OSURC Nightlog 20220319 UT

Observer*: Olga Kuhn
Lead Partner Observer*: Draco Reed
Other Partner Observers*: Emily Griffith
Special Assistants*:
AO Operator*:
Telescope Operator: David Gonzalez Huerta
*** = from home**

Plan:

Bright moon (~1 day past full), so all LUCI tonight
UM_Flashlights - telluric, then switch to flashlight at twilight
OSU_XMDs - DDO68 (1.5hrs), or short OSU_BALQ
OSU_BALQ
OSU_XMDs WISEAJ1331?
UVa_BCD target (BCD)
UVa_nirjets AFGL

Summary:

We got off to a rocky start with some LUCI errors which will need some daytime to resolve. So while we tried UM_Flashlights and OSU_BALQ/J0802, we did not complete these, obtaining only an object/sky spectrum on J0802. We ran the OSU_XMDs/DDO68 script and telluric, although the dithering pattern was not what was desired - instead of ABBAAB, it was ABAAAABC where the first A on LUCI2 was taken during an offset. Things went better for the last 3 objects: OSU_BALQ/J1547, OSU_XMDs_LUCI/WISEAJ1331 and UVa_nirjets/AFGL2591. The seeing was subarcsecond at the start of the LUCI imaging and through most of it, but it puffed up at times. The delivered image quality was variable.

Issues:

1/ Doing a LUCI MOS telluric acquisition, when the initial offset to position the star near the leftmost slit was made, mirrors on both sides went into their limits of travel. The offset did exceed the copointing limit, however the offset should have been executed synchronously. Dave checked the script and confirmed that a synchronous offset was being commanded. Later in the night, I saw that on the Observer Execution panel, in the drop down menu that appears when

you right-click, there is a "bino async" below "skip to next item". I don't think I could have clicked this because this was the first script loaded and sent, but maybe it was set to async from the start? All LUCI offsets used to be synchronous only - is this option a new one to allow async offsets?

2/ MOS alignment was made difficult because the LMS file was not automatically loaded into the RTD and the RTD complained about missing fits header keywords. I initially ran the released RTD (osurc@obs5), but tried with the old RTD. Eventually I ran the test RTD on boht sides, but this was after we moved on from MOS. WIth the new one, I do see error messages about certain header keywords like MRSLITNO not found in luci1.20220319.0055 (not a MOS image,though).

3/ On the DD068 observation, when the script commanded the LUCI2 detector configuration to change from LIR mode (for acquisition) to MER mode (for spectroscopy), there was an error, origin unknown. Setting this through the readout GUI worked - I took the first exposure manually (maybe only setting the config was necessary).

4/ On J0802, the initial offset of detY 20" caused the guide star not to be found on SX. On DX this was fine. The probe positions, according to GCS, are similar. This was repeatable. I had tried to make a manual offset of +20" to get a new sky image that would be clean under the quasar - the detX 10" offset put a star under the quasar. This, too, showed the same problem with the star lost on SX but not on DX. The guide star is above the LUCI field, but it should be about 60" below the edge of the patrol field when at the dY~20" offset. On the acquisition images, the target showed up at coordinates L1:(1026, 1040) and L2:(1033, 1042), not that far off the center, and was centered on the slit at Y~1041(L1), 1043 (L2).

Script Issues:
1/ Neither Dave nor I saw problems with the MOS scripts. I'll try to repeat the acquisition during the day, to investigate why the header keywords and LMS problems. We could run the acquisition closed-dome to see if the first offset is again treated as an asynchronous one. I wonder if the bino async option got toggled.

2/ OSU_BALQ:
 The tellurics use no mask for the spectra - I am changing this to "MASK IN FPU" (TBD/checked still)
 The tellurics sometimes have 1.97 mic central wavelength instead of 1.93 mic. I'm changing this (TBD/checked still).
 The flat/arc scripts need to be checked - these do not look like what is generated from the library.

3/ OSU_XMDs_LUCI
 The telluric HIP675008 (V=6) is bright for G200 zJ. Having subarcsecond seeing didn't help. We had to defocus.

Weather:

Conditions were good - the wind was low, just a few m/s and the seeing was quite good at times especially during the second part of the night. There were some excursions to 1.5" though.

Preparations:

luci[1|2].20220319.0NNN.fits
mods[1|2][b|r].20220319.NNNN.fits

I checked pupil and FS alignment on LUCI1. They were both pretty good and I did not make any changes. Had a camwheel error moving N3.75->N1.8 (hopefully not a sign of things to come). I took the mask out to check the N375 field alignment on LUCI2 - made a few small adjustments. I checked once again LUCI1 with the mask out and in twilight - the guide probe was in, leaving a shadow of the probe against a bright background. 01:40 UT. Fading.
I took sieveMask (in and out) image with both MODS.

Closed Dome Calibrations

LUCI

Twilight sky flats and closed-dome imaging & spectroscopic calibrations were taken at the end of the night. See the end of the log

PEPSI

None taken

MODS

None taken

Overview (times are given in UT):

01:33 sunset

01:52 12-deg twilight

02:26 18-deg twilight

UM_Flashlights

(did not observe)

02:25 Slewing to the telluric for the first target.
There are some problems sending the preset. PCS restarted. Copointing limits, yet this is a binocular preset. However, the first item contains the preset and the first offset, which is larger than the copointing limit (it is -76.24, -36.28) since it should put the telluric in the leftmost slit. This is a known problem - David disabled the copointing limit check fixed the issue.
02:40 Put blind filter in

02:44 We resent the script. No guide star found. David needs to check/correct pointing since PCS was restarted.

The guide star for this telluric is faint, R=15.94. It looks like another one would work (just in case).

02:46 Slewing again. Problem with tip/tilt request for PSF now.
02:58: Rewrote script for offset, but mirrors are still moving into limits, despite attempting synchronous offset.
03:00 I called Dave Thompson - this does not seem normal and the script looks OK. We'll do the science target first. (RA 07:17:32.43, Dec 37:45:14.40).

There was an error getting the LMS file. Copied the LMS file to the local directory. But then there were header keyword errors.

3:25 There is a problem with writing fits keywords to both sides. Stop/start GEIRS and restarting the GEIRS service. Readout GUI to check communication between them.

After restarting the GEIRS service, we still see this error.

Trying to test the header error by creating a new script with the same mask. This will take image 16 L1 and 6 L2. Same header error about MOSPOSID.

We're going to move on. There are two errors we've encountered:
1/ with the telluric. The offset that appears in the first item should be done synchronously. Dave checked the script and confirmed.
2/ with no picking up the MOSPOSID keyword.

I tried both the released and the old version (luci_rtd_old #) of the RTD.

This is hard to solve at night - we're going to have to move on.

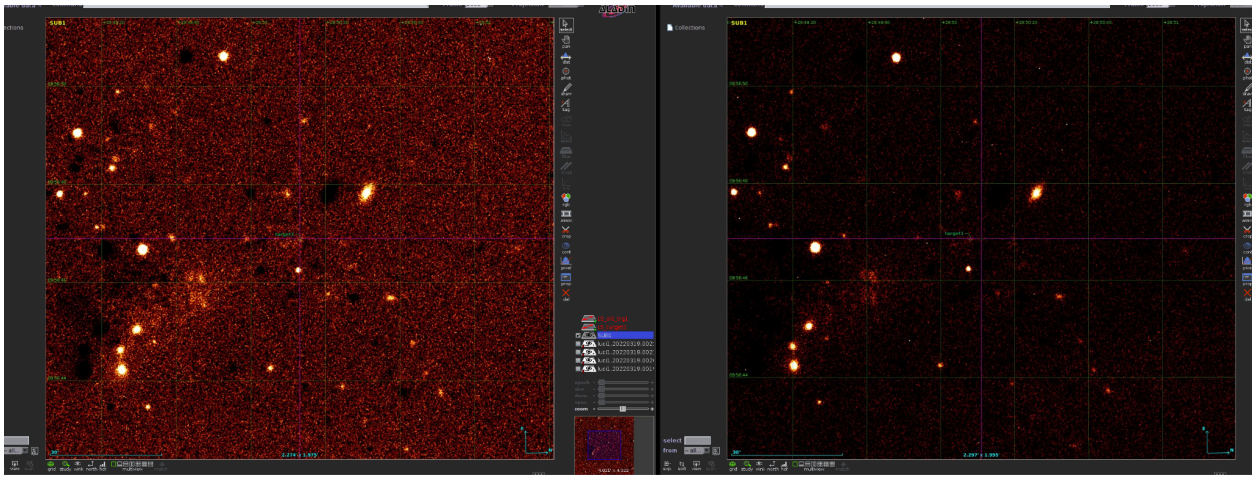
OSU_XMDs_LUCI/DDO68

21:06 David is checking pointing - the initial preset did not turn up a guide star on the right side.

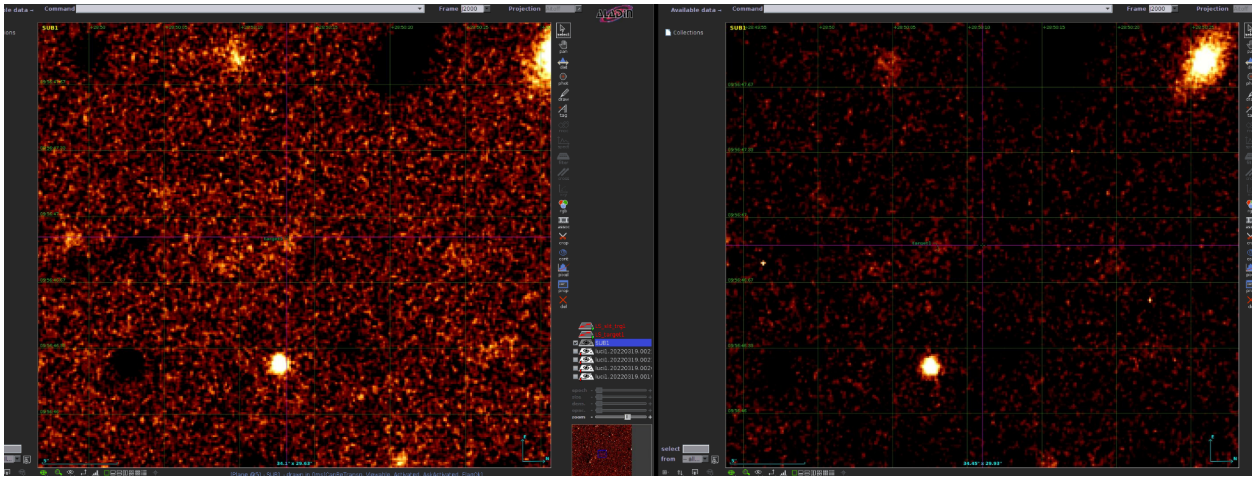
21:10 Sending the preset again.

L1: 20 & 21, 22 needs offset dx,dy = -0.2733", 0.4665" to put target at 1028.44, 1043.72 in slit
L2: 10 & 11, 12 needs offset dx,dy = 2.9274", 0.2142" to put target at 1031.11, 1045.29 in slit

The target is very faint and diffuse. The screenshot shows what we centered on (using the cursor position only).



Zoom in:



~04:30(check) started the observation. With LUCI2, we had an error with sending the MER command. I had to manually start the exposure on LUCI2 because of this ,but the offset occurred during it. This was L2 13 (no, according to headers, it was L2 14).

36867607	2022-03-19 04:28:46.0400	ERROR	***	Luci TWO	TWO_ReadoutManager	Could not commit value "MER, 10" by "setROEMode" to GEIRS from "rmi://localhost:60002/TWO_GEIRSServer"!
36867606	2022-03-19 04:28:46.0240	ERROR	****	Luci TWO	TWO_GEIRSServer	GEIRS received response with error: ERROR 19 Command 'ctype mer 10' returned errorcode = 19: (E_invcamera=19) invalid RO...
36867605	2022-03-19 04:28:46.0230	INSTRUMENT	***	Luci TWO	TWO_GEIRSServer	ctype mer 10
36867600	2022-03-19 04:28:45.7810	DEBUG	***	Luci TWO	TWO_GEIRSServer	roeMode=MER nReads=10

L1 24 and L2 14 are A L2 14 is bad.
L1 25 and L2 15=16 are ok. B.
I'll retake "A". So BA BAABBA.. but there was a problem because the "B" I'd skipped to didn't have an offset in the item. What we ended up getting was (A)BA AA AB+A. The first A in parenthesis is good (L1) but bad (L2) because L2 was still taking the image when the telescope offset. I took a final, extra, image at A to try to make up for the series of 4 "A"s in a row which came about by mistake.

L1 26 and L2 17 are A.
L1 27 and L2 18 A
L1 28 and L2 19 A
L1 29 and L2 20 A
L1 30 and L2 21 are back at B.

L2 15 and 16 are identical (same start time, same time of file creation). I am not sure how this happened. Could it have been because I took an image manually when the mer error occurred, and L2 was behind L1. The observer gui proceeded to offset and try to take a L2 image while the one I'd started manually was still going (this one was 14).

05:32 Seeing is 1" on the guiders.
05:43 Seeing 0.76/0.78".

05:47 Taking a final A

L1 31 and L2 22 are A

L1	**L2**	**A/B**	**Comments**
24	14	A	14 is bad
25	15=16	B	(15 truly = 16, same image, same start time)
26	17	A	
27	18	A	
28	19	A	
29	20	A	
30	21	B	
31	22	C	Manually added extra A (gave a relative instead of absolute +20" offset and as a result, the position was between A & B).

06:00 Slewing to the telluric HIP50459.
L1: 32,33 -> -10.4406", 0.2274" to put the star on the slit at 1019.52,1042.93 → 34
L2 23,24 → -8.5", 0.45" to put the star on the slit at 1043, 1044.38 → 25
L1 35 & 36
L2 26 & 27

OSU_BALQ/J0802

(did not finish - dY~20" offset on SX was a problem for unknown reasons)

L1: 37 & 38, 39 →
L2: 28 & 29, 30 →
There is a star about 10" to the right of the quasar - the 10" offset to sky just overlaps. This should be changed for the future.
The object is just bright enough to see in the 3sx10 exposure, but the background in L2 was a bit noisy and centroiding wasn't possible. It would be best to change the sky offset in the script.

I tried to take a new "background" at 0 20" since the 10" dx offset overlapped a star on the quasar. However, there was a problem with the guide star on the left side at 20". This is a

puzzle - the guide star is not near the edge of the patrol field - it is 60" below the edge at the dY=20" offset.

Actually, just use single images:
L1 40, 39 → -0.3075", 0.2262" to center on 1023.76, 1041.76 → 42, tweaked by 0.1"
L2 31, 30 → 1.1948", .2487" to center on 1041.54, 1043.40 → 32, tweaked by +0.1"

Offset failed on the left side. First offset is dy=19.69. Why does it not work on SX? but does on DX. The star is not near the edge of the patrol field (checked the OT).

I started the script from the 2nd item, skipping the 19" offset. Took a few images before deciding on the next target.
L1: 44,45 and
L2: 35,36

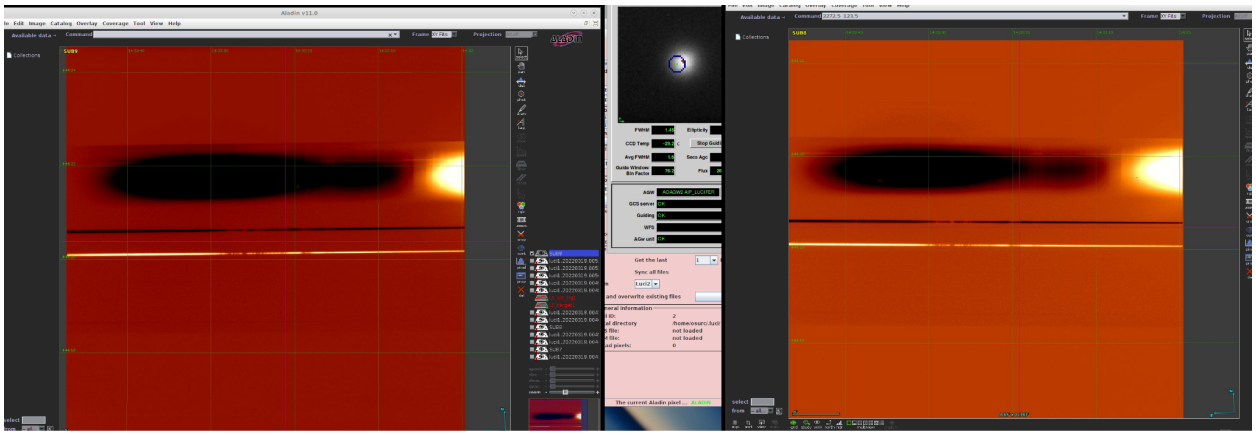
OSU_BALQ/J1547

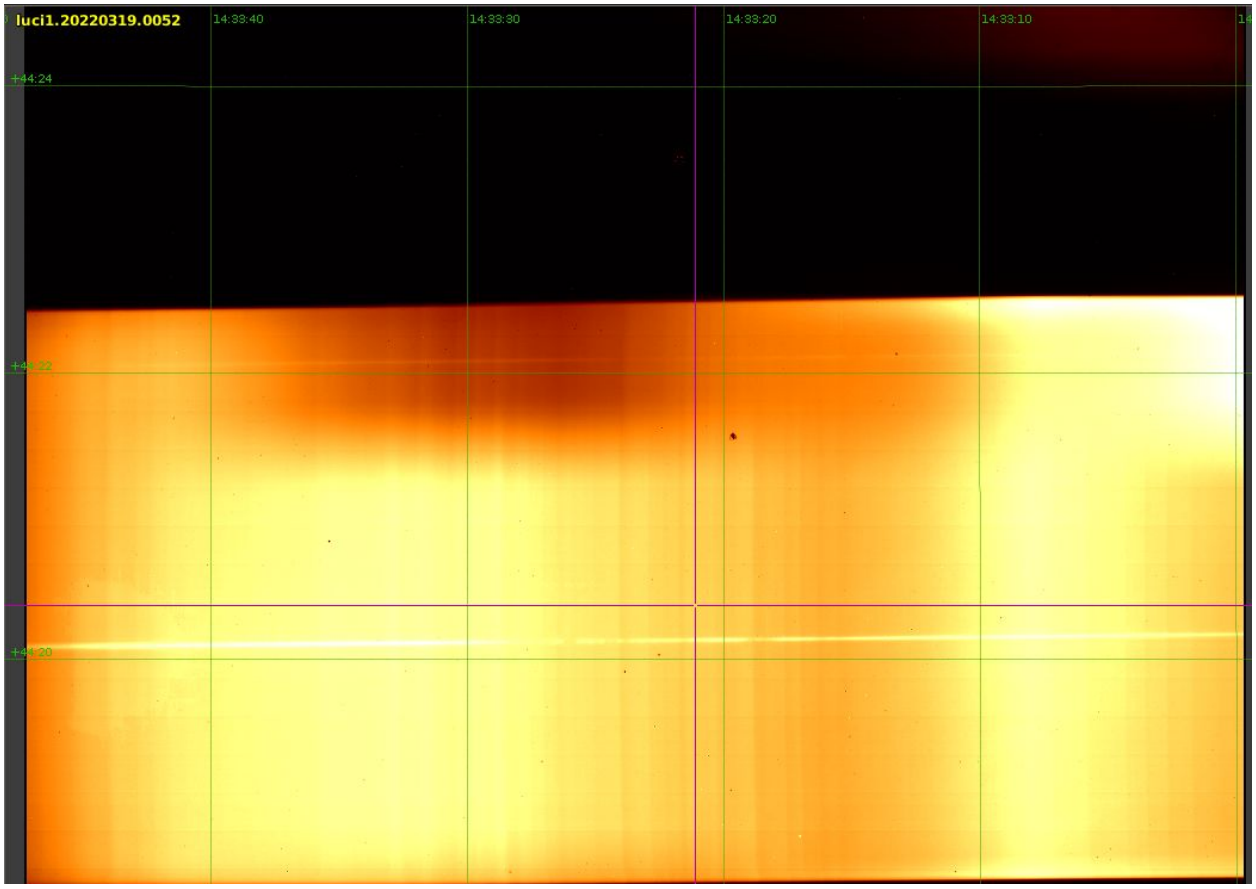
Telluric — HD128039

07:01 Slewing to HD128039
07:11 Seeing is about 1.5" on the guiders during the acquisition, 2.1 on the DIMM.

I'm running the released RTD on L1 and the new test version on L2. The pixel histogram is not coming up now on L1.

7:30 Extremely bright background in HK for telluric, was due to not having the correct mask in





Subtracted images and raw image (bottom). In a 5s x 3 we had 65000 counts in the star and 45000 counts in the sky. 15000 counts per DIT at HK. That's too much. There was no mask.

07:22 Slewing to J1547 (we'll try to figure out why the background is so high - the spectroscopic observation had "no mask in use").

07:37 Sending the edited telluric script.
L1: 53, 54 → -10.185", -0.0106" to put star at X,Y=1024.27, 1045.42
L2: 44,45 → -10.1697, 1.3399 to put star at X,Y = 1041.43, 1042.86

These spectra (below) are good:
L1: 56-59
L2: 47-50

J1547

07:55 Seeing is 1.7-2.0

L1: 60 & 61, 62 → -0.3982", -0.7304" to put qso at X,Y = 1025.62, 1045.51 → 63, looks good.

L2: 51 & 52, 53 → 1.6803", -0.2642" to put qso at X,Y = 1035.16, 985.00 → 54, 55 and finally after a 0.1" offset to the right, 56 looked good.
(985.00!!! The field seems to have shifted down; this is OK, but we have to ensure the flats overlap)

08:17 Seeing is 0.9" on average.

08:19 Starting the spectroscopic sequence:
L1: 64
L2: 57

OSU_XMDs_LUCI/WISEAJ1331

WISEAJ1331

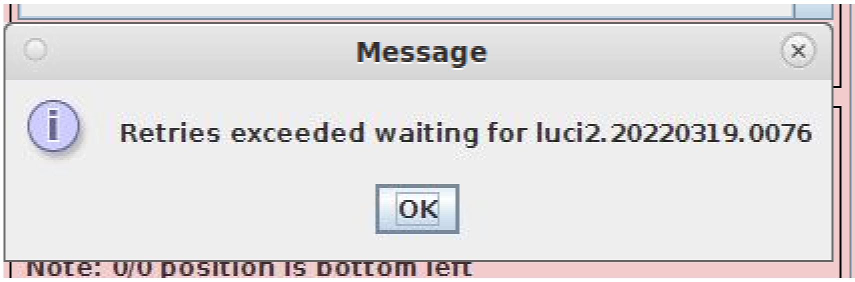
09:11 Slewing to the target. The guide star was not found on the right side. David is checking/correcting pointing.

09:20 Slewing again.
L1: 76 & 77, 78 → 0.0424", -0.4995" to put the target at 1031.46, 1041.81→ 79, looks well-centered.
L2: 69 & 70, 71 → -0.2309", -0.5438" to put the target at 1038.58, 1027.69 → 72, looks well-centered.

09:43 Starting the spectroscopic observation
L1: 80-
L2: 73-
09:49 Seeing SX 0.74, DX 0.73

We see lines on the sky-subtracted spectra. The first spectra have some persistence from the bright star to the NNW of the target.

I've seen the error below several times. In this case, the image has to be manually loaded into the RTD.



10:28 Seeing is 0.63"/0.61" on the guiders.
10:42 Finished

Telluric – HIP67005

10:42 Slewing to the telluric
L1 86, 87 → -10.0495, -85.31" to put star at 1028.53, 1048.50 → 88
L2 80, 81 → -8.8, 0.1452 to put star at 1045.56, 1037.38 → 82

What appears in the msg log when the "retries" popup is seen.

The spectra at 5s are saturated - peak counts ~55000 in 1 DIT. These are:
L1 89, 90
L2 83,84

Repeated with DIT=2.51s.
L1: 91,92
L2: 85,86

HIP 67005 has V=6.018.
Defocussed:
L1: 93,94 (not really) but 95, 96 are defocussed & counts peak at about 20-30k
L2: 87, 88 (not really), but 89, 90 are defocussed.

UVa_nirjets/AFGL2591

11:10 Slewing to AFGL2591, RA 20:29:24.90, Dec 40:11:20.29

Filters	L1	L2		Seeing
K+K	97-107	90-100	L1 99 has bad IQ-collim/jump? L2 95 <0.5"	FWHM ~ 0.7/0.6" on guiders, 0.65" on the L1 image
BrG+H2	108-122	101-115	L1 120 elongated	11:47 seeing worse.
J+H	123-133	116-126	Spread out, but more evenly	Seeing LX 1.33, DX 0.7
P_Beta+FeII	134-148	127-141		

L1 99 is
11:24 LX 0.69, DX 0.66

11:47 LX 1.2, DX 1.33
12:02 18-deg twilight
12:04 LX 1.33, DX 0.7
12:16 LX 0.75, DX 1.42

Throughout this observation, we have seen vignetting of the WFS pupil by M3 - this is not unusual for far off-axis positions and low elevation. But the WFS images sometimes look 'pinched' or the spots double (DX) or the grid of spots wavy (SX). Examples are, for the right, right_wfscimage000737 and 000746.

12:31 12-deg twilight
12:46 Finished

LUCI Twilight Sky Flats

12:47 Slewing to Blank16+55 field

12:56 Sky flats taken under cloudy conditions

J&H, L1 149-162, L2 142-155
K, L1 163-167,169-173 , L2 156-160, 162-166
P-Beta+FeII, L1 174-178, L2 167-171

BrG+H2, L1 179-190, L2 172-185

13:21 sunrise

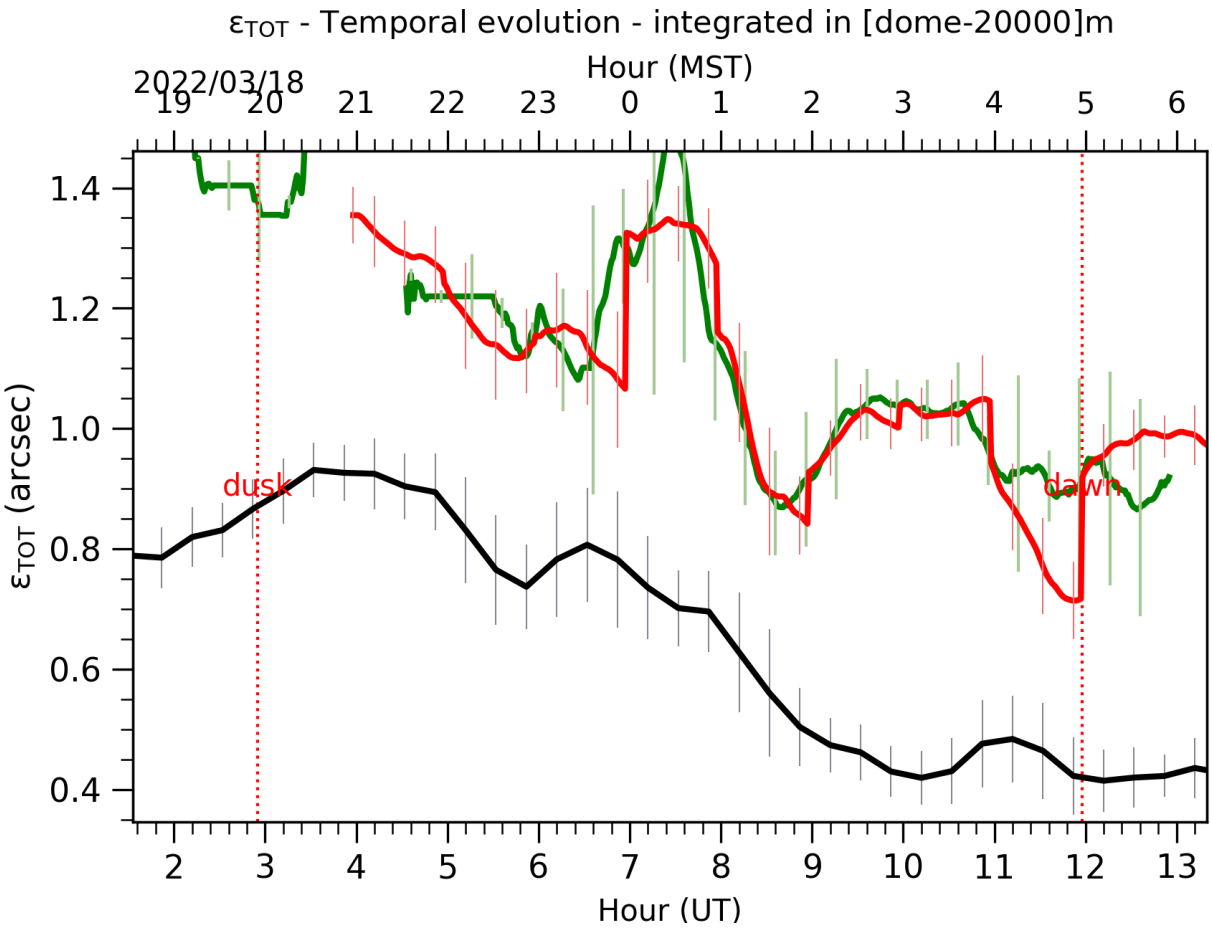
13:35 David is closing up.

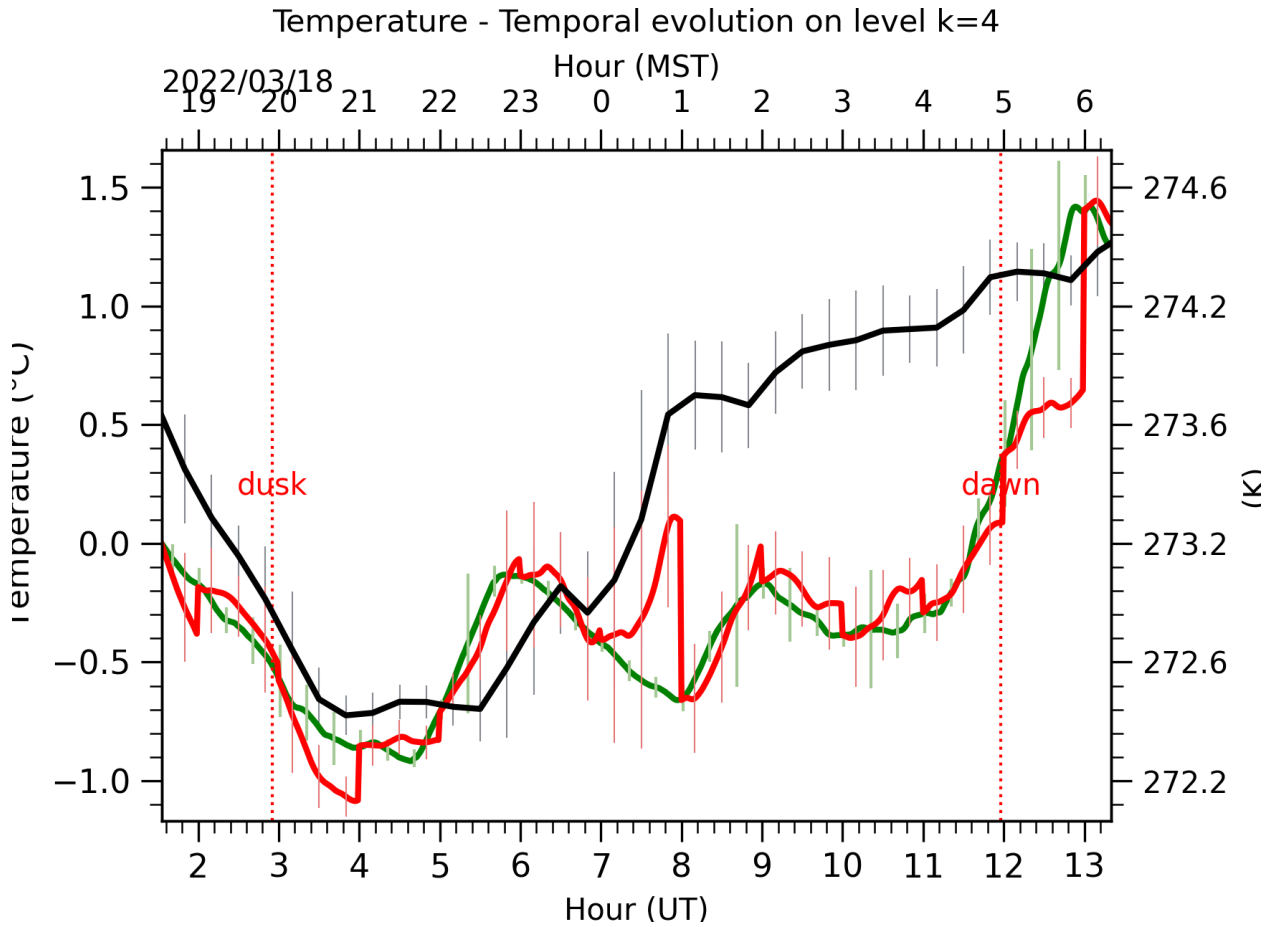
Closed-Dome Calibrations

LUCI

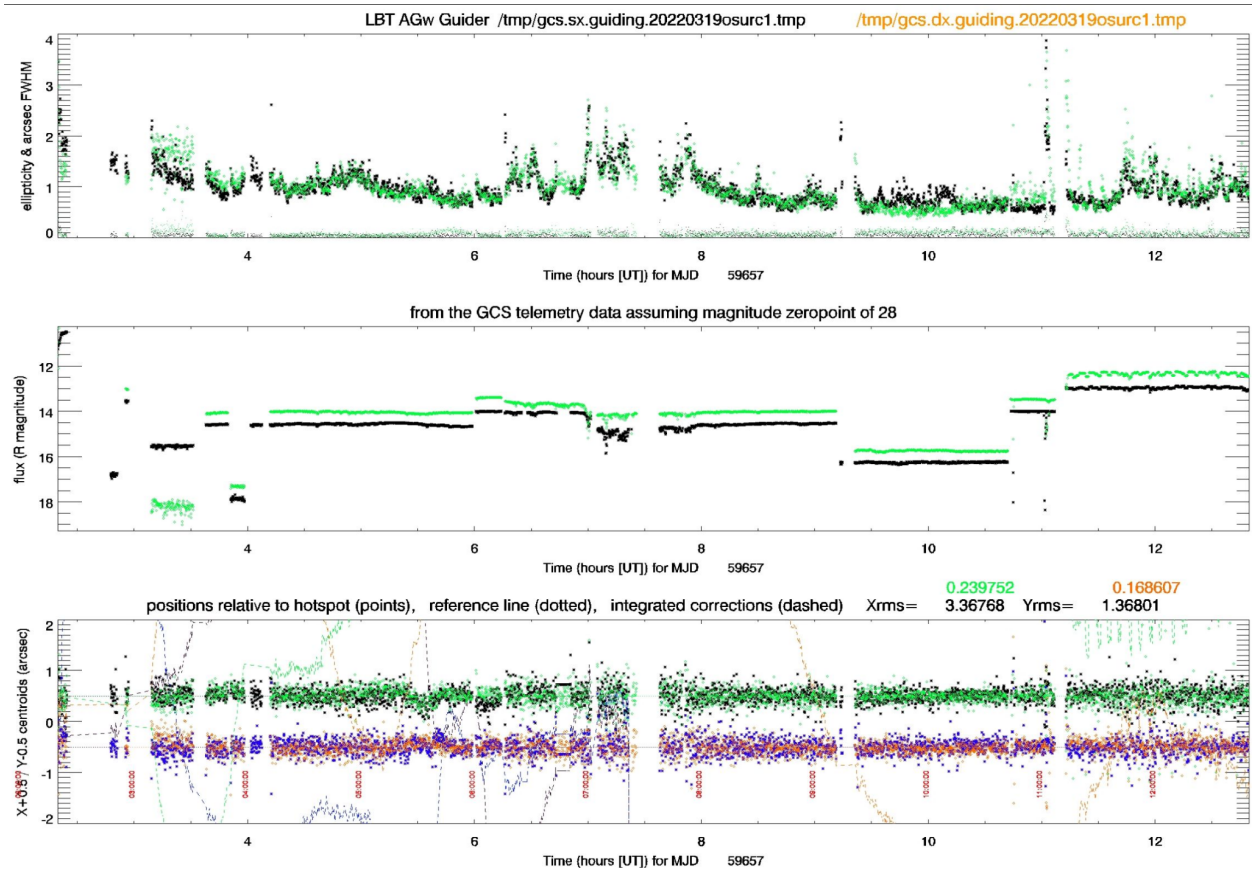
	Filters	L1	L2	
UVa_nirjets	J+H	193-197 198-202	186-190 191-195	
	K+K	203-207 208-212	196-200 201-205	
	PaB+FeII	213-217 218-222	206-210 211-215	The DIT for PaB was a bit low - it did not match what was in the template, 8-sec.
	PaB+FeII	223-227 228-232	216-220 221-225	repeat with DIT=8sec for L1
	BrG+H2	233-237 238-242	226-230 231-235	
UVa_BCD_LUCI	1" G200 zJ 1.17 mic	243-260	239-253	
OT library 14.0	1” G200 HK 1.93 mic			from the OT library, not the flat+arc HK script in OSU_BALQ

ALTA predictions




Temperature - Temporal evolution on level k=4
2022/03/18
Hour (MST)
19 20 21 22 23 0 1 2 3 4 5 6
1.5
1.0
0.5
0.0
−0.5
−1.0
274.6
274.2
273.6
273.2
272.6
272.2
(K)
dusk
dawn
2 3 4 5 6 7 8 9 10 11 12 13
Hour (UT)

LBTplot


LBT AGw Guider /tmp/gcs.sx.guiding.20220319osurc1.tmp
/tmp/gcs.dx.guiding.20220319osurc1.tmp
ellipticity & arcsec FWHM
Time (hours [UT]) for MJD 59657
from the GCS telemetry data assuming magnitude zeropoint of 28
flux (R magnitude)
Time (hours [UT]) for MJD 59657
positions relative to hotspot (points), reference line (dotted), integrated corrections (dashed)
0.239752
Xrms= 3.36768
0.168607
Yrms= 1.36801
X+0.57 Y-0.5 centroids (arcsec)
Time (hours [UT]) for MJD 59657