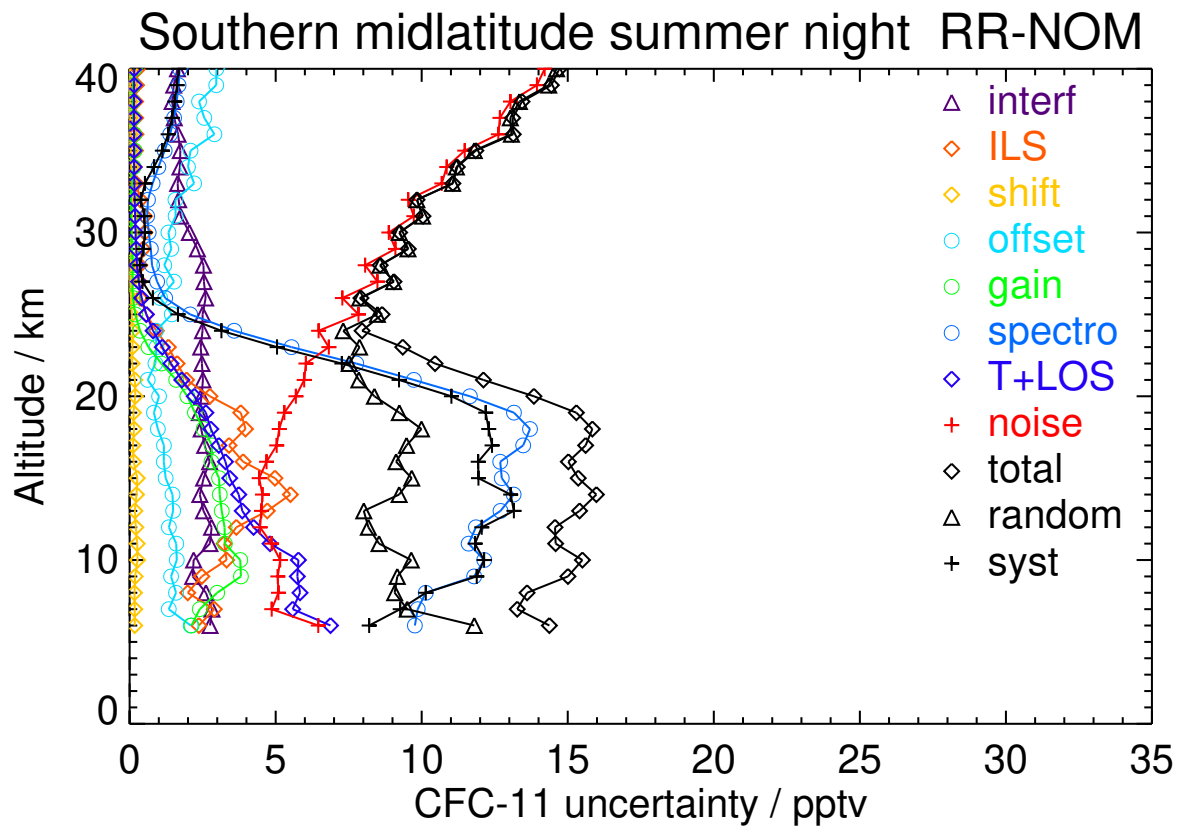


Figure S58. V8R_F-11_261 Southern midlatitude summer night

Table S60. CFC-11 error budget for Southern midlatitude autumn day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	238.67	2.31	1.41	0.24	1.50	3.88	11.47	5.85	4.92	8.61	11.85	14.65
11	228.20	2.80	1.75	0.20	0.81	3.00	10.43	4.13	4.07	7.00	10.68	12.77
14	214.70	2.55	3.25	0.28	0.94	3.03	11.64	3.50	4.20	6.81	12.08	13.87
17	163.03	2.48	3.06	0.11	0.83	2.98	13.68	2.98	4.93	6.84	14.10	15.67
20	83.73	2.45	1.85	0.20	0.80	1.88	9.98	1.94	5.88	7.23	9.97	12.31
23	24.86	2.48	0.79	0.06	0.83	0.67	4.81	0.93	6.80	7.85	4.07	8.84
26	10.33	2.42	0.30	0.02	1.35	0.13	1.50	0.38	8.51	9.02	1.12	9.09
29	7.41	2.19	0.28	0.07	1.61	0.10	1.01	0.26	9.91	10.29	0.88	10.33
32	7.16	1.58	0.22	0.07	2.17	0.10	0.69	0.18	11.65	11.98	0.31	11.98
35	7.11	1.28	0.09	0.03	2.70	0.08	1.00	0.16	13.92	14.24	0.88	14.27
38	0.80	1.18	0.17	0.01	3.21	0.08	1.83	0.17	15.83	16.21	1.75	16.30
41	-0.06	1.36	0.30	0.02	4.98	0.12	2.47	0.19	17.37	18.13	2.45	18.29

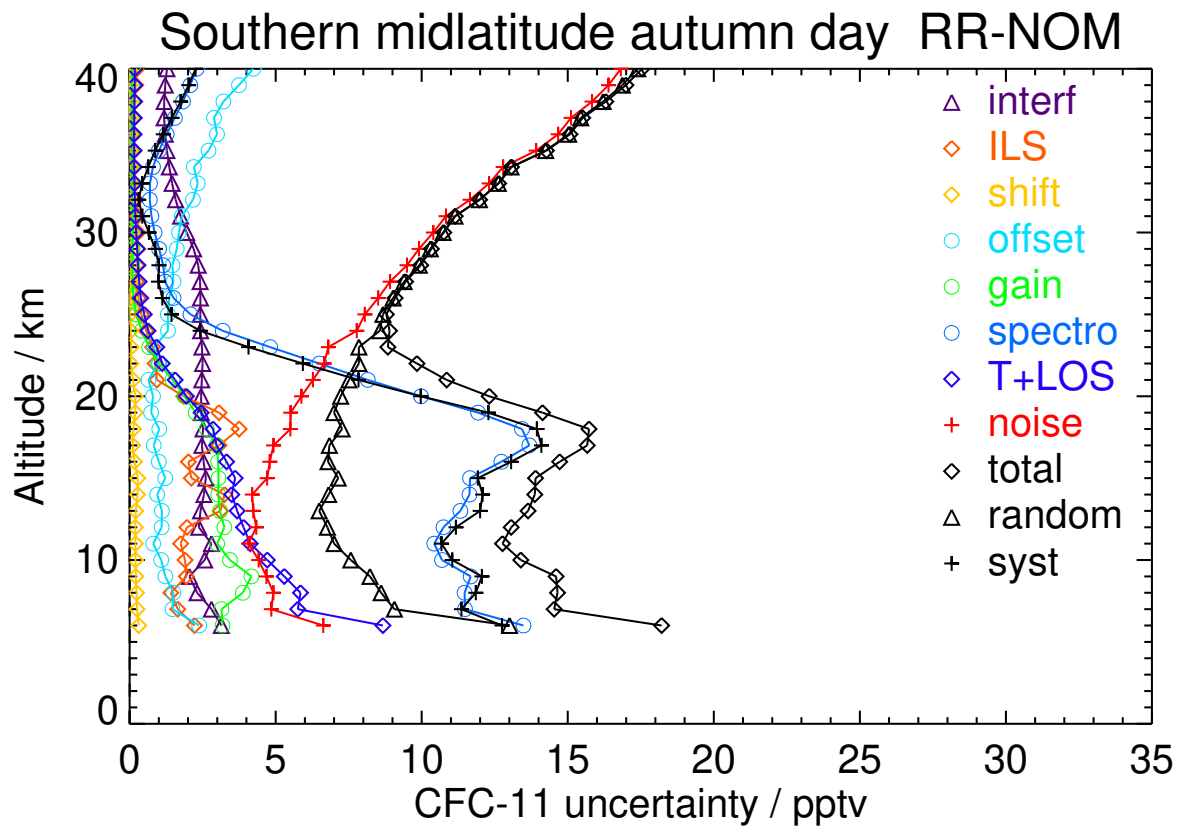


Figure S59. V8R_F-11_261 Southern midlatitude autumn day

Table S61. CFC-11 error budget for Southern midlatitude autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
8	241.83	2.50	2.16	0.18	1.65	3.04	10.16	5.99	5.39	9.31	10.22	13.82
11	234.41	3.05	1.60	0.22	1.51	2.92	10.72	4.80	4.98	8.19	10.88	13.62
14	218.92	2.40	3.82	0.28	1.37	3.10	12.03	3.75	4.57	7.25	12.62	14.55
17	168.37	2.47	3.36	0.11	1.04	2.97	14.69	3.13	5.18	7.20	15.09	16.72
20	86.11	2.47	2.17	0.22	0.96	1.72	10.07	2.12	6.03	7.47	10.07	12.54
23	25.87	2.47	0.67	0.06	0.91	0.66	4.71	0.94	7.25	8.11	4.20	9.13
26	10.09	2.44	0.31	0.03	1.18	0.17	1.78	0.40	7.98	8.56	1.17	8.63
29	5.64	2.21	0.38	0.07	1.57	0.07	1.06	0.26	10.17	10.56	0.76	10.59
32	7.13	1.66	0.22	0.07	1.91	0.08	0.60	0.16	11.06	11.36	0.29	11.36
35	6.50	1.27	0.10	0.04	2.40	0.08	1.13	0.14	13.28	13.57	0.98	13.61
38	6.87	1.27	0.19	0.02	3.02	0.09	1.93	0.16	15.33	15.69	1.84	15.79
41	10.70	1.53	0.33	0.02	4.64	0.14	2.37	0.18	16.84	17.54	2.32	17.70

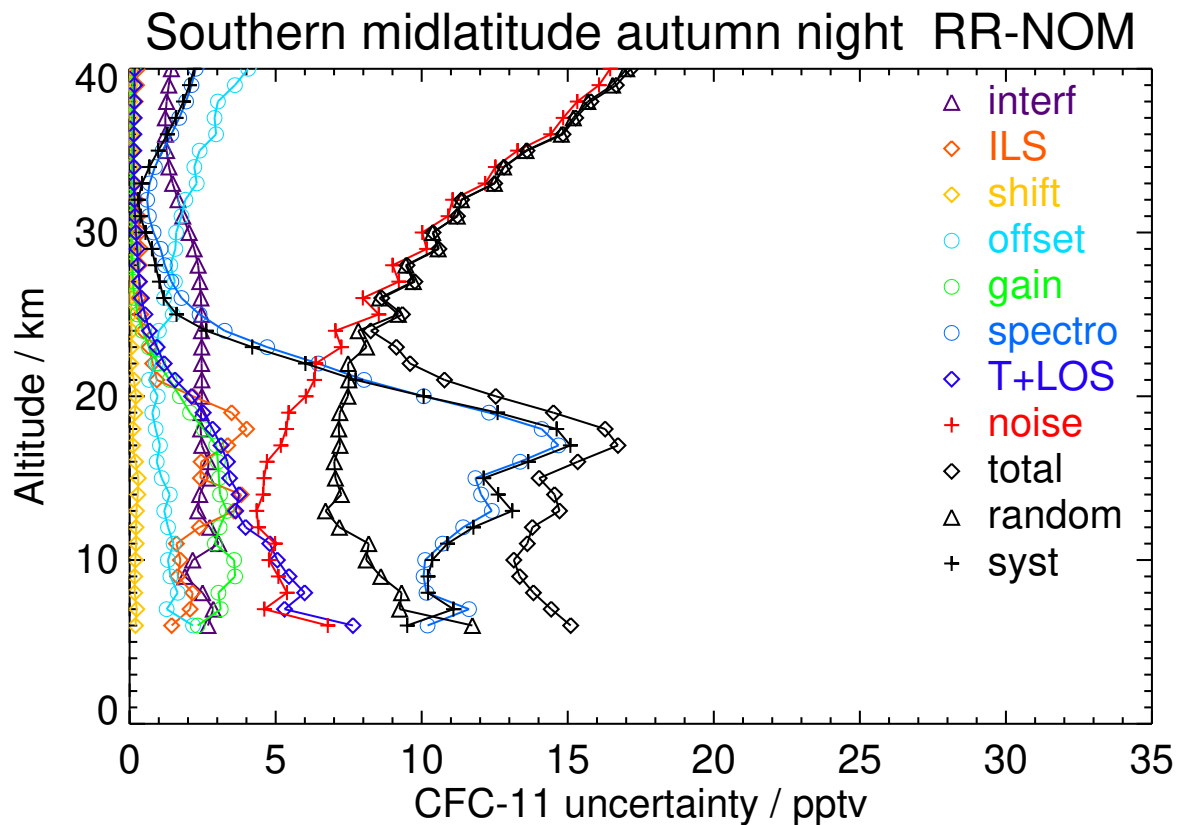


Figure S60. V8R_F-11_261 Southern midlatitude autumn night

Table S62. CFC-11 error budget for Southern polar winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	245.34	2.99	1.95	0.33	2.96	3.35	14.68	10.49	7.60	14.71	14.14	20.40
8	242.83	2.24	1.25	0.23	0.84	3.74	11.80	4.71	4.05	7.18	12.15	14.11
11	224.46	2.44	2.66	0.33	1.03	3.53	13.91	4.20	4.16	7.12	14.29	15.97
14	155.57	2.52	4.27	0.38	1.14	2.95	16.99	4.19	5.02	8.55	17.12	19.14
17	48.49	2.34	2.86	0.13	0.85	1.49	10.26	2.28	6.10	7.75	10.21	12.81
20	7.94	2.35	0.52	0.04	0.93	0.42	2.72	0.70	7.57	8.40	1.21	8.48
23	1.17	2.47	0.21	0.03	1.46	0.10	1.17	0.32	8.69	9.21	0.58	9.23
26	0.62	2.45	0.29	0.05	1.92	0.08	1.03	0.26	11.20	11.65	0.83	11.68
29	3.03	2.12	0.27	0.05	2.18	0.11	0.66	0.21	12.16	12.55	0.47	12.55
32	1.69	1.60	0.26	0.04	2.89	0.13	0.80	0.20	14.24	14.63	0.44	14.64
35	1.26	1.42	0.17	0.02	3.78	0.15	1.29	0.18	16.24	16.74	1.18	16.79
38	1.28	1.60	0.21	0.02	5.16	0.13	1.88	0.20	17.99	18.80	1.79	18.88
41	-1.10	1.93	0.29	0.02	7.65	0.18	2.28	0.25	19.26	20.83	2.19	20.94

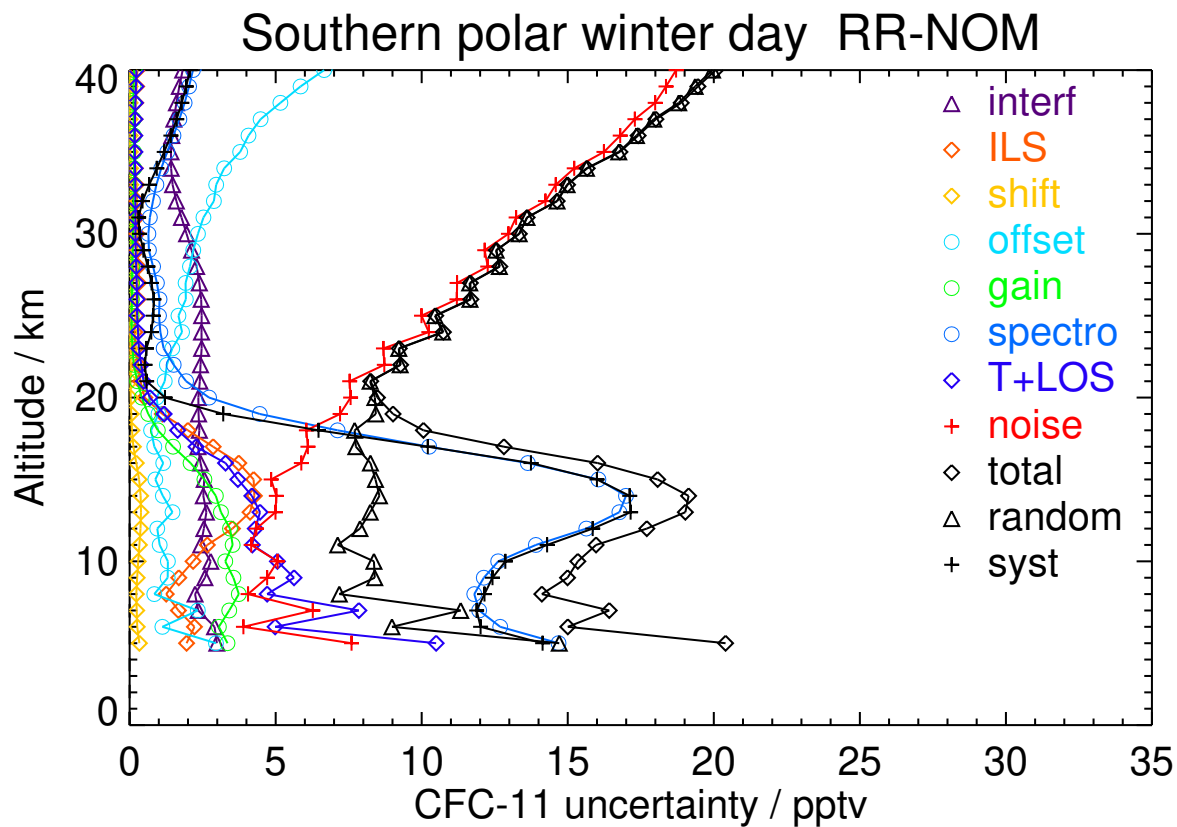


Figure S61. V8R_F-11_261 Southern polar winter day

Table S63. CFC-11 error budget for Southern polar winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	242.37	2.85	2.71	0.32	2.83	2.96	13.42	10.13	7.46	14.49	12.68	19.25
8	245.99	1.81	0.79	0.16	1.01	3.47	9.50	4.89	4.35	7.33	9.82	12.26
11	226.99	2.24	2.00	0.25	1.02	3.50	11.68	4.11	4.21	6.90	12.08	13.91
14	177.14	2.53	3.99	0.38	0.91	2.94	15.75	4.13	4.77	7.59	16.20	17.89
17	60.90	2.31	3.42	0.24	0.72	1.54	10.75	2.41	5.70	7.32	10.96	13.18
20	7.72	2.29	1.03	0.08	0.91	0.36	3.59	0.90	7.15	8.17	2.29	8.49
23	1.47	2.45	0.33	0.04	1.33	0.09	1.04	0.37	8.35	8.87	0.35	8.88
26	3.36	2.46	0.36	0.06	1.87	0.08	1.36	0.30	11.04	11.50	1.12	11.56
29	2.13	2.24	0.42	0.06	2.14	0.07	0.93	0.23	12.11	12.53	0.68	12.55
32	2.40	1.72	0.27	0.03	2.83	0.08	0.68	0.19	14.01	14.40	0.45	14.41
35	2.61	1.47	0.17	0.03	3.72	0.07	1.30	0.19	15.86	16.38	1.15	16.42
38	1.93	1.58	0.21	0.02	5.06	0.09	1.82	0.21	17.66	18.45	1.74	18.53
41	3.27	1.87	0.27	0.02	7.58	0.13	2.12	0.26	19.12	20.67	2.02	20.77

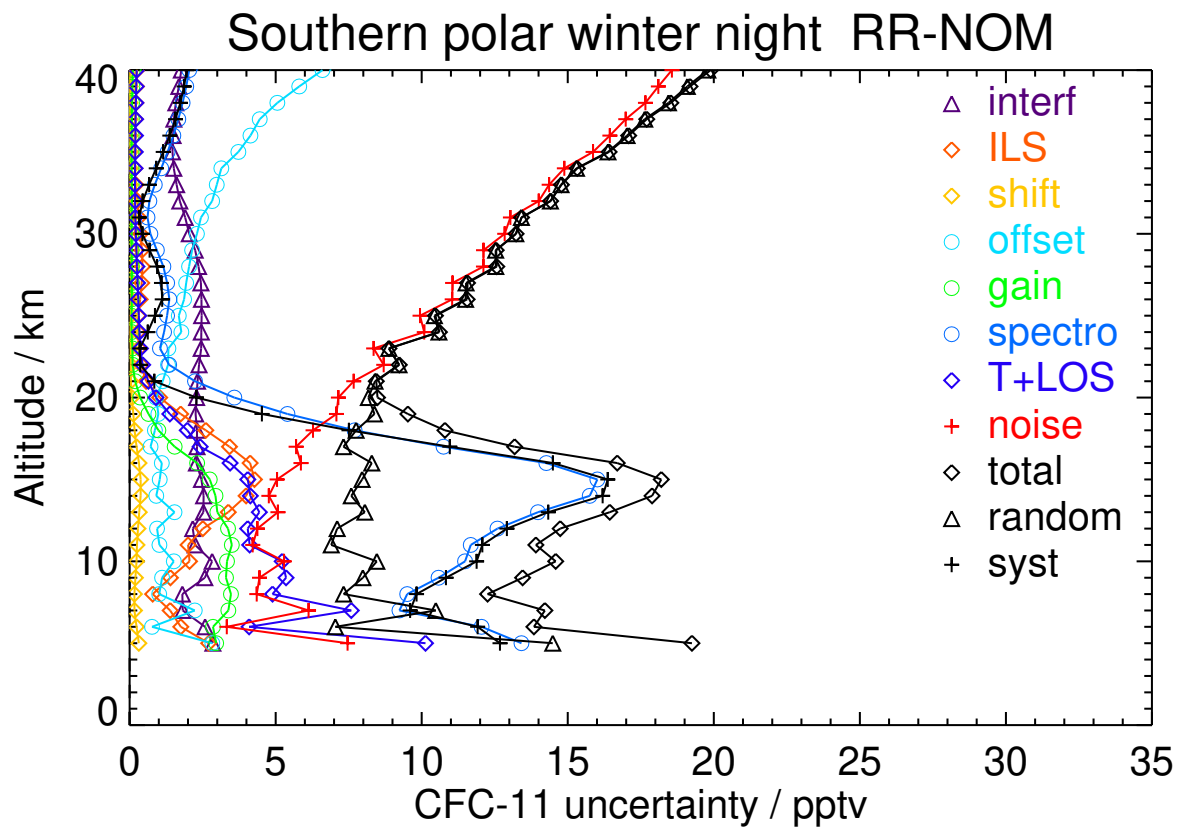


Figure S62. V8R_F-11_261 Southern polar winter night

Table S64. CFC-11 error budget for Southern polar spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	235.38	2.96	2.18	0.25	2.57	2.32	12.75	8.96	7.14	13.38	11.85	17.87
8	244.73	2.12	1.85	0.17	1.08	3.75	11.26	4.73	4.58	7.64	11.62	13.90
11	222.60	2.36	6.10	0.25	1.21	3.50	17.06	4.31	4.36	8.91	17.49	19.63
14	117.09	2.44	6.16	0.15	1.27	1.64	14.06	3.48	4.90	11.30	12.43	16.79
17	59.38	2.51	3.79	0.21	0.98	1.33	9.48	1.89	5.57	8.90	8.30	12.17
20	19.32	2.52	0.72	0.07	0.58	0.56	2.73	0.74	6.50	7.51	1.17	7.60
23	13.15	2.64	0.37	0.02	0.96	0.27	1.52	0.37	6.58	7.28	0.99	7.34
26	9.18	2.69	0.45	0.03	1.60	0.13	0.98	0.29	8.83	9.42	0.58	9.43
29	6.45	2.56	0.36	0.04	1.26	0.11	0.61	0.20	8.74	9.22	0.42	9.23
32	3.04	2.09	0.53	0.08	2.36	0.15	0.92	0.21	10.80	11.29	0.58	11.31
35	2.48	1.77	0.30	0.07	3.04	0.12	0.99	0.20	12.95	13.44	0.88	13.47
38	5.66	1.55	0.26	0.05	3.02	0.11	1.35	0.19	14.41	14.82	1.23	14.87
41	8.58	1.52	0.23	0.04	3.51	0.12	1.40	0.18	15.96	16.43	1.26	16.47

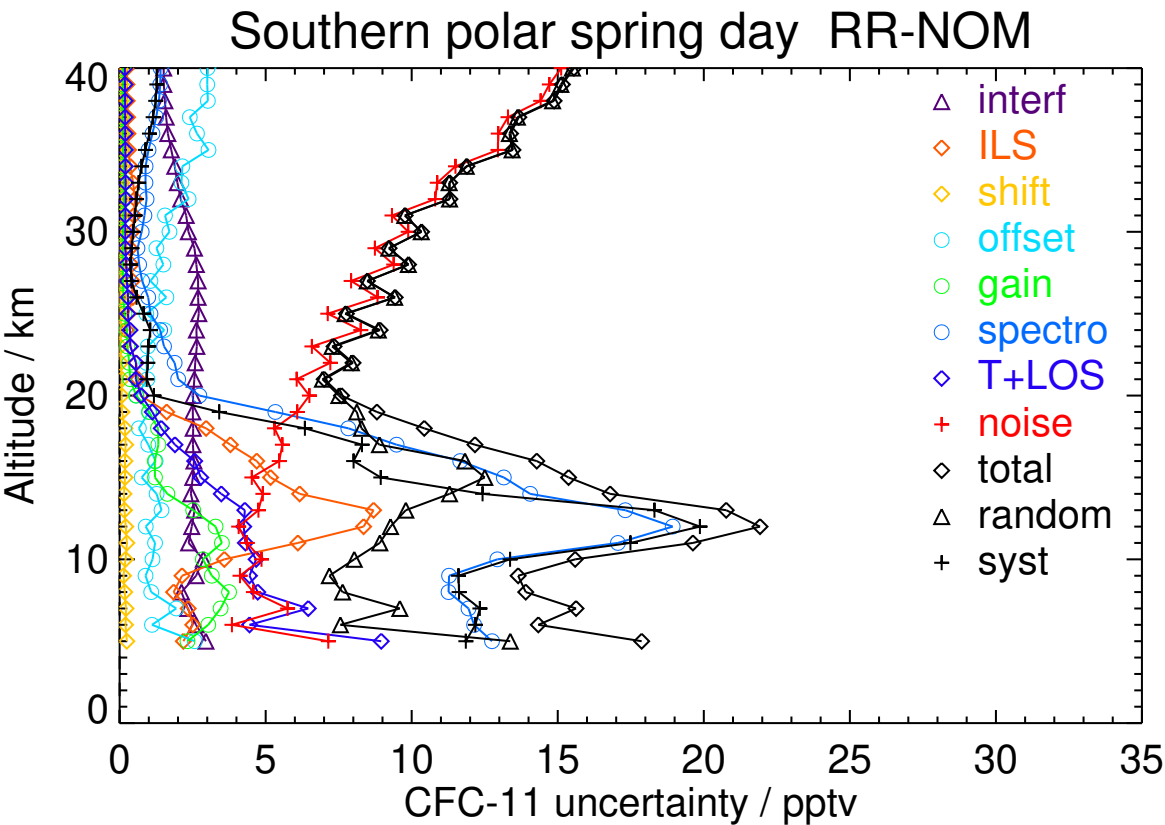


Figure S63. V8R_F-11_261 Southern polar spring day

Table S65. CFC-11 error budget for Southern polar spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	237.01	2.79	2.01	0.19	2.36	2.68	11.04	8.64	6.77	12.66	10.33	16.34
8	249.49	1.67	1.94	0.23	1.47	3.89	10.75	5.38	5.27	8.58	11.08	14.01
11	214.34	2.18	4.32	0.21	1.50	3.41	14.47	4.00	4.46	7.80	14.89	16.81
14	127.38	2.51	6.70	0.19	1.37	2.29	14.18	3.66	4.90	9.37	14.46	17.23
17	58.23	2.55	3.53	0.14	1.22	1.27	8.18	1.89	5.52	9.14	6.29	11.09
20	25.52	2.54	0.74	0.06	0.48	0.68	3.10	0.92	6.34	7.30	2.24	7.63
23	14.82	2.68	0.24	0.02	0.96	0.29	1.58	0.40	6.44	7.15	1.10	7.23
26	9.54	2.61	0.32	0.03	1.57	0.11	0.85	0.30	8.78	9.33	0.55	9.35
29	6.59	2.42	0.33	0.04	1.20	0.09	0.81	0.18	8.64	9.09	0.46	9.10
32	8.48	1.85	0.50	0.08	2.33	0.14	0.97	0.20	10.80	11.24	0.57	11.26
35	5.78	1.66	0.28	0.06	3.00	0.11	0.93	0.17	12.90	13.36	0.81	13.39
38	5.56	1.54	0.22	0.04	2.96	0.11	1.41	0.18	14.40	14.80	1.26	14.86
41	6.81	1.56	0.19	0.03	3.54	0.10	1.60	0.19	15.95	16.43	1.46	16.50

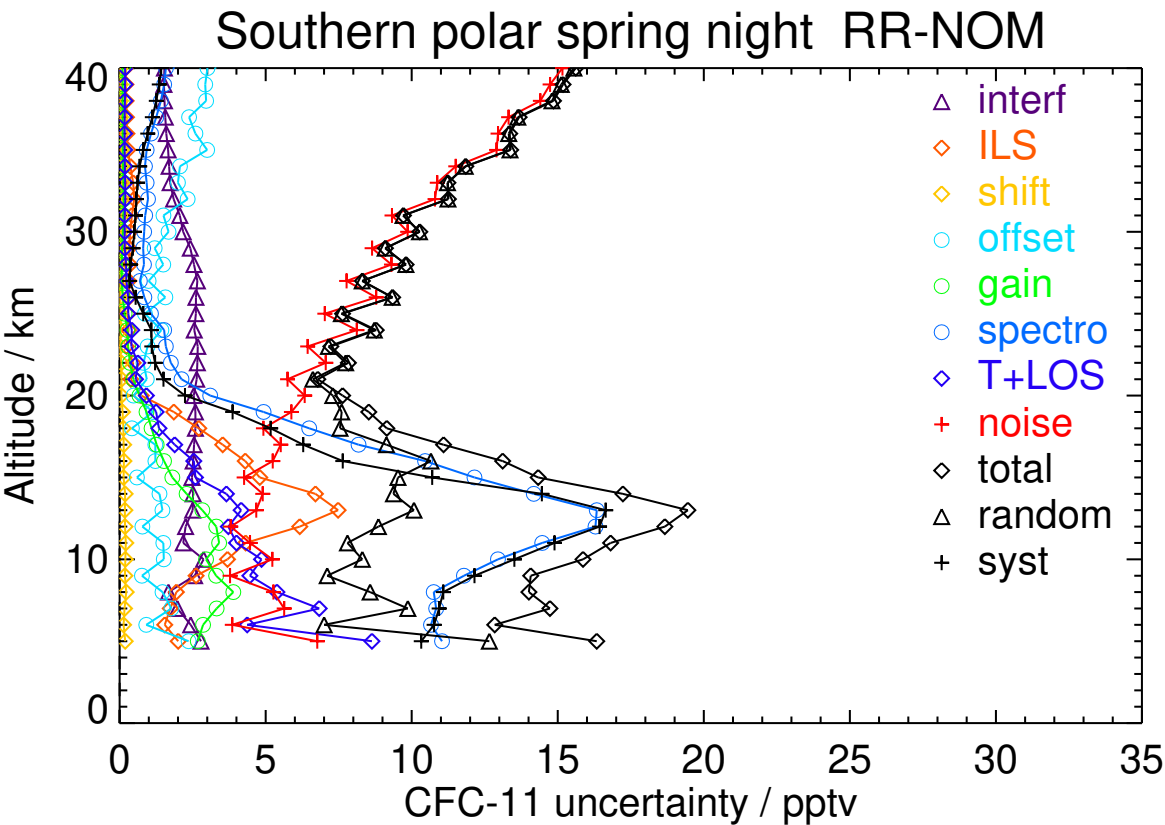


Figure S64. V8R_F-11_261 Southern polar spring night

Table S66. CFC-11 error budget for Southern polar summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	223.97	2.39	3.53	0.14	2.46	2.88	11.94	8.19	7.32	13.23	10.99	17.20
8	243.16	2.09	2.01	0.20	1.29	4.13	12.42	5.28	4.67	8.34	12.71	15.20
11	204.49	2.58	2.74	0.28	1.19	2.92	10.83	3.63	3.90	6.84	11.10	13.04
14	189.55	2.63	4.16	0.29	1.38	2.47	10.98	3.19	4.24	7.31	11.29	13.46
17	137.84	2.80	3.58	0.34	1.17	2.21	11.88	2.66	4.82	7.10	12.17	14.09
20	67.62	2.64	0.74	0.23	0.44	1.58	8.00	1.65	5.73	6.83	7.95	10.48
23	19.02	2.46	0.54	0.05	0.77	0.42	2.69	0.67	5.51	6.20	2.59	6.72
26	7.75	2.48	0.29	0.05	1.87	0.07	0.82	0.33	8.51	9.09	0.41	9.10
29	6.69	2.09	0.34	0.03	1.12	0.06	0.82	0.22	8.14	8.51	0.64	8.53
32	4.30	1.63	0.57	0.10	2.35	0.08	0.73	0.21	10.38	10.80	0.61	10.81
35	4.58	1.75	0.19	0.07	3.08	0.11	0.75	0.15	12.43	12.94	0.60	12.95
38	4.87	1.40	0.18	0.03	2.84	0.09	1.38	0.14	13.68	14.05	1.30	14.11
41	5.66	1.61	0.29	0.02	3.10	0.15	1.85	0.16	15.14	15.55	1.82	15.65

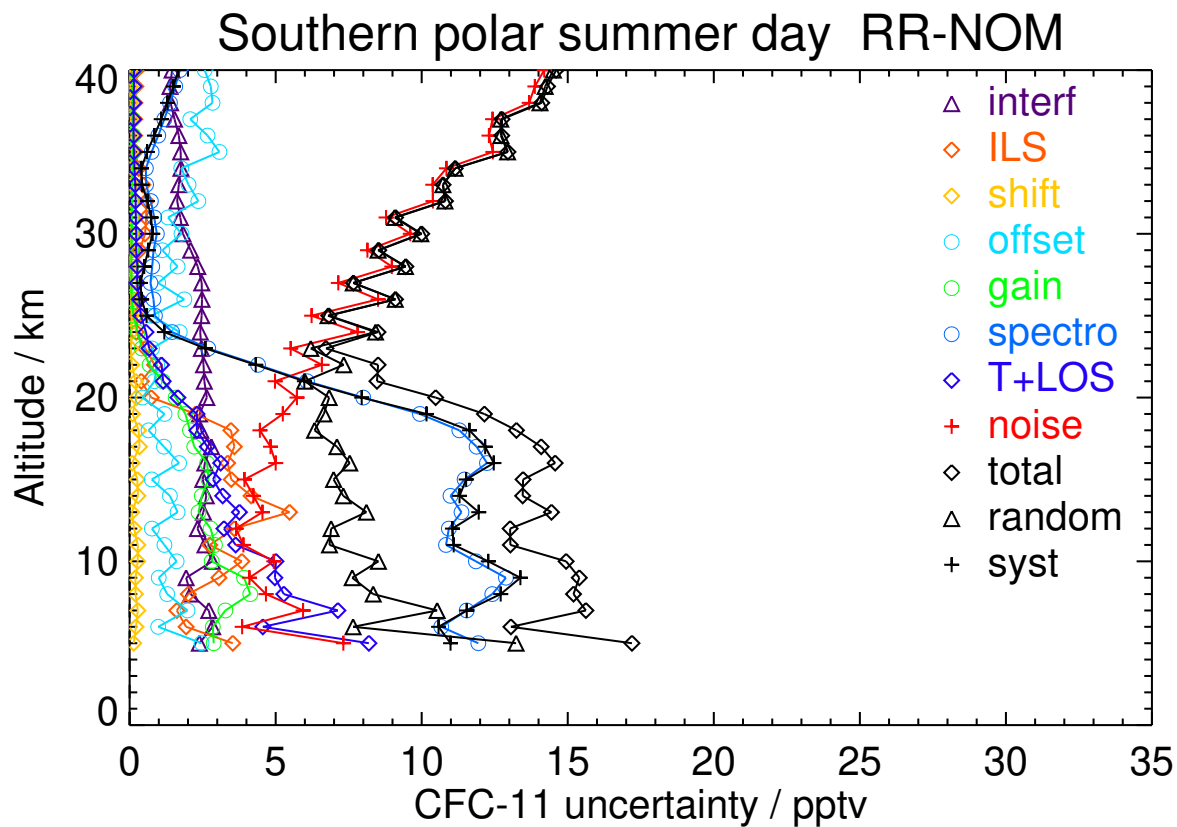


Figure S65. V8R_F-11_261 Southern polar summer day

Table S67. CFC-11 error budget for Southern polar summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	216.00	2.49	2.17	0.22	2.43	2.72	9.95	7.66	6.91	11.53	9.84	15.16
8	247.23	2.27	1.15	0.19	0.95	3.84	11.76	4.64	4.17	7.39	12.04	14.12
11	206.68	2.67	2.93	0.26	0.67	2.89	11.23	3.49	3.42	7.53	10.85	13.21
14	193.58	2.56	4.70	0.27	0.69	2.79	12.23	2.90	3.64	7.62	12.26	14.43
17	142.19	2.67	3.53	0.18	0.60	2.53	12.20	2.41	4.33	6.47	12.57	14.14
20	68.88	2.54	0.91	0.17	0.60	1.57	8.25	1.54	5.37	6.50	8.19	10.46
23	22.02	2.42	0.64	0.03	0.54	0.45	3.21	0.80	5.59	6.28	3.08	6.99
26	3.66	2.43	0.23	0.04	1.65	0.06	0.79	0.31	8.32	8.85	0.38	8.86
29	4.88	2.23	0.35	0.05	1.25	0.06	0.60	0.21	8.51	8.90	0.50	8.91
32	5.16	1.54	0.32	0.08	2.18	0.09	0.66	0.18	10.34	10.70	0.37	10.71
35	6.18	1.65	0.16	0.04	2.80	0.13	0.86	0.14	12.47	12.90	0.68	12.91
38	5.50	1.44	0.20	0.02	2.79	0.10	1.42	0.14	13.86	14.22	1.34	14.28
41	4.87	1.49	0.29	0.02	3.17	0.11	1.83	0.14	15.34	15.74	1.79	15.85

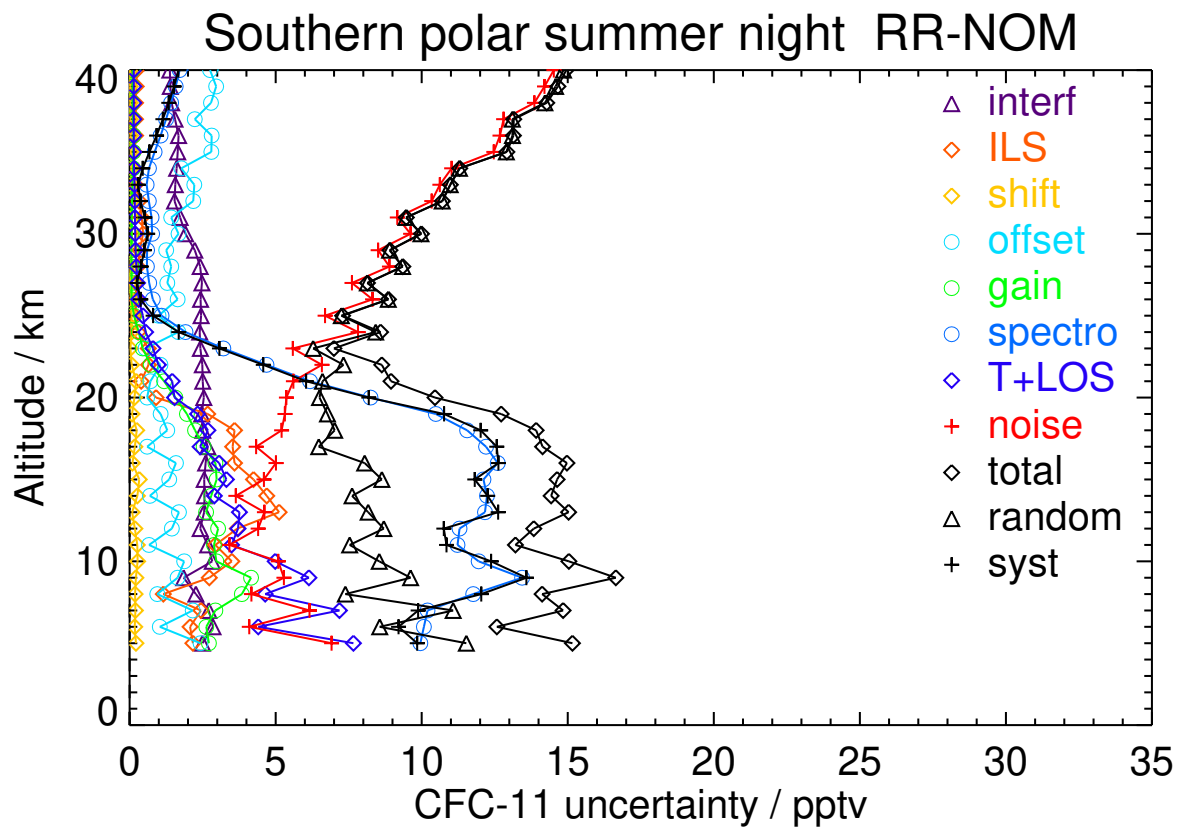


Figure S66. V8R_F-11_261 Southern polar summer night

Table S68. CFC-11 error budget for Southern polar autumn day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	229.71	2.65	2.16	0.50	2.74	3.30	13.64	9.61	7.58	15.17	11.67	19.14
8	235.07	1.99	1.39	0.25	1.18	4.38	11.99	5.29	4.61	7.98	12.49	14.82
11	215.50	2.47	1.46	0.26	1.28	3.11	10.52	3.71	4.16	6.68	10.81	12.71
14	196.95	2.66	2.90	0.35	1.34	3.13	12.79	3.53	4.63	7.11	13.19	14.99
17	123.43	2.57	3.01	0.12	0.99	2.53	12.28	2.72	5.38	7.05	12.67	14.50
20	51.83	2.38	0.75	0.14	0.60	1.59	8.02	1.50	6.45	7.61	7.70	10.83
23	9.42	2.41	0.29	0.05	1.05	0.35	2.51	0.61	7.01	7.66	2.08	7.93
26	6.47	2.37	0.23	0.03	1.75	0.13	1.25	0.35	9.76	10.24	0.87	10.28
29	11.67	2.12	0.29	0.07	1.80	0.15	1.43	0.29	10.65	11.05	1.14	11.11
32	3.59	1.54	0.28	0.06	2.52	0.12	0.92	0.25	13.25	13.60	0.47	13.61
35	-1.26	1.15	0.13	0.02	3.26	0.11	1.13	0.18	15.65	16.04	0.99	16.07
38	-2.80	1.09	0.18	0.02	4.37	0.11	2.02	0.19	17.65	18.22	1.98	18.33
41	-1.42	1.22	0.30	0.02	7.01	0.09	2.65	0.23	19.24	20.52	2.63	20.69

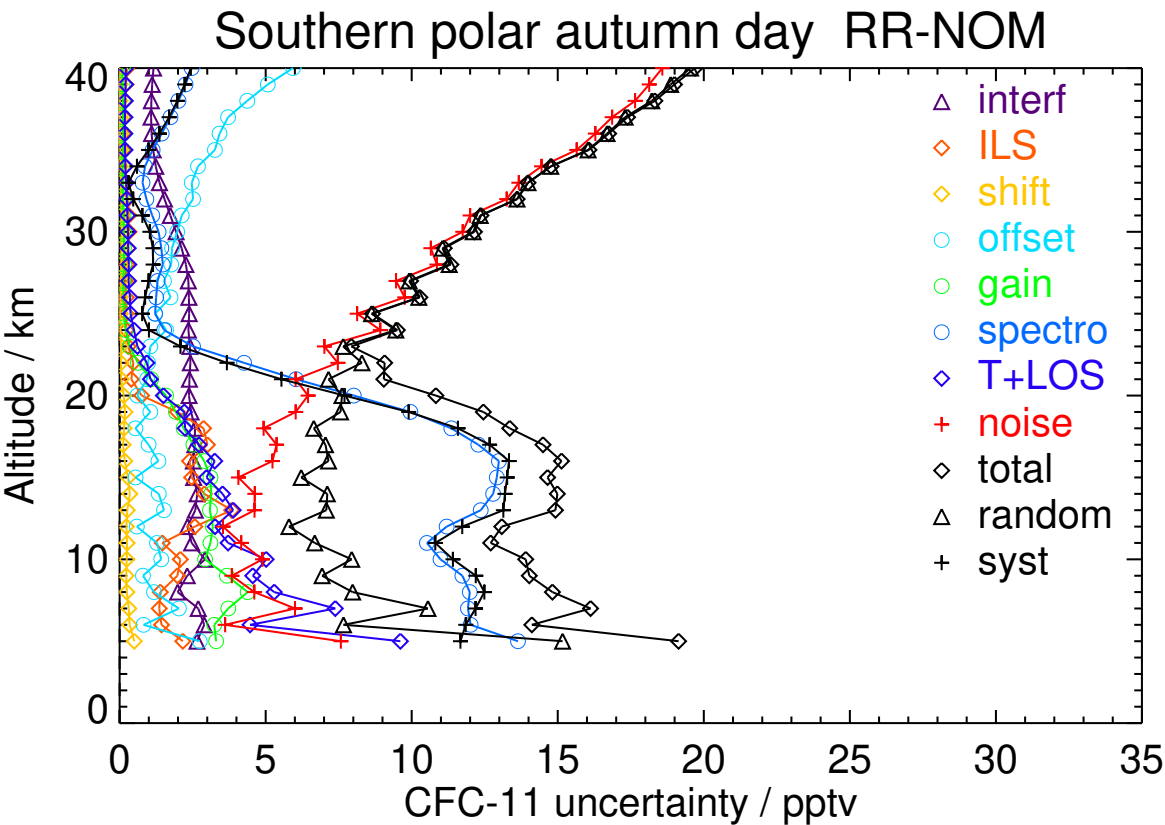


Figure S67. V8R_F-11_261 Southern polar autumn day

Table S69. CFC-11 error budget for Southern polar autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
5	231.29	2.85	2.46	0.34	2.18	3.05	12.82	7.90	6.45	12.65	11.70	17.23
8	238.24	2.08	1.46	0.26	1.60	3.77	10.46	5.98	5.31	8.94	10.81	14.02
11	218.60	2.35	1.46	0.24	1.52	3.03	11.09	3.83	4.36	6.81	11.38	13.26
14	194.40	2.61	2.90	0.35	1.28	2.98	13.04	3.64	4.72	7.21	13.40	15.22
17	107.87	2.58	3.28	0.18	0.93	2.43	13.46	2.78	5.48	7.34	13.76	15.59
20	29.62	2.37	0.80	0.10	0.65	0.94	5.47	1.30	6.54	7.42	5.18	9.05
23	6.34	2.42	0.23	0.05	1.09	0.16	1.70	0.53	7.23	7.80	1.30	7.91
26	9.39	2.39	0.18	0.04	1.73	0.14	1.53	0.37	9.98	10.45	1.31	10.53
29	6.39	2.11	0.28	0.07	1.87	0.12	1.29	0.31	11.00	11.37	1.15	11.43
32	0.60	1.56	0.19	0.04	2.57	0.06	0.56	0.21	13.52	13.86	0.25	13.87
35	-1.02	1.17	0.13	0.02	3.35	0.06	1.44	0.17	15.92	16.32	1.36	16.38
38	2.66	1.10	0.23	0.02	4.56	0.06	2.21	0.20	17.89	18.50	2.18	18.63
41	4.24	1.30	0.32	0.03	7.29	0.07	2.68	0.24	19.49	20.86	2.67	21.03

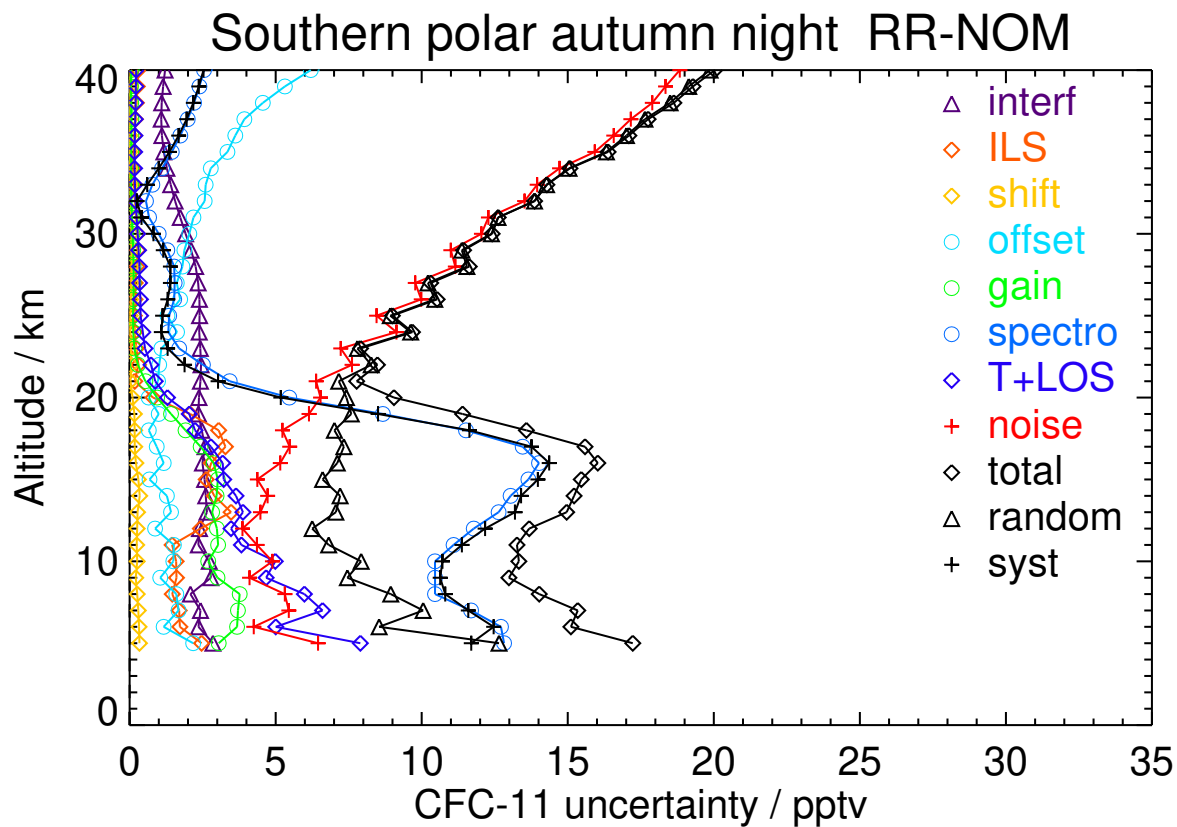


Figure S68. V8R_F-11_261 Southern polar autumn night

Table S70. CFC-11 error budget for Northern polar winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
14	24.48	2.15	0.40	0.03	2.42	1.12	6.61	0.86	5.14	8.33	3.65	9.09
17	94.75	3.66	0.40	0.03	1.09	1.78	7.52	0.87	3.38	7.01	6.12	9.31
20	55.05	2.73	0.33	0.07	0.88	1.37	6.15	0.68	3.73	5.86	5.29	7.89
23	17.60	2.54	0.12	0.02	1.36	0.53	2.76	0.42	5.42	6.38	2.24	6.77
26	13.84	2.30	0.26	0.02	2.06	0.14	1.04	0.26	7.48	8.15	0.53	8.17
29	14.73	1.93	0.14	0.03	2.62	0.18	1.29	0.25	9.92	10.48	1.00	10.52
32	12.39	1.28	0.18	0.05	2.74	0.19	1.24	0.22	12.29	12.69	0.91	12.72
35	6.40	0.81	0.10	0.03	2.91	0.12	0.87	0.16	14.43	14.76	0.51	14.77
38	1.89	0.54	0.06	0.02	4.31	0.07	1.60	0.15	16.62	17.19	1.45	17.25
41	1.68	0.40	0.08	0.01	7.82	0.06	2.04	0.16	19.28	20.82	1.95	20.91
44	3.13	0.36	0.11	0.01	13.18	0.07	2.24	0.17	23.31	26.79	2.15	26.88
47	3.32	0.36	0.12	0.02	19.40	0.09	2.34	0.17	28.83	34.76	2.21	34.83
50	2.63	0.36	0.13	0.02	25.53	0.10	2.37	0.18	34.66	43.06	2.22	43.12
53	9.68	0.36	0.16	0.02	30.31	0.13	2.41	0.20	39.25	49.60	2.23	49.65
56	9.76	0.34	0.22	0.02	32.94	0.13	2.43	0.20	41.64	53.11	2.22	53.16
62	-53.18	0.43	0.04	<0.01	39.18	0.19	2.63	0.29	47.34	61.45	2.64	61.51

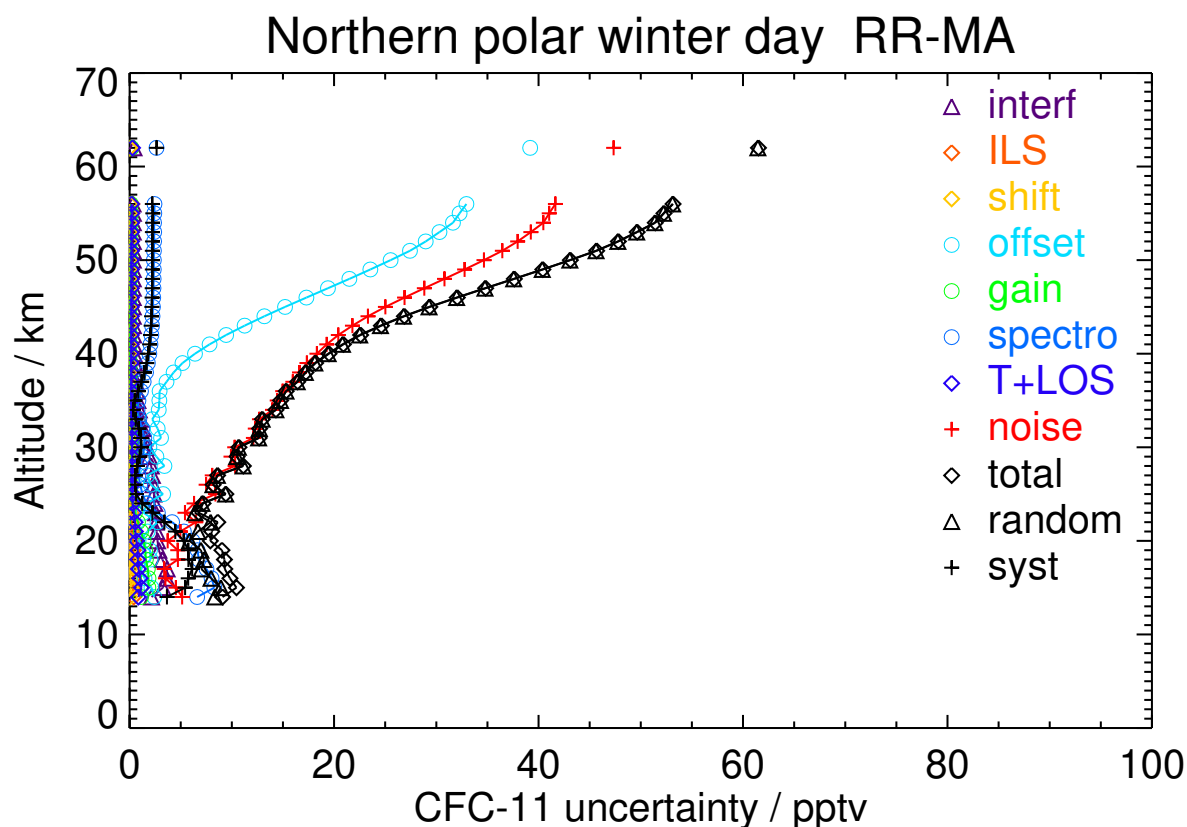
**Figure S69.** V8R_F-11_561 Northern polar winter day

Table S71. CFC-11 error budget for Northern polar winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
14	149.68	4.04	0.35	0.17	2.29	2.30	10.71	1.52	4.81	7.35	10.63	12.92
17	80.51	3.29	0.88	0.08	2.73	1.62	7.76	1.15	6.52	9.21	6.40	11.21
20	42.28	2.74	0.59	0.06	1.34	0.97	5.28	0.78	5.17	6.61	4.71	8.11
23	7.61	2.50	0.27	0.02	1.67	0.49	3.04	0.52	7.33	8.16	2.44	8.52
26	6.73	2.34	0.21	0.03	2.40	0.13	1.21	0.31	9.92	10.51	0.87	10.55
29	7.06	2.01	0.18	0.03	2.71	0.13	1.10	0.22	12.10	12.60	0.61	12.61
32	-0.41	1.42	0.13	0.02	2.94	0.10	0.93	0.17	14.13	14.53	0.29	14.54
35	0.68	0.94	0.17	0.01	3.46	0.07	1.25	0.16	16.08	16.48	1.11	16.52
38	4.04	0.66	0.21	0.01	5.15	0.08	1.72	0.18	18.03	18.77	1.65	18.84
41	5.04	0.52	0.24	0.01	8.49	0.11	2.04	0.20	20.23	21.95	1.98	22.04
44	8.77	0.49	0.25	0.01	13.38	0.14	2.26	0.22	23.45	27.01	2.18	27.10
47	10.98	0.51	0.25	0.02	19.20	0.17	2.39	0.24	28.03	33.99	2.27	34.07
50	13.01	0.52	0.25	0.02	25.18	0.20	2.44	0.25	33.41	41.85	2.31	41.91
53	13.90	0.55	0.26	0.02	30.03	0.23	2.52	0.27	37.91	48.37	2.38	48.43
56	20.47	0.61	0.31	0.02	33.99	0.30	2.56	0.31	41.35	53.54	2.43	53.60
62	17.15	0.55	0.30	0.02	41.50	0.39	2.58	0.35	48.20	63.62	2.41	63.66

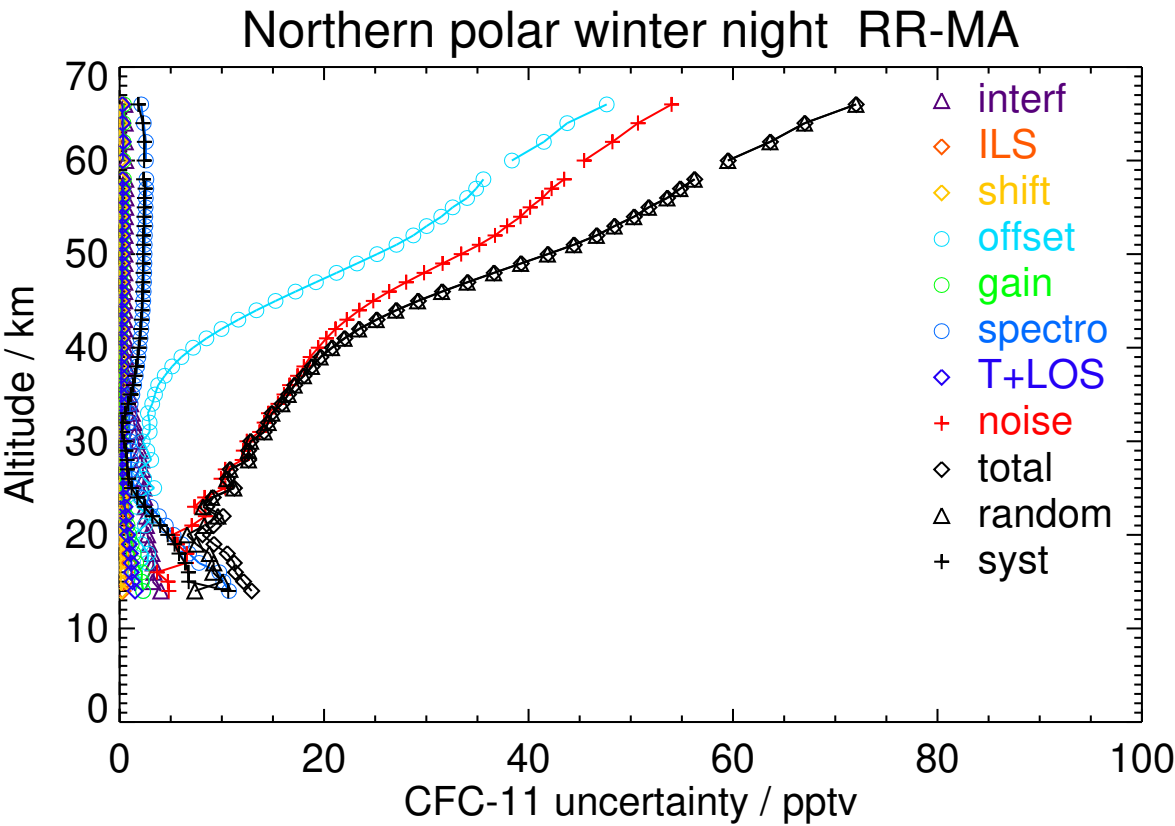


Figure S70. V8R_F-11_561 Northern polar winter night

Table S72. CFC-11 error budget for Northern polar spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	70.31	3.06	0.60	0.07	3.20	1.00	6.00	0.98	7.10	8.73	5.65	10.40
20	39.36	2.82	0.48	0.04	1.33	0.69	4.54	0.67	4.62	5.79	4.39	7.27
23	8.19	2.53	0.16	0.03	0.89	0.20	1.70	0.37	5.81	6.46	1.52	6.64
26	9.83	2.40	0.14	0.01	1.41	0.10	0.84	0.22	8.17	8.67	0.46	8.68
29	4.45	2.09	0.34	0.06	1.95	0.11	1.10	0.22	10.57	10.98	0.88	11.01
32	0.70	1.48	0.27	0.07	2.28	0.08	0.70	0.16	12.59	12.90	0.37	12.90
35	-0.94	1.03	0.13	0.04	2.63	0.06	0.98	0.12	14.30	14.59	0.79	14.61
38	0.29	0.78	0.08	0.03	3.29	0.09	1.65	0.14	15.87	16.24	1.58	16.32
41	2.99	0.66	0.09	0.03	4.52	0.12	2.03	0.16	17.33	17.93	1.98	18.04
44	6.68	0.65	0.10	0.02	6.84	0.16	2.14	0.16	18.78	20.01	2.08	20.12
47	8.55	0.66	0.10	0.02	10.63	0.18	2.12	0.16	21.14	23.68	2.03	23.77
50	9.26	0.65	0.10	0.02	15.65	0.21	2.07	0.17	25.26	29.74	1.94	29.80
53	8.97	0.61	0.09	0.02	21.15	0.23	2.01	0.17	30.82	37.39	1.85	37.44
56	10.28	0.55	0.10	0.03	26.24	0.27	1.97	0.17	36.34	44.84	1.79	44.87
59	10.75	0.49	0.11	0.03	30.30	0.31	1.95	0.17	40.71	50.76	1.76	50.79
62	11.31	0.41	0.13	0.03	34.82	0.38	1.93	0.18	45.84	57.58	1.74	57.60

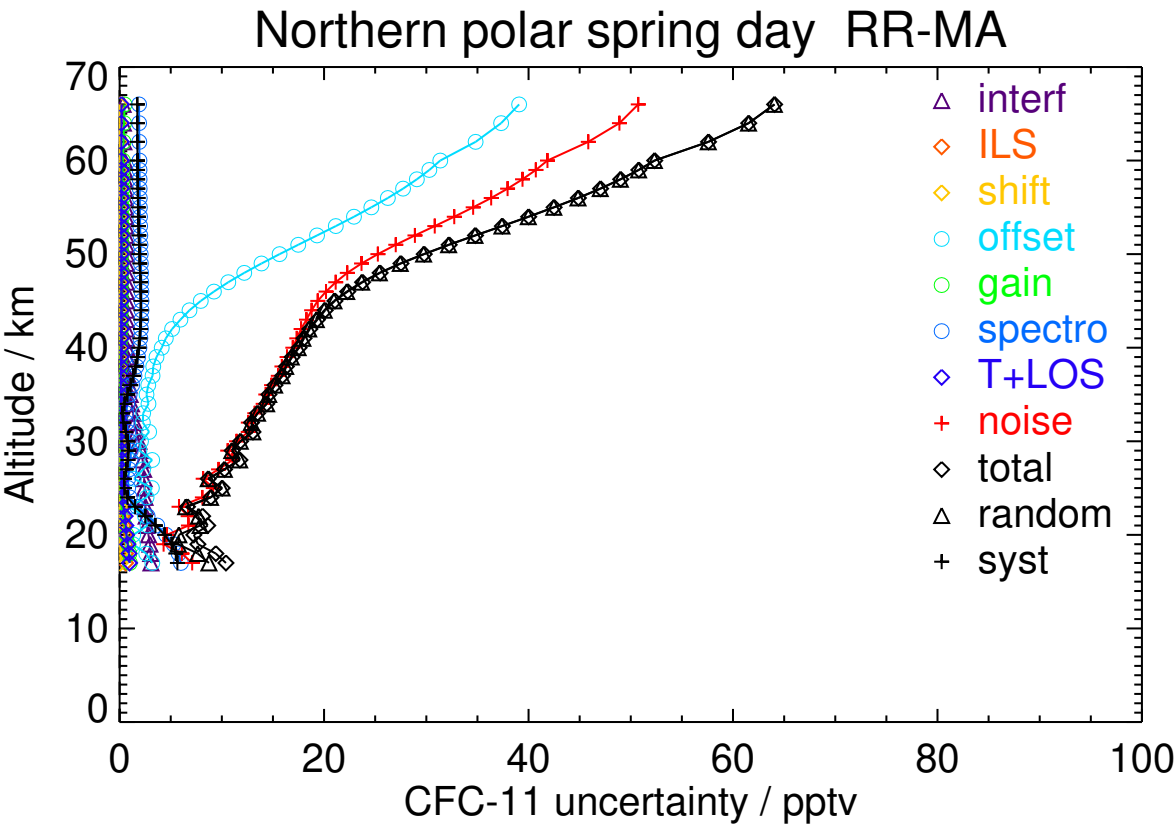


Figure S71. V8R_F-11_561 Northern polar spring day

Table S73. CFC-11 error budget for Northern polar spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	85.47	3.06	0.66	0.07	3.12	1.23	6.82	1.13	6.95	8.51	6.68	10.82
20	50.16	2.82	0.56	0.04	1.24	0.87	5.46	0.79	4.47	5.77	5.25	7.81
23	11.45	2.54	0.21	0.02	0.93	0.31	2.60	0.47	5.76	6.51	2.30	6.90
26	8.56	2.41	0.15	0.02	1.44	0.11	0.98	0.24	8.05	8.56	0.69	8.59
29	0.75	2.12	0.36	0.06	1.95	0.10	1.03	0.21	10.38	10.80	0.78	10.83
32	-1.38	1.49	0.23	0.06	2.27	0.06	0.59	0.13	12.29	12.60	0.28	12.60
35	3.01	1.03	0.12	0.04	2.59	0.05	1.14	0.12	13.94	14.23	1.02	14.26
38	5.32	0.77	0.08	0.03	3.16	0.08	1.77	0.14	15.56	15.90	1.71	16.00
41	5.39	0.65	0.10	0.03	4.34	0.11	2.04	0.16	17.07	17.63	1.99	17.74
44	2.18	0.64	0.11	0.02	6.64	0.14	2.09	0.16	18.59	19.75	2.04	19.86
47	2.58	0.64	0.10	0.01	10.45	0.17	2.03	0.15	21.00	23.47	1.97	23.55
50	4.65	0.62	0.10	0.01	15.52	0.19	1.94	0.16	25.26	29.65	1.86	29.71
53	5.77	0.57	0.11	0.02	21.05	0.21	1.86	0.16	30.88	37.38	1.76	37.42
56	6.00	0.51	0.12	0.02	26.16	0.25	1.80	0.16	36.38	44.82	1.68	44.85
59	5.51	0.45	0.13	0.02	30.17	0.29	1.76	0.17	40.68	50.66	1.64	50.68
62	4.53	0.37	0.14	0.02	34.70	0.36	1.71	0.20	45.68	57.37	1.59	57.39

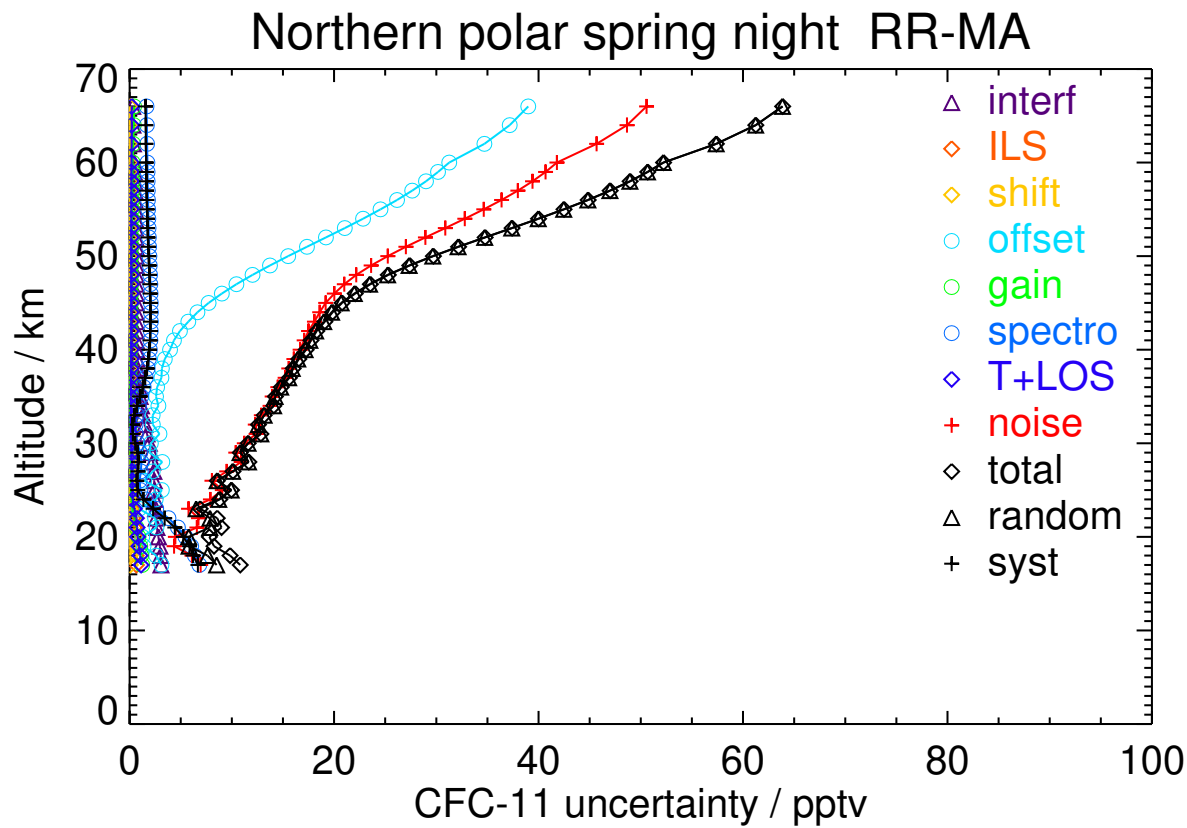


Figure S72. V8R_F-11_561 Northern polar spring night

Table S74. CFC-11 error budget for Northern polar summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	147.63	2.94	0.56	0.15	2.62	2.21	10.58	1.69	5.88	7.48	10.68	13.04
20	91.30	2.98	0.64	0.04	0.99	1.75	8.96	1.22	3.57	4.99	9.10	10.38
23	19.24	2.53	0.21	0.04	0.61	0.63	3.99	0.67	4.50	5.29	3.99	6.62
26	8.37	2.44	0.13	0.06	0.93	0.08	0.72	0.26	6.13	6.70	0.33	6.71
29	3.55	2.11	0.28	0.04	1.45	0.06	0.79	0.20	7.88	8.30	0.67	8.33
32	2.59	1.48	0.38	0.07	1.90	0.05	0.50	0.16	9.65	9.96	0.42	9.97
35	3.99	1.14	0.22	0.07	2.24	0.05	0.70	0.13	11.47	11.75	0.48	11.76
38	4.98	0.79	0.11	0.04	2.44	0.07	1.16	0.13	13.02	13.28	1.09	13.32
41	0.25	0.70	0.13	0.04	2.79	0.08	1.59	0.14	14.59	14.88	1.55	14.96
44	-4.76	0.72	0.11	0.04	3.66	0.11	1.83	0.14	16.10	16.53	1.81	16.63
47	-6.81	0.67	0.10	0.03	5.45	0.14	1.80	0.14	17.55	18.39	1.78	18.47
50	-6.70	0.63	0.10	0.02	8.80	0.15	1.67	0.14	19.68	21.57	1.64	21.63
53	-5.67	0.58	0.10	0.03	13.54	0.16	1.54	0.14	23.71	27.31	1.49	27.35
56	-5.40	0.49	0.09	0.03	18.74	0.20	1.47	0.14	29.21	34.71	1.39	34.74
59	-4.14	0.38	0.08	0.04	23.35	0.25	1.44	0.14	34.57	41.72	1.34	41.75
62	-1.59	0.24	0.10	0.04	28.78	0.36	1.44	0.15	42.10	51.00	1.34	51.02

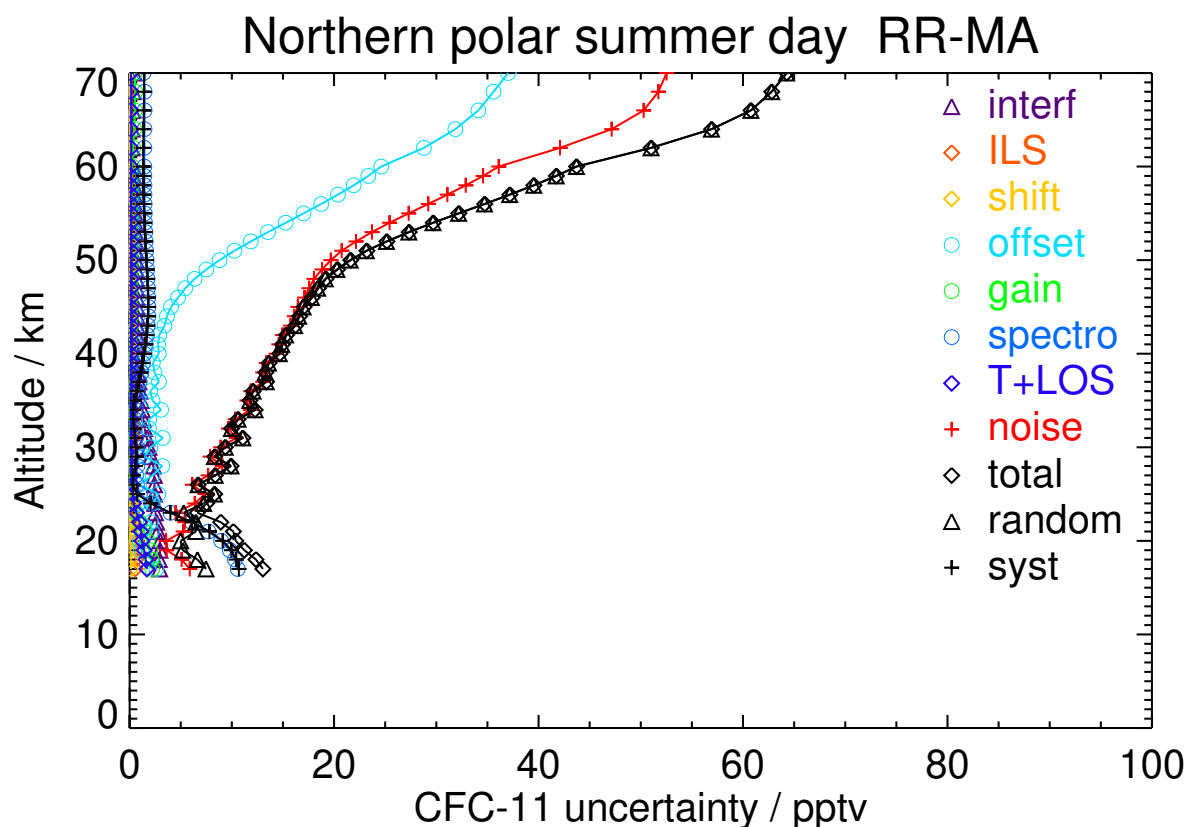
**Figure S73.** V8R_F-11_561 Northern polar summer day

Table S75. CFC-11 error budget for Northern polar summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	146.41	3.04	0.85	0.06	2.79	2.24	10.93	1.71	6.13	7.87	10.99	13.52
20	87.10	2.85	0.83	0.03	0.99	1.68	8.74	1.19	3.74	5.09	8.86	10.22
23	18.49	2.57	0.33	0.03	0.76	0.60	4.20	0.71	4.86	5.67	4.17	7.03
26	6.01	2.37	0.15	0.04	1.25	0.10	0.87	0.28	6.74	7.30	0.33	7.31
29	5.79	2.13	0.23	0.05	1.79	0.07	0.78	0.20	8.70	9.16	0.48	9.17
32	7.71	1.47	0.32	0.08	2.18	0.09	0.80	0.16	10.67	11.02	0.46	11.03
35	5.17	0.99	0.22	0.07	2.43	0.07	0.85	0.14	12.41	12.70	0.57	12.72
38	4.05	0.79	0.06	0.03	2.64	0.08	1.56	0.12	14.18	14.45	1.50	14.53
41	9.15	0.65	0.04	0.02	3.29	0.10	2.02	0.14	15.74	16.10	1.98	16.22
44	9.80	0.62	0.05	0.01	4.85	0.13	2.02	0.14	17.25	17.93	1.98	18.04
47	5.87	0.63	0.06	0.01	7.99	0.15	1.90	0.14	19.16	20.77	1.84	20.85
50	4.28	0.61	0.06	0.02	12.65	0.17	1.77	0.14	22.76	26.05	1.69	26.10
53	3.74	0.54	0.07	0.03	18.10	0.20	1.67	0.14	28.19	33.51	1.57	33.54
56	3.31	0.44	0.09	0.03	23.34	0.23	1.62	0.14	33.99	41.25	1.49	41.27
59	2.04	0.34	0.10	0.03	27.57	0.27	1.59	0.16	38.71	47.53	1.45	47.55
62	-0.26	0.24	0.13	0.03	32.23	0.35	1.57	0.19	44.24	54.75	1.43	54.76

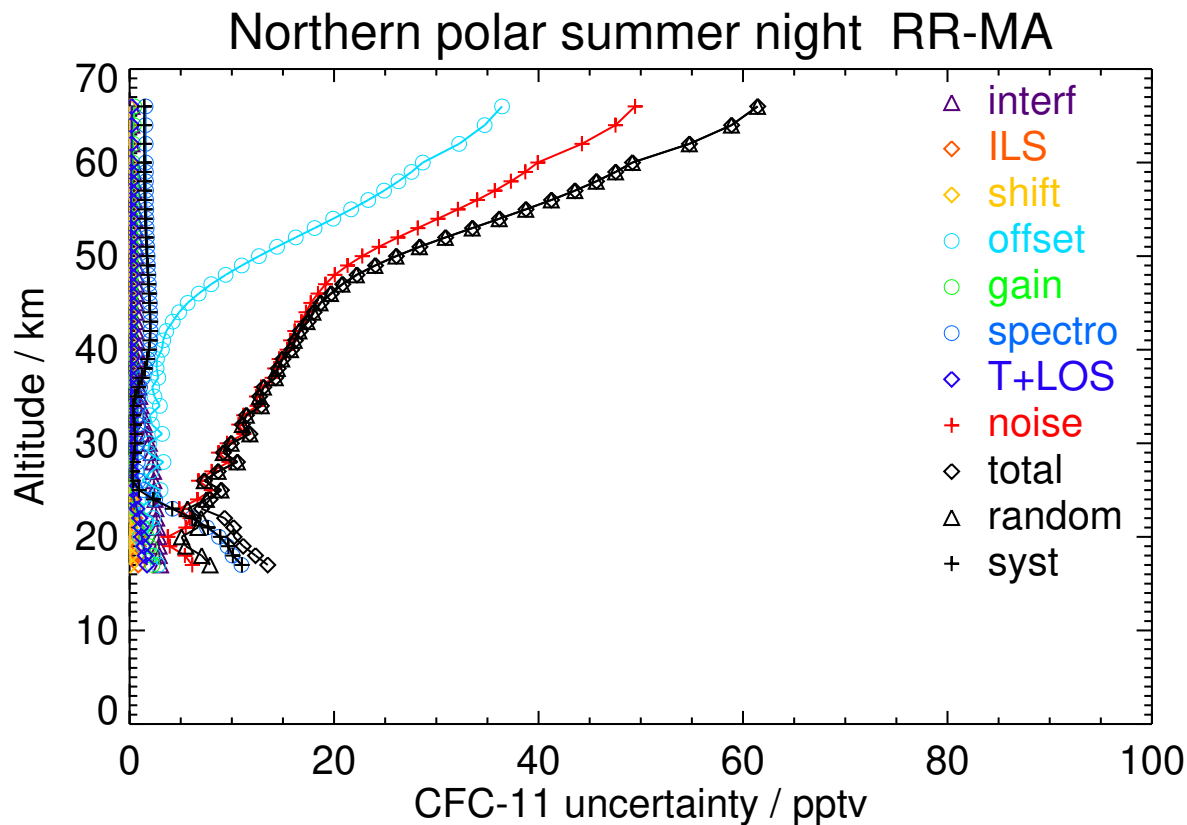


Figure S74. V8R_F-11_561 Northern polar summer night

Table S76. CFC-11 error budget for Northern polar autumn day. All uncertainties are 1 σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	106.10	3.03	0.76	0.07	3.23	1.52	8.34	1.32	7.25	9.03	8.04	12.10
20	63.32	2.79	0.67	0.05	1.07	1.12	6.99	0.95	4.32	5.89	6.66	8.89
23	11.41	2.50	0.22	0.02	0.96	0.40	3.46	0.62	5.83	6.58	3.21	7.32
26	5.49	2.35	0.13	0.01	1.71	0.09	0.92	0.29	8.27	8.80	0.63	8.82
29	2.35	2.03	0.18	0.05	2.23	0.11	1.08	0.24	10.78	11.21	0.89	11.25
32	-0.36	1.41	0.15	0.05	2.45	0.07	0.53	0.15	12.93	13.24	0.19	13.25
35	3.12	0.94	0.09	0.02	2.77	0.05	1.09	0.13	14.80	15.10	0.96	15.13
38	2.43	0.67	0.10	0.01	3.55	0.05	1.76	0.16	16.64	17.04	1.69	17.12
41	0.80	0.54	0.14	<0.01	5.39	0.06	2.22	0.18	18.34	19.13	2.18	19.25
44	1.16	0.52	0.17	<0.01	8.81	0.10	2.49	0.20	20.38	22.22	2.43	22.35
47	4.69	0.53	0.19	0.01	13.63	0.14	2.58	0.21	23.83	27.47	2.51	27.58
50	6.76	0.52	0.19	0.02	19.24	0.17	2.57	0.21	28.99	34.81	2.47	34.90
53	6.86	0.51	0.20	0.02	24.79	0.19	2.54	0.22	34.63	42.60	2.41	42.67
56	6.19	0.49	0.20	0.02	29.56	0.22	2.50	0.22	39.49	49.34	2.35	49.39
59	11.71	0.48	0.19	0.02	33.23	0.17	2.58	0.22	43.16	54.48	2.50	54.54
62	5.11	0.41	0.21	0.02	37.12	0.30	2.42	0.24	46.94	59.86	2.25	59.90

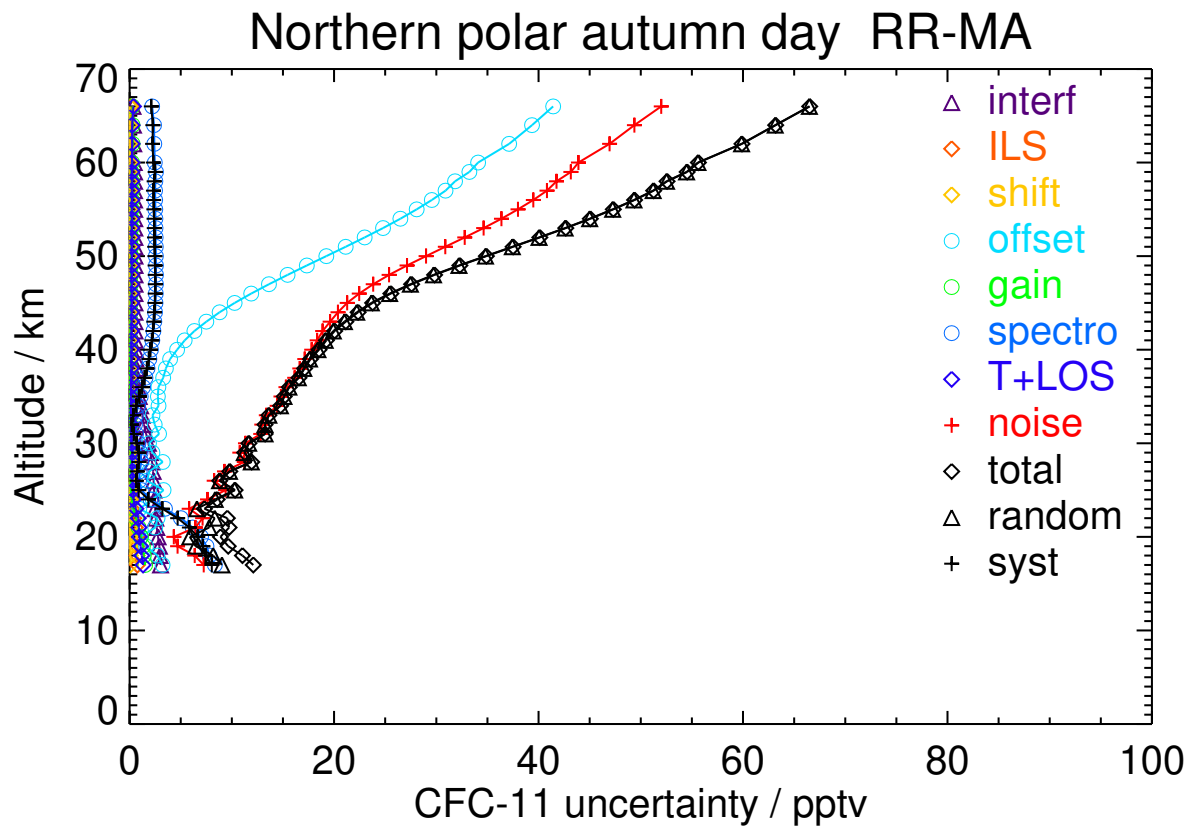


Figure S75. V8R_F-11_561 Northern polar autumn day

Table S77. CFC-11 error budget for Northern polar autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	106.04	3.09	0.81	0.09	3.29	1.64	9.12	1.44	7.36	9.15	8.90	12.77
20	56.36	2.77	0.64	0.05	0.97	1.08	6.62	0.95	4.32	5.56	6.53	8.57
23	4.00	2.51	0.17	0.02	1.18	0.30	2.79	0.55	6.08	6.79	2.60	7.27
26	6.28	2.34	0.14	0.01	2.00	0.08	0.89	0.30	8.82	9.37	0.69	9.39
29	6.10	2.03	0.20	0.05	2.47	0.13	1.24	0.27	11.30	11.77	1.06	11.81
32	1.35	1.42	0.13	0.04	2.59	0.07	0.56	0.17	13.43	13.77	0.28	13.77
35	-3.97	0.93	0.09	0.02	2.89	0.03	1.09	0.14	15.40	15.70	0.96	15.73
38	-2.82	0.65	0.13	0.01	3.86	0.04	1.83	0.17	17.31	17.75	1.79	17.84
41	0.00	0.52	0.17	<0.01	5.99	0.05	2.28	0.20	19.03	19.96	2.26	20.09
44	2.53	0.51	0.19	0.01	9.61	0.07	2.54	0.22	21.14	23.23	2.51	23.36
47	3.18	0.54	0.19	0.01	14.51	0.08	2.67	0.23	24.60	28.57	2.63	28.69
50	1.40	0.56	0.20	0.02	20.08	0.10	2.73	0.24	29.65	35.81	2.68	35.91
53	-1.10	0.56	0.20	0.02	25.53	0.12	2.75	0.26	35.14	43.45	2.69	43.53
56	-3.81	0.55	0.21	0.02	30.23	0.15	2.77	0.31	39.92	50.08	2.70	50.15
59	22.47	0.50	0.28	0.01	34.30	0.21	2.59	0.29	43.80	55.64	2.49	55.69
62	-8.04	0.48	0.21	0.02	37.64	0.24	2.83	0.48	47.24	60.42	2.72	60.48

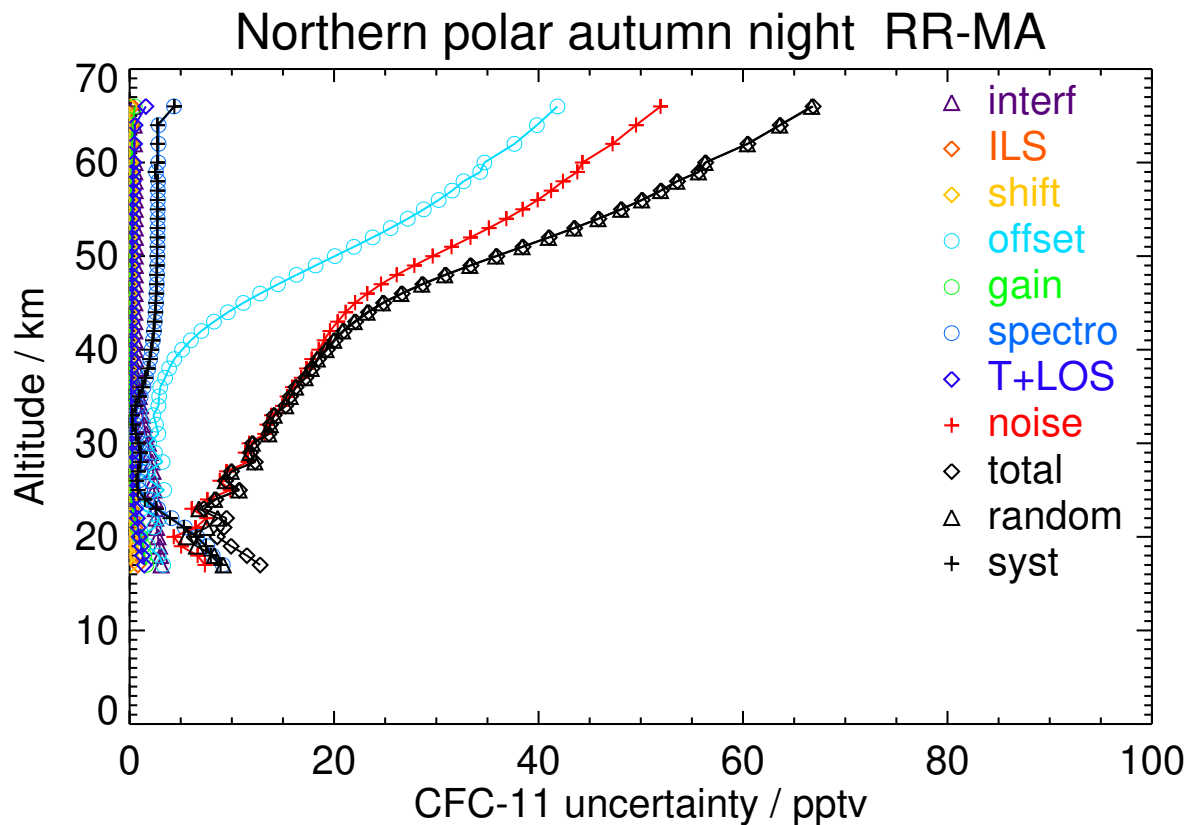


Figure S76. V8R_F-11_561 Northern polar autumn night

Table S78. CFC-11 error budget for Northern midlatitude winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
14	165.75	4.28	0.38	0.10	2.53	2.43	11.58	1.80	5.18	7.42	11.83	13.97
17	158.94	3.33	0.70	0.05	0.92	2.62	12.41	1.62	3.33	5.84	12.37	13.68
20	79.78	2.77	0.55	0.10	1.15	1.85	10.00	1.40	4.31	6.04	9.84	11.55
23	24.40	2.53	0.37	0.07	1.73	0.61	4.00	0.66	6.15	7.19	3.54	8.02
26	11.54	2.42	0.22	0.02	2.26	0.14	1.41	0.31	8.13	8.84	1.07	8.90
29	7.75	2.09	0.23	0.05	2.62	0.11	1.30	0.23	10.09	10.68	0.78	10.71
32	7.41	1.45	0.20	0.06	2.75	0.10	0.84	0.16	11.92	12.35	0.37	12.35
35	3.94	0.98	0.08	0.03	2.81	0.07	1.07	0.13	13.76	14.10	0.84	14.12
38	3.49	0.72	0.05	0.02	3.27	0.05	1.81	0.14	15.63	15.99	1.72	16.08
41	5.35	0.62	0.07	0.01	4.80	0.06	2.17	0.14	17.34	18.01	2.12	18.13
44	2.76	0.62	0.10	0.01	8.00	0.08	2.31	0.15	19.30	20.90	2.24	21.02
47	1.46	0.63	0.13	0.01	12.81	0.09	2.32	0.15	22.65	26.03	2.24	26.13
50	2.44	0.62	0.15	0.02	18.62	0.11	2.26	0.15	27.81	33.48	2.17	33.55
53	3.57	0.57	0.17	0.02	24.44	0.14	2.18	0.17	33.60	41.55	2.08	41.61
56	3.13	0.52	0.18	0.02	29.43	0.16	2.12	0.21	38.62	48.57	2.01	48.61
59	-37.91	0.34	0.16	0.03	31.40	0.12	1.83	0.20	40.75	51.45	1.83	51.48
62	0.16	0.39	0.19	0.02	37.24	0.27	2.04	0.33	46.14	59.30	1.90	59.33

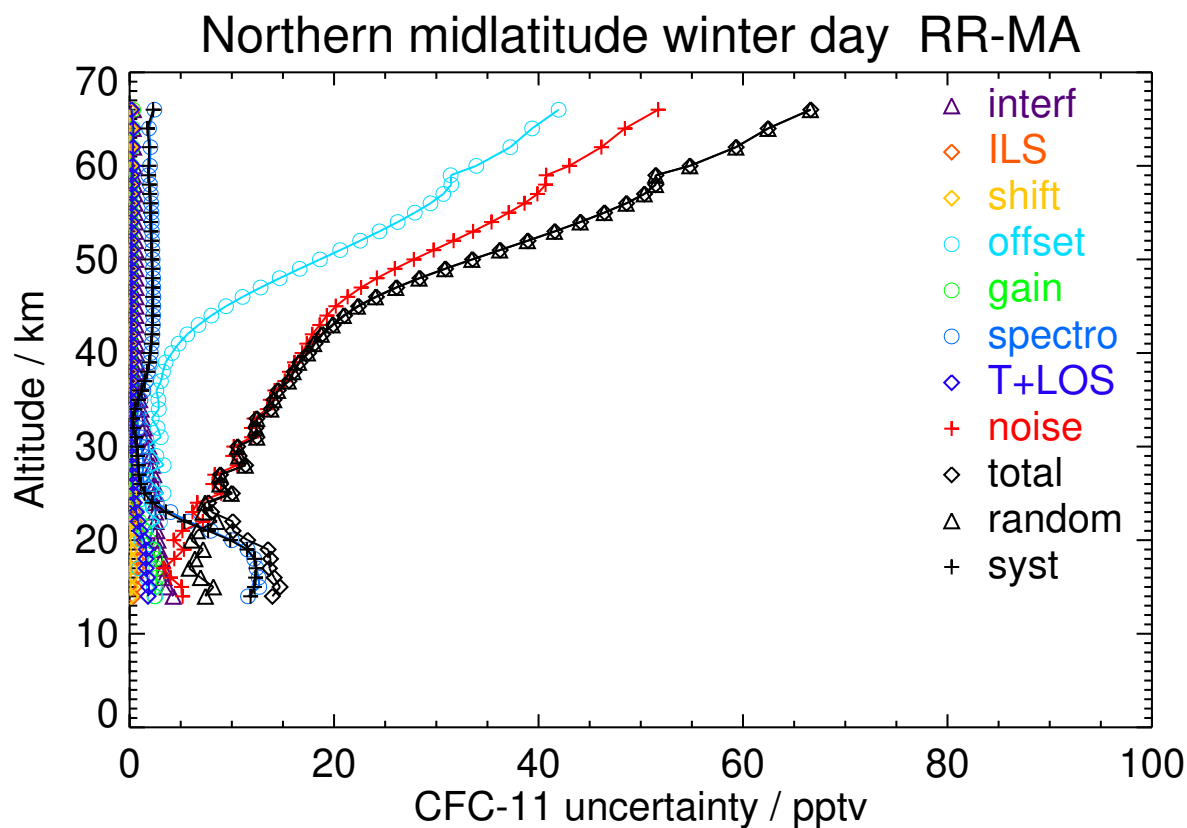
**Figure S77.** V8R_F-11_561 Northern midlatitude winter day

Table S79. CFC-11 error budget for Northern midlatitude winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	121.90	3.19	0.89	0.06	1.89	1.93	9.59	1.36	4.57	7.31	8.92	11.54
20	66.79	2.76	0.80	0.09	2.04	1.38	7.87	1.11	5.17	7.01	7.42	10.21
23	22.11	2.53	0.35	0.05	2.50	0.51	3.28	0.56	6.92	7.94	2.99	8.48
26	10.78	2.40	0.26	0.03	2.87	0.14	1.35	0.29	8.80	9.63	0.92	9.67
29	7.23	2.10	0.27	0.06	2.95	0.15	1.28	0.23	10.52	11.15	1.05	11.20
32	3.32	1.44	0.24	0.06	2.81	0.12	0.74	0.17	12.26	12.68	0.38	12.68
35	3.91	0.98	0.09	0.03	2.83	0.08	1.17	0.13	13.95	14.28	1.00	14.31
38	2.10	0.74	0.07	0.02	3.29	0.08	1.97	0.15	15.62	15.99	1.89	16.10
41	4.26	0.63	0.10	0.01	4.68	0.10	2.44	0.16	17.15	17.80	2.37	17.96
44	8.55	0.62	0.15	0.01	7.59	0.12	2.61	0.17	18.95	20.43	2.52	20.59
47	10.64	0.59	0.19	0.02	12.20	0.14	2.56	0.17	22.12	25.28	2.45	25.40
50	9.80	0.55	0.20	0.02	17.95	0.17	2.46	0.17	27.28	32.67	2.30	32.75
53	8.72	0.49	0.21	0.02	23.79	0.20	2.37	0.17	33.16	40.83	2.18	40.89
56	8.00	0.42	0.22	0.02	28.83	0.24	2.32	0.18	38.28	47.94	2.10	47.98
59	-4.17	0.41	0.16	0.03	32.77	0.16	2.16	0.20	41.94	53.24	2.01	53.27
62	11.31	0.30	0.24	0.02	36.78	0.37	2.23	0.19	46.15	59.02	2.00	59.06

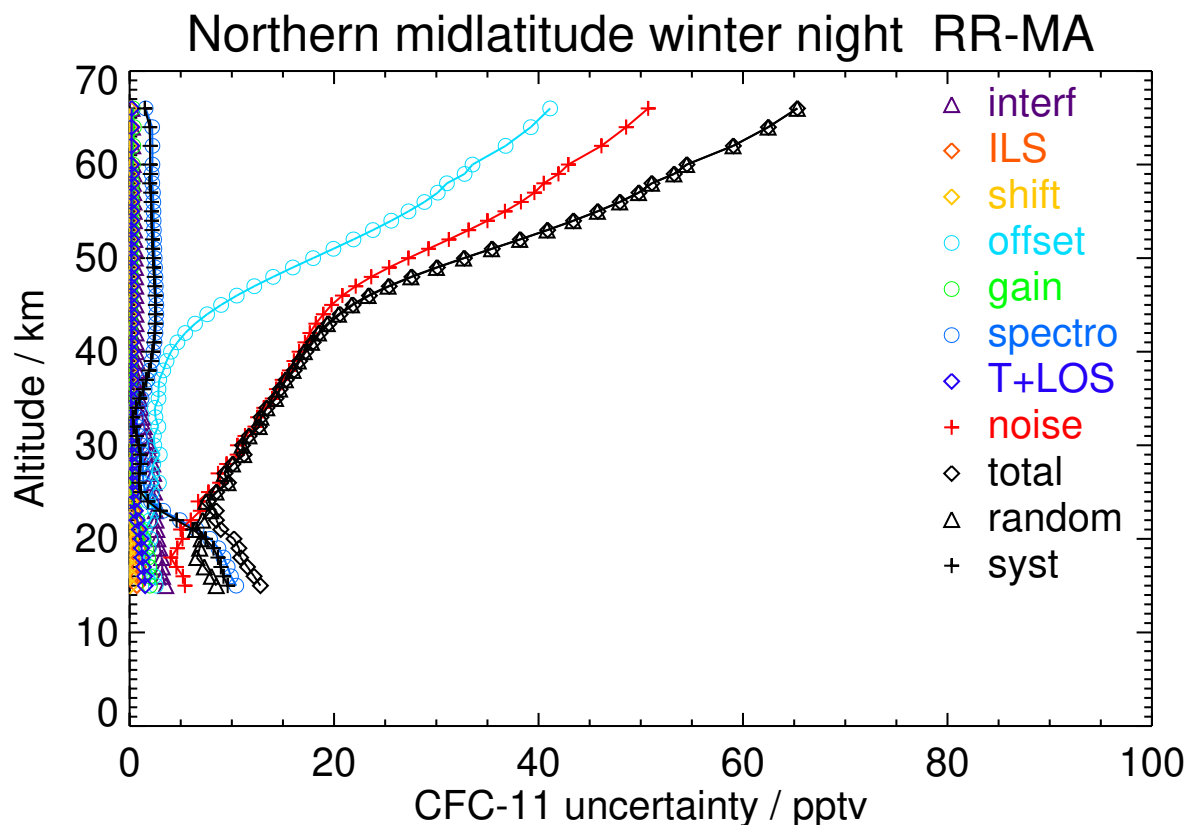
**Figure S78.** V8R_F-11_561 Northern midlatitude winter night

Table S80. CFC-11 error budget for Northern midlatitude spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	146.55	3.09	1.15	0.08	3.14	1.92	10.44	1.80	7.04	8.93	10.31	13.64
20	96.75	2.84	1.20	0.05	1.23	1.54	9.38	1.39	4.40	5.98	9.33	11.08
23	26.80	2.58	0.74	0.03	0.74	0.63	5.26	0.88	5.47	6.40	5.05	8.15
26	8.83	2.40	0.27	0.02	1.12	0.14	1.18	0.32	7.40	7.91	0.87	7.96
29	5.51	2.12	0.28	0.05	1.55	0.08	0.67	0.18	9.32	9.70	0.48	9.71
32	5.42	1.50	0.31	0.07	1.96	0.07	0.62	0.14	11.07	11.36	0.37	11.36
35	3.32	1.01	0.15	0.05	2.31	0.07	1.14	0.13	12.78	13.04	1.00	13.08
38	4.26	0.80	0.08	0.02	2.74	0.07	1.82	0.14	14.48	14.77	1.76	14.88
41	6.34	0.67	0.07	0.02	3.65	0.11	2.04	0.15	16.04	16.47	1.99	16.59
44	6.80	0.62	0.07	0.01	5.56	0.15	1.98	0.13	17.60	18.48	1.91	18.58
47	6.43	0.57	0.08	0.01	9.15	0.17	1.86	0.13	19.94	21.96	1.77	22.03
50	8.06	0.51	0.10	0.02	14.23	0.19	1.74	0.13	24.23	28.12	1.62	28.16
53	8.49	0.43	0.12	0.02	19.92	0.22	1.64	0.13	30.03	36.05	1.50	36.08
56	6.97	0.35	0.14	0.02	25.16	0.25	1.59	0.13	35.71	43.69	1.42	43.71
59	6.05	0.29	0.16	0.02	29.26	0.29	1.55	0.13	40.10	49.65	1.39	49.67
62	6.62	0.24	0.18	0.02	33.72	0.38	1.53	0.13	45.10	56.31	1.38	56.33

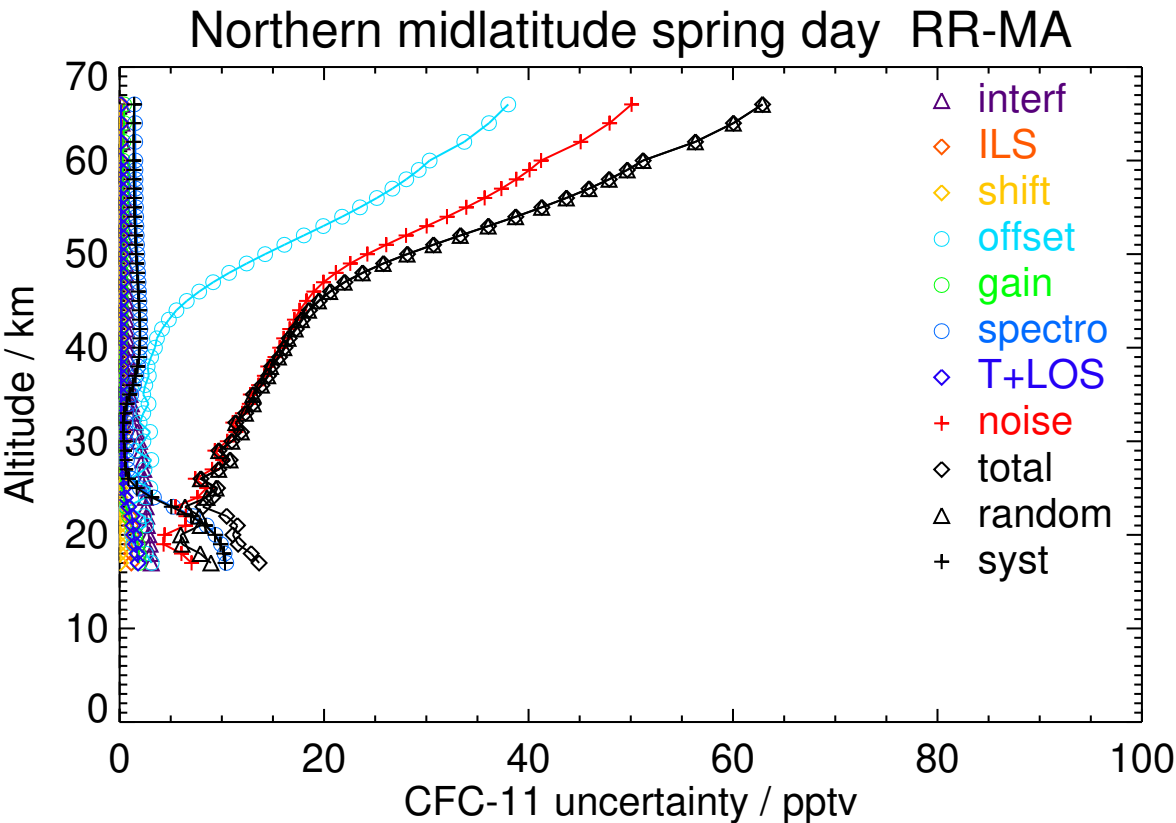


Figure S79. V8R_F-11_561 Northern midlatitude spring day

Table S81. CFC-11 error budget for Northern midlatitude spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	142.07	3.04	1.06	0.07	3.05	1.89	10.12	1.72	6.74	8.59	10.01	13.19
20	92.26	2.83	1.10	0.06	1.18	1.50	9.06	1.33	4.27	5.81	9.00	10.72
23	24.31	2.56	0.61	0.02	0.86	0.64	5.05	0.83	5.44	6.41	4.77	7.99
26	10.05	2.42	0.20	0.01	1.31	0.16	1.13	0.30	7.55	8.08	0.87	8.13
29	6.33	2.12	0.37	0.06	1.80	0.10	0.96	0.21	9.65	10.07	0.72	10.10
32	4.07	1.49	0.30	0.08	2.14	0.08	0.74	0.15	11.50	11.81	0.35	11.81
35	2.18	1.04	0.17	0.05	2.41	0.08	1.22	0.13	13.18	13.46	1.03	13.50
38	3.28	0.79	0.07	0.03	2.88	0.10	1.80	0.14	14.81	15.12	1.70	15.22
41	1.82	0.66	0.06	0.02	3.80	0.10	1.99	0.15	16.34	16.79	1.92	16.90
44	0.21	0.61	0.08	0.02	5.78	0.12	1.95	0.14	17.89	18.82	1.90	18.91
47	0.30	0.59	0.10	0.01	9.41	0.14	1.85	0.13	20.24	22.33	1.80	22.41
50	0.90	0.55	0.11	0.01	14.48	0.17	1.74	0.13	24.51	28.48	1.68	28.53
53	1.50	0.48	0.12	0.02	20.14	0.20	1.66	0.13	30.25	36.35	1.58	36.38
56	1.75	0.41	0.13	0.02	25.39	0.24	1.61	0.14	35.86	43.94	1.51	43.97
59	2.13	0.35	0.15	0.02	29.54	0.28	1.59	0.14	40.22	49.91	1.48	49.93
62	2.52	0.28	0.16	0.02	34.17	0.37	1.57	0.15	45.35	56.79	1.46	56.80

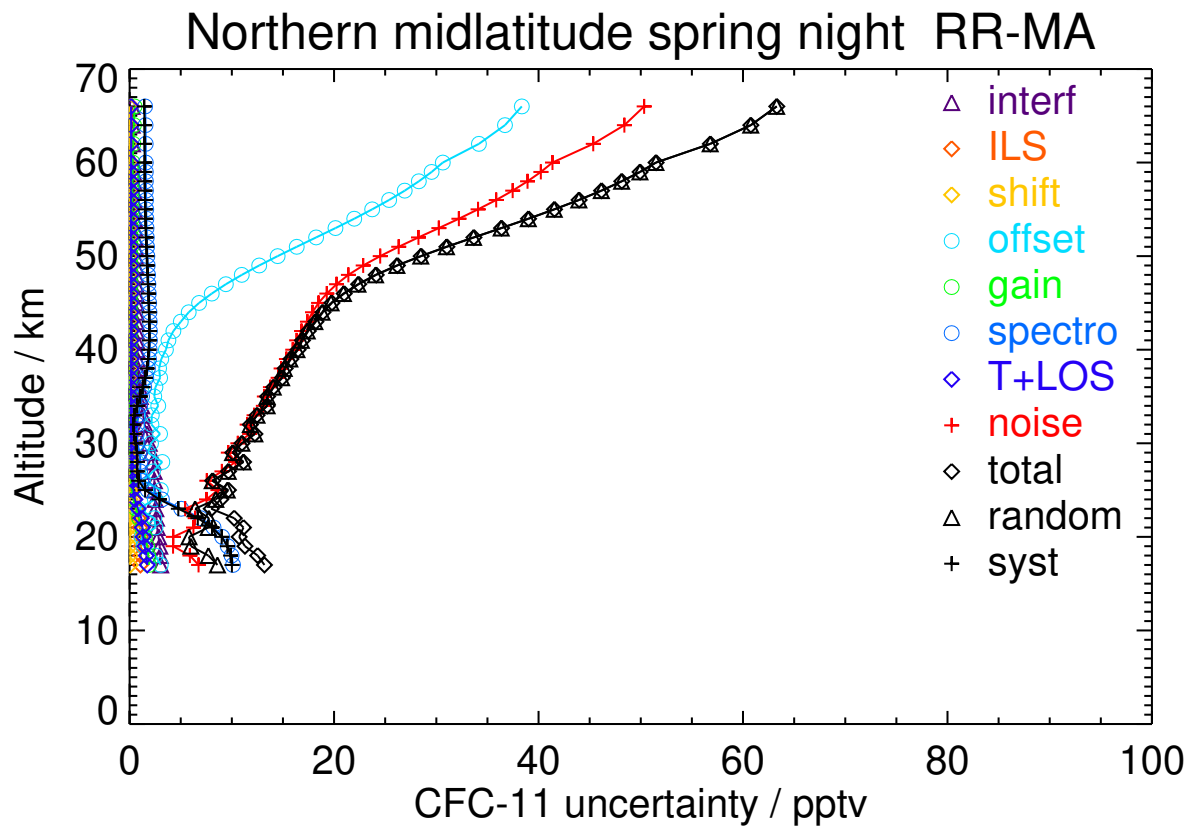


Figure S80. V8R_F-11_561 Northern midlatitude spring night

Table S82. CFC-11 error budget for Northern midlatitude summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	172.13	3.05	0.98	0.08	2.85	2.44	12.01	2.07	6.38	8.11	12.16	14.62
20	112.88	2.88	1.07	0.04	1.09	2.06	10.79	1.56	3.92	5.40	10.95	12.21
23	29.14	2.59	0.58	0.03	0.65	0.86	5.67	0.95	4.88	5.75	5.66	8.07
26	10.61	2.41	0.24	0.04	0.97	0.14	1.05	0.35	6.61	7.14	0.85	7.19
29	3.32	2.16	0.33	0.05	1.41	0.06	0.75	0.21	8.35	8.76	0.48	8.78
32	2.88	1.46	0.29	0.06	1.85	0.06	0.62	0.14	10.08	10.37	0.38	10.37
35	5.34	1.07	0.17	0.05	2.19	0.07	1.00	0.12	11.86	12.12	0.85	12.15
38	5.34	0.82	0.11	0.03	2.47	0.06	1.50	0.13	13.54	13.80	1.44	13.87
41	1.07	0.64	0.09	0.03	2.98	0.08	1.87	0.14	15.07	15.38	1.83	15.49
44	-1.50	0.65	0.06	0.02	4.31	0.11	1.95	0.13	16.66	17.23	1.91	17.33
47	-0.66	0.64	0.05	0.01	7.08	0.13	1.81	0.12	18.47	19.79	1.77	19.87
50	-1.63	0.59	0.05	0.02	11.46	0.13	1.63	0.12	21.67	24.53	1.58	24.58
53	-5.60	0.49	0.06	0.02	16.82	0.15	1.52	0.12	26.91	31.74	1.44	31.77
56	-8.20	0.38	0.07	0.03	22.13	0.18	1.45	0.12	32.84	39.60	1.36	39.63
59	-8.64	0.28	0.10	0.03	26.46	0.23	1.43	0.12	37.80	46.14	1.33	46.16
62	-9.58	0.22	0.13	0.03	31.18	0.33	1.41	0.12	43.70	53.69	1.32	53.71

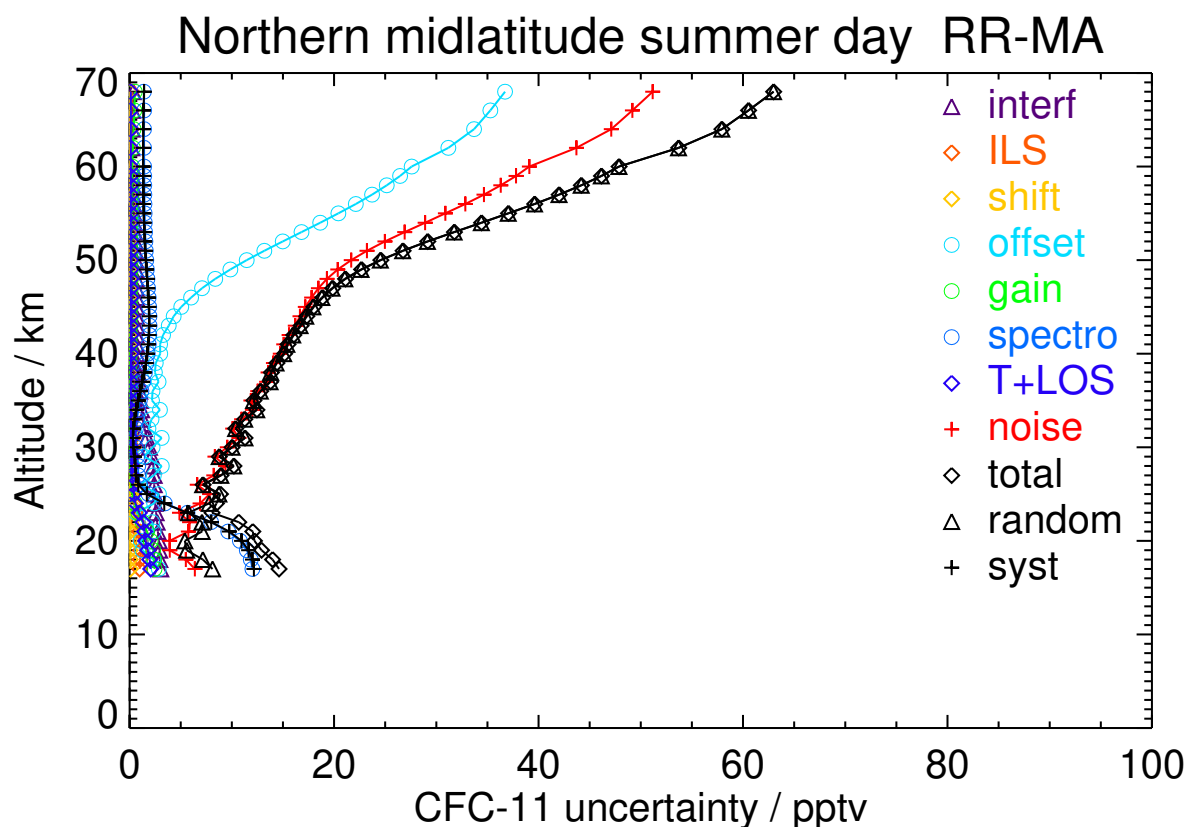
**Figure S81.** V8R_F-11_561 Northern midlatitude summer day

Table S83. CFC-11 error budget for Northern midlatitude summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	168.13	2.97	1.02	0.07	2.78	2.24	11.67	2.00	6.24	8.03	11.71	14.20
20	110.75	2.86	1.06	0.04	0.99	1.84	10.26	1.52	3.78	5.24	10.39	11.64
23	30.65	2.58	0.57	0.03	0.70	0.75	5.54	0.94	4.82	5.70	5.51	7.92
26	10.74	2.41	0.25	0.04	1.10	0.13	1.14	0.35	6.55	7.10	0.97	7.17
29	2.54	2.16	0.30	0.05	1.59	0.05	0.68	0.20	8.31	8.76	0.38	8.77
32	4.27	1.46	0.30	0.07	1.95	0.06	0.64	0.14	10.03	10.34	0.35	10.35
35	3.21	1.10	0.20	0.07	2.26	0.05	0.84	0.13	11.82	12.10	0.70	12.12
38	3.58	0.81	0.10	0.03	2.48	0.06	1.44	0.13	13.41	13.67	1.37	13.74
41	-2.12	0.65	0.08	0.03	2.91	0.10	1.82	0.14	14.93	15.23	1.78	15.33
44	-1.54	0.69	0.06	0.03	4.22	0.14	1.87	0.13	16.48	17.03	1.83	17.13
47	3.16	0.68	0.06	0.02	6.75	0.18	1.77	0.12	18.17	19.40	1.72	19.48
50	6.27	0.62	0.08	0.02	10.93	0.21	1.63	0.12	21.24	23.91	1.55	23.96
53	9.06	0.51	0.08	0.02	16.21	0.25	1.52	0.12	26.38	30.98	1.40	31.01
56	9.89	0.39	0.09	0.02	21.54	0.30	1.47	0.13	32.33	38.86	1.30	38.88
59	8.33	0.29	0.10	0.03	25.94	0.35	1.46	0.14	37.39	45.52	1.27	45.54
62	4.82	0.22	0.13	0.03	30.83	0.45	1.46	0.15	43.49	53.31	1.27	53.33

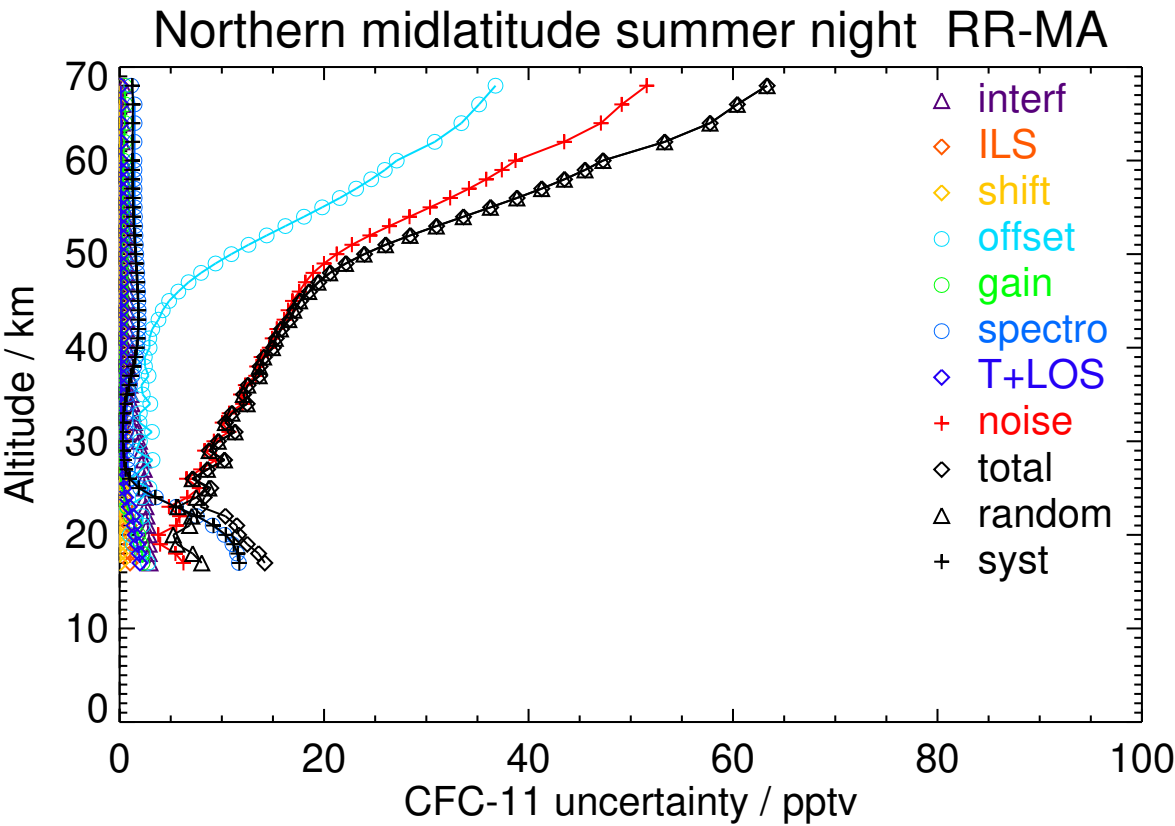


Figure S82. V8R_F-11_561 Northern midlatitude summer night

Table S84. CFC-11 error budget for Northern midlatitude autumn day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	162.74	3.03	1.06	0.06	3.15	2.09	10.74	1.82	7.04	8.89	10.66	13.88
20	112.23	2.86	1.22	0.06	0.98	1.70	10.22	1.41	4.15	6.18	9.95	11.71
23	38.32	2.55	0.83	0.02	0.94	0.86	6.87	1.07	5.58	6.75	6.54	9.40
26	8.33	2.39	0.32	0.01	1.52	0.22	1.89	0.40	7.71	8.34	1.39	8.45
29	5.65	2.07	0.26	0.06	2.00	0.11	1.03	0.23	9.72	10.16	0.81	10.20
32	1.94	1.46	0.28	0.07	2.25	0.08	0.61	0.16	11.68	12.00	0.31	12.00
35	2.14	0.97	0.12	0.04	2.50	0.07	1.00	0.12	13.44	13.72	0.85	13.74
38	2.59	0.70	0.06	0.02	2.95	0.07	1.74	0.14	15.20	15.51	1.64	15.60
41	3.13	0.60	0.10	0.01	4.15	0.07	2.22	0.16	16.87	17.39	2.15	17.52
44	3.37	0.57	0.14	<0.01	6.74	0.09	2.35	0.16	18.61	19.81	2.28	19.94
47	4.99	0.53	0.16	0.01	10.98	0.12	2.26	0.16	21.57	24.21	2.20	24.31
50	5.89	0.49	0.17	0.02	16.43	0.14	2.14	0.16	26.48	31.18	2.06	31.25
53	6.79	0.43	0.18	0.02	22.12	0.17	2.05	0.16	32.37	39.21	1.94	39.26
56	6.91	0.38	0.19	0.02	27.11	0.21	1.99	0.16	37.64	46.40	1.86	46.43
59	12.08	0.32	0.18	0.02	30.28	0.25	1.79	0.15	41.05	51.01	1.70	51.04
62	6.79	0.28	0.20	0.02	35.04	0.32	1.91	0.17	45.88	57.74	1.78	57.76

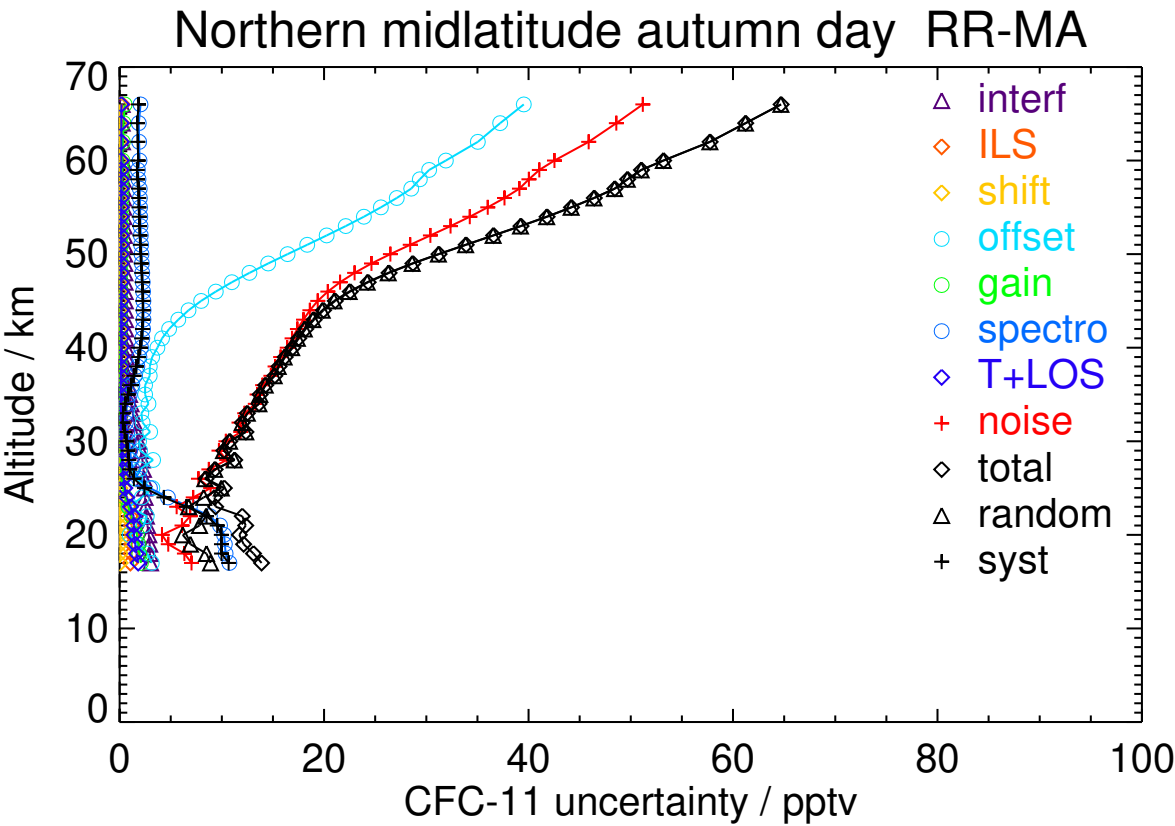


Figure S83. V8R_F-11_561 Northern midlatitude autumn day

Table S85. CFC-11 error budget for Northern midlatitude autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	146.86	2.96	1.19	0.06	3.03	2.07	10.53	1.72	6.81	9.18	9.98	13.56
20	102.53	2.83	1.25	0.06	0.99	1.66	9.56	1.36	4.09	6.04	9.31	11.10
23	32.90	2.58	0.69	0.03	0.95	0.77	5.77	0.92	5.41	6.45	5.52	8.49
26	12.39	2.38	0.25	0.01	1.49	0.25	1.80	0.37	7.53	8.13	1.41	8.25
29	4.92	2.06	0.27	0.06	2.02	0.11	0.98	0.22	9.64	10.09	0.65	10.12
32	6.47	1.44	0.24	0.06	2.33	0.10	0.65	0.14	11.63	11.96	0.32	11.97
35	5.33	0.98	0.15	0.04	2.51	0.09	1.06	0.13	13.52	13.80	0.79	13.83
38	5.59	0.68	0.08	0.02	2.94	0.07	1.59	0.13	15.28	15.58	1.50	15.65
41	4.09	0.58	0.09	0.01	4.17	0.07	2.06	0.15	16.88	17.41	2.00	17.52
44	4.07	0.56	0.14	<0.01	6.88	0.08	2.28	0.16	18.69	19.93	2.22	20.05
47	3.65	0.53	0.17	0.01	11.23	0.09	2.26	0.16	21.81	24.54	2.21	24.64
50	1.49	0.48	0.18	0.01	16.74	0.11	2.16	0.16	26.90	31.69	2.10	31.76
53	-1.00	0.43	0.19	0.02	22.41	0.14	2.06	0.16	32.81	39.74	1.99	39.79
56	-3.08	0.37	0.20	0.02	27.34	0.17	1.99	0.17	38.01	46.83	1.91	46.87
59	-19.12	0.33	0.25	0.02	30.31	0.22	1.96	0.21	41.25	51.19	1.86	51.22
62	-8.47	0.27	0.21	0.02	35.12	0.28	1.89	0.22	45.90	57.80	1.80	57.83

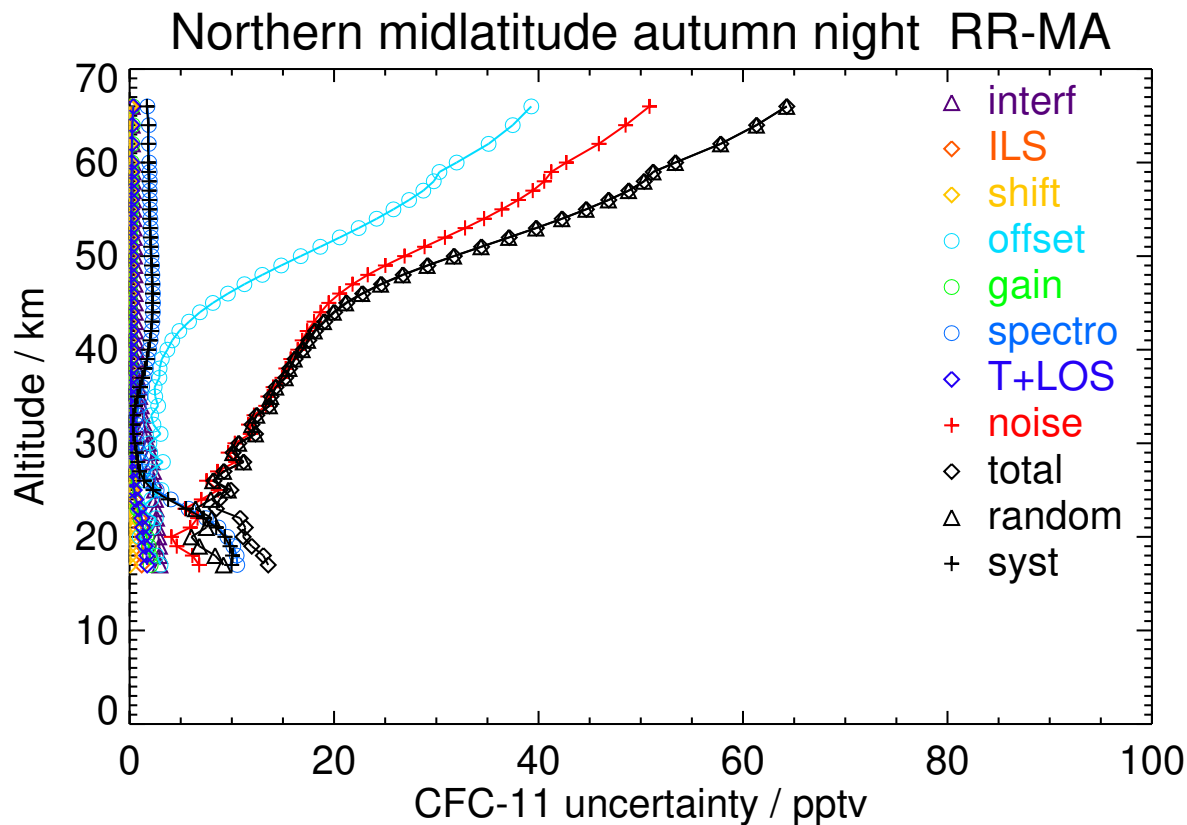


Figure S84. V8R_F-11_561 Northern midlatitude autumn night

Table S86. CFC-11 error budget for Tropics day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	230.74	3.15	3.02	0.17	3.71	2.79	13.51	3.48	8.40	10.90	13.68	17.49
20	191.13	3.00	2.77	0.09	1.00	2.15	13.36	2.32	4.79	6.46	13.69	15.14
23	107.83	2.55	2.24	0.07	0.95	1.07	11.10	1.83	5.86	6.99	11.21	13.21
26	51.64	2.43	1.76	0.05	1.26	0.52	5.78	0.96	7.41	8.26	5.65	10.01
29	18.84	2.18	1.21	0.15	1.56	0.19	2.45	0.46	9.02	9.49	2.47	9.81
32	5.77	1.51	0.45	0.09	1.87	0.06	0.68	0.18	10.68	10.97	0.47	10.98
35	4.52	1.04	0.13	0.05	2.21	0.06	1.11	0.12	12.39	12.64	0.99	12.68
38	0.68	0.82	0.09	0.03	2.62	0.07	1.51	0.13	14.06	14.33	1.44	14.41
41	5.57	0.67	0.07	0.03	3.37	0.11	1.77	0.13	15.56	15.94	1.71	16.03
44	10.32	0.63	0.05	0.03	5.10	0.16	1.71	0.12	17.10	17.86	1.65	17.94
47	10.59	0.58	0.07	0.02	8.43	0.19	1.53	0.11	19.25	21.03	1.44	21.08
50	9.06	0.51	0.09	0.01	13.33	0.21	1.38	0.11	23.31	26.87	1.26	26.90
53	9.06	0.41	0.10	0.02	18.98	0.24	1.30	0.11	29.12	34.77	1.13	34.79
56	9.81	0.33	0.11	0.02	24.28	0.28	1.26	0.11	34.95	42.56	1.06	42.57
59	9.79	0.26	0.12	0.02	28.41	0.33	1.25	0.11	39.44	48.62	1.03	48.63
62	9.18	0.22	0.13	0.02	32.82	0.41	1.24	0.11	44.47	55.28	1.03	55.29

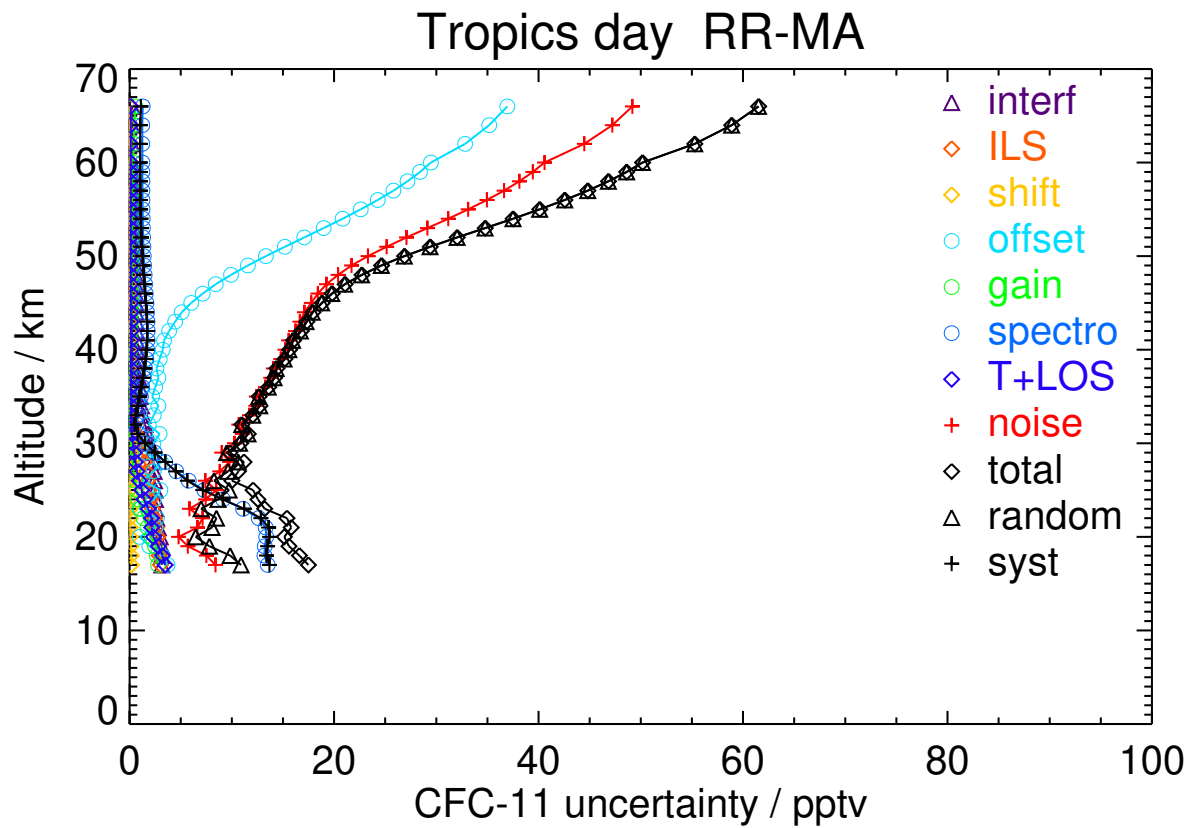


Figure S85. V8R_F-11_561 Tropics day

Table S87. CFC-11 error budget for Tropics night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	228.02	3.12	2.81	0.17	3.69	2.70	12.77	3.29	8.33	10.58	13.03	16.79
20	189.28	2.98	2.74	0.10	1.01	2.12	12.98	2.28	4.76	6.33	13.35	14.77
23	106.63	2.56	2.25	0.07	1.06	1.06	11.00	1.84	5.90	7.01	11.13	13.16
26	51.02	2.44	1.72	0.05	1.44	0.53	5.68	0.94	7.45	8.37	5.47	10.00
29	20.55	2.19	1.23	0.15	1.78	0.19	2.52	0.46	9.10	9.63	2.46	9.94
32	3.55	1.50	0.46	0.09	2.07	0.06	0.66	0.19	10.73	11.06	0.47	11.07
35	4.20	1.04	0.11	0.04	2.34	0.06	1.17	0.12	12.49	12.76	1.07	12.80
38	6.54	0.81	0.08	0.03	2.70	0.07	1.46	0.13	14.17	14.46	1.37	14.52
41	4.56	0.65	0.08	0.03	3.35	0.10	1.54	0.12	15.68	16.06	1.47	16.13
44	-0.76	0.62	0.06	0.03	5.10	0.12	1.49	0.11	17.19	17.94	1.43	18.00
47	-4.09	0.60	0.06	0.02	8.42	0.14	1.39	0.11	19.27	21.04	1.33	21.09
50	-2.95	0.52	0.06	<0.01	13.27	0.15	1.29	0.10	23.28	26.81	1.21	26.83
53	-4.19	0.42	0.07	0.01	18.86	0.17	1.21	0.10	29.09	34.68	1.11	34.69
56	-5.35	0.34	0.08	0.01	24.11	0.20	1.16	0.10	34.91	42.43	1.05	42.44
59	-5.12	0.27	0.09	0.01	28.22	0.24	1.13	0.10	39.42	48.48	1.02	48.49
62	-3.91	0.22	0.10	0.01	32.61	0.32	1.12	0.11	44.45	55.13	1.02	55.14

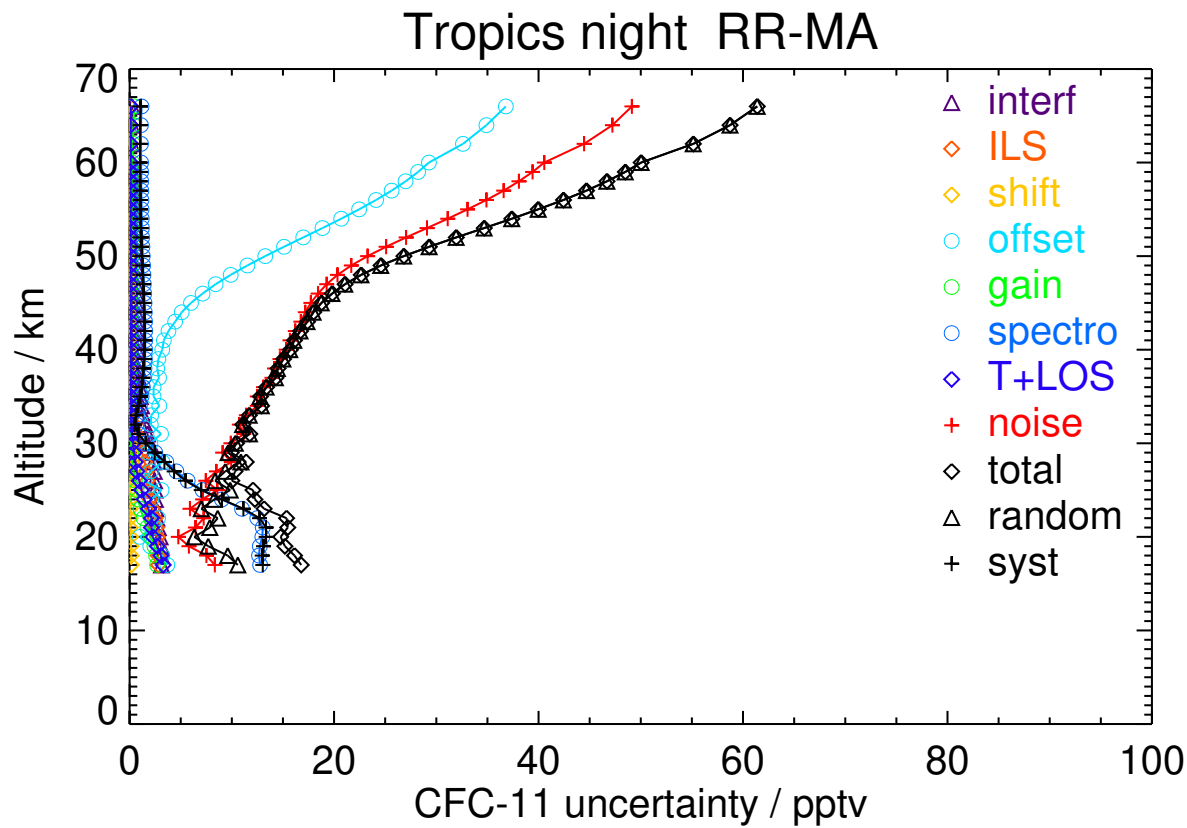


Figure S86. V8R_F-11_561 Tropics night

Table S88. CFC-11 error budget for Southern midlatitude winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	65.48	3.14	0.66	0.07	3.73	1.25	6.13	0.96	8.77	11.06	4.35	11.89
20	82.88	2.85	0.88	0.06	0.86	1.35	7.39	1.09	4.03	5.66	7.17	9.14
23	27.06	2.56	0.50	0.02	1.77	0.66	4.58	0.78	6.16	7.19	4.26	8.36
26	11.70	2.42	0.28	0.03	2.56	0.24	1.98	0.37	8.63	9.40	1.65	9.54
29	3.01	2.13	0.26	0.06	2.87	0.12	0.91	0.22	10.58	11.19	0.70	11.21
32	7.51	1.47	0.22	0.06	2.80	0.10	0.77	0.14	12.32	12.74	0.35	12.74
35	9.28	0.98	0.18	0.06	2.86	0.08	1.04	0.14	13.95	14.29	0.81	14.31
38	4.14	0.73	0.10	0.03	3.29	0.07	1.66	0.15	15.58	15.95	1.58	16.03
41	1.76	0.62	0.12	0.02	4.59	0.08	2.22	0.17	17.08	17.71	2.18	17.84
44	3.99	0.57	0.16	0.01	7.29	0.11	2.41	0.18	18.77	20.15	2.37	20.29
47	4.72	0.54	0.17	0.01	11.60	0.14	2.37	0.17	21.86	24.76	2.31	24.87
50	4.04	0.48	0.18	0.02	17.05	0.17	2.26	0.17	26.95	31.90	2.17	31.97
53	5.23	0.42	0.19	0.02	22.62	0.20	2.16	0.18	32.87	39.91	2.05	39.96
56	6.99	0.36	0.20	0.02	27.40	0.24	2.09	0.19	38.08	46.92	1.96	46.96
59	26.01	0.34	0.22	0.02	30.93	0.34	2.10	0.23	41.94	52.13	1.91	52.16
62	10.28	0.29	0.22	0.02	34.62	0.35	1.99	0.26	45.87	57.47	1.84	57.50

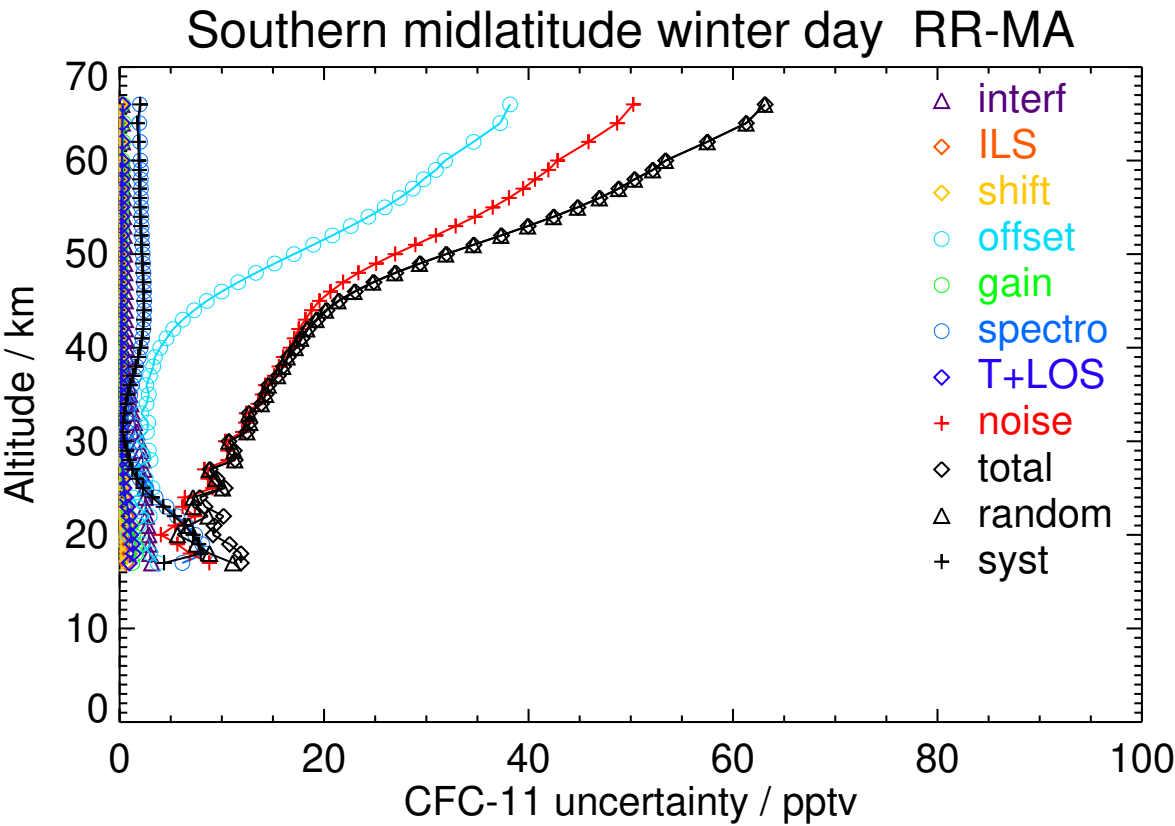


Figure S87. V8R_F-11_561 Southern midlatitude winter day

Table S89. CFC-11 error budget for Southern midlatitude winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	101.23	2.96	0.73	0.08	3.46	1.27	6.83	1.19	7.71	9.38	6.53	11.42
20	74.07	2.78	0.96	0.08	0.95	1.14	7.05	1.05	4.38	5.90	6.78	8.99
23	19.62	2.49	0.53	0.03	1.69	0.48	4.08	0.74	6.62	7.52	3.76	8.41
26	9.97	2.37	0.26	0.03	2.41	0.16	1.53	0.33	9.14	9.80	1.20	9.87
29	6.36	2.08	0.29	0.05	2.68	0.14	1.26	0.25	11.39	11.92	0.95	11.96
32	1.64	1.46	0.24	0.05	2.70	0.09	0.69	0.16	13.23	13.60	0.34	13.60
35	-0.42	0.99	0.13	0.04	2.99	0.07	1.01	0.14	14.94	15.28	0.80	15.30
38	1.28	0.73	0.10	0.02	3.79	0.09	1.69	0.15	16.60	17.05	1.62	17.12
41	1.09	0.61	0.13	0.02	5.42	0.12	2.10	0.18	18.06	18.87	2.06	18.98
44	0.93	0.57	0.16	0.02	8.43	0.14	2.28	0.19	19.74	21.48	2.21	21.59
47	2.34	0.55	0.18	0.01	12.86	0.16	2.30	0.20	22.75	26.15	2.22	26.25
50	4.37	0.53	0.19	0.01	18.25	0.19	2.27	0.20	27.73	33.21	2.17	33.28
53	5.67	0.49	0.19	0.02	23.71	0.22	2.22	0.22	33.45	41.01	2.12	41.06
56	6.55	0.45	0.19	0.02	28.40	0.26	2.20	0.27	38.45	47.81	2.09	47.86
59	10.81	0.45	0.22	0.02	32.33	0.25	2.00	0.36	42.79	53.64	1.84	53.67
62	1.57	0.37	0.18	0.02	35.59	0.35	2.24	0.46	46.03	58.19	2.09	58.23

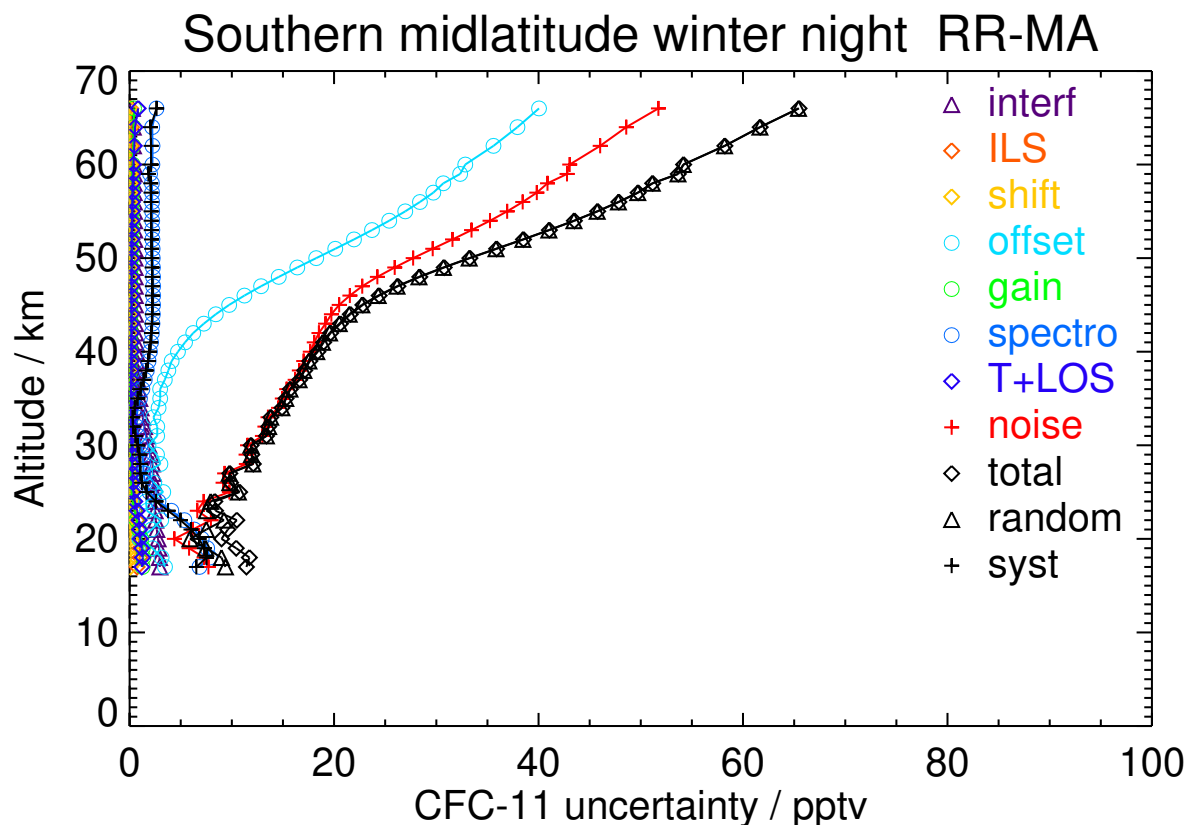
**Figure S88.** V8R_F-11_561 Southern midlatitude winter night

Table S90. CFC-11 error budget for Southern midlatitude spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
20	64.85	2.91	0.70	0.04	0.83	0.99	5.73	0.76	3.85	5.86	4.95	7.67
23	26.60	2.53	0.42	0.03	1.75	0.49	3.68	0.63	5.86	6.84	3.35	7.62
26	15.14	2.41	0.19	0.02	2.46	0.20	1.45	0.31	7.97	8.74	1.20	8.82
29	9.73	2.12	0.27	0.05	2.83	0.12	0.85	0.20	9.77	10.42	0.57	10.43
32	1.72	1.44	0.26	0.06	2.90	0.07	0.55	0.13	11.53	11.99	0.29	11.99
35	-2.07	0.96	0.14	0.05	2.80	0.04	0.93	0.11	13.19	13.53	0.85	13.56
38	0.09	0.71	0.07	0.02	2.88	0.07	1.60	0.13	14.88	15.18	1.55	15.25
41	6.75	0.61	0.07	0.02	3.72	0.11	1.92	0.14	16.48	16.91	1.85	17.01
44	6.73	0.56	0.07	0.02	5.78	0.13	1.97	0.14	18.01	18.94	1.88	19.03
47	4.03	0.53	0.09	0.01	9.44	0.14	1.90	0.14	20.38	22.47	1.80	22.54
50	1.28	0.48	0.11	0.01	14.44	0.15	1.81	0.13	24.68	28.61	1.69	28.66
53	-0.02	0.43	0.12	0.02	19.91	0.17	1.73	0.13	30.44	36.38	1.60	36.42
56	0.16	0.36	0.14	0.02	24.87	0.20	1.67	0.15	36.01	43.78	1.53	43.80
59	-1.30	0.31	0.15	0.02	28.69	0.23	1.61	0.18	40.38	49.54	1.48	49.56
62	3.93	0.26	0.17	0.02	32.83	0.34	1.61	0.23	45.47	56.09	1.46	56.11

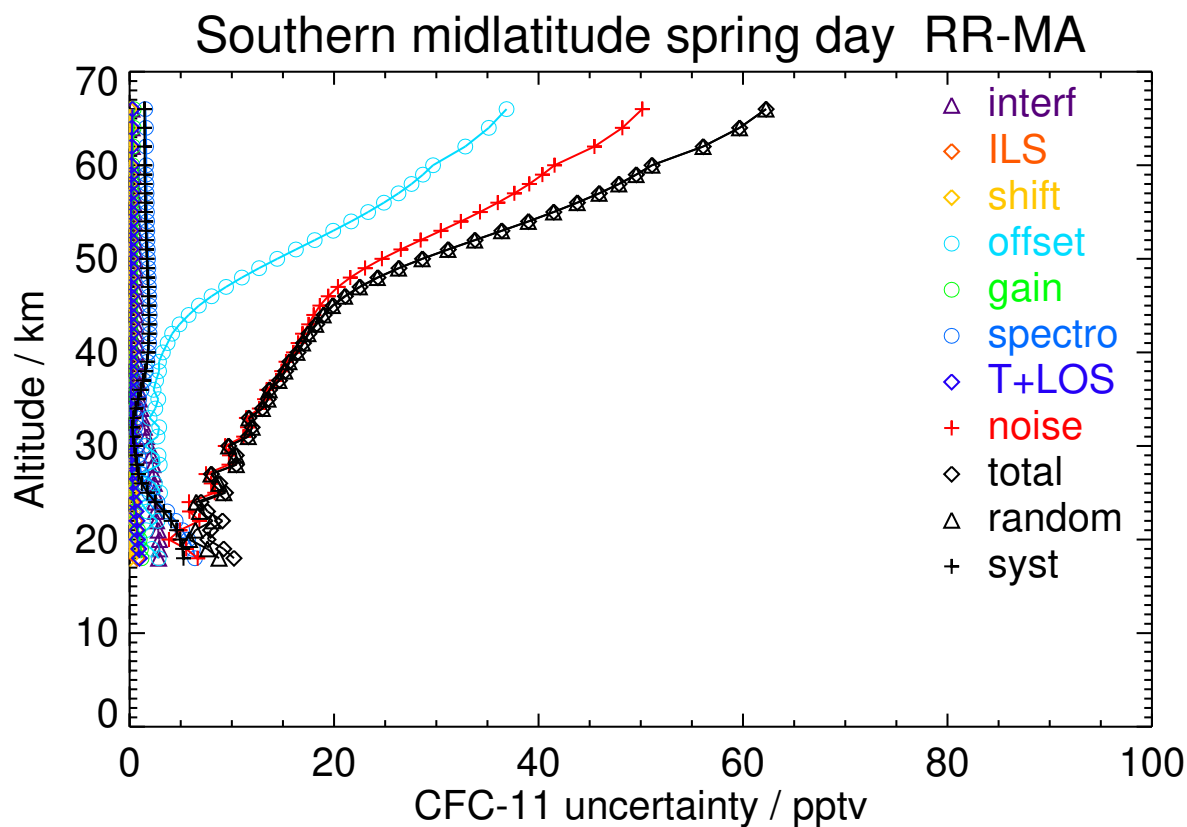
**Figure S89.** V8R_F-11_561 Southern midlatitude spring day

Table S91. CFC-11 error budget for Southern midlatitude spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	113.67	2.90	0.64	0.08	2.86	1.89	8.24	1.38	6.39	7.95	8.25	11.45
20	73.15	2.94	0.78	0.05	0.82	1.33	6.93	0.98	3.82	5.54	6.68	8.68
23	20.89	2.55	0.42	0.03	1.06	0.55	3.63	0.64	5.36	6.19	3.46	7.10
26	14.56	2.44	0.23	0.03	1.72	0.19	1.28	0.29	7.43	8.07	0.92	8.12
29	9.01	2.13	0.39	0.06	2.18	0.15	1.12	0.22	9.25	9.79	0.71	9.81
32	5.69	1.47	0.31	0.06	2.44	0.09	0.69	0.14	11.14	11.52	0.44	11.52
35	5.17	0.98	0.18	0.05	2.60	0.09	1.16	0.13	12.96	13.27	0.94	13.31
38	5.57	0.72	0.09	0.03	2.79	0.09	1.62	0.13	14.73	15.02	1.54	15.10
41	5.79	0.63	0.07	0.02	3.65	0.11	1.96	0.14	16.33	16.75	1.89	16.86
44	2.15	0.60	0.08	0.02	5.68	0.12	2.00	0.14	17.91	18.81	1.91	18.90
47	-2.89	0.56	0.09	0.01	9.32	0.11	1.88	0.13	20.30	22.36	1.79	22.43
50	-3.82	0.51	0.11	0.01	14.36	0.11	1.76	0.13	24.66	28.54	1.66	28.59
53	-3.85	0.44	0.13	0.02	19.91	0.13	1.68	0.15	30.42	36.36	1.57	36.40
56	-4.35	0.37	0.15	0.02	24.99	0.17	1.63	0.18	35.97	43.81	1.52	43.83
59	-4.45	0.31	0.16	0.02	28.94	0.22	1.61	0.24	40.22	49.55	1.48	49.58
62	-3.59	0.25	0.18	0.02	33.29	0.30	1.61	0.33	45.04	56.01	1.47	56.03

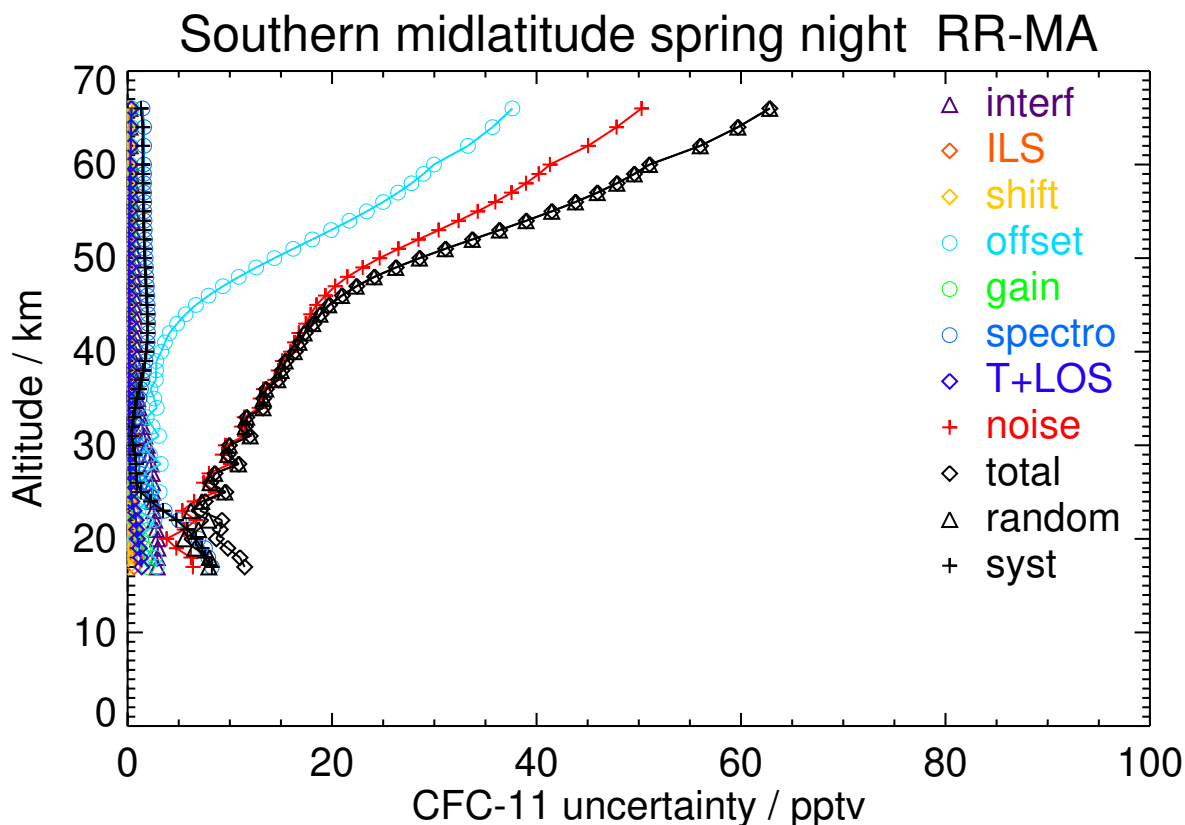
**Figure S90.** V8R_F-11_561 Southern midlatitude spring night

Table S92. CFC-11 error budget for Southern midlatitude summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	169.49	2.96	1.31	0.06	2.55	2.17	10.92	1.92	5.66	7.47	10.99	13.29
20	107.95	2.88	1.39	0.06	1.73	1.70	10.34	1.50	4.60	6.26	10.36	12.10
23	32.86	2.57	0.81	0.03	1.48	0.68	5.58	0.87	5.45	6.40	5.53	8.45
26	9.00	2.44	0.31	0.03	1.41	0.10	1.20	0.31	6.85	7.46	0.92	7.52
29	6.45	2.16	0.29	0.05	1.50	0.04	0.67	0.18	8.34	8.77	0.48	8.78
32	3.66	1.47	0.33	0.08	1.79	0.05	0.57	0.14	9.95	10.23	0.35	10.24
35	4.43	1.11	0.14	0.05	2.17	0.07	0.85	0.12	11.76	12.02	0.75	12.04
38	2.67	0.83	0.07	0.03	2.53	0.06	1.45	0.12	13.45	13.72	1.39	13.79
41	0.55	0.65	0.05	0.03	3.10	0.07	1.86	0.13	15.08	15.41	1.82	15.52
44	0.19	0.65	0.05	0.02	4.61	0.10	1.93	0.13	16.69	17.34	1.90	17.44
47	-4.21	0.66	0.06	0.01	7.65	0.12	1.83	0.12	18.60	20.12	1.79	20.20
50	-3.95	0.61	0.08	0.02	12.32	0.15	1.72	0.12	22.14	25.35	1.66	25.40
53	0.81	0.50	0.10	0.02	17.89	0.18	1.64	0.12	27.62	32.92	1.55	32.96
56	5.73	0.38	0.13	0.03	23.29	0.23	1.58	0.13	33.51	40.82	1.47	40.84
59	9.41	0.28	0.15	0.03	27.65	0.28	1.55	0.14	38.30	47.24	1.41	47.26
62	11.90	0.23	0.18	0.03	32.44	0.37	1.52	0.16	43.97	54.64	1.38	54.66

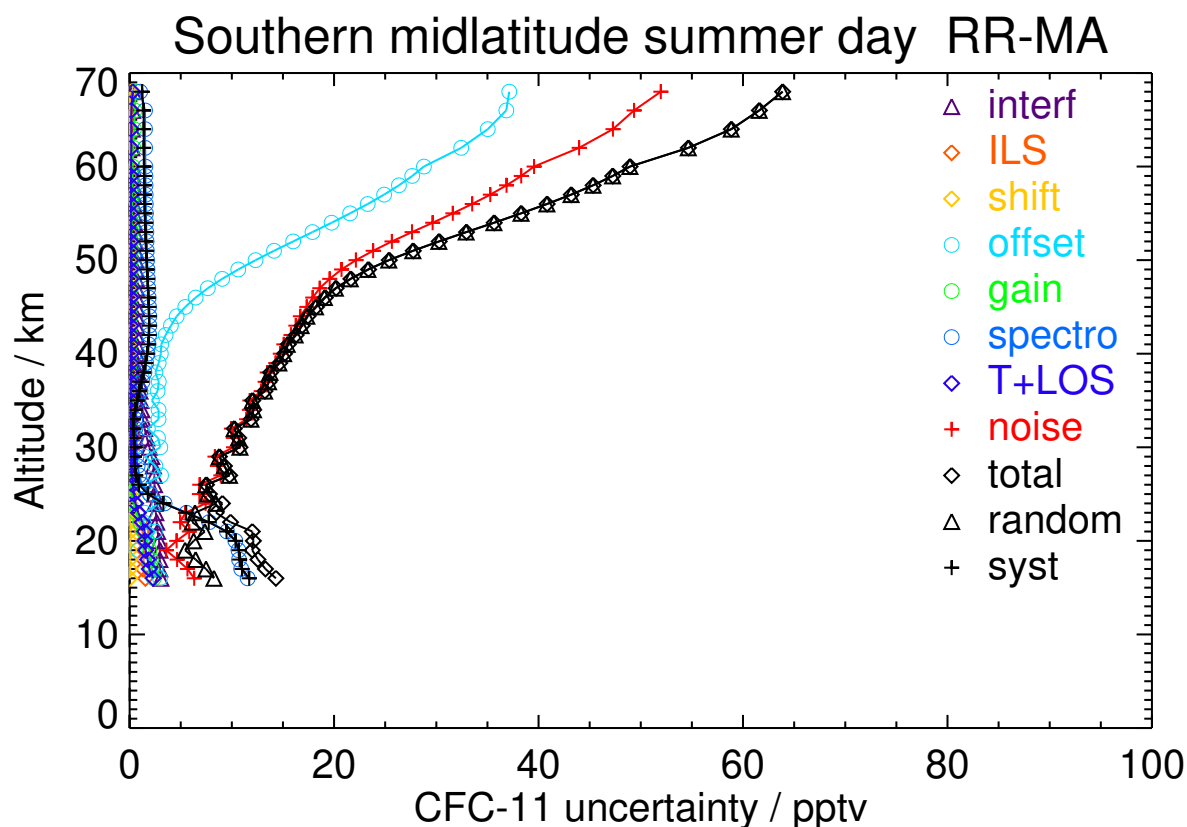
**Figure S91.** V8R_F-11_561 Southern midlatitude summer day

Table S93. CFC-11 error budget for Southern midlatitude summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	172.28	3.10	1.40	0.06	2.82	2.33	11.90	2.06	6.10	8.04	11.98	14.42
20	107.93	2.93	1.36	0.05	1.31	1.83	10.31	1.44	4.16	5.87	10.33	11.88
23	31.70	2.61	0.87	0.02	1.13	0.76	5.72	0.91	5.14	6.11	5.66	8.33
26	7.70	2.45	0.36	0.03	1.31	0.13	1.21	0.32	6.77	7.39	0.77	7.43
29	6.88	2.18	0.33	0.05	1.64	0.06	0.73	0.18	8.40	8.86	0.44	8.87
32	8.00	1.49	0.42	0.08	2.03	0.07	0.64	0.15	10.06	10.39	0.45	10.40
35	7.65	1.12	0.20	0.07	2.35	0.07	0.84	0.13	11.80	12.10	0.72	12.12
38	6.04	0.83	0.08	0.03	2.57	0.08	1.52	0.13	13.42	13.70	1.44	13.77
41	6.20	0.70	0.09	0.03	3.14	0.12	1.86	0.14	14.90	15.25	1.79	15.36
44	6.43	0.71	0.08	0.02	4.42	0.16	1.80	0.13	16.42	17.03	1.73	17.12
47	7.77	0.69	0.07	0.02	7.07	0.17	1.62	0.12	18.20	19.55	1.54	19.61
50	4.92	0.61	0.07	0.03	11.41	0.18	1.49	0.13	21.39	24.25	1.37	24.29
53	1.46	0.50	0.08	0.03	16.84	0.22	1.43	0.13	26.55	31.45	1.27	31.47
56	-0.02	0.37	0.09	0.04	22.28	0.26	1.41	0.14	32.40	39.33	1.21	39.35
59	-0.54	0.27	0.10	0.04	26.77	0.31	1.42	0.17	37.41	46.01	1.19	46.03
62	0.61	0.23	0.14	0.04	31.80	0.41	1.47	0.21	43.59	53.97	1.20	53.98

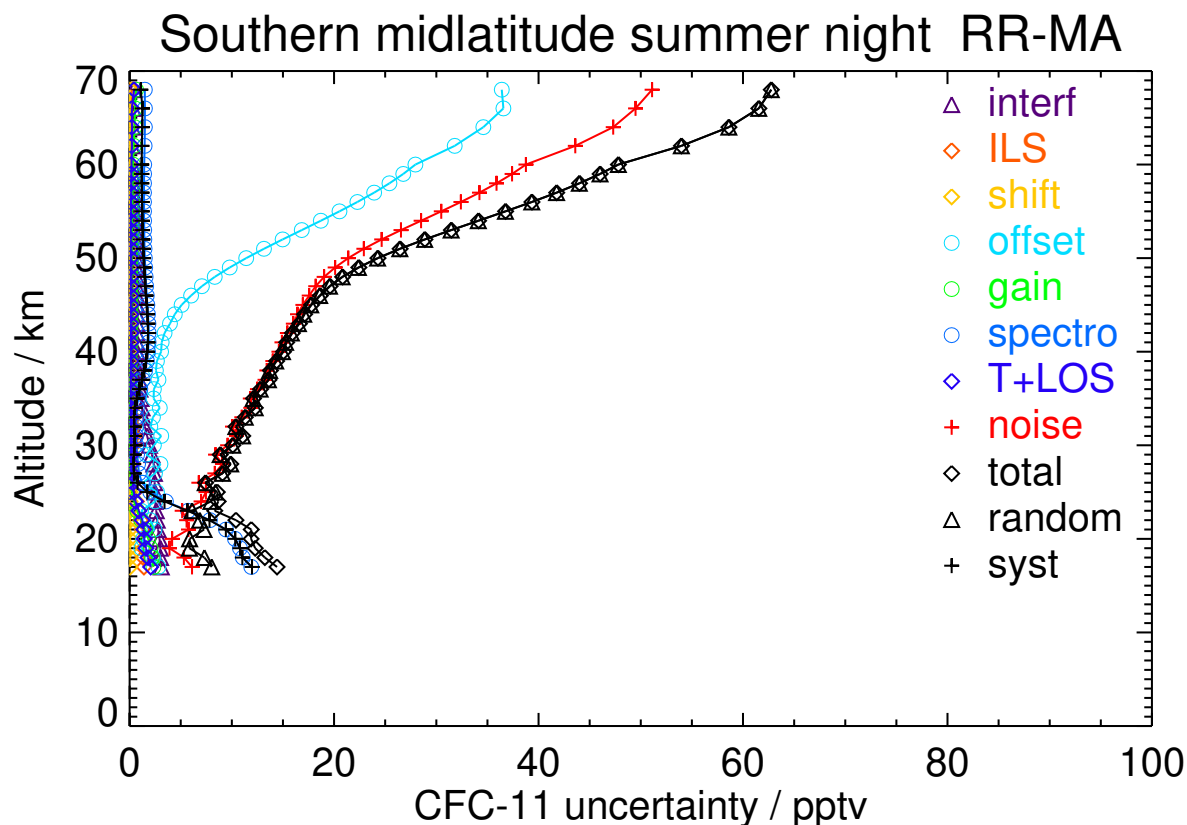
**Figure S92.** V8R_F-11_561 Southern midlatitude summer night

Table S94. CFC-11 error budget for Southern midlatitude autumn day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
20	117.13	2.81	1.57	0.11	0.81	1.82	10.30	1.54	3.93	5.67	10.30	11.76
23	33.00	2.59	0.98	0.05	1.69	0.81	6.28	1.09	5.92	7.02	6.13	9.32
26	11.90	2.41	0.34	0.02	2.40	0.25	1.87	0.36	8.09	8.88	1.44	8.99
29	5.75	2.11	0.32	0.07	2.80	0.13	1.14	0.23	10.04	10.67	0.88	10.70
32	4.24	1.45	0.23	0.06	2.80	0.09	0.57	0.14	11.88	12.30	0.31	12.31
35	7.73	0.97	0.17	0.05	2.80	0.07	1.05	0.13	13.53	13.87	0.84	13.89
38	5.63	0.70	0.08	0.02	3.11	0.08	1.61	0.14	15.15	15.49	1.52	15.57
41	2.64	0.59	0.09	0.01	4.24	0.08	2.12	0.16	16.75	17.30	2.05	17.42
44	2.95	0.55	0.14	<0.01	6.97	0.09	2.31	0.16	18.59	19.87	2.26	19.99
47	0.94	0.51	0.17	0.01	11.36	0.11	2.29	0.16	21.74	24.54	2.22	24.64
50	-3.48	0.47	0.19	0.02	16.92	0.13	2.20	0.16	26.91	31.80	2.12	31.87
53	-6.29	0.40	0.21	0.02	22.57	0.16	2.11	0.17	32.84	39.86	2.02	39.91
56	-5.33	0.34	0.22	0.02	27.44	0.20	2.05	0.20	37.99	46.87	1.94	46.91
59	4.99	0.28	0.25	0.03	29.84	0.21	1.79	0.40	40.56	50.36	1.72	50.39
62	-1.04	0.25	0.23	0.02	34.93	0.30	1.95	0.31	45.74	57.56	1.81	57.59

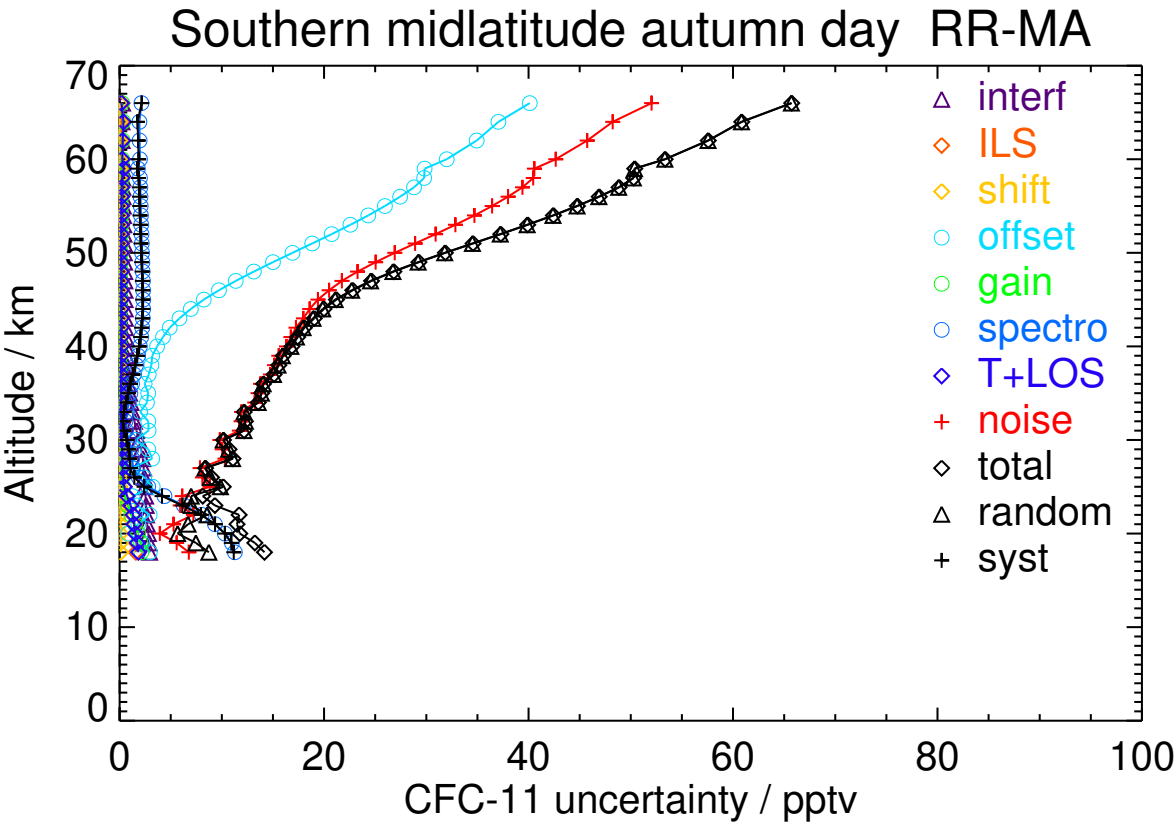


Figure S93. V8R_F-11_561 Southern midlatitude autumn day

Table S95. CFC-11 error budget for Southern midlatitude autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
20	117.89	2.85	1.52	0.09	0.79	1.80	10.80	1.60	3.99	5.73	10.79	12.22
23	32.31	2.58	1.00	0.03	1.60	0.94	6.40	1.08	5.89	7.14	6.08	9.38
26	10.76	2.39	0.31	0.02	2.32	0.20	1.88	0.36	8.06	8.83	1.39	8.94
29	2.24	2.09	0.26	0.06	2.66	0.10	0.93	0.22	10.01	10.59	0.78	10.61
32	5.00	1.44	0.23	0.06	2.72	0.08	0.55	0.14	11.87	12.28	0.28	12.28
35	4.64	0.97	0.15	0.05	2.75	0.07	0.92	0.12	13.54	13.87	0.76	13.89
38	3.88	0.70	0.07	0.02	3.06	0.07	1.61	0.13	15.23	15.56	1.52	15.63
41	1.47	0.61	0.10	0.01	4.28	0.07	2.12	0.16	16.80	17.36	2.05	17.48
44	1.91	0.56	0.13	<0.01	6.93	0.08	2.27	0.16	18.54	19.81	2.22	19.93
47	0.13	0.52	0.15	0.01	11.27	0.11	2.23	0.16	21.69	24.46	2.16	24.55
50	-1.33	0.47	0.16	0.02	16.80	0.13	2.14	0.16	26.87	31.69	2.06	31.76
53	-4.44	0.40	0.17	0.02	22.46	0.16	2.07	0.17	32.76	39.72	1.96	39.77
56	-8.54	0.34	0.18	0.02	27.36	0.19	2.03	0.21	37.90	46.75	1.90	46.79
59	7.61	0.31	0.21	0.02	30.32	0.28	1.86	0.21	41.08	51.07	1.68	51.10
62	-14.96	0.25	0.19	0.02	35.08	0.31	2.05	0.34	45.88	57.76	1.85	57.79

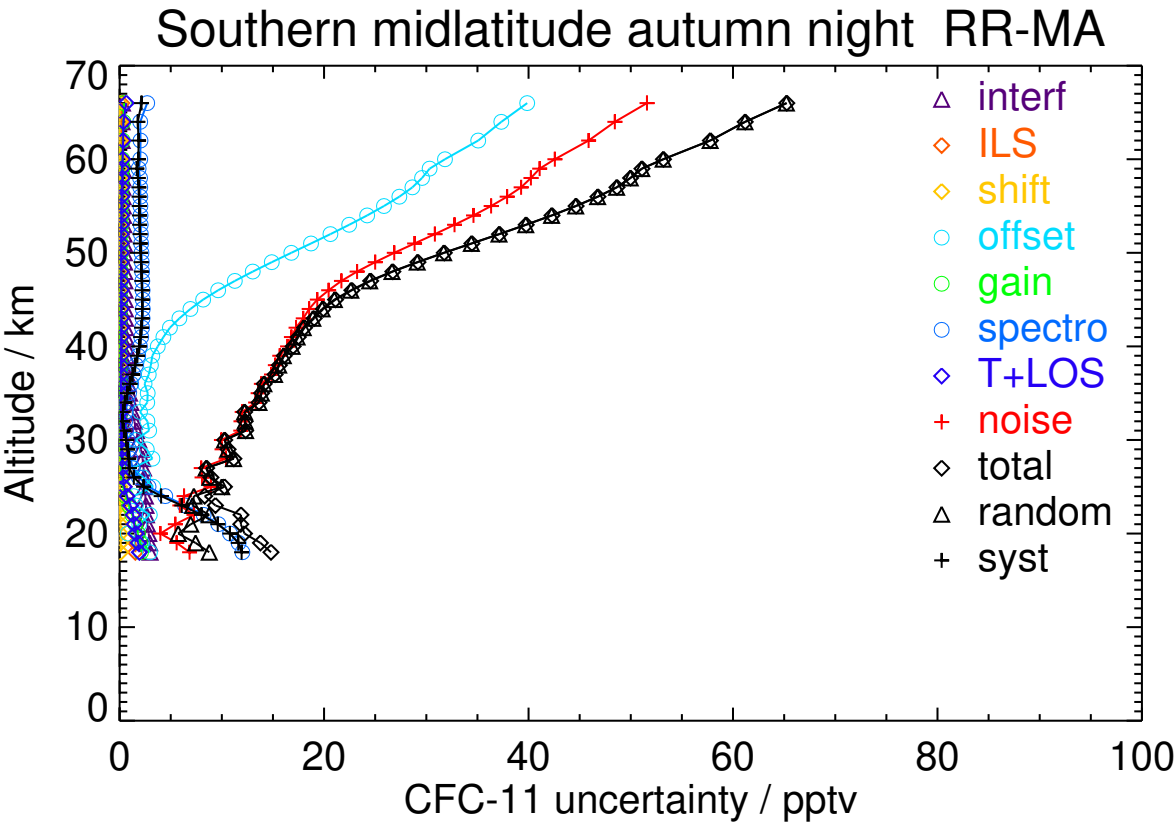


Figure S94. V8R_F-11_561 Southern midlatitude autumn night

Table S96. CFC-11 error budget for Southern polar winter day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	16.42	3.19	0.35	0.05	4.31	0.27	1.23	0.49	10.22	11.60	0.82	11.63
20	9.79	3.02	0.45	0.04	1.55	0.22	1.91	0.31	6.51	7.53	1.13	7.61
23	-1.78	2.67	0.33	0.02	2.68	0.06	1.39	0.30	9.91	10.66	0.96	10.71
26	1.59	2.56	0.33	0.05	2.87	0.06	1.14	0.24	11.79	12.42	0.97	12.46
29	4.95	2.28	0.41	0.06	2.72	0.07	0.81	0.18	12.97	13.46	0.65	13.48
32	4.19	1.63	0.33	0.05	2.92	0.07	0.53	0.13	14.25	14.64	0.35	14.65
35	1.53	1.13	0.16	0.04	3.46	0.10	1.00	0.12	15.63	16.05	0.86	16.08
38	1.07	0.84	0.12	0.03	4.47	0.15	1.49	0.14	17.02	17.62	1.39	17.68
41	-0.96	0.70	0.15	0.03	6.33	0.20	1.71	0.17	18.36	19.44	1.62	19.51
44	-2.01	0.62	0.17	0.02	9.35	0.23	1.75	0.17	20.14	22.23	1.66	22.29
47	-0.93	0.57	0.18	0.02	13.76	0.26	1.74	0.17	23.45	27.21	1.63	27.26
50	3.75	0.52	0.18	0.02	19.07	0.28	1.71	0.17	28.64	34.42	1.56	34.46
53	7.69	0.48	0.18	0.02	24.38	0.30	1.67	0.17	34.44	42.20	1.50	42.23
56	8.45	0.44	0.19	0.02	28.85	0.34	1.64	0.18	39.40	48.84	1.46	48.87
59	52.01	0.29	0.10	0.02	30.23	0.42	1.25	0.16	41.31	51.19	1.32	51.21
62	1.04	0.36	0.17	0.03	35.30	0.42	1.50	0.18	46.62	58.48	1.37	58.50

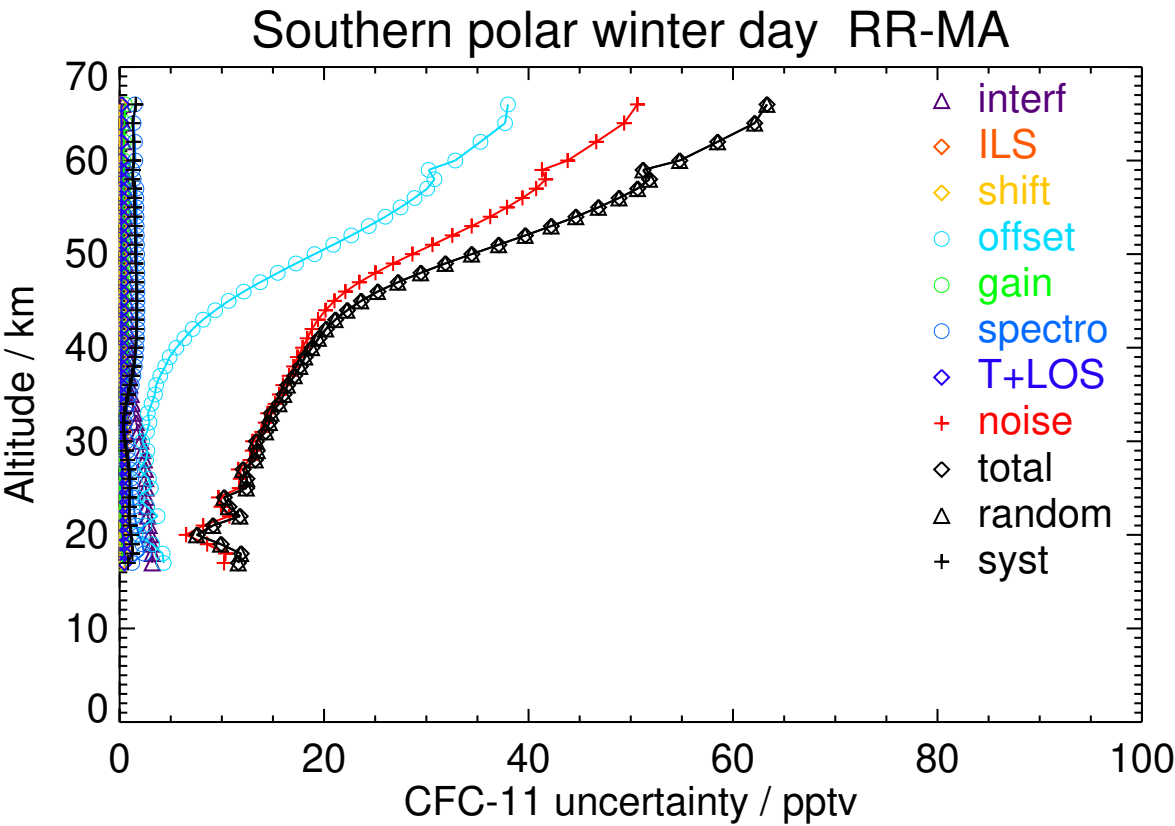


Figure S95. V8R_F-11_561 Southern polar winter day

Table S97. CFC-11 error budget for Southern polar winter night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
20	15.36	2.89	0.76	0.08	2.19	0.30	2.47	0.40	7.18	8.34	1.47	8.47
23	-0.50	2.59	0.39	0.03	3.30	0.07	1.45	0.32	10.48	11.36	0.88	11.39
26	2.04	2.52	0.33	0.04	3.10	0.05	1.04	0.24	11.90	12.57	0.91	12.60
29	2.89	2.26	0.41	0.05	2.77	0.07	0.87	0.18	13.08	13.57	0.73	13.59
32	2.91	1.63	0.37	0.05	2.90	0.08	0.57	0.14	14.25	14.65	0.37	14.65
35	-0.31	1.12	0.22	0.04	3.41	0.11	0.87	0.12	15.60	16.01	0.78	16.03
38	-3.10	0.83	0.16	0.03	4.40	0.17	1.42	0.14	16.95	17.54	1.32	17.59
41	-5.30	0.67	0.17	0.03	6.14	0.22	1.68	0.16	18.29	19.31	1.57	19.38
44	-3.27	0.59	0.17	0.03	9.05	0.24	1.73	0.17	20.04	22.00	1.60	22.06
47	-1.81	0.54	0.17	0.02	13.37	0.26	1.69	0.17	23.17	26.77	1.53	26.81
50	-1.96	0.51	0.17	0.02	18.66	0.27	1.63	0.17	28.17	33.80	1.44	33.83
53	-2.26	0.48	0.17	0.03	24.00	0.29	1.59	0.17	33.89	41.54	1.37	41.56
56	-2.83	0.44	0.17	0.03	28.60	0.33	1.56	0.17	39.00	48.37	1.33	48.39
59	1.27	0.36	0.16	0.03	30.97	0.37	1.20	0.14	42.21	52.36	1.08	52.37
62	-8.34	0.37	0.18	0.03	35.44	0.43	1.51	0.18	46.96	58.84	1.30	58.85

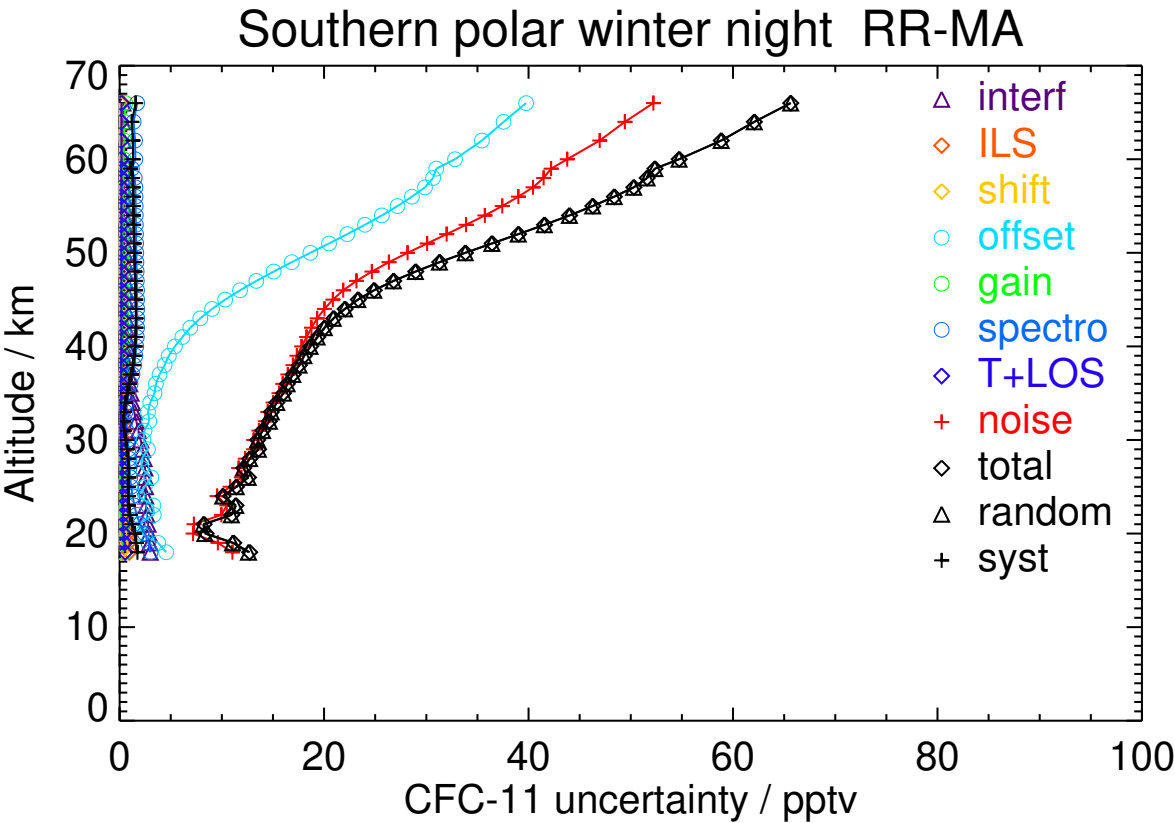


Figure S96. V8R_F-11_561 Southern polar winter night

Table S98. CFC-11 error budget for Southern polar spring day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
20	7.56	3.23	0.30	0.01	1.23	0.20	1.19	0.16	5.25	6.39	0.47	6.41
23	5.34	2.70	0.21	0.02	2.18	0.16	0.95	0.18	7.09	7.93	0.57	7.95
26	5.76	2.61	0.44	0.03	2.60	0.11	0.65	0.18	8.38	9.18	0.47	9.20
29	4.53	2.33	0.43	0.04	2.82	0.09	0.67	0.14	9.56	10.25	0.49	10.27
32	3.04	1.62	0.52	0.06	2.98	0.10	0.70	0.14	10.95	11.48	0.70	11.50
35	2.09	1.10	0.32	0.07	3.05	0.12	0.92	0.13	12.50	12.93	0.82	12.95
38	3.13	0.79	0.26	0.05	2.93	0.17	1.06	0.12	14.11	14.44	1.01	14.48
41	1.53	0.62	0.27	0.05	3.33	0.20	1.14	0.12	15.72	16.10	1.03	16.13
44	-1.43	0.54	0.22	0.05	4.92	0.21	1.13	0.11	17.36	18.06	1.03	18.09
47	-1.60	0.50	0.18	0.04	8.25	0.22	1.11	0.11	19.59	21.27	1.00	21.30
50	0.81	0.45	0.15	0.03	13.06	0.24	1.09	0.11	23.62	27.00	0.94	27.01
53	4.45	0.37	0.13	0.03	18.44	0.27	1.08	0.10	29.23	34.57	0.89	34.58
56	7.89	0.29	0.11	0.03	23.44	0.32	1.09	0.11	34.97	42.10	0.87	42.11
59	8.54	0.24	0.11	0.04	27.34	0.37	1.10	0.11	39.68	48.19	0.88	48.20
62	6.74	0.25	0.12	0.04	31.58	0.47	1.13	0.13	45.41	55.32	0.93	55.33

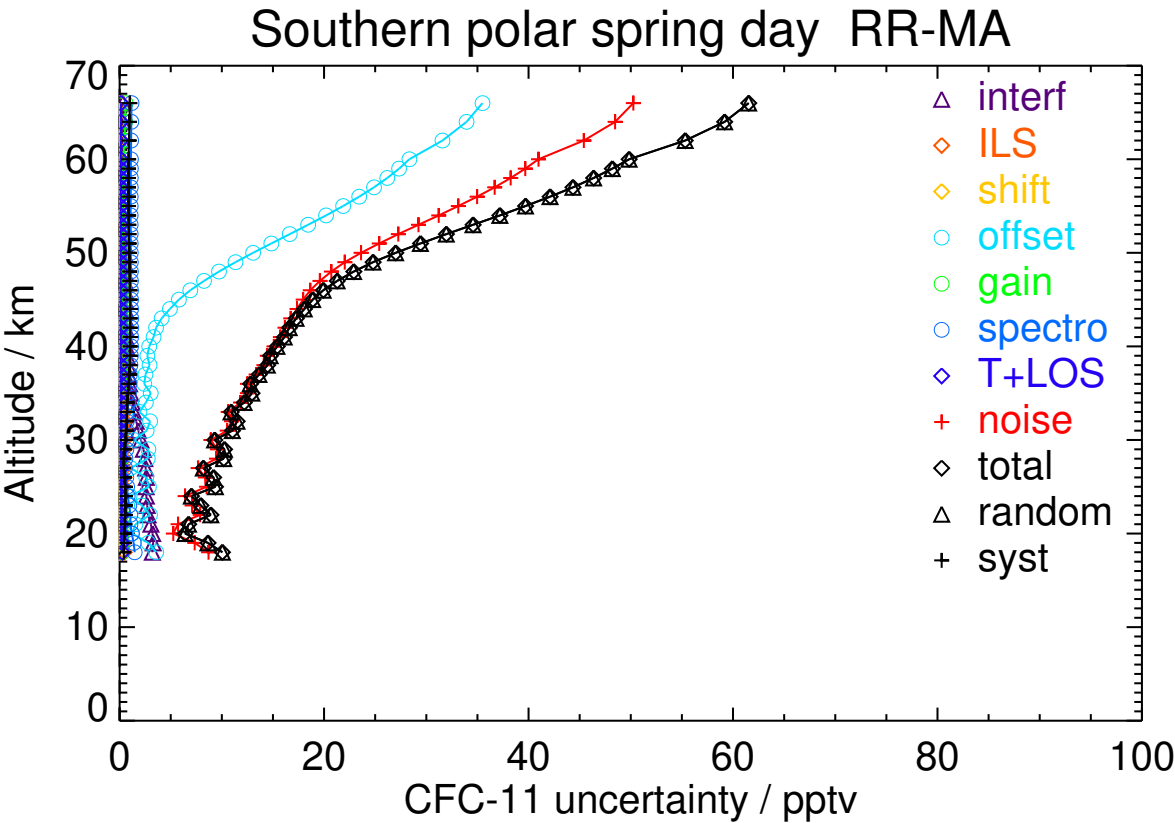


Figure S97. V8R_F-11_561 Southern polar spring day

Table S99. CFC-11 error budget for Southern polar spring night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
20	15.00	3.06	0.32	0.02	1.05	0.36	1.75	0.22	4.78	5.97	1.01	6.06
23	8.06	2.68	0.26	0.03	1.93	0.22	1.21	0.23	6.65	7.49	0.82	7.54
26	8.66	2.59	0.53	0.04	2.36	0.12	0.90	0.20	8.03	8.81	0.57	8.83
29	4.29	2.29	0.46	0.05	2.58	0.11	0.72	0.15	9.42	10.06	0.48	10.07
32	5.33	1.58	0.47	0.06	2.77	0.12	0.79	0.14	10.96	11.43	0.65	11.45
35	4.76	1.11	0.28	0.06	2.88	0.13	1.00	0.13	12.59	12.97	0.86	13.00
38	3.72	0.81	0.21	0.04	2.96	0.15	1.28	0.13	14.18	14.51	1.20	14.56
41	1.27	0.63	0.21	0.04	3.45	0.19	1.39	0.12	15.76	16.15	1.33	16.21
44	2.29	0.56	0.19	0.03	5.14	0.20	1.32	0.11	17.40	18.16	1.21	18.20
47	-2.75	0.51	0.17	0.02	8.56	0.18	1.21	0.11	19.69	21.49	1.07	21.52
50	-8.96	0.45	0.15	0.02	13.45	0.17	1.13	0.11	23.91	27.44	0.99	27.46
53	-11.11	0.37	0.13	0.03	18.91	0.19	1.07	0.11	29.65	35.17	0.93	35.18
56	-11.71	0.29	0.12	0.03	23.93	0.22	1.04	0.12	35.35	42.69	0.91	42.70
59	-14.22	0.25	0.12	0.03	27.81	0.28	1.03	0.13	39.91	48.65	0.90	48.66
62	-14.21	0.26	0.14	0.03	32.04	0.38	1.06	0.17	45.34	55.52	0.95	55.53

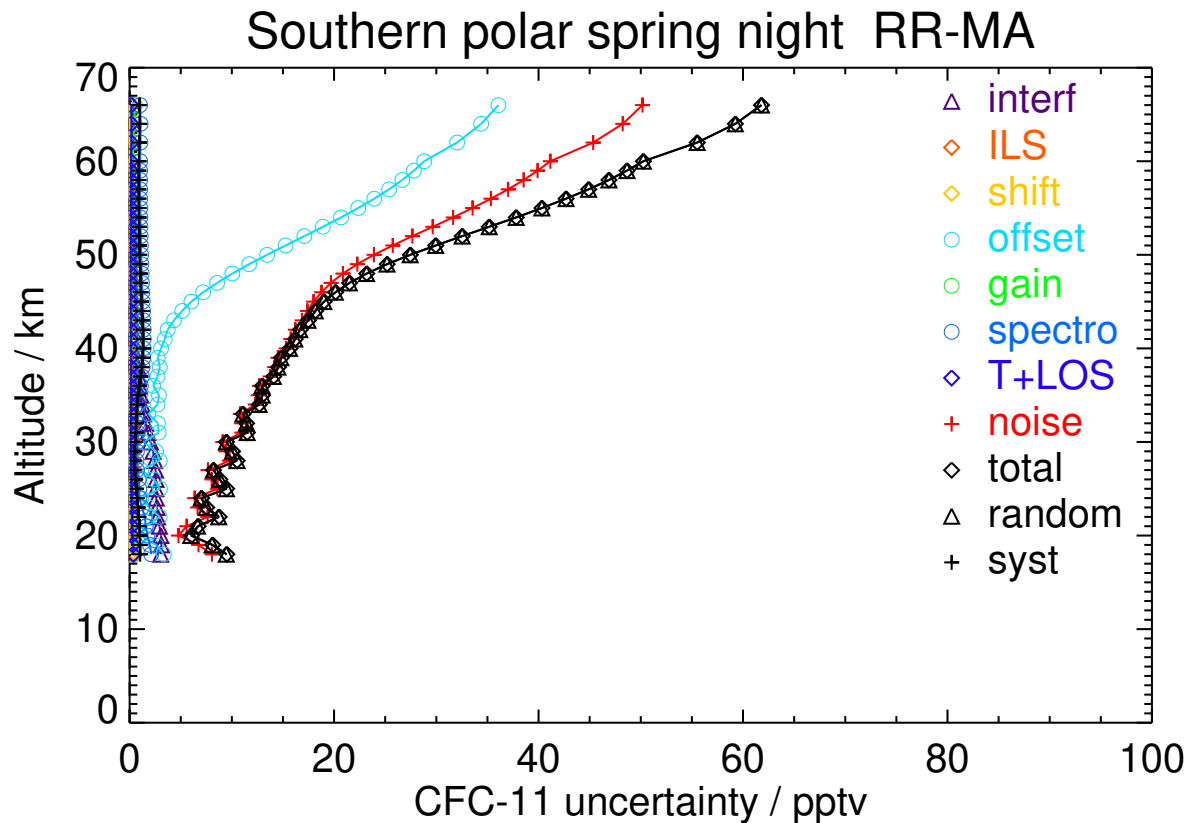


Figure S98. V8R_F-11_561 Southern polar spring night

Table S100. CFC-11 error budget for Southern polar summer day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	119.20	3.04	0.96	0.10	2.67	2.12	9.01	1.34	5.76	7.40	9.12	11.74
20	66.98	2.93	0.63	0.06	0.94	1.16	6.08	0.81	3.48	5.17	5.85	7.81
23	16.79	2.64	0.29	0.04	1.57	0.40	2.86	0.50	5.11	6.07	2.72	6.65
26	6.36	2.46	0.26	0.05	2.19	0.10	0.78	0.21	6.99	7.77	0.31	7.77
29	6.10	2.20	0.35	0.04	2.70	0.07	0.91	0.20	8.71	9.41	0.73	9.44
32	1.55	1.53	0.52	0.09	2.97	0.05	0.63	0.17	10.33	10.88	0.56	10.89
35	5.61	1.08	0.23	0.08	2.98	0.05	0.63	0.13	11.81	12.24	0.51	12.25
38	4.14	0.81	0.12	0.05	2.89	0.08	1.13	0.13	13.18	13.52	1.04	13.56
41	1.00	0.72	0.16	0.04	3.07	0.10	1.57	0.14	14.57	14.91	1.54	14.99
44	0.58	0.65	0.11	0.04	3.80	0.15	1.76	0.14	15.97	16.43	1.73	16.52
47	2.09	0.62	0.11	0.03	5.53	0.17	1.68	0.14	17.37	18.25	1.64	18.32
50	-0.93	0.59	0.12	0.03	8.83	0.18	1.55	0.14	19.54	21.45	1.50	21.50
53	-1.68	0.53	0.12	0.03	13.42	0.19	1.45	0.14	23.35	26.94	1.39	26.98
56	-3.02	0.45	0.10	0.04	18.40	0.24	1.42	0.16	28.49	33.93	1.34	33.95
59	-5.38	0.35	0.09	0.05	22.70	0.30	1.45	0.20	33.70	40.64	1.35	40.66
62	-7.81	0.25	0.13	0.05	27.81	0.44	1.55	0.27	41.83	50.24	1.43	50.26

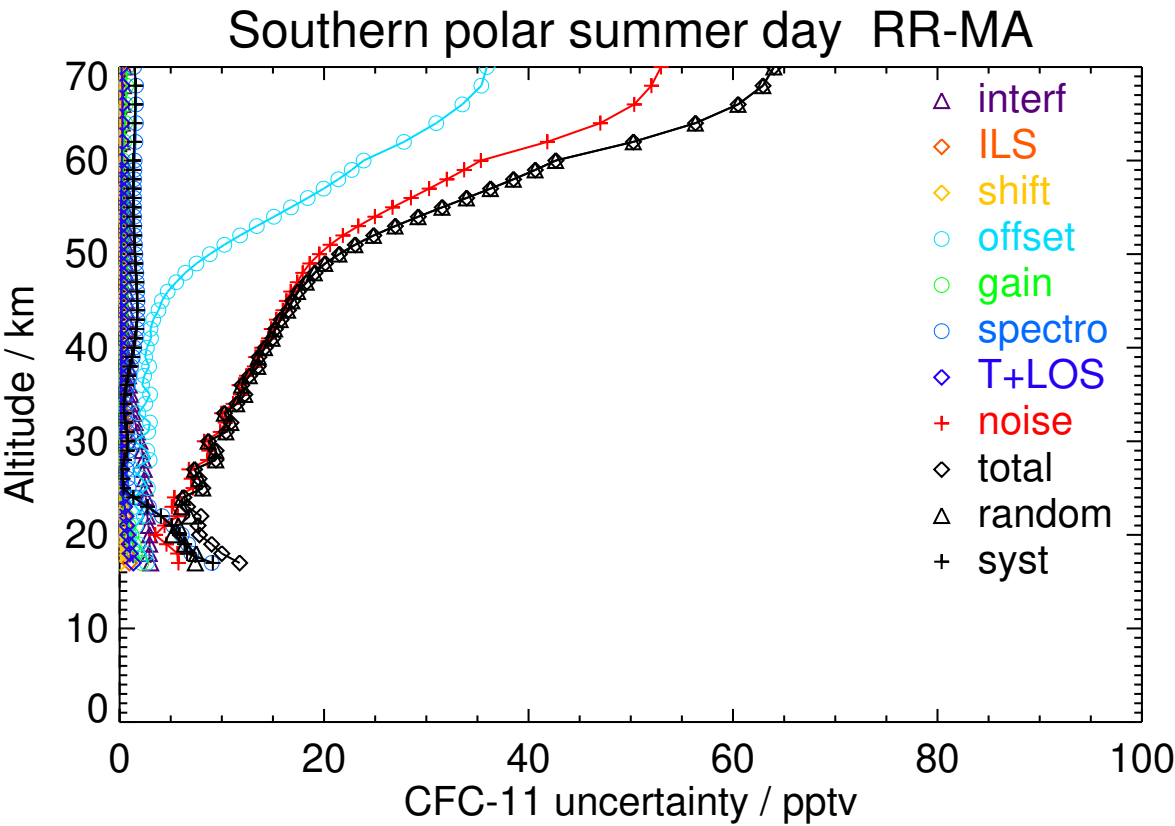


Figure S99. V8R_F-11_561 Southern polar summer day

Table S101. CFC-11 error budget for Southern polar summer night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
17	122.16	3.00	0.72	0.09	2.78	1.90	8.56	1.36	5.99	7.60	8.60	11.48
20	76.42	2.88	0.78	0.02	1.07	1.35	6.97	0.99	3.88	5.23	7.01	8.74
23	15.82	2.57	0.32	0.03	1.71	0.47	3.38	0.62	5.65	6.52	3.32	7.32
26	6.72	2.42	0.16	0.03	2.32	0.10	0.71	0.24	7.65	8.38	0.35	8.38
29	5.31	2.17	0.28	0.05	2.70	0.07	0.82	0.21	9.30	9.94	0.69	9.97
32	2.95	1.43	0.35	0.08	2.78	0.06	0.56	0.15	10.92	11.37	0.37	11.38
35	5.40	1.03	0.20	0.06	2.79	0.07	0.86	0.12	12.49	12.85	0.72	12.87
38	4.25	0.80	0.08	0.03	2.88	0.07	1.43	0.12	14.01	14.34	1.37	14.40
41	2.75	0.62	0.04	0.02	3.31	0.10	1.83	0.14	15.49	15.86	1.78	15.96
44	2.59	0.62	0.05	0.01	4.81	0.13	1.93	0.14	17.02	17.70	1.88	17.80
47	4.99	0.63	0.07	0.01	7.83	0.14	1.85	0.13	18.91	20.49	1.80	20.57
50	5.09	0.59	0.08	0.02	12.40	0.16	1.73	0.13	22.26	25.50	1.66	25.55
53	4.85	0.49	0.09	0.03	17.86	0.19	1.64	0.13	27.49	32.79	1.54	32.83
56	2.80	0.38	0.10	0.03	23.17	0.23	1.59	0.14	33.29	40.57	1.47	40.60
59	0.98	0.29	0.12	0.03	27.48	0.29	1.57	0.16	38.26	47.12	1.44	47.14
62	-2.68	0.22	0.15	0.03	32.28	0.38	1.56	0.19	44.52	55.00	1.43	55.02

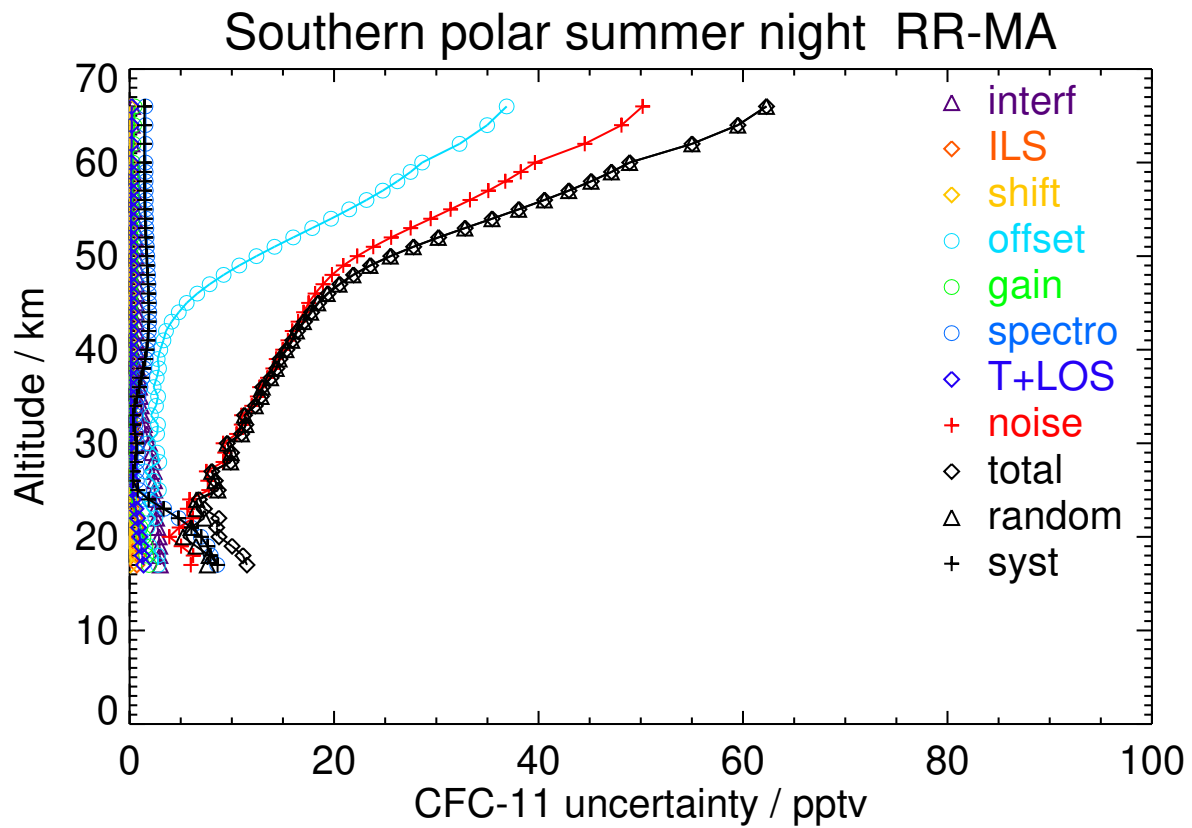


Figure S100. V8R_F-11_561 Southern polar summer night

Table S102. CFC-11 error budget for Southern polar autumn day. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
20	51.90	2.83	0.59	0.07	1.09	0.89	5.32	0.78	4.46	5.72	5.14	7.69
23	7.64	2.53	0.22	0.03	2.33	0.28	2.69	0.55	7.16	8.05	2.45	8.42
26	6.84	2.38	0.17	0.02	3.09	0.11	1.13	0.31	9.84	10.62	0.82	10.65
29	9.99	2.07	0.20	0.05	3.15	0.14	1.30	0.27	11.87	12.48	1.07	12.53
32	5.18	1.42	0.17	0.04	2.86	0.10	0.69	0.19	13.69	14.07	0.44	14.08
35	4.51	0.92	0.10	0.02	3.02	0.06	0.98	0.15	15.57	15.90	0.78	15.92
38	-1.05	0.64	0.11	0.01	4.05	0.05	1.75	0.17	17.37	17.85	1.68	17.93
41	-0.95	0.52	0.18	<0.01	6.32	0.07	2.38	0.20	19.05	20.09	2.33	20.22
44	-0.92	0.49	0.22	<0.01	10.16	0.09	2.72	0.23	21.32	23.63	2.67	23.78
47	-0.43	0.50	0.23	0.01	15.26	0.12	2.87	0.24	25.15	29.43	2.81	29.56
50	-2.43	0.51	0.24	0.02	20.89	0.15	2.93	0.25	30.46	36.95	2.84	37.06
53	-3.60	0.51	0.24	0.02	26.26	0.18	2.94	0.26	36.03	44.59	2.83	44.68
56	-4.22	0.49	0.24	0.02	30.74	0.21	2.93	0.26	40.69	51.01	2.80	51.08
62	-6.09	0.41	0.25	0.02	37.44	0.30	2.88	0.27	47.69	60.65	2.73	60.71

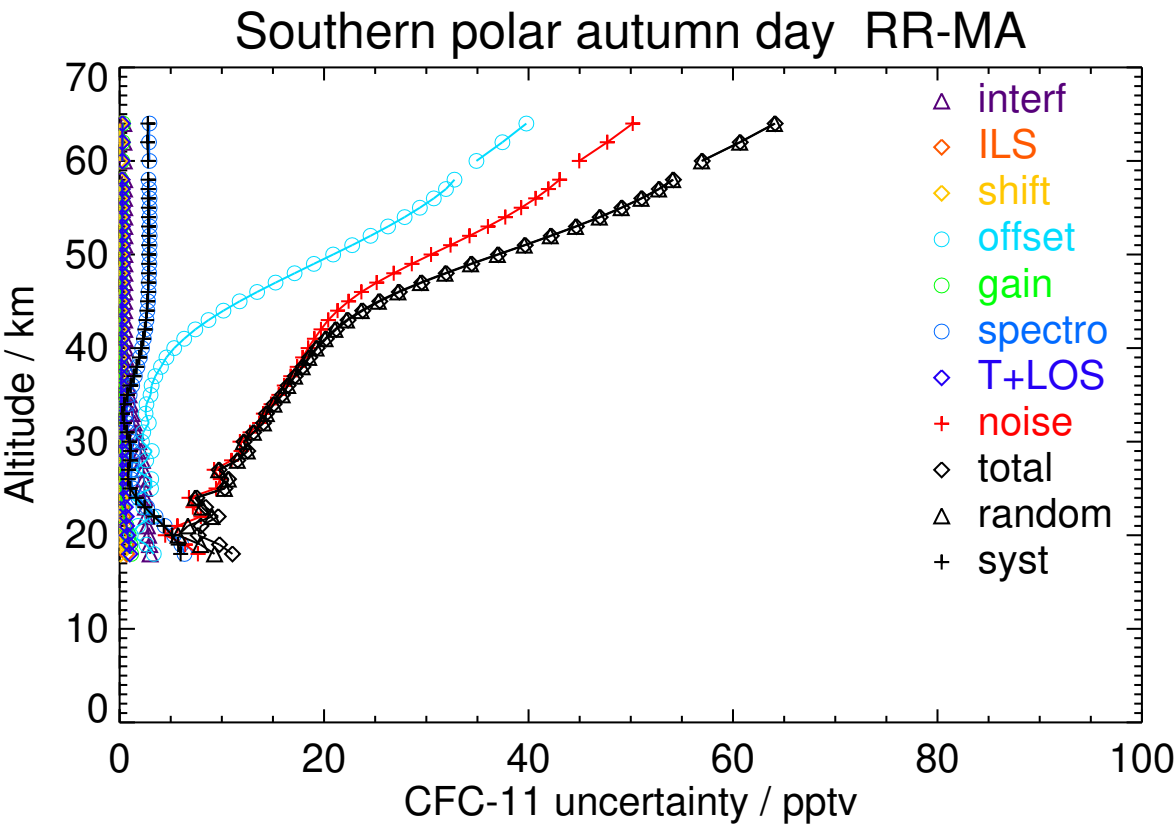


Figure S101. V8R_F-11_561 Southern polar autumn day

Table S103. CFC-11 error budget for Southern polar autumn night. All uncertainties are 1σ .

altitude (km)	mean target (pptv)	interf (pptv)	ILS (pptv)	shift (pptv)	offset (pptv)	gain (pptv)	spectro (pptv)	T+LOS (pptv)	noise (pptv)	random (pptv)	syst (pptv)	total (pptv)
20	46.72	2.80	0.61	0.06	1.10	0.81	4.90	0.69	4.61	6.05	4.37	7.47
23	9.24	2.50	0.27	0.02	2.35	0.30	2.68	0.56	7.44	8.32	2.38	8.65
26	6.54	2.36	0.16	0.02	3.03	0.09	1.37	0.34	10.05	10.80	1.10	10.85
29	5.26	2.05	0.16	0.04	3.04	0.12	1.20	0.27	12.10	12.66	1.01	12.70
32	1.00	1.41	0.18	0.04	2.87	0.09	0.81	0.18	13.98	14.36	0.29	14.37
35	-0.29	0.93	0.11	0.02	3.15	0.05	1.11	0.15	15.86	16.21	0.98	16.24
38	1.27	0.66	0.14	0.01	4.32	0.06	1.84	0.18	17.66	18.20	1.80	18.29
41	1.26	0.53	0.20	0.01	6.74	0.07	2.36	0.22	19.33	20.49	2.32	20.62
44	3.17	0.50	0.25	0.01	10.69	0.10	2.69	0.25	21.72	24.22	2.63	24.36
47	5.73	0.51	0.27	0.02	15.84	0.13	2.86	0.26	25.62	30.14	2.78	30.27
50	8.79	0.51	0.28	0.02	21.47	0.17	2.93	0.27	30.94	37.68	2.82	37.78
53	11.52	0.51	0.29	0.02	26.83	0.20	2.95	0.28	36.44	45.26	2.81	45.35
56	12.10	0.49	0.29	0.02	31.29	0.23	2.94	0.28	41.06	51.64	2.79	51.72
62	10.93	0.43	0.29	0.02	38.07	0.34	2.89	0.29	48.18	61.41	2.72	61.47

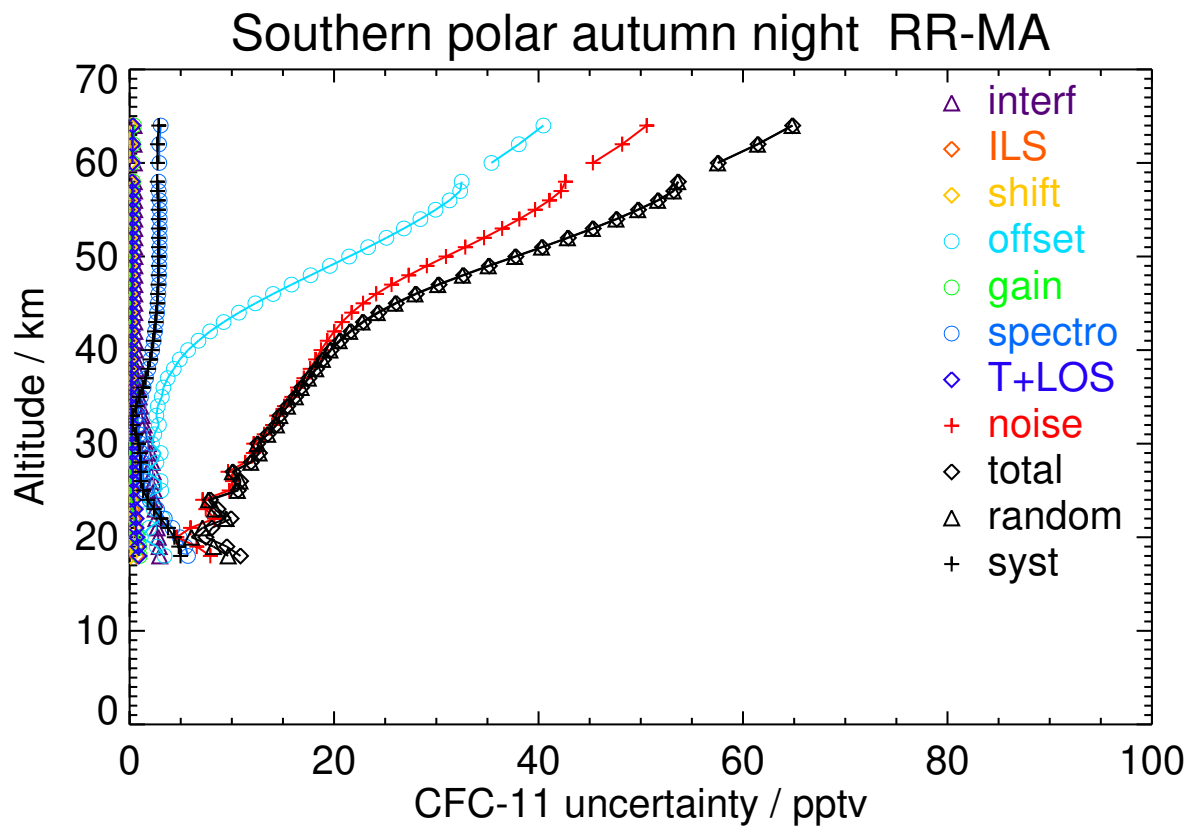


Figure S102. V8R_F-11_561 Southern polar autumn night