OSURC Nightlog 20220127 UT

Observer*: Olga Kuhn
Lead Partner Observer*: Charlotte Wood (ND)
Other Partner Observers*: Mark Whittle (UVa), Annika Peter (OSU)
Special Assistants*: none
Telescope Operator: Steve Allanson (LBT)
*** = from home**

Plan:

The plan tonight is to start with the LUCIs and observe a couple of the UVa_nirjets targets. Then we'll assess conditions - if there is not cirrus, we'll switch to the LBCs for OSU_monitor. If the conditions are not good, then we'll observe one MODS target and switch to the LBCs for OSU_monitor I band targets. We may switch to PEPSI at the end of the night.

Summary:

We started with LUCI and observed 2 of the UVa_nirjets targets, HH298 and IRAS04200. For IRAS04200, only 3 filter pairs (K+K, BrG+H2 and J+H) could be obtained before the clouds became too thick. The seeing during these observations was ~1.5" though better on the NIR images.
We switched to MODS during the cloudy period and observed OSU_ASASSN/J09333 and the standard, G191B2B.
Then we switched to the LBCs. Initially there were stil some clouds passing through but these cleared out by the end of the night. OSU_monitor targets: N2903, N3344, N3489, N3627, N4449, N4826, N4605, N4395, N4214 and N4736; were observed. TMS was run in passive mode during the LBC observations.

The LBC image quality log is here: 20220127.fwhm

Issues:

There were no serious issues with the instruments. Unfortunately I left a "pause" in the LUCI sequence which lost some time at the start of the night. During morning calibrations, I saw an issue with the observer execution panel of LUCI - possible the text sticking, but the sequence

did not appear to continue (IT 8529). With the LBCs, the image quality varied, possibly due to the rapid swings in ambient temperature.

Weather:

There was a thin band of cirrus passing through, which at the worst caused an ~4 mag drop in the guide star signal, but towards the end of the night it cleared out. The temperature was up and down (see the ALTA plot at the bottom of this log) and the seeing was not very stable, around 1.5" but sometimes <~1".
The thickest clouds caused some downtime (the loss of the final filter pair for IRAS04200) but was mitigated by switching instruments during this time.

Preparations:

luci[1|2].20220127.0NNN.fits
mods[1|2][b|r].20220127.NNNN.fits
lbc[b|r].20220127.HHMMSS.fits

Overview (times are given in UT):

23:57 Initialized both LUCIs and am running a series of darks for the UVa_nirjets program.

Darks	L1	L2	DIT(s)	NDIT	readmode	savemode
UVa_nirjets	91-95	1-5	2.5	20	LIR	integrated
UVa_nirjets	96-100	6-10	10	6	LIR	integrated

00:06 Taking a series of 25 LBCB+R biases

00:16 Taking images through BrG to check the field stop alignment. On L2, the FS alignment looks good - no adjustment is warranted. On L1, there is a roll-off to the left & bottom edges - not an alignment problem but perhaps some accumulation of dust or debris along the edges of the window. I toggled the camera and switched to Ks and the image on L1 now looks flatter. The NB filters do produce an illumination gradient - suspect it was that and not toggling the camera since there was no camera error.

00:40 Preparing for running skyflats, although there are patches of cirrus constantly passing through.

00:50 Sunset

00:52 Steve has opened the chamber, and I'm slewing to a blank field for sky flats.

00:54 Starting twilight sky flats BrG+H2 - too dark for it. I increased DIT to 5, but got an error (probably related to quick change and a mistake I made)

00:59 PaB+FeII - counts ~12,000 ADU (only 1 pair probably)… down to 5K.
01:04 Trying K+K - perfect. Count levels are 10-15,000, down to 5000K
01:10 Trying J+H - perfect - starting at 10-15,000, down to 5000K.

Looks like we got the broadband sky flats (but with the caveat that cirrus may have been passing through). We missed the narrow band sky flats, though. I'll take all of the closed-dome imaging cals and the end of the night.

01:23 Steve is going to correct pointing and collimation near the first target, HH288.
Avg FWHM is ~1.2"

UVa_nirjets/HH288

UT	L1 + L2 filter	L1	L2	AM	FWHM on guider: SX/DX	Comments
01:36	K+K	137-138	44-45	1.13	0.99/1"	some glitches getting started… ignore these
01:47	K+K	139-140	46-47		1.3/1.3"	I left a "pause" in.
02:07	K+K	141-151	48-58	1.294	1.2"	starting in earnest
02:26	BrG+H2	152-166	59-73	1.328	0.94/1.07"	
02:59	J+H	167-177	74-84	1.407	1.07/1.11"	

03:11	PaB+H2	178-192	85-99	1.433	0.94/0.97"	03:29 seeing is puffing up to 1.9"

01:39 There are no WFS images appearing on the DX side. Steve restarted GCS and I resent the preset at 01:41. Now we're getting messages and active optics is running.

> IT#7543 - AGw2 probe position may have drifted
> Thu Jan 27 01:37:36.325 2022 59606.06778154472 2 GCSR gcs.guidethread.alert right Probe position difference between requested/achieved is large 0.5408 (arcs). Probe position may have DRIFTED which may cause WFS to pause.

01:43 12-deg twilight
02:12 18-deg twilight

03:38 Done

UVa_nirjets/IRAS00420

03:39 Slewing to target.

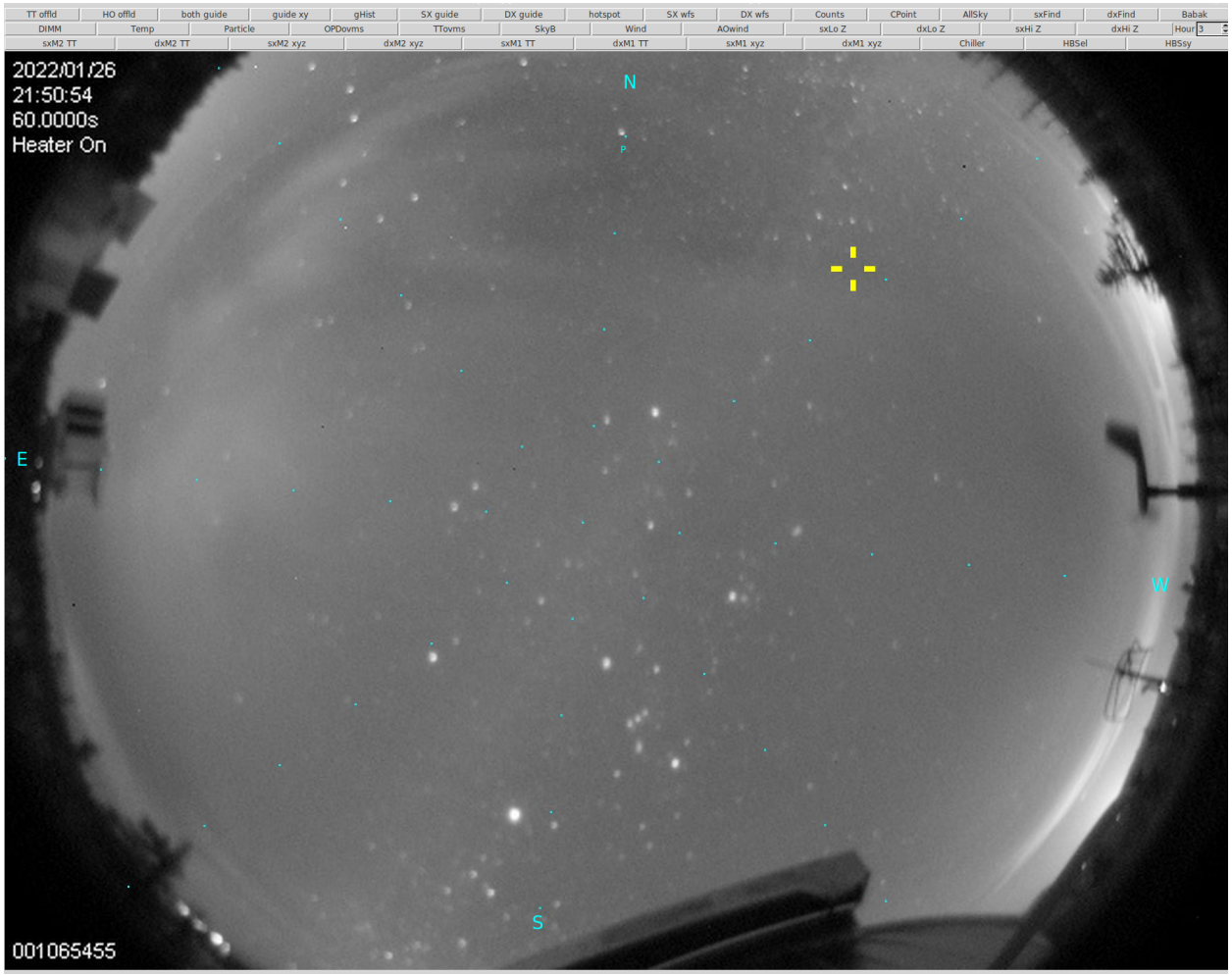
UT	L1+L2 filters	L1	L2	AM	FWHM on guider SX/DX:	Comments
03:42	K+K	193-203	100-110	1.47	1.4/1.5"	
04:01	BrG+H2	204-218	111-125	1.58	1.58/1.63	1.4"/1.3" on L1/L2 images
04:30	J+H	219-229	126-136	1.62	1.61/1.64	
04:50	PaB+FeII	230-234	137-141	1.83	1.52"	

03:51 1.7" on the guiders
04:12 Now up to 2.2-2.3" on average on the guiders.
04:24 Seeing seems to be tightening up a bit - on the images, about 1" in BrG image LUCI1 215 and 0.96 on H2 image LUCI2 123.

04:49 Getting about 1.5 mags of extinction.

04:56 The clouds are coming over. I paused the exposure, so we only got 5 exposures.

We truncated the exposures and are switching to MODS.



Reconfiguring: LUCI→ MODS

05:05 Steve is starting to reconfigure.
05:17 Steve is checking pointing & collimation. Average FWHM ~ 1.5-1.6"

OSU_ASASSN/J09333

05:33 acqBinoMODS J093300_edit.acq where I edited the exposure time from 60->20 sec. (20-sec gave 49000 cnts in MODS2)

m1r: 3 & 4 → offsetxy -0.375 11.220 rel → 5, dx = -0.15" → 6, ok
m2r: 3 & 4 → offsetxy 3.880 8.272 rel → 5, ok

05:35 execBinoMODS J093300.obs

	m1b	m1r	m2b	m2r	AM	FWHM
05:38	3-5	7-9	3-5	6-8	1.215	1.3/1.4"

05:38 IMCS lock failure on MODS1
05:38 Comm glitch on MODS2 in object command.
05:49 On 2nd exposure, seeing puffing up to 1.7" on average

G191B2B

06:00 acqBinoMODS g191b2b.acq
m1r: 10 → offsetxy -1.269 11.282 rel → 11, offsetxy 0.828 -0.098 rel, → 12
m2r: 9 → offsetxy 4.205 9.057 rel → 10, offsetxy -0.273 -0.276 rel → 11

06:09 execBinOMODS g191b2b_dualGrating.obs

UT	m1b	m1r	m2b	m2r	AM	FWHM SX/DX
06:10	6-8	13-15	6-8	12-14	1.165	1.52/1.65"

06:22 Finished

Reconfiguring: MODS → LBC

06:22 Steve is slewing to zenith to reconfigure

06:25 Heejoo is online to turn on the IR lasers for running TMS in passive mode.
I copied the reference from 20220121
telescope@robs 20220121]$ cp tms_dx_ref.dat /tmp
[telescope@robs 20220121]$ cp tms_sx_ref.dat /tmp
[telescope@robs 20220121]$ cp telescope_left_tmsoffset.dat /tmp
[telescope@robs 20220121]$ cp telescope_right_tmsoffset.dat /tmp

06:45 We're reconfigured and the lasers are on. While Steve is rebalancing, I am running the active loop to set the positions to the old reference from a few days ago.

OSU_monitor/N2903

06:47 Slewing to N2903focus (waited for a TMS update before control-C'ing active loop)

Note: there was an old_focus and just N2903focus. I used N2903focus and it worked well.

06:59 dofpia – converged in 3 iterations although the last z4 corr was large (est seeing 1.5).

07:00 Copointed and then ran dofpia again

07:05 Copointing again since it did not seem to work before.

Setting the reference while taking copointing data.

07:07 Starting the science OB. Stopped - I realized by the copointing was not working. No corrections were sent by the script since it "silently" crashed when it could not find the "Misc" sub- directory which is created by "prepdir".

Copointing again - this time it made a change.

07:12 Starting the science OB
B 1.4" and R 1.13"-1.45"

On 073128 the FWHM is better, ~1"

OSU_monitor/N3344

07:55 Slewing to N3344_focus_new
07:56 dofpia
08:00 copointing
08:03 Starting the science
5 (1.1")and 4.4 (1") pix on the images

OSU_monitor/N3489

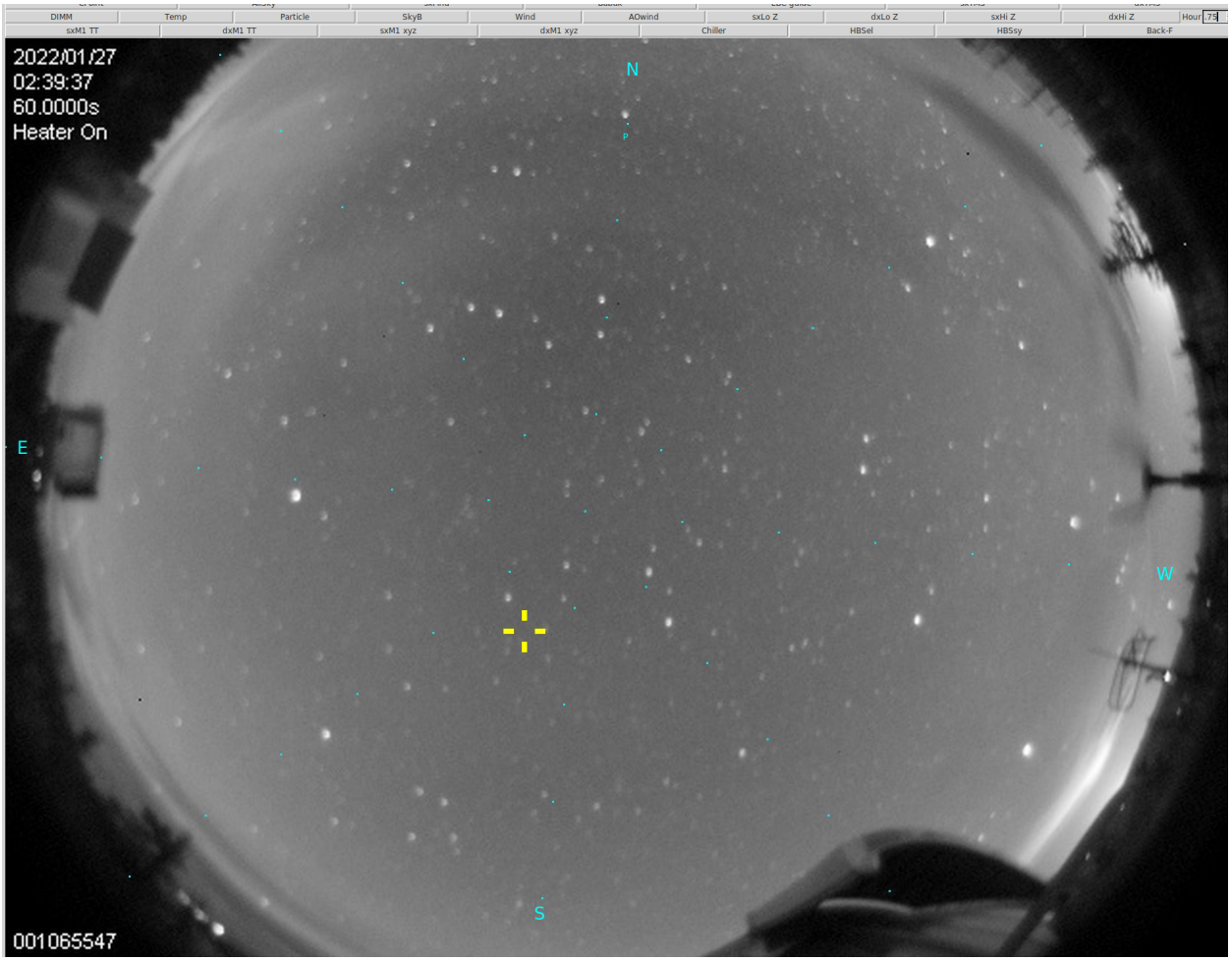
08:35 Slewing to N3489focus
08:35 dofpia
08:39 copointing
08:43 dofpia - in previous run, red drifted a bit while blue was converging. Since this is a longer OB, we'll insure a good start.

08:44 Starting the science
4.1 and 3.7 pix FWHM on the first B and R images
0.8" on the images 085835 and 085816

OSU_monitor/N3627

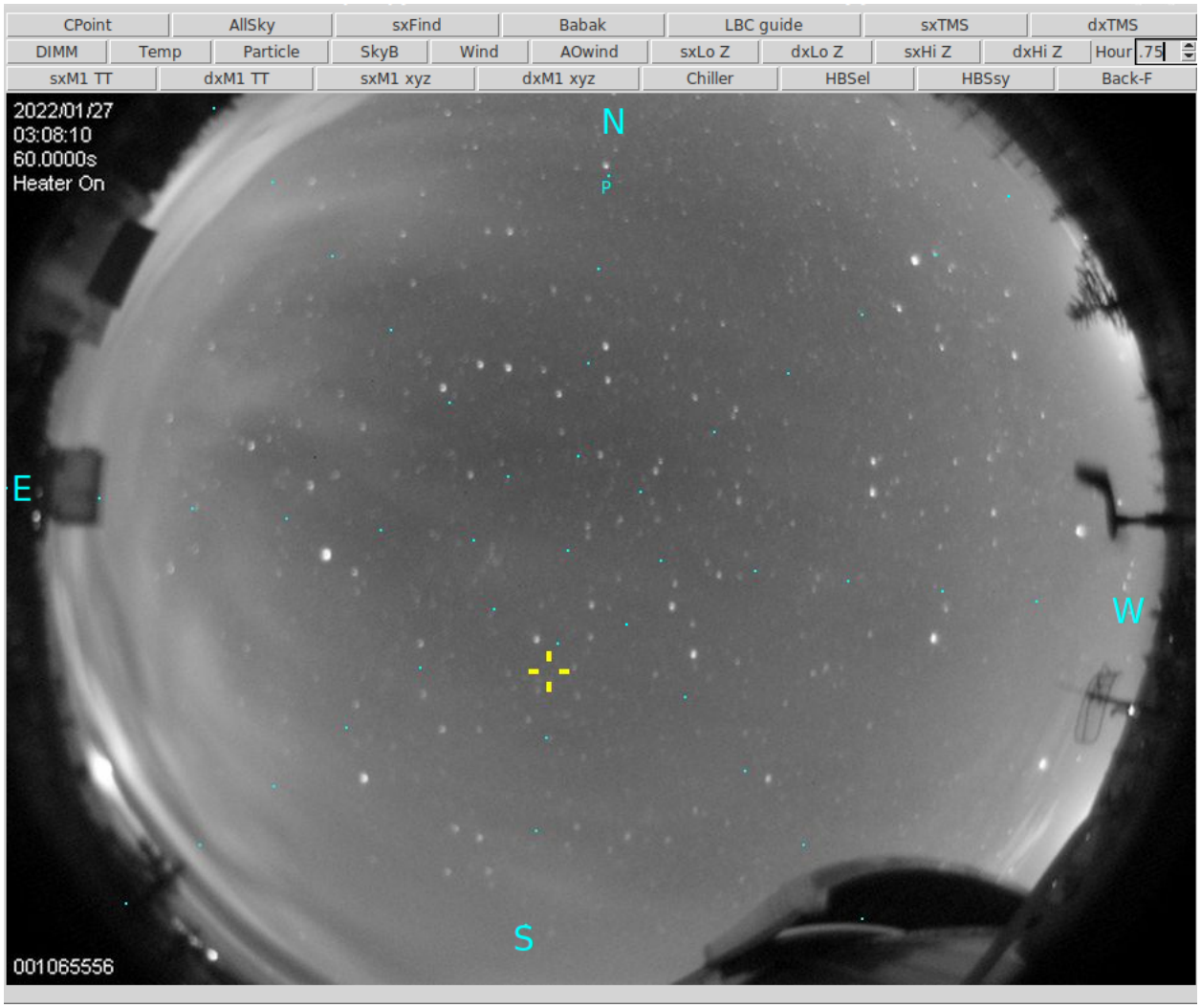
09:23 Slewing to N3627focus
Ran dofpia to focus/collimate
Corrected pointing & copointing
09:32 Starting the science

B 3.6 pix and R 3.1 pix
There is some light cirrus passing through. The allsky image at 09:46:



10:04 FWHM has gone up, clouds have increased

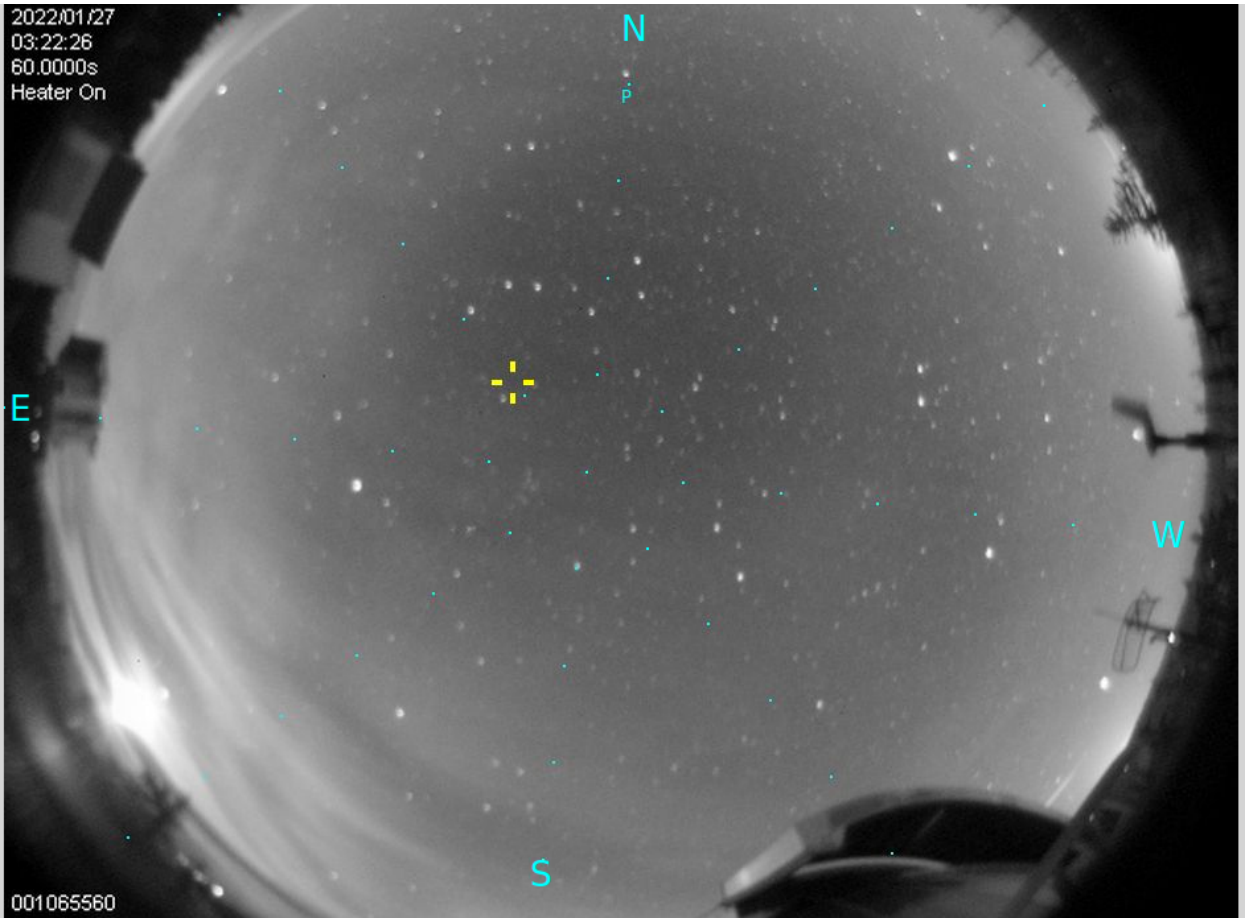
10:12 all sky image - from near end of observation



OSU_monitor/N4449

10:13 Slewing
10:15 dofpia
10:21 copointing

10:23 Waiting until clouds pass.
10:25 starting the science.
5.5 pix 1.2-1.3"++



OSU_monitor/N4826

10:4x Slewing
10:41 dofpia — there were are not many stars and they are faint. fpia did not find pupils in one blue image.
Looks like the clouds are moving away.
10:48 Ran dofpia, /x2 (with double the exposure time)
Converged in 3 iterations. It used only 3 stars on the blue side.

10:54 copointing

10:56 Starting science
B 4.7 (1.05") and R 4.3 (1")
110556 and 110955 on red are elongated.

112156 on red side - stars look rounder.

11:29 On the all-sky, it looks clear again but during the observation, there were problems maintaining collimation and the seeing got worse.

OSU_monitor/N4605

11:35 Slewing
dofpia - red focus
copointing
11:48 Starting the science
Guide star FWHM 0.9" and 1.5" on the red

Blue 3.5 pix and red 4.5 pix (this is one of those times when the blue IQ is better than the red IQ).

Last pair had about 5 pix FWHM on both sides.

OSU_monitor/N4395

12:0x Slewing
12:06 dofpia - converged in 3 iterations on DX and 2 on SX, but the last SX image gave a large defocus correction - I'll repeat dofpia after copointing. The temperature is on a roller-coaster ride.
12:12 copointing
12:14 dofpia - both needed some focus correction

First images: 5.7 pix (1.3") on B and R.

OSU_monitor/N4214

12:39 dofpia - only 3 pupils. Running it with double exposure time (/x2)
12:44 copointing
12:47 Starting the science

5.7 and 5.2 pix FWHM on B and R

12:52 18-deg twilight
12:56 Finished

OSU_monitor/N4736

12:56 Slewing
dofpia finished at 13:02
13:02 Starting the science (skipped the copointing step here)

On first images, 6 pix on blue and 3 pix on the red. Red IQ is nice and blue IQ on the image reflects what we see on the tech chip images - guide star FWHM >> on blue than on red. Not well collimated on the blue side.
13:17 finished

13:17 running dofpia again to see what happened with the blue collimation earlier. Well, FPIA does not think that the SX side needs much correction at all.
13:21 12-deg twilight

Twilight Sky Flats

13:26 Slewing to blank sky field
Control-C'd the passive TMS loop.

V + R: 13:40 (35 min before sunrise) 7-sec → 22k at V, 13k at R. Only 2 good V-Bessel flats, but 5 good R-Bessel ones

V: 134245 - scrambled image, the other 2 afterwards too bright

B+R - LBCB 135025 also scrambled, subsequent image is too bright - 3 good B-Bessel flats, 5 good R-Bessel flats.

USpec+R These are saturating at 3.58sec:1sec exposure times for B:R..

13:57 Starting again with 0.3 scale factor. Counts are still too high.

13:57 0.1 scale factor gave one Uspec flat with a good count level.
 Another bad image: LBCR image 0135913.
0.03 scale factor gave two more good Uspec flats. (exptime = 0.03*3.58sec ~ 0.1 sec).

The counts on 3 Uspec flats were within a good range, this time all the R-Bessel flats were saturated.

~2-3 flats at each LBCB filter and 10 flats at R-Bessel, LBCR.

14:06 Steve is closing up.

14:14 Sunrise

End of Night Calibrations

LUCI

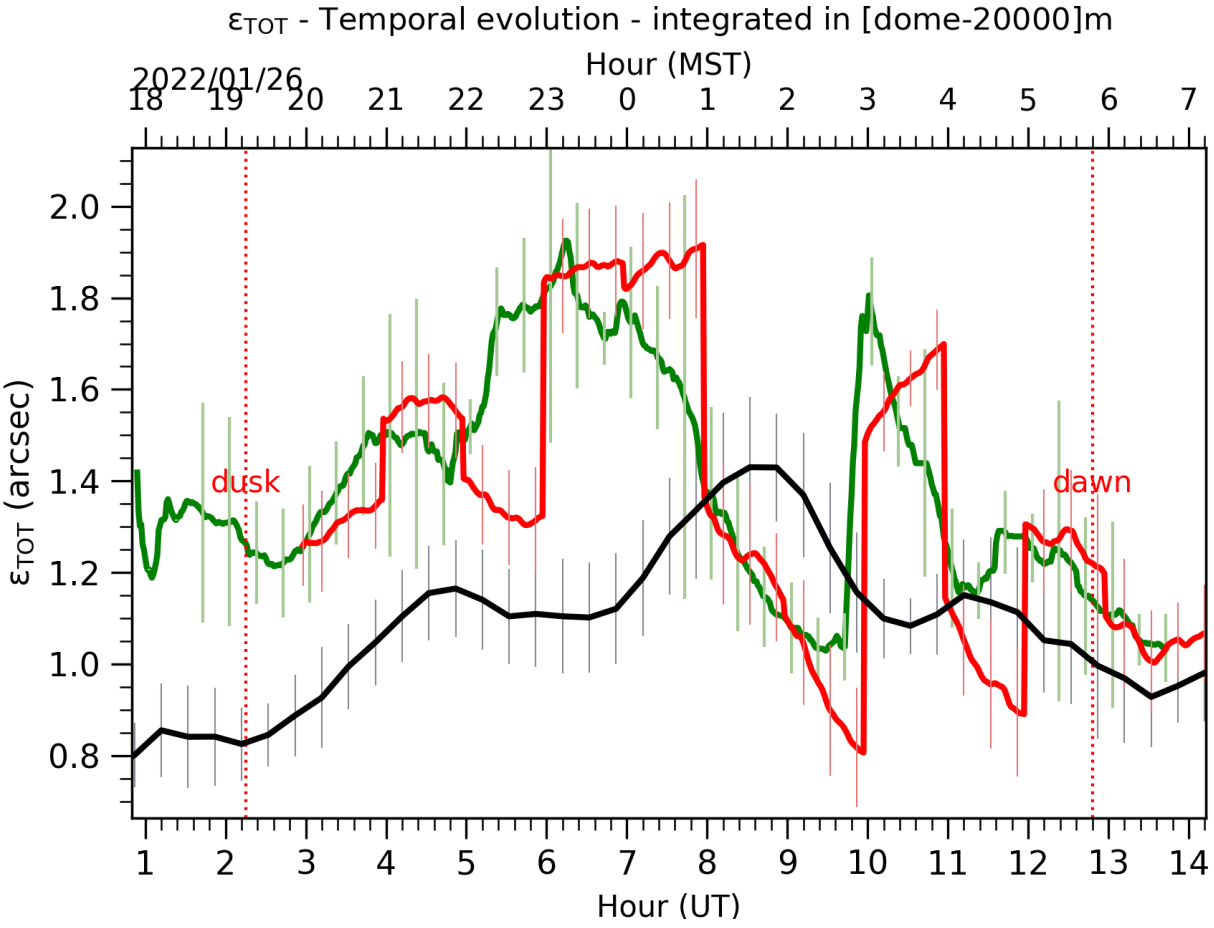
Closed-Dome Calibrations	filters L1+L2	L1	L2
UVa_nirjets	K+K	235-239 240-244	142-146 147-151
	J+H	245-249 250-254	152-156 157-161
	BrG+H2	255-259 260-264	162-166 167-171
	PaB+FeII	265-269 270-274	172-176 177-181

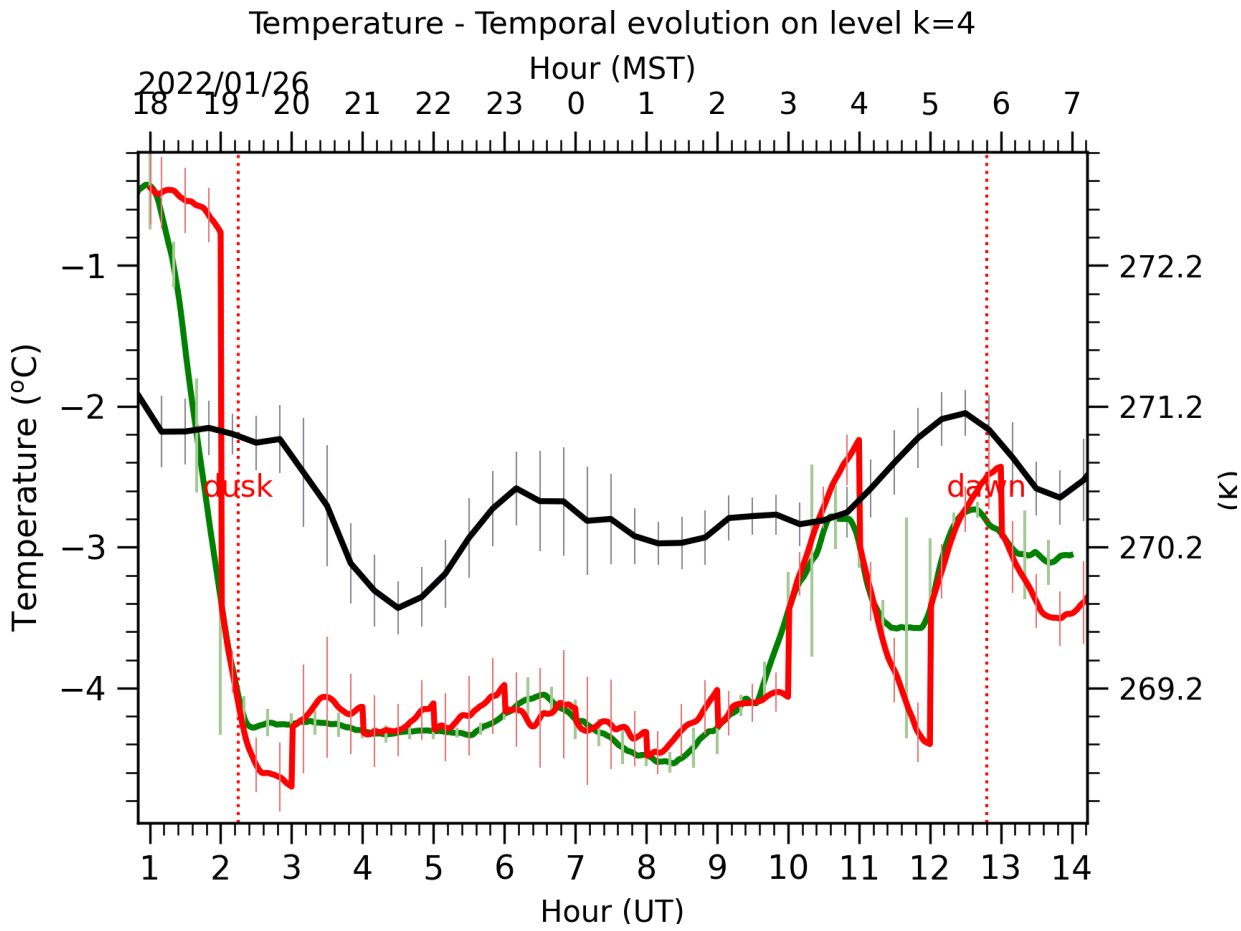
161 L2 - stuck on saving exposure. I closed and restarted the observer panel and that error went away. The exposure was taken and written to newdata. But the script did not turn off the lookup table; it's as though the script froze. (IT 85

LBC

25 biases with each camera

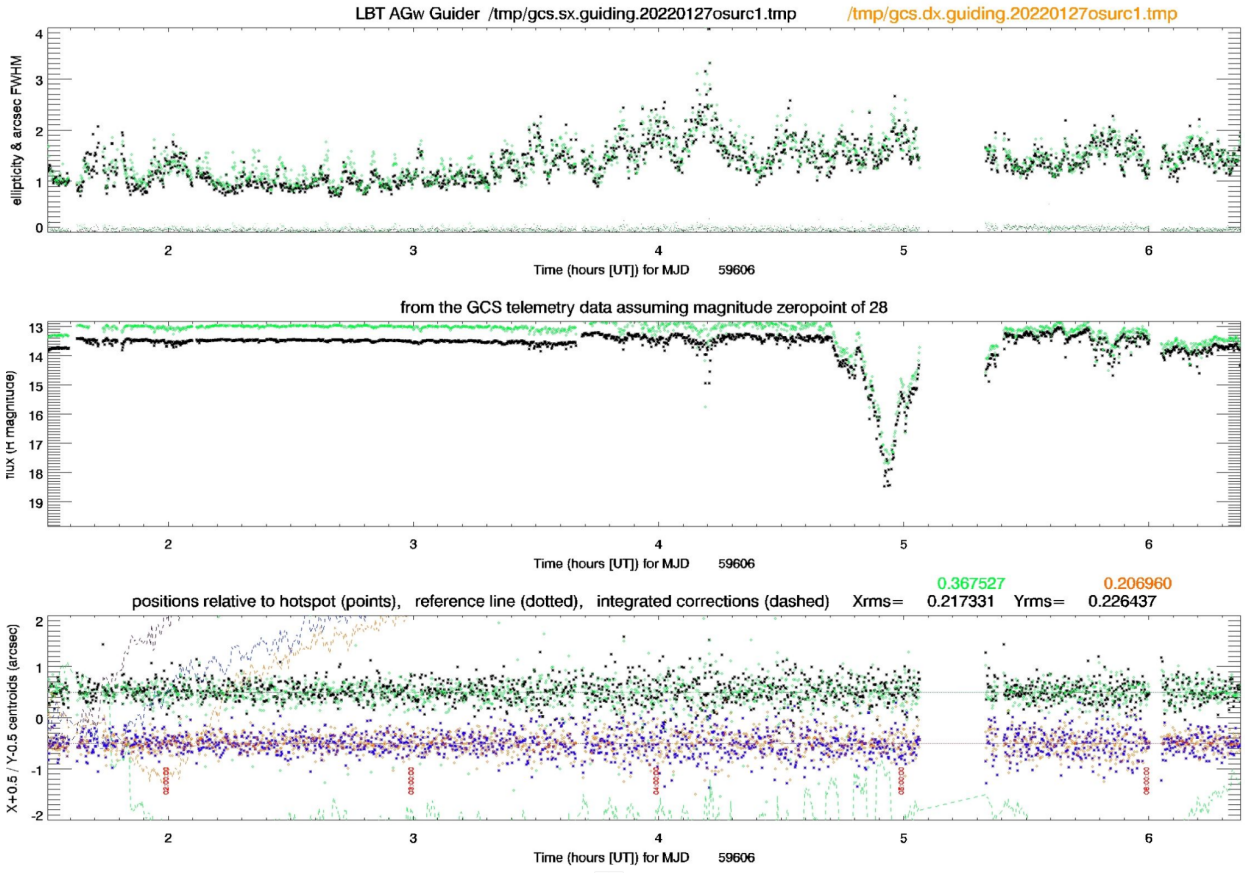
ALTA predictions





LBTplot

The SX (black) and DX (green) guide star FWHM and flux are plotted below.


LBT AGw Guider /tmp/gcs.sx.guiding.20220127osurc1.tmp
/tmp/gcs.dx.guiding.20220127osurc1.tmp
ellipticity & arcsec FWHM
Time (hours [UT]) for MJD 59606
from the GCS telemetry data assuming magnitude zeropoint of 28
flux (H magnitude)
Time (hours [UT]) for MJD 59606
positions relative to hotspot (points), reference line (dotted), integrated corrections (dashed)
0.367527
0.206960
Xrms= 0.217331 Yrms= 0.226437
X+0.5 / Y-0.5 centroids (arcsec)
Time (hours [UT]) for MJD 59606