OSURC Nightlog 20211004 UT

Observer*: Olga Kuhn
Lead Partner Observer*: Jack Neustadt (OSU)
Other Partner Observers*: Anusha Pai (OSU), Elvira Cruz-Cru (OSU)
Special Assistants*: none
Telescope Operator: David Gonzalez Huerta (LBT)
*** = from home**

Plan:

The plan is to start with binocular LUCI and execute UVa_nirjets observation, and then to switch to binocular MODS.

[]	UVa_nirjets/CepA	UTC 02:00 - 03:45 (imaging)
[]	UVa_nirjets/NGC7538_IRS9	UTC 04:00 - 05:15 (imaging)
[]	switch to MODS	UTC 05:15 - 05:45
[]	UM_XMDs/J2213	UTC 05:50 - 07:00
[]	ND_GAIAQSO/j0038	UTC 07:05 - 07:35
[]	OSU_XMDs_MODS/SHOC113	UTC 07:40 - 09:00
[]	OSU_ASASSN/ASASSN15ti	UTC 09:05 - 11:35
[]	standard	UTC 11:40 -

Summary:

Clouds came and went throughout the night. Started with LUCI to observe two UVa_nijets targets: CepA was completed but NGC7538_IRS9 was heavily affected by clouds and not all filter combinations were done before reconfiguring to MODS. With MODS, OSU_XMDs_MODS/J2213 was observed - acquisition was through clouds but they cleared off mostly during the observation. Clouds held off for the subsequent observation of UM_XMDs/SHOC113. Throughout the 2 hour observation on ASASSN15ti, clouds came and went. We finished with observations of G191-B2B and GD71.

Issues:

Weather:

The forecast is for mostly cloudy skies. There is a fair amount of cirrus at the summit before sunset and the satellite map shows more coming.

Preparations:

luci[1|2].20211004.0NNN.fits
mods[1|2][b|r].20211004.NNNN.fits
lbc[b|r].20211004.HHMMSS.fits

Overview (times are given in UT):

01:15 Enclosure open

Twilight Sky Flats with LUCI

01:2x Slewing to Blank 19 field for skyflats at K+K - counts are low, ~4500 k

01:27 J+H, first with NDIT=1 and then with NDIT=5. NDIT=5 gives about 10k in the integrated images, but we don't have a "low-illumination" flat to remove thermal and local illumination gradients. There are also out-of-focus stars.

We should try again for twilight sky flats at all filters: BrG+H2, PaB+FeII, K+K and J+H.

01:40 David is checking pointing and collimation near the first target, CepA (22h56m, +62d).

UVa_nirjets/CepA

01:54 12-deg twilight

Seeing estimate from collimation is ~1".

02:05 Starting the imaging series of CepA.

L1filt+L2filt	L1	L2	comments
K+K	20-30	23-33	
BrG+H2	31-45	34-48	clouds are visible on the all-sky*
J+H	46-56	49-59	FWHM on images ~0.8"
PaB+FeII	57-71	60-74	

* A plot of guide star flux vs time from LBTplot will be included at the end of this log.

02:23 18-deg twilight

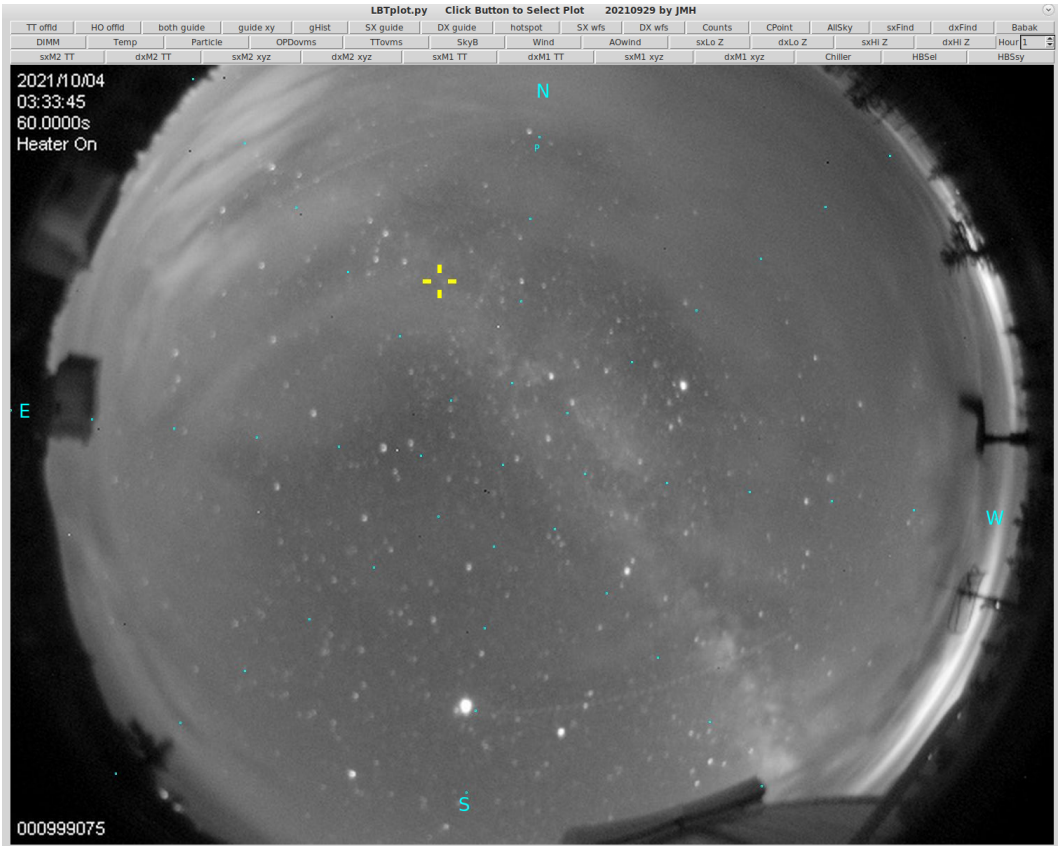
UVa_nirjets/NGC7538_IRS9

03:37 Slewing to NGC7538_IRS9

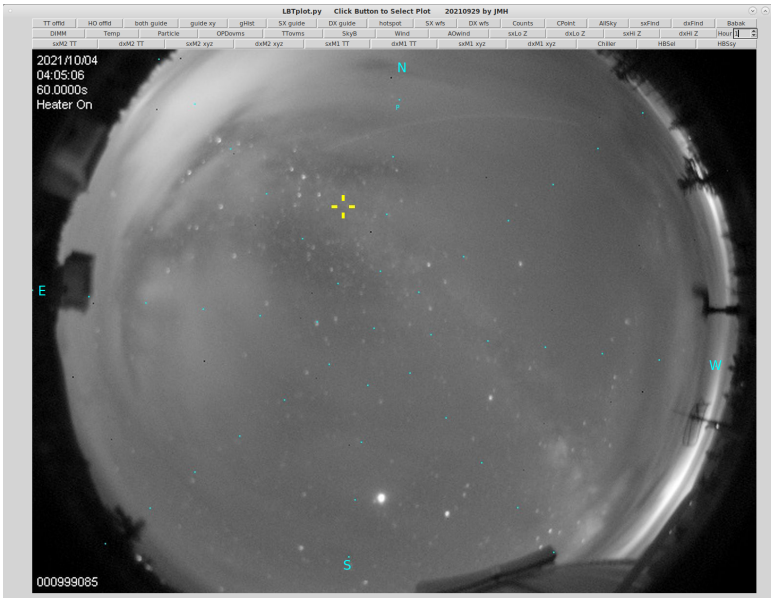
L1filt+L2filt	L1	L2	comments
K+K	72-82	75-85	~0.75" on images
BrG+H2	83-89 90 (offset to sky) ** 91-92***	86-92 93 (offset sky) ** 94-95***	clouds are closing in - guide star signal is very weak(04:07UT). Lost guiding and offset before 90,93 failed. Paused script. 04:32 Resumed as guide star signal came back. 04:38 lost guide star again. Did not complete BrG+H.
J+H	93-103	96-106	05:14 resumed script here. Aim to complete J+H and move on. Clouds are not getting any better.
PaB+FeII	not done	not done	

** Note, I just repeated the sky exposure 90. It was because I'd put a pause after it and so there would have been a longer-than-normal delay between it and the subsequent exposure. (But clouds are making these considerations of IR sky variability timescales moot).
*** The pair is all we got before clouds came again and caused the offset to fail.

03:41 FWHM on guider images 0.95/1" (SX/DX)
Below is the all-sky image from the time we started the series on NGC7538_IRS9



04:07 The offset failed since we lost the guide star due to clouds. Pausing the script execution but tracking field.
All-sky image from this time below.



04:32 Resumed, but by 04:38 we'd lost the star again and the script execution stopped.

05:13 Abandoned BrG+H2 pair and tried J+H although through a lot of cloud - about 2 mags of extinction according to guide star flux in LBTplot..

Reconfiguring: LUCI → MODS

05:34 Starting to reconfigure

05:50 David is checking pointing and collimation near the first target.

UM_XMDs/J2213

06:03 acqBinoMODS J2213_UT0630.acq
Clouds are coming over as we are taking the acquisition images

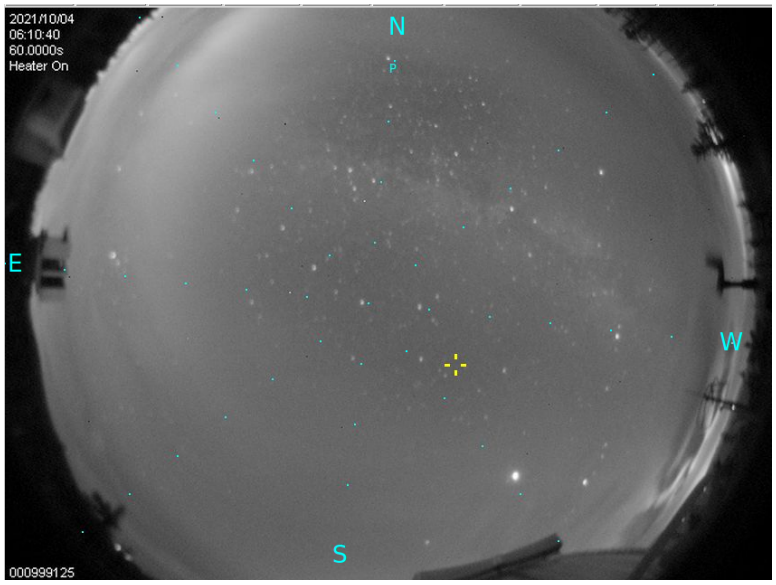
m1r: 2 & 3 → offsetxy -0.728 10.526 rel → 4
m2r: 2 & 3 → offsetxy 3.775 8.943 rel → 4

Used "x" for MODS1 and "a" for MODS2 centroiding.

06:17 execBinoMODS J2213.obs

m1b	m1r	m2b	m2r	seeing
2-4	5-7	2-4	5-7	1"

All-sky image at the start of the exposures:



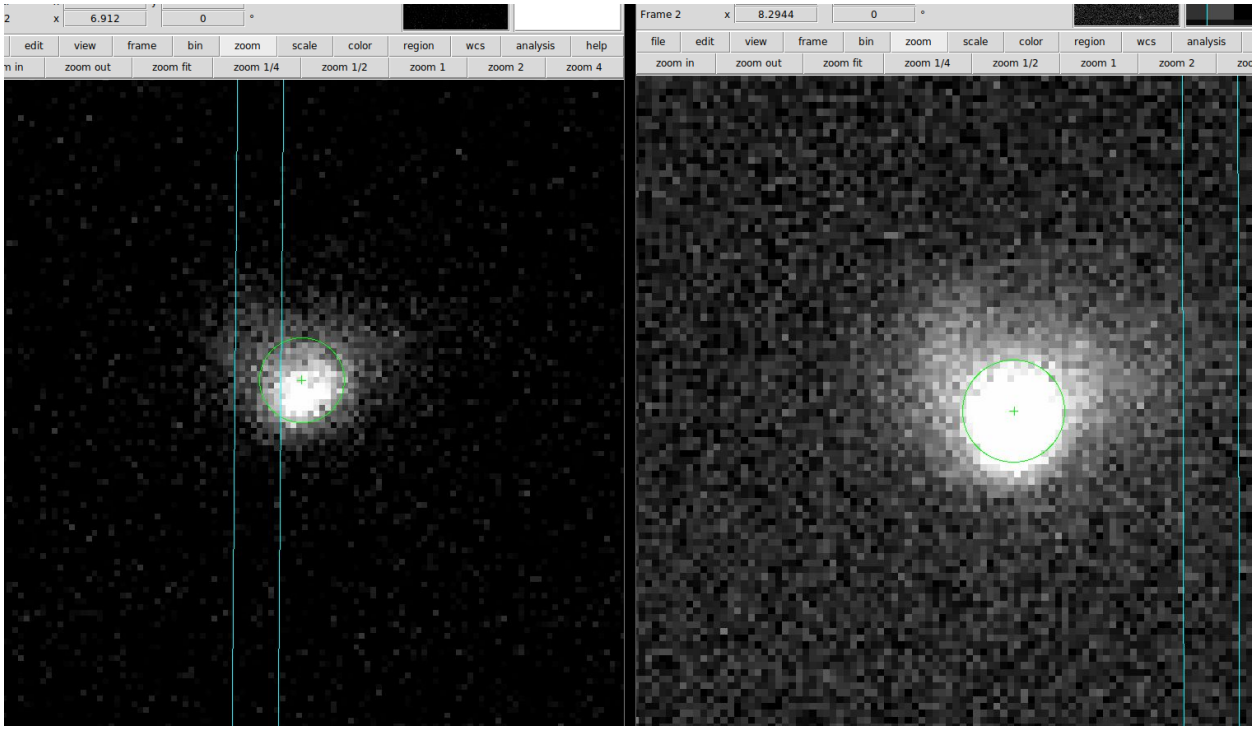
But conditions actually improved during the observations (see LBTplot guide flux vs time).

OSU_XMDs/SHOC113

00:29 acqBinoMODS SHOC113_UT0730.acq

m1r: 8 & 9 → -0.863 10.595 rel → 10 → dx = -0.15" → 11
m2r: 8 & 9 → 3.505 7.836 rel → 10

I used "a", although centroiding was not the best choice for this target since it had extended emission which influenced the fit. Fortunately, the extension was up/down. Below is a screenshot showing the centroid position that was used.



07:47 execBinoMODS SHOC113.obs

m1b	m1r	m2b	m2r	seeing
5-7	12-14	5-7	11-13	0.95"

Clouds held off during this observation. .

OSU_ASASSN/ASASSN15ti

08:54 acqBinoMODS ASASSN15ti.acq

m1r: 15 & 16 → offsetxy -1.003 11.193 rel → 17 → dx = -0.123" → 18
m2r: 14 & 15 → offsetxy 3.425 8.919 rel → 16

09:14 execBinoMODS ASASSN15ti.obs

m1b	m1r	m2b	m2r	seeing
8-13	19-24	8-13	17-22	~0.8"

09:25 Guide star signal is starting to dip, about 10 min into the first exposure. We lost the guide star for a moment. It came back but it looks like the clouds are getting worse.

10:04 During the 1st half of the 3rd exposure, the guide star has faded but it came back.

11:27 finished

G191B2B

11:29 acqBinoMODS g191b2b.acq

m1r: offsetxy -0.208 10.723 rel
m2r: offsetxy 4.376 8.288 rel

Lost the guide star so am waiting until it comes back to offset onto the slit.

11:52 execBinoMODS g191b2b_dualGrating.obs
Lots of extinction.

Star came back on 3rd exposure.

m1b	m1r	m2b	m2r	Comments
14-16, 17	27-29, 30	14-16, 17	25-27, 28	clouds heavily affected first 2, took a 4th

GD71

12:09 acqBinoMODS gd71.acq

m1r: 31 → offsetxy -0.573 11.97 rel → 32
m2r: 29 → offsetxy 4.308 8.993 → 30 → offsetxy -0.778 0.039 → 31

12:18 execBinoMODS gd71_dualGrating.obs

m1b	m1r	m2b	m2r	comments
17-19	33-35	18-20	32-35	gs disappearing

				during 1 exposures 6 mags of extinction

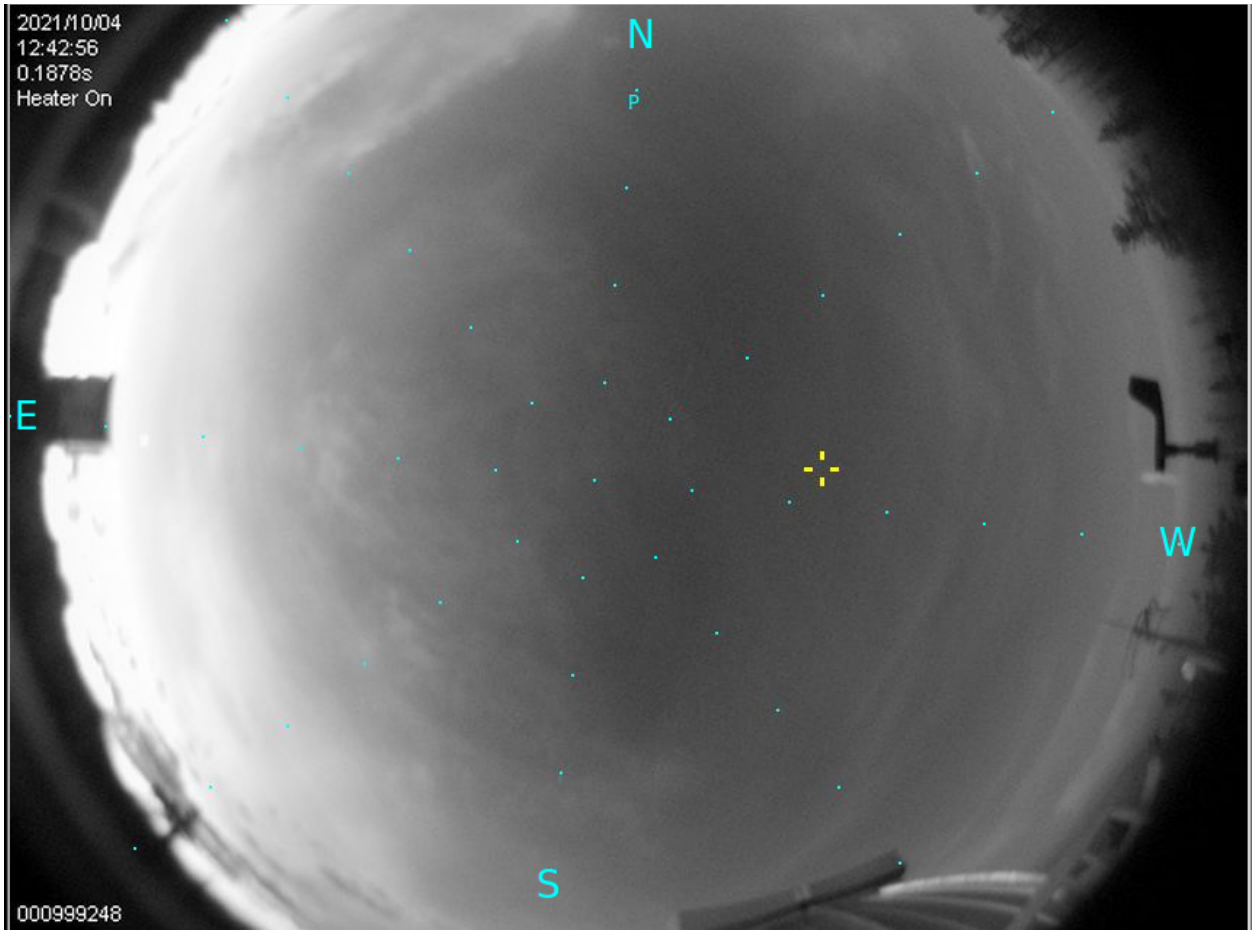
Lots of extinction and twilight in the first exposures. Stopped after two.

11:54 18-deg twilight
12:23 12-deg twilight

Reconfigure MODS → LUCI

Twilight Sky Flats with LUCI (try 2)

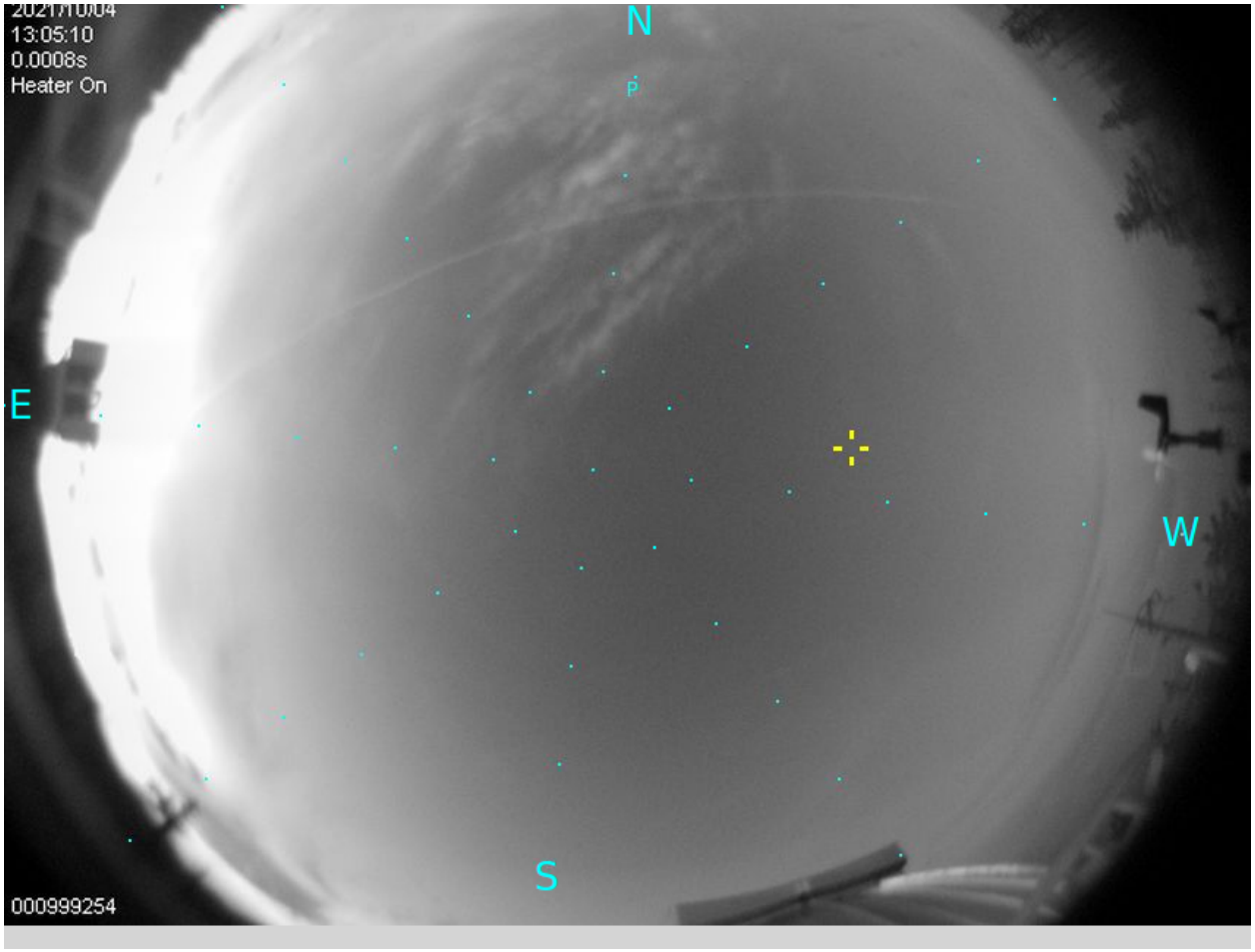
It is very cloudy, but we'll try sky flats with LUCI nevertheless.



05:44 Slewing to a Blank field 03+31 in the west for JH flats. The yellow "+" is where we are pointing - not too cloudy there.

J+H 14-15k counts to start, getting up to 19,24k either due to it getting light or clouds. We have some low illumination J+H flats from evening twilight with same detector settings. I don't know if subtracting these from the high illumination ones (to remove dark and other effects) taken in the morning would make sense, though.

	L1	L2	
J+H	104-108	107-111	15k - 19,24k
K+K	109-113, 114-118, 119-123, 124- 128-132	112-116, 117-121 122-126 127- 131-135	5k,6k to start 5k,6k reaching 10k 11k-15 17k-22k
PaB+FeII	133-137	136-140	13k, 10k up to 20k, 14k
BrG+H2	138- 152- 162 167	141 155- 165- 170	6k up to 10k 14k 28k - too high, ending

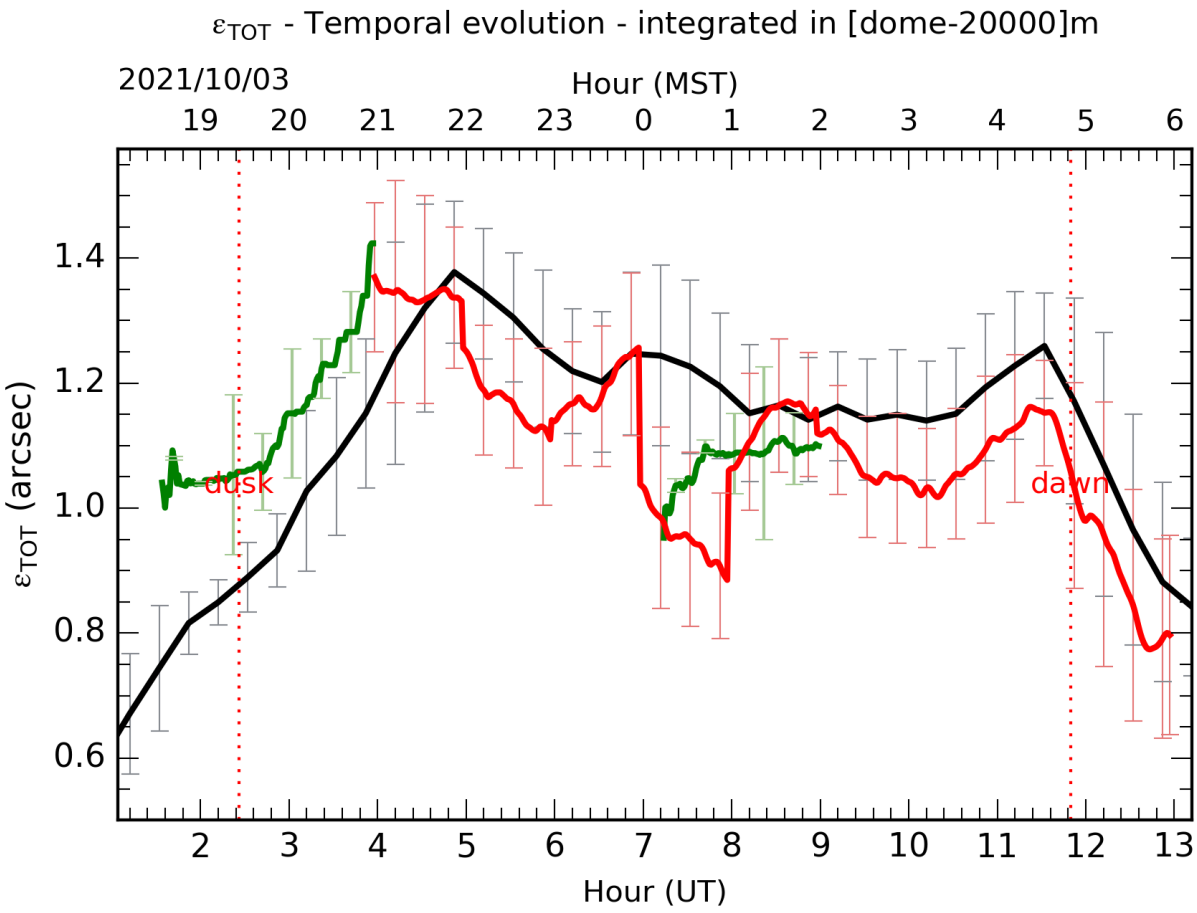


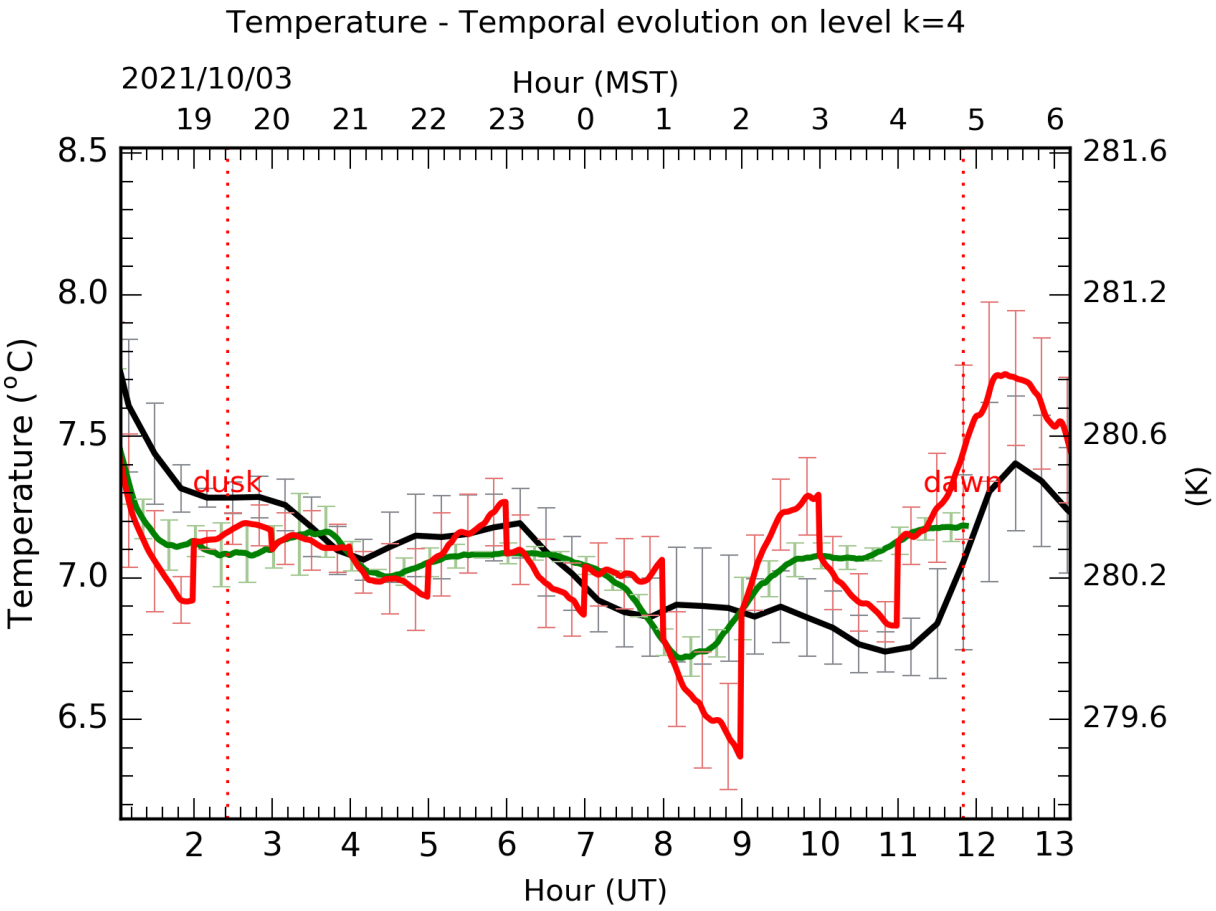
LUCI closed-dome flats

13:38

	L1	L2	
PaB+FeII	171-175 176-180	174-178 179-183	lamp off lamp on
J+H	181-185 186-190	184-188 189-193	lamp off lamp on
BrG+H2	191-195 196-200	194-198 199-203	lamp off lamp on
K+K	201-205 206-210	204-208 209-213	lamp off lamp on, counts are high

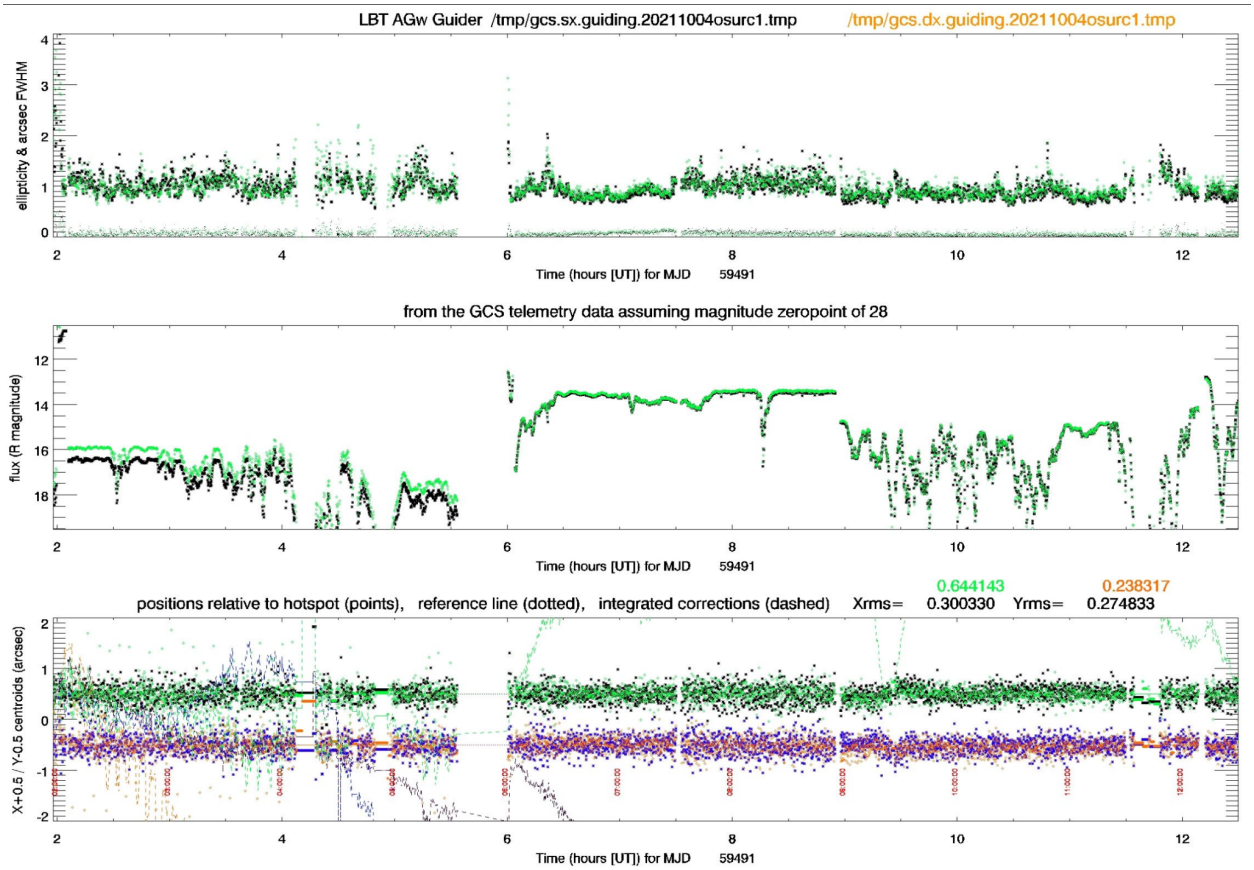
ALTA predictions





LBTplot

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


LBT AGw Guider /tmp/gcs.sx.guiding.20211004osurc1.tmp
/tmp/gcs.dx.guiding.20211004osurc1.tmp
ellipticity & arcsec FWHM
Time (hours [UT]) for MJD 59491
from the GCS telemetry data assuming magnitude zeropoint of 28
flux (R magnitude)
Time (hours [UT]) for MJD 59491
positions relative to hotspot (points), reference line (dotted), integrated corrections (dashed)
Xrms= 0.300330
0.644143
Yrms= 0.274833
0.238317
X+0.5 / Y-0.5 centroids (arcsec)
Time (hours [UT]) for MJD 59491