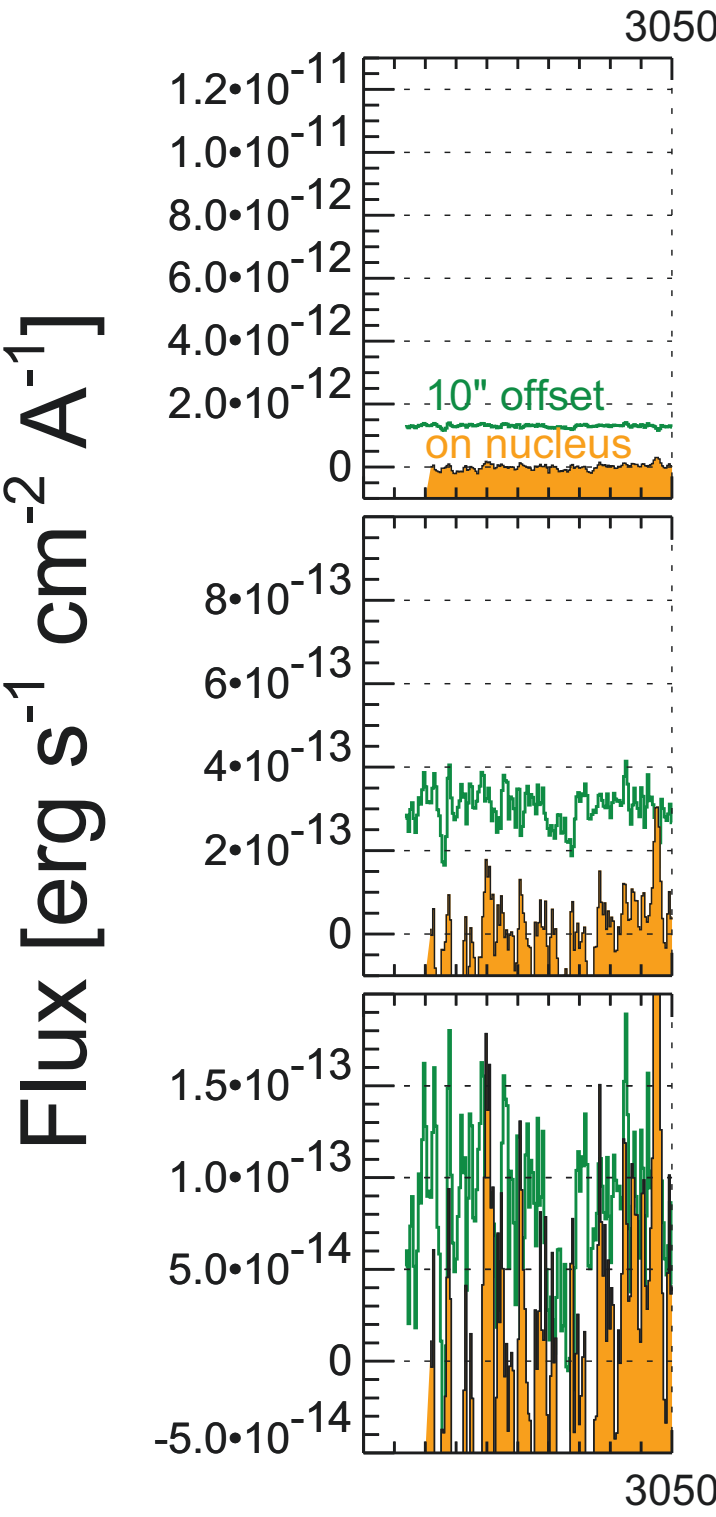
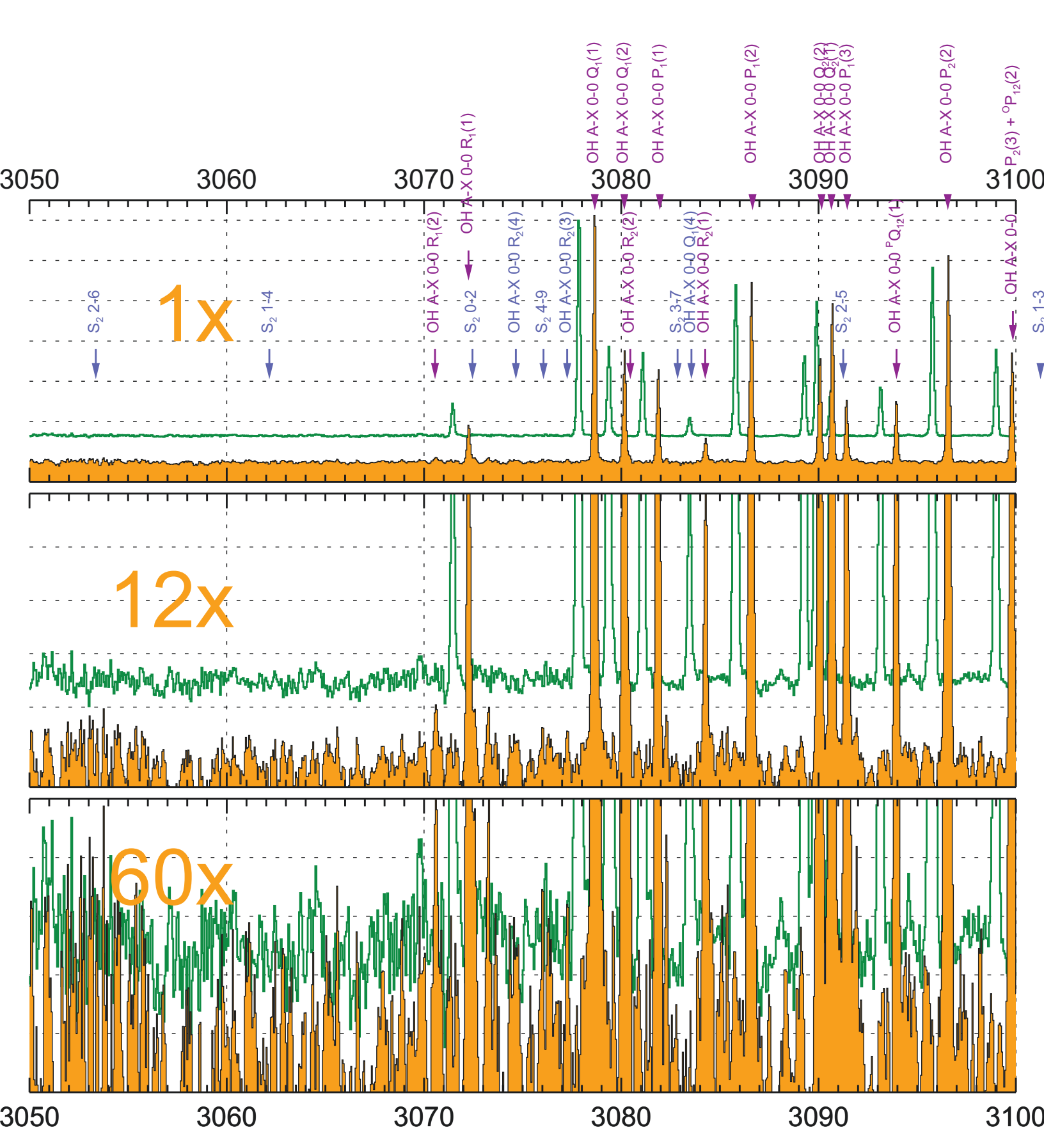
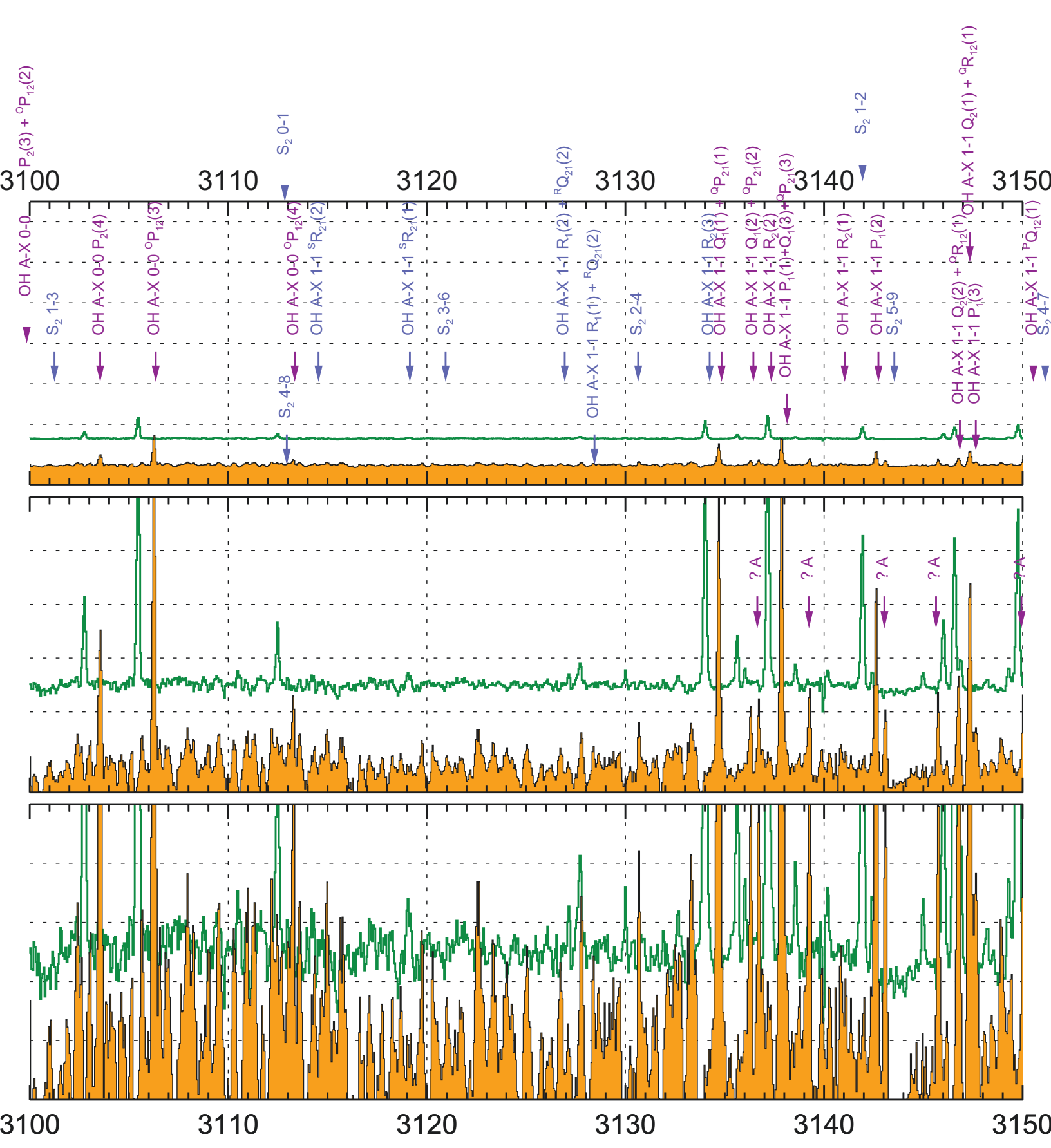
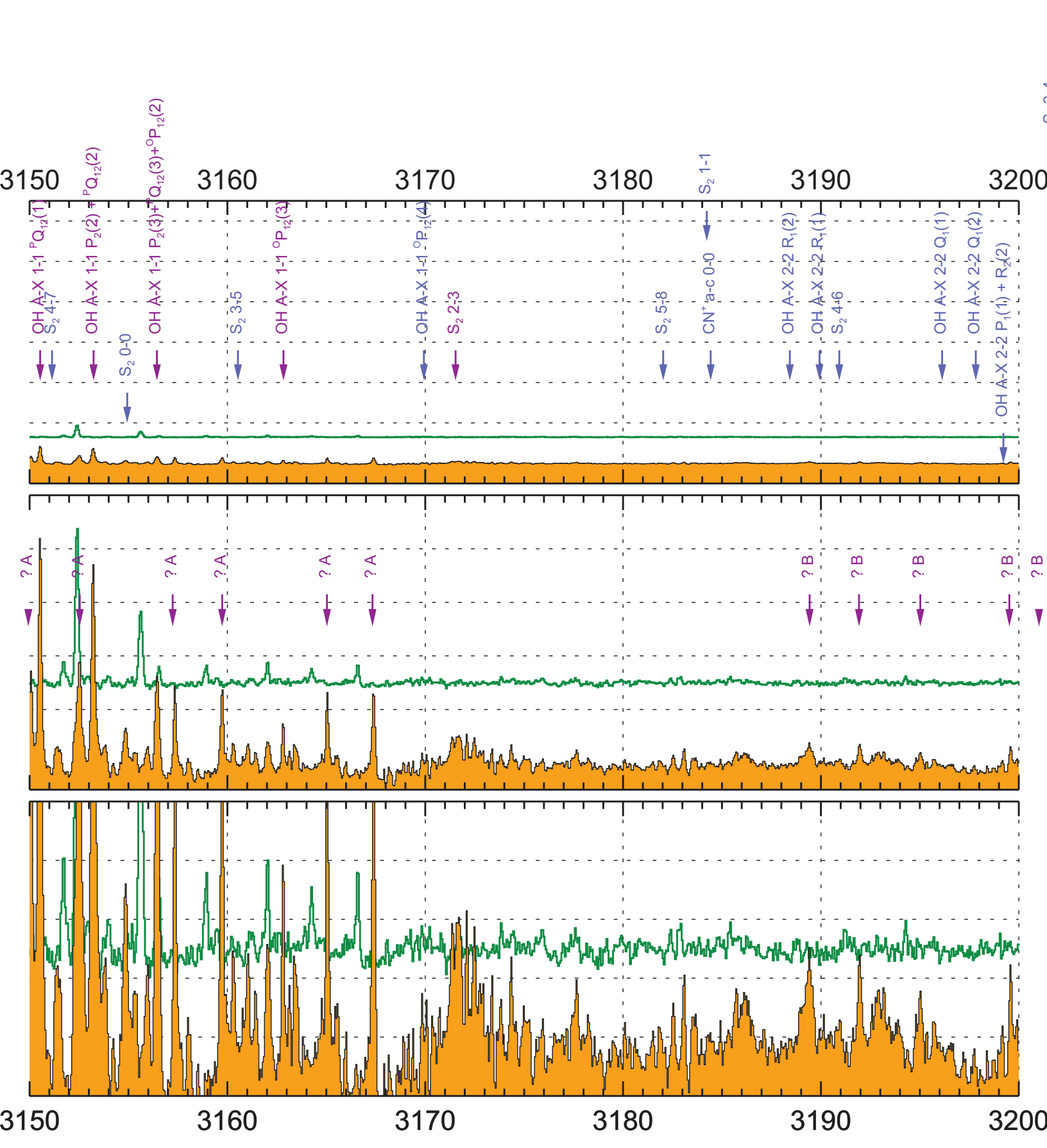
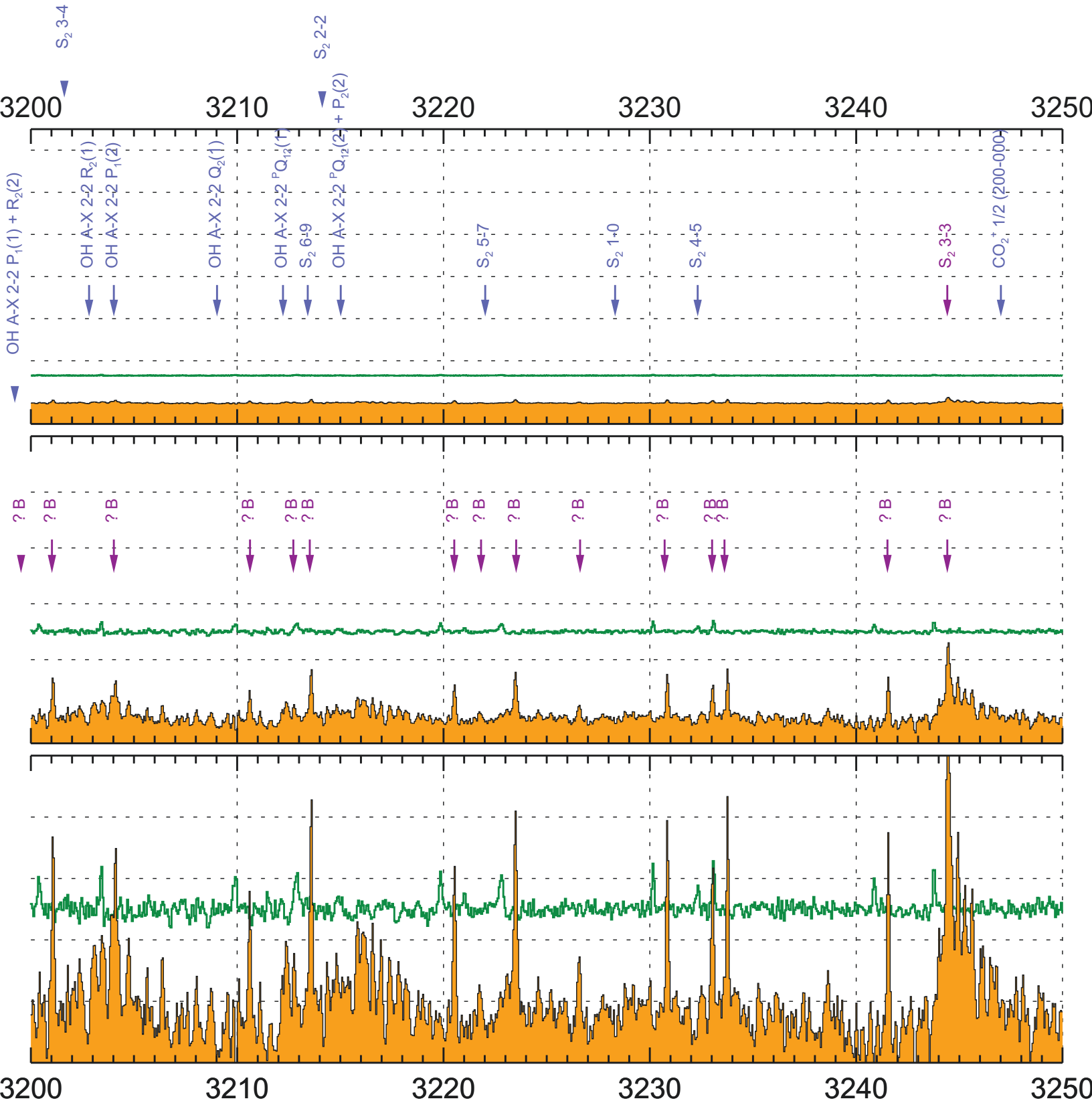
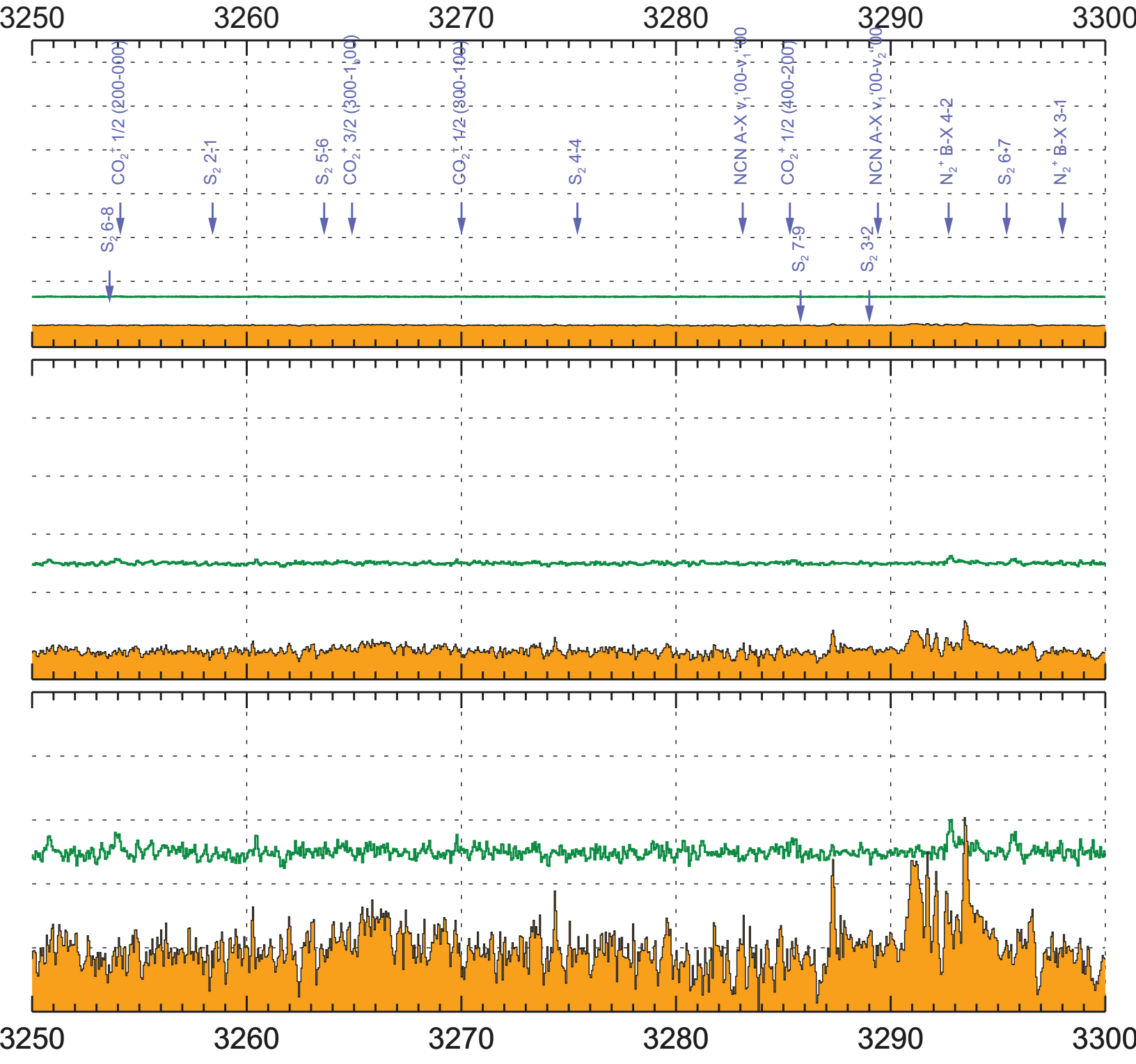

3050
1.2•10^-11
1.0•10^-11
8.0•10^-12
6.0•10^-12
4.0•10^-12
2.0•10^-12
0
10" offset
on nucleus
8•10^-13
6•10^-13
4•10^-13
2•10^-13
0
1.5•10^-13
1.0•10^-13
5.0•10^-14
0
-5.0•10^-14
3050
Flux [erg s^-1 cm^-2 A^-1]

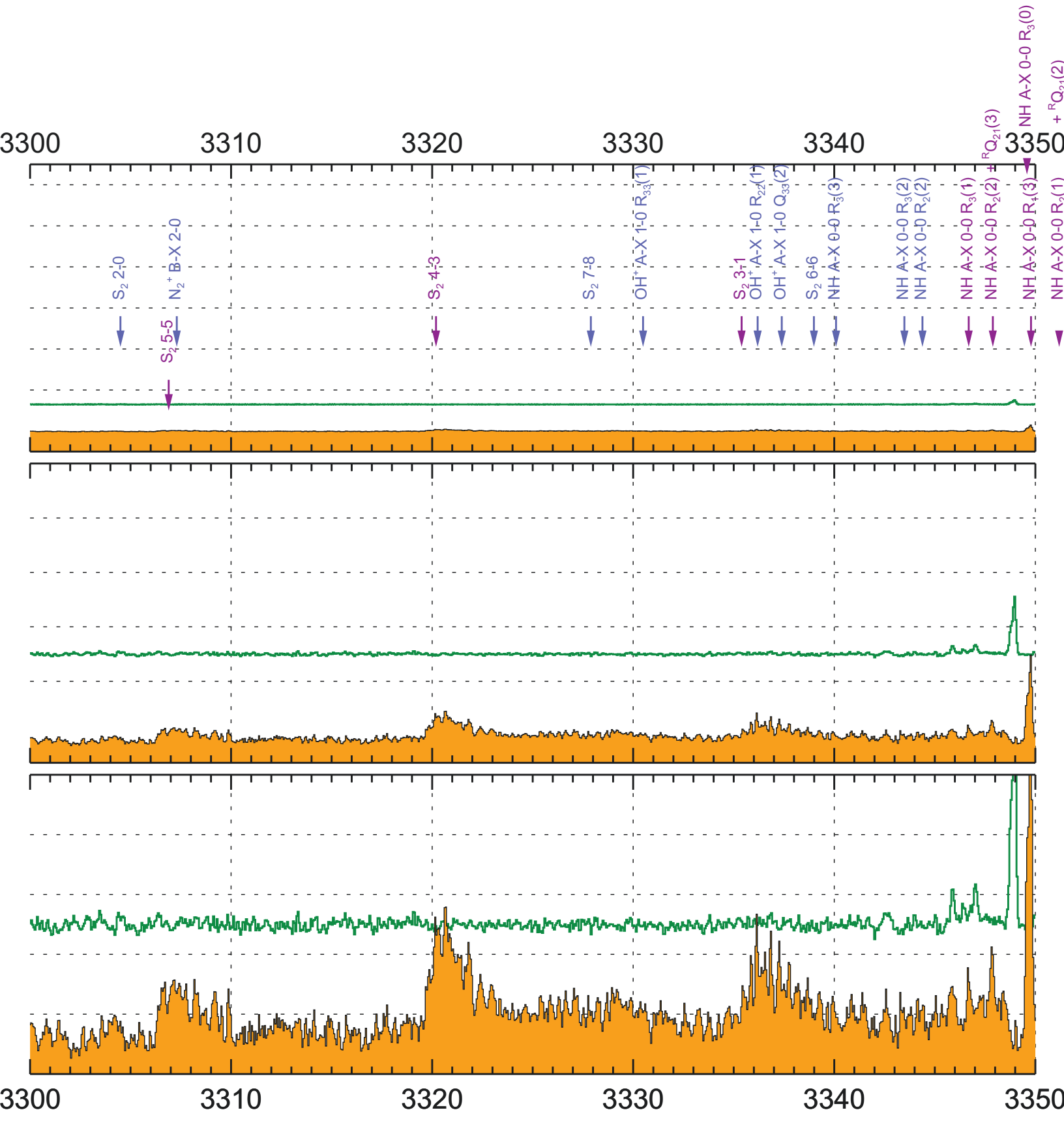

3050
3060
3070
3080
3090
3100
1x
12x
60x
OH A-X 0-0 Q1(1)
OH A-X 0-0 Q1(2)
OH A-X 0-0 P1(1)
OH A-X 0-0 P1(2)
OH A-X 0-0 Q2(2)
OH A-X 0-0 Q21(1)
OH A-X 0-0 P1(3)
OH A-X 0-0 P2(2)
P2(3) + OP12(2)
OH A-X 0-0 R1(1)
OH A-X 0-0 R1(2)
S2 0-2
OH A-X 0-0 R2(4)
S2 4-9
OH A-X 0-0 R2(3)
OH A-X 0-0 R2(2)
S2 3-7
OH A-X 0-0 Q1(4)
OH A-X 0-0 R2(1)
S2 2-5
OH A-X 0-0 PQ12(1)
S2 2-6
S2 1-4
S2 1-3

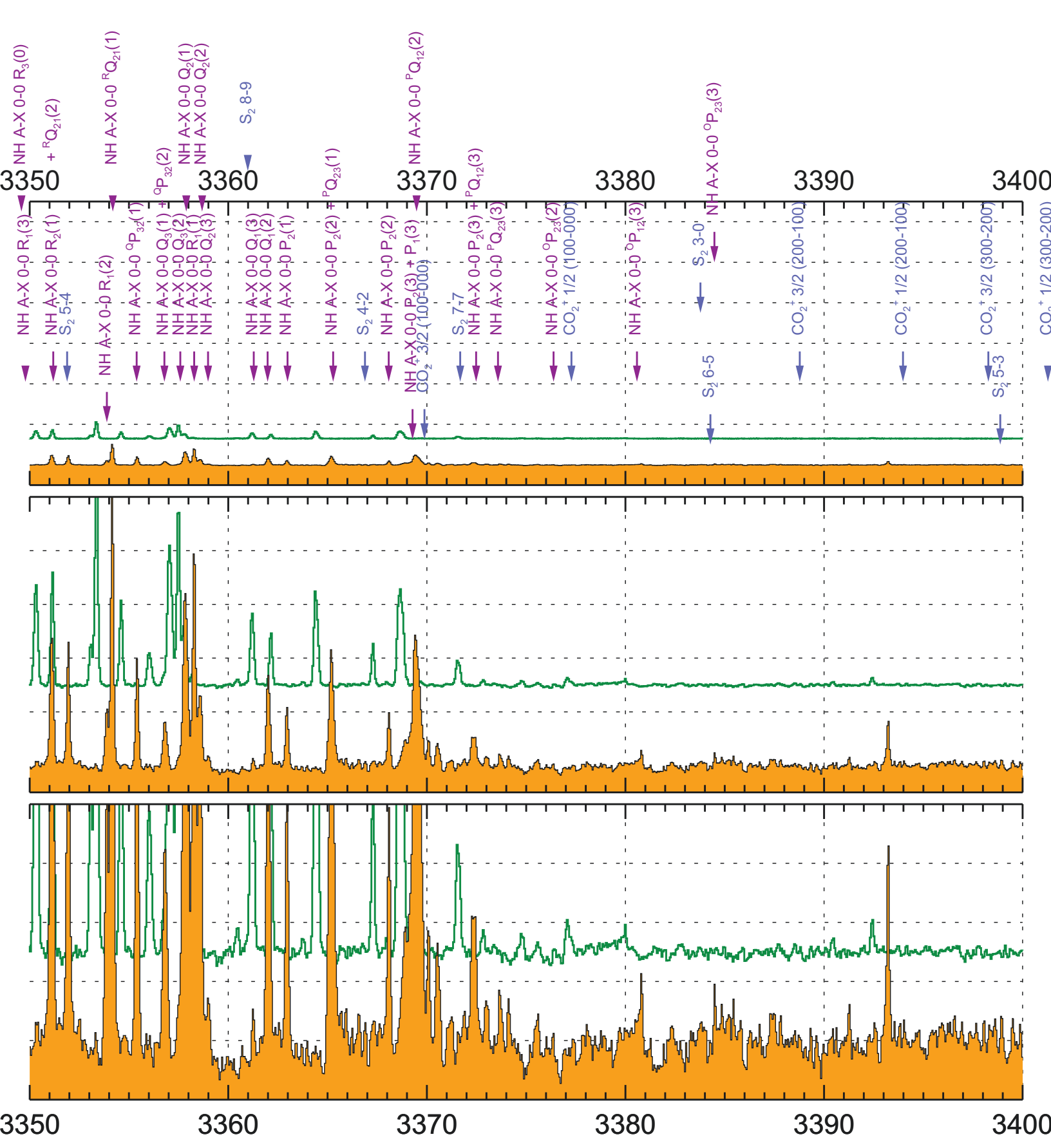

3100
3110
3120
3130
3140
3150
OH A-X 0-0 $^{O}P_2(3) + {}^{O}P_{12}(2)$
S_2 1-3
OH A-X 0-0 $P_2(4)$
OH A-X 0-0 $^{O}P_{12}(3)$
S_2 0-1
OH A-X 0-0 $^{O}P_{12}(4)$
S_2 4-8
OH A-X 1-1 $^{S}R_{21}(2)$
OH A-X 1-1 $^{S}R_{21}(1)$
S_2 3-6
OH A-X 1-1 $R_1(2) + {}^{R}Q_{21}(2)$
OH A-X 1-1 $R_1(1) + {}^{R}Q_{21}(2)$
S_2 2-4
OH A-X 1-1 $R_2(3)$
OH A-X 1-1 $Q_1(1) + {}^{Q}P_{21}(1)$
OH A-X 1-1 $Q_1(2) + {}^{Q}P_{21}(2)$
OH A-X 1-1 $R_2(2)$
OH A-X 1-1 $P_1(1)+Q_1(3)+{}^{P}P_{21}(3)$
S_2 1-2
OH A-X 1-1 $R_2(1)$
OH A-X 1-1 $P_1(2)$
S_2 5-9
OH A-X 1-1 $Q_2(1) + {}^{O}R_{12}(1)$
OH A-X 1-1 $Q_2(2) + {}^{P}R_{12}(1)$
OH A-X 1-1 $P_1(3)$
OH A-X 1-1 $^{P}Q_{12}(1)$
S_2 4-7
? A
? A
? A
? A
? A

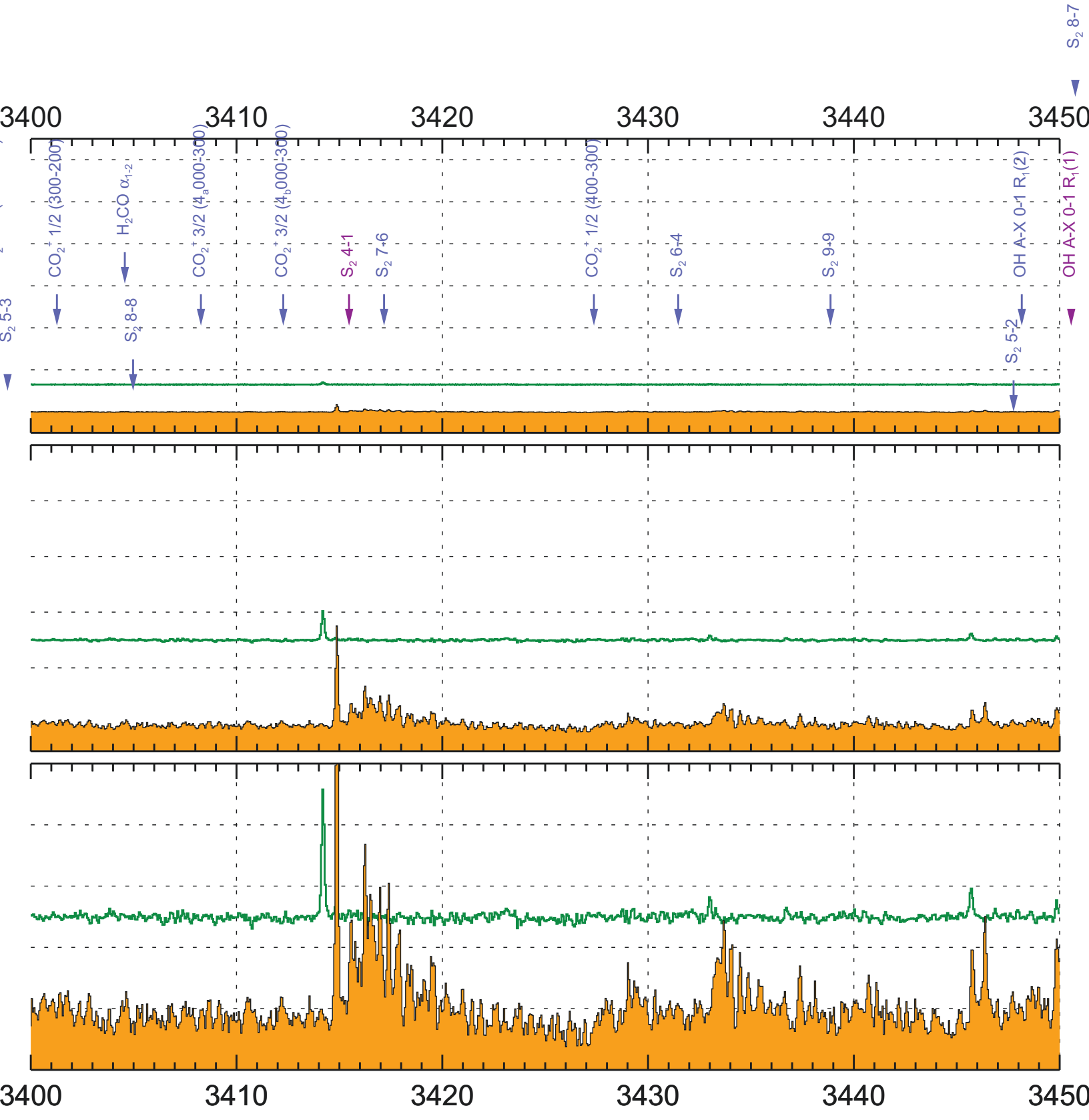

3150
3160
3170
3180
3190
3200
OH A-X 1-1 PQ12(1)
S2 4-7
OH A-X 1-1 P2(2) + PQ12(2)
S2 0-0
OH A-X 1-1 P2(3)+PQ12(3)+OPQ12(2)
S2 3-5
OH A-X 1-1 OP12(3)
OH A-X 1-1 OP12(4)
S2 2-3
S2 5-8
S2 1-1
CN+ a-c 0-0
OH A-X 2-2 R1(2)
OH A-X 2-2 R1(1)
S2 4-6
OH A-X 2-2 Q1(1)
OH A-X 2-2 Q1(2)
OH A-X 2-2 P1(1) + R2(2)
? A
? A
? A
? A
? A
? A
? B
? B
? B
? B
? B

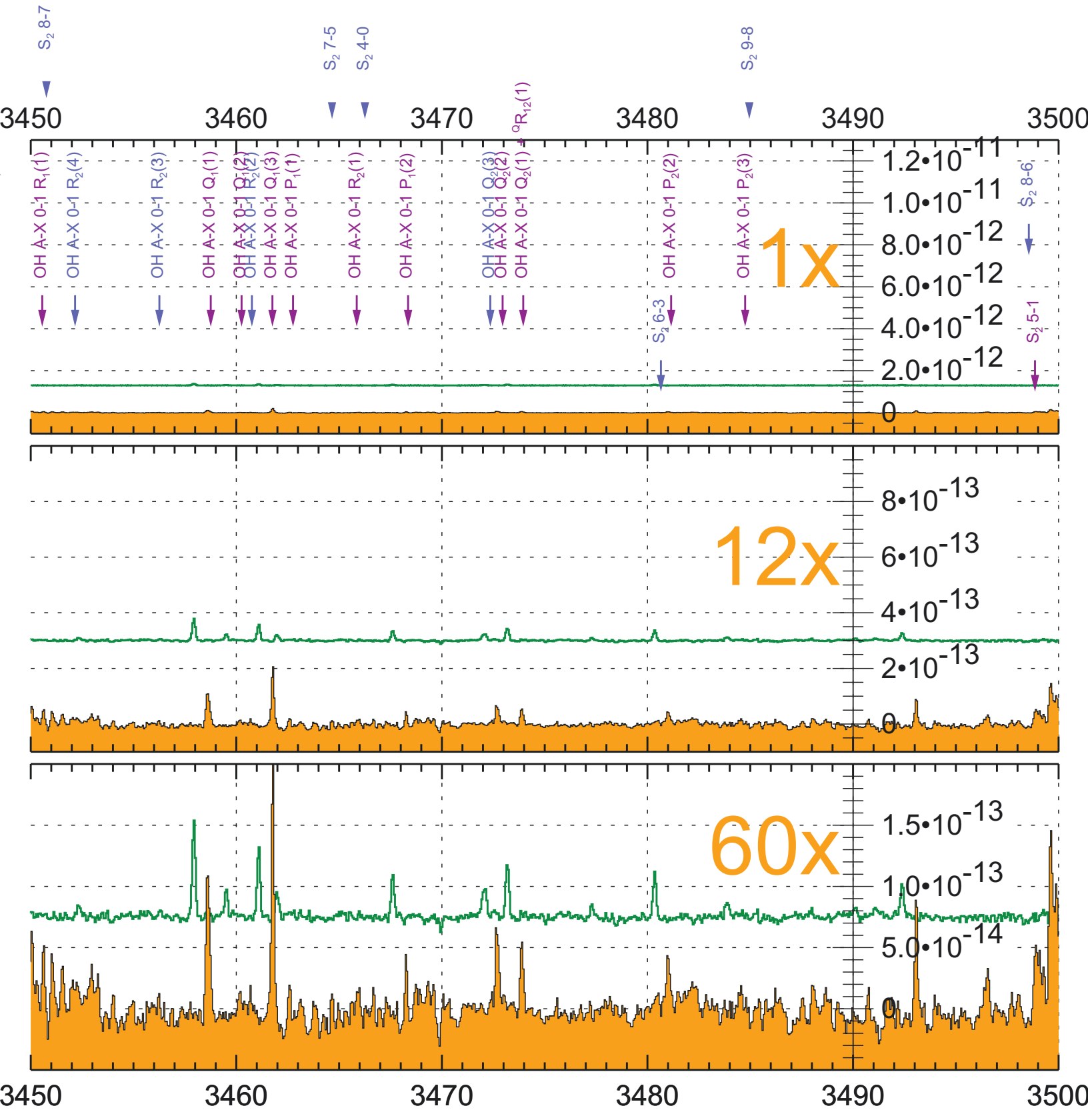

S2 3-4
S2 2-2
3200
3210
3220
3230
3240
3250
OH A-X 2-2 P1(1) + R2(2)
OH A-X 2-2 R2(1)
OH A-X 2-2 P1(2)
OH A-X 2-2 Q2(1)
OH A-X 2-2 PQ12(1)
S2 6-9
OH A-X 2-2 PQ12(2) + P2(2)
S2 5-7
S2 1-0
S2 4-5
S2 3-3
CO2+ 1/2 (200-000)
? B
3200
3210
3220
3230
3240
3250

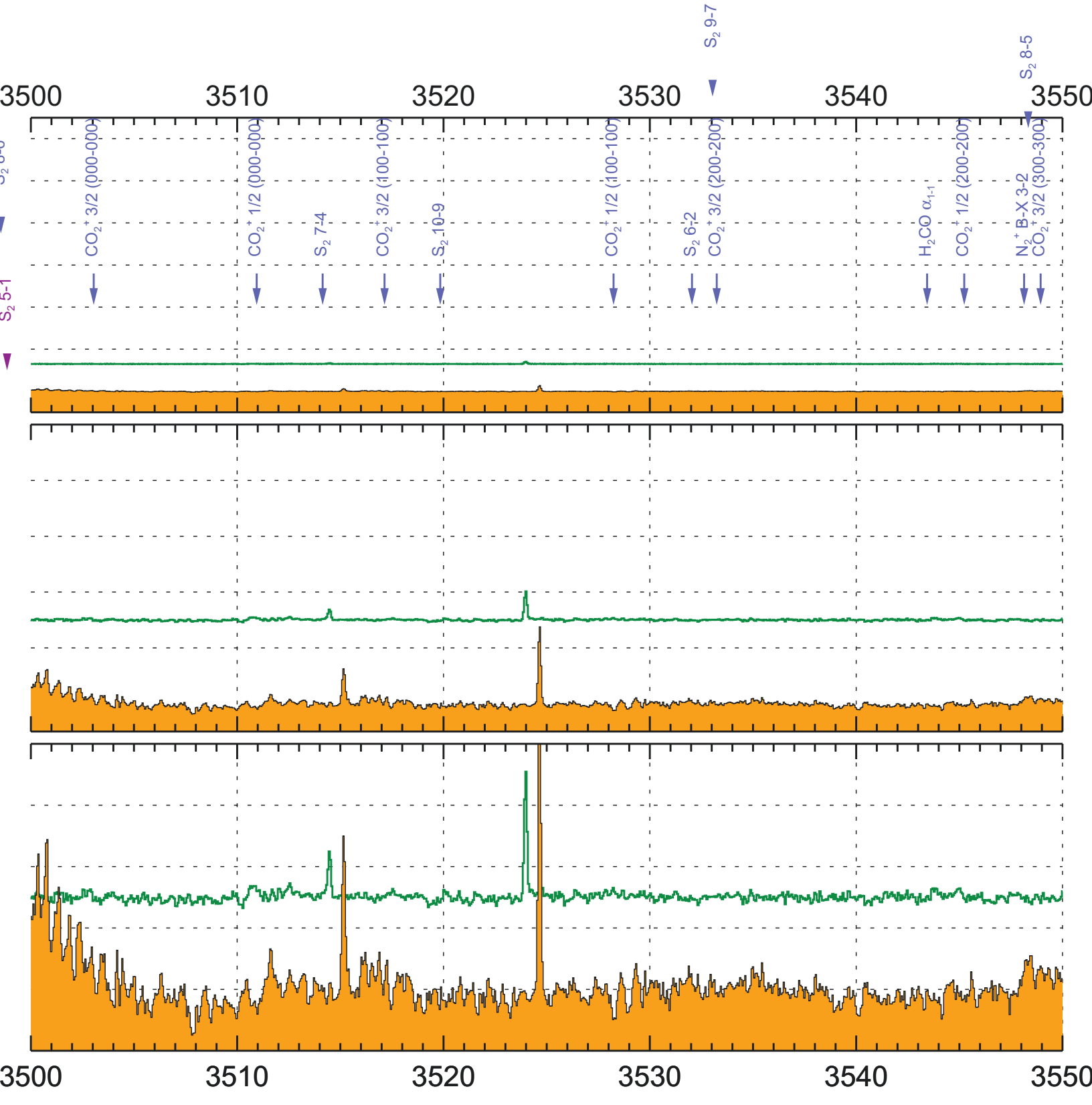

3250
3260
3270
3280
3290
3300
CO_2^+ 1/2 (200-000)
S_2 2-1
S_2 5-6
CO_2^+ 3/2 (300-100)
CO_2^+ 1/2 (300-100)
S_2 4-4
NCN A-X v_1'00-v_1''00
CO_2^+ 1/2 (400-200)
NCN A-X v_1'00-v_2''00
N_2^+ B-X 4-2
S_2 6-7
N_2^+ B-X 3-1
S_2 6-8
S_2 7-9
S_2 3-2
3250
3260
3270
3280
3290
3300

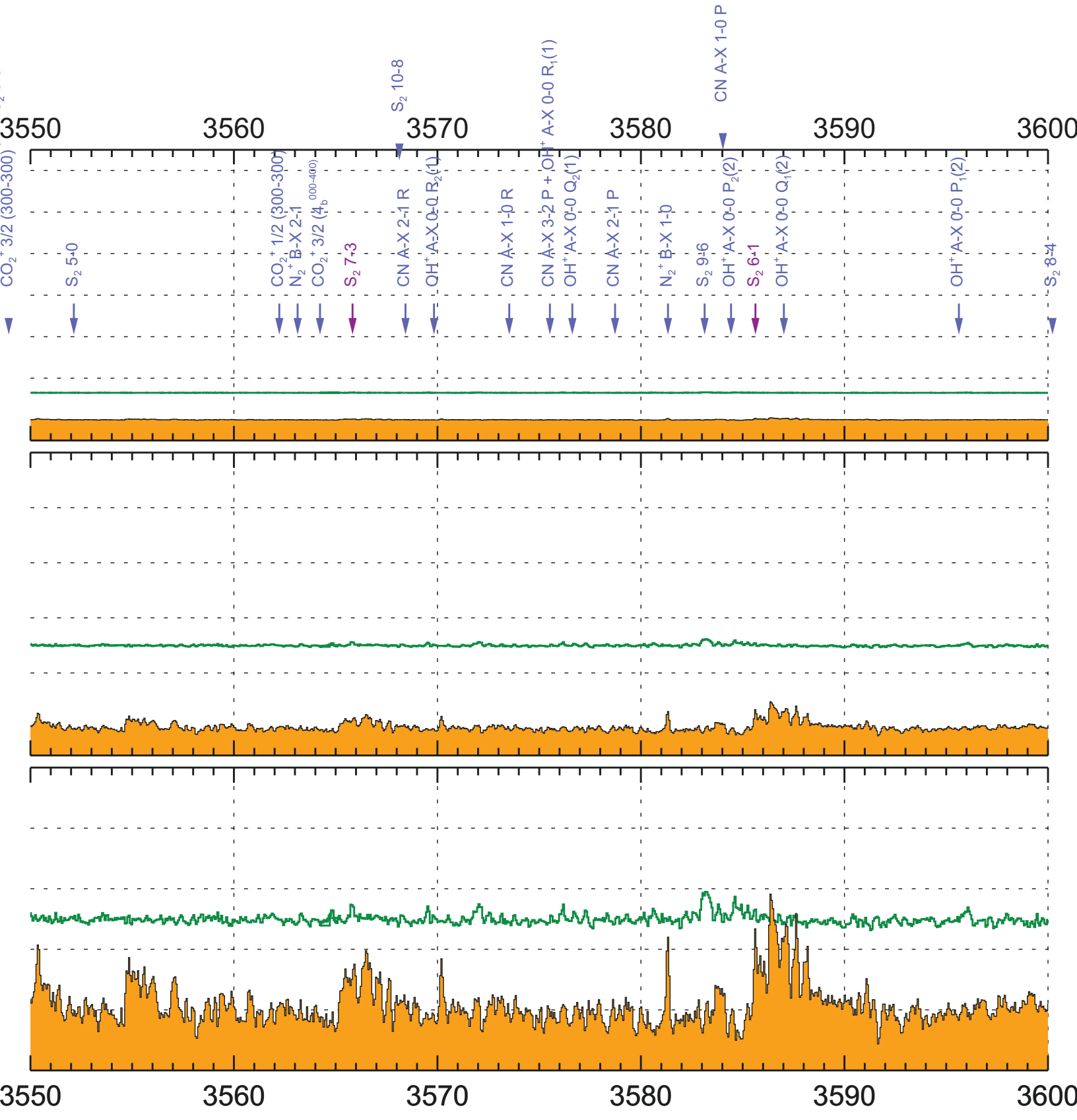

3300
3310
3320
3330
3340
3350
S2 2-0
N2+ B-X 2-0
S2 5-5
S2 4-3
S2 7-8
OH+ A-X 1-0 R33(1)
S2 3-1
OH+ A-X 1-0 R22(1)
OH+ A-X 1-0 Q33(2)
S2 6-6
NH A-X 0-0 R3(3)
NH A-X 0-0 R3(2)
NH A-X 0-0 R2(2)
NH A-X 0-0 R3(1)
NH A-X 0-0 R2(2) + RQ21(3)
NH A-X 0-0 R1(3)
NH A-X 0-0 R3(0)
NH A-X 0-0 R3(1) + RQ31(2)

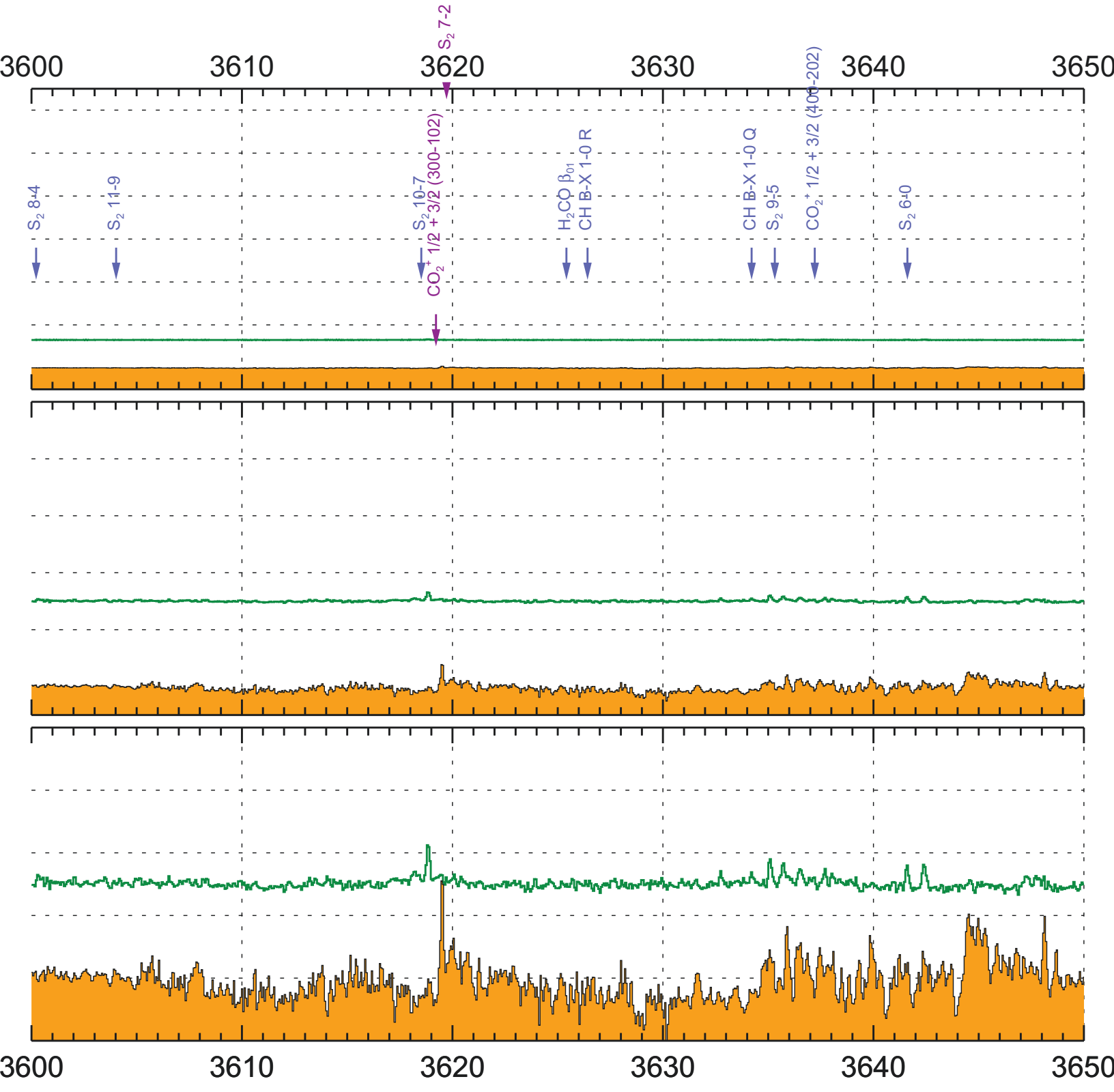

NH A-X 0-0 R1(3)
NH A-X 0-0 R2(1)
S2 5-4
NH A-X 0-0 R1(2)
NH A-X 0-0 QP32(1)
NH A-X 0-0 Q3(1) + RQ21(2)
NH A-X 0-0 Q3(2)
NH A-X 0-0 R1(1)
NH A-X 0-0 Q2(3)
NH A-X 0-0 Q2(1)
NH A-X 0-0 Q2(2)
S2 8-9
NH A-X 0-0 Q1(3)
NH A-X 0-0 Q1(2)
NH A-X 0-0 P2(1)
NH A-X 0-0 P2(2) + PQ23(1)
S2 4-2
NH A-X 0-0 P2(2)
NH A-X 0-0 P1(3) + PQ12(2)
CO2+ 3/2 (100-000)
S2 7-7
NH A-X 0-0 P2(3) + PQ12(3)
NH A-X 0-0 PQ23(3)
NH A-X 0-0 OP23(2)
CO2+ 1/2 (100-000)
NH A-X 0-0 OP12(3)
S2 3-0
NH A-X 0-0 OP23(3)
S2 6-5
CO2+ 3/2 (200-100)
CO2+ 1/2 (200-100)
CO2+ 3/2 (300-200)
S2 5-3
CO2+ 1/2 (300-200)
3350
3360
3370
3380
3390
3400

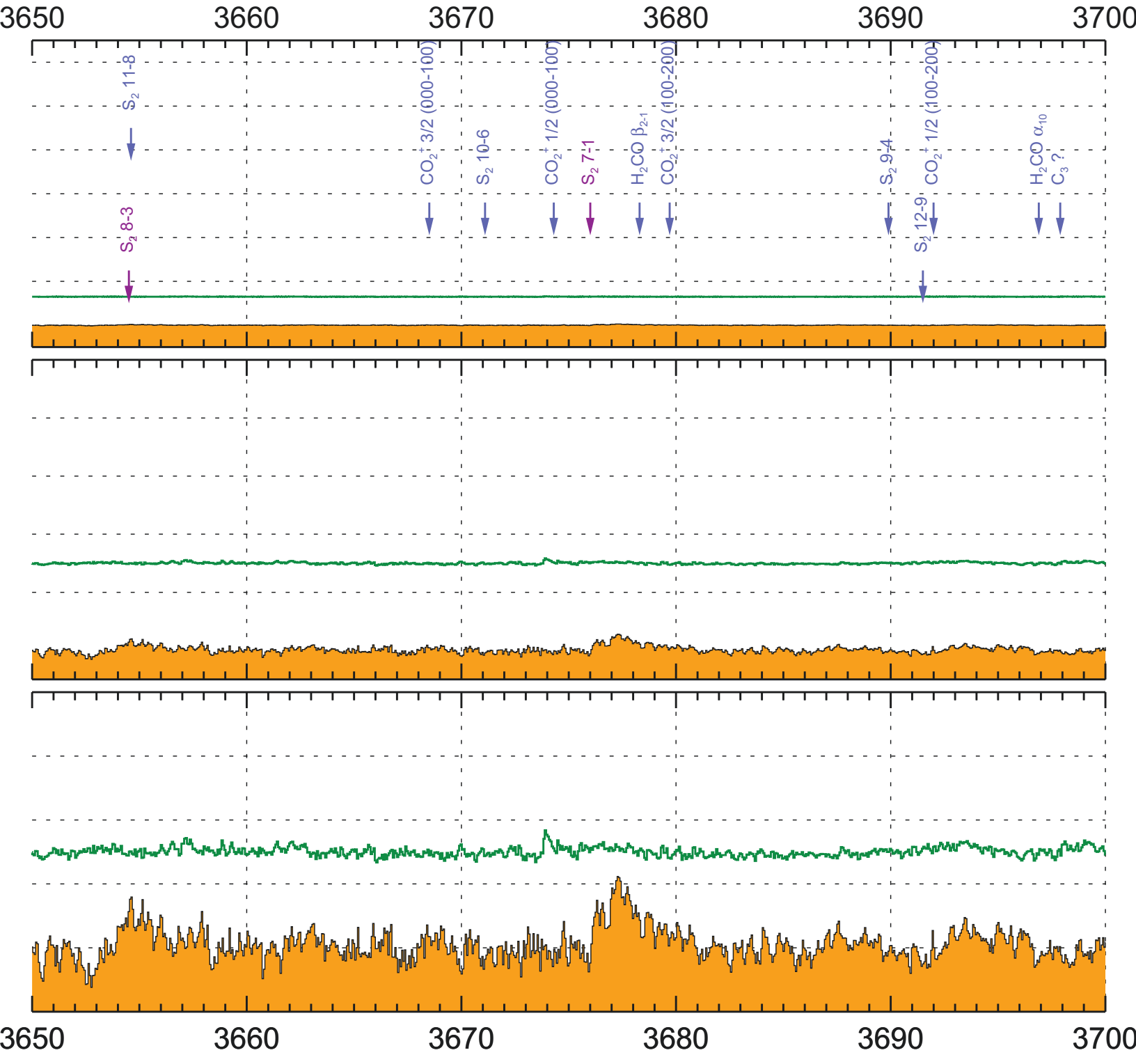

3400
3410
3420
3430
3440
3450
CO_2^+ 1/2 (300-200)
H_2CO α_{1-2}
CO_2^+ 3/2 (4_a000-300)
CO_2^+ 3/2 (4_b000-300)
S_2 4-1
S_2 7-6
CO_2^+ 1/2 (400-300)
S_2 6-4
S_2 9-9
OH A-X 0-1 $R_1(2)$
OH A-X 0-1 $R_1(1)$
S_2 8-7
S_2 5-3
S_2 8-8
S_2 5-2

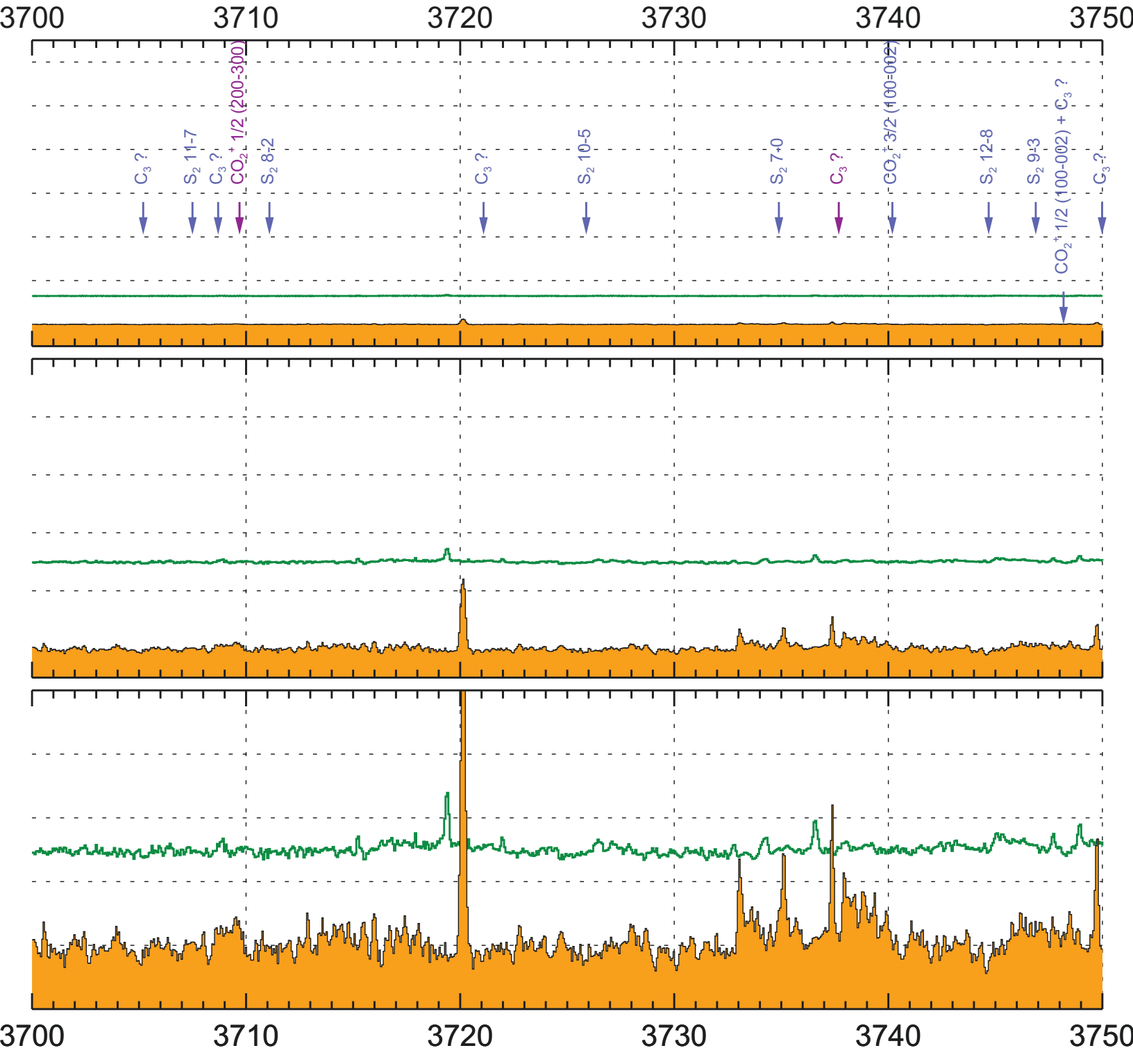

S2 8-7
S2 7-5
S2 4-0
S2 9-8
3450
3460
3470
3480
3490
3500
OH A-X 0-1 R1(1)
OH A-X 0-1 R2(4)
OH A-X 0-1 R2(3)
OH A-X 0-1 Q1(1)
OH A-X 0-1 Q1(2)
OH A-X 0-1 R2(2)
OH A-X 0-1 Q1(3)
OH A-X 0-1 P1(1)
OH A-X 0-1 R2(1)
OH A-X 0-1 P1(2)
OH A-X 0-1 Q2(3)
OH A-X 0-1 Q2(2)
OH A-X 0-1 Q2(1) + QR12(1)
OH A-X 0-1 P2(2)
OH A-X 0-1 P2(3)
S2 8-6
S2 6-3
S2 5-1
1x
12x
60x
1.2•10-11
1.0•10-11
8.0•10-12
6.0•10-12
4.0•10-12
2.0•10-12
0
8•10-13
6•10-13
4•10-13
2•10-13
0
1.5•10-13
1.0•10-13
5.0•10-14
0

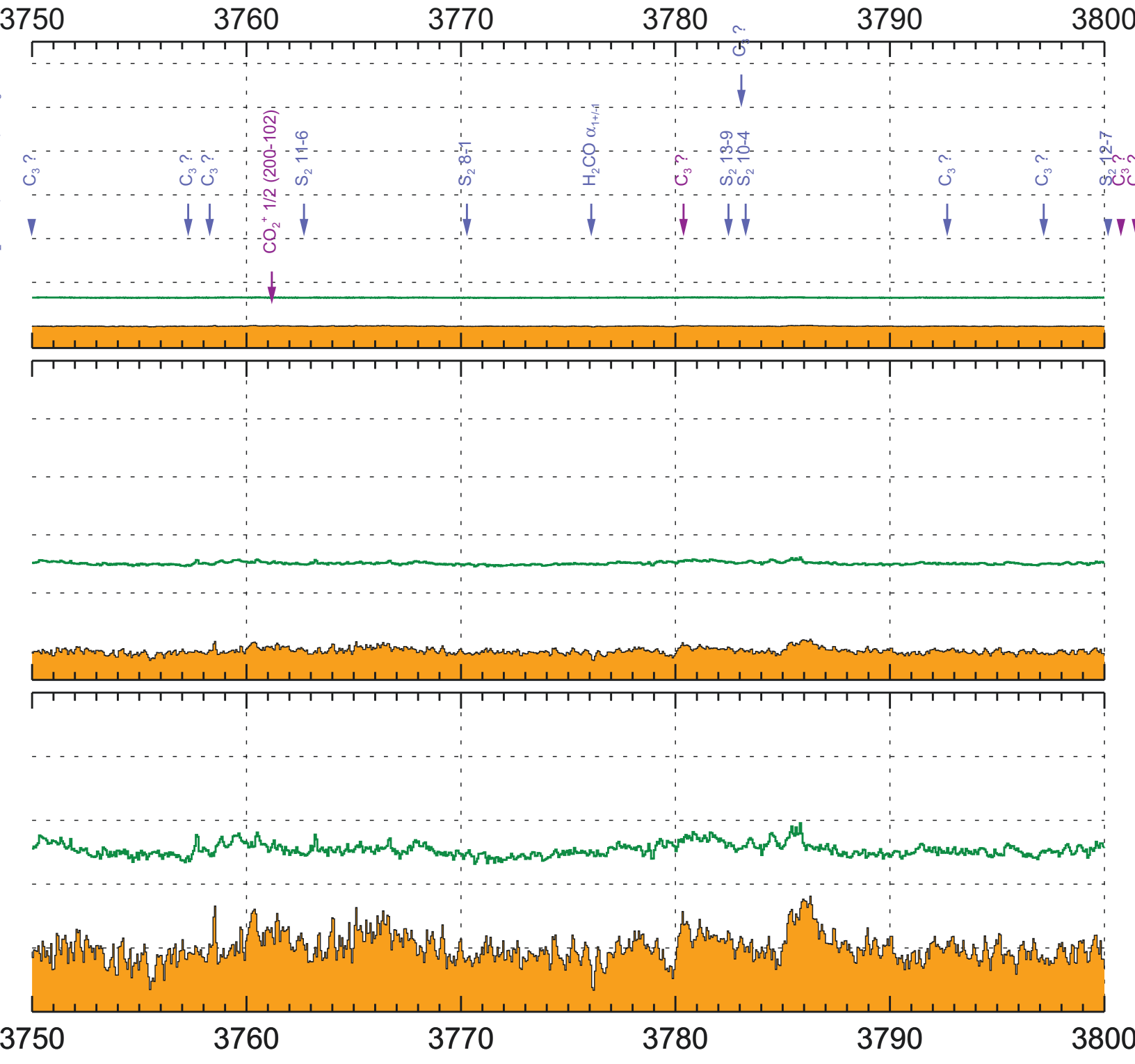

3500
3510
3520
3530
3540
3550
S_2 9-7
S_2 8-5
S_2 5-1
CO_2^+ 3/2 (000-000)
CO_2^+ 1/2 (000-000)
S_2 7-4
CO_2^+ 3/2 (100-100)
S_2 10-9
CO_2^+ 1/2 (100-100)
S_2 6-2
CO_2^+ 3/2 (200-200)
H_2CO α_{1-1}
CO_2^+ 1/2 (200-200)
N_2^+ B-X 3-2
CO_2^+ 3/2 (300-300)

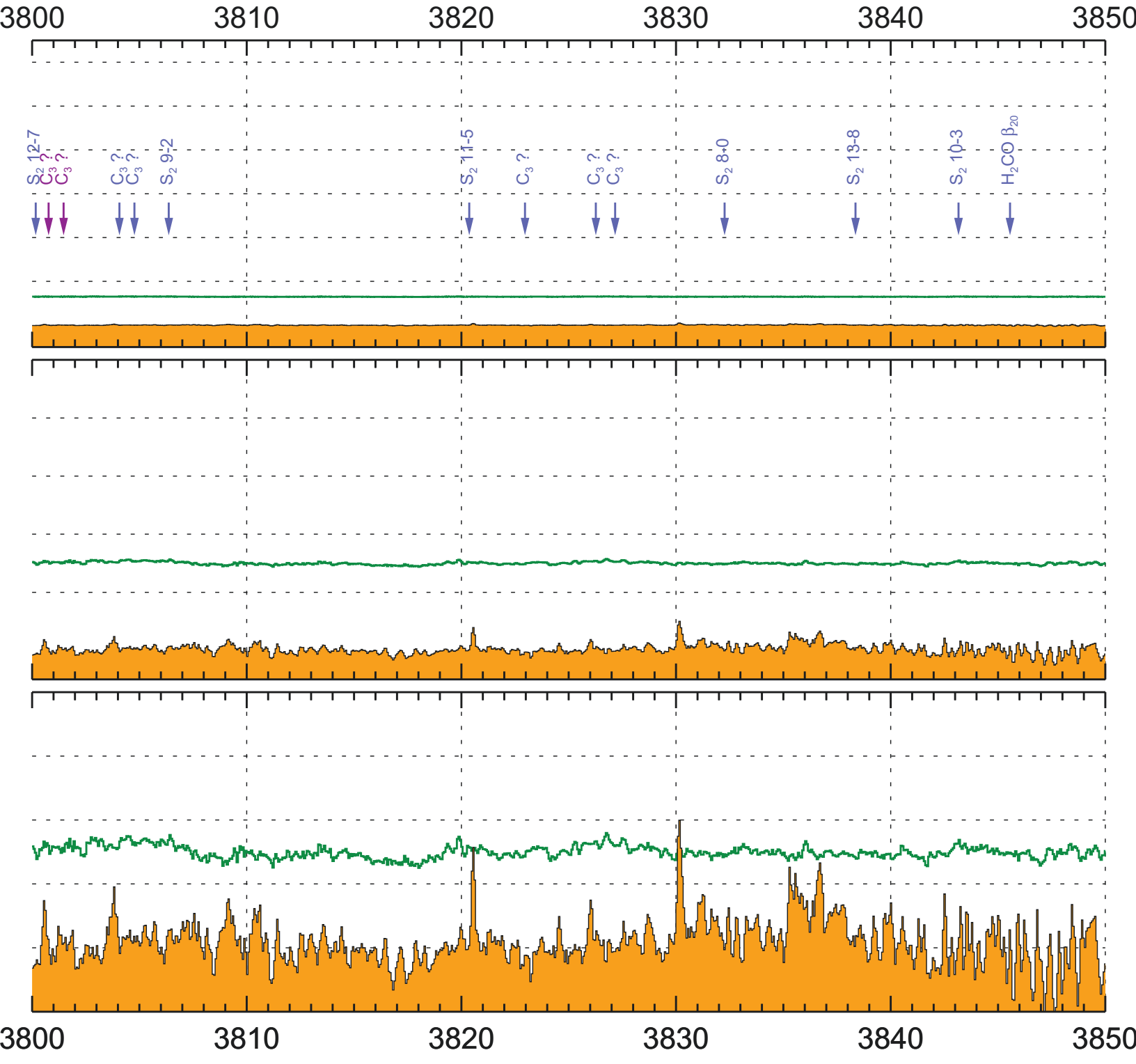

3550
3560
3570
3580
3590
3600
CO_2^+ 3/2 (300-300)
S_2 5-0
CO_2^+ 1/2 (300-300)
N_2^+ B-X 2-1
CO_2^+ 3/2 ($4_b^{000-400}$)
S_2 7-3
CN A-X 2-1 R
OH^+ A-X 0-0 $R_2(1)$
S_2 10-8
CN A-X 1-0 R
CN A-X 3-2 P + OH^+ A-X 0-0 $R_1(1)$
OH^+ A-X 0-0 $Q_2(1)$
CN A-X 2-1 P
N_2^+ B-X 1-0
S_2 9-6
OH^+ A-X 0-0 $P_2(2)$
CN A-X 1-0 P
S_2 6-1
OH^+ A-X 0-0 $Q_1(2)$
OH^+ A-X 0-0 $P_1(2)$
S_2 8-4

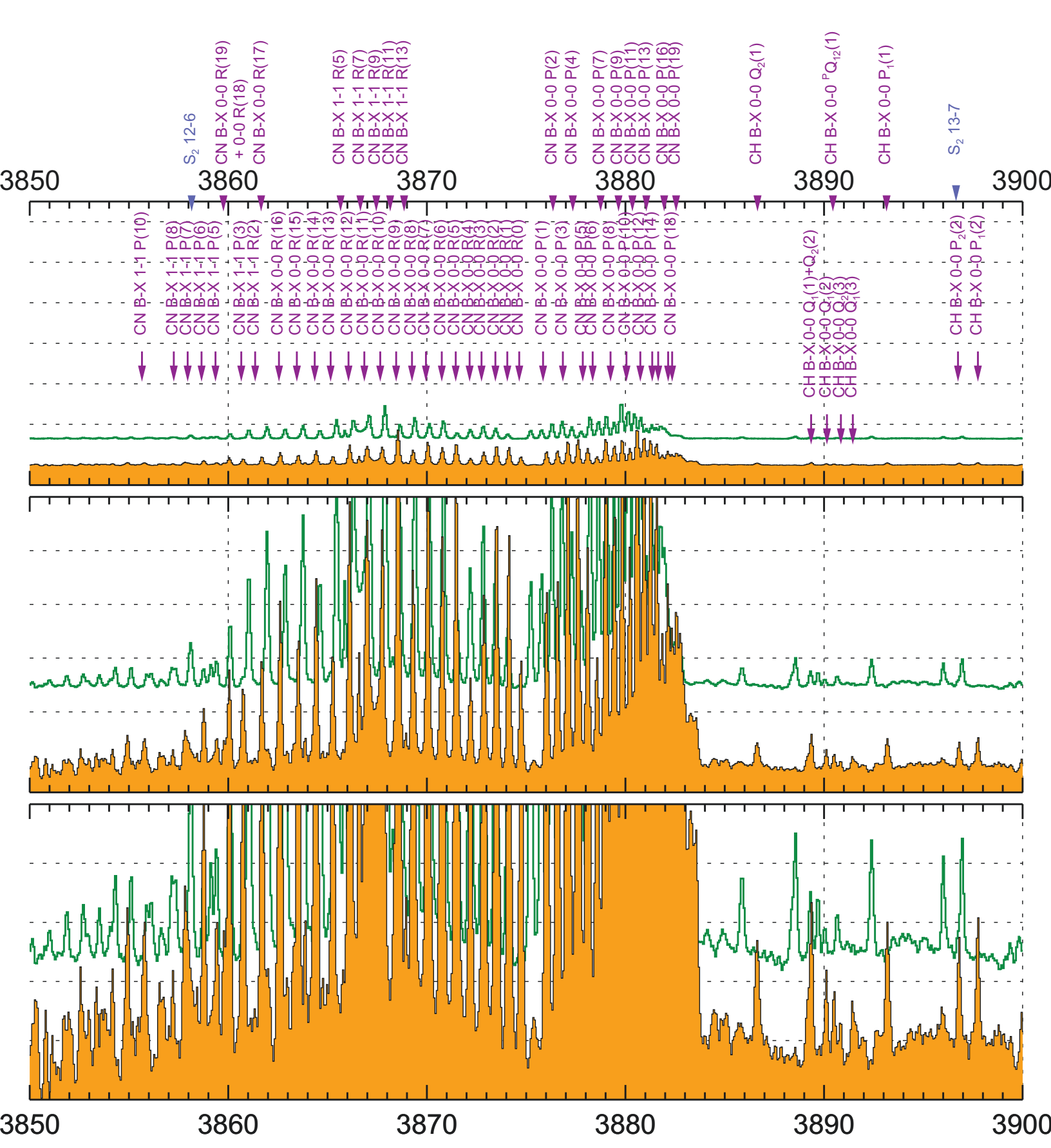

3600
3610
3620
3630
3640
3650
S2 7-2
S2 8-4
S2 11-9
S2 10-7
CO2+ 1/2 + 3/2 (300-102)
H2CO β01
CH B-X 1-0 R
CH B-X 1-0 Q
S2 9-5
CO2+ 1/2 + 3/2 (400-202)
S2 6-0

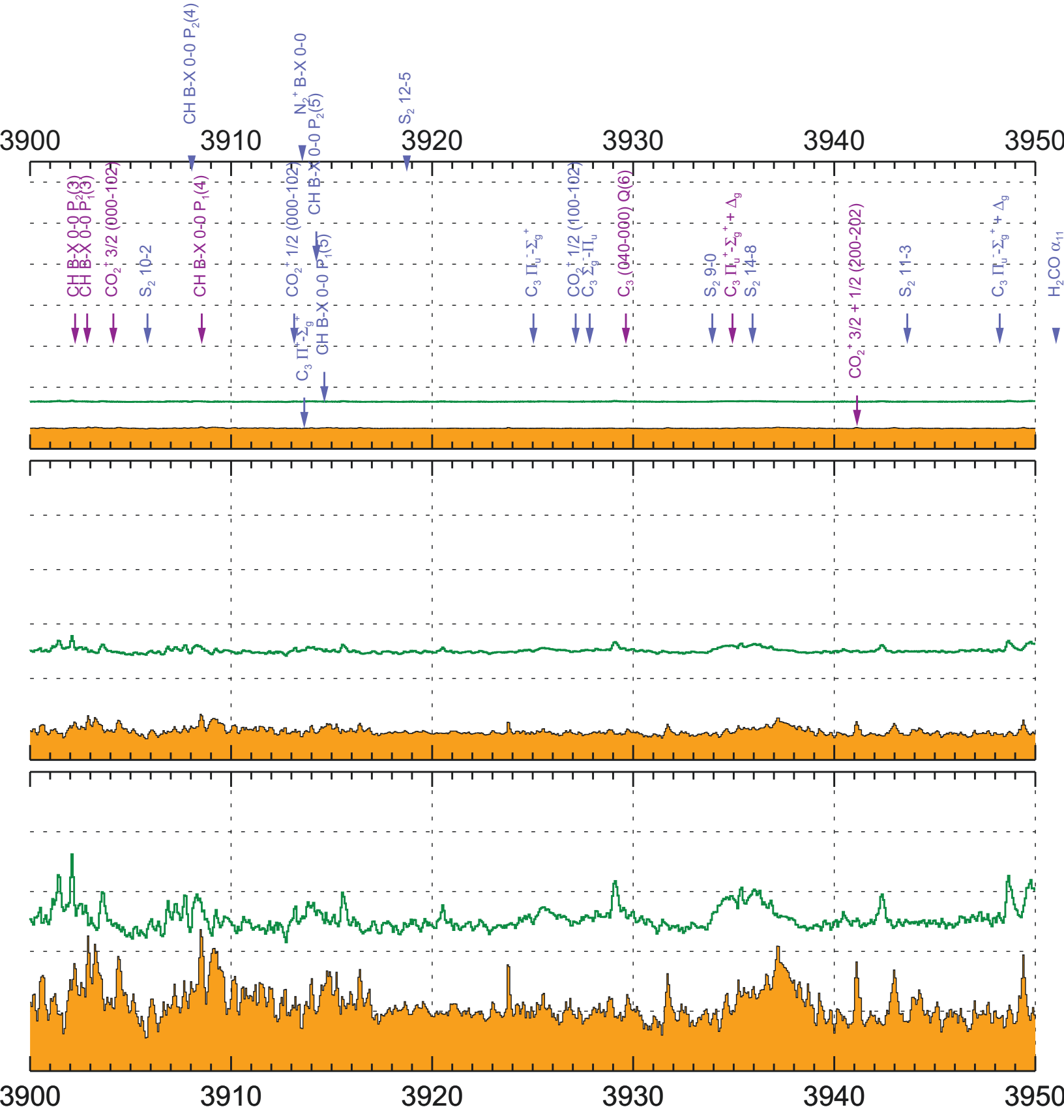

3650
3660
3670
3680
3690
3700
S2 11-8
S2 8-3
CO2+ 3/2 (000-100)
S2 10-6
CO2+ 1/2 (000-100)
S2 7-1
H2CO β2-1
CO2+ 3/2 (100-200)
S2 9-4
S2 12-9
CO2+ 1/2 (100-200)
H2CO α10
C3 ?

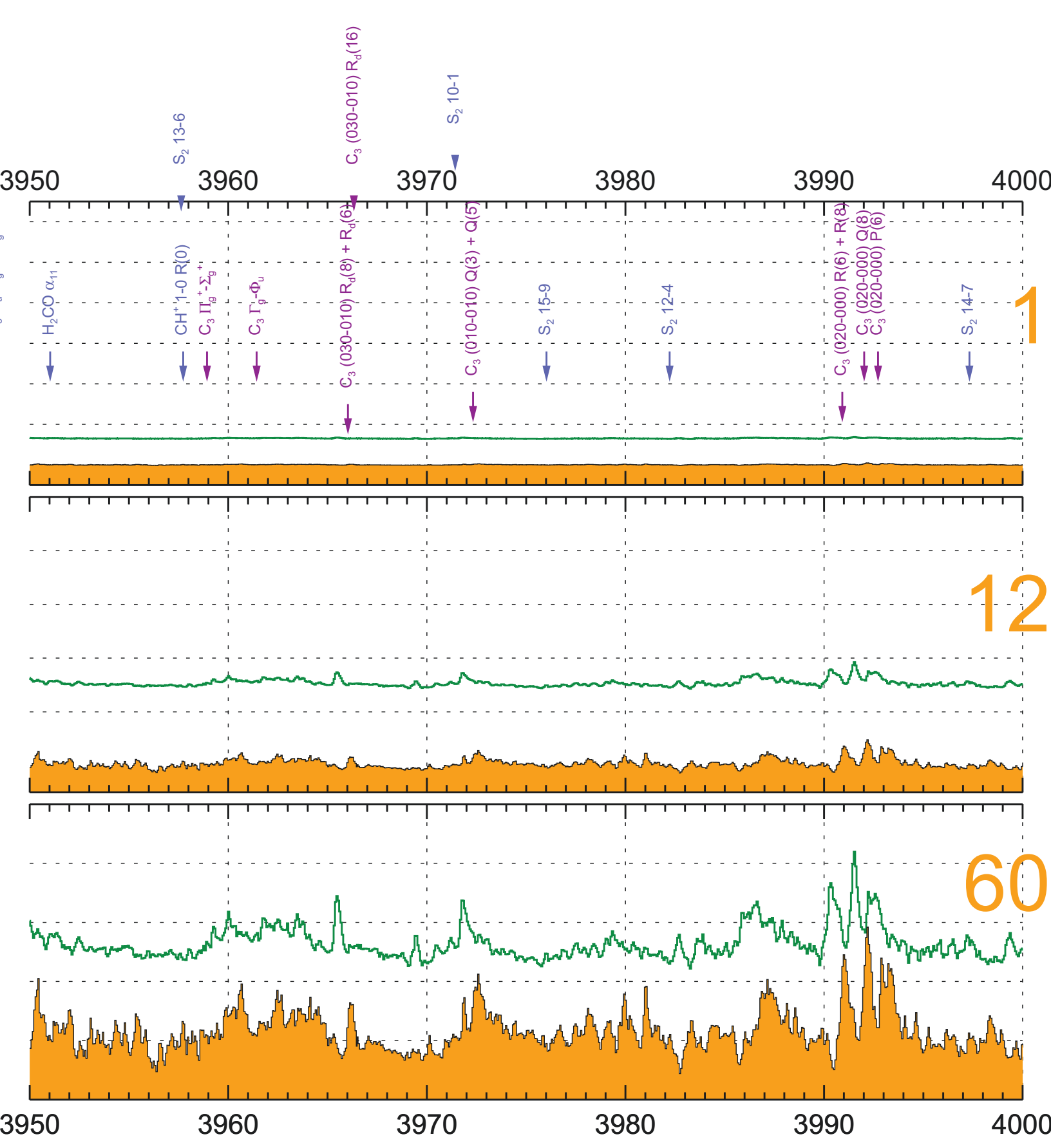

3700
3710
3720
3730
3740
3750
C3 ?
S2 11-7
C3 ?
CO2+ 1/2 (200-300)
S2 8-2
C3 ?
S2 10-5
S2 7-0
C3 ?
CO2+ 3/2 (100-002)
S2 12-8
S2 9-3
CO2+ 1/2 (100-002) + C3 ?
C3 ?
3700
3710
3720
3730
3740
3750

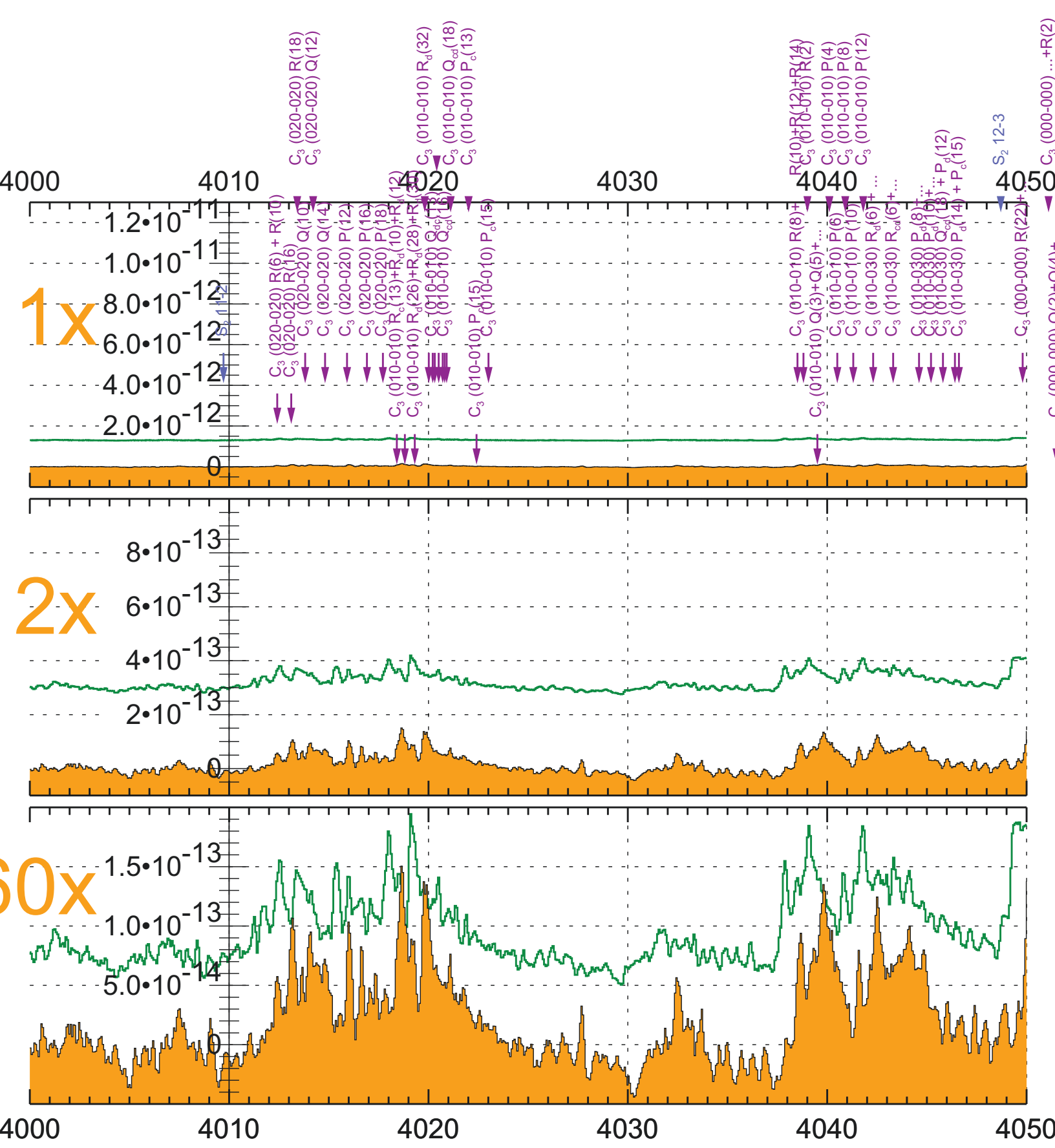

3750
3760
3770
3780
3790
3800
C3 ?
C3 ?
C3 ?
CO2+ 1/2 (200-102)
S2 11-6
S2 8-1
H2CO α1+/-1
C3 ?
G3 ?
S2 13-9
S2 10-4
C3 ?
C3 ?
S2 12-7
C3 ?
3750
3760
3770
3780
3790
3800

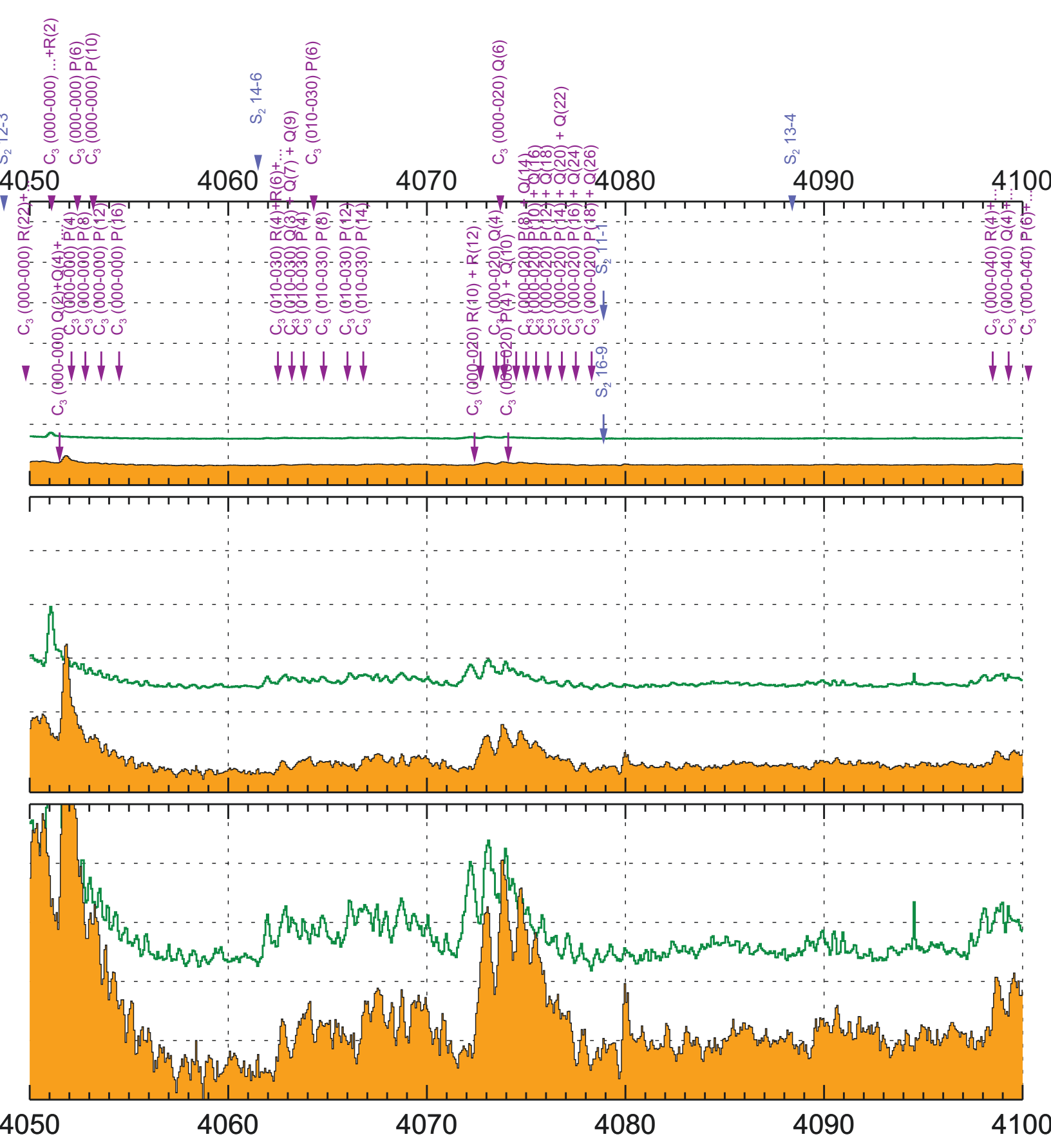

3800
3810
3820
3830
3840
3850
S2 12-7
C3 ?
C3 ?
C3 ?
C3 ?
S2 9-2
S2 11-5
C3 ?
C3 ?
C3 ?
S2 8+0
S2 13-8
S2 10-3
H2CO β20

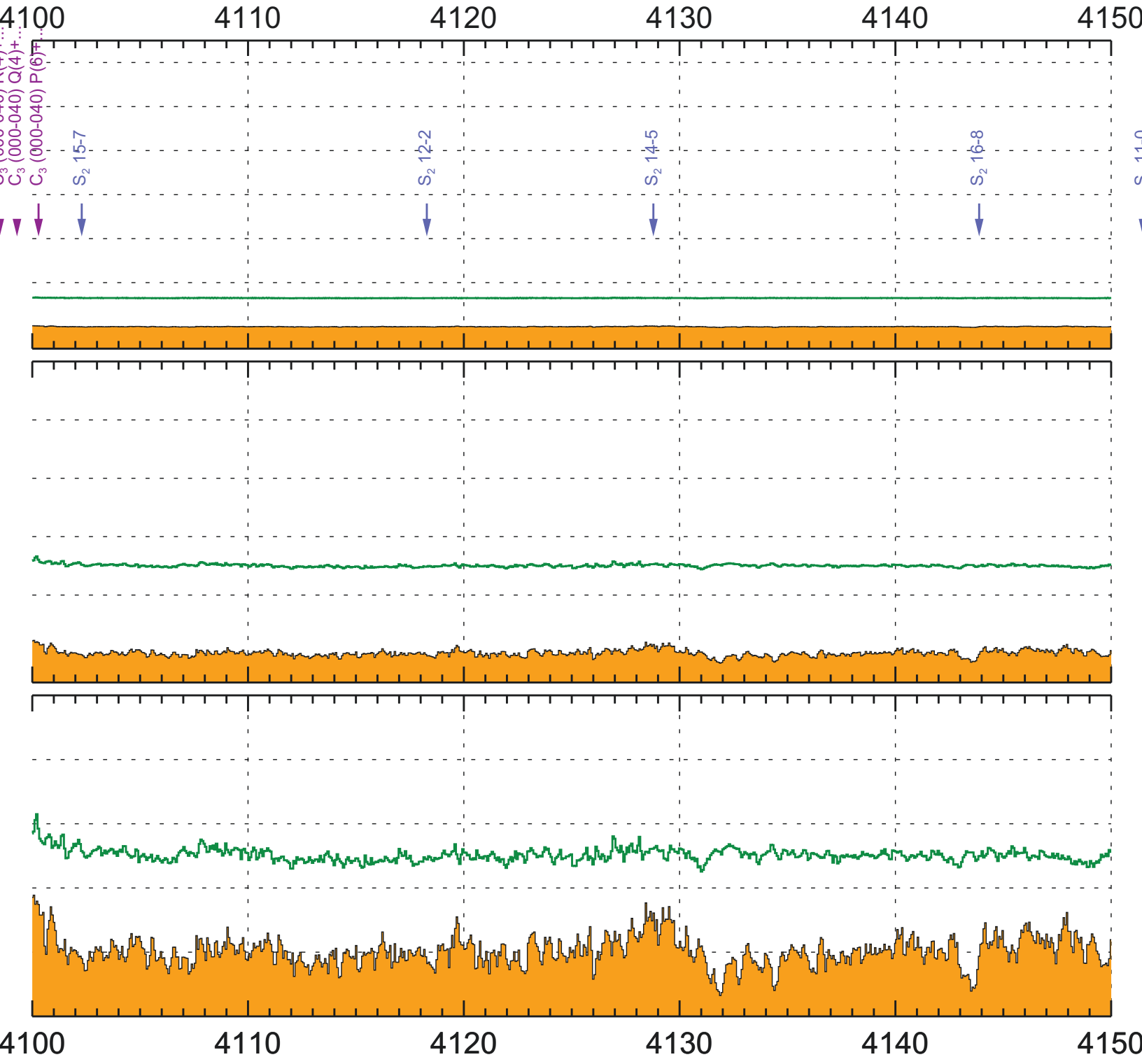

3850
3860
3870
3880
3890
3900
S_2 12-6
CN B-X 0-0 R(19)
+ 0-0 R(18)
CN B-X 0-0 R(17)
CN B-X 1-1 R(5)
CN B-X 1-1 R(7)
CN B-X 1-1 R(9)
CN B-X 1-1 R(11)
CN B-X 1-1 R(13)
CN B-X 0-0 P(2)
CN B-X 0-0 P(4)
CN B-X 0-0 P(7)
CN B-X 0-0 P(9)
CN B-X 0-0 P(11)
CN B-X 0-0 P(13)
CN B-X 0-0 P(16)
CN B-X 0-0 P(18)
CH B-X 0-0 Q_2(1)
CH B-X 0-0 $^PQ_{12}$(1)
CH B-X 0-0 P_1(1)
S_2 13-7
CN B-X 1-1 P(10)
CN B-X 1-1 P(8)
CN B-X 1-1 P(7)
CN B-X 1-1 P(6)
CN B-X 1-1 P(5)
CN B-X 1-1 P(3)
CN B-X 1-1 R(2)
CN B-X 0-0 R(16)
CN B-X 0-0 R(15)
CN B-X 0-0 R(14)
CN B-X 0-0 R(13)
CN B-X 0-0 R(12)
CN B-X 0-0 R(11)
CN B-X 0-0 R(10)
CN B-X 0-0 R(9)
CN B-X 0-0 R(8)
CN B-X 0-0 R(7)
CN B-X 0-0 R(6)
CN B-X 0-0 R(5)
CN B-X 0-0 R(4)
CN B-X 0-0 R(3)
CN B-X 0-0 R(2)
CN B-X 0-0 R(1)
CN B-X 0-0 R(0)
CN B-X 0-0 P(1)
CN B-X 0-0 P(3)
CN B-X 0-0 P(5)
CN B-X 0-0 P(8)
CN B-X 0-0 P(10)
CN B-X 0-0 P(12)
CN B-X 0-0 P(14)
CH B-X 0-0 Q_1(2)+Q_2(2)
CH B-X 0-0 Q_1(2)
CH B-X 0-0 Q_2(3)
CH B-X 0-0 Q_1(3)
CH B-X 0-0 P_2(2)
CH B-X 0-0 P_1(2)

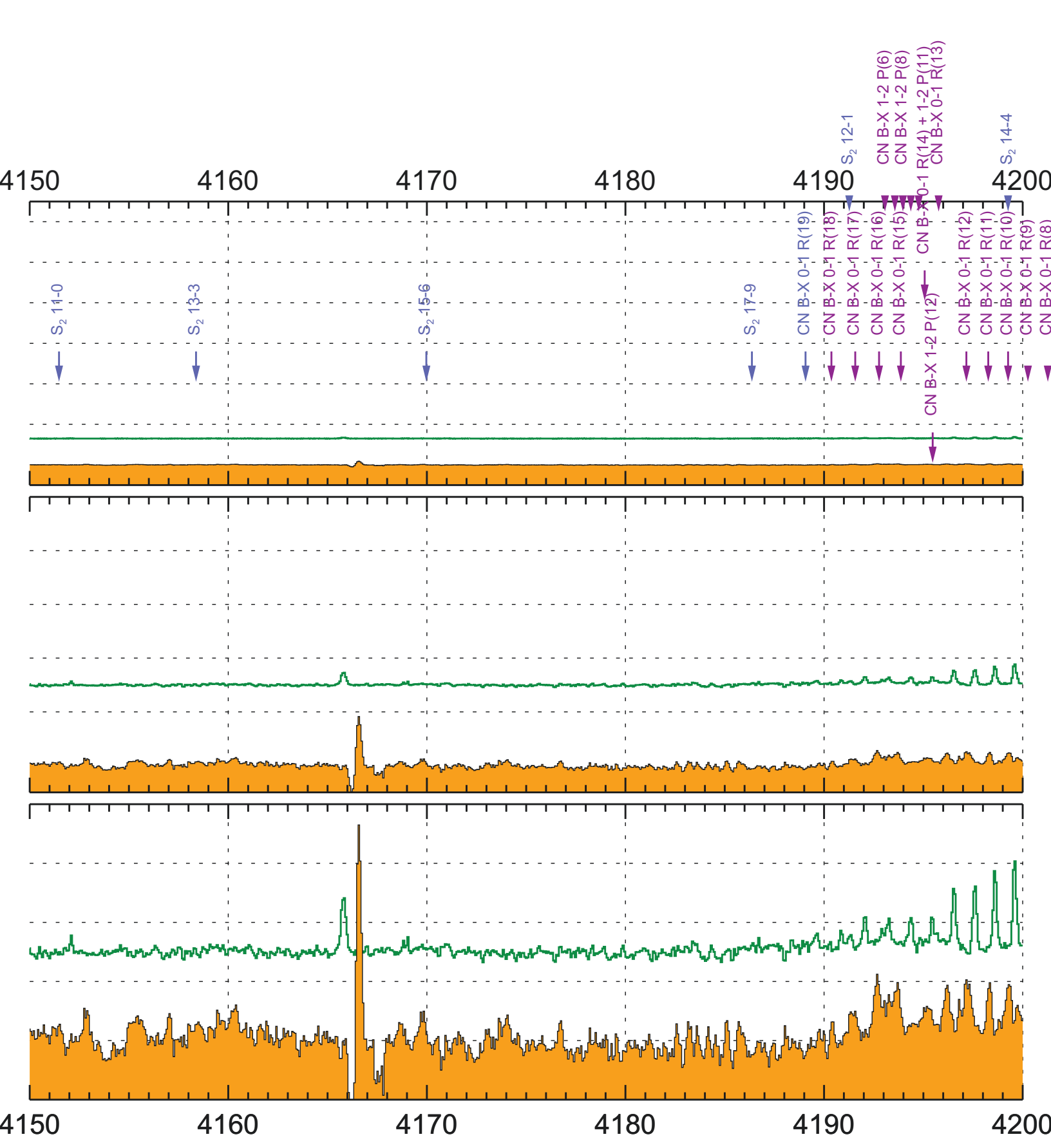

CH B-X 0-0 P2(4)
N2+ B-X 0-0 P2(5)
S2 12-5
3900
3910
3920
3930
3940
3950
CH B-X 0-0 P2(3)
CH B-X 0-0 P1(3)
CO2+ 3/2 (000-102)
S2 10-2
CH B-X 0-0 P1(4)
CO2+ 1/2 (000-102)
CH B-X 0-0 P1(5)
C3 Πu-Σg+
CH B-X 0-0 P1(5)
C3 Πu-Σg+
CO2+ 1/2 (100-102)
C3 Σg+-Πu
C3 (040-000) Q(6)
S2 9-0
C3 Πu-Σg+ + Δg
S2 14-8
CO2+ 3/2 + 1/2 (200-202)
S2 11-3
C3 Πu-Σg+ + Δg
H2CO α11

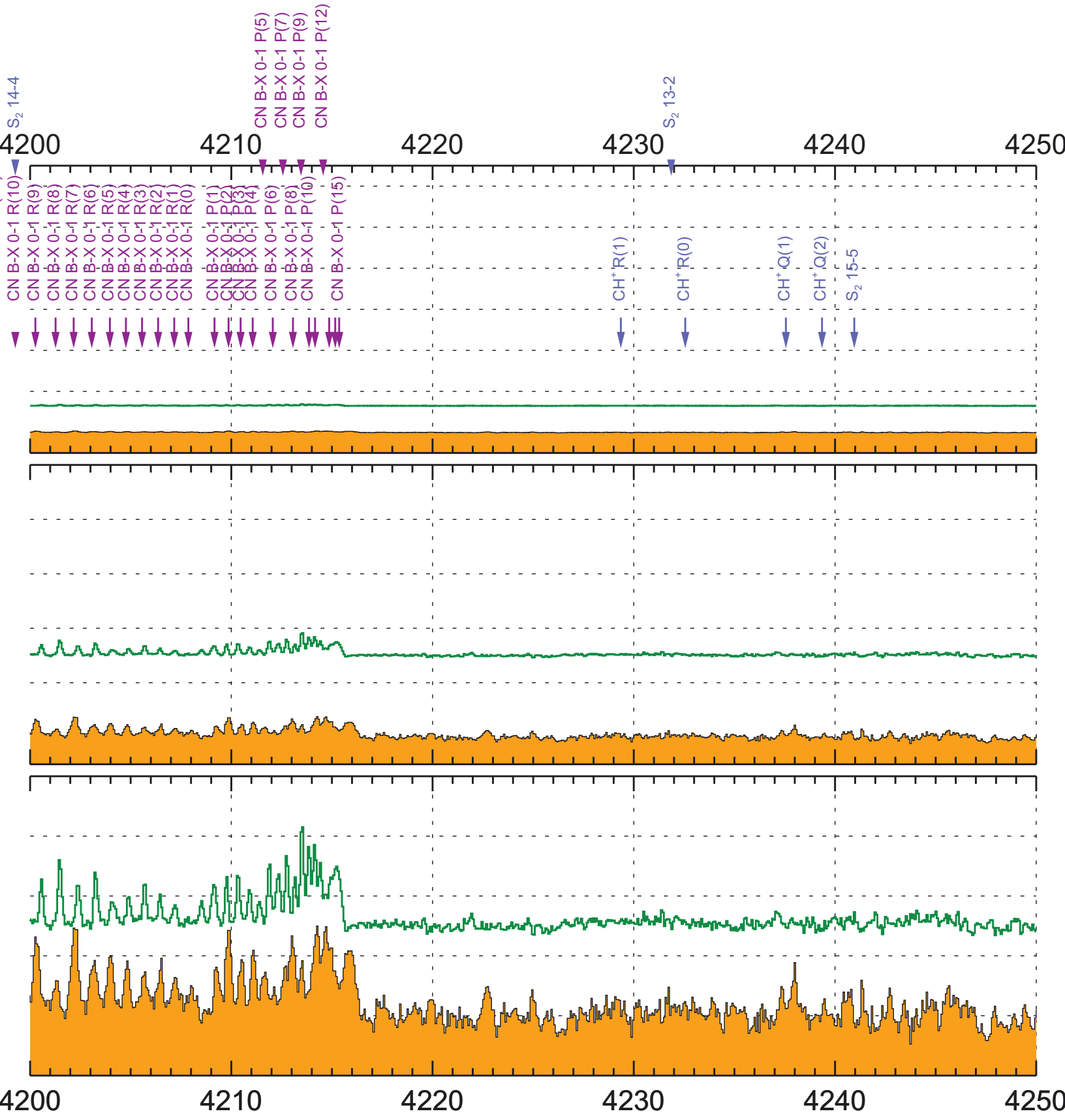

3950
3960
3970
3980
3990
4000
1
12
60
H_2CO α_{11}
CH^+ 1-0 R(0)
C_3 Π_g-$^+\Sigma_g^+$
C_3 Γ_g-Φ_u
C_3 (030-010) R_d(8) + R_d(6)
C_3 (030-010) R_d(16)
C_3 (010-010) Q(3) + Q(5)
S_2 15-9
S_2 12-4
C_3 (020-000) R(6) + R(8)
C_3 (020-000) Q(8)
C_3 (020-000) P(6)
S_2 14-7
S_2 13-6
S_2 10-1

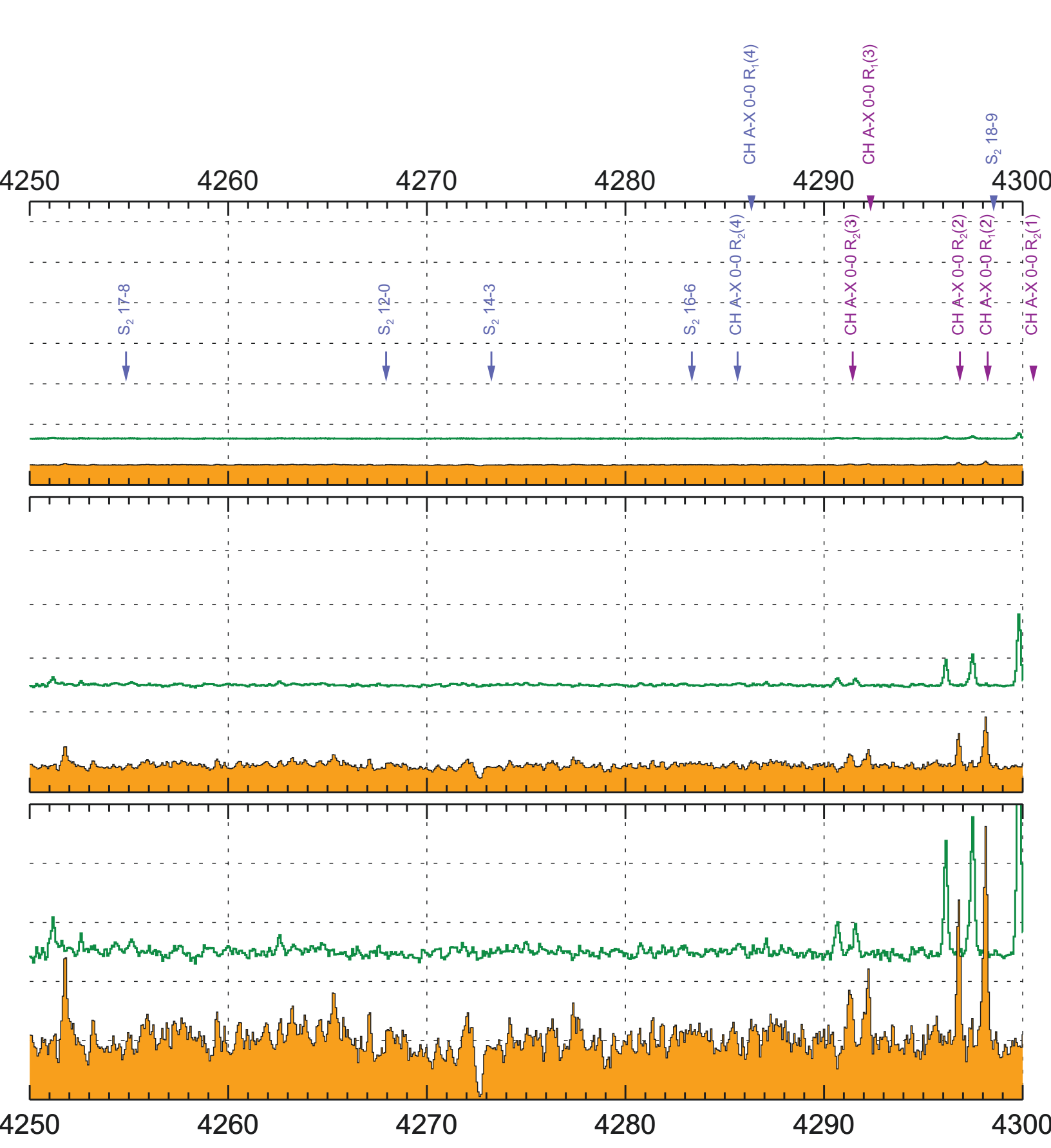

1x
2x
60x
4000
4010
4020
4030
4040
4050

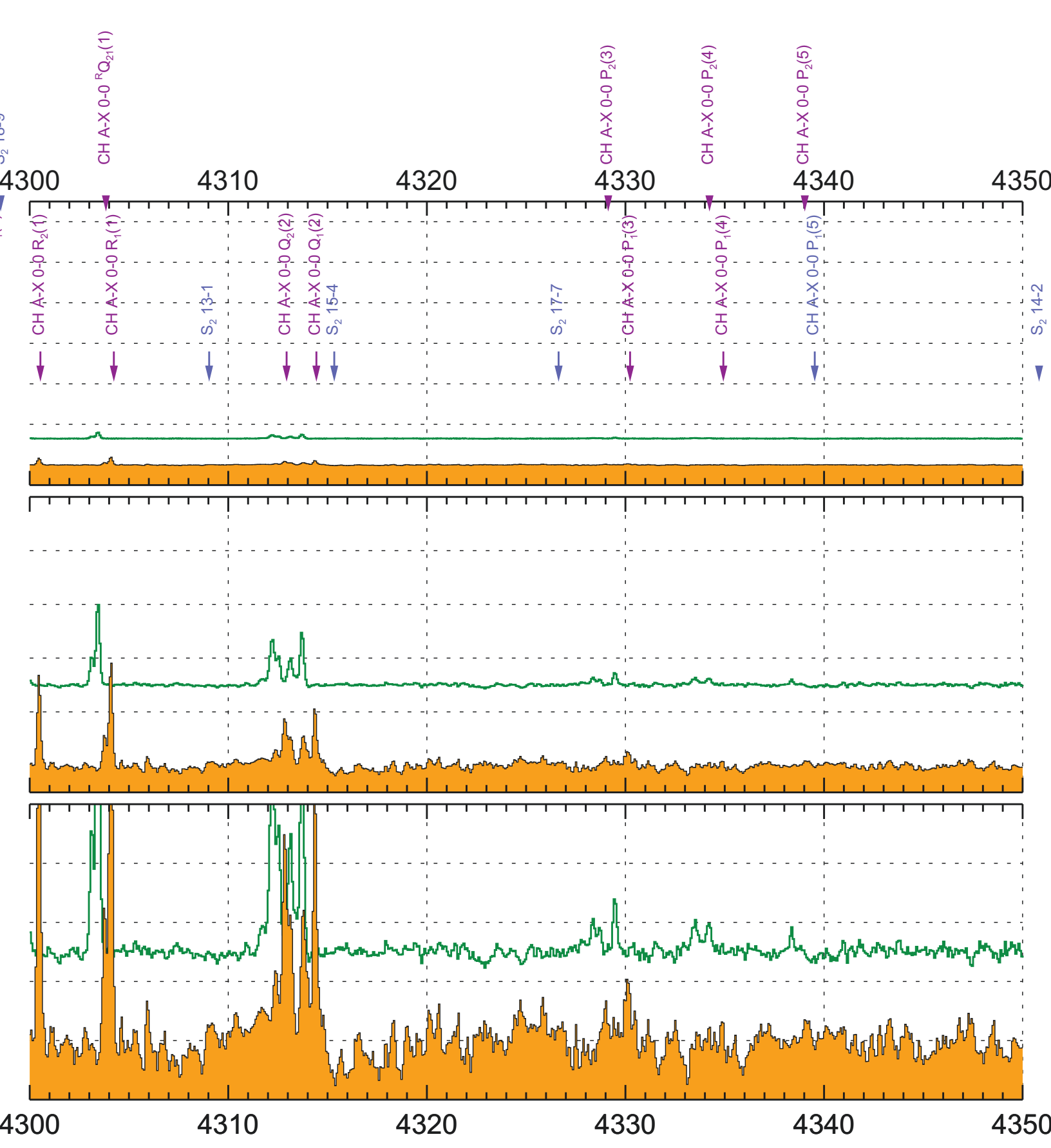

4050
4060
4070
4080
4090
4100

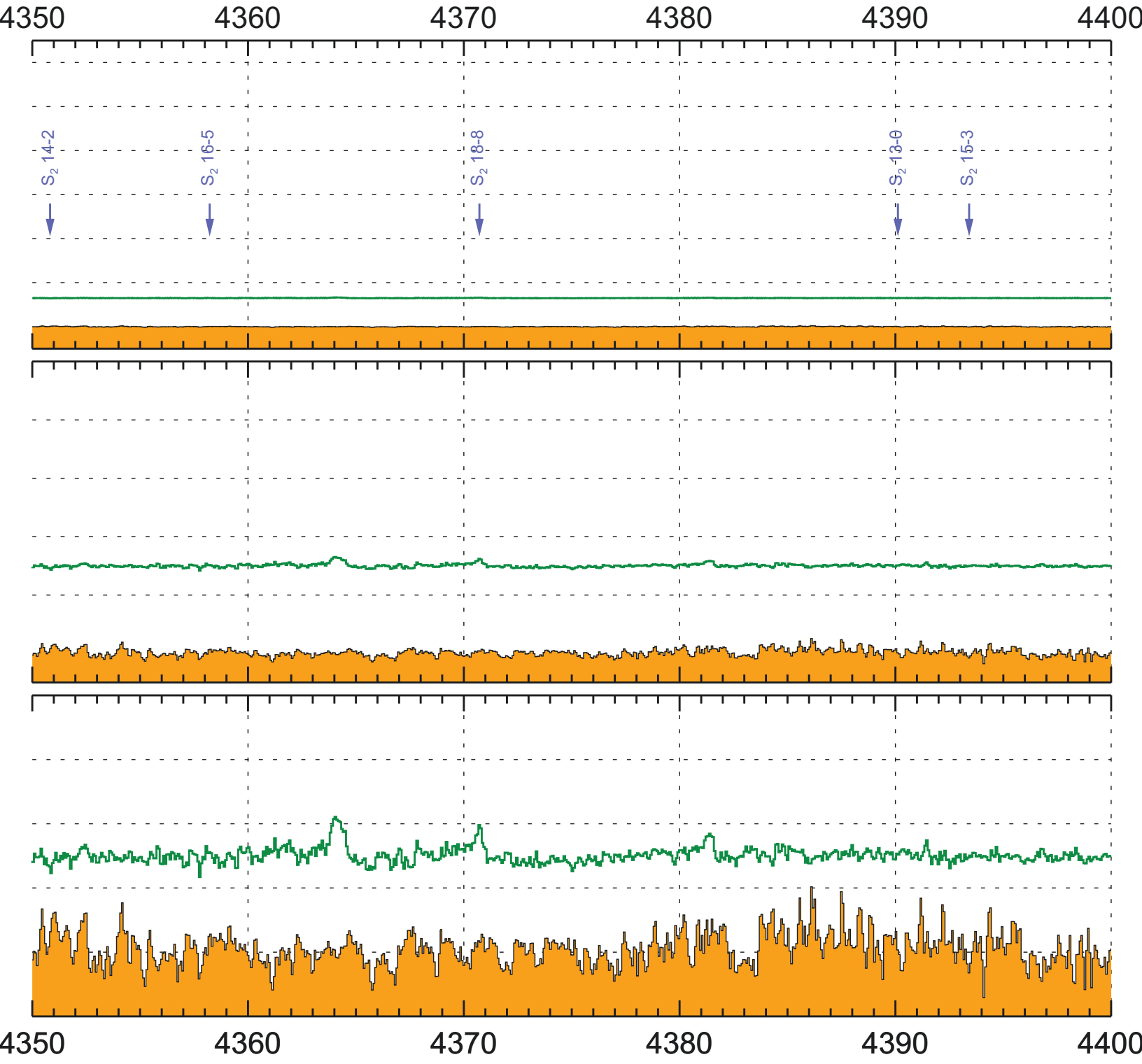

4100
4110
4120
4130
4140
4150
C3 (000-040) Q(4)+...
C3 (000-040) P(6)+...
S2 15-7
S2 12-2
S2 14-5
S2 16-8
4100
4110
4120
4130
4140
4150

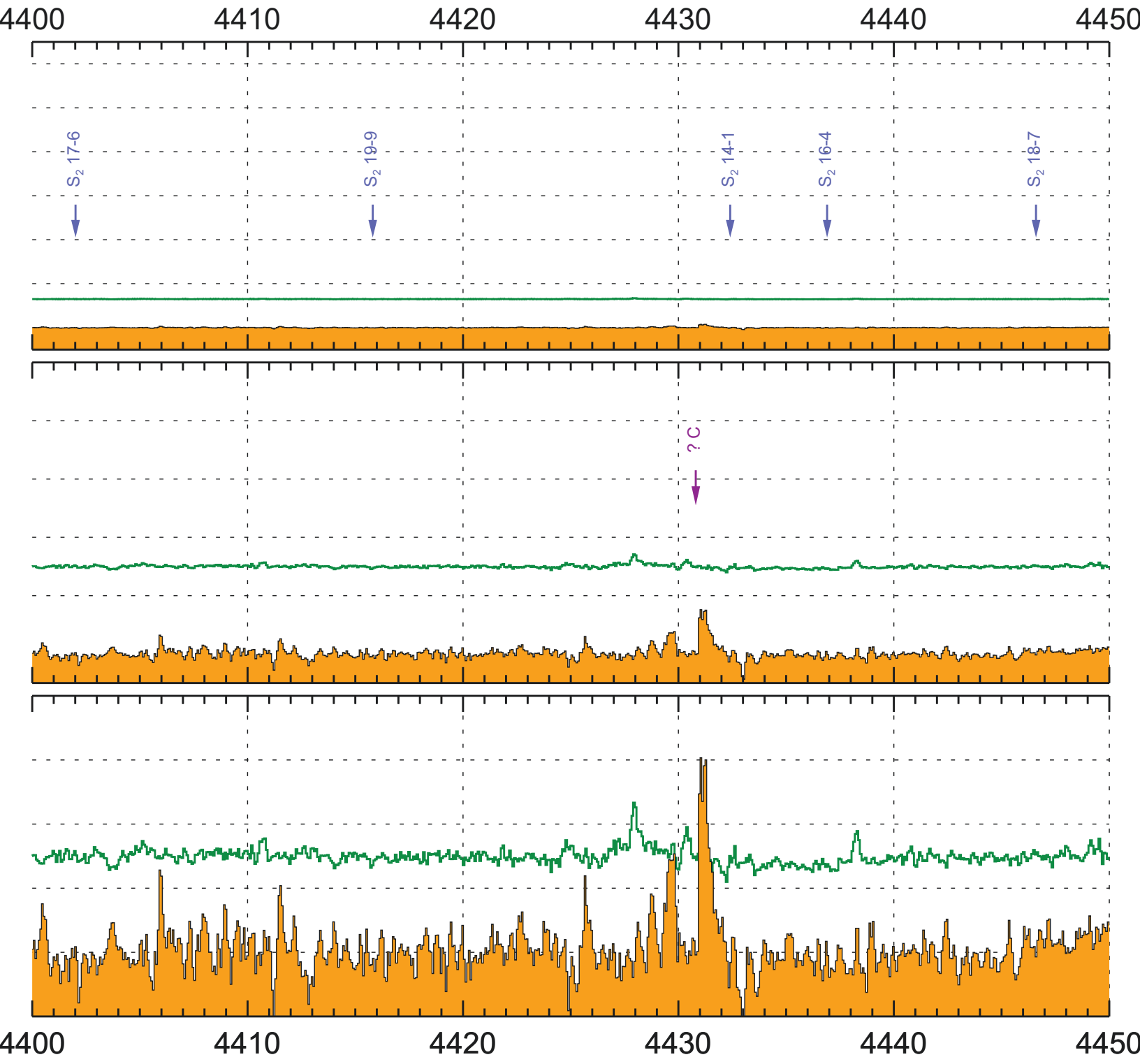

4150
4160
4170
4180
4190
4200
S2 11-0
S2 13-3
S2 15-6
S2 17-9
CN B-X 0-1 R(19)
CN B-X 0-1 R(18)
S2 12-1
CN B-X 0-1 R(17)
CN B-X 0-1 R(16)
CN B-X 1-2 P(6)
CN B-X 0-1 R(15)
CN B-X 1-2 P(8)
CN B-X 0-1 R(14) + 1-2 P(11)
CN B-X 1-2 P(12)
CN B-X 0-1 R(13)
CN B-X 0-1 R(12)
CN B-X 0-1 R(11)
S2 14-4
CN B-X 0-1 R(10)
CN B-X 0-1 R(9)
CN B-X 0-1 R(8)

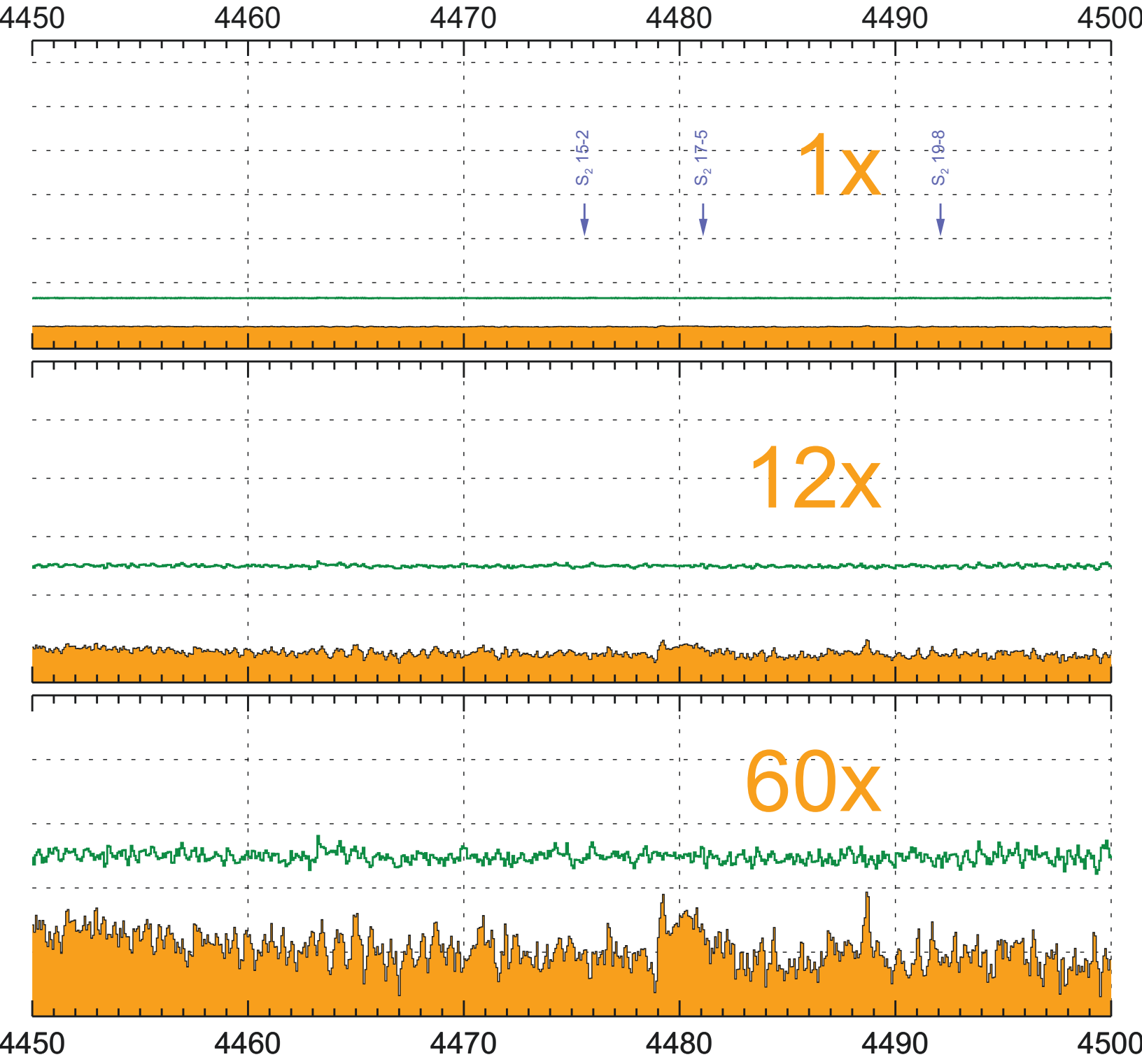

S2 14-4
CN B-X 0-1 P(5)
CN B-X 0-1 P(7)
CN B-X 0-1 P(9)
CN B-X 0-1 P(12)
S2 13-2
4200
4210
4220
4230
4240
4250
CN B-X 0-1 R(10)
CN B-X 0-1 R(9)
CN B-X 0-1 R(8)
CN B-X 0-1 R(7)
CN B-X 0-1 R(6)
CN B-X 0-1 R(5)
CN B-X 0-1 R(4)
CN B-X 0-1 R(3)
CN B-X 0-1 R(2)
CN B-X 0-1 R(1)
CN B-X 0-1 R(0)
CN B-X 0-1 P(1)
CN B-X 0-1 P(2)
CN B-X 0-1 P(3)
CN B-X 0-1 P(4)
CN B-X 0-1 P(6)
CN B-X 0-1 P(8)
CN B-X 0-1 P(10)
CN B-X 0-1 P(15)
CH+ R(1)
CH+ R(0)
CH+ Q(1)
CH+ Q(2)
S2 15-5


CH A-X 0-0 R1(4)
CH A-X 0-0 R1(3)
S2 18-9
4250
4260
4270
4280
4290
4300
S2 17-8
S2 12-0
S2 14-3
S2 16-6
CH A-X 0-0 R2(4)
CH A-X 0-0 R2(3)
CH A-X 0-0 R2(2)
CH A-X 0-0 R1(2)
CH A-X 0-0 R2(1)


CH A-X 0-0 $^{R}Q_{21}(1)$
CH A-X 0-0 $P_2(3)$
CH A-X 0-0 $P_2(4)$
CH A-X 0-0 $P_2(5)$
4300
4310
4320
4330
4340
4350
CH A-X 0-0 $R_2(1)$
CH A-X 0-0 $R_1(1)$
S_2 13-1
CH A-X 0-0 $Q_2(2)$
CH A-X 0-0 $Q_1(2)$
S_2 15-4
S_2 17-7
CH A-X 0-0 $P_1(3)$
CH A-X 0-0 $P_1(4)$
CH A-X 0-0 $P_1(5)$
S_2 14-2


4350
4360
4370
4380
4390
4400
S2 14-2
S2 16-5
S2 18-8
S2 13-0
S2 15-3
4350
4360
4370
4380
4390
4400


4400
4410
4420
4430
4440
4450
S2 17-6
S2 19-9
S2 14-1
S2 16-4
S2 18-7
? C
4400
4410
4420
4430
4440
4450


4450
4460
4470
4480
4490
4500
S2 15-2
S2 17-5
S2 19-8
1x
12x
60x
4450
4460
4470
4480
4490
4500

4490
1.2•10-11
1.0•10-11
8.0•10-12
6.0•10-12
4.0•10-12
2.0•10-12
0
S2 19-8
10" offset
on nucleus
1•10-12
8•10-13
6•10-13
4•10-13
2•10-13
0
2.0•10-13
1.5•10-13
1.0•10-13
5.0•10-14
0
-5.0•10-14
4490
Flux [erg s-1 cm-2 A-1]