

Goals for 2021

- ~~1. get iOptron working~~
- ~~2. get Titan working~~
3. submit 10,000 observations to AAVSO
4. submit all Ripepi observations
5. implement first weather stn
6. get QHY183 working for pretty pictures
- ~~7. photometry with Hankscope~~
8. publish two papers in JAAVSO
 1. M31 V619 period stability
 2. APASS ensemble technique?
 3. APASS photometry test against Landolt fields?
9. get focuser working in MoonLite emulation mode
10. build and install 15cm guide scope
11. talk on HR diagrams and main sequence fitting
12. talk on New Mexico trip
13. talk on Boltwood scope
14. talk on RASCRT and some science results
15. best images to RASC National image database
16. best images to Flickr
- ~~17. Wide Field AstroImaging Certificate~~
18. Deep Sky AstroImaging Certificate
19. Planetary AstroImaging Certificate
20. Double Star Observing Certificate
21. complete deep sky challenge certificate

2021-01-05

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J091116.89+351700.8	100s CV	2x2	N
BO Lyn	100s CV	2x2	N

2021-01-08 (#001)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2141UT sunset

2250UT end of nautical twilight

2325UT end of astronomical twilight

0119UT started CCDC action Boltwood_2021-01-08.act.

Group	Stars	Exposures	Binning	Guided
Andromeda 02.5h				
	Dauban V248	200s V	1x1	N
	V0569 And	200s V	1x1	N
	DU And	200s V	1x1	N

0200UT sky has clouded over for the remainder of the night so am shutting down.

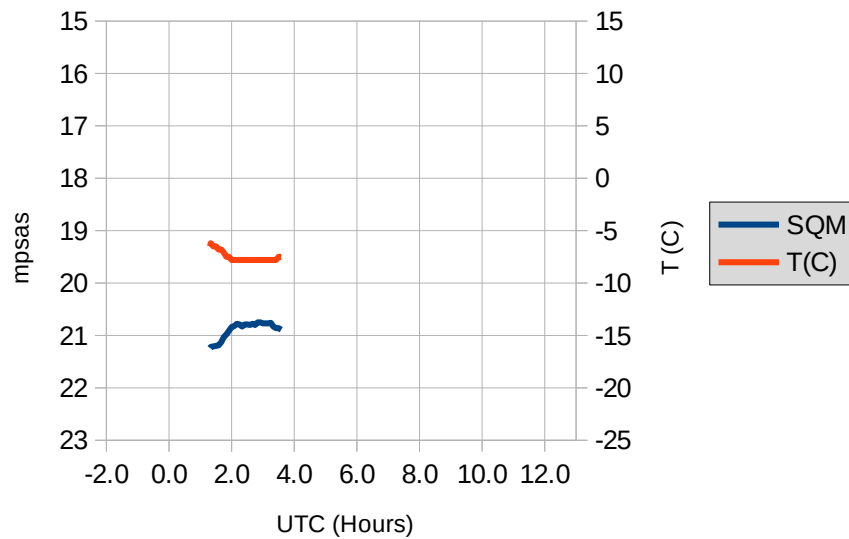
0734UT moonrise

1055UT beginning of astronomical twilight

1131UT beginning of nautical twilight

1242UT sunrise

SQM 2021-01-08



2021-01-09 (#002)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2142UT sunset

2228UT started CCDC action Boltwood_2021-01-09.act.

Group	Stars	Exposures	Binning	Guided
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N
Cassiopeia 01.6h				
	ET Per	200s V	1x1	N
	ISON_J013244.3+565231	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Aries 2.2h				
	CU Ari	200s V	1x1	N
	TY Ari	200s V	1x1	N
Andromeda 02.5h				
	Dauban V248	200s V	1x1	N
	V0569 And	200s V	1x1	N
	DU And	200s V	1x1	N
V1112 Per		20s B, 15s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	QY UMa	200s V	1x1	N

2251UT end of nautical twilight

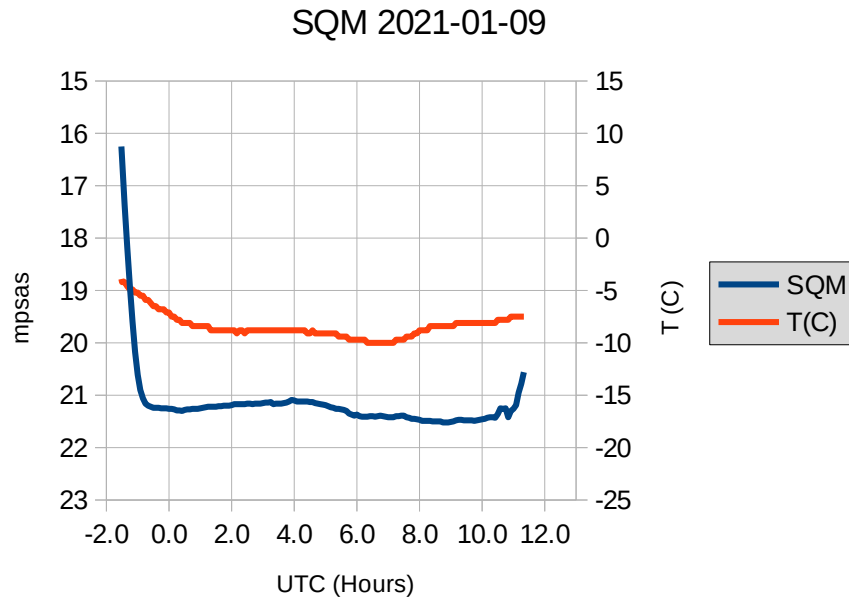
2326UT end of astronomical twilight

0852UT moonrise

1055UT beginning of astronomical twilight

1130UT beginning of nautical twilight

1240UT sunrise



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
IU Cas	200s CV	2x2	N
SERIV 101	50s CV	2x2	N
ASASSN-V J091116.89+351700.8	100s CV	2x2	N
BO Lyn	100s CV	2x2	N
ROTSE1-J232708.22+371216.9	200s CV	2x2	N
V0851 Cas	50s Lum	2x2	N
V0870 Cas	300s Lum	2x2	N
M31V619	400s Lum	2x2	N
V0547 Lac	150s Lum	2x2	N
VESPA V23	50s Lum	2x2	N

Stars	Exposures	Binning	Guided
TYC3224-2602	60s Lum	2x2	N
USNOA2-1350-1748	150s Lum	2x2	N

2021-01-10 (#003)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2143UT sunset

2252UT end of nautical twilight

2327UT end of astronomical twilight

0540UT having trouble getting to sleep and, upon rising to read for a little while, discovered a quite clear sky.

0549UT started CCDC action Boltwood_2021-01-10.act.

Group	Stars	Exposures	Binning	Guided
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N

Having got everything started it appears from the satellite imagery that I will be clouding over very shortly anyway. However, I will collect data while I can.

0630UT it has clouded over thick enough to stop. Shutting down.

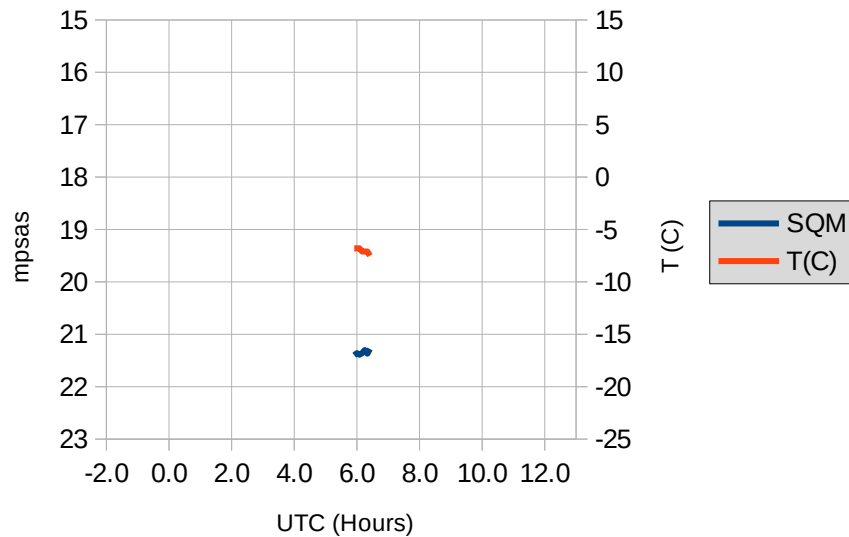
1009UT moonrise

1055UT beginning of astronomical twilight

1130UT beginning of nautical twilight

1239UT sunrise

SQM 2021-01-10



2021-01-12

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
SERIV 101	50s CV	2x2	N
M31V619	400s Lum		
VESPA V23	50s Lum		

2021-01-16

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J091116.89+351700.8	100s CV	2x2	N
CN Tau	250s Lum	2x2	N
IY Tau	200s Lum	2x2	N
M67	80s Lum 120s TR, TG, TB	2x2	N
M67		2x2	N
M67		2x2	N
M67		2x2	N
ROTSE1-J232708.22+371216.9	200s CV	2x2	N
VESPA V23	50s CV	2x2	N

Stars	Exposures	Binning	Guided
SERIV 101	50s CV	2x2	N
V1112 Per	300s TG, TB	2x2	N
BO Lyn	100s CV	2x2	N
ASASSN-V J094318.52+393221.5	300s Lum	2x2	N
MV Aur	300s Lum	2x2	N
TYC3224-2602	60s Lum	2x2	N
V0547 Lac	150s Lum	2x2	N
V0839 Lac	150s Lum	2x2	N

2021-01-19 (#004)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2154UT sunset

2248UT started CCDC action Boltwood_2021-01-19.act.

Group	Stars	Exposures	Binning	Guided
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N
Cassiopeia 01.6h				
	ET Per	200s V	1x1	N
	ISON_J013244.3+565231	300s V	1x1	N
Andromeda 02.5h				
	Dauban V248	200s V	1x1	N
	V0569 And	200s V	1x1	N
	DU And	200s V	1x1	N
V1112 Per		20s B, 15s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N

2302UT end of nautical twilight

2337UT end of astronomical twilight

0356UT moonset

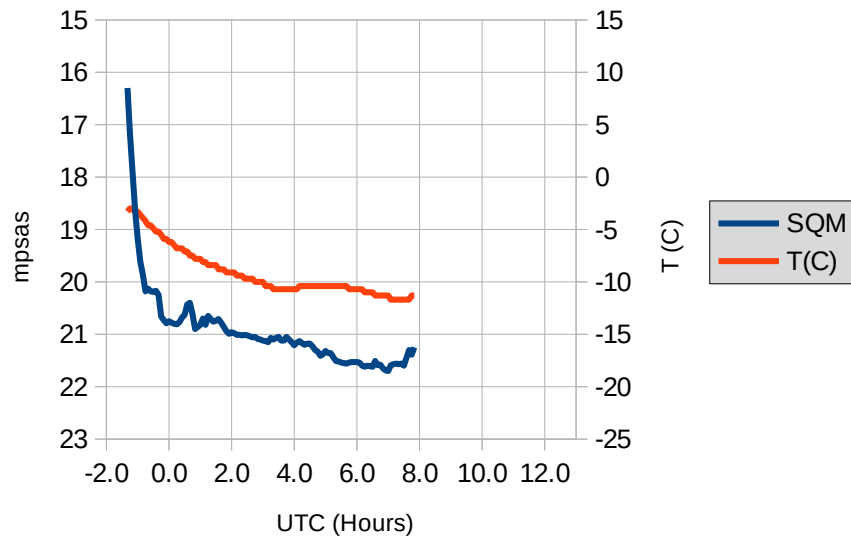
0750UT awoke to find that the cloud is too thick to continue. Shutting down.

1052UT beginning of astronomical twilight

1127UT beginning of nautical twilight

1235UT sunrise

SQM 2021-01-19



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AC Eri	250s Lum		
V0851 Cas	50s Lum		
CN Tau	250s Lum		
HT Cam	300s Lum	2x2	N
M31V619	400s Lum		
IY Tau	200s Lum		
IU Cas	200s CV	2x2	N
ASASSN-V J073243.90+170221.6	200s Lum		
V1112 Per	300s Green		
ASAS J071102+1651.5	100s Lum		
BO Lyn	100s Lum		
M67	70s Lum		
MV Aur	300s Lum		
WY Eri	300s Lum		
XX Eri	300s Lum		
V0870 Cas	300s Lum		

2021-01-23

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

2230UT Starting 50 each bias and 400s dark frames.

2021-01-24 (#005)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2200UT sunset

2230UT started CCDC action Boltwood_2021-01-24.act.

Group	Stars	Exposures	Binning	Guided
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N
Cassiopeia 01.6h				
	ET Per	200s V	1x1	N
	ISON_J013244.3+565231	300s V	1x1	N
Andromeda 02.5h				
	Dauban V248	200s V	1x1	N
	V0569 And	200s V	1x1	N
	DU And	200s V	1x1	N
V1112 Per		20s B, 15s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				

Group	Stars	Exposures	Binning	Guided
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N

2308UT end of nautical twilight

2342UT end of astronomical twilight

0304UT first plate solve on FM Aur field failed, second succeeded.

0321UT first plate solve on TYC3361-1787 field failed, second succeeded.

0633UT both plate solves on TYC2995-663 field for the UMa09.8h group failed.

0638UT mount threw an error while trying to meridian flip (which it should not have been doing - something wrong in my script timing), RA motor in blinky mode, CCDC shut down, wasting most of the night.

CCDC log:

Flipping mount...

06:38:56 Slewing to VSX_J094546.2+342925...

06:38:56 Error Number: -2146233088

06:38:56

06:38:56

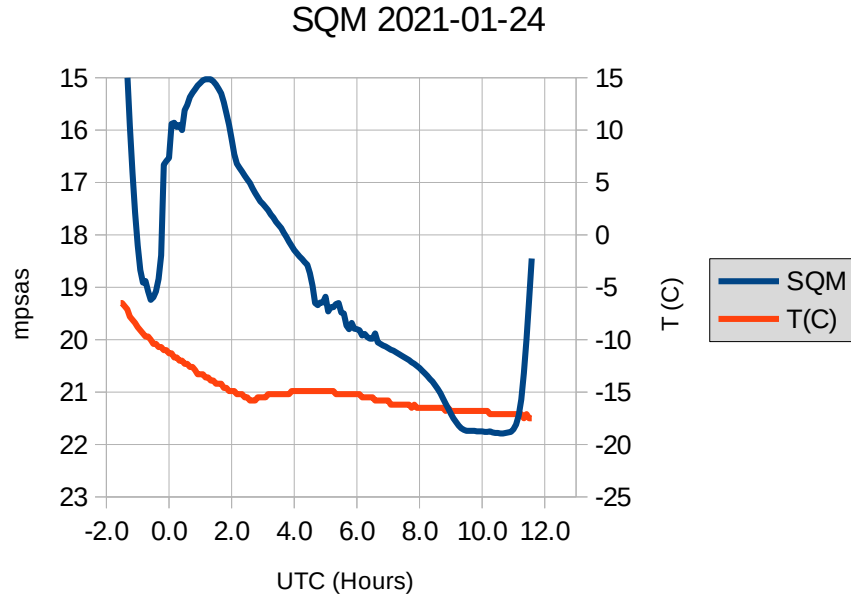
06:38:56 Stopping.

0907UT moonset

1049UT beginning of astronomical twilight

1124UT beginning of nautical twilight

1231UT sunrise



2021-01-28 (#006)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2206UT sunset

2313UT end of nautical twilight

2347UT end of astronomical twilight

0153UT seems to have cleared off so started CCDC action Boltwood_2021-01-28.act.

Group	Stars	Exposures	Binning	Guided
Cassiopeia 01.6h				
	ET Per	200s V	1x1	N
	ISON_J013244.3+565231	300s V	1x1	N
FM Aur		300s V	1x1	N
V1112 Per		20s B, 15s V	1x1	N

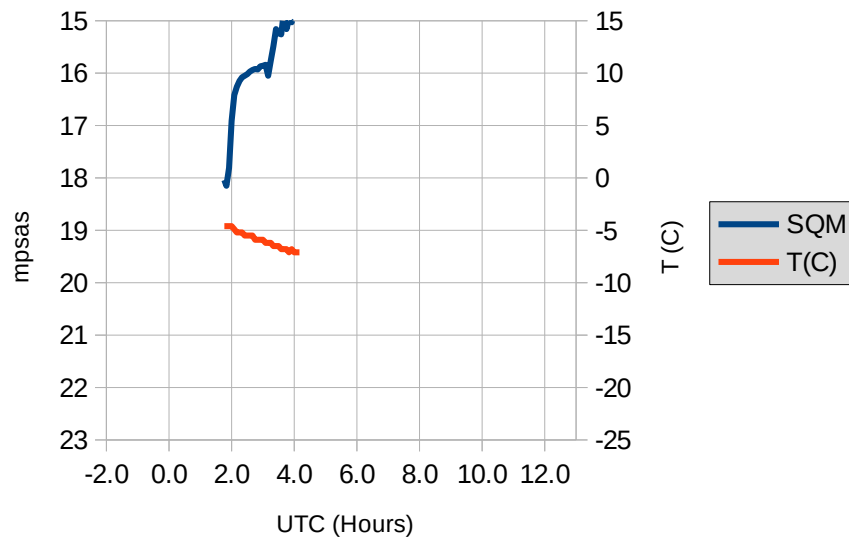
0205UT clouded over so shutting down.

1046UT beginning of astronomical twilight

1120UT beginning of nautical twilight

1227UT sunrise

SQM 2021-01-28



2021-01-29 (#007)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2207UT sunset

2220UT started twilight flat script to collect B, V, and empty flats.

Action: could easily increase the number of flats slightly as the longest exposures are only ~5s.

2159UT moonrise

2230UT started CCDC action Boltwood_2021-01-29.act.

Group	Stars	Exposures	Binning	Guided
Cassiopeia 01.6h				
	ET Per	200s V	1x1	N
	ISON_J013244.3+565231	300s V	1x1	N

2314UT end of nautical twilight

2348UT end of astronomical twilight

0040UT cloud has been thickening over the past several exposures so am shutting down at for a short while to see if the cloud moves off later in the evening.

0613UT awoke to 'check the skies' and found it has cleared off so restarted CCDC action Boltwood_2021-01-29.act.

Moon is very bright and it is quite breezy out but it looks quite clear.

0622UT forgot to remove scope cover and Paracorr cap so did those and then restarted CCDC action Boltwood_2021-01-29.act.

Group	Stars	Exposures	Binning	Guided
Ursa Major 08.6h				

Group	Stars	Exposures	Binning	Guided
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N

0626UT failed both plate solves on first slew so terminated, slewed to the star, did FindStar exposure, centred the star and synced on it. Restarted Boltwood_2021-01-29.act. It again failed both plate solves:

06:26:57 Plate Solve Error Number: -2147220436

06:26:57 No matching stars found. Check your estimated center-point RA/Dec, and your image scaling and quality.

However, I trusted to the accuracy of the star sync and allowed the script to continue.

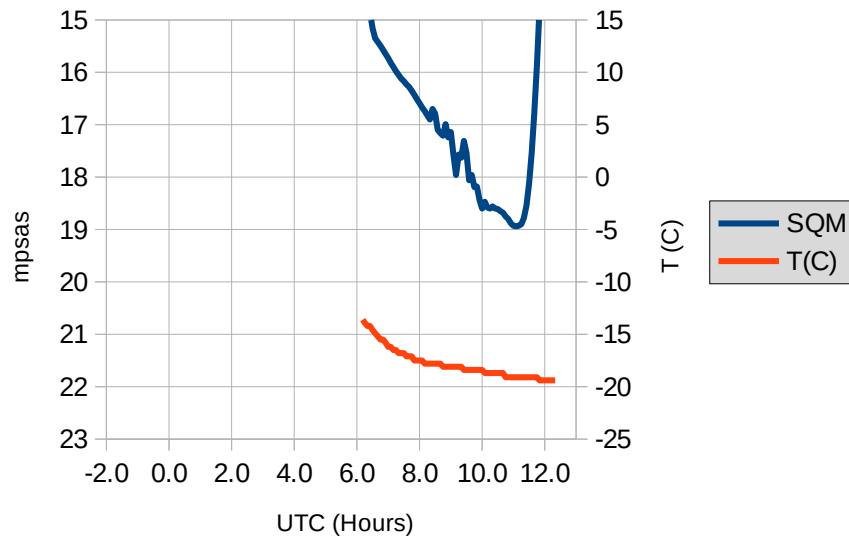
1045UT beginning of astronomical twilight

1120UT beginning of nautical twilight

The mount has blown the Dec fuse and gone into blinky mode just a few degrees north of the park position. Dragged the scope manually into approximately the park position.

1226UT sunrise

SQM 2021-01-29



2021-01-30 (#008)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2209UT sunset

2311UT moonrise

2315UT end of nautical twilight

2349UT end of astronomical twilight

0400UT It has finally cleared off for at least a few hours.

0421UT started CCDC action Boltwood_2021-01-30.act.

Group	Stars	Exposures	Binning	Guided
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N

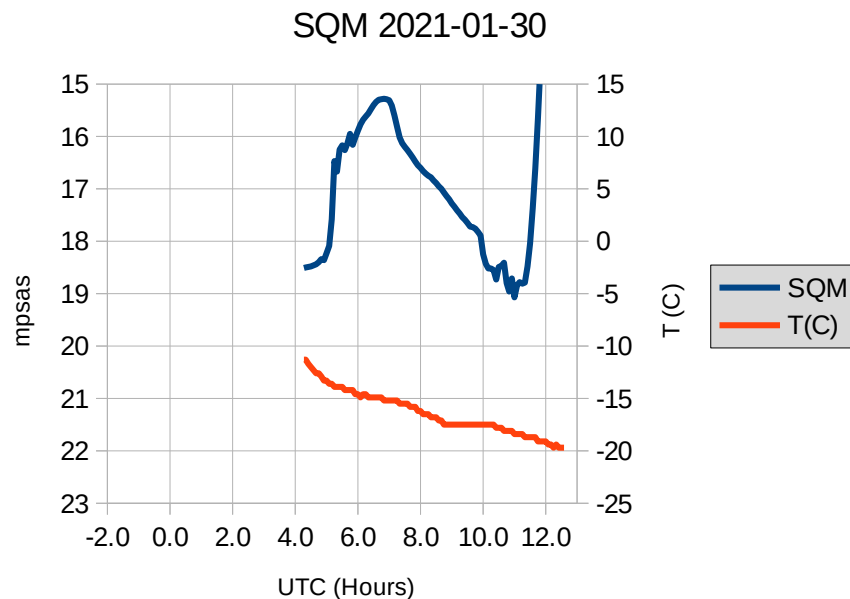
1044UT beginning of astronomical twilight

1119UT beginning of nautical twilight

Second morning in a row that the mount has blown the Dec fuse and gone into blinky mode just a few degrees north of the park position. Again, just dragged the scope manually into approximately the park position.

Action: reduce the slew rate on the mount using SiTechConfig.

1225UT sunrise



2021-01-31 (#009)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2210UT sunset

2316UT started CCDC action Boltwood_2021-01-31.act.

Group	Stars	Exposures	Binning	Guided
Andromeda 02.5h				
	Dauban V248	200s V	1x1	N
	V0569 And	200s V	1x1	N
	DU And	200s V	1x1	N
V1112 Per		400s B, 300s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N

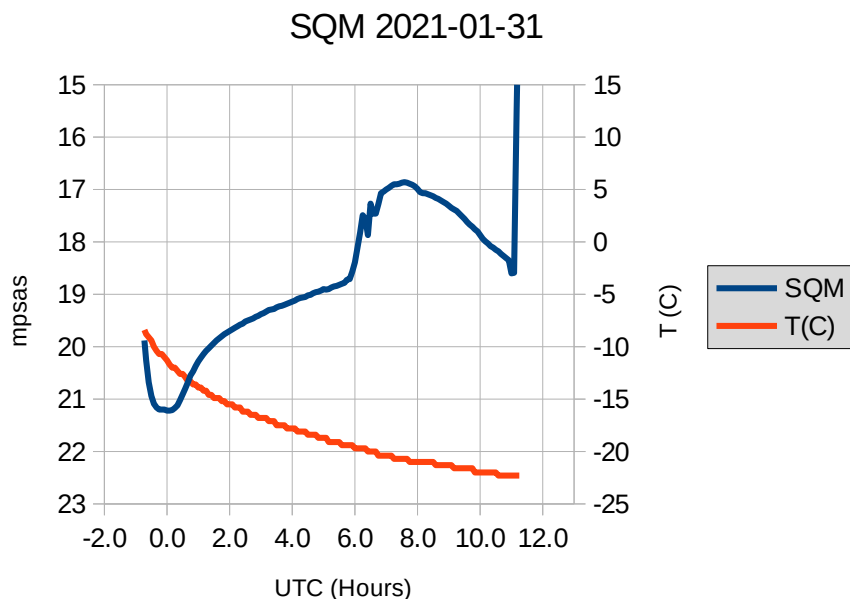
2316UT end of nautical twilight

2351UT end of astronomical twilight

0026UT moonrise

0840UT blew a fuse again, this time on RA on a slew to Ursa Major 11.5h group. Put in my last fuse and blew the Dec fuse while trying to park the scope. I am now dead in the water for observing.

Action: regrease the Dec worm gear.
Action: decrease the max power rating in SiTechConfig.
 1044UT beginning of astronomical twilight
 1118UT beginning of nautical twilight
 1224UT sunrise



2021-02-02

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J045244.41+434100.3	50s Lum		
AC Eri	250s Lum	2x2	N
ASASSN-V J042901.42+323532.9	150s Lum	2x2	N
ASASSN-V J091116.89+351700.8	100s CV	2x2	N
ASASSN-V J094318.52+393221.5	300s Lum	2x2	N
BO Lyn	100s CV	2x2	N
NSVS10743622	300s Lum	2x2	N
ASASSN-V J073243.90+170221.6	200s Lum	2x2	N
HT Cam	300s Lum	2x2	N
V1112 Per	300s Green	2x2	N
ASAS J071102+1651.5	100s Lum	2x2	N
BT Mon	300s Lum	2x2	N
V0870 Cas	300s Lum	2x2	N
V1083 Her	300s Lum	2x2	N

Stars	Exposures	Binning	Guided
V0851 Cas	50s Lum	2x2	N
WY Eri	300s Lum	2x2	N
XX Eri	300s Lum	2x2	N
XY Eri	200s Lum	2x2	N

2021-02-05 (#010)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky looks quite clear but there is very gradually thickening cloud moving in from the west.

2217UT sunset

2323UT end of nautical twilight

2324UT started a series of 3 each 400s B and V exposures of V1112 Per, no autoguiding.

2357UT end of astronomical twilight

0012UT started CCDC action Boltwood_2021-02-05.act.

Group	Stars	Exposures	Binning	Guided
Andromeda 02.5h				
	Dauban V248	200s V	1x1	N
	V0569 And	200s V	1x1	N
	DU And	200s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N

0440UT cloud has thickened to the point that S/N is getting too low for high quality photometry so am shutting down.

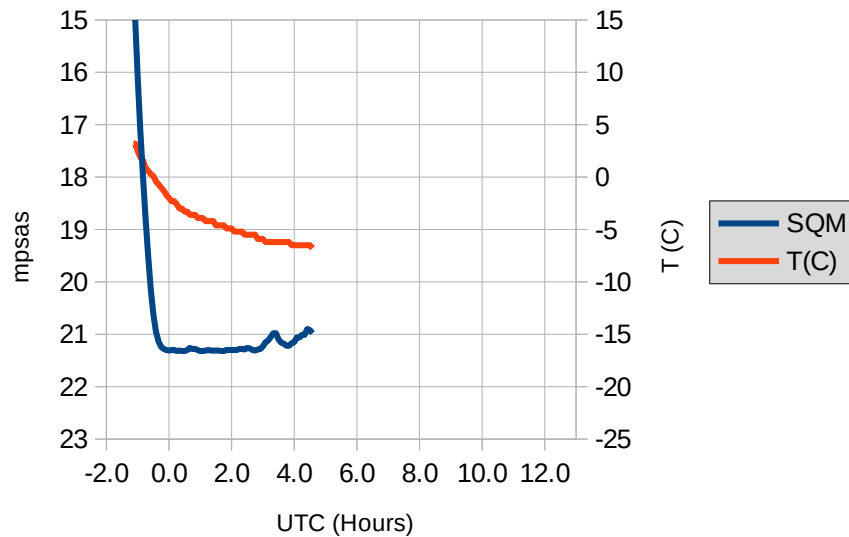
0640UT moonrise

1039UT beginning of astronomical twilight

1113UT beginning of nautical twilight

1218UT sunrise

SQM 2021-02-05



2021-02-06

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
HT Cam	300s Lum	2x2	N
GCN1030629	100s Lum	2x2	N
M67	35s 70s 140s Lum	2x2	N
M67	60s, 120s, 200s TB, TG, TR	2x2	N
WASP-11b	48s Lum	1x1	N
NSVS10743622	300s Lum	2x2	N
V0605 Her	300s Lum	2x2	N
V1083 Her	300s Lum	2x2	N
V1204 Her	300s Lum	2x2	N

2021-02-07 (#011)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2220UT sunset

2325UT end of nautical twilight

2359UT end of astronomical twilight

0034UT it has cleared off so started CCDC action Boltwood_2021-02-07.act.

Group	2325UT end of nautical twilight 2359UT end of astronomical twilight	Exposures	Binning	Guided
V1112 Per		400s B, 300s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N

0330UT it has clouded over again so am shutting down.

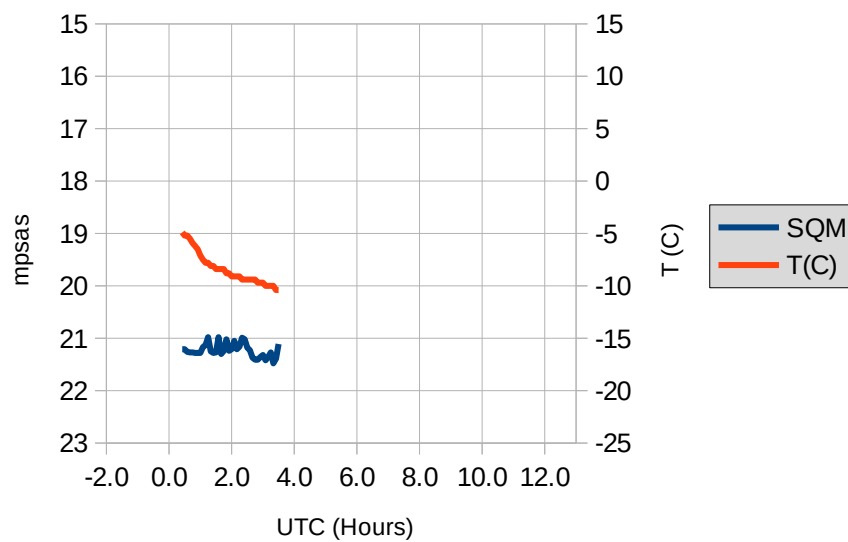
0909UT moonrise

1036UT beginning of astronomical twilight

1110UT beginning of nautical twilight

1215UT sunrise

SQM 2021-02-07



2021-02-08 (#012)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2221UT sunset

2256UT started CCD action Boltwood_2021-02-08.act.

Group	Stars	Exposures	Binning	Guided
Andromeda 02.5h				
	Dauban V248	200s V	1x1	N
	V0569 And	200s V	1x1	N
	DU And	200s V	1x1	N
V1112 Per		400s B, 300s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N

2326UT end of nautical twilight

0000UT end of astronomical twilight

1015UT moonrise

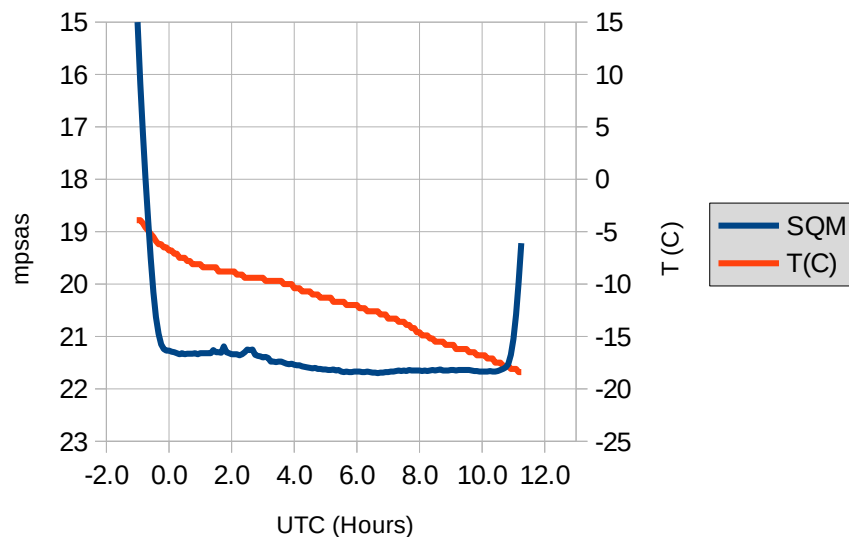
1035UT beginning of astronomical twilight

1109UT beginning of nautical twilight

1111UT attempted a series of shots of a passage of ~50 StarLink mag 3.3 satellites through Cygnus; standing on the lake in the cold, Canon 60Da, 18-50mm Sigma at 18mm, f/2.8, ISO3200, 10s exposures. Took a dozen or so shots but never saw any sign of the satellites visually or photographically.

1214UT sunrise

SQM 2021-02-08



2021-02-09 (#013)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2223UT sunset

2328UT end of nautical twilight

2330UT started CCDC action Boltwood_2021-02-08.act.

Group	Stars	Exposures	Binning	Guided
Andromeda 02.5h				
	Dauban V248	200s V	1x1	N
	V0569 And	200s V	1x1	N
	DU And	200s V	1x1	N
V1112 Per		400s B, 300s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N

0002UT end of astronomical twilight

0050UT clouded over suddenly so shutting down.

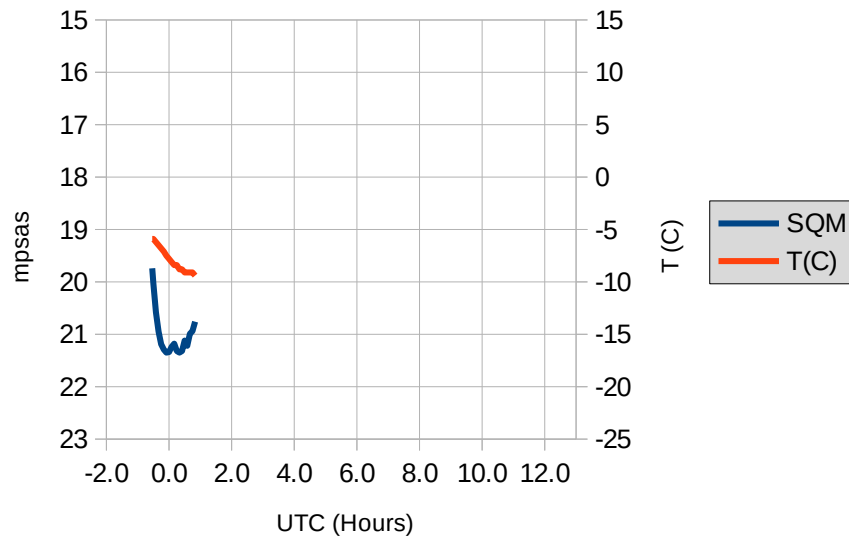
1034UT beginning of astronomical twilight

1108UT beginning of nautical twilight

1112UT moonrise

1213UT sunrise

SQM 2021-02-09



2021-02-12 (#014)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

Tak Sky90II on iOptron iEQ45 at observing site overlooking the lake; QSI583ws with B and V filters, temp at -25C.

Canon 60Da with 100/2.8 macro lens on barn-door tracker in the parking area.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2227UT sunset

2332UT end of nautical twilight

2344UT started a series of 8 x 400s 1x1 unfiltered exposures of NGC925, autoguided with 1s exposures binned 1x1. Had problem with guide star disappearing several times but only on the first exposure and only on test shots etc. The main run went fine with no hiccups. Images looking very good.



0005UT end of astronomical twilight

0048UT started CCD action Boltwood_2021-02-12.act.

Group	Stars	Exposures	Binning	Guided
V1112 Per		400s B, 300s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
M67		30s, 60s, 120s B & V	1x1	N
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N

0147UT started a series of 20 each 100s and 30s exposures of **M46** and **M47** with Sky90/QSI583ws; no guiding. First 100s image looked surprisingly good for no guiding and polar alignment just hoping that it stayed good with the removal and remounting of the mount on the pier.



M1-18 = PK231+4.1 planetary nebula visible in the image at 07 42 04 -14.01 21 16.4. Need to do a colour DSLR version of this to colourize it.

0230UT Canon, ISO1000, landscape orientation: started a series of 180s exposures of λ Ori nebula in the head of Orion.

0325UT Canon, ISO1000, portrait orientation: started a series of 180s exposures of Rosette nebula north to the feet of Gemini. Mis-aimed and cut off the north end of the dark area that I was hoping to include in the top of the frame.

0338UT Tried some 300s V images of BO Lyn but the tracking is way too poor - the cables may be dragging. I also forgot to add back on the second counterweight so the mount has been heavily weighted to the west (telescope end.) Shut down that telescope.

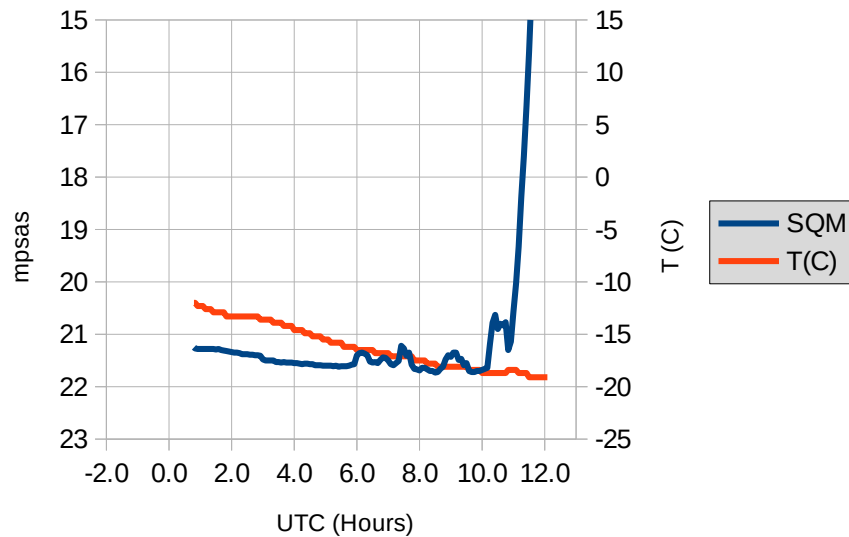
0415UT it's getting too cold out and I don't want to be supervising the Canon 60Da on the barn-door tracker so have shut that down as well.

1030UT beginning of astronomical twilight

1104UT beginning of nautical twilight

1208UT sunrise

SQM 2021-02-12



2021-02-13 (#015)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2228UT sunset

2330UT moonset

2333UT end of nautical twilight

0007UT end of astronomical twilight

0302UT in spite of consistent forecasts for a cloudy night it has cleared off, significantly better than last night; started CCDC action Boltwood_2021-02-13.act.

Group	Stars	Exposures	Binning	Guided
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N

0413UT paused the CCDC action here, adjusted focuser inwards 28 steps and shot 3 each 30s, 60s, and 120s unfiltered images of M67 for saturation and S/N measurements.

0430UT did a refocus in the V filter which gave best FWHMs around 2.1px and then resumed the action where it left off in the middle of the Lynx 07.6h group.

Group	Stars	Exposures	Binning	Guided
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N

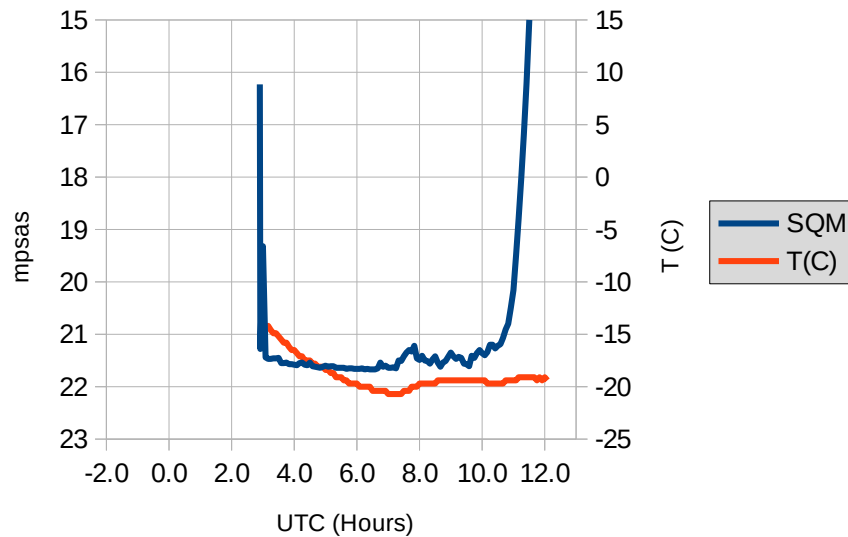
1029UT beginning of astronomical twilight

1103UT beginning of nautical twilight

Blew the Dec fuse while parking the scope this morning.

1207UT sunrise.

SQM 2021-02-13



2021-02-14

Tak Sky90II on electronics bench in the office; QSI583ws with B and V filters, temp at -25C.
0510UT started a series of 25 each bias and 400s dark frames.

2021-02-15 (#016)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2231UT sunset

2313UT CCDC action Boltwood_2021-02-15.act.

Group	Stars	Exposures	Binning	Guided
Andromeda 02.5h				
	Dauban V248	200s V	1x1	N
	V0569 And	200s V	1x1	N
	DU And	200s V	1x1	N
V1112 Per		400s B, 300s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				

Group	Stars	Exposures	Binning	Guided
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N

2335UT end of nautical twilight

0009UT end of astronomical twilight

0141UT moonset

0440UT is has clouded over pretty solidly so am shutting down.

0538UT Tak Sky90II on electronics bench in the office; QSI583ws with B and V filters, temp at -25C.

Shot a series of 50 10s unfiltered flat frames.

1030UT beginning of astronomical twilight

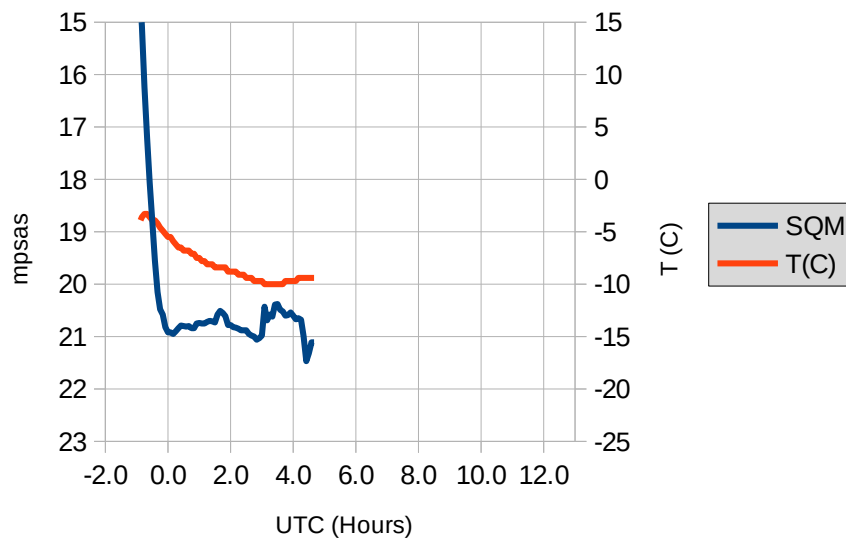
1104UT beginning of nautical twilight

1159UT Tak Sky90II on electronics bench in the office; QSI583ws with B and V filters, temp at -25C.

Shot a series of 25 each 40s B and V flat frames.

1208UT sunrise.

SQM 2021-02-15



2021-02-18 (#017)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2234UT sunset

2338UT end of nautical twilight

0012UT end of astronomical twilight

0315UT suddenly/finally noticed that it has cleared off after our largest snowstorm of the winter so far (only ~20cm so nothing very major.) Although it appears to have cleared of some time ago, some Cu bands formed and crossed the area, potentially dropping some flurries so now is the best time to open up anyway.

0334UT started CCDC action Boltwood_2021-02-18.act.

Group	Stars	Exposures	Binning	Guided
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N

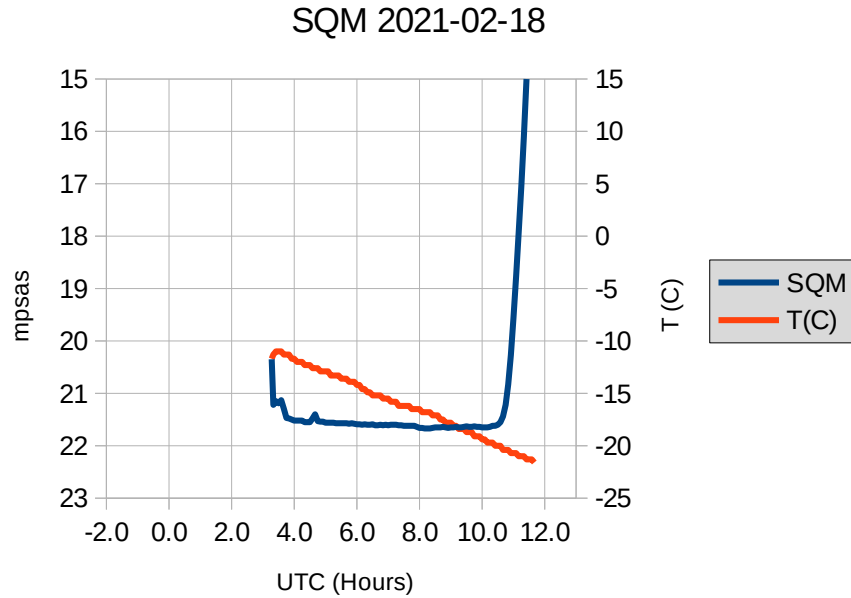
0448UT moonset

1023UT beginning of astronomical twilight

1057UT beginning of nautical twilight

This morning the SiTech controller decided to park the mount by putting the OTA pointing N instead of S and blew the fuse.

1201UT sunrise.



2021-02-20

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
SERIV 101	50s CV	2x2	N
V0647 Aur	300s Lum	2x2	N
VESPA V23	50s Lum	2x2	N

2021-02-21 (#018)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is variable and not good but transparent enough to get at least a goodly number of successful images.

2240UT sunset

2343UT end of nautical twilight

0012UT started CCDC action Boltwood_2021-02-21.act.

Group	Stars	Exposures	Binning	Guided
V1112 Per		400s B, 300s V	1x1	N
Perseus 4h				

Group	Stars	Exposures	Binning	Guided
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N

0017UT end of astronomical twilight

0755UT moonset

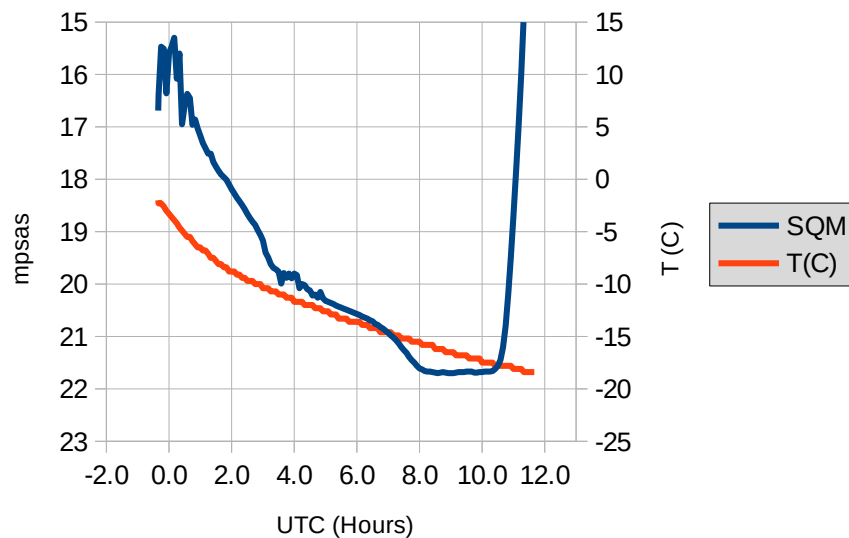
1018UT beginning of astronomical twilight

1051UT beginning of nautical twilight

Chose to manually park the scope this morning and still managed to blow the Dec fuse. The Dec gearing clearly needs regreasing.

1155UT sunrise.

SQM 2021-02-21



2021-02-22 (#019)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is clouding over but slowly enough and starting out thin enough that I will get at least a few hours of observations.

2241UT sunset

2344UT end of nautical twilight

0017UT end of astronomical twilight

0025UT started CCDC action Boltwood_2021-02-21.act.

Group	Stars	Exposures	Binning	Guided
V1112 Per		400s B, 300s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N

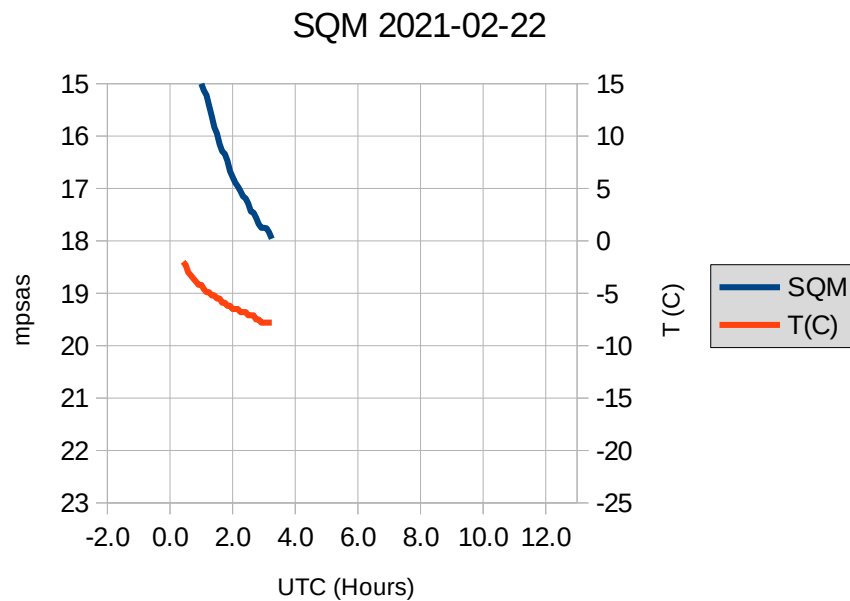
0330UT it has clouded over thick enough to make it pointless to lose any sleep over, shutting down.

0854UT moonset

1016UT beginning of astronomical twilight

1050UT beginning of nautical twilight

1153UT sunrise.



2021-02-23

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J042901.42+323532.9	150s Lum	2x2	N

Stars	Exposures	Binning	Guided
ASASSN-V J045244.41+434100.3	50s Lum	2x2	N
V0605 Her	300s Lum	2x2	N
NSVS10743622	300s Lum	2x2	N
V1083 Her	300s Lum	2x2	N
V1112 Per	400s TG	2x2	N
V1112 Per	400s TB	2x2	N
V1112 Per	400s TR	2x2	N
V1204 Her	300s Lum	2x2	N

2021-02-26 (#020)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is clouding over but slowly enough and starting out thin enough that I will get at least a few hours of observations.

2246UT sunset

2254UT started ffs.pl V5.1 to shoot B, V, and unfiltered flats. This is primarily to test a newly edited ffs.pl version 5.1 which no longer tracks during flat exposures.

0025UT started CCDC action Boltwood_2021-02-26.act.

Group	Stars	Exposures	Binning	Guided
V1112 Per		30s B, 25s V	1x1	N

2350UT end of nautical twilight

0023UT end of astronomical twilight

0025UT it has clouded over already so am letting the last exposure complete then will shut down.

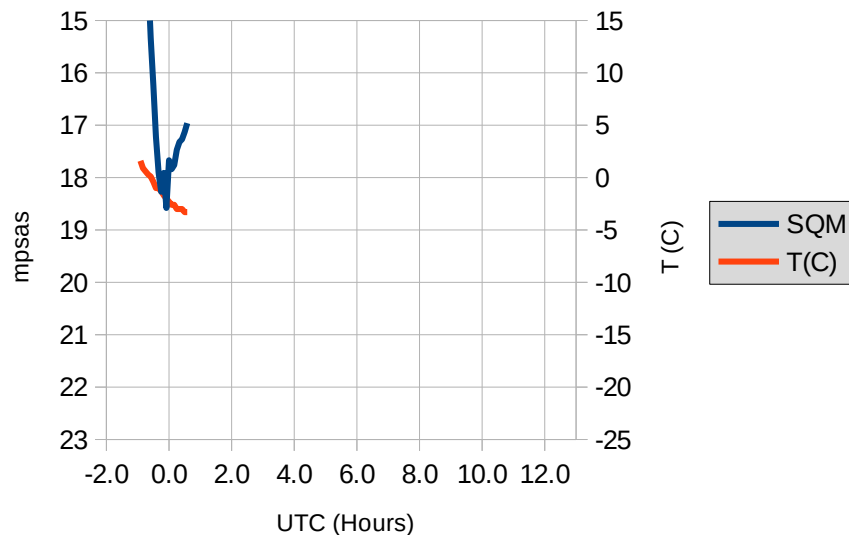
1010UT beginning of astronomical twilight

1043UT beginning of nautical twilight

1146UT sunrise.

1152UT moonset

SQM 2021-02-26



2021-02-27 (#021)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is clouding over but slowly enough and starting out thin enough that I will get at least a few hours of observations.

2248UT sunset

2309UT started CCDC action Boltwood_2021-02-26.act.

Group	Stars	Exposures	Binning	Guided
V1112 Per		30s B, 25s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N

2351UT end of nautical twilight

0025UT end of astronomical twilight

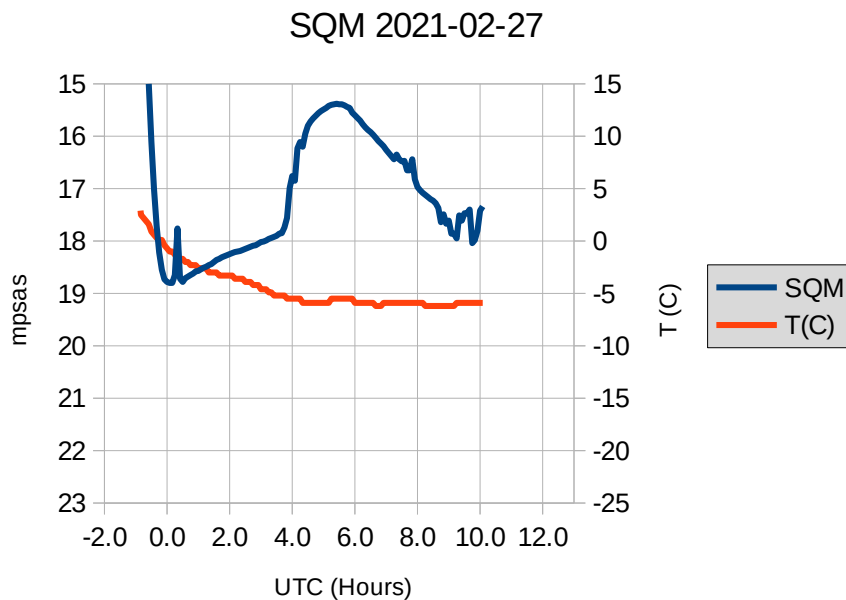
1000UT awoke to find it had clouded over so shut down.

SiTech once again failed in the park mount - after getting the RA axis to nearly the park point it tried to swing the OTA the wrong direction in Dec and collided with the building blowing both fuses.

1008UT beginning of astronomical twilight

1042UT beginning of nautical twilight

1145UT sunrise.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J042901.42+323532.9	150s Lum	2x2	N
ASASSN-V J045244.41+434100.3	50s Lum	2x2	N
ASASSN-V J073605.43+661935.1	200s Lum	2x2	N
ASASSN-V J080321.63+550606.1	200s Lum	2x2	N
V0605 Her	300s Lum	2x2	N
NSVS10743622	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1112 Per	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

2021-02-28 (#022)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is clouding over but slowly enough and starting out thin enough that I will get at least a few hours of observations.

2249UT sunset

2322UT moonrise

2322UT started CCDC action Boltwood_2021-02-26.act.

Group	Stars	Exposures	Binning	Guided
V1112 Per		30s B, 25s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N

2352UT end of nautical twilight

0026UT end of astronomical twilight

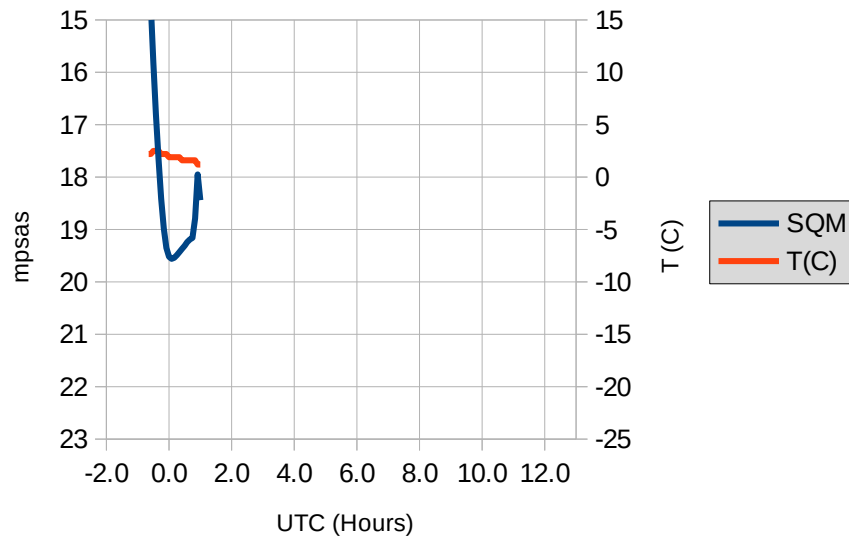
0055UT it has clouded over already so am letting the last exposure complete then shutting down.

1006UT beginning of astronomical twilight

1040UT beginning of nautical twilight

1143UT sunrise.

SQM 2021-02-28



2021-03-02

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J073605.43+661935.1	200s Lum	2x2	N
ASASSN-V J042901.42+323532.9	150s Lum	2x2	N
ASASSN-V J045244.41+434100.3	50s Lum	2x2	N
ASASSN-V J080321.63+550606.1	200s Lum	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

2021-03-03

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is clouding over rapidly but I'm hoping that I will get at least a few observations.

2249UT sunset

0004UT started CCD action Boltwood_2021-02-26.act, though the cloud already looks pretty thick. I should have been more aggressive and delayed supper to get things started 20 minutes earlier.

0030UT it has clearly got too cloudy out there are very few or no stars in the latest image. Turned everything off and parked the scope. Will go out and close the observatory when Green Acres ends.

0045UT it has clouded over completely and is actually snowing already on the open telescope. Closed the observatory. None of the few images gathered were of any use and were all deleted.

2021-03-06 (#023)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is clouding over but slowly enough and starting out thin enough that I will get at least a few hours of observations.

2258UT sunset

0000UT end of nautical twilight

0034UT end of astronomical twilight. Sky is clear but it's windy and cold and there is extensive cloud moving in from the north and the Ottawa Centre meeting is starting so I won't open the observatory.

0235UT it is still clear out !!! So I'm opening the observatory - probably in time for the cloud to actually move in.

0243UT started CCDC action Boltwood_2021-02-26.act.

0344UT realized my error, transferred Boltwood_2021-03-05.act over from Achilles and started it instead (it includes NGC5053 but is otherwise similar.)

Group	Stars	Exposures	Binning	Guided
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N

0415UT it has clouded over thick enough to make continuation of dubious value so am shutting down.

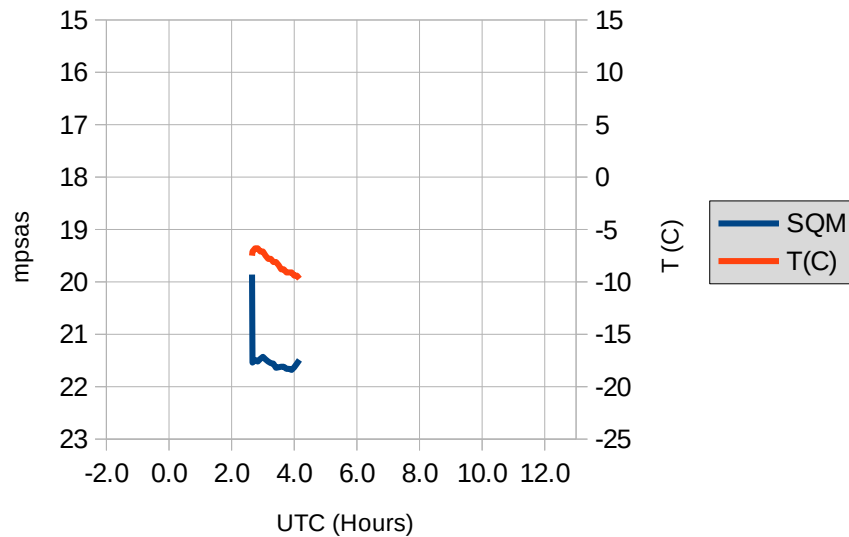
0701UT moonrise.

0956UT beginning of astronomical twilight

1030UT beginning of nautical twilight

1133UT sunrise.

SQM 2021-03-06



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J045815.25+135230.3	300s Lum	2x2	N
ASASSN-V J073243.90+170221.6	200s Lum	2x2	N
ASASSN-V J073605.43+661935.1	200s Lum	2x2	N
ASASSN-V J080321.63+550606.1	200s Lum	2x2	N
NGC5053	200s CV, TR, TG, TB	2x2	N
ASAS J051053+0717.4	300s Lum	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

2021-03-07 (#024)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is clouding over but slowly enough and starting out thin enough that I will get at least a few hours of observations.

2258UT sunset

0001UT end of nautical twilight

0035UT end of astronomical twilight.

0227UT started CCDC action Boltwood_2021-03-07.act.

Group	Stars	Exposures	Binning	Guided
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
NGC5053		5 x 200s B, V, TR, unfiltered	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N

0809UT moonrise.

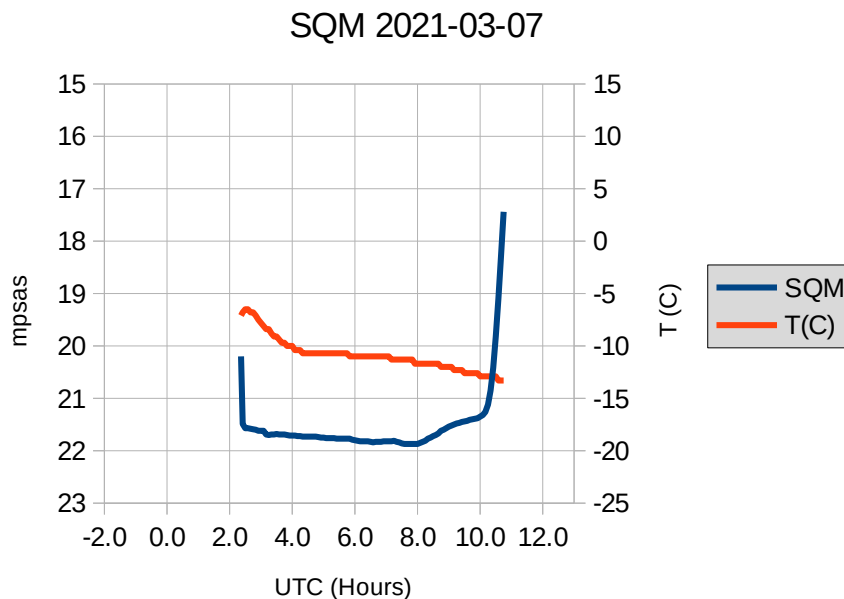
0954UT beginning of astronomical twilight

1020UT out with the 15x70 binos to try to see the morning planet grouping of Saturn, Jupiter and Mercury. Saturn is quite obvious in the binos and, after 10 minutes was easy naked eye.

1028UT beginning of nautical twilight

1042UT Jupiter and Mercury both visible, Mercury (at only 1.3d above the horizon) fading in and out randomly over few second time scales as it goes behind the thin patch cloud near the horizon, but very easy. Disk of Jupiter and oval of Saturn both quite apparent.

1131UT sunrise.



2021-03-08 (#025)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

Canon 60Da, Sigma 18-50mm f/2.8 lens at 50mm f/4, on the barndoor tracker in the parking area.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is clouding over but slowly enough and starting out thin enough that I will get at least a few hours of observations.

2300UT sunset

0020UT finally got everything working and started CCDC action 2021-03-08.act.

Group	Stars	Exposures	Binning	Guided
V1112 Per		30s B, 25s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N

0003UT end of nautical twilight

0037UT end of astronomical twilight.

0126UT Canon 60Da, ISO2000, Sigma 18-50mm f/2.8 lens at 50mm f/4, on the barndoor tracker in the parking area; started a series of 120s exposures of Pleiades, Mars, Hyades.



0139UT Canon 60Da, ISO2000, Sigma 18-50mm f/2.8 lens at 50mm f/4, on the barndoor tracker in the parking area; started a series of 120s exposures of Auriga.



0646UT paused the CCDC action.

0650UT Started a series of 300s TR followed by B, and V 2x2 binned frames of NGC4725 to go with the unfiltered images from 2019-04-29; autoguided with 1s exposures binned 2x2.

The shutter closed ~4s into the first exposure but otherwise behaved properly. However, during the B and V frames the guider camera several times got stuck on reading and failed to guide, had to stop and resume the sequence each time.

0818UT Started a series of 5 each 400s B and V 1x1 frames of NGC5053; autoguided with 2s exposures binned 2x2. Guiding problems continue - although the shutter only rarely closes during an exposure nearly every single exposure there is a failure to read the guide camera - when the exposure stop button is clicked the guide exposure shows that it has been exposing for the whole period while reading guider is displayed in the status window as the guide star and background are very bright. For the 6th exposure of the planned 10 I increased the guider exposure to 4s as guiding was struggling in the B filter. Stars seem to be slightly less circular as a result.

0908UT moonrise.

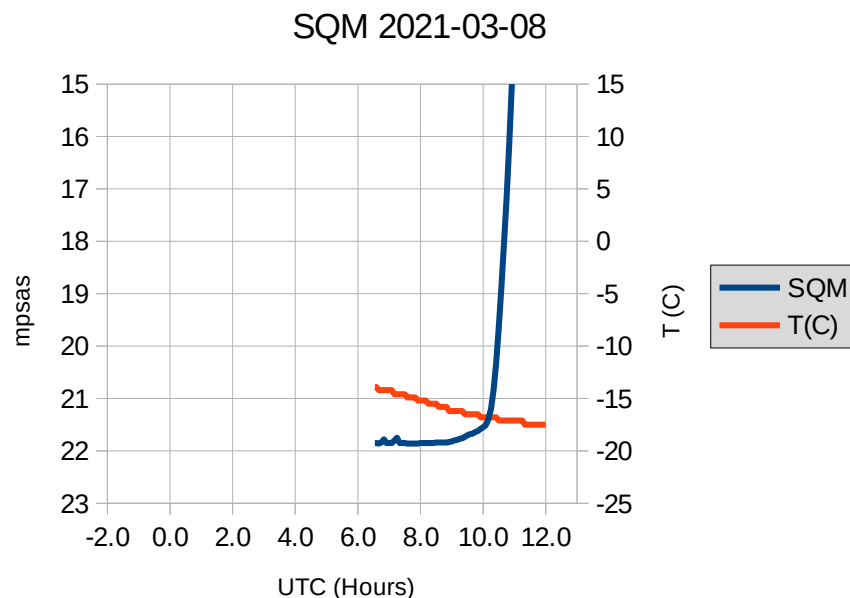
0935UT started a series of 5 x 400s unfiltered 1x1 exposures of NGC5053; autoguided with 2s exposures binned 2x2.

0952UT beginning of astronomical twilight

1014UT started new CCDC action on only the Boo variables, all with unfiltered exposures, 1/2 the duration of the earlier V exposures. Just to test what this does to performance. I don't think I should do this.

1026UT beginning of nautical twilight

1129UT sunrise.



2021-03-10 (#026)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

Canon 60Da, Sigma 18-50mm f/2.8 lens at 50mm f/4, on the barndoor tracker in the parking area.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

The sky is clouding over but slowly enough and starting out thin enough that I will get at least a few hours of observations.

2302UT sunset

0005UT end of nautical twilight

Started with a tragedy of errors - a blown fuse last night meant the scope was not parked so pointing was off and I had to go out to the obsy and adjust the pointing; my misguided editing of some of the CCDC actions to shoot CV instead of V caused a number of the originals to be unloadable so had to be rewritten and Windows is refusing to save the new versions of the CCDC actions and VNC keeps disconnecting so had to go out to the obsy to do the edits and saves; I neglected to return the focuser to V/B position so first images were badly out of focus.

0020UT finally got everything working and started CCDC action 2021-03-10.act.

Group	Stars	Exposures	Binning	Guided
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N

0039UT end of astronomical twilight.

Action: try some guided exposures watching from inside the observatory to see if VNC is having any effect on results.

0049UT Canon 60Da, ISO2000, Sigma 18-50mm f/2.8 lens at 50mm f/4, on the barndoor tracker in the parking area; started a series of 20 X 120s exposures of Pleiades, Mars, Hyades.

~0115UT upped the ISO to 3200 and closed the lens down to f/5.6, still at 50mm; to see if the optical quality improves. Started a series of 18 X 120s exposures of Auriga. (There were more exposures but the tracker ran out of thread and the last 5 shots were trailed.)

0312UT The Aur06.0hRRLs action was continuing well into the trees due to an erroneous change to the skip-to altitude (55d); I corrected the skip ahead to a higher altitude (62d) and restarted the action on the Lyn 07.6hRRLs action.

Group	Stars	Exposures	Binning	Guided
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N

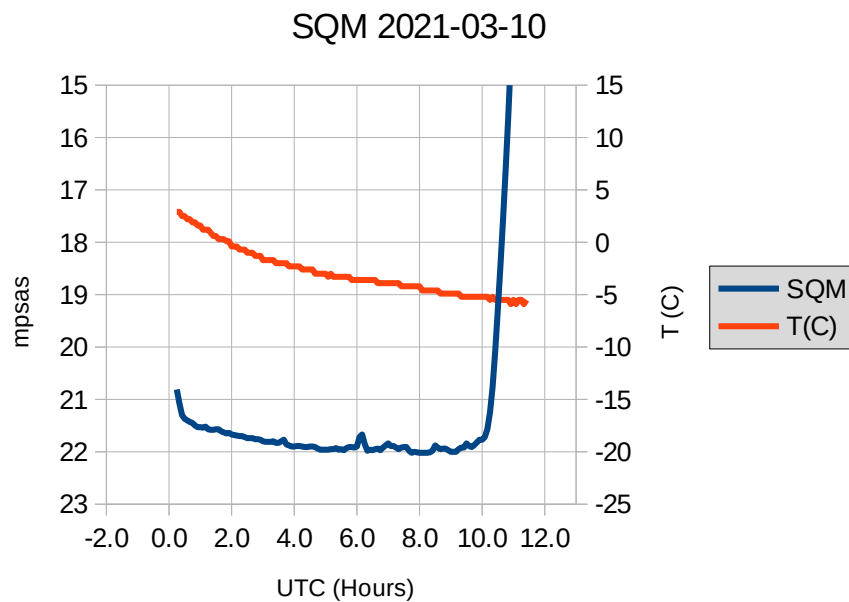
Group	Stars	Exposures	Binning	Guided
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N

1035UT moonrise.

0949UT beginning of astronomical twilight

1023UT beginning of nautical twilight

1125UT sunrise.



2021-03-13 (#027)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2223UT moonset

2306UT sunset

0009UT end of nautical twilight

0020UT sky has finally cleared off and the wind seems barely acceptable so started CCDC action 2021-03-13.act.

Group	Stars	Exposures	Binning	Guided
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
NGC5053		5 x 200s B, V, TR, unfiltered	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N

0043UT end of astronomical twilight.

0931UT Blew another fuse - RA this time - while slewing between from VX Boo to SZ Boo and CCDC shut down. There was no obvious obstruction so it looks like friction?

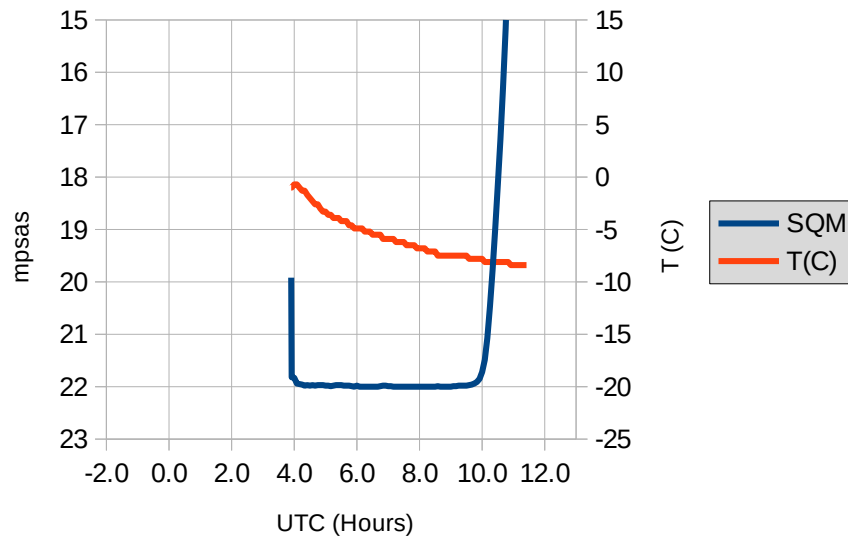
0943UT beginning of astronomical twilight

1017UT beginning of nautical twilight

1120UT sunrise.

Action: change the dawn flats back to 1x1 and remove TR and Empty flats, increase back to 15 exposures.

SQM 2021-03-13



2021-03-15 (#028)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2309UT sunset

2352UT sky cleared off just after sunset and the wind seems barely acceptable so started CCDC action

2021-03-15.act.

Group	Stars	Exposures	Binning	Guided
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
NGC5053		5 x 200s B, V, TR, unfiltered	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N

0012UT end of nautical twilight

0032UT moonset

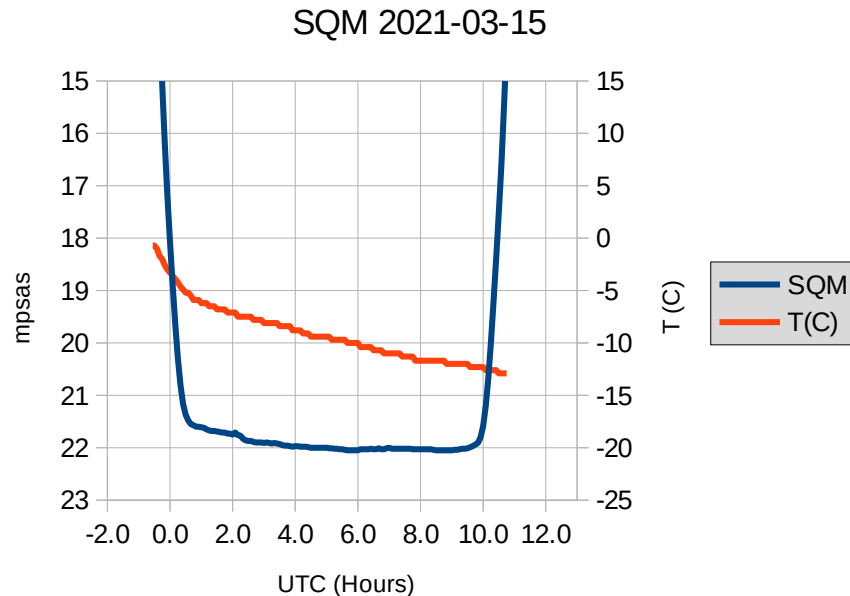
0046UT end of astronomical twilight.

0706UT Blew another RA fuse while slewing between from VZ UMa to V0397 UMa and CCDC shut down. I had forgotten to reattach the cable bundle to the back of the scope after regreasing the Dec worm gear so perhaps it was catching somewhere - possibly on the cable to the Dec motor.

0939UT beginning of astronomical twilight

1013UT beginning of nautical twilight

1116UT sunrise.



2021-03-16 (#029)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

Takahashi Sky90II 9cm/4.5 apo refractor with Canon 60Da and subsequently the QSI583ws at -25C with 31mm Astrodon interferometric B and V filters (plus usual TR Red, Ha, and OIII), 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount at the cliff-top observing site. Autoguiding with PHD2

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2310UT sunset

2318UT started a series of 2x2 binned flats in TR, B, V, and Empty.

~~Action: the script does test exposures between filters but allows for very short exposures - I need to be doing a 'wait for dark' test sequence until exposures are >2s.~~

Restarted the script several times in immediate succession for V, B, and Empty filters to overcome the problem with script allowing too short exposures. (Focused inwards 28 steps for unfiltered flats and then back out again when done.)

2345UT started CCDC action 2021-03-16.act.

Group	Stars	Exposures	Binning	Guided
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
NGC5053		5 x 200s B, V, TR, unfiltered	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N

0013UT end of nautical twilight

0048UT end of astronomical twilight.

M46 & M47

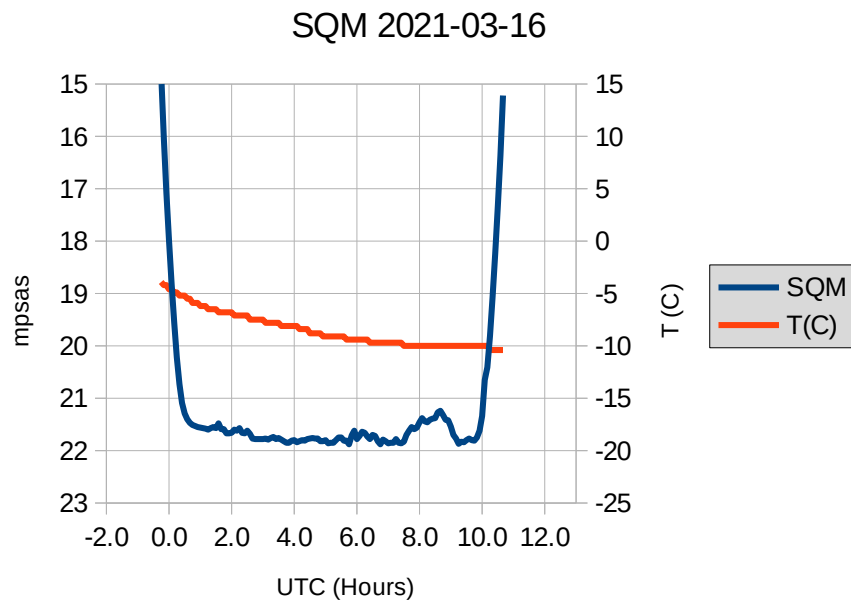


0134UT moonset

M44



0937UT beginning of astronomical twilight
1012UT beginning of nautical twilight
1114UT sunrise.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J045815.25+135230.3	300s Lum	2x2	N
ASASSN-V J073605.43+661935.1	200s Lum	2x2	N
ASASSN-V J080321.63+550606.1	200s Lum	2x2	N
ASAS J051053+0717.4	300s Lum	2x2	N
NGC5053	300s CV, TR, TG, 400s TB	2x2	N
ASAS J071102+1651.5	100s Lum	2x2	N
ASASSN-V J073243.90+170221.6	200s Lum	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

2021-03-17 (#030)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2311UT sunset

0014UT end of nautical twilight

0049UT end of astronomical twilight.

0237UT moonset

0240UT it has cleared off quite spectacularly so started CCDC action 2021-03-17.act. It took several tries to get things to run the way I wanted (PinPoint refuses to solve

Group	Stars	Exposures	Binning	Guided
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N

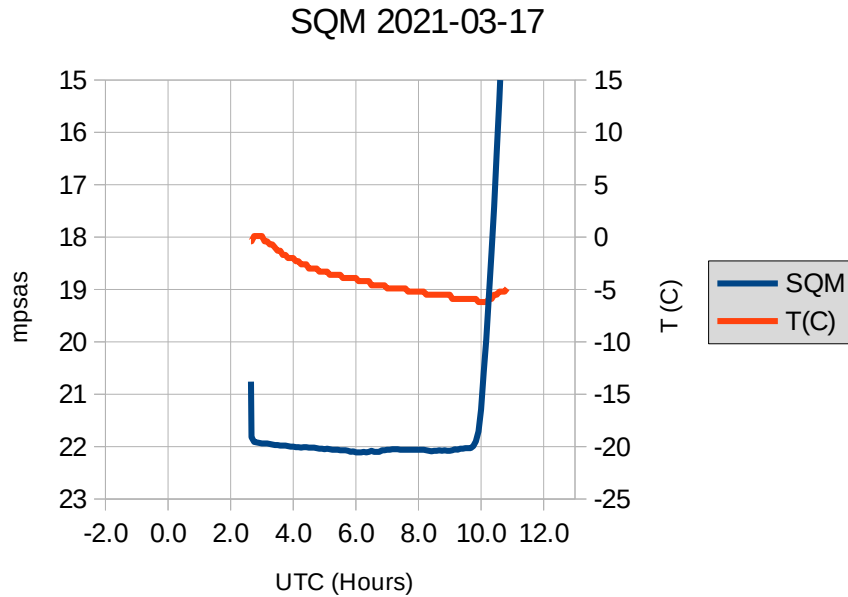
Group	Stars	Exposures	Binning	Guided
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
NGC5053		5 x 200s B, V, TR, unfiltered	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N

0935UT beginning of astronomical twilight

1010UT beginning of nautical twilight

0630UT it has clouded over some time since 10UT, some of the later images were significantly dimmed.

1113UT sunrise.



2021-03-19

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

0200UT started a series of 25 each bias and 400s dark frames, binned 2x2 to reduce my NGC4725 images of a few nights ago.

2021-03-20 (#031)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

Takahashi Sky90II 9cm/4.5 apo refractor with QSI583ws at -25C with 31mm Astrodon interferometric B and V filters (plus usual TR Red, Ha, and OIII), 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount at the cliff-top observing site. Autoguiding with PHD2

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2315UT sunset

2320UT attempted to use ffs.pl to shoot twilight flats; because the scope was not synced to the sky at that point I edited the script to not use and scope slewing but something went wrong and I was unable to get the script working.

~~Action: review and debug a no-slew ffs.pl (appeared not to be loading the astrofolder?)~~

0010UT started first trial run with PEMPro. Calibration wizard, setup all appeared to go without a hitch. Ran for 10 worm cycles, averaged the data, determined the best fit PEC curve. Was unable to figure out how to load it to the mount, will try again another night.

0018UT end of nautical twilight

0053UT end of astronomical twilight.

2157UT Sky90: started a series of 150s B and 120s V exposures of HY Com; autoguided with 1s exposures binned 2x2.

Action: there are settings in PHD2 which should be adjusted (guide camera pixel size, guidescope focal length, turn on auto star select, increase exposure duration.) Check out the Tools>Guiding

Assistant. Create an equipment profile. Look over guide corrections graph to see if I am over-correcting and correct this.

0110UT started CCDC action 2021-03-20.act.

Group	Stars	Exposures	Binning	Guided
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N

Action: both plate solves failed on CNC08.9RRLs action.

Action: both plate solves failed on Leo Minor 09.8h action.

Action: both plate solves failed on Ursa Major 11.5h action.

0540UT started a series of 200s V and 30s B exposures of RV CrB; autoguided with 1s exposures binned 2x2. Guiding appears to be excellent.

0543UT moonset

0610UT paused the CCDC action to do a refocus unfiltered. I was having trouble getting a handle on the point of best focus because of the relatively poor seeing so I defocused roughly 18 steps outwards, watched the HFD for several exposures then focused inward 2.5 x HFD as per my manual V-curve from a year or two ago and it worked great - about 2.8px FWHM.

0617UT started a series of 400s unfiltered exposures of NGC4631, specifically the SN; autoguided with 2s exposures binned 2x2, dithered up to 3px, no guiding in Dec. Guiding looks pretty good. Stars in images are ~4.2px FWHM.

First image the guide star disappeared, second start worked perfectly with very nice result, third image the guide camera locked up at some point and the image is trailed E-W.

0702UT tried increasing the guide exposure to 4s to see if that changes anything. Seems to allow for greater excursions in RA - up to just over 1px. In fact the final image shows stars are noticeably though not drastically more elongated in the E-W direction. Returned to guiding at 2s exposures.

0735UT tried to shoot NGC5053 with 3s guider exposures but Maxim refused to keep the shutter open for more than 8s and kept losing the guide star. I shifted the pointing slightly to the north to access a much brighter guide star, returned to 2s guide exposures and everything seems to be fine.

0740UT started a series of 400s unfiltered exposures of NGC5053; autoguided with 2s exposures binned 2x2, dither up to 6 pixels, no Dec corrections. The star sizes are just too large for working a globular cluster so I gave up after 1 image.

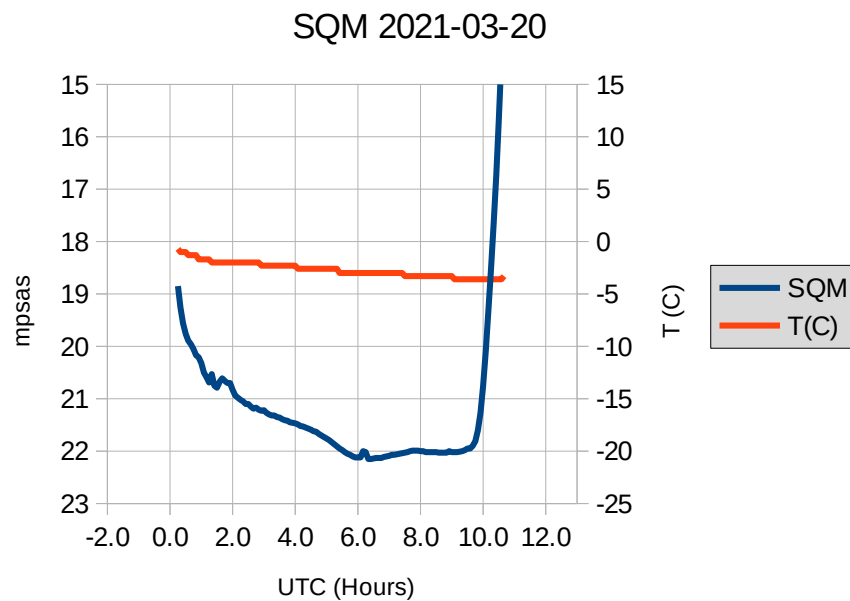
0758UT started a short series of 14 x 90s unfiltered exposures of AM CVn, a target of interest to the Center for Backyard Astrophysics (CBA); autoguided with 2s exposures binned 2x2. Image centred at RA 12h 34m 49.5s, Dec +37° 35' 11.9"

0832UT resumed 2021-03-20.act with Boo 14.7h RRLs.

0929UT beginning of astronomical twilight

1004UT beginning of nautical twilight

1107UT sunrise.



2021-03-21 (#032)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C. Was barely able to reach -25 during twilight - cooler at 100% and -24.9.

Takahashi Sky90II 9cm/4.5 apo refractor with QSI583ws at -25C with 31mm Astrodon interferometric B and V filters (plus usual TR Red, Ha, and OIII), 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount at the cliff-top observing site. Autoguiding with PHD2

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2316UT sunset

2320UT started ffs.pl to collect V, B, and unfiltered twilight flats with the Boltwood scope.

2325UT started ffs_iOptron.pl to collect V, B, and unfiltered (without refocus) twilight flats with the Sky90. Ran out of time on the B flats - for some reason there was a very large increase in exposure between the V and B flats and the latter ran to >30s.

Action: reduce the number of flats to 12 in each filter for the Sky90.

0020UT end of nautical twilight
 0055UT end of astronomical twilight.
 0110UT started CCDC action 2021-03-21.act.

Group	Stars	Exposures	Binning	Guided
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N

Action: both plate solves failed on FM Aur action.

Action: both plate solves failed on Auriga 06h RRLs action.

0102UT started a series of 30s and 100s B and V images of M44 for an HR diagram.

0133UT stopped CCDC.

0155UT started a series of 300s unfiltered exposures of NGC2903; autoguided with 2s exposures binned 2x2; galaxy displaced to the S to get a good guide star.



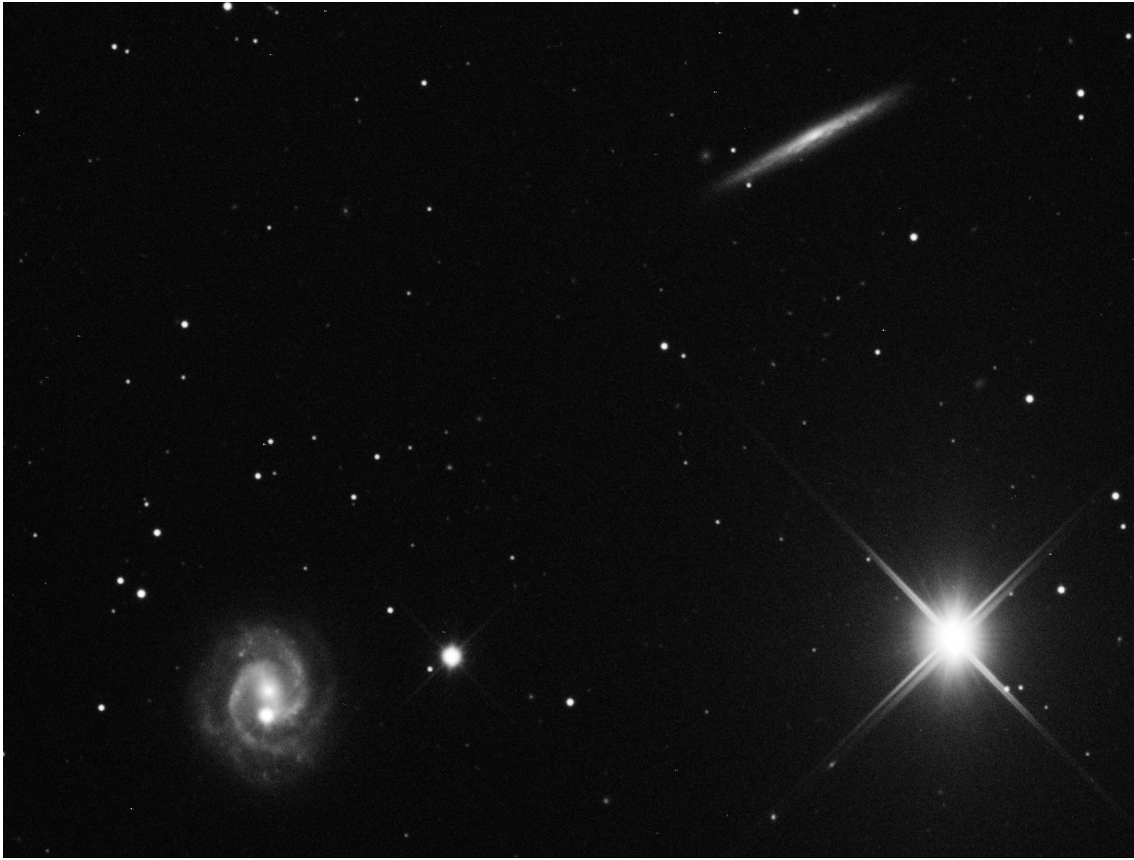
Action: Need to do another frame with galaxy displaced to S for another guide star and to capture the outer northern reaches of the galaxy.

0212UT Sky90: started a series of 300s B and 300s V exposures of HY Com; autoguided with 1s exposures binned 2x2.

0258UT started a series of 4 x 400s unfiltered exposures of NGC3344; autoguided with 2s exposures binned 2x2.

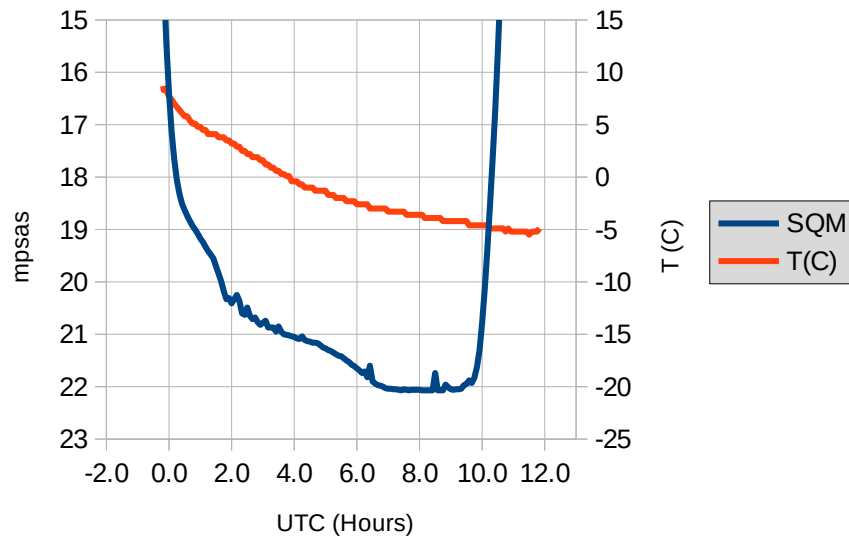


0330UT started a series of 5 x 400s unfiltered exposures of Vesta in the field with NGC3501 and NGC3507; autoguided with 2s exposures binned 2x2.



0430UT Sky90 is acting up - ASI120MC is unable to download images, comms with mount are acting up. Gave up on the Sky90 for the rest of the night.
0447UT resumed 2021-03-21.act with the UMa11.5hRRLs.
0451UT images are not showing any stars - is the secondary perhaps frosted? Turned on the secondary heater and will see what things look like in an hour or two.
0626UT started a long series of 60s unfiltered exposures of AM CVn; autoguided with 2s exposures binned 2x2. Image centred at RA 12h 34m 51.0s, Dec +37° 34' 43.3" (from PinPoint solve).
0643UT moonset
0829UT resumed 2021-03-21.act with the Boo 14.7h RRLs.
0927UT beginning of astronomical twilight
1002UT beginning of nautical twilight
1105UT sunrise.

SQM 2021-03-21



2021-03-22 (#033)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

2318UT sunset

0021UT end of nautical twilight

0056UT end of astronomical twilight.

0110UT started CCDC action 2021-03-22.act.

Group	Stars	Exposures	Binning	Guided
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	NSV7413280	300s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N

0518UT started a long series of 60s unfiltered exposures of AM CVn; autoguided with 2s exposures binned 2x2. Image centred at RA 12h 34m 50.8s, Dec +37° 36' 34.8" (from PinPoint solve).

Guiding worked fine from the very first image, and is quite good, RMS in RA 0.7 and 0.1 in Dec.

0739UT moonset

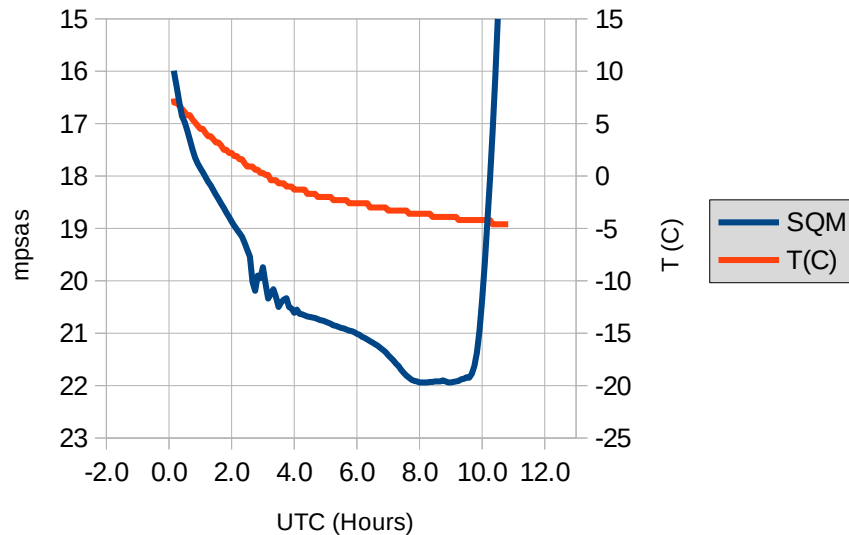
0821UT resumed 2021-03-22.act with Boo 14.7h RRLs.

0925UT beginning of astronomical twilight

1000UT beginning of nautical twilight

1103UT sunrise.

SQM 2021-03-22



2021-03-23 (#034)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

Takahashi Sky90II 9cm/4.5 apo refractor with QSI583ws at -25C with 31mm Astrodon interferometric B and V filters (plus usual TR Red, Ha, and OIII), 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount at the cliff-top observing site. Autoguiding with PHD2

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2319UT sunset

0022UT end of nautical twilight

0058UT end of astronomical twilight.

0110UT started CCDC action 2021-03-22.act.

Group	Stars	Exposures	Binning	Guided
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	MZ Boo	300s V	1x1	N

0126UT Sky90: started a series of 150s B and 120s V exposures of HY Com; autoguided with 1s exposures binned 2x2.

0540UT Sky90: started a series of 300s V and B exposures of RV CrB; autoguided with 1s exposures binned 2x2. Guiding appears to be excellent.

0548UT started a long series of 90s unfiltered exposures of AM CVn; autoguided with 2s exposures binned 2x2. Longer exposures to keep good S/N in hazy skies.

0812UT resumed 2021-03-22.act with Boo 14.7h RRLs.

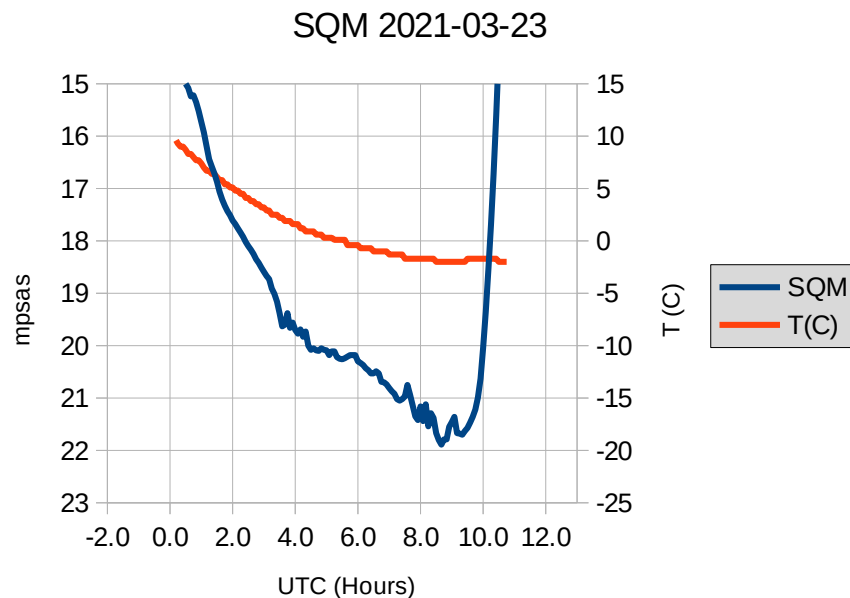
0818UT Sky90: started a series of 300s V and B exposures of V2369 Cyg; autoguided with 1s exposures binned 2x2.

0829UT moonset

0923UT beginning of astronomical twilight

0958UT beginning of nautical twilight

1101UT sunrise.



2021-03-24

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

0134UT started a series of 25 each bias and 400s dark frames unbinned.

2021-03-25

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -10C.

0134UT started a series of 14 each bias and 400s dark frames unbinned.

2021-03-26

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -10C.

0134UT started a series of 15 each bias and 400s dark frames unbinned.

2021-03-27

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J045815.25+135230.3	300s Lum	2x2	N
ASAS J051053+0717.4	300s Lum	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
V1535 Her	120s Lum	2x2	N

2021-03-28

QHY183 camera.

1513UT started a series of 10 each bias and 100s dark frames, camera at -10C; gain and offset settings were not recorded so these are essentially useless.

Did a median stack of each set and subtracted the master bias from the master dark with constant of 1000ADU added: minimum pixel is 607 so there are some bias pixels larger than the corresponding dark pixels. Average signal in the bias-subtracted dark is 2637ADU = 26.4ADU/s

1923UT changed camera temp to -20 to further reduce the dark current and shot a series of 10 each darks at 5s, 10s, and 30s, Gain at 0, 5, and 10, offset at 0, 10, 20, and 30. Except at the two higher gain settings when it was clear that things were no longer useful. None of the images are bias-subtracted (which may be a problem.) Also, these were shot during daylight which may be leaking into the camera and distorting results.

At gain 5 and 5s exposure the average signal is ~48kADU and 10s exposures are completely saturated at 65457 average signal. At gain 10 the 5s exposure is saturated at the same level. These will not be further discussed.

Gain=0 results:

Gain=0	5s				10s				30s			
Offset	Mean	Err	Min	Max	Mean	Err	Min	Max	Mean	Err	Min	Max
0	23836	69	21374	24101	44812	2574	282	50820	47360	3661	57	65490
10	24477	70	21998	24758	45461	2573	1080	51779	47993	3661	666	65489
20	25490	129	20869	30867	45704	2776	1530	57085	47514	3537	1285	64947
30	25994	71	23464	26273	46921	2671	2283	51734	49296	3662	1945	65487

In the 10s and 30s exposures the min values are very odd and result in very large SDs on the average values. The 30s exposures are nowhere near 3x the 10s signals, nor are they very close to saturation values.

Fitting straight lines to the 5s and 10s mean signals at each offset yield nice results. The slope at offset 5 is 4195, at 10 is 4197, at 20 is 4042 (not as nice but still fairly close), at 30s is 4185. This seems to indicate that the response of the camera does not depend on the offset. The intercepts of the linear fits do not fit a straight line, but the 0, 10, 20 offset values fit what may be a nice parabola (I think it might be a nice parabola because the minimum of the fitted parabola is exactly at offset=0.) The parabola equation is $\text{bias} = 5.75z^2 + 5.8z + 2860$ where z is the offset value (0, 10, and 20.)

If I assume that the fit intercept is the bias then the dark current at 5s and 10s appears to be linear with time implying that I can use scaled darks.

2021-03-30 (#035)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

2328UT sunset

0010UT started CCDC action 2021-03-30.act.

Group	Stars	Exposures	Binning	Guided
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N

0032UT end of nautical twilight

0050UT moonrise

0108UT end of astronomical twilight.

0455UT started a long series of 90s unfiltered exposures of AM CVn; autoguided with 2s exposures binned 2x2. Longer exposures to keep good S/N in hazy skies.

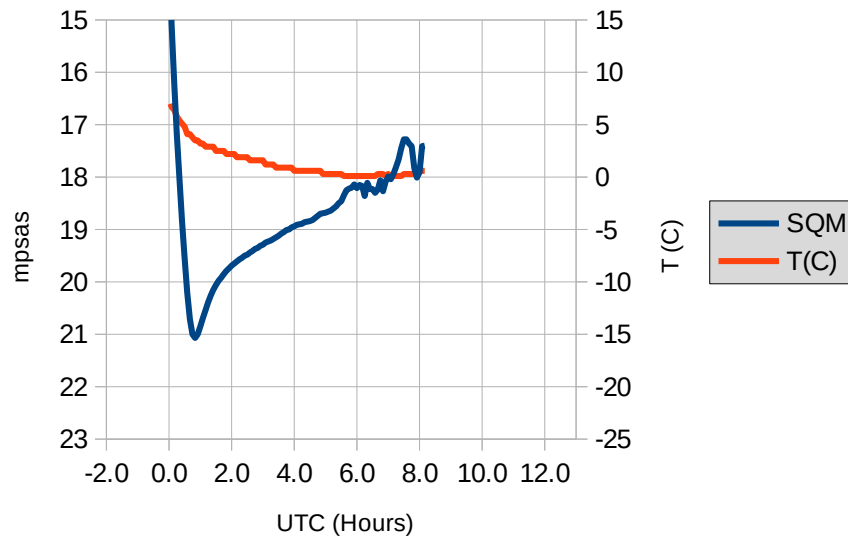
0812UT it has clouded over, looks like for the rest of the night, so am shutting down.

0908UT beginning of astronomical twilight

0944UT beginning of nautical twilight

1049UT sunrise.

SQM 2021-03-30



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J045815.25+135230.3	300s Lum	2x2	N
ASAS J051053+0717.4	300s Lum	2x2	N
ASASSN-V J073605.43+661935.1	200s Lum	2x2	N
ASASSN-V J073243.90+170221.6	200s Lum	2x2	N
ASASSN-V J080321.63+550606.1	200s Lum	2x2	N
NSVS10743622	400s Lum	2x2	N
ASAS J071102+1651.5	100s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N
V1535 Her	120s Lum	2x2	N

2021-04-02 (#036)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

2331UT sunset

0036UT end of nautical twilight

0113UT end of astronomical twilight.

0230UT sky has cleared off (after a total bust forecast of several cm of snow that turned into >>1cm which melted on contact).

0242UT started CCDC action 2021-04-01.act. But cloud has formed right overhead before the first exposure completed. I think it will be thin enough to get some data and should clear in an hour or so, I will just let things continue.

Group	Stars	Exposures	Binning	Guided
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N

0450UT moonrise

0902UT beginning of astronomical twilight

0938UT beginning of nautical twilight

0938UT at observing site with 20cm/5.6 Dob at 127X to view the reappearance of 44 Cap from behind Jupiter. Seeing is absolutely awful, frequently reaching about 30arcsec, and there is very strong atmospheric dispersion. The belts were only vaguely visible as a broad darkening across the

middle of the disk. Io exited transit shortly before 44 Cap was to appear. Io became visible some time after it had left the disk - was never visible as a 'bump' on the side of Jupiter's disk. Some time later it became apparent that Io was a 'double star' with the fainter 44 Cap (Stellarium reports that 44 Cap is actually about 0.5mag brighter but that is not how it appeared) between it and the disk, separated by several arcsec. At times there were periods of perhaps 15-20s when the seeing was moderately good, the belts on Jupiter were resolved and easily differentiated (N being much darker and wider than the S.) Over the next 20min the two merged into a single object. When I finally quit observing about 1025UT (the sky was getting too bright and the Galilean moons were becoming intermittently invisible) I still could resolve the pair.

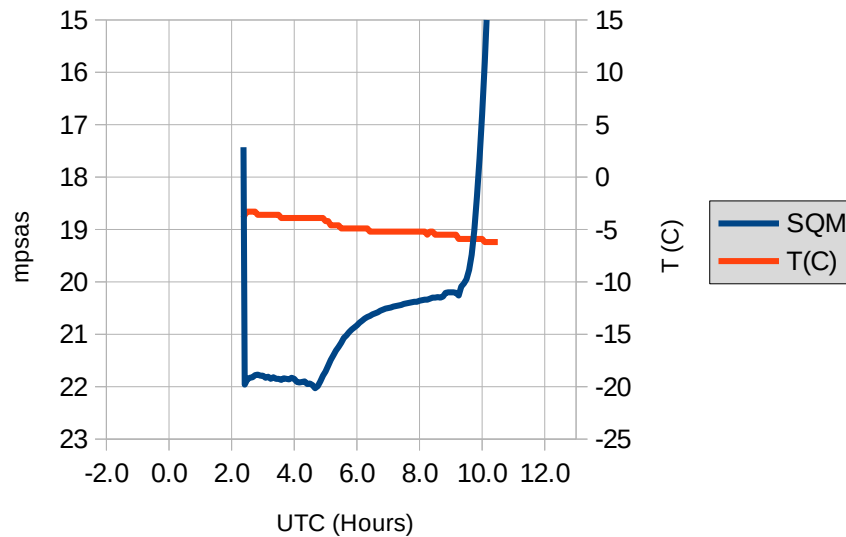
Report to Kingston RASC email list:

I awoke this morning shortly after 5AM and lay there for a little while to try to go back to sleep. After about 15min I remembered that I had planned to get up to see the reappearance of 44 Cap from behind Jupiter sometime shortly before 6. Rolling over to look out the window I could easily see (even with my glasses off) Jupiter gleaming on the horizon so I got up, dressed, and dragged the 20cm/5.6 Dob out to my cliff-top observing site. It was a lovely morning though somewhat chilly at -7C and with a goodly breeze blowing from the north. Saturn and Jupiter were both very prominent in the SE, the waning gibbous Moon to the south. I centred up Jupiter with the 8.8mm eyepiece (127X) to find a nearly featureless blob (slight darkening in the middle was all that could be seen of the belts) accompanied by three of the Galilean moons. The disk of Jupiter was colour-fringed from atmospheric dispersion and frequently wracked by very fast waves of turbulence which tore pieces off the upper and lower limbs, even occasionally breaking through the middle of the disk. Somewhat daunted I continued my careful watch regardless. After several minutes I was able to distinguish Io having departed its transit of the disk, already well separated from the boiling disk. By about 6AM the seeing was occasionally moderately good for periods of up to 15s, the equatorial belts were nicely separated and their different widths and intensities obvious during these intervals. I began to be aware of a fainter near twin to Io, closer to Jupiter and somewhat fainter (Stellarium says 44 Cap should be 0.5mag brighter than Io but that's not how it appeared.) By about 6:10 I could no longer resolve the two 'stars' and they stayed that way, very slowly drifting away from Jupiter, until 6:25 when the Galilean moons were beginning to intermittently disappear in the brightening twilight so I gave up the effort and headed off for a very chilly pre-dawn bike ride.

1043UT sunrise.

Action: change LMi09.8h plate solve target to TYC2996-1393 at 09 50 06 +40 40 17 for easier plate solves.

SQM 2021-04-02



2021-04-03 (#037)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

Takahashi Sky90II 9cm f/9 apo refractor (with Extender-Q) with QHY183 at -25C with 1.25" Astrodon LRGB filters, 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount at the cliff-top observing site. Autoguiding with PHD2. QHY183 gain at 0, offset at 2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2333UT sunset

0037UT end of nautical twilight

0103UT Sky90: started a series of 14 x 300s exposures of the Medusa nebula using Maxim; autoguided by Maxim with 1s exposures. Guiding was not very good for at least some of the images.

0110UT started a series of 8 x 300s unfiltered exposures of NGC2903; autoguided with 2s exposures binned 2x2; galaxy displaced to the N to get a good guide star.

0114UT end of astronomical twilight.

0212UT started CCDC action 2021-04-03.act.

Group	Stars	Exposures	Binning	Guided
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				

Group	Stars	Exposures	Binning	Guided
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N

0229UT Sky90: started several series of 60s frames in filters 1 through 4 of NGC2903 binned 2x2 using SharpCap in live-stack mode saving all frames, storing images as PNG files; autoguided in Maxim (since PHD2 wouldn't read the ASI120 camera) with 1x exposures binned 2x2?

0448UT Sky90: after a series of several false starts trying to find a good exposure, started a series of 69 x 120s exposures binned 2x2 in "Filter 4" of RV CrB to see how well photometry works with this camera, using SharpCap; autoguided in Maxim (since PHD2 wouldn't read the ASI120 camera) with 1x exposures binned 2x2.

0602UT moonrise

0710UT shut down Sky90.

0900UT beginning of astronomical twilight

0936UT beginning of nautical twilight

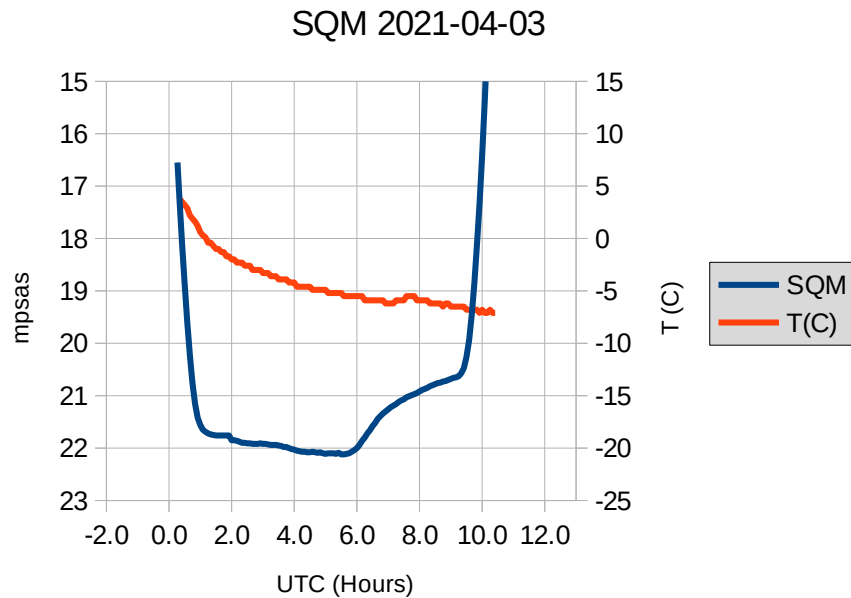
1041UT sunrise.

Action: PHD2 will not read ASI120MC camera - connects fine, says it's looping but never displays an image.

~~Action: maxim does not recognize QHY filter wheel~~

Action: shoot bias, darks, flats for Sky90 + QHY183.

Action: determine and document which filters are in the QHY183 and QSI583 filter wheels.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J073605.43+661935.1	200s Lum	2x2	N
ASASSN-V J080321.63+550606.1	200s Lum	2x2	N
ASAS J071102+1651.5	100s Lum	2x2	N
ASASSN-V J073243.90+170221.6	200s Lum	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
CN Tau	250s Lum	2x2	N
MV Aur	300s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
IY Tau	200s Lum	2x2	N
NSVS10743622	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N
V1535 Her	120s Lum	2x2	N

2021-04-05 (#038)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, Empty, OIII filters at -25C.

Takahashi Sky90II 9cm/4.5 apo refractor (with reducer/corrector) with QHY183 at -25C, gain=0, offset=4; 31mm Astrodon LRGB filters, 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount at the cliff-top observing site. Autoguiding with PHD2. Had to turn USB hub off and then on to get the ASI guide camera detected - there is a little white light at each used USB port which needs to be on if the port is in use.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2339UT sunset

0040UT end of nautical twilight

0117UT end of astronomical twilight.

0140UT checked the focus with no filter and it looks pretty good.

0150UT started a series of 400s unfiltered exposures of NGC2841; autoguided with 2s exposures binned 2x2; galaxy displaced slightly to the NW to get a good guide star. Shutter is occasionally closing in the first ~6s of an image. Guiding is quite good RMSE <0.4px in RA, <0.3px in Dec

013UT Sky90: attempted manual focus

0140UT Sky90: started a series of 60s L and 60s 2x2 binned RGB exposures of Regulus; autoguided with 1s exposures binned 2x2. Note that the filters are almost certainly mislabelled so I need to go through the images to determine which filter is which. No filter offsets are in use. Filter positions 5, 6, and 7 are empty and show decidedly different focus than all the others. The others are not however, perfectly parfocal (actually pretty close) so focus offsets need to be measured.

0240UT Sky90: again tried to focus and had better luck on a fainter star, eventually got it to FWHM 3.7-4.0px.

0242UT Sky90: started a series of 200s LRGB images of the Leo Trio (M65, M66, NGC3648) autoguided with 2s exposures binned 2x2; dithered via the mount for max of 5px. Somehow only managed to actually save 3 of each filter (some sort of guiding error reported by Maxim) and they are all badly trailed so all were deleted.

0349UT started a series of 400s unfiltered exposures of M99; autoguided with 0.5s exposures binned 2x2; galaxy displaced slightly to the E to get a very good guide star. Shutter is occasionally closing in the first ~6s of an image. Guiding is quite good RMSE <0.4px in RA, <0.3px in Dec

0339UT Sky90: started a series of 200s 2x2 binned LRGB images of M53 and NGC5053; autoguided with 1(?)s images binned 2x2.

0501UT started a series of 90s unfiltered exposures of AM CVn; autoguided with 1s exposures binned 2x2. Images centred at RA 12h 34m 49.4s, Dec +37° 35' 04.7" for a guide star. Very first image the shutter closed early in and gave a very dim image, second worked fine, number 17 was lost to a shutter closure and another 6 or 8 too.

0525UT Sky90: adjusted focus slightly (attempted using Bhatinov mask from Andrew but it doesn't seem to give a very fine resolution) then started a series of 200s LRGB images of Abell2065 galaxy cluster; autoguided with 2s images binned 2x2.

0713UT started CCDC action 2021-04-05.act.

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N

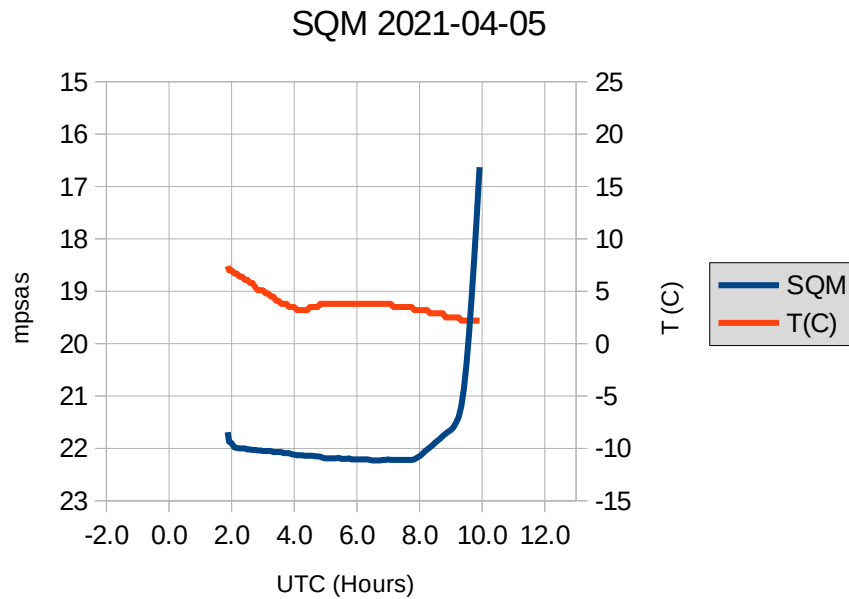
0738UT Sky90: started a series of 200s LRGB images of NGC6633; autoguided with 2s images binned 2x2.

0757UT moonrise

0855UT beginning of astronomical twilight

0932UT beginning of nautical twilight

1038UT sunrise.



Checking the Abell2065 images all stacked by filter - those labelled TR have a much higher signal so are Luminance images. For the other three images manual photometry was done on 5 stars of a range of colours:

Zero	B-V	Tycho Mags		USNO A2 Mags	
		B	V	B	R
	0.22	12.45	12.23		
	0.25	13.15	12.9	12.8	11.4
	0.4	10.41	10.01	10.5	9.8
	0.91	10.39	9.48	10.6	9.1
	1.61	11.463	9.82	9.1	11.5

points were determined for each image against Tycho B and V and USNO A2 R magnitudes (as

read from ECU.) The B zero points clearly show that the “L” image is actually the TB filter (SD on zero point 0.2 vs 0.6 and 0.4 for the other two images.) However, the other two images show very similar std deviations on their zero points wrt B and V so no clear decision. Std deviations on these two images for the USNO A2 magnitudes are 1.0 and 1.3 so again no clear winner. However, doing a colour combine in Maxim gives a much more realistic picture assuming the “G” image is the TR filter and the “B” image is TG. Final translation:

R -> Lum/CV

L -> TB

G -> TR

B -> TG

In trying to get a nice colour balance on TYC2031-1055 (B-V=0.63 so roughly solar coloured?) used background equalization and R x 1.7, G x 1, B x 0.75. This still leaves RGB average signals for this star as 6541:7045:6985.

The QHY183 images have a very noisy background, average=2350, std dev=107 in a stack of 9 x 200s 2x2 binned CV image, background average=2332, std dev=458 in a single 200s binned 2x2 image. In Photoshop Filter->Despeckle gets rid of much of the noise with no visible impact on stars, but leaves a remnant of the worst noise strings, Filter->Dust and Scratches and Filter->Median both at 1px do about the same job as despeckle and at 2px subdue most of the noise but also begin to shrink the faintest stars. In fact all of them rather blur the noise but make it faint enough that curves will make it nearly invisible.

QHY183 stars at either f/4.5 or f/9 are oversampled at 1x1, look good at 2x2. Try some more extended photometry at 2x2, keep the gain at 0, decrease the offset to 3.

2021-04-06 (#039)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV (changed name from “Empty” to give the name AAVSO requires in their reports), OIII filters at -25C.

Takahashi Sky90II 9cm/4.5 apo refractor (with reducer/corrector) with QHY183 at -25C, gain=0, offset=4; 31mm Astrodon LRGB filters, 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount at the cliff-top observing site. Autoguiding with PHD2. Had to turn USB hub off and then on to get the ASI guide camera detected - there is a little white light at each used USB port which needs to be on if the port is in use.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2336UT sunset

0042UT end of nautical twilight

0119UT end of astronomical twilight.

013UT Sky90: checked focus and it looks very good (2.4px FWHM unbinned.)

0056UT Sky90: started a series of 300s L exposures of HY Com; autoguided with 2s exposures binned 2x2.

0104UT started CCDC action 2021-04-06.act.

Group	Stars	Exposures	Binning	Guided
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N

0420UT Sky90: started a series of 60s Lum 2x2 binned images of RV CrB; autoguided with 2s images binned 2x2. 300s images were way overexposed.

0443UT started a series of 90s unfiltered exposures of AM CVn; unguided.

0718UT resumed CCDC action 2021-04-06.act.

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N

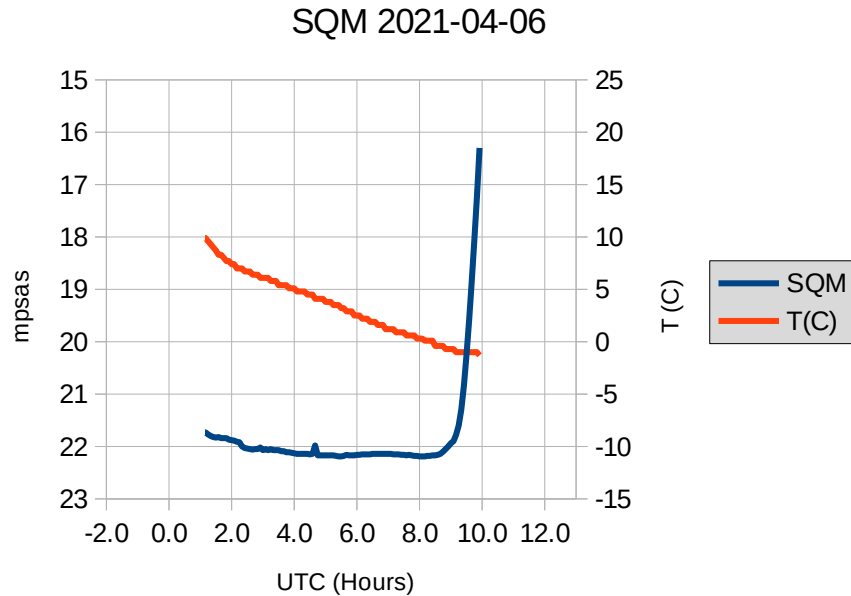
0740UTSky90: started a series of 60s Lum 2x2 binned images of V2369 Cyg; autoguided with 2s images binned 2x2.

0839UT moonrise

0853UT beginning of astronomical twilight

0931UT beginning of nautical twilight

1036UT sunrise.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J073605.43+661935.1	200s Lum	2x2	N
ASASSN-V J080321.63+550606.1	200s Lum	2x2	N
ASAS J071102+1651.5	100s Lum	2x2	N
ASASSN-V J073243.90+170221.6	200s Lum	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
CN Tau	250s Lum	2x2	N
MV Aur	300s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
IY Tau	200s Lum	2x2	N
NSVS10743622	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N
V1535 Her	120s Lum	2x2	N

2021-04-08 (#040)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV (changed name from “Empty” to give the name AAVSO requires in their reports), OIII filters at -25C.

Canon 60Da with Sigma 18-50mm f/2.8 and Canon 70-300mm f/4-5.6 lenses, on iOptron iEQ45, 5cm/4 guide scope with ZWO ASI120MC autoguider camera, autoguiding with Maxim (PHD2 seems not to be able to talk to the ASI120MC at least some of the time) at the cliff-top observing site.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2339UT sunset

0044UT end of nautical twilight

0110UT started a series of 400s unfiltered exposures of NGC3184; autoguided with 1s exposures binned 2x2; galaxy displaced slightly to get a good guide star.



0122UT end of astronomical twilight.

0247UT started a series of 400s unfiltered exposures of UGC6253; autoguided with 1s exposures binned 2x2.



0247UT started a series of 400s unfiltered exposures of NGC4217; autoguided with 1s exposures binned 2x2. Badly aimed and only shot one exposure so ignored this. But it does look like an interesting galaxy worth returning to.

0255UT started a series of 3 x 240s images of Leo, Canon 60Da @ ISO1600, Sigma 18-50/2.8 at 31mm/4.0; autoguided with 2s exposures binned 2x2 using Maxim.

0323UT started a series of 60s test exposures of Mel111 with Canon 70-300/4-5.6 lens at an assortment of focal lengths (70, 115, 200, & 300mm) to see how good the images are and whether stopping down up to one stop improves the images significantly.

0423UT started a series of 90s unfiltered exposures of AM CVn; guided with 1s exposures binned 2x2.

0436UT started a series of 60s test exposures of Bootes with Sigma 18-50/2.8 lens at an assortment of focal lengths (70, 115, 200, & 300mm) to see how good the images are and whether stopping down up to one stop improves the images significantly.

0537UT started a series of 10 x 30s and 20 x 240s exposures of Hercules with Sigma lens at 18/4.0, ISO800.

0705UT started CCDC action 2021-04-08.act.

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N

0743UT started a series of 6 x 240s exposures of the Scorpius Blue Horse with Canon lens at 165mm/5.0, ISO1600.



This is a very pleasing result for such little effort - I need to shoot darks to correct the background noise, and flats for the vignetting, and lots more data for improved contrast and S/N.

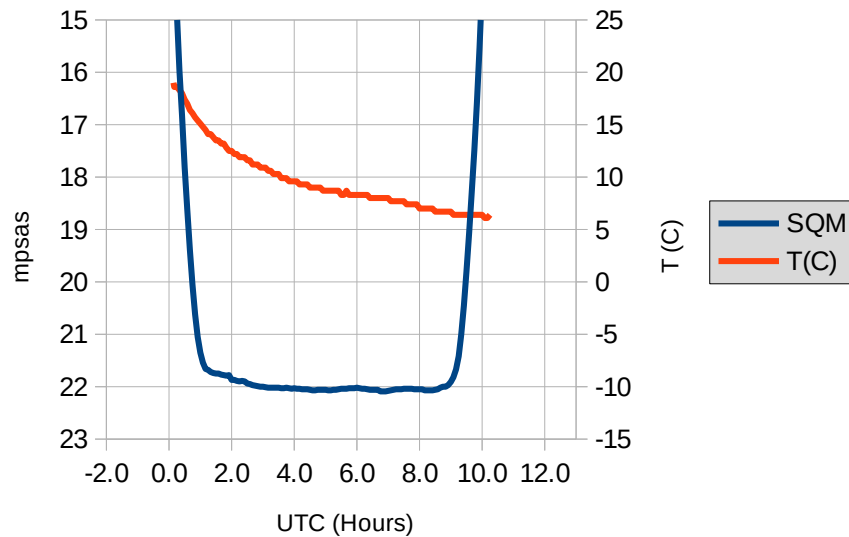
0849UT beginning of astronomical twilight

0927UT beginning of nautical twilight

0938UT moonrise

1032UT sunrise.

SQM 2021-04-08



2021-04-09 (#047)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV (changed name from “Empty” to give the name AAVSO requires in their reports), OIII filters at -10C.

Canon 60Da with Sigma 18-50mm f/2.8 lens, on iOptron iEQ45, 5cm/4 guide scope with ZWO ASI120MC autoguider camera, autoguiding with Maxim (PHD2 seems not to be able to talk to the ASI120MC at least some of the time) at the cliff-top observing site.

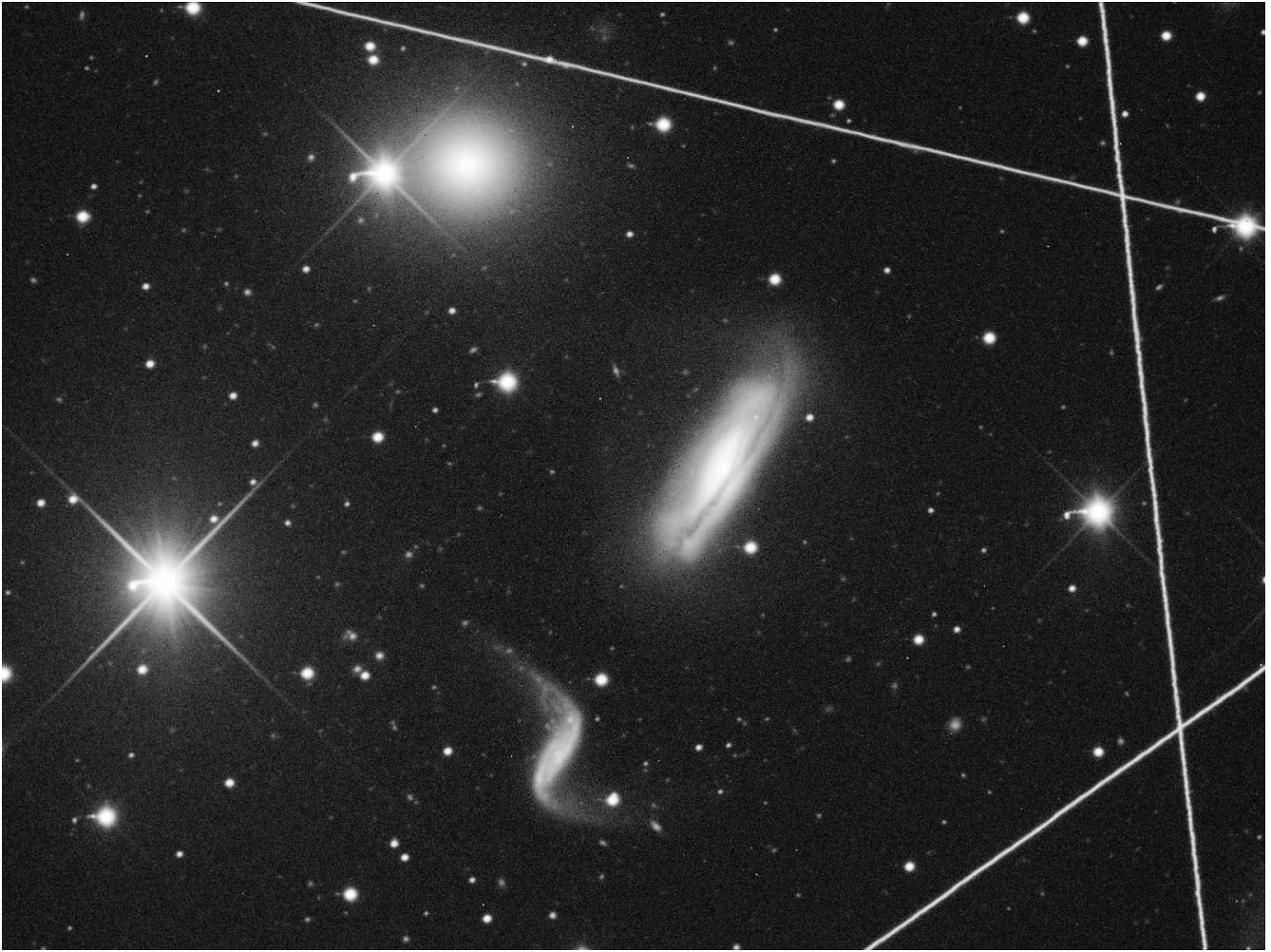
SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2340UT sunset

0046UT end of nautical twilight

0124UT end of astronomical twilight.

0120UT started a series of 400s unfiltered exposures of NGC3189 and neighbours; autoguided with 1s exposures binned 2x2; galaxy displaced slightly to get a good guide star.



There were serious guiding problems, several images lost, even one of the ones I stacked had tadpoles off the bright stars, but the intrusion of the satellite trails made it worth keeping.
0138UT started a series of 20 x 120s images of Leo, Canon 60Da @ ISO800, Sigma 18-50/2.8 at 31mm/4.0; autoguided with 2s exposures binned 2x2 using Maxim. There are thousands of bright red and blue pixels in the final Siril stacked image.



0225UT started CCDC action 2021-04-09.act.

Group	Stars	Exposures	Binning	Guided
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N

0316UT started a series of 7 x 180s images of Coma Berenices, Canon 60Da @ ISO1600, Sigma 18-50/2.8 at 39mm/4.0; autoguided with 2s exposures binned 2x2 using Maxim.



0410UT started a series of 90s unfiltered exposures of AM CVn; guided with 1s exposures binned 2x2.
 0704UT resumed CCDC action 2021-04-09.act.

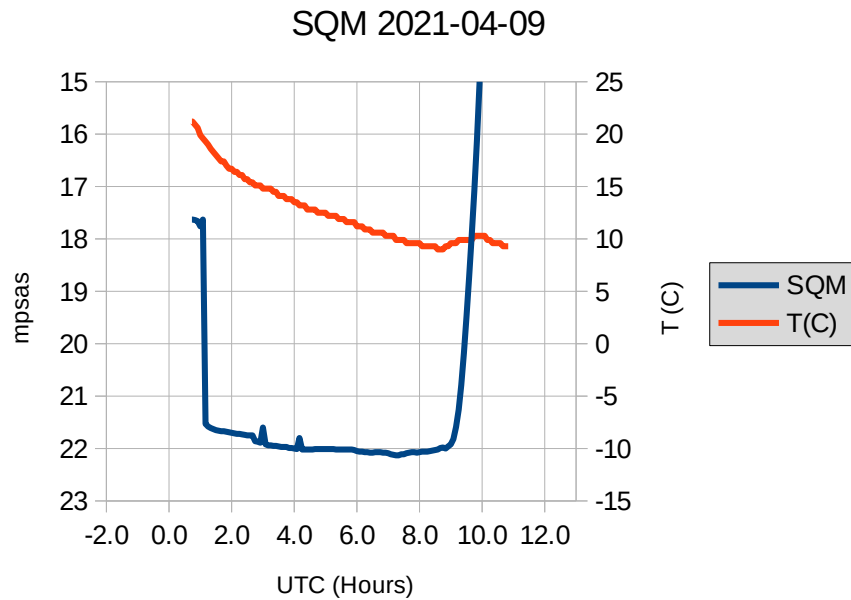
Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N

0847UT beginning of astronomical twilight

0925UT beginning of nautical twilight

1000UT moonrise

1030UT sunrise.



2021-04-10 (#048)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2341UT sunset

0047UT end of nautical twilight

0125UT end of astronomical twilight.

0245UT it has cleared off unexpectedly so started CCDC action 2021-04-10.act.

Group	Stars	Exposures	Binning	Guided
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N

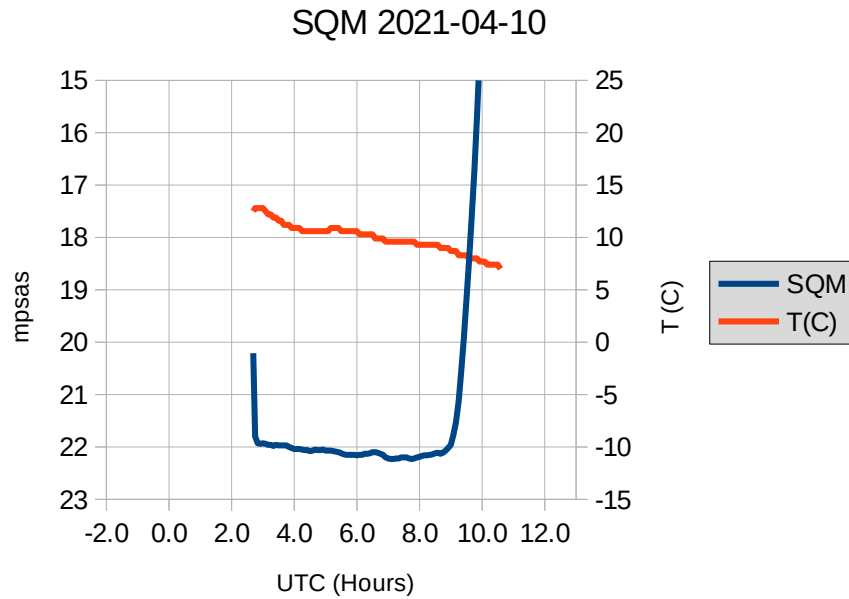
Group	Stars	Exposures	Binning	Guided
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N

0844UT beginning of astronomical twilight

0923UT beginning of nautical twilight

1020UT moonrise

1029UT sunrise.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J073605.43+661935.1	200s Lum	2x2	N
ASASSN-V J080321.63+550606.1	200s Lum	2x2	N
ASAS J071102+1651.5	100s Lum	2x2	N
ASASSN-V J073243.90+170221.6	200s Lum	2x2	N

Stars	Exposures	Binning	Guided
ASAS J183851+1907.7	200s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
NSVS10743622	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N
V1535 Her	120s Lum	2x2	N

2021-04-10

Takahashi Sky90II 9cm/4.5 apo refractor (with reducer/corrector) with QHY183 at approx -20C, gain=0, offset=4; 31mm Astrodon LRGB filters, 5cm/4 guide scope with ZWO ASI120MC autoguider camera. In the office.

Shooting bias and dark frames for the images from the past few nights.

The camera did not reach needed -25C cooling so all frames are useless and were deleted. Will need to try again in a few days when it is cooler in the office.

2021-04-11

Takahashi Sky90II 9cm/4.5 apo refractor (with reducer/corrector) with QHY183 at -15C, gain=0, offset=4; 31mm Astrodon LRGB filters, 5cm/4 guide scope with ZWO ASI120MC autoguider camera.

Shooting flat frames for the images from the past few nights. Need to shoot some -15 bias and dark frames for these.

2021-04-12

Takahashi Sky90II 9cm/4.5 apo refractor (with reducer/corrector) with QHY183 at -15C, gain=0, offset=2; 31mm Astrodon LRGB filters, 5cm/4 guide scope with ZWO ASI120MC autoguider camera.

Shooting bias and dark frames for the -15C flats from 2021-04-11. (Except that I didn't shoot the correct durations for the flats.) 16 exposures were shot at both 1x1 and 2x2 binning; bias, 60s, 120s, 200s, and 300s darks.

Each group of images was median combined in Maxim. The appropriate master bias was subtracted from each masterdark (with NO constant added) to create bias-subtracted masterdarks. Dividing one bias-subtracted masterdark by another DOES NOT give the expected ratio in signal levels.

Mean dark currents in ADU/px/s are:

Duration	Flux (ADU/px)	ADU/px/s
60	67.342	1.122
120	141.07	1.176
200	239.465	1.197
300	361.771	1.206

These values are a lot closer to each other than the division results and may deviate from each other as a result of hot pixels and/or the number of zero pixels.

Looking at the histograms in Maxim shows that approximately 5% of the pixels are zero (i.e. the masterbias was greater than the masterdark.)

The 1x1 masterbias has an average signal 120.863+/-0.02ADU and the 2x2 has 481.237+/-0.059ADU. Note that the ratio is 3.982.

1915UT started a short camera gain and linearity test on QHY183 binned 2x2 at -20C.

2017UT started a short camera gain and linearity test on QHY183 binned 1x1 at -20C.

QHY183 Camera Tests

The 2x2 looks exactly like expected: except for the strong errors below ~6kADU the camera is very nicely linear right up to 65kADU with maximum non-linearity at the very top end of <0.5%.

The 1x1 shows a crippling non-linearity starting at 43kADU at which point the camera basically stops responding. This must be the point of pixel saturation. This value was determined by fitting a (very nice) straight line to the data from 1200ADU to 32kADU ($ADU=1237.45*t-58$, where t is the exposure) and another equally nice straight line ($ADU=63.15*t+40780$) and calculating the intersection at 42980ADU. I should run this again with the gain set to 1 to see if it makes better use of the ADU range. I should also rerun it at zero gain with finer resolution around 30s exposures to more closely define the point of non-linearity.

2021-04-13

QHY183 camera in office, at -20C.

0303UT started a series of 16 each 1x1 and 2x2 flat darks at the exposures used for the flats on 2021-04-11.

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J073605.43+661935.1	200s Lum	2x2	N
ASASSN-V J080321.63+550606.1	200s Lum	2x2	N
ASAS J071102+1651.5	100s Lum	2x2	N
ASASSN-V J073243.90+170221.6	200s Lum	2x2	N
V0377 Boo	200s CV	2x2	N
ASASSN-V J102825.47+550610.1	300s CV	2x2	N
V0398 UMa	200s CV	2x2	N
V0467 Dra	150s CV	2x2	N

2021-04-17

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

QHY183 camera in office, at -20C, gain=1, offset=0.

On both cameras started with two 400s dark frames, one with all the lights on (Dark400sBright.fit) and one with all the lights off (Dark400sDark.fit) to see if either camera has light leaks. First indication is that the QHY183 has a very serious light leak on one end of the frame.

ST2K: dividing the frame shot in the light by that shot in the dark gives an average pixel value of 0.999 ± 0.035 ADU with < half-dozen pixels at 2,3,10 and minimum pixel of 0.159. I can shoot darks with this camera during the day.

QHY183: there is a large semi-elliptical area on the right side with signal levels up to just below 16kADU.

0230UT QHY183 with lights off: started a series of 3 each 200s,400s, 600s, 800s, 1000s dark frames to try to determine the true dark current.

0240UT ST2K on the Boltwood scope: started a series of 3 each 200s,400s, 600s, 800s, 1000s dark frames to try to determine the true dark current.

1232UT ST2K started a series of 25 bias frames.

1430UT QHY183 started a series of 25 bias frames.

1440UT increased offset to 1, shot a series of 5 bias frames, then again at offset =2, 3.

Analysis of all these images are in my publication folder under cam-name-Characterisation.odt.

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J073243.90+170221.6	200s Lum	2x2	N
ASASSN-V J073605.43+661935.1	200s Lum	2x2	N
ASASSN-V J080321.63+550606.1	200s Lum	2x2	N
V0377 Boo	200s CV	2x2	N
V0398 UMa	200s CV	2x2	N
V0467 Dra	150s CV	2x2	N
ASAS J071102+1651.5	100s Lum	2x2	N
ASASSN-V J102825.47+550610.1	300s CV	2x2	N

2021-04-19

QHY183 camera in office, at -20C, gain=1, offset=3.

0100UT started full camera gain and linearity tests on QHY183 binned 1x1 and 2x2 using batchrun.pl. Problems, debugged things and will rerun.

2021-04-20

QHY183 camera in office, at -20C, gain=2, offset=5.

0228UT started full camera gain and linearity tests on QHY183 binned 1x1 and 2x2 using batchrun.pl. RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J080321.63+550606.1	200s Lum	2x2	N
ASASSN-V J073605.43+661935.1	200s Lum	2x2	N
V0377 Boo	200s CV	2x2	N

Stars	Exposures	Binning	Guided
ASASSN-V J102825.47+550610.1	300s CV	2x2	N
V0398 UMa	200s CV	2x2	N
V0467 Dra	150s CV	2x2	N

2021-04-21

QHY183 camera in office, at -20C, gain=4, offset=5.

0228UT started short camera gain and linearity tests on QHY183 binned 1x1 and 2x2 using batchrun.pl.

2021-04-23 (#049)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2357UT sunset

0107UT end of nautical twilight

0148UT end of astronomical twilight.

0237UT it has cleared off unexpectedly so started CCDC action 2021-04-23.act.

Group	Stars	Exposures	Binning	Guided
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	ASAS_J154747+2725	150s B, 100s V	1x1	N

0251UT QHY183 camera in office, at -20C, gain=0, offset=5; started short camera gain and linearity tests binned 1x1. Intending to run a similar set for gain 0.5, all at offset = 5.

0816UT beginning of astronomical twilight

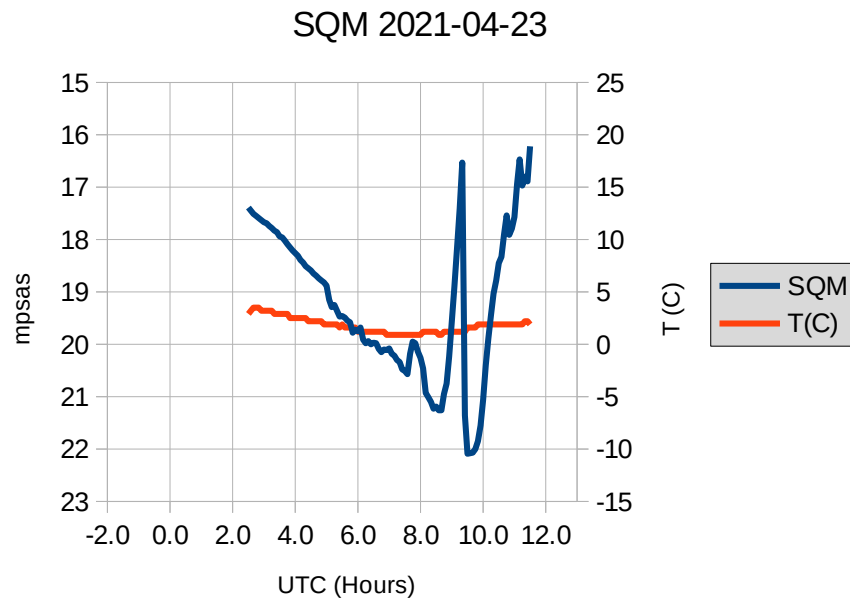
0845UT moonset

0857UT beginning of nautical twilight

0917UT awoke to find it overcast - lost a half-dozen images near the end of the night.

1006UT sunrise.

Action: moved UMa11.5RRLs.act sync point to TYC2522-1622 which has more stars in the field of view so may solve better.



2021-04-24 (#050)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Takahashi Sky90II 9cm/4.5 apo refractor with QSI583ws at -25C with 31mm Astrodon interferometric B and V filters (plus usual TR Red, Ha, and OIII), 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount at the cliff-top observing site. Autoguiding with PHD2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2359UT sunset

0000UT started ffs.pl to collect V, B, and unfiltered twilight flats with the Boltwood scope.

0048UT started CCDC action 2021-04-24.act.

Group	Stars	Exposures	Binning	Guided
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+345928.7	300s V	1x1	N

0108UT end of nautical twilight

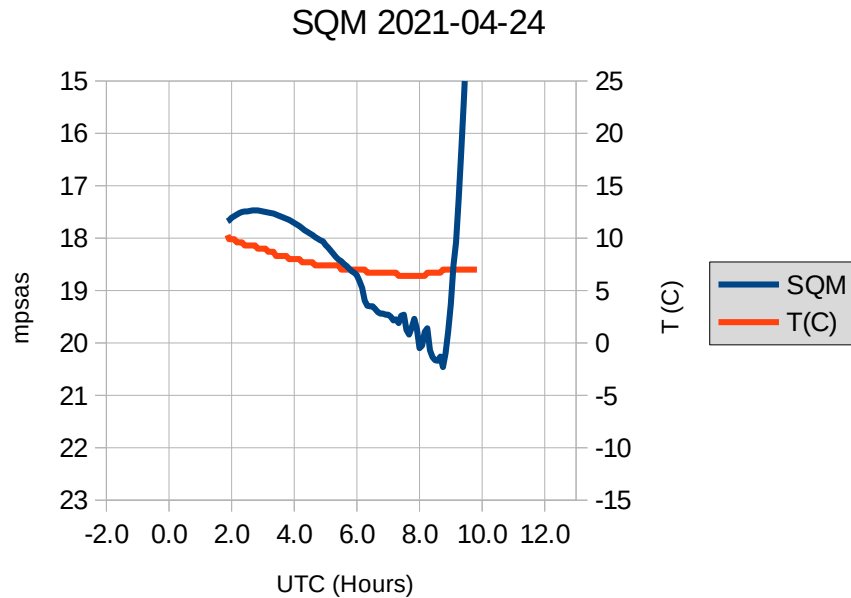
0150UT end of astronomical twilight.

0230UT spent some time messing with the Sky90 - guiding was awful with huge uncontrolled errors in RA and Dec; ran the PHD2 guiding assistant for ~3min and it suggested that my polar alignment is off (need to get out and fix that next clear/moony night using an eyepiece in the scope), the Dec backlash is ~8.5s which is huge so it suggested only guiding in one direction (north) which works great, set the minimum RA move to 0.11 and Dec to 0.17; and guiding exposures should be 1.5-3.5s; and that recalibration would be good. Did the recalibration and guiding is now excellent, with errors <~1".

0310UT started a series of 300s B exposures of RV CrB; autoguided with 2s exposures binned 2x2 in PHD2.

0725UT shut down the Sky90.

0814UT beginning of astronomical twilight
 0855UT beginning of nautical twilight
 0911UT moonset
 1005UT sunrise.



2021-04-26

QHY183 camera in office, at -20C.
 0054UT started short camera gain and linearity tests on QHY183 binned 1x1, gain=1, offset=5.
 0228UT started short camera gain and linearity tests on QHY183 binned 1x1, gain=2, offset=5.

2021-04-27 (#051)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.
 SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.
 QHY183 camera in office, at -20C.
 It is slowly clouding over from the NW, very slowly increasing in density so will observe as long as I can.
 2341UT moonrise.
 0002UT sunset
 0049UT started CCDC action 2021-04-27.act.

Group	Stars	Exposures	Binning	Guided
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N

0113UT end of nautical twilight

0134UT started short camera gain and linearity tests on QHY183 binned 1x1, gain=3, offset=5. About halfway through Maxim 'stopped running' and the camera tests script stalled. Attempted to restart Maxim and the script, restarted the computer and then Maxim wouldn't recognize the camera so shut it all down and will try to debug tomorrow.

0156UT end of astronomical twilight.

0250UT cloud in concert with the full moon is making it of little value to continue photometry.

Started a focus test: Moved the focuser outwards 20 steps then started a series of 4s V (subframed and autodark reduced) exposures binned 1x1 of star TYC 3452-2143 and its near neighbour, moving the focuser inwards 2 steps with every exposure. Continued so for about 15 exposures then paused the focuser movements for several images, then began moving it outwards again until good focus was achieved. I followed this with a careful single step focus run, finally achieving FWHM on 1s exposures of consistently $\leq 2.0\text{px}$. The best focused 4s images are slightly saturated.

0315UT shut down for the night.

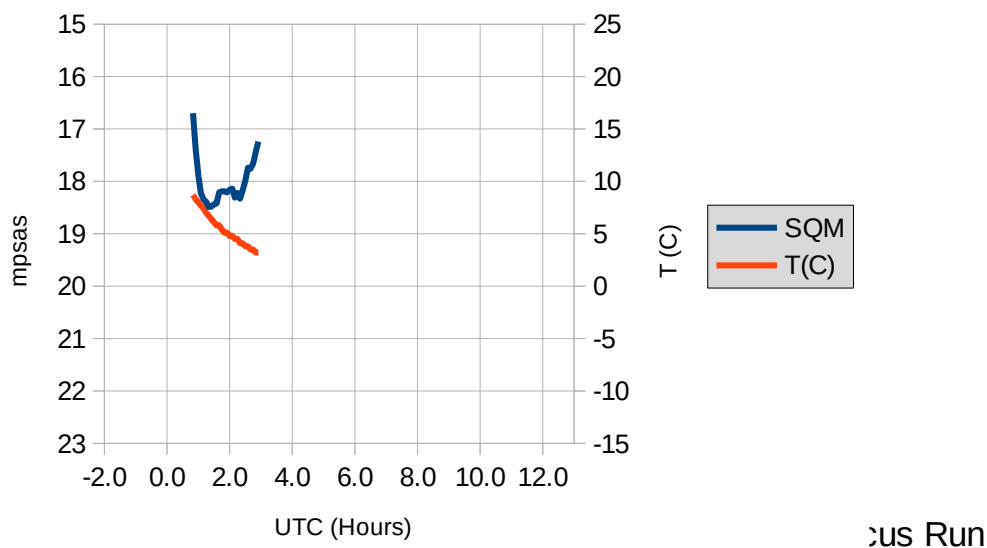
0807UT beginning of astronomical twilight

0850UT beginning of nautical twilight

1000UT sunrise.

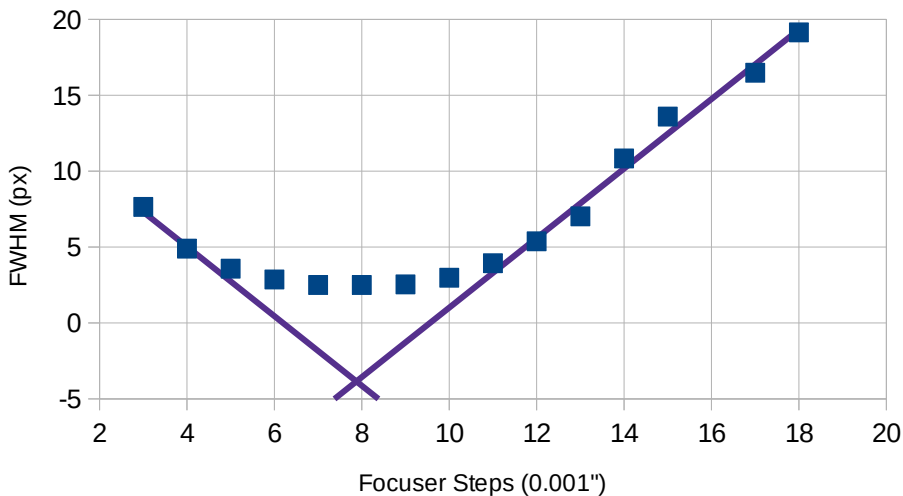
1010UT moonset.

SQM 2021-04-27



V Filter - 2021-04-27

Exposure	Focuser Posn	FWHM
1	+20	6.556
2	+18	3.800
3	+16	7.642
4	+14	4.895
5	+12	3.576



6	+10	2.864
7	+8	2.500
8	+6	2.503
9	+4	2.540
10	+2	2.978
11	0	3.936
12	-2	5.381
13	-4	7.024
14	-6	10.834
15	-8	13.594
16	-10	22.886
17	-12	16.482
18	-14	19.142
19		16.310
20		10.696
21		7.980
22		6.477
23		5.954
24		3.775
25		2.892
26		2.171
27		2.055

2021-04-29

QHY183 camera in office, at -20C.

2344UT started short camera gain and linearity tests on QHY183 binned 1x1, gain=3, offset=5.

0034UT started short camera gain and linearity tests on QHY183 binned 1x1, gain=4, offset=5.

0203UT started short camera gain and linearity tests on QHY183 binned 1x1, gain=5, offset=5.

2021-05-04

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AM CVn	60s CV	2x2	N
HP Lib	150s CV	2x2	N
M67	30s 60s 120s CV	2x2	N

Stars	Exposures	Binning	Guided
M67	30s 60s 120s TG, TR, TB	2x2	N

2021-05-08

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AM CVn	60s CV	2x2	N
Barnard's Star	20s CV	2x2	N

2021-05-09 (#052)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0017UT sunset

0131UT end of nautical twilight

0132UT started CCDC action 2021-05-09.act.

Group	Stars	Exposures	Binning	Guided
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N

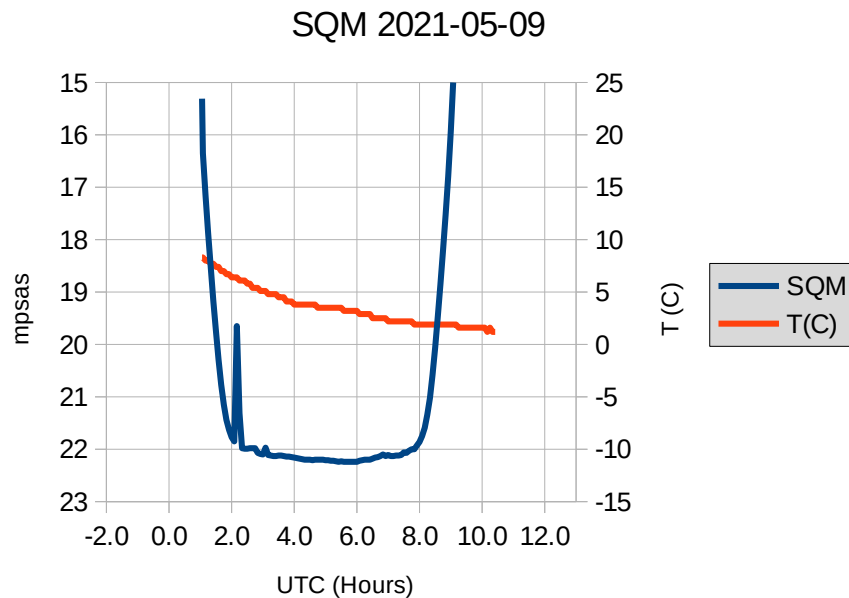
0215UT paused the CCDC action to run a long series of 90s unfiltered exposures of AM CVn; autoguided with 1s exposures binned 2x2.

0509UT resumed CCDC action 2021-05-09.act.

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+345928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	250s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0219UT end of astronomical twilight.
0741UT beginning of astronomical twilight
0829UT beginning of nautical twilight
0906UT moonrise
0943UT sunrise.



2021-05-11 (#053)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0019UT sunset

0134UT end of nautical twilight

0223UT end of astronomical twilight.

0230UT gradually clearing with some intermittent cloud but I've decided to open up and see what I can get.

0300UT started CCDC action 2021-05-11.act.

Group	Stars	Exposures	Binning	Guided
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+345928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	250s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

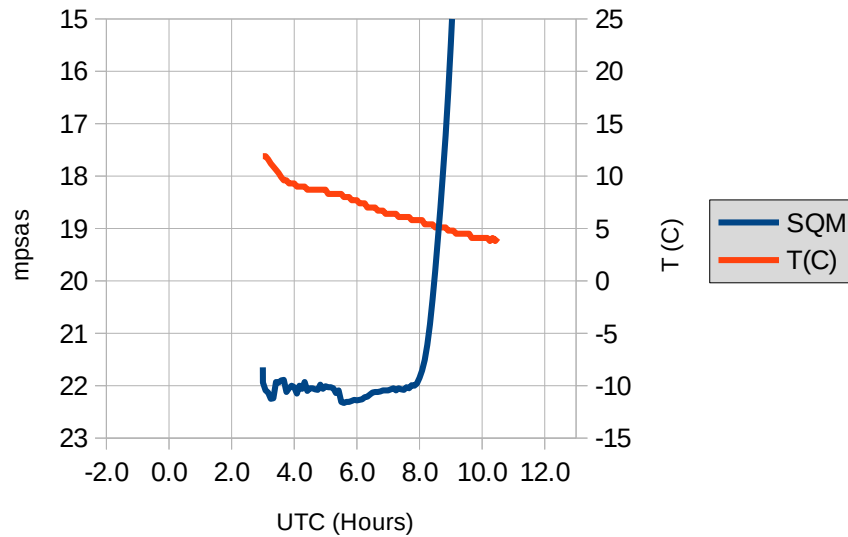
0737UT beginning of astronomical twilight

0825UT beginning of nautical twilight

0941UT sunrise.

0948UT moonrise.

SQM 2021-05-11



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AM CVn	60s CV	2x2	N
Barnard's Star	20s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

2021-05-13 (#054)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

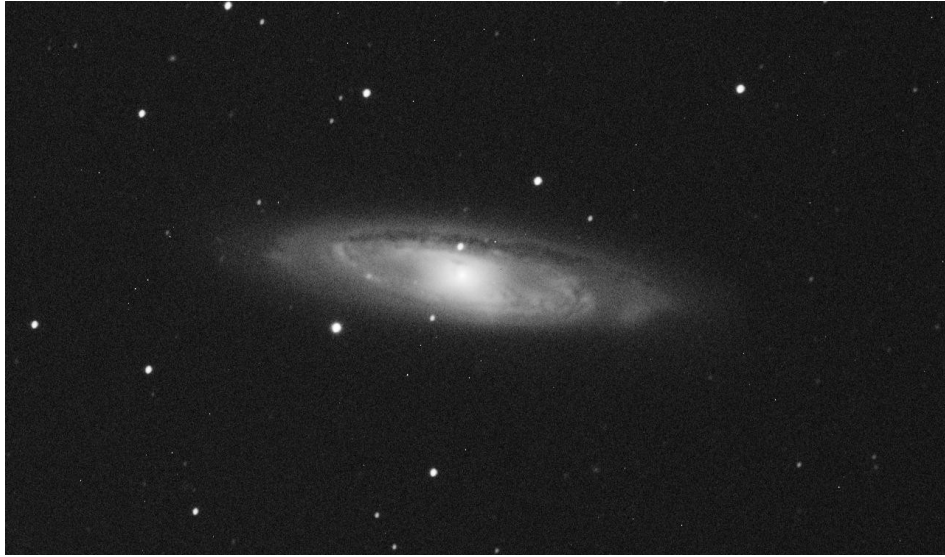
SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0022UT sunset

0127UT moonset

0138UT end of nautical twilight

0122UT ran a short series of unfiltered 100s images of M65; autoguided with 1s exposures binned 2x2; some were shot with multi-star guiding enabled but it didn't seem to improve anything. Guiding was not very good.



0145UT did a fairly careful refocus, achieving 1.5px FWHM. Shot a quick 60s V exposure of Denebola, autoguided with 1s exposures binned 2x2.

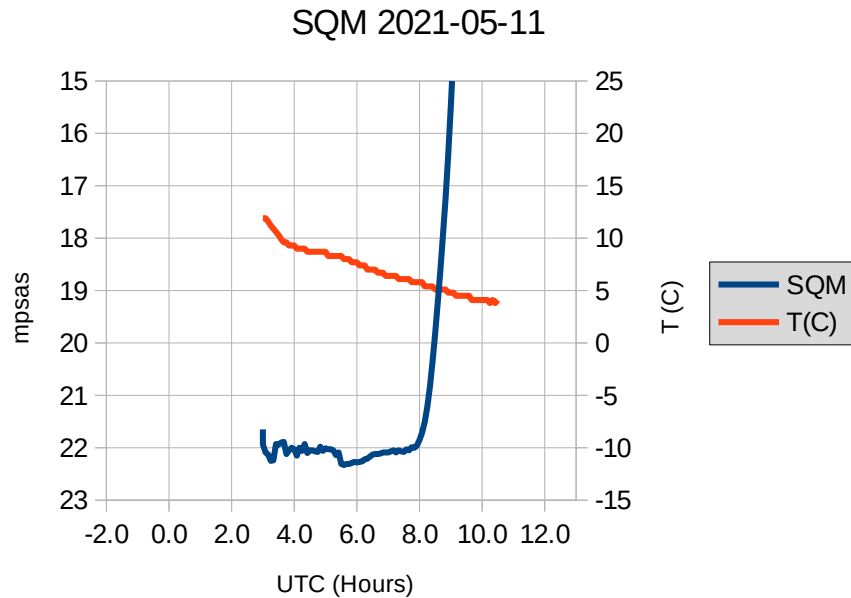


0150UT started CCDC action 2021-05-13.act.

Group	Stars	Exposures	Binning	Guided
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	250s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0227UT end of astronomical twilight.
 0733UT beginning of astronomical twilight
 0822UT beginning of nautical twilight
 0938UT sunrise.



2021-05-14 (#055)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Takahashi Sky90II 9cm/4.5 apo refractor with QSI583ws at -25C with 31mm Astrodon interferometric B and V filters (plus usual TR Red, Ha, and OIII), 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount, with Ultimate Power Box V2, at the cliff-top observing site.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0023UT sunset

0053UT started CCDC action 2021-05-13.act.

Group	Stars	Exposures	Binning	Guided
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				

Group	Stars	Exposures	Binning	Guided
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	250s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0139UT end of nautical twilight

0229UT end of astronomical twilight.

0229UT moonset

0230UT first time attempting an autofocus using the Pegasus Astro Ultimate Power Box V2 internal focus motor driver. Movement of the focuser worked fine, Maxim did a complete V curve (though the curve had a quite rounded bottom) then Maxim reported it was unable to find best focus. However, when I returned the focuser to the reported focuser position at which Maxim reported the smallest HFD the focus was very good (~2.4px FWHM.) Also refocused the guider manually.

0244UT started a series of 300s B and V exposures of RV CrB; autoguided using Maxim DL with 2s exposures binned 2x2. Guider star image is very small, often only a couple of pixels but seems to be working well enough.

Action: for some reason, and not for the first time, Maxim has quit imaging for no apparent reason: both primary and guide cameras are 'idle' and have been for ~1hr. Diagnose and correct.

Action: there is clear field rotation in the guided shots indicating that the polar alignment is not good (but I knew that already.) Polar align the mount.

Action: the images gradually go out of focus.

Action: the B images are clearly not as sharp as the V images - check the focus in both filters and set filter offsets in Maxim.

0620UT messed with PHD2 to try to get it to recognize and read images from the camera. PHD2 insisted that it was timing out after 17s tryin to read the guide camera; ran a 'cross test' (saved the image somewhere but can't seem to find it right now) which seemed to work fine and then everything worked. Refocused the scope.

Action: find out where I saved it and what a cross test is.

0627UT started a series of 300s B and V exposures of V2359 Cyg; autoguided using PHD2 with 2s exposures binned 2x2.

Guiding problems: last time I set it to only guide northwards since it seemed to be drifting consistently southwards (PKD2 recommended this) but now the drift seems to be in the other direction so many of these images are badly trailed.

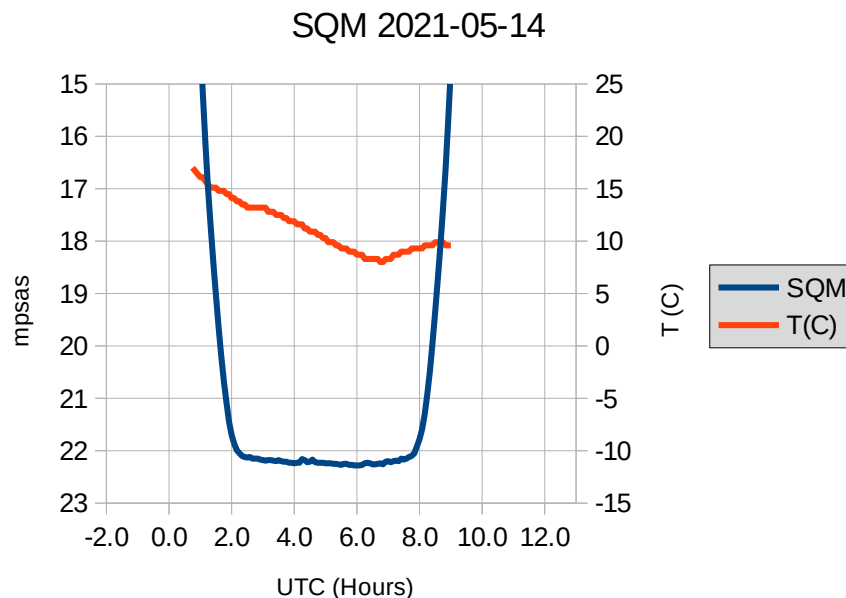
Action: the guiding errors only started about 10 exposures into the run so it appears there was a cable dragging or something. Properly manage the remaining cables that hang off the scope.

0840UT Canon 60Da + Canon 10-22/3.5 lens at 10/4, various ISOs and exposures as dawn brightened. Finally shot a series of ISO400 10s exposures of a mag -3.5 ISS pass. These are all overexposed for the red glow on the SE horizon.

0731UT beginning of astronomical twilight

0821UT beginning of nautical twilight

0937UT sunrise.



2021-05-15 (#056)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Takahashi Sky90II 9cm/4.5 apo refractor with QSI583ws at -25C with 31mm Astrodon interferometric B and V filters (plus usual TR Red, Ha, and OIII), 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount, with Ultimate Power Box V2, at the cliff-top observing site.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0024UT sunset

0045UT measuring the Sky90 focuser step size: start position 2.370", moved focuser inwards 1000 steps (using Maxim focuser control), end position 2.477"; difference = 0.107" means 107 microinches per focuser step. Focuser is also moving in the wrong direction so I reversed the direction in the UPBv2 software and confirmed that the focuser now moves in the advertised direction.

0052UT started CCDC action 2021-05-13.act.

Group	Stars	Exposures	Binning	Guided
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	250s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0141UT end of nautical twilight

Spent over an hour trying to get PHD2 guiding to work but it mostly can't seem to read the camera - keeps timing out, though sometimes it works and with Maxim it always works (though I did have to change to ASI(2) in the ASCOM guider setup.

0200UT Sky90: started a series of 300s B and V exposures of RV CrB; autoguided using Maxim DL with 2s exposures binned 1x1.

0231UT end of astronomical twilight.

0328UT moonset

0230UT attempting an autofocus using the Pegasus Astro Ultimate Power Box V2 internal focus motor driver.

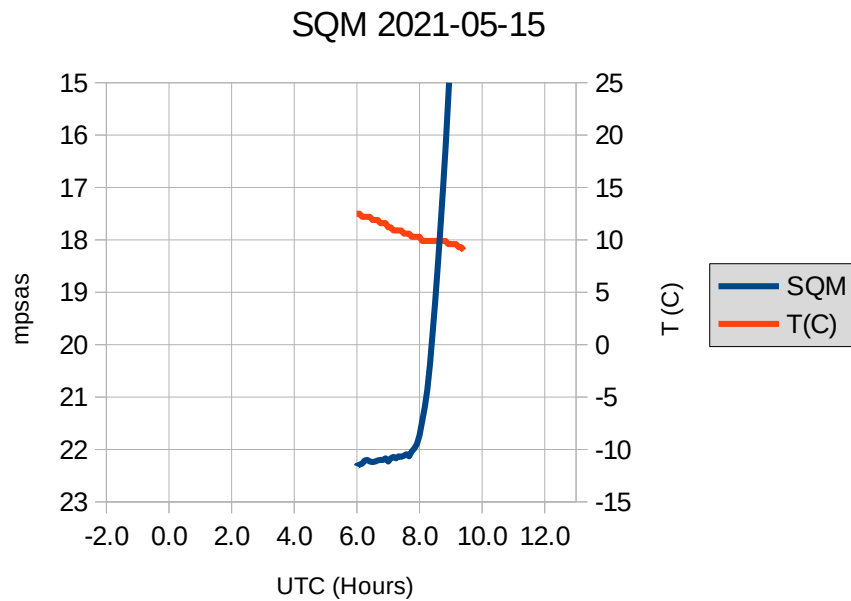
0555UT Sky90: started a series of 300s B and V exposures of V2359 Cyg; autoguided using Maxim with 2s exposures binned 1x1.

0755UT Canon 60Da + Canon 10-22/3.5 lens at 10/4, various ISOs and exposures as dawn brightened. Finally shot a series of ISO400 10s exposures of a mag -3.5 ISS pass. These are all overexposed for the red glow on the SE horizon.

0729UT beginning of astronomical twilight

0819UT beginning of nautical twilight

0936UT sunrise.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AM CVn	60s CV	2x2	N
HP Lib	150s CV	2x2	N
Barnard's Star	20s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

2021-05-16 (#057)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Lots of patchy cloud moving through but may clear as daytime heating subsides.

0025UT sunset

0142UT end of nautical twilight

0145UT it seems to have mostly cleared off. Started with a quick refocus, inwards 4-5 steps to get FWHM down to ~2px.

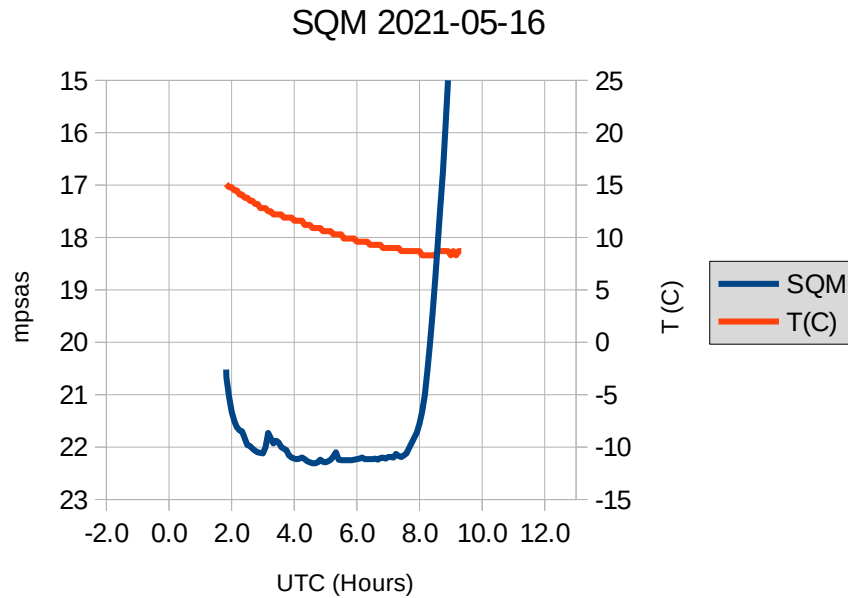
0201UT started CCDC action 2021-05-13.act.

Group	Stars	Exposures	Binning	Guided
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+345928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	250s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0233UT end of astronomical twilight.

0421UT moonset

0727UT beginning of astronomical twilight
 0818UT beginning of nautical twilight
 0935UT sunrise.



2021-05-17 (#058)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Lots of patchy cloud moving through but may clear as daytime heating subsides.

0026UT sunset

0101UT started CCDC action 2021-05-13.act.

Group	Stars	Exposures	Binning	Guided
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+345928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	250s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0144UT end of nautical twilight

0234UT end of astronomical twilight.

0320UT completed ~1.5hours of trying to get iOptron mount polar aligned. Not sure it was ever successful. Shut down and restarted it several times to clear any sync to the sky; did several one-star alignments on the sky, tried one multi-star alignment which did not appear to do anything any better than the one-star align. Ran through the whole polar align routine in the handpaddle, first time made some significant adjustment, second time seemed to undo most of those. Pointing was never any good at any stage of the process - frequently putting objects outside the field of view of my 24mm eyepiece (3.2deg field of view.) It is not clear how the polar align process is supposed to end: I kept adjusting the Alt angle and Az angle as per instructions and within a few cycles back and forth between the two stars (Rasalhague and Spice the first run then Rasalhague and Arcturus) no further adjustments in alt or az were required but the star had to be moved with the handpaddle quite a long distance ~1/4 of the field of view of the 25mm reticle eyepiece), always the same distance except opposite between the two stars.

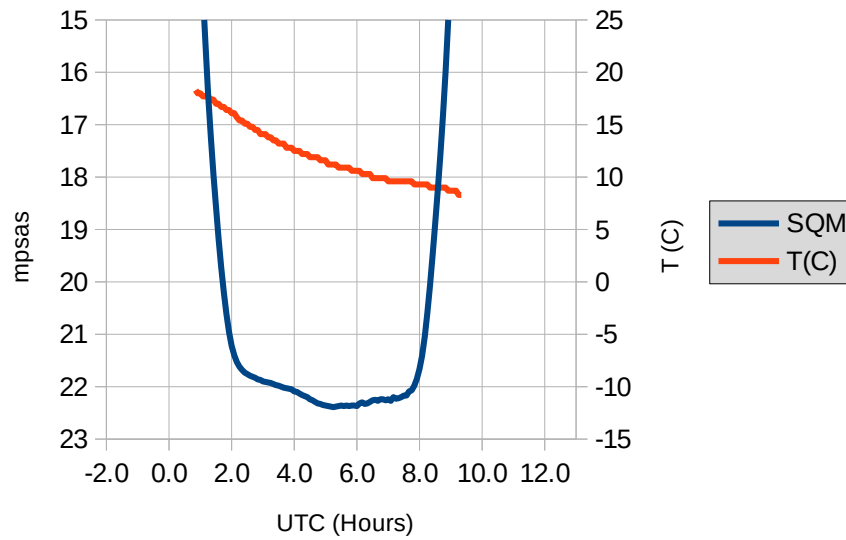
0507UT moonset

0726UT beginning of astronomical twilight

0816UT beginning of nautical twilight

0934UT sunrise.

SQM 2021-05-17



2021-05-18 (#059)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Lots of patchy cloud moving through but may clear as daytime heating subsides.

0027UT sunset

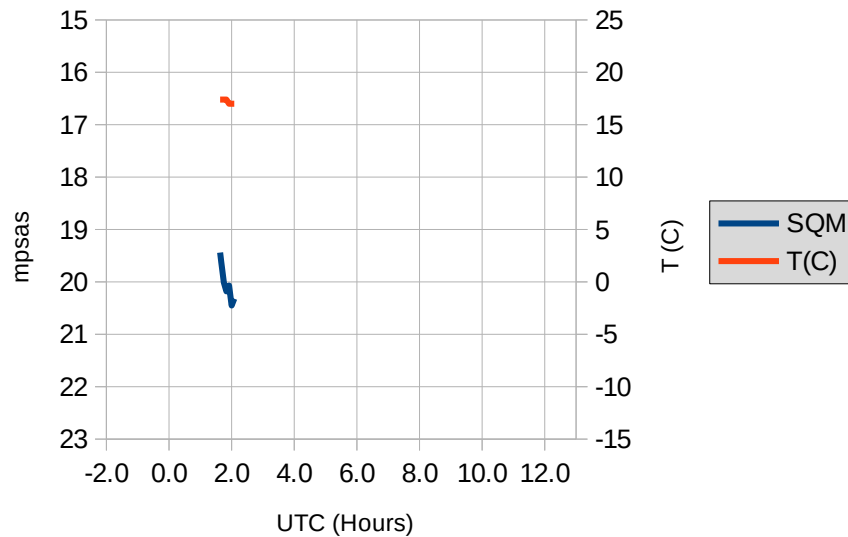
0101UT started CCDC action 2021-05-13.act.

Group	Stars	Exposures	Binning	Guided
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N

0145UT end of nautical twilight

0200UT it has clouded over, not sure I got even one image of each of the first target group. Shut down.

SQM 2021-05-18



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AM CVn	60s CV	2x2	N
HP Lib	150s CV	2x2	N
Barnard's Star	20s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

2021-05-19 (#060)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0028UT sunset

0100UT started a series of SER videos of the first quarter Moon and the lunar X with the ZWO ASI174mini camera, first at the Newtonian focus, then with Televue 2X barlow and then added the Televue 1.8X barlow on top of that. Seeing is not very good but looked fine for the lowest power videos, passable for the middle magnification and poor for the highest.

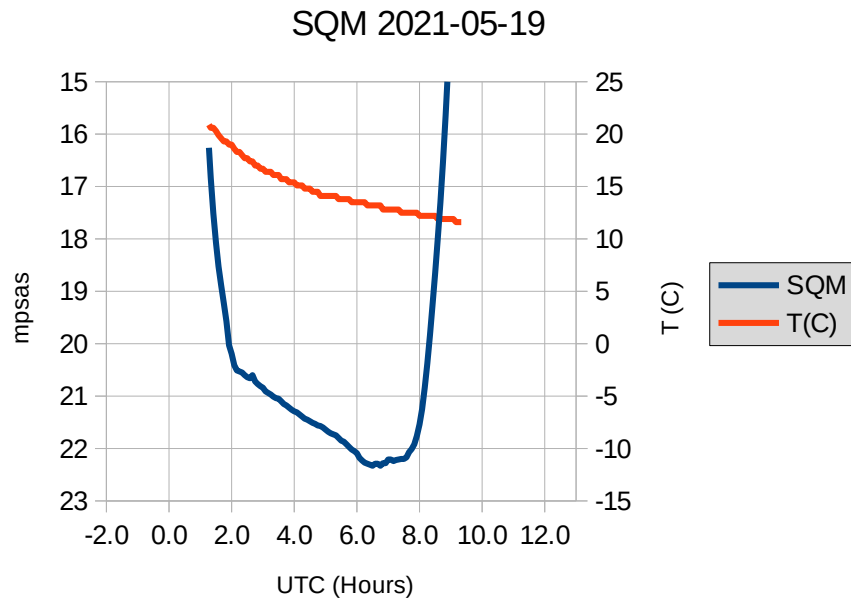
0147UT end of nautical twilight

0148UT started CCDC action 2021-05-13.act.

Group	Stars	Exposures	Binning	Guided
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	250s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0238UT end of astronomical twilight.
 0619UT moonset
 0722UT beginning of astronomical twilight
 0814UT beginning of nautical twilight
 0932UT sunrise.



2021-05-23 (#061)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0033UT sunset

0152UT end of nautical twilight

0202UT started CCDC action 2021-05-23.act.

Group	Stars	Exposures	Binning	Guided
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+345928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	250s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

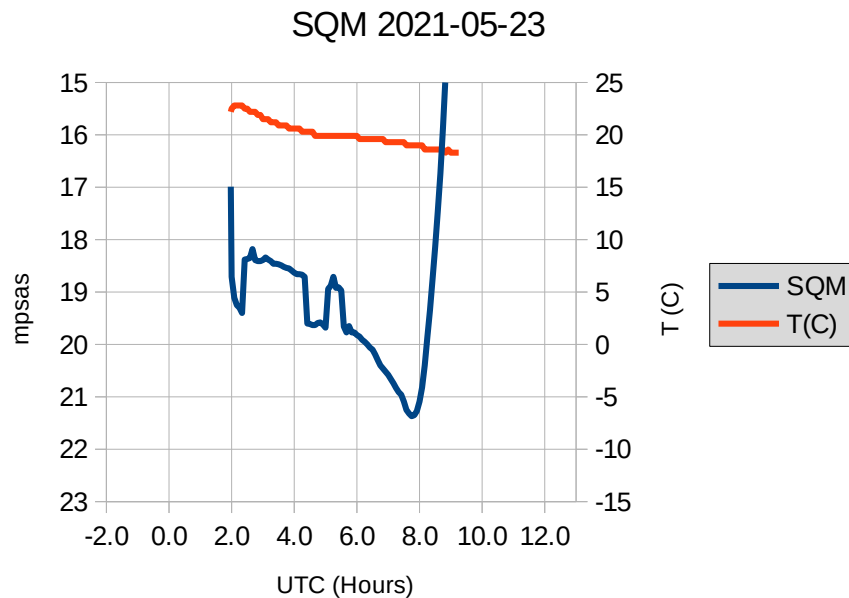
0246UT end of astronomical twilight.

0715UT beginning of astronomical twilight

0809UT beginning of nautical twilight

0827UT moonset

0928UT sunrise.



2021-05-24 (#062)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0034UT sunset

0154UT end of nautical twilight

0127UT started CCDC action 2021-05-24.act.

Group	Stars	Exposures	Binning	Guided
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	250s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

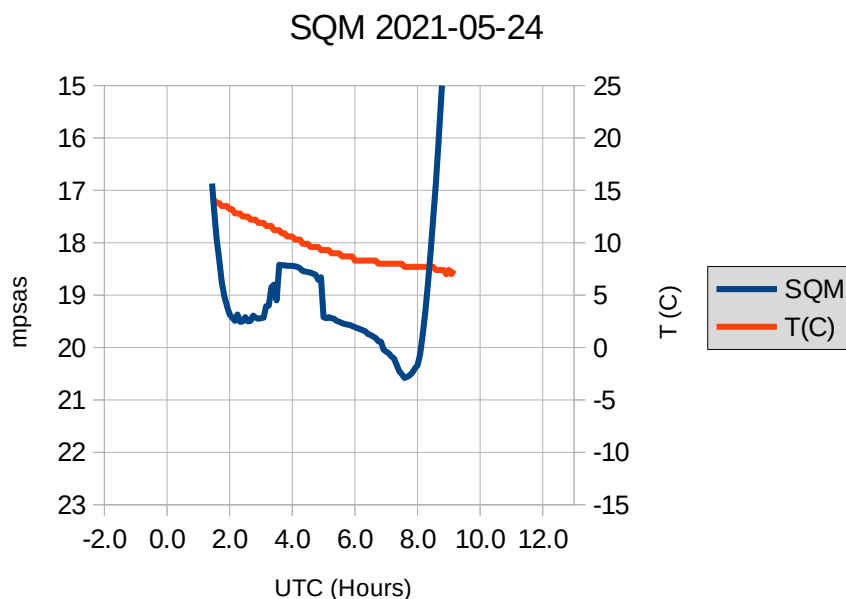
0248UT end of astronomical twilight.

0713UT beginning of astronomical twilight

0807UT beginning of nautical twilight

0826UT moonset

0927UT sunrise.



2021-05-25 (#063)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0035UT sunset

0155UT end of nautical twilight

0156UT started CCDC action 2021-05-25.act. I suspect that tracking errors are significant impediment to good S/N and that shorter exposures may reduce that. Reducing the max exposures to 200s will reduce S/N but if that is partly offset by reduced tracking errors then I may be able to collect more data per night with little impact on quality.

Group	Stars	Exposures	Binning	Guided
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	200s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+345928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	000s V	1x1	N

Pointing exposure for CVn 12.7h RRLs failed to solve twice.

0231UT moonrise

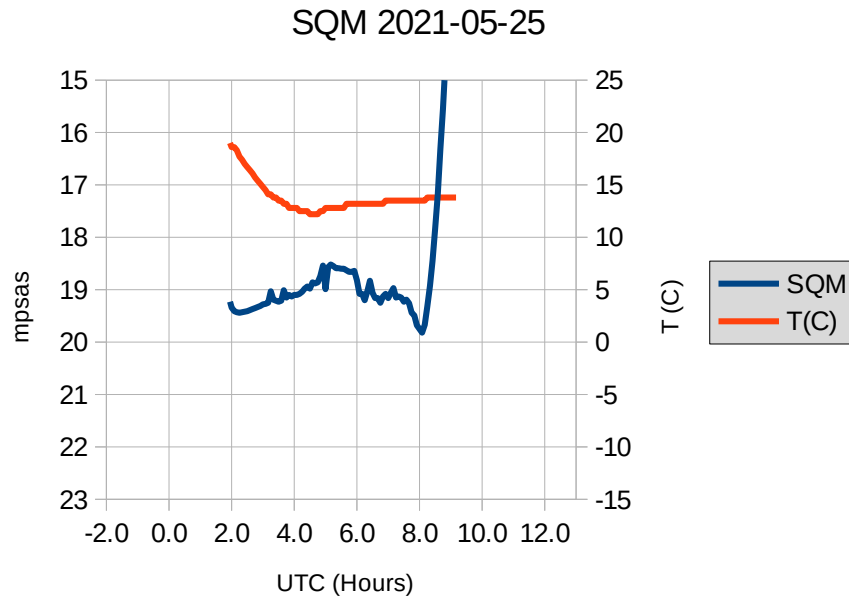
0250UT end of astronomical twilight.

0711UT beginning of astronomical twilight

0806UT beginning of nautical twilight

0855UT moonset

0927UT sunrise.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AM CVn	60s CV	2x2	N
Barnard's Star	20s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

Shooting main and guider shots with RASCRT to determine guider offset NGC6888 on east of pier, guider camera centred near 20 15 30 +38 24 38

2021-05-29 (#064)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0038UT sunset

0200UT end of nautical twilight

0243UT started CCDC action 2021-05-25.act.

Group	Stars	Exposures	Binning	Guided
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	200s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	ROTSE1_J162721.01+345928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

Pointing exposure for CVn 12.7h RRLs again failed to solve twice, then again after a manual reslew and sync on a bright star. Also PinPoint failed to solve an image taken nearby with ~8 bright stars in it.

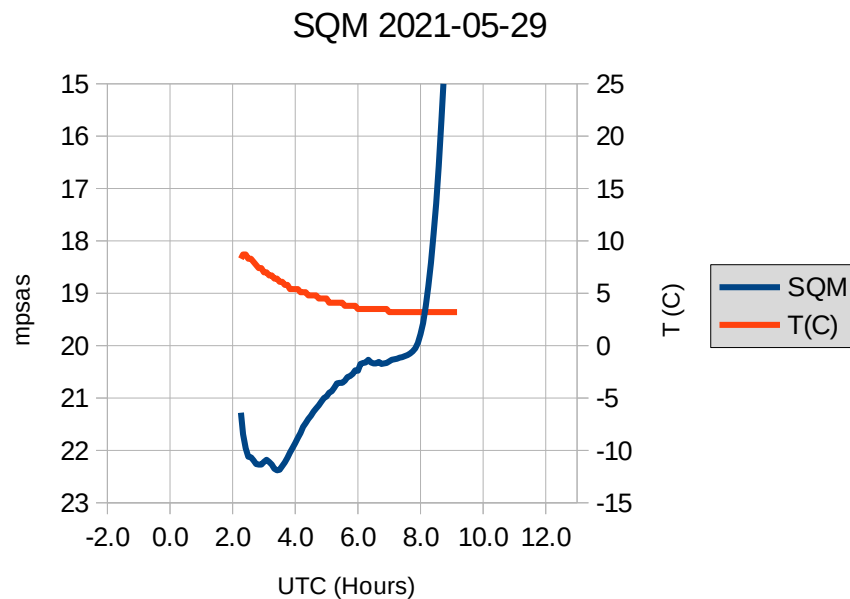
0257UT end of astronomical twilight.

0341UT moonrise

0705UT beginning of astronomical twilight

0802UT beginning of nautical twilight

0924UT sunrise.



2021-05-30 (#065)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Takahashi Sky90II 9cm f/9 apo refractor (with Extender-Q) with QHY183 at -25C with 1.25" Astrodon LRGB filters, 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount at the cliff-top observing site. Autoguiding with PHD2. QHY183 gain at 0, offset at 2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0039UT sunset

0045UT started ffs.pl to collect a set of twilight flat frames.

0100UT CCDC started off failing its first plate solve so I killed the script and did a manual sync on a bright star. Did a fairly careful manual focus which gave ocnl FWHM ~1.7px.

0114UT started CCDC action 2021-05-30.act.

Group	Stars	Exposures	Binning	Guided
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	200s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+345928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0201UT end of nautical twilight

0259UT end of astronomical twilight.

0300UT Sky90 started trying to get things running: PHD2 still refuses to read the ASI120 camera - starts out OK but when actually trying to guide it times out trying to read it; killed PHD2 and went to guiding in Maxim. Had trouble focusing, was never able to get the settings in Maxim to work, finally just used what seemed to be about the best focus achieved during Maxim's attempts to do a V-curve; guiding needed to be recalibrated; attempted to use multi-star guiding but it was very erratic, causing stars bloated to ~6px FWHM; reverted to single star guiding and the result is much smoother and stars about 1/2 as large.

Action: check the focuser step size is correct.

0410UT Sky90: started a series of 60s CV images of RZ Lyr, autoguided with 1s exposures binned 2x2 using Maxim. Mixed in with those are 10 each 100s TR, TG, and TB exposures to get a colour image of the field.

0434UT moonrise.

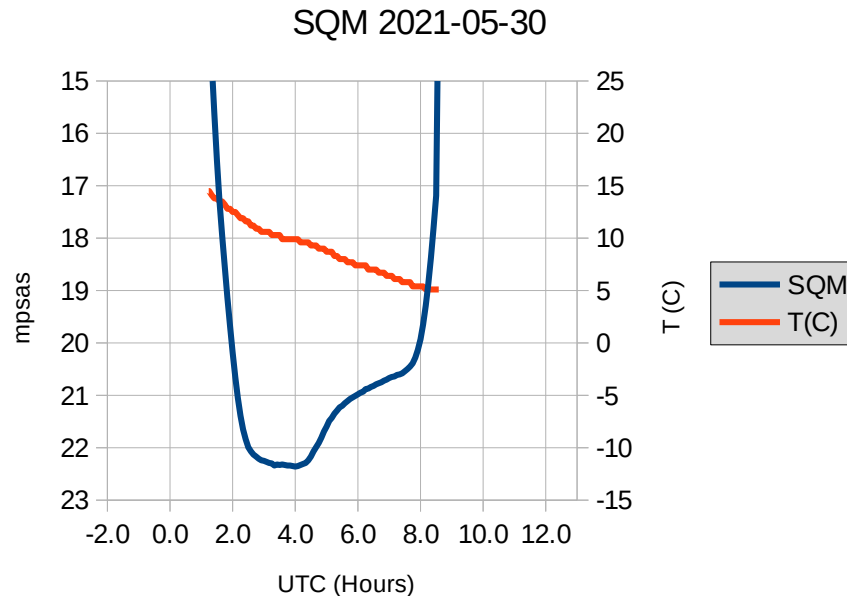
0704UT beginning of astronomical twilight

0730UT Sky90: shot a bunch of test exposures of Jupiter and its Galilean moons, plus a few longer exposures of two other fainter moons.

0900UT Sky90: ran a CCDC action to shoot LRGB flats at dawn.

0801UT beginning of nautical twilight

0923UT sunrise.



2021-05-31 (#066)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Canon 60Da with 70-300/4-5.6 lens, 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount at the cliff-top observing site.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0040UT sunset

0203UT end of nautical twilight

0300UT end of astronomical twilight.

0310UT started a series of 400s unfiltered exposures of M51; autoguided with 1s exposures binned 2x2. Followed this by a set of 200s exposures as the central core of both galaxies is burned out.

Initially had a terrible time with the guiding - two similar brightness stars in the track box so ocnyly the dimmer one would be brighter and Maxim would suddenly decide to start guiding on it then change its mind back to the brighter one. Nearly half of the exposures were lost to smaller guiding errors, one was lost to the ongoing shutter malfunction.



0430UT Canon 60Da: started a series of 200s exposures on the Blue Horse Nebula LBN1114; unguided as I can't get anything to fucking work! PHD2 still refuses to read the ASI120MC camera; tried connecting Maxim to it (having to then switch main camera and filter wheel to simulators) but it won't properly calibrate the guiding - refuses to send move commands in Y direction to the mount, frequently says 'moving scope' for up to twice as long as the setting calls for. After getting the pointing right and image framed I had to flip the camera upside down which required another sync to the sky, then had to re-route cables requiring another connection from all software. In addition to all that the camera battery died and I had to install the AC power supply. I forgot to remove the second counterweight so that may have had some effect - the mount was pulling hard against the worm.



Framing could be a little further south (image is north down) and much more data. Exposure is probably pretty good for the conditions, any more and the sky background would be too bright. 0444UT started CCD action 2021-05-30.act.

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

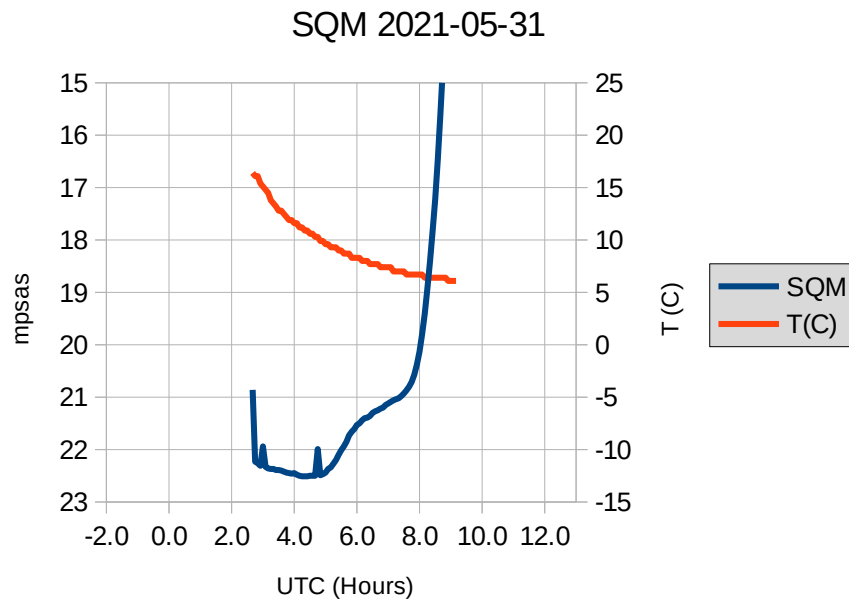
0516UT moonrise

0520UT packed up the Canon camera.

0702UT beginning of astronomical twilight

0800UT beginning of nautical twilight

0922UT sunrise.



2021-06-01

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AM CVn	60s CV	2x2	N
Barnard's Star	20s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

2021-06-02 (#067)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0042UT sunset

0205UT end of nautical twilight

0304UT end of astronomical twilight.

0147UT started a series of 200s TR, B, V exposures binned 2x2 of M51; autoguided with 2s exposures binned 2x2. Having quite a lot of trouble with the guide star disappearing about 8s into the exposure (shutter closing prematurely) at least a half-dozen times in the ~20 exposures.

0340UT started CCDC action 2021-06-02.act.

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+345928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

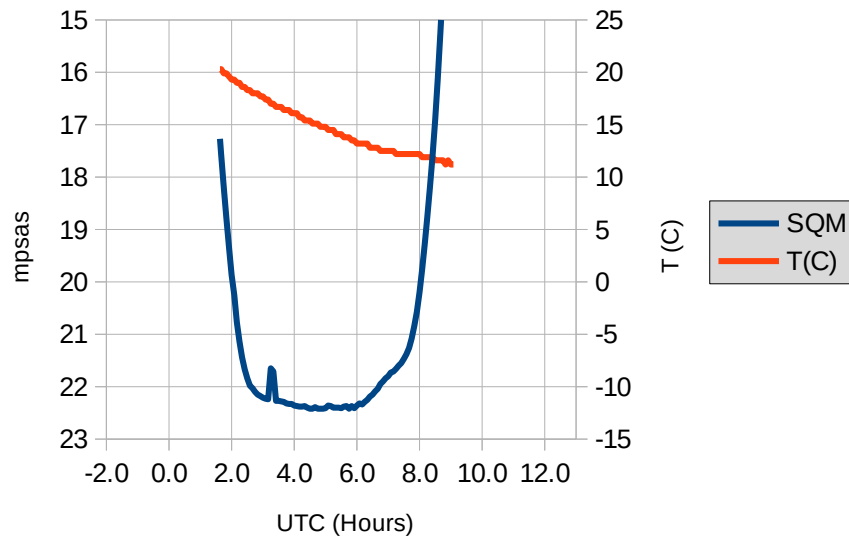
0613UT moonrise

0700UT beginning of astronomical twilight

0758UT beginning of nautical twilight

0921UT sunrise.

SQM 2021-06-02



2021-06-04

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0300UT it has cleared unexpectedly and the satellite image shows no cloud likely for at least several hours. Opened up and started the camera cooling.

0310UT finished opening the observatory and it has fogged in. Looks like it is probably permanent.

0330UT giving up, shutting down and going to bed.

2021-06-05 (#068)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

It is very humid and hazy, there is patchy cloud in the area. Satellite imagery looks like it may cloud over in a couple of hours.

0044UT sunset

0116UT started CCDC action 2021-06-05.act.

Group	Stars	Exposures	Binning	Guided
CVn 12.7h RRLs				
	SV CVn	200s B, 120s V	1x1	N
	SW CVn	300s B, 200s V	1x1	N
	GR CVn	400s B, 200s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0208UT end of nautical twilight

0308UT end of astronomical twilight.

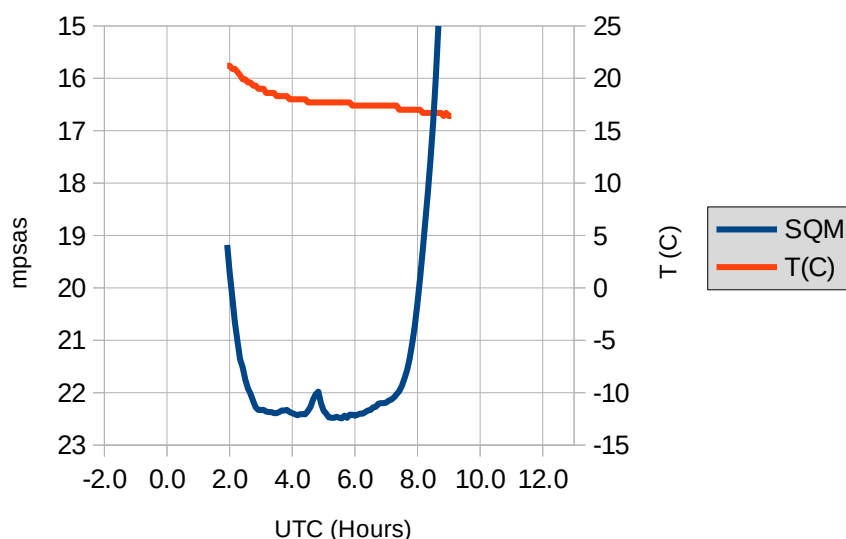
0712UT moonrise

0656UT beginning of astronomical twilight

0756UT beginning of nautical twilight

0920UT sunrise.

SQM 2021-06-05



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AM CVn	60s CV	2x2	N
Barnard's Star	20s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

2021-06-07 (#069)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

It is very humid and hazy.

0046UT sunset

0144UT started CCDC action 2021-06-08.act.

Group	Stars	Exposures	Binning	Guided
CVn 12.7h RRLs				
	SV CVn	200s B, 120s V	1x1	N
	SW CVn	300s B, 200s V	1x1	N
	GR CVn	400s B, 200s V	1x1	N
Boo 14.7h RRLs				

Group	Stars	Exposures	Binning	Guided
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0210UT end of nautical twilight

0311UT end of astronomical twilight.

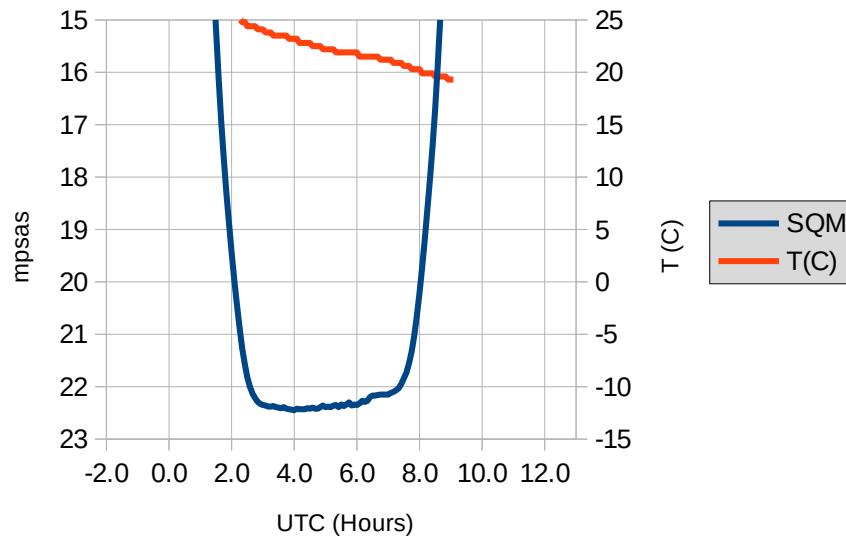
0753UT moonrise

0654UT beginning of astronomical twilight

0755UT beginning of nautical twilight

0919UT sunrise.

SQM 2021-06-07



2021-06-10 (#070)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Takahashi Sky90II 9cm f/9 apo refractor (with Extender-Q) with QHY183 at -25C with 1.25" Astrodon LRGB filters, 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount at the cliff-top observing site. Autoguiding with PHD2. QHY183 gain at 0, offset at 2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0048UT sunset

0213UT end of nautical twilight

0228UT started CCDC action 2021-06-10.act.

Group	Stars	Exposures	Binning	Guided
CVn 12.7h RRLs				
	SV CVn	200s B, 120s V	1x1	N
	SW CVn	300s B, 200s V	1x1	N
	GR CVn	400s B, 200s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				

Group	Stars	Exposures	Binning	Guided
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0314UT end of astronomical twilight.

0340UT Sky90: started a series of 120 x 80s CV images of RZ Lyr; autoguided with 2s exposures using PHD2.

0720UT Sky90: started a series of 240 x 10s TR exposures (unbinned, subframed) of Jupiter to catch Callisto (JIV) eclipse of Io (JII); autoguided with 2s exposures using PHD2.

0654UT beginning of astronomical twilight

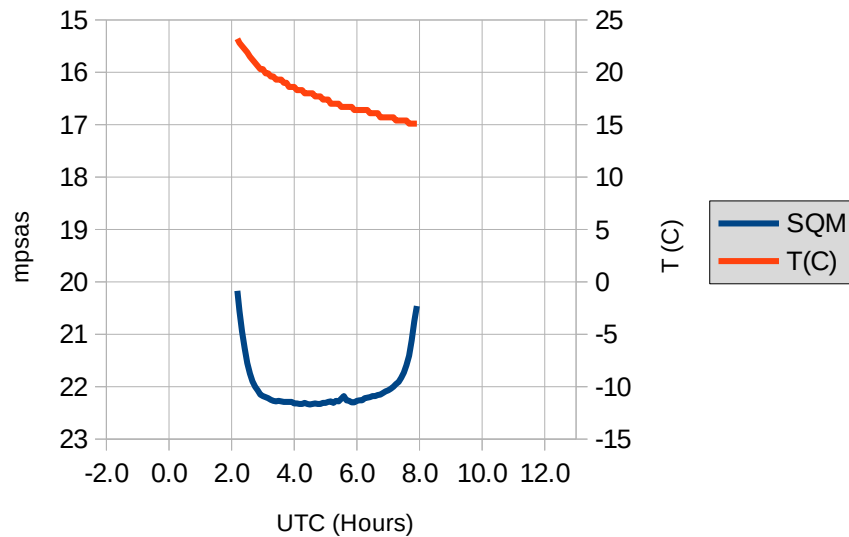
0754UT beginning of nautical twilight

0430UT at Herlehy's Building Centre just south of Westport to watch the partial solar eclipse at sunrise. 80mm semi-apo refractor on alt-az mount, Baader mylar solar filter, Canon 60Da, 20cm/5.6 Dobsonian with mylar white light solar filter.

0519UT moonrise

0919UT sunrise.

SQM 2021-06-10



2021-06-12

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AM CVn	60s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

2021-06-15

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AM CVn	60s CV	2x2	N
Barnard's Star	20s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N

2021-06-16 (#071)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0051UT sunset

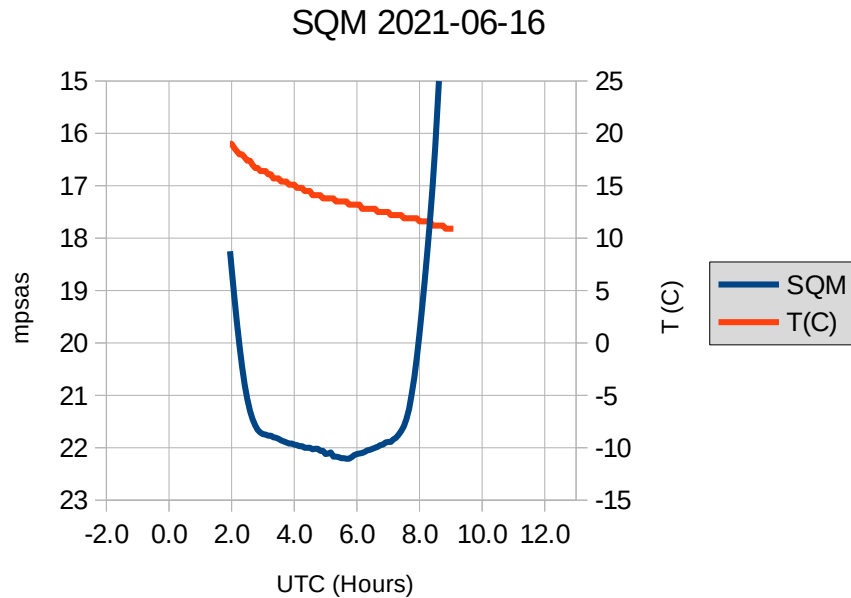
0200UT started CCDC action 2021-06-16.act.

Group	Stars	Exposures	Binning	Guided
CVn 12.7h RRLs				
	SV CVn	200s B, 120s V	1x1	N
	SW CVn	300s B, 200s V	1x1	N
	GR CVn	400s B, 200s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+345928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021		20s V, 20s B	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0216UT end of nautical twilight

0320UT end of astronomical twilight.

0451UT moonset.
 0649UT beginning of astronomical twilight
 0752UT beginning of nautical twilight
 0918UT sunrise.



2021-06-17 (#072)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0051UT sunset

0134UT started CCDC action 2021-06-17.act.

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				

Group	Stars	Exposures	Binning	Guided
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+345928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N

0217UT end of nautical twilight

0321UT end of astronomical twilight.

0516UT moonset.

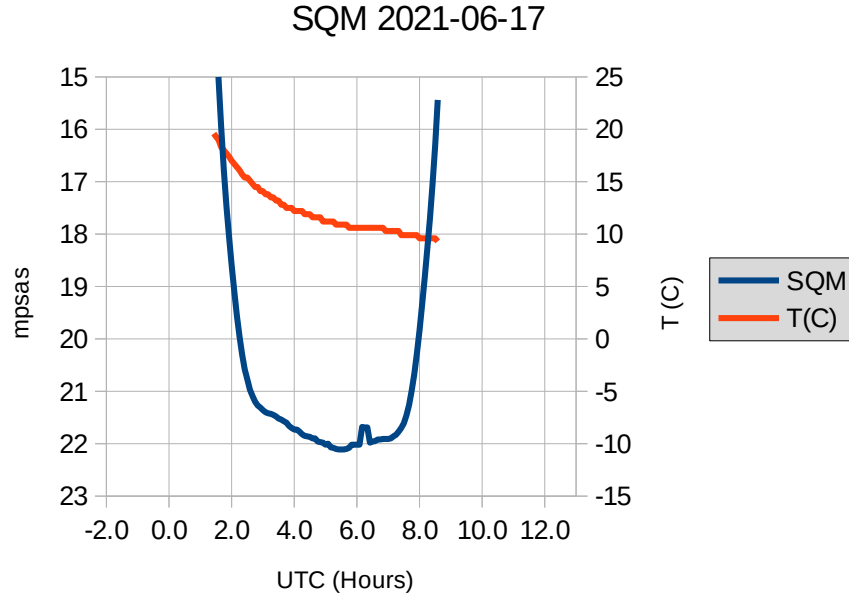
0610UT terminated the CCDC action to start a long series of 20s V exposures 1x1 of Nova Her 2021 = **TCP J18573095+1653396** = ZTF19aasfsjq; unguided.

0649UT beginning of astronomical twilight

0752UT beginning of nautical twilight

0840UT well after the beginning of civil twilight the photometry still looks quite good but I'm shutting down anyway as it won't last longer than a few more minutes.

0918UT sunrise.



2021-06-18 (#073)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0051UT sunset

0153UT started CCDC action 2021-06-18.act.

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021	TCP J18573095+1653396	20s V	1x1	N

0217UT end of nautical twilight

0321UT end of astronomical twilight.

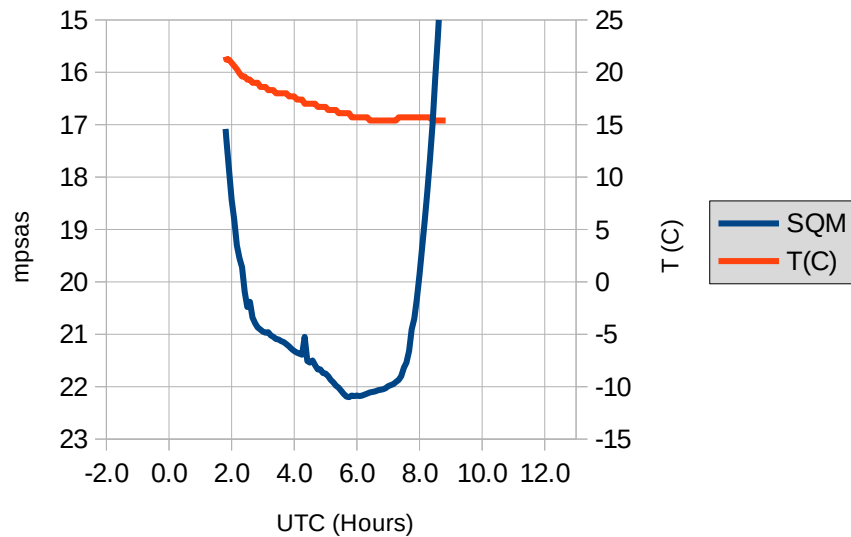
0539UT moonset.

0649UT beginning of astronomical twilight

0752UT beginning of nautical twilight

0918UT sunrise.

SQM 2021-06-18



2021-06-19

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
NovaHer2021	20s TG	2x2	N
Barnard's Star	20s CV	2x2	N

2021-06-20 (#074)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0052UT sunset

0200UT started CCDC action 2021-06-20.act.

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021	TCP J18573095+1653396	20s V	1x1	N

0218UT end of nautical twilight

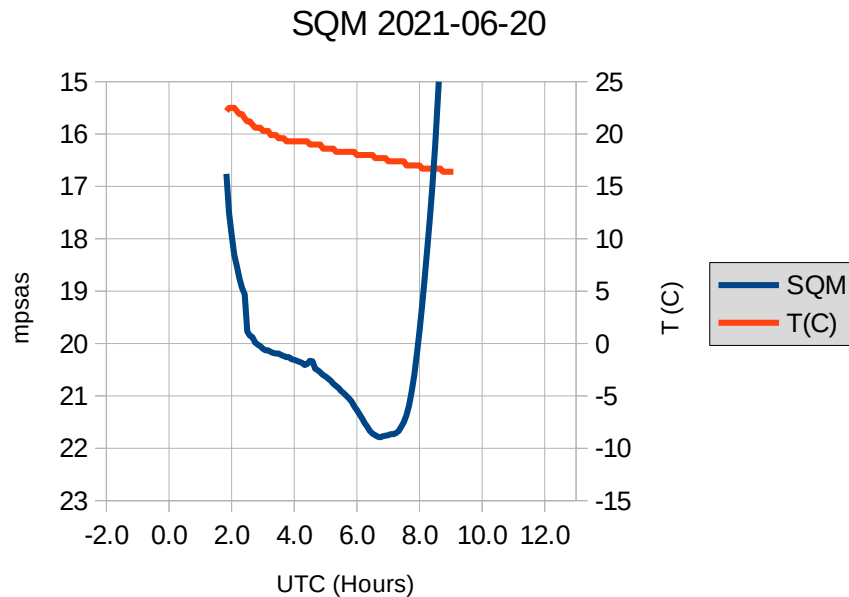
0322UT end of astronomical twilight.

0626UT moonset.

0649UT beginning of astronomical twilight

0753UT beginning of nautical twilight

0919UT sunrise.



2021-06-22

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
NovaHer2021	60s CV	2x2	N

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N

2021-06-23 (#075)

Sky90 @ f/5.6 with diagonal and eyepieces (alternating 24mm Explore Scientific and Celestron 25mm reticle), on Losmandy Titan with Gemini controller, on the pier at lakeside, no computer.

The Gemini controller was sent away to Michael Herman for repair - he reports the serial chip was blown. He repaired that and added a few extras to make it electronically a little more resistant to static etc. Received it back yesterday Tue the 22nd, tested it on the mount with a computer in the shop and it worked fine.

Sky is quite murky and forecast to be cloudy so will work visual to try to polar align the newly installed Titan mount using the Sky90 with a reticle eyepiece.

This morning I installed the Titan on the pier, and installed the power supply. First problem - the mount uses a ciggy lighter connector for power, as does my Pegasus Power Box and the power supply only has one outlet. I need either a splitter, a new power supply, or just cut both lighter plugs off and replace them with something more modern than an 8-track. I think my power supply is rather underpowered now that I have dewheaters and everything is powered from the Power Box instead of individual wall warts so I might do both the last two.

Once it got dark I installed the Sky90 with diagonal and eyepiece to do an initial sync on the sky and rough polar alignment. But first I spent a few minutes looking at the nearly Full Moon - WOW!

Spent about an hour using the Gemini polar alignment assist function: Gemini slews back and forth between two stars while I alternate azimuth and altitude adjustments on the mount.

0300UT the cloud is just getting too thick to continue so am shutting down.

2021-06-26

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
NovaHer2021	75s CV	2x2	N
Barnard's Star	20s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N

2021-07-03

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
NovaHer2021	120s CV	2x2	N
Barnard's Star	20s CV	2x2	N

Stars	Exposures	Binning	Guided
NSVS10743622	400s Lum	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N
WASP-80b	60s CV	2x2	N

2021-07-04 (#076)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Sky90 at f/4.5 with reducer/corrector, Robofocus focuser, mounted on the Titan/Gemini, QSI583WS camera at -25C, B and V filters; guiding with PHD2, 2s exposures; Pegasus Ultimate Power Box as power and USB hub, focuser driver. Turquoise computer at the pier. Using the Energizer lithium battery pack to power the Pegasus UPB, original 13.8V 5A power supply for the mount.

Action: check which uses more power - mount or UPB and put the Energizer on the lesser of the two.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0052UT sunset

0217UT end of nautical twilight

0257UT started CCDC action 2021-07-04.act.

Group	Stars	Exposures	Binning	Guided
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021	TCP J18573095+1653396	120s V	1x1	N

0300UT attempting to get the Titan running. Did a cold start, slewed to Vega which was out of the field of view. Used the guide scope to get it roughly centered. Did a quick manual focus on a nearby star. Slew to and synced on Albireo. Maxim is unable to read anything from the mount.. This means to plate solve I need to input the RA/Dec manually for each image. ECU works fine with it -

shows the correct pointing for the scope, syncs the mount on a star, etc I don't know how to display the ASCOM device hub so I can change settings.

Action: turn off the voice in the device hub.

Action: repair/reinstall Maxim on turquoise.

0318UT end of astronomical twilight.

0415UT started a series of 15 x 200s V exposures of M71.



0525UT Sky90: started a series of 60s V exposures of BH Peg, autoguided with 2s exposures in PHD2.

0540UT These exposures are too short so increased them to 200s.

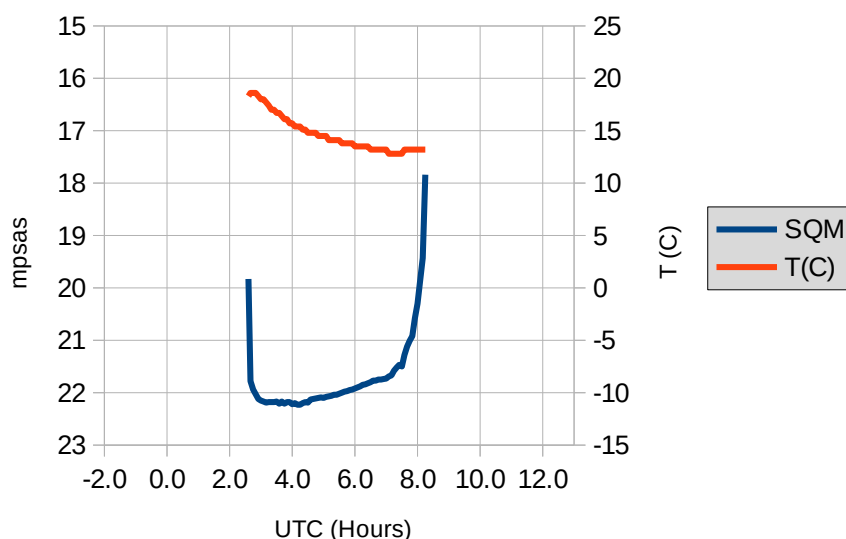
0557UT moonrise

0658UT beginning of astronomical twilight

0800UT beginning of nautical twilight

0924UT sunrise.

SQM 2021-07-04



2021-07-05 (#077)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount powered with the Energizer LiIon battery, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Sky90 at f/4.5 with reducer/corrector, Robofocus focuser, mounted on the Titan, QSI583WS camera at -25C, B and V filters; guiding with PHD2, 2s exposures; Pegasus Ultimate Power Box as power and USB hub, focuser driver. Turquoise computer at the pier. Using the original 13.8V 5A power supply for the Pegasus UPB.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0052UT sunset

0200UT started CCDC action 2021-07-05.act.

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+345928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021	TCP J18573095+1653396	120s V	1x1	N
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N

0216UT end of nautical twilight

0230UT a great deal of time wasted trying to do a number of adjustments on the Titan. Maxim was 'repaired' today but seems to have had no beneficial effect. Problems:

- frequently reports Error and no RA&Dec from the mount
- insists the mount is slewing when it is not and as a result cannot do centering movements
- PinPoint most of the time fails to solve an image - probably works 1/5
- attempted to run autofocus - Maxim never took a single exposure, just sat there like something was going to happen.

Note that ECU has no problem with the mount - always showing the correct RA and Dec

Action: install FocusMax on Turquoise.

Action: test out AstroPhotography Tool and NINA to replace Maxim (but they neither of them will do plate solves I bet so mount modelling will be difficult to impossible.)

Replaced the camera and reducer/corrector with diagonal and eyepiece in order to mark the CWD position using the Mike Dodd process:

1. cold start the mount
2. slew to a bright star
3. center the star while keeping track of the number of seconds and which buttons pressed
4. synchronize
5. use the park command to park the mount back at the CWD position
6. use the handpaddle buttons to slew the mount the exact same amount as was required to center the star, same buttons, same durations.

7. turn off the mount
8. start again at 1. and repeat until happy with the pointing.

I got the mount to where the pointing was within the field of view of the 25mm reticle eyepiece (and could easily do better than that) and then marked the mount with aluminum tape. However, I marked both axes in the wrong place so neither was effective and the whole procedure will have to be repeated. I forgot to tighten the RoboFocus grub screws on the focuser shaft after using the eyepiece last week so the focuser motor was just spinning. So I manually refocused using continuous images in Maxim then tightened the screws and did a fairly careful manual focus through the V filter based on Maxim reporting of FWHM and HFD. A quick exposure through the B filter shows that the focus is essentially identical at position 21600. Did another similar focus run unfiltered and found focus position 21226. Polar alignment: used PHD2 drift alignment tool. After mistakenly messing very badly with the altitude adjustment on the mount the drift tool shows I am within ~1' in both altitude and azimuth. The only success of the night.

0317UT end of astronomical twilight.

0515UT Sky90: started a short series of 300s unfiltered exposures of nebulosity around Sadr in central Cygnus; autoguided with 1s exposures in PHD2. Stellarium names the nebulosity LBN249, the dark lane across it B347, and another ~dozen or so LBN, Sh2 nebulae

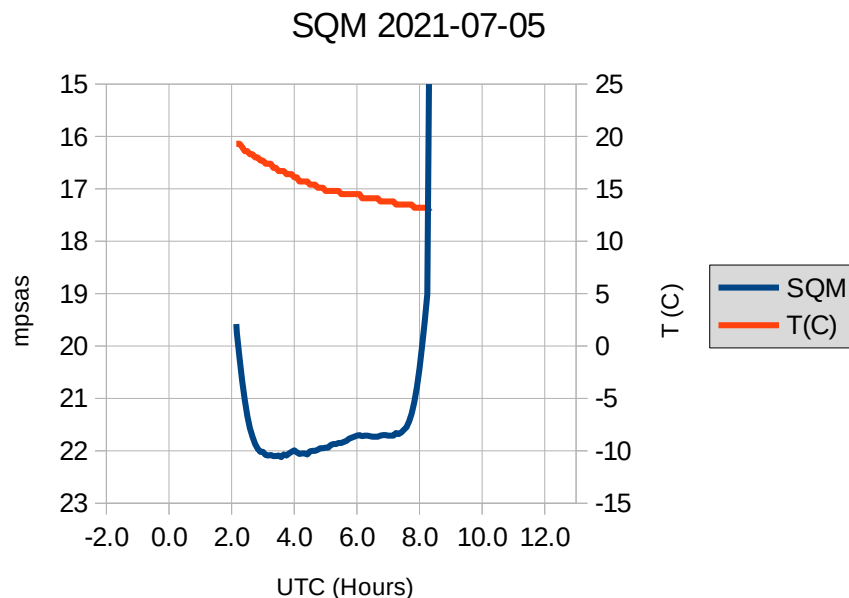
0610UT started a series of 200s V exposures of BH Peg, autoguided with 2s exposures in PHD2.

0620UT moonrise

0700UT beginning of astronomical twilight

0801UT beginning of nautical twilight

0925UT sunrise.



2021-07-11 (#078)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount powered with the Energizer LiIon battery, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Sky90 at f/4.5 with reducer/corrector, Robofocus focuser, mounted on the Titan, QSI583WS camera at -25C, B and V filters; guiding with PHD2, 2s exposures; Pegasus Ultimate Power Box as power and USB hub, focuser driver. Turquoise computer at the pier. Using the original 13.8V 5A power supply for the Pegasus UPB & mount with a Canadian Tire splitter.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0049UT sunset

0147UT moonset.

0206UT started CCDC action 2021-07-11.act.

Group	Stars	Exposures	Binning	Guided
Boo 14.7h RRLs				
	LN Boo	200s V	1x1	N
	VX Boo	200s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	200s V	1x1	N
	NN Boo	200s V	1x1	N
	MZ Boo	200s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+345928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021	TCP J18573095+1653396	120s V	1x1	N
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	BL Peg	300s V	1x1	N

0212UT end of nautical twilight

0311UT end of astronomical twilight

Redid the alignment and marking of the CWD position on the Titan. A cold start put Deneb well within the (admittedly rather large) field.

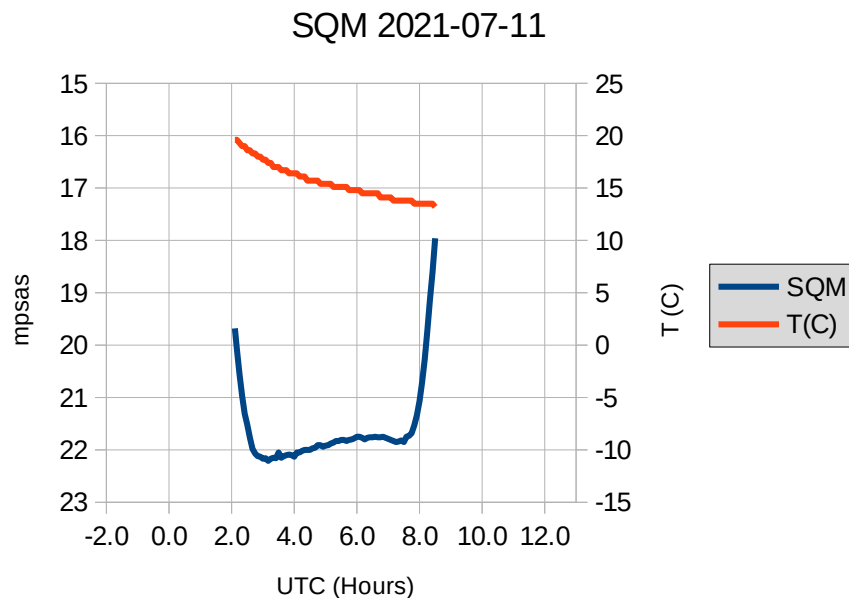
Shot a couple of 300s unfiltered exposures of IC5146 as it is one of the challenge objects for RASCOC this month; autoguided with 2s exposures.

0520UT started a series of 75s exposures of BH Peg (100s exposures pushed max pixel to ~48kADU); autoguided with 2s exposures.

0708UT start of astronomical twilight.

0807UT start of nautical twilight.

0929UT sunrise.



2021-07-13

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
NovaHer2021	300s CV	2x2	N
AM CVn	100s CV	2x2	N

2021-07-15 (#079)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

0047UT sunset

0203UT started CCDC action 2021-07-15.act.

Group	Stars	Exposures	Binning	Guided
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021	TCP J18573095+1653396	120s V	1x1	N
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N

0208UT end of nautical twilight

0305UT end of astronomical twilight

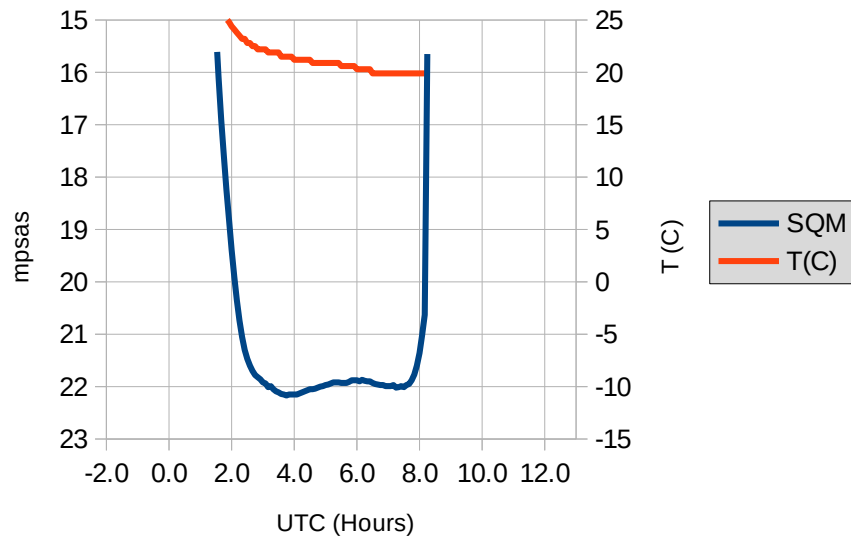
0345UT moonset.

0715UT start of astronomical twilight.

0811UT start of nautical twilight.

0933UT sunrise.

SQM 2021-07-15



2021-07-17

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
AM CVn	100s CV	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
ASASSN-V J195903.89+504639.4	100s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
ASASSN-V J194144.71+273717.5	100s CV	2x2	N
V1535 Her	120s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N
V2367 Cyg	100s CV	2x2	N

2021-07-20

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
AM CVn	100s CV	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N

Stars	Exposures	Binning	Guided
ASASSN-V J195903.89+504639.4	100s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
ASASSN-V J194144.71+273717.5	100s CV	2x2	N
V0605 Her	400s Lum	2x2	N
V1535 Her	120s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N
V2367 Cyg	100s CV	2x2	N

2021-07-22 (#080)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

HankScope 0.25m f/4 Schmidt-Newtonian, Canon 60Da, QSI583WS camera at -25C, B and V filters, SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0041UT sunset

0200UT end of nautical twilight

0200UT started CCDC action 2021-07-22.act.

Group	Stars	Exposures	Binning	Guided
Bootes 15.8h RRLs				
	V0338 Boo	200s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+345928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021	TCP J18573095+1653396	120s V	1x1	N
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	NS Cyg	300s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N

0254UT end of astronomical twilight

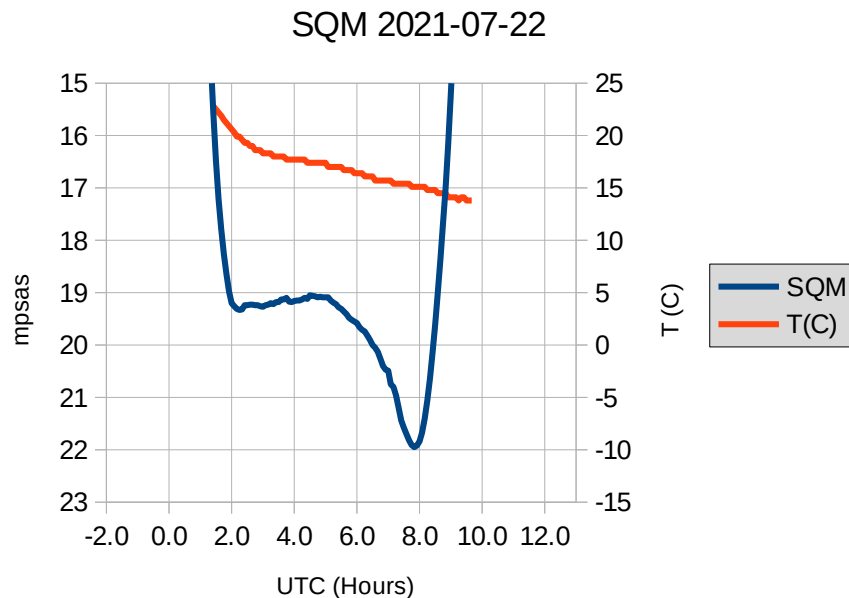
0340UT Hankscope: shot a 4x4 FindDSL image of the field of 12 Victoria and solved it. Result is: focal length = 1015.9mm, pixel size = 4.39"/4 = 1.097", FoV = 1.013 x 0.763°

0727UT start of astronomical twilight.

0735UT moonset.

0820UT start of nautical twilight.

0940UT sunrise.



2021-07-24 (#081)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, new 60mm f/5 guidescope with ZWO ASI120MC camera, QSI583WS camera at -25C, B and V filters, Pegasus Astro Ultimate Power Box v2, all on Titan/Gemini; all on 13.8V power supply .

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0039UT sunset

0058UT moonrise.

0200UT started CCDC action 2021-07-24.act.

Group	Stars	Exposures	Binning	Guided
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021	TCP J18573095+1653396	120s V	1x1	N
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N

0158UT end of nautical twilight

????UT Hankscope: started a series of 20s V and 30s B images of V0627 Peg; autoguided with 1s exposures using PHD2.

The series was cut short by some sort of power glitch or something - came out shortly after V0627 Peg transited to find the Gemini restarted and asking for a warm restart. The warm restart was successful and pointing was pretty good.

25 Phocaea

Shot one FindDSO image of M33 and then everything seemed to fall apart and was unable to get guiding/mount connection etc working again. Not sure the problem.

Many problems with the Titan etc - guide camera disappears occasionally, PHD2 is unable to read the camera; disconnecting and reconnecting it in PHD2 seems to fix that;

0250UT end of astronomical twilight

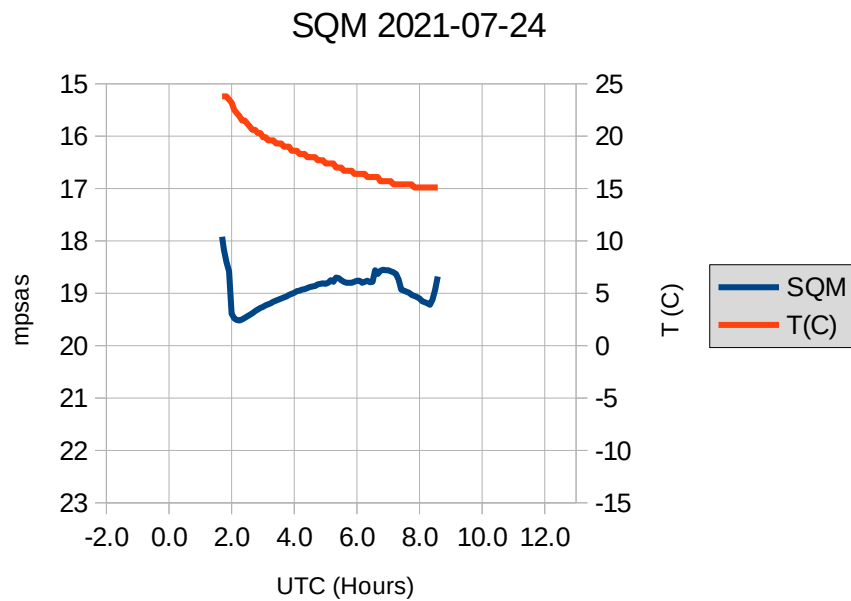
0731UT start of astronomical twilight.

0823UT start of nautical twilight.

0942UT sunrise.

The 13.8V power supply does not supply enough power: everything runs fine until I try to slew the mount at which point the camera disconnects, cooler turns off.

Action: replace or supplement the 13.8V power supply. In the interim, use the Energizer Li-ion battery pack to power either mount or UPBv2 and use 13.8V power supply for the other.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
AM CVn	100s CV	2x2	N
V0627 Peg	10s CV	2x2	N
V0377 Boo	200s CV	2x2	N
V0467 Dra	150s CV	2x2	N

2021-07-26 (#082)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190; forgot to start it.

0037UT sunset

0155UT end of nautical twilight

0210UT started CCDC action 2021-07-26.act.

Group	Stars	Exposures	Binning	Guided
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	ROTSE1_J162721.01+34 5928.7	200s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021	TCP J18573095+1653396	120s V	1x1	N
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N

0213UT moonrise

0246UT end of astronomical twilight

0735UT start of astronomical twilight.

0826UT start of nautical twilight.

0944UT sunrise.

2021-07-29 (#083)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, **new 60mm f/5 guidescope** with ZWO ASI120MC camera, Canon 60Da on battery, Pegasus Astro Ultimate Power Box v2 on 13.8V power supply, all on Titan/Gemini on the Energizer Li-Ion battery pack.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0034UT sunset

0145UT started CCDC action 2021-07-26.act.

Group	Stars	Exposures	Binning	Guided
CrB 16.3h RRLs				
	CT CrB	200s V	1x1	N
	CX CrB	200s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	200s V	1x1	N
Lyra 18.9h RRLs				

Group	Stars	Exposures	Binning	Guided
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021	TCP J18573095+1653396	120s V	1x1	N
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N

0151UT end of nautical twilight

0206UT Hankscope: started a series of 10 x 30s, 10 x 60s, and 10 x 120s exposures of M22;
autoguided with 1s exposures in PHD2.



0240UT end of astronomical twilight

0316UT Hankscope: started a series of 10 x 120s exposures of NGC6992; autoguided with 1s exposures in PHD2.

0321UT moonrise

0339UT Hankscope: started a series of 10 x 300s exposures of NGC6992; autoguided with 1s exposures in PHD2.



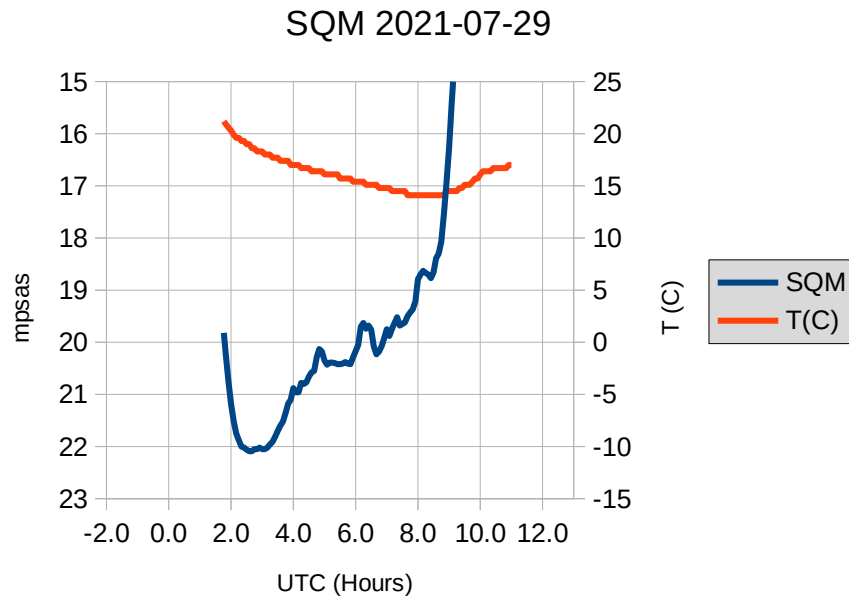
0445UT Hankscope: did a brief video of Jupiter in 640x480 crop mode, did the same of the Moon, panning about.

0500UT What a shame. I shut everything down and started to carry the computer back into the shop when I suddenly realized this would be a good time (way past bedtime but few mosquitos) to do the scope alignments. I started the mount back up and connected to the UPB to have access to the guide camera. I slewed to Jupiter and centred it in the Canon live view. Then loosened the screws on the finder mount and twisted it into approximate alignment, tightened the screws and completed the alignment with the ring screws. It isn't perfect but quite close and I think some shimming would be required to get it perfect. Then aligned the guide scope on Jupiter. Then I decided to take a look at Jupiter and the Moon visually with the scope so removed the camera and installed an eyepiece. While trying to slew over to Jupiter the mount suddenly went crazy, slewing by itself in RA first one direction then the other. I switched it off quickly and restarted it. Seemed to work OK for about 20s then did the same thing. I've given up for tonight and packed it all away.

Up until the mount went berserk it was feeling like a very successful evening.

0510UT some thin cloud moving through temporarily?

0738UT start of astronomical twilight.
0830UT start of nautical twilight.
0947UT sunrise.
0950UT awoke to find the sky overcast.



Action: run PHD2 guide assist to see what settings can be improved.

~~Action: align guide scope to the main scope.~~

~~Action: align finder scope to the main scope.~~

~~Action: adjust guide scope settings in PHD2.~~

~~Action: turn the Gemini holder to face south.~~

2021-07-31 (#084)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hanscope 0.25m f/4 Schmidt-Newtonian, new 60mm f/5 guidescope with ZWO ASI120MC camera, QSI583ws, Pegasus Astro Ultimate Power Box v2 on 13.8V power supply, all on Titan/Gemini on the Energizer Li-Ion battery pack.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0032UT sunset

0148UT end of nautical twilight

0151UT started a series of 300s B and 200s V exposures on M12; autoguided with 1s exposures binned 2x2.

0236UT end of astronomical twilight

Hanscope: re-aligned the guide scope to the main scope - looks much better now.

Spent a some time polar aligning with the PHD2 drift align tool. This is a very good tool.

Azimuth adjustment: When PHD2 indicates a negative error the azimuth adjustment screw needs to be turned towards the mount; knobs have 12 indents and each indent is very roughly 4 arcmin.

Altitude adjustment: When PHD2 indicates a negative error the altitude adjustment screw needs to be turned counterclockwise; knob has 12 indents and each indent is very roughly 5 arcmin.

However, it isn't necessary to know the movement per rotation etc. Once PHD2 has measured the polar misalignment it draws a purple circle on the image around the star that was being measured.

Simply adjust the mount until the star is on the circle.

0323UT started a series of 15 x 15s V exposures of Barnard's Star.

0343UT started CCDC action 2021-07-31.act.

Group	Stars	Exposures	Binning	Guided
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Her 2021	TCP J18573095+1653396	120s V	1x1	N
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N

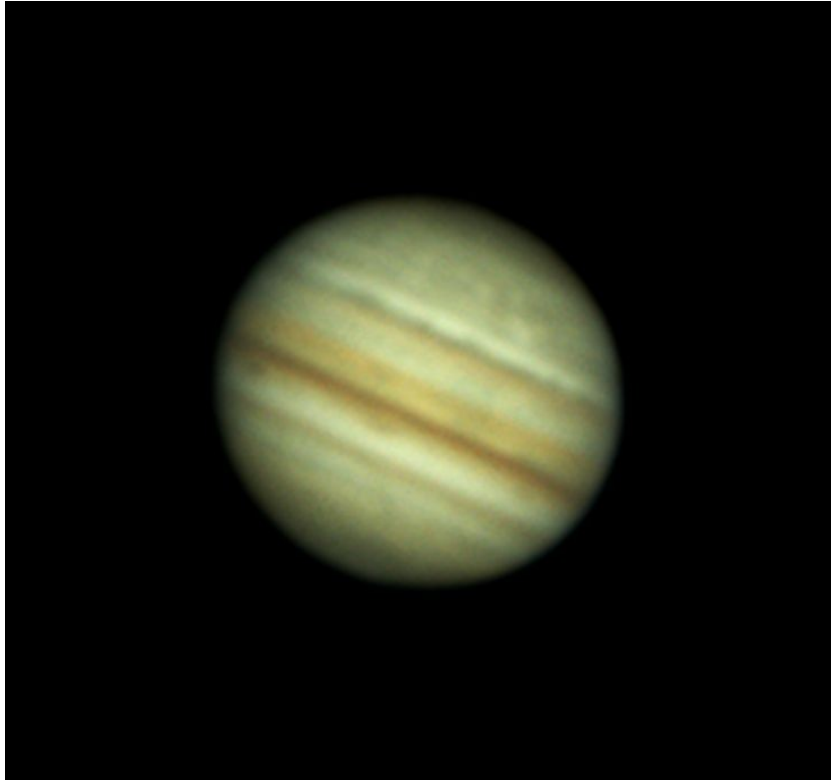
0401UT started a series of 30s B and V exposures of V0627 Peg; autoguided with PHD2, 1s exposures.

0401UT moonrise

0710UT Hankscope: the QSI camera has low and high gain settings which I don't know what that means; shot one image each at high gain, low gain, and auto gain, of CD Ari. The auto gain image matches the high gain image. I assume that auto gain uses high gain for 1x1 and low gain for binned images?

0715UT Hankscope: started a series of 300s V exposures of CD Ari; autoguided with 2s exposures in PHD2. There is some thin cloud around the last quarter moon.

0800UT shooting some AVIs of Jupiter for the Solar System AstroImaging Certificate; QHY5III178 colour camera and Televue 2x barlow; seeing is very poor.



0815UT Hankscope: at least some exposures are saturating - shortened to 200s.

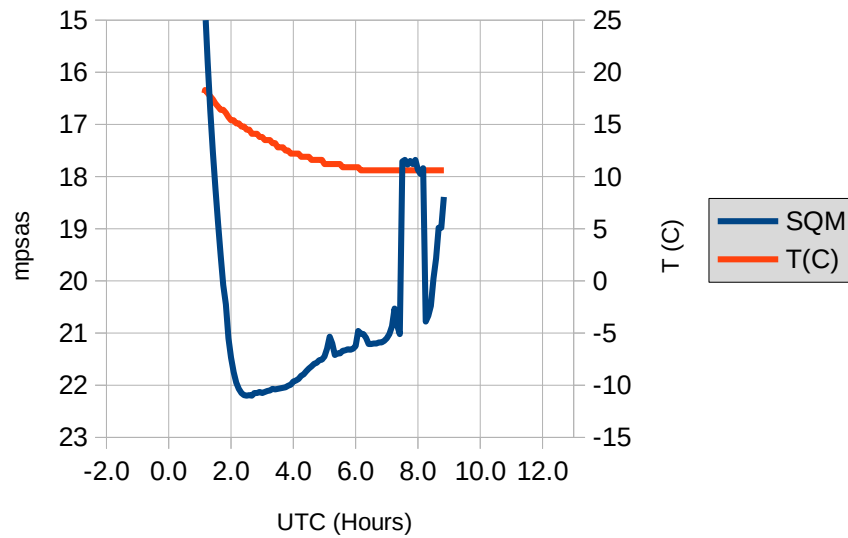
0830UT Hankscope: still too long - shortened to 150s.

0744UT start of astronomical twilight.

0833UT start of nautical twilight.

0949UT sunrise.

SQM 2021-07-31



2021-08-03 (#085)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI120MC camera, QSI583ws, Pegasus Astro Ultimate Power Box v2, all on Titan/Gemini, all being powered by a newly wired/repurposed 12V 15A power supply.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0028UT sunset

0035UT Hankscope: started ffs_iOptron.pl to shoot V, B, and CV flats, scope pointed manually very roughly at azimuth 90, altitude 85. First actual flat shot at 0050UT when the sun was xdeg below the horizon.

Scale factor on the flats is too small - flat signal levels are quickly decreasing. And with 12 flats per filter it is taking too long - B flats are starting at 5s, (and signal levels are decreasing as well.)

Failed to refocus, in fact I'm just depending on the focus having remained correct from the last night observing.

Action: measure and update the time to download 1x1 and 2x2 binned images.

Hankscope: made and installed new little pointers from AI flashing for the CWD position and redid the determination of the correct CWD position. It should now put the target star easily in the field of the guidescope.

0143UT end of nautical twilight

0152UT started CCDC action 2021-08-03.act.

Group	Stars	Exposures	Binning	Guided
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N

Group	Stars	Exposures	Binning	Guided
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+345928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
TCP_J20210770+2914093		75s B 30s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N

0226UT Hankscope: started a series of 40s V and 50s B exposures on new Nova Vulpeculae 2021 = TCP_J20210770+2914093; 40s V is too long, shortened it to 20s, still too long, shortened to 15s. B lengthened slightly to 60s. This is a very red target.

0230UT end of astronomical twilight

0350UT Hankscope: Focus is getting better and better (last V image at 1.97px FWHM) and pushing pixel values up over 50kADU so defocused slightly. Still gives good SNR but max pixel value about 15kADU.

0440UT Hankscope: started a series of 5 each 100s V and 150s B images of NGC6940 to determine transformation coefficients.



0500UT Maxim is refusing to continue with the NGC6940 sequence. It completed the first exposure then sits and says waiting. In fact if I start any sequence it says waiting and never takes any exposures. Single exposures work fine. Turned off the camera and restarted it. Closed Maxim and restarted it. No luck. Shot 3 each of the 100s V and 150s B exposures one at a time of NGC6940.

It is clear that the B and V filters are not perfectly parfocal.

0518UT moonrise

Action: do a mount model for the Hankscope.

Action: it appears the polar alignment from the other night was not successful - there is still field rotation over the period of several images.

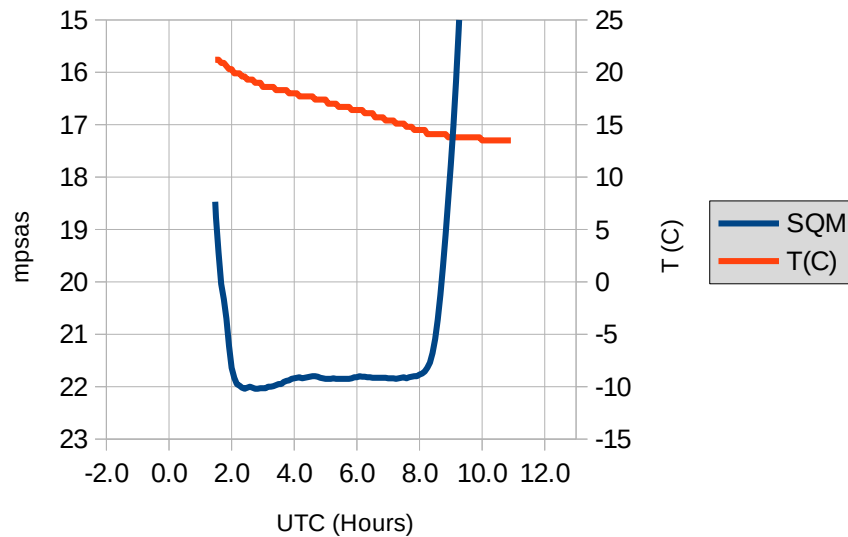
~ 0545UT Hankscope: rotated the camera $\sim 90^\circ$, changed to no filter and did a fairly careful manual refocus then started a series of 300s unfiltered exposures of M33; autoguided with PHD2, 1s exposures, multi-star guiding. First image looks very nice. Will have to do colour tomorrow night with the Canon 60Da. So why is this sequence working when the other didn't?

0750UT start of astronomical twilight.

0838UT start of nautical twilight.

0953UT sunrise.

SQM 2021-08-03



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
AM CVn	100s CV	2x2	N
V0627 Peg	10s CV	2x2	N
V0377 Boo	200s CV	2x2	N
V0467 Dra	150s CV	2x2	N

2021-08-05 (#086)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI120MC camera, QSI583ws, Pegasus Astro Ultimate Power Box v2, all on Titan/Gemini, all being powered by a newly wired/repurposed 12V 15A power supply.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is very murky with smoke from NW Ontario forest fires.

Action: do a mount model for the Hankscope.

Action: measure and update the time to download 1x1 and 2x2 binned images.

Action: run PHD2 guide assist to see what settings can be improved.

0025UT sunset

0130UT started CCDC action 2021-08-05.act.

Group	Stars	Exposures	Binning	Guided
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+345928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
TCP_J20210770+2914093		75s B 30s V	1x1	N
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N

0139UT end of nautical twilight

0226UT end of astronomical twilight

Started trying to do a mount model on the Titan/Gemini. After the first sync on Deneb I switched the Gemini to accept new syncs as additional aligns. Then I manually slewed to several locations taking a 20s pointing image, solved, synced. After about 4 of these I seemed to lose control via VNC. I am now unable to connect via VNC so had to go out to the scope.

Titan causing problems, suddenly it thinks it's pointing at -46 dec, I manually slewed to Jupiter and synced the mount but it immediately synced itself back to -51 dec. I disconnected all software, turned off the mount and did a cold restart. Then I did a sync on Jupiter (at which the scope was already pointed.) However, that seemed to get the mount confused as it then seemed to have Dec backwards S vs N. Turned off, moved it to CWD, cold start, told it to slew to Deneb but it started putting the scope on the east side of the pier in spite of Deneb being well east of meridian. So i immediately interrupted that with a push on one of the slew buttons. Then manually slewed to Deneb and synced. Things seemed to be fine then.

0345UT Hankscope: started a sequence of 200s V and 300s B images of V0547 Lac; autoguided with PHD2 at 2s exposures.

Restarted the TigerVNC server (service always says 'the file does not exist' error (2) without telling me which file is missing) and still I cannot connect to Lakeside.

0405UT Naked eye limiting mag about 4.5 - zeta Lyr barely visible. Jupiter is a bright red and Saturn is actually difficult to see, frequently requiring averted vision.

0638UT moonrise

0724UT Hankscope: Switched to the Canon 60Da to get some colour images of M33, started a series of 300s exposures at ISO800; autoguided with 2s exposures in PHD2. Battery died so I only got 8 of intended 20 images (which would have extended well into twilight in any case.)



0744UT Boltwood: installed QHY178 colour camera to see if the seeing is good enough to shoot jupiter but it isn't. So I switched back to the ST2K and resumed CCD action 2021-08-05.act

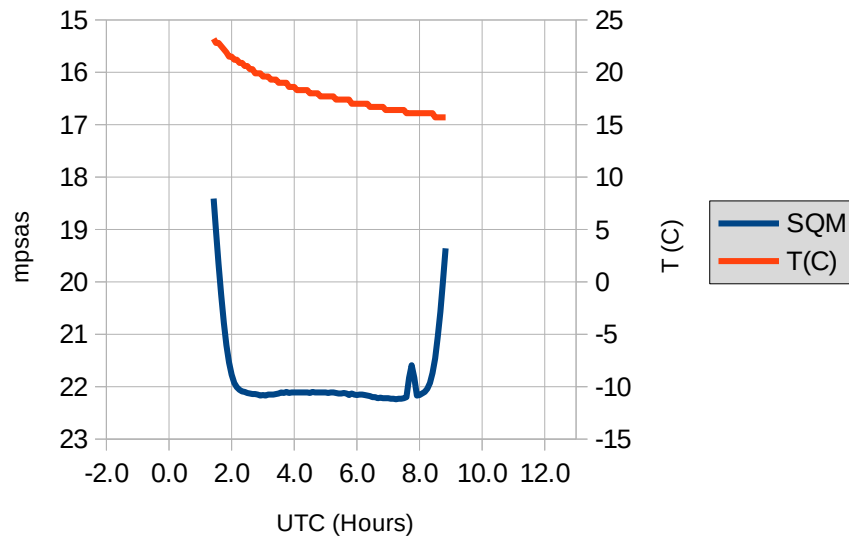
0754UT start of astronomical twilight.

0817UT Hankscope: started a series of 120s exposures at ISO1600 of M31, hopefully to include M31V1; autoguided with 2s exposures in PHD2. In spite of being in astronomical twilight the images look pretty good.

0841UT start of nautical twilight.

0955UT sunrise.

SQM 2021-08-05



2021-08-06 (#087)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI120MC camera, QSI583ws, Pegasus Astro Ultimate Power Box v2, all on Titan/Gemini, all being powered by a newly wired/repurposed 12V 15A power supply.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is still murky with smoke from NW Ontario forest fires but much improved over the last couple of nights, especially the 4th when I didn't even open up.

Action: do a mount model for the Hankscope.

Action: measure and update the time to download 1x1 and 2x2 binned QSI583 images.

Action: run PHD2 guide assist to see what settings can be improved.

0024UT sunset

0138UT end of nautical twilight

0148UT started CCDC action 2021-08-06.act.

Group	Stars	Exposures	Binning	Guided
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+345928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	MW Lyr	300s V	1x1	N
TCP_J20210770+2914093	V0606 Vul	75s B 30s V	1x1	N
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N

0224UT end of astronomical twilight

0259UT Hankscope: started a series of 300s V exposures of V0627 Peg; autoguided with 2s exposures in PHD2.

0400UT Hankscope: messed about with Saturn to see if I can image many of the moons. Turns out that no I can't - the glare from the planet and rings completely washes out the inner moons. Hyperion, titan, Rhea were all easy but no others were seen.

0417UT Hankscope: started a series of cropped 20s V and 100s B exposures of SW And; autoguided with 2s exposures in PHD2. Remember that these are cropped so stars near the edge of the frame are not near the edge of the chip.

0731UT moonrise

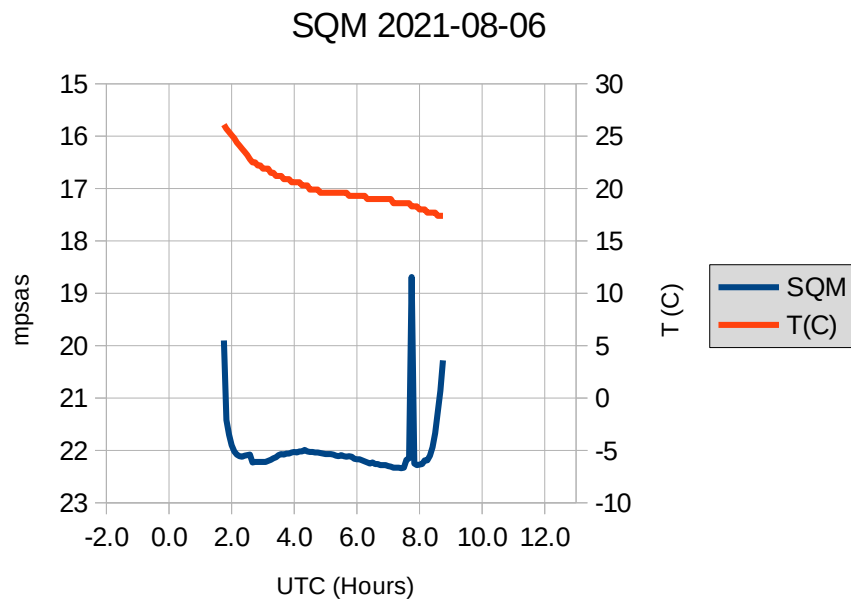
0745UT Boltwood: shot some videos of Jupiter, plus one of one of the Galilean moons (the one closest to the east of the planet) to show the poor seeing. QHY178 camera, Televue 2X barlow. Seeing is quite poor, however, on at least the first video of the disk it looks to be better than a few nights ago. I am even trying running the system with VNC from the office in case my absence from the obsy makes for slightly better seeing. 2.426ms exposure, gain 38, 9.89 FPS with VNC running. Debayering off for the recording, on for preview. 240s and 120s videos.

0756UT start of astronomical twilight.

0810UT Hankscope: halved the exposures on SW And as it is getting into saturation, then dropped B to 30s. FWHM getting below 2px and 2".

Scope has suddenly slewed off (approximately) to Saturn for no reason. While messing with the SW And exposures Maxim did come up with an error message about being unable to start slew to some position, probably Saturn. This time it succeeded. I really need to dump Maxim. Or is the turquoise computer just too underpowered?

0842UT start of nautical twilight.
 0956UT sunrise.



2021-08-07 (#088)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hanscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI120MC camera, QSI583ws, Pegasus Astro Ultimate Power Box v2, all on Titan/Gemini, all being powered by a newly wired/repurposed 12V 15A power supply.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is murky with smoke from NW Ontario forest fires.

Action: measure and update the time to download 1x1 and 2x2 binned QSI583 images.

Action: run PHD2 guide assist to see what settings can be improved.

0023UT sunset

0138UT end of nautical twilight

0216UT started CCDC action 2021-08-07.act.

Group	Stars	Exposures	Binning	Guided
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+345928.7	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
TCP_J20210770+2914093	V0606 Vul	75s B 30s V	1x1	N
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N

0222UT end of astronomical twilight

0227UT Hankscope: started a series of 60s V and 120s B exposures of BH Peg; autoguided with 1s exposures in PHD2.

0250UT an area of cloud is moving in and it looks like it will be at least on and off cloud through most of the rest of the night. Shutting down both scopes.

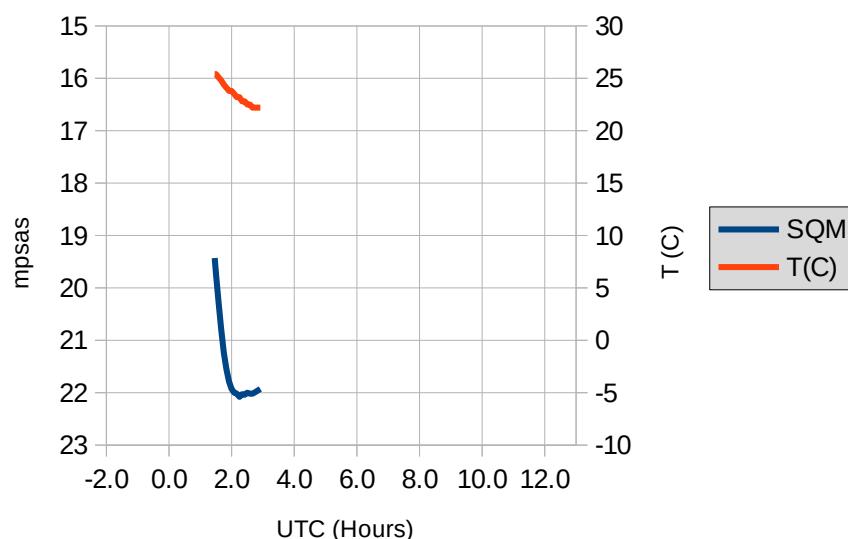
0758UT start of astronomical twilight.

0833UT moonrise

0844UT start of nautical twilight.

0957UT sunrise.

SQM 2021-08-07



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
AM CVn	100s CV	2x2	N
V0377 Boo	200s CV	2x2	N
V0467 Dra	150s CV	2x2	N

2021-08-10 (#089)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hanscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI120MC camera, QSI583ws, Pegasus Astro Ultimate Power Box v2, all on Titan/Gemini, all being powered by a newly wired/repurposed 12V 15A power supply.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Action: measure and update the time to download 1x1 and 2x2 binned QSI583 images.

Action: run PHD2 guide assist to see what settings can be improved.

0018UT sunset

0125UT moonset.

0131UT end of nautical twilight

0142UT started CCDC action 2021-08-10.act.

Group	Stars	Exposures	Binning	Guided
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	ROTSE1_J162721.01+34 5928.7	300s V	1x1	N
Barnard's Star		10 x 15s V	1x1	N
Hercules 17.4h RRLs				
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	100s B 50s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N

0215UT end of astronomical twilight

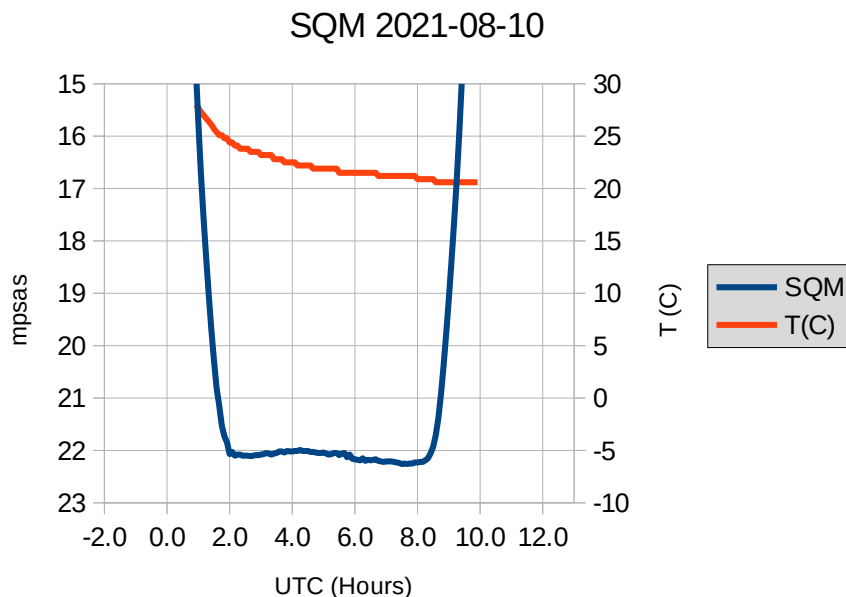
0240UT Hankscope: started a series of 60s V and 120s B exposures of BH Peg; autoguided on multiple stars with 2s exposures in PHD2.

Having a lot of trouble with Maxim - refuses to acknowledge or properly read the mount position, will not sync the mount because it thinks it is slewing when it is not. Finally disconnected it from the mount, used ECU to move to a nearby star then sync and on to BH Peg with good pointing results (I had to determine that manually by comparing the image with ECU.) Then started the sequence.

0621UT Hankscope: started a series of 300s V B exposures of TY Ari; autoguided on single star with 2s exposures in PHD2.

0803UT start of astronomical twilight.

0848UT start of nautical twilight.
 1001UT sunrise.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
V0627 Peg	300s CV	2x2	N
V0377 Boo	200s CV	2x2	N
V0467 Dra	150s CV	2x2	N

2021-08-13 (#090)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0014UT sunset

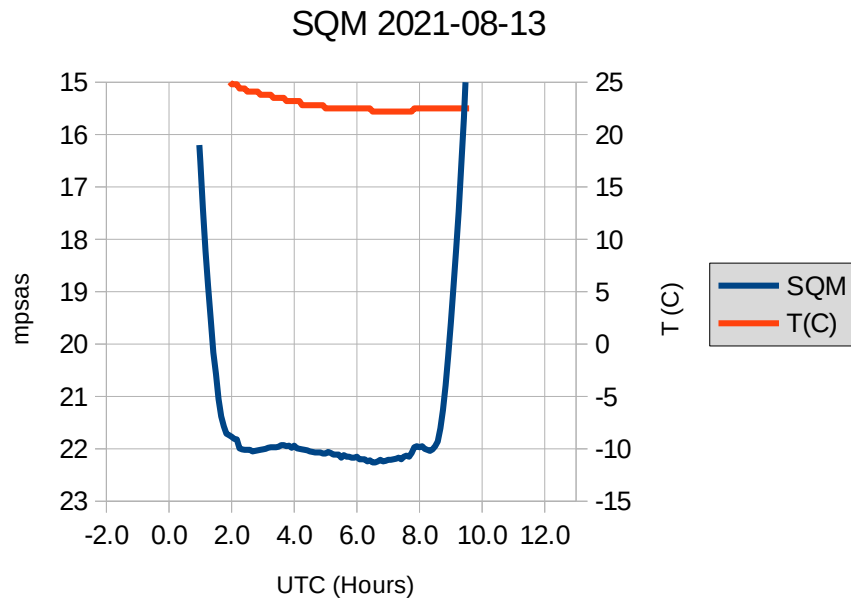
0125UT end of nautical twilight

0128UT started CCDC action 2021-08-10.act.

Group	Stars	Exposures	Binning	Guided
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Barnard's Star		10 x 15s V	1x1	N
Hercules 17.4h RRLs				
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	100s B 50s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N

0209UT end of astronomical twilight
 0236UT moonset.
 0809UT start of astronomical twilight.
 0853UT start of nautical twilight.
 1004UT sunrise.



2021-08-15 (#091)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C. Dessicant cooked yesterday (2021-08-14) afternoon @ 350F for ~4hrs.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI120MC camera, QSI583 & Canon 60Da, Pegasus Astro Ultimate Power Box v2, all on Titan/Gemini, all being powered by 12V 15A power supply; newly installed RoboFocus motor on the focuser so I should be able to remote focus.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0011UT sunset

0100UT shot a short sequence of 200s B and V exposures of M13; autoguided with 0.5s exposures binned 2x2.

0115UT started CCDC action 2021-08-15.act.

Group	Stars	Exposures	Binning	Guided
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Hercules 17.4h RRLs				
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	100s B 50s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N

0122UT end of nautical twilight

0205UT end of astronomical twilight

0255UT Hankscope: did a manual refocus to get stars about 3px FWHM: posn 20794.

0259UT Hankscope: started a sequence of 60s V and 120s B exposures of BH Peg; multi-star autoguided with 2s exposures in PHD2.

0307UT Hankscope: V images are saturating so reduced BH Peg exposures to 30s V and 60s B; multi-star autoguided with 2s exposures in PHD2.

Action: measure the step length of the focuser with the RoboFocus motor.

Action: measure and input the filter offsets. (B filter shows 5.6px/FWHM vs 2.8 for V.)

0326UT moonset.

0649UT Hankscope: refocused for unfiltered: posn 20300. Started a sequence of 200s, 100s unfiltered exposures of M31; multi-star autoguided with 2s exposures in PHD2.



0715UT shot several videos of Jupiter, QHY178 colour camera, Televue 2X barlow.

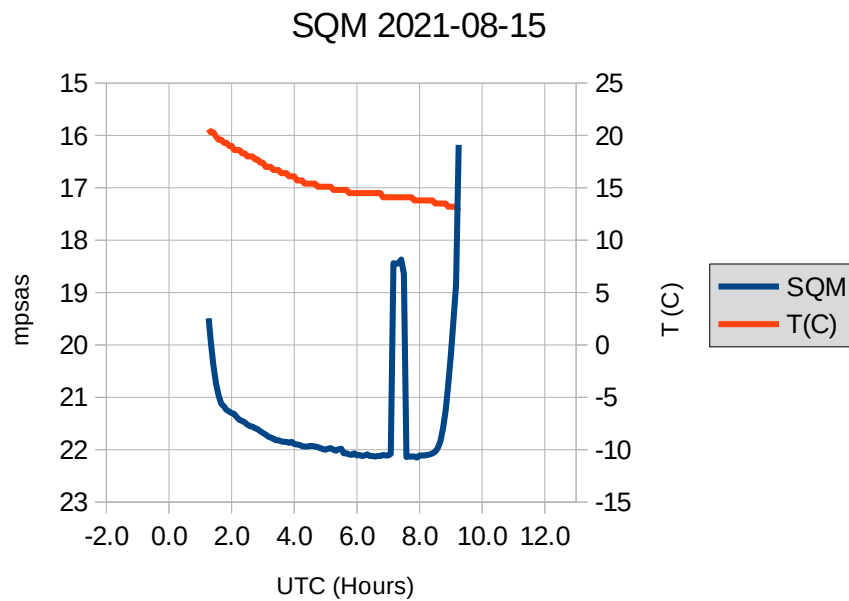
0735UT resumed CCDC action 2021-08-15.act.

0750UT Hankscope: started a sequence of 10ss V and 150s B images of CD Ari; multi-star autoguided with 2s exposures in PHD2.

0813UT start of astronomical twilight.



0856UT start of nautical twilight.
1006UT sunrise.



2021-08-16 (#092)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hanscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI120MC camera, QSI583 & Canon 60Da, Pegasus Astro Ultimate Power Box v2, all on Titan/Gemini, all being powered by 12V 15A power supply; newly installed RoboFocus motor on the focuser so I should be able to remote focus.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

0009UT sunset

0100UT shot a short sequence of 200s B and V exposures of M13; autoguided with 0.5s exposures binned 2x2.

0116UT started CCDC action 2021-08-16.act.

Group	Stars	Exposures	Binning	Guided
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	300s V	1x1	N
Hercules 17.4h RRLs				
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	100s B 50s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N

0120UT end of nautical twilight

0137UT Hankscope: moved focuser to 20300, started 6 x 200s unfiltered exposures of M16; multi-star autoguided with 2s exposures in PHD2.



0202UT end of astronomical twilight

0215UT Hankscope: started 6 x 200s unfiltered exposures of M72; multi-star autoguided with 2s exposures in PHD2.



0250UT Hankscope: started 10 x 60s unfiltered exposures of (2) Pallas with 105s pause between images to allow it to move; multi-star autoguided with 2s exposures in PHD2. Position does not match with either Stellarium (7arcmin to NNE) or ECU (10arcmin NW) predictions.

~~Action: adjust the pause between exposures to roughly give a 5min cadence over 1/2 hr (assuming 21s download time, 60s exposure, gives 219s pause.) Change to 7 exposures for ~ 1/2hr total duration.~~



0329UT Hankscope: move focuser to 20794, started a sequence of 10s V and 50s B exposures of SW And, subframes to only include the most likely comp stars; multi-star autoguided with 2s exposures in PHD2.

0357UT moonset.

0810UT Hankscope: started a series of 30s and 200s V exposures of M42. Twilight will rapidly become a problem so cancelled the rest of the 200s exposures and shot 10 x 30s V exposures; autoguided with 2s exposures in PHD2.



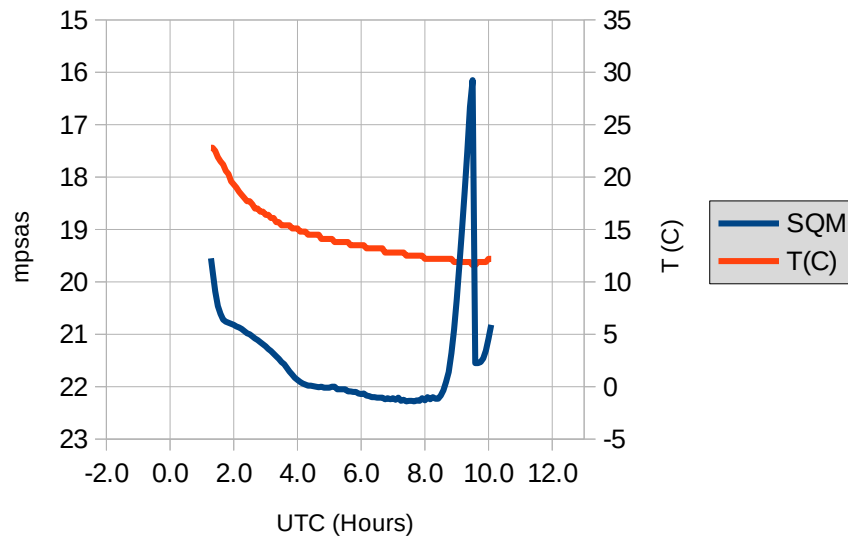
0815UT start of astronomical twilight.

0825UT started a sequence of 9 x 400s V images of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim. Guiding is very poor with long slow oscillations of $\sim\pm 3$ px in RA. So gave up and restarted CCDC action 2021-08-16.act.

0857UT start of nautical twilight.

1008UT sunrise.

SQM 2021-08-16



2021-08-21 (#093)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is terribly murky, nearly full moon, very humid. LVM about 2.

0001UT sunset

0110UT end of nautical twilight

0151UT end of astronomical twilight

0224UT started CCDC action 2021-08-21.act.

Group	Stars	Exposures	Binning	Guided
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	100s B 50s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N

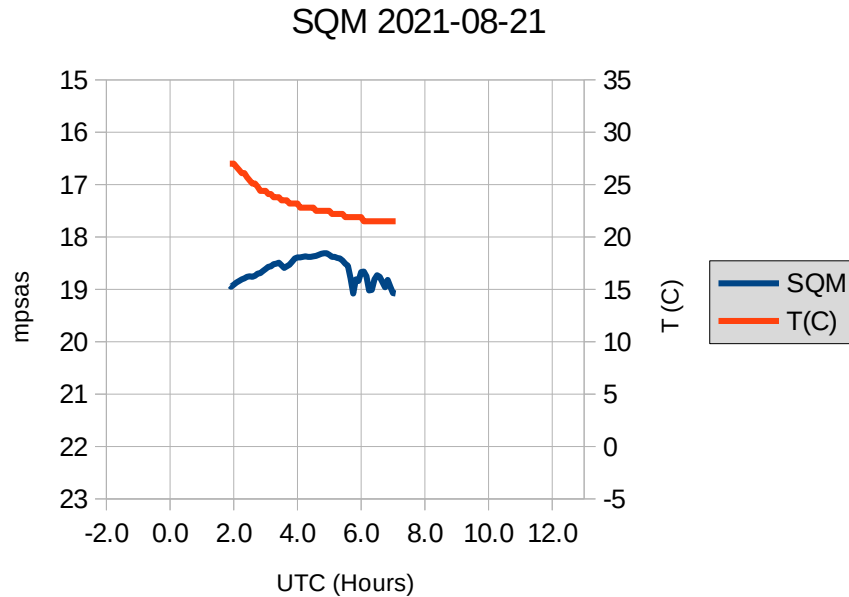
0705UT awoke to find it cloudy out, shutting down.

0823UT start of astronomical twilight.

0848UT moonset.

0904UT start of nautical twilight.

1013UT sunrise.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
GRB1069551	200s CV	2x2	N
V0377 Boo	200s CV	2x2	N

Stars	Exposures	Binning	Guided
V0467 Dra	150s CV	2x2	N
ASASSN-V J194144.71+273717.5	100s CV	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
ASASSN-V J195903.89+504639.4	100s CV	2x2	N
V1535 Her	120s Lum	2x2	N
V2367 Cyg	100s CV	2x2	N

2021-08-23 (#094)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is somewhat hazy but clear once the patchy cloud moved out about 02UT, full moon, very humid.

2358UT sunset

0039UT moonrise

0106UT end of nautical twilight

0123UT camera is unable to reach -10C at the moment due to the very high ambient temperature.

Started a sequence of 200s B and V images of M13; autoguided with 1s exposures binned 2x2.

0135UT paused the sequence on M13 to do a rough refocus, reduced FWHM to about 2.4px. Restarted the M13 sequence.

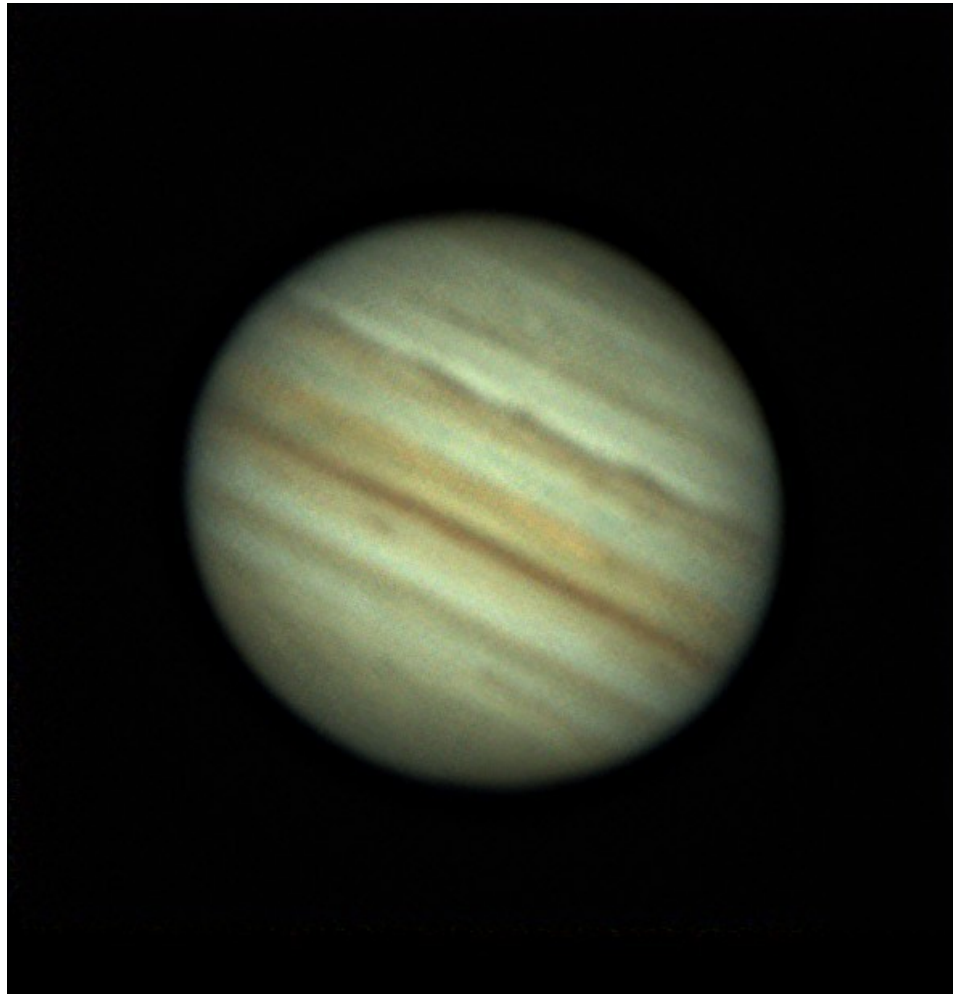
0147UT end of astronomical twilight

0216UT started CCDC action 2021-08-23.act.

Group	Stars	Exposures	Binning	Guided
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 200s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			

Group	Stars	Exposures	Binning	Guided
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N

0615UT shot several videos of Jupiter, QHY178 colour camera, Televue 2X barlow.



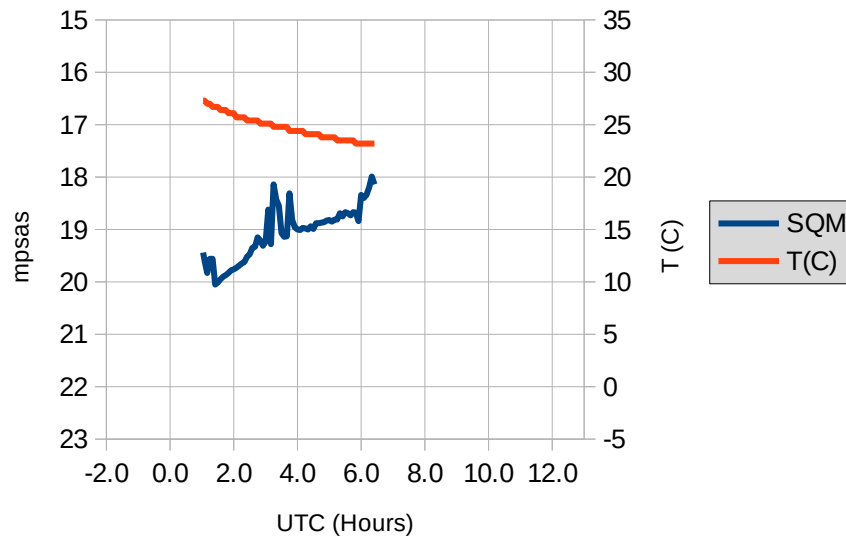
Cloud moved in as I was completing these videos so shut down the observatory.

0827UT start of astronomical twilight.

0907UT start of nautical twilight.

1016UT sunrise.

SQM 2021-08-23



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
NSVS10743622	400s Lum	2x2	N
GRB1069551	200s CV	2x2	N
V0377 Boo	200s CV	2x2	N
V0467 Dra	150s CV	2x2	N
ASASSN-V J194144.71+273717.5	100s CV	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
ASASSN-V J195903.89+504639.4	100s CV	2x2	N
V1535 Her	120s Lum	2x2	N
V2367 Cyg	100s CV	2x2	N
TYC3224-2602	60s Lum	2x2	N
V0547 Lac	150s Lum	2x2	N
ROTSE1-J232708.22+371216.9	200s CV	2x2	N
V0839 Lac	150s Lum	2x2	N

2021-08-25 (#095)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QHY183 with CVRGB filters, Pegasus Astro Ultimate Power Box v2, all on Titan/Gemini, all being powered by 12V 15A power supply.

Sky is quite murky and there is patchy thin cirrus mainly off to the east.

2355UT sunset

0050UT started CCD action 2021-08-25.act.

Group	Stars	Exposures	Binning	Guided
Hercules 17.4h RRLs				
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 200s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N

0102UT end of nautical twilight

0124UT moonrise

0142UT end of astronomical twilight

0213UT Hankscope: It took a lot longer to get the scope up and running than I expected (what with being delayed by a RASC Kingston exec meeting, then having to focus the guidescope with the new camera on it, reshoot the darks library for the new guide camera, recalibrate the guiding, get the QHY183 camera focused...) Camera without any extension tube focused at approx 38120 but I eventually focused it out another 30 steps to get slightly broader PSF. Started a long series of 40s unfiltered 2x2 binned exposures of WASP-10b which has a predicted exoplanet transit - almost perfectly centred in the Lakeside sky; autoguided with 1s exposures in PHD2. S/N is terrible ~90, almost certainly won't see any transit.

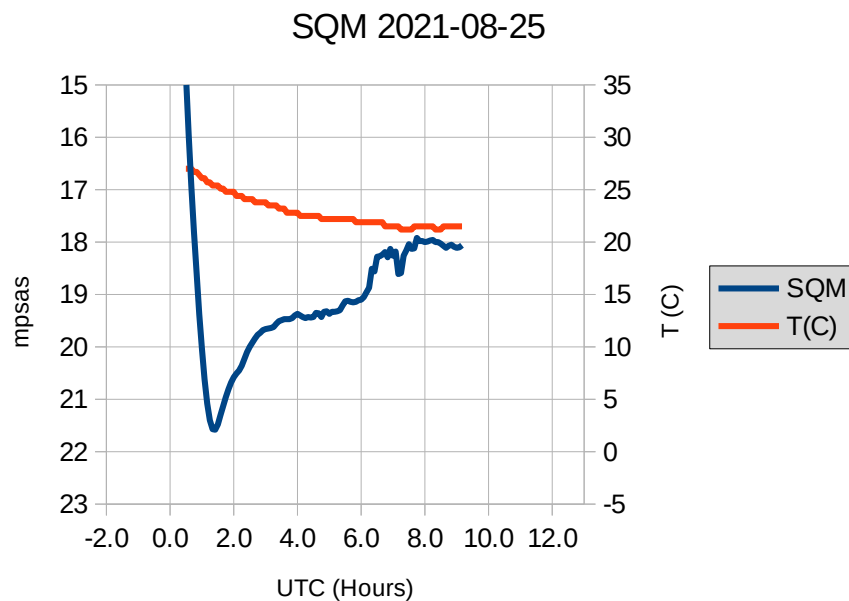
0629UT Hankscope: started a sequence of 20s CV images of CD Ari; single-star autoguided with 2s exposures in PHD2.

Maxim once again f'ed up, slewed to somewhere well west of the meridian (which the Titan allowed because I still haven't set my RA safety limits) until either the mount hit its default safety limit or the scope hit the pier. In either case it set off an alarm. Fortunately the clutch was set very light so no damage was done.

0830UT start of astronomical twilight.

0910UT start of nautical twilight.

1018UT sunrise.



2021-08-27 (#096)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Temps are once again very high - 28C at 10PM and the camera is unable to reach -10.

2351UT sunset

0058UT end of nautical twilight

0203UT moonrise

0138UT end of astronomical twilight

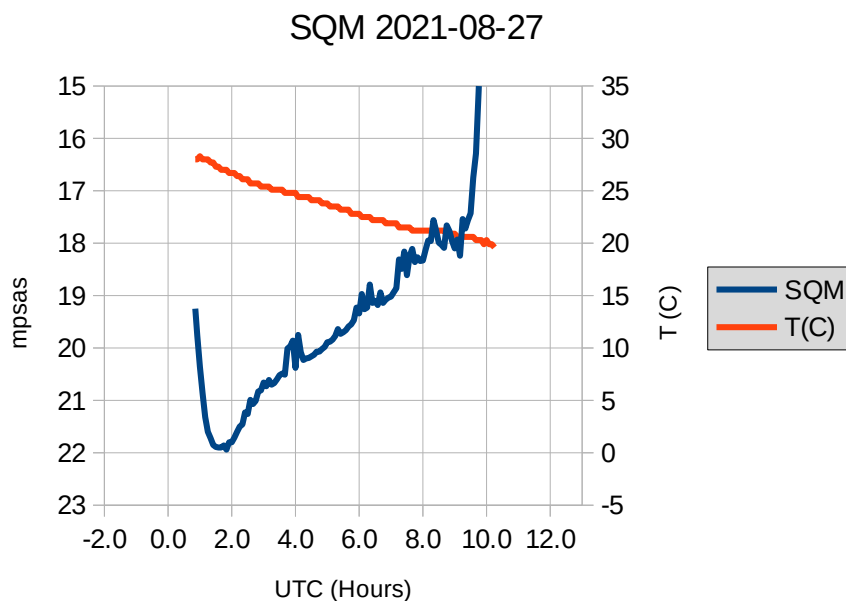
0205UT camera has reached -9.4 @ 100% but CCDC seems willing to make a go of it so started CCDC action 2021-08-27.act.

Group	Stars	Exposures	Binning	Guided
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 200s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N

0834UT start of astronomical twilight.

0913UT start of nautical twilight.

1020UT sunrise.



2021-08-30

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QHY183 with CVRGB filters, Pegasus Astro Ultimate Power Box v2, sitting on the floor in the office, all being powered by 12V 5A power supply.

1407UT (27th) Hankscope: started a series of 25 each 2x2 binned 130ms CV, 700ms TR, 400ms TG, and 600ms TB flats. These are shot with a sheet of frosted plastic over the aperture of the telescope pointed at the ceiling and just using daylight as the light source.

2021-08-31 (#097)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QHY183 with CVRGB filters, Pegasus Astro Ultimate Power Box v2, sitting on the floor in the office, all being powered by 12V 5A power supply.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is quite good.

2344UT sunset

0024UT started CCDC action 2021-08-31.act.

Group	Stars	Exposures	Binning	Guided
Hercules 17.4h RRLs				

Group	Stars	Exposures	Binning	Guided
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 200s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N

0050UT end of nautical twilight

0129UT end of astronomical twilight

0240UT Hankscope: started a series of 25 each 2x2 binned bias frames, 20s darks, 40s darks. Then shot 10 each 100s and 200s darks. These latter are to see if they give different results as scaled darks than do the exposure-matched darks.

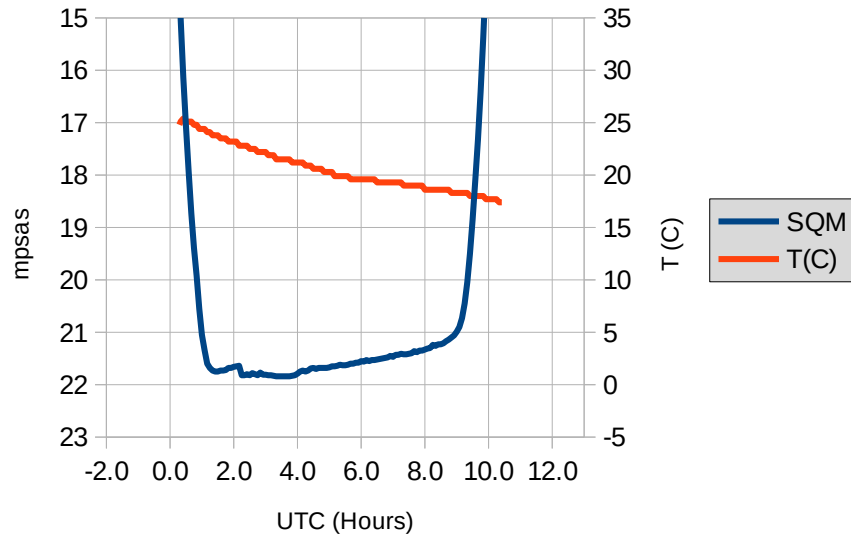
0349UT moonrise

0840UT start of astronomical twilight.

0919UT start of nautical twilight.

1025UT sunrise.

SQM 2021-08-31



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
V0377 Boo	200s CV	2x2	N
V0467 Dra	150s CV	2x2	N
ASASSN-V J194144.71+273717.5	100s CV	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
ASASSN-V J195903.89+504639.4	100s CV	2x2	N
V1535 Her	120s Lum	2x2	N
V2367 Cyg	100s CV	2x2	N
TYC3224-2602	60s Lum	2x2	N
V0547 Lac	150s Lum	2x2	N
ROTSE1-J232708.22+371216.9	200s CV	2x2	N
V0839 Lac	150s Lum	2x2	N

2021-09-02 (#098)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hanscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QHY183 with CVRGB filters, Pegasus Astro Ultimate Power Box v2, sitting on the floor in the office, all being powered by 12V 5A power supply.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is very good for the first time in weeks.

2340UT sunset

0018UT started CCDC action 2021-08-31.act.

Group	Stars	Exposures	Binning	Guided
Hercules 17.4h RRLs				
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 200s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N

0046UT end of nautical twilight

0125UT end of astronomical twilight

0240UT Hankscope: started a series of bias and darks but failed to hang around to 'cover the aperture' to be able to shoot either so got no images.

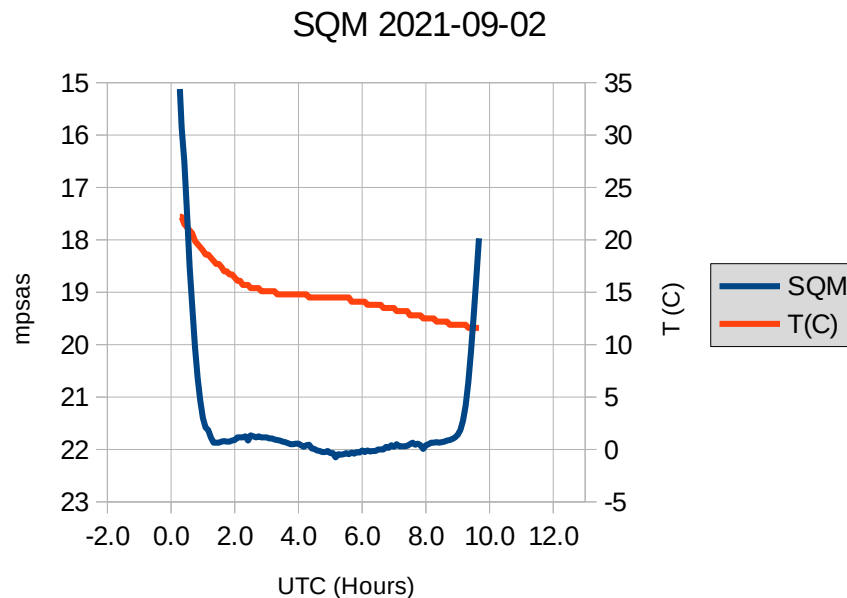
0617UT moonrise

0845UT start of astronomical twilight.

0923UT start of nautical twilight.

1029UT sunrise.

1818UT Hankscope: started a series of 25 each 1x1 500ms CV, 2500ms TR, 1700ms TG, and 2500ms TB flats. These are shot with a sheet of frosted plastic over the aperture of the telescope pointed at the ceiling and just using daylight as the light source.



2021-09-03

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QHY183 with CVRGB filters, Pegasus Astro Ultimate Power Box v2, sitting on the floor in the office, all being powered by 12V 5A power supply.

0136UT started a series of 1x1 unbinned bias, 20s, 40s, 100s, 200s, 400s darks.

1407UT (27th) Hankscope: started a series of 25 each 2x2 binned 130ms CV, 700ms TR, 400ms TG, and 600ms TB flats. These are shot with a sheet of frosted plastic over the aperture of the telescope pointed at the ceiling and just using daylight as the light source.

2021-09-04 (#099)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, Canon 60Da, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Installed an Ha filter in the QHY183 camera. However this evening on the telescope the camera would not connect: when power is applied the camera starts normally, filter wheel rotates twice, the LED flashes various colours then turns green and then, after a few seconds, goes out. Maxim refuses to connect. Removed the camera and installed the Canon 60Da.

Sky is very good.

2337UT sunset

0018UT started CCDC action 2021-08-31.act.

Group	Stars	Exposures	Binning	Guided
Hercules 17.4h RRLs				
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N

0042UT end of nautical twilight

0046UT Hankscope: focused the camera and then started a series of 300s exposures of M27; multi-star autoguided with 0.5s exposures in PHD2.

0120UT end of astronomical twilight

0155UT Hankscope: focused the camera on a nearby star (though rather badly it appears - turbulence made the focus rather indefinite) and then started a series of 300s exposures of M27; multi-star autoguided with 0.5s exposures in PHD2. As these are only intended for the colour channel hopefully the defocus won't detract too much from the result.

0220UT stopped the CCDC action. Did a careful focus with no filter. Started a series of 400s unfiltered exposures of M27; autoguided with 1s exposures binned 2x2, internal guide chip in Maxim. Maxim seems to be causing problems again - reports slewing telescope in the Camera Control Expose tab time window when an autosave sequence is halted; several exposures experienced bad tracking errors, several were blank - probably the old shutter closing shortly into an exposure.

0313UT Hankscope: started a series of 300s exposures of NGC7293, the Helix Nebula; multi-star autoguided with 0.5s exposures in PHD2.



0436UT moved the focuser out 28 steps and resumed the CCDC action with the 21h Cygnus variables.
0455UT Hankscope: rotated the camera 90deg, refocused (unable to get a good focus - BackyardEOS showing bad values for HFD, adjusting focus seems to have little effect on the star size; started a series of 300s exposures on M33; multi-star autoguided with 0.5s exposures in PHD2.

0722UT moonrise

0731UT started a sequence of 400s unfiltered exposures of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.



0807UT Hankscope: started a series of 300s exposures of Abell426 galaxy cluster, centred roughly on NGC1272;; multi-star autoguided with 0.5s exposures in PHD2.

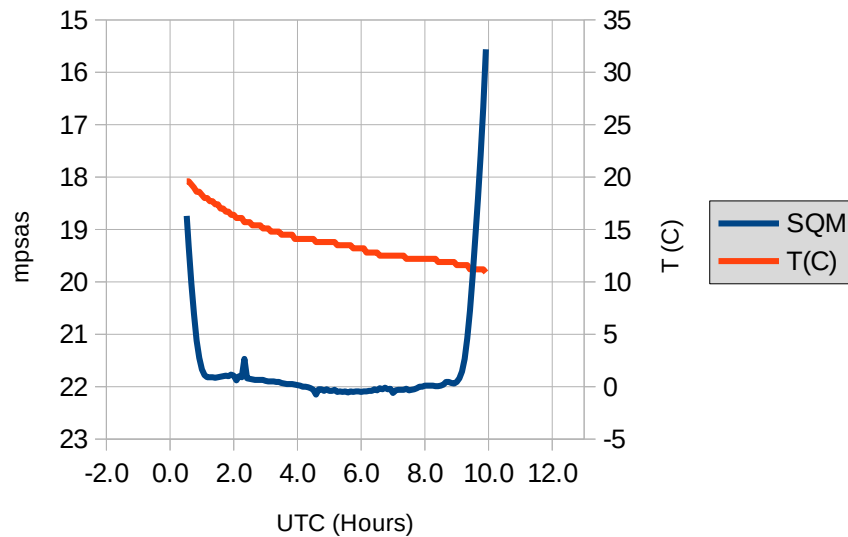
0846UT start of astronomical twilight.

0924UT start of nautical twilight.

1000UT shutting down.

1030UT sunrise.

SQM 2021-09-04



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
V0467 Dra	150s CV	2x2	N
ASASSN-V J194144.71+273717.5	100s CV	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
ASASSN-V J195903.89+504639.4	100s CV	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N
V1535 Her	120s Lum	2x2	N
V2367 Cyg	100s CV	2x2	N
TYC3224-2602	60s Lum	2x2	N
V0547 Lac	150s Lum	2x2	N
ROTSE1-J232708.22+371216.9	200s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
V0839 Lac	150s Lum	2x2	N

2021-09-07 (#100)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

It has cleared off a little into the evening so am getting started later than ideal but the sky looks very good.

2331UT sunset

0017UT moonset

0036UT end of nautical twilight

0113UT end of astronomical twilight

0234UT started CCDC action 2021-09-07.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 200s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg?			
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N

0815UT started a sequence of 400s unfiltered exposures of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

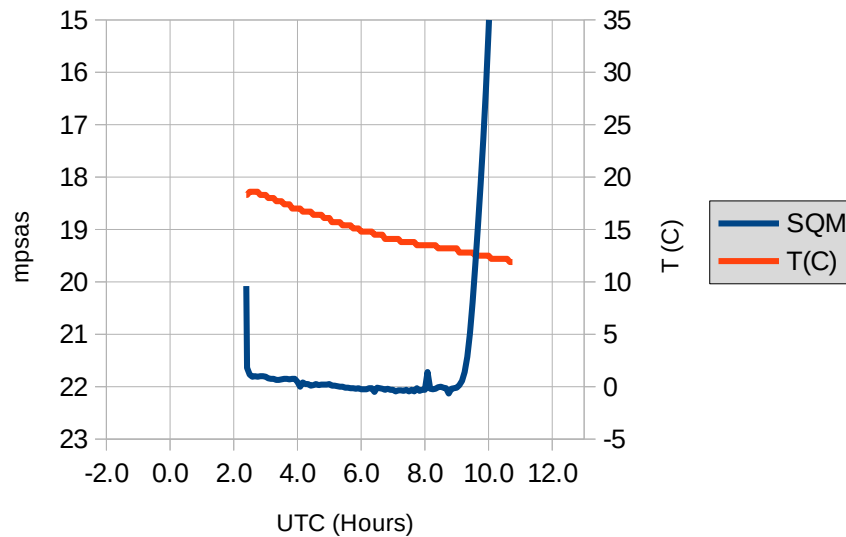
0851UT start of astronomical twilight.

0928UT start of nautical twilight.

At shutdown the dec worm started screeching briefly and then seized. Had to push it into the park position.

1033UT sunrise.

SQM 2021-09-07



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J194144.71+273717.5	100s CV	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
ASASSN-V J195903.89+504639.4	100s CV	2x2	N
V0605 Her	400s Lum	2x2	N
V1083 Her	400s Lum	2x2	N
V1204 Her	400s Lum	2x2	N
V1535 Her	120s Lum	2x2	N
V2367 Cyg	100s CV	2x2	N
TYC3224-2602	60s Lum	2x2	N
V0547 Lac	150s Lum	2x2	N
ROTSE1-J232708.22+371216.9	200s CV	2x2	N
NSVS10743622	400s Lum	2x2	N
V0839 Lac	150s Lum	2x2	N

2021-09-09 (#101)

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QHY183 with Astrodon LRGB filters at -10C, Pegasus Astro Ultimate Power Box v2. QHY183 is oriented with filter wheel motor at the bottom/south which puts it in portrait orientation, top edge of images in Maxim is east, right edge is north. So camera should be installed with filter wheel motor at the top/north for images to appear north-up in Maxim.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is very good.

2328UT sunset

Attempting to start the Boltwood this evening and the dec worm is still seized and goes into blinky mode immediately. Pushed the scope back into the park position and turned everything off.

Action: regrease the Boltwood dec gear.

0032UT end of nautical twilight

0040UT moonset

0109UT end of astronomical twilight

Having a lot of trouble getting the Hankscope aligned on the sky:

- it is too hard to reach the 6x30 finder
- the 6x30 finder reticle is not illuminated
- the 6x30 finder does not stay aligned to the scope
- the CWD pointers are not quite correct
- pointing is not accurate enough

Action: remove the 6x30 finder and replace with red dot finder on new electronics platform.

Action: adjust CWD pointers.

Action: do a mount model.

0215UT did a series of test exposures to try to find best option for imaging SW And. TR images seem to have very poor S/N for the signal, TG was acceptable.

0227UT started a series of 50s TG exposures of SW And; autoguided with 0.5s exposure in PHD2.

0239UT adjusted the focus outwards some 40 steps to try to reduce the peak signal in the 8.9 comp star and shortened the exposure to 30s.

0251UT started a series of 20s CV exposures of minor planet (40) Harmonia with 38s pauses between exposures to extend the trailing without getting in to too many exposures; autoguided with 0.5s exposure in PHD2. Asteroid shows very little trailing in the final stacked image but it is enough.

0328UT started a series of 30s CV exposures of minor planet (25) Phocaea with 88s pauses between exposures; autoguided with 0.5s exposure in PHD2.

0422UT started a series of 300s Lum exposures of 67P/Churyumov-Gerasimenko; autoguided with 2s exposures in PHD2.

0452UT started a series of 30s unbinned Lum exposures of CD Ari; autoguided with 2s exposures in PHD2.

0700UT awoke to find it overcast so I shut down.

0707UT checked the satellite image and it looks like it may clear shortly so I restarted everything.

0805UT still no stars showing up in test images.

0819UT started a series of 100s Lum images of 4P/Faye; autoguided with 2s exposures in PHD2. Comet is about 2 mags fainter than ECU predicts.

0842UT started a series of 120s Lum images of 29P/Schwassmann-Wachmann; autoguided with 2s exposures in PHD2. Comet is not showing at all in individual images.

0900UT attempted a refocus. The focuser is too fine and small changes make no difference, plus either the seeing is bad and/or the chromatic aberration is bad so that the stars never seem to get as small as they should. Looks like collimation may be off as well.

Action: replace small screws holding mirror cell in place and then recollimate.

0903UT started a series of 120s Lum images of 15P/Finlay; autoguided with 2s exposures in PHD2.

Comet is not showing at all in individual images. Current focus is at 38014 with FWHM = 7.2px = 3.5" on some of the fainter stars near the centre of the field.

0854UT start of astronomical twilight.

0921UT start of nautical twilight.

0924UT stopped observing, preparing to shoot twilight flats.

0938UT started CCDC action flats2021-09-09.act to shoot 15 twilight flats in CV, TB, TG, TR filters.

0944UT paused the CCDC flats action as the sky is still way too dark.

0954UT resumed the CCDC flats action. First 30s CV flat started at 100340UT when the Sun is 6° below the horizon. First TB flat started at 101119UT with Sun 4°52' below horizon.

CCDC flats action worked perfectly excepting only that it turned tracking on the mount back on.

1006UT start of civil twilight.

1036UT sunrise.

Action: install FocusMax and get it running.

Action: configure CCD Commander for the Hankscope/Titan; create a CCDC action for next session - focus on single HADS to start and plate solve every slew.

2021-09-11 (#102)

Fall'n'Stars at Johnson's RV Camp, Prince Edward County, 43.938683, -77.016274.

12.5" f/6 Dob, 8x42 apo binos, Canon 60Da with 18-50mm Sigma lens and 10-22mm Canon lens on barn door tracker.

The 12.5" has a new (bought used at a swap table) AstroTech red dot pointer. Lovely piece of kit all machined Al, multiple different reticles, variable brightness level, nice solid pointing adjustments (except they need a 7/32" allen key which I didn't have.) But it is way too bright and the mounting point on the 12.5" isn't parallel to the optical axis - far enough off that the finder corrections can't fix it. Borrowed allen keys from Malcolm but they didn't seem to have the right size (perhaps they were out of order in the holder and I didn't actually try the 7/32?) Borrowed another set from Don Town of Belleville Centre and that worked, although I had to shift the finder in its mounting block which allowed it to flop forward and back so I eventually learned that I had to pull it backwards gently to get the correct pointing. It also needs a lower voltage battery (or a filter or a resistor in the circuit) to dim it.

Started in twilight attempting to find some Messier objects before it is fully dark. Had a lot of trouble primarily because of the new red-dot finder. Started on M57 but gave up, corrected the pointing of the finder and found M13 instead, then returned and found M57 both still while in relatively bright twilight (the prallelogram of Lyra was barely visible.)

NGC6822 was surprisingly easy - there is a small group of naked eye stars right nearby providing a super-easy starhop. Then the galaxy is much brighter than I expected - quite easy, much extended N-S, looking like a slightly curved triangle pointing south. Stars are visible within the boundary of the galaxy - members or intervening stars in our galaxy?

12.5" secondary dewed up by 23:00EDT (the secondary heater is installed but does not yet have power wired to it.) Got out the 8x42 binos and toured about for a little while, sitting in the zero-gravity chair.

Got out the Canon 60Da with Canon 10-22 lens and shot a bunch of milky way shots - 180s at f/4 and ISO1600.



When that lens dewed over I switched to the Sigma 18-50 for some closer shots of Cygnus, also 180s f/4 and ISO1600.



Headed back to the ‘barn’ (really an oversized double garage) to log onto the RASC remote telescope to start a science run, and incidentally showed those in the barn how the scope is run, the software, took a 30s shot of M13, demonstrated manual information window photometry and setting the zero point.

By this time it had clouded over so a few of us sat in the barn and gabbed. By 0200EDT I headed to bed but discovered it had cleared off (quite some time ago actually) so spent a little more time talking with Susan Gagnon and touring with the 8x42s.

Saturday night was cloudy and rain forecast so a bunch of us (Malcolm, Susan, Kim & Kevin and I) all packed up just before dinner and then headed home in the early evening.

2021-09-11

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
ASASSN-V J194144.71+273717.5	100s CV	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
ASASSN-V J195903.89+504639.4	100s CV	2x2	N
V1535 Her	120s Lum	2x2	N
V2367 Cyg	100s CV	2x2	N
TYC3224-2602	60s Lum	2x2	N

Stars	Exposures	Binning	Guided
V0547 Lac	150s Lum	2x2	N
ROTSE1-J232708.22+371216.9	200s CV	2x2	N
V0839 Lac	150s Lum	2x2	N

2021-09-14 (#103)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hanscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is patchy cloud occasionally reducing transparency but not impeding guiding.

After the seize-up of the Boltwood Dec axis, the OTA was removed, Dec worm gear re-greased with Liqui-Moly molybdenum sulphide grease instead of the molykote 33 previously used and the OTA remounted. RA worm gear done as well. SiTech config program used to increase Dec slew rate to 3°/s and RA to 2°/s. These seem to work well with no oscillation. (RA at 3°/s caused severe oscillation of the telescope in RA.)

2318UT sunset

0115UT sky has cleared off somewhat unexpectedly so have started up the Boltwood scope.

0022UT end of nautical twilight

0058UT end of astronomical twilight

0120UT attempted a focus of the Boltwood scope but was unable to get focus to better than ~3.5px FWHM. However, it subsequently improved to ~2.8px as the scope cooled.

0123UT started CCDC action 2021-09-14.act.

Group	Stars	Exposures	Binning	Guided
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 200s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N
Aries 2.2h				
	CU Ari	200s V	1x1	N
	TY Ari	200s V	1x1	N

0210UT Hankscope: focused with V filter to 22288.

0221UT Hankscope: started a series of 20s V exposures of SW And with ~35s pauses between exposures to try to get to 1min cadence; autoguided with 2s exposures in PHD2. Gradually decreased the exposure to 15s then 12s to keep the signal in the linear range.

0316UT started a series of 15s B and 10s V exposures of SW And with ~35s pauses between exposures to try to get to 1min cadence; autoguided with 2s exposures in PHD2.

0320UT moonset

0407UT Hankscope: started a series of 150s B and 100s V exposures of LS Cet; first time observing this HADS; autoguided with 2s exposures in PHD2. Immediately decreased the V exposures to 60s to avoid saturation.

0745UT Hankscope: started a series of 100s V and 200s B exposures of SA95; autoguided with 2s exposures in PHD2.

0745UT stopped CCDC action, adjusted focuser inwards 28 steps.

0751UT started a sequence of 400s unfiltered exposures of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

0820UT Hankscope: started a series of 150s B and 60s V exposures of ASASSN-V J045815.25 +135230.3; first time observing this HADS; autoguided with 2s exposures in PHD2.

0858UT adjusted focuser outwards 28 steps and restarted CCDC action 2021-09-14.act.

0901UT start of astronomical twilight.

0937UT start of nautical twilight.

0951UT shutting down. Both scopes however, seem to be doing fine yet - reasonably clean images and decent S/N so I should be starting slightly earlier and going slightly longer.

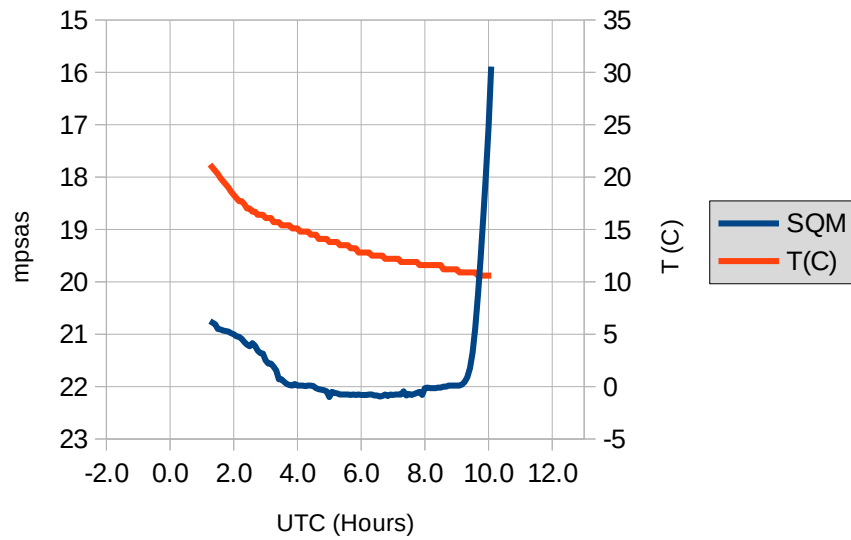
I had the dawn flats scheduled to happen in the CCDC action but they were pre-empted by a skip ahead.

Action: remove or correct that skip ahead so I can shoot dawn flats with the Boltwood scope.

1041UT sunrise.

1445UT Hankscope: started a series of 1.5s B and 0.4s V flats in the office with the scope pointed at the ceiling and a frosted piece of plastic over the aperture.

SQM 2021-09-14



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
V0377 Boo	200s CV	2x2	N
ASASSN-V J194144.71+273717.5	100s CV	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
ASASSN-V J195903.89+504639.4	100s CV	2x2	N
V0467 Dra	150s CV	2x2	N
V1535 Her	120s Lum	2x2	N
V2367 Cyg	100s CV	2x2	N
TYC3224-2602	60s Lum	2x2	N
V0547 Lac	150s Lum	2x2	N
ROTSE1-J232708.22+371216.9	200s CV	2x2	N
V0839 Lac	150s Lum	2x2	N
SERIV 101	50s CV	2x2	N
VESPA V23	50s Lum	2x2	N
NSVS10743622	400s Lum	2x2	N

2021-09-15

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2; sitting on the floor in the office pointing at the ceiling.

0129UT started a series of 50 each 1x1 unbinned bias and 300s darks.

2021-09-17 (#104)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2. The 0.5" spacer has been added under the focuser so all previous focus readings are now bogus.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is very clear but very bright with waxing gibbous Moon.

2310UT started CCDC action 2021-09-17.act. Started with twilight flats - I did come out to refocus the scope for the unfiltered flats. The script has been adjusted to shoot while the Sun is more than 9° below the horizon (about 15min into nautical twilight.)

Group	Stars	Exposures	Binning	Guided
Twilight Flats				
Hercules 17.4h RRLs				
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 200s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N
Lac 22.7h RRLs				

Group	Stars	Exposures	Binning	Guided
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N
Aries 2.2h				
	CU Ari	200s V	1x1	N
	TY Ari	200s V	1x1	N

2313UT sunset

2332UT Hankscope: CCDC shot a bunch of flats in V, B and unfiltered. Focus is totally off so these are all useless.

0016UT end of nautical twilight

0020UT Hankscope: since the focus settings are all changed with the additional spacer, I ran the focuser in as far as it will go and zeroed the UPB focuser reading. The distance between the top of the focuser body and the face of the camera is 7.0mm. I then ran the focuser out 5000 steps at which time the focuser-camera distance was 16.7mm. This gives a step size of 1.94 μ m.

Focused the V filter at reading 13364 (FWHM = 2.3px), B at 13400 (FWHM=1.5px), and unfiltered at 12928 (FWHM=2.4px.)

~~Action: set up filter offsets in Maxim.~~

0052UT end of astronomical twilight

0130UT Hankscope: Maxim continues to act up. I can't sync because it says the mount isn't tracking though it clearly is; PHD2 guides fine but Maxim will not move the scope with Autoguide Output Control Via set to either Telescope or ASCOM direct. CCDC didn't seem to be able to autoguide either. However, otherwise CCDC seemed to be working fine, takes images, slews, takes and plate solves pointing images. Tracking is way too poor to shoot unguided.

0238UT Hankscope: started a sequence of 100s V images of V0457 Peg, first time observing this HADS target; autoguided with 2s exposures in PHD2.

0251UT Hankscope: started a sequence of 150s B and 60s V images of LS Cet; autoguided with 2s exposures in PHD2.

Maxim choked on this and slewed the telescope way off into the western sky, hitting the safety limits and setting off the alarm.

~~Action: input safety limits.~~

0256UT Hankscope: first two exposures on LS Cet show that the exposures are too short - increased them to 300s B and 180s V.

0405UT paused CCDC action for Jupiter imaging - about 8-10 runs with QHY178 colour camera, 2x Televue barlow, gain about 35, 2.4ms exposures. Seeing looked to be quite poor but improved quite a bit when I turned off both the front and rear fans in the OTA.

0457UT resumed the CCDC action.

0632UT moonset

0635UT paused CCDC action, adjusted focuser inwards 28 steps.

0745UT started a sequence of 400s unfiltered exposures of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

0759UT Hankscope: started a sequence of 300B and 200s V images of ASASSN-V J062409.89 +315123.5; autoguided with 2s exposures in PHD2.

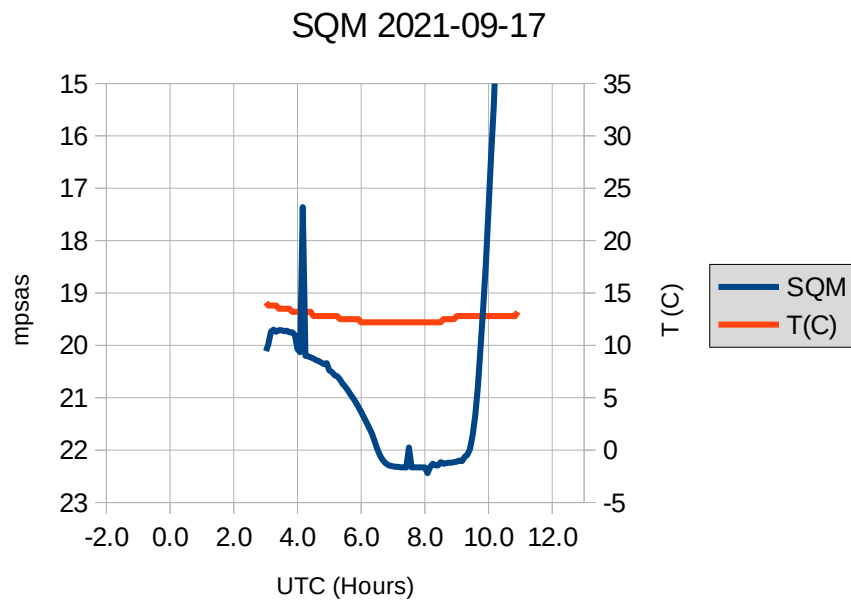
0858UT adjusted focuser outwards 28 steps and resumed CCDC action 2021-09-17.act.

0906UT start of astronomical twilight.

0941UT start of nautical twilight.

1045UT sunrise.

Action: install FocusMax on Lakeside and get it working.



2021-09-18 (#105)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at +10C!!! Got caught by CCDC's warmup routine.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is very clear but very bright with waxing gibbous Moon.

2311UT sunset

0014UT end of nautical twilight

0018UT started CCDC action 2021-09-18.act.

Group	Stars	Exposures	Binning	Guided
Hercules 17.4h RRLs				

Group	Stars	Exposures	Binning	Guided
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	200s B 100s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N
Aries 2.2h				
	CU Ari	200s V	1x1	N
	TY Ari	200s V	1x1	N

0050UT end of astronomical twilight

0014UT Hankscope: Maxim continues to act up. Even though I didn't connect to the mount, when I connected to the camera Maxim came up with some sort of dialog that it was connecting to the telescope guide port? I left the mount unconnected in Maxim except that then I can't easily plate solve images (since I don't have a FITS header RA/Dec I have to manually input them from

ECU) and I can't easily sync the mount to a solved position (I have to manually centre ECU on the solved position and then sync scope to chart center.) This also screws my reduction/plate solve routines since they depend on have OBJCTRA and OBJCTDEC in the FITS headers.

0014UT Hankscope: started a sequence of 250s B and 100s V images of V0457 Peg; autoguided with 2s exposures in PHD2.

0114UT Hankscope: upped the V0457 Peg exposures to 300s B and 150s V. It is interesting that the Hankscope seems to give relatively poor S/N for a given exposure and max pixel value. (Moon is $\sim 43^\circ$ away to the south.

0247UT Hankscope: started a sequence of 300s B and 180s V images of LS Cet; autoguided with 2s exposures in PHD2.

0710UT stopped CCDC action, adjusted focuser inwards 28 steps.

0713UT started a sequence of 400s unfiltered exposures of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

0726UT Hankscope: started a sequence of 300B and 200s V images of ASASSN-V J062409.89 +315123.5; autoguided with 2s exposures in PHD2. I clearly need to examine my target stars more carefully - this one has a nearby star ($\sim 9''$ east) only about 0.9mag fainter. Will have to be careful with the photometry - particularly watching for blurry images where the two will blend.

0746UT moonset

0750UT images of M31 are very poor, V619 undetectable so gave up on it, adjusted focuser outwards 28 steps, did a careful manual focus (FWHM 1.9px) and restarted CCDC action 2021-09-18.act.

0833UT Hankscope: about to shut down but it looks still quite nice to the east so I'm just shooting a few 100s V images of M35 to see how it looks; autoguided with 2s exposures in PHD2.

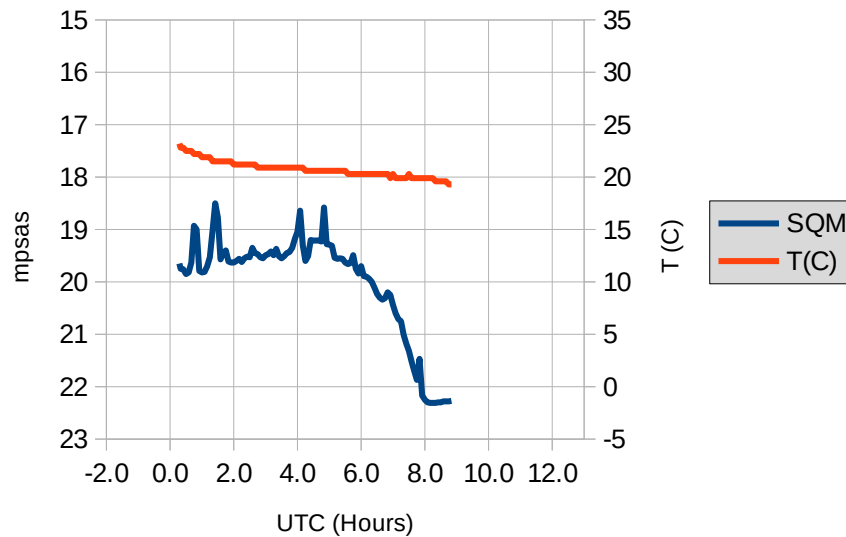
0846UT there is a front moving in with some very scattered showers and some cloud in front of it so it looks like the sky is going to go to pot very shortly; in order to maximize sleep, minimize rain risk to the scopes I'm shutting down.

0907UT start of astronomical twilight.

0943UT start of nautical twilight.

1046UT sunrise.

SQM 2021-09-18



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
V0377 Boo	200s CV	2x2	N
ASASSN-V J194144.71+273717.5	100s CV	2x2	N
ASAS J183851+1907.7	200s Lum	2x2	N
ASASSN-V J195903.89+504639.4	100s CV	2x2	N
V1535 Her	120s Lum	2x2	N
V2367 Cyg	100s CV	2x2	N
TYC3224-2602	60s Lum	2x2	N
V0547 Lac	150s Lum	2x2	N
ROTSE1-J232708.22+371216.9	200s CV	2x2	N
V0839 Lac	150s Lum	2x2	N
SERIV 101	50s CV	2x2	N
VESPA V23	50s Lum	2x2	N
NSVS10743622	400s Lum	2x2	N

2021-09-19 (#106)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hanscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is very clear but very bright with waxing gibbous Moon.

2309UT sunset

0018UT started CCDC action 2021-09-19.act.

Group	Stars	Exposures	Binning	Guided
Twilight Flats				
Hercules 17.4h RRLs				
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	200s B 100s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N
Aries 2.2h				
	CU Ari	200s V	1x1	N
	TY Ari	200s V	1x1	N

Dusk twilight flats are starting slightly too late - first flat exposure was already 3.3s.

~~Action: adjust CCDC dusk flats action to start when the Sun is slightly higher.~~

Dawn twilight flats ran until it was too bright to continue.

Action: debug problem with CCDC dawn flats running into too bright a sky.

0012UT end of nautical twilight

0015UT Hankscope: messed with the QHY178 colour camera on the Moon and Jupiter. Seeing is so poor and the scale is so small (Jupiter is very small, the Moon nearly fits on the chip) that I didn't bother recording anything but was able to get it focused and aligned on Jupiter.

0048UT end of astronomical twilight

0050UT Hankscope: realigned the guider to the main scope by centring the main scope on Jupiter and then adjusting the guide scope rings to centre Jupiter.

0053UT Hankscope: started a sequence of 300s B and 150s V images of V0457 Peg; autoguided with 2s exposures in PHD2.

0233UT Hankscope: started a sequence of 300s B and 180s V images of LS Cet; autoguided with 2s exposures in PHD2.

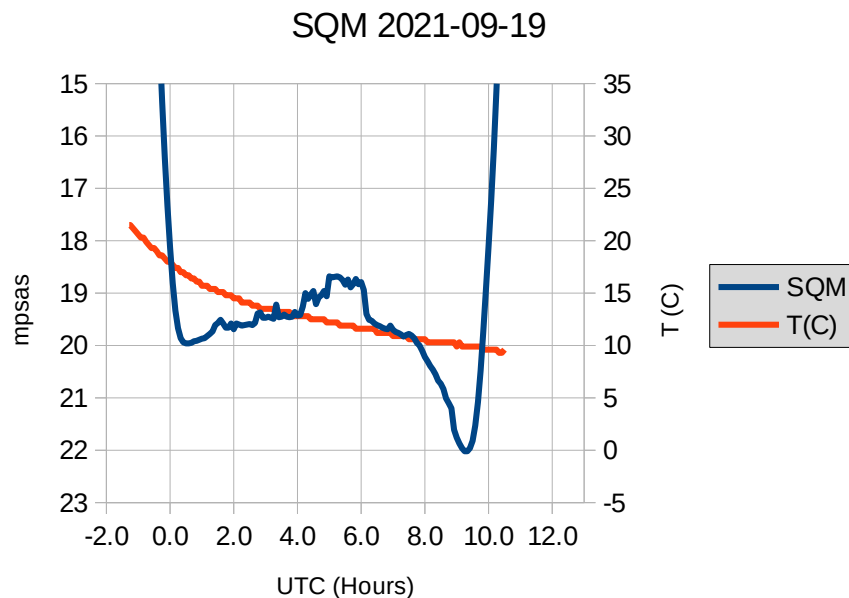
0841UT Hankscope: started a sequence of 300B and 200s V images of ASASSN-V J062409.89 +315123.5; autoguided with 2s exposures in PHD2.

0859UT moonset

0908UT start of astronomical twilight.

0944UT start of nautical twilight.

1047UT sunrise.



2021-09-20 (#107)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is very clear but very bright with waxing gibbous Moon.

21:21:00UT Hankscope: started a series of 100 x bias frames to measure how long the downloads take.

Sequence ended at 22:01:26. Total duration = 40:26 = 2426s, for a download time of 24.26s.

This is for NINA which adds in the download time to calculate sequence durations. Also installed PlateSolve2 with the APM catalogue.

2306UT moonrise.

2307UT sunset

0004UT started CCDC action 2021-09-20.act. Because I was starting it late it hung on waiting for the Sun at -9° which was already past. Killed it, disabled the wait for action and restarted at 0028UT.

Group	Stars	Exposures	Binning	Guided
Hercules 17.4h RRLs				
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	200s B 100s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N
Aries 2.2h				
	CU Ari	200s V	1x1	N
	TY Ari	200s V	1x1	N

0010UT end of nautical twilight

0046UT end of astronomical twilight

0000UT Hankscope: first attempt at using N.I.N.A. (Nighttime Imaging 'n' Astronomy) to run a series of 18 each 300s B and 150s V images of V0457 Peg, 31 each 300s B and 180s V images of LS Cet, and 10 each 300B and 200s V images of ASASSN-V J062409.89 +315123.5; all autoguided with 2s exposures in PHD2 through NINA. This failed because I don't have PlateSolve2 installed and I need a plate solver to account for the crappy pointing of the mount with no model.

0015UT Hankscope: started a sequence of 300s B and 150s V images of V0457 Peg; autoguided with 2s exposures in PHD2.

0233UT Hankscope: started a sequence of 300s B and 180s V images of LS Cet; autoguided with 2s exposures in PHD2.

0316UT paused the CCDC action (interestingly, the status window does not indicate that it is paused, though the status light is yellow), installed QHY178 colour camera in Televue 2" 2X barlow.

0328UT started a series of 180s videos of Saturn, 5ms exposure, gain about 40. Seeing is not very good but there are periods of acceptable.

0356UT started a long series of 180s videos of Jupiter, 2.8ms exposure, gain 31-33. Seeing looks much better - perhaps the best I've seen on Jupiter? Shot one video of Io and Ganymede, the two visible moons. (Europa is on the disk, someone's shadow is ingressing through the series of videos. Stellarium shows the GRS on the disk but I don't see it. There is a dark blob just north of the northern equatorial belt. Seeing is deteriorating significantly through the series.

0426UT Hankscope: LS Cet is saturating, reduced exposures to 200s B and 120s V.

0439UT Hankscope: shortened LS Cet exposures again to 120s B and 80s V. Focus and guiding are very good on the star with FWHM only 2.6px. And later on 2.3px.

0504UT Hankscope: and the final shortening of LS Cet exposures to 60s V (B remains the same at 120s.)

0515UT removed the barlow and shot a bunch of videos for a mosaic of the whole disk. Reinstalled the barlow and shot some details, primarily along the terminator.

0600UT reset the Boltwood secondary for the ST2K, adjusted focuser inwards 28 steps.

0603UT started a sequence of 400s unfiltered exposures of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

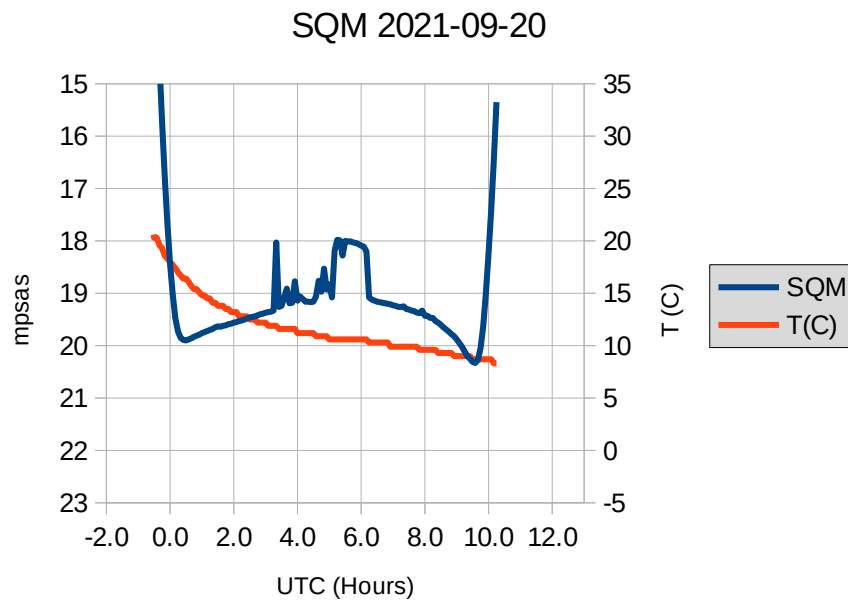
0721UT adjusted focuser outwards 28 steps and resumed CCDC action 2021-09-20.act.

0727UT Hankscope: started a sequence of 200s B and 150s V images of ASASSN-V J062409.89 +315123.5; autoguided with 2s exposures in PHD2.

0910UT start of astronomical twilight.

0945UT start of nautical twilight.

1009UT moonset
 1049UT sunrise.



2021-09-21 (#108)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hanscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Sky is patchy cloud moving through occasionally.

21:21:00UT started a series of 100 x bias frames to measure how long the downloads take. Sequence ended at 22:01:26. Total duration = 40:26 = 2426s, for a download time of 24.26s.

2306UT moonrise.

2305UT sunset

0004UT started CCDC action 2021-09-20.act. Because I was starting it late it hung on waiting for the Sun at -9° which was already past. Killed it, disabled the wait for action and restarted at 0028UT.

Group	Stars	Exposures	Binning	Guided
Hercules 17.4h RRLs				
	VSX_J172135.7+374319	300s V	1x1	N
	V1260_Her	300s V	1x1	N
	V0486_Her	300s V	1x1	N
	V1267_Her	300s V	1x1	N
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	V0462 Lyr	200s V	1x1	N
	MW Lyr	300s V	1x1	N
Nova Vul 2021	V0606 Vul	200s B 100s V	1x1	N
Cygnus 19.9h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
Cyg 21.2h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N
Lac 22.7h RRLs				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N
Aries 2.2h				
	CU Ari	200s V	1x1	N
	TY Ari	200s V	1x1	N

0008UT end of nautical twilight

0043UT end of astronomical twilight

0100UT Hankscope: did a quick mount model for the Gemini controller. Did an initial sync on Deneb, shot one 20s exposures, solved and synced in Maxim. Then switched the Gemini to accept all further syncs as additional aligns so they contribute to the mount model. Did about 10 x 20s exposures solved and synced in Maxim (early in the evening Maxim seems to behave pretty well.) First slew to V0482 Peg was excellent.

0126UT Hankscope: started a sequence of 300s B and 150s V images of V0482 Peg; autoguided with 2s exposures in PHD2.

0255UT Hankscope: it has clouded over and the guide star is lost. Slew the scope to near the eastern horizon, turned off tracking and covered with a sheet in the hope that it will clear later.

Unfortunately I left Maxim connected to the mount so sometime during the night Maxim suddenly decided to slew far to the west while reporting that it failed to initiate the slew to some

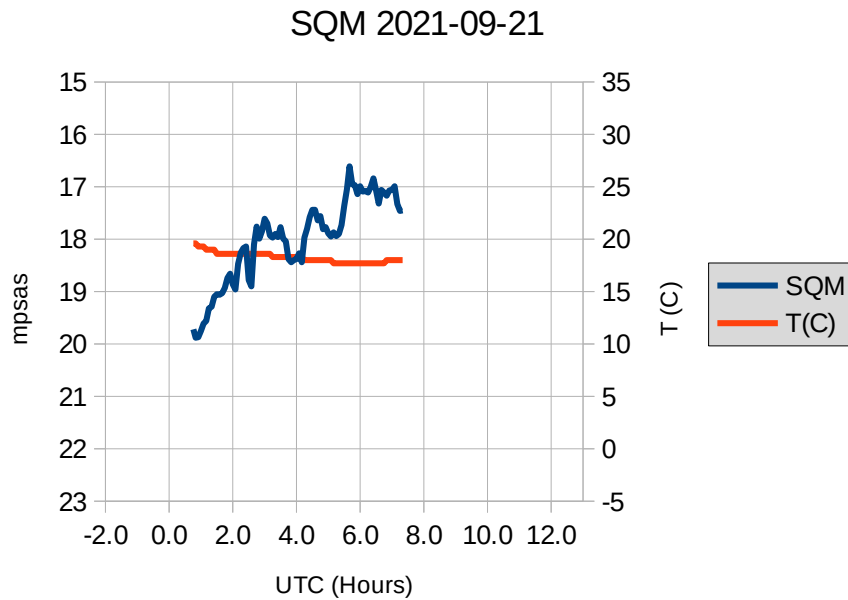
position. I left the Boltwood running in the hope that it will pick up useful exposures during any breaks in the cloud.

0730UT awoke to find it nearly overcast and the radar shows some very scattered showers due to arrive in a couple of hours so I shut everything down, tied the two white tarps over the Hankscope.

0911UT start of astronomical twilight.

0946UT start of nautical twilight.

1050UT sunrise.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
V0417 Boo	300s CV	2x2	N
ASASSN-V J180752.92+382238.6	200s CV	2x2	N
HAT 199-01886	30s CV	2x2	N
KID 2857323	300s CV	2x2	N
QS Dra	300s CV	2x2	N
V1513 Her	300s CV	2x2	N
V0761 Peg	300s CV	2x2	N
ROTSE1-J232708.22+371216.9	200s CV	2x2	N

2021-09-25 (#109)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2258UT sunset

0001UT end of nautical twilight

0035UT end of astronomical twilight

0049UT moonrise.

0155UT started CCDC action 2021-09-25.act.

Group	Stars	Exposures	Binning	Guided
Hercules 18.1h RRCs				
	V1316 Her	300s B	1x1	N
	V0726 Her	300s B	1x1	N
Nova Vul 2021	V0606 Vul	150s B 100s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
M31 V619 (manual)		10 x 400s CV	1x1	Y
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

0600UT adjusted focuser inwards 28 steps.

0233UT Hankscope: started a sequence of 300s B and 180s V images of LS Cet; autoguided with 2s exposures in PHD2.

0603UT started a sequence of 400s unfiltered exposures of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

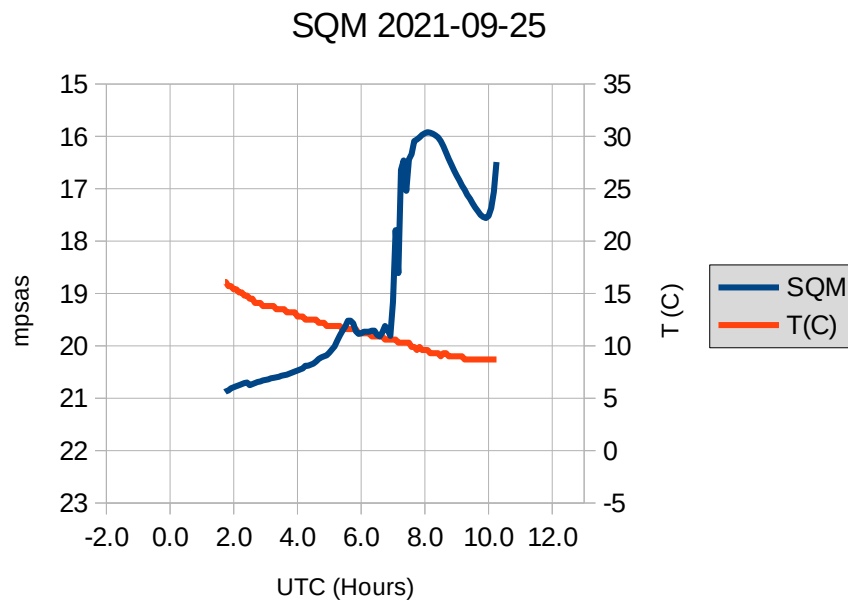
0721UT adjusted focuser outwards 28 steps and resumed CCDC action 2021-09-20.act.

0727UT Hankscope: started a sequence of 200s B and 150s V images of ASASSN-V J062409.89 +315123.5; autoguided with 2s exposures in PHD2.

0917UT start of astronomical twilight.

0951UT start of nautical twilight.

1054UT sunrise.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
CSS J234218.8+352034	300s CV	2x2	N
V0417 Boo	300s CV	2x2	N
ASASSN-V J180752.92+382238.6	200s CV	2x2	N
GSC2860-1552	200s CV	2x2	N
HAT 199-01886	30s CV	2x2	N
KID 2857323	300s CV	2x2	N
QS Dra	300s CV	2x2	N
V1513 Her	300s CV	2x2	N
V0761 Peg	300s CV	2x2	N

Stars	Exposures	Binning	Guided
ZTF J030315.83+460033	300s CV	2x2	N

2021-09-28

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
CSS J234218.8+352034	300s CV	2x2	N
V0417 Boo	300s CV	2x2	N
ASASSN-V J180752.92+382238.6	200s CV	2x2	N
GSC2860-1552	200s CV	2x2	N
HAT 199-01886	30s CV	2x2	N
KID 2857323	300s CV	2x2	N
QS Dra	300s CV	2x2	N
HD80606	15s CV	2x2	N
V1513 Her	300s CV	2x2	N
V0761 Peg	300s CV	2x2	N
ZTF J030315.83+460033	300s CV	2x2	N

2021-09-29 (#110)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2250UT sunset

2250UT started CCDC action 2021-09-29.act.

Group	Stars	Exposures	Binning	Guided
Twilight Flats				
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	150s V	1x1	N
	MW Lyr	200s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				

Group	Stars	Exposures	Binning	Guided
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
M31 V619 (manual)		10 x 400s CV	1x1	Y
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

2255UT Hankscope: started CCD action flatsDusk.act to shoot V, B, and unfiltered twilight flats.

2353UT end of nautical twilight

0000UT Hankscope: worked to get FocusMax running. Did a complete V-curve run successfully with the V filter - best focus 13541. Did a focus run in B (13561) and unfiltered (13063) to determine filter offsets and input the offsets into Maxim (unfiltered=0, V=478, B=498.) Was unable to subsequently to focus probably because there was not a bright enough star in the field. I need to figure out how to automate focusing - do I need to slew to a nearby bright star and then back to target?

0027UT end of astronomical twilight

0035UT Hankscope: started a sequence of 400s B and 150s V images of V0482 Peg; autoguided with 2s exposures in PHD2.

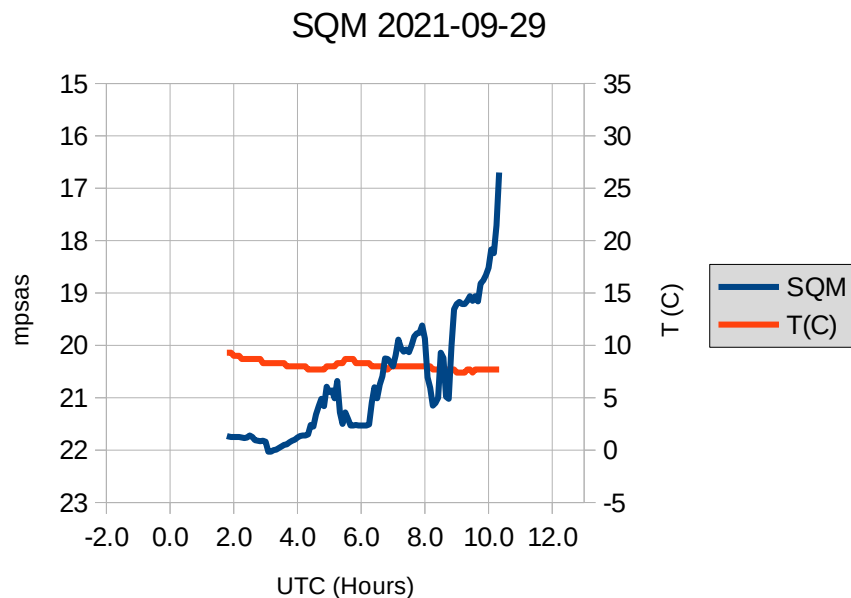
0132UT Hankscope: shortened V exposures of V0482 Peg to 120s

0248UT Hankscope: started a sequence of 120s B and 60s V exposures of LS Cet; autoguided with 2s exposures in PHD2. Quickly decided that signal levels are lower than I like so increased the exposures to 200s B and 100s V.

0308UT moonrise.

0730UT awoke to find I had slept through my wristwatch alarm and missed the M31 V619 observation and the target switch on the Hankscope. It is also nearly overcast. Because I hadn't switched

targets on the Hankscope it had continued tracking until it hit the pier (where were the safety limits - do they not work because I was autoguiding?) Had to resync the scope on the Moon.
 0810UT the sky has almost completely cleared off so am starting things up again.
 0820UT Hankscope: started a sequence of 150s V and 200s B exposures of EZ Cnc; autoguided with 2s exposures in PHD2.
 0850UT Hankscope: decided that EZ Cnc is not a target that I particularly want to observe so terminated that and started a sequence of 300s B and V images of ASASSN-V_J082639.29-102403.0; autoguided with 2s exposures in PHD2. It clouded over again almost immediately so only actually got one each successful exposures.
 0922UT start of astronomical twilight.
 0956UT start of nautical twilight.
 1059UT sunrise.



2021-10-01 (#111)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.
 SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.
 2246UT sunset
 2349UT end of nautical twilight
 0023UT end of astronomical twilight
 0033UT started CCDC action 2021-10-01.act.

Group	Stars	Exposures	Binning	Guided
Twilight Flats				
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	150s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	MW Lyr	200s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
M31 V619 (manual)		10 x 400s CV	1x1	Y
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

0110UT paused the CCDC action for a couple of minutes and did a refocus to FwhM 1.8px, resumed the action.

0503UT moonrise.

0516UT paused the CCDC action; adjusted focuser inwards some unknown number of steps (scope started a meridian flip while I was doing it and trying to stop that distracted me.) Did a good refocus in V (FWHM 1.8px) and then stepped focuser inwards 28 steps.

0523UT started a sequence of 400s unfiltered exposures of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

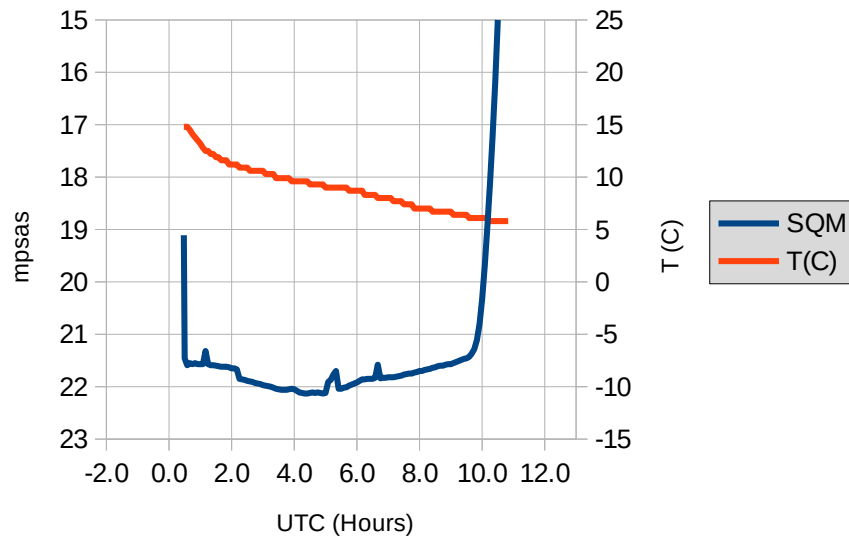
0640UT resumed the CCDC action but it reported "Error - MaxIm reported the exposure aborted!" several times then "Done running subaction list." and stopped. So I unchecked all the items before the Psc01.3hRRCs group and started it. It appears that pausing the script this way is not functional.

0924UT start of astronomical twilight.

0959UT start of nautical twilight.

1102UT sunrise.

SQM 2021-10-01



2021-10-02 (#112)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2244UT sunset

2337UT started CCDC action 2021-10-01.act.

Group	Stars	Exposures	Binning	Guided
Twilight Flats				
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	150s V	1x1	N
	MW Lyr	200s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N

Group	Stars	Exposures	Binning	Guided
M31 V619 (manual)		10 x 400s CV	1x1	Y
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

2347UT end of nautical twilight

0021UT end of astronomical twilight

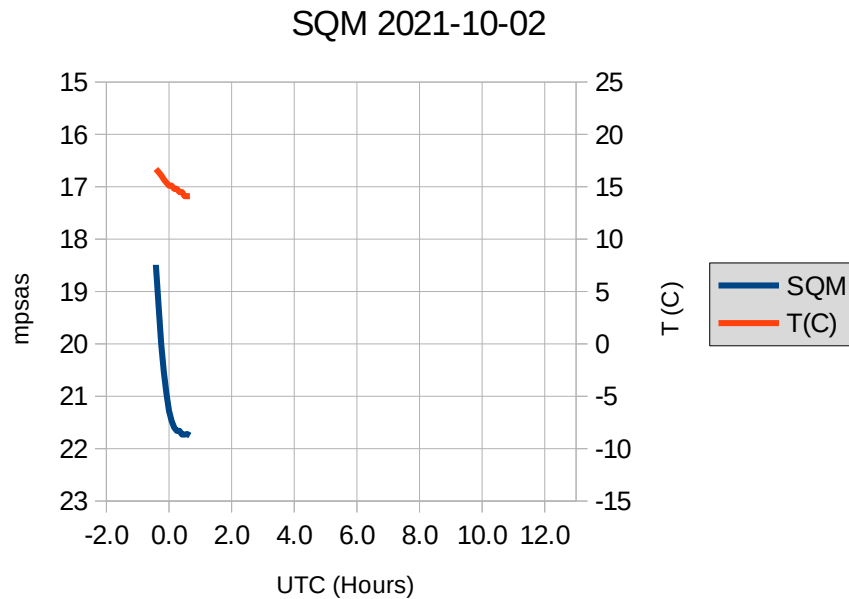
0041UT it has clouded over so am shutting down.

0611UT moonrise.

0926UT start of astronomical twilight.

1000UT start of nautical twilight.

1103UT sunrise.



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
CSS J234218.8+352034	300s CV	2x2	N
V0417 Boo	300s CV	2x2	N
ASASSN-V J180752.92+382238.6	200s CV	2x2	N
GSC2860-1552	200s CV	2x2	N
HAT 199-01886	30s CV	2x2	N
KID 2857323	300s CV	2x2	N
QS Dra	300s CV	2x2	N
V1513 Her	300s CV	2x2	N
V0761 Peg	300s CV	2x2	N
ZTF J030315.83+460033	300s CV	2x2	N

2021-10-05

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

Stars	Exposures	Binning	Guided
Barnard's Star	20s CV	2x2	N
CSS J234218.8+352034	300s CV	2x2	N
V0417 Boo	300s CV	2x2	N
ASASSN-V J180752.92+382238.6	200s CV	2x2	N
GSC2860-1552	200s CV	2x2	N
HAT 199-01886	30s CV	2x2	N
KID 2857323	300s CV	2x2	N
QS Dra	300s CV	2x2	N
V1513 Her	300s CV	2x2	N
V0761 Peg	300s CV	2x2	N
ZTF J030315.83+460033	300s CV	2x2	N

2021-10-06 (#113)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2237UT sunset

2241UT moonset

2340UT end of nautical twilight

2343UT started CCDC action 2021-10-01.act.

Group	Stars	Exposures	Binning	Guided
Lyra 18.9h RRLs				
	KM Lyr	200s V	1x1	N
	V0462 Lyr	150s V	1x1	N
	MW Lyr	200s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
M31 V619 (manual)		9 x 400s CV	1x1	Y
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

0014UT end of astronomical twilight

0145UT it has clouded over, hopefully for a short enough period that I let things run.

0215UT seems to have cleared off. I am vindicated.

0453UT stopped CCDC action, adjusted focuser in 28 steps, did a very successful refocus (FWHM 1.3px!!) and started a sequence of 10 x 400s unfiltered images of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

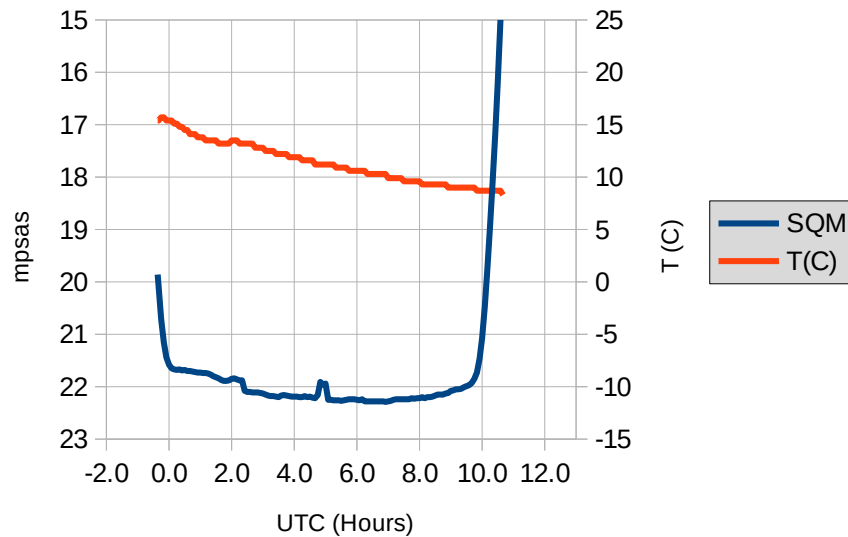
0611UT adjusted focuser out 28 steps and restarted CCDC action from the Psc01.3hRRCs group.

0931UT start of astronomical twilight.

1005UT start of nautical twilight.

1108UT sunrise.

SQM 2021-10-06



2021-10-07 (#114)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2235UT sunset

2304UT moonset

2324UT Hankscope: started a sequence of 300s B and 120s V images of V0482 Peg; autoguided with 2s exposures in PHD2.

2338UT end of nautical twilight

2343UT started CCDC action 2021-10-07.act.

Group	Stars	Exposures	Binning	Guided
Serpens 18.4h RRCs				
	V3433 Oph	300s V	1x1	N
	V0542 Ser	300s V	1x1	N
	V0553 Ser	200s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				

Group	Stars	Exposures	Binning	Guided
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
M31 V619 (manual)		9 x 400s CV	1x1	Y
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

0012UT end of astronomical twilight

0237UT Hankscope: started a sequence of 200s B and 100s V exposures of LS Cet; autoguided with 2s exposures in PHD2.

0445UT it is clouding over so I inserted a Wait until 0530 to allow the Pisces 01.3h RRCs to cross the meridian, hoping it would clear off.

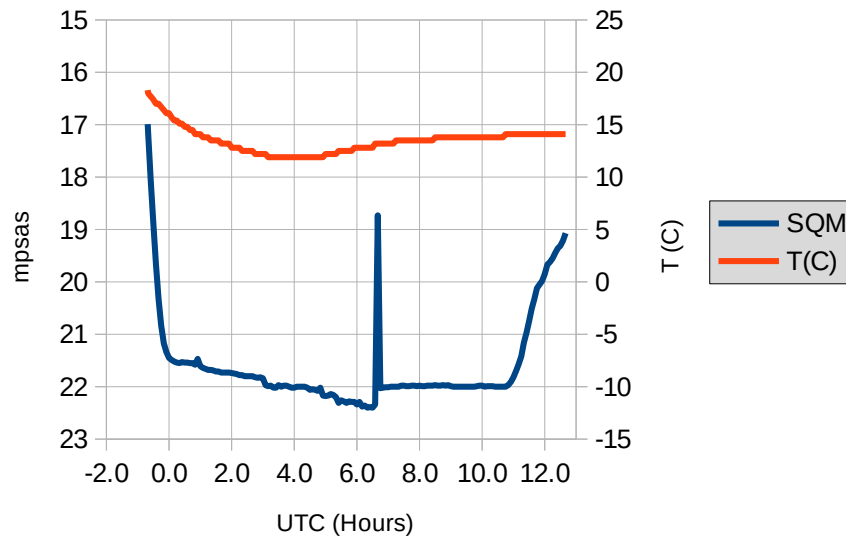
0640UT it is now heavily overcast and from the satellite images looks unlikely to clear off. Shutting down everything.

0932UT start of astronomical twilight.

1006UT start of nautical twilight.

1109UT sunrise.

SQM 2021-10-07



2021-10-08 (#115)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hanscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2233UT sunset

2329UT moonset

2324UT Hanscope: started a sequence of 300s B and 120s V images of V0482 Peg; autoguided with 2s exposures in PHD2.

2336UT end of nautical twilight

2343UT started CCDC action 2021-10-07.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
M31 V619 (manual)		9 x 400s CV	1x1	Y

Group	Stars	Exposures	Binning	Guided
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

0010UT end of astronomical twilight

0126UT Hankscope: started a sequence of 200s B and 100s V exposures of LS Cet; autoguided with 2s exposures in PHD2.

0220UT stopped the CCDC action and switched the Boltwood scope over to planetary mode with the QHY5III178C and Televue 2x barlow (FL 3820mm, 0.13"/px) in port 2, sometimes also with Televue 1.8X barlow (FO 6880mm, 0.072"/px.) All recorded as raw (not debayered) .SER files, preview debayered. Using FireCapture v2.6.

Action: before next planetary session collimate the optics for this port.

0229UT seeing on Saturn is very poor - it is over the west end of the house, shortly going into the trees; started a series of 180s runs on Saturn: Sat_023025.ser 5ms and gain 51, full frame;

Sat_023334.ser 15ms, gain 51, full frame to try to catch the many moons which were faintly visible while focusing; added the 1.8x barlow and shot 2 runs reduced ROI at 15ms and gain 42 of just the planet.

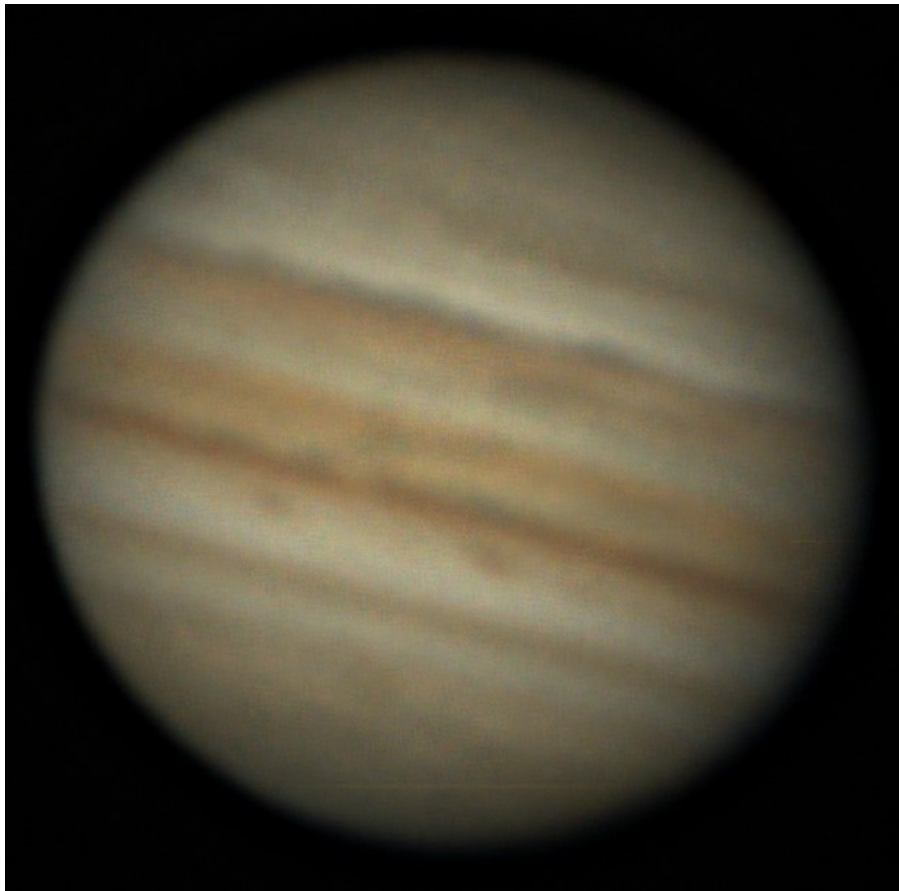
Measuring one of the double-barlowed images, assuming that FireCapture's statement of the size of Saturn's disk is correct at 17.4", I calculate the EFL as 5920mm.



0246UT Jupiter is now out of the trees so moved to it and the seeing is much better, still not perfect though; started a series of runs (a few of which were terminated early): Jup_024609.ser is a 'wide-field' shot with only 2X barlow to capture three of the moons, 5.55ms gain 30, 60s; cropped in to shoot only the disk, ser file Jup_024851.ser, 2.7ms, gain 34, 120s; Jup_025055.ser, ditto; added the 1.8x barlow once again, Jup_025637.ser, 6.3ms, gain 35, 120s; Jup_025845.ser ditto; Jup_030131.ser ditto; Jup_030336.ser ditto; Jup_030559.ser ditto; Jup_031157.ser 6.3ms, gain 36, 120s; Jup_031403.ser ditto. Seeing got significantly steadily as the series progressed.



Jupiter with 2X barlow

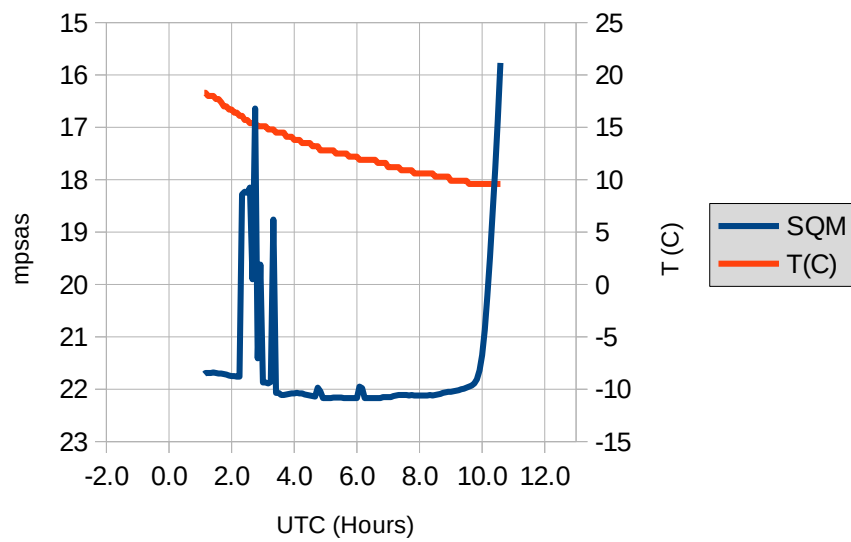


Jupiter with 2x and 1.8x barlows

- 0450UT stopped CCDC action, adjusted focuser in 28 steps, did a very successful refocus (FWHM 1.3px!!) and started a sequence of 10 x 400s unfiltered images of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.
- 0511UT started a sequence of 13 x 300s unfiltered exposures of Fornax Dwarf Galaxy, MCG-06-07-001; autoguided with 2s exposures in PHD2.
- 0611UT adjusted focuser out 28 steps and restarted CCDC action from the Psc01.3hRRCs group.
- 0631UT started a sequence of 200s V and 300s B exposures of ASASSN-V_J062409.89+315123.5; autoguided with 2s exposures in PHD2.
- 0933UT start of astronomical twilight.
- 1007UT start of nautical twilight.
- 1110UT sunrise.



SQM 2021-10-08



2021-10-09

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

2021-10-12

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

2021-10-13 (#116)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2225UT sunset

2328UT end of nautical twilight

0001UT end of astronomical twilight

0009UT started CCDC action 2021-10-13.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
NSVS9147378		300s B, 200s V	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N

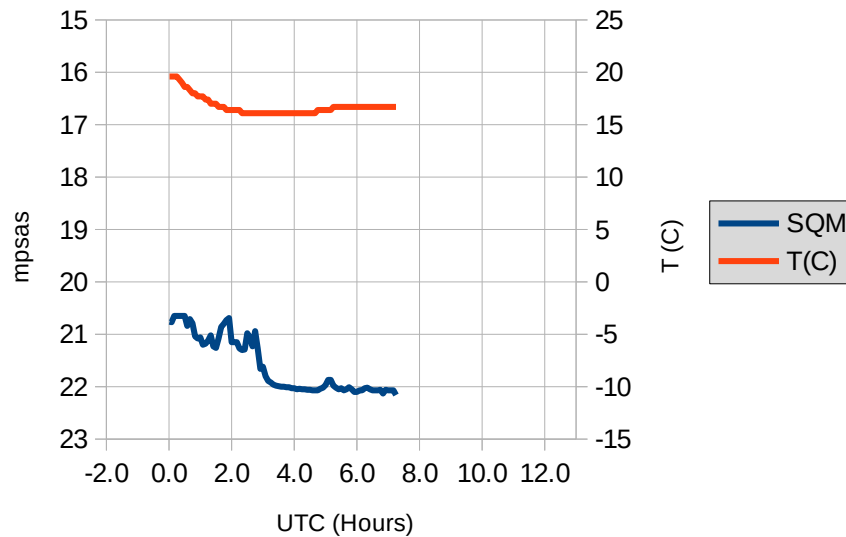
0312UT moonset

0940UT start of astronomical twilight.

1013UT start of nautical twilight.

1117UT sunrise.

SQM 2021-10-13



2021-10-16

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

2021-10-17 (#117)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2218UT sunset

2321UT end of nautical twilight

2355UT end of astronomical twilight

0243UT started CCDC action 2021-10-17.act.

Group	Stars	Exposures	Binning	Guided
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
NSVS9147378		300s B, 200s V	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N

Group	Stars	Exposures	Binning	Guided
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

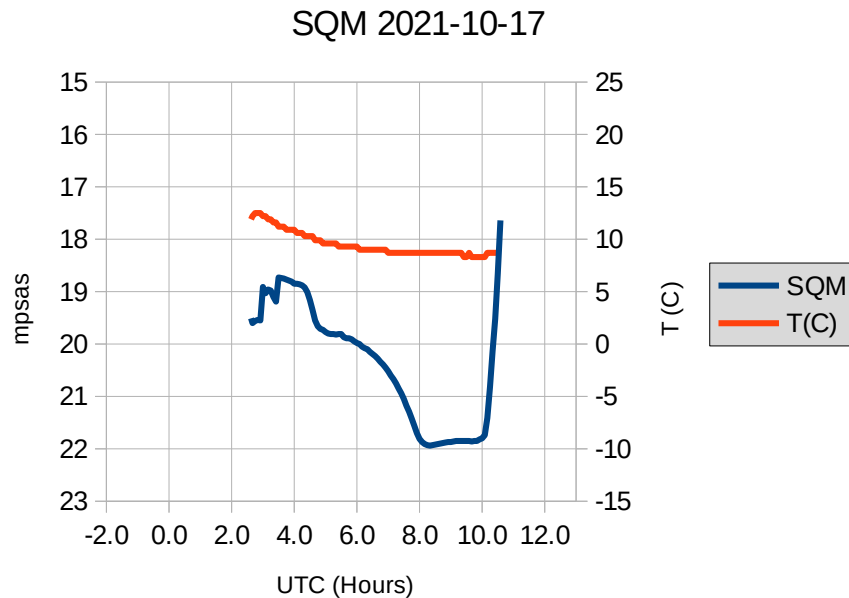
0758UT moonset

0945UT start of astronomical twilight.

0955UT clouded over and all subsequent exposures are lost (3 of V1327 Tau and 2 of VSX_J043039.1+124954.)

1018UT start of nautical twilight.

1122UT sunrise.



2021-10-19 (#118)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2214UT sunset

2314UT started CCD action 2021-10-19.act.

2318UT end of nautical twilight

2351UT end of astronomical twilight

Group	Stars	Exposures	Binning	Guided
Serpens 18.4h RRCs				
	V3433 Oph	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
	V0542 Ser	300s V	1x1	N
	V0553 Ser	200s V	1x1	N
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
NSVS9147378		300s B, 200s V	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

0947UT start of astronomical twilight.

0955UT clouded over and all subsequent exposures are lost (3 of V1327 Tau and 2 of VSX_J043039.1+124954.)

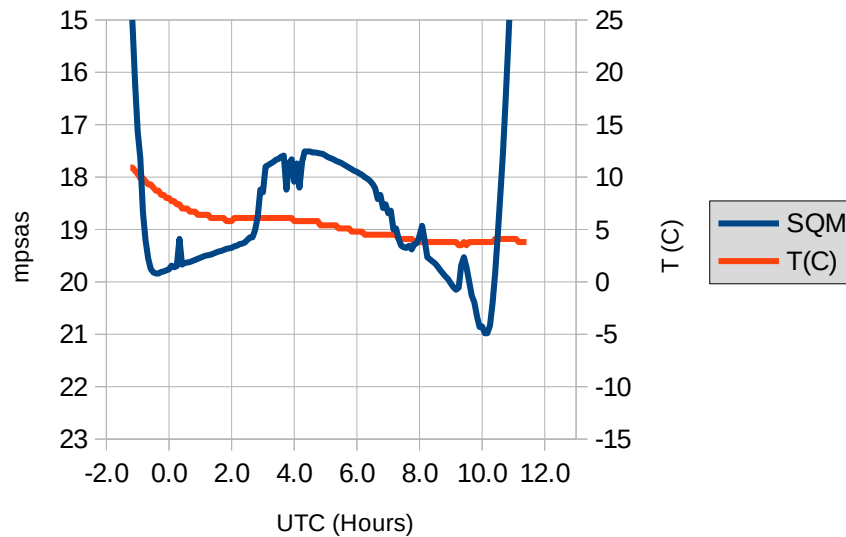
1011UT moonset

1021UT start of nautical twilight.

1124UT sunrise.

RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

SQM 2021-10-19



2021-10-20 (#119)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hanscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2211UT moonrise

2213UT sunset

2233UT Hanscope: started a series of twilight flats using CCD Commander; the focusing of all the flats seems to be quite poor (judging from the blurry star trails) so they may not work.

2300UT Hanscope: started a sequence of 100s V and 200s B exposures of NGC6940; autoguided with 2s exposures in PHD2.

2316UT end of nautical twilight

2316UT started some attempts at shooting M57 with the QHY5III178 colour camera and Televue 2" 2x barlow in port 2 (still not collimated, but from the defocused images of Vega, used for pointing, it looks like it isn't far off) using SharpCap but it was never able to find any stars in the images and so refused to stack them. However, I saved all the FITS images so can stack them myself later. Mostly 10s, 15s, 20s, and 30s exposures at gains of 42 or 51.

2350UT end of astronomical twilight

2358UT returned the Boltwood scope to the main camera port and started a short series of 20s and 200s exposures of M57; autoguided with 1x exposures binned 2x2.

0018UT Hanscope: started a series of 120s V and 300s B exposures of V0482 Peg; autoguided with 2s exposures in PHD2.

0029UT started CCDC action 2021-10-20.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
NSVS9147378		300s B, 200s V	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

0110UT Hankscope: used the PHD2 drift align tool to refine the polar alignment which is clearly off as shown by the gradual drift of target stars over many exposures in spite of autoguiding.

When preparing to click the drift button, select a star reasonably near the centre of the frame so the resulting circle is contained in the frame

- first azimuth run near equator and meridian said error was -60.76, PHD2 drew a large red circle on the image, I moved the drift star roughly to the edge of the circle, moving the mount counterclockwise looking down on the mount.
- first altitude run says error +4.2', gradually reducing to 2', no correction made
- second azimuth, -18.2, adjusted further eastward (CCW)
- second altitude - said +5.7 I turned the alt knob clockwise to move the star to the circle, ran another drift measurement right away and the error is now close to zero
- 3rd azimuth error about 1.5', no adjustment required.

Did a cold start on the mount, synced on the Moon since the first slew to Alpheratz was too poor and the finder scope is badly misaligned. Slewed to Mirach, realigned the guide scope to the main scope and the finder scope. Did a mount model run of about 15 points including one on the west side of the meridian.

0221UT Hankscope: shot a few each of 10s, 20s, 30s, and 60s V exposures of Uranus in an attempt to see how many moons I can capture.

0257UT started a long series of 10s V exposures of WASP-33b in an attempt to capture a transit predicted for tonight. Shooting only a subframe X:960 Y: 620 W:1540 H: 1208 according to the Camera Control window. This was very late starting so I may have missed the beginning, certainly didn't get as much pre-transit baseline as is proper. Camera had to be badly refocused (outwards by 90 steps) to get the max pixel in the star below 50kadu. Autoguided with 2s exposures in PHD2 to prevent too much drift over the long series. Eclipse predicted for 22:56-01:47 local time.

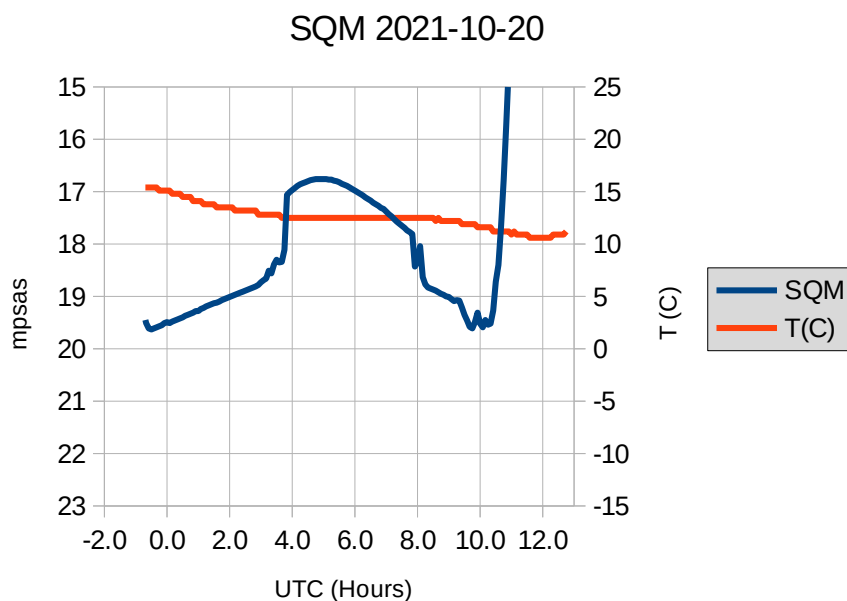
0422UT decided that I had missed the boat on the WASP-33b transit so I will just use the exposures so far as practice and a measurement of how consistent my measurements are. Started a series of 30s unfiltered exposures of WASP-12b which is predicted to undergo transit 0101-0401 local time. Shooting only a subframe X:960 Y: 620 W:1540 H: 1208 according to the Camera Control window. Focus is back to fairly good (back in 60 of the 90 I moved out for WASP-33b.) Autoguided with 2s exposures in PHD2 to prevent too much drift over the long series.

0948UT start of astronomical twilight.

1022UT start of nautical twilight.

1116UT moonset

1126UT sunrise.



2021-10-21 (#120)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

It is unexpectedly clear out for probably a few hours.

2211UT sunset

2231UT moonrise

2314UT end of nautical twilight

2324UT started CCDC action 2021-10-21.act.

Group	Stars	Exposures	Binning	Guided
Serpens 18.4h RRCs				
	V3433 Oph	300s B	1x1	N
	V0542 Ser	300s B	1x1	N
	V0553 Ser	200s B	1x1	N
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
NSVS9147378		300s B, 200s V	1x1	N

2348UT end of astronomical twilight

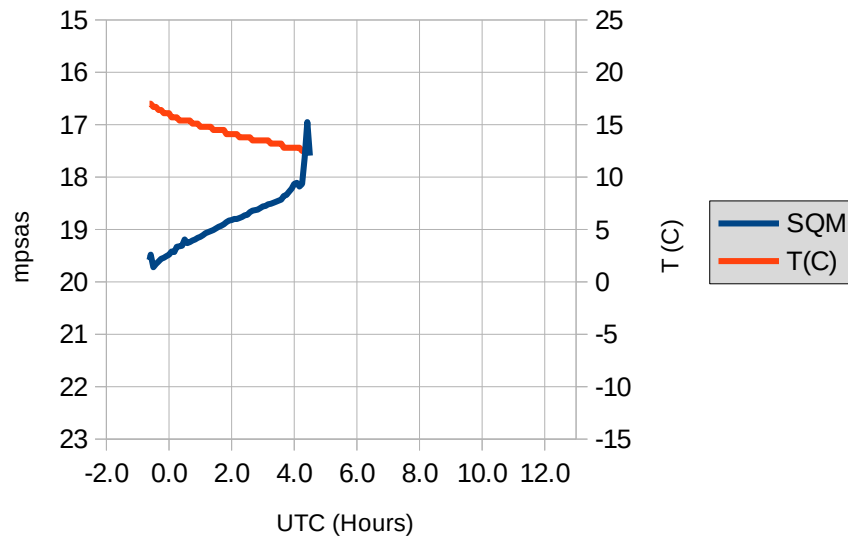
0435UT it is going to cloud over within an hour or so and start raining very soon thereafter so am shutting down now in the interest in getting a good night's sleep.

0949UT start of astronomical twilight.

1023UT start of nautical twilight.

1127UT sunrise.

SQM 2021-10-21



2021-10-23 (#121)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

It looks like it may clear off or at least have clear periods and periods of thin cloud so opening up to see how many useful images I can get.

2208UT sunset

2247UT started CCDC action 2021-10-21.act.

Group	Stars	Exposures	Binning	Guided
Serpens 18.4h RRCs				
	V3433 Oph	300s B	1x1	N
	V0542 Ser	300s B	1x1	N
	V0553 Ser	200s B	1x1	N
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N

Group	Stars	Exposures	Binning	Guided
NSVS9147378		300s B, 200s V	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

2311UT end of nautical twilight

2316UT moonrise

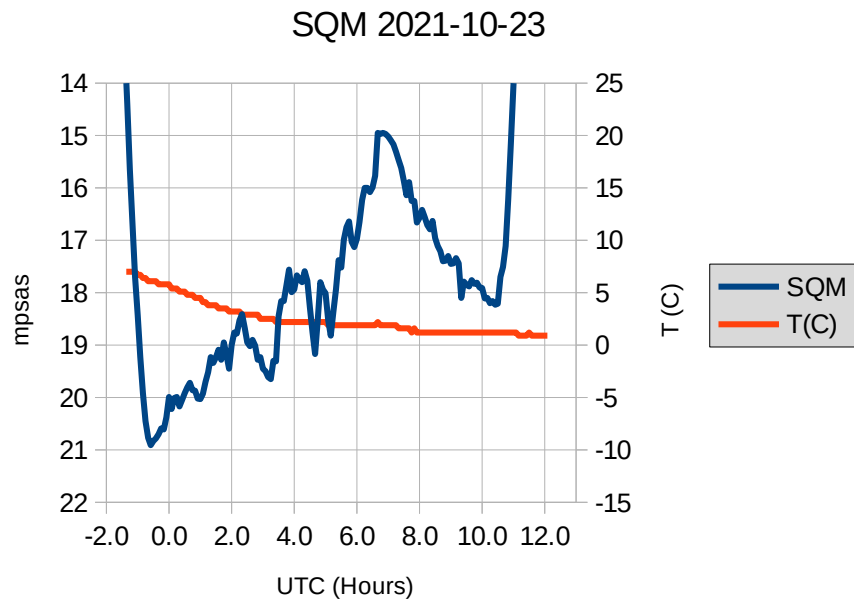
As expected many shots were clouded out, but ~88 usable images were collected.

2345UT end of astronomical twilight

0952UT start of astronomical twilight.

1026UT start of nautical twilight.

1129UT sunrise.



2021-10-24 (#122)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Again tonight it looks like it may clear off or at least have clear periods and periods of thin cloud so opening up to see how many useful images I can get.

2206UT sunset

2310UT end of nautical twilight

2330UT started CCDC action 2021-10-24.act.

Group	Stars	Exposures	Binning	Guided
Serpens 18.4h RRCs				
	V3433 Oph	300s B	1x1	N
	V0542 Ser	300s B	1x1	N
	V0553 Ser	200s B	1x1	N
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
NSVS9147378		300s B, 200s V	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

2344UT end of astronomical twilight

0229UT moonrise

0335UT stopped CCDC action, adjusted focuser in 28 steps, did a quick refocus (FWHM 2px after movement outwards 6 steps) and started a sequence of 10 x 400s unfiltered images of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

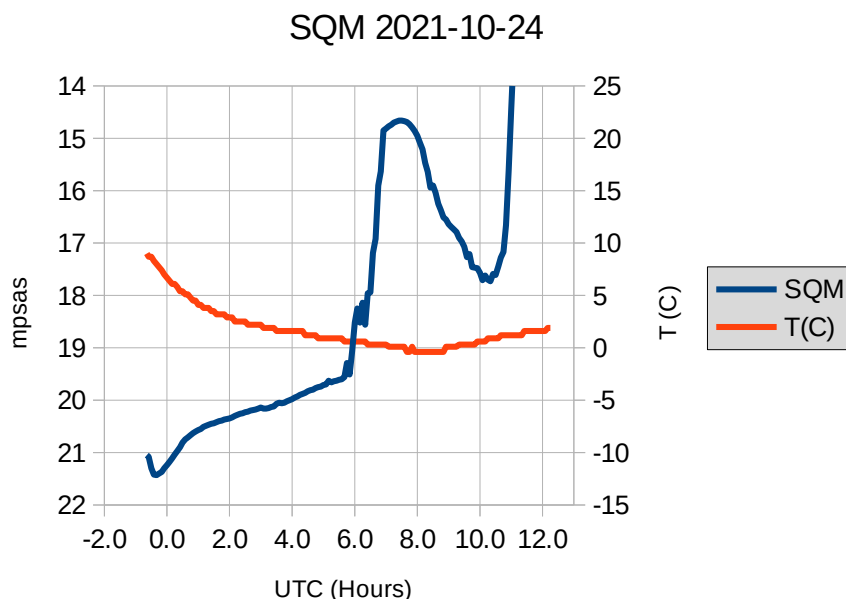
0450UT adjusted focuser out 28 steps and restarted CCDC action from the Psc01.3hRRCs group.

0953UT start of astronomical twilight.

1027UT start of nautical twilight.

1131UT sunrise.

When shutting down this morning the primary (and probably the secondary) was heavily dewed up in spite of having the heat on both for most of the night. The last 6 or so images of the Taurus 04.6h RRCs group were lost.



2021-10-28 (#123)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

It cleared late evening, slowly from the west.

2200UT sunset

2304UT end of nautical twilight

2338UT end of astronomical twilight

2357UT it has at least partially cleared off so started CCDC action 2021-10-28.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N

Group	Stars	Exposures	Binning	Guided
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
NSVS9147378		300s B, 200s V	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN- V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

0035UT it is still cloudy in the east so the Hankscope is skunked for now.

0046UT seems to have cleared off to the east so started a sequence of 200s unfiltered exposures of UGC12613 = Pegasus Irregular Dwarf; autoguided with 1s exposures in PHD2.



Tried a run with NINA but had no luck - first run did not include focusing or platesolve/pointing. It took its first exposure but apparently misused the filter offsets so the image was very out of focus. I restarted it including a 'center' function (platesolve and reslew) on the first target but it reported error 'unable to find executable' and quit. I need to attempt using PlateSolve2 manually to ensure that it works and the settings are good. Then check that the NINA config points to the correct location. (2021-10-28 - NINA config did not have a pointer to PlateSolve2, added that and successfully tested PlateSolve2 on an image so NINA plate solving should now work.)

I've messed up the Imaging Tab by removing the Filterwheel window - need to find out how to get it back into its correct position.

Attempted focus run with Focus Max but it was unable to find a star ever. Attempted a focus run with Maxim and it went way out of focus in one direction then took so many steps to get to the focus point that it quit with a 'too many exposures' failure. I finally manually did a V focus at 13452.

0230UT Hankscope: started a sequence of 200s B and 150s V images of LS Cet; autoguided with 1s exposures in PHD2.

0248UT moonrise

0314UT stopped CCDC action, adjusted focuser in 28 steps, did a quick refocus (seeing quite poor so no better than ocnl 2.4px FWHM) and started a sequence of 9 x 400s unfiltered images of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

0320UT Hankscope: started test exposures on GM Aur; 30s V exposure gave 5.8kADU on GM Aur, 15kADU on 110 comp star so will go with 90s V exposures; 30s B exposure gave 900ADU on GM Aur, 2.9kADU on 110, will use 300s B.

0327UT Hankscope: started a sequence of 300s B and 90s V exposure of GM Aur; autoguided with 1s exposures in PHD2.

0355UT some relatively thick cloud has moved in for a short while (I hope) so both scopes were stopped.

0411UT adjusted focuser out 28 steps and restarted CCDC action from NSVS9147378. It is still cloudy but there are small holes and hopefully it will clear off shortly and in any case I will get some sleep.

0417UT Actually it now looks like it has clouded over for the night - the area of cloud is increasing and intensifying so I'm shutting everything down.

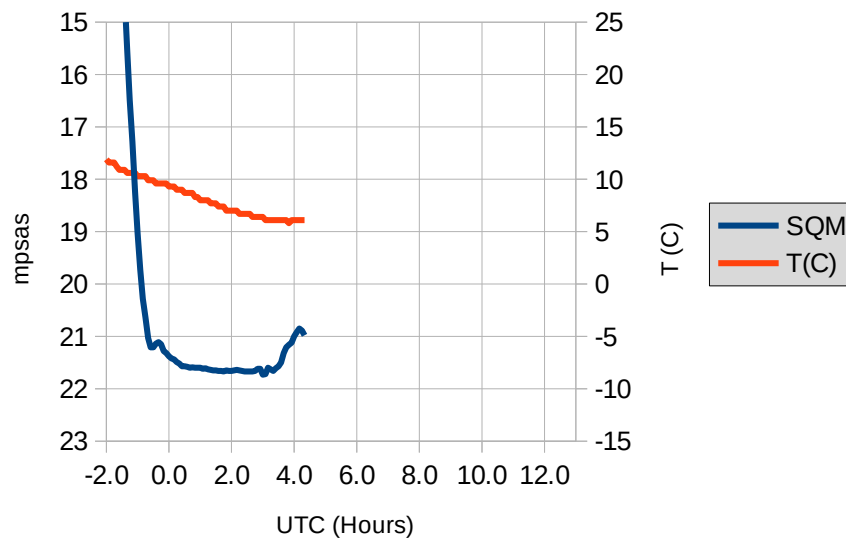
From looking at the satellite loop it looks like it did finally clear off again shortly after 07UT and it certainly was clear at 1040UT when I arose and headed off canoeing.

0958UT start of astronomical twilight.

1032UT start of nautical twilight.

1136UT sunrise.

SQM 2021-10-28



2021-10-29 (#124)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Lovely clear and dark evening.

2159UT sunset

2246UT started CCDC action 2021-10-29.act.

Group	Stars	Exposures	Binning	Guided
Serpens 18.4h RRCs				
	V3433 Oph	300s B	1x1	N
	V0542 Ser	300s B	1x1	N
	V0553 Ser	200s B	1x1	N
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
NSVS9147378		300s B, 200s V	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

2303UT end of nautical twilight

2325UT Hankscope: first successful run of Nighttime Imaging 'N' Astronomy (NINA) to automate observing with this scope. Each target starts with a platesolve and reslew and autofocus.

Target	Exposures	Binning	Guided
V0482 Peg	300s B, 150s V	1x1	Y
LS Cet	300s B, 180s V	1x1	Y
ASASSN-V_J062409.89+315123.5	300s B, 200s V	1x1	Y
ASASSN-V J091617.57-194846.3	300s B, 200s V	1x1	Y

2337UT end of astronomical twilight

0352UT moonrise

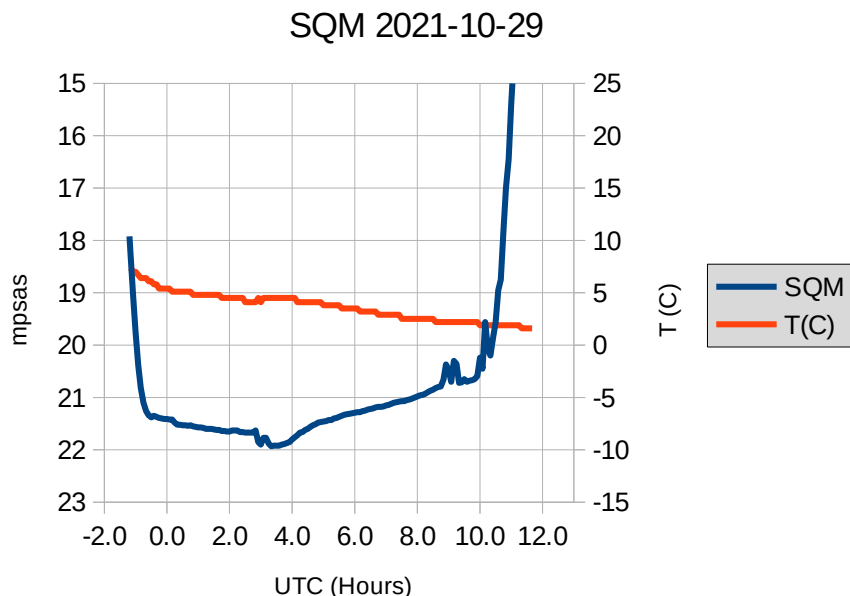
0310UT stopped CCDC action, adjusted focuser in 28 steps, did a quick refocus (seeing quite poor so no better than ocnl 2.9px FWHM)) and started a sequence of 9 x 400s unfiltered images of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

0413UT adjusted focuser out 28 steps and restarted CCDC action from Psc01.3h RRCs group.
Beautifully clear outside.

0959UT start of astronomical twilight.

1033UT start of nautical twilight.

1137UT sunrise.



2021-10-30 (#125)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Arrived home at 0000UT from Kingston to find unexpectedly beautifully clear skies. Opened quickly and got shooting.

2157UT sunset

2303UT end of nautical twilight

2337UT end of astronomical twilight

0014UT started CCDC action 2021-10-30.act.

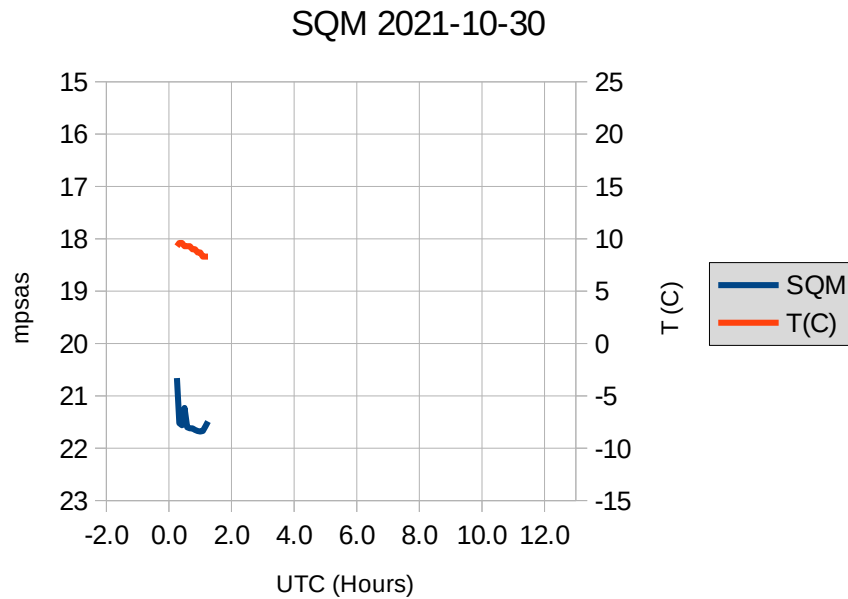
Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N

0117UT it clouded over some minutes ago - first two exposures of the Delphinus group were both blank, while all the Nova Vul 2021 exposures were good. Shut down.

0500UT moonrise

1000UT start of astronomical twilight.

1034UT start of nautical twilight.
 1139UT sunrise.



Images to date (end October) this year:

my scopes:

- reduced on /mnt/data/... 4196
- unreduced on /mnt/data 305
- reduced on Seagate drive 11000
- total: 15501

RASC remote scope: 11079

Total: 26580

2021-11-02 (#126)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Cleared off late to a lovely clear and dark evening.

2153UT sunset

2258UT end of nautical twilight

2331UT end of astronomical twilight

0208UT started CCDC action 2021-11-02.act.

Group	Stars	Exposures	Binning	Guided
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N

Group	Stars	Exposures	Binning	Guided
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN- V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

The camera is misbehaving again - shutter failing to stay open, at least one stuck partially open. 0325UT stopped CCDC action, adjusted focuser in 28 steps, focus looks good, started a sequence of 9 x 400s unfiltered images of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim. Camera continues to misbehave - unable to get more than 8s into an exposure before the guide star disappears. Maxim is operating extremely slowly - clicking on any button or menu item takes upwards of 10s to respond, even once an exposure begins there is an 8-12s gap between showing 1 or 2s progress then a sudden jump to 10-12s. Restarted Maxim and problem persists, rebooted the computer and restarted all apps and problem persists.

0405UT adjusted focuser out 28 steps and restarted CCDC action from Psc01.3h RRCs group. Exposures are all very dim - the shutter is clearly closing very shortly into every exposure.

0420UT attempted two test exposures (20s V and 30s B) of RU Psc to see if the camera works better with short exposures and these look fine.

0423UT started a sequence of 30s B and 20s V exposures of RU Psc, no guiding. First exposure didn't work - RU Psc only has max pixel of 713 vs normal exposure of ~26000. Couldn't shoot second exposures as Maxim reported filter error. discovered the sequence still had auto dark enabled, turned that off and restarted the sequence. First exposure B worked fine, 1st V was poor, 2nd B worked (though was trailed), 2nd V was blank, 3rd B blank, 3rd V blank, 4th B blank, 4th V fine, Note that there are faint stars in many of the failed images so the problem is that the shutter is closing very early in the exposure rather than not opening at all.

0433UT giving up in disgust and shutting down.

Action: remove camera and disassemble to see if I can fix it.

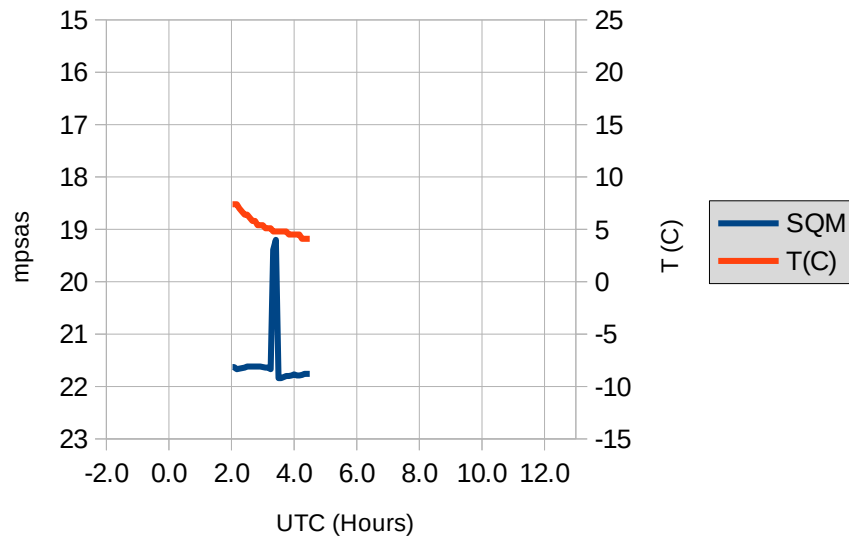
0838UT moonrise

1004UT start of astronomical twilight.

1038UT start of nautical twilight.

1143UT sunrise.

SQM 2021-11-02



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

2021-11-03 (#127)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

I was over at Rob Dick's place for dinner (very nice home-made tourtiere) and returned late to find clear skies.

I disassembled the camera today (down as far as removing the filter wheel and the camera cover.)

There is nothing obviously wrong with the shutter, it seems to rotate quite nicely. I reassembled it and reinstalled in the Boltwood scope. For testing I attempted to get it running under Linux on the Intel NUC and the scopi and under Win10 with the turquoise computer and none is able to connect even though the camera is detected by all the systems.

2151UT sunset

2256UT end of nautical twilight

2330UT end of astronomical twilight

0120UT did a quick focus - very poor result as the seeing seems to be very poor - FWHM ~ 4px.

0128UT started CCDC action 2021-11-03.act.

Group	Stars	Exposures	Binning	Guided
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
NSVS9147378		300s B, 200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

0345UT the sky looks rather murky and there is cloud building in from the east and moving in from the southwest so I don't have much longer.

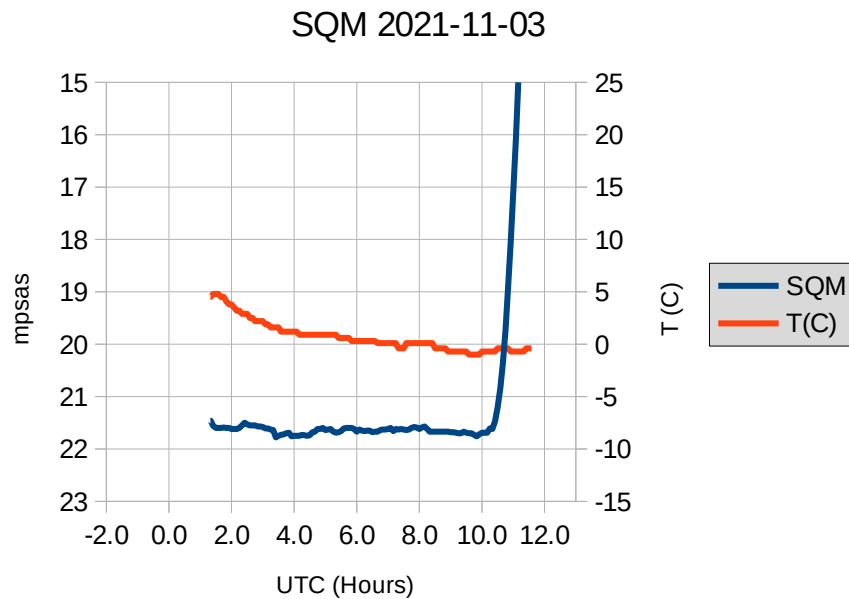
0955UT moonrise

1005UT start of astronomical twilight.

1039UT start of nautical twilight.

Awoke to find it cloudy but it looks like any cloud was thin enough that the whole night was useful.

1144UT sunrise.



2021-11-04 (#128)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C.

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

20cm f/5.6 Dob

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

We were over at Caroline's place for dinner (very nice scallops in cream sauce with brownies for dessert) and returned late to find very clear skies.

2150UT sunset

2255UT end of nautical twilight

2329UT end of astronomical twilight

0109UT started CCDC action 2021-11-03.act.

Group	Stars	Exposures	Binning	Guided
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N

0215UT Hankscope: did a FocusMax run unfiltered - best focus was determined to be 13036.

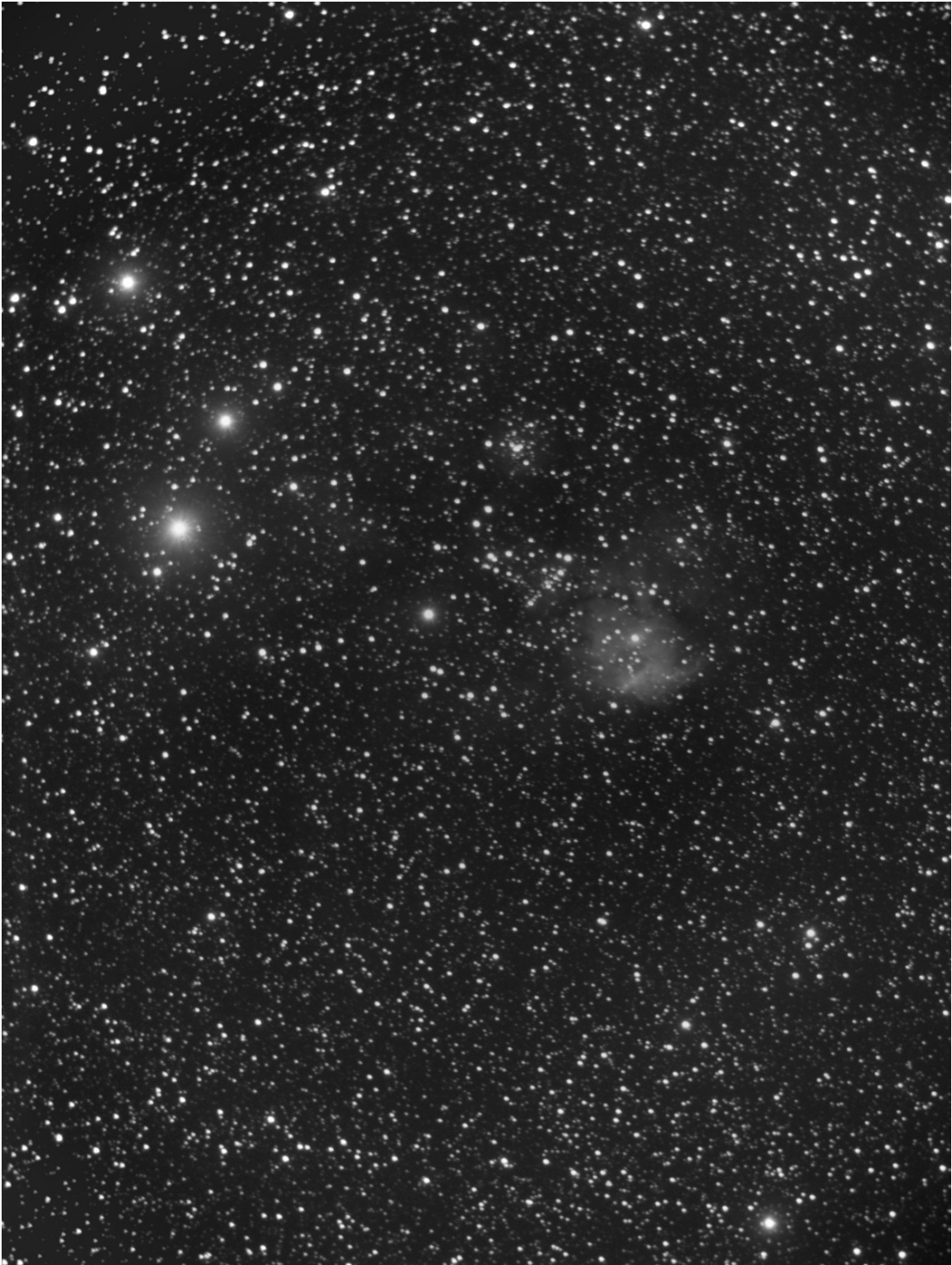
0227UT Hankscope: started a Maxim sequence of 300s CV exposures of NGC253; multi-star autoguided with 2s exposures in PHD2.

0245UT 20cm Dob: Looking for UGC12613: I thought I was able to see something extremely faint in about the correct position but looking at my images from 2021-10-28 it is clear that I was looking very slightly in the wrong position. Accidentally looking down the focuser it is clear that both primary and secondary mirrors are extremely dirty.

Action: clean 20cm Dob mirrors.

0404UT Hankscope: started a Maxim sequence of 300s CV exposures of M78; multi-star autoguided with 2s exposures in PHD2.

0430UT Hankscope: switched to NINA to shoot 200s CV exposures of the Merope Nebula; 300s CV exposures of M78; 300s CV exposures of NGC2467. All targets set to autofocus at start, slew to target, centre target (solve and reslew), autoguide with PHD2. NINA's first autofocus run with the V filter plus offset gave 12915 for unfiltered vice 13036 from 2 hours ago. Now, did it change that much or is there a difference in the quality of the autofocus runs? Or a problem with offsets? (I missed when the first autofocus run ended, but the result of 12915 + 478 offset = 13393 was presumably the measured V focus point.)



NGc2467 needs more exposure.

0448UT stopped CCDC action, adjusted focuser in 28 steps, started a sequence of 9 x 400s unfiltered images of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

0546UT 8th image of M31 is very dim and the guide star is frequently disappearing - looks like it has moved (far!) into the trees. Adjusted focuser out 28 steps and restarted CCDC action from Cet02.6h RRCs group.

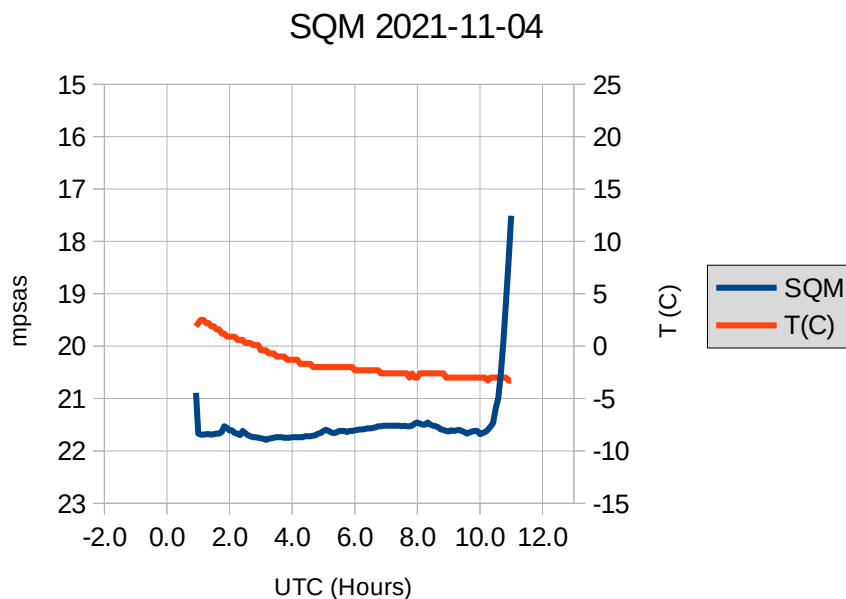
Plate solve at the start of the Cet02.6h RRCs group failed twice almost instantly saying that no stars could be matched.

1006UT start of astronomical twilight.

1040UT start of nautical twilight.

1116UT moonrise

1146UT sunrise.



2021-11-05 (#129)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C; camera in portrait orientation (long axis is north-south.)

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, QSI583ws with B and V filters, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Clearing after supper.

2149UT sunset

2254UT end of nautical twilight

2328UT end of astronomical twilight

2300UT started CCDC action 2021-11-05.act, except that I forgot to remove the tube cap and uncover the Paracorr.

2330UT started CCDC action 2021-11-05.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N

Group	Stars	Exposures	Binning	Guided
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N
CMi 07.1h RRCs				
	ASASSN-V_J070344.48+054432.1	300s B	1x1	N
	ASASSN-V_J071230.28+062847.3	300s B	1x1	N

2310UT Hankscope: when taking off the tube cap I accidentally moved the scope in RA (I tightened the clutch to prevent this in the future) which meant I had to do a 'warm start'. I didn't set the mount to CWD position and the first sync on the sky left the mount thinking it was on the wrong side of the mount so it had north and south reversed. I finally had to close everything down, put the mount in CWD and then restart to successfully sync to the sky.

0059UT Hankscope: tarted a sequence of 300s CV exposures of NGC247; multi-star autoguided with 1.5s exposures in PHD2

0210UT Hankscope: switched to NINA to shoot 300s CV exposures of NGC247; 300s CV exposures of M77; and 300s CV exposures of Sh2-224; and 300s CV exposures of Sh2-302. All targets set to autofocus at start, slew to target, centre target (solve and reslew), autoguide with PHD2. For some reason the solve/reslew function was not successful - it did one solve but the correction was too far, it did another image/solve and correction which took the target even further away from centre. It then (gave up? ran out of allowable number of attempts? and) began guiding and focusing.

Action: change the focus to have no inner or outer radius

Action: adjust framing assistant to only 2deg field

Action: reduce the frame download size for autofocus in NINA to increase speed

0256UT Hankscope: When it started to do the same thing after slewing to M77 & NGC1055 I gave up and went back to Maxim. Started a sequence of 300s CV exposures of M77 and nearby NGC1055; multi-star autoguided with 1.5s exposures in PHD2.

0323UT stopped CCDC action, adjusted focuser in 28 steps, started a sequence of 9 x 400s unfiltered images of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

0420UT it has now clouded over quite dense so I killed the Hankscope sequence and returned to CCDC controlled photometry in the hope that it will capture some images while I sleep; adjusted focuser out 28 steps and restarted CCDC action from Pisces 01.3h RRCs group.

0740UT Hankscope: it has cleared off so started a sequence of 300s CV images of Sh2-302; multi-star autoguided with 1.5s exposures in PHD2.

0800UT CCDC says "07:58:10 Skip ahead at 16:49 action is active. Soft skip..." and then "07:59:13 VSX_J043039.1+124954 passed 44d altitude." This is WAY EARLY! As a result it did an unwanted meridian flip. Is this possibly because I added the CMi RRCs while the action was running?

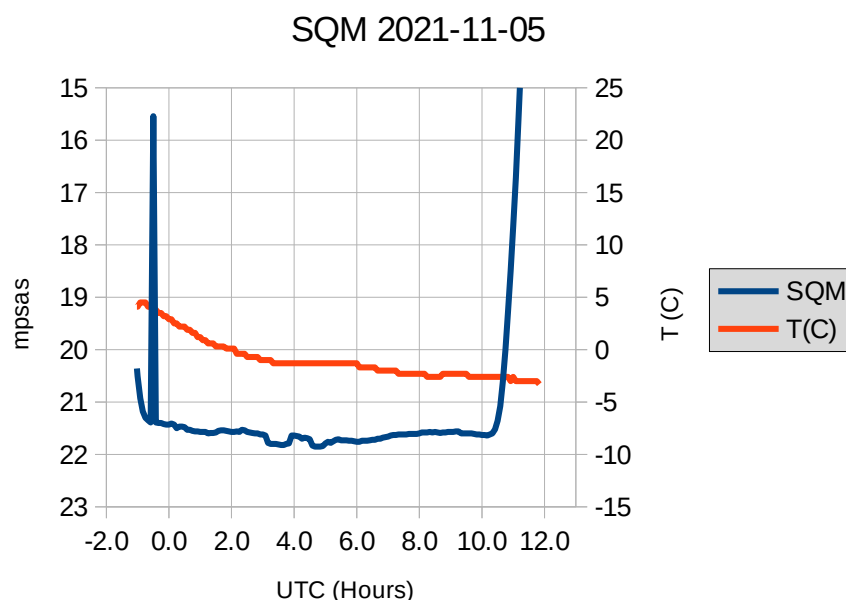
0825UT Hankscope: switched to NINA to shoot 300s CV exposures of Sh302; 5 each 200s B and 150s V exposures of M67; and 300s CV exposures of the Leo Trio (M65, M65, NGC3648). First target set to autofocus at start, all targets slew to target, centre target (solve and reslew), autoguide with 1.5s exposures in PHD2. Autofocus yielded 12888 (note that this is the unfiltered focus position - it should have focused with the V filter but appears not to have), current temp is -2.5C. (SQM reporting -2.3C.)

~~Action: unset the V filter as the auto-focus filter.~~

1007UT start of astronomical twilight.

1042UT start of nautical twilight.

1147UT sunrise.



2021-11-06 (#130)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C; camera in portrait orientation (long axis is north-south.)

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, Canon 60Da, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Clearing after supper.

2147UT sunset

2226UT moonset.

2253UT end of nautical twilight

2327UT end of astronomical twilight

2309UT started CCDC action 2021-11-06.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N
CMi 07.1h RRCs				
	ASASSN-V_J070344.48+054432.1	300s B	1x1	N
	ASASSN-V_J071230.28+062847.3	300s B	1x1	N

0015UT Hankscope: started a NINA autofocus run - 3727 at HFR of 3.74px.

0040UT Hankscope: started a series of 10x 300s exposures of NGC253, camera at ISO800; autoguided with 1.5s exposures in PHD2.

0130UT Hankscope: started more 300s exposures of NGC253, camera at ISO800; autoguided with 1.5s exposures in PHD2.



0302UT Hankscope: changed camera to portrait format (long axis N-S), started 300s exposures of Merope Nebula, camera at ISO800; autoguided with 1.5s exposures in PHD2.



Maxim was unable to align the 60Da colour image to the QSI583 luminance image. Splitting the colour image into 3 colour planes and then aligning the 4 images worked. The Merope nebula 60Da image shows some peculiar roughly cross-shaped reflections on the upper right edge, inside the lower right corner and just above Merope. These were mostly eliminated by using the split 60Da colour frames to create a new colour image in Photoshop then using that colour image as a colour layer in Photoshop with the QSI583 as luminosity layer.

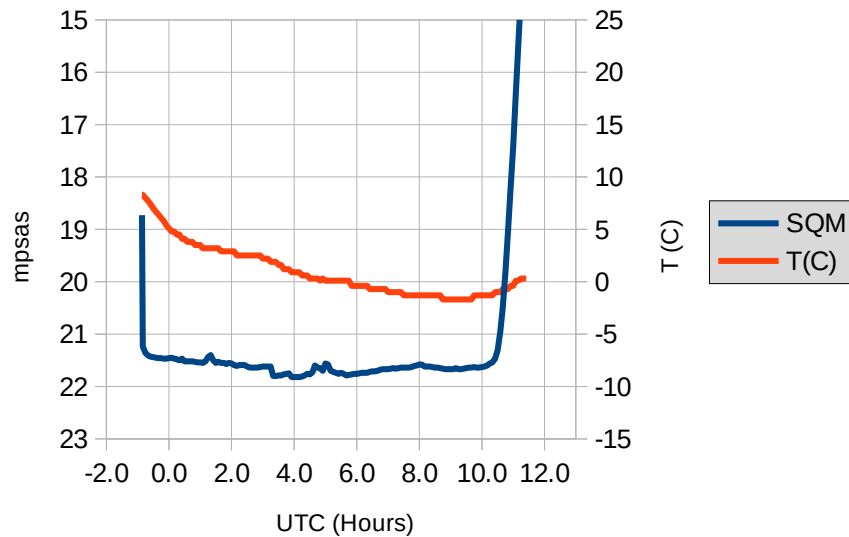
0505UT awoke to find the sky is (nearly?) overcast in thin cloud which is making the Hankscope images hopeless with scattered light. I slewed the Hankscope to the southern horizon pending further developments.

1009UT start of astronomical twilight.

1043UT start of nautical twilight.

1148UT sunrise.

SQM 2021-11-06



RASC Remote Telescope at Sierra Remote Observatories, -119 24 46.8, Lat. 37 04 13.1 N, Alt. 1404m, 0.4m f/8.9 RC, SBIG ST16803 at -25C, LRGBHaOIIISII filters. Rotator always at 0.55d (north up.)

2021-11-07 (#131)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C; camera in portrait orientation (long axis is north-south.)

Hanscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, Canon 60Da, Pegasus Astro Ultimate Power Box v2.

All-sky cameras: QHY5III178 colour with 2.5mm fishey lens borrowed from Kevin and 6mm lens from RPi HQ camera; ZWO ASI120MC colour camera with with 2.5mm fishey lens borrowed from Kevin.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

Clearing after supper.

2148UT sunset

2205UT Hanscope: set the Canon to aperture priority and shot 30 flats manually using the shutter button. Most were set to put the histogram ~3/4 of max.

Shot a set of V, B, and unfiltered flats using my Perl script ffs.pl; scope was refocused in 28 steps for the unfiltered flats.

2252UT end of nautical twilight

2221UT started CCDC action 2021-11-07.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N

Group	Stars	Exposures	Binning	Guided
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N
CMi 07.1h RRCs				
	ASASSN-V_J070344.48+054432.1	300s B	1x1	N
	ASASSN-V_J071230.28+062847.3	300s B	1x1	N

2307UT moonset.

2326UT end of astronomical twilight

2326UT using NINA started a series of 300s images of the core of M31; autoguided with PHD2 (through NINA) with 1.5s exposures.

0031UT using NINA started a series of 300s images of NGC247; autoguided with PHD2 (through NINA) with 1.5s exposures.



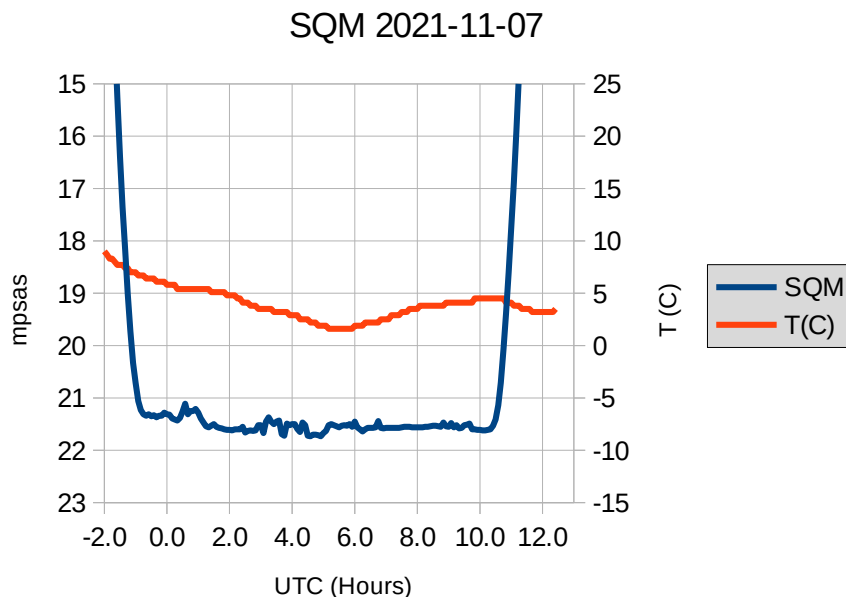
0245UT inside the observatory, using SharpCap shot a series of 30s all sky images with the QHY5III178 colour camera (gain at 41, offset 122, RGB24 mode) and 2.5mm fisheye lens.



0300UT inside the observatory, using SharpCap shot a series of 30s all sky images with the QHY5III178 colour camera (gain at 41, offset 122, RGB24 mode) and 6mm RPi HQ camera lens.



0329UT out at the lakeside site beside the Hankscope, using SharpCap shot a series of 30s all sky images with the ZWO ASI120MC (gain at 48, Raw8 mode) and 2.5mm fisheye lens. Used the SharpCap dark tool to shoot and average 10 x 30s dark frames at same settings.
 1010UT start of astronomical twilight.
 1044UT start of nautical twilight.
 1150UT sunrise.



2021-11-08 (#132)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C; camera in portrait orientation (long axis is north-south.)
 Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, Canon 60Da, Pegasus Astro Ultimate Power Box v2.
 SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.
 2145UT sunset
 2239UT started CCDC action 2021-11-08.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N

Group	Stars	Exposures	Binning	Guided
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN- V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N
CMi 07.1h RRCs				
	ASASSN- V_J070344.48+054432.1	300s B	1x1	N
	ASASSN- V_J071230.28+062847.3	300s B	1x1	N

2251UT end of nautical twilight

2317UT Hankscope: using NINA started an all-night script: 12 x 300s on each of panels 1, 4, & 7 of M31; 20 x 300s on M77 and NGC1059; 18 x 300s on M78; 18 x 300s on the Christmas Tree Cluster; ~~12 x 300s on Sh2-302~~; 18 x 300s on the Leo Trio (M65, M66, NGC3628); all slewed to (but no plate solve) and PHD2 autoguided with NINA. (The command to slew to target was unchecked for the Sh2-302 so all those images were actually of NGC2264/Christmas Tree Cluster; images were renamed.)





2325UT end of astronomical twilight

2357UT moonset.

0215UT stopped CCDC action, adjusted focuser in 28 steps, started a sequence of 9 x 400s unfiltered images of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

0318UT attempted a series of all sky images with ASI120MC (RGB24 mode, gain 48, offset not reported in camera settings file) + 2.5mm fisheye lens but SharpCap is dropping all frames - can't even preview.

0320UT started a sequence of 400s unfiltered images of NGC206; autoguided with 2s exposures binned 2x2 in Maxim. Guiding is noticeably poorer than the M31 V619 images with 1s guide exposures so after the first three NGC206 images changed to 1s guiding exposures.

0353UT restarted SharpCap to try again with the allsky shots but still no luck - all frames being dropped. Tried shorter exposures - works fine at 1s, then 2s then 4s; choked again at 15s for a bunch of frames, gave one frame that was fractured (looked like the right hand end was translated to the left end of the frame and only the green channel?) then suddenly started working again so I quick started a capture (RAW16 mode, gain 48, offset not reported in camera settings file). In some of the failed captures the frame exposure timer runs on well beyond the actual exposure duration and no image ever shows up.

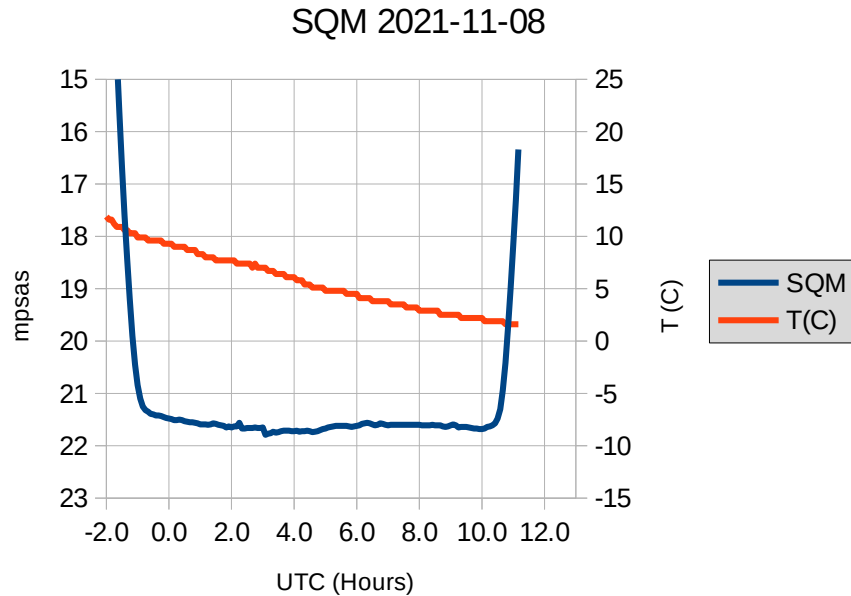




0357UT attempted a series of 30s all sky frames (RAW16 mode, gain 48, offset not reported in camera settings file) - first several were dropped but then suddenly it started working. Looks like focus could be improved slightly.



0410UT adjusted focuser out 28 steps and restarted CCDC action from Pisces 01.3h RRCs group.
 1011UT start of astronomical twilight.
 1045UT start of nautical twilight.
 1151UT sunrise.



2021-11-09 (#133)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C; camera in portrait orientation (long axis is north-south.)
 Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, Canon 60Da, Pegasus Astro Ultimate Power Box v2.
 SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.
 2144UT sunset
 2239UT started CCDC action 2021-11-08.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N

Group	Stars	Exposures	Binning	Guided
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N
CMi 07.1h RRCs				
	ASASSN-V_J070344.48+054432.1	300s B	1x1	N
	ASASSN-V_J071230.28+062847.3	300s B	1x1	N

2249UT end of nautical twilight

2304UT Hankscope: did a NINA focus run - final result 3704. The focus run is taking way too long and too many exposures so I increased the step size from 10 to 20. In the hope that it might somewhat reduce the coma in the corners of the frame I also set an inner crop ratio of 0.2 and an outer crop ratio of 0.6 so it doesn't focus in the centre of the frame.

2324UT end of astronomical twilight

2331UT Hankscope: using NINA started sequences: 12 x 300s on each of panels 3, 6, & 8 of M31; all slewed to (but no plate solves) and PHD2 autoguided with NINA.



0059UT moonset.

0211UT stopped CCDC action, adjusted focuser in 28 steps, started a sequence of 11 x 400s unfiltered images of M31 V619; autoguided with 1s exposures binned 2x2 in Maxim.

0316UT Hankscope: using NINA started sequences: 30 x 300s on PK 215-30.1; ~~20 x 300s on NGC2359~~; ~~24 x 300s on NGC3158/UGC5511 (lost to cloud)~~; all slewed to (but no plate solves) and PHD2 autoguided with NINA. (Second and third targets were added by stopping the first sequence, loading the new targets then resuming the first sequence where it left off.) (Made an error in adding NGC2359 so it did not slew to the new target - a whole bunch more images of PK 215-30.1.) PK 215-30.1 is extremely faint and is barely detectable in the image below as the 'circle' of slightly reddish blobs ~3cm diameter in the centre of the image.



0331UT adjusted focuser out 28 steps and restarted CCD action from Pisces 01.3h RRCs group.

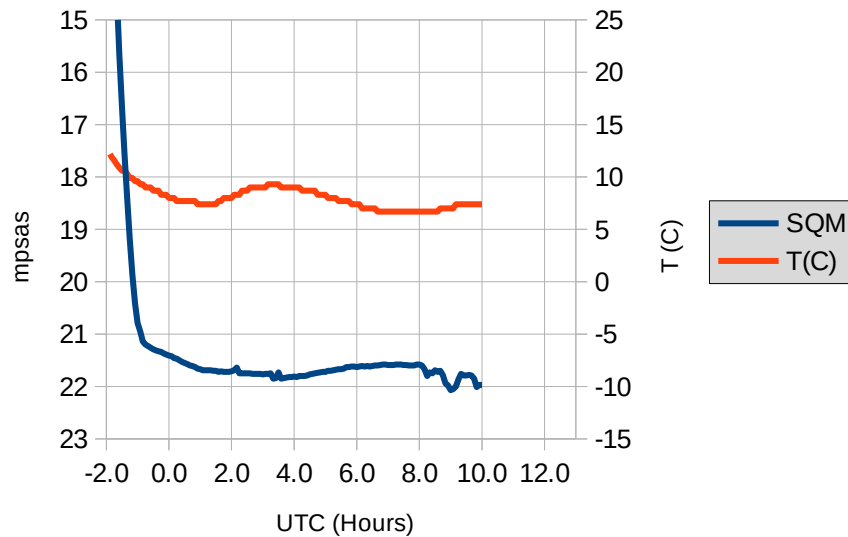
0500UT awoke to find it overcast so shut everything down.

1012UT start of astronomical twilight.

1046UT start of nautical twilight.

1152UT sunrise.

SQM 2021-11-09



2021-11-11 (#134)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C; camera in portrait orientation (long axis is north-south.) SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190. Evening started off clear (following passage of a narrow band of thin cirrus) 2141UT sunset 2254UT started CCDC action 2021-11-11.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
NSVS9147378		300s B, 200s V	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N

Group	Stars	Exposures	Binning	Guided
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N
CMi 07.1h RRCs				
	ASASSN-V_J070344.48+054432.1	300s B	1x1	N
	ASASSN-V_J071230.28+062847.3	300s B	1x1	N

2247UT end of nautical twilight

2322UT end of astronomical twilight

0200UT thin cloud moved in and persisted throughout the night, other than occasional breaks. Thin enough to continue photometry though.

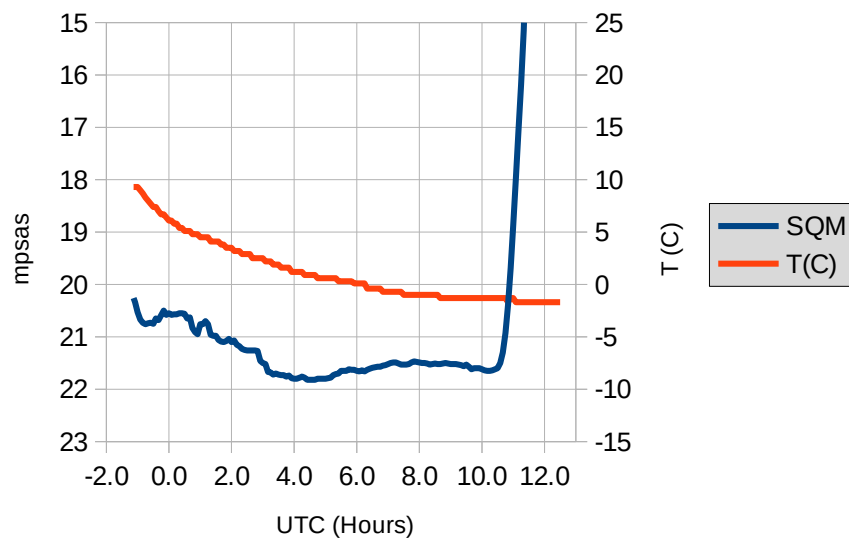
0325UT moonset.

1015UT start of astronomical twilight.

1049UT start of nautical twilight.

1155UT sunrise.

SQM 2021-11-11



2021-11-13 (#135)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C; camera in portrait orientation (long axis is north-south.)

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, Canon 60Da, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2139UT sunset

2203UT started CCDC action 2021-11-13.act.

Group	Stars	Exposures	Binning	Guided
Nova Vul 2021	V0606 Vul	300s B 300s V	1x1	N
Delphinus 20.6h				
	ASASSN-V_J203420.84+034757.9	300s B	1x1	N
	CSS_J205058.0+045822	300s B	1x1	N
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N
CMi 07.1h RRCs				
	ASASSN-V_J070344.48+054432.1	300s B	1x1	N
	ASASSN-V_J071230.28+062847.3	300s B	1x1	N

2240UT Hankscope: started a NINA focus run V filter; final result 13358, HFR=1.93px; beautiful run, V-curve looks excellent, 10 points wide which seems good.

2255UT Hankscope: started a NINA set of sequences

Target	Exposures	Binning	Guided
LS Cet	300s B, 180s V	1x1	Y
ASASSN-V_J062409.89+315123.5	300s B, 200s V	1x1	Y
ASASSN-V J091617.57-194846.3	300s B, 200s V	1x1	Y

2246UT end of nautical twilight

2320UT end of astronomical twilight

0050UT a small area of cloud is moving in from the SW; I would just ignore it until it passed but it does have some decreasing amount of rain in it so I've shut everything down at least until it is past.

0218UT the cloud has passed so I've opened up again, adjusted the focuser inwards 28 steps and started a sequence of 10 x 400s unfiltered exposures on M31 V619; autoguided with 1s exposures binned 2x2.

0332UT adjusted the focuser outwards 28 steps and resumed CCDC action 2021-11-13.act.

0550UT moonset.

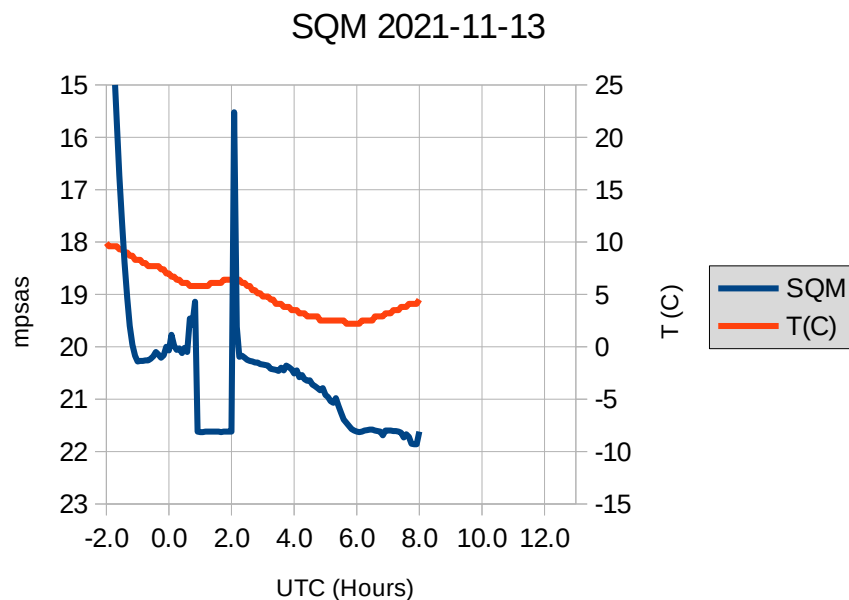
0800UT awoke to find it overcast so shut down. (Checking images after the fact it had actually clouded over at 0645UT, except for two usable images at about 0710UT.)

1017UT start of astronomical twilight.

1051UT start of nautical twilight.

1158UT sunrise.

Images to date: 28234.



2021-11-14 (#136)

Boltwood 0.4m f/5.453 Newtonian, Mathis Instruments MI-750 mount, SBIG ST2000XM camera with TR, B, V, CV, OIII filters at -10C; camera in portrait orientation (long axis is north-south.)

Hankscope 0.25m f/4 Schmidt-Newtonian, 60mm f/5 guidescope with ZWO ASI174MM Mini camera, Canon 60Da, Pegasus Astro Ultimate Power Box v2.

SQMLU mounted inside E wall of observatory pointing roughly Alt 80, Az 190.

2138UT sunset

2245UT end of nautical twilight

2319UT end of astronomical twilight

0023UT it has suddenly cleared off in spite of satellite images/loops that looked very hopeless; started
CCDC action 2021-11-14.act.

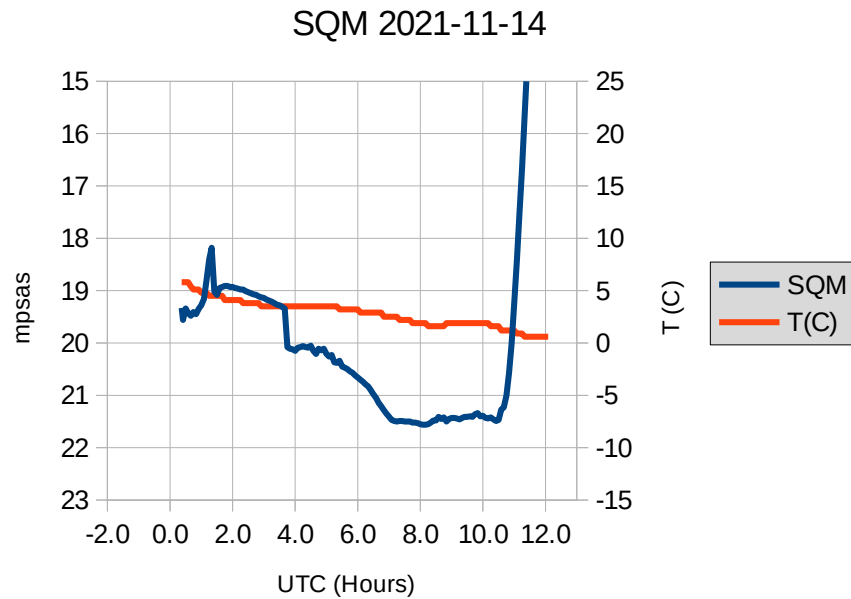
Group	Stars	Exposures	Binning	Guided
Lacerta 22.5h RRCs				
	ASASSN-V_J222750.52+405407.5	300s B	1x1	N
	ASASSN-V J223141.87+383245.1	300s B	1x1	N
NSVS9147378		300s B, 200s V	1x1	N
Pisces 01.3h RRCs				
	ASAS_J011709+2101.6	200s B	1x1	N
	SS Psc	60s B	1x1	N
Cetus 02.6h RRCs				
	LT Cet	300s B	1x1	N
	ASASSN-V_J025107.96+032850.2	300s B	1x1	N
Taurus 04.6h RRCs				
	VSX_J043039.1+124954 (HADS)	300s V	1x1	N
	V1327 Tau	300s B	1x1	N
CMi 07.1h RRCs				
	ASASSN-V_J070344.48+054432.1	300s B	1x1	N
	ASASSN-V_J071230.28+062847.3	300s B	1x1	N

0658UT moonset.

1018UT start of astronomical twilight.

1052UT start of nautical twilight.

1159UT sunrise.



Action: Hankscope - for the QSI183 I need to pick a set of standard exposure durations that I will use so that I can create a library of matched master dark frames. Need to adjust reducer.py to use the correct master dark by exposure.

Action: try some guided exposures watching from inside the observatory with VNC server stopped and closed to see if VNC is having any effect on results.

Action: Hankscope: there are settings in PHD2 which should be adjusted (guide camera pixel size, guidescope focal length, turn on auto star select, increase exposure duration.) Check out the Tools>Guiding Assistant. Create an equipment profile. Look over guide corrections graph to see if I am over-correcting and correct this.

Planning:

Sky90/Ext-Q: Sextans I Dwarf Spheroidal 10 13 03 -01 36 53 – XXXF

UGC10822=Draco Dwarf, centre on GSC 3896 752 at 17 20 05.4 +57 51 45 gives a good guide star

exoplanet transits?

HR Diagram Shots

- B and V images of a series of open and globular clusters to show the changes in HR diagram with age and also their use for relative distance measurements

- in rough order of age
- ~~NGC7822 2MYr too far north~~
- ~~NGC869 ~4MYr~~
- NGC884 ~4MYr
- ~~NGC663 25MYr~~
- ~~NGC659 35MYr~~
- ~~M52 152MYr 2019-10-08~~
- ~~M11 316MYr 2019-10-08~~
- ~~NGC752 1.34GYr~~
- ~~NGC7789 1.7GYr 2017-12-17, 2017-10-26~~
- ~~M67 4GYr 2018-04-24~~
- NGC188 6.8GYr with Tak
- ~~NGC6791 8.9GYr 2018-10-10~~
- ~~M5 10.6GYr 2019-05-27~~
- ~~M3 11.4GYr 2019-07-09~~
- ~~M13 11.65GYr 2019-08-26~~

Globular Cluster Condensation

- M2
- M3
- M5
- M13
- M15
- M22
- M92

Takahashi Sky90II 9cm/4.5 apo refractor with QSI583ws at -25C with 31mm Astrodon interferometric B and V filters (plus usual TR Red, Ha, and OIII), 5cm/4 guide scope with ZWO ASI120MC autoguider camera, on iOptron iEQ45 mount. Autoguider is the ZWO ASI120MC camera, guiding with Maxim so I can use my blurguide script.

Group	Stars	Exposures	Binning	Guided
V1112 Per		30s B, 25s V	1x1	N
Perseus 4h				
	V0378 Per	300s V	1x1	N
	FM Per	200s V	1x1	N
	V1026 Per	200s V	1x1	N
FM Aur		300s V	1x1	N
Auriga 06h				
	PZ Aur	300s V	1x1	N
	LQ Aur	300s V	1x1	N
	V0575 Aur	300s V	1x1	N
	V0643 Aur	300s V	1x1	N
	V0800 Aur	300s V	1x1	N
Lynx 07.6h				
	GP Lyn	200s V	1x1	N
	TV Lyn	60s V	1x1	N
	HK Lyn	300s V	1x1	N
	WZ Lyn	400s V	1x1	N
Ursa Major 08.6h				
	OW UMa	150s V	1x1	N
	GSC3798-492	300s V	1x1	N
	EN Lyn	300s V	1x1	N
Cancer 08.9h				
	SX Cnc	200s V	1x1	N
	NSV7413280	300s V	1x1	N
Leo Minor 09.8h				
	AM LMi	200s V	1x1	N
	VSX_J094546.2+342925	200s V	1x1	N
	QY UMa	200s V	1x1	N
Ursa Major 11.5h				
	V0396 UMa	150s V	1x1	N
	VZ UMa	300s V	1x1	N
	V0397 UMa	300s V	1x1	N
	BN UMa	200s V	1x1	N

Group	Stars	Exposures	Binning	Guided
NGC5053		5 x 200s B, V, TR, unfiltered	1x1	N
CVn 12.7h RRLs				
	SV CVn	120s V	1x1	N
	SW CVn	200s V	1x1	N
	GR CVn	400s V	1x1	N
Boo 14.7h RRLs				
	LN Boo	400s V	1x1	N
	VX Boo	400s V	1x1	N
	SZ Boo	200s V	1x1	N
	SV Boo	300s V	1x1	N
	NN Boo	300s V	1x1	N
	MZ Boo	300s V	1x1	N
Bootes 15.8h RRLs				
	V0338 Boo	300s B, 200s V	1x1	N
	ASAS_J154747+2725	150s B, 100s V	1x1	N
CrB 16.3h RRLs				
	CT CrB	300s V	1x1	N
	CX CrB	300s V	1x1	N
	ROTSE1_J162721.01+34 5928.7	300s V	1x1	N
Flats		Empty, B, V	1x1	

Old target groups:

Group	Stars	Exposures	Binning	Guided
Cygnus 20h				
	V0759 Cyg	200s V	1x1	N
	V0381 Cyg	300s V	1x1	N
	V1510 Cyg	300s V	1x1	N
	NS Cyg	300s V	1x1	N
M15		400s B&V	1x1	Y
Cyg 21h				
	V0835 Cyg	200s V	1x1	N
	V1240 Cyg	200s V	1x1	N
	BL Peg	300s V	1x1	N

Group	Stars	Exposures	Binning	Guided
Lac 22.7h				
	V0548 Lac	200s V	1x1	N
	V0530 Lac	200s V	1x1	N
	V0473 Lac	150s V	1x1	N
Andromeda 00h				
	GM And	200s V	1x1	N
	DY And	200s V	1x1	N
	CSS_J234900.5+270316	200s V	1x1	N
Cassiopeia 01.6h				
	ET Per	200s V	1x1	N
	ISON_J013244.3+565231	300s V	1x1	N
Aries 2.2h				
	CU Ari	200s V	1x1	N
	TY Ari	200s V	1x1	N
Andromeda 02.5h				
	Dauban V248	200s V	1x1	N
	V0569 And	200s V	1x1	N
	DU And	200s V	1x1	N