1 DLR Retrievals

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1.1 Data

- Microwindow data supplied by G. Schwarz, email 04 Feb 02.
- Averaging kernels: not available.
- Residuals supplied by G. Schwarz, email 15 Mar 02

1.2 Notes

- The "historic" set of microwindows is used, which have no masks and which do not include microwindows for an NO_2 retrieval
- No absorbers lists are supplied with the microwindows, so it is assumed that all significant absorbers are modelled (i.e., no errors due to omitted gases)
- Retrieval sequence: pT, O_3, H_2O, CH_4, N_2O then HNO_3
- Residuals supplied for the BT1 tests only, so no pT retrieval residuals.

1.3 REC Analysis

Table 1: REC analysis for all DLR residuals

error source	BT1 Residuals c	σ
`h2o_06`	-0.02	0.01
`o3`	-0.12	0.01
`h2o_09`	0.02	0.01
`hno3`	-0.19	0.01
`ch4`	-0.02	0.02
`n2o`	0.04	0.02
`so2`	0.13	0.02
`nonlte`	0.26	0.02
`h2o_12`	0.24	0.03
`h2o_st`	0.07	0.03
`nh3`	-0.27	0.04
`no2`	-0.07	0.06
`co2mix`	0.90	0.08
`pre`	0.68	0.08

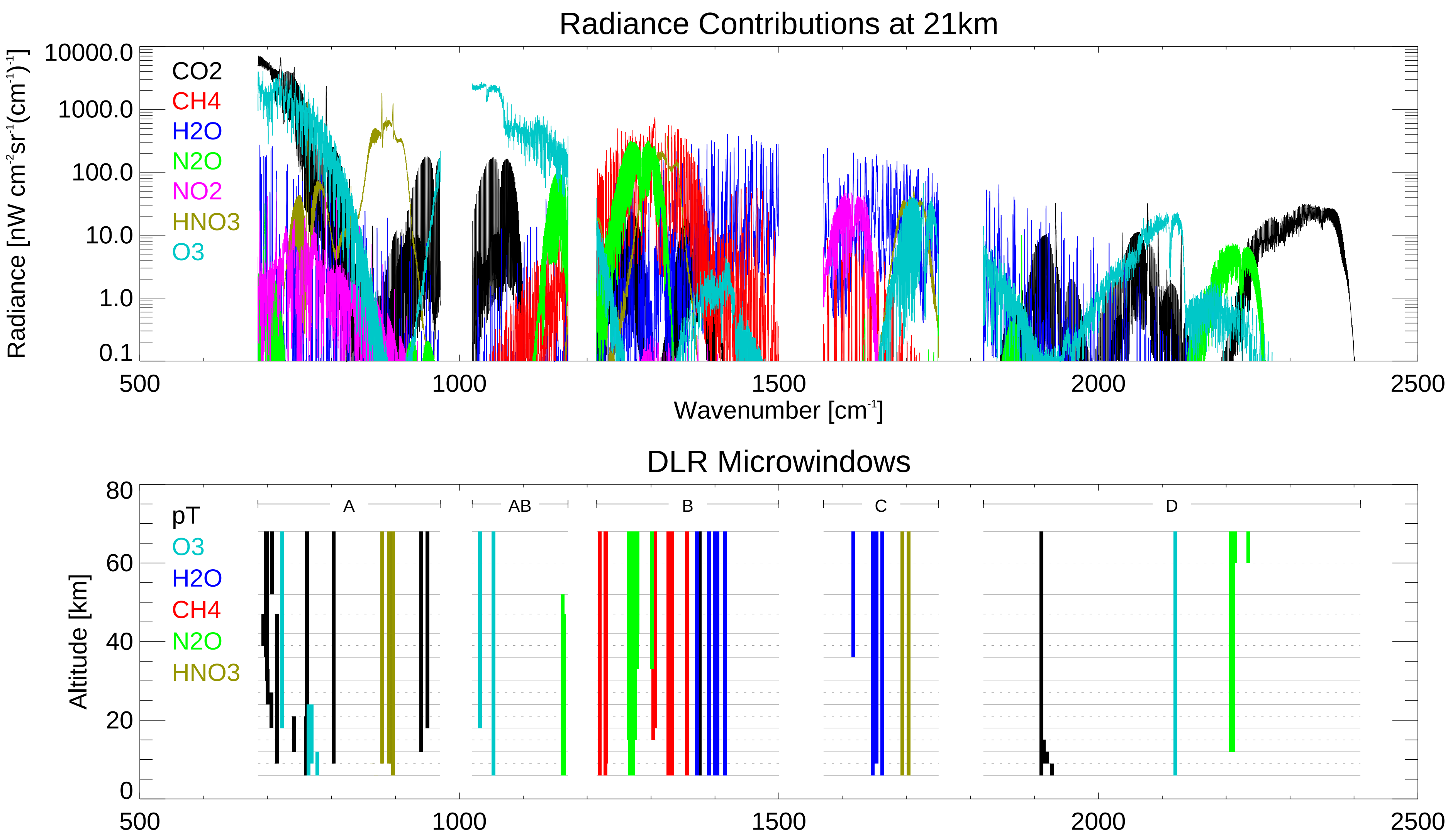


Figure 1: DLR microwindows

1.4 Pressure-Temperature

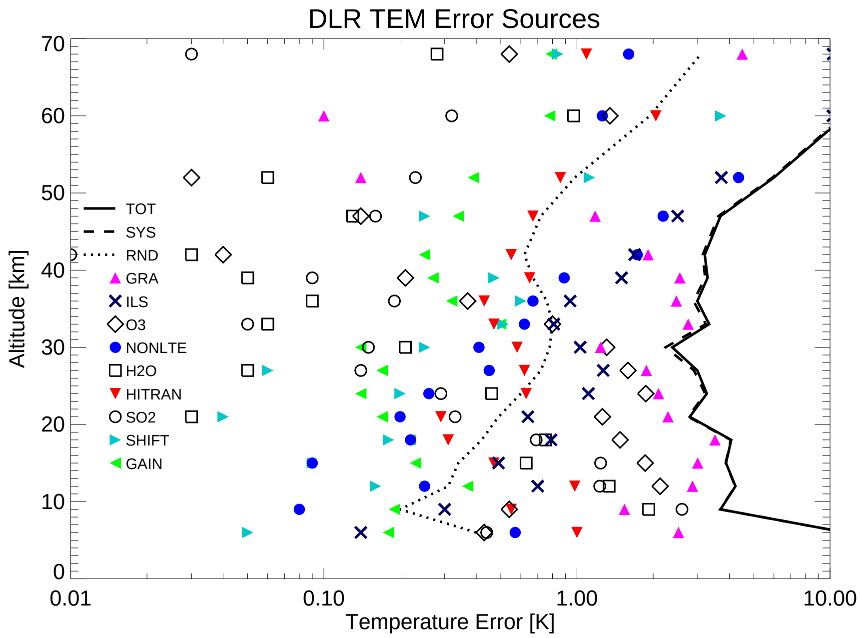


Figure 2: DLR temperature retrieval errors

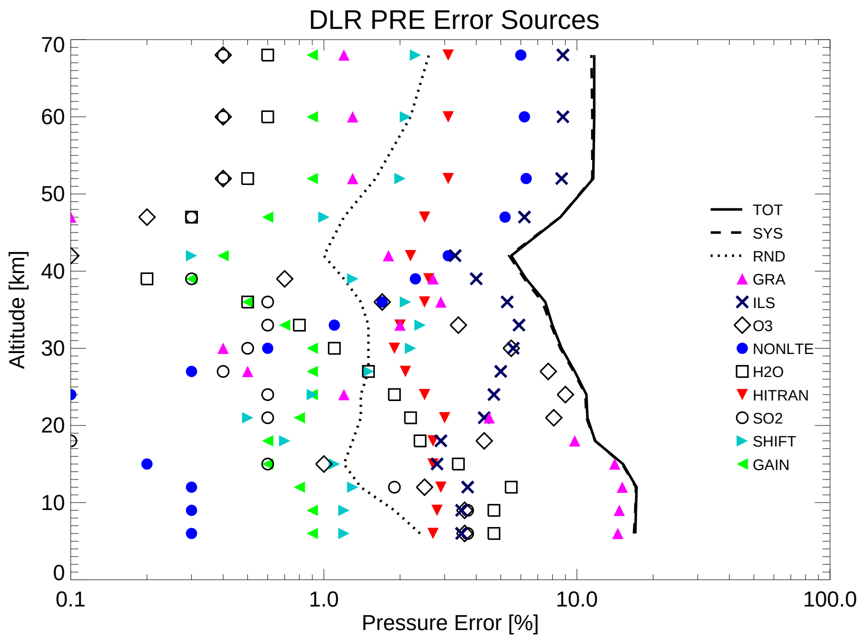
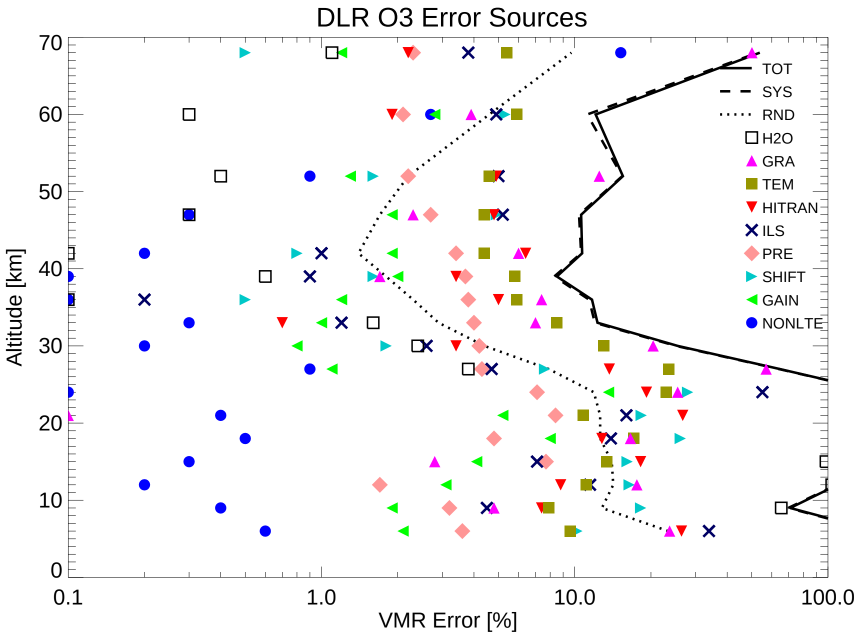


Figure 3: DLR pressure retrieval errors

1.5 Ozone

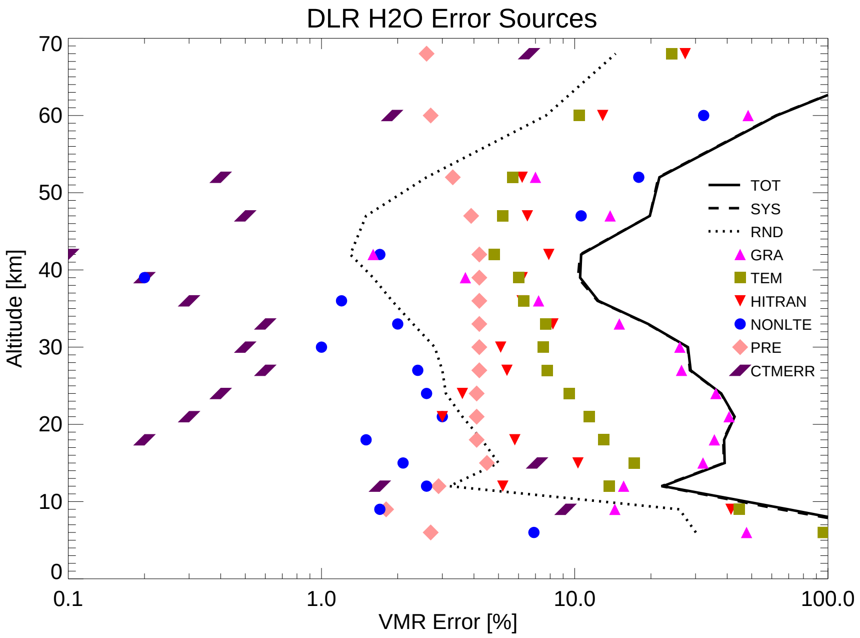


REC Analysis

source	c	σ
o3	−0.11	0.01
h2o_06	−0.09	0.01
h2o_09	−0.04	0.01
h2o_12	0.17	0.08
co2mix	0.70	0.09
pre	−0.54	0.13
clono2	1.44	0.15
nh3	−0.18	0.22
hno3	0.89	0.23

Figure 4: DLR ozone retrieval errors

1.6 Water Vapour

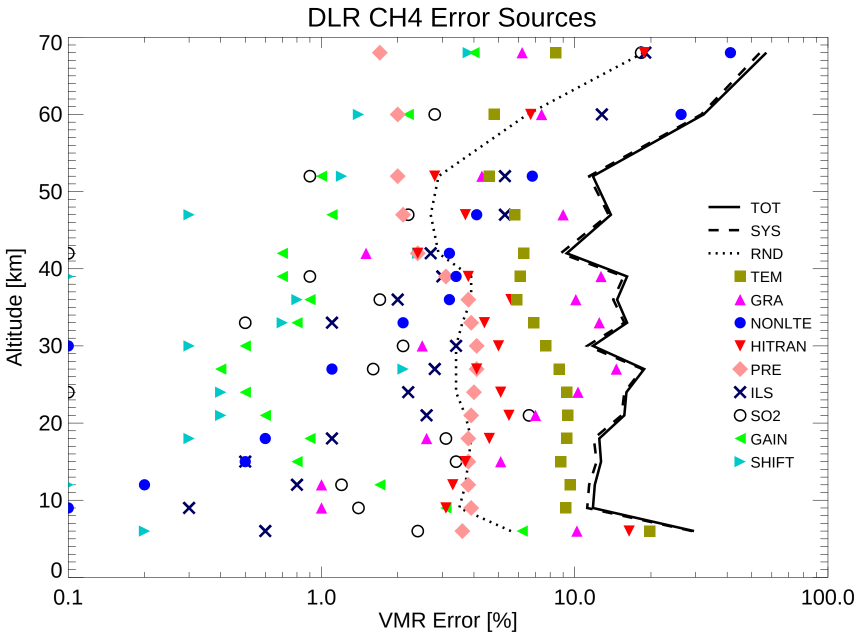


REC Analysis

source	c	σ
h2o_06	−0.07	0.02
nonlte	0.31	0.02
h2o_12	0.25	0.03
h2o_09	−0.01	0.04
h2o_st	0.28	0.05
no2	−0.05	0.06
pre	−0.56	0.18
so2	0.26	0.21
ch4	0.78	0.24

Figure 5: DLR water vapour retrieval errors

1.7 Methane

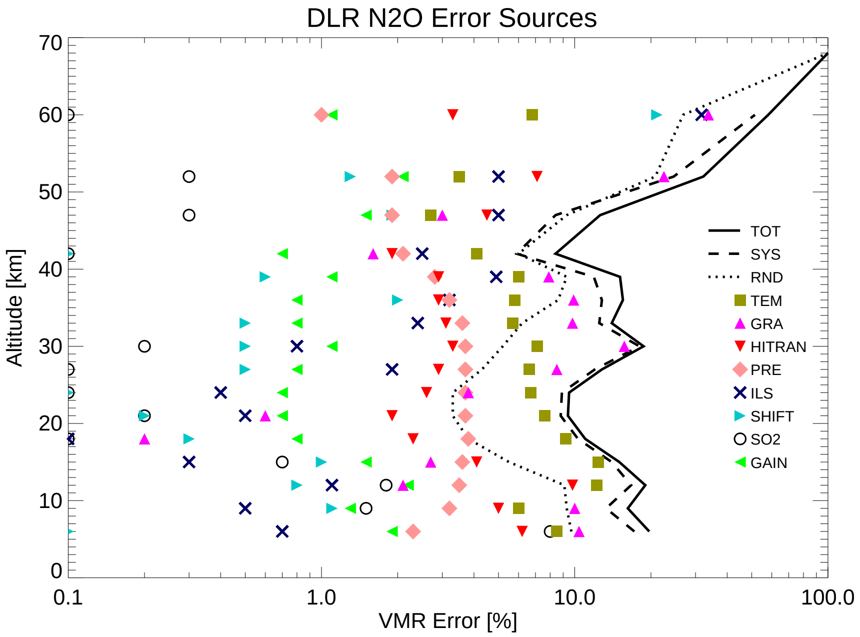


REC Analysis

source	c	σ
so2	0.07	0.02
h2o_06	−0.04	0.02
ch4	−0.22	0.03
h2o_09	0.12	0.03
nonlte	0.97	0.07
n2o	0.68	0.08
hno3	0.91	0.09
h2o_12	1.25	0.13
pre	2.42	0.21
h2o_st	2.01	0.25

Figure 6: DLR methane retrieval errors

1.8 Nitrous Oxide

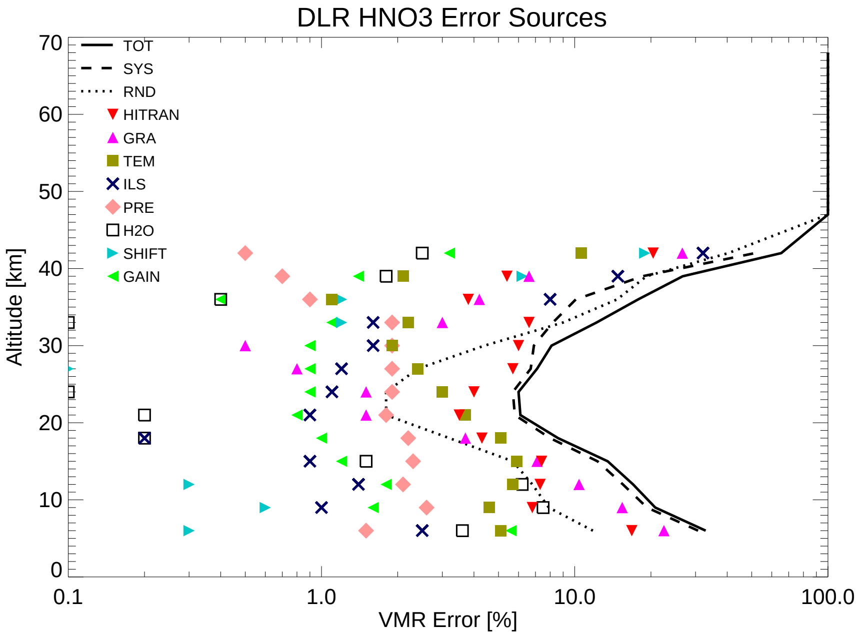


REC Analysis

source	c	σ
n2o	−0.13	0.02
h2o_06	−0.24	0.02
h2o_09	−0.33	0.08
o3	1.90	0.14
so2	0.74	0.17

Figure 7: DLR nitrous oxide retrieval errors

1.9 Nitric Acid



REC Analysis

source	c	σ
h2o_06	0.05	0.01
hno3	−0.22	0.01
h2o_09	0.08	0.01
nh3	−0.26	0.05
h2o_12	−0.10	0.07
ocs	−0.15	0.10

Figure 8: DLR nitric acid retrieval errors