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Supplement of

Michelson Interferometer for Passive Atmospheric Sounding Institute of Meteorology and Climate Research/Instituto de Astrofísica de Andalucía version 8 retrieval of nitric oxide and lower-thermospheric temperature

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Contents

This document serves as reference for the definition of the representative atmospheres used for the calculation of nitric oxide error budgets, as listed in Tab. S1, and as collection of the respective error budgets for NO and NO+T retrievals for different measurement modes and periods:

- Nominal measurement mode (NOM) NO errors for the FR period (V8H_NO_61, 2002-2004), which are listed in tables S2–S35 and depicted in figures S1–S34,
- Nominal measurement mode (NOM) NO errors for the RR period (V8R_NO_261, 2005-2012), which are listed in tables S36–S69 and depicted in figures S35–S68.
- Middle Atmosphere measurement mode (MA) NO errors for the RR period (V8R_NO_561, 2005-2012), which are listed in tables S70–S103 and depicted in figures S69–S102.
- Upper Atmosphere measurement mode (UA) NO errors at low solar activity for the RR period (V8R_NOwT_662, 2005-2012), which are listed in tables S104–S137 and depicted in figures S103–S136.
- Upper Atmosphere measurement mode (UA) NO errors at high solar activity for the RR period (V8R_NOwT_662, 2005-2012), which are listed in tables S138–S171 and depicted in figures S137–S170.
- Upper Atmosphere measurement mode (UA) temperature errors at low solar activity for the RR period (V8R_TwNO_662, 2005-2012), which are listed in tables S172–S205 and depicted in figures S171–S204.
- Upper Atmosphere measurement mode (UA) temperature errors at high solar activity for the RR period (V8R_TwNO_662, 2005-2012), which are listed in tables S206–S239 and depicted in figures S205–S238.

The errors are presented as relative errors in percent for NO, regardless of whether they are additive or multiplicative errors. They were calculated with the average NO profile that was calculated from the single geolocations which contribute to the respective representative atmospheres.

Table S1. Labels and definitions of the representative atmospheric conditions which were used to calculate the error budget. Daytime atmospheres are defined by solar zenith angles $< 90^\circ$. Nighttime atmospheres are defined by solar zenith angles $> 95^\circ$for NOM observations, $> 98^\circ$for MA observations, and $> 100^\circ$for UA observations.

representative atmosphere label	month(s) used	latitude range
Northern polar winter day	Jan, Feb	65°N – 90°N
Northern polar winter night	Jan, Feb	65°N – 90°N
Northern polar spring day	Apr	65°N – 90°N
Northern polar spring night	Apr	65°N – 90°N
Northern polar summer day	Jul, Aug	65°N – 90°N
Northern polar summer night	Jul, Aug	65°N – 90°N
Northern polar autumn day	Oct	65°N – 90°N
Northern polar autumn night	Oct	65°N – 90°N
Northern midlatitude winter day	Jan, Feb	40°N – 60°N
Northern midlatitude winter night	Jan, Feb	40°N – 60°N
Northern midlatitude spring day	Apr	40°N – 60°N
Northern midlatitude spring night	Apr	40°N – 60°N
Northern midlatitude summer day	Jul, Aug	40°N – 60°N
Northern midlatitude summer night	Jul, Aug	40°N – 60°N
Northern midlatitude autumn day	Oct	40°N – 60°N
Northern midlatitude autumn night	Oct	40°N – 60°N
Tropics day	Apr	20°S – 20°N
Tropics night	Apr	20°S – 20°N
Southern midlatitude winter day	Jul, Aug	40°S – 60°S
Southern midlatitude winter night	Jul, Aug	40°S – 60°S
Southern midlatitude spring day	Oct	40°S – 60°S
Southern midlatitude spring night	Oct	40°S – 60°S
Southern midlatitude summer day	Jan, Feb	40°S – 60°S
Southern midlatitude summer night	Jan, Feb	40°S – 60°S
Southern midlatitude autumn day	Apr	40°S – 60°S
Southern midlatitude autumn night	Apr	40°S – 60°S
Southern polar winter day	Jul, Aug	65°S – 90°S
Southern polar winter night	Jul, Aug	65°S – 90°S
Southern polar spring day	Oct	65°S – 90°S
Southern polar spring night	Oct	65°S – 90°S
Southern polar summer day	Jan, Feb	65°S – 90°S
Southern polar summer night	Jan, Feb	65°S – 90°S
Southern polar autumn day	Apr	65°S – 90°S
Southern polar autumn night	Apr	65°S – 90°S

Table S2. Nitric oxide error budget for Northern polar winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	17.91	0.19	7.26	1.11	7.45	2.35	11.26	1.83	39.64	44.26	13.36	46.23
40	0.01	11.65	0.08	2.02	0.74	5.76	3.76	10.68	2.08	33.07	35.83	10.77	37.41
50	0.01	25.81	0.08	1.23	0.99	5.12	2.65	10.90	2.96	40.44	47.12	15.63	49.65
60	0.04	58.32	0.09	1.61	0.68	9.86	2.51	9.62	2.72	51.15	65.61	43.80	78.89
70	0.25	61.87	0.13	2.11	0.69	9.42	2.72	8.17	0.20	33.44	52.64	48.40	71.51
80	1.09	46.03	0.11	1.55	0.60	7.83	1.52	9.30	0.43	27.85	39.05	39.02	55.20
90	10.34	39.11	0.11	2.77	0.84	7.42	2.73	12.18	0.16	25.84	46.93	14.65	49.16
100	49.51	28.75	0.08	3.08	0.45	5.91	1.99	10.96	0.08	21.50	34.47	16.40	38.18
110	190.23	34.53	0.10	3.41	0.53	3.94	1.63	10.60	6.70	15.71	32.78	23.49	40.33
120	415.64	35.66	0.05	2.63	0.33	3.53	1.07	7.67	10.48	10.72	27.66	28.47	39.69
130	505.60	55.57	0.03	2.71	0.12	2.84	0.91	9.06	4.38	6.44	40.95	39.62	56.98
140	505.93	52.01	0.03	2.45	0.22	1.96	0.94	10.65	2.13	5.34	44.57	29.59	53.50
150	511.74	56.33	0.03	2.31	0.28	2.31	1.15	12.57	1.42	6.25	51.53	26.99	58.17

S1 NO error contribution profile plots and tabulated values for FR NOM data (V8H_NO_61)

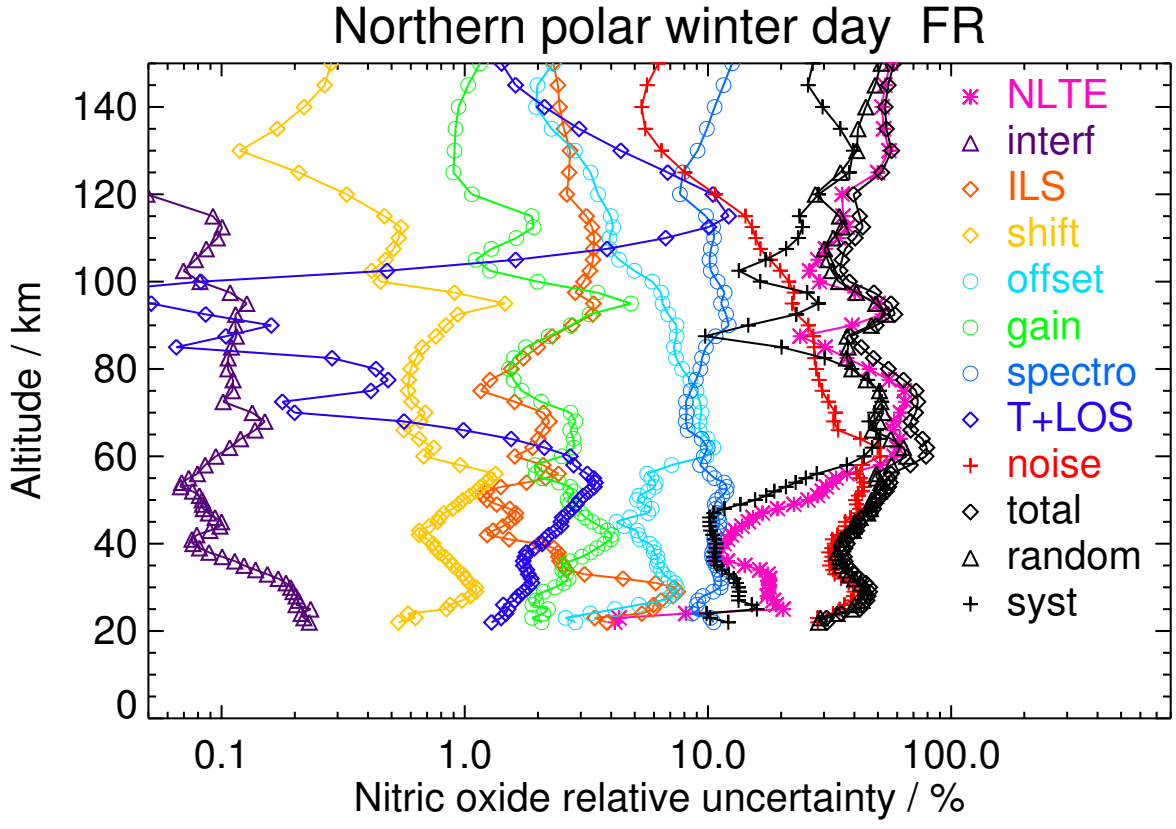

Figure S1. V8H_NO_61 Northern polar winter day

Table S3. Nitric oxide error budget for Northern polar winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	3.01	0.23	0.35	1.13	4.39	0.47	1.36	0.80	42.77	43.01	3.35	43.14
40	0.00	35.56	0.77	0.87	0.79	10.14	15.31	7.88	3.56	64.88	75.20	15.26	76.73
50	0.00	8.33	0.09	3.04	1.32	2.05	2.77	15.49	1.06	14.70	21.97	8.15	23.43
60	0.06	15.99	0.09	0.66	0.45	10.57	4.58	13.54	4.59	51.39	54.86	15.00	56.88
70	0.19	31.63	0.12	1.30	0.65	11.53	4.62	12.51	1.89	42.64	49.83	25.54	56.00
80	1.10	29.36	0.14	1.36	0.87	10.76	1.95	10.26	0.11	35.80	43.30	22.29	48.70
90	6.50	25.82	0.14	1.78	0.92	9.97	2.19	12.37	0.53	33.22	43.79	10.69	45.07
100	45.04	25.29	0.14	1.81	0.87	8.41	2.04	13.44	0.96	26.86	36.01	18.03	40.27
110	190.91	37.07	0.09	1.94	0.39	4.96	1.67	11.03	6.41	15.86	32.47	27.67	42.66
120	301.29	30.36	0.05	2.25	0.22	3.34	1.10	9.29	7.58	9.87	24.14	24.45	34.36
130	251.51	42.91	0.05	2.41	0.11	3.04	1.08	9.92	4.15	7.38	34.18	29.32	45.03
140	232.59	32.51	0.04	1.93	0.10	2.03	0.92	11.01	2.52	6.18	26.07	23.48	35.09
150	213.59	37.38	0.04	1.06	0.14	2.63	0.85	10.88	1.46	7.66	29.39	26.86	39.82

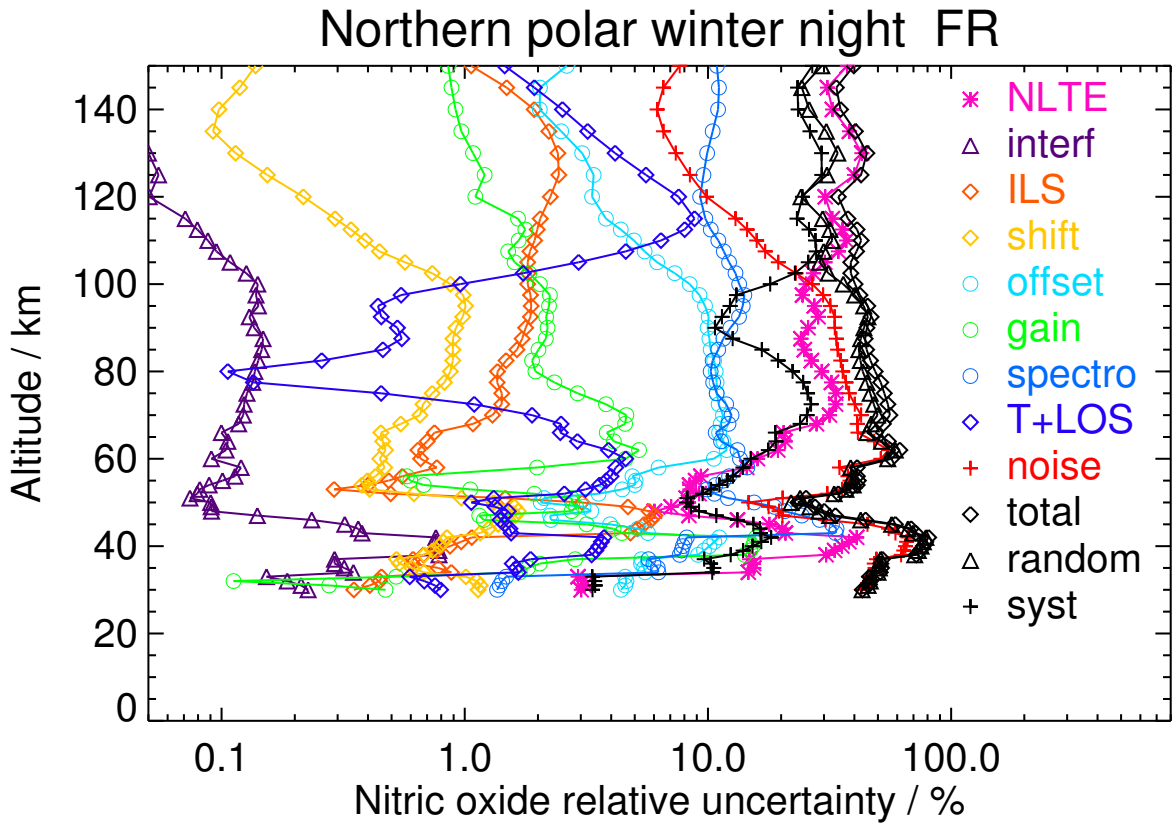

Figure S2. V8H_NO_61 Northern polar winter night

Table S4. Nitric oxide error budget for Northern polar spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	7.53	0.12	7.99	0.64	2.85	1.45	9.94	1.44	20.97	23.15	11.66	25.92
30	0.00	8.96	0.09	2.45	0.65	3.61	1.71	10.72	2.11	23.15	24.51	12.54	27.53
40	0.01	4.61	0.03	2.06	0.38	2.04	2.31	9.16	1.20	12.93	13.64	10.09	16.96
50	0.01	9.43	0.05	0.48	0.71	1.95	1.92	9.22	0.82	22.06	23.35	11.15	25.88
60	0.00	76.47	0.10	0.96	0.72	9.08	1.45	10.97	1.99	58.61	80.06	55.53	97.43
90	0.53	71.99	0.11	0.70	0.09	12.69	1.33	8.09	0.87	42.49	49.22	69.25	84.96
100	11.49	71.14	0.11	2.06	0.70	10.08	1.71	10.36	0.21	35.76	47.63	65.48	80.97
110	85.22	69.98	0.07	2.06	0.34	6.55	1.68	9.95	8.79	22.88	42.01	62.31	75.15
120	222.86	36.93	0.03	2.63	0.34	2.97	1.12	9.22	7.97	10.74	27.36	29.94	40.56
130	392.02	48.17	0.03	2.54	0.16	3.06	0.70	8.85	4.45	7.57	27.30	41.79	49.92
140	570.72	34.01	0.02	1.89	0.12	1.86	0.72	9.41	2.77	5.33	22.17	28.24	35.90
150	652.69	40.40	0.02	1.03	0.15	1.91	0.83	10.04	1.55	5.99	31.92	27.53	42.15

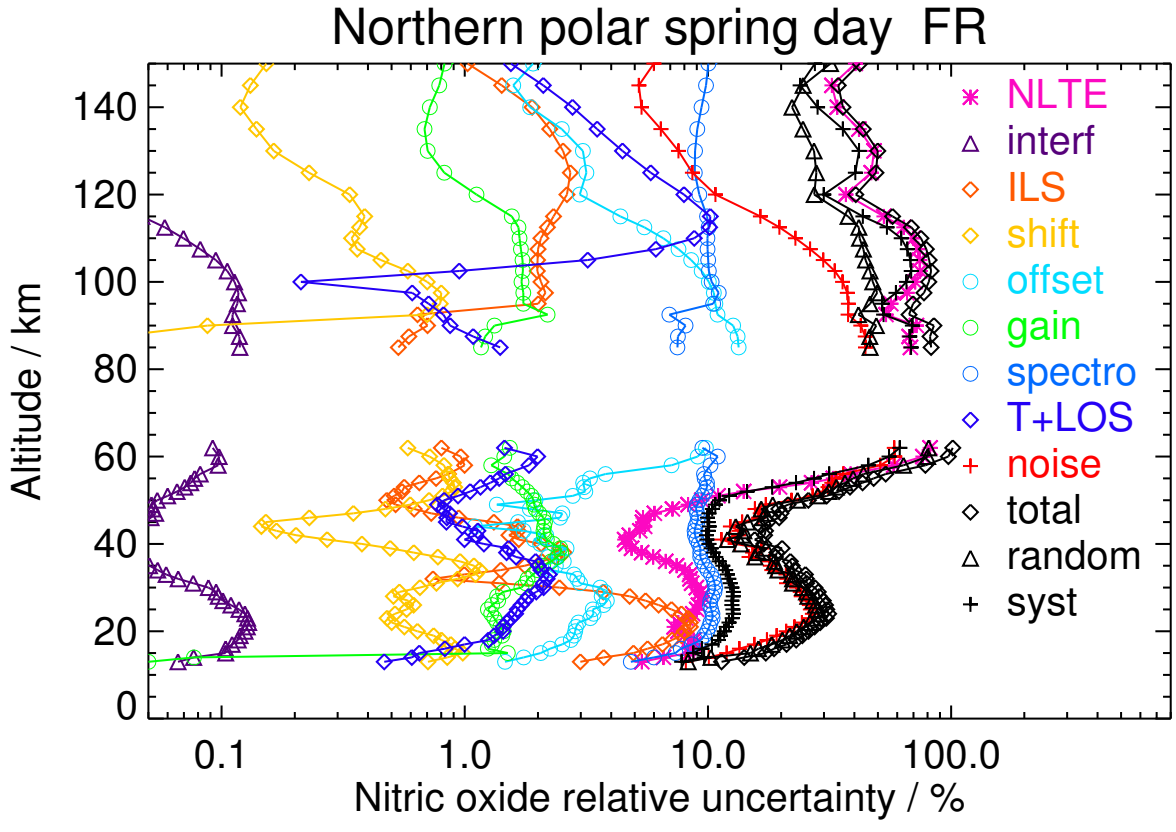

Figure S3. V8H_NO_61 Northern polar spring day

Table S5. Nitric oxide error budget for Northern polar spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	17.67	0.28	9.84	2.97	3.77	6.88	6.27	1.17	28.84	35.83	8.26	36.77
40	0.00	48.49	0.15	5.50	2.97	4.31	12.30	17.45	0.98	25.79	58.15	12.21	59.42
50	0.00	29.33	0.14	0.85	0.84	3.02	3.61	13.64	1.25	29.09	38.48	20.89	43.79
60	0.02	29.67	0.07	3.35	1.06	5.35	2.69	12.54	1.74	29.69	39.72	19.81	44.39
100	14.24	79.05	0.15	1.48	1.36	10.67	2.10	12.52	0.98	36.67	54.72	69.85	88.73
110	151.84	80.12	0.10	1.26	0.81	6.67	1.78	12.36	9.84	21.22	49.62	68.61	84.67
120	512.69	44.10	0.04	2.36	0.28	2.63	1.12	9.02	8.96	9.10	31.56	34.74	46.94
130	673.94	49.80	0.04	2.63	0.24	2.48	1.08	11.58	4.56	6.25	28.83	43.10	51.85
140	703.12	43.25	0.04	1.81	0.18	1.64	1.16	12.27	2.48	5.44	32.43	31.82	45.43
150	654.39	64.68	0.04	0.94	0.25	2.54	1.24	12.54	1.12	7.40	44.46	49.28	66.37

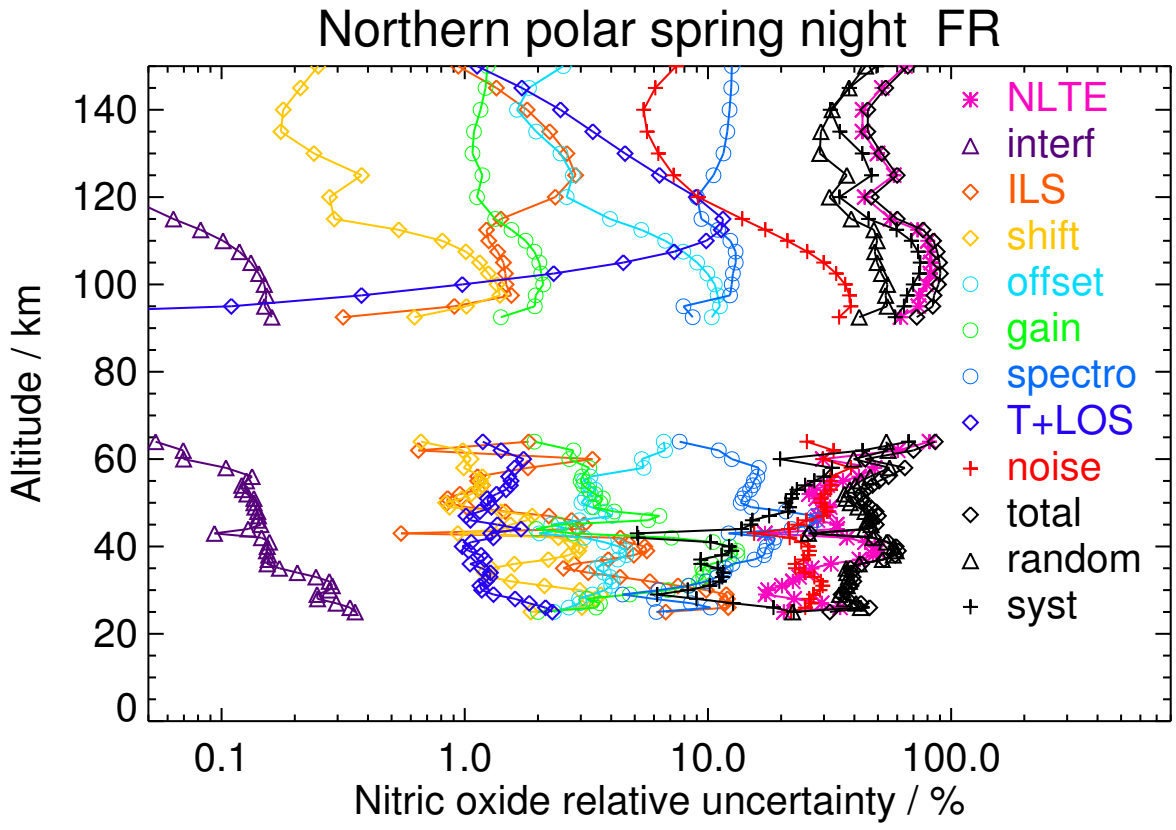

Figure S4. V8H_NO_61 Northern polar spring night

Table S6. Nitric oxide error budget for Northern polar summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	6.00	0.14	11.40	1.26	2.85	1.53	9.26	1.62	21.23	22.79	14.06	26.78
30	0.01	9.39	0.06	3.57	0.60	2.86	1.63	9.13	2.52	21.51	22.66	12.27	25.78
40	0.01	5.04	0.03	2.61	0.84	2.17	2.65	8.76	1.70	14.39	15.22	10.00	18.21
50	0.01	6.89	0.03	0.49	0.51	0.89	2.09	8.56	0.69	9.49	11.24	9.52	14.73
60	0.01	45.63	0.08	2.52	0.90	6.84	1.74	11.64	1.42	43.31	54.52	34.34	64.43
90	0.73	76.25	0.12	0.91	1.47	10.41	0.83	8.03	0.78	39.80	55.88	66.73	87.04
100	17.67	>100	0.10	1.62	1.13	8.56	1.00	9.51	1.81	31.52	67.81	83.31	>100
110	72.43	99.06	0.04	2.03	0.44	4.71	1.21	8.75	8.17	16.90	77.33	65.50	>100
120	226.11	41.44	0.03	2.40	0.38	2.53	0.89	7.95	7.08	9.19	30.68	31.41	43.91
130	632.40	73.94	0.03	3.48	0.38	2.78	1.24	10.80	5.63	7.56	53.07	53.65	75.46
140	1060.95	51.86	0.02	2.78	0.35	1.80	1.24	12.39	4.10	5.63	39.35	36.82	53.89
150	1289.58	50.69	0.02	2.12	0.39	1.67	1.38	13.93	2.63	5.56	41.36	33.16	53.01

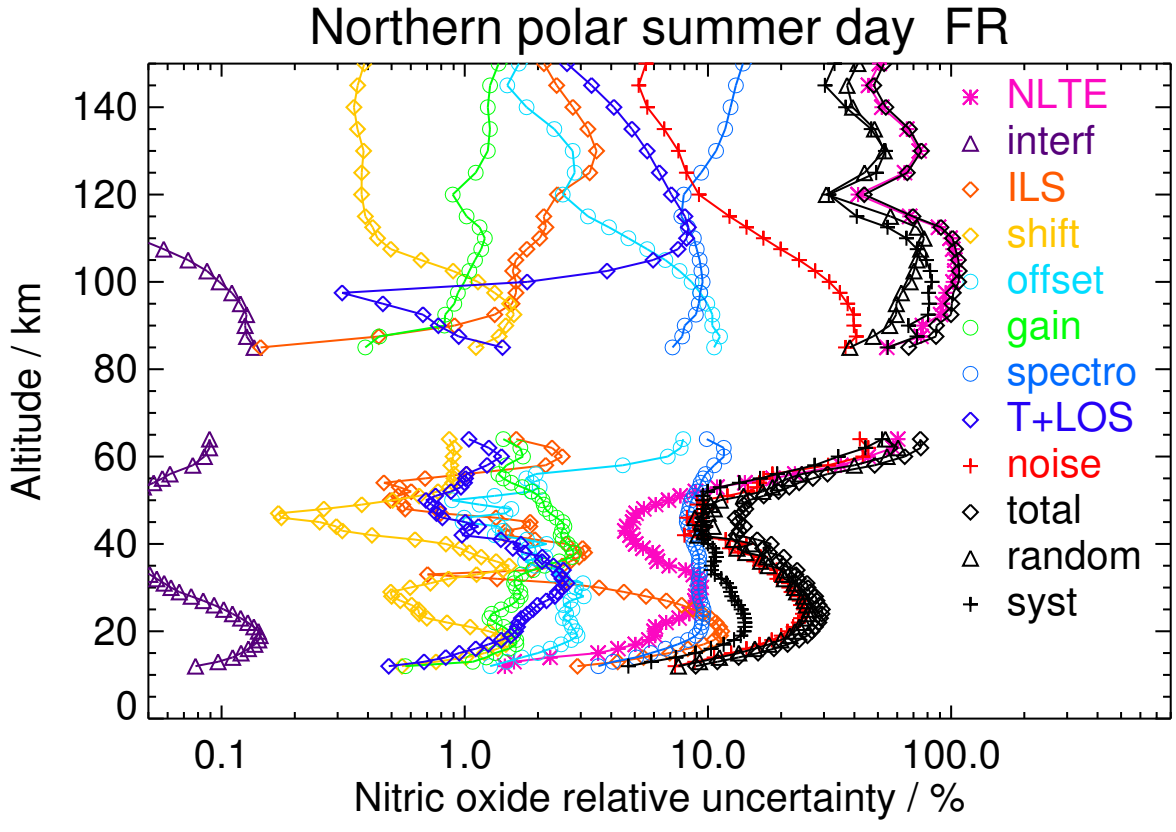

Figure S5. V8H_NO_61 Northern polar summer day

Table S7. Nitric oxide error budget for Northern polar summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	19.75	0.31	6.82	0.71	4.20	4.89	9.58	1.98	33.77	40.05	10.54	41.41
40	0.00	19.54	0.10	1.93	0.95	3.10	3.65	6.53	1.49	22.35	29.99	7.38	30.88
50	0.00	11.97	0.10	2.44	1.59	2.75	5.26	18.36	1.42	19.69	27.87	11.69	30.22
60	0.01	26.82	0.13	2.02	0.81	7.73	2.78	12.67	1.63	49.07	54.45	19.95	57.99
90	1.48	41.75	0.13	1.08	0.71	9.07	1.12	10.24	0.79	30.85	43.12	32.03	53.72
100	32.26	59.59	0.11	0.79	0.69	7.79	1.64	10.66	2.92	26.09	41.20	52.16	66.46
110	151.11	78.41	0.07	1.02	0.24	4.49	1.72	9.57	12.99	14.77	63.83	50.75	81.55
120	392.23	49.59	0.05	3.15	0.26	2.92	0.83	11.10	9.20	8.74	37.09	37.24	52.56
130	501.06	58.71	0.06	3.05	0.16	2.76	0.98	11.06	4.99	7.37	42.29	43.33	60.55
140	568.00	32.97	0.05	1.91	0.29	1.77	0.94	10.82	3.11	6.04	23.94	26.18	35.47
150	578.11	46.88	0.05	0.87	0.35	2.45	0.81	10.28	1.75	7.36	31.51	37.08	48.66

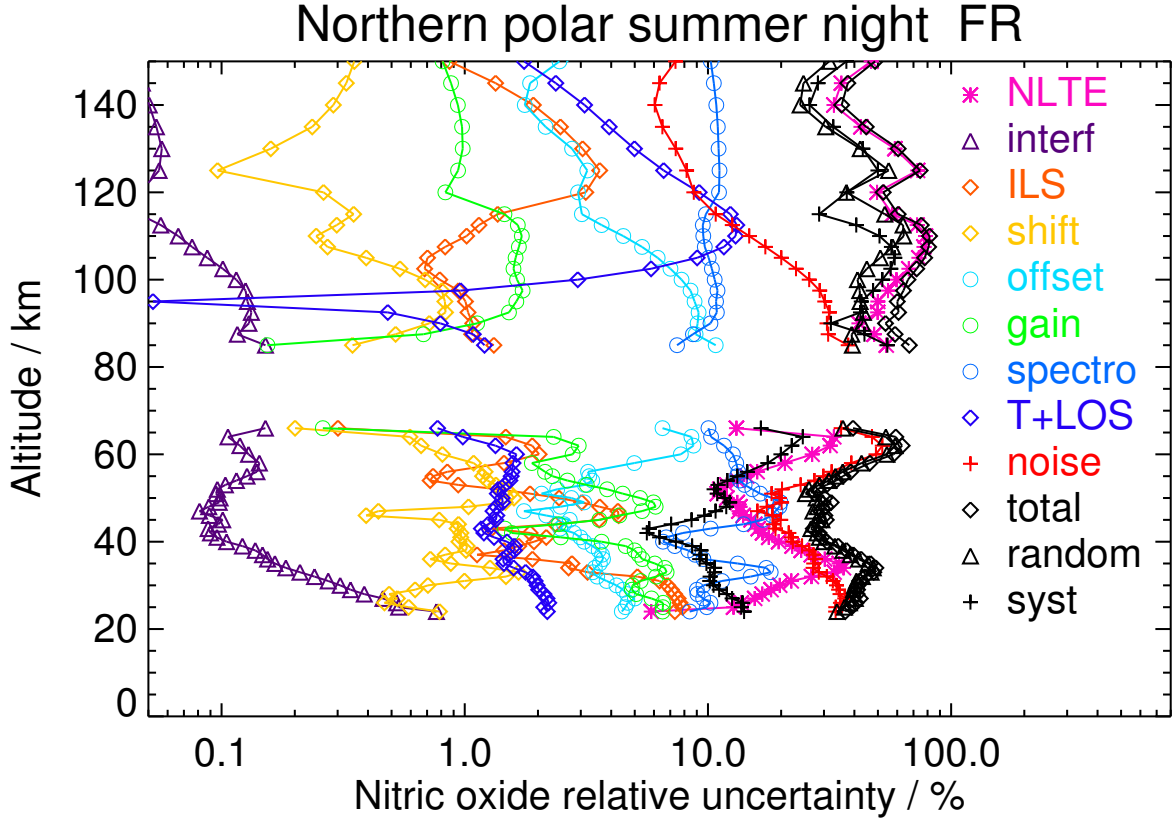

Figure S6. V8H_NO_61 Northern polar summer night

Table S8. Nitric oxide error budget for Northern polar autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	7.36	0.15	4.12	0.50	2.85	3.13	5.99	1.13	22.32	24.06	6.78	25.00
30	0.00	20.49	0.29	6.36	1.58	6.59	5.38	15.10	2.16	34.73	42.66	12.42	44.43
40	0.01	46.99	0.16	3.73	1.28	5.63	3.53	18.42	2.25	33.90	57.94	20.12	61.33
50	0.01	>100	0.13	1.47	1.98	4.93	3.31	9.67	4.85	42.75	>100	35.67	>100
60	0.01	52.16	0.10	1.72	0.66	8.39	2.79	13.21	2.65	57.42	69.47	38.15	79.25
70	0.09	23.20	0.12	0.40	0.18	7.21	0.54	7.17	0.17	24.32	25.37	24.29	35.12
80	0.24	96.45	0.09	1.83	0.62	9.83	1.89	8.54	0.81	34.73	79.16	66.48	>100
90	3.30	66.34	0.09	1.06	0.86	8.51	2.16	17.34	0.22	31.66	72.88	21.70	76.05
100	23.34	67.56	0.07	1.76	0.95	7.14	1.56	11.19	0.33	25.86	61.92	39.77	73.60
110	113.47	81.28	0.07	1.20	0.45	5.08	1.42	7.53	5.37	17.91	64.22	54.02	83.91
120	412.47	54.17	0.04	2.64	0.16	2.83	1.95	11.30	9.62	9.32	44.25	36.09	57.10
130	590.33	>100	0.05	5.18	0.39	2.70	3.01	14.74	4.81	6.82	>100	62.65	>100
140	716.73	>100	0.05	13.24	0.31	1.51	2.38	25.19	2.15	4.83	>100	40.27	>100
150	733.73	96.47	0.04	8.84	0.80	1.93	2.34	31.80	1.65	6.02	94.93	37.86	>100

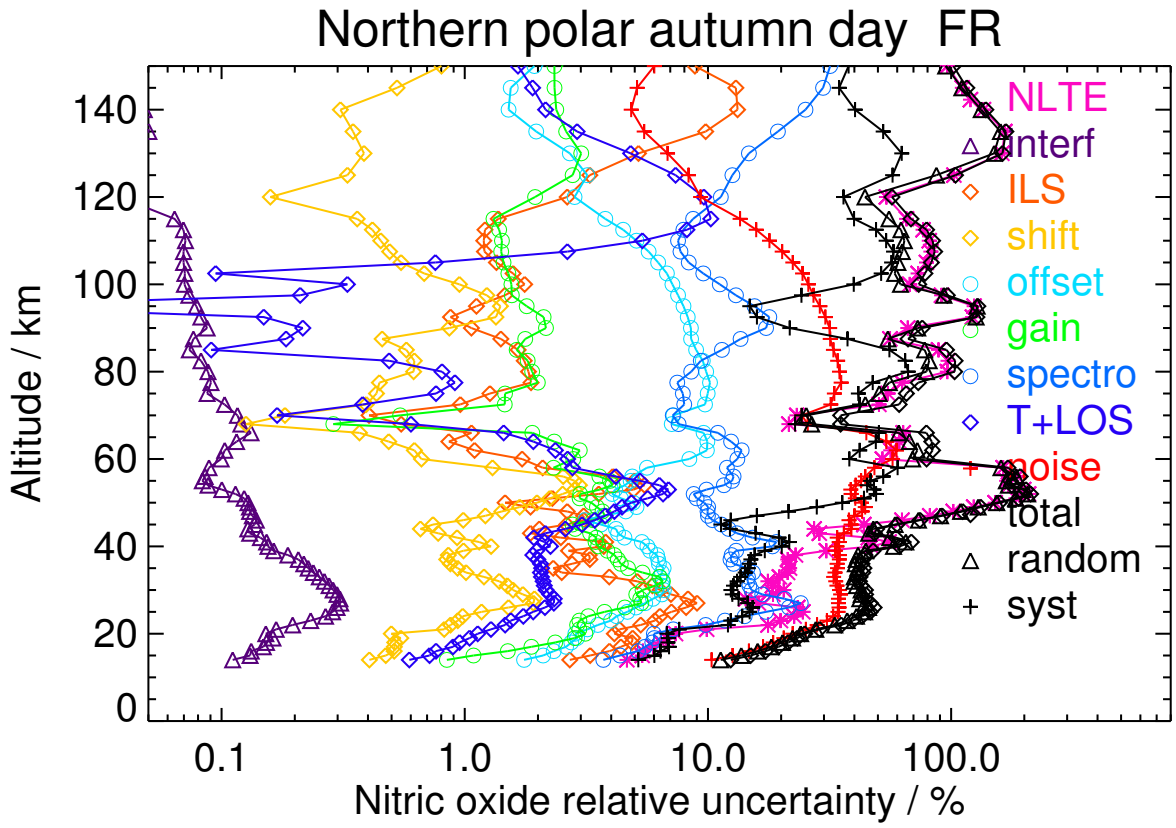

Figure S7. V8H_NO_61 Northern polar autumn day

Table S9. Nitric oxide error budget for Northern polar autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	43.90	0.22	3.45	1.84	9.57	4.01	5.63	2.22	49.56	53.85	40.54	67.40
40	0.00	19.63	0.17	2.81	0.69	7.11	3.29	10.53	2.02	44.86	49.95	9.31	50.81
50	0.01	29.94	0.08	7.62	2.42	5.40	3.23	28.15	3.46	33.96	49.36	22.84	54.38
60	0.06	79.96	0.10	3.63	1.09	5.35	3.51	10.07	3.80	29.74	74.64	43.33	86.30
70	0.29	76.74	0.10	3.21	0.52	7.20	2.66	9.12	1.93	27.61	66.94	48.24	82.51
80	0.69	92.75	0.19	2.16	0.86	8.77	3.75	14.00	0.18	30.85	98.19	14.33	99.23
90	9.15	98.55	0.17	1.52	0.72	8.11	4.42	12.47	0.98	24.05	74.99	70.08	>100
100	49.74	68.08	0.10	1.84	0.80	6.58	3.29	16.65	0.43	20.66	72.49	11.91	73.47
110	199.76	>100	0.10	1.65	0.72	5.48	1.88	12.00	9.40	16.81	>100	85.70	>100
120	699.24	99.74	0.07	4.99	0.58	2.57	2.00	15.90	10.11	8.28	94.32	38.87	>100
130	872.89	95.85	0.05	4.80	0.61	2.46	1.64	15.32	3.62	6.18	76.74	60.14	97.50
140	728.35	47.90	0.05	2.64	0.40	1.67	1.40	14.22	2.00	5.63	39.17	31.79	50.44
150	667.41	66.02	0.05	1.35	0.28	2.15	1.41	14.41	1.20	6.68	51.45	44.43	67.98

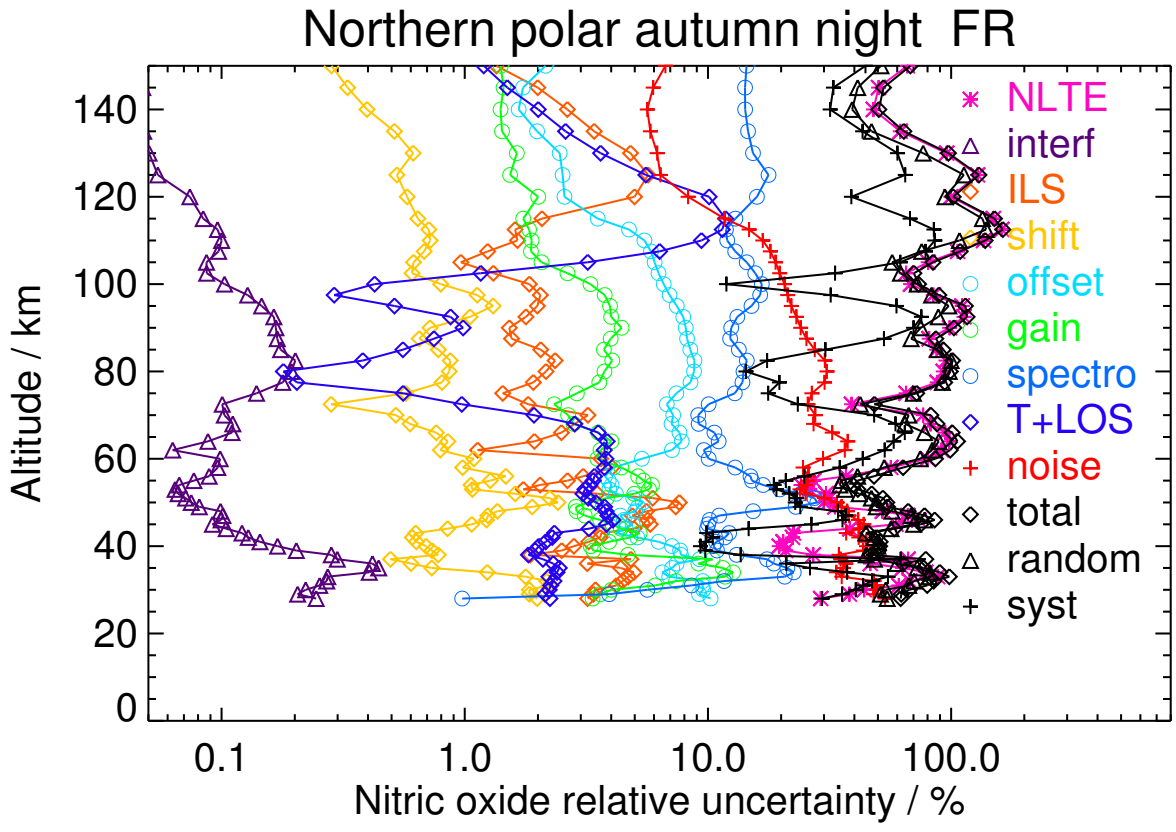

Figure S8. V8H_NO_61 Northern polar autumn night

Table S10. Nitric oxide error budget for Northern midlatitude winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	5.94	0.19	5.02	0.47	4.07	1.91	7.04	0.95	24.78	25.73	9.13	27.30
30	0.00	10.75	0.19	3.27	0.71	5.61	2.12	12.10	1.82	30.52	32.48	13.76	35.27
40	0.01	8.13	0.05	2.19	0.58	3.60	2.91	10.11	1.45	22.01	23.58	11.19	26.10
50	0.01	10.47	0.06	0.68	0.70	2.48	2.44	10.85	1.75	26.27	27.77	12.75	30.56
60	0.02	28.33	0.10	1.70	0.84	9.33	4.07	15.86	2.21	50.27	55.97	23.68	60.77
70	0.09	56.05	0.16	1.35	0.46	10.06	6.35	12.32	0.24	31.75	52.53	41.05	66.67
80	0.52	48.79	0.12	1.93	0.36	8.30	2.72	9.83	0.56	27.77	45.06	36.03	57.70
90	3.78	24.03	0.12	2.07	0.47	7.84	3.58	8.90	0.21	27.35	36.15	13.29	38.52
100	15.24	30.79	0.10	1.97	0.42	7.30	3.03	8.49	0.18	26.37	35.75	22.45	42.22
110	89.96	39.71	0.05	2.65	0.22	4.22	1.01	8.38	6.37	16.00	33.59	29.00	44.38
120	170.09	42.36	0.05	2.97	0.38	4.77	1.48	10.46	9.61	14.77	37.26	29.32	47.41
130	236.67	40.70	0.04	2.75	0.42	3.29	2.05	12.07	6.05	8.75	32.41	29.79	44.02
140	273.14	38.50	0.05	2.16	0.33	1.83	2.28	12.36	3.52	5.35	32.66	24.96	41.10
150	293.54	33.84	0.06	1.18	0.26	2.14	2.25	11.84	1.78	6.35	25.22	26.53	36.60

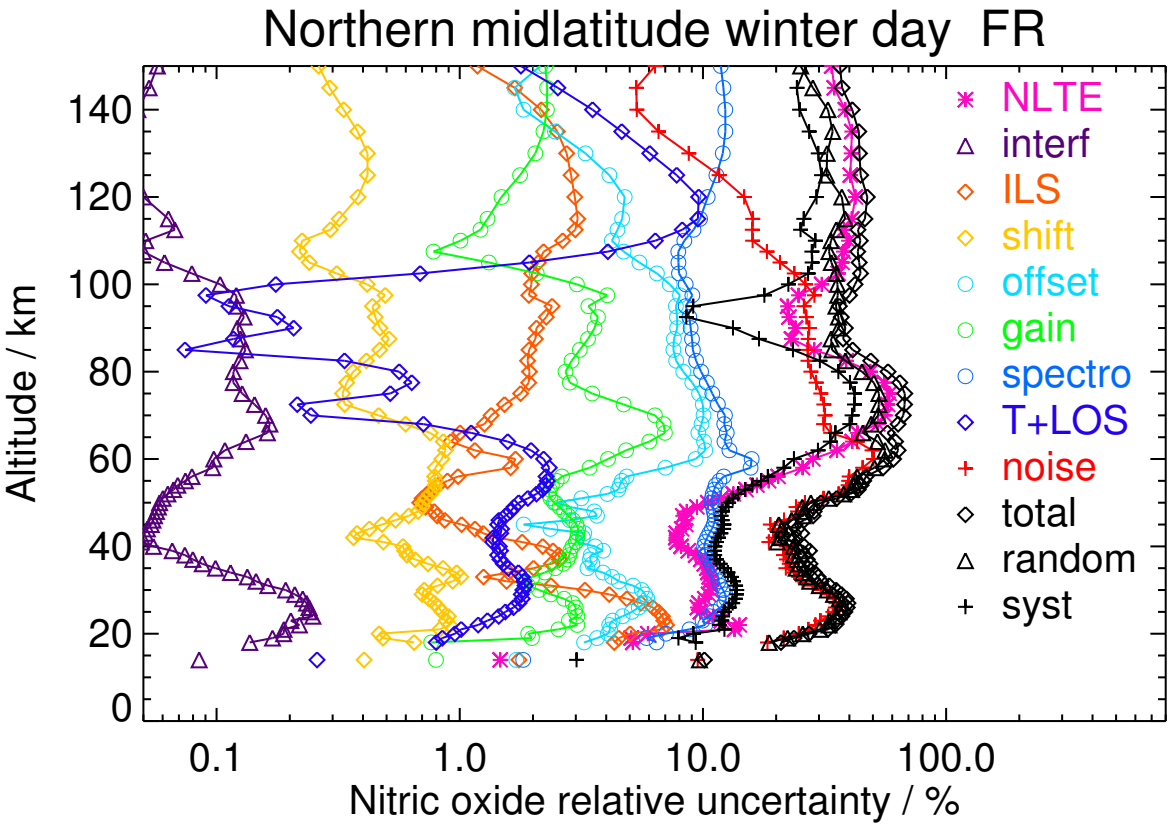

Figure S9. V8H_NO_61 Northern midlatitude winter day

Table S11. Nitric oxide error budget for Northern midlatitude winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.01	21.39	0.14	0.55	0.97	13.29	3.27	14.72	2.21	73.92	78.04	15.52	79.57
70	0.05	23.53	0.15	1.23	0.99	13.53	9.28	22.11	0.79	54.10	63.00	16.50	65.13
80	0.40	19.35	0.25	2.44	0.73	10.23	4.05	25.19	0.30	36.28	46.71	16.45	49.52
90	3.31	13.49	0.32	2.76	0.64	8.54	6.88	16.17	0.61	32.40	36.93	16.07	40.28
100	9.72	15.85	0.17	1.92	0.27	8.44	2.91	11.09	2.08	28.75	32.35	15.55	35.90
110	38.74	17.85	0.11	1.91	0.27	5.75	1.95	10.14	7.50	20.09	26.42	14.96	30.36
120	66.23	21.29	0.05	1.80	0.14	3.80	1.16	9.51	6.56	11.45	21.02	17.18	27.15
130	63.00	22.92	0.04	1.64	0.16	3.26	1.15	9.83	4.73	9.66	19.87	18.90	27.43
140	63.33	22.72	0.04	1.46	0.20	3.13	0.94	9.81	3.68	10.33	19.30	19.32	27.31
150	66.15	22.97	0.05	1.25	0.22	3.61	0.86	9.49	2.83	11.82	20.16	19.35	27.94

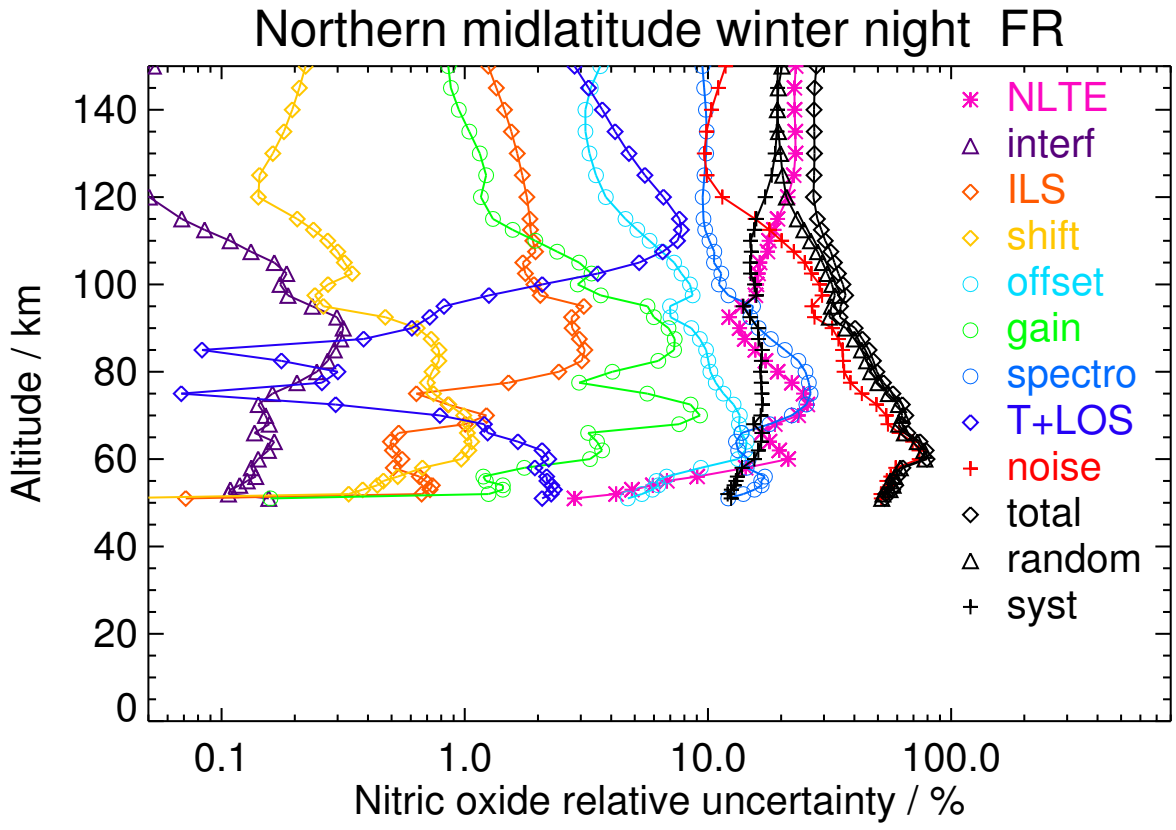

Figure S10. V8H_NO_61 Northern midlatitude winter night

Table S12. Nitric oxide error budget for Northern midlatitude spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	10.02	0.17	8.25	1.35	3.57	2.47	7.26	1.30	24.64	27.45	9.87	29.16
30	0.00	19.57	0.20	4.13	1.21	4.81	4.17	10.44	1.98	27.36	34.68	10.04	36.11
40	0.01	10.97	0.05	3.21	0.85	2.31	3.01	12.21	1.39	14.19	16.61	14.91	22.32
50	0.01	26.66	0.06	0.37	0.79	2.24	3.38	12.22	0.83	21.11	31.67	17.92	36.38
60	0.01	>100	0.09	5.56	1.74	9.90	3.17	34.75	2.12	58.02	>100	99.43	>100
90	0.68	76.38	0.12	1.95	1.05	13.01	1.38	6.99	0.37	46.84	59.05	69.05	90.85
100	7.99	>100	0.10	1.40	0.88	11.13	1.05	7.14	0.29	38.97	74.43	81.47	>100
110	53.38	>100	0.06	1.32	0.63	7.25	1.11	7.75	8.54	25.32	81.53	69.90	>100
120	179.82	94.58	0.04	2.37	0.65	3.15	2.18	11.00	9.79	11.81	85.98	43.94	96.56
130	389.62	69.33	0.05	2.74	0.90	2.42	3.46	16.23	5.90	7.92	61.46	37.63	72.06
140	615.66	97.83	0.06	3.02	1.63	1.81	5.29	28.03	3.73	5.99	93.41	41.51	>100
150	863.10	>100	0.08	6.13	3.10	2.36	9.20	50.95	2.21	6.09	>100	50.68	>100

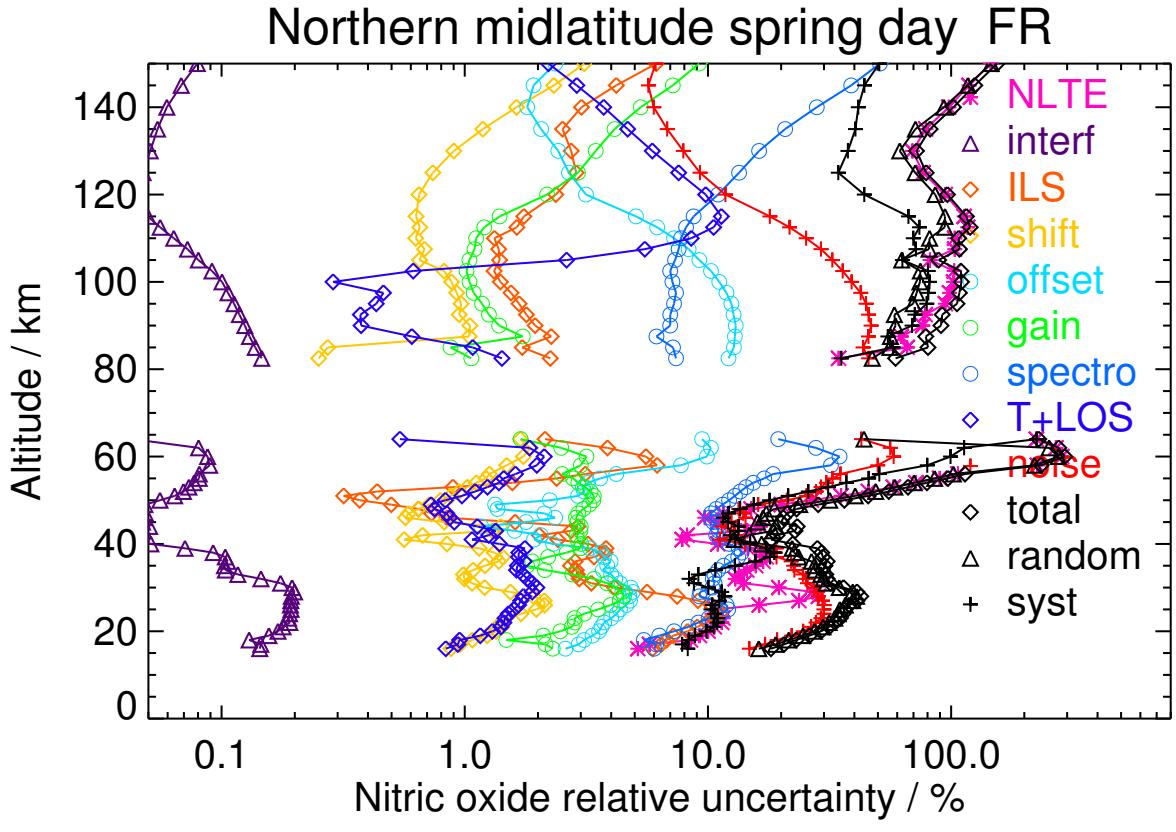

Figure S11. V8H_NO_61 Northern midlatitude spring day

Table S13. Nitric oxide error budget for Northern midlatitude spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	65.11	0.18	1.05	0.93	14.17	1.79	11.45	4.63	94.98	>100	40.08	>100
90	0.71	46.89	0.17	1.14	0.52	12.23	1.46	11.40	0.13	40.83	51.54	38.62	64.41
100	5.70	78.83	0.17	0.96	0.52	11.13	2.08	11.13	1.02	35.73	72.11	50.46	88.01
110	47.30	67.80	0.11	1.27	0.37	6.96	1.47	10.25	7.88	23.57	58.91	43.60	73.29
120	174.94	35.54	0.04	2.28	0.23	3.01	0.85	10.53	8.44	10.52	30.99	24.71	39.63
130	227.14	46.51	0.04	2.76	0.10	2.85	0.80	11.68	5.91	7.75	39.69	28.90	49.10
140	268.32	33.75	0.04	2.24	0.11	1.84	0.82	11.65	4.10	6.18	28.89	22.45	36.59
150	266.97	36.83	0.04	1.52	0.18	2.12	0.85	11.74	2.69	7.39	31.94	23.32	39.55

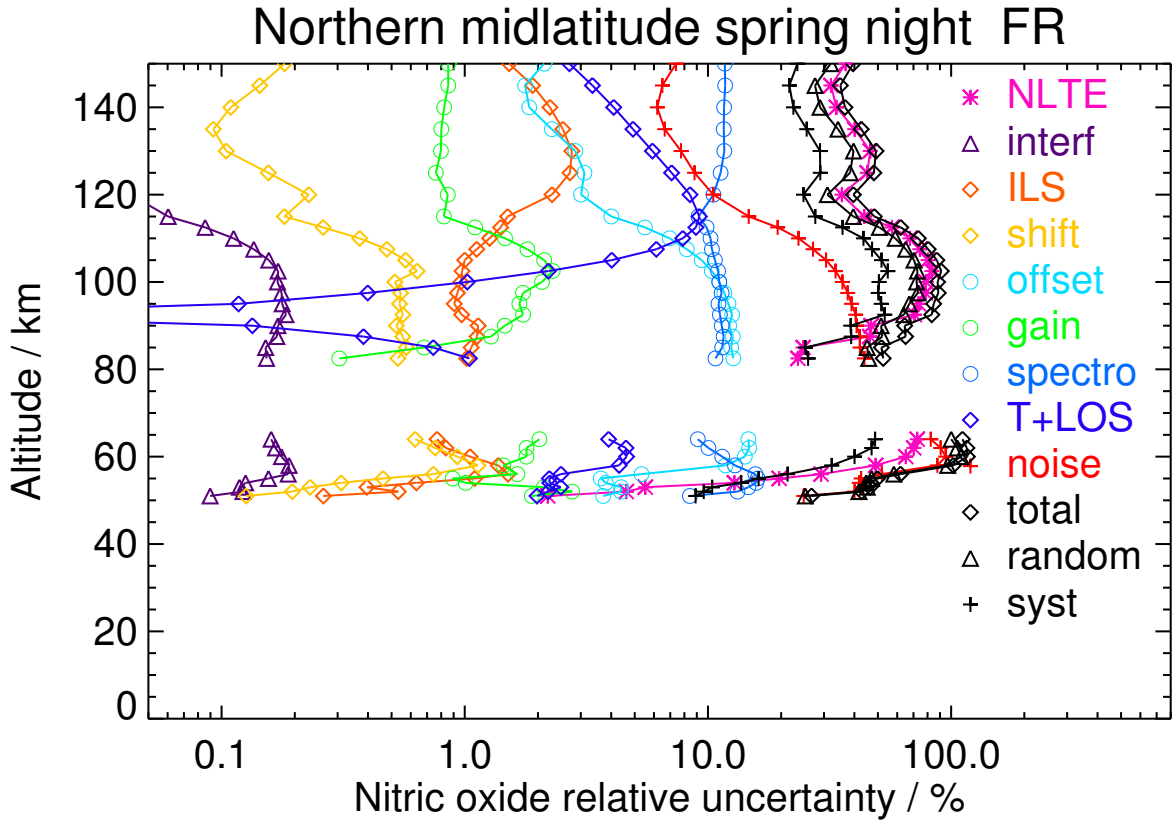

Figure S12. V8H_NO_61 Northern midlatitude spring night

Table S14. Nitric oxide error budget for Northern midlatitude summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	6.02	0.26	7.43	1.24	3.57	3.19	6.68	1.54	24.63	25.97	9.75	27.74
30	0.00	10.02	0.12	4.21	0.81	4.15	2.68	10.66	1.99	26.24	28.62	11.43	30.82
40	0.01	5.88	0.03	2.66	0.56	2.27	2.93	10.34	1.69	15.18	15.98	11.87	19.90
50	0.01	4.20	0.04	0.32	0.46	1.22	3.03	9.33	0.71	13.33	14.10	9.75	17.14
60	0.01	29.96	0.11	0.95	0.79	9.81	1.91	9.18	1.15	58.67	62.54	24.82	67.28
80	0.03	54.78	0.11	1.43	0.79	11.69	0.38	7.82	0.85	38.81	40.55	55.35	68.61
90	1.04	60.19	0.13	0.96	0.89	11.24	1.63	7.03	0.78	39.39	51.25	52.24	73.18
100	15.59	48.88	0.10	0.76	0.54	8.98	1.18	6.26	0.81	30.64	38.15	44.67	58.74
110	65.65	54.99	0.05	1.02	0.35	5.30	1.52	7.98	10.72	18.03	43.28	41.06	59.66
120	136.48	34.85	0.04	1.89	0.51	3.21	2.63	11.65	9.67	10.58	27.94	28.22	39.71
130	260.79	51.68	0.04	2.49	0.61	3.63	3.42	12.06	6.77	9.52	36.96	40.22	54.63
140	416.97	43.35	0.04	1.92	0.52	2.60	3.18	11.59	4.93	6.99	31.01	33.85	45.91
150	514.60	31.90	0.04	0.83	0.42	1.53	2.60	10.55	3.12	5.03	20.76	27.25	34.26

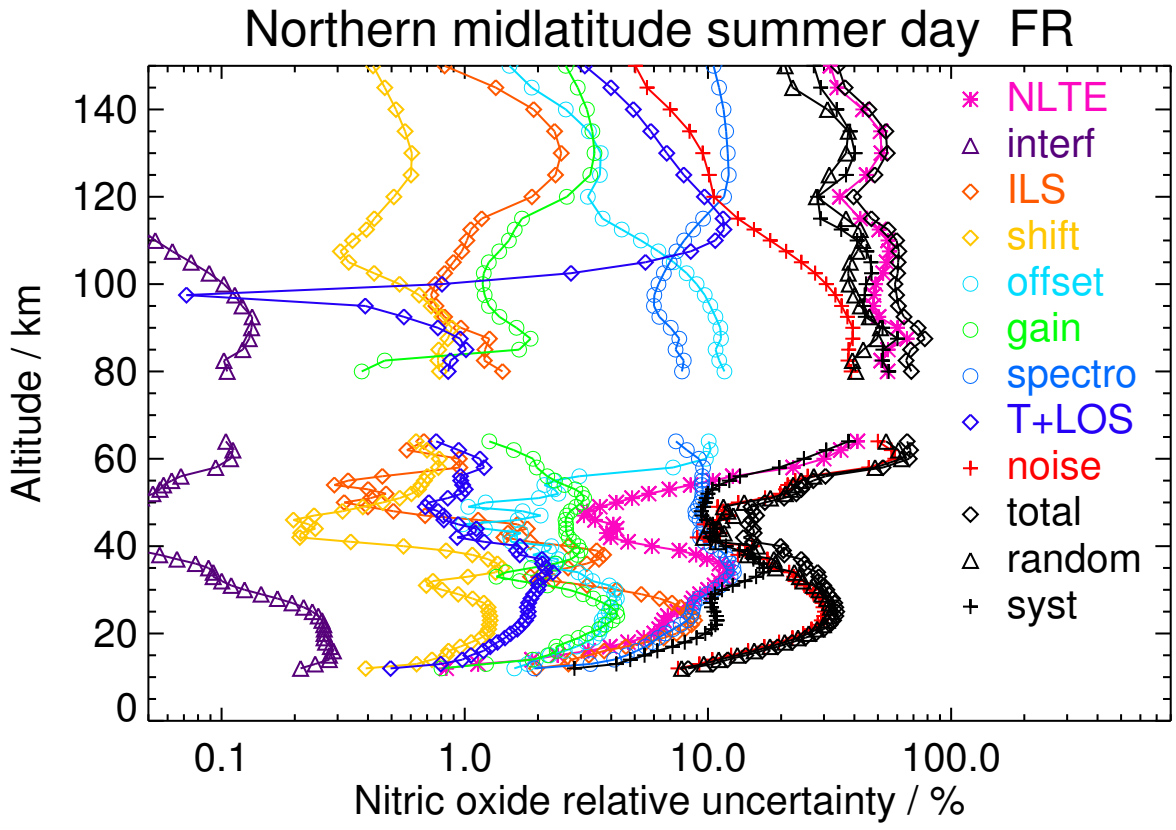

Figure S13. V8H_NO_61 Northern midlatitude summer day

Table S15. Nitric oxide error budget for Northern midlatitude summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.01	65.72	0.13	2.13	0.97	11.34	2.93	12.98	2.90	75.39	98.78	23.77	>100
90	0.36	14.82	0.12	1.10	0.64	11.00	0.52	12.69	1.05	43.74	45.12	19.54	49.17
100	11.09	71.80	0.15	0.67	0.74	9.56	2.31	11.93	3.05	31.65	65.59	45.87	80.04
110	65.91	85.87	0.09	1.16	0.52	5.34	1.75	9.25	12.91	18.34	77.17	45.17	89.42
120	215.64	51.65	0.05	1.60	0.45	2.68	1.63	11.71	9.40	8.85	47.98	26.12	54.63
130	355.76	88.66	0.06	4.02	0.46	2.63	3.11	15.10	6.13	6.94	78.99	44.35	90.59
140	413.61	69.16	0.05	3.42	0.42	1.77	1.91	16.52	4.05	5.89	64.11	31.88	71.60
150	413.05	83.36	0.05	2.76	0.59	2.34	2.09	16.80	2.41	7.40	77.01	37.13	85.49

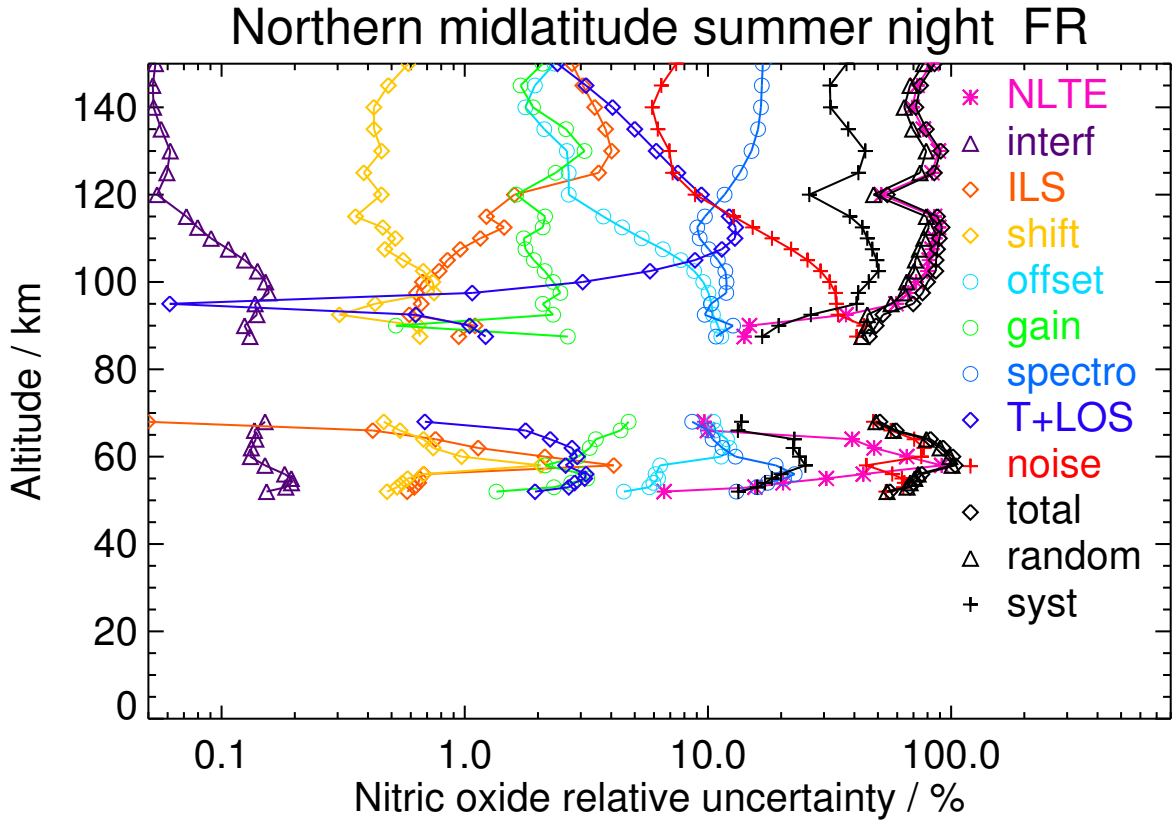

Figure S14. V8H_NO_61 Northern midlatitude summer night

Table S16. Nitric oxide error budget for Northern midlatitude autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	4.14	0.21	5.52	0.62	3.42	4.90	6.08	1.42	24.62	25.78	8.03	27.00
30	0.00	9.44	0.14	3.93	0.76	4.43	1.98	11.85	1.71	29.14	30.57	13.66	33.48
40	0.01	8.29	0.03	2.79	0.54	2.67	3.30	11.42	1.54	19.65	20.40	14.06	24.78
50	0.01	8.95	0.04	0.63	0.47	1.73	2.55	9.86	0.84	20.42	21.82	11.35	24.60
60	0.01	49.10	0.06	3.14	1.35	7.68	4.31	14.84	1.97	46.81	66.96	20.76	70.11
80	0.11	62.66	0.10	2.24	0.50	12.75	1.80	8.92	0.84	51.42	70.76	42.60	82.60
90	1.71	27.53	0.09	2.35	0.50	11.09	2.31	8.30	0.40	43.57	46.65	26.15	53.48
100	5.91	93.37	0.08	0.83	0.36	10.36	0.81	8.91	0.30	38.40	78.70	64.70	>100
110	32.54	77.59	0.06	1.09	0.34	6.79	1.13	9.78	3.72	27.26	69.91	45.09	83.19
120	98.00	44.50	0.04	2.31	0.55	3.24	1.90	12.13	7.40	13.81	41.19	26.39	48.92
130	187.01	52.50	0.03	3.30	0.57	2.63	2.56	13.69	5.15	8.91	48.05	27.65	55.44
140	262.53	35.24	0.03	2.32	0.50	1.76	2.77	13.69	3.57	6.20	30.63	23.63	38.69
150	315.14	33.68	0.03	1.43	0.40	1.70	2.79	13.23	2.30	6.19	28.72	23.25	36.95

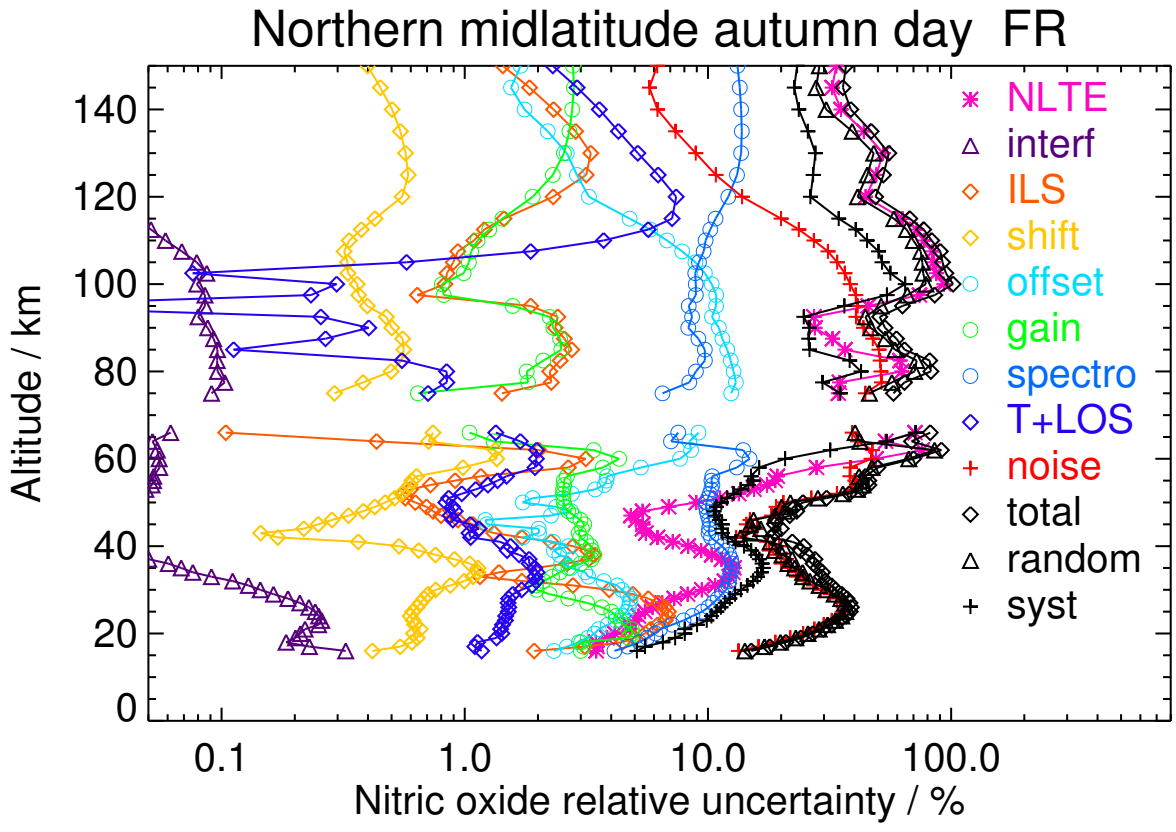

Figure S15. V8H_NO_61 Northern midlatitude autumn day

Table S17. Nitric oxide error budget for Northern midlatitude autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	10.73	0.14	1.59	1.17	3.47	6.05	15.55	2.37	38.83	41.68	13.61	43.85
60	0.01	22.29	0.10	1.35	0.65	8.95	1.62	9.45	3.02	66.52	69.63	16.02	71.45
70	0.01	15.79	0.14	1.05	0.54	12.47	3.17	9.77	0.95	64.61	66.86	14.70	68.46
80	0.05	14.47	0.12	1.28	0.52	11.71	2.72	10.35	0.34	52.21	54.73	13.89	56.47
90	3.71	>100	0.18	2.85	0.69	7.82	2.52	32.14	0.97	27.54	>100	37.89	>100
100	23.54	60.26	0.17	2.07	1.04	7.57	3.35	33.45	0.58	25.98	72.20	16.90	74.15
110	107.46	64.24	0.08	1.46	0.37	5.37	2.35	15.11	6.27	19.19	57.49	38.66	69.28
120	602.95	>100	0.07	7.08	1.91	2.01	2.41	27.07	8.03	8.12	>100	25.36	>100
130	353.84	78.89	0.04	4.74	0.36	2.07	2.57	16.08	5.02	6.43	73.16	35.07	81.13
140	314.90	50.15	0.05	2.67	0.20	1.62	1.32	16.22	2.60	6.39	47.20	24.68	53.27
150	256.13	72.53	0.06	1.59	0.20	2.55	1.23	15.78	1.57	9.10	66.20	34.97	74.87

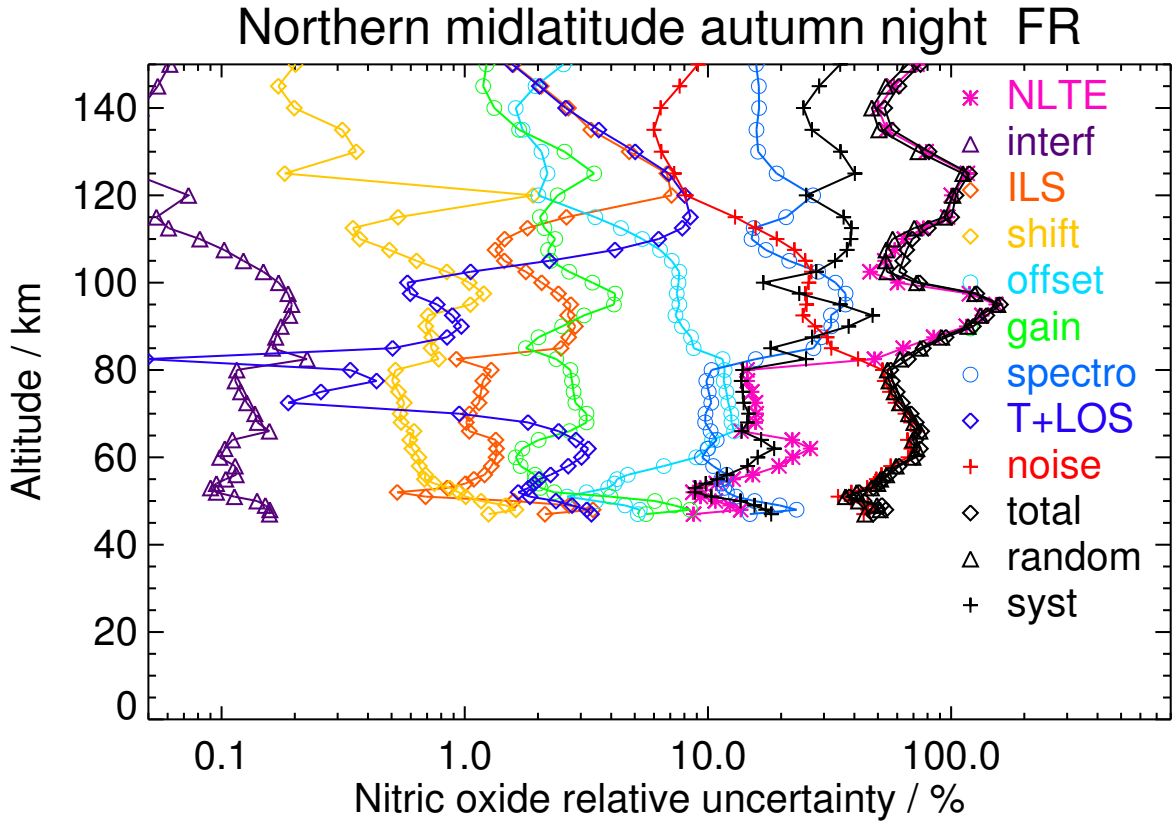

Figure S16. V8H_NO_61 Northern midlatitude autumn night

Table S18. Nitric oxide error budget for Tropics day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	6.72	0.34	2.16	0.65	3.23	3.28	8.17	1.82	23.72	24.89	9.21	26.54
30	0.00	8.66	0.18	3.72	0.44	4.24	6.57	13.14	2.36	28.51	29.70	16.10	33.78
40	0.01	4.54	0.04	1.51	0.36	1.45	2.30	8.93	1.19	8.88	9.34	10.16	13.80
50	0.01	2.44	0.04	0.28	0.44	1.94	2.51	9.13	0.74	16.61	16.97	9.39	19.40
60	0.00	28.26	0.13	1.63	0.71	9.98	2.56	7.73	3.34	63.58	65.40	27.27	70.86
100	5.15	48.78	0.11	1.41	0.39	10.52	1.78	7.90	0.18	40.77	48.20	43.56	64.97
110	24.60	35.85	0.08	1.82	0.44	7.28	1.86	8.76	6.70	29.68	35.46	33.02	48.45
120	51.73	25.56	0.04	2.21	0.47	4.19	2.27	9.52	9.56	15.59	22.16	24.79	33.25
130	97.90	25.25	0.03	2.00	0.29	3.15	1.79	9.70	5.97	8.80	16.49	24.29	29.36
140	151.51	21.94	0.03	1.54	0.17	1.93	1.33	9.65	3.95	5.74	12.36	21.87	25.12
150	188.52	22.22	0.03	0.99	0.18	1.81	0.99	9.34	2.41	6.26	12.14	22.00	25.12

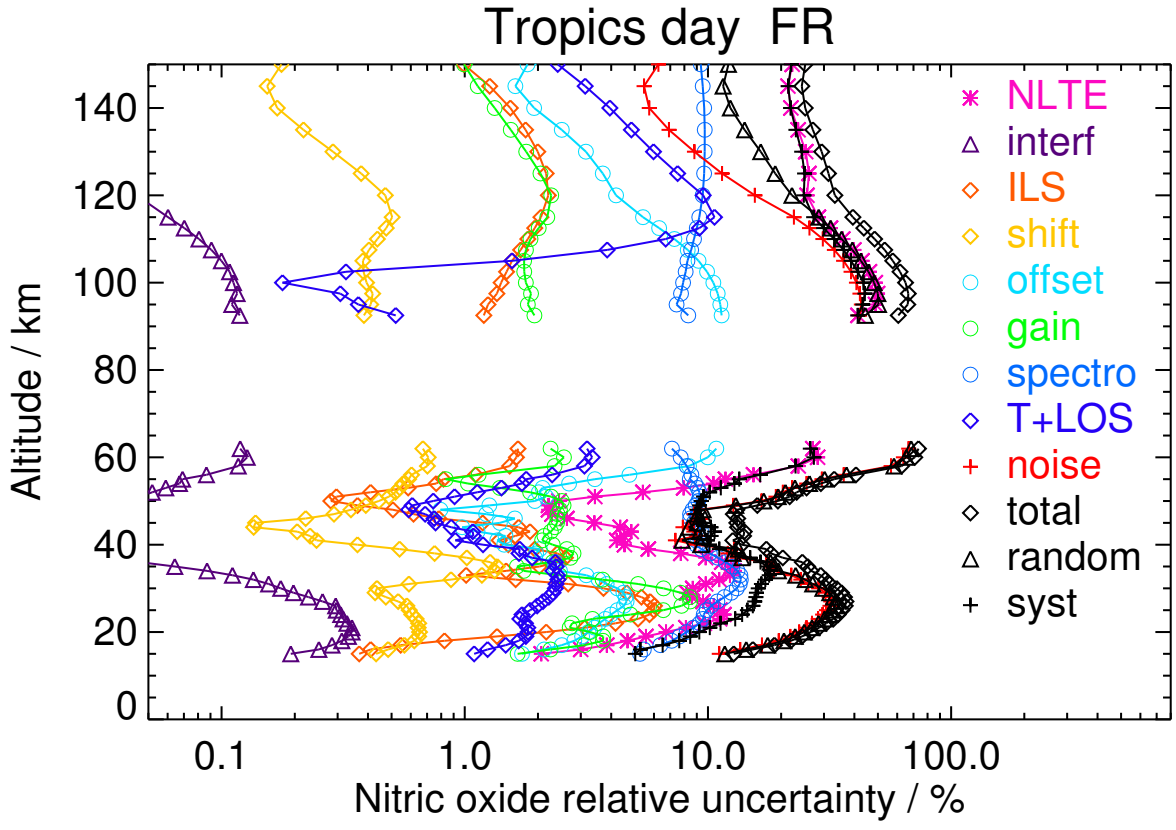

Figure S17. V8H_NO_61 Tropics day

Table S19. Nitric oxide error budget for Tropics night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	9.02	0.21	0.54	1.16	12.13	2.47	15.07	4.49	82.66	84.76	11.53	85.54
100	2.64	21.45	0.18	0.86	0.76	12.23	2.15	9.91	0.47	44.62	48.30	19.28	52.01
110	16.51	17.55	0.13	0.96	0.53	8.00	1.37	9.13	5.63	29.43	32.96	16.43	36.83
120	39.26	15.54	0.05	1.19	0.22	3.19	1.05	8.86	8.60	11.02	17.17	15.28	22.98
130	50.53	16.63	0.04	1.23	0.21	2.34	1.22	8.72	6.33	7.73	14.04	16.24	21.47
140	59.55	17.01	0.04	1.17	0.32	2.67	1.17	8.38	5.02	9.86	14.76	16.55	22.18
150	58.56	17.29	0.05	1.05	0.40	3.33	1.16	7.84	3.93	12.07	16.32	16.40	23.14

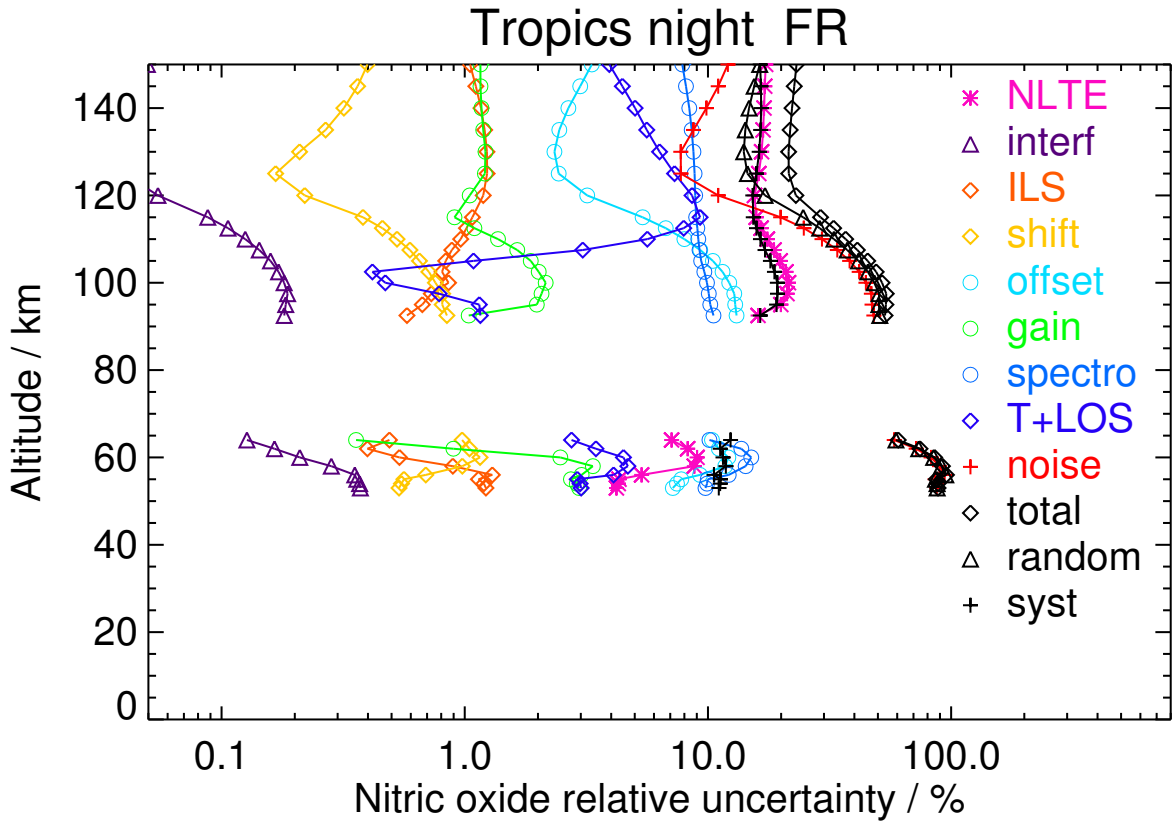

Figure S18. V8H_NO_61 Tropics night

Table S20. Nitric oxide error budget for Southern midlatitude winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	10.27	0.18	7.85	0.39	3.36	3.55	11.96	1.41	21.78	26.64	10.03	28.47
30	0.01	13.96	0.32	10.87	1.38	7.07	4.58	12.32	2.01	35.59	40.73	12.23	42.53
40	0.01	12.65	0.09	3.00	1.00	4.06	3.11	11.04	2.19	22.97	26.39	12.42	29.16
50	0.01	9.81	0.05	0.94	0.69	2.08	2.93	10.70	1.60	16.44	20.02	9.86	22.31
60	0.02	31.42	0.05	2.51	0.86	6.16	1.79	12.77	1.69	37.69	47.75	18.48	51.20
70	0.04	34.98	0.06	1.59	0.29	7.50	2.23	8.42	0.07	25.57	35.07	27.97	44.86
80	0.20	69.37	0.06	1.17	0.29	8.59	3.26	9.68	1.21	28.14	60.75	45.76	76.06
90	2.32	54.27	0.07	2.08	0.53	7.59	3.33	11.09	0.11	26.55	49.45	37.43	62.02
100	12.02	71.66	0.09	1.63	0.38	7.71	4.03	9.37	0.32	26.28	53.82	55.65	77.42
110	66.01	59.76	0.06	1.60	0.32	4.35	3.29	9.07	6.32	16.01	51.23	36.85	63.11
120	172.45	54.26	0.05	2.38	0.39	3.83	2.19	10.04	8.11	12.14	49.22	29.34	57.30
130	341.82	83.05	0.02	3.87	0.27	2.78	1.00	13.87	5.14	7.48	72.83	43.50	84.83
140	455.13	88.22	0.03	5.12	0.15	1.65	1.27	17.53	3.01	5.34	83.89	33.47	90.32
150	496.26	82.70	0.03	2.19	0.38	1.86	1.30	18.47	1.51	6.78	76.37	37.50	85.08

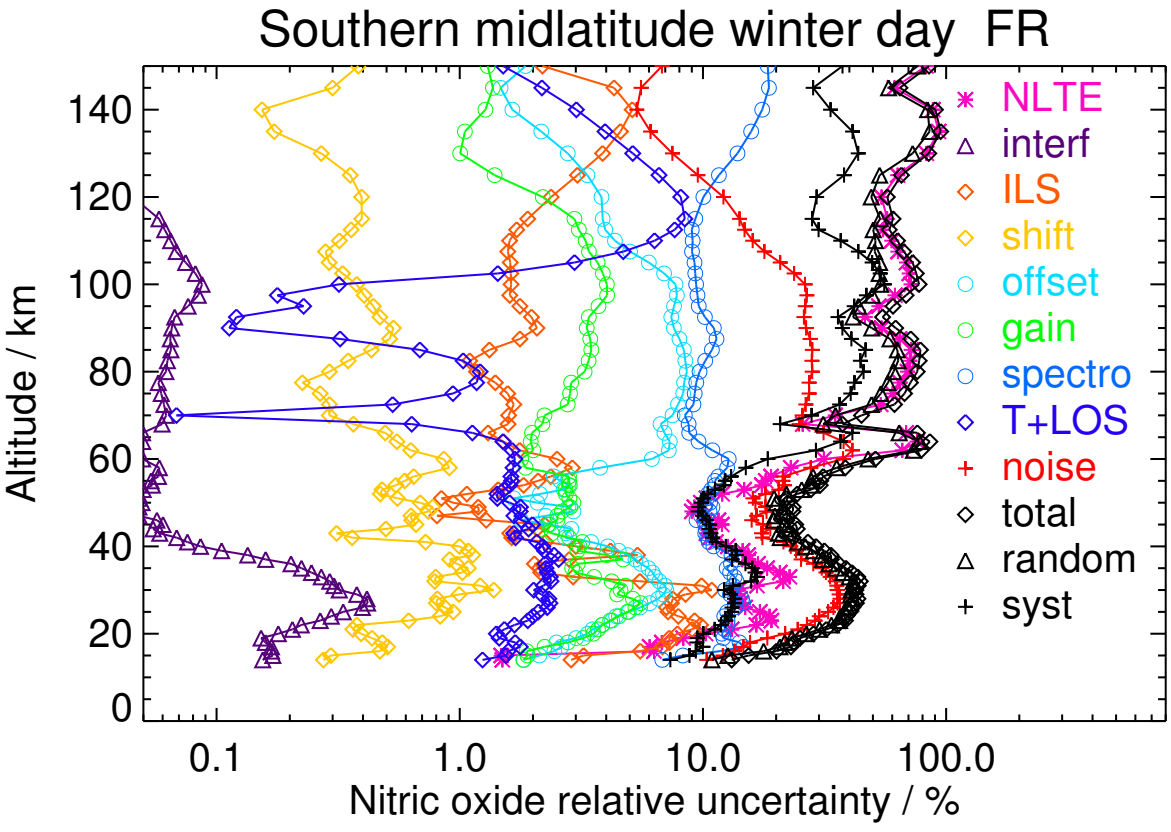

Figure S19. V8H_NO_61 Southern midlatitude winter day

Table S21. Nitric oxide error budget for Southern midlatitude winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	22.11	0.20	1.28	0.68	4.82	3.15	14.61	2.17	53.23	56.07	20.76	59.80
60	0.02	44.89	0.11	3.77	1.84	7.54	10.87	27.72	3.43	43.31	65.70	23.40	69.74
70	0.07	46.23	0.13	1.15	0.27	8.94	5.54	13.17	0.91	35.70	53.90	28.16	60.81
80	0.31	60.19	0.12	1.73	0.46	9.66	2.23	14.10	0.99	31.43	59.22	37.50	70.09
90	2.83	39.93	0.12	1.87	0.56	9.70	2.54	14.71	0.41	34.17	49.33	25.50	55.53
100	10.46	66.13	0.14	1.44	0.41	8.81	4.57	15.39	3.37	28.84	56.85	48.18	74.53
110	59.16	56.72	0.11	2.20	0.47	5.15	5.57	16.36	10.67	18.36	52.27	35.58	63.23
120	153.75	62.12	0.12	2.83	0.90	4.25	6.68	14.22	9.31	13.48	57.27	33.48	66.34
130	254.81	58.41	0.10	2.59	0.39	2.76	4.46	12.22	5.48	7.96	52.60	30.37	60.73
140	315.26	39.17	0.09	2.10	0.19	1.88	3.61	13.63	3.35	6.32	33.86	25.40	42.33
150	339.80	68.02	0.08	1.46	0.18	2.75	2.73	16.18	1.94	8.16	60.91	35.57	70.54

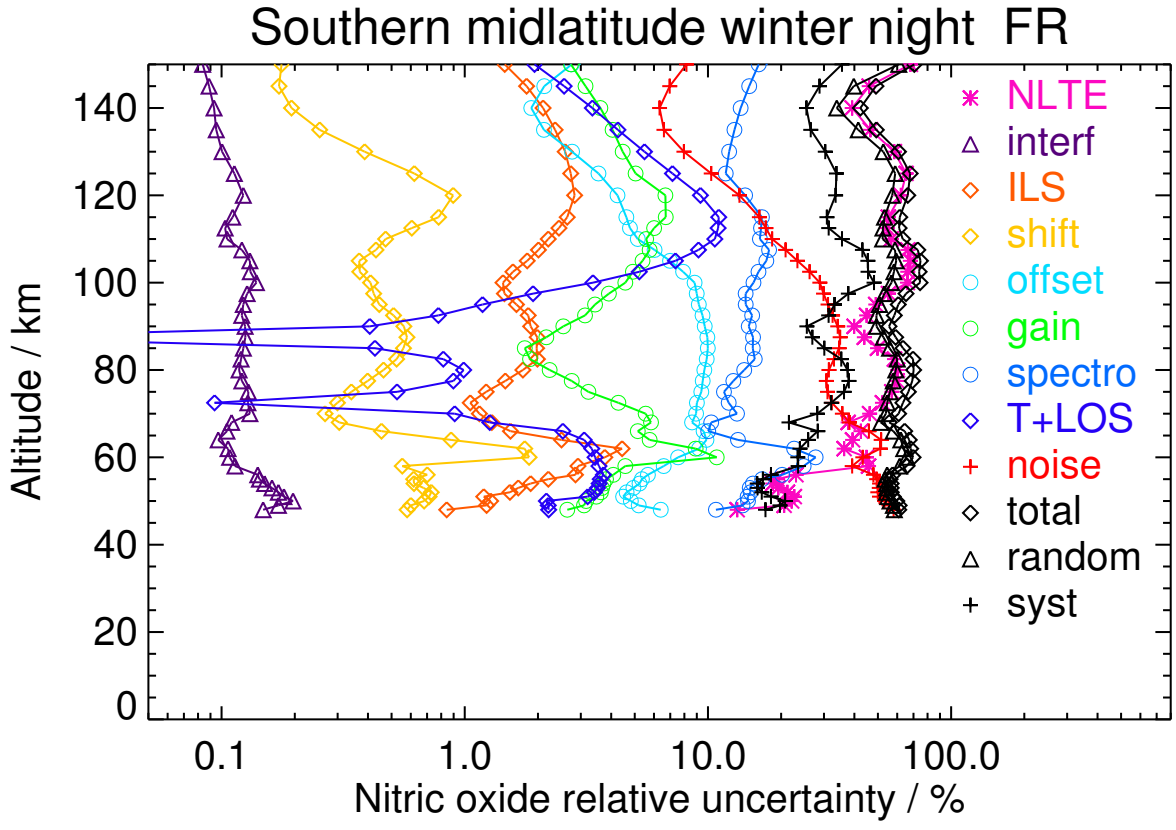

Figure S20. V8H_NO_61 Southern midlatitude winter night

Table S22. Nitric oxide error budget for Southern midlatitude spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	21.67	0.22	7.27	1.46	2.92	6.34	12.82	2.25	22.95	32.96	13.52	35.63
30	0.01	23.67	0.14	5.44	1.08	3.32	2.53	11.77	2.11	23.32	32.13	16.22	35.99
40	0.01	9.88	0.04	2.93	0.87	2.24	2.56	9.16	1.64	14.70	16.83	11.75	20.53
50	0.01	29.59	0.06	3.71	2.44	2.22	2.12	9.28	2.01	16.89	32.37	15.23	35.78
60	0.02	34.52	0.08	9.47	3.68	6.22	2.74	18.19	2.08	38.14	51.62	21.60	55.96
70	0.02	>100	0.10	2.71	1.17	8.50	2.59	9.65	<0.01	33.19	34.29	>100	>100
90	3.83	>100	0.10	7.28	8.12	4.60	3.85	13.80	0.04	17.64	>100	74.41	>100
100	17.45	81.91	0.09	8.10	1.91	6.55	2.35	19.69	<0.01	24.36	83.27	29.56	88.36
110	85.52	>100	0.11	9.17	2.29	5.21	2.42	12.15	17.75	18.66	>100	>100	>100
120	209.89	58.61	0.04	3.01	1.24	2.53	1.33	11.24	11.38	9.58	52.38	32.53	61.66
130	386.82	>100	0.05	4.87	1.73	2.38	0.78	10.48	4.81	6.70	84.58	62.38	>100
140	709.47	>100	0.06	7.75	0.65	1.92	1.30	15.56	2.61	5.57	>100	61.26	>100
150	1000.92	90.67	0.06	6.34	1.48	1.48	1.87	29.21	1.77	5.61	87.35	39.09	95.69

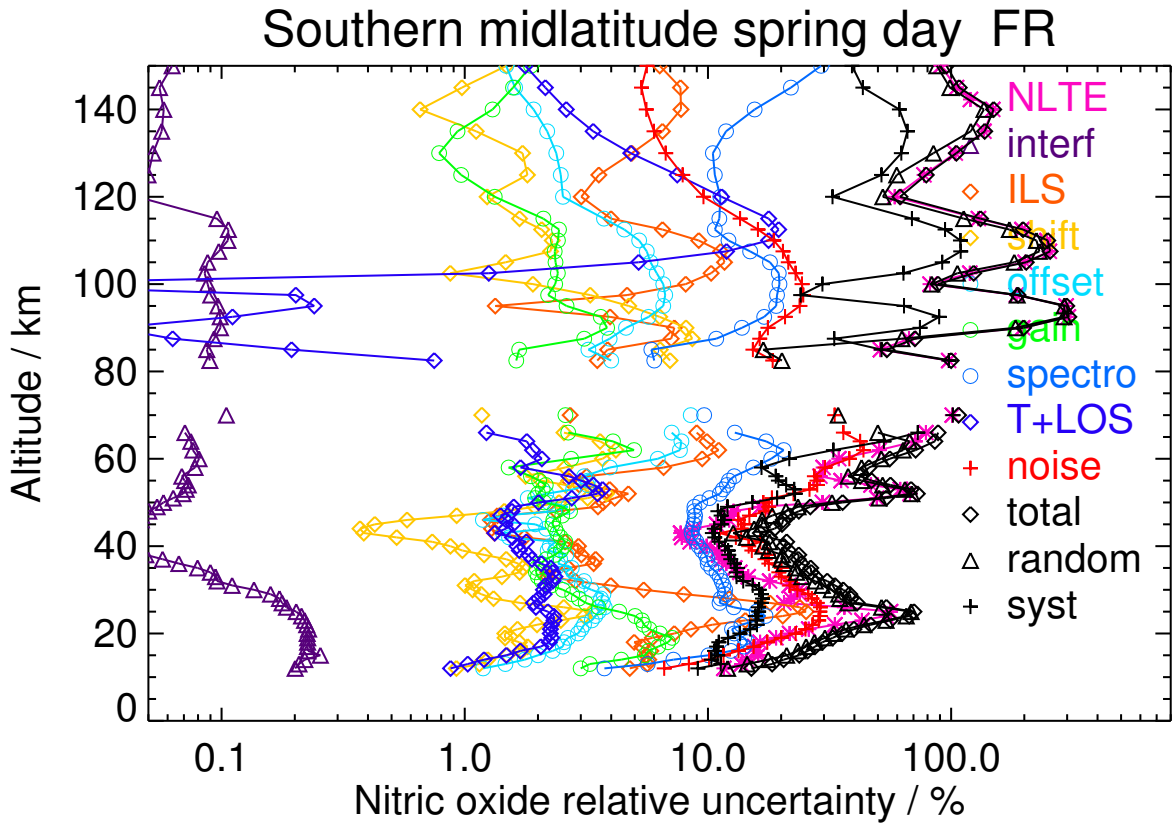

Figure S21. V8H_NO_61 Southern midlatitude spring day

Table S23. Nitric oxide error budget for Southern midlatitude spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.04	29.83	0.19	2.87	1.42	5.45	7.31	16.67	2.17	29.93	43.12	17.38	46.49
80	0.13	25.36	0.13	0.72	0.58	9.98	1.34	6.13	0.14	38.85	40.12	26.13	47.88
90	0.77	70.61	0.14	1.91	1.10	10.03	1.37	8.72	0.17	36.16	79.54	12.27	80.48
100	12.13	82.03	0.13	1.76	0.98	7.94	1.69	8.93	0.43	27.76	86.50	12.95	87.46
110	82.34	55.24	0.12	0.75	1.38	4.89	2.37	9.58	7.80	17.79	54.16	24.89	59.60
120	283.20	>100	0.09	5.84	0.35	2.39	4.02	21.39	8.84	8.45	>100	34.37	>100
130	296.54	53.29	0.12	2.82	1.89	2.03	3.42	17.88	4.32	6.64	49.93	27.52	57.01
140	277.00	94.85	0.11	2.86	0.66	1.71	3.13	13.74	2.74	6.48	91.43	29.95	96.21
150	250.74	85.06	0.10	2.21	0.56	2.52	3.05	14.17	1.71	8.29	75.92	42.01	86.76

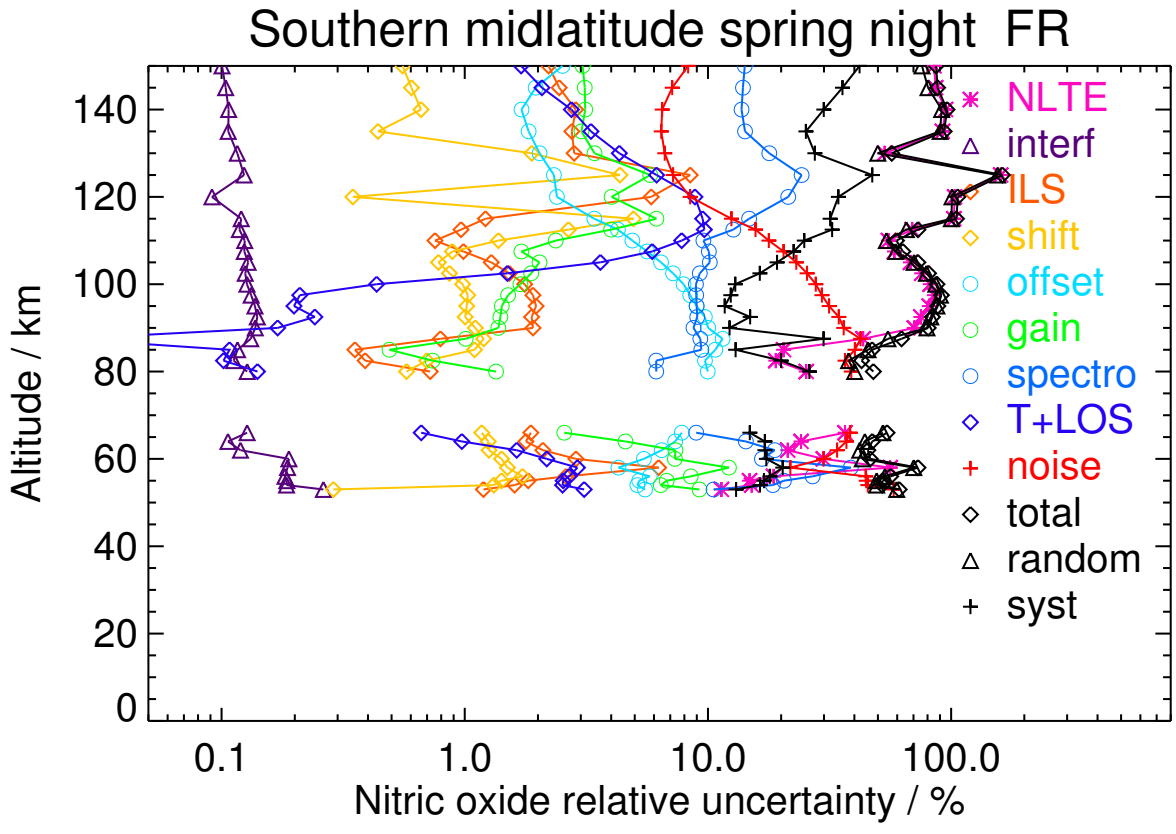

Figure S22. V8H_NO_61 Southern midlatitude spring night

Table S24. Nitric oxide error budget for Southern midlatitude summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	9.25	0.15	12.42	1.09	3.08	5.68	8.39	1.91	23.07	24.89	16.42	29.82
30	0.01	9.17	0.09	2.14	0.46	2.26	2.34	11.25	2.62	19.77	20.79	13.84	24.98
40	0.01	4.64	0.03	2.53	0.66	1.58	2.91	8.68	1.28	9.56	10.12	10.26	14.42
50	0.01	3.59	0.05	0.42	0.55	0.82	2.74	8.72	0.65	9.13	9.64	9.41	13.47
60	0.01	38.78	0.10	3.02	1.71	9.12	2.64	10.65	1.30	52.98	60.47	29.51	67.29
90	1.68	40.22	0.13	0.93	1.09	10.75	4.55	6.28	0.69	39.19	46.08	34.76	57.72
100	14.42	59.64	0.12	1.42	1.26	9.23	2.33	9.24	0.99	33.38	43.90	54.08	69.65
110	64.81	76.64	0.08	1.12	0.46	6.14	1.44	8.65	10.16	20.13	51.31	62.17	80.61
120	125.58	35.30	0.04	1.78	0.54	2.78	1.29	8.21	8.95	10.02	27.87	27.03	38.82
130	226.56	57.18	0.04	3.16	0.35	3.47	1.05	8.93	6.34	8.90	33.63	48.59	59.09
140	385.26	56.97	0.04	3.31	0.19	2.97	0.68	9.58	4.61	7.29	35.84	46.34	58.58
150	487.23	38.03	0.03	2.33	0.24	1.68	0.71	9.67	2.95	4.98	23.65	31.98	39.77

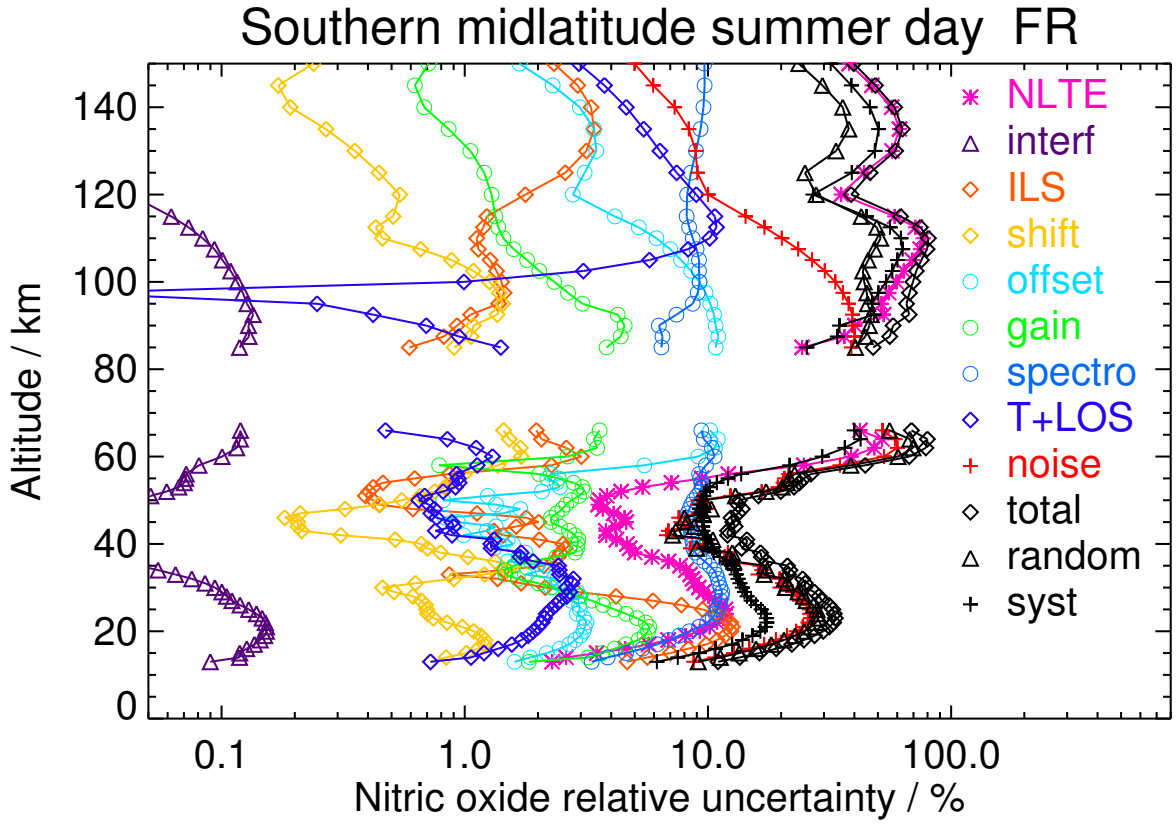

Figure S23. V8H_NO_61 Southern midlatitude summer day

Table S25. Nitric oxide error budget for Southern midlatitude summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.00	4.59	0.21	0.39	0.56	3.80	4.84	3.43	1.25	33.21	33.75	6.05	34.29
50	0.00	2.07	0.12	0.50	0.25	2.46	0.41	3.62	0.79	20.90	21.16	3.71	21.48
60	0.00	23.42	0.22	1.34	0.67	11.09	2.25	9.46	1.34	72.78	75.27	20.02	77.89
100	9.04	55.73	0.24	0.88	0.87	10.27	5.66	11.87	3.24	34.07	53.29	41.43	67.50
110	38.65	40.32	0.12	1.20	0.35	6.77	2.32	9.39	8.19	23.83	38.54	30.27	49.00
120	90.19	27.30	0.10	1.77	0.44	3.22	4.20	9.19	7.98	11.66	22.80	23.26	32.57
130	126.14	34.51	0.10	1.93	0.25	2.94	4.61	10.02	6.08	8.16	25.51	27.89	37.80
140	166.58	32.69	0.08	1.74	0.15	2.12	3.57	10.30	4.61	6.85	23.35	26.80	35.54
150	178.28	32.76	0.06	1.30	0.32	2.10	2.61	9.98	3.25	7.64	23.21	26.77	35.43

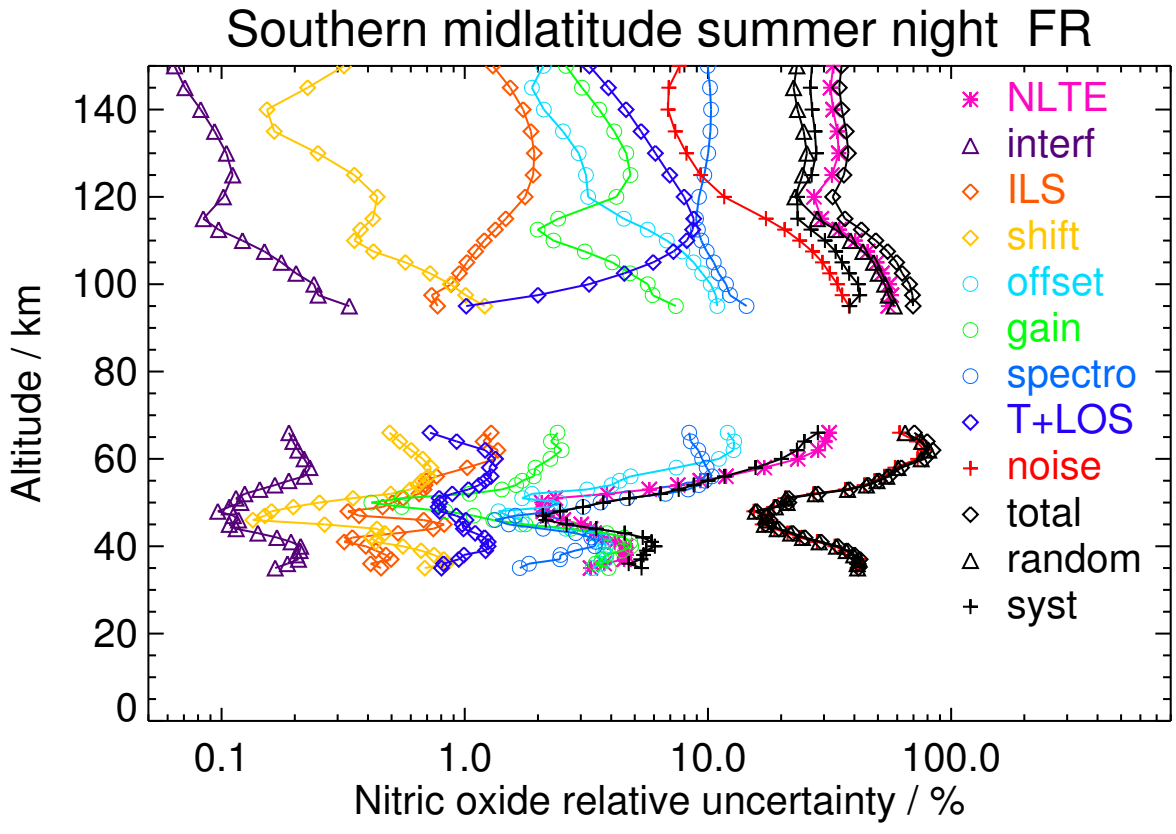

Figure S24. V8H_NO_61 Southern midlatitude summer night

Table S26. Nitric oxide error budget for Southern midlatitude autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	6.24	0.22	5.50	0.45	3.57	7.60	7.95	1.86	24.45	26.05	11.20	28.36
30	0.00	15.01	0.17	3.50	0.75	5.13	3.91	13.03	2.17	28.77	31.80	16.46	35.80
40	0.01	10.73	0.05	3.06	0.51	3.02	3.22	10.40	1.51	18.72	21.22	12.43	24.60
50	0.01	7.88	0.06	0.56	0.73	1.80	1.90	9.24	1.08	21.64	23.25	9.17	24.99
60	0.01	35.89	0.04	1.98	2.43	7.50	8.51	26.44	2.27	37.63	57.08	16.98	59.55
70	0.04	78.79	0.28	3.14	0.41	10.73	6.67	4.85	0.16	37.55	39.09	79.27	88.38
80	0.12	96.88	0.11	1.98	0.42	12.34	2.64	10.03	0.70	42.94	83.04	67.81	>100
90	1.41	75.39	0.09	1.40	0.47	10.27	2.09	11.63	0.48	36.22	65.06	54.87	85.11
100	10.50	70.28	0.08	1.02	0.41	8.38	2.36	9.74	0.09	28.63	53.99	54.93	77.02
110	66.67	53.50	0.05	1.33	0.29	4.99	2.10	9.21	7.88	17.34	43.17	38.44	57.80
120	176.79	35.51	0.04	2.34	0.29	3.35	1.07	9.33	8.35	11.17	28.75	27.09	39.50
130	231.54	45.76	0.03	2.85	0.17	2.86	1.17	11.95	4.62	7.28	34.59	33.65	48.26
140	256.25	34.63	0.03	2.27	0.21	1.80	1.39	12.59	2.74	6.08	26.87	26.28	37.59
150	267.82	38.25	0.04	1.39	0.31	2.28	1.43	12.24	1.53	7.63	28.58	29.42	41.02

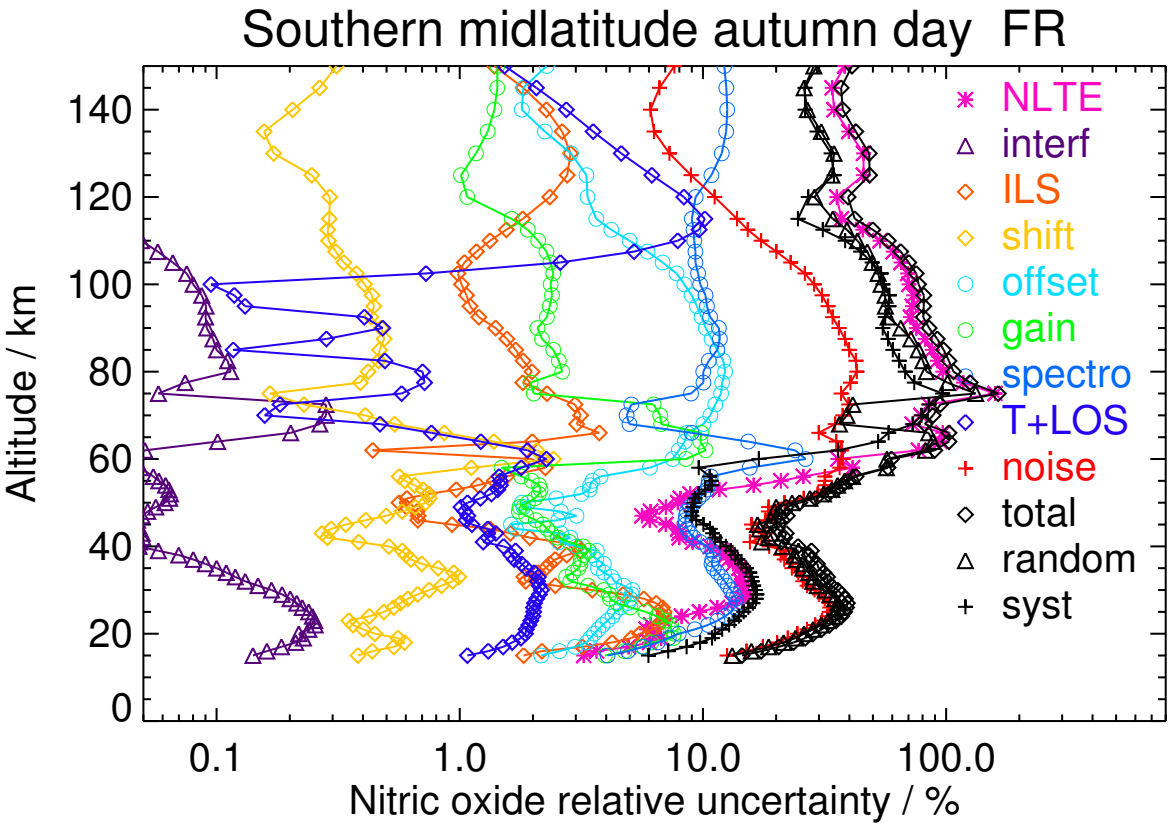

Figure S25. V8H_NO_61 Southern midlatitude autumn day

Table S27. Nitric oxide error budget for Southern midlatitude autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.01	32.14	0.23	0.93	0.64	13.73	8.80	10.22	4.44	80.55	85.03	26.13	88.96
70	0.04	23.02	0.13	0.53	0.53	11.20	3.54	18.49	0.80	47.69	54.03	19.15	57.32
80	0.19	29.92	0.19	0.75	0.28	11.81	8.38	12.36	0.54	39.05	47.86	22.20	52.76
90	2.06	15.23	0.12	0.84	0.58	10.74	3.88	9.01	1.00	34.89	38.05	14.66	40.78
100	9.05	33.87	0.11	0.87	0.51	9.20	2.94	11.26	0.76	30.08	42.23	22.14	47.68
110	38.19	44.63	0.10	1.01	0.24	5.95	3.75	11.96	9.93	20.30	45.83	24.40	51.92
120	78.42	32.61	0.14	1.61	0.42	3.50	7.22	13.20	10.08	12.77	34.07	20.19	39.61
130	97.63	41.19	0.16	1.92	0.43	2.72	8.08	13.78	5.81	9.12	39.76	22.35	45.61
140	104.06	34.78	0.15	1.39	0.31	2.22	7.03	13.36	3.60	8.22	33.75	19.65	39.05
150	99.60	46.53	0.14	0.72	0.21	2.95	6.12	12.89	2.28	9.36	43.54	23.99	49.71

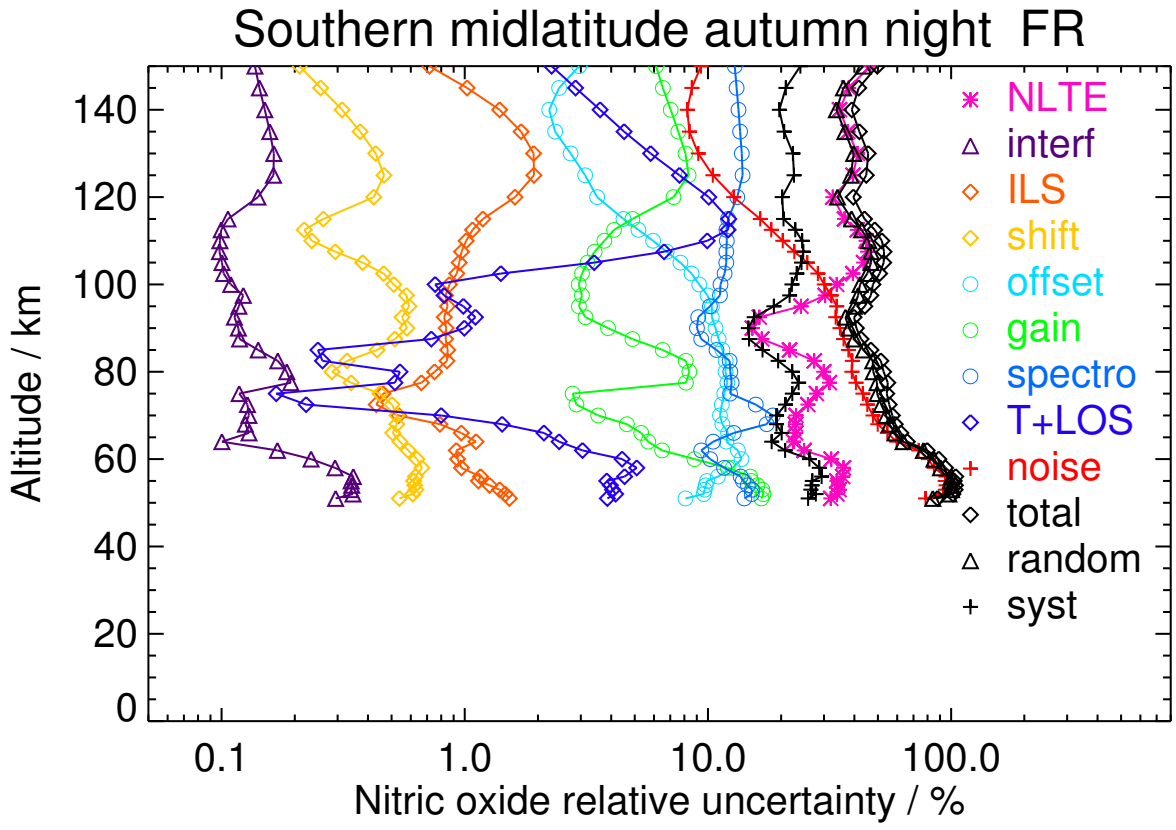

Figure S26. V8H_NO_61 Southern midlatitude autumn night

Table S28. Nitric oxide error budget for Southern polar winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.01	25.11	0.11	5.72	1.10	6.56	1.90	11.39	2.20	36.31	44.71	12.84	46.52
40	0.01	6.57	0.03	1.80	0.59	2.89	3.07	9.93	2.53	17.25	19.27	9.78	21.61
50	0.01	11.00	0.04	1.12	0.62	2.29	1.88	9.36	2.14	16.39	19.96	9.69	22.19
60	0.03	23.93	0.05	1.12	0.55	6.75	4.86	14.68	3.05	38.86	43.75	21.55	48.77
70	0.16	72.10	0.06	2.41	0.35	9.54	1.73	11.06	0.07	34.21	66.87	46.04	81.19
80	0.88	44.06	0.06	0.91	0.43	8.71	1.11	9.58	1.14	28.14	39.08	37.11	53.89
90	11.79	87.23	0.06	1.75	1.06	6.78	1.56	13.63	0.05	23.46	88.13	25.12	91.64
100	54.69	33.20	0.05	1.77	0.37	4.89	0.78	8.02	0.20	17.26	36.73	11.98	38.63
110	232.17	27.41	0.04	2.36	0.23	3.55	1.10	8.92	9.30	14.02	26.98	20.13	33.66
120	412.52	39.29	0.03	2.66	0.20	3.78	0.92	8.30	10.99	11.28	31.23	30.13	43.39
130	574.46	62.03	0.02	2.81	0.29	2.45	0.65	9.71	4.06	6.57	52.97	34.79	63.37
140	695.18	50.05	0.01	2.93	0.19	1.62	0.77	12.91	1.75	5.35	45.27	25.80	52.11
150	805.13	60.93	0.01	2.02	0.36	2.04	0.98	16.43	1.52	6.21	54.36	32.81	63.50

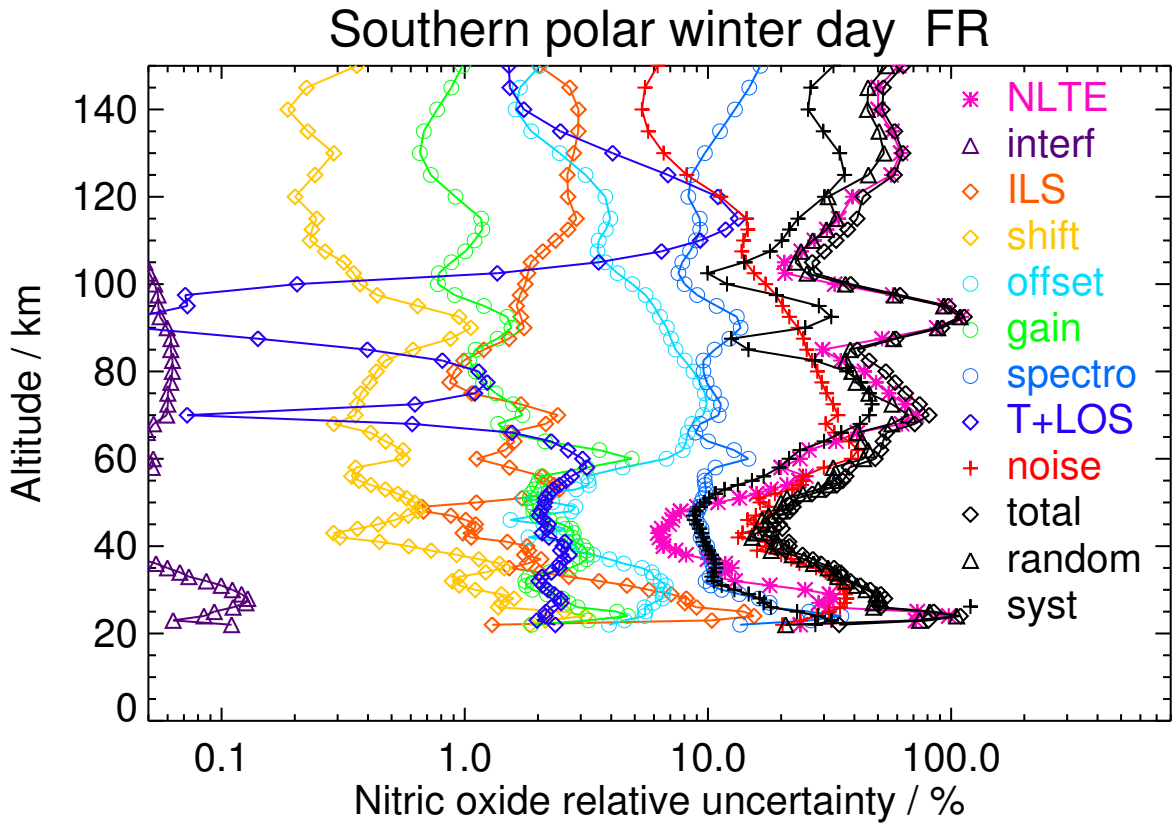

Figure S27. V8H_NO_61 Southern polar winter day

Table S29. Nitric oxide error budget for Southern polar winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	16.42	0.10	0.69	0.96	3.85	1.46	12.34	2.34	35.51	38.34	15.39	41.31
60	0.03	47.66	0.12	3.75	0.59	8.60	4.48	10.60	6.25	49.99	60.51	36.99	70.92
70	0.37	51.61	0.12	2.67	0.69	11.47	7.73	13.80	4.54	40.13	54.96	40.79	68.44
80	1.82	35.11	0.14	1.40	0.48	9.26	1.52	7.49	0.99	30.83	45.84	15.17	48.28
90	16.08	45.71	0.19	1.31	0.63	8.96	2.53	7.71	1.87	27.71	45.68	30.37	54.86
100	43.07	31.58	0.15	0.72	0.32	6.95	1.74	7.54	1.21	21.80	35.91	17.13	39.79
110	139.62	32.73	0.12	1.38	0.35	5.22	1.54	9.57	8.71	17.73	33.59	21.37	39.81
120	331.87	37.79	0.07	1.99	0.30	3.71	1.65	10.31	10.42	10.87	30.29	29.39	42.21
130	471.98	34.10	0.08	1.61	0.28	2.52	1.28	8.78	5.21	6.46	26.92	24.39	36.33
140	522.89	30.24	0.08	1.31	0.21	1.87	1.00	8.60	3.04	5.77	25.22	20.03	32.20
150	518.31	35.01	0.07	0.96	0.14	2.58	0.83	8.41	1.62	7.00	26.11	25.97	36.83

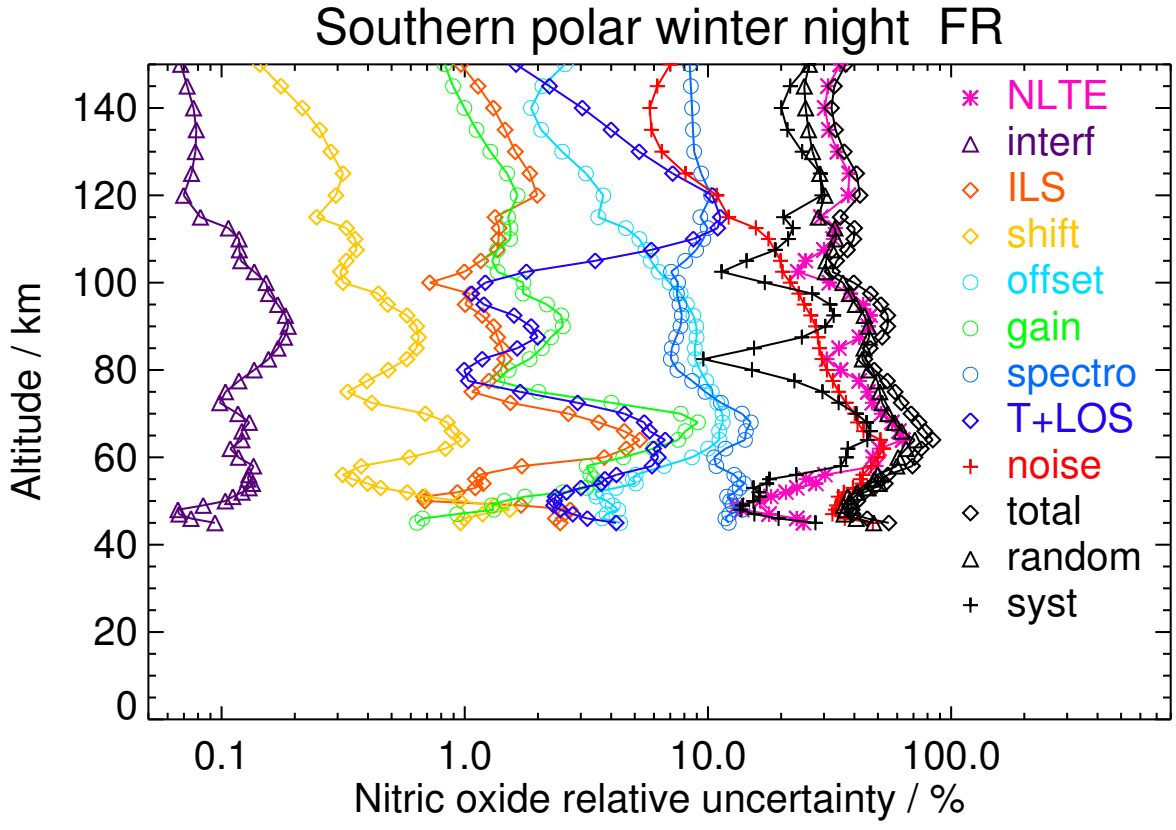

Figure S28. V8H_NO_61 Southern polar winter night

Table S30. Nitric oxide error budget for Southern polar spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	11.14	0.43	3.18	0.75	2.47	3.51	8.05	2.78	22.16	24.54	10.73	26.78
30	0.01	3.78	0.07	1.26	0.79	1.59	2.13	9.44	1.99	13.46	14.38	9.54	17.26
40	0.01	2.95	0.03	1.93	0.36	1.06	2.06	8.23	0.82	7.08	7.81	8.69	11.68
50	0.01	8.26	0.06	0.68	0.85	2.01	1.69	8.89	0.84	13.96	15.73	10.17	18.73
60	0.01	31.16	0.10	3.60	1.45	6.32	1.63	12.46	1.80	43.02	50.36	22.40	55.11
90	1.32	41.89	0.14	0.77	1.58	10.74	1.41	9.36	0.12	41.38	59.87	9.51	60.62
100	25.39	39.00	0.16	0.71	1.39	9.13	1.83	10.34	0.45	34.72	49.70	21.27	54.06
110	131.73	91.69	0.09	1.20	0.74	5.93	1.27	9.60	9.70	20.54	56.20	76.78	95.15
120	265.44	51.44	0.03	2.51	0.54	2.22	1.37	10.04	8.95	8.43	43.96	31.29	53.96
130	446.86	80.27	0.03	3.97	0.52	2.62	1.07	11.44	5.00	7.26	57.41	58.14	81.71
140	604.77	58.02	0.03	3.19	0.21	1.83	1.20	11.80	3.00	5.41	43.53	40.79	59.66
150	632.98	43.74	0.02	1.30	0.34	1.61	0.99	10.42	1.58	5.35	33.96	30.08	45.37

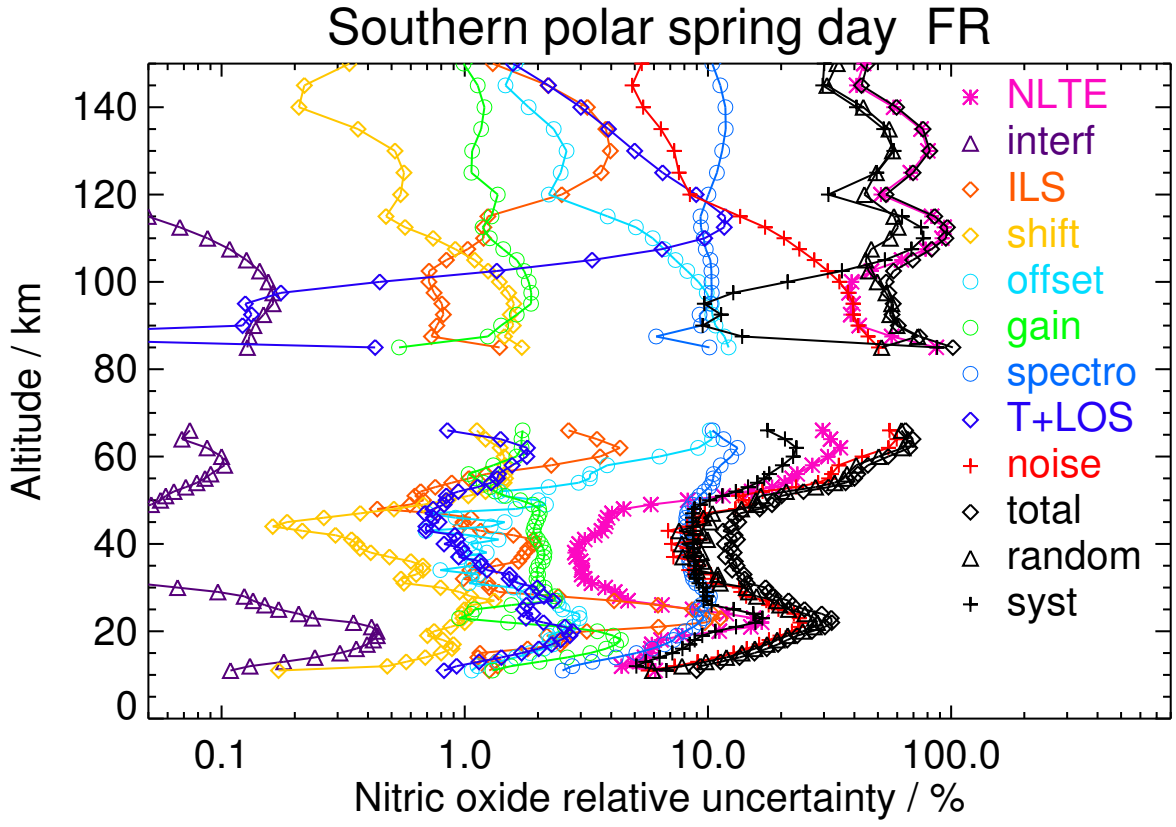

Figure S29. V8H_NO_61 Southern polar spring day

Table S31. Nitric oxide error budget for Southern polar spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	8.66	0.37	3.23	0.82	5.64	2.44	5.08	1.15	30.20	31.52	8.34	32.60
40	0.00	3.96	0.10	0.73	0.22	1.13	0.35	3.76	0.97	12.91	13.78	3.09	14.12
50	0.00	18.74	0.17	1.93	1.29	3.27	2.10	12.04	1.38	26.57	32.36	13.33	35.00
60	0.02	28.06	0.23	4.27	1.11	6.52	9.05	31.45	1.97	39.60	55.18	21.17	59.10
70	0.02	14.71	0.22	0.33	1.00	10.07	0.40	6.88	0.28	37.74	39.08	16.24	42.32
90	1.50	49.29	0.31	1.90	1.64	11.77	4.13	15.87	0.15	44.32	66.18	20.69	69.34
100	23.55	55.88	0.27	1.30	1.39	9.37	3.84	15.88	0.43	34.61	62.30	28.26	68.41
110	117.25	77.94	0.11	0.92	1.09	5.73	1.34	13.99	10.49	19.70	69.68	44.15	82.49
120	217.81	48.78	0.09	2.45	0.73	2.59	1.87	10.60	8.28	9.88	43.51	27.96	51.72
130	258.44	45.78	0.12	2.05	0.40	2.32	2.27	11.26	4.07	7.15	34.74	33.14	48.01
140	293.33	36.86	0.11	1.48	0.23	1.74	2.09	11.86	2.47	6.36	27.17	28.59	39.44
150	292.79	50.27	0.10	1.04	0.36	2.42	1.85	11.89	1.42	8.14	37.34	36.79	52.42

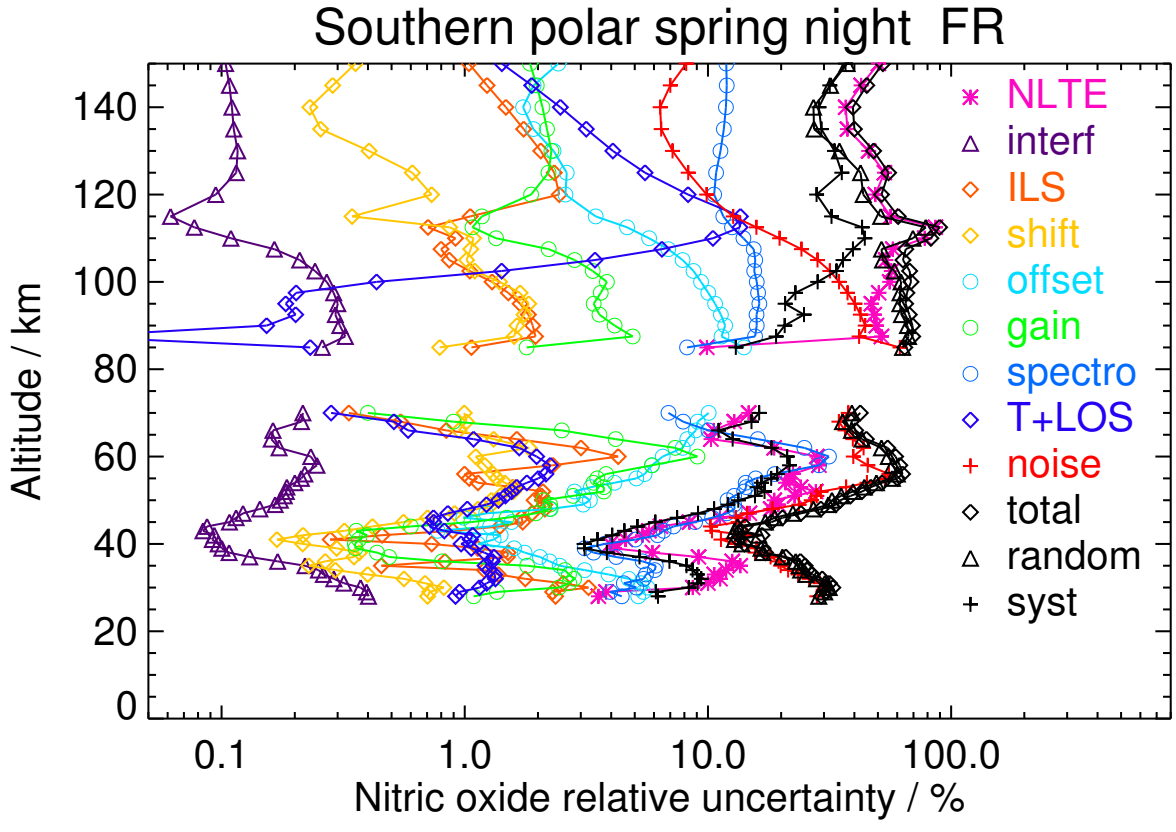

Figure S30. V8H_NO_61 Southern polar spring night

Table S32. Nitric oxide error budget for Southern polar summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	5.62	0.13	11.25	0.90	2.19	2.74	10.36	2.21	19.29	20.54	15.30	25.61
30	0.01	6.91	0.07	2.29	0.47	2.04	0.97	9.16	2.73	17.85	18.71	10.88	21.64
40	0.01	3.41	0.03	2.89	0.70	1.24	2.80	8.48	1.09	7.36	7.94	9.70	12.53
50	0.01	3.91	0.04	0.36	0.40	0.79	2.28	8.32	0.59	6.61	7.21	9.10	11.61
60	0.01	38.33	0.09	7.79	1.08	5.83	3.46	17.00	1.82	34.76	48.79	26.41	55.48
90	0.50	37.34	0.15	0.35	1.44	10.36	0.99	8.27	0.50	38.41	39.81	38.25	55.21
100	15.69	46.05	0.13	1.20	1.36	9.47	1.45	8.06	3.76	33.73	40.09	42.73	58.59
110	60.63	75.67	0.08	1.29	0.57	6.23	1.23	8.00	6.07	20.59	41.77	67.44	79.33
120	141.58	36.54	0.04	2.26	0.55	2.49	1.65	8.88	6.21	8.94	28.42	27.18	39.33
130	307.38	60.80	0.04	3.62	0.50	3.24	1.54	9.90	5.79	8.63	36.87	50.69	62.68
140	566.15	58.60	0.04	3.37	0.39	2.80	1.39	10.40	4.88	7.62	38.02	46.90	60.38
150	750.31	49.43	0.03	2.75	0.25	1.90	1.00	10.78	3.56	5.95	39.58	32.45	51.18

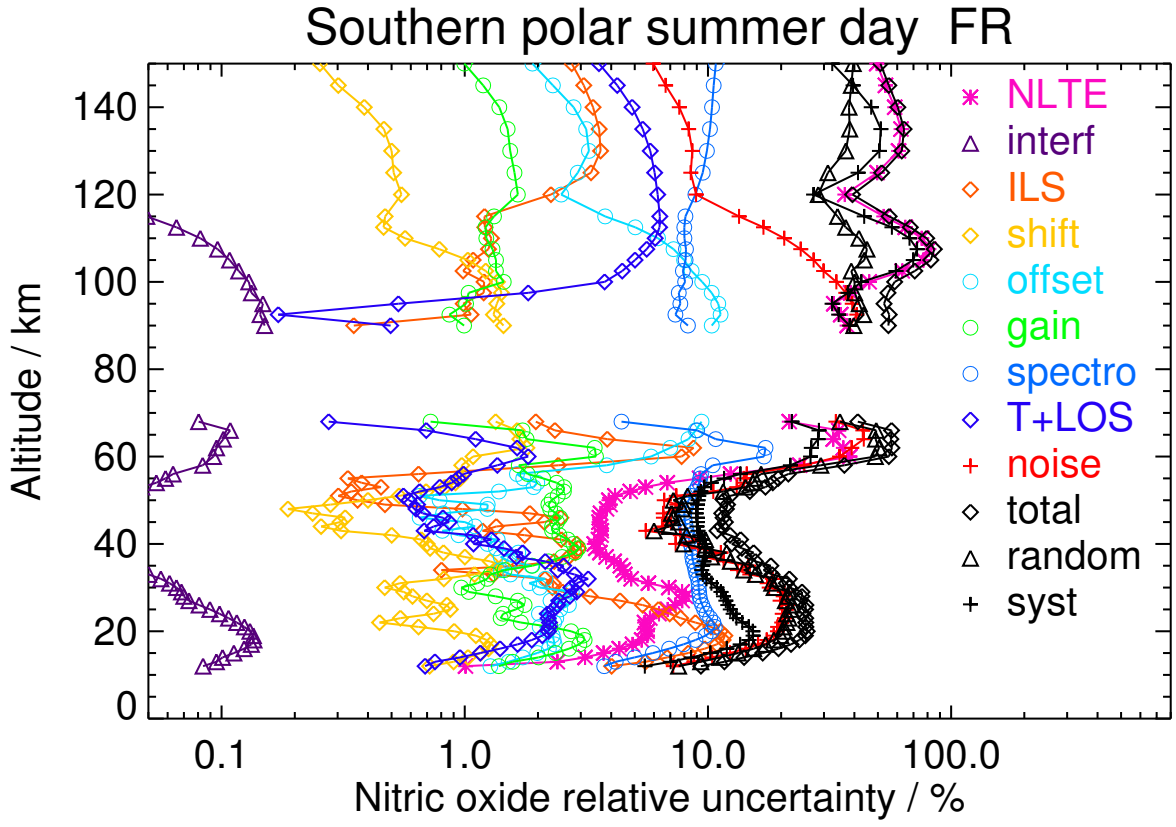

Figure S31. V8H_NO_61 Southern polar summer day

Table S33. Nitric oxide error budget for Southern polar summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	23.39	0.21	3.18	1.23	5.07	2.82	8.97	1.30	32.07	40.70	6.84	41.27
40	0.00	19.60	0.08	0.95	0.84	2.46	3.38	7.65	1.75	17.43	27.04	6.11	27.72
50	0.00	9.22	0.07	0.75	0.74	1.63	3.04	11.97	0.78	14.97	19.79	8.61	21.58
60	0.01	48.19	0.11	2.12	0.75	8.50	2.48	12.93	1.49	51.80	65.01	32.13	72.52
100	11.54	61.28	0.16	1.41	1.04	10.75	2.12	10.13	4.02	35.83	54.14	48.48	72.67
110	50.61	71.38	0.10	1.17	0.42	7.24	1.28	9.34	9.51	23.48	52.75	55.65	76.68
120	140.45	35.68	0.09	1.88	0.55	2.81	2.47	10.01	7.48	10.67	29.51	26.27	39.51
130	260.21	54.91	0.10	2.87	0.55	2.92	3.01	12.09	5.20	8.31	40.51	40.52	57.30
140	379.09	44.34	0.08	2.47	0.34	2.10	2.77	12.69	3.78	6.72	33.32	33.08	46.95
150	428.79	42.22	0.07	1.67	0.15	1.82	2.35	12.68	2.45	6.34	31.84	31.42	44.73

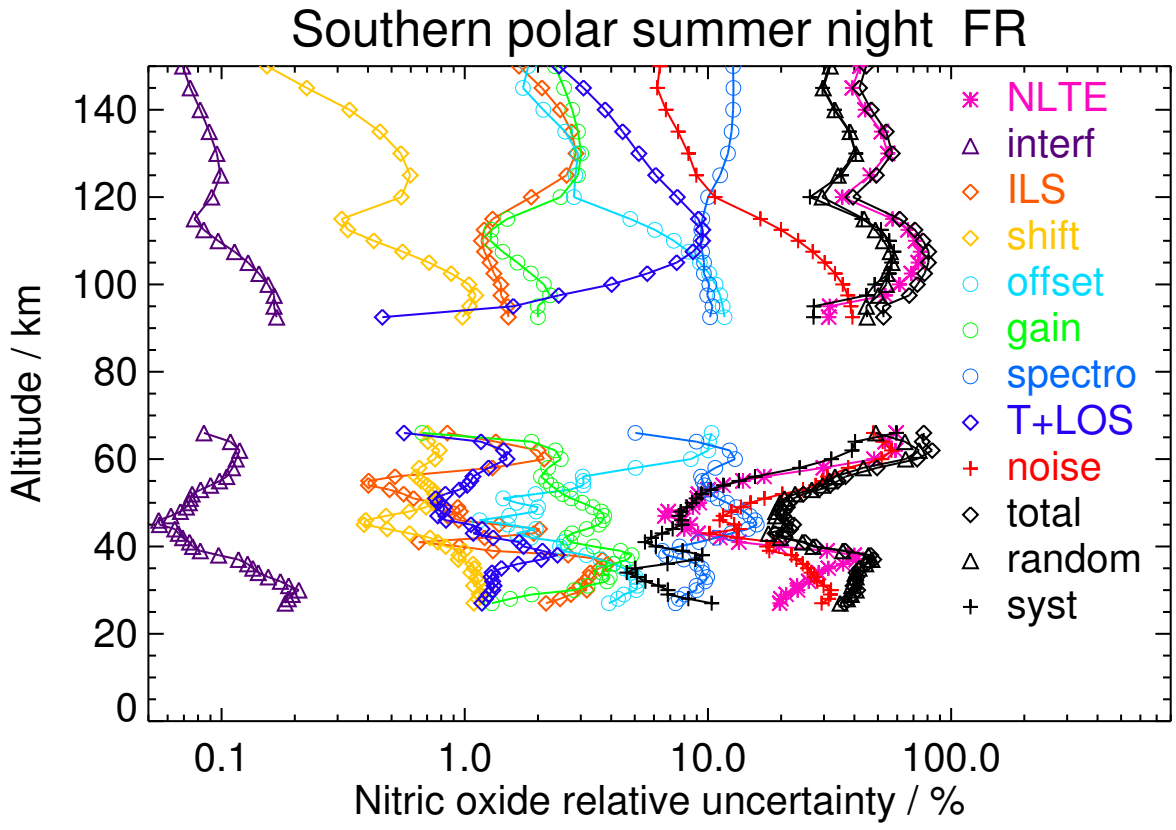

Figure S32. V8H_NO_61 Southern polar summer night

Table S34. Nitric oxide error budget for Southern polar autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	5.02	0.16	7.91	0.35	3.96	0.42	7.62	1.50	25.40	27.14	8.53	28.45
30	0.01	15.06	0.13	3.90	0.71	7.40	3.09	11.54	1.62	34.91	37.55	15.84	40.76
40	0.01	11.07	0.09	4.01	0.61	4.48	3.76	12.02	1.68	29.56	32.17	12.61	34.56
50	0.01	16.46	0.07	1.22	0.90	2.68	1.61	10.34	1.50	33.22	35.87	14.46	38.67
60	0.01	50.66	0.07	1.19	0.54	9.59	1.54	10.07	2.18	62.81	71.93	39.25	81.94
70	0.06	30.24	0.19	1.02	0.37	12.75	4.30	9.38	0.40	42.55	44.44	31.94	54.73
80	0.27	61.37	0.08	1.20	0.42	12.42	1.71	8.94	0.87	40.94	53.37	53.24	75.38
90	3.75	37.64	0.08	1.87	0.58	11.12	1.69	11.77	0.45	39.24	49.16	28.44	56.80
100	26.87	45.82	0.07	1.62	0.49	8.88	1.62	10.84	0.09	30.87	41.95	38.66	57.04
110	141.41	53.28	0.05	1.50	0.34	5.18	1.75	10.01	9.40	17.91	41.75	40.46	58.14
120	286.20	35.68	0.03	2.17	0.17	3.48	1.02	8.43	9.09	10.88	26.36	29.47	39.54
130	373.61	42.16	0.02	2.38	0.09	2.90	0.69	9.48	3.79	6.84	26.82	34.99	44.08
140	413.66	30.24	0.02	1.78	0.08	1.68	0.69	10.16	1.84	5.57	21.66	24.28	32.54
150	424.29	43.82	0.02	1.12	0.12	2.67	0.69	10.62	0.97	7.77	31.22	33.59	45.86

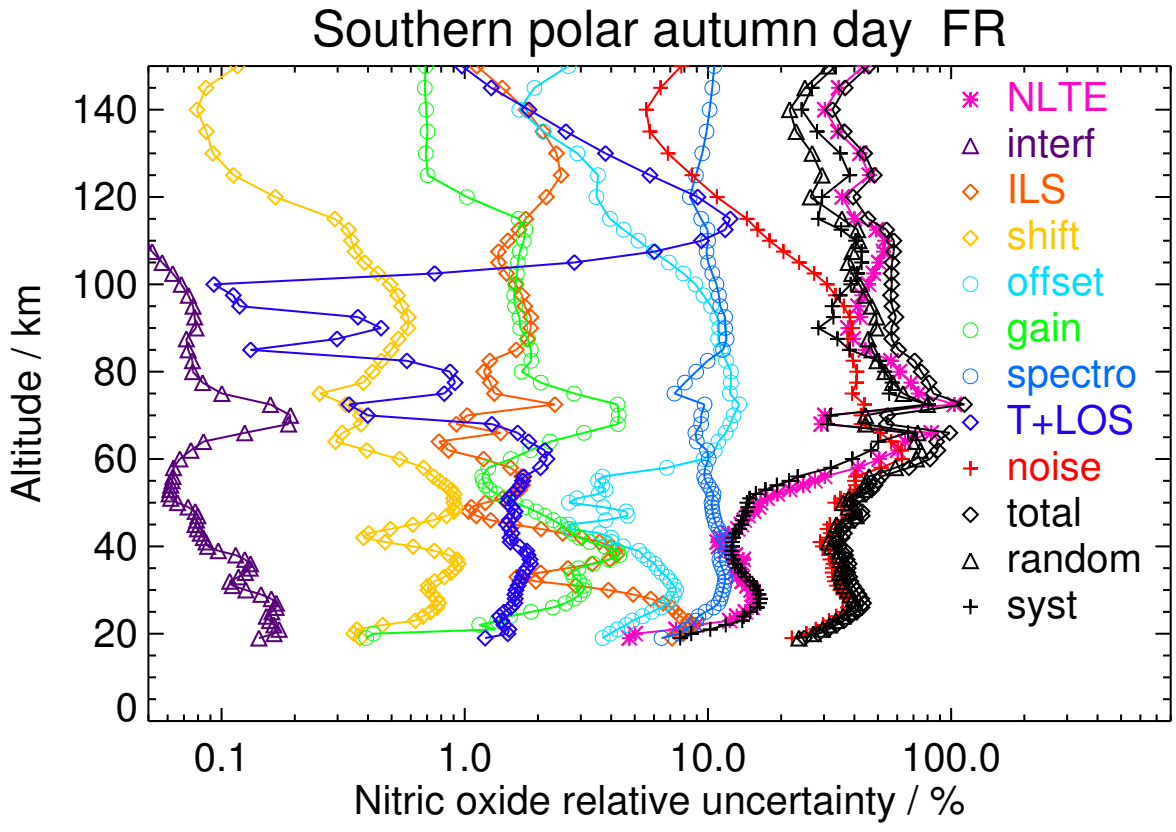

Figure S33. V8H_NO_61 Southern polar autumn day

Table S35. Nitric oxide error budget for Southern polar autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	21.31	0.53	1.40	1.23	9.71	2.28	5.62	1.67	49.23	50.22	22.19	54.91
40	0.00	66.41	0.12	1.05	1.26	12.79	1.27	11.13	2.18	68.45	82.85	50.28	96.91
50	0.00	32.39	0.14	1.16	1.65	5.26	2.19	17.30	2.53	34.16	44.95	23.19	50.58
60	0.02	79.68	0.09	2.53	0.58	10.07	2.71	8.77	4.90	57.85	84.85	52.09	99.56
70	0.26	72.96	0.12	0.92	0.51	8.54	1.83	10.29	2.58	32.56	66.18	46.84	81.08
80	0.83	59.44	0.19	1.84	0.54	10.30	5.06	10.17	0.54	33.94	66.71	21.79	70.18
90	14.47	54.53	0.26	1.08	0.64	7.41	5.25	9.76	1.28	22.89	54.92	25.73	60.65
100	55.81	35.38	0.18	0.74	0.34	7.06	4.69	9.08	0.51	21.27	37.86	20.65	43.12
110	179.64	73.05	0.08	1.00	0.44	5.96	2.70	11.04	10.76	18.40	62.51	45.26	77.17
120	411.99	50.57	0.08	3.00	0.31	3.12	2.46	12.07	10.12	9.33	43.51	32.00	54.01
130	554.89	53.31	0.06	2.55	0.18	2.50	1.64	10.61	3.21	5.85	40.12	37.49	54.91
140	532.90	32.46	0.07	1.38	0.23	1.67	2.01	10.64	1.49	5.31	24.80	24.31	34.73
150	485.70	61.16	0.06	0.81	0.21	3.01	1.91	10.51	1.11	7.69	45.08	43.50	62.65

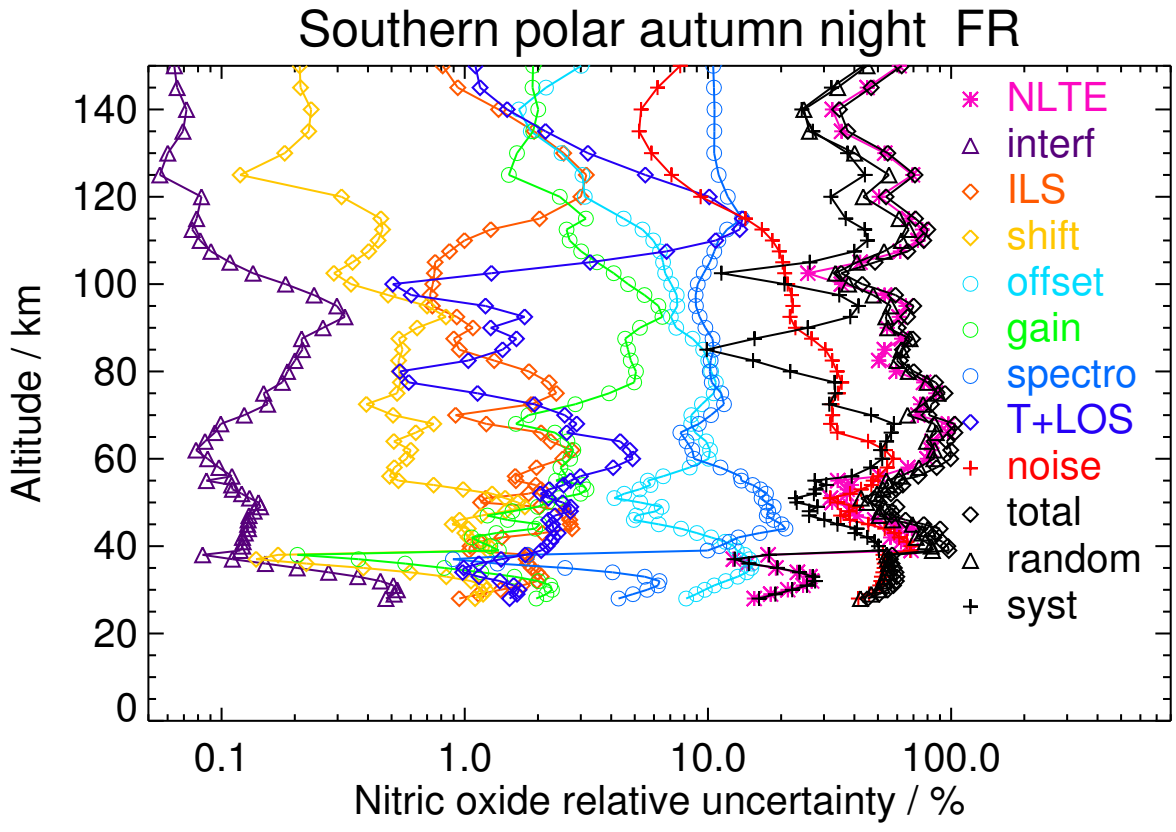

Figure S34. V8H_NO_61 Southern polar autumn night

Table S36. Nitric oxide error budget for Northern polar winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	4.84	0.16	1.14	0.38	0.76	2.11	12.19	0.89	26.54	27.28	11.83	29.73
40	0.01	8.20	0.28	1.59	0.33	0.99	2.06	10.86	1.07	33.96	34.39	12.84	36.71
50	0.01	7.43	0.91	1.84	0.46	1.28	0.81	10.60	1.58	55.95	56.39	11.28	57.51
60	0.01	10.04	1.89	1.12	1.21	2.38	2.46	10.88	1.71	64.62	65.56	10.88	66.45
70	0.06	7.80	2.10	1.73	1.24	2.13	1.70	10.21	0.11	41.73	42.69	10.00	43.85
80	0.34	6.32	1.59	2.18	0.83	1.97	2.55	10.29	0.33	34.01	35.02	9.74	36.35
90	1.80	6.95	1.23	1.82	0.71	1.53	2.84	8.80	0.19	26.61	26.70	11.71	29.15
120	30.64	20.83	1.29	1.47	1.03	1.73	2.77	11.22	4.57	23.01	28.90	17.03	33.55
130	46.23	21.84	1.60	1.20	1.19	1.85	3.67	10.79	4.27	25.11	31.08	17.29	35.56
140	66.13	20.55	1.74	1.02	1.17	1.80	3.80	9.83	3.86	25.84	30.79	16.64	35.00
150	87.18	18.69	1.78	0.87	1.10	1.72	3.70	8.74	3.39	25.49	29.43	15.59	33.30

S2 NO error contribution profile plots and tabulated values for RR NOM data (V8R_NO_261)

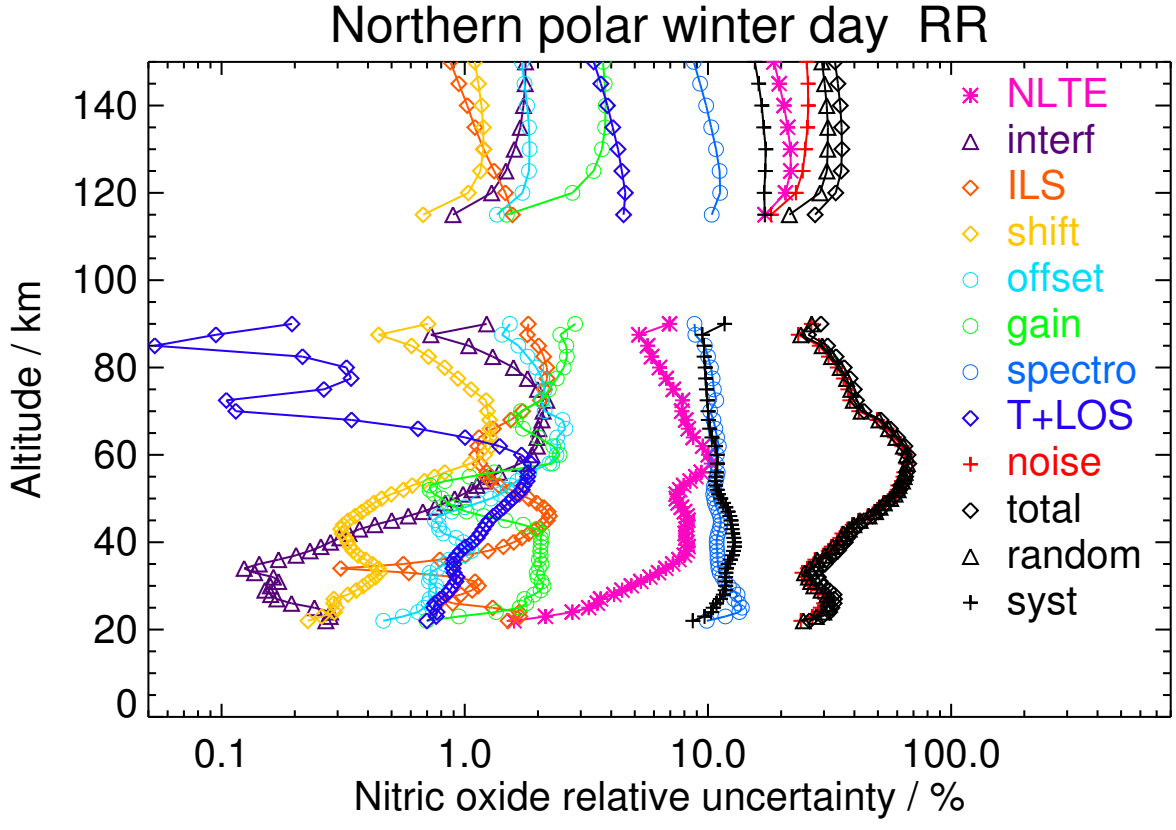

Figure S35. V8R_NO_261 Northern polar winter day

Table S37. Nitric oxide error budget for Northern polar winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	0.40	0.61	2.66	0.14	0.88	4.30	1.39	0.94	32.76	32.81	5.16	33.21
40	0.00	2.22	0.27	1.15	0.32	1.26	5.60	4.75	0.55	32.65	33.37	3.85	33.59
50	0.00	11.68	3.32	3.02	1.75	2.54	8.64	11.29	1.74	72.41	74.20	10.46	74.93
60	0.01	11.49	2.48	0.70	1.52	2.64	1.85	18.09	2.48	62.19	64.59	13.44	65.98
70	0.04	8.36	3.51	1.90	2.25	3.05	3.83	13.03	1.70	66.77	67.49	13.78	68.89
80	0.18	11.01	5.13	1.88	3.61	2.98	6.77	17.33	0.23	62.47	64.09	17.72	66.49
90	1.37	12.62	4.39	2.18	3.37	2.52	9.07	15.97	1.71	48.72	49.93	20.53	53.98
100	15.87	20.23	3.88	2.97	3.03	2.30	8.52	15.04	3.12	44.45	47.15	22.56	52.27
110	31.95	24.30	3.52	2.58	1.89	1.07	5.62	16.77	7.71	21.59	33.93	17.37	38.11
120	43.99	31.19	0.94	1.96	0.80	0.69	1.53	16.60	8.24	12.97	33.91	18.50	38.63
130	53.77	33.36	2.46	2.01	1.47	0.91	2.58	15.99	6.68	15.93	36.43	18.97	41.07
140	64.69	31.92	2.99	2.08	1.49	0.97	3.00	14.85	5.75	17.33	35.56	18.26	39.98
150	82.01	27.73	2.91	1.91	1.31	0.96	2.97	12.71	4.92	17.21	31.41	16.97	35.70

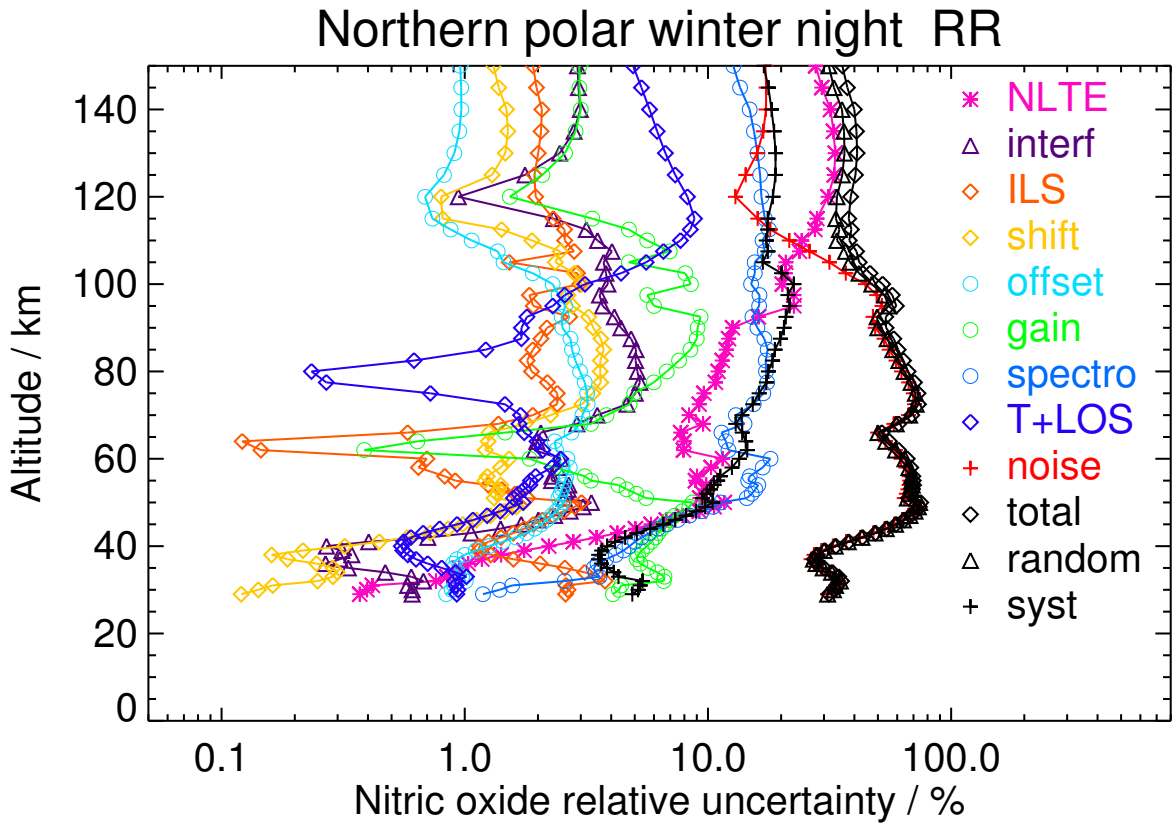

Figure S36. V8R_NO_261 Northern polar winter night

Table S38. Nitric oxide error budget for Northern polar spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	4.02	0.26	0.78	0.33	0.53	0.58	8.70	1.05	24.30	24.62	8.88	26.17
30	0.01	9.17	0.42	1.34	1.21	1.74	1.34	10.99	1.29	36.64	37.21	13.15	39.47
40	0.01	6.56	0.16	2.47	0.52	0.88	2.23	11.46	1.20	28.07	28.99	11.64	31.24
50	0.01	2.11	0.07	2.71	0.26	0.38	2.65	12.79	1.61	20.45	21.79	11.34	24.56
60	0.00	16.48	0.59	2.01	0.58	2.20	1.03	10.75	3.40	63.21	64.54	15.47	66.37
70	0.01	9.49	0.92	2.31	1.12	2.73	1.35	8.88	0.36	53.82	53.91	13.26	55.52
80	0.09	19.73	0.66	2.28	1.04	2.95	2.10	6.50	1.61	53.08	53.40	20.47	57.19
90	1.05	25.46	0.64	2.14	1.06	2.55	2.04	8.26	0.68	49.65	51.23	23.97	56.56
100	6.92	39.18	0.81	1.85	1.03	2.24	1.79	7.62	0.29	44.21	49.10	33.92	59.67
110	51.01	32.57	0.77	1.78	0.56	1.55	1.47	8.50	10.03	31.35	38.86	26.74	47.17
120	125.17	27.79	0.46	1.98	0.18	0.93	0.99	10.58	8.75	13.78	25.17	22.87	34.01
130	227.57	28.85	0.11	2.14	0.27	0.68	0.99	11.79	5.16	7.38	21.62	24.32	32.54
140	340.98	30.73	0.27	2.21	0.23	0.59	1.15	12.03	3.50	8.57	23.19	25.38	34.38
150	425.91	32.37	0.41	2.16	0.19	0.72	1.27	11.58	2.39	11.08	25.38	25.95	36.30

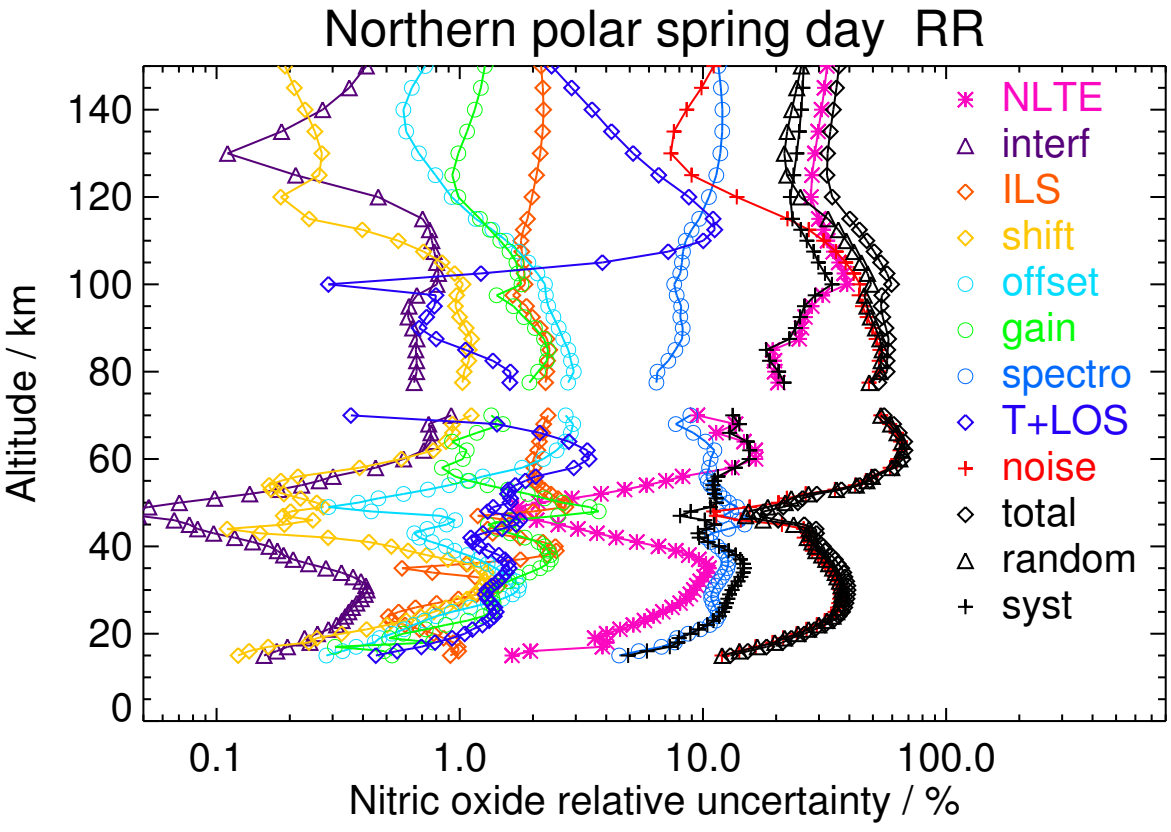

Figure S37. V8R_NO_261 Northern polar spring day

Table S39. Nitric oxide error budget for Northern polar spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	2.47	0.50	0.42	0.63	1.23	6.24	6.48	1.25	41.08	41.52	7.39	42.17
40	0.00	5.05	0.22	0.71	0.50	1.01	0.97	8.70	0.71	33.30	34.54	4.54	34.84
50	0.01	3.13	0.10	1.65	0.16	0.70	3.75	16.71	1.03	20.63	25.72	8.46	27.07
60	0.00	9.31	0.64	1.77	0.55	2.15	1.33	10.53	2.60	71.20	71.81	11.29	72.69
90	0.66	18.85	0.66	0.12	1.24	2.82	1.67	12.48	0.19	42.15	42.26	22.67	47.96
100	7.04	23.79	0.85	1.98	1.09	2.22	2.07	13.96	1.28	42.04	44.43	23.89	50.44
110	36.79	24.03	0.82	2.02	0.67	1.25	1.55	14.04	9.61	27.47	36.03	18.23	40.38
120	74.87	24.92	0.38	1.94	0.17	0.88	0.90	12.42	8.81	14.98	26.86	19.00	32.90
130	91.06	25.14	0.28	1.88	0.32	0.91	0.91	11.20	6.32	13.40	24.53	19.51	31.34
140	112.12	24.56	0.47	1.80	0.33	0.88	1.12	10.30	5.03	14.46	24.19	19.08	30.81
150	128.22	23.16	0.59	1.67	0.30	0.90	1.24	9.22	4.01	15.20	23.44	18.00	29.56

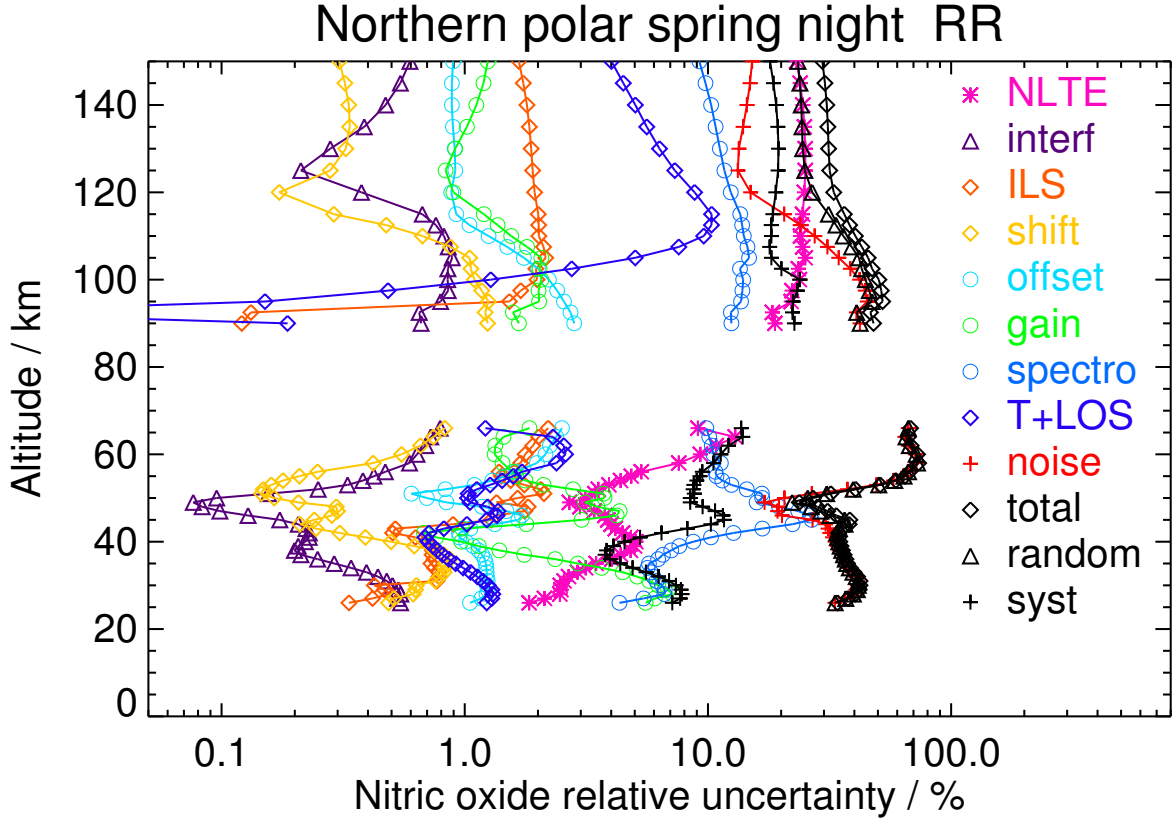

Figure S38. V8R_NO_261 Northern polar spring night

Table S40. Nitric oxide error budget for Northern polar summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.33	0.20	1.42	0.20	0.34	0.82	10.00	1.27	17.62	17.89	9.84	20.42
30	0.01	4.48	0.18	2.14	0.42	0.65	1.45	9.32	1.38	17.53	17.83	10.28	20.58
40	0.01	2.34	0.12	0.99	0.28	0.40	1.93	8.66	0.80	13.58	13.72	9.06	16.44
50	0.01	1.13	0.10	1.19	0.07	0.15	1.68	8.23	0.52	20.87	21.03	8.20	22.57
60	0.00	5.40	0.75	1.26	1.00	1.88	1.72	8.82	1.13	57.75	57.95	9.68	58.76
100	11.73	15.17	1.56	2.19	2.00	1.90	3.98	9.94	2.72	36.16	37.73	15.85	40.92
110	46.28	17.47	1.43	1.92	0.86	1.33	2.71	10.15	9.76	25.19	28.83	17.95	33.96
120	92.29	20.59	0.35	1.58	0.42	0.76	1.00	10.51	8.35	10.25	18.04	19.71	26.71
130	155.85	22.67	0.65	1.45	0.78	0.88	2.39	10.43	6.84	11.48	19.27	20.97	28.47
140	245.66	23.38	1.02	1.40	0.85	1.00	3.03	10.17	5.89	14.57	21.46	21.22	30.18
150	311.75	22.99	1.21	1.33	0.82	1.08	3.31	9.57	4.98	16.46	22.49	20.64	30.53

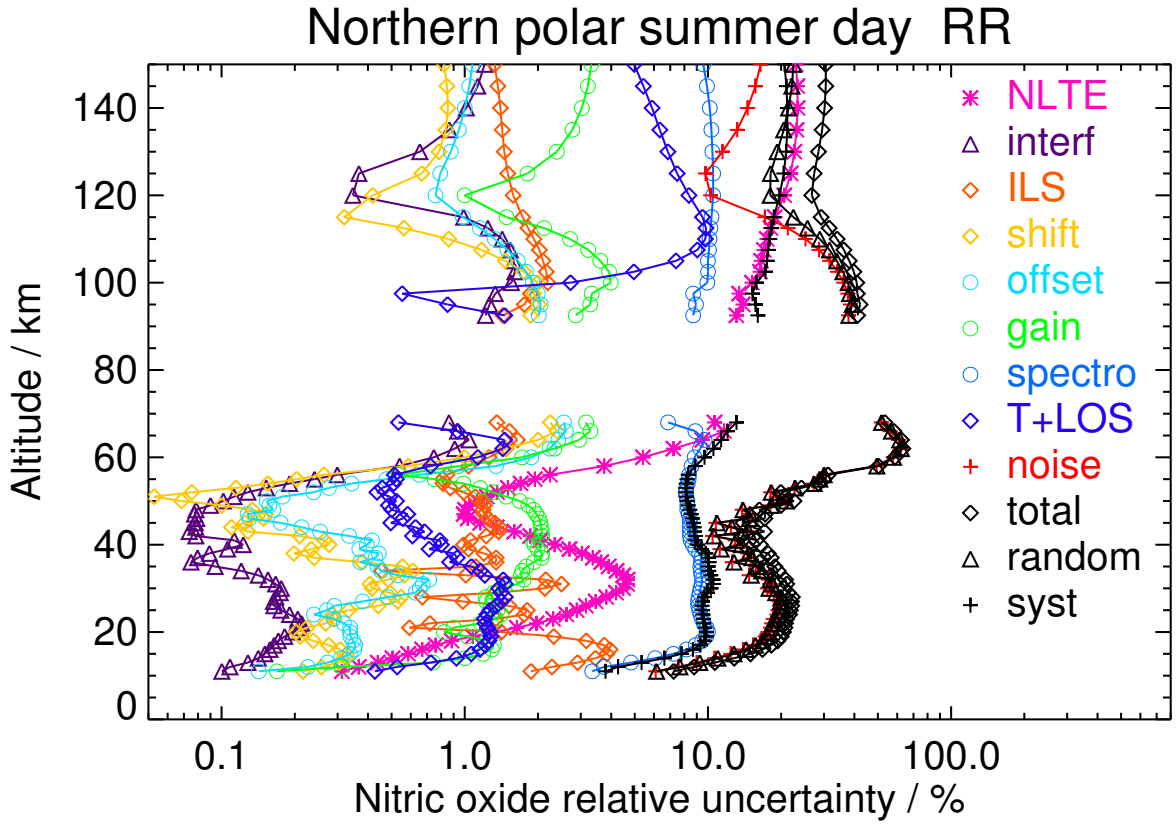

Figure S39. V8R_NO_261 Northern polar summer day

Table S41. Nitric oxide error budget for Northern polar summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	1.42	0.21	0.95	0.20	0.58	2.98	1.40	0.99	27.85	27.98	2.76	28.12
40	0.00	1.86	0.20	0.32	0.26	0.62	1.93	2.14	0.51	25.16	25.37	1.42	25.41
50	0.00	1.95	0.23	1.36	0.13	0.54	1.98	12.83	0.66	29.16	30.82	8.68	32.02
60	0.01	14.69	0.56	1.26	0.98	1.80	3.07	10.49	1.78	52.22	54.79	8.32	55.42
90	0.66	29.30	0.71	1.73	1.74	2.48	1.82	11.60	1.01	38.07	43.13	24.48	49.59
100	6.15	17.48	1.23	2.22	1.42	1.83	2.71	12.13	3.25	33.84	37.32	15.31	40.34
110	32.31	18.58	1.10	1.84	0.60	1.07	1.47	12.65	12.15	21.90	30.24	15.04	33.77
120	78.99	22.86	0.71	1.79	0.24	0.80	0.83	11.54	9.10	11.95	24.91	16.31	29.78
130	94.72	27.20	0.40	2.26	0.38	0.85	1.04	12.21	6.57	12.99	27.46	18.82	33.29
140	116.02	28.45	0.70	2.35	0.43	0.93	1.30	11.80	5.46	14.54	28.86	19.12	34.62
150	131.07	27.08	0.87	2.24	0.42	0.97	1.44	10.71	4.58	15.26	27.87	18.28	33.33

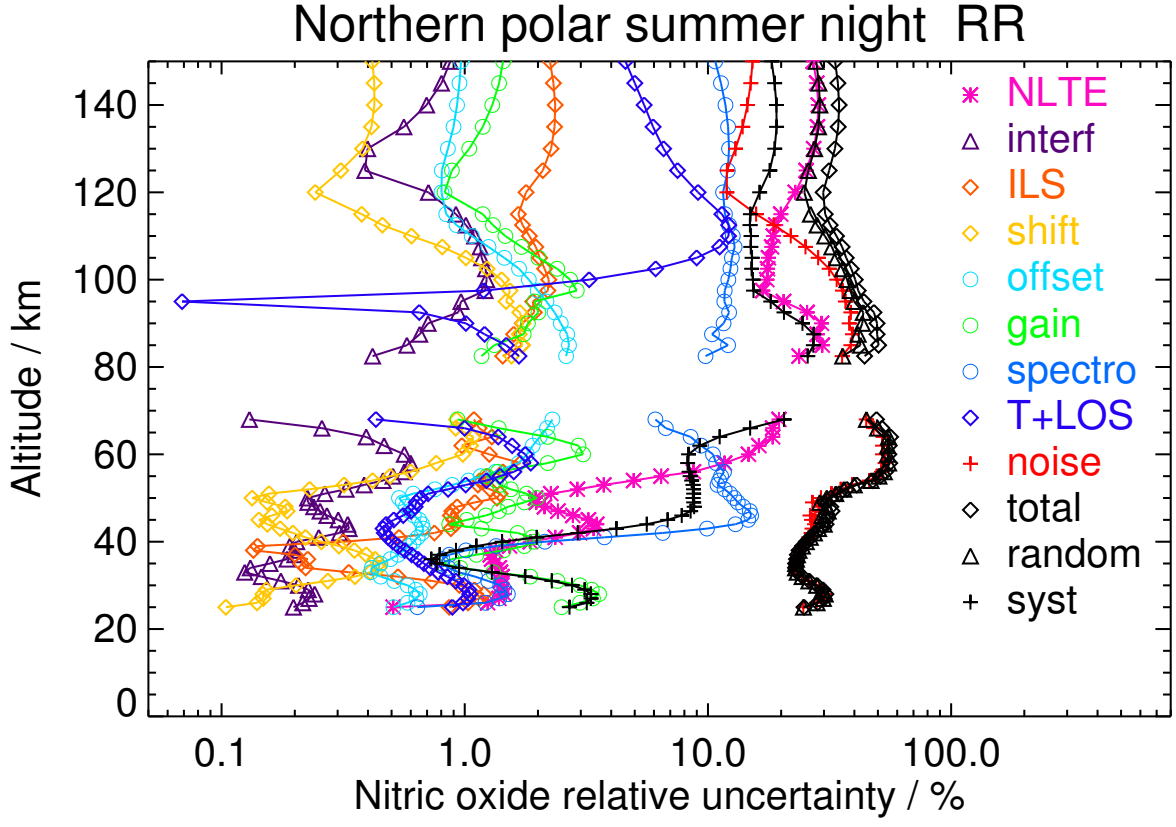

Figure S40. V8R_NO_261 Northern polar summer night

Table S42. Nitric oxide error budget for Northern polar autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.40	0.19	1.34	0.13	0.56	1.32	8.84	0.87	21.90	22.73	6.92	23.76
30	0.00	9.56	0.16	1.02	0.35	1.10	3.26	11.67	1.22	27.00	27.59	14.49	31.16
40	0.00	6.90	0.18	1.81	0.30	0.88	2.62	11.88	0.93	31.36	31.97	12.71	34.41
50	0.00	4.42	0.30	1.70	0.08	0.92	1.82	10.85	1.50	48.29	48.78	9.98	49.79
60	0.01	18.12	0.99	1.30	0.54	2.27	1.61	12.85	2.88	61.72	64.35	13.47	65.74
70	0.04	33.66	1.50	2.06	1.01	2.83	1.22	7.85	0.23	52.09	57.95	23.81	62.65
80	0.18	26.33	1.38	1.83	1.23	2.77	2.12	7.25	0.99	50.20	53.59	20.34	57.32
90	0.52	15.27	1.24	1.51	0.67	2.43	2.05	11.73	0.38	51.65	51.73	19.42	55.26
100	11.40	15.33	0.77	1.21	0.58	1.76	1.18	7.51	0.41	34.70	35.34	15.92	38.76
110	69.70	13.37	0.73	1.34	0.21	1.11	0.74	8.05	4.89	22.66	24.10	14.29	28.02
120	70.60	22.33	0.42	1.91	0.32	0.97	1.00	11.94	7.79	13.28	24.26	17.21	29.74
130	101.44	25.73	0.25	1.91	0.41	0.93	1.36	11.98	5.82	12.52	25.17	19.21	31.66
140	133.82	26.44	0.43	1.86	0.39	0.89	1.47	11.52	4.68	14.05	26.05	19.47	32.52
150	164.68	25.68	0.55	1.72	0.35	0.92	1.48	10.57	3.77	15.32	25.92	18.84	32.04

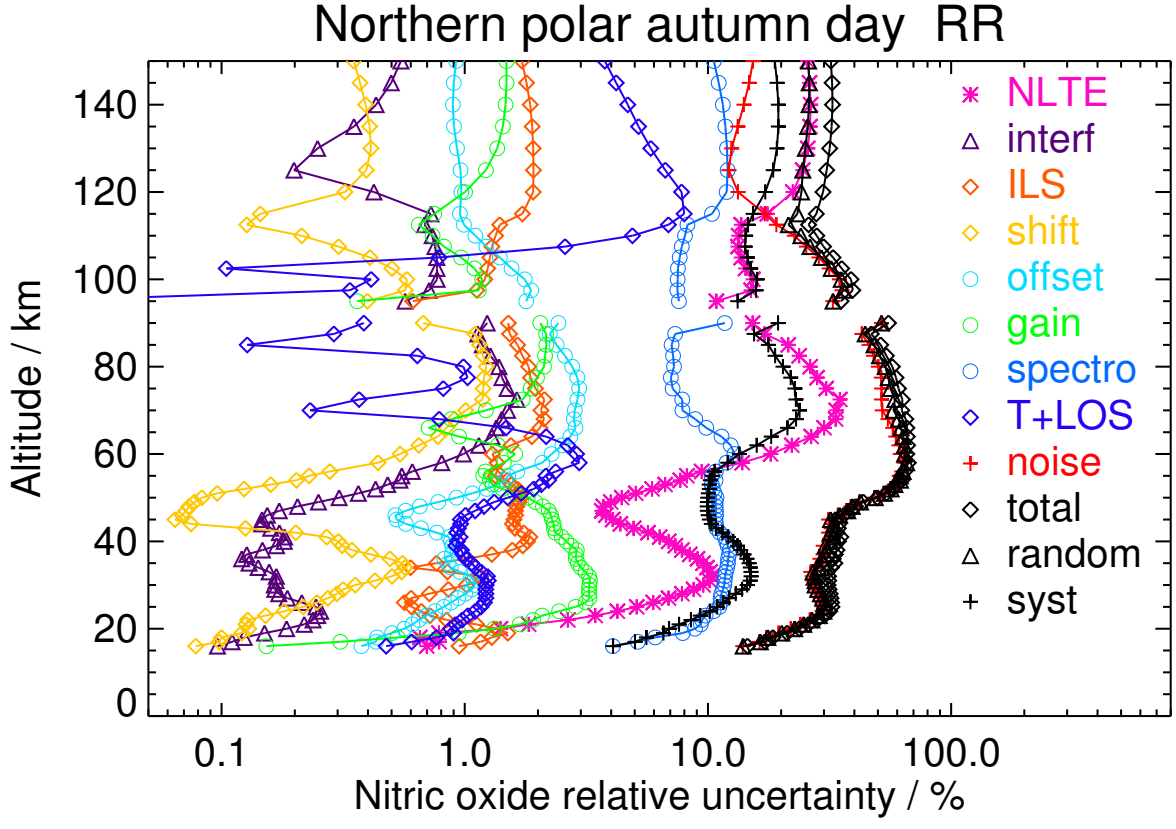

Figure S41. V8R_NO_261 Northern polar autumn day

Table S43. Nitric oxide error budget for Northern polar autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	3.81	0.51	0.98	0.43	1.10	0.45	10.52	3.06	63.04	63.51	8.87	64.12
60	0.01	7.18	0.46	0.47	0.63	1.86	2.59	11.22	3.85	51.60	52.94	7.99	53.54
80	0.14	23.88	0.81	0.47	0.79	2.45	0.62	7.94	0.46	43.49	46.51	19.22	50.32
90	0.42	13.48	0.60	1.51	0.26	1.62	0.57	13.90	1.77	38.43	38.52	19.43	43.14
100	24.18	15.57	0.63	0.53	0.64	1.54	0.47	6.70	1.09	26.72	27.90	15.09	31.72
110	68.70	27.29	1.02	1.33	0.45	1.15	0.97	9.63	8.68	22.55	34.47	15.43	37.77
120	118.59	31.58	0.83	2.27	0.16	0.78	1.00	13.75	8.97	12.59	34.29	16.04	37.86
130	127.48	33.97	0.19	2.63	0.20	0.70	1.05	14.42	6.31	10.54	34.88	17.45	39.00
140	140.08	35.40	0.55	2.59	0.18	0.68	1.06	13.62	4.91	12.23	36.03	17.96	40.26
150	147.93	35.90	0.80	2.35	0.18	0.79	1.01	12.09	3.89	13.67	36.45	17.77	40.56

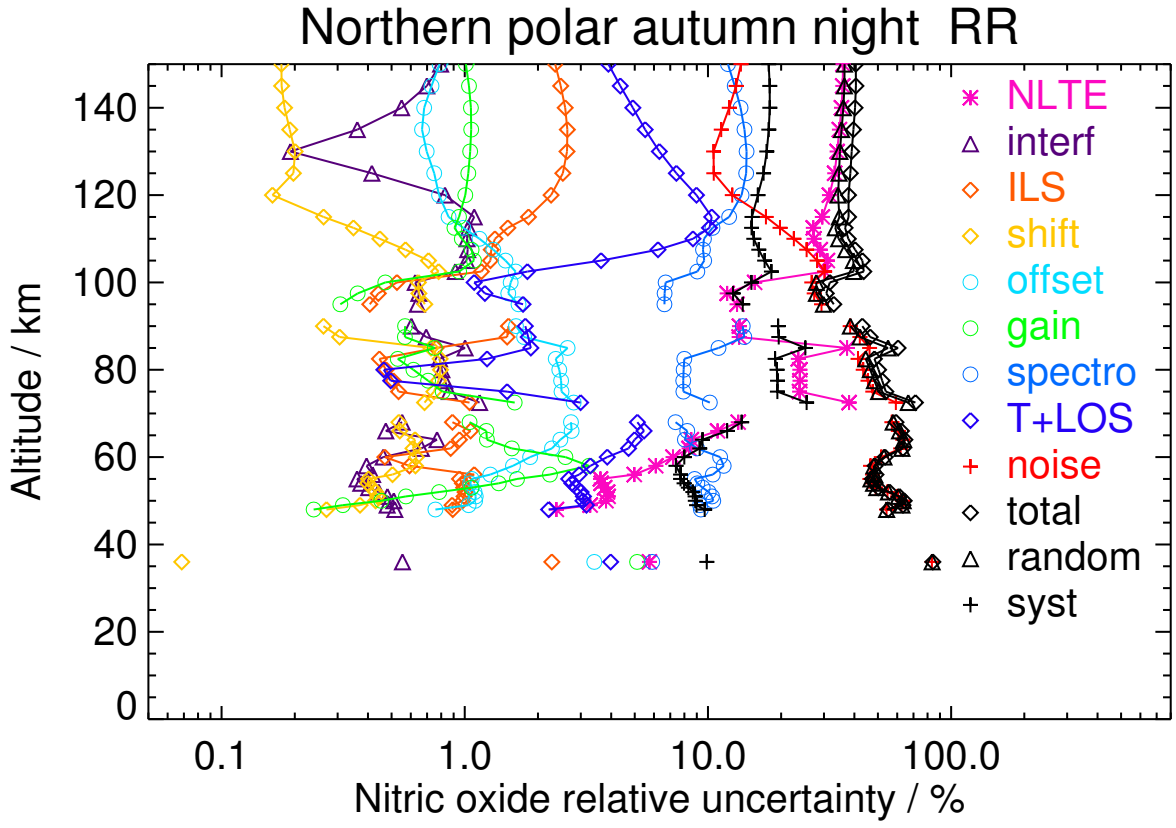

Figure S42. V8R_NO_261 Northern polar autumn night

Table S44. Nitric oxide error budget for Northern midlatitude winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	0.93	0.20	0.66	0.23	0.51	2.29	8.33	0.91	23.25	23.57	7.88	24.86
30	0.00	6.93	0.11	2.43	0.44	0.85	2.15	11.64	1.26	20.35	20.94	13.12	24.71
40	0.01	4.82	0.12	1.26	0.19	0.60	2.20	9.89	0.74	20.00	20.31	10.77	22.99
50	0.01	2.31	0.25	1.26	0.14	0.64	1.32	9.32	0.85	33.24	33.49	8.98	34.67
60	0.00	7.06	1.21	1.77	1.10	2.45	2.08	9.54	2.49	66.29	66.77	9.97	67.51
70	0.01	10.22	1.55	1.93	1.48	2.86	3.30	11.08	0.24	56.08	57.08	11.89	58.30
80	0.08	9.71	1.47	1.81	1.44	2.99	3.43	10.89	0.60	54.86	55.66	12.34	57.02
90	0.68	7.14	0.94	1.29	1.00	2.17	2.18	10.03	0.33	39.34	39.85	11.15	41.38
120	15.26	12.64	0.45	0.67	0.51	1.27	1.72	8.57	5.94	17.62	21.08	11.85	24.18
130	24.60	13.29	0.68	0.54	0.77	1.55	2.59	7.62	5.35	21.40	24.07	12.34	27.05
140	46.99	12.56	0.80	0.46	0.83	1.61	3.00	6.84	4.82	22.86	24.74	12.30	27.63
150	74.13	11.77	0.84	0.41	0.83	1.58	3.20	6.25	4.22	22.76	24.28	11.75	26.97

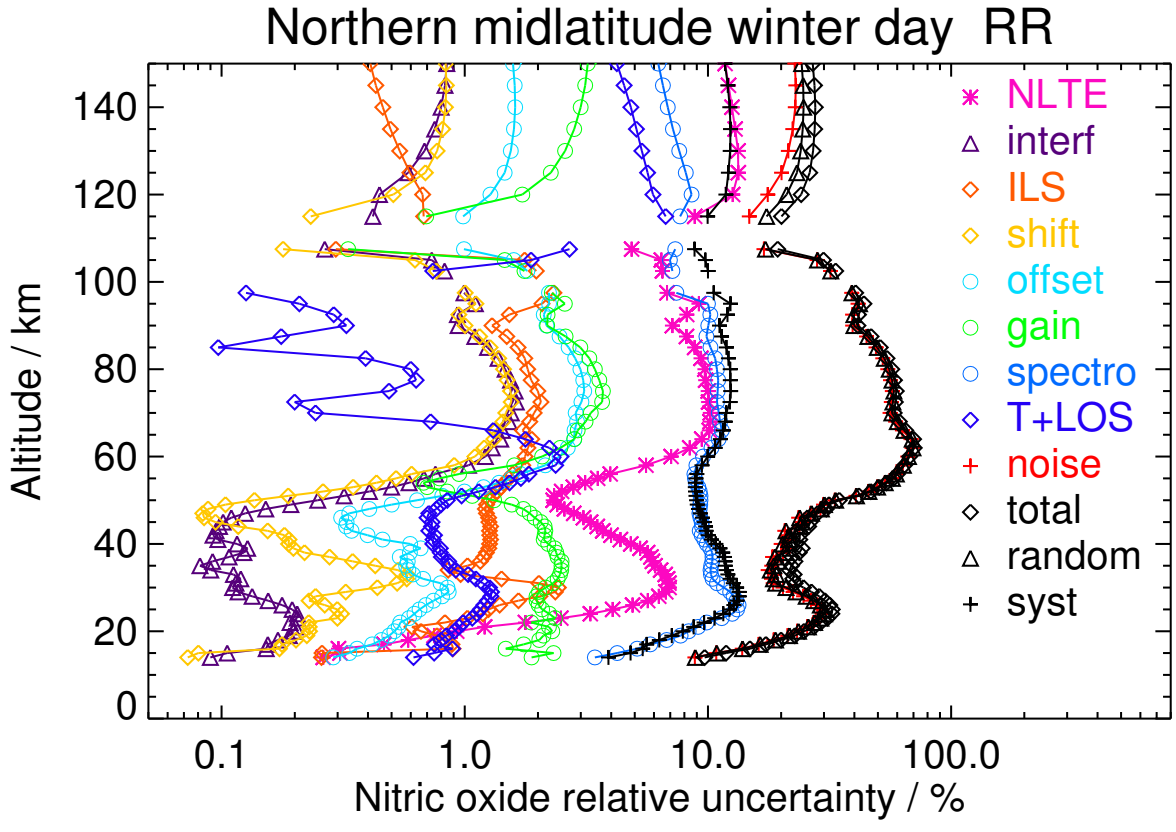

Figure S43. V8R_NO_261 Northern midlatitude winter day

Table S45. Nitric oxide error budget for Northern midlatitude winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	5.51	1.24	0.33	1.33	1.83	3.38	11.37	5.56	79.02	79.26	13.06	80.33
70	0.01	4.82	0.85	0.83	0.92	2.11	2.11	12.87	1.02	60.35	60.80	12.10	61.99
80	0.06	5.50	0.96	0.97	0.96	2.00	3.24	15.44	0.43	47.96	49.32	12.39	50.85
90	0.66	5.62	0.77	0.64	0.68	1.48	3.81	14.47	0.82	37.28	38.52	12.89	40.62
100	2.45	10.60	0.58	2.33	0.51	1.35	3.70	10.26	2.93	33.77	33.94	15.37	37.26
110	5.86	9.76	0.50	1.91	0.36	0.95	3.84	9.26	8.32	28.40	30.95	10.88	32.81
120	11.45	9.41	0.56	1.77	0.58	0.90	1.97	6.91	8.11	26.72	28.70	10.03	30.40
130	13.28	8.56	0.73	1.55	0.68	0.96	1.39	5.89	7.35	25.22	26.92	8.94	28.36
140	16.81	7.90	0.74	1.41	0.65	0.93	1.22	5.31	6.66	23.51	24.96	8.36	26.32
150	22.08	7.38	0.71	1.29	0.59	0.88	1.08	4.86	5.78	21.57	22.68	8.17	24.11

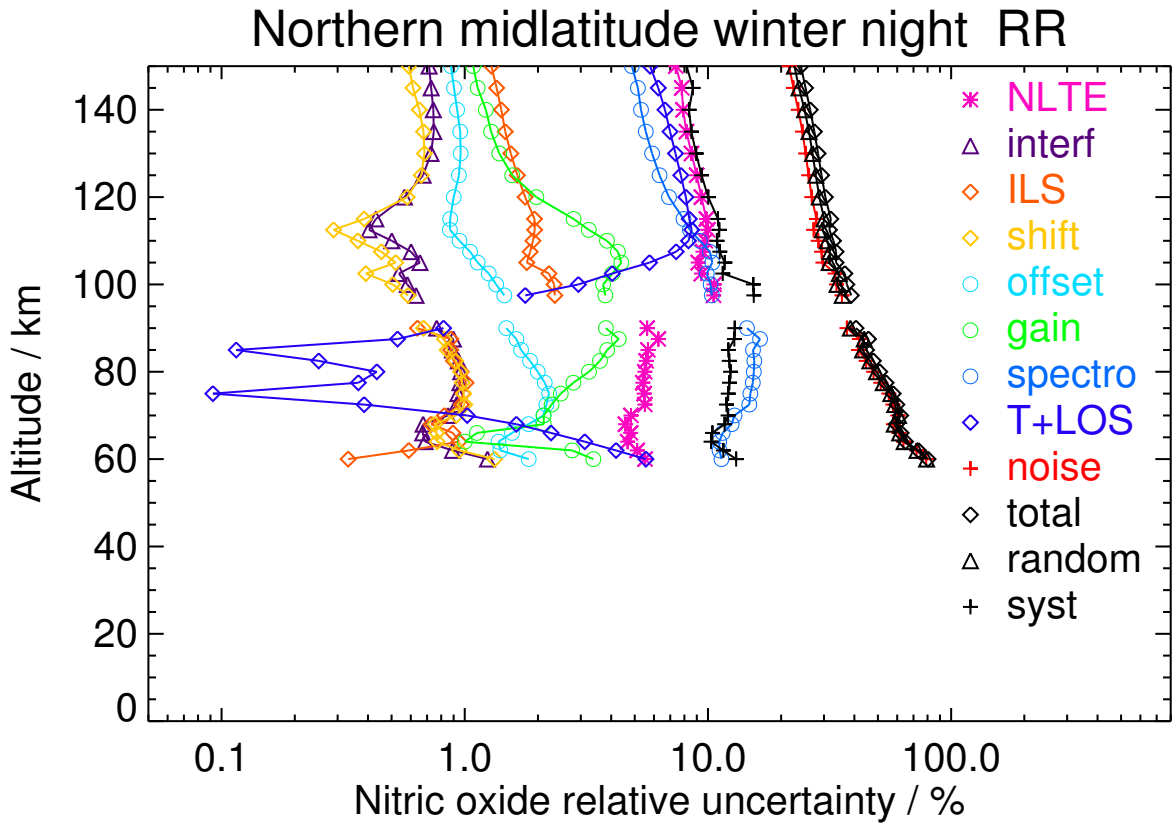

Figure S44. V8R_NO_261 Northern midlatitude winter night

Table S46. Nitric oxide error budget for Northern midlatitude spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.48	0.20	1.20	0.22	0.48	2.21	8.52	1.11	22.27	22.63	8.16	24.06
30	0.00	11.44	0.21	1.43	0.44	1.02	2.06	12.58	1.44	23.56	24.31	16.21	29.22
40	0.01	4.88	0.09	1.15	0.28	0.55	2.51	10.00	0.83	16.26	16.70	10.86	19.92
50	0.01	1.77	0.15	1.10	0.05	0.42	1.62	8.92	0.62	28.69	28.87	8.77	30.17
60	0.00	10.08	0.98	1.81	0.87	2.27	1.20	8.06	2.84	64.16	64.64	11.11	65.59
80	0.04	11.85	1.63	2.74	1.70	3.27	3.75	9.31	1.06	58.67	59.18	14.35	60.90
90	0.55	14.77	1.33	1.78	1.44	2.79	2.51	9.89	0.39	50.42	51.42	15.34	53.66
100	4.93	18.65	1.16	1.76	1.13	2.38	2.06	7.26	0.34	43.19	43.86	18.93	47.77
110	26.91	17.97	1.12	1.98	0.70	1.70	1.83	7.42	8.79	32.25	34.91	17.00	38.83
120	32.52	19.15	0.60	1.78	0.18	0.88	0.82	10.01	8.64	14.98	22.37	16.44	27.76
130	62.39	19.58	0.19	1.36	0.48	0.81	1.77	9.90	6.66	10.78	18.68	17.29	25.45
140	105.94	19.20	0.32	1.15	0.53	0.83	2.20	9.32	5.54	11.42	17.93	17.38	24.97
150	147.09	18.59	0.46	1.00	0.52	0.88	2.39	8.64	4.55	12.61	17.95	16.91	24.66

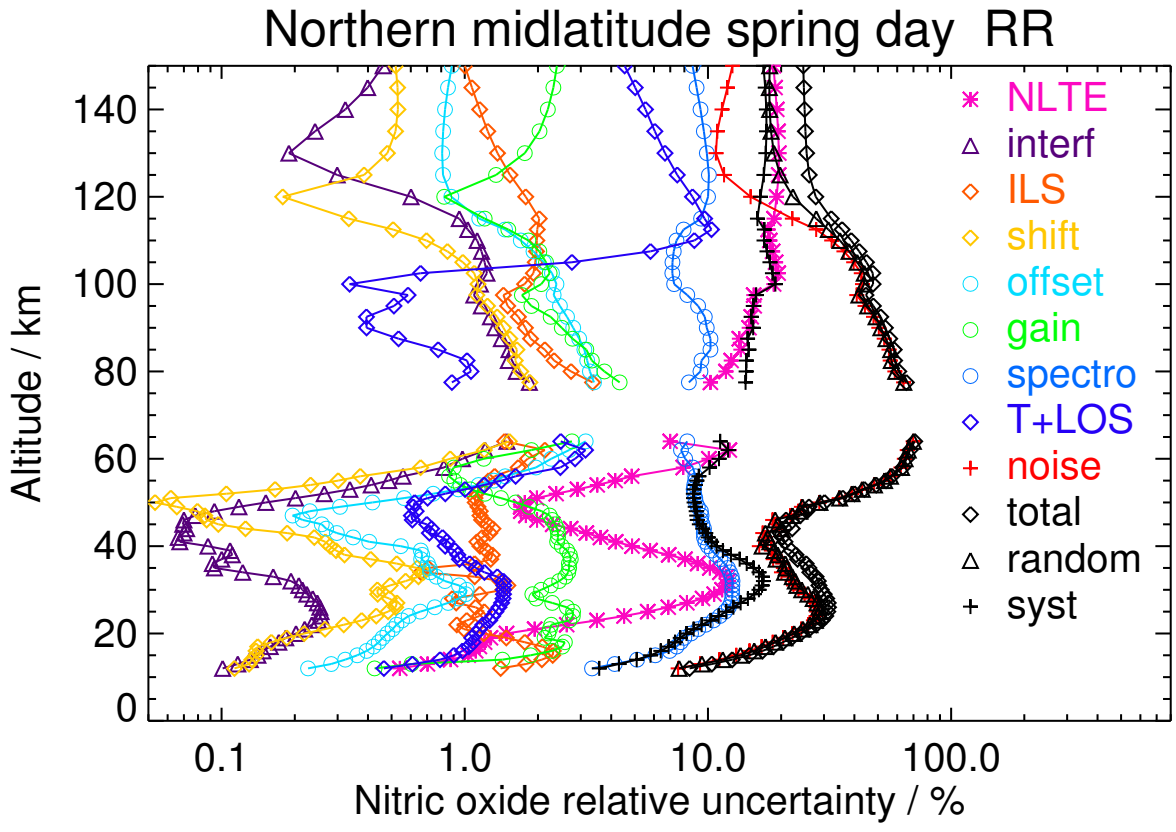

Figure S45. V8R_NO_261 Northern midlatitude spring day

Table S47. Nitric oxide error budget for Northern midlatitude spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	7.32	1.47	1.03	1.08	2.25	2.98	12.59	5.88	98.83	99.41	12.25	>100
80	0.02	7.11	1.36	1.86	1.28	2.26	3.46	11.00	0.77	53.72	53.98	12.97	55.51
90	0.31	8.13	0.93	1.88	0.86	1.85	3.73	10.89	0.10	41.51	41.82	13.45	43.93
100	2.78	10.90	0.99	1.23	0.94	2.12	3.82	9.94	1.09	38.30	38.41	15.27	41.33
110	8.49	12.64	0.59	1.58	0.39	1.00	3.08	9.73	8.32	22.85	26.24	13.07	29.31
120	15.38	12.55	0.45	1.66	0.49	0.82	1.69	8.17	8.67	22.46	25.69	12.26	28.47
130	21.13	11.69	0.65	1.47	0.63	1.03	1.32	7.21	7.68	23.03	25.55	11.43	27.99
140	28.79	10.89	0.73	1.36	0.64	1.06	1.24	6.63	6.85	22.75	24.84	10.73	27.06
150	35.40	10.02	0.74	1.24	0.60	1.03	1.17	6.02	5.92	21.49	23.26	9.86	25.27

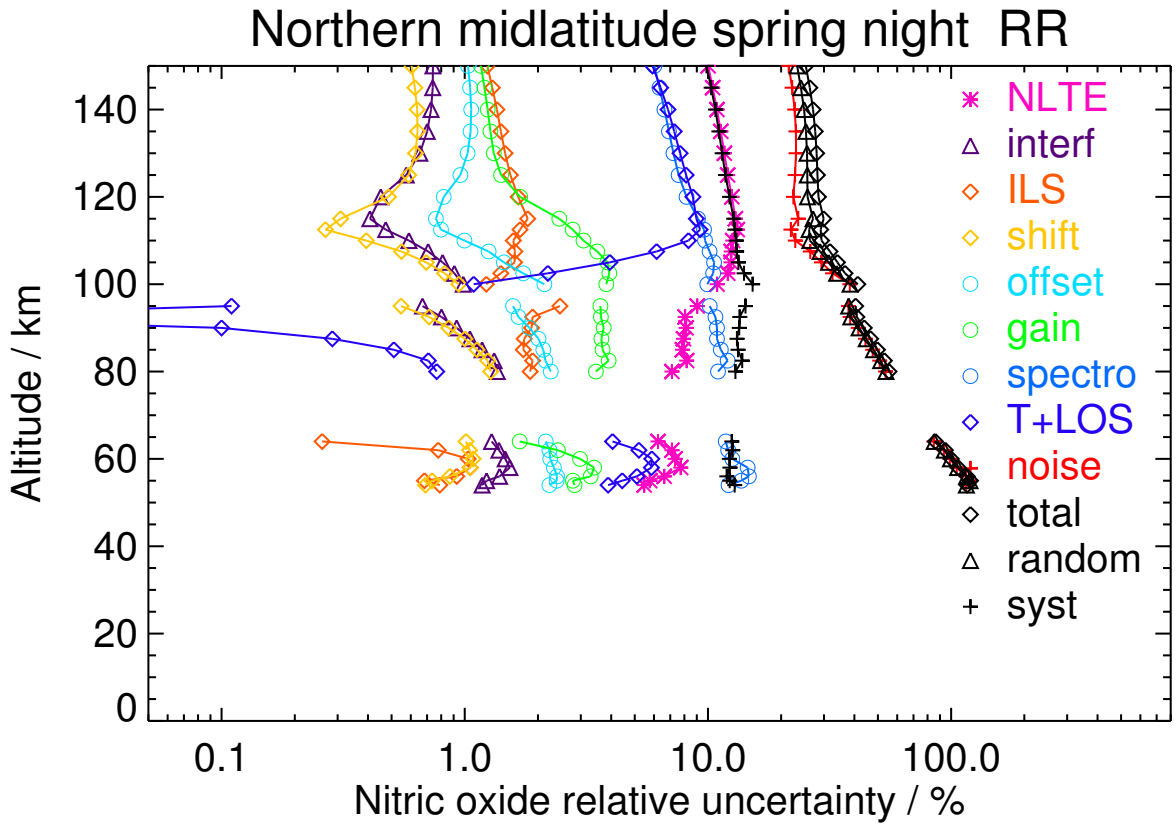

Figure S46. V8R_NO_261 Northern midlatitude spring night

Table S48. Nitric oxide error budget for Northern midlatitude summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	2.81	0.49	2.58	0.24	0.58	8.08	10.49	2.29	22.80	23.64	12.50	26.75
30	0.00	11.24	0.23	1.55	0.33	0.89	1.26	12.98	1.57	23.10	23.53	16.80	28.91
40	0.01	5.29	0.09	0.88	0.25	0.53	2.63	9.69	0.91	13.91	14.21	11.07	18.01
50	0.01	1.90	0.08	0.76	0.06	0.24	1.76	8.27	0.63	19.29	19.44	8.38	21.17
60	0.00	8.77	0.88	1.23	0.90	2.24	1.35	8.15	1.68	63.71	64.09	10.39	64.92
90	0.44	14.27	1.33	1.78	1.53	2.98	3.41	8.81	0.91	52.17	52.95	15.10	55.06
100	3.30	14.64	1.29	1.57	1.22	2.44	2.53	9.46	1.00	43.20	44.18	15.38	46.78
110	14.81	18.15	1.18	1.30	0.62	1.74	1.38	8.69	9.10	30.92	33.97	17.27	38.11
120	32.23	20.70	0.61	1.33	0.27	0.99	2.91	9.17	8.55	14.57	21.55	18.58	28.45
130	70.02	23.34	0.28	1.41	0.63	0.96	4.25	9.67	6.93	10.52	20.61	19.85	28.61
140	127.63	24.14	0.40	0.99	0.67	0.98	4.14	9.57	5.88	11.17	21.14	20.15	29.21
150	174.87	24.68	0.57	0.50	0.62	1.00	3.74	9.14	4.87	12.43	22.28	19.76	29.78

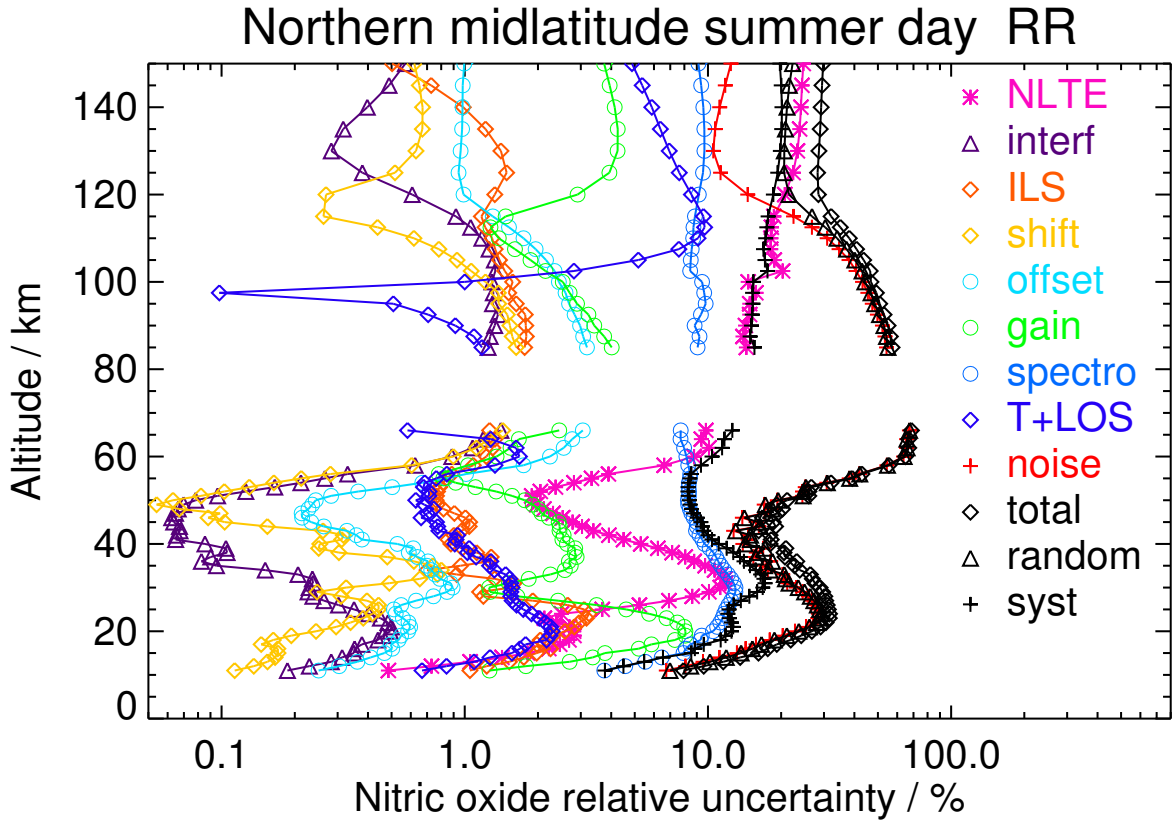

Figure S47. V8R_NO_261 Northern midlatitude summer day

Table S49. Nitric oxide error budget for Northern midlatitude summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	8.98	1.34	1.55	0.86	2.56	6.13	17.59	4.69	94.42	95.51	15.96	96.83
90	0.30	10.09	0.68	1.49	0.73	1.72	3.98	12.34	0.66	36.19	36.26	16.48	39.83
100	3.22	11.25	0.88	0.84	0.76	1.48	3.24	11.42	2.79	28.74	28.94	16.36	33.24
110	7.00	14.33	0.44	1.19	0.26	0.90	2.04	9.19	10.05	23.03	26.62	14.80	30.46
120	17.16	14.16	0.56	0.99	0.54	1.03	1.20	7.82	9.70	22.00	25.44	14.02	29.05
130	24.43	12.97	0.79	0.86	0.63	1.16	1.23	6.86	8.46	21.93	24.64	12.85	27.79
140	32.83	11.85	0.83	0.79	0.61	1.14	1.23	6.19	7.52	21.07	23.30	11.87	26.15
150	39.96	10.72	0.81	0.72	0.56	1.07	1.18	5.57	6.48	19.60	21.39	10.89	24.00

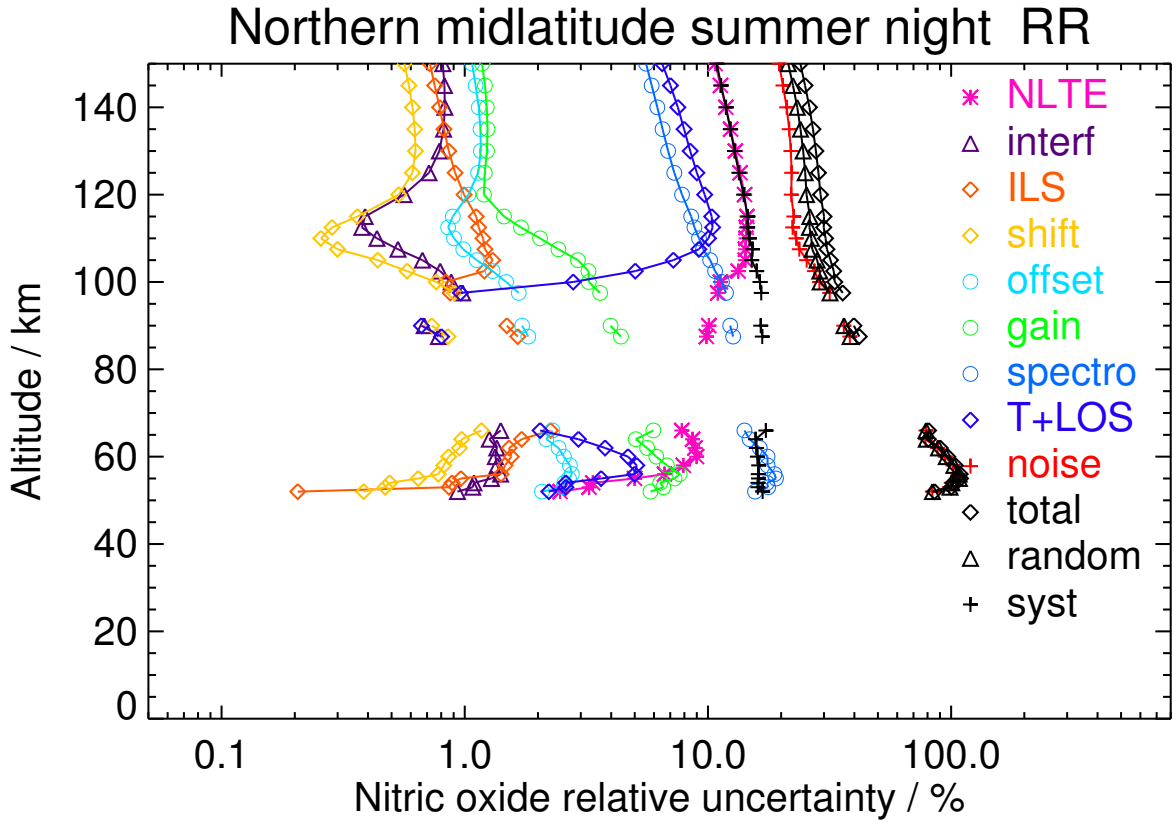

Figure S48. V8R_NO_261 Northern midlatitude summer night

Table S50. Nitric oxide error budget for Northern midlatitude autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	2.11	0.35	1.90	0.22	0.50	5.73	8.54	1.75	23.84	24.41	9.46	26.18
30	0.00	11.29	0.25	1.14	0.40	0.98	2.04	13.13	1.61	25.97	26.53	16.72	31.36
40	0.01	6.84	0.08	1.24	0.32	0.70	2.93	9.83	1.05	16.83	17.10	12.09	20.94
50	0.01	2.48	0.11	1.02	0.05	0.37	1.60	8.87	0.70	25.08	25.23	9.02	26.80
60	0.00	5.72	0.74	1.36	0.59	2.02	1.22	9.23	2.18	61.68	61.95	9.86	62.73
80	0.04	9.69	1.09	1.25	0.90	2.90	1.99	10.84	0.78	53.77	54.55	11.99	55.85
90	0.45	8.35	0.87	1.17	0.80	2.50	1.73	9.65	0.38	48.21	48.67	11.42	49.99
100	3.30	9.59	0.87	0.68	0.62	2.44	0.73	6.66	0.27	43.67	43.76	11.71	45.30
110	12.48	8.31	0.56	0.65	0.29	1.27	0.62	7.53	3.73	24.33	25.11	10.19	27.10
120	12.91	11.92	0.16	0.69	0.21	1.09	1.38	7.70	7.33	19.59	21.71	13.08	25.35
130	25.19	12.37	0.35	0.54	0.39	1.31	2.00	7.14	6.86	20.45	22.31	13.33	25.99
140	47.45	12.10	0.45	0.51	0.45	1.38	2.36	6.72	6.25	21.17	22.67	13.15	26.21
150	72.61	11.50	0.50	0.53	0.48	1.37	2.57	6.23	5.51	20.91	22.16	12.53	25.46

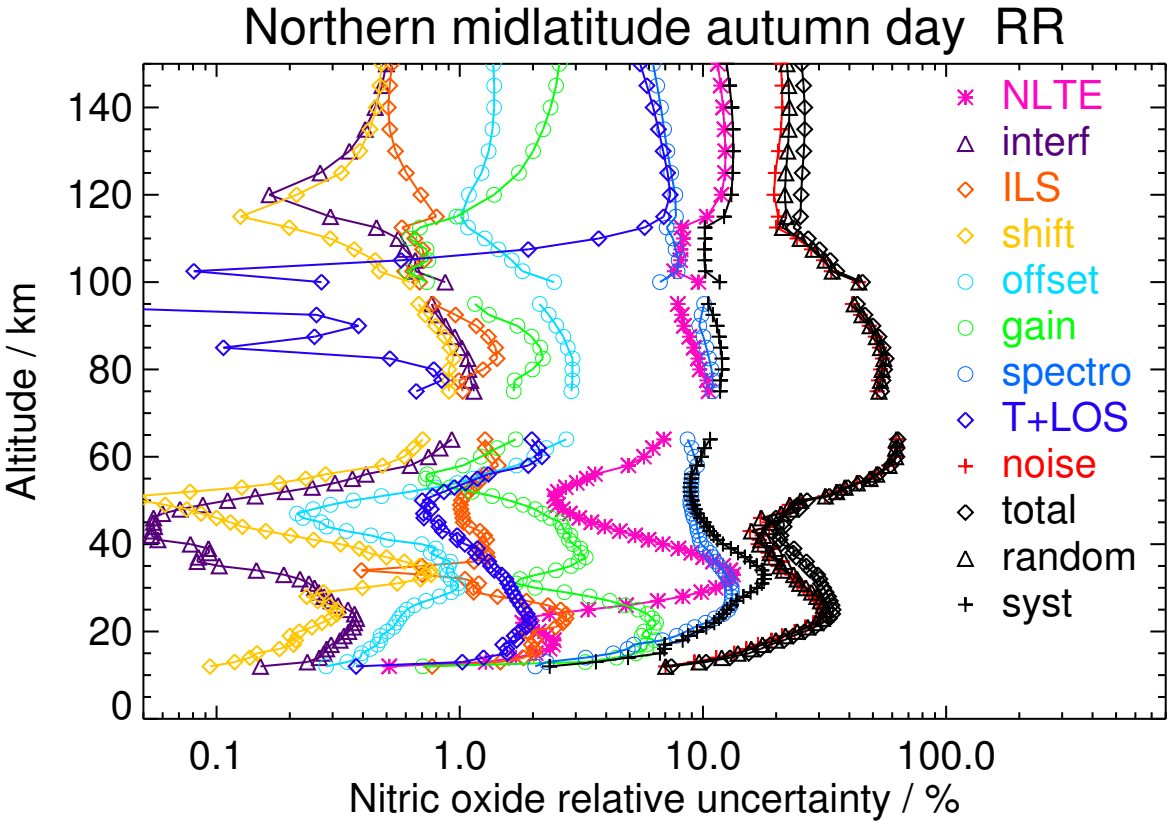

Figure S49. V8R_NO_261 Northern midlatitude autumn day

Table S51. Nitric oxide error budget for Northern midlatitude autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	8.95	1.10	2.06	0.53	2.19	5.78	13.30	5.41	95.82	96.14	16.36	97.53
90	0.14	6.60	0.53	2.15	0.28	1.50	4.34	9.16	1.14	49.65	49.85	11.65	51.19
100	1.00	11.00	0.53	1.57	0.30	1.49	2.64	10.69	0.95	35.19	35.24	15.63	38.55
110	5.20	9.25	0.29	1.15	0.13	0.90	1.29	8.65	6.67	30.39	31.64	11.45	33.65
120	9.58	12.20	0.48	1.27	0.41	1.02	1.60	8.73	7.65	31.56	33.77	12.03	35.85
130	12.99	11.39	0.62	1.14	0.49	1.11	1.76	7.81	6.97	29.71	31.69	11.13	33.59
140	16.94	10.40	0.65	1.06	0.49	1.11	1.73	7.06	6.32	28.37	30.01	10.39	31.76
150	20.24	9.35	0.63	0.97	0.46	1.06	1.63	6.31	5.56	26.24	27.60	9.49	29.19

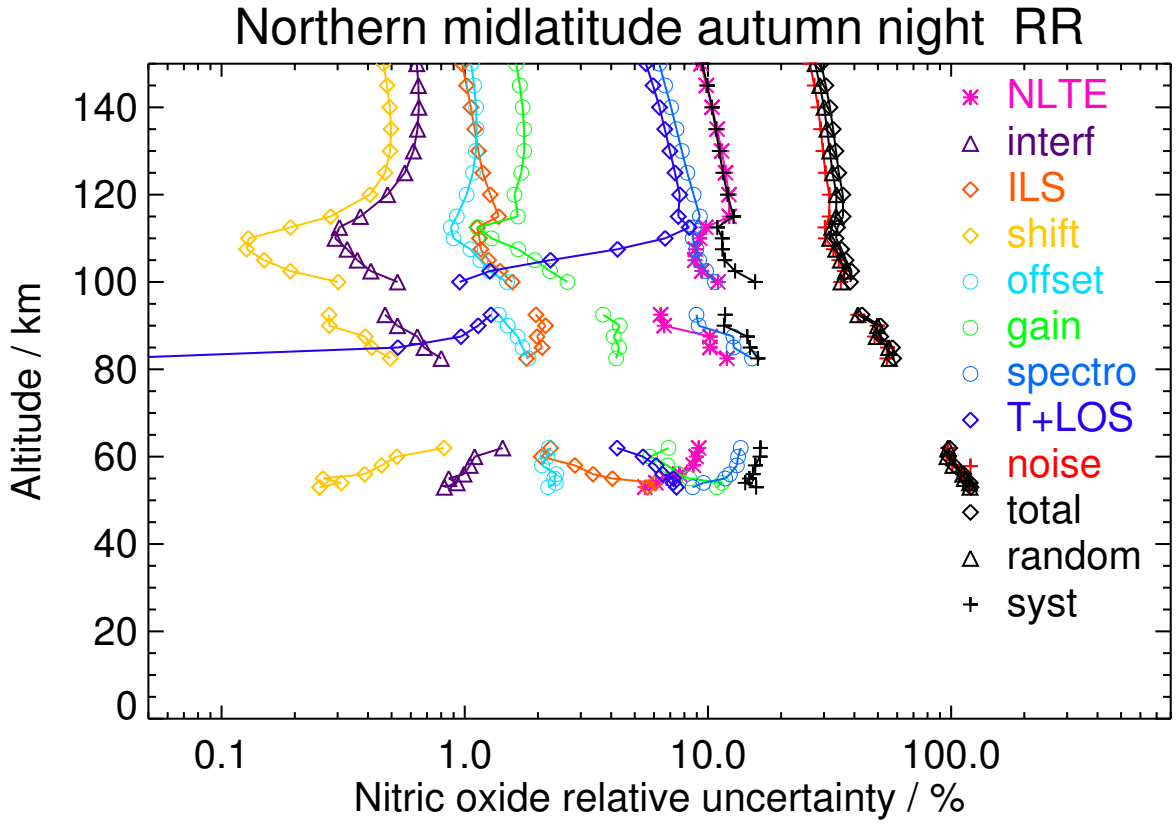

Figure S50. V8R_NO_261 Northern midlatitude autumn night

Table S52. Nitric oxide error budget for Tropics day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.93	0.72	2.32	0.37	0.79	4.25	11.36	2.19	25.39	26.10	11.22	28.41
30	0.00	9.85	0.23	3.15	0.59	1.12	1.82	14.72	1.60	31.41	31.96	17.21	36.30
40	0.01	4.73	0.06	1.03	0.33	0.50	2.60	9.30	1.02	11.87	12.25	10.44	16.10
50	0.01	1.68	0.08	1.18	0.06	0.26	1.75	9.11	0.68	23.03	23.23	9.05	24.93
60	0.00	6.65	0.52	1.58	0.83	2.37	1.26	8.95	2.00	64.10	64.36	10.31	65.18
90	0.23	8.89	0.68	0.97	1.52	3.09	2.80	10.64	0.73	47.98	48.17	14.02	50.16
100	2.47	10.95	0.64	1.58	1.27	2.63	2.92	9.78	0.14	43.54	43.99	14.02	46.17
110	11.03	9.76	0.44	1.15	0.69	1.65	1.66	9.07	5.69	28.24	29.19	12.77	31.86
120	17.67	14.76	0.12	1.16	0.14	0.89	0.64	9.26	7.98	14.13	17.21	16.54	23.87
130	37.53	16.10	0.14	0.96	0.38	1.02	1.12	9.10	6.78	12.39	15.73	17.24	23.34
140	67.58	16.10	0.22	0.88	0.46	1.09	1.42	8.71	5.90	13.13	16.00	17.04	23.37
150	92.88	15.39	0.27	0.79	0.48	1.08	1.58	8.08	5.02	13.60	15.91	16.24	22.73

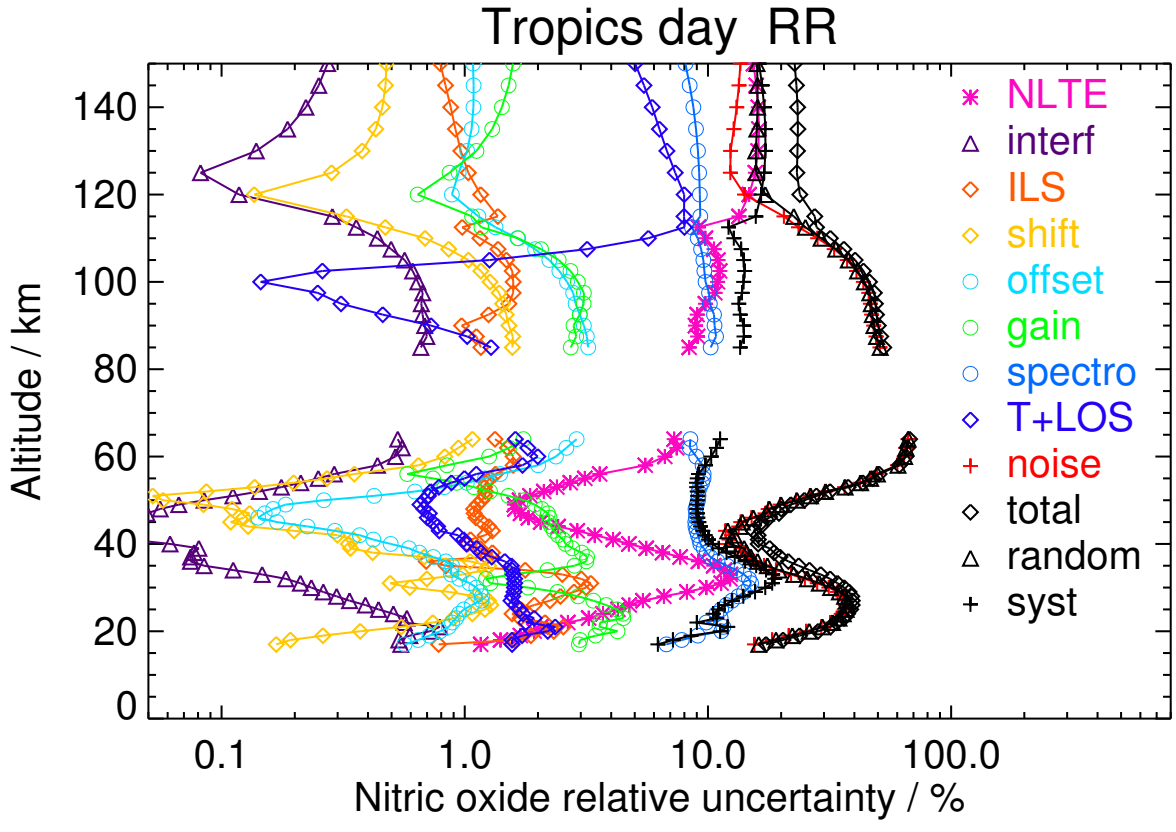

Figure S51. V8R_NO_261 Tropics day

Table S53. Nitric oxide error budget for Tropics night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	8.31	0.72	1.75	0.67	2.38	4.38	11.87	6.72	75.12	75.68	14.17	76.99
100	0.90	9.10	0.47	1.14	0.38	1.41	3.09	11.51	0.44	35.73	36.12	14.17	38.80
110	5.10	12.00	0.38	1.53	0.22	1.00	2.77	10.20	4.91	29.00	30.43	14.09	33.53
120	10.46	12.60	0.32	1.58	0.39	1.00	1.81	9.00	8.49	27.27	29.56	13.74	32.60
130	14.79	11.52	0.33	1.42	0.47	1.08	1.33	7.99	7.73	25.53	27.50	12.54	30.22
140	19.78	10.62	0.33	1.32	0.47	1.07	1.14	7.31	6.97	24.06	25.76	11.62	28.26
150	21.92	9.66	0.31	1.21	0.44	1.01	0.99	6.62	6.03	22.06	23.46	10.67	25.77

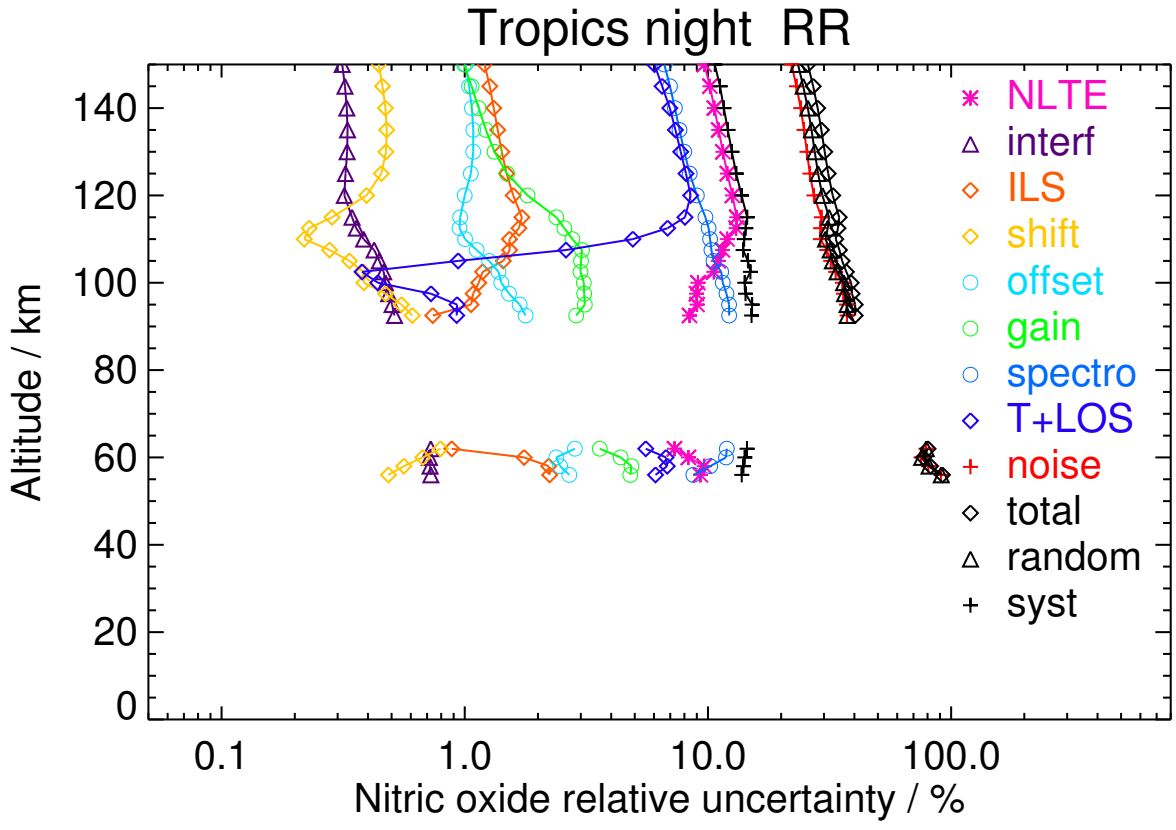

Figure S52. V8R_NO_261 Tropics night

Table S54. Nitric oxide error budget for Southern midlatitude winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	2.90	0.19	0.99	0.17	0.71	0.99	8.28	0.75	25.38	25.79	7.67	26.91
30	0.01	14.23	0.74	1.92	0.93	1.86	5.88	24.25	2.62	39.13	43.29	22.31	48.70
40	0.01	13.30	0.14	2.27	0.30	1.04	2.50	12.05	1.28	31.32	32.92	15.30	36.30
50	0.01	2.25	0.13	0.71	0.10	0.58	1.18	8.39	0.93	33.87	34.11	7.88	35.01
60	0.01	6.71	0.28	1.16	0.29	1.69	1.88	14.67	2.03	51.74	53.51	9.25	54.30
70	0.02	16.04	0.40	1.92	0.47	2.16	1.73	12.08	0.06	45.13	47.89	12.58	49.51
80	0.08	19.15	0.46	1.41	0.67	2.45	2.36	12.10	1.12	44.55	48.09	14.17	50.13
90	0.93	15.15	0.37	1.22	0.60	2.12	2.10	11.19	0.11	38.41	40.91	12.94	42.91
100	7.12	13.58	0.36	1.28	0.53	1.62	1.96	11.92	0.34	29.52	32.22	12.98	34.73
110	43.17	13.24	0.27	1.54	0.19	0.91	1.25	11.86	6.27	17.02	21.97	12.94	25.49
120	58.55	24.90	0.14	2.19	0.28	1.21	2.09	14.00	7.68	15.27	29.49	15.78	33.44
130	72.53	27.97	0.28	2.16	0.35	1.31	2.01	13.12	6.14	18.01	32.25	16.95	36.43
140	79.90	24.23	0.37	1.77	0.35	1.35	2.07	10.80	5.19	20.10	29.71	16.18	33.83
150	99.99	20.12	0.40	1.41	0.35	1.36	2.02	8.74	4.40	20.79	26.82	14.90	30.68

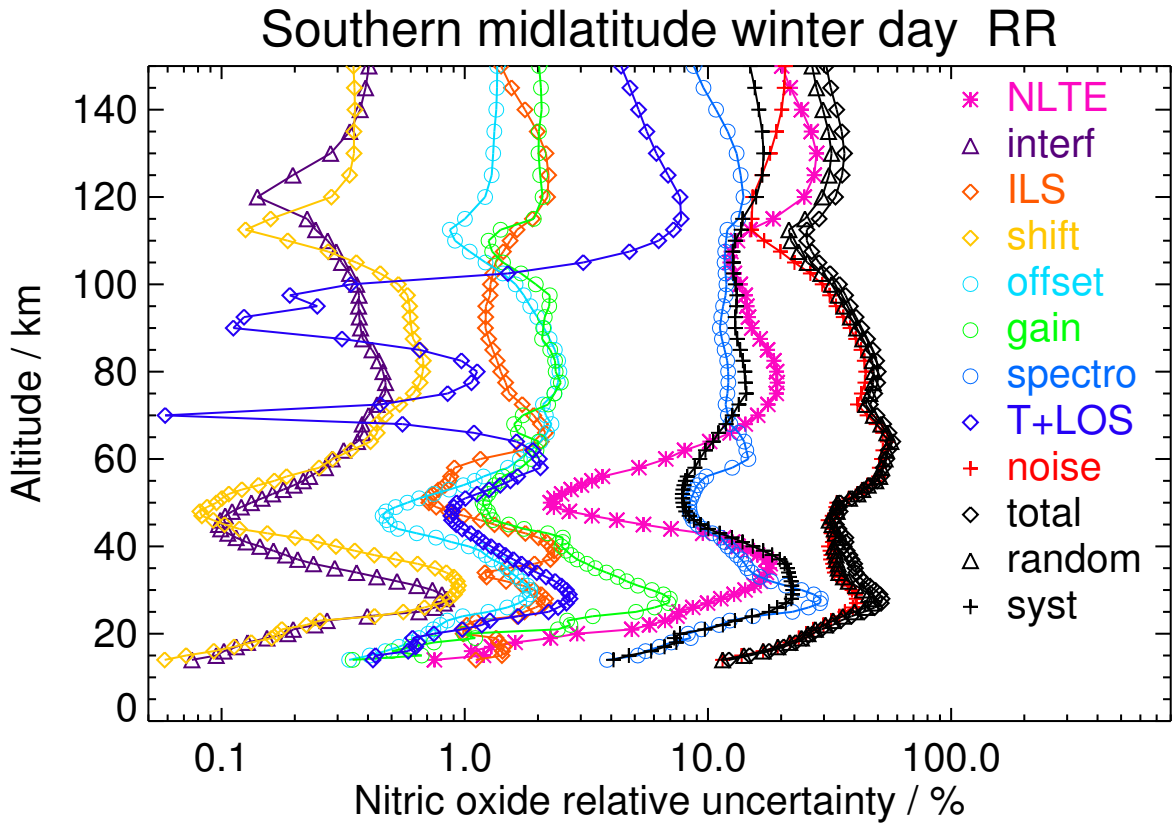

Figure S53. V8R_NO_261 Southern midlatitude winter day

Table S55. Nitric oxide error budget for Southern midlatitude winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	1.53	0.18	0.22	0.15	0.99	0.46	7.68	1.47	55.29	55.32	7.85	55.87
60	0.00	3.39	0.44	0.97	0.29	2.13	2.59	11.09	3.48	77.46	78.00	8.61	78.48
70	0.02	5.73	0.40	1.01	0.41	1.93	2.14	12.42	0.77	61.42	62.14	10.43	63.01
80	0.07	7.55	0.43	1.00	0.53	2.09	1.89	15.99	0.81	46.66	48.89	10.48	50.00
90	0.78	5.45	0.26	0.61	0.30	1.77	0.82	10.84	0.43	36.40	37.00	10.38	38.42
100	5.84	4.68	0.17	0.32	0.21	1.52	0.46	8.73	2.80	24.78	25.39	8.84	26.88
110	10.85	9.07	0.17	1.04	0.09	0.77	0.88	8.78	7.28	19.39	22.44	9.34	24.30
120	16.68	11.65	0.26	1.05	0.33	1.09	0.97	7.99	7.21	22.77	25.91	10.09	27.81
130	18.89	12.03	0.33	1.01	0.38	1.22	1.19	7.45	6.32	23.28	26.24	9.89	28.04
140	20.38	12.05	0.34	0.99	0.37	1.19	1.26	7.16	5.64	22.25	25.12	9.82	26.97
150	29.27	11.76	0.31	0.93	0.32	1.13	1.33	6.77	4.84	20.61	22.83	10.73	25.23

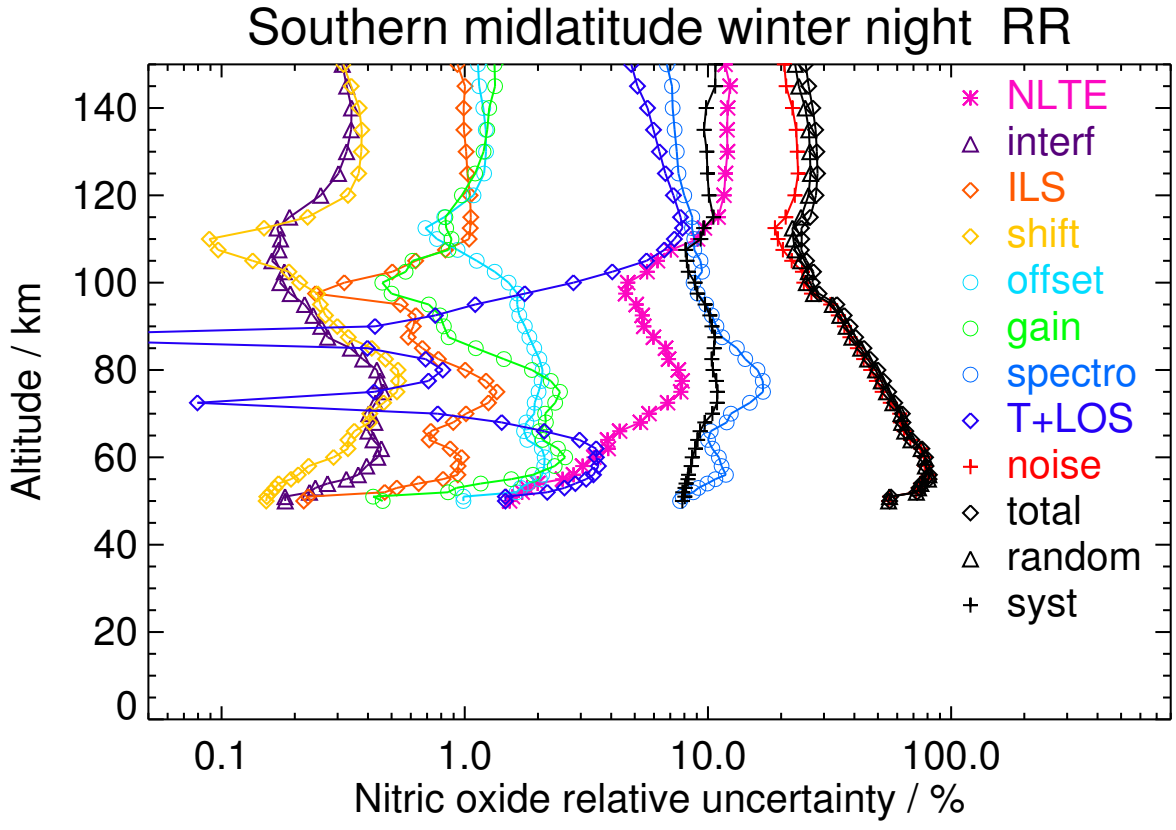

Figure S54. V8R_NO_261 Southern midlatitude winter night

Table S56. Nitric oxide error budget for Southern midlatitude spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	2.16	0.25	2.04	0.27	0.56	2.67	10.59	1.16	20.23	21.87	7.80	23.22
30	0.00	8.49	0.24	1.75	0.57	0.82	2.20	12.45	1.36	22.15	22.91	14.28	26.99
40	0.01	5.61	0.11	1.43	0.24	0.57	1.99	9.93	0.90	17.20	17.57	11.16	20.81
50	0.01	1.98	0.17	1.14	0.11	0.40	1.18	8.51	0.68	25.68	25.83	8.48	27.19
60	0.00	9.50	0.99	1.36	1.09	2.28	1.69	9.34	2.58	66.11	66.48	12.12	67.57
90	0.32	18.66	1.71	1.87	1.81	3.06	3.99	10.15	0.04	55.72	56.17	20.86	59.92
100	2.88	19.96	1.63	2.17	1.61	2.59	3.31	10.00	0.01	46.16	47.09	20.96	51.55
110	23.89	18.36	1.39	1.91	0.94	1.78	2.11	9.84	9.90	31.91	34.55	19.24	39.55
120	51.58	18.44	0.64	1.50	0.13	0.87	0.91	10.07	9.48	13.34	18.79	18.99	26.71
130	92.71	19.65	0.19	1.28	0.36	0.75	1.21	9.63	6.70	8.72	14.18	20.06	24.57
140	153.55	19.99	0.47	1.23	0.41	0.77	1.49	9.16	5.25	10.02	14.25	20.32	24.82
150	211.68	19.74	0.67	1.18	0.40	0.82	1.67	8.52	4.10	11.83	15.13	19.89	24.99

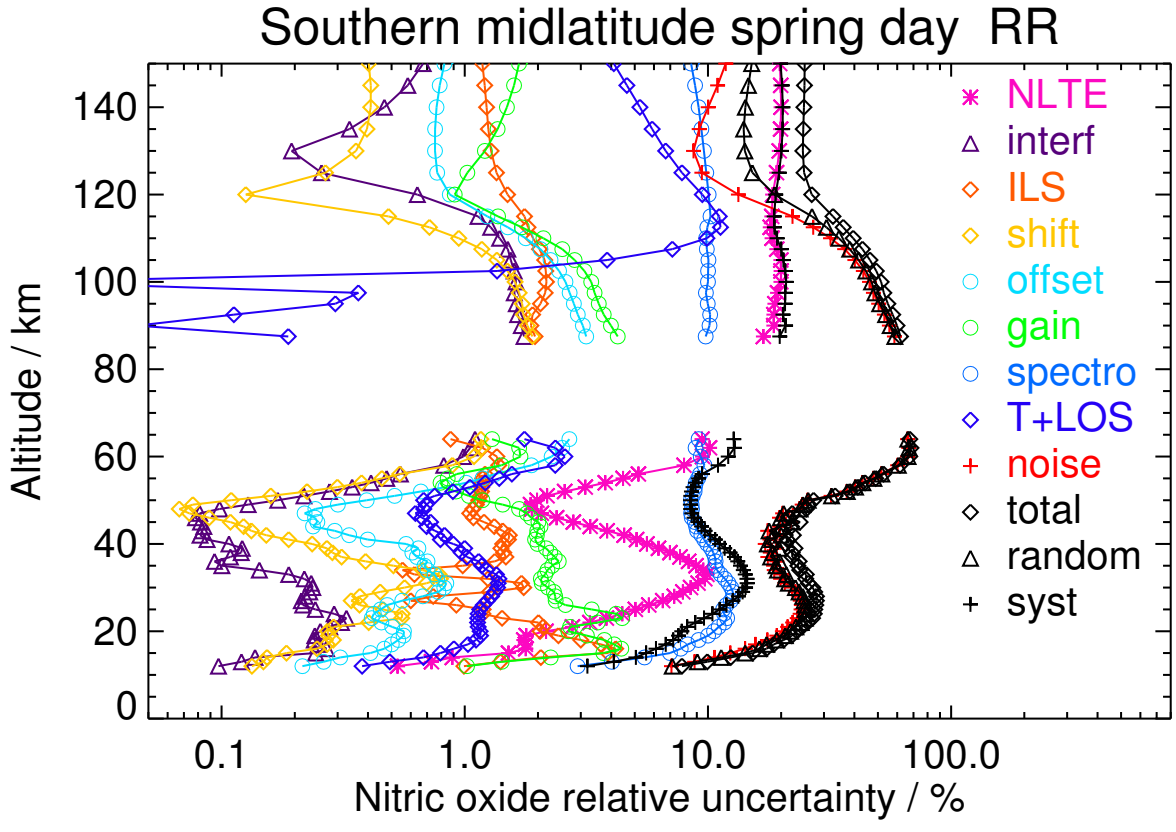

Figure S55. V8R_NO_261 Southern midlatitude spring day

Table S57. Nitric oxide error budget for Southern midlatitude spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	8.16	2.88	1.11	1.95	2.77	5.23	15.78	3.99	92.42	93.60	12.69	94.46
90	0.13	7.11	1.07	1.91	1.11	2.12	4.14	8.71	0.30	44.37	44.54	11.79	46.08
100	2.12	12.29	1.14	2.20	1.23	1.94	3.64	11.87	0.75	35.61	36.41	16.11	39.82
110	6.99	13.45	0.75	2.08	0.50	0.98	3.30	10.46	10.07	23.00	27.39	13.70	30.62
120	14.92	14.53	0.41	1.69	0.46	0.69	1.64	8.79	8.45	19.13	23.14	14.02	27.06
130	21.44	14.11	0.69	1.50	0.64	0.84	1.53	7.90	7.16	18.77	22.29	13.20	25.91
140	28.67	13.67	0.80	1.43	0.66	0.86	1.69	7.45	6.28	18.37	21.68	12.49	25.02
150	34.29	13.00	0.85	1.36	0.64	0.83	1.78	6.98	5.36	17.29	20.45	11.58	23.50

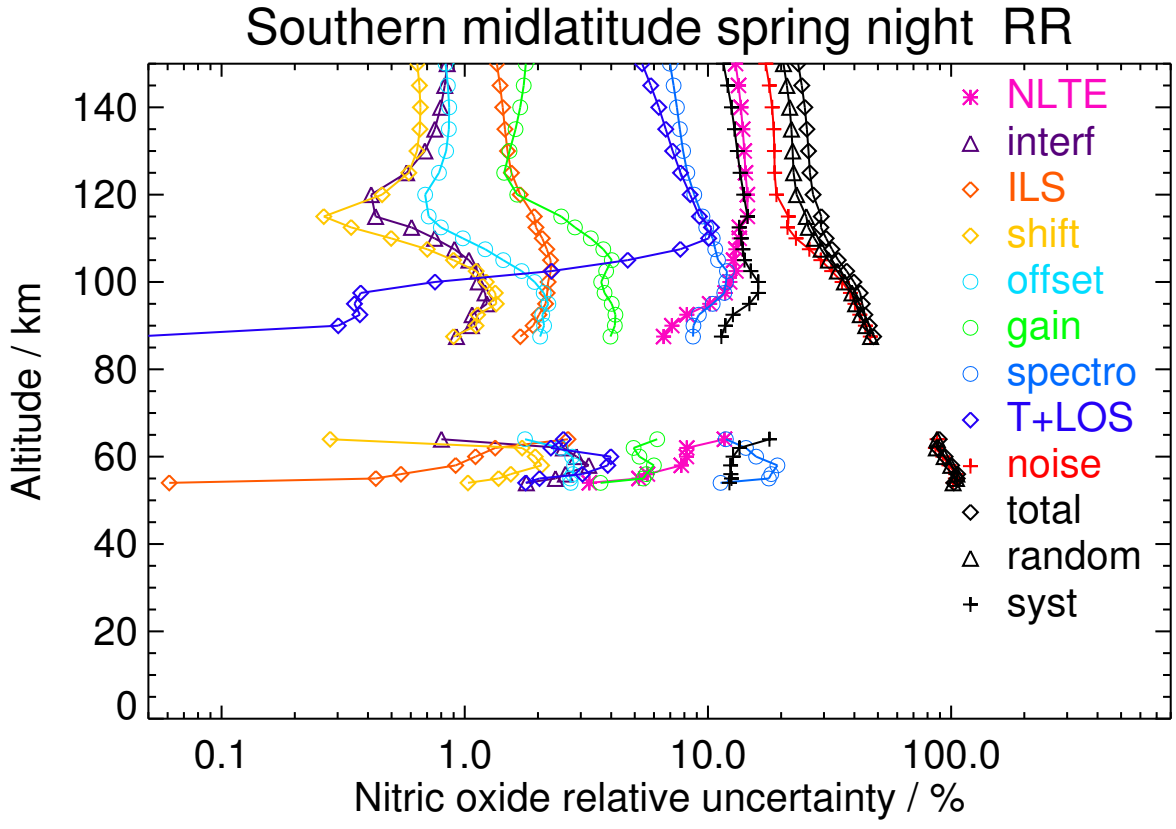

Figure S56. V8R_NO_261 Southern midlatitude spring night

Table S58. Nitric oxide error budget for Southern midlatitude summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	2.56	0.29	2.54	0.40	0.53	7.58	10.92	2.20	22.18	23.07	12.44	26.21
30	0.01	7.83	0.23	2.02	0.47	0.76	1.72	10.88	1.75	20.54	20.99	13.12	24.75
40	0.01	3.25	0.10	1.16	0.29	0.45	2.16	8.76	0.92	11.82	12.06	9.42	15.30
50	0.01	1.29	0.11	1.27	0.08	0.21	1.49	8.38	0.57	18.09	18.23	8.42	20.08
60	0.00	9.21	0.87	1.70	1.07	2.13	2.07	9.33	1.54	62.17	62.64	11.34	63.66
70	0.01	8.38	1.42	0.92	1.72	2.83	1.03	8.18	0.13	50.55	50.68	11.78	52.03
90	0.51	9.49	1.42	1.46	1.73	2.79	2.37	8.92	0.72	47.67	47.93	12.87	49.63
100	9.11	25.68	1.23	1.47	1.35	2.23	1.06	9.73	1.32	37.68	39.61	24.86	46.77
110	28.98	25.37	1.66	1.94	0.73	1.71	1.50	10.32	10.69	28.92	35.38	21.47	41.39
120	63.07	26.43	0.92	1.80	0.23	0.97	1.01	10.49	8.93	13.16	23.81	22.39	32.68
130	123.05	28.98	0.21	1.59	0.36	0.75	0.85	10.21	6.41	7.56	21.60	24.08	32.35
140	223.31	29.88	0.58	1.49	0.34	0.71	0.96	9.82	5.02	8.74	22.03	24.69	33.09
150	301.20	29.91	0.86	1.39	0.29	0.80	1.11	9.15	3.86	11.14	22.81	24.54	33.50

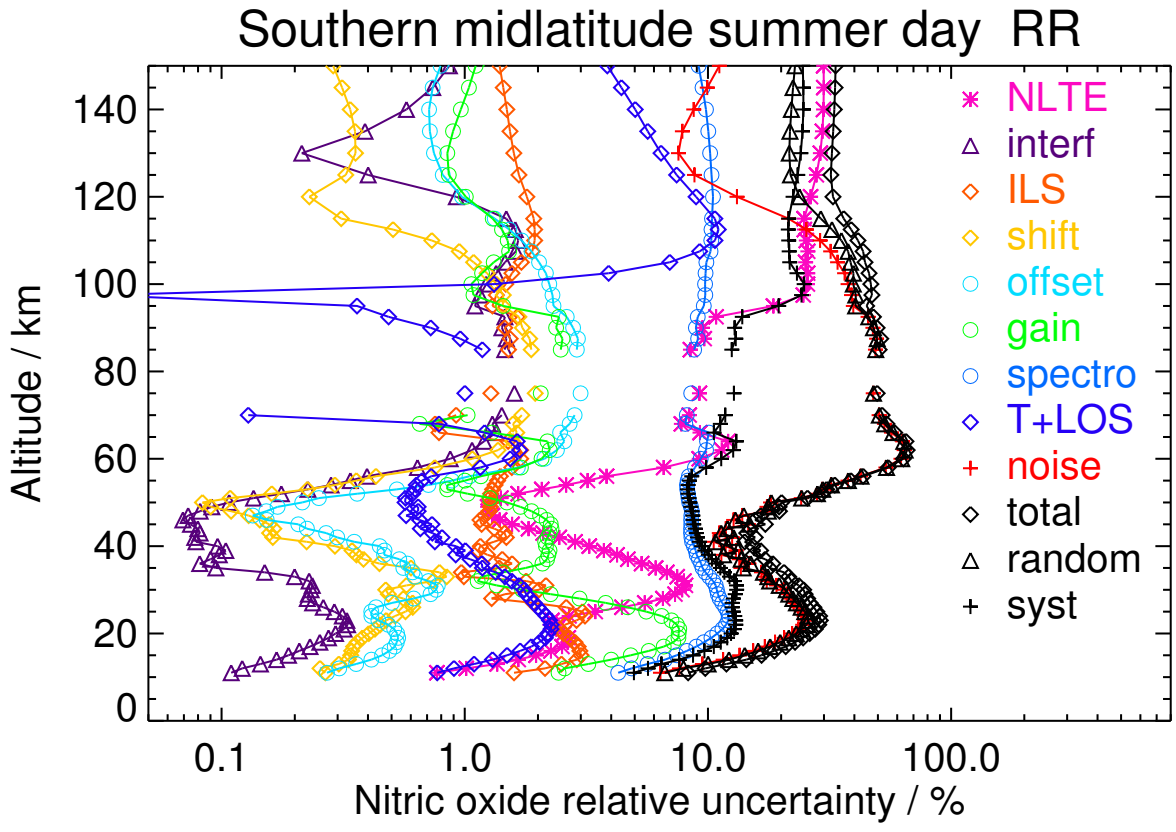

Figure S57. V8R_NO_261 Southern midlatitude summer day

Table S59. Nitric oxide error budget for Southern midlatitude summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	1.39	0.50	1.86	0.57	0.59	2.04	3.53	0.94	31.80	32.00	3.30	32.17
40	0.00	0.83	0.26	0.81	0.25	0.46	2.03	2.31	0.54	18.82	19.06	1.46	19.12
50	0.00	1.44	0.23	0.76	0.13	0.46	1.89	11.02	0.48	25.71	27.41	6.15	28.09
60	0.00	6.42	1.42	1.47	1.12	2.53	3.64	10.32	1.97	80.07	80.55	10.01	81.17
100	3.59	11.48	1.93	1.41	1.87	2.09	2.50	7.56	3.46	37.87	38.53	13.07	40.68
110	9.70	16.43	1.37	1.59	0.87	1.17	2.55	8.52	7.53	24.85	27.20	17.03	32.09
120	21.81	17.51	0.49	1.32	0.42	0.97	2.85	7.77	7.42	17.97	21.53	17.10	27.50
130	30.69	18.10	0.80	1.24	0.69	1.04	4.77	8.19	6.44	17.37	22.09	16.61	27.64
140	42.39	18.39	1.14	1.19	0.77	1.06	5.70	8.66	5.70	17.53	23.12	15.98	28.10
150	51.30	17.95	1.37	1.14	0.75	1.04	6.07	8.70	4.90	17.11	23.02	15.04	27.50

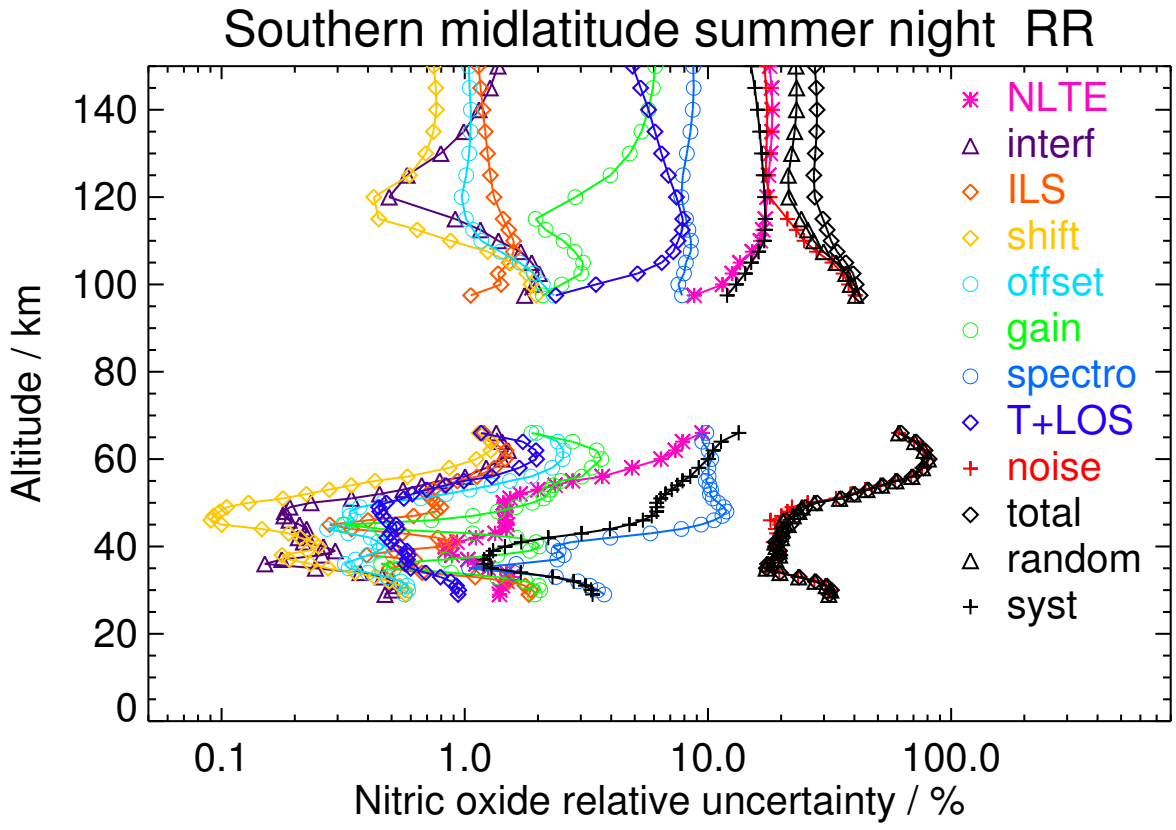

Figure S58. V8R_NO_261 Southern midlatitude summer night

Table S60. Nitric oxide error budget for Southern midlatitude autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.83	0.21	1.20	0.17	0.56	3.71	9.78	1.20	24.31	24.80	9.59	26.59
30	0.01	12.03	0.22	1.61	0.66	1.10	2.21	14.39	1.72	24.02	25.13	17.59	30.67
40	0.01	7.26	0.10	1.77	0.27	0.75	2.54	10.41	1.04	20.74	21.27	12.25	24.55
50	0.01	2.92	0.16	1.50	0.14	0.55	1.07	8.83	0.92	32.00	32.27	8.57	33.39
60	0.00	11.77	0.56	1.91	0.86	2.24	3.22	9.20	2.56	62.90	63.87	11.28	64.86
70	0.02	5.29	0.67	1.24	1.18	2.58	4.76	11.35	0.23	51.79	51.89	13.41	53.59
80	0.08	21.29	0.66	0.96	1.09	2.81	2.84	10.17	1.01	44.09	45.83	20.48	50.20
90	1.16	20.84	0.69	1.00	0.98	2.37	2.06	9.99	0.67	37.93	40.73	18.09	44.56
100	6.86	18.42	0.78	1.26	0.74	1.95	2.13	9.32	0.11	32.42	33.77	18.64	38.58
110	44.83	15.10	0.73	1.40	0.36	1.27	1.26	9.36	8.23	21.52	24.28	16.21	29.20
120	49.45	25.67	0.43	2.42	0.28	0.95	1.46	14.28	8.48	12.57	27.91	17.97	33.20
130	73.67	29.99	0.27	2.41	0.35	0.90	1.50	14.23	6.32	11.13	29.47	20.15	35.70
140	96.18	29.96	0.52	2.20	0.38	0.90	2.01	13.31	5.14	12.89	29.37	20.36	35.74
150	119.55	28.31	0.64	1.95	0.38	0.95	2.41	11.96	4.21	14.36	28.22	19.57	34.34

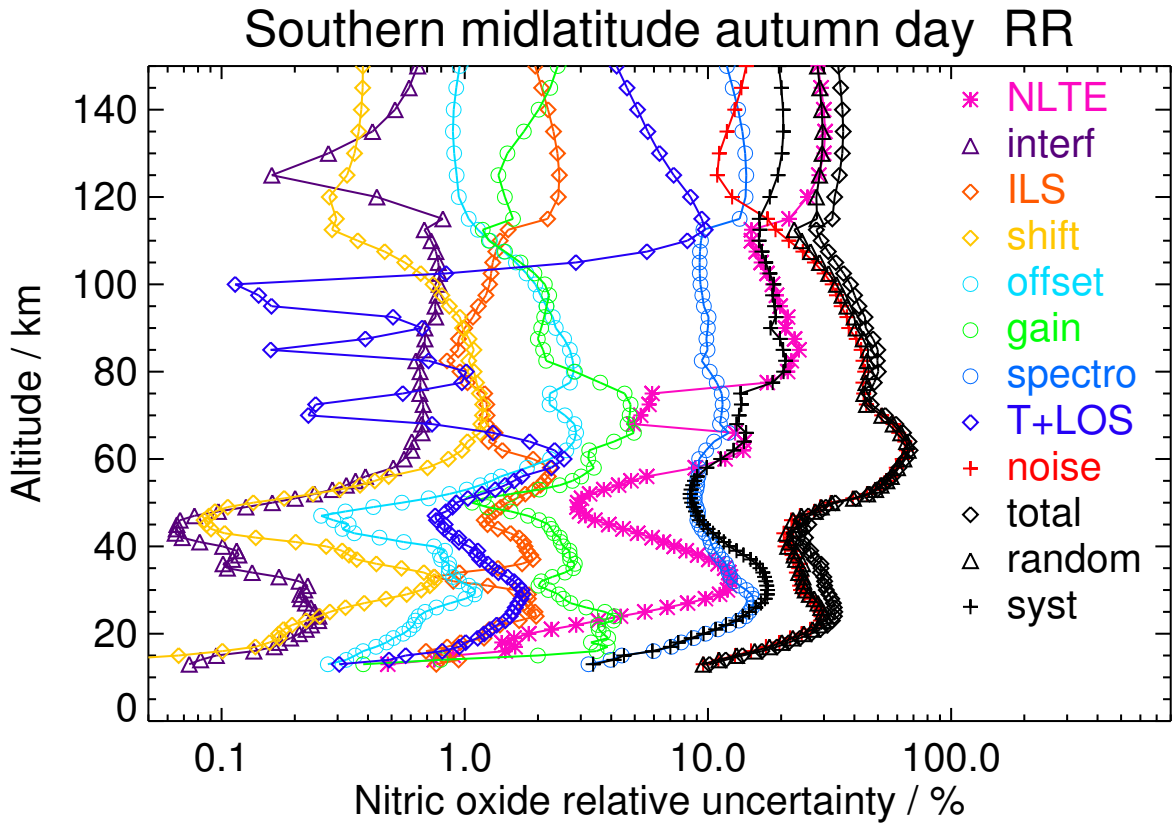

Figure S59. V8R_NO_261 Southern midlatitude autumn day

Table S61. Nitric oxide error budget for Southern midlatitude autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.01	12.78	0.74	1.62	0.99	3.00	4.91	11.75	2.88	85.58	86.60	13.03	87.58
80	0.09	32.54	1.34	0.58	1.82	3.14	2.74	15.74	0.56	57.91	65.36	20.30	68.44
90	2.00	28.56	1.00	1.19	1.38	2.44	5.10	18.94	1.43	44.04	51.98	21.21	56.14
100	10.68	25.55	0.86	1.68	0.90	1.66	3.68	18.31	0.74	31.66	39.00	22.15	44.86
110	16.11	27.27	0.90	2.00	0.53	1.26	1.20	17.56	7.49	23.38	38.36	13.84	40.78
120	23.88	33.76	0.37	2.27	0.37	0.76	2.65	17.33	7.29	15.23	37.98	17.19	41.69
130	32.28	37.12	0.39	2.37	0.51	0.87	4.02	17.65	5.79	14.94	40.42	18.32	44.38
140	38.34	38.97	0.62	2.49	0.54	0.89	4.57	18.11	4.96	15.80	42.36	18.85	46.36
150	44.34	36.67	0.72	2.35	0.51	0.89	4.51	16.85	4.23	15.94	39.85	18.42	43.91

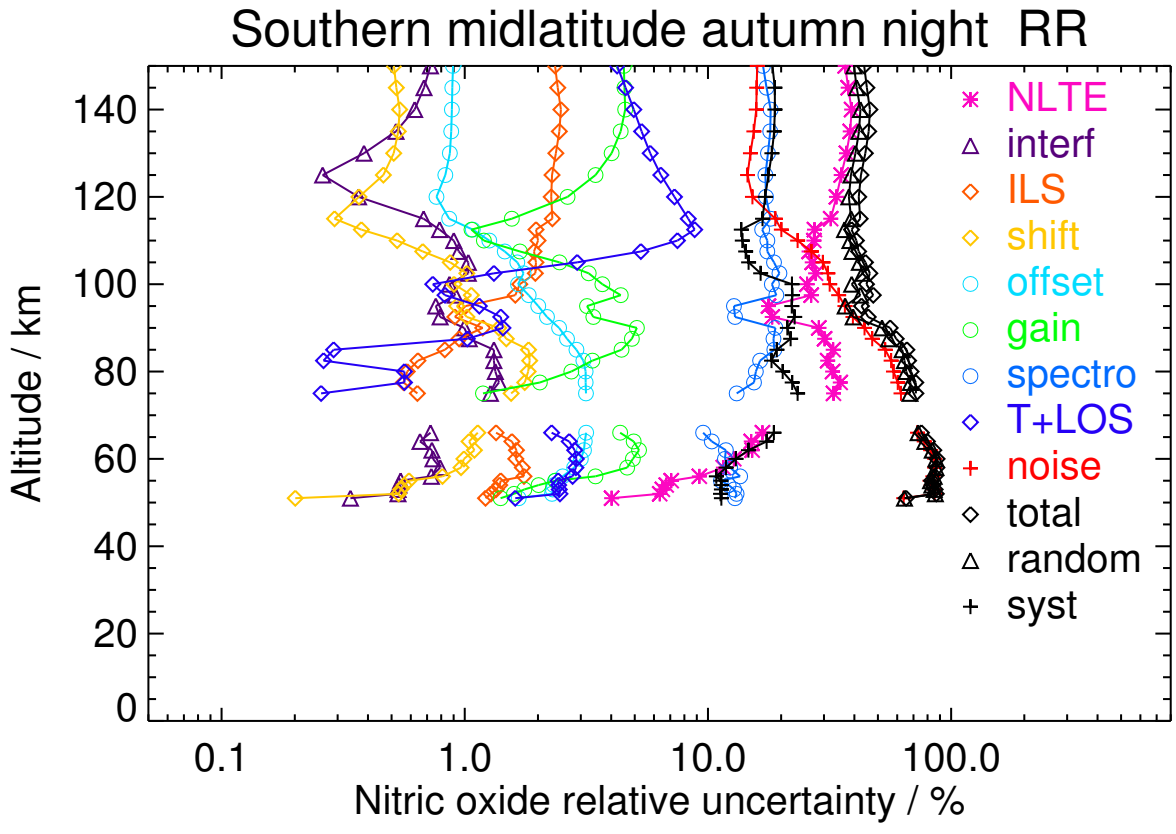

Figure S60. V8R_NO_261 Southern midlatitude autumn night

Table S62. Nitric oxide error budget for Southern polar winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	9.88	0.39	2.06	0.79	1.78	2.22	12.09	1.60	42.06	43.59	11.32	45.04
40	0.00	5.51	0.20	1.28	0.32	0.98	1.37	9.32	1.18	30.51	31.02	9.60	32.47
50	0.00	2.89	0.21	1.23	0.08	0.65	1.20	8.65	1.17	35.23	35.55	8.11	36.46
60	0.01	8.16	0.64	1.08	0.34	2.25	1.18	9.90	2.68	64.14	64.81	9.68	65.52
70	0.04	14.58	0.80	1.18	0.53	2.66	2.15	10.80	0.06	51.20	52.87	13.02	54.45
80	0.22	17.05	0.84	1.73	0.70	2.60	1.78	11.10	1.12	44.39	46.77	14.59	48.99
90	2.41	13.68	0.65	1.45	0.63	1.81	1.16	10.26	0.10	29.18	31.27	13.19	33.94
100	11.60	13.30	0.66	1.38	0.64	1.77	1.20	9.83	0.37	30.48	32.06	13.52	34.79
110	63.82	12.65	0.62	1.04	0.20	1.00	0.82	9.48	6.41	18.40	21.47	13.11	25.16
120	126.06	18.33	0.34	1.42	0.26	1.02	1.83	9.24	7.01	11.85	20.42	14.15	24.85
130	141.45	22.05	0.37	1.51	0.28	1.04	1.30	9.72	5.26	13.50	22.50	17.02	28.21
140	148.12	22.44	0.63	1.51	0.26	1.03	1.19	9.13	4.16	15.23	23.27	17.31	29.00
150	162.63	22.01	0.77	1.48	0.24	1.08	1.18	8.28	3.32	16.24	23.54	16.71	28.87

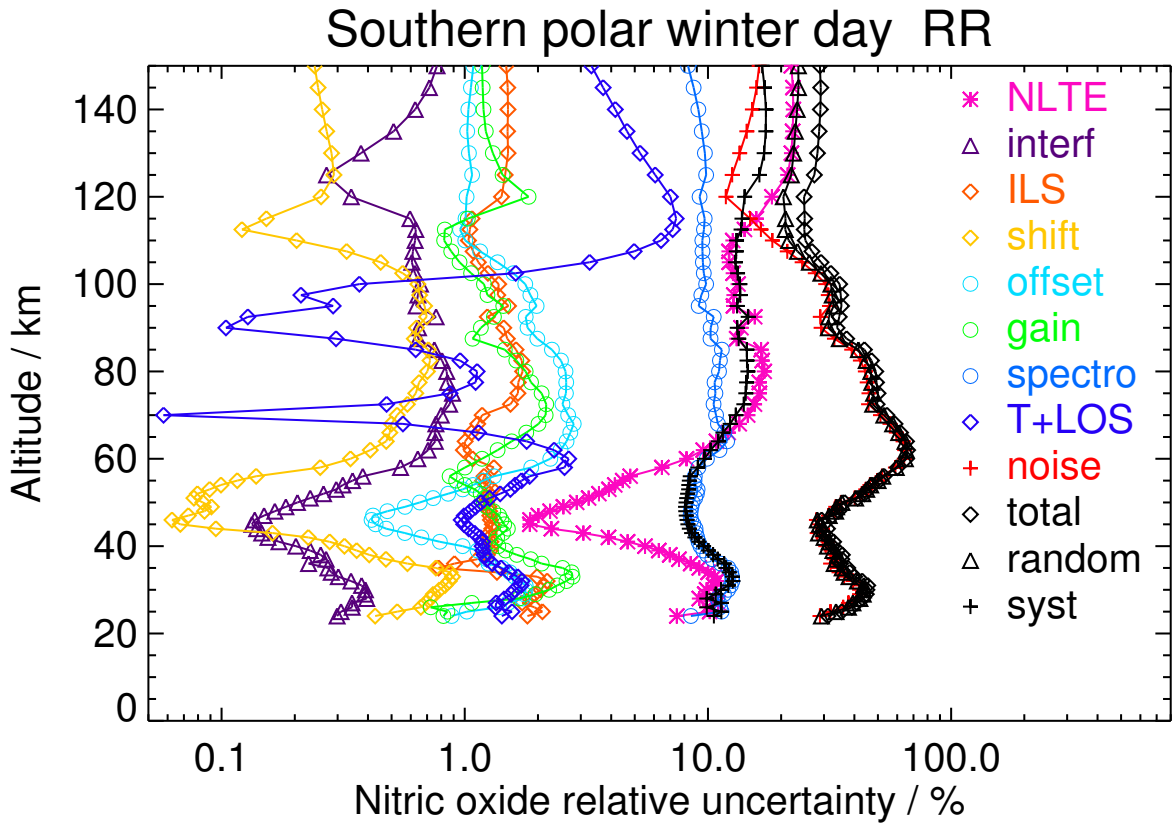

Figure S61. V8R_NO_261 Southern polar winter day

Table S63. Nitric oxide error budget for Southern polar winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	6.56	0.47	0.53	0.15	1.90	1.67	9.56	1.30	69.52	69.78	10.28	70.54
60	0.00	11.33	1.61	1.08	0.78	3.28	1.90	11.91	5.14	95.53	96.29	13.05	97.17
70	0.05	4.66	0.77	0.39	0.39	1.82	0.68	12.46	3.96	54.96	55.67	10.91	56.73
80	0.24	5.74	0.53	0.83	0.35	2.10	0.83	12.35	1.68	41.09	41.97	11.03	43.40
90	1.69	5.80	0.22	0.27	0.17	1.38	0.85	9.59	3.30	23.30	23.61	11.17	26.12
100	11.80	8.65	0.75	0.51	0.50	1.82	1.15	9.23	2.63	31.32	31.89	11.67	33.96
110	39.19	17.62	1.01	1.37	0.36	1.35	1.20	9.07	7.20	25.47	28.91	16.25	33.16
120	61.52	22.01	0.28	1.76	0.17	0.77	1.07	10.78	7.63	13.38	23.47	17.10	29.04
130	81.11	25.38	0.42	1.92	0.28	0.79	1.38	11.39	5.89	13.04	25.77	17.91	31.38
140	92.83	26.32	0.64	1.95	0.28	0.85	1.35	11.28	4.93	14.52	27.26	17.86	32.59
150	117.48	23.80	0.72	1.74	0.24	0.89	1.18	9.87	4.07	15.07	24.69	17.43	30.22

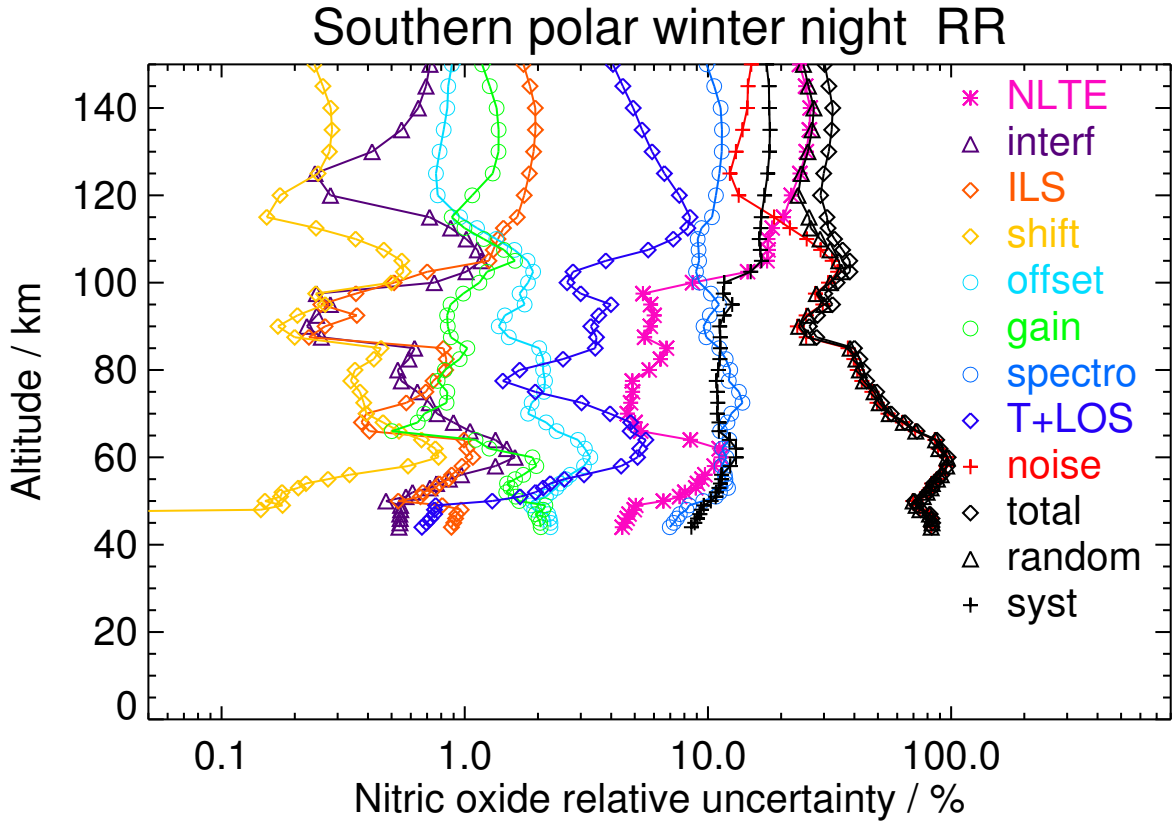

Figure S62. V8R_NO_261 Southern polar winter night

Table S64. Nitric oxide error budget for Southern polar spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	2.47	0.26	1.85	0.22	0.51	2.67	10.95	1.08	17.39	19.21	8.45	20.99
30	0.00	5.08	0.09	1.95	0.42	0.61	2.01	10.54	1.23	17.31	18.21	10.71	21.13
40	0.01	3.39	0.09	1.24	0.19	0.33	1.92	9.46	0.81	14.06	14.57	9.62	17.46
50	0.01	1.47	0.14	1.09	0.07	0.27	1.36	8.36	0.61	24.02	24.14	8.35	25.54
60	0.01	9.67	1.04	1.50	1.42	2.02	1.92	10.26	2.51	62.45	63.22	11.00	64.17
90	0.62	13.43	1.55	1.75	2.33	2.65	4.85	9.40	0.44	50.13	50.41	16.78	53.13
100	7.12	13.67	1.50	1.93	1.97	2.21	4.38	9.43	1.51	41.75	42.30	16.29	45.33
110	32.20	16.29	1.27	1.96	1.02	1.47	2.88	9.19	9.71	27.69	30.08	17.97	35.04
120	53.73	20.28	0.49	1.47	0.25	0.86	0.88	8.88	7.86	12.51	16.52	20.96	26.69
130	85.66	21.72	0.34	0.96	0.59	0.78	1.69	8.52	5.47	9.70	13.73	22.01	25.94
140	133.52	21.89	0.62	0.81	0.67	0.81	2.29	8.17	4.31	11.15	14.71	21.91	26.39
150	178.52	21.30	0.81	0.72	0.66	0.88	2.61	7.63	3.41	12.67	15.75	21.10	26.33

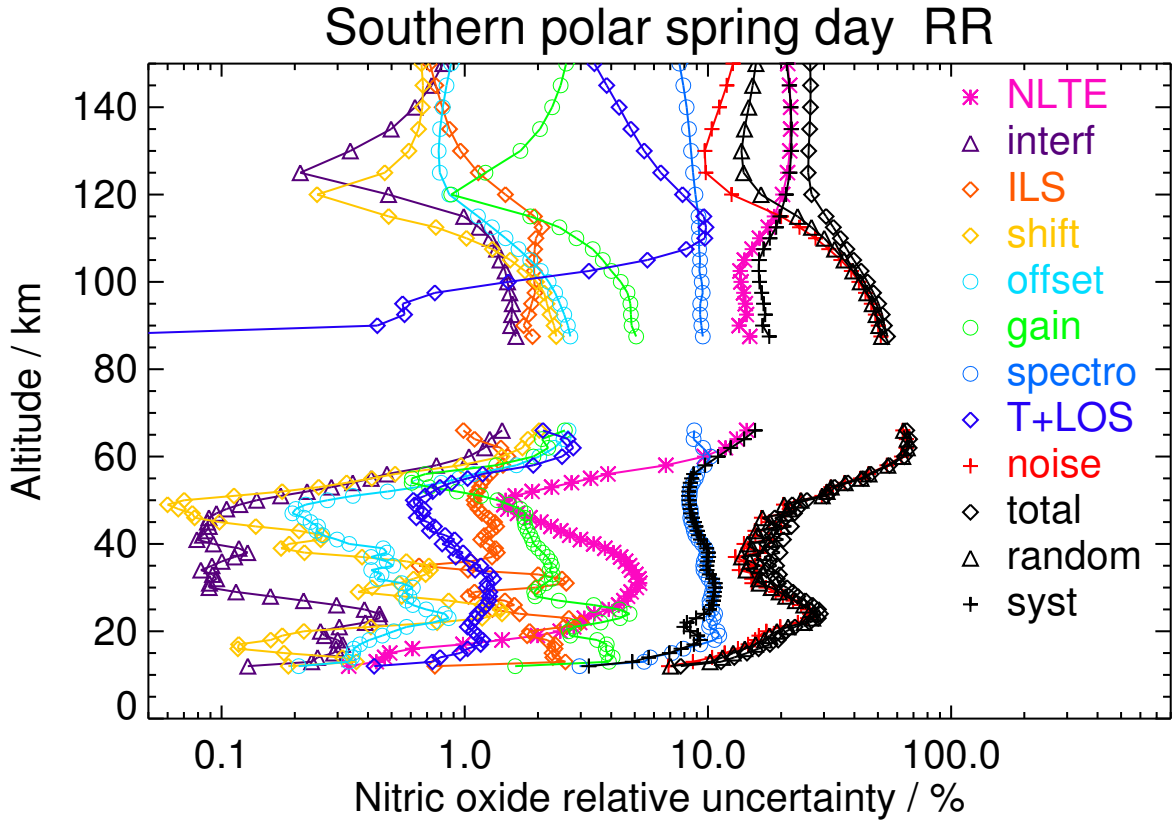

Figure S63. V8R_NO_261 Southern polar spring day

Table S65. Nitric oxide error budget for Southern polar spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	2.57	0.41	3.56	0.53	0.87	5.60	4.37	1.02	26.69	27.59	4.82	28.01
40	0.00	3.57	0.28	0.78	0.16	0.64	2.77	3.84	0.64	22.30	22.91	3.04	23.11
50	0.00	3.86	0.32	1.02	0.20	0.56	1.32	10.66	0.69	31.47	32.70	7.26	33.50
60	0.00	10.56	1.49	2.52	1.55	2.41	2.96	16.24	2.28	70.59	72.38	12.23	73.41
70	0.06	11.24	1.52	2.65	1.75	2.76	1.79	9.21	0.30	50.98	51.11	14.88	53.23
80	0.10	10.57	1.80	0.45	1.97	2.83	3.02	10.00	0.38	48.70	48.87	14.85	51.07
90	0.51	9.96	1.88	2.16	2.77	2.68	5.99	11.09	0.38	49.13	49.34	16.16	51.91
100	8.49	14.89	1.88	2.24	2.28	2.13	5.81	11.72	0.62	40.39	41.65	17.56	45.20
110	33.88	39.12	1.64	1.94	1.42	1.55	4.03	8.76	8.79	28.49	43.30	25.46	50.23
120	71.62	45.23	1.34	1.84	0.35	0.91	2.18	10.42	7.64	13.61	43.14	23.40	49.08
130	142.85	48.97	0.49	2.24	0.57	0.73	1.73	14.63	5.42	7.95	46.09	24.28	52.09
140	232.24	51.31	0.71	2.99	0.53	0.58	2.12	17.56	3.98	8.13	48.90	25.42	55.12
150	286.90	69.20	1.33	3.50	0.39	0.82	2.54	18.42	2.84	11.13	66.44	29.44	72.68

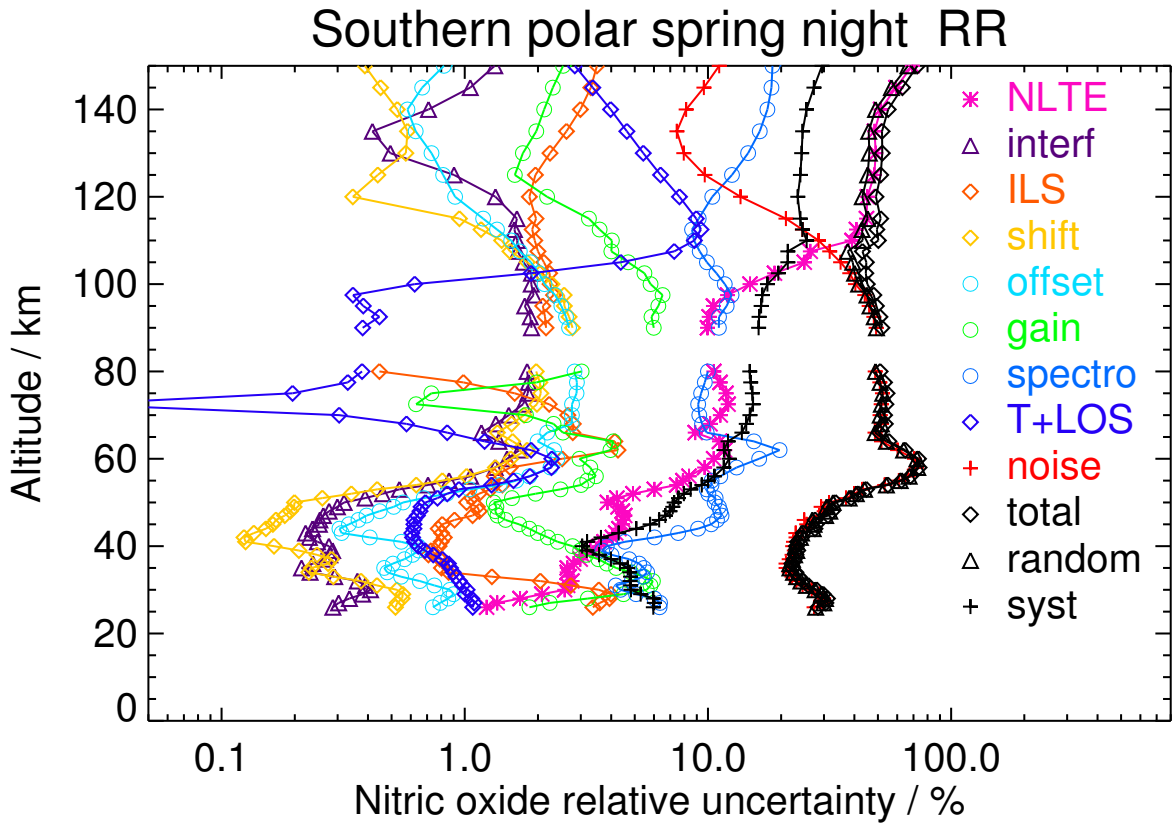

Figure S64. V8R_NO_261 Southern polar spring night

Table S66. Nitric oxide error budget for Southern polar summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
10	0.00	0.23	0.08	0.91	0.24	0.23	1.88	3.38	0.80	5.41	5.50	3.95	6.77
20	0.00	1.06	0.20	1.21	0.14	0.28	3.36	12.84	1.71	17.79	18.31	12.76	22.32
30	0.01	3.64	0.19	2.03	0.40	0.66	1.18	9.40	1.65	17.34	17.69	9.91	20.28
40	0.01	2.19	0.06	1.25	0.21	0.41	2.61	9.00	0.81	9.59	9.83	9.51	13.68
50	0.01	1.12	0.09	1.14	0.09	0.17	1.91	8.32	0.50	17.73	17.83	8.50	19.75
60	0.01	4.25	0.69	1.19	0.87	1.75	1.25	8.80	1.28	57.03	57.25	8.91	57.94
100	10.59	15.11	1.16	2.11	1.53	1.87	2.71	7.91	5.11	32.99	34.61	15.05	37.74
110	22.45	19.13	1.41	2.43	0.86	1.38	2.24	9.80	9.37	24.39	28.90	18.02	34.06
120	42.06	21.58	0.34	1.56	0.51	0.88	1.90	10.03	8.04	12.85	19.63	20.44	28.34
130	69.34	22.62	0.55	1.16	0.80	1.01	3.12	9.79	6.59	13.36	19.88	21.15	29.03
140	116.63	22.57	0.83	1.01	0.83	1.10	3.27	9.29	5.72	15.01	20.80	20.86	29.46
150	159.85	21.62	0.97	0.88	0.80	1.15	3.22	8.56	4.88	15.98	20.95	19.88	28.88

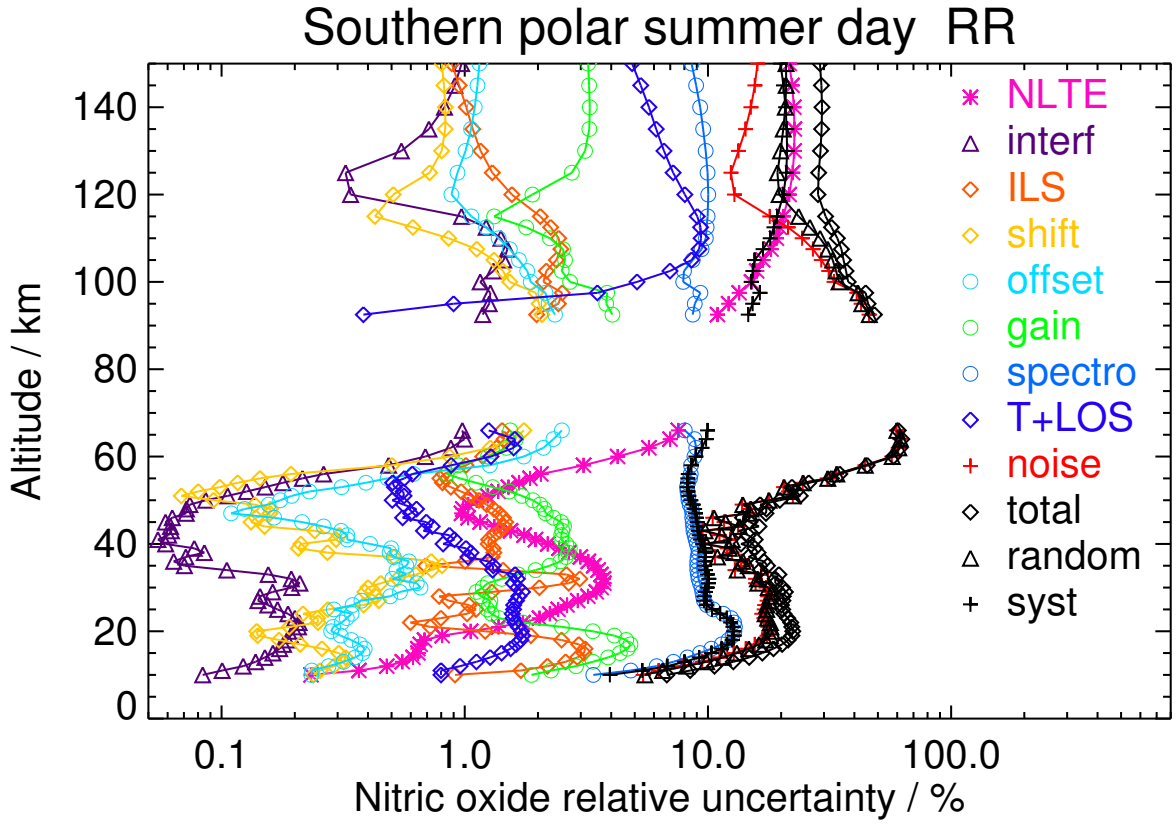

Figure S65. V8R_NO_261 Southern polar summer day

Table S67. Nitric oxide error budget for Southern polar summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	0.70	0.61	3.68	0.35	0.72	2.53	5.35	1.22	32.29	32.54	5.96	33.08
40	0.00	1.02	0.20	0.77	0.15	0.53	2.13	2.85	0.49	19.90	20.20	1.65	20.27
50	0.00	1.23	0.17	0.66	0.09	0.36	1.19	9.03	0.49	24.20	25.17	6.13	25.90
60	0.00	4.17	0.97	0.94	0.89	1.94	2.26	8.71	1.85	66.54	66.81	8.46	67.34
100	3.62	14.94	1.80	2.57	2.39	2.07	4.00	10.37	4.21	37.29	40.25	12.46	42.13
110	10.71	18.38	1.36	2.14	1.02	1.30	2.15	11.55	9.61	27.04	33.22	14.32	36.18
120	17.31	20.83	0.36	1.45	0.66	1.27	3.69	10.69	7.64	21.84	28.90	16.31	33.19
130	25.48	21.41	0.84	1.31	0.99	1.42	4.53	10.17	6.48	22.25	29.23	16.44	33.54
140	37.31	21.09	1.07	1.28	1.03	1.41	4.79	9.81	5.75	22.00	28.83	15.99	32.97
150	47.93	19.55	1.16	1.22	0.97	1.35	4.70	9.03	4.99	21.04	27.10	14.99	30.97

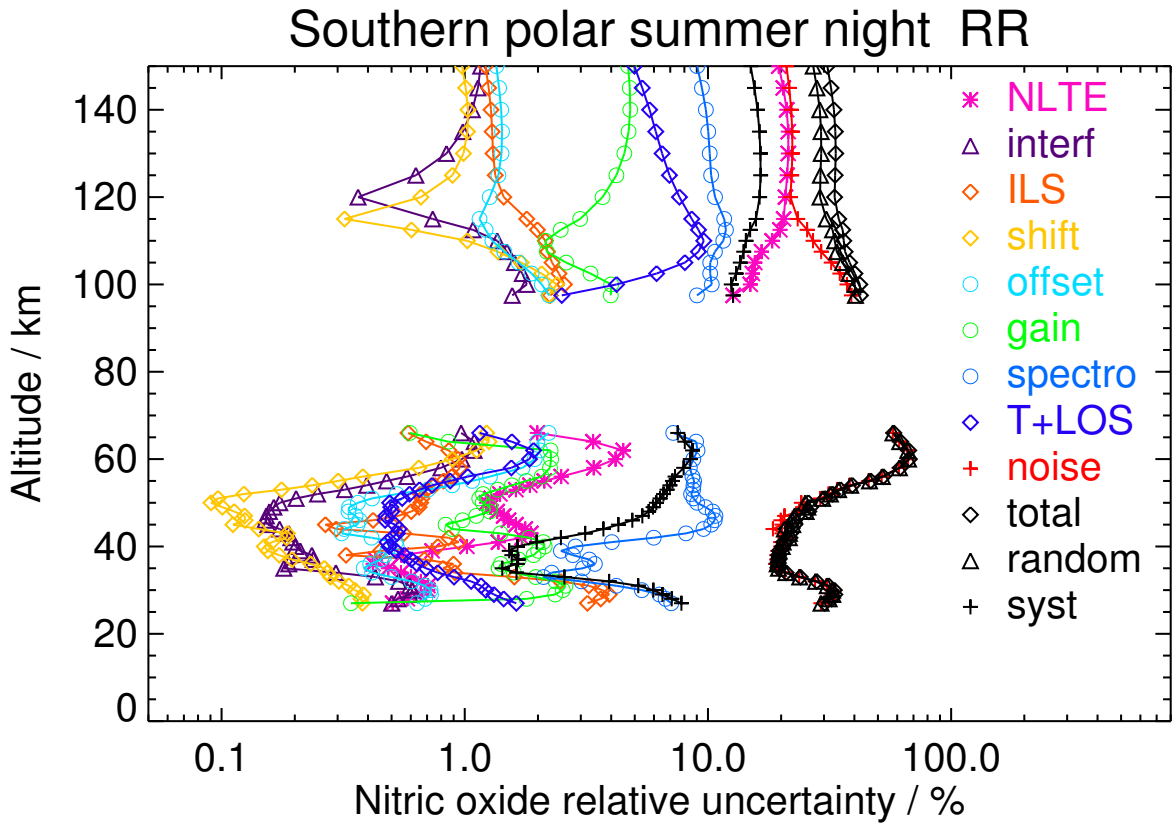

Figure S66. V8R_NO_261 Southern polar summer night

Table S68. Nitric oxide error budget for Southern polar autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	2.15	0.18	0.87	0.21	0.58	0.85	8.66	0.83	22.28	22.45	8.65	24.06
30	0.01	8.85	0.34	1.35	0.70	1.30	3.42	12.62	1.75	29.70	30.53	14.38	33.75
40	0.00	6.82	0.24	2.44	0.34	0.98	1.43	11.02	1.31	37.05	37.43	12.28	39.39
50	0.00	4.20	0.36	1.38	0.18	1.11	1.21	9.06	1.66	49.82	50.17	8.49	50.88
60	0.01	10.13	0.94	1.12	0.60	2.63	2.32	11.39	2.69	67.32	68.23	11.45	69.18
70	0.04	15.27	1.25	1.65	0.89	2.90	2.55	10.60	0.23	52.64	54.15	14.30	56.01
80	0.19	16.43	1.26	1.64	1.02	2.89	2.66	10.92	0.80	51.30	53.03	15.15	55.15
90	1.48	13.91	0.88	1.40	0.85	2.13	2.03	12.00	0.59	37.52	39.05	15.26	41.92
100	12.49	23.24	0.90	1.26	0.75	1.91	1.78	9.50	0.11	35.08	39.32	18.00	43.25
110	67.07	18.07	0.82	1.50	0.28	1.27	1.56	9.07	7.64	23.12	27.51	15.87	31.76
120	86.16	21.54	0.31	1.79	0.23	0.94	1.90	10.68	7.21	11.27	21.74	17.09	27.65
130	109.53	24.61	0.41	1.80	0.31	0.93	1.83	10.96	4.80	11.82	23.08	19.06	29.94
140	133.56	25.47	0.59	1.75	0.30	0.92	1.76	10.69	3.68	13.52	24.38	19.30	31.09
150	159.18	24.99	0.68	1.61	0.28	0.98	1.62	9.84	2.89	14.61	24.53	18.66	30.82

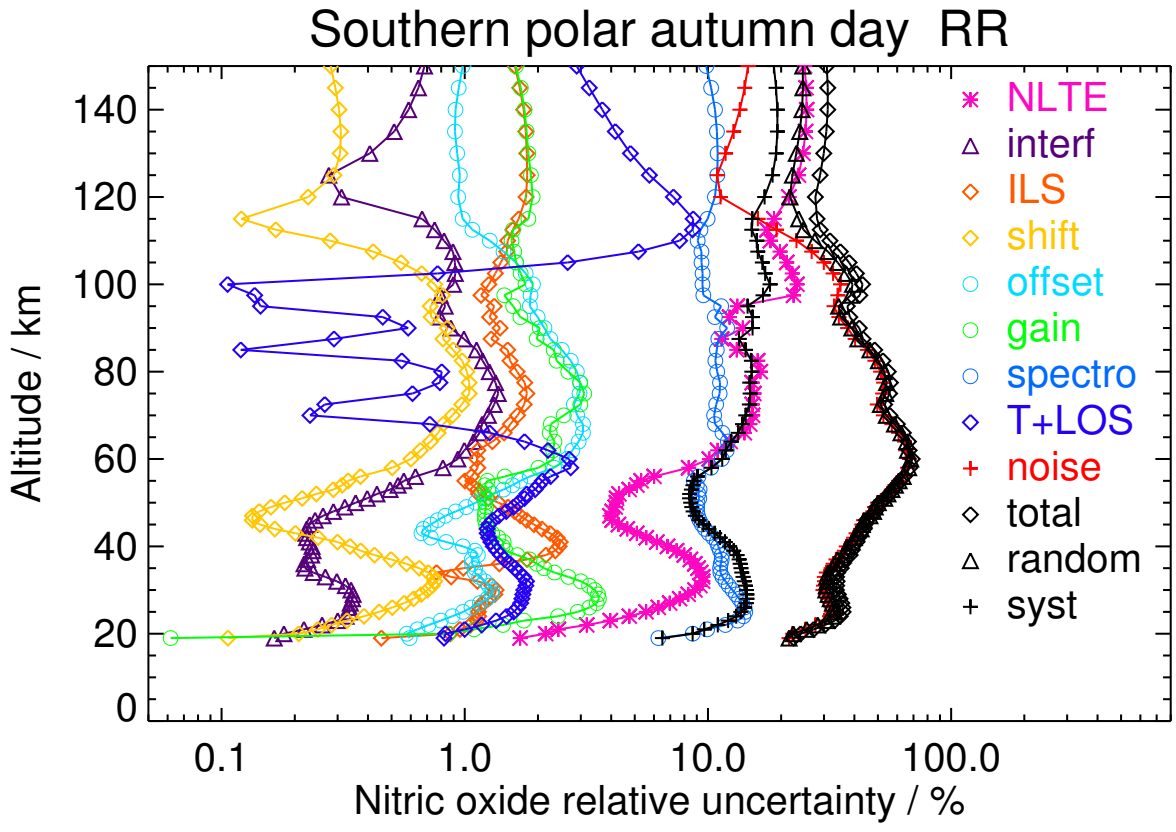

Figure S67. V8R_NO_261 Southern polar autumn day

Table S69. Nitric oxide error budget for Southern polar autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	8.08	0.52	0.35	0.66	1.41	5.72	8.79	2.00	37.92	38.03	13.16	40.25
40	0.00	15.88	0.64	1.49	0.57	2.86	8.49	12.07	3.96	65.96	68.12	14.40	69.63
50	0.00	21.70	0.79	1.48	0.35	2.72	3.61	10.92	3.60	83.26	85.27	16.97	86.94
60	0.01	16.39	1.06	1.54	0.64	3.10	2.56	11.35	5.39	83.72	85.00	15.21	86.35
70	0.14	20.85	0.92	3.06	0.91	2.81	2.81	20.78	3.09	56.38	61.43	17.53	63.88
80	0.63	20.27	1.04	1.23	1.18	2.82	2.13	16.86	1.13	55.13	57.94	19.87	61.26
90	4.33	16.37	0.82	0.83	0.89	2.17	3.84	16.55	3.99	41.24	43.59	19.49	47.75
100	21.34	22.25	0.67	0.76	0.44	1.76	0.68	8.06	2.23	28.40	28.56	23.69	37.10
110	77.39	21.98	0.67	1.17	0.35	1.19	1.96	12.16	8.15	22.54	29.33	18.77	34.82
120	107.40	24.30	0.28	1.88	0.21	0.80	1.64	11.63	6.47	10.04	21.78	20.03	29.59
130	130.01	26.47	0.33	2.06	0.27	0.77	1.81	11.64	4.28	10.70	22.61	21.58	31.26
140	144.65	25.97	0.49	1.96	0.26	0.80	1.88	10.89	3.39	12.89	22.81	21.42	31.29
150	152.40	24.81	0.55	1.81	0.23	0.85	1.89	10.01	2.77	13.75	22.42	20.44	30.34

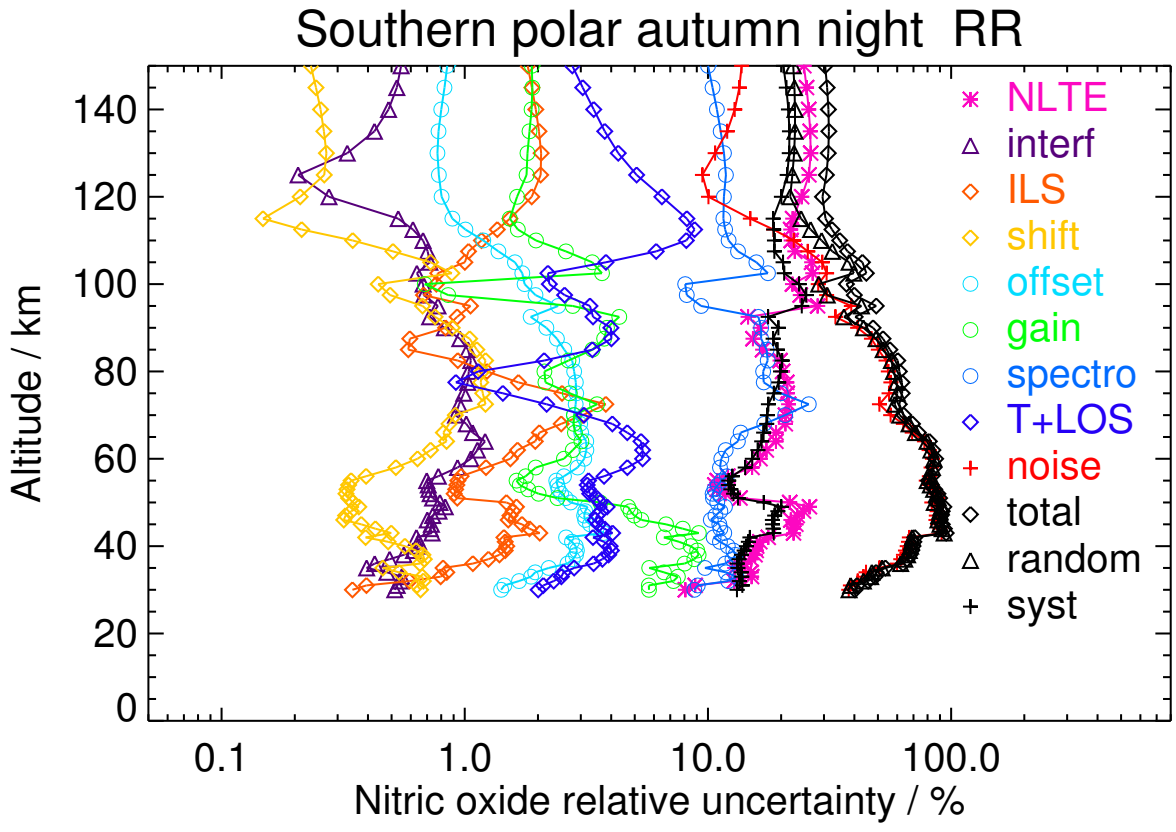

Figure S68. V8R_NO_261 Southern polar autumn night

Table S70. Nitric oxide error budget for Northern polar winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.00	10.47	0.64	0.67	0.58	1.40	2.77	14.00	1.73	39.98	41.28	14.63	43.79
40	0.01	13.25	0.25	2.35	0.48	1.50	3.34	13.24	2.06	43.68	44.83	16.53	47.78
50	0.01	14.20	0.26	1.75	0.43	1.09	2.28	12.70	3.21	55.96	57.36	14.99	59.28
60	0.02	14.70	0.36	1.84	0.38	1.63	1.41	13.08	2.86	54.62	56.37	14.48	58.20
70	0.11	9.81	0.23	2.04	0.27	1.39	1.12	11.98	0.20	37.03	38.45	11.83	40.23
80	0.55	9.51	0.23	2.21	0.16	1.32	0.91	10.87	0.54	30.89	32.14	11.74	34.22
90	3.31	15.10	0.22	1.69	0.24	1.86	0.74	9.07	0.38	32.34	33.62	15.28	36.93
100	21.55	18.04	0.18	1.15	0.24	2.50	0.63	7.62	0.26	24.74	26.15	17.88	31.68
110	120.50	13.11	0.29	1.44	0.08	1.67	0.67	7.25	18.90	16.57	26.06	13.51	29.35
120	186.88	18.04	0.21	1.81	0.07	1.28	0.62	8.40	28.62	10.13	31.56	18.10	36.38
130	204.28	22.99	0.13	1.94	0.08	1.16	0.67	9.53	19.80	8.05	23.55	22.96	32.89
140	236.66	25.81	0.22	2.00	0.11	1.07	0.78	10.11	14.59	9.14	21.01	25.09	32.72
150	263.59	28.67	0.30	1.99	0.15	1.19	0.92	10.24	10.62	11.18	21.50	26.62	34.22

S3 NO error contribution profile plots and tabulated values for RR MA data (V8R_NO_561)

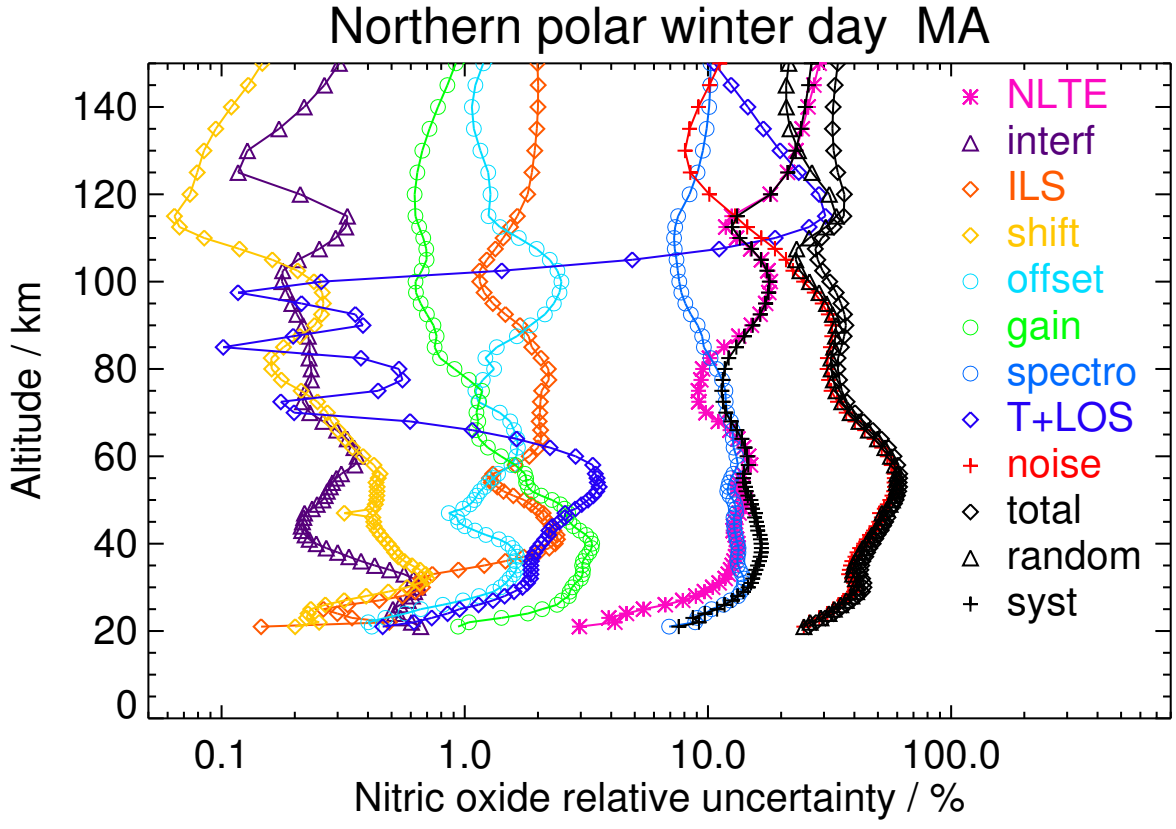

Figure S69. V8R_NO_561 Northern polar winter day

Table S71. Nitric oxide error budget for Northern polar winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.00	3.88	2.49	1.44	1.34	3.52	13.02	8.50	2.32	80.62	81.85	9.26	82.37
50	0.00	9.63	0.56	2.50	0.47	1.29	2.25	17.41	4.20	54.32	57.15	10.55	58.12
60	0.04	16.50	0.53	2.24	0.70	2.33	2.11	11.75	4.62	48.93	52.63	8.42	53.30
70	0.27	13.64	0.40	2.14	0.90	3.55	1.54	11.91	2.56	37.61	41.27	8.12	42.07
80	0.73	30.81	0.35	2.38	0.31	2.96	2.41	13.04	0.16	37.45	48.87	12.41	50.42
90	4.50	14.52	0.30	1.59	0.28	2.20	0.92	9.76	1.23	37.91	39.73	13.21	41.87
100	22.44	19.65	0.28	1.14	0.28	2.94	0.81	8.82	2.83	33.79	36.11	17.91	40.30
110	111.27	20.42	0.30	1.32	0.16	2.18	0.91	8.54	20.74	23.73	34.71	16.91	38.61
120	203.19	19.71	0.22	1.76	0.07	0.97	0.73	9.09	28.79	10.37	33.09	17.82	37.58
130	200.31	23.93	0.12	1.94	0.07	1.21	0.64	9.92	19.94	9.75	26.80	21.24	34.20
140	214.66	25.02	0.21	1.92	0.09	1.28	0.64	9.81	15.27	11.92	25.01	21.85	33.21
150	227.89	25.07	0.28	1.80	0.09	1.32	0.63	9.23	11.89	13.41	24.13	21.41	32.26

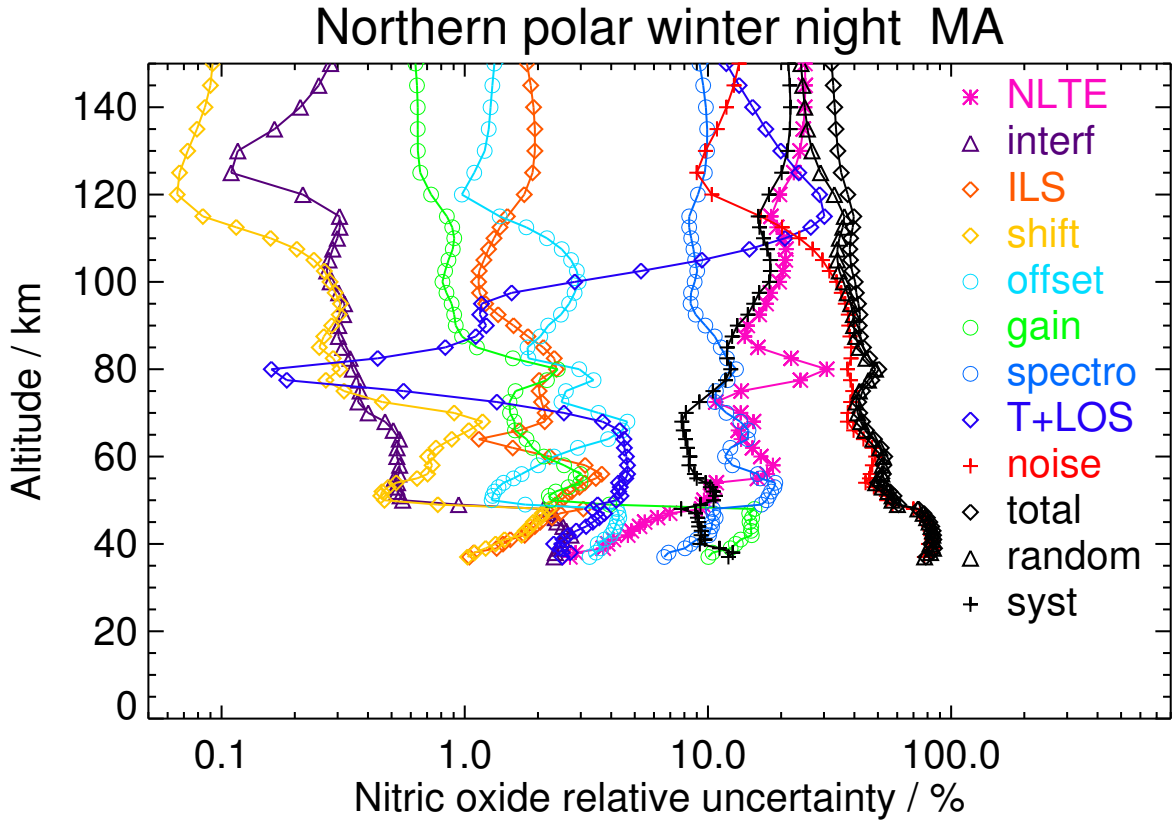

Figure S70. V8R_NO_561 Northern polar winter night

Table S72. Nitric oxide error budget for Northern polar spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	4.76	0.38	0.50	0.12	0.53	2.09	6.01	1.33	21.97	22.47	6.59	23.42
30	0.01	9.26	0.28	1.98	0.63	1.36	3.41	10.65	1.64	34.60	35.56	12.36	37.64
40	0.01	4.43	0.16	1.51	0.42	0.75	2.17	10.77	1.09	23.93	24.83	10.05	26.78
50	0.01	2.43	0.06	3.61	0.36	0.48	3.72	16.71	1.50	18.57	22.94	11.55	25.68
60	0.01	14.73	0.20	1.55	0.34	1.49	1.05	10.46	2.22	49.79	51.46	12.98	53.07
70	0.02	16.93	0.18	2.32	0.30	1.99	1.14	12.45	0.24	49.28	51.48	15.19	53.67
80	0.06	30.07	0.20	1.79	0.29	2.85	0.90	11.79	0.72	56.00	60.64	22.70	64.74
90	0.53	34.74	0.22	1.52	0.41	3.90	0.69	9.06	0.46	51.88	57.08	27.21	63.24
100	5.39	42.73	0.21	1.28	0.41	3.86	0.62	7.90	0.30	38.20	45.00	36.61	58.01
110	41.01	34.35	0.20	1.41	0.13	2.46	0.62	7.94	17.41	24.10	37.57	26.90	46.21
120	106.27	29.76	0.19	1.91	0.22	1.30	0.76	9.56	25.03	12.29	35.24	22.78	41.96
130	183.50	29.60	0.08	1.94	0.15	1.09	0.71	10.16	18.86	7.48	28.90	23.69	37.37
140	286.31	29.79	0.09	2.03	0.12	0.88	0.74	10.75	14.77	6.81	27.04	23.28	35.68
150	378.25	33.04	0.13	2.07	0.12	0.92	0.80	11.13	11.23	8.35	27.85	25.33	37.65

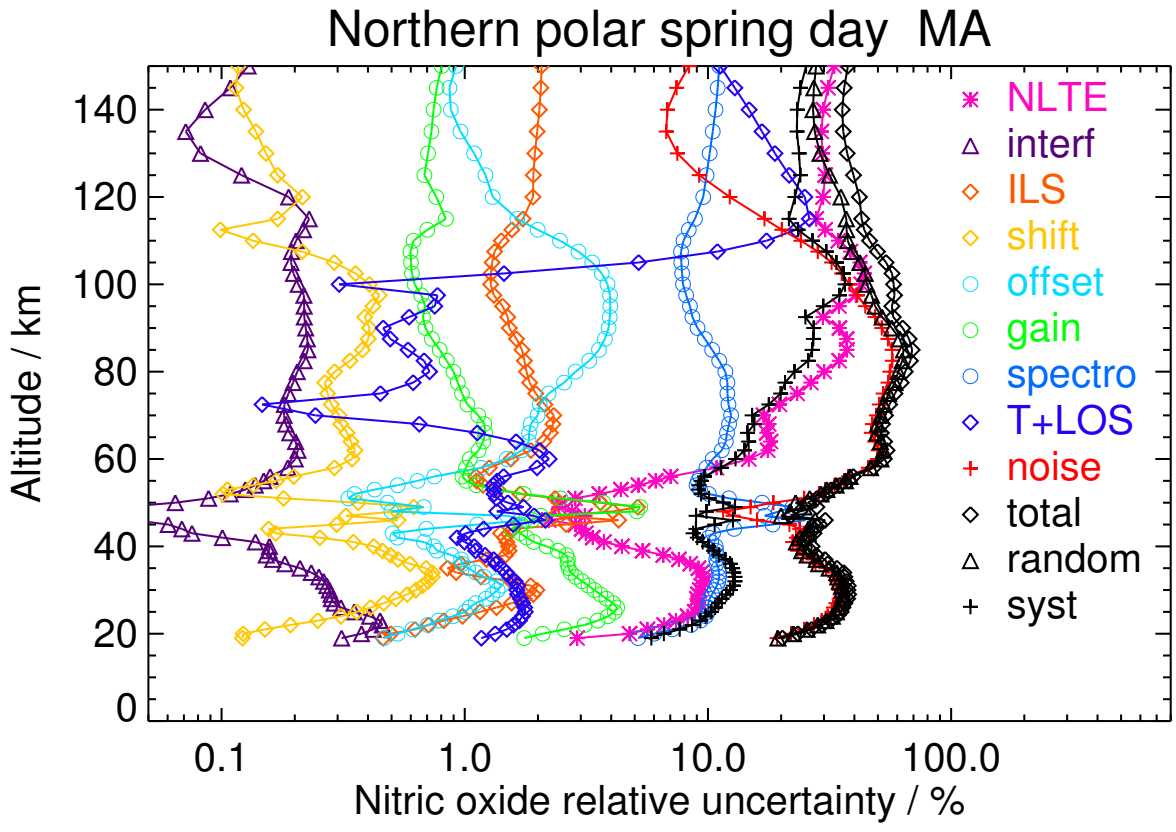

Figure S71. V8R_NO_561 Northern polar spring day

Table S73. Nitric oxide error budget for Northern polar spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.00	3.09	0.67	0.23	0.06	0.83	0.39	1.20	0.94	43.28	43.41	1.37	43.43
50	0.00	5.62	0.25	0.34	0.18	0.97	1.04	10.42	1.88	36.37	37.72	6.77	38.32
60	0.01	11.10	0.36	1.12	0.26	2.05	1.44	12.72	1.83	54.02	55.83	9.84	56.69
70	0.12	1.71	0.14	0.57	0.24	1.73	0.78	8.13	0.40	41.07	41.40	6.76	41.95
80	0.13	3.09	0.33	1.22	0.42	2.44	0.57	9.01	0.37	53.21	53.70	6.80	54.13
90	0.74	31.84	0.33	0.84	0.52	3.31	1.19	9.05	0.20	44.05	51.38	20.25	55.23
100	4.78	33.79	0.31	1.20	0.42	3.82	1.06	9.28	1.55	38.72	45.10	26.70	52.41
110	37.12	24.43	0.27	1.34	0.18	2.63	0.60	8.37	17.89	27.91	36.50	21.04	42.13
120	79.09	25.22	0.20	1.78	0.09	1.15	0.63	10.26	23.64	12.02	32.66	19.56	38.07
130	111.50	27.73	0.05	2.03	0.09	1.04	0.68	11.10	19.74	7.72	30.06	21.06	36.70
140	145.28	27.88	0.12	2.03	0.08	1.04	0.68	10.64	16.01	9.14	27.97	21.30	35.16
150	168.58	28.27	0.17	1.92	0.07	1.16	0.66	9.70	12.67	11.29	27.14	21.22	34.45

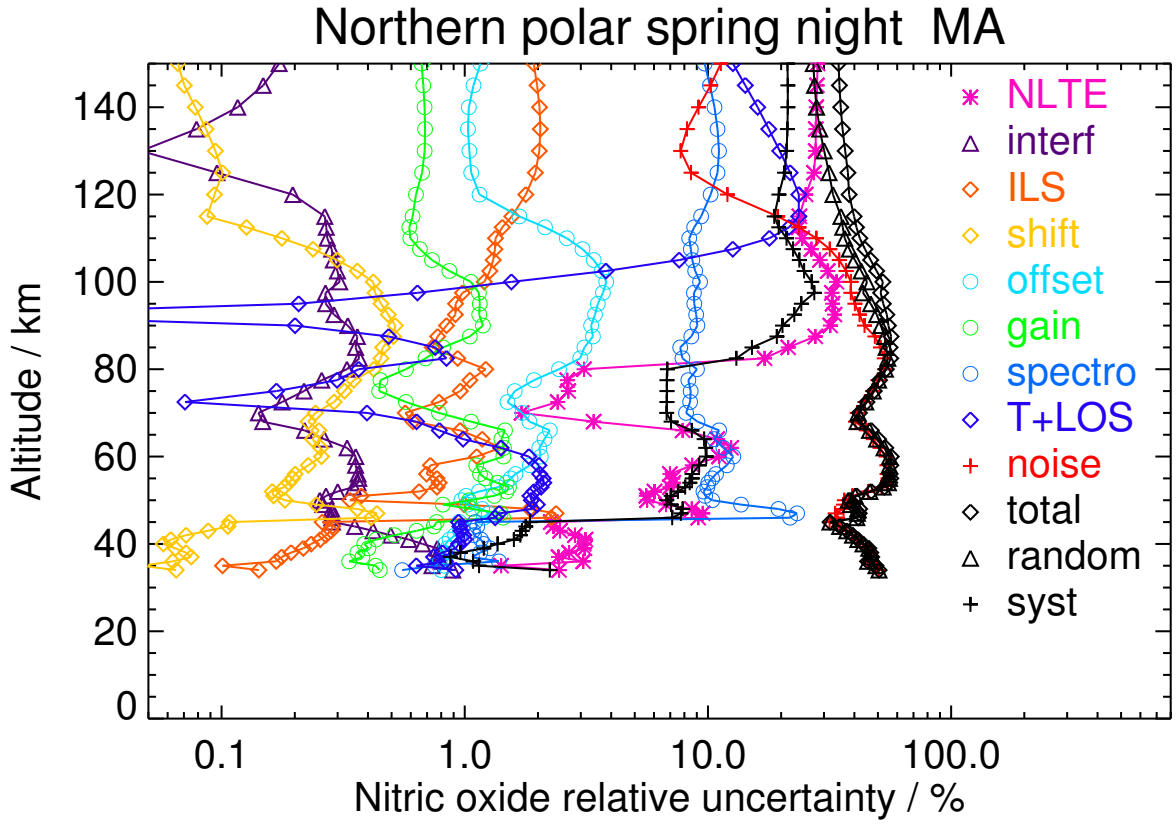

Figure S72. V8R_NO_561 Northern polar spring night

Table S74. Nitric oxide error budget for Northern polar summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.47	0.47	0.34	0.13	0.46	2.38	7.92	1.31	19.57	19.90	7.73	21.35
30	0.01	4.05	0.15	2.53	0.26	0.67	2.59	9.07	1.61	17.77	18.07	10.20	20.75
40	0.01	2.26	0.13	0.62	0.27	0.43	1.45	8.66	0.95	15.75	15.90	8.88	18.22
50	0.01	1.35	0.08	1.04	0.10	0.18	1.28	8.19	0.70	18.15	18.31	8.15	20.04
60	0.01	6.78	0.23	1.27	0.45	1.15	0.76	9.70	3.10	41.51	42.19	9.85	43.32
70	0.02	13.09	0.18	1.98	0.71	1.49	1.49	13.60	0.63	38.23	40.97	12.19	42.75
80	0.03	15.28	0.28	1.87	0.80	2.32	0.81	11.24	1.91	40.89	41.96	16.88	45.22
90	0.80	26.82	0.25	1.78	0.96	2.83	1.09	11.95	3.62	35.96	42.22	19.98	46.71
100	20.65	17.03	0.17	1.54	0.35	2.51	0.68	8.58	3.98	24.86	27.57	15.70	31.73
110	53.55	16.23	0.26	1.70	0.21	1.15	0.79	8.67	23.44	13.17	29.04	14.94	32.66
120	80.94	22.92	0.17	1.85	0.19	1.27	0.75	9.84	26.21	9.87	31.22	20.91	37.58
130	141.08	26.50	0.15	2.07	0.19	1.20	0.80	11.32	24.96	9.84	32.22	22.76	39.45
140	234.84	28.46	0.25	2.11	0.18	1.20	0.91	11.73	23.05	11.08	32.38	23.65	40.10
150	311.39	30.05	0.32	2.02	0.17	1.32	1.03	11.29	20.21	12.89	31.93	24.34	40.15

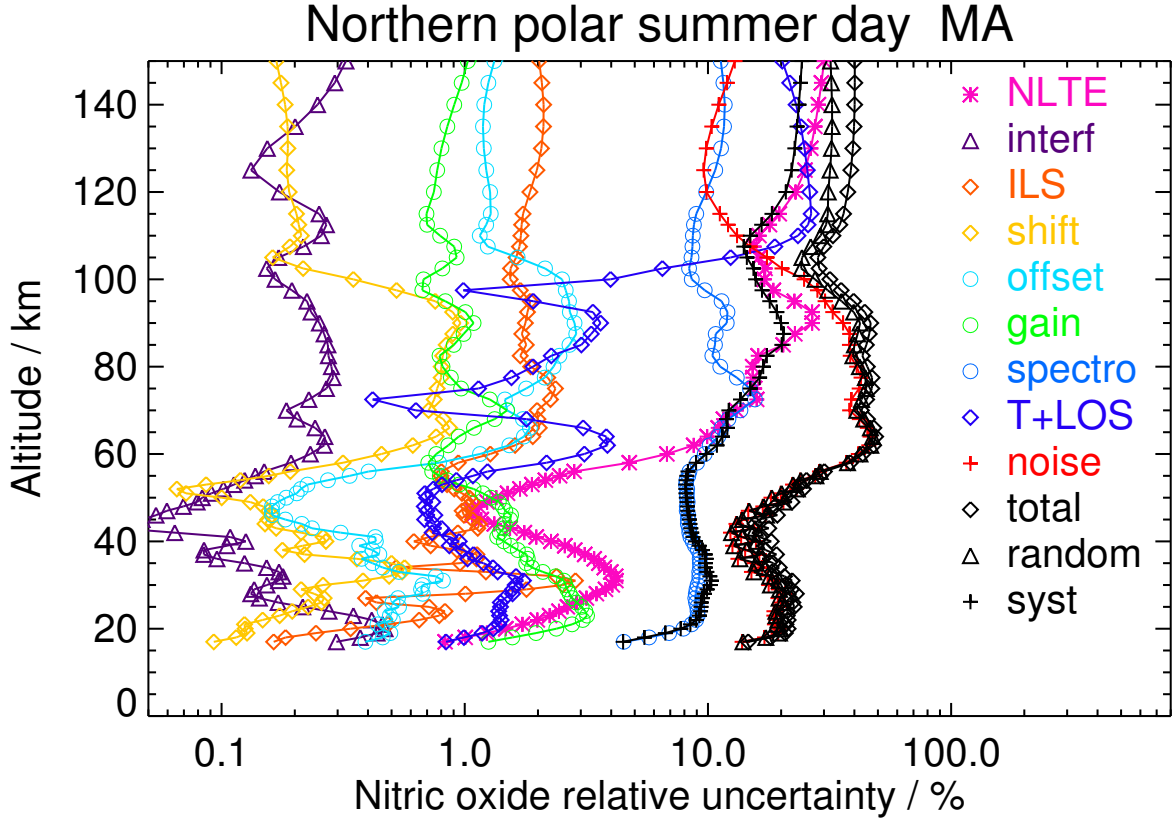

Figure S73. V8R_NO_561 Northern polar summer day

Table S75. Nitric oxide error budget for Northern polar summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.00	2.49	0.80	0.14	0.17	0.69	0.83	1.06	1.30	42.82	42.92	1.62	42.95
50	0.00	4.53	0.45	0.48	0.30	1.22	2.27	3.87	2.59	39.33	39.70	4.43	39.95
60	0.00	8.05	0.48	0.71	0.40	2.17	1.11	9.47	3.31	60.56	61.39	8.45	61.97
90	0.63	21.21	0.49	0.92	0.72	3.96	0.71	7.71	1.39	47.31	49.63	17.44	52.60
100	11.07	19.02	0.35	1.25	0.46	3.31	0.71	9.11	4.36	32.62	36.11	15.40	39.26
110	50.06	14.45	0.30	1.44	0.16	1.82	0.73	9.01	25.86	19.99	34.12	14.14	36.94
120	86.25	19.14	0.14	1.37	0.14	1.22	0.51	8.26	24.45	9.47	29.34	16.28	33.55
130	101.36	23.13	0.13	1.60	0.12	1.36	0.58	9.07	20.09	10.00	28.63	17.49	33.55
140	131.67	23.30	0.17	1.72	0.09	1.29	0.62	9.28	16.80	11.20	27.15	17.46	32.28
150	160.67	25.71	0.21	1.72	0.09	1.33	0.65	8.80	13.52	12.58	27.88	17.53	32.94

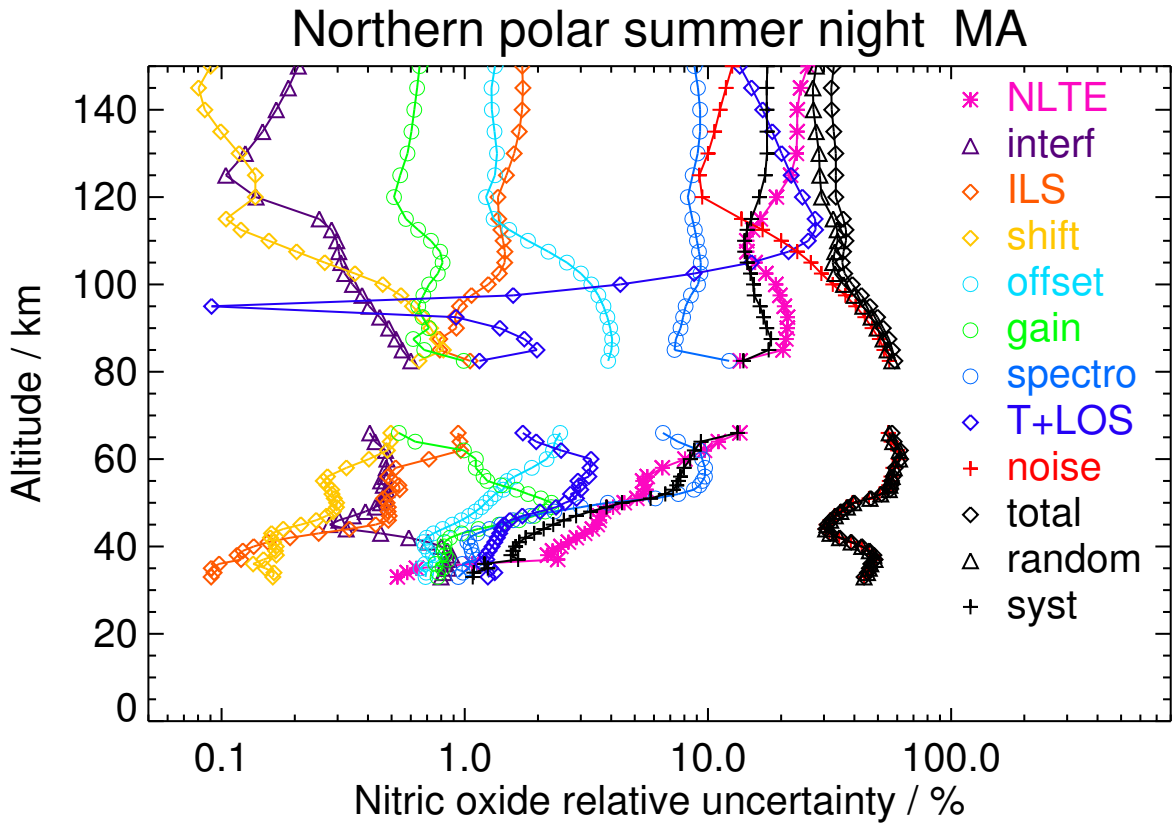

Figure S74. V8R_NO_561 Northern polar summer night

Table S76. Nitric oxide error budget for Northern polar autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.87	0.43	0.13	0.11	0.48	1.34	5.24	0.70	23.21	23.28	5.50	23.92
30	0.01	8.27	0.17	0.86	0.32	1.06	3.97	10.77	1.43	25.68	26.22	13.26	29.38
40	0.01	6.11	0.14	1.63	0.29	0.89	2.35	11.05	0.87	29.09	29.58	11.83	31.86
50	0.00	3.85	0.14	1.40	0.09	0.75	1.49	10.09	1.07	41.14	41.52	9.56	42.60
60	0.00	9.23	0.25	1.81	0.08	2.21	0.96	11.79	1.23	65.86	66.58	11.79	67.62
70	0.01	13.89	0.32	2.17	0.15	2.55	0.79	12.50	0.09	68.59	69.63	14.77	71.18
80	0.05	15.12	0.42	1.92	0.21	3.20	0.72	11.20	0.43	66.69	67.56	15.87	69.40
90	0.58	17.36	0.48	1.83	0.25	3.86	0.72	10.60	0.35	53.40	54.87	16.52	57.31
100	4.39	15.61	0.46	1.68	0.21	3.92	0.64	9.66	0.54	41.57	42.66	16.23	45.65
110	28.68	13.57	0.34	1.51	0.10	2.48	0.57	8.98	9.58	27.85	30.22	15.08	33.78
120	47.03	17.79	0.12	1.72	0.05	1.04	0.59	9.68	20.50	11.35	25.41	17.83	31.04
130	75.66	20.93	0.11	1.78	0.08	1.32	0.61	9.75	18.42	10.73	24.34	20.01	31.51
140	109.31	21.66	0.19	1.75	0.10	1.47	0.63	9.51	16.14	12.76	23.98	20.35	31.45
150	141.77	21.13	0.24	1.65	0.10	1.52	0.62	8.91	13.76	14.15	23.08	19.70	30.35

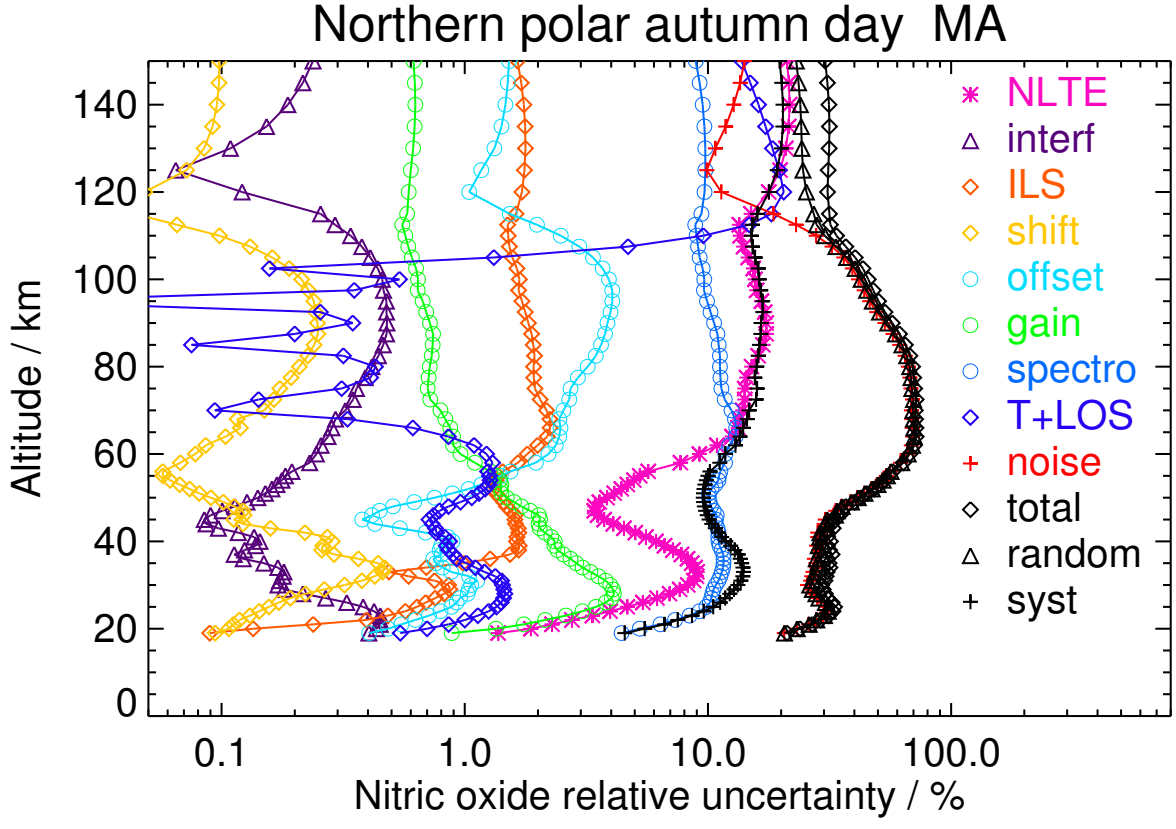

Figure S75. V8R_NO_561 Northern polar autumn day

Table S77. Nitric oxide error budget for Northern polar autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.00	4.98	0.37	1.02	0.22	2.38	1.57	8.61	2.16	67.73	68.29	6.02	68.55
50	0.00	7.04	0.29	0.99	0.13	1.87	0.87	9.80	2.59	64.67	65.39	7.96	65.88
60	0.01	8.97	0.33	1.11	0.10	2.44	1.23	11.50	2.92	59.69	60.87	9.35	61.58
70	0.04	9.84	0.36	1.36	0.16	2.46	1.61	11.32	1.75	57.85	58.91	10.70	59.87
80	0.15	14.60	0.46	2.37	0.21	2.72	1.34	14.77	0.22	57.65	59.83	13.79	61.40
90	1.28	18.68	0.49	2.31	0.27	3.34	1.29	14.13	1.92	47.72	50.97	15.80	53.36
100	7.03	19.35	0.47	1.82	0.25	3.46	0.93	12.05	1.35	37.83	40.88	17.27	44.37
110	39.77	16.88	0.37	1.57	0.11	2.21	0.78	10.29	18.25	26.13	34.15	15.76	37.61
120	69.66	20.61	0.12	1.82	0.06	0.99	0.73	10.66	24.78	10.71	30.60	18.32	35.66
130	83.37	23.90	0.16	2.05	0.09	1.36	0.72	11.17	20.62	11.75	29.12	20.45	35.58
140	101.23	24.39	0.24	2.06	0.10	1.48	0.72	10.96	17.74	13.87	28.43	20.52	35.06
150	118.21	23.44	0.28	1.96	0.10	1.49	0.69	10.24	15.04	14.74	26.91	19.50	33.24

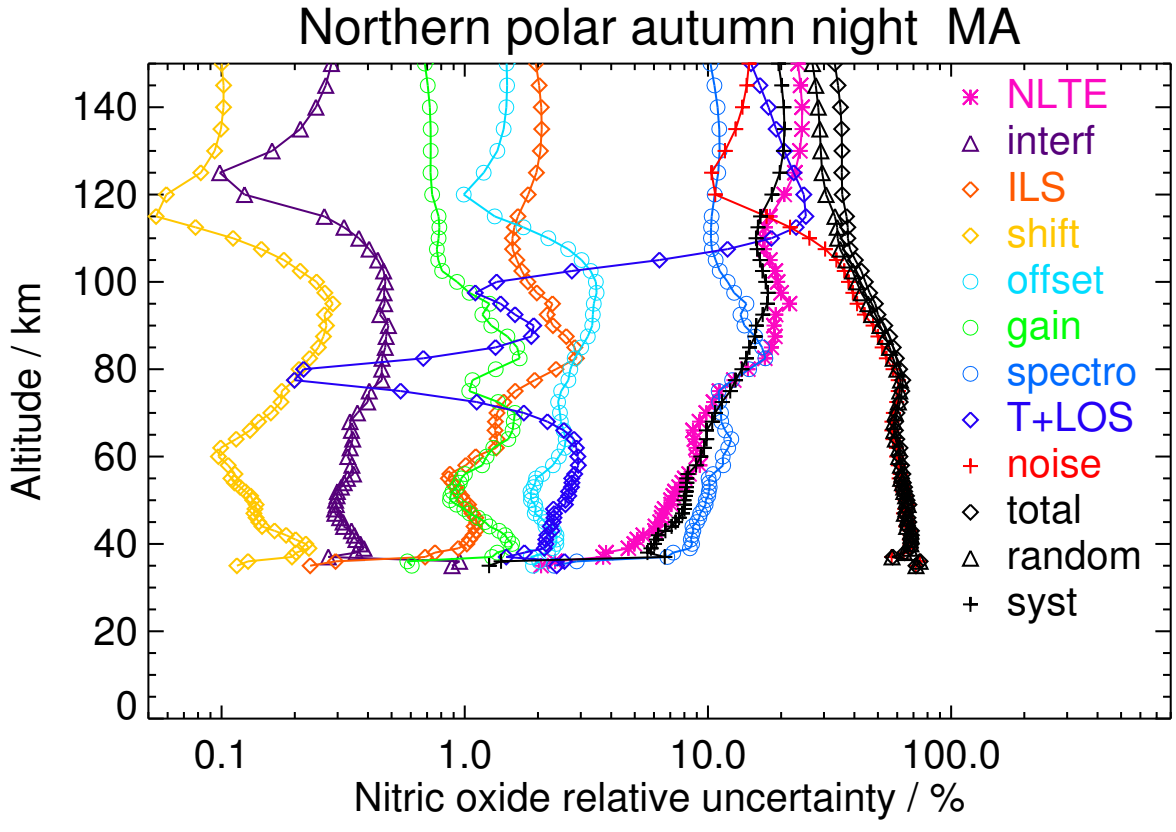

Figure S76. V8R_NO_561 Northern polar autumn night

Table S78. Nitric oxide error budget for Northern midlatitude winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.95	0.85	0.22	0.11	0.48	1.50	5.71	0.59	24.51	24.64	5.80	25.31
30	0.00	9.25	0.22	0.71	0.39	1.04	3.29	11.83	1.29	26.38	26.94	14.47	30.58
40	0.01	6.88	0.07	1.65	0.21	0.67	2.33	10.57	0.99	24.26	24.64	12.25	27.52
50	0.01	3.71	0.11	1.19	0.07	0.63	1.76	9.48	1.06	35.75	36.08	9.27	37.26
60	0.01	10.87	0.26	1.52	0.11	2.35	1.30	9.62	1.59	62.37	63.22	10.77	64.13
70	0.02	15.80	0.33	1.94	0.20	2.76	0.96	9.72	0.14	64.31	65.59	13.83	67.03
80	0.07	21.22	0.35	1.64	0.22	2.96	0.93	9.57	0.42	58.19	60.37	17.20	62.77
90	0.73	22.75	0.31	1.36	0.27	3.40	0.68	8.55	0.28	45.28	48.19	18.25	51.52
100	5.73	23.19	0.26	1.19	0.29	3.29	0.59	8.06	0.28	33.20	37.62	17.39	41.45
110	29.82	17.09	0.26	1.41	0.13	2.20	0.56	8.03	13.54	23.49	30.02	14.05	33.15
120	52.40	18.93	0.18	1.99	0.07	1.15	0.66	9.89	24.25	11.65	30.93	15.12	34.43
130	72.77	22.95	0.07	2.15	0.12	1.13	0.81	10.72	20.33	8.48	28.46	17.98	33.67
140	96.21	24.00	0.08	2.07	0.15	1.11	0.90	10.54	16.64	9.01	26.31	18.95	32.43
150	120.34	24.32	0.13	1.90	0.15	1.17	0.95	9.84	13.25	10.69	24.82	19.19	31.37

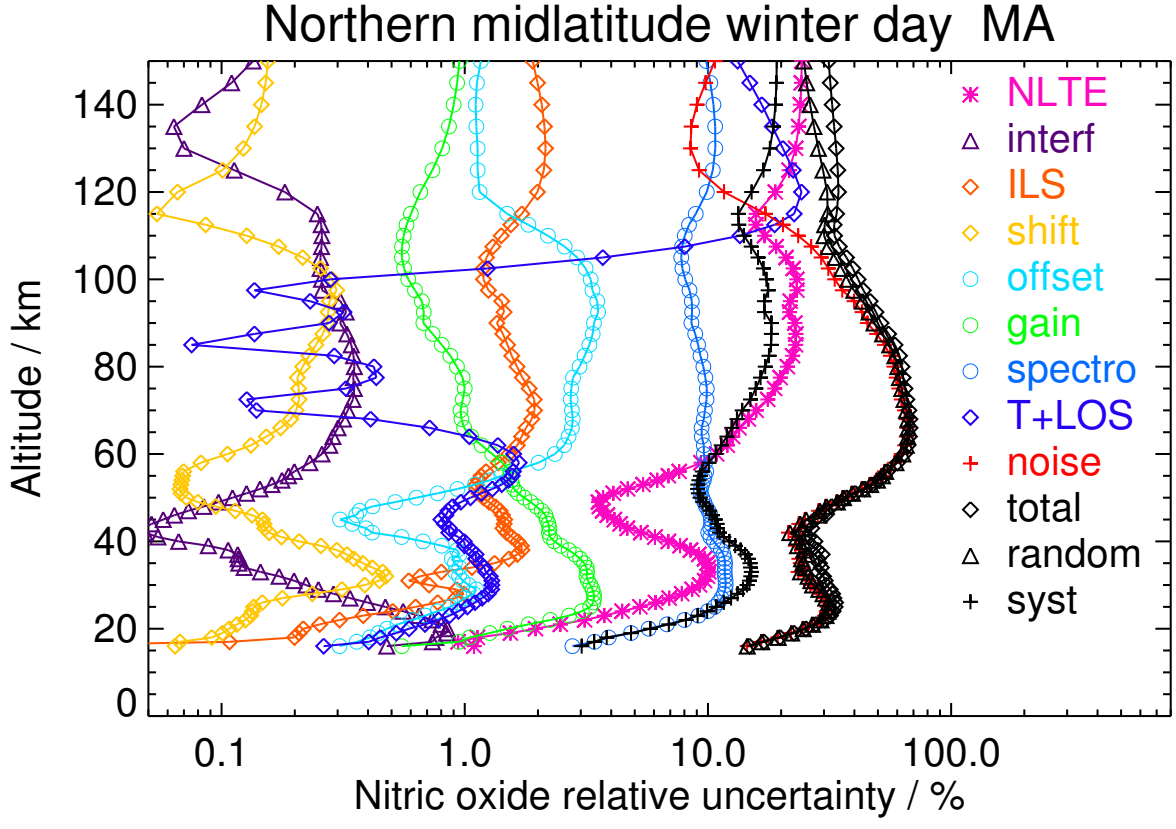

Figure S77. V8R_NO_561 Northern midlatitude winter day

Table S79. Nitric oxide error budget for Northern midlatitude winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	3.81	0.46	0.55	0.21	3.33	1.09	7.89	2.18	84.83	85.17	6.05	85.38
70	0.02	3.03	0.37	0.66	0.19	2.90	0.81	7.47	0.50	71.05	71.23	6.99	71.57
80	0.16	26.91	0.47	1.19	0.81	2.97	0.48	4.18	0.39	65.94	70.33	12.44	71.42
90	1.28	27.27	0.32	0.74	0.70	3.27	0.40	4.45	0.92	47.60	53.73	12.47	55.15
100	8.88	27.32	0.30	0.78	0.55	3.14	0.47	8.32	3.58	33.57	42.22	13.58	44.35
110	23.83	30.59	0.35	2.04	0.27	1.93	1.20	12.93	23.50	21.18	44.25	12.45	45.97
120	38.68	32.27	0.40	2.78	0.13	1.20	1.35	13.49	28.63	11.54	45.16	12.15	46.77
130	31.41	35.41	0.18	2.77	0.08	1.39	0.90	14.34	21.06	13.12	43.37	14.32	45.68
140	31.49	36.16	0.33	2.57	0.10	1.59	0.86	13.62	17.01	15.49	42.61	14.72	45.08
150	33.22	34.87	0.40	2.29	0.10	1.67	0.80	12.23	13.90	16.46	40.47	14.17	42.88

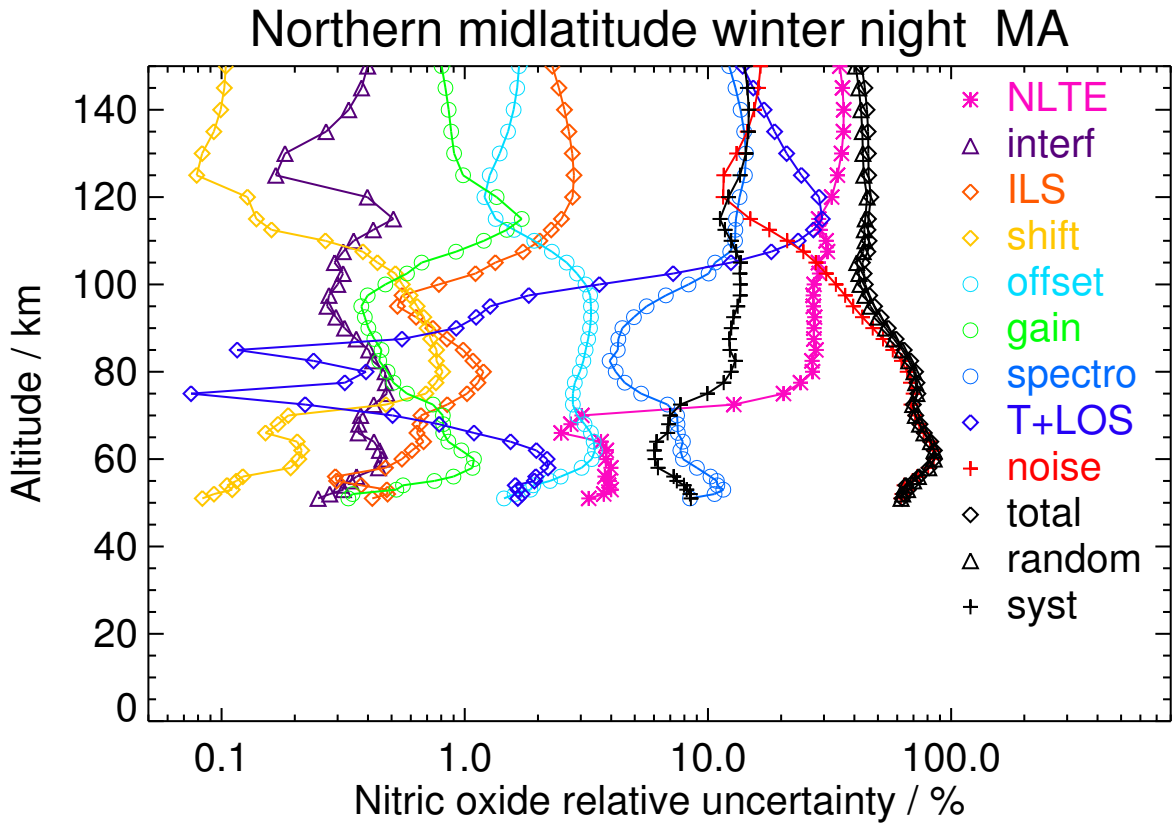

Figure S78. V8R_NO_561 Northern midlatitude winter night

Table S80. Nitric oxide error budget for Northern midlatitude spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.87	0.39	0.37	0.13	0.52	1.58	5.75	0.87	24.23	24.37	5.80	25.05
30	0.00	11.69	0.18	1.58	0.36	1.09	3.73	13.03	1.48	24.72	25.35	17.18	30.62
40	0.01	4.53	0.11	0.91	0.33	0.60	2.14	10.24	0.97	17.34	17.97	10.49	20.81
50	0.01	1.62	0.08	1.10	0.07	0.30	1.56	9.03	0.78	23.03	23.33	8.65	24.88
60	0.01	9.58	0.27	1.45	0.20	2.09	1.14	9.87	1.99	58.10	58.86	10.56	59.80
70	0.02	27.85	0.26	2.49	0.19	1.94	1.98	12.18	0.15	53.69	59.38	17.17	61.81
80	0.04	23.05	0.39	1.47	0.41	3.25	0.93	9.03	0.65	59.44	62.20	17.05	64.50
90	0.38	27.07	0.48	1.56	0.51	4.39	1.00	7.63	0.32	55.68	57.98	23.52	62.57
100	3.15	34.11	0.39	1.50	0.48	4.03	0.86	7.83	0.32	41.64	48.34	25.32	54.57
110	20.25	27.90	0.38	1.64	0.29	2.65	0.85	8.58	13.34	28.37	37.76	20.47	42.96
120	46.67	23.32	0.28	1.84	0.10	1.26	0.63	9.52	22.46	13.44	31.82	17.67	36.40
130	85.55	24.44	0.12	1.85	0.16	1.04	0.68	9.75	20.07	7.89	28.88	18.12	34.10
140	141.10	22.32	0.08	1.79	0.19	0.93	0.90	9.69	17.23	7.45	24.90	18.14	30.81
150	190.15	22.88	0.13	1.68	0.20	0.99	1.13	9.45	14.14	9.18	23.57	18.61	30.03

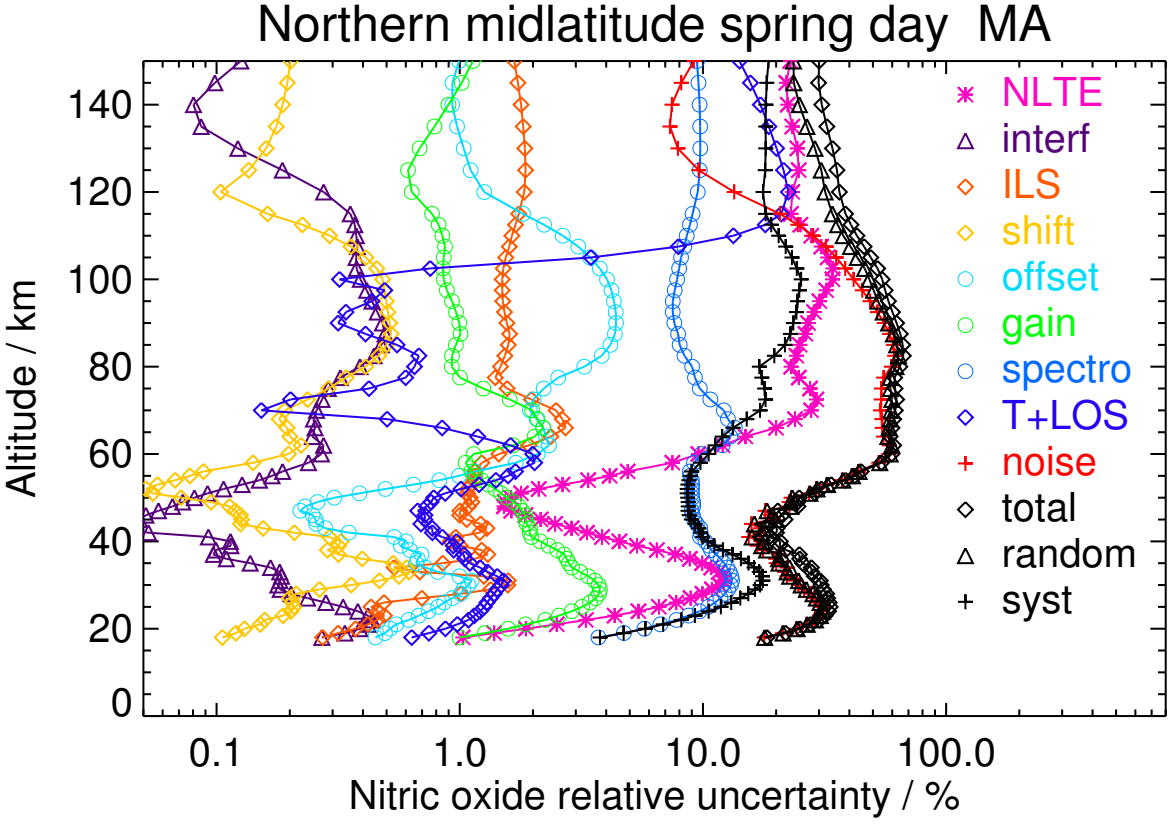

Figure S79. V8R_NO_561 Northern midlatitude spring day

Table S81. Nitric oxide error budget for Northern midlatitude spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	7.09	0.49	0.92	0.26	2.57	1.23	9.56	2.07	67.30	68.05	7.39	68.45
70	0.04	4.00	0.20	0.76	0.19	2.24	0.83	12.63	0.42	47.70	48.77	8.91	49.57
80	0.08	6.73	0.36	1.16	0.34	1.97	1.78	14.25	0.46	45.56	47.53	8.58	48.30
90	0.47	15.27	0.73	1.07	0.57	3.81	0.63	8.65	0.09	55.46	56.77	13.35	58.32
100	3.56	26.81	0.50	1.06	0.42	3.71	0.53	9.00	1.25	39.92	45.61	18.16	49.09
110	23.66	31.43	0.44	1.54	0.21	2.36	0.73	10.63	16.10	26.78	41.62	18.79	45.67
120	56.79	31.84	0.29	2.28	0.09	1.19	0.88	13.64	23.42	12.97	40.28	17.37	43.86
130	75.31	33.12	0.11	2.64	0.11	1.23	0.95	14.36	20.27	10.34	38.84	17.92	42.78
140	93.14	33.00	0.23	2.60	0.10	1.32	0.93	13.43	17.07	12.42	37.47	17.91	41.53
150	104.01	31.99	0.33	2.39	0.09	1.44	0.88	11.94	14.10	14.08	35.68	17.28	39.64

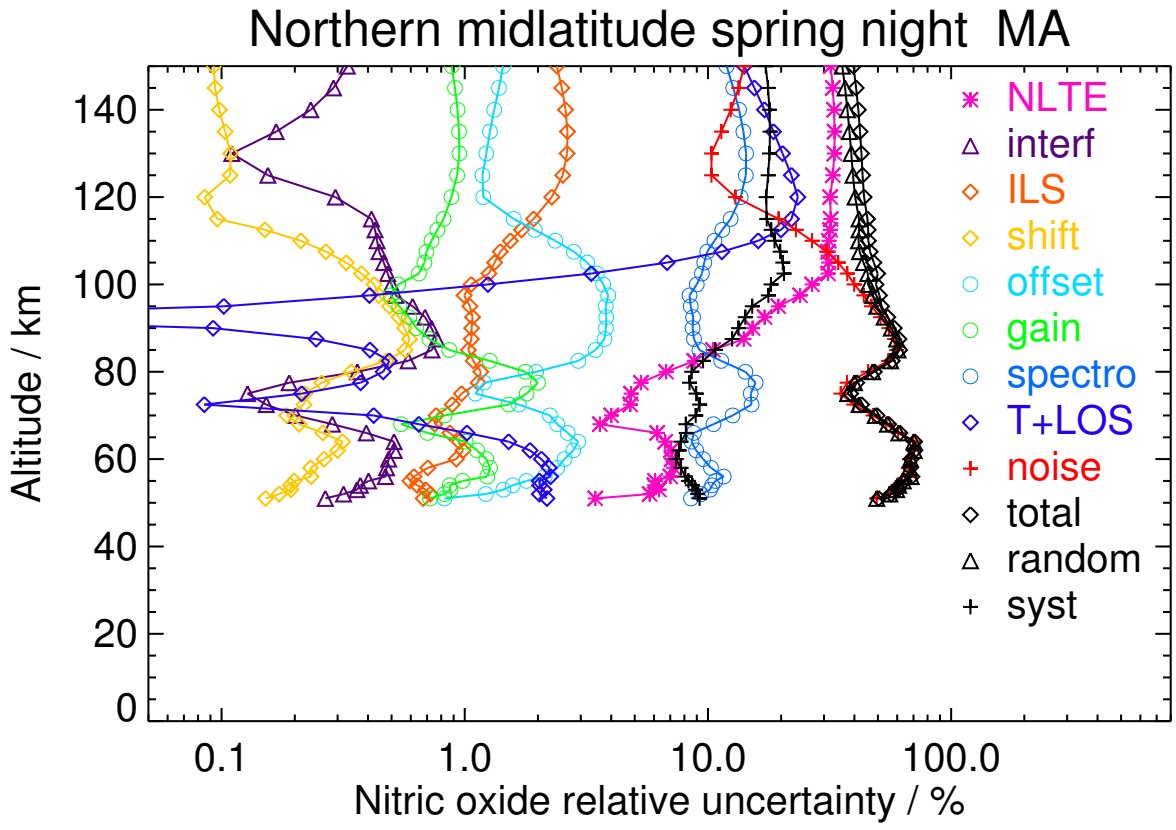

Figure S80. V8R_NO_561 Northern midlatitude spring night

Table S82. Nitric oxide error budget for Northern midlatitude summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.49	0.44	0.38	0.13	0.48	2.02	6.89	0.98	23.77	23.96	6.81	24.91
30	0.01	7.98	0.16	2.16	0.27	0.87	3.67	11.79	1.49	20.45	20.77	14.51	25.34
40	0.01	3.59	0.12	0.70	0.27	0.52	1.84	9.43	0.94	16.94	17.15	9.98	19.85
50	0.01	1.39	0.08	0.84	0.07	0.27	1.43	8.41	0.67	20.14	20.32	8.29	21.94
60	0.01	8.65	0.30	1.24	0.24	1.90	0.86	9.05	2.47	55.03	55.62	10.18	56.54
70	0.01	14.51	0.39	1.92	0.48	2.58	1.07	9.59	0.49	57.48	57.86	16.44	60.15
80	0.02	21.26	0.40	1.33	0.42	3.15	0.53	7.54	1.50	54.17	56.06	17.74	58.80
90	0.85	25.24	0.39	1.67	0.62	3.63	0.78	9.53	1.42	45.49	49.73	18.52	53.07
100	9.51	17.61	0.34	1.46	0.49	3.24	0.85	7.19	1.20	32.82	34.45	16.34	38.13
110	34.27	15.33	0.41	1.62	0.23	1.98	0.71	7.75	21.86	22.54	32.63	14.95	35.89
120	60.30	21.38	0.24	1.70	0.16	1.12	0.62	8.90	24.08	9.37	28.64	19.70	34.76
130	107.94	26.70	0.08	1.73	0.27	1.14	1.01	9.66	20.29	8.27	27.39	23.27	35.94
140	176.86	29.28	0.18	1.72	0.29	1.21	1.26	9.87	17.44	10.35	27.69	24.61	37.04
150	236.21	30.10	0.27	1.63	0.28	1.31	1.39	9.54	14.51	12.42	27.44	24.80	36.99

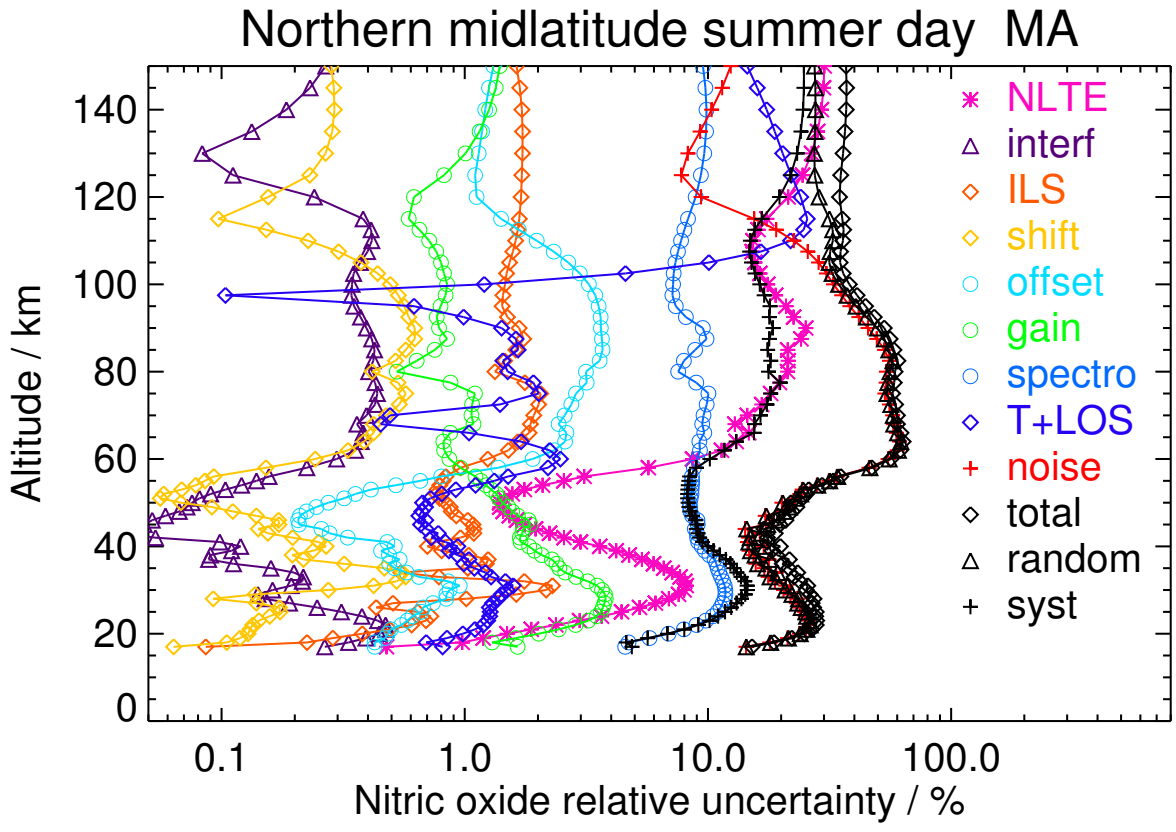

Figure S81. V8R_NO_561 Northern midlatitude summer day

Table S83. Nitric oxide error budget for Northern midlatitude summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.00	1.29	0.64	0.09	0.15	0.52	0.32	0.70	1.31	37.86	37.91	1.04	37.92
50	0.00	2.63	0.41	0.32	0.30	1.01	2.42	3.66	2.26	34.14	34.38	4.00	34.62
60	0.00	5.77	0.56	0.86	0.40	2.26	1.37	8.67	1.97	61.73	62.33	6.75	62.70
70	0.01	6.26	0.67	1.20	0.67	2.72	0.44	7.31	0.04	62.32	62.59	8.28	63.13
80	0.04	14.83	0.84	1.15	1.03	3.42	0.49	6.93	1.37	60.95	62.02	12.38	63.24
90	1.07	15.76	0.82	1.57	1.03	3.65	0.64	9.29	0.91	47.71	49.93	11.68	51.28
100	9.23	14.89	0.70	1.98	0.72	3.14	1.28	10.70	3.70	31.80	34.71	13.15	37.12
110	27.38	18.80	0.53	1.92	0.21	1.64	0.98	10.50	22.42	18.25	32.25	16.33	36.15
120	44.68	27.45	0.17	1.95	0.17	1.29	0.76	10.88	25.01	10.26	34.63	20.24	40.11
130	55.02	29.40	0.41	1.94	0.20	1.82	0.94	10.47	22.38	15.28	35.77	20.91	41.43
140	71.19	27.91	0.51	1.84	0.19	1.89	1.00	9.58	19.82	16.92	33.99	20.08	39.47
150	84.42	25.43	0.53	1.68	0.18	1.84	0.98	8.50	16.97	17.09	30.99	18.61	36.15

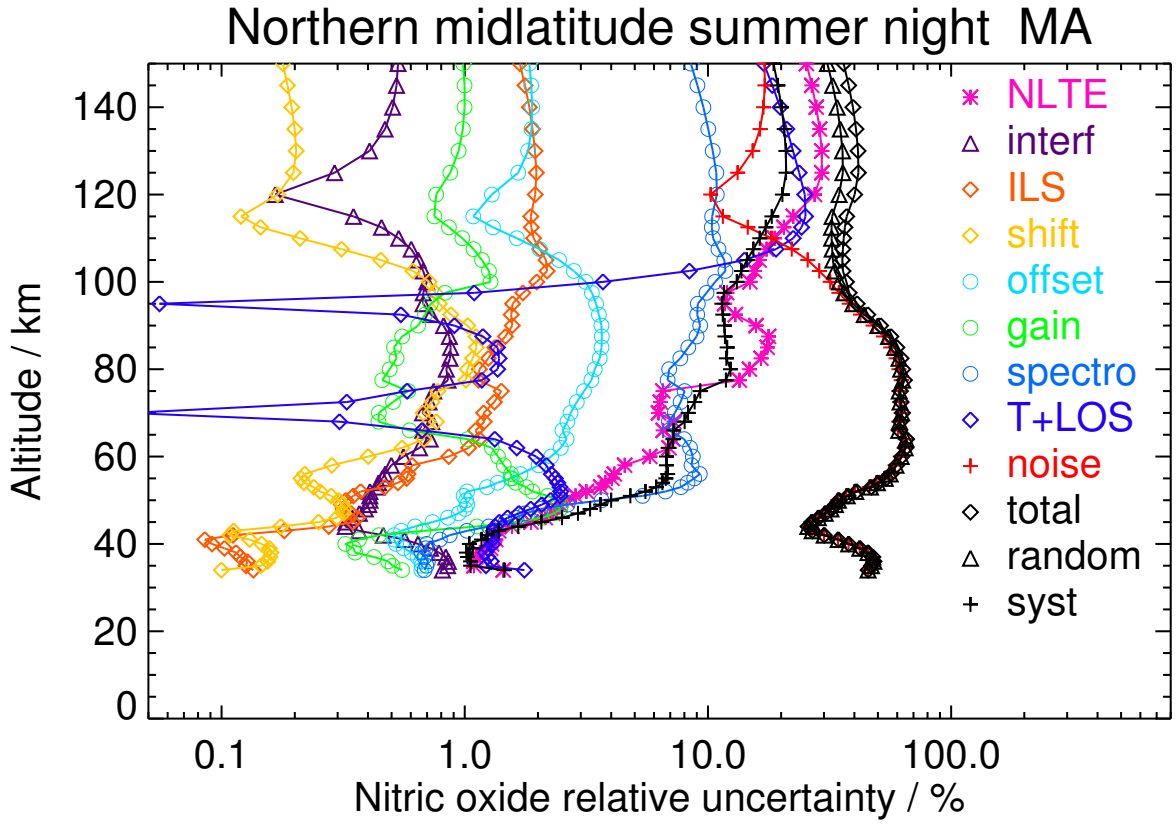

Figure S82. V8R_NO_561 Northern midlatitude summer night

Table S84. Nitric oxide error budget for Northern midlatitude autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.50	0.36	0.10	0.17	0.46	0.99	4.66	0.71	24.17	24.24	4.78	24.70
30	0.01	9.47	0.17	1.72	0.35	1.04	3.80	11.66	1.51	24.73	25.18	14.97	29.29
40	0.01	5.67	0.10	1.23	0.36	0.70	2.42	10.36	1.10	19.61	20.07	11.42	23.09
50	0.01	1.79	0.07	1.16	0.08	0.37	1.58	9.14	0.78	25.24	25.49	8.87	26.99
60	0.00	9.71	0.19	1.74	0.13	2.08	1.02	11.51	1.30	60.35	61.46	10.09	62.28
70	0.01	10.90	0.23	1.66	0.20	2.58	0.59	9.24	0.09	64.79	65.38	11.71	66.42
80	0.04	12.98	0.34	1.64	0.30	3.46	0.69	9.37	0.42	68.22	68.98	12.92	70.18
90	0.50	16.38	0.36	1.86	0.32	3.82	0.81	9.76	0.35	55.57	57.05	14.69	58.91
100	3.91	17.84	0.30	1.92	0.29	3.49	0.85	9.51	0.47	37.84	40.28	15.34	43.10
110	21.48	18.64	0.31	1.85	0.18	2.70	0.72	9.26	8.17	30.09	33.70	16.77	37.64
120	27.40	21.55	0.19	2.24	0.04	1.18	0.72	11.73	20.38	14.32	31.26	15.88	35.06
130	50.39	23.03	0.05	2.11	0.12	1.09	0.75	11.37	18.86	9.72	28.69	17.11	33.40
140	81.41	22.70	0.10	1.93	0.15	1.24	0.78	10.48	16.51	10.79	26.81	17.35	31.94
150	112.07	21.60	0.16	1.72	0.16	1.36	0.80	9.45	14.12	12.61	25.21	16.86	30.33

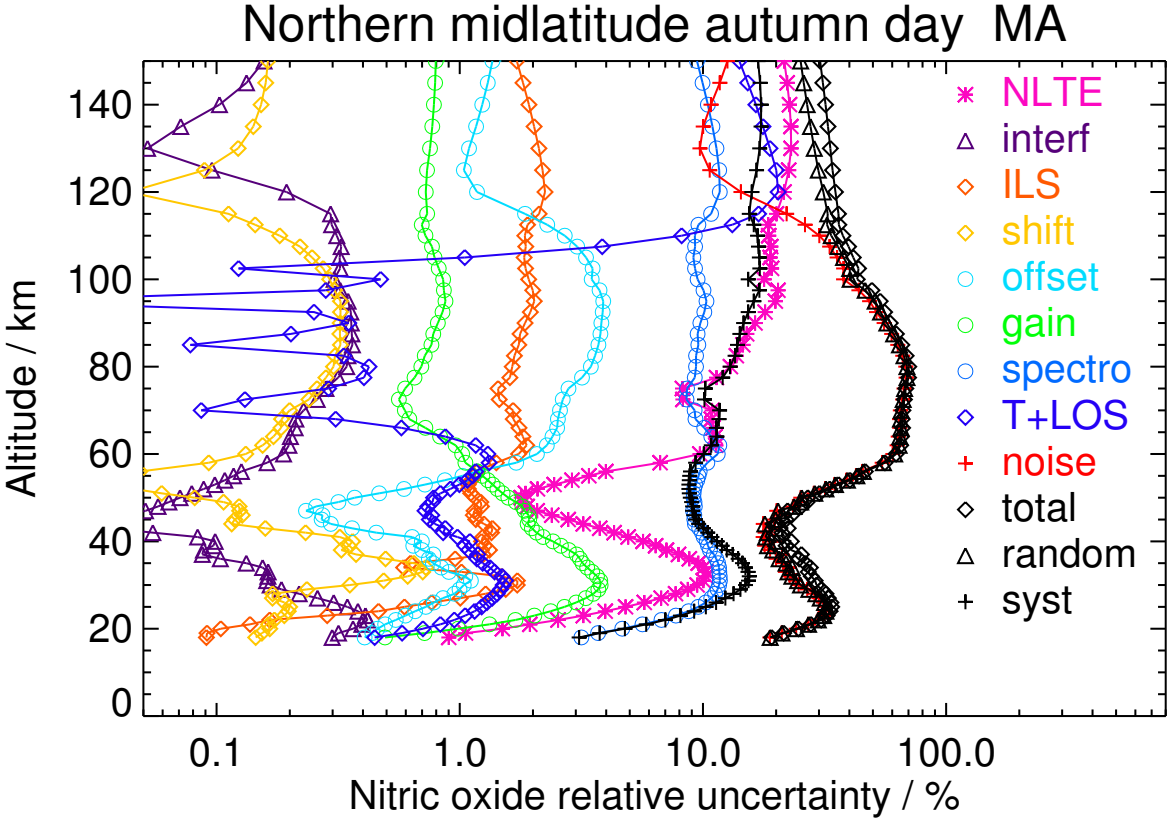

Figure S83. V8R_NO_561 Northern midlatitude autumn day

Table S85. Nitric oxide error budget for Northern midlatitude autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	6.66	0.38	0.62	0.25	1.37	0.80	10.28	1.25	66.51	66.54	12.29	67.67
60	0.00	5.24	0.36	1.07	0.16	2.38	0.95	12.43	3.24	77.30	77.94	9.99	78.58
70	0.07	1.68	0.08	0.86	0.15	1.47	2.17	11.61	0.28	32.97	34.31	7.43	35.11
80	0.06	6.78	0.28	0.54	0.26	2.29	1.04	8.80	0.26	55.70	56.19	8.70	56.86
90	0.37	9.87	0.37	1.12	0.26	2.94	0.67	8.70	1.55	49.20	49.77	11.38	51.06
100	2.31	7.45	0.19	1.49	0.09	2.58	0.42	9.43	1.88	36.04	36.19	12.11	38.16
110	9.17	11.71	0.19	1.33	0.11	1.87	0.70	9.23	13.06	25.58	29.91	12.59	32.45
120	13.98	16.55	0.15	1.55	0.12	1.98	0.68	9.61	17.30	25.81	33.85	13.87	36.58
130	19.20	18.27	0.20	1.61	0.16	2.07	0.75	9.67	16.66	24.02	33.27	13.49	35.90
140	25.33	18.38	0.24	1.59	0.16	2.07	0.77	9.33	15.35	23.26	32.28	12.92	34.77
150	30.50	17.37	0.25	1.50	0.15	1.98	0.74	8.59	13.52	21.97	30.07	11.99	32.37

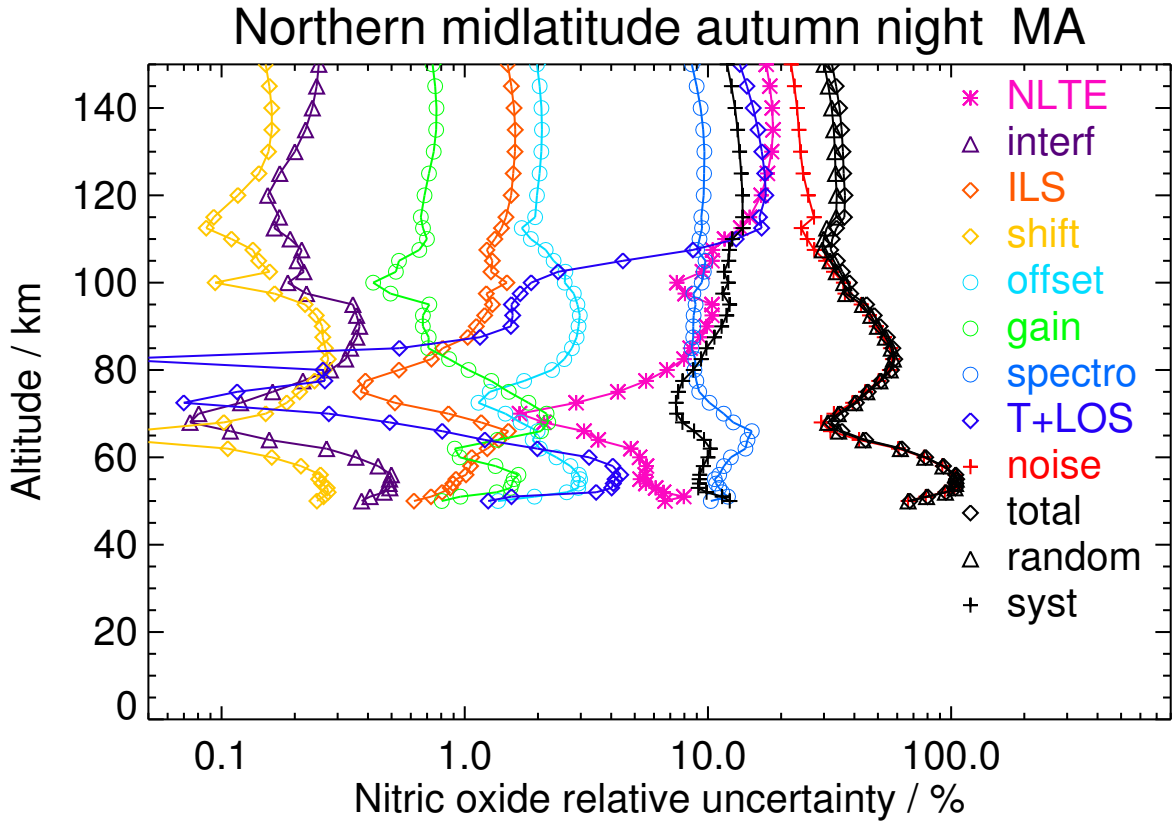

Figure S84. V8R_NO_561 Northern midlatitude autumn night

Table S86. Nitric oxide error budget for Tropics day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	3.22	0.12	1.47	0.09	0.84	0.22	3.99	0.55	24.45	24.66	4.42	25.05
30	0.00	9.70	0.18	3.04	0.27	0.98	2.02	12.62	1.36	30.09	30.59	15.46	34.28
40	0.01	4.24	0.09	0.75	0.37	0.55	2.11	9.44	1.12	13.81	14.16	10.20	17.45
50	0.01	1.26	0.07	1.24	0.08	0.22	1.52	8.99	0.67	19.87	20.03	8.97	21.95
60	0.00	8.36	0.18	2.01	0.32	2.33	0.56	10.49	1.18	63.21	63.68	11.50	64.71
70	0.01	11.87	0.20	2.67	0.44	3.17	0.69	11.14	0.02	67.85	68.34	14.70	69.91
80	0.02	14.45	0.26	2.66	0.56	4.15	1.15	10.35	0.56	66.27	66.74	16.71	68.80
90	0.37	18.02	0.27	2.57	0.59	4.60	1.31	9.93	0.66	55.99	56.89	18.77	59.91
100	3.86	20.45	0.26	2.40	0.53	4.26	1.24	9.06	0.25	45.12	46.80	19.29	50.62
110	16.34	16.63	0.22	2.29	0.32	2.79	0.94	9.16	11.85	30.63	34.33	16.57	38.12
120	26.12	15.42	0.11	2.03	0.06	1.07	0.60	9.54	19.79	11.61	24.34	16.40	29.34
130	51.32	17.97	0.04	1.79	0.15	1.15	0.63	9.45	16.32	8.19	20.38	18.31	27.40
140	87.91	18.72	0.07	1.63	0.18	1.24	0.72	9.06	13.72	9.57	19.07	18.80	26.78
150	117.73	18.59	0.11	1.46	0.19	1.26	0.78	8.41	11.30	11.21	18.27	18.44	25.96

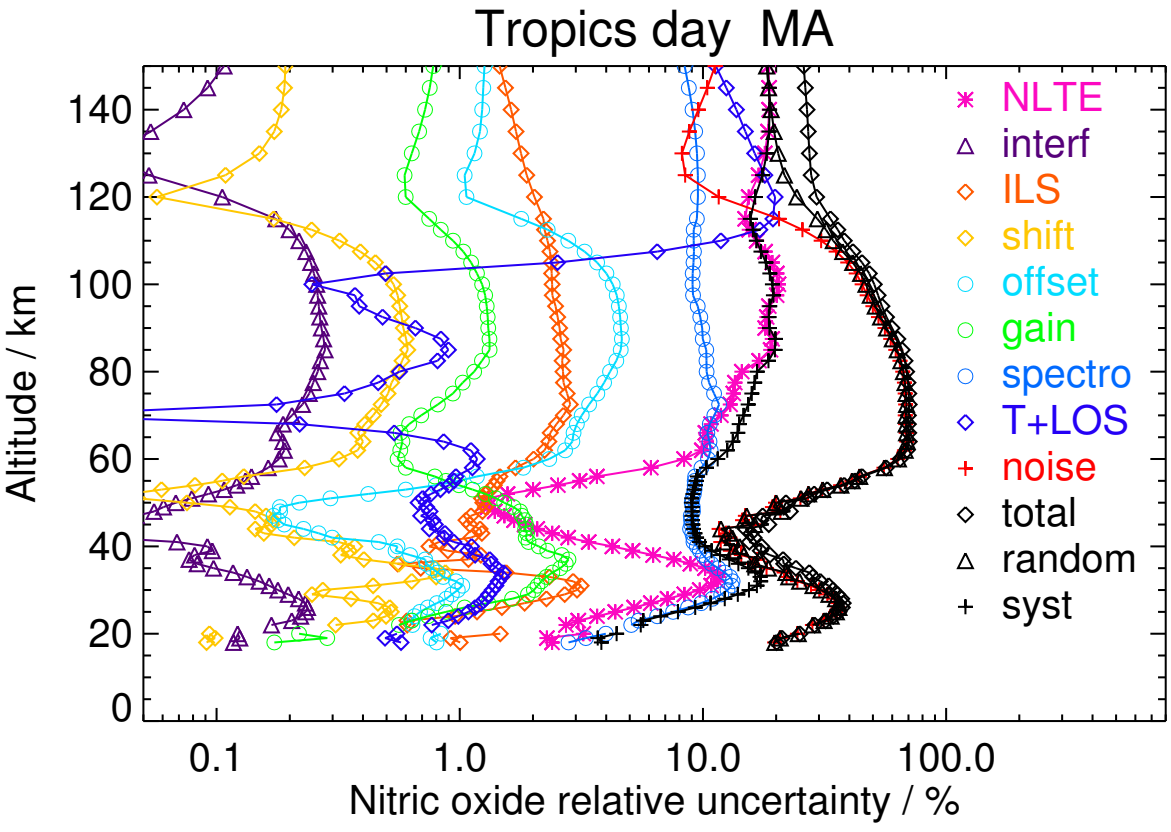

Figure S85. V8R_NO_561 Tropics day

Table S87. Nitric oxide error budget for Tropics night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	6.34	0.52	2.10	0.28	2.71	2.07	12.42	2.25	80.85	81.41	11.20	82.18
90	0.20	10.47	0.31	2.25	0.43	3.20	0.95	10.20	0.72	46.46	47.05	13.23	48.88
100	1.67	12.30	0.25	2.30	0.33	2.85	0.81	10.56	0.63	35.72	36.51	14.85	39.42
110	7.14	13.99	0.15	2.25	0.15	1.99	0.74	10.68	9.14	26.46	29.39	15.46	33.21
120	12.68	14.58	0.11	2.00	0.16	2.06	0.63	9.58	17.94	23.50	30.93	15.17	34.45
130	17.08	13.81	0.15	1.80	0.22	2.24	0.58	8.60	16.53	23.31	29.78	14.25	33.02
140	22.55	12.82	0.16	1.66	0.22	2.21	0.54	7.85	14.90	22.54	28.05	13.32	31.05
150	25.20	11.63	0.16	1.51	0.21	2.07	0.50	7.07	12.95	20.93	25.50	12.16	28.25

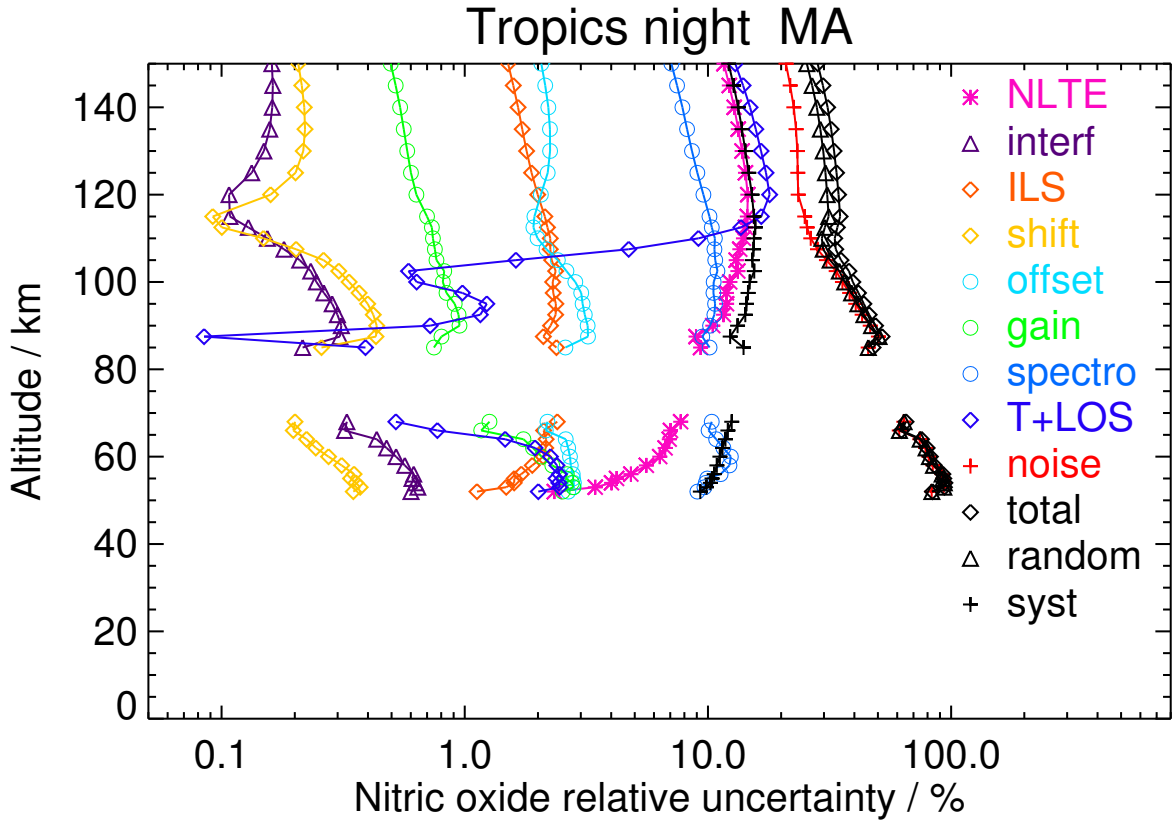

Figure S86. V8R_NO_561 Tropics night

Table S88. Nitric oxide error budget for Southern midlatitude winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	2.55	0.38	0.26	0.10	0.51	1.72	5.55	0.91	23.98	24.22	5.51	24.83
30	0.00	14.15	0.31	1.57	0.47	1.35	4.34	13.59	1.72	30.62	32.55	17.03	36.73
40	0.01	8.23	0.09	2.01	0.32	0.71	2.58	12.21	1.11	25.11	26.68	12.15	29.32
50	0.01	1.89	0.09	1.03	0.07	0.39	1.30	8.66	1.00	30.83	31.05	8.34	32.15
60	0.01	6.75	0.19	1.19	0.33	1.88	0.64	8.64	2.23	56.37	56.81	9.04	57.52
70	0.02	11.11	0.22	1.48	0.37	2.30	0.75	8.57	0.04	57.60	58.22	11.52	59.35
80	0.07	13.62	0.26	1.33	0.39	2.66	0.80	8.52	0.83	53.24	53.92	13.98	55.70
90	0.87	17.25	0.25	1.36	0.39	3.20	0.73	8.30	0.13	44.18	45.38	16.49	48.28
100	8.59	17.72	0.22	1.44	0.29	3.21	0.60	8.56	0.60	33.56	35.26	16.84	39.08
110	45.66	15.00	0.25	1.72	0.10	1.89	0.77	9.85	21.55	21.04	32.22	14.08	35.16
120	75.07	18.77	0.17	1.91	0.10	1.21	0.65	10.38	31.99	10.82	36.46	16.62	40.07
130	100.85	20.77	0.07	1.75	0.11	1.30	0.62	9.64	24.21	9.43	29.18	18.80	34.71
140	135.70	21.39	0.15	1.64	0.10	1.36	0.60	9.11	19.32	11.10	25.85	19.33	32.28
150	173.47	21.14	0.20	1.50	0.09	1.42	0.58	8.32	15.32	12.81	23.59	19.06	30.33

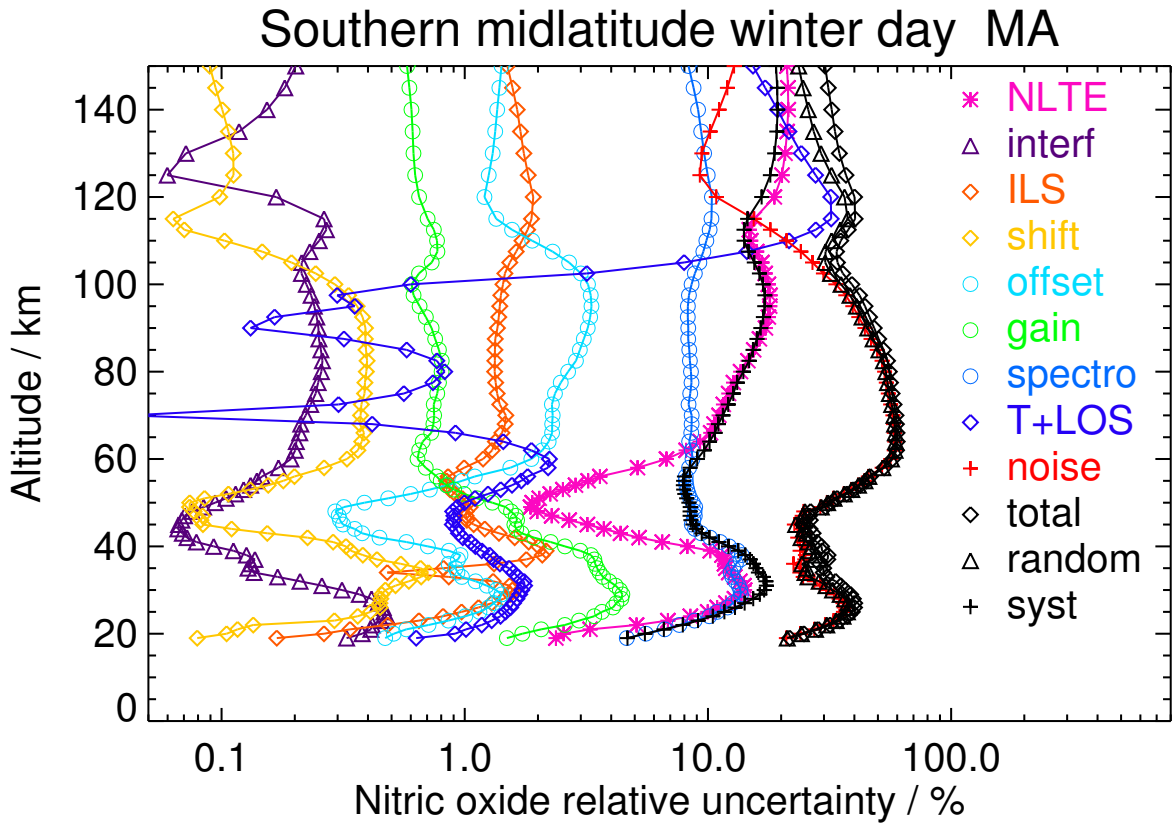

Figure S87. V8R_NO_561 Southern midlatitude winter day

Table S89. Nitric oxide error budget for Southern midlatitude winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	5.92	0.26	1.14	0.24	1.00	0.38	11.36	1.56	49.75	50.30	10.67	51.42
60	0.01	8.73	0.27	0.74	0.21	2.27	1.59	12.81	2.93	57.31	58.73	9.58	59.51
70	0.04	12.39	0.19	1.91	0.23	2.12	1.89	15.32	0.59	53.57	56.04	11.35	57.18
80	0.19	13.40	0.23	2.49	0.30	2.16	1.54	16.11	0.89	50.05	52.82	12.93	54.38
90	1.57	14.43	0.26	1.56	0.37	2.94	0.95	10.96	0.66	43.96	45.75	13.45	47.68
100	11.37	19.43	0.32	1.26	0.49	3.07	0.92	10.59	5.80	33.72	38.15	14.74	40.90
110	43.27	15.81	0.25	1.37	0.19	1.91	0.63	9.26	29.00	22.56	38.88	13.43	41.13
120	73.83	20.32	0.13	1.69	0.10	1.12	0.71	9.93	31.70	11.48	37.02	16.82	40.66
130	89.28	24.62	0.11	1.96	0.14	1.39	0.80	10.80	24.62	12.04	33.40	19.10	38.48
140	101.42	27.24	0.17	2.13	0.16	1.45	0.90	11.44	19.82	13.36	32.56	19.79	38.10
150	110.32	28.08	0.23	2.16	0.15	1.45	0.96	11.26	15.81	14.17	31.58	19.40	37.07

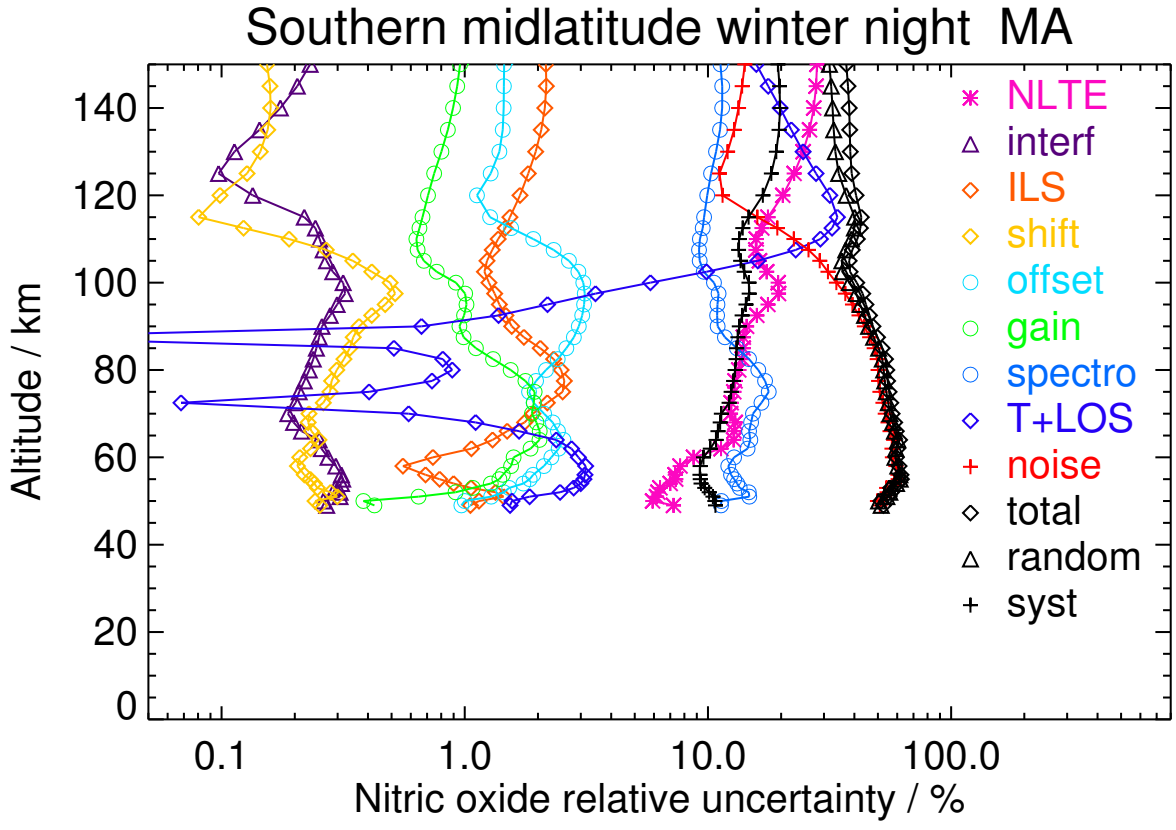

Figure S88. V8R_NO_561 Southern midlatitude winter night

Table S90. Nitric oxide error budget for Southern midlatitude spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.59	0.40	0.51	0.15	0.49	1.36	5.63	0.75	23.15	23.40	5.04	23.94
30	0.00	8.30	0.14	1.57	0.38	0.80	3.14	10.70	1.30	21.14	21.74	13.14	25.40
40	0.01	4.86	0.07	1.18	0.26	0.47	1.89	9.91	0.94	19.85	20.18	10.71	22.85
50	0.01	1.70	0.09	1.06	0.08	0.31	1.31	8.46	0.73	27.32	27.48	8.33	28.72
60	0.01	9.56	0.28	1.46	0.51	1.99	0.75	10.55	1.66	57.20	58.07	10.60	59.03
70	0.01	25.93	0.33	2.08	0.73	2.56	1.66	9.12	<0.01	61.67	64.78	19.41	67.63
80	0.03	29.42	0.42	1.69	0.71	3.81	1.71	8.63	0.66	64.42	66.51	26.23	71.50
90	0.40	26.23	0.48	1.64	0.63	4.52	1.42	8.54	0.04	58.55	60.34	23.95	64.92
100	3.41	25.54	0.43	1.68	0.44	4.10	1.06	8.69	0.01	43.98	46.08	23.67	51.80
110	20.36	23.48	0.41	1.78	0.23	2.75	0.78	9.12	16.27	29.96	37.37	20.30	42.53
120	46.13	21.69	0.25	1.92	0.05	1.16	0.63	9.93	24.03	12.53	30.78	19.02	36.18
130	83.92	23.44	0.08	1.98	0.09	1.03	0.63	10.49	20.66	7.43	27.17	20.22	33.87
140	143.26	24.37	0.12	1.93	0.09	1.06	0.65	10.41	17.63	8.25	25.64	20.71	32.96
150	200.54	25.69	0.21	1.82	0.09	1.16	0.67	10.03	14.54	10.52	25.59	20.81	32.99

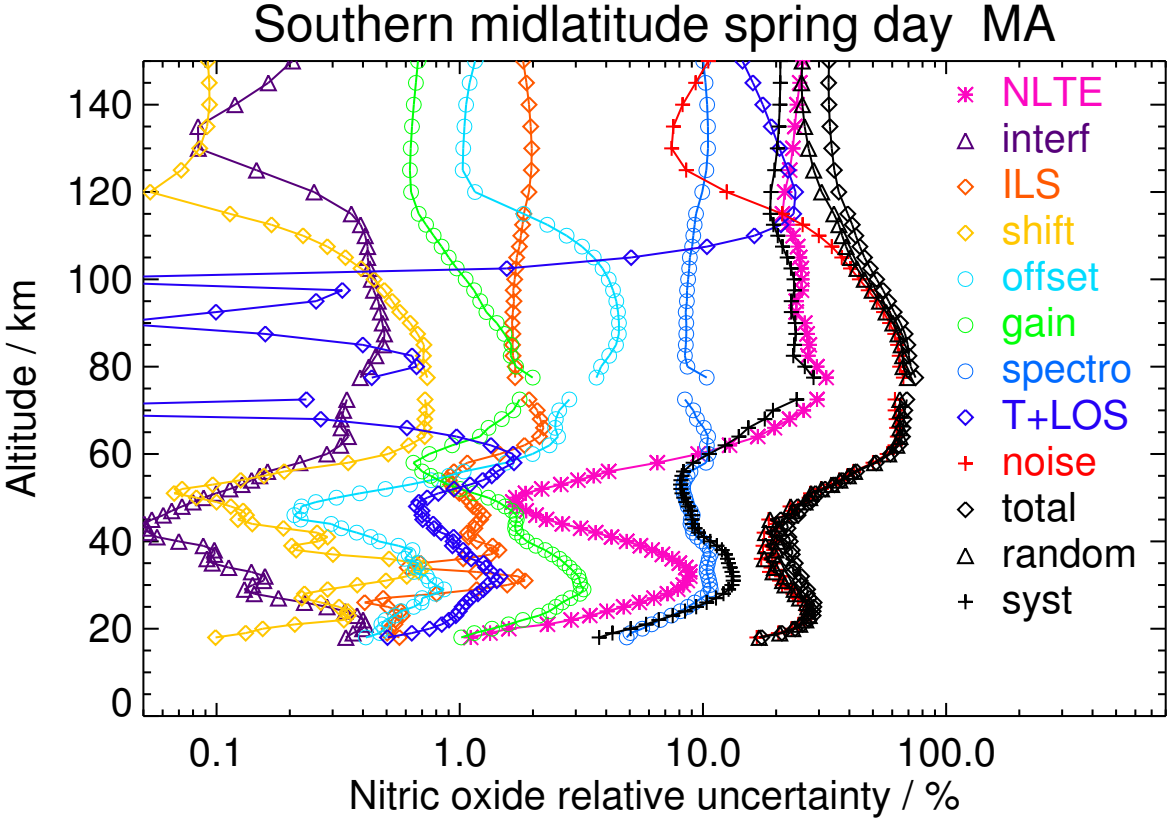

Figure S89. V8R_NO_561 Southern midlatitude spring day

Table S91. Nitric oxide error budget for Southern midlatitude spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.01	6.68	0.43	1.32	0.20	2.81	2.11	14.31	2.14	73.63	74.82	9.53	75.43
70	0.03	12.58	0.24	2.45	0.25	1.56	2.21	15.35	0.42	46.54	49.32	11.87	50.73
80	0.05	11.62	0.44	1.91	0.39	2.54	1.39	12.26	0.54	53.03	54.53	11.69	55.77
90	0.45	17.56	0.62	1.78	0.54	3.37	0.76	11.00	0.26	50.16	52.69	13.63	54.42
100	4.74	20.22	0.67	1.67	0.59	3.45	0.55	10.23	0.83	36.36	40.53	14.48	43.03
110	17.14	14.11	0.54	1.38	0.27	1.91	0.65	9.15	24.28	23.24	35.72	11.95	37.66
120	24.89	21.44	0.16	1.96	0.12	1.29	0.82	11.15	23.46	13.95	32.96	15.77	36.54
130	34.27	23.19	0.22	2.08	0.17	1.50	0.98	11.15	19.98	13.80	31.43	16.48	35.49
140	45.06	23.25	0.31	2.08	0.18	1.58	1.07	10.77	17.34	14.64	30.29	16.18	34.34
150	53.17	21.92	0.37	1.96	0.18	1.56	1.07	9.89	14.61	14.73	28.01	15.22	31.88

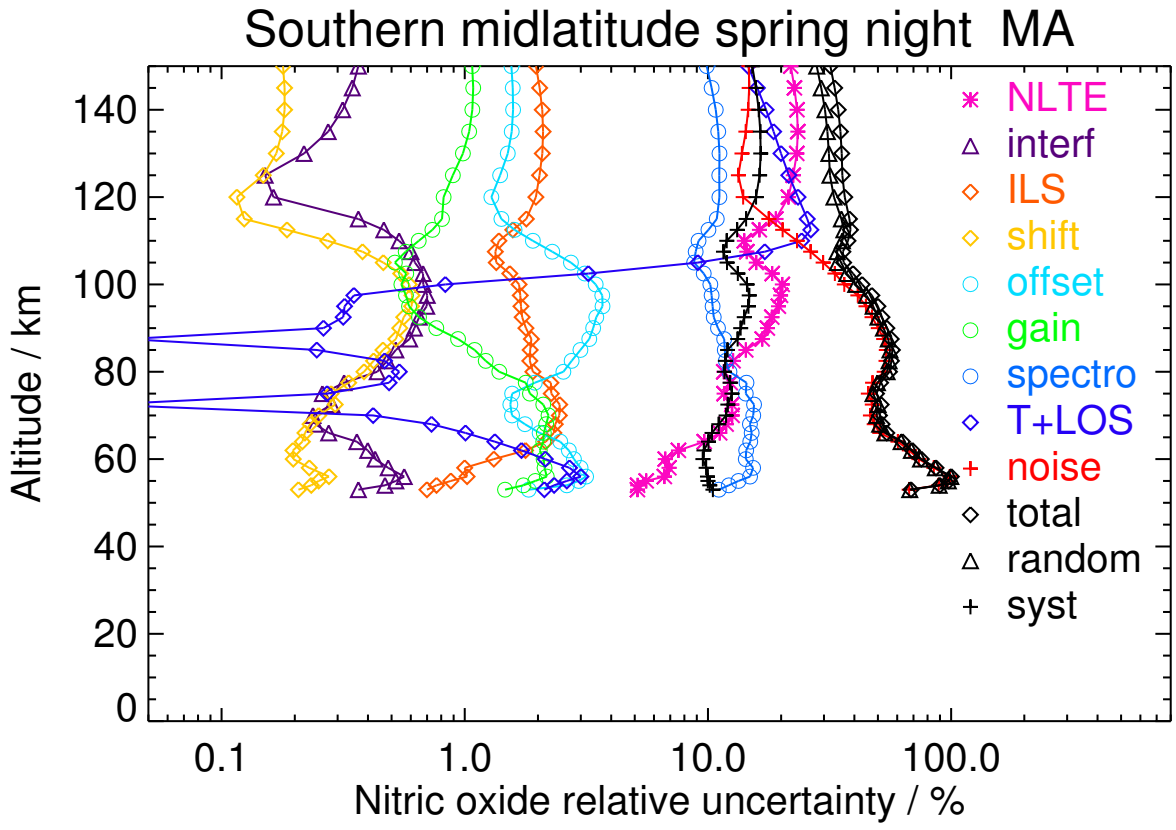

Figure S90. V8R_NO_561 Southern midlatitude spring night

Table S92. Nitric oxide error budget for Southern midlatitude summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.44	0.51	0.38	0.32	0.46	0.70	4.77	1.03	23.81	23.92	4.68	24.37
30	0.01	7.48	0.31	2.76	0.41	0.75	2.34	10.46	1.67	20.93	21.29	12.92	24.90
40	0.01	3.27	0.04	0.72	0.34	0.38	1.77	8.80	1.12	13.36	13.60	9.33	16.49
50	0.01	1.51	0.07	0.91	0.07	0.22	1.30	8.24	0.86	18.95	19.15	8.12	20.80
60	0.01	10.04	0.28	1.21	0.79	1.67	1.21	8.37	2.25	51.49	52.24	10.18	53.23
70	0.01	25.48	0.40	2.50	1.01	2.27	1.63	11.47	0.13	53.78	57.81	18.61	60.74
80	0.03	33.74	0.31	1.96	0.92	2.89	1.73	11.15	1.57	52.17	55.70	30.00	63.27
90	0.79	35.22	0.27	1.37	0.97	3.63	1.71	9.97	0.88	46.79	52.83	27.54	59.58
100	8.41	34.11	0.22	1.43	0.57	3.38	0.78	10.07	1.72	33.97	41.66	26.47	49.36
110	38.87	29.08	0.28	2.00	0.13	2.29	0.78	9.67	26.89	21.59	40.79	21.79	46.25
120	73.14	28.75	0.32	2.13	0.18	1.36	0.73	9.61	28.72	11.39	36.22	23.85	43.37
130	116.99	31.80	0.08	1.92	0.14	1.23	0.63	9.81	21.74	7.45	30.35	26.83	40.51
140	190.92	32.14	0.12	1.84	0.14	1.02	0.64	9.85	17.34	7.21	27.39	27.16	38.57
150	260.73	33.38	0.22	1.72	0.13	1.01	0.62	9.54	13.30	9.01	26.28	27.87	38.31

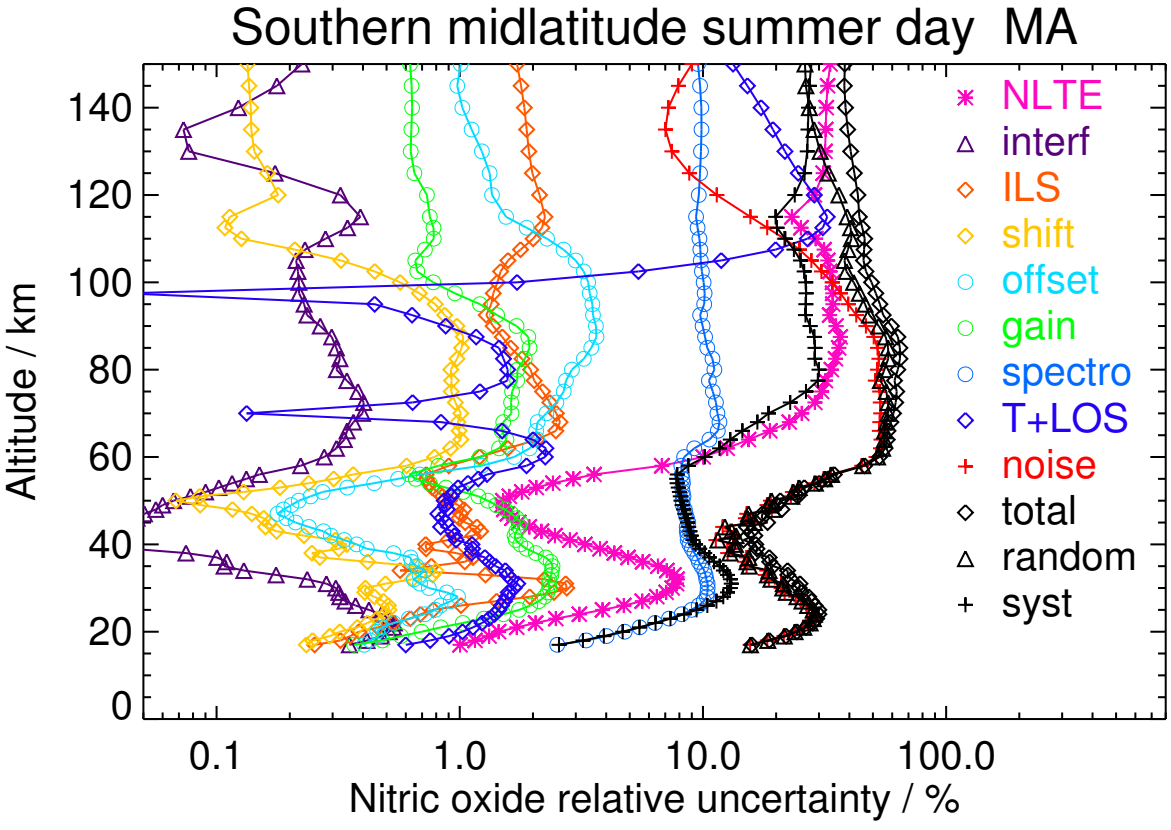

Figure S91. V8R_NO_561 Southern midlatitude summer day

Table S93. Nitric oxide error budget for Southern midlatitude summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.00	0.56	0.73	0.49	0.16	0.48	0.39	0.23	0.76	41.06	41.08	0.86	41.09
50	0.00	4.34	0.44	0.98	0.44	1.11	3.00	4.05	2.00	31.41	31.79	5.18	32.21
60	0.00	14.06	0.58	1.58	0.42	2.53	1.48	12.89	3.36	65.31	66.91	13.21	68.20
70	0.05	10.89	0.26	1.45	0.32	1.54	1.54	10.21	0.44	41.26	41.90	13.28	43.96
80	0.07	19.29	0.45	1.09	0.57	2.53	1.10	10.07	1.18	49.55	50.32	20.19	54.22
90	1.20	29.88	0.40	1.66	0.94	3.42	0.92	13.55	0.36	42.16	48.63	22.48	53.58
100	9.96	24.73	0.36	1.89	0.77	3.25	0.83	11.15	6.83	33.65	39.55	19.14	43.94
110	45.43	23.63	0.38	1.92	0.44	1.94	0.90	9.89	32.60	21.41	43.88	16.13	46.75
120	104.83	28.29	0.39	1.76	0.15	1.03	0.80	9.32	32.97	10.15	41.66	18.64	45.63
130	115.52	37.15	0.15	2.31	0.16	1.05	1.04	12.17	21.26	8.41	37.23	25.95	45.38
140	143.18	40.02	0.32	2.45	0.18	1.08	1.21	12.55	16.20	10.23	36.68	28.10	46.21
150	161.74	40.30	0.43	2.42	0.17	1.17	1.25	12.09	12.60	12.11	35.89	28.23	45.66

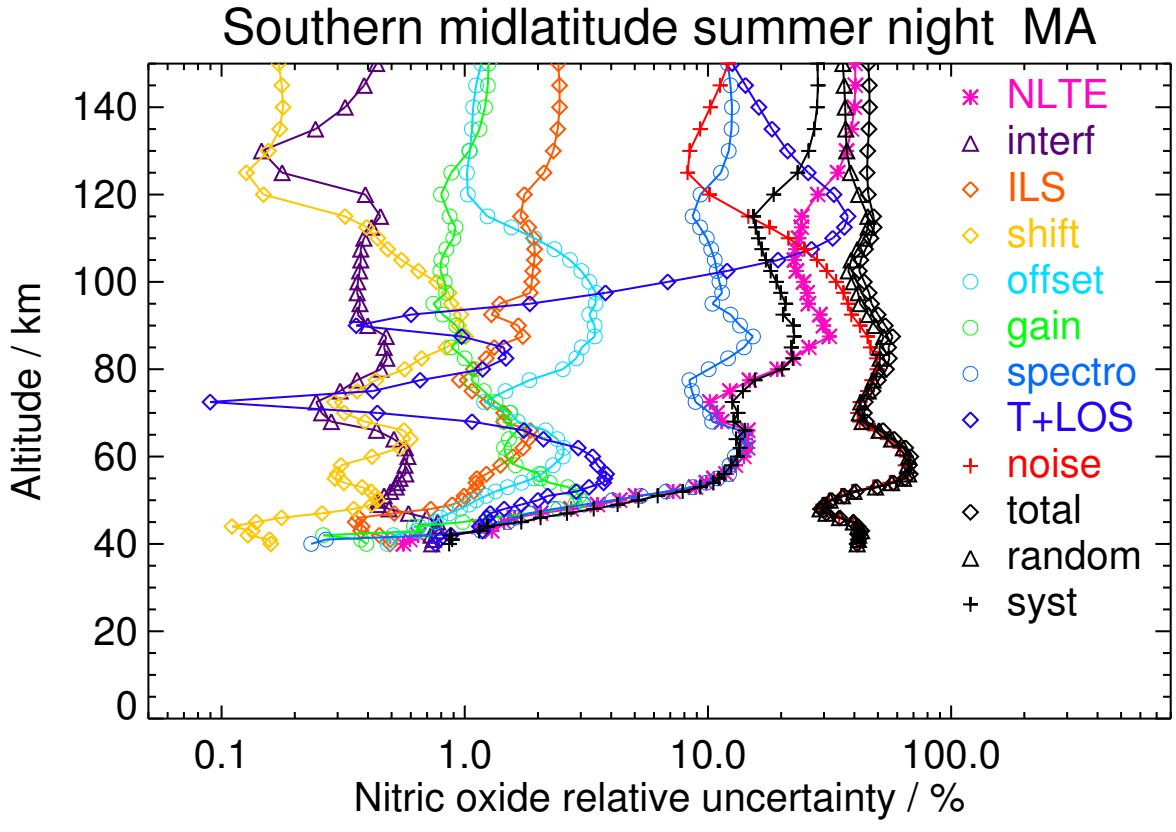

Figure S92. V8R_NO_561 Southern midlatitude summer night

Table S94. Nitric oxide error budget for Southern midlatitude autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.86	0.33	0.18	0.12	0.50	1.28	4.90	0.81	23.75	23.82	5.18	24.38
30	0.01	10.98	0.24	2.08	0.42	1.11	4.36	12.94	1.78	25.56	26.29	16.67	31.13
40	0.01	5.77	0.05	1.09	0.33	0.55	2.44	9.94	1.21	18.97	19.26	11.40	22.38
50	0.01	2.00	0.06	1.11	0.09	0.33	1.50	8.88	0.93	25.63	25.83	8.77	27.28
60	0.01	7.33	0.16	1.31	0.56	1.78	1.06	10.26	1.29	53.30	54.27	7.95	54.84
70	0.02	10.88	0.22	1.75	0.56	2.15	1.37	7.39	0.13	54.88	55.61	10.13	56.52
80	0.07	18.78	0.24	1.84	0.58	2.36	1.75	9.51	0.64	51.65	54.31	13.19	55.89
90	0.88	24.95	0.20	1.85	0.46	2.81	1.40	9.58	0.63	41.61	47.09	15.54	49.59
100	4.97	24.25	0.21	1.91	0.28	3.12	0.96	9.48	0.14	33.21	38.46	17.78	42.37
110	25.38	21.43	0.26	2.10	0.11	2.23	0.76	10.53	15.69	24.23	33.74	16.57	37.59
120	44.20	23.79	0.17	2.36	0.05	1.10	0.75	11.98	25.28	11.62	34.39	17.55	38.61
130	62.58	25.68	0.04	2.17	0.06	1.24	0.69	11.49	21.69	9.69	31.61	19.07	36.92
140	83.52	24.91	0.12	1.93	0.08	1.34	0.64	10.47	18.40	11.39	28.92	19.19	34.71
150	109.39	23.86	0.17	1.70	0.09	1.42	0.60	9.41	15.37	13.02	26.84	18.67	32.70

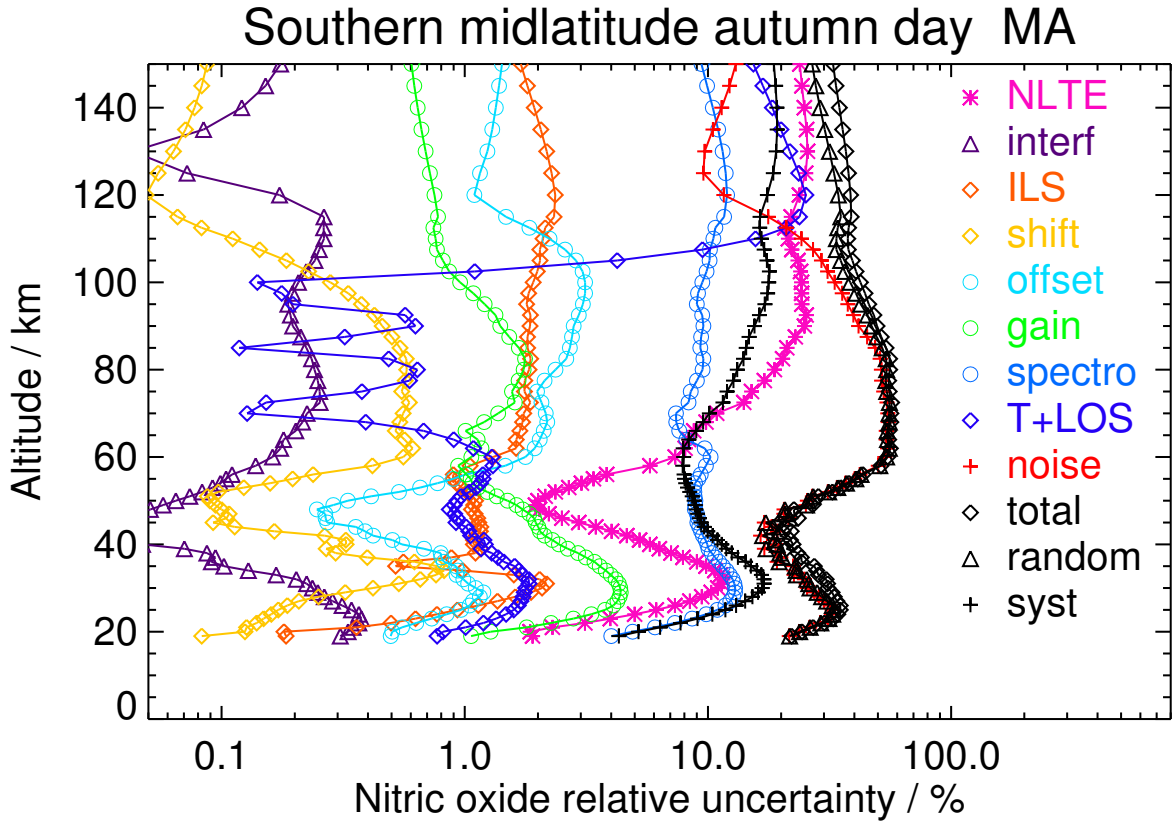

Figure S93. V8R_NO_561 Southern midlatitude autumn day

Table S95. Nitric oxide error budget for Southern midlatitude autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	3.31	0.19	1.58	0.17	1.11	0.29	12.96	1.84	48.36	49.18	10.30	50.25
60	0.01	16.28	0.34	1.29	0.24	2.35	2.03	15.63	2.55	65.29	68.10	12.36	69.21
70	0.07	13.81	0.20	1.55	0.20	1.84	1.90	14.30	0.62	40.94	44.13	11.54	45.62
80	0.10	49.34	0.48	4.06	0.45	2.53	1.57	20.86	0.56	56.20	74.41	22.73	77.81
90	0.91	38.43	0.39	2.61	0.48	3.22	1.12	15.84	1.45	48.78	60.57	21.42	64.25
100	10.11	23.24	0.29	1.43	0.33	3.12	0.74	10.19	1.17	35.19	39.08	19.21	43.54
110	48.71	25.52	0.26	1.43	0.20	2.10	0.80	10.10	24.94	24.08	41.25	16.15	44.30
120	40.30	43.16	0.23	2.99	0.09	1.24	1.12	16.12	29.65	14.01	53.82	17.72	56.66
130	56.25	61.14	0.15	4.99	0.10	1.13	1.68	25.37	21.18	11.14	66.90	22.51	70.59
140	66.84	81.39	0.20	6.17	0.14	1.26	2.12	31.40	15.02	12.63	85.76	26.18	89.67
150	68.81	89.01	0.30	6.25	0.17	1.40	2.19	31.85	10.66	14.31	92.51	27.25	96.44

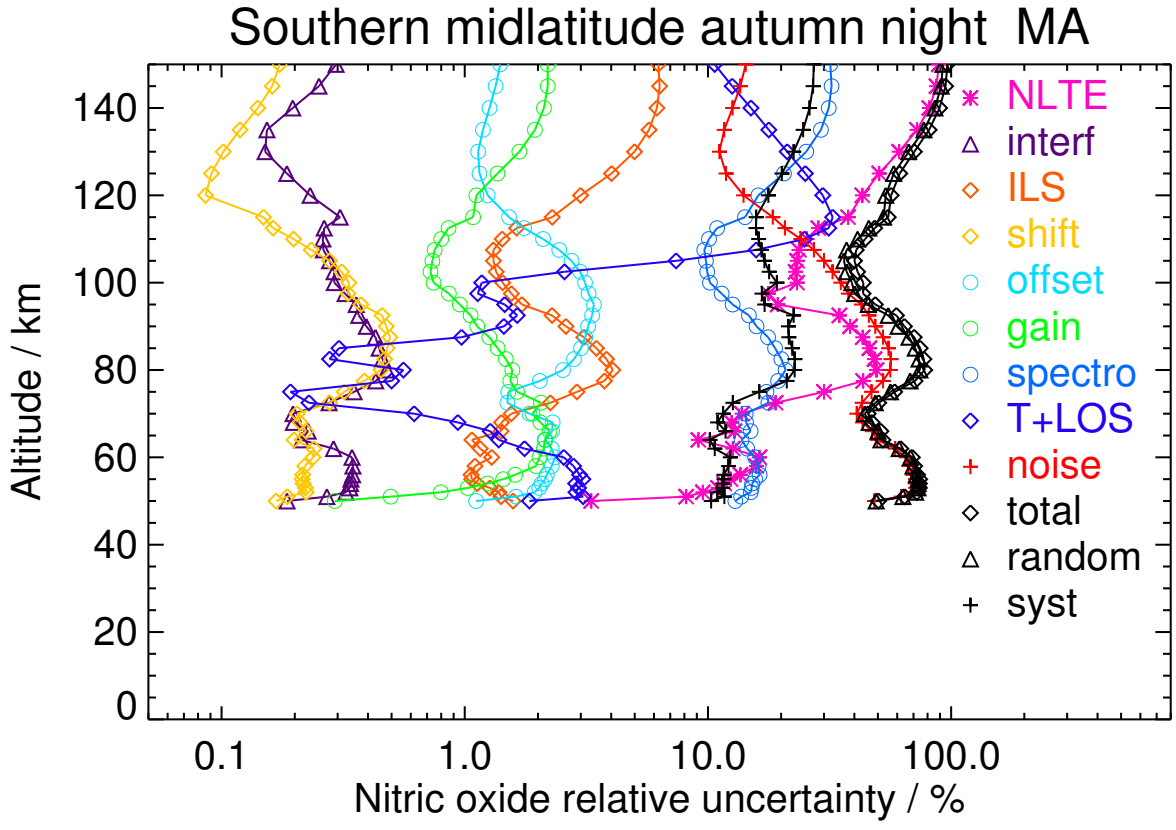

Figure S94. V8R_NO_561 Southern midlatitude autumn night

Table S96. Nitric oxide error budget for Southern polar winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
30	0.01	7.81	0.46	2.18	0.57	1.56	2.70	10.79	1.56	38.82	39.42	12.15	41.25
40	0.00	2.22	0.11	0.97	0.24	0.51	1.58	8.69	0.88	22.20	22.44	8.62	24.04
50	0.00	2.88	0.15	1.31	0.10	0.41	1.13	8.47	0.91	31.30	31.49	8.50	32.62
60	0.01	7.53	0.25	1.63	0.15	1.81	0.79	10.42	3.62	54.90	55.56	10.60	56.56
70	0.03	10.47	0.26	1.85	0.24	1.98	0.64	9.95	0.07	55.68	56.15	12.80	57.59
80	0.17	14.64	0.33	1.68	0.30	2.18	0.69	9.61	1.23	50.65	51.49	15.17	53.68
90	1.94	18.25	0.30	1.62	0.34	2.61	0.70	9.11	0.14	39.16	40.78	17.21	44.26
100	19.20	17.05	0.27	1.74	0.33	2.77	0.73	9.42	0.62	30.23	32.27	16.24	36.12
110	83.47	12.65	0.28	1.64	0.14	1.82	0.60	8.29	25.13	20.40	33.33	13.12	35.82
120	135.60	17.26	0.15	1.69	0.11	1.11	0.60	9.13	35.79	9.77	38.31	17.16	41.98
130	170.87	22.63	0.12	1.80	0.15	1.33	0.69	9.98	24.26	10.17	29.67	20.72	36.18
140	199.49	24.22	0.22	1.76	0.15	1.35	0.75	9.92	17.56	11.93	25.90	21.68	33.78
150	226.07	24.73	0.29	1.66	0.14	1.37	0.80	9.45	12.82	13.44	24.16	21.62	32.42

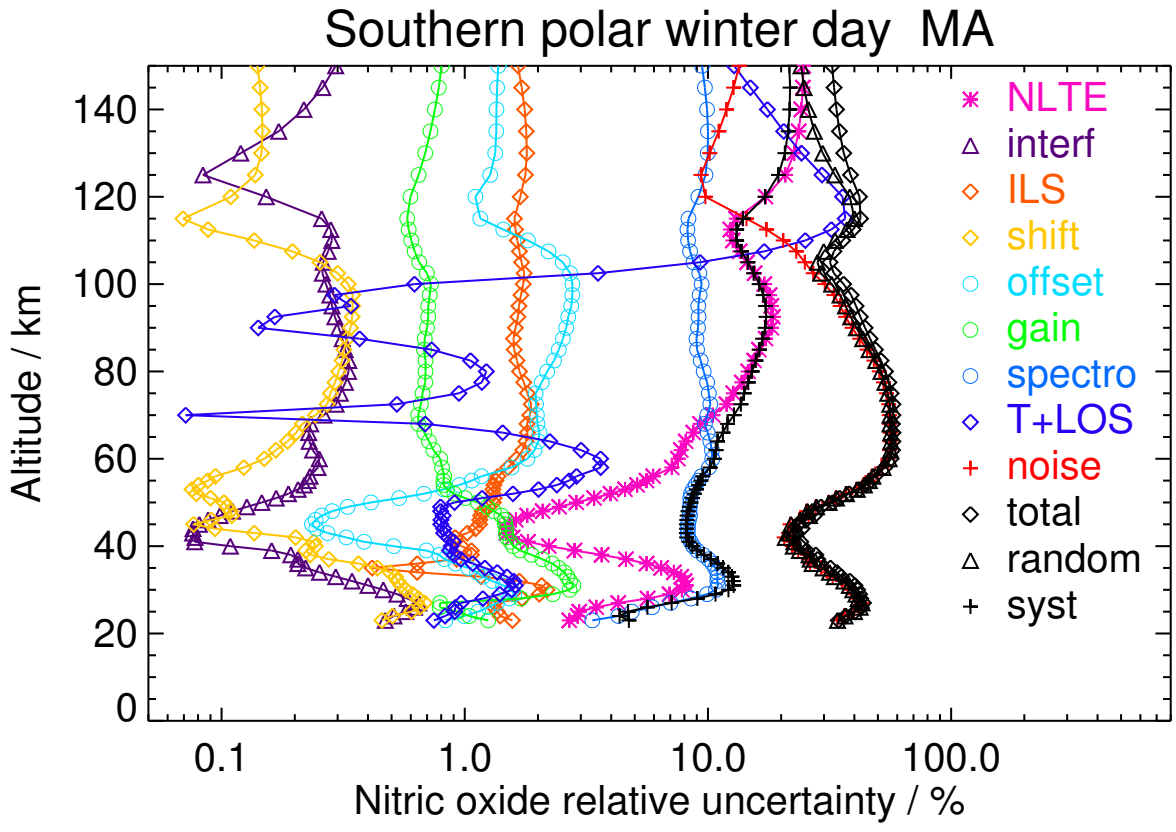

Figure S95. V8R_NO_561 Southern polar winter day

Table S97. Nitric oxide error budget for Southern polar winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.00	7.47	0.68	1.32	0.18	1.70	2.04	10.33	2.46	66.51	67.22	9.06	67.83
50	0.00	12.44	0.43	1.28	0.34	1.32	1.62	13.49	3.41	59.09	60.79	12.26	62.02
60	0.01	19.93	0.38	1.98	0.18	2.14	1.14	13.56	5.43	58.57	61.60	16.03	63.65
70	0.09	13.09	0.26	1.98	0.72	2.66	1.45	12.48	4.97	53.15	55.16	12.14	56.49
80	0.90	14.68	0.30	4.14	1.55	3.27	1.92	18.19	2.44	52.40	56.77	10.46	57.73
90	5.93	18.28	0.32	2.40	0.82	2.76	1.06	13.84	6.18	41.50	45.91	13.93	47.98
100	26.24	27.09	0.34	2.09	0.58	3.01	0.95	11.68	3.90	35.76	41.58	21.23	46.68
110	88.55	23.12	0.37	1.37	0.21	2.11	0.65	8.05	26.23	23.81	38.71	19.05	43.14
120	144.15	20.65	0.27	1.38	0.10	1.04	0.52	7.66	32.60	10.17	36.45	18.05	40.68
130	191.44	25.01	0.10	1.83	0.11	1.01	0.68	9.87	23.23	8.20	29.38	21.72	36.54
140	237.55	31.12	0.23	2.20	0.09	1.10	0.81	11.64	17.75	10.24	30.07	25.04	39.13
150	263.51	35.98	0.36	2.41	0.08	1.24	0.87	12.56	13.49	12.27	32.40	27.26	42.34

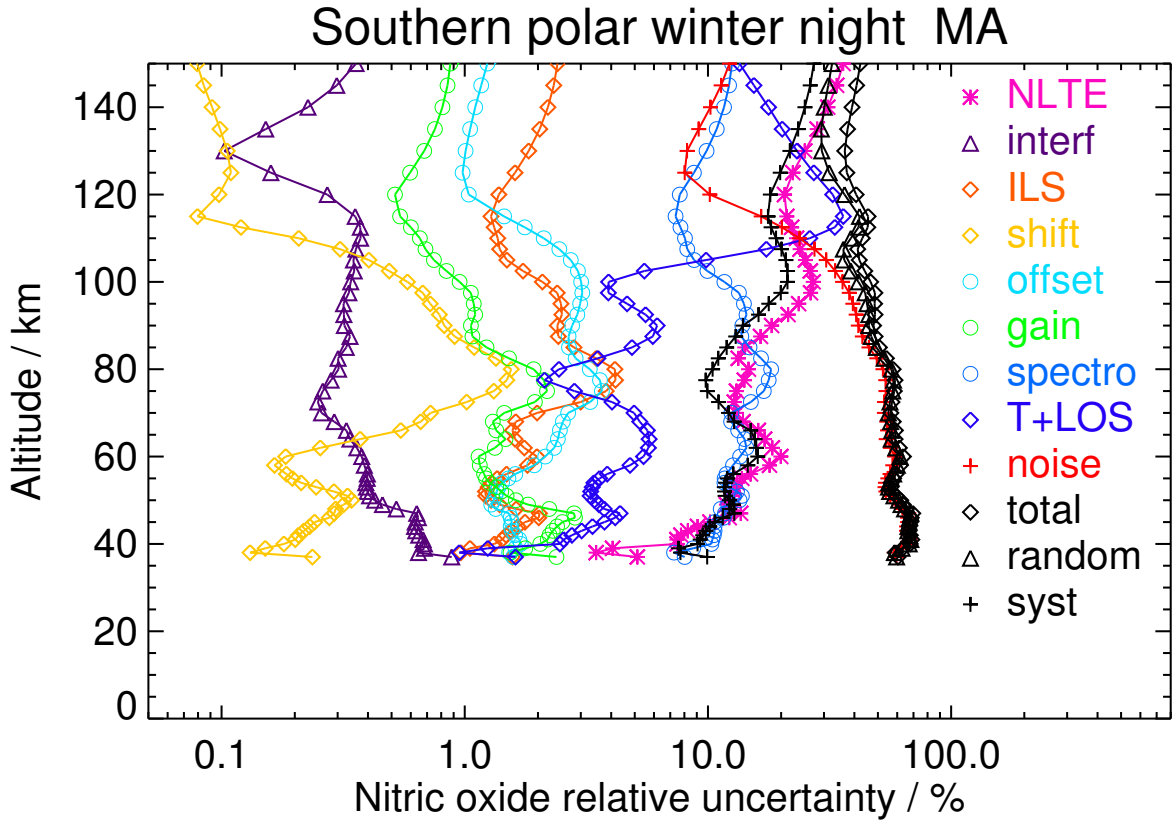

Figure S96. V8R_NO_561 Southern polar winter night

Table S98. Nitric oxide error budget for Southern polar spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.84	0.47	1.44	0.25	0.55	1.18	6.31	0.70	20.78	21.41	4.59	21.90
30	0.00	4.10	0.13	2.32	0.40	0.57	2.57	9.90	1.11	14.44	15.48	9.88	18.36
40	0.01	2.29	0.05	0.74	0.24	0.27	1.67	8.76	0.76	14.01	14.35	8.74	16.80
50	0.01	1.66	0.09	1.29	0.11	0.23	1.35	8.72	0.73	24.53	24.71	8.60	26.16
60	0.01	9.48	0.25	2.12	0.48	1.82	0.70	10.75	2.36	57.09	57.85	11.53	58.98
70	0.02	11.04	0.18	3.09	0.61	1.80	1.03	10.68	0.31	49.81	50.94	11.72	52.27
80	0.06	15.53	0.31	3.36	0.78	2.69	1.90	10.29	0.68	53.96	54.98	16.09	57.29
90	0.58	22.15	0.36	3.17	0.91	3.92	2.37	10.31	0.28	52.96	54.80	20.76	58.60
100	4.62	21.29	0.36	2.91	0.82	3.95	2.17	9.61	1.49	42.65	44.40	20.63	48.96
110	28.37	18.87	0.38	2.73	0.54	2.66	1.67	9.41	21.48	30.09	38.50	18.65	42.77
120	51.02	20.68	0.20	2.04	0.10	0.96	0.72	9.16	25.78	10.95	29.39	20.93	36.08
130	78.75	24.10	0.07	1.69	0.20	1.08	0.70	9.34	20.37	7.71	24.07	23.82	33.87
140	122.02	25.64	0.17	1.57	0.26	1.21	0.97	9.40	16.96	10.34	23.20	24.64	33.84
150	164.73	25.93	0.24	1.43	0.28	1.29	1.17	9.09	13.93	12.58	22.79	24.35	33.35

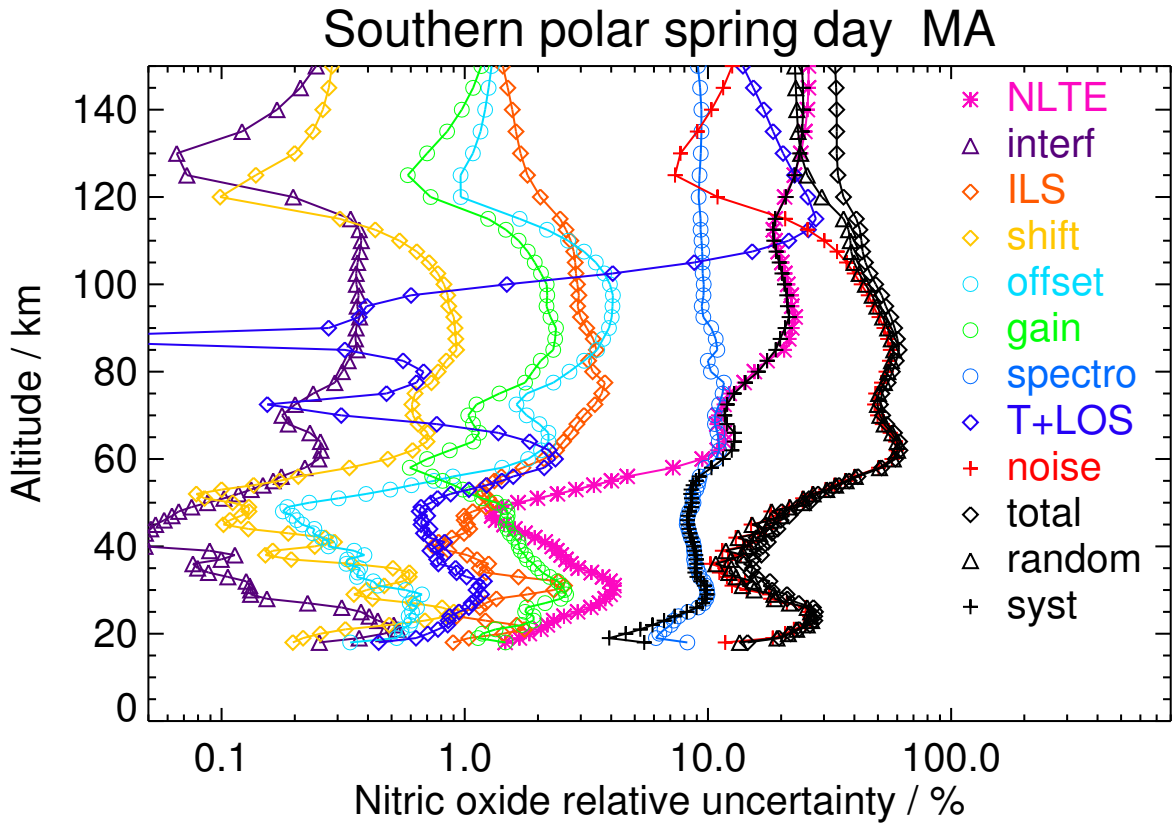

Figure S97. V8R_NO_561 Southern polar spring day

Table S99. Nitric oxide error budget for Southern polar spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.00	0.92	0.76	1.19	0.21	1.02	1.93	1.00	1.53	53.61	53.70	1.19	53.71
50	0.00	3.14	0.57	1.93	0.53	1.41	4.79	4.26	1.54	39.13	39.44	5.94	39.89
60	0.01	9.20	0.42	1.32	0.42	2.22	1.94	12.19	1.98	56.78	58.18	9.32	58.93
70	0.20	6.35	0.09	1.35	0.23	1.99	1.48	13.10	0.38	33.88	35.69	9.72	36.99
80	0.23	9.38	0.25	2.14	0.44	1.73	0.93	8.81	0.66	41.29	41.86	11.28	43.36
90	0.94	24.26	0.64	2.20	0.95	3.70	2.29	8.69	0.40	50.95	53.54	20.46	57.32
100	5.82	20.99	0.72	2.35	0.88	3.80	2.42	9.08	0.93	41.04	43.63	18.21	47.28
110	25.30	21.54	0.67	1.97	0.53	2.58	1.73	8.76	20.90	29.03	38.57	18.62	42.83
120	46.11	24.56	0.24	1.88	0.12	0.96	0.73	10.19	23.51	10.81	30.92	20.64	37.17
130	67.00	28.65	0.19	1.99	0.21	1.09	0.93	11.06	19.36	8.62	29.35	23.17	37.39
140	92.86	29.82	0.31	2.06	0.22	1.22	1.05	11.06	16.34	11.05	29.18	23.58	37.51
150	111.53	28.85	0.38	1.98	0.20	1.27	1.09	10.34	13.44	12.58	27.77	22.67	35.85

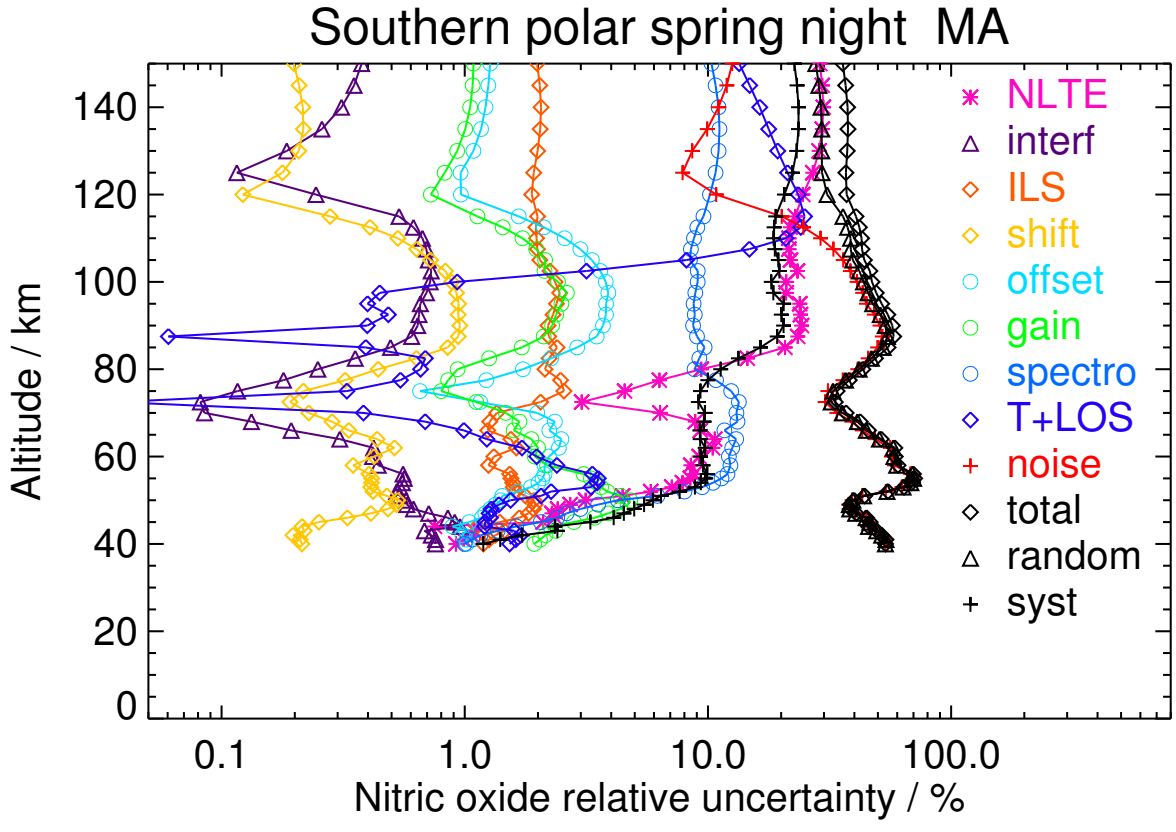

Figure S98. V8R_NO_561 Southern polar spring night

Table S100. Nitric oxide error budget for Southern polar summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.72	0.57	0.41	0.30	0.43	1.56	7.14	1.20	20.97	21.20	7.00	22.33
30	0.01	3.63	0.29	2.90	0.40	0.67	2.06	8.92	1.57	16.59	16.90	9.92	19.59
40	0.01	1.83	0.06	0.64	0.30	0.29	1.55	8.39	0.97	10.10	10.32	8.56	13.41
50	0.01	1.74	0.07	1.06	0.14	0.18	1.24	7.99	0.86	18.15	18.32	8.01	19.99
60	0.01	9.13	0.21	1.14	0.48	0.98	0.99	9.16	2.97	38.73	39.89	9.37	40.98
70	0.02	29.23	0.27	2.08	0.87	1.69	1.25	10.55	0.80	47.17	53.43	18.60	56.58
80	0.04	28.31	0.19	1.99	0.83	1.72	1.16	11.61	1.87	39.62	44.40	23.39	50.19
90	1.75	46.69	0.13	1.21	0.94	2.15	1.43	10.79	3.08	31.09	48.65	30.24	57.28
100	17.24	35.27	0.14	1.49	0.56	2.65	0.84	8.81	14.49	27.44	40.38	25.77	47.90
110	35.24	23.62	0.27	1.66	0.17	1.57	0.73	8.00	22.48	16.14	32.59	18.21	37.33
120	64.46	33.30	0.21	1.83	0.35	1.32	0.85	8.99	27.53	10.23	38.14	24.57	45.37
130	119.33	31.89	0.11	1.88	0.25	1.27	0.86	10.20	25.69	8.99	34.64	25.84	43.21
140	219.19	30.24	0.18	1.83	0.25	1.14	0.99	10.34	22.81	9.31	31.15	25.77	40.43
150	319.24	30.71	0.24	1.76	0.25	1.12	1.06	10.12	19.18	10.59	28.71	26.58	39.12

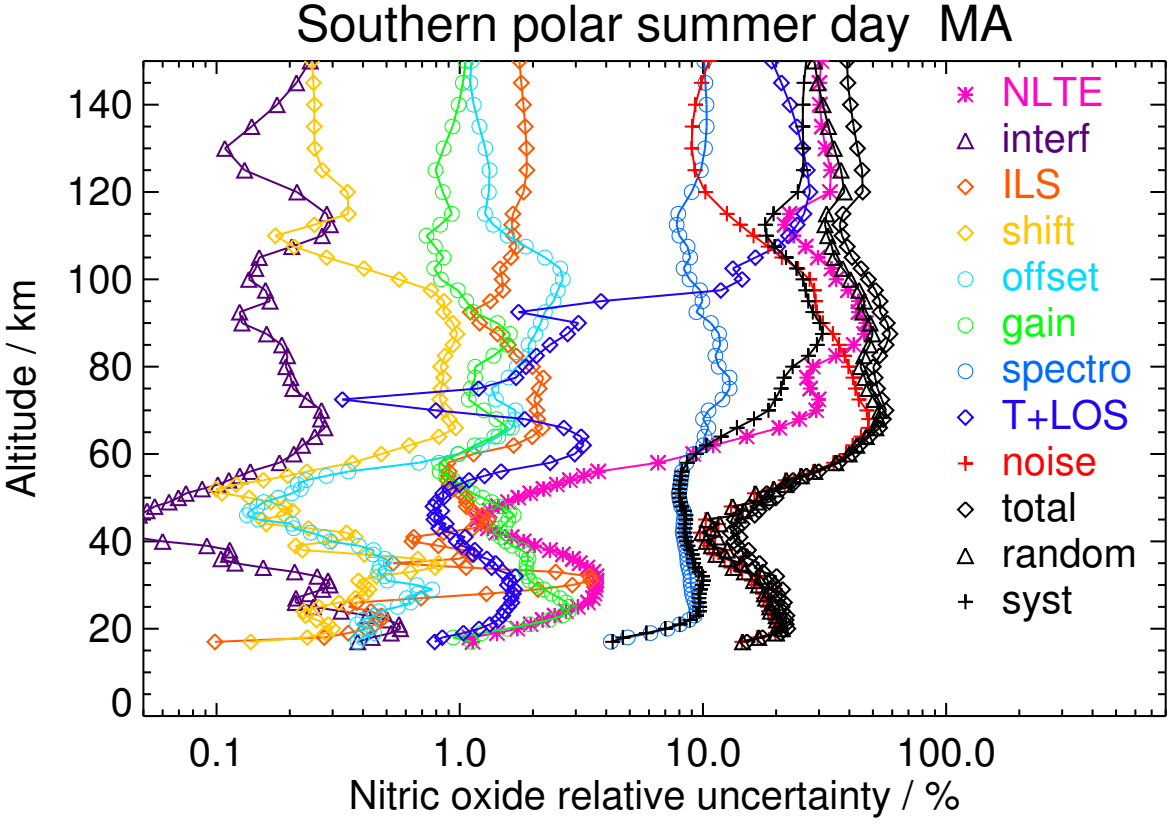

Figure S99. V8R_NO_561 Southern polar summer day

Table S101. Nitric oxide error budget for Southern polar summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.00	1.70	0.82	0.40	0.07	0.90	0.11	0.75	0.74	41.92	41.94	1.90	41.99
50	0.00	4.66	0.64	0.59	0.38	1.70	3.28	3.35	3.93	45.01	45.49	4.44	45.71
60	0.00	10.30	0.39	1.34	0.26	2.23	1.57	14.46	3.14	56.29	58.42	9.48	59.19
70	0.04	10.74	0.30	1.24	0.39	1.67	1.45	9.18	0.40	45.71	46.04	13.28	47.92
80	0.05	15.27	0.46	0.77	0.57	2.90	0.58	7.85	1.14	49.93	50.03	17.19	52.90
90	0.70	26.08	0.55	1.29	0.66	3.94	1.10	7.57	0.28	49.70	50.30	26.40	56.81
100	6.95	26.81	0.54	1.31	0.68	3.63	1.07	7.46	5.63	36.39	40.65	22.24	46.34
110	24.64	25.96	0.57	1.67	0.35	2.44	0.85	9.16	22.35	25.13	39.80	17.75	43.58
120	51.63	28.00	0.22	1.97	0.13	1.00	0.73	11.20	25.17	8.90	35.27	19.59	40.35
130	73.38	34.41	0.18	2.39	0.21	1.24	0.93	12.98	21.40	8.98	36.09	24.43	43.59
140	108.77	37.93	0.32	2.63	0.18	1.29	1.07	13.82	18.52	11.34	37.63	26.36	45.94
150	138.05	41.66	0.43	2.77	0.13	1.35	1.17	14.19	15.63	13.04	40.20	27.32	48.61

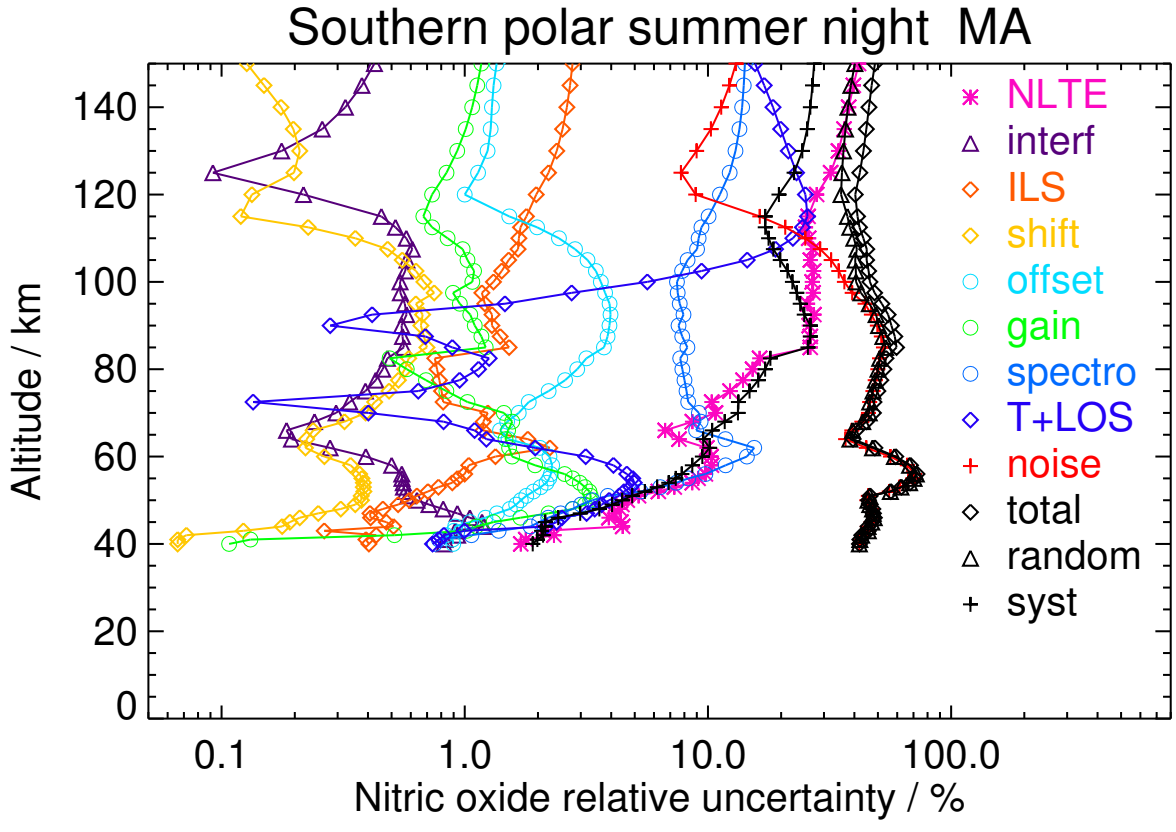

Figure S100. V8R_NO_561 Southern polar summer night

Table S102. Nitric oxide error budget for Southern polar autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
20	0.00	1.46	0.41	0.22	0.17	0.60	2.99	7.41	1.10	22.26	22.31	8.09	23.73
30	0.01	9.29	0.31	1.77	0.56	1.55	4.99	11.25	2.63	32.11	32.84	14.25	35.80
40	0.01	6.61	0.13	2.13	0.33	0.84	2.43	11.95	1.40	33.14	33.68	12.81	36.03
50	0.00	5.66	0.15	1.32	0.12	0.80	1.35	10.14	1.76	42.60	43.24	9.33	44.24
60	0.01	11.67	0.25	1.59	0.35	1.99	0.89	10.34	2.52	59.01	60.10	11.29	61.15
70	0.03	16.52	0.30	1.77	0.42	2.09	0.86	9.70	0.20	57.09	58.55	14.37	60.28
80	0.13	22.19	0.27	1.88	0.37	2.19	0.96	11.69	0.75	49.51	52.68	17.76	55.59
90	1.24	28.44	0.26	1.40	0.32	2.99	0.70	9.16	0.56	42.68	47.26	22.20	52.22
100	10.60	28.79	0.21	1.22	0.19	3.24	0.58	8.18	0.13	33.60	38.14	24.13	45.13
110	71.79	21.27	0.21	1.41	0.06	2.07	0.77	8.13	21.87	21.11	33.86	17.40	38.07
120	127.86	22.17	0.12	2.01	0.09	1.12	0.69	9.83	30.28	9.57	35.73	18.06	40.03
130	153.96	26.81	0.08	2.23	0.08	1.10	0.76	11.51	19.97	8.10	29.14	21.76	36.37
140	174.95	28.87	0.15	2.18	0.09	1.11	0.78	11.52	14.84	10.44	27.61	23.23	36.09
150	197.27	30.31	0.19	1.99	0.09	1.27	0.76	10.74	11.38	12.56	27.46	23.94	36.43

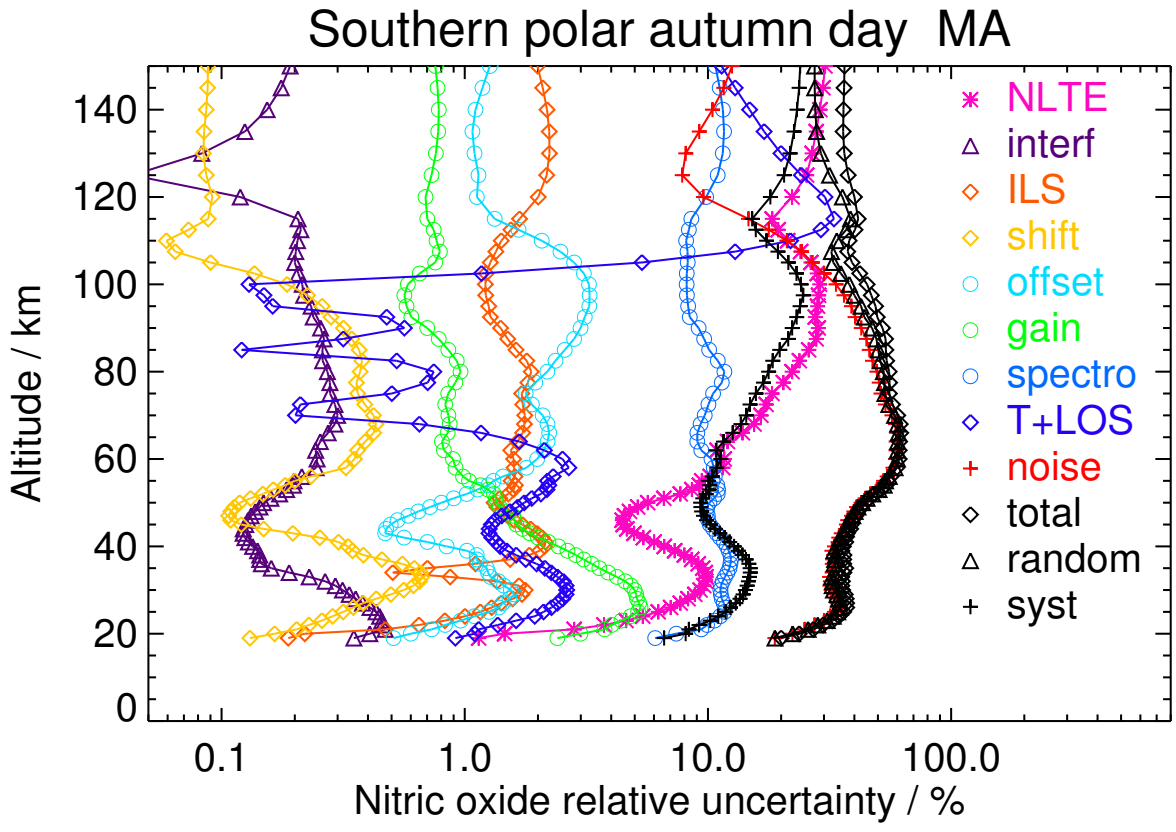

Figure S101. V8R_NO_561 Southern polar autumn day

Table S103. Nitric oxide error budget for Southern polar autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	12.67	0.20	1.25	0.20	1.02	0.64	12.28	3.26	52.39	54.41	10.49	55.41
60	0.02	14.73	0.28	1.32	0.25	1.71	1.88	12.30	3.12	47.80	50.56	10.74	51.69
70	0.08	20.00	0.25	2.16	0.39	2.07	1.28	13.07	2.24	55.57	59.01	13.87	60.62
80	0.39	20.08	0.27	1.18	0.46	2.12	1.41	11.95	0.76	52.77	55.09	17.47	57.79
90	3.61	22.12	0.23	0.92	0.53	2.89	1.18	10.77	3.51	45.52	48.57	18.48	51.97
100	23.08	23.21	0.19	0.89	0.38	2.90	1.01	9.41	3.11	35.02	39.22	18.30	43.28
110	116.54	22.18	0.19	1.65	0.12	1.92	0.85	9.11	39.75	21.99	48.33	17.62	51.44
120	144.19	23.05	0.13	1.75	0.08	1.03	0.62	8.87	30.63	11.20	35.77	19.95	40.96
130	185.61	26.29	0.08	2.12	0.08	0.87	0.68	10.68	20.02	7.11	27.55	22.43	35.52
140	217.01	30.89	0.14	2.29	0.04	1.00	0.74	11.86	14.80	9.49	28.37	24.61	37.56
150	230.31	34.49	0.18	2.24	0.03	1.19	0.73	11.79	11.09	11.96	30.42	25.99	40.02

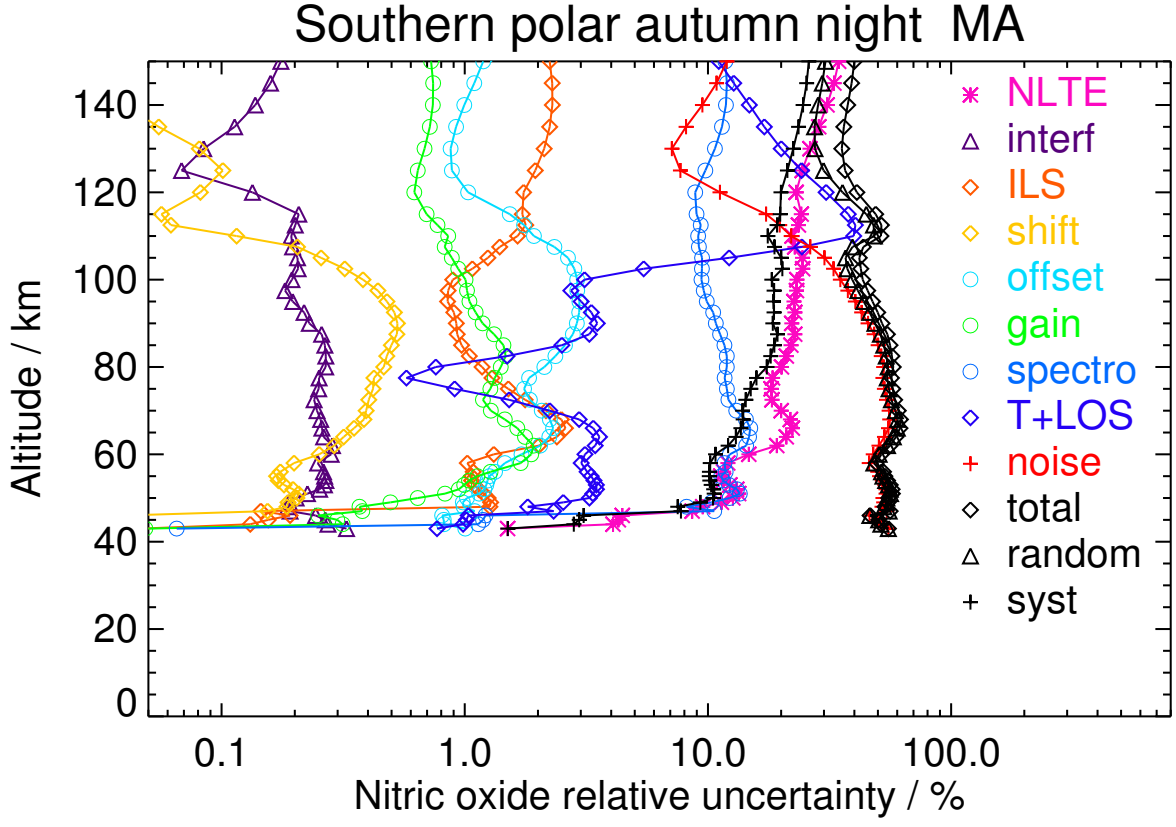

Figure S102. V8R_NO_561 Southern polar autumn night

Table S104. Nitric oxide error budget for Northern polar winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.01	14.15	0.08	1.84	0.07	0.08	2.80	3.75	13.30	1.45	71.23	72.10	16.73	74.02
50	0.01	9.38	0.08	0.89	0.10	0.06	2.75	2.17	11.57	0.83	56.38	57.27	11.58	58.43
60	0.03	8.54	0.03	1.05	0.07	0.09	2.47	1.51	14.42	0.62	38.80	41.15	10.10	42.38
70	0.14	5.63	0.02	2.01	0.08	0.06	2.52	1.12	11.37	0.02	30.61	32.03	9.17	33.31
80	0.37	5.16	<0.01	1.74	0.11	0.06	3.93	1.59	11.02	0.12	29.89	31.28	9.16	32.60
90	2.09	8.41	<0.01	1.01	0.22	0.05	7.18	2.46	12.67	0.14	29.68	32.57	10.49	34.22
100	10.87	13.99	<0.01	1.55	0.29	0.12	7.76	3.06	14.64	0.08	27.39	32.85	12.37	35.10
110	64.56	7.84	<0.01	1.07	1.07	0.04	4.09	1.13	9.48	3.94	23.68	25.83	8.98	27.35
120	153.30	22.04	<0.01	1.19	3.57	0.21	3.04	0.62	9.86	<0.01	27.13	32.55	16.85	36.65
130	227.37	27.24	<0.01	2.28	5.03	0.39	3.61	0.54	8.86	<0.01	31.21	36.75	22.09	42.87
140	230.51	27.06	0.02	2.27	6.88	0.39	4.00	0.56	9.27	<0.01	33.43	37.94	23.77	44.77
150	273.36	30.60	0.02	2.76	7.51	0.50	3.58	0.77	12.74	<0.01	29.96	39.63	22.43	45.54
160	340.14	32.56	0.01	2.81	7.02	0.42	2.92	0.81	13.54	<0.01	27.76	39.90	22.10	45.61
170	388.88	30.30	0.01	2.51	7.00	0.30	2.84	0.73	12.24	<0.01	32.12	40.84	22.26	46.51
180	407.10	30.58	0.01	2.51	7.34	0.29	3.02	0.73	12.37	<0.01	38.04	45.91	22.29	51.04

S4 NO error contribution profile plots and tabulated values for RR UA data (V8R_NOwT_662) at low solar activity conditions

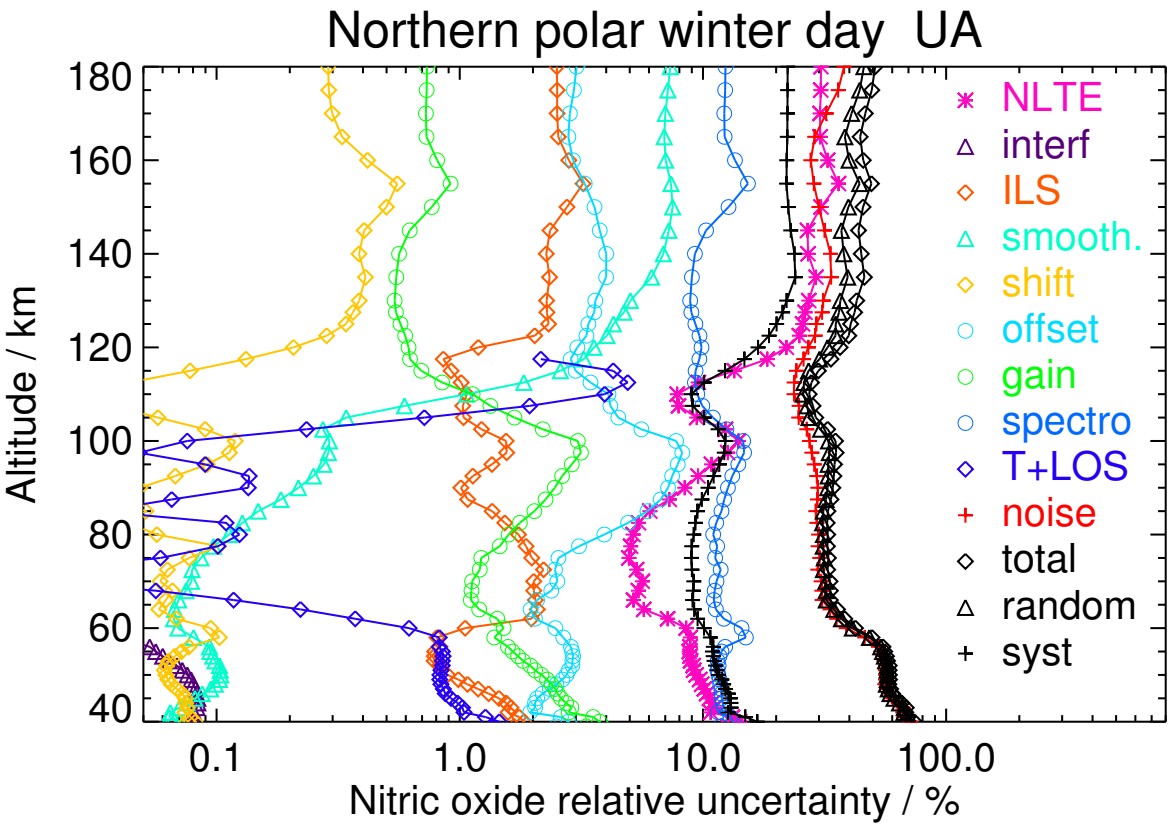

Figure S103. V8R_NOwT_662 Northern polar winter day

Table S105. Nitric oxide error budget for Northern polar winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	5.83	0.27	0.41	0.04	0.15	1.38	0.43	9.22	0.91	72.74	72.91	9.82	73.57
60	0.01	7.72	0.20	1.55	0.14	0.12	3.57	0.97	11.01	1.10	68.44	69.28	9.06	69.87
70	0.07	6.90	0.11	2.13	0.18	0.17	3.67	1.76	10.86	0.48	52.48	53.62	8.15	54.23
80	0.74	6.66	0.05	1.86	0.21	0.12	4.12	1.85	10.29	0.07	36.50	37.98	8.00	38.82
90	5.50	8.81	0.02	1.35	0.31	0.15	6.15	2.57	9.76	0.74	31.00	33.17	9.00	34.36
100	16.62	8.91	0.01	1.28	0.69	0.16	6.17	2.42	9.20	1.04	33.19	34.98	9.45	36.23
110	73.21	9.17	0.01	1.17	2.23	0.14	8.40	2.02	9.79	9.81	31.81	35.85	9.13	37.00
120	120.62	18.90	<0.01	0.63	4.65	0.14	3.96	0.54	8.42	<0.01	30.05	33.51	15.70	37.00
130	144.21	28.05	<0.01	1.90	5.67	0.30	4.52	0.56	9.17	<0.01	34.25	40.89	20.70	45.83
140	132.92	30.21	0.01	2.17	7.89	0.32	4.70	0.57	9.38	<0.01	39.23	45.90	22.84	51.27
150	149.95	29.36	0.01	2.18	10.50	0.28	4.45	0.60	9.98	<0.01	43.49	49.84	22.46	54.66
160	165.45	29.54	0.01	2.27	12.30	0.25	4.61	0.64	10.60	<0.01	51.66	57.78	22.19	61.90
170	202.16	29.13	0.01	2.28	13.32	0.25	4.95	0.64	10.63	<0.01	60.45	65.86	22.04	69.45
180	251.57	27.04	0.01	2.13	13.71	0.23	4.82	0.59	9.87	<0.01	61.27	65.83	21.56	69.27

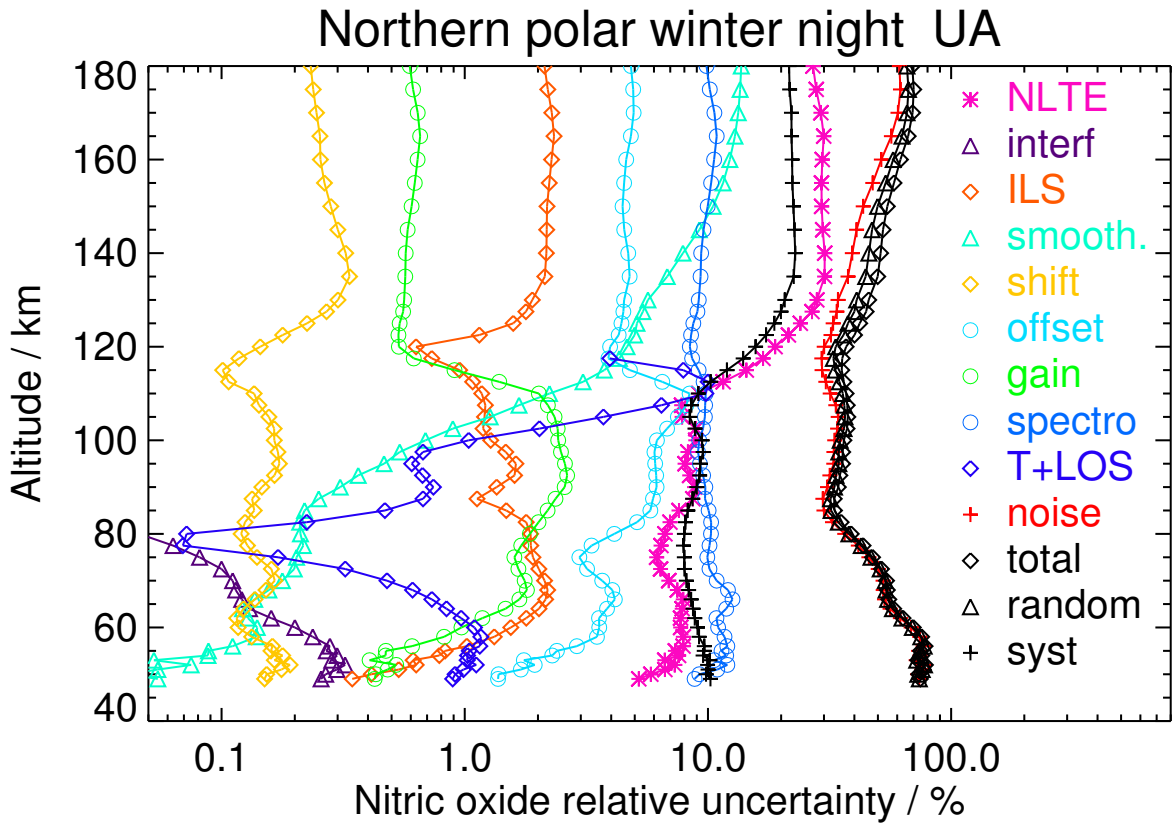

Figure S104. V8R_NOwT_662 Northern polar winter night

Table S106. Nitric oxide error budget for Northern polar spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	2.48	0.10	1.81	0.04	0.18	0.62	1.59	9.95	0.77	23.37	24.23	8.42	25.66
60	0.01	13.23	0.11	2.49	0.21	0.10	3.25	1.23	13.65	1.01	47.50	50.44	9.62	51.35
70	0.03	18.94	0.05	2.87	0.29	0.26	3.87	1.54	14.36	0.08	46.30	50.90	11.96	52.29
80	0.08	13.94	0.05	2.35	0.44	0.26	2.43	1.05	13.50	0.22	42.98	45.67	12.31	47.30
90	0.84	19.72	0.08	2.04	0.49	0.36	2.48	1.62	14.42	0.12	34.05	39.56	14.31	42.07
100	9.58	30.48	0.08	1.89	0.48	0.36	3.27	2.27	12.25	0.05	29.93	42.08	14.97	44.66
110	60.21	13.84	0.06	1.56	1.07	0.12	4.80	1.21	9.64	7.66	21.36	25.71	12.91	28.77
120	101.73	25.39	0.10	0.77	2.93	0.25	1.74	0.49	8.28	<0.01	21.46	25.86	22.74	34.44
130	167.51	25.57	0.13	1.81	3.42	0.31	1.39	0.47	8.03	<0.01	21.64	25.51	23.52	34.70
140	254.25	27.51	0.12	1.81	4.22	0.29	1.45	0.49	8.25	<0.01	22.11	26.93	24.75	36.57
150	342.22	27.08	0.13	1.91	5.32	0.27	1.35	0.52	8.67	<0.01	19.48	25.59	23.83	34.96
160	446.47	25.37	0.14	1.88	5.56	0.22	1.17	0.52	8.70	<0.01	17.29	23.22	22.70	32.47
170	562.86	24.46	0.11	1.88	3.33	0.19	1.14	0.52	8.73	<0.01	13.65	19.64	22.17	29.62
180	653.02	24.22	0.14	1.88	4.08	0.19	1.27	0.52	8.56	<0.01	16.82	21.43	22.49	31.07

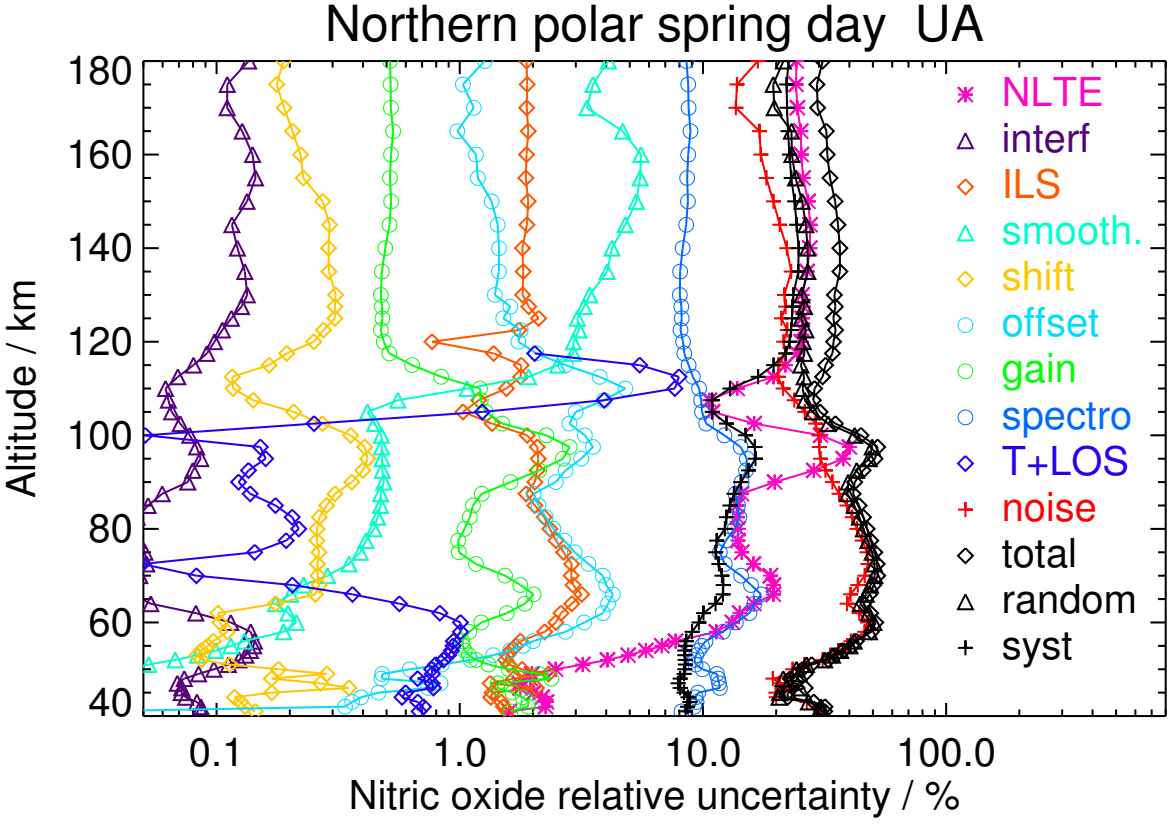

Figure S105. V8R_NOwT_662 Northern polar spring day

Table S107. Nitric oxide error budget for Northern polar spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	26.47	0.20	2.37	0.09	0.38	7.74	2.25	26.20	1.56	45.04	57.12	15.02	59.07
60	0.01	18.53	0.19	1.84	0.33	0.27	5.21	1.35	14.14	1.57	61.14	64.35	13.21	65.70
70	0.03	12.38	0.10	1.53	0.55	0.29	3.13	1.03	8.34	0.17	53.80	55.50	7.16	55.96
80	0.28	18.68	0.04	1.47	0.33	0.47	5.00	2.54	13.65	0.14	34.26	40.68	9.40	41.75
90	3.33	19.82	0.03	1.33	0.36	0.54	4.24	2.62	10.71	0.03	30.13	35.38	13.82	37.98
100	23.63	20.34	0.04	1.46	0.45	0.76	4.32	1.82	11.20	0.34	31.91	38.34	10.59	39.78
110	130.08	22.24	0.02	2.87	0.78	0.67	7.63	2.23	14.65	7.52	22.96	33.68	15.20	36.95
120	227.07	37.21	0.02	0.74	2.10	0.42	1.79	0.77	11.91	<0.01	22.32	36.91	25.90	45.09
130	253.85	35.06	0.02	2.39	2.58	0.49	1.24	0.66	10.52	<0.01	19.08	32.82	25.33	41.46
140	253.20	36.42	0.03	2.10	4.03	0.40	1.26	0.63	10.31	<0.01	21.75	35.19	26.28	43.92
150	274.93	36.19	0.02	2.41	5.51	0.45	1.40	0.66	10.68	<0.01	20.20	35.16	25.18	43.25
160	283.09	30.93	0.02	2.34	5.65	0.28	1.39	0.61	10.04	<0.01	19.18	30.08	23.67	38.28
170	336.79	31.72	0.02	2.58	3.88	0.23	1.32	0.63	10.56	<0.01	15.91	29.26	23.20	37.35
180	368.10	32.08	0.03	2.26	4.95	0.30	1.58	0.66	10.73	<0.01	21.22	31.81	24.81	40.34

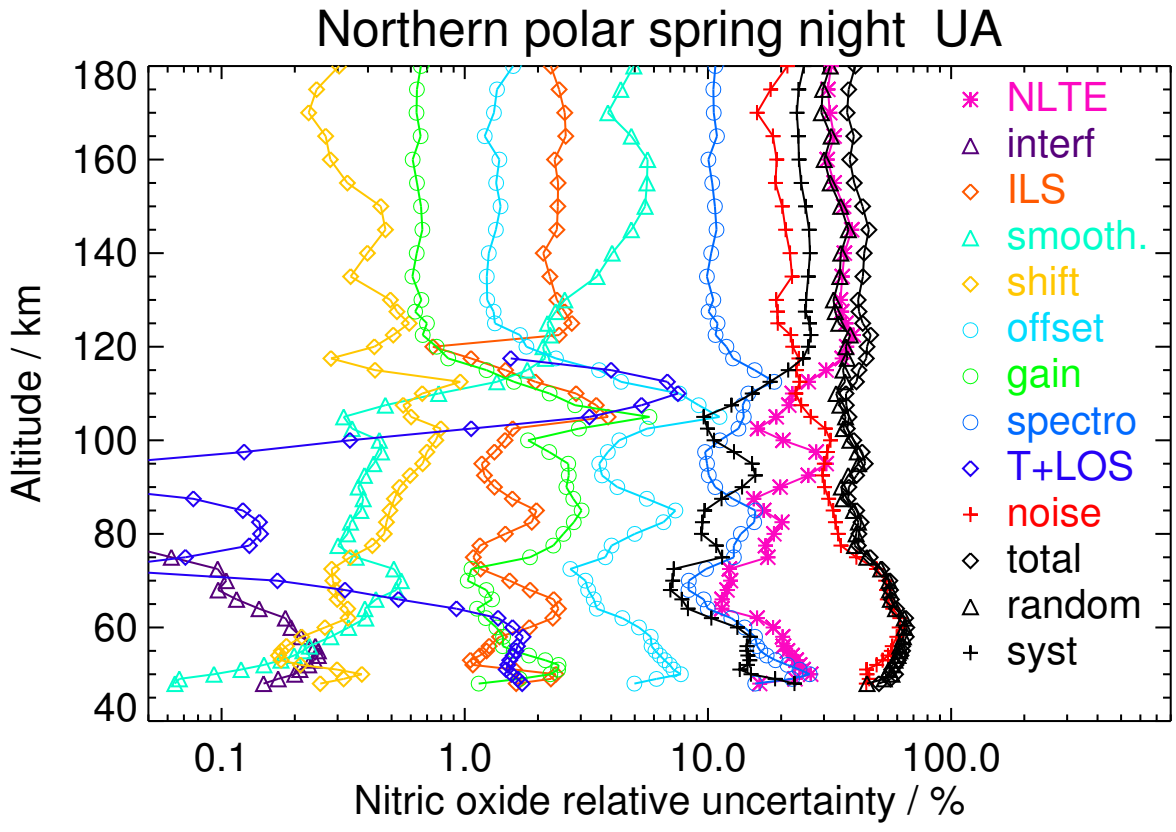

Figure S106. V8R_NOwT_662 Northern polar spring night

Table S108. Nitric oxide error budget for Northern polar summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.02	0.08	0.81	0.02	0.09	0.28	1.06	8.28	0.56	17.90	18.04	8.18	19.80
60	0.01	4.71	0.14	1.69	0.11	0.12	1.91	0.88	9.77	0.71	43.75	44.34	8.56	45.16
70	0.01	5.86	0.04	2.02	0.28	0.16	2.23	1.07	10.77	0.10	49.57	50.18	9.99	51.17
80	0.02	8.78	0.03	0.86	0.37	0.18	1.42	0.79	10.16	0.22	41.96	42.49	11.79	44.10
90	0.53	14.05	0.03	1.30	0.52	0.24	2.51	1.03	10.87	0.27	39.01	41.23	12.12	42.98
100	8.98	9.26	0.02	2.29	0.35	0.15	3.69	1.59	10.30	1.33	31.52	33.40	9.65	34.77
110	34.33	14.57	0.02	5.37	1.47	0.11	7.49	2.00	9.68	16.01	19.70	28.89	14.38	32.27
120	73.43	21.38	0.03	1.56	3.90	0.09	3.13	0.48	8.40	<0.01	25.92	29.25	19.28	35.03
130	159.79	26.57	0.03	2.62	4.77	0.27	3.13	0.51	8.66	<0.01	29.55	34.60	22.30	41.16
140	240.76	27.80	0.04	2.64	5.66	0.47	2.58	0.58	9.39	<0.01	28.19	34.73	22.26	41.25
150	320.30	27.43	0.03	2.27	5.98	0.36	2.12	0.63	10.08	<0.01	24.48	32.23	21.46	38.72
160	383.09	24.07	0.03	1.93	5.39	0.26	1.86	0.58	9.37	<0.01	23.04	28.41	20.67	35.14
170	501.57	24.06	0.03	1.93	4.58	0.23	1.89	0.60	9.72	<0.01	22.83	28.20	20.68	34.97
180	553.14	24.20	0.03	1.92	5.23	0.24	2.18	0.61	9.87	<0.01	29.66	34.14	20.81	39.98

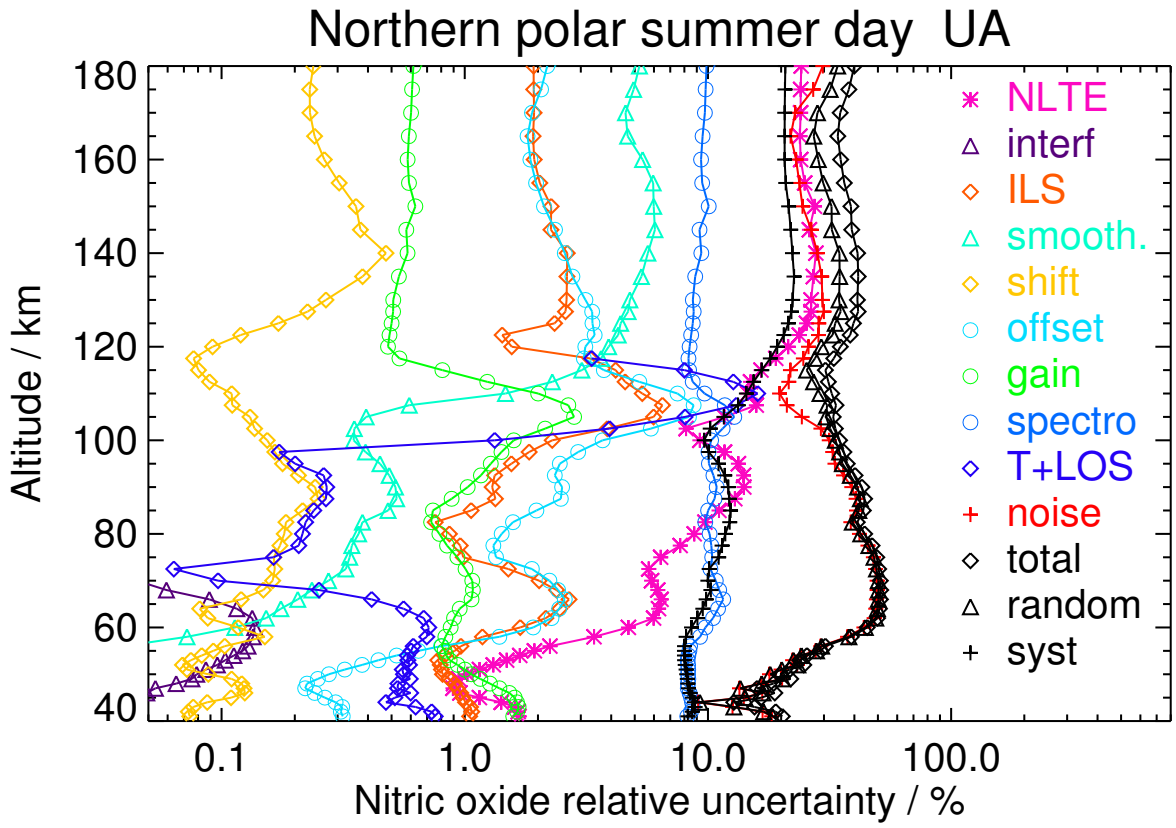

Figure S107. V8R_NOwT_662 Northern polar summer day

Table S109. Nitric oxide error budget for Northern polar summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	4.42	0.25	0.38	0.10	0.13	1.52	0.99	4.46	0.78	41.17	41.54	3.59	41.70
60	0.00	11.80	0.23	2.23	0.29	0.14	3.47	0.75	11.02	1.23	59.52	61.44	6.90	61.83
80	0.09	15.57	0.05	2.59	0.34	0.34	2.34	0.78	11.75	0.23	42.66	42.73	19.68	47.04
90	1.24	17.08	0.05	1.39	0.57	0.51	2.56	1.38	9.60	0.24	37.81	40.72	12.91	42.72
100	19.45	21.33	0.03	0.84	0.36	0.60	3.94	3.00	11.84	1.46	27.68	35.31	11.94	37.28
110	39.38	18.04	0.02	3.01	1.30	0.18	6.94	1.77	11.43	14.51	22.21	32.10	13.85	34.96
120	96.83	38.78	0.03	0.97	2.74	0.25	2.33	0.80	13.90	<0.01	23.44	41.81	22.65	47.55
130	159.85	39.15	0.02	2.99	3.53	0.50	2.00	0.72	12.17	<0.01	24.19	41.45	23.96	47.88
140	144.53	36.47	0.02	2.75	5.35	0.45	2.04	0.68	11.18	<0.01	26.47	40.07	24.31	46.87
150	186.89	38.11	0.03	2.99	6.12	0.48	2.08	0.76	12.34	<0.01	24.92	41.54	23.48	47.72
160	212.64	33.91	0.03	2.77	6.21	0.43	2.01	0.73	11.88	<0.01	24.64	37.90	22.65	44.15
170	295.07	32.91	0.03	2.66	4.75	0.32	1.80	0.73	11.95	<0.01	22.21	34.93	23.08	41.86
180	361.91	30.78	0.03	2.31	5.32	0.31	1.93	0.68	11.21	<0.01	27.32	35.87	23.90	43.10

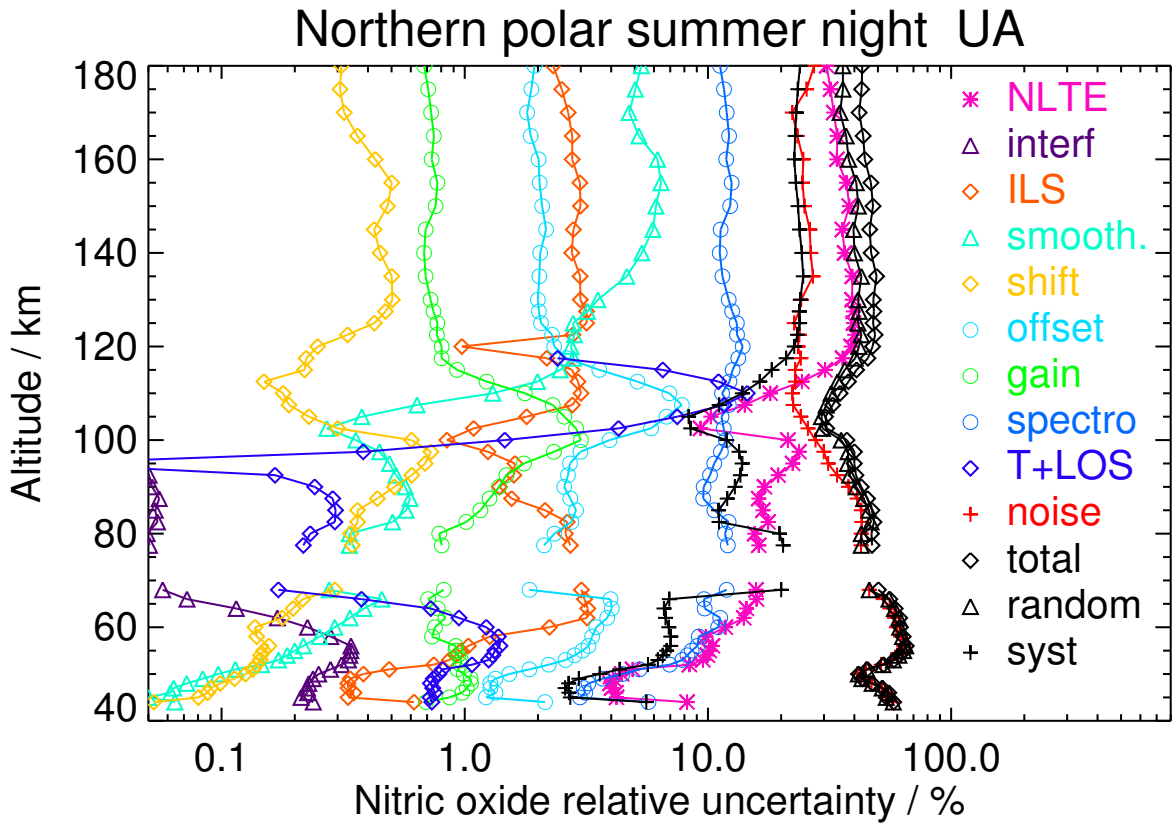

Figure S108. V8R_NOwT_662 Northern polar summer night

Table S110. Nitric oxide error budget for Northern polar autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	7.90	0.14	1.59	0.13	0.09	1.70	1.55	11.31	0.80	44.75	45.57	11.14	46.91
60	0.01	15.43	0.10	2.24	0.16	0.07	3.50	1.12	13.94	0.59	55.21	56.85	16.32	59.15
70	0.03	25.83	0.03	3.28	0.17	0.16	5.24	1.55	20.02	0.02	44.88	51.41	21.91	55.88
80	0.12	11.97	0.02	1.79	0.28	0.15	2.36	1.32	14.97	0.13	40.65	42.92	13.71	45.06
90	1.57	17.76	0.01	1.91	0.34	0.19	4.03	2.18	19.04	0.10	31.72	38.54	14.94	41.34
100	9.44	20.79	0.02	1.87	0.46	0.21	3.40	1.67	15.49	0.09	31.99	38.81	14.39	41.39
110	53.15	14.83	0.01	1.00	1.34	0.10	5.19	1.09	10.11	4.05	24.37	28.60	12.08	31.04
120	105.13	25.42	0.02	0.93	3.35	0.24	2.14	0.53	8.92	<0.01	22.11	28.15	20.96	35.09
130	147.91	30.32	0.02	2.10	3.86	0.26	2.16	0.55	9.36	<0.01	23.67	32.11	23.67	39.89
140	158.46	32.15	0.04	2.08	5.81	0.30	2.46	0.55	9.29	<0.01	27.69	36.39	24.64	43.94
150	200.37	27.74	0.04	2.00	7.17	0.29	2.36	0.53	8.78	<0.01	25.35	32.07	22.85	39.38
160	289.32	28.22	0.03	2.20	6.61	0.30	2.01	0.59	9.75	<0.01	22.36	31.25	21.65	38.01
170	394.52	31.58	0.02	2.58	5.22	0.35	1.91	0.68	11.36	<0.01	20.03	33.22	21.50	39.57
180	428.50	32.58	0.02	2.73	6.13	0.38	2.14	0.72	11.99	<0.01	26.31	38.43	21.71	44.13

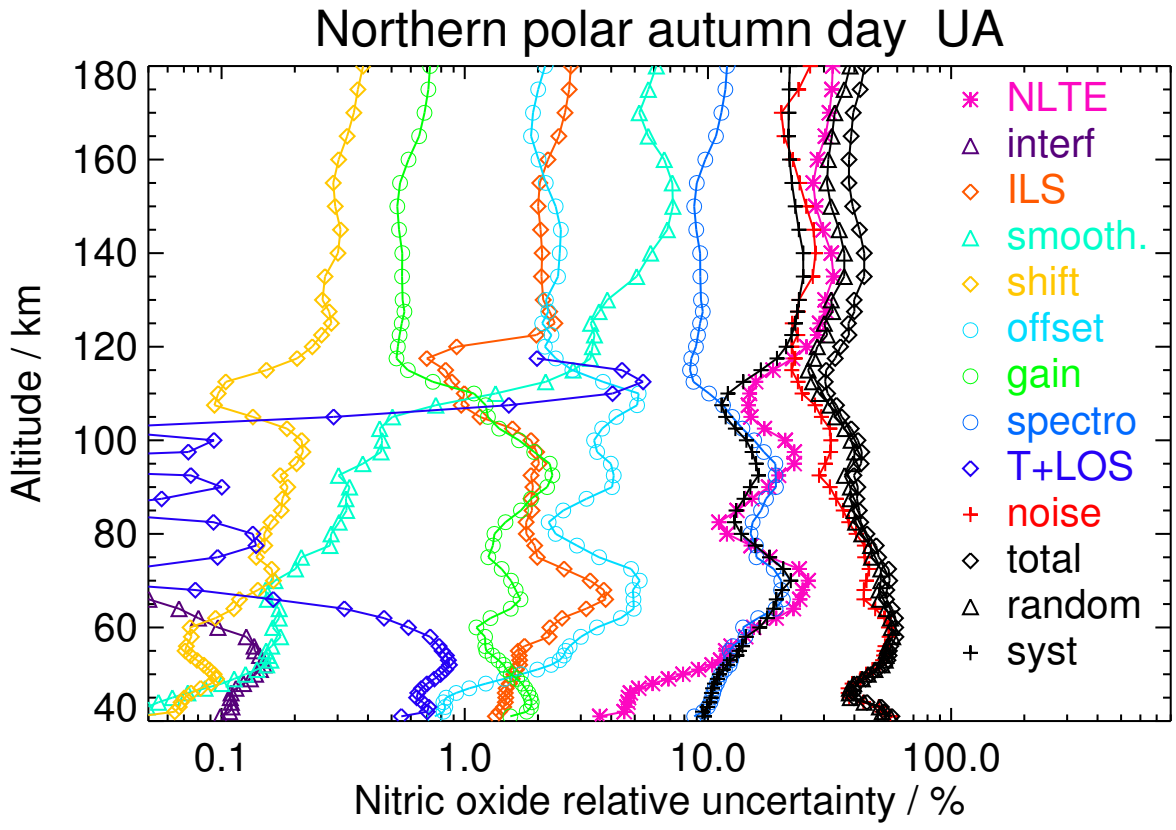

Figure S109. V8R_NOwT_662 Northern polar autumn day

Table S111. Nitric oxide error budget for Northern polar autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	8.61	0.20	0.84	0.18	0.16	3.34	0.85	9.22	2.16	70.13	71.03	7.11	71.38
60	0.01	8.70	0.11	1.59	0.19	0.07	2.84	0.97	10.44	1.86	49.56	50.97	7.67	51.54
70	0.05	8.59	0.07	2.47	0.25	0.14	3.35	1.70	10.81	0.98	50.75	52.25	7.54	52.80
80	0.31	13.53	0.04	2.72	0.42	0.19	3.33	1.48	11.67	0.09	42.64	45.64	8.69	46.46
90	3.07	20.00	0.02	1.23	0.43	0.14	7.32	3.30	13.19	0.73	32.62	39.21	12.94	41.29
100	24.93	12.40	0.02	1.63	0.54	0.31	7.76	3.50	12.92	0.56	34.20	37.89	11.45	39.58
110	76.57	19.11	0.01	0.93	1.38	0.19	9.55	2.66	14.14	8.40	26.03	35.17	13.33	37.61
120	99.38	27.63	0.01	1.26	3.49	0.26	3.26	0.64	10.33	<0.01	27.50	35.55	19.68	40.63
130	117.69	40.94	0.01	2.41	4.74	0.40	3.73	0.73	12.16	<0.01	30.91	47.60	23.59	53.12
140	128.32	54.00	<0.01	3.40	6.67	0.63	4.23	0.85	14.05	<0.01	35.35	61.63	25.28	66.62
150	109.64	42.67	0.01	3.10	8.32	0.54	3.57	0.83	13.69	<0.01	33.43	52.30	21.97	56.73
160	110.18	40.70	0.02	3.13	8.30	0.41	3.30	0.87	14.53	<0.01	35.62	52.94	20.59	56.81
170	106.66	33.31	0.01	2.60	8.46	0.28	3.52	0.73	12.23	<0.01	42.44	52.26	20.50	56.14
180	141.91	28.50	0.01	2.23	9.03	0.24	3.36	0.62	10.48	<0.01	44.02	50.29	20.73	54.39

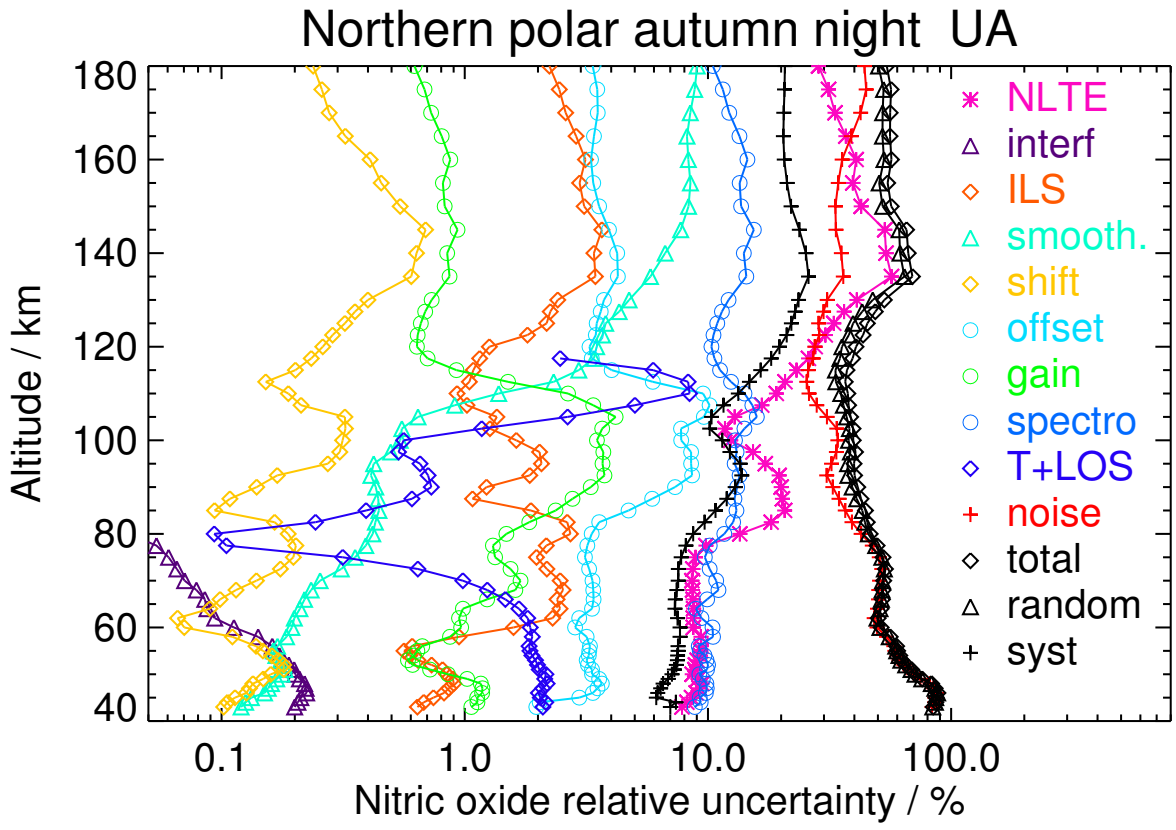

Figure S110. V8R_NOwT_662 Northern polar autumn night

Table S112. Nitric oxide error budget for Northern midlatitude winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.01	5.35	0.05	1.42	0.03	0.08	0.48	1.90	9.28	0.80	27.55	27.78	10.43	29.67
50	0.00	2.86	0.11	1.29	0.13	0.10	0.95	1.29	8.96	0.61	37.62	37.84	8.73	38.84
60	0.00	6.92	0.10	1.44	0.38	0.04	2.76	0.87	8.41	0.44	61.26	61.89	7.18	62.30
70	0.02	6.85	0.04	1.49	0.45	0.11	2.76	0.54	6.48	0.04	60.10	60.44	7.63	60.92
80	0.07	9.47	0.02	1.20	0.58	0.16	1.09	0.65	7.87	0.13	50.54	51.25	9.10	52.05
90	0.43	12.91	0.02	1.02	0.93	0.13	1.97	0.61	7.19	0.09	49.45	50.36	11.54	51.67
100	2.75	12.93	0.01	1.01	1.03	0.13	2.07	0.71	8.57	0.06	40.25	41.65	11.51	43.21
110	13.82	10.13	0.01	1.11	2.47	0.10	4.30	0.98	9.52	5.18	37.73	39.92	8.77	40.87
120	27.52	18.84	0.01	0.90	4.81	0.17	3.26	0.68	11.21	<0.01	32.13	37.53	11.81	39.35
130	51.25	20.16	0.01	2.02	6.45	0.19	3.88	0.53	8.83	<0.01	33.84	37.73	16.35	41.12
140	96.18	23.79	0.02	1.70	7.68	0.19	4.60	0.52	8.58	<0.01	35.12	38.75	21.33	44.23
150	177.39	28.87	0.02	2.19	7.69	0.25	3.94	0.64	10.54	<0.01	30.85	38.58	22.09	44.45
160	218.24	27.56	0.02	2.10	6.84	0.19	2.94	0.62	10.25	<0.01	26.92	34.31	21.73	40.61
170	255.24	23.88	0.02	1.84	7.01	0.15	2.69	0.55	9.03	<0.01	29.86	34.24	20.76	40.04
180	266.34	23.02	0.02	1.79	7.66	0.15	2.83	0.53	8.78	<0.01	35.55	39.13	20.25	44.06

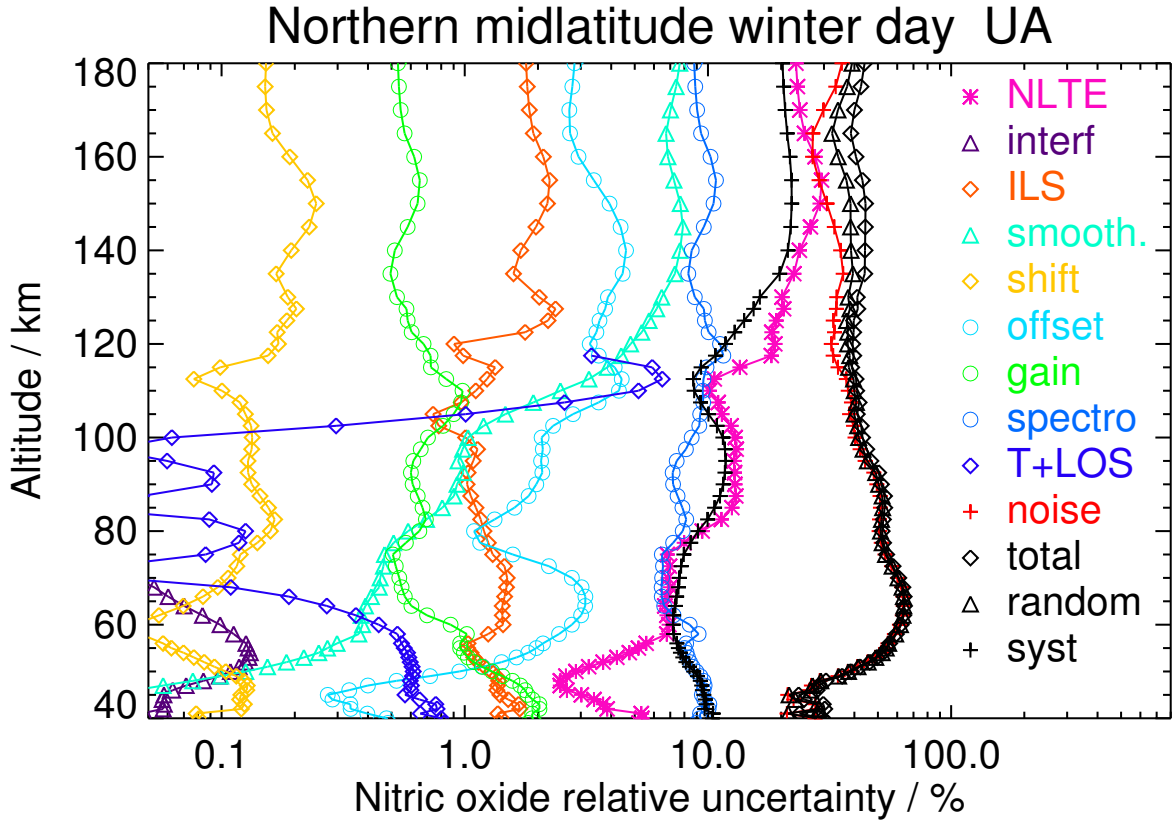

Figure S111. V8R_NOwT_662 Northern midlatitude winter day

Table S113. Nitric oxide error budget for Northern midlatitude winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.01	3.58	0.22	1.04	0.31	0.10	4.61	0.53	8.55	0.72	83.78	84.16	6.67	84.43
70	0.02	4.71	0.14	1.29	0.53	0.10	4.35	1.01	7.80	0.23	76.17	76.58	6.50	76.86
80	0.10	8.53	0.08	1.55	0.59	0.22	2.81	2.65	11.06	0.15	60.47	61.82	6.92	62.21
90	0.81	13.19	0.04	1.78	0.73	0.18	3.07	3.28	12.37	0.46	49.84	52.60	8.24	53.24
100	8.03	14.28	0.02	2.56	0.79	0.16	4.34	3.91	13.47	1.59	38.57	42.93	8.56	43.78
110	32.65	19.66	0.03	5.34	2.31	0.17	8.42	4.35	22.36	12.10	34.67	47.91	7.95	48.57
120	46.29	32.33	0.02	4.12	4.83	0.26	4.77	1.05	14.48	<0.01	35.19	48.69	13.67	50.57
130	46.97	44.11	0.01	3.73	6.37	0.48	5.04	0.96	15.46	<0.01	38.94	58.54	18.85	61.50
140	55.45	50.60	0.01	4.42	7.90	0.64	5.18	0.95	15.79	<0.01	42.84	65.48	21.60	68.96
150	66.99	47.39	0.01	4.01	8.84	0.57	5.23	0.97	16.21	<0.01	49.01	67.33	22.35	70.95
160	76.62	41.54	0.01	3.34	9.12	0.38	5.46	0.91	15.21	<0.01	56.51	69.17	22.16	72.63
170	85.33	35.77	0.01	2.79	9.45	0.26	5.96	0.80	13.56	<0.01	65.98	73.94	21.98	77.14
180	120.20	30.83	0.01	2.37	9.67	0.21	5.71	0.70	11.79	<0.01	66.08	71.38	22.20	74.76

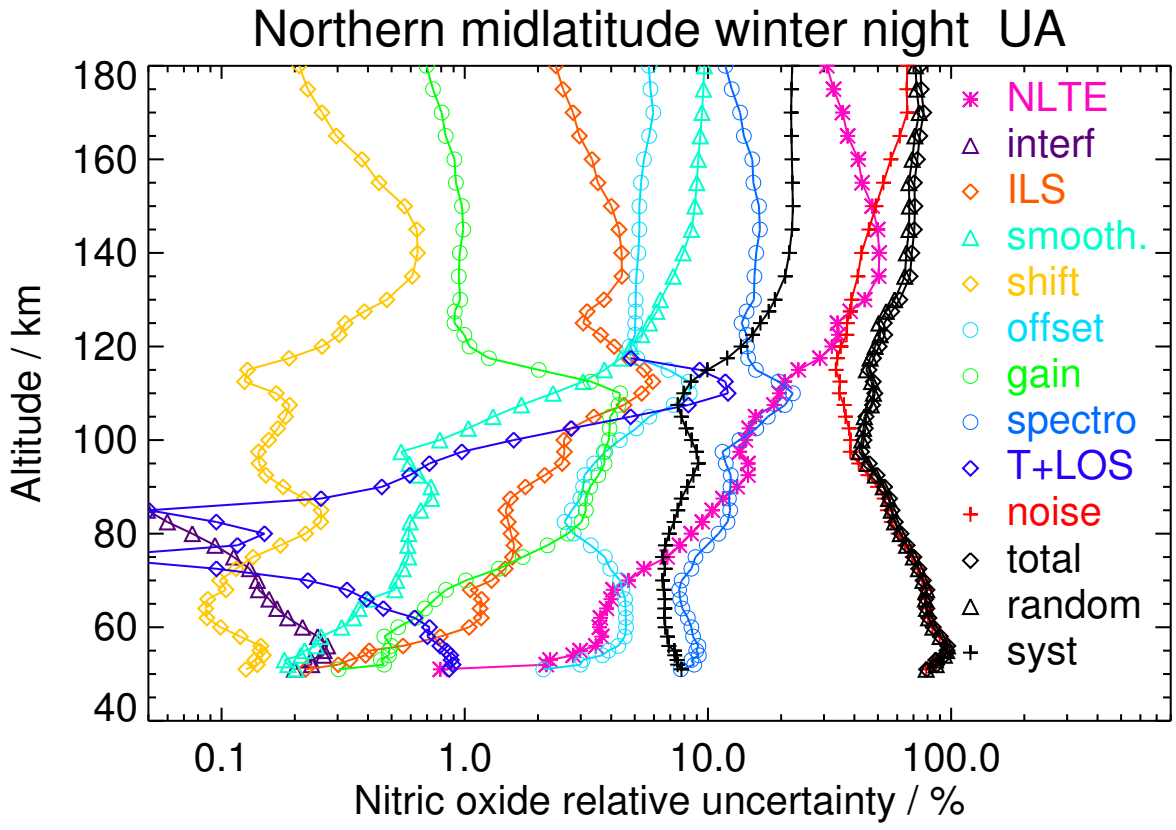

Figure S112. V8R_NOwT_662 Northern midlatitude winter night

Table S114. Nitric oxide error budget for Northern midlatitude spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	2.48	0.10	1.37	0.07	0.09	0.54	1.39	9.73	0.67	27.98	28.40	9.05	29.80
60	0.00	13.09	0.12	2.30	0.43	0.10	2.48	1.07	13.25	0.79	61.56	63.61	10.23	64.42
70	0.01	4.85	0.04	2.07	0.52	0.06	1.85	0.72	10.21	0.03	53.20	53.24	11.50	54.46
80	0.04	18.90	0.03	2.22	0.64	0.22	1.60	1.01	15.40	0.20	52.29	55.40	16.37	57.77
90	0.51	25.93	0.03	2.80	0.68	0.31	2.48	1.32	18.79	0.08	45.26	52.66	17.83	55.59
100	4.08	25.83	0.03	2.30	0.69	0.38	3.08	1.35	18.74	0.07	38.20	46.46	18.33	49.95
110	30.50	18.42	0.02	1.87	1.44	0.17	4.83	1.30	11.78	6.14	27.82	33.48	14.11	36.33
120	96.72	29.20	0.02	0.92	3.44	0.23	2.26	0.52	8.91	<0.01	24.09	32.28	22.10	39.12
130	191.03	26.92	0.02	1.79	3.99	0.27	2.23	0.50	8.46	<0.01	25.85	30.24	23.97	38.59
140	257.42	27.12	0.02	1.73	4.95	0.23	1.81	0.47	8.00	<0.01	23.85	27.30	25.58	37.41
150	325.46	24.12	0.03	1.70	5.27	0.19	1.34	0.47	7.91	<0.01	19.35	22.73	23.13	32.43
160	377.46	22.10	0.03	1.68	5.30	0.16	1.17	0.47	7.81	<0.01	17.98	20.91	21.63	30.09
170	459.02	21.25	0.02	1.71	3.60	0.14	1.12	0.47	7.85	<0.01	13.84	16.98	20.83	26.87
180	497.42	21.67	0.03	1.78	4.63	0.19	1.43	0.48	7.92	<0.01	19.37	22.25	20.96	30.57

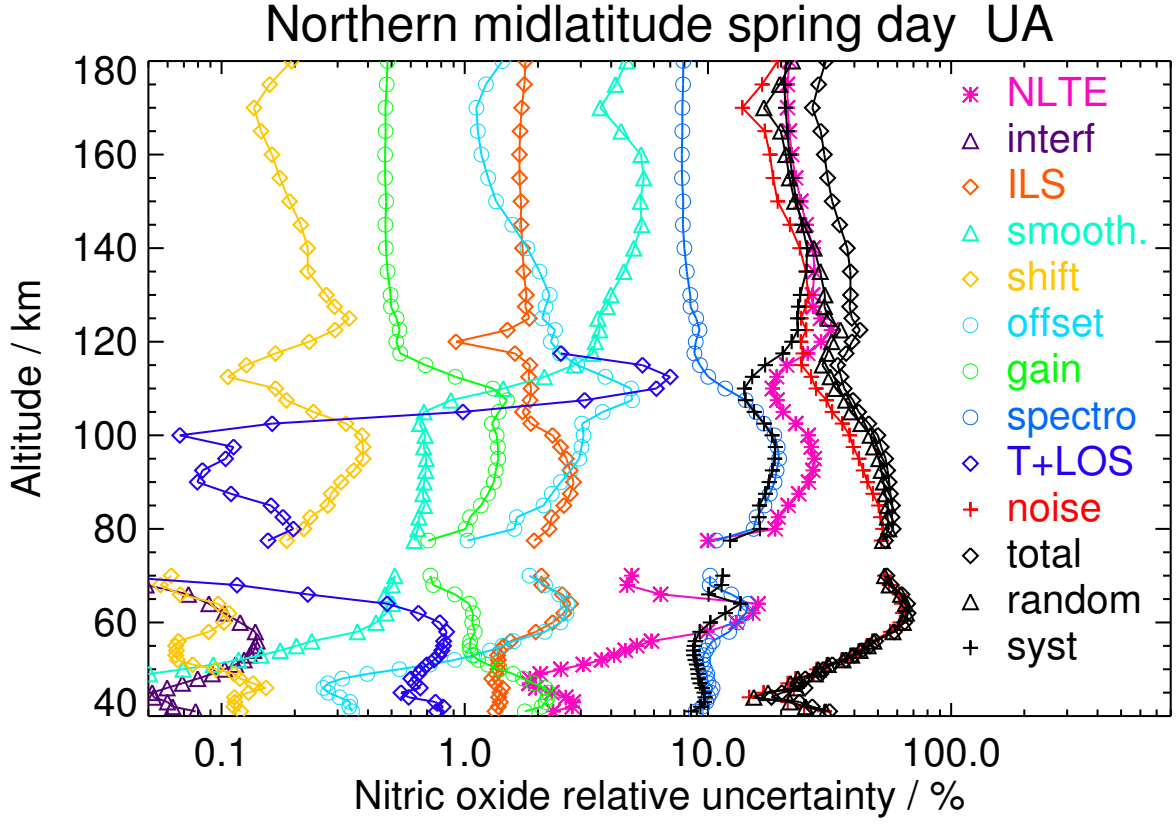

Figure S113. V8R_NOwT_662 Northern midlatitude spring day

Table S115. Nitric oxide error budget for Northern midlatitude spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	13.33	0.26	2.42	0.44	0.12	5.21	0.81	8.96	1.30	73.26	74.94	6.74	75.24
70	0.02	22.43	0.12	1.19	0.27	0.09	6.22	1.01	18.12	0.18	51.57	57.92	13.33	59.43
80	0.13	12.77	0.05	1.89	0.37	0.24	4.47	1.41	18.48	0.16	46.01	50.61	9.30	51.46
90	0.68	21.83	0.07	2.88	1.04	0.45	3.18	1.60	14.08	0.04	51.65	57.14	9.96	58.00
100	5.41	28.04	0.04	2.53	0.89	0.51	2.91	2.15	11.81	0.36	40.25	49.69	9.86	50.66
110	27.76	19.88	0.03	2.56	2.08	0.12	7.47	1.94	11.52	10.48	31.72	39.94	10.93	41.40
120	58.12	29.94	0.03	0.95	4.32	0.27	3.48	0.69	11.85	<0.01	28.84	40.01	17.33	43.60
130	60.63	29.22	0.02	2.50	5.65	0.35	3.63	0.60	10.26	<0.01	31.54	40.40	19.33	44.78
140	67.51	26.02	0.02	2.02	7.20	0.26	3.76	0.54	9.16	<0.01	35.58	40.78	20.84	45.80
150	94.96	27.02	0.02	2.11	7.43	0.25	3.46	0.59	9.77	<0.01	36.40	41.95	21.51	47.14
160	100.49	26.63	0.02	2.13	7.35	0.21	3.47	0.60	9.90	<0.01	39.65	44.55	21.58	49.50
170	110.76	26.43	0.02	2.16	7.52	0.18	3.76	0.60	9.95	<0.01	46.07	50.28	21.64	54.74
180	136.60	24.57	0.02	2.04	7.63	0.16	3.63	0.56	9.23	<0.01	47.29	50.33	21.65	54.79

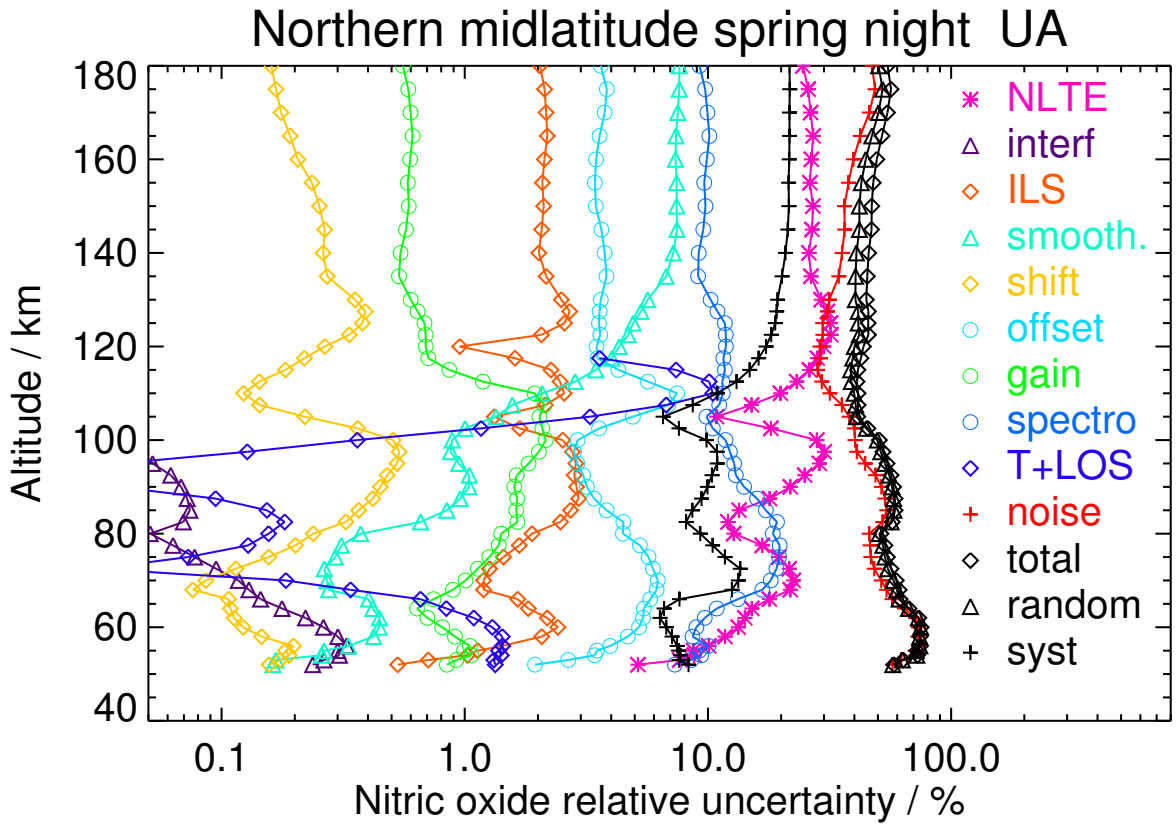

Figure S114. V8R_NOwT_662 Northern midlatitude spring night

Table S116. Nitric oxide error budget for Northern midlatitude summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.20	0.07	0.75	0.02	0.07	0.31	1.23	8.48	0.63	21.66	21.80	8.37	23.35
60	0.01	5.93	0.09	1.41	0.21	0.05	2.07	1.01	10.60	0.60	52.62	53.46	8.13	54.07
70	0.01	4.10	0.05	1.66	0.22	0.05	1.67	0.78	9.73	0.04	52.31	52.34	10.71	53.42
80	0.03	6.23	0.03	1.22	0.31	0.11	1.46	0.81	10.52	0.23	41.84	42.27	10.85	43.64
90	0.80	20.11	0.02	1.38	0.48	0.19	2.40	1.75	15.60	0.20	39.34	45.19	12.82	46.98
100	5.33	9.76	0.02	1.12	0.63	0.13	4.11	1.64	11.58	0.47	39.90	41.66	10.33	42.93
110	19.13	13.36	0.01	3.17	2.03	0.08	7.14	1.68	9.75	14.47	27.41	34.35	11.07	36.08
120	49.07	23.72	0.02	1.09	4.47	0.13	2.90	0.50	8.62	<0.01	26.33	31.54	19.11	36.88
130	123.68	28.38	0.02	1.79	5.43	0.26	3.26	0.48	8.22	<0.01	31.05	35.52	24.89	43.37
140	245.77	30.76	0.03	2.08	5.99	0.33	2.92	0.50	8.22	<0.01	28.83	33.24	28.09	43.52
150	293.12	27.46	0.04	1.77	5.76	0.23	2.06	0.48	7.81	<0.01	23.21	26.31	26.50	37.34
160	349.14	28.07	0.04	1.76	4.49	0.17	1.43	0.51	8.34	<0.01	20.61	25.21	25.93	36.16
170	361.42	26.58	0.04	1.66	3.75	0.11	1.43	0.49	8.11	<0.01	20.01	23.22	25.54	34.52
180	357.99	26.00	0.04	1.61	4.30	0.11	1.77	0.48	7.98	<0.01	27.16	29.39	25.26	38.75

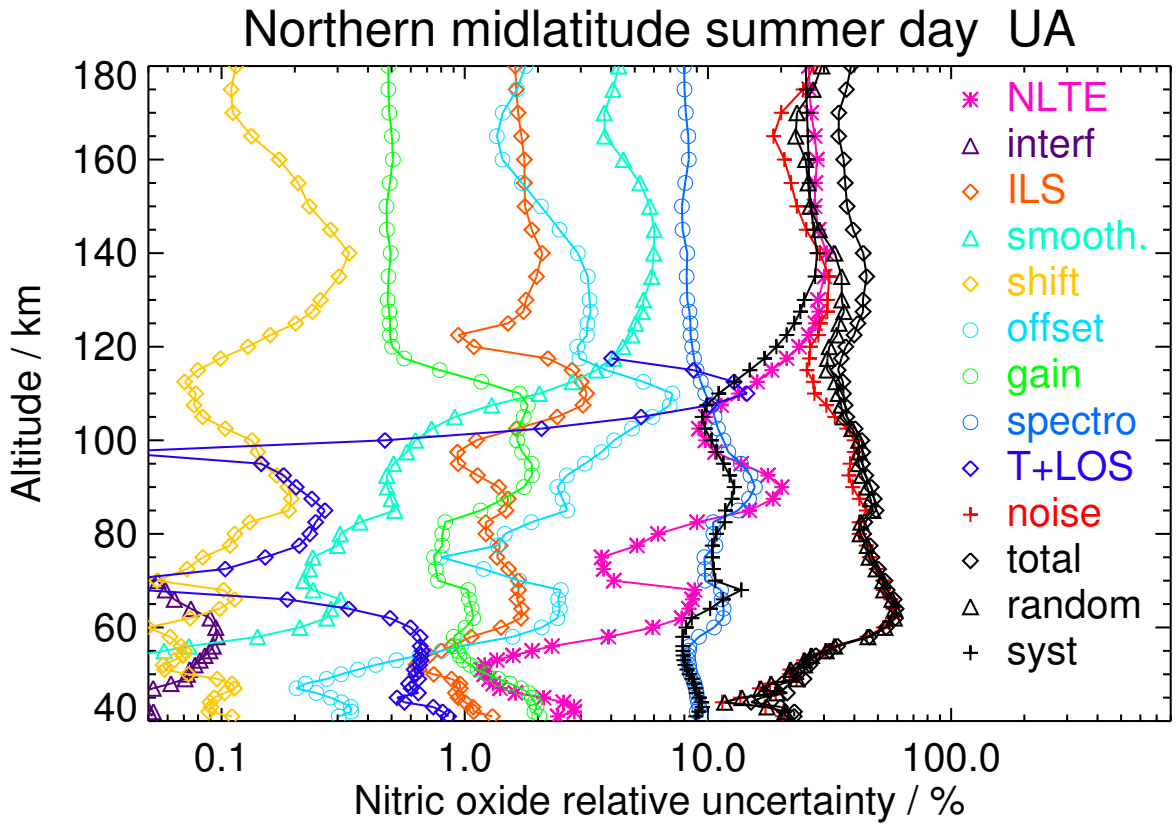

Figure S115. V8R_NOwT_662 Northern midlatitude summer day

Table S117. Nitric oxide error budget for Northern midlatitude summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	5.24	0.40	1.05	0.57	0.14	4.50	0.80	7.93	1.41	99.83	>100	6.60	>100
80	0.02	5.48	0.05	0.13	0.35	0.17	1.55	0.76	7.32	0.08	50.07	50.10	9.18	50.93
90	0.33	8.37	0.11	0.70	1.10	0.18	3.56	0.85	7.97	0.29	60.47	61.11	8.43	61.69
100	4.48	8.72	0.06	1.59	1.16	0.18	4.94	1.56	9.06	1.78	48.87	50.24	7.52	50.80
110	13.65	8.02	0.04	2.80	3.08	0.12	7.45	1.72	9.17	17.47	40.46	45.63	9.20	46.55
120	31.71	16.27	0.03	1.65	5.65	0.05	3.92	0.46	7.96	<0.01	30.59	32.87	15.28	36.25
130	45.36	22.73	0.02	0.75	6.93	0.09	4.59	0.50	8.57	<0.01	35.40	39.09	19.62	43.74
140	60.05	28.71	0.02	1.62	8.40	0.14	4.67	0.57	9.59	<0.01	43.12	48.21	23.37	53.58
150	74.42	34.61	0.02	2.07	8.78	0.13	4.54	0.65	10.90	<0.01	51.89	58.77	25.66	64.13
160	73.82	35.69	0.02	2.18	8.79	0.11	5.41	0.67	11.30	<0.01	65.30	71.25	26.47	76.01
170	79.22	31.97	0.02	1.98	8.82	0.10	6.06	0.60	10.21	<0.01	74.41	78.07	26.21	82.35
180	109.26	30.00	0.02	1.86	8.46	0.09	5.51	0.56	9.52	<0.01	69.30	71.95	26.86	76.80

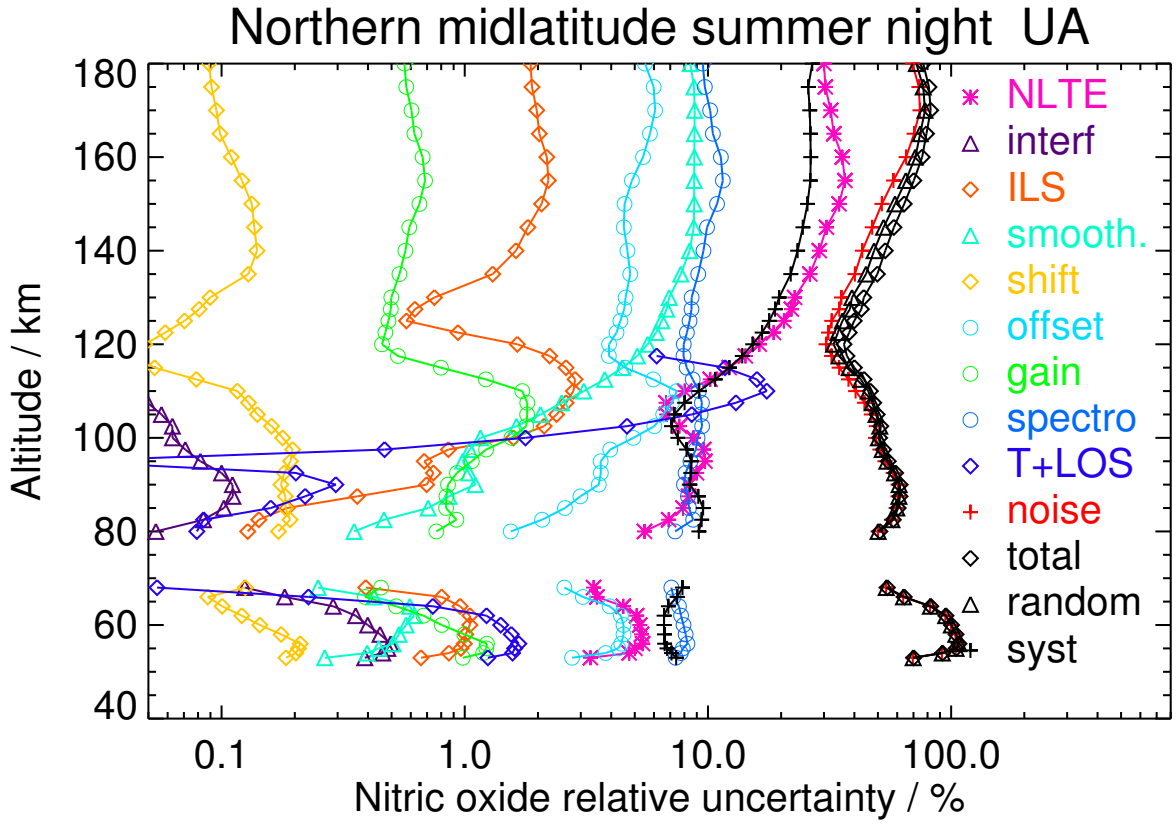

Figure S116. V8R_NOwT_662 Northern midlatitude summer night

Table S118. Nitric oxide error budget for Northern midlatitude autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.80	0.07	1.00	0.07	0.08	0.51	1.39	8.82	0.69	26.13	26.38	8.49	27.71
60	0.00	7.55	0.09	1.55	0.43	0.04	2.34	1.01	9.71	0.54	57.96	58.81	7.87	59.33
70	0.01	12.36	0.06	2.00	0.43	0.06	2.64	0.85	11.73	0.03	59.96	61.59	10.20	62.43
80	0.04	12.11	0.03	1.93	1.05	0.09	2.13	0.91	13.21	0.15	63.21	64.98	10.20	65.78
90	0.37	16.66	0.03	2.16	1.44	0.12	3.23	1.35	17.23	0.12	60.23	63.67	12.90	64.97
100	3.90	22.19	0.01	2.12	0.78	0.10	5.41	2.55	24.90	0.11	36.52	47.64	14.76	49.88
110	12.71	19.65	0.02	0.95	2.56	0.18	8.12	2.06	16.06	4.69	36.51	44.39	10.32	45.57
120	22.78	22.55	0.02	1.16	5.06	0.23	3.19	0.57	9.74	<0.01	33.16	39.25	14.15	41.72
130	42.39	20.65	0.01	1.46	6.59	0.15	3.78	0.50	8.45	<0.01	34.42	37.70	17.91	41.74
140	99.73	30.07	0.01	1.95	7.49	0.24	4.53	0.58	9.71	<0.01	35.00	42.04	23.17	48.00
150	189.09	30.22	0.02	2.09	7.46	0.28	3.81	0.60	9.96	<0.01	29.49	37.65	23.23	44.24
160	255.90	27.71	0.02	2.04	6.96	0.25	2.79	0.60	9.91	<0.01	25.39	33.07	21.86	39.64
170	267.42	24.68	0.02	1.88	7.03	0.21	2.51	0.56	9.24	<0.01	28.67	33.74	20.92	39.70
180	270.04	23.80	0.02	1.84	7.69	0.21	2.65	0.55	9.06	<0.01	34.58	38.65	20.49	43.75

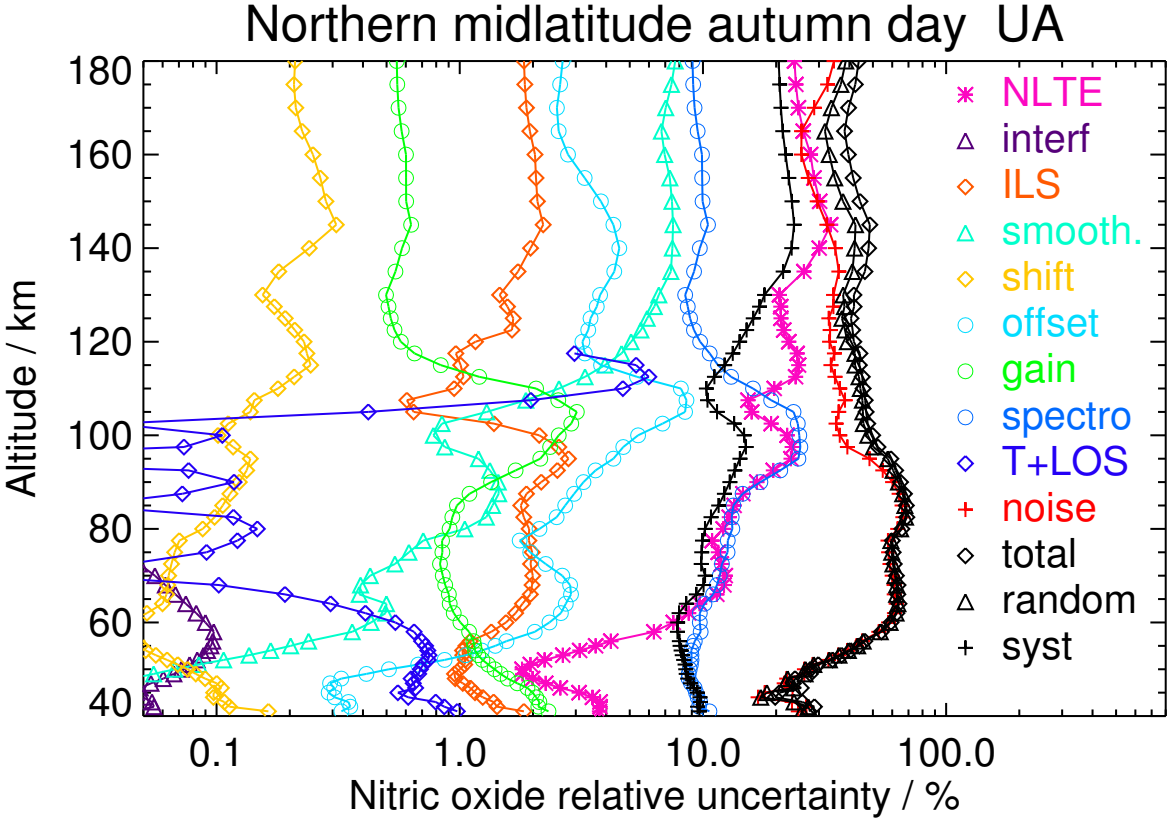

Figure S117. V8R_NOwT_662 Northern midlatitude autumn day

Table S119. Nitric oxide error budget for Northern midlatitude autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	2.17	0.20	0.47	0.14	0.12	1.69	0.20	7.10	1.11	66.40	66.43	7.44	66.85
60	0.01	12.92	0.19	1.23	0.47	0.09	3.79	0.68	9.49	1.10	69.70	71.29	7.05	71.64
70	0.04	21.03	0.09	1.42	0.55	0.08	3.35	0.66	8.00	0.14	56.12	60.08	7.74	60.58
80	0.11	21.89	0.08	2.27	0.90	0.18	3.45	0.88	9.84	0.09	60.88	65.15	7.54	65.59
90	1.31	18.96	0.05	1.74	1.09	0.27	3.45	1.28	8.72	0.47	53.77	57.19	8.64	57.84
100	8.64	18.30	0.03	1.54	1.12	0.30	6.22	2.11	13.81	0.40	41.56	47.20	8.48	47.96
110	24.11	24.90	0.03	1.84	2.98	0.18	12.82	2.35	13.34	10.09	37.98	48.83	11.83	50.24
120	33.55	41.96	0.03	0.97	5.03	0.47	3.88	0.86	13.56	<0.01	35.71	54.43	17.30	57.11
130	37.27	39.19	0.03	2.60	5.92	0.43	3.92	0.71	11.85	<0.01	35.44	50.95	19.85	54.68
140	46.43	33.04	0.04	2.22	6.78	0.26	3.74	0.62	10.49	<0.01	36.28	46.29	20.99	50.83
150	57.82	32.45	0.02	2.27	7.15	0.23	3.66	0.64	10.72	<0.01	37.51	47.01	20.87	51.43
160	73.09	29.84	0.02	2.15	7.05	0.16	3.78	0.62	10.51	<0.01	41.12	48.26	20.79	52.55
170	80.13	31.31	0.02	2.31	7.20	0.14	4.10	0.66	11.24	<0.01	47.49	54.67	21.15	58.62
180	99.52	28.66	0.02	2.12	7.47	0.13	4.05	0.61	10.46	<0.01	50.00	55.25	21.33	59.22

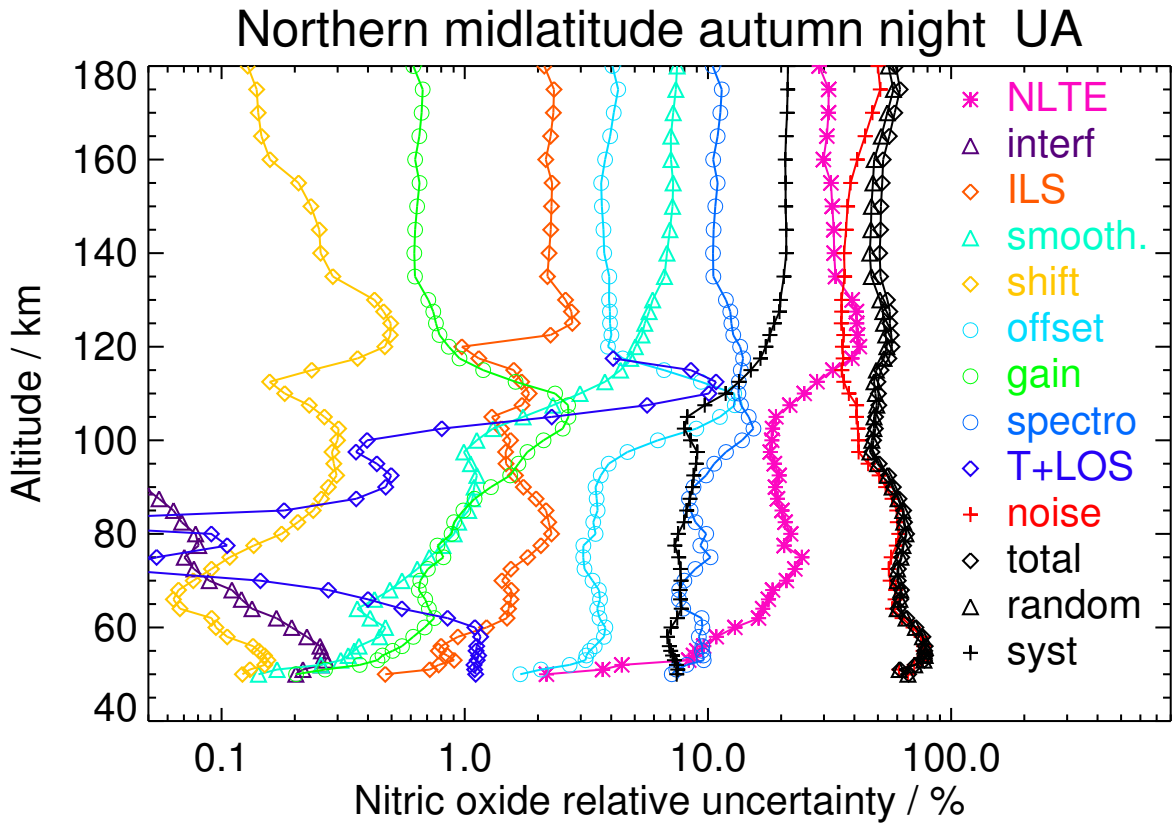

Figure S118. V8R_NOwT_662 Northern midlatitude autumn night

Table S120. Nitric oxide error budget for Tropics day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
40	0.01	3.07	0.04	1.04	0.01	0.07	0.36	1.86	8.41	0.86	15.43	15.70	8.78	17.99
50	0.01	1.19	0.07	1.18	0.03	0.09	0.27	1.35	9.28	0.68	21.09	21.30	9.07	23.16
60	0.00	4.22	0.12	1.56	0.43	0.05	2.07	0.89	10.15	0.53	63.32	63.66	9.31	64.33
70	0.00	5.45	0.05	1.12	0.66	0.10	1.80	0.72	7.51	<0.01	58.91	58.94	9.37	59.68
80	0.01	8.36	0.04	0.91	0.84	0.14	1.30	0.75	8.78	0.15	62.15	62.28	11.61	63.35
90	0.19	11.39	0.03	0.77	1.09	0.14	2.40	0.94	10.89	0.12	59.27	59.85	13.68	61.40
100	2.16	14.39	0.03	0.71	1.46	0.16	2.87	0.87	10.66	0.05	55.49	56.46	14.96	58.41
110	10.49	12.86	0.02	0.90	2.55	0.12	3.42	0.89	10.52	3.60	42.08	43.53	13.60	45.60
120	31.81	19.26	0.02	0.77	4.66	0.12	2.75	0.62	10.49	<0.01	28.18	32.45	15.87	36.13
130	72.28	27.74	0.01	1.87	5.35	0.23	3.31	0.56	9.61	<0.01	30.58	37.29	21.21	42.90
140	132.96	28.31	0.02	1.84	6.33	0.25	3.66	0.51	8.59	<0.01	31.00	35.93	24.53	43.51
150	166.01	26.44	0.02	1.80	7.07	0.24	2.98	0.52	8.53	<0.01	26.47	31.39	23.44	39.18
160	196.14	23.91	0.02	1.75	6.94	0.20	2.07	0.52	8.49	<0.01	23.12	27.50	21.85	35.13
170	203.81	23.59	0.02	1.82	6.92	0.17	1.93	0.54	8.81	<0.01	24.77	29.13	21.32	36.10
180	205.85	23.72	0.02	1.86	7.74	0.19	2.14	0.55	9.00	<0.01	31.11	35.12	21.14	40.99

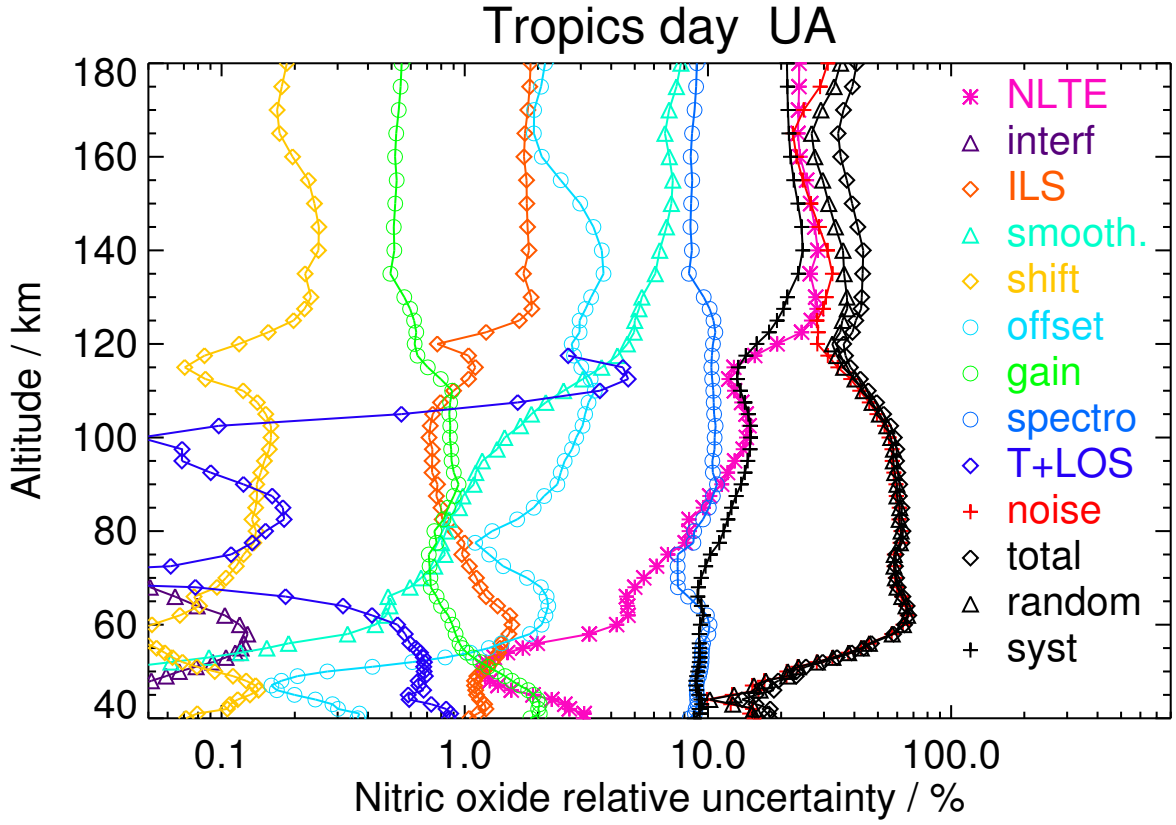

Figure S119. V8R_NOwT_662 Tropics day

Table S121. Nitric oxide error budget for Tropics night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	2.82	0.43	0.89	0.52	0.21	3.79	0.67	11.34	1.03	99.49	99.93	8.09	>100
70	0.02	3.91	0.08	0.63	0.68	0.21	1.90	0.81	7.48	0.03	56.54	56.58	8.50	57.21
90	0.18	6.40	0.13	0.57	1.57	0.15	4.26	0.65	8.52	0.32	74.24	74.64	8.66	75.15
100	1.45	6.70	0.10	0.99	2.21	0.12	5.06	0.76	8.36	0.35	67.92	68.44	8.67	68.99
110	5.32	7.53	0.08	1.43	4.00	0.09	5.65	0.84	8.04	8.37	56.33	57.68	9.36	58.44
120	10.40	11.39	0.05	1.03	5.90	0.04	3.94	0.44	8.18	<0.01	40.77	42.01	12.05	43.71
130	16.02	15.68	0.04	0.76	7.18	0.05	3.92	0.47	8.63	<0.01	35.00	37.32	14.83	40.16
140	23.27	21.17	0.03	1.43	8.60	0.07	4.77	0.55	9.78	<0.01	44.54	47.84	18.38	51.25
150	27.72	29.28	0.02	2.03	9.05	0.08	5.83	0.73	12.62	<0.01	59.74	65.39	20.75	68.60
160	31.08	35.35	0.02	2.42	9.33	0.09	7.11	0.88	15.32	<0.01	75.09	82.38	21.91	85.25
170	46.62	40.72	0.02	2.77	9.57	0.10	7.60	1.02	17.59	<0.01	81.33	90.56	23.19	93.49
180	91.57	39.24	0.02	2.66	9.77	0.09	7.22	0.96	16.88	<0.01	76.30	84.78	24.82	88.33

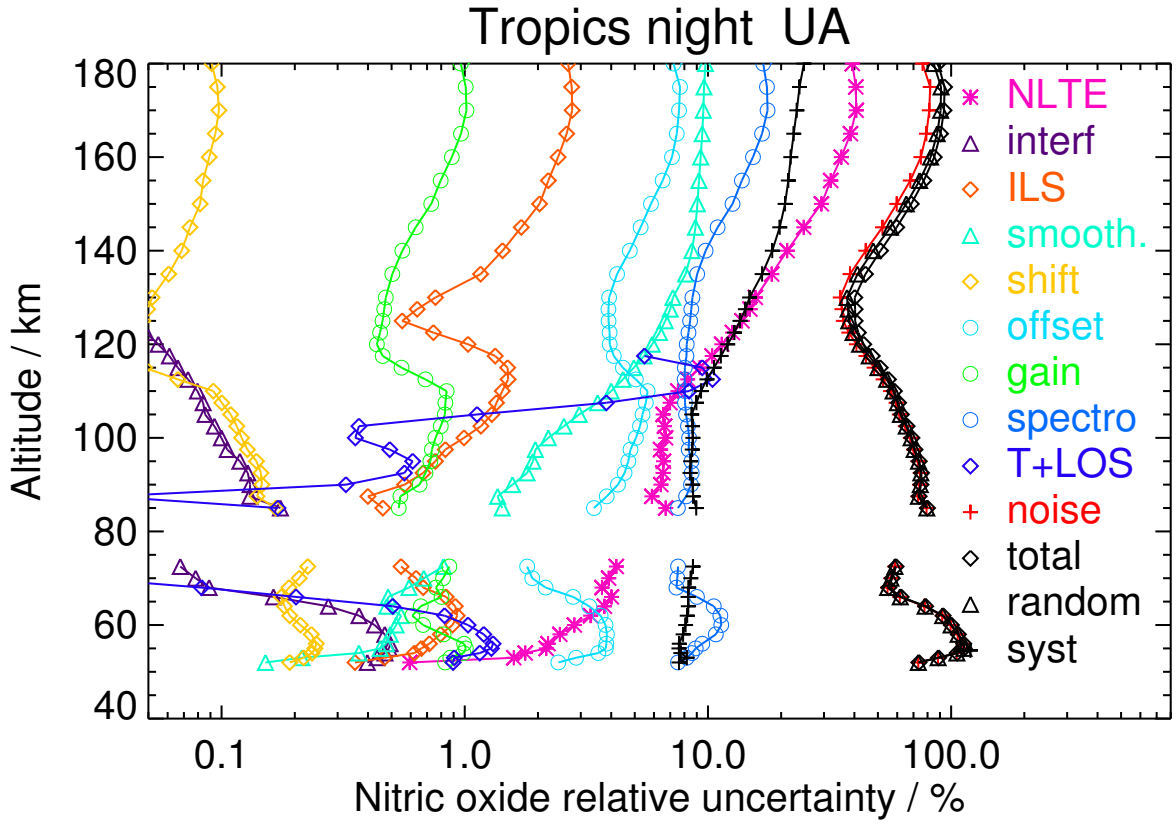

Figure S120. V8R_NOwT_662 Tropics night

Table S122. Nitric oxide error budget for Southern midlatitude winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.90	0.09	0.82	0.07	0.08	0.66	1.31	8.38	0.60	31.51	31.78	7.76	32.71
60	0.00	4.44	0.11	1.27	0.28	0.07	2.52	0.87	9.95	0.55	57.70	58.37	7.08	58.80
70	0.02	5.25	0.04	2.61	0.29	0.11	2.08	0.90	10.74	<0.01	49.87	50.83	7.64	51.40
80	0.10	9.35	0.02	1.52	0.46	0.07	1.40	0.94	9.88	0.16	46.15	47.23	9.44	48.17
90	0.94	16.40	0.01	1.24	0.58	0.11	2.62	1.32	10.89	0.02	37.62	40.67	12.61	42.58
100	4.73	17.84	0.01	1.60	0.85	0.14	2.46	0.90	10.10	0.10	35.99	39.49	12.89	41.54
110	21.67	10.21	<0.01	1.46	2.01	0.10	6.32	1.14	10.78	5.60	33.33	36.61	8.36	37.56
120	48.48	22.13	<0.01	0.99	4.76	0.17	3.33	0.68	11.09	<0.01	31.00	37.62	13.90	40.11
130	79.95	27.14	<0.01	2.19	6.07	0.30	4.21	0.63	10.35	<0.01	35.42	42.66	18.40	46.46
140	149.28	28.09	0.02	2.10	7.19	0.31	4.51	0.59	9.82	<0.01	36.95	42.90	22.06	48.24
150	193.79	26.01	0.02	2.00	7.17	0.25	3.42	0.59	9.75	<0.01	31.67	36.96	21.81	42.92
160	224.98	24.10	0.02	1.86	6.67	0.19	2.72	0.56	9.27	<0.01	29.36	33.70	21.18	39.80
170	266.13	23.58	0.02	1.83	6.79	0.16	2.87	0.56	9.23	<0.01	34.33	38.00	20.82	43.33
180	290.90	23.31	0.02	1.81	7.18	0.15	3.08	0.55	9.20	<0.01	40.09	43.30	20.61	47.96

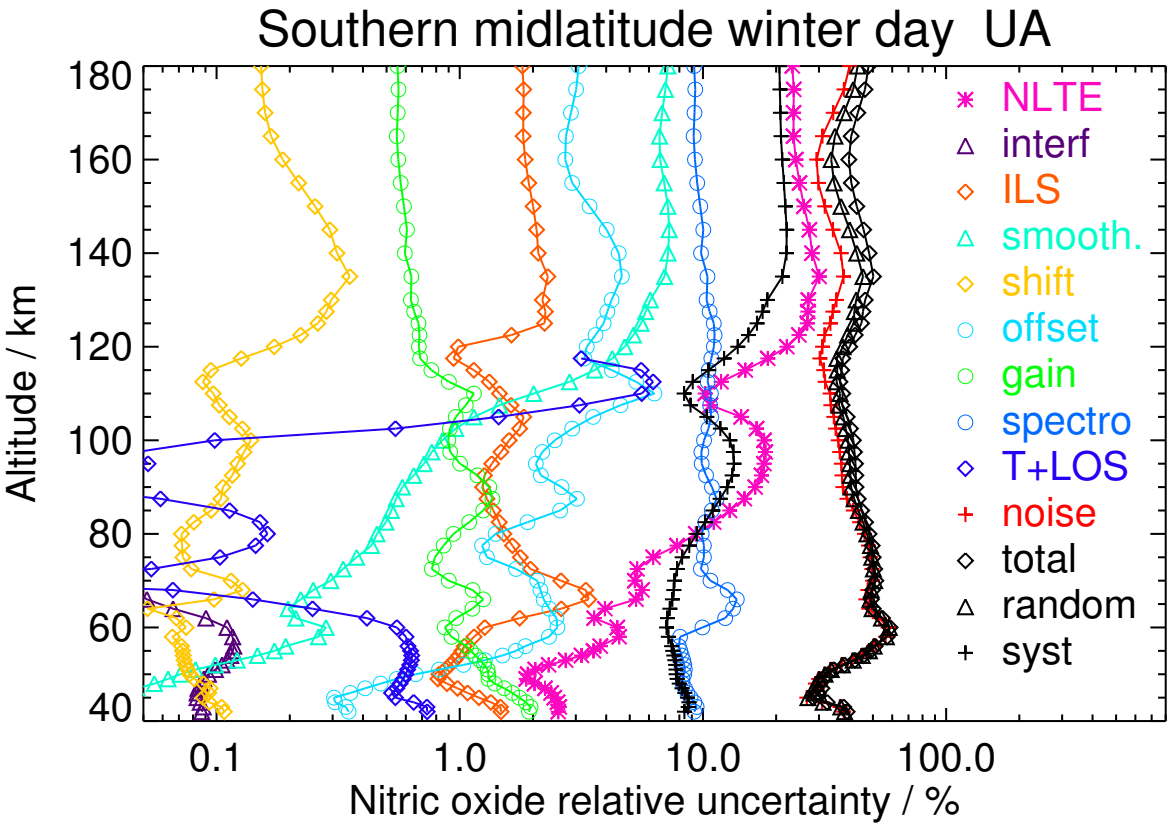

Figure S121. V8R_NOwT_662 Southern midlatitude winter day

Table S123. Nitric oxide error budget for Southern midlatitude winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	4.64	0.30	1.13	0.38	0.12	4.70	0.50	8.13	1.10	98.79	99.12	6.80	99.36
70	0.02	4.79	0.17	1.69	0.35	0.09	3.55	1.06	8.58	0.11	69.89	70.29	7.53	70.69
80	0.09	9.42	0.09	1.97	0.57	0.25	1.91	2.32	12.47	0.18	58.18	59.66	9.09	60.35
90	0.98	12.78	0.04	1.41	0.77	0.33	3.29	2.86	14.39	0.11	50.67	53.53	9.67	54.40
100	5.24	14.08	0.07	1.43	1.31	0.37	7.28	2.03	15.44	1.73	50.78	54.61	9.86	55.49
110	21.50	21.43	0.05	2.08	2.64	0.35	12.09	2.27	14.50	13.70	39.21	49.29	11.29	50.57
120	46.78	33.10	0.02	0.91	4.38	0.18	3.70	0.78	12.95	<0.01	29.54	43.08	17.72	46.58
130	57.41	53.86	0.01	3.30	5.01	0.41	3.68	0.97	16.27	<0.01	31.34	60.97	21.94	64.80
140	64.53	73.85	0.01	5.29	7.24	1.02	3.90	1.28	21.16	<0.01	36.52	82.46	23.12	85.63
150	53.14	50.98	0.02	4.12	8.25	0.81	4.15	1.04	16.97	<0.01	41.84	65.76	20.39	68.85
160	60.54	47.68	0.02	3.92	7.56	0.63	4.32	1.04	17.15	<0.01	46.07	66.28	19.74	69.16
170	68.49	39.88	0.02	3.32	7.54	0.46	4.64	0.89	14.77	<0.01	52.50	65.44	19.32	68.23
180	105.02	32.14	0.01	2.69	7.68	0.37	4.31	0.71	12.04	<0.01	52.04	60.02	19.22	63.02

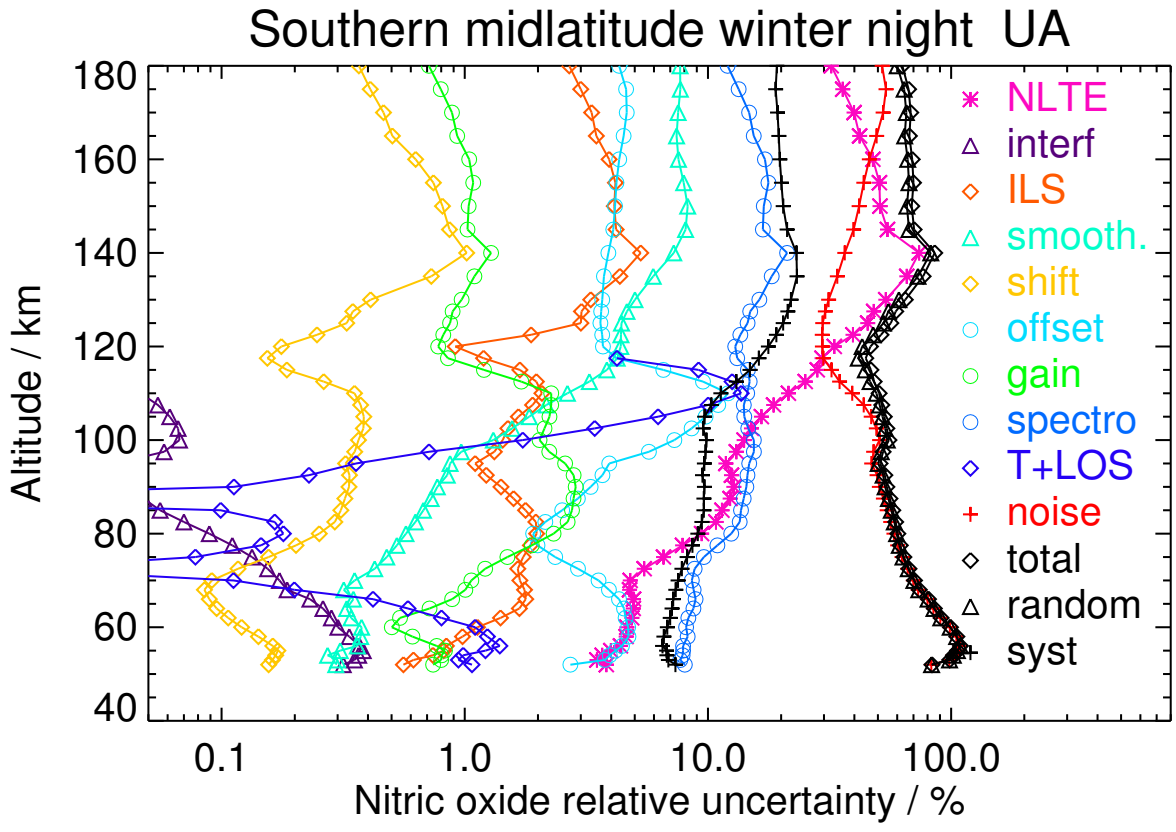

Figure S122. V8R_NOwT_662 Southern midlatitude winter night

Table S124. Nitric oxide error budget for Southern midlatitude spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.76	0.08	1.10	0.05	0.08	0.43	1.30	8.70	0.67	26.18	26.40	8.41	27.70
60	0.00	5.70	0.11	1.95	0.40	0.06	2.33	0.95	10.37	0.77	62.06	62.63	8.92	63.26
70	0.01	8.53	0.04	1.58	0.42	0.09	2.94	1.11	13.17	<0.01	59.48	59.56	15.79	61.62
80	0.05	8.84	0.03	1.57	0.58	0.16	2.33	1.07	14.29	0.20	56.50	57.50	13.34	59.03
90	0.42	14.99	0.03	1.58	0.82	0.26	2.98	1.09	14.09	<0.01	52.51	54.54	14.82	56.52
100	3.17	17.52	0.02	1.14	0.92	0.28	3.48	1.13	13.12	<0.01	45.07	47.79	15.58	50.26
110	18.49	17.23	0.02	1.30	2.16	0.18	6.79	1.32	12.37	8.24	34.68	39.72	14.03	42.13
120	58.58	28.09	0.02	0.69	4.15	0.22	2.64	0.57	9.69	<0.01	26.92	34.40	21.19	40.40
130	133.45	29.96	0.03	1.71	4.84	0.26	2.70	0.52	8.92	<0.01	29.26	35.29	24.93	43.21
140	196.91	30.03	0.02	1.87	5.91	0.29	2.60	0.50	8.42	<0.01	27.21	32.03	27.08	41.94
150	299.23	27.41	0.03	1.91	6.19	0.24	2.10	0.52	8.61	<0.01	22.23	27.44	24.77	36.97
160	309.72	25.08	0.03	1.87	5.82	0.17	1.61	0.52	8.65	<0.01	20.01	24.80	23.00	33.83
170	393.14	24.08	0.02	1.86	4.44	0.12	1.40	0.52	8.66	<0.01	17.21	21.85	22.34	31.25
180	431.84	23.60	0.03	1.86	5.15	0.14	1.53	0.52	8.56	<0.01	21.83	25.47	22.15	33.75

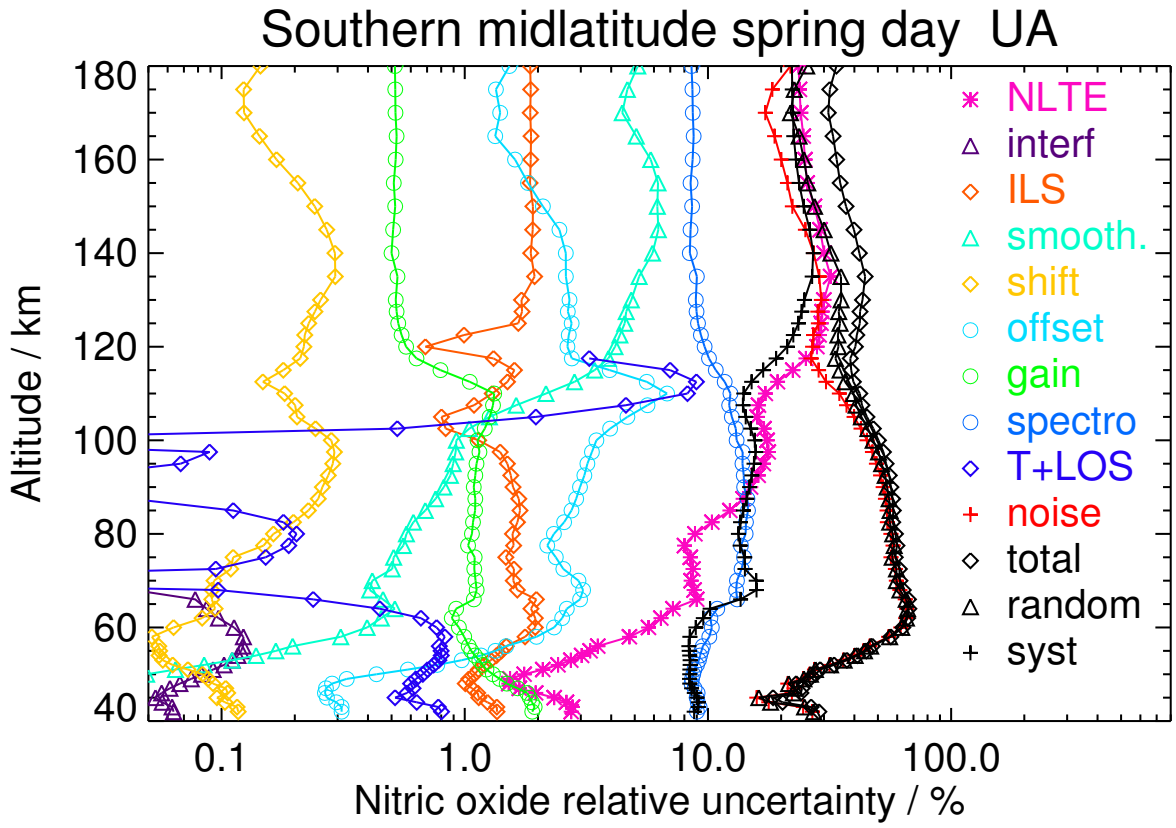

Figure S123. V8R_NOwT_662 Southern midlatitude spring day

Table S125. Nitric oxide error budget for Southern midlatitude spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	13.92	0.43	1.32	0.64	0.15	5.24	0.97	11.14	1.40	>100	>100	7.38	>100
70	0.04	27.82	0.12	1.43	0.29	0.05	6.04	1.28	19.61	0.15	58.60	58.91	34.08	68.06
80	0.21	21.95	0.05	0.84	0.26	0.13	4.98	1.84	19.57	0.16	40.22	47.44	16.15	50.11
90	0.90	28.46	0.05	0.69	0.57	0.38	8.39	3.69	23.20	0.09	42.00	55.24	12.08	56.54
100	5.03	18.66	0.05	1.00	0.89	0.25	9.01	3.12	17.17	0.30	44.35	50.96	10.28	51.99
110	15.49	14.41	0.04	2.06	2.68	0.15	8.13	1.81	10.47	15.44	37.04	43.59	10.40	44.81
120	29.29	24.30	0.04	0.94	4.97	0.16	3.52	0.58	10.04	<0.01	31.55	38.17	16.38	41.53
130	51.21	45.82	0.11	2.69	5.09	0.53	3.24	0.83	14.07	<0.01	30.54	52.99	21.63	57.23
140	63.75	36.93	0.03	2.61	6.21	0.35	2.96	0.70	11.65	<0.01	30.58	45.05	21.46	49.90
150	68.74	32.88	0.04	2.40	7.05	0.28	3.04	0.67	11.25	<0.01	33.77	44.26	21.31	49.12
160	74.14	33.49	0.03	2.56	7.38	0.34	3.38	0.70	11.77	<0.01	38.65	48.73	21.29	53.17
170	88.66	35.74	0.02	2.88	7.42	0.35	3.51	0.77	12.91	<0.01	41.07	52.51	21.23	56.64
180	115.90	33.09	0.02	2.70	7.68	0.30	3.42	0.72	12.16	<0.01	43.24	52.23	21.51	56.49

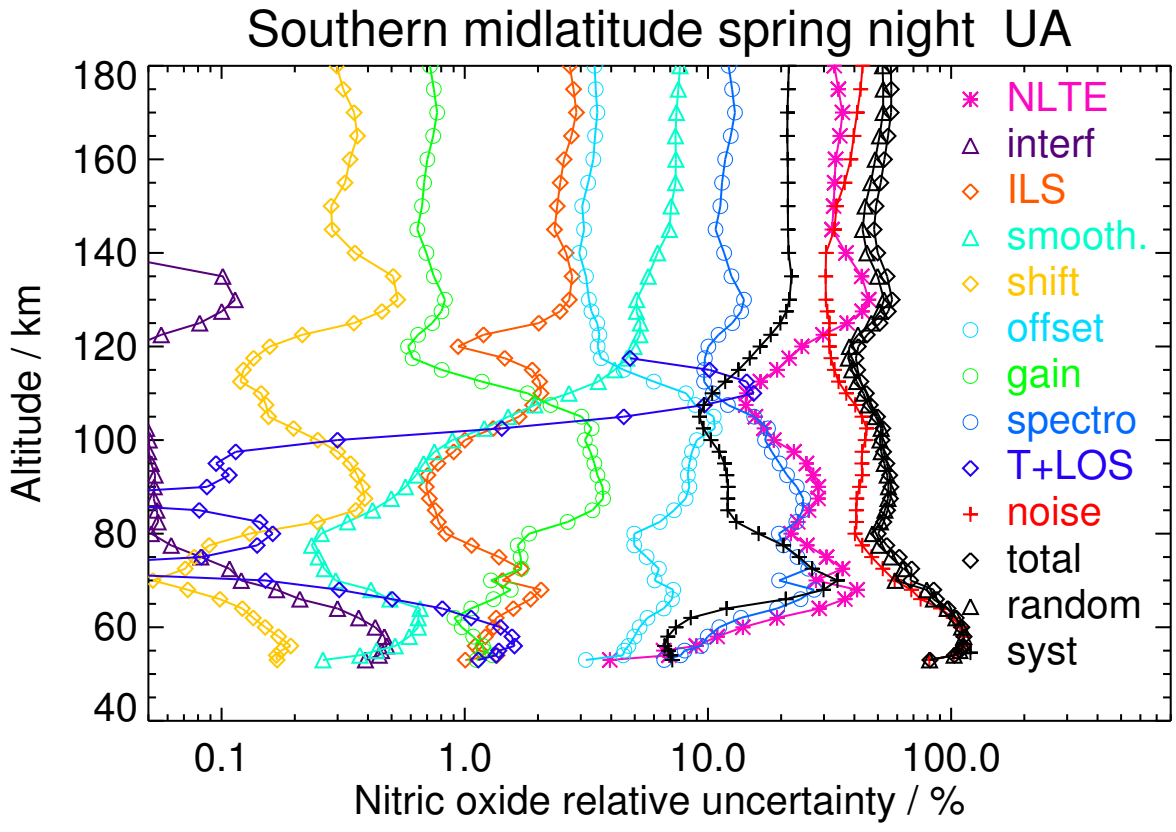

Figure S124. V8R_NOwT_662 Southern midlatitude spring night

Table S126. Nitric oxide error budget for Southern midlatitude summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.12	0.06	0.98	0.03	0.09	0.24	1.20	8.46	0.65	20.72	20.90	8.27	22.48
60	0.01	5.17	0.09	1.70	0.20	0.05	1.71	0.83	9.86	0.64	48.39	49.15	7.54	49.73
70	0.01	7.29	0.02	2.33	0.34	0.14	1.45	0.84	11.06	0.02	54.47	55.07	10.89	56.13
80	0.01	7.76	0.02	1.35	0.42	0.18	1.32	0.85	9.70	0.19	48.12	48.47	11.17	49.75
90	0.38	8.60	0.02	0.84	0.60	0.17	2.62	1.36	11.55	0.18	48.40	49.30	11.36	50.59
100	3.96	11.82	0.02	1.17	0.81	0.17	4.35	1.45	11.29	0.68	43.47	45.37	11.05	46.70
110	16.67	13.39	0.02	3.52	1.99	0.11	7.50	1.66	9.66	14.93	29.88	36.24	12.25	38.26
120	39.98	24.70	0.03	1.56	4.56	0.11	3.04	0.50	8.59	<0.01	27.89	31.85	21.90	38.66
130	98.49	28.53	0.03	1.69	5.35	0.19	3.15	0.46	7.97	<0.01	30.93	33.83	27.03	43.30
140	165.44	31.93	0.02	1.96	6.05	0.30	2.92	0.48	8.02	<0.01	28.38	32.66	29.53	44.03
150	214.96	29.44	0.04	1.77	6.24	0.22	2.39	0.48	7.80	<0.01	23.73	27.25	28.22	39.22
160	257.59	28.97	0.04	1.69	5.53	0.15	1.75	0.49	8.08	<0.01	21.22	25.21	27.49	37.31
170	259.52	28.04	0.03	1.66	4.52	0.10	1.51	0.48	7.99	<0.01	19.47	22.77	27.13	35.42
180	260.40	27.95	0.04	1.66	5.13	0.10	1.78	0.49	7.99	<0.01	26.19	28.94	26.94	39.54

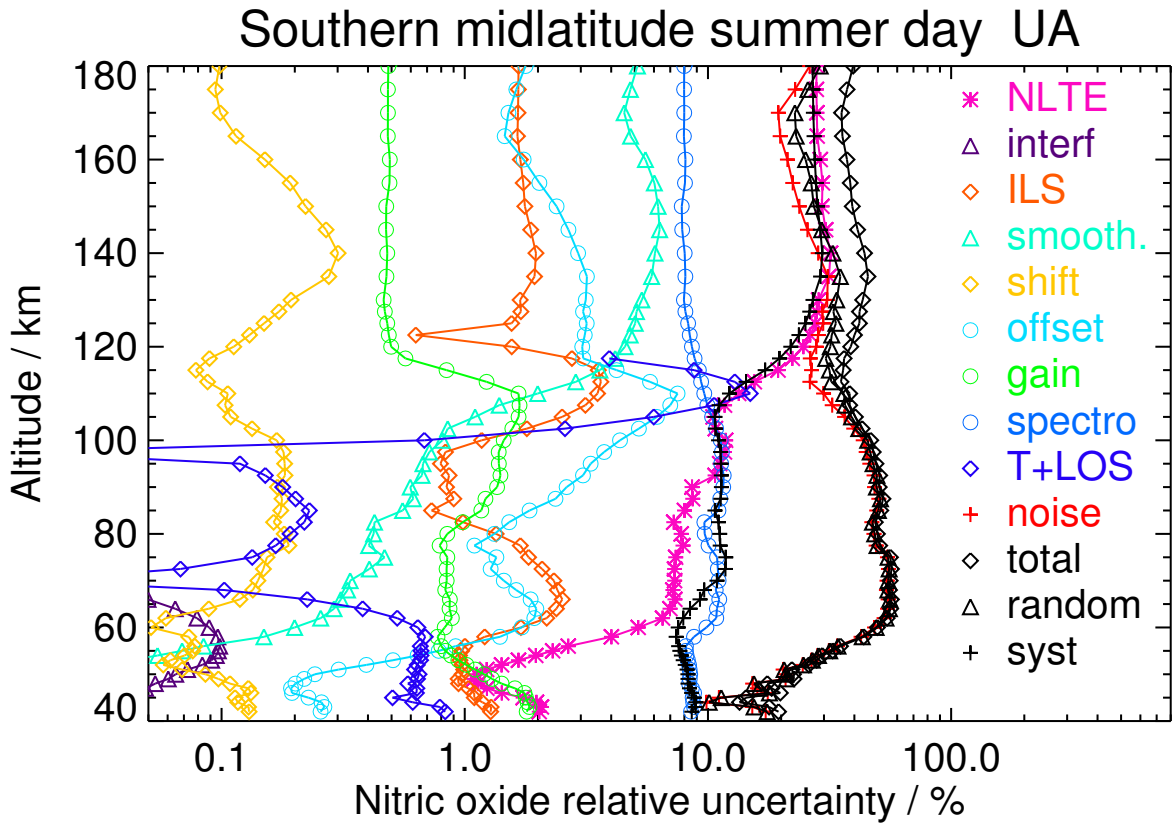

Figure S125. V8R_NOwT_662 Southern midlatitude summer day

Table S127. Nitric oxide error budget for Southern midlatitude summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	12.41	0.42	1.18	0.45	0.16	5.27	0.95	10.47	1.59	94.97	96.21	7.63	96.52
70	0.01	3.95	0.16	0.23	0.38	0.16	2.97	0.28	7.24	0.10	58.91	58.99	8.25	59.56
80	0.03	5.53	0.10	0.18	0.58	0.22	1.24	0.55	7.76	0.20	53.50	53.53	9.49	54.36
90	0.39	9.81	0.09	0.63	0.90	0.26	3.91	1.10	10.94	0.07	57.39	58.69	9.05	59.39
100	3.74	13.85	0.08	1.26	1.33	0.25	6.58	1.22	11.03	2.63	52.42	55.09	9.03	55.83
110	21.59	14.79	0.04	1.72	2.49	0.14	8.54	1.43	10.52	16.20	37.44	43.89	12.33	45.58
120	50.96	29.68	0.03	1.00	4.48	0.13	4.31	0.62	10.57	<0.01	29.87	38.88	20.32	43.87
130	64.38	34.84	0.02	2.16	5.66	0.28	4.69	0.63	10.71	<0.01	34.75	45.17	23.54	50.94
140	60.20	31.91	0.02	1.98	7.61	0.28	4.42	0.58	9.67	<0.01	38.84	45.75	24.69	51.98
150	60.81	32.86	0.02	1.92	8.80	0.25	4.21	0.63	10.43	<0.01	45.00	52.01	24.65	57.55
160	64.76	33.48	0.02	1.97	8.88	0.20	4.81	0.63	10.67	<0.01	55.40	61.54	24.98	66.41
170	68.35	32.26	0.02	1.91	8.79	0.18	5.44	0.60	10.29	<0.01	64.37	69.09	25.06	73.49
180	95.41	27.89	0.02	1.65	8.51	0.16	5.09	0.52	8.95	<0.01	61.06	64.25	23.65	68.47

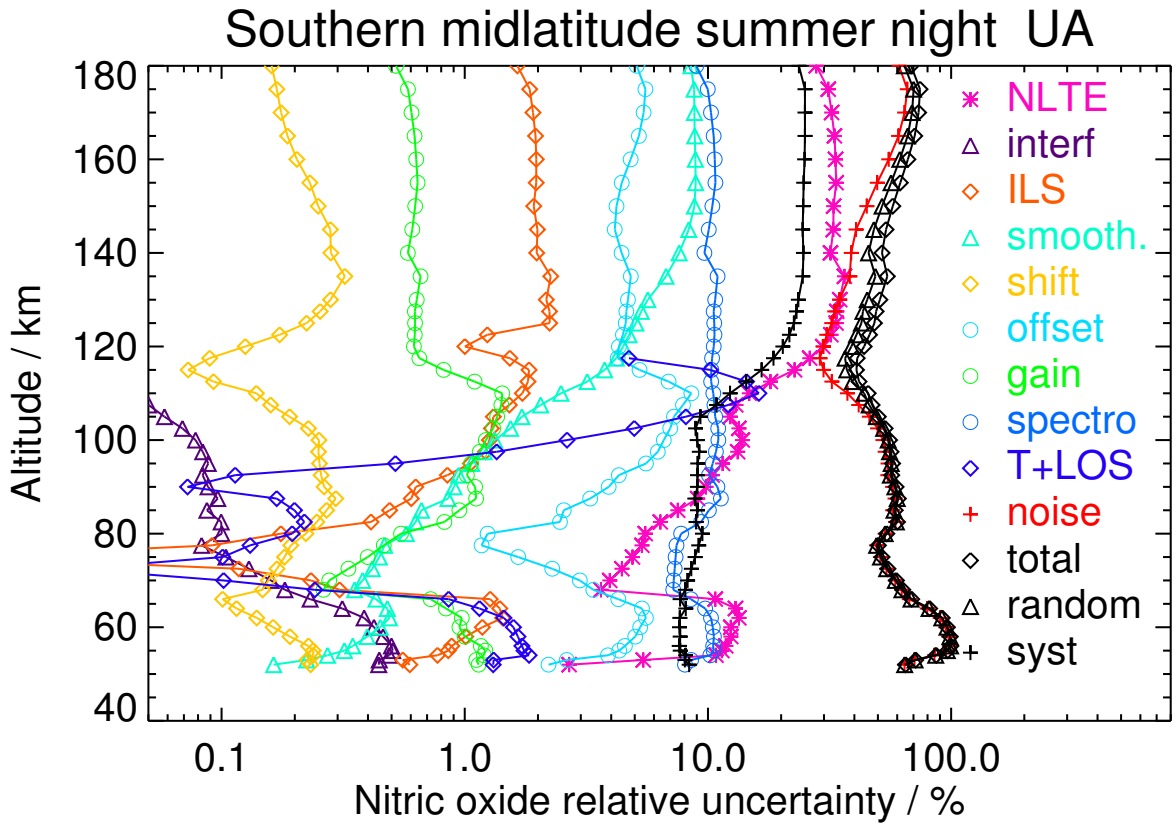

Figure S126. V8R_NOwT_662 Southern midlatitude summer night

Table S128. Nitric oxide error budget for Southern midlatitude autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	3.02	0.07	1.08	0.09	0.08	0.85	1.68	9.43	0.80	29.89	30.27	8.97	31.57
60	0.01	13.61	0.06	2.37	0.33	0.10	3.34	1.38	13.18	1.01	55.00	57.54	9.62	58.34
70	0.03	16.88	0.02	2.97	0.23	0.10	2.87	1.29	15.78	0.04	47.00	51.06	12.41	52.55
80	0.08	13.10	0.02	1.94	0.41	0.16	2.56	1.47	16.11	0.17	41.41	45.40	9.85	46.46
90	1.08	25.61	0.02	1.59	0.54	0.20	3.11	1.65	13.59	0.13	36.27	44.14	14.93	46.60
100	6.08	24.07	0.02	1.03	0.64	0.25	3.41	1.41	11.98	0.03	33.06	40.19	14.69	42.79
110	48.33	19.58	0.01	1.20	0.82	0.11	6.84	1.65	12.61	7.48	22.74	31.40	13.46	34.16
120	88.78	32.40	0.01	1.31	3.00	0.26	2.39	0.65	10.96	<0.01	24.81	36.89	21.01	42.46
130	103.54	33.93	0.01	2.91	4.86	0.43	2.67	0.64	10.77	<0.01	28.07	39.08	23.83	45.77
140	123.27	33.58	0.02	2.38	6.81	0.38	3.31	0.58	9.67	<0.01	32.29	40.55	26.13	48.24
150	160.68	27.03	0.02	2.03	7.58	0.29	2.87	0.52	8.64	<0.01	28.01	32.71	24.29	40.75
160	203.46	25.85	0.02	2.02	7.23	0.25	2.27	0.54	8.97	<0.01	25.23	30.12	23.24	38.04
170	233.56	25.88	0.02	2.06	6.46	0.21	2.10	0.56	9.36	<0.01	24.86	30.01	22.94	37.77
180	264.57	26.73	0.02	2.14	7.26	0.25	2.24	0.59	9.79	<0.01	30.34	35.67	22.84	42.35

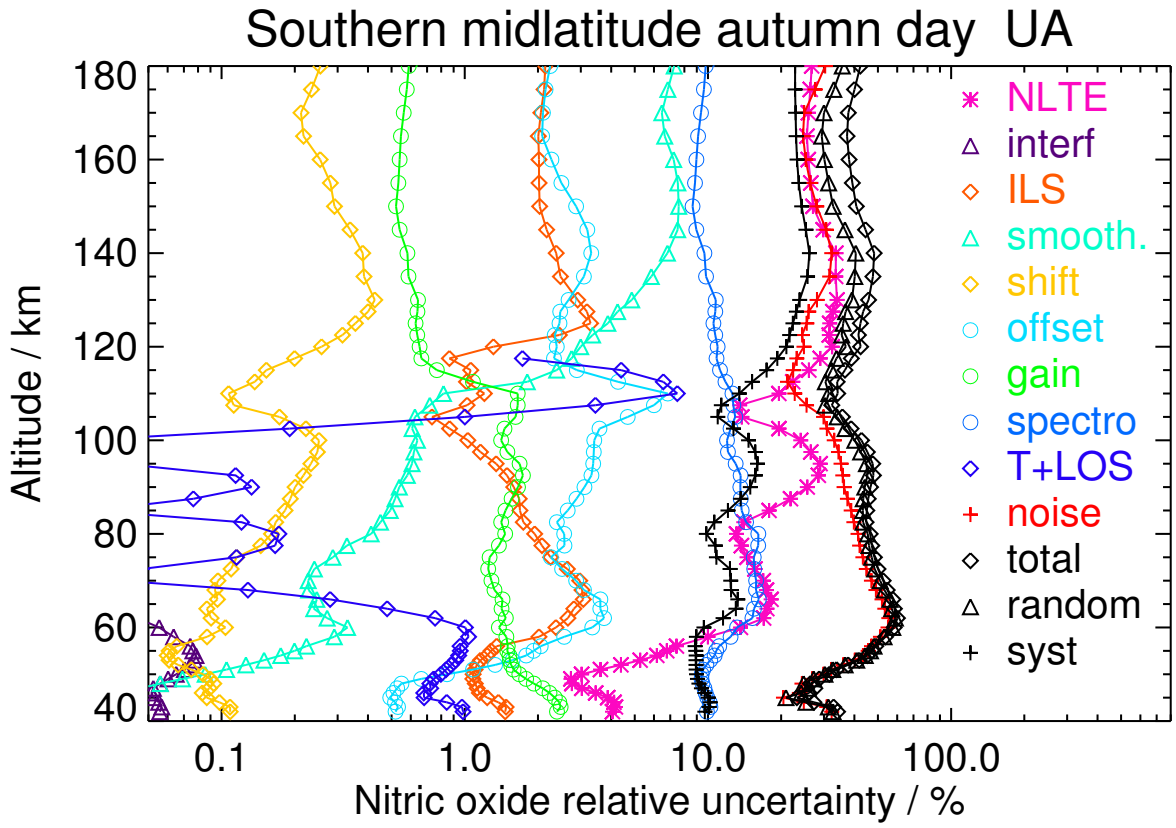

Figure S127. V8R_NOwT_662 Southern midlatitude autumn day

Table S129. Nitric oxide error budget for Southern midlatitude autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	7.56	0.21	0.69	0.14	0.14	1.48	0.37	10.07	1.37	66.81	67.23	10.31	68.02
60	0.01	6.07	0.14	0.87	0.27	0.07	2.86	0.88	9.93	0.85	63.80	64.50	7.47	64.93
70	0.03	6.03	0.06	1.43	0.23	0.15	2.44	0.83	9.33	0.10	49.51	50.21	7.91	50.83
80	0.17	14.56	0.03	1.11	0.35	0.22	1.69	1.28	12.45	0.11	38.49	41.98	9.59	43.06
90	1.59	26.91	0.03	1.72	0.58	0.29	3.00	1.96	14.53	0.39	36.99	46.53	12.42	48.16
100	7.97	39.11	0.07	1.91	0.89	0.27	3.13	1.66	15.56	0.31	36.69	54.33	13.55	56.00
110	19.60	33.98	0.03	1.57	2.51	0.12	6.72	1.52	17.43	11.00	36.59	51.01	19.31	54.54
120	54.25	50.58	0.02	1.39	4.27	0.28	3.18	1.09	18.42	<0.01	30.31	56.13	26.41	62.03
130	88.66	55.72	0.02	3.11	4.48	0.59	2.94	0.90	15.12	<0.01	29.30	59.67	25.91	65.05
140	92.16	70.37	0.02	3.66	6.04	0.75	3.15	0.85	14.27	<0.01	31.55	74.32	26.24	78.81
150	85.39	48.32	0.02	3.34	6.89	0.43	2.81	0.88	14.73	<0.01	30.53	54.47	24.18	59.60
160	78.15	45.38	0.02	3.31	7.07	0.28	2.68	0.92	15.59	<0.01	32.29	53.21	24.14	58.43
170	82.81	51.77	0.02	3.86	6.48	0.25	3.02	1.07	18.20	<0.01	36.41	61.59	24.72	66.37
180	98.32	61.18	0.02	4.65	6.68	0.29	3.06	1.31	22.35	<0.01	39.51	71.99	26.43	76.68

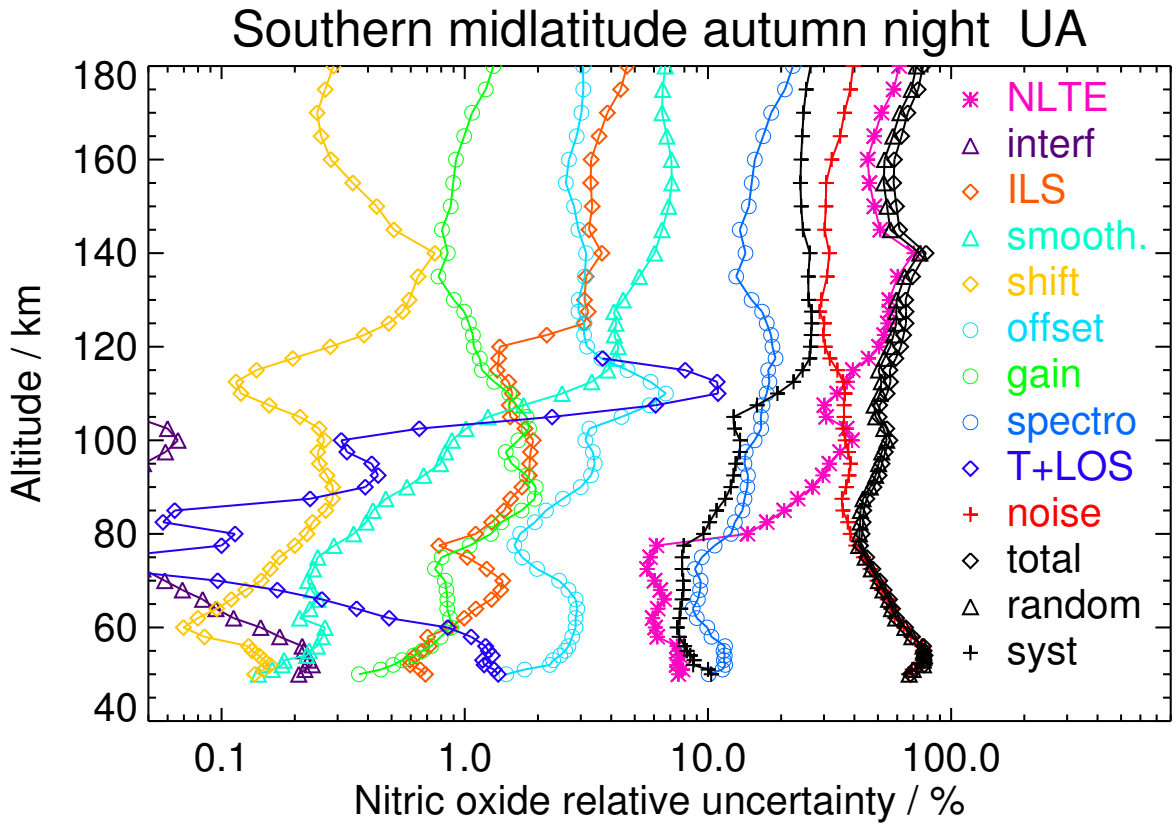

Figure S128. V8R_NOwT_662 Southern midlatitude autumn night

Table S130. Nitric oxide error budget for Southern polar winter day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	2.56	0.13	0.86	0.05	0.09	0.60	1.20	8.03	0.52	31.77	32.00	7.68	32.91
60	0.01	3.94	0.12	1.34	0.12	0.05	2.38	0.72	6.95	0.41	53.89	54.12	6.87	54.55
70	0.02	5.16	0.06	1.84	0.28	0.06	2.69	0.59	7.29	<0.01	56.35	56.69	7.22	57.15
80	0.13	8.05	0.02	1.44	0.38	0.07	1.46	0.74	7.86	0.19	47.48	47.89	9.59	48.84
90	1.57	15.41	0.01	1.59	0.40	0.11	1.50	1.01	8.75	0.02	34.96	36.92	13.40	39.27
100	16.24	16.81	<0.01	1.66	0.39	0.15	2.09	1.30	9.57	0.08	27.60	31.19	13.12	33.84
110	68.74	6.87	<0.01	1.12	1.41	0.09	5.59	1.07	8.89	5.68	25.92	28.29	8.10	29.42
120	116.16	19.43	0.02	0.83	4.32	0.17	3.52	0.53	8.60	<0.01	28.64	31.50	17.66	36.11
130	159.21	30.53	0.02	2.18	5.61	0.31	3.97	0.61	10.07	<0.01	34.09	41.47	23.00	47.42
140	171.89	31.52	0.03	2.33	6.79	0.38	3.96	0.61	9.92	<0.01	34.07	41.32	24.75	48.17
150	228.28	31.17	0.04	2.41	7.23	0.42	3.16	0.65	10.56	<0.01	30.08	38.99	23.15	45.34
160	264.99	27.72	0.04	2.17	6.81	0.31	2.69	0.61	9.91	<0.01	28.94	35.65	22.18	41.99
170	288.23	28.08	0.03	2.23	6.84	0.28	2.84	0.63	10.33	<0.01	33.14	39.69	21.88	45.32
180	298.92	28.40	0.03	2.27	7.34	0.29	3.12	0.65	10.56	<0.01	40.04	46.01	21.76	50.90

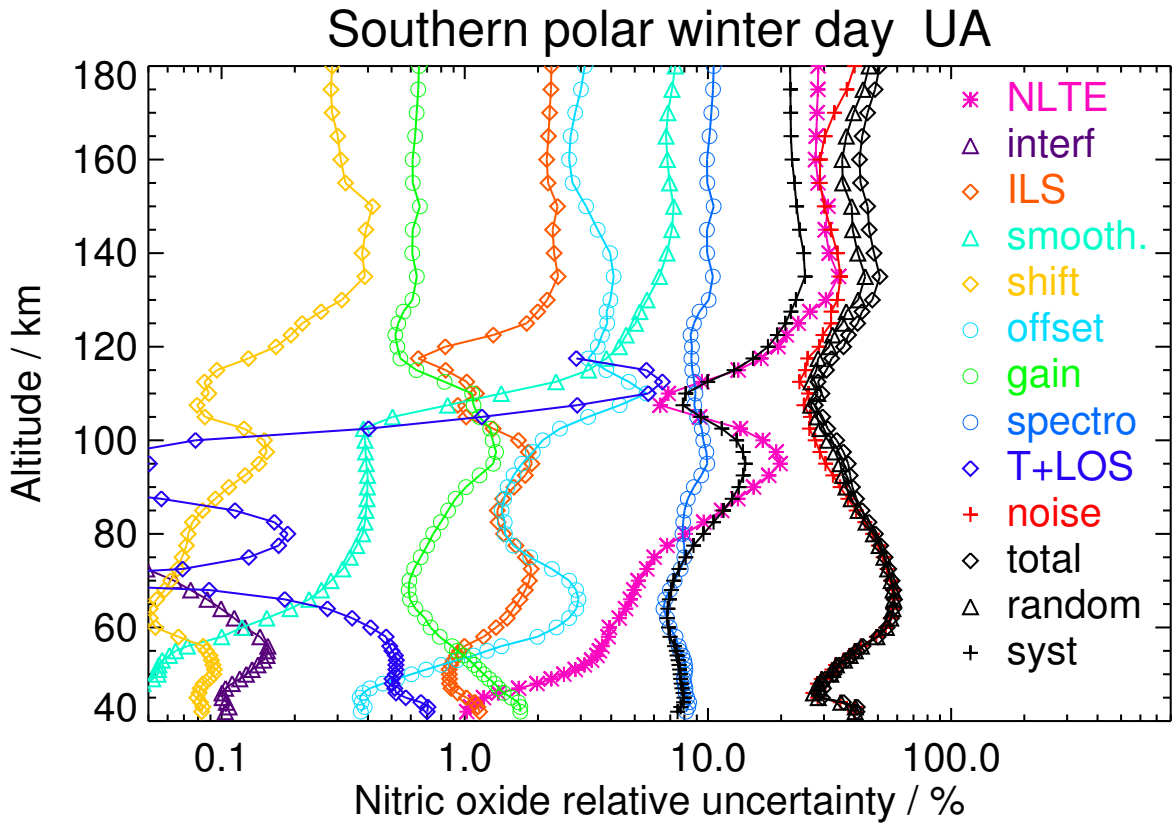

Figure S129. V8R_NOwT_662 Southern polar winter day

Table S131. Nitric oxide error budget for Southern polar winter night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	8.16	0.60	1.23	0.09	0.25	3.22	1.42	11.01	1.62	88.80	89.19	11.63	89.95
60	0.01	10.55	0.26	2.07	0.14	0.14	3.81	0.80	11.53	1.31	68.95	70.17	9.79	70.85
70	0.08	9.28	0.13	1.57	0.23	0.16	4.73	1.95	11.22	0.93	56.64	57.97	9.38	58.73
80	0.51	6.39	0.06	1.08	0.38	0.17	5.63	2.81	11.57	0.57	48.05	49.46	8.85	50.24
90	4.58	8.41	0.03	2.80	0.44	0.26	7.27	3.41	10.77	2.13	38.03	40.23	9.57	41.35
100	30.70	9.07	0.02	1.70	0.65	0.29	8.21	3.19	10.27	1.56	36.69	39.09	9.43	40.21
110	98.39	11.48	0.01	1.53	2.07	0.20	11.63	2.30	9.74	16.23	28.83	36.37	12.07	38.32
120	119.35	21.75	0.01	0.54	4.48	0.17	4.48	0.56	8.86	<0.01	31.60	35.10	18.94	39.89
130	149.59	29.51	0.01	2.09	5.51	0.33	5.38	0.60	9.69	<0.01	39.14	45.51	22.13	50.61
140	147.72	29.97	0.02	2.43	8.00	0.39	4.98	0.61	9.76	<0.01	40.46	46.97	22.81	52.21
150	140.82	28.12	0.02	2.25	9.83	0.30	4.09	0.60	9.85	<0.01	42.79	48.34	22.37	53.27
160	149.28	29.05	0.01	2.34	10.58	0.28	4.57	0.63	10.49	<0.01	53.92	59.20	22.25	63.25
170	176.29	28.78	0.01	2.31	10.81	0.25	5.11	0.63	10.49	<0.01	63.02	67.56	22.22	71.12
180	211.61	27.20	0.01	2.17	10.97	0.23	5.32	0.60	9.95	<0.01	66.74	70.33	22.38	73.80

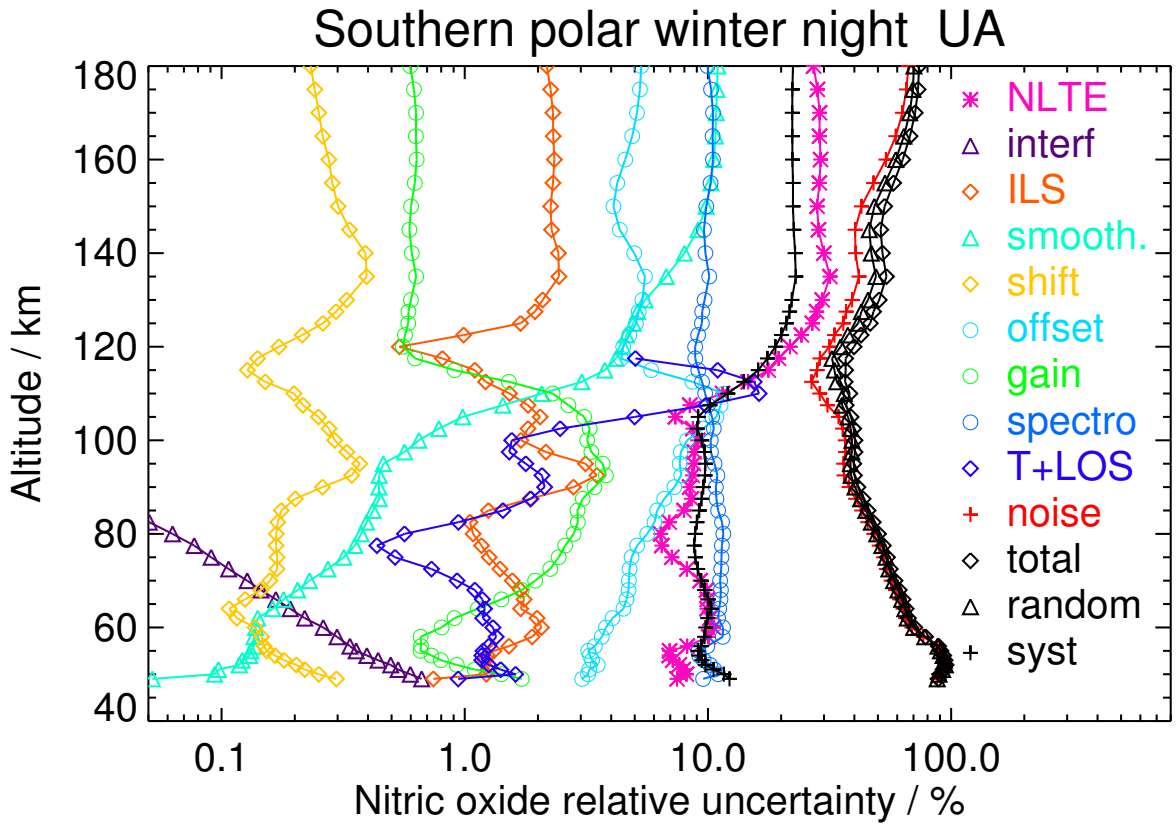

Figure S130. V8R_NOwT_662 Southern polar winter night

Table S132. Nitric oxide error budget for Southern polar spring day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.89	0.09	1.24	0.03	0.11	0.32	1.19	8.62	0.65	23.43	23.65	8.41	25.11
60	0.01	8.29	0.12	2.39	0.19	0.12	1.98	0.91	12.29	0.98	47.29	48.77	9.44	49.68
70	0.07	10.42	0.03	3.64	0.11	0.30	1.47	1.07	9.97	0.06	30.24	32.50	9.09	33.75
80	0.09	7.32	0.02	1.92	0.24	0.25	2.23	0.86	9.25	0.15	34.39	35.41	8.78	36.49
90	1.15	33.82	0.03	1.62	0.37	0.47	1.96	1.38	12.22	0.08	33.05	46.77	14.38	48.93
100	10.10	19.37	0.03	1.49	0.41	0.40	2.42	1.31	12.07	0.32	31.40	36.82	12.72	38.95
110	34.76	16.99	0.02	3.41	1.27	0.15	7.16	1.58	9.84	12.05	24.31	31.02	15.04	34.47
120	88.06	30.93	0.03	0.94	2.93	0.12	2.21	0.52	8.94	<0.01	23.06	31.42	24.40	39.78
130	142.91	30.07	0.02	2.10	3.84	0.26	1.97	0.51	8.70	<0.01	23.83	30.36	25.48	39.64
140	188.58	32.11	0.03	2.06	5.47	0.35	2.32	0.52	8.74	<0.01	26.56	33.16	27.44	43.04
150	239.23	28.53	0.04	1.90	6.28	0.28	2.07	0.50	8.20	<0.01	22.91	27.76	26.14	38.13
160	282.47	27.20	0.05	1.81	5.82	0.16	1.66	0.51	8.32	<0.01	20.58	25.20	25.25	35.68
170	356.72	27.91	0.04	1.87	4.45	0.12	1.45	0.53	8.73	<0.01	18.15	24.01	25.18	34.79
180	397.75	28.04	0.04	1.86	4.91	0.13	1.57	0.54	8.82	<0.01	22.67	27.47	25.56	37.53

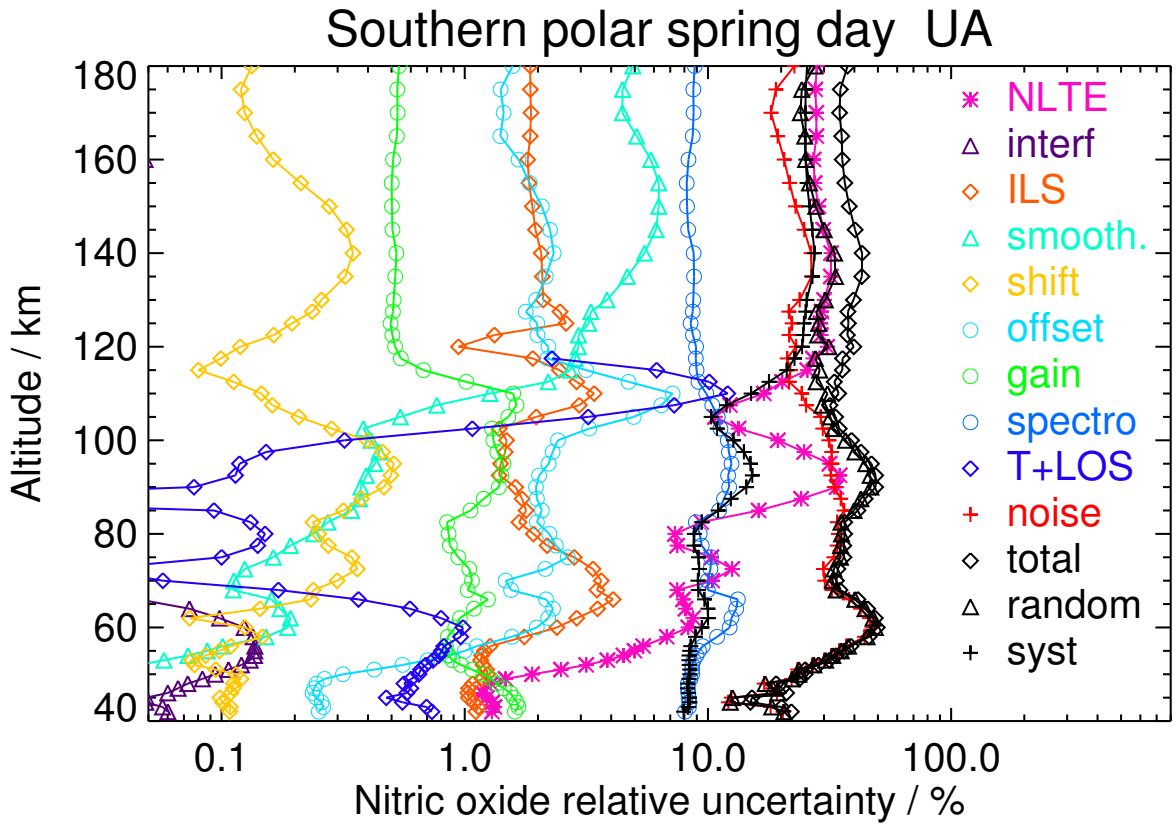

Figure S131. V8R_NOwT_662 Southern polar spring day

Table S133. Nitric oxide error budget for Southern polar spring night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.01	6.73	0.16	1.94	0.20	0.06	2.73	1.32	11.42	1.25	57.00	58.10	8.00	58.65
70	0.05	8.34	0.08	1.06	0.25	0.14	2.05	1.07	10.96	0.14	48.66	49.95	8.29	50.64
80	0.51	9.72	0.04	1.32	0.25	0.29	1.68	2.57	9.42	0.20	37.21	38.94	7.95	39.74
90	3.97	14.17	0.04	3.89	0.44	0.40	6.95	4.72	9.04	0.11	42.46	45.49	10.10	46.60
100	18.02	12.13	0.04	4.09	0.59	0.44	10.85	5.06	10.48	0.40	39.72	43.76	8.98	44.67
110	43.34	27.42	0.04	3.13	1.82	0.11	12.92	2.59	12.49	17.71	29.07	44.54	16.42	47.47
120	60.73	31.25	0.03	0.88	3.91	0.15	3.39	0.58	9.72	<0.01	28.22	37.31	22.44	43.54
130	85.51	36.01	0.02	2.33	4.58	0.35	3.24	0.59	9.87	<0.01	28.38	39.94	25.32	47.29
140	99.11	34.51	0.01	2.38	6.19	0.37	3.21	0.58	9.57	<0.01	30.32	39.46	26.44	47.50
150	110.84	35.02	0.01	2.40	6.99	0.41	2.78	0.63	10.25	<0.01	29.02	39.75	25.63	47.29
160	130.26	33.43	0.01	2.26	6.97	0.32	2.44	0.63	10.33	<0.01	28.35	38.25	24.99	45.69
170	153.36	34.09	0.01	2.34	6.76	0.30	2.53	0.65	10.72	<0.01	30.00	40.15	24.96	47.28
180	211.63	33.97	0.01	2.32	7.44	0.30	2.63	0.66	10.71	<0.01	34.55	43.48	25.28	50.30

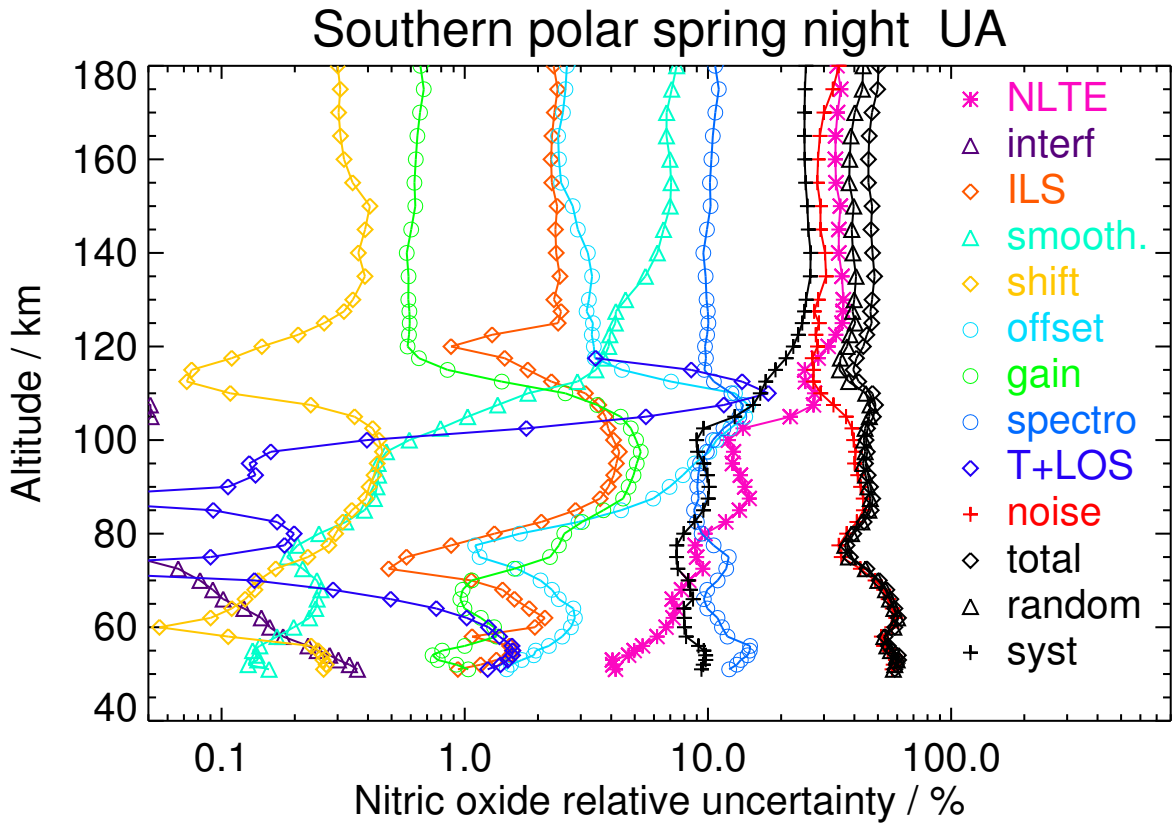

Figure S132. V8R_NOwT_662 Southern polar spring night

Table S134. Nitric oxide error budget for Southern polar summer day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.08	0.06	0.87	0.01	0.11	0.26	1.06	8.17	0.64	16.42	16.54	8.14	18.43
60	0.00	4.46	0.16	2.00	0.10	0.17	2.15	0.85	9.24	0.91	42.46	43.04	8.13	43.80
70	0.01	11.05	0.06	3.29	0.23	0.25	3.68	1.28	10.88	0.15	47.99	49.91	8.85	50.69
80	0.09	9.53	0.02	2.58	0.14	0.30	3.47	1.62	13.60	0.27	35.59	35.77	16.87	39.55
90	0.35	7.55	0.02	2.88	0.34	0.31	2.98	1.48	12.39	0.28	32.51	33.67	12.39	35.88
100	11.32	11.80	0.02	3.59	0.31	0.26	5.47	2.44	11.89	5.70	29.01	33.32	9.66	34.69
110	30.11	14.84	0.03	5.00	1.01	0.18	7.33	1.98	8.74	19.54	19.79	30.50	14.96	33.97
120	68.47	26.95	0.05	1.51	3.27	0.11	3.06	0.46	8.35	<0.01	26.22	30.46	24.05	38.81
130	148.60	30.43	0.04	3.30	4.28	0.23	2.71	0.49	8.71	<0.01	27.63	33.60	25.95	42.45
140	251.56	28.17	0.03	2.28	5.10	0.50	2.08	0.53	8.62	<0.01	25.40	30.72	24.61	39.36
150	313.21	26.63	0.04	1.92	5.28	0.34	1.70	0.53	8.49	<0.01	21.39	26.72	23.66	35.69
160	364.08	25.98	0.03	1.82	5.08	0.26	1.39	0.54	8.70	<0.01	19.95	25.24	23.31	34.36
170	477.11	26.46	0.02	1.82	3.54	0.21	1.31	0.56	9.09	<0.01	17.16	23.49	23.31	33.09
180	538.08	26.12	0.03	1.71	3.85	0.23	1.52	0.56	8.98	<0.01	21.64	26.38	23.58	35.38

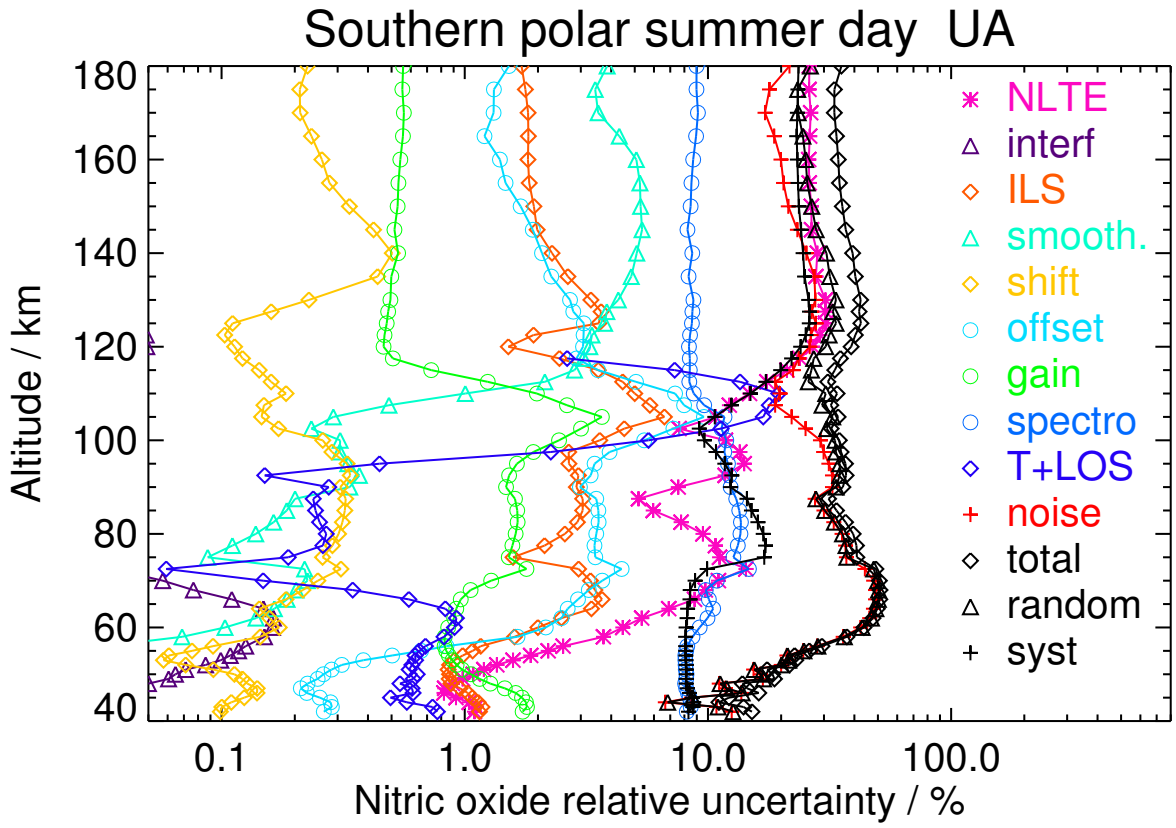

Figure S133. V8R_NOwT_662 Southern polar summer day

Table S135. Nitric oxide error budget for Southern polar summer night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	2.13	0.25	1.55	0.08	0.27	1.88	0.84	10.68	1.23	54.04	54.09	11.03	55.20
60	0.00	8.56	0.28	2.10	0.38	0.11	3.65	1.30	13.00	1.38	63.78	65.42	7.24	65.82
70	0.08	7.97	0.03	1.92	0.09	0.18	1.46	0.92	8.18	0.09	37.62	38.29	9.30	39.40
80	0.22	8.93	0.02	1.19	0.15	0.21	1.32	1.02	7.88	0.17	33.61	34.61	8.80	35.71
90	2.32	22.24	0.03	2.28	0.32	0.28	2.54	2.06	10.87	0.06	29.42	36.85	11.68	38.65
100	8.27	16.09	0.04	1.16	0.66	0.27	3.66	2.74	10.89	2.56	35.76	40.18	8.40	41.05
110	15.35	17.54	0.04	2.79	2.26	0.13	8.50	1.77	10.75	16.91	33.10	41.92	11.65	43.51
120	35.12	32.06	0.04	1.32	4.10	0.19	3.71	0.61	10.52	<0.01	29.67	41.19	18.84	45.29
130	47.44	36.37	0.03	3.16	5.17	0.33	3.85	0.66	11.27	<0.01	32.15	45.04	22.51	50.35
140	58.45	34.32	0.04	2.38	6.99	0.24	3.87	0.67	11.19	<0.01	34.60	44.19	24.85	50.70
150	74.85	37.20	0.04	2.51	7.63	0.31	3.61	0.74	12.24	<0.01	35.57	47.12	25.63	53.64
160	88.36	36.36	0.03	2.52	7.28	0.30	3.54	0.73	12.12	<0.01	38.33	48.80	25.08	54.87
170	93.98	35.55	0.03	2.54	6.74	0.31	3.81	0.72	11.96	<0.01	43.17	52.15	24.86	57.77
180	107.81	33.75	0.03	2.07	6.69	0.32	3.59	0.68	11.26	<0.01	42.78	51.04	23.54	56.21

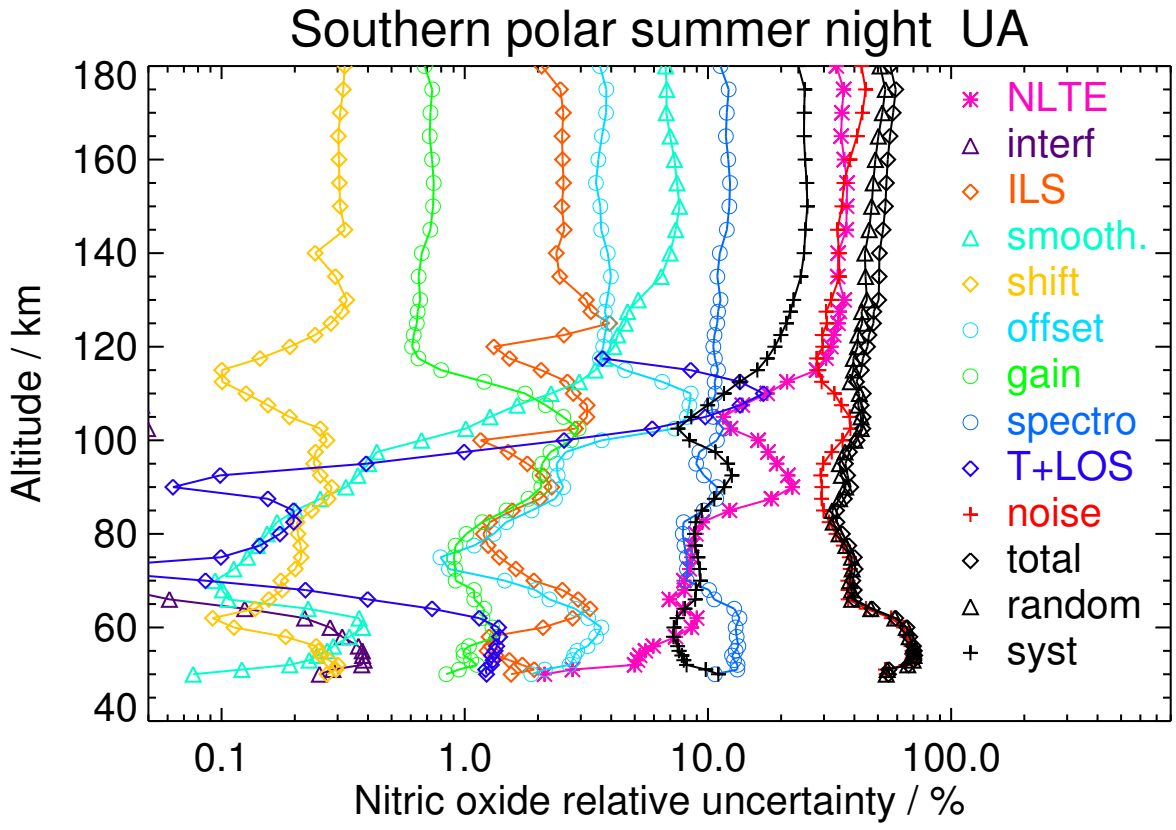

Figure S134. V8R_NOwT_662 Southern polar summer night

Table S136. Nitric oxide error budget for Southern polar autumn day. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	5.21	0.16	1.49	0.19	0.10	2.22	1.32	9.31	0.96	54.43	54.94	8.29	55.56
60	0.00	11.89	0.14	3.26	0.34	0.06	3.60	1.43	17.08	0.71	60.14	63.32	8.19	63.85
70	0.02	12.94	0.06	3.61	0.44	0.08	3.45	1.05	13.50	0.06	58.25	60.46	10.65	61.40
80	0.08	14.59	0.04	2.27	0.63	0.10	3.84	0.95	11.10	0.20	57.16	59.37	9.99	60.21
90	1.04	16.71	0.02	1.78	0.71	0.14	3.22	0.91	9.07	0.14	45.39	47.74	12.58	49.36
100	8.16	12.97	0.01	1.15	0.61	0.14	3.55	1.68	12.62	0.04	34.68	37.89	10.57	39.34
110	40.39	12.62	<0.01	0.91	1.34	0.07	6.41	1.36	11.04	7.83	26.74	31.91	9.19	33.21
120	63.62	26.63	0.01	0.93	3.82	0.24	2.93	0.58	9.65	<0.01	27.06	35.23	17.82	39.49
130	80.14	30.52	0.02	2.19	5.05	0.36	3.06	0.59	9.89	<0.01	29.27	38.62	20.85	43.89
140	85.16	30.43	0.02	2.18	6.79	0.26	3.44	0.60	10.08	<0.01	32.70	40.80	22.27	46.48
150	111.16	28.05	0.02	2.13	7.69	0.27	2.96	0.59	9.84	<0.01	30.89	37.96	21.67	43.71
160	150.58	28.36	0.02	2.31	7.56	0.34	2.81	0.63	10.57	<0.01	30.79	38.49	21.31	43.99
170	191.67	30.45	0.02	2.56	6.81	0.36	3.01	0.70	11.74	<0.01	33.59	42.50	21.20	47.50
180	238.23	30.46	0.02	2.58	7.12	0.36	3.11	0.70	11.81	<0.01	37.44	45.69	21.20	50.37

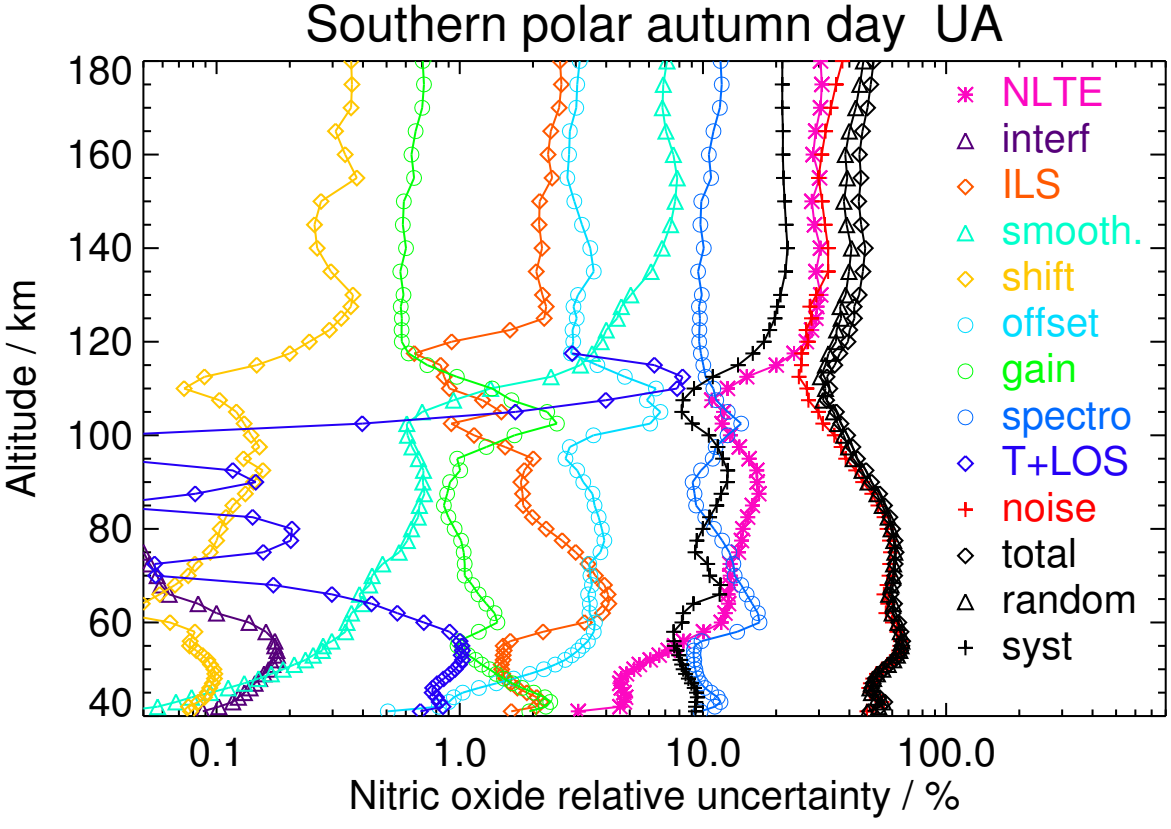

Figure S135. V8R_NOwT_662 Southern polar autumn day

Table S137. Nitric oxide error budget for Southern polar autumn night. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.01	21.52	0.17	2.09	0.24	0.14	6.25	1.96	17.97	1.80	60.52	64.62	17.98	67.07
70	0.05	32.20	0.10	2.39	0.37	0.13	10.01	2.75	21.42	1.20	60.86	69.08	23.29	72.90
80	0.38	23.50	0.07	1.86	0.44	0.29	9.97	2.92	18.53	0.44	53.93	60.50	15.99	62.58
90	4.32	18.59	0.06	1.76	0.45	0.34	7.39	2.82	15.04	1.86	41.83	47.61	11.18	48.90
100	29.66	14.33	0.04	1.19	0.31	0.39	8.81	3.15	11.30	1.44	36.00	40.33	9.68	41.48
110	115.02	20.71	0.02	1.90	1.17	0.16	11.17	2.74	11.89	13.62	26.53	36.43	16.42	39.96
120	125.17	28.60	<0.01	0.92	3.49	0.23	2.86	0.59	9.31	<0.01	26.98	33.86	22.53	40.67
130	134.96	30.23	<0.01	2.10	4.18	0.32	2.70	0.57	9.24	<0.01	25.84	33.66	23.74	41.19
140	137.18	29.83	0.01	2.01	6.30	0.31	3.23	0.54	8.78	<0.01	31.01	36.76	25.13	44.53
150	162.10	28.32	0.01	2.04	7.88	0.30	2.95	0.55	9.06	<0.01	29.27	35.18	24.06	42.62
160	184.11	27.87	0.01	2.13	8.29	0.31	2.59	0.58	9.54	<0.01	28.51	35.07	23.05	41.96
170	205.63	26.93	0.01	2.15	8.57	0.28	2.70	0.58	9.50	<0.01	32.32	37.73	22.85	44.11
180	232.17	27.68	0.01	2.20	9.30	0.28	2.87	0.60	9.84	<0.01	38.17	43.46	23.05	49.19

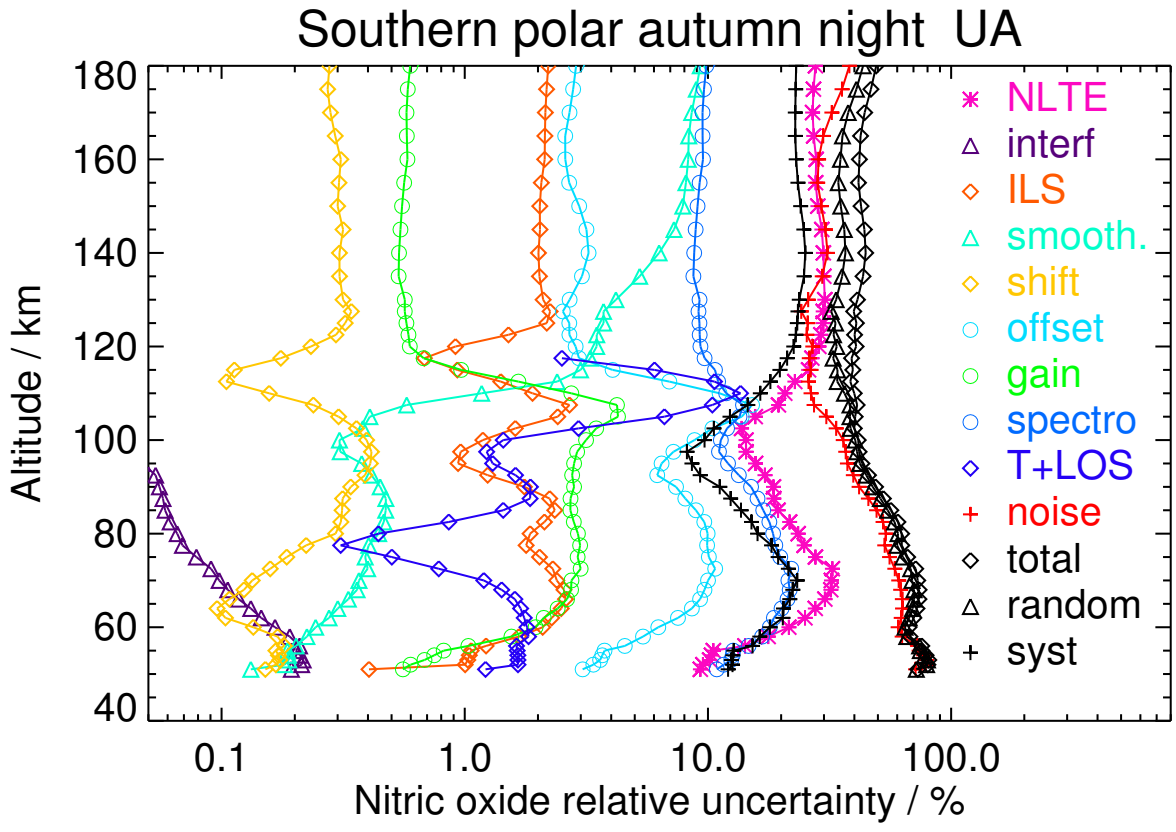

Figure S136. V8R_NOwT_662 Southern polar autumn night

Table S138. Nitric oxide error budget for Northern polar winter day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.02	5.38	0.04	0.48	0.05	0.09	1.35	3.61	11.42	1.42	28.16	29.60	9.66	31.14
60	0.02	8.61	0.05	2.39	0.11	0.16	2.92	1.78	12.21	0.58	37.90	39.80	9.70	40.96
70	0.08	9.37	0.04	3.94	0.16	0.11	2.78	1.16	10.94	0.03	38.37	39.95	10.41	41.28
80	0.55	12.19	0.02	3.27	0.19	0.17	2.36	1.60	11.24	0.14	30.24	33.19	10.32	34.76
90	4.33	22.24	0.04	1.76	0.31	0.53	5.41	1.83	10.22	0.32	31.97	37.60	15.61	40.71
100	19.56	23.40	0.04	1.38	0.29	0.57	4.59	2.40	10.60	0.46	29.77	36.62	15.31	39.69
110	99.32	14.38	0.01	0.88	0.86	0.14	5.38	1.40	9.15	10.03	20.41	25.27	14.19	28.98
120	214.00	29.88	0.03	0.76	2.38	0.27	1.89	0.50	8.14	<0.01	22.72	27.95	26.53	38.54
130	287.78	27.46	0.08	1.74	2.84	0.43	1.22	0.49	8.10	<0.01	20.47	25.50	24.52	35.38
140	302.72	30.46	0.09	1.78	3.76	0.33	1.06	0.52	8.66	<0.01	19.47	26.65	26.28	37.43
150	326.76	26.24	0.06	1.81	3.95	0.19	1.08	0.51	8.49	<0.01	16.00	21.94	23.56	32.20
160	383.72	25.07	0.08	1.80	3.97	0.09	0.88	0.50	8.54	<0.01	14.38	20.53	22.52	30.47
170	481.57	25.44	0.05	1.89	2.42	0.12	1.04	0.50	8.65	<0.01	12.58	20.05	22.12	29.85
180	553.22	26.79	0.08	2.05	2.48	0.19	0.91	0.55	9.12	<0.01	12.31	20.42	23.38	31.05

S5 NO error contribution profile plots and tabulated values for RR UA data (V8R_NOwT_662) at high solar activity conditions

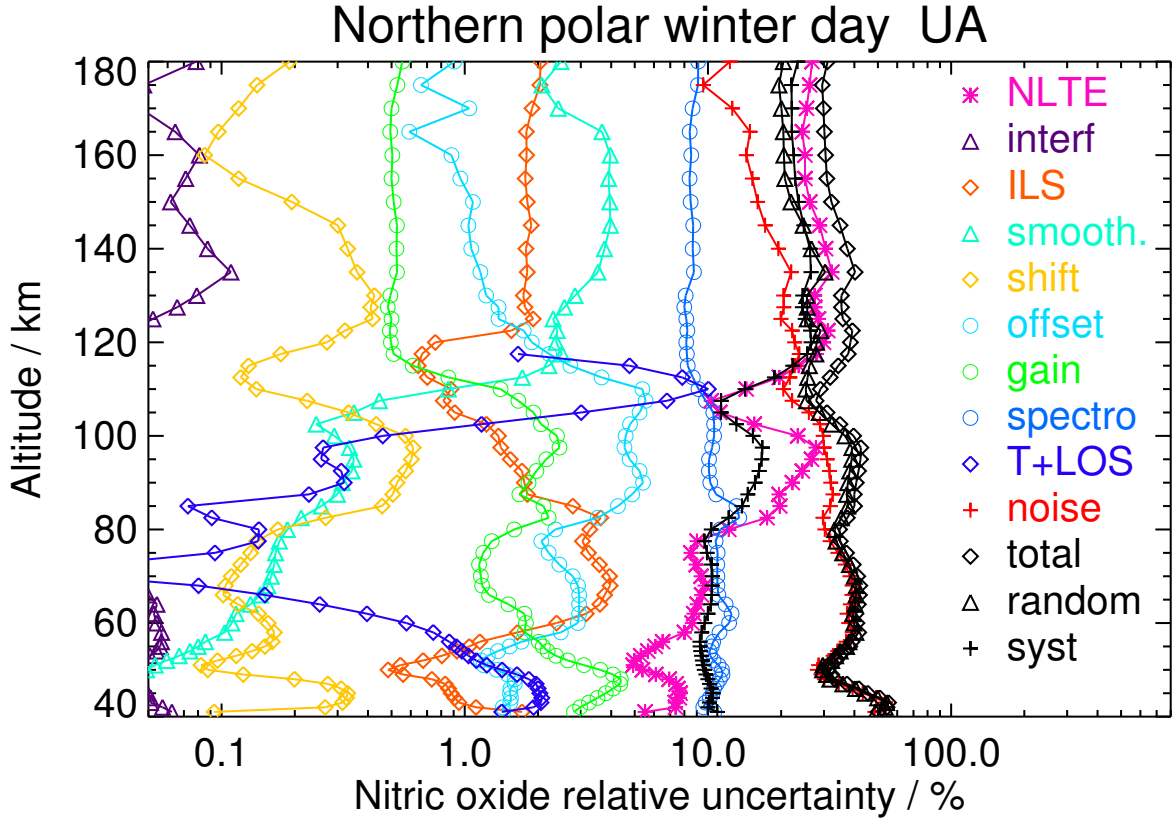

Figure S137. V8R_NOwT_662 Northern polar winter day, high solar activity

Table S139. Nitric oxide error budget for Northern polar winter night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	4.13	0.12	2.76	0.06	0.19	2.10	1.51	14.21	2.08	47.54	48.73	11.09	49.97
60	0.13	16.02	0.03	0.54	0.06	0.53	2.70	2.36	7.51	4.32	43.50	46.79	6.94	47.30
70	0.37	13.93	0.02	2.41	0.12	0.60	5.80	4.69	14.28	0.87	39.35	44.17	7.56	44.82
80	1.56	11.18	0.02	2.44	0.17	0.41	4.81	2.45	11.31	0.21	33.11	36.59	6.80	37.21
90	11.88	20.06	0.03	1.19	0.21	0.45	4.66	1.99	7.84	2.13	30.78	36.61	10.17	37.99
100	41.64	19.02	0.03	2.53	0.23	0.42	6.02	2.77	7.55	2.07	30.45	36.41	8.67	37.43
110	134.37	18.15	0.02	1.67	0.79	0.37	5.89	1.65	8.87	12.56	24.13	30.54	16.00	34.48
120	282.99	33.57	<0.01	1.01	1.74	0.34	1.58	0.61	9.57	<0.01	21.10	30.77	26.91	40.88
130	340.01	27.49	<0.01	1.73	2.31	0.35	0.98	0.51	8.18	<0.01	18.95	24.30	24.52	34.52
140	258.61	28.87	0.01	1.78	4.07	0.27	1.15	0.51	8.32	<0.01	20.44	25.74	26.07	36.63
150	230.75	25.98	0.02	1.83	5.59	0.27	1.55	0.49	8.01	<0.01	19.63	23.52	24.67	34.08
160	233.98	25.57	0.03	1.98	5.91	0.25	1.37	0.52	8.51	<0.01	18.47	23.74	23.34	33.29
170	214.35	25.78	0.03	2.16	4.88	0.25	1.24	0.54	8.93	<0.01	16.04	22.47	22.95	32.12
180	210.24	26.90	0.03	2.18	5.74	0.27	1.43	0.55	9.14	<0.01	21.90	27.19	24.24	36.42

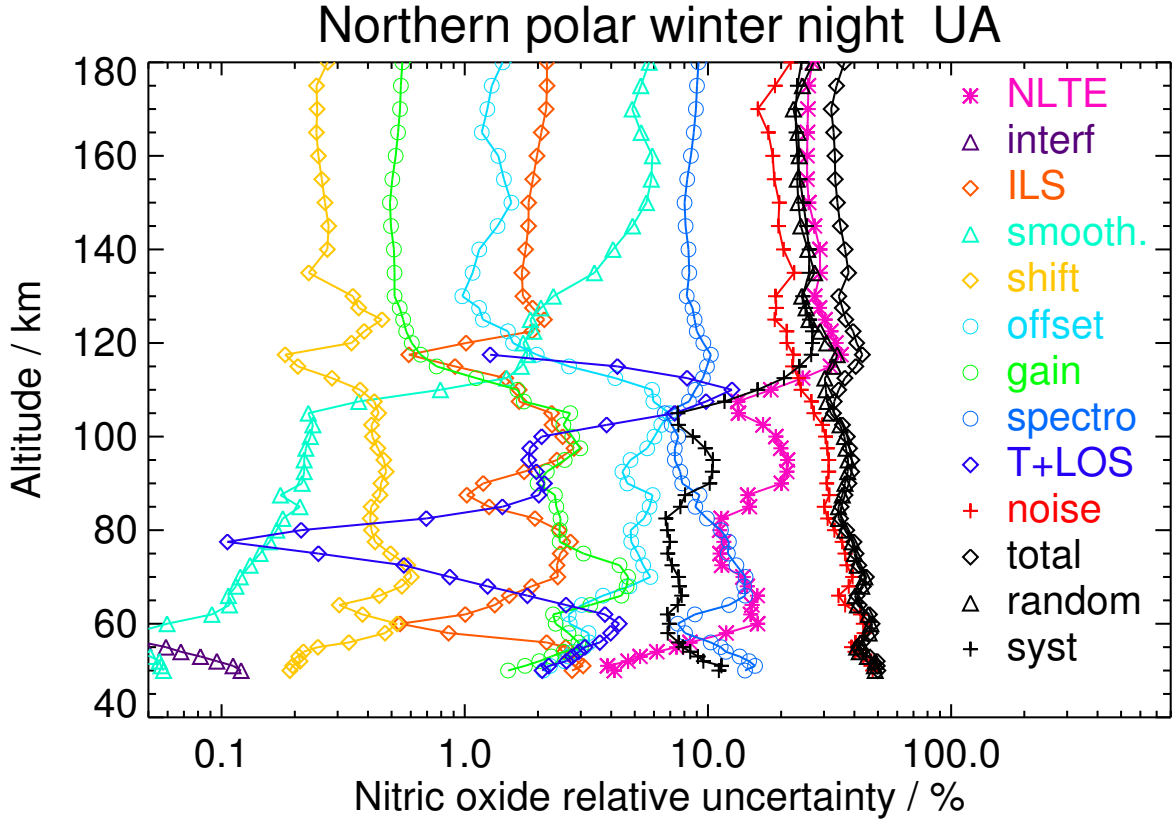

Figure S138. V8R_NOwT_662 Northern polar winter night, high solar activity

Table S140. Nitric oxide error budget for Northern polar spring day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	3.41	0.07	1.50	0.03	0.11	0.61	1.59	9.94	0.81	21.58	22.04	9.81	24.12
60	0.01	14.44	0.10	2.71	0.18	0.16	2.73	1.14	13.47	0.90	44.23	47.37	10.93	48.61
70	0.03	18.16	0.06	4.28	0.21	0.29	2.37	1.08	11.72	0.05	38.48	42.99	11.17	44.42
80	0.12	17.92	0.06	2.03	0.28	0.28	3.08	1.34	13.00	0.18	33.01	38.75	9.69	39.94
90	1.05	26.26	0.09	2.41	0.48	0.54	3.51	1.01	10.73	0.06	33.24	41.05	15.63	43.92
100	9.12	22.45	0.09	1.67	0.48	0.57	3.42	0.97	10.27	0.01	29.81	35.59	15.73	38.91
110	46.38	22.95	0.04	2.74	0.80	0.25	5.75	1.43	10.59	9.59	20.28	28.70	19.02	34.43
120	125.48	34.60	0.06	0.84	2.21	0.37	1.59	0.48	8.29	<0.01	20.30	28.53	29.53	41.06
130	223.16	27.46	0.16	1.90	2.53	0.44	0.97	0.50	8.41	<0.01	18.24	24.23	24.12	34.19
140	276.07	25.72	0.15	1.66	3.11	0.27	0.88	0.49	8.15	<0.01	17.23	21.39	24.11	32.23
150	396.24	25.78	0.13	1.71	3.69	0.29	0.98	0.49	8.18	<0.01	15.00	20.12	23.86	31.21
160	475.54	23.59	0.10	1.68	4.00	0.11	0.85	0.48	8.18	<0.01	13.17	17.44	22.64	28.58
170	643.60	23.62	0.06	1.71	2.32	0.08	1.14	0.46	7.88	<0.01	12.53	16.73	22.52	28.05
180	765.61	24.62	0.12	1.74	2.12	0.10	0.80	0.50	8.40	<0.01	10.14	14.96	23.76	28.07

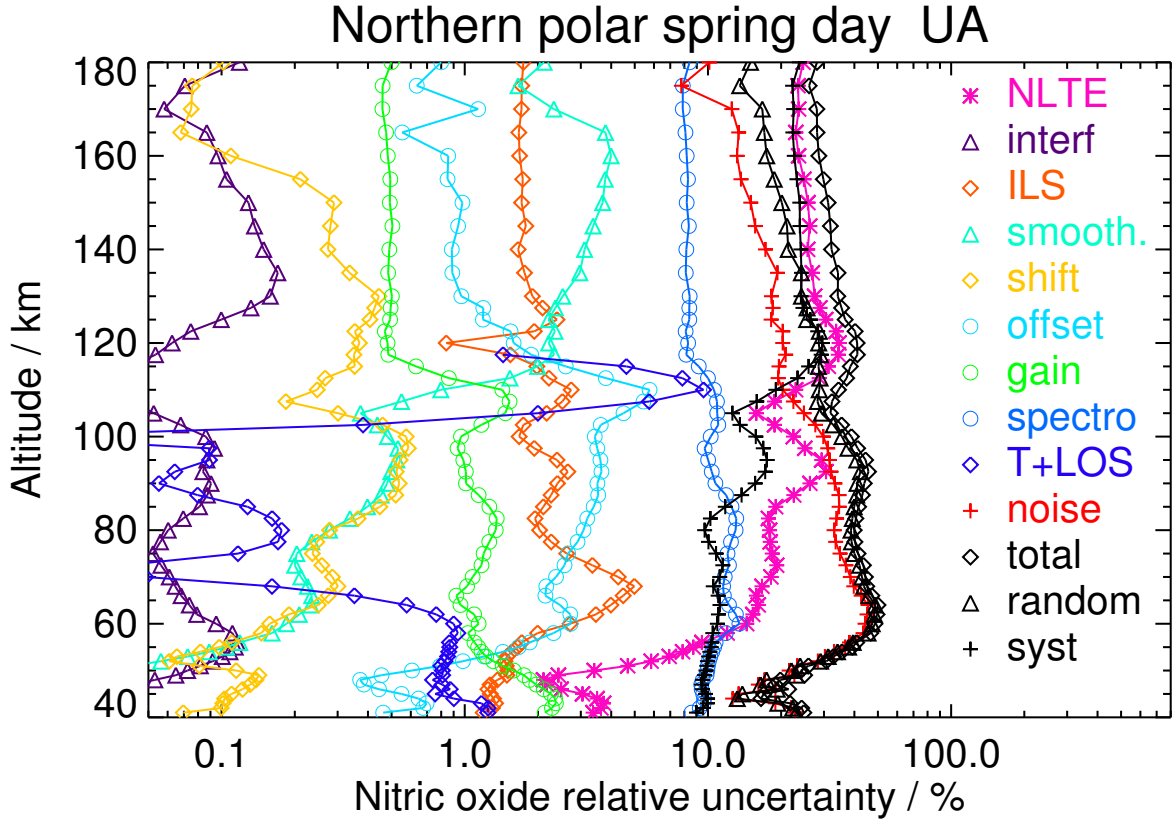

Figure S139. V8R_NOwT_662 Northern polar spring day, high solar activity

Table S141. Nitric oxide error budget for Northern polar spring night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	7.18	0.27	0.85	0.14	0.24	1.27	1.06	7.99	1.24	55.59	55.81	9.76	56.66
60	0.01	17.67	0.20	1.61	0.33	0.10	4.40	1.19	12.19	1.44	57.87	61.46	7.60	61.93
70	0.03	17.51	0.08	2.07	0.33	0.28	4.08	1.11	10.92	0.16	47.12	50.52	10.80	51.66
80	0.10	10.67	0.09	1.26	0.40	0.41	3.41	1.22	12.04	0.21	41.80	43.74	10.37	44.95
90	1.92	31.72	0.08	2.49	0.37	0.82	3.17	2.50	10.47	0.09	29.75	43.29	12.26	44.99
100	9.49	12.31	0.07	0.84	0.58	0.57	3.66	1.81	7.74	0.94	38.39	40.50	7.99	41.28
110	55.58	17.57	0.04	2.89	1.35	0.17	6.83	1.98	9.91	12.26	25.42	32.03	15.44	35.55
120	139.69	25.57	0.04	1.06	2.67	0.21	2.09	0.51	8.56	<0.01	22.76	26.44	23.65	35.48
130	184.66	29.96	0.06	1.91	3.31	0.32	1.65	0.53	9.13	<0.01	22.45	30.57	23.84	38.76
140	162.25	30.87	0.05	1.99	5.08	0.38	1.73	0.54	9.03	<0.01	24.41	32.34	24.85	40.79
150	163.74	26.93	0.08	1.95	5.57	0.26	1.58	0.53	8.80	<0.01	21.31	27.80	22.84	35.98
160	174.13	25.79	0.09	1.98	4.66	0.14	1.21	0.55	9.18	<0.01	19.32	25.87	21.94	33.92
170	224.22	24.67	0.07	2.00	2.91	0.07	1.12	0.53	8.90	<0.01	15.32	21.74	21.54	30.60
180	232.48	24.89	0.08	1.75	3.26	0.10	1.35	0.53	8.96	<0.01	20.58	25.25	22.40	33.75

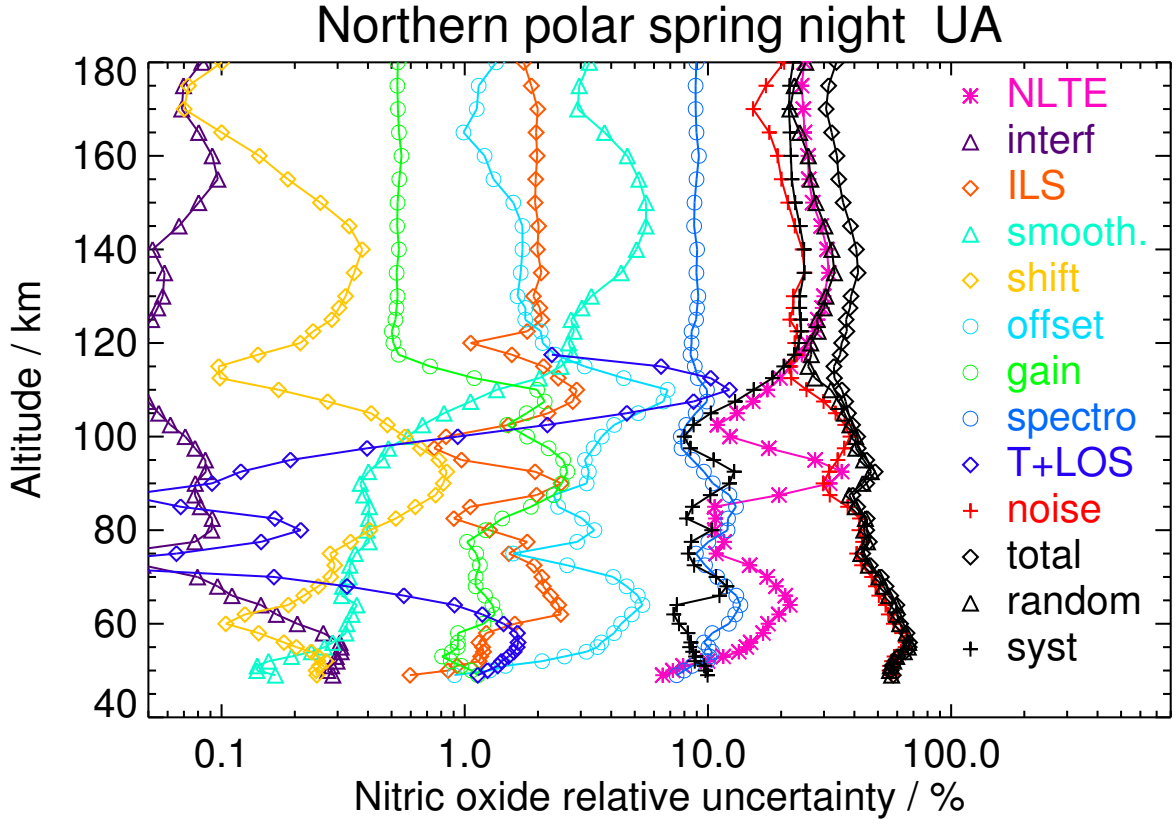

Figure S140. V8R_NOwT_662 Northern polar spring night, high solar activity

Table S142. Nitric oxide error budget for Northern polar summer day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.60	0.04	0.78	0.01	0.08	0.38	1.32	8.40	0.79	10.79	11.02	8.44	13.88
60	0.01	9.38	0.10	2.39	0.08	0.22	1.91	1.03	11.72	1.11	35.23	37.13	9.97	38.45
70	0.03	19.08	0.03	4.56	0.14	0.33	2.19	1.51	15.01	0.13	37.37	42.27	15.07	44.88
80	0.09	14.22	0.03	2.91	0.23	0.36	3.46	1.12	13.21	0.35	31.78	35.20	13.04	37.53
90	1.21	18.98	0.04	2.91	0.35	0.69	4.19	1.63	11.96	0.37	32.72	37.49	14.08	40.04
100	23.58	14.60	0.02	2.52	0.20	0.50	4.20	2.94	12.67	1.69	24.13	29.74	10.35	31.49
110	59.63	19.67	0.03	3.08	0.77	0.29	5.02	1.47	8.52	13.51	16.00	24.63	18.14	30.59
120	135.90	29.67	0.06	1.37	2.11	0.19	1.82	0.47	8.38	<0.01	19.57	26.00	25.83	36.65
130	275.44	26.15	0.06	2.51	2.68	0.34	1.31	0.51	8.59	<0.01	19.27	24.25	23.59	33.83
140	389.07	25.91	0.13	1.88	3.35	0.50	1.01	0.51	8.32	<0.01	18.73	23.52	23.54	33.28
150	483.42	24.89	0.05	1.78	4.06	0.35	0.93	0.51	8.30	<0.01	16.60	21.65	22.72	31.38
160	585.65	23.43	0.05	1.76	3.89	0.17	0.74	0.50	8.33	<0.01	14.65	19.32	21.88	29.19
170	679.79	23.30	0.03	1.82	1.79	0.06	0.87	0.50	8.49	<0.01	11.64	17.00	21.65	27.53
180	737.38	24.37	0.05	1.69	2.02	0.12	0.94	0.50	8.33	<0.01	13.74	17.57	23.48	29.33

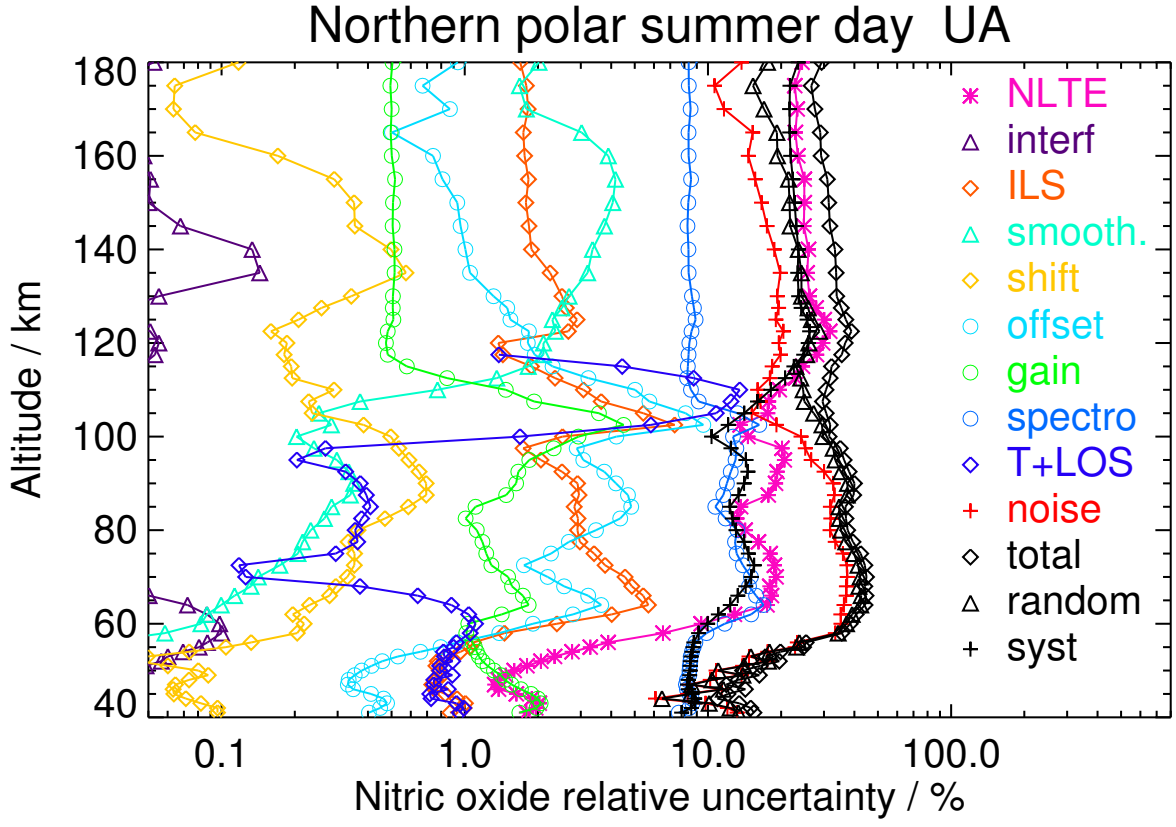

Figure S141. V8R_NOwT_662 Northern polar summer day, high solar activity

Table S143. Nitric oxide error budget for Northern polar summer night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	3.82	0.21	0.41	0.08	0.12	1.00	0.94	3.22	0.86	35.03	35.24	3.56	35.42
60	0.01	8.14	0.15	1.44	0.23	0.08	2.64	0.87	8.65	1.05	49.77	50.72	7.51	51.27
70	0.02	14.10	0.05	1.10	0.43	0.16	2.02	0.96	6.00	<0.01	49.00	50.38	10.19	51.40
80	0.07	22.92	0.07	0.41	0.71	0.28	2.15	1.65	6.99	0.23	46.92	50.02	16.79	52.76
90	1.03	18.06	0.06	0.66	0.64	0.28	2.45	1.22	8.63	0.13	38.64	41.88	12.19	43.62
100	10.04	12.46	0.04	1.52	0.58	0.18	4.73	2.30	10.12	2.66	32.66	35.75	9.14	36.90
110	26.57	11.48	0.03	2.76	2.03	0.10	7.00	1.75	8.44	17.23	26.63	34.17	10.26	35.67
120	57.52	22.49	0.05	1.10	4.19	0.12	3.19	0.48	8.11	<0.01	26.18	29.19	20.83	35.86
130	83.00	36.22	0.06	2.19	4.57	0.31	3.11	0.59	10.07	<0.01	29.27	40.66	25.54	48.02
140	108.85	41.79	0.12	2.77	6.38	0.57	3.36	0.69	11.41	<0.01	31.97	46.46	28.30	54.40
150	127.45	39.16	0.12	2.66	6.39	0.36	2.56	0.74	12.07	<0.01	27.76	41.93	27.33	50.05
160	130.08	34.76	0.12	2.38	4.94	0.19	2.11	0.69	11.33	<0.01	26.29	36.92	26.45	45.42
170	150.36	32.79	0.11	2.15	4.24	0.13	2.33	0.63	10.39	<0.01	30.18	37.88	26.22	46.07
180	158.71	32.46	0.11	2.10	4.46	0.12	2.62	0.62	10.18	<0.01	36.63	43.04	26.04	50.31

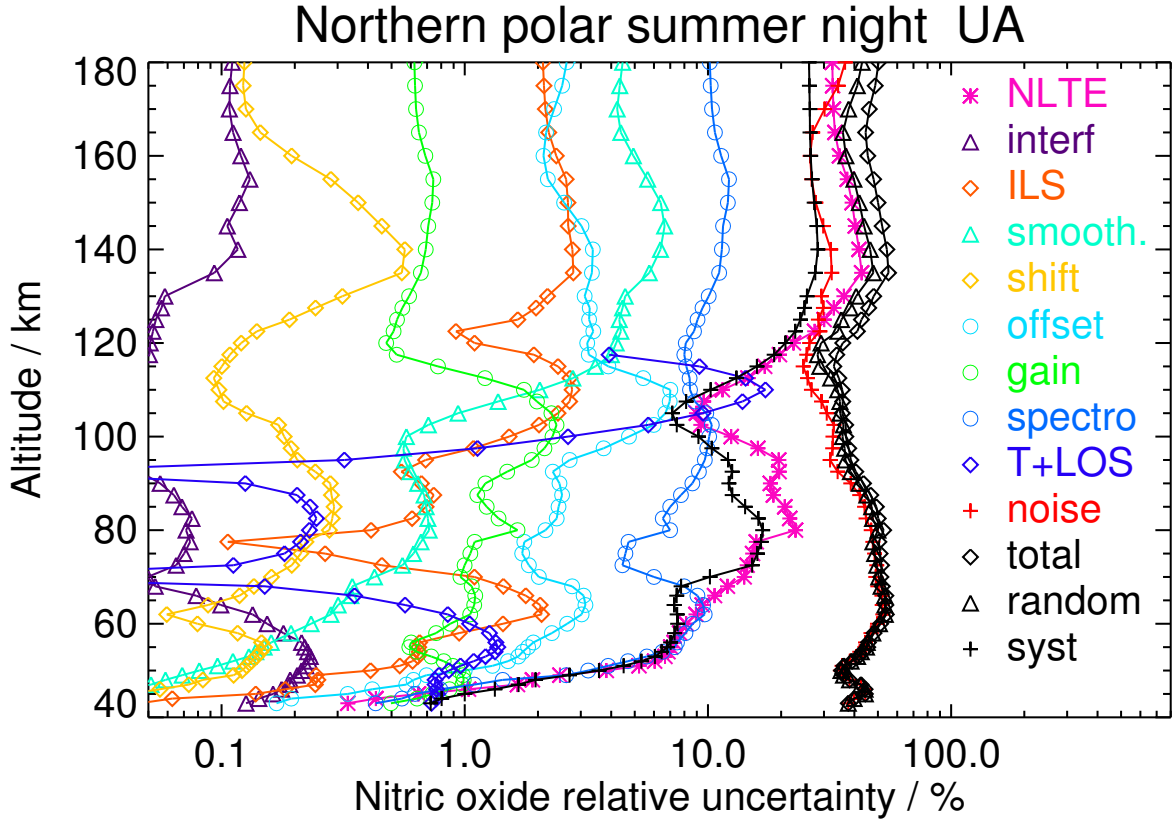

Figure S142. V8R_NOwT_662 Northern polar summer night, high solar activity

Table S144. Nitric oxide error budget for Northern polar autumn day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	8.16	0.10	1.53	0.07	0.07	1.18	1.88	11.67	0.95	37.73	38.87	11.12	40.43
60	0.01	23.49	0.08	3.99	0.19	0.16	3.02	1.41	17.12	0.91	52.23	56.81	19.30	60.00
70	0.05	15.07	0.05	4.46	0.16	0.18	2.82	0.99	12.24	0.03	40.99	42.92	15.61	45.67
80	0.18	18.07	0.05	3.27	0.27	0.33	3.31	1.26	15.00	0.20	39.63	44.08	14.21	46.32
90	1.93	21.20	0.06	2.24	0.40	0.60	2.92	1.30	12.15	0.18	34.70	39.91	14.98	42.63
100	14.66	18.68	0.06	2.26	0.42	0.59	2.94	1.35	13.52	0.08	30.27	34.88	15.72	38.26
110	76.26	21.77	0.02	0.86	0.91	0.31	5.07	1.29	10.48	7.78	22.35	29.05	18.15	34.25
120	205.42	29.10	0.04	0.73	2.04	0.36	1.36	0.46	7.63	<0.01	19.18	22.37	27.93	35.78
130	311.25	24.10	0.08	1.61	2.10	0.34	0.78	0.47	7.73	<0.01	15.76	17.67	24.18	29.95
140	343.01	26.74	0.15	1.61	2.99	0.31	0.86	0.48	7.92	<0.01	16.26	19.90	25.66	32.48
150	401.60	24.78	0.09	1.66	3.69	0.26	0.96	0.47	7.81	<0.01	15.01	17.96	24.39	30.29
160	465.30	23.11	0.08	1.64	3.38	0.11	0.79	0.47	7.89	<0.01	13.38	16.10	23.04	28.11
170	583.59	23.52	0.04	1.67	1.63	0.07	1.02	0.46	8.00	<0.01	11.90	15.42	22.98	27.67
180	629.72	24.43	0.09	1.67	1.44	0.10	0.83	0.48	8.06	<0.01	11.04	13.47	24.66	28.10

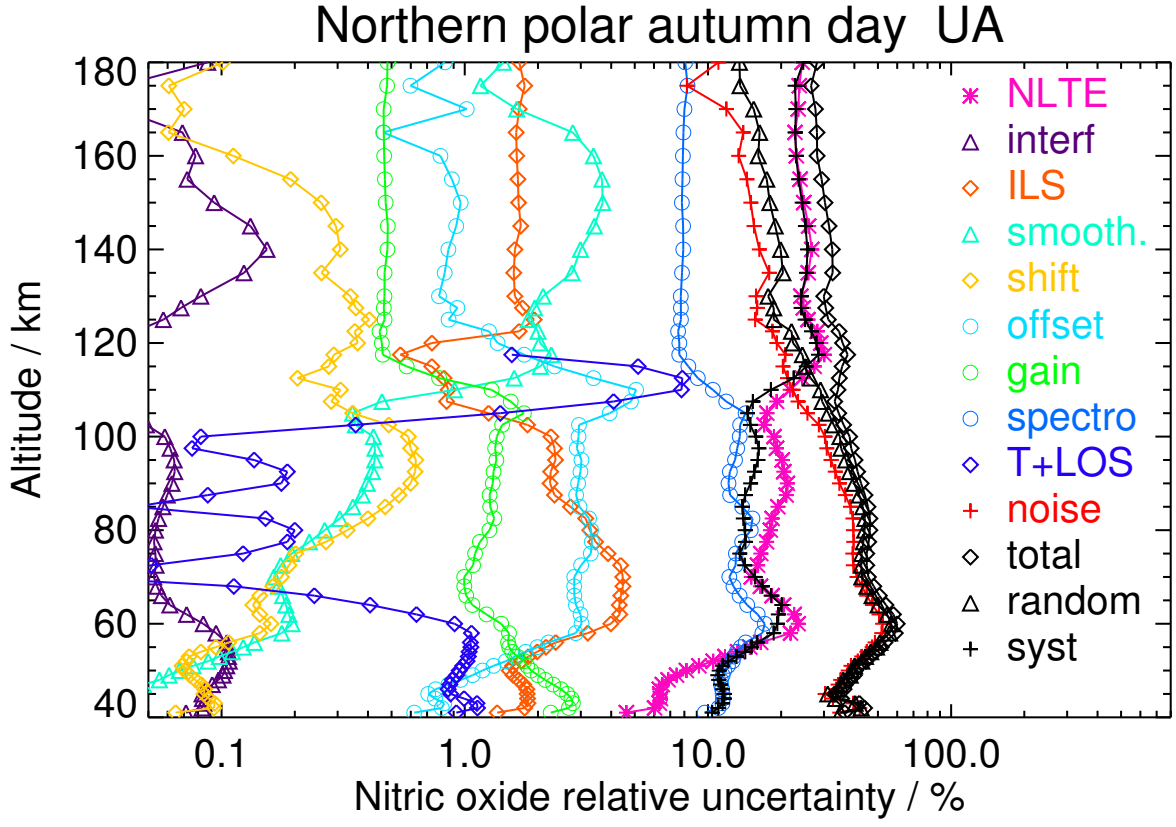

Figure S143. V8R_NOwT_662 Northern polar autumn day, high solar activity

Table S145. Nitric oxide error budget for Northern polar autumn night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	7.17	0.15	2.01	0.11	0.34	1.52	1.43	10.92	2.12	63.66	64.55	8.34	65.09
60	0.02	13.40	0.07	1.77	0.11	0.19	1.95	2.37	12.92	1.58	34.97	38.69	9.38	39.81
70	0.12	10.47	0.05	2.94	0.21	0.16	2.19	1.72	8.88	0.53	38.92	40.83	7.27	41.47
80	0.77	15.92	0.06	2.23	0.30	0.35	1.76	3.05	11.19	0.05	34.48	38.67	9.47	39.81
90	5.15	38.55	0.08	0.98	0.31	0.33	5.73	4.21	11.26	0.78	30.53	48.26	16.39	50.97
100	20.33	14.75	0.13	1.61	0.51	0.57	4.69	2.37	10.71	0.70	39.50	42.71	9.97	43.86
110	70.50	22.56	0.12	1.26	1.56	0.22	6.38	1.79	9.22	12.83	25.92	33.86	18.22	38.45
120	125.82	35.00	0.07	0.97	2.73	0.28	2.01	0.62	10.16	<0.01	23.64	33.84	27.48	43.59
130	176.14	37.84	0.10	1.93	2.86	0.45	1.21	0.60	9.85	<0.01	19.95	36.09	25.26	44.05
140	180.84	33.60	0.06	2.07	3.97	0.24	1.23	0.58	9.96	<0.01	20.31	32.00	25.26	40.77
150	210.70	31.58	0.13	2.02	4.64	0.21	1.32	0.58	9.84	<0.01	17.82	29.29	24.11	37.94
160	222.68	30.21	0.15	2.19	4.83	0.21	1.19	0.61	10.11	<0.01	17.07	28.06	23.43	36.56
170	268.06	31.31	0.14	2.47	3.28	0.19	1.04	0.64	10.76	<0.01	13.51	28.05	22.58	36.01
180	227.29	30.88	0.18	2.30	3.83	0.15	1.22	0.64	10.76	<0.01	18.88	28.89	24.75	38.04

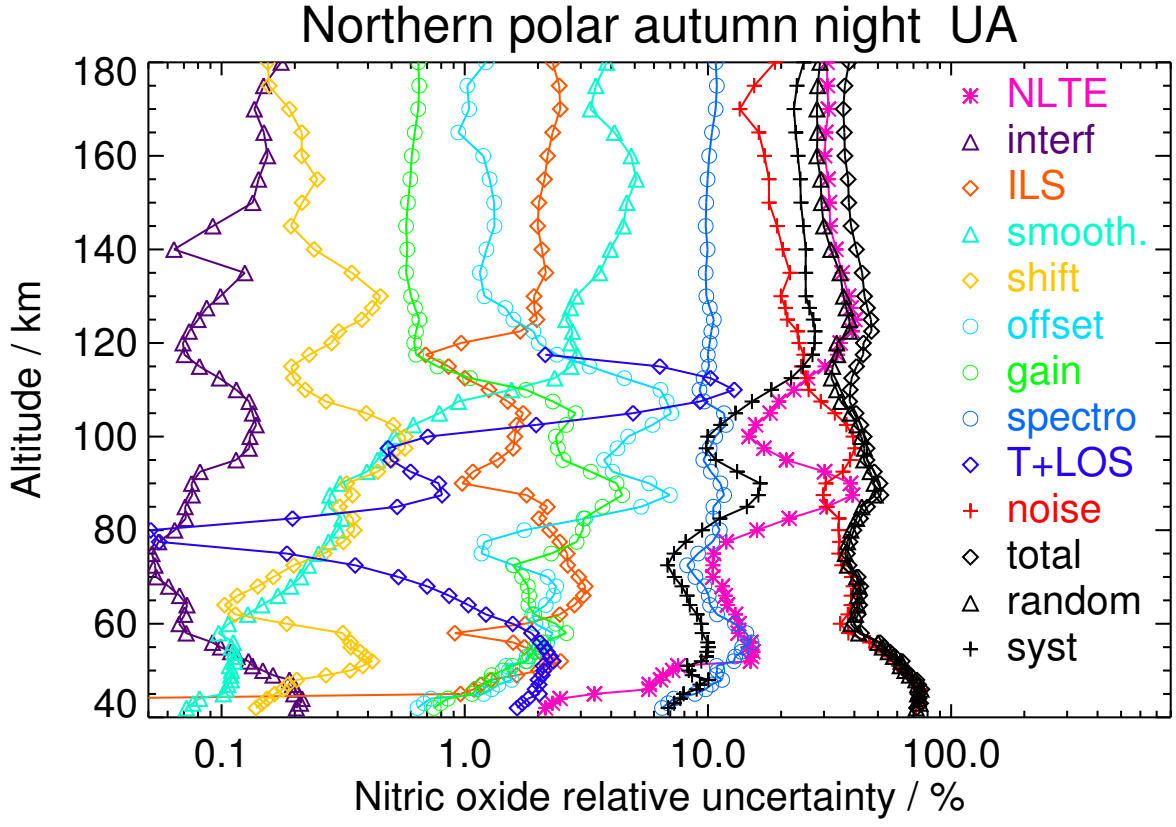

Figure S144. V8R_NOwT_662 Northern polar autumn night, high solar activity

Table S146. Nitric oxide error budget for Northern midlatitude winter day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	11.14	0.08	0.91	0.15	0.09	1.74	2.94	11.07	1.28	45.90	47.74	9.43	48.66
60	0.02	14.67	0.04	1.48	0.18	0.11	1.99	1.85	13.08	0.70	47.32	50.43	9.63	51.34
70	0.08	13.09	0.02	2.88	0.18	0.08	2.14	1.66	14.05	0.03	36.45	40.33	9.31	41.39
80	0.55	13.62	<0.01	1.80	0.16	0.10	4.27	2.32	13.89	0.11	25.38	30.39	11.23	32.40
90	3.38	29.72	0.02	0.85	0.30	0.32	5.02	2.39	12.55	0.29	30.35	40.65	18.49	44.65
100	10.12	19.37	0.02	0.86	0.41	0.22	3.73	2.10	10.02	0.53	30.52	34.06	16.33	37.78
110	38.22	12.08	0.03	1.02	1.54	0.09	4.83	1.60	10.18	8.03	28.45	32.30	10.48	33.95
120	88.00	29.52	0.06	1.28	3.62	0.32	2.46	0.65	10.78	<0.01	26.28	36.61	18.96	41.23
130	128.66	30.03	0.10	2.06	4.54	0.45	2.33	0.61	9.92	<0.01	27.18	34.54	24.01	42.07
140	155.57	29.51	0.04	1.77	5.76	0.26	2.06	0.51	8.65	<0.01	26.55	31.01	27.02	41.13
150	209.35	26.89	0.05	1.79	5.78	0.19	1.46	0.51	8.56	<0.01	20.05	25.46	24.27	35.17
160	242.97	23.39	0.06	1.70	5.01	0.13	1.13	0.48	8.14	<0.01	18.38	21.96	22.33	31.32
170	311.30	22.99	0.05	1.74	3.01	0.08	0.94	0.49	8.34	<0.01	12.21	16.47	22.12	27.57
180	310.27	20.47	0.06	1.58	3.79	0.12	1.30	0.44	7.37	<0.01	18.42	20.68	20.09	28.84

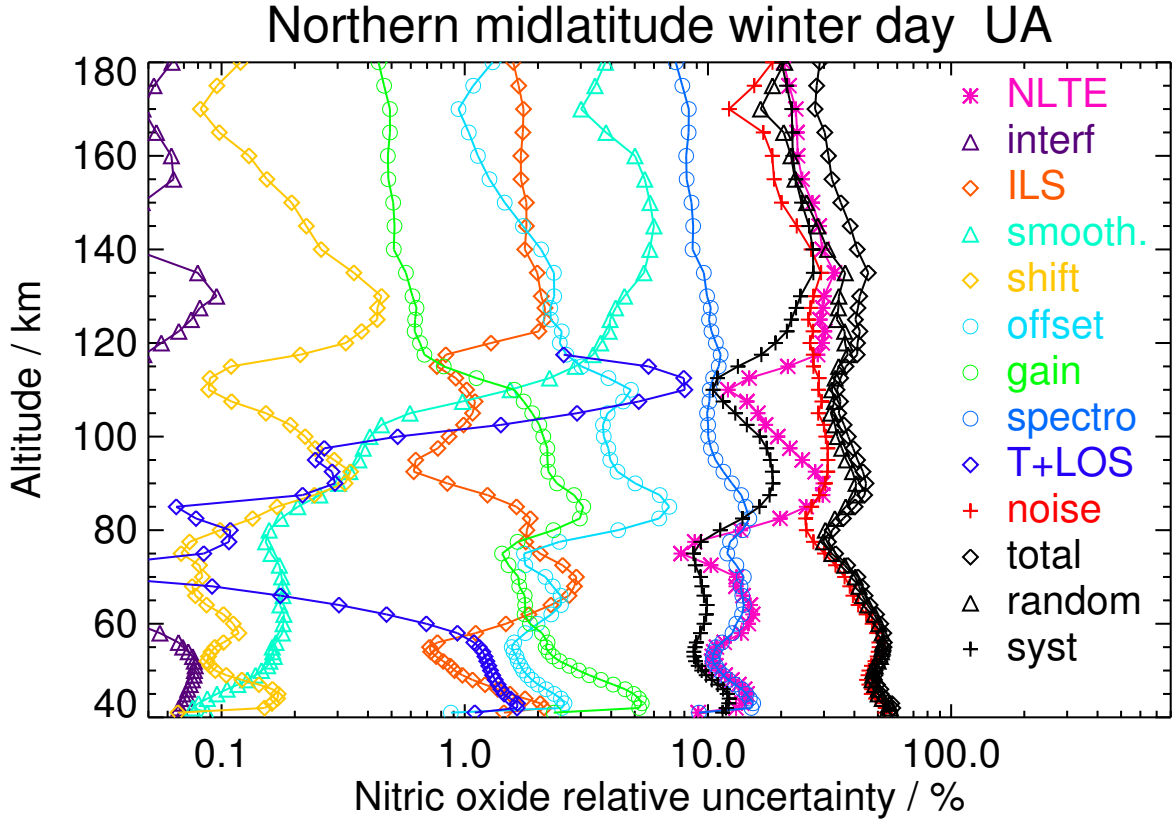

Figure S145. V8R_NOwT_662 Northern midlatitude winter day, high solar activity

Table S147. Nitric oxide error budget for Northern midlatitude winter night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	3.29	0.11	2.15	0.18	0.17	1.12	1.44	11.12	2.21	51.71	52.28	9.42	53.12
60	0.02	8.81	0.09	0.99	0.41	0.20	2.63	1.23	8.56	1.14	55.98	56.90	7.65	57.41
70	0.07	9.90	0.04	2.81	0.41	0.18	2.64	1.03	8.33	0.20	45.46	46.74	8.09	47.43
80	0.26	12.18	0.03	2.21	0.57	0.28	3.89	1.89	8.66	0.13	43.98	45.92	8.53	46.70
90	1.75	27.64	0.03	1.95	0.98	0.68	5.54	1.26	5.94	0.42	46.42	53.24	12.57	54.70
100	6.66	23.55	0.04	1.57	1.10	0.73	4.71	1.91	5.38	1.56	42.17	47.76	10.66	48.93
110	23.13	17.50	0.03	1.59	2.62	0.48	6.35	1.52	7.50	12.61	36.52	42.51	9.98	43.67
120	85.60	59.31	0.03	0.62	3.34	0.90	2.41	0.74	11.69	<0.01	23.41	61.25	21.66	64.97
130	107.25	39.25	0.03	2.86	3.77	0.44	1.97	0.82	13.59	<0.01	22.98	42.21	22.33	47.75
140	100.42	39.46	0.04	2.51	5.11	0.45	2.15	0.72	12.24	<0.01	25.61	43.00	23.50	49.00
150	101.82	26.21	0.07	1.95	5.54	0.23	2.03	0.54	8.95	<0.01	24.55	30.65	21.66	37.53
160	104.07	24.24	0.08	1.82	4.83	0.11	1.66	0.52	8.79	<0.01	23.05	27.96	21.08	35.01
170	104.04	22.50	0.07	1.75	4.09	0.10	1.80	0.50	8.41	<0.01	24.08	27.28	20.89	34.36
180	106.74	23.46	0.08	1.77	4.43	0.08	2.08	0.50	8.41	<0.01	30.49	33.70	21.03	39.73

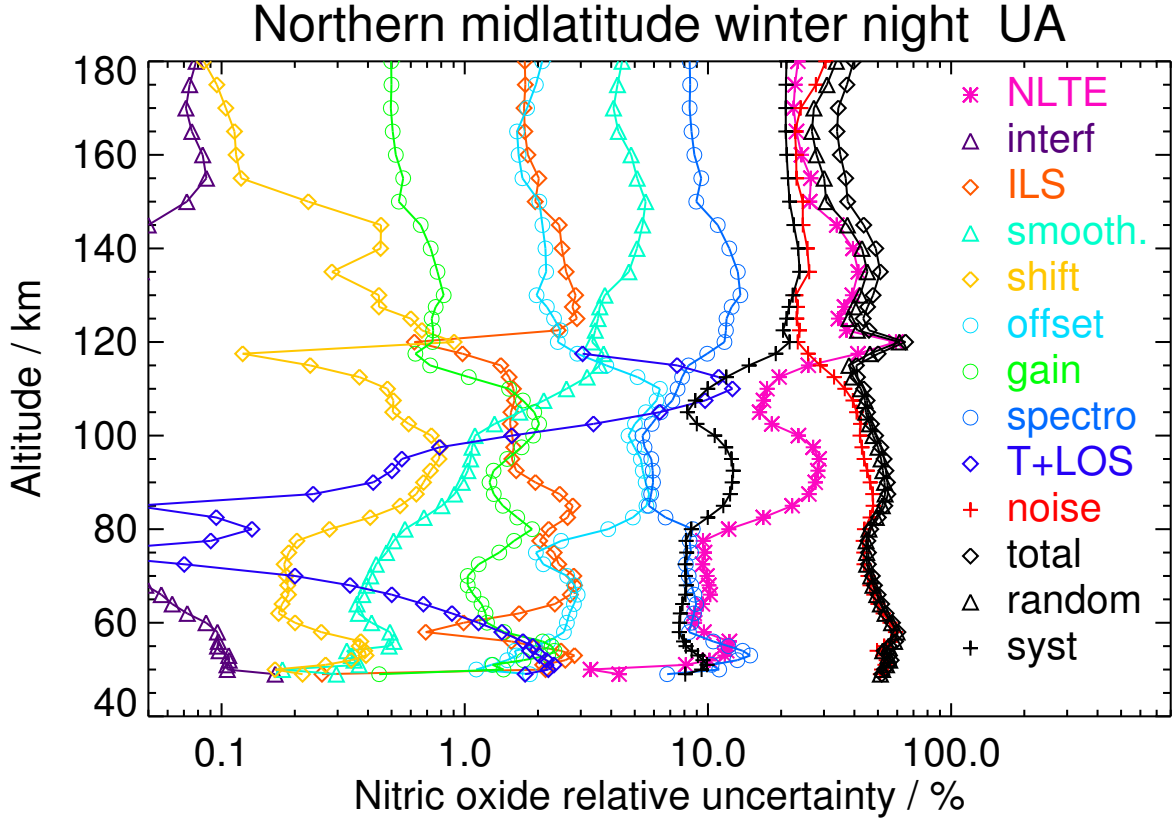

Figure S146. V8R_NOwT_662 Northern midlatitude winter night, high solar activity

Table S148. Nitric oxide error budget for Northern midlatitude spring day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	2.58	0.09	1.25	0.05	0.08	0.39	1.34	8.99	0.68	23.92	24.21	8.82	25.77
60	0.01	13.16	0.11	2.80	0.32	0.37	2.03	1.19	13.94	1.05	51.73	54.43	9.73	55.30
70	0.02	6.93	0.06	2.02	0.35	0.25	0.84	0.72	6.85	0.05	44.60	44.61	9.97	45.71
80	0.06	20.25	0.09	2.35	0.54	0.67	2.16	0.87	11.75	0.27	47.98	51.01	16.12	53.50
90	0.91	29.89	0.10	2.22	0.63	1.33	3.40	1.21	18.13	0.03	43.84	52.72	19.61	56.25
100	7.74	24.32	0.07	0.97	0.51	0.78	3.25	1.28	13.89	0.06	35.86	41.10	19.87	45.65
110	50.05	18.61	0.02	2.46	1.00	0.29	5.78	1.57	9.99	8.74	23.61	29.53	15.83	33.51
120	119.12	32.83	0.03	0.64	2.66	0.38	2.08	0.49	8.30	<0.01	24.47	29.19	30.10	41.93
130	220.24	30.66	0.03	1.90	3.01	0.30	1.72	0.49	8.62	<0.01	23.20	29.55	26.37	39.60
140	300.25	27.65	0.09	1.68	3.26	0.27	0.96	0.50	8.37	<0.01	18.21	23.74	24.85	34.37
150	405.48	25.21	0.06	1.70	3.72	0.27	0.67	0.48	8.01	<0.01	14.35	19.81	23.04	30.39
160	450.01	21.65	0.03	1.57	3.74	0.10	0.51	0.45	7.66	<0.01	12.46	15.69	21.30	26.45
170	558.18	23.76	0.03	1.65	1.85	0.09	0.89	0.46	7.97	<0.01	9.61	15.07	22.37	26.97
180	574.42	24.13	0.06	1.67	2.35	0.17	0.95	0.46	7.60	<0.01	11.38	16.15	22.76	27.91

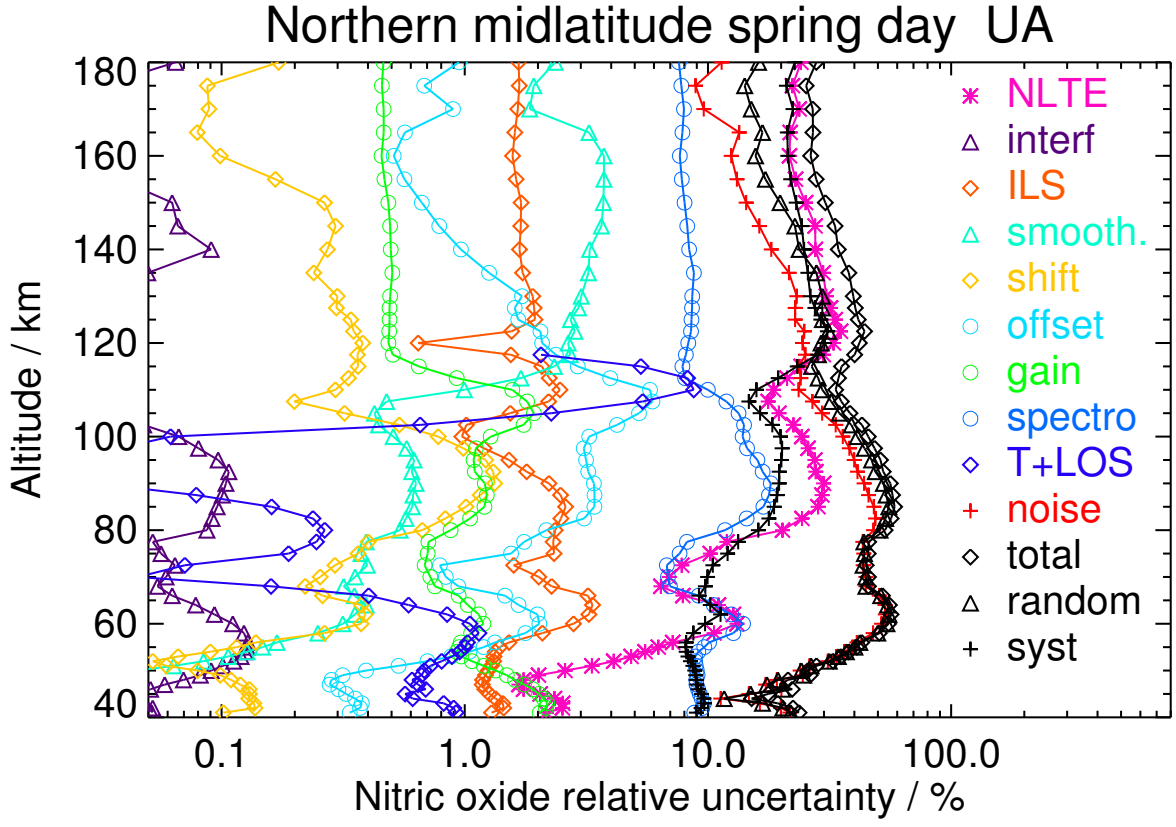

Figure S147. V8R_NOwT_662 Northern midlatitude spring day, high solar activity

Table S149. Nitric oxide error budget for Northern midlatitude spring night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.01	10.84	0.19	2.16	0.30	0.11	3.41	0.83	10.44	1.31	52.43	54.25	7.20	54.72
70	0.03	8.94	0.04	3.24	0.37	0.32	1.85	1.36	8.24	0.17	42.55	43.72	7.97	44.44
80	0.07	14.48	0.18	2.02	0.62	0.41	4.00	1.00	6.26	0.19	44.53	45.79	12.54	47.47
90	0.87	25.06	0.17	2.50	0.72	0.55	3.41	2.87	7.95	0.13	41.17	46.93	14.50	49.12
100	7.42	18.72	0.09	2.07	0.68	0.39	3.53	2.97	7.88	0.92	37.03	40.88	11.82	42.56
110	45.86	12.95	0.05	1.97	1.63	0.17	5.02	1.57	7.92	10.55	26.36	30.51	11.81	32.72
120	92.66	25.03	0.05	0.75	3.47	0.22	2.61	0.51	8.67	<0.01	24.76	29.77	21.17	36.53
130	113.54	29.57	0.07	2.30	4.05	0.43	2.15	0.57	9.70	<0.01	24.73	32.61	23.32	40.09
140	110.01	28.71	0.05	2.08	5.60	0.32	2.28	0.54	9.05	<0.01	26.45	32.48	24.33	40.58
150	132.30	27.39	0.11	2.22	5.82	0.27	1.98	0.57	9.44	<0.01	23.28	30.03	22.86	37.74
160	154.99	25.80	0.12	2.06	4.99	0.20	1.50	0.56	9.36	<0.01	20.64	27.09	21.84	34.80
170	160.76	24.36	0.12	1.95	3.86	0.12	1.44	0.54	9.02	<0.01	19.24	24.61	21.46	32.65
180	168.48	24.69	0.14	1.91	4.28	0.12	1.69	0.53	8.91	<0.01	25.48	29.88	21.69	36.92

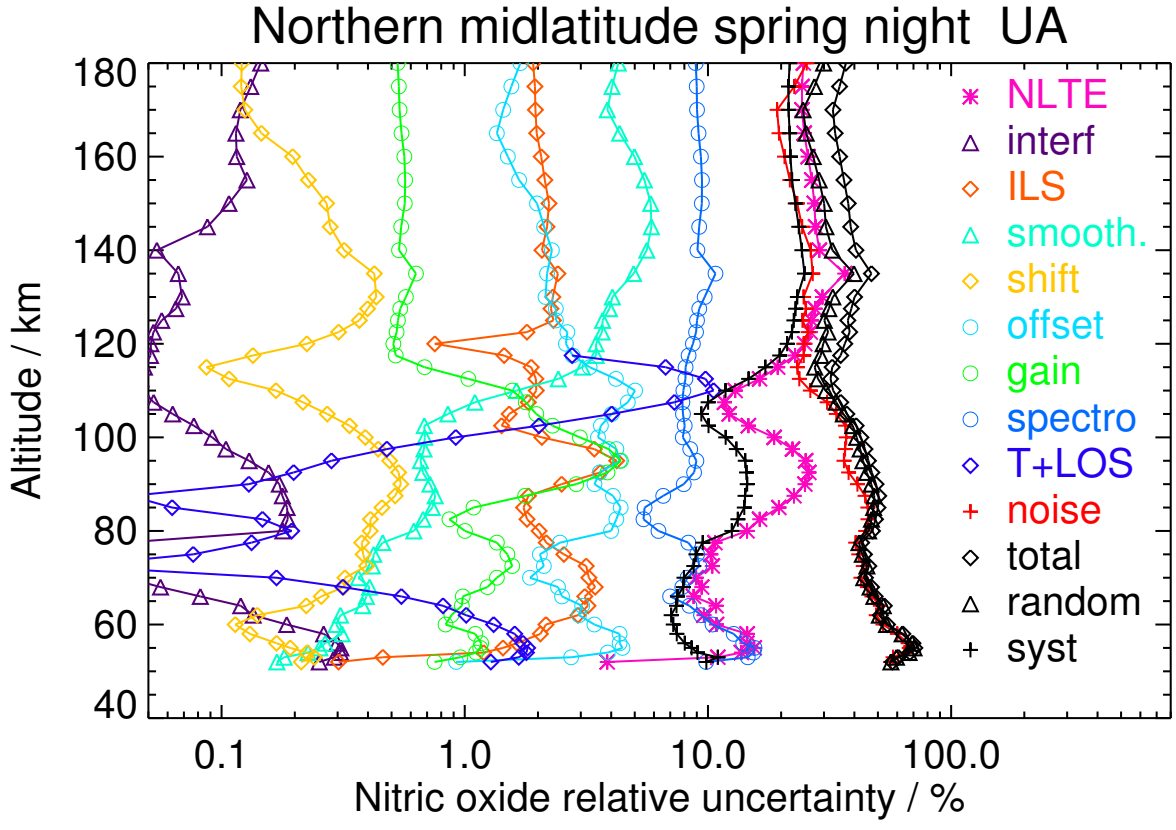

Figure S148. V8R_NOwT_662 Northern midlatitude spring night, high solar activity

Table S150. Nitric oxide error budget for Northern midlatitude summer day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.53	0.06	0.73	0.02	0.06	0.33	1.35	8.61	0.73	18.49	18.68	8.51	20.52
60	0.01	11.26	0.10	2.19	0.22	0.14	1.82	0.97	10.33	0.74	55.76	57.27	8.53	57.90
70	0.01	21.33	0.06	1.70	0.39	0.41	1.21	0.92	10.55	0.08	59.03	62.60	11.71	63.69
80	0.02	14.48	0.05	1.06	0.52	0.46	1.89	1.01	10.43	0.29	55.43	56.59	13.96	58.28
90	0.86	20.02	0.05	0.82	0.58	0.61	2.69	1.29	11.16	0.25	47.94	51.35	14.03	53.23
100	9.80	16.45	0.02	1.02	0.35	0.37	4.80	2.36	12.10	1.97	35.07	39.10	12.32	41.00
110	32.51	12.56	0.02	2.84	1.46	0.15	6.74	1.68	8.66	15.24	24.50	31.44	11.63	33.52
120	106.73	31.71	0.04	0.78	3.25	0.21	2.63	0.51	8.96	<0.01	26.03	33.26	25.98	42.21
130	281.18	33.44	0.08	1.93	3.75	0.35	2.29	0.51	8.71	<0.01	26.41	31.88	29.98	43.76
140	398.19	30.55	0.13	1.82	3.99	0.35	1.33	0.48	7.96	<0.01	21.35	24.96	29.17	38.39
150	487.70	28.62	0.04	1.70	4.00	0.25	0.86	0.47	7.86	<0.01	17.05	20.89	27.48	34.52
160	522.99	27.54	0.05	1.67	3.54	0.12	0.60	0.47	7.97	<0.01	16.05	19.64	26.65	33.10
170	602.84	27.09	0.04	1.65	1.62	0.03	0.62	0.47	8.09	<0.01	9.96	13.62	26.81	30.07
180	612.55	27.13	0.06	1.61	1.94	0.10	1.03	0.48	7.95	<0.01	15.67	18.96	26.32	32.44

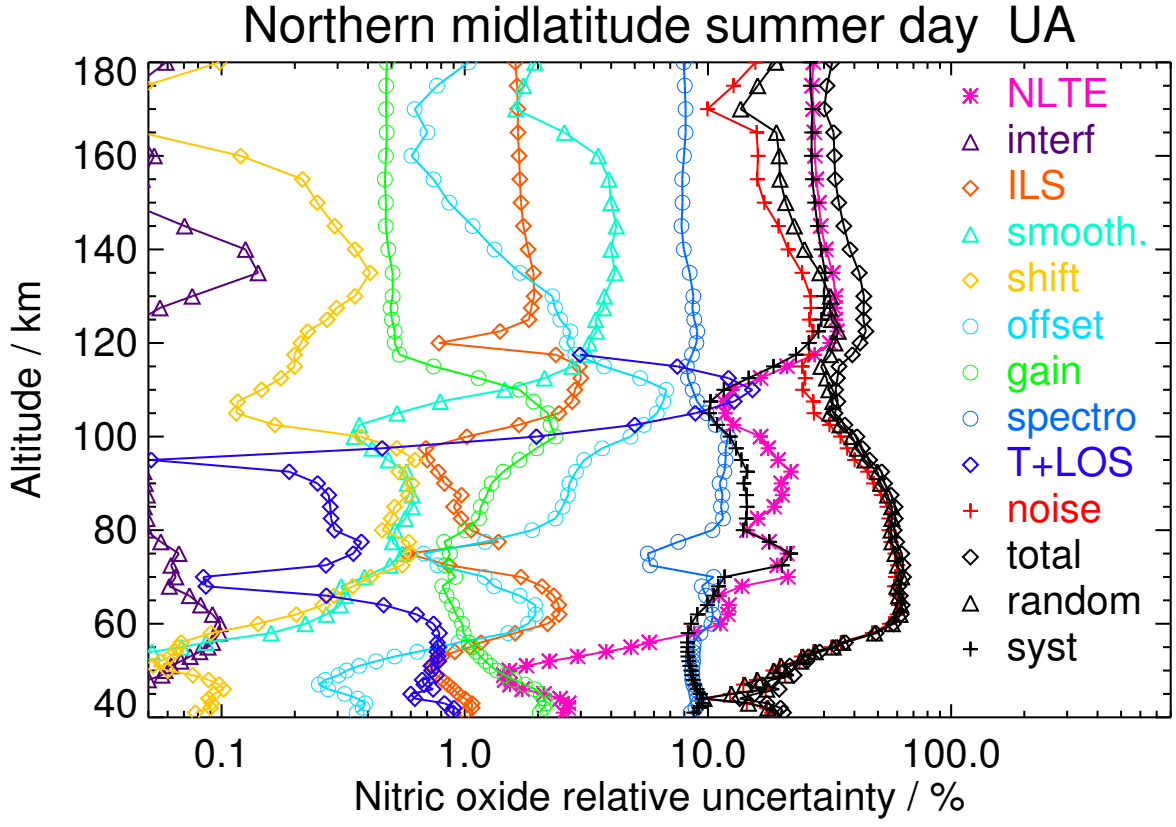

Figure S149. V8R_NOwT_662 Northern midlatitude summer day, high solar activity

Table S151. Nitric oxide error budget for Northern midlatitude summer night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	8.82	0.36	0.38	0.16	0.21	1.68	1.51	7.89	1.04	54.51	54.99	9.75	55.84
60	0.00	7.69	0.32	2.22	0.43	0.11	4.23	1.01	7.82	1.33	79.92	80.49	7.37	80.83
70	0.01	4.99	0.12	4.96	0.45	0.12	6.32	2.12	6.77	0.01	60.81	61.51	7.41	61.95
80	0.04	9.63	0.06	3.62	0.59	0.19	5.45	1.36	6.43	0.25	51.37	52.10	10.20	53.09
90	0.76	17.83	0.06	2.31	0.76	0.24	3.77	1.11	8.35	0.15	46.67	49.46	11.89	50.87
100	7.87	13.50	0.05	1.88	0.68	0.15	4.84	1.84	8.44	3.54	39.05	41.95	7.86	42.68
110	25.61	10.01	0.03	3.08	2.11	0.09	7.15	1.77	8.15	18.26	27.37	34.80	10.32	36.30
120	65.12	19.37	0.03	1.10	4.26	0.09	3.95	0.47	8.00	<0.01	27.60	29.24	19.53	35.16
130	87.72	27.99	0.02	2.18	5.22	0.22	4.60	0.55	9.31	<0.01	34.25	38.85	24.23	45.79
140	86.82	29.75	0.03	2.18	7.22	0.28	4.13	0.53	8.77	<0.01	35.50	39.99	26.39	47.92
150	95.23	28.80	0.03	1.93	6.94	0.18	2.76	0.52	8.63	<0.01	32.48	36.35	26.40	44.93
160	104.80	30.33	0.02	1.92	6.03	0.12	2.63	0.56	9.22	<0.01	33.21	37.86	26.86	46.42
170	119.80	33.76	0.02	2.09	5.93	0.11	3.10	0.62	10.28	<0.01	40.64	47.07	27.04	54.28
180	128.49	34.79	0.02	2.14	6.09	0.12	3.31	0.64	10.62	<0.01	45.52	52.15	26.99	58.72

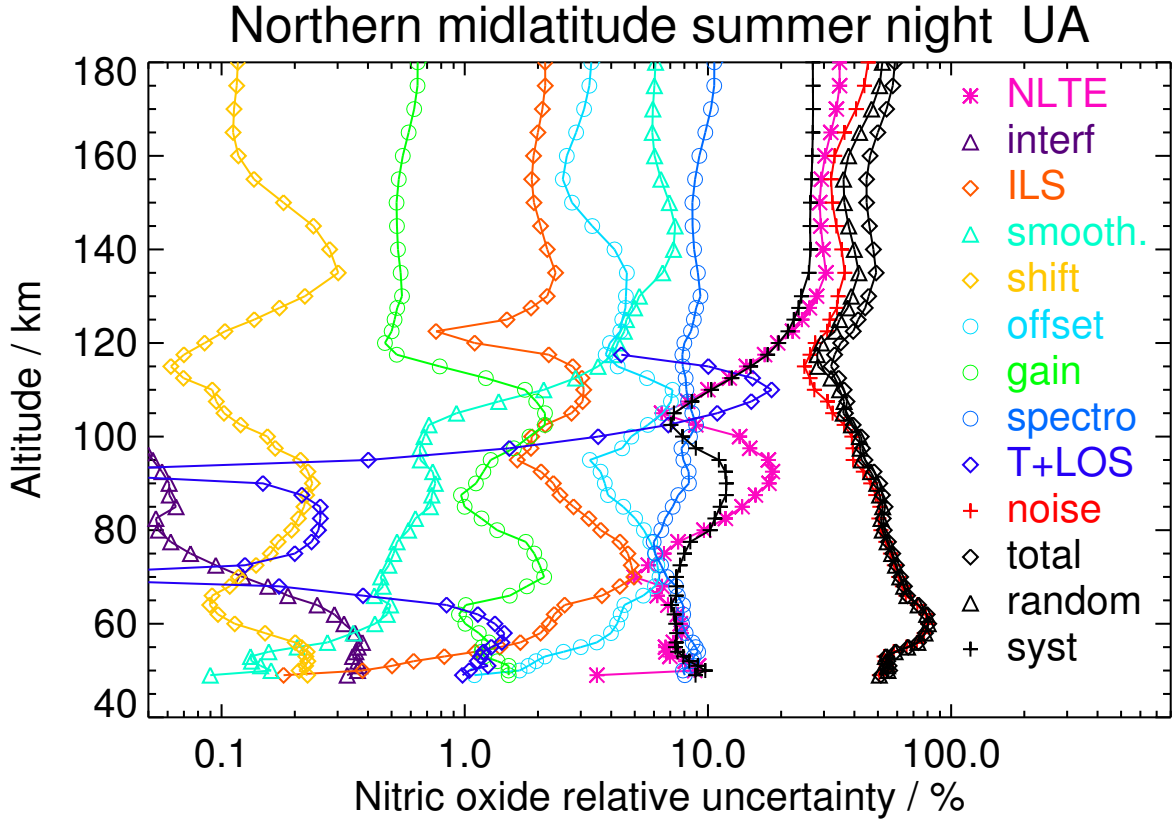

Figure S150. V8R_NOwT_662 Northern midlatitude summer night, high solar activity

Table S152. Nitric oxide error budget for Northern midlatitude autumn day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	4.16	0.07	1.16	0.09	0.07	0.76	1.72	9.41	0.90	31.49	32.06	8.69	33.21
60	0.01	11.40	0.07	2.17	0.25	0.10	2.20	1.17	10.25	0.75	54.03	55.75	7.58	56.26
70	0.03	12.71	0.04	2.65	0.32	0.13	1.95	1.01	10.70	0.03	48.53	50.73	8.32	51.41
80	0.10	14.36	0.03	2.00	0.41	0.23	1.59	1.39	12.90	0.17	45.66	48.08	12.41	49.66
90	1.37	25.05	0.03	1.43	0.44	0.37	2.21	1.35	11.97	0.14	36.88	42.14	19.10	46.26
100	7.68	28.14	0.02	1.28	0.43	0.34	3.39	2.11	15.26	0.07	32.65	41.23	20.23	45.92
110	31.17	15.89	0.02	1.24	1.37	0.22	4.87	1.40	9.92	7.38	27.45	32.37	11.85	34.47
120	67.96	24.82	0.03	0.95	3.38	0.28	2.39	0.56	9.30	<0.01	26.18	31.43	20.44	37.50
130	103.91	28.09	0.06	1.80	4.78	0.31	2.41	0.52	9.00	<0.01	29.09	33.99	24.36	41.82
140	158.69	31.78	0.07	1.89	5.80	0.29	1.98	0.53	9.01	<0.01	26.54	32.30	28.17	42.86
150	208.79	25.84	0.03	1.75	5.48	0.22	1.25	0.49	8.17	<0.01	19.43	23.50	24.38	33.86
160	265.98	22.45	0.04	1.61	4.09	0.09	0.77	0.46	7.83	<0.01	16.51	18.97	22.31	29.29
170	330.14	22.67	0.02	1.64	1.86	0.05	0.76	0.48	8.15	<0.01	10.13	13.50	22.53	26.26
180	349.00	21.27	0.04	1.57	2.19	0.09	1.01	0.45	7.54	<0.01	14.51	16.78	21.13	26.99

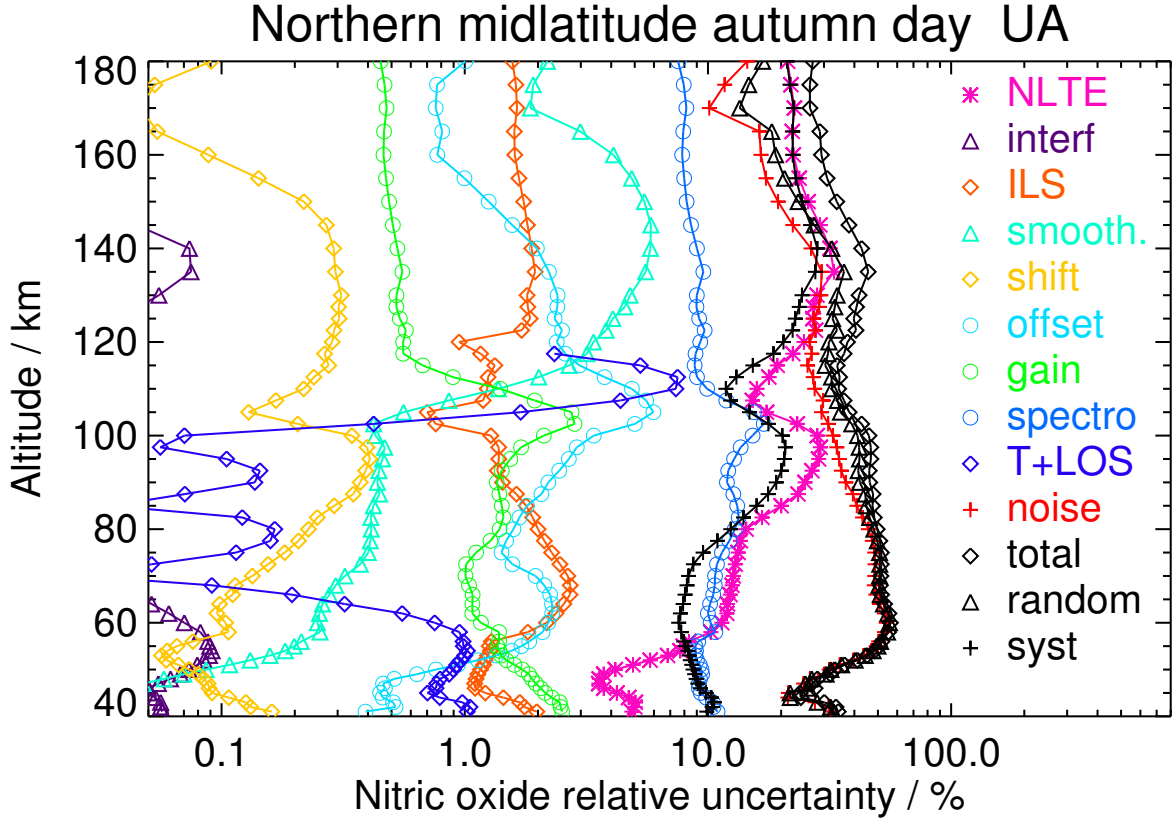

Figure S151. V8R_NOwT_662 Northern midlatitude autumn day, high solar activity

Table S153. Nitric oxide error budget for Northern midlatitude autumn night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	11.45	0.22	0.65	0.30	0.20	2.82	0.78	8.51	1.71	56.98	57.79	11.08	58.84
60	0.01	17.18	0.15	2.36	0.31	0.06	4.58	1.11	5.84	1.03	59.74	62.11	8.33	62.67
70	0.05	16.63	0.11	2.51	0.40	0.20	3.93	1.13	4.79	0.13	45.35	47.75	9.96	48.78
80	0.10	16.07	0.09	1.67	0.65	0.20	3.26	1.03	6.46	0.13	53.90	55.59	11.38	56.74
90	1.20	17.90	0.08	1.31	0.76	0.31	2.89	1.80	8.68	0.37	48.48	50.80	13.40	52.54
100	6.31	31.02	0.07	1.36	1.03	0.53	3.28	3.22	12.70	0.61	42.33	52.31	14.26	54.22
110	36.76	22.45	0.04	1.86	2.06	0.27	7.55	3.36	12.79	10.29	30.40	40.93	9.93	42.12
120	57.18	34.17	0.03	0.79	4.57	0.12	3.22	0.54	9.28	<0.01	28.83	42.58	17.44	46.01
130	55.84	34.70	0.03	1.88	5.52	0.27	3.26	0.61	10.39	<0.01	30.74	42.96	21.37	47.98
140	71.90	33.34	0.07	2.05	6.28	0.23	3.20	0.63	10.65	<0.01	30.88	40.38	24.54	47.25
150	110.95	32.06	0.08	2.12	5.70	0.21	2.26	0.64	10.62	<0.01	25.50	35.35	24.15	42.82
160	126.51	29.96	0.07	2.09	4.45	0.17	1.59	0.62	10.35	<0.01	21.66	31.01	23.23	38.75
170	140.57	29.66	0.07	2.12	3.34	0.09	1.55	0.62	10.52	<0.01	20.74	30.36	22.75	37.94
180	145.36	31.47	0.07	2.28	3.67	0.11	1.83	0.66	11.18	<0.01	27.34	36.92	22.85	43.42

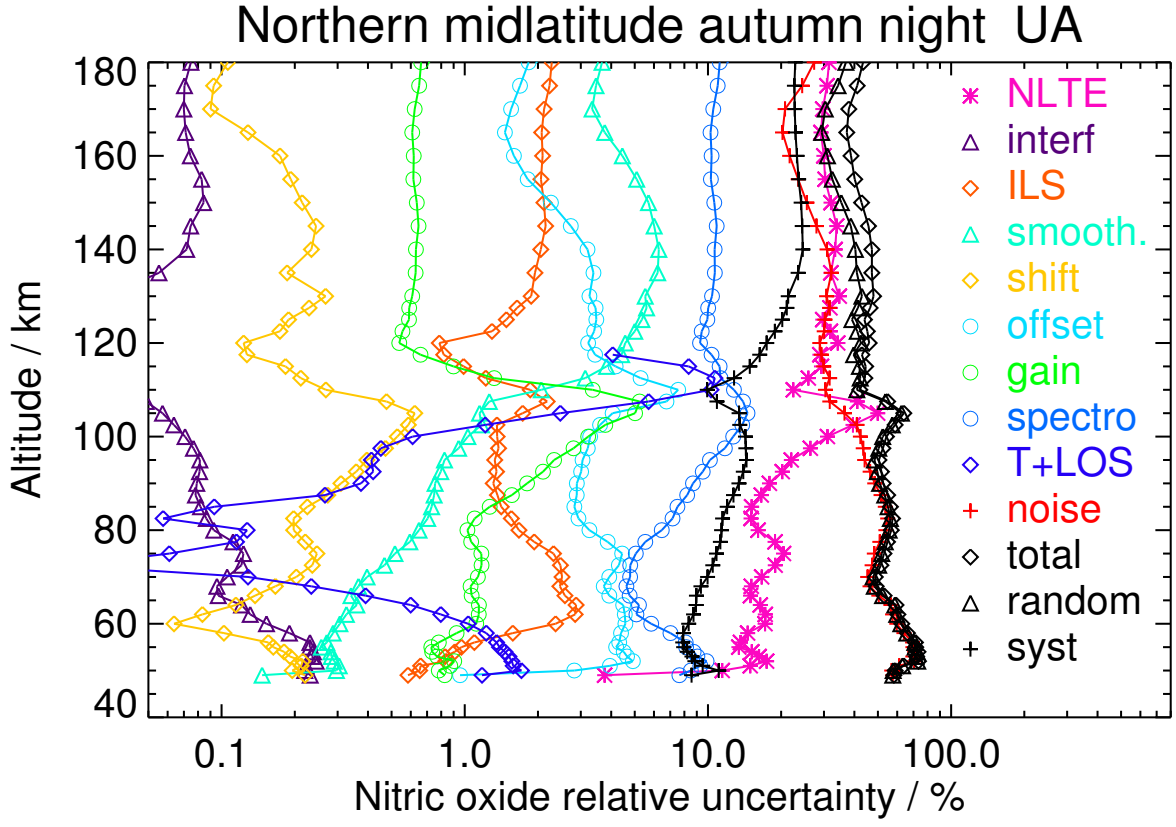

Figure S152. V8R_NOwT_662 Northern midlatitude autumn night, high solar activity

Table S154. Nitric oxide error budget for Tropics day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.75	0.08	1.45	0.05	0.10	0.32	1.45	9.79	0.72	22.86	23.18	9.45	25.03
60	0.00	10.41	0.11	2.79	0.46	0.14	1.88	1.00	12.67	0.57	61.97	62.95	12.64	64.21
70	0.01	16.19	0.04	2.86	0.31	0.18	1.28	1.05	13.83	<0.01	55.91	56.32	20.47	59.92
80	0.05	12.43	0.02	1.71	0.38	0.29	0.82	1.48	16.30	0.15	41.10	43.54	14.83	46.00
90	0.45	17.03	0.03	1.48	0.64	0.34	2.13	1.34	15.60	0.13	45.07	47.32	18.28	50.73
100	5.18	20.74	0.03	1.10	0.71	0.36	2.73	1.23	14.37	0.08	43.36	45.49	21.41	50.27
110	22.98	14.92	0.02	1.36	1.27	0.19	4.86	1.18	11.10	5.27	31.02	33.09	16.43	36.94
120	60.27	23.32	0.02	0.68	3.07	0.44	1.83	0.52	8.56	<0.01	23.96	27.44	21.26	34.71
130	120.35	24.50	0.03	1.67	3.13	0.26	1.75	0.47	8.01	<0.01	22.89	25.93	23.06	34.70
140	161.61	25.43	0.03	1.62	3.90	0.19	1.31	0.46	7.82	<0.01	20.55	23.60	24.34	33.91
150	192.51	23.95	0.02	1.60	4.99	0.19	1.18	0.45	7.59	<0.01	17.90	20.51	23.66	31.31
160	236.19	22.41	0.04	1.62	5.46	0.14	0.96	0.46	7.62	<0.01	16.10	18.61	22.51	29.20
170	263.76	21.91	0.03	1.70	3.43	0.09	0.83	0.46	7.83	<0.01	10.80	13.75	22.01	25.95
180	268.39	22.81	0.05	1.76	4.67	0.16	1.14	0.48	7.95	<0.01	15.91	18.60	22.73	29.38

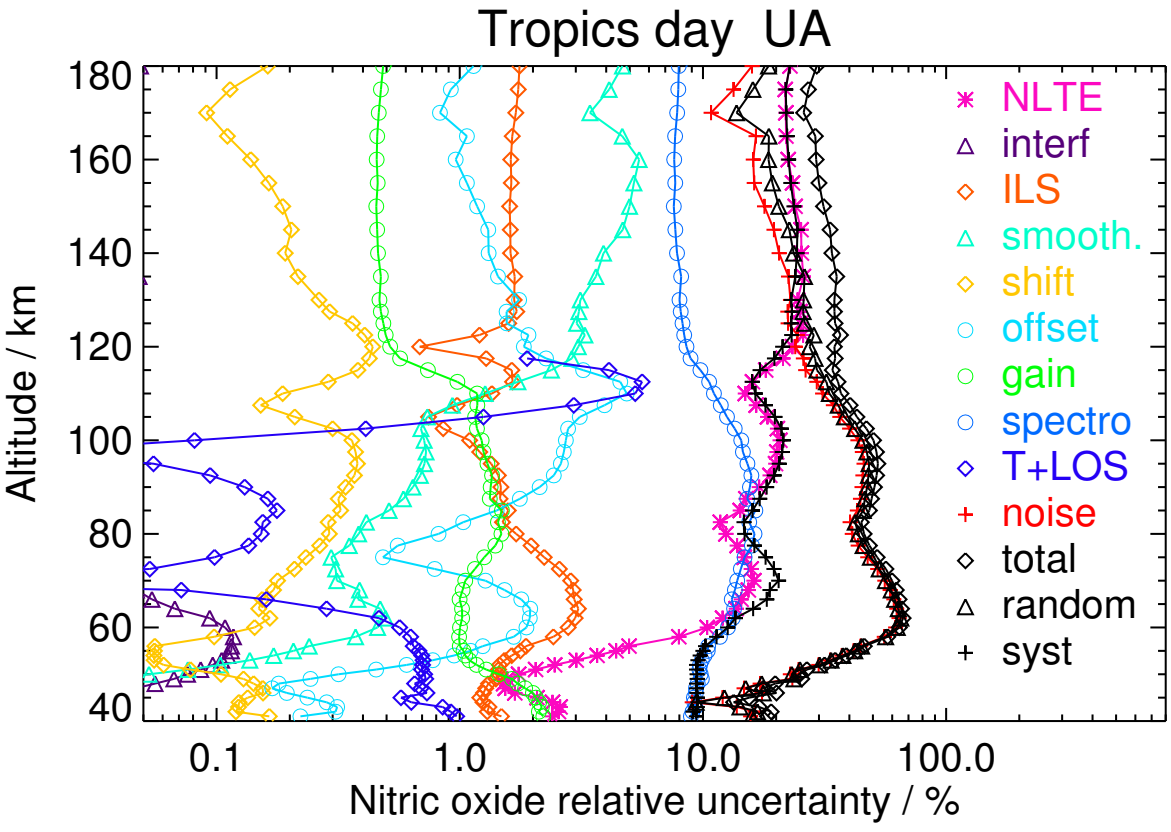

Figure S153. V8R_NOwT_662 Tropics day, high solar activity

Table S155. Nitric oxide error budget for Tropics night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.00	8.21	0.36	1.56	0.44	0.15	4.53	0.67	12.15	1.22	96.14	96.89	9.76	97.38
70	0.01	4.99	0.18	0.63	0.64	0.16	3.09	0.43	8.29	0.06	70.14	70.22	9.70	70.88
90	0.36	11.66	0.08	0.79	0.76	0.19	2.58	1.07	10.57	0.23	51.94	52.99	12.08	54.35
100	5.32	13.32	0.05	0.67	0.67	0.22	4.07	2.00	13.01	0.26	41.31	44.16	11.15	45.55
110	27.38	8.94	0.03	1.69	1.77	0.10	5.08	1.35	8.24	9.56	25.37	28.38	10.56	30.28
120	49.48	17.12	0.02	0.63	3.64	0.13	3.60	0.47	7.93	<0.01	26.29	28.04	16.97	32.78
130	43.87	20.63	0.03	2.07	5.18	0.19	4.08	0.48	8.09	<0.01	32.14	34.33	19.84	39.65
140	37.97	23.24	0.05	2.06	7.35	0.17	3.84	0.49	8.41	<0.01	33.90	37.26	21.10	42.82
150	44.52	22.94	0.05	1.91	7.84	0.12	2.74	0.51	8.63	<0.01	30.19	33.79	21.06	39.81
160	52.71	22.38	0.04	1.82	6.92	0.07	2.26	0.51	8.68	<0.01	28.06	31.19	21.15	37.69
170	61.25	22.53	0.04	1.82	6.64	0.05	2.54	0.51	8.78	<0.01	33.88	36.50	21.30	42.26
180	64.09	22.76	0.04	1.84	6.89	0.05	2.73	0.51	8.89	<0.01	39.47	41.90	21.40	47.05

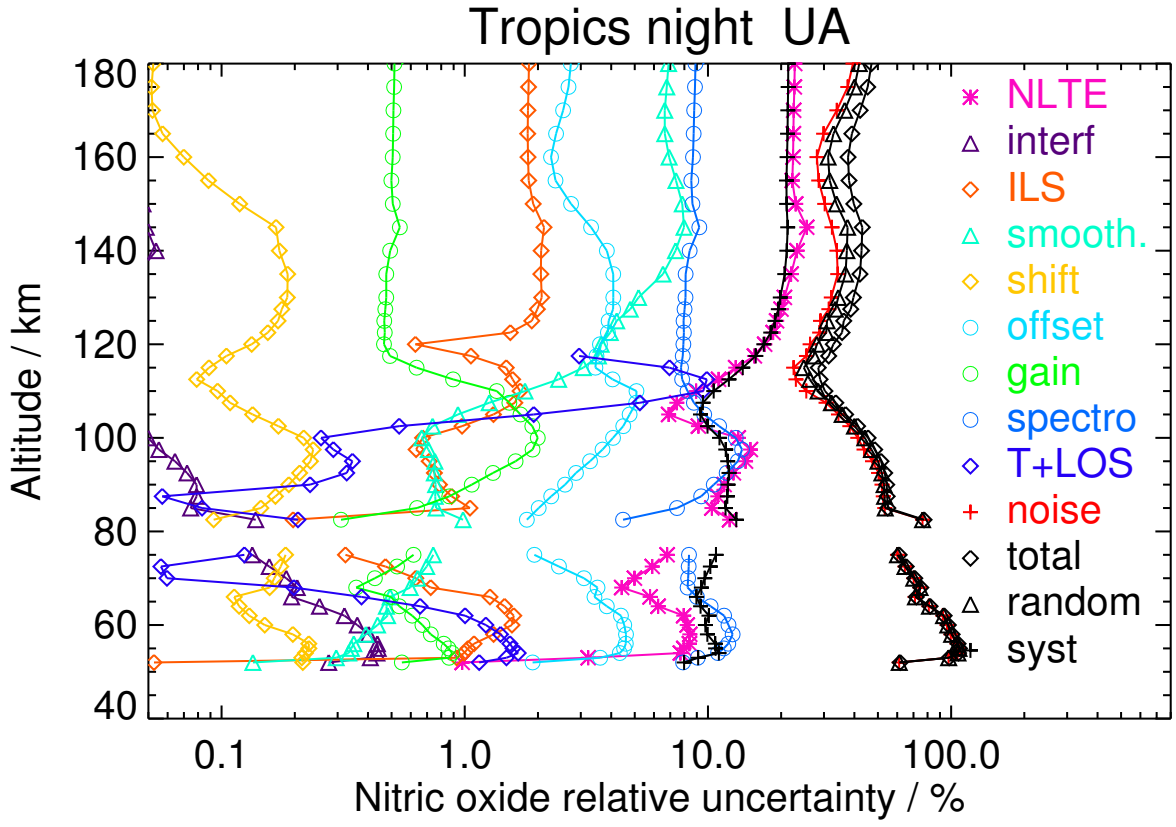

Figure S154. V8R_NOwT_662 Tropics night, high solar activity

Table S156. Nitric oxide error budget for Southern midlatitude winter day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	2.07	0.05	0.63	0.05	0.07	0.91	1.61	9.07	0.93	24.97	25.57	7.80	26.74
60	0.01	4.19	0.05	2.09	0.12	0.07	2.33	1.29	10.40	0.56	43.20	44.14	7.46	44.77
70	0.06	6.16	0.02	3.55	0.16	0.07	2.47	0.98	11.12	<0.01	38.06	39.63	7.71	40.37
80	0.21	8.34	0.01	1.94	0.24	0.10	2.61	0.91	10.12	0.14	35.77	37.16	9.05	38.25
90	2.27	19.12	0.01	1.68	0.35	0.15	2.32	1.17	10.10	0.02	30.47	34.54	14.58	37.49
100	7.22	17.09	0.01	1.78	0.63	0.15	1.94	1.00	10.17	0.52	31.15	34.28	14.14	37.08
110	37.35	18.51	0.02	0.63	1.39	0.13	7.62	1.47	13.06	12.63	25.15	35.36	10.83	36.98
120	89.01	29.71	0.04	1.68	3.72	0.38	2.56	0.69	11.37	<0.01	26.28	36.83	19.23	41.55
130	117.87	29.99	0.05	2.64	5.27	0.47	2.73	0.58	9.58	<0.01	29.88	37.35	23.06	43.89
140	135.17	31.84	0.04	2.25	6.42	0.44	2.99	0.54	8.99	<0.01	30.54	38.18	24.99	45.64
150	183.16	26.81	0.06	1.92	6.50	0.27	2.39	0.52	8.57	<0.01	25.16	30.84	22.94	38.43
160	205.26	23.92	0.06	1.76	5.46	0.17	1.74	0.50	8.27	<0.01	21.89	26.35	21.50	34.00
170	259.46	23.13	0.05	1.75	4.19	0.13	1.46	0.50	8.33	<0.01	18.03	22.70	20.91	30.86
180	266.37	22.92	0.05	1.74	4.85	0.14	1.65	0.50	8.36	<0.01	24.18	27.93	20.72	34.77

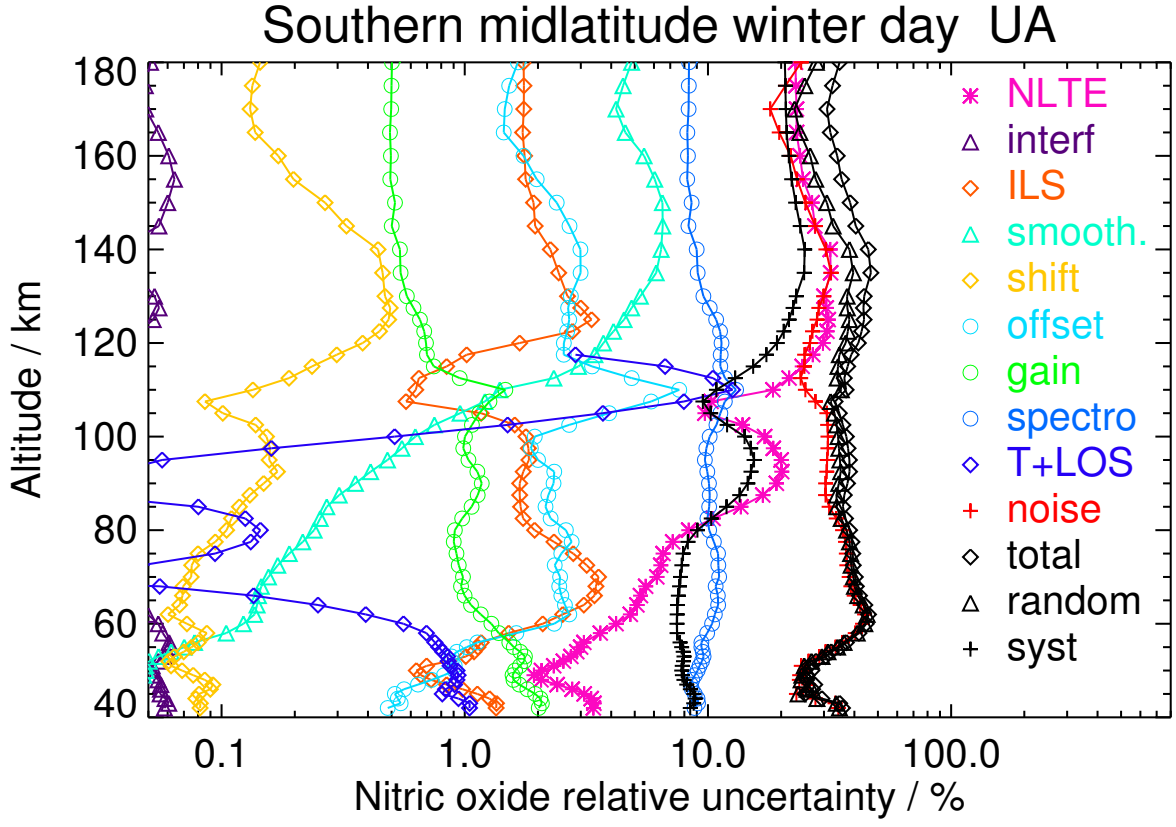

Figure S155. V8R_NOwT_662 Southern midlatitude winter day, high solar activity

Table S157. Nitric oxide error budget for Southern midlatitude winter night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	12.74	0.20	0.33	0.11	0.14	3.07	0.58	11.42	1.32	59.93	61.39	11.29	62.42
60	0.01	14.30	0.14	2.05	0.24	0.13	5.07	1.31	12.15	1.20	64.55	67.00	7.94	67.47
70	0.05	10.90	0.05	4.19	0.29	0.20	3.43	1.61	12.40	0.16	48.31	50.71	8.21	51.37
80	0.51	17.21	0.06	2.72	0.25	0.18	14.23	6.47	26.05	0.29	31.99	46.27	10.41	47.43
90	3.20	33.97	0.05	1.47	0.43	0.33	8.06	3.95	21.00	0.22	37.61	53.79	14.11	55.61
100	17.88	30.36	0.04	0.72	0.43	0.32	10.42	3.94	20.33	1.80	34.28	49.62	13.29	51.36
110	42.77	16.63	0.02	1.80	1.75	0.14	9.36	2.19	10.70	17.48	27.57	37.40	12.51	39.44
120	114.04	32.75	0.01	0.98	3.33	0.24	2.62	0.59	9.89	<0.01	25.89	37.54	21.23	43.13
130	143.33	36.68	0.01	2.59	3.92	0.45	2.22	0.66	10.95	<0.01	24.75	39.55	23.27	45.89
140	125.37	37.63	0.02	2.74	5.69	0.45	2.71	0.67	11.04	<0.01	29.15	42.96	24.29	49.35
150	126.78	34.67	0.02	2.67	6.04	0.34	2.23	0.70	11.56	<0.01	26.37	39.49	22.83	45.61
160	109.99	28.30	0.03	2.22	5.85	0.20	1.98	0.61	10.15	<0.01	26.78	34.80	21.30	40.80
170	109.67	27.67	0.02	2.21	5.54	0.18	2.30	0.61	10.13	<0.01	30.79	37.60	21.07	43.10
180	110.87	27.92	0.02	2.19	5.83	0.19	2.58	0.61	10.26	<0.01	37.05	42.97	21.37	47.99

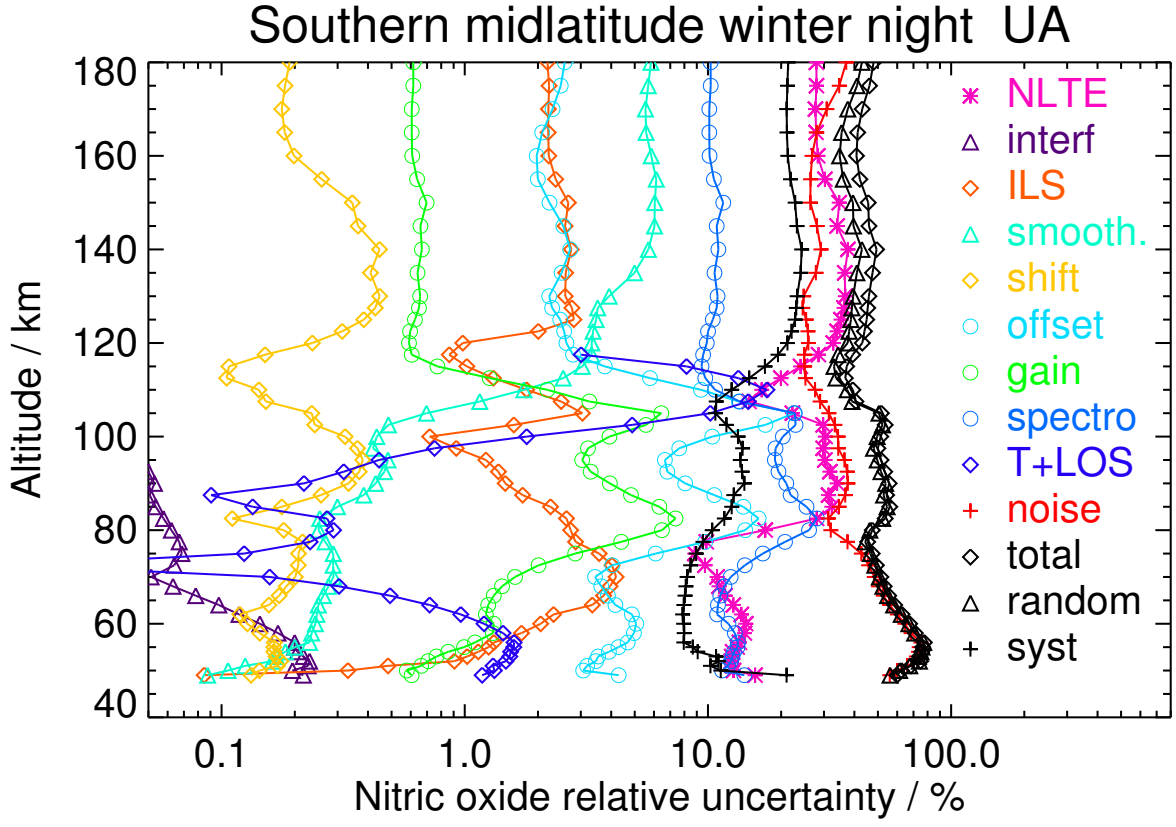

Figure S156. V8R_NOwT_662 Southern midlatitude winter night, high solar activity

Table S158. Nitric oxide error budget for Southern midlatitude spring day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	4.05	0.09	1.23	0.07	0.09	0.58	1.41	8.38	0.88	29.28	29.72	8.05	30.79
60	0.01	9.27	0.07	2.48	0.15	0.28	2.43	1.20	11.07	0.91	42.12	44.13	7.04	44.69
70	0.04	20.61	0.11	3.01	0.19	0.86	3.04	1.78	13.56	0.02	42.78	48.43	10.73	49.61
80	0.05	24.47	0.14	3.68	0.49	1.45	4.50	1.30	13.47	0.34	52.57	57.14	17.81	59.85
90	0.61	27.55	0.10	2.87	0.58	1.42	5.21	1.24	10.95	<0.01	48.52	52.18	23.45	57.20
100	7.86	28.58	0.09	1.60	0.53	1.27	3.83	1.08	11.52	0.03	40.88	45.54	23.80	51.39
110	52.69	25.59	0.03	2.56	0.62	0.65	5.81	1.42	9.35	9.21	23.58	33.19	18.01	37.76
120	111.53	33.08	0.03	1.06	2.01	0.46	1.46	0.51	8.67	<0.01	20.11	27.28	28.94	39.77
130	169.92	24.11	0.05	1.77	2.54	0.27	0.96	0.48	8.14	<0.01	18.41	21.13	23.46	31.58
140	229.21	25.41	0.10	1.60	3.18	0.24	0.95	0.47	7.98	<0.01	17.33	19.95	25.01	32.00
150	269.29	23.86	0.08	1.62	3.56	0.24	0.96	0.47	7.82	<0.01	13.31	16.36	23.59	28.71
160	320.68	22.52	0.05	1.59	3.11	0.13	0.90	0.47	7.90	<0.01	12.11	15.18	22.34	27.01
170	347.80	23.30	0.04	1.58	1.78	0.07	1.10	0.47	8.04	<0.01	13.29	16.44	22.82	28.13
180	394.29	22.83	0.05	1.59	1.23	0.07	0.65	0.46	7.82	<0.01	9.14	13.86	21.88	25.90

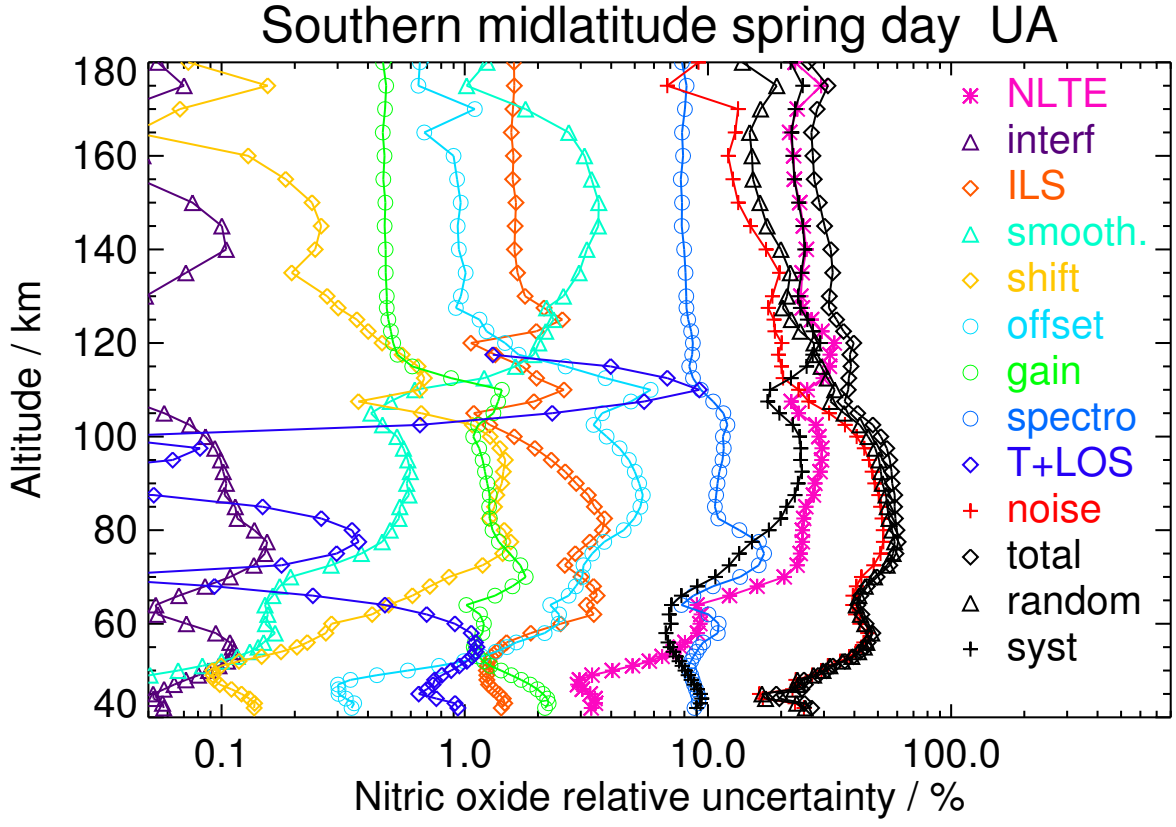

Figure S157. V8R_NOwT_662 Southern midlatitude spring day, high solar activity

Table S159. Nitric oxide error budget for Southern midlatitude spring night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.01	26.07	0.16	2.60	0.23	0.13	4.91	1.45	18.34	1.84	60.79	66.42	18.35	68.91
70	0.09	17.22	0.04	4.88	0.11	0.49	2.98	3.01	17.04	0.22	44.45	49.00	14.27	51.04
80	0.13	19.84	0.06	0.93	0.32	0.68	2.83	1.56	11.58	0.25	54.66	54.74	23.03	59.39
90	0.83	23.63	0.10	1.19	0.43	0.99	4.56	2.04	12.07	0.15	48.78	54.41	12.27	55.78
100	16.82	29.95	0.06	3.84	0.45	1.29	20.00	3.10	7.44	0.77	34.07	49.59	8.97	50.40
110	75.43	21.69	0.06	6.02	0.76	0.52	13.94	2.79	7.26	10.93	22.04	35.46	10.49	36.98
120	124.36	33.05	0.09	0.80	2.44	0.22	1.89	0.56	9.52	<0.01	22.62	33.05	24.77	41.30
130	152.03	31.79	0.09	2.29	3.06	0.50	1.32	0.58	9.59	<0.01	20.70	31.82	23.13	39.34
140	147.66	32.52	0.09	1.98	4.36	0.42	1.58	0.60	9.99	<0.01	22.35	32.46	25.07	41.02
150	159.41	26.27	0.12	1.87	4.75	0.28	1.49	0.54	8.87	<0.01	18.93	25.31	22.70	34.00
160	165.70	24.62	0.13	1.86	4.25	0.12	1.18	0.53	8.87	<0.01	18.11	23.58	21.92	32.19
170	188.48	23.97	0.11	1.95	2.69	0.05	1.08	0.51	8.74	<0.01	15.05	20.60	21.57	29.83
180	192.71	26.02	0.13	1.76	2.64	0.06	1.15	0.55	9.28	<0.01	18.25	24.14	22.91	33.28

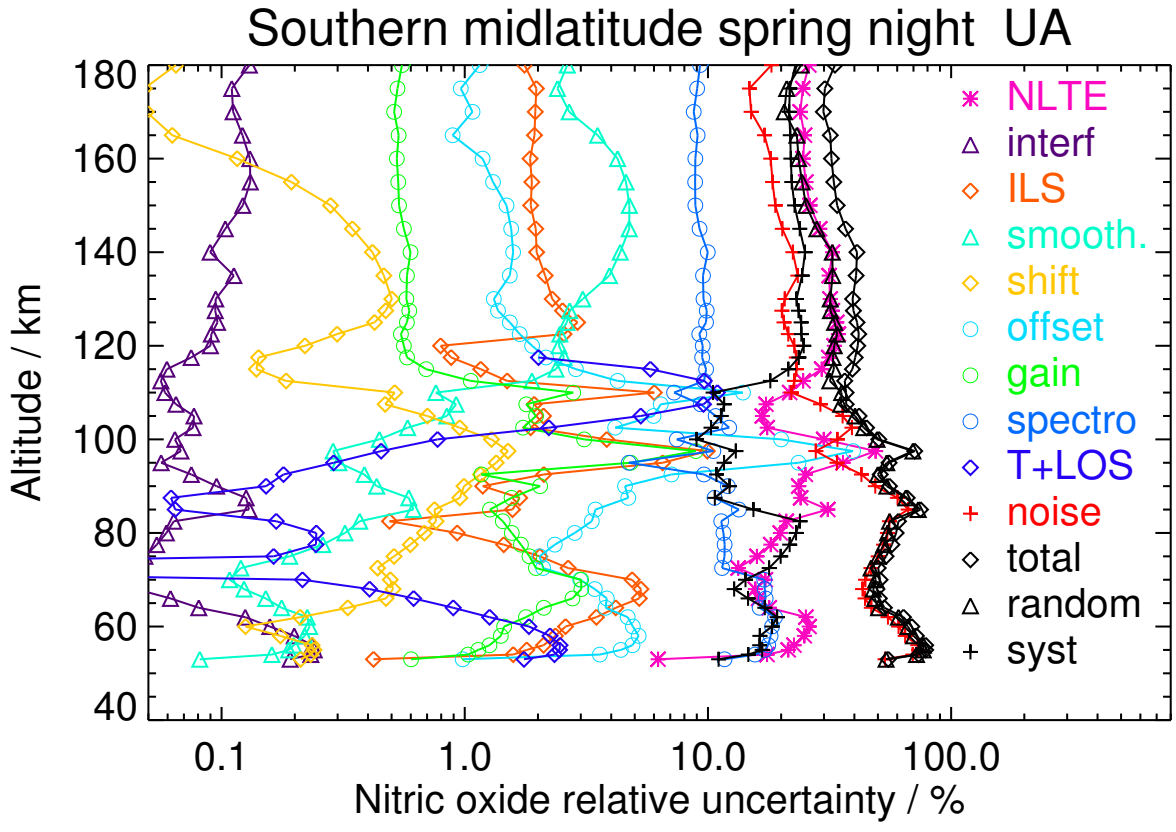

Figure S158. V8R_NOwT_662 Southern midlatitude spring night, high solar activity

Table S160. Nitric oxide error budget for Southern midlatitude summer day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.73	0.06	1.03	0.02	0.08	0.25	1.24	8.30	0.80	20.55	20.76	8.16	22.30
60	0.01	8.35	0.10	2.96	0.18	0.31	1.90	0.58	8.25	1.59	47.77	48.80	7.36	49.35
70	0.02	12.47	0.05	3.65	0.26	0.49	2.55	0.79	7.76	0.14	43.92	45.48	9.84	46.53
80	0.06	13.18	0.06	2.54	0.38	0.52	3.26	0.78	8.43	5.10	43.99	45.40	12.77	47.16
90	1.17	23.18	0.08	1.67	0.50	1.00	3.90	1.08	7.77	2.16	41.73	45.64	16.77	48.62
100	15.23	20.26	0.07	1.53	0.41	0.97	3.73	1.48	8.39	0.79	35.57	38.90	15.91	42.03
110	39.30	21.74	0.03	4.17	0.68	0.39	7.27	1.75	9.01	>100	22.47	>100	19.49	>100
120	105.28	43.93	0.05	0.73	2.23	0.35	1.91	0.51	8.53	<0.01	22.80	34.91	36.24	50.32
130	209.32	31.91	0.06	1.87	2.52	0.32	1.06	0.50	8.47	<0.01	19.43	24.84	29.36	38.45
140	315.25	32.22	0.13	1.74	2.96	0.36	0.90	0.50	8.38	<0.01	17.17	22.91	29.85	37.63
150	375.07	29.96	0.08	1.69	3.58	0.25	0.96	0.48	7.90	<0.01	13.14	17.51	29.04	33.91
160	399.86	29.05	0.07	1.64	3.35	0.10	0.97	0.47	7.98	<0.01	12.53	16.91	28.17	32.86
170	466.67	29.49	0.05	1.68	2.18	0.06	1.11	0.48	8.28	<0.01	13.41	17.35	28.74	33.57
180	503.79	29.47	0.08	1.72	1.58	0.07	0.68	0.48	8.18	<0.01	9.40	14.71	28.52	32.09

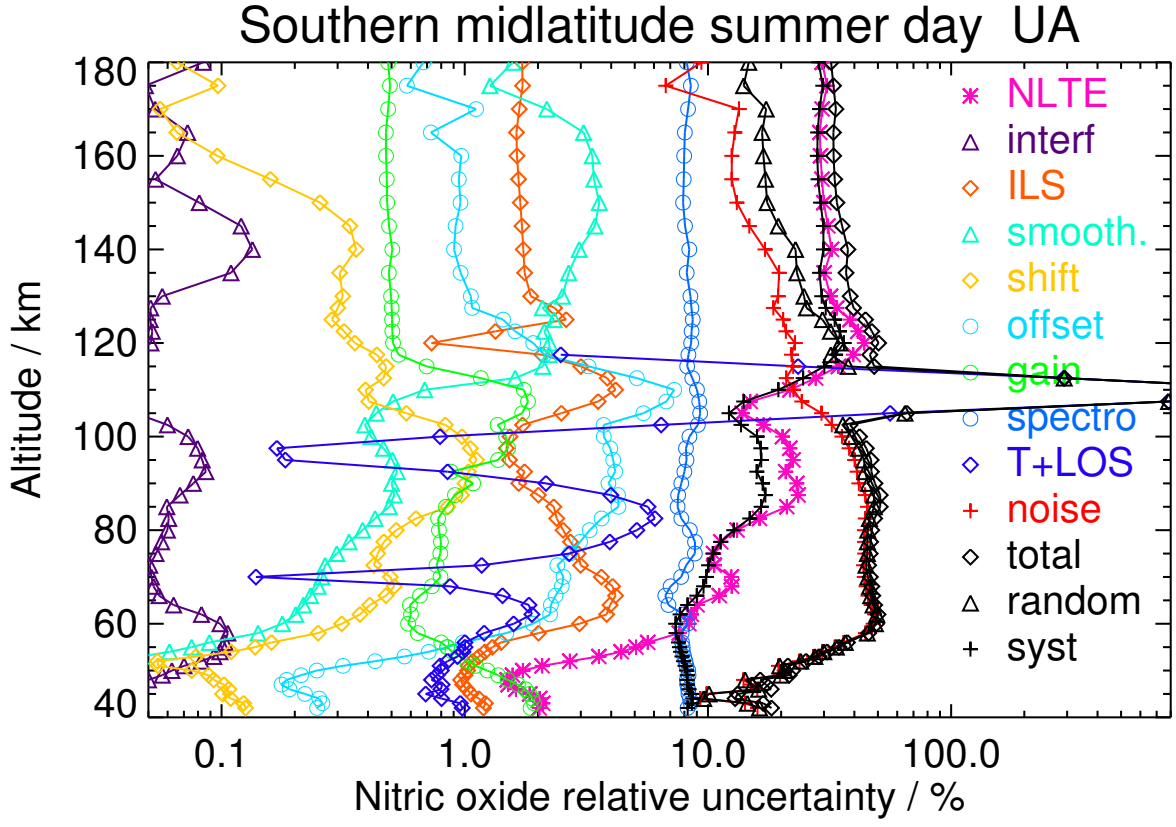

Figure S159. V8R_NOwT_662 Southern midlatitude summer day, high solar activity

Table S161. Nitric oxide error budget for Southern midlatitude summer night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	2.93	0.28	1.58	0.06	0.27	2.17	0.81	10.85	1.19	51.27	51.33	11.38	52.58
60	0.01	12.81	0.25	1.44	0.31	0.14	4.46	1.40	13.69	1.47	66.06	68.45	7.52	68.86
70	0.05	6.94	0.07	1.34	0.22	0.28	3.92	1.91	11.71	0.13	45.37	46.01	12.15	47.59
80	0.06	7.53	0.08	2.31	0.40	0.32	3.90	1.86	12.43	0.21	46.49	47.73	10.93	48.96
90	1.23	10.28	0.08	2.25	0.58	0.42	4.72	1.99	12.48	<0.01	44.08	46.12	10.44	47.29
100	9.06	9.44	0.08	1.94	0.58	0.32	6.19	2.30	11.49	3.81	37.92	40.52	8.90	41.49
110	22.49	14.49	0.06	2.49	1.97	0.18	7.10	1.71	8.42	17.85	29.99	38.15	10.34	39.53
120	54.27	28.50	0.07	1.17	3.83	0.16	2.76	0.53	9.11	<0.01	25.87	33.34	21.84	39.86
130	83.76	34.54	0.07	2.05	4.42	0.24	2.64	0.51	8.90	<0.01	27.19	37.26	25.57	45.19
140	111.07	39.70	0.06	2.15	5.45	0.30	2.53	0.60	10.33	<0.01	27.37	40.42	28.96	49.72
150	129.70	39.86	0.09	2.29	6.28	0.30	2.30	0.65	10.78	<0.01	24.66	39.65	28.14	48.62
160	158.14	35.68	0.09	2.16	5.71	0.23	1.82	0.60	9.93	<0.01	21.71	34.27	26.65	43.41
170	190.97	34.50	0.08	2.14	4.26	0.17	1.65	0.59	9.74	<0.01	19.84	32.03	26.05	41.29
180	203.00	33.48	0.10	2.02	4.62	0.16	1.81	0.57	9.44	<0.01	25.10	34.36	26.24	43.24

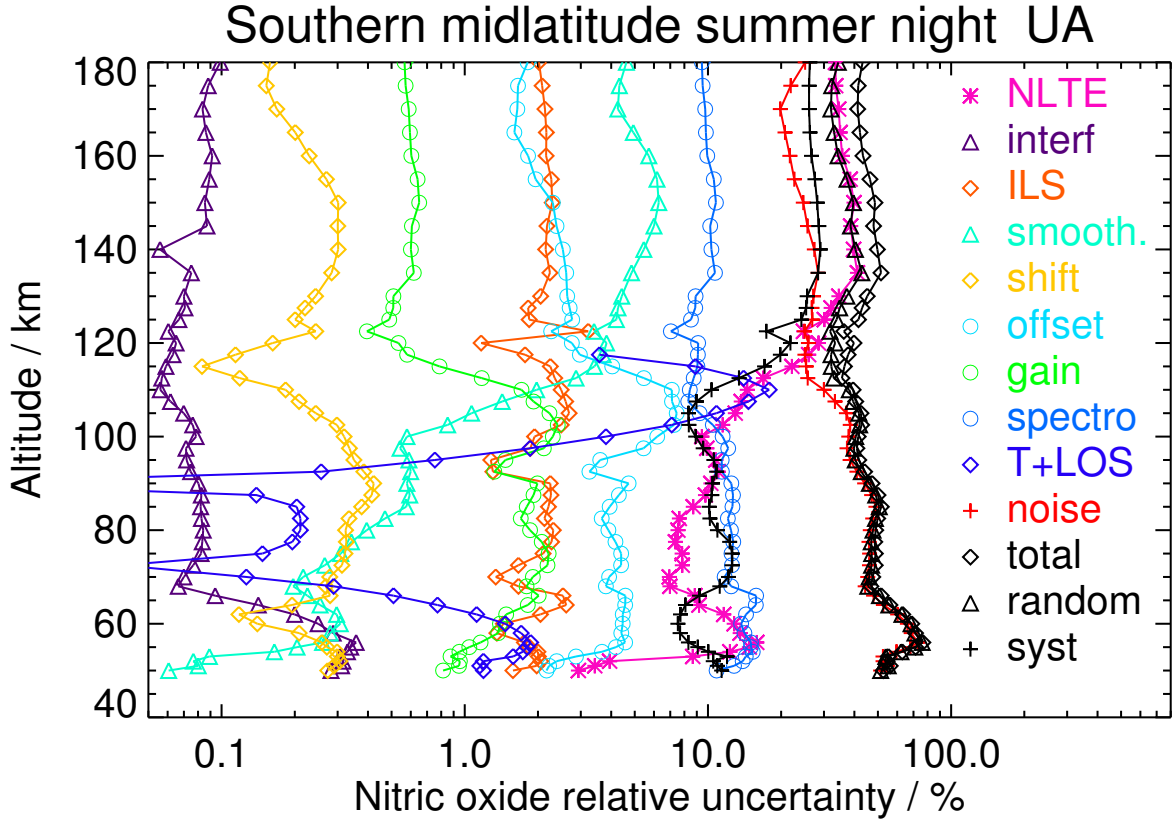

Figure S160. V8R_NOwT_662 Southern midlatitude summer night, high solar activity

Table S162. Nitric oxide error budget for Southern midlatitude autumn day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	2.95	0.08	1.24	0.09	0.09	0.70	1.66	9.24	0.87	32.59	32.98	8.60	34.08
60	0.00	7.80	0.09	2.18	0.31	0.05	2.67	1.13	9.99	0.54	59.77	60.71	7.82	61.21
70	0.02	10.60	0.04	2.10	0.41	0.10	2.26	1.00	8.70	0.03	54.71	55.78	8.96	56.50
80	0.05	13.81	0.03	1.58	0.72	0.15	1.76	0.83	9.08	0.16	58.40	59.51	12.20	60.75
90	0.74	18.01	0.02	1.22	0.74	0.18	1.98	0.85	9.08	0.12	47.11	48.96	15.37	51.31
100	5.76	16.21	0.01	0.70	0.57	0.15	2.20	1.26	9.51	0.04	35.45	37.74	13.90	40.22
110	32.82	12.56	<0.01	1.02	1.50	0.11	4.98	1.53	9.57	9.28	27.44	31.63	10.85	33.44
120	64.83	25.52	0.01	0.76	4.19	0.21	2.89	0.60	10.03	<0.01	29.06	35.06	19.84	40.29
130	89.94	30.59	0.02	2.13	5.49	0.26	2.87	0.57	9.80	<0.01	31.57	38.18	24.79	45.52
140	127.06	34.04	0.01	2.00	6.25	0.27	2.58	0.54	9.28	<0.01	28.63	36.68	27.73	45.98
150	172.90	28.09	0.03	1.86	6.68	0.23	2.04	0.51	8.48	<0.01	22.84	28.40	25.07	37.89
160	218.91	24.69	0.03	1.79	5.79	0.14	1.49	0.50	8.37	<0.01	19.65	24.10	22.89	33.24
170	261.87	24.19	0.03	1.79	3.60	0.08	1.12	0.51	8.59	<0.01	15.29	20.19	22.42	30.17
180	301.86	24.32	0.03	1.83	3.83	0.09	1.15	0.52	8.72	<0.01	18.13	23.04	22.03	31.88

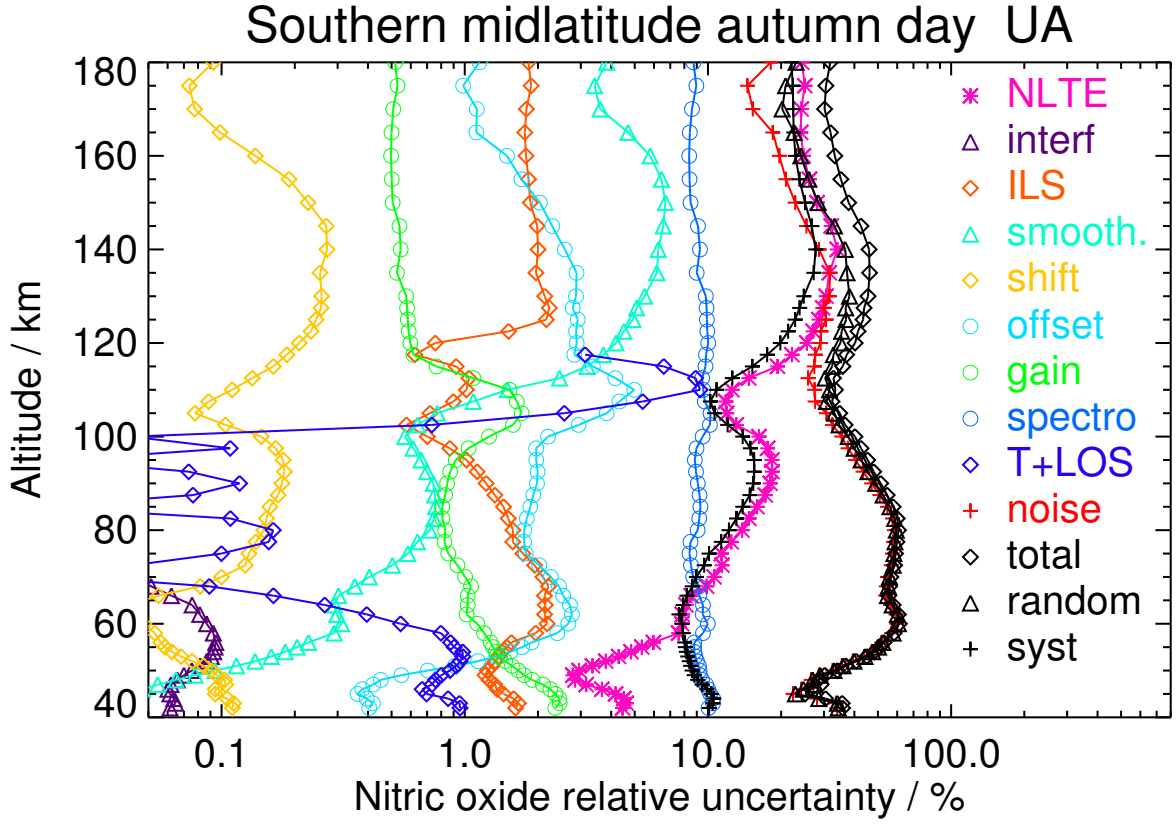

Figure S161. V8R_NOwT_662 Southern midlatitude autumn day, high solar activity

Table S163. Nitric oxide error budget for Southern midlatitude autumn night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	0.45	0.20	0.89	0.08	0.18	1.15	0.21	8.62	1.34	65.01	65.04	8.67	65.61
60	0.01	5.91	0.10	0.99	0.22	0.11	2.16	1.75	11.51	1.12	56.41	57.49	7.36	57.96
70	0.06	6.13	0.04	1.51	0.17	0.26	1.67	2.11	10.74	0.11	38.23	39.49	8.01	40.30
80	0.12	15.02	0.08	1.10	0.69	0.33	3.86	1.79	11.29	0.19	57.79	60.15	9.71	60.93
90	0.90	21.08	0.07	0.87	0.97	0.46	3.86	2.20	11.25	0.41	51.44	55.73	11.53	56.91
100	7.25	21.34	0.06	0.94	1.04	0.32	6.53	2.56	10.63	0.68	46.65	51.58	11.63	52.88
110	39.92	41.65	0.04	2.23	1.89	0.22	13.67	3.33	10.09	12.95	32.85	55.40	14.84	57.35
120	59.23	49.51	0.04	0.90	4.26	0.21	2.85	0.70	11.84	<0.01	28.37	55.20	19.42	58.51
130	62.12	39.75	0.04	2.46	4.65	0.53	2.69	0.67	11.37	<0.01	27.36	45.27	21.09	49.94
140	77.37	33.60	0.06	2.19	5.32	0.31	2.83	0.62	10.50	<0.01	28.68	39.47	23.34	45.86
150	80.02	32.35	0.10	2.25	5.35	0.22	2.03	0.64	10.78	<0.01	25.21	36.00	23.24	42.85
160	86.61	33.14	0.10	2.40	5.12	0.09	1.79	0.66	11.32	<0.01	23.90	36.07	23.07	42.82
170	90.17	30.30	0.10	2.32	4.45	0.07	2.04	0.63	10.81	<0.01	26.55	35.42	22.69	42.06
180	89.83	31.07	0.11	2.29	4.77	0.08	2.28	0.63	10.85	<0.01	32.46	40.56	22.93	46.59

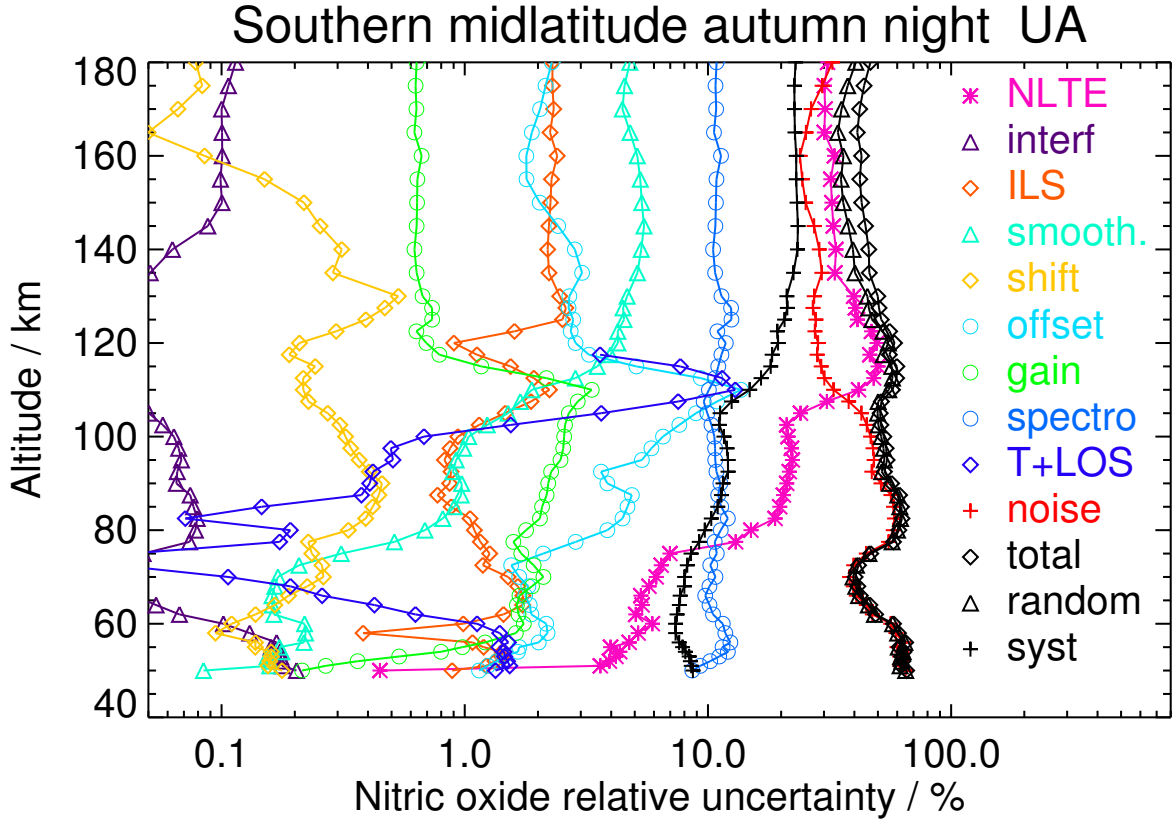

Figure S162. V8R_NOwT_662 Southern midlatitude autumn night, high solar activity

Table S164. Nitric oxide error budget for Southern polar winter day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	2.05	0.10	1.09	0.04	0.09	0.40	1.46	8.29	0.63	27.34	27.58	8.00	28.72
60	0.01	4.64	0.08	1.63	0.11	0.07	2.05	0.93	8.53	0.47	46.44	47.01	6.98	47.53
70	0.04	6.44	0.03	2.05	0.20	0.12	2.89	0.84	7.39	<0.01	47.16	47.75	7.30	48.31
80	0.22	7.47	0.01	1.31	0.24	0.12	1.77	1.05	8.31	0.16	37.02	37.75	8.76	38.75
90	2.16	17.58	0.02	0.98	0.33	0.11	2.97	1.63	8.88	0.02	31.34	34.47	13.94	37.18
100	10.54	18.13	0.02	0.95	0.45	0.16	2.35	1.23	8.70	0.49	30.15	33.57	13.98	36.36
110	57.73	10.58	0.02	0.99	1.36	0.10	6.65	1.17	10.09	12.50	25.12	30.85	9.91	32.40
120	104.72	25.08	0.04	1.05	3.67	0.25	2.53	0.54	9.02	<0.01	25.57	30.80	20.91	37.23
130	137.78	30.89	0.04	2.04	4.52	0.34	2.42	0.57	9.57	<0.01	26.87	34.63	24.48	42.41
140	144.42	29.63	0.05	2.01	5.62	0.30	2.44	0.54	9.10	<0.01	27.79	33.76	25.20	42.13
150	172.28	26.08	0.09	1.88	5.90	0.21	2.02	0.52	8.72	<0.01	24.52	28.92	23.75	37.42
160	215.85	26.14	0.08	1.93	5.10	0.14	1.52	0.55	9.26	<0.01	21.30	26.95	23.00	35.43
170	251.48	25.82	0.07	1.95	3.98	0.11	1.41	0.56	9.34	<0.01	18.79	24.79	22.68	33.60
180	265.96	25.93	0.07	1.98	4.35	0.12	1.64	0.56	9.43	<0.01	24.60	29.72	22.56	37.31

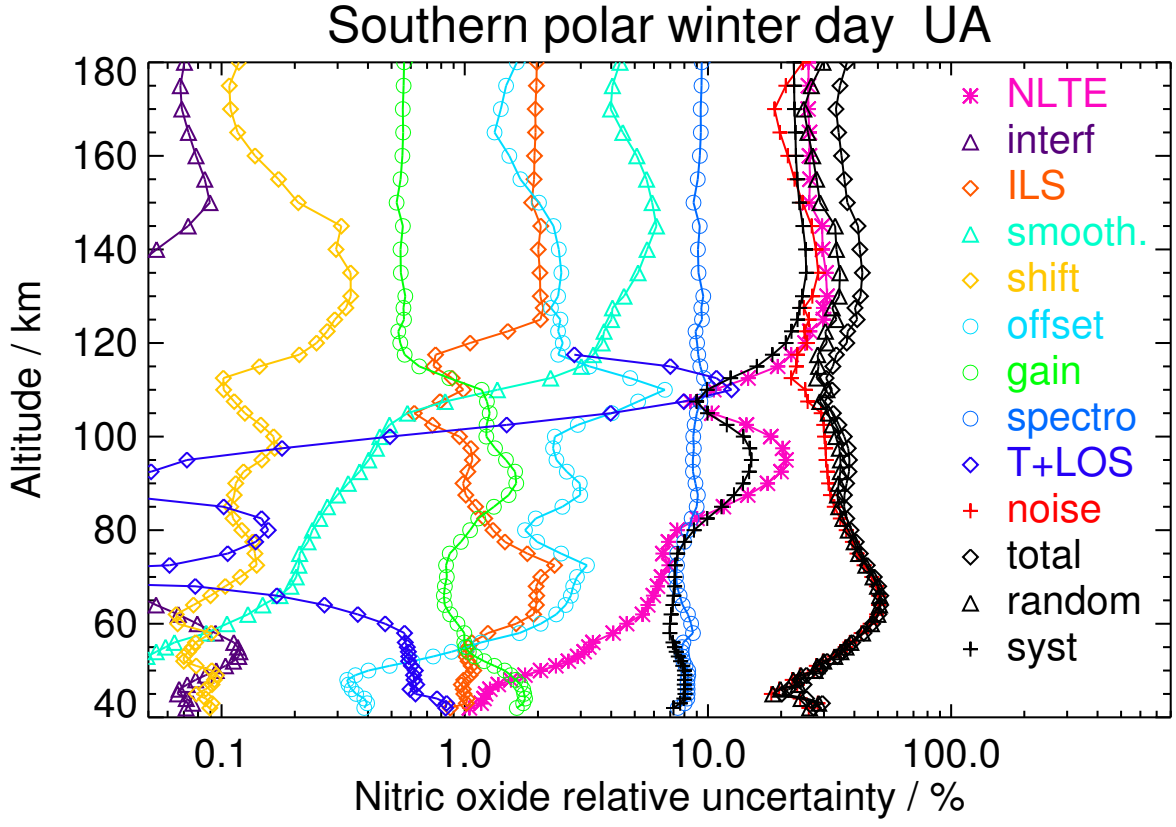

Figure S163. V8R_NOwT_662 Southern polar winter day, high solar activity

Table S165. Nitric oxide error budget for Southern polar winter night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	8.44	0.10	1.81	0.07	0.49	3.10	2.94	21.34	2.06	37.46	43.17	9.62	44.23
60	0.02	12.37	0.08	1.26	0.10	0.32	4.62	6.70	22.62	1.93	41.78	49.03	8.81	49.82
70	0.19	24.42	0.07	2.69	0.20	0.33	5.24	2.32	13.32	1.27	44.95	52.11	10.99	53.25
80	1.31	15.47	0.03	1.69	0.28	0.38	4.67	2.51	10.94	0.62	39.68	43.51	8.49	44.33
90	9.88	20.00	0.03	1.13	0.35	0.44	4.13	2.21	7.96	1.89	41.65	46.26	9.20	47.17
100	35.39	30.94	0.04	4.69	0.35	0.89	17.87	6.63	12.19	2.67	33.91	50.56	9.65	51.47
110	104.26	17.20	0.02	1.53	1.58	0.16	9.33	1.92	9.51	21.28	26.79	37.19	16.40	40.65
120	188.33	29.53	0.01	0.80	2.99	0.24	2.36	0.56	8.76	<0.01	25.19	32.02	23.96	39.99
130	229.57	28.28	<0.01	1.89	3.80	0.33	1.98	0.52	8.36	<0.01	23.95	29.15	24.82	38.28
140	225.00	29.40	0.01	1.97	5.12	0.34	2.11	0.52	8.45	<0.01	25.55	31.23	25.46	40.29
150	247.11	27.49	0.02	1.99	6.36	0.34	2.00	0.52	8.44	<0.01	24.06	29.64	24.00	38.14
160	243.34	25.76	0.02	2.02	6.45	0.34	1.73	0.53	8.60	<0.01	22.63	27.75	22.99	36.04
170	277.84	25.64	0.01	2.03	5.57	0.26	1.69	0.54	8.93	<0.01	21.72	26.90	22.87	35.31
180	293.91	26.34	0.01	2.07	6.25	0.26	1.91	0.57	9.28	<0.01	27.73	32.59	23.11	39.96

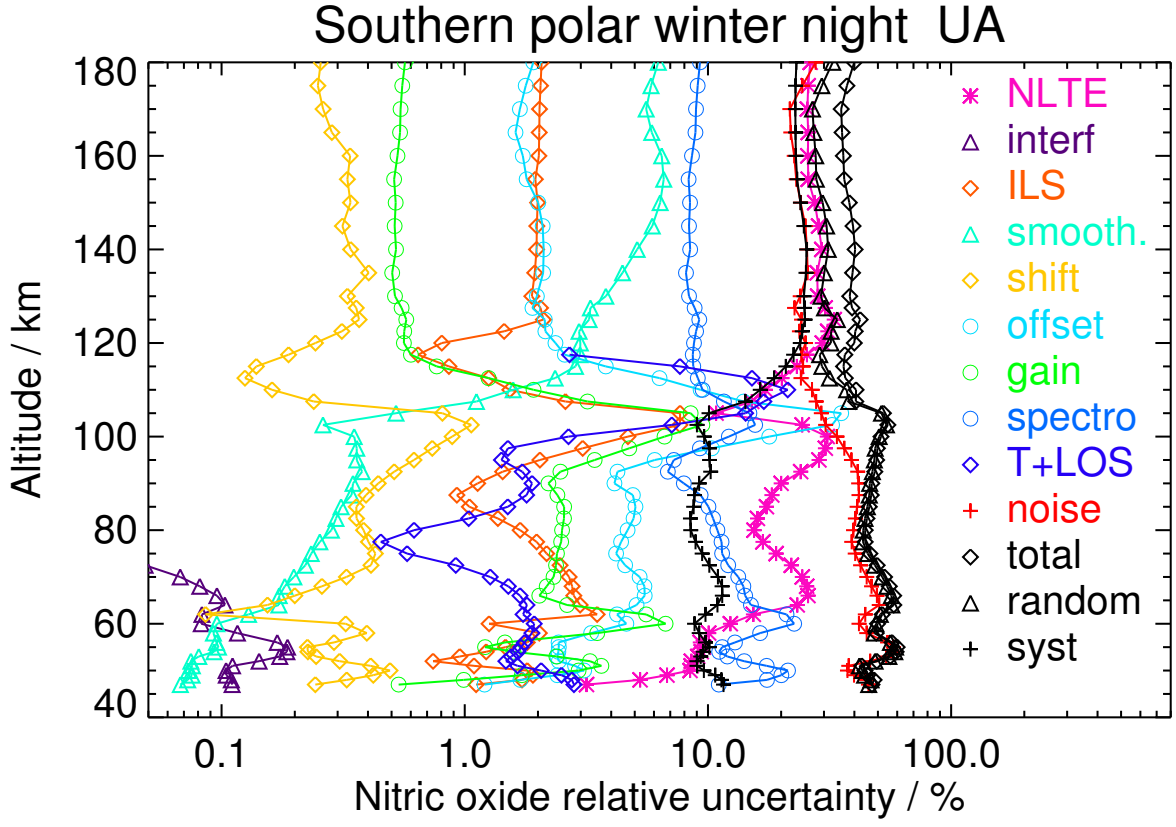

Figure S164. V8R_NOwT_662 Southern polar winter night, high solar activity

Table S166. Nitric oxide error budget for Southern polar spring day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	4.19	0.10	1.35	0.03	0.09	0.61	1.11	8.67	0.72	25.63	26.11	8.48	27.45
60	0.01	15.68	0.11	3.36	0.14	0.39	2.15	0.91	12.80	1.41	45.64	48.78	11.51	50.12
70	0.06	11.52	0.06	5.47	0.17	0.49	3.07	0.81	9.05	0.10	43.54	44.84	11.85	46.38
80	0.16	9.94	0.07	1.62	0.16	0.50	1.79	1.08	9.19	0.25	32.93	34.77	8.14	35.71
90	1.52	21.90	0.10	2.73	0.31	0.84	3.45	1.08	9.01	<0.01	34.43	39.44	14.56	42.04
100	13.13	24.60	0.14	1.49	0.44	1.27	3.76	0.99	9.24	0.76	35.57	42.16	14.06	44.44
110	55.22	26.17	0.05	2.98	0.61	0.28	5.47	1.27	8.60	13.64	21.07	30.00	23.03	37.82
120	145.12	36.57	0.05	0.62	1.48	0.31	1.18	0.48	8.32	<0.01	17.10	26.94	31.26	41.27
130	241.95	26.24	0.07	1.82	1.79	0.30	0.74	0.48	8.14	<0.01	14.99	19.67	24.49	31.41
140	271.45	27.67	0.15	1.68	2.33	0.32	0.78	0.50	8.31	<0.01	14.30	19.70	25.70	32.38
150	310.63	27.51	0.11	1.69	2.85	0.25	0.87	0.50	8.36	<0.01	11.85	18.94	24.92	31.30
160	377.60	26.86	0.08	1.66	2.70	0.09	0.86	0.50	8.47	<0.01	11.38	18.43	24.37	30.55
170	443.38	26.84	0.05	1.62	1.98	0.05	0.99	0.49	8.41	<0.01	12.99	18.86	24.74	31.11
180	582.30	27.57	0.06	1.79	1.06	0.05	0.54	0.51	8.75	<0.01	7.33	17.14	24.53	29.93

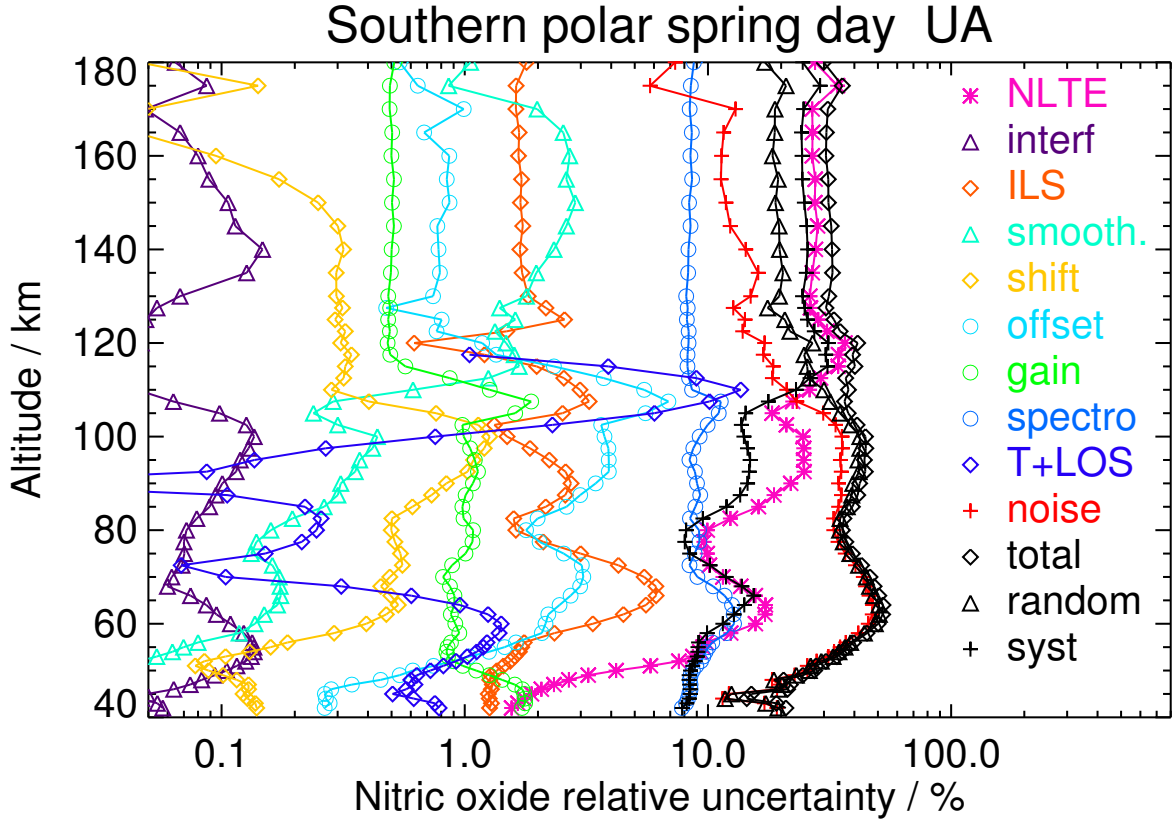

Figure S165. V8R_NOwT_662 Southern polar spring day, high solar activity

Table S167. Nitric oxide error budget for Southern polar spring night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
60	0.01	20.59	0.12	3.38	0.21	0.24	5.17	1.04	11.95	1.75	46.67	52.01	9.08	52.80
70	0.12	17.57	0.04	1.59	0.20	0.50	4.10	2.09	13.89	0.14	39.74	45.03	8.83	45.88
80	0.27	24.52	0.06	2.16	0.46	0.67	4.97	1.85	16.32	0.25	47.07	54.00	14.18	55.83
90	1.72	17.71	0.09	1.60	0.42	0.87	5.53	1.32	8.09	0.16	49.73	53.30	6.90	53.74
100	13.75	25.29	0.07	2.91	0.53	0.90	9.10	2.30	6.15	0.81	45.00	52.52	6.52	52.92
110	59.99	26.73	0.04	2.13	1.16	0.43	6.19	1.55	11.03	13.76	27.82	38.22	19.64	42.97
120	116.35	42.83	0.03	1.20	2.05	0.27	1.63	0.61	10.20	<0.01	20.41	40.03	27.59	48.62
130	163.90	32.84	0.03	2.05	2.48	0.37	1.14	0.59	9.69	<0.01	18.07	30.41	24.21	38.87
140	182.71	37.70	0.10	2.20	3.37	0.43	1.16	0.65	10.61	<0.01	18.73	34.89	26.18	43.62
150	194.10	34.18	0.09	2.15	4.18	0.37	1.27	0.62	10.07	<0.01	16.87	30.76	25.15	39.73
160	197.74	31.19	0.10	2.05	3.96	0.13	1.12	0.58	9.81	<0.01	16.28	27.77	24.18	36.82
170	232.14	29.40	0.08	2.05	2.73	0.05	1.09	0.56	9.45	<0.01	15.05	24.97	23.88	34.55
180	264.84	32.56	0.09	2.10	2.40	0.04	0.99	0.60	10.19	<0.01	15.25	27.81	25.20	37.53

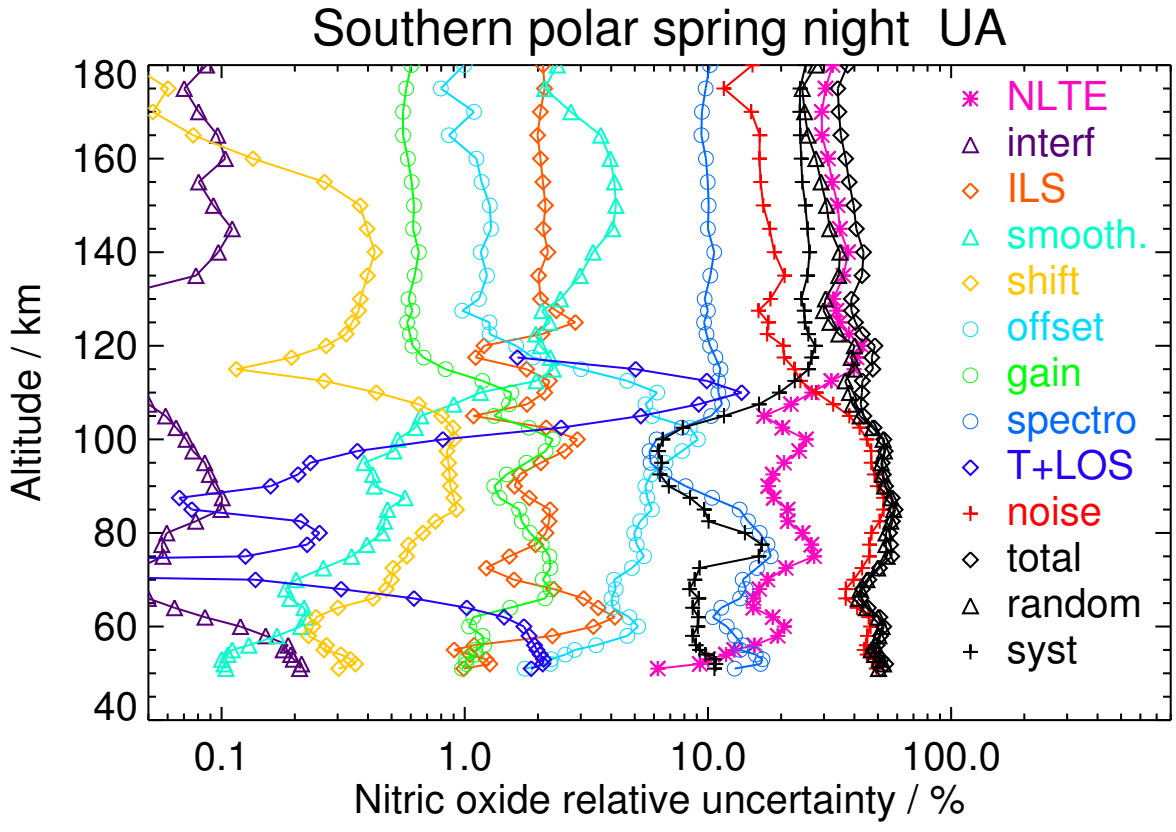

Figure S166. V8R_NOwT_662 Southern polar spring night, high solar activity

Table S168. Nitric oxide error budget for Southern polar summer day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.01	1.70	0.05	0.94	0.01	0.12	0.42	1.14	8.26	0.76	14.75	14.95	8.26	17.08
60	0.01	9.11	0.11	2.76	0.07	0.33	2.66	0.90	10.38	1.17	34.47	36.33	8.73	37.36
70	0.06	11.26	0.05	3.49	0.13	0.59	5.12	1.69	10.29	0.14	31.72	34.48	9.56	35.78
80	0.17	11.73	0.04	2.01	0.15	0.47	2.78	0.89	8.56	0.27	27.75	30.25	8.88	31.52
90	1.45	17.78	0.06	0.86	0.23	0.94	3.16	0.96	10.27	0.25	29.01	32.55	14.72	35.72
100	18.02	13.54	0.07	2.73	0.21	1.05	4.49	1.78	10.05	6.24	30.89	35.01	9.16	36.18
110	44.23	24.60	0.03	3.46	0.41	0.29	4.74	1.33	8.24	13.08	15.57	25.21	22.07	33.51
120	117.67	33.46	0.06	1.71	1.53	0.13	1.37	0.47	8.34	<0.01	17.66	25.38	29.40	38.84
130	244.11	28.44	0.08	1.86	2.03	0.28	0.94	0.50	8.51	<0.01	17.40	23.21	25.58	34.54
140	378.64	27.74	0.14	1.81	2.67	0.56	0.89	0.49	7.97	<0.01	16.39	21.37	25.63	33.37
150	454.89	26.46	0.16	1.71	3.50	0.42	0.98	0.48	7.75	<0.01	13.54	17.58	25.52	30.99
160	524.77	25.57	0.06	1.65	3.45	0.17	0.95	0.48	7.91	<0.01	12.72	16.85	24.70	29.90
170	620.49	26.09	0.03	1.67	2.48	0.05	1.00	0.48	8.22	<0.01	13.51	18.13	24.74	30.67
180	781.92	26.43	0.04	1.77	1.40	0.05	0.58	0.50	8.39	<0.01	8.26	15.46	24.57	29.03

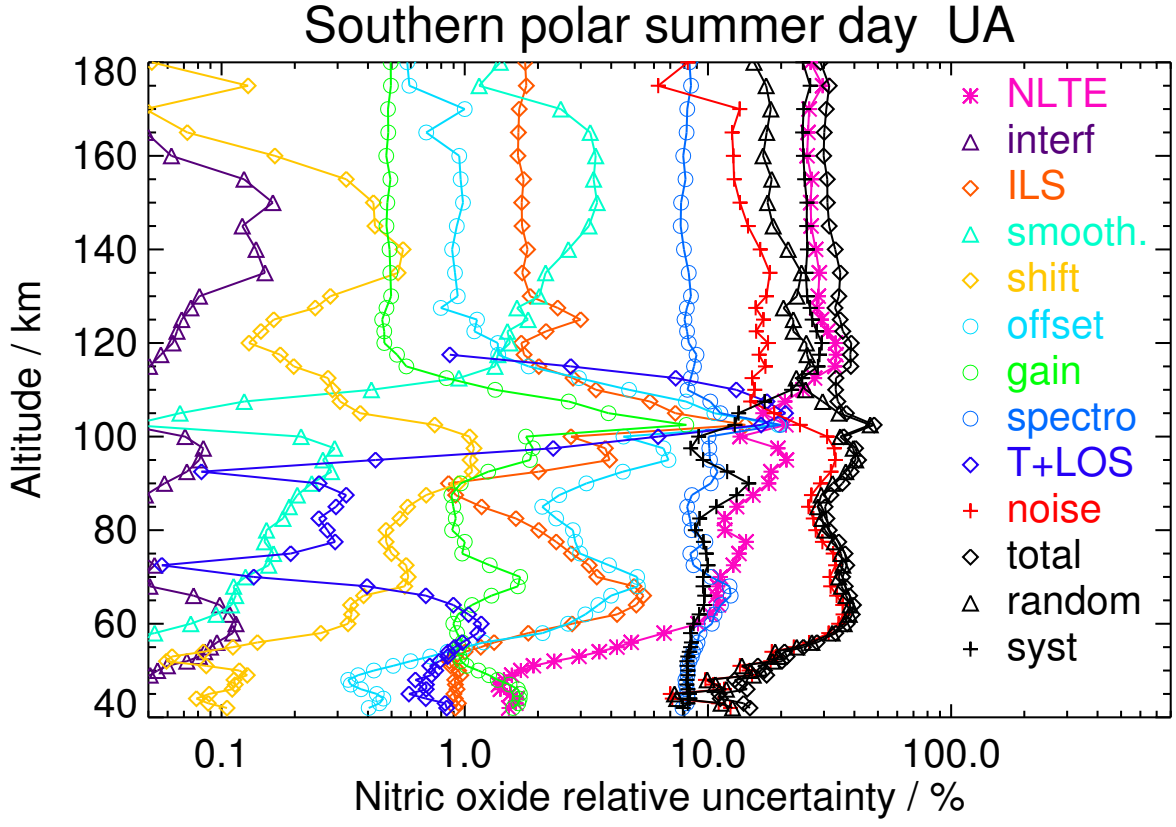

Figure S167. V8R_NOwT_662 Southern polar summer day, high solar activity

Table S169. Nitric oxide error budget for Southern polar summer night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	2.36	0.17	1.94	0.10	0.36	1.29	0.78	13.27	2.27	41.98	42.07	13.64	44.22
60	0.01	11.38	0.11	3.21	0.19	0.18	1.79	1.22	12.60	1.72	41.77	44.57	8.02	45.29
70	0.08	15.59	0.07	2.63	0.14	0.38	2.22	0.76	4.70	0.11	39.84	41.48	12.05	43.19
80	0.28	13.32	0.07	1.59	0.28	0.46	3.65	1.23	6.18	0.25	37.65	38.24	13.73	40.63
90	1.16	26.93	0.09	2.31	0.66	0.96	5.20	2.13	11.23	<0.01	41.99	49.90	12.75	51.51
100	10.29	13.26	0.11	1.49	0.63	1.03	4.70	1.26	8.55	3.29	41.80	44.50	7.31	45.10
110	51.51	21.48	0.06	1.92	1.15	0.57	5.19	1.26	7.83	14.49	23.64	33.30	14.71	36.40
120	98.94	47.84	0.05	1.01	2.76	0.67	2.21	0.59	10.24	<0.01	23.27	46.13	28.66	54.31
130	153.74	36.04	0.05	2.39	3.19	0.34	1.71	0.60	10.14	<0.01	21.97	34.83	26.27	43.63
140	189.07	40.11	0.10	2.14	4.08	0.44	1.57	0.63	10.61	<0.01	21.86	37.77	28.23	47.16
150	218.36	33.46	0.09	2.07	4.77	0.33	1.46	0.57	9.32	<0.01	18.82	30.03	26.24	39.88
160	263.65	30.23	0.07	1.91	4.32	0.15	1.19	0.53	8.93	<0.01	16.75	25.84	25.11	36.03
170	317.69	30.57	0.06	1.96	2.92	0.10	1.17	0.54	9.13	<0.01	15.77	25.53	25.08	35.79
180	365.41	32.36	0.07	2.00	2.68	0.13	1.03	0.56	9.52	<0.01	14.96	26.96	25.45	37.07

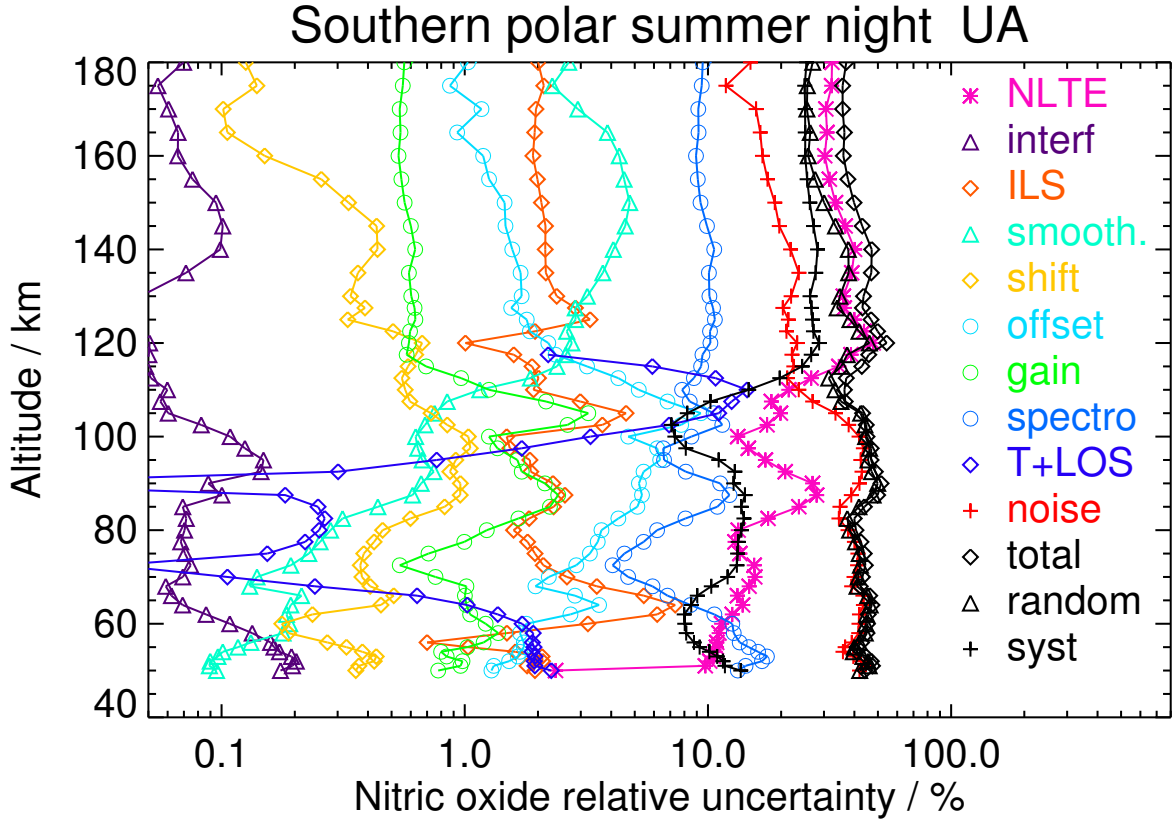

Figure S168. V8R_NOwT_662 Southern polar summer night, high solar activity

Table S170. Nitric oxide error budget for Southern polar autumn day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	4.95	0.12	1.26	0.15	0.06	1.50	1.57	8.84	1.18	46.16	46.73	7.59	47.34
60	0.01	8.82	0.10	2.37	0.22	0.07	3.67	0.98	10.04	0.90	58.92	60.11	7.64	60.59
70	0.03	8.91	0.05	2.43	0.27	0.10	5.01	0.94	9.79	0.05	53.33	54.55	8.71	55.24
80	0.17	12.81	0.02	2.30	0.34	0.16	6.14	1.37	12.84	0.23	42.98	46.25	9.07	47.13
90	2.18	18.22	0.02	1.43	0.40	0.25	5.01	1.45	10.97	0.18	33.16	37.46	13.36	39.77
100	18.82	23.70	0.02	1.18	0.43	0.27	4.42	1.42	10.05	0.04	27.99	35.01	15.61	38.33
110	77.72	10.96	<0.01	0.70	0.85	0.06	5.60	1.27	9.74	9.48	21.93	26.64	10.50	28.63
120	120.21	26.46	0.01	1.11	3.06	0.25	2.26	0.55	9.06	<0.01	25.22	31.40	21.17	37.87
130	119.69	28.28	0.02	2.06	4.40	0.33	2.17	0.53	8.88	<0.01	26.01	31.77	23.96	39.80
140	121.17	30.46	0.03	1.98	6.27	0.28	2.59	0.53	8.89	<0.01	29.31	35.21	26.01	43.77
150	133.84	25.98	0.05	1.79	6.76	0.19	2.12	0.49	8.25	<0.01	24.97	29.29	23.71	37.68
160	167.31	25.18	0.05	1.87	6.13	0.18	1.58	0.51	8.62	<0.01	21.27	26.54	22.36	34.71
170	224.96	26.02	0.04	2.08	4.47	0.21	1.38	0.55	9.29	<0.01	17.49	24.77	21.96	33.11
180	280.11	27.78	0.04	2.38	4.79	0.29	1.47	0.61	10.07	<0.01	20.21	29.07	21.62	36.23

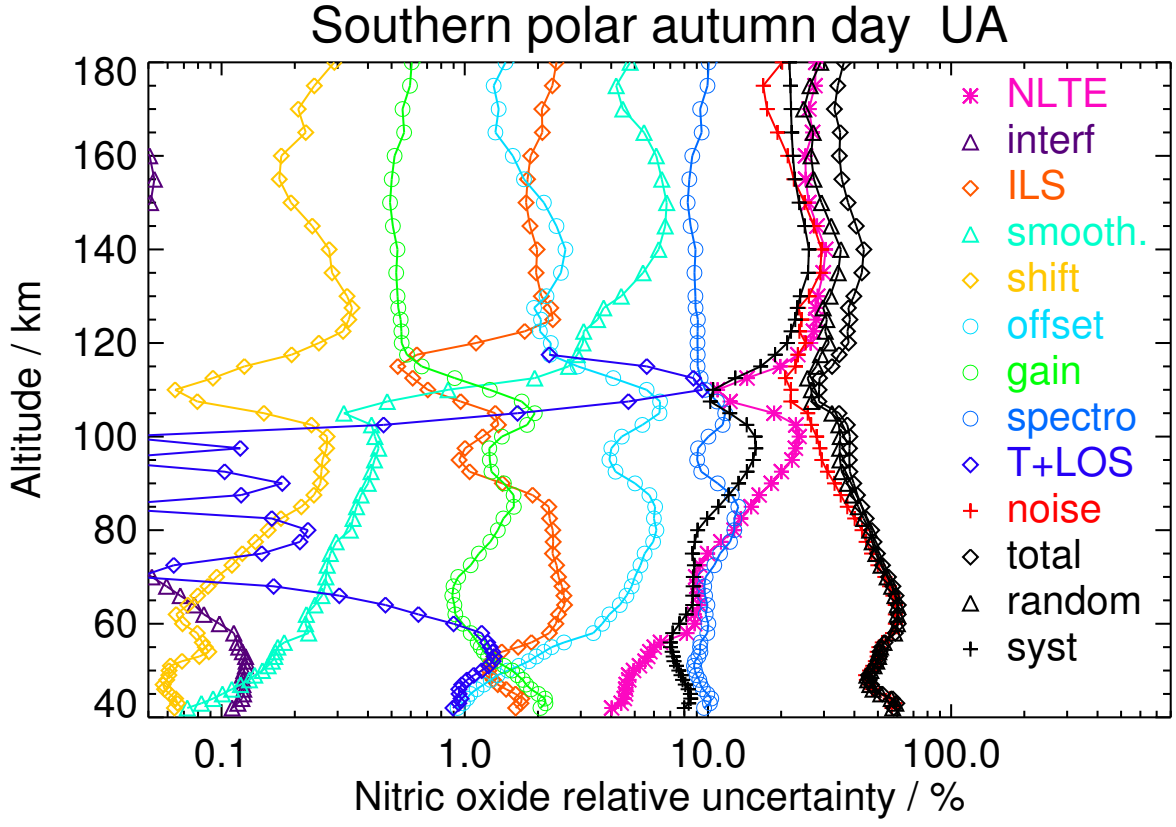

Figure S169. V8R_NOwT_662 Southern polar autumn day, high solar activity

Table S171. Nitric oxide error budget for Southern polar autumn night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (ppmv)	NLTE (%)	interf (%)	ILS (%)	smooth. (%)	shift (%)	offset (%)	gain (%)	spectro (%)	T+LOS (%)	noise (%)	random (%)	syst (%)	total (%)
50	0.00	4.06	0.17	0.29	0.14	0.14	1.27	0.36	8.49	1.30	64.51	64.67	8.46	65.22
60	0.01	9.73	0.14	1.94	0.22	0.11	2.92	0.99	10.73	1.54	61.26	62.18	10.59	63.07
70	0.13	8.41	0.05	3.22	0.22	0.26	3.52	3.57	11.92	0.70	41.41	43.44	8.74	44.31
80	0.67	14.08	0.03	2.17	0.35	0.18	6.38	3.22	13.96	0.40	41.65	45.43	10.95	46.74
90	6.05	13.28	0.03	0.90	0.44	0.27	11.97	4.91	15.22	2.84	39.48	45.04	10.72	46.30
100	18.81	9.56	0.03	1.43	0.70	0.35	8.17	3.35	9.62	1.26	40.43	42.50	9.75	43.60
110	58.22	19.47	0.03	1.05	1.94	0.21	7.35	1.91	9.69	13.50	30.67	37.80	15.15	40.73
120	108.25	27.49	0.02	0.64	3.50	0.18	2.37	0.50	8.28	<0.01	26.18	31.97	22.48	39.09
130	160.13	28.55	0.01	1.80	3.51	0.30	1.82	0.53	8.84	<0.01	22.40	29.55	23.26	37.61
140	150.85	34.45	0.03	2.01	5.04	0.30	2.00	0.58	9.69	<0.01	25.15	36.16	25.29	44.13
150	144.47	29.79	0.05	2.04	5.99	0.28	1.86	0.56	9.31	<0.01	22.88	31.62	23.27	39.26
160	142.93	26.21	0.06	1.96	5.51	0.14	1.49	0.53	9.00	<0.01	21.06	27.70	21.92	35.33
170	139.99	25.12	0.05	1.96	4.18	0.06	1.47	0.54	9.06	<0.01	20.03	25.68	21.88	33.74
180	137.39	25.93	0.06	2.01	4.44	0.07	1.77	0.55	9.35	<0.01	26.76	31.47	22.64	38.77

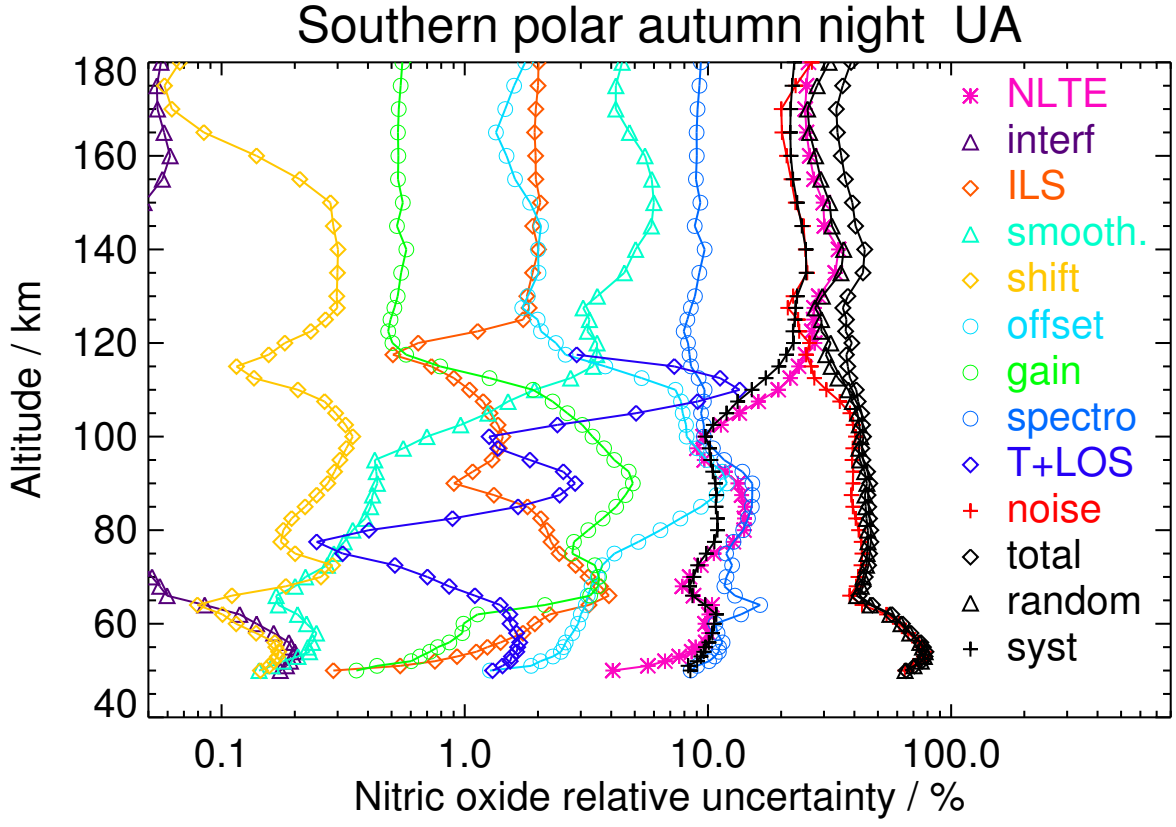

Figure S170. V8R_NOwT_662 Southern polar autumn night, high solar activity

Table S172. Temperature error budget for Northern polar winter day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	262.24	2.65	<0.01	0.67	3.28	0.02	0.97	0.02	<0.01	7.48	8.29	2.53	8.67
120	333.45	8.87	<0.01	1.36	12.20	0.11	3.03	0.05	<0.01	24.05	27.34	8.32	28.58
130	430.85	15.25	0.02	0.53	16.27	0.30	5.04	0.06	<0.01	36.47	40.55	14.47	43.05
140	496.26	21.20	0.07	0.82	18.45	0.43	7.20	0.07	<0.01	49.04	53.40	19.92	56.99
150	551.89	18.28	0.13	0.81	15.47	0.43	7.97	0.05	<0.01	47.53	51.00	17.21	53.83
160	607.19	13.79	0.16	0.68	9.05	0.40	8.20	0.04	<0.01	42.43	44.36	13.13	46.26
170	647.13	10.78	0.17	0.60	4.82	0.38	8.26	0.04	<0.01	39.40	40.73	10.10	41.96
180	713.78	8.35	0.15	0.62	3.44	0.44	9.73	0.03	0.01	42.38	43.76	7.64	44.42

S6 Temperature error contribution profile plots and tabulated values for RR UA data (V8R_TwNO_662) at low solar activity conditions

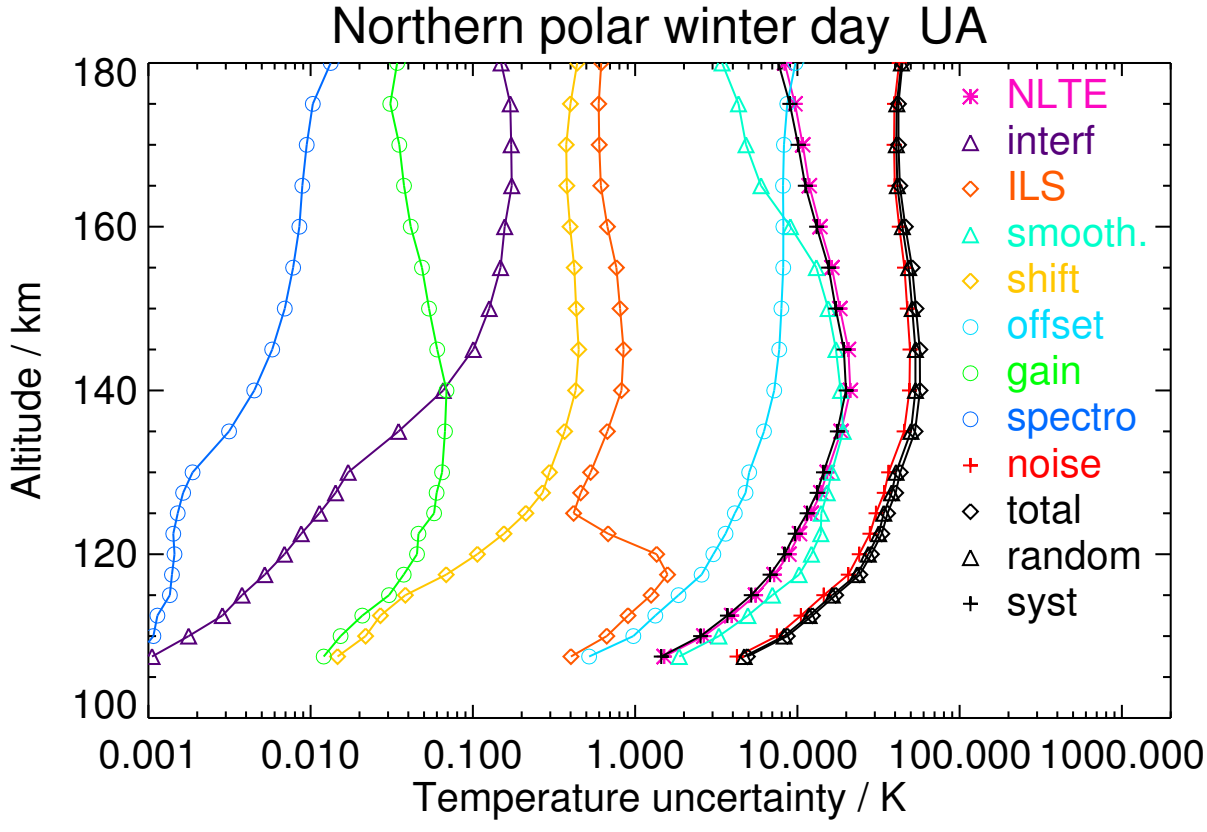

Figure S171. V8R_TwNO_662 Northern polar winter day

Table S173. Temperature error budget for Northern polar winter night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	278.15	2.00	<0.01	0.52	3.45	0.01	0.85	<0.01	<0.01	7.26	8.16	1.72	8.34
120	337.52	7.06	<0.01	0.92	10.68	0.08	2.93	0.03	<0.01	24.94	27.61	5.77	28.21
130	416.36	12.32	<0.01	0.41	14.25	0.20	5.00	0.04	<0.01	38.07	41.66	9.67	42.77
140	457.43	14.36	0.01	0.53	14.72	0.27	6.22	0.05	<0.01	47.67	51.14	10.93	52.29
150	495.35	12.28	0.02	0.48	12.34	0.29	6.24	0.04	0.01	42.76	45.47	10.17	46.59
160	528.18	10.77	0.03	0.44	9.02	0.31	6.21	0.04	0.02	35.97	37.86	9.81	39.11
170	530.19	9.76	0.03	0.40	7.60	0.32	5.78	0.04	0.02	30.30	31.86	9.49	33.24

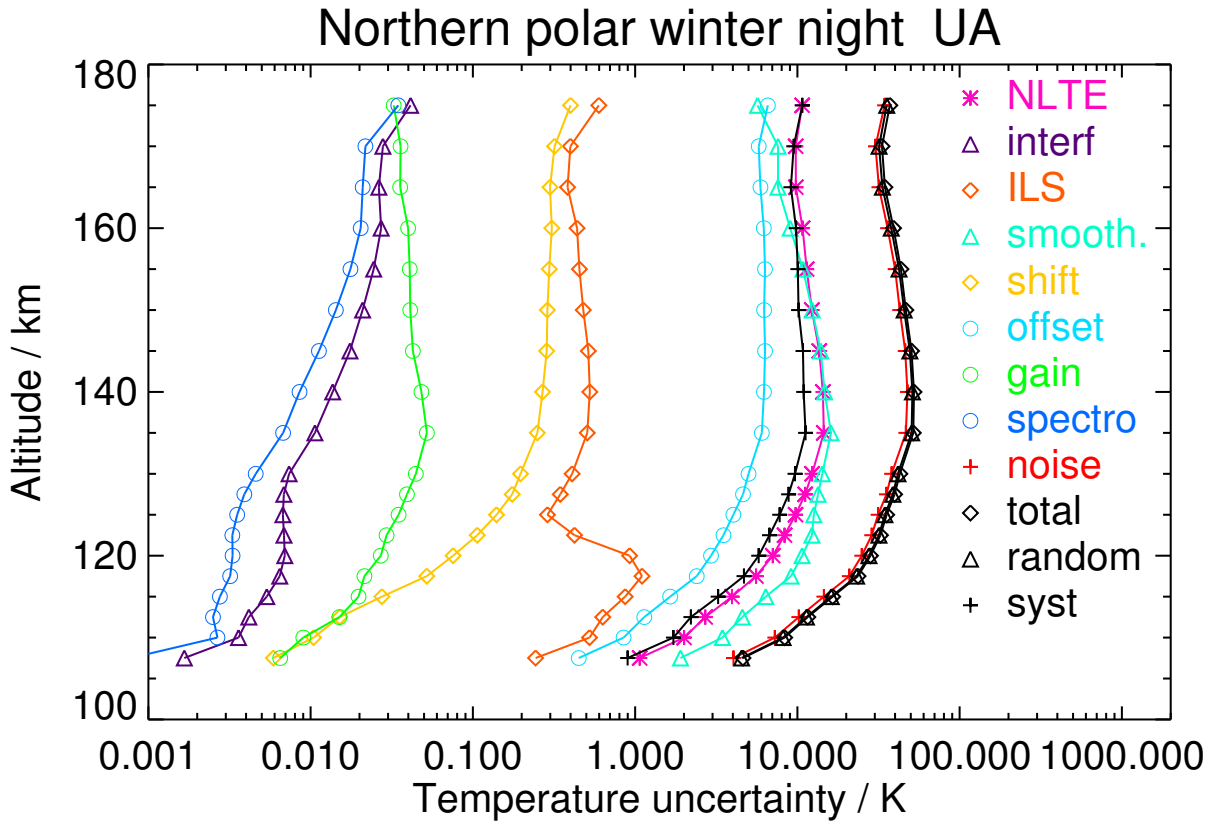

Figure S172. V8R_TwNO_662 Northern polar winter night

Table S174. Temperature error budget for Northern polar spring day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	304.75	5.96	0.04	1.21	4.02	0.04	0.81	0.03	<0.01	7.65	8.87	5.81	10.60
120	432.79	17.86	0.13	2.84	11.53	0.26	2.21	0.07	0.01	23.89	27.04	17.45	32.18
130	546.06	23.24	0.43	1.12	13.02	0.52	2.80	0.07	0.01	35.98	38.75	22.65	44.88
140	590.01	32.35	0.53	0.84	14.13	0.57	3.41	0.05	<0.01	44.58	47.29	31.79	56.98
150	635.58	29.46	1.10	0.78	14.16	0.55	4.14	0.06	0.01	42.19	45.28	28.59	53.55
160	692.27	21.29	1.61	0.83	10.83	0.49	5.45	0.09	0.03	37.75	40.53	19.66	45.04
170	726.96	14.22	1.74	0.96	4.60	0.53	6.79	0.11	0.04	39.38	41.07	11.74	42.72
180	758.42	11.90	1.82	1.05	3.70	0.56	7.18	0.11	0.04	39.68	41.41	8.46	42.26

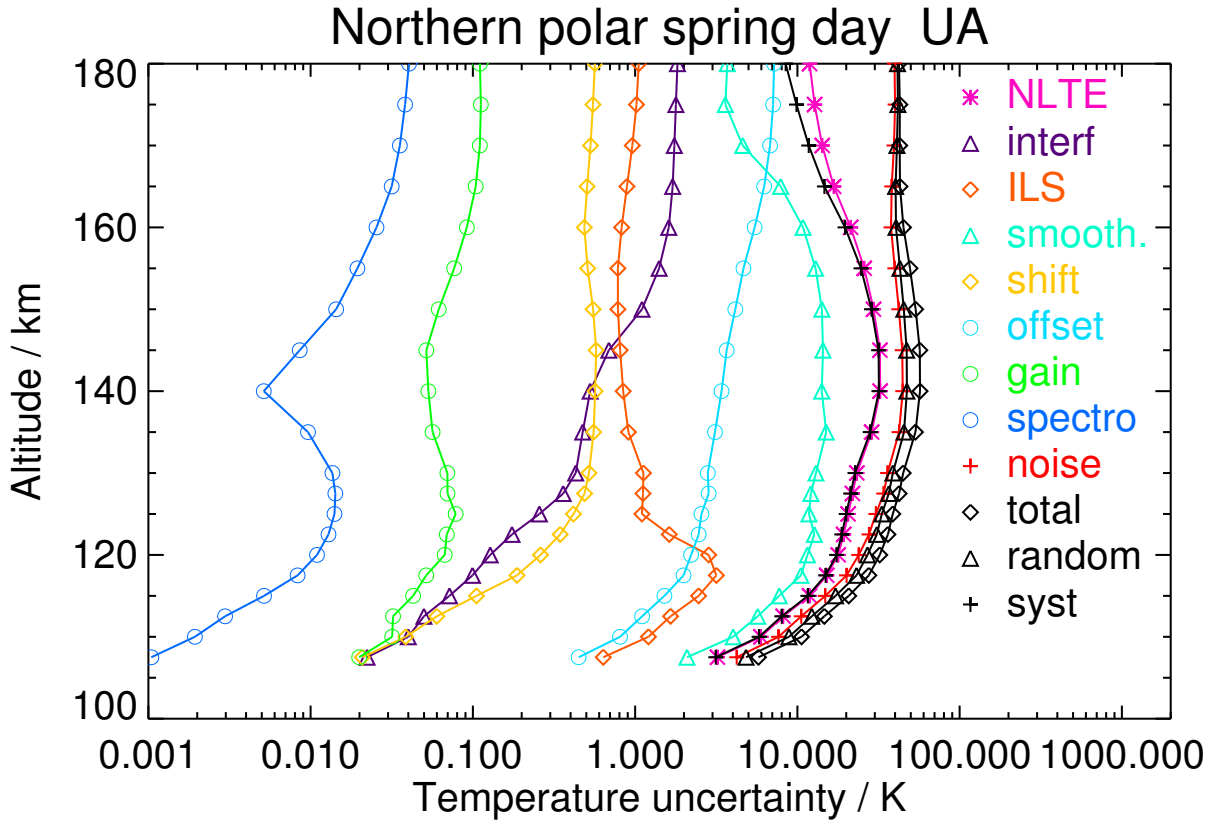

Figure S173. V8R_TwNO_662 Northern polar spring day

Table S175. Temperature error budget for Northern polar spring night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	282.12	5.10	<0.01	1.13	3.55	0.09	0.74	0.09	<0.01	8.01	9.51	3.75	10.23
120	387.46	14.06	0.02	2.57	9.46	0.24	2.09	0.06	<0.01	20.49	23.87	12.17	26.79
130	500.58	17.50	0.04	0.84	11.84	0.47	2.96	0.06	0.01	32.35	35.47	15.64	38.76
140	556.84	27.00	0.09	0.69	13.53	0.47	4.32	0.06	<0.01	44.35	48.10	24.17	53.83
150	621.28	26.27	0.29	0.86	13.10	0.58	5.14	0.04	0.02	42.84	46.38	23.94	52.19
160	690.63	19.33	0.44	1.17	10.93	0.64	6.02	0.03	0.03	41.30	43.60	18.32	47.30
170	725.33	12.39	0.45	1.26	4.82	0.68	6.82	0.03	0.04	41.19	42.77	9.64	43.84
180	758.28	11.35	0.53	1.48	4.19	0.81	7.12	0.04	0.04	40.69	42.70	5.70	43.08

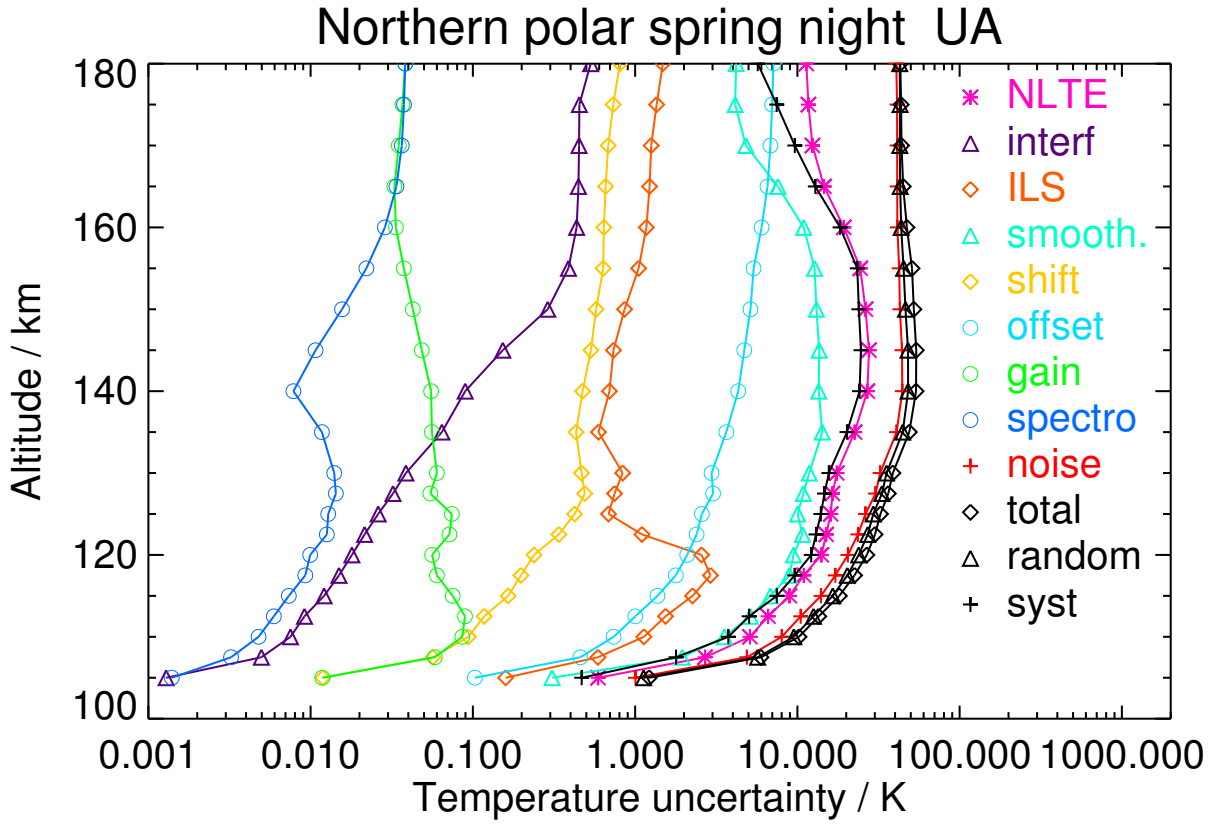

Figure S174. V8R_TwNO_662 Northern polar spring night

Table S176. Temperature error budget for Northern polar summer day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	323.28	3.27	0.01	1.65	3.80	0.02	0.96	0.01	<0.01	7.47	8.55	3.39	9.20
120	376.85	10.66	0.03	3.25	12.37	0.08	3.19	0.06	0.02	24.80	28.20	10.35	30.04
130	463.53	16.92	0.06	1.77	15.84	0.29	5.10	0.07	0.03	38.46	42.33	15.93	45.23
140	528.52	19.98	0.17	1.88	16.56	0.57	6.54	0.06	0.02	48.55	52.26	18.59	55.47
150	585.36	16.09	0.26	1.39	13.31	0.58	7.39	0.08	0.04	45.76	48.64	14.88	50.87
160	634.29	11.03	0.29	0.93	8.41	0.53	7.99	0.09	0.07	43.16	44.97	9.87	46.04
170	678.11	7.68	0.31	0.67	3.93	0.50	8.22	0.10	0.08	42.21	43.46	5.98	43.87
180	704.81	6.08	0.27	0.54	3.72	0.53	8.09	0.10	0.08	41.38	42.61	3.74	42.77

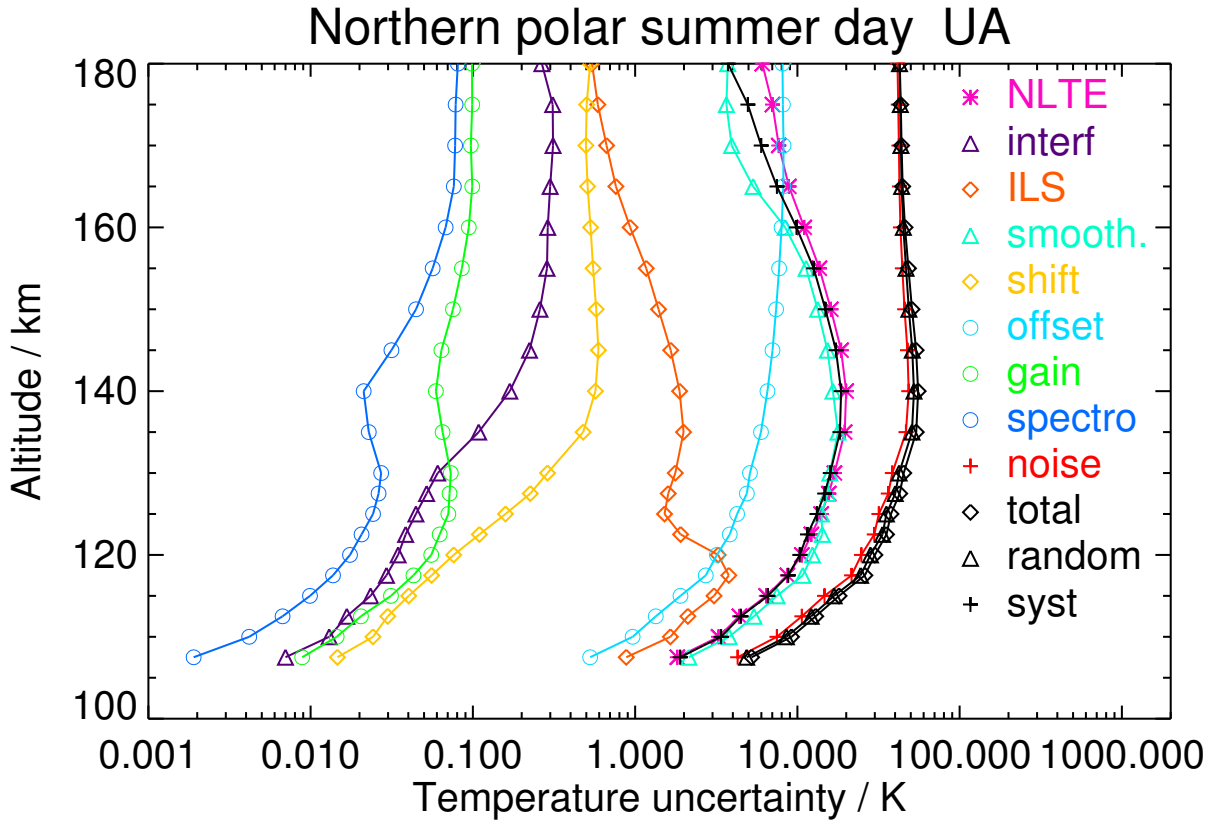

Figure S175. V8R_TwNO_662 Northern polar summer day

Table S177. Temperature error budget for Northern polar summer night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	303.93	4.14	0.01	1.23	3.94	0.09	0.80	0.02	<0.01	7.80	9.09	3.60	9.78
120	388.75	10.64	0.03	2.55	10.44	0.16	2.83	0.05	0.01	23.02	26.18	9.03	27.69
130	474.47	14.00	0.05	0.98	13.06	0.31	4.44	0.06	0.02	34.87	38.23	11.90	40.04
140	523.79	19.72	0.07	0.98	14.49	0.48	5.55	0.06	0.01	45.82	49.66	16.26	52.25
150	586.75	19.68	0.19	1.15	13.91	0.57	6.20	0.05	0.02	43.68	47.08	17.67	50.28
160	647.03	13.34	0.33	1.13	10.48	0.59	7.15	0.05	0.04	42.12	44.30	12.35	45.99
170	698.07	8.24	0.41	1.07	4.78	0.61	7.88	0.05	0.05	42.51	43.81	6.50	44.29
180	713.07	5.84	0.23	1.18	4.38	0.64	7.77	0.05	0.05	41.55	42.80	3.23	42.92

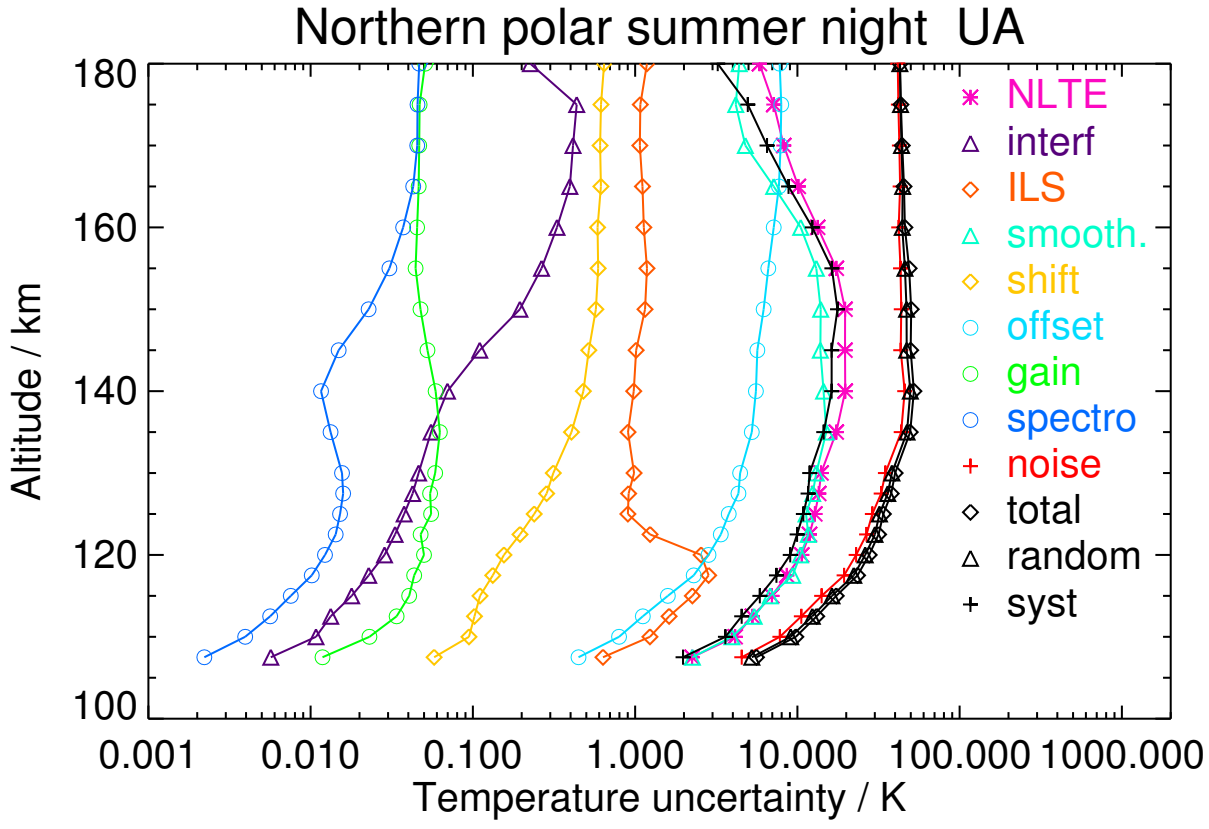

Figure S176. V8R_TwNO_662 Northern polar summer night

Table S178. Temperature error budget for Northern polar autumn day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	292.56	4.97	<0.01	0.89	3.93	0.03	0.80	0.04	<0.01	7.41	8.69	4.59	9.82
120	422.07	13.67	0.02	1.61	11.73	0.19	2.78	0.08	<0.01	24.37	27.59	12.95	30.47
130	515.27	21.17	0.09	0.73	14.27	0.36	4.39	0.10	<0.01	36.94	40.25	20.40	45.12
140	554.98	26.65	0.24	0.67	16.96	0.35	6.02	0.09	<0.01	48.27	52.05	25.61	58.01
150	583.01	22.40	0.28	0.65	16.30	0.38	6.71	0.07	0.01	46.45	50.07	21.56	54.51
160	644.11	16.49	0.31	0.66	10.64	0.43	7.43	0.06	0.02	43.15	45.37	15.65	47.99
170	682.75	12.32	0.34	0.67	4.55	0.47	7.73	0.04	0.02	41.11	42.42	11.09	43.85
180	708.78	9.80	0.23	0.82	3.99	0.49	7.94	0.04	0.03	41.28	42.71	7.45	43.35

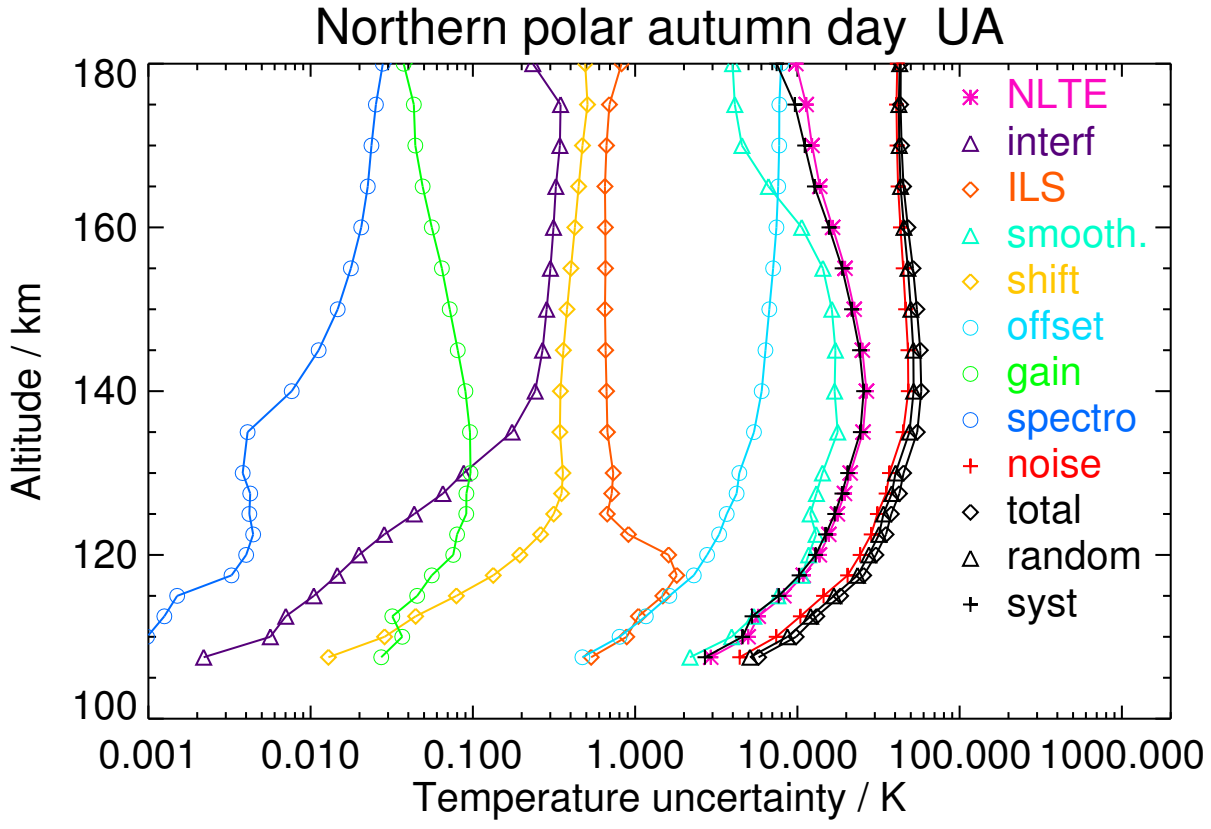

Figure S177. V8R_TwNO_662 Northern polar autumn day

Table S179. Temperature error budget for Northern polar autumn night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	277.57	3.09	<0.01	0.57	3.82	0.02	0.85	0.04	<0.01	7.74	8.83	2.68	9.23
120	380.66	9.13	0.01	1.23	10.60	0.14	2.89	0.04	<0.01	22.90	25.74	8.21	27.02
130	460.53	13.43	0.02	0.59	14.04	0.25	4.72	0.05	0.01	34.41	38.17	11.30	39.80
140	495.70	13.91	0.03	0.51	14.49	0.22	5.51	0.04	<0.01	43.13	46.65	10.87	47.90
150	544.27	14.00	0.05	0.57	13.28	0.31	6.01	0.04	0.01	43.20	46.07	12.36	47.70
160	585.28	12.35	0.02	0.53	9.49	0.36	6.04	0.03	0.02	37.69	39.53	11.72	41.23
170	619.16	10.66	0.04	0.49	6.35	0.43	6.99	0.03	0.03	38.52	39.88	9.80	41.07
180	628.84	8.21	0.04	0.51	6.03	0.52	7.75	0.03	0.03	40.33	41.51	8.23	42.32

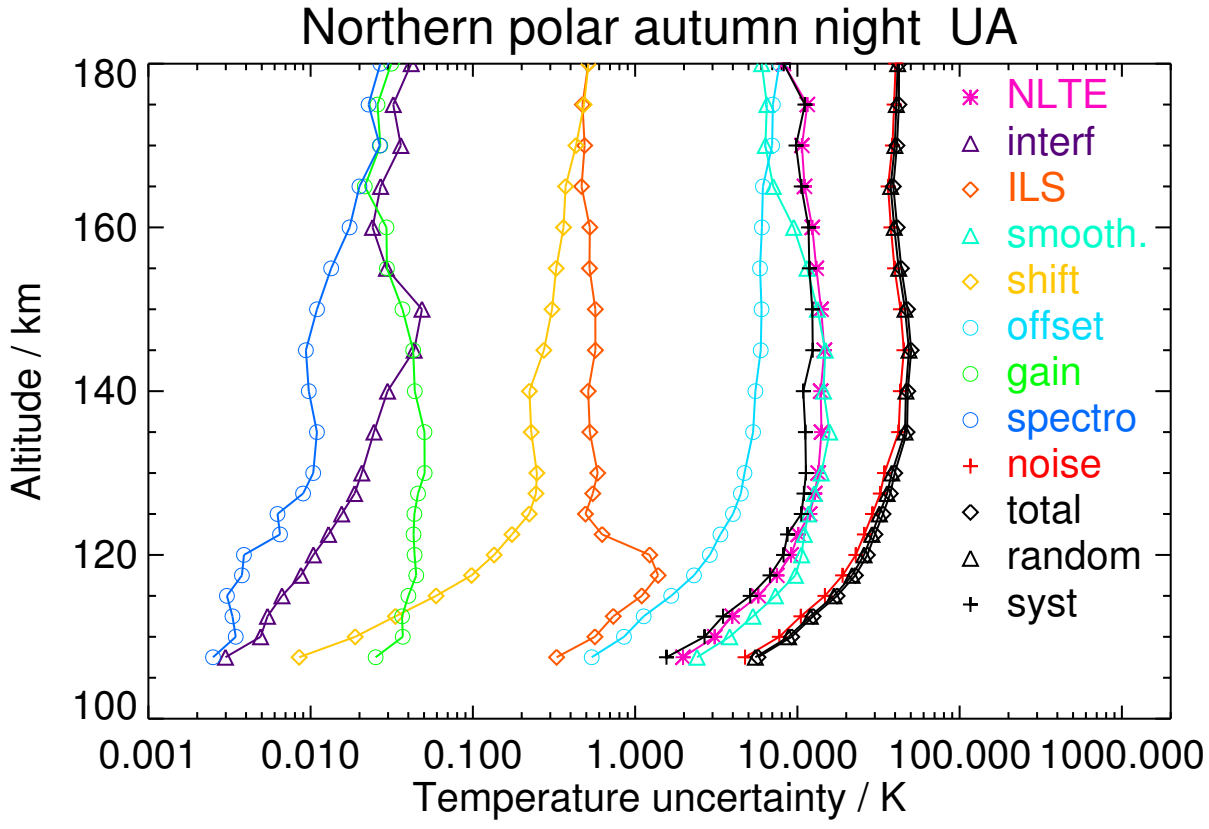

Figure S178. V8R_TwNO_662 Northern polar autumn night

Table S180. Temperature error budget for Northern midlatitude winter day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	344.81	2.26	<0.01	1.19	4.19	0.03	1.11	<0.01	<0.01	7.38	8.56	2.56	8.94
120	341.41	6.05	0.01	0.93	8.38	0.04	2.67	0.03	<0.01	23.01	24.75	5.64	25.39
130	443.85	11.85	0.02	0.31	13.54	0.12	5.16	0.04	<0.01	37.71	40.67	10.87	42.10
140	489.76	18.02	0.08	0.39	17.41	0.22	7.86	0.06	0.01	51.07	54.88	16.90	57.43
150	555.79	18.61	0.13	0.51	14.78	0.29	8.97	0.07	0.02	49.38	52.70	17.54	55.54
160	608.62	15.10	0.13	0.48	8.15	0.30	8.89	0.07	0.03	43.38	45.31	14.25	47.49
170	641.42	12.56	0.06	0.45	4.54	0.31	8.63	0.06	0.03	39.09	40.45	12.04	42.21
180	662.72	10.72	0.06	0.50	4.49	0.37	9.31	0.08	0.04	40.69	42.04	10.52	43.33

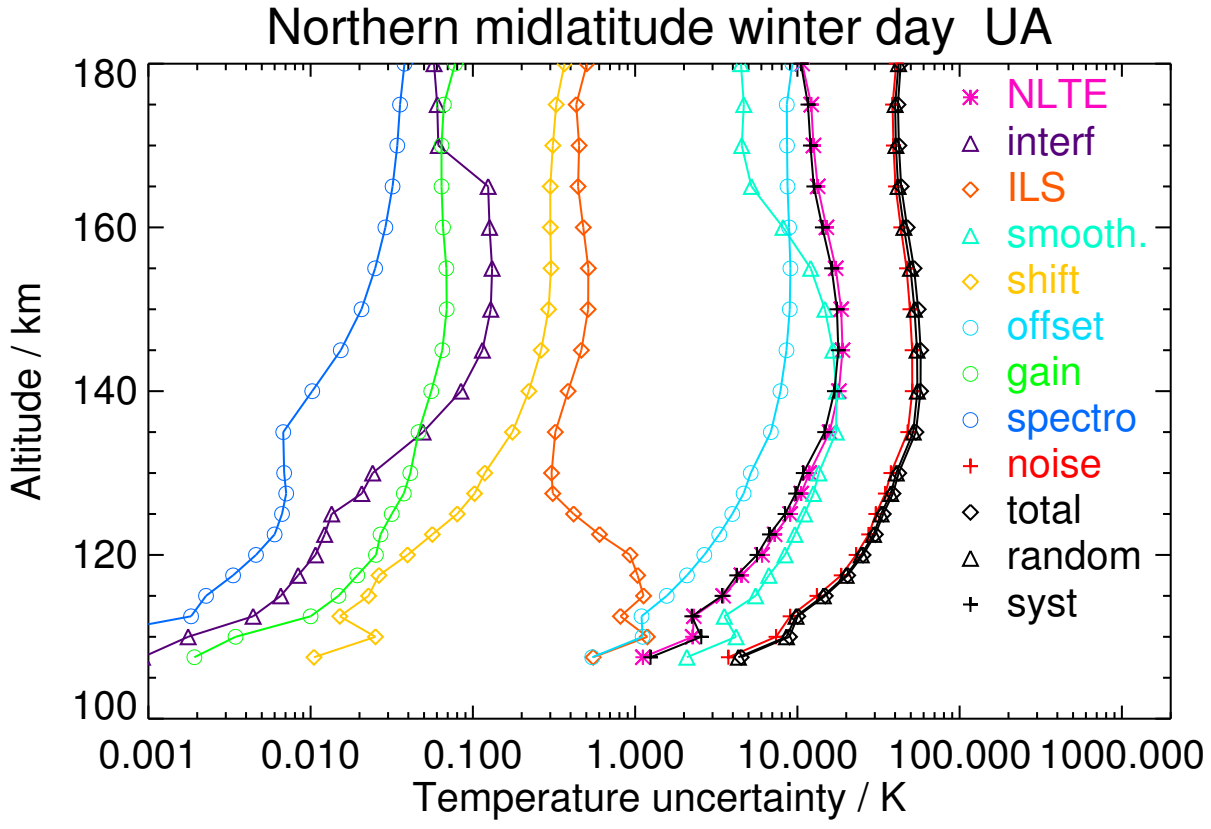

Figure S179. V8R_TwNO_662 Northern midlatitude winter day

Table S181. Temperature error budget for Northern midlatitude winter night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	271.43	1.98	<0.01	0.54	3.09	<0.01	0.89	<0.01	<0.01	7.35	8.15	1.50	8.28
120	325.42	4.05	0.01	0.66	7.94	0.03	2.71	0.03	<0.01	24.63	26.18	2.89	26.34
130	419.07	5.67	0.01	0.22	10.13	0.08	4.31	0.03	0.01	35.72	37.60	3.98	37.81
140	488.65	7.13	0.01	0.38	10.50	0.13	5.92	0.06	0.01	44.16	46.05	5.08	46.33
150	545.25	8.55	0.02	0.49	7.81	0.21	6.45	0.06	0.01	38.14	39.91	6.12	40.38
160	611.20	11.46	0.03	0.79	6.66	0.37	7.63	0.08	0.02	38.12	39.79	10.22	41.08
170	591.19	10.80	0.02	0.87	6.29	0.50	7.74	0.02	0.01	36.73	38.06	10.84	39.58

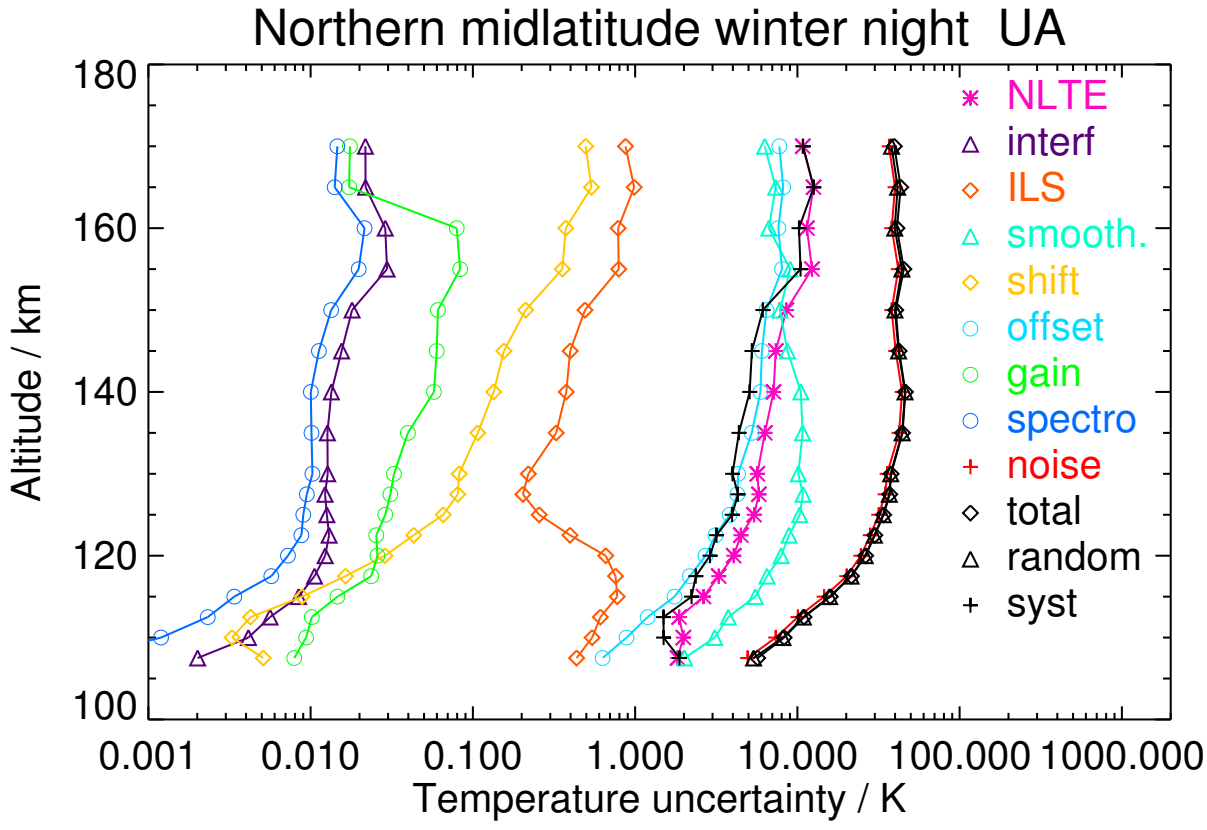

Figure S180. V8R_TwNO_662 Northern midlatitude winter night

Table S182. Temperature error budget for Northern midlatitude spring day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	269.72	5.84	<0.01	0.88	3.33	0.03	0.85	0.03	<0.01	7.73	8.85	5.31	10.32
120	380.54	16.31	0.02	1.69	11.62	0.13	2.45	0.06	<0.01	23.55	27.05	15.26	31.06
130	487.50	22.49	0.04	0.49	14.43	0.34	3.54	0.06	0.01	36.16	39.37	22.00	45.10
140	551.17	33.08	0.08	0.66	15.81	0.45	4.12	0.05	<0.01	44.43	47.81	32.40	57.75
150	634.04	32.68	0.21	0.84	14.21	0.55	5.19	0.05	0.02	43.03	46.12	31.98	56.12
160	689.54	23.82	0.35	0.92	10.68	0.51	6.47	0.05	0.03	40.82	43.11	23.06	48.89
170	729.78	15.89	0.42	1.01	4.23	0.52	7.33	0.05	0.04	41.73	43.05	14.61	45.47
180	752.43	12.83	0.42	1.12	3.81	0.54	7.22	0.05	0.04	40.49	42.01	10.37	43.28

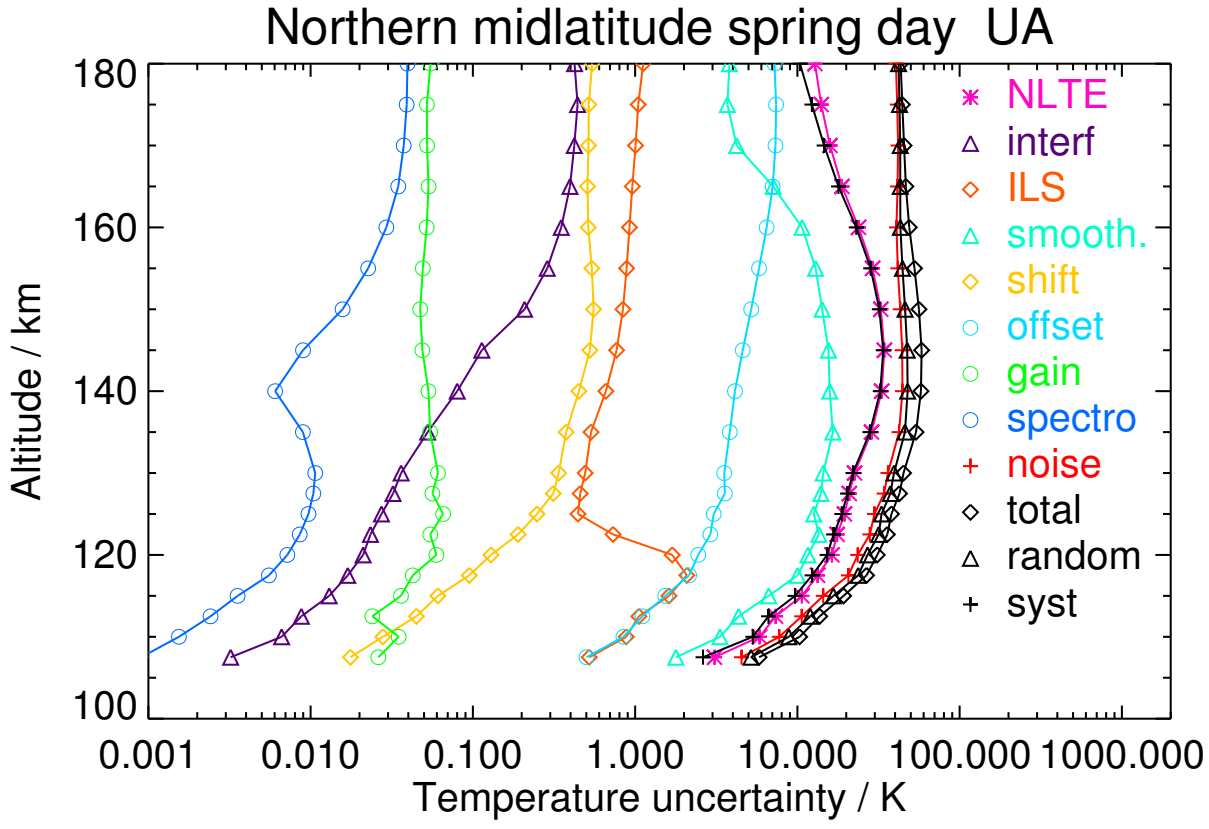

Figure S181. V8R_TwNO_662 Northern midlatitude spring day

Table S183. Temperature error budget for Northern midlatitude spring night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	301.04	3.46	0.01	0.97	3.52	0.02	0.87	<0.01	<0.01	7.38	8.38	3.20	8.97
120	350.51	6.00	0.03	1.51	9.24	0.07	3.10	0.02	0.02	24.55	26.70	4.80	27.13
130	421.70	9.46	0.03	0.50	12.65	0.17	4.75	0.04	0.03	38.39	41.15	7.24	41.79
140	481.96	12.26	0.03	0.60	13.08	0.22	5.92	0.06	0.02	46.80	49.68	8.87	50.47
150	573.75	13.65	0.07	0.65	10.21	0.30	7.01	0.07	0.02	42.47	45.03	10.78	46.31
160	622.48	12.63	0.12	0.66	7.45	0.36	7.48	0.07	0.03	40.18	41.93	11.30	43.43
170	664.22	10.88	0.14	0.63	5.04	0.40	7.28	0.06	0.04	38.44	39.69	9.98	40.93

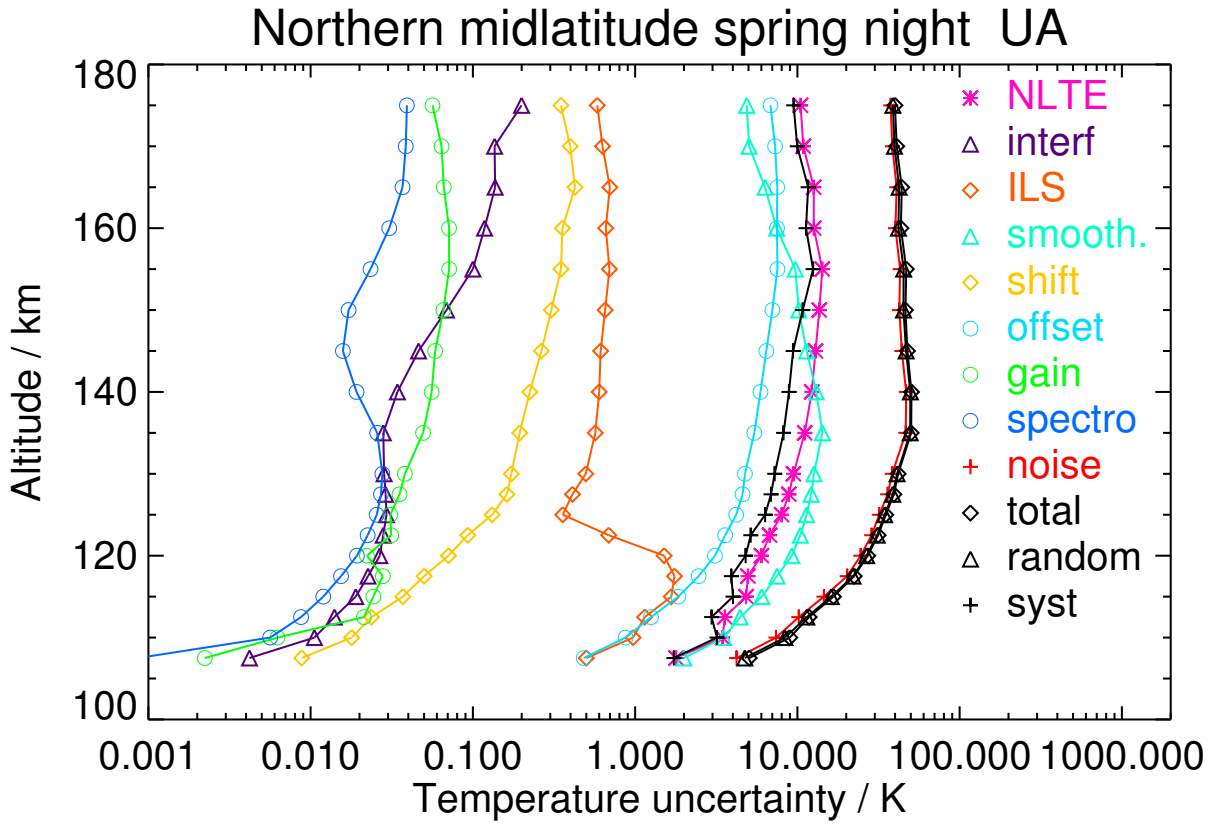

Figure S182. V8R_TwNO_662 Northern midlatitude spring night

Table S184. Temperature error budget for Northern midlatitude summer day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	312.61	2.86	<0.01	0.83	3.25	0.02	0.80	<0.01	<0.01	7.11	7.91	2.83	8.40
120	348.23	9.77	0.02	1.44	11.38	0.08	2.75	0.03	<0.01	24.87	27.62	9.50	29.21
130	443.89	17.55	0.04	0.44	16.27	0.27	4.66	0.05	0.01	38.64	42.36	17.12	45.69
140	535.90	25.80	0.09	1.07	16.88	0.55	6.33	0.05	0.01	47.84	51.32	25.44	57.28
150	617.46	22.62	0.29	1.05	14.30	0.53	7.42	0.05	0.02	45.02	48.01	22.24	52.91
160	691.87	15.64	0.46	0.79	8.58	0.39	8.20	0.05	0.04	43.64	45.44	15.04	47.87
170	729.69	10.87	0.49	0.58	3.78	0.31	8.18	0.05	0.05	41.69	42.87	10.00	44.02
180	757.16	8.91	0.61	0.54	3.34	0.31	8.18	0.05	0.05	40.13	41.36	7.59	42.05

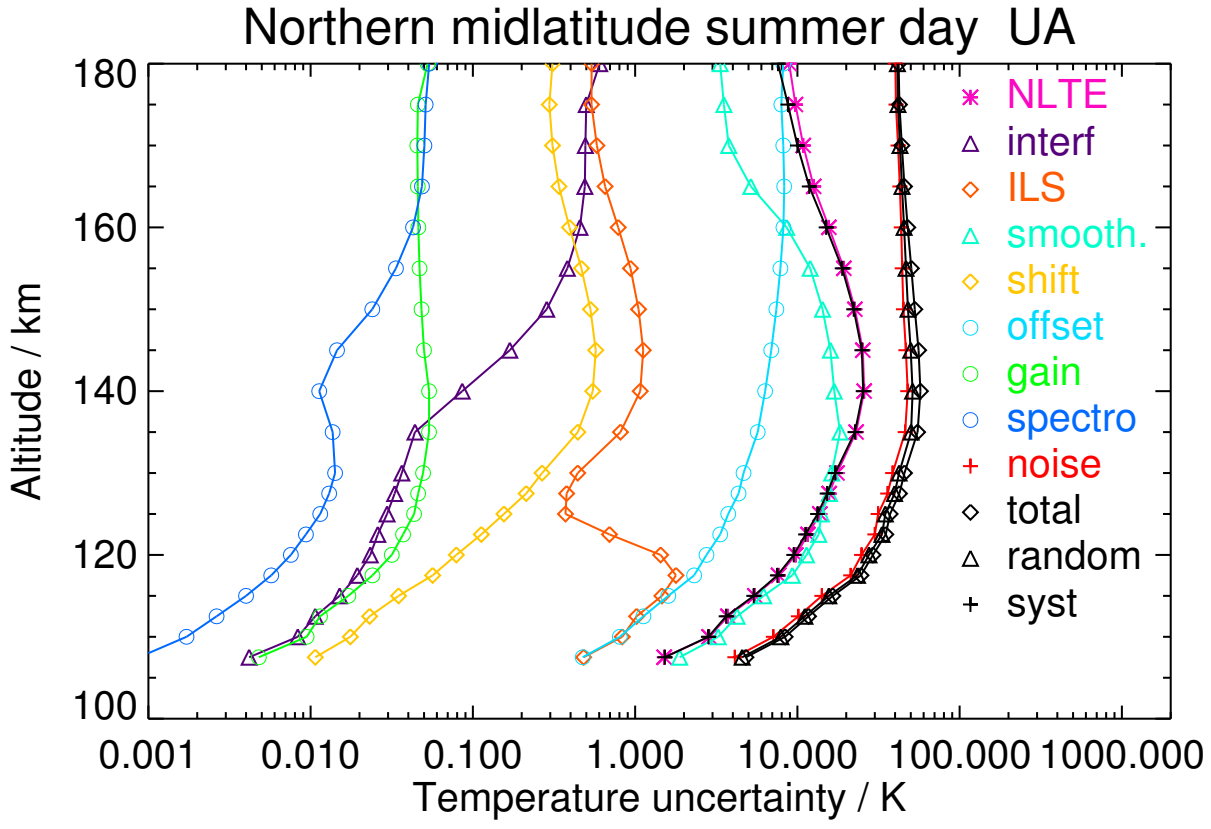

Figure S183. V8R_TwNO_662 Northern midlatitude summer day

Table S185. Temperature error budget for Northern midlatitude summer night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
120	346.28	3.09	0.03	0.84	7.97	0.02	3.19	0.03	0.03	24.95	26.43	2.83	26.58
130	425.87	5.11	0.03	0.45	12.32	0.05	5.38	0.03	0.03	38.87	41.20	4.46	41.44
140	467.12	5.44	0.03	0.31	11.47	0.10	6.44	0.03	0.02	46.22	48.16	4.44	48.36
150	547.86	5.50	0.07	0.24	7.09	0.14	7.25	0.04	0.02	40.02	41.38	4.73	41.65
160	627.63	7.04	0.05	0.31	3.75	0.21	7.35	0.04	0.04	34.88	35.87	6.90	36.53

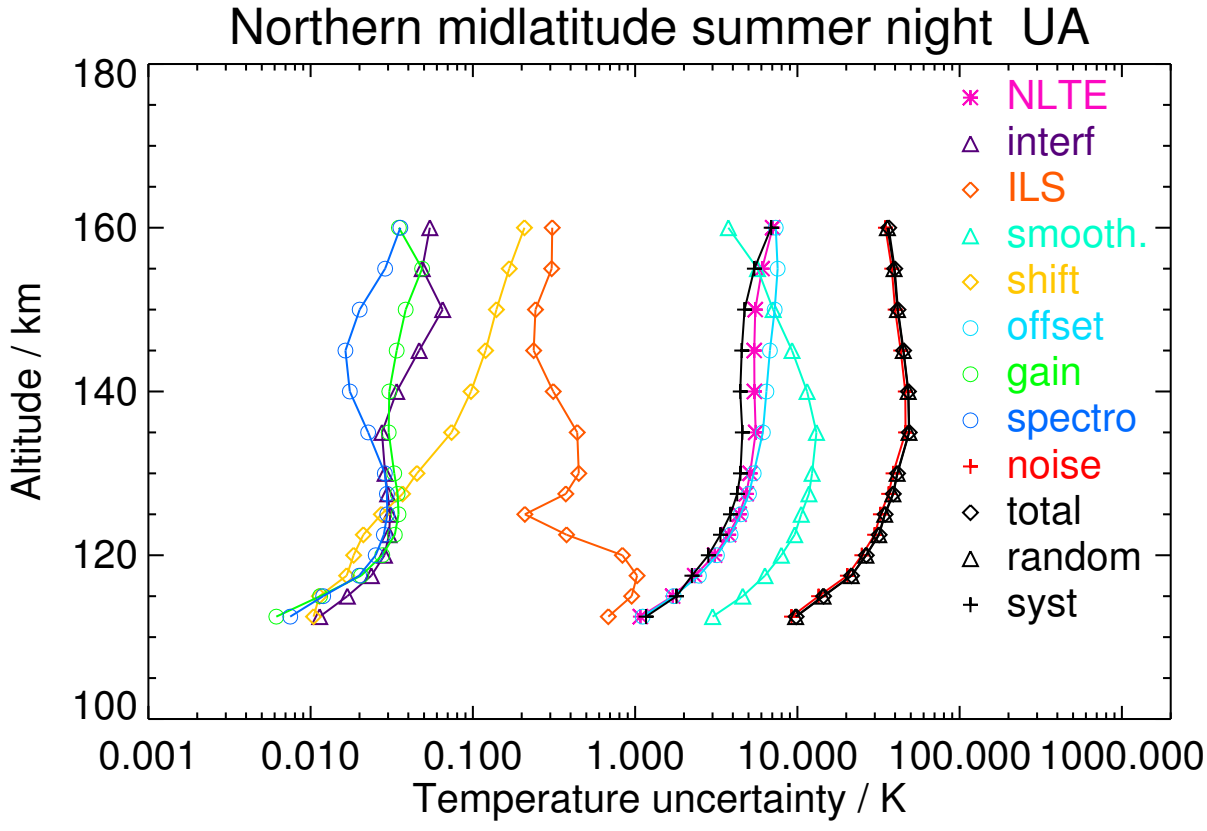

Figure S184. V8R_TwNO_662 Northern midlatitude summer night

Table S186. Temperature error budget for Northern midlatitude autumn day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	279.37	4.09	<0.01	0.79	3.85	0.02	0.87	0.04	<0.01	7.67	8.94	3.44	9.58
120	364.06	7.43	0.02	0.90	8.37	0.08	2.90	0.04	<0.01	23.52	25.30	6.88	26.22
130	451.68	12.30	0.03	0.33	13.06	0.15	5.12	0.05	<0.01	37.58	40.46	11.12	41.96
140	494.54	18.55	0.07	0.41	17.31	0.23	7.46	0.06	<0.01	49.90	53.88	16.90	56.47
150	549.36	18.77	0.10	0.53	14.81	0.31	8.29	0.07	0.02	47.62	51.10	17.25	53.93
160	609.78	16.05	0.07	0.51	9.20	0.34	8.48	0.06	0.03	43.60	45.63	15.27	48.12
170	647.26	13.01	0.09	0.46	4.81	0.35	8.25	0.06	0.03	39.33	40.64	12.51	42.52
180	630.85	9.62	0.06	0.51	5.14	0.43	8.69	0.08	0.03	38.78	40.09	9.54	41.21

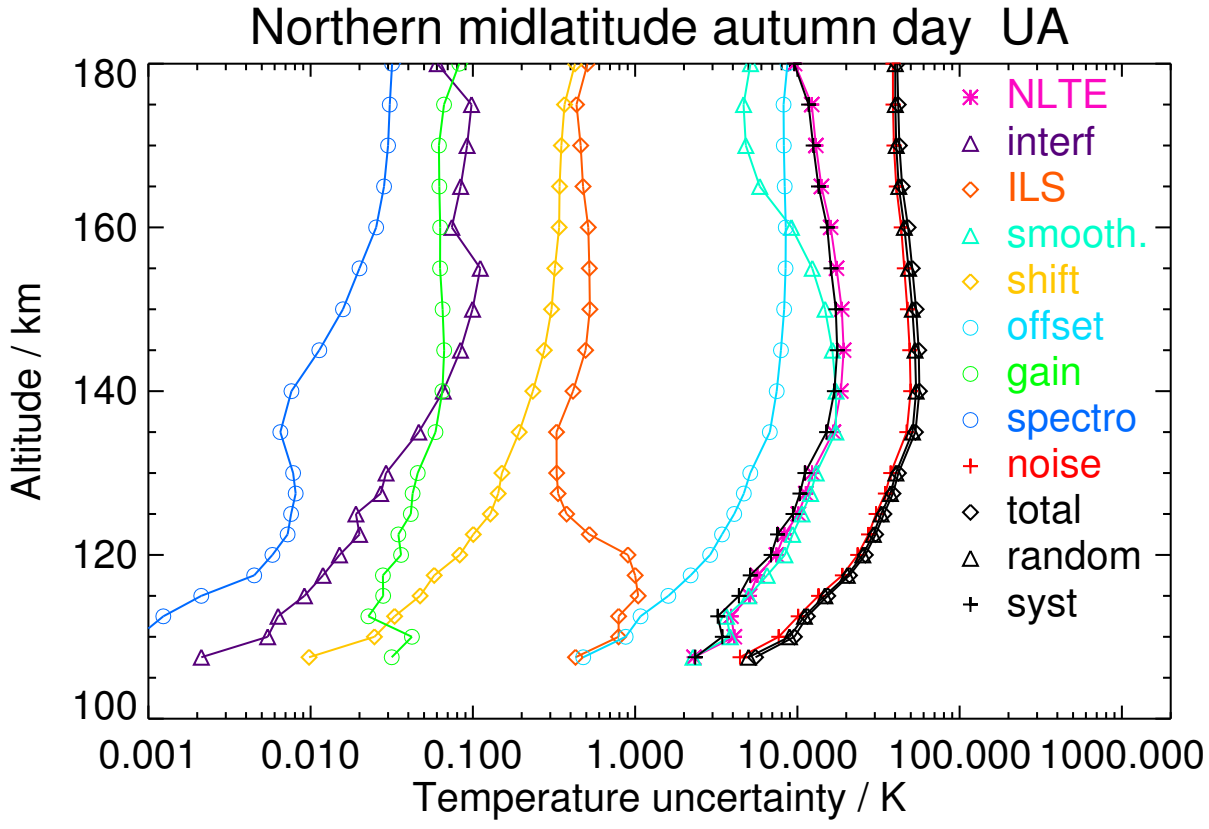

Figure S185. V8R_TwNO_662 Northern midlatitude autumn day

Table S187. Temperature error budget for Northern midlatitude autumn night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	268.62	3.71	<0.01	0.71	4.22	0.02	0.73	0.02	<0.01	7.65	8.91	3.40	9.54
120	344.58	6.29	0.02	0.74	8.28	0.07	2.60	0.03	0.01	23.61	25.52	4.65	25.94
130	445.89	9.70	0.03	0.18	9.60	0.14	4.40	0.04	0.02	35.61	37.85	6.39	38.39
140	530.24	12.67	0.07	0.31	10.74	0.17	6.49	0.06	0.01	44.21	46.96	8.23	47.67
150	592.25	14.08	0.17	0.33	9.31	0.22	7.42	0.06	0.02	42.17	44.79	10.61	46.03
160	638.17	13.75	0.25	0.38	6.54	0.27	7.63	0.05	0.02	39.21	41.17	11.51	42.75
170	675.04	15.29	0.04	0.48	4.84	0.35	6.55	0.03	0.02	37.82	38.79	15.05	41.60

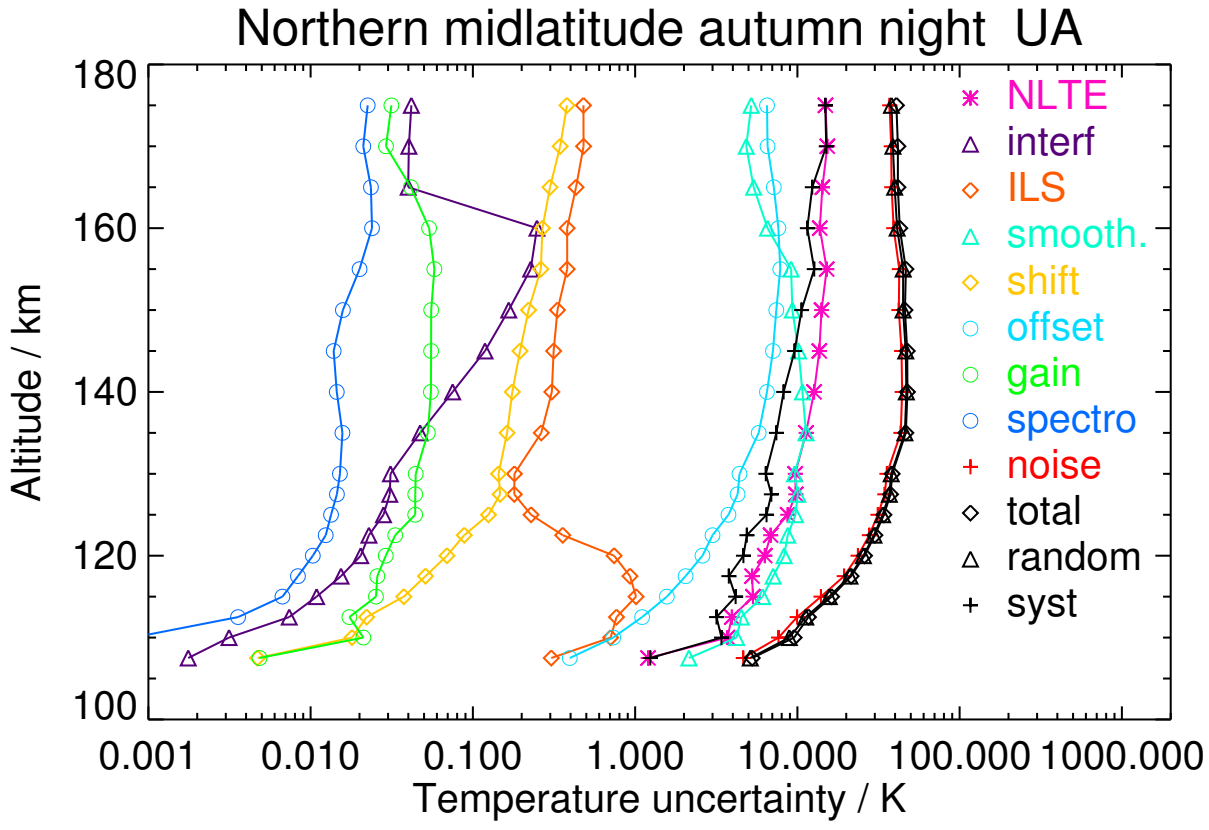

Figure S186. V8R_TwNO_662 Northern midlatitude autumn night

Table S188. Temperature error budget for Tropics day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	220.13	1.73	<0.01	0.17	1.21	0.02	0.67	<0.01	<0.01	8.41	8.56	1.56	8.70
120	365.44	8.97	0.02	0.77	10.17	0.07	2.86	0.02	<0.01	25.07	27.35	8.57	28.66
130	468.37	17.57	0.03	0.21	15.48	0.19	5.36	0.03	0.01	39.67	43.10	17.12	46.37
140	521.36	26.30	0.07	0.41	17.87	0.35	7.30	0.04	<0.01	49.84	53.78	25.63	59.57
150	565.05	24.60	0.12	0.46	17.01	0.37	7.67	0.04	0.02	47.73	51.52	24.03	56.85
160	628.73	19.39	0.13	0.43	10.47	0.35	7.59	0.04	0.03	43.49	45.59	18.89	49.35
170	658.77	14.72	0.13	0.38	4.95	0.33	7.06	0.04	0.03	37.90	39.05	14.23	41.56
180	683.78	13.78	0.17	0.57	4.82	0.39	6.71	0.04	0.04	39.06	40.16	13.10	42.24

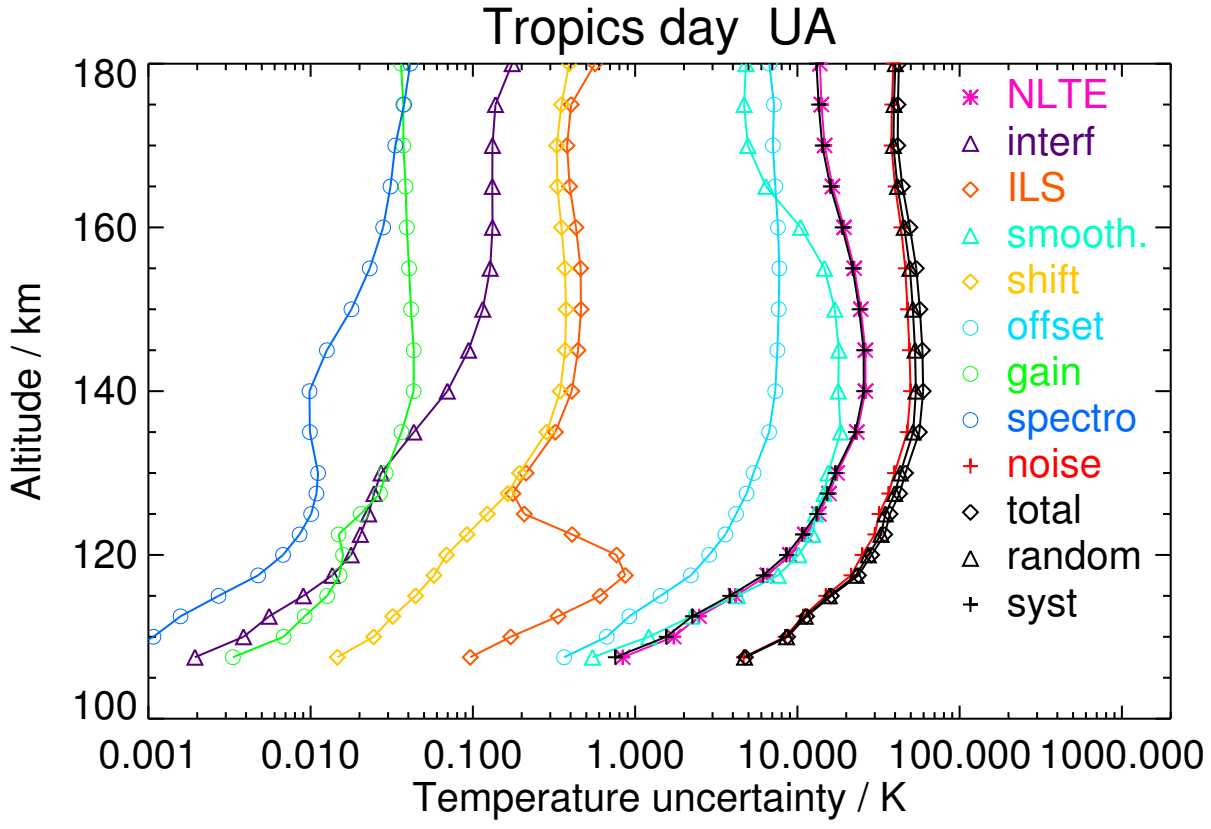

Figure S187. V8R_TwNO_662 Tropics day

Table S189. Temperature error budget for Tropics night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
120	348.14	1.82	0.02	0.42	5.81	0.01	2.44	0.02	0.02	22.24	23.13	1.66	23.19
130	445.15	3.63	0.04	0.29	9.45	0.02	4.77	0.03	0.04	36.46	38.01	3.22	38.14
140	495.23	3.79	0.03	0.30	9.04	0.03	5.53	0.02	0.03	40.76	42.17	3.22	42.29
150	520.78	5.11	0.02	0.10	7.43	0.07	6.46	0.03	0.02	39.82	41.05	4.84	41.33

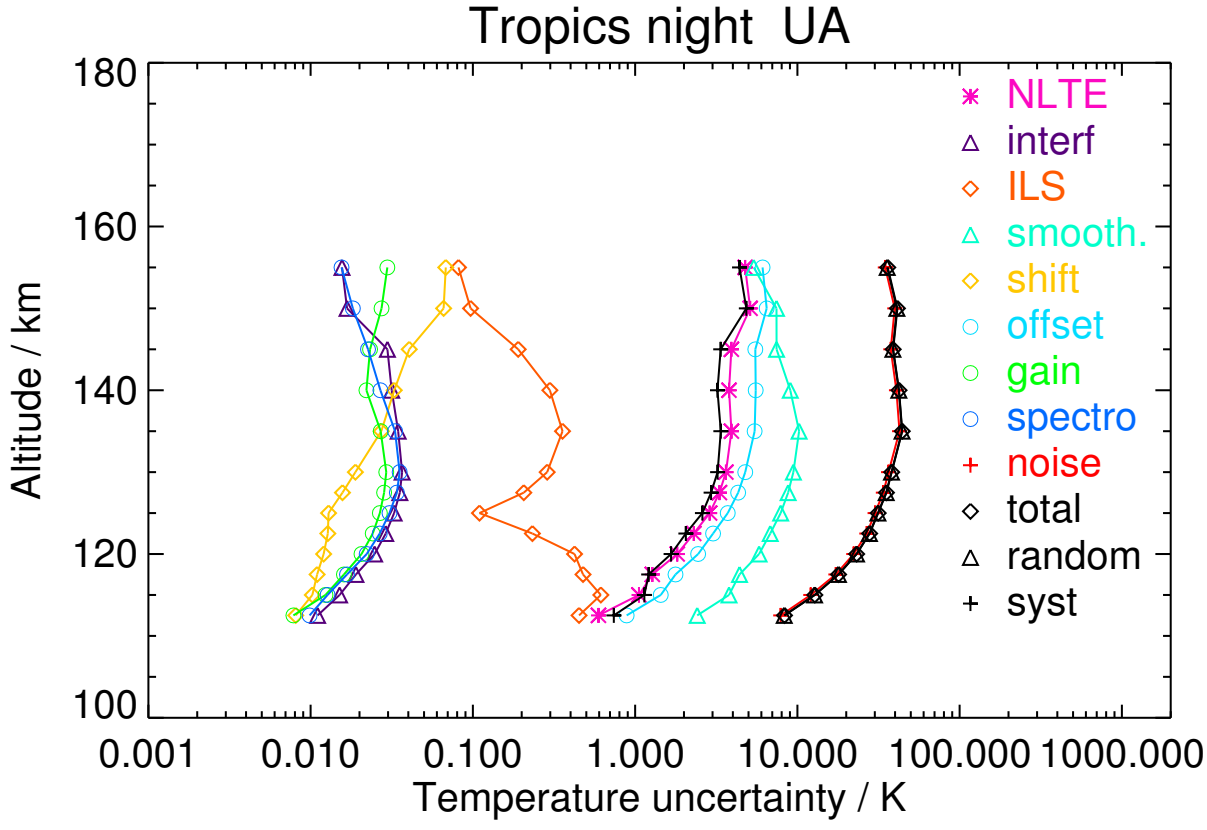

Figure S188. V8R_TwNO_662 Tropics night

Table S190. Temperature error budget for Southern midlatitude winter day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	282.18	2.07	<0.01	0.51	3.07	0.01	0.82	<0.01	<0.01	6.58	7.36	1.95	7.61
120	345.26	5.77	<0.01	0.88	9.15	0.06	2.69	0.03	<0.01	23.46	25.44	5.29	25.99
130	426.33	10.26	0.02	0.29	14.07	0.14	4.96	0.04	<0.01	38.13	41.10	9.63	42.21
140	510.84	16.58	0.06	0.53	16.82	0.26	8.17	0.05	0.01	51.70	55.22	15.76	57.43
150	564.03	15.89	0.10	0.59	12.87	0.29	8.82	0.06	0.02	49.00	51.69	15.04	53.83
160	616.07	12.56	0.11	0.51	7.12	0.27	8.50	0.06	0.03	41.34	42.99	11.88	44.61
170	636.15	10.41	0.09	0.45	4.32	0.30	8.73	0.06	0.03	39.28	40.60	9.89	41.79
180	669.64	10.69	0.17	0.39	3.45	0.32	9.45	0.09	0.04	40.62	42.02	10.01	43.19

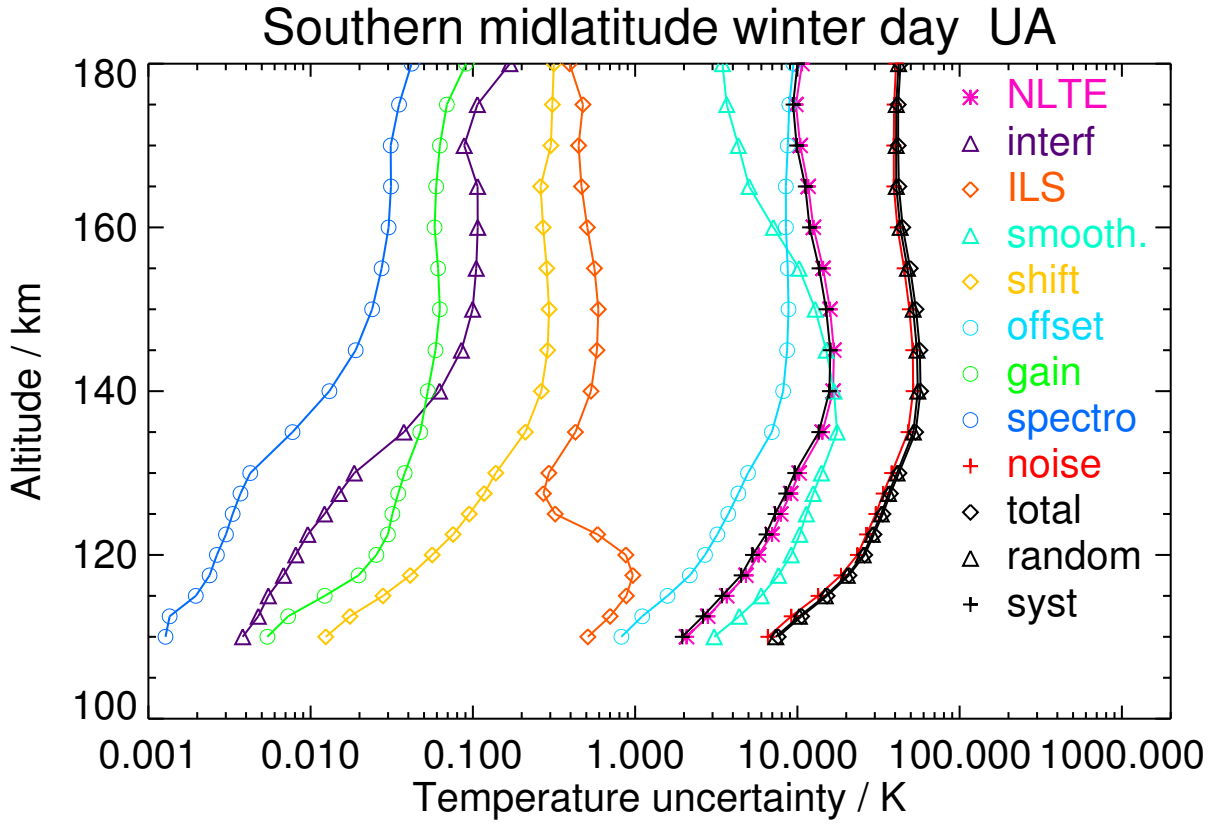

Figure S189. V8R_TwNO_662 Southern midlatitude winter day

Table S191. Temperature error budget for Southern midlatitude winter night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	293.08	1.89	<0.01	0.60	3.16	0.02	0.92	<0.01	<0.01	7.37	8.15	1.62	8.31
120	376.86	5.67	0.01	0.87	8.90	0.07	2.92	0.02	0.01	24.28	26.32	4.16	26.65
130	471.53	9.68	0.02	0.29	11.31	0.16	5.04	0.05	0.01	37.02	39.68	6.62	40.22
140	517.57	9.30	0.02	0.37	11.55	0.18	5.85	0.05	<0.01	42.43	44.83	6.69	45.32
150	557.13	9.31	0.03	0.42	9.67	0.26	5.69	0.05	<0.01	37.48	39.43	7.96	40.22
160	601.19	9.49	0.04	0.65	9.41	0.51	7.23	0.06	0.03	40.17	42.16	8.21	42.95
170	595.23	1.80	0.06	0.61	6.25	0.55	8.94	0.06	0.04	41.51	42.92	1.90	42.96
180	614.15	1.66	0.06	0.51	5.74	0.49	8.45	0.05	0.04	38.93	40.25	1.73	40.29

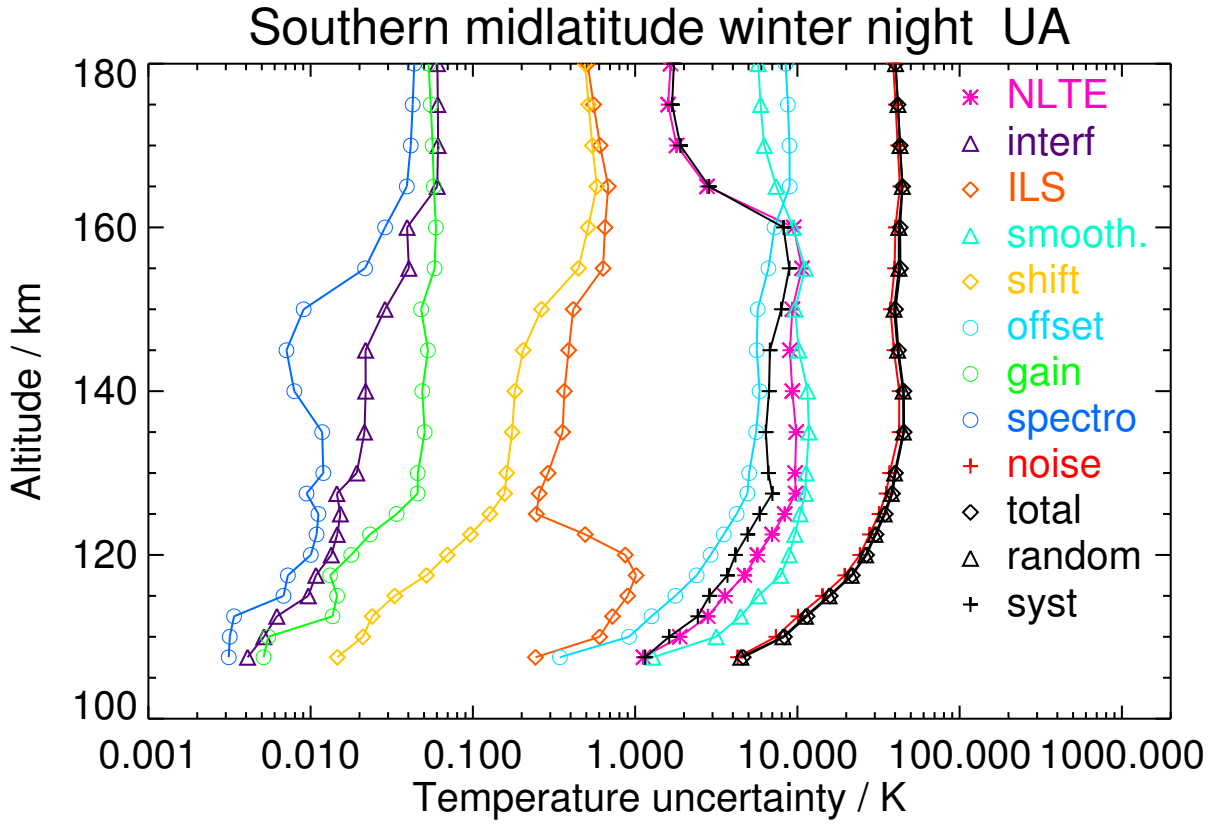

Figure S190. V8R_TwNO_662 Southern midlatitude winter night

Table S192. Temperature error budget for Southern midlatitude spring day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	267.90	4.15	<0.01	0.54	2.83	0.06	0.78	0.01	<0.01	8.10	8.78	3.84	9.58
120	379.85	12.99	0.02	1.58	11.31	0.10	2.75	0.02	<0.01	25.20	28.10	12.34	30.68
130	476.60	21.67	0.03	0.33	15.74	0.26	4.46	0.04	0.01	38.13	41.73	21.20	46.81
140	520.24	30.86	0.05	0.64	18.26	0.44	5.63	0.04	<0.01	46.42	50.59	30.23	58.93
150	603.37	30.79	0.14	0.81	16.16	0.50	6.43	0.04	0.02	45.44	49.02	30.23	57.59
160	658.63	22.56	0.26	0.84	11.41	0.44	7.18	0.05	0.03	42.09	44.48	22.02	49.63
170	701.88	15.96	0.28	0.83	5.12	0.41	7.59	0.05	0.04	40.82	42.18	15.07	44.79
180	729.33	13.57	0.35	0.91	3.95	0.45	7.62	0.05	0.04	40.39	41.85	11.80	43.48

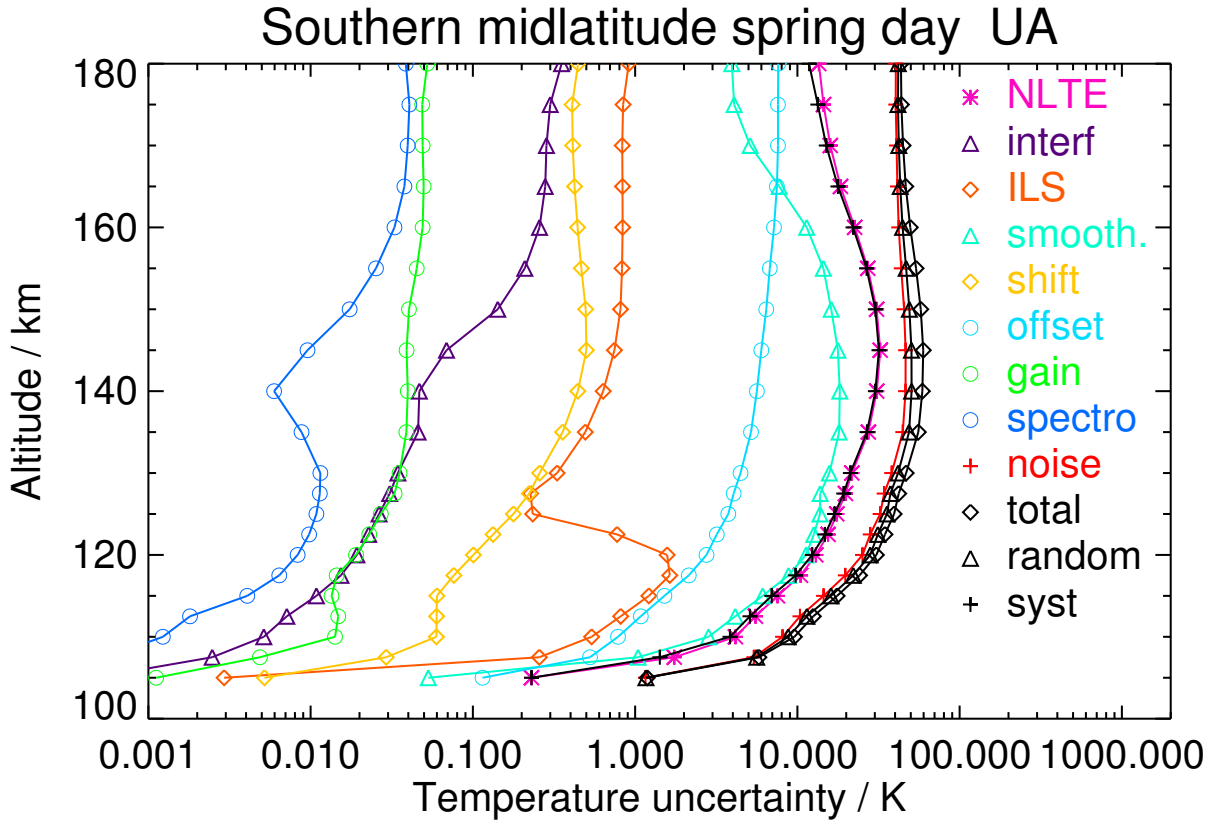

Figure S191. V8R_TwNO_662 Southern midlatitude spring day

Table S193. Temperature error budget for Southern midlatitude spring night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	290.75	2.66	<0.01	0.75	3.57	0.02	0.94	<0.01	<0.01	7.80	8.74	2.38	9.06
120	361.36	5.81	0.03	1.04	8.14	0.06	2.83	0.03	0.02	23.72	25.58	4.17	25.91
130	446.04	10.00	0.05	0.31	11.21	0.17	4.92	0.05	0.03	37.79	40.35	7.09	40.97
140	521.35	13.44	0.07	0.51	12.64	0.26	6.53	0.05	0.02	46.45	49.51	9.47	50.41
150	579.48	12.63	0.23	0.45	9.88	0.22	6.58	0.04	0.02	40.53	43.00	9.70	44.08
160	648.03	13.62	0.75	0.50	8.47	0.35	7.66	0.07	0.02	40.65	42.87	11.46	44.37
170	710.55	13.29	1.15	0.56	4.93	0.49	7.70	0.10	0.03	41.05	43.07	9.56	44.12
180	766.88	12.79	1.36	0.57	3.63	0.52	7.76	0.10	0.03	40.76	42.85	8.09	43.60

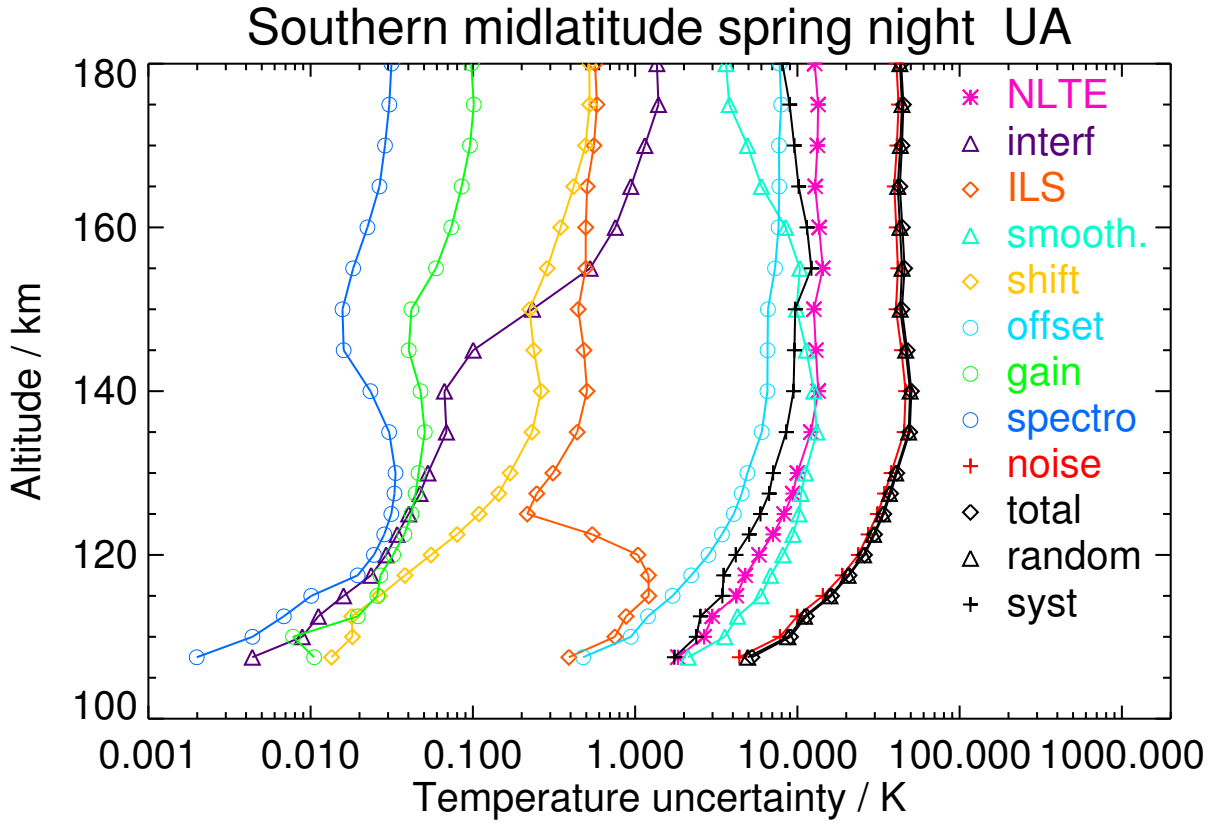

Figure S192. V8R_TwNO_662 Southern midlatitude spring night

Table S194. Temperature error budget for Southern midlatitude summer day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	302.15	3.27	<0.01	0.96	3.20	0.01	0.82	<0.01	<0.01	7.39	8.16	3.23	8.78
120	355.30	10.45	0.03	2.15	11.93	0.07	2.74	0.03	<0.01	25.50	28.51	10.05	30.23
130	473.07	19.43	0.04	0.59	16.21	0.24	4.82	0.04	0.02	38.76	42.56	18.83	46.54
140	534.80	27.27	0.10	1.02	17.73	0.49	6.30	0.04	0.01	47.37	51.27	26.72	57.82
150	602.15	26.17	0.26	0.99	15.91	0.50	7.19	0.04	0.02	45.99	49.50	25.61	55.73
160	674.70	19.53	0.36	0.81	10.47	0.37	7.94	0.04	0.04	43.62	45.79	19.01	49.58
170	711.31	13.98	0.39	0.65	4.79	0.29	7.99	0.04	0.05	41.13	42.37	13.41	44.44
180	742.84	11.47	0.49	0.64	3.72	0.29	7.94	0.05	0.06	40.09	41.25	10.70	42.61

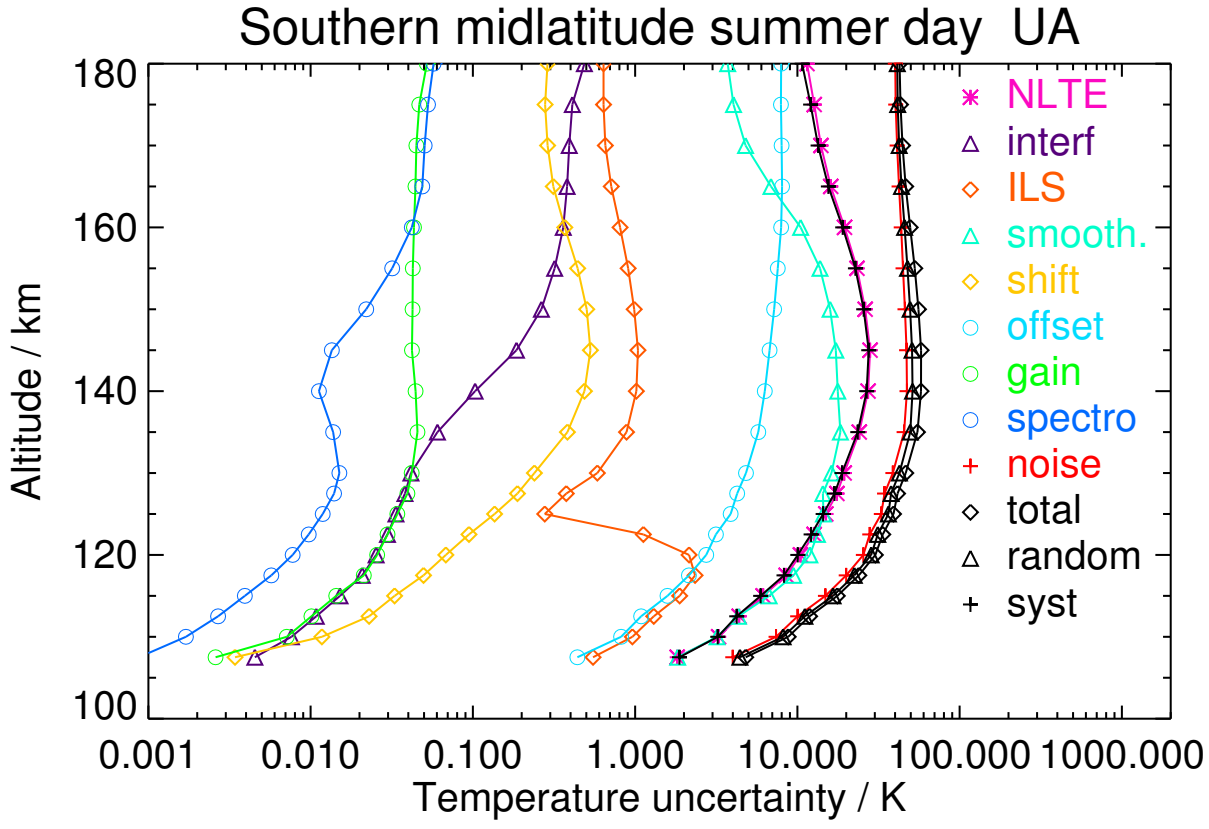

Figure S193. V8R_TwNO_662 Southern midlatitude summer day

Table S195. Temperature error budget for Southern midlatitude summer night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	279.27	2.04	<0.01	0.71	3.31	<0.01	0.95	<0.01	<0.01	7.33	8.20	1.73	8.38
120	361.13	5.27	0.02	1.29	10.43	0.04	3.75	0.02	0.02	26.69	29.03	4.68	29.41
130	450.28	8.46	0.02	0.47	14.59	0.14	6.39	0.02	0.02	40.67	43.89	7.33	44.50
140	492.42	8.27	0.03	0.41	13.43	0.18	7.04	0.03	0.02	47.74	50.30	6.88	50.77
150	539.05	6.80	0.04	0.32	8.75	0.18	6.48	0.03	0.02	38.82	40.44	6.01	40.89
160	595.87	5.92	0.13	0.25	5.38	0.19	7.43	0.05	0.03	34.66	35.97	5.24	36.35

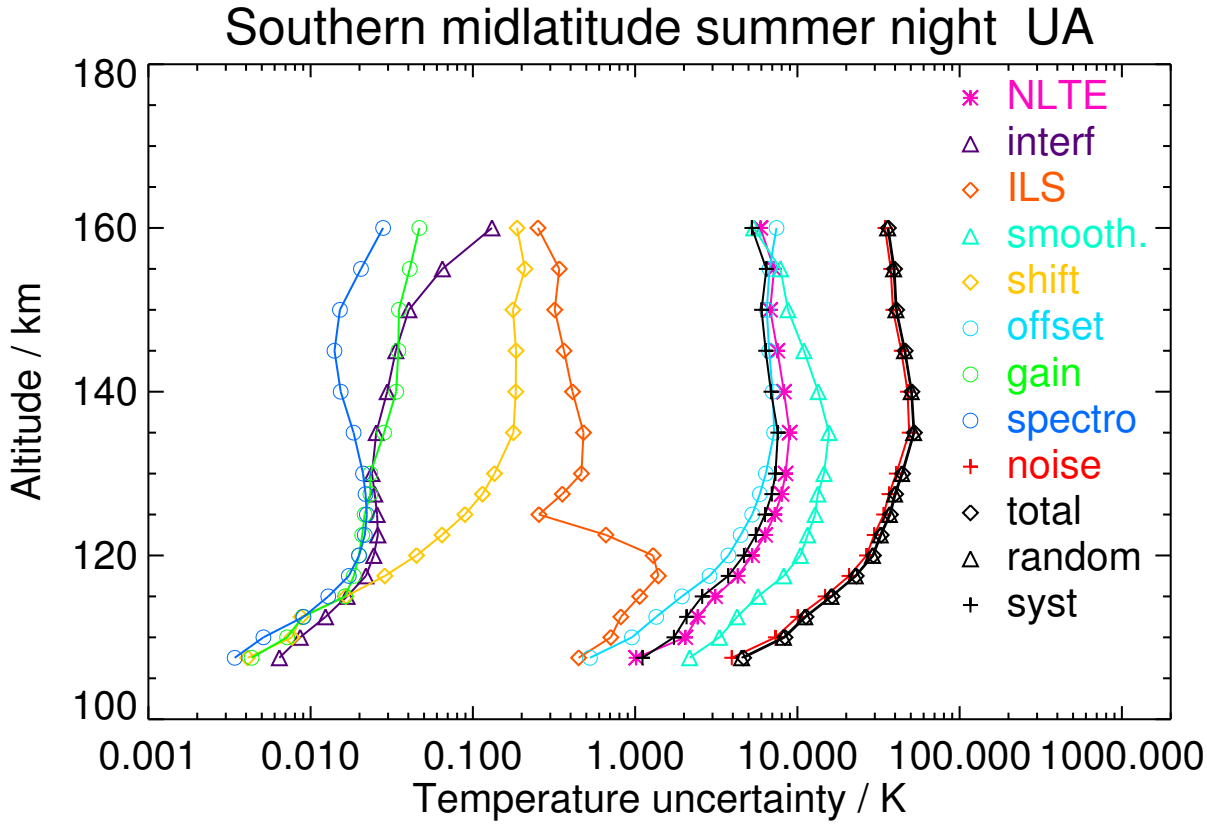

Figure S194. V8R_TwNO_662 Southern midlatitude summer night

Table S196. Temperature error budget for Southern midlatitude autumn day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	302.82	5.05	<0.01	1.08	4.22	0.03	0.85	0.01	<0.01	7.99	9.20	4.94	10.44
120	378.68	10.28	0.01	1.84	9.70	0.13	2.54	0.03	<0.01	22.64	25.26	9.15	26.87
130	454.87	15.93	0.01	0.74	15.08	0.26	4.44	0.06	<0.01	35.79	39.66	14.48	42.22
140	497.77	22.94	0.11	0.73	18.13	0.37	6.43	0.06	<0.01	49.00	53.55	20.76	57.43
150	558.63	22.51	0.18	0.77	15.84	0.43	7.21	0.05	0.01	47.34	51.34	20.37	55.24
160	620.58	18.57	0.18	0.80	10.21	0.43	7.49	0.04	0.02	42.62	45.04	17.14	48.19
170	664.76	15.61	0.21	0.87	5.18	0.49	7.66	0.03	0.02	40.87	42.22	14.77	44.72
180	706.12	13.90	0.31	0.95	3.96	0.55	7.90	0.03	0.02	41.49	42.79	12.75	44.65

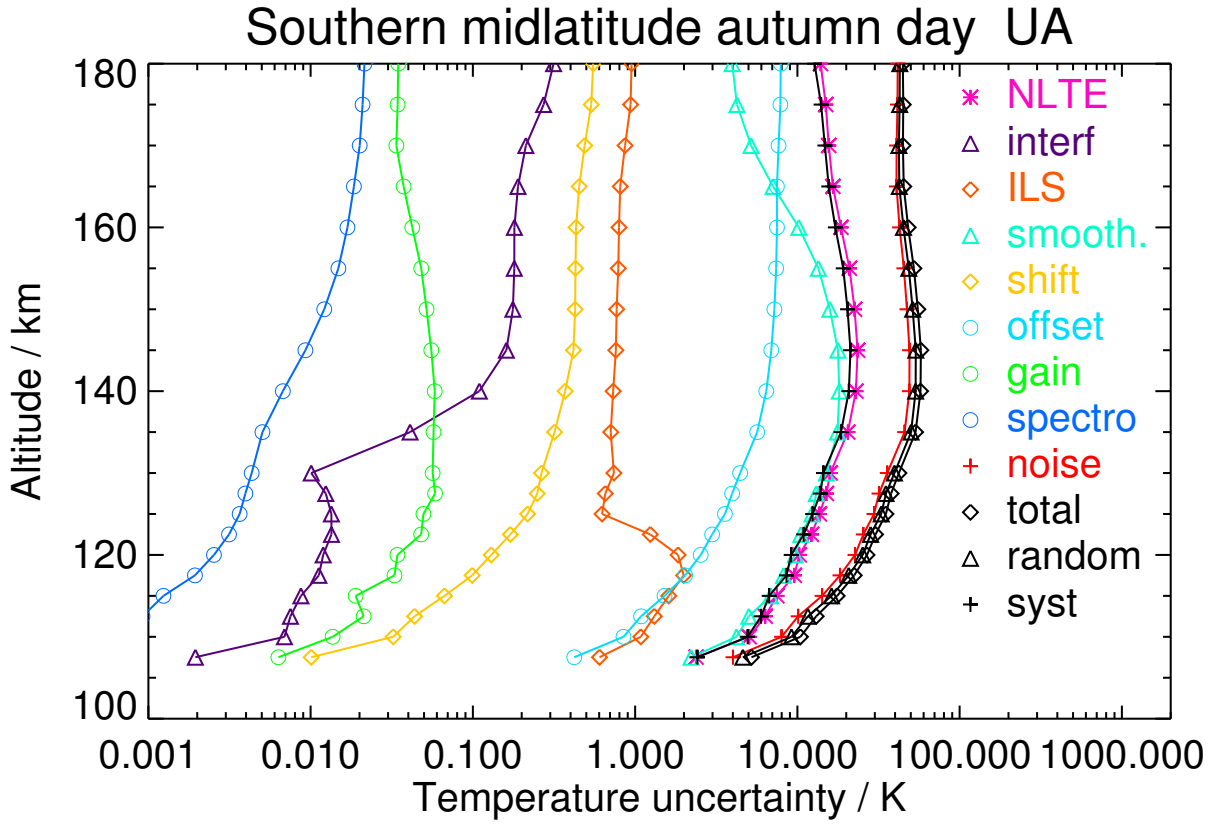

Figure S195. V8R_TwNO_662 Southern midlatitude autumn day

Table S197. Temperature error budget for Southern midlatitude autumn night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	279.45	2.33	<0.01	0.32	3.25	0.03	0.86	0.03	<0.01	7.76	8.57	1.92	8.78
120	366.84	8.53	0.04	0.80	9.18	0.11	2.79	0.06	<0.01	24.50	27.05	5.83	27.67
130	473.18	13.37	0.19	0.21	11.20	0.21	4.66	0.05	0.01	35.95	39.17	9.14	40.23
140	556.38	16.41	0.59	0.32	11.56	0.24	6.58	0.09	<0.01	44.73	48.23	11.01	49.47
150	627.43	17.07	0.68	0.42	8.98	0.25	6.92	0.09	<0.01	43.13	46.14	12.32	47.76
160	665.88	15.79	0.78	0.43	6.69	0.25	7.13	0.09	<0.01	40.84	43.03	12.73	44.87
170	685.82	18.62	1.94	0.76	3.48	0.38	6.74	0.11	0.01	44.38	47.38	11.57	48.77
180	722.16	13.39	0.05	0.62	3.57	0.46	7.85	0.08	0.02	43.36	44.21	13.41	46.20

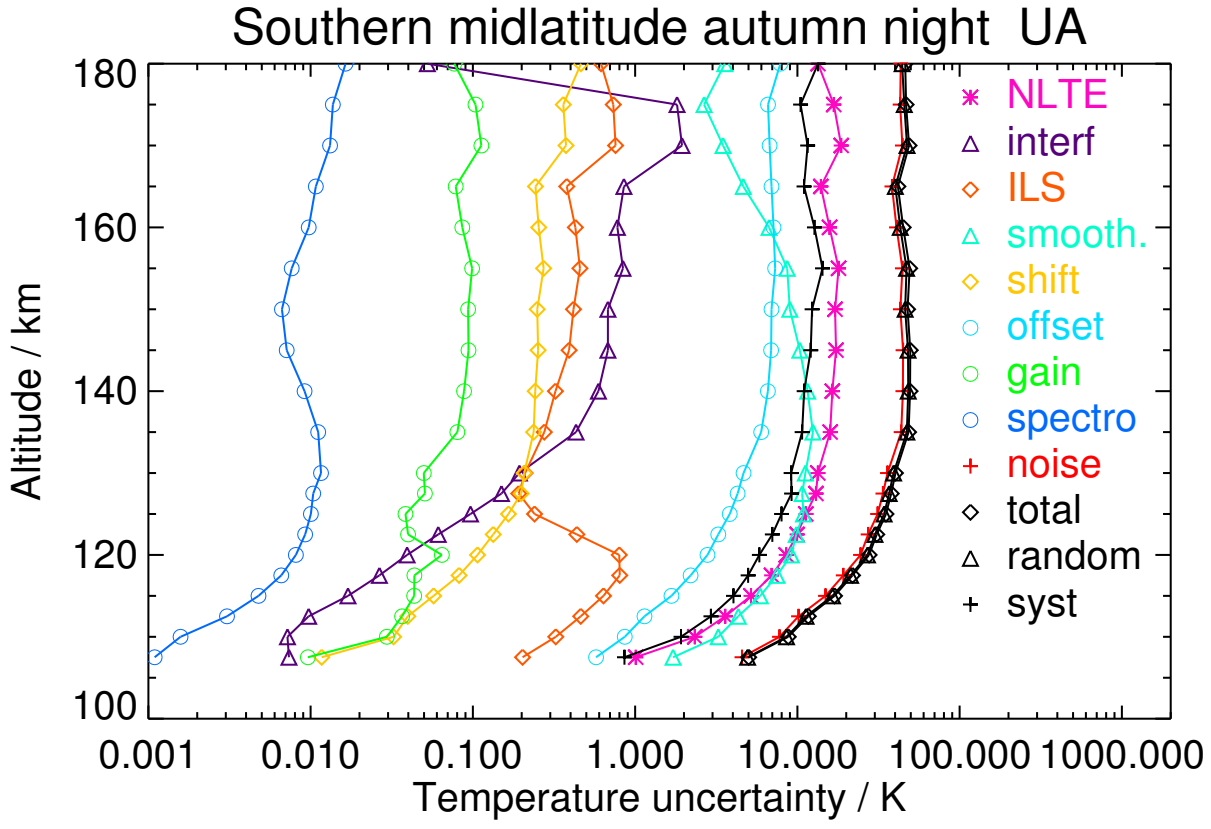

Figure S196. V8R_TwNO_662 Southern midlatitude autumn night

Table S198. Temperature error budget for Southern polar winter day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	276.69	2.41	<0.01	0.77	3.85	0.01	0.93	<0.01	<0.01	7.50	8.51	2.45	8.86
120	358.34	7.99	0.02	1.46	12.70	0.09	3.15	0.03	<0.01	25.29	28.60	7.68	29.61
130	447.34	14.41	0.04	0.58	16.38	0.27	5.56	0.06	<0.01	40.08	43.91	13.63	45.97
140	516.01	18.56	0.16	0.85	17.19	0.36	7.58	0.07	0.02	50.29	54.08	17.40	56.81
150	584.36	15.87	0.26	0.80	12.51	0.36	8.27	0.07	0.04	46.27	48.98	14.83	51.17
160	626.21	12.36	0.23	0.70	7.67	0.37	8.22	0.06	0.05	40.78	42.50	11.67	44.08
170	658.63	10.34	0.31	0.59	4.69	0.40	8.58	0.05	0.05	39.95	41.27	9.81	42.42
180	657.88	7.41	0.10	0.62	4.77	0.49	8.49	0.06	0.06	39.49	40.80	6.73	41.35

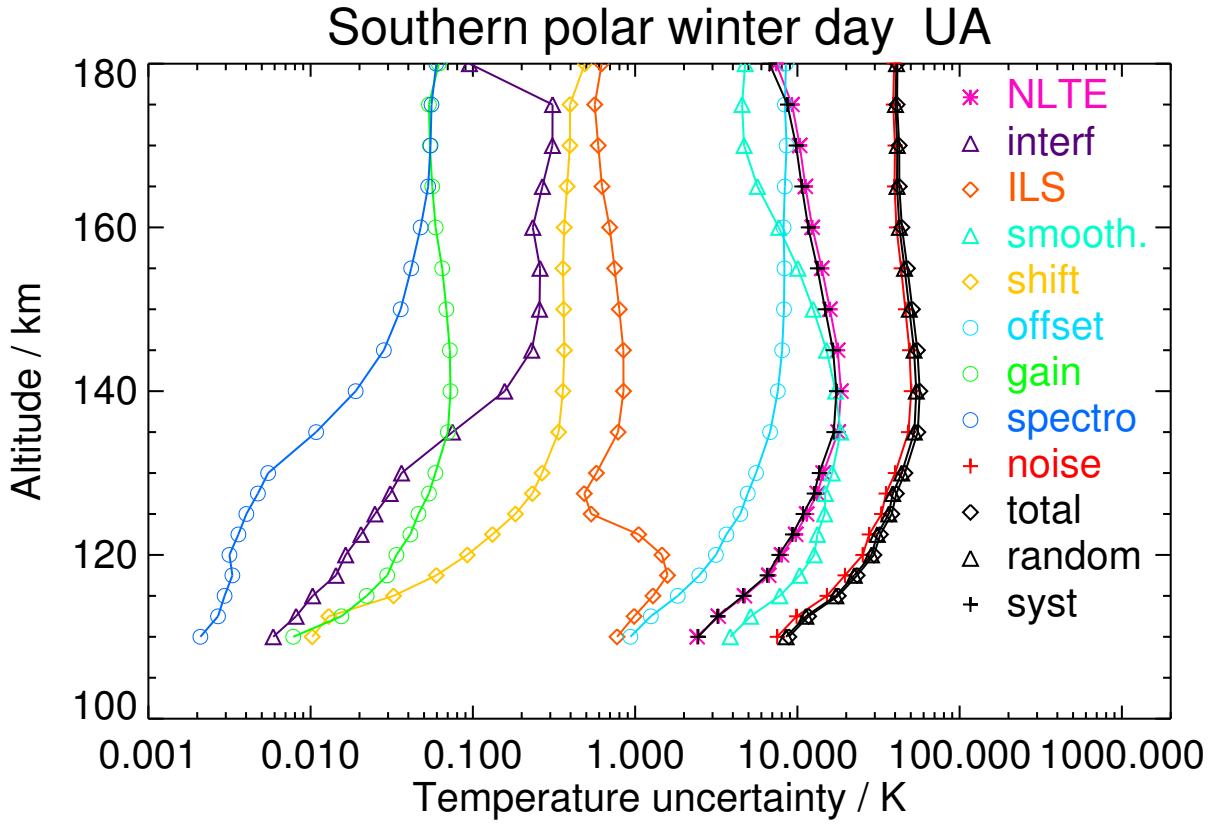

Figure S197. V8R_TwNO_662 Southern polar winter day

Table S199. Temperature error budget for Southern polar winter night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	276.19	2.08	<0.01	0.54	3.66	0.01	0.96	<0.01	<0.01	7.96	8.85	1.97	9.07
120	366.78	7.09	<0.01	1.05	12.27	0.09	3.56	0.02	<0.01	26.25	29.33	6.59	30.06
130	446.61	11.81	0.01	0.36	15.60	0.22	6.27	0.04	<0.01	41.62	45.12	10.90	46.42
140	490.64	12.22	0.02	0.55	15.54	0.28	7.19	0.04	0.02	50.81	53.80	11.38	54.99
150	525.72	9.57	0.02	0.47	10.28	0.26	6.42	0.03	0.02	42.11	43.94	9.03	44.85
160	525.89	7.34	0.03	0.48	7.09	0.29	6.54	0.04	0.03	33.82	35.24	7.00	35.93

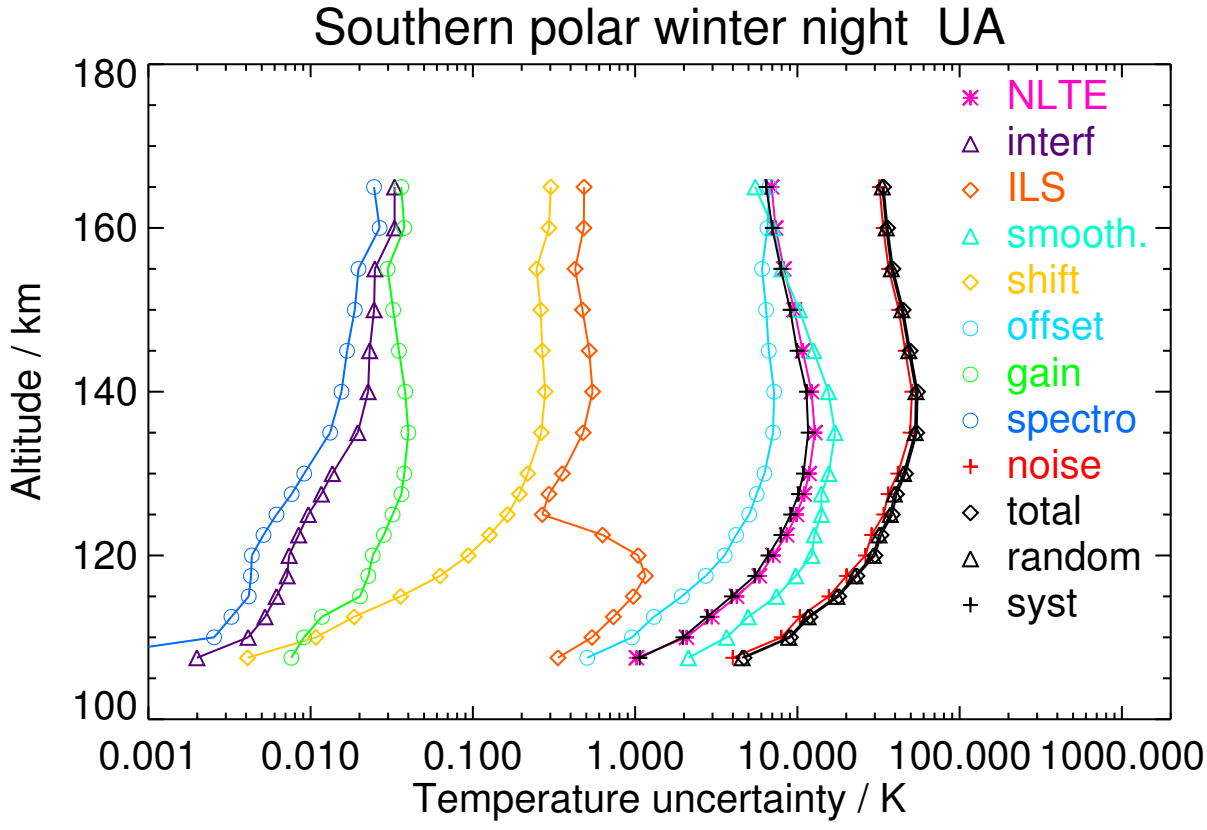

Figure S198. V8R_TwNO_662 Southern polar winter night

Table S200. Temperature error budget for Southern polar spring day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	302.24	5.16	<0.01	1.38	3.98	0.03	0.79	0.02	<0.01	7.68	8.92	4.94	10.20
120	422.51	14.98	0.03	3.20	11.43	0.13	2.51	0.04	<0.01	23.74	26.93	14.47	30.58
130	501.15	20.22	0.06	1.11	15.07	0.35	3.65	0.06	0.01	35.84	39.31	19.76	43.99
140	548.02	28.30	0.14	0.85	16.96	0.52	4.91	0.06	<0.01	46.65	50.33	27.51	57.35
150	601.93	27.41	0.27	0.88	16.02	0.59	5.87	0.05	0.02	45.62	49.27	26.40	55.90
160	662.73	19.58	0.47	0.87	11.36	0.50	7.07	0.06	0.04	42.89	45.32	18.68	49.02
170	708.46	13.74	0.56	0.86	5.23	0.50	7.82	0.06	0.05	42.27	43.75	12.30	45.45
180	746.29	11.74	0.61	0.92	3.60	0.51	7.92	0.07	0.06	41.55	42.99	9.66	44.06

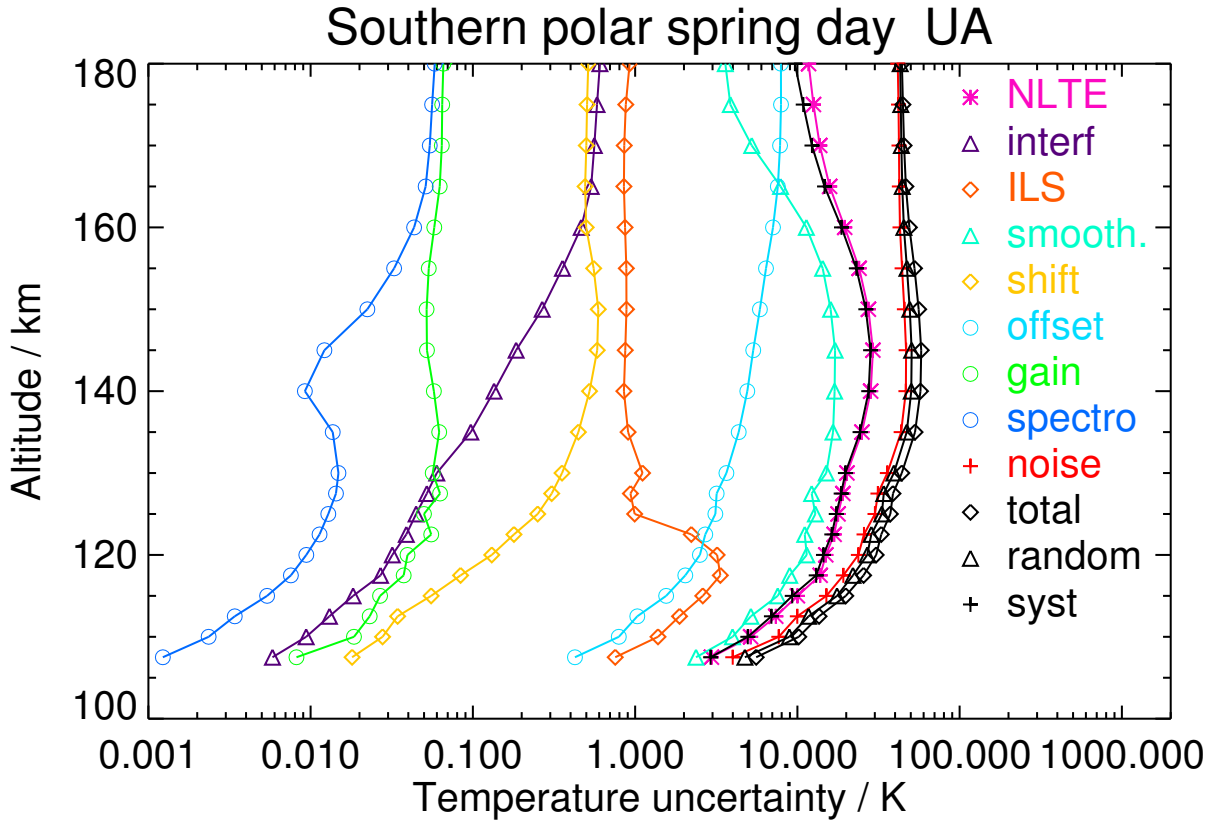

Figure S199. V8R_TwNO_662 Southern polar spring day

Table S201. Temperature error budget for Southern polar spring night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	294.07	3.68	<0.01	0.85	3.70	0.02	0.88	0.02	<0.01	8.09	9.13	3.29	9.71
120	389.93	10.17	0.03	1.66	10.30	0.09	3.10	0.03	0.03	24.21	27.16	8.38	28.43
130	478.73	15.85	0.05	0.62	13.89	0.26	5.14	0.06	0.03	37.63	41.42	13.09	43.44
140	532.46	19.58	0.13	0.63	15.01	0.39	6.57	0.05	0.02	47.65	51.67	15.91	54.06
150	593.82	18.36	0.21	0.62	12.06	0.40	6.68	0.04	0.02	43.94	47.18	15.24	49.58
160	649.22	16.63	0.16	0.62	9.57	0.47	6.87	0.04	0.03	42.02	44.19	15.14	46.71
170	700.73	13.21	0.18	0.57	4.81	0.50	7.10	0.04	0.03	40.65	41.89	12.11	43.60
180	699.06	10.02	0.06	0.57	4.77	0.55	7.25	0.03	0.04	40.19	41.25	9.51	42.33

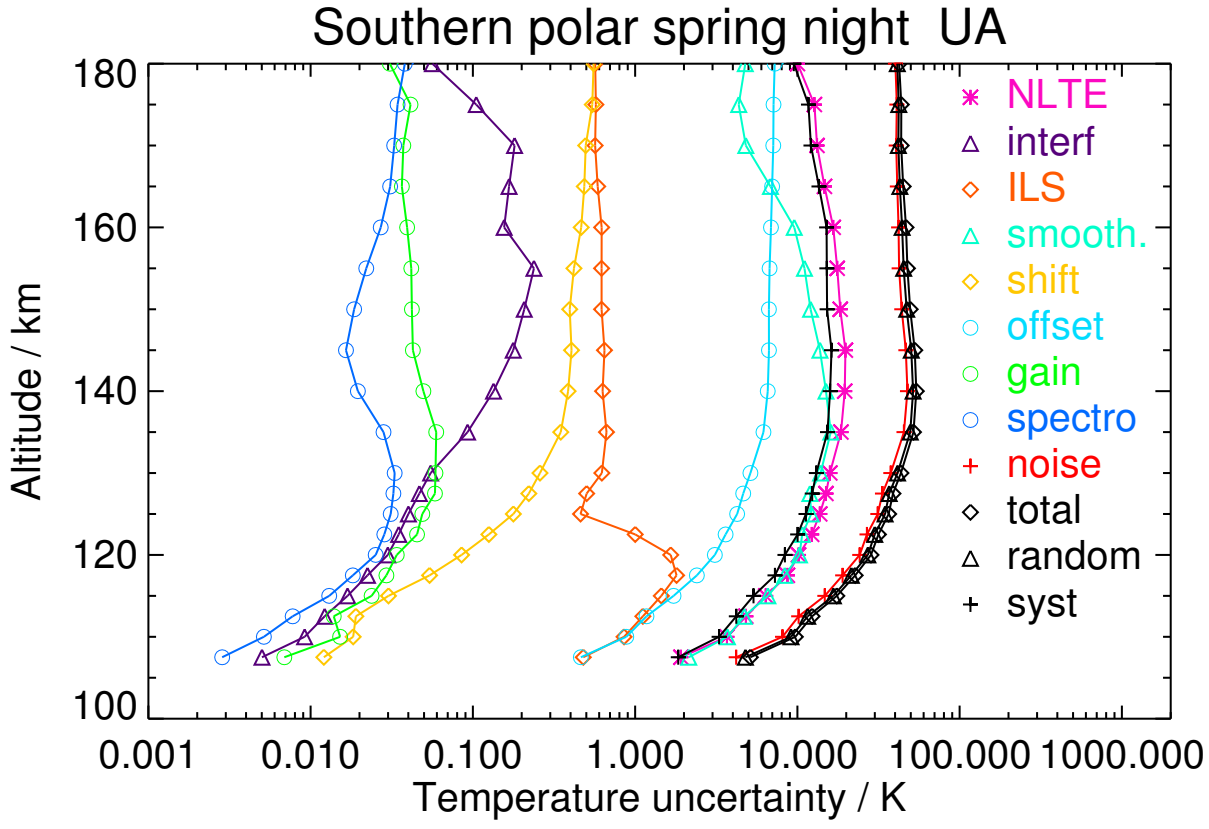

Figure S200. V8R_TwNO_662 Southern polar spring night

Table S202. Temperature error budget for Southern polar summer day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	320.65	4.23	0.01	1.86	4.20	0.05	0.91	0.01	<0.01	8.02	9.25	4.31	10.20
120	383.15	14.09	0.04	4.59	12.65	0.08	2.92	0.04	0.02	23.78	27.55	13.96	30.88
130	475.55	20.46	0.09	1.88	16.06	0.29	4.30	0.06	0.03	36.60	40.64	19.67	45.15
140	551.83	22.74	0.20	1.68	16.13	0.78	5.17	0.05	0.02	46.83	50.24	21.84	54.78
150	627.36	20.00	0.40	1.24	13.36	0.74	6.01	0.07	0.04	44.33	47.20	18.83	50.82
160	692.45	13.54	0.58	0.89	9.16	0.61	7.00	0.08	0.07	41.06	43.11	12.07	44.76
170	733.77	9.15	0.59	0.76	4.32	0.56	7.65	0.09	0.08	41.77	43.11	6.94	43.67
180	763.93	7.85	0.48	0.77	3.23	0.55	7.65	0.10	0.09	41.48	42.79	4.67	43.04

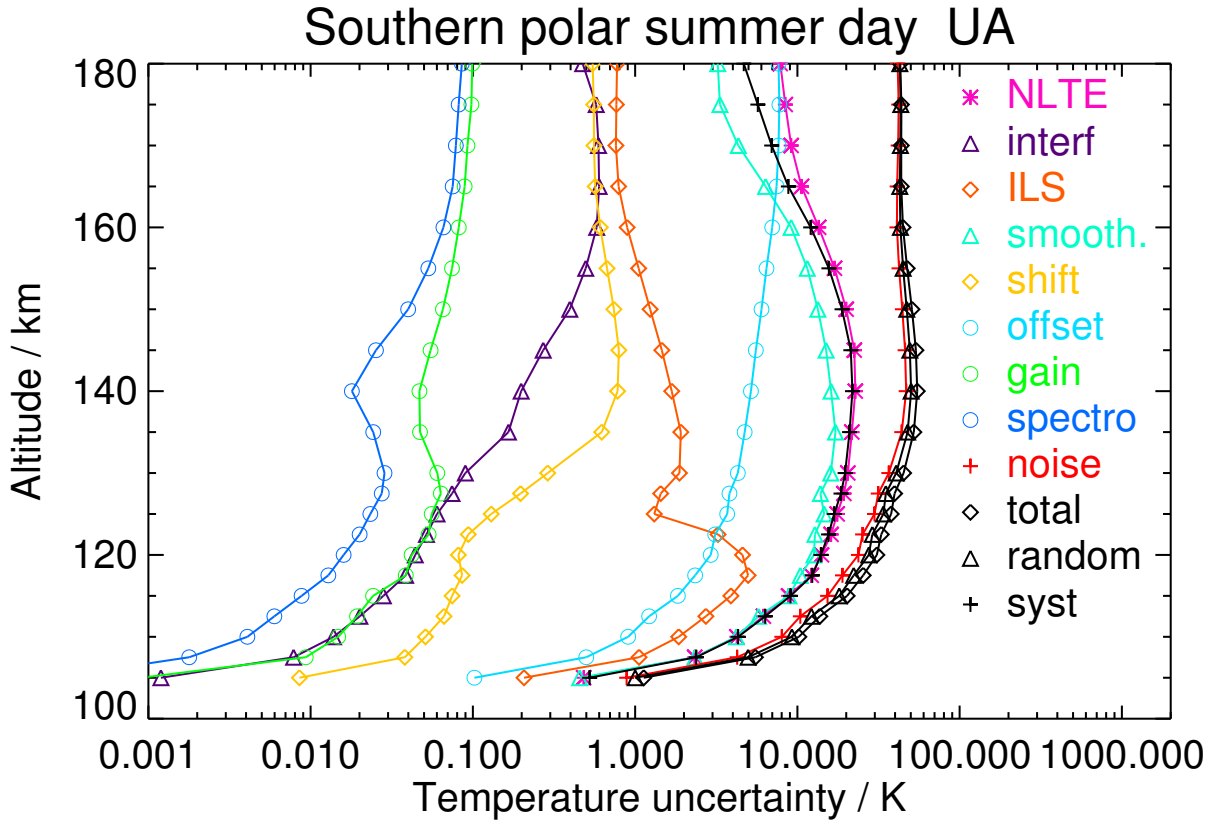

Figure S201. V8R_TwNO_662 Southern polar summer day

Table S203. Temperature error budget for Southern polar summer night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	306.77	3.33	0.01	1.11	3.32	0.01	0.94	0.02	<0.01	7.65	8.71	2.62	9.09
120	376.99	6.86	0.03	1.97	9.17	0.08	3.29	0.04	0.02	24.46	26.72	5.48	27.28
130	457.01	10.88	0.06	0.64	13.29	0.22	5.69	0.06	0.03	39.12	42.20	8.81	43.11
140	524.43	12.96	0.15	0.64	13.37	0.25	7.09	0.06	0.02	47.36	50.46	9.67	51.38
150	582.05	12.91	0.42	0.55	10.20	0.23	7.31	0.07	0.02	42.69	45.27	9.88	46.34
160	660.15	14.41	1.10	0.75	7.22	0.40	8.29	0.14	0.03	41.52	43.95	11.08	45.32
170	716.71	13.79	1.39	0.88	4.05	0.56	8.54	0.19	0.05	42.13	44.20	10.19	45.36
180	792.35	13.50	1.83	1.11	2.87	0.64	8.29	0.20	0.04	41.78	43.66	10.18	44.83

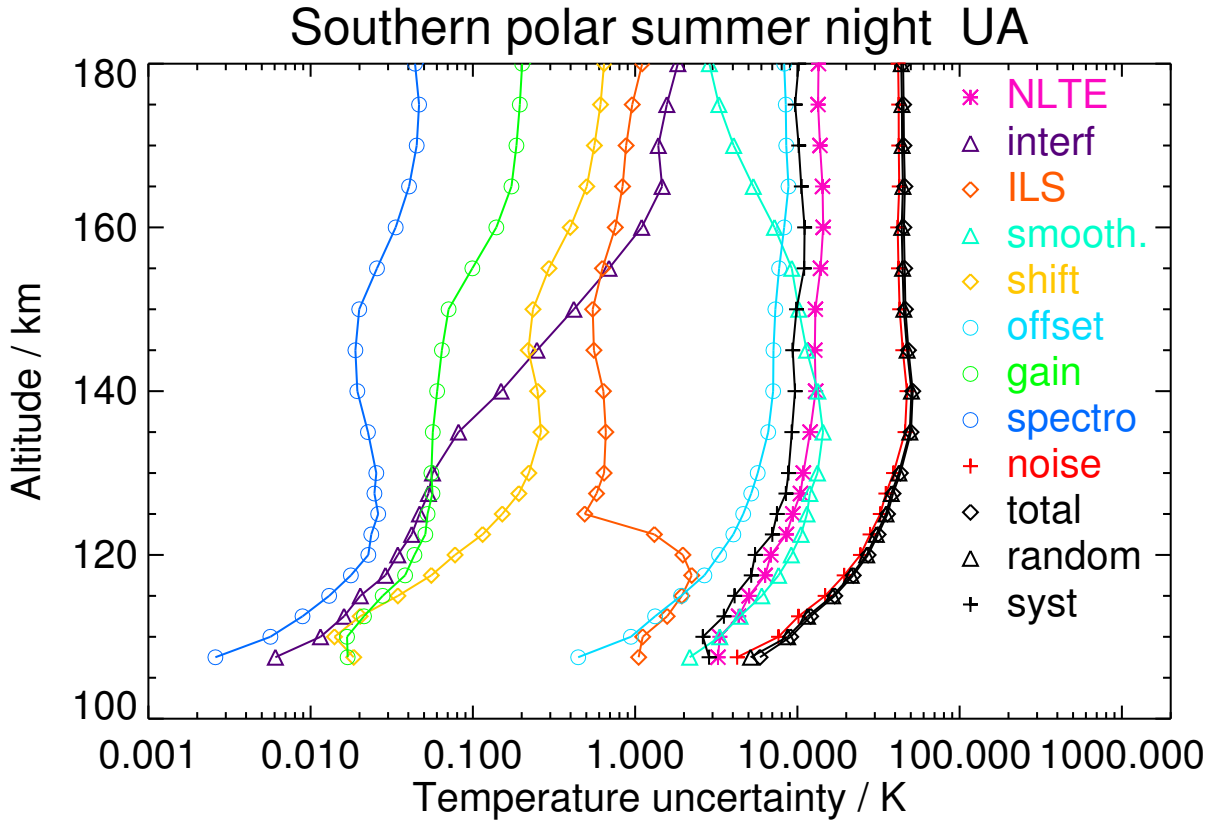

Figure S202. V8R_TwNO_662 Southern polar summer night

Table S204. Temperature error budget for Southern polar autumn day. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	276.24	3.24	<0.01	0.53	3.53	0.02	0.86	0.02	<0.01	7.36	8.39	2.79	8.84
120	379.26	7.99	<0.01	1.06	9.95	0.11	3.01	0.04	<0.01	24.14	26.76	6.29	27.49
130	460.42	12.46	0.02	0.41	13.64	0.23	5.05	0.06	<0.01	37.86	41.27	9.86	42.43
140	492.40	16.77	0.04	0.45	14.77	0.25	5.89	0.05	<0.01	46.98	50.86	12.47	52.36
150	547.99	16.17	0.08	0.51	12.67	0.27	6.37	0.05	0.02	43.39	46.72	12.77	48.43
160	611.64	15.30	0.16	0.63	9.33	0.34	6.92	0.04	0.02	40.06	42.39	13.32	44.43
170	664.83	13.54	0.30	0.77	5.22	0.43	7.62	0.04	0.02	39.93	41.71	11.14	43.17
180	705.07	14.00	0.50	0.95	4.47	0.59	8.25	0.05	0.02	42.21	44.50	9.31	45.47

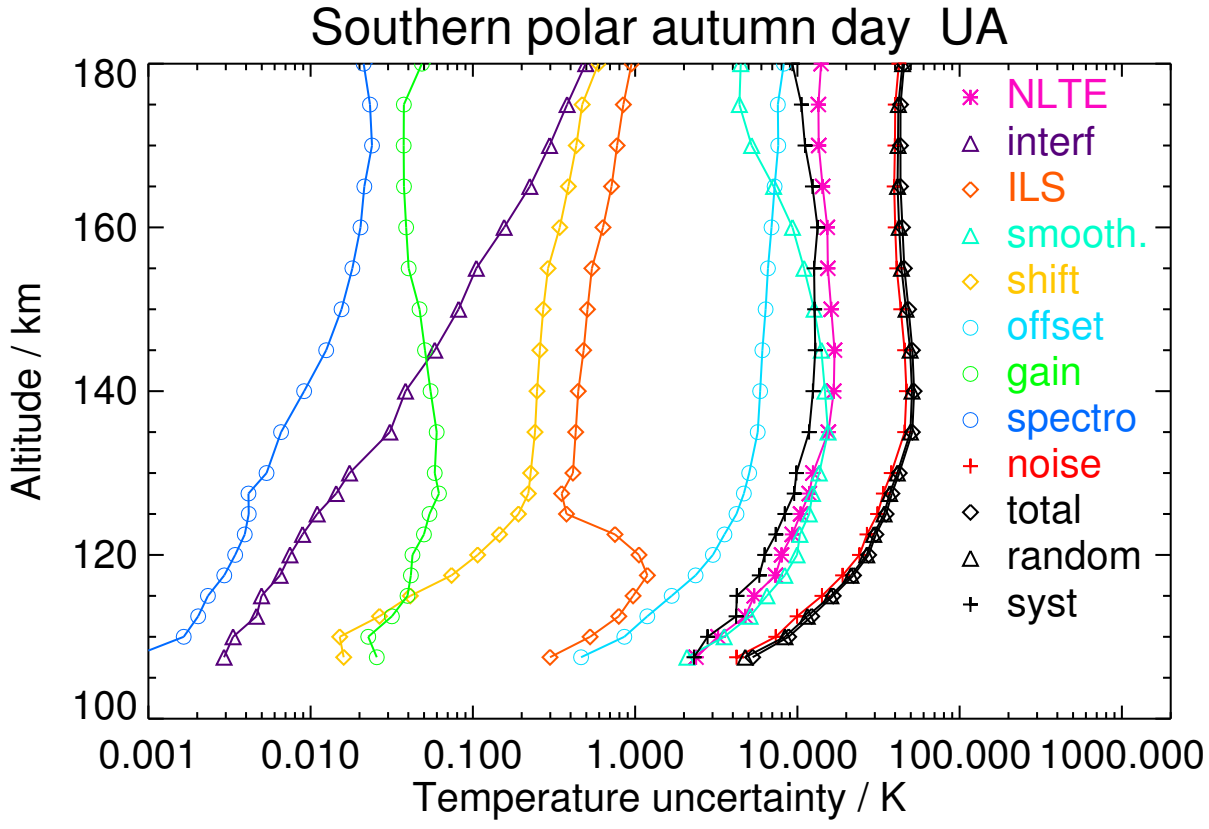

Figure S203. V8R_TwNO_662 Southern polar autumn day

Table S205. Temperature error budget for Southern polar autumn night. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	271.82	3.66	<0.01	0.69	4.05	0.02	0.81	0.05	<0.01	8.21	9.41	3.13	9.92
120	376.94	11.13	<0.01	1.18	11.16	0.12	2.61	0.05	<0.01	22.94	26.18	9.88	27.99
130	476.89	19.39	0.02	0.52	14.75	0.30	4.49	0.09	<0.01	36.20	40.42	17.06	43.87
140	519.41	24.32	0.04	0.58	16.75	0.36	6.14	0.08	<0.01	47.61	52.14	21.41	56.37
150	557.99	21.36	0.04	0.59	15.98	0.40	6.61	0.06	0.01	47.13	50.93	19.57	54.56
160	601.40	16.18	0.04	0.55	10.18	0.42	6.56	0.05	0.02	40.81	42.98	15.07	45.54
170	625.88	13.34	0.03	0.58	5.95	0.51	6.93	0.04	0.02	37.94	39.32	12.45	41.25
180	631.16	14.62	0.04	0.78	5.98	0.73	7.55	0.03	0.03	40.55	41.93	13.94	44.18

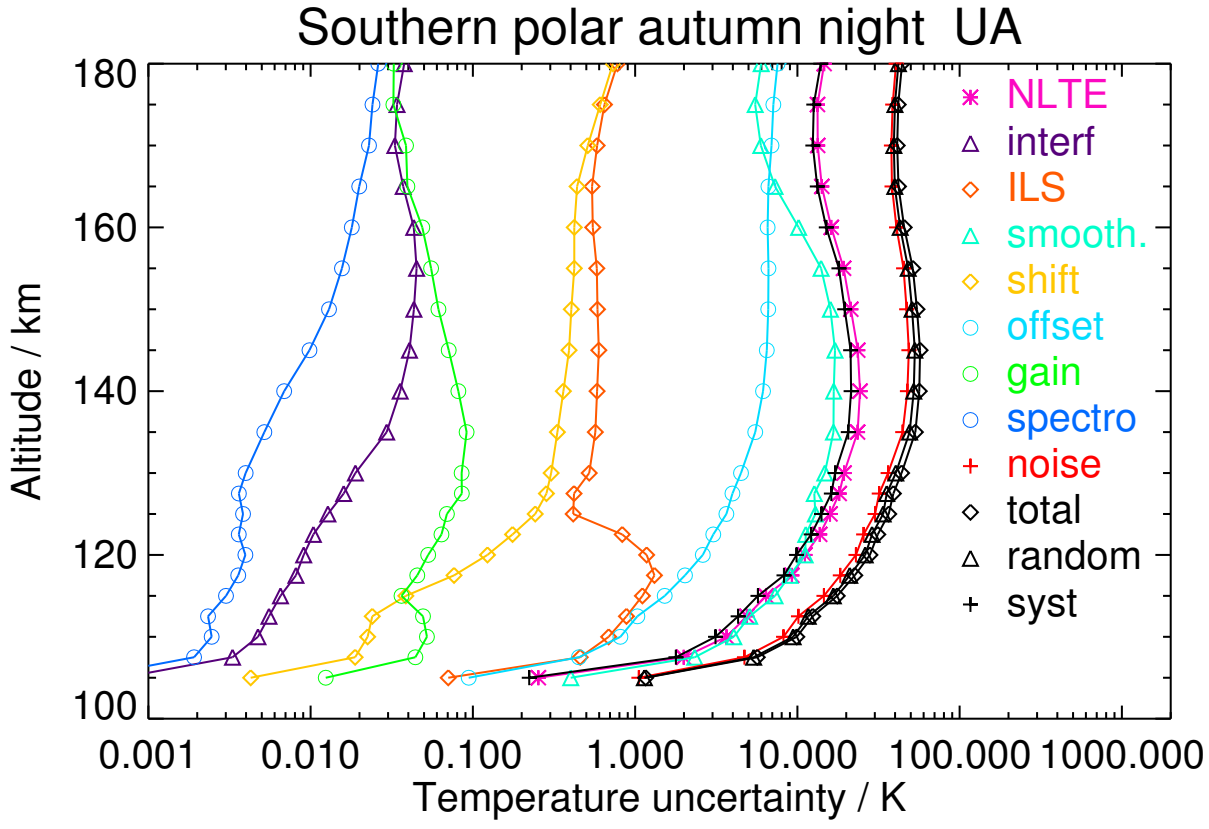

Figure S204. V8R_TwNO_662 Southern polar autumn night

Table S206. Temperature error budget for Northern polar winter day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	285.20	7.49	<0.01	0.76	4.18	0.04	0.83	0.06	<0.01	8.20	9.70	6.94	11.92
120	385.97	20.54	0.03	1.74	10.31	0.24	1.86	0.10	<0.01	19.93	23.56	19.42	30.53
130	496.57	22.73	0.11	0.62	12.45	0.56	2.03	0.10	<0.01	30.36	33.41	21.96	39.98
140	572.50	37.82	0.26	0.74	13.64	0.66	3.03	0.09	<0.01	42.33	45.19	37.10	58.47
150	684.48	39.52	0.53	0.93	11.84	0.62	3.85	0.08	<0.01	42.31	45.00	38.52	59.23
160	752.12	31.08	1.02	0.99	8.77	0.37	5.01	0.09	0.02	36.91	39.33	29.76	49.32
170	798.26	22.79	1.36	1.26	3.64	0.50	6.38	0.12	0.02	37.55	39.49	20.66	44.57
180	837.75	20.31	1.57	1.60	2.27	0.64	6.93	0.13	0.02	38.42	40.57	17.35	44.13

S7 Temperature error contribution profile plots and tabulated values for RR UA data (V8R_TwNO_662) at high solar activity conditions

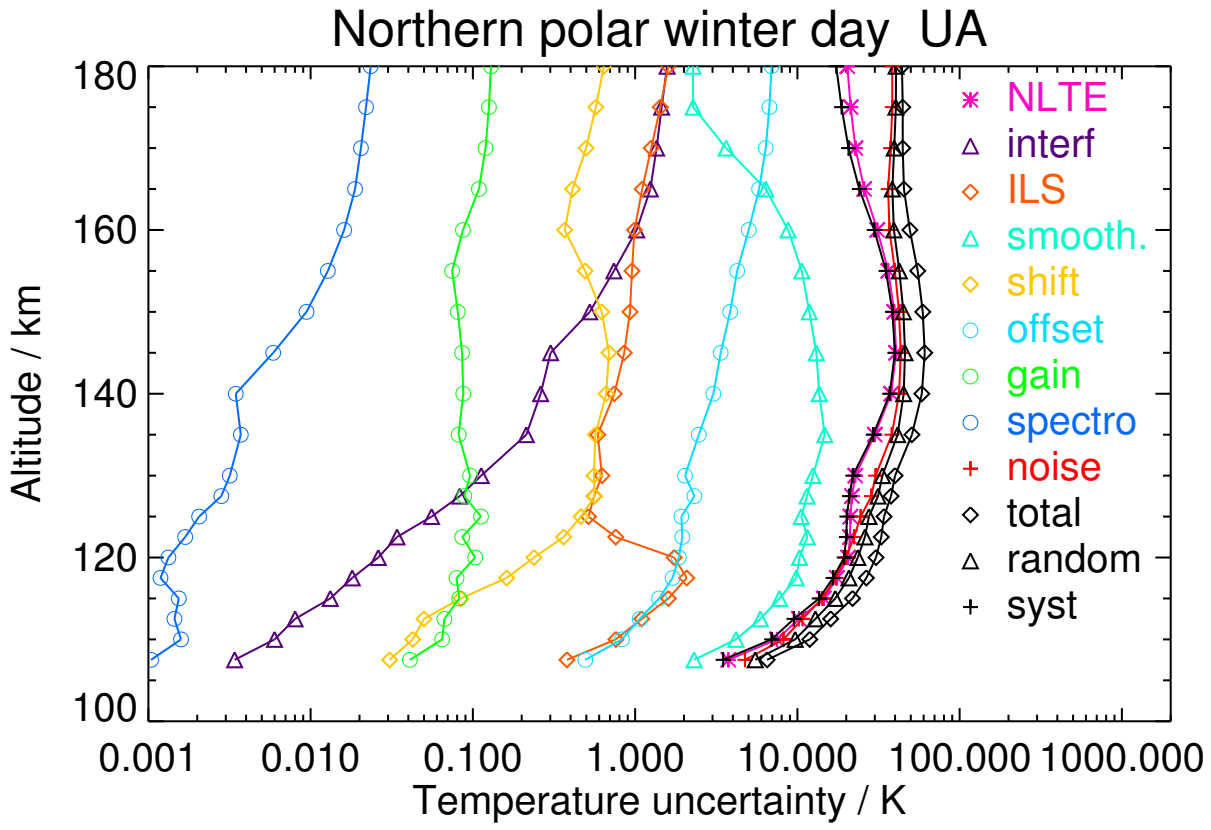

Figure S205. V8R_TwNO_662 Northern polar winter day, high solar activity

Table S207. Temperature error budget for Northern polar winter night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	281.54	6.03	<0.01	0.93	3.99	0.07	0.77	0.07	<0.01	8.25	9.70	5.26	11.03
120	390.94	17.23	<0.01	1.96	8.78	0.19	1.54	0.09	<0.01	17.95	20.55	16.74	26.51
130	497.48	20.21	0.04	0.56	10.60	0.38	1.59	0.06	<0.01	26.69	29.26	19.49	35.15
140	564.43	34.24	0.08	0.58	13.97	0.45	3.04	0.07	<0.01	40.90	43.87	33.56	55.23
150	623.98	36.50	0.18	0.96	15.49	0.60	4.66	0.08	<0.01	43.83	47.33	35.72	59.30
160	687.74	27.90	0.30	1.22	11.86	0.65	6.09	0.07	0.01	43.24	45.94	26.77	53.18
170	727.96	19.70	0.37	1.27	5.38	0.76	6.64	0.07	0.02	41.40	43.03	18.04	46.66
180	744.38	16.49	0.36	1.47	4.70	0.93	6.77	0.06	0.02	40.15	41.93	14.02	44.22

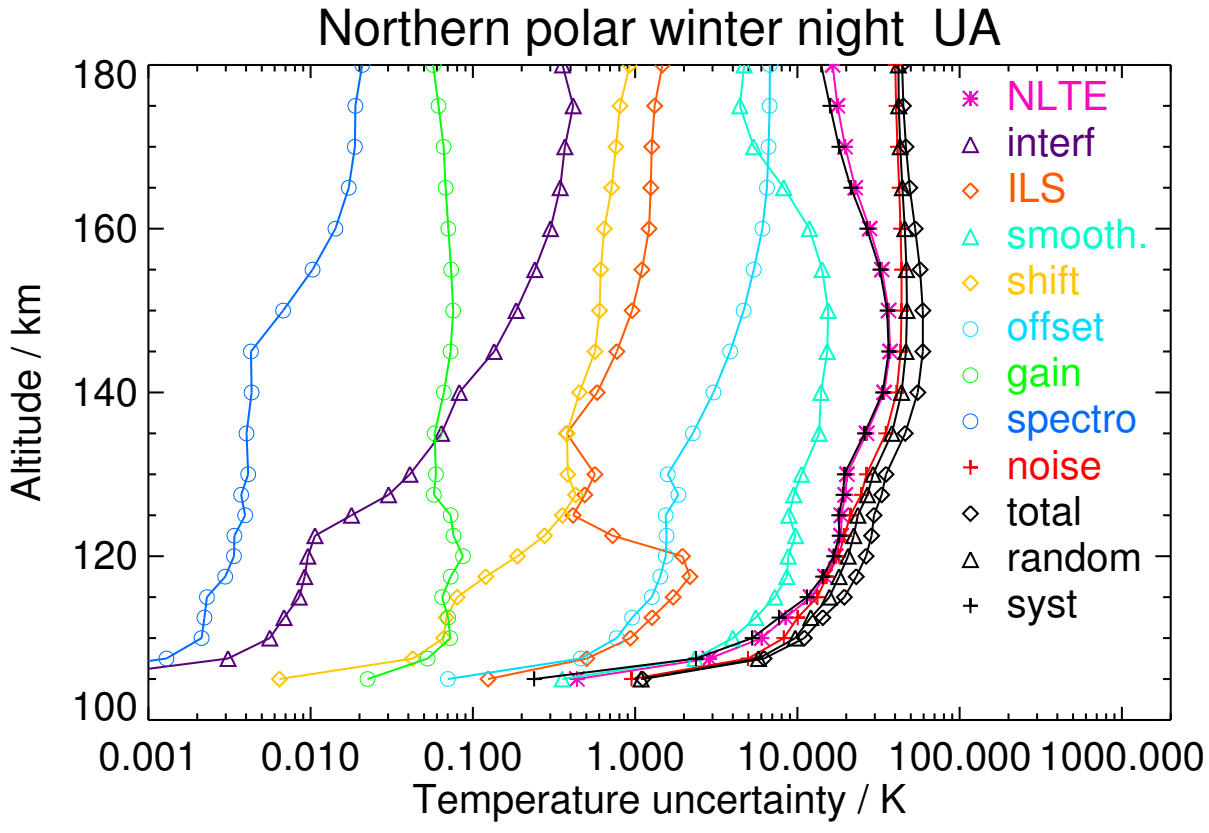

Figure S206. V8R_TwNO_662 Northern polar winter night, high solar activity

Table S208. Temperature error budget for Northern polar spring day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	324.23	9.32	0.02	1.45	3.79	0.19	0.81	0.03	<0.01	8.36	9.79	8.84	13.19
120	431.40	26.83	0.08	3.60	10.15	0.38	1.85	0.09	<0.01	21.25	24.74	26.05	35.93
130	529.62	24.60	0.30	1.16	11.51	0.63	1.81	0.07	<0.01	30.87	33.72	23.64	41.18
140	610.53	35.83	0.62	0.66	11.82	0.72	2.42	0.06	<0.01	42.17	44.50	35.04	56.64
150	675.89	40.07	0.93	0.73	10.92	0.80	2.73	0.08	<0.01	40.47	43.07	38.96	58.08
160	740.90	32.38	1.32	0.84	9.29	0.57	3.46	0.11	<0.01	34.09	36.75	30.99	48.07
170	791.76	21.76	1.82	1.19	3.95	0.45	4.86	0.15	0.02	31.91	33.49	20.36	39.19
180	838.71	21.51	2.33	1.72	2.18	0.85	6.05	0.16	0.03	34.28	36.63	18.62	41.09

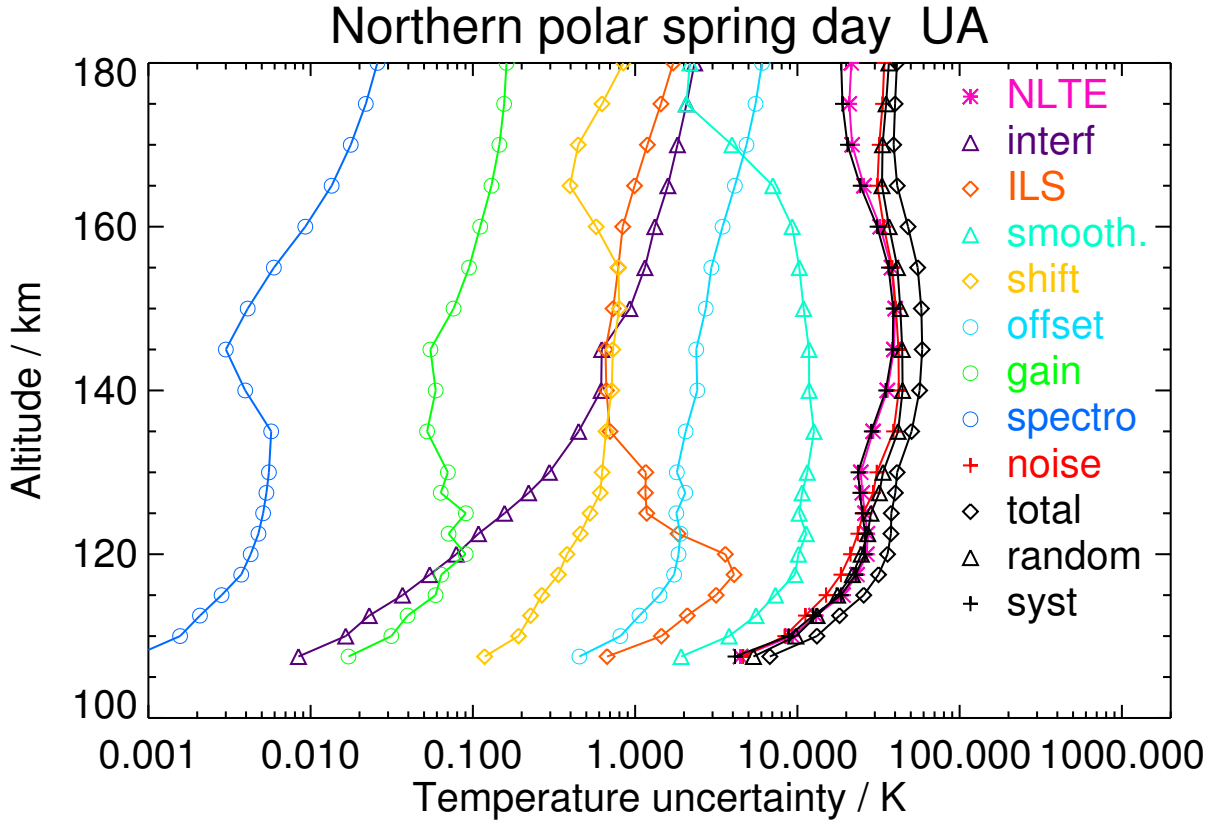

Figure S207. V8R_TwNO_662 Northern polar spring day, high solar activity

Table S209. Temperature error budget for Northern polar spring night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	297.56	4.71	0.01	1.24	3.76	0.03	0.75	0.02	<0.01	7.74	8.81	4.56	9.92
120	389.33	14.36	0.04	3.14	10.90	0.16	2.10	0.04	0.01	20.57	23.80	14.01	27.62
130	493.50	19.56	0.09	1.10	13.85	0.44	2.94	0.05	0.02	31.65	34.96	19.08	39.83
140	552.68	28.54	0.14	0.94	16.69	0.55	4.46	0.05	0.01	45.64	49.35	27.58	56.54
150	637.64	27.34	0.59	0.88	14.66	0.49	5.62	0.06	0.02	45.23	48.63	26.01	55.14
160	721.02	19.31	1.24	0.84	9.00	0.40	7.00	0.09	0.03	41.79	43.91	17.99	47.45
170	784.18	14.81	1.58	0.89	3.42	0.59	7.94	0.12	0.04	42.13	43.67	12.86	45.53
180	836.48	14.20	2.03	1.02	2.36	0.80	8.46	0.14	0.04	42.01	43.61	12.14	45.27

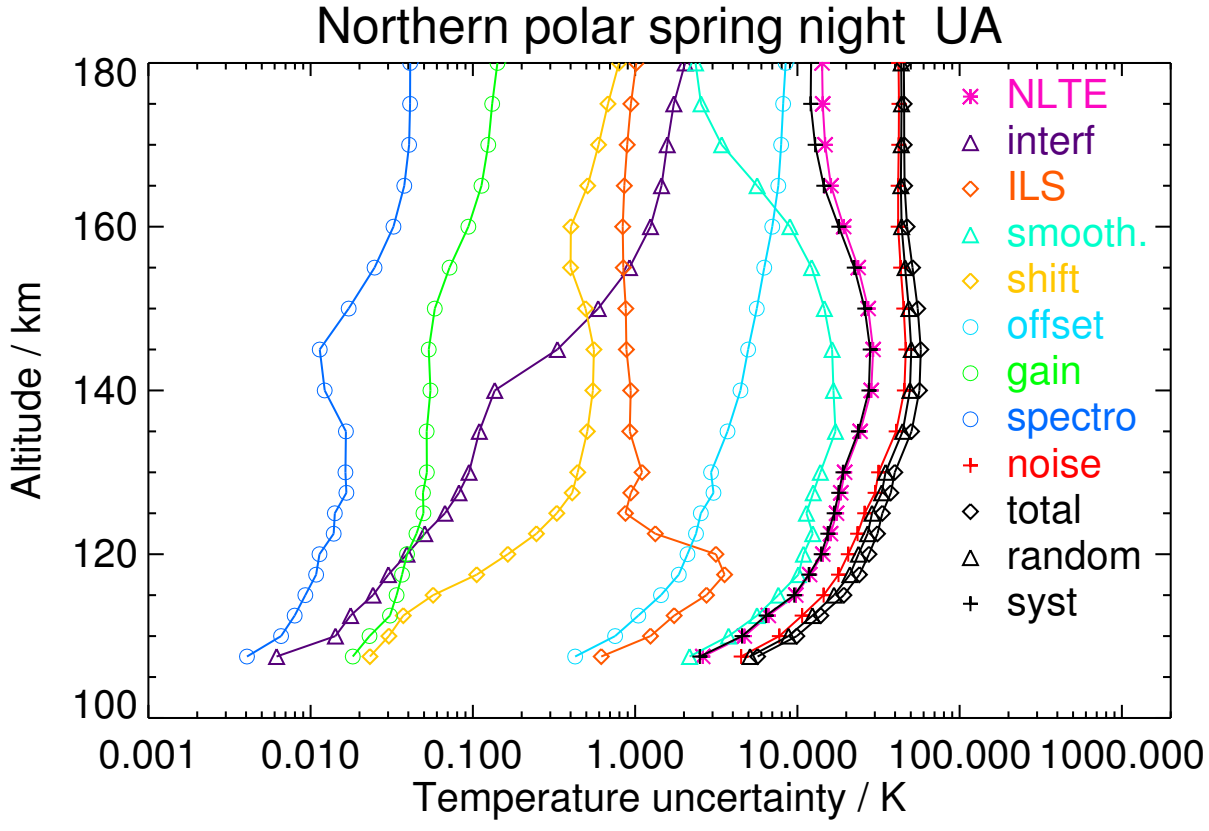

Figure S208. V8R_TwNO_662 Northern polar spring night, high solar activity

Table S210. Temperature error budget for Northern polar summer day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	344.30	9.14	0.02	2.50	4.02	0.11	0.80	0.07	<0.01	8.26	10.03	8.61	13.22
120	413.72	22.47	0.06	5.15	9.70	0.21	1.90	0.13	<0.01	19.90	23.72	21.51	32.02
130	515.49	22.77	0.09	1.67	11.81	0.53	2.08	0.09	0.02	30.69	33.59	21.88	40.09
140	590.28	29.19	0.34	1.09	12.38	0.98	2.71	0.09	<0.01	42.86	45.19	28.47	53.41
150	660.95	30.30	0.53	1.06	11.56	0.97	3.37	0.08	0.02	41.30	44.13	28.69	52.64
160	747.87	21.14	1.12	1.11	7.98	0.69	4.62	0.11	0.03	35.88	38.50	18.44	42.69
170	804.28	15.87	1.39	1.32	3.16	0.63	6.01	0.12	0.04	36.62	38.42	12.90	40.53
180	843.00	17.29	1.49	1.59	2.28	0.81	6.61	0.11	0.05	37.87	39.99	13.73	42.28

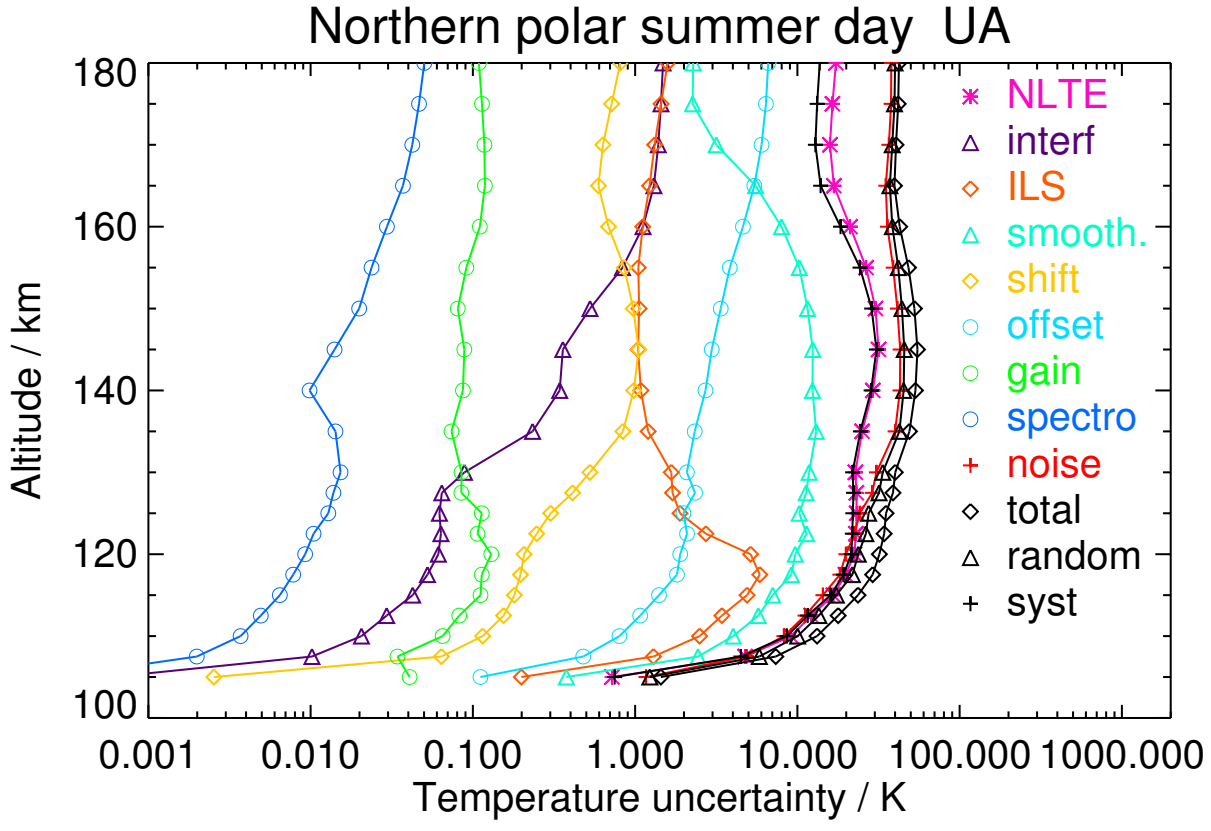

Figure S209. V8R_TwNO_662 Northern polar summer day, high solar activity

Table S211. Temperature error budget for Northern polar summer night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	298.64	2.21	0.01	0.92	3.54	0.02	0.82	0.01	<0.01	7.14	8.06	2.24	8.36
120	387.40	8.68	0.05	1.91	12.29	0.09	3.22	0.03	0.01	25.16	28.32	8.44	29.55
130	492.91	15.03	0.13	0.68	15.10	0.27	5.70	0.06	0.02	39.20	42.64	14.33	44.99
140	531.31	17.41	0.43	0.95	16.62	0.36	7.31	0.08	0.02	48.89	52.51	16.33	54.99
150	610.95	14.66	0.92	0.75	11.89	0.31	8.13	0.08	0.03	45.76	48.38	13.32	50.18
160	690.32	10.80	1.37	0.52	5.85	0.23	8.90	0.09	0.04	41.73	43.35	9.72	44.42
170	749.14	8.53	1.70	0.45	2.66	0.31	9.51	0.11	0.05	41.53	42.94	7.42	43.57
180	793.41	8.31	2.74	0.49	2.07	0.40	10.09	0.14	0.04	42.33	43.84	7.30	44.44

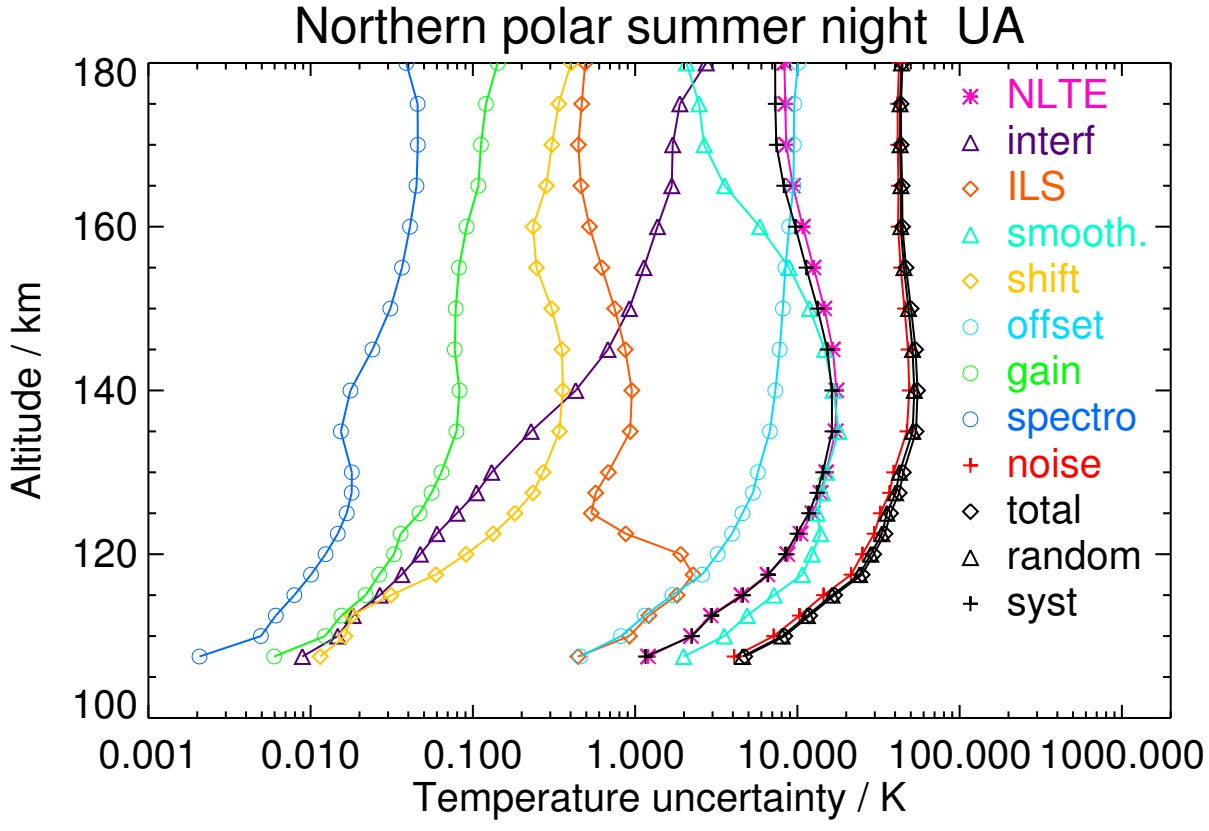

Figure S210. V8R_TwNO_662 Northern polar summer night, high solar activity

Table S212. Temperature error budget for Northern polar autumn day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	280.83	9.53	<0.01	0.84	3.72	0.12	0.73	0.08	<0.01	7.91	9.36	8.99	12.98
120	429.86	26.45	0.05	1.99	9.17	0.39	1.66	0.14	<0.01	20.41	23.34	25.74	34.75
130	546.93	24.69	0.17	0.59	9.74	0.65	1.41	0.10	<0.01	29.62	31.91	23.80	39.81
140	623.77	41.64	0.41	0.51	10.60	0.69	2.20	0.07	<0.01	41.68	43.53	41.16	59.91
150	690.88	43.16	0.75	0.91	10.63	0.94	2.95	0.09	<0.01	41.29	43.73	42.18	60.76
160	778.63	31.48	1.55	1.08	7.76	0.55	4.05	0.14	<0.01	35.15	37.71	29.75	48.03
170	846.88	24.63	2.46	1.33	3.07	0.75	5.86	0.19	0.01	34.61	36.76	22.49	43.09
180	902.81	28.58	3.09	1.59	1.72	1.29	7.02	0.21	0.02	36.66	39.19	26.29	47.19

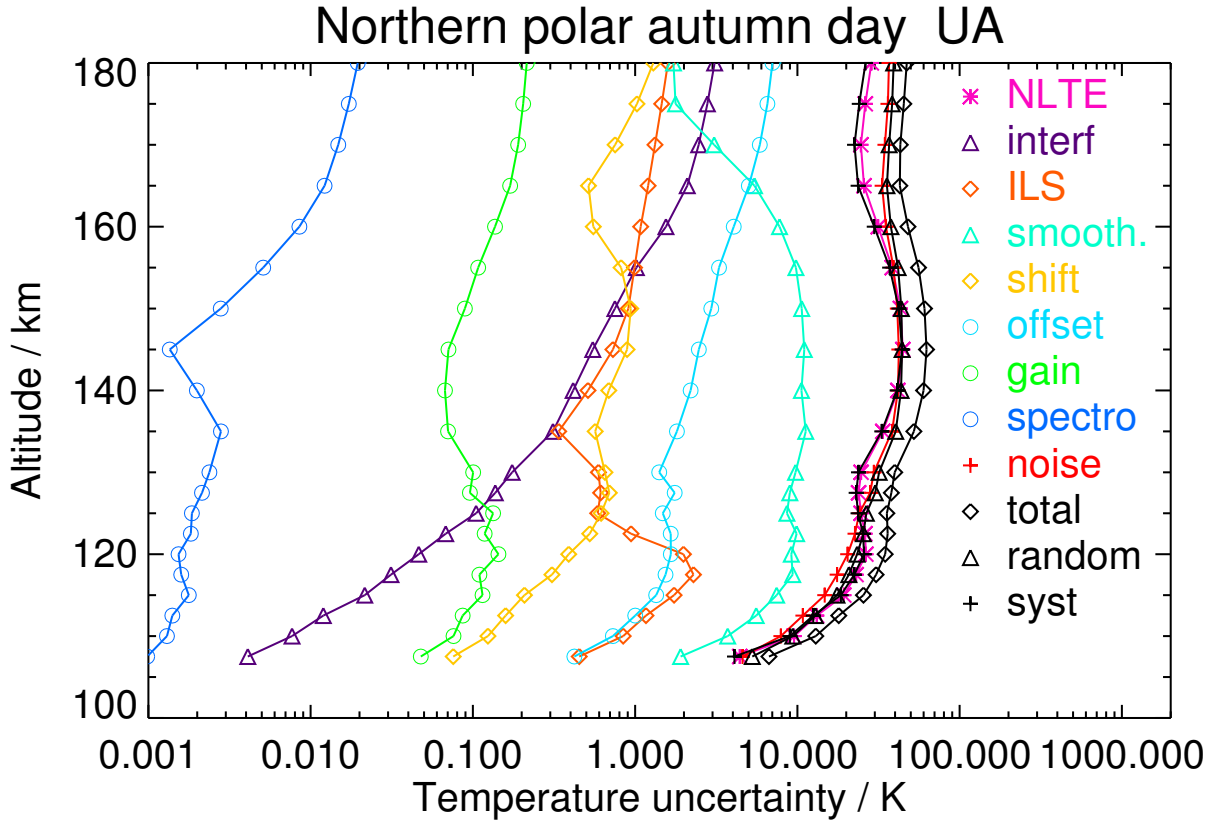

Figure S211. V8R_TwNO_662 Northern polar autumn day, high solar activity

Table S213. Temperature error budget for Northern polar autumn night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	281.13	5.98	0.02	0.62	3.95	0.04	0.73	0.05	<0.01	8.06	9.42	5.34	10.82
120	413.82	18.47	0.11	1.44	10.71	0.26	2.02	0.10	<0.01	21.70	25.09	17.41	30.54
130	533.64	23.50	0.28	0.57	12.30	0.48	2.38	0.09	<0.01	32.21	35.10	22.70	41.80
140	601.23	35.20	0.41	0.58	13.94	0.50	3.69	0.07	<0.01	44.84	47.79	34.27	58.81
150	671.68	35.32	1.29	0.73	13.13	0.49	5.02	0.08	<0.01	44.46	47.76	33.82	58.52
160	719.41	27.63	1.94	0.93	9.92	0.69	6.57	0.11	0.02	41.50	44.62	25.32	51.30
170	763.05	21.14	2.19	1.08	4.29	0.87	7.57	0.13	0.02	41.89	44.08	18.46	47.79
180	802.91	19.58	2.37	1.14	3.09	1.03	7.65	0.14	0.03	40.78	43.06	16.39	46.07

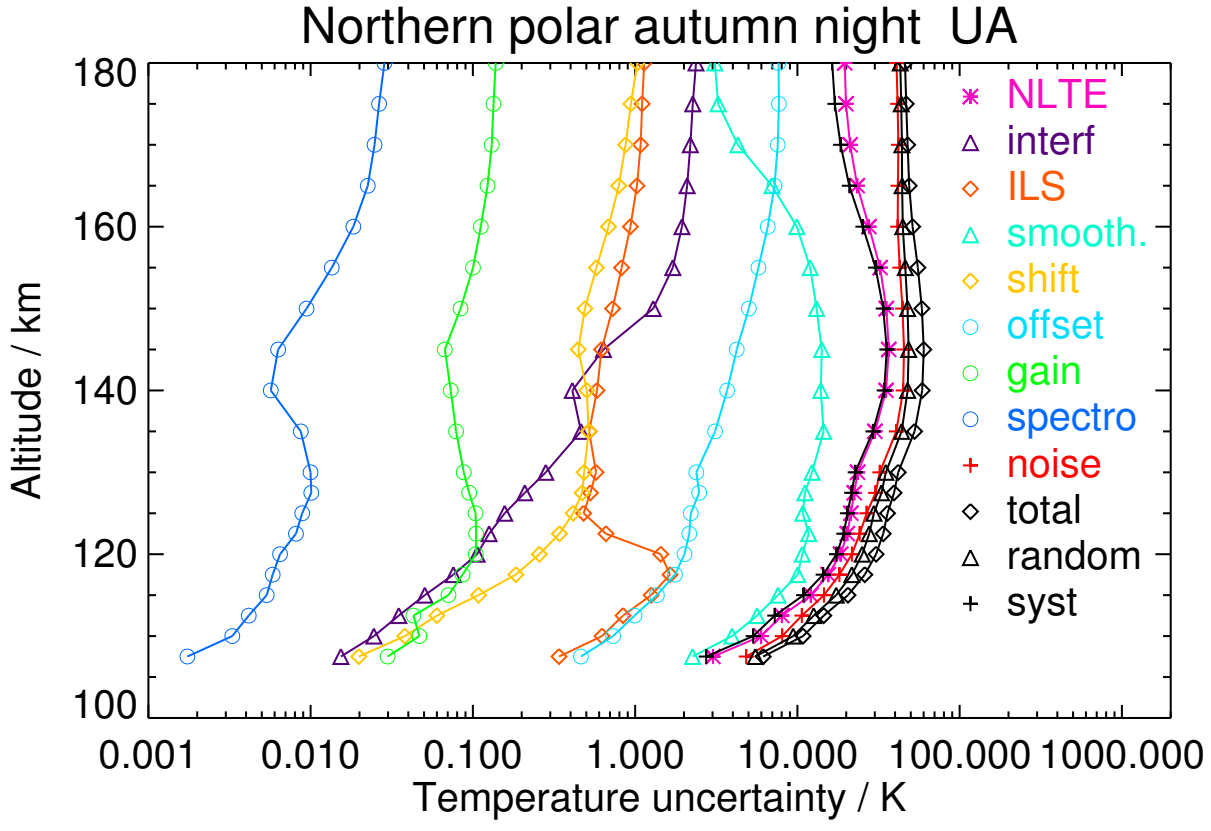

Figure S212. V8R_TwNO_662 Northern polar autumn night, high solar activity

Table S214. Temperature error budget for Northern midlatitude winter day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	239.73	3.05	<0.01	0.38	2.46	0.04	0.75	0.03	<0.01	8.03	8.56	2.70	8.98
120	350.92	11.87	0.04	1.11	11.67	0.13	2.21	0.08	<0.01	23.20	26.36	11.24	28.66
130	468.94	21.12	0.11	0.52	15.40	0.34	3.50	0.13	<0.01	35.98	39.77	20.20	44.61
140	563.66	34.72	0.15	0.76	16.79	0.44	4.70	0.14	<0.01	46.22	50.02	33.84	60.39
150	645.38	35.22	0.57	0.89	14.61	0.46	5.73	0.12	<0.01	42.38	45.90	34.31	57.31
160	715.24	27.62	0.92	0.94	10.22	0.42	7.11	0.09	0.01	40.52	42.99	26.71	50.61
170	763.69	20.27	1.07	0.94	3.74	0.43	8.04	0.09	0.02	42.07	43.52	19.17	47.56
180	798.29	17.19	1.14	0.96	3.02	0.45	8.02	0.09	0.02	40.69	42.15	15.82	45.02

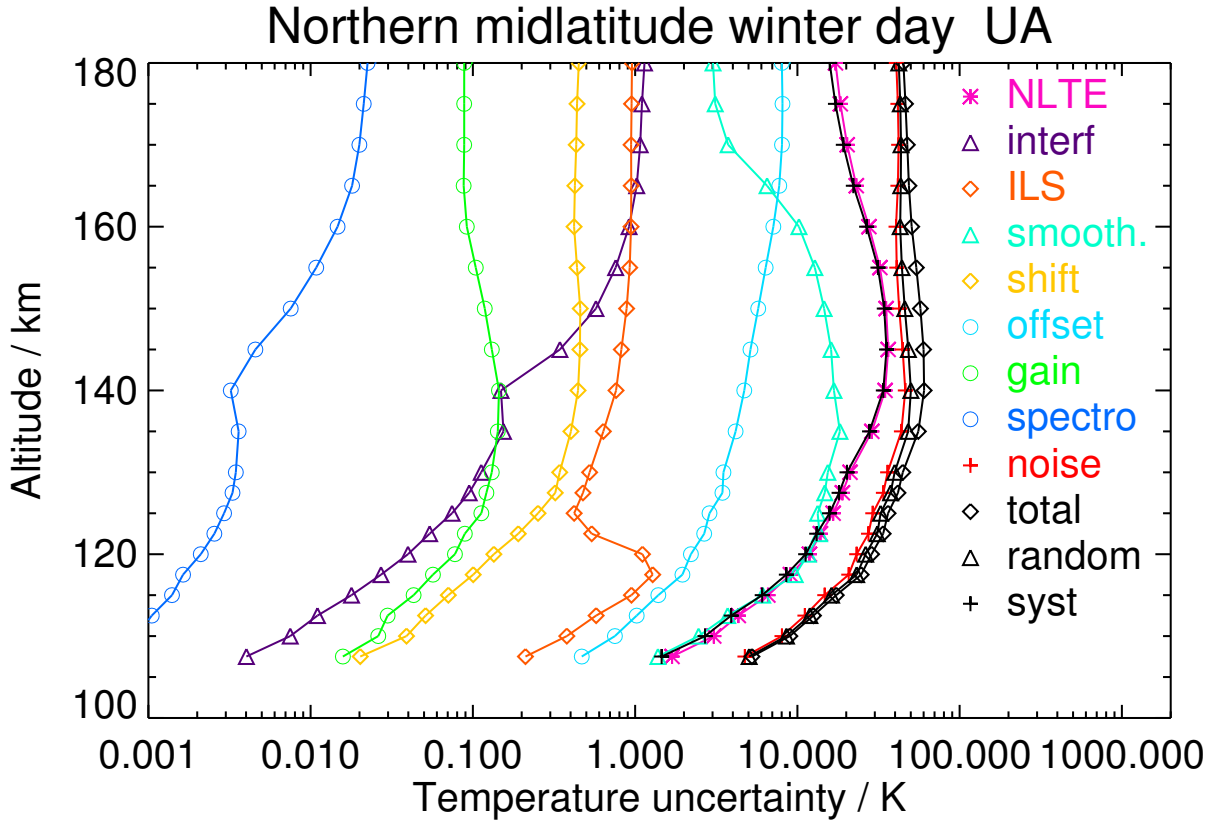

Figure S213. V8R_TwNO_662 Northern midlatitude winter day, high solar activity

Table S215. Temperature error budget for Northern midlatitude winter night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	292.61	3.56	0.01	0.59	3.61	0.02	0.72	0.02	<0.01	6.99	8.18	2.91	8.68
120	357.82	10.39	0.03	1.13	10.52	0.13	2.50	0.05	0.01	23.72	26.81	8.36	28.08
130	471.36	14.93	0.06	0.45	14.12	0.28	4.30	0.06	0.02	35.92	39.32	13.61	41.61
140	552.38	23.54	0.14	0.61	15.91	0.36	6.58	0.08	0.01	48.29	52.24	21.29	56.42
150	638.96	22.00	0.43	0.69	12.15	0.34	7.69	0.07	0.01	46.30	49.43	19.79	53.24
160	703.01	16.66	0.77	0.64	7.32	0.40	8.19	0.08	0.02	41.92	43.84	15.31	46.44
170	753.42	16.38	1.19	0.63	3.56	0.94	8.43	0.10	0.03	40.88	43.19	12.66	45.01
180	791.60	20.06	1.61	0.71	2.94	1.48	8.71	0.13	0.03	40.48	44.50	12.29	46.16

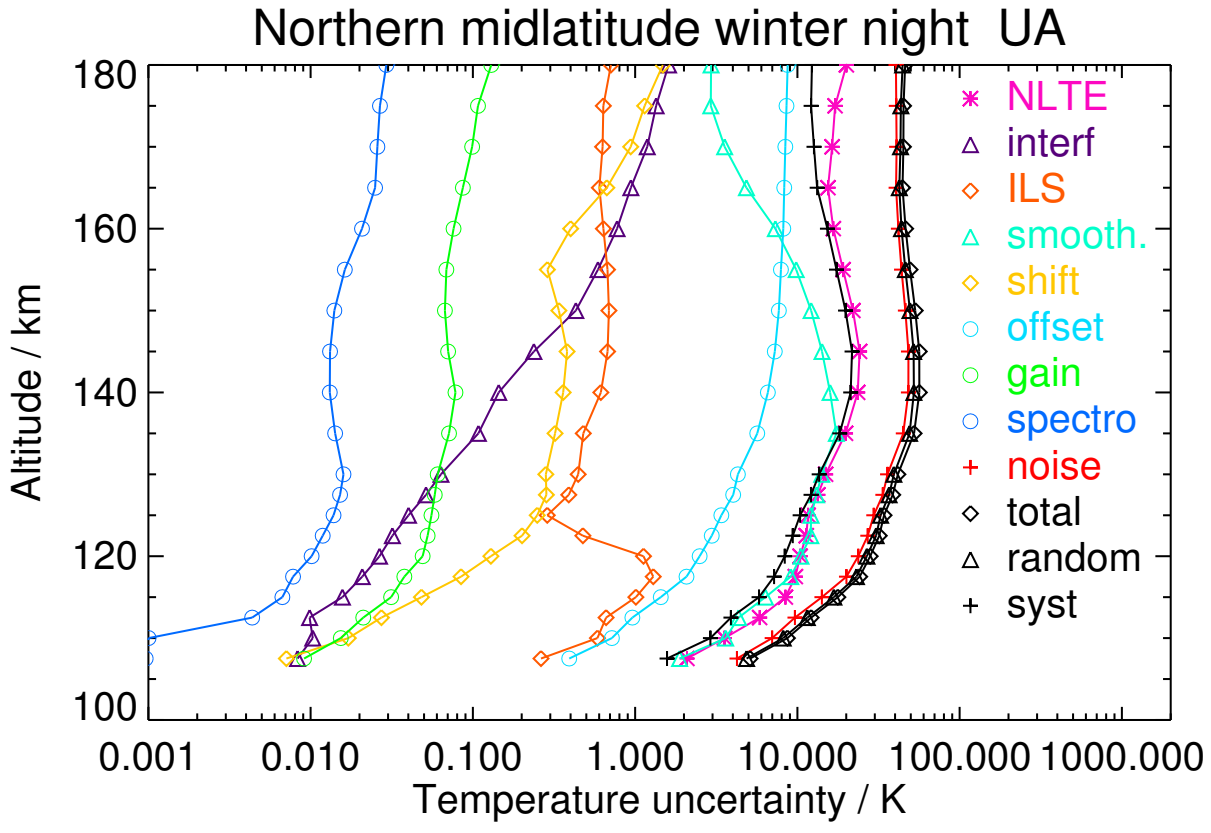

Figure S214. V8R_TwNO_662 Northern midlatitude winter night, high solar activity

Table S216. Temperature error budget for Northern midlatitude spring day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	291.11	7.89	<0.01	0.88	3.25	0.23	0.92	0.02	<0.01	9.24	10.48	7.07	12.64
120	382.34	24.91	0.02	2.48	11.24	0.35	1.88	0.04	<0.01	20.78	24.83	23.91	34.48
130	491.21	26.59	0.04	0.78	12.54	0.42	2.44	0.06	<0.01	32.39	35.32	25.93	43.82
140	591.31	36.97	0.18	0.55	12.37	0.49	2.23	0.05	<0.01	40.52	42.79	36.55	56.28
150	674.16	42.69	0.28	0.72	11.17	0.64	2.55	0.05	<0.01	39.06	41.29	42.14	59.00
160	749.05	35.30	0.48	1.03	9.22	0.59	3.70	0.08	0.01	34.48	36.73	34.45	50.36
170	797.74	24.66	0.77	1.46	3.37	0.60	5.30	0.10	0.02	35.76	37.44	22.98	43.93
180	843.36	22.61	1.09	1.91	2.38	0.72	6.20	0.11	0.03	36.95	39.84	18.40	43.88

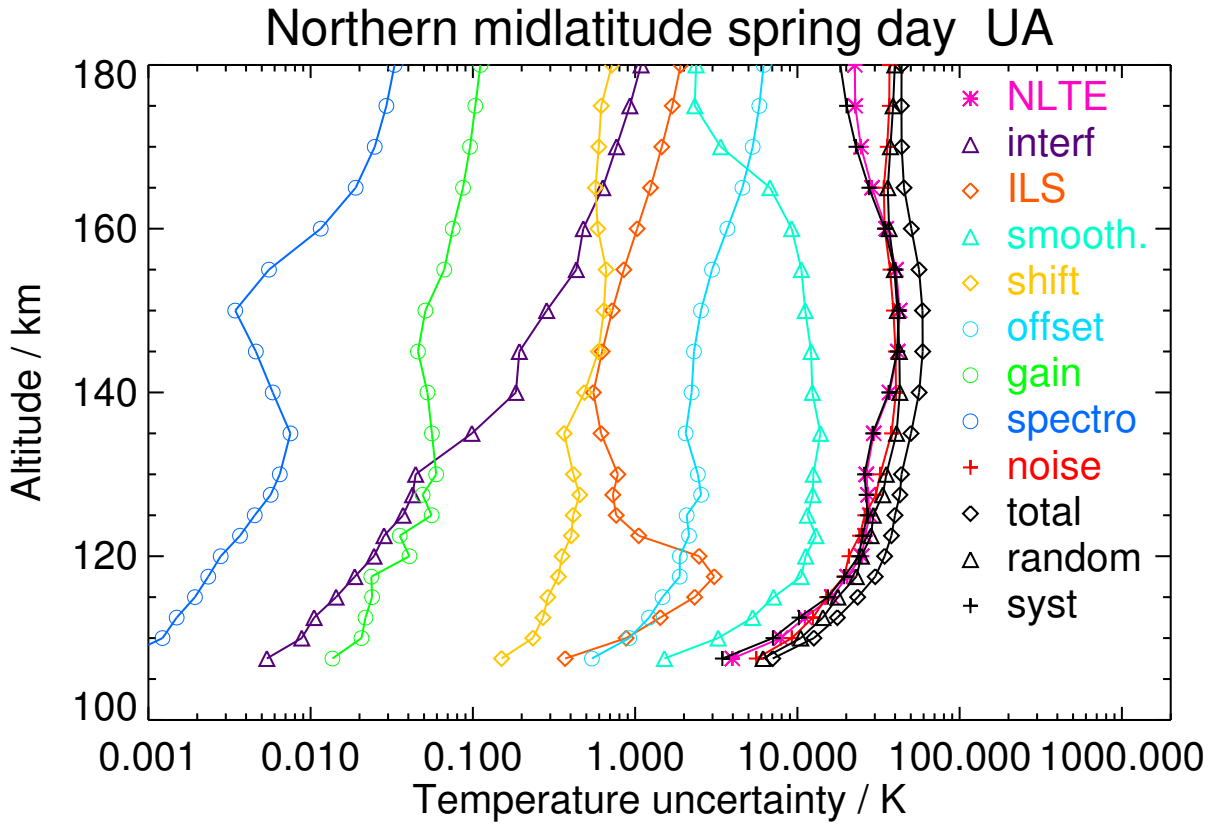

Figure S215. V8R_TwNO_662 Northern midlatitude spring day, high solar activity

Table S217. Temperature error budget for Northern midlatitude spring night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	300.18	4.74	0.02	1.09	3.97	0.02	0.77	0.02	<0.01	7.36	8.62	4.47	9.71
120	374.34	12.43	0.05	2.45	11.97	0.16	2.41	0.04	0.02	22.40	25.98	11.68	28.49
130	496.75	18.45	0.11	0.93	14.92	0.42	3.82	0.06	0.03	34.90	38.44	17.87	42.39
140	553.04	27.14	0.27	0.92	17.00	0.47	5.37	0.08	0.02	46.82	50.89	25.64	56.99
150	639.51	26.34	0.69	0.85	13.84	0.37	6.74	0.09	0.02	46.59	49.86	24.83	55.70
160	712.49	19.84	1.07	0.70	8.40	0.37	7.73	0.09	0.03	43.18	45.23	18.58	48.89
170	755.31	16.16	1.35	0.58	3.59	0.59	8.17	0.10	0.04	41.55	43.21	14.23	45.49
180	795.56	16.26	1.99	0.60	2.89	0.87	8.56	0.11	0.04	41.83	43.77	13.61	45.84

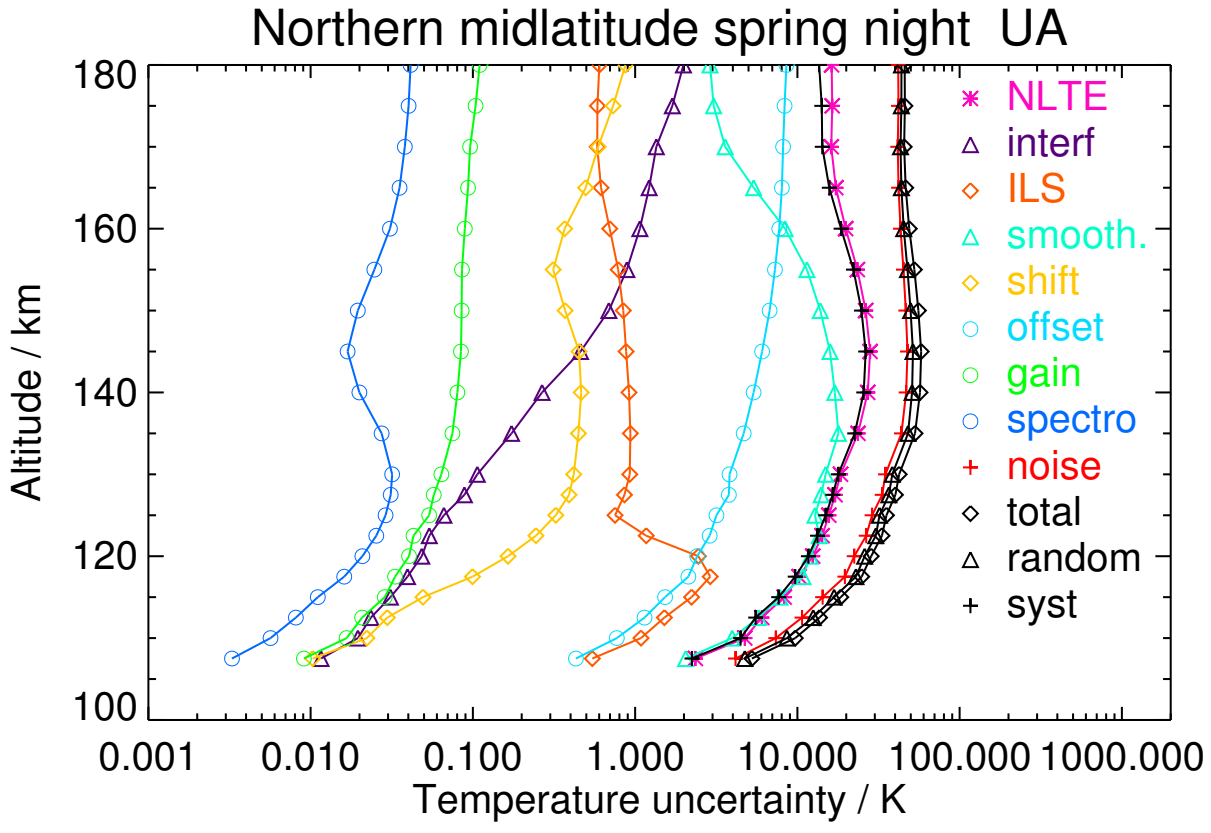

Figure S216. V8R_TwNO_662 Northern midlatitude spring night, high solar activity

Table S218. Temperature error budget for Northern midlatitude summer day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	292.87	4.89	0.01	0.75	3.18	0.09	0.80	0.01	<0.01	8.45	9.21	4.66	10.32
120	355.57	17.81	0.04	1.83	11.85	0.18	2.36	0.05	<0.01	23.11	26.45	17.36	31.63
130	467.35	25.60	0.10	0.63	14.22	0.38	3.28	0.07	0.01	34.88	38.22	24.99	45.67
140	580.88	34.51	0.31	1.03	13.86	0.78	3.28	0.07	<0.01	42.97	45.72	33.93	56.94
150	679.83	30.97	0.32	1.19	11.61	0.74	4.00	0.04	0.01	41.36	43.53	30.47	53.13
160	763.34	20.14	0.97	1.12	7.58	0.43	5.49	0.08	0.02	36.97	38.57	19.34	43.15
170	824.01	14.75	1.39	1.06	2.70	0.39	6.95	0.12	0.03	39.68	40.88	13.40	43.02
180	859.24	14.76	1.52	1.06	2.19	0.52	7.32	0.12	0.03	39.66	41.04	12.99	43.04

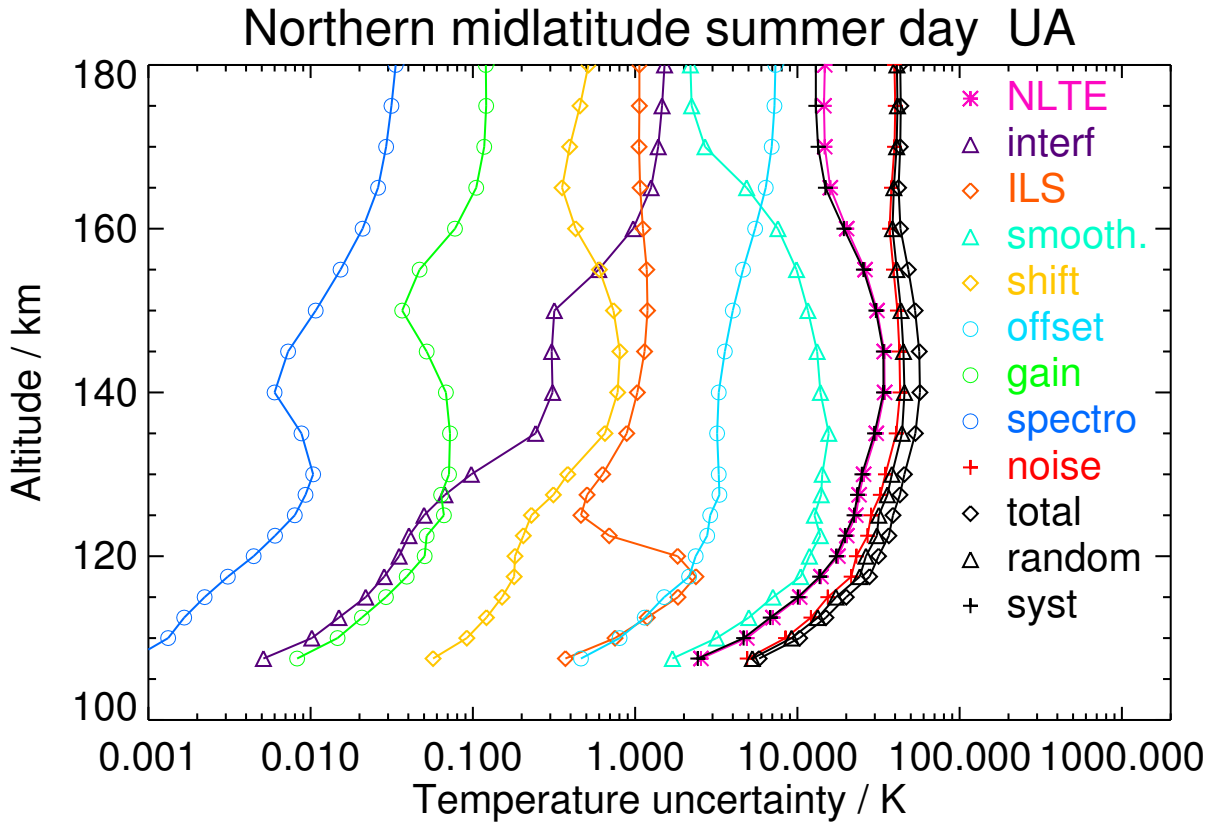

Figure S217. V8R_TwNO_662 Northern midlatitude summer day, high solar activity

Table S219. Temperature error budget for Northern midlatitude summer night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	296.76	1.82	0.01	1.02	3.60	0.01	0.90	<0.01	<0.01	7.37	8.27	2.00	8.51
120	368.94	7.18	0.03	1.93	12.10	0.06	3.59	0.02	0.02	25.26	28.32	7.15	29.21
130	453.10	11.82	0.04	0.59	15.95	0.20	6.26	0.03	0.02	40.06	43.66	11.48	45.14
140	494.83	12.48	0.09	0.89	17.71	0.28	7.31	0.05	0.02	50.08	53.72	12.08	55.07
150	581.75	10.21	0.16	0.74	11.36	0.25	7.41	0.05	0.02	43.58	45.75	9.73	46.78
160	657.24	8.62	0.24	0.59	5.73	0.23	7.82	0.06	0.04	38.70	40.00	8.13	40.82
170	715.69	7.34	0.47	0.47	2.85	0.24	8.85	0.06	0.05	38.94	40.12	6.86	40.71

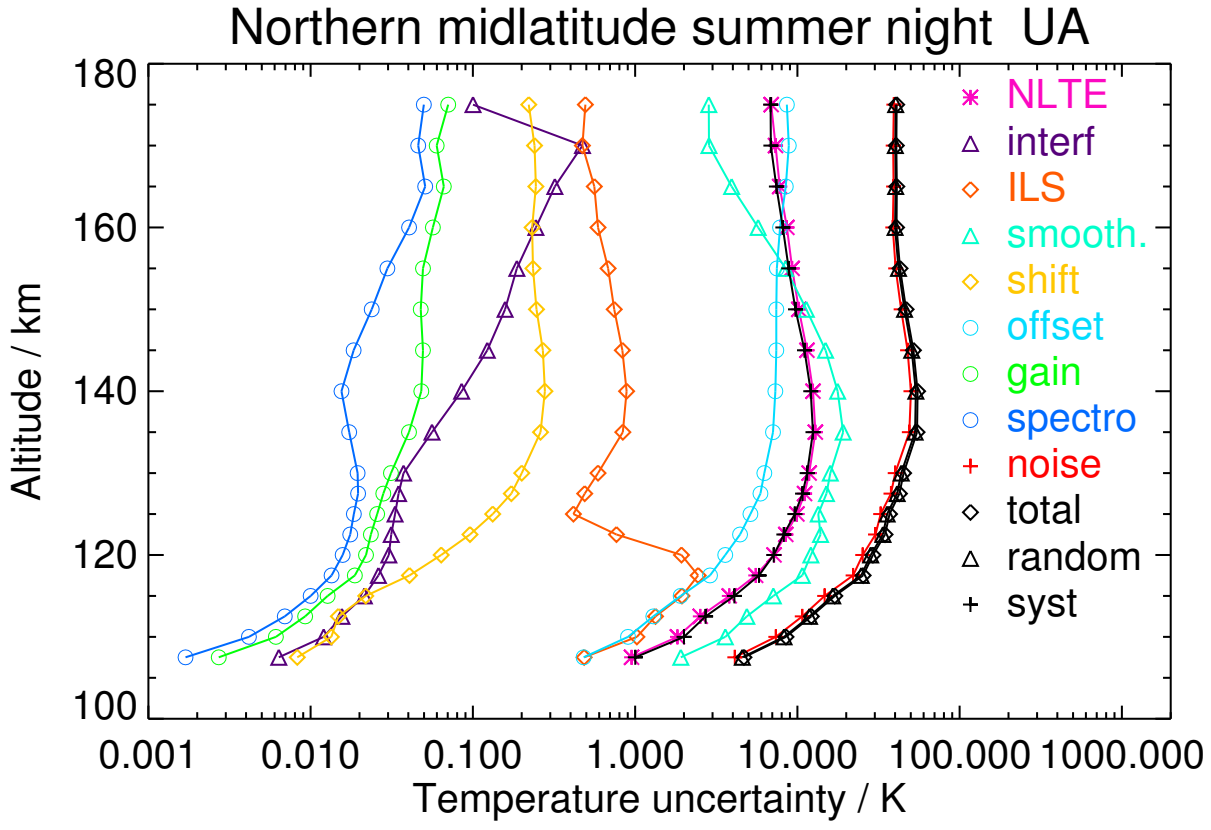

Figure S218. V8R_TwNO_662 Northern midlatitude summer night, high solar activity

Table S220. Temperature error budget for Northern midlatitude autumn day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	270.14	4.28	<0.01	0.53	2.34	0.13	0.95	0.02	<0.01	9.43	10.00	3.75	10.68
120	377.32	14.65	0.02	1.50	10.98	0.26	2.23	0.05	<0.01	23.81	26.73	13.96	30.15
130	468.89	22.65	0.07	0.59	15.99	0.38	3.28	0.11	<0.01	36.31	40.28	21.82	45.81
140	525.45	35.07	0.14	0.81	17.67	0.51	3.68	0.15	<0.01	44.16	48.42	34.09	59.22
150	642.63	40.32	0.16	0.98	15.08	0.59	4.61	0.12	<0.01	41.88	45.46	39.54	60.25
160	751.12	33.01	0.60	1.03	9.73	0.39	6.13	0.10	0.01	38.78	41.23	32.04	52.22
170	822.55	25.32	0.95	1.03	3.45	0.35	7.53	0.11	0.02	41.17	42.96	23.70	49.06
180	870.39	21.82	1.06	1.06	2.35	0.42	7.90	0.12	0.02	40.72	42.58	19.79	46.96

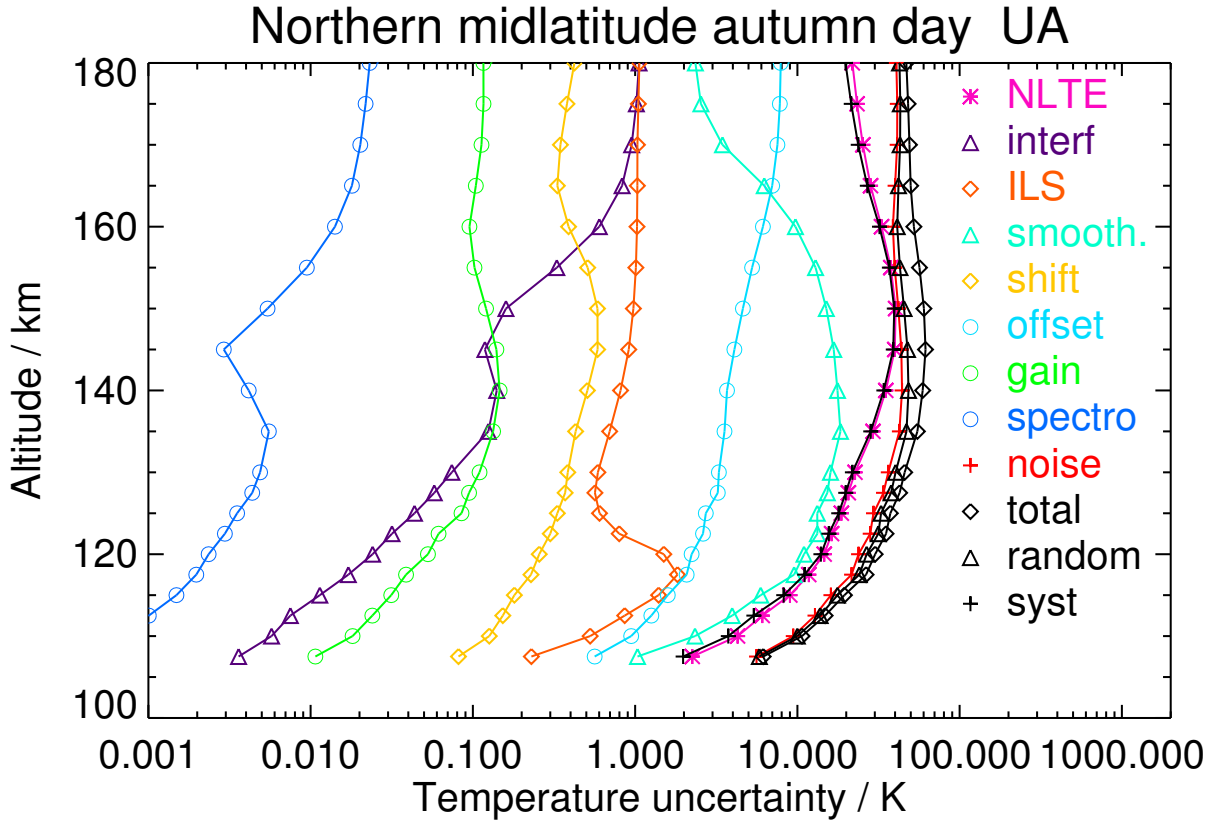

Figure S219. V8R_TwNO_662 Northern midlatitude autumn day, high solar activity

Table S221. Temperature error budget for Northern midlatitude autumn night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	282.96	2.68	0.03	0.50	3.43	0.02	0.88	0.03	<0.01	7.70	8.60	2.29	8.90
120	352.16	8.48	0.04	1.05	11.14	0.09	2.91	0.06	<0.01	25.42	28.14	7.73	29.18
130	452.52	14.28	0.11	0.31	15.56	0.19	4.96	0.08	0.01	38.68	42.30	13.31	44.35
140	556.80	21.65	0.56	0.40	16.36	0.24	7.61	0.08	<0.01	49.46	53.17	20.35	56.93
150	663.58	22.42	1.04	0.51	11.42	0.27	9.29	0.08	0.01	47.37	50.32	20.81	54.45
160	723.25	17.84	1.22	0.52	6.20	0.30	9.68	0.08	0.02	43.10	45.21	16.32	48.06
170	769.38	14.27	1.40	0.64	2.74	0.34	9.85	0.09	0.02	41.94	43.53	13.20	45.49
180	817.07	12.94	1.77	0.89	2.32	0.40	9.66	0.11	0.03	41.61	43.11	11.94	44.74

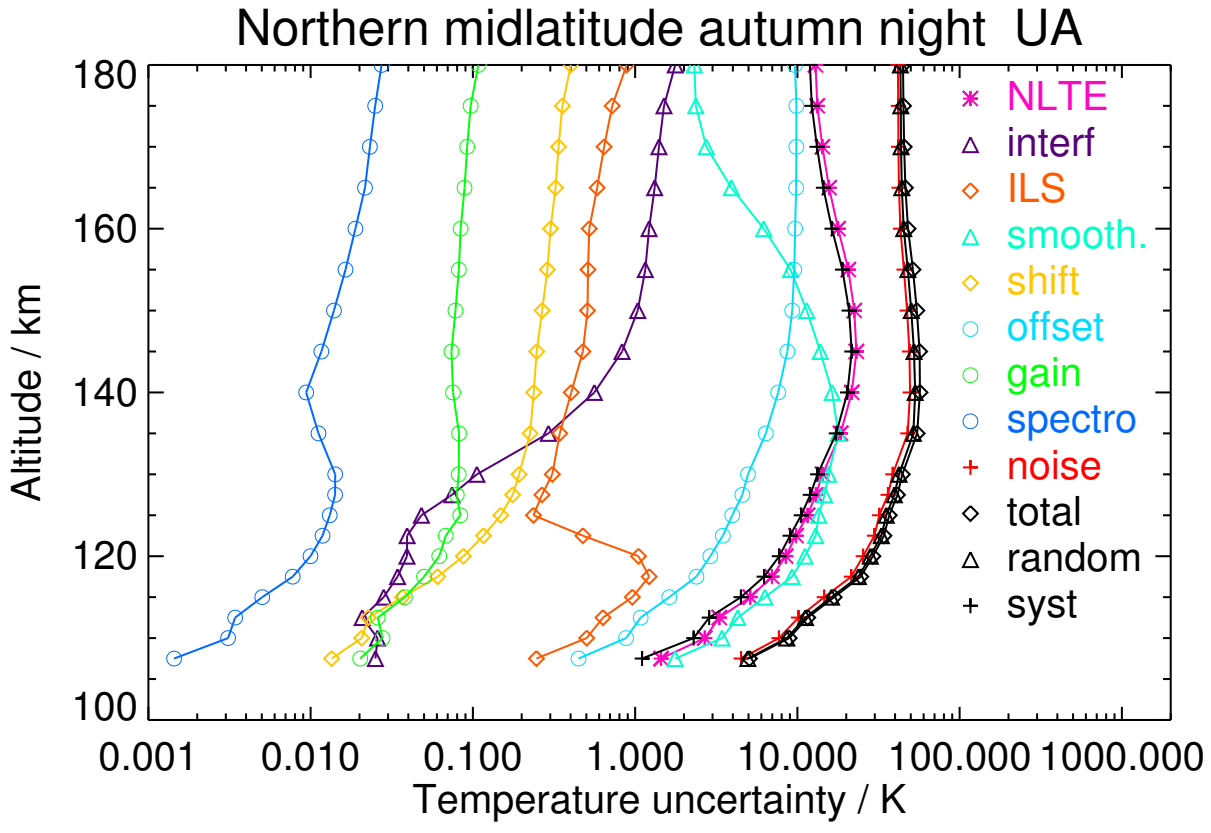

Figure S220. V8R_TwNO_662 Northern midlatitude autumn night, high solar activity

Table S222. Temperature error budget for Tropics day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	250.97	4.69	<0.01	0.24	1.60	0.16	0.96	0.03	<0.01	10.42	10.72	4.36	11.58
120	401.57	18.22	0.02	1.24	11.59	0.35	2.04	0.04	<0.01	23.04	26.17	17.84	31.67
130	524.05	25.41	0.05	0.49	12.54	0.39	2.81	0.07	<0.01	35.46	38.06	24.91	45.48
140	586.36	36.11	0.10	0.44	13.56	0.38	2.92	0.06	<0.01	42.59	45.16	35.65	57.54
150	642.01	41.00	0.19	0.54	14.16	0.56	3.66	0.08	<0.01	41.32	44.24	40.56	60.02
160	690.89	36.01	0.36	0.71	12.21	0.51	4.89	0.09	0.02	40.19	42.77	35.45	55.55
170	736.65	28.06	0.53	0.89	4.68	0.52	5.90	0.10	0.03	41.72	43.35	26.58	50.85
180	781.63	24.14	0.61	1.00	3.64	0.57	6.05	0.11	0.03	39.81	41.90	21.54	47.11

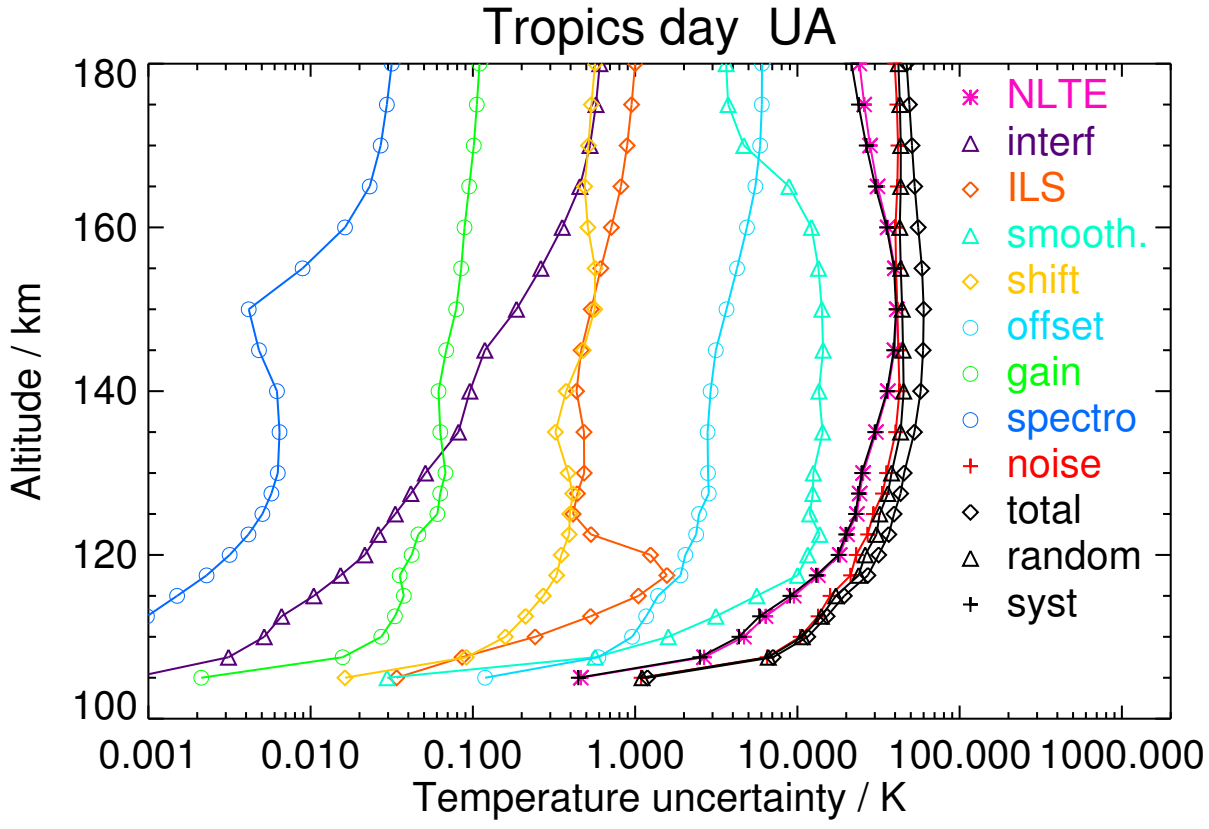

Figure S221. V8R_TwNO_662 Tropics day, high solar activity

Table S223. Temperature error budget for Tropics night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	297.12	2.59	<0.01	0.93	3.73	0.01	0.91	<0.01	<0.01	7.41	8.40	2.58	8.78
120	389.73	8.59	0.02	2.09	11.73	0.10	3.38	0.02	<0.01	23.76	26.81	8.57	28.14
130	470.25	13.35	0.05	0.87	16.74	0.20	5.72	0.04	0.01	38.43	42.38	13.13	44.37
140	496.76	14.89	0.17	0.82	18.70	0.18	6.74	0.04	<0.01	49.19	53.25	14.20	55.11
150	574.85	13.37	0.30	0.66	14.10	0.16	7.13	0.04	<0.01	44.65	47.58	12.57	49.22
160	641.87	11.16	0.37	0.50	7.27	0.19	7.26	0.04	<0.01	38.06	39.63	10.44	40.98
170	702.18	10.77	0.78	0.50	3.33	0.26	8.29	0.05	0.01	38.46	39.72	9.91	40.94

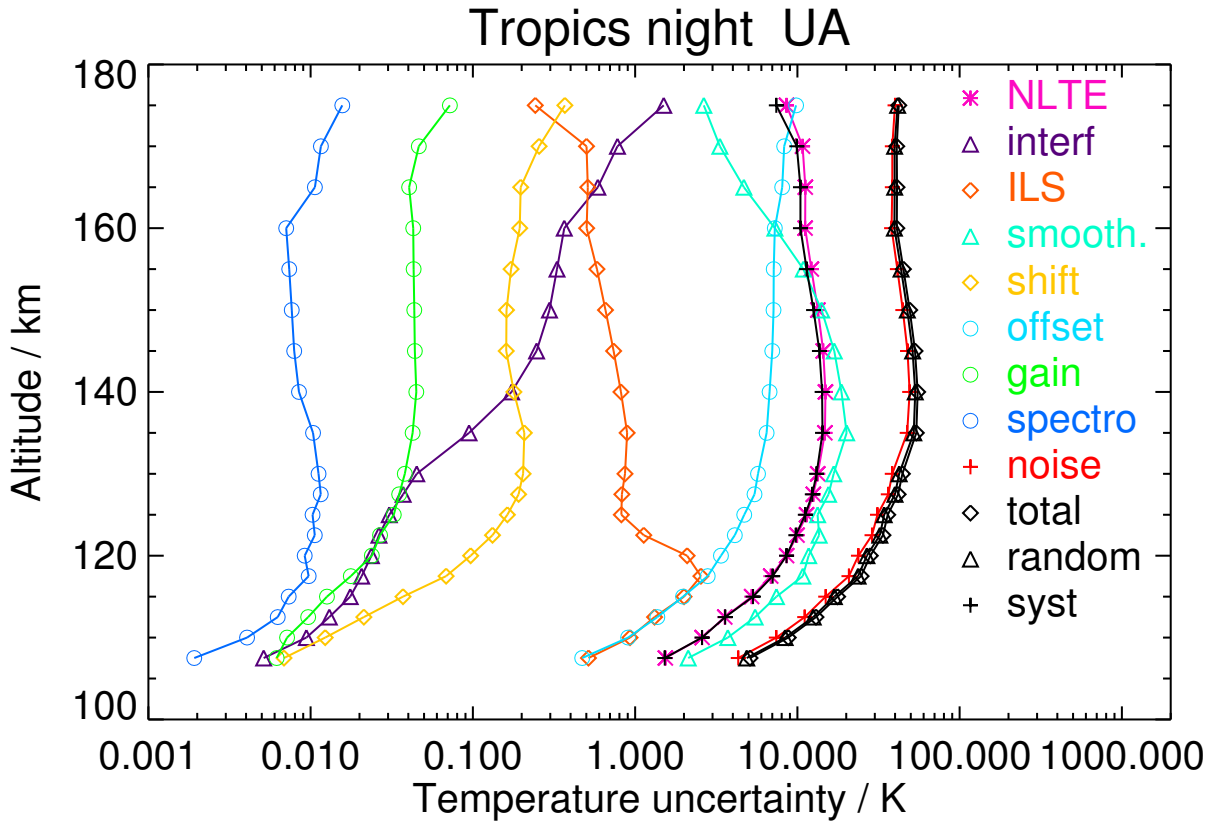

Figure S222. V8R_TwNO_662 Tropics night, high solar activity

Table S224. Temperature error budget for Southern midlatitude winter day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	284.49	2.92	<0.01	0.66	2.90	0.04	0.68	0.01	<0.01	7.28	8.02	2.56	8.42
120	359.64	9.60	0.02	1.41	11.60	0.13	2.41	0.04	<0.01	24.31	27.23	9.16	28.73
130	465.30	18.29	0.06	0.53	16.15	0.31	4.29	0.06	<0.01	38.15	41.93	17.65	45.50
140	545.86	29.05	0.20	0.75	17.36	0.41	6.46	0.07	<0.01	49.31	53.22	28.06	60.16
150	632.34	28.67	0.51	0.84	14.65	0.38	7.74	0.06	0.01	46.86	50.17	27.87	57.39
160	689.33	22.63	0.68	0.76	9.84	0.34	8.41	0.06	0.02	43.97	46.22	21.86	51.13
170	732.47	17.47	0.72	0.67	4.16	0.33	8.52	0.06	0.03	41.91	43.30	16.66	46.40
180	754.75	15.58	0.73	0.71	3.33	0.37	8.38	0.07	0.03	41.23	42.61	14.45	45.00

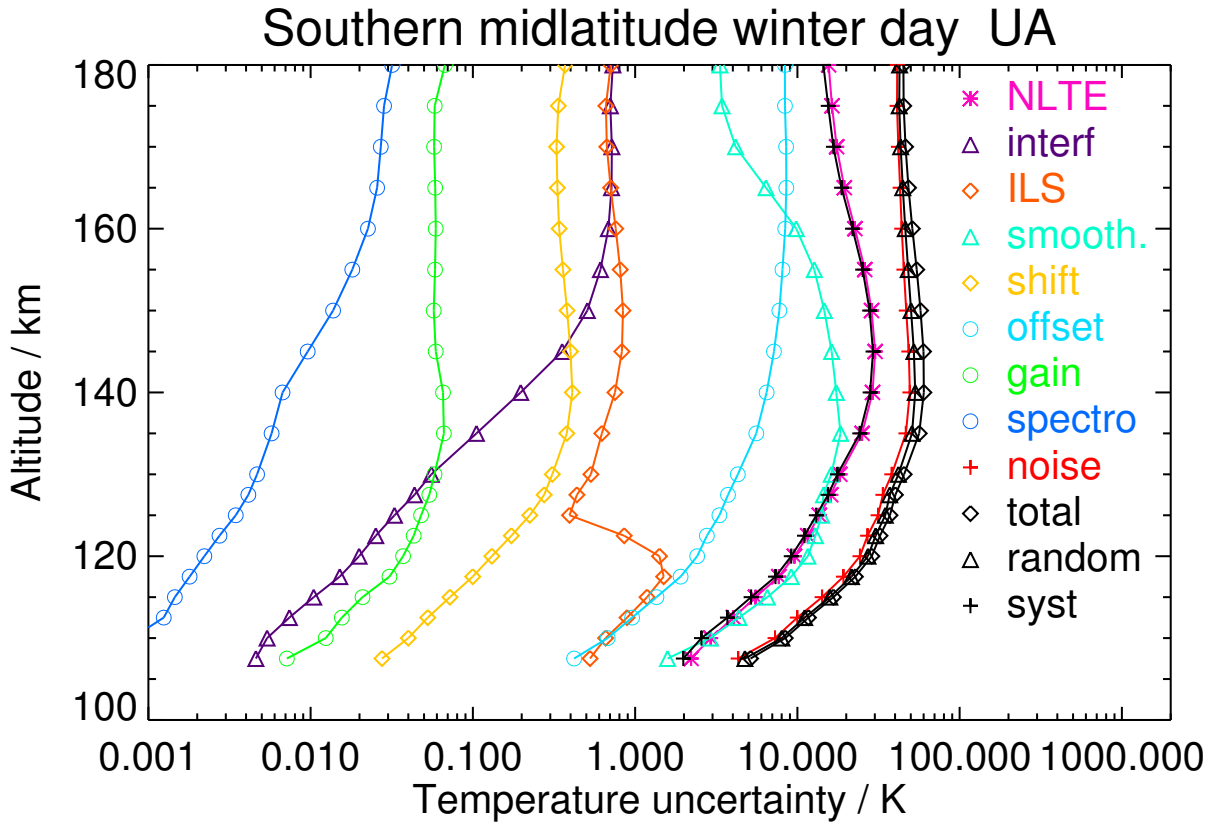

Figure S223. V8R_TwNO_662 Southern midlatitude winter day, high solar activity

Table S225. Temperature error budget for Southern midlatitude winter night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	284.44	3.20	<0.01	0.72	3.85	0.03	0.78	0.03	<0.01	7.54	8.71	2.67	9.11
120	399.84	10.26	0.02	1.47	11.66	0.13	3.14	0.05	<0.01	25.07	28.20	9.30	29.69
130	495.39	15.68	0.05	0.60	14.91	0.30	5.16	0.07	<0.01	37.86	41.44	14.53	43.92
140	550.94	20.38	0.14	0.80	15.68	0.37	6.74	0.07	<0.01	48.50	52.42	17.69	55.32
150	615.10	17.38	0.20	0.82	11.24	0.36	6.87	0.06	0.01	44.22	47.04	14.78	49.31
160	657.47	14.18	0.24	0.80	7.89	0.39	6.83	0.05	0.02	40.55	42.41	12.52	44.22
170	710.61	11.56	0.27	0.83	4.38	0.56	7.31	0.04	0.03	39.65	41.12	9.43	42.18
180	734.21	8.57	0.09	1.27	4.07	0.54	6.77	0.02	0.05	39.81	40.59	8.67	41.51

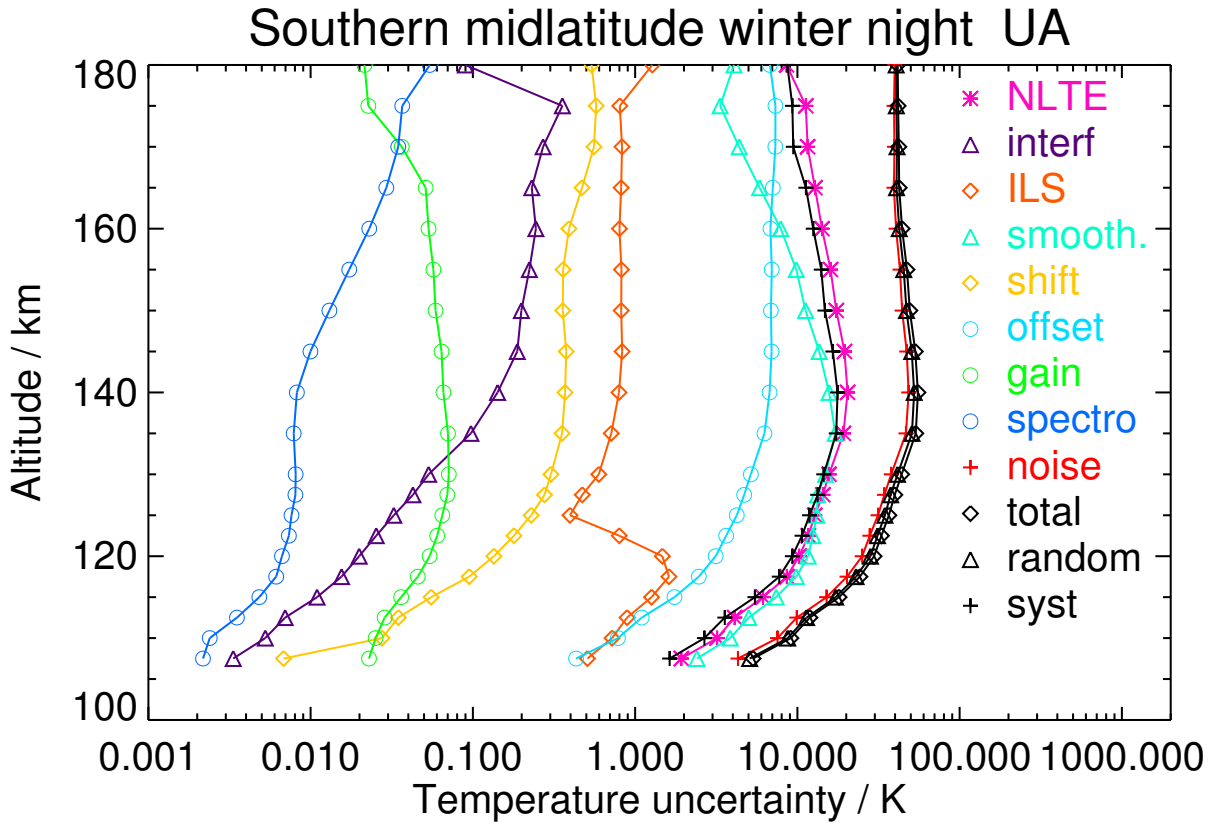

Figure S224. V8R_TwNO_662 Southern midlatitude winter night, high solar activity

Table S226. Temperature error budget for Southern midlatitude spring day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	300.94	9.74	0.01	0.99	2.82	0.41	1.01	0.03	<0.01	10.14	11.67	8.46	14.42
120	417.32	24.78	0.02	3.39	10.33	0.47	1.77	0.04	<0.01	20.62	24.00	24.19	34.07
130	530.25	24.44	0.08	1.05	11.51	0.46	1.84	0.06	<0.01	31.34	34.13	23.50	41.44
140	590.17	37.82	0.27	0.55	11.31	0.53	2.20	0.06	<0.01	40.18	42.36	37.20	56.38
150	692.46	47.65	0.33	0.77	10.72	0.88	2.69	0.06	<0.01	40.19	42.22	47.19	63.32
160	790.56	40.68	0.80	0.85	7.67	0.63	3.85	0.12	<0.01	35.77	37.82	39.74	54.86
170	858.94	32.25	1.72	1.12	3.59	0.55	5.65	0.21	0.02	35.24	37.30	30.66	48.28
180	911.64	32.94	2.23	1.53	1.61	1.06	6.76	0.25	0.02	37.26	40.34	30.05	50.30

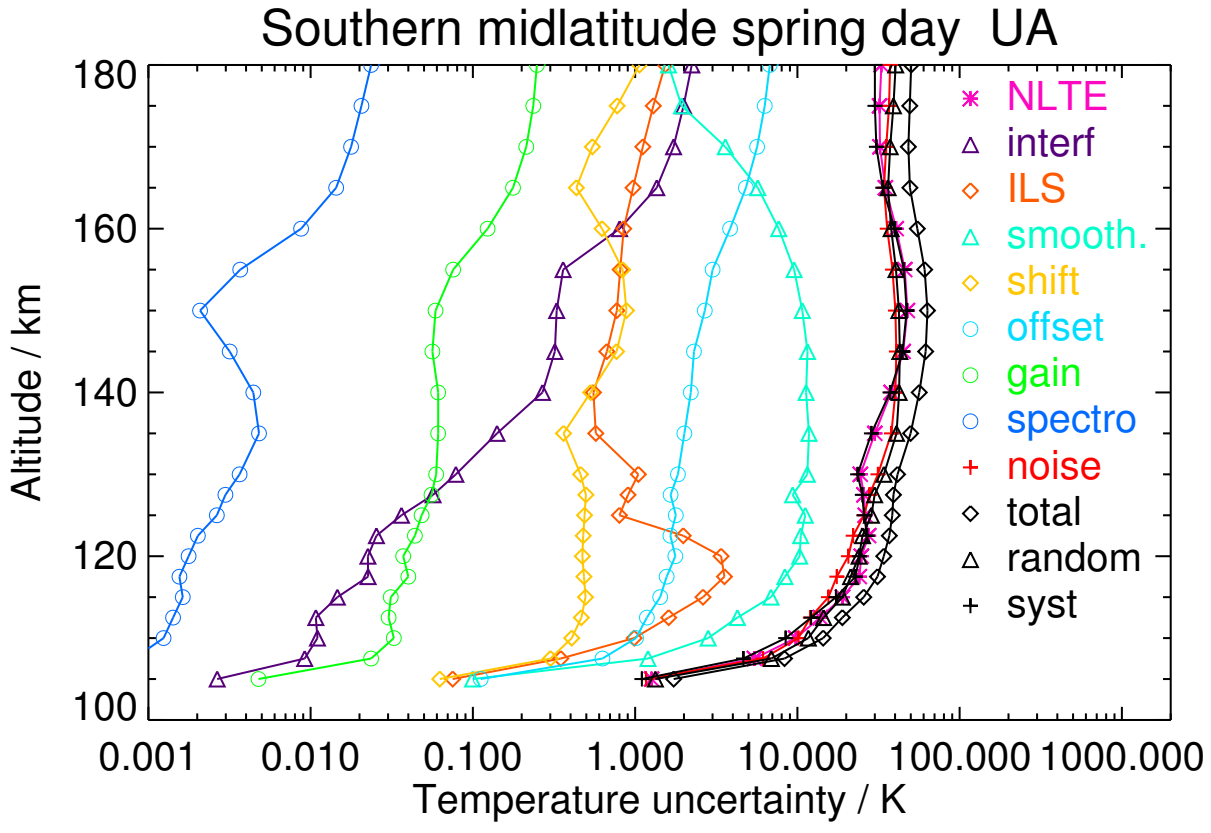

Figure S225. V8R_TwNO_662 Southern midlatitude spring day, high solar activity

Table S227. Temperature error budget for Southern midlatitude spring night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	295.85	5.96	0.02	1.09	3.69	0.05	0.78	0.06	<0.01	8.00	9.43	5.10	10.72
120	393.72	15.38	0.09	2.47	10.69	0.17	2.09	0.07	0.01	21.13	24.42	14.54	28.42
130	501.86	20.37	0.22	0.80	14.04	0.47	2.89	0.08	0.02	32.83	36.31	19.49	41.21
140	586.86	32.39	0.31	0.68	15.03	0.57	4.45	0.08	0.01	46.10	49.43	31.27	58.49
150	676.22	32.40	1.25	0.83	12.81	0.53	5.70	0.09	0.01	45.42	48.67	30.72	57.55
160	743.26	23.71	1.91	0.93	8.63	0.50	7.07	0.12	0.02	41.73	44.13	22.04	49.33
170	798.15	18.82	2.18	0.95	3.65	0.72	8.05	0.14	0.03	41.78	43.67	16.65	46.73
180	848.70	19.26	2.58	1.03	2.29	0.96	8.44	0.15	0.03	41.88	44.07	16.37	47.01

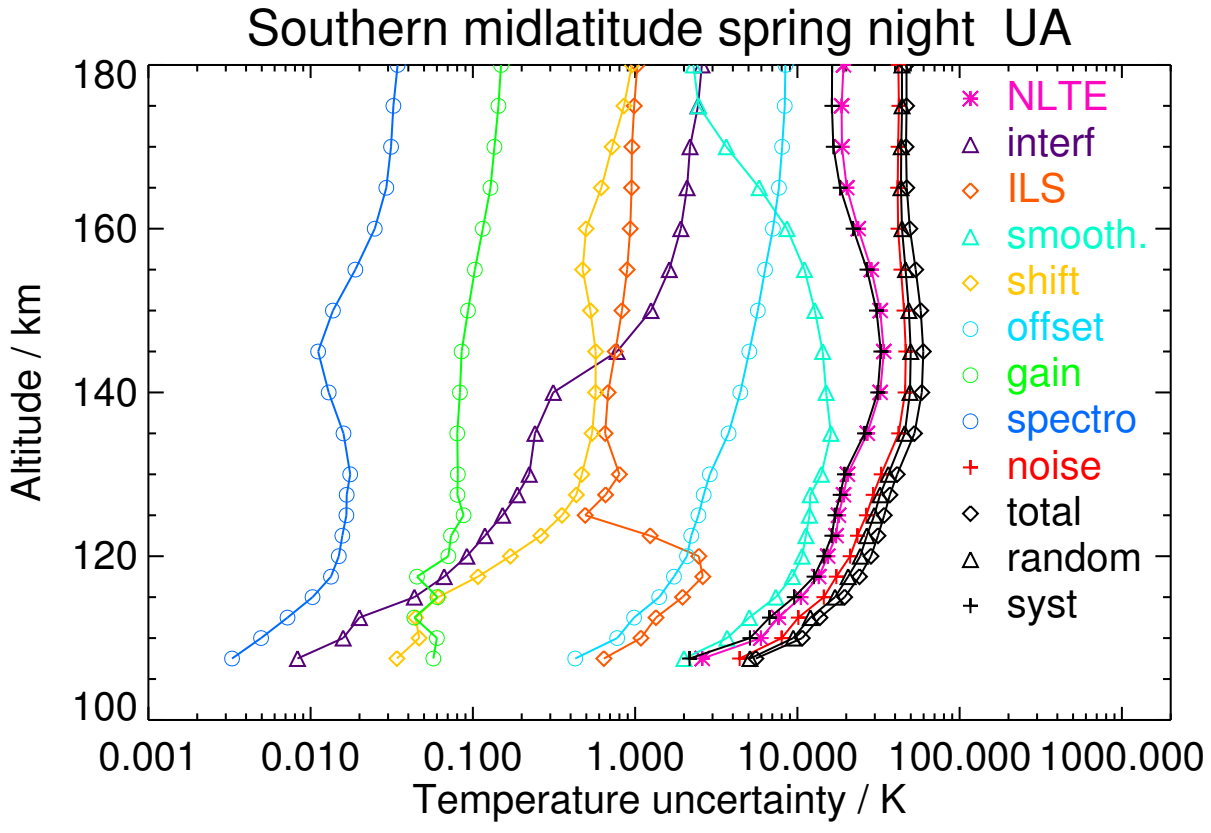

Figure S226. V8R_TwNO_662 Southern midlatitude spring night, high solar activity

Table S228. Temperature error budget for Southern midlatitude summer day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	313.40	8.96	0.01	1.42	3.75	0.28	0.92	0.03	<0.01	9.55	10.97	8.26	13.73
120	410.50	26.07	0.04	4.08	10.68	0.32	1.85	0.03	<0.01	19.98	23.33	25.86	34.83
130	502.55	24.98	0.10	1.16	11.86	0.42	1.86	0.04	<0.01	29.67	32.56	24.28	40.62
140	575.65	34.40	0.35	0.72	11.21	0.72	2.25	0.05	<0.01	39.29	41.39	33.85	53.47
150	675.98	42.55	0.48	0.94	10.72	0.91	2.67	0.07	<0.01	39.35	41.53	41.94	59.02
160	772.39	34.30	1.05	0.93	8.07	0.59	3.64	0.13	0.01	34.50	36.61	33.28	49.47
170	832.70	27.20	1.85	1.13	3.80	0.65	5.40	0.21	0.02	33.08	35.14	25.45	43.39
180	877.99	28.71	2.34	1.53	1.83	1.00	6.62	0.23	0.02	35.72	38.33	26.21	46.43

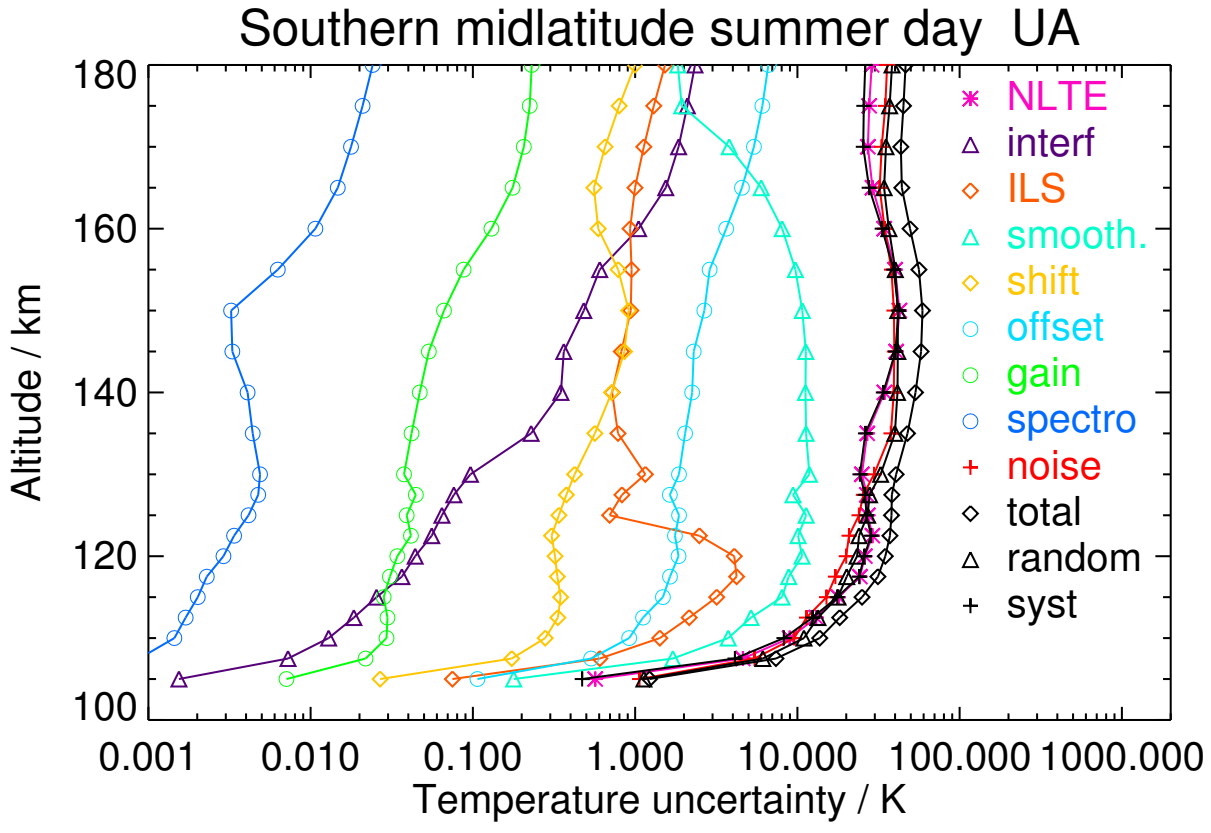

Figure S227. V8R_TwNO_662 Southern midlatitude summer day, high solar activity

Table S229. Temperature error budget for Southern midlatitude summer night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	296.08	3.69	0.02	0.85	3.68	0.03	0.80	0.02	<0.01	7.63	8.80	3.07	9.32
120	365.28	10.34	0.05	2.15	11.02	0.10	2.60	0.05	0.02	24.21	27.26	9.08	28.74
130	482.81	16.93	0.14	0.73	14.87	0.30	4.48	0.05	0.02	37.08	40.73	15.63	43.63
140	573.55	23.91	0.45	0.73	15.90	0.39	6.66	0.06	0.01	49.19	52.84	22.31	57.35
150	628.53	22.07	1.01	0.70	13.29	0.37	7.57	0.07	0.02	45.53	48.98	19.91	52.87
160	686.66	16.66	1.14	0.71	8.47	0.39	8.34	0.08	0.03	41.69	44.02	14.85	46.46
170	733.80	12.59	1.30	0.78	3.89	0.43	8.83	0.08	0.03	41.39	42.94	11.11	44.36
180	774.70	11.10	1.51	0.93	3.19	0.49	8.79	0.09	0.04	41.58	43.09	9.27	44.08

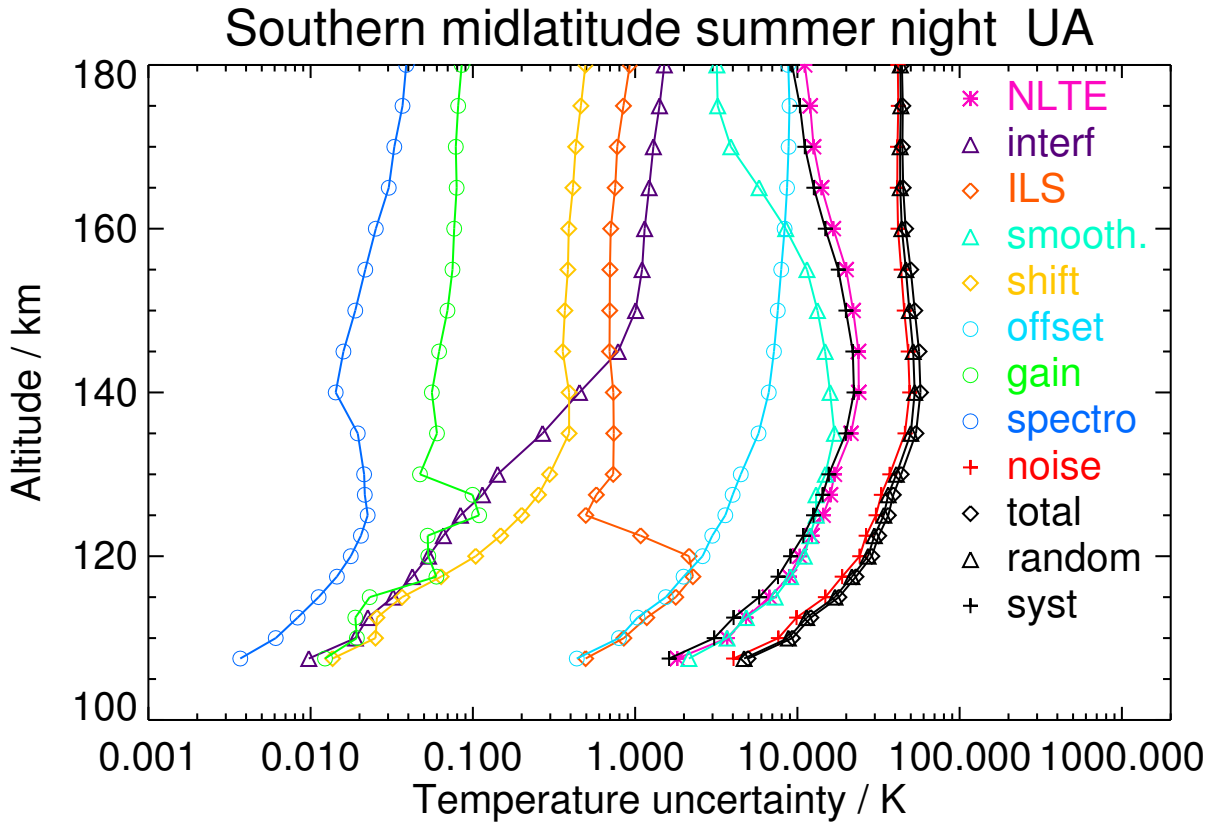

Figure S228. V8R_TwNO_662 Southern midlatitude summer night, high solar activity

Table S230. Temperature error budget for Southern midlatitude autumn day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	271.03	3.23	<0.01	0.50	2.88	0.06	0.79	<0.01	<0.01	8.34	8.97	2.97	9.45
120	357.39	11.52	0.01	1.38	12.14	0.14	2.57	0.02	<0.01	25.84	28.81	11.22	30.92
130	457.58	20.38	0.02	0.38	16.88	0.27	4.07	0.05	<0.01	38.70	42.63	19.93	47.06
140	538.07	32.85	0.04	0.67	18.53	0.40	5.30	0.06	<0.01	47.19	51.26	32.42	60.65
150	605.37	34.31	0.15	0.79	17.29	0.45	6.01	0.05	<0.01	44.19	48.13	33.92	58.88
160	683.27	28.33	0.34	0.85	12.25	0.37	7.06	0.05	0.02	42.18	44.71	27.99	52.75
170	749.14	21.93	0.45	0.88	5.28	0.33	7.85	0.06	0.02	42.58	43.86	21.46	48.83
180	791.02	18.80	0.51	0.90	3.23	0.34	7.97	0.06	0.02	41.50	42.67	18.17	46.38

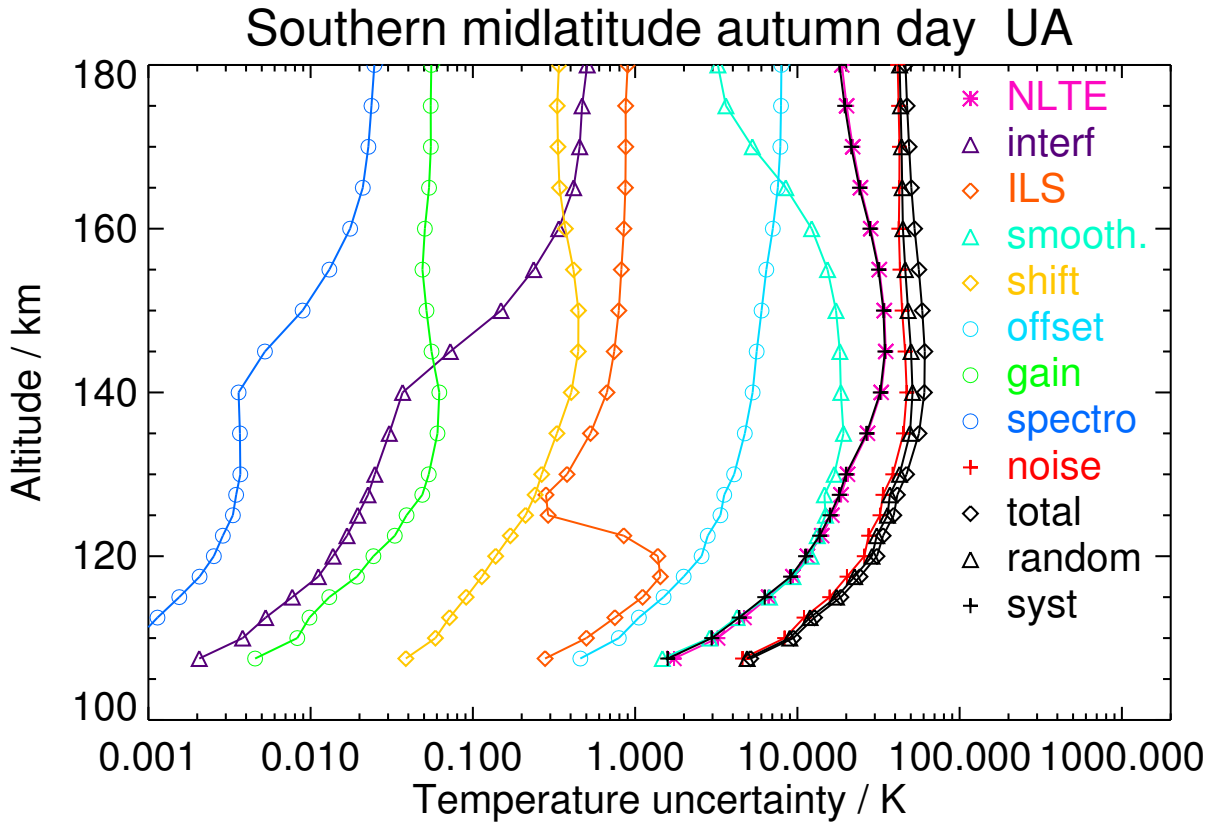

Figure S229. V8R_TwNO_662 Southern midlatitude autumn day, high solar activity

Table S231. Temperature error budget for Southern midlatitude autumn night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	267.39	6.00	0.02	0.57	3.78	0.03	0.73	0.03	<0.01	8.22	9.97	4.40	10.89
120	367.44	7.95	0.03	0.77	10.47	0.09	2.81	0.05	<0.01	25.18	27.72	6.83	28.55
130	475.31	14.15	0.11	0.33	13.93	0.24	5.13	0.05	0.01	39.58	42.67	12.91	44.58
140	588.00	22.19	0.56	0.37	14.75	0.27	8.08	0.06	<0.01	51.81	55.25	20.18	58.82
150	651.75	21.11	0.90	0.45	10.60	0.26	8.50	0.07	<0.01	47.26	50.28	18.35	53.53
160	699.39	18.10	1.16	0.54	6.52	0.19	8.42	0.08	0.01	41.04	43.57	15.13	46.12
170	741.68	18.28	1.70	0.77	3.73	0.28	8.45	0.10	0.01	41.17	43.61	14.70	46.02
180	786.92	21.73	1.92	1.09	3.03	0.52	8.02	0.12	0.02	42.62	45.35	17.60	48.65

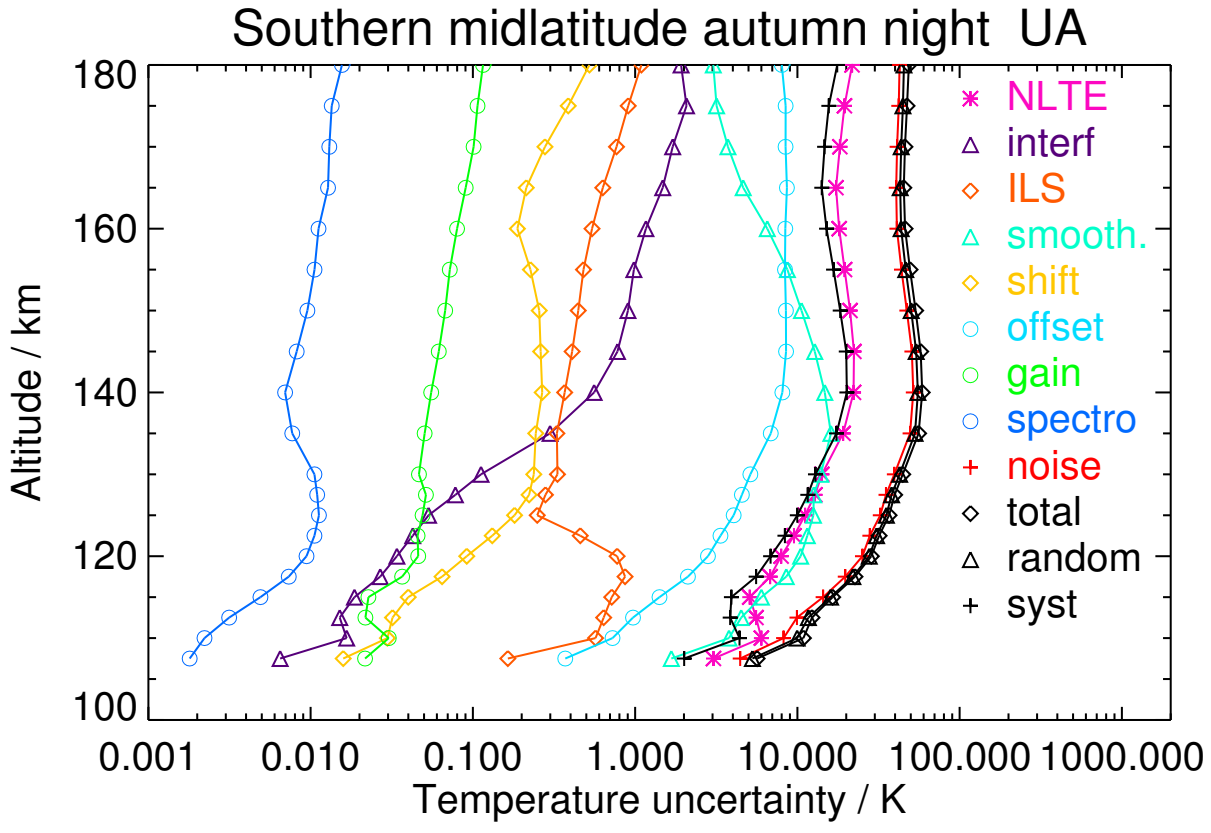

Figure S230. V8R_TwNO_662 Southern midlatitude autumn night, high solar activity

Table S232. Temperature error budget for Southern polar winter day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	276.75	3.44	<0.01	0.59	3.62	0.02	0.76	0.01	<0.01	7.24	8.22	3.27	8.85
120	386.08	12.04	0.03	1.45	12.83	0.15	2.56	0.04	<0.01	24.33	27.90	11.49	30.17
130	496.31	20.85	0.08	0.65	15.78	0.40	4.26	0.07	<0.01	37.80	41.50	20.22	46.16
140	569.60	29.42	0.27	0.86	16.92	0.45	6.22	0.08	0.01	48.86	52.58	28.53	59.82
150	635.22	26.14	0.69	0.84	14.25	0.37	7.43	0.06	0.03	46.85	49.98	25.30	56.02
160	694.10	19.49	0.89	0.77	9.07	0.32	8.25	0.06	0.04	43.72	45.73	18.75	49.43
170	740.42	14.62	0.96	0.70	4.01	0.32	8.58	0.06	0.05	42.17	43.46	13.97	45.64
180	779.60	12.64	1.03	0.75	2.91	0.37	8.55	0.07	0.05	42.17	43.37	11.86	44.96

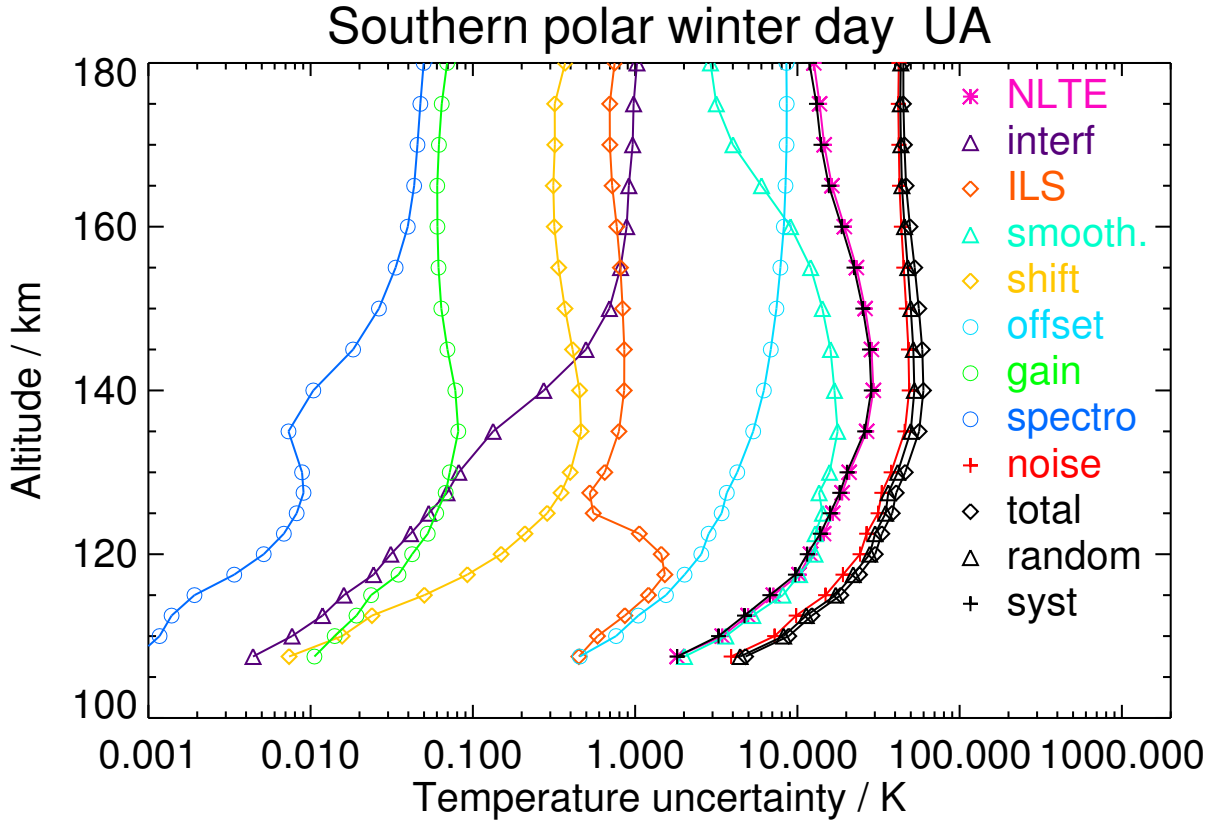

Figure S231. V8R_TwNO_662 Southern polar winter day, high solar activity

Table S233. Temperature error budget for Southern polar winter night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	284.58	4.26	<0.01	0.65	4.17	0.05	0.76	0.04	<0.01	8.38	9.66	3.67	10.33
120	400.76	13.85	0.01	1.43	11.71	0.21	2.34	0.06	<0.01	22.52	25.87	13.21	29.05
130	505.67	21.98	0.03	0.61	14.67	0.43	3.56	0.09	<0.01	34.67	38.41	20.95	43.75
140	563.29	29.79	0.06	0.80	16.56	0.52	5.02	0.07	<0.01	46.71	50.66	28.33	58.05
150	614.89	26.17	0.09	0.89	15.11	0.53	5.92	0.05	0.02	46.27	49.76	24.78	55.59
160	656.57	19.08	0.11	0.88	10.79	0.53	6.40	0.04	0.03	42.60	44.85	18.06	48.35
170	690.91	14.08	0.11	0.91	5.67	0.58	6.89	0.04	0.03	41.37	42.67	13.03	44.61
180	710.04	11.88	0.08	0.96	4.66	0.64	6.84	0.04	0.04	40.44	41.62	10.67	42.97

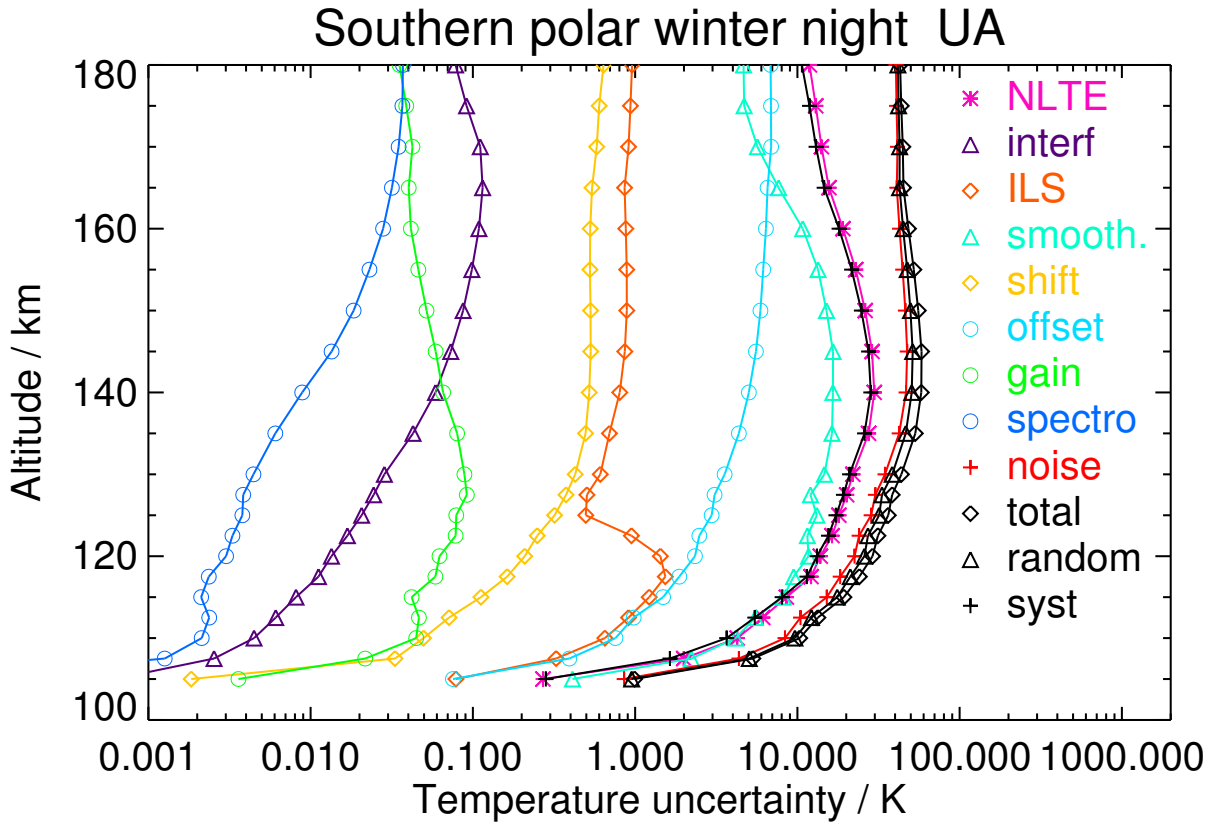

Figure S232. V8R_TwNO_662 Southern polar winter night, high solar activity

Table S234. Temperature error budget for Southern polar spring day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	319.17	11.84	0.02	1.77	4.09	0.17	0.82	0.05	<0.01	8.89	10.82	11.08	15.49
120	462.60	28.85	0.05	4.53	8.04	0.38	1.42	0.06	<0.01	19.27	22.54	27.98	35.93
130	556.10	22.24	0.16	0.79	8.86	0.54	1.64	0.04	<0.01	30.29	32.41	21.08	38.66
140	627.35	37.31	0.48	0.56	9.24	0.84	2.24	0.04	<0.01	41.25	42.88	36.70	56.44
150	719.03	43.98	0.92	0.74	8.89	0.89	2.58	0.10	<0.01	40.25	42.83	42.53	60.35
160	794.84	36.12	1.61	0.78	6.85	0.68	3.45	0.12	0.02	34.86	37.71	34.05	50.81
170	850.49	26.89	2.27	1.19	3.53	0.66	4.88	0.17	0.02	31.23	33.29	25.16	41.73
180	903.43	30.10	2.91	1.93	1.34	1.29	6.17	0.21	0.03	34.29	37.03	27.64	46.21

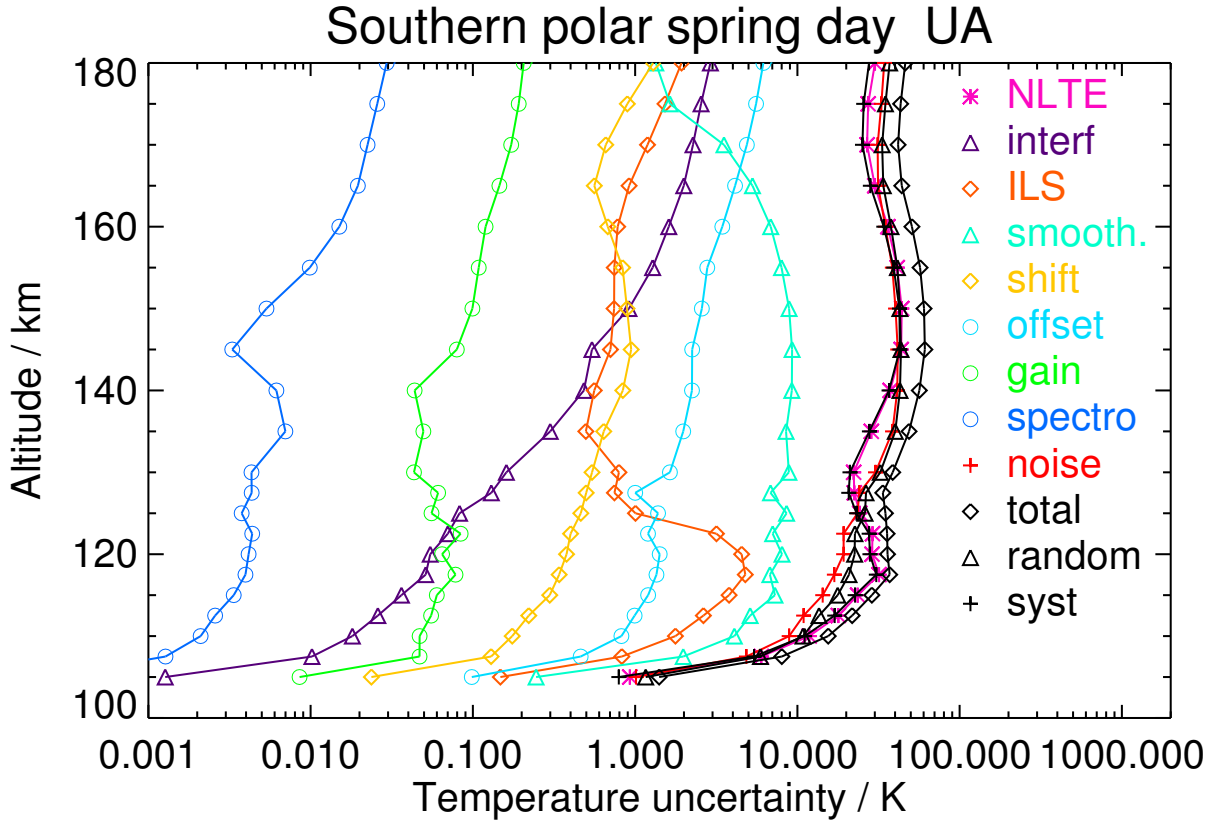

Figure S233. V8R_TwNO_662 Southern polar spring day, high solar activity

Table S235. Temperature error budget for Southern polar spring night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	300.01	6.16	0.01	1.00	3.69	0.04	0.81	0.04	<0.01	8.55	9.96	5.21	11.24
120	429.58	18.30	0.04	2.07	10.31	0.18	2.15	0.08	0.01	21.73	25.40	16.65	30.37
130	537.02	21.56	0.06	0.70	12.69	0.47	3.13	0.07	0.02	33.80	36.84	20.53	42.18
140	590.34	32.21	0.31	0.62	13.97	0.58	4.37	0.07	0.01	46.06	49.18	30.90	58.08
150	676.52	32.74	0.84	0.79	12.47	0.62	5.63	0.09	0.02	45.39	48.66	30.88	57.63
160	740.67	24.49	1.17	0.92	8.57	0.49	6.78	0.10	0.02	41.65	43.94	22.92	49.56
170	796.00	18.83	1.40	1.07	3.95	0.64	7.77	0.10	0.03	41.26	43.01	16.95	46.23
180	845.98	19.83	1.52	1.28	2.35	0.88	7.89	0.11	0.04	41.34	43.62	16.51	46.64

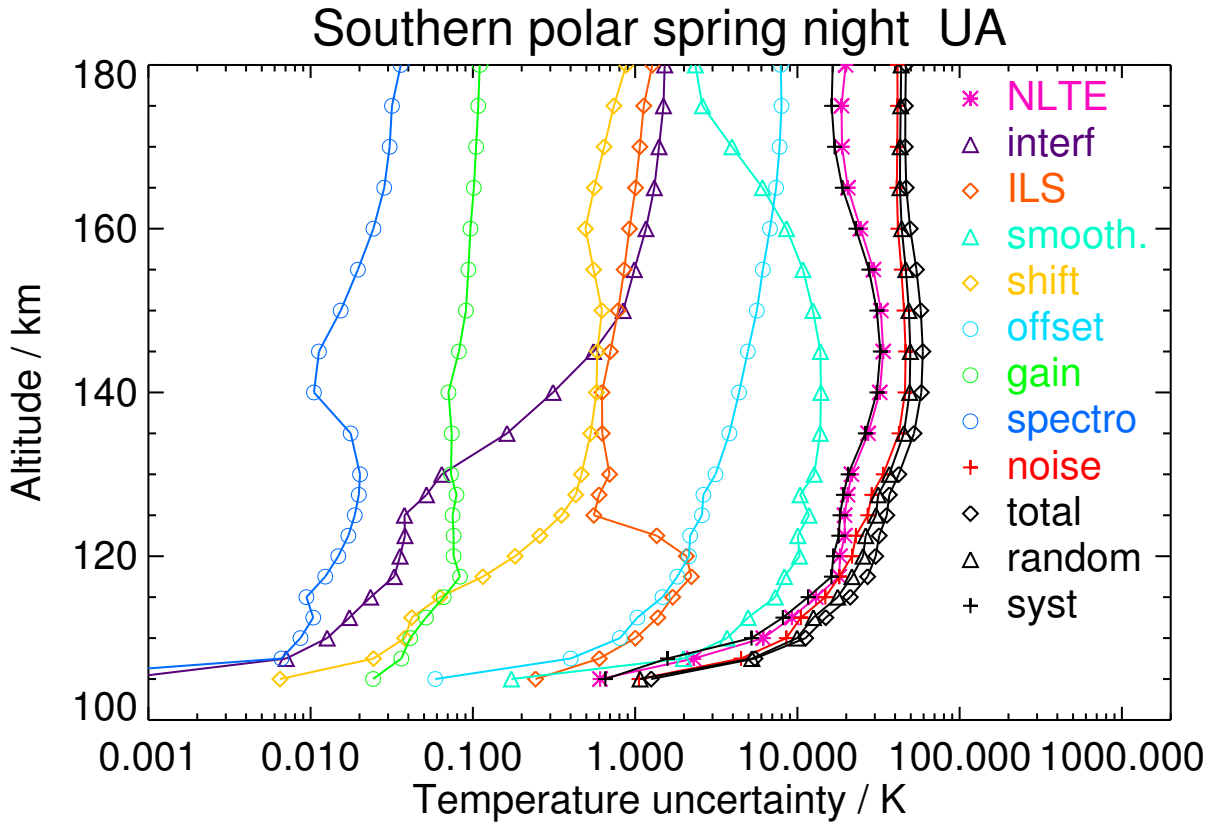

Figure S234. V8R_TwNO_662 Southern polar spring night, high solar activity

Table S236. Temperature error budget for Southern polar summer day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	359.88	12.74	0.02	3.33	4.18	0.22	0.81	0.06	<0.01	8.78	11.04	12.12	16.39
120	434.52	25.47	0.07	6.16	8.37	0.20	1.52	0.09	<0.01	18.09	21.48	24.99	32.95
130	520.87	23.53	0.17	1.08	10.09	0.47	1.77	0.05	<0.01	29.09	31.90	22.11	38.81
140	604.94	29.58	0.75	0.86	9.60	1.05	2.31	0.07	<0.01	39.72	41.93	28.18	50.53
150	674.31	37.70	0.95	1.14	9.96	1.29	2.56	0.11	0.01	39.02	42.03	35.87	55.26
160	753.75	29.24	0.89	1.20	8.04	0.87	3.18	0.10	0.02	34.21	36.83	27.33	45.86
170	816.26	19.62	1.38	1.41	4.18	0.52	4.46	0.12	0.03	30.02	31.91	17.59	36.44
180	869.88	22.90	1.87	1.98	1.70	1.03	5.73	0.15	0.04	33.10	35.33	20.40	40.80

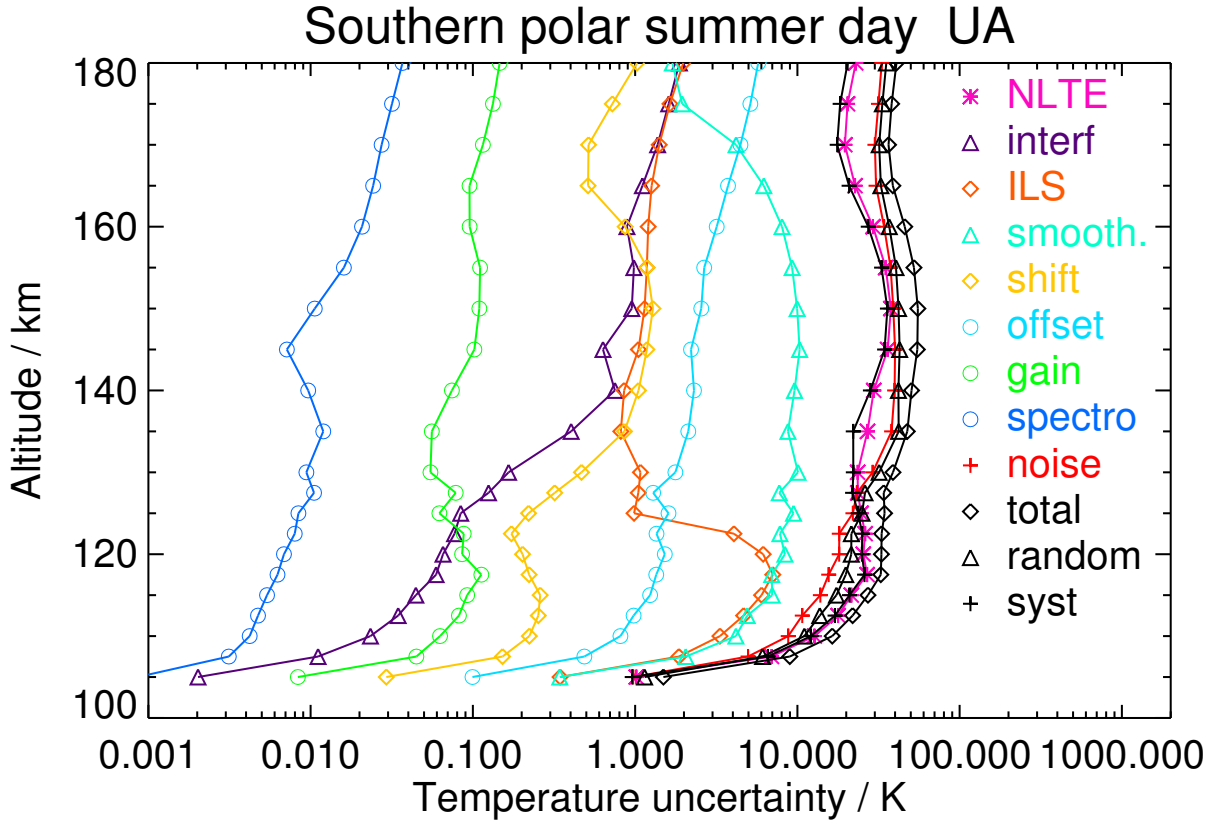

Figure S235. V8R_TwNO_662 Southern polar summer day, high solar activity

Table S237. Temperature error budget for Southern polar summer night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	311.72	6.85	0.02	1.23	3.59	0.28	0.83	0.04	<0.01	8.08	9.97	5.29	11.29
120	395.78	15.79	0.08	2.57	11.27	0.22	2.43	0.07	0.01	23.06	26.93	13.98	30.34
130	499.08	18.91	0.12	0.81	14.25	0.37	3.59	0.08	0.02	35.24	38.74	17.77	42.62
140	554.60	27.43	0.50	0.71	15.03	0.55	4.77	0.08	0.01	45.25	49.07	25.32	55.22
150	659.02	29.04	0.90	0.85	12.57	0.57	5.72	0.06	0.01	43.74	47.57	26.19	54.30
160	732.70	21.09	1.30	0.94	8.01	0.48	6.79	0.08	0.02	39.38	41.93	18.72	45.92
170	782.65	14.77	1.59	1.08	3.99	0.57	7.56	0.11	0.03	38.84	40.53	12.71	42.47
180	821.27	14.97	1.71	1.23	2.43	0.82	7.93	0.11	0.03	39.23	41.47	10.82	42.86

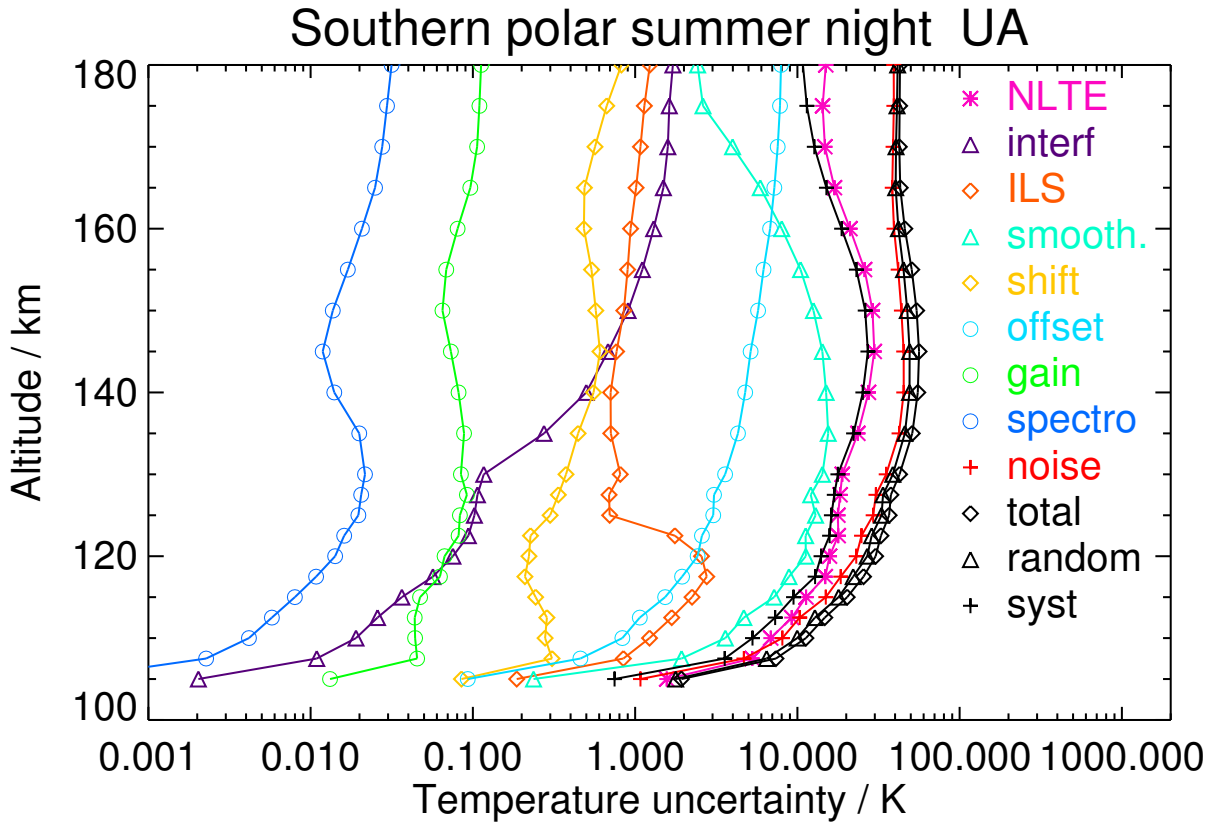

Figure S236. V8R_TwNO_662 Southern polar summer night, high solar activity

Table S238. Temperature error budget for Southern polar autumn day, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	272.22	4.17	<0.01	0.57	4.13	0.02	0.83	0.03	<0.01	7.94	9.12	3.93	9.93
120	390.62	12.47	0.02	1.40	11.88	0.17	2.33	0.05	<0.01	22.77	26.14	11.81	28.68
130	485.62	19.78	0.05	0.56	16.03	0.35	3.69	0.07	<0.01	35.57	39.54	19.08	43.90
140	542.70	29.37	0.24	0.62	18.02	0.39	5.50	0.07	<0.01	47.76	51.88	28.42	59.15
150	609.81	28.90	0.50	0.72	16.14	0.36	6.60	0.07	0.01	46.58	50.36	27.83	57.53
160	679.26	22.95	0.66	0.80	10.94	0.32	7.54	0.06	0.02	43.22	45.68	22.04	50.72
170	730.60	17.54	0.69	0.84	4.89	0.35	8.01	0.06	0.02	41.78	43.15	16.76	46.29
180	770.53	15.79	0.84	0.99	3.13	0.43	8.27	0.06	0.03	41.91	43.21	14.78	45.67

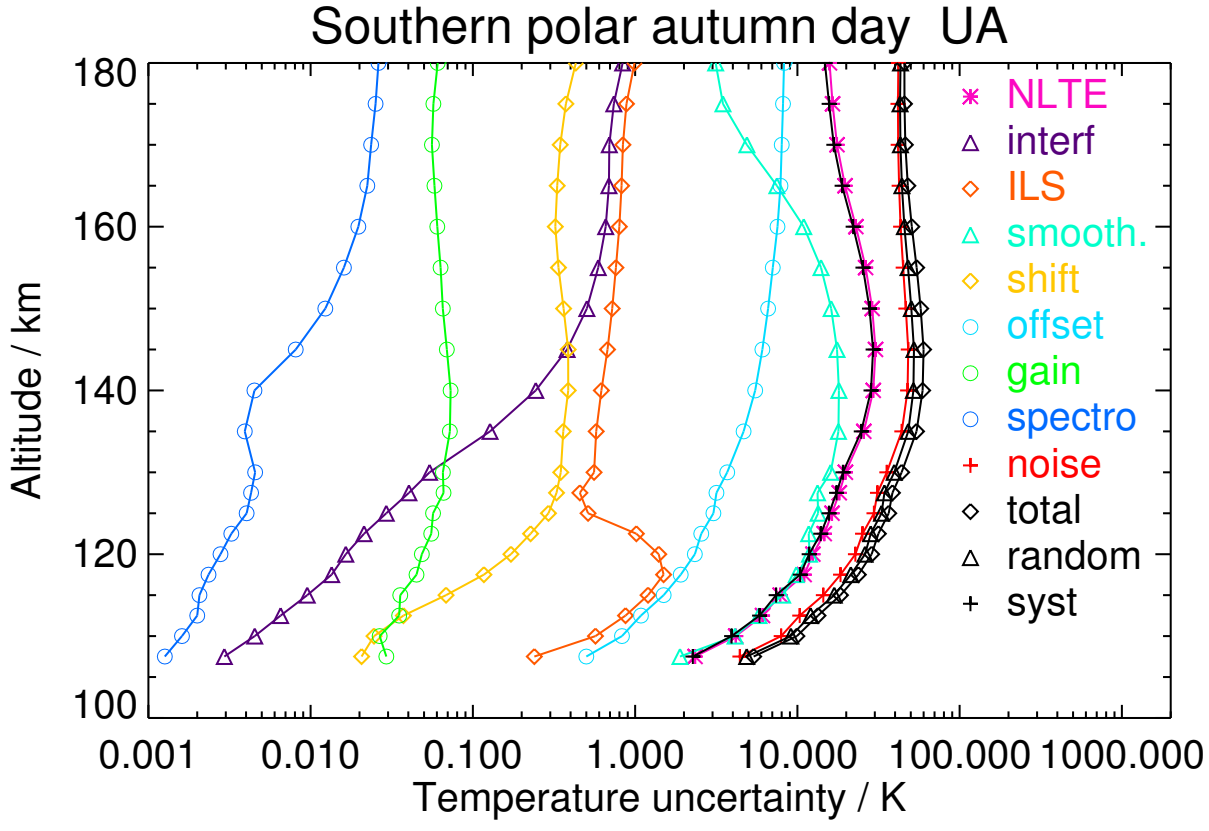

Figure S237. V8R_TwNO_662 Southern polar autumn day, high solar activity

Table S239. Temperature error budget for Southern polar autumn night, high solar activity. All uncertainties are 1σ.

altitude (km)	mean target (K)	NLTE (K)	interf (K)	ILS (K)	smooth. (K)	shift (K)	offset (K)	gain (K)	spectro (K)	noise (K)	random (K)	syst (K)	total (K)
110	266.84	3.87	<0.01	0.50	3.67	0.02	0.68	0.03	<0.01	7.79	8.86	3.36	9.48
120	400.85	13.54	0.02	1.11	11.79	0.16	2.41	0.04	<0.01	23.26	26.67	12.62	29.50
130	516.87	21.24	0.05	0.40	13.85	0.37	3.72	0.05	<0.01	35.20	38.43	20.48	43.54
140	566.81	29.62	0.18	0.53	16.13	0.40	5.44	0.06	<0.01	47.38	51.03	28.45	58.42
150	630.76	26.66	0.40	0.65	14.38	0.36	6.57	0.05	0.01	46.81	50.15	25.24	56.15
160	697.58	20.23	0.58	0.69	9.70	0.37	7.20	0.06	0.02	42.99	45.23	18.95	49.04
170	750.90	15.79	0.71	0.72	4.45	0.47	7.67	0.06	0.02	40.88	42.29	14.56	44.72
180	791.63	14.90	0.89	0.88	3.16	0.60	8.11	0.07	0.02	41.25	42.64	13.53	44.73

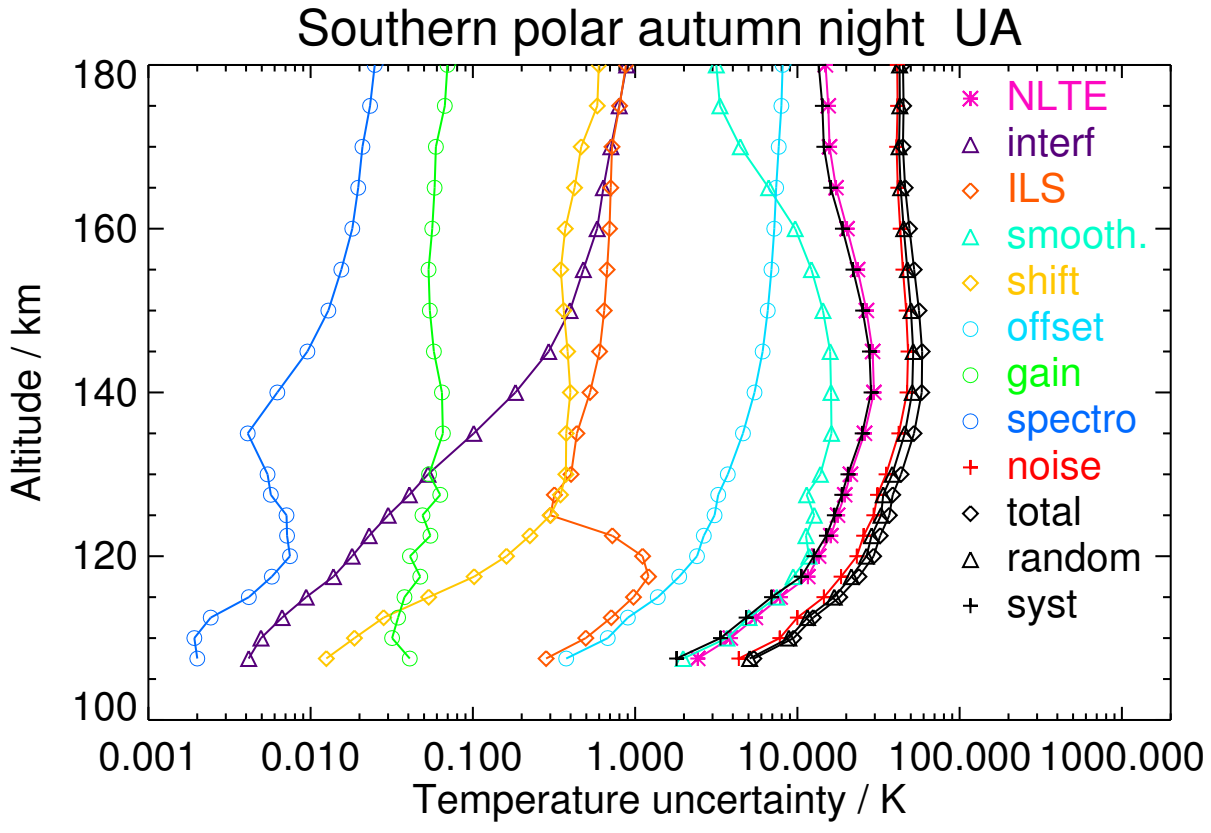

Figure S238. V8R_TwNO_662 Southern polar autumn night, high solar activity