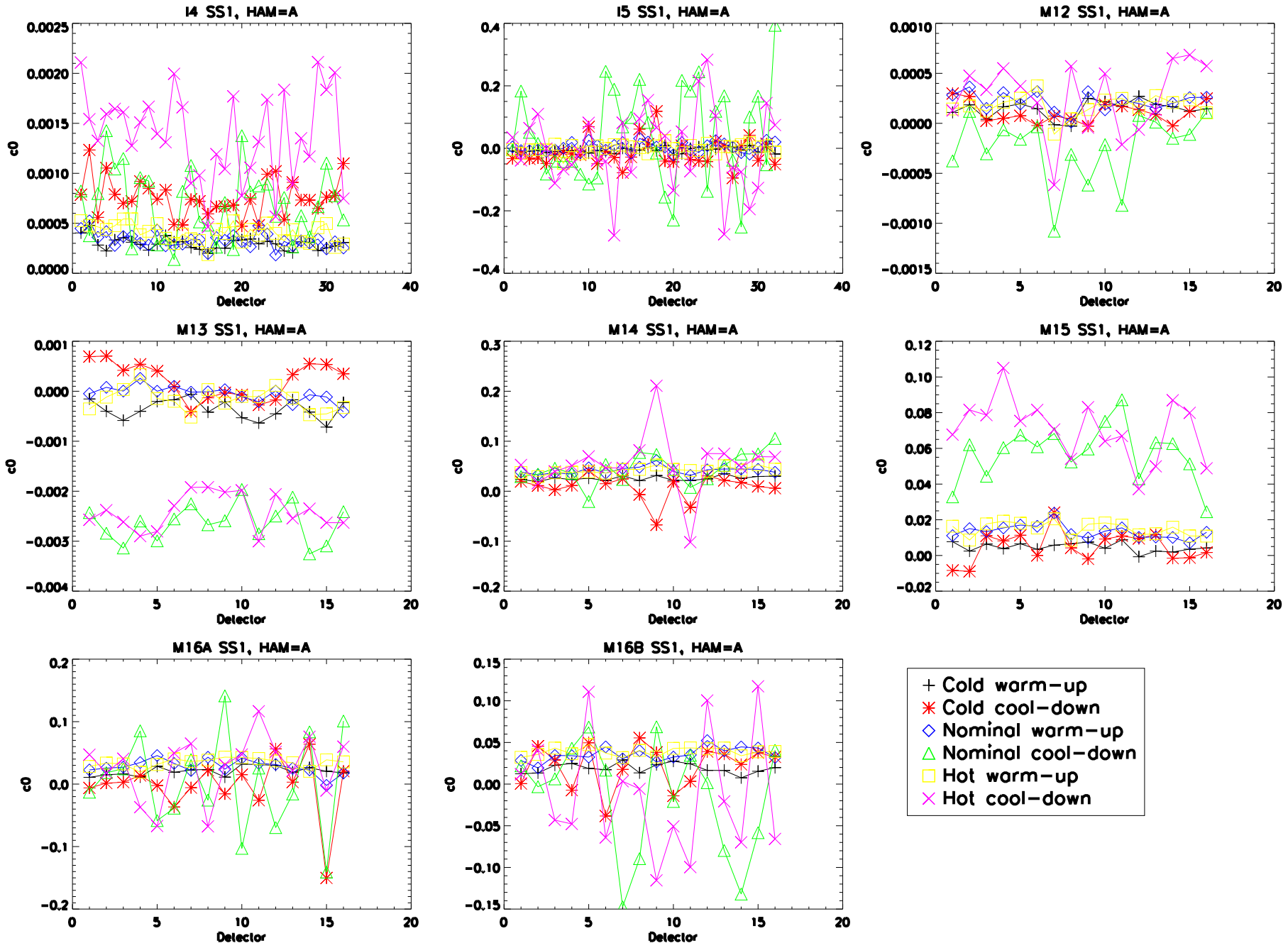
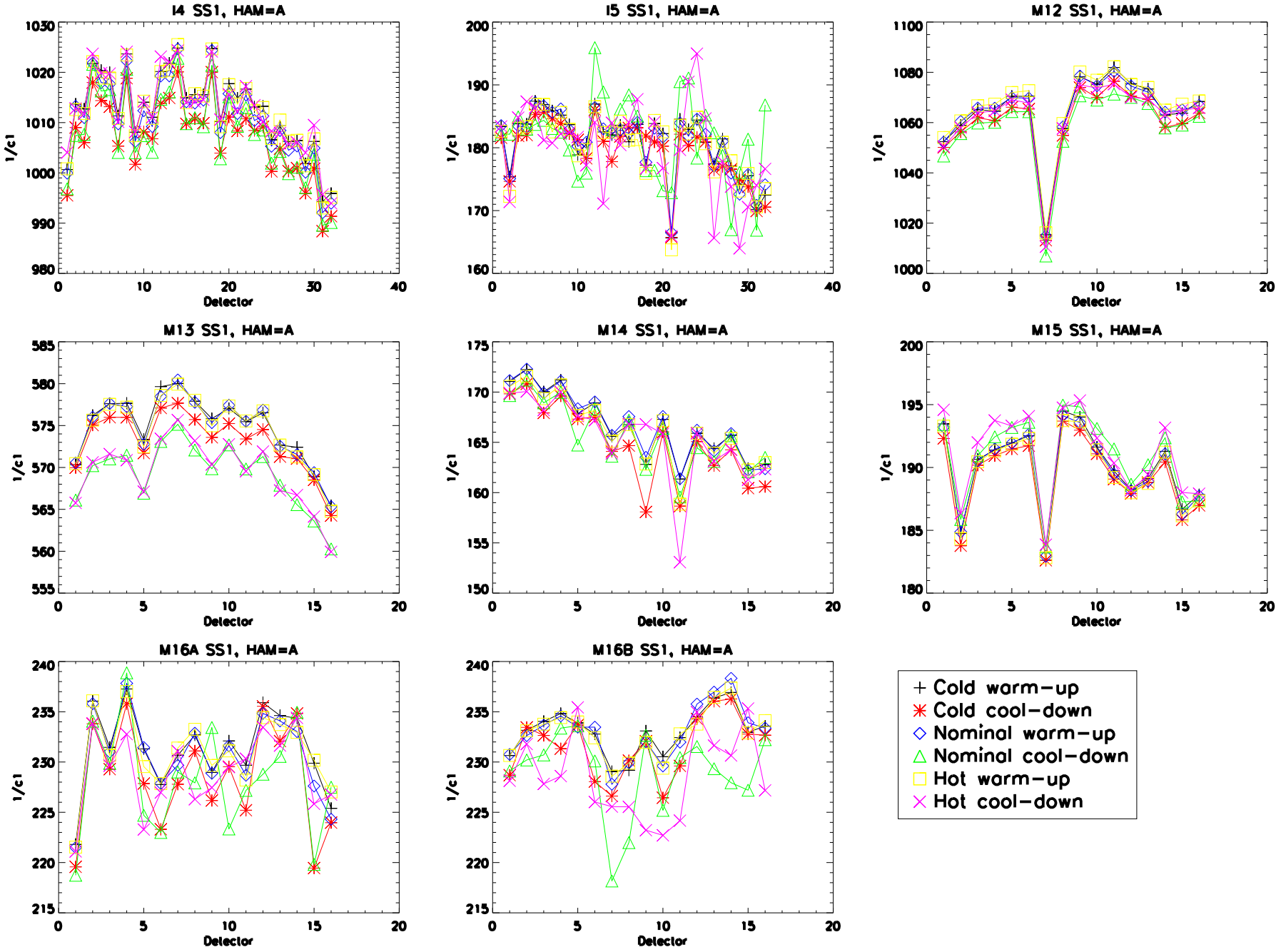
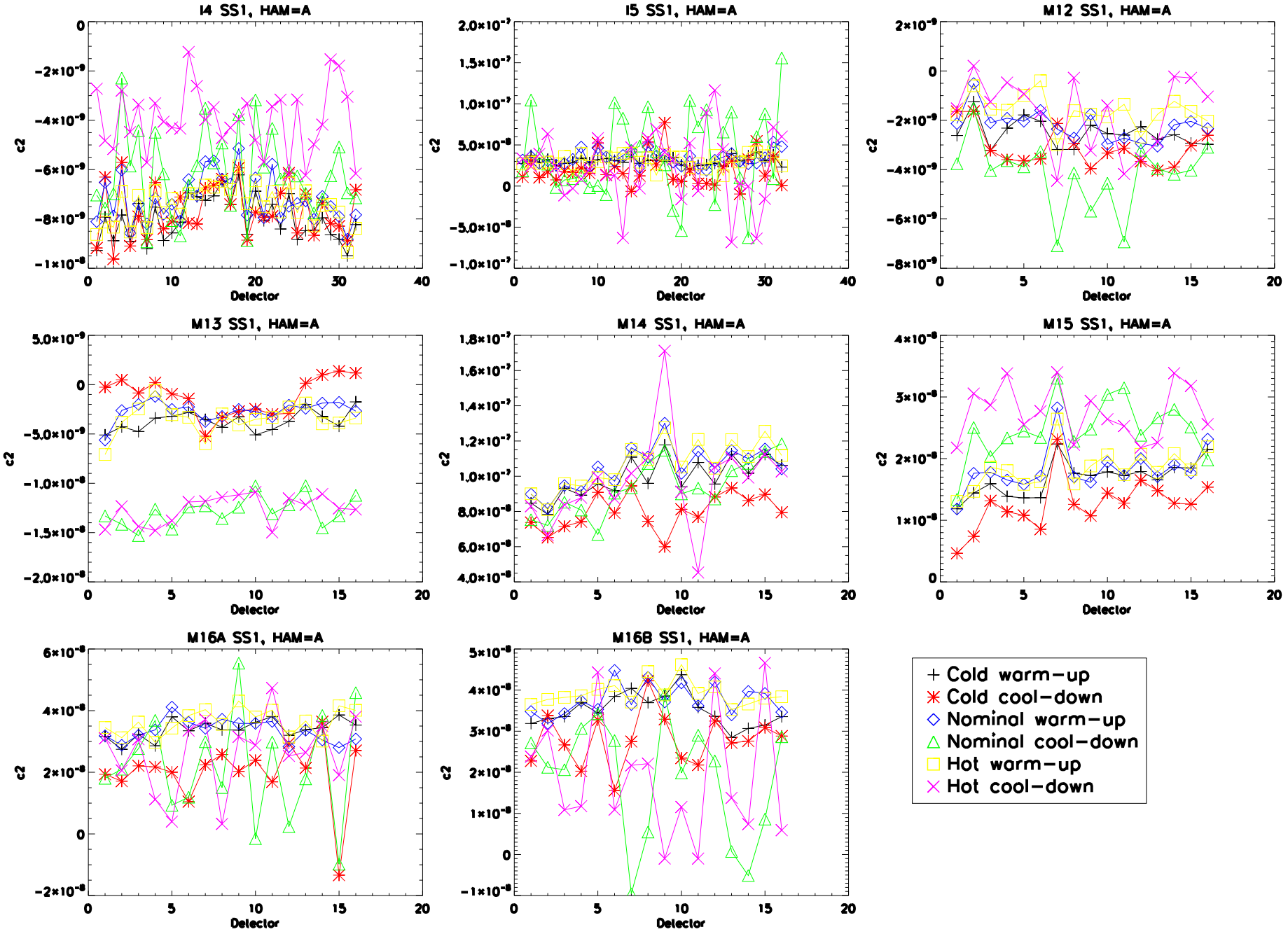
Detector Variation in c0

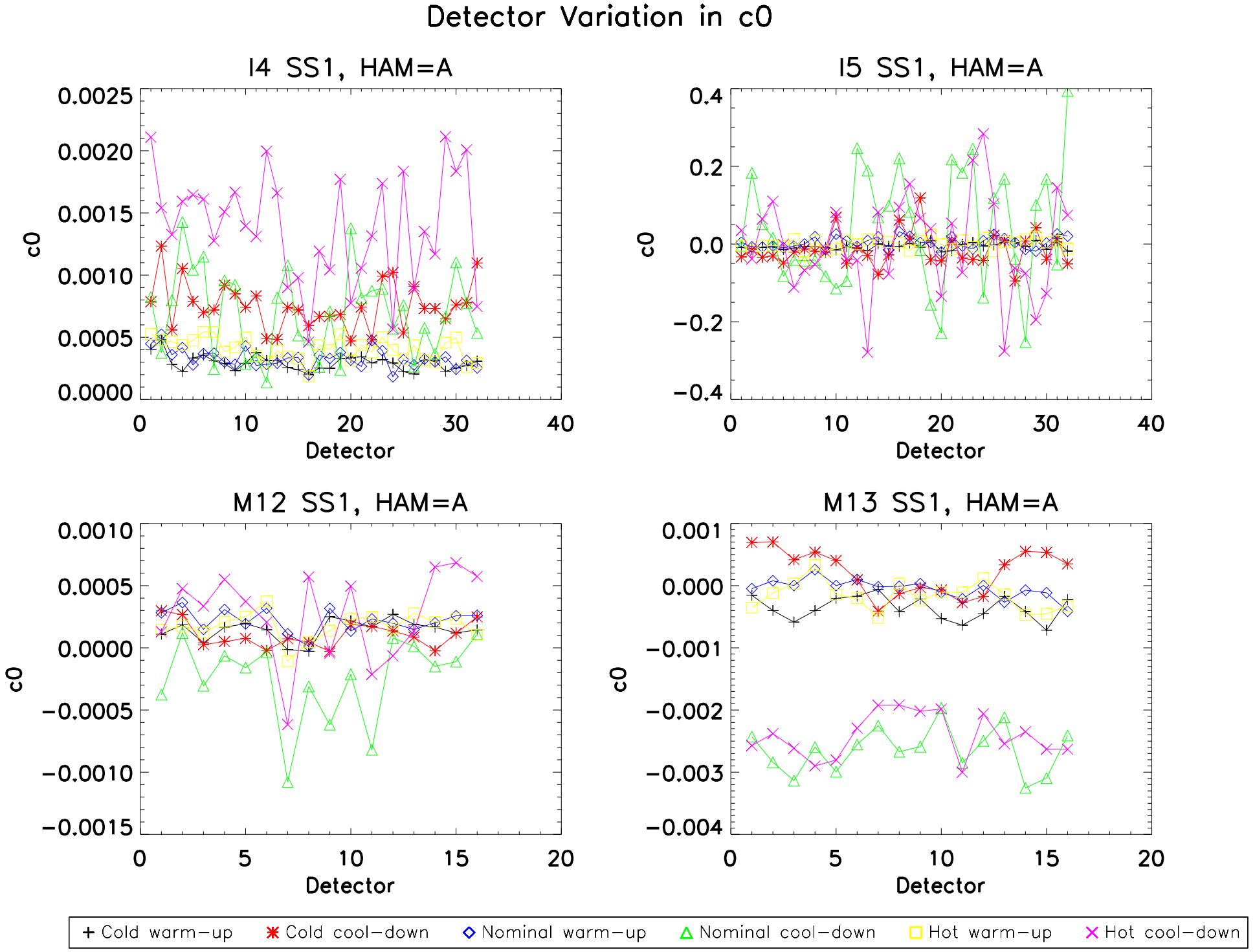


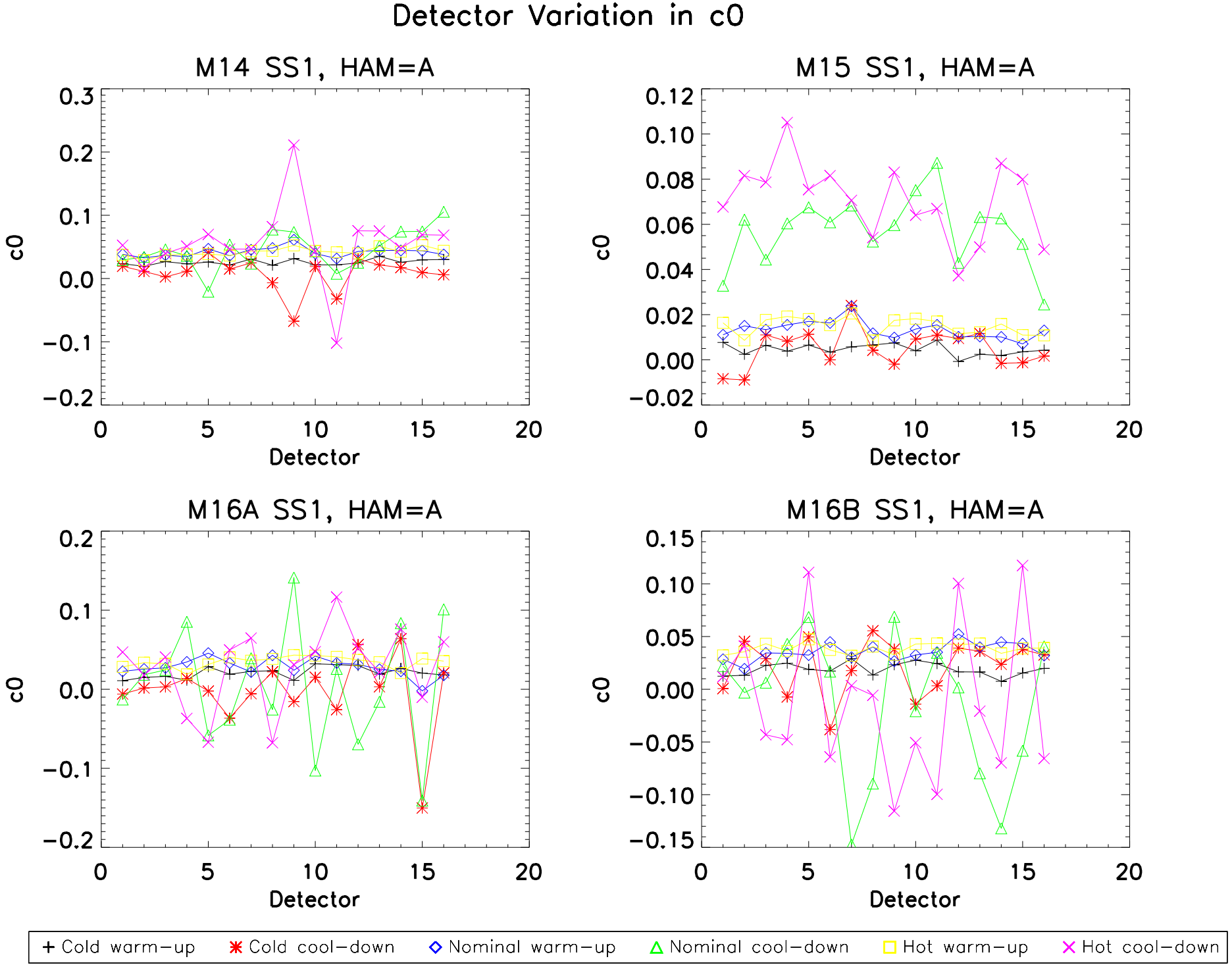
Detector Variation in 1/c1



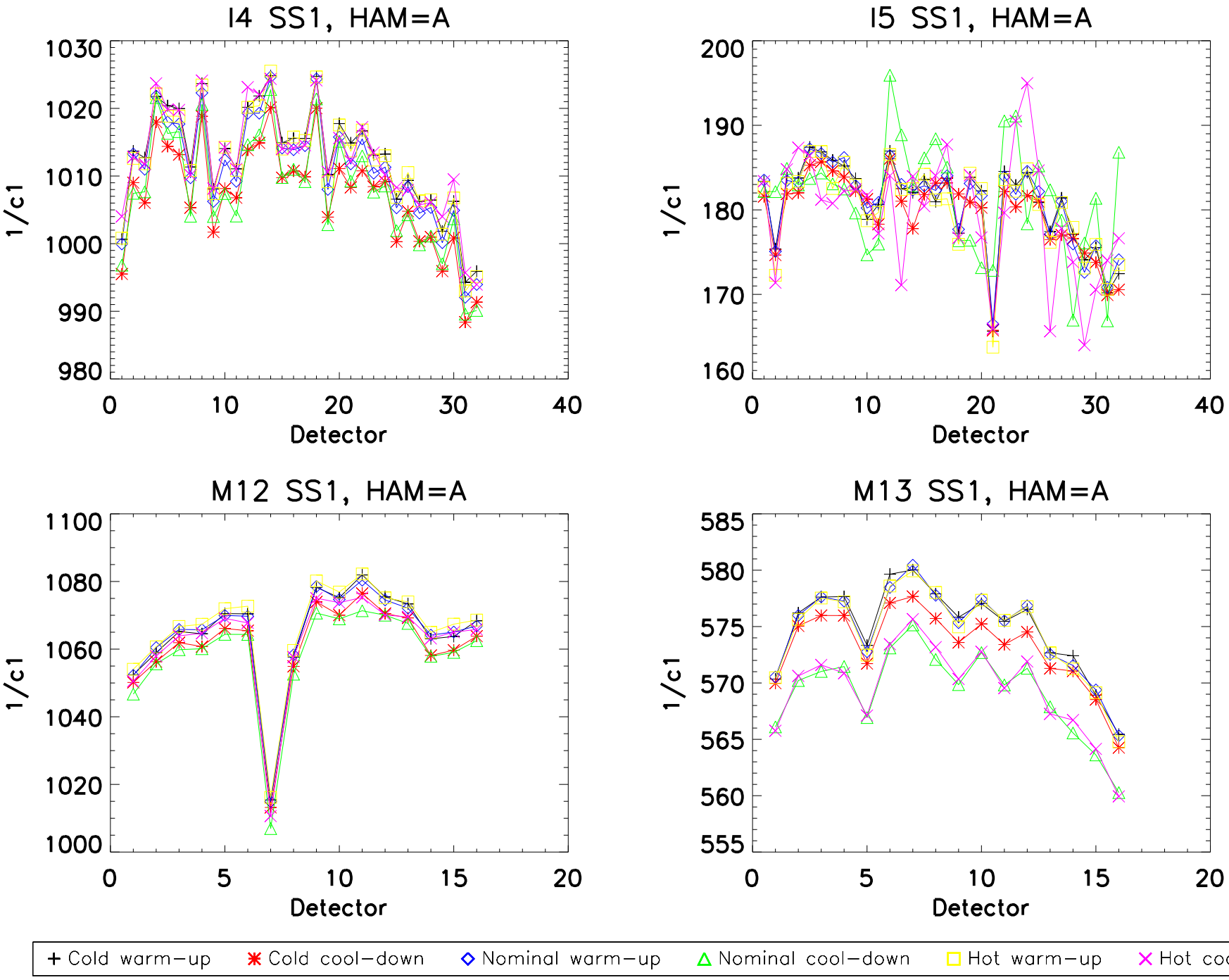
Detector Variation in c2

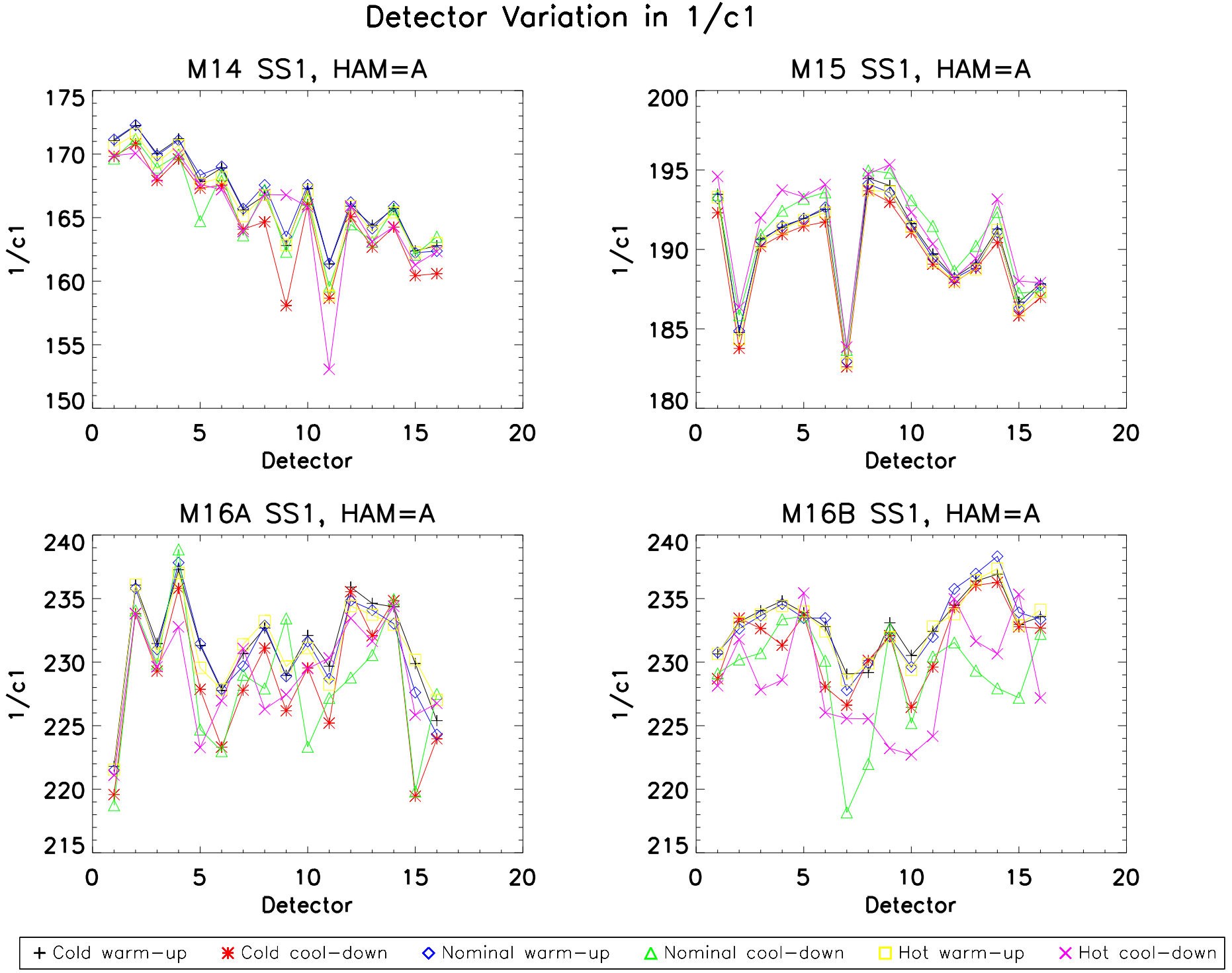


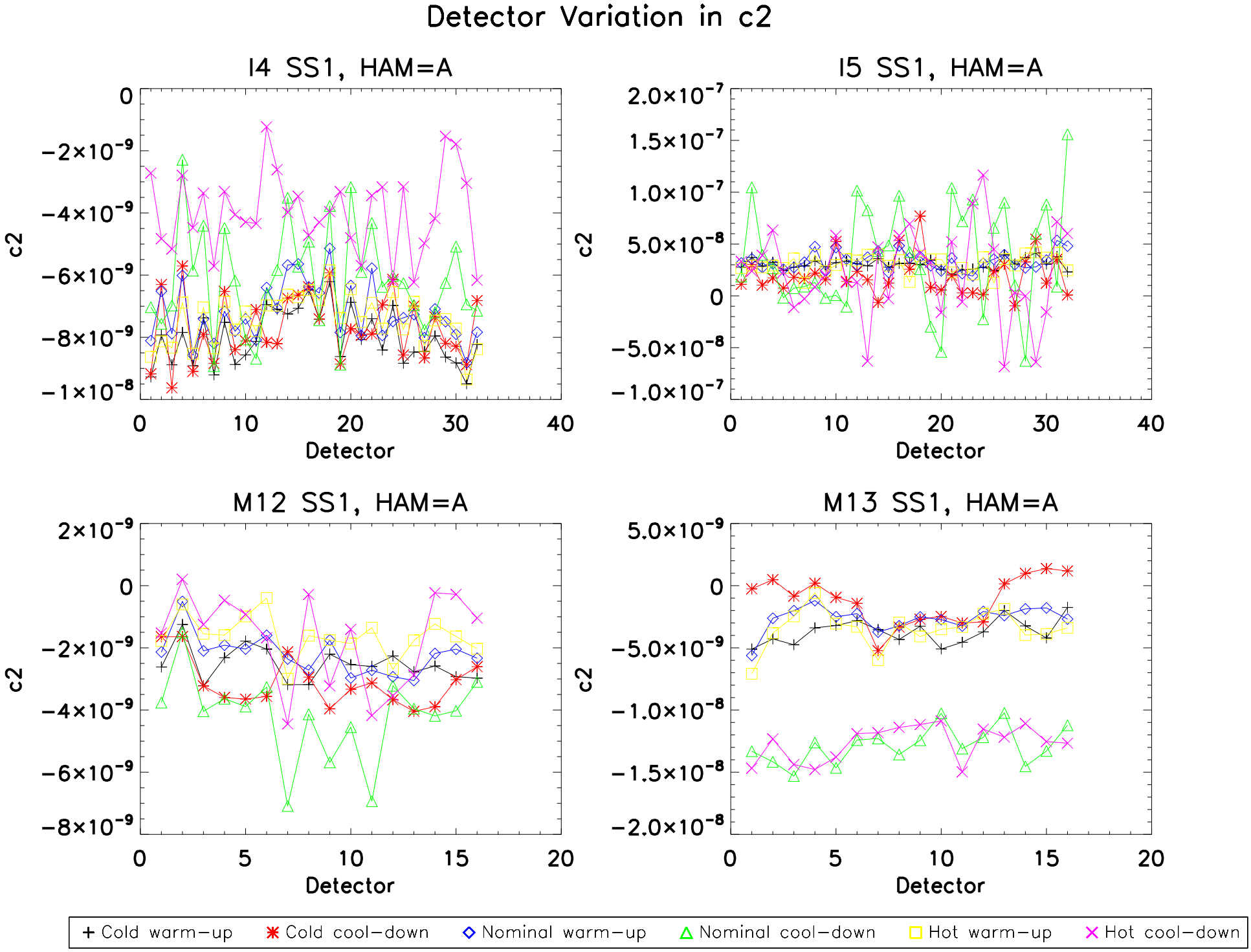

Detector Variation in c0
I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
c0
Detector
0.0025
0.0020
0.0015
0.0010
0.0005
0.0000
0.4
0.2
0.0
−0.2
−0.4
0.001
0.000
−0.001
−0.002
−0.003
−0.004
−0.0005
−0.0010
−0.0015
0
5
10
15
20
30
40
+ Cold warm−up
Cold cool−down
Nominal warm−up
Nominal cool−down
Hot warm−up
Hot cool−down

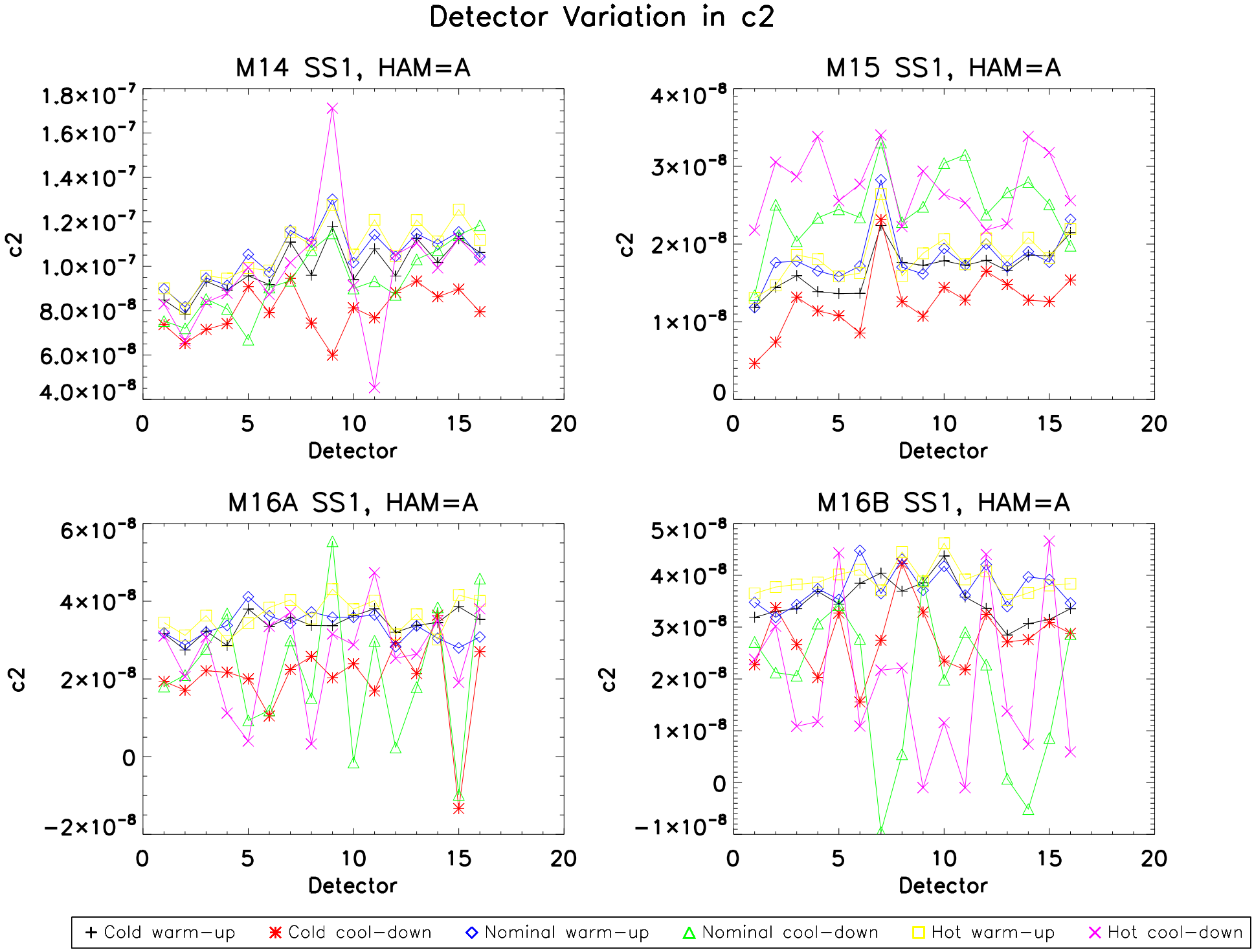

Detector Variation in c0
M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
c0
Detector
0.3
0.2
0.1
0.0
−0.1
−0.2
0.12
0.10
0.08
0.06
0.04
0.02
0.00
−0.02
0.15
0.05
−0.05
−0.10
−0.15
0
5
10
15
20
+ Cold warm−up
Cold cool−down
Nominal warm−up
Nominal cool−down
Hot warm−up
Hot cool−down

Detector Variation in 1/c1

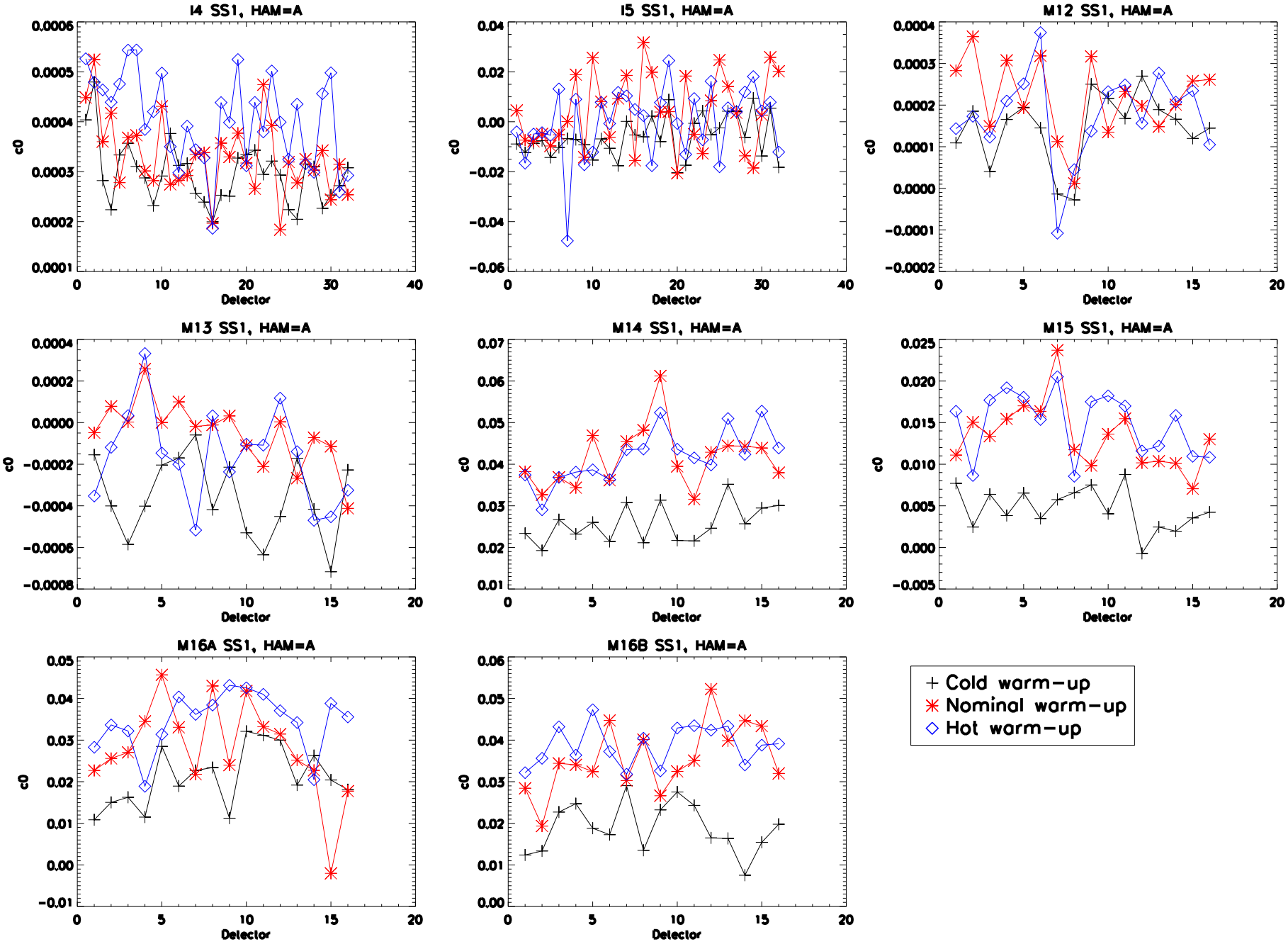



Detector Variation in 1/c1
M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
1/c1
Detector
Cold warm-up
Cold cool-down
Nominal warm-up
Nominal cool-down
Hot warm-up
Hot cool-down

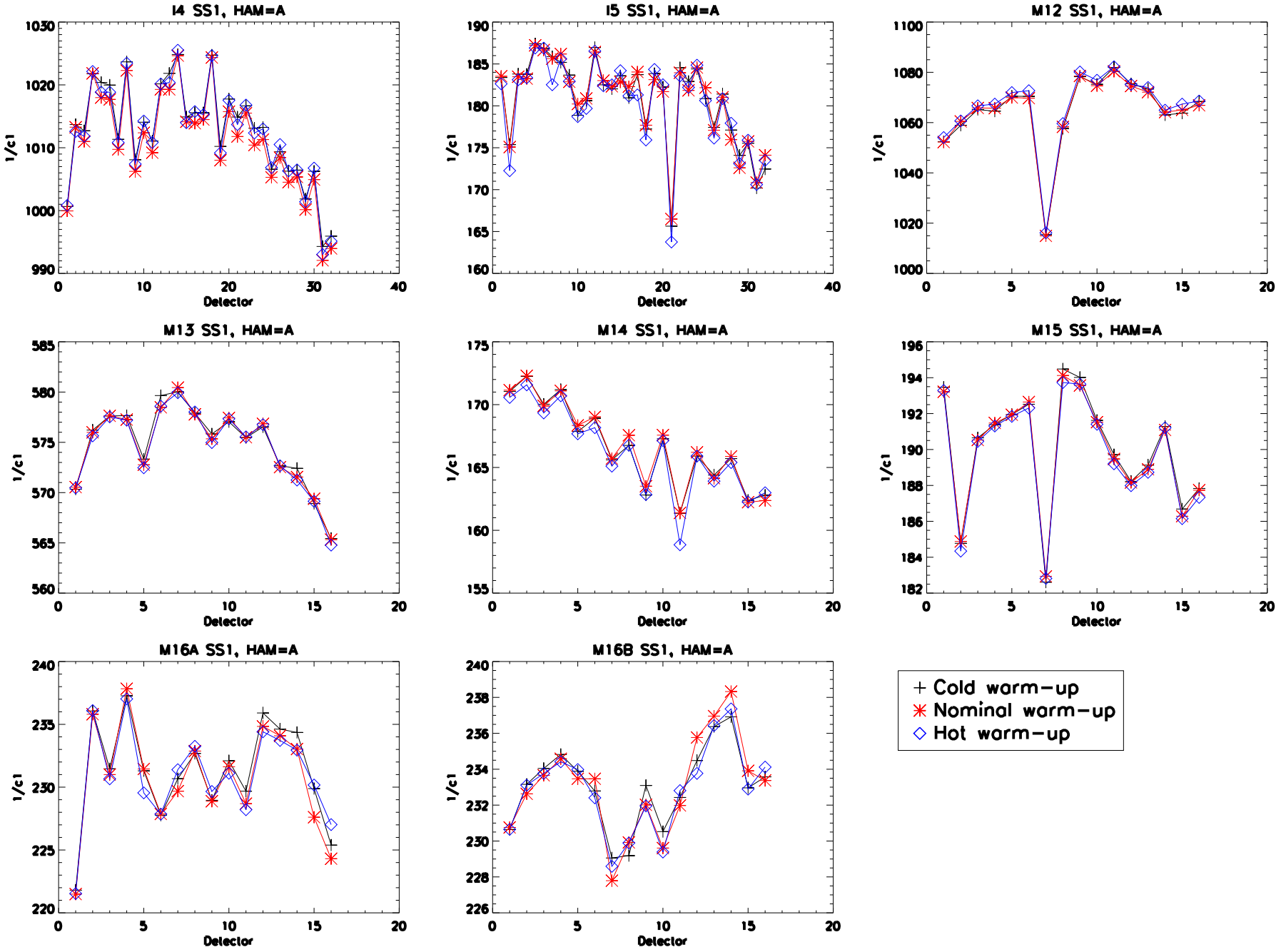

Detector Variation in c2
I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
c2
Detector
0
−2×10⁻⁹
−4×10⁻⁹
−6×10⁻⁹
−8×10⁻⁹
−1×10⁻⁸
2.0×10⁻⁷
1.5×10⁻⁷
1.0×10⁻⁷
5.0×10⁻⁸
−5.0×10⁻⁸
−1.0×10⁻⁷
2×10⁻⁹
5.0×10⁻⁹
−5.0×10⁻⁹
−1.0×10⁻⁸
−1.5×10⁻⁸
−2.0×10⁻⁸
0
10
20
30
40
5
15
Cold warm−up
Cold cool−down
Nominal warm−up
Nominal cool−down
Hot warm−up
Hot cool−down


Detector Variation in c2
M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
c2
Detector
1.8×10⁻⁷
1.6×10⁻⁷
1.4×10⁻⁷
1.2×10⁻⁷
1.0×10⁻⁷
8.0×10⁻⁸
6.0×10⁻⁸
4.0×10⁻⁸
4×10⁻⁸
3×10⁻⁸
2×10⁻⁸
1×10⁻⁸
0
6×10⁻⁸
4×10⁻⁸
2×10⁻⁸
0
−2×10⁻⁸
5×10⁻⁸
4×10⁻⁸
3×10⁻⁸
2×10⁻⁸
1×10⁻⁸
0
−1×10⁻⁸
0
5
10
15
20
+ Cold warm−up
Cold cool−down
Nominal warm−up
Nominal cool−down
Hot warm−up
Hot cool−down

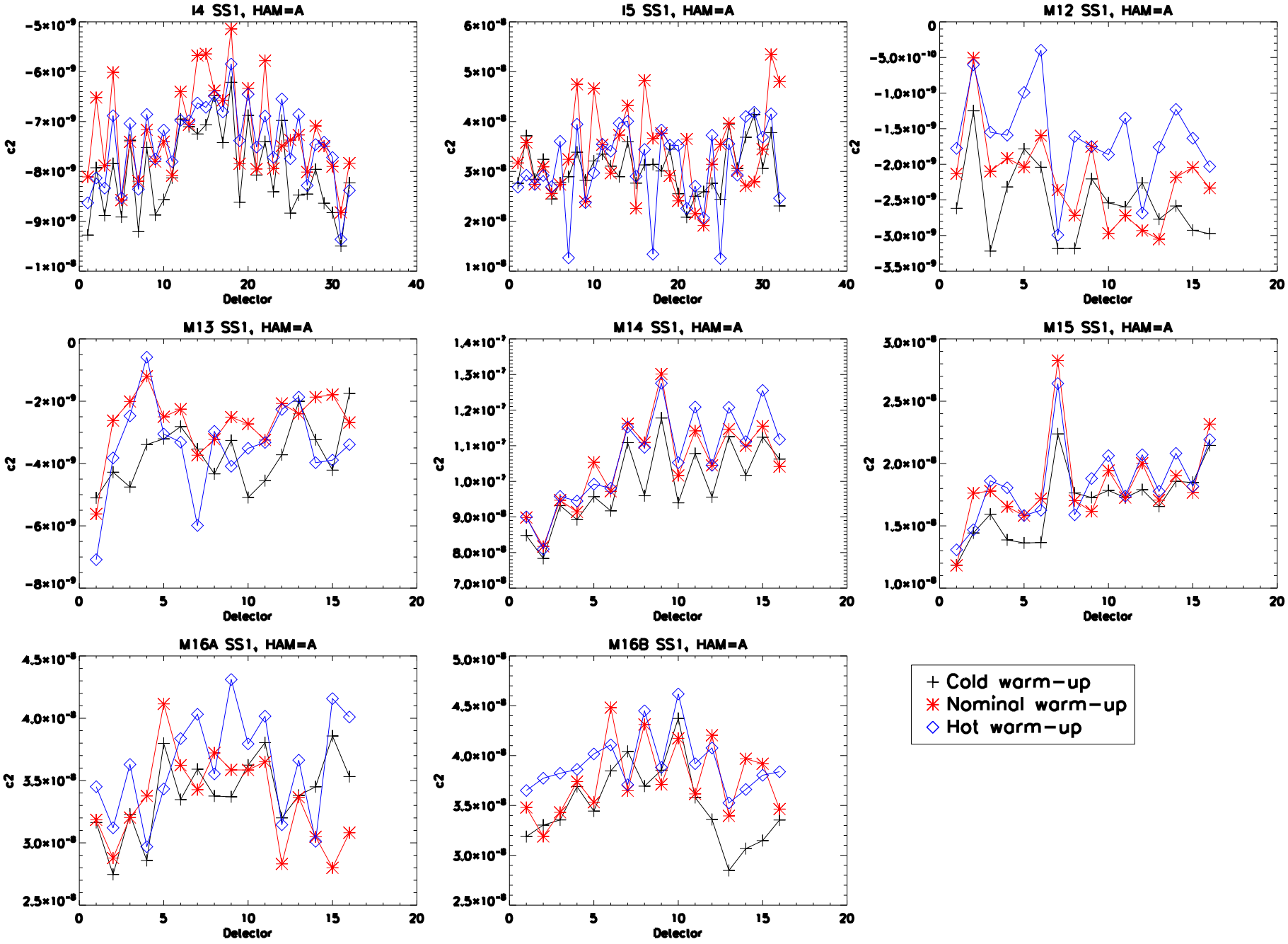
Detector Variation in c0

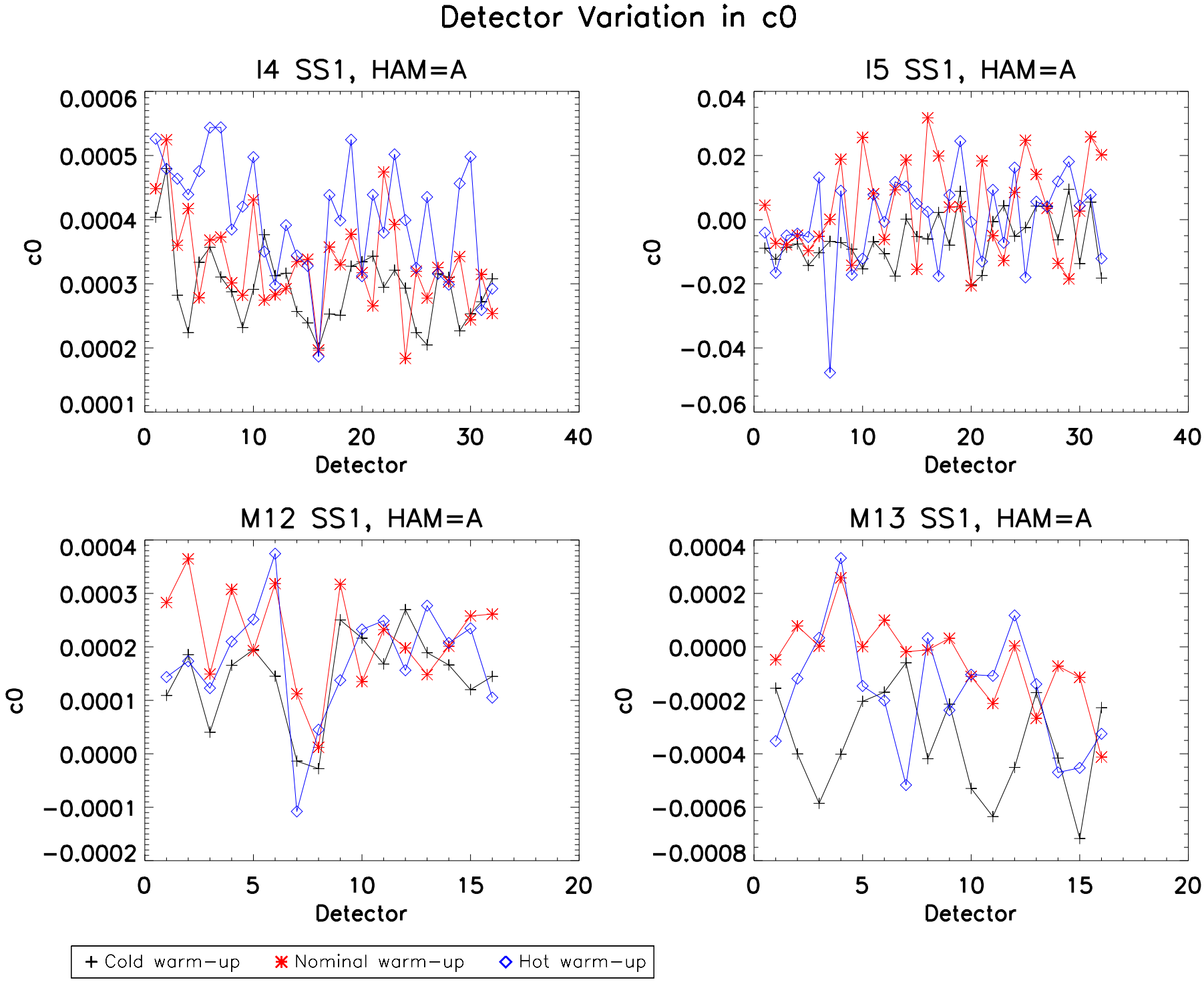


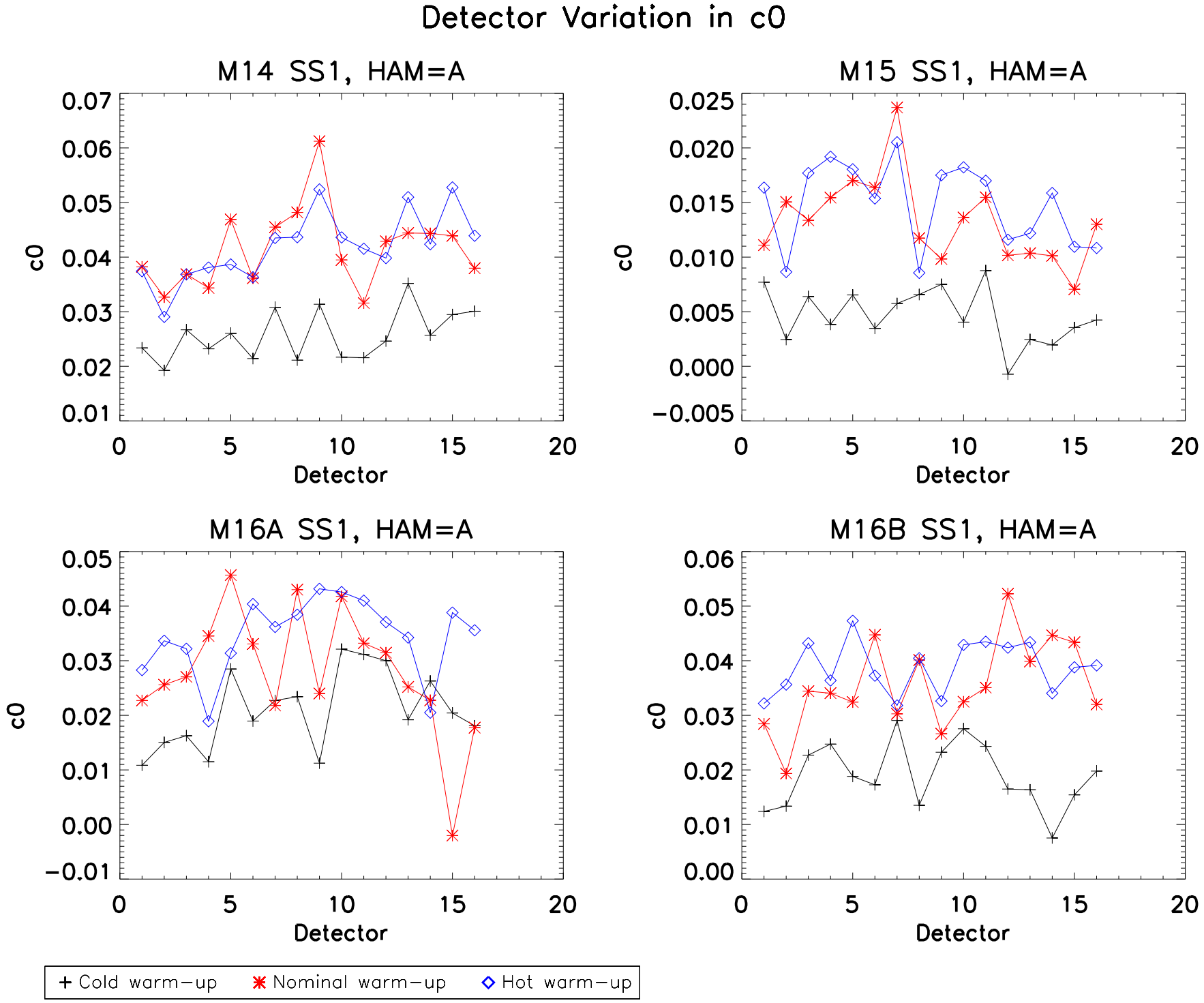
Detector Variation in 1/c1

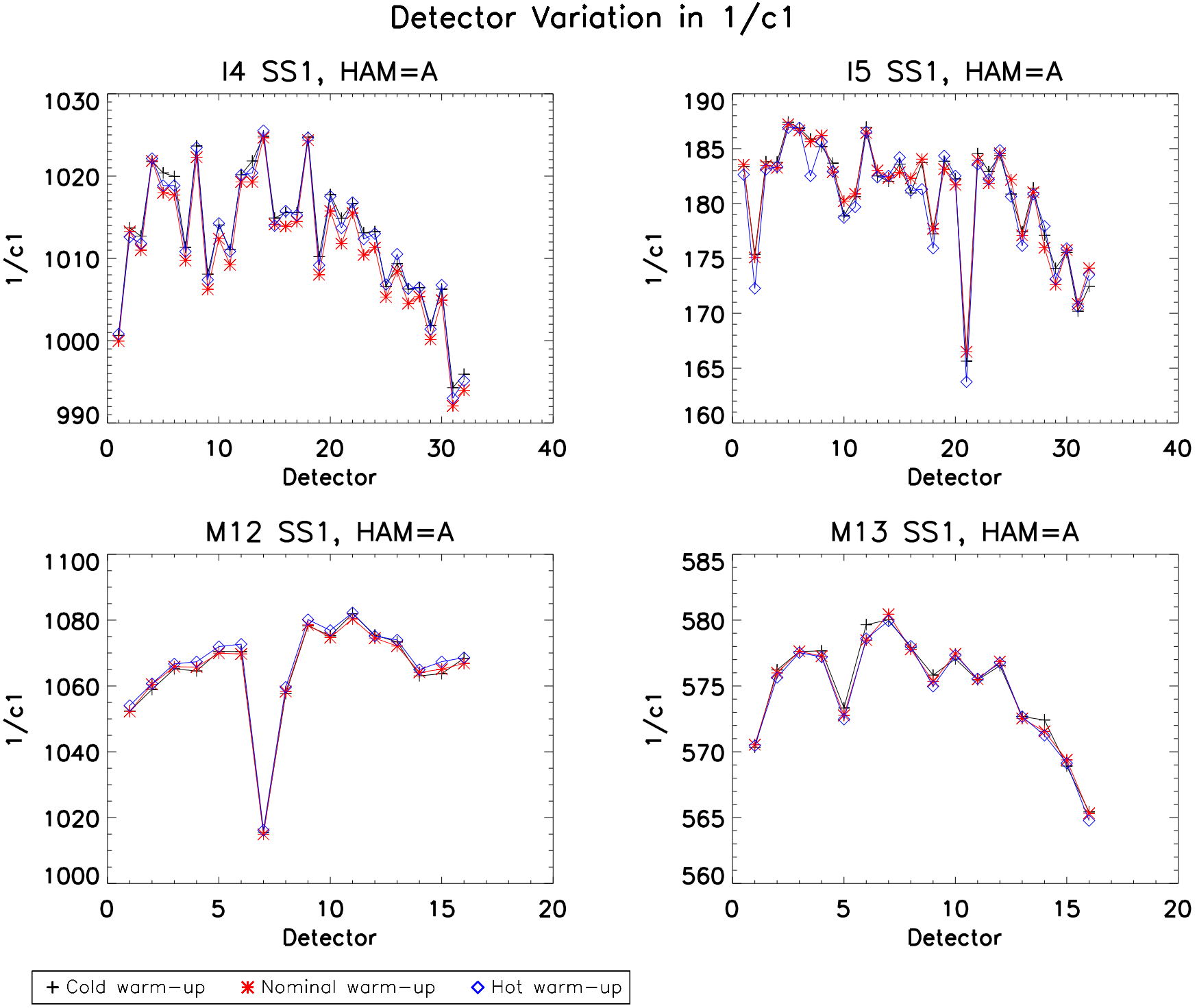


Detector Variation in c2

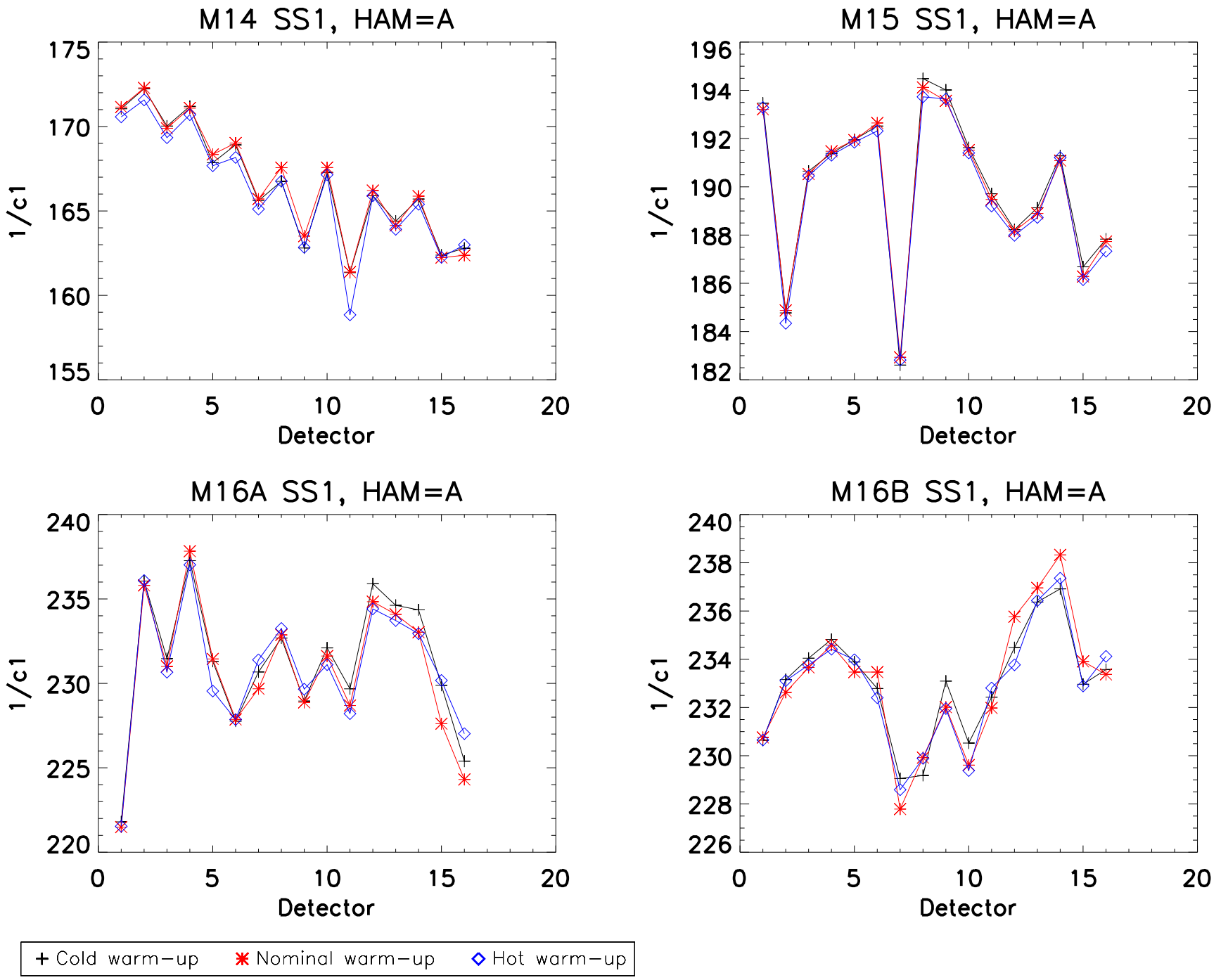


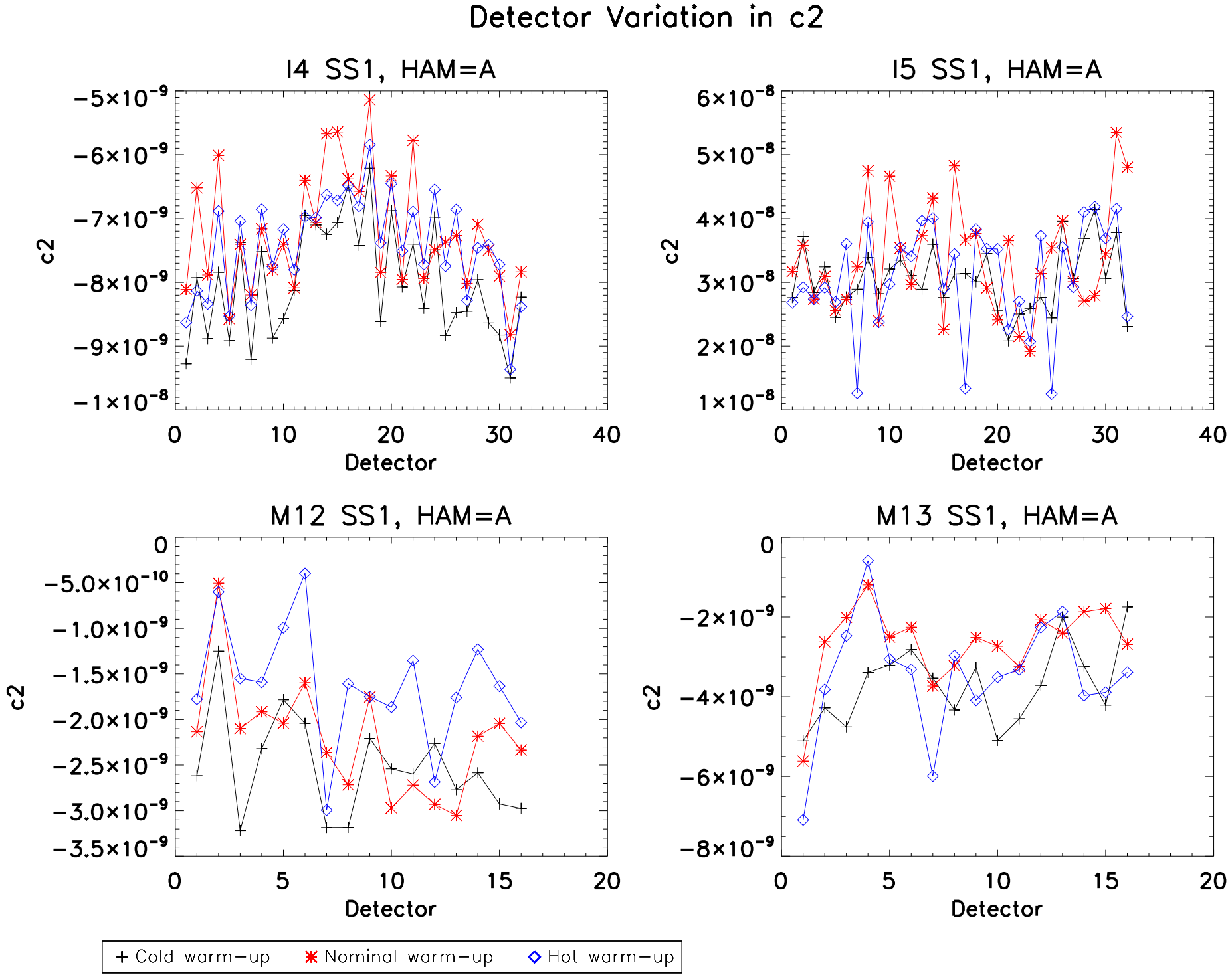

Detector Variation in c0
I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
c0
Detector
0.0006
0.0005
0.0004
0.0003
0.0002
0.0001
0.04
0.02
0.00
−0.02
−0.04
−0.06
0.0004
0.0003
0.0002
0.0001
0.0000
−0.0001
−0.0002
0.0002
0.0000
−0.0002
−0.0004
−0.0006
−0.0008
0
5
10
15
20
30
40
+ Cold warm−up
* Nominal warm−up
◇ Hot warm−up

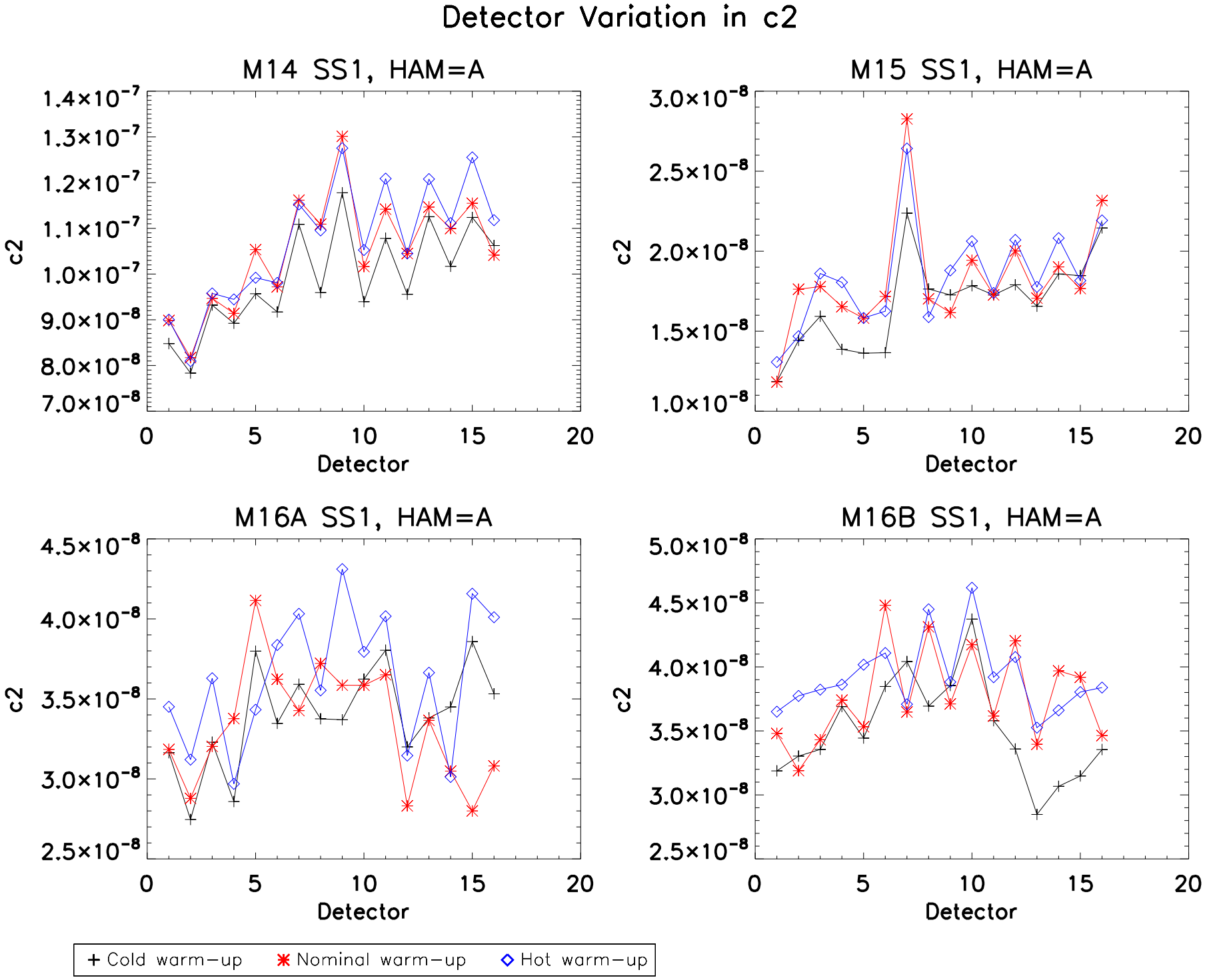

Detector Variation in c0
M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
c0
Detector
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.025
0.020
0.015
0.010
0.005
0.000
−0.005
−0.01
0.00
0
5
10
15
20
+ Cold warm−up
Nominal warm−up
Hot warm−up


Detector Variation in 1/c1
I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
1/c1
Detector
+ Cold warm-up
* Nominal warm-up
◇ Hot warm-up

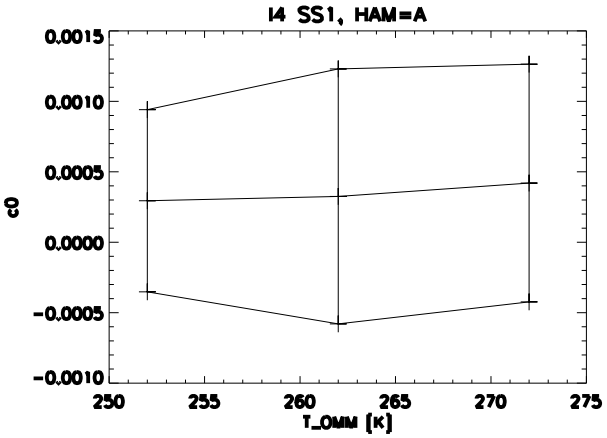
Detector Variation in 1/c1

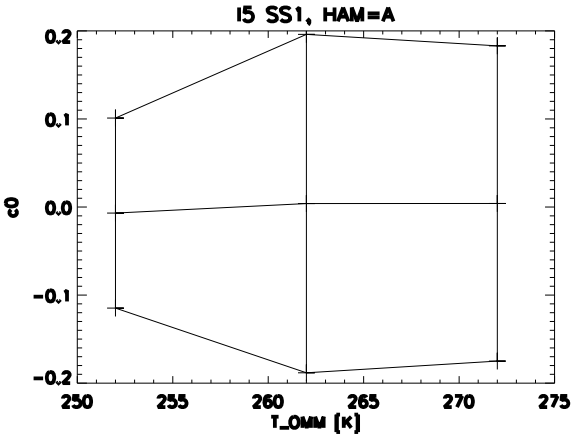


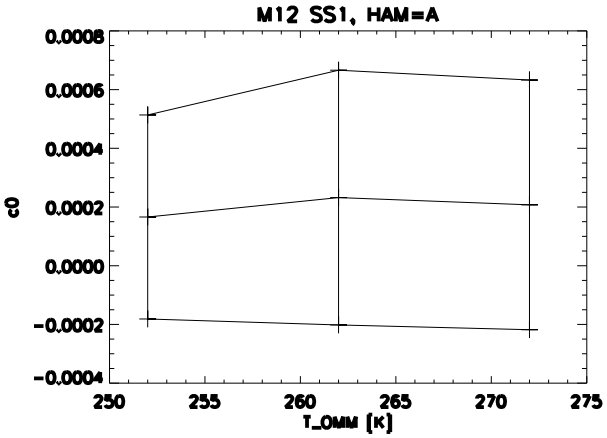

Detector Variation in c2
I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
c2
Detector
−5×10⁻⁹
−6×10⁻⁹
−7×10⁻⁹
−8×10⁻⁹
−9×10⁻⁹
−1×10⁻⁸
6×10⁻⁸
5×10⁻⁸
4×10⁻⁸
3×10⁻⁸
2×10⁻⁸
1×10⁻⁸
0
−5.0×10⁻¹⁰
−1.0×10⁻⁹
−1.5×10⁻⁹
−2.0×10⁻⁹
−2.5×10⁻⁹
−3.0×10⁻⁹
−3.5×10⁻⁹
−2×10⁻⁹
−4×10⁻⁹
−6×10⁻⁹
−8×10⁻⁹
0
10
20
30
40
5
15
Cold warm−up
Nominal warm−up
Hot warm−up

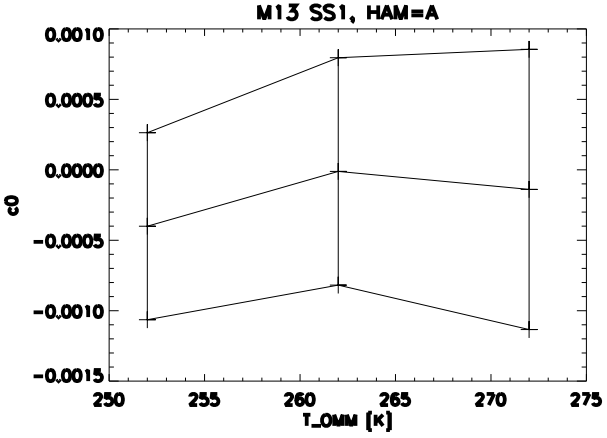

Detector Variation in c2
M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
c2
Detector
1.4×10⁻⁷
1.3×10⁻⁷
1.2×10⁻⁷
1.1×10⁻⁷
1.0×10⁻⁷
9.0×10⁻⁸
8.0×10⁻⁸
7.0×10⁻⁸
3.0×10⁻⁸
2.5×10⁻⁸
2.0×10⁻⁸
1.5×10⁻⁸
1.0×10⁻⁸
4.5×10⁻⁸
4.0×10⁻⁸
3.5×10⁻⁸
3.0×10⁻⁸
2.5×10⁻⁸
5.0×10⁻⁸
4.5×10⁻⁸
4.0×10⁻⁸
3.5×10⁻⁸
3.0×10⁻⁸
2.5×10⁻⁸
0
5
10
15
20
Cold warm−up
Nominal warm−up
Hot warm−up

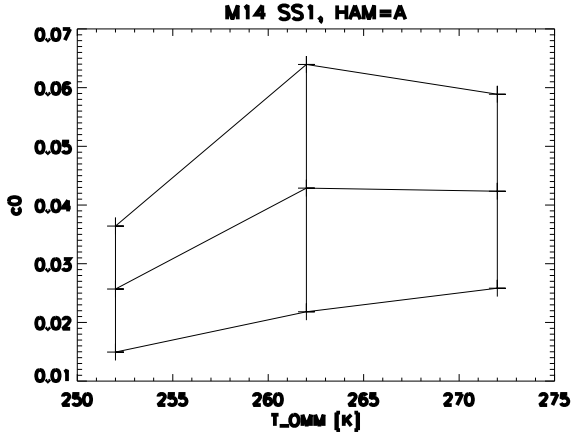
Temperature Variation in c0

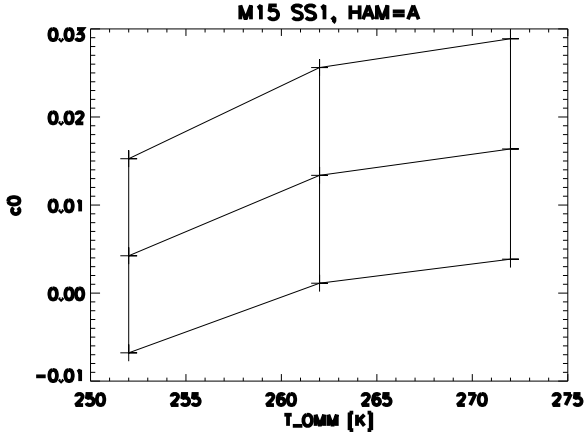


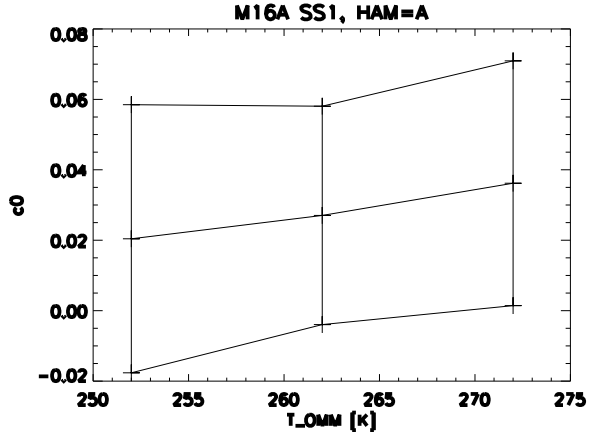


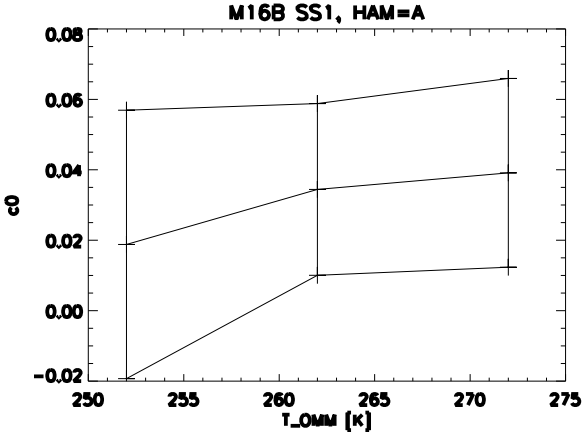




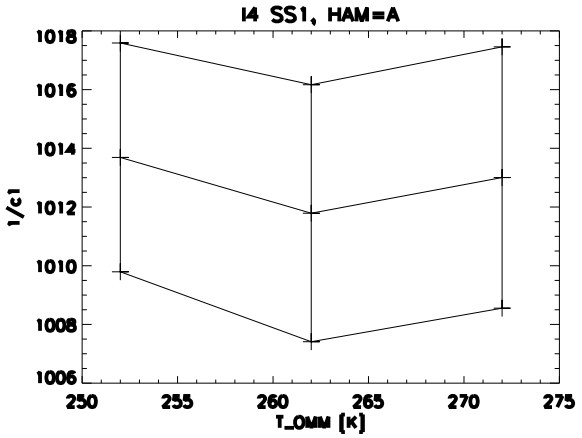


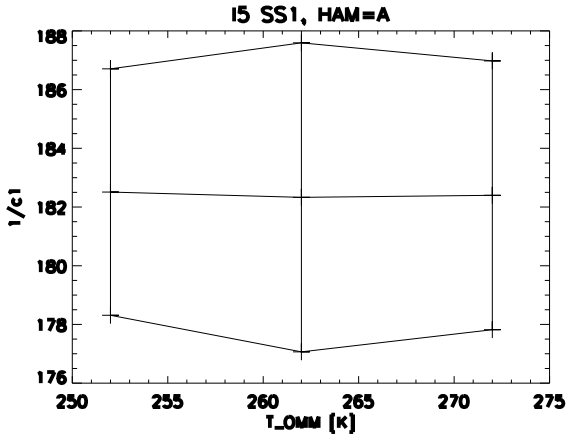


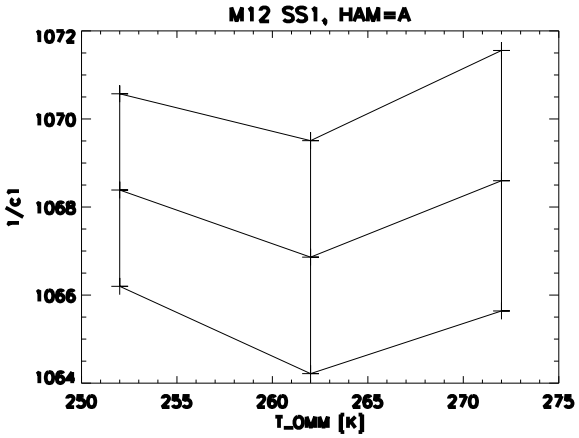


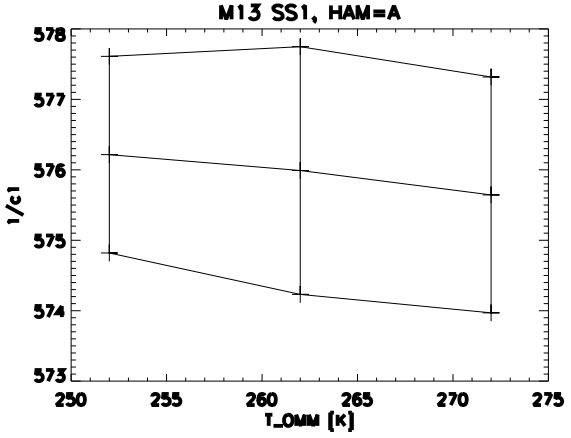


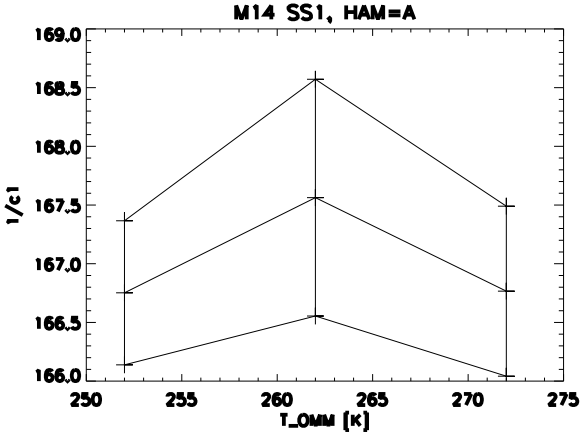
Temperature Variation in 1/c1

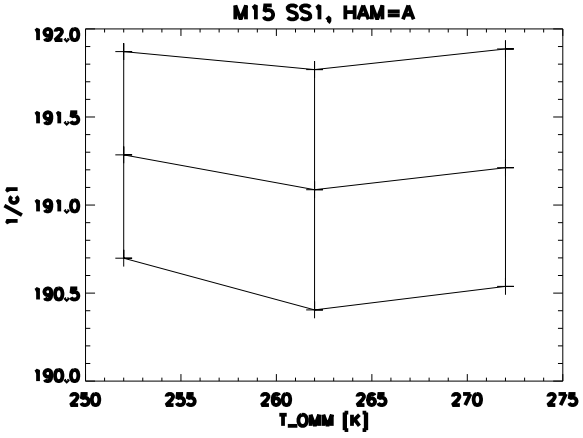


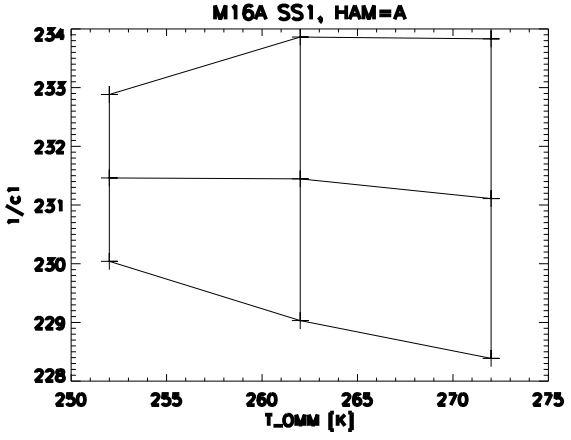


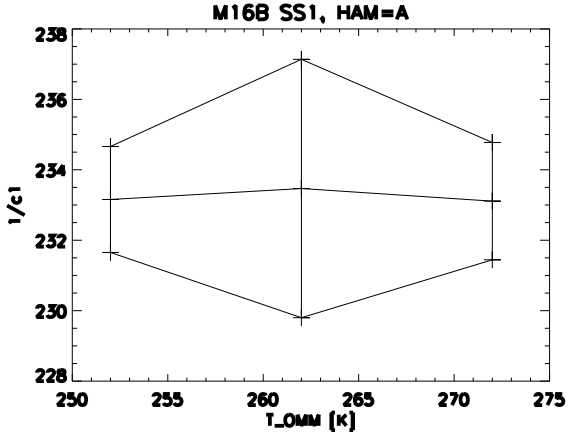




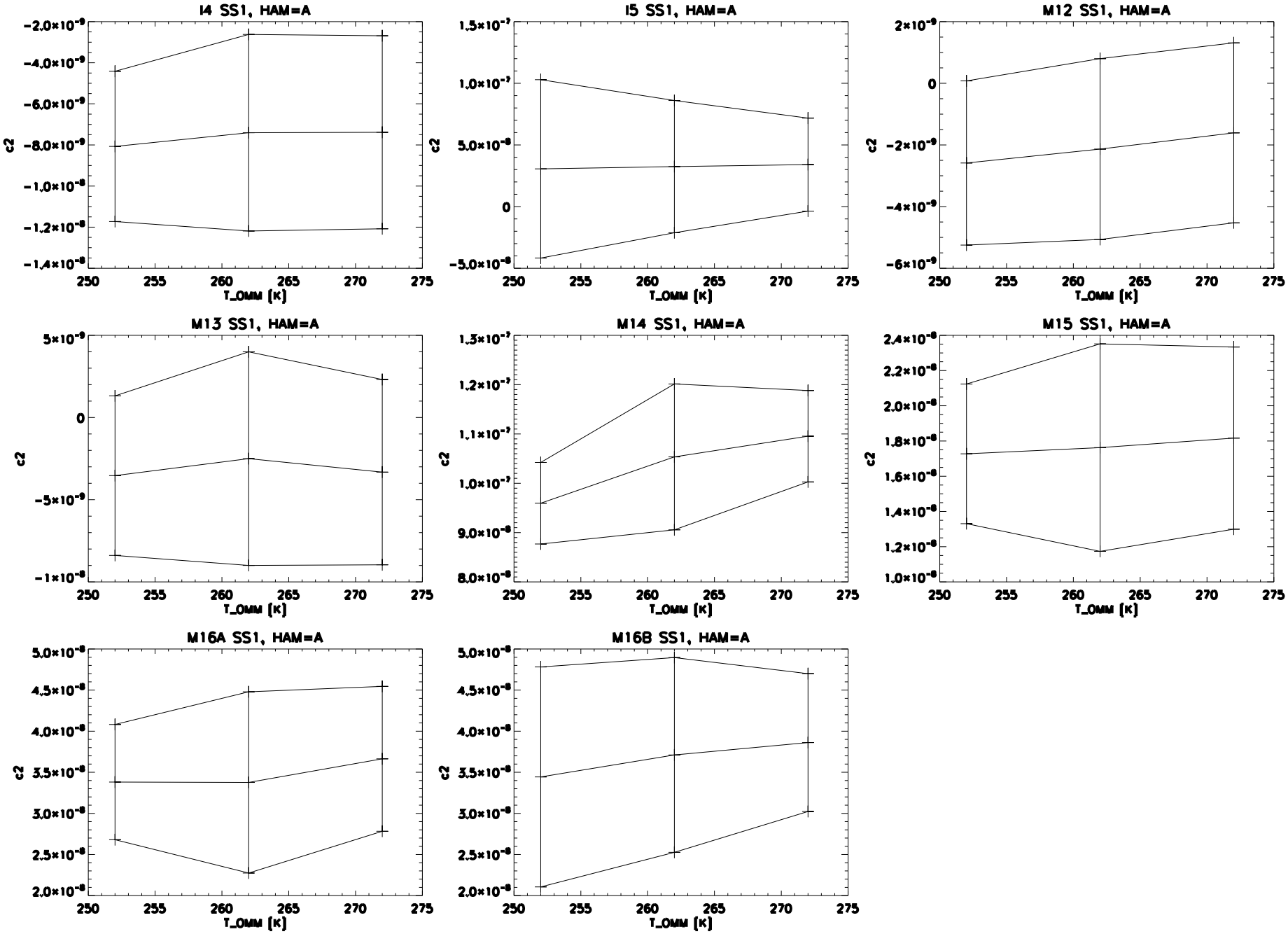




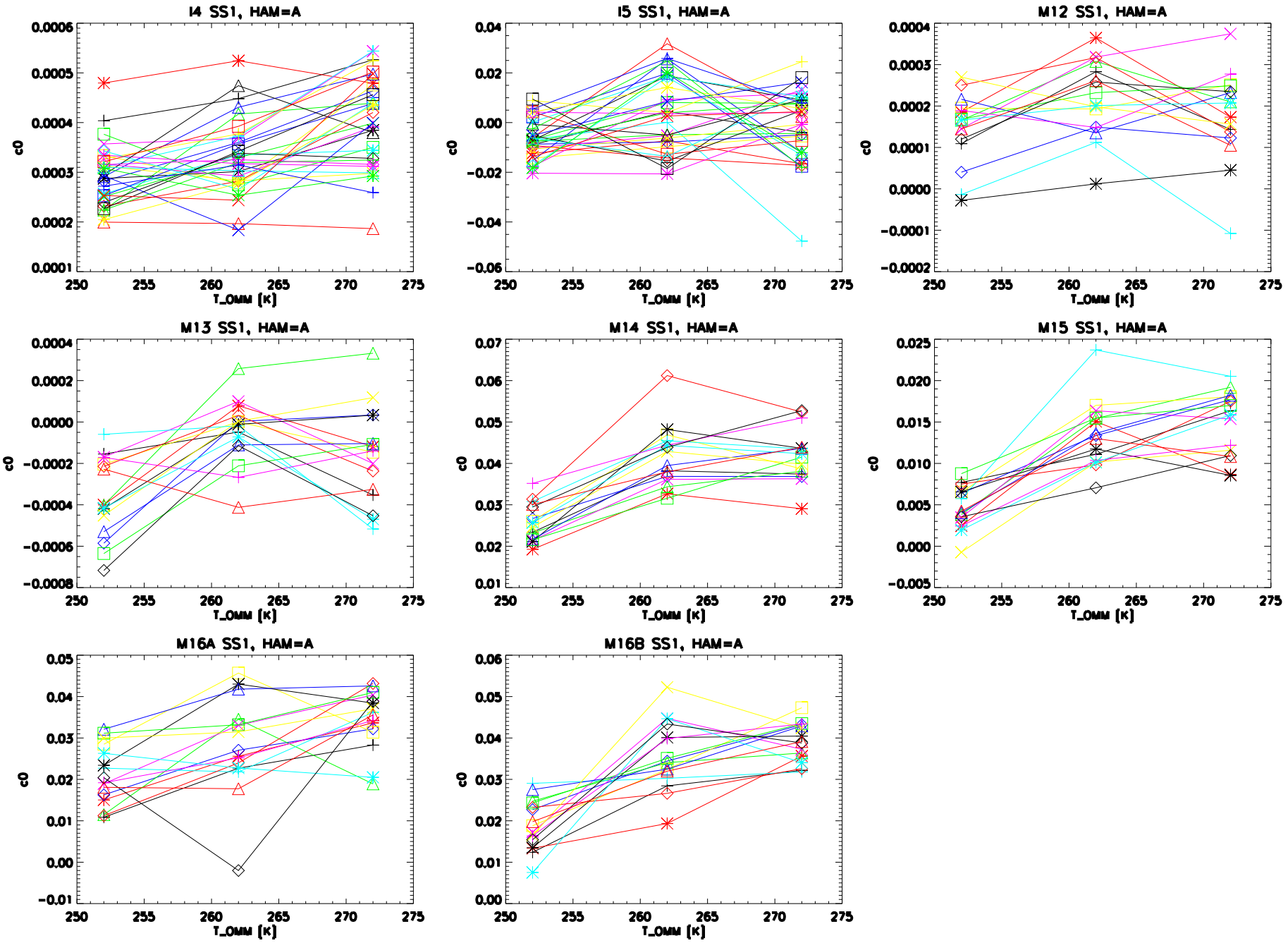




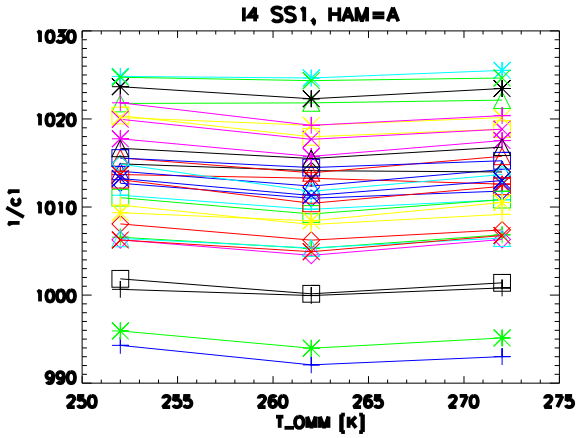
Temperature Variation in c2

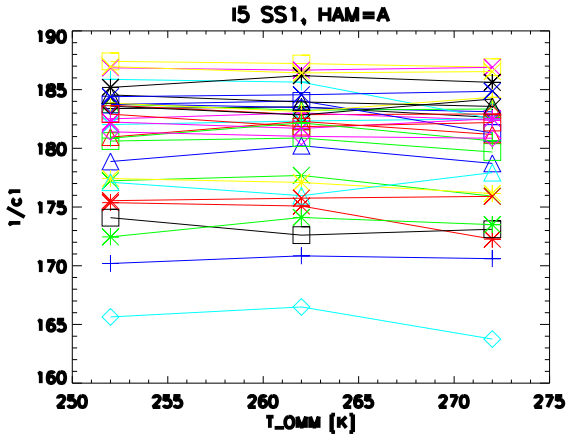


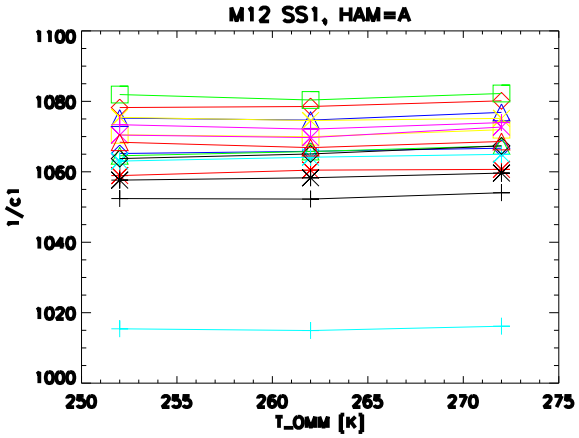
Temperature Variation in c0

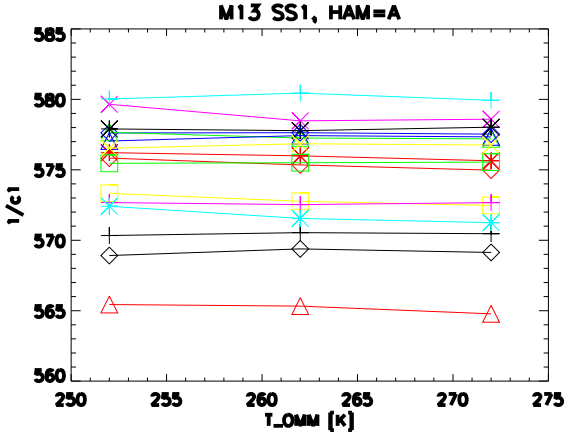


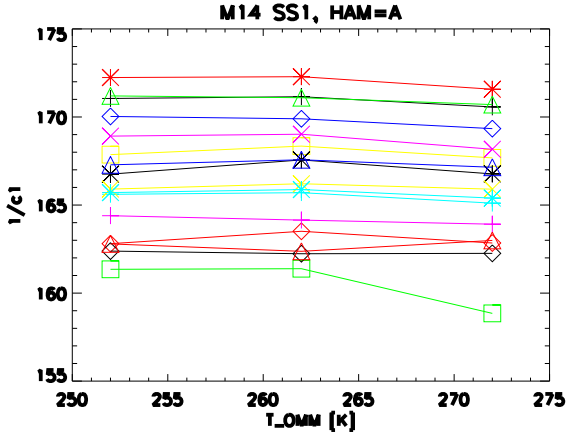
Temperature Variation in 1/c1

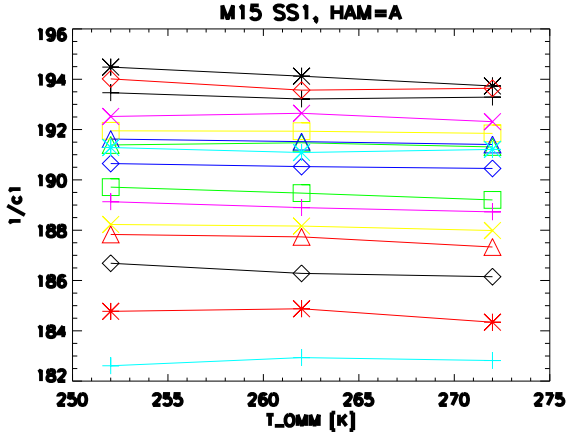


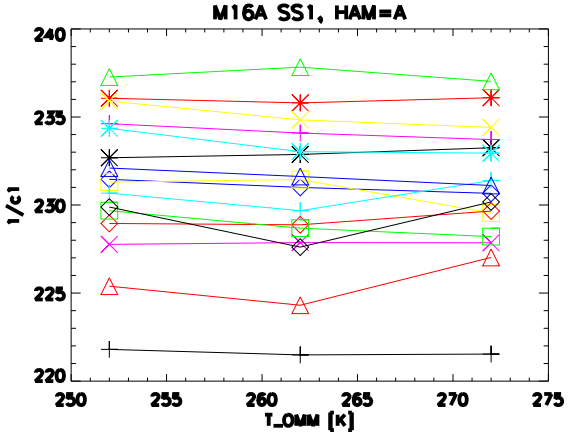


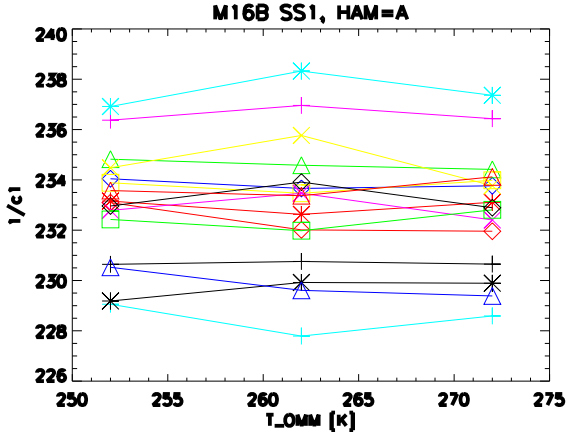


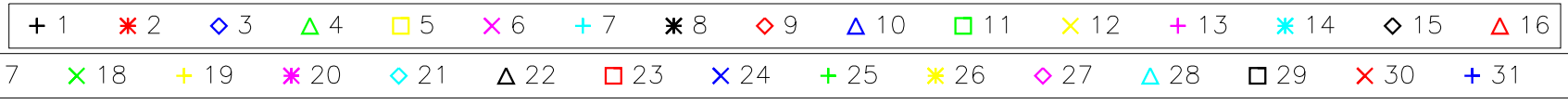




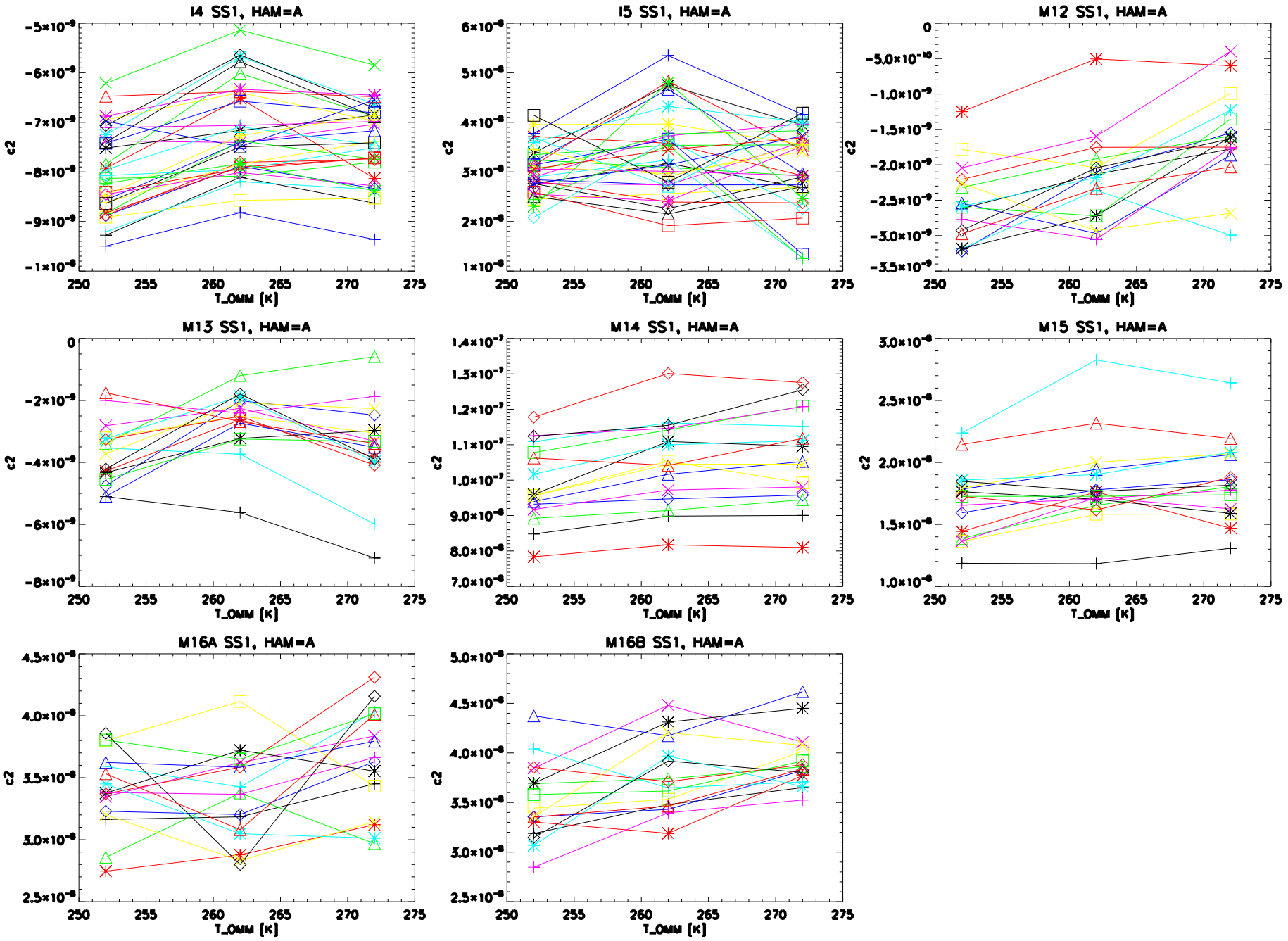




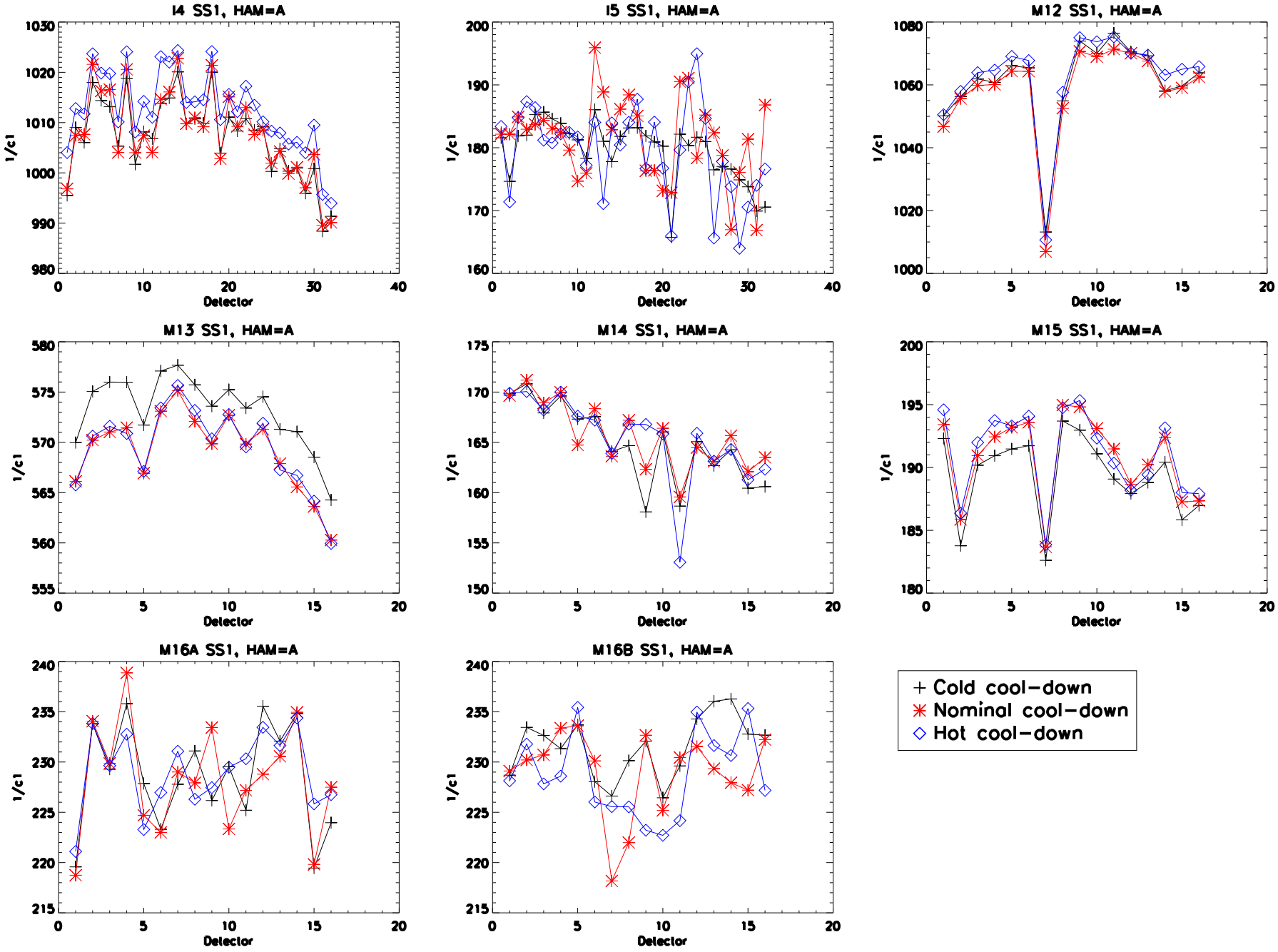




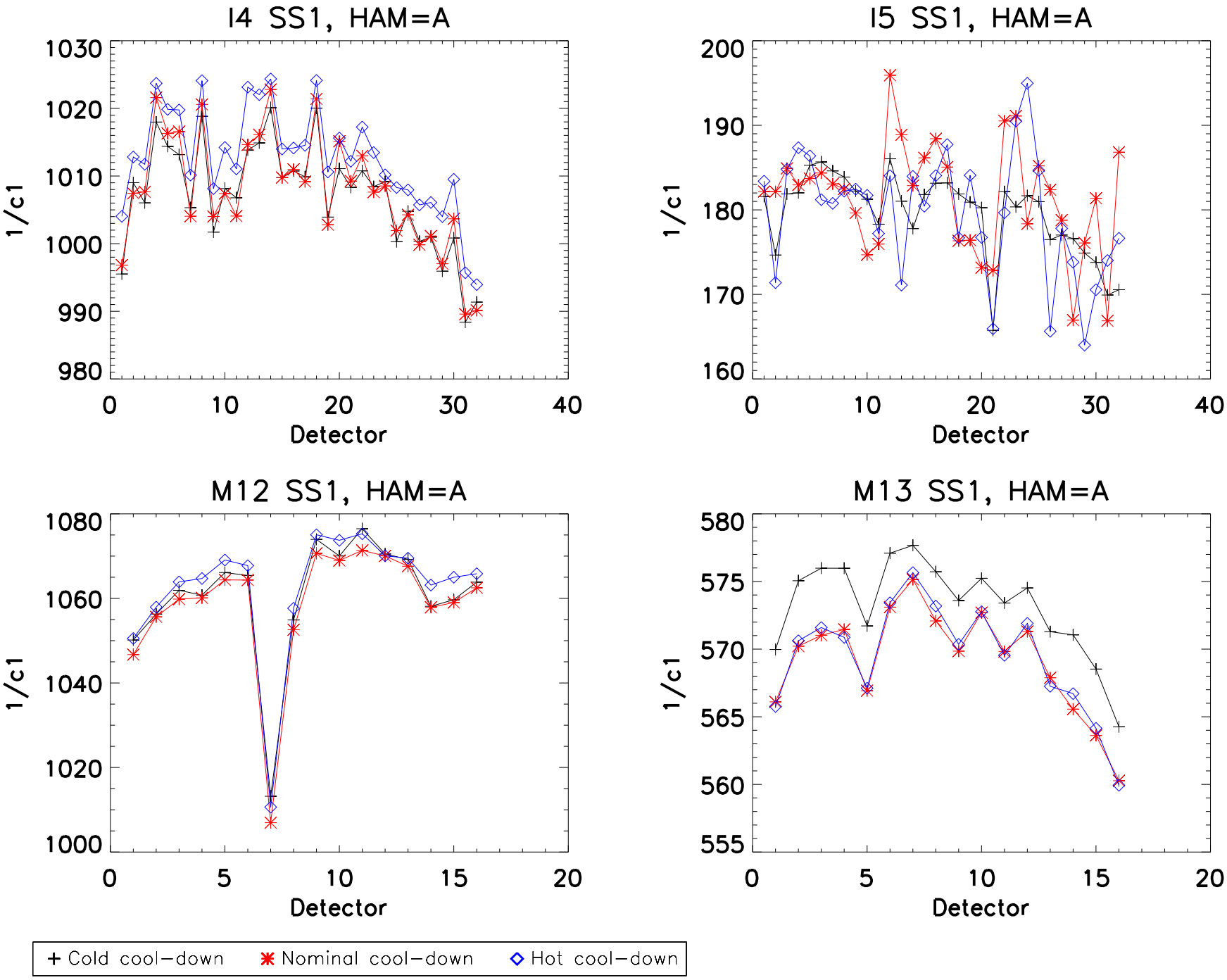
Temperature Variation in c2



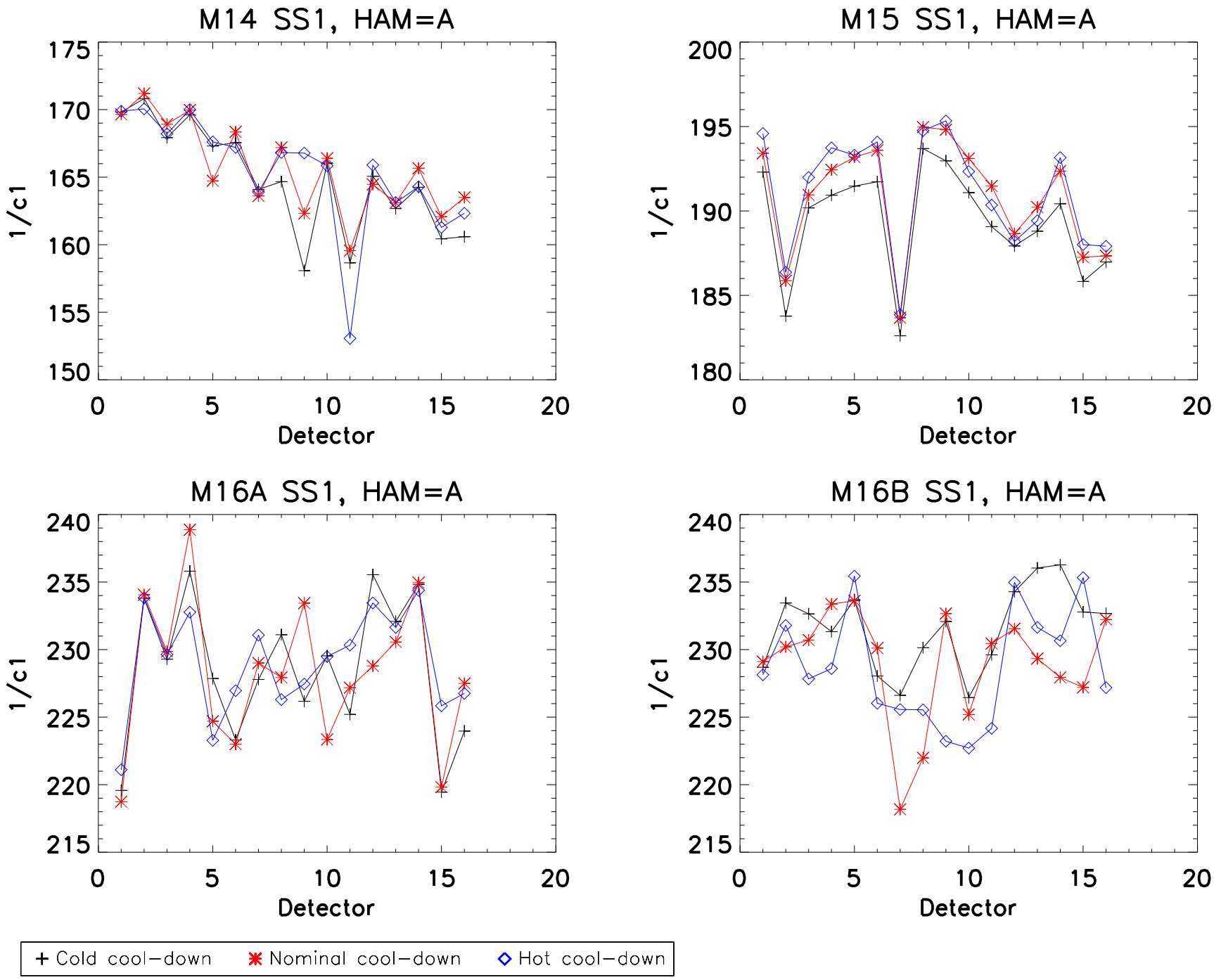
Detector Variation in Gain



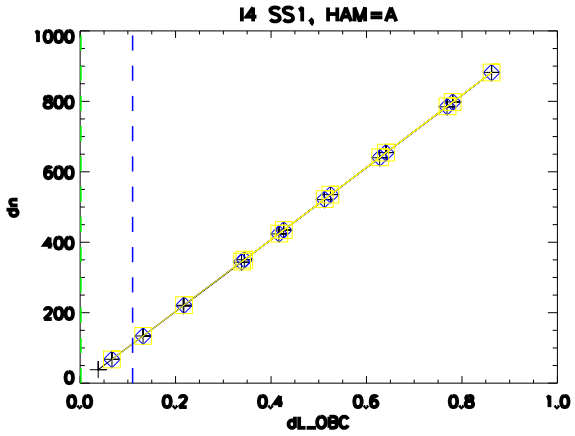
Detector Variation in Gain

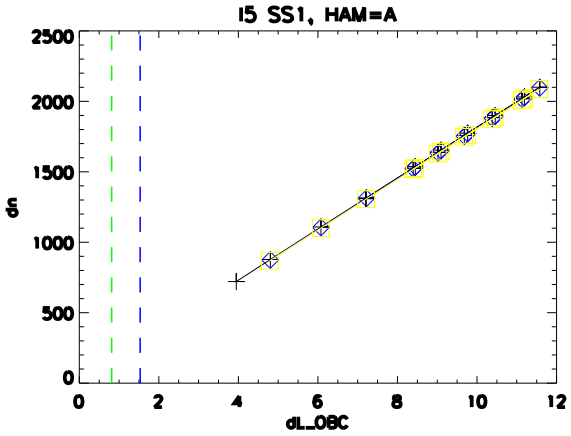


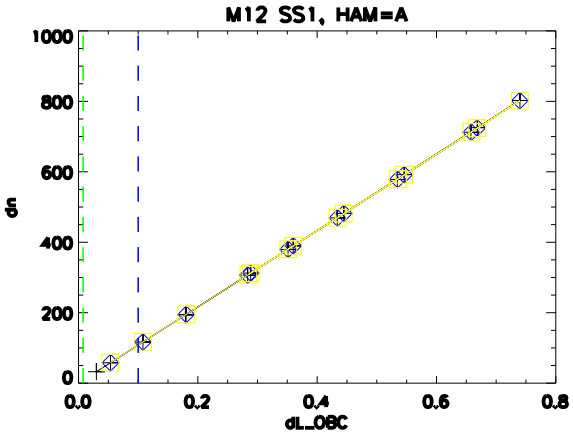
Detector Variation in Gain

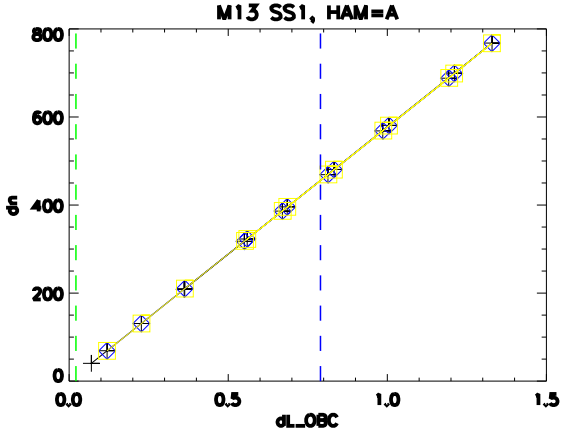


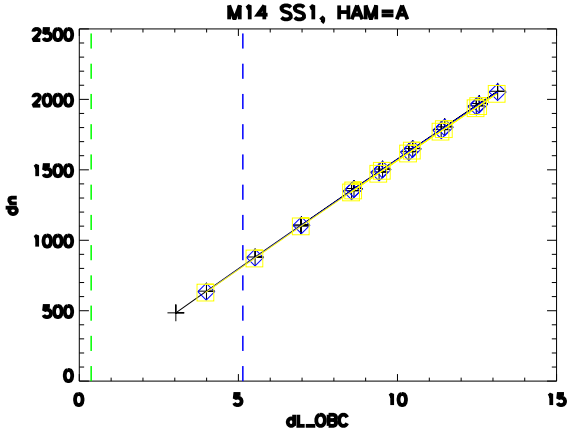
dn vs dL_OBC

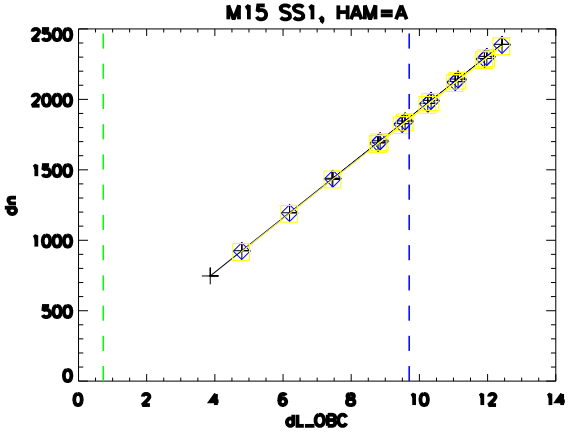

I4 SS1, HAM=A
dn
dL_OBC

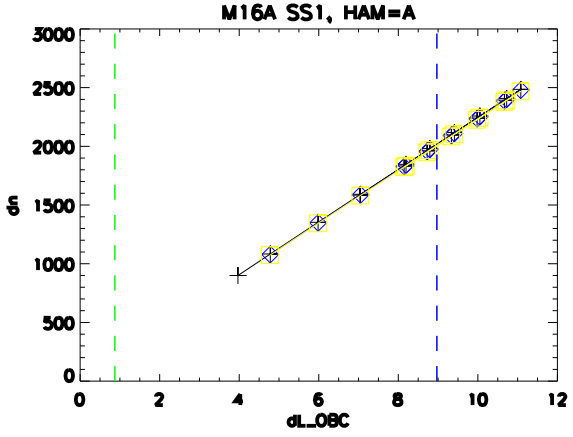

I5 SS1, HAM=A
dn
dL_OBC

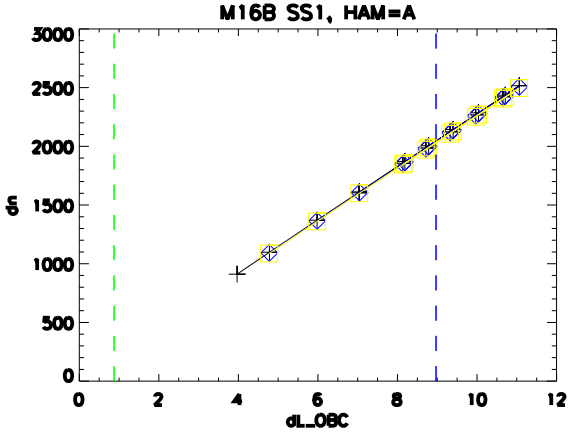

M12 SS1, HAM=A
dn
dL_OBC

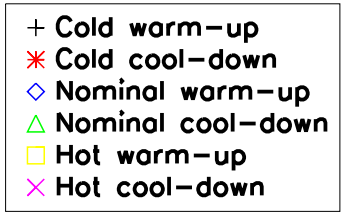

M13 SS1, HAM=A
dn
dL_OBC


M14 SS1, HAM=A
dn
dL_OBC

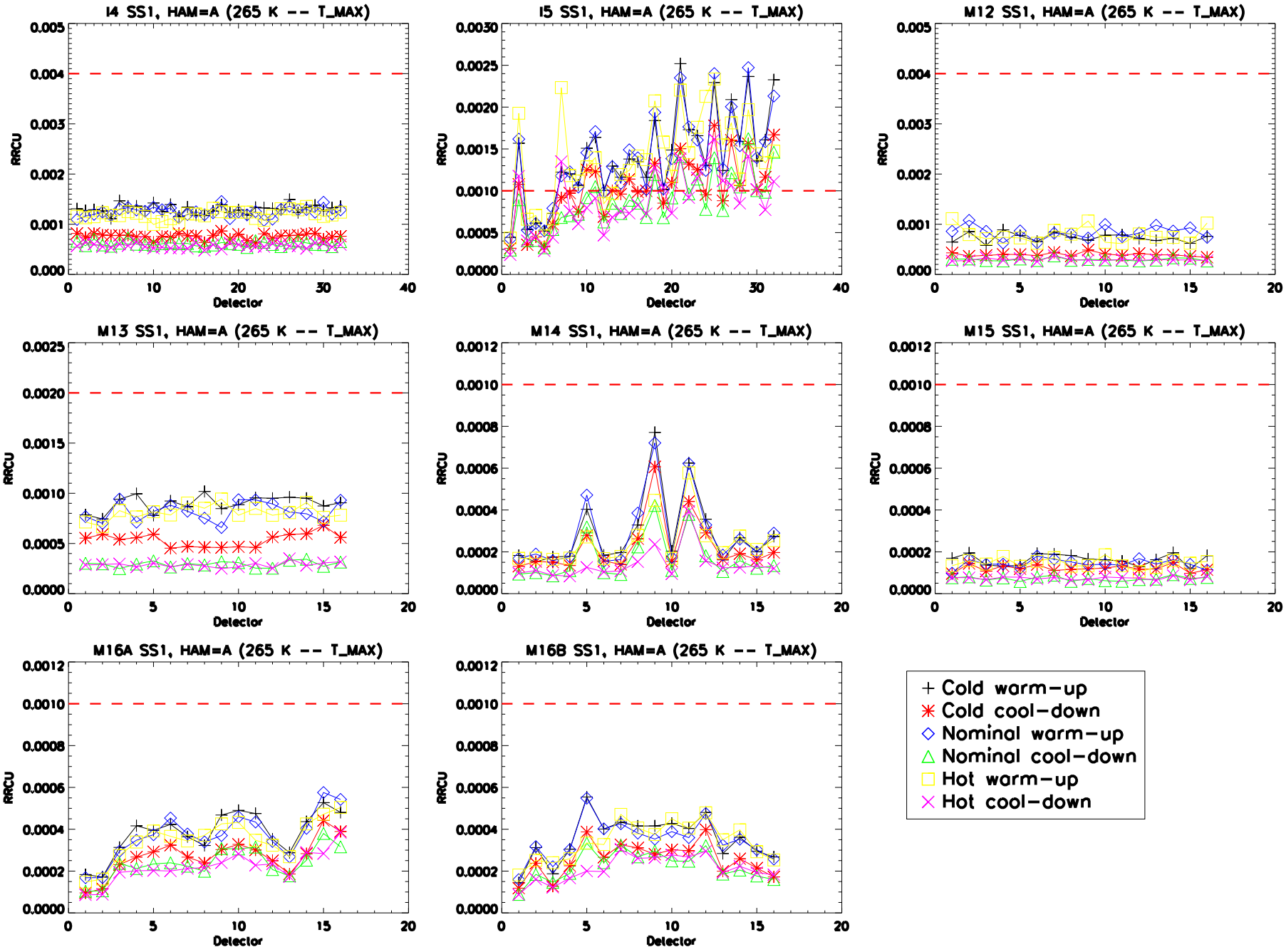

M15 SS1, HAM=A
dn
dL_OBC


M16A SS1, HAM=A
dn
dL_OBC

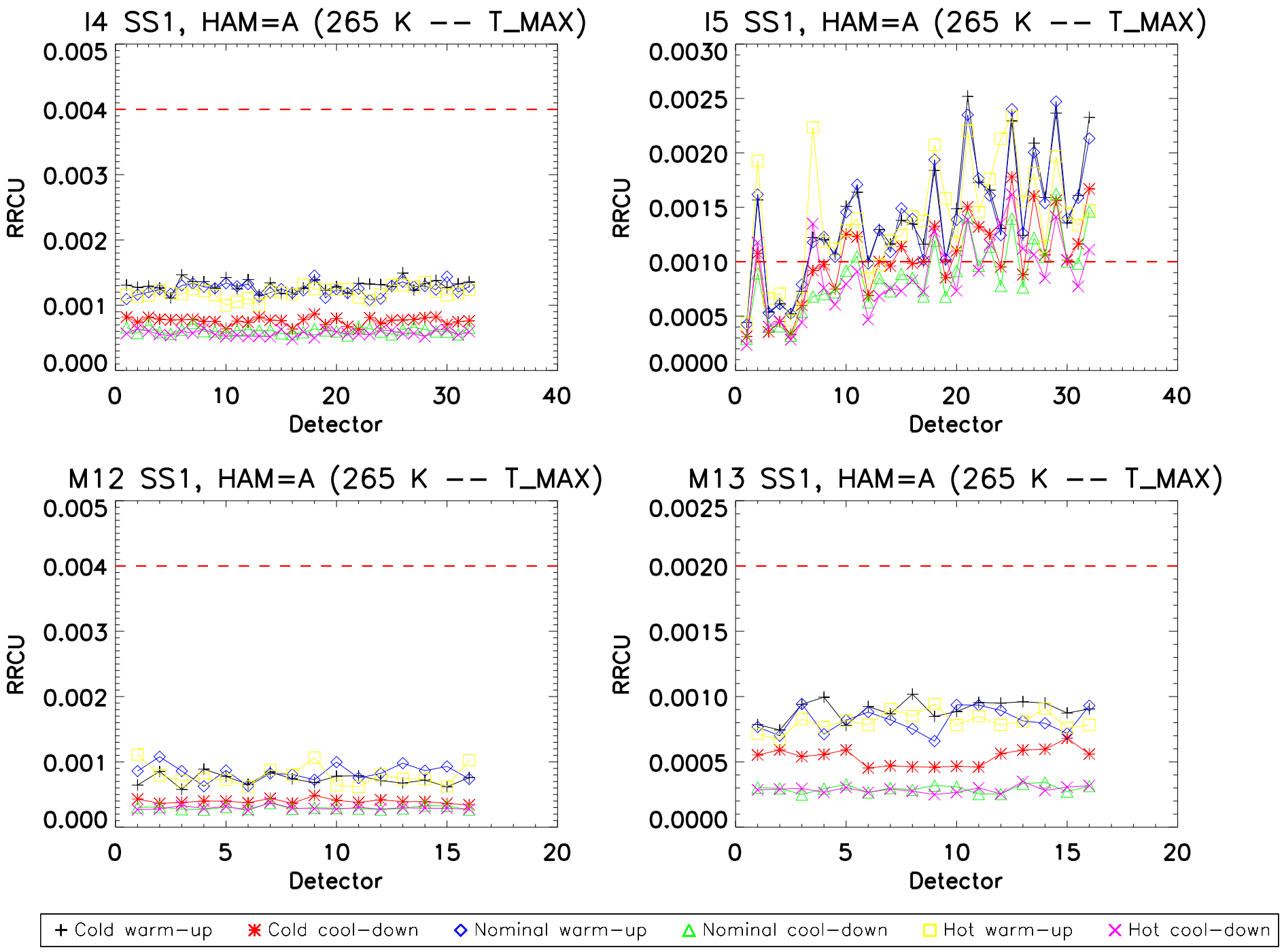

M16B SS1, HAM=A
dn
dL_OBC

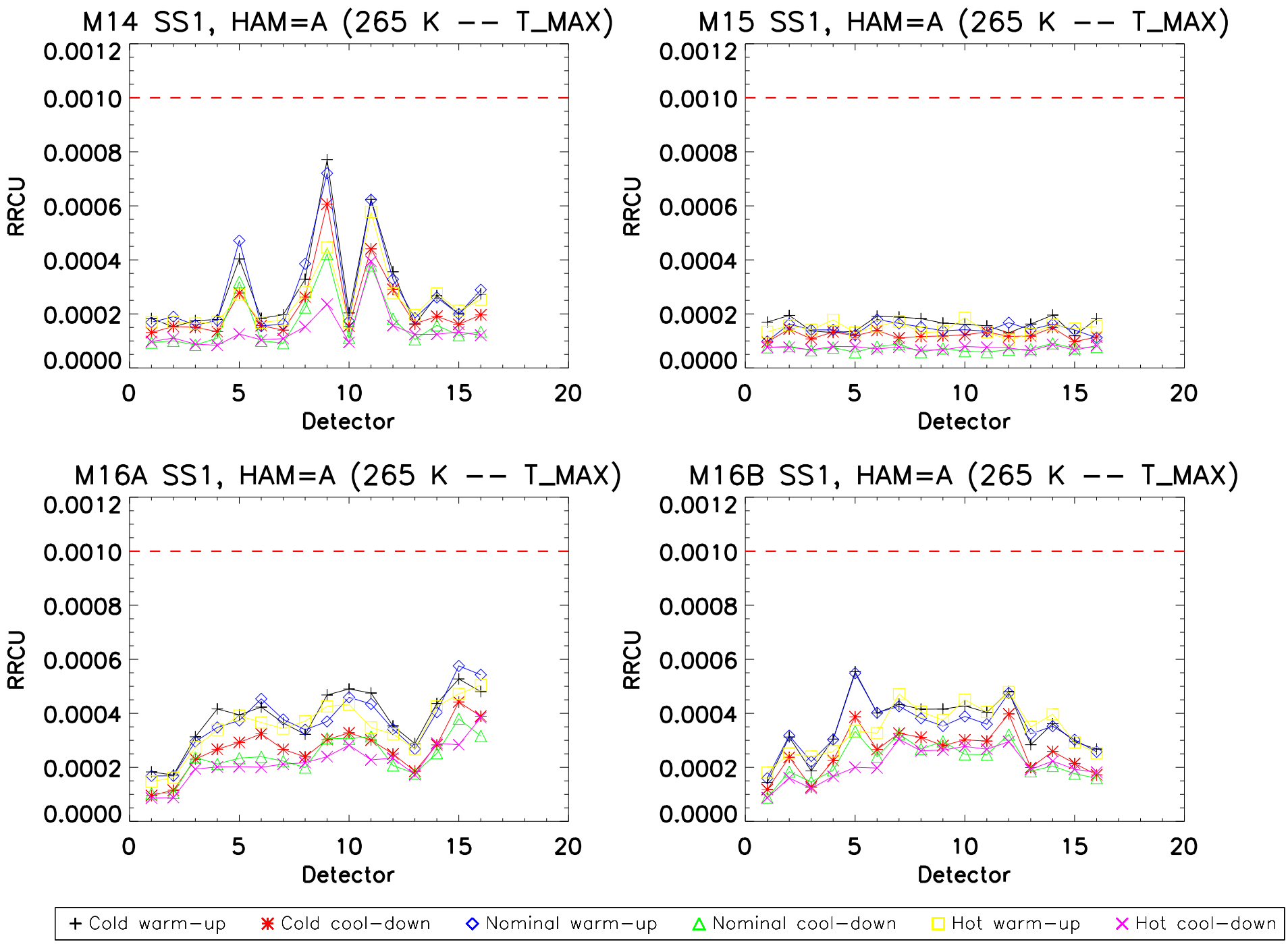

Cold warm-up
Cold cool-down
Nominal warm-up
Nominal cool-down
Hot warm-up
Hot cool-down

Detector Variation in RRCU

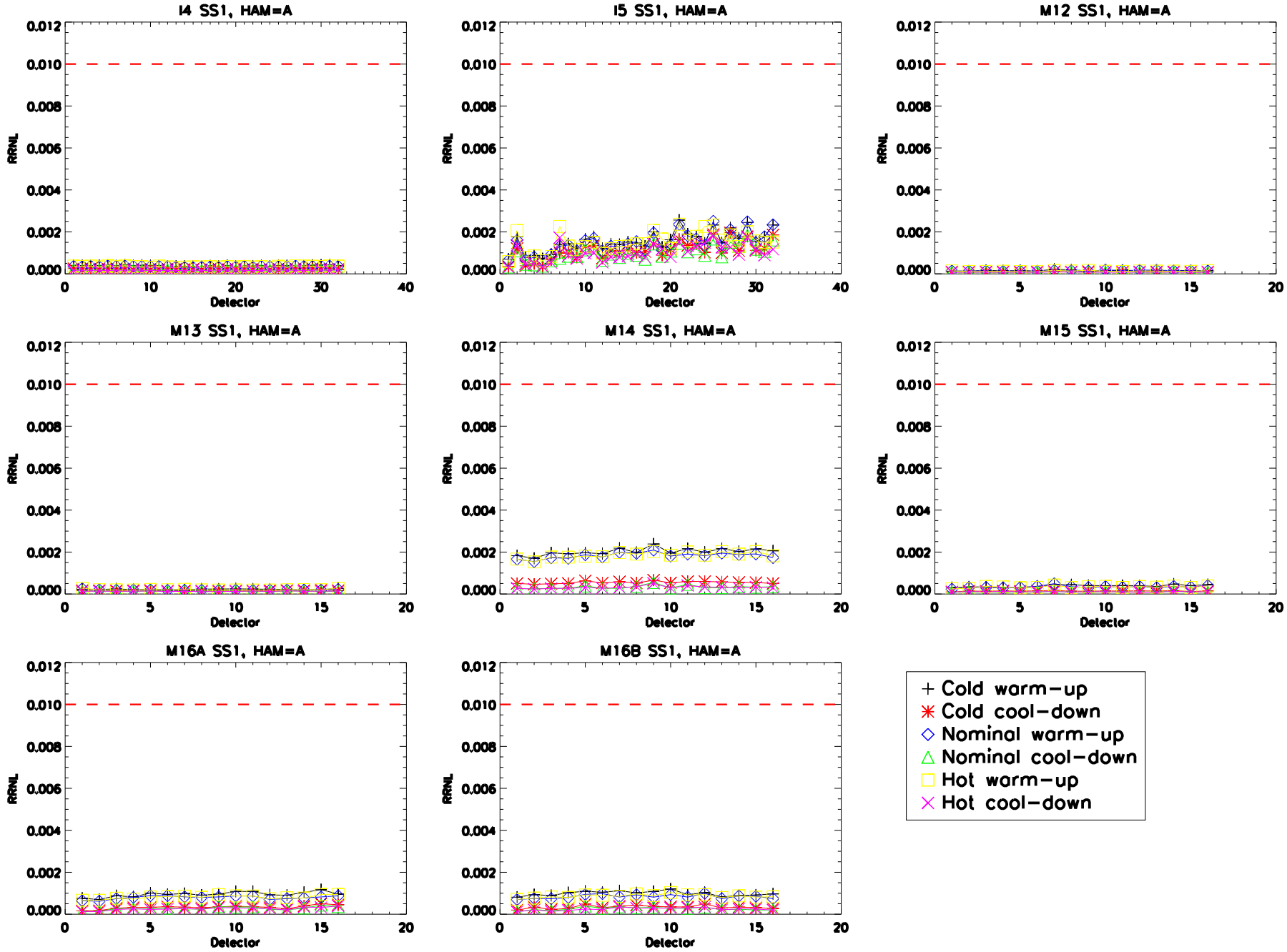


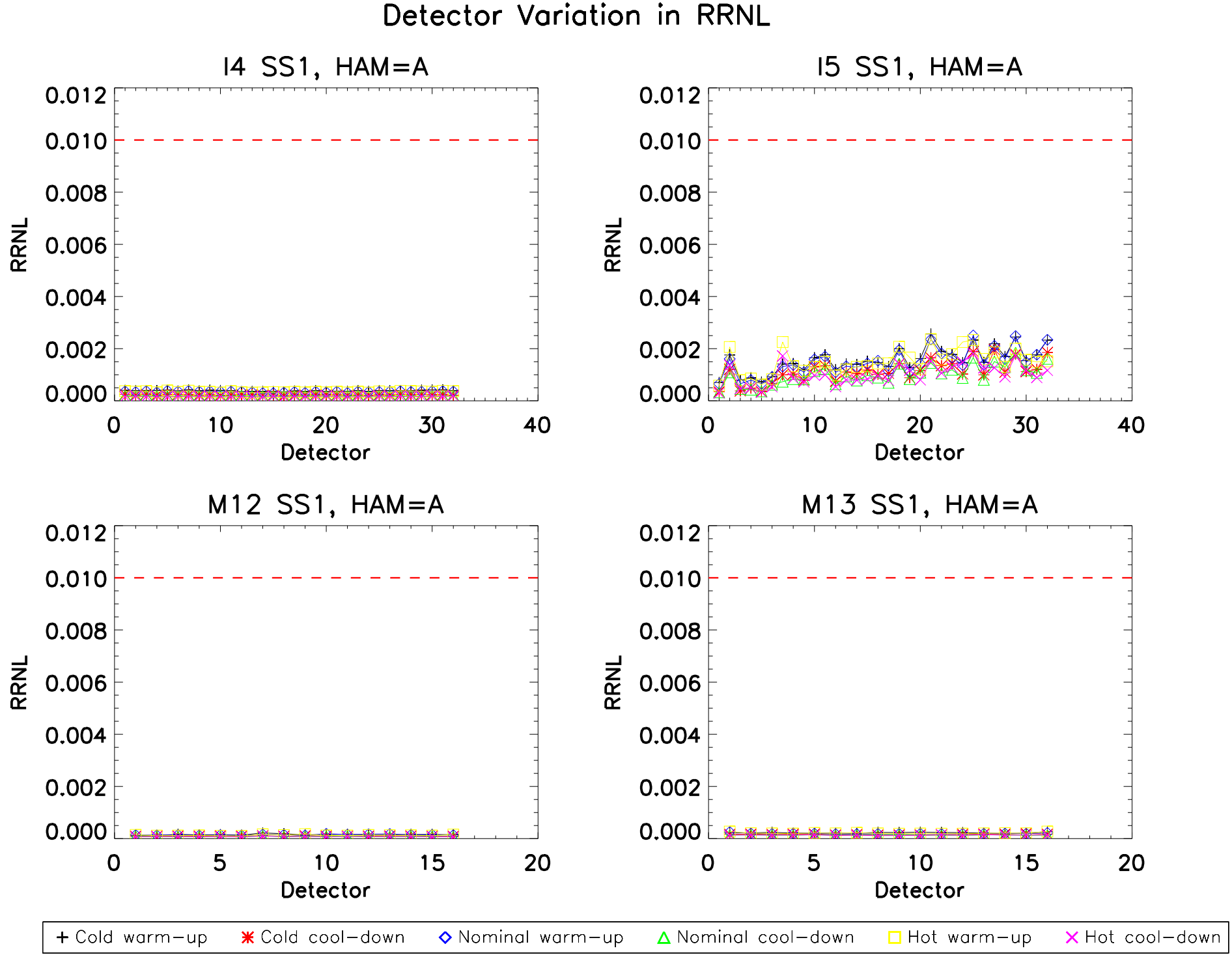
Detector Variation in RRCU

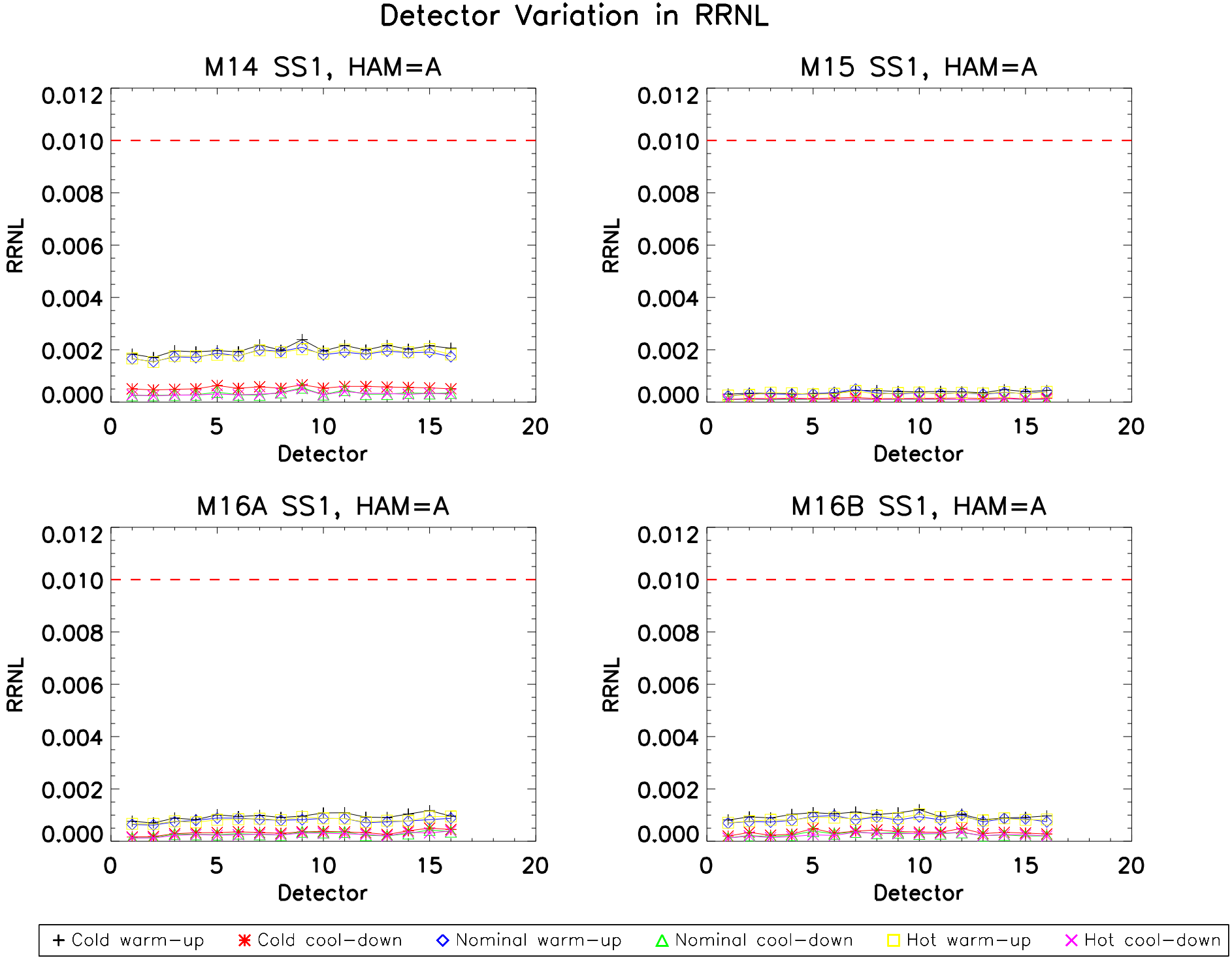



Detector Variation in RRCU
M14 SS1, HAM=A (265 K -- T_MAX)
M15 SS1, HAM=A (265 K -- T_MAX)
M16A SS1, HAM=A (265 K -- T_MAX)
M16B SS1, HAM=A (265 K -- T_MAX)
RRCU
Detector
0.0012
0.0010
0.0008
0.0006
0.0004
0.0002
0.0000
0
5
10
15
20
Cold warm-up
Cold cool-down
Nominal warm-up
Nominal cool-down
Hot warm-up
Hot cool-down

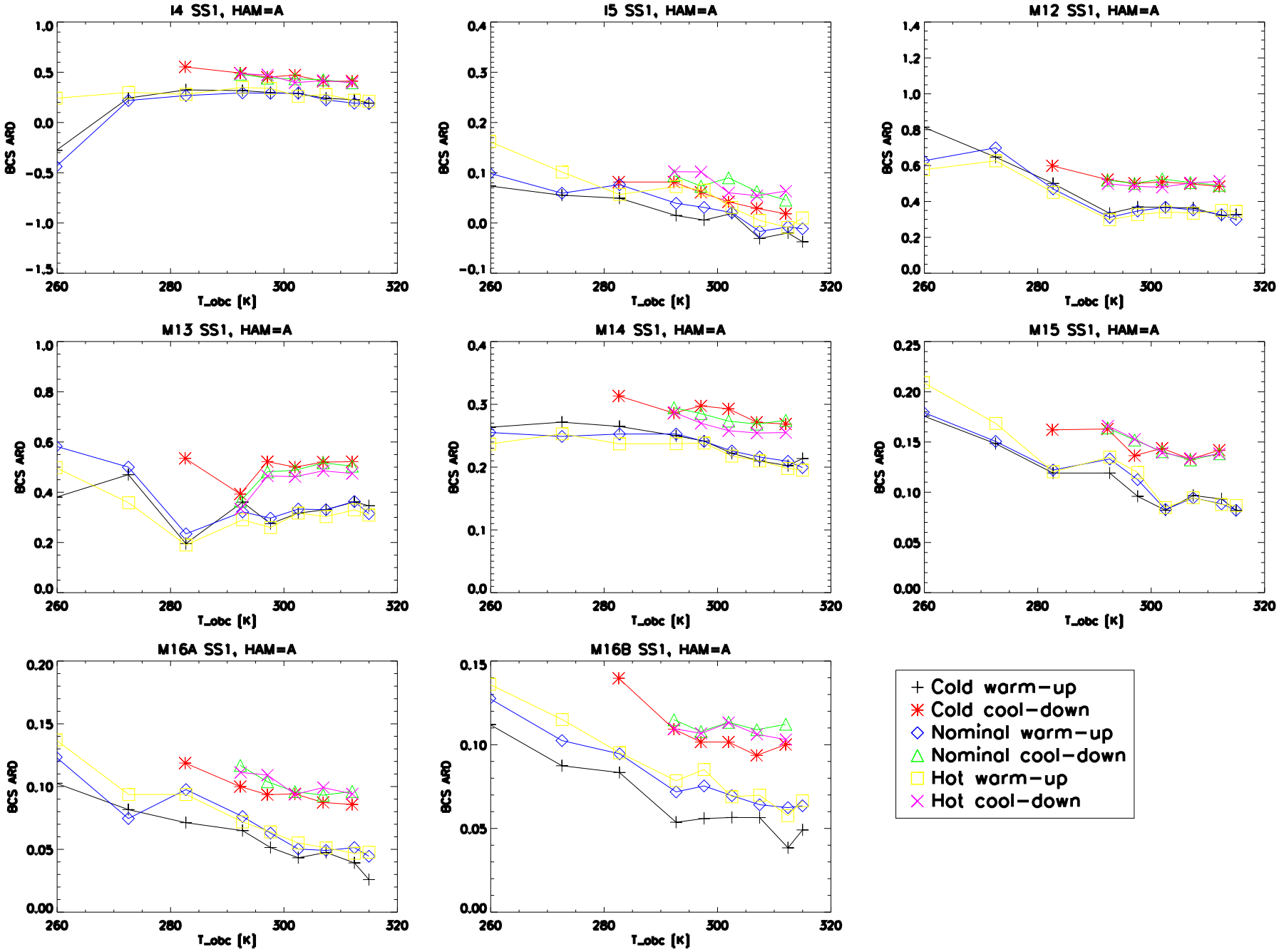
Detector Variation in RRNL



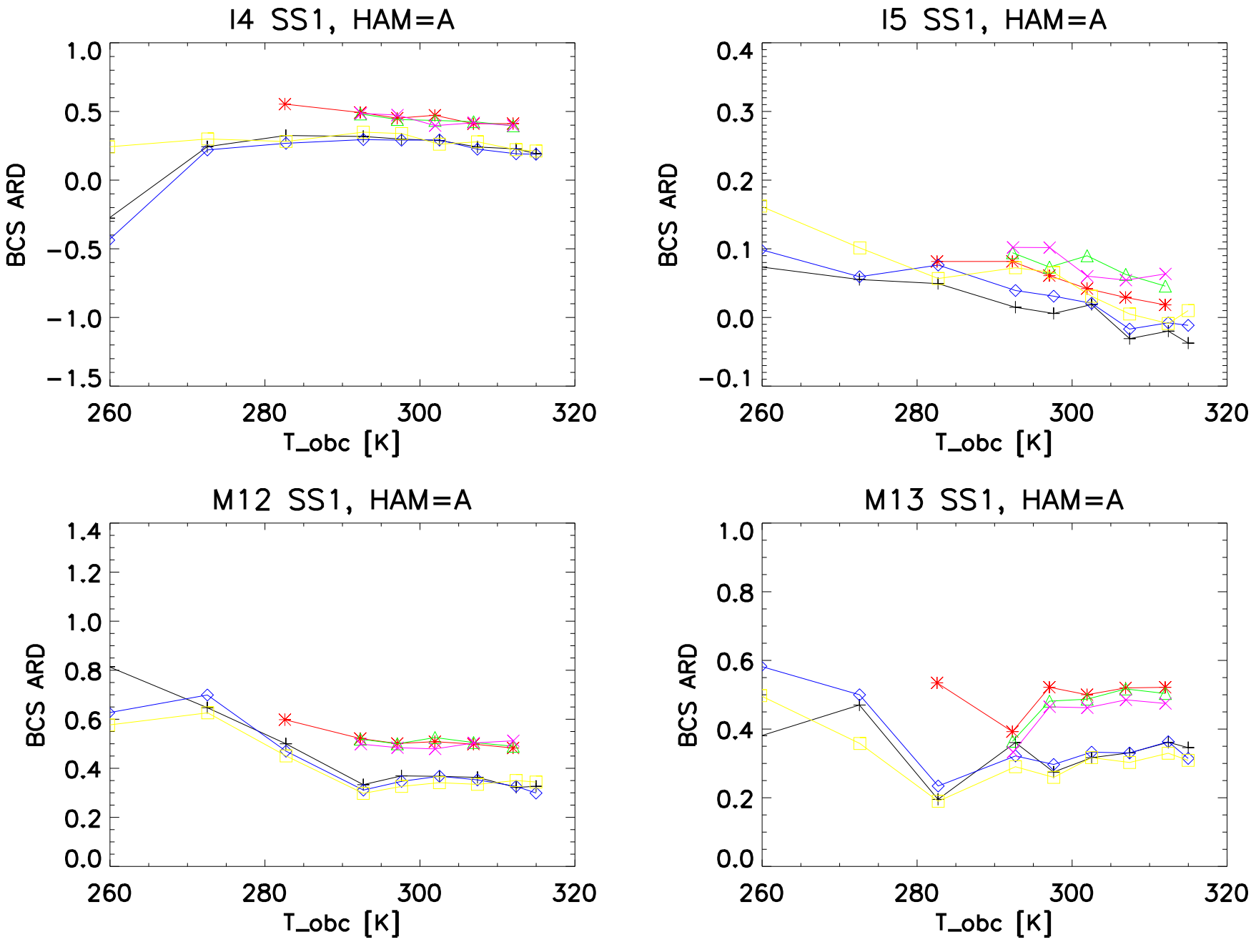

Detector Variation in RRNL
I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
RRNL
Detector
0.012
0.010
0.008
0.006
0.004
0.002
0.000
0
5
10
15
20
30
40
Cold warm−up
Cold cool−down
Nominal warm−up
Nominal cool−down
Hot warm−up
Hot cool−down


Detector Variation in RRNL
M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
RRNL
0.012
0.010
0.008
0.006
0.004
0.002
0.000
0
5
10
15
20
Detector
Cold warm−up
Cold cool−down
Nominal warm−up
Nominal cool−down
Hot warm−up
Hot cool−down

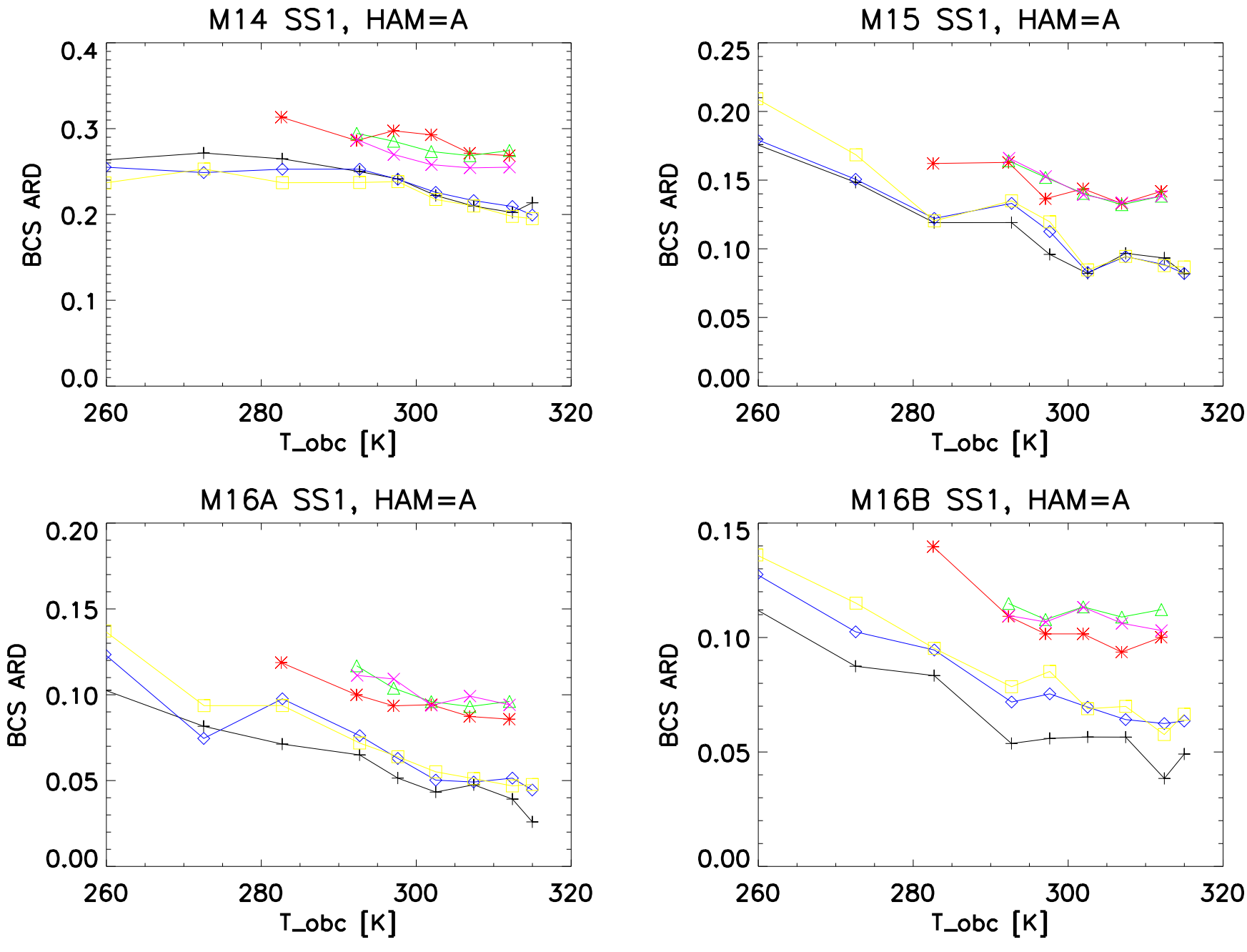
ARD vs T_obc


I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
BCS ARD
T_obc (K)
Cold warm-up
Cold cool-down
Nominal warm-up
Nominal cool-down
Hot warm-up
Hot cool-down

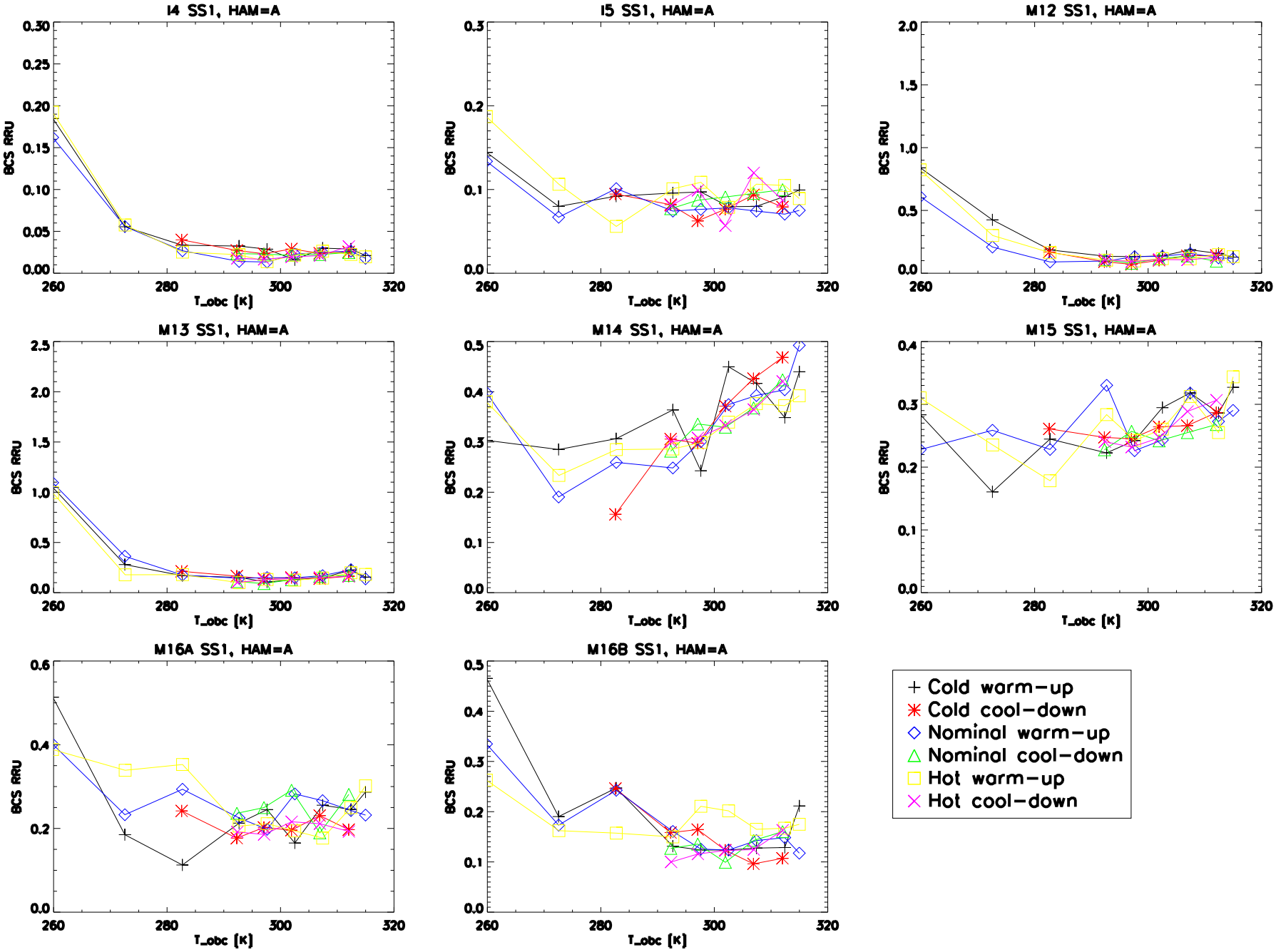
ARD vs T_obc


I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
BCS ARD
T_obc [K]
+ Cold warm−up
Cold cool−down
Nominal warm−up
Nominal cool−down
Hot warm−up
Hot cool−down

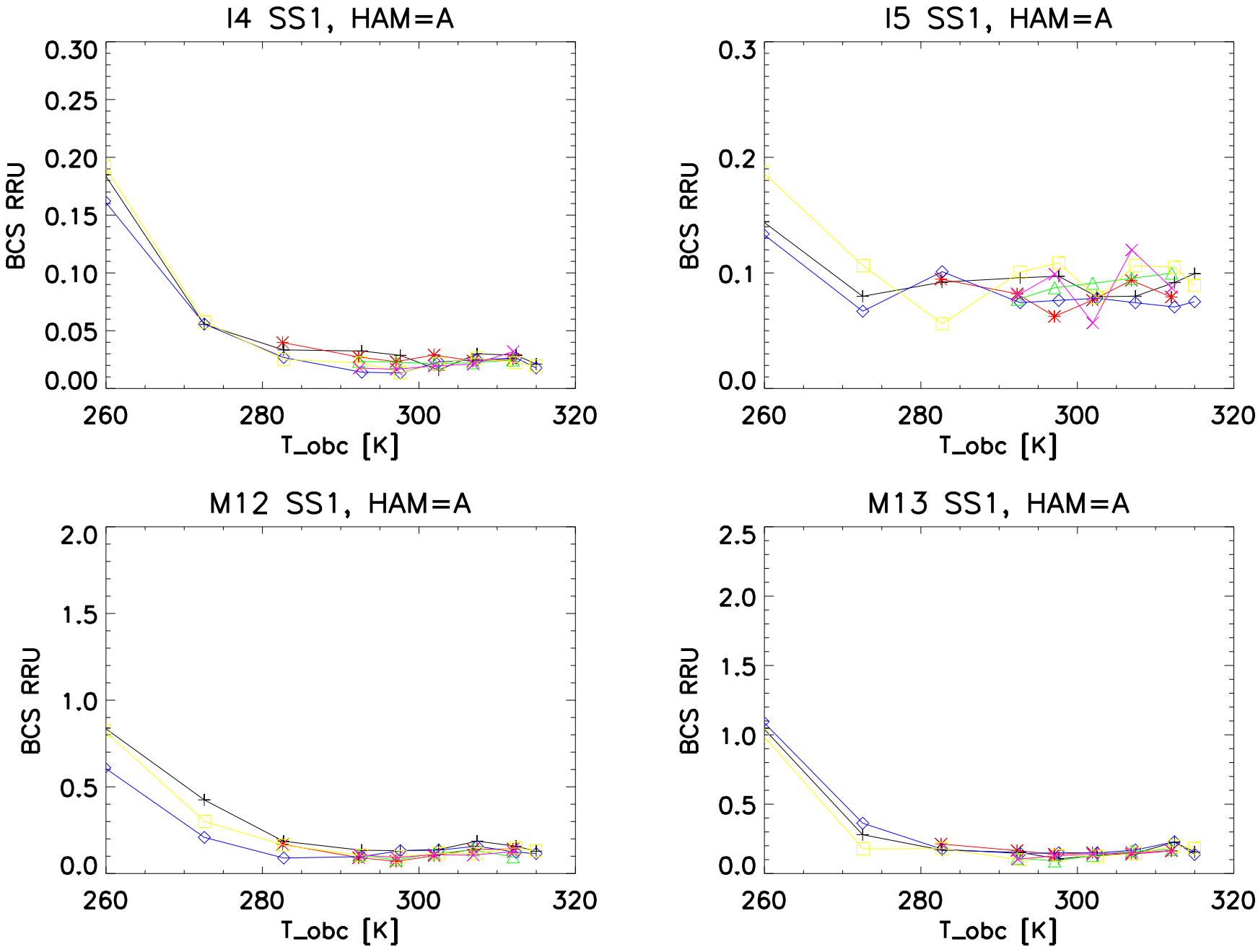
ARD vs T_obc


M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
BCS ARD
T_obc [K]
0.0
0.1
0.2
0.3
0.4
0.00
0.05
0.10
0.15
0.20
0.25
260
280
300
320
+ Cold warm-up
Cold cool-down
Nominal warm-up
Nominal cool-down
Hot warm-up
Hot cool-down

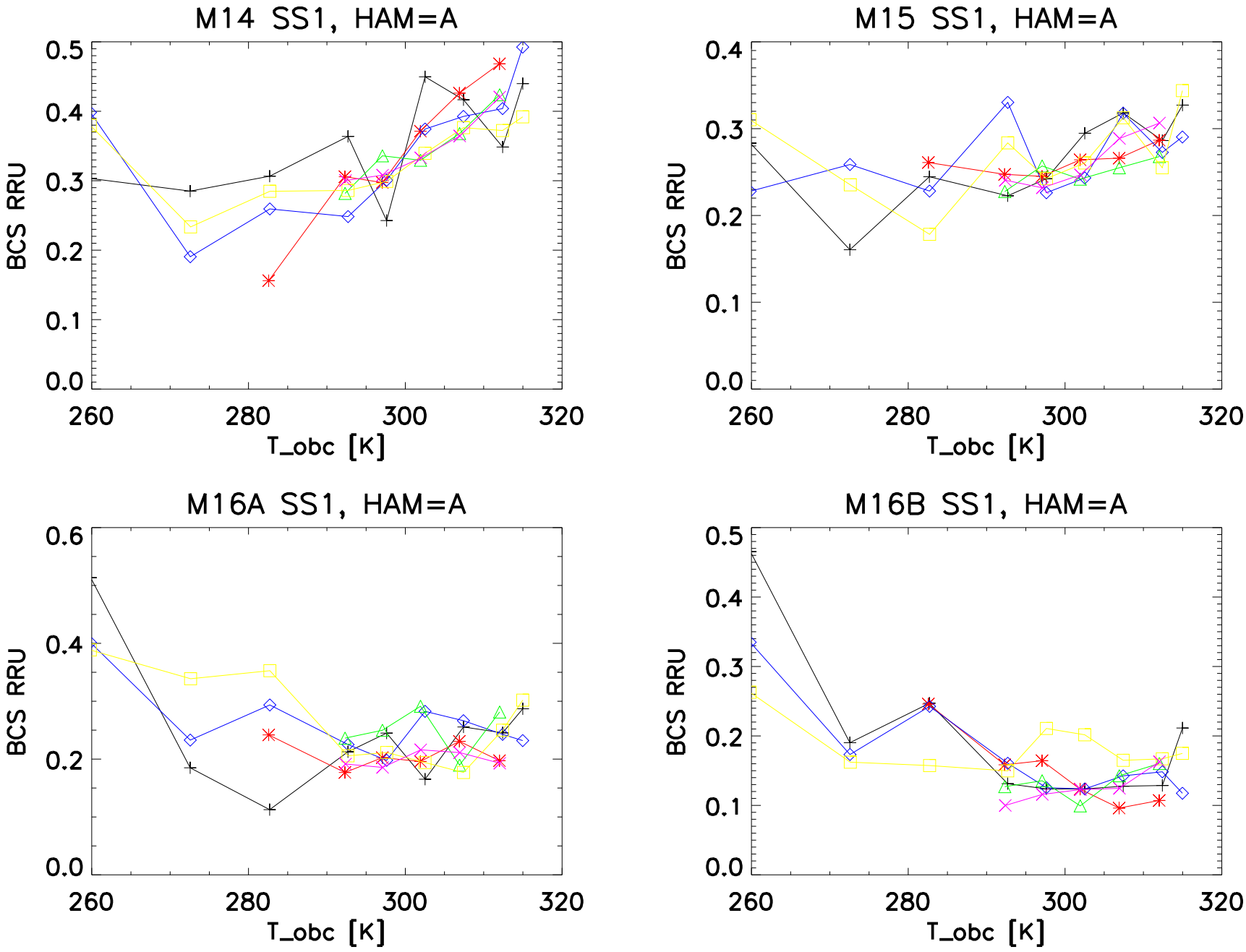
RRU vs T_obc


I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
BCS RRU
T_obc (K)
Cold warm-up
Cold cool-down
Nominal warm-up
Nominal cool-down
Hot warm-up
Hot cool-down

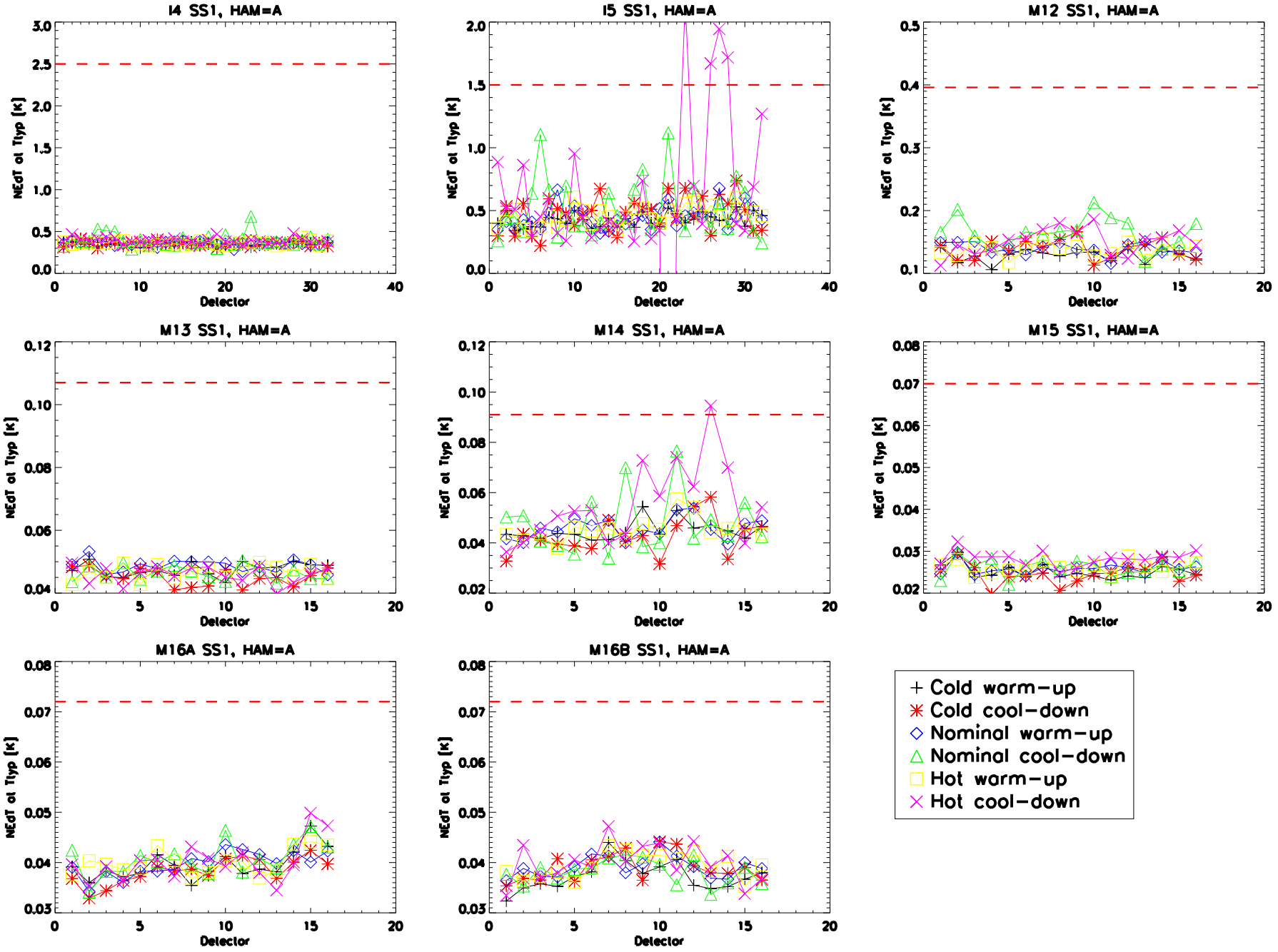
RRU vs T_obc

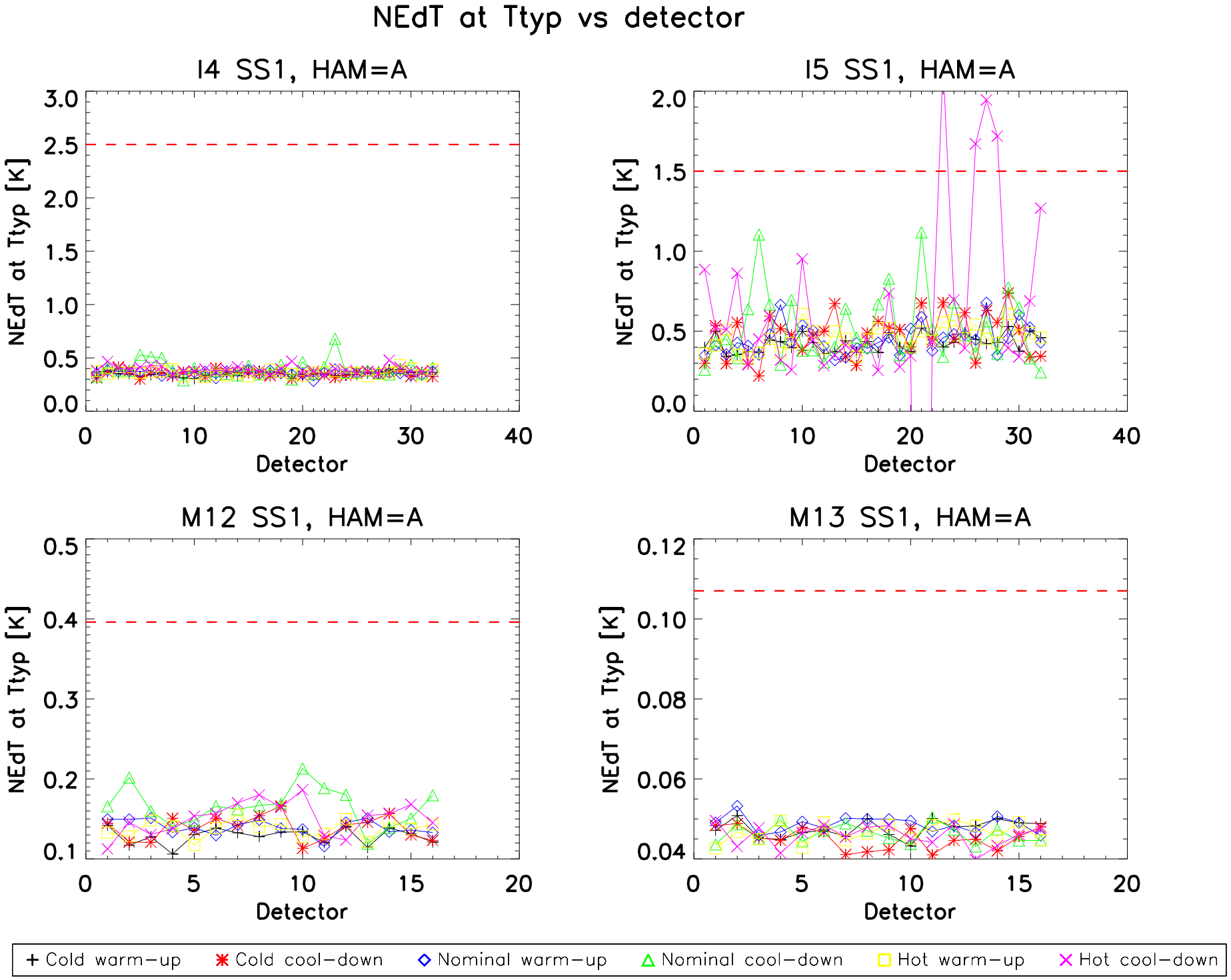

I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
BCS RRU
T_obc [K]
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.3
0.2
0.1
0.0
2.0
1.5
1.0
0.5
2.5
260
280
300
320
Cold warm−up
Cold cool−down
Nominal warm−up
Nominal cool−down
Hot warm−up
Hot cool−down

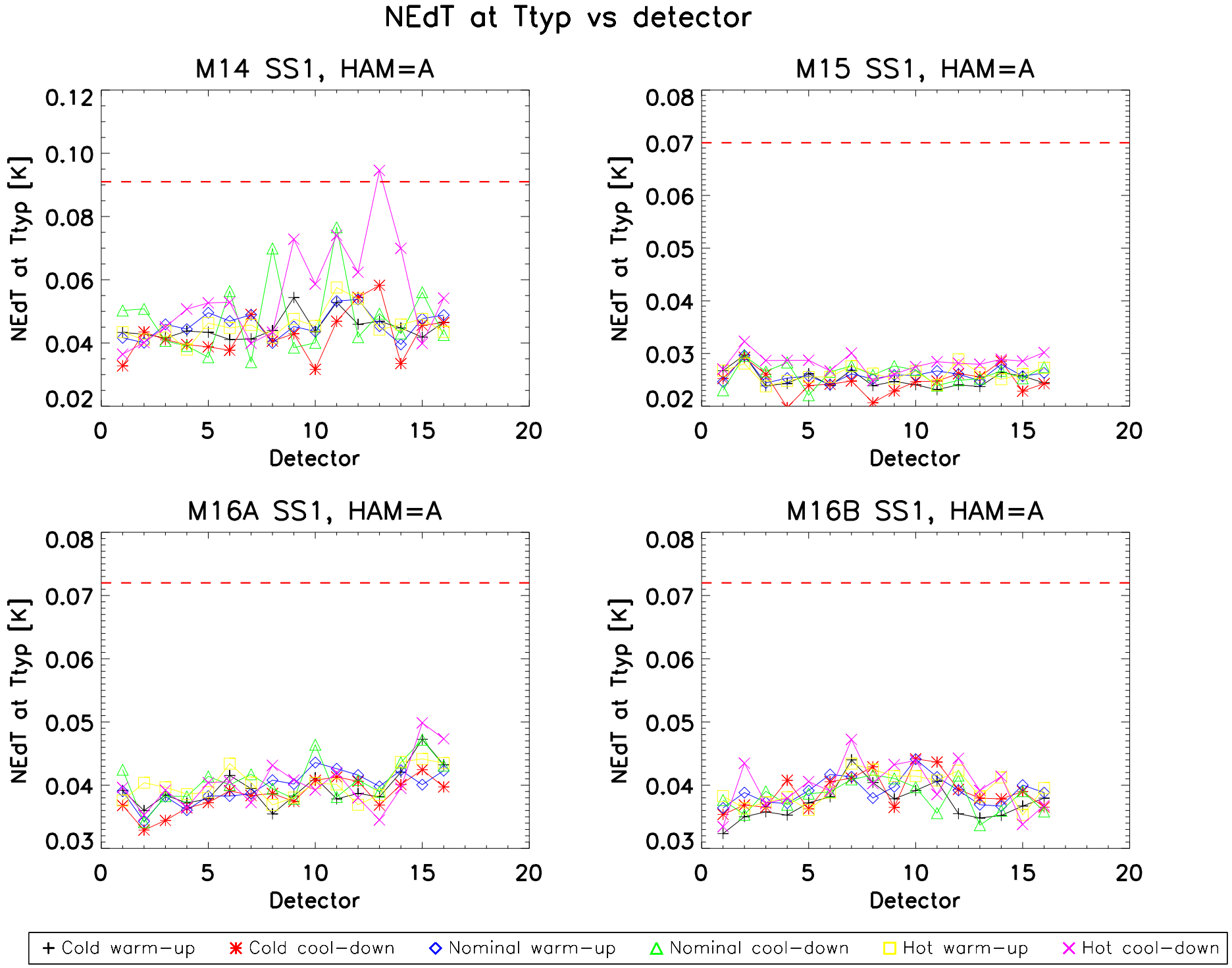
RRU vs T_obc


M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
BCS RRU
T_obc [K]
260
280
300
320
Cold warm−up
Cold cool−down
Nominal warm−up
Nominal cool−down
Hot warm−up
Hot cool−down

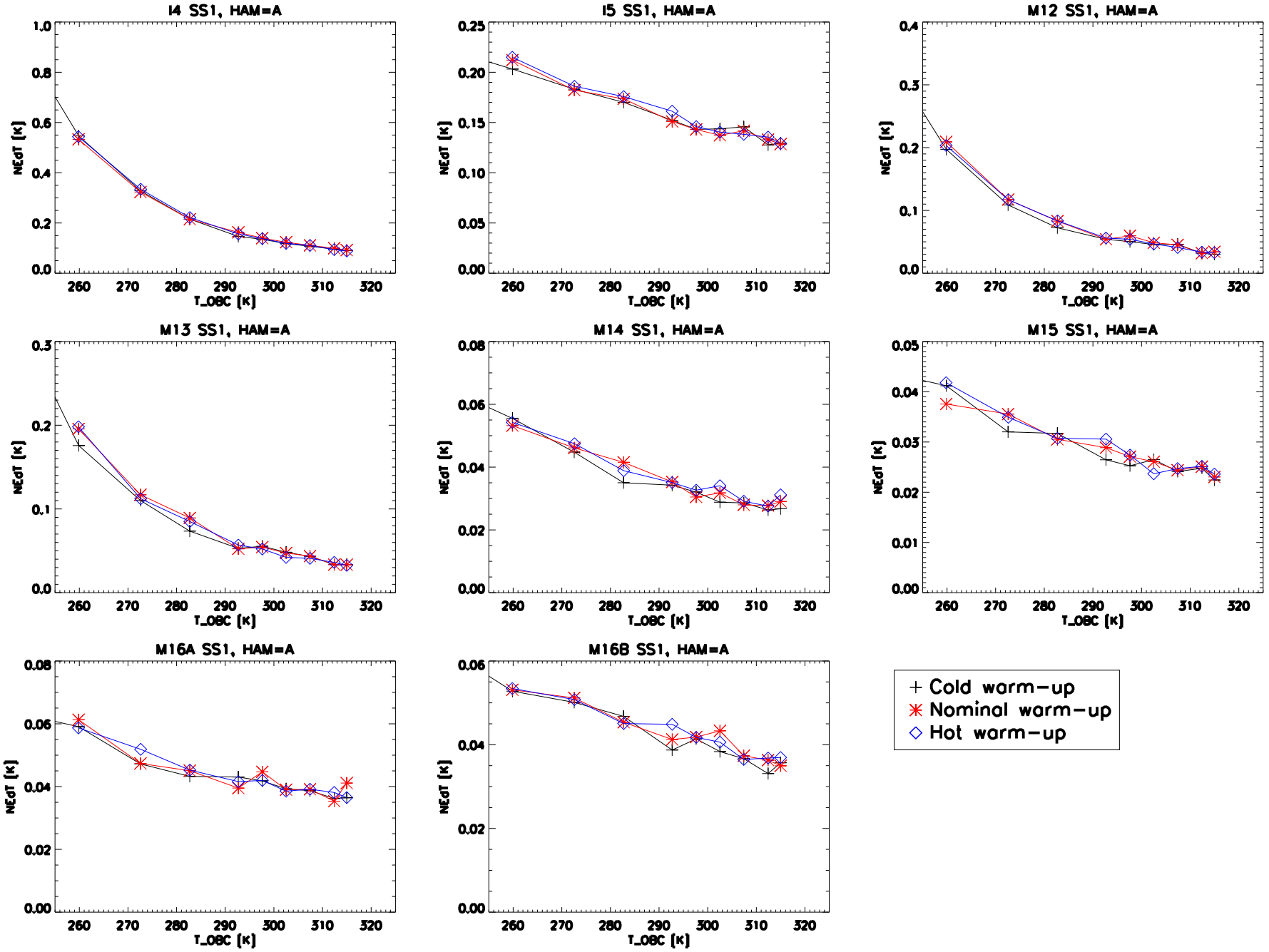
NEdT at Ttyp vs detector



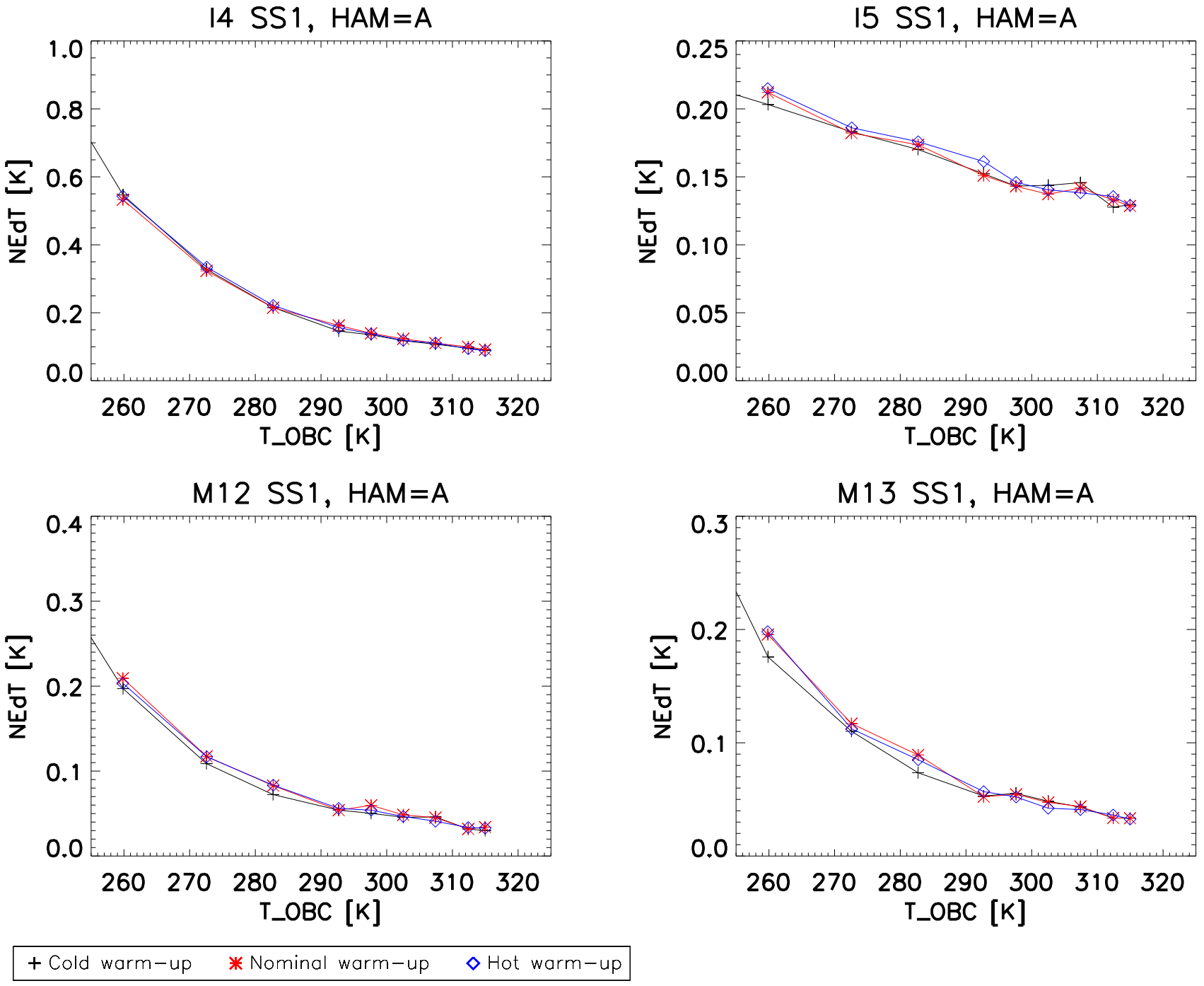

NEdT at Ttyp vs detector
I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
NEdT at Ttyp [K]
Detector
Cold warm−up
Cold cool−down
Nominal warm−up
Nominal cool−down
Hot warm−up
Hot cool−down

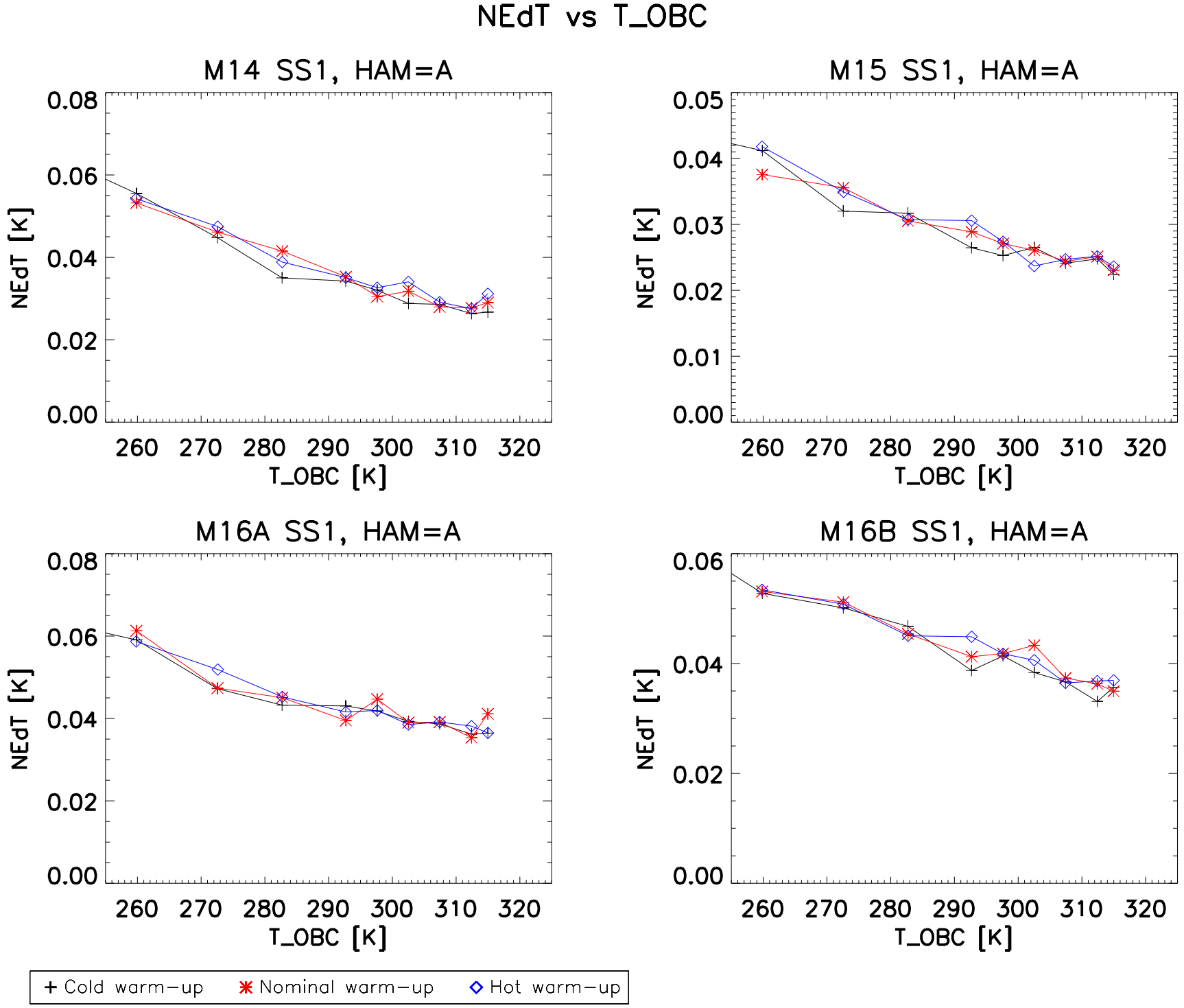

NEdT at Ttyp vs detector
M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
NEdT at Ttyp [K]
Detector
0.12
0.10
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0
5
10
15
20
Cold warm−up
Cold cool−down
Nominal warm−up
Nominal cool−down
Hot warm−up
Hot cool−down

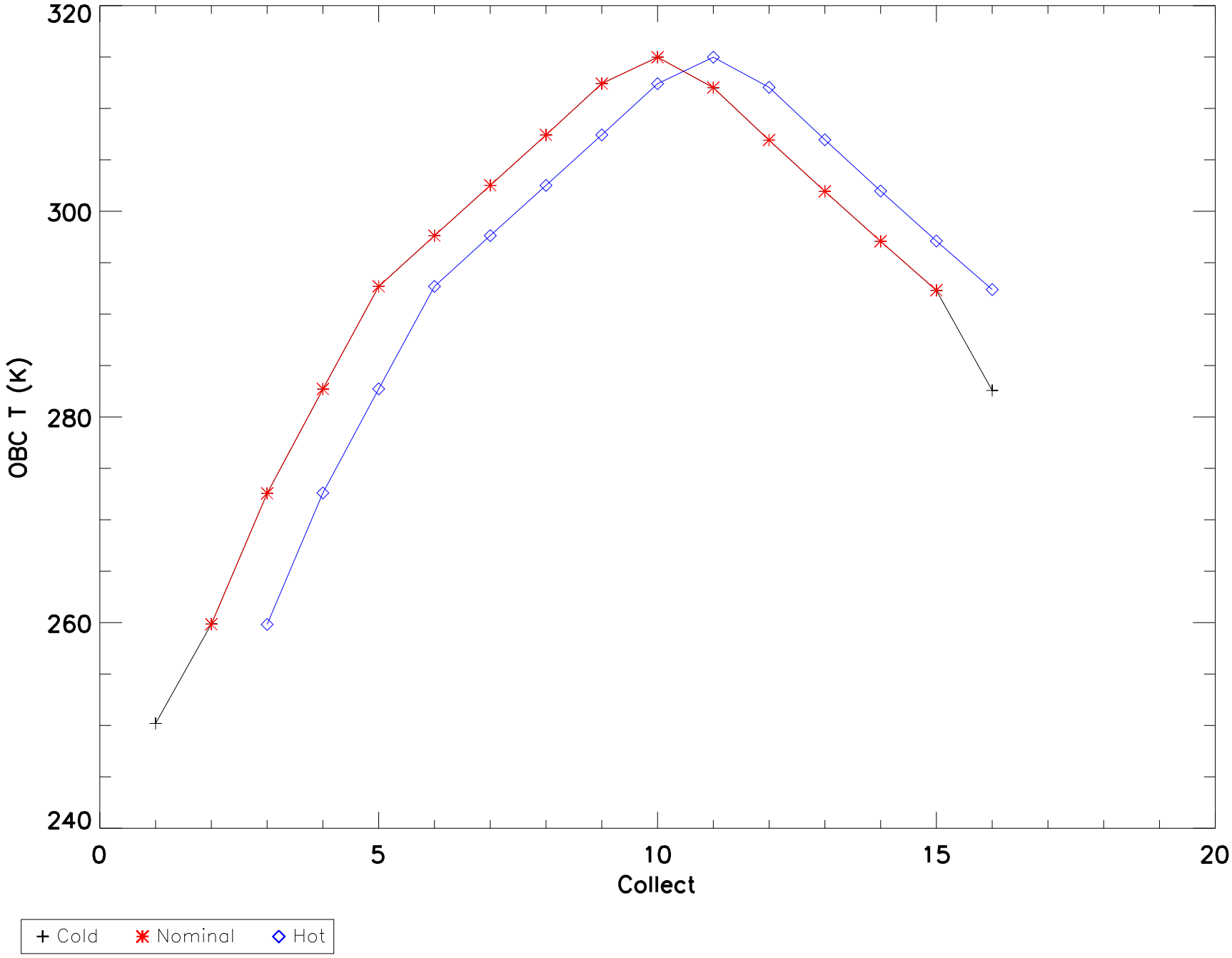
NEdT vs T_OBC

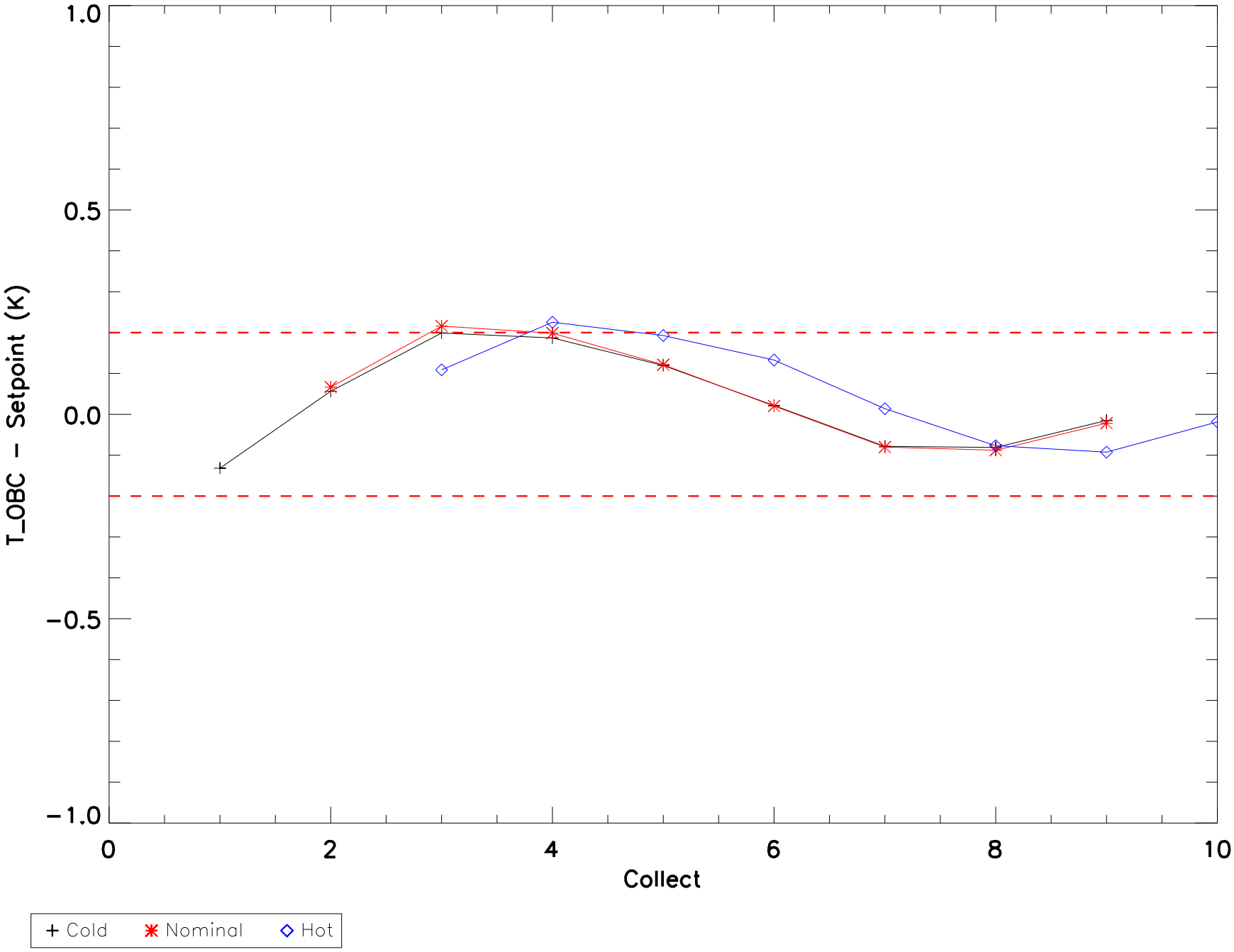

I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
NEdT [K]
T_OBC [K]
Cold warm-up
Nominal warm-up
Hot warm-up

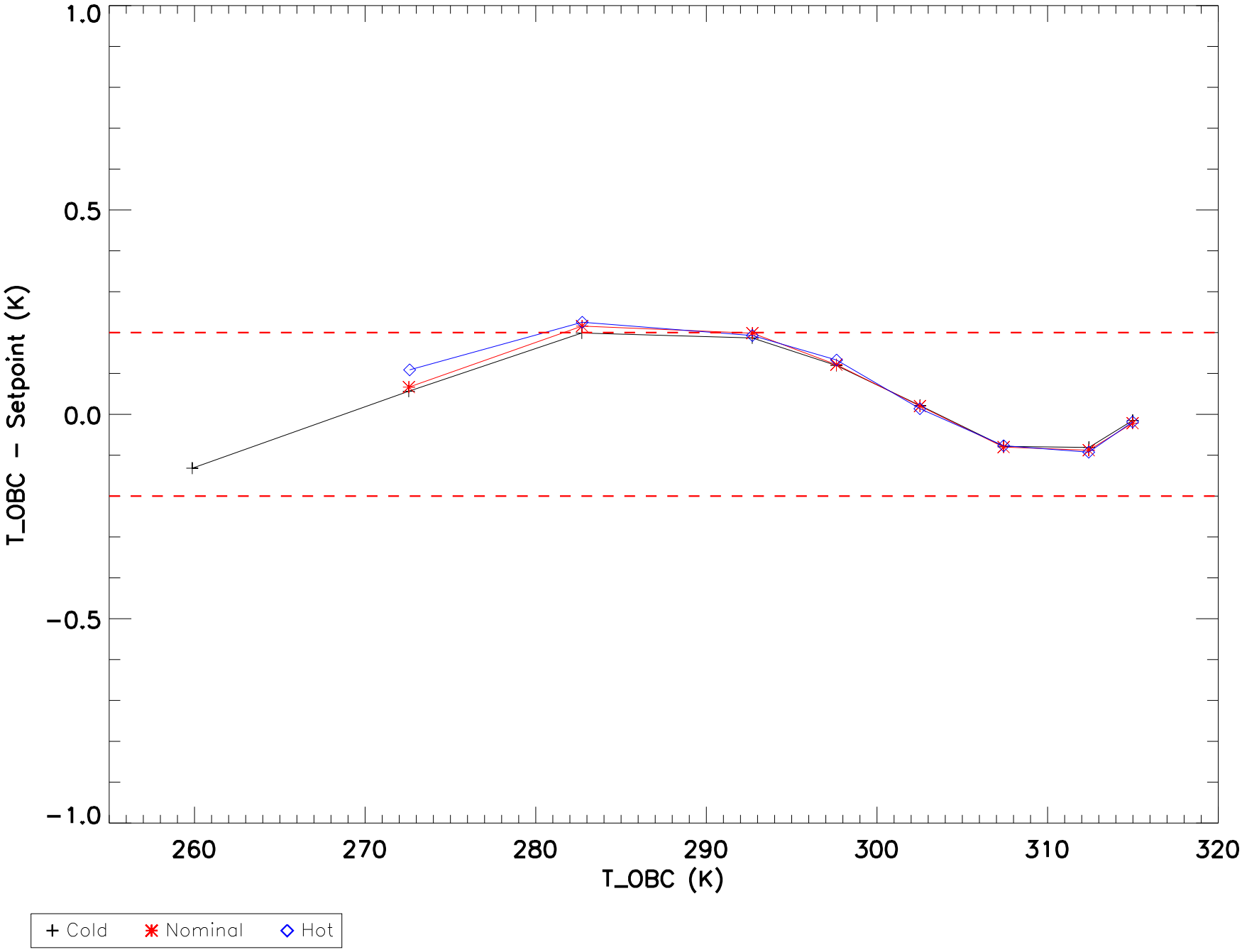
NEdT vs T_OBC

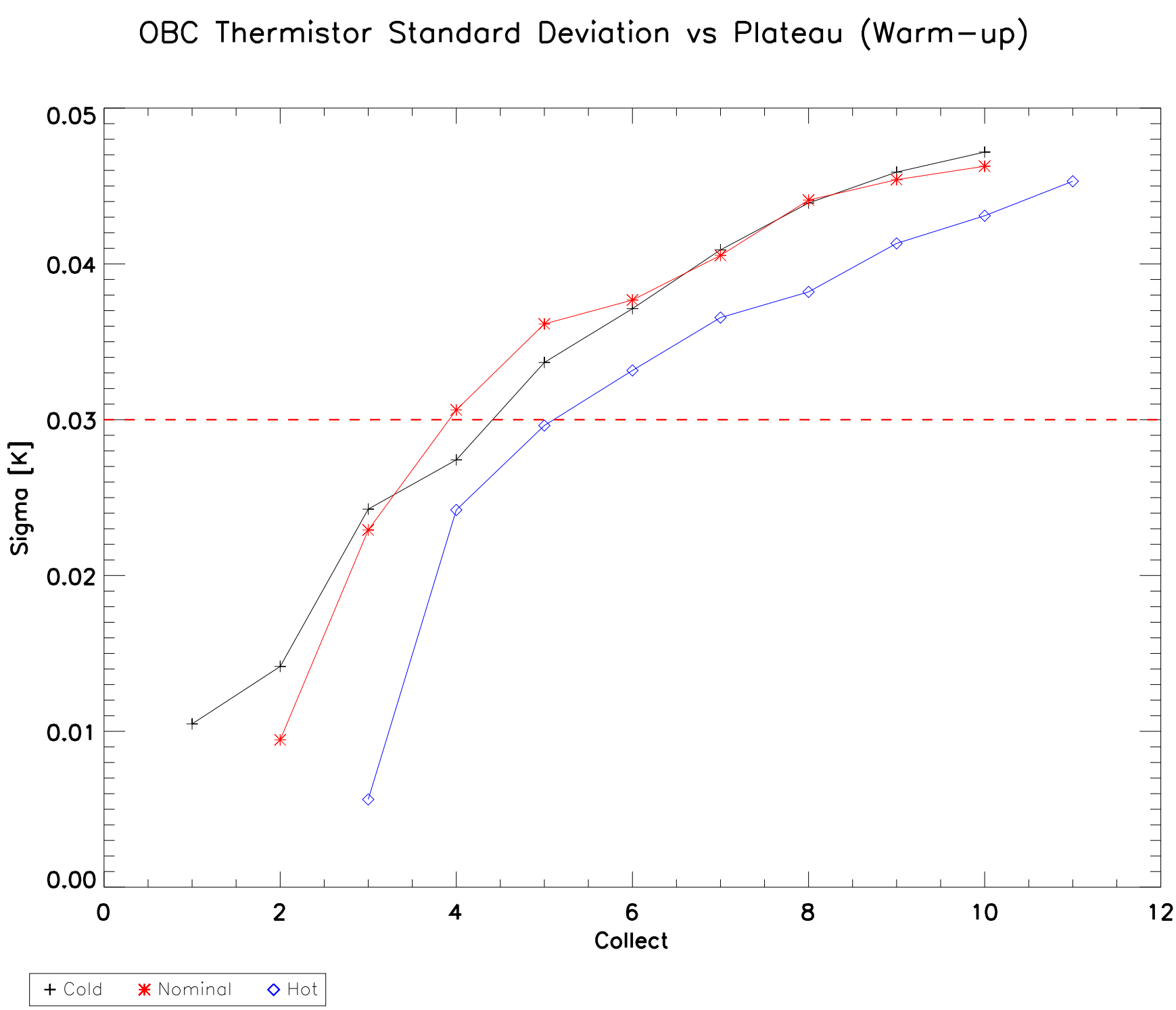

I4 SS1, HAM=A
I5 SS1, HAM=A
M12 SS1, HAM=A
M13 SS1, HAM=A
NEdT [K]
T_OBC [K]
1.0
0.8
0.6
0.4
0.2
0.0
0.25
0.20
0.15
0.10
0.05
0.00
0.3
0.1
260
270
280
290
300
310
320
+ Cold warm−up
Nominal warm−up
Hot warm−up

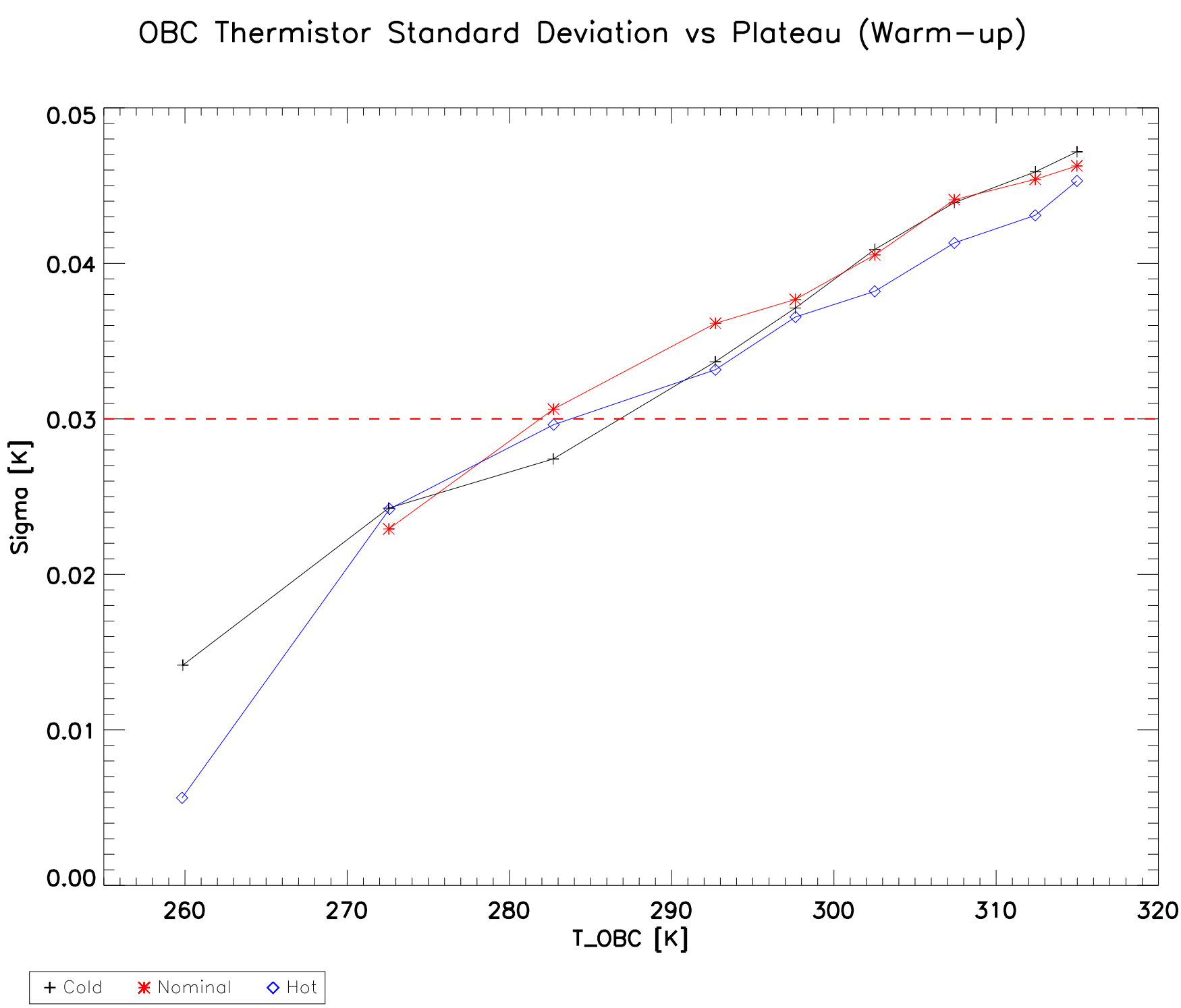

NEdT vs T_OBC
M14 SS1, HAM=A
M15 SS1, HAM=A
M16A SS1, HAM=A
M16B SS1, HAM=A
NEdT [K]
T_OBC [K]
0.00
0.02
0.04
0.06
0.08
0.01
0.03
0.05
260
270
280
290
300
310
320
+ Cold warm-up
* Nominal warm-up
◇ Hot warm-up

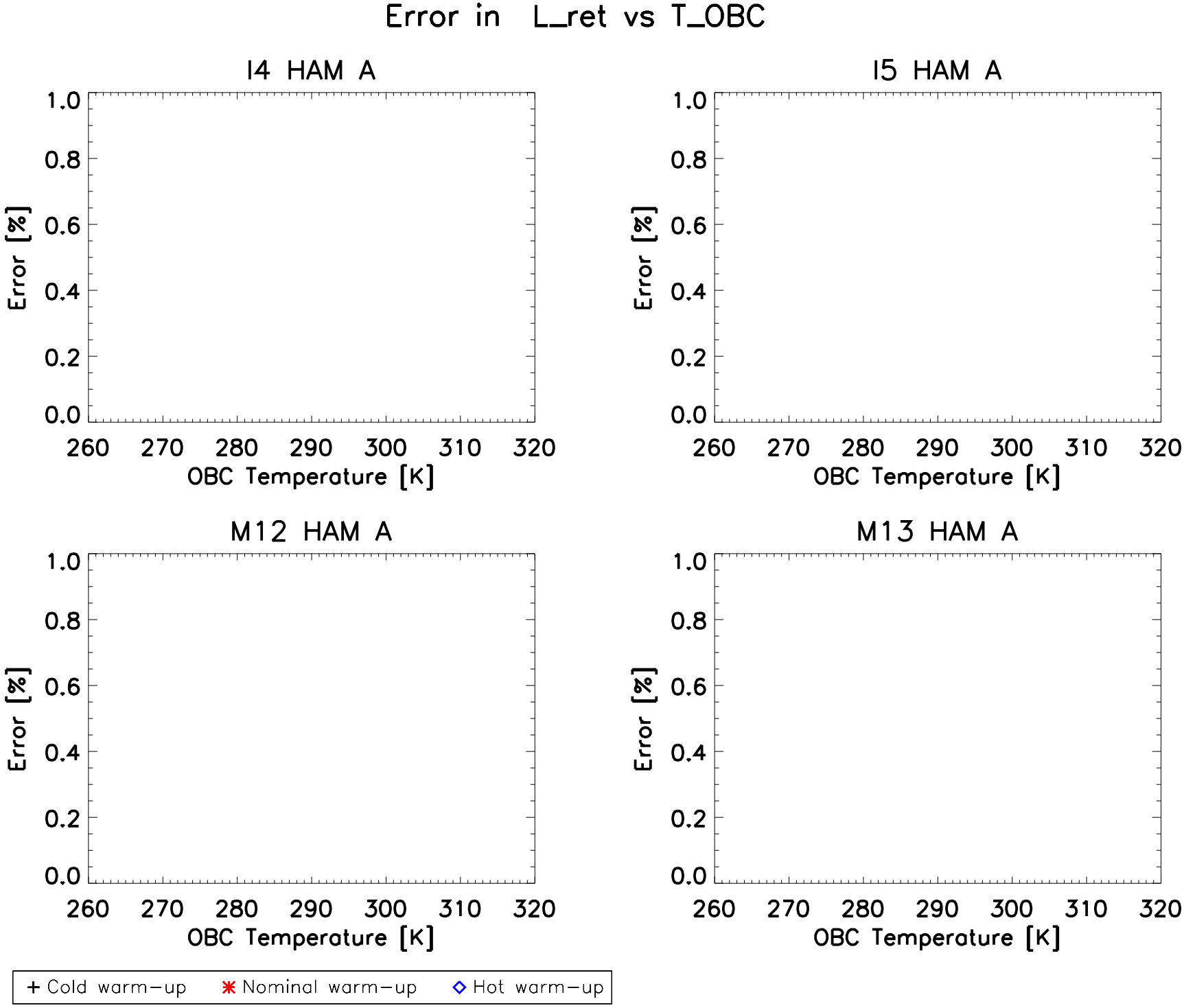

OBC Temperature vs Plateau
320
300
280
260
240
OBC T (K)
0
5
10
15
20
Collect
Cold
Nominal
Hot

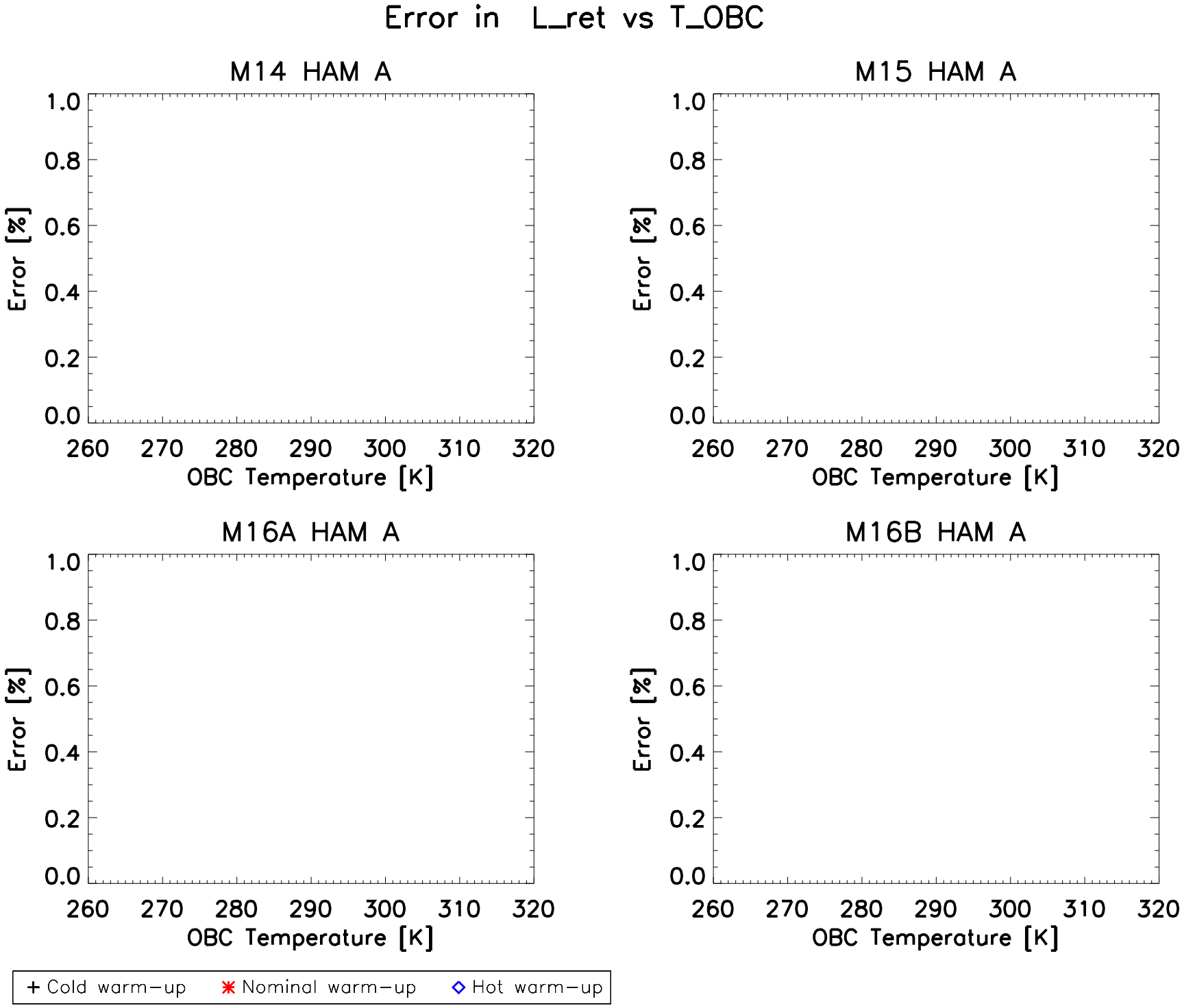

Deviation of OBC Temperature from Setpoint vs Plateau
T_OBC – Setpoint (K)
1.0
0.5
0.0
−0.5
−1.0
0
2
4
6
8
10
Collect
Cold
Nominal
Hot


Deviation of OBC Temperature from Setpoint vs Plateau
1.0
0.5
0.0
−0.5
−1.0
T_OBC − Setpoint (K)
260
270
280
290
300
310
320
T_OBC (K)
Cold
Nominal
Hot


OBC Thermistor Standard Deviation vs Plateau (Warm-up)
0.05
0.04
0.03
0.02
0.01
0.00
Sigma [K]
0
2
4
6
8
10
12
Collect
Cold
Nominal
Hot


OBC Thermistor Standard Deviation vs Plateau (Warm-up)
0.05
0.04
0.03
0.02
0.01
0.00
Sigma [K]
260
270
280
290
300
310
320
T_OBC [K]
Cold
Nominal
Hot


Error in L_ret vs T_OBC
I4 HAM A
I5 HAM A
M12 HAM A
M13 HAM A
Error [%]
OBC Temperature [K]
0.0
0.2
0.4
0.6
0.8
1.0
260
270
280
290
300
310
320
Cold warm-up
Nominal warm-up
Hot warm-up


Error in L_ret vs T_OBC
M14 HAM A
M15 HAM A
M16A HAM A
M16B HAM A
Error [%]
OBC Temperature [K]
0.0
0.2
0.4
0.6
0.8
1.0
260
270
280
290
300
310
320
Cold warm-up
Nominal warm-up
Hot warm-up