Why Observe Visually in the 21st Century?

John Toone

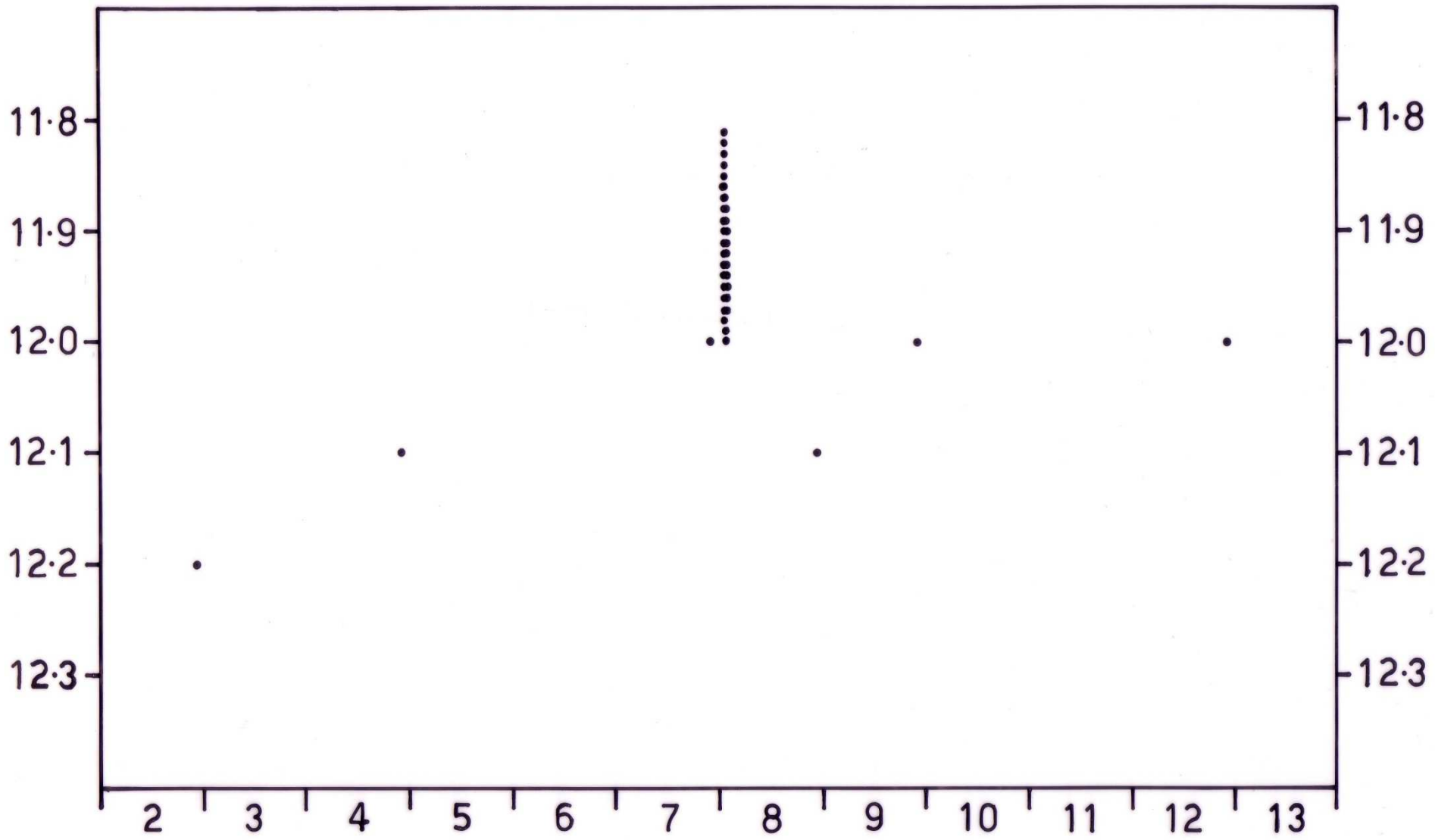
BAA VSS, Edinburgh, October 2008

Visual Observing - Background

- In use for 160 years
- Two principle methods - step & fractional
- Measured to 0.1 mag
- Accuracy +/- 0.2 mag
- Systematic differences between observers
- Has been under threat for 100 years

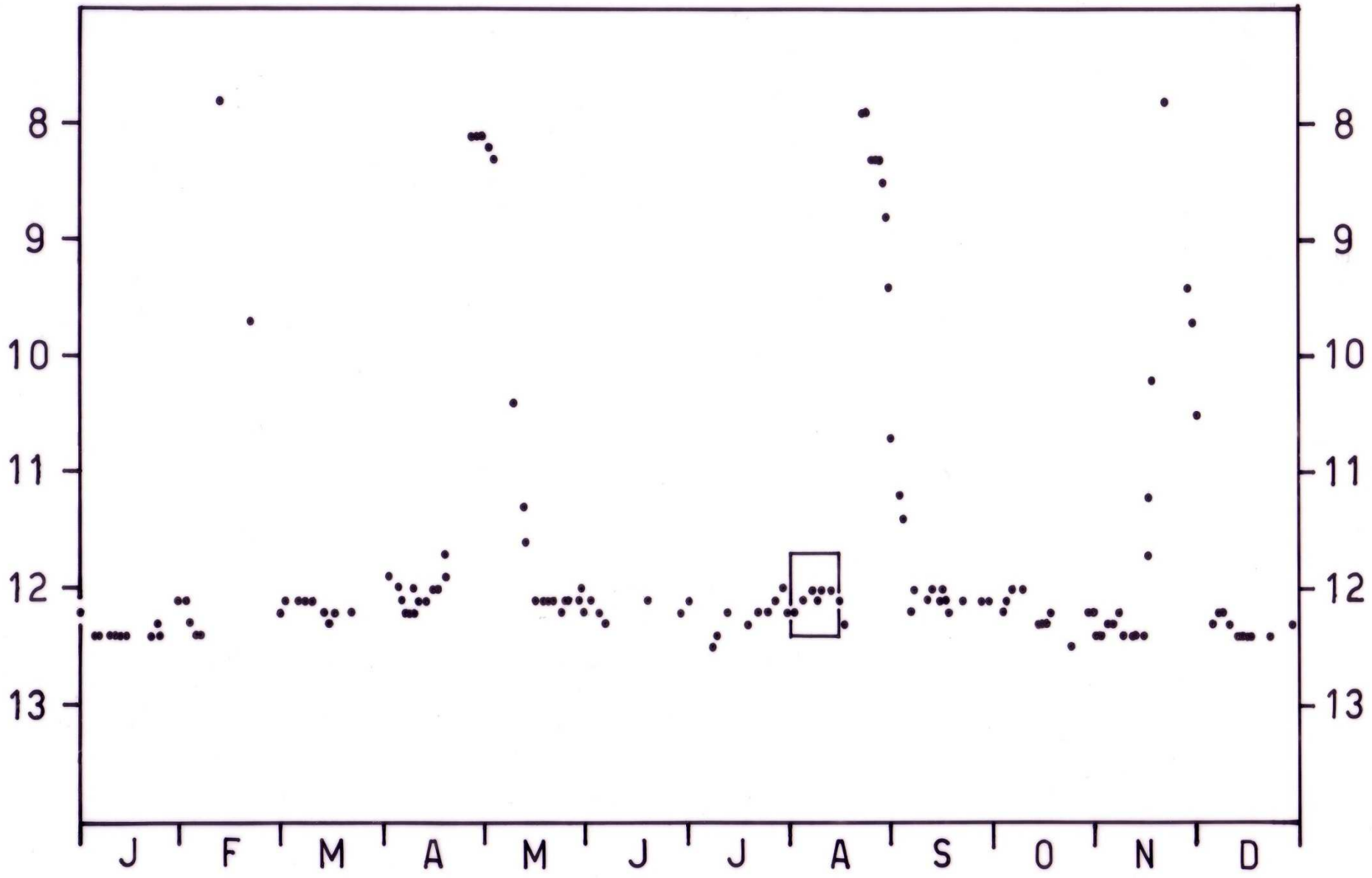
Observations submitted to the BAA VSS in 2007

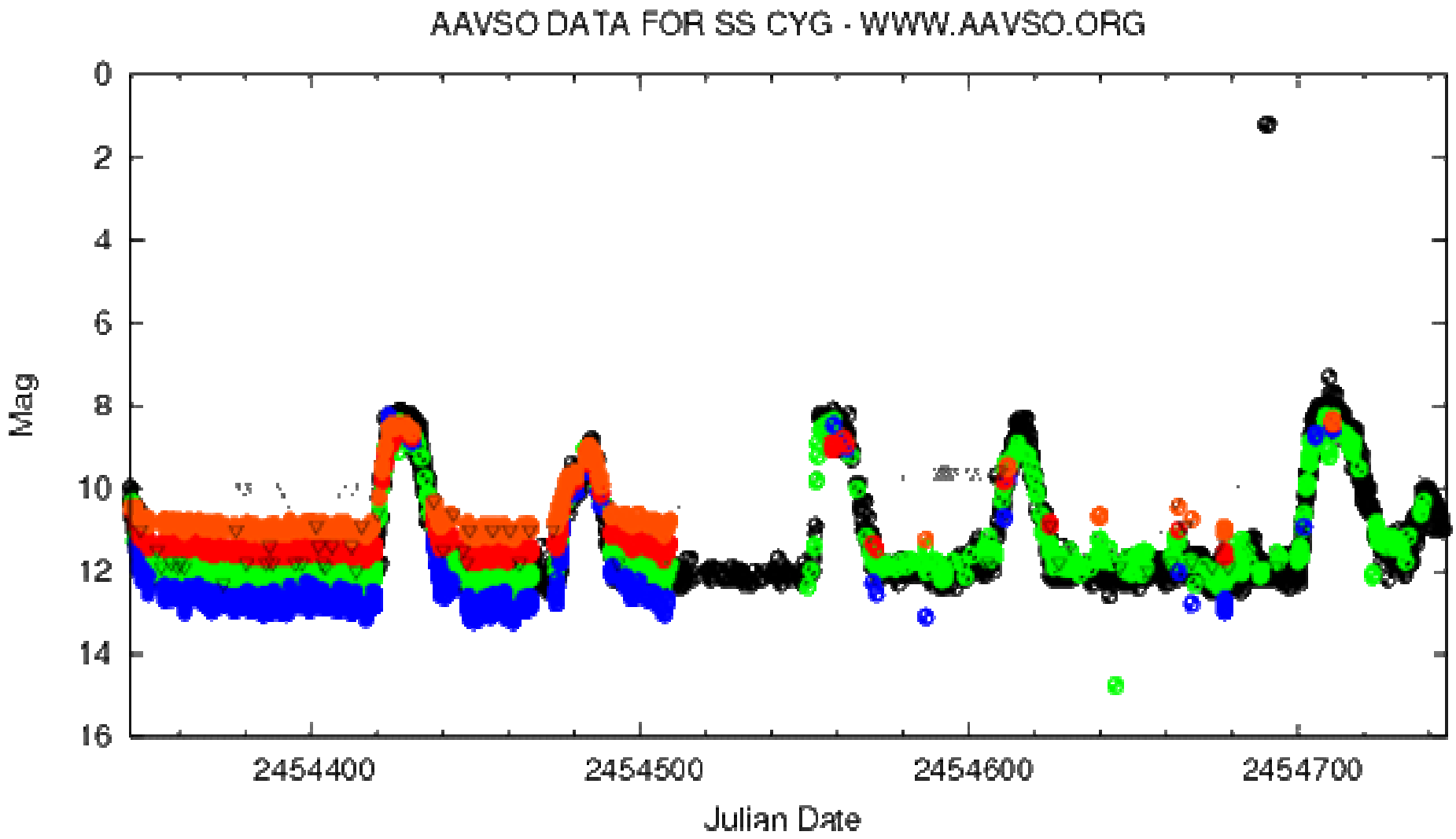
Method	Number	Observers	Average
CCDV	44568	5	8914
Visual	44205	33	1340

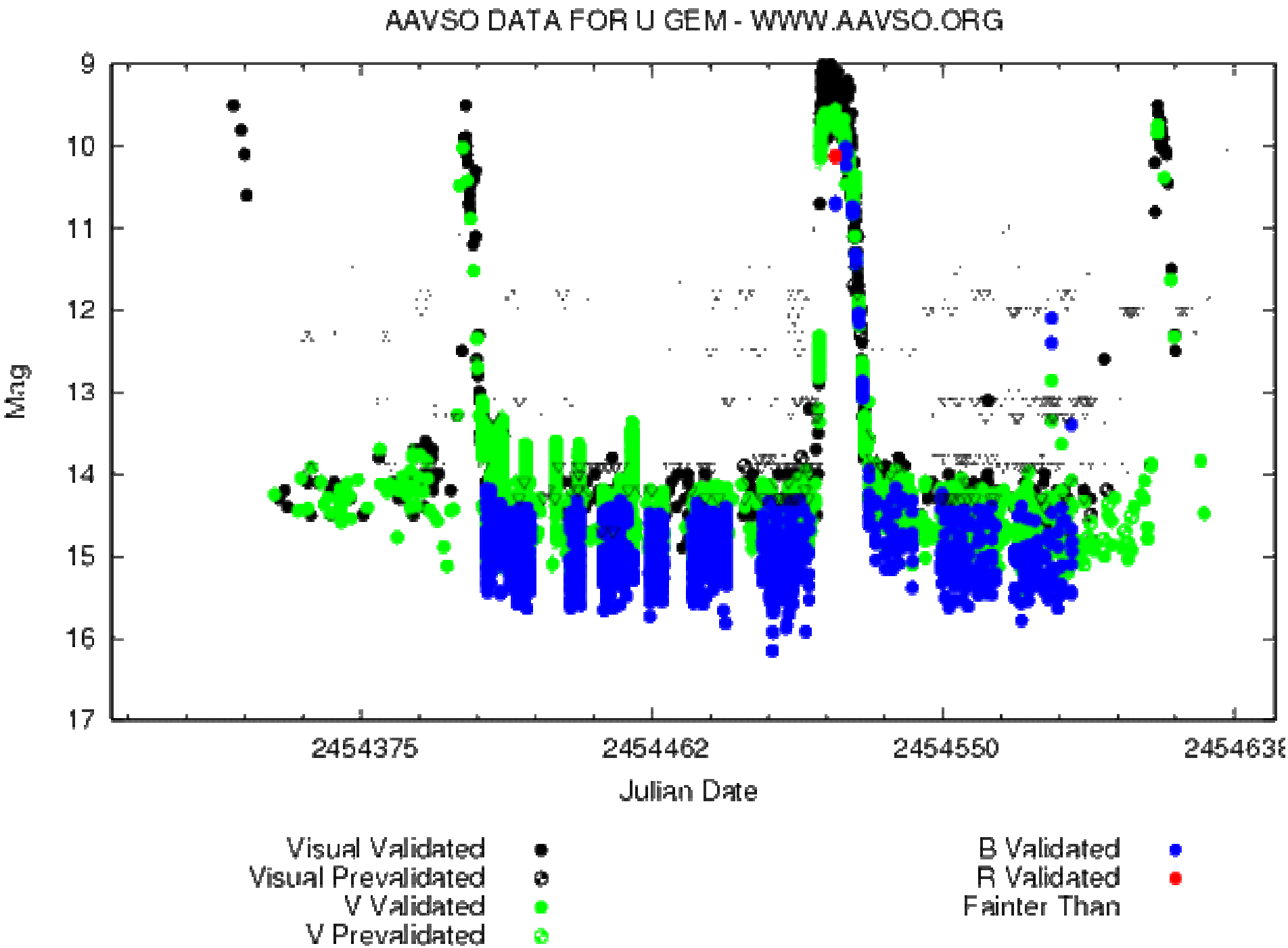

SS CYGNI IN AUGUST 2007
CCDV PICKARD mv TOONE
11·8
11·9
12·0
12·1
12·2
12·3
2
3
4
5
6
7
8
9
10
11
12
13

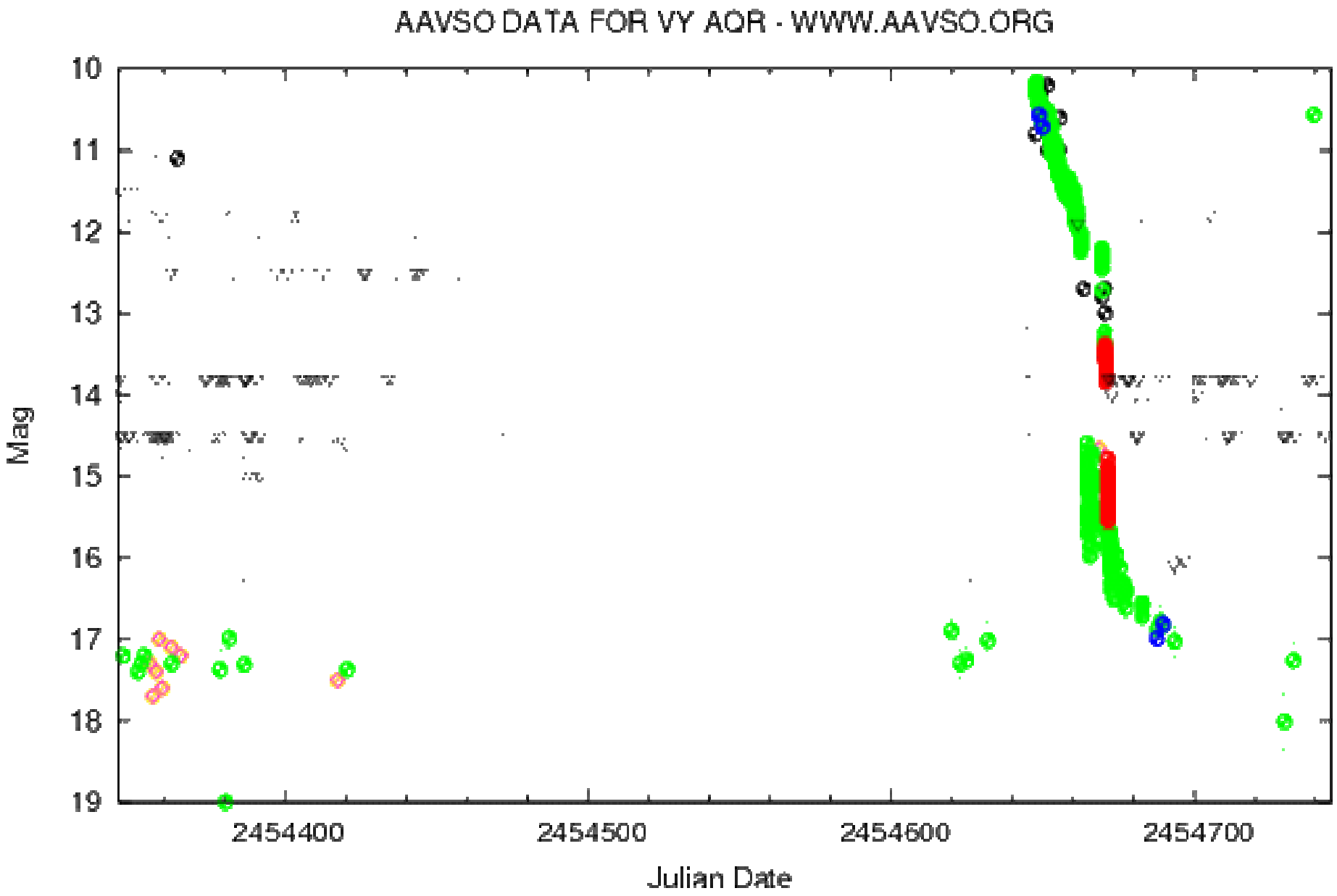
SS CYGNI IN 2007

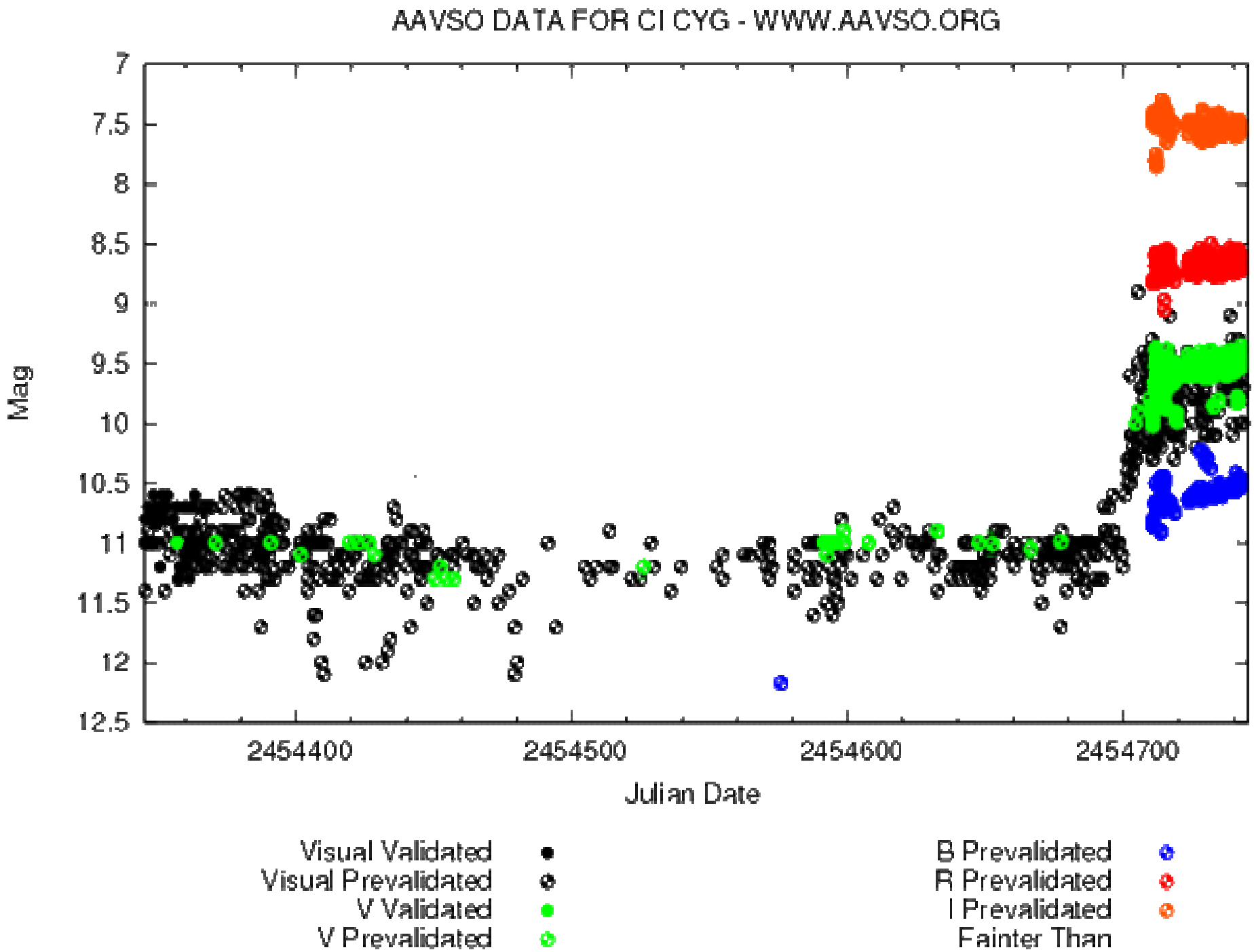
mv TOONE

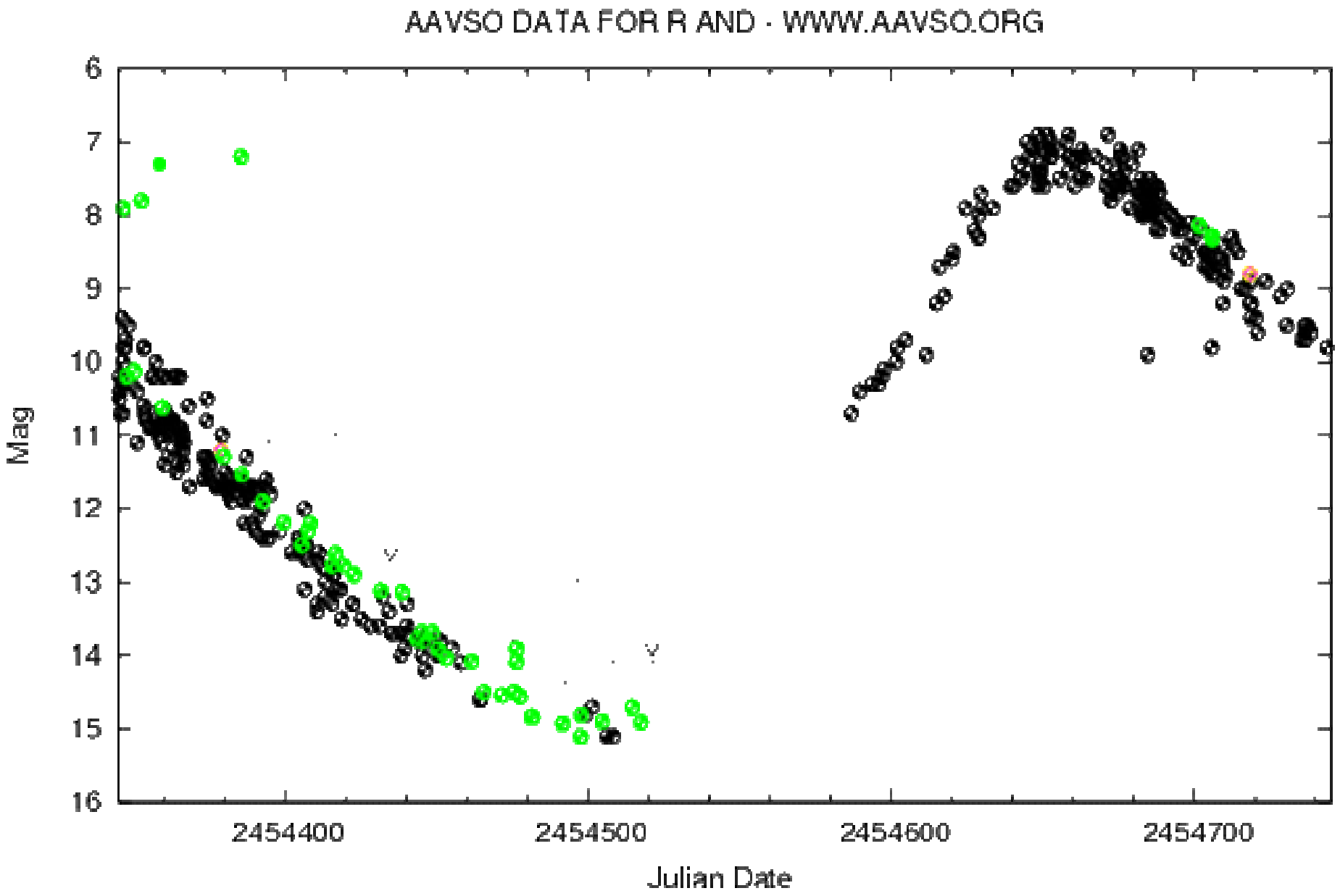


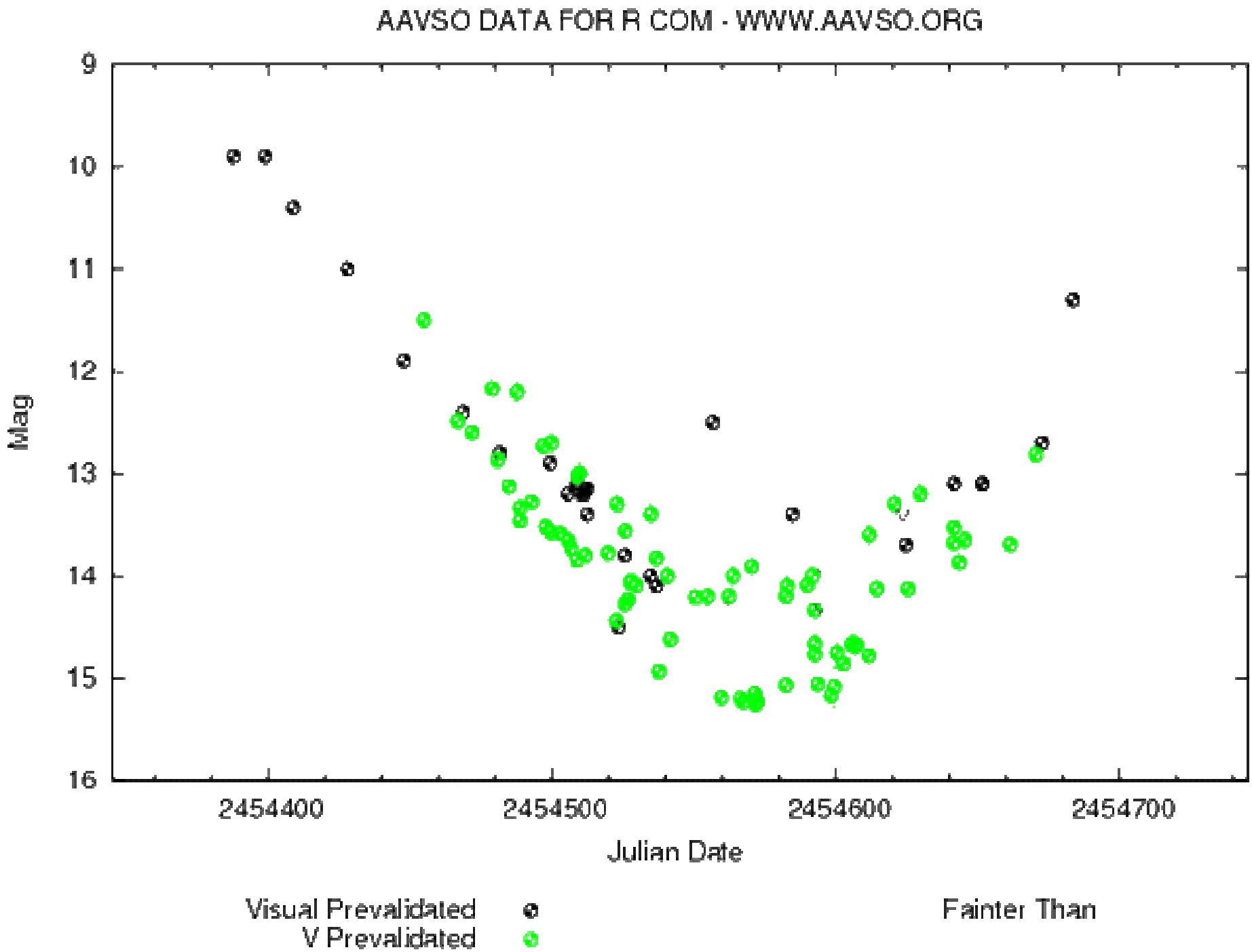

AAVSO DATA FOR SS CYG - WWW.AAVSO.ORG
Mag
0
2
4
6
8
10
12
14
16
2454400
2454500
2454600
2454700
Julian Date
Visual Validated
Visual Prevalidated
Visual Unvalidated
Unknown Validated
Unknown Prevalidated
V Validated
V Prevalidated
B Validated
B Prevalidated
R Validated
R Prevalidated
I Validated
I Prevalidated
Fainter Than

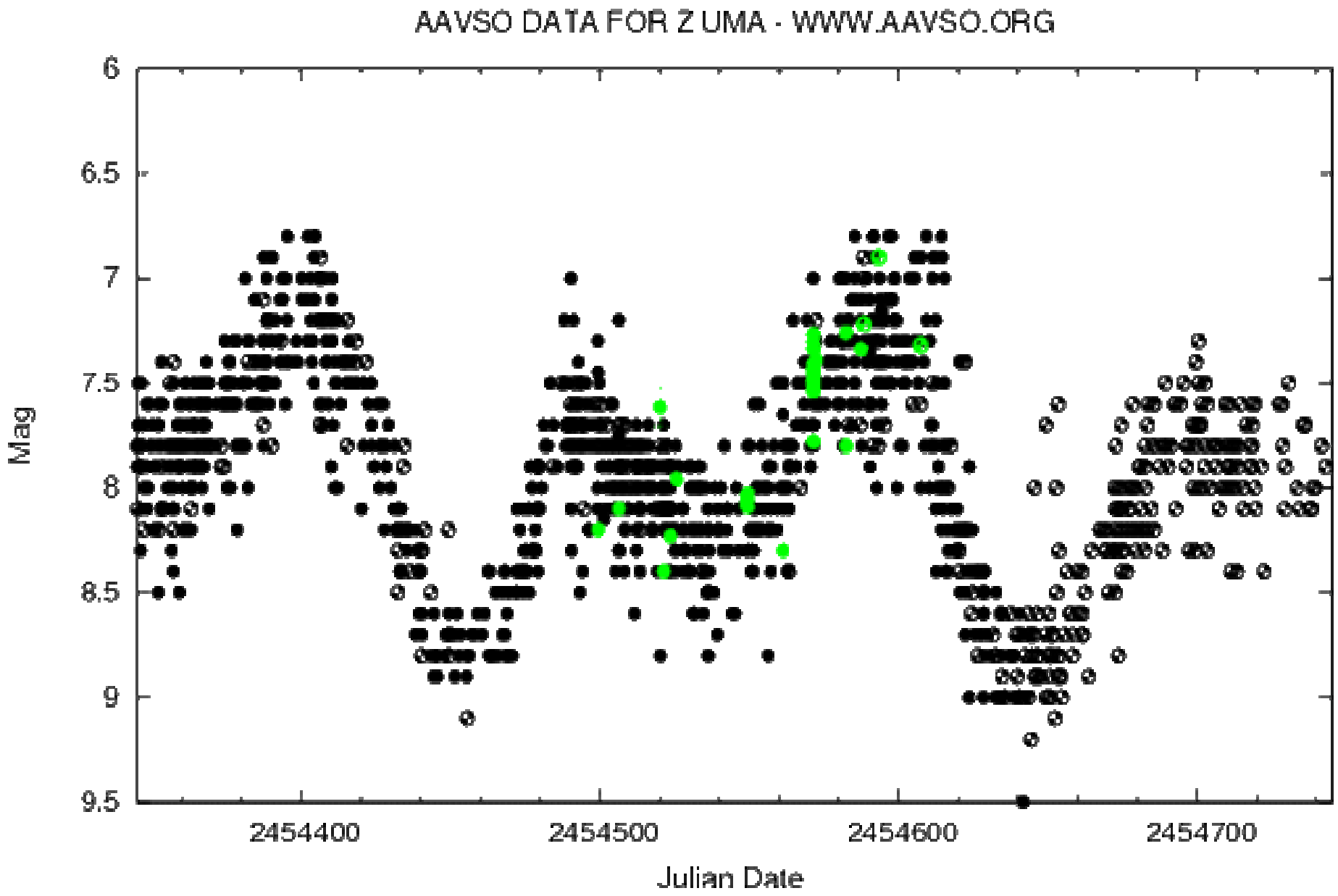

AAVSO DATA FOR U GEM - WWW.AAVSO.ORG
Mag
9
10
11
12
13
14
15
16
17
2454375
2454462
2454550
Julian Date
Visual Validated
Visual Prevalidated
V Validated
V Prevalidated
B Validated
R Validated
Fainter Than

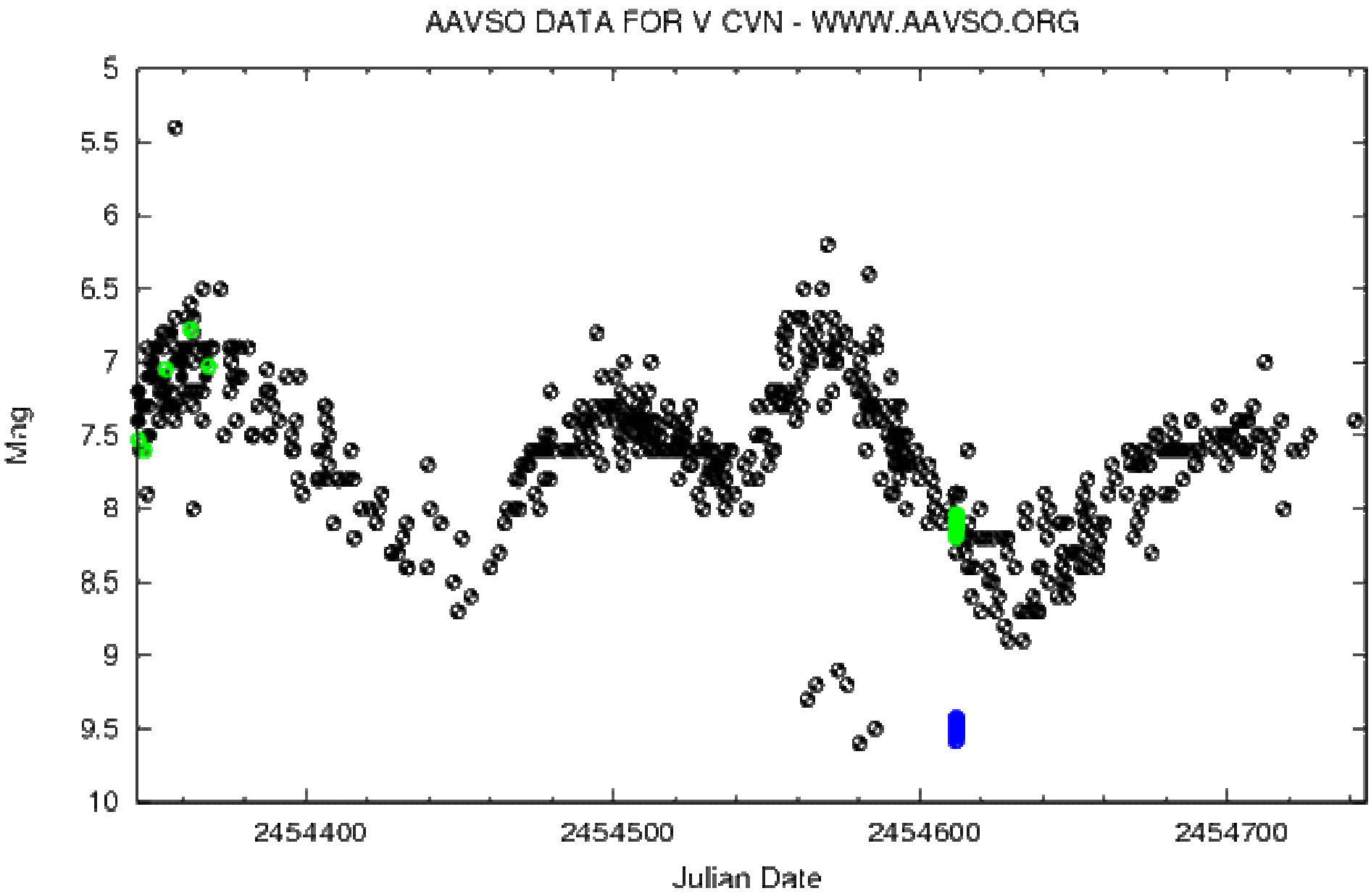

AAVSO DATA FOR VY AOR - WWW.AAVSO.ORG
Mag
10
11
12
13
14
15
16
17
18
19
2454400
2454500
2454600
2454700
Julian Date
Visual Prevalidated
Unknown Prevalidated
V Prevalidated
B Prevalidated
R Prevalidated
Fainter Than

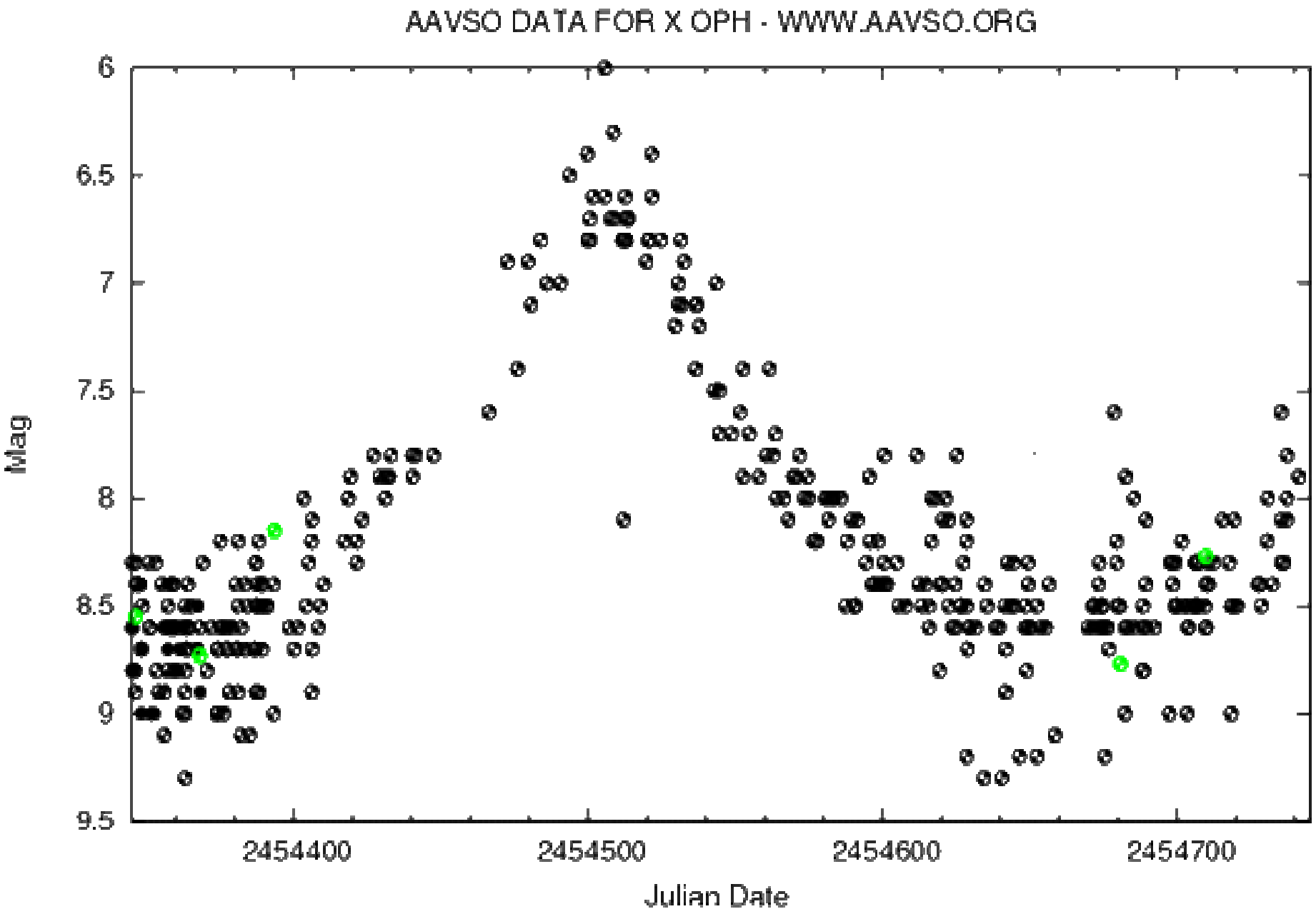

AAVSO DATA FOR CI CYG - WWW.AAVSO.ORG
Mag
7
7.5
8
8.5
9
9.5
10
10.5
11
11.5
12
12.5
2454400
2454500
2454600
2454700
Julian Date
Visual Validated
Visual Prevalidated
V Validated
V Prevalidated
B Prevalidated
R Prevalidated
I Prevalidated
Fainter Than


AAVSO DATA FOR R AND - WWW.AAVSO.ORG
Mag
6
7
8
9
10
11
12
13
14
15
16
2454400
2454500
2454600
2454700
Julian Date
Visual Prevalidated
Visual Unvalidated
Unknown Prevalidated
V Validated
V Prevalidated
Fainter Than


AAVSO DATA FOR R COM - WWW.AAVSO.ORG
Mag
9
10
11
12
13
14
15
16
2454400
2454500
2454600
2454700
Julian Date
Visual Prevalidated
V Prevalidated
Fainter Than


AAVSO DATA FOR Z UMA - WWW.AAVSO.ORG
Mag
6
6.5
7
7.5
8
8.5
9
9.5
2454400
2454500
2454600
2454700
Julian Date
Visual Validated
Visual Prevalidated
V Validated
V Prevalidated
Fainter Than


AAVSO DATA FOR V CVN - WWW.AAVSO.ORG
Mag
5
5.5
6
6.5
7
7.5
8
8.5
9
9.5
10
2454400
2454500
2454600
2454700
Julian Date
Visual Validated
Visual Prevalidated
V Prevalidated
B Prevalidated
Fainter Than


AAVSO DATA FOR X OPH - WWW.AAVSO.ORG
Mag
6
6.5
7
7.5
8
8.5
9
9.5
2454400
2454500
2454600
2454700
Julian Date
Visual Validated
Visual Prevalidated
V Prevalidated
Fainter Than

026·04 8° FIELD DIRECT

V AQUILAE	19h 04m 24·2s	−05° 41′ 05″	(2000)
R SCUTI	18h 47m 29·0s	−05° 42′ 18″	(2000)
S SCUTI	18h 50m 20·0s	−07° 54′ 27″	(2000)

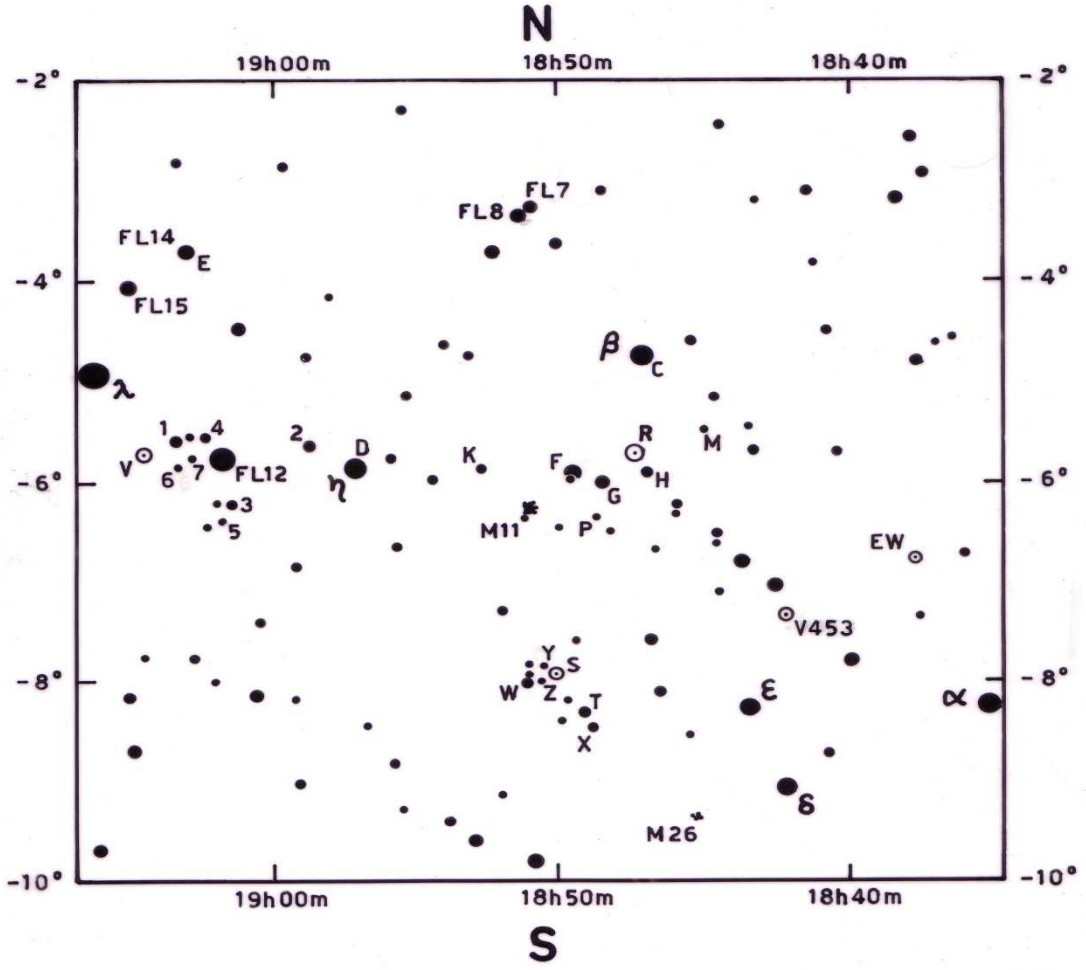


CHART: ECLIPTICALIS

SEQUENCE: F HARVARD OTHERS TYCHO 2 VJ

C	4·2	M	8·4	1	6·9
D	4·8	P	8·8	2	7·3
E	5·4	T	7·1	3	7·7
F	6·2	W	7·3	4	7·8
G	6·5	X	7·8	5	8·1
H	7·0	Y	8·2	6	8·2
K	7·9	Z	9·0	7	8·9

BAA VSS
EPOCH: 2000
DRAWN: JT 21-09-07
APPROVED: RDP

033·02 9° FIELD DIRECT

R SERPENTIS 15h 50m 41·7s +15° 08′ 01″ (2000)

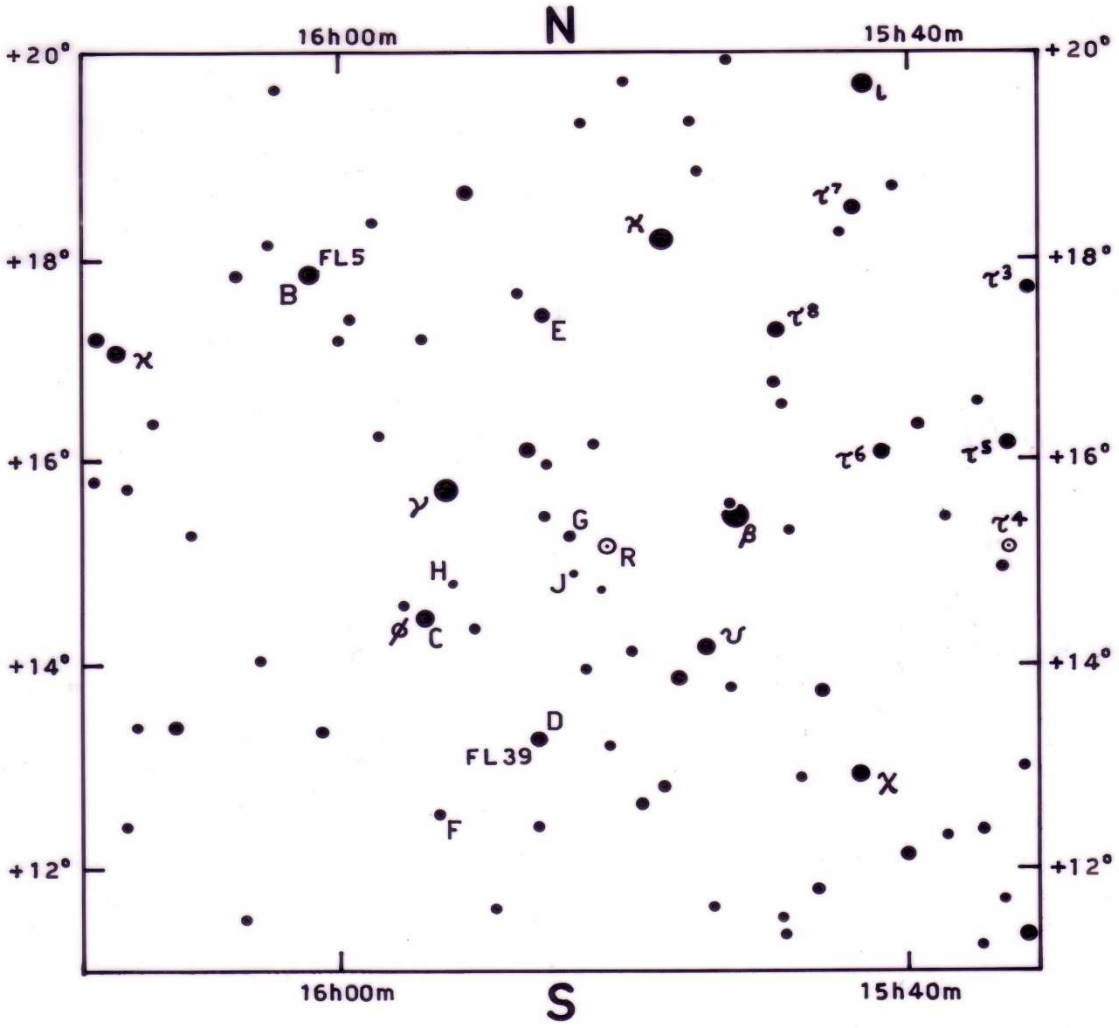


CHART: ATLAS ECLIPTICALIS

SEQUENCE: TYCHO 2 VJ

B	5·1	F	6·9
C	5·5	G	7·3
D	6·1	H	8·3
E	6·3	J	8·6

BAA VSS
EPOCH: 2000
DRAWN: JT 28-9-08
APPROVED: RDP

217·02

9° FIELD DIRECT

RY URSAE MAJORIS 12h 20m 27·4s +61° 18′ 35″ (2000)

Z URSAE MAJORIS 11h 56m 30·2s +57° 52′ 18″ (2000)

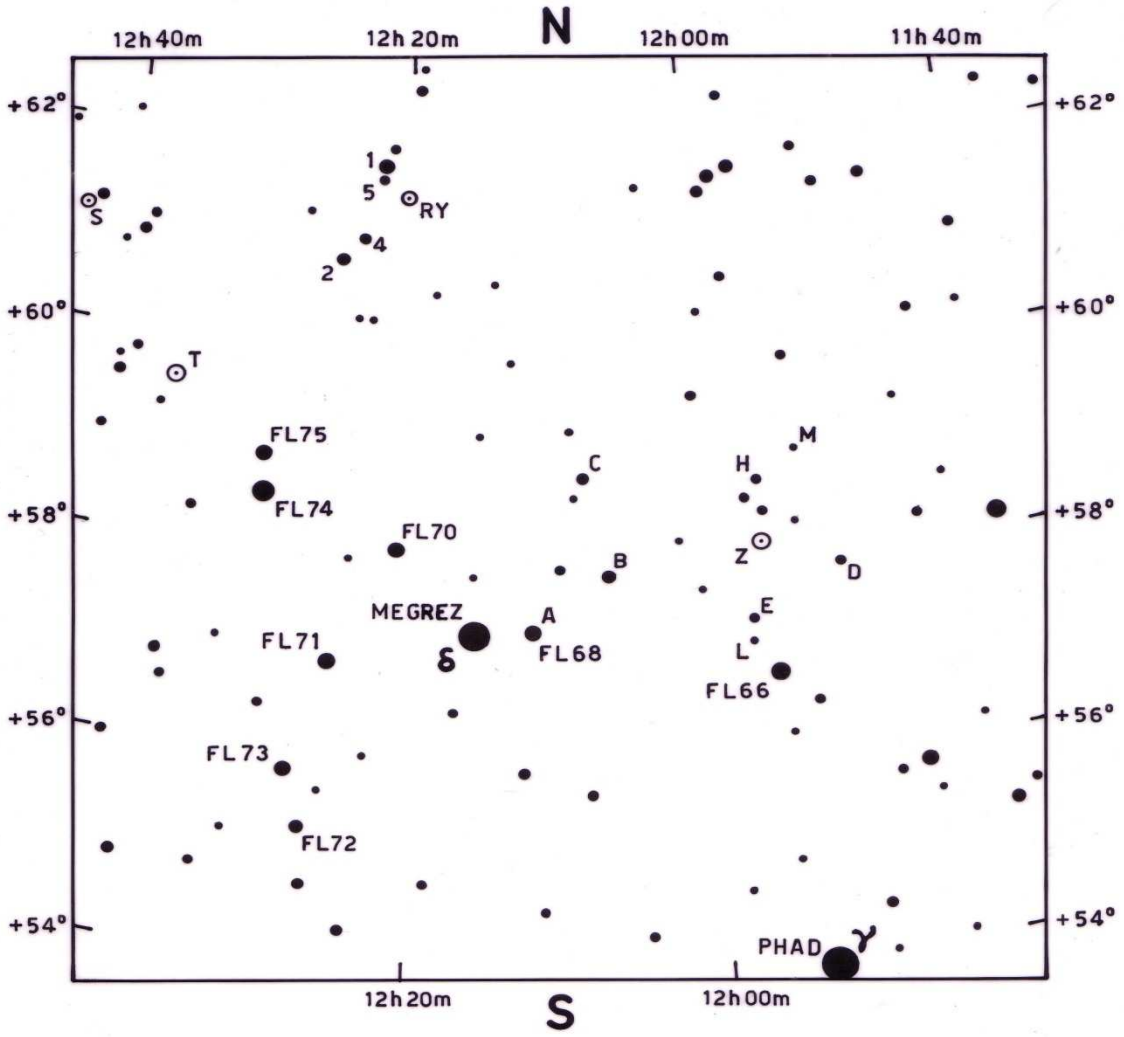


CHART:
ATLAS BOREALIS

SEQUENCE:
TYCHO 2 VJ

A	6·3	L	8·9
B	7·3	M	9·5
C	7·5	1	6·7
D	7·9	2	7·4
E	8·4	4	7·7
H	8·7	5	8·3

BAA VSS
EPOCH: 2000
DRAWN: JT 06-08-06
APPROVED: RDP

214·02 9° FIELD DIRECT

V CANUM VENATICORUM 13h 19m 27·8s +45° 31′ 38″ (2000)

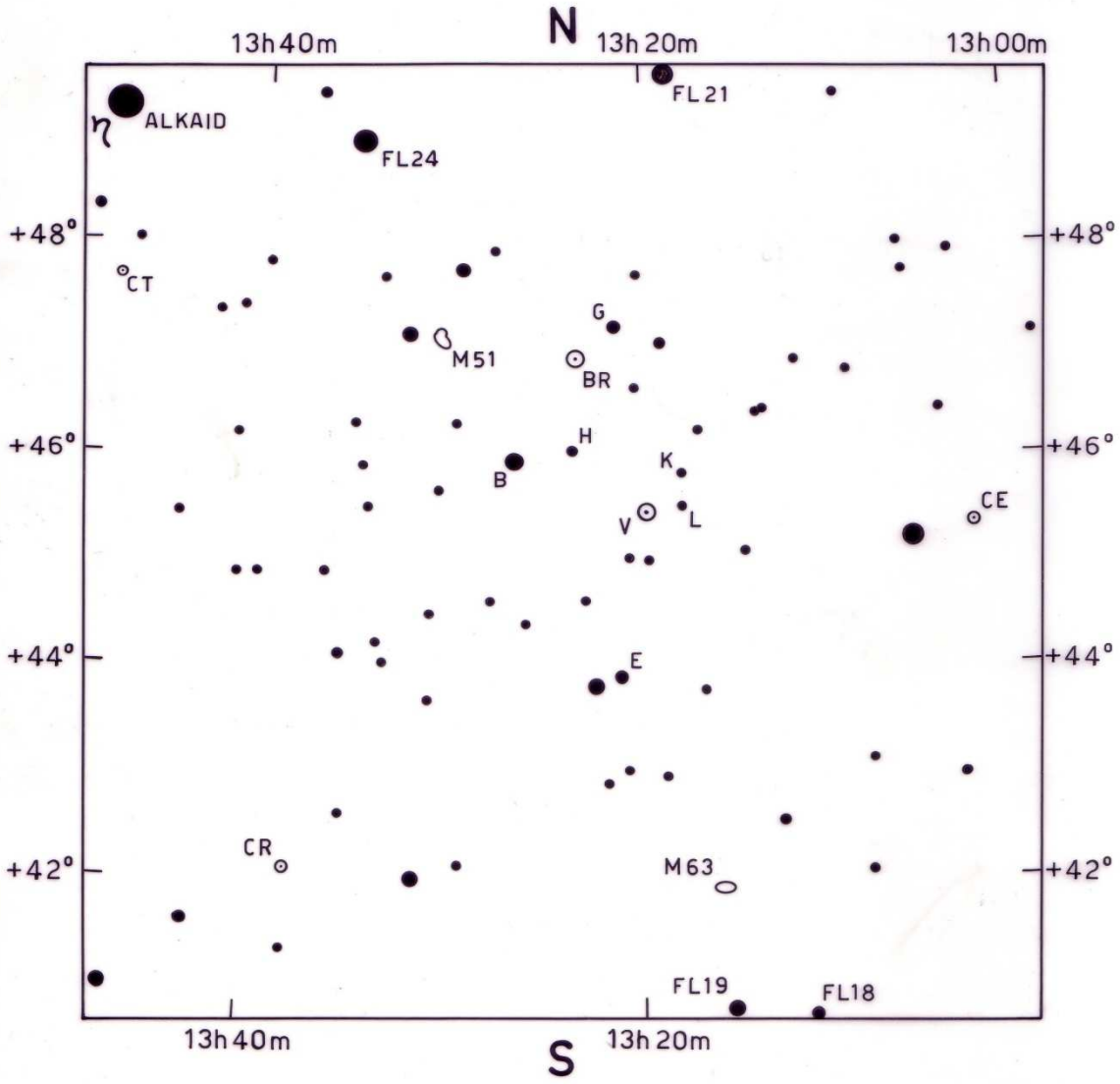


CHART	B 5·9	H 7·7	BAA VSS
ATLAS BOREALIS	E 6·5	K 8·5	EPOCH: 2000
SEQUENCE:	G 7·0	L 8·7	DRAWN: JT 11-03-05
HIPPARCOS VJ			APPROVED: RDP

094·02 6° FIELD DIRECT

AG PEGASI 21h 51m 02·0s +12° 37′ 32″ (2000)

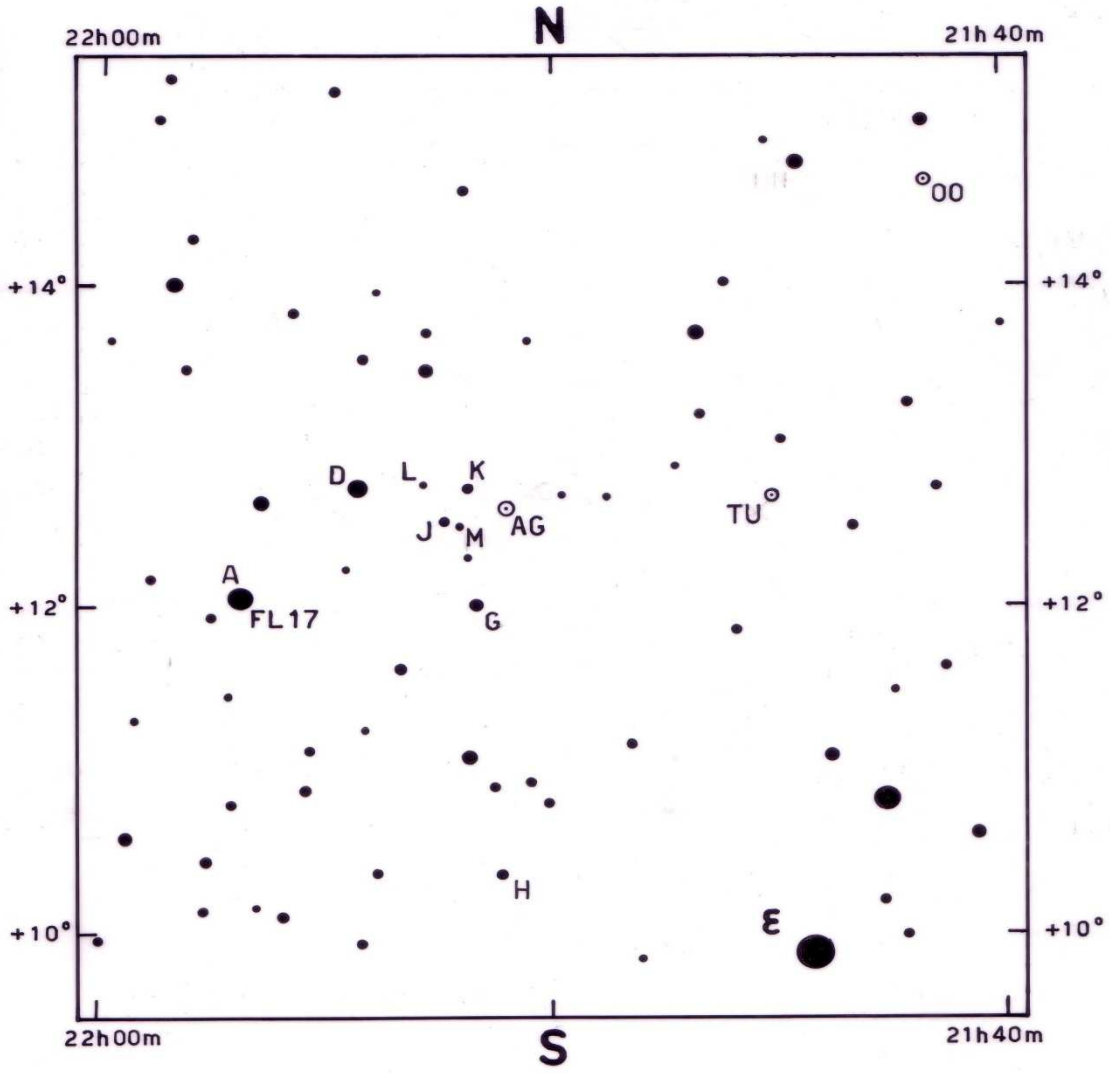


CHART: MILLENNIUM SA

SEQUENCE: TYCHO 2 VJ

A	5·5	J	8·2
D	6·6	K	8·7
G	7·6	L	9·5
H	7·9	M	10·0

BAA VSS
EPOCH: 2000
DRAWN: JT 17-05-07
APPROVED: RDP

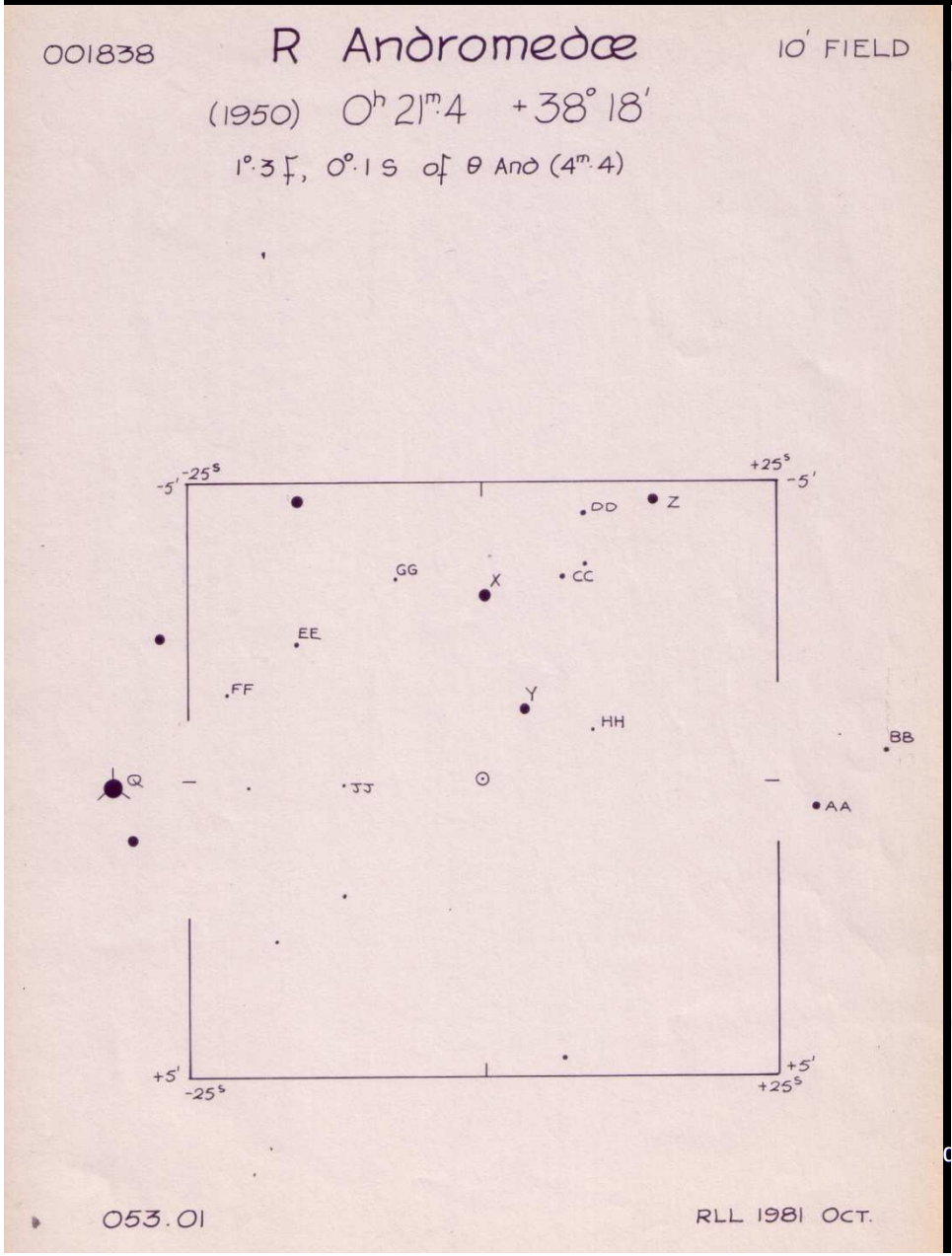
Advantages of Visual Observing

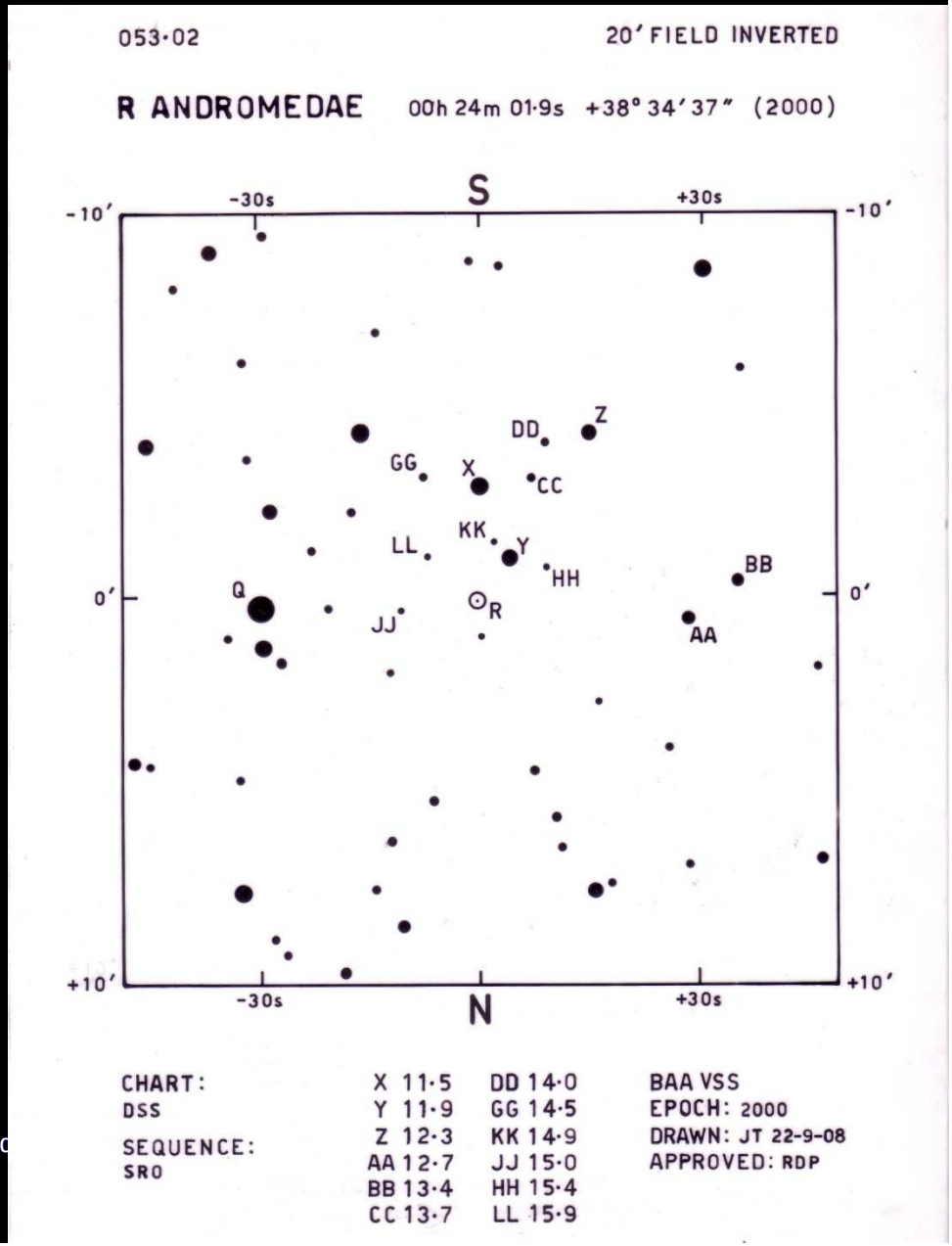
- Inexpensive
- Easy to learn and apply
- Setup speed
- Maximum photometric opportunities
- Instant preliminary reduction
- Timely alerts
- Target shift speed

Why Observe Visually in the 21st Century

- Large range variables do not require CCD accuracy levels
- CCD coverage of most variables is patchy
- Accurate V sequences geared towards visual observers are now available
- Extension of 160 year data series
- Timely alerts on unusual activity

Old & New Charts





CONCLUSION

- CCD observers have not made visual observers redundant
- Any variable star with a range exceeding one magnitude warrants visual monitoring
- The BAA VSS has the largest homogenous visual database and applies best practice procedures for visual data acquisition
- Your continued contribution is scientifically important and very much valued