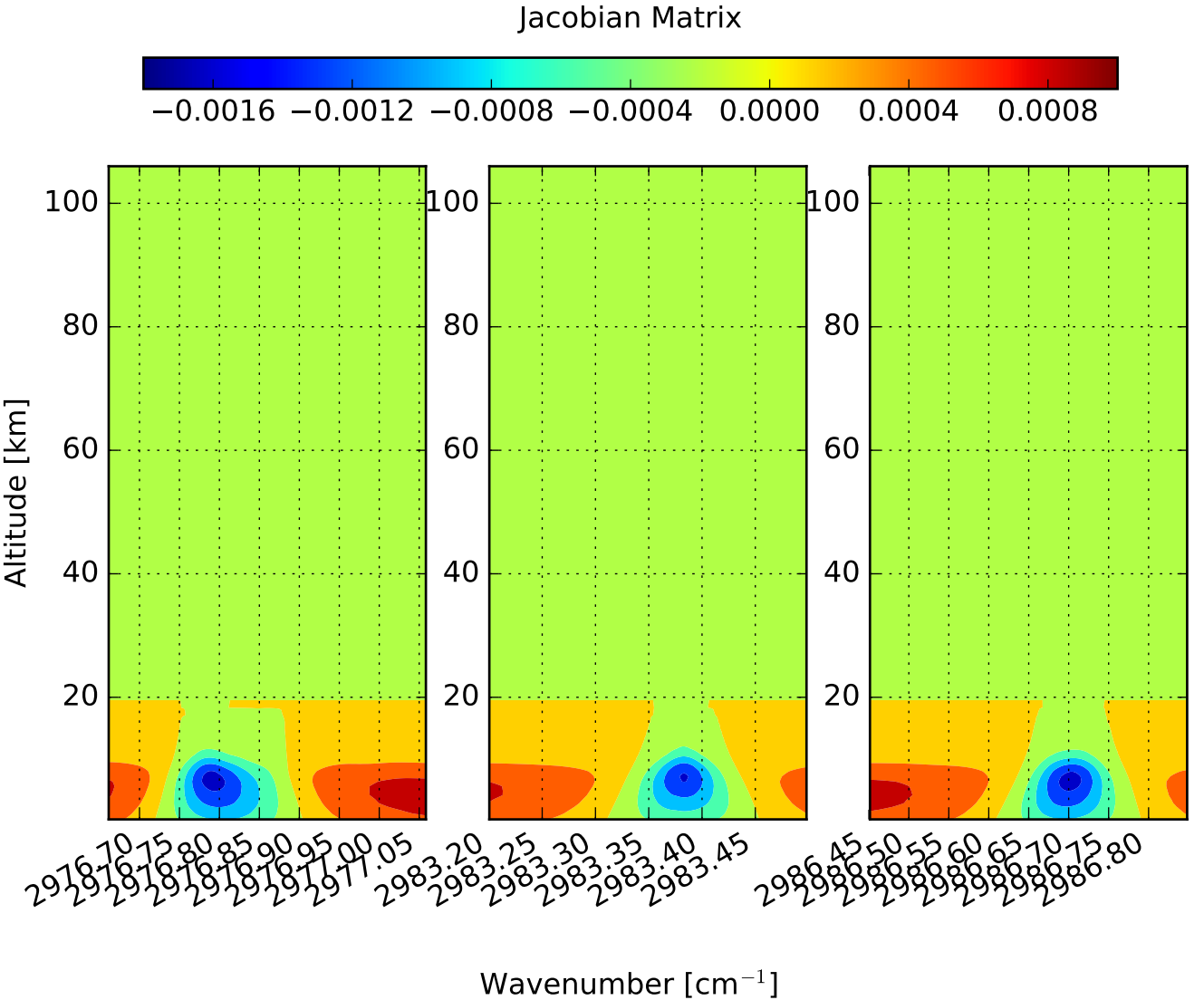
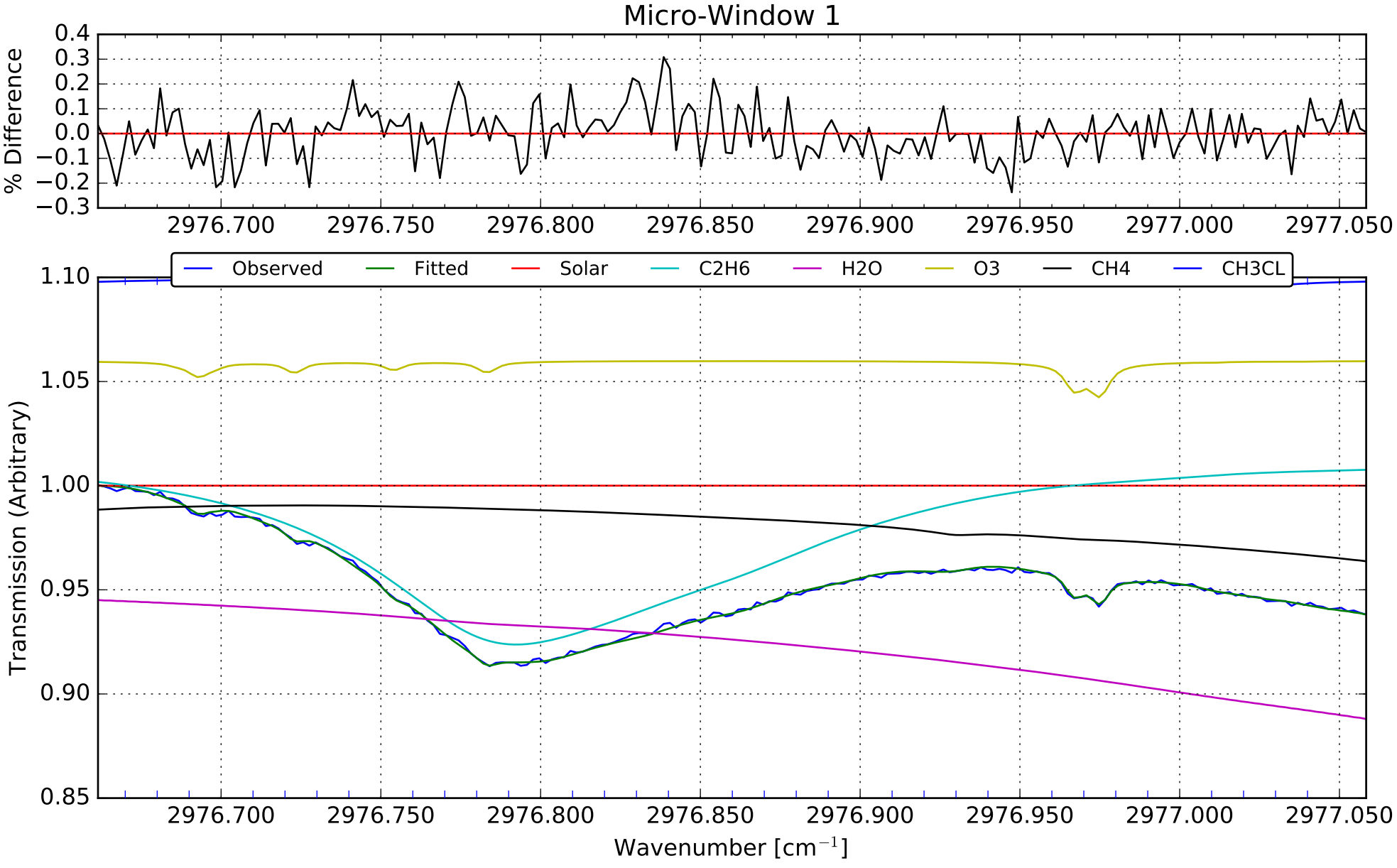
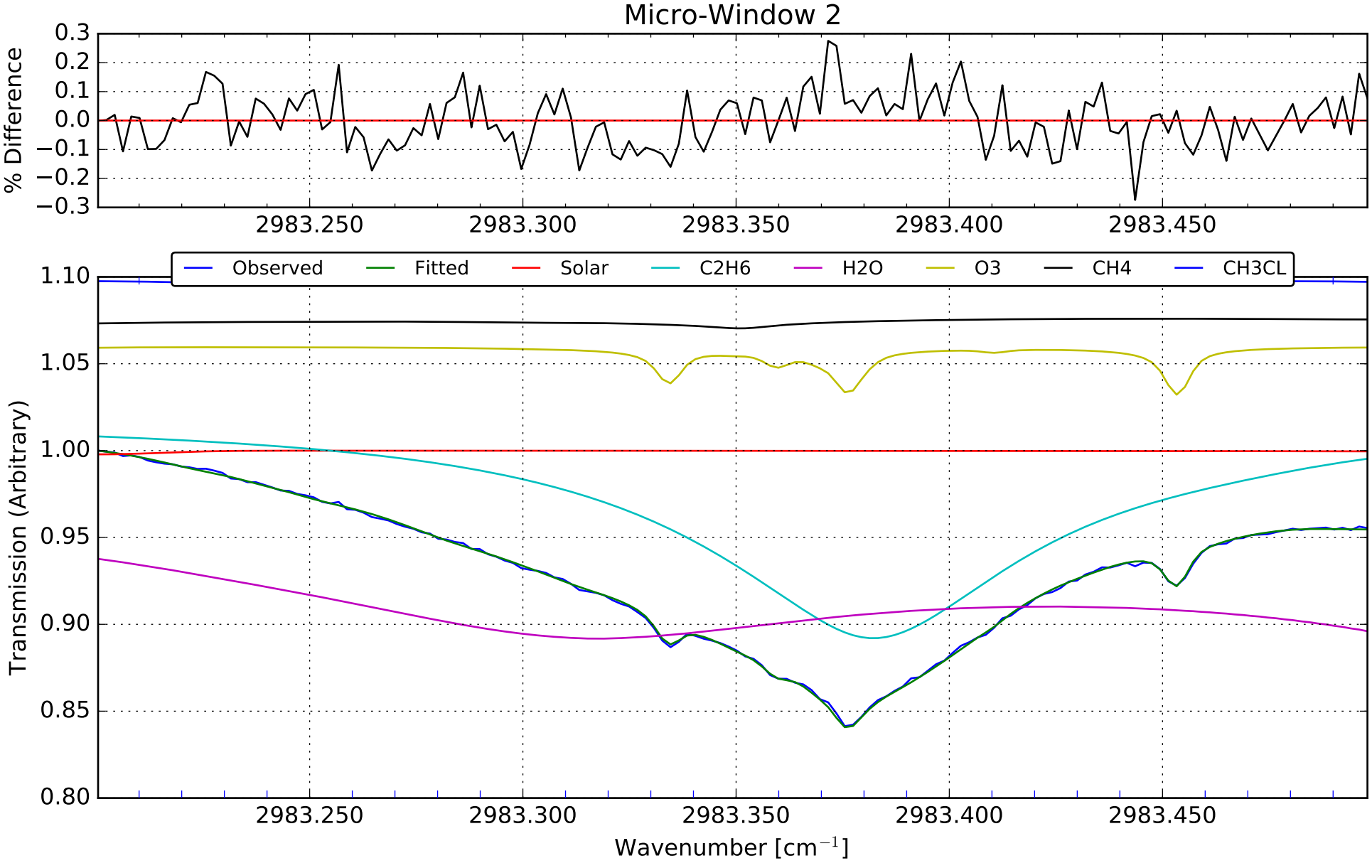
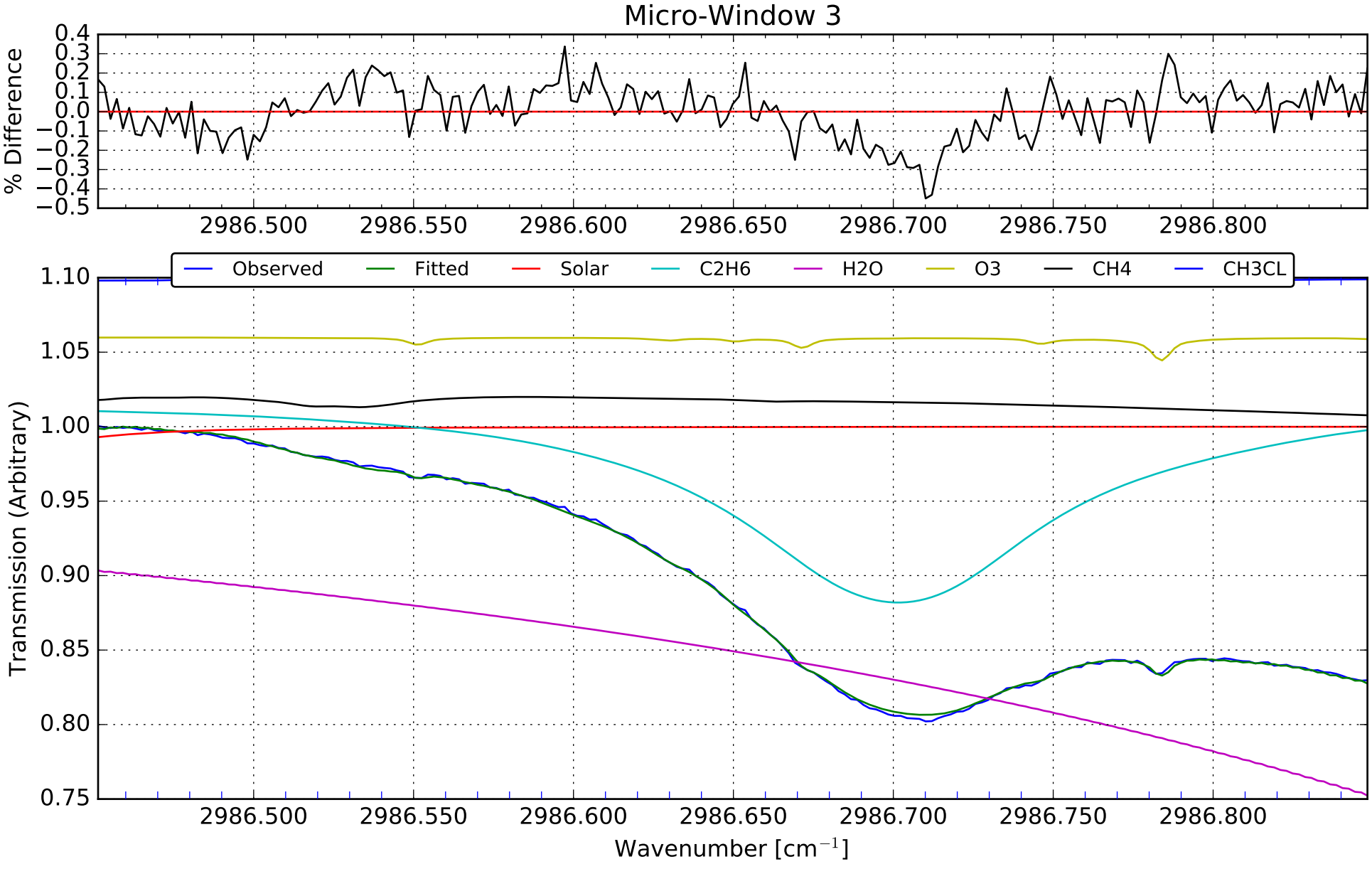
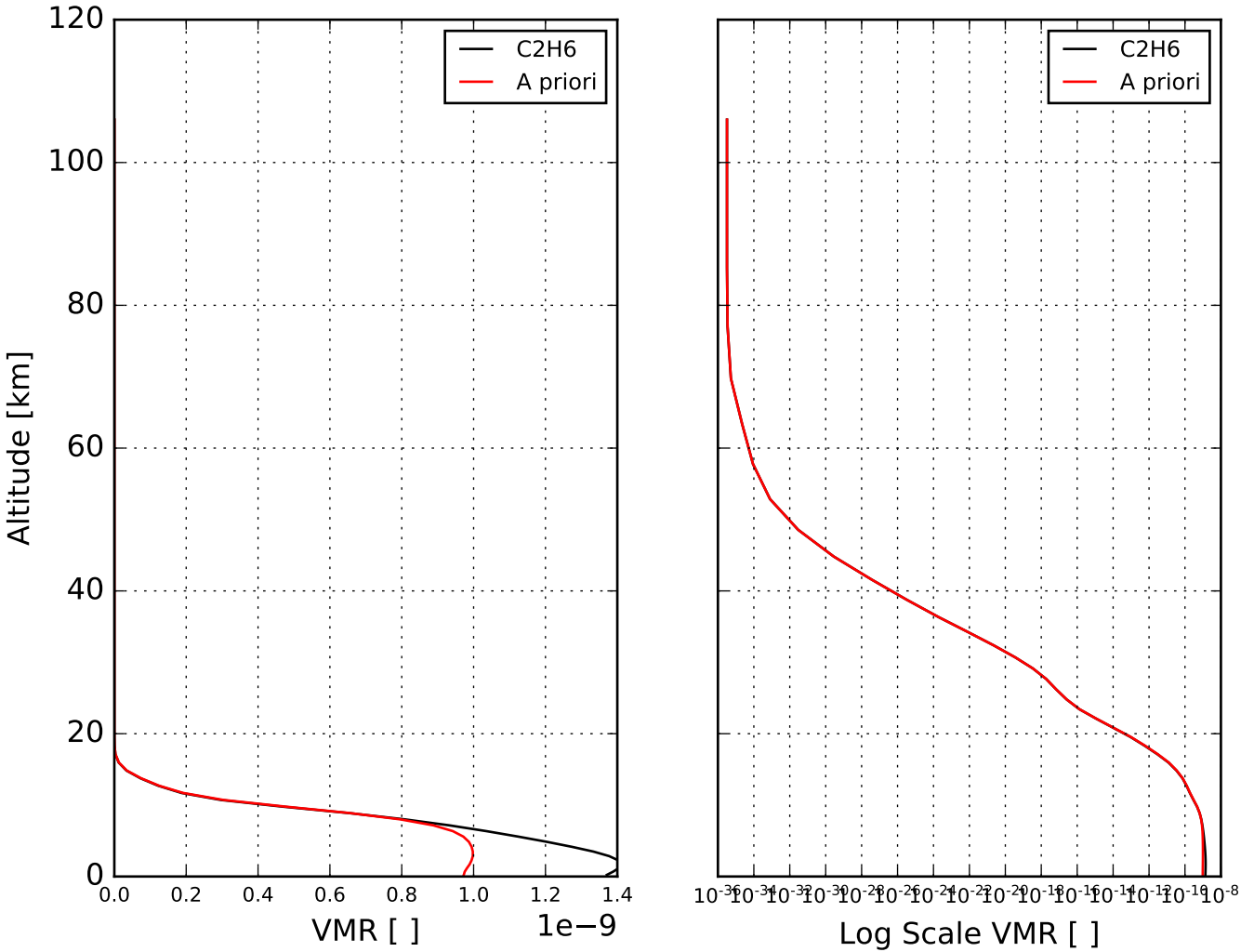
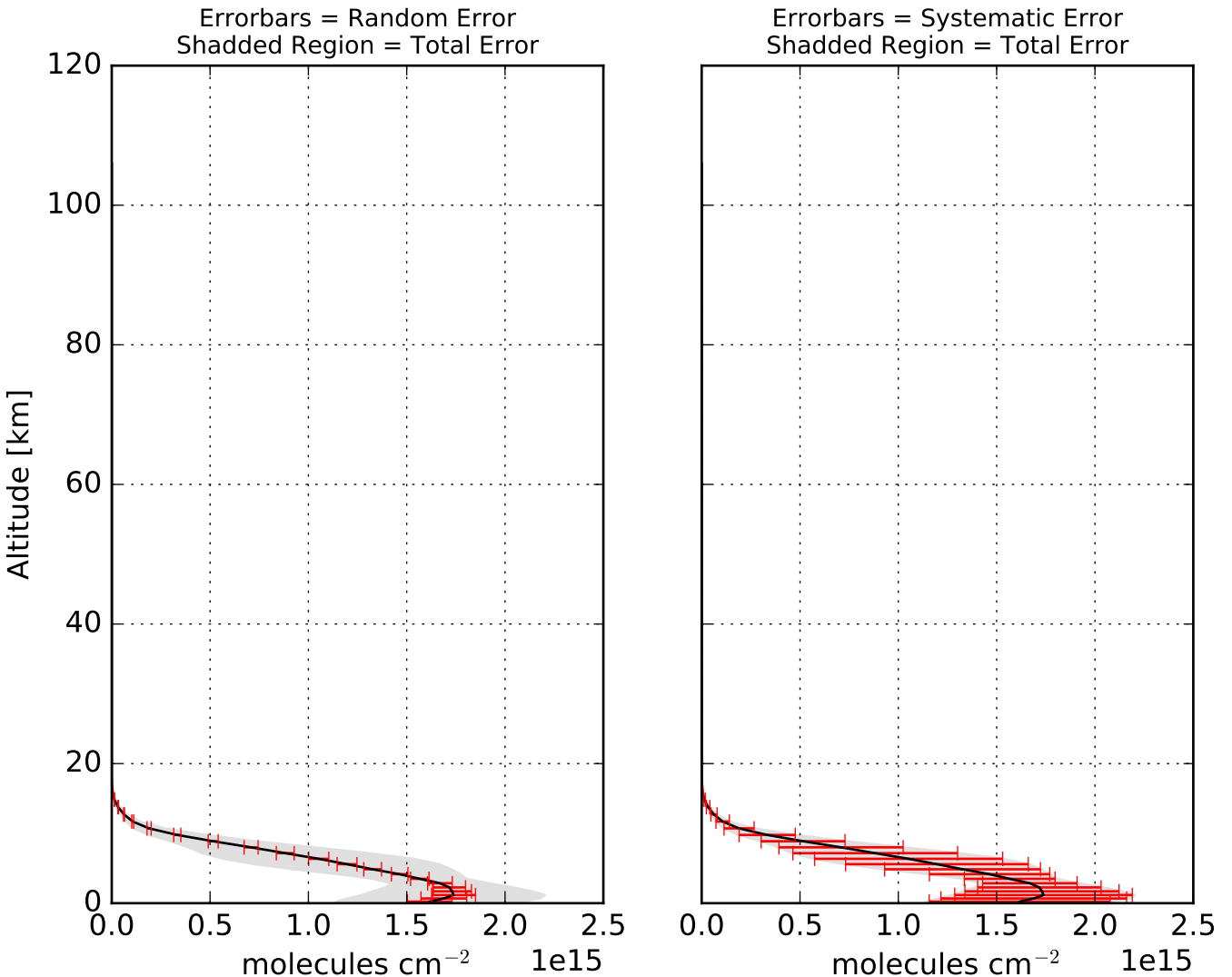

Jacobian Matrix
−0.0016
−0.0012
−0.0008
−0.0004
0.0000
0.0004
0.0008
Altitude [km]
100
80
60
40
20
2976.70
2976.75
2976.80
2976.85
2976.90
2976.95
2977.00
2977.05
2983.20
2983.25
2983.30
2983.35
2983.40
2983.45
2986.45
2986.50
2986.55
2986.60
2986.65
2986.70
2986.75
2986.80
Wavenumber [cm^{-1}]

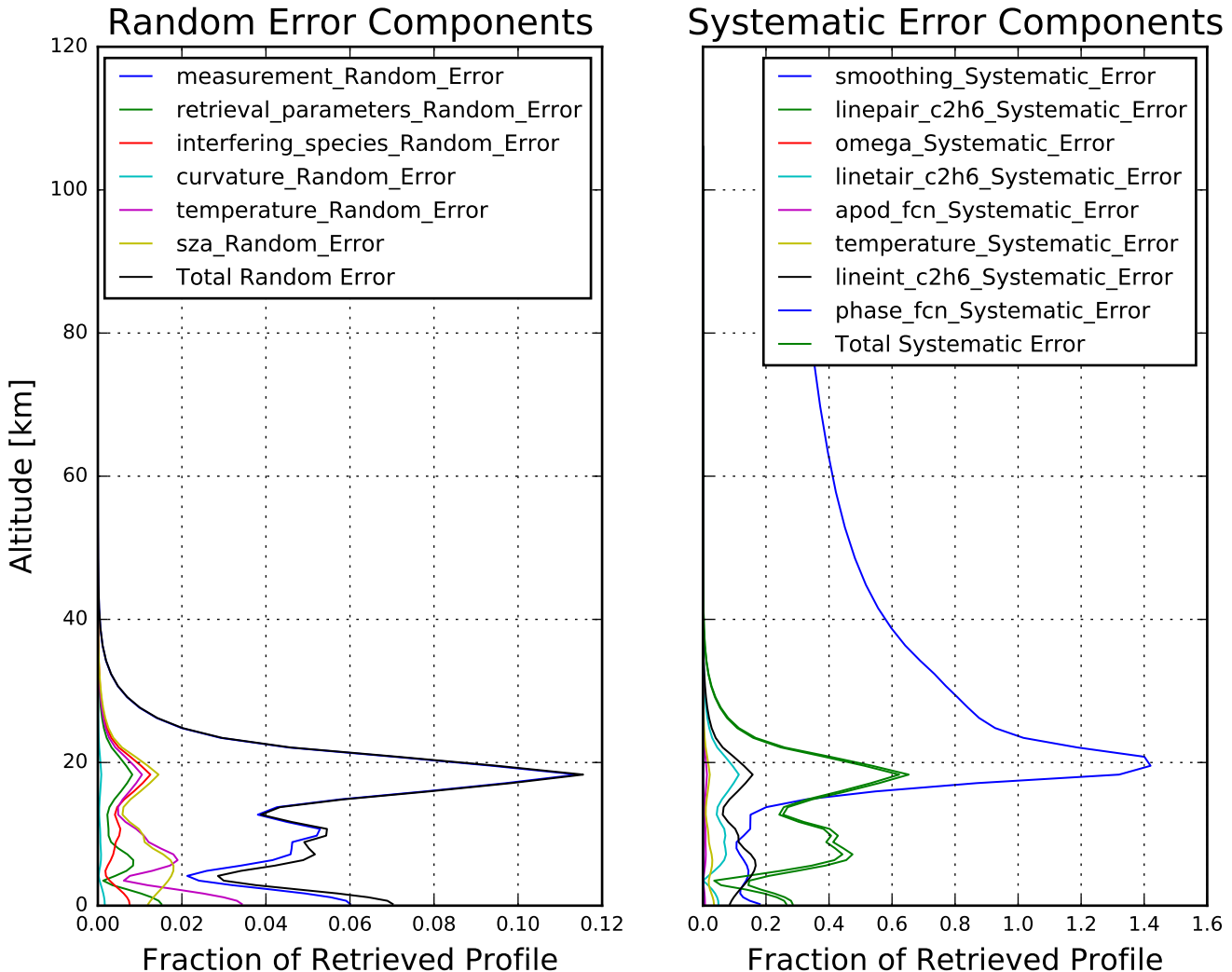

Micro-Window 1
% Difference
0.4
0.3
0.2
0.1
0.0
−0.1
−0.2
−0.3
2976.700
2976.750
2976.800
2976.850
2976.900
2976.950
2977.000
2977.050
Observed
Fitted
Solar
C2H6
H2O
O3
CH4
CH3CL
Transmission (Arbitrary)
1.10
1.05
1.00
0.95
0.90
0.85
Wavenumber [cm^{-1}]

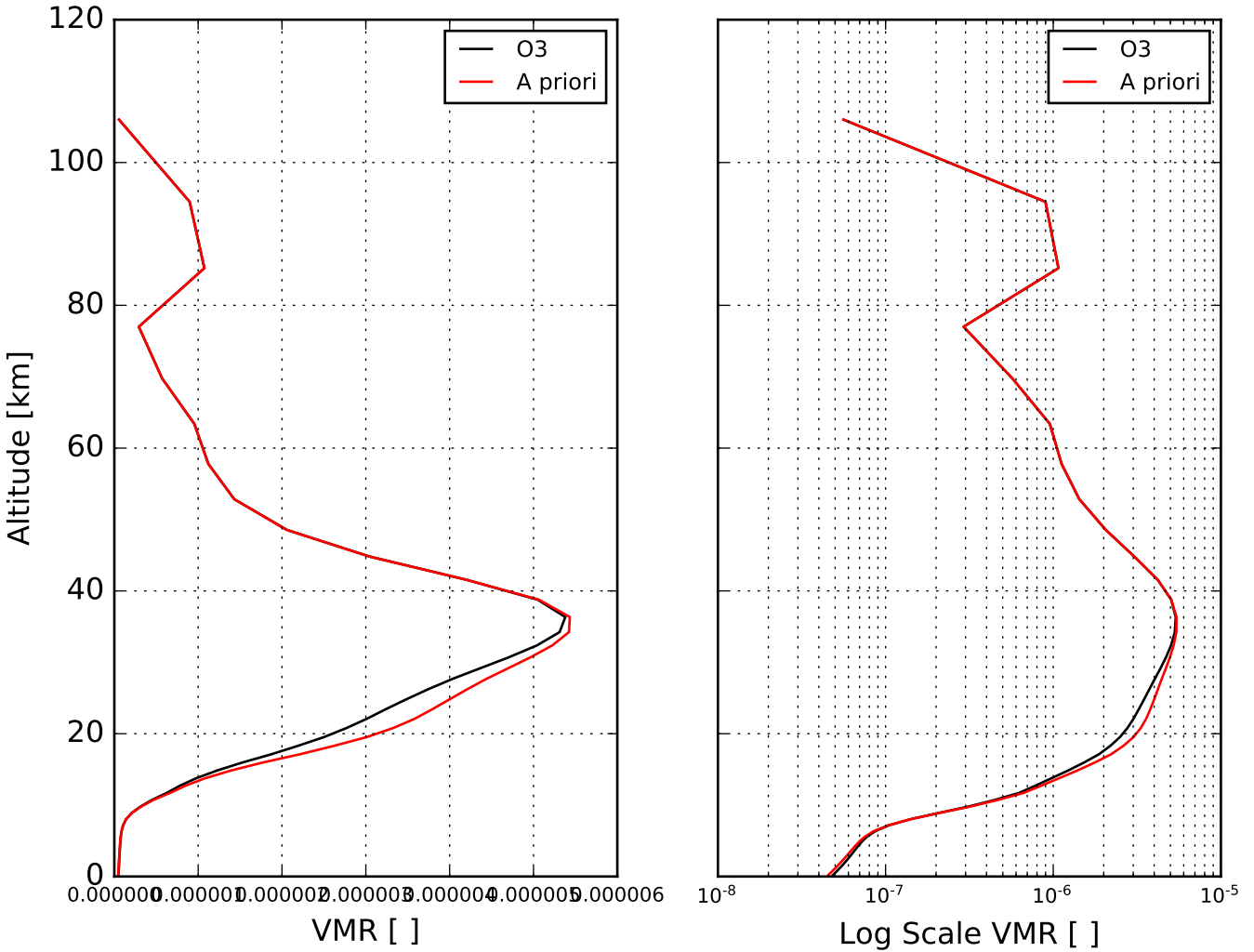

Micro-Window 2
% Difference
0.3
0.2
0.1
0.0
−0.1
−0.2
−0.3
2983.250
2983.300
2983.350
2983.400
2983.450
Observed
Fitted
Solar
C2H6
H2O
O3
CH4
CH3CL
Transmission (Arbitrary)
1.10
1.05
1.00
0.95
0.90
0.85
0.80
2983.250
2983.300
2983.350
2983.400
2983.450
Wavenumber [cm^{-1}]

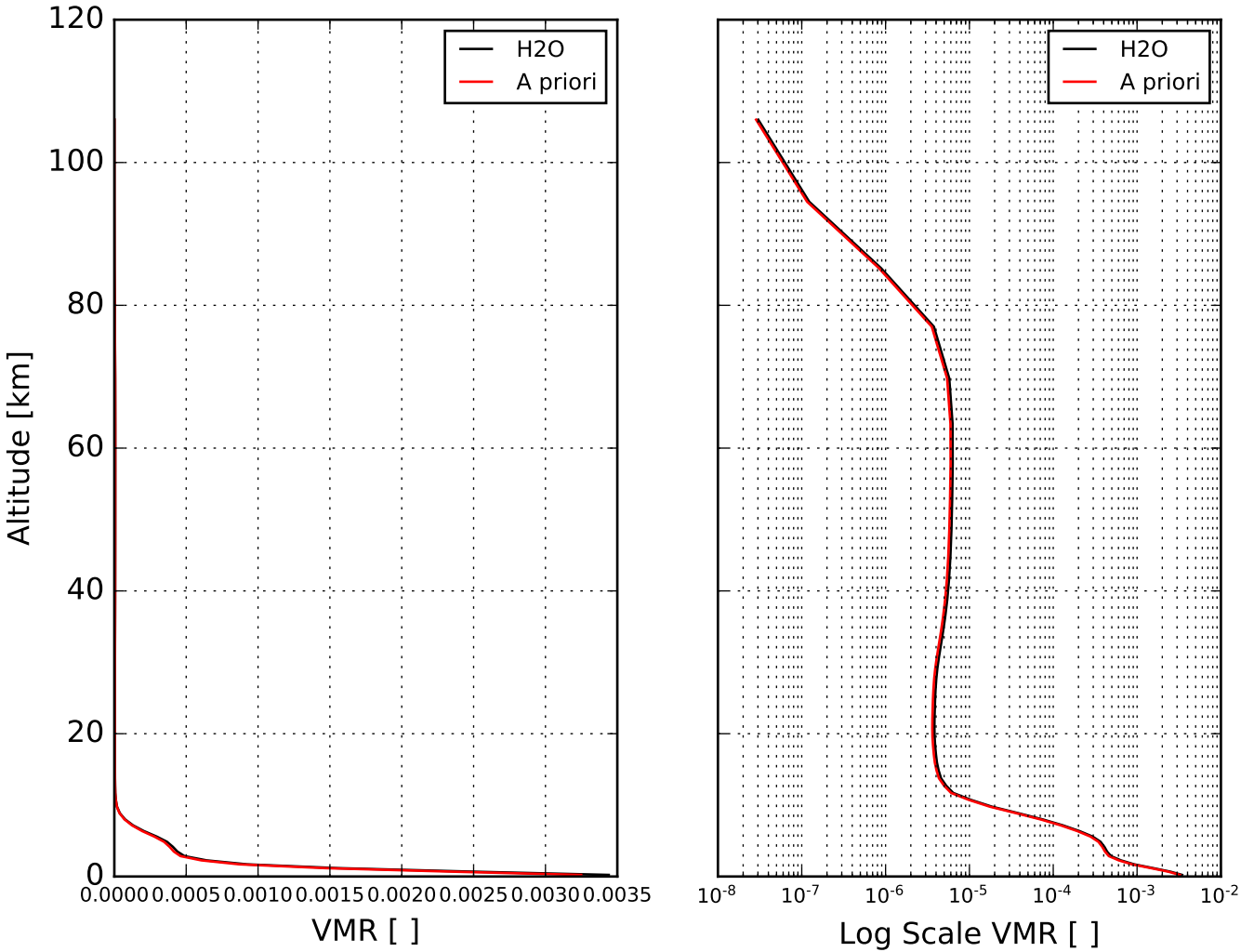

Micro-Window 3
% Difference
0.4
0.3
0.2
0.1
0.0
−0.1
−0.2
−0.3
−0.4
−0.5
2986.500
2986.550
2986.600
2986.650
2986.700
2986.750
2986.800
Observed
Fitted
Solar
C2H6
H2O
O3
CH4
CH3CL
Transmission (Arbitrary)
1.10
1.05
1.00
0.95
0.90
0.85
0.80
0.75
Wavenumber [cm^{-1}]

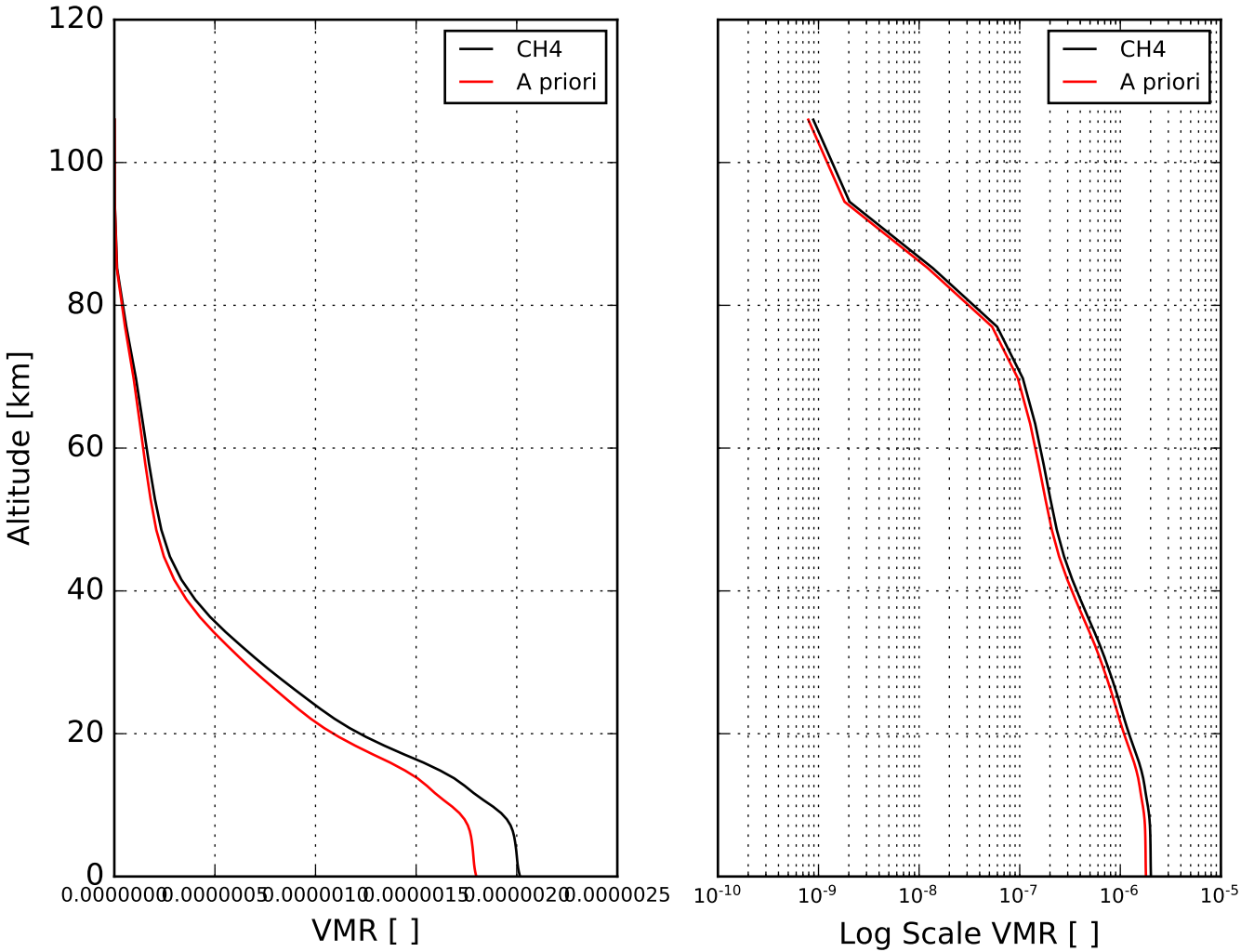

C2H6
C2H6
A priori
Altitude [km]
VMR [ ]
1e−9
C2H6
A priori
Log Scale VMR [ ]

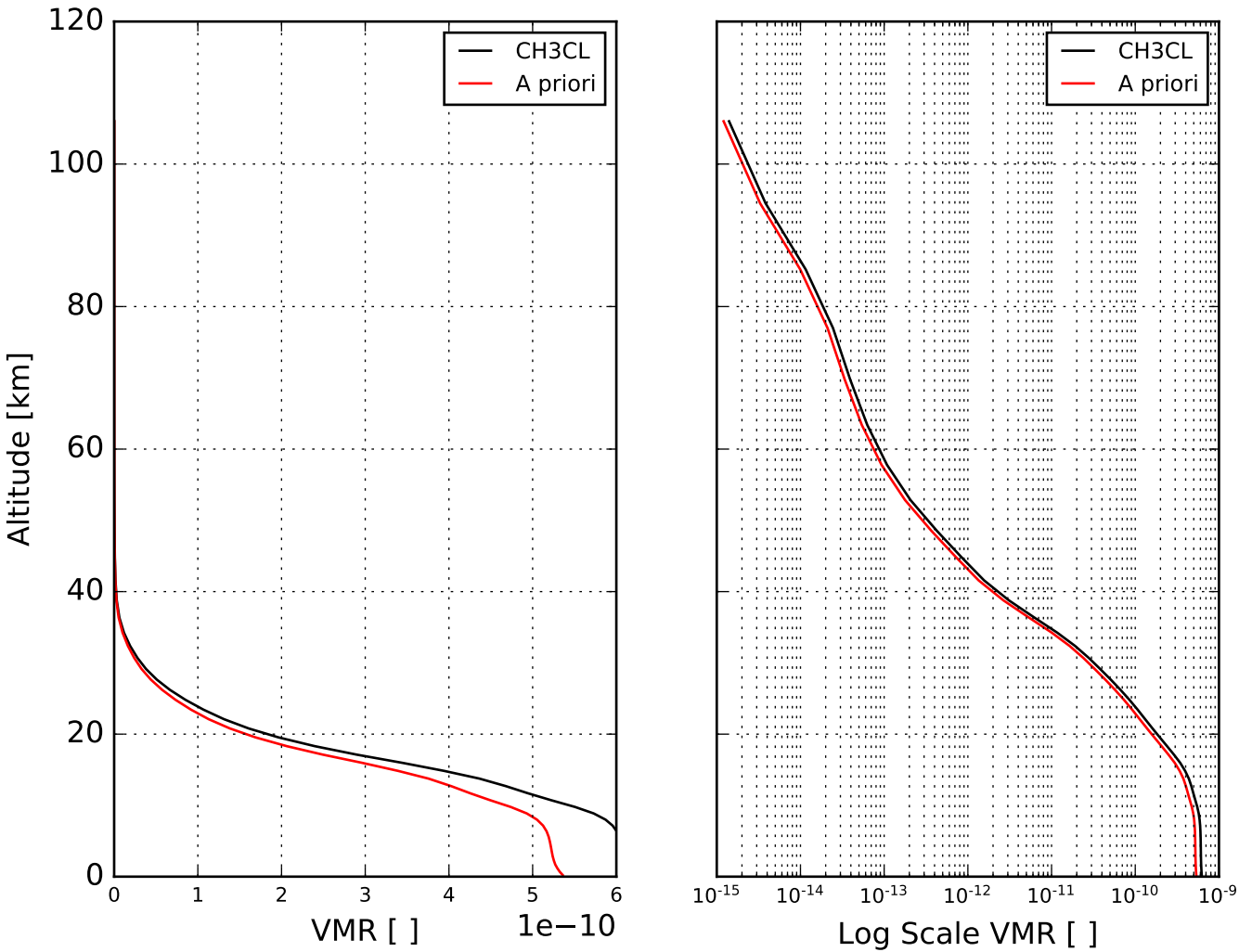

Errorbars = Random Error
Shadded Region = Total Error
Errorbars = Systematic Error
Shadded Region = Total Error
Altitude [km]
120
100
80
60
40
20
0
0.0
0.5
1.0
1.5
2.0
2.5
molecules cm^{-2}
1e15
0.0
0.5
1.0
1.5
2.0
2.5
molecules cm^{-2}
1e15

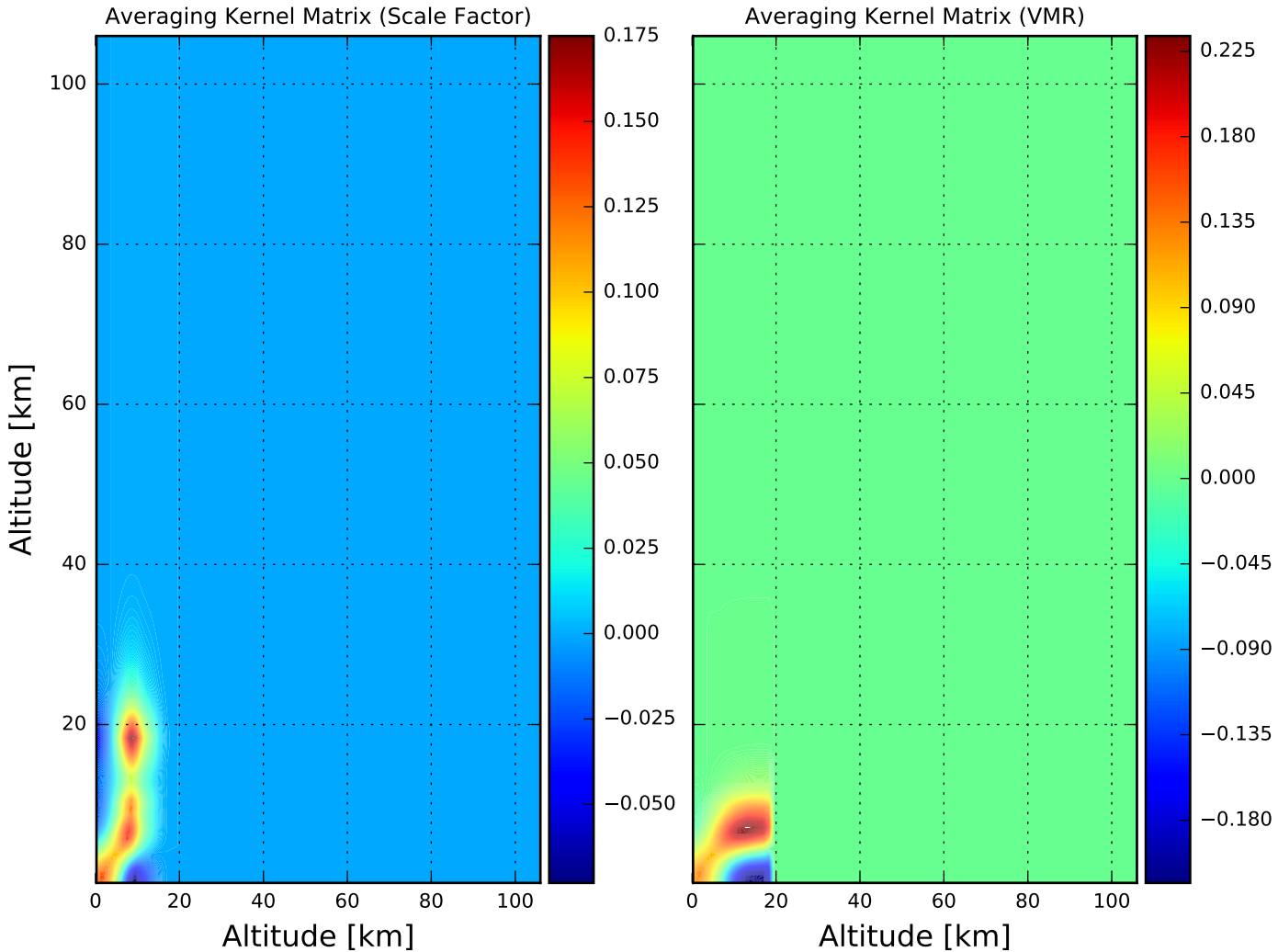

Random Error Components
measurement_Random_Error
retrieval_parameters_Random_Error
interfering_species_Random_Error
curvature_Random_Error
temperature_Random_Error
sza_Random_Error
Total Random Error
Altitude [km]
0
20
40
60
80
100
120
0.00
0.02
0.04
0.06
0.08
0.10
0.12
Fraction of Retrieved Profile
Systematic Error Components
smoothing_Systematic_Error
linepair_c2h6_Systematic_Error
omega_Systematic_Error
linetair_c2h6_Systematic_Error
apod_fcn_Systematic_Error
temperature_Systematic_Error
lineint_c2h6_Systematic_Error
phase_fcn_Systematic_Error
Total Systematic Error
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
Fraction of Retrieved Profile

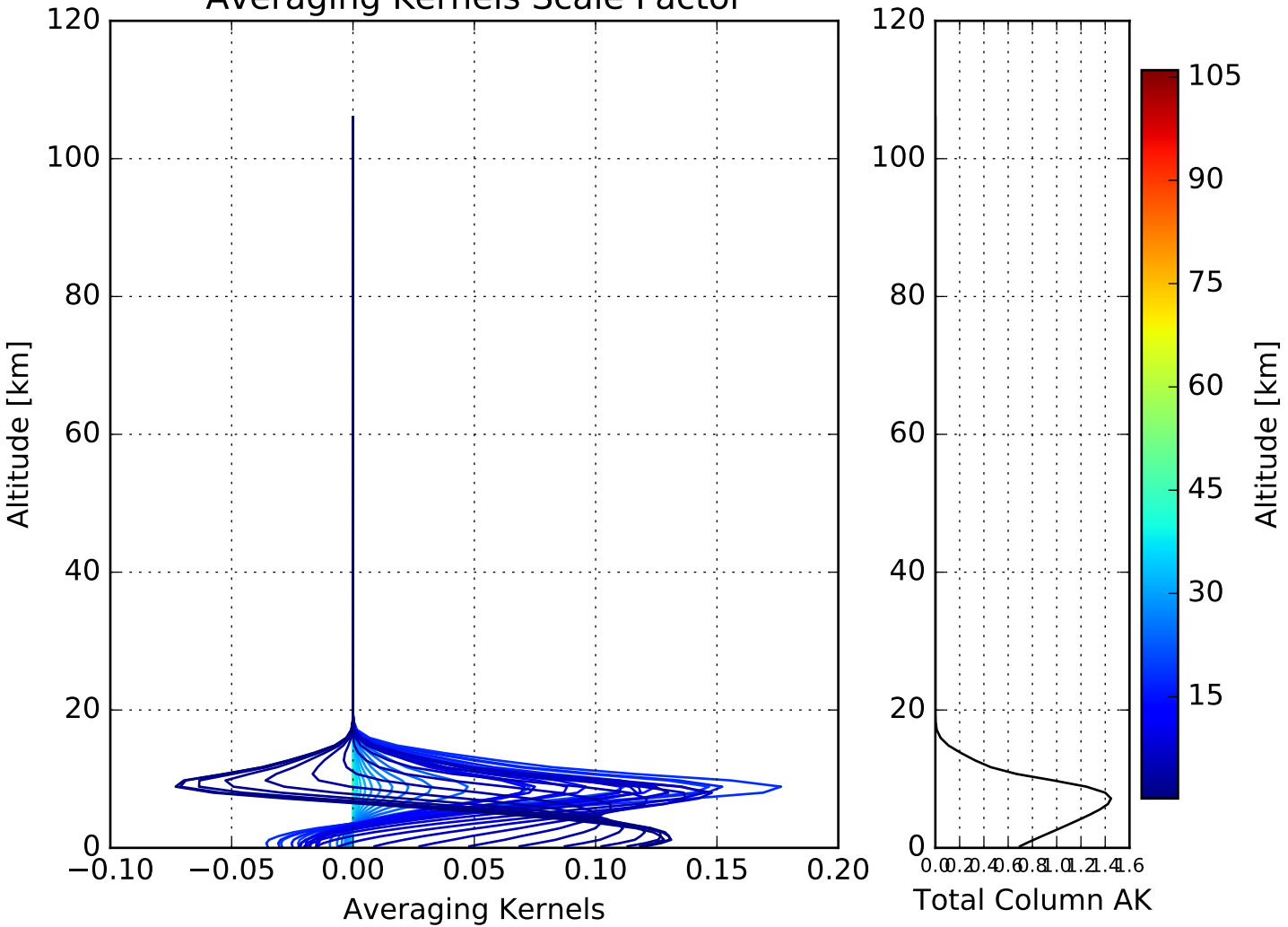

O3
O3
A priori
Altitude [km]
120
100
80
60
40
20
0
0.000000
0.000001
0.000002
0.000003
0.000004
0.000005
0.000006
VMR [ ]
O3
A priori
10^{-8}
10^{-7}
10^{-6}
10^{-5}
Log Scale VMR [ ]

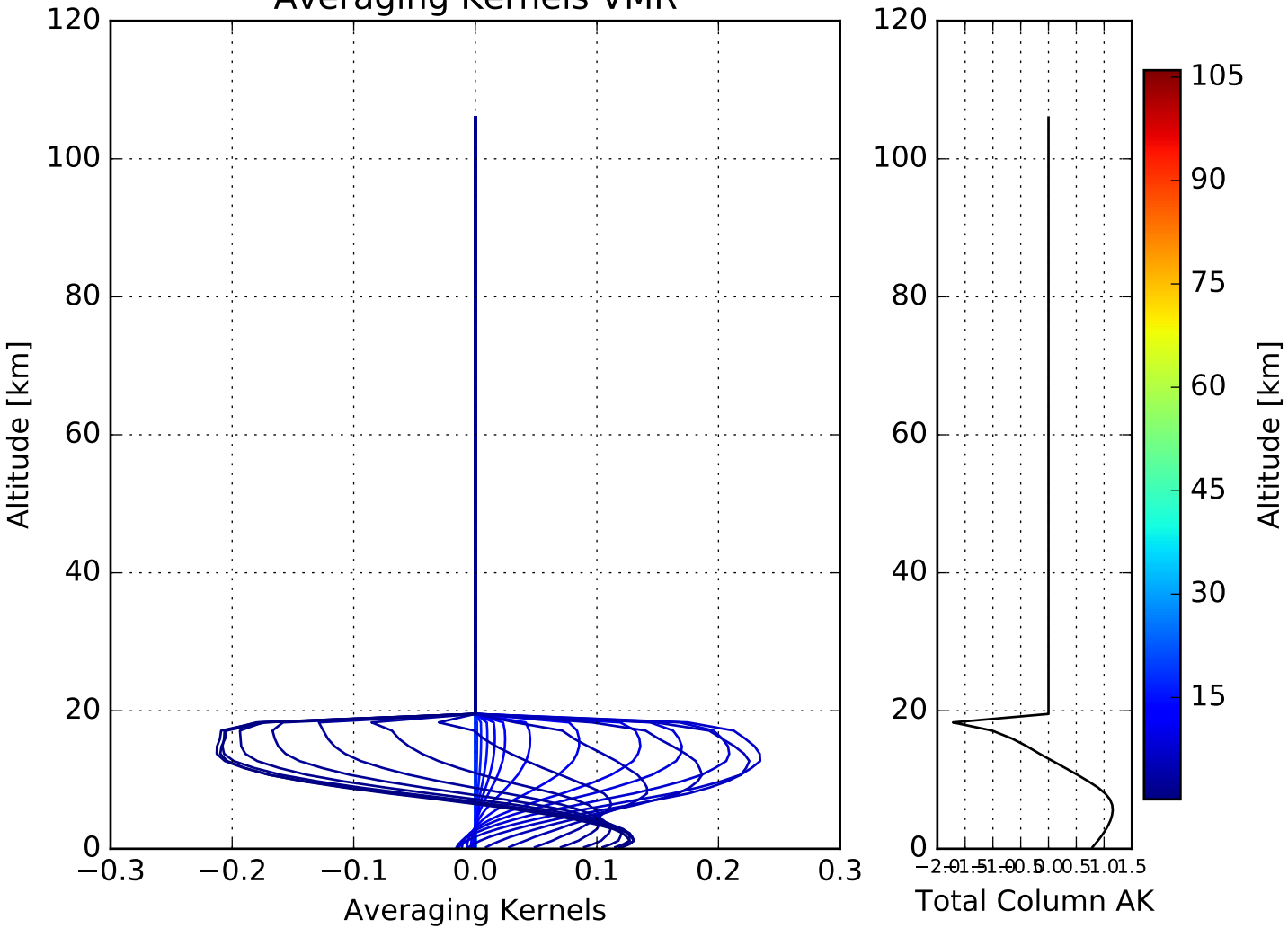

H2O
H2O
A priori
Altitude [km]
VMR [ ]
Log Scale VMR [ ]
0
20
40
60
80
100
120
0.0000
0.0005
0.0010
0.0015
0.0020
0.0025
0.0030
0.0035
10^{-8}
10^{-7}
10^{-6}
10^{-5}
10^{-4}
10^{-3}
10^{-2}

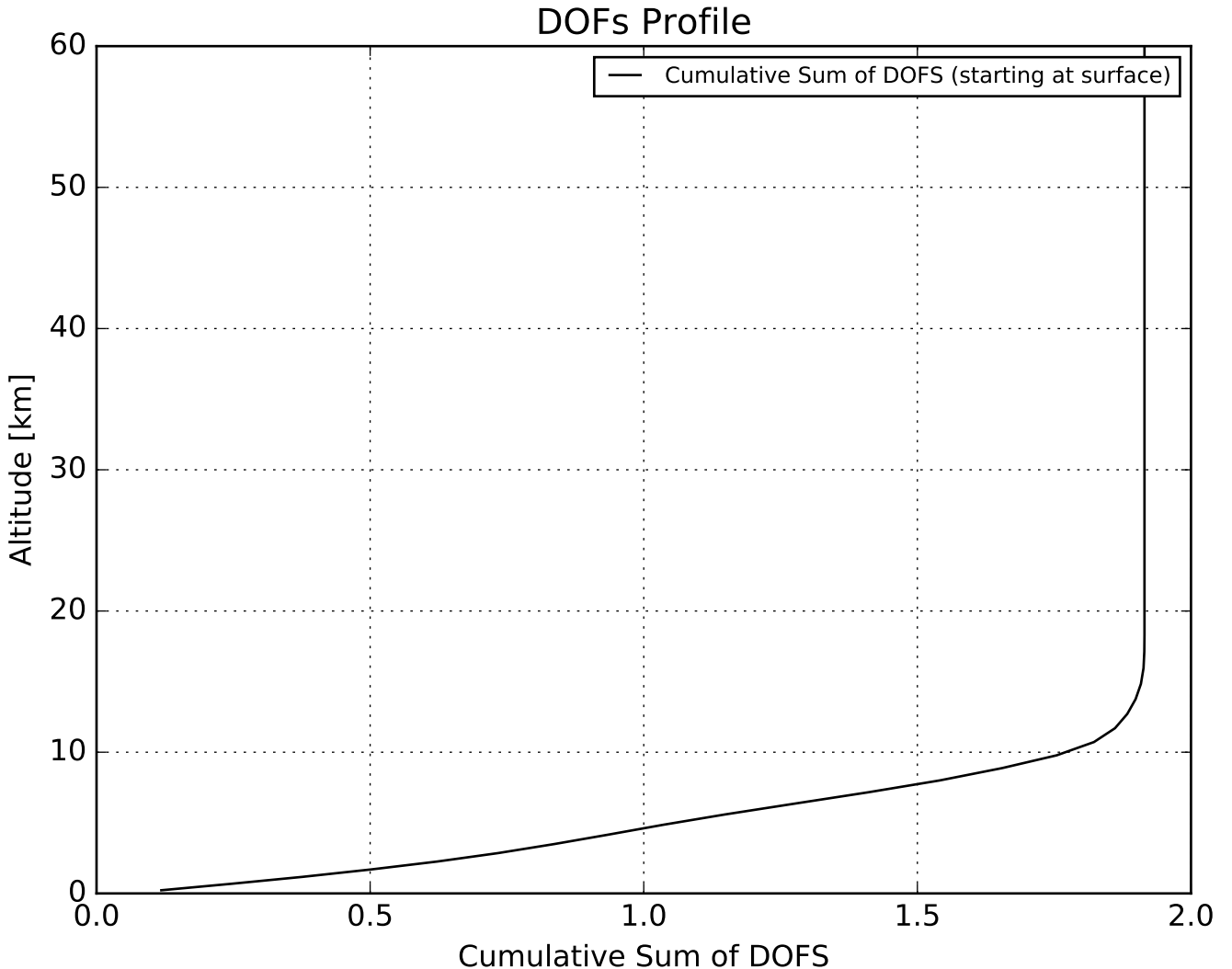

CH4
CH4
A priori
Altitude [km]
120
100
80
60
40
20
0
0.0000000
0.0000005
0.0000010
0.0000015
0.0000020
0.0000025
VMR [ ]
CH4
A priori
10^{-10}
10^{-9}
10^{-8}
10^{-7}
10^{-6}
10^{-5}
Log Scale VMR [ ]


CH3CL
CH3CL
A priori
Altitude [km]
VMR [ ]
1e−10
CH3CL
A priori
Log Scale VMR [ ]


Averaging Kernel Matrix (Scale Factor)
Averaging Kernel Matrix (VMR)
Altitude [km]
Altitude [km]
Altitude [km]
Altitude [km]
0
20
40
60
80
100
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
−0.025
−0.050
0.225
0.180
0.135
0.090
0.045
0.000
−0.045
−0.090
−0.135
−0.180


Averaging Kernels Scale Factor
Altitude [km]
120
100
80
60
40
20
0
−0.10
−0.05
0.00
0.05
0.10
0.15
0.20
Averaging Kernels
0.0
0.2
0.4
0.6
0.8
1.0
1.2
1.4
1.6
Total Column AK
105
90
75
60
45
30
15
Altitude [km]


Averaging Kernels VMR
Altitude [km]
Averaging Kernels
Total Column AK
Altitude [km]
120
100
80
60
40
20
0
−0.3
−0.2
−0.1
0.0
0.1
0.2
0.3
105
90
75
60
45
30
15


DOFs Profile
Cumulative Sum of DOFS (starting at surface)
Altitude [km]
0
10
20
30
40
50
60
0.0
0.5
1.0
1.5
2.0
Cumulative Sum of DOFS

SFIT4: Pre-Rele:Pre-Release -- Sept 9 2014 RUNTIME:20190114-11:17:51 RETRIEVAL SUMMARY

3
20170520 13:56:01UT Z:059.701 A:316.91 D:0204.7 R:0.0035 P:BX V:02.3923 E:6397□□
20170520 13:56:01UT Z:059.701 A:316.91 D:0204.7 R:0.0035 P:BX V:02.3923 E:6397□□
20170520 13:56:01UT Z:059.701 A:316.91 D:0204.7 R:0.0035 P:BX V:02.3923 E:6397□□

5

IRET	GAS_NAME	IFPRF	APR_COLUMN	RET_COLUMN
1	C2H6	T	4.66631E+15	1.96177E+16
2	O3	T	1.03827E+19	9.37520E+18
3	H2O	F	1.29288E+22	1.36926E+22
4	CH4	F	3.48390E+19	3.90509E+19
5	CH3CL	F	9.76489E+15	1.13483E+16

3

IBAND	NUSTART	NUSTOP	SPACE	NPTSB	PMAX	FOVDIA	MEAN_FIT_SNR	NSCAN	JSCAN	INIT_SNR	FIT
1	2976.66000	2977.05900	0.001945525	205	257.00	2.392300	977.444062	1			
							1 1251.597	977.444			
2	2983.20000	2983.50000	0.001945525	154	257.00	2.392300	996.888659	1			
							1 1481.987	996.889			
3	2986.45000	2986.85000	0.001945525	205	257.00	2.392300	673.529970	1			
							1 1495.984	673.530			

FITRMS	CHI_2_Y	DOFS_ALL	DOFS_TRG	DOFS_TPR	ITER	MAX_ITER	CONVERGED	DIVWARN
0.120370	0.986385	15.676	1.915	0.000	5	25	T	F

sfit4 ERROR SUMMARY

Primary gas = C2H6
Total column amount = 1.96177E+16 [molecules cm^-2]
DOFs (total column) = 1.915
Smoothing error (Ss) = 1.239 [%]
Measurement error (Sm) = 1.657 [%]
Interference error (retrieved params) = 0.316 [%]
Interference error (interfering spcs) = 0.262 [%]
Total random error = 2.400 [%]
Total systematic error = 13.073 [%]
Total random uncertainty = 4.709E+14 [molecules cm^-2]
Total systematic uncertainty = 2.565E+15 [molecules cm^-2]
Total random uncertainty retrieval_parameters = 6.192E+13 [molecules cm^-2]
Total random uncertainty temperature = 1.768E+14 [molecules cm^-2]
Total random uncertainty sza = 2.911E+14 [molecules cm^-2]
Total random uncertainty curvature = 1.028E+13 [molecules cm^-2]
Total random uncertainty measurement = 3.250E+14 [molecules cm^-2]
Total random uncertainty interfering_species = 5.131E+13 [molecules cm^-2]
Total systematic uncertainty linetair_c2h6 = 2.223E+13 [molecules cm^-2]
Total systematic uncertainty temperature = 3.008E+14 [molecules cm^-2]
Total systematic uncertainty apod_fcn = 1.710E+12 [molecules cm^-2]
Total systematic uncertainty phase_fcn = 8.465E+11 [molecules cm^-2]
Total systematic uncertainty lineint_c2h6 = 2.458E+15 [molecules cm^-2]
Total systematic uncertainty smoothing = 2.430E+14 [molecules cm^-2]
Total systematic uncertainty linepair_c2h6 = 6.658E+14 [molecules cm^-2]
Total systematic uncertainty omega = 1.279E+10 [molecules cm^-2]