1 Oxford Retrievals

Document version: April 6, 2002

1.1 Data

- Microwindow data copied 20 Feb 02 from `~vbennett/OPTIMO_MW_SEL/sort_reduced/*.lst`
- Averaging kernels copied 21 Mar 02 from `~vbennett/Amil2da/AKs/oxford_AK_*`.
- Residuals supplied 18 Feb 02.

1.2 Notes

- Averaging kernels calculated using **L** matrix ('method 3').
- Retrieval sequence: pT retrieval, followed by independent retrievals for all species performed in parallel, i.e., retrieved constituent profiles not input as contaminant profiles for other retrievals.
- Residuals also supplied for masked points in microwindows

1.3 REC Analysis

Table 1: REC analysis for Oxford retrievals

error source	all points		unmasked only	
	c	σ	c	σ
h2o_06	0.05	0.00	0.03	0.00
o3	0.00	0.00	−0.02	0.01
h2o_09	−0.01	0.00	0.01	0.01
no2	−0.06	0.01	−0.02	0.01
hno3	0.03	0.01	0.01	0.01
so2	0.02	0.01	−0.01	0.01
ch4	0.36	0.01	0.20	0.02
n2o	0.25	0.02	0.16	0.02
nonlte	0.73	0.02	0.53	0.03
h2o_12	0.08	0.02	−0.01	0.03
co2mix	0.77	0.02	0.62	0.05
h2o_st	0.06	0.03	−0.32	0.04
nh3	−0.14	0.03	−0.20	0.10
pre	−1.44	0.05	−0.46	0.09
f12	0.72	0.05	0.96	0.07
n2o5	0.41	0.06	0.27	0.09
hcn	−0.74	0.06	−1.65	0.58

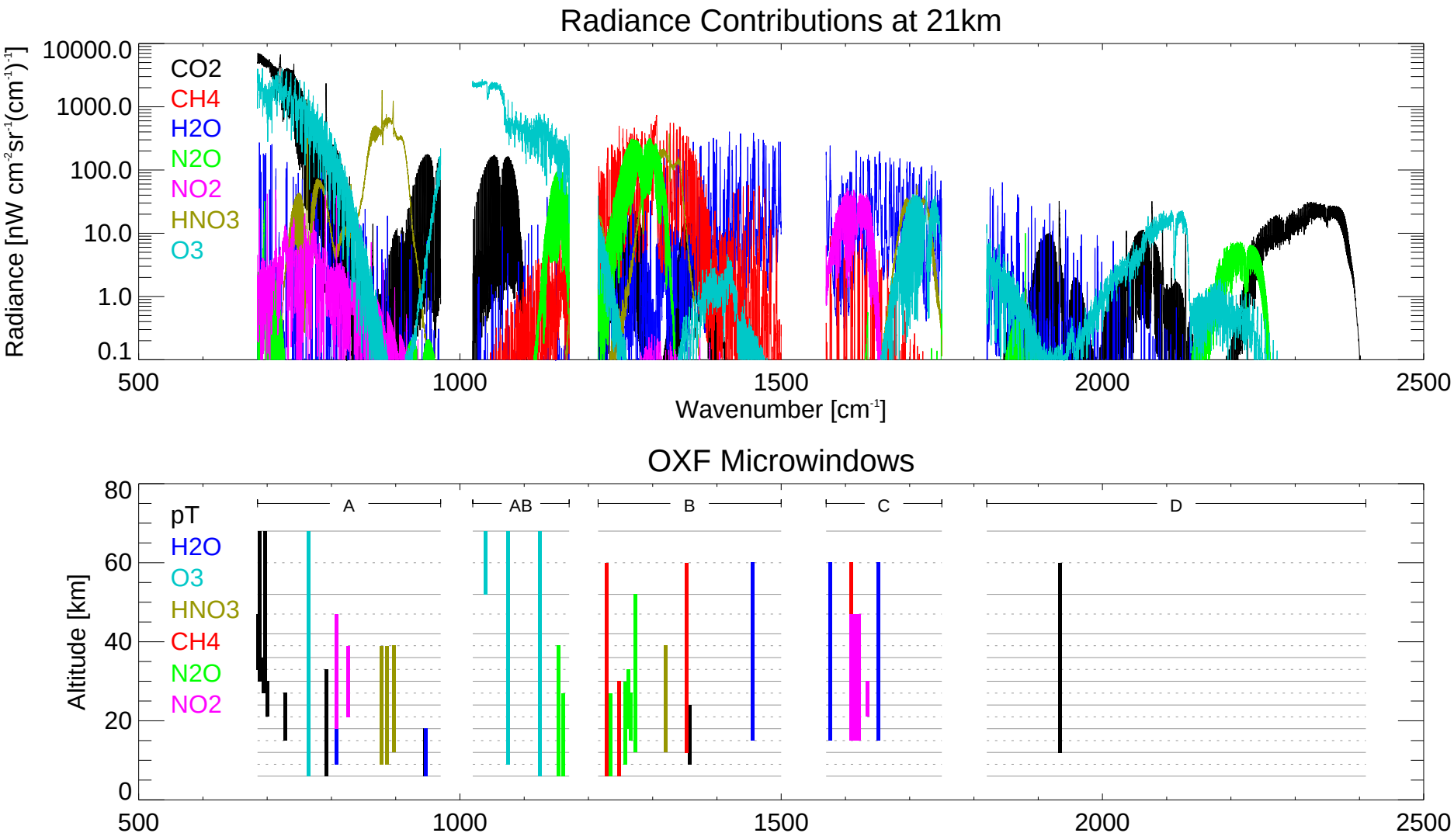


Figure 1: Oxford microwindows

1.4 Pressure-Temperature

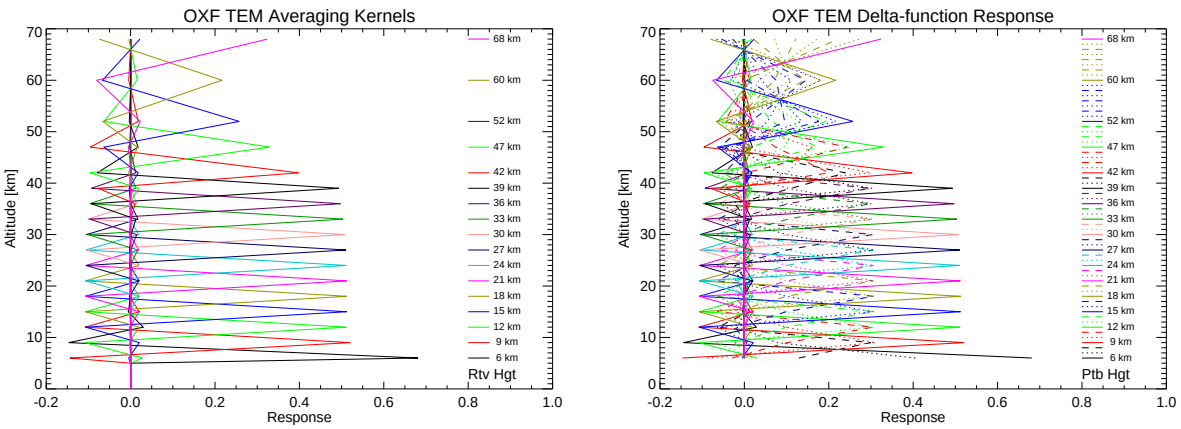
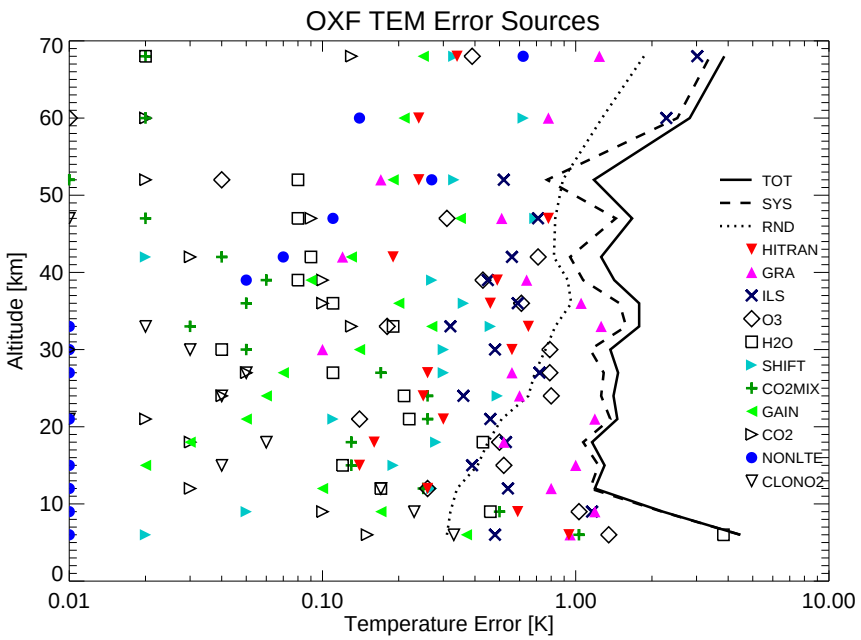


Figure 2: Oxford temperature averaging kernel matrix



REC Analysis

source	c	σ
h2o_06	0.02	0.01
h2o_09	0.10	0.03
so2	0.02	0.04
o3	−0.53	0.04
co2mix	0.51	0.06
nonlte	1.12	0.14
pre	−0.73	0.16
h2o_12	0.19	0.23

Figure 3: Oxford temperature retrieval errors

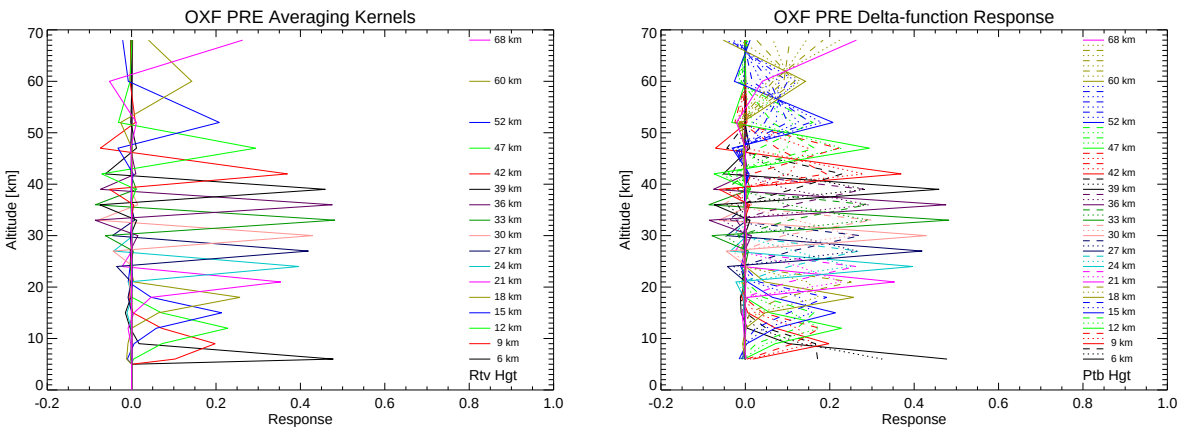
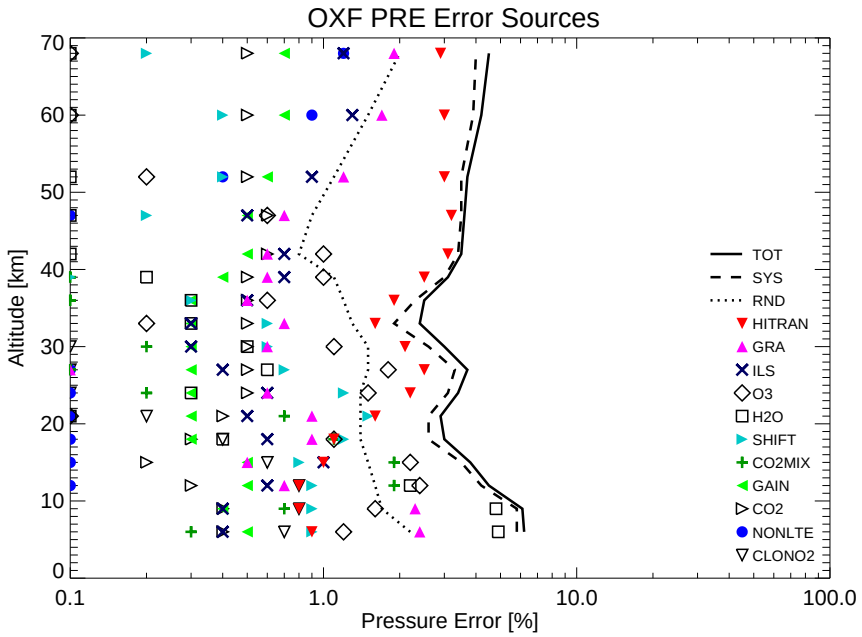


Figure 4: Oxford pressure averaging kernel matrix



REC Analysis

source	c	σ
h2o_06	0.02	0.01
h2o_09	0.10	0.03
so2	0.02	0.04
o3	−0.53	0.04
co2mix	0.51	0.06
nonlte	1.12	0.14
pre	−0.73	0.16
h2o_12	0.19	0.23

Figure 5: Oxford pressure retrieval errors

1.5 Methane

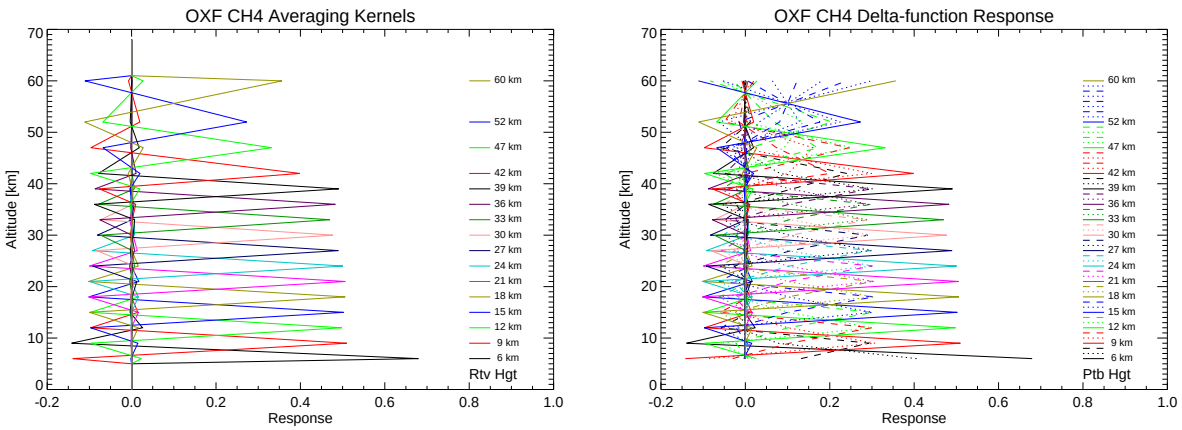
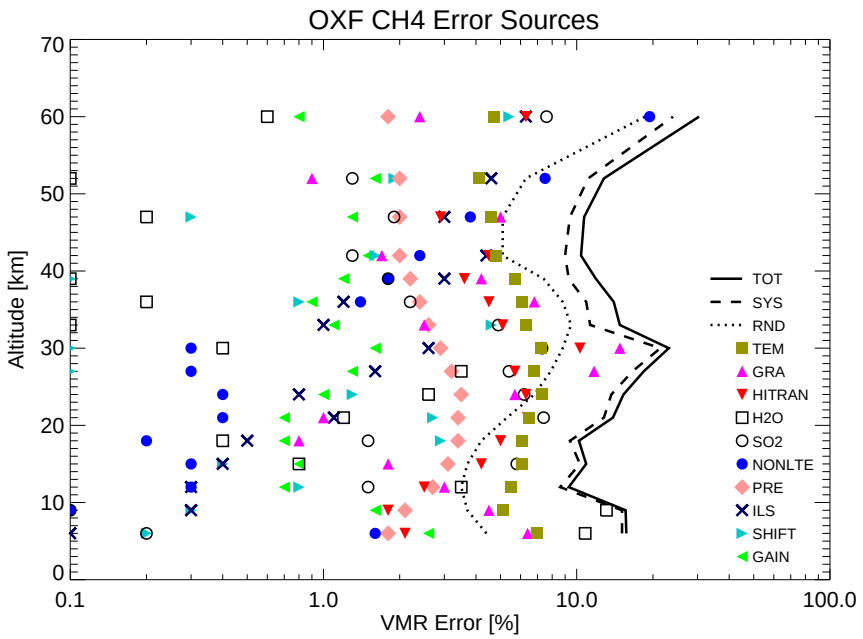


Figure 6: Oxford methane averaging kernel matrix



REC Analysis

source	c	σ
so2	−0.02	0.01
h2o_06	0.00	0.02
no2	−0.03	0.02
ch4	0.03	0.03
h2o_09	0.02	0.04
h2o_12	−0.15	0.09
n2o	1.23	0.10
nonlte	−0.19	0.13
n2o5	−0.16	0.13
h2o_st	−1.00	0.15
cof2	−0.40	0.27

Figure 7: Oxford methane retrieval errors

1.6 Water Vapour

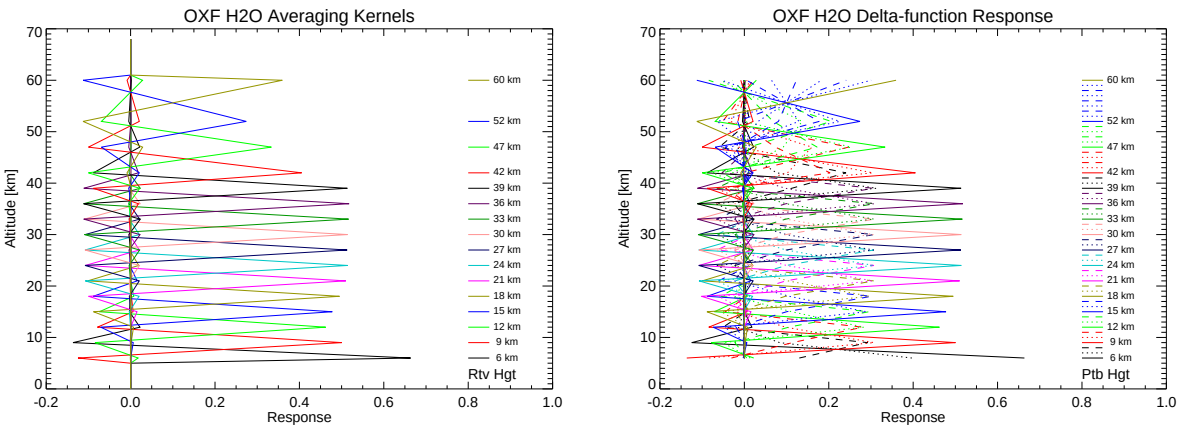
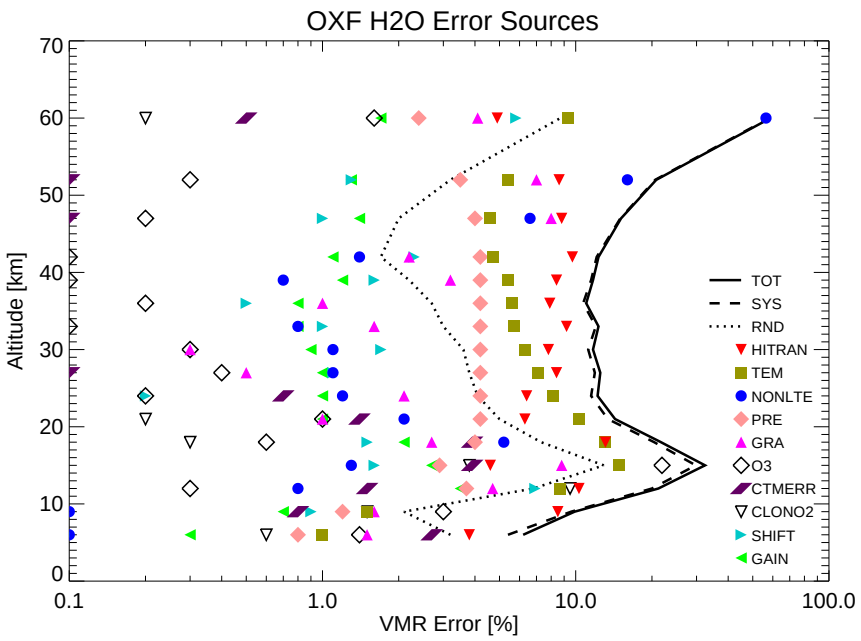


Figure 8: Oxford water vapour averaging kernel matrix



REC Analysis

source	c	σ
h2o_06	0.03	0.01
h2o_09	0.01	0.02
o3	−0.29	0.04
h2o_12	−0.05	0.04
nonlte	0.66	0.05
h2o_st	0.11	0.08
no2	−0.09	0.09
ch4	1.45	0.16
clono2	0.04	0.25
pre	−1.24	0.26

Figure 9: Oxford water vapour retrieval errors

1.7 Nitric Acid

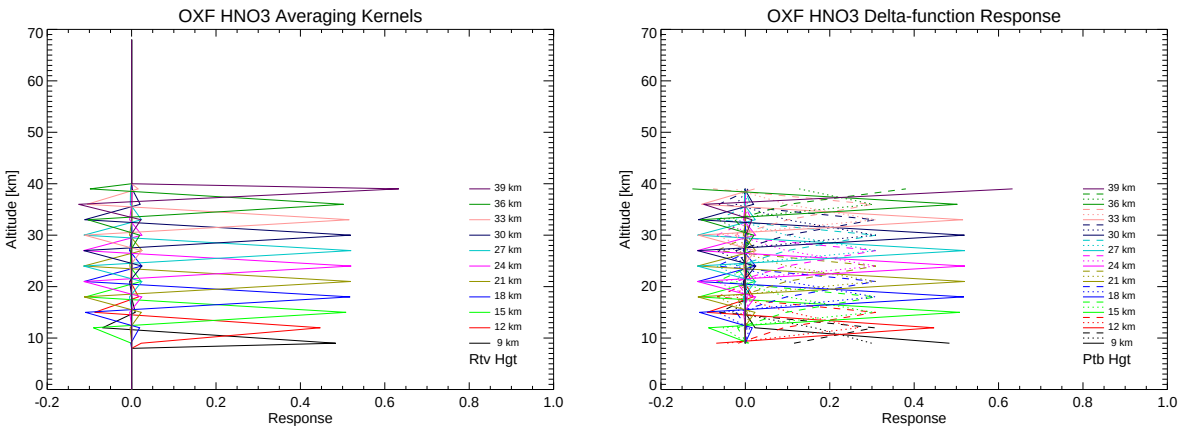
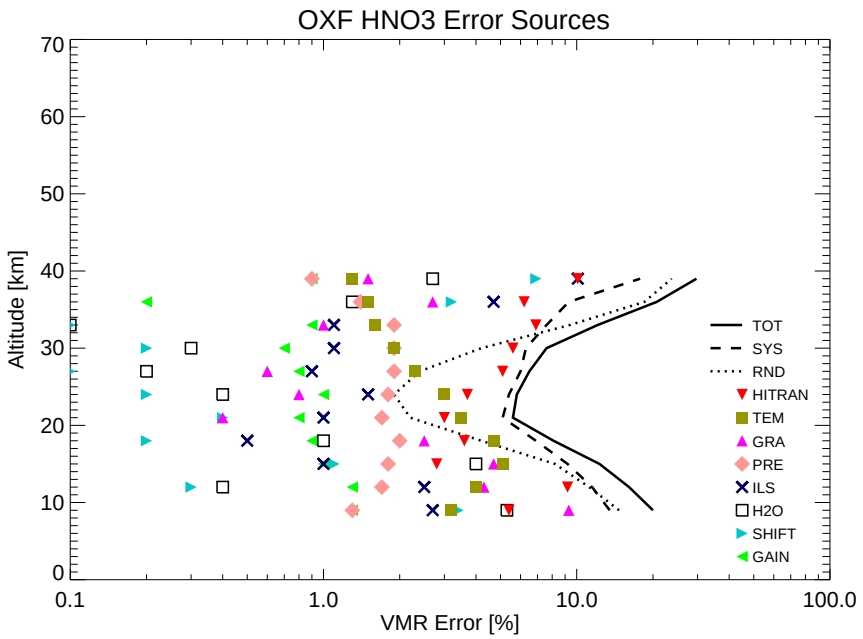


Figure 10: Oxford nitric acid averaging kernel matrix



REC Analysis

source	c	σ
hno3	0.00	0.02
h2o_09	0.00	0.03
h2o_12	−0.09	0.06
n2o	1.09	0.10
ch4	0.75	0.12
h2o_st	−0.24	0.14
nh3	−0.13	0.23

Figure 11: Oxford nitric acid retrieval errors

1.8 Nitrous Oxide

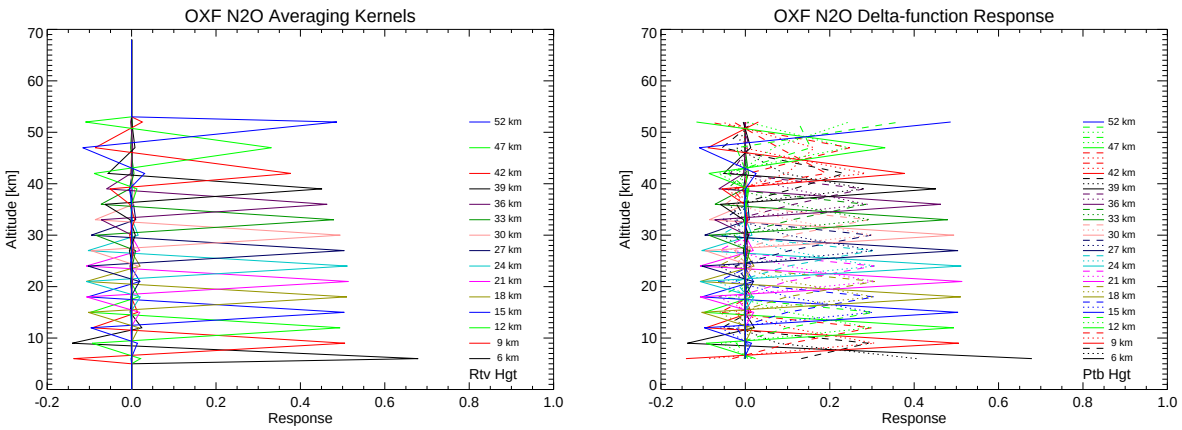
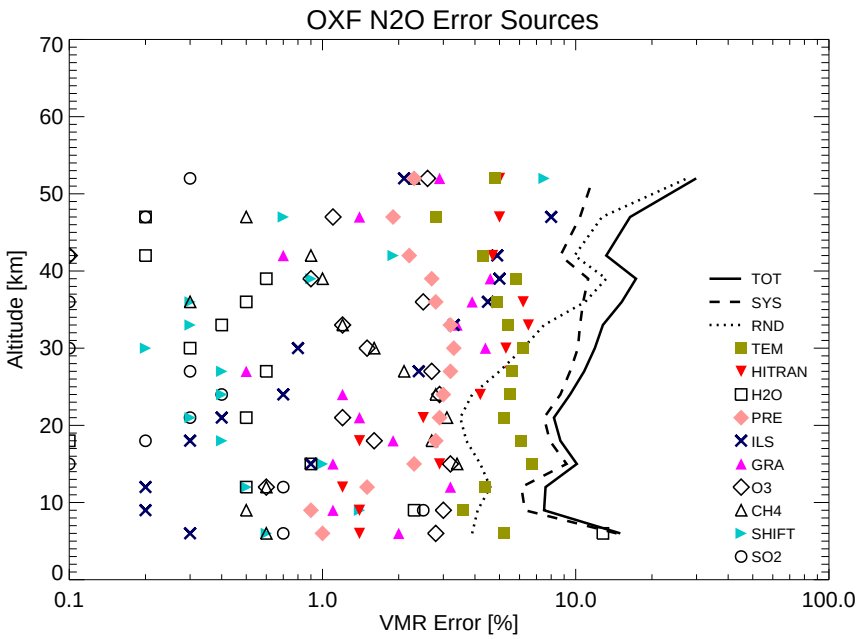


Figure 12: Oxford nitrous oxide averaging kernel matrix



REC Analysis

source	c	σ
h2o_06	0.06	0.01
n2o	0.14	0.02
o3	−0.29	0.03
h2o_09	0.10	0.03
so2	−0.01	0.08
f12	0.81	0.08
ch4	0.99	0.09
h2o_12	0.13	0.10
n2o5	0.17	0.14
cof2	−0.85	0.19
pre	−1.46	0.23

Figure 13: Oxford nitrous oxide retrieval errors

1.9 Nitrogen Dioxide

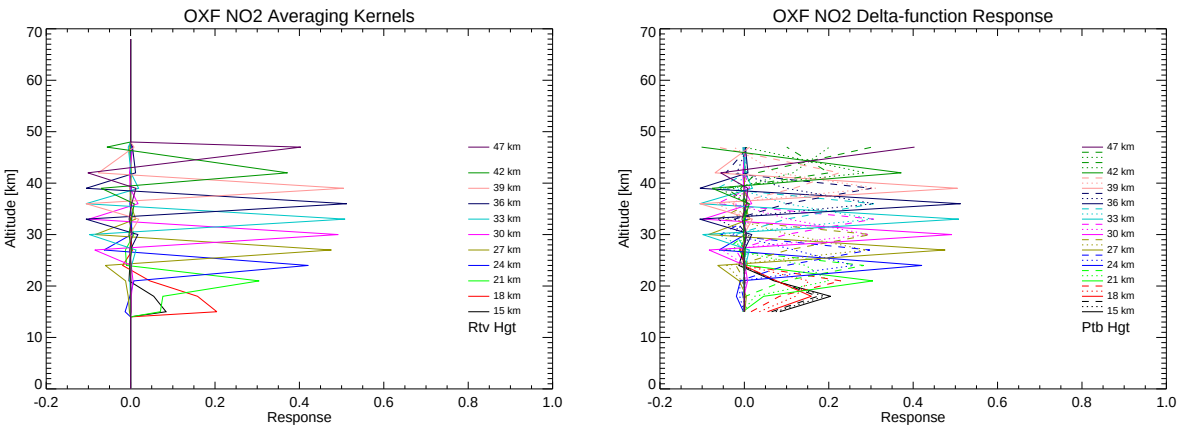
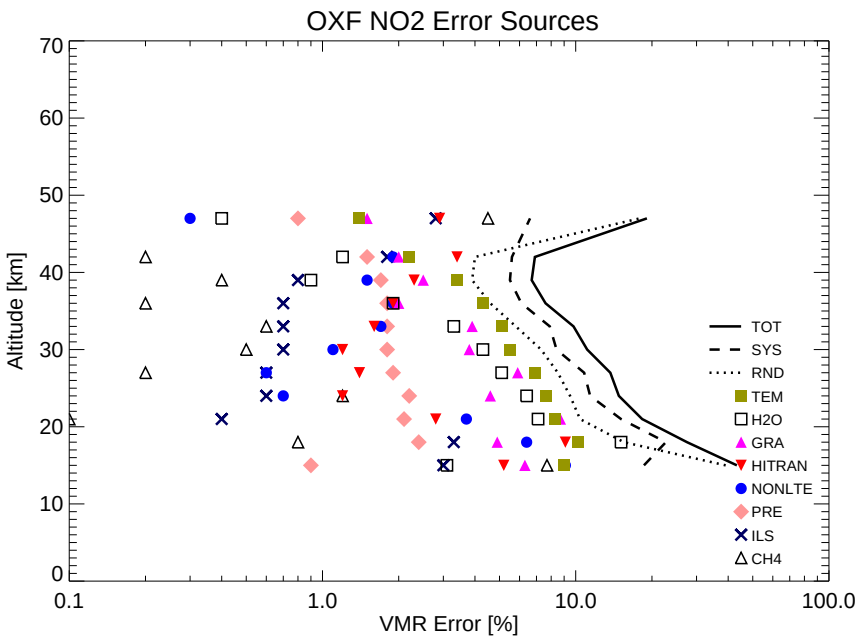


Figure 14: Oxford nitrogen dioxide averaging kernel matrix



REC Analysis

source	c	σ
no2	−0.03	0.01
nonlte	−0.16	0.09
h2o_st	−0.97	0.10
ch4	1.22	0.11
o3	−1.57	0.17

Figure 15: Oxford nitrogen dioxide retrieval errors

1.10 Ozone

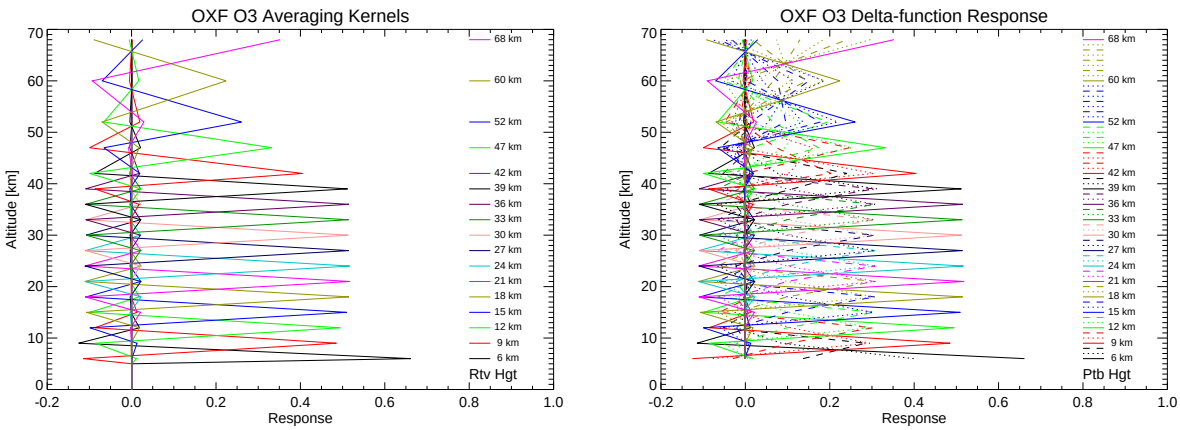
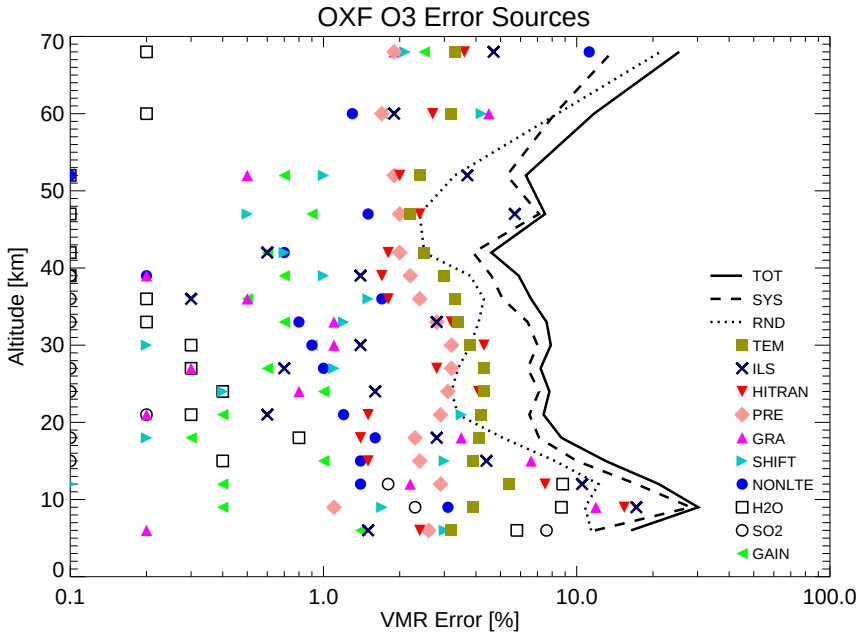


Figure 16: Oxford ozone averaging kernel matrix



REC Analysis

source	c	σ
o3	0.05	0.01
h2o_06	0.04	0.01
h2o_09	0.04	0.02
nonlte	0.85	0.06
so2	0.12	0.10
nh3	−0.24	0.11
pre	−0.06	0.23
h2o_12	0.38	0.27

Figure 17: Oxford ozone retrieval errors