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Atlas of Absorption Lines From 0 to 17900 cm^{-1}

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and Space Administration

Scientific and Technical Information Office

Description of the Atlas

This atlas is a pictorial representation of atmospheric absorption line parameters contained in the 1986 Air Force Geophysics Laboratory high-resolution transmission molecular absorption data base (HITRAN) compilation currently available on magnetic tape (Rothman et al. 1987). It is a revised edition of the atlas previously published by Park et al. (1981), which had been based on an earlier version of the compilation (Rothman et al. 1981a and 1981b). This earlier publication has become very useful as a quick reference for researchers in the fields of molecular spectroscopy and atmospheric remote sensing. Since a new, extensively revised version of the HITRAN line parameters compilation has recently been released, the authors felt that a new edition of the atlas was necessary.

In the atlas are presented plots of the logarithm (base 10) of absorption line strength (S converted from the HITRAN units of $cm^{-1}/(molecule\ cm^{-2})$ at 296 K to $atm^{-1}cm^{-2}$ at 296 K) versus wavenumber (in cm^{-1}) for atmospheric gases. The atlas covers the spectral range of the HITRAN compilation (0 to 17 900 cm^{-1}). Line parameters for all gases are taken from the 1986 version of the HITRAN compilation with additional data shown separately for $O(^3P)$, isotropic O_3 (668, 686, 667, and 676), and HO_2 from the 1984 JPL compilation in the spectral region 0 to 200 cm^{-1} (Poynter and Pickett 1985). Solar CO lines at 4500 K, calculated by C. P. Rinsland, are also shown for the fundamental and first overtone sequences (Park et al. 1981). As in the HITRAN compilation, intensities of all bands are scaled according to the terrestrial abundance of each isotopic species. Approximate infrared absorption cross sections (converted from the HITRAN units of cm^2/molecule to $atm^{-1}cm^{-1}$) of 11 heavy atmospheric molecules (base 10 logarithm) in the 700- to 1800-cm^{-1} region are plotted beneath the other data. These values were determined at equally spaced wavenumber intervals from room-temperature laboratory spectra (Massie et al. 1985) and are included as a separate file in the 1986 HITRAN database.

Figures 1 and 2 summarize the parameters on a compressed wavenumber scale. Figure 1 lists the molecules and shows the regions of spectral data coverage for each between 0 and 10 000 cm^{-1}. Figure 2 shows the absorption cross sections σ as continuous curves on a base 10 logarithm versus wavenumber scale for the 700- to 1800-cm^{-1} region. Figure 3 presents plots of the logarithm (base 10) of absorption line strength of the AFGL gases versus wavenumber for every 1000 cm^{-1} up to 5000 cm^{-1} with the strength scale the same on all plots for each gas. This provides a view of the band structures and their relative strengths. Above 10 000 cm^{-1}, only H_2O occurs in the atlas except for O_2 from 11 400 to 11 700 cm^{-1}, 12 800 to 13 200 cm^{-1}, 14 300 to 14 600 cm^{-1}, and 15 700 to 16 000 cm^{-1}.

On each page of the atlas, the plots of log (S) versus wavenumber for all gases having absorption lines in the same 10 cm^{-1} interval for the 0- to 200-cm^{-1} region, 50 cm^{-1} interval for the 200- to 6000-cm^{-1} region, and 100-cm^{-1} interval for the 6000- to 17 900-cm^{-1} region are presented in order of the integer gas codes given in figure 1. For the major gases (H_2O, CO_2, O_3, N_2O, CO, CH_4, and O_2), all lines having strengths within 10^{-6} of the maximum value for that interval are shown; and for the trace gases, all lines having strengths within 10^{-4} of the maximum are included. Because the maximum and minimum line strengths are redetermined for each interval, sudden changes may appear in the line strength scale from one plot to another, and some weak lines on the HITRAN compilation are not plotted in this atlas. Isolated weak bands may also appear, at first glance, to be much stronger than expected. For the 0- to 200-cm^{-1} region, some intervals are repeated on two pages because of the large number of gases which appear in the interval; in such cases, H_2O lines are repeated at the top to be used as reference. In other regions where the number of gases appearing in an interval is small, two or three consecutive intervals are presented on the same page. For the heavy molecule cross-section data, the strength scale for each molecule is normalized to the same value, so that the scale for each of these molecules is the same on all frames. Only cross sections within 10^{-2} of the maximum value are included in the atlas.

NASA Langley Research Center
Hampton, VA 23665–5225
July 17, 1987

References

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Park, Jae H.; Rothman, L. S.; Rinsland, C. P.; Smith, M. A. H.; Richardson, D. J.; and Larsen, J. C. 1981: *Atlas of Absorption Lines From 0 to 17 900 cm^{-1}*. NASA RP-1084.

Poynter, Robert L.; and Pickett, Herbert M. 1985: Submillimeter, Millimeter, and Microwave Spectral Line Catalog. *Appl. Opt.*, vol. 24, no. 14, July 15, pp. 2235–2240.

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Rothman, L. S.; Goldman, A.; Gillis, J. R.; Tipping, R. H.; Brown, L. R.; Margolis, J. S.; Maki, A. G.; and and Young, L. D. G. 1981b: AFGL Trace Gas Compilation: 1980 Version. *Appl. Opt.*, vol. 20, no. 8, Apr. 15, pp. 1323–1328.

Rothman, L. S.; Gamache, R. R.; Goldman, A.; Brown, L. R.; Toth, R. A.; Pickett, H. M.; Poynter, R.; Flaud, J.-M.; Camy-Peyret, C.; Barbe, A.; Husson, N.; Rinsland, C. P.; and Smith, M. A. H. 1987: The HITRAN Database: 1986 Edition. *Appl. Opt.*, vol. 26, no. 19, Oct. 1.

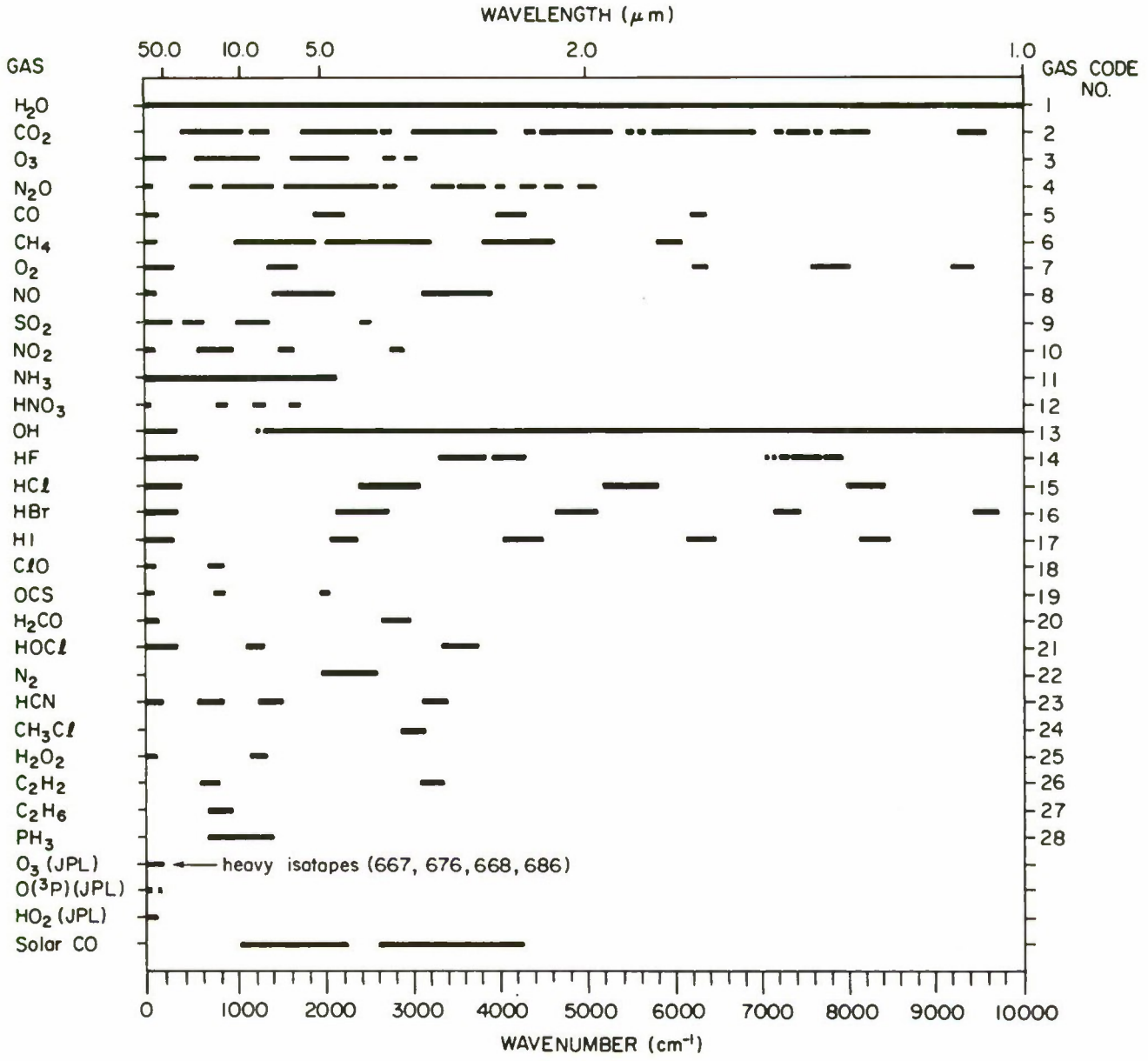


Figure 1. Spectral data coverage for each molecule between 0 and 10 000 cm^{-1}.

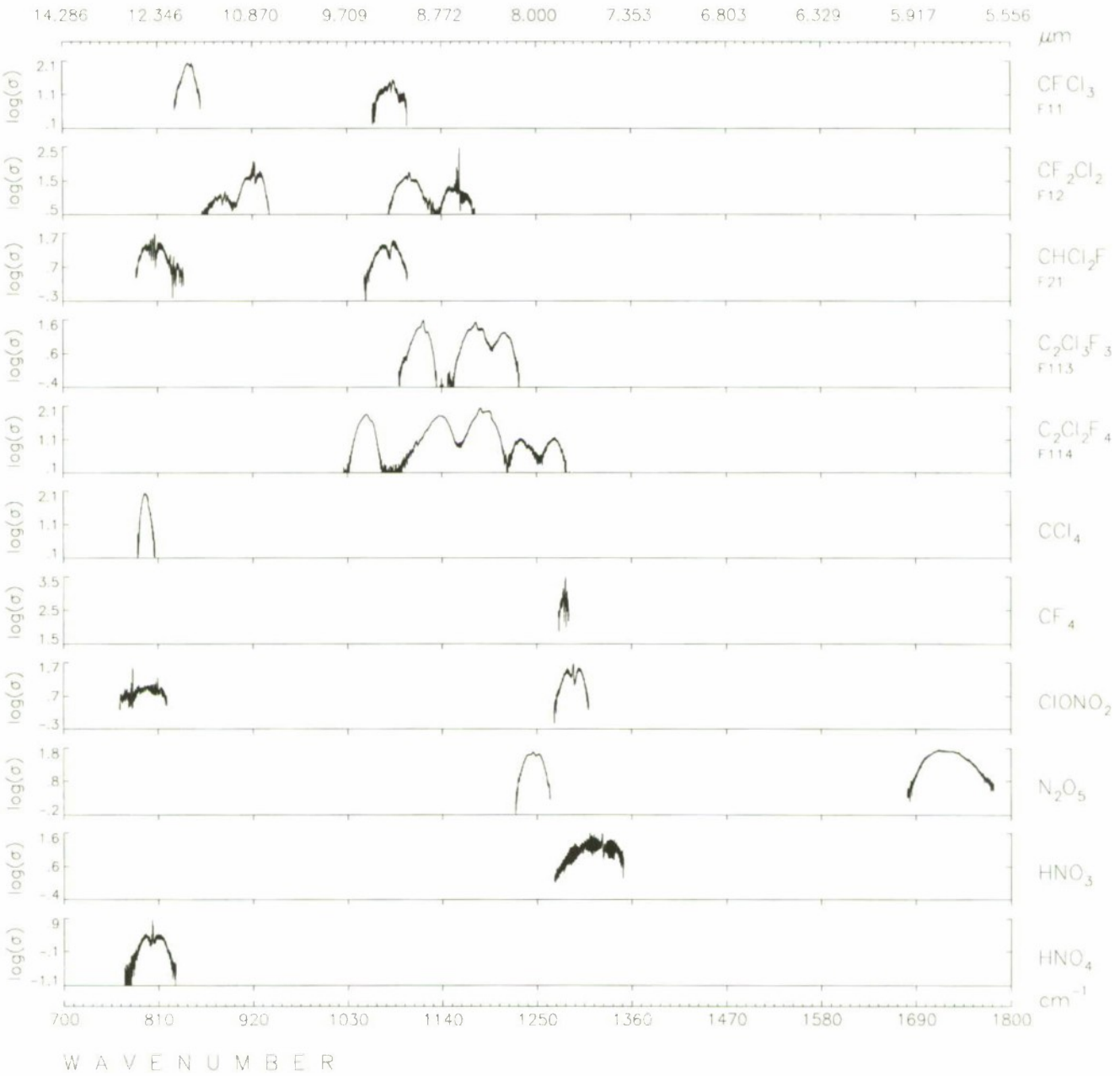


Figure 2. Absorption cross sections of 11 heavy molecules for the 700- to 1800-cm^{-1} region.

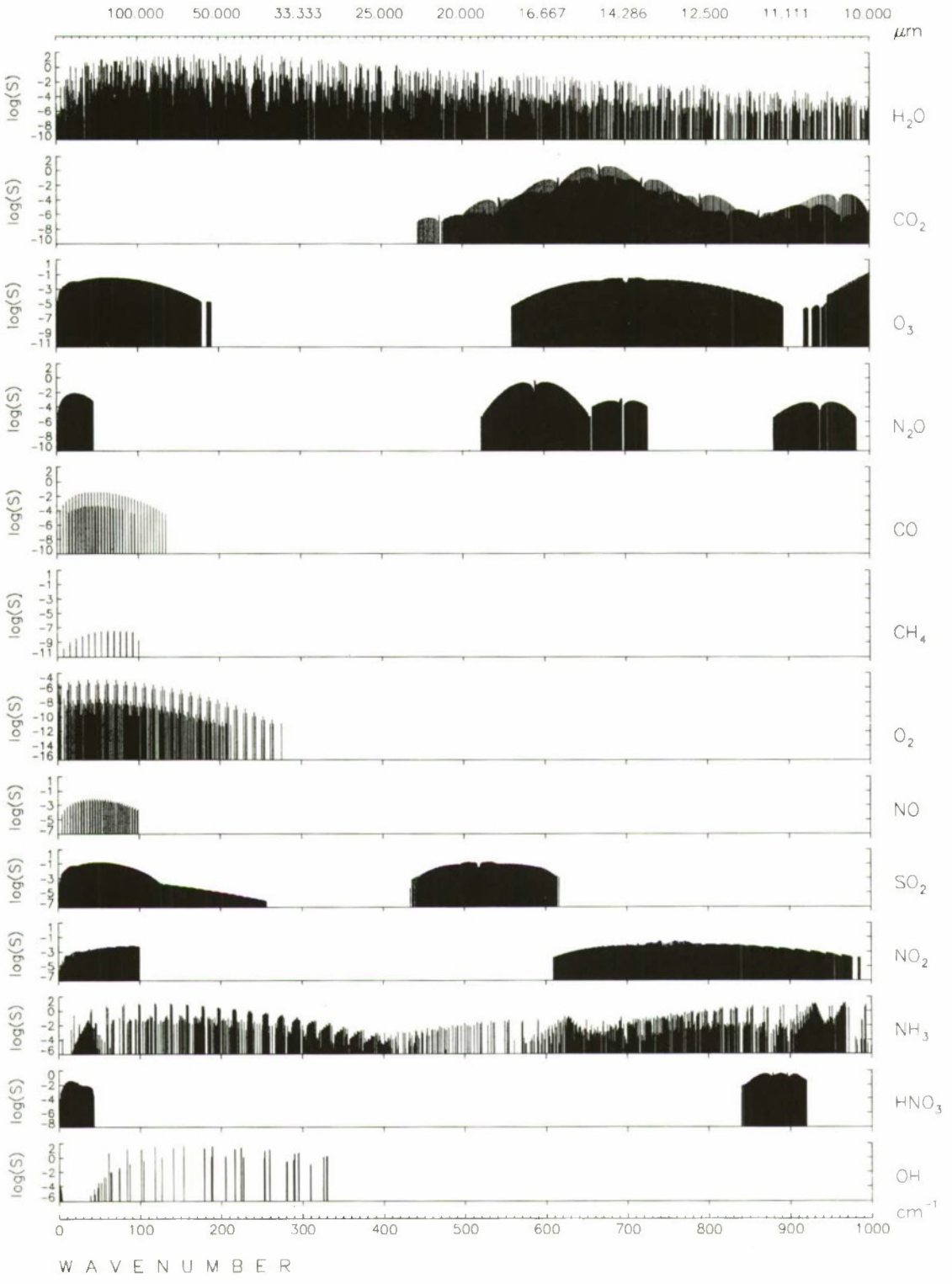
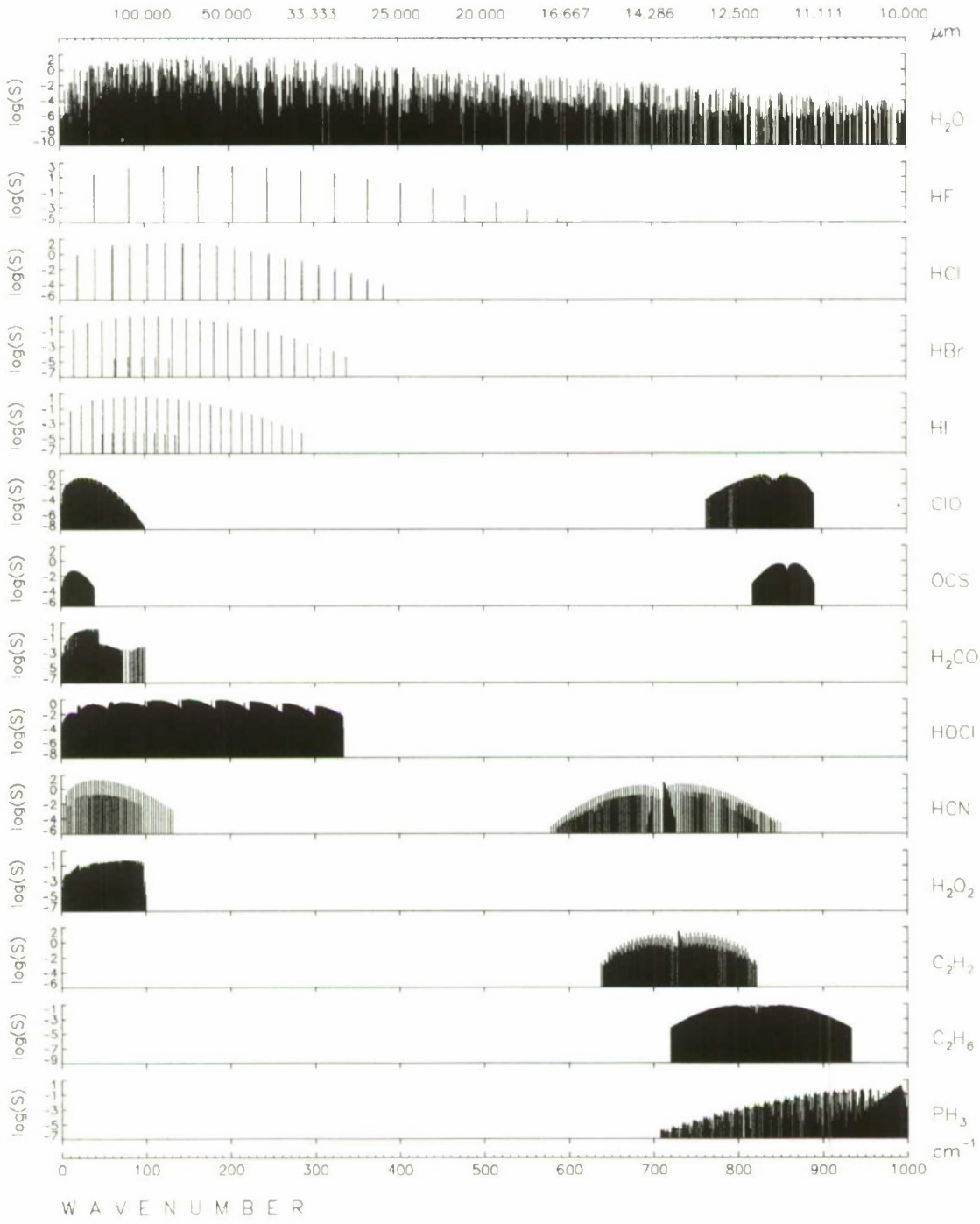


Figure 3. Absorption line strengths of AFGL gases versus wavenumber for every 1000 cm^{-1} up to 5000 cm^{-1}.



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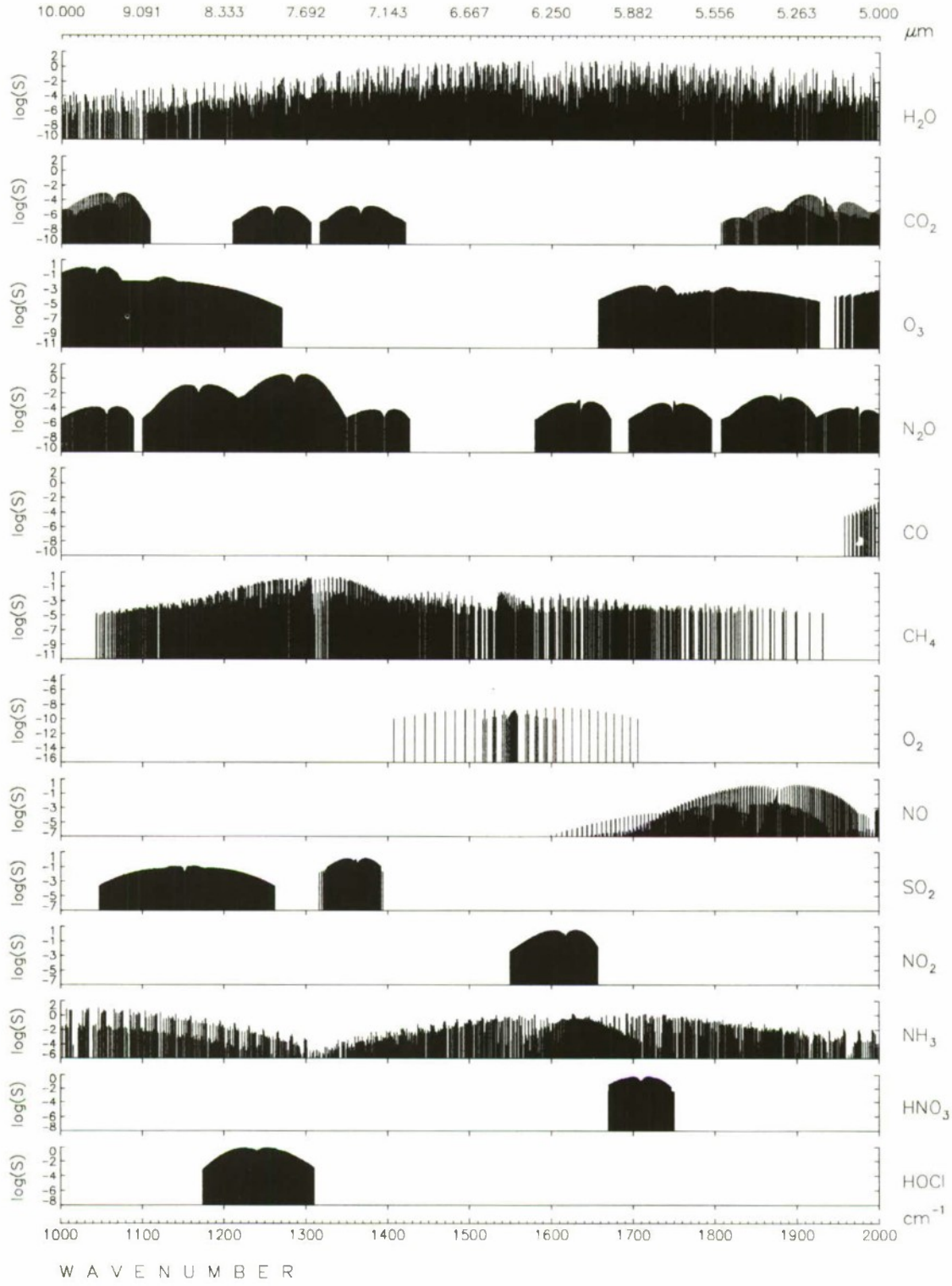

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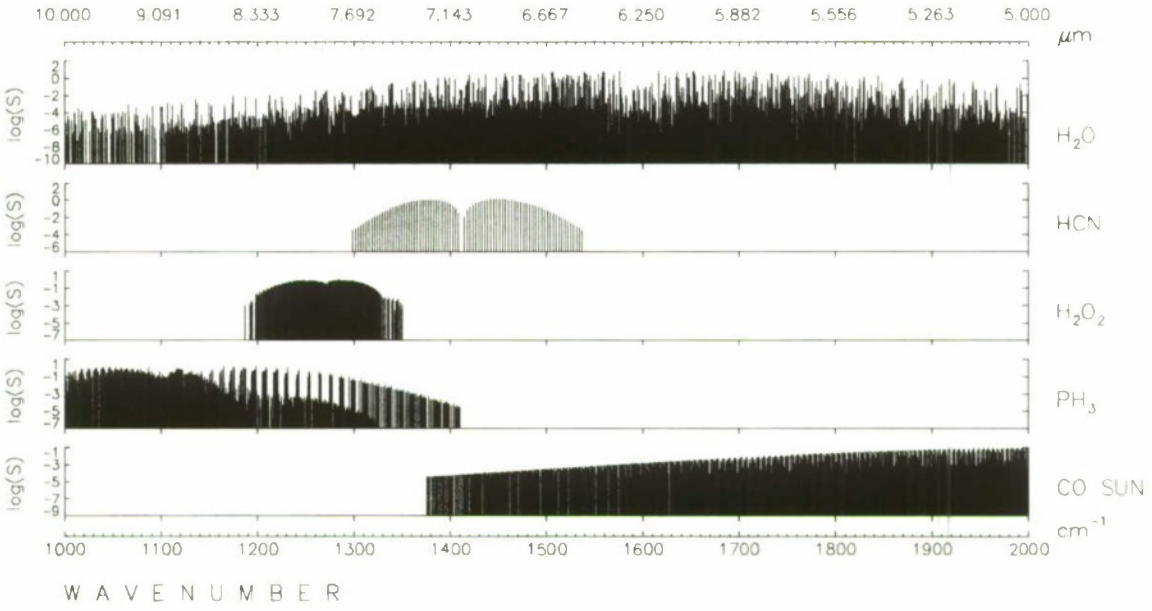

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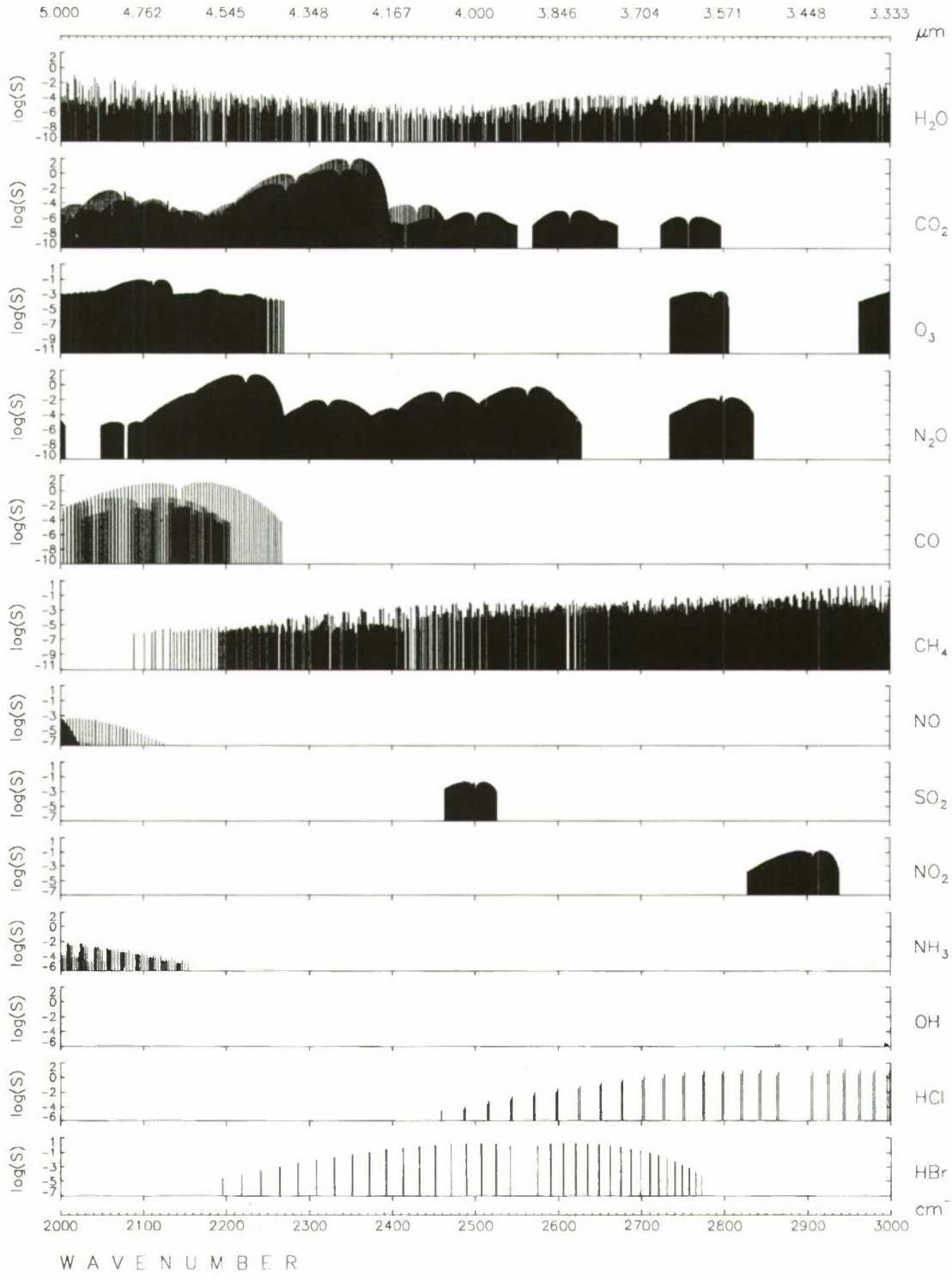

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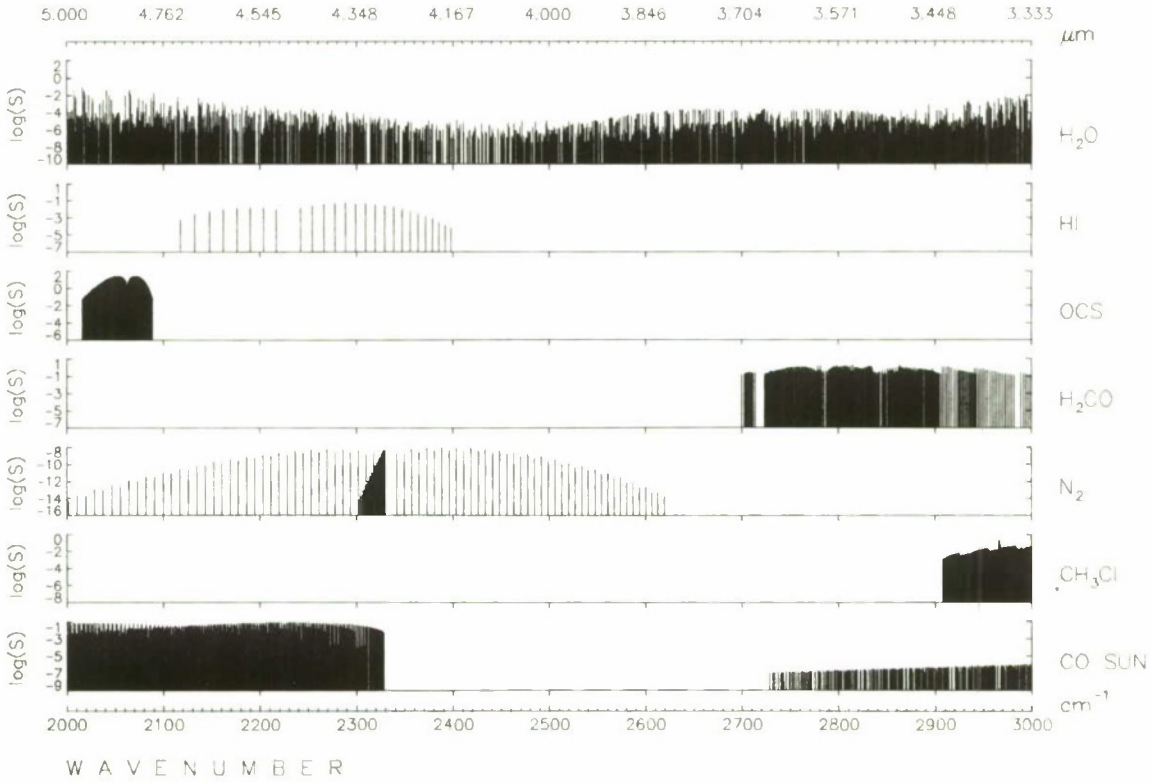

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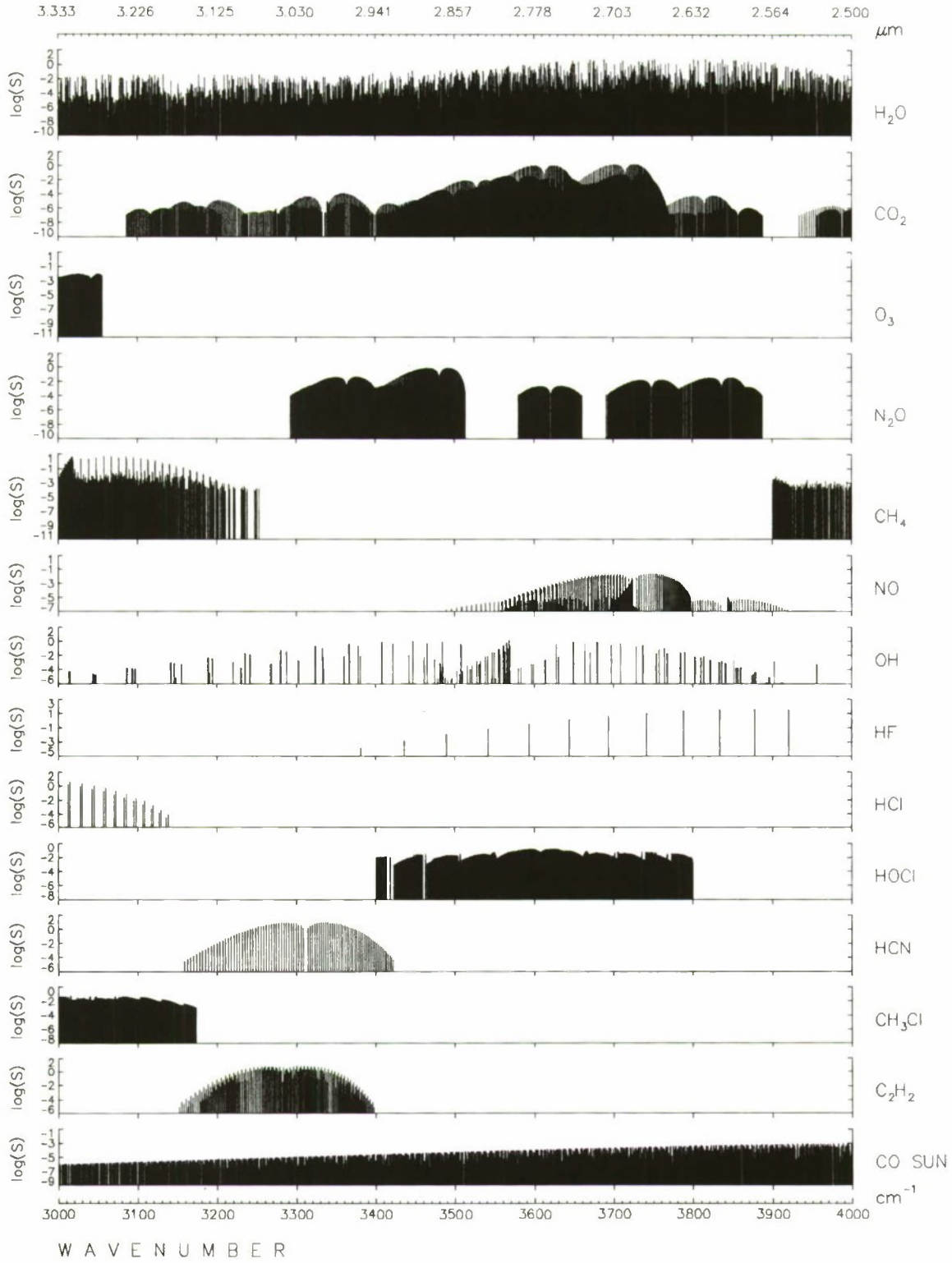

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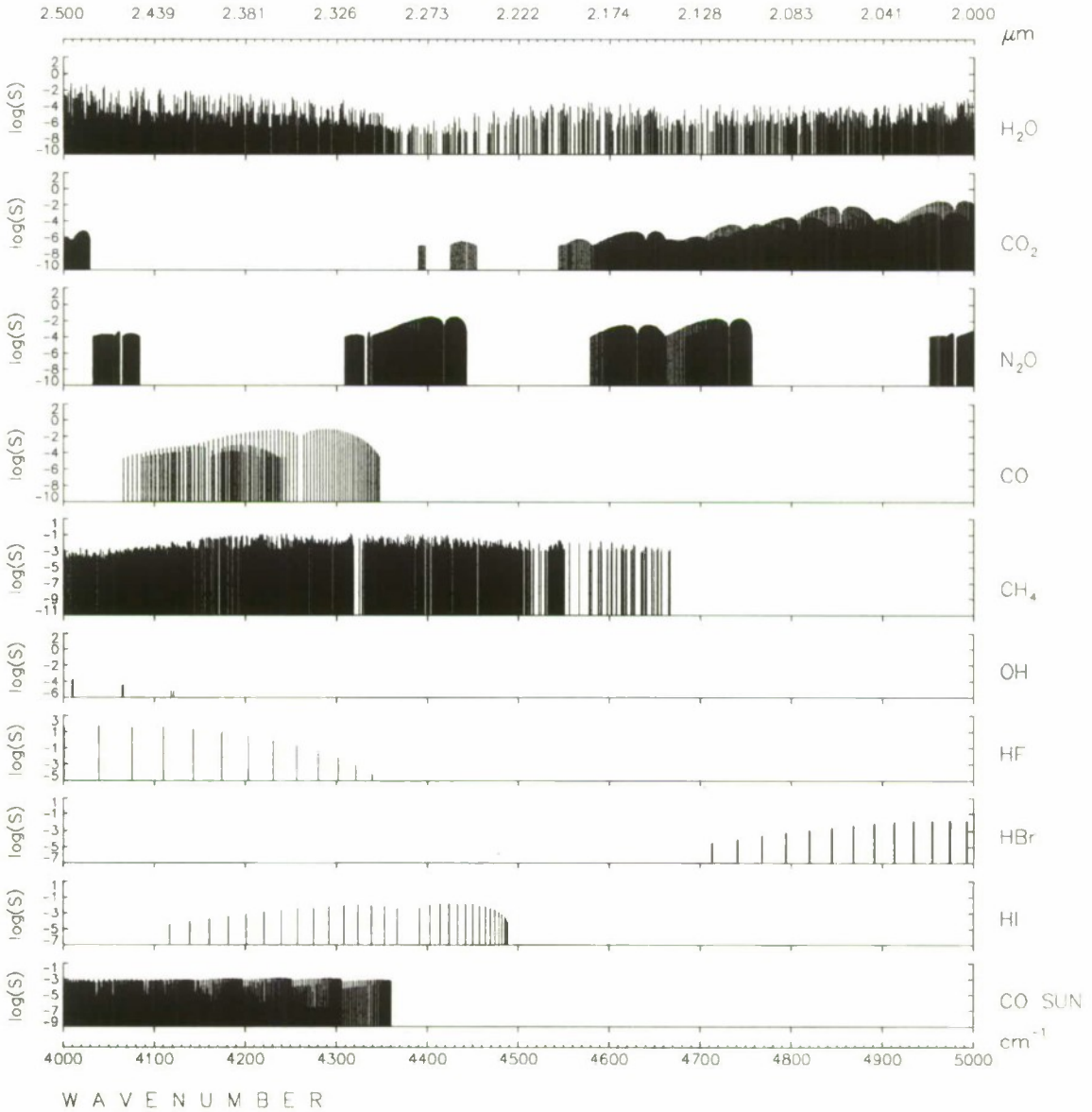

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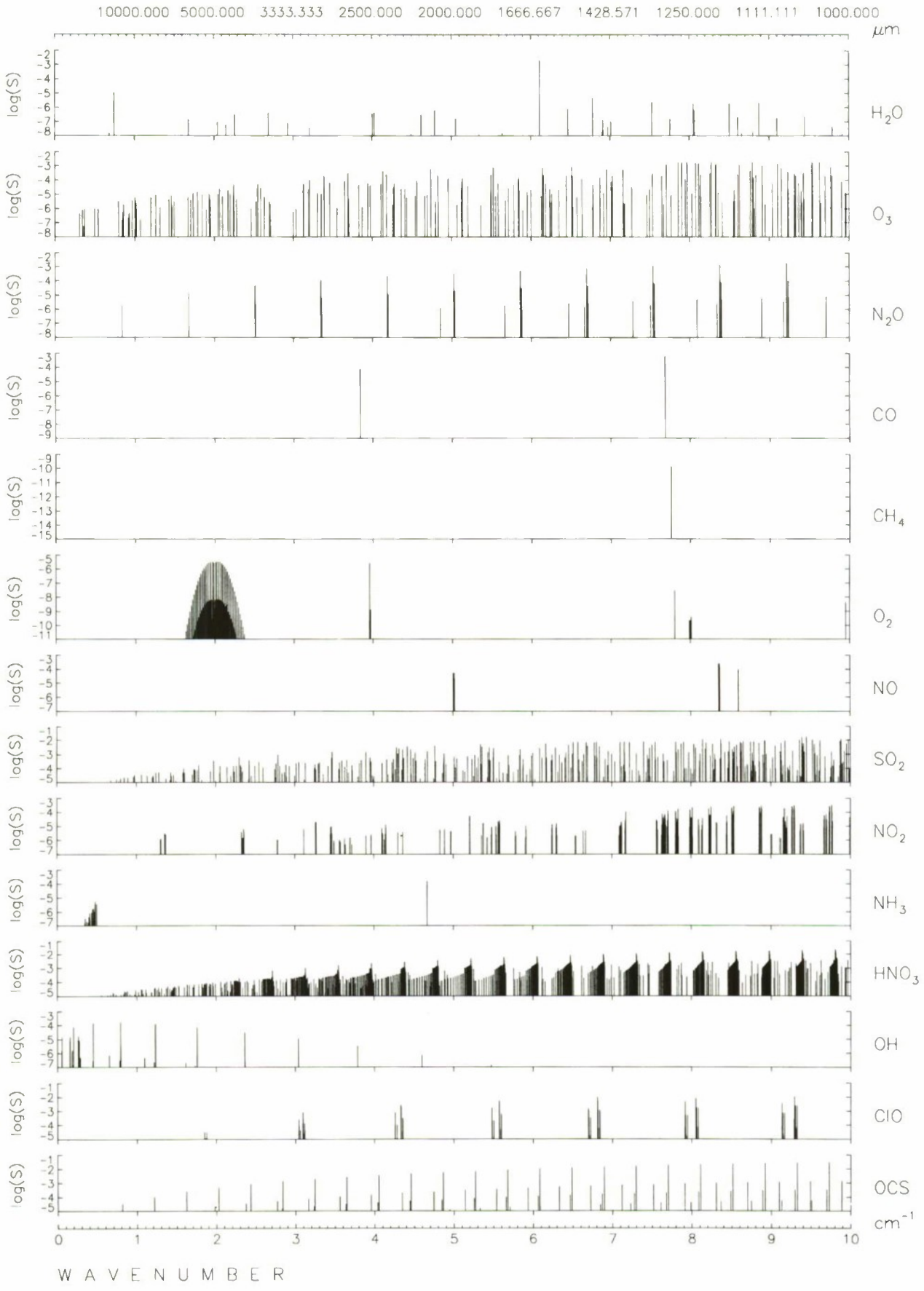
ATLAS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CO
CH4
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OCS
cm-1
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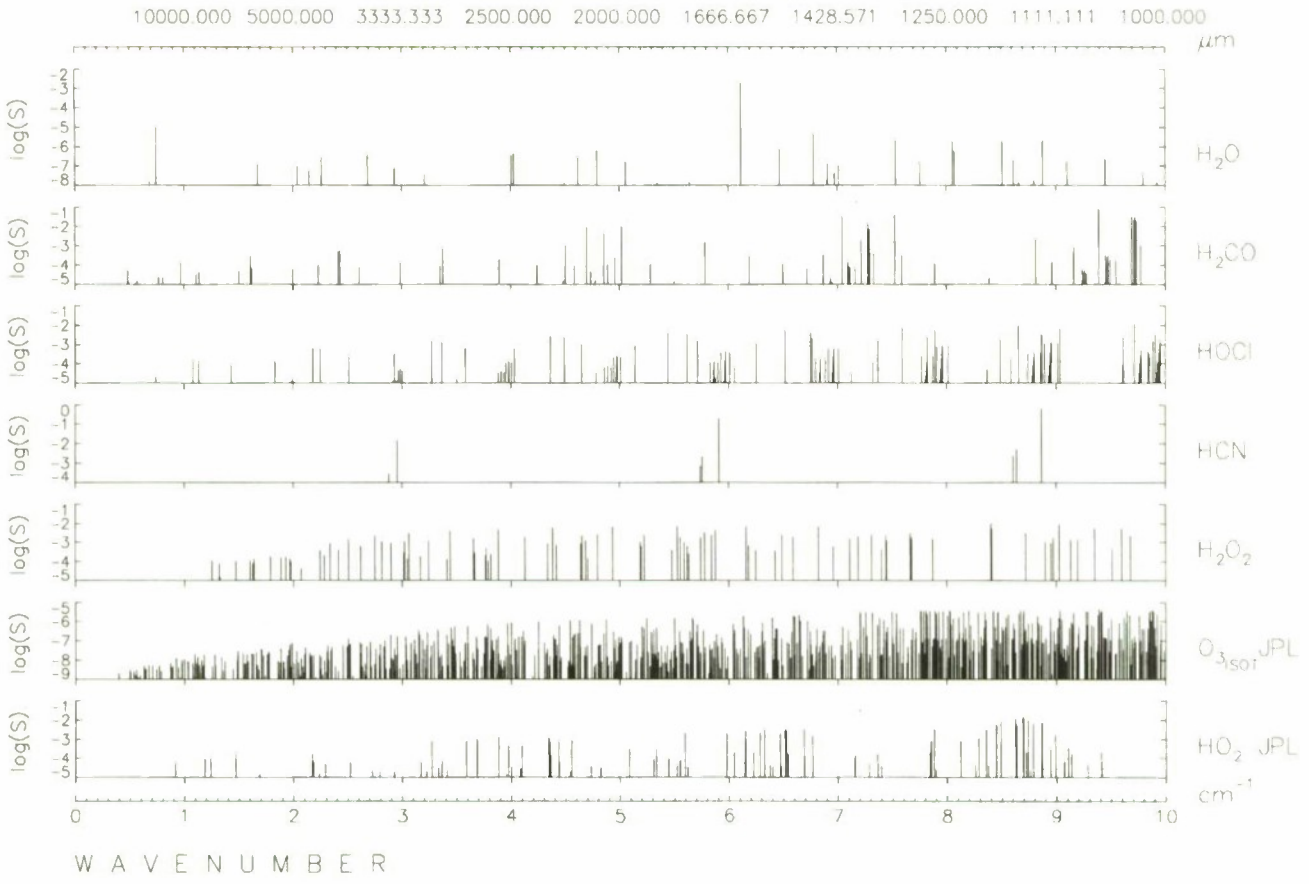
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log(S)
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HO2 JPL
cm-1
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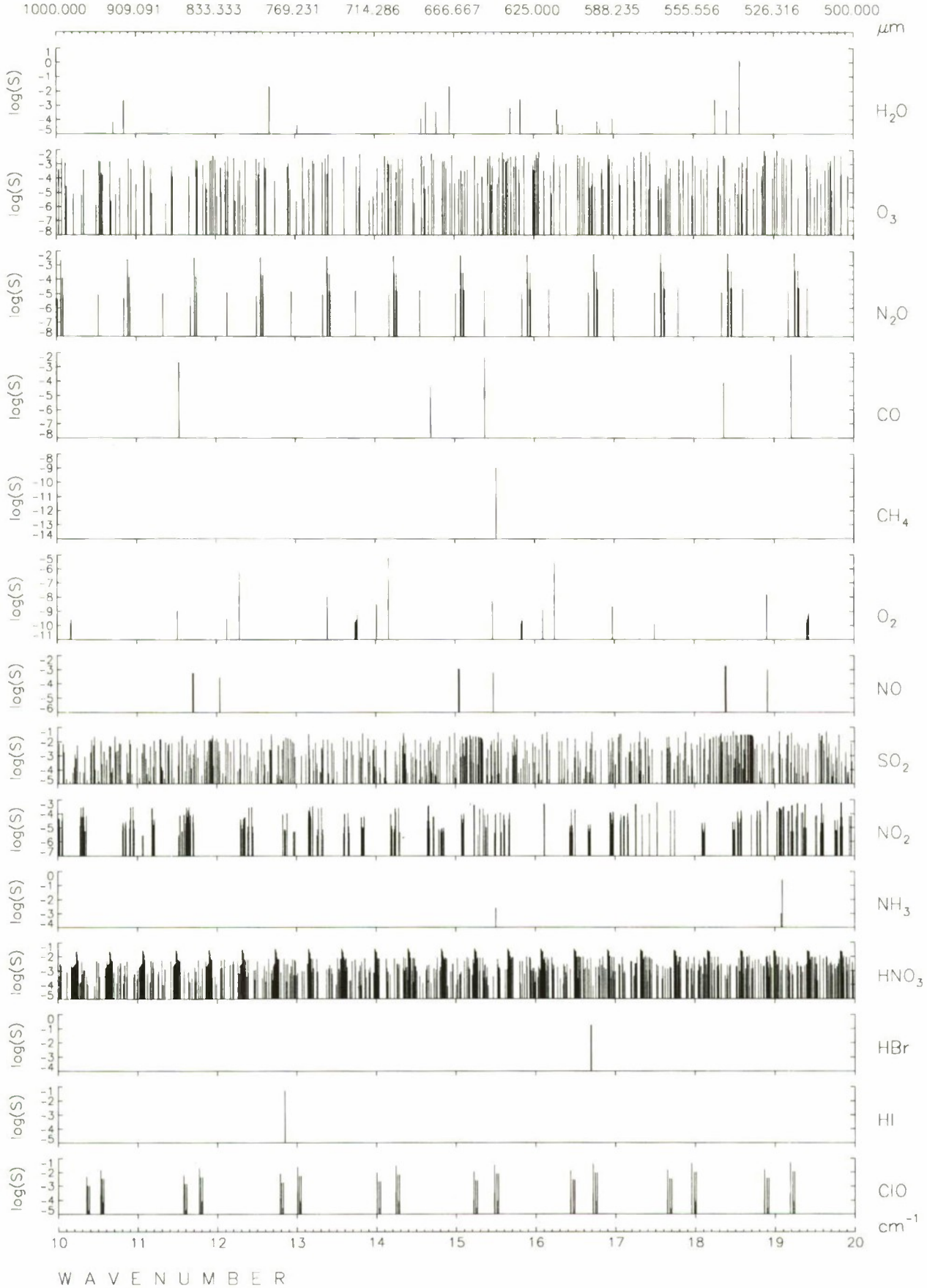
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N2O
CO
CH4
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cm-1
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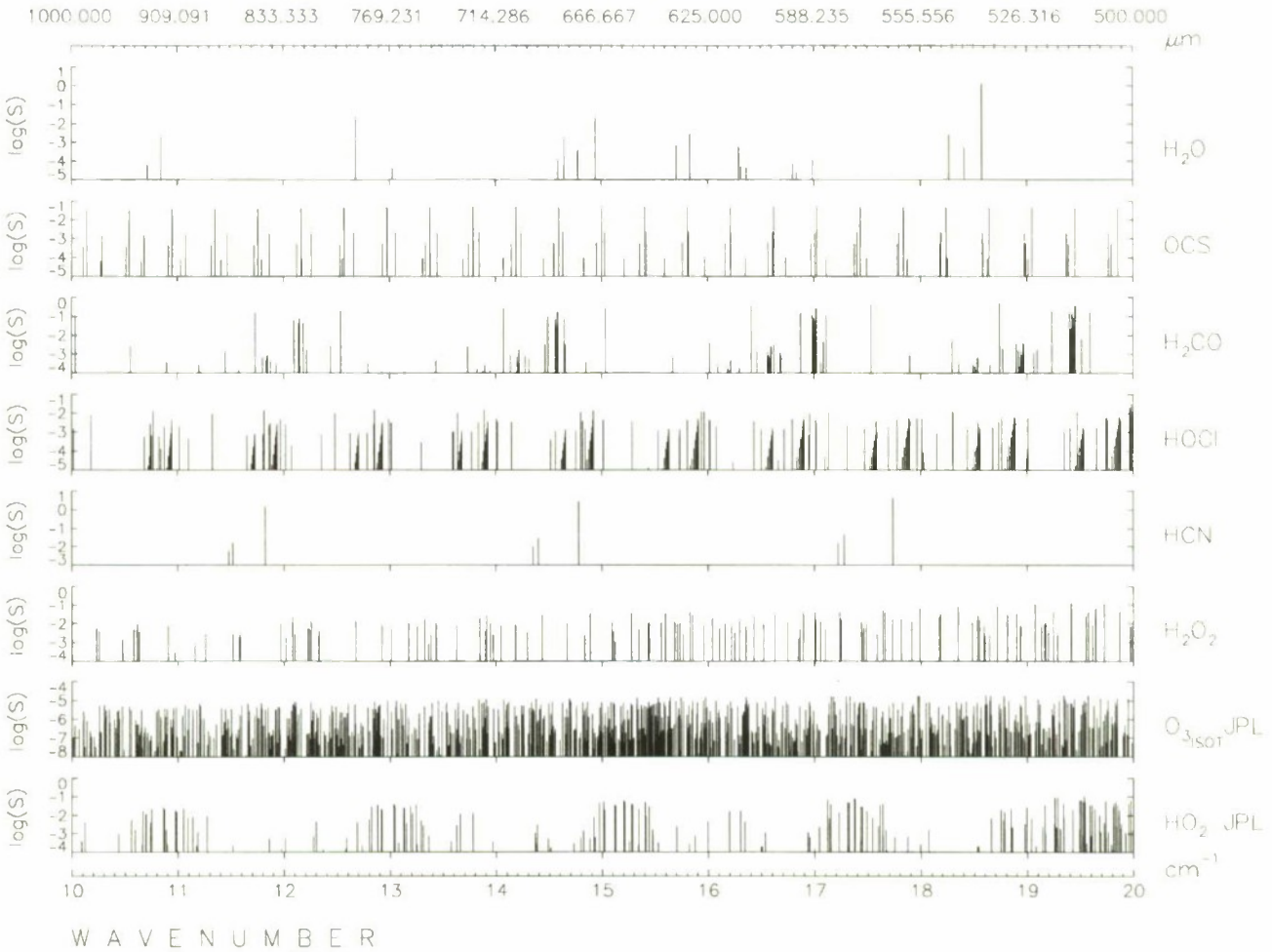
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HOCl
HCN
H2O2
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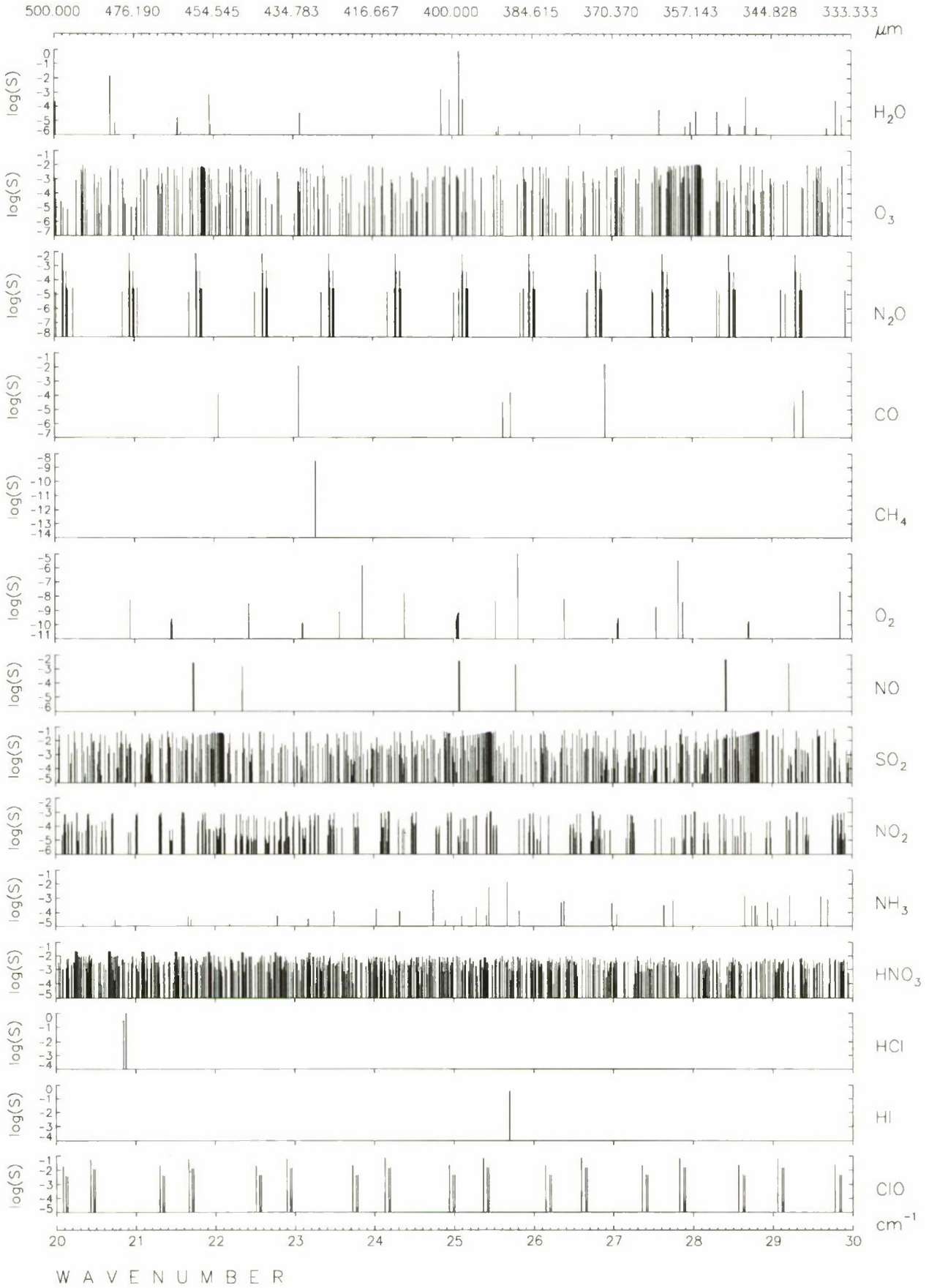
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SO2
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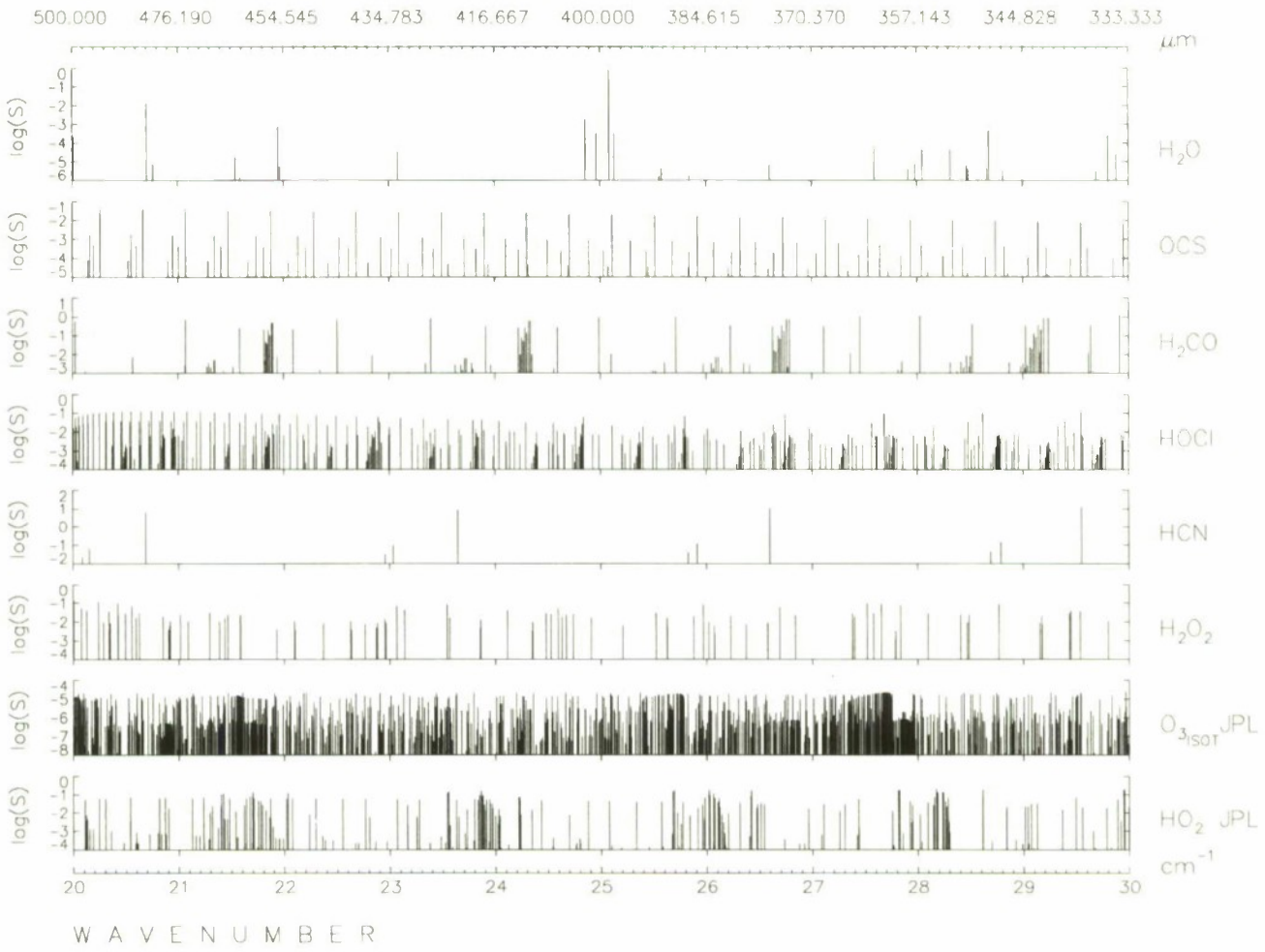
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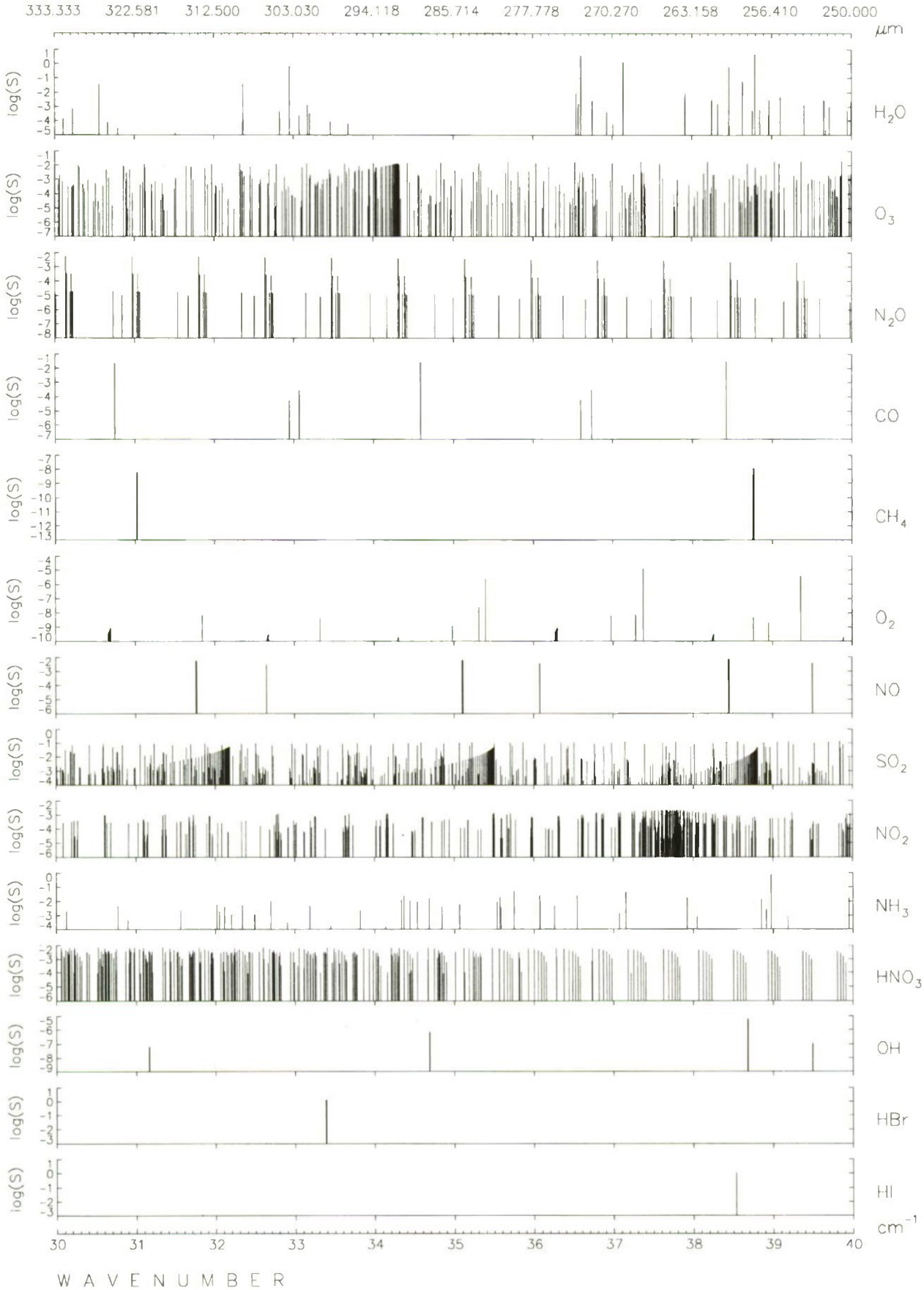
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O3
N2O
CO
CH4
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NO
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HI
cm-1
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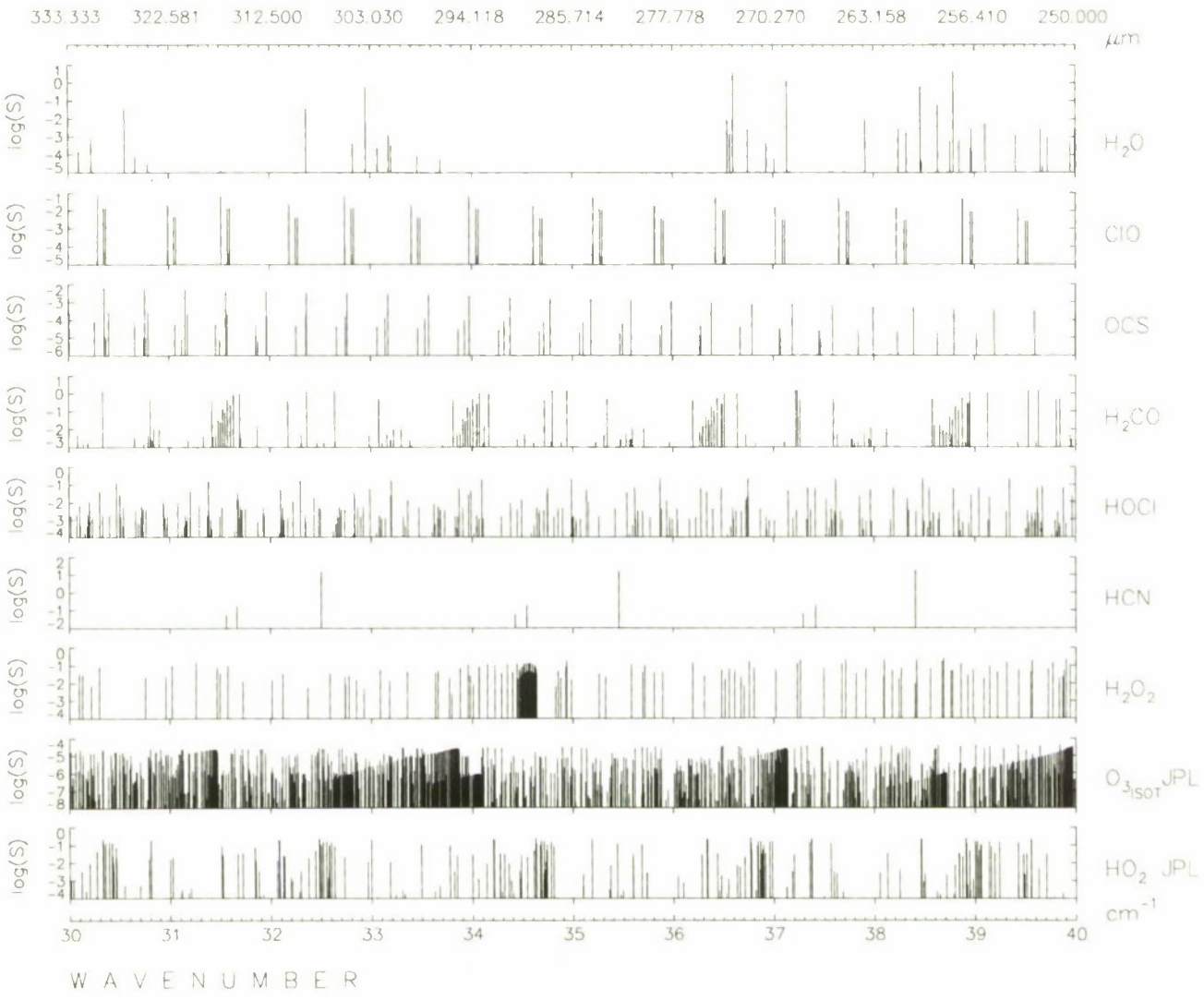
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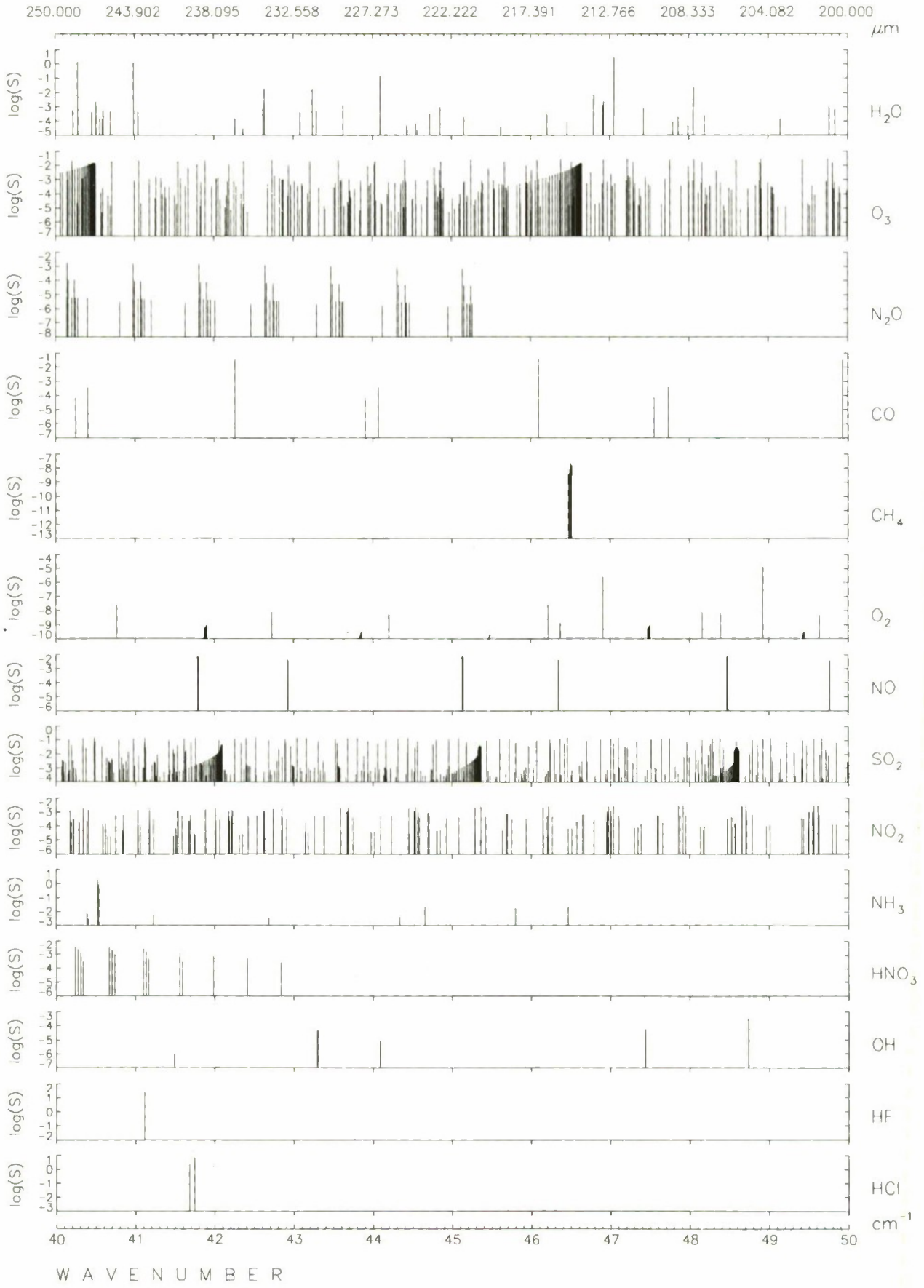
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N2O
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NO
SO2
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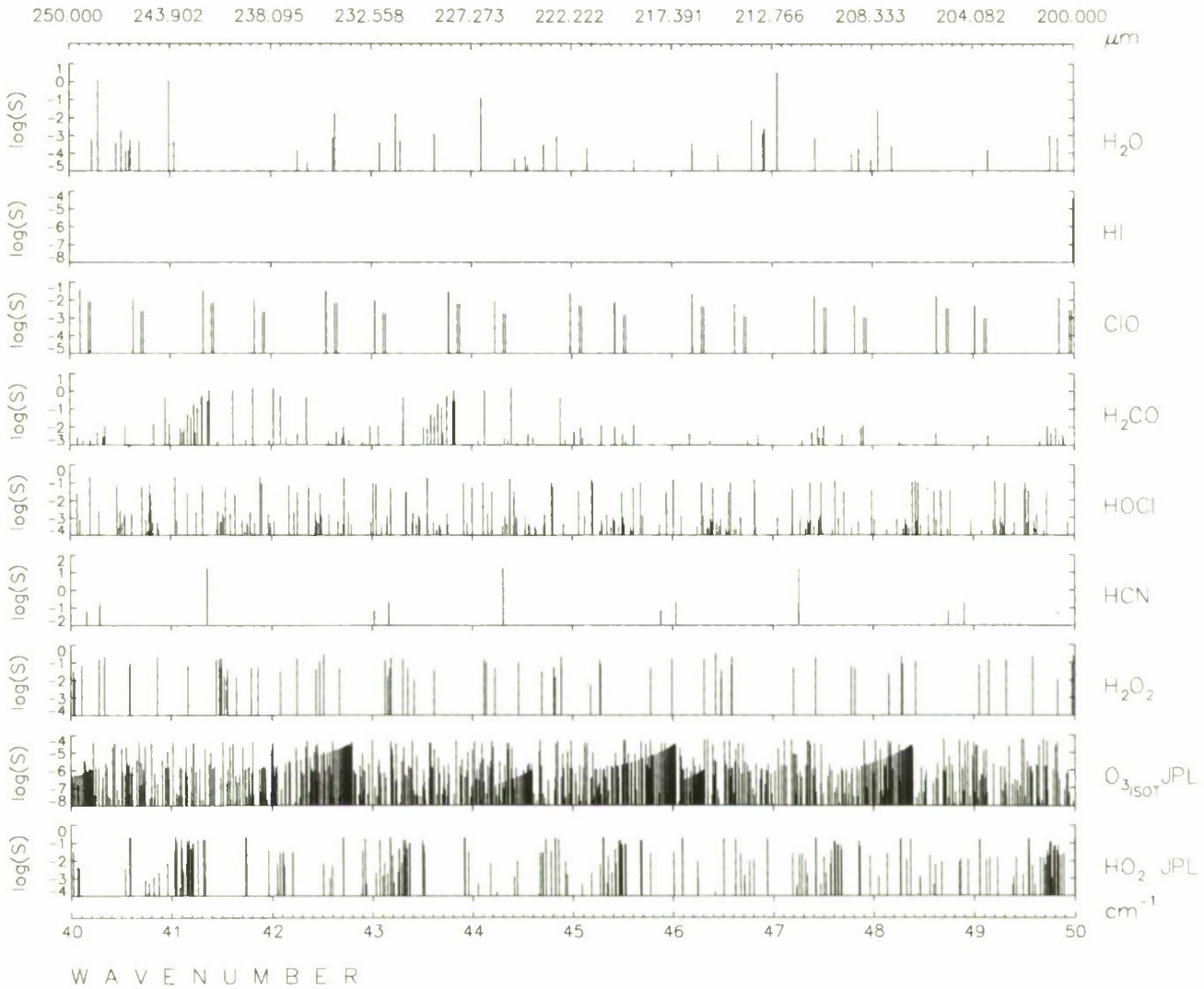
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ClO
H2CO
HOCl
HCN
H2O2
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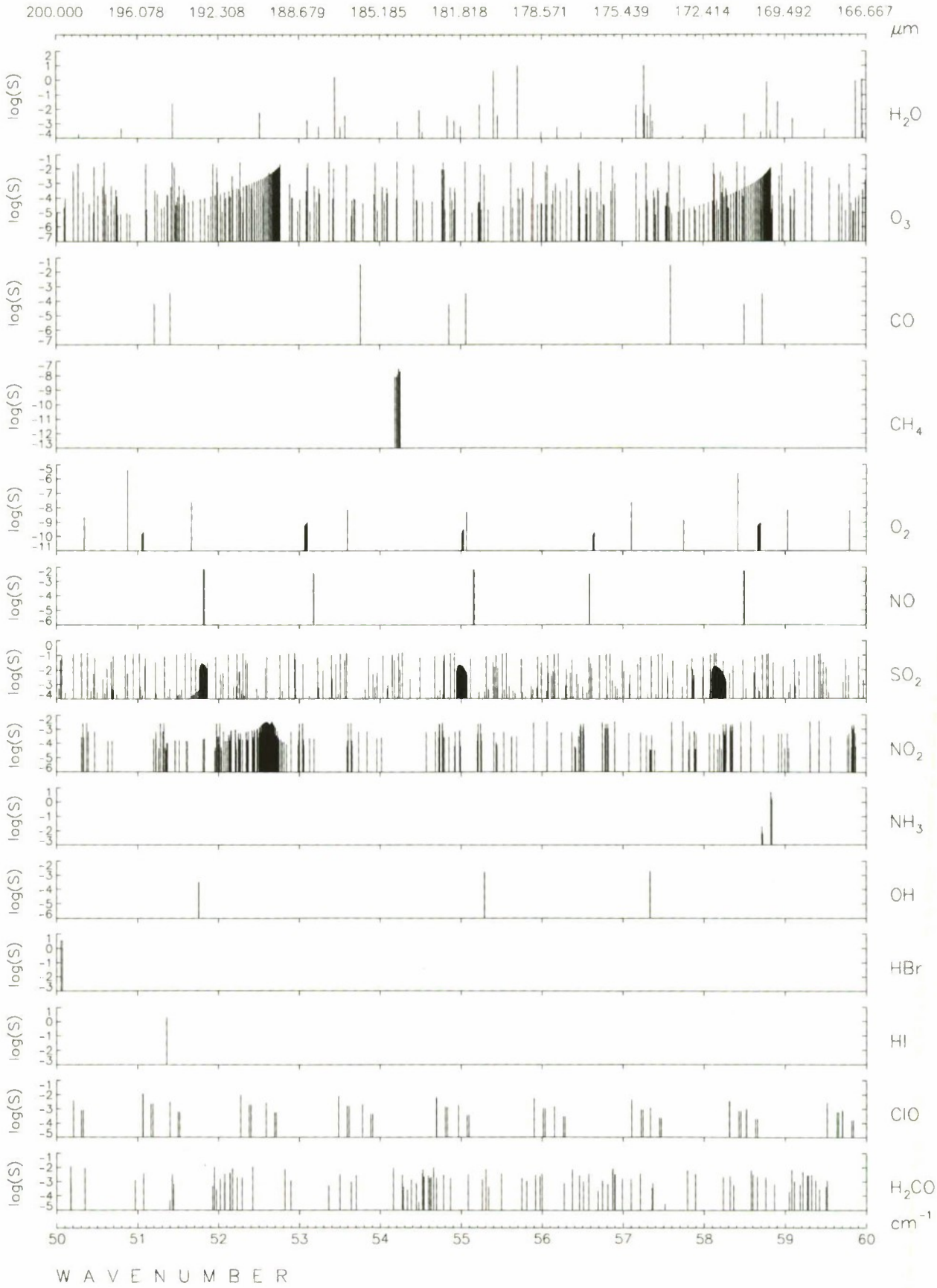
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O3
CO
CH4
O2
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SO2
NO2
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OH
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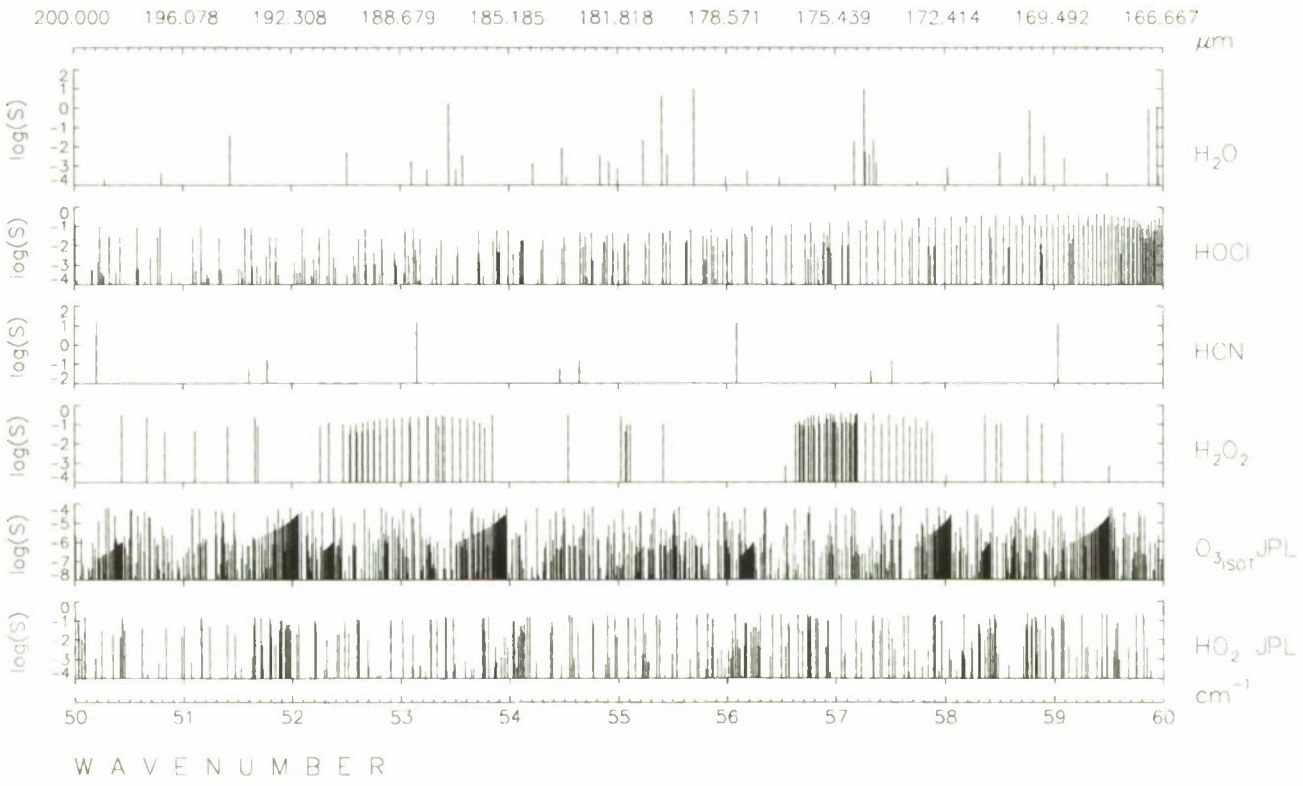
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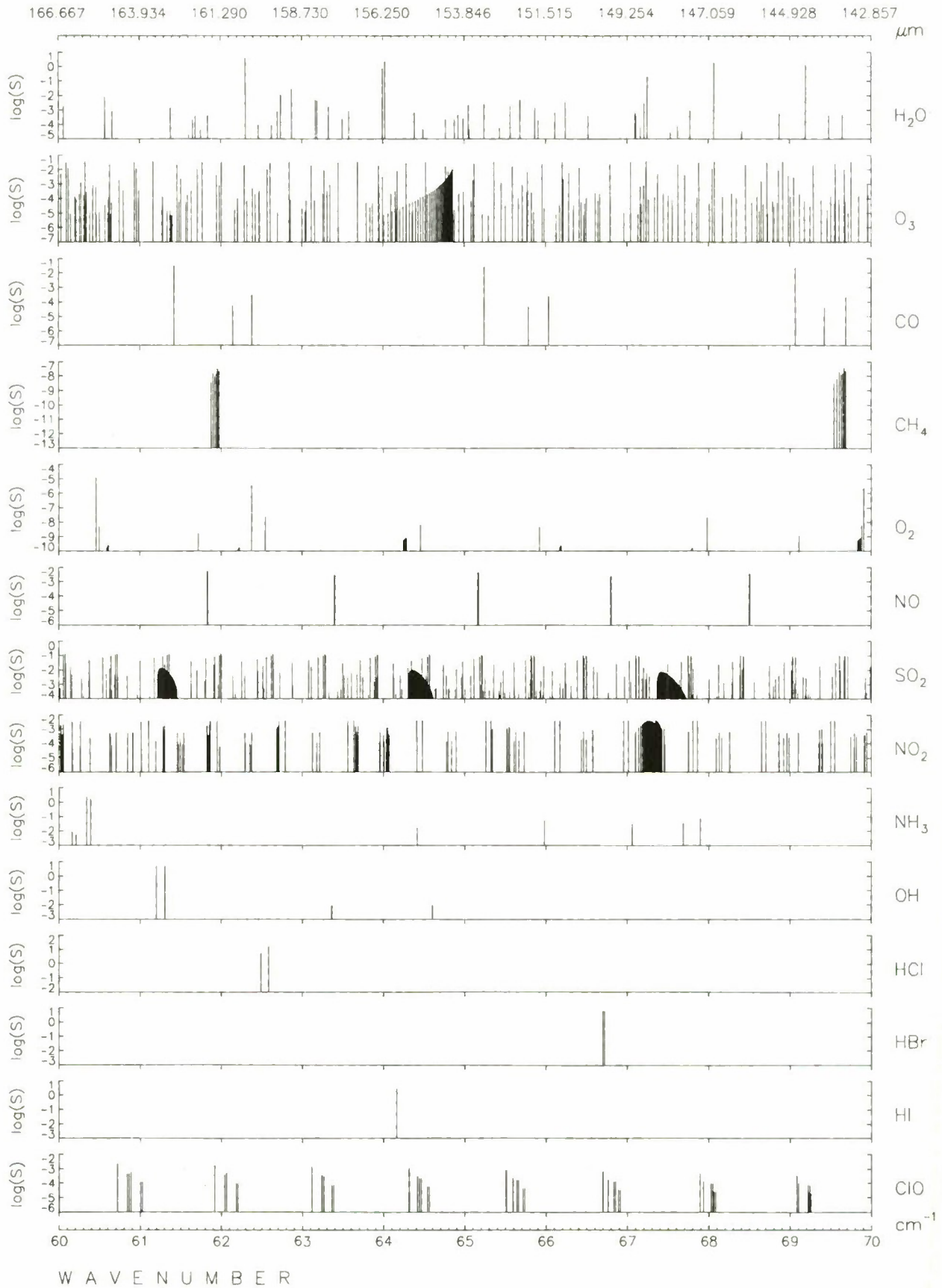
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NO2
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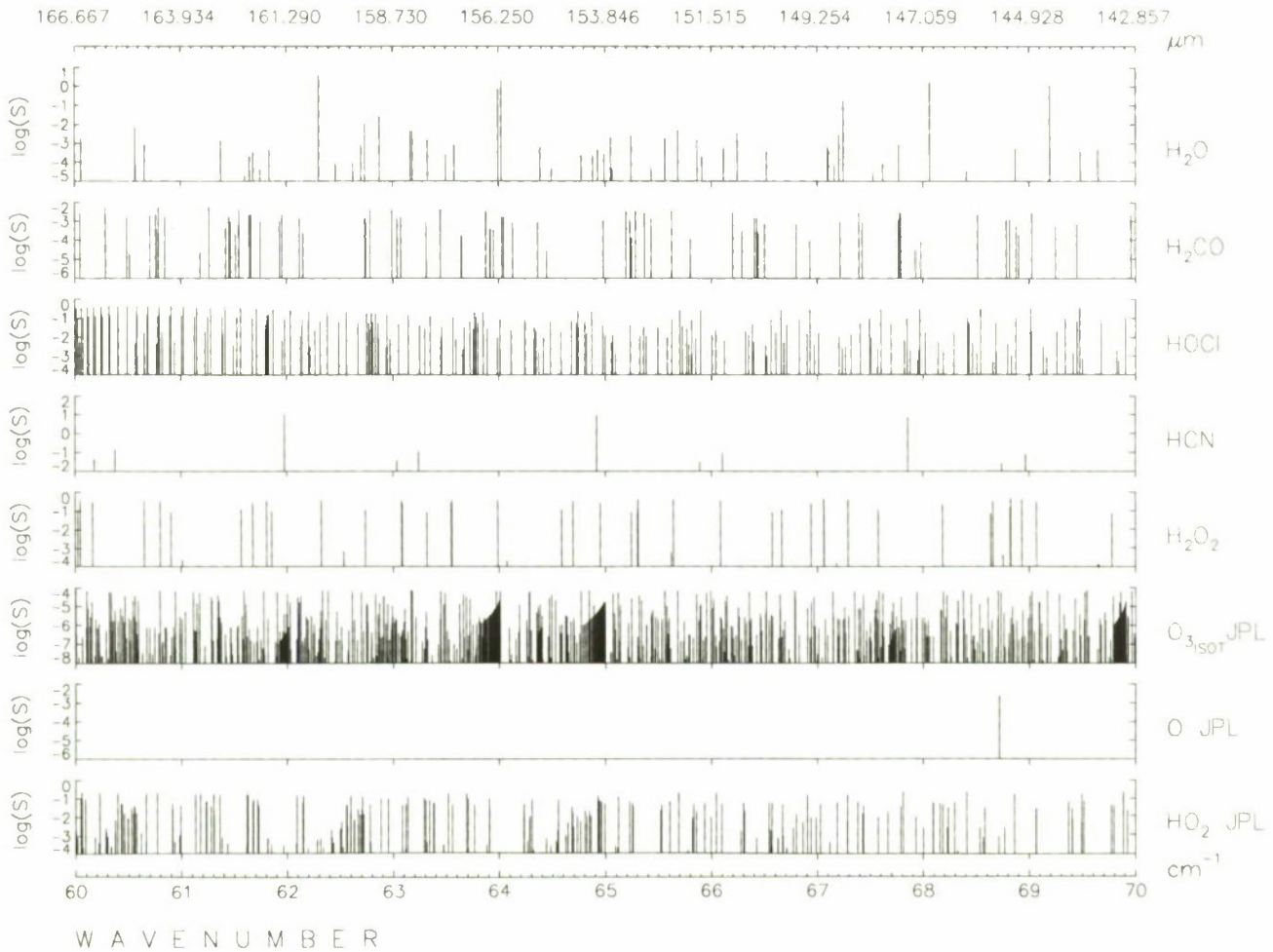
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HCN
H2O2
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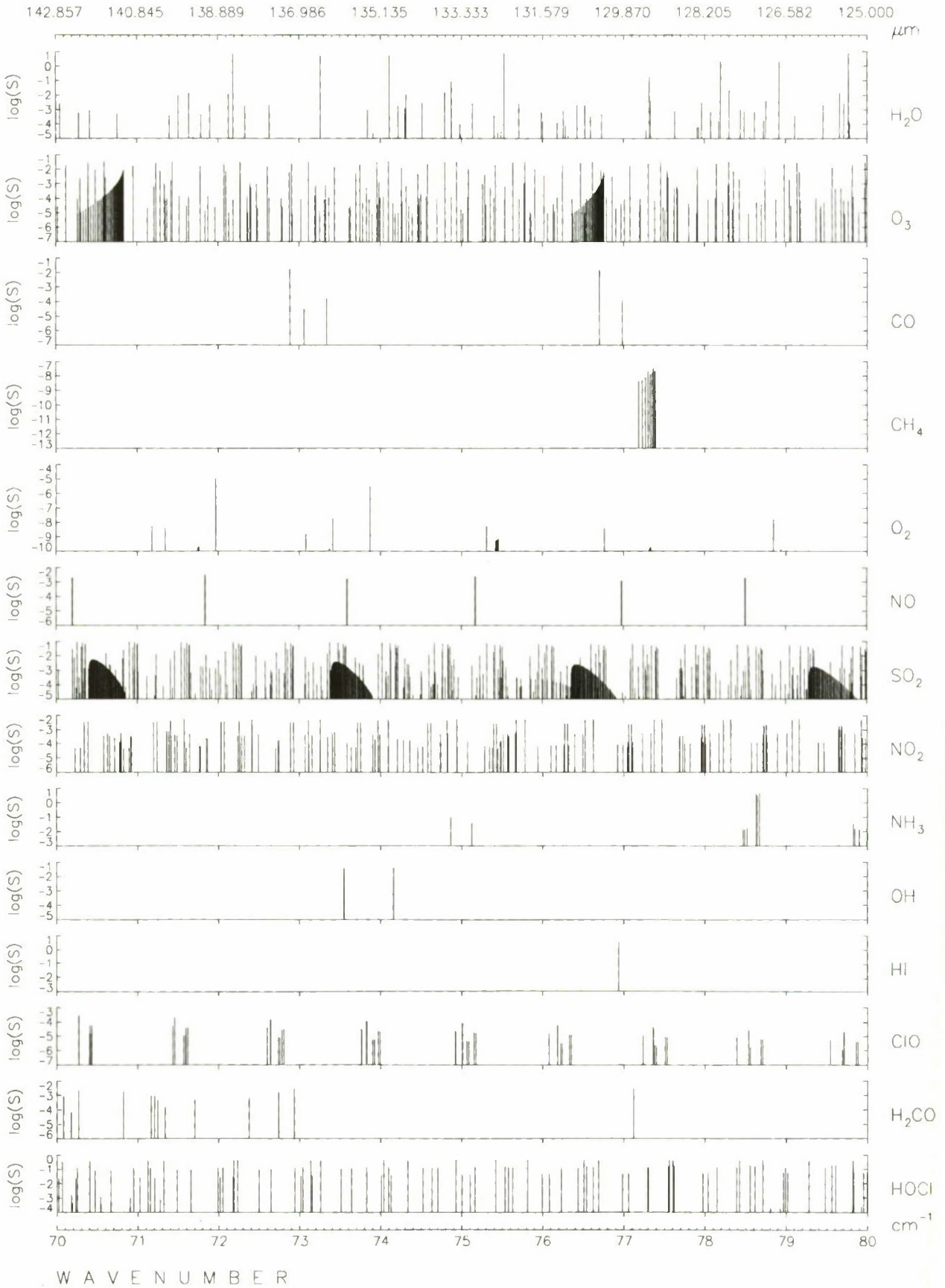
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O3
CO
CH4
O2
NO
SO2
NO2
NH3
OH
HI
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H2CO
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80
cm-1
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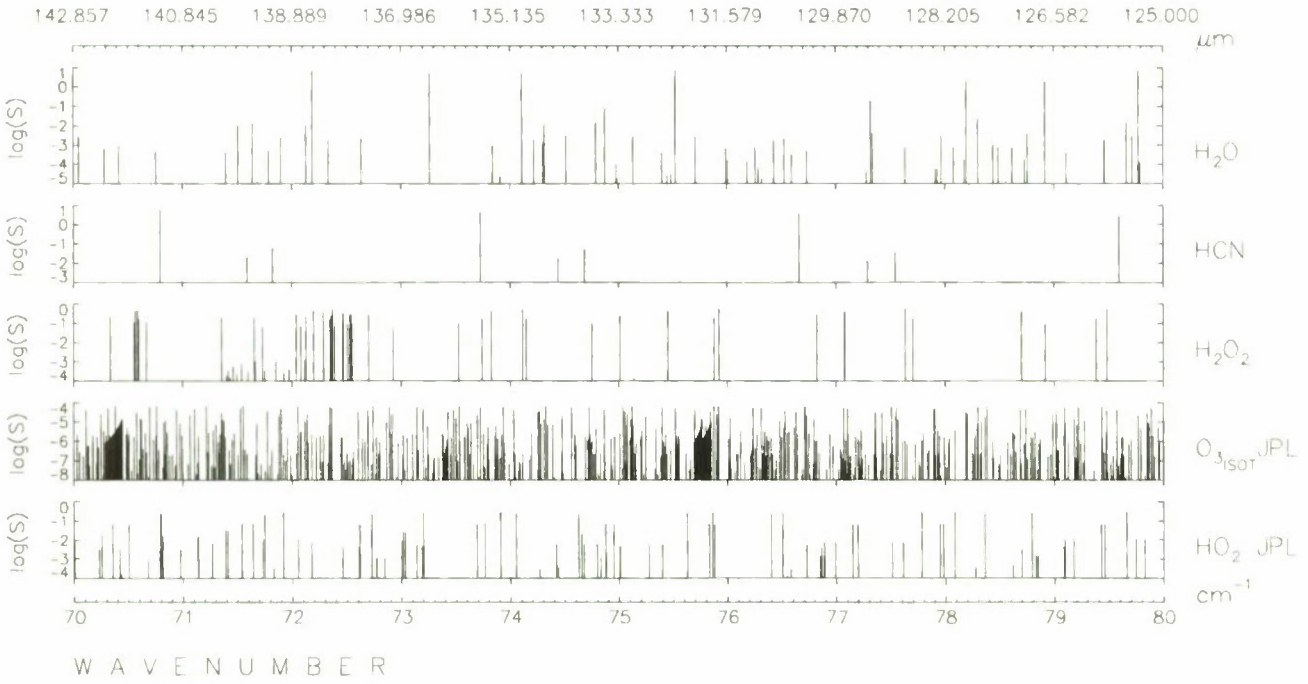
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μm
log(S)
H2O
HCN
H2O2
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cm-1
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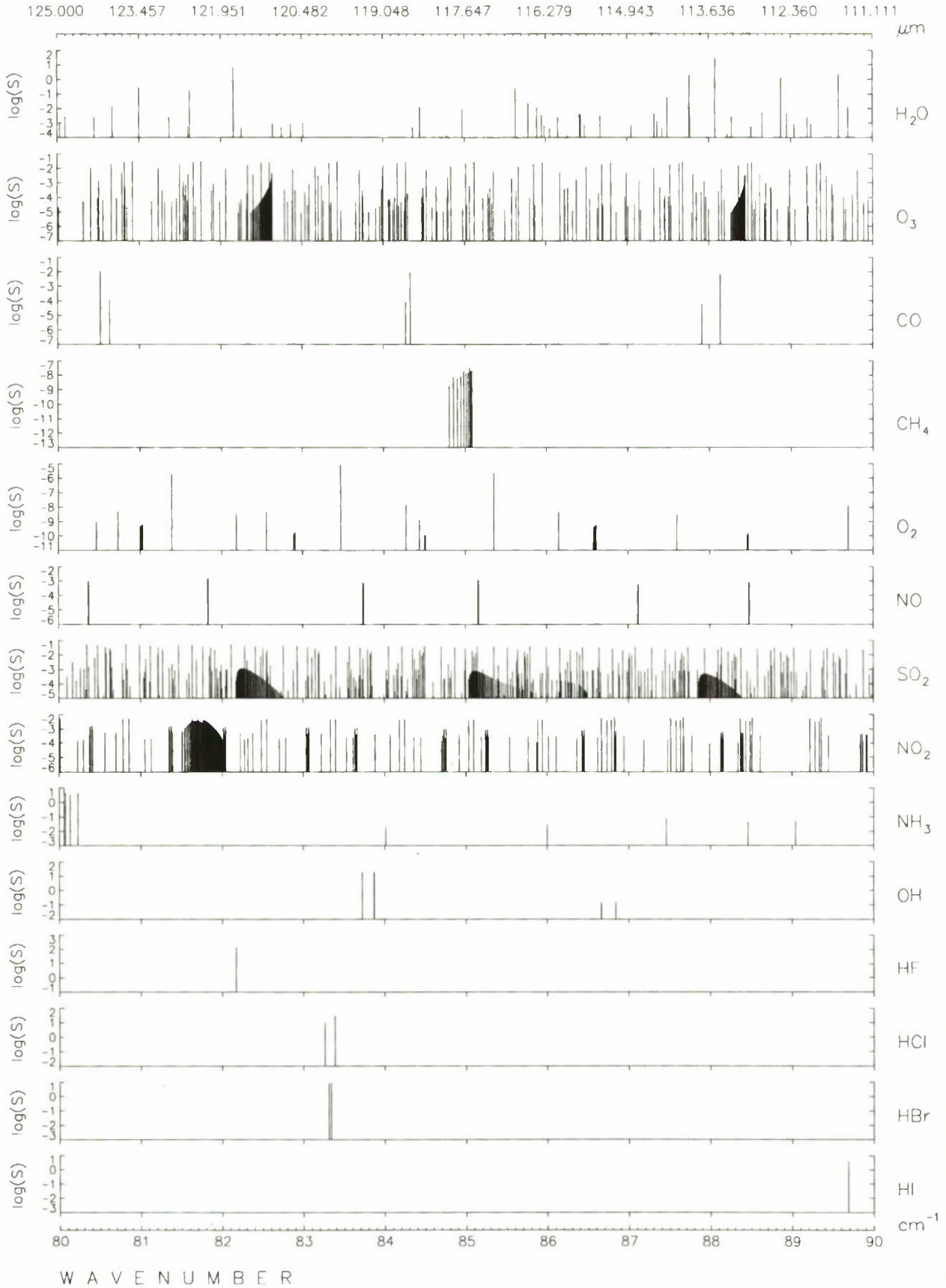
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83
84
85
86
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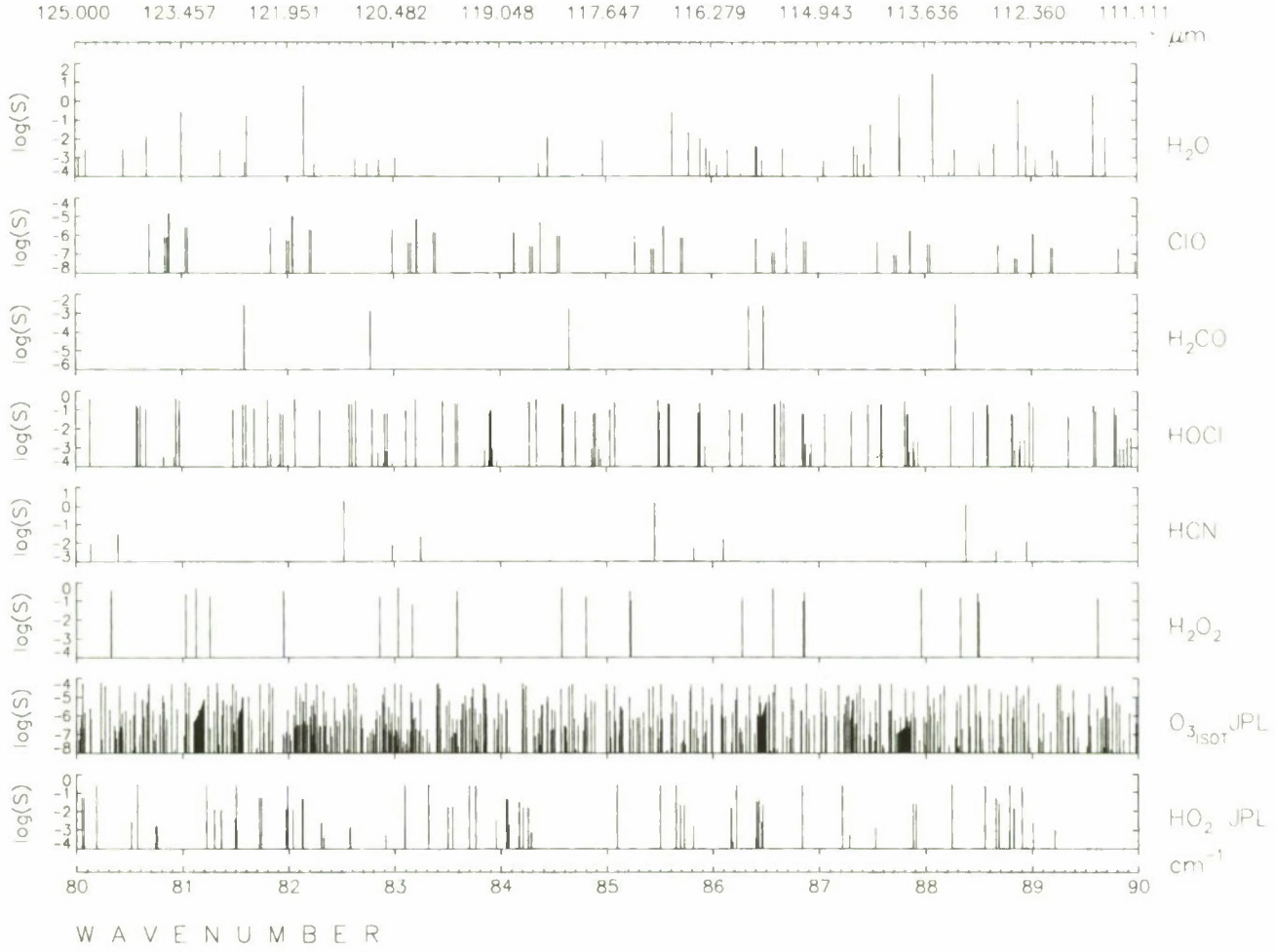
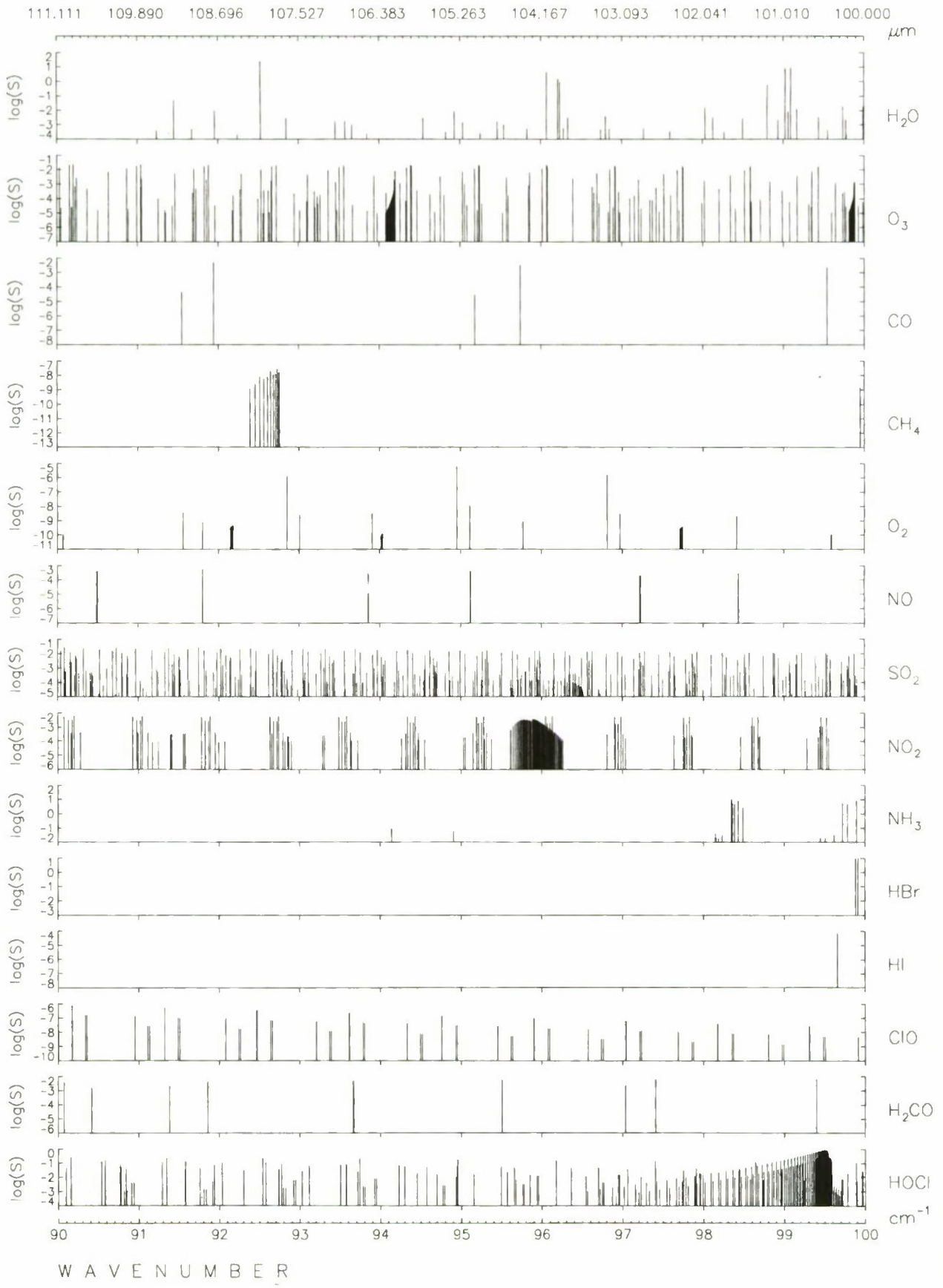
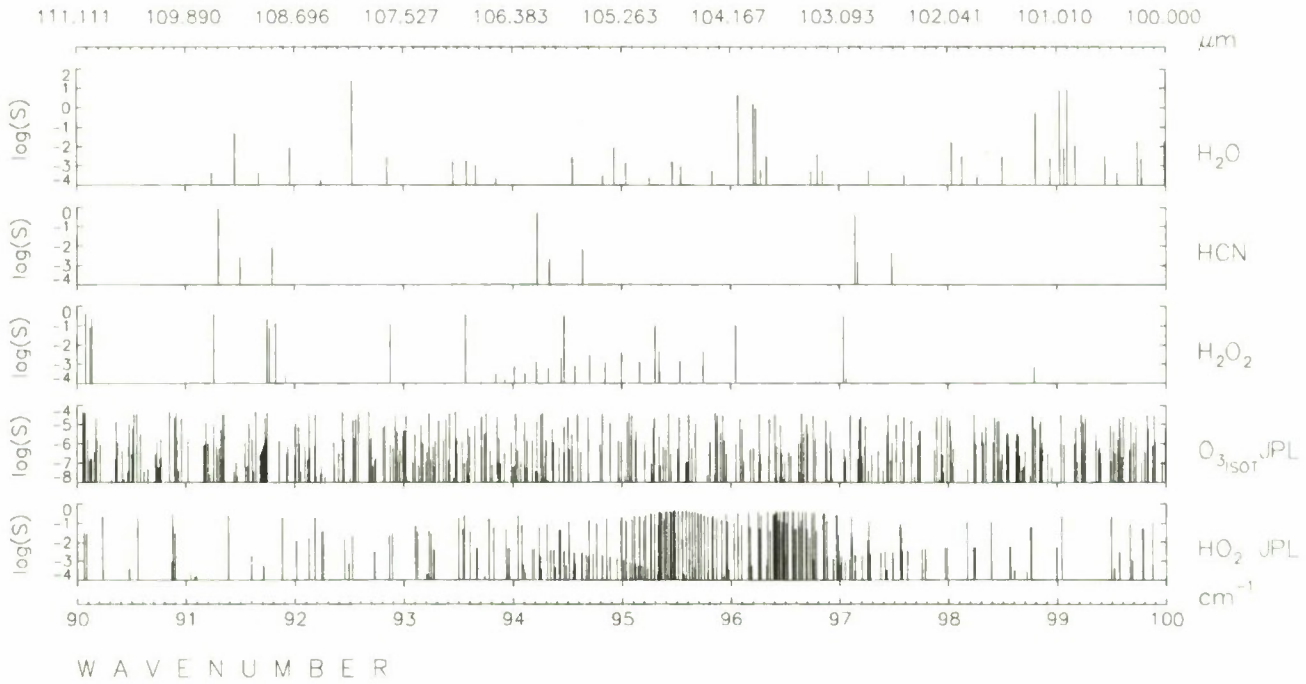
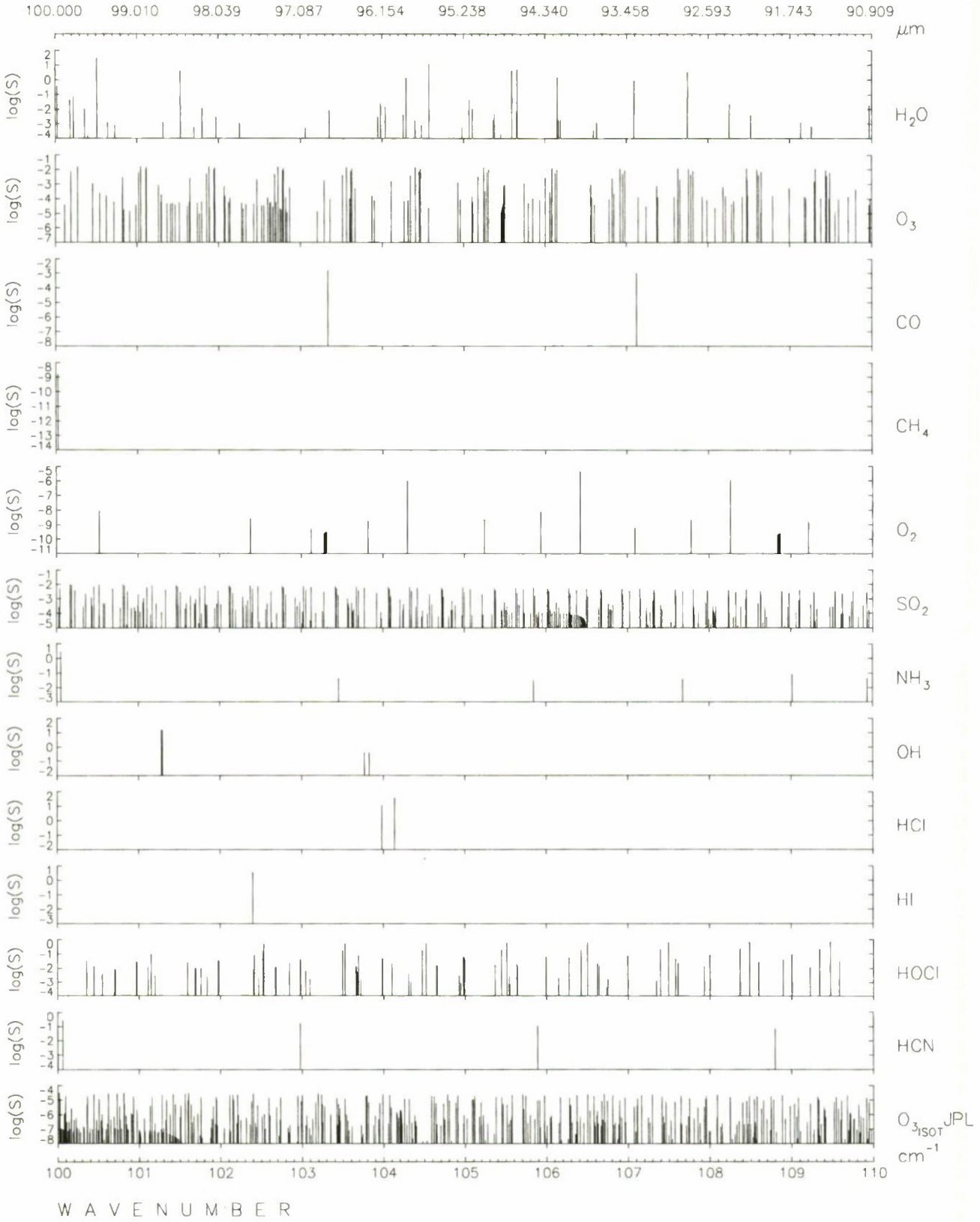
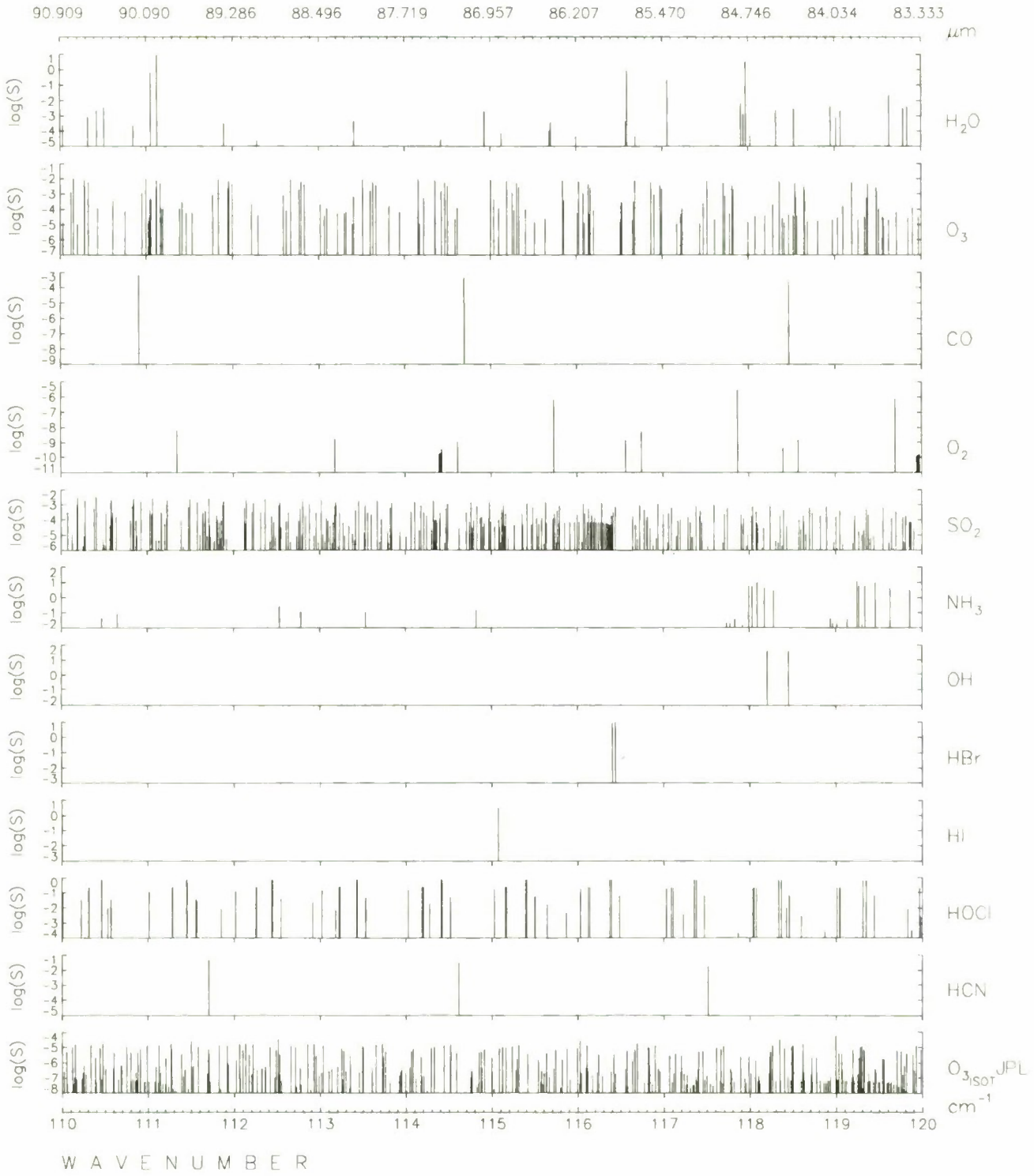
88
89
90
cm-1
WAVENUMBER

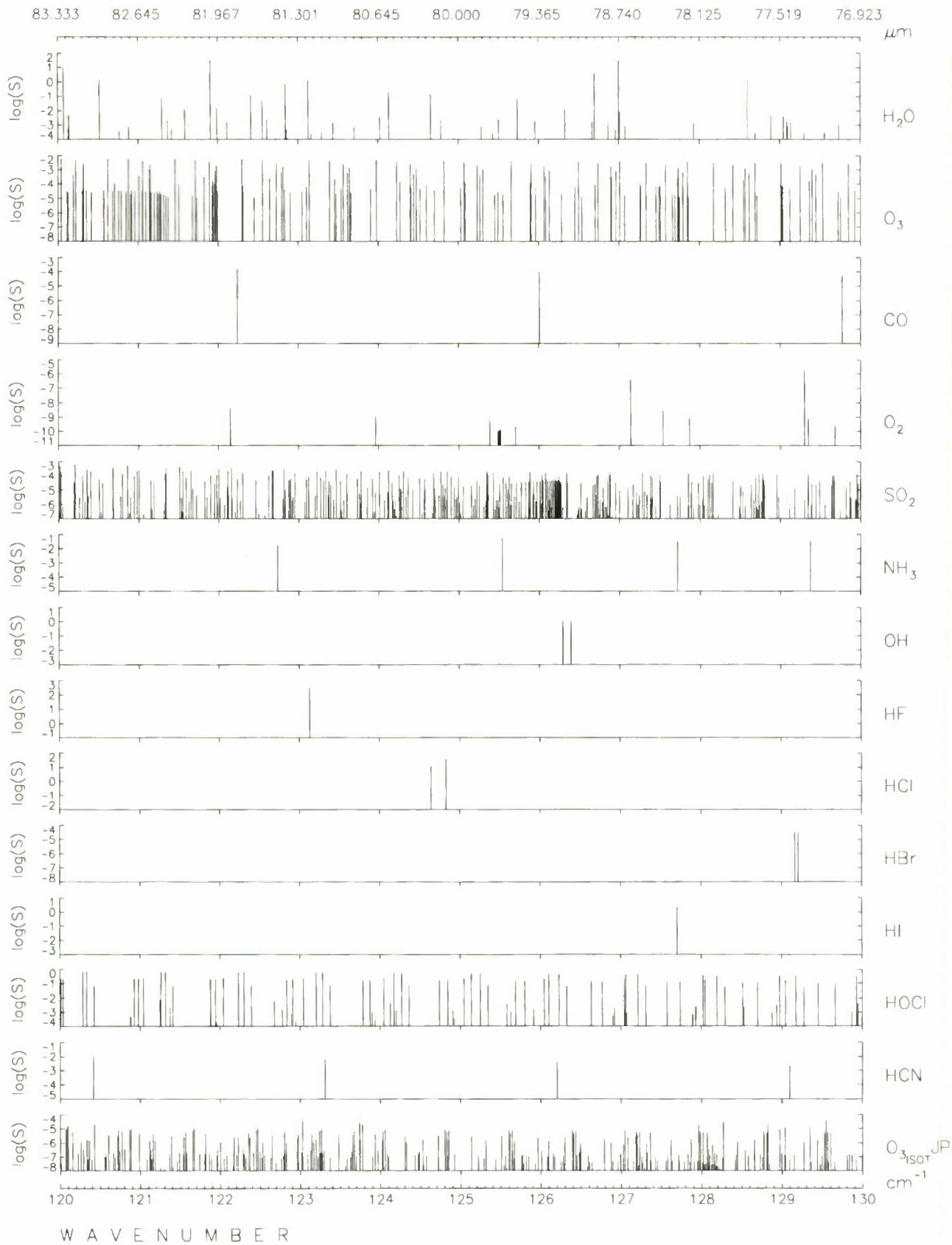

125.000
123.457
121.951
120.482
119.048
117.647
116.279
114.943
113.636
112.360
111.111
μm
log(S)
H2O
ClO
H2CO
HOCl
HCN
H2O2
O3ISOT JPL
HO2 JPL
cm-1
80
81
82
83
84
85
86
87
88
89
90
WAVENUMBER

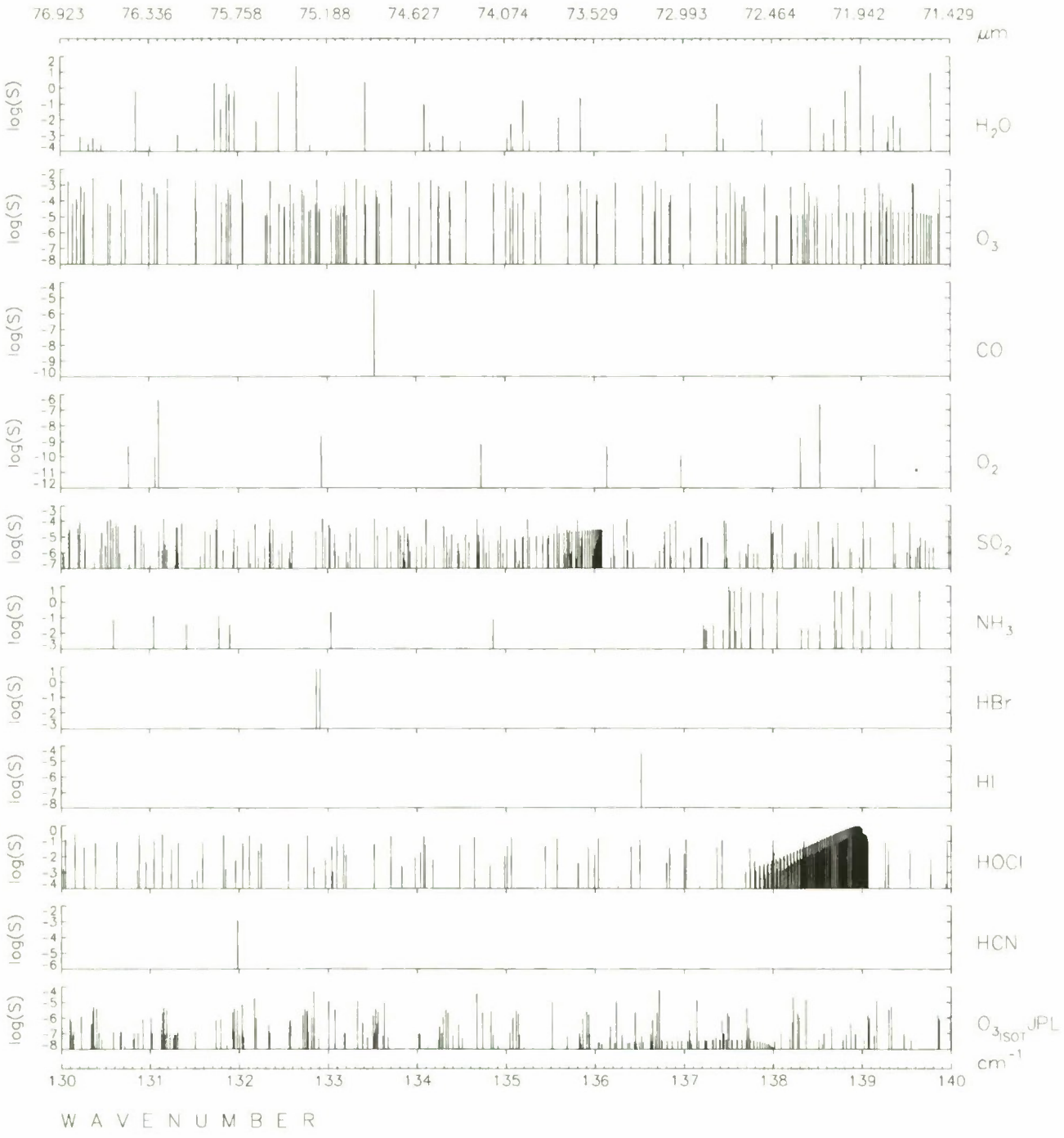

111.111
109.890
108.696
107.527
106.383
105.263
104.167
103.093
102.041
101.010
100.000
μm
log(S)
H2O
O3
CO
CH4
O2
NO
SO2
NO2
NH3
HBr
HI
ClO
H2CO
HOCl
90
91
92
93
94
95
96
97
98
99
100
cm-1
WAVENUMBER

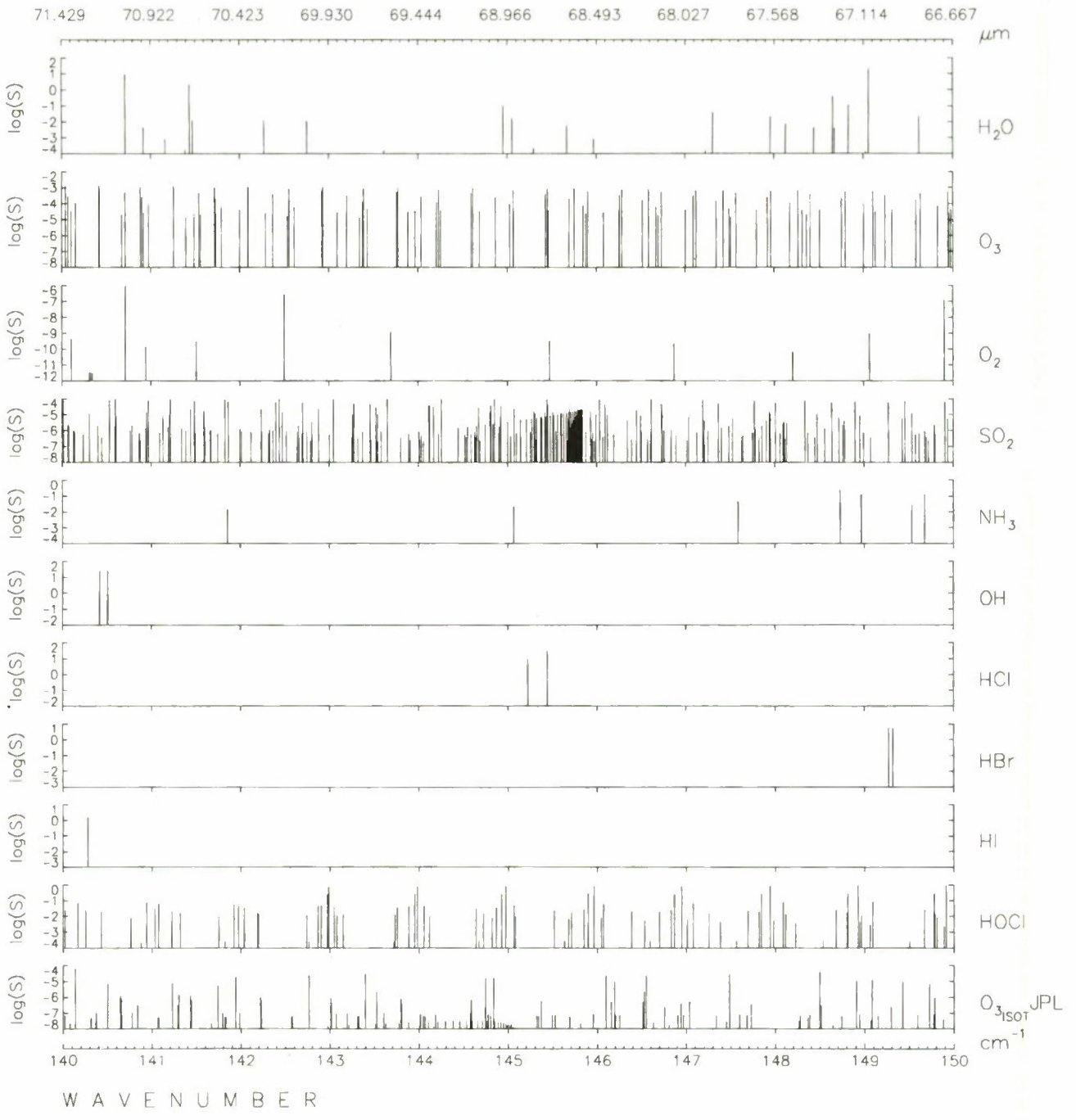

111.111
109.890
108.696
107.527
106.383
105.263
104.167
103.093
102.041
101.010
100.000
μm
log(S)
H2O
HCN
H2O2
O3ISOT JPL
HO2 JPL
cm-1
90
91
92
93
94
95
96
97
98
99
100
WAVENUMBER

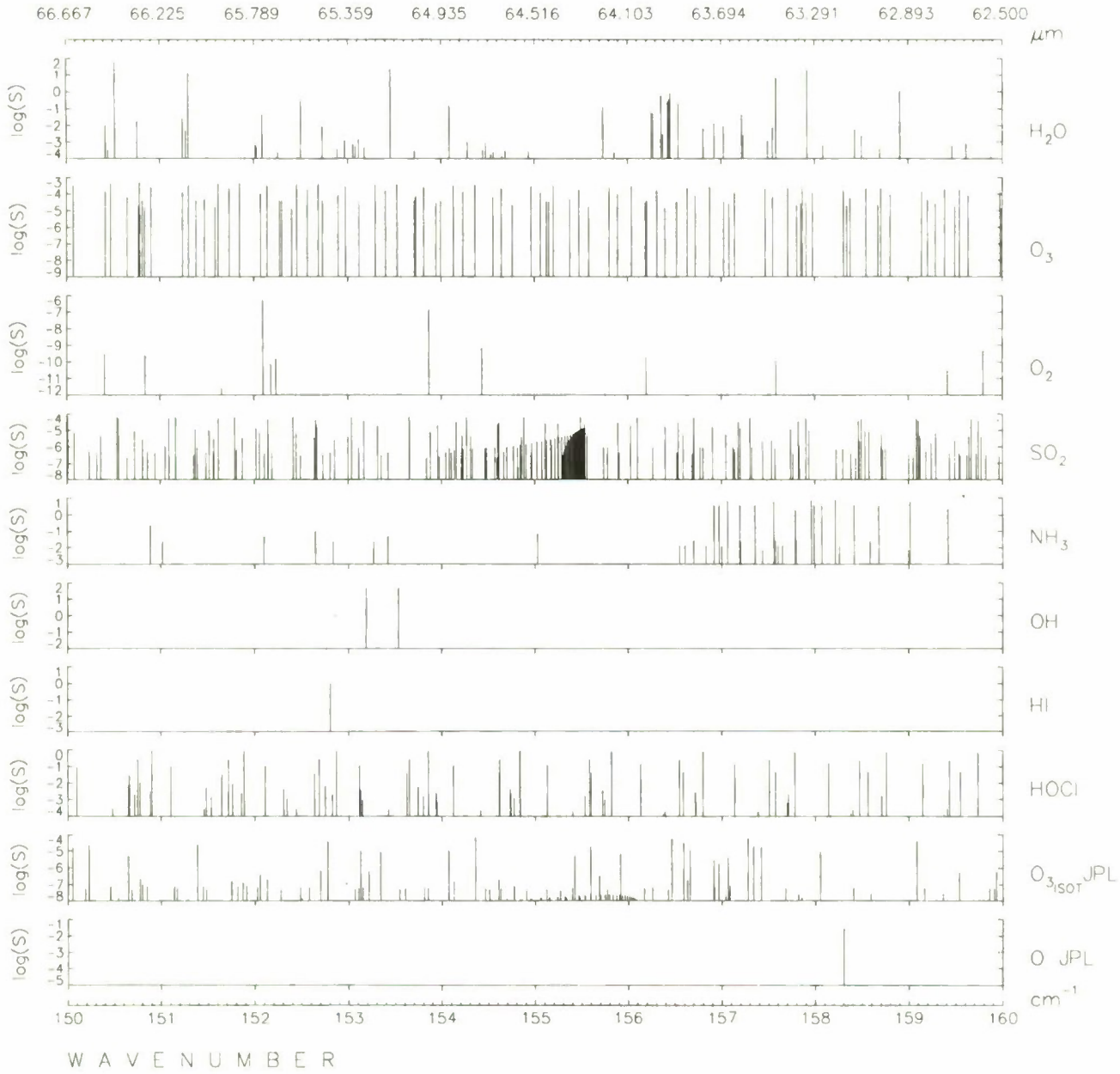

100.000
99.010
98.039
97.087
96.154
95.238
94.340
93.458
92.593
91.743
90.909
μm
log(S)
H2O
O3
CO
CH4
O2
SO2
NH3
OH
HCl
HI
HOCl
HCN
O3ISOTJPL
cm-1
100
101
102
103
104
105
106
107
108
109
110
WAVENUMBER

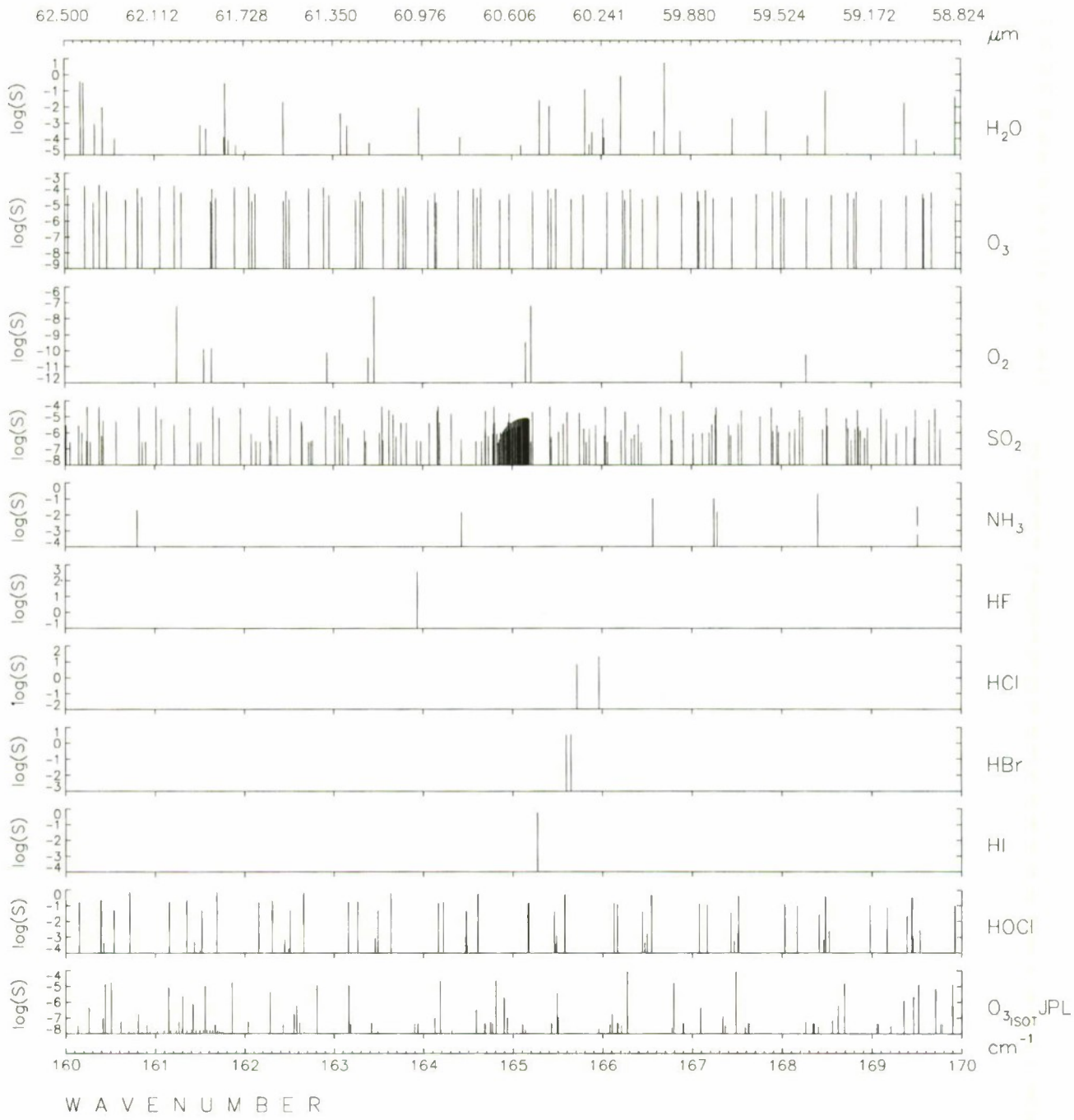

90.909
90.090
89.286
88.496
87.719
86.957
86.207
85.470
84.746
84.034
83.333
μm
log(S)
H2O
O3
CO
O2
SO2
NH3
OH
HBr
HI
HOCl
HCN
O3ISOTJPL
cm-1
110
111
112
113
114
115
116
117
118
119
120
WAVENUMBER

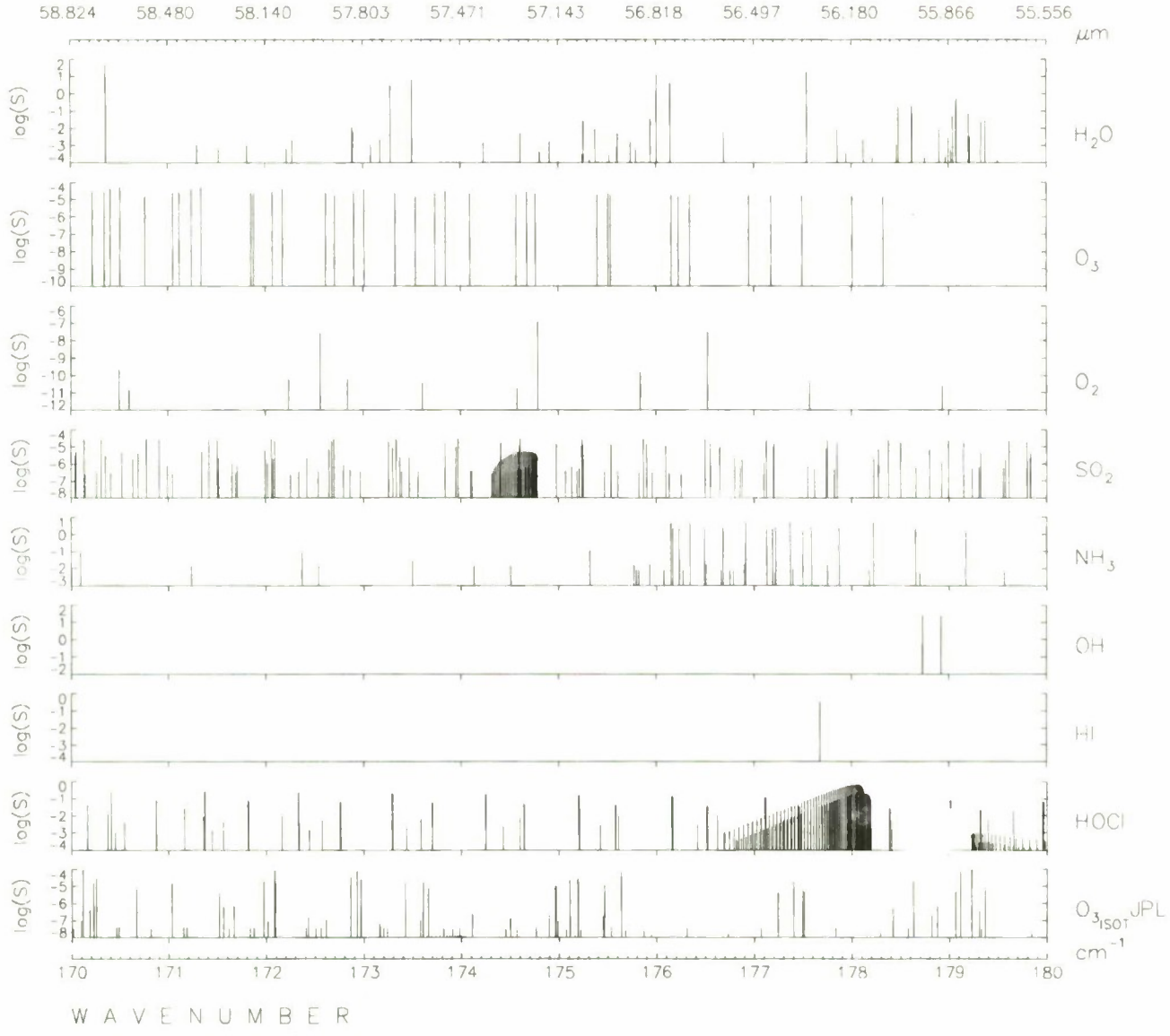

83.333
82.645
81.967
81.301
80.645
80.000
79.365
78.740
78.125
77.519
76.923
μm
log(S)
H2O
O3
CO
O2
SO2
NH3
OH
HF
HCl
HBr
HI
HOCl
HCN
O3ISOT JPL
cm-1
120
121
122
123
124
125
126
127
128
129
130
WAVENUMBER

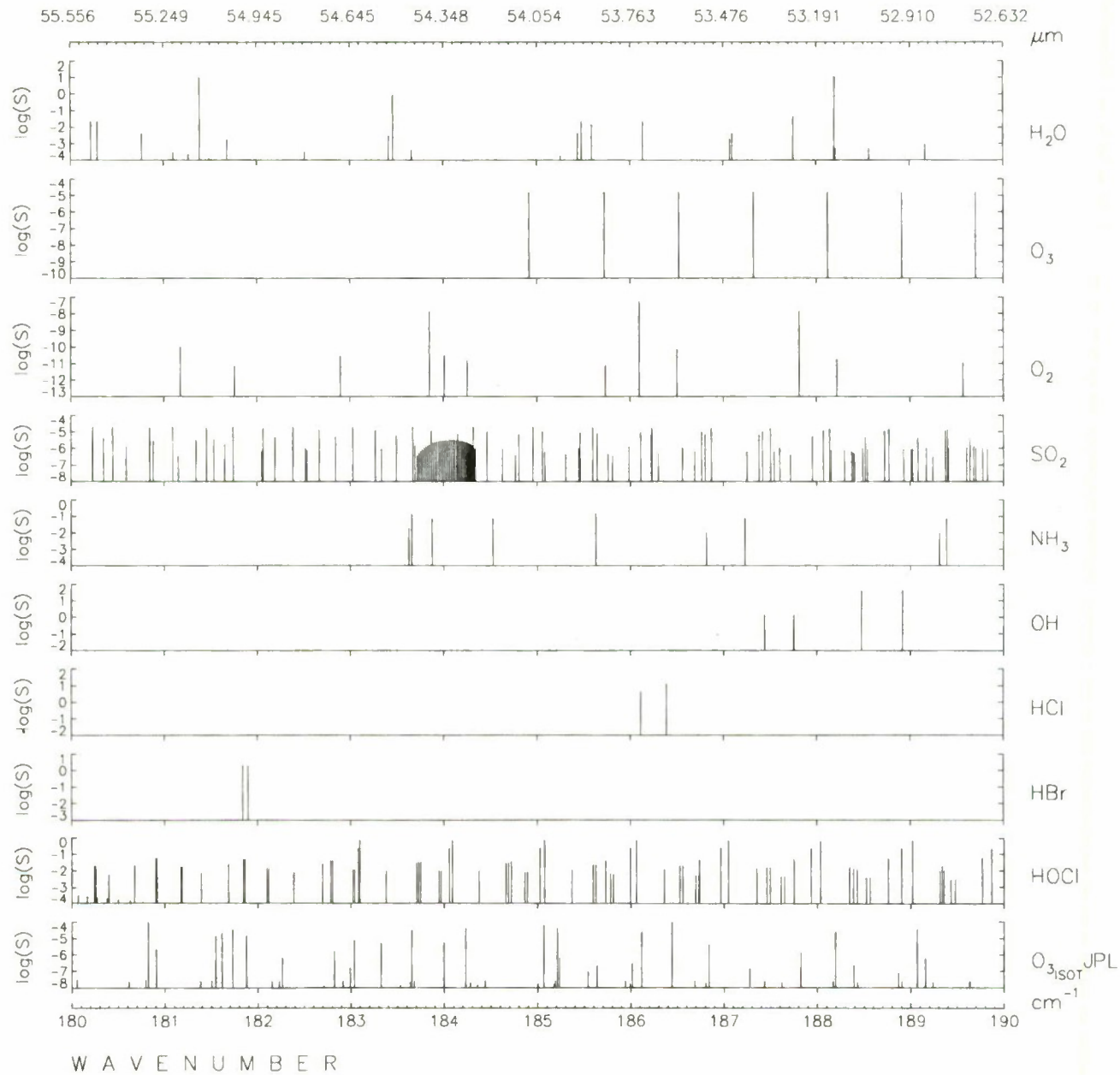

76.923
76.336
75.758
75.188
74.627
74.074
73.529
72.993
72.464
71.942
71.429
μm
log(S)
H2O
O3
CO
O2
SO2
NH3
HBr
HI
HOCl
HCN
O3isot JPL
cm-1
130
131
132
133
134
135
136
137
138
139
140
WAVENUMBER

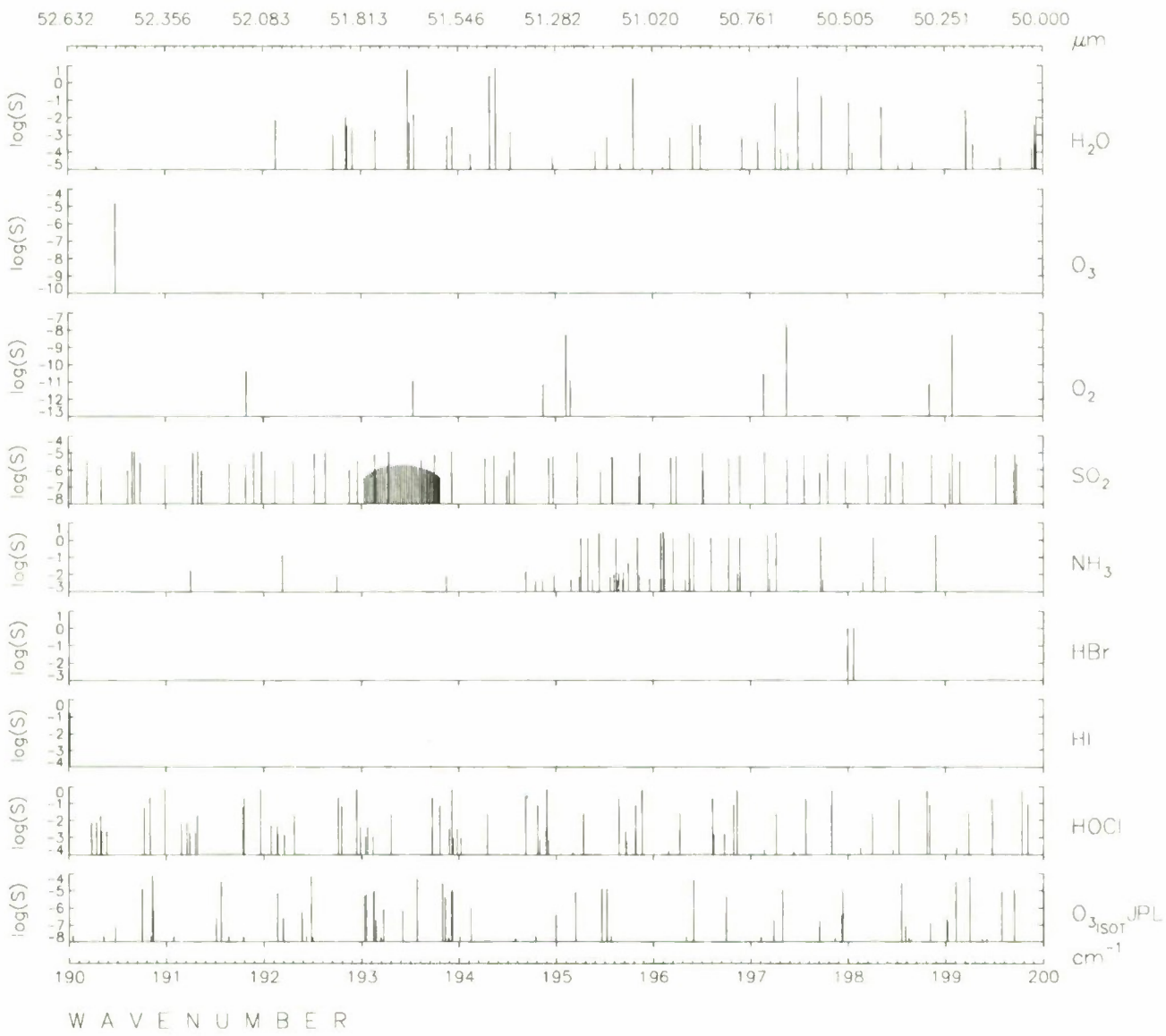

71.429
70.922
70.423
69.930
69.444
68.966
68.493
68.027
67.568
67.114
66.667
μm
log(S)
H2O
O3
O2
SO2
NH3
OH
HCl
HBr
HI
HOCl
O3ISOT JPL
cm-1
140
141
142
143
144
145
146
147
148
149
150
WAVENUMBER

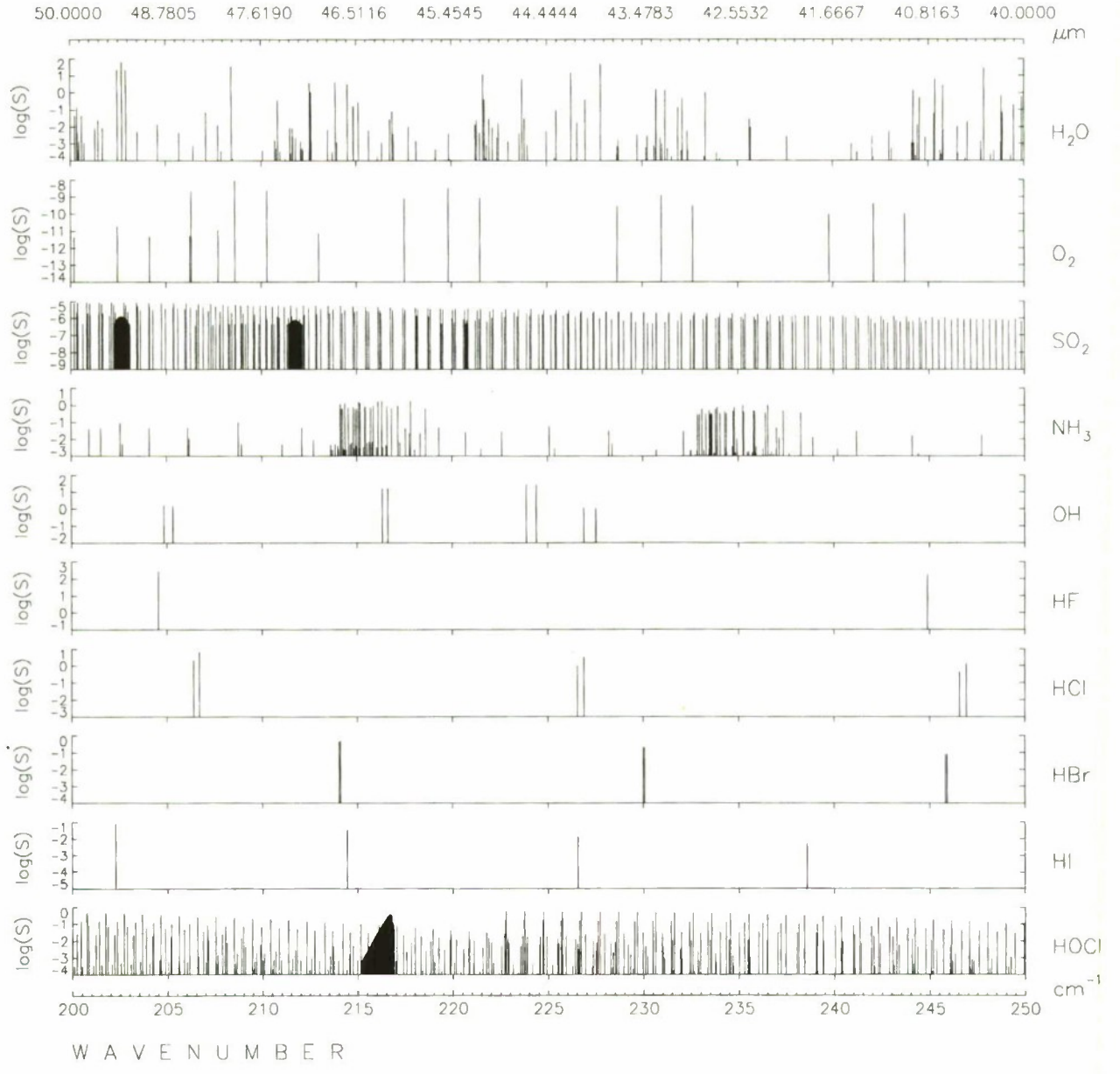

66.667
66.225
65.789
65.359
64.935
64.516
64.103
63.694
63.291
62.893
62.500
μm
log(S)
H2O
O3
O2
SO2
NH3
OH
HI
HOCl
O3ISOT JPL
O JPL
cm-1
150
151
152
153
154
155
156
157
158
159
160
WAVENUMBER

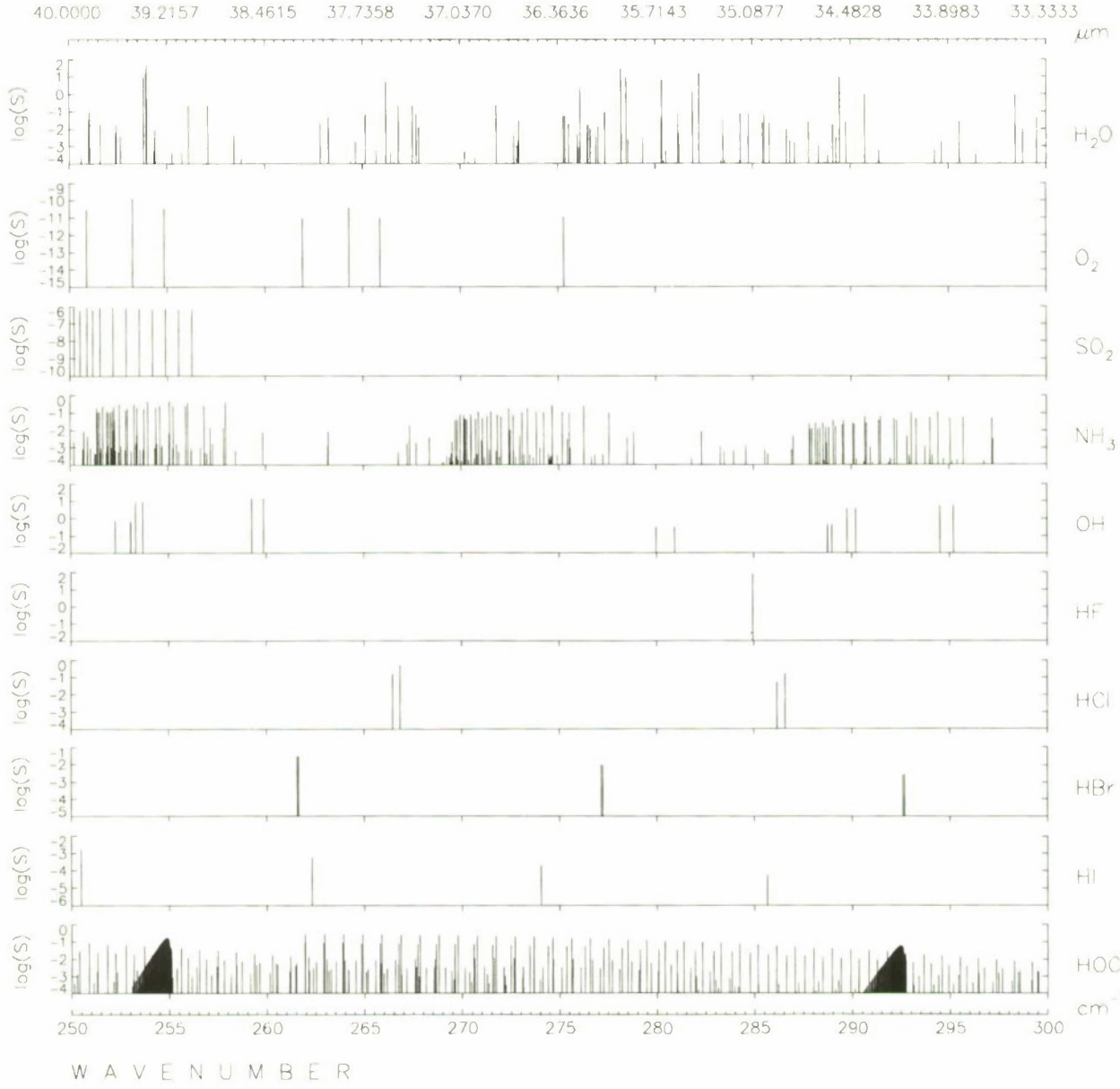

62.500
62.112
61.728
61.350
60.976
60.606
60.241
59.880
59.524
59.172
58.824
μm
log(S)
H2O
O3
O2
SO2
NH3
HF
HCl
HBr
HI
HOCl
O3ISOT JPL
cm-1
160
161
162
163
164
165
166
167
168
169
170
WAVENUMBER

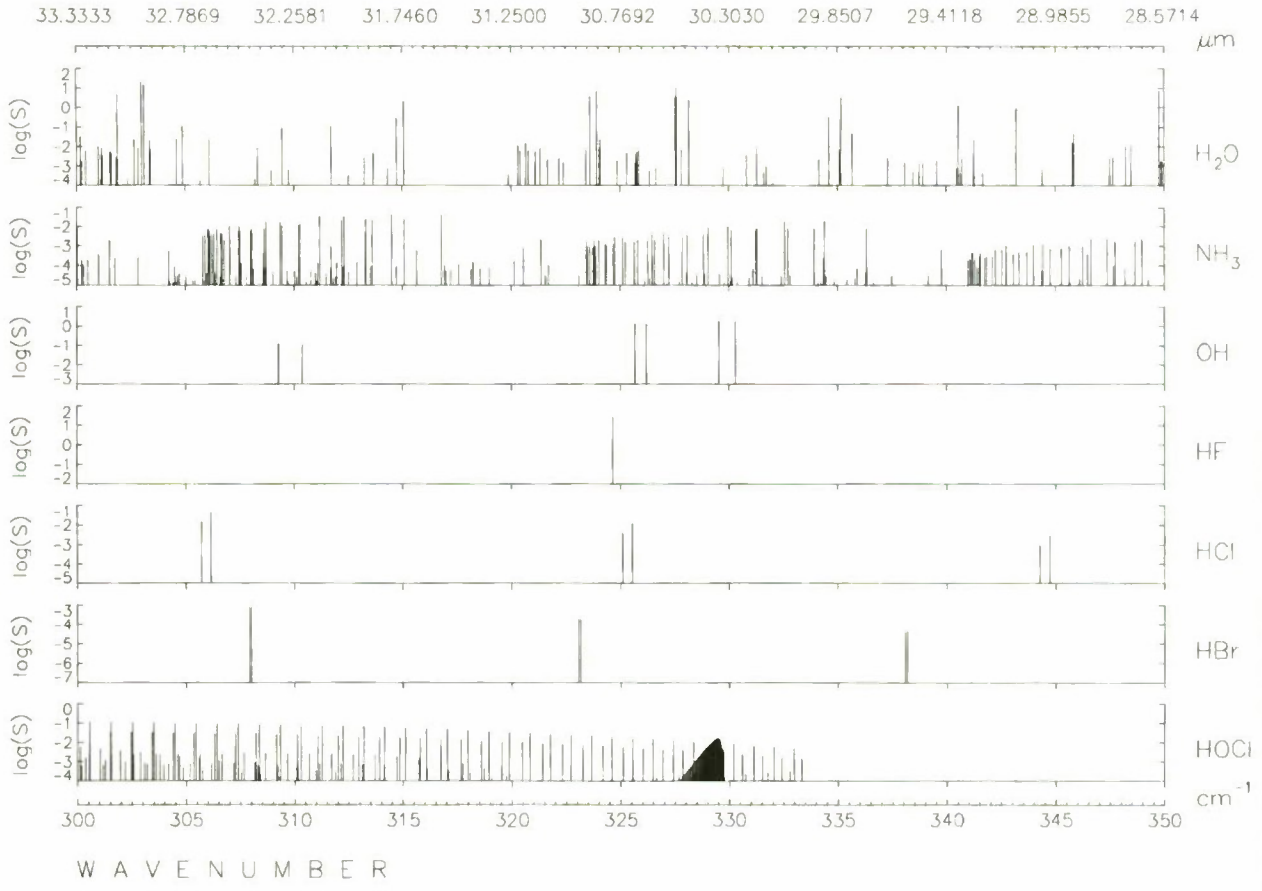

58.824
58.480
58.140
57.803
57.471
57.143
56.818
56.497
56.180
55.866
55.556
μm
log(S)
H2O
O3
O2
SO2
NH3
OH
HI
HOCl
O3ISOTJPL
cm-1
170
171
172
173
174
175
176
177
178
179
180
WAVENUMBER

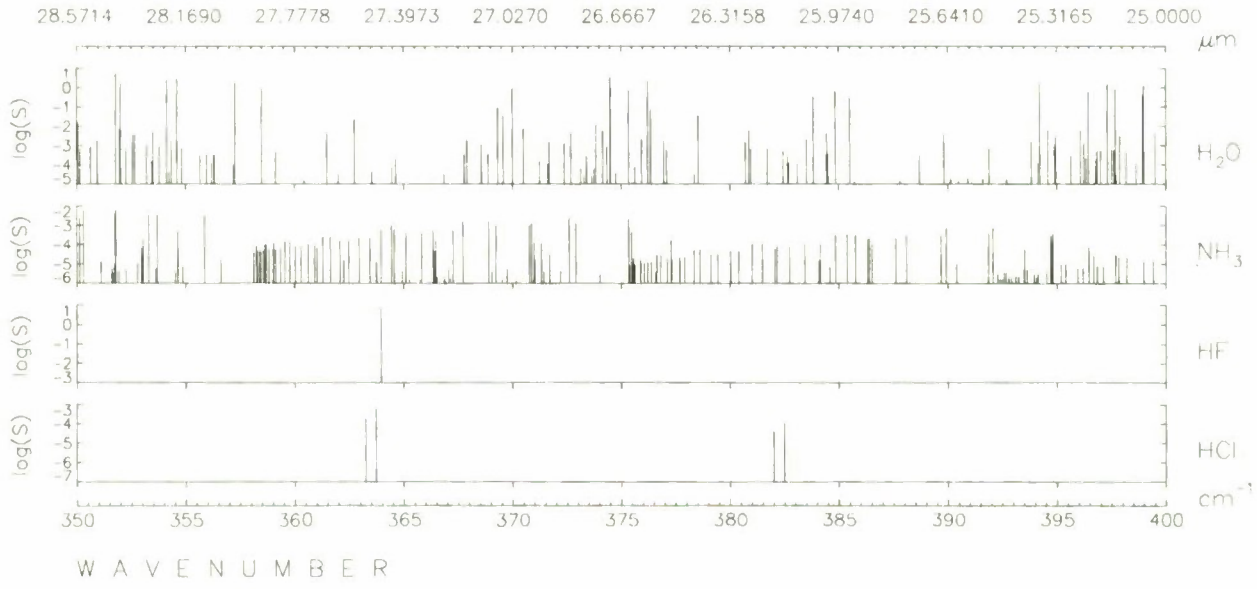

55.556
55.249
54.945
54.645
54.348
54.054
53.763
53.476
53.191
52.910
52.632
μm
log(S)
H2O
O3
O2
SO2
NH3
OH
HCl
HBr
HOCl
O3 ISOT JPL
cm-1
180
181
182
183
184
185
186
187
188
189
190
WAVENUMBER

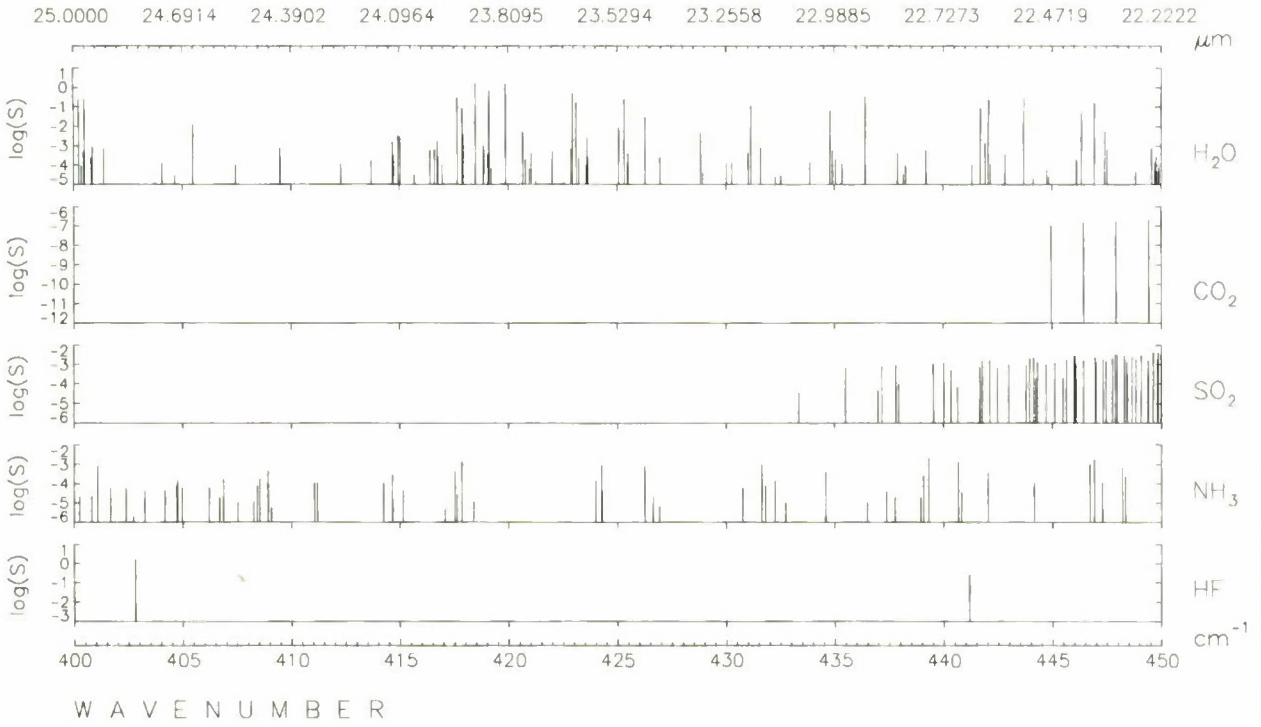

52.632
52.356
52.083
51.813
51.546
51.282
51.020
50.761
50.505
50.251
50.000
μm
log(S)
H2O
O3
O2
SO2
NH3
HBr
HI
HOCl
O3ISOT JPL
cm-1
190
191
192
193
194
195
196
197
198
199
200
WAVENUMBER

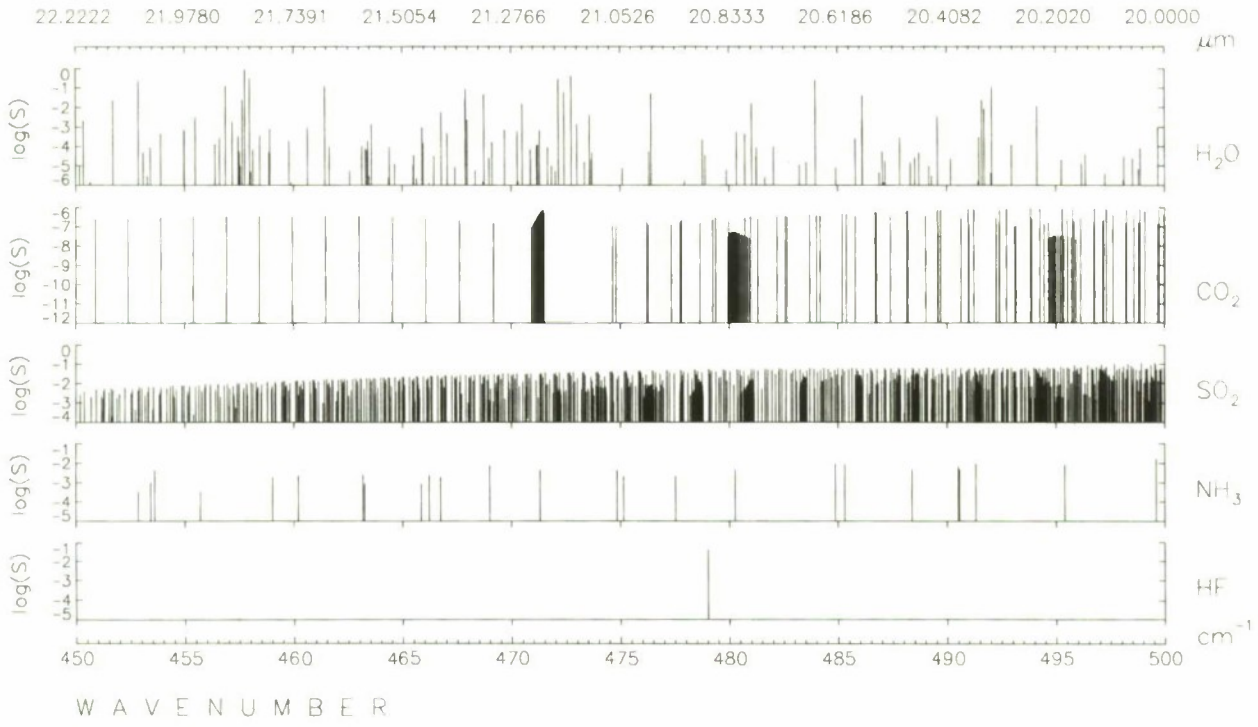

50.0000
48.7805
47.6190
46.5116
45.4545
44.4444
43.4783
42.5532
41.6667
40.8163
40.0000
μm
log(S)
H2O
O2
SO2
NH3
OH
HF
HCl
HBr
HI
HOCl
cm-1
200
205
210
215
220
225
230
235
240
245
250
WAVENUMBER

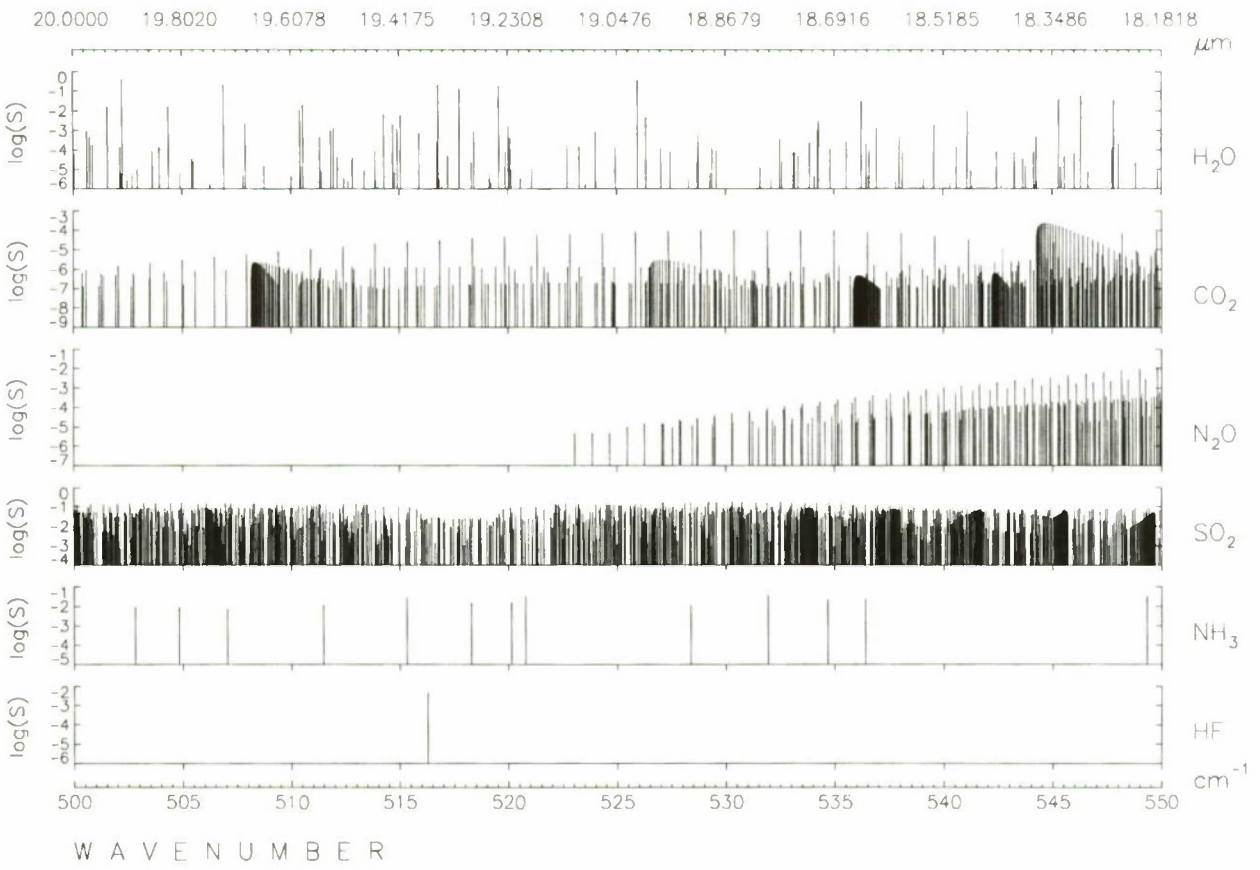

40.0000 39.2157 38.4615 37.7358 37.0370 36.3636 35.7143 35.0877 34.4828 33.8983 33.3333
μm
log(S)
H2O
O2
SO2
NH3
OH
HF
HCl
HBr
HI
HOCl
cm-1
250 255 260 265 270 275 280 285 290 295 300
WAVENUMBER

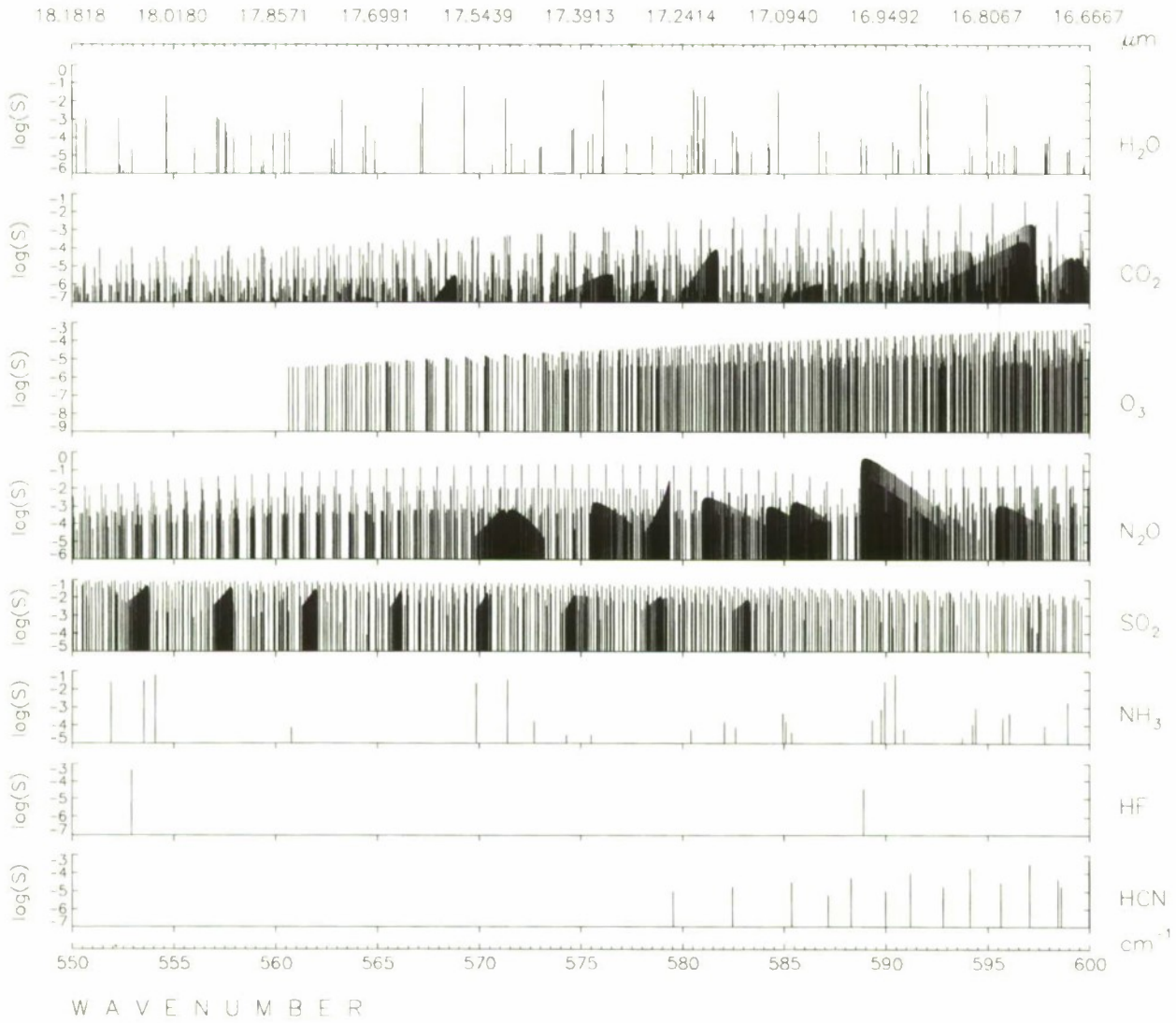

33.3333
32.7869
32.2581
31.7460
31.2500
30.7692
30.3030
29.8507
29.4118
28.9855
28.5714
μm
log(S)
H2O
NH3
OH
HF
HCl
HBr
HOCl
cm-1
300
305
310
315
320
325
330
335
340
345
350
WAVENUMBER

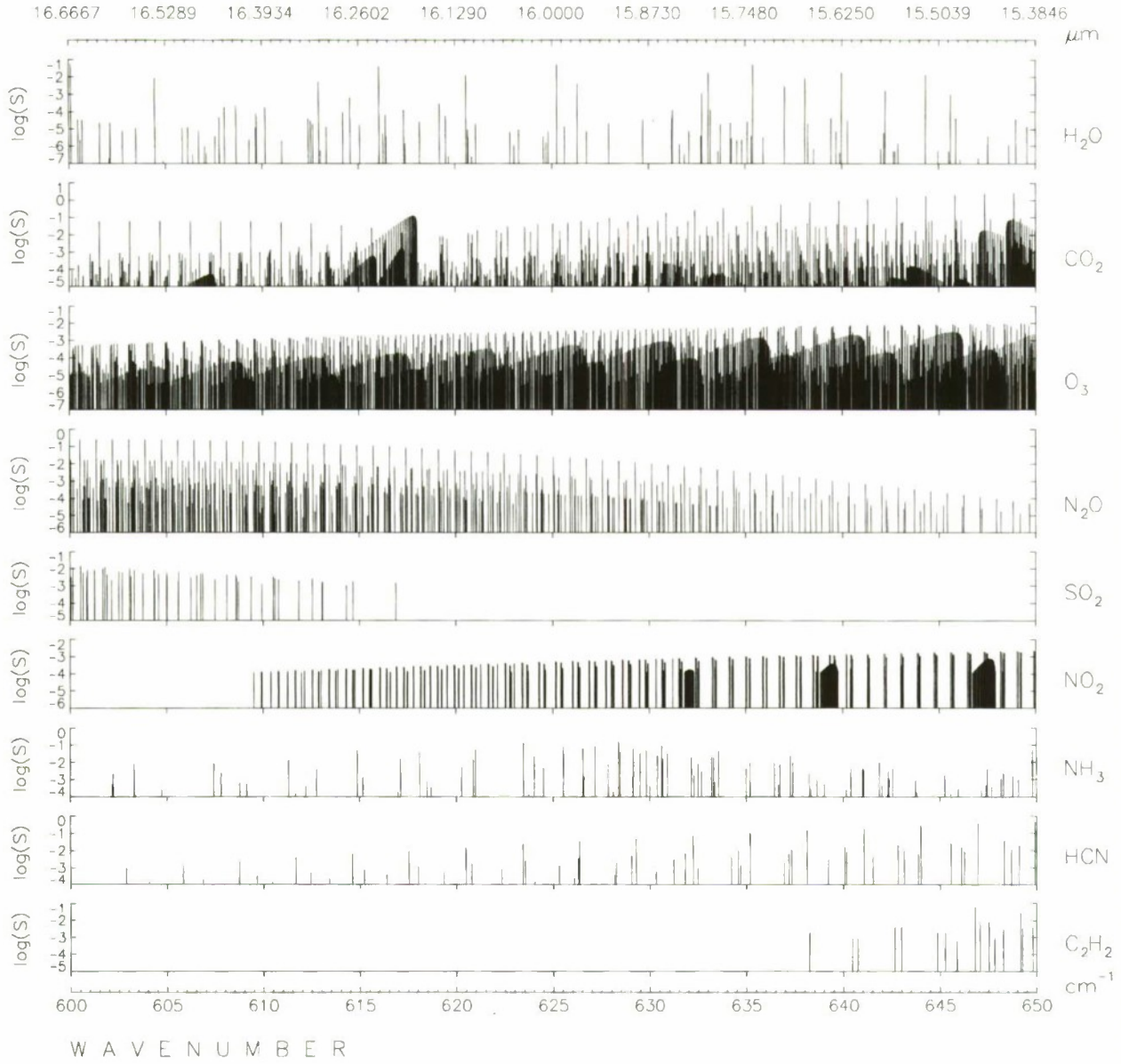

28.5714
28.1690
27.7778
27.3973
27.0270
26.6667
26.3158
25.9740
25.6410
25.3165
25.0000
μm
log(S)
H2O
NH3
HF
HCl
cm-1
350
355
360
365
370
375
380
385
390
395
400
WAVENUMBER

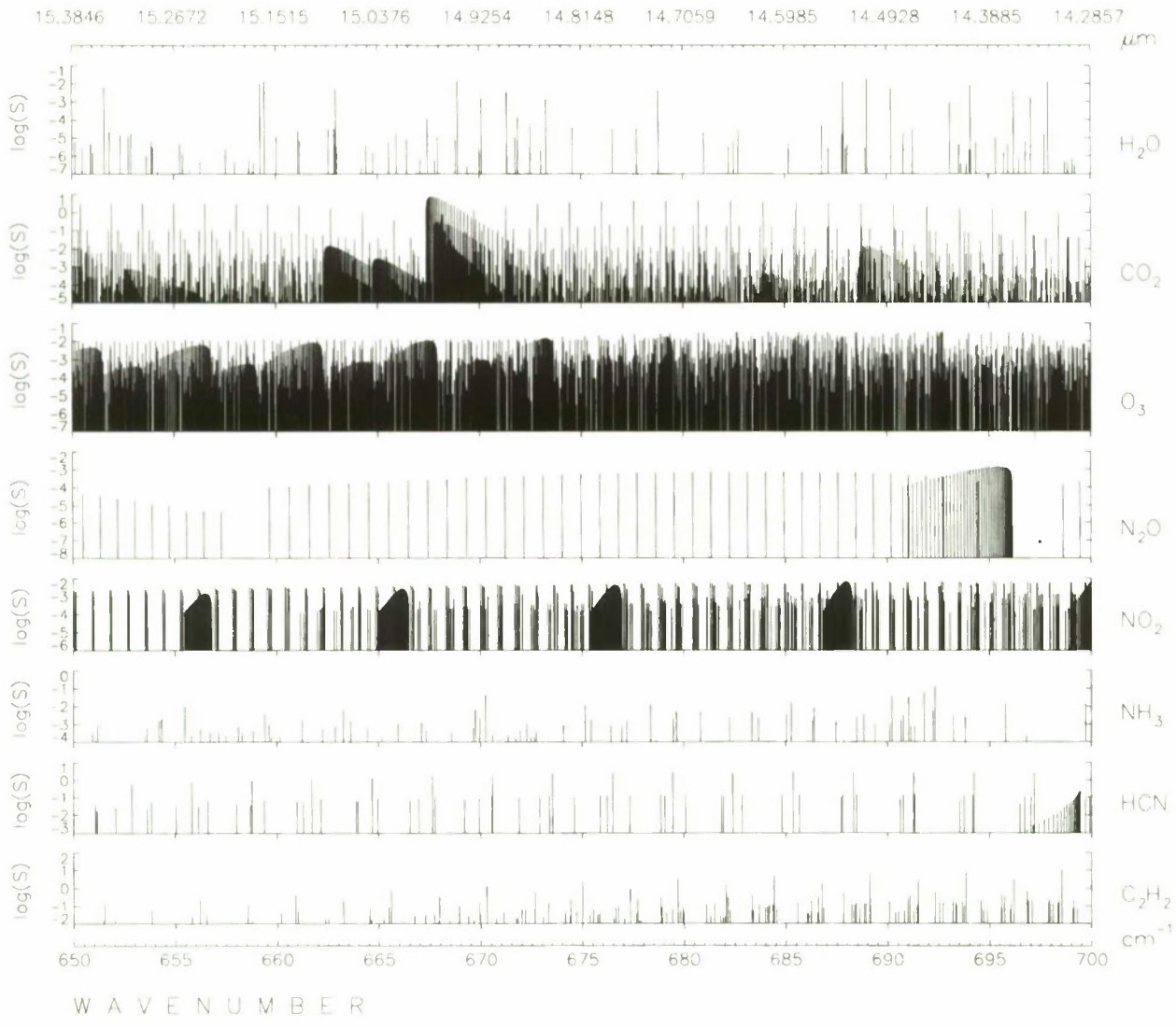

25.0000
24.6914
24.3902
24.0964
23.8095
23.5294
23.2558
22.9885
22.7273
22.4719
22.2222
μm
log(S)
H2O
CO2
SO2
NH3
HF
cm-1
400
405
410
415
420
425
430
435
440
445
450
WAVENUMBER

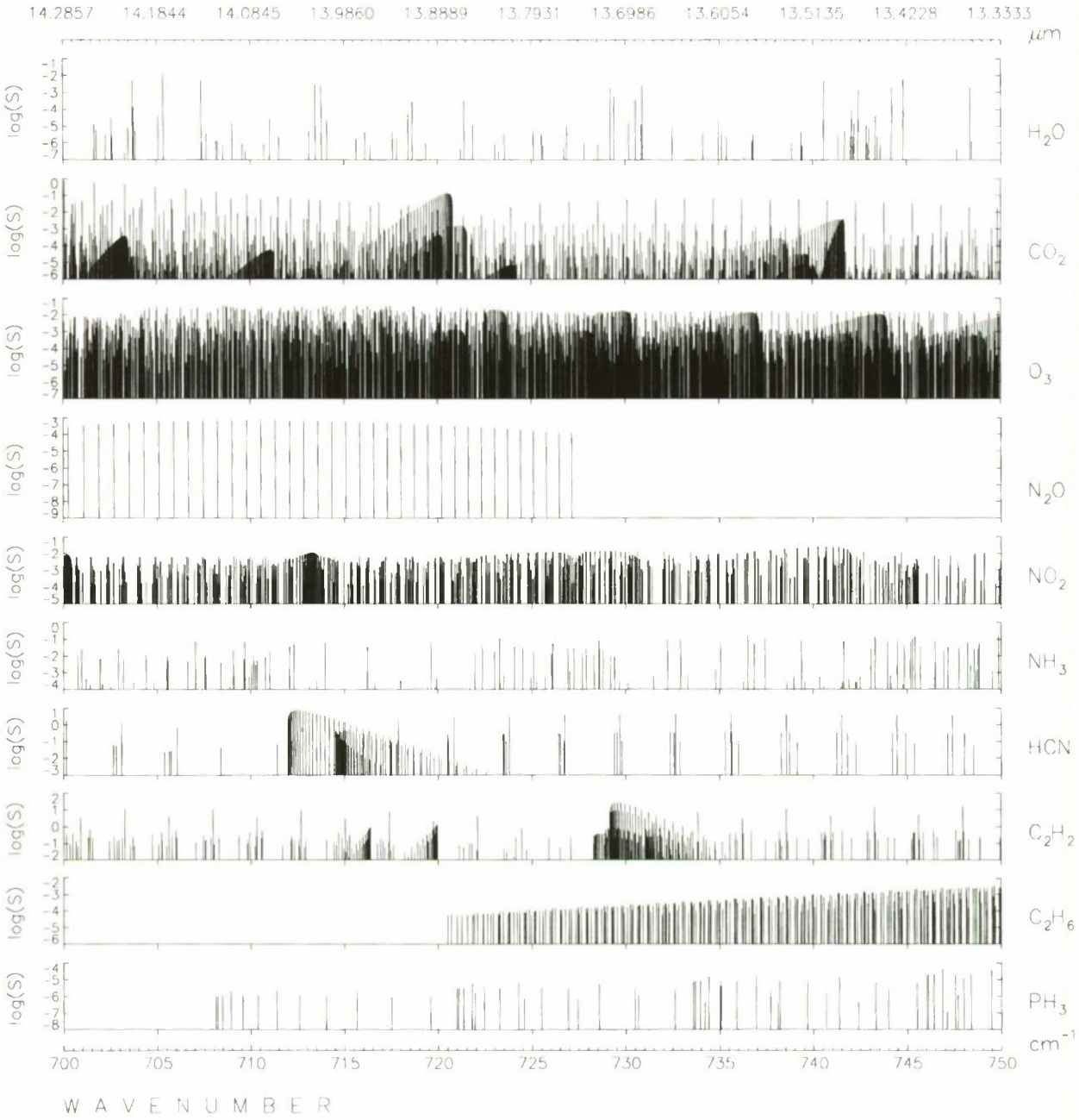

22.2222
21.9780
21.7391
21.5054
21.2766
21.0526
20.8333
20.6186
20.4082
20.2020
20.0000
μm
log(S)
H2O
CO2
SO2
NH3
HF
cm-1
450
455
460
465
470
475
480
485
490
495
500
WAVENUMBER

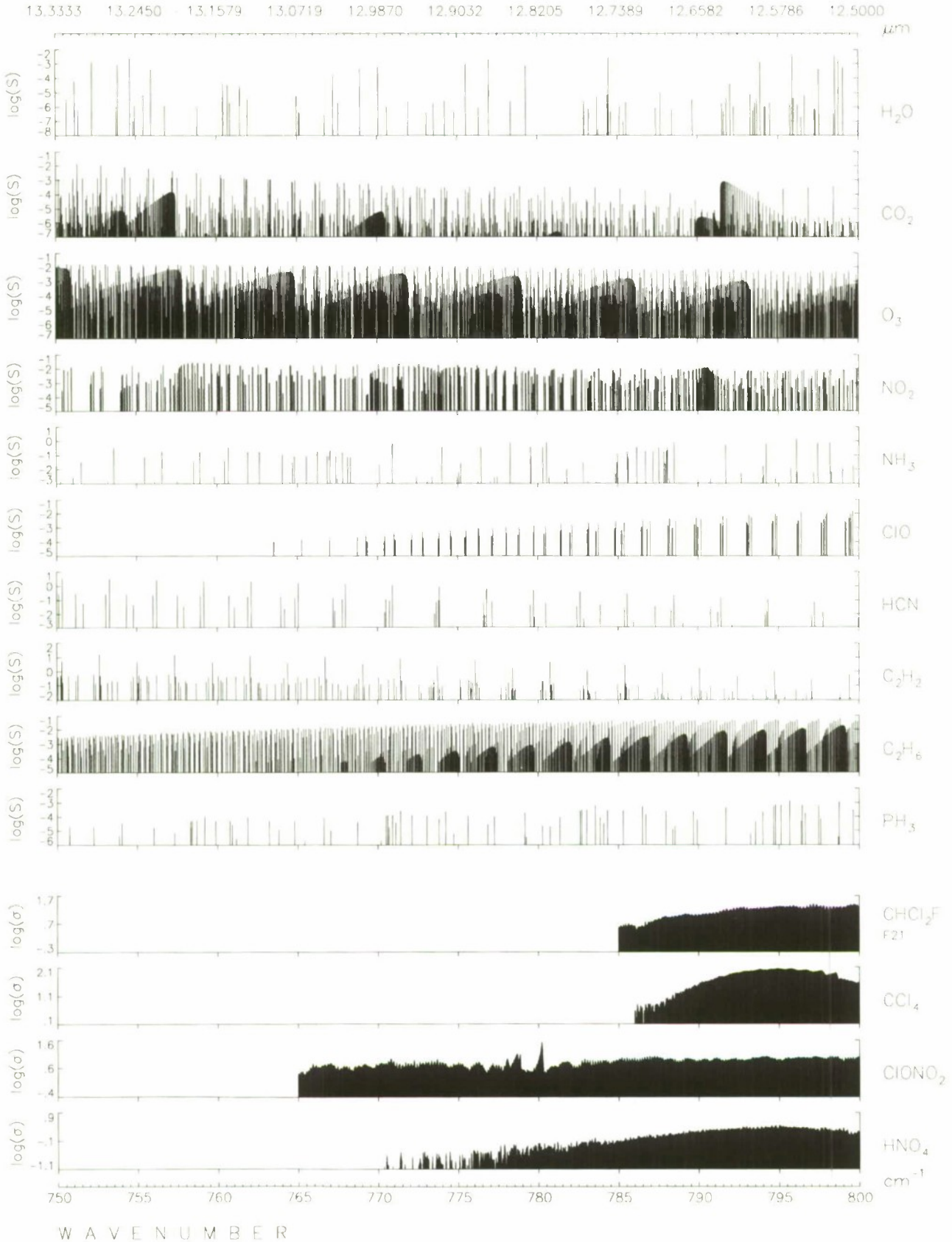

20.0000
19.8020
19.6078
19.4175
19.2308
19.0476
18.8679
18.6916
18.5185
18.3486
18.1818
μm
log(S)
H2O
CO2
N2O
SO2
NH3
HF
cm-1
500
505
510
515
520
525
530
535
540
545
550
WAVENUMBER

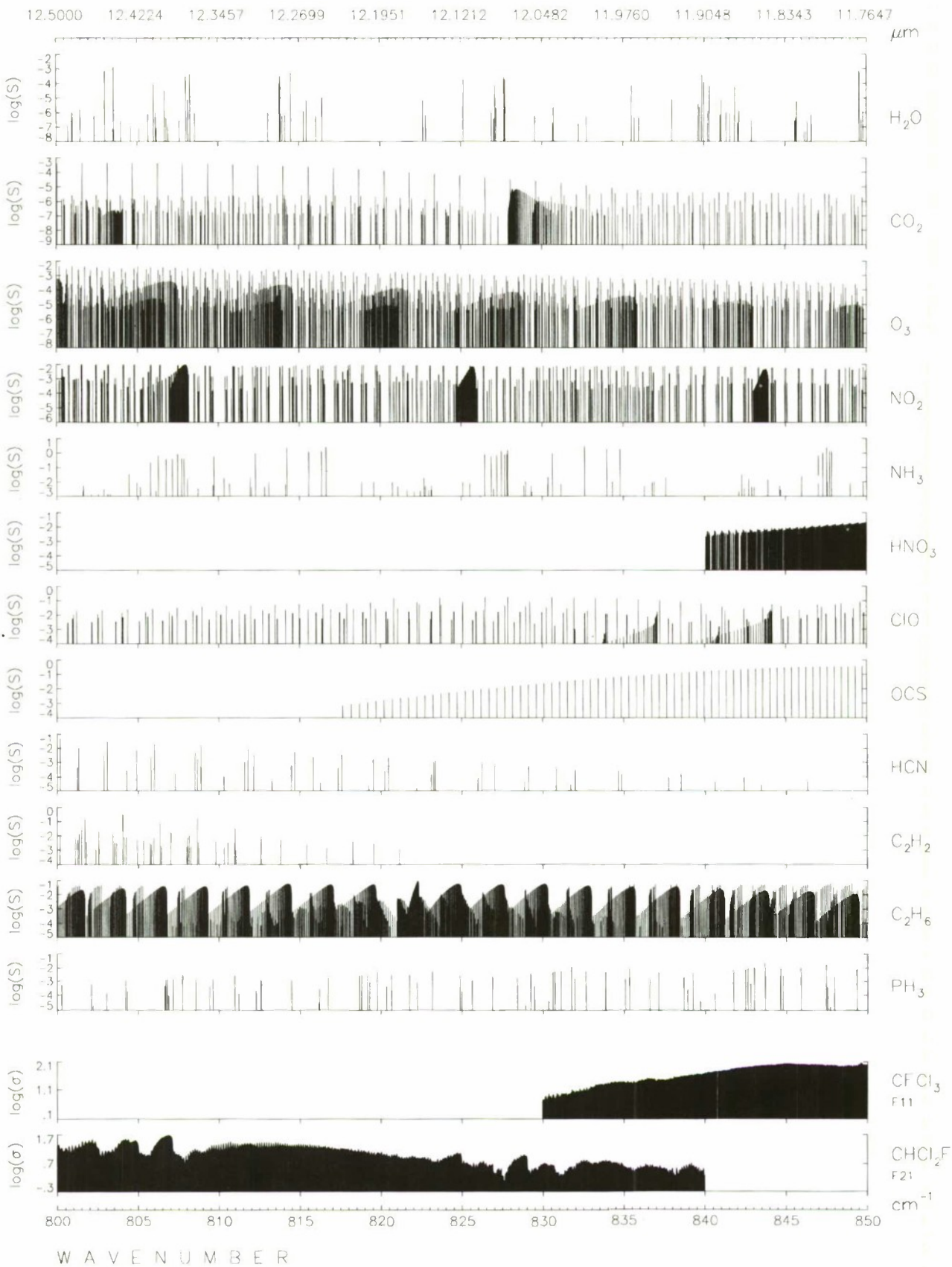

18.1818
18.0180
17.8571
17.6991
17.5439
17.3913
17.2414
17.0940
16.9492
16.8067
16.6667
μm
log(S)
H2O
CO2
O3
N2O
SO2
NH3
HF
HCN
cm-1
550
555
560
565
570
575
580
585
590
595
600
WAVENUMBER

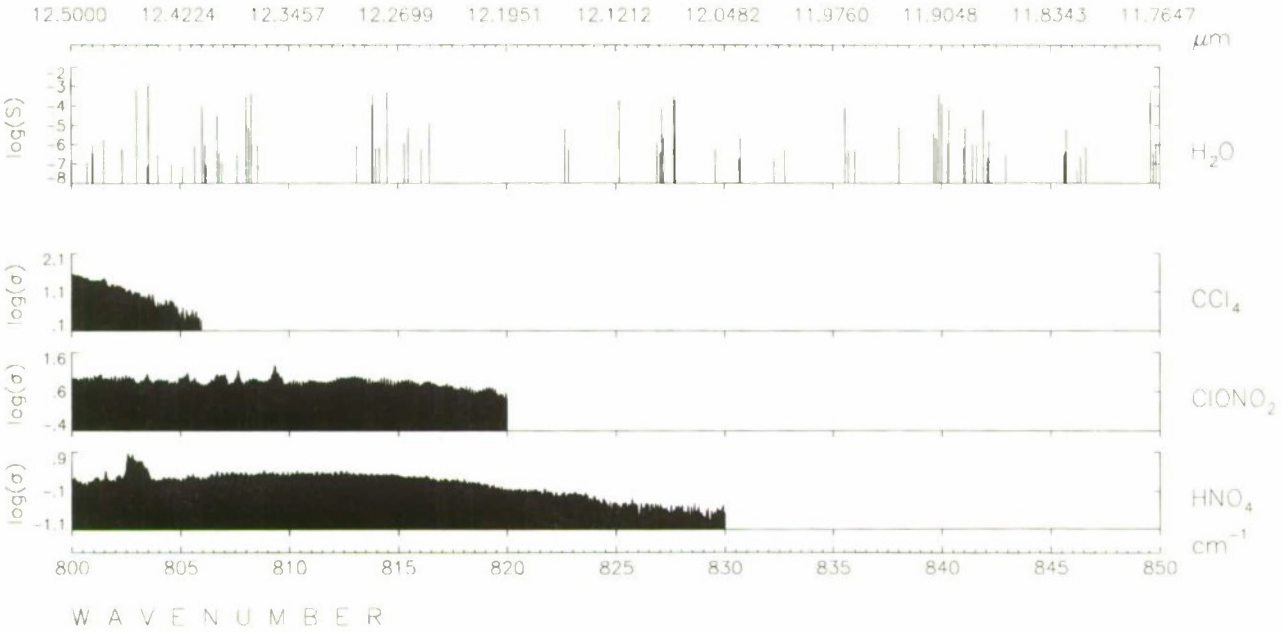

16.6667
16.5289
16.3934
16.2602
16.1290
16.0000
15.8730
15.7480
15.6250
15.5039
15.3846
μm
log(S)
H2O
CO2
O3
N2O
SO2
NO2
NH3
HCN
C2H2
cm-1
600
605
610
615
620
625
630
635
640
645
650
WAVENUMBER

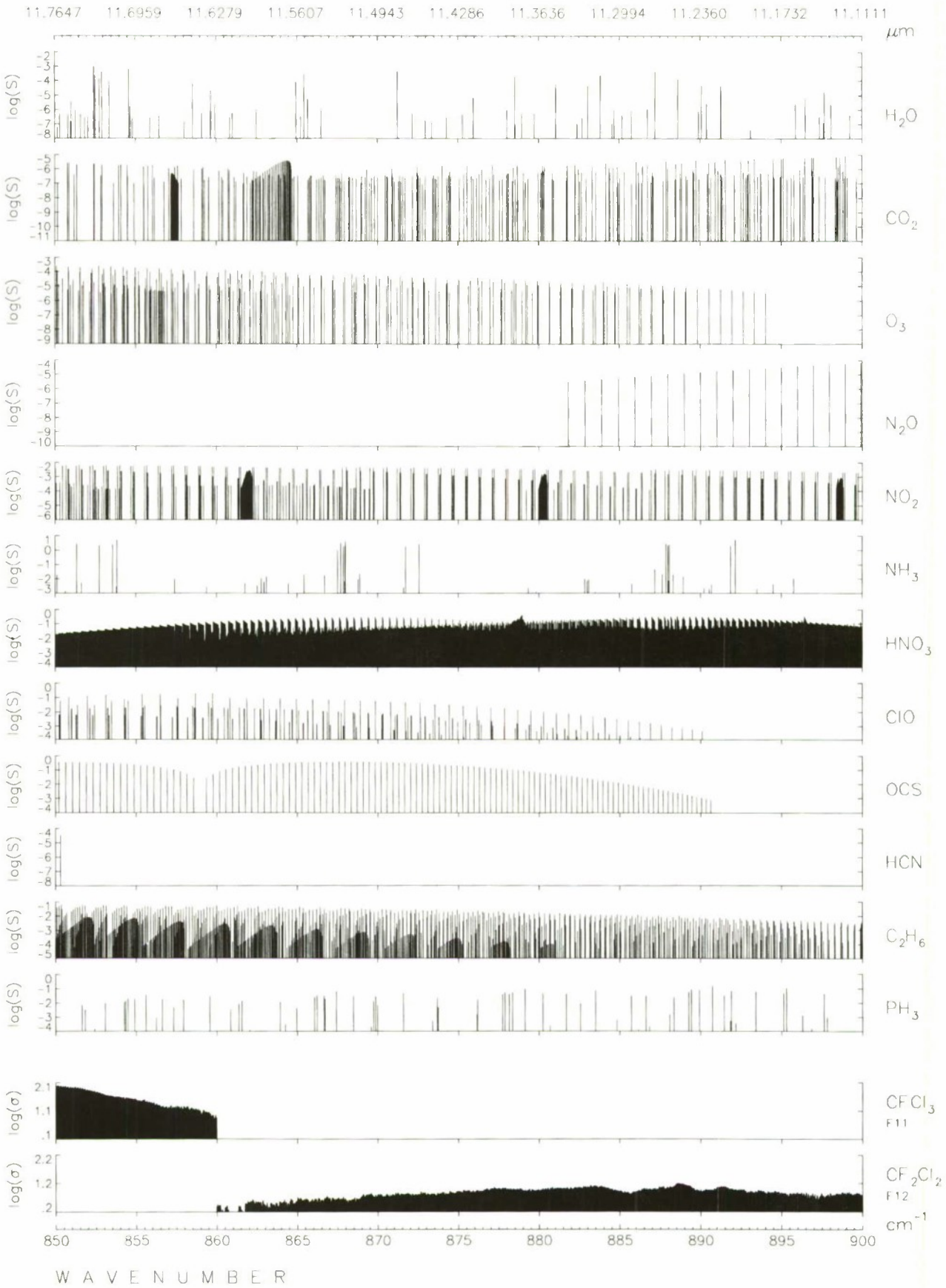

15.3846
15.2672
15.1515
15.0376
14.9254
14.8148
14.7059
14.5985
14.4928
14.3885
14.2857
μm
log(S)
H2O
CO2
O3
N2O
NO2
NH3
HCN
C2H2
650
655
660
665
670
675
680
685
690
695
700
cm-1
WAVENUMBER

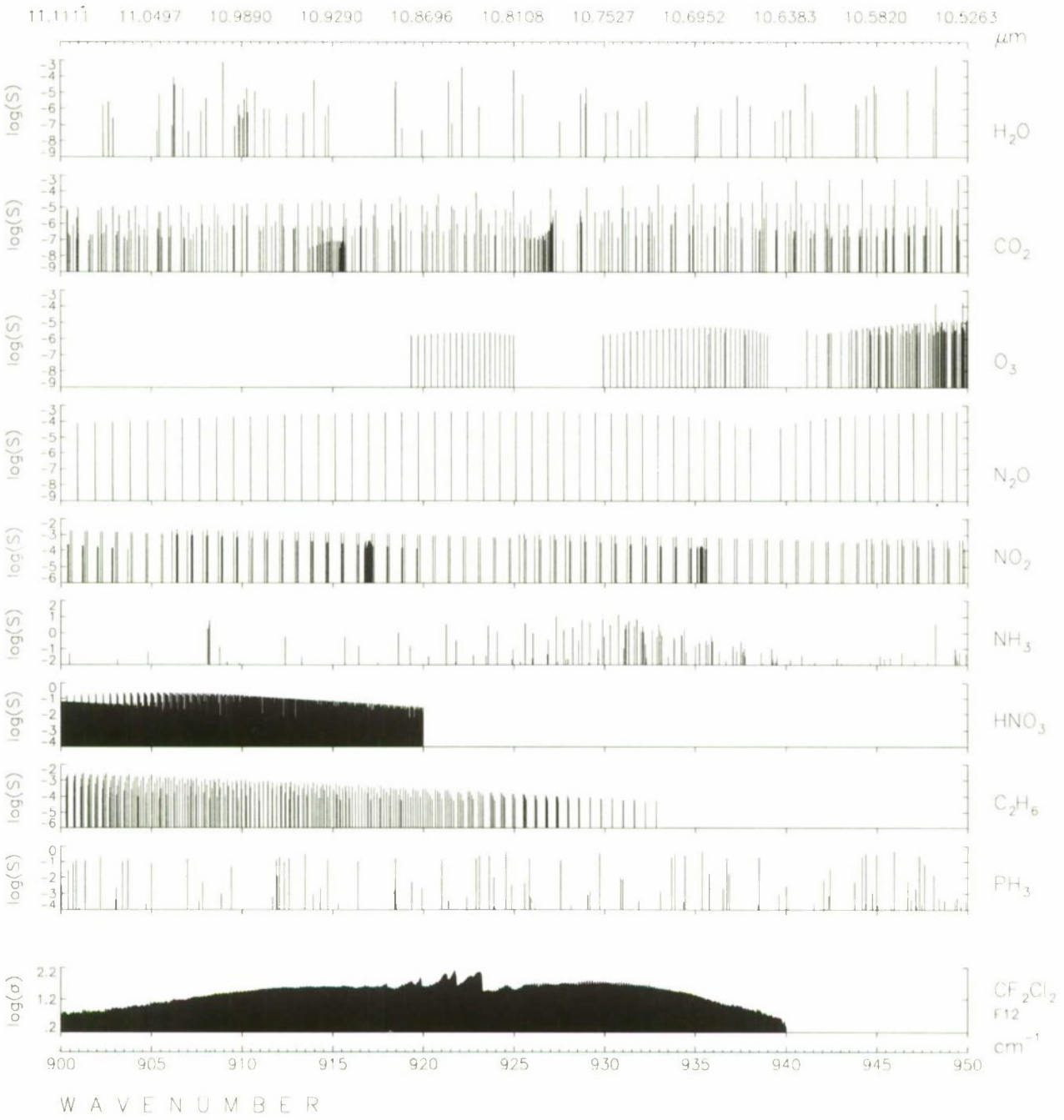

14.2857 14.1844 14.0845 13.9860 13.8889 13.7931 13.6986 13.6054 13.5135 13.4228 13.3333
μm
log(S)
H2O
CO2
O3
N2O
NO2
NH3
HCN
C2H2
C2H6
PH3
cm-1
700 705 710 715 720 725 730 735 740 745 750
WAVENUMBER


13.3333 13.2450 13.1579 13.0719 12.9870 12.9032 12.8205 12.7389 12.6582 12.5786 12.5000
μm
log(S)
H2O
CO2
O3
NO2
NH3
ClO
HCN
C2H2
C2H6
PH3
log(σ)
CHCl2F
F21
CCl4
ClONO2
HNO4
cm-1
750 755 760 765 770 775 780 785 790 795 800
WAVENUMBER


12.5000
12.4224
12.3457
12.2699
12.1951
12.1212
12.0482
11.9760
11.9048
11.8343
11.7647
μm
log(S)
H2O
CO2
O3
NO2
NH3
HNO3
ClO
OCS
HCN
C2H2
C2H6
PH3
log(σ)
CFCl3
F11
CHCl2F
F21
cm-1
800
805
810
815
820
825
830
835
840
845
850
WAVENUMBER


12.5000
12.4224
12.3457
12.2699
12.1951
12.1212
12.0482
11.9760
11.9048
11.8343
11.7647
μm
log(S)
-2
-3
-4
-5
-6
-7
-8
H2O
log(σ)
2.1
1.1
.1
CCl4
1.6
.6
-.4
ClONO2
.9
-.1
-1.1
HNO4
cm-1
800
805
810
815
820
825
830
835
840
845
850
WAVENUMBER


11.7647
11.6959
11.6279
11.5607
11.4943
11.4286
11.3636
11.2994
11.2360
11.1732
11.1111
μm
log(S)
H2O
CO2
O3
N2O
NO2
NH3
HNO3
ClO
OCS
HCN
C2H6
PH3
log(σ)
CFCl3
F11
CF2Cl2
F12
cm-1
850
855
860
865
870
875
880
885
890
895
900
WAVENUMBER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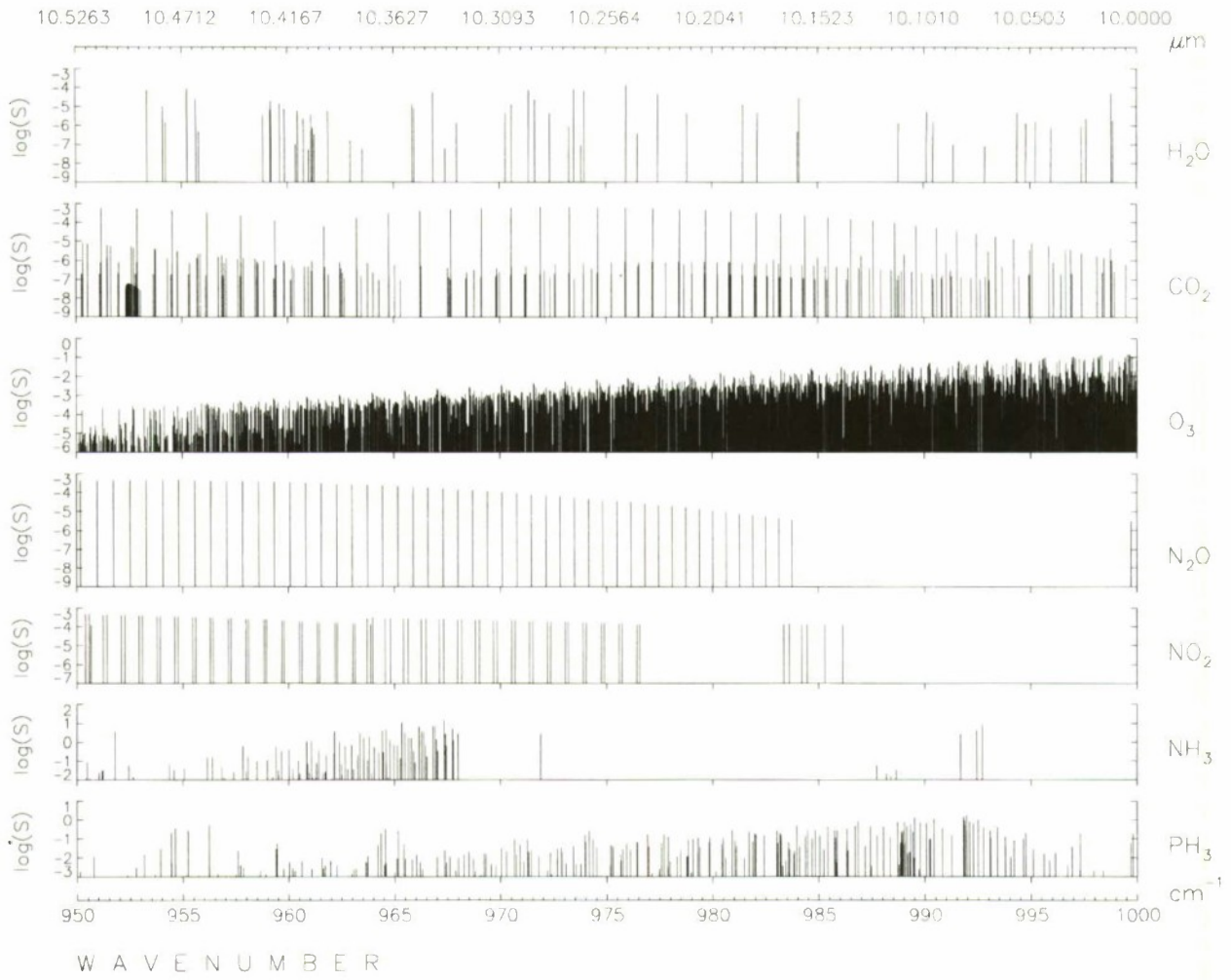
11.0497
10.9890
10.9290
10.8696
10.8108
10.7527
10.6952
10.6383
10.5820
10.5263
μm
log(S)
H2O
CO2
O3
N2O
NO2
NH3
HNO3
C2H6
PH3
log(σ)
CF2Cl2
F12
cm-1
900
905
910
915
920
925
930
935
940
945
950
WAVENUMBER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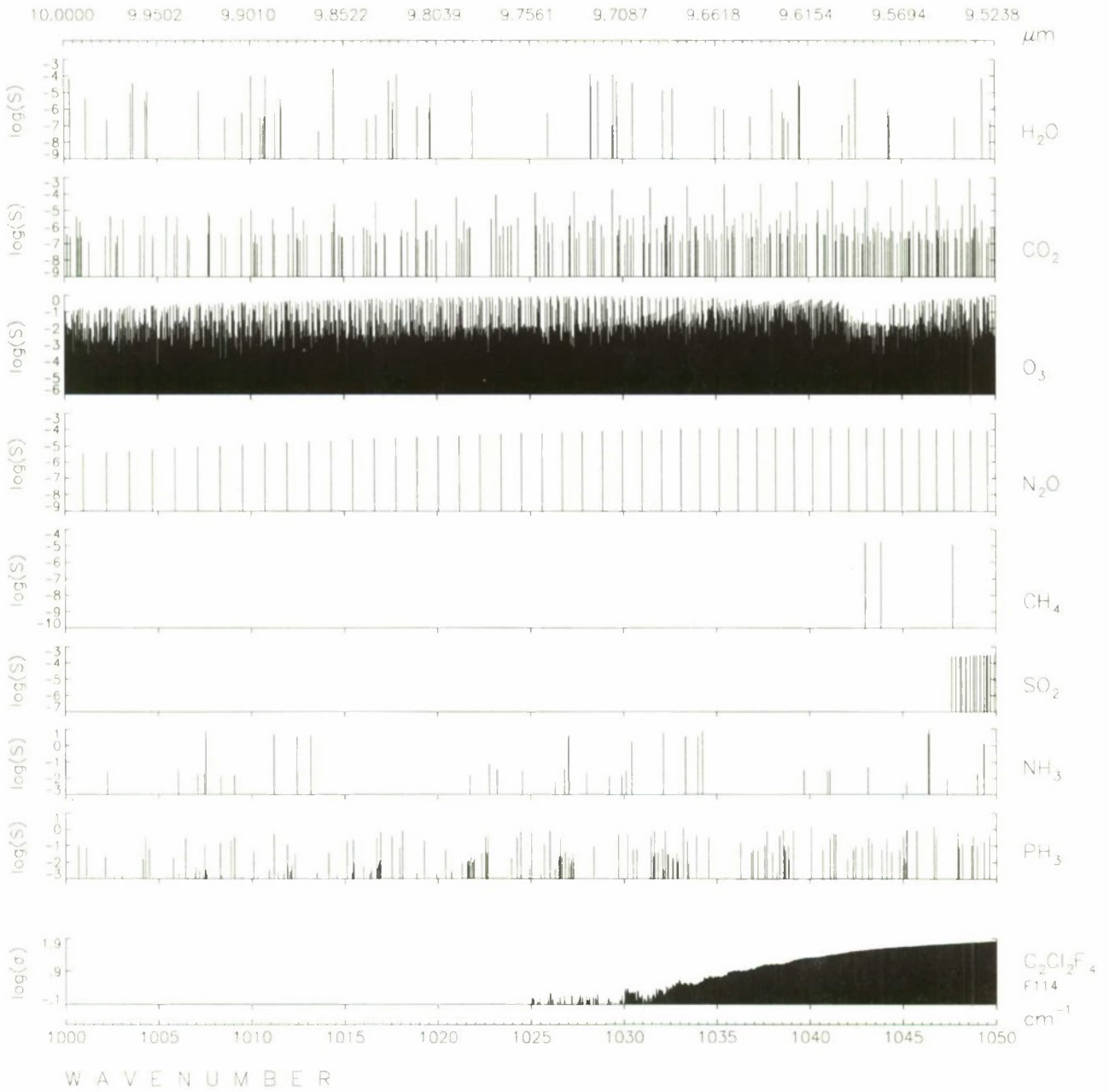
10.4712
10.4167
10.3627
10.3093
10.2564
10.2041
10.1523
10.1010
10.0503
10.0000
μm
log(S)
H2O
CO2
O3
N2O
NO2
NH3
PH3
cm-1
950
955
960
965
970
975
980
985
990
995
1000
WAVENUMBER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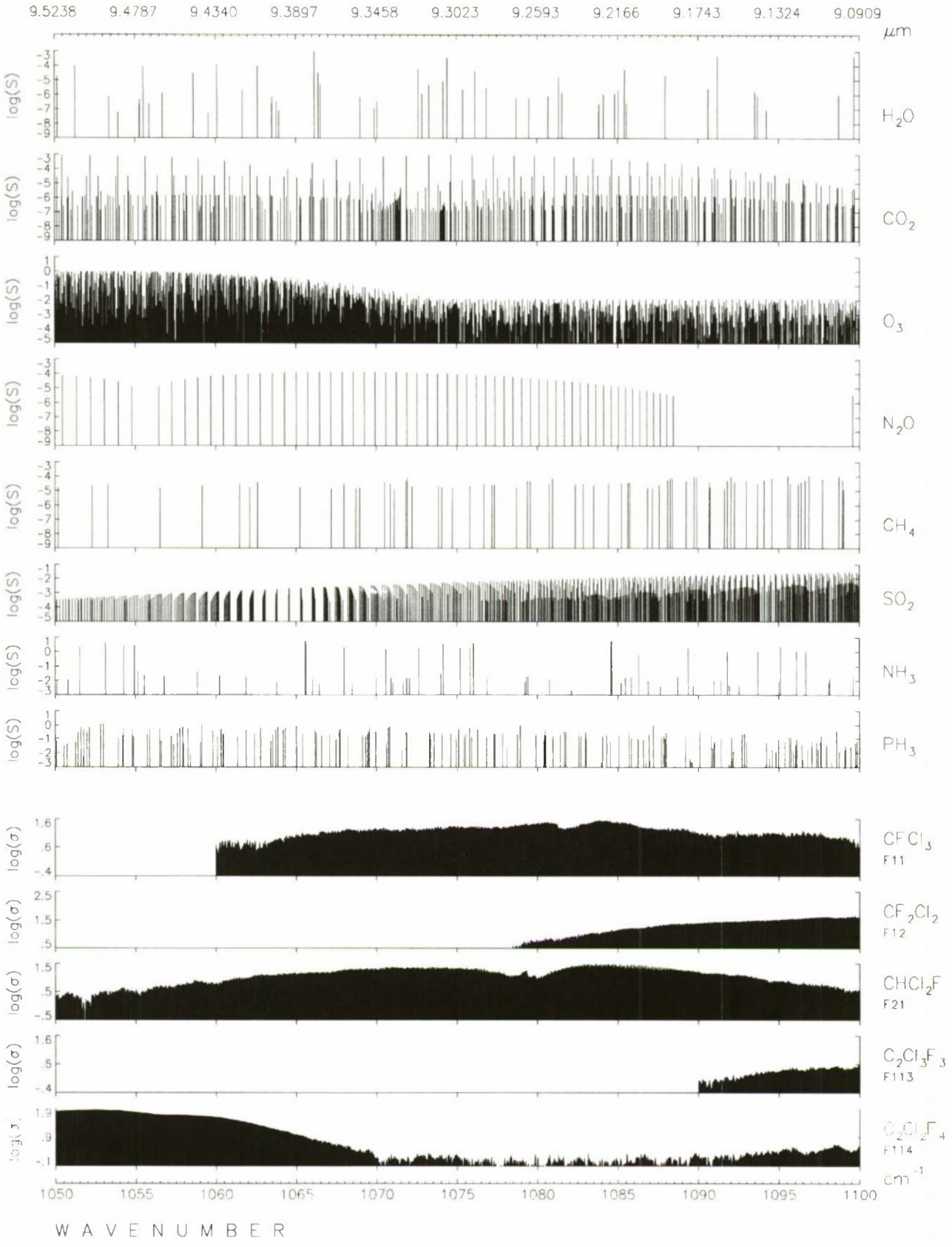
9.9502
9.9010
9.8522
9.8039
9.7561
9.7087
9.6618
9.6154
9.5694
9.5238
μm
log(S)
H2O
CO2
O3
N2O
CH4
SO2
NH3
PH3
log(σ)
C2Cl2F4
F114
cm-1
1000
1005
1010
1015
1020
1025
1030
1035
1040
1045
1050
WAVENUMBER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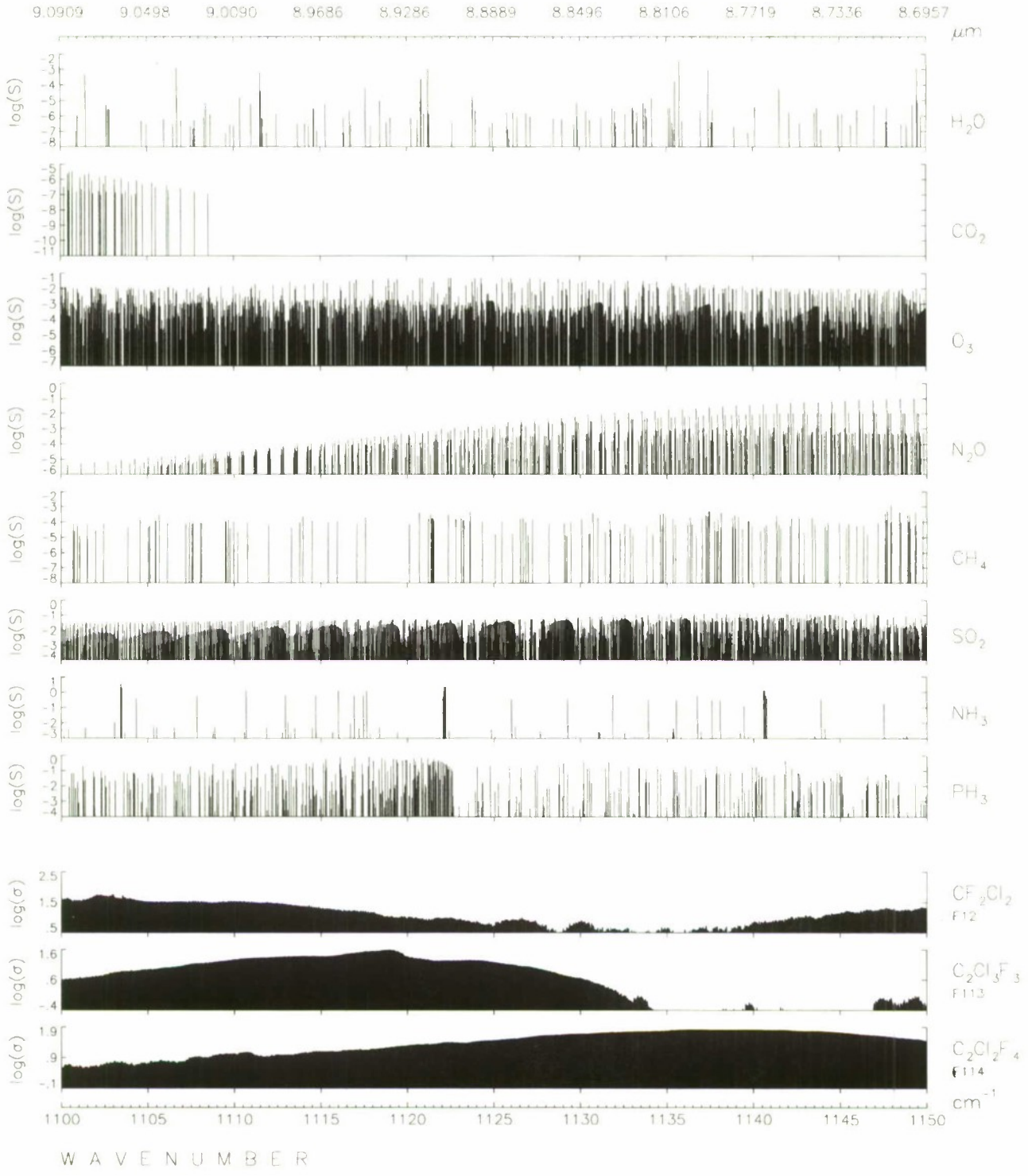
9.4787
9.4340
9.3897
9.3458
9.3023
9.2593
9.2166
9.1743
9.1324
9.0909
μm
log(S)
H2O
CO2
O3
N2O
CH4
SO2
NH3
PH3
log(σ)
CFCl3
F11
CF2Cl2
F12
CHCl2F
F21
C2Cl3F3
F113
C2Cl2F4
F114
1050
1055
1060
1065
1070
1075
1080
1085
1090
1095
1100
cm-1
WAVENUMBER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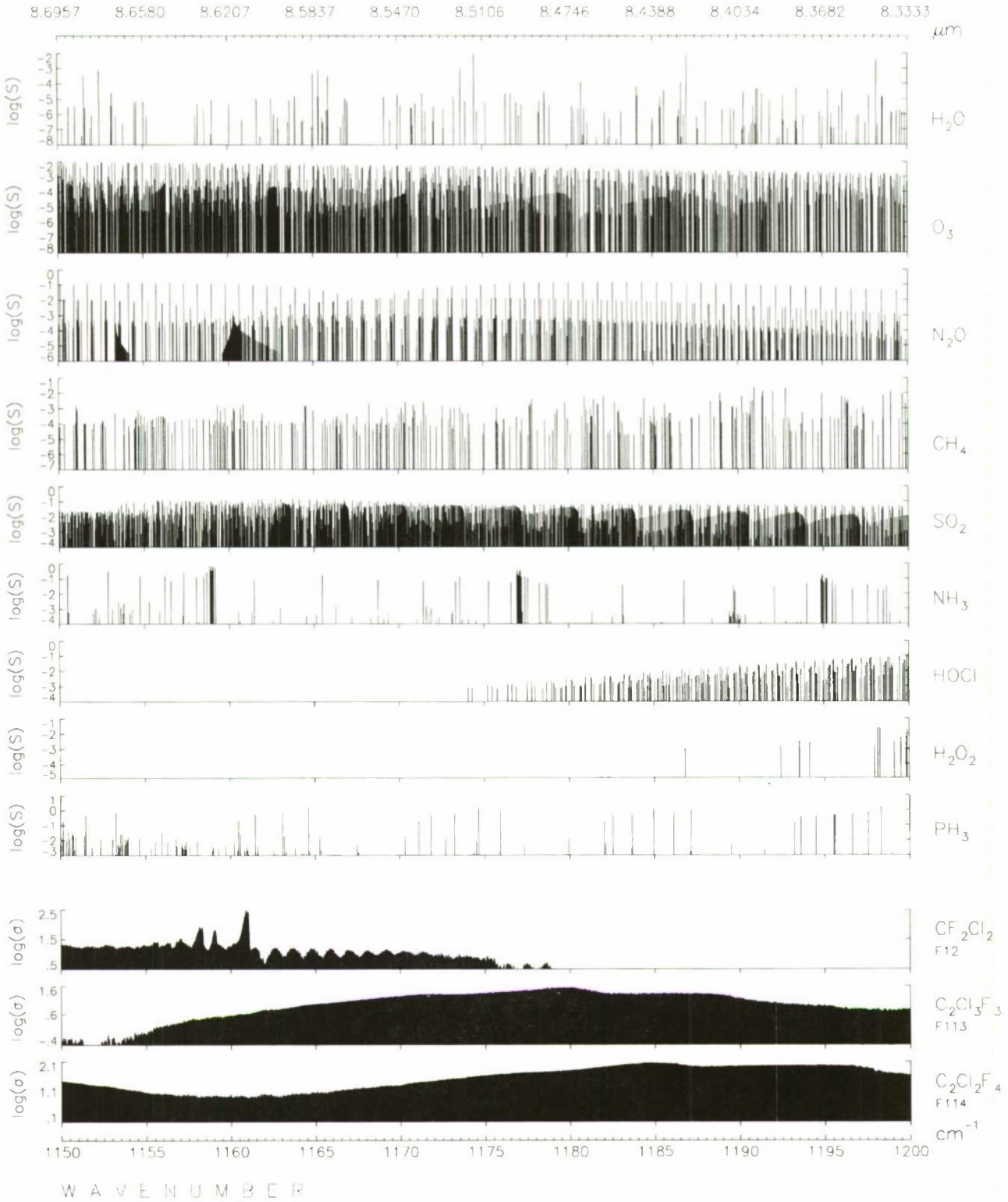
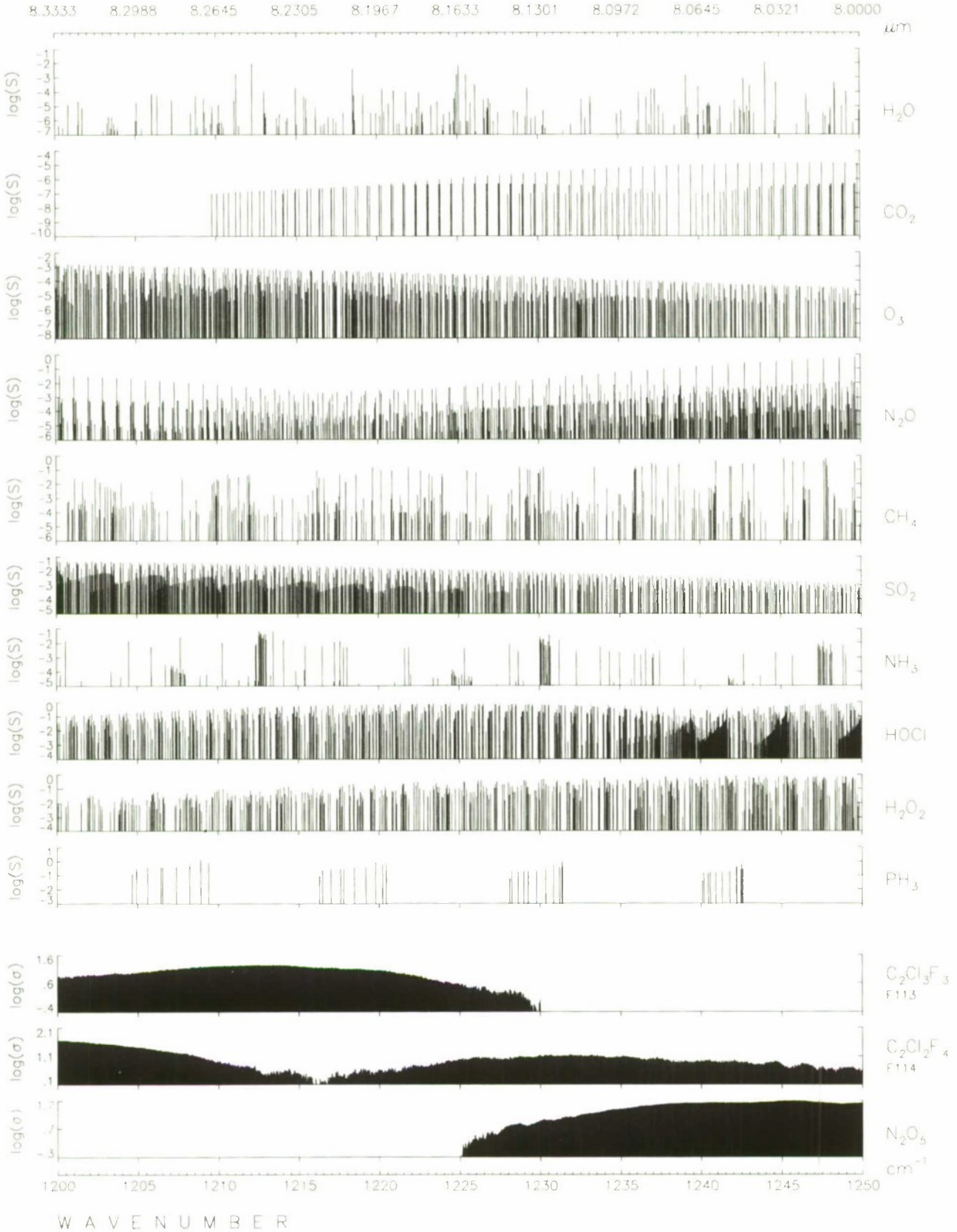
9.0498
9.0090
8.9686
8.9286
8.8889
8.8496
8.8106
8.7719
8.7336
8.6957
μm
log(S)
H2O
CO2
O3
N2O
CH4
SO2
NH3
PH3
log(σ)
CF2Cl2
F12
C2Cl3F3
F113
C2Cl2F4
F114
cm-1
1100
1105
1110
1115
1120
1125
1130
1135
1140
1145
1150
WAVENUMBER


8.6957
8.6580
8.6207
8.5837
8.5470
8.5106
8.4746
8.4388
8.4034
8.3682
8.3333
μm
log(S)
H2O
O3
N2O
CH4
SO2
NH3
HOCl
H2O2
PH3
log(σ)
CF2Cl2
F12
C2Cl3F3
F113
C2Cl2F4
F114
cm-1
1150
1155
1160
1165
1170
1175
1180
1185
1190
1195
1200
WAVENUMBER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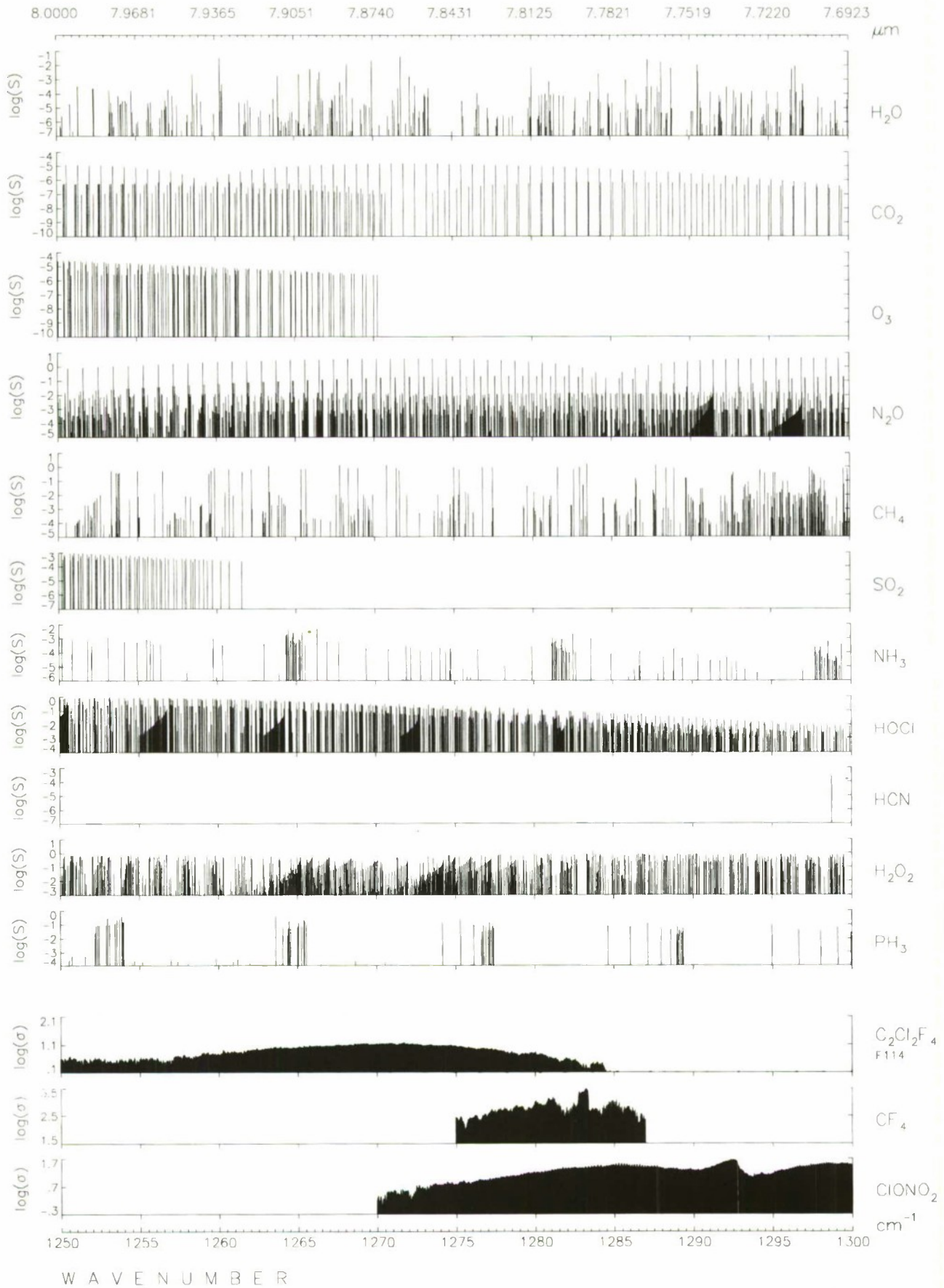
8.2988
8.2645
8.2305
8.1967
8.1633
8.1301
8.0972
8.0645
8.0321
8.0000
μm
log(S)
H2O
CO2
O3
N2O
CH4
SO2
NH3
HOCl
H2O2
PH3
log(σ)
C2Cl3F3
F113
C2Cl2F4
F114
N2O5
cm-1
1200
1205
1210
1215
1220
1225
1230
1235
1240
1245
1250
WAVENUMBER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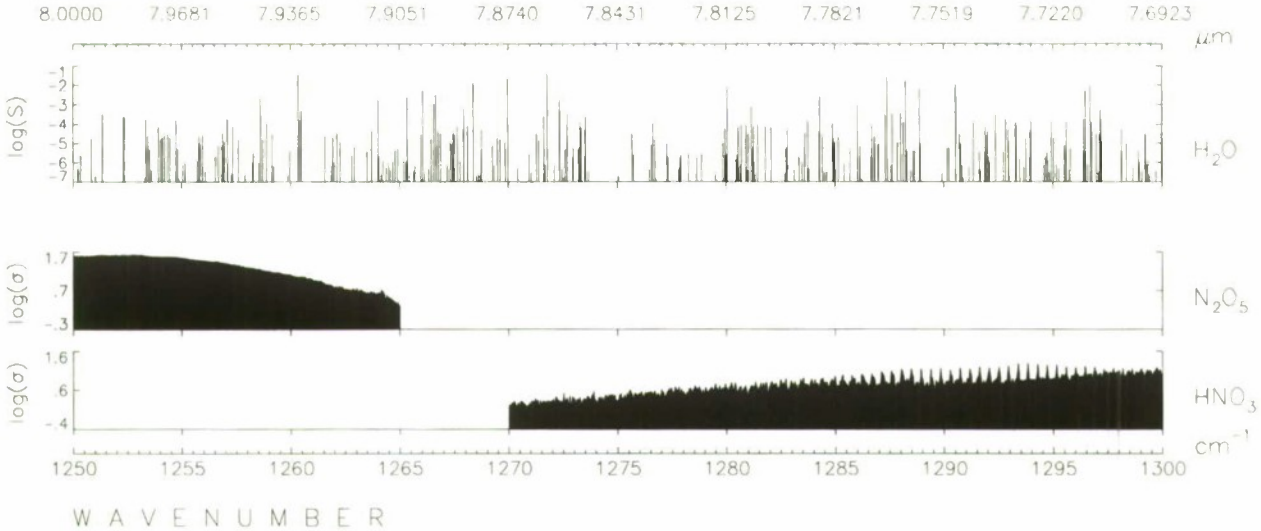
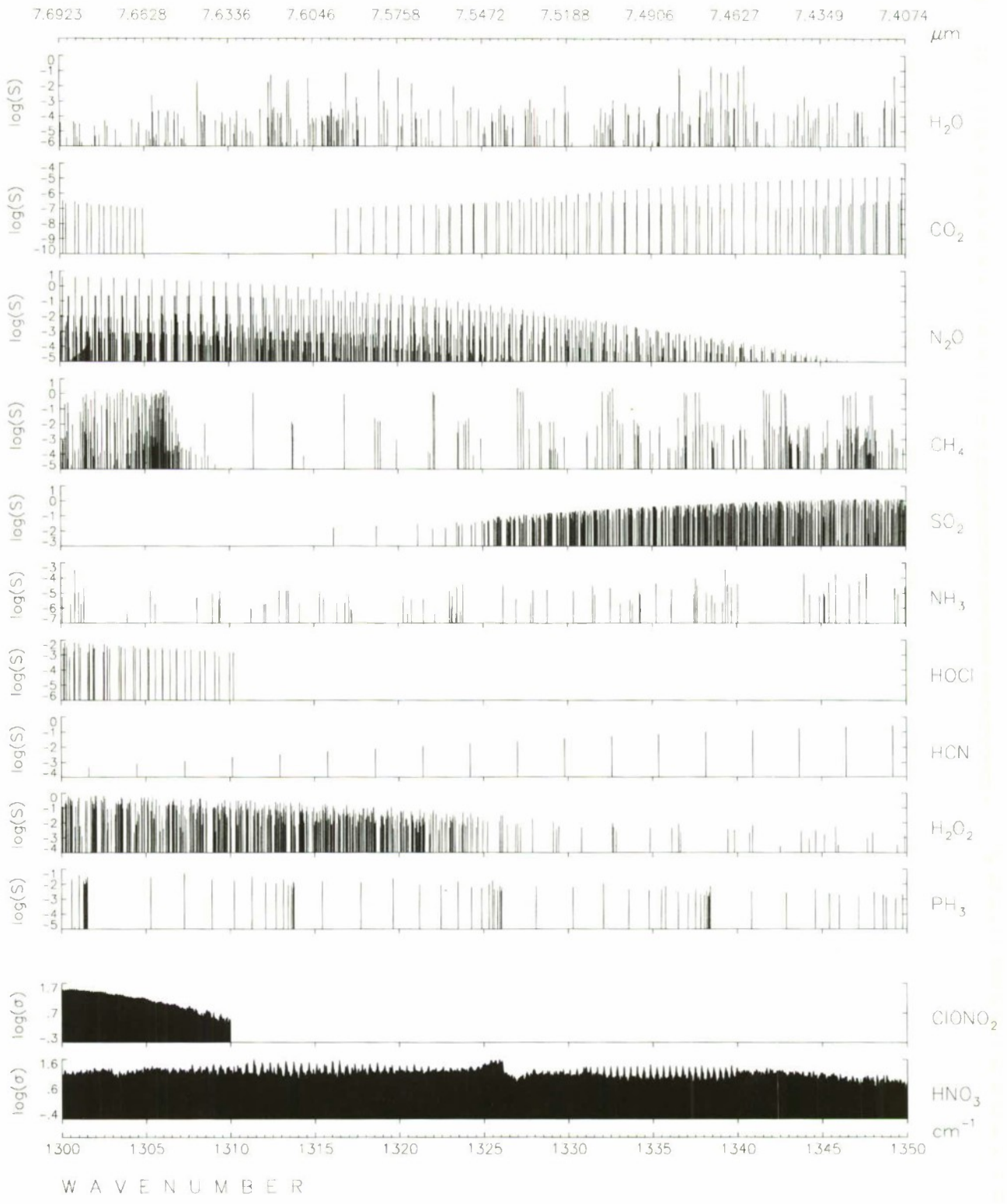
7.9681
7.9365
7.9051
7.8740
7.8431
7.8125
7.7821
7.7519
7.7220
7.6923
μm
log(S)
H2O
CO2
O3
N2O
CH4
SO2
NH3
HOCl
HCN
H2O2
PH3
log(σ)
C2Cl2F4
F114
CF4
ClONO2
cm-1
1250
1255
1260
1265
1270
1275
1280
1285
1290
1295
1300
WAVENUMBER


8.0000
7.9681
7.9365
7.9051
7.8740
7.8431
7.8125
7.7821
7.7519
7.7220
7.6923
μm
log(S)
-1
-2
-3
-4
-5
-6
-7
H2O
log(σ)
1.7
.7
-.3
N2O5
log(σ)
1.6
.6
-.4
HNO3
cm-1
1250
1255
1260
1265
1270
1275
1280
1285
1290
1295
1300
WAVENUMBER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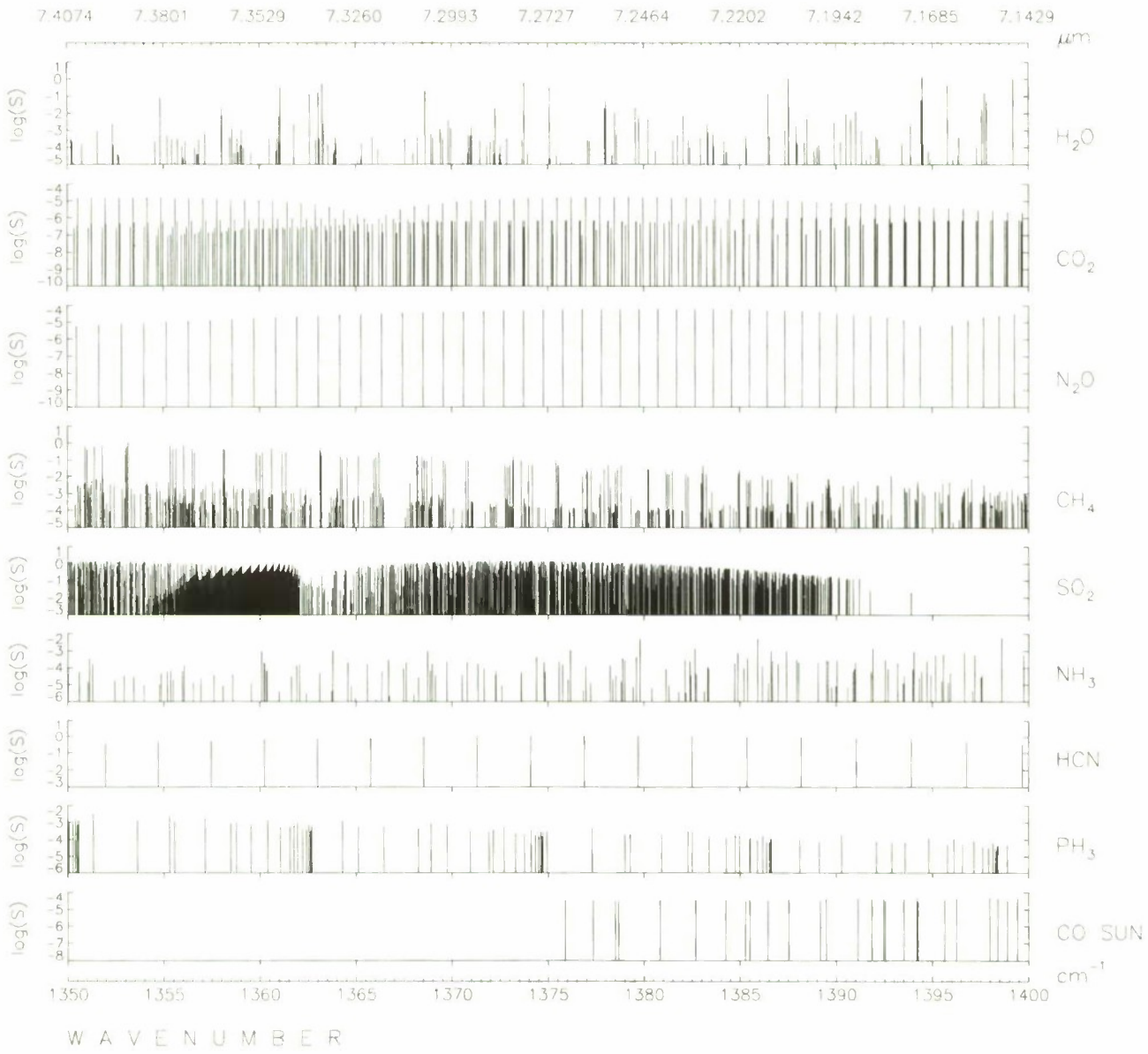
7.6628
7.6336
7.6046
7.5758
7.5472
7.5188
7.4906
7.4627
7.4349
7.4074
μm
log(S)
H2O
CO2
N2O
CH4
SO2
NH3
HOCl
HCN
H2O2
PH3
log(σ)
ClONO2
HNO3
cm-1
1300
1305
1310
1315
1320
1325
1330
1335
1340
1345
1350
WAVENUMBER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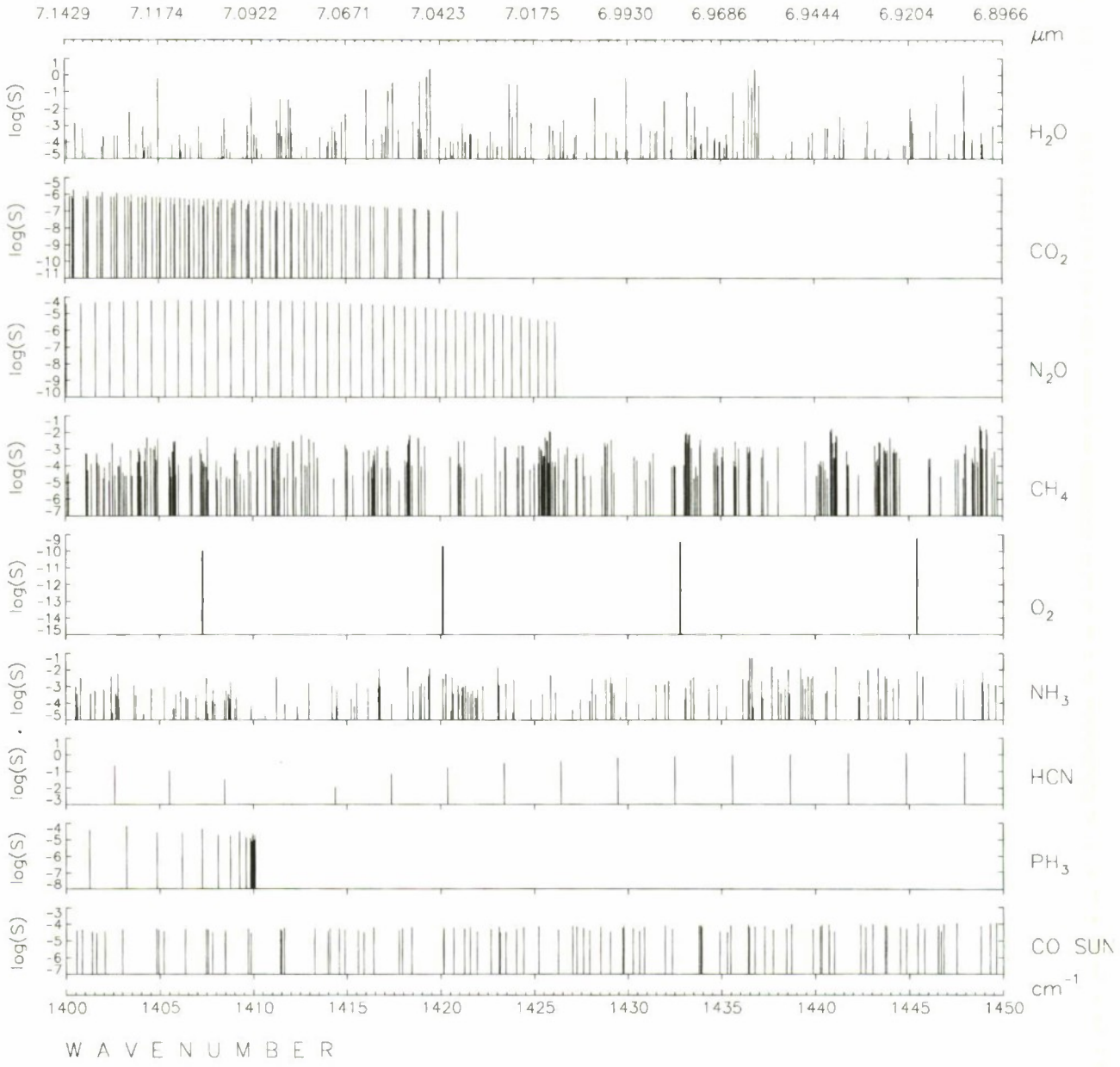
7.3801
7.3529
7.3260
7.2993
7.2727
7.2464
7.2202
7.1942
7.1685
7.1429
μm
log(S/S0)
H2O
CO2
N2O
CH4
SO2
NH3
HCN
PH3
CO SUN
cm-1
1350
1355
1360
1365
1370
1375
1380
1385
1390
1395
1400
WAVENUMBER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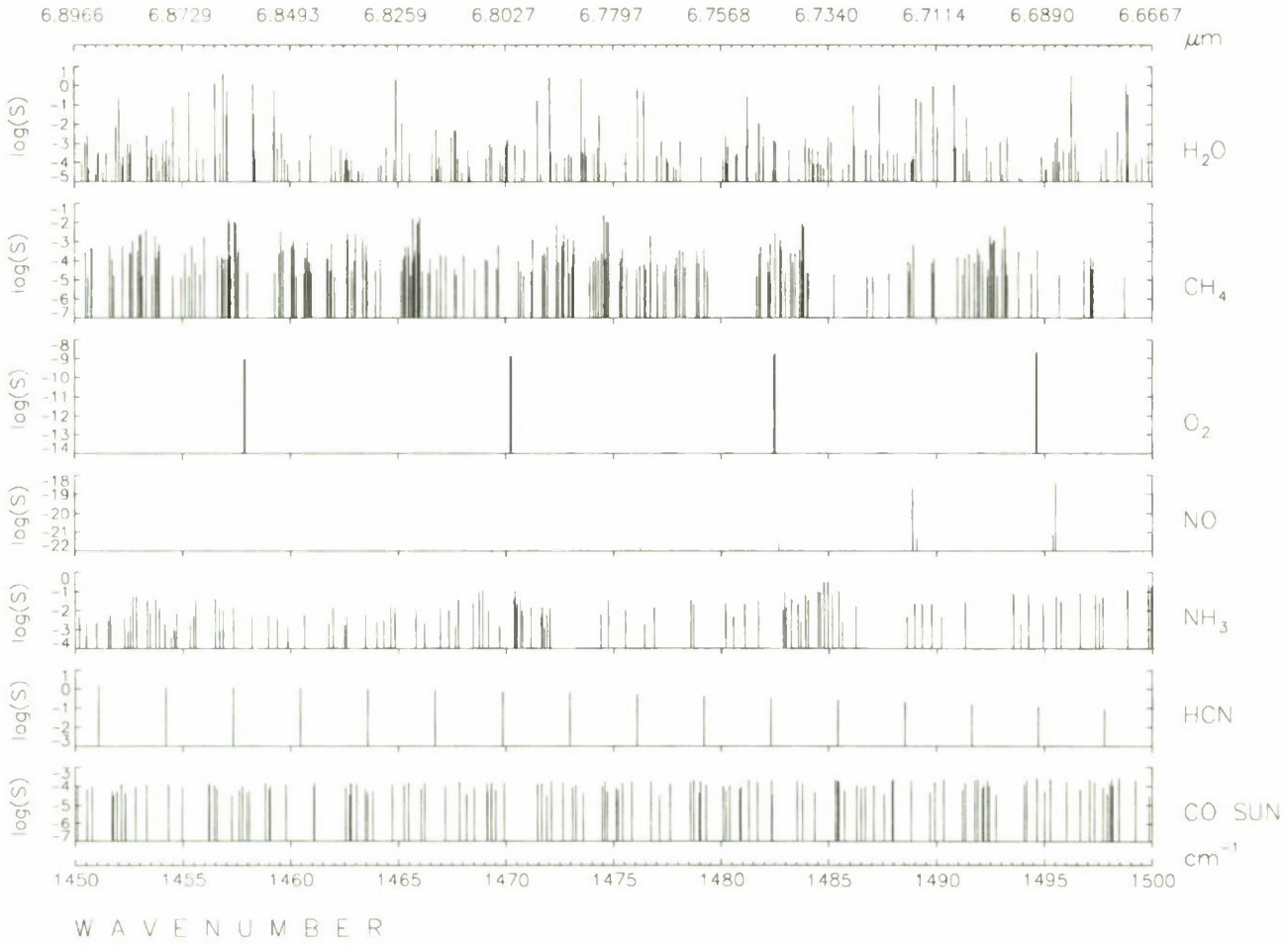
7.1174
7.0922
7.0671
7.0423
7.0175
6.9930
6.9686
6.9444
6.9204
6.8966
μm
log(S)
H2O
CO2
N2O
CH4
O2
NH3
HCN
PH3
CO SUN
cm-1
1400
1405
1410
1415
1420
1425
1430
1435
1440
1445
1450
WAVENUMBER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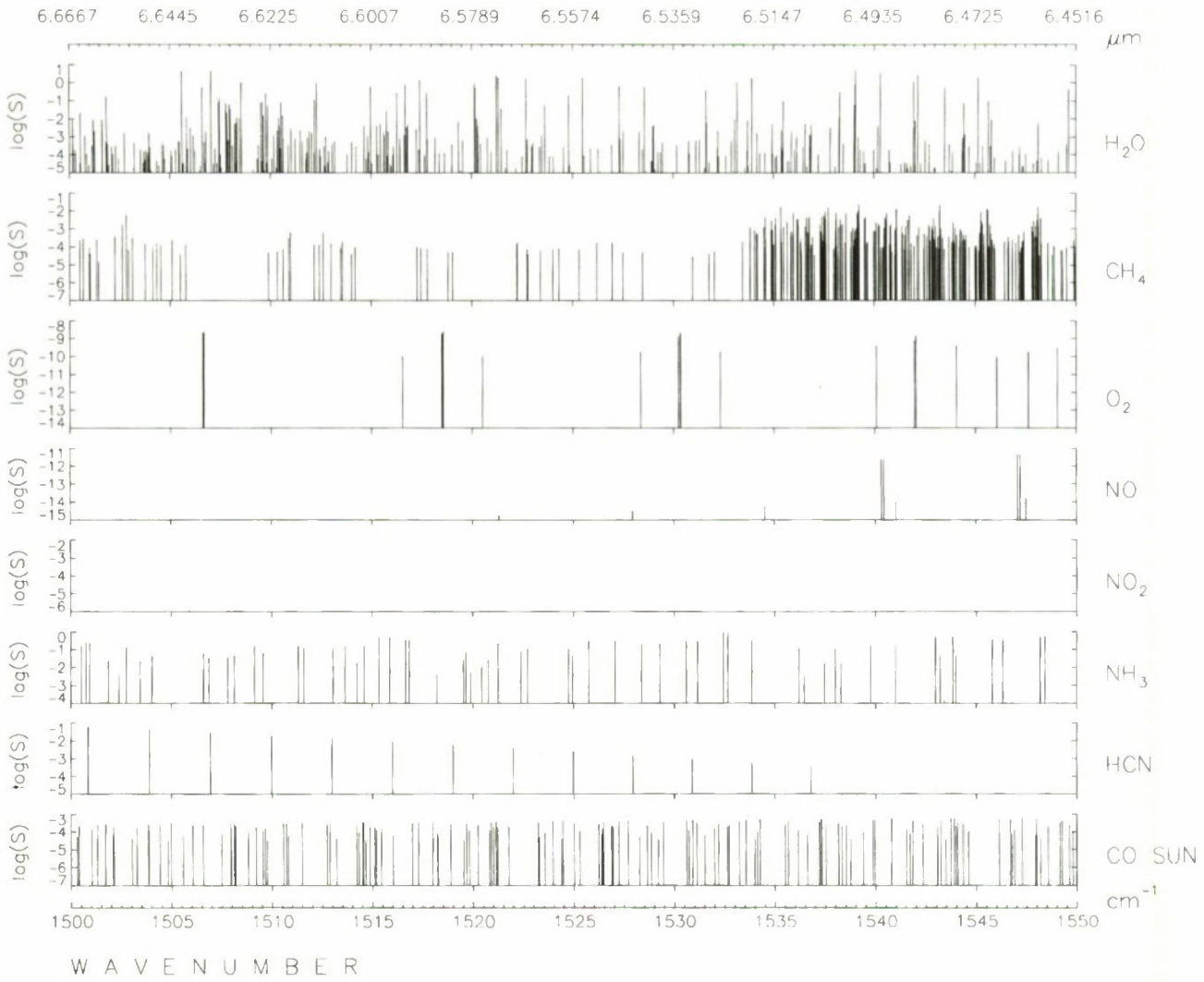
6.8729
6.8493
6.8259
6.8027
6.7797
6.7568
6.7340
6.7114
6.6890
6.6667
μm
log(S)
H2O
CH4
O2
NO
NH3
HCN
CO SUN
cm-1
1450
1455
1460
1465
1470
1475
1480
1485
1490
1495
1500
WAVENUMBER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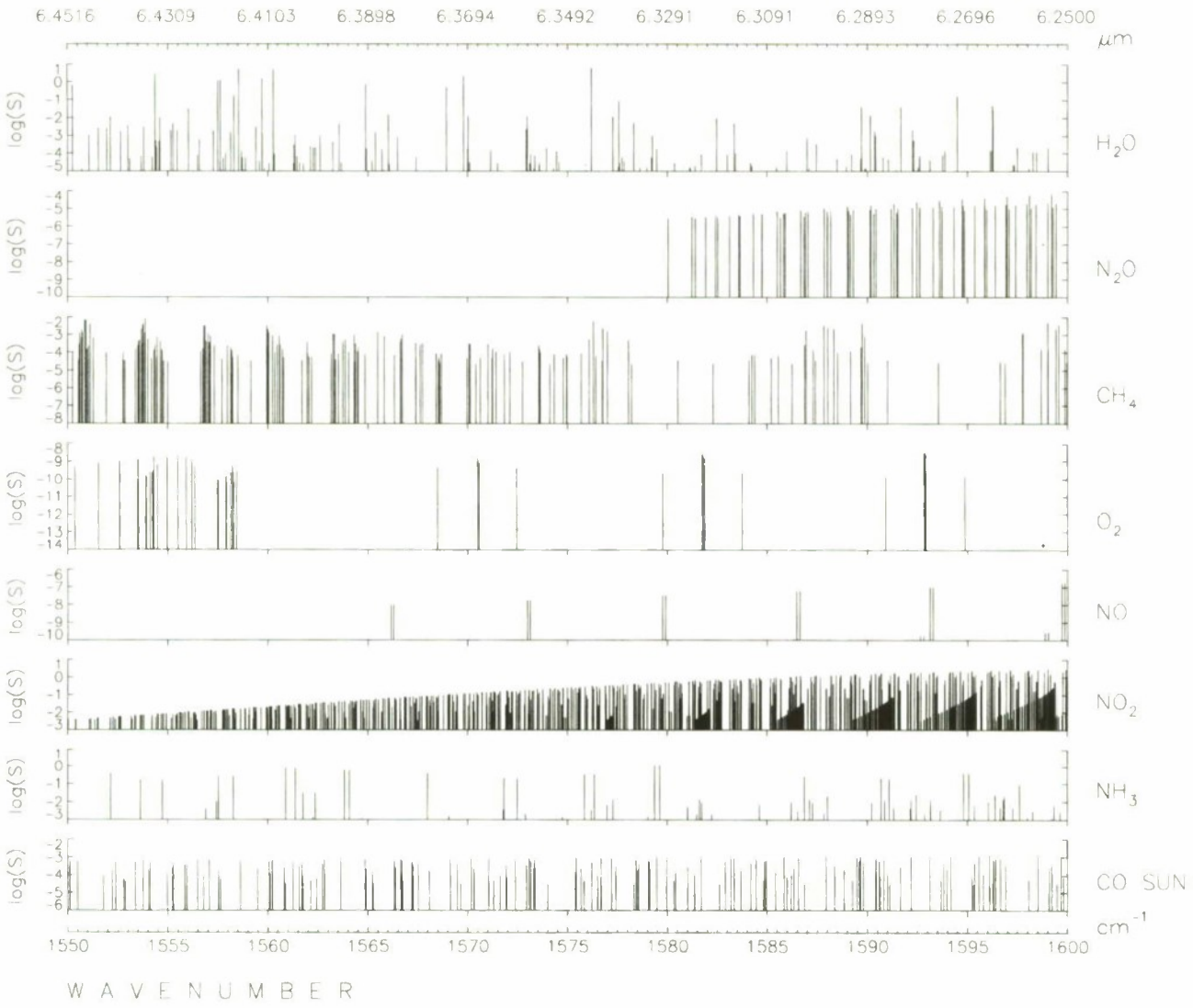
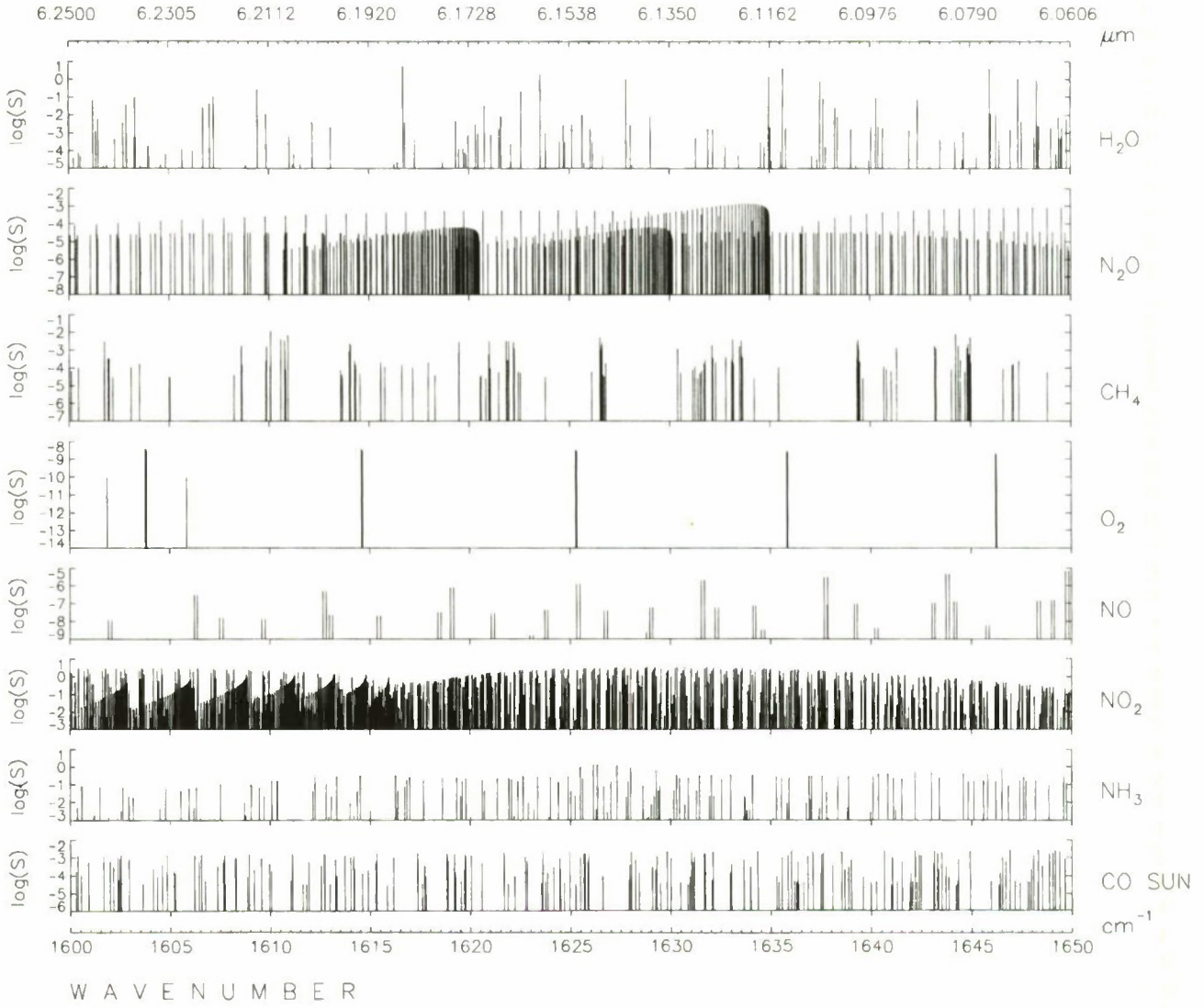
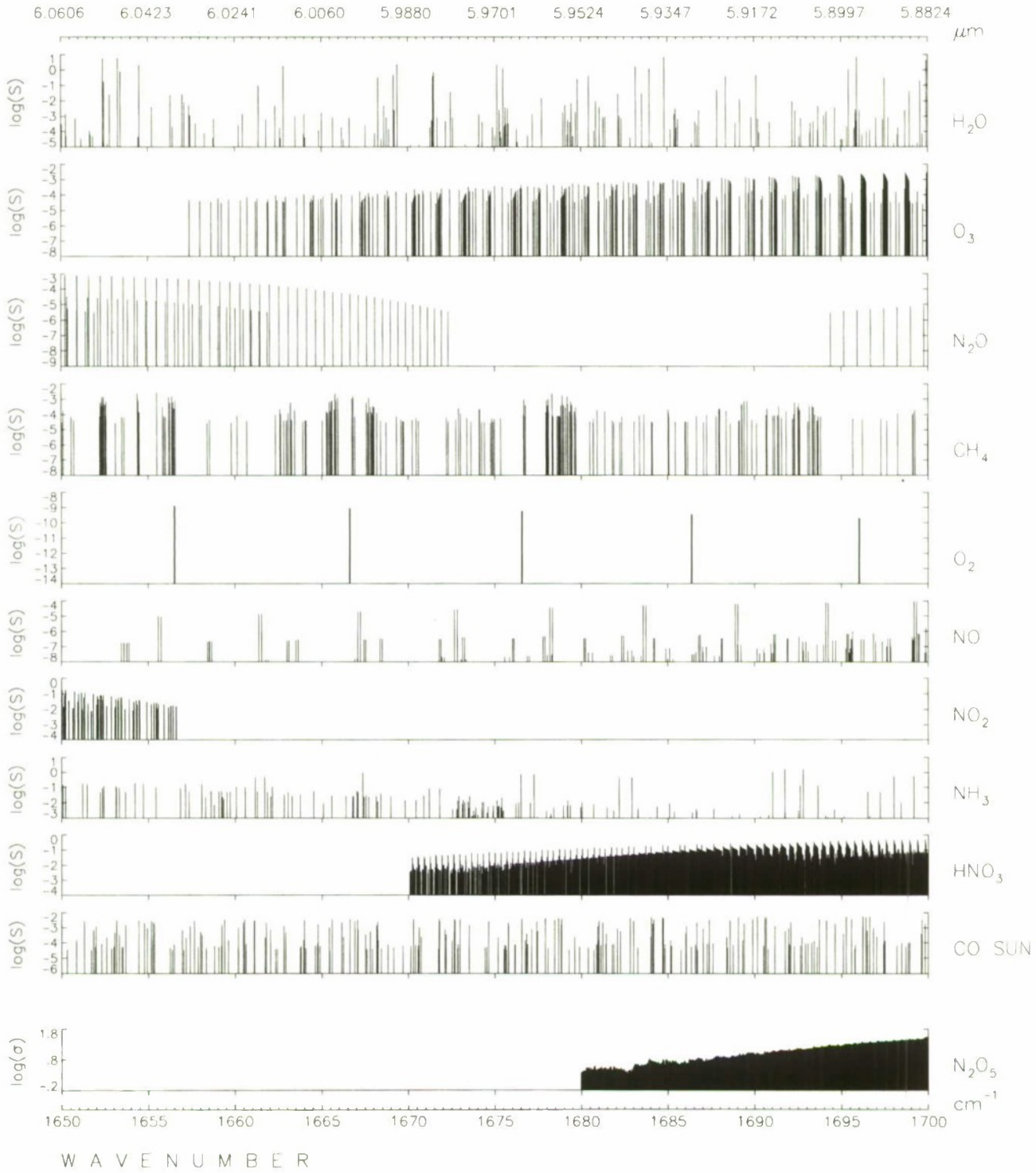
6.6445
6.6225
6.6007
6.5789
6.5574
6.5359
6.5147
6.4935
6.4725
6.4516
μm
log(S)
H2O
CH4
O2
NO
NO2
NH3
HCN
CO SUN
cm-1
1500
1505
1510
1515
1520
1525
1530
1535
1540
1545
1550
WAVENUMBER


6.4516
6.4309
6.4103
6.3898
6.3694
6.3492
6.3291
6.3091
6.2893
6.2696
6.2500
μm
log(S)
H2O
N2O
CH4
O2
NO
NO2
NH3
CO SUN
cm-1
1550
1555
1560
1565
1570
1575
1580
1585
1590
1595
1600
WAVENUMBER


6.2500
6.2305
6.2112
6.1920
6.1728
6.1538
6.1350
6.1162
6.0976
6.0790
6.0606
μm
log(S)
H2O
N2O
CH4
O2
NO
NO2
NH3
CO SUN
1600
1605
1610
1615
1620
1625
1630
1635
1640
1645
1650
cm-1
WAVENUMBER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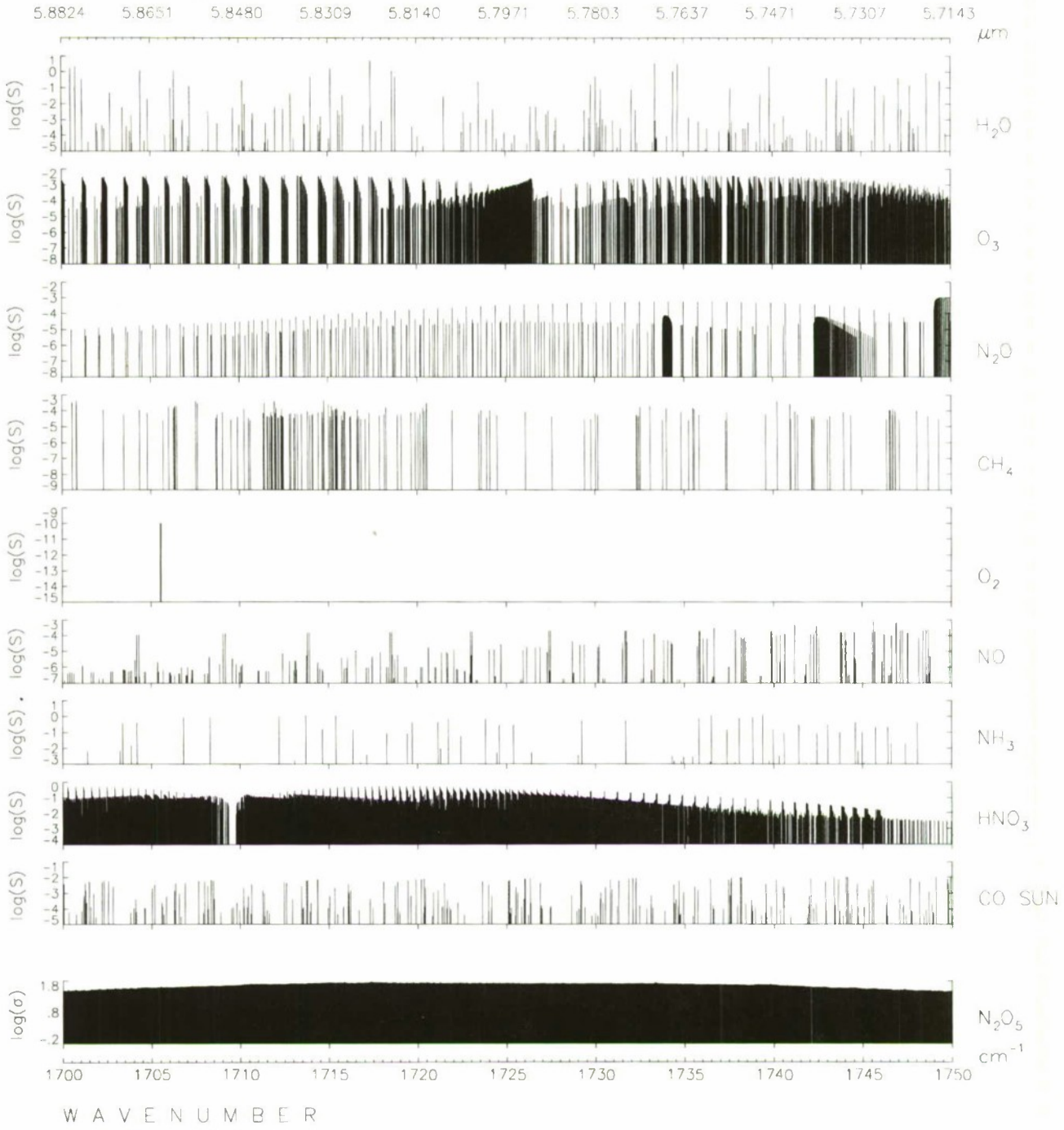
6.0423
6.0241
6.0060
5.9880
5.9701
5.9524
5.9347
5.9172
5.8997
5.8824
μm
log(S)
H2O
O3
N2O
CH4
O2
NO
NO2
NH3
HNO3
CO SUN
log(σ)
N2O5
cm-1
1650
1655
1660
1665
1670
1675
1680
1685
1690
1695
1700
WAVENUMBER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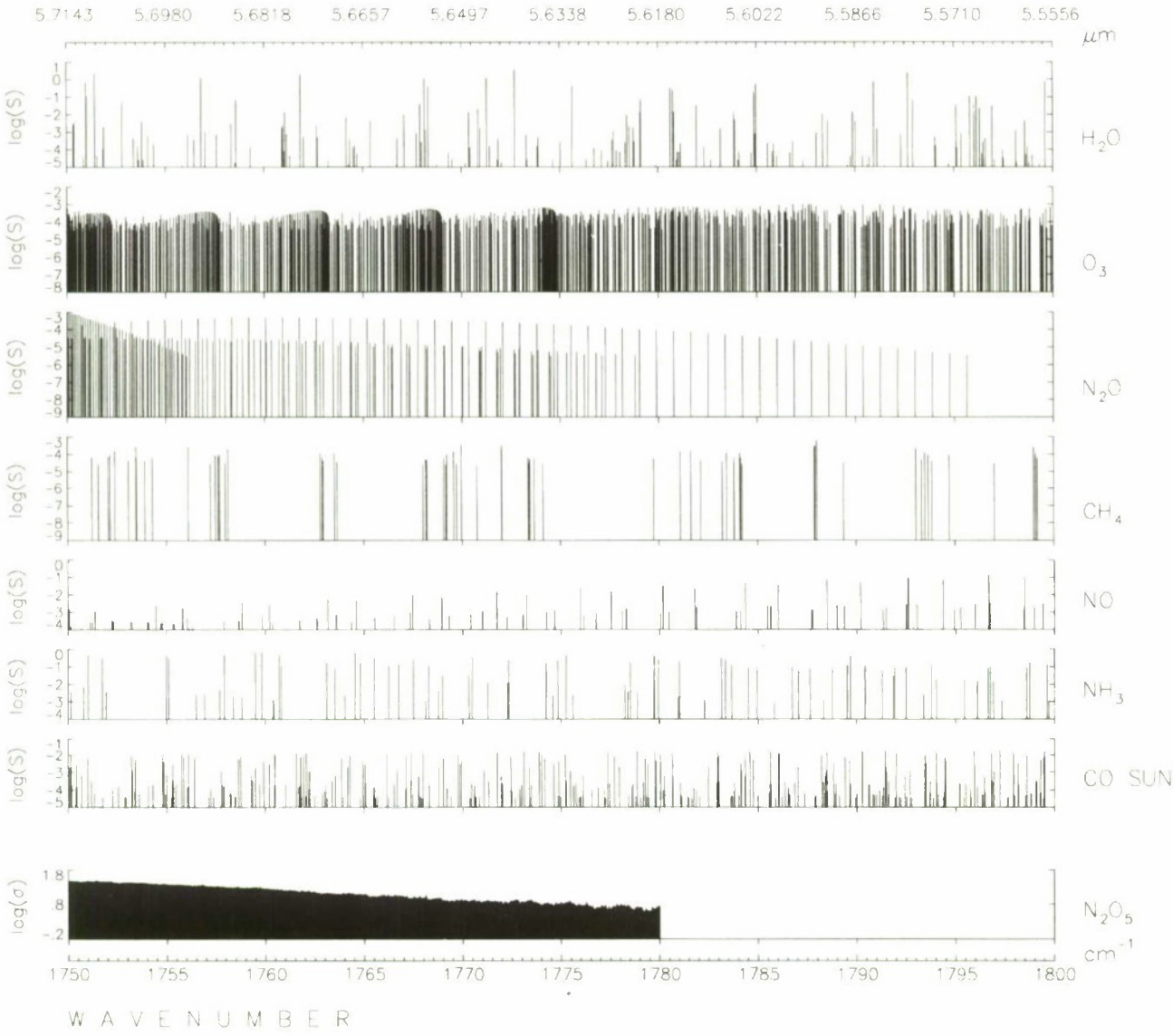
5.8651
5.8480
5.8309
5.8140
5.7971
5.7803
5.7637
5.7471
5.7307
5.7143
μm
log(S)
H2O
O3
N2O
CH4
O2
NO
NH3
HNO3
CO SUN
log(σ)
N2O5
cm-1
1700
1705
1710
1715
1720
1725
1730
1735
1740
1745
1750
WAVENUMBER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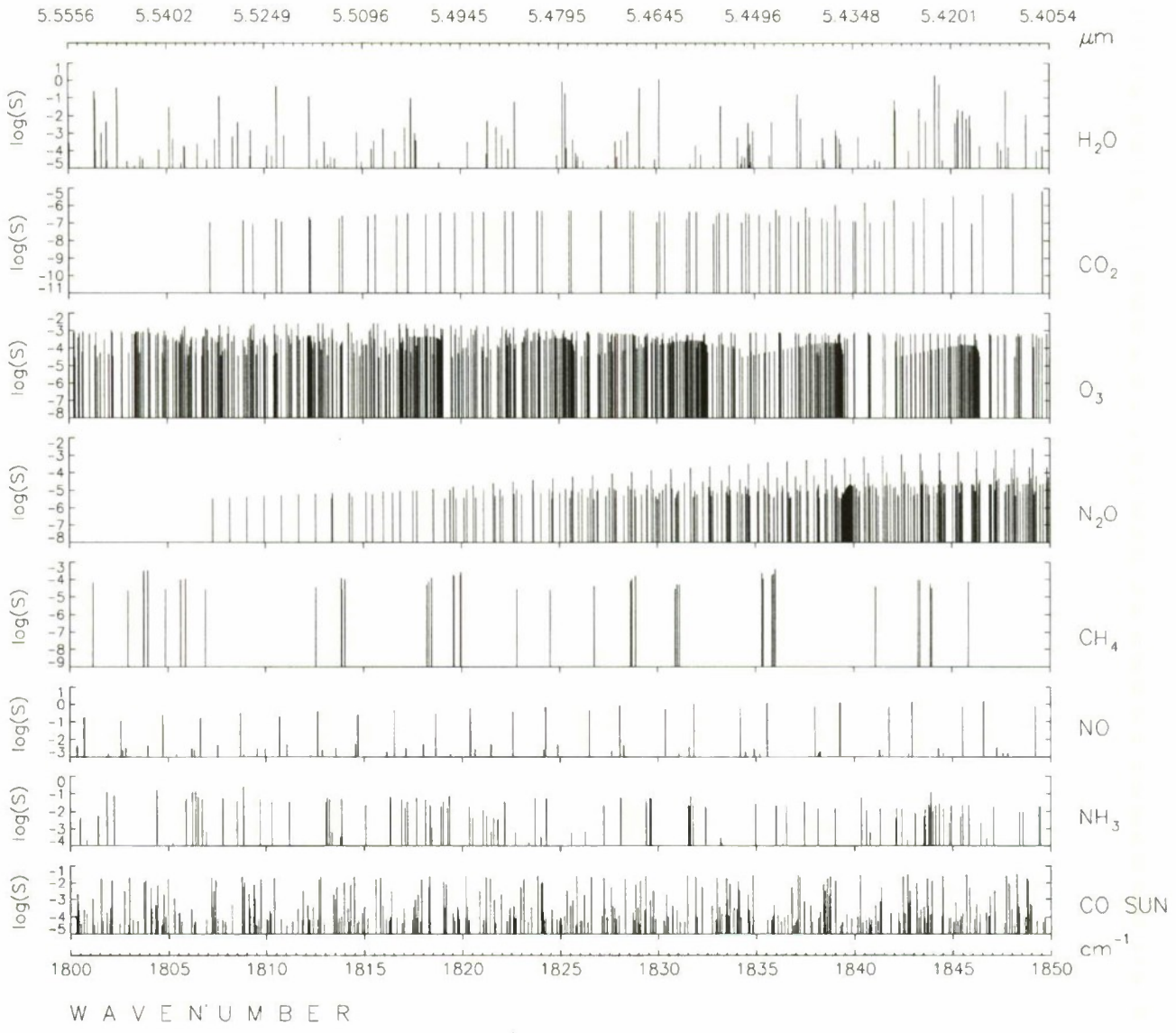
5.6980
5.6818
5.6657
5.6497
5.6338
5.6180
5.6022
5.5866
5.5710
5.5556
μm
log(S)
H2O
O3
N2O
CH4
NO
NH3
CO SUN
log(σ)
N2O5
cm-1
1750
1755
1760
1765
1770
1775
1780
1785
1790
1795
1800
WAVENUMBER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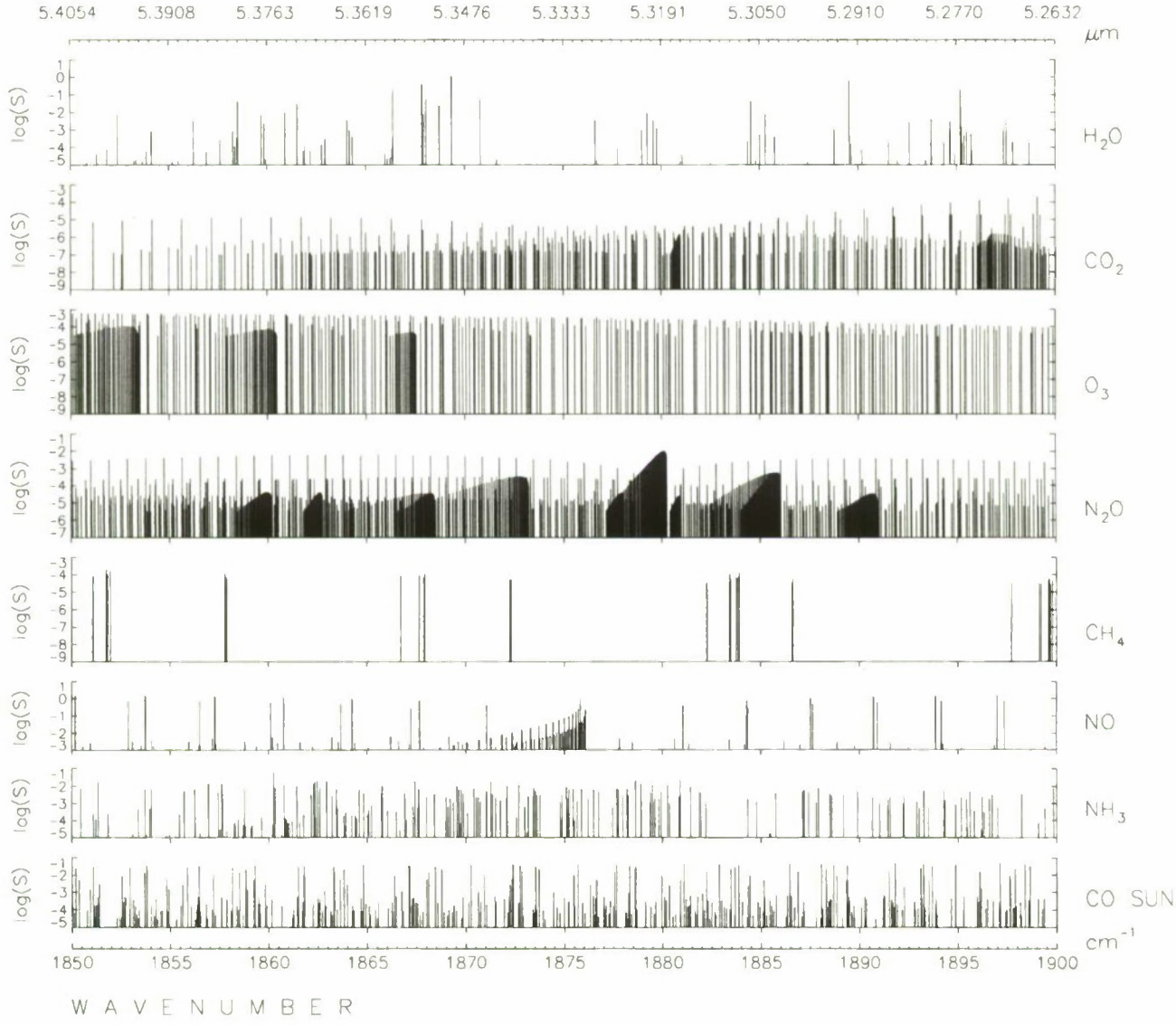
5.5402
5.5249
5.5096
5.4945
5.4795
5.4645
5.4496
5.4348
5.4201
5.4054
μm
log(S)
H2O
CO2
O3
N2O
CH4
NO
NH3
CO SUN
cm-1
1800
1805
1810
1815
1820
1825
1830
1835
1840
1845
1850
WAVENUMBER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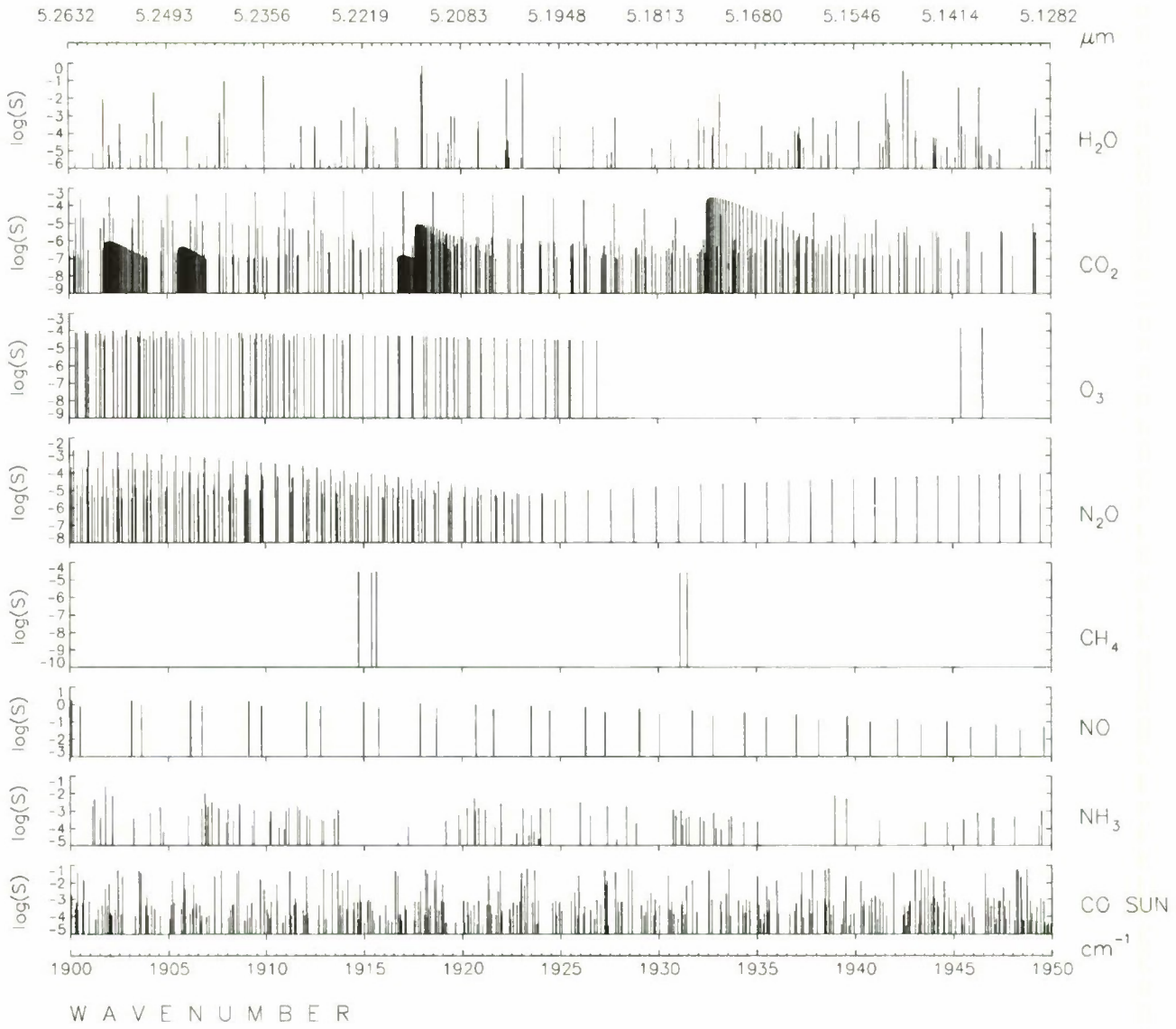
5.3908
5.3763
5.3619
5.3476
5.3333
5.3191
5.3050
5.2910
5.2770
5.2632
μm
log(S)
H2O
CO2
O3
N2O
CH4
NO
NH3
CO SUN
cm-1
1850
1855
1860
1865
1870
1875
1880
1885
1890
1895
1900
WAVENUMBER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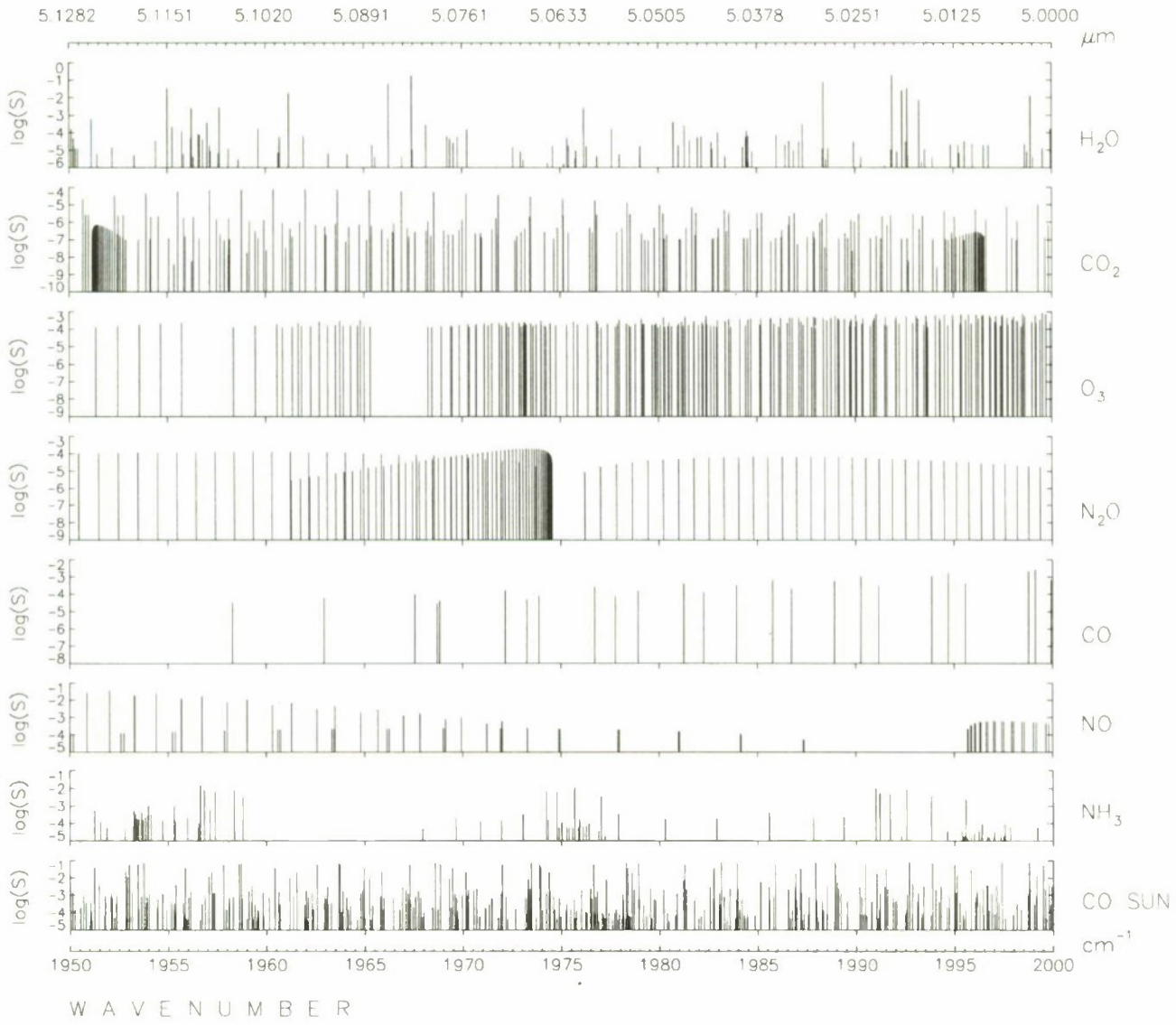
5.2493
5.2356
5.2219
5.2083
5.1948
5.1813
5.1680
5.1546
5.1414
5.1282
μm
log(S)
H2O
CO2
O3
N2O
CH4
NO
NH3
CO SUN
cm-1
1900
1905
1910
1915
1920
1925
1930
1935
1940
1945
1950
WAVENUMBER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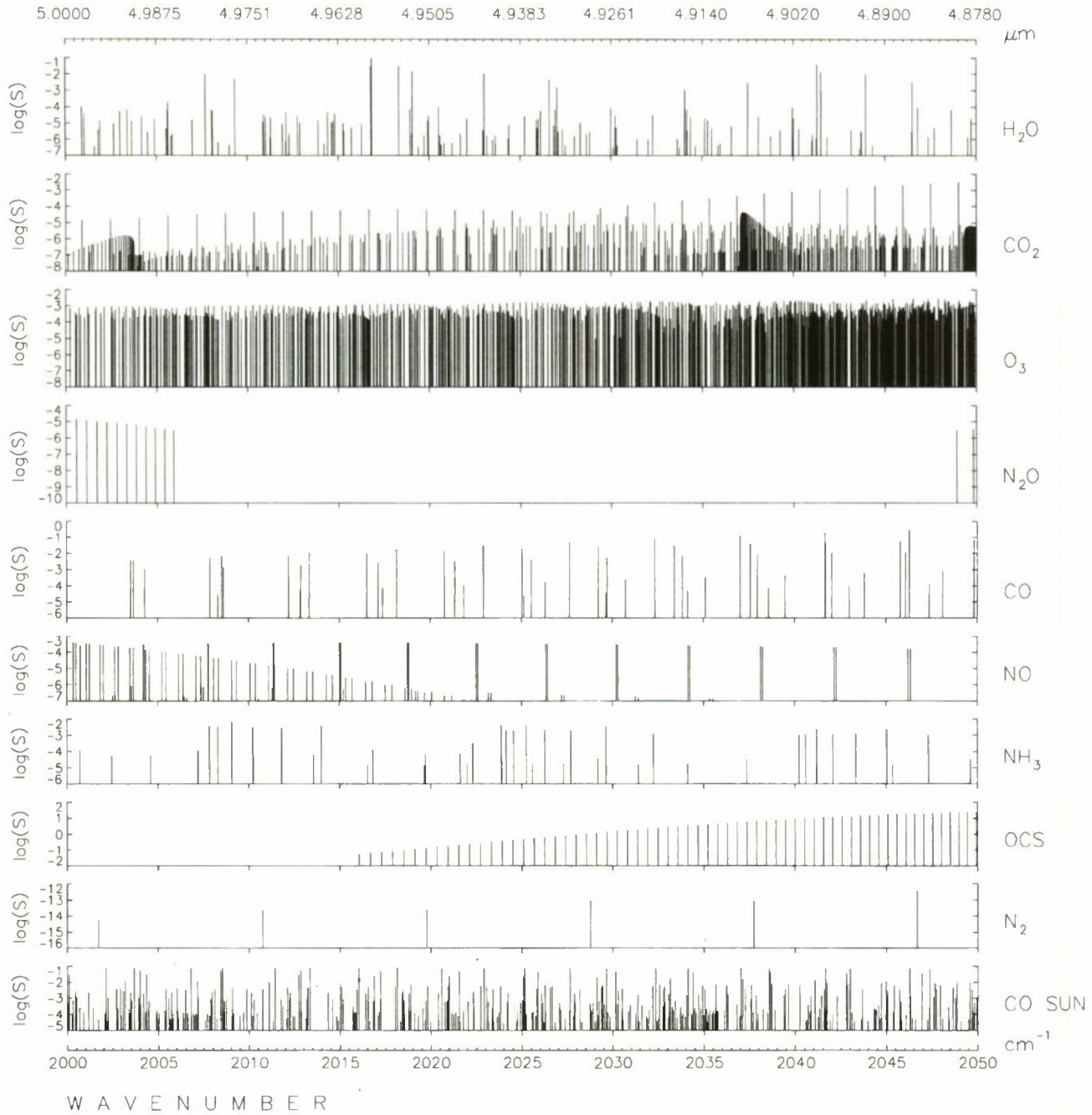
5.1151
5.1020
5.0891
5.0761
5.0633
5.0505
5.0378
5.0251
5.0125
5.0000
μm
log(S)
H2O
CO2
O3
N2O
CO
NO
NH3
CO SUN
1950
1955
1960
1965
1970
1975
1980
1985
1990
1995
2000
cm-1
WAVENUMBER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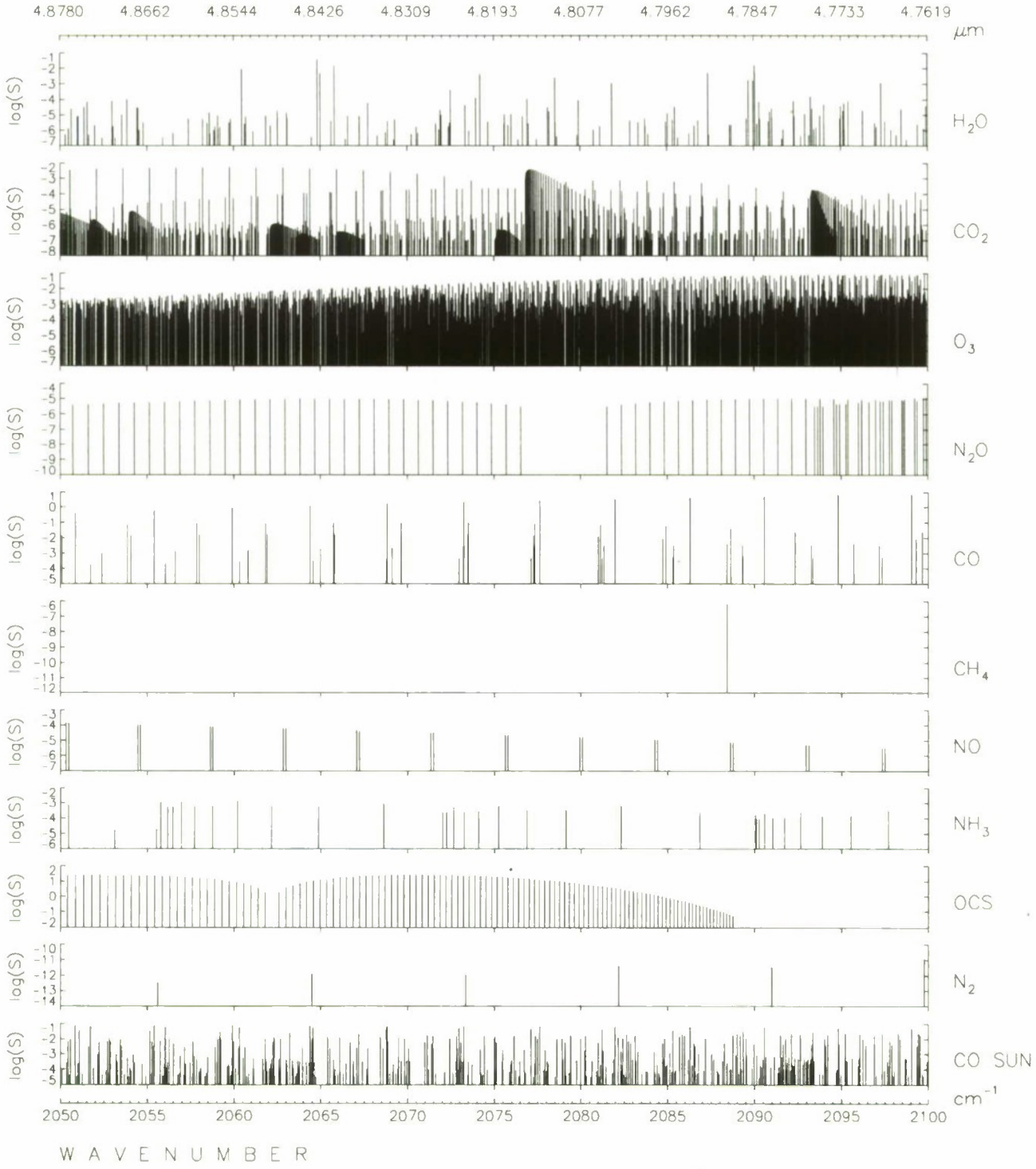
4.9875
4.9751
4.9628
4.9505
4.9383
4.9261
4.9140
4.9020
4.8900
4.8780
μm
log(S)
H2O
CO2
O3
N2O
CO
NO
NH3
OCS
N2
CO SUN
cm-1
2000
2005
2010
2015
2020
2025
2030
2035
2040
2045
2050
WAVENUMBER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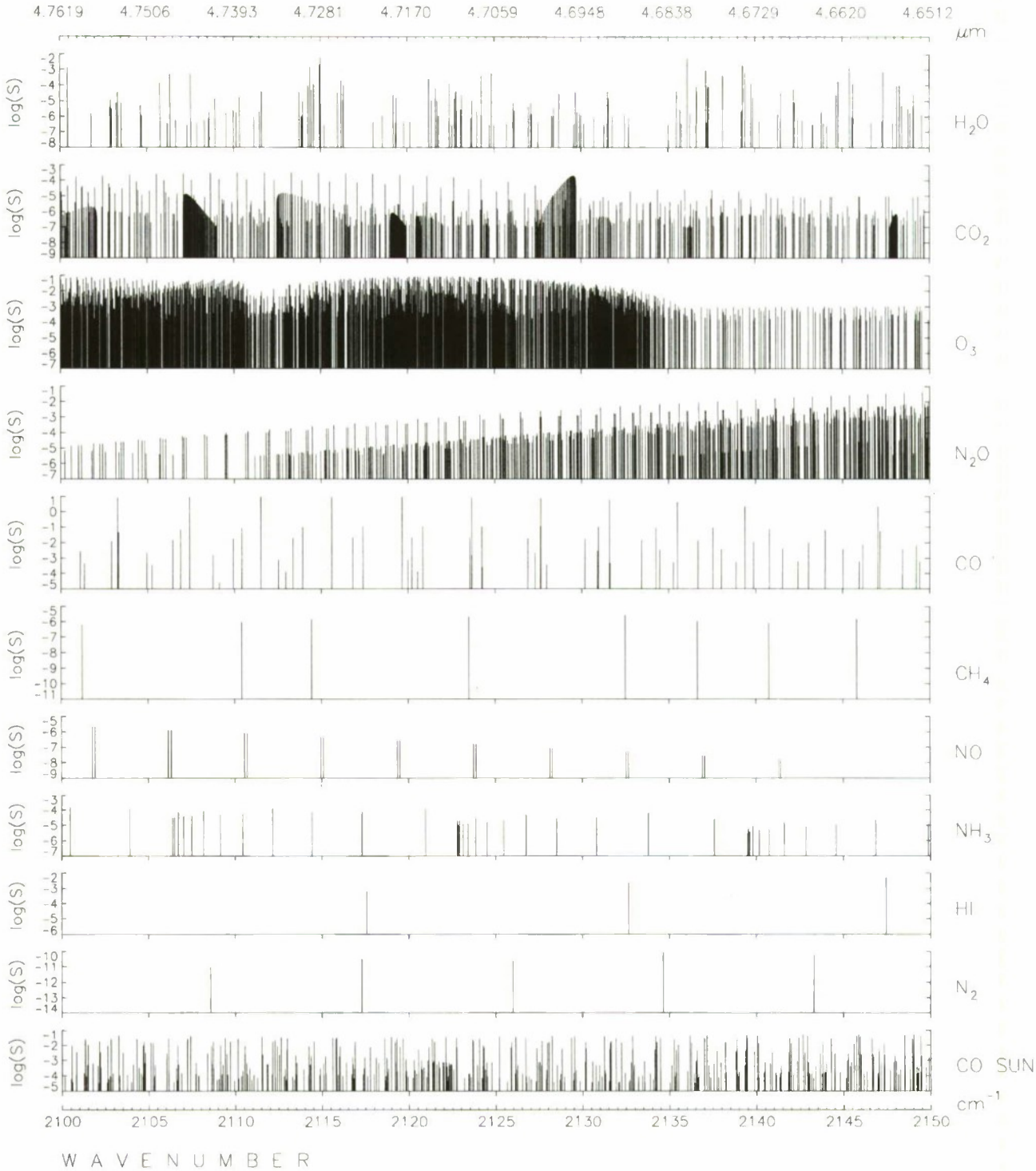
4.8662
4.8544
4.8426
4.8309
4.8193
4.8077
4.7962
4.7847
4.7733
4.7619
μm
log(S)
H2O
CO2
O3
N2O
CO
CH4
NO
NH3
OCS
N2
CO SUN
cm-1
2050
2055
2060
2065
2070
2075
2080
2085
2090
2095
2100
WAVENUMBER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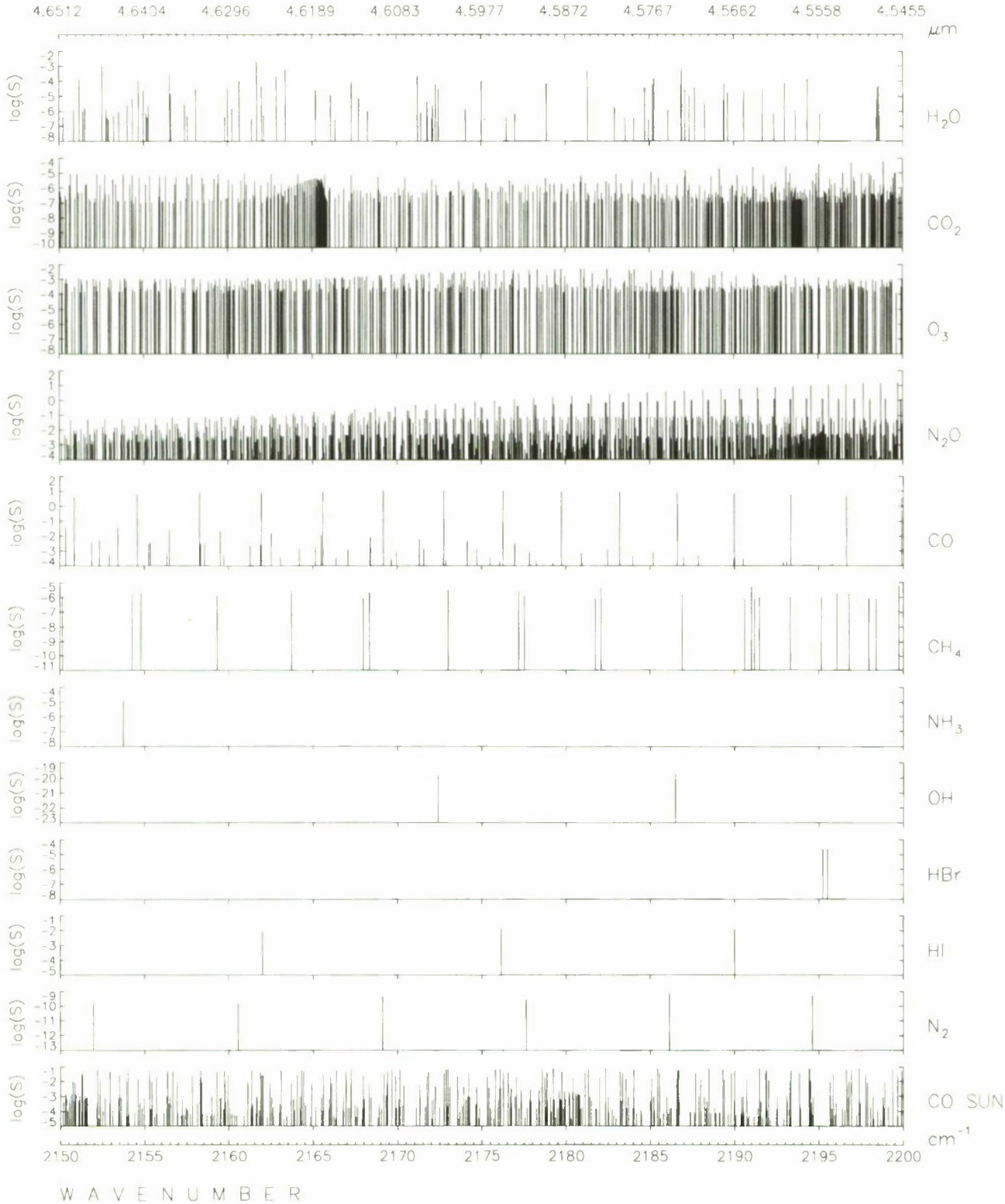
4.7506
4.7393
4.7281
4.7170
4.7059
4.6948
4.6838
4.6729
4.6620
4.6512
μm
log(S)
H2O
CO2
O3
N2O
CO
CH4
NO
NH3
HI
N2
CO SUN
cm-1
2100
2105
2110
2115
2120
2125
2130
2135
2140
2145
2150
WAVENUMBER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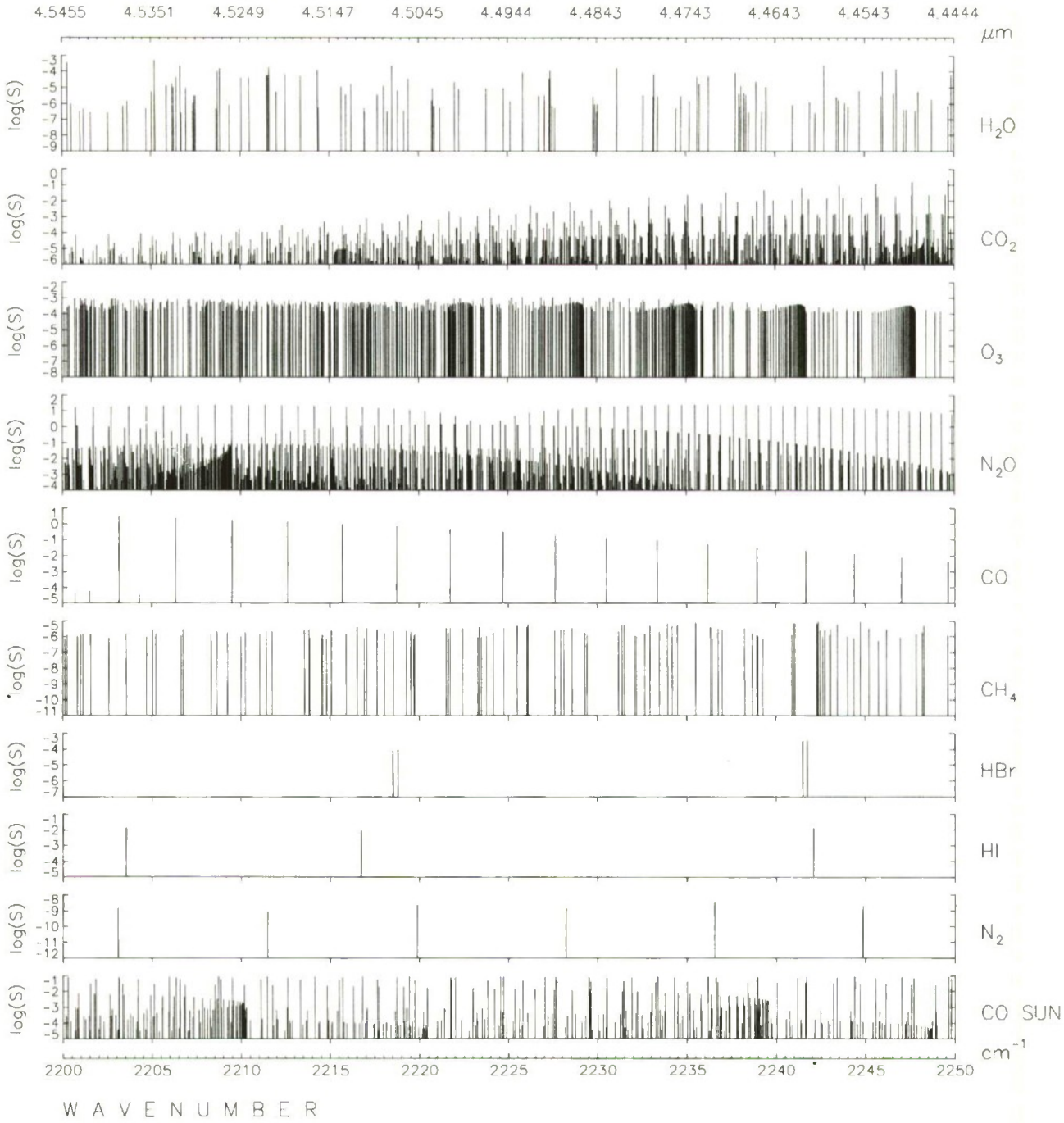
4.6296
4.6189
4.6083
4.5977
4.5872
4.5767
4.5662
4.5558
4.5455
μm
log(S)
H2O
CO2
O3
N2O
CO
CH4
NH3
OH
HBr
HI
N2
CO SUN
cm-1
2150
2155
2160
2165
2170
2175
2180
2185
2190
2195
2200
WAVENUMBER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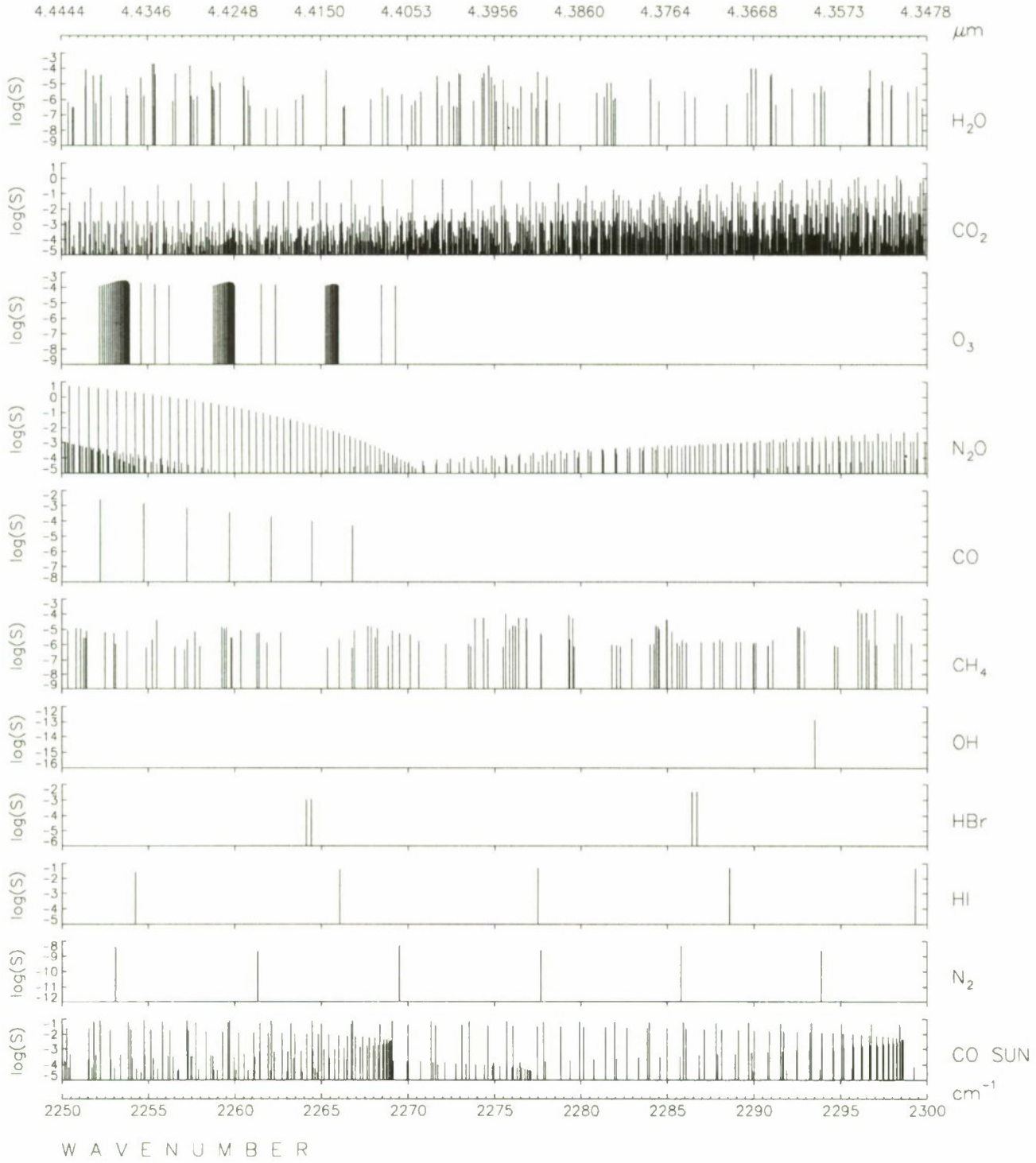
4.5351
4.5249
4.5147
4.5045
4.4944
4.4843
4.4743
4.4643
4.4543
4.4444
μm
log(S)
H2O
CO2
O3
N2O
CO
CH4
HBr
HI
N2
CO SUN
cm-1
2200
2205
2210
2215
2220
2225
2230
2235
2240
2245
2250
WAVENUMBER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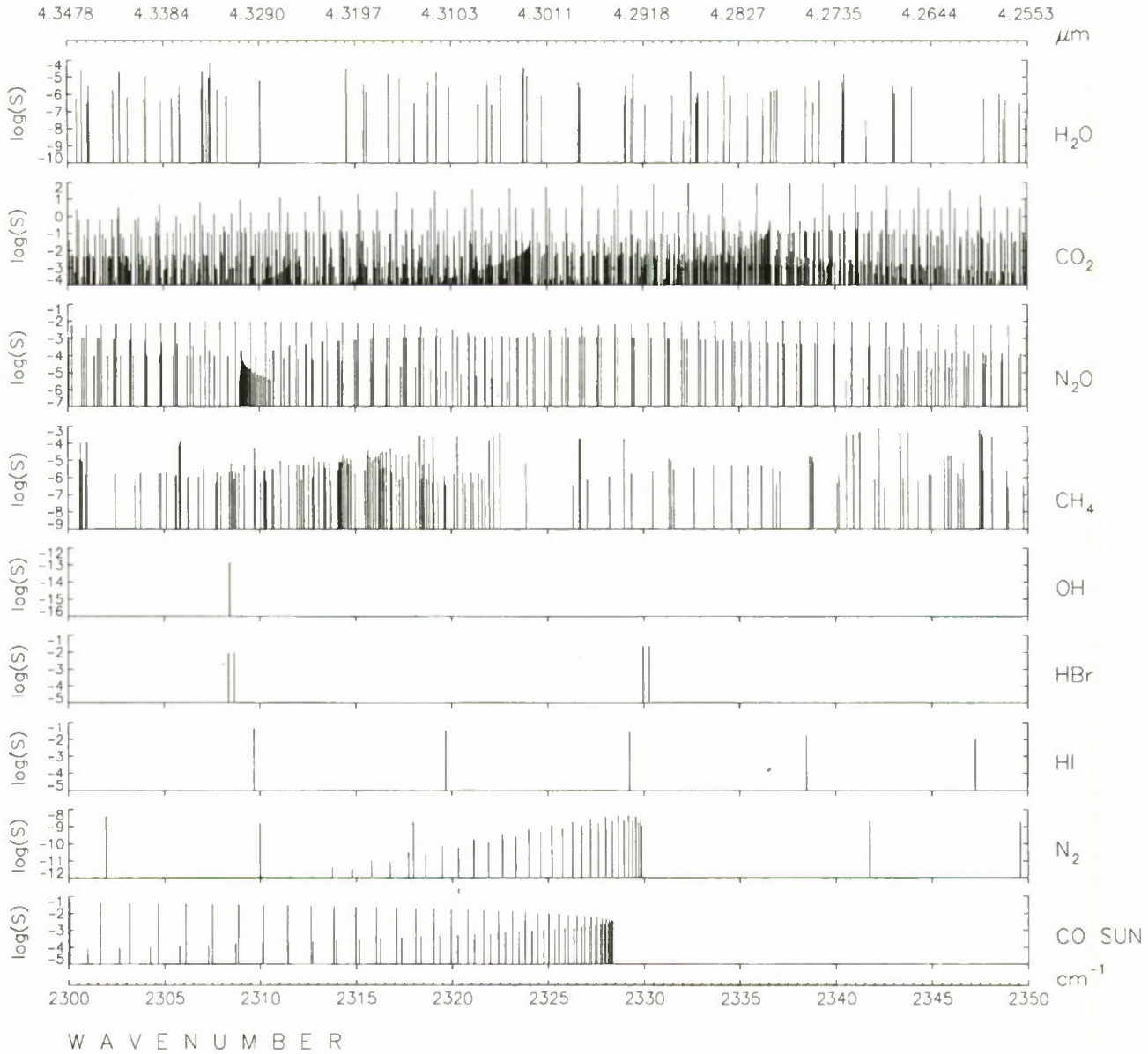
4.4053
4.3956
4.3860
4.3764
4.3668
4.3573
4.3478
μm
log(S)
H2O
CO2
O3
N2O
CO
CH4
OH
HBr
HI
N2
CO SUN
cm-1
2250
2255
2260
2265
2270
2275
2280
2285
2290
2295
2300
WAVENUMBER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4.3290
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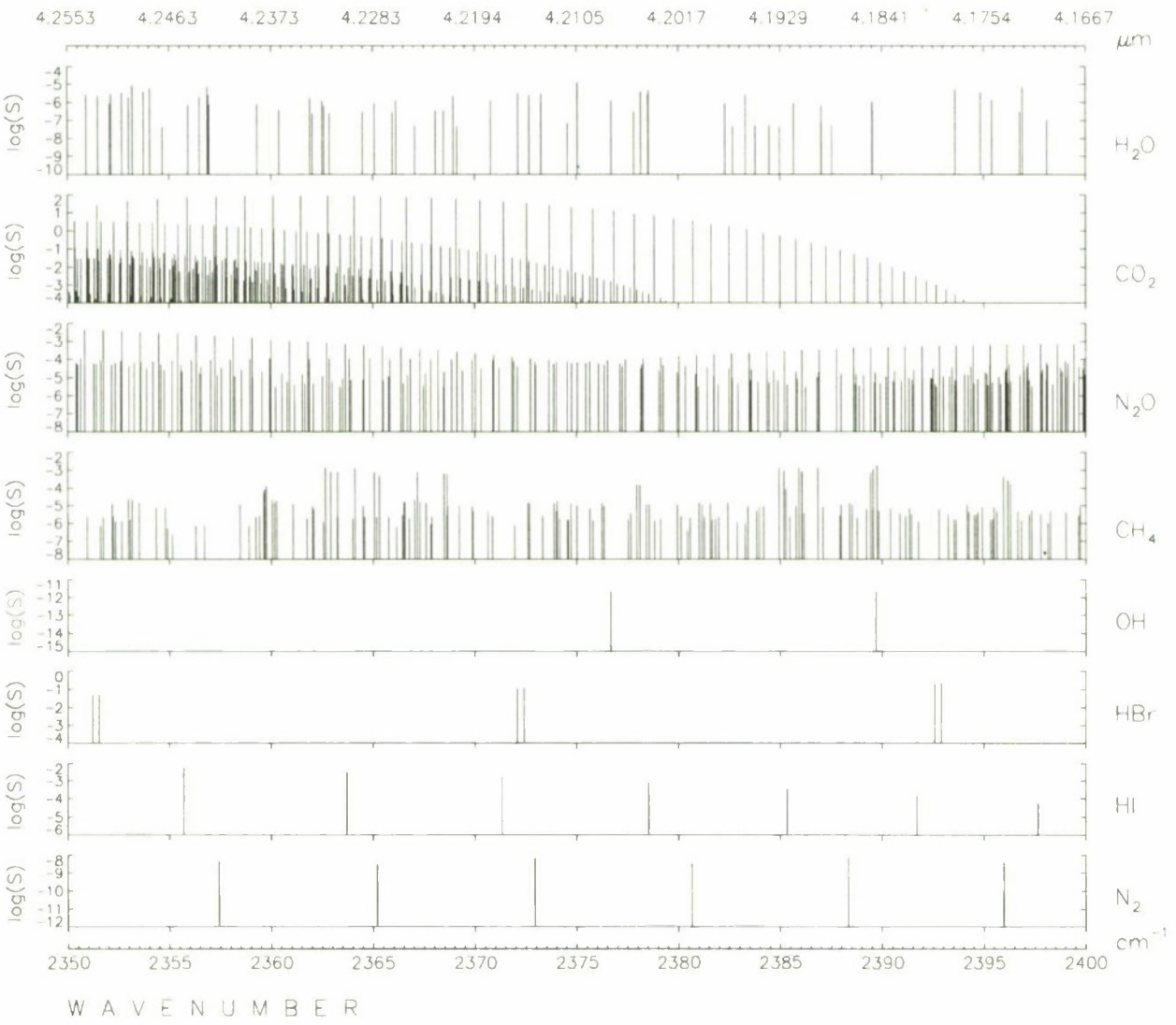
4.3103
4.3011
4.2918
4.2827
4.2735
4.2644
4.2553
μm
log(S)
H2O
CO2
N2O
CH4
OH
HBr
HI
N2
CO SUN
cm-1
2300
2305
2310
2315
2320
2325
2330
2335
2340
2345
2350
WAVENUMBER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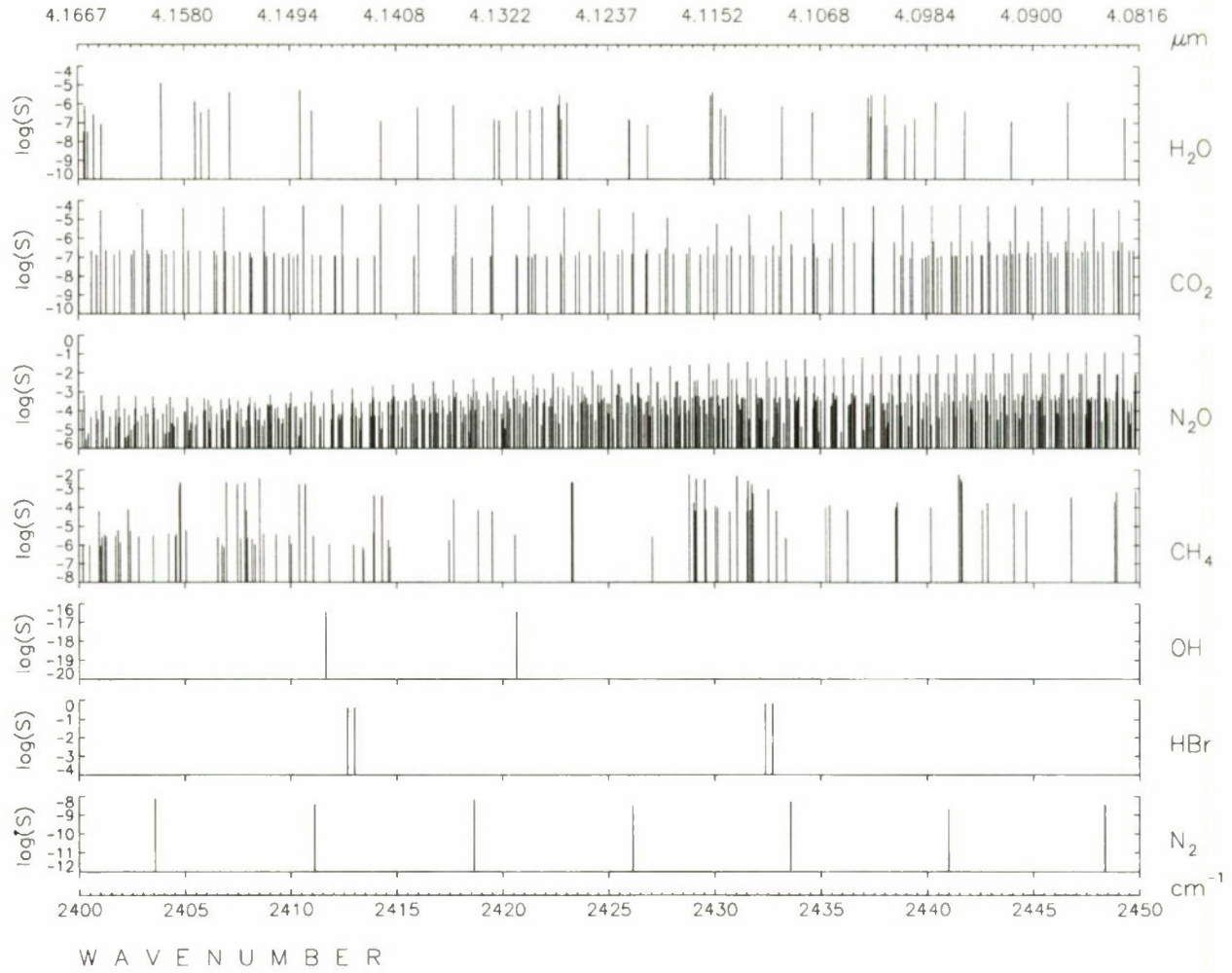
4.2373
4.2283
4.2194
4.2105
4.2017
4.1929
4.1841
4.1754
4.1667
μm
log(S)
H2O
CO2
N2O
CH4
OH
HBr
HI
N2
cm-1
2350
2355
2360
2365
2370
2375
2380
2385
2390
2395
2400
WAVENUMBER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4.1580
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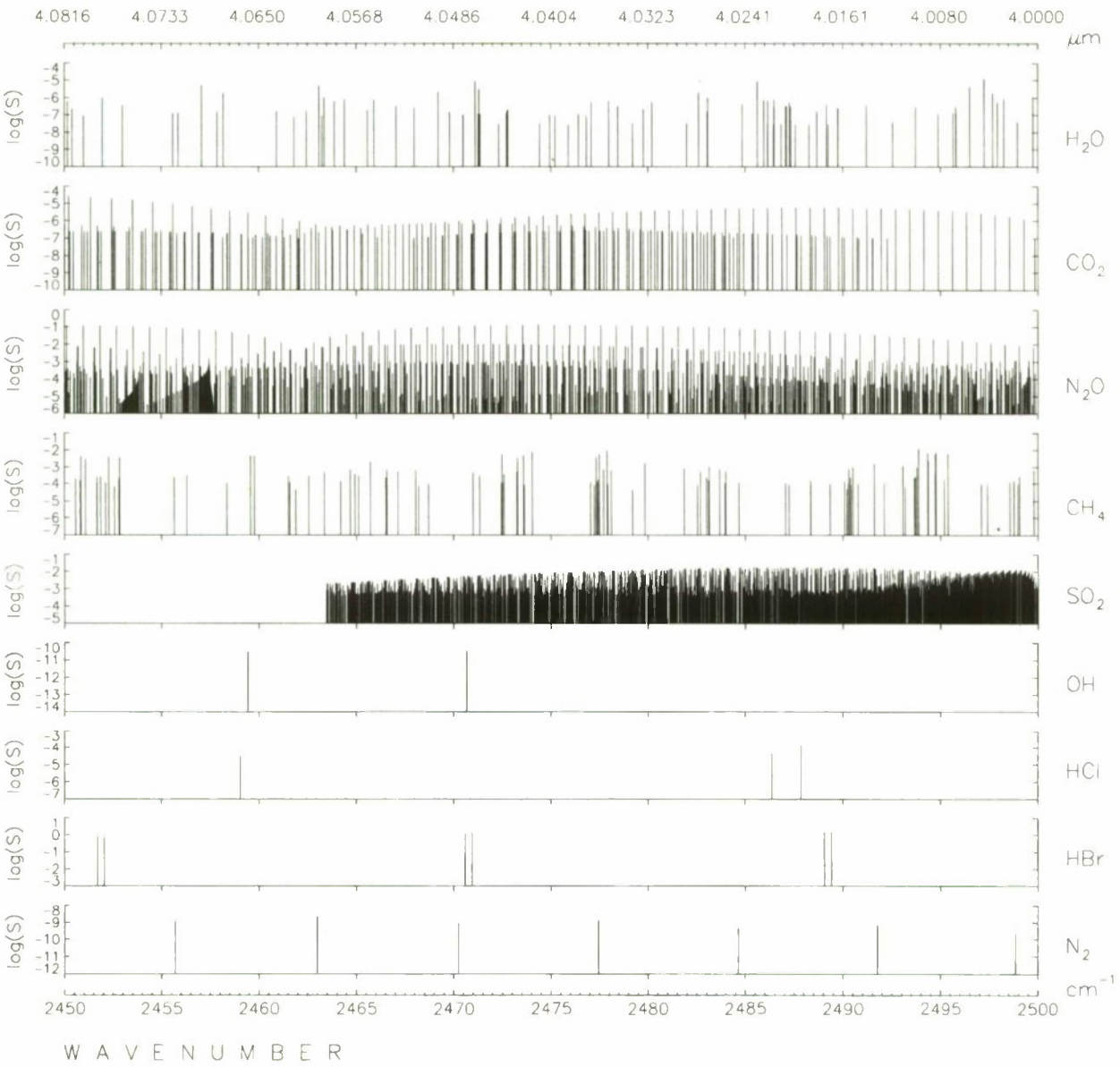
4.1408
4.1322
4.1237
4.1152
4.1068
4.0984
4.0900
4.0816
μm
log(S)
H2O
CO2
N2O
CH4
OH
HBr
N2
cm-1
2400
2405
2410
2415
2420
2425
2430
2435
2440
2445
2450
WAVENUMBER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4.0733
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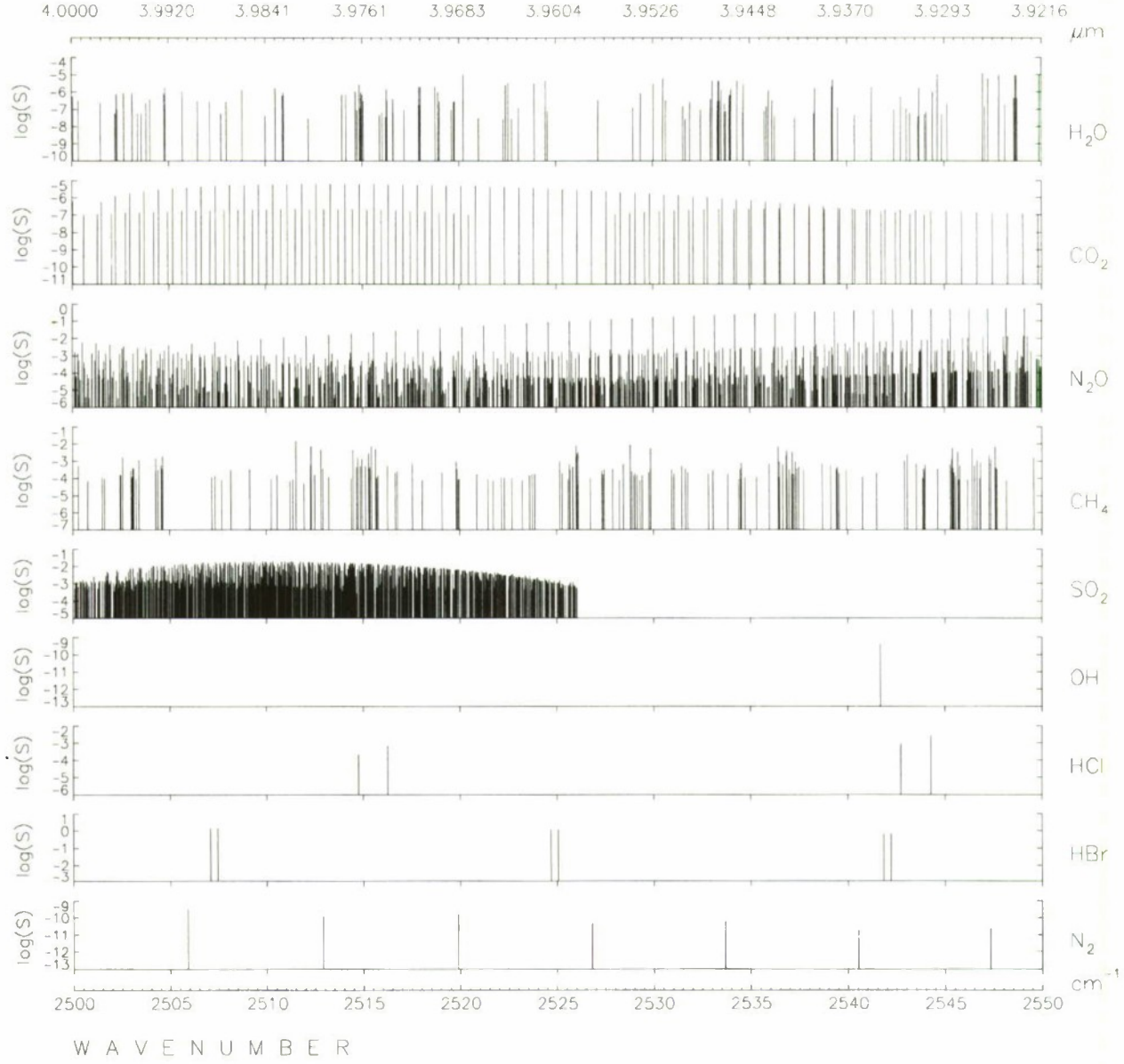
4.0404
4.0323
4.0241
4.0161
4.0080
4.0000
μm
log(S)
H2O
CO2
N2O
CH4
SO2
OH
HCl
HBr
N2
cm-1
2450
2455
2460
2465
2470
2475
2480
2485
2490
2495
2500
WAVENUMBER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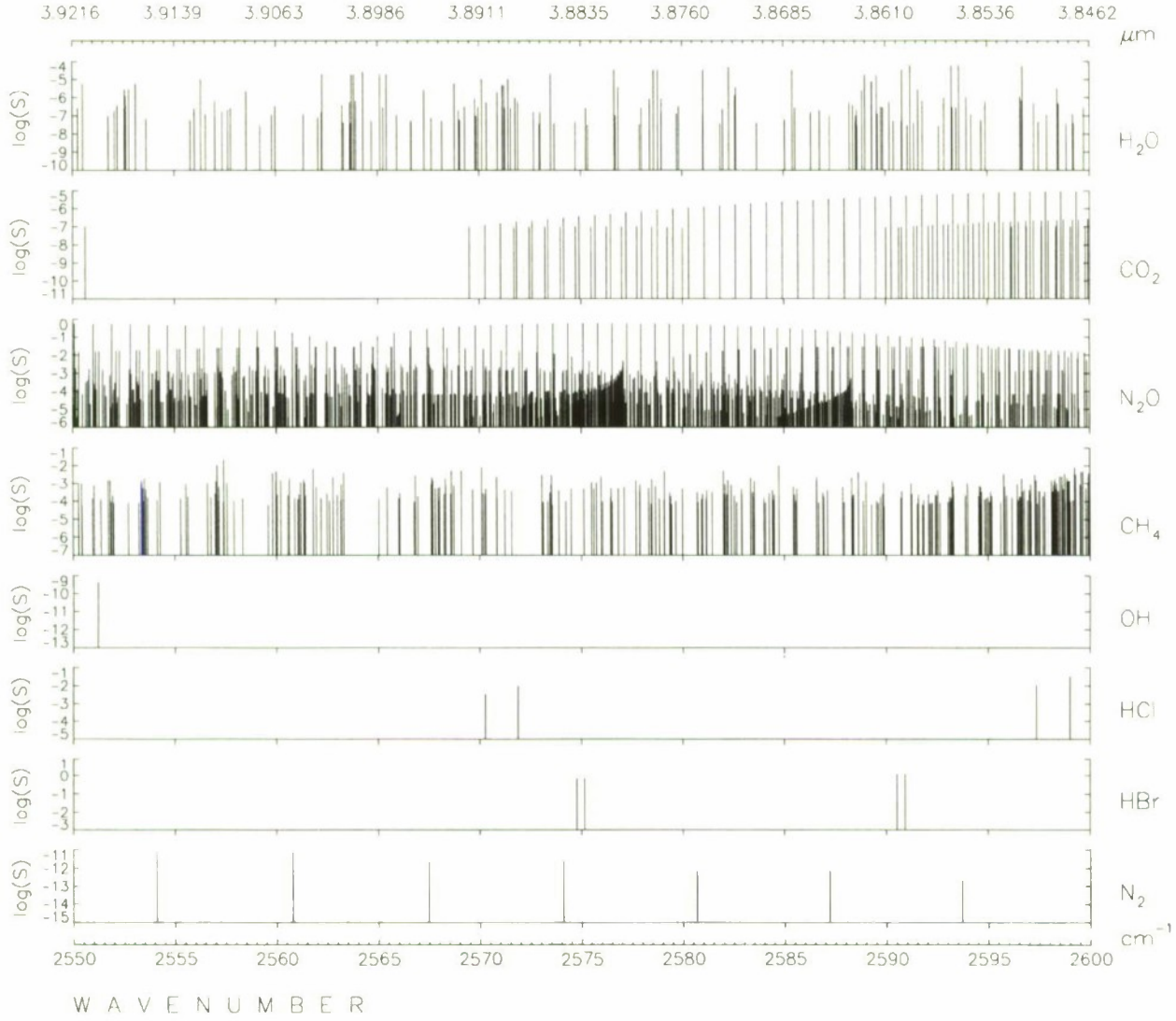
3.9604
3.9526
3.9448
3.9370
3.9293
3.9216
μm
log(S)
H2O
CO2
N2O
CH4
SO2
OH
HCl
HBr
N2
cm-1
2500
2505
2510
2515
2520
2525
2530
2535
2540
2545
2550
WAVENUMBER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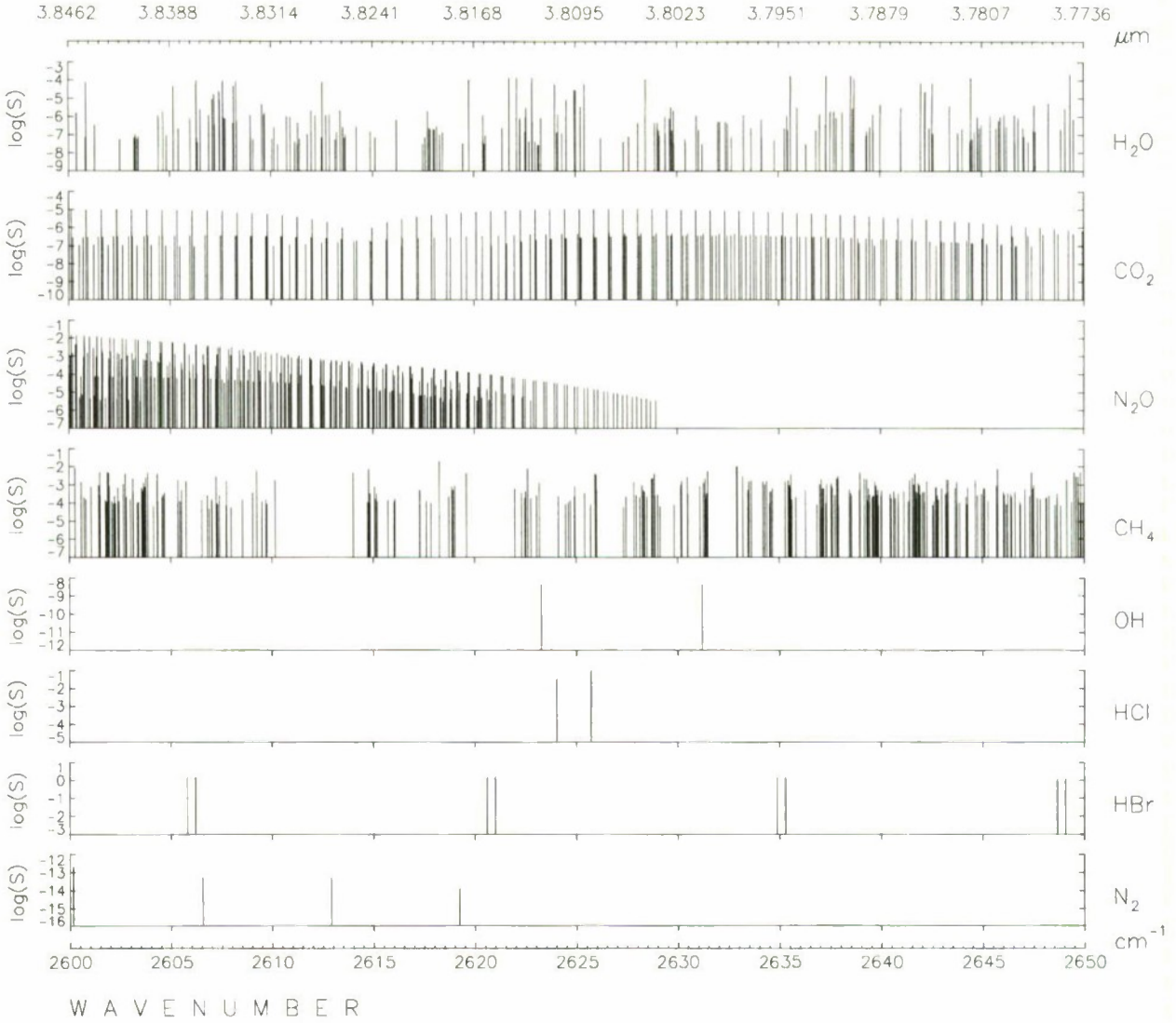
3.9139
3.9063
3.8986
3.8911
3.8835
3.8760
3.8685
3.8610
3.8536
3.8462
μm
log(S)
H2O
CO2
N2O
CH4
OH
HCl
HBr
N2
cm-1
2550
2555
2560
2565
2570
2575
2580
2585
2590
2595
2600
WAVENUMBER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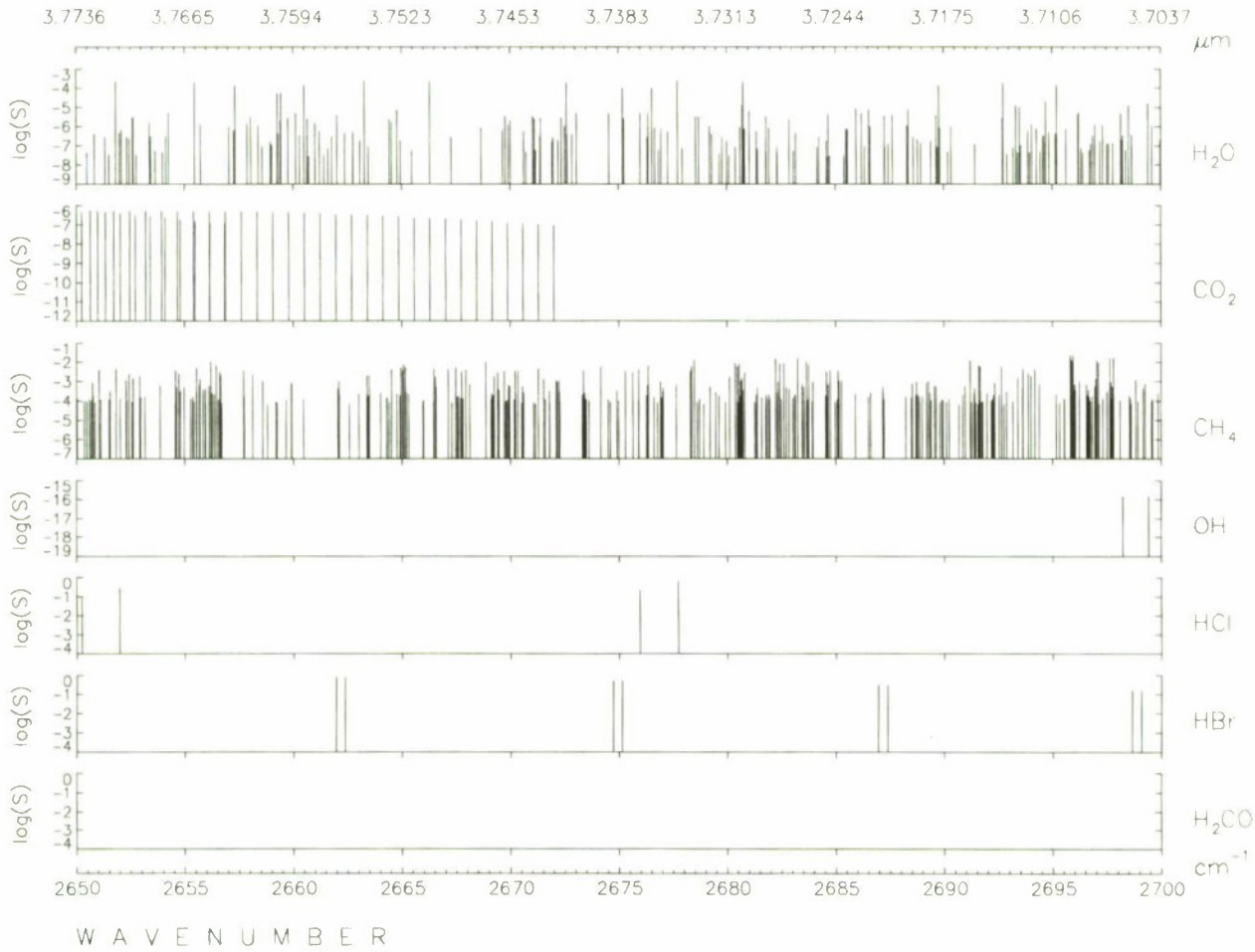
3.8388
3.8314
3.8241
3.8168
3.8095
3.8023
3.7951
3.7879
3.7807
3.7736
μm
log(S)
H2O
CO2
N2O
CH4
OH
HCl
HBr
N2
cm-1
2600
2605
2610
2615
2620
2625
2630
2635
2640
2645
2650
WAVENUMBER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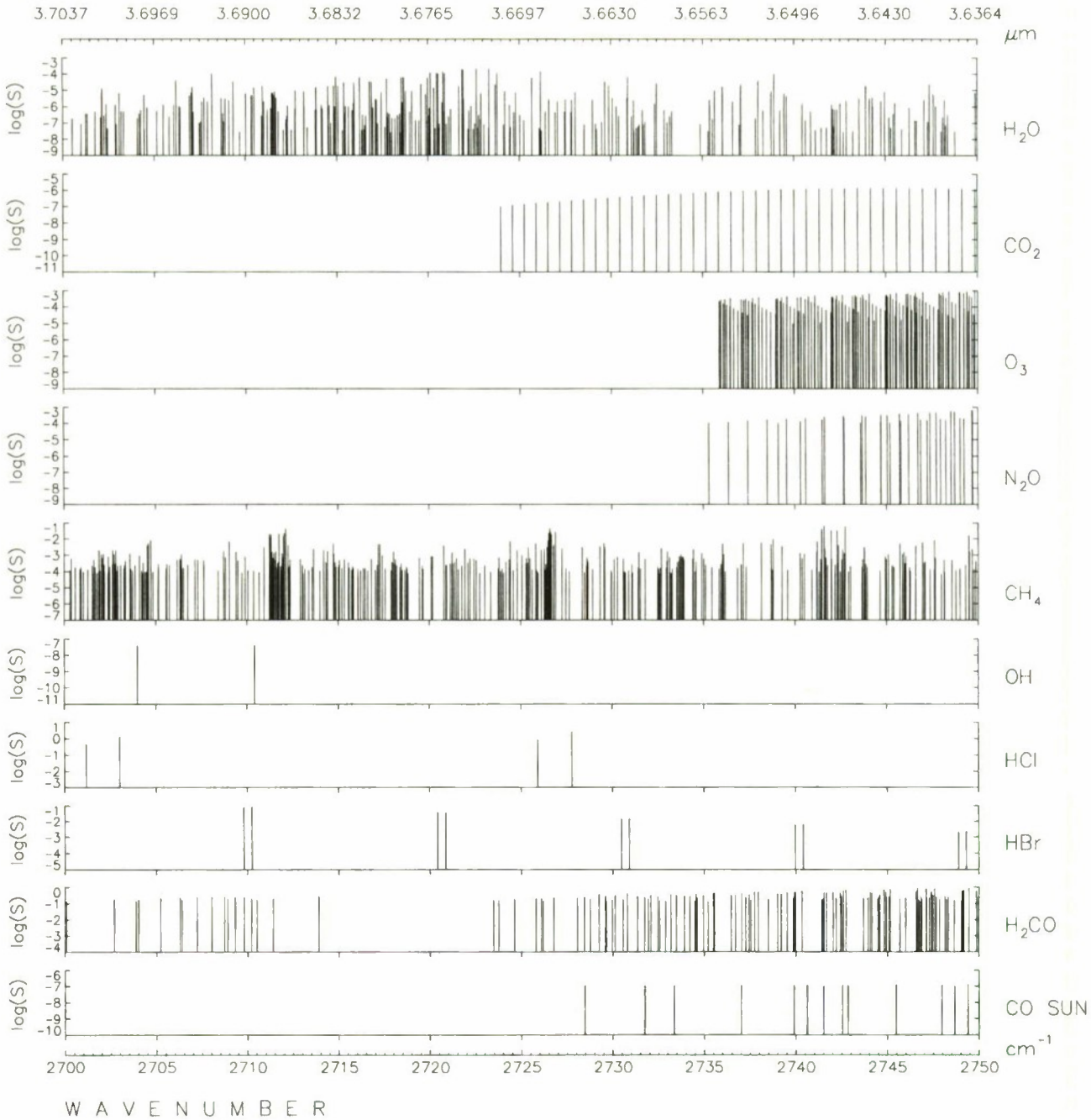
3.7665
3.7594
3.7523
3.7453
3.7383
3.7313
3.7244
3.7175
3.7106
3.7037
μm
log(S)
H2O
CO2
CH4
OH
HCl
HBr
H2CO
cm-1
2650
2655
2660
2665
2670
2675
2680
2685
2690
2695
2700
WAVENUMBER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3.6900
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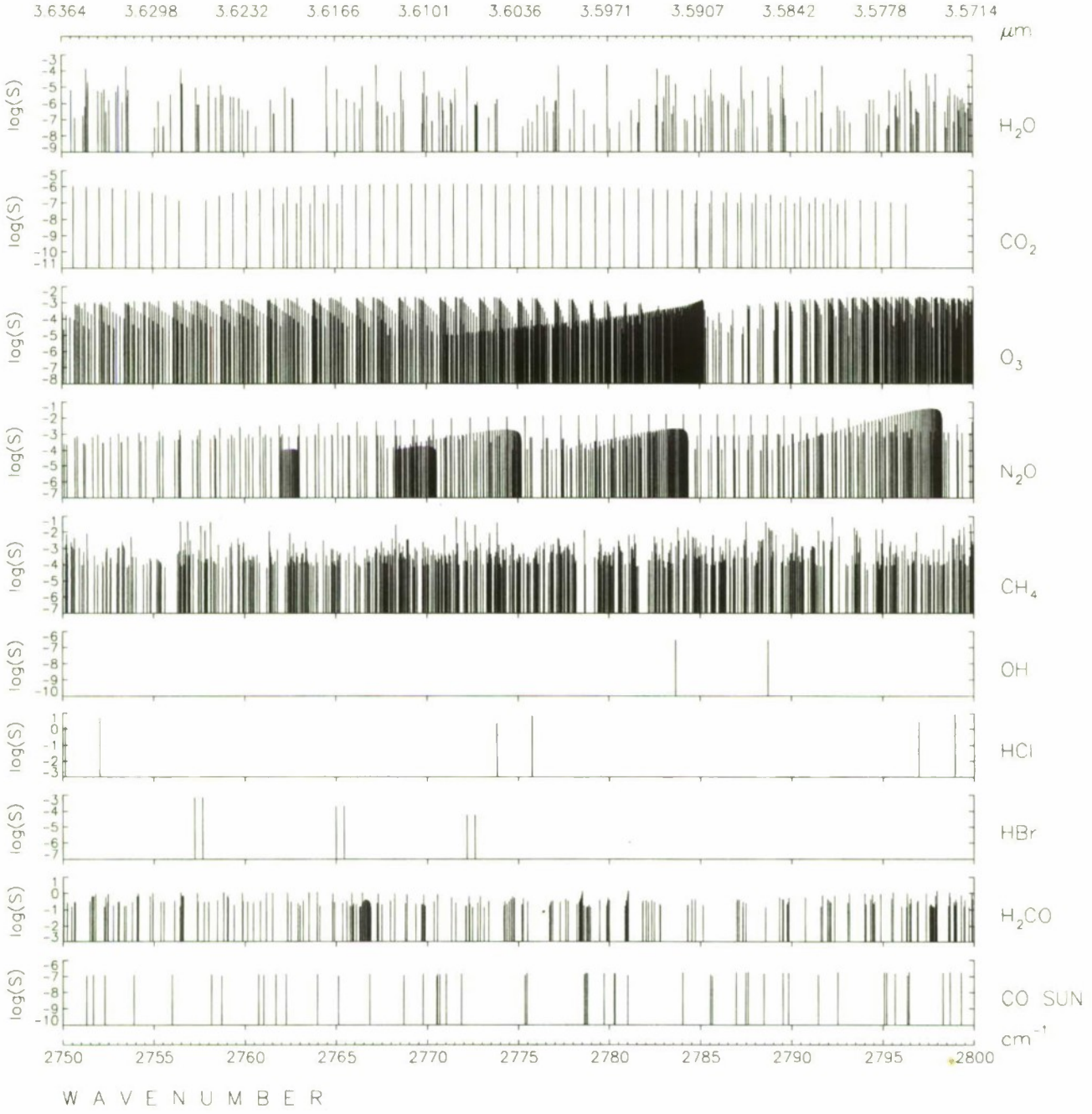
3.6765
3.6697
3.6630
3.6563
3.6496
3.6430
3.6364
μm
log(S)
H2O
CO2
O3
N2O
CH4
OH
HCl
HBr
H2CO
CO SUN
cm-1
2700
2705
2710
2715
2720
2725
2730
2735
2740
2745
2750
WAVENUMBER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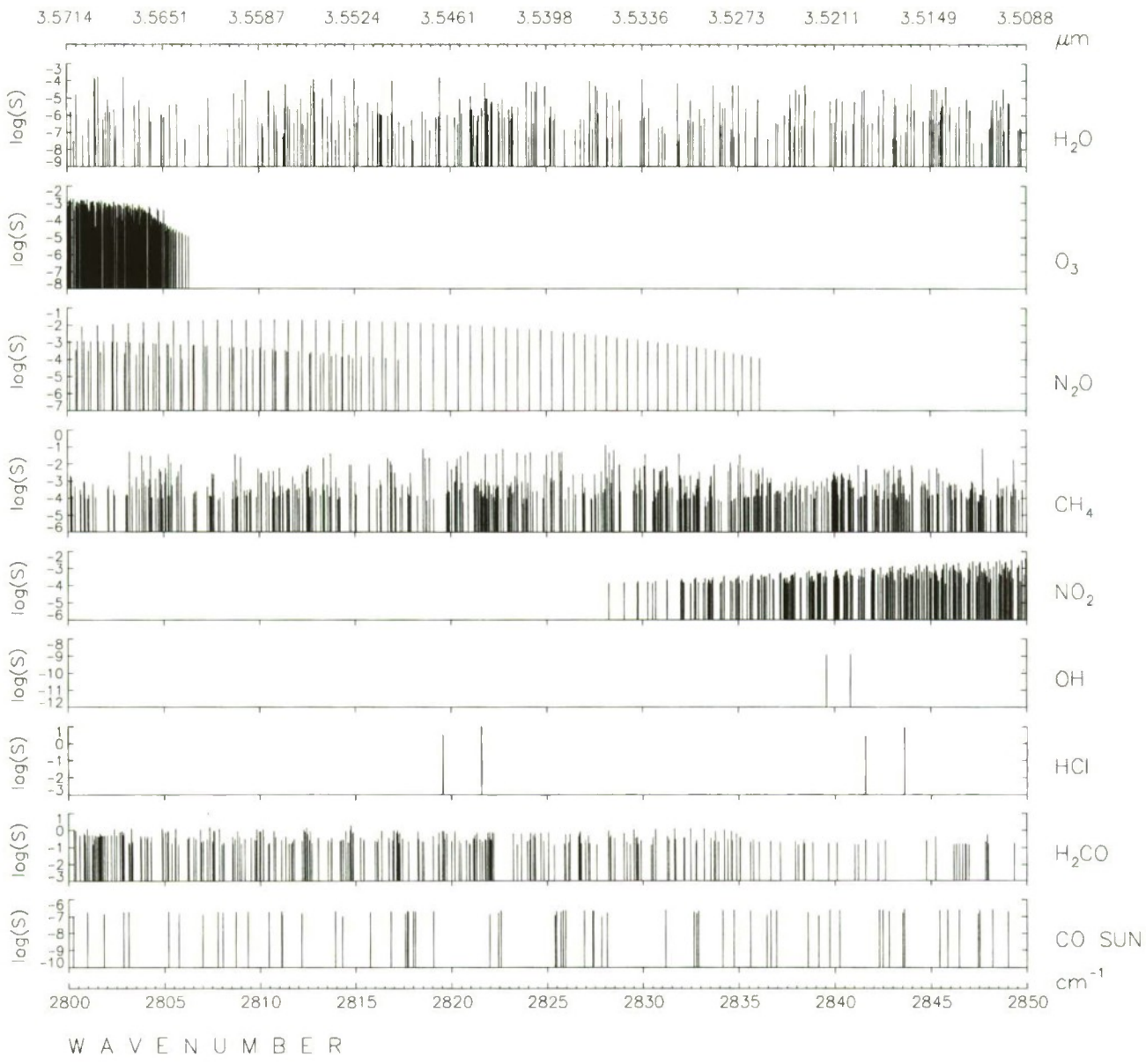
3.5842
3.5778
3.5714
μm
log(S)
H2O
CO2
O3
N2O
CH4
OH
HCl
HBr
H2CO
CO SUN
cm-1
2750
2755
2760
2765
2770
2775
2780
2785
2790
2795
2800
WAVENUMBER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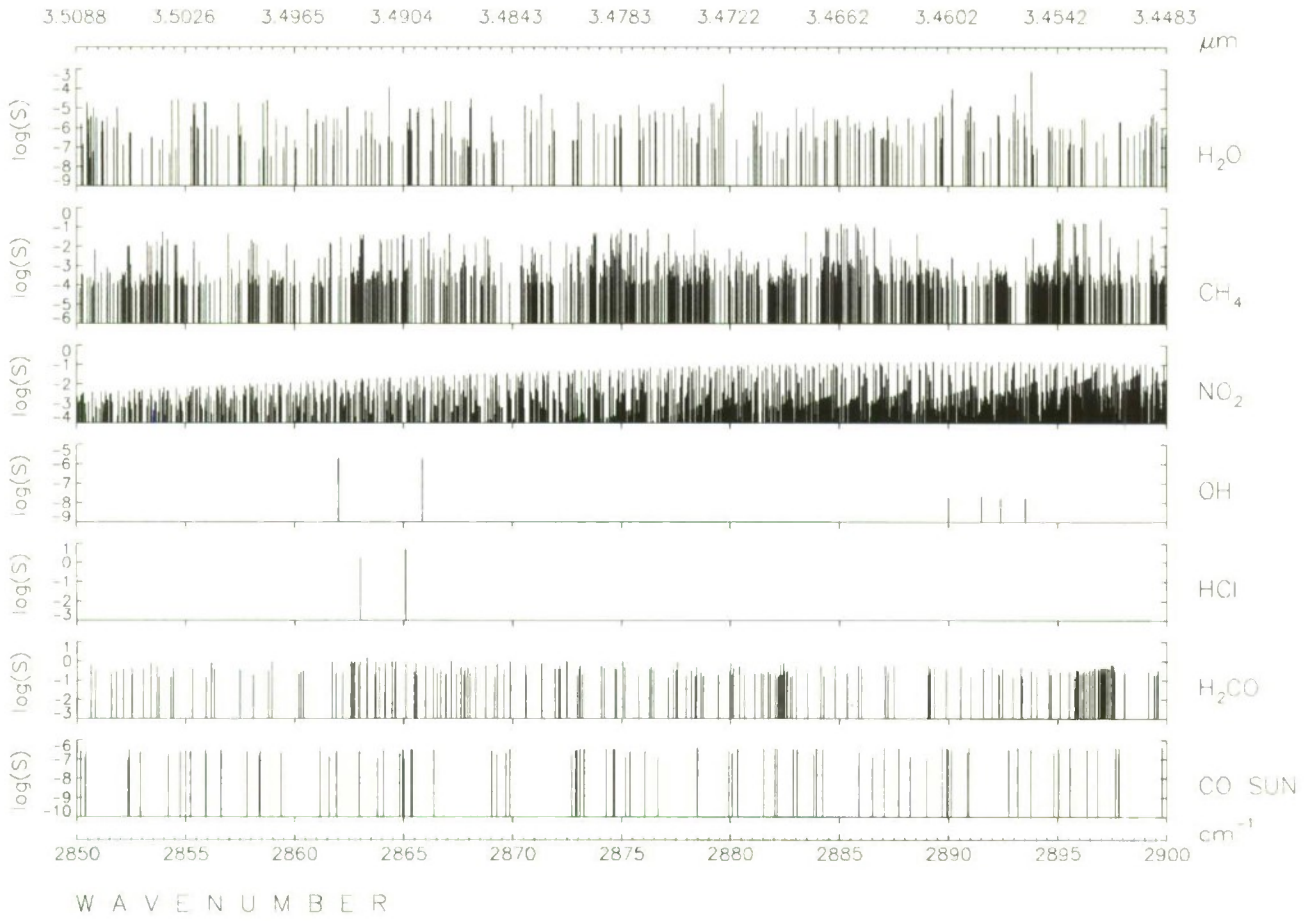
3.5273
3.5211
3.5149
3.5088
μm
log(S)
H2O
O3
N2O
CH4
NO2
OH
HCl
H2CO
CO SUN
cm-1
2800
2805
2810
2815
2820
2825
2830
2835
2840
2845
2850
WAVENUMBER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3.4783
3.4722
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3.4602
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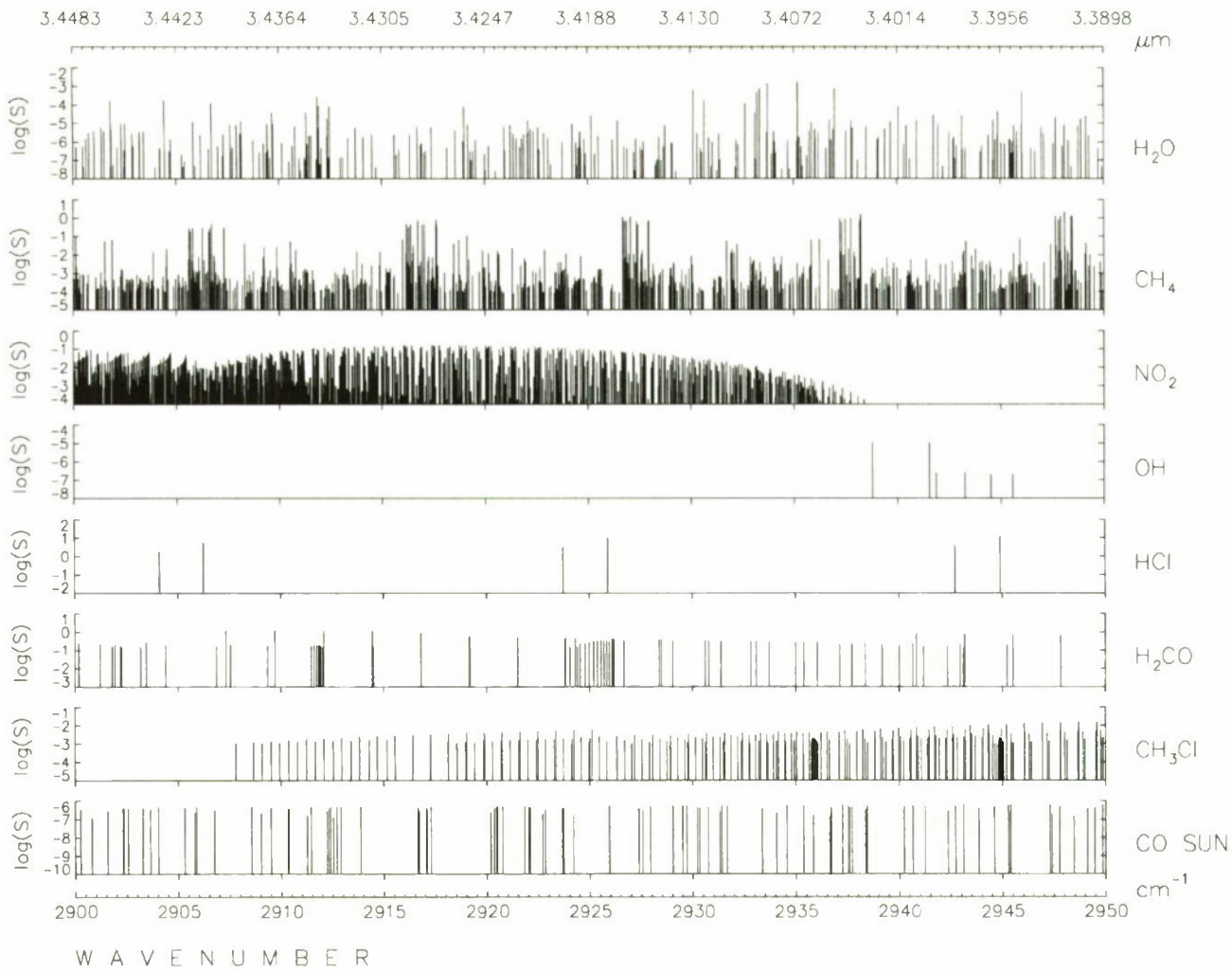
3.4483
μm
log(S)
H2O
CH4
NO2
OH
HCl
H2CO
CO SUN
cm-1
2850
2855
2860
2865
2870
2875
2880
2885
2890
2895
2900
WAVENUMBER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3.4130
3.4072
3.4014
3.3956
3.3898
μm
log(S)
H2O
CH4
NO2
OH
HCl
H2CO
CH3Cl
CO SUN
cm-1
2900
2905
2910
2915
2920
2925
2930
2935
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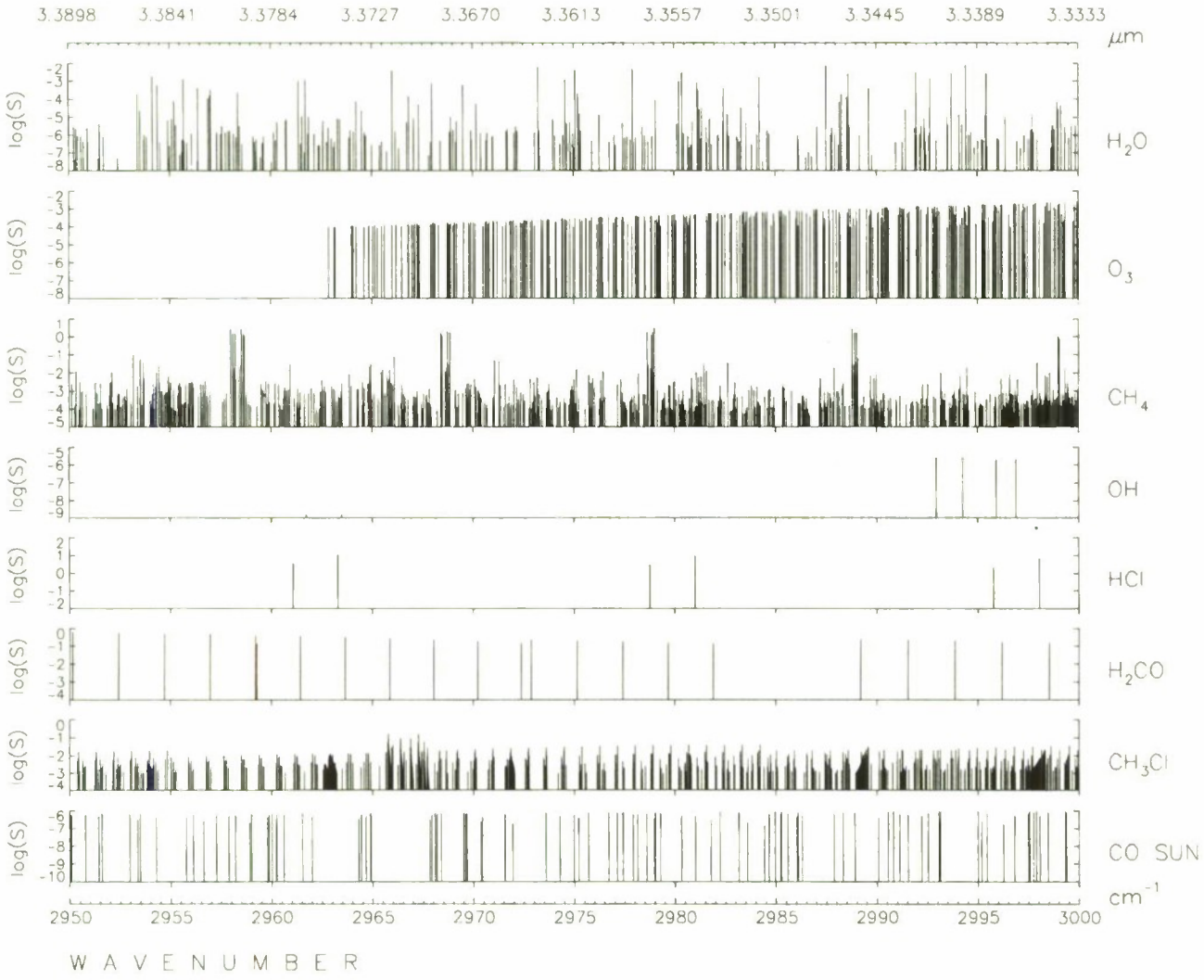
2950
WAVENUMBER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3.3784
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3.3557
3.3501
3.3445
3.3389
3.3333
μm
log(S)
H2O
O3
CH4
OH
HCl
H2CO
CH3Cl
CO SUN
cm-1
2950
2955
2960
2965
2970
2975
2980
2985
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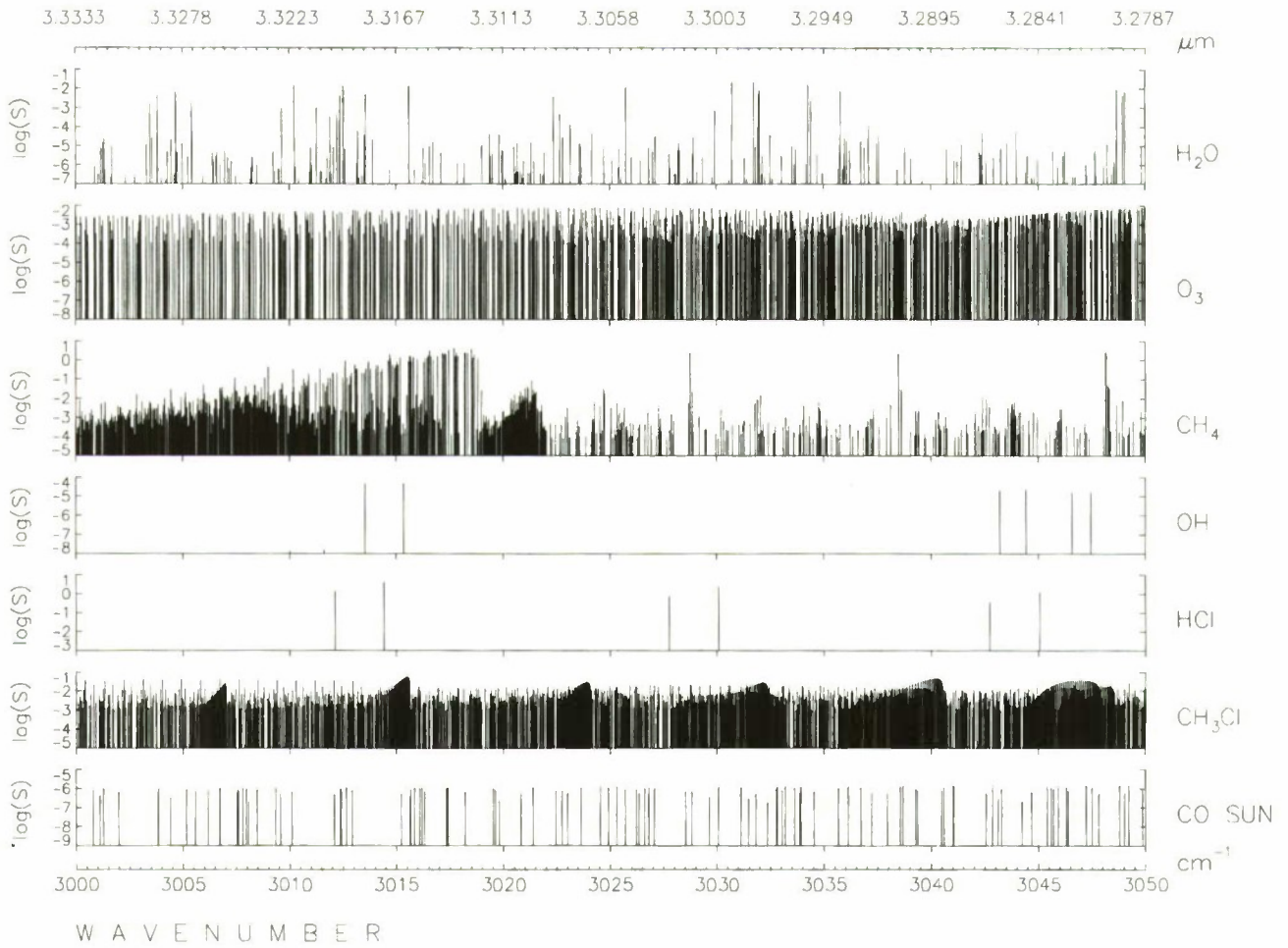
3000
WAVENUMBER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3.2787
μm
log(S)
H2O
O3
CH4
OH
HCl
CH3Cl
CO SUN
cm-1
3000
3005
3010
3015
3020
3025
3030
3035
3040
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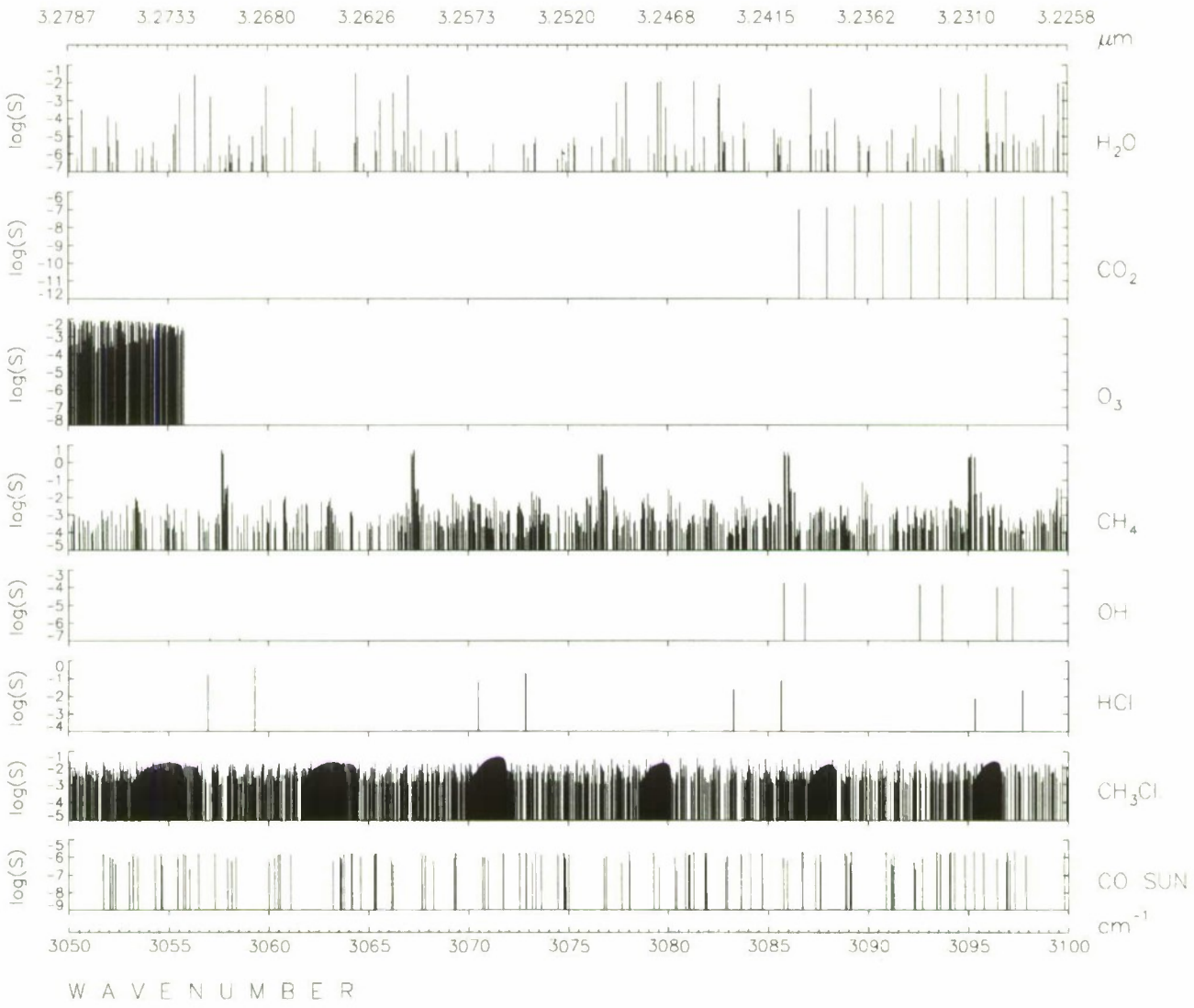
3050
WAVENUMBER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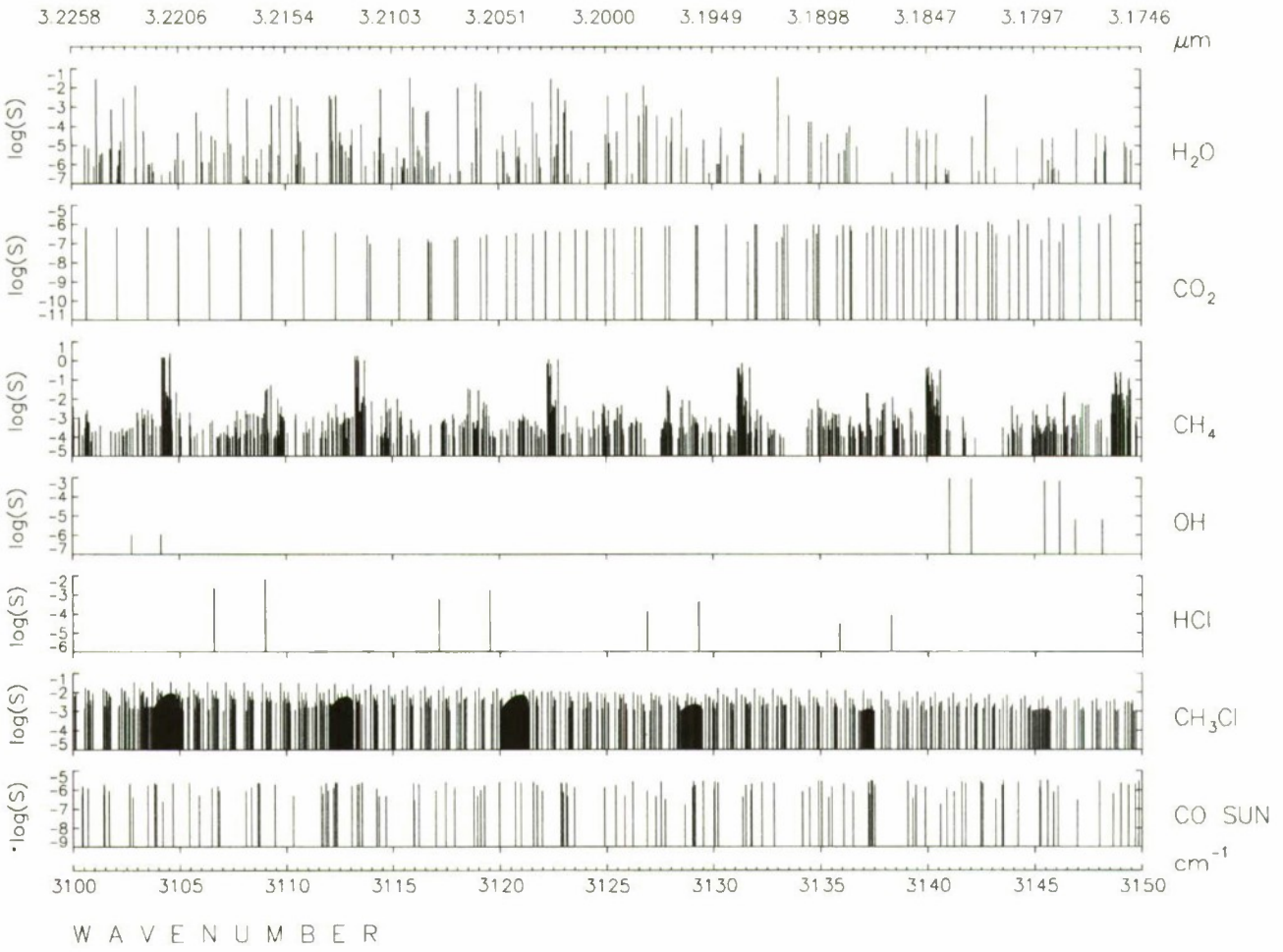
3.2520
3.2468
3.2415
3.2362
3.2310
3.2258
μm
log(S)
H2O
CO2
O3
CH4
OH
HCl
CH3Cl
CO SUN
cm-1
3050
3055
3060
3065
3070
3075
3080
3085
3090
3095
3100
WAVENUMBER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3.2000
3.1949
3.1898
3.1847
3.1797
3.1746
μm
log(S)
H2O
CO2
CH4
OH
HCl
CH3Cl
CO SUN
cm-1
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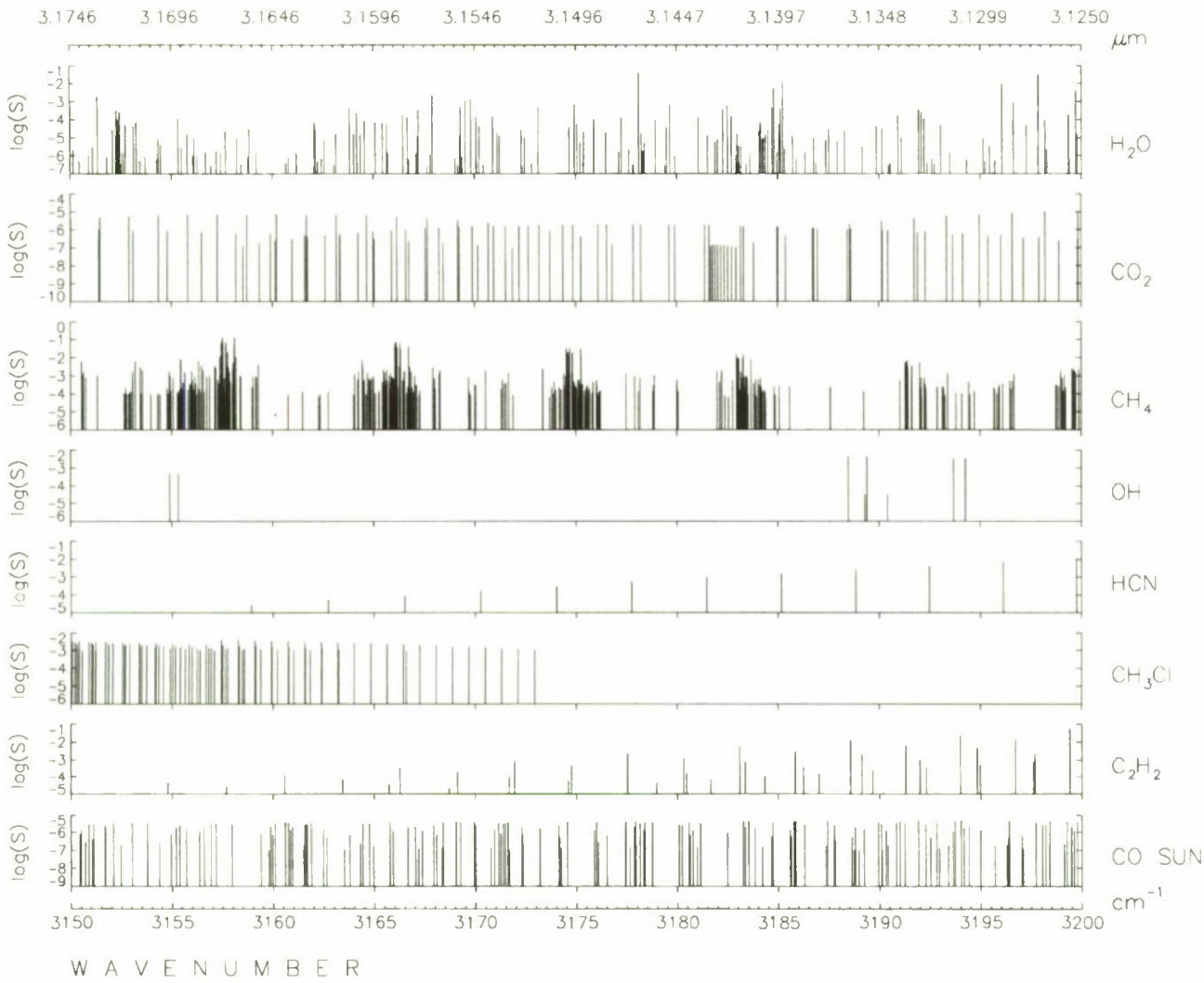
3105
3110
3115
3120
3125
3130
3135
3140
3145
3150
WAVENUMBER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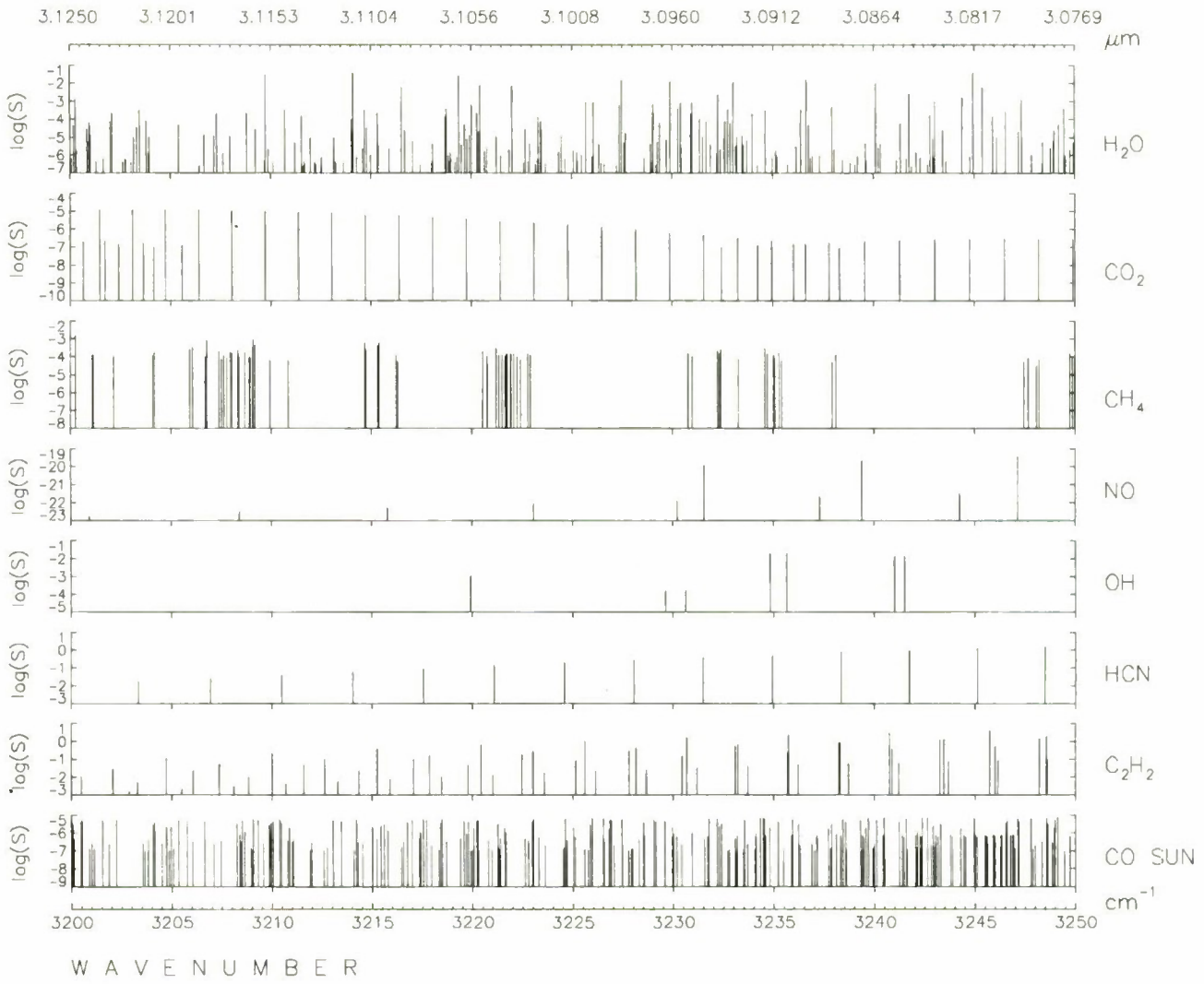
3.1348
3.1299
3.1250
μm
log(S)
H2O
CO2
CH4
OH
HCN
CH3Cl
C2H2
CO SUN
cm-1
3150
3155
3160
3165
3170
3175
3180
3185
3190
3195
3200
WAVENUMBER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3.0960
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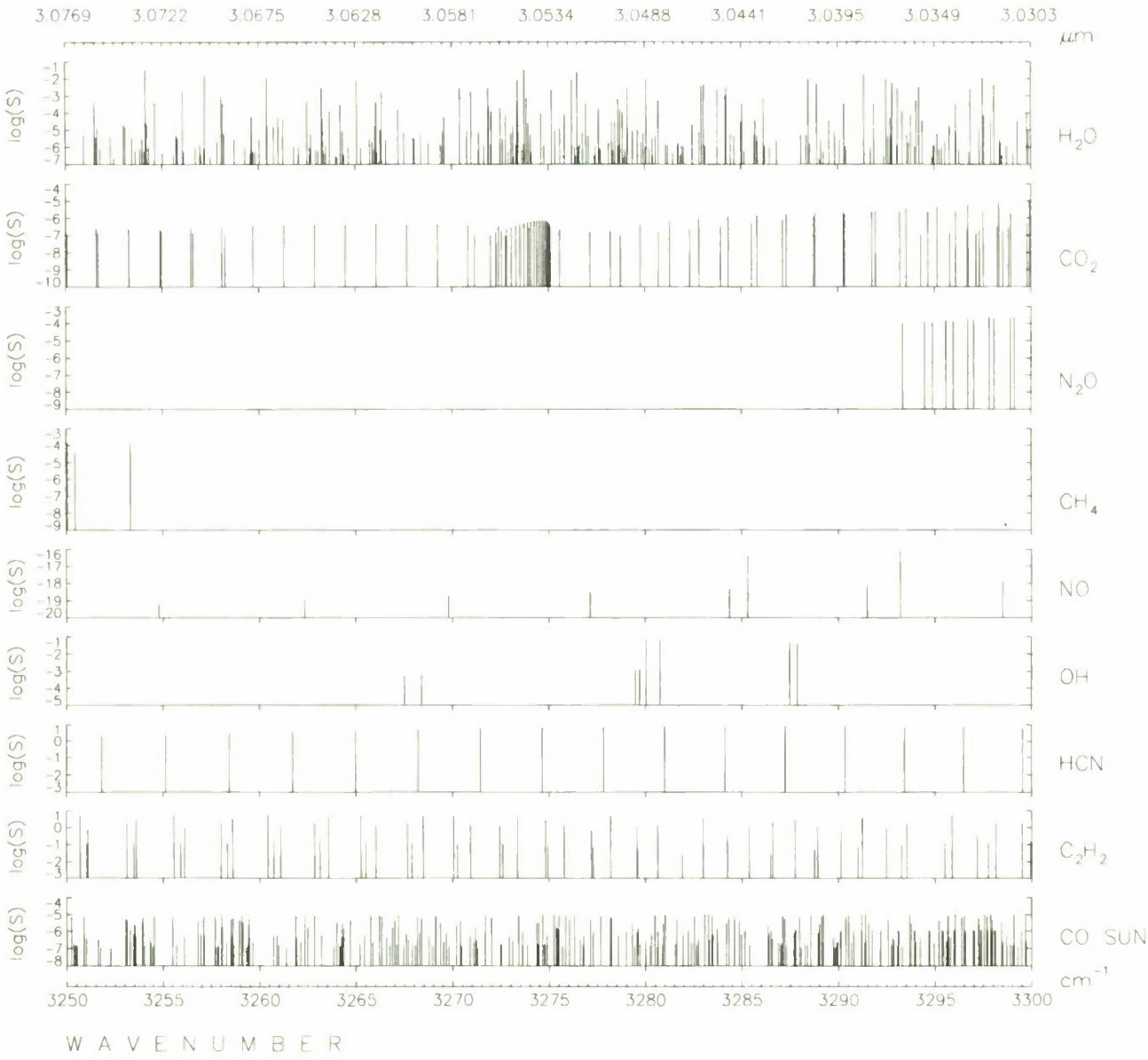
3.0817
3.0769
μm
log(S)
H2O
CO2
CH4
NO
OH
HCN
C2H2
CO SUN
cm-1
3200
3205
3210
3215
3220
3225
3230
3235
3240
3245
3250
WAVENUMBER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3.0488
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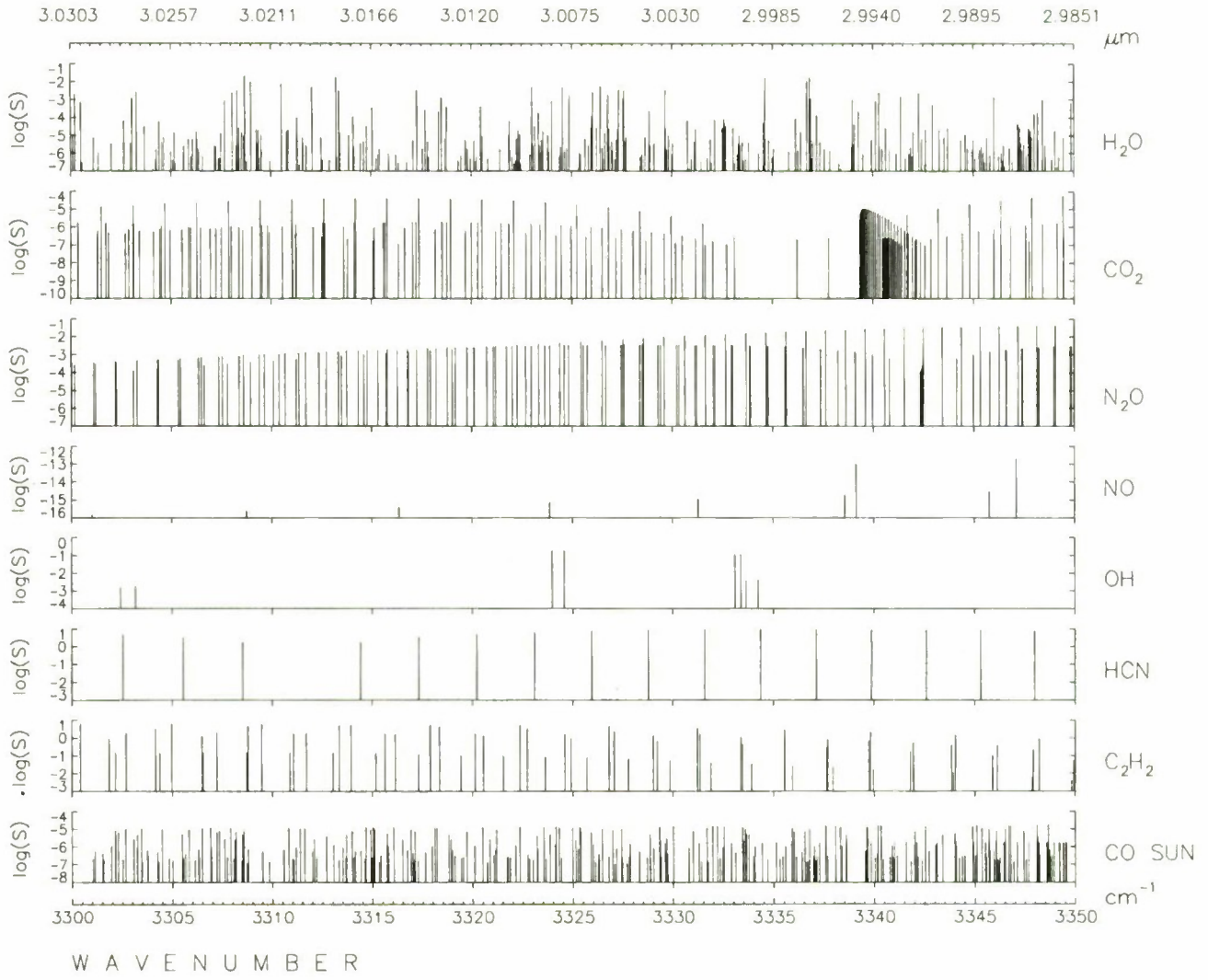
3.0395
3.0349
3.0303
μm
log(S)
H2O
CO2
N2O
CH4
NO
OH
HCN
C2H2
CO SUN
cm-1
3250
3255
3260
3265
3270
3275
3280
3285
3290
3295
3300
WAVENUMBER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3.0075
3.0030
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2.9940
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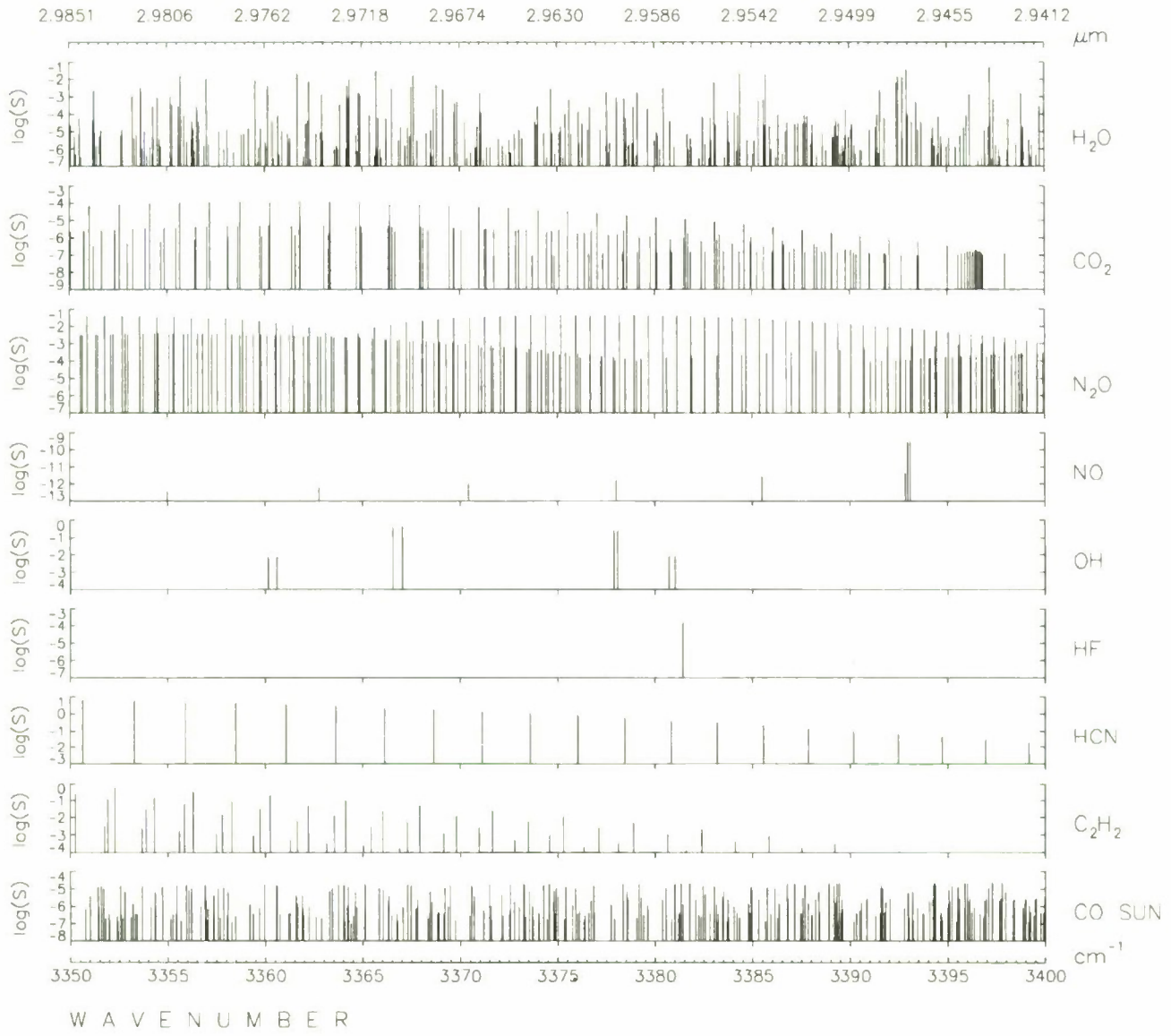
2.9851
μm
log(S)
H2O
CO2
N2O
NO
OH
HCN
C2H2
CO SUN
cm-1
3300
3305
3310
3315
3320
3325
3330
3335
3340
3345
3350
WAVENUMBER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2.9586
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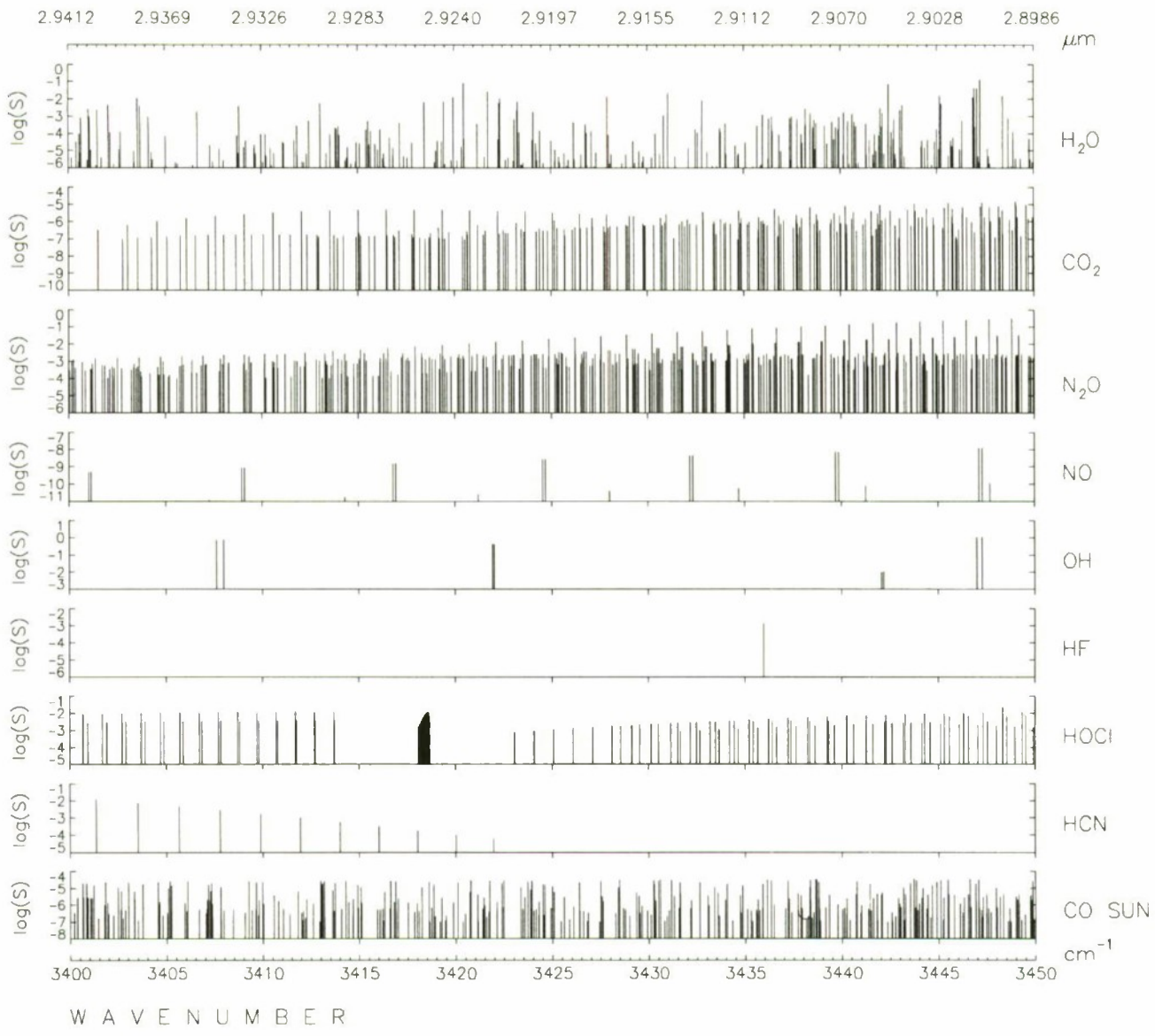
2.9499
2.9455
2.9412
μm
log(S)
H2O
CO2
N2O
NO
OH
HF
HCN
C2H2
CO SUN
cm-1
3350
3355
3360
3365
3370
3375
3380
3385
3390
3395
3400
WAVENUMBER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2.9155
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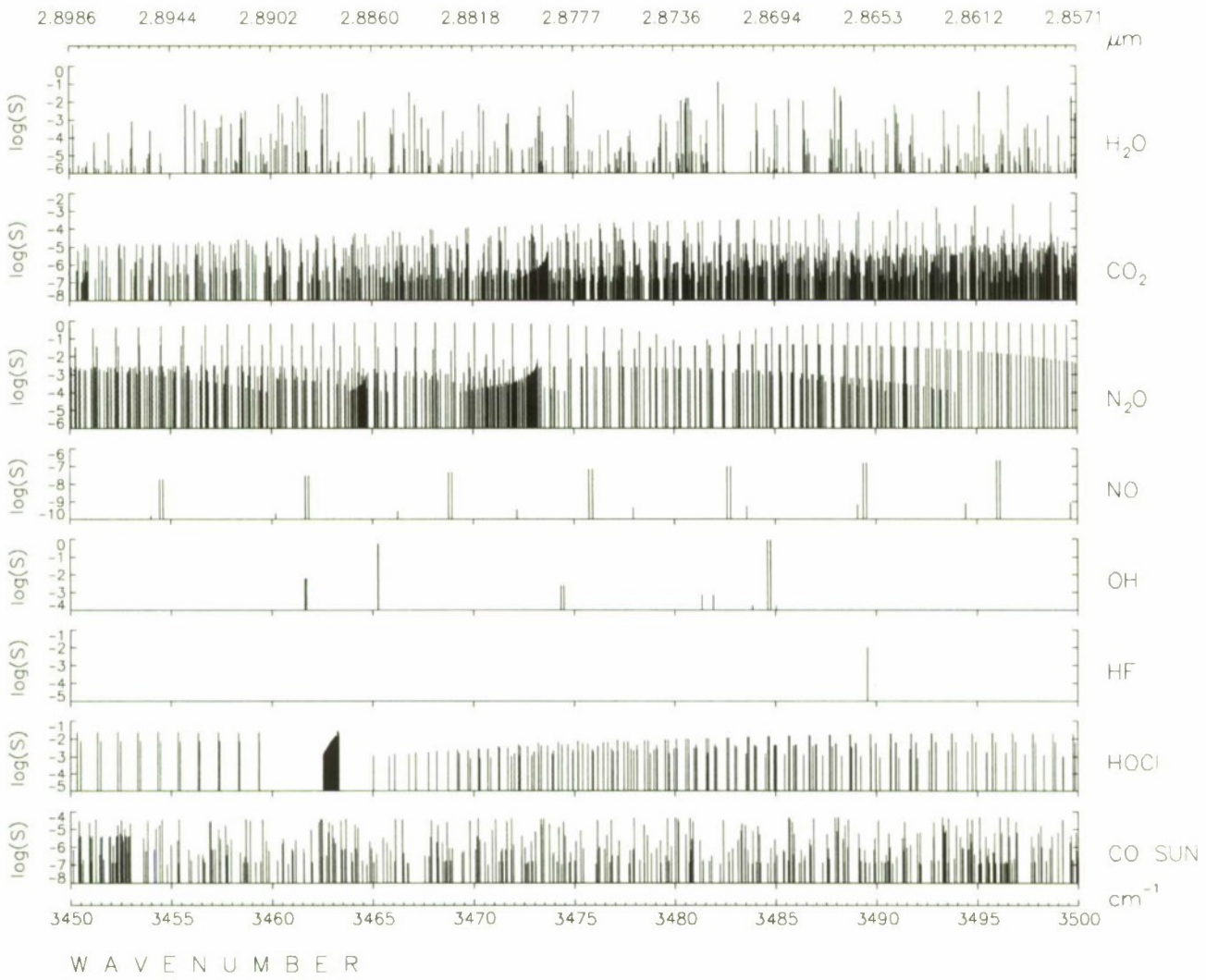
2.9070
2.9028
2.8986
μm
log(S)
H2O
CO2
N2O
NO
OH
HF
HOCl
HCN
CO SUN
cm-1
3400
3405
3410
3415
3420
3425
3430
3435
3440
3445
3450
WAVENUMBER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2.8736
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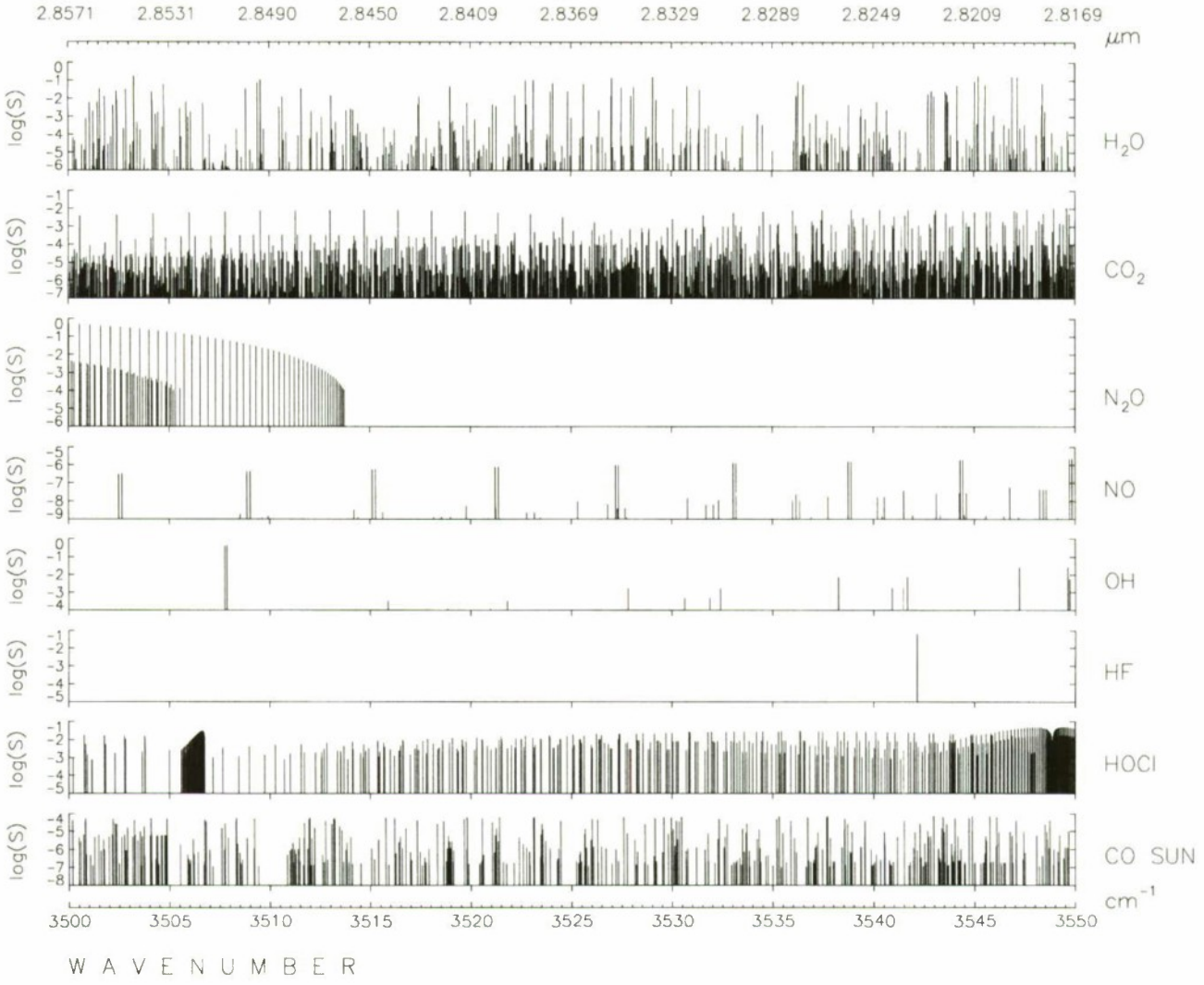
2.8653
2.8612
2.8571
μm
log(S)
H2O
CO2
N2O
NO
OH
HF
HOCl
CO SUN
cm-1
3450
3455
3460
3465
3470
3475
3480
3485
3490
3495
3500
WAVENUMBER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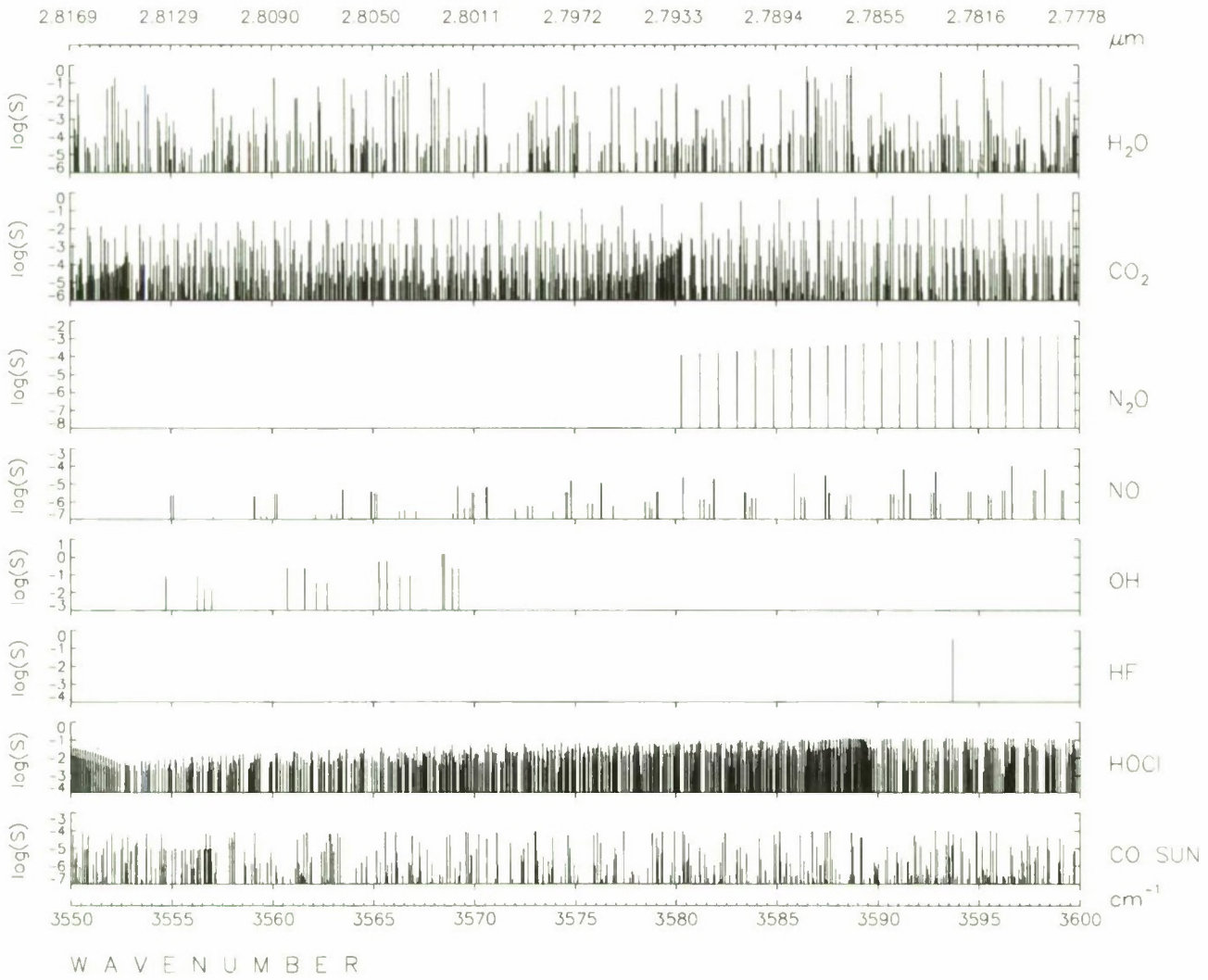
2.8409
2.8369
2.8329
2.8289
2.8249
2.8209
2.8169
μm
log(S)
H2O
CO2
N2O
NO
OH
HF
HOCl
CO SUN
cm-1
3500
3505
3510
3515
3520
3525
3530
3535
3540
3545
3550
WAVENUMBER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2.8129
2.8090
2.8050
2.8011
2.7972
2.7933
2.7894
2.7855
2.7816
2.7778
μm
log(S)
H2O
CO2
N2O
NO
OH
HF
HOCl
CO SUN
cm-1
3550
3555
3560
3565
3570
3575
3580
3585
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3595
3600
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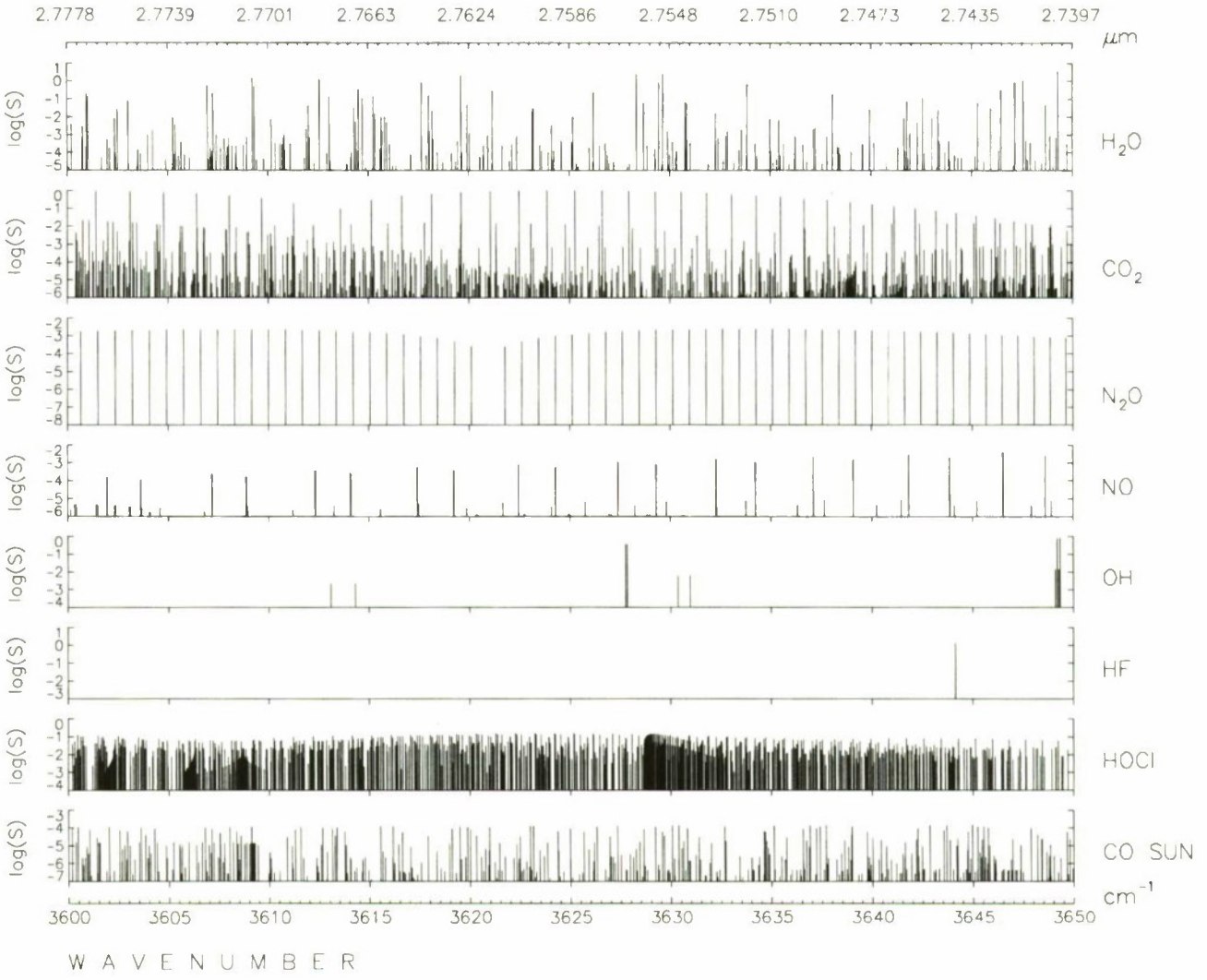
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2.7701
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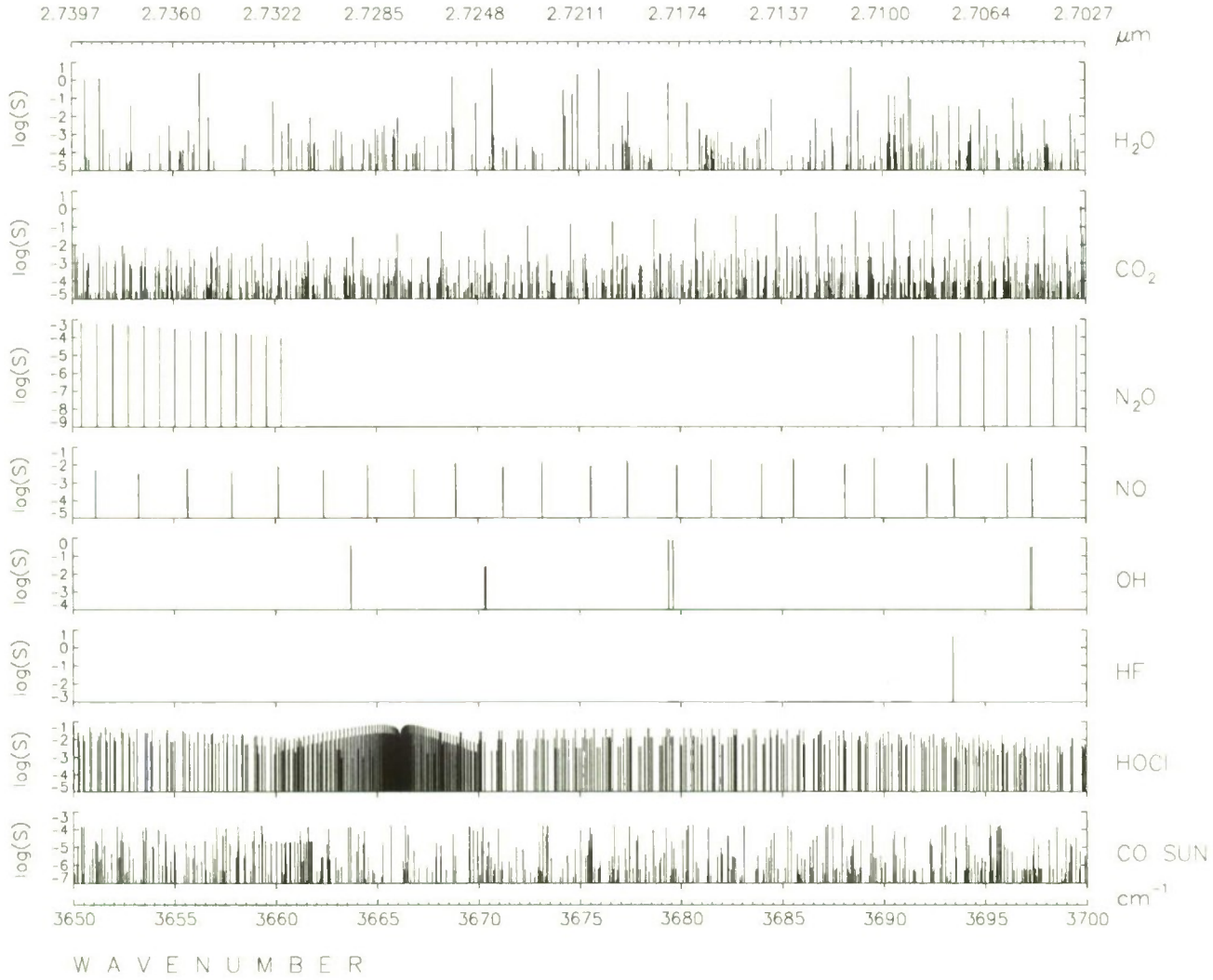
2.7624
2.7586
2.7548
2.7510
2.7473
2.7435
2.7397
μm
log(S)
H2O
CO2
N2O
NO
OH
HF
HOCl
CO SUN
cm-1
3600
3605
3610
3615
3620
3625
3630
3635
3640
3645
3650
WAVENUMBER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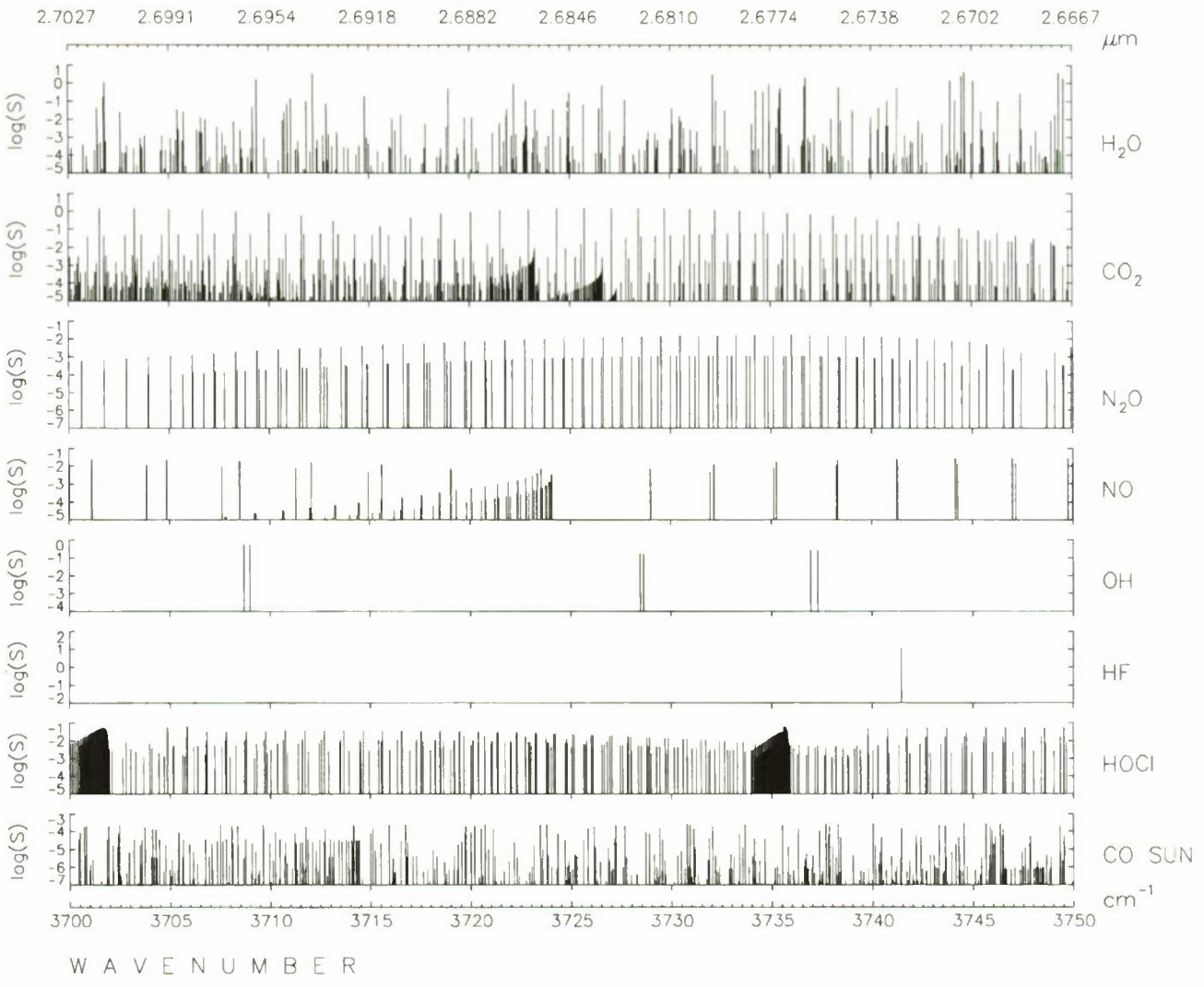
2.7360
2.7322
2.7285
2.7248
2.7211
2.7174
2.7137
2.7100
2.7064
2.7027
μm
log(S)
H2O
CO2
N2O
NO
OH
HF
HOCl
CO SUN
cm-1
3650
3655
3660
3665
3670
3675
3680
3685
3690
3695
3700
WAVENUMBER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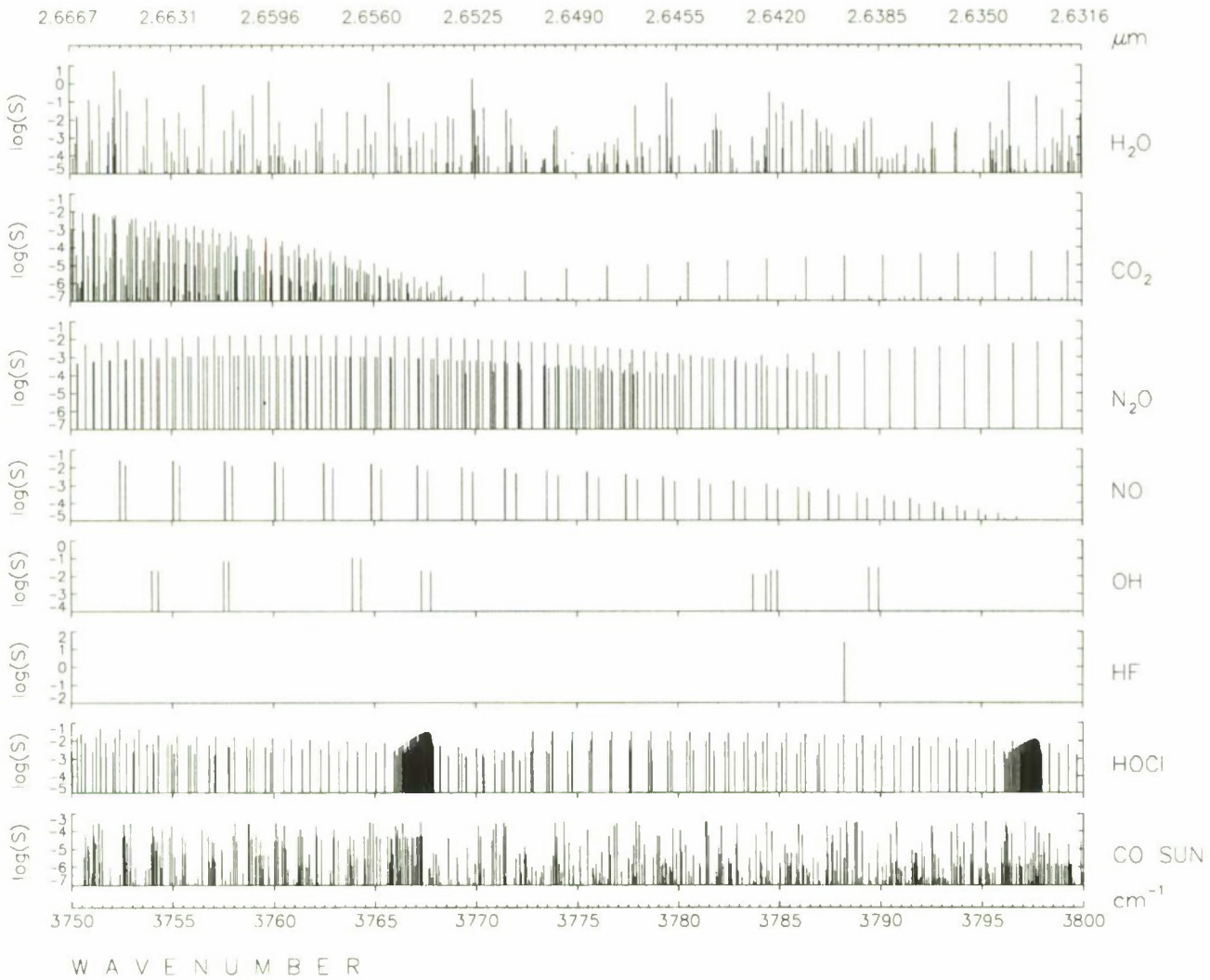
2.6991
2.6954
2.6918
2.6882
2.6846
2.6810
2.6774
2.6738
2.6702
2.6667
μm
log(S)
H2O
CO2
N2O
NO
OH
HF
HOCl
CO SUN
cm-1
3700
3705
3710
3715
3720
3725
3730
3735
3740
3745
3750
WAVENUMBER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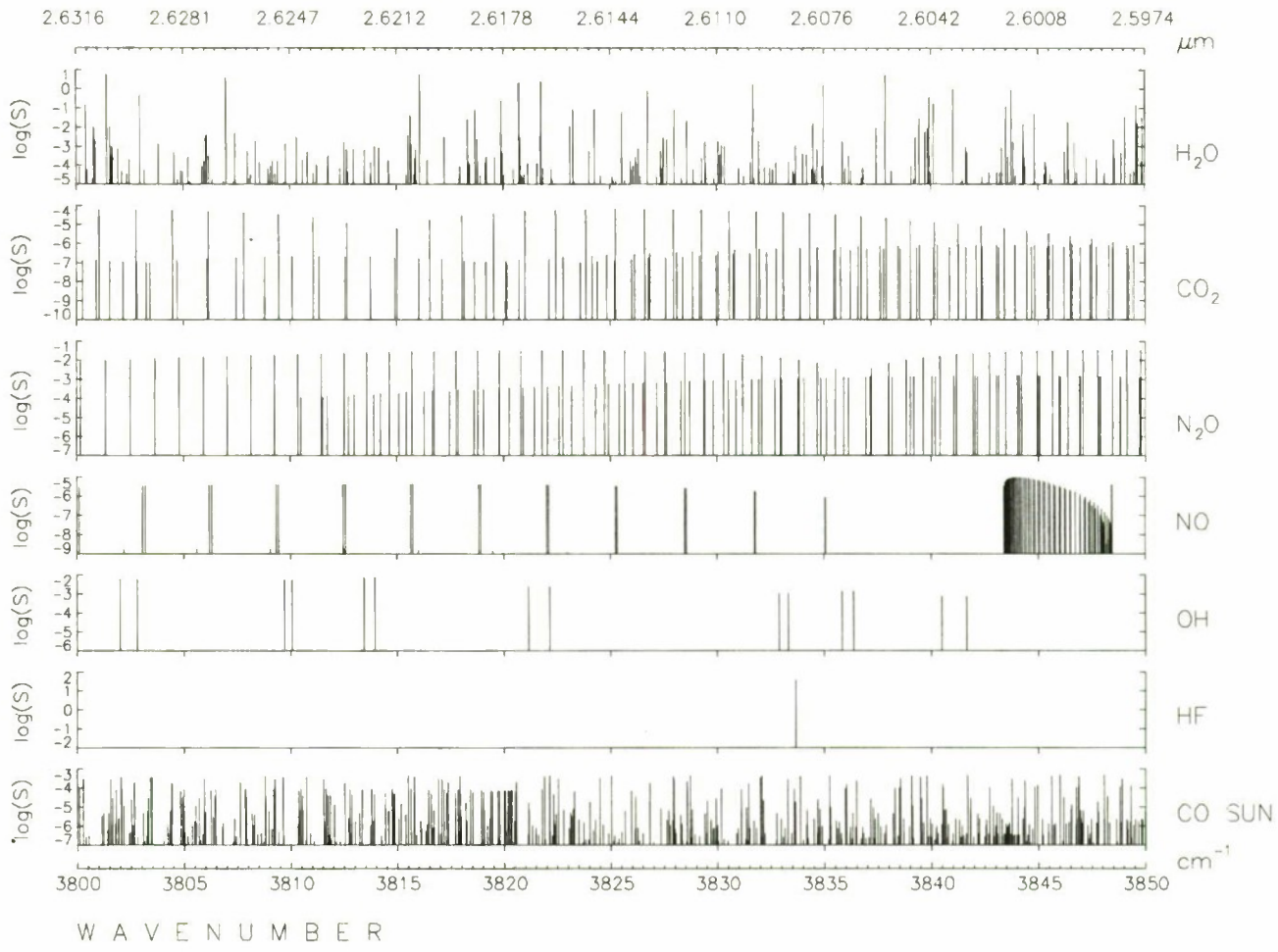
2.6631
2.6596
2.6560
2.6525
2.6490
2.6455
2.6420
2.6385
2.6350
2.6316
μm
log(S)
H2O
CO2
N2O
NO
OH
HF
HOCl
CO SUN
cm-1
3750
3755
3760
3765
3770
3775
3780
3785
3790
3795
3800
WAVENUMBER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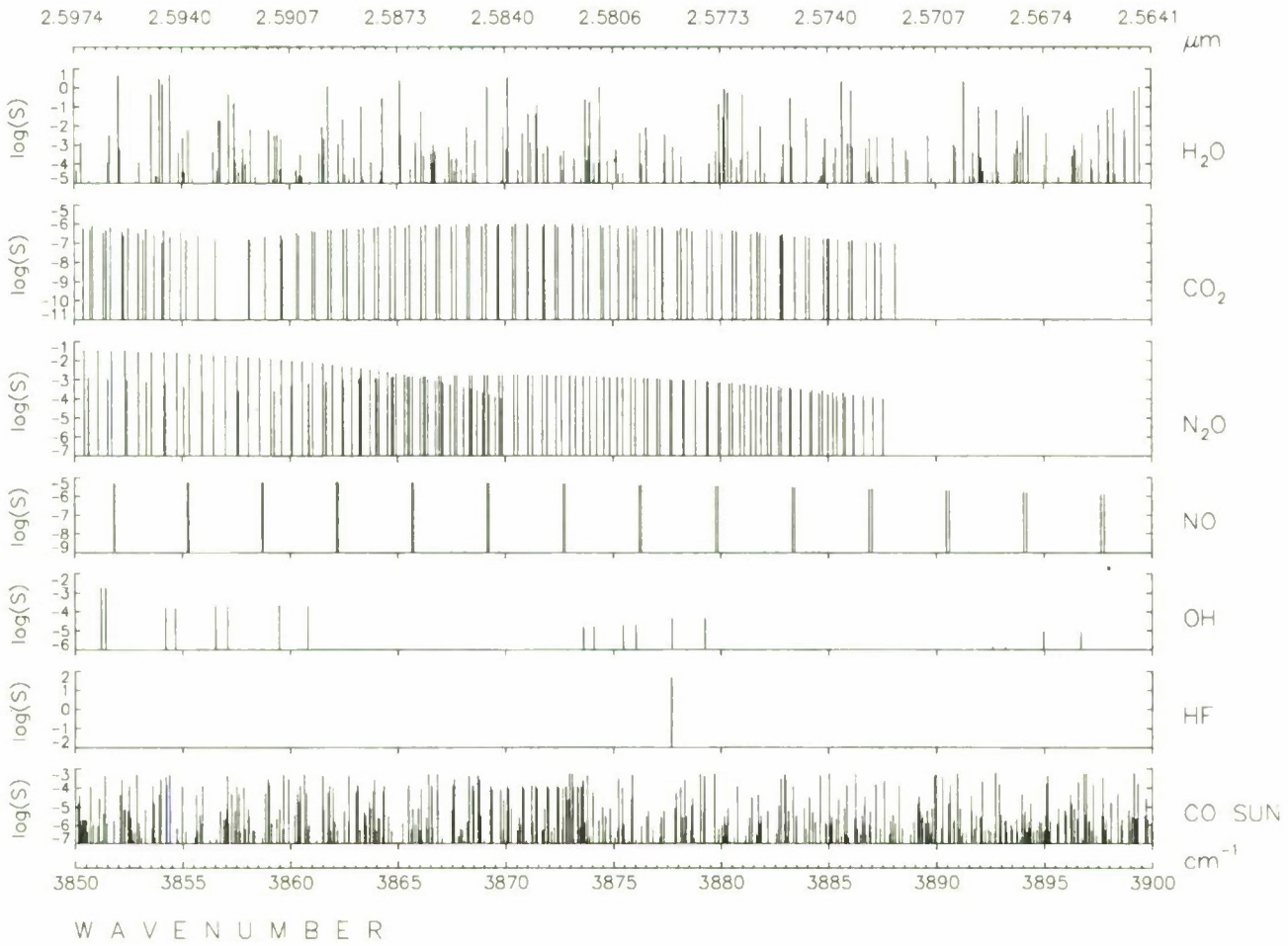
2.6281
2.6247
2.6212
2.6178
2.6144
2.6110
2.6076
2.6042
2.6008
2.5974
μm
log(S)
H2O
CO2
N2O
NO
OH
HF
CO SUN
cm-1
3800
3805
3810
3815
3820
3825
3830
3835
3840
3845
3850
WAVENUMBER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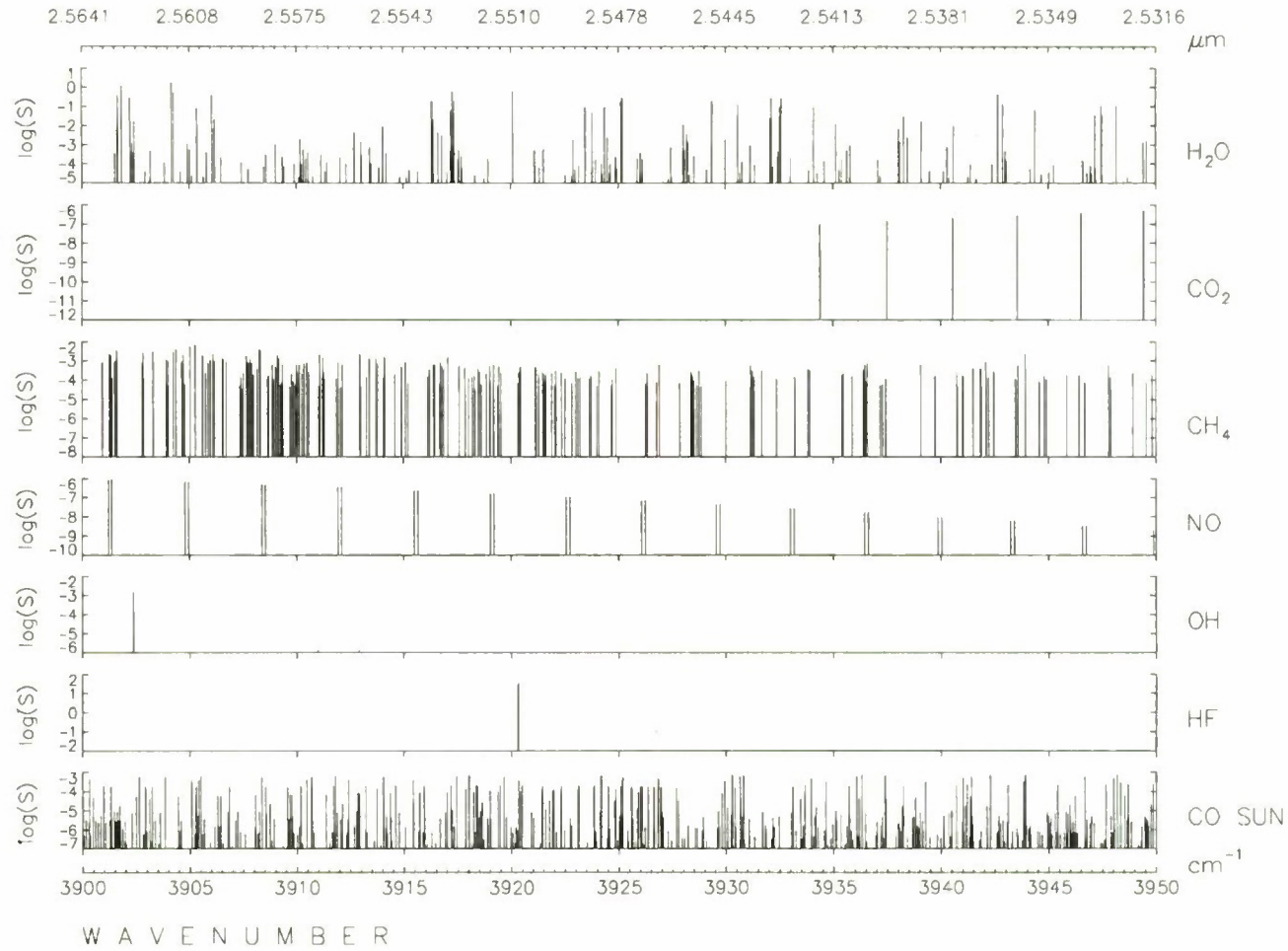
2.5940
2.5907
2.5873
2.5840
2.5806
2.5773
2.5740
2.5707
2.5674
2.5641
μm
log(S)
H2O
CO2
N2O
NO
OH
HF
CO SUN
cm-1
3850
3855
3860
3865
3870
3875
3880
3885
3890
3895
3900
WAVENUMBER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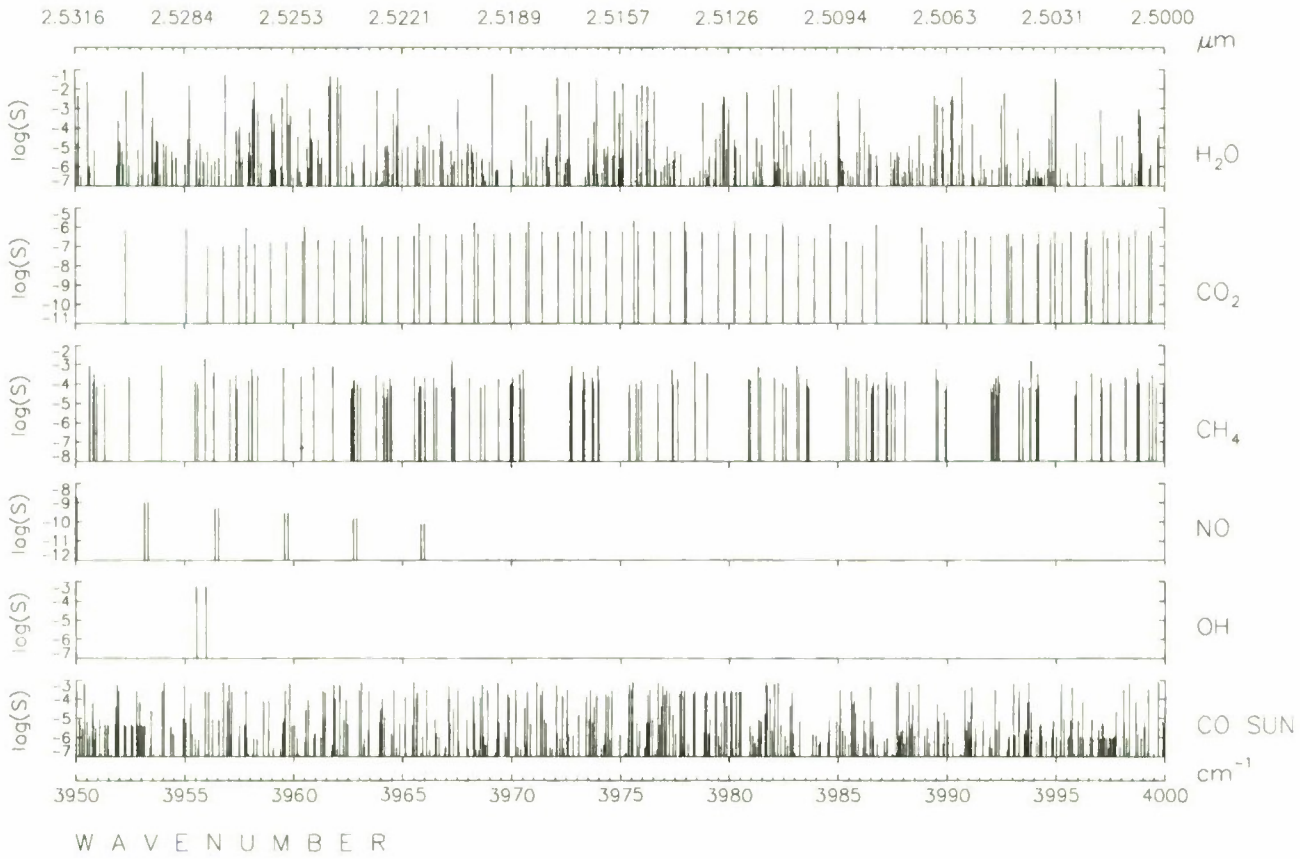
2.5575
2.5543
2.5510
2.5478
2.5445
2.5413
2.5381
2.5349
2.5316
μm
log(S)
H2O
CO2
CH4
NO
OH
HF
CO SUN
cm-1
3900
3905
3910
3915
3920
3925
3930
3935
3940
3945
3950
WAVENUMBER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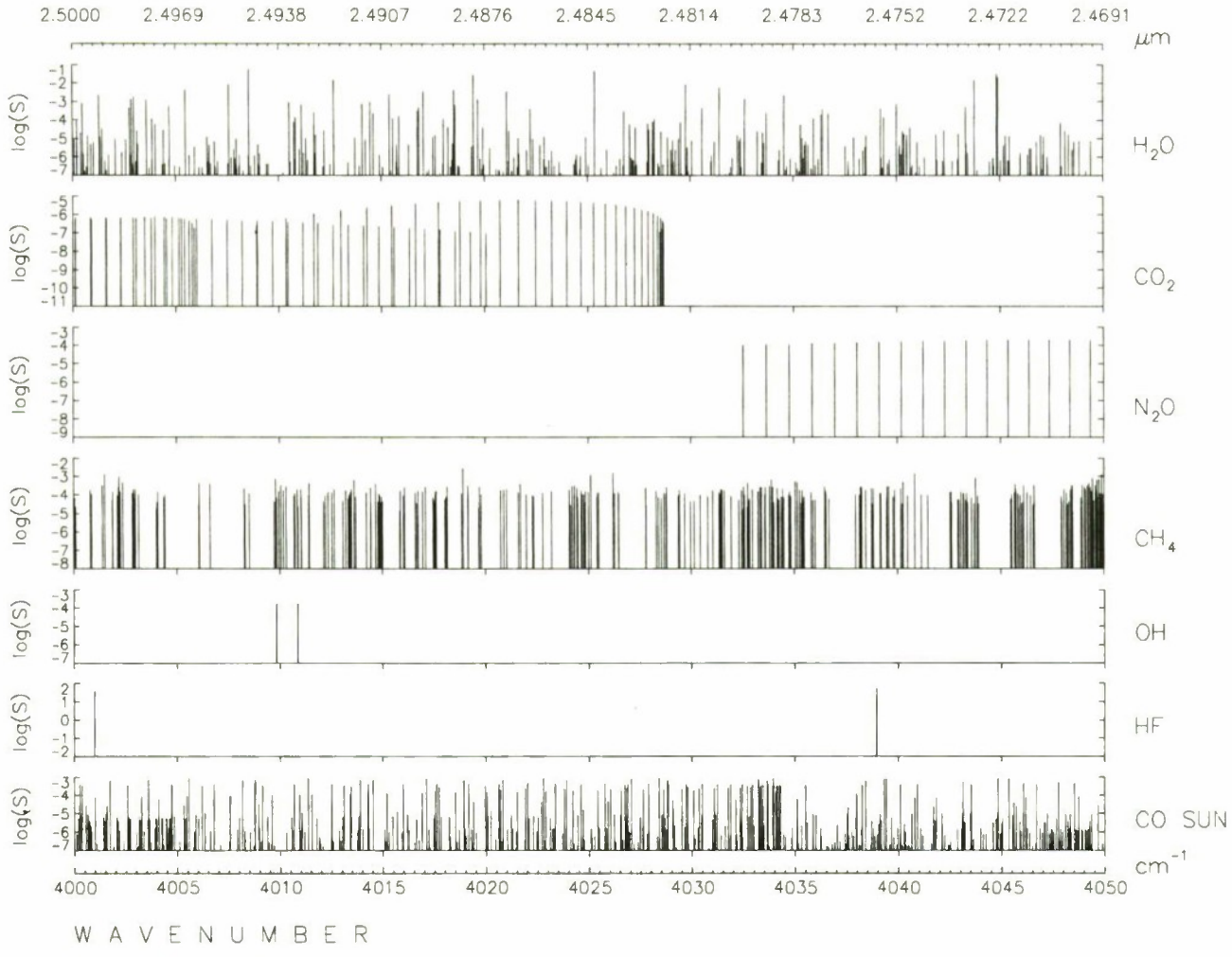
2.5284
2.5253
2.5221
2.5189
2.5157
2.5126
2.5094
2.5063
2.5031
2.5000
μm
log(S)
H2O
CO2
CH4
NO
OH
CO SUN
cm-1
3950
3955
3960
3965
3970
3975
3980
3985
3990
3995
4000
WAVENUMBER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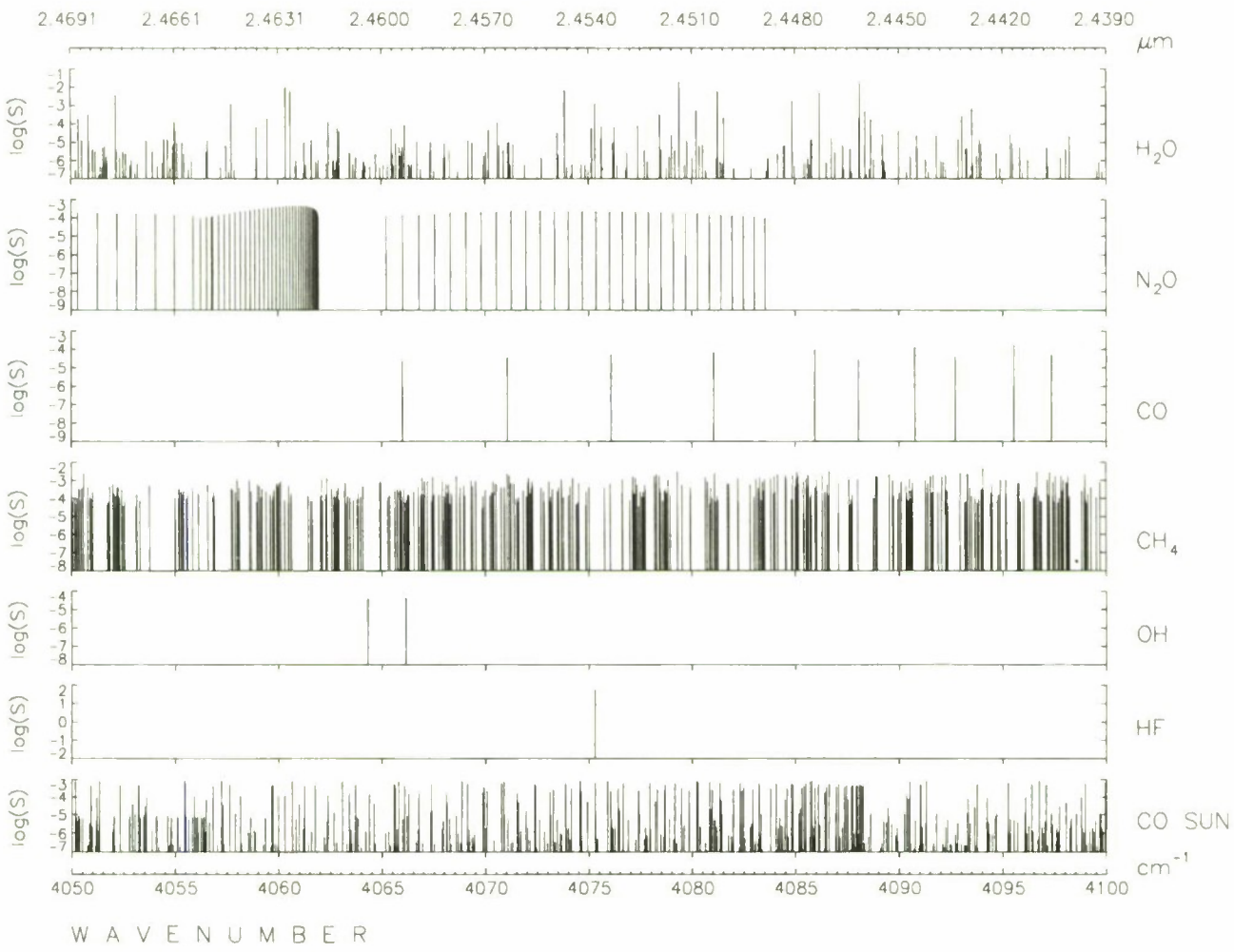
2.4969
2.4938
2.4907
2.4876
2.4845
2.4814
2.4783
2.4752
2.4722
2.4691
μm
log(S)
H2O
CO2
N2O
CH4
OH
HF
CO SUN
cm-1
4000
4005
4010
4015
4020
4025
4030
4035
4040
4045
4050
WAVENUMBER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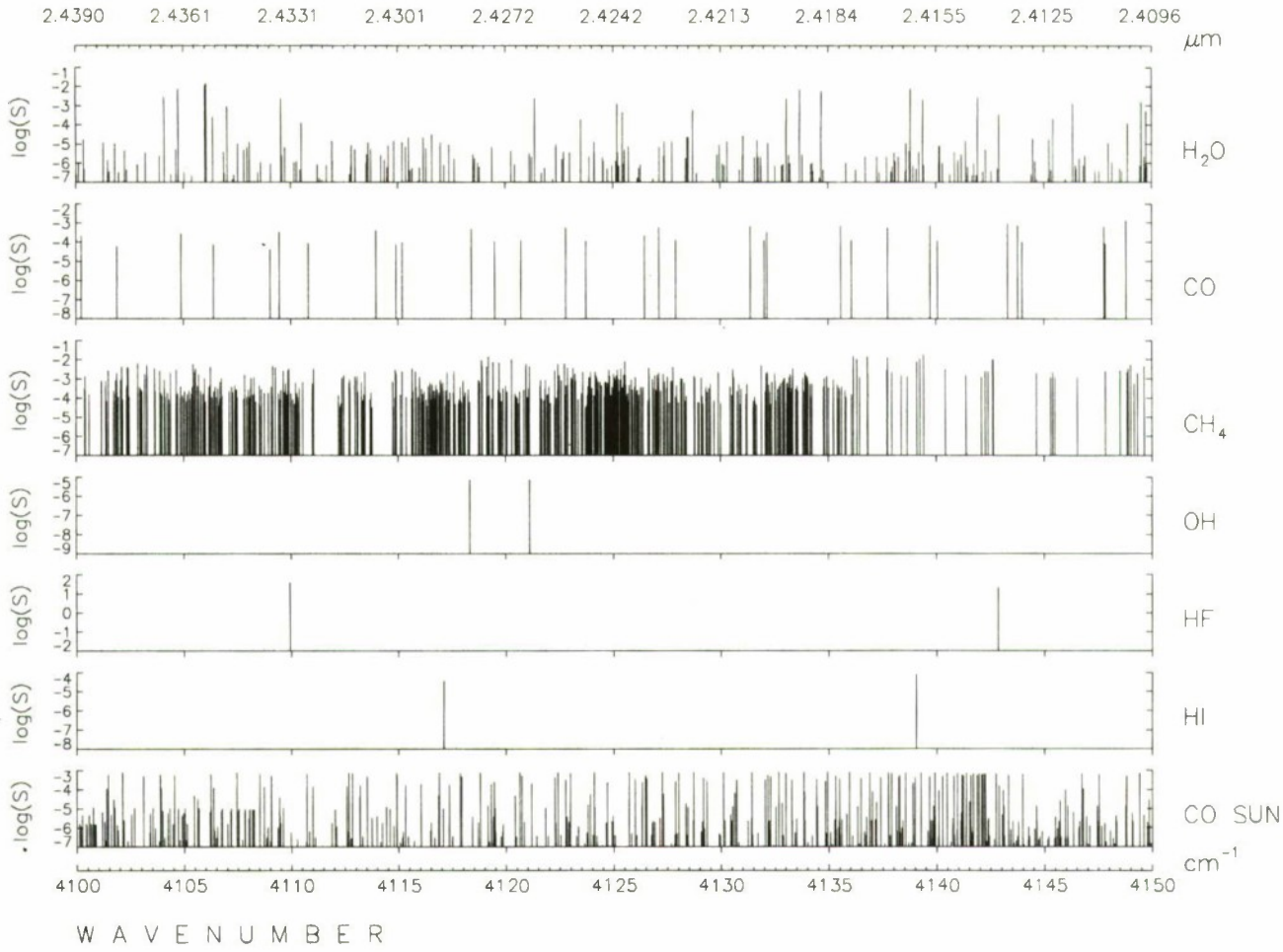
2.4661
2.4631
2.4600
2.4570
2.4540
2.4510
2.4480
2.4450
2.4420
2.4390
μm
log(S)
H2O
N2O
CO
CH4
OH
HF
CO SUN
cm-1
4050
4055
4060
4065
4070
4075
4080
4085
4090
4095
4100
WAVENUMBER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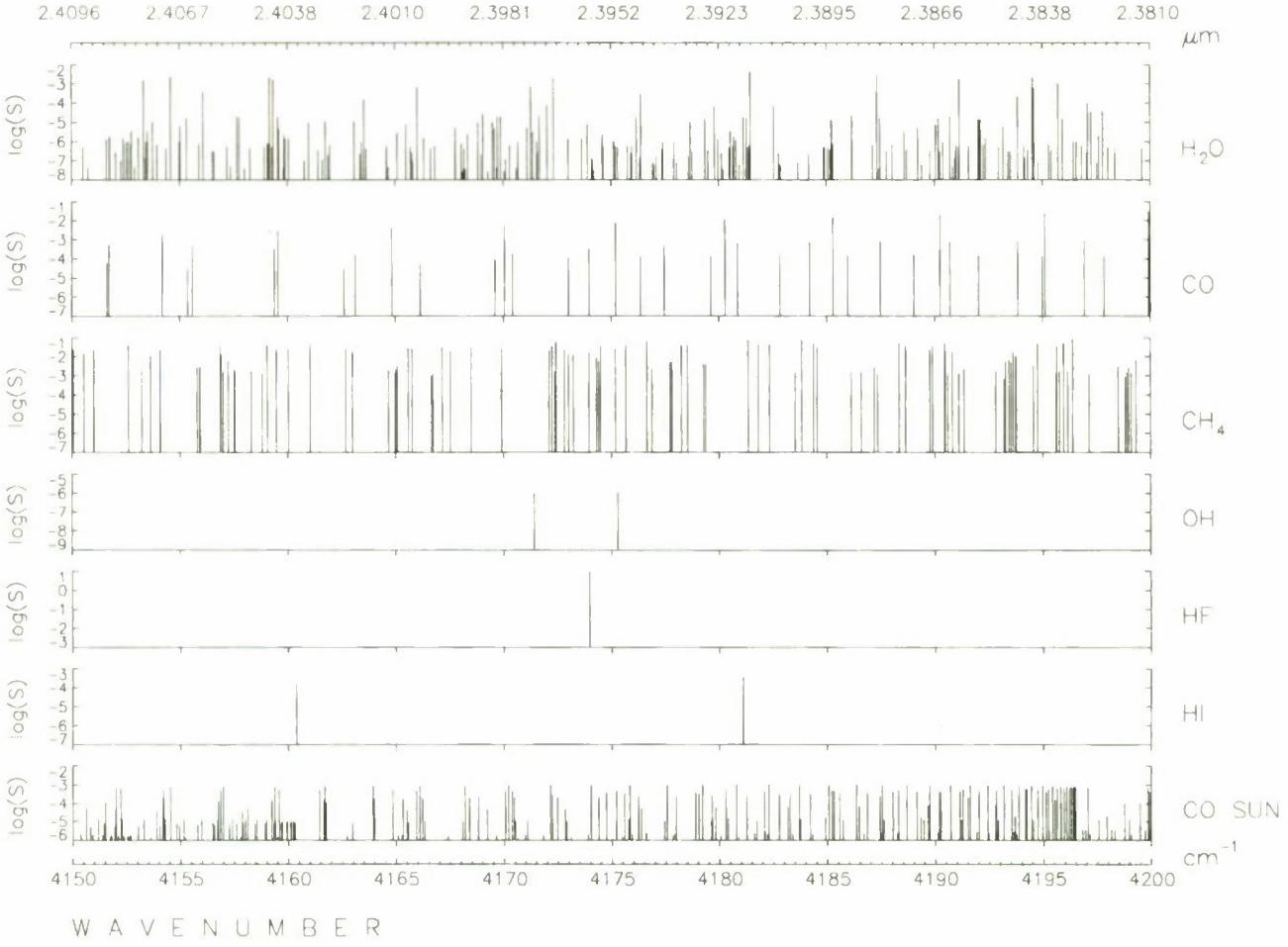
2.4361
2.4331
2.4301
2.4272
2.4242
2.4213
2.4184
2.4155
2.4125
2.4096
μm
log(S)
H2O
CO
CH4
OH
HF
HI
CO SUN
cm-1
4100
4105
4110
4115
4120
4125
4130
4135
4140
4145
4150
WAVENUMBER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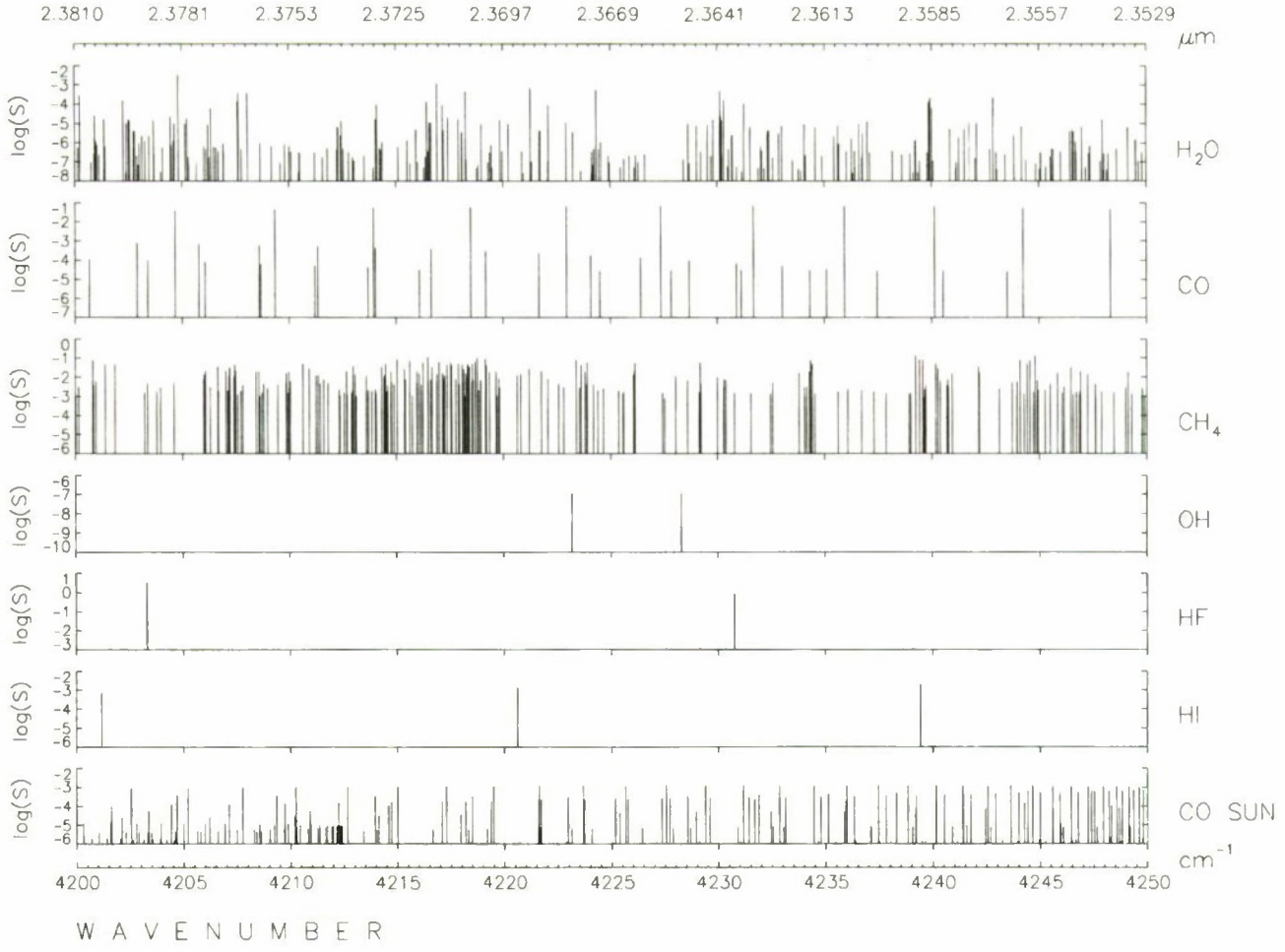
2.4067
2.4038
2.4010
2.3981
2.3952
2.3923
2.3895
2.3866
2.3838
2.3810
μm
log(S)
H2O
CO
CH4
OH
HF
HI
CO SUN
cm-1
4150
4155
4160
4165
4170
4175
4180
4185
4190
4195
4200
WAVENUMBER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2.3781
2.3753
2.3725
2.3697
2.3669
2.3641
2.3613
2.3585
2.3557
2.3529
μm
log(S)
H2O
CO
CH4
OH
HF
HI
CO SUN
cm-1
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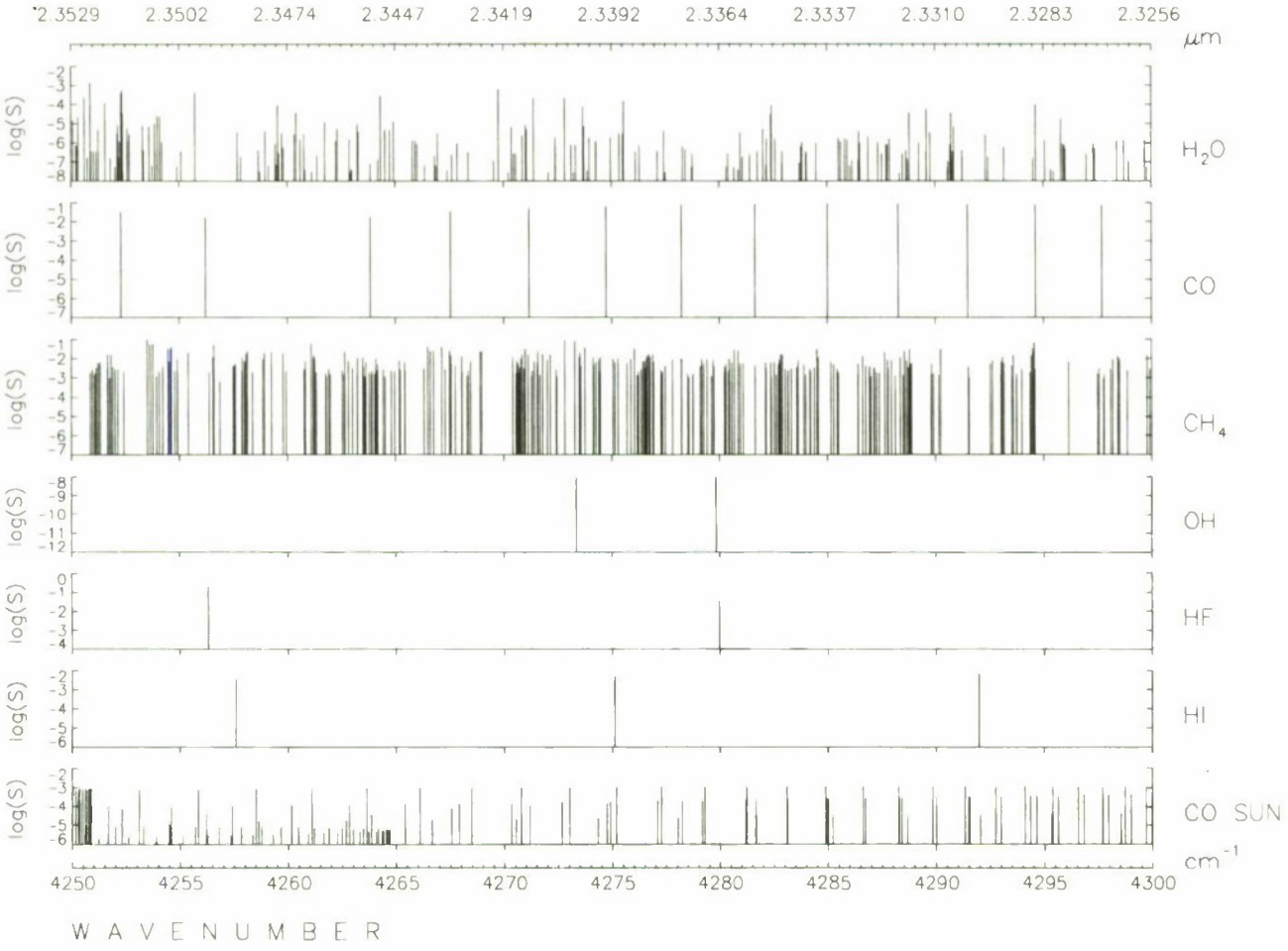
4205
4210
4215
4220
4225
4230
4235
4240
4245
4250
WAVENUMBER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2.3474
2.3447
2.3419
2.3392
2.3364
2.3337
2.3310
2.3283
2.3256
μm
log(S)
H2O
CO
CH4
OH
HF
HI
CO SUN
cm-1
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4255
4260
4265
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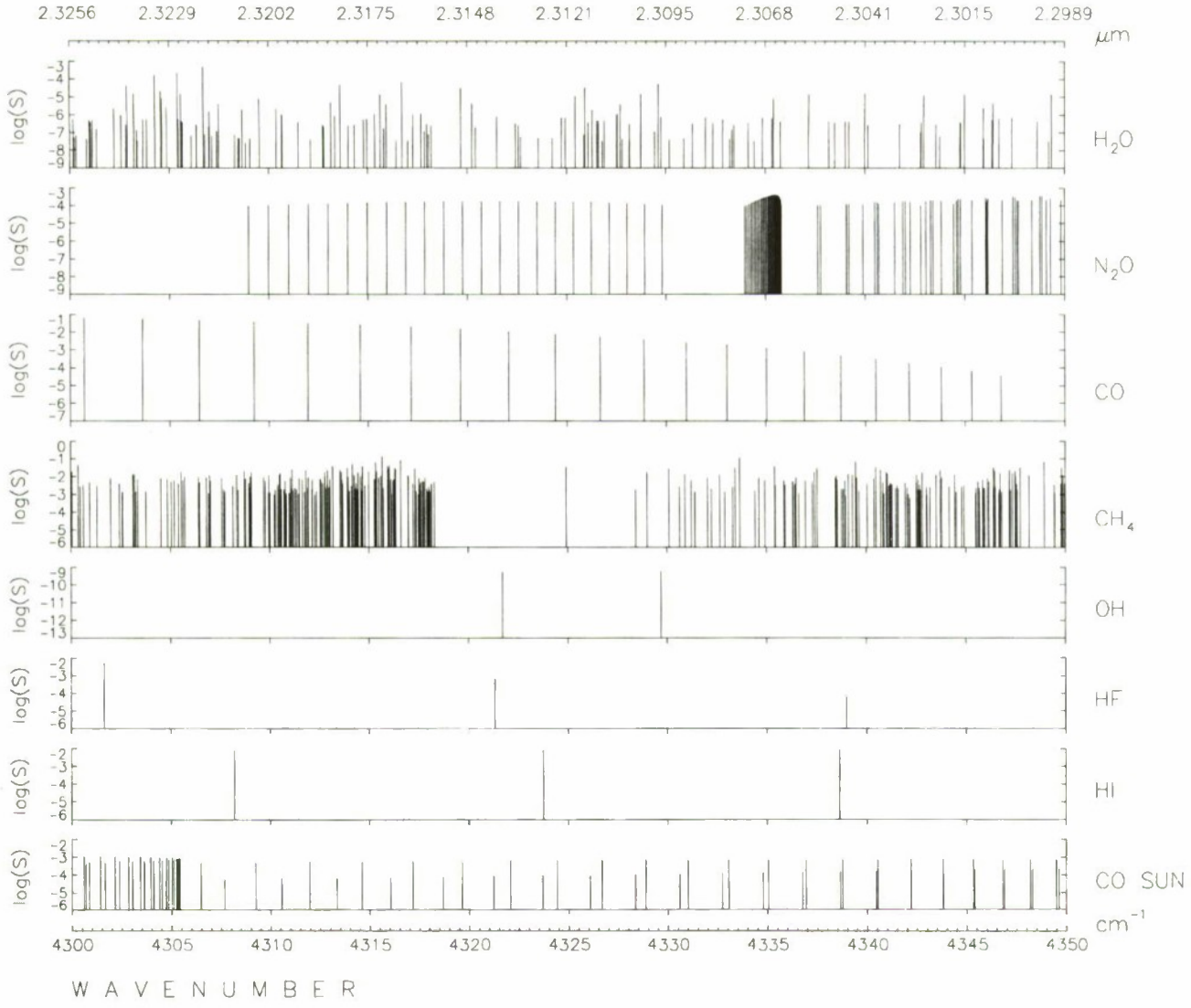
4280
4285
4290
4295
4300
WAVENUMBER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2.3121
2.3095
2.3068
2.3041
2.3015
2.2989
μm
log(S)
H2O
N2O
CO
CH4
OH
HF
HI
CO SUN
cm-1
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4305
4310
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4320
4325
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4335
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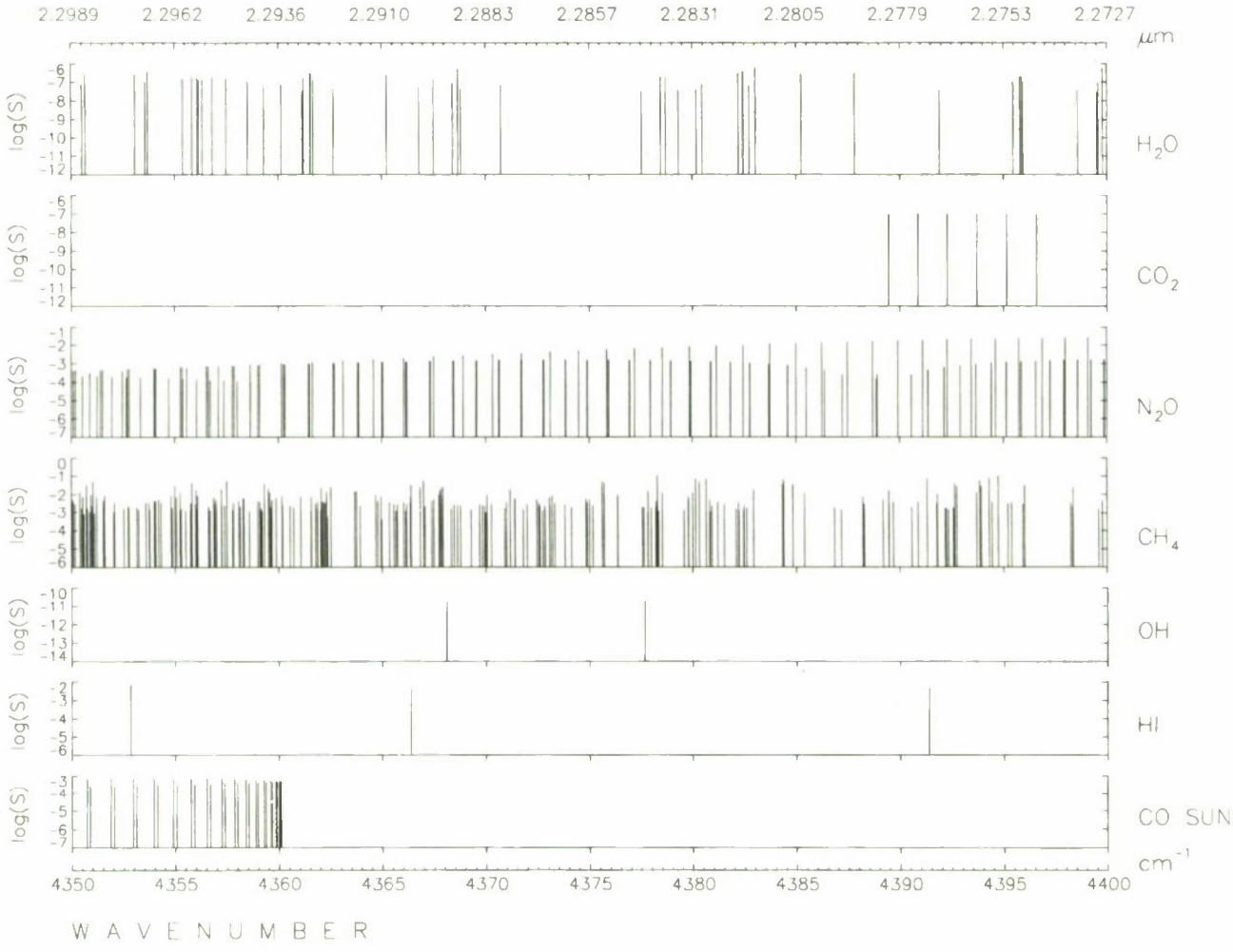
4345
4350
WAVENUMBER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2.2962
2.2936
2.2910
2.2883
2.2857
2.2831
2.2805
2.2779
2.2753
2.2727
μm
log(S)
H2O
CO2
N2O
CH4
OH
HI
CO SUN
cm-1
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4355
4360
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4385
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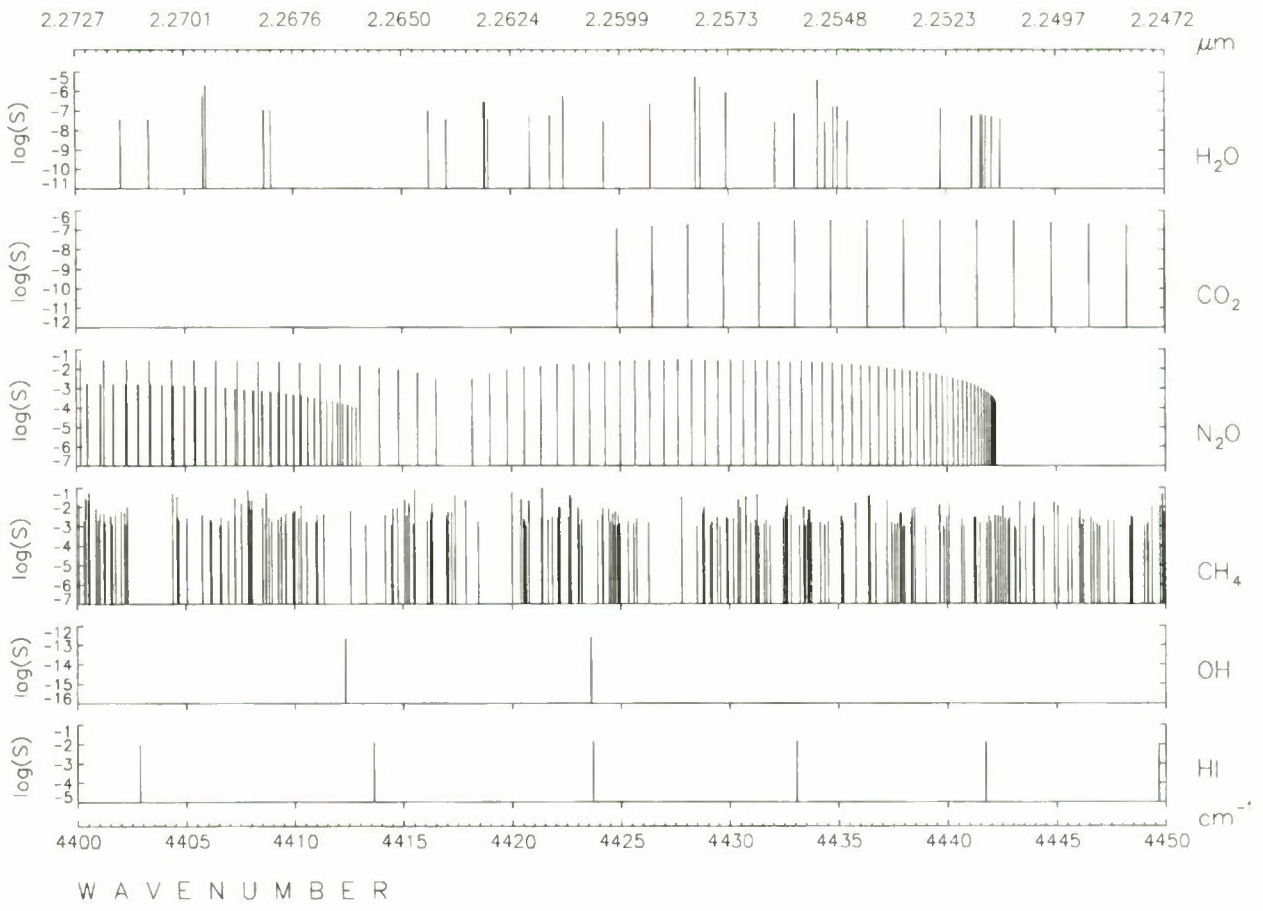
4395
4400
WAVENUMBER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2.2701
2.2676
2.2650
2.2624
2.2599
2.2573
2.2548
2.2523
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2.2472
μm
log(S)
H2O
CO2
N2O
CH4
OH
HI
cm-1
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4405
4410
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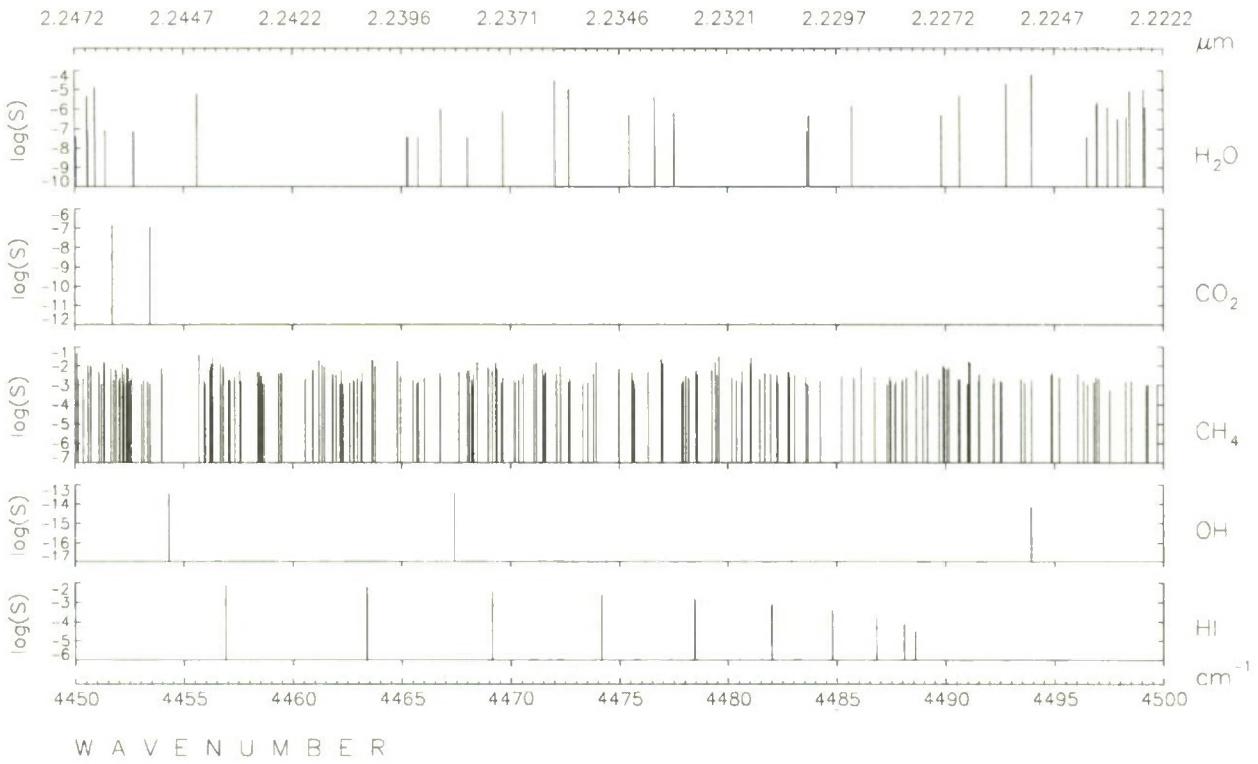
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2.2447
2.2422
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2.2321
2.2297
2.2272
2.2247
2.2222
μm
log(S)
H2O
CO2
CH4
OH
HI
cm-1
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4465
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4475
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4485
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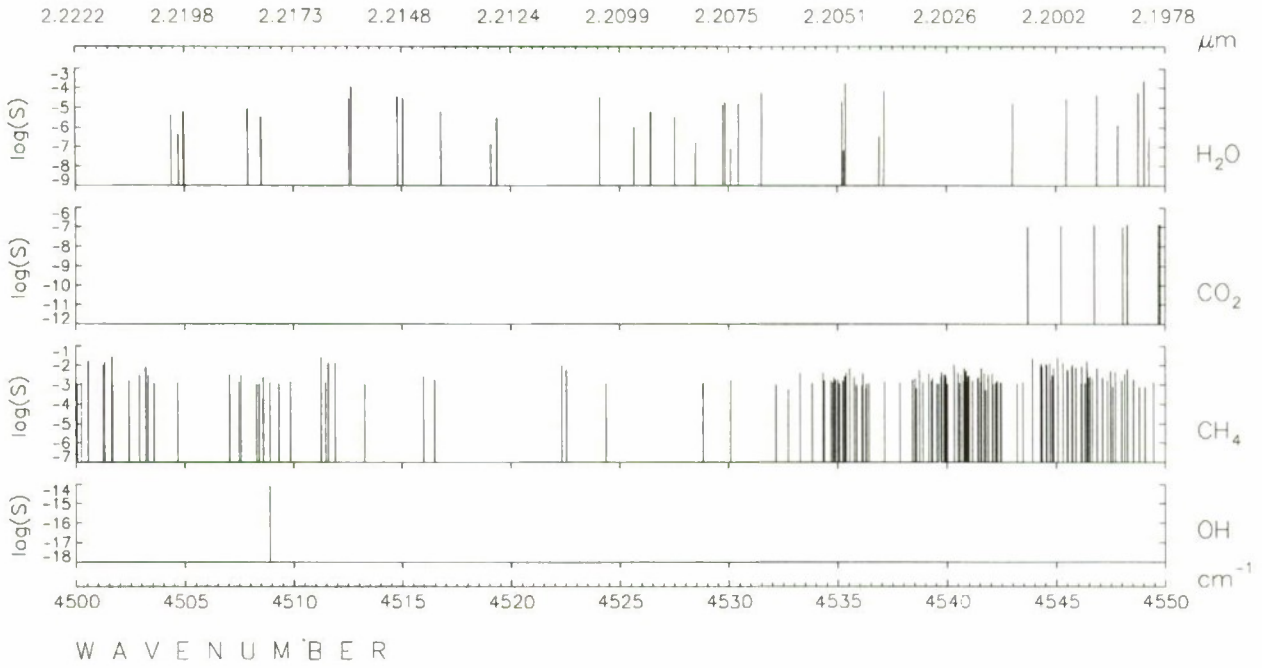
4495
4500
WAVENUMBER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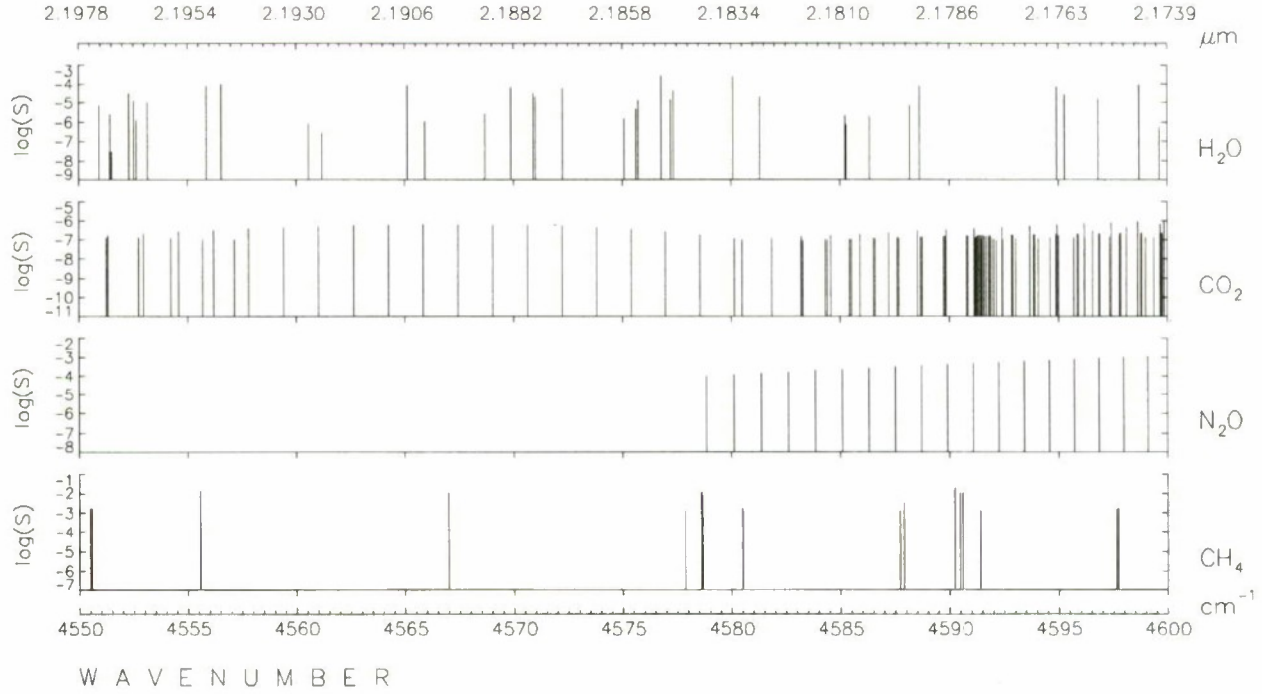
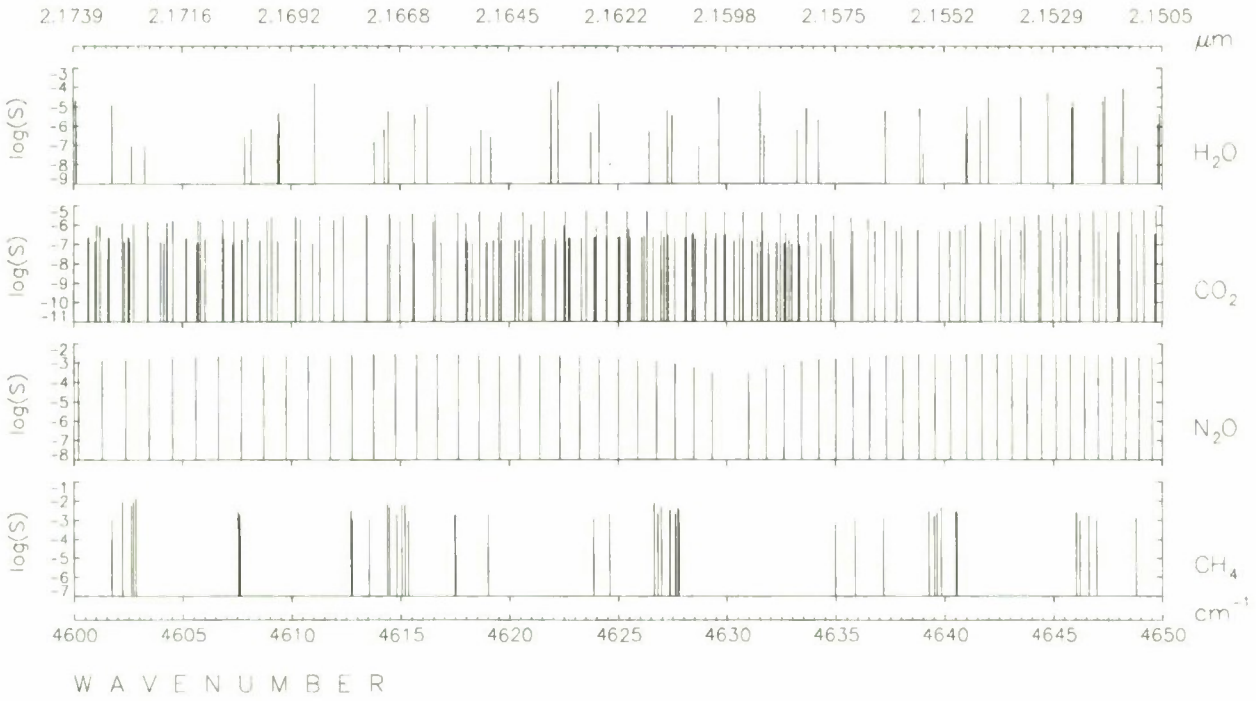
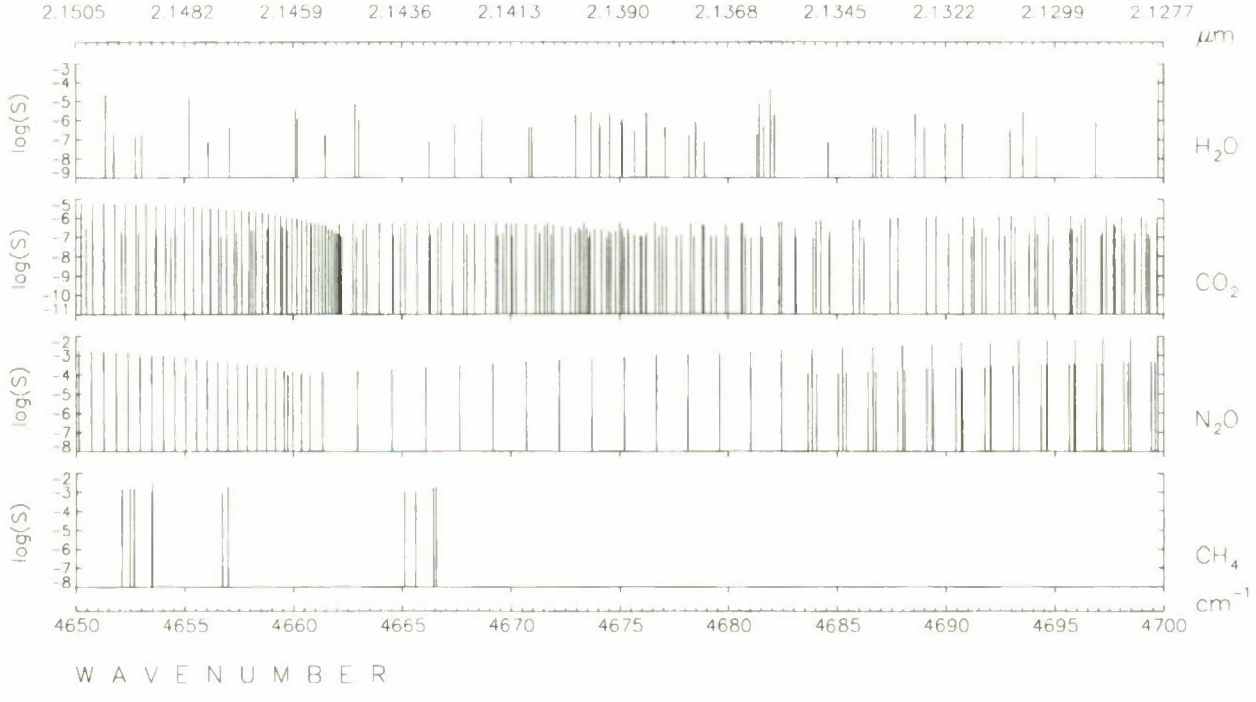
μm
log(S)
H2O
CO2
CH4
OH
cm-1
4500 4505 4510 4515 4520 4525 4530 4535 4540 4545 4550
WAVENUMBER


2.1978 2.1954 2.1930 2.1906 2.1882 2.1858 2.1834 2.1810 2.1786 2.1763 2.1739
μm
log(S)
H2O
CO2
N2O
CH4
cm-1
4550 4555 4560 4565 4570 4575 4580 4585 4590 4595 4600
WAVENUMBER


2.1739 2.1716 2.1692 2.1668 2.1645 2.1622 2.1598 2.1575 2.1552 2.1529 2.1505
μm
log(S)
H2O
CO2
N2O
CH4
cm-1
4600 4605 4610 4615 4620 4625 4630 4635 4640 4645 4650
WAVENUMBER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μm
log(S)
H2O
CO2
N2O
CH4
cm-1
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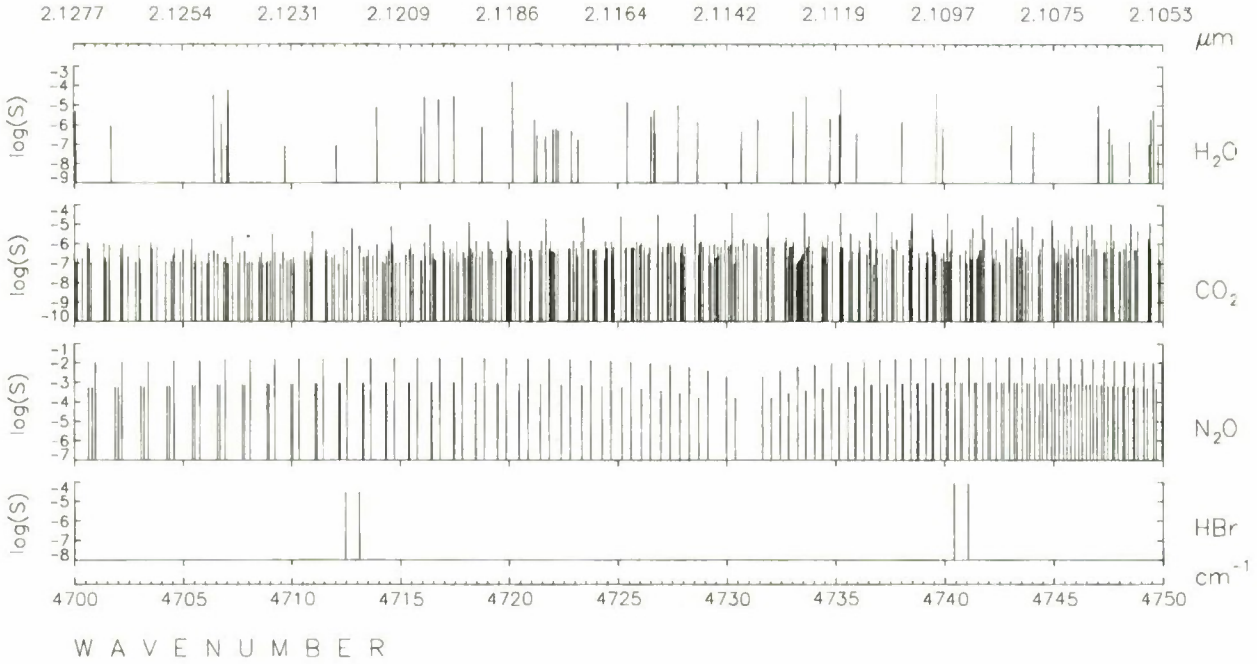
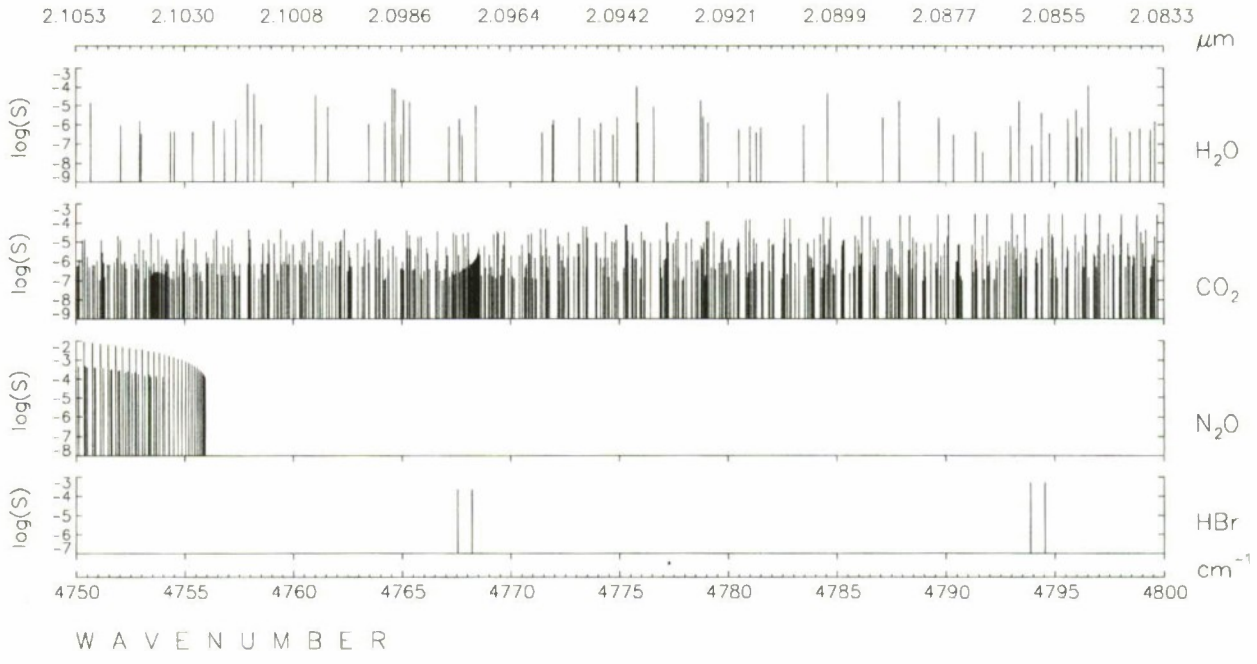
WAVENUMBER


2.1277 2.1254 2.1231 2.1209 2.1186 2.1164 2.1142 2.1119 2.1097 2.1075 2.1053
μm
log(S)
H2O
CO2
N2O
HBr
cm-1
4700 4705 4710 4715 4720 4725 4730 4735 4740 4745 4750
WAVENUMBER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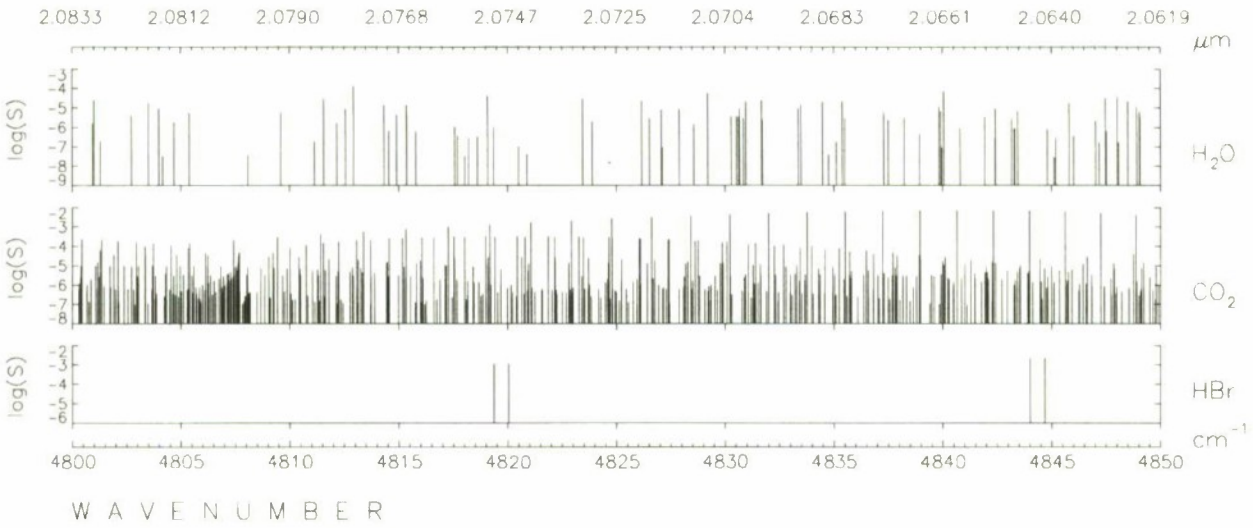
μm
log(S)
H2O
CO2
N2O
HBr
cm-1
4750 4755 4760 4765 4770 4775 4780 4785 4790 4795 4800
WAVENUMBER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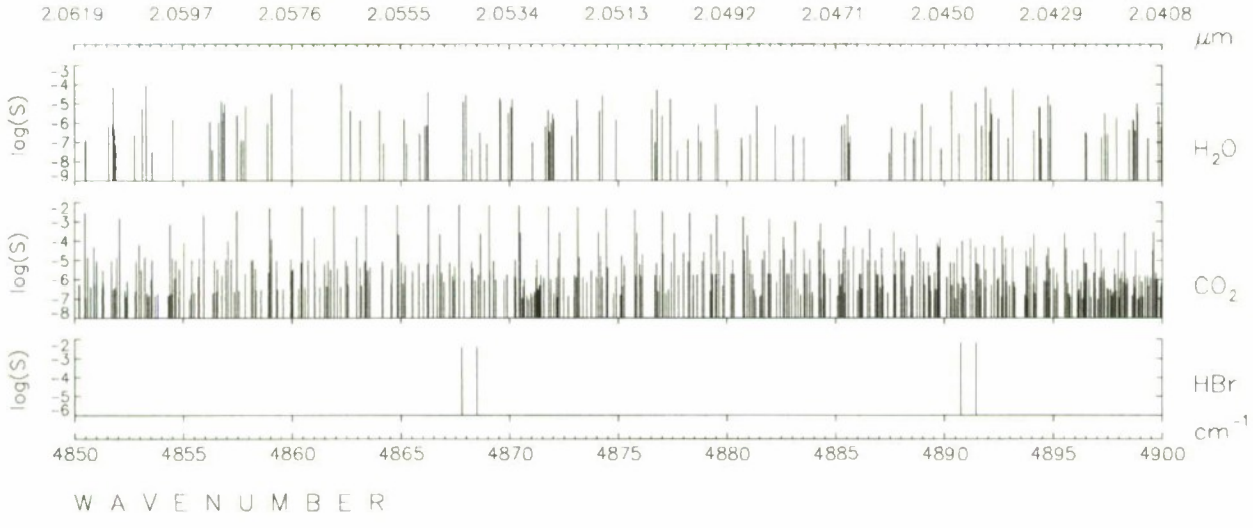
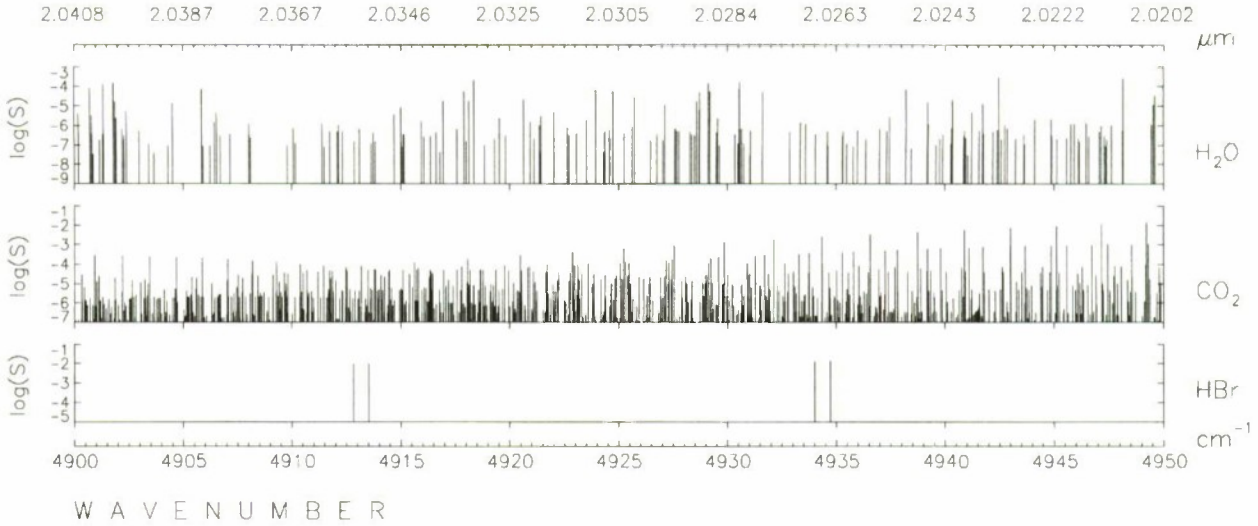
μm
log(S)
H2O
CO2
HBr
cm-1
4800 4805 4810 4815 4820 4825 4830 4835 4840 4845 4850
WAVENUMBER


2.0619 2.0597 2.0576 2.0555 2.0534 2.0513 2.0492 2.0471 2.0450 2.0429 2.0408
μm
log(S)
H2O
CO2
HBr
cm-1
4850 4855 4860 4865 4870 4875 4880 4885 4890 4895 4900
WAVENUMBER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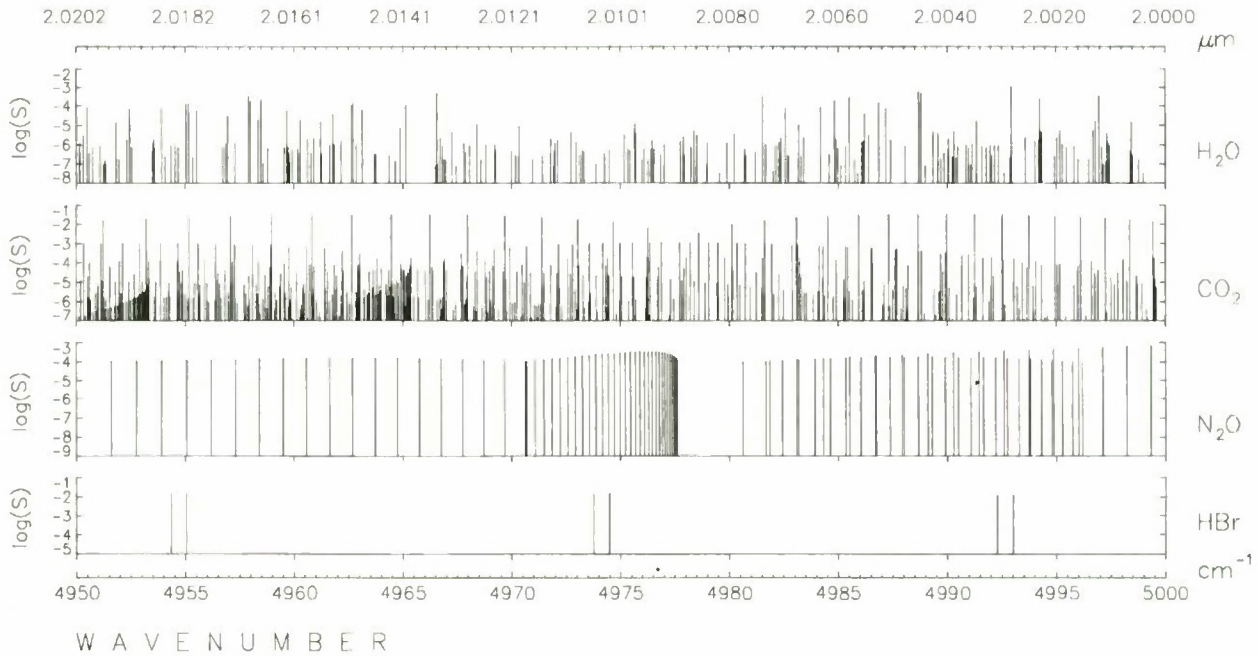
μm
log(S)
H2O
CO2
HBr
cm-1
4900 4905 4910 4915 4920 4925 4930 4935 4940 4945 4950
WAVENUMBER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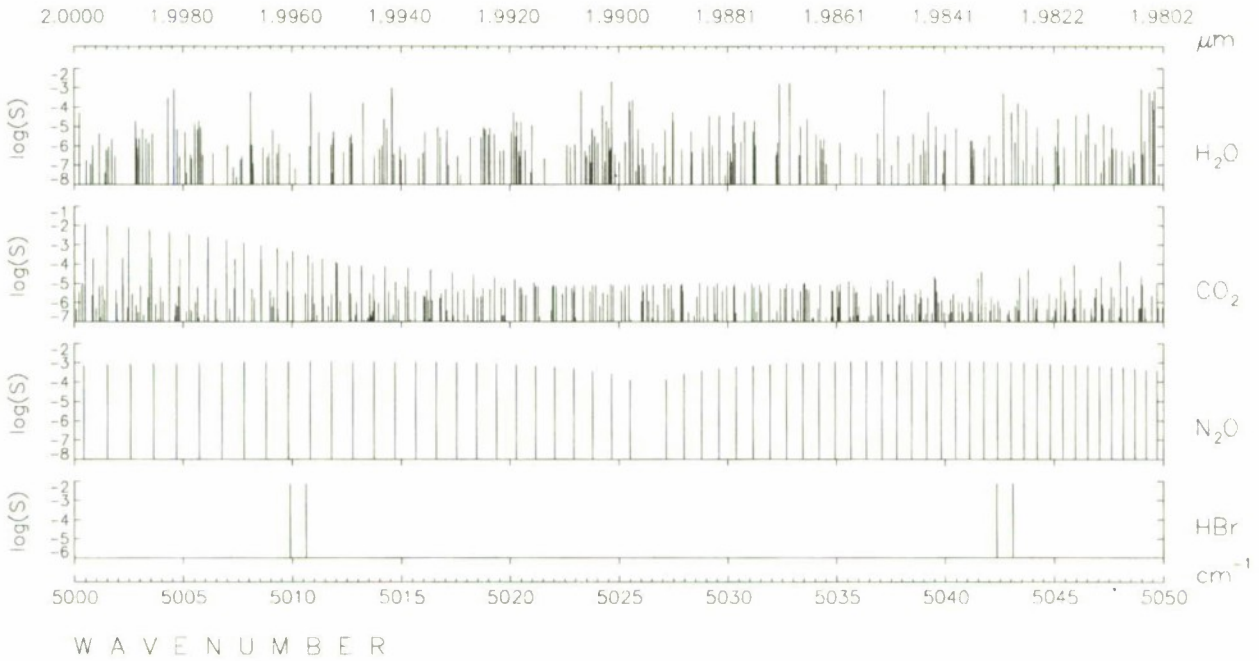
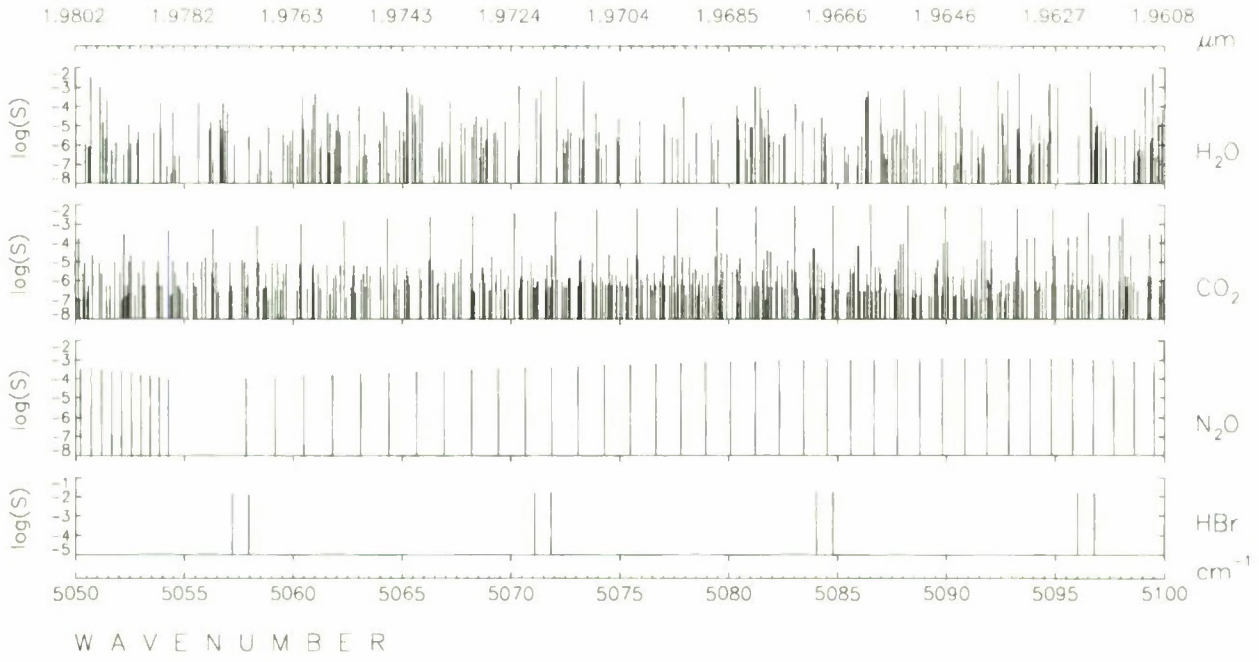
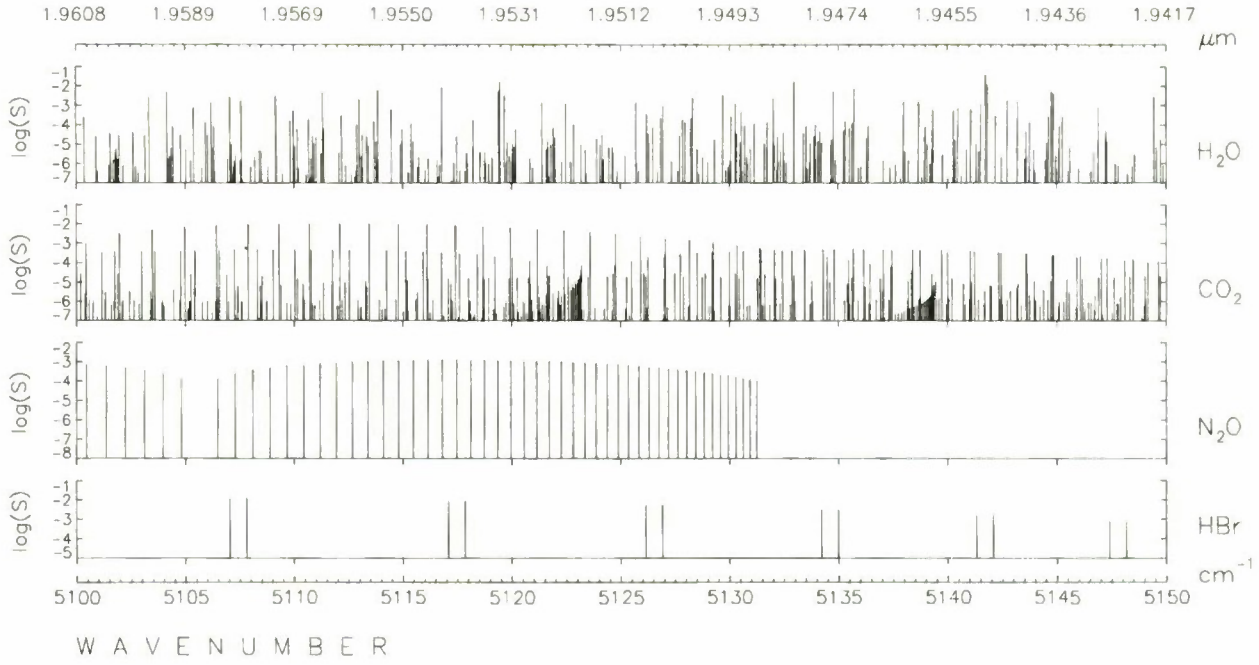
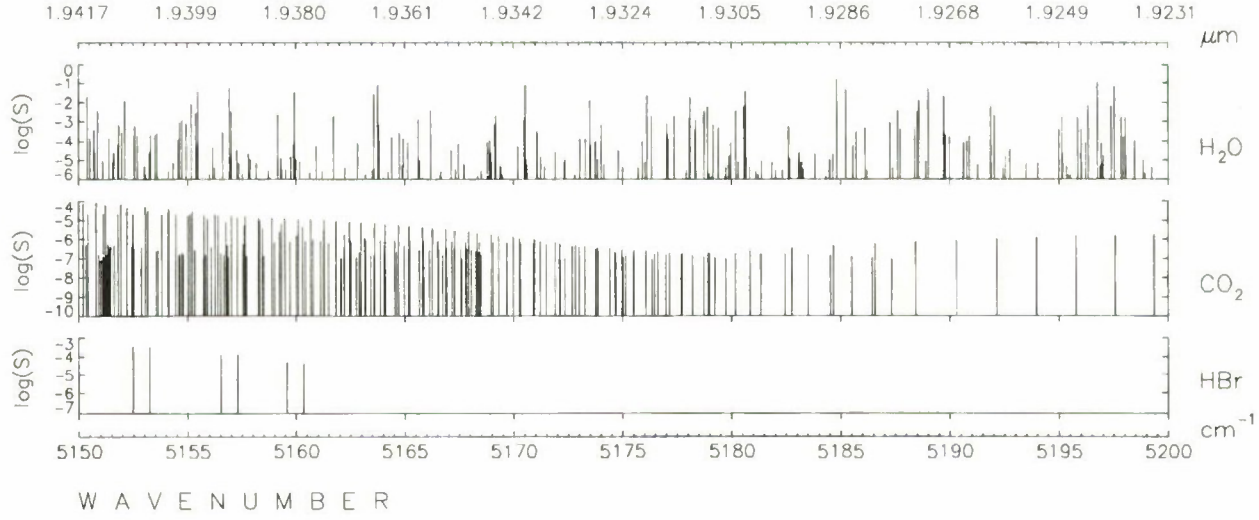
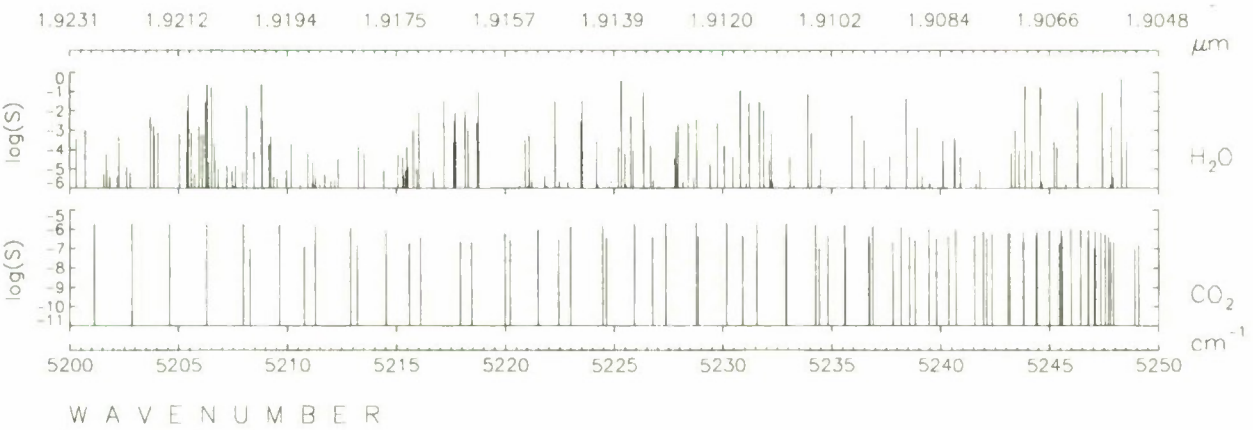
μm
log(S)
H2O
CO2
N2O
HBr
cm-1
4950 4955 4960 4965 4970 4975 4980 4985 4990 4995 5000
WAVENUMBER

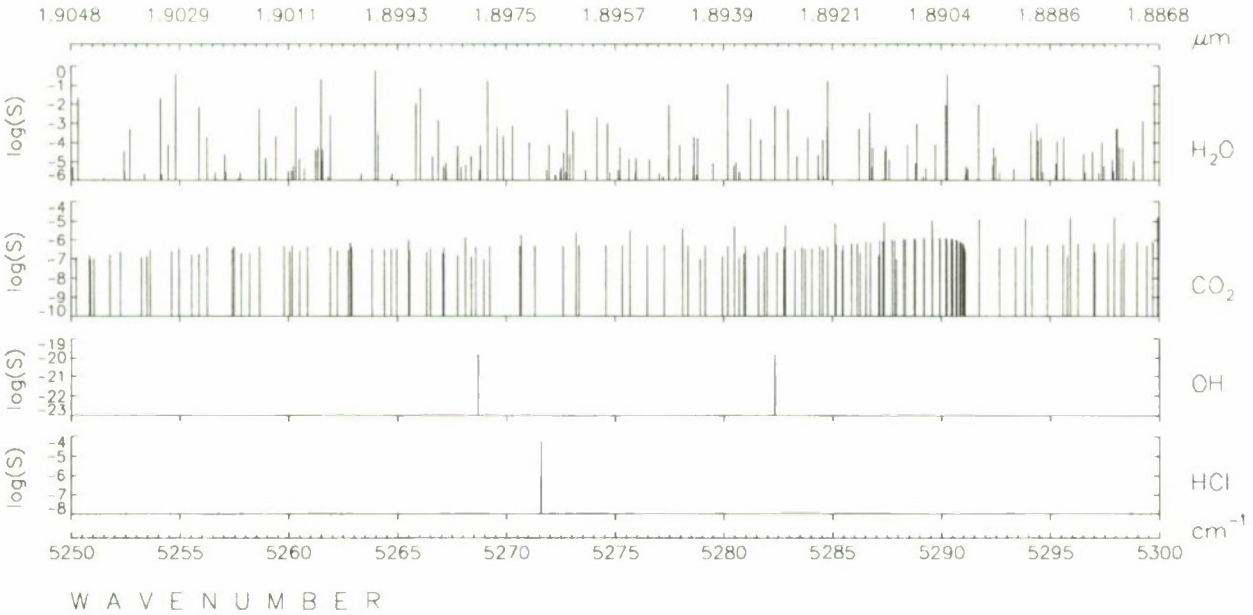

2.0000 1.9980 1.9960 1.9940 1.9920 1.9900 1.9881 1.9861 1.9841 1.9822 1.9802
μm
log(S)
H2O
CO2
N2O
HBr
cm-1
5000 5005 5010 5015 5020 5025 5030 5035 5040 5045 5050
WAVENUMBER

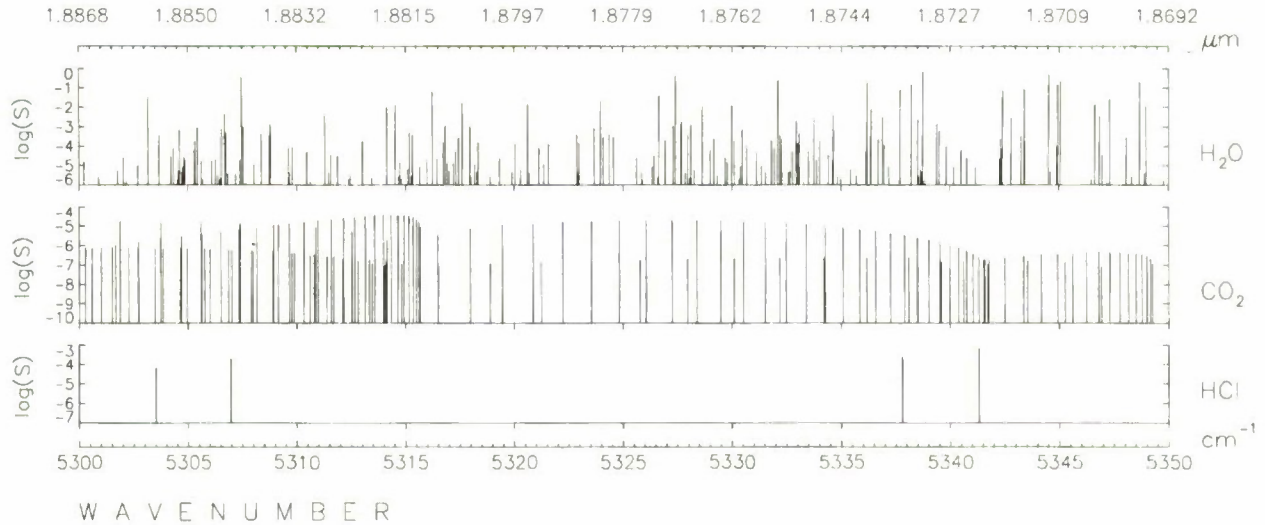

1.9802 1.9782 1.9763 1.9743 1.9724 1.9704 1.9685 1.9666 1.9646 1.9627 1.9608
μm
log(S)
H2O
CO2
N2O
HBr
cm-1
5050 5055 5060 5065 5070 5075 5080 5085 5090 5095 5100
WAVENUMBER

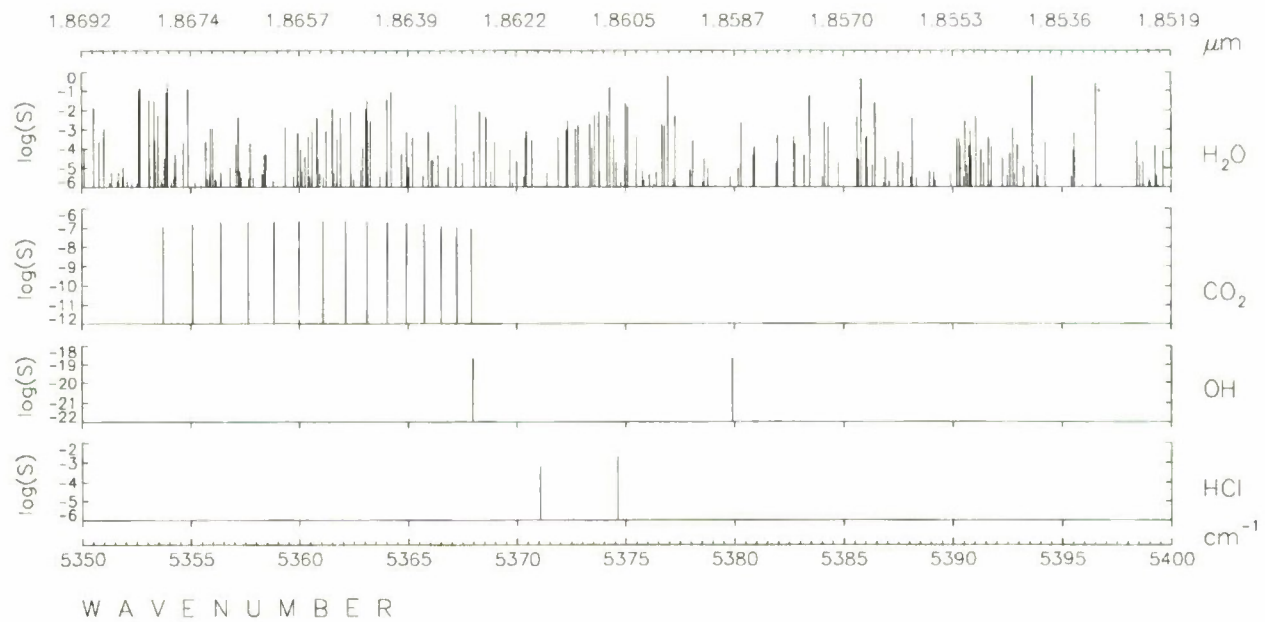

1.9608 1.9589 1.9569 1.9550 1.9531 1.9512 1.9493 1.9474 1.9455 1.9436 1.9417
μm
log(S)
H2O
CO2
N2O
HBr
cm-1
5100 5105 5110 5115 5120 5125 5130 5135 5140 5145 5150
WAVENUMBER

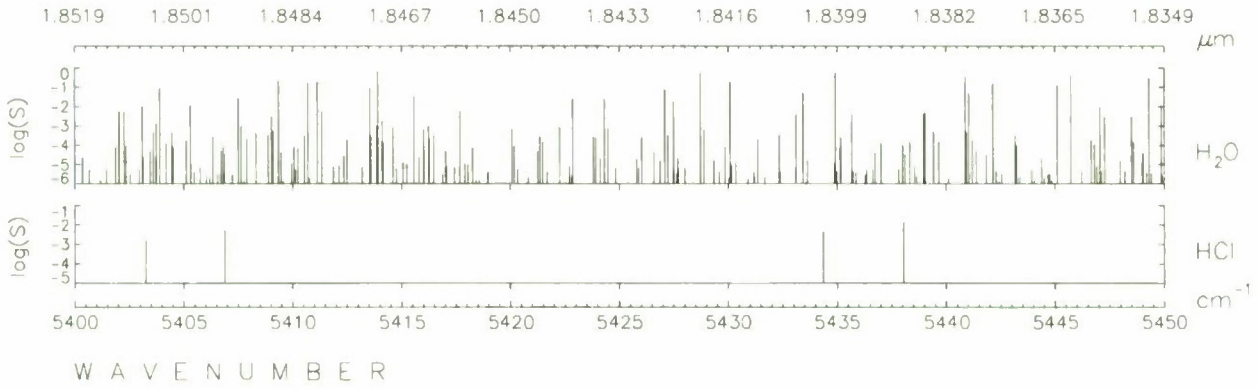

1.9417 1.9399 1.9380 1.9361 1.9342 1.9324 1.9305 1.9286 1.9268 1.9249 1.9231
μm
log(S)
H2O
CO2
HBr
cm-1
5150 5155 5160 5165 5170 5175 5180 5185 5190 5195 5200
WAVENUMBER

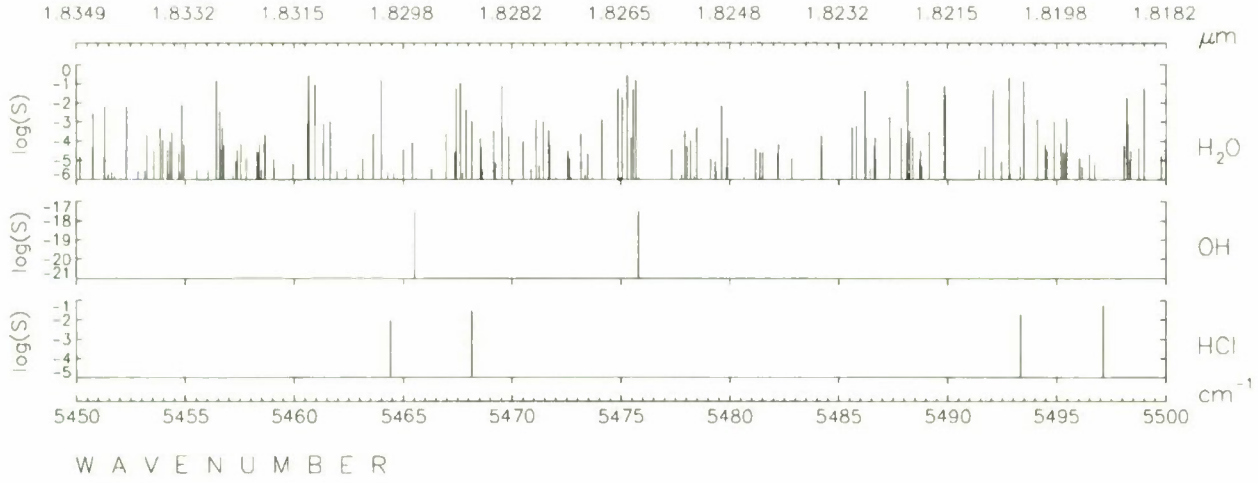

1.9231 1.9212 1.9194 1.9175 1.9157 1.9139 1.9120 1.9102 1.9084 1.9066 1.9048
μm
log(S)
H2O
log(S)
CO2
cm-1
5200 5205 5210 5215 5220 5225 5230 5235 5240 5245 5250
WAVENUMBER

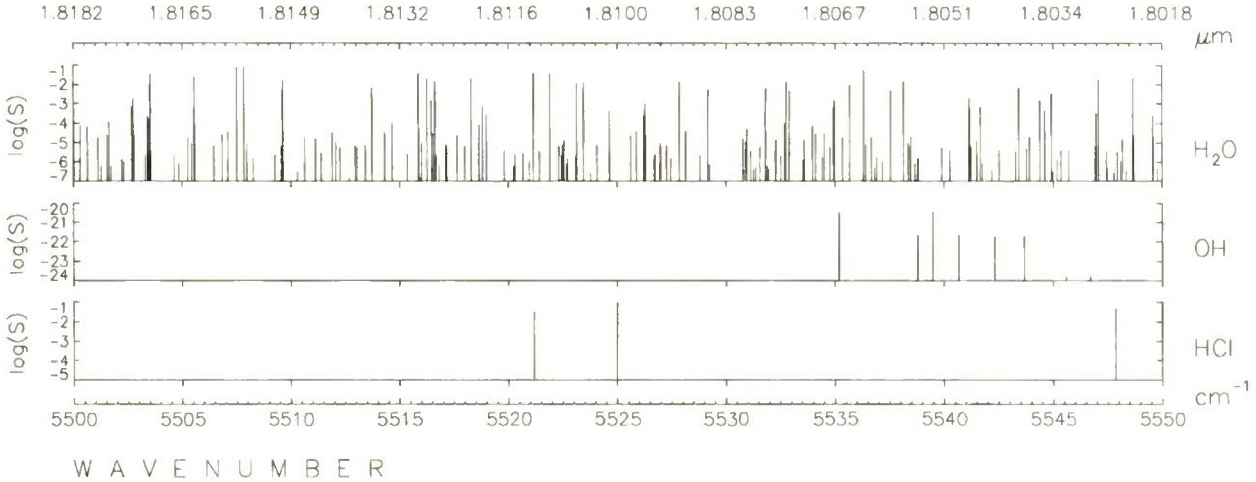

1.9048 1.9029 1.9011 1.8993 1.8975 1.8957 1.8939 1.8921 1.8904 1.8886 1.8868
μm
log(S)
H2O
log(S)
CO2
log(S)
OH
log(S)
HCl
cm-1
5250 5255 5260 5265 5270 5275 5280 5285 5290 5295 5300
WAVENUMBER

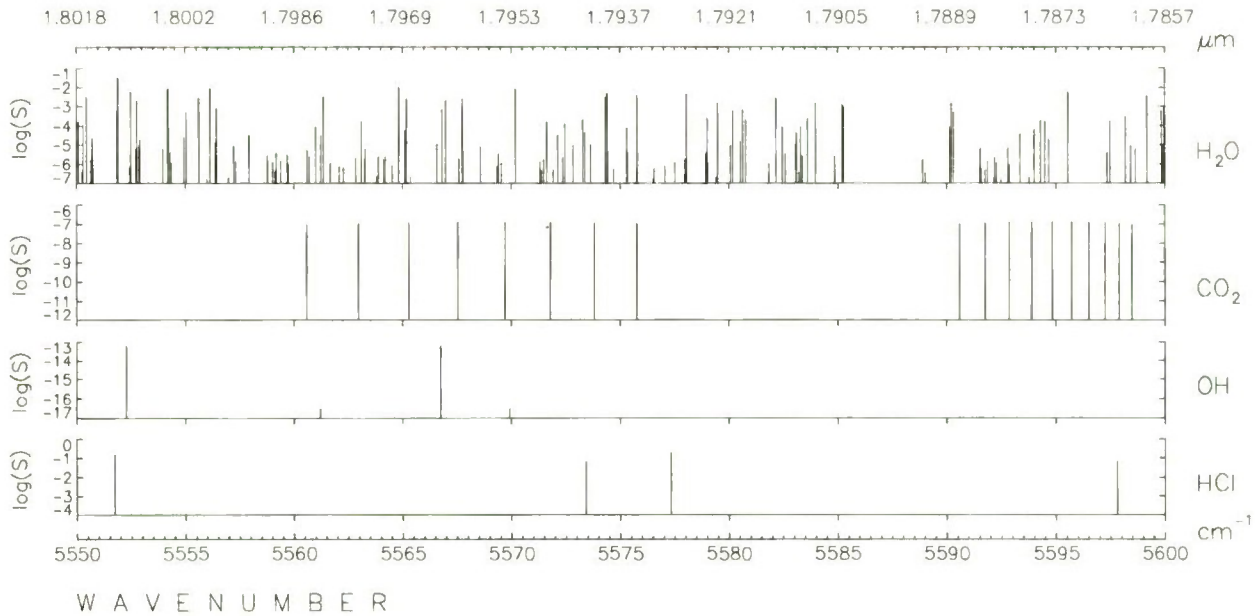

1.8868 1.8850 1.8832 1.8815 1.8797 1.8779 1.8762 1.8744 1.8727 1.8709 1.8692
μm
log(S)
H2O
CO2
HCl
cm-1
5300 5305 5310 5315 5320 5325 5330 5335 5340 5345 5350
WAVENUMBER

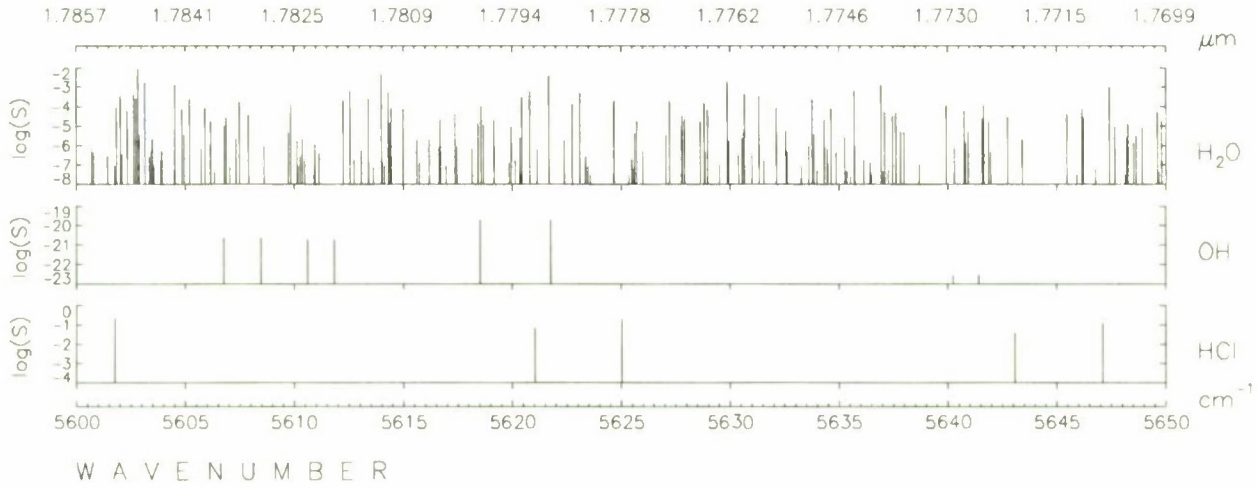

1.8692 1.8674 1.8657 1.8639 1.8622 1.8605 1.8587 1.8570 1.8553 1.8536 1.8519
μm
log(S)
H2O
CO2
OH
HCl
cm-1
5350 5355 5360 5365 5370 5375 5380 5385 5390 5395 5400
WAVENUMBER

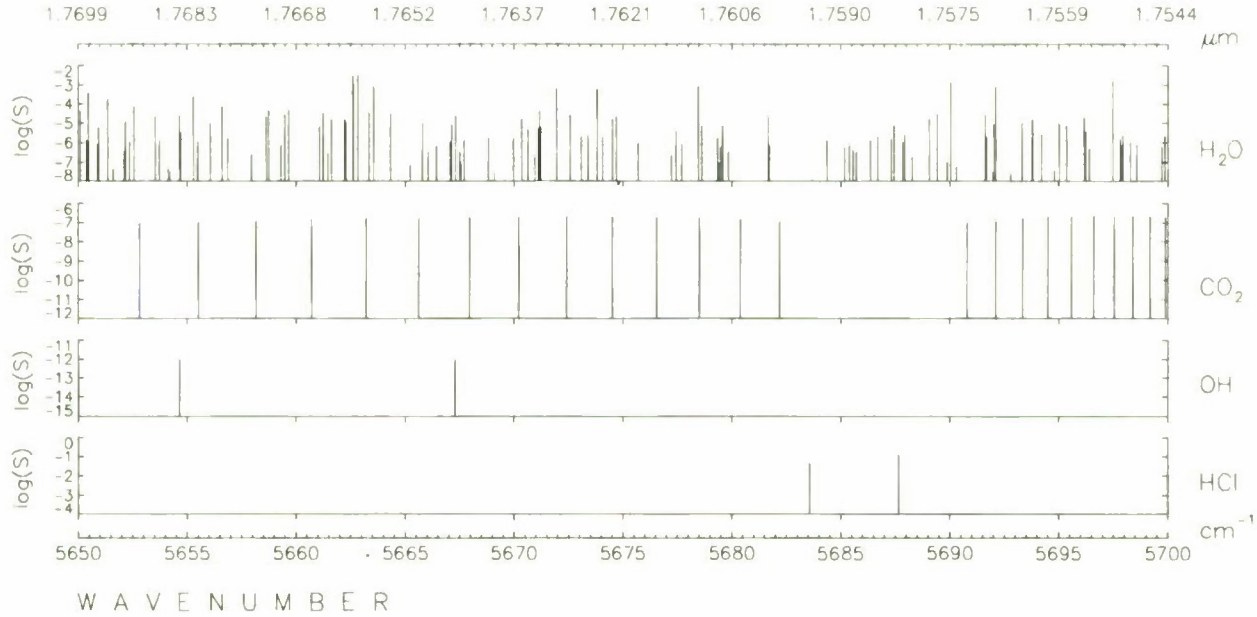

1.8519 1.8501 1.8484 1.8467 1.8450 1.8433 1.8416 1.8399 1.8382 1.8365 1.8349
μm
log(S)
H2O
log(S)
HCl
cm-1
5400 5405 5410 5415 5420 5425 5430 5435 5440 5445 5450
WAVENUMBER

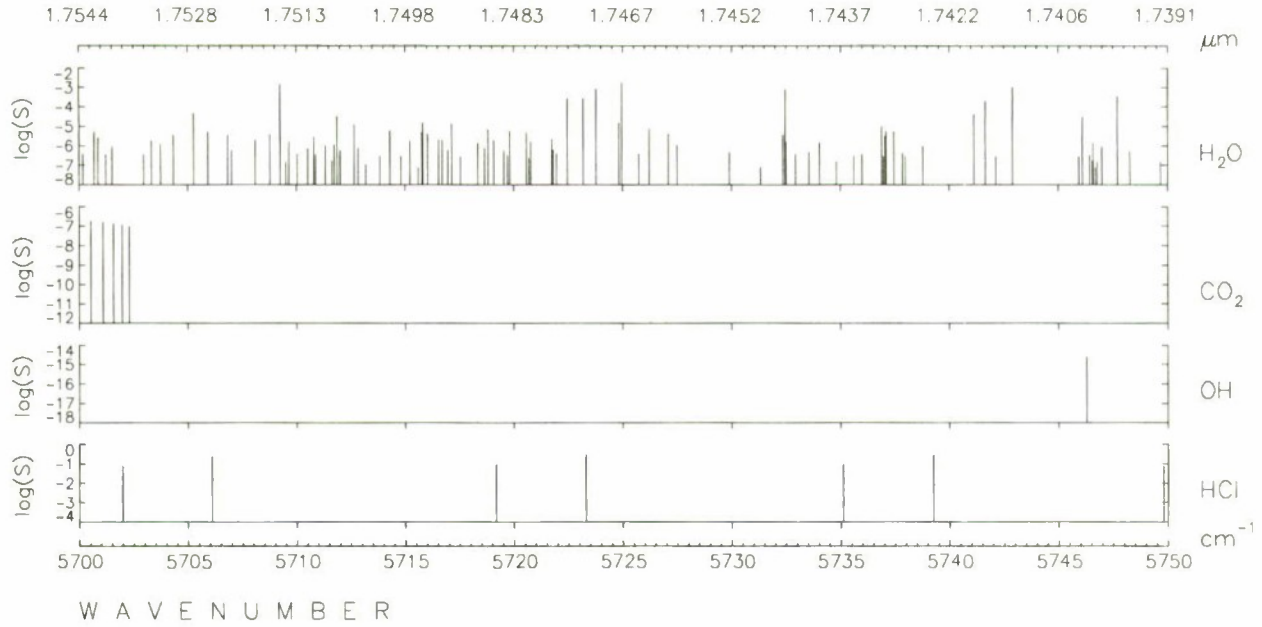

1.8349 1.8332 1.8315 1.8298 1.8282 1.8265 1.8248 1.8232 1.8215 1.8198 1.8182
μm
log(S)
H2O
log(S)
OH
log(S)
HCl
cm-1
5450 5455 5460 5465 5470 5475 5480 5485 5490 5495 5500
WAVENUMBER

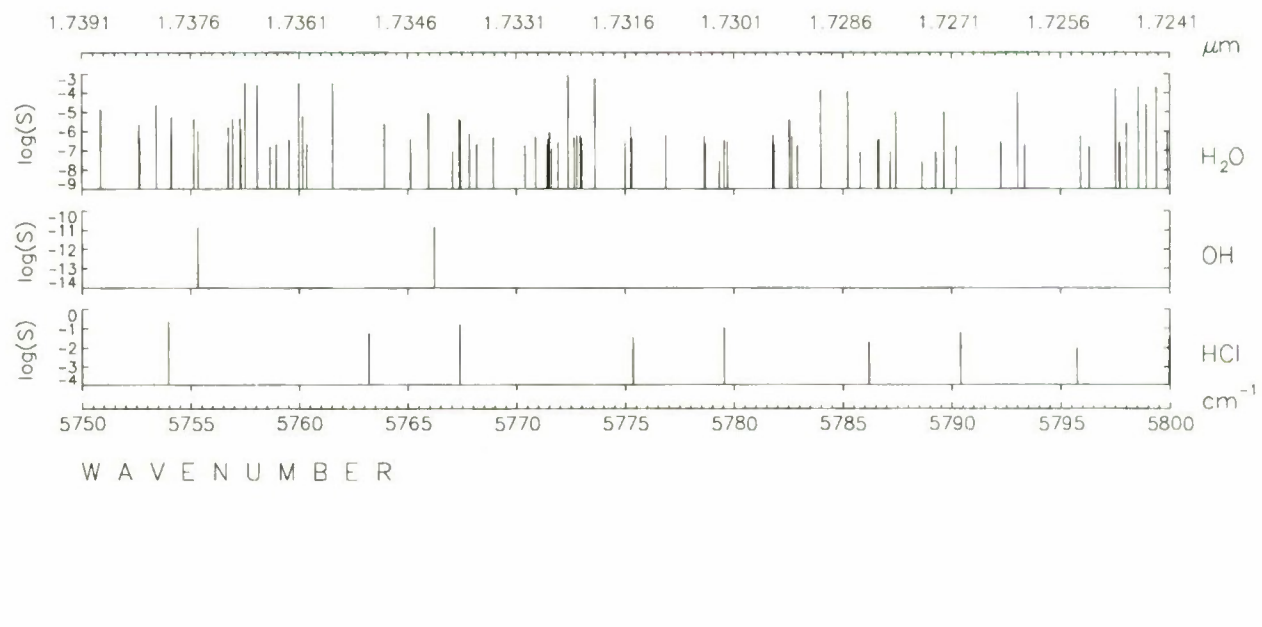

1.8182 1.8165 1.8149 1.8132 1.8116 1.8100 1.8083 1.8067 1.8051 1.8034 1.8018
μm
log(S)
H2O
OH
HCl
cm-1
5500 5505 5510 5515 5520 5525 5530 5535 5540 5545 5550
WAVENUMBER

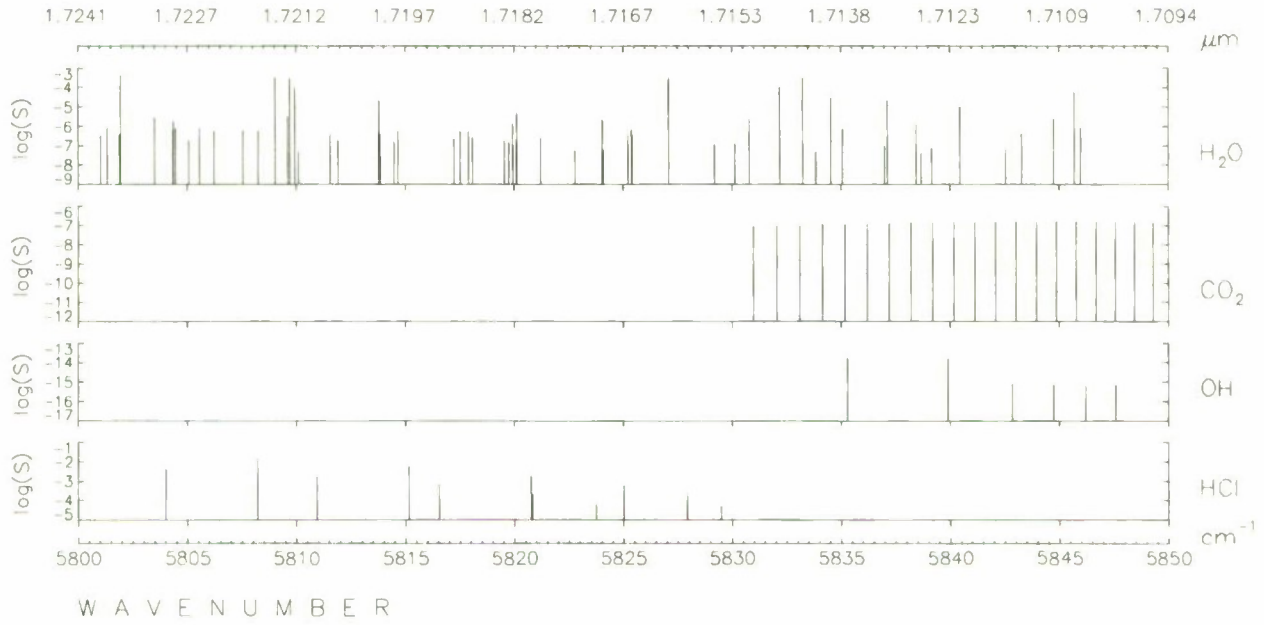

1.8018 1.8002 1.7986 1.7969 1.7953 1.7937 1.7921 1.7905 1.7889 1.7873 1.7857
μm
log(S)
H2O
CO2
OH
HCl
cm-1
5550 5555 5560 5565 5570 5575 5580 5585 5590 5595 5600
WAVENUMBER

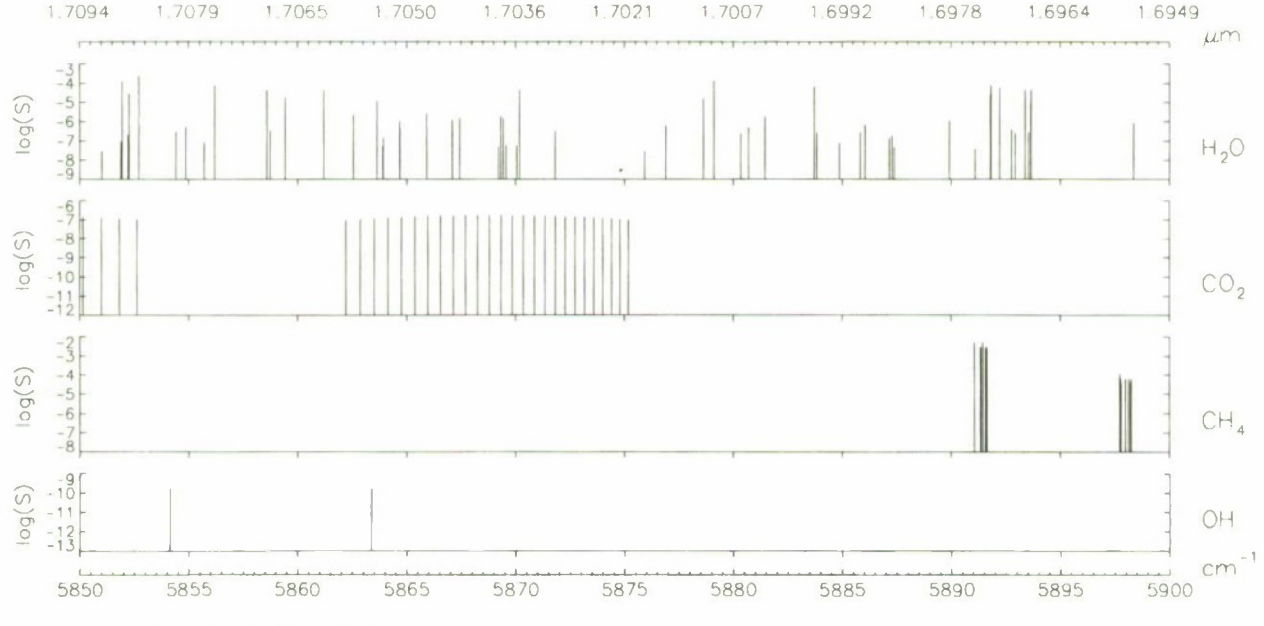

1.7857 1.7841 1.7825 1.7809 1.7794 1.7778 1.7762 1.7746 1.7730 1.7715 1.7699
μm
log(S)
H2O
OH
HCl
cm-1
5600 5605 5610 5615 5620 5625 5630 5635 5640 5645 5650
WAVENUMBER

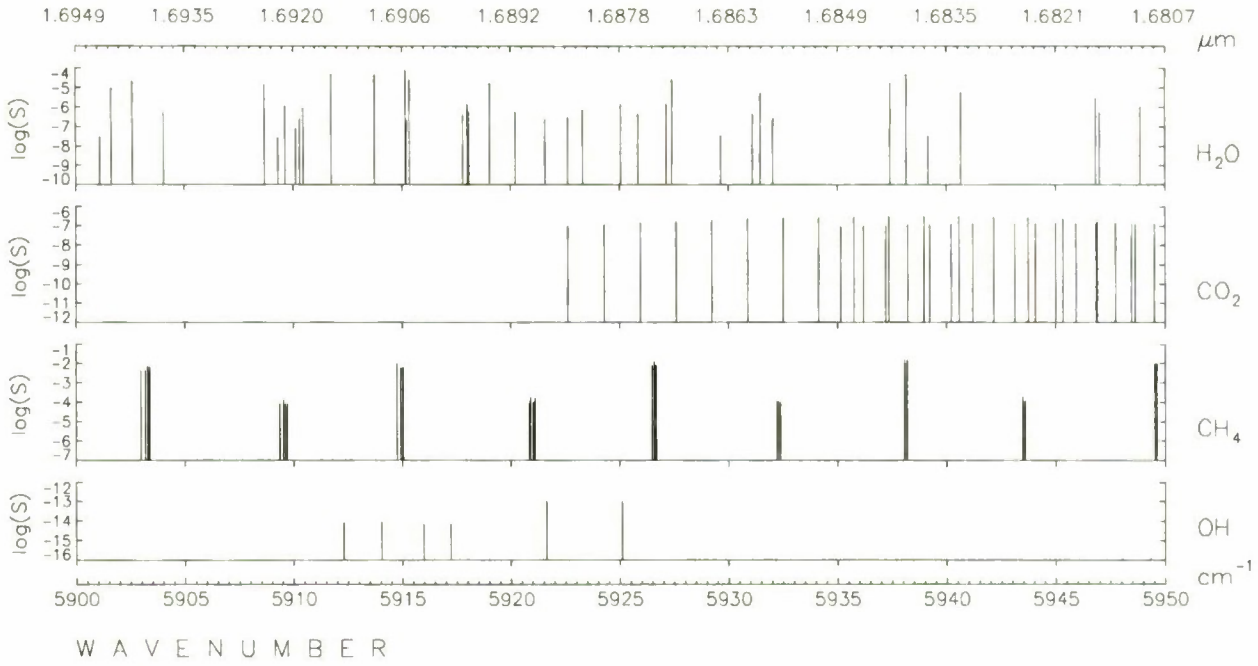

1.7699 1.7683 1.7668 1.7652 1.7637 1.7621 1.7606 1.7590 1.7575 1.7559 1.7544
μm
log(S)
H2O
CO2
OH
HCl
cm-1
5650 5655 5660 5665 5670 5675 5680 5685 5690 5695 5700
WAVENUMBER

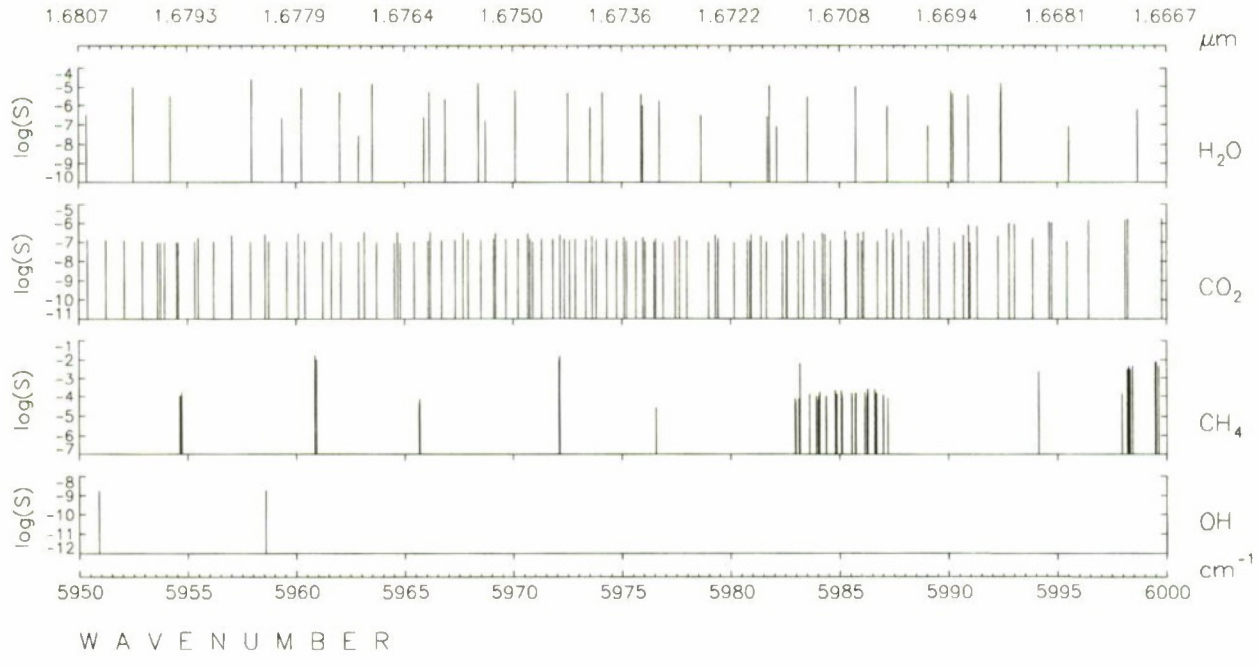

1.7544 1.7528 1.7513 1.7498 1.7483 1.7467 1.7452 1.7437 1.7422 1.7406 1.7391
μm
log(S)
H2O
CO2
OH
HCl
cm-1
5700 5705 5710 5715 5720 5725 5730 5735 5740 5745 5750
WAVENUMBER

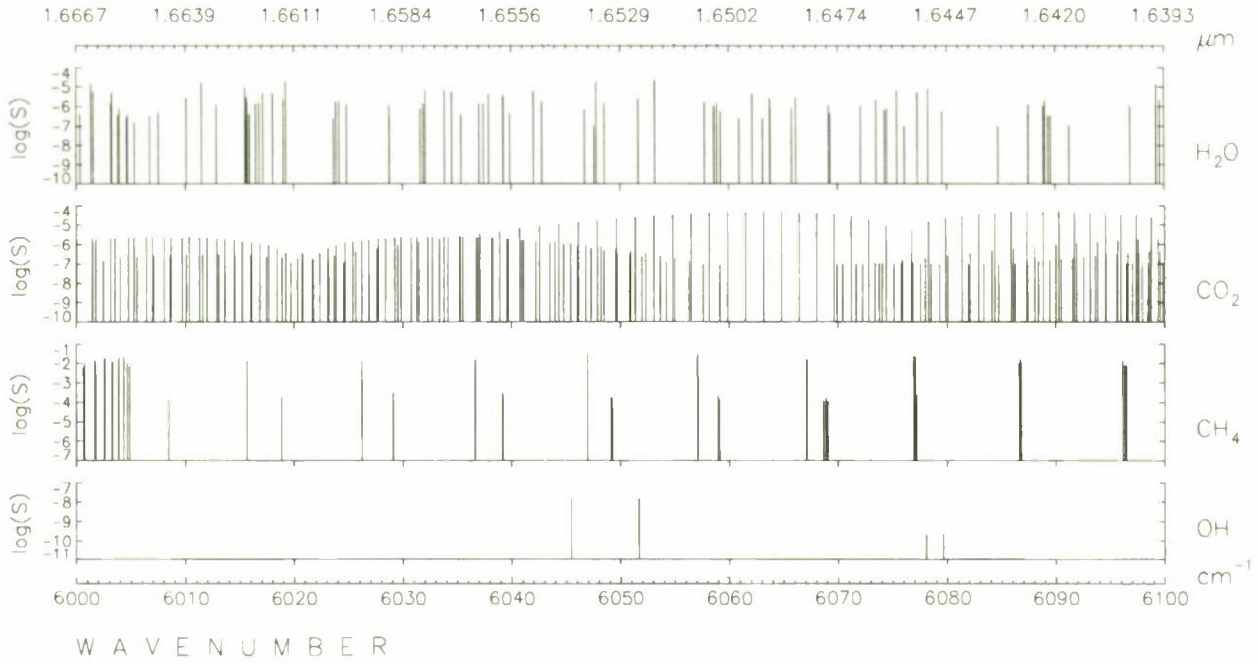

1.7391 1.7376 1.7361 1.7346 1.7331 1.7316 1.7301 1.7286 1.7271 1.7256 1.7241
μm
log(S)
H2O
OH
HCl
cm-1
5750 5755 5760 5765 5770 5775 5780 5785 5790 5795 5800
WAVENUMBER

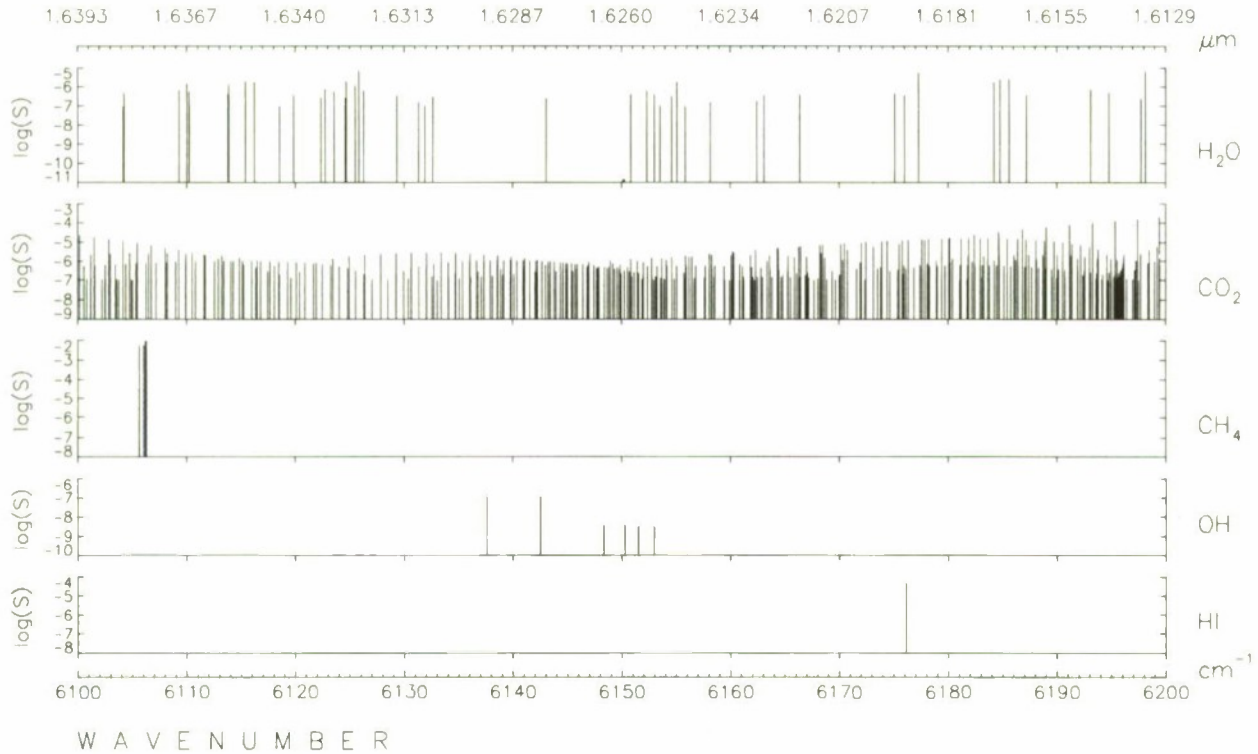

1.7241 1.7227 1.7212 1.7197 1.7182 1.7167 1.7153 1.7138 1.7123 1.7109 1.7094
μm
log(S)
H2O
CO2
OH
HCl
cm-1
5800 5805 5810 5815 5820 5825 5830 5835 5840 5845 5850
WAVENUMBER

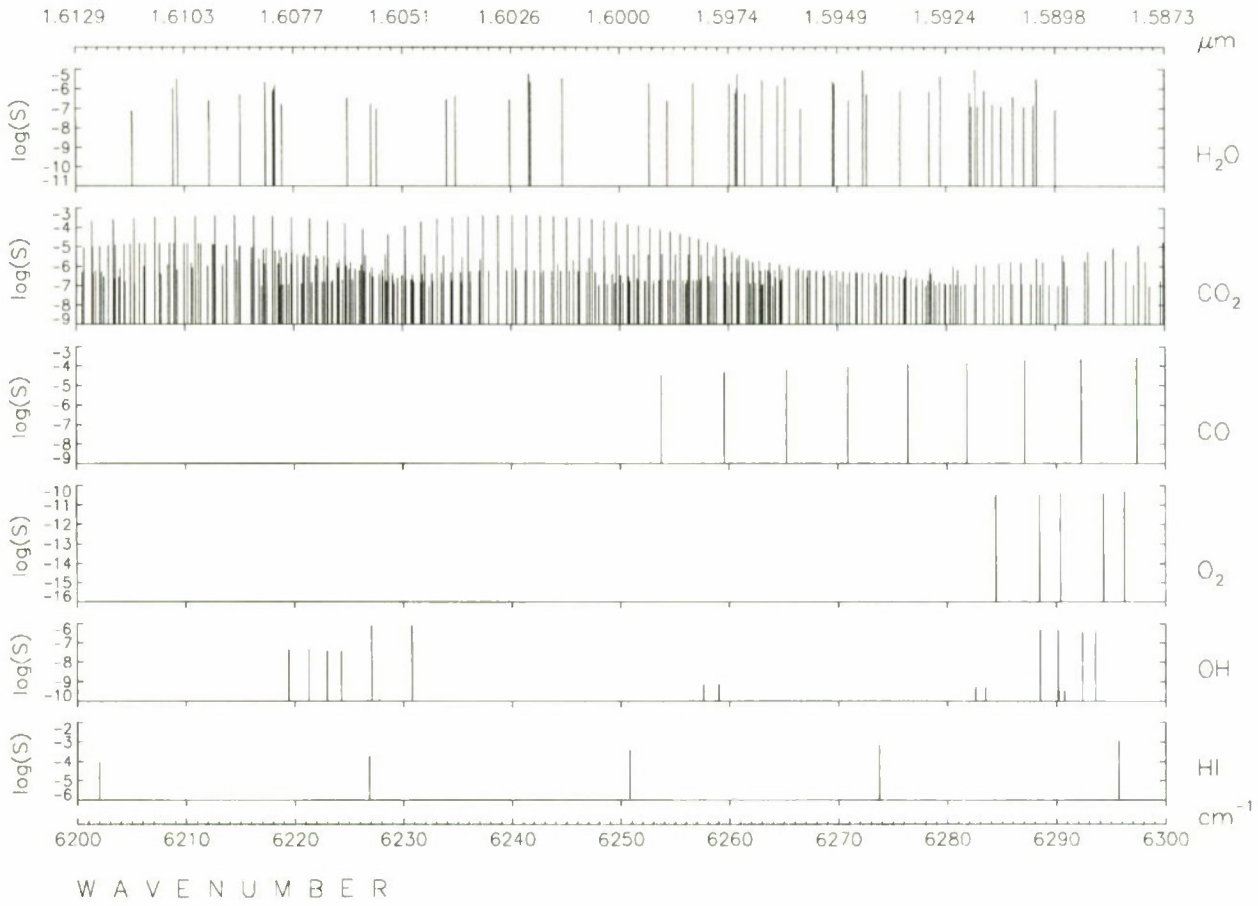

1.7094 1.7079 1.7065 1.7050 1.7036 1.7021 1.7007 1.6992 1.6978 1.6964 1.6949
μm
log(S)
H2O
CO2
CH4
OH
cm-1
5850 5855 5860 5865 5870 5875 5880 5885 5890 5895 5900
WAVENUMBER

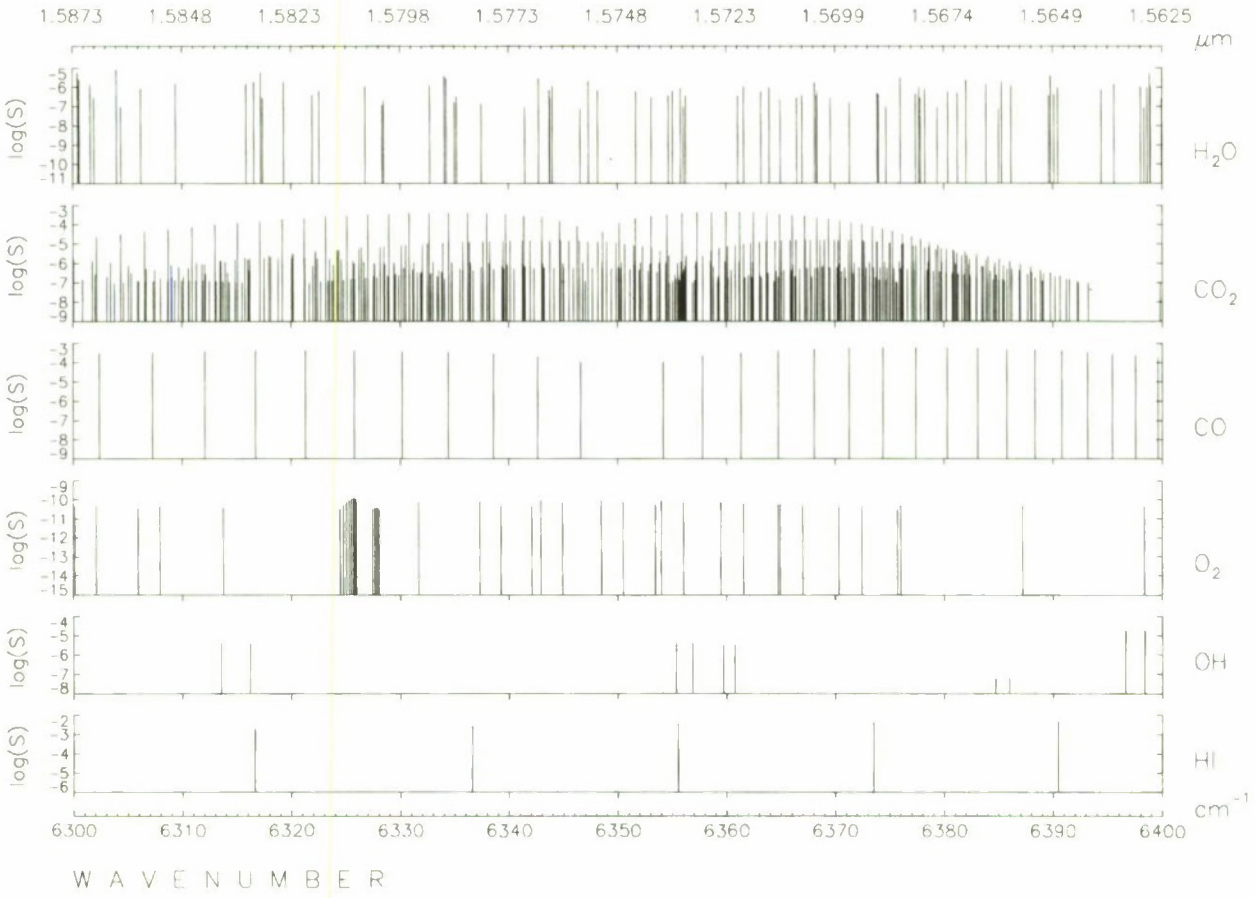

1.6949 1.6935 1.6920 1.6906 1.6892 1.6878 1.6863 1.6849 1.6835 1.6821 1.6807
μm
log(S)
H2O
CO2
CH4
OH
cm-1
5900 5905 5910 5915 5920 5925 5930 5935 5940 5945 5950
WAVENUMBER

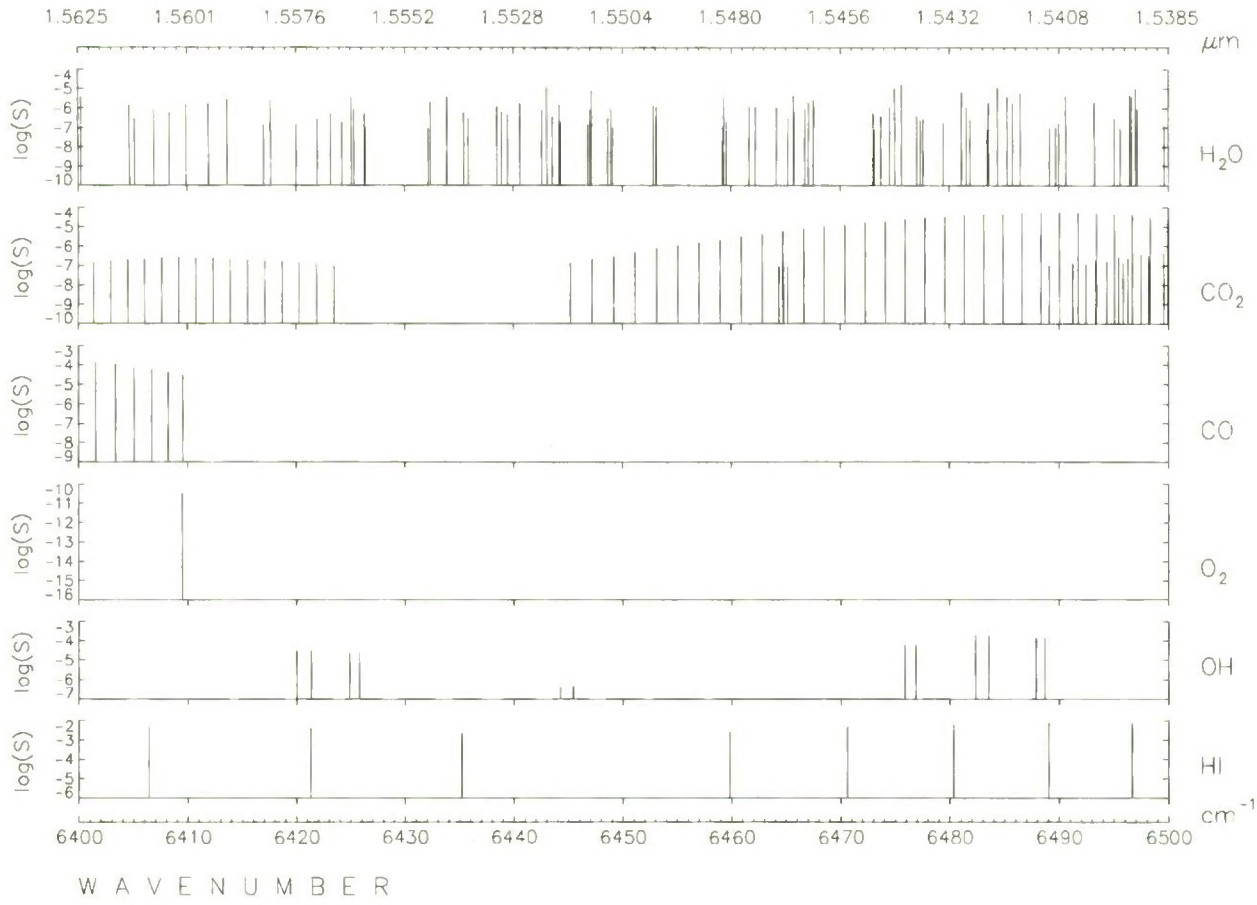

1.6807 1.6793 1.6779 1.6764 1.6750 1.6736 1.6722 1.6708 1.6694 1.6681 1.6667
μm
log(S)
H2O
CO2
CH4
OH
cm-1
5950 5955 5960 5965 5970 5975 5980 5985 5990 5995 6000
WAVENUMBER

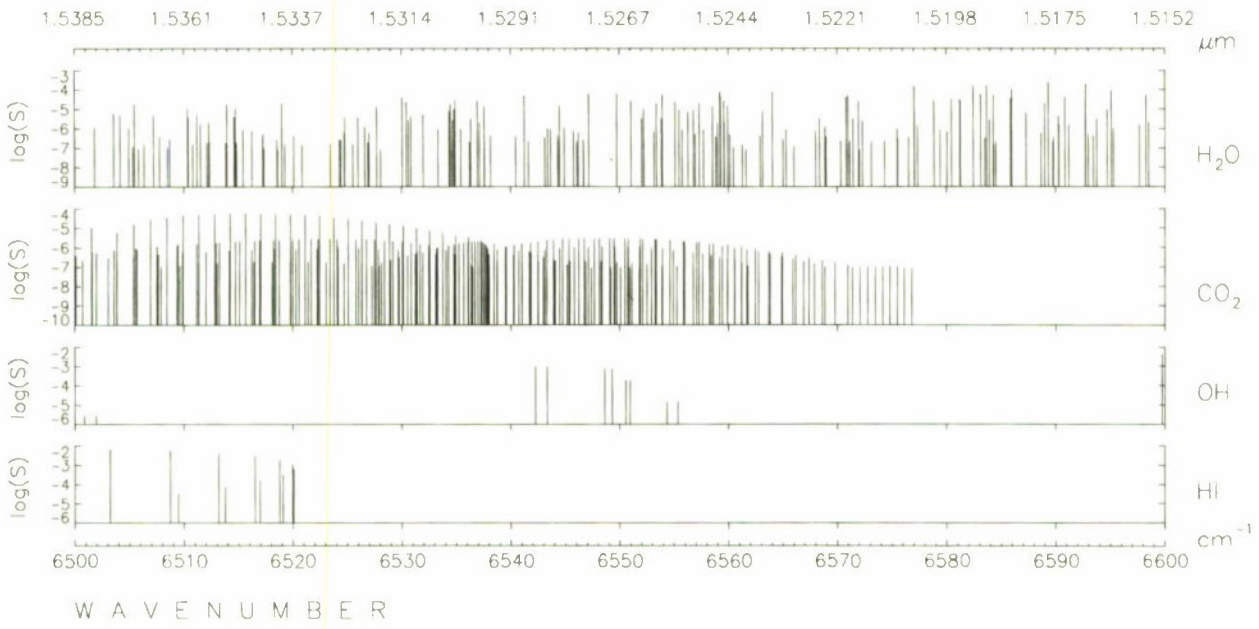

1.6667 1.6639 1.6611 1.6584 1.6556 1.6529 1.6502 1.6474 1.6447 1.6420 1.6393
μm
log(S)
H2O
CO2
CH4
OH
cm-1
6000 6010 6020 6030 6040 6050 6060 6070 6080 6090 6100
WAVENUMBER

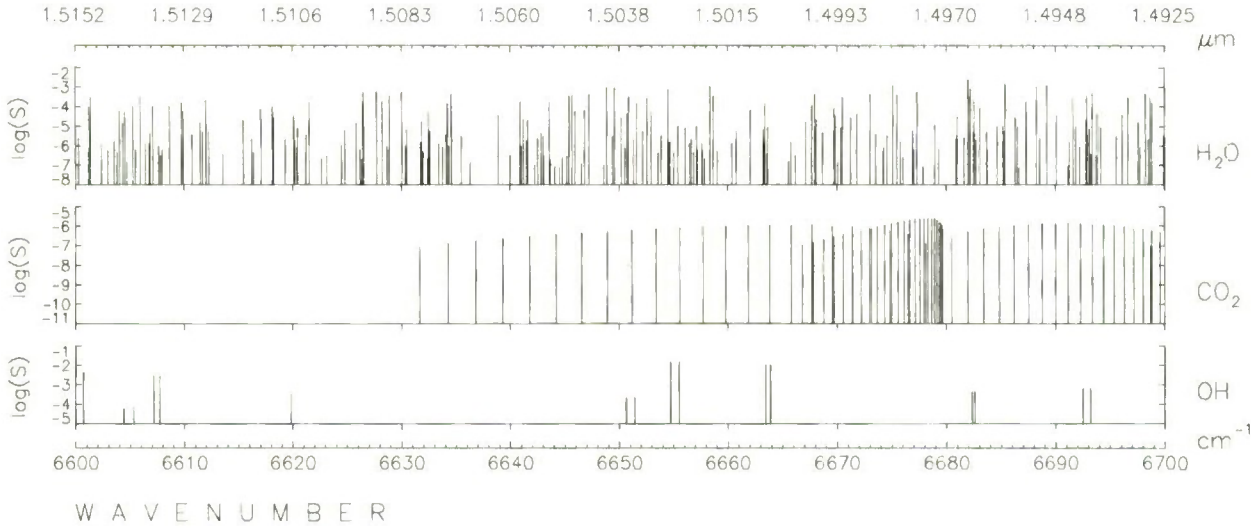

1.6393 1.6367 1.6340 1.6313 1.6287 1.6260 1.6234 1.6207 1.6181 1.6155 1.6129
μm
log(S)
H2O
CO2
CH4
OH
HI
cm-1
6100 6110 6120 6130 6140 6150 6160 6170 6180 6190 6200
WAVENUMBER

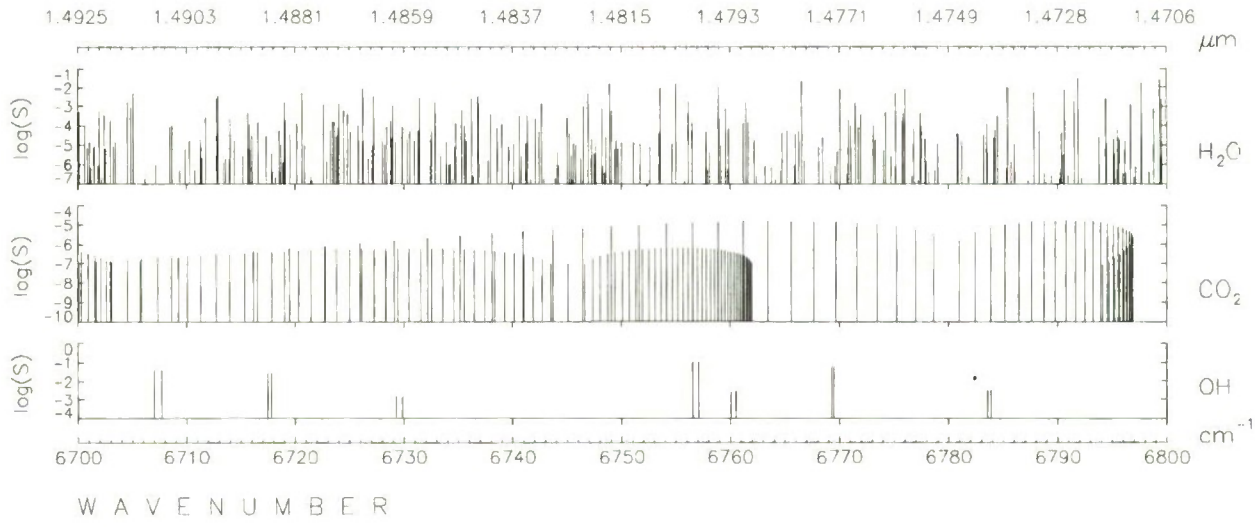

1.6129
1.6103
1.6077
1.6051
1.6026
1.6000
1.5974
1.5949
1.5924
1.5898
1.5873
μm
log(S)
H2O
CO2
CO
O2
OH
HI
cm-1
6200
6210
6220
6230
6240
6250
6260
6270
6280
6290
6300
WAVENUMBER

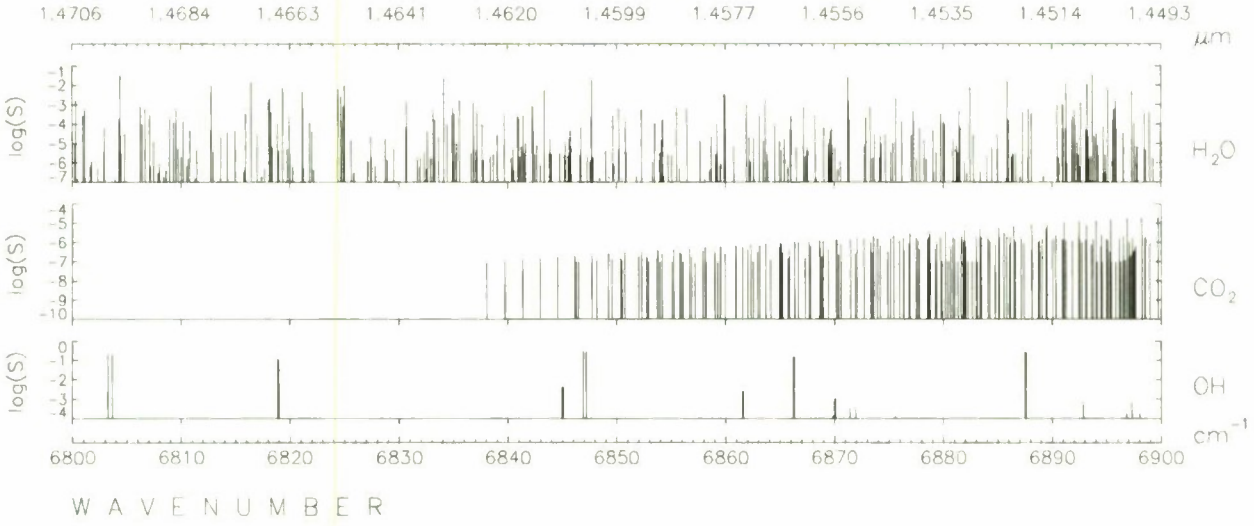

1.5873
1.5848
1.5823
1.5798
1.5773
1.5748
1.5723
1.5699
1.5674
1.5649
1.5625
μm
log(S)
H2O
CO2
CO
O2
OH
HI
6300
6310
6320
6330
6340
6350
6360
6370
6380
6390
6400
cm-1
WAVENUMBER

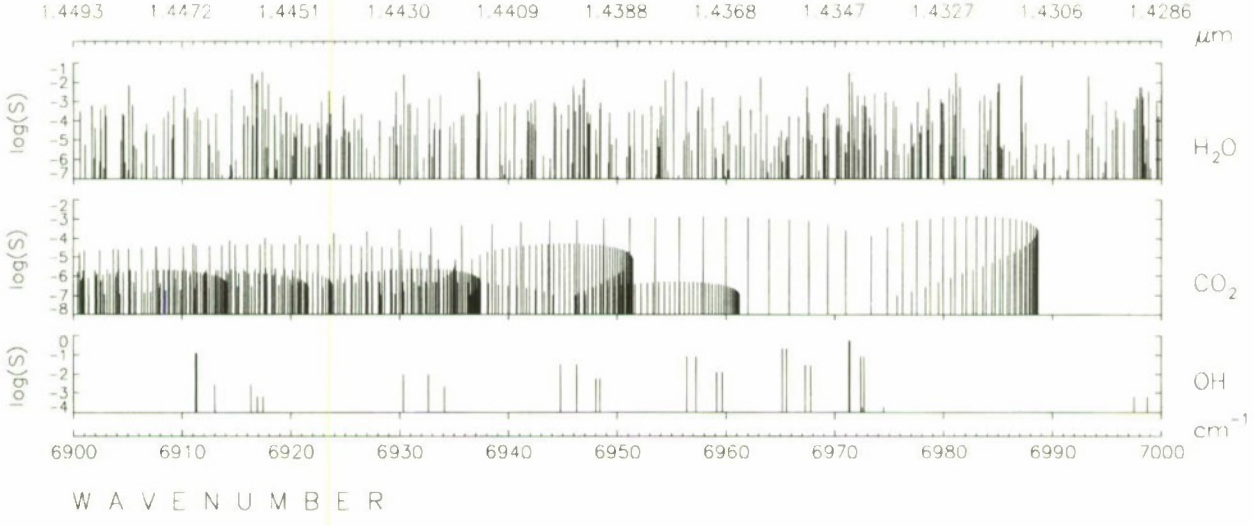

1.5625
1.5601
1.5576
1.5552
1.5528
1.5504
1.5480
1.5456
1.5432
1.5408
1.5385
μm
log(S)
H2O
CO2
CO
O2
OH
HI
cm-1
6400
6410
6420
6430
6440
6450
6460
6470
6480
6490
6500
WAVENUMBER

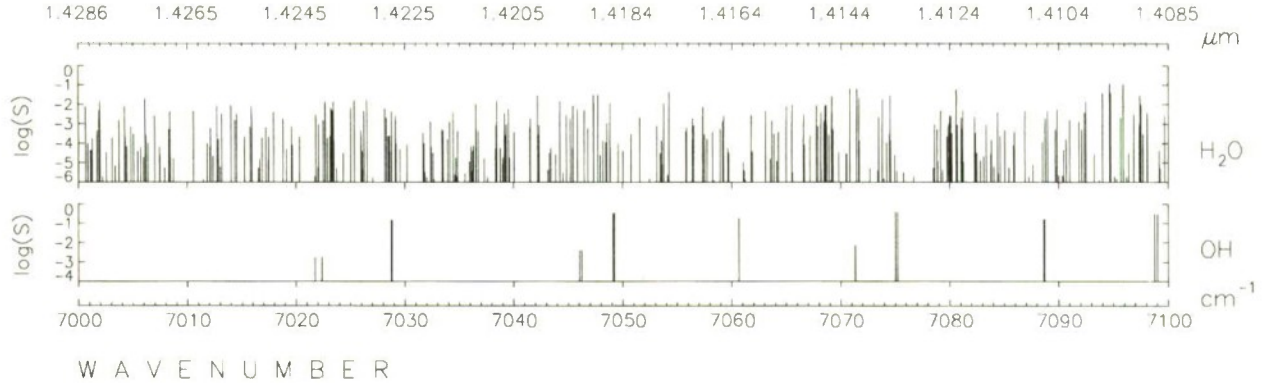

1.5385
1.5361
1.5337
1.5314
1.5291
1.5267
1.5244
1.5221
1.5198
1.5175
1.5152
μm
log(S)
H2O
CO2
OH
HI
cm-1
6500
6510
6520
6530
6540
6550
6560
6570
6580
6590
6600
WAVENUMBER

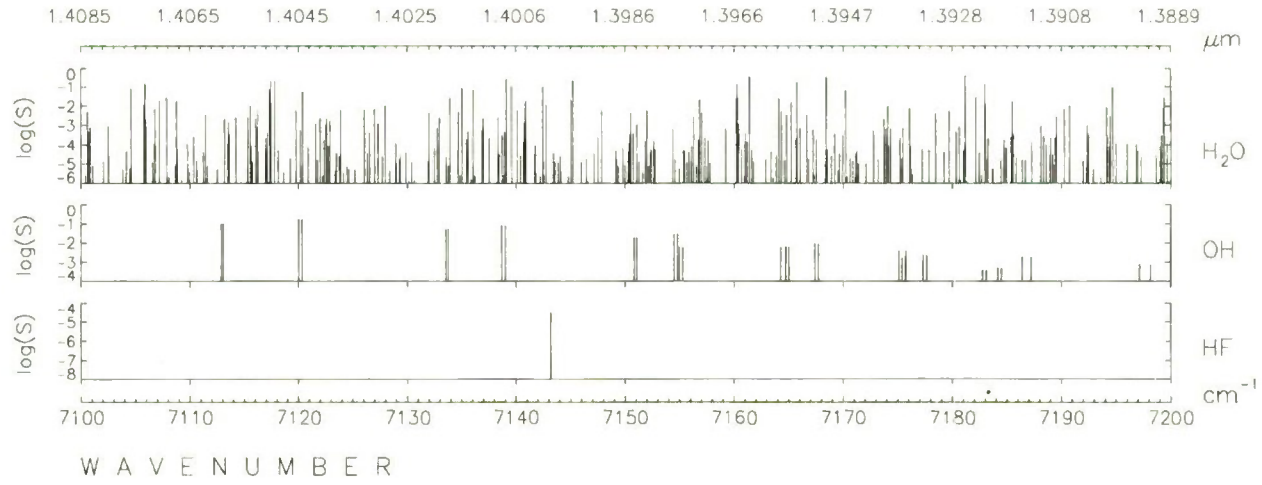

1.5152 1.5129 1.5106 1.5083 1.5060 1.5038 1.5015 1.4993 1.4970 1.4948 1.4925
μm
log(S)
H2O
CO2
OH
cm-1
6600 6610 6620 6630 6640 6650 6660 6670 6680 6690 6700
WAVENUMBER

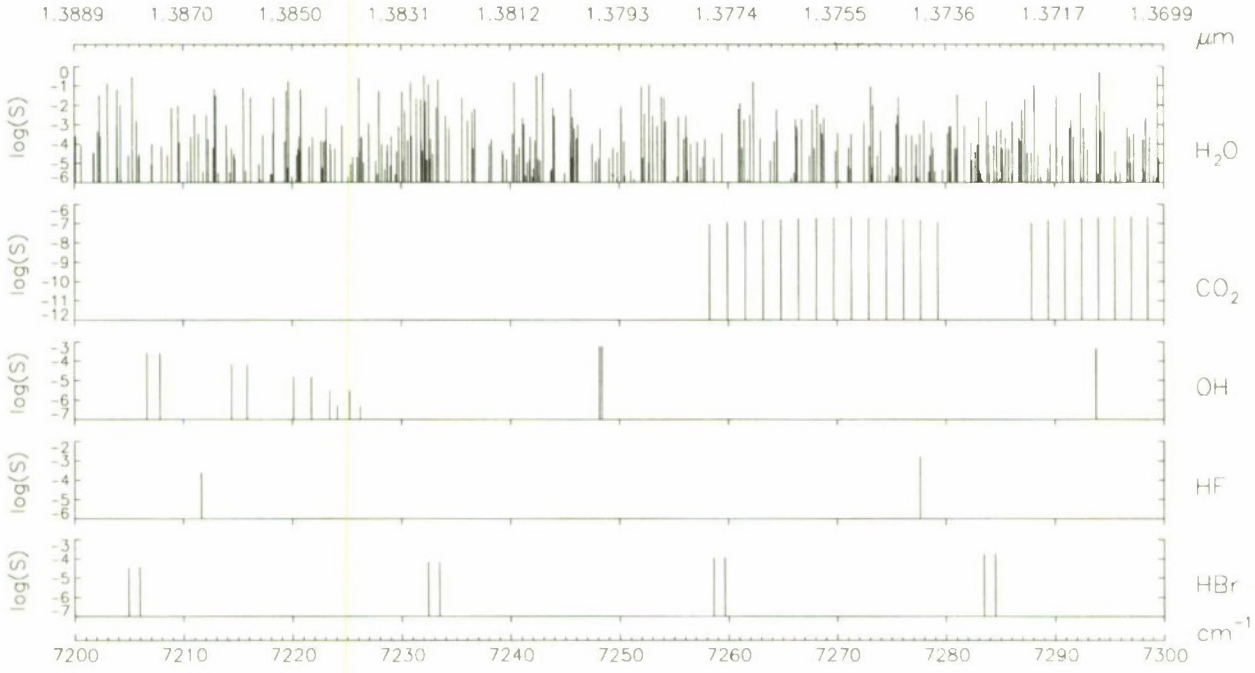

1.4925 1.4903 1.4881 1.4859 1.4837 1.4815 1.4793 1.4771 1.4749 1.4728 1.4706
μm
log(S)
H2O
CO2
OH
cm-1
6700 6710 6720 6730 6740 6750 6760 6770 6780 6790 6800
WAVENUMBER

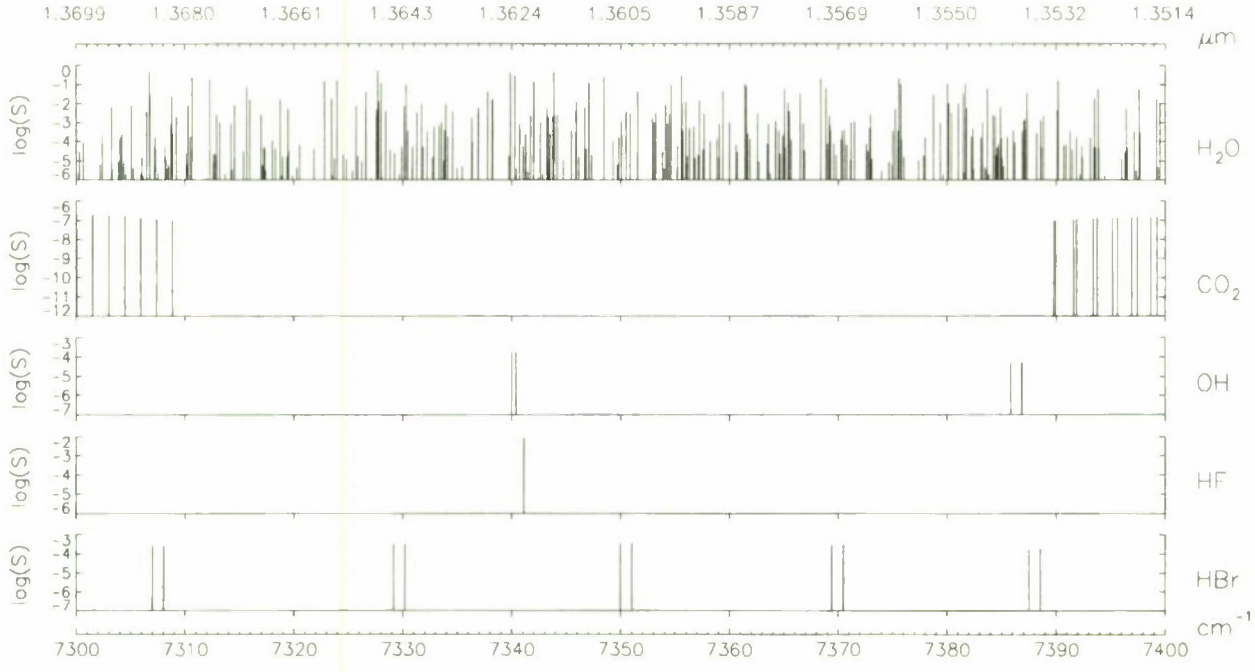

1.4706 1.4684 1.4663 1.4641 1.4620 1.4599 1.4577 1.4556 1.4535 1.4514 1.4493
μm
log(S)
H2O
CO2
OH
cm-1
6800 6810 6820 6830 6840 6850 6860 6870 6880 6890 6900
WAVENUMBER

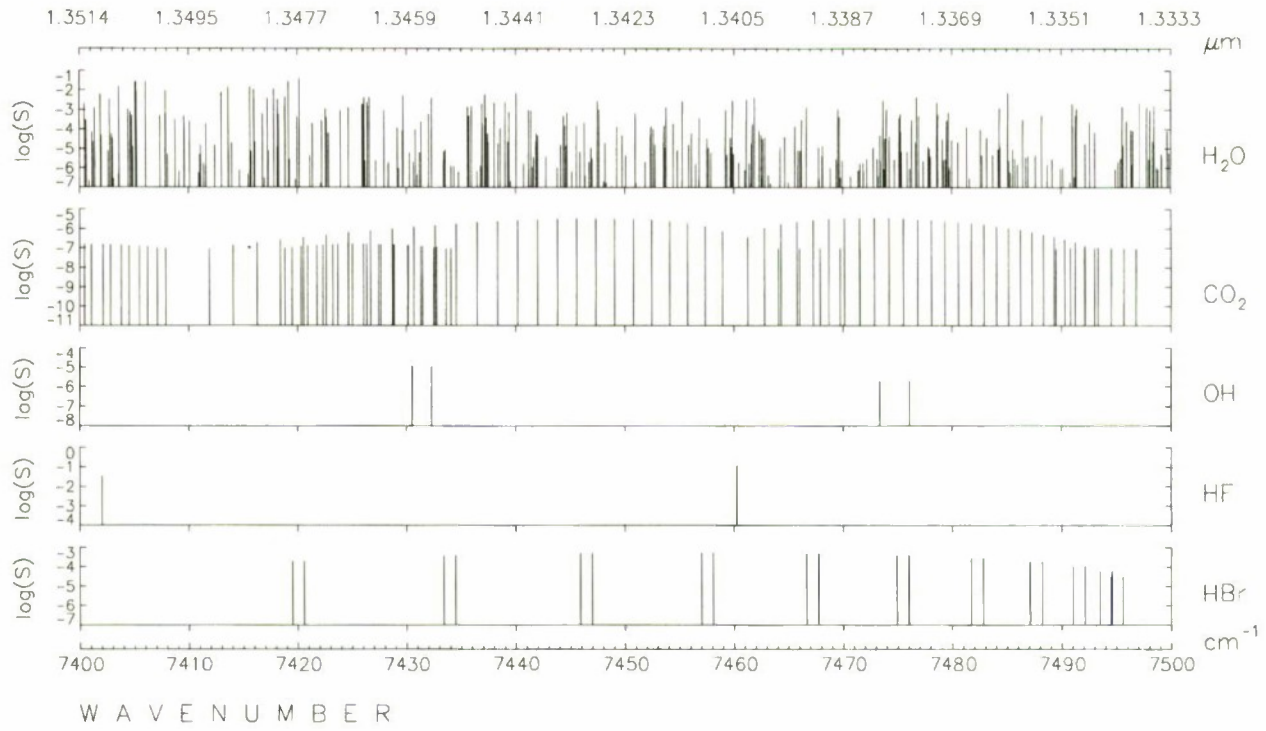

1.4493 1.4472 1.4451 1.4430 1.4409 1.4388 1.4368 1.4347 1.4327 1.4306 1.4286
μm
log(S)
H2O
CO2
OH
cm-1
6900 6910 6920 6930 6940 6950 6960 6970 6980 6990 7000
WAVENUMBER

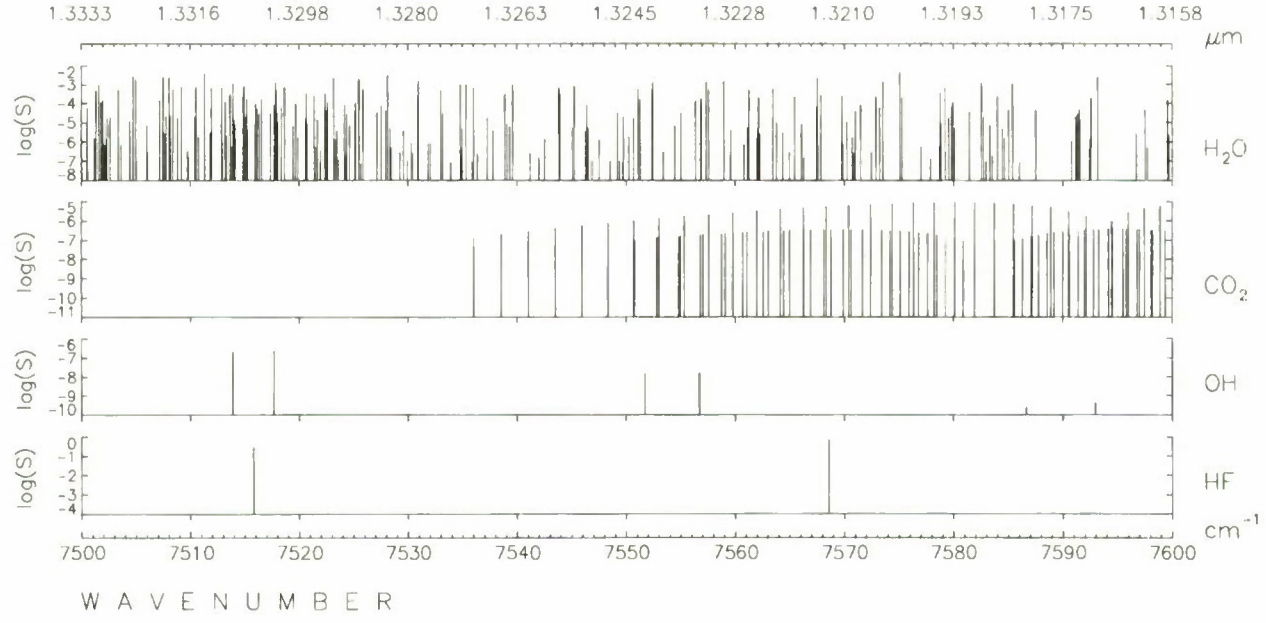

1.4286 1.4265 1.4245 1.4225 1.4205 1.4184 1.4164 1.4144 1.4124 1.4104 1.4085
μm
log(S)
H2O
OH
cm-1
7000 7010 7020 7030 7040 7050 7060 7070 7080 7090 7100
WAVENUMBER

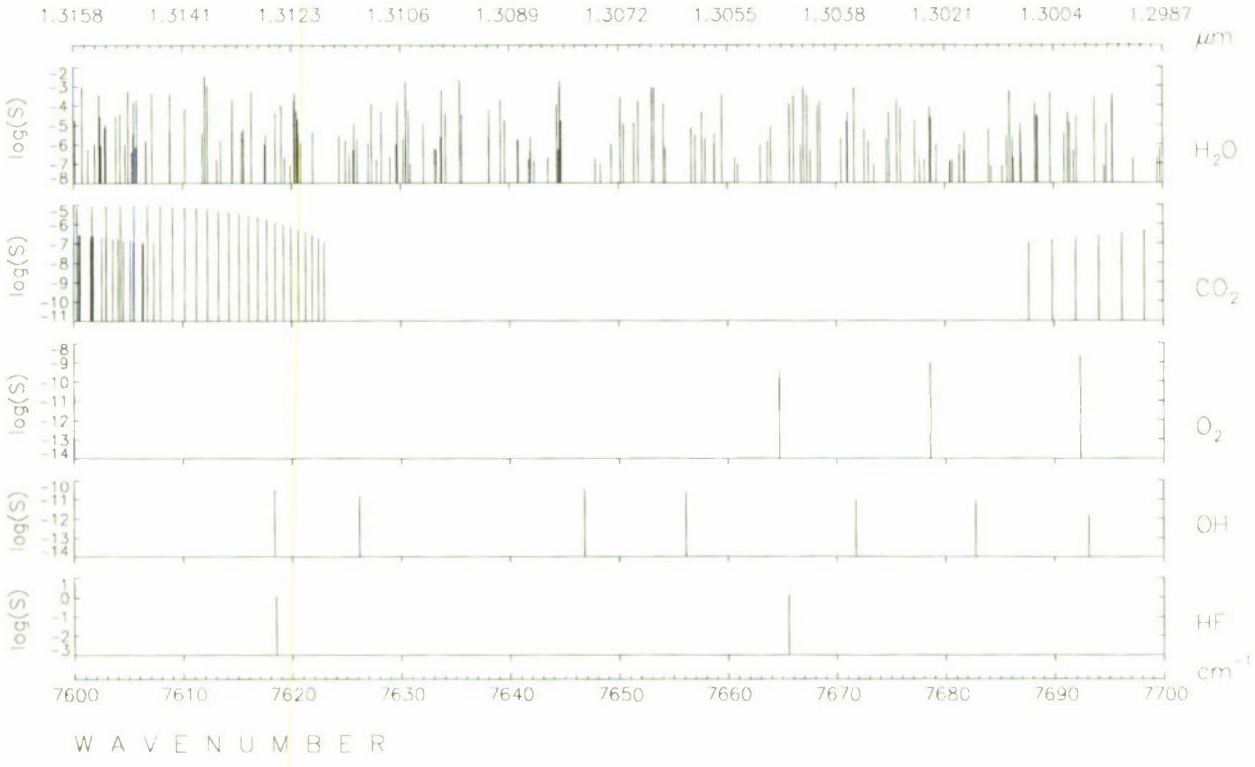

1.4085 1.4065 1.4045 1.4025 1.4006 1.3986 1.3966 1.3947 1.3928 1.3908 1.3889
μm
log(S)
H2O
OH
HF
cm-1
7100 7110 7120 7130 7140 7150 7160 7170 7180 7190 7200
WAVENUMBER

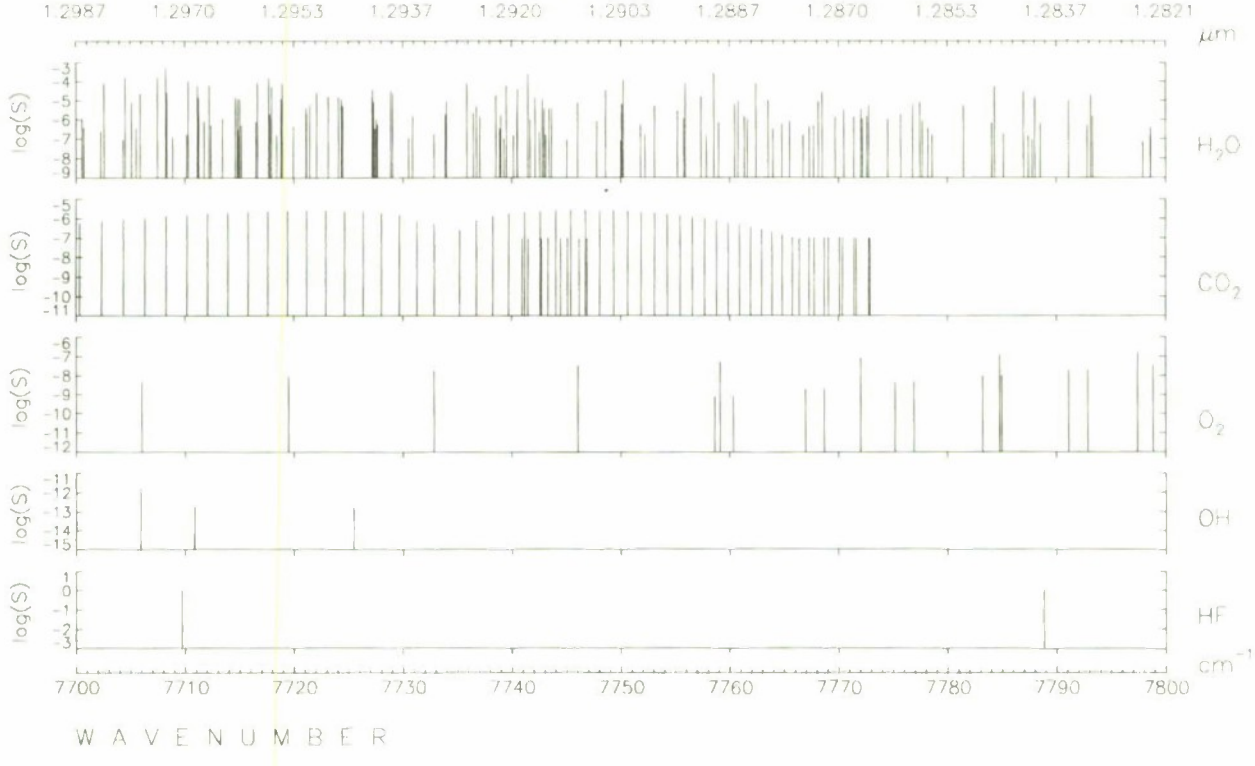

1.3889 1.3870 1.3850 1.3831 1.3812 1.3793 1.3774 1.3755 1.3736 1.3717 1.3699
μm
log(S)
H2O
CO2
OH
HF
HBr
cm-1
7200 7210 7220 7230 7240 7250 7260 7270 7280 7290 7300
WAVENUMBER

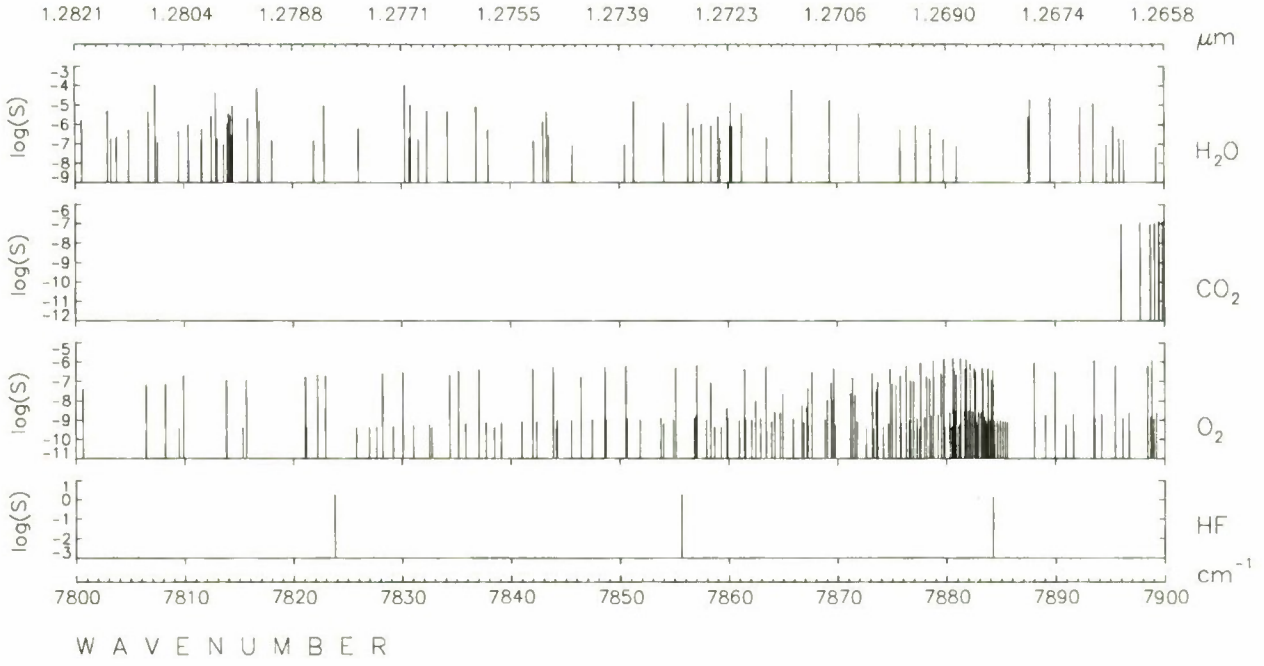

1.3699 1.3680 1.3661 1.3643 1.3624 1.3605 1.3587 1.3569 1.3550 1.3532 1.3514
μm
log(S)
H2O
CO2
OH
HF
HBr
cm-1
7300 7310 7320 7330 7340 7350 7360 7370 7380 7390 7400
WAVENUMBER

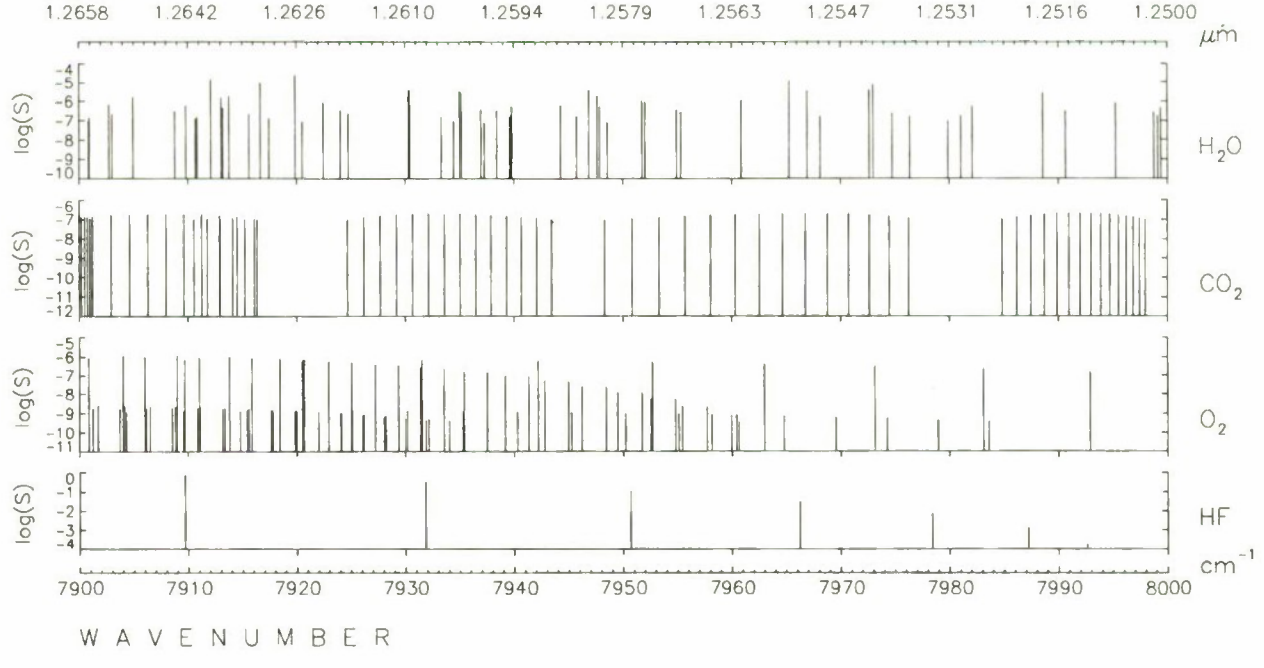

1.3514 1.3495 1.3477 1.3459 1.3441 1.3423 1.3405 1.3387 1.3369 1.3351 1.3333
μm
log(S)
H2O
CO2
OH
HF
HBr
cm-1
7400 7410 7420 7430 7440 7450 7460 7470 7480 7490 7500
WAVENUMBER

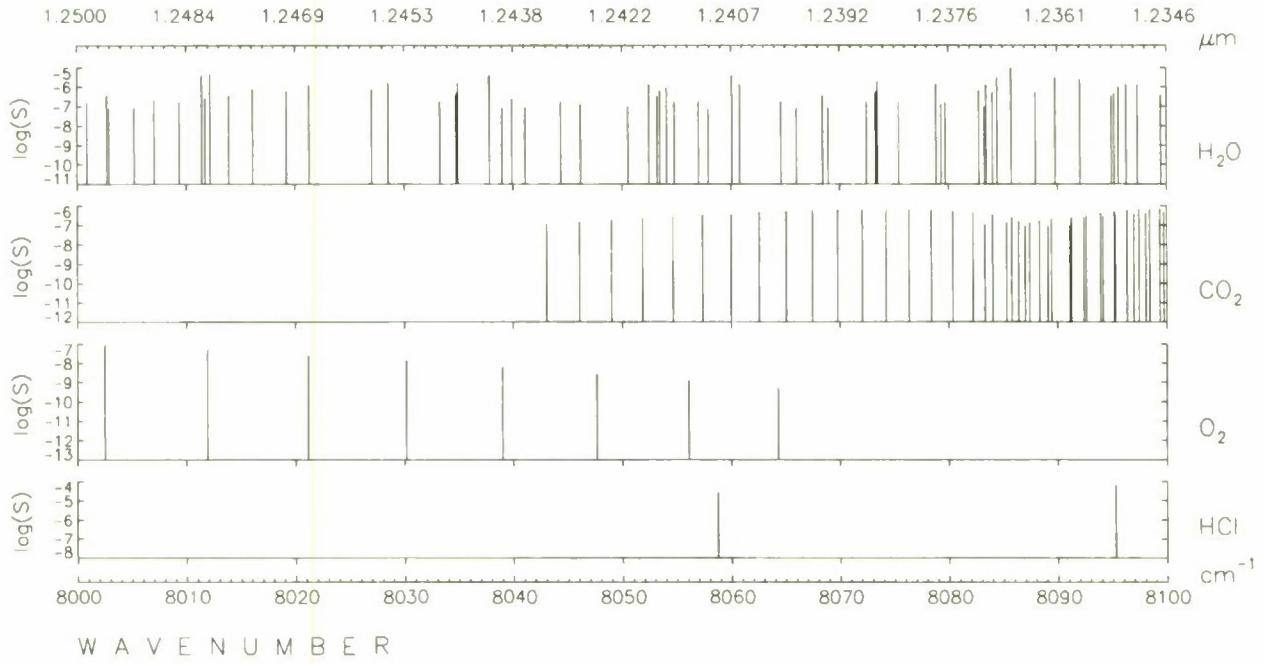

1.3333 1.3316 1.3298 1.3280 1.3263 1.3245 1.3228 1.3210 1.3193 1.3175 1.3158
μm
log(S)
H2O
CO2
OH
HF
cm-1
7500 7510 7520 7530 7540 7550 7560 7570 7580 7590 7600
WAVENUMBER

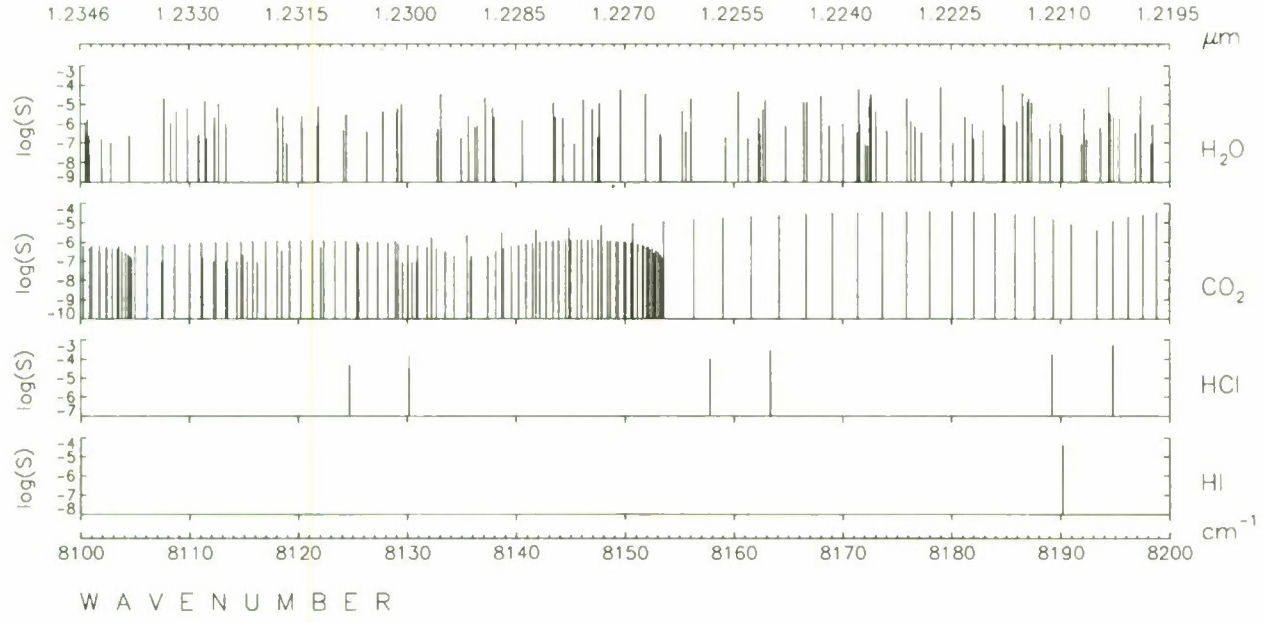

1.3158 1.3141 1.3123 1.3106 1.3089 1.3072 1.3055 1.3038 1.3021 1.3004 1.2987
μm
log(S)
H2O
CO2
O2
OH
HF
cm-1
7600 7610 7620 7630 7640 7650 7660 7670 7680 7690 7700
WAVENUMBER

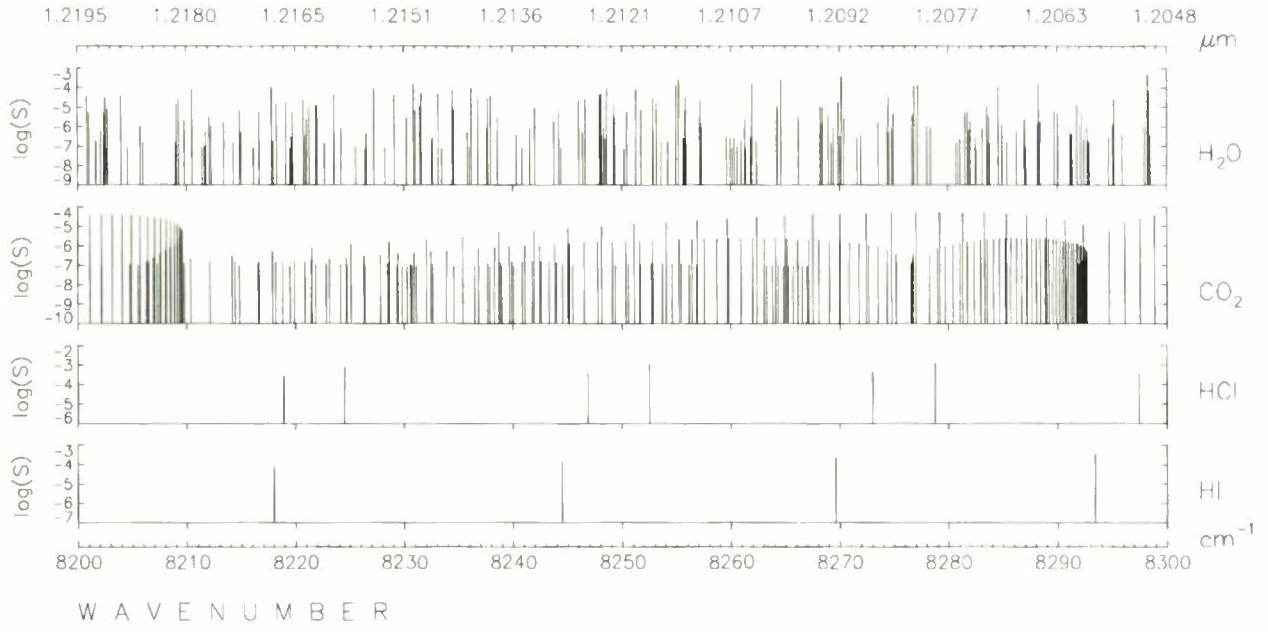

1.2987 1.2970 1.2953 1.2937 1.2920 1.2903 1.2887 1.2870 1.2853 1.2837 1.2821
μm
log(S)
H2O
CO2
O2
OH
HF
cm-1
7700 7710 7720 7730 7740 7750 7760 7770 7780 7790 7800
WAVENUMBER

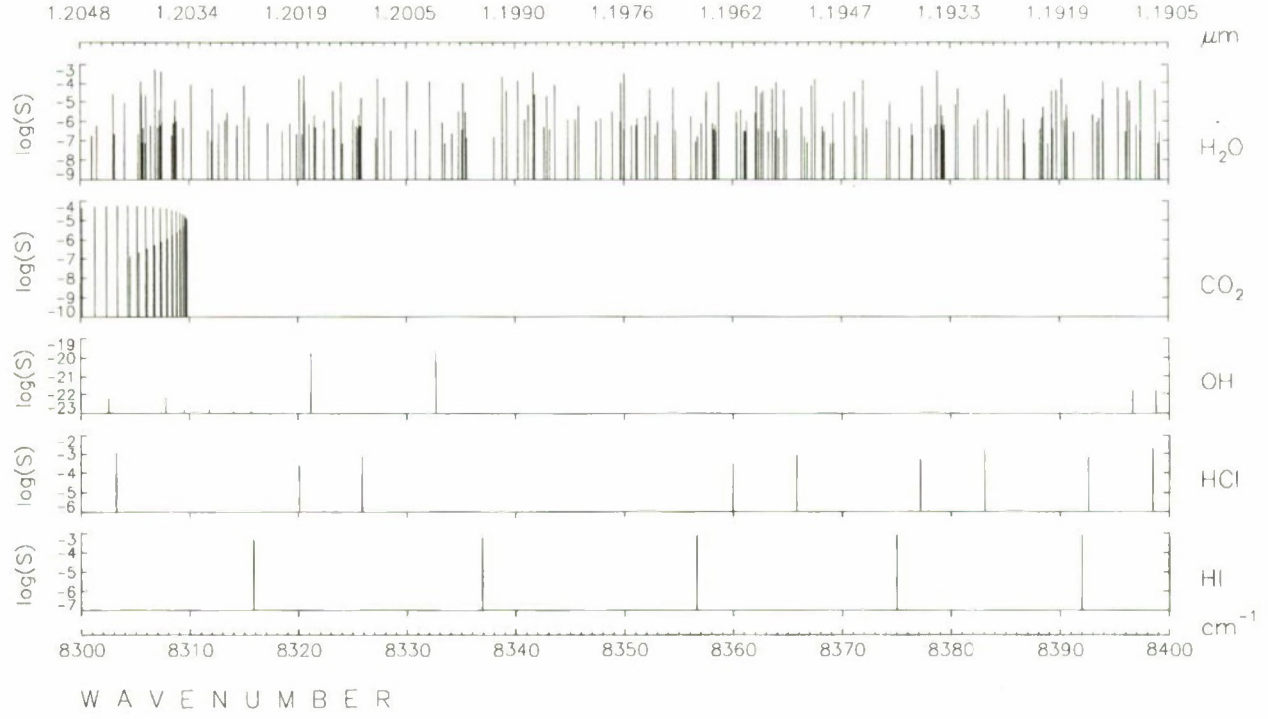

1.2821 1.2804 1.2788 1.2771 1.2755 1.2739 1.2723 1.2706 1.2690 1.2674 1.2658
μm
log(S)
H2O
CO2
O2
HF
cm-1
7800 7810 7820 7830 7840 7850 7860 7870 7880 7890 7900
WAVENUMBER

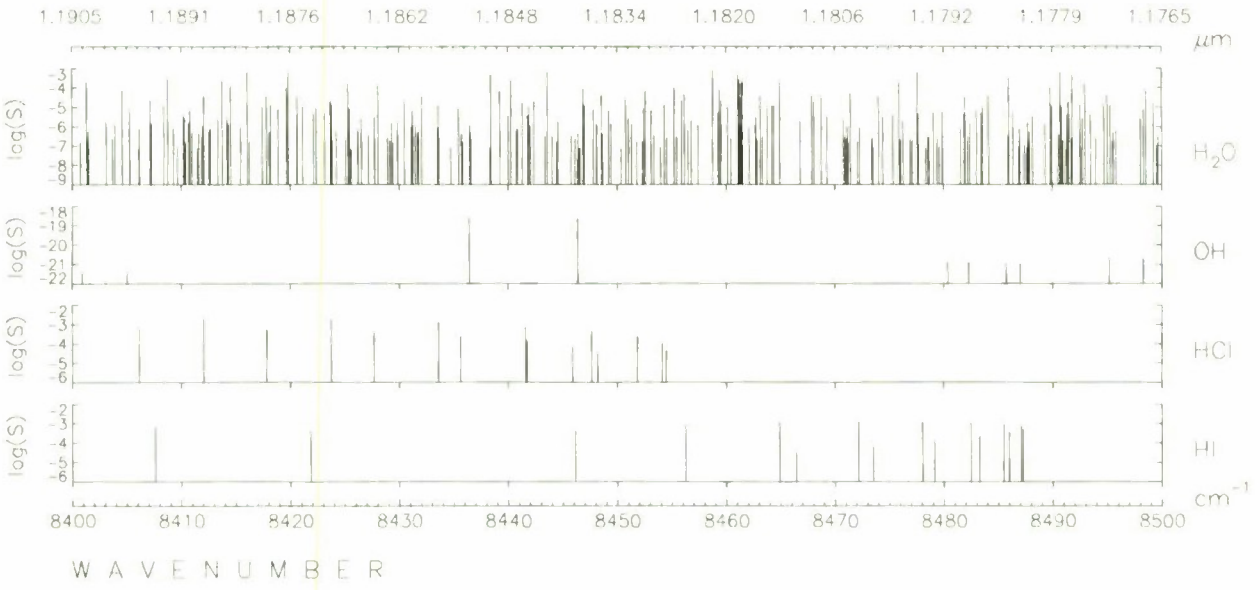

1.2658 1.2642 1.2626 1.2610 1.2594 1.2579 1.2563 1.2547 1.2531 1.2516 1.2500
μm
log(S)
H2O
CO2
O2
HF
cm-1
7900 7910 7920 7930 7940 7950 7960 7970 7980 7990 8000
WAVENUMBER

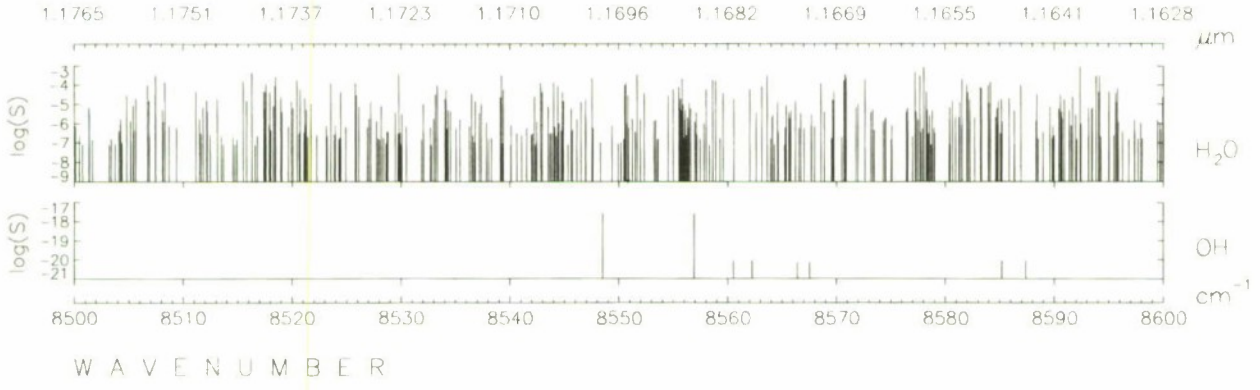

1.2500 1.2484 1.2469 1.2453 1.2438 1.2422 1.2407 1.2392 1.2376 1.2361 1.2346
μm
log(S)
H2O
CO2
O2
HCl
cm-1
8000 8010 8020 8030 8040 8050 8060 8070 8080 8090 8100
WAVENUMBER

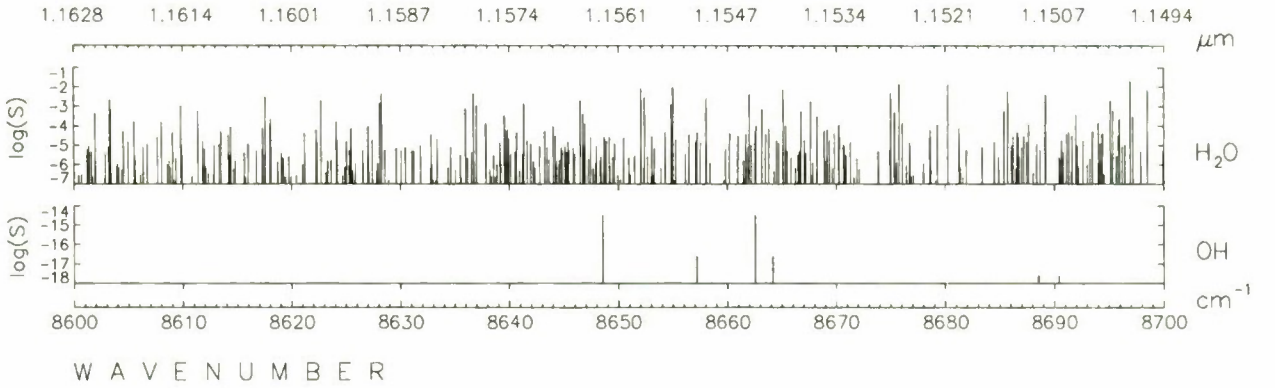

1.2346 1.2330 1.2315 1.2300 1.2285 1.2270 1.2255 1.2240 1.2225 1.2210 1.2195
μm
log(S)
H2O
CO2
HCl
HI
cm-1
8100 8110 8120 8130 8140 8150 8160 8170 8180 8190 8200
WAVENUMBER

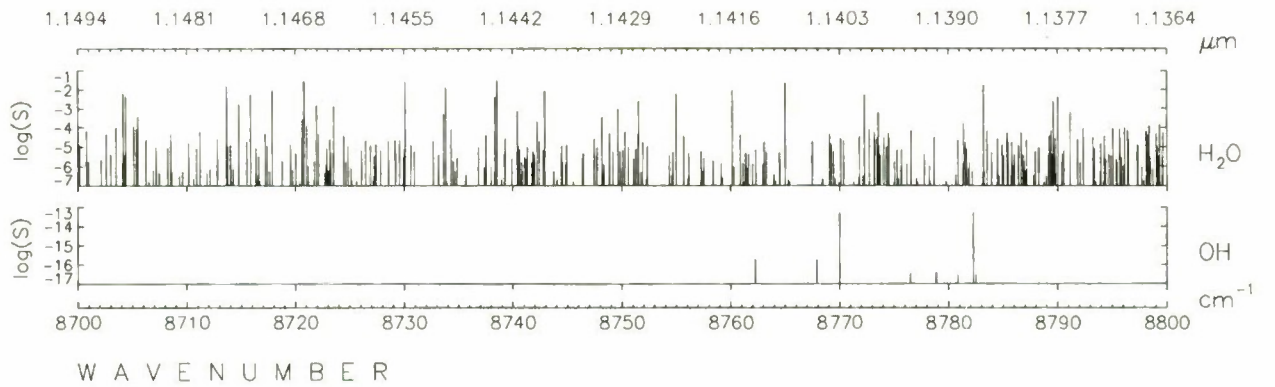

1.2195 1.2180 1.2165 1.2151 1.2136 1.2121 1.2107 1.2092 1.2077 1.2063 1.2048
μm
log(S)
H2O
CO2
HCl
HI
cm-1
8200 8210 8220 8230 8240 8250 8260 8270 8280 8290 8300
WAVENUMBER

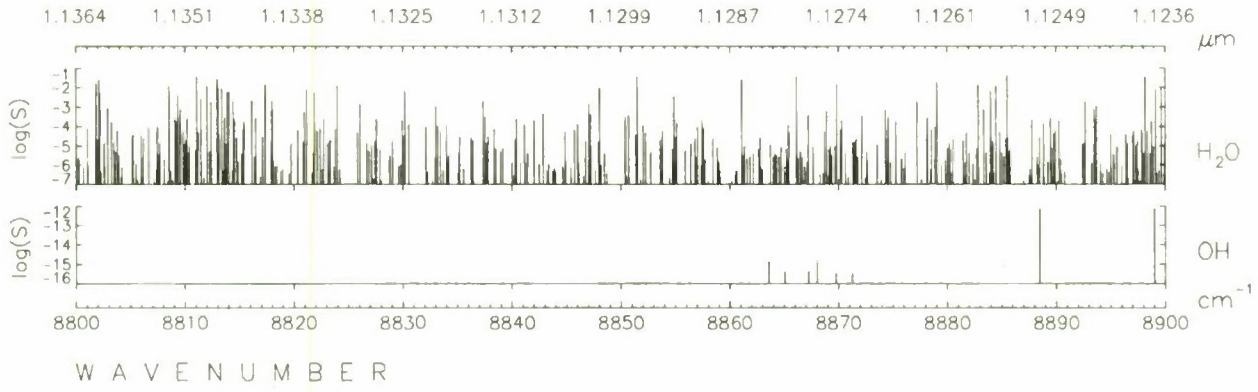

1.2048 1.2034 1.2019 1.2005 1.1990 1.1976 1.1962 1.1947 1.1933 1.1919 1.1905
μm
log(S)
H2O
CO2
OH
HCl
HI
cm-1
8300 8310 8320 8330 8340 8350 8360 8370 8380 8390 8400
WAVENUMBER

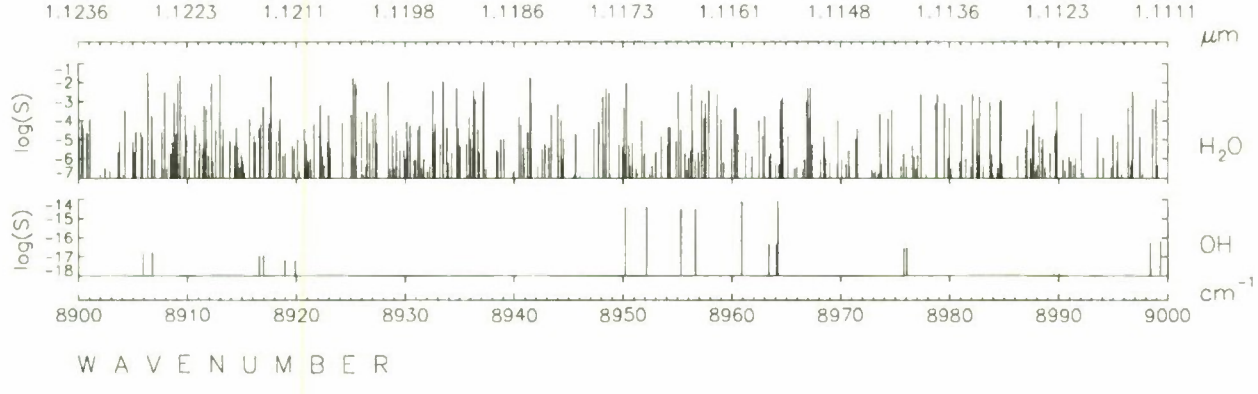

1.1905 1.1891 1.1876 1.1862 1.1848 1.1834 1.1820 1.1806 1.1792 1.1779 1.1765
μm
log(S)
H2O
OH
HCl
HI
cm-1
8400 8410 8420 8430 8440 8450 8460 8470 8480 8490 8500
WAVENUMBER

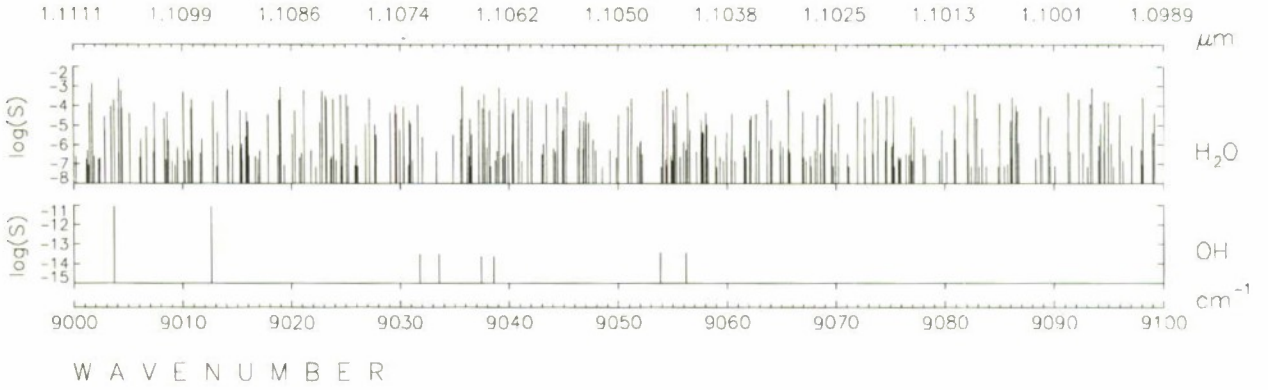

1.1765 1.1751 1.1737 1.1723 1.1710 1.1696 1.1682 1.1669 1.1655 1.1641 1.1628
μm
log(S)
H2O
OH
cm-1
8500 8510 8520 8530 8540 8550 8560 8570 8580 8590 8600
WAVENUMBER

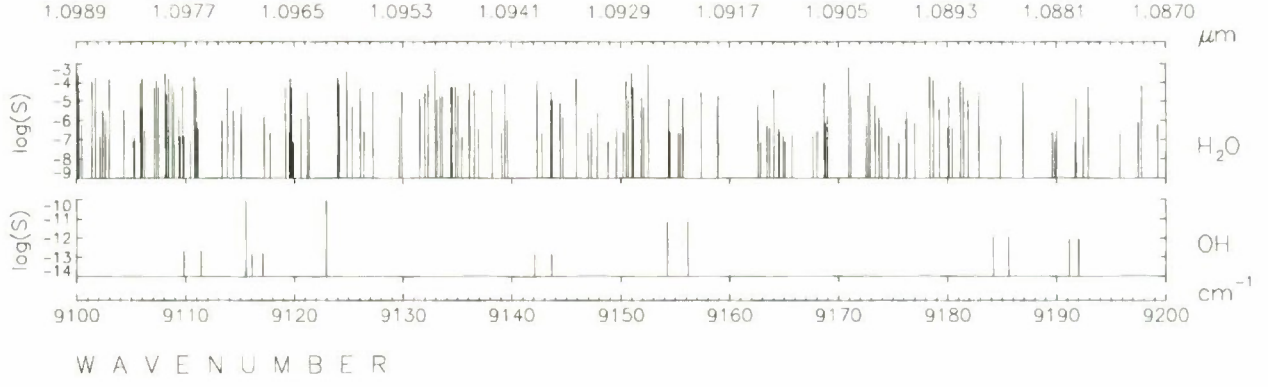

1.1628 1.1614 1.1601 1.1587 1.1574 1.1561 1.1547 1.1534 1.1521 1.1507 1.1494
μm
log(S)
-1 -2 -3 -4 -5 -6 -7
H2O
log(S)
-14 -15 -16 -17 -18
OH
cm-1
8600 8610 8620 8630 8640 8650 8660 8670 8680 8690 8700
WAVENUMBER

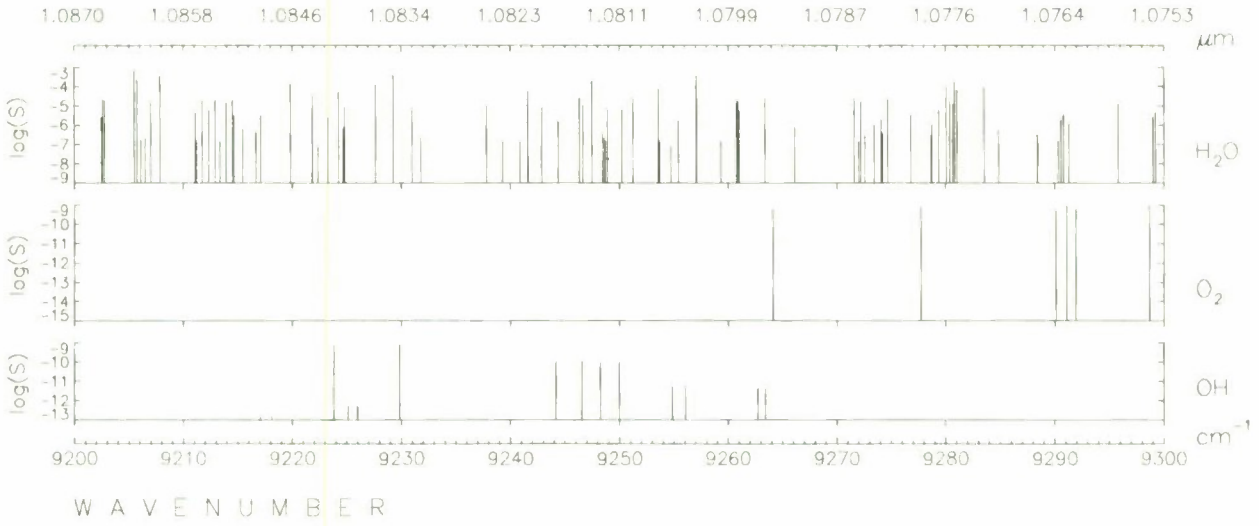

1.1494 1.1481 1.1468 1.1455 1.1442 1.1429 1.1416 1.1403 1.1390 1.1377 1.1364
μm
log(S)
-1 -2 -3 -4 -5 -6 -7
H2O
log(S)
-13 -14 -15 -16 -17
OH
cm-1
8700 8710 8720 8730 8740 8750 8760 8770 8780 8790 8800
WAVENUMBER

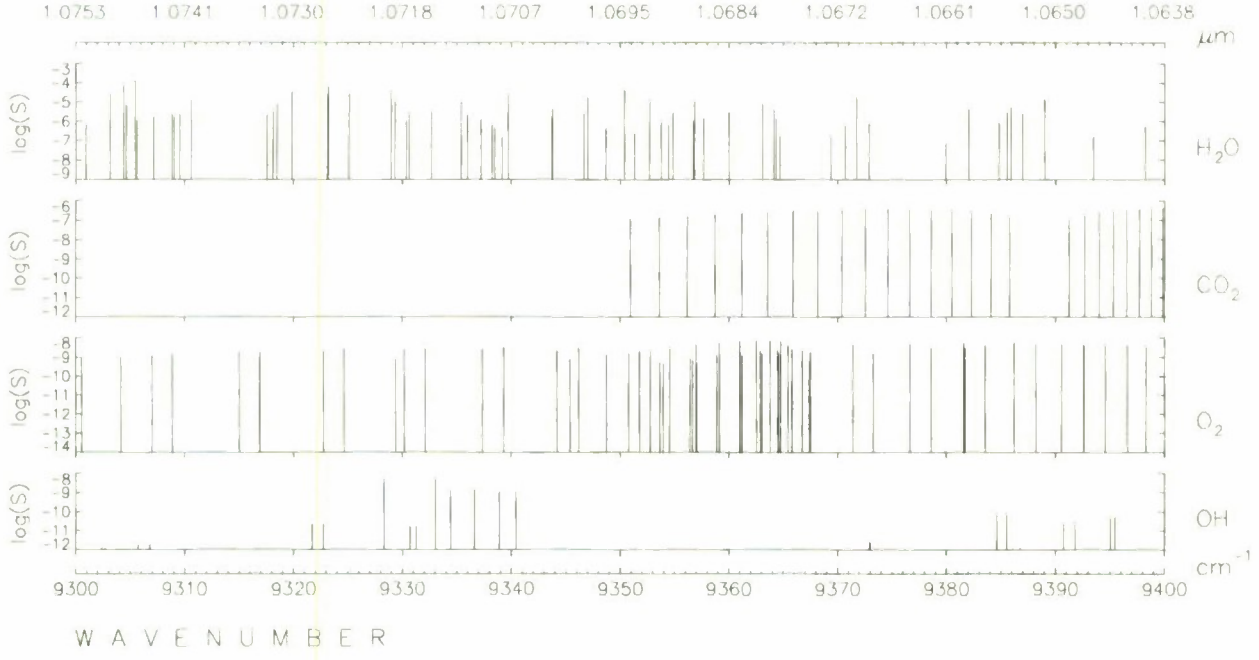

1.1364 1.1351 1.1338 1.1325 1.1312 1.1299 1.1287 1.1274 1.1261 1.1249 1.1236
μm
log(S)
H2O
OH
cm-1
8800 8810 8820 8830 8840 8850 8860 8870 8880 8890 8900
WAVENUMBER

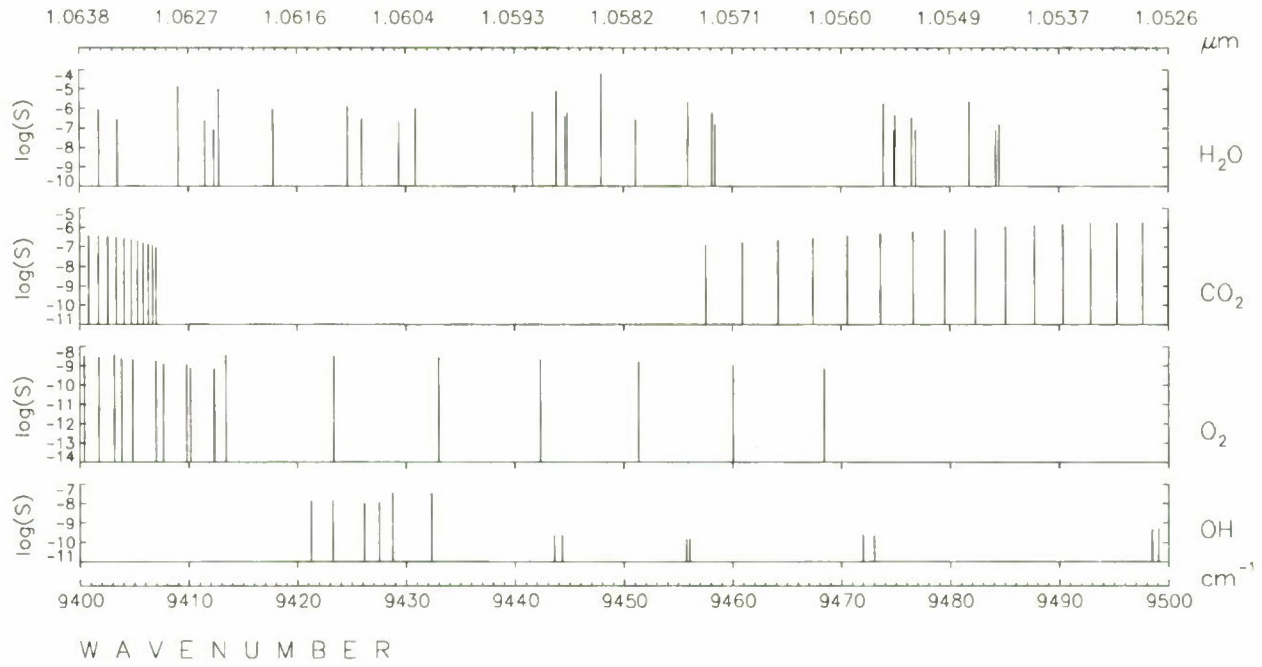

1.1236 1.1223 1.1211 1.1198 1.1186 1.1173 1.1161 1.1148 1.1136 1.1123 1.1111
μm
log(S)
H2O
OH
cm-1
8900 8910 8920 8930 8940 8950 8960 8970 8980 8990 9000
WAVENUMBER

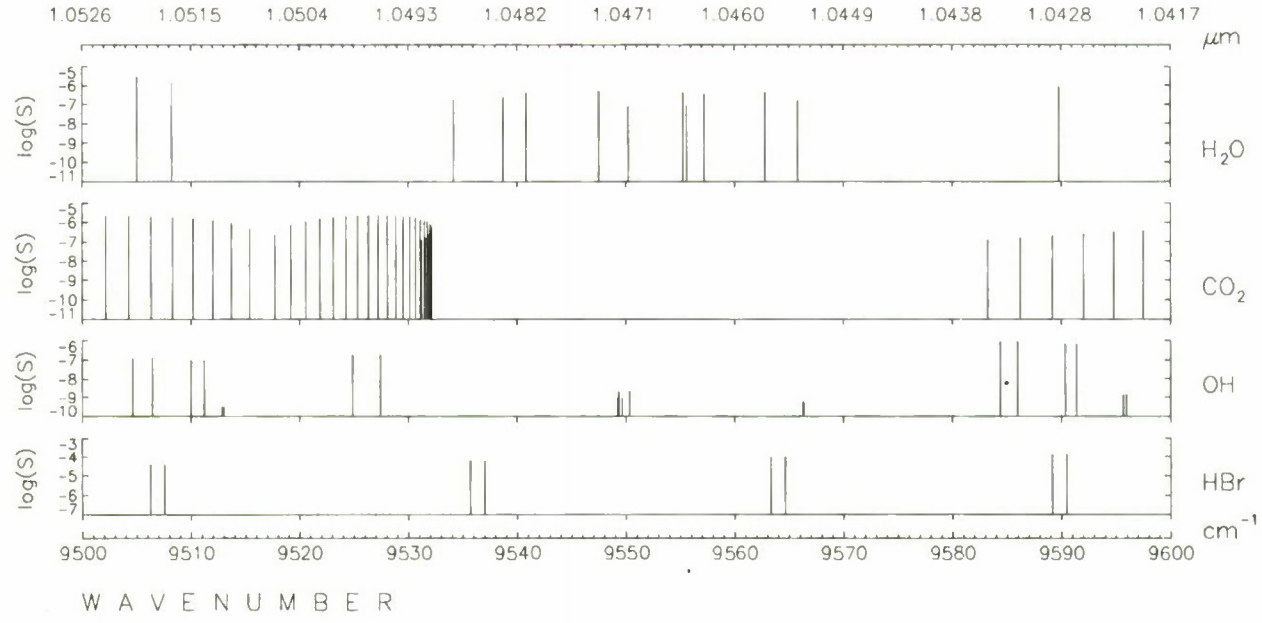

1.1111 1.1099 1.1086 1.1074 1.1062 1.1050 1.1038 1.1025 1.1013 1.1001 1.0989
μm
log(S)
H2O
OH
cm-1
9000 9010 9020 9030 9040 9050 9060 9070 9080 9090 9100
WAVENUMBER

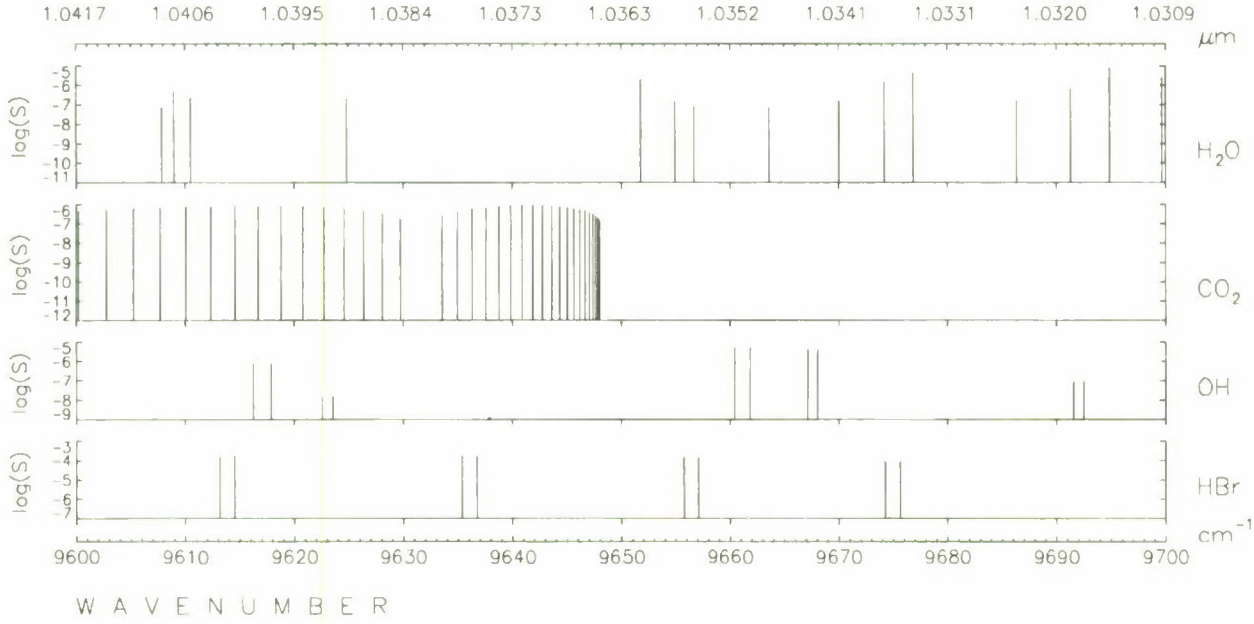

1.0989 1.0977 1.0965 1.0953 1.0941 1.0929 1.0917 1.0905 1.0893 1.0881 1.0870
μm
log(S)
H2O
OH
cm-1
9100 9110 9120 9130 9140 9150 9160 9170 9180 9190 9200
WAVENUMBER

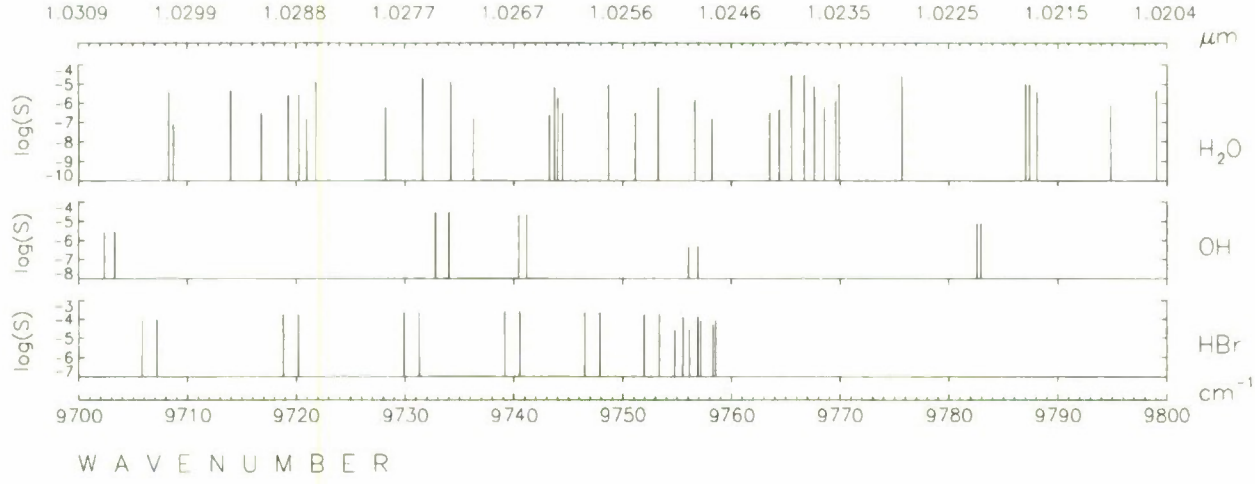

1.0870 1.0858 1.0846 1.0834 1.0823 1.0811 1.0799 1.0787 1.0776 1.0764 1.0753
μm
log(S)
H2O
O2
OH
cm-1
9200 9210 9220 9230 9240 9250 9260 9270 9280 9290 9300
WAVENUMBER

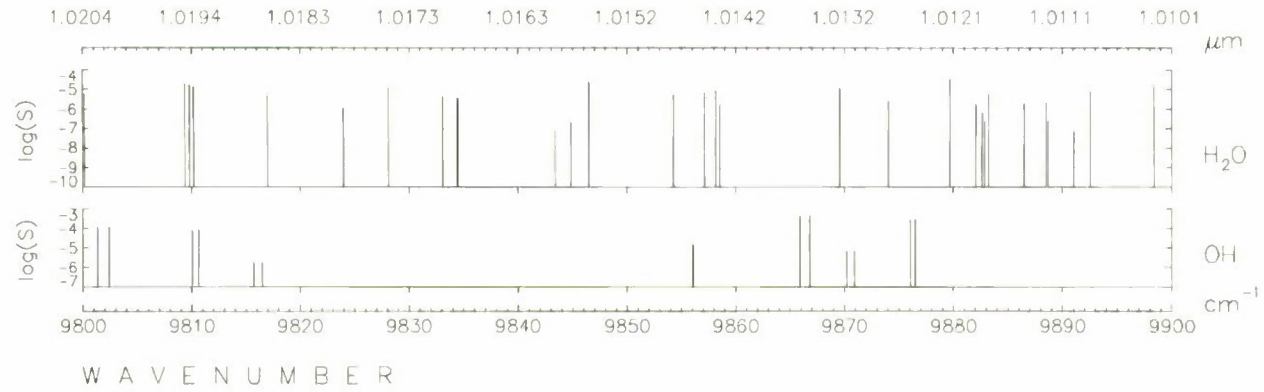

1.0753 1.0741 1.0730 1.0718 1.0707 1.0695 1.0684 1.0672 1.0661 1.0650 1.0638
μm
log(S)
H2O
CO2
O2
OH
cm-1
9300 9310 9320 9330 9340 9350 9360 9370 9380 9390 9400
WAVENUMBER

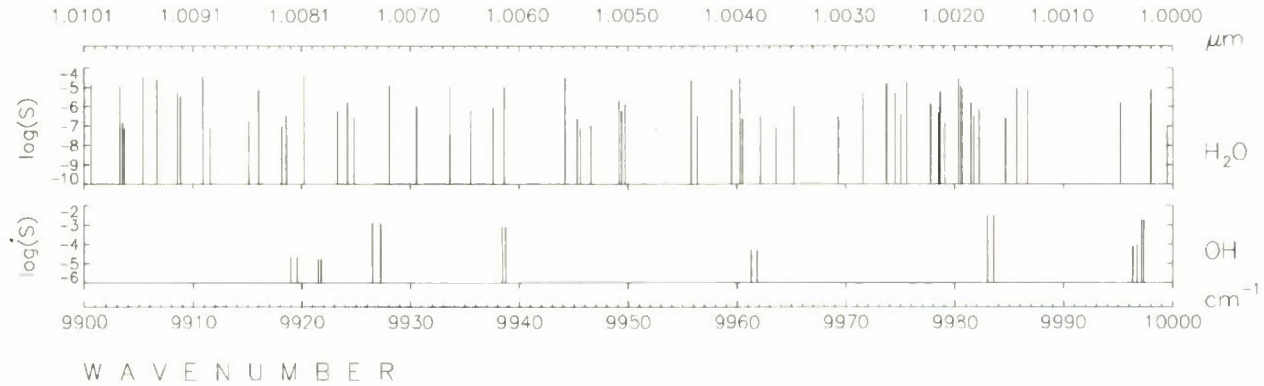

1.0638 1.0627 1.0616 1.0604 1.0593 1.0582 1.0571 1.0560 1.0549 1.0537 1.0526
μm
log(S)
H2O
CO2
O2
OH
cm-1
9400 9410 9420 9430 9440 9450 9460 9470 9480 9490 9500
WAVENUMBER

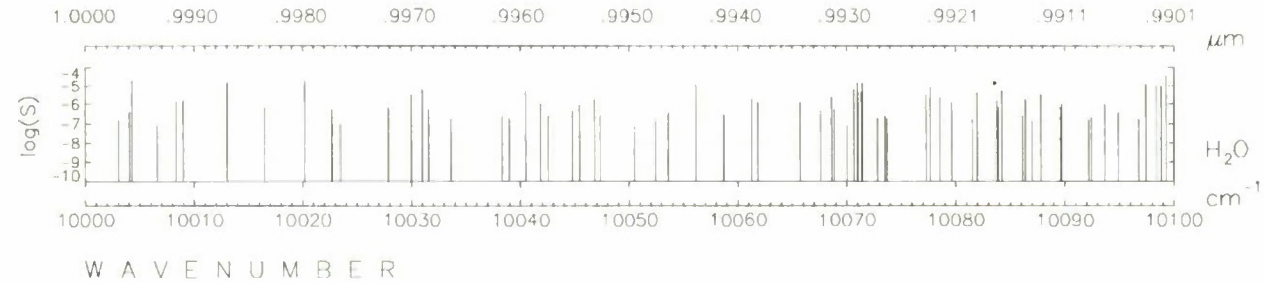

1.0526 1.0515 1.0504 1.0493 1.0482 1.0471 1.0460 1.0449 1.0438 1.0428 1.0417
μm
log(S)
H2O
CO2
OH
HBr
cm-1
9500 9510 9520 9530 9540 9550 9560 9570 9580 9590 9600
WAVENUMBER

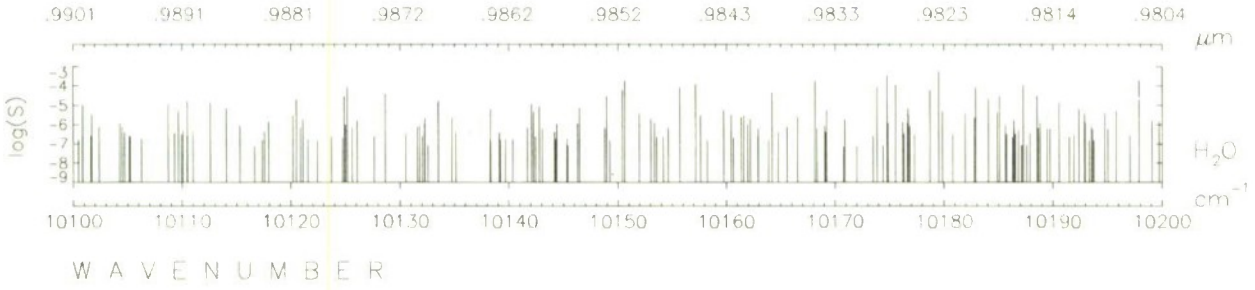

1.0417 1.0406 1.0395 1.0384 1.0373 1.0363 1.0352 1.0341 1.0331 1.0320 1.0309
μm
log(S)
H2O
CO2
OH
HBr
cm-1
9600 9610 9620 9630 9640 9650 9660 9670 9680 9690 9700
WAVENUMBER

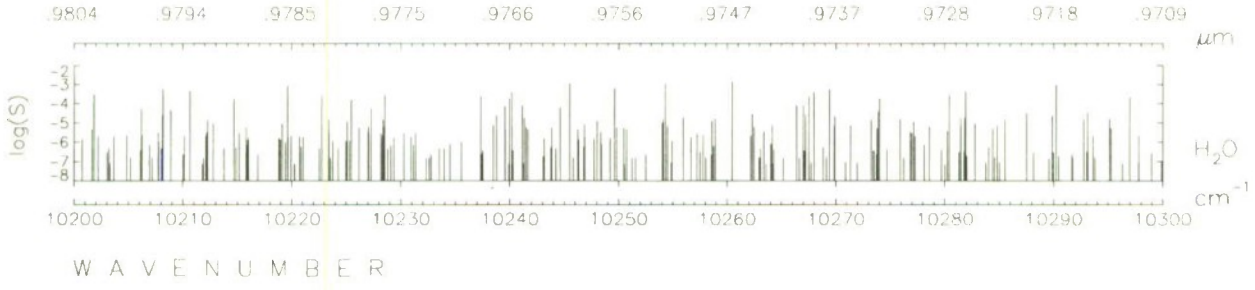

1.0309 1.0299 1.0288 1.0277 1.0267 1.0256 1.0246 1.0235 1.0225 1.0215 1.0204
μm
log(S)
H2O
OH
HBr
cm-1
9700 9710 9720 9730 9740 9750 9760 9770 9780 9790 9800
WAVENUMBER

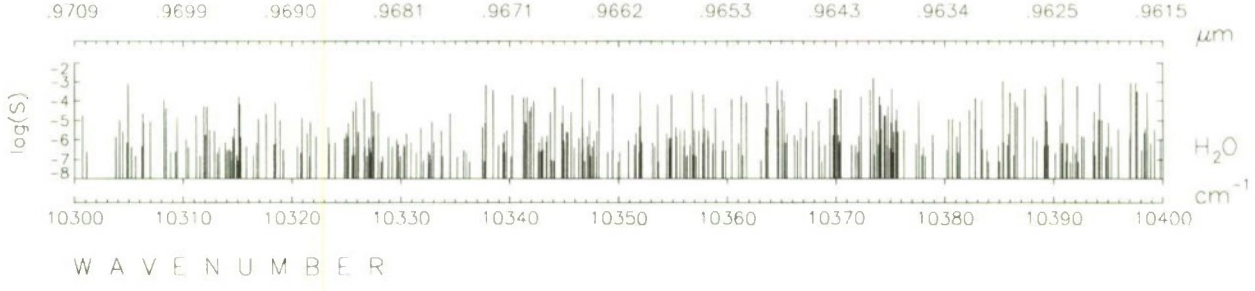

1.0204 1.0194 1.0183 1.0173 1.0163 1.0152 1.0142 1.0132 1.0121 1.0111 1.0101
μm
log(S)
H2O
OH
cm-1
9800 9810 9820 9830 9840 9850 9860 9870 9880 9890 9900
WAVENUMBER

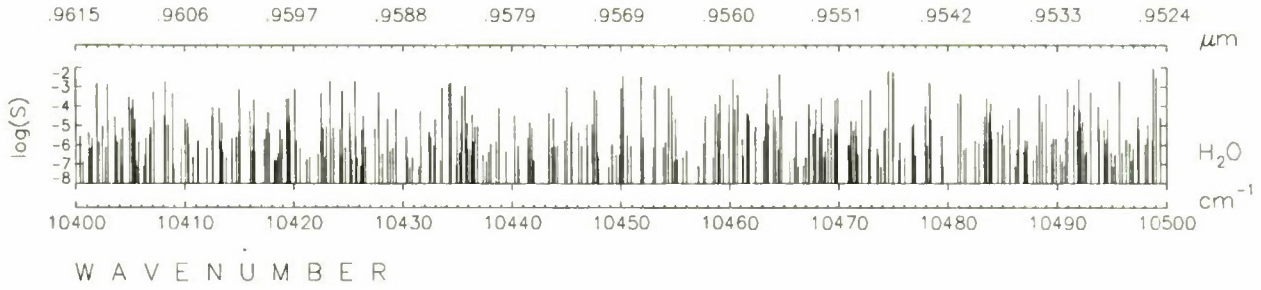

1.0101 1.0091 1.0081 1.0070 1.0060 1.0050 1.0040 1.0030 1.0020 1.0010 1.0000
μm
log(S)
H2O
OH
cm-1
9900 9910 9920 9930 9940 9950 9960 9970 9980 9990 10000
WAVENUMBER

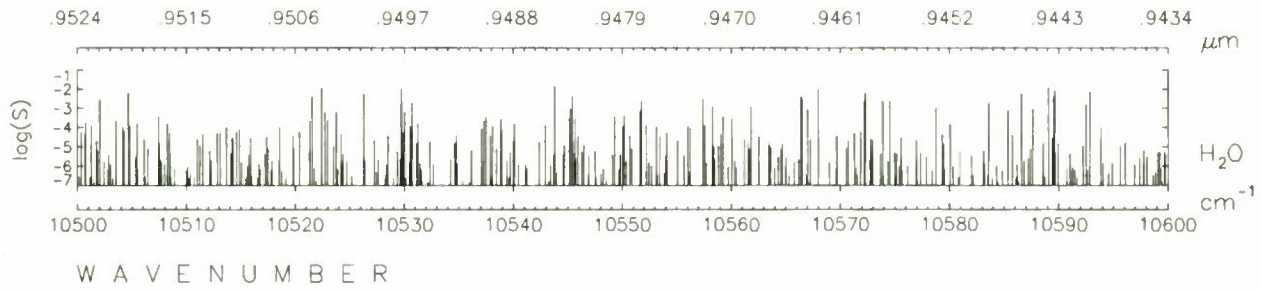

1.0000 .9990 .9980 .9970 .9960 .9950 .9940 .9930 .9921 .9911 .9901
μm
log(S)
H2O
cm-1
10000 10010 10020 10030 10040 10050 10060 10070 10080 10090 10100
WAVENUMBER

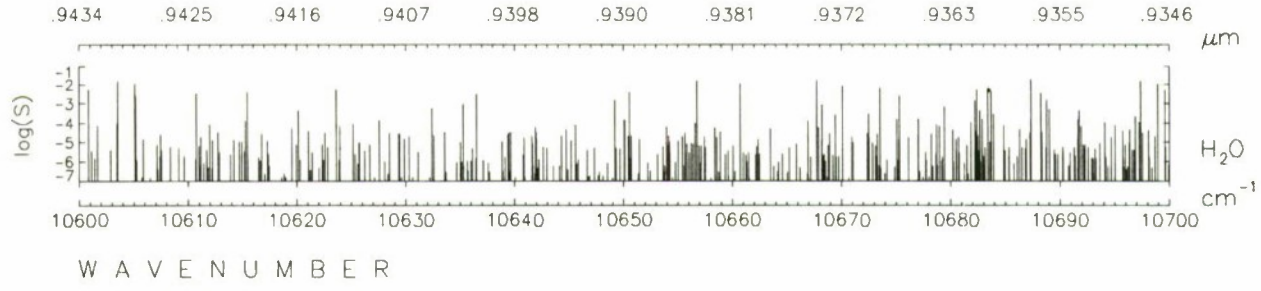

.9901 .9891 .9881 .9872 .9862 .9852 .9843 .9833 .9823 .9814 .9804
μm
log(S)
-3 -4 -5 -6 -7 -8 -9
H2O
cm-1
10100 10110 10120 10130 10140 10150 10160 10170 10180 10190 10200
WAVENUMBER

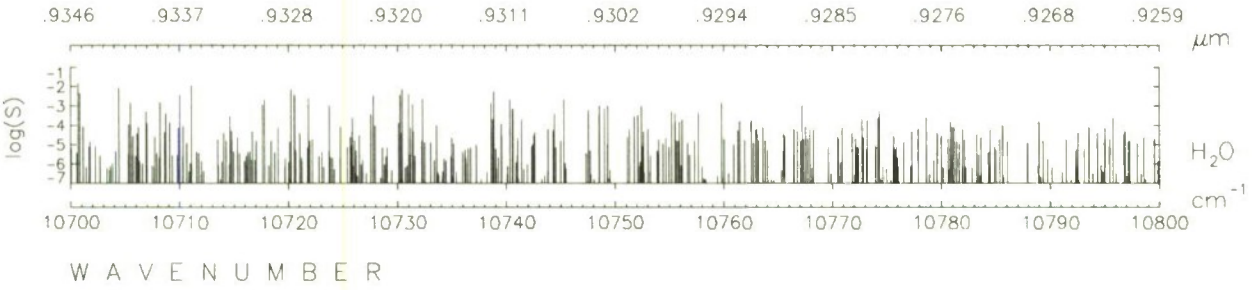

.9804 .9794 .9785 .9775 .9766 .9756 .9747 .9737 .9728 .9718 .9709
μm
log(S)
-2 -3 -4 -5 -6 -7 -8
H2O
cm-1
10200 10210 10220 10230 10240 10250 10260 10270 10280 10290 10300
WAVENUMBER

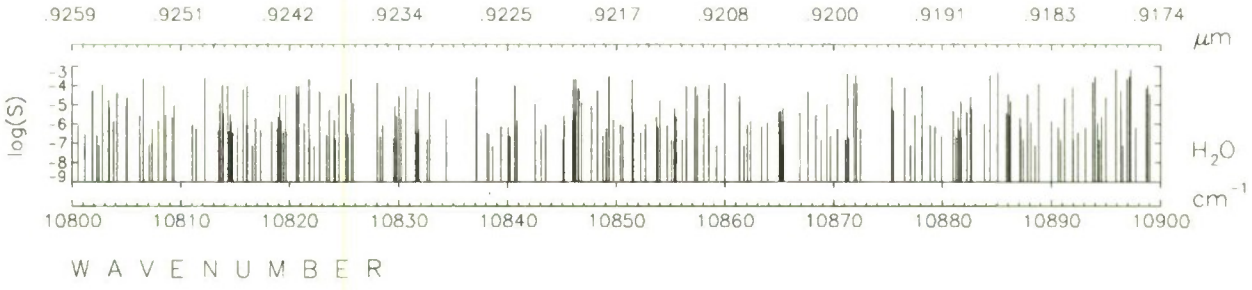

.9709 .9699 .9690 .9681 .9671 .9662 .9653 .9643 .9634 .9625 .9615
μm
log(S)
-2 -3 -4 -5 -6 -7 -8
H2O
cm-1
10300 10310 10320 10330 10340 10350 10360 10370 10380 10390 10400
WAVENUMBER

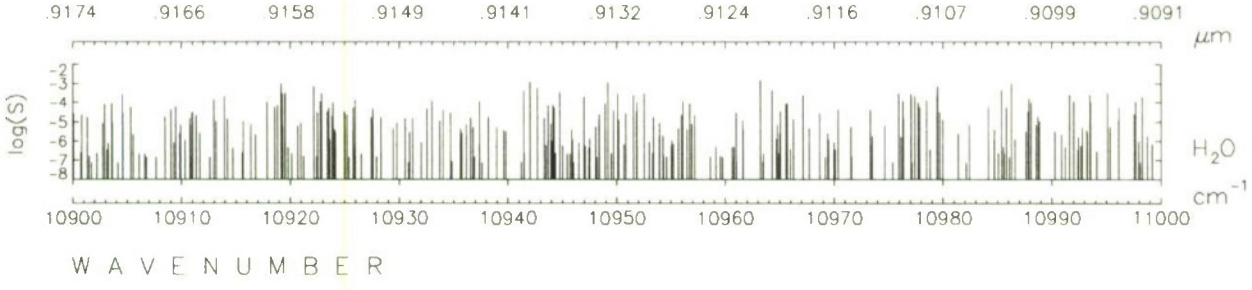

.9615 .9606 .9597 .9588 .9579 .9569 .9560 .9551 .9542 .9533 .9524
μm
log(S)
-2 -3 -4 -5 -6 -7 -8
H2O
cm-1
10400 10410 10420 10430 10440 10450 10460 10470 10480 10490 10500
WAVENUMBER

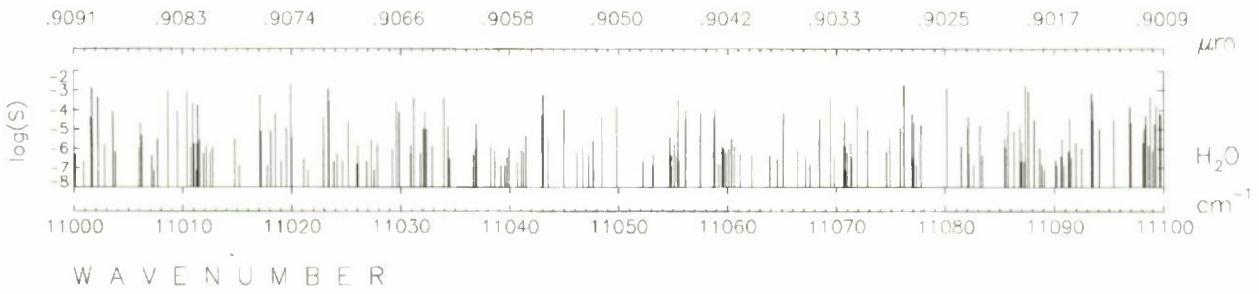

.9524 .9515 .9506 .9497 .9488 .9479 .9470 .9461 .9452 .9443 .9434
μm
log(S)
-1 -2 -3 -4 -5 -6 -7
H2O
cm-1
10500 10510 10520 10530 10540 10550 10560 10570 10580 10590 10600
WAVENUMBER

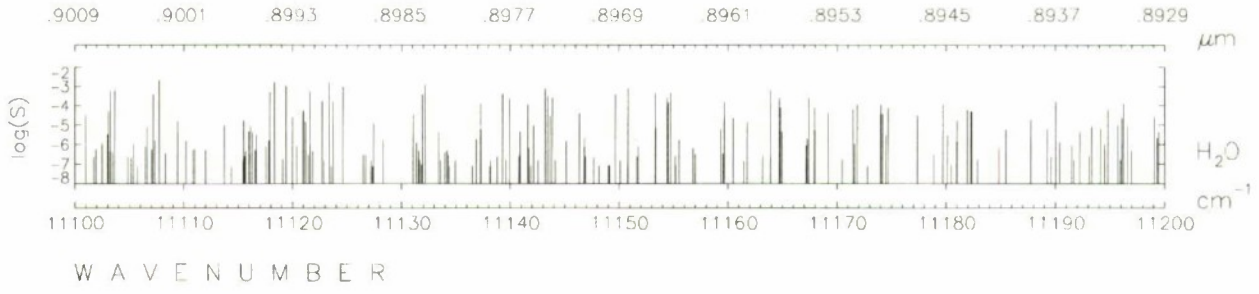

.9434 .9425 .9416 .9407 .9398 .9390 .9381 .9372 .9363 .9355 .9346
μm
log(S)
-1 -2 -3 -4 -5 -6 -7
H2O
cm-1
10600 10610 10620 10630 10640 10650 10660 10670 10680 10690 10700
WAVENUMBER

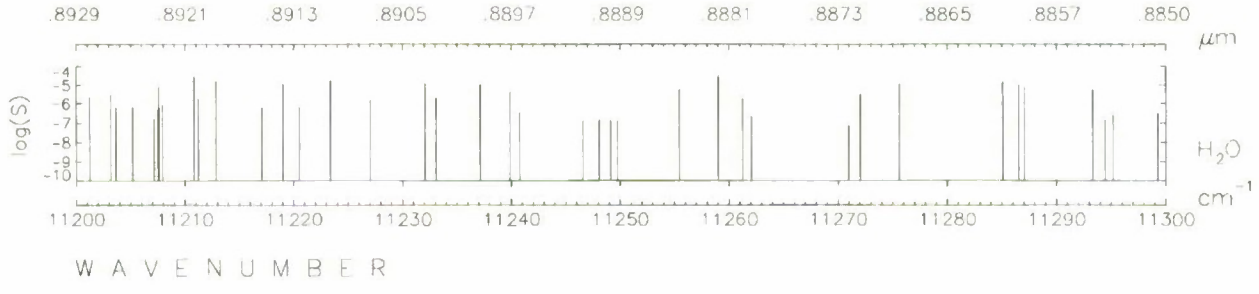

.9346 .9337 .9328 .9320 .9311 .9302 .9294 .9285 .9276 .9268 .9259
μm
log(S)
-1 -2 -3 -4 -5 -6 -7
H2O
cm-1
10700 10710 10720 10730 10740 10750 10760 10770 10780 10790 10800
WAVENUMBER

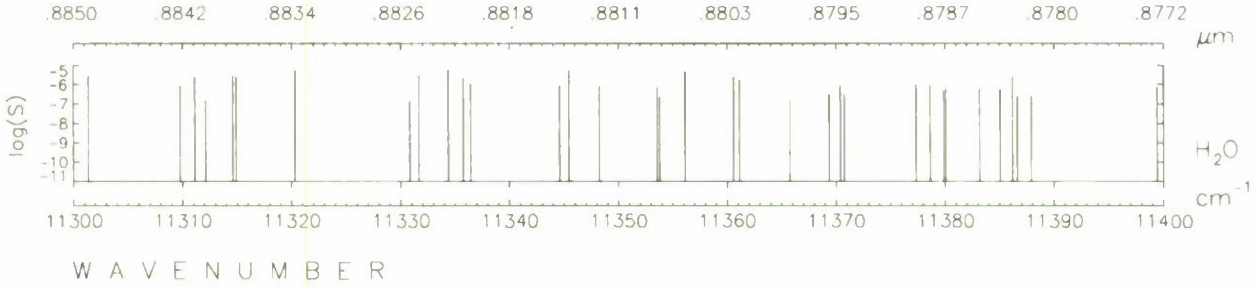

.9259 .9251 .9242 .9234 .9225 .9217 .9208 .9200 .9191 .9183 .9174
μm
log(S)
-3 -4 -5 -6 -7 -8 -9
H2O
cm-1
10800 10810 10820 10830 10840 10850 10860 10870 10880 10890 10900
WAVENUMBER

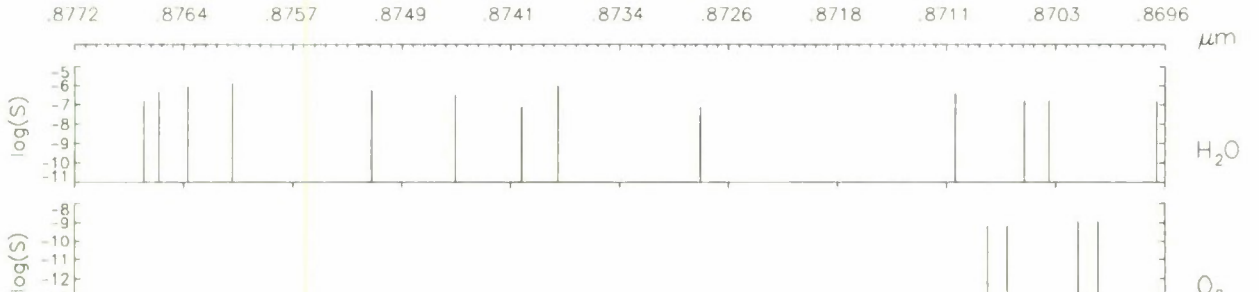

.9174 .9166 .9158 .9149 .9141 .9132 .9124 .9116 .9107 .9099 .9091
μm
log(S)
-2 -3 -4 -5 -6 -7 -8
H2O
cm-1
10900 10910 10920 10930 10940 10950 10960 10970 10980 10990 11000
WAVENUMBER

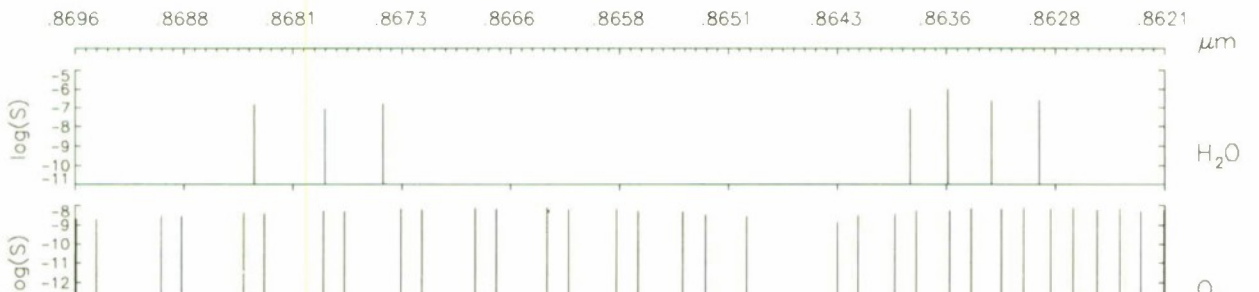

.9091 .9083 .9074 .9066 .9058 .9050 .9042 .9033 .9025 .9017 .9009
μm
log(S)
-2
-3
-4
-5
-6
-7
-8
H2O
cm-1
11000 11010 11020 11030 11040 11050 11060 11070 11080 11090 11100
WAVENUMBER

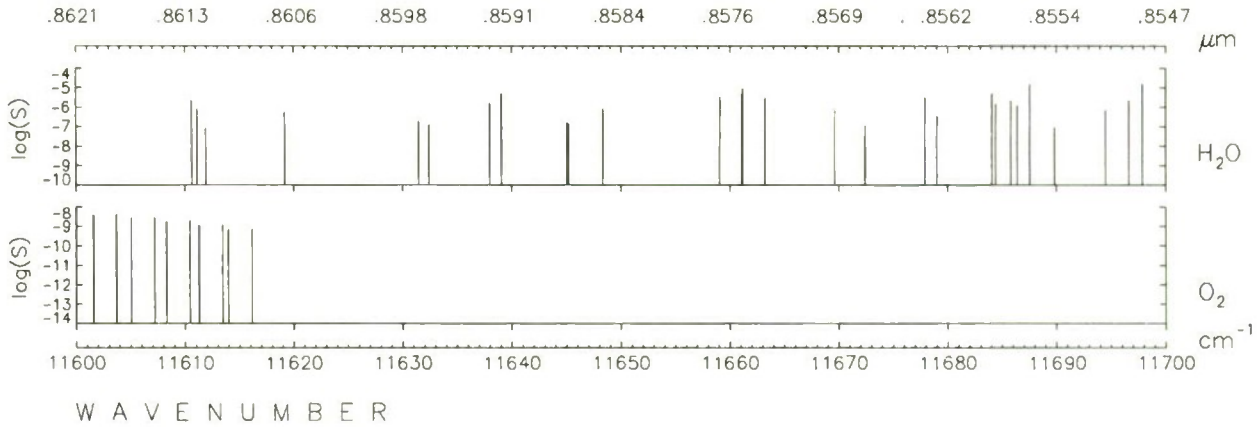

.9009 .9001 .8993 .8985 .8977 .8969 .8961 .8953 .8945 .8937 .8929
μm
log(S)
-2
-3
-4
-5
-6
-7
-8
H2O
cm-1
11100 11110 11120 11130 11140 11150 11160 11170 11180 11190 11200
WAVENUMBER

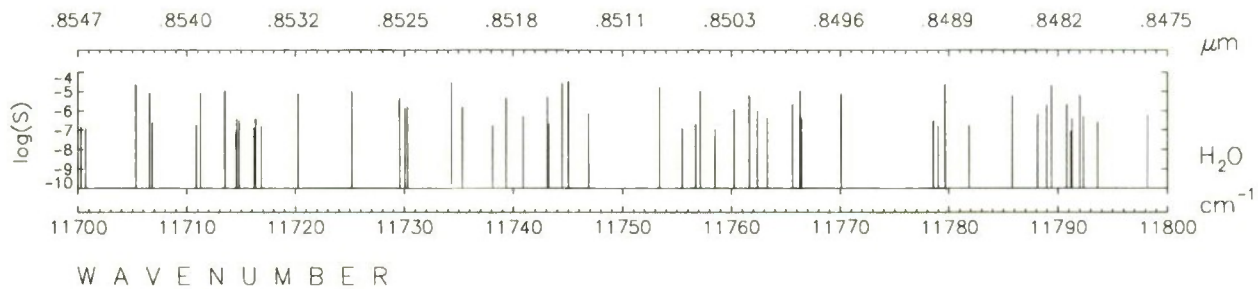

.8929 .8921 .8913 .8905 .8897 .8889 .8881 .8873 .8865 .8857 .8850
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
11200 11210 11220 11230 11240 11250 11260 11270 11280 11290 11300
WAVENUMBER

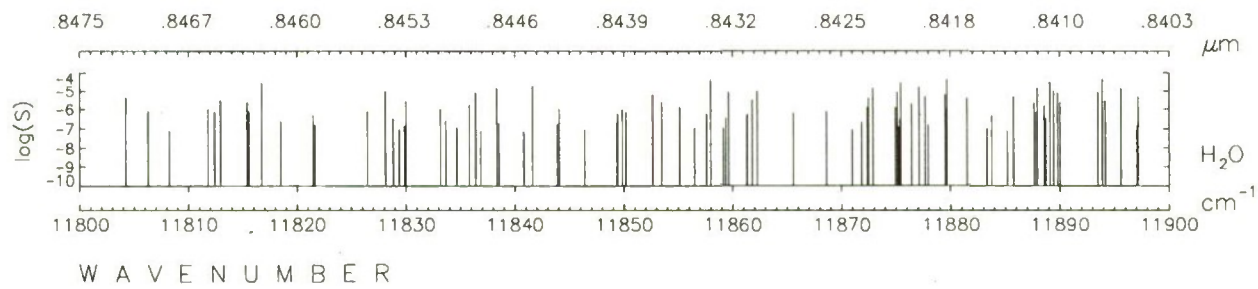

.8850 .8842 .8834 .8826 .8818 .8811 .8803 .8795 .8787 .8780 .8772
μm
log(S)
-5 -6 -7 -8 -9 -10 -11
H2O
cm-1
11300 11310 11320 11330 11340 11350 11360 11370 11380 11390 11400
WAVENUMBER

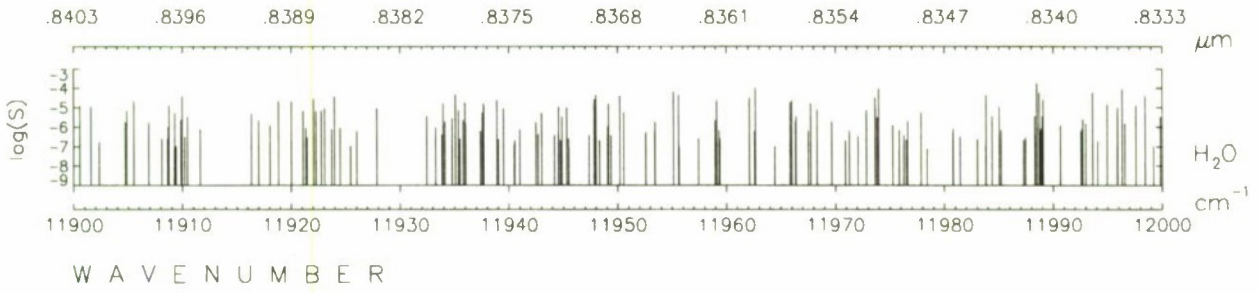

.8772 .8764 .8757 .8749 .8741 .8734 .8726 .8718 .8711 .8703 .8696
μm
log(S)
-5 -6 -7 -8 -9 -10 -11
H2O
log(S)
-8 -9 -10 -11 -12 -13 -14
O2
cm-1
11400 11410 11420 11430 11440 11450 11460 11470 11480 11490 11500
WAVENUMBER

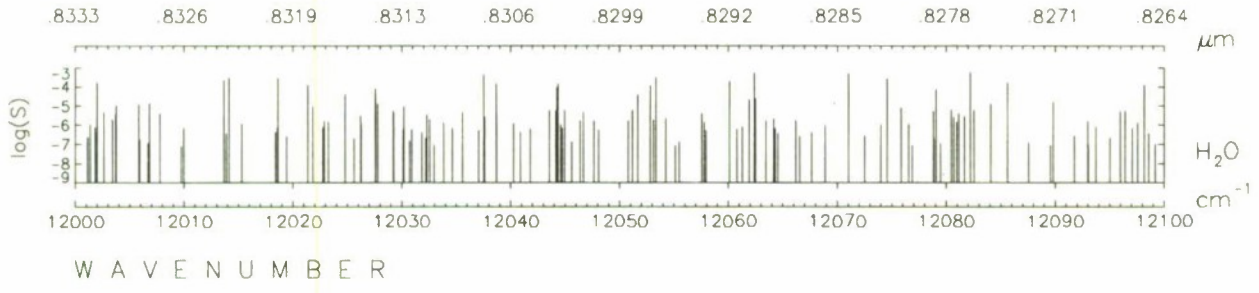

.8696 .8688 .8681 .8673 .8666 .8658 .8651 .8643 .8636 .8628 .8621
μm
log(S)
-5 -6 -7 -8 -9 -10 -11
H2O
log(S)
-8 -9 -10 -11 -12 -13 -14
O2
cm-1
11500 11510 11520 11530 11540 11550 11560 11570 11580 11590 11600
WAVENUMBER

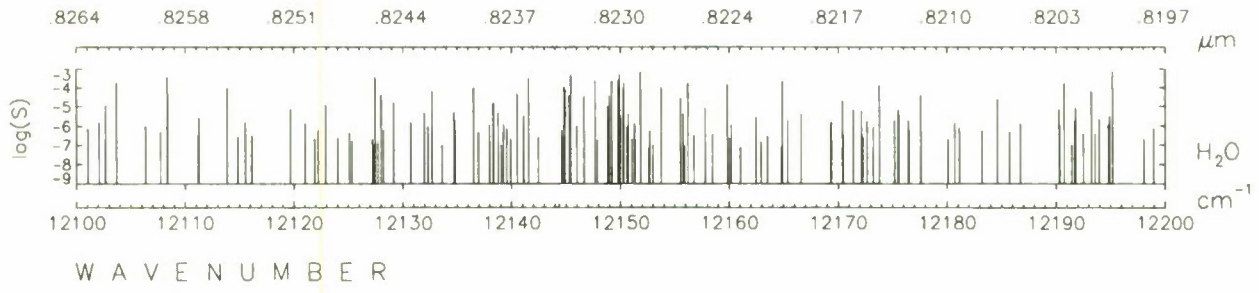

.8621 .8613 .8606 .8598 .8591 .8584 .8576 .8569 .8562 .8554 .8547
μm
log(S)
-4 -5 -6 -7 -8 -9 -10
H2O
log(S)
-8 -9 -10 -11 -12 -13 -14
O2
cm-1
11600 11610 11620 11630 11640 11650 11660 11670 11680 11690 11700
WAVENUMBER

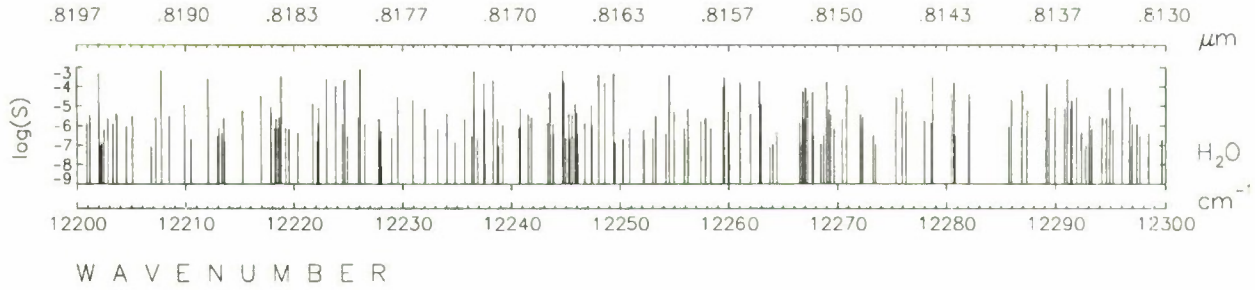

.8547 .8540 .8532 .8525 .8518 .8511 .8503 .8496 .8489 .8482 .8475
μm
log(S)
-4 -5 -6 -7 -8 -9 -10
H2O
cm-1
11700 11710 11720 11730 11740 11750 11760 11770 11780 11790 11800
WAVENUMBER

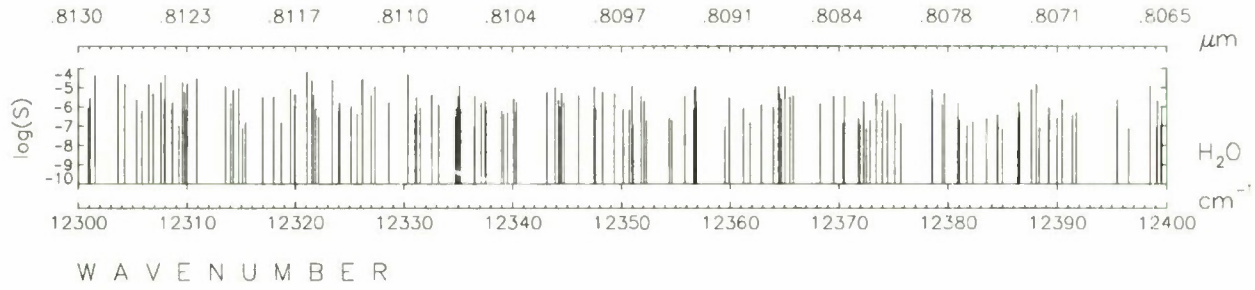

.8475 .8467 .8460 .8453 .8446 .8439 .8432 .8425 .8418 .8410 .8403
μm
log(S)
-4 -5 -6 -7 -8 -9 -10
H2O
cm-1
11800 11810 11820 11830 11840 11850 11860 11870 11880 11890 11900
WAVENUMBER

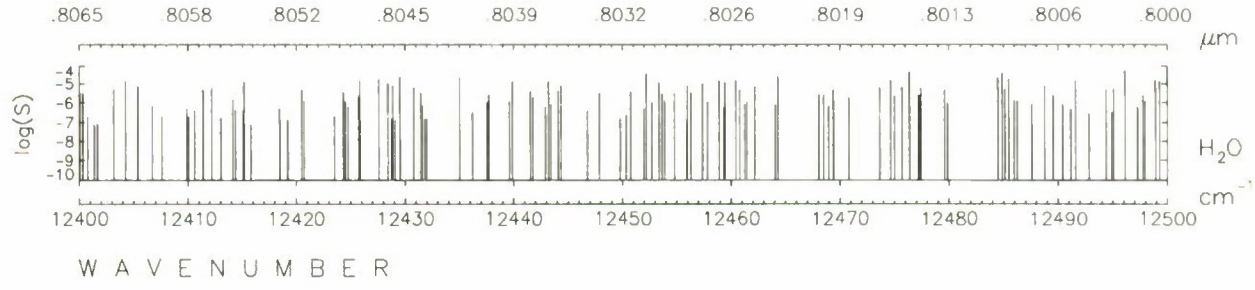

.8403 .8396 .8389 .8382 .8375 .8368 .8361 .8354 .8347 .8340 .8333
μm
log(S)
-3
-4
-5
-6
-7
-8
-9
H2O
cm-1
11900 11910 11920 11930 11940 11950 11960 11970 11980 11990 12000
WAVENUMBER

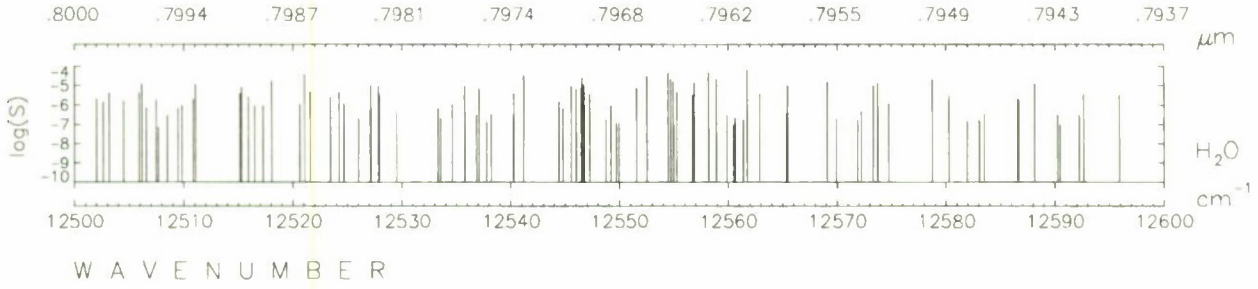

.8333 .8326 .8319 .8313 .8306 .8299 .8292 .8285 .8278 .8271 .8264
μm
log(S)
-3
-4
-5
-6
-7
-8
-9
H2O
cm-1
12000 12010 12020 12030 12040 12050 12060 12070 12080 12090 12100
WAVENUMBER

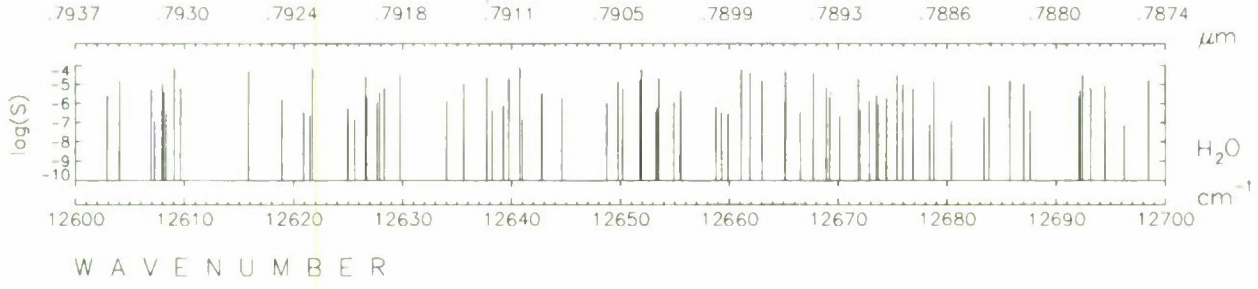

.8264 .8258 .8251 .8244 .8237 .8230 .8224 .8217 .8210 .8203 .8197
μm
log(S)
-3
-4
-5
-6
-7
-8
-9
H2O
cm-1
12100 12110 12120 12130 12140 12150 12160 12170 12180 12190 12200
WAVENUMBER

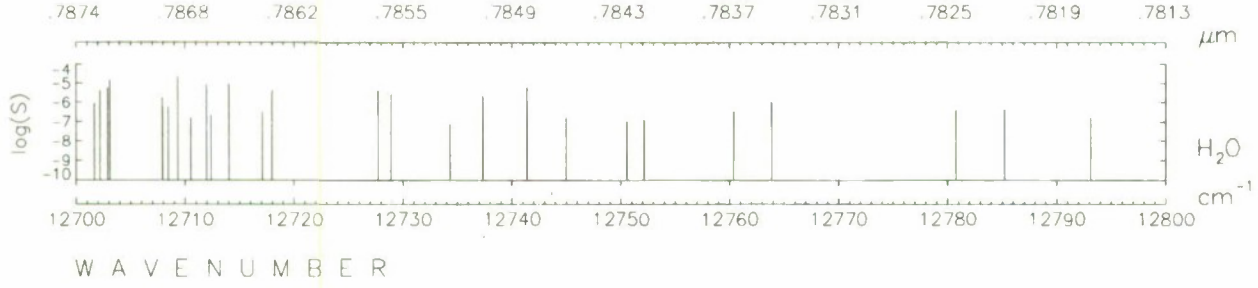

.8197 .8190 .8183 .8177 .8170 .8163 .8157 .8150 .8143 .8137 .8130
μm
log(S)
-3 -4 -5 -6 -7 -8 -9
H2O
cm-1
12200 12210 12220 12230 12240 12250 12260 12270 12280 12290 12300
WAVENUMBER

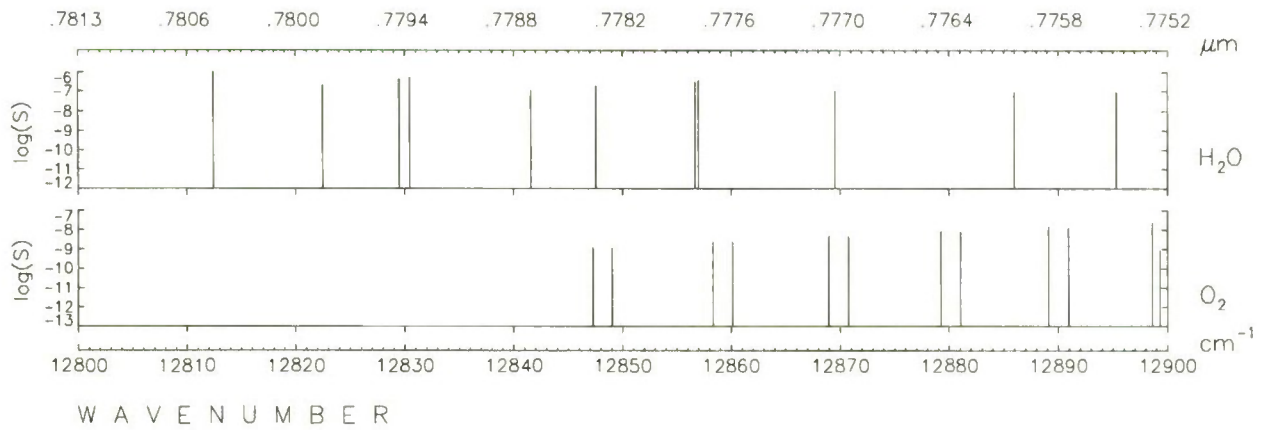

.8130 .8123 .8117 .8110 .8104 .8097 .8091 .8084 .8078 .8071 .8065
μm
log(S)
-4 -5 -6 -7 -8 -9 -10
H2O
cm-1
12300 12310 12320 12330 12340 12350 12360 12370 12380 12390 12400
WAVENUMBER

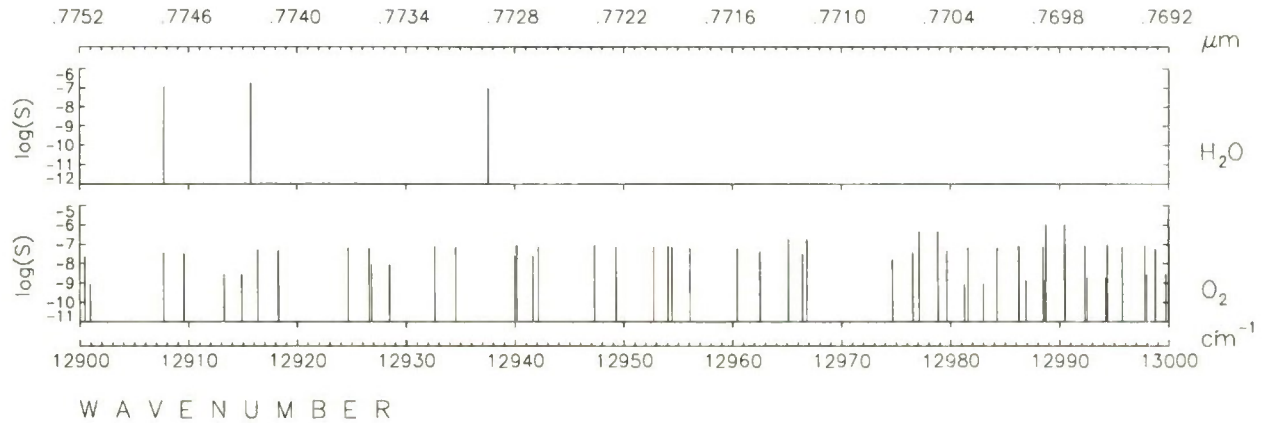

.8065 .8058 .8052 .8045 .8039 .8032 .8026 .8019 .8013 .8006 .8000
μm
log(S)
-4 -5 -6 -7 -8 -9 -10
H2O
cm-1
12400 12410 12420 12430 12440 12450 12460 12470 12480 12490 12500
WAVENUMBER

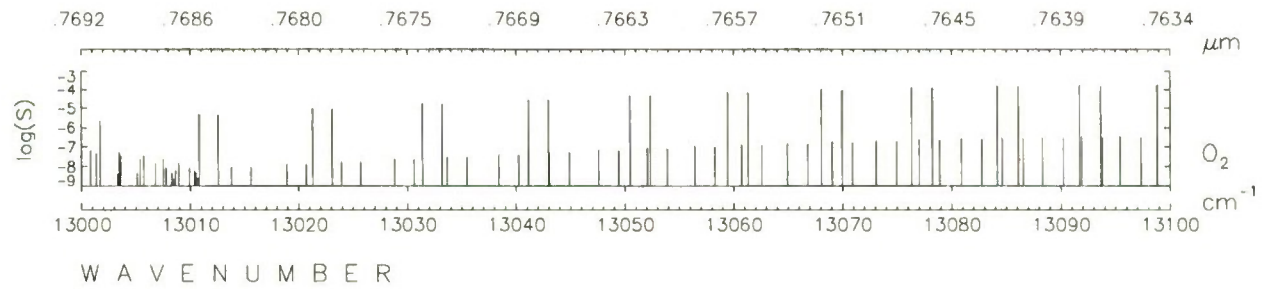

.8000 .7994 .7987 .7981 .7974 .7968 .7962 .7955 .7949 .7943 .7937
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
12500 12510 12520 12530 12540 12550 12560 12570 12580 12590 12600
WAVENUMBER

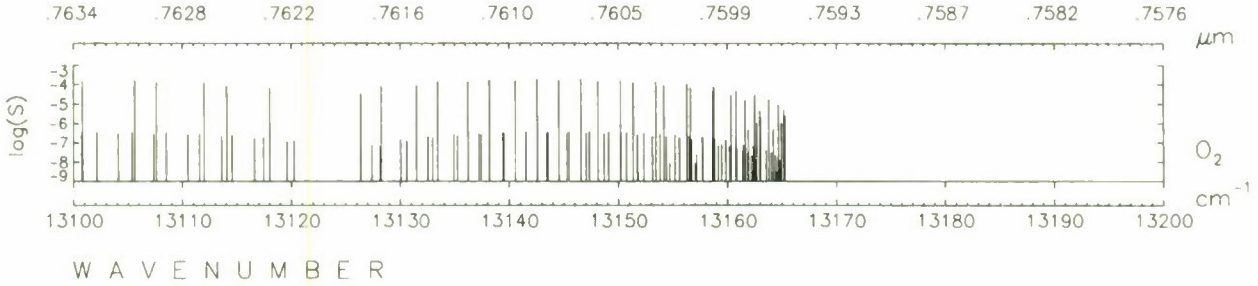

.7937 .7930 .7924 .7918 .7911 .7905 .7899 .7893 .7886 .7880 .7874
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
12600 12610 12620 12630 12640 12650 12660 12670 12680 12690 12700
WAVENUMBER

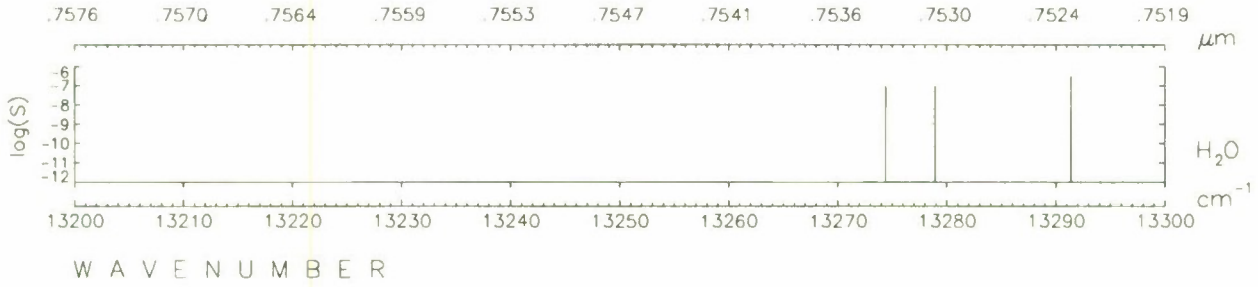

.7874 .7868 .7862 .7855 .7849 .7843 .7837 .7831 .7825 .7819 .7813
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
12700 12710 12720 12730 12740 12750 12760 12770 12780 12790 12800
WAVENUMBER

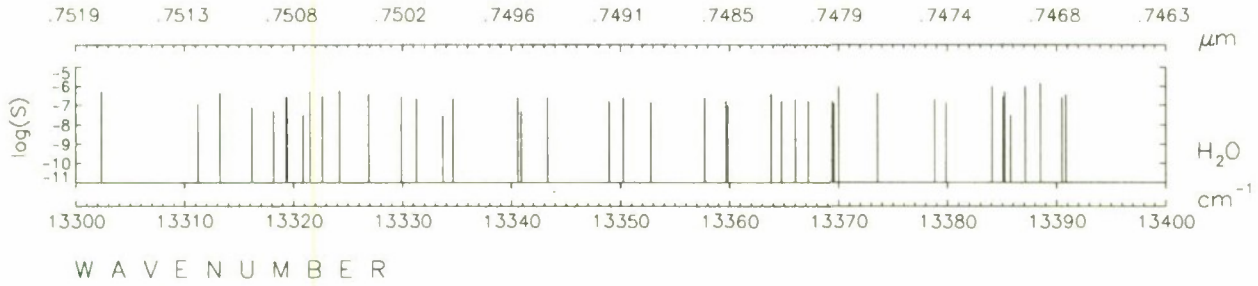

.7813 .7806 .7800 .7794 .7788 .7782 .7776 .7770 .7764 .7758 .7752
μm
log(S)
H2O
O2
cm-1
12800 12810 12820 12830 12840 12850 12860 12870 12880 12890 12900
WAVENUMBER

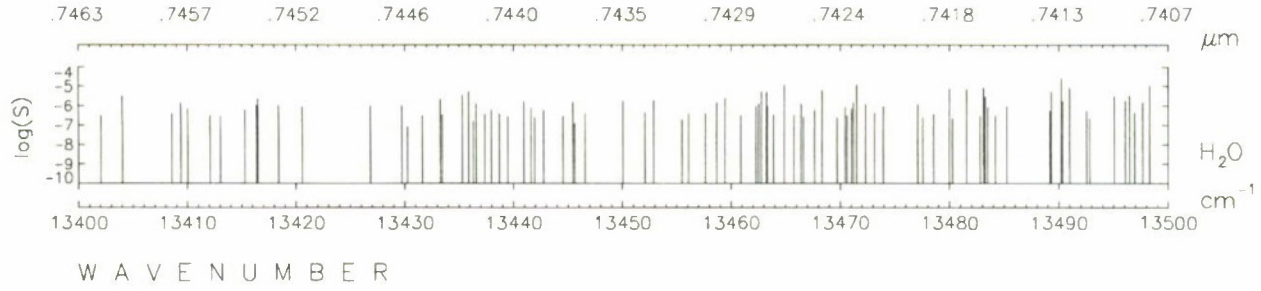

.7752 .7746 .7740 .7734 .7728 .7722 .7716 .7710 .7704 .7698 .7692
μm
log(S)
H2O
O2
cm-1
12900 12910 12920 12930 12940 12950 12960 12970 12980 12990 13000
WAVENUMBER

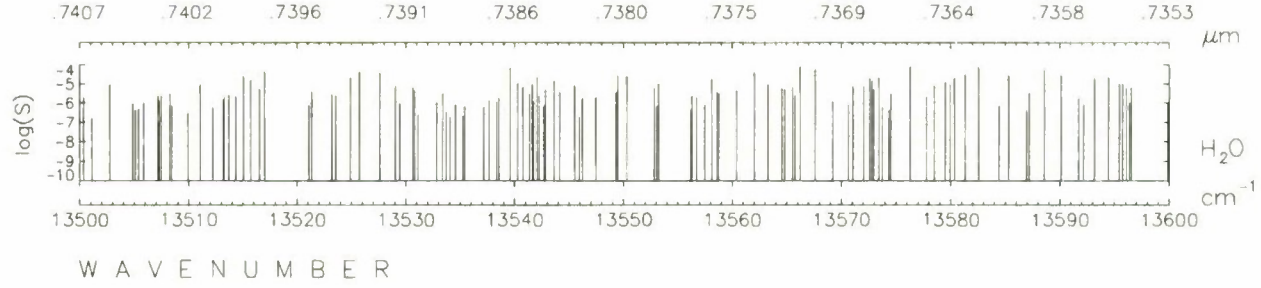

.7692 .7686 .7680 .7675 .7669 .7663 .7657 .7651 .7645 .7639 .7634
μm
log(S)
O2
cm-1
13000 13010 13020 13030 13040 13050 13060 13070 13080 13090 13100
WAVENUMBER

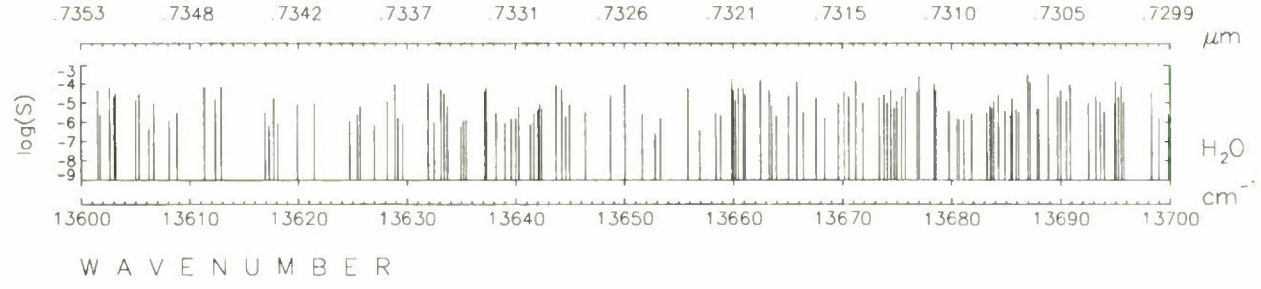

.7634 .7628 .7622 .7616 .7610 .7605 .7599 .7593 .7587 .7582 .7576
μm
log(S)
-3 -4 -5 -6 -7 -8 -9
O2
cm-1
13100 13110 13120 13130 13140 13150 13160 13170 13180 13190 13200
WAVENUMBER

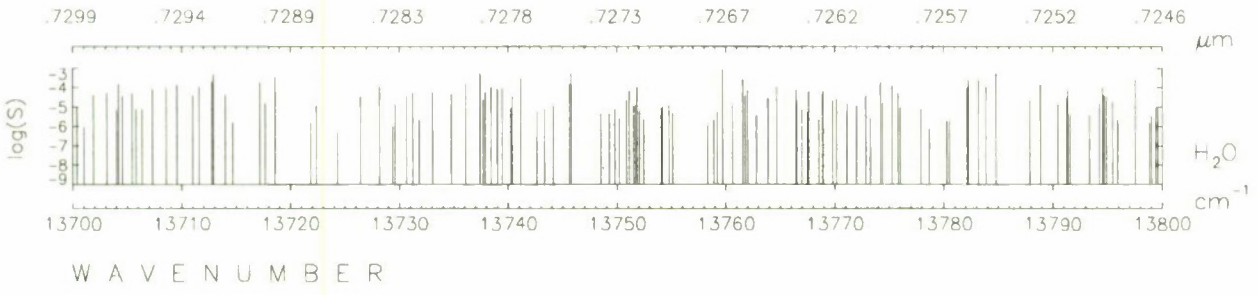

.7576 .7570 .7564 .7559 .7553 .7547 .7541 .7536 .7530 .7524 .7519
μm
log(S)
-6 -7 -8 -9 -10 -11 -12
H2O
cm-1
13200 13210 13220 13230 13240 13250 13260 13270 13280 13290 13300
WAVENUMBER

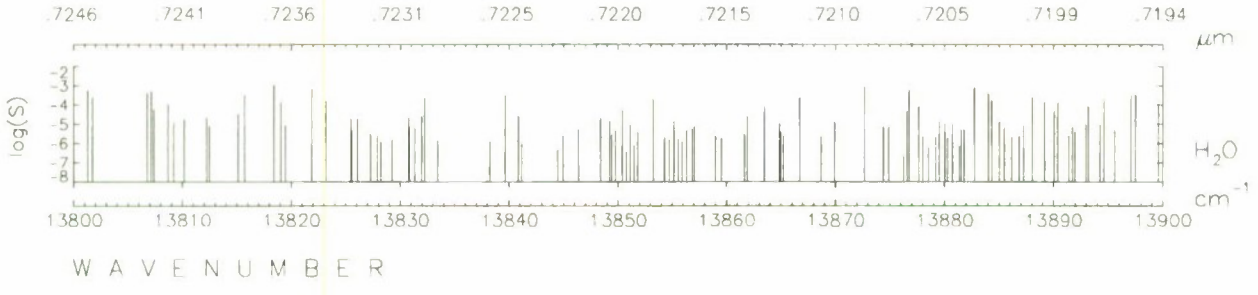

.7519 .7513 .7508 .7502 .7496 .7491 .7485 .7479 .7474 .7468 .7463
μm
log(S)
-5 -6 -7 -8 -9 -10 -11
H2O
cm-1
13300 13310 13320 13330 13340 13350 13360 13370 13380 13390 13400
WAVENUMBER


.7463 .7457 .7452 .7446 .7440 .7435 .7429 .7424 .7418 .7413 .7407
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
13400 13410 13420 13430 13440 13450 13460 13470 13480 13490 13500
WAVENUMBER


.7407 .7402 .7396 .7391 .7386 .7380 .7375 .7369 .7364 .7358 .7353
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
13500 13510 13520 13530 13540 13550 13560 13570 13580 13590 13600
WAVENUMBER


.7353 .7348 .7342 .7337 .7331 .7326 .7321 .7315 .7310 .7305 .7299
μm
log(S)
-3
-4
-5
-6
-7
-8
-9
H2O
cm-1
13600 13610 13620 13630 13640 13650 13660 13670 13680 13690 13700
WAVENUMBER


.7299 .7294 .7289 .7283 .7278 .7273 .7267 .7262 .7257 .7252 .7246
μm
log(S)
H2O
cm-1
13700 13710 13720 13730 13740 13750 13760 13770 13780 13790 13800
WAVENUMBER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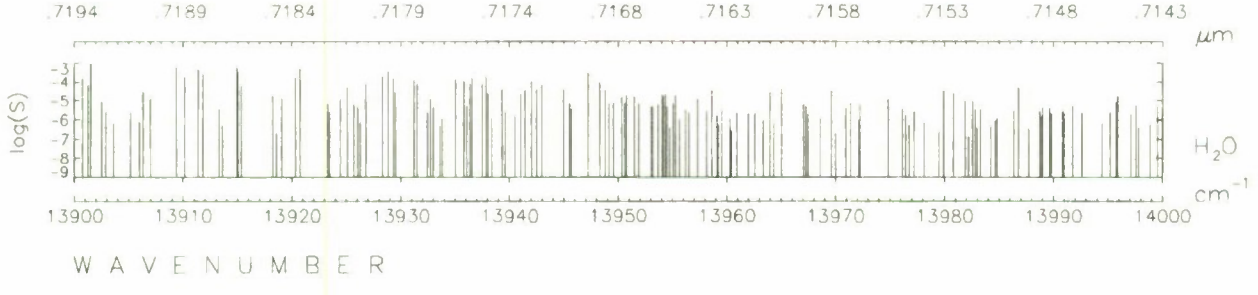
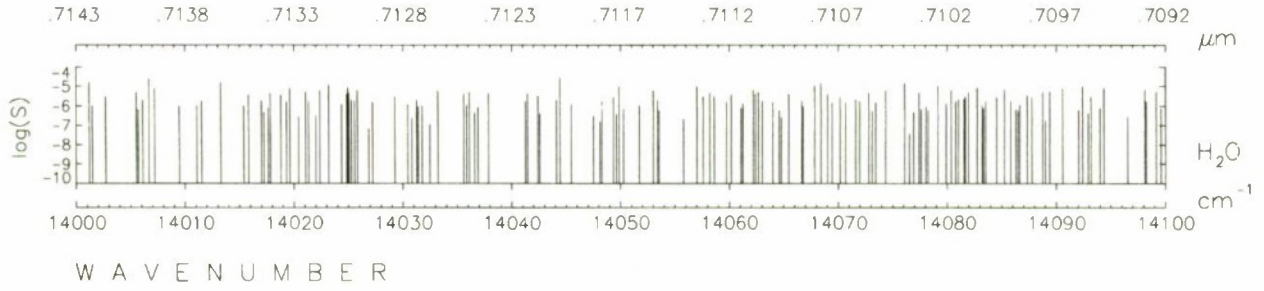
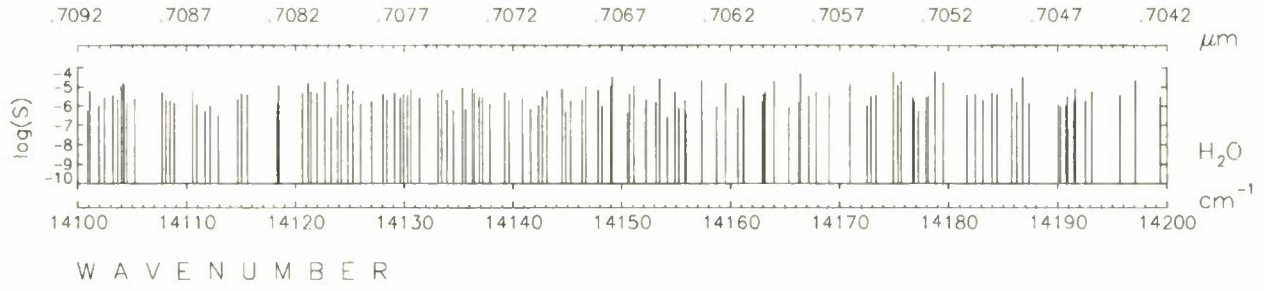
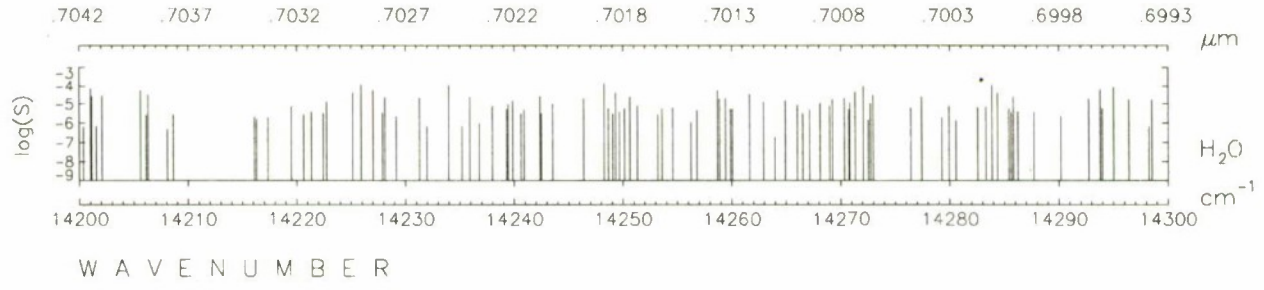
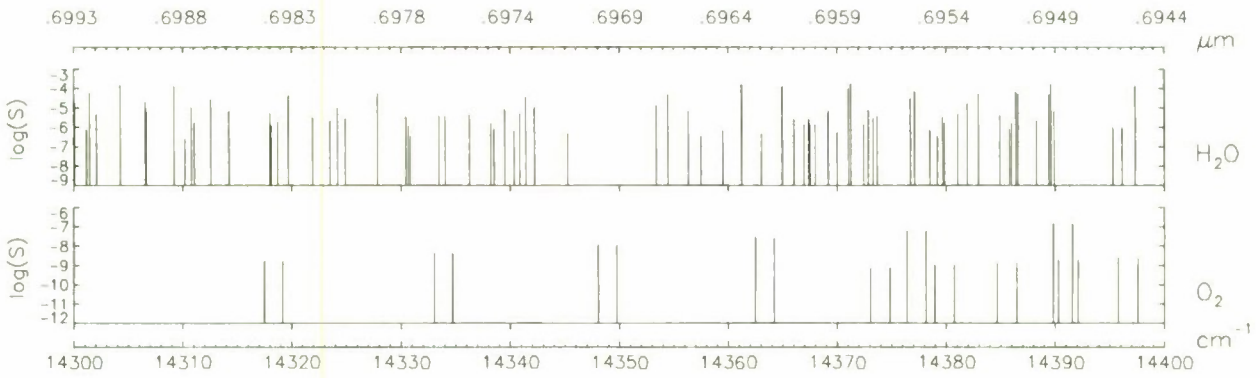
μm
log(S)
H2O
cm-1
13800 13810 13820 13830 13840 13850 13860 13870 13880 13890 13900
WAVENUMBER

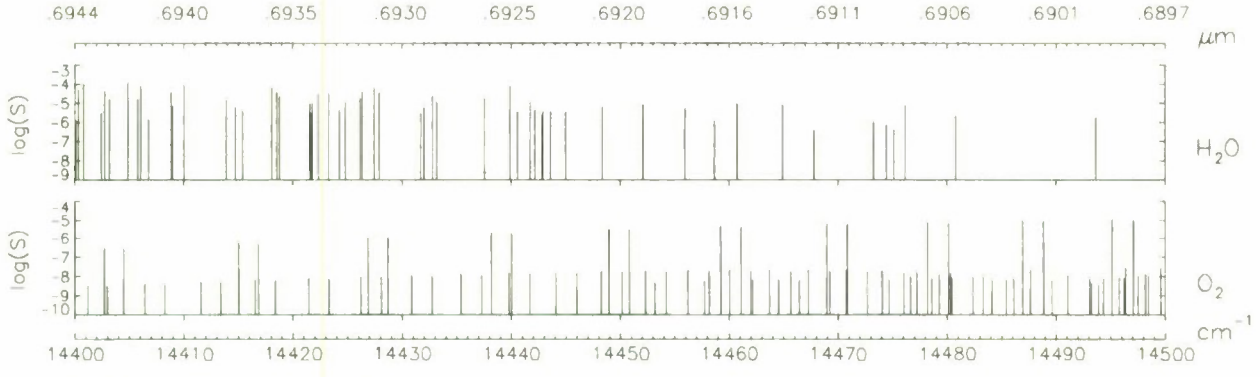

.7194 .7189 .7184 .7179 .7174 .7168 .7163 .7158 .7153 .7148 .7143
μm
log(S)
H2O
cm-1
13900 13910 13920 13930 13940 13950 13960 13970 13980 13990 14000
WAVENUMBER

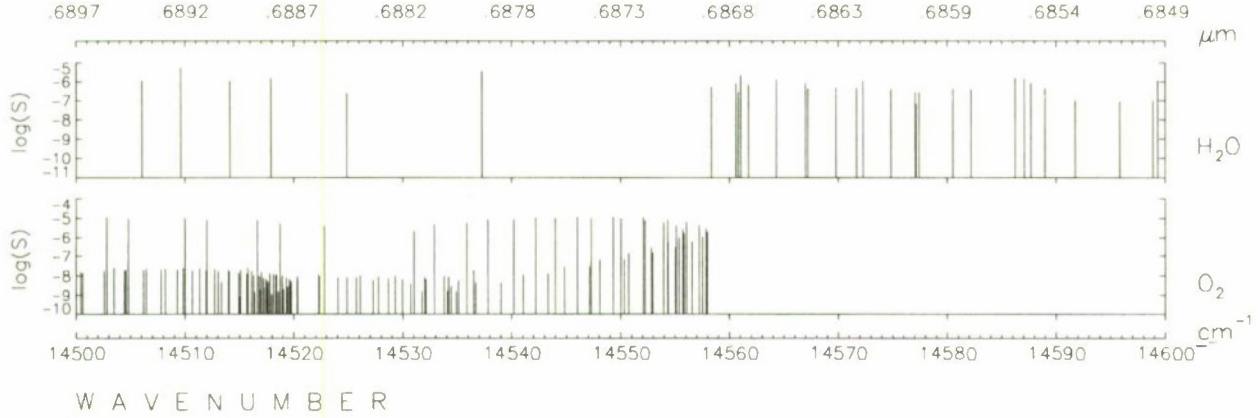

.7143 .7138 .7133 .7128 .7123 .7117 .7112 .7107 .7102 .7097 .7092
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
14000 14010 14020 14030 14040 14050 14060 14070 14080 14090 14100
WAVENUMBER

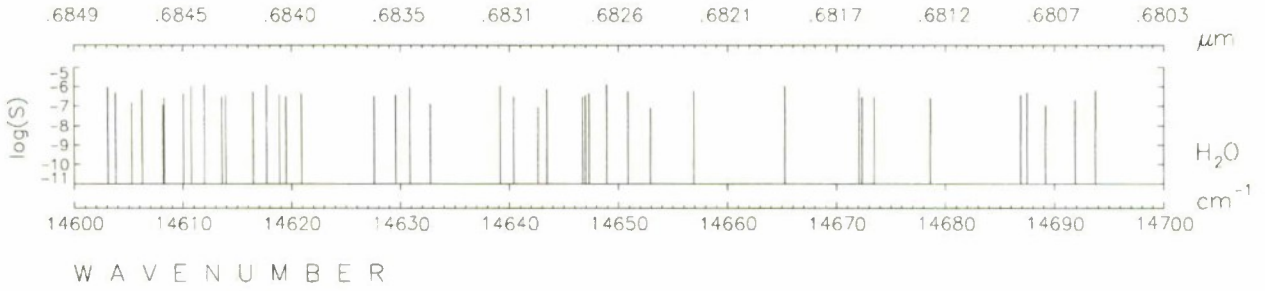

.7092 .7087 .7082 .7077 .7072 .7067 .7062 .7057 .7052 .7047 .7042
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
14100 14110 14120 14130 14140 14150 14160 14170 14180 14190 14200
WAVENUMBER

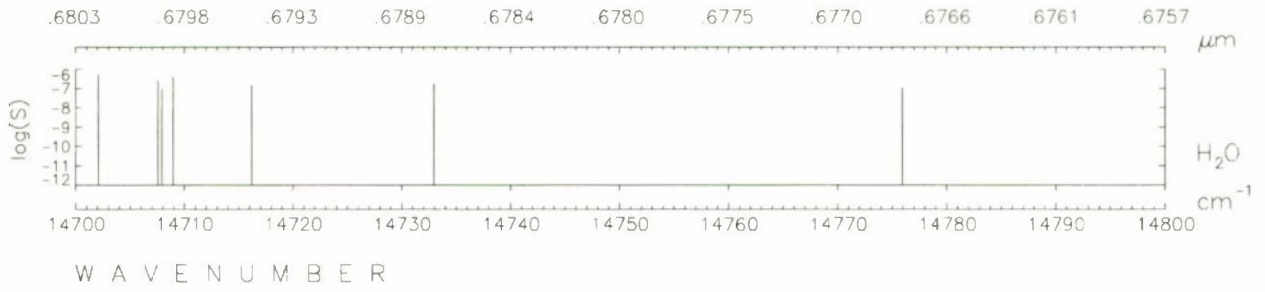

.7042 .7037 .7032 .7027 .7022 .7018 .7013 .7008 .7003 .6998 .6993
μm
log(S)
-3
-4
-5
-6
-7
-8
-9
H2O
cm-1
14200 14210 14220 14230 14240 14250 14260 14270 14280 14290 14300
WAVENUMBER

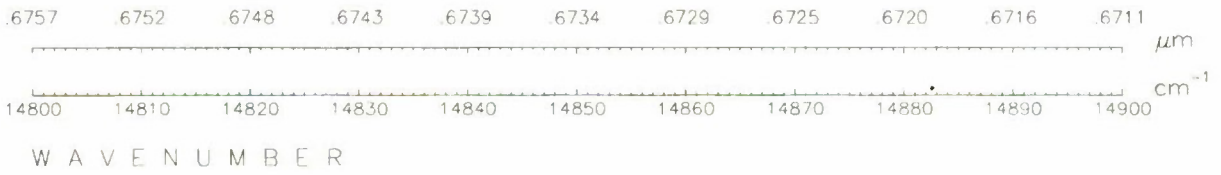

.6993 .6988 .6983 .6978 .6974 .6969 .6964 .6959 .6954 .6949 .6944
μm
log(S)
H2O
O2
cm-1
14300 14310 14320 14330 14340 14350 14360 14370 14380 14390 14400
WAVENUMBER

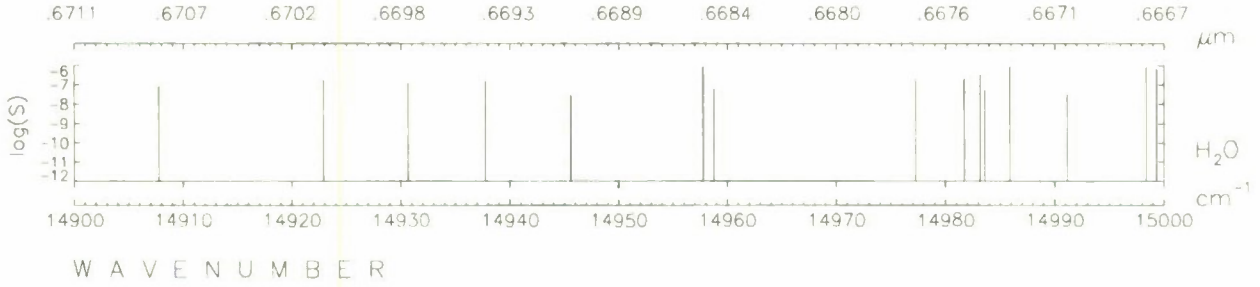

.6944 .6940 .6935 .6930 .6925 .6920 .6916 .6911 .6906 .6901 .6897
μm
log(S)
H2O
O2
cm-1
14400 14410 14420 14430 14440 14450 14460 14470 14480 14490 14500
WAVENUMBER

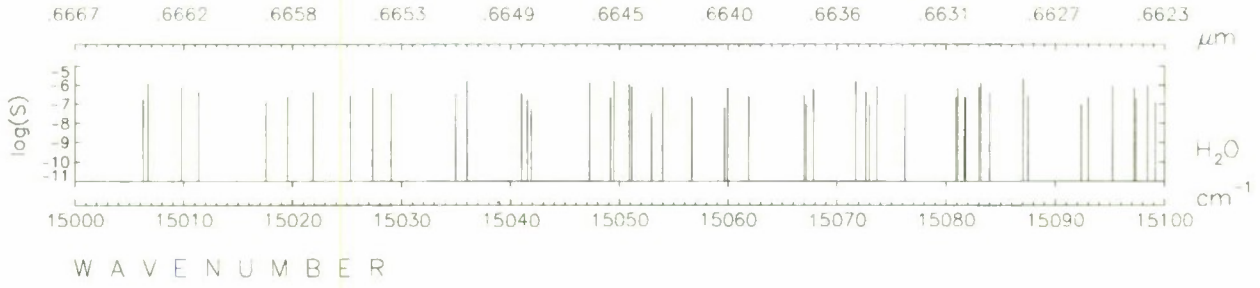

.6897 .6892 .6887 .6882 .6878 .6873 .6868 .6863 .6859 .6854 .6849
μm
log(S)
H2O
O2
cm-1
14500 14510 14520 14530 14540 14550 14560 14570 14580 14590 14600
WAVENUMBER

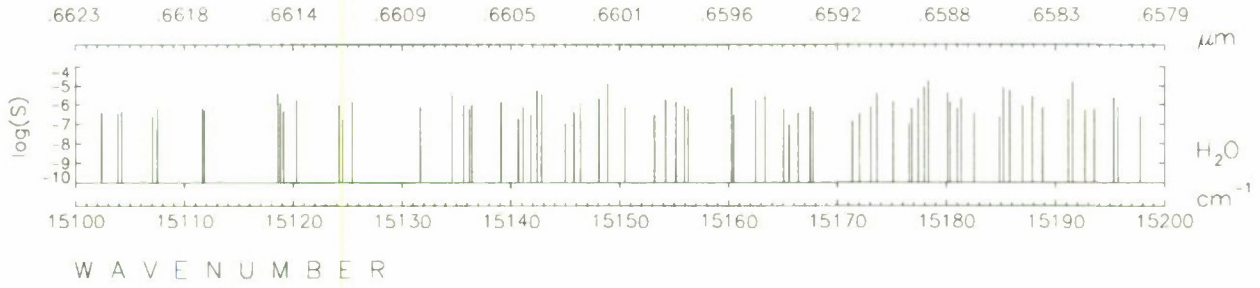

.6849 .6845 .6840 .6835 .6831 .6826 .6821 .6817 .6812 .6807 .6803
μm
log(S)
-5
-6
-7
-8
-9
-10
-11
H2O
cm-1
14600 14610 14620 14630 14640 14650 14660 14670 14680 14690 14700
WAVENUMBER

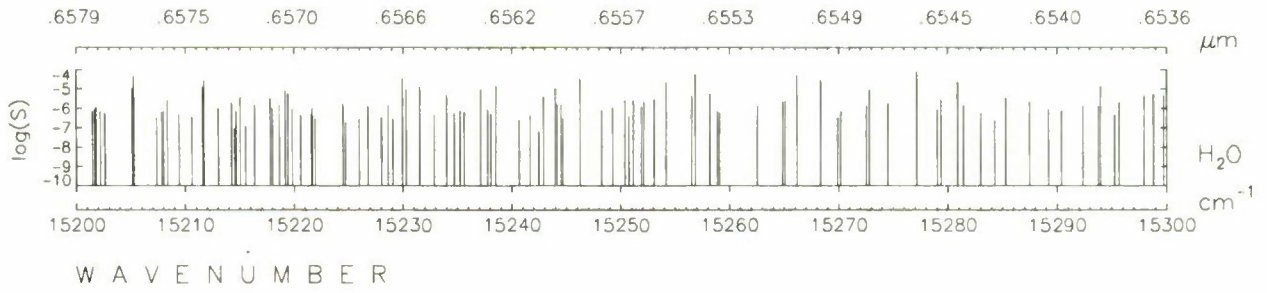

.6803 .6798 .6793 .6789 .6784 .6780 .6775 .6770 .6766 .6761 .6757
μm
log(S)
-6
-7
-8
-9
-10
-11
-12
H2O
cm-1
14700 14710 14720 14730 14740 14750 14760 14770 14780 14790 14800
WAVENUMBER

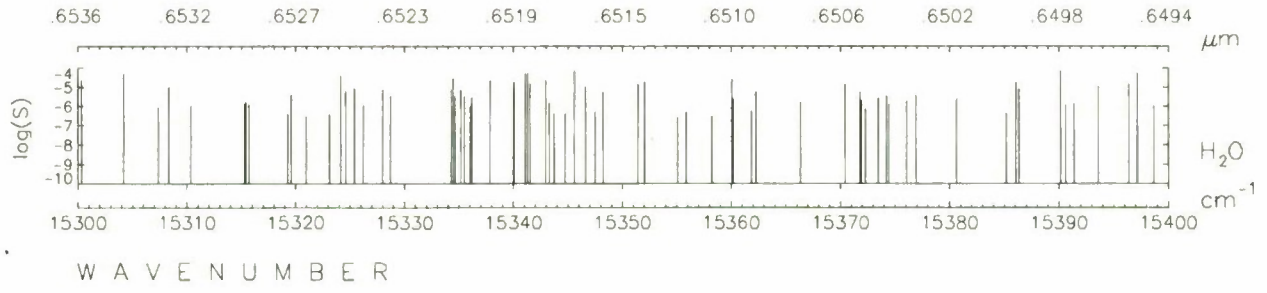

.6757 .6752 .6748 .6743 .6739 .6734 .6729 .6725 .6720 .6716 .6711
μm
cm-1
14800 14810 14820 14830 14840 14850 14860 14870 14880 14890 14900
WAVENUMBER

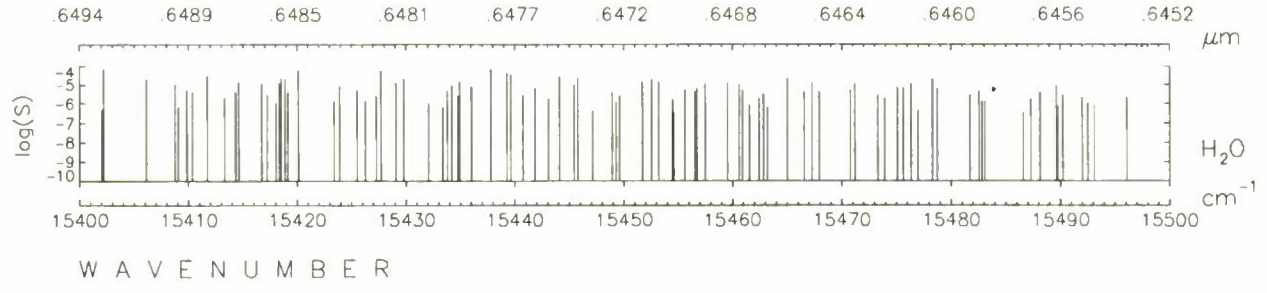

.6711 .6707 .6702 .6698 .6693 .6689 .6684 .6680 .6676 .6671 .6667
μm
log(S)
-6
-7
-8
-9
-10
-11
-12
H2O
cm-1
14900 14910 14920 14930 14940 14950 14960 14970 14980 14990 15000
WAVENUMBER

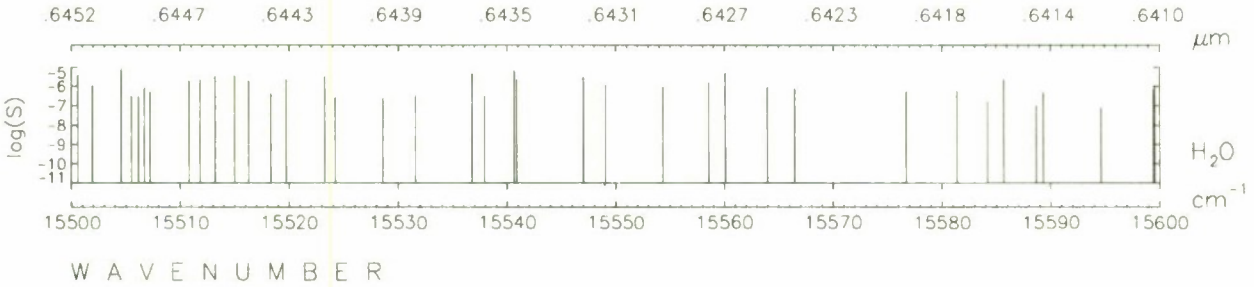

.6667 .6662 .6658 .6653 .6649 .6645 .6640 .6636 .6631 .6627 .6623
μm
log(S)
-5
-6
-7
-8
-9
-10
-11
H2O
cm-1
15000 15010 15020 15030 15040 15050 15060 15070 15080 15090 15100
WAVENUMBER

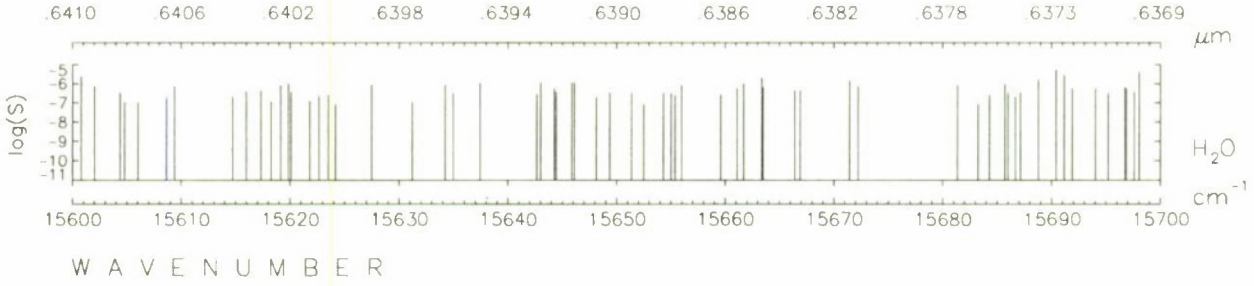

.6623 .6618 .6614 .6609 .6605 .6601 .6596 .6592 .6588 .6583 .6579
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
15100 15110 15120 15130 15140 15150 15160 15170 15180 15190 15200
WAVENUMBER

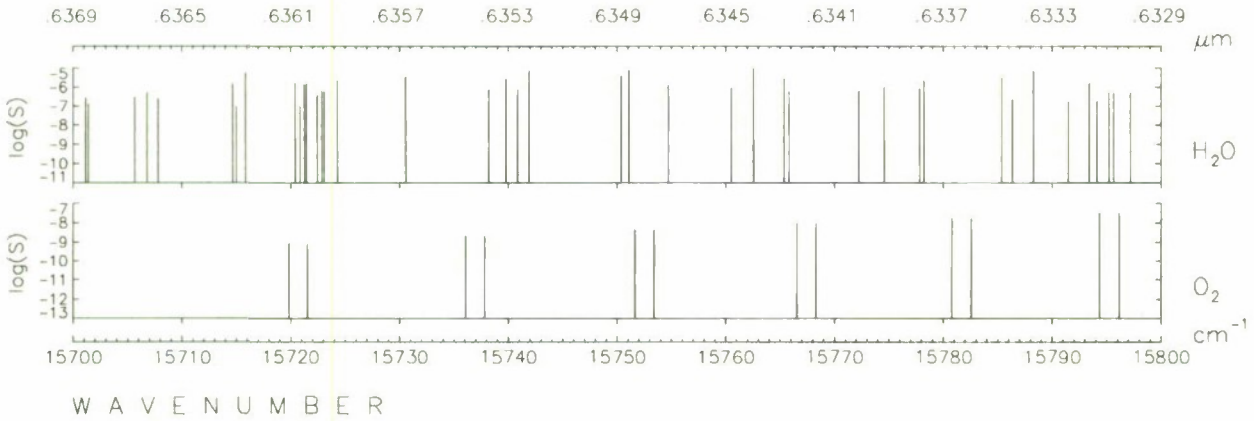

.6579 .6575 .6570 .6566 .6562 .6557 .6553 .6549 .6545 .6540 .6536
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
15200 15210 15220 15230 15240 15250 15260 15270 15280 15290 15300
WAVENUMBER

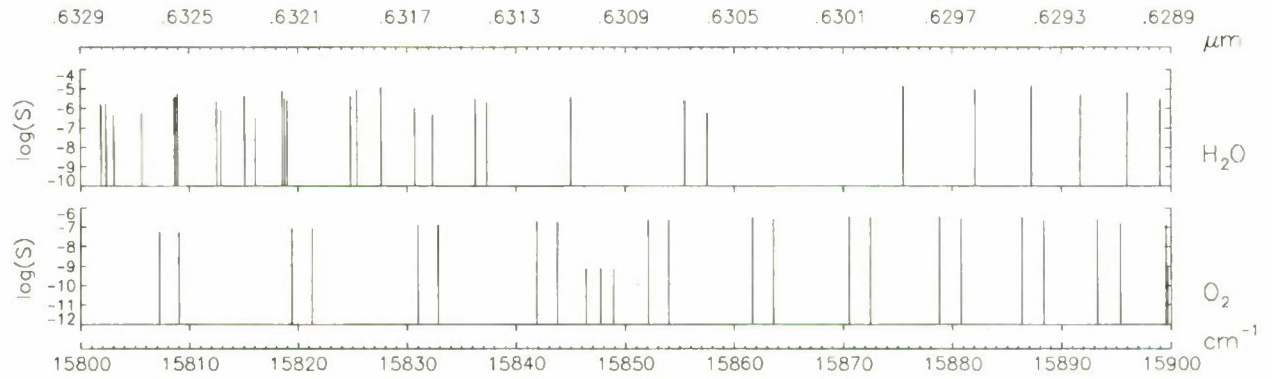

.6536 .6532 .6527 .6523 .6519 .6515 .6510 .6506 .6502 .6498 .6494
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
15300 15310 15320 15330 15340 15350 15360 15370 15380 15390 15400
WAVENUMBER

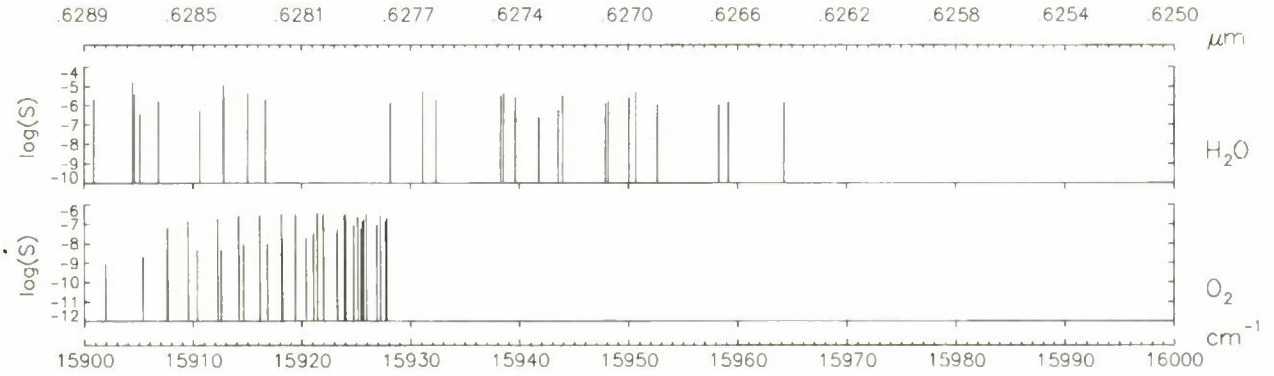

.6494 .6489 .6485 .6481 .6477 .6472 .6468 .6464 .6460 .6456 .6452
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
15400 15410 15420 15430 15440 15450 15460 15470 15480 15490 15500
WAVENUMBER

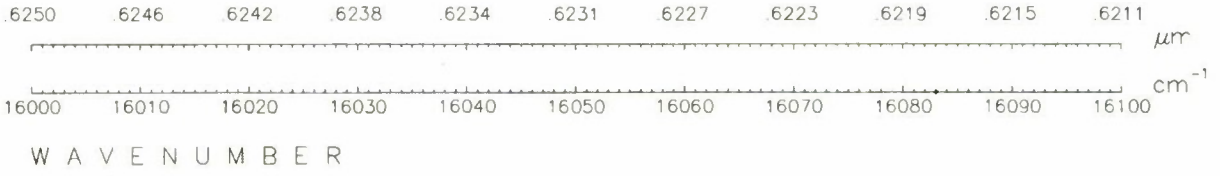

.6452 .6447 .6443 .6439 .6435 .6431 .6427 .6423 .6418 .6414 .6410
μm
log(S)
-5 -6 -7 -8 -9 -10 -11
H2O
cm-1
15500 15510 15520 15530 15540 15550 15560 15570 15580 15590 15600
WAVENUMBER


.6410 .6406 .6402 .6398 .6394 .6390 .6386 .6382 .6378 .6373 .6369
μm
log(S)
-5 -6 -7 -8 -9 -10 -11
H2O
cm-1
15600 15610 15620 15630 15640 15650 15660 15670 15680 15690 15700
WAVENUMBER

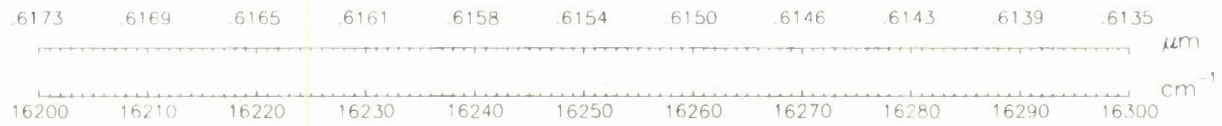

.6369 .6365 .6361 .6357 .6353 .6349 .6345 .6341 .6337 .6333 .6329
μm
log(S)
-5 -6 -7 -8 -9 -10 -11
H2O
log(S)
-7 -8 -9 -10 -11 -12 -13
O2
cm-1
15700 15710 15720 15730 15740 15750 15760 15770 15780 15790 15800
WAVENUMBER


.6329 .6325 .6321 .6317 .6313 .6309 .6305 .6301 .6297 .6293 .6289
μm
log(S)
-4 -5 -6 -7 -8 -9 -10
H2O
log(S)
-6 -7 -8 -9 -10 -11 -12
O2
cm-1
15800 15810 15820 15830 15840 15850 15860 15870 15880 15890 15900
WAVENUMBER

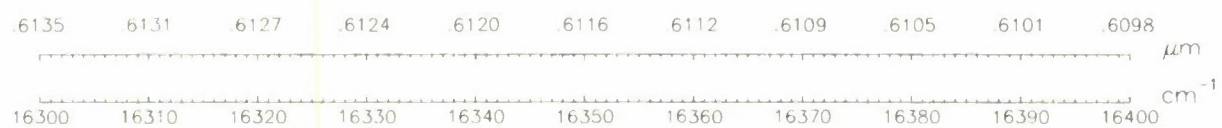

.6289 .6285 .6281 .6277 .6274 .6270 .6266 .6262 .6258 .6254 .6250
μm
log(S)
-4 -5 -6 -7 -8 -9 -10
H2O
log(S)
-6 -7 -8 -9 -10 -11 -12
O2
cm-1
15900 15910 15920 15930 15940 15950 15960 15970 15980 15990 16000
WAVENUMBER


.6250 .6246 .6242 .6238 .6234 .6231 .6227 .6223 .6219 .6215 .6211
μm
cm-1
16000 16010 16020 16030 16040 16050 16060 16070 16080 16090 16100
WAVENUMBER

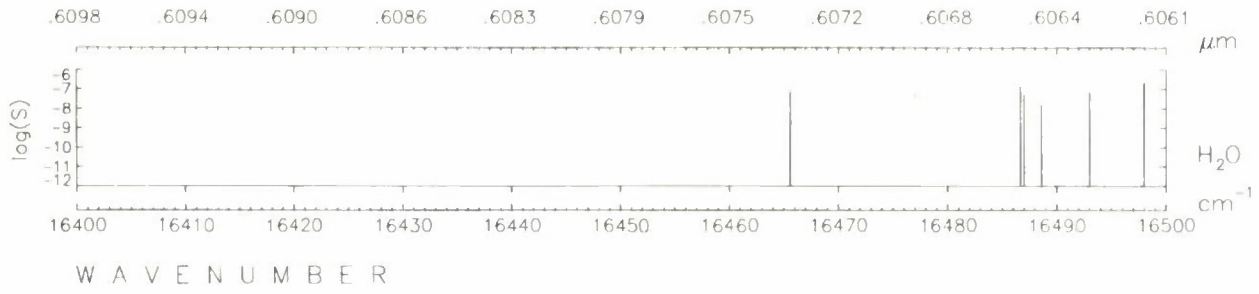
W A V E N U M B E R

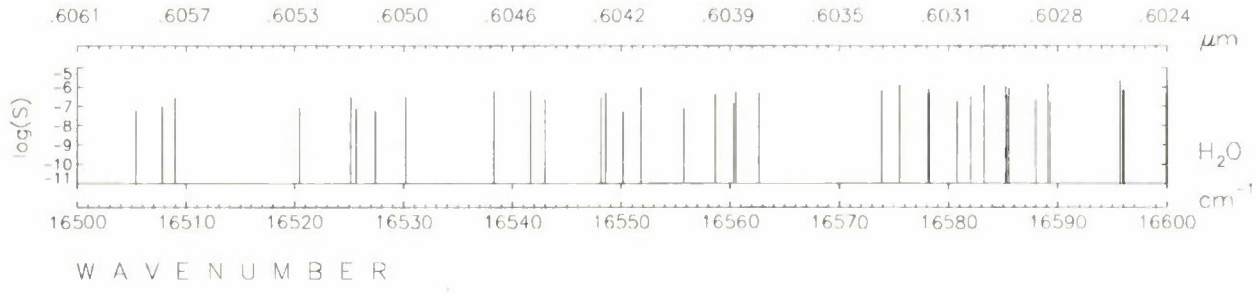


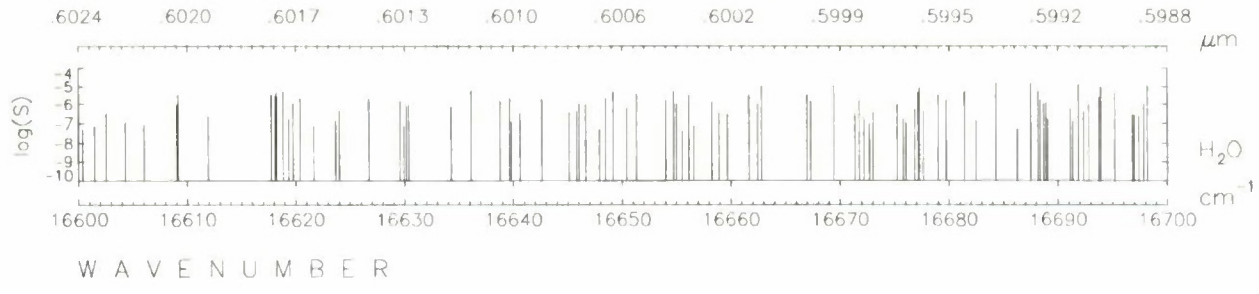
W A V E N U M B E R

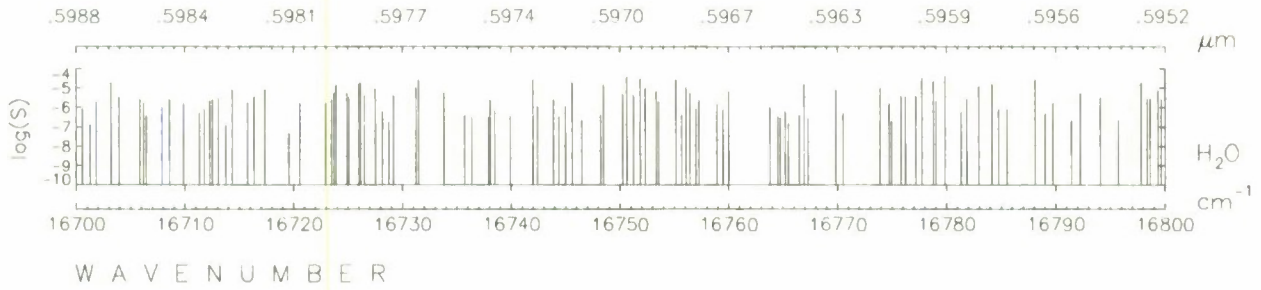


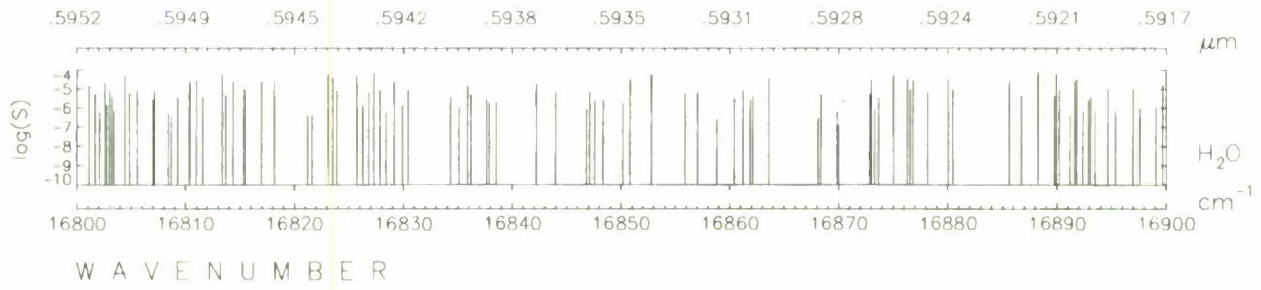
W A V E N U M B E R

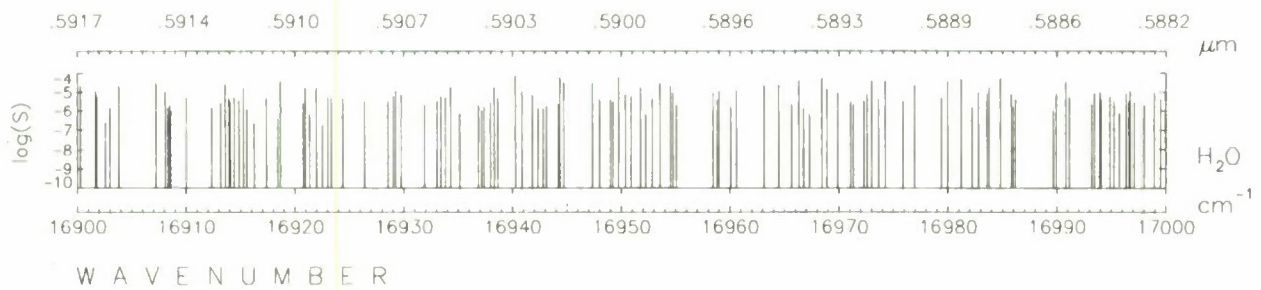

.6098 .6094 .6090 .6086 .6083 .6079 .6075 .6072 .6068 .6064 .6061
μm
log(S)
-6
-7
-8
-9
-10
-11
-12
H2O
cm-1
16400 16410 16420 16430 16440 16450 16460 16470 16480 16490 16500
WAVENUMBER

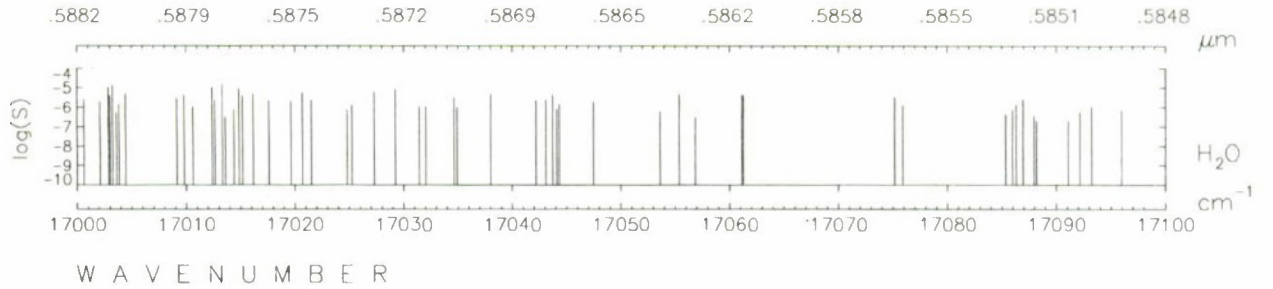

.6061 .6057 .6053 .6050 .6046 .6042 .6039 .6035 .6031 .6028 .6024
μm
log(S)
-5
-6
-7
-8
-9
-10
-11
H2O
cm-1
16500 16510 16520 16530 16540 16550 16560 16570 16580 16590 16600
WAVENUMBER

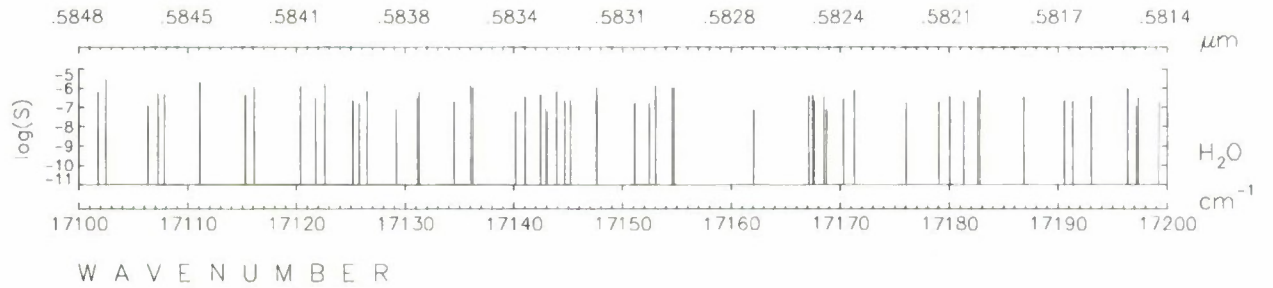

.6024 .6020 .6017 .6013 .6010 .6006 .6002 .5999 .5995 .5992 .5988
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
16600 16610 16620 16630 16640 16650 16660 16670 16680 16690 16700
WAVENUMBER

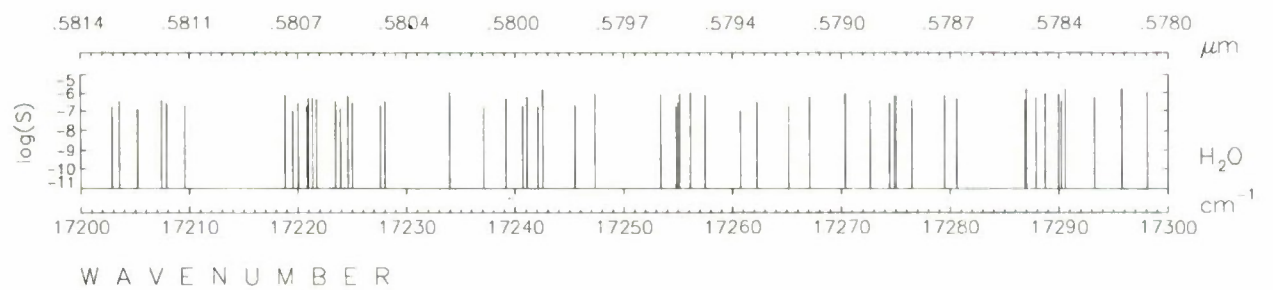

.5988 .5984 .5981 .5977 .5974 .5970 .5967 .5963 .5959 .5956 .5952
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
16700 16710 16720 16730 16740 16750 16760 16770 16780 16790 16800
WAVENUMBER

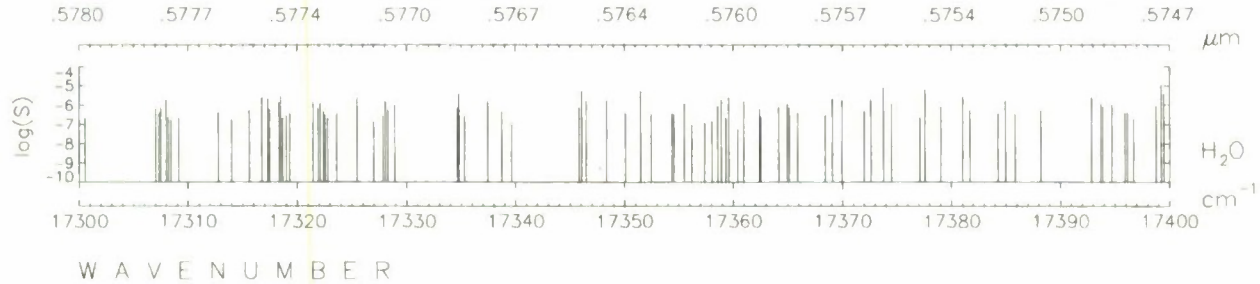

.5952 .5949 .5945 .5942 .5938 .5935 .5931 .5928 .5924 .5921 .5917
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
16800 16810 16820 16830 16840 16850 16860 16870 16880 16890 16900
WAVENUMBER

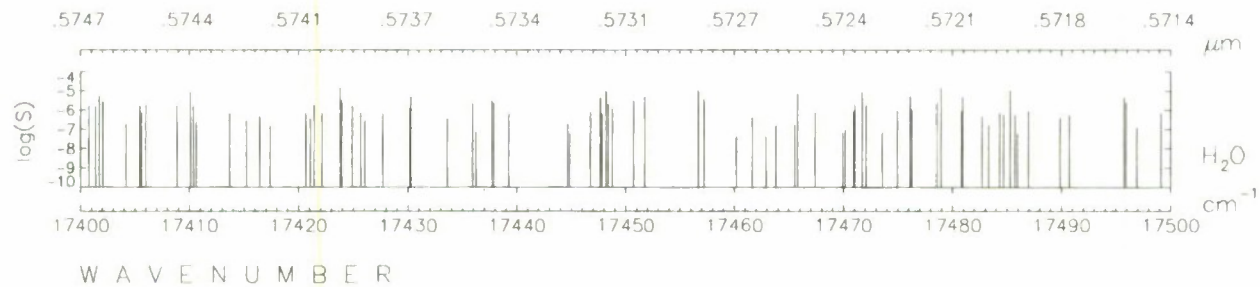

.5917 .5914 5910 .5907 .5903 .5900 5896 5893 5889 5886 5882
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
16900 16910 16920 16930 16940 16950 16960 16970 16980 16990 17000
WAVENUMBER


.5882 .5879 .5875 .5872 .5869 .5865 .5862 .5858 .5855 .5851 .5848
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
17000 17010 17020 17030 17040 17050 17060 17070 17080 17090 17100
WAVENUMBER


.5848 .5845 .5841 .5838 .5834 .5831 .5828 .5824 .5821 .5817 .5814
μm
log(S)
-5
-6
-7
-8
-9
-10
-11
H2O
cm-1
17100 17110 17120 17130 17140 17150 17160 17170 17180 17190 17200
WAVENUMBER


.5814 .5811 .5807 .5804 .5800 .5797 .5794 .5790 .5787 .5784 .5780
μm
log(S)
-5
-6
-7
-8
-9
-10
-11
H2O
cm-1
17200 17210 17220 17230 17240 17250 17260 17270 17280 17290 17300
WAVENUMBER


.5780 .5777 .5774 .5770 .5767 .5764 .5760 .5757 .5754 .5750 .5747
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
17300 17310 17320 17330 17340 17350 17360 17370 17380 17390 17400
WAVENUMBER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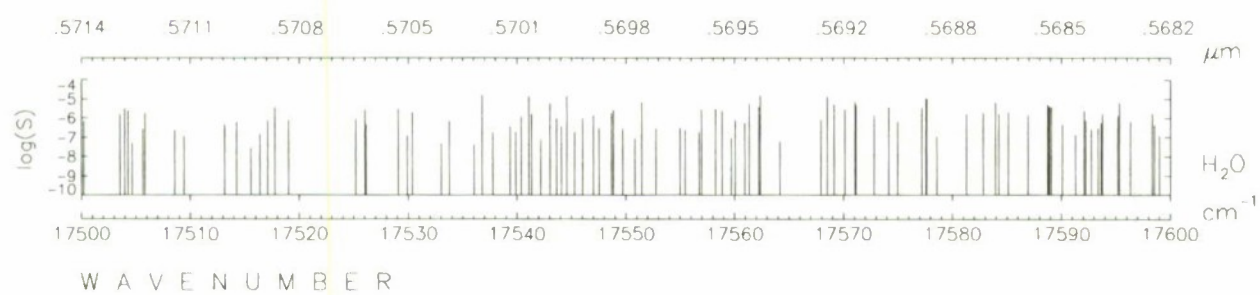
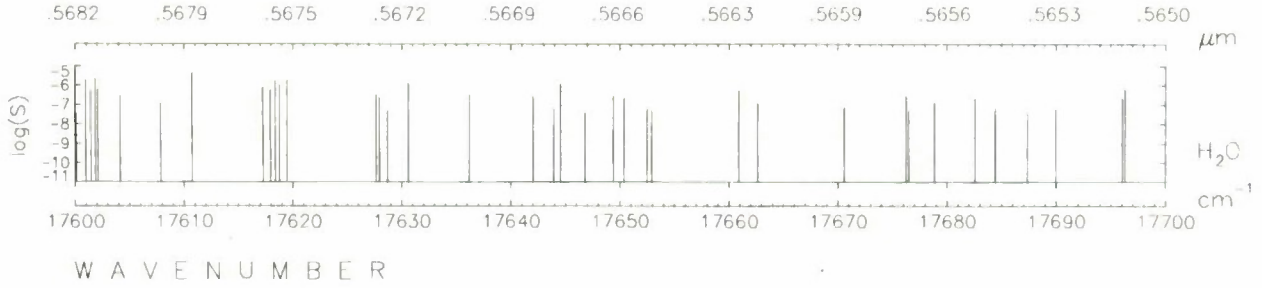
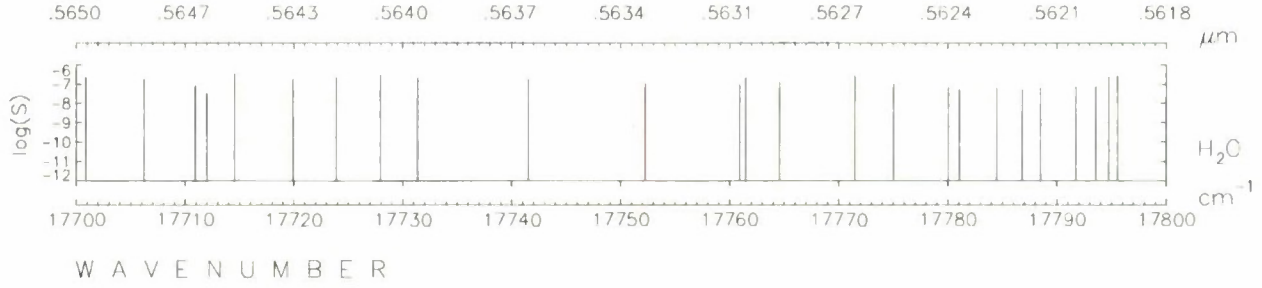
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
17400 17410 17420 17430 17440 17450 17460 17470 17480 17490 17500
WAVENUMBER


.5714 .5711 .5708 .5705 .5701 .5698 .5695 .5692 .5688 .5685 .5682
μm
log(S)
-4
-5
-6
-7
-8
-9
-10
H2O
cm-1
17500 17510 17520 17530 17540 17550 17560 17570 17580 17590 17600
WAVENUMBER


.5682 .5679 .5675 .5672 .5669 .5666 .5663 .5659 .5656 .5653 .5650
μm
log(S)
-5 -6 -7 -8 -9 -10 -11
H2O
cm-1
17600 17610 17620 17630 17640 17650 17660 17670 17680 17690 17700
WAVENUMBER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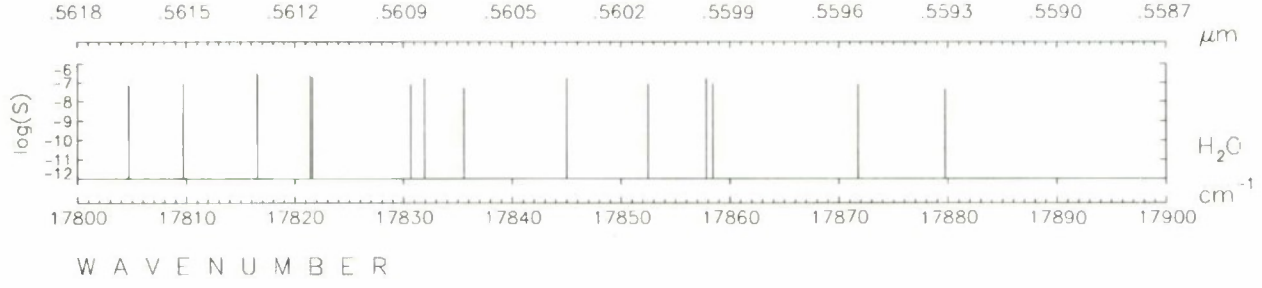
μm
log(S)
-6 -7 -8 -9 -10 -11 -12
H2O
cm-1
17700 17710 17720 17730 17740 17750 17760 17770 17780 17790 17800
WAVENUMBER


.5618 .5615 .5612 .5609 .5605 .5602 .5599 .5596 .5593 .5590 .5587
μm
log(S)
-6 -7 -8 -9 -10 -11 -12
H2O
cm-1
17800 17810 17820 17830 17840 17850 17860 17870 17880 17890 17900
WAVENUMBER

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16. Abstract

Plots of logarithm (base 10) of absorption line strength versus wavenumber from 0 to 17 900 cm^{-1} are shown for the 28 atmospheric gases (H_2O, CO_2, O_3, N_2O, CO, CH_4, O_2, NO, SO_2, NO_2, NH_3, HNO_3, OH, HF, $HC\ell$, HBr, HI, $C\ell O$, OCS, H_2CO, $HOC\ell$, N_2, HCN, $CH_3C\ell$, H_2O_2, C_2H_2, C_2H_6, PH_3), which appear in the 1986 Air Force Geophysics Laboratory high-resolution transmission molecular absorption data base (HITRAN) compilation, and for $O(^3P)$, 18-0 isotopic ozone, and HO_2 from the 1984 JPL compilation in the 0- to 200-cm^{-1} region, and infrared solar CO lines at 4500 K. Also shown are plots of logarithm (base 10) of approximate infrared absorption cross sections of 11 heavy molecules versus wavenumber. The cross-section data cover 700 to 1800 cm^{-1} and are included as a separate data file in the 1986 HITRAN database.

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