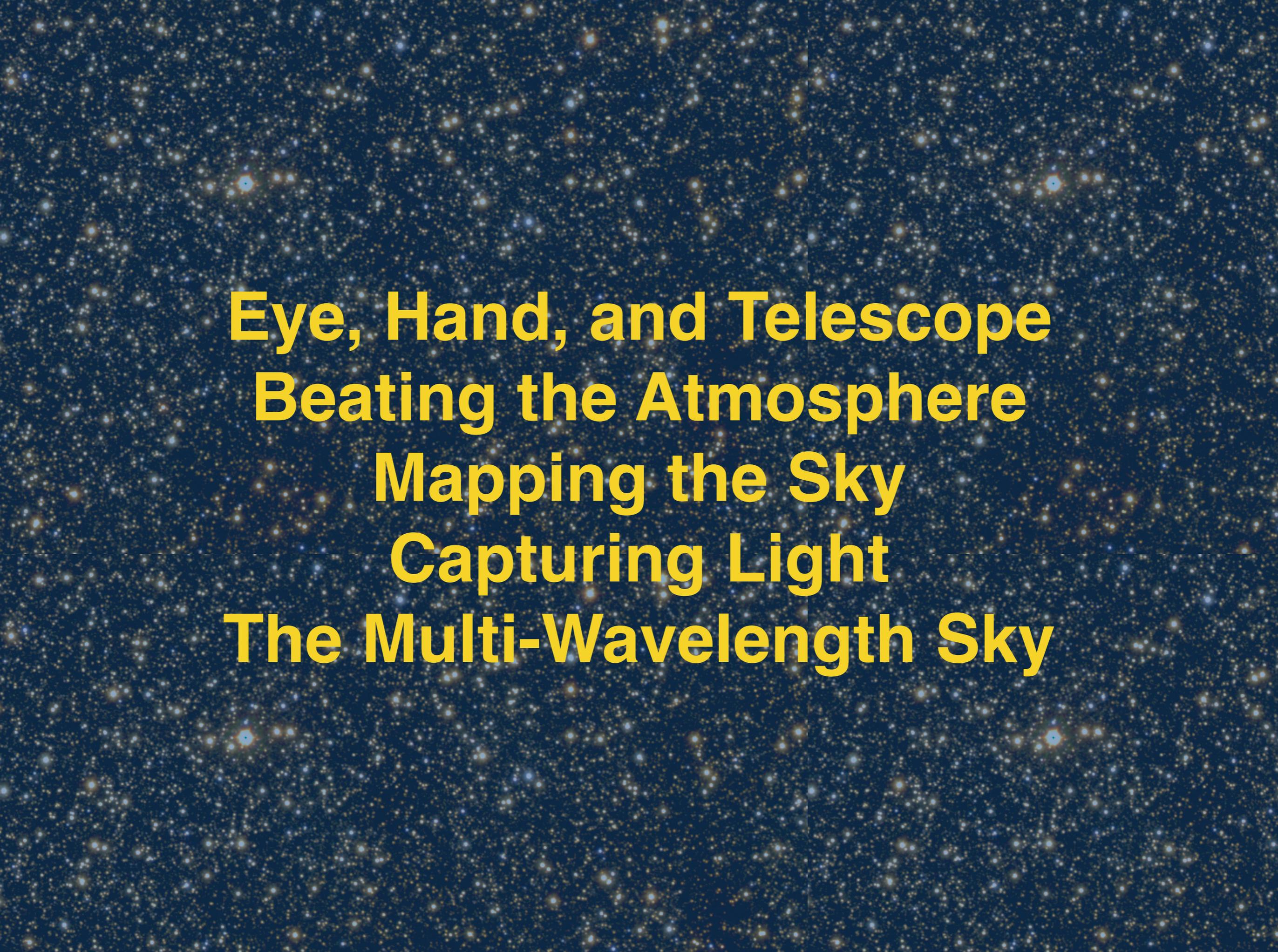


# **Making Pictures of the Sky**

**Two hundred years  
of Astronomical imaging  
from the  
Royal Observatory Edinburgh**

**Andy Lawrence  
Astronomical Society of Edinburgh  
June 2023**





**Eye, Hand, and Telescope**  
**Beating the Atmosphere**  
**Mapping the Sky**  
**Capturing Light**  
**The Multi-Wavelength Sky**

A dense field of stars in a dark blue space, with the text "Eye, Hand, and Telescope" overlaid in yellow. The stars are of various colors, including yellow, white, and blue, and are scattered across the entire frame. The text is centered horizontally and vertically.

# Eye, Hand, and Telescope



THE LATE ADMIRAL SIR W. H. SMYTH, F.R.S.





ZODIACAL LIGHT AS SEEN

AT ROYAL OBSERVATORY

PALERMO, 1 April, 8, 40 P.M. 1878

[www.piazzismyth.org](http://www.piazzismyth.org)

PLATE III VOL 20 P 194



THE ZODIACAL LIGHT  
AT THE CAPE OF GOOD HOPE, JULY 1845.

Sun set.

Twilight  $9^\circ$  high to extreme blue.

”  $3^\circ$  ” orange.

Twilight, of faintest possible blue,  $3^\circ$  high.

” ” red, only a suspicion,  $0^\circ.5$  high.

Twilight gone.

Duration of twilight =  $1^h 14^m$ .

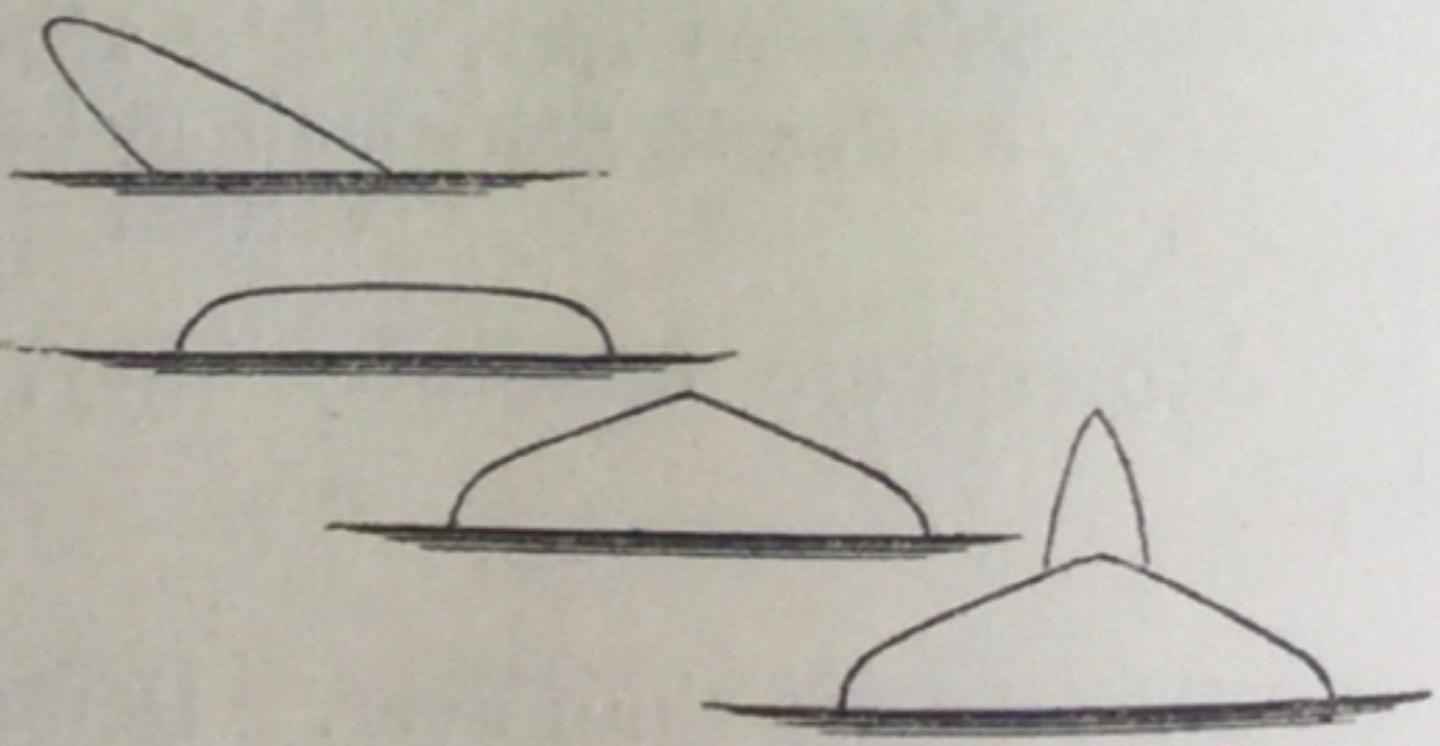
Zodiacal light left outstanding.

Angle with horizon,  $36^\circ$ ; length,  $50^\circ$ . It is faint, but certainly there, thus: . . . . .

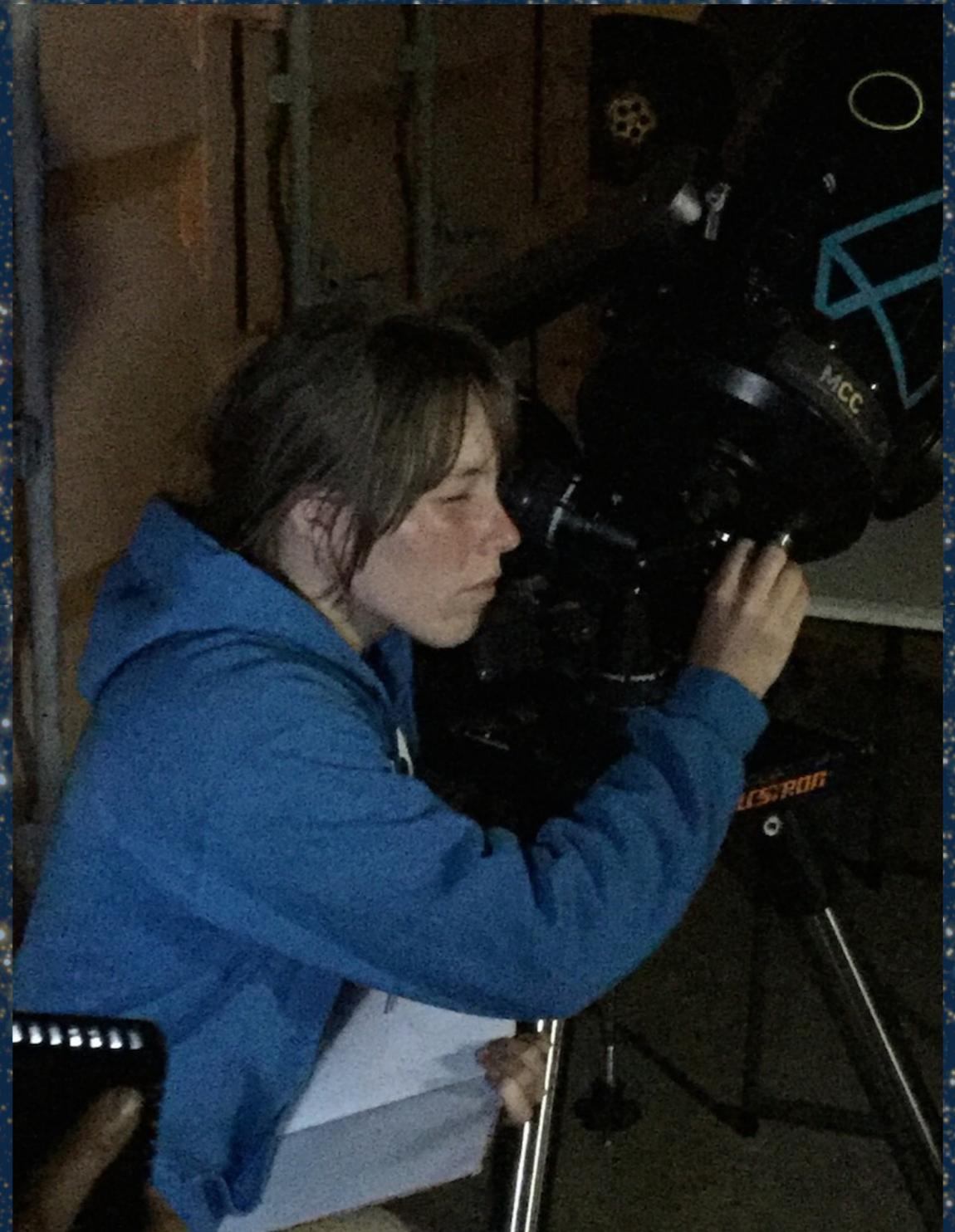
Lunar twilight appears strong in the east, in azimuthal extent =  $70^\circ$ , thus: . . . . .

Grows pyramidal, thus: . . .  
Is strong to  $15^\circ$  high, and has an ascending cone  $30^\circ$  high, thus, and very faint: . . . . .

Moon rose. Angle with horizon of ascending cone or ray =  $90^\circ$ .



# Telescope: Deeper and Sharper



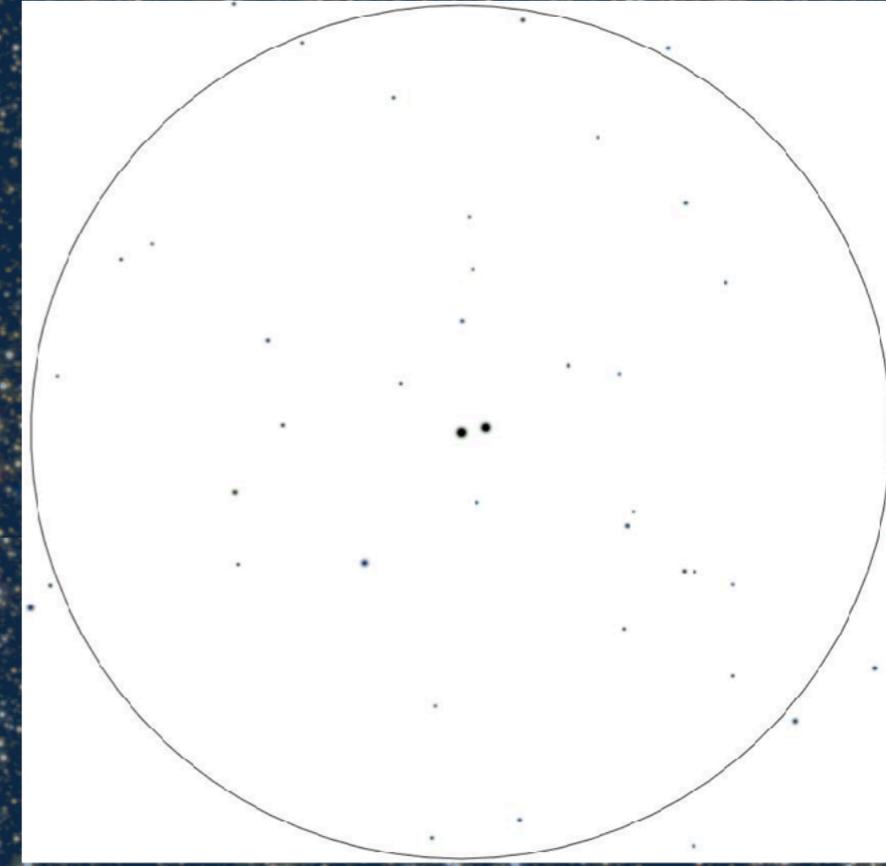
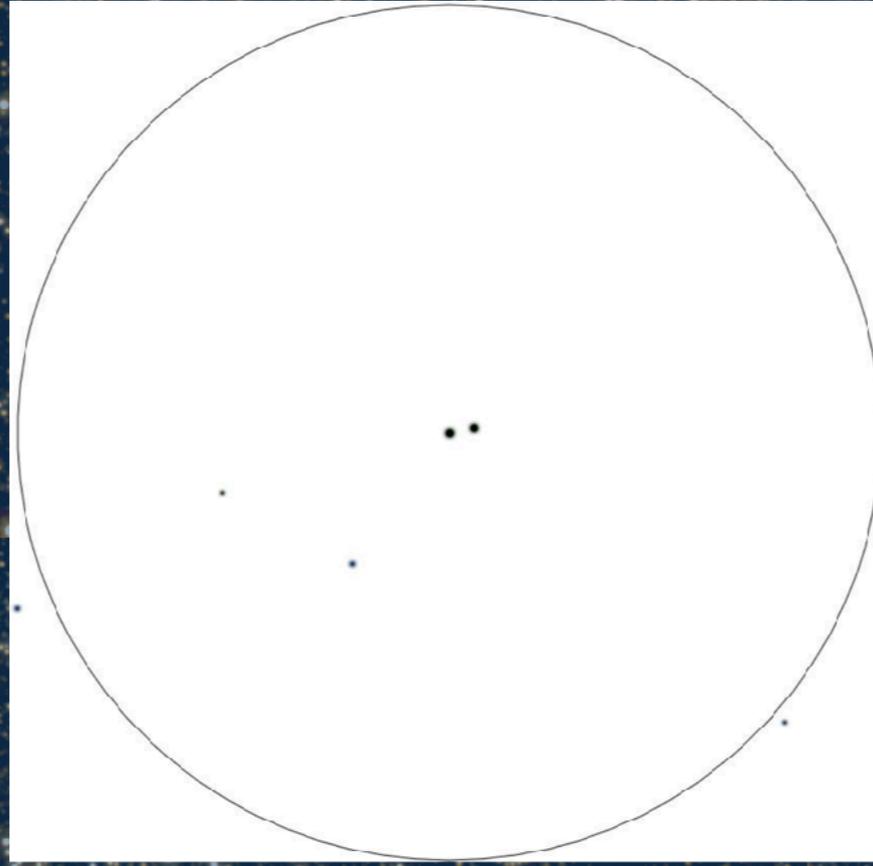
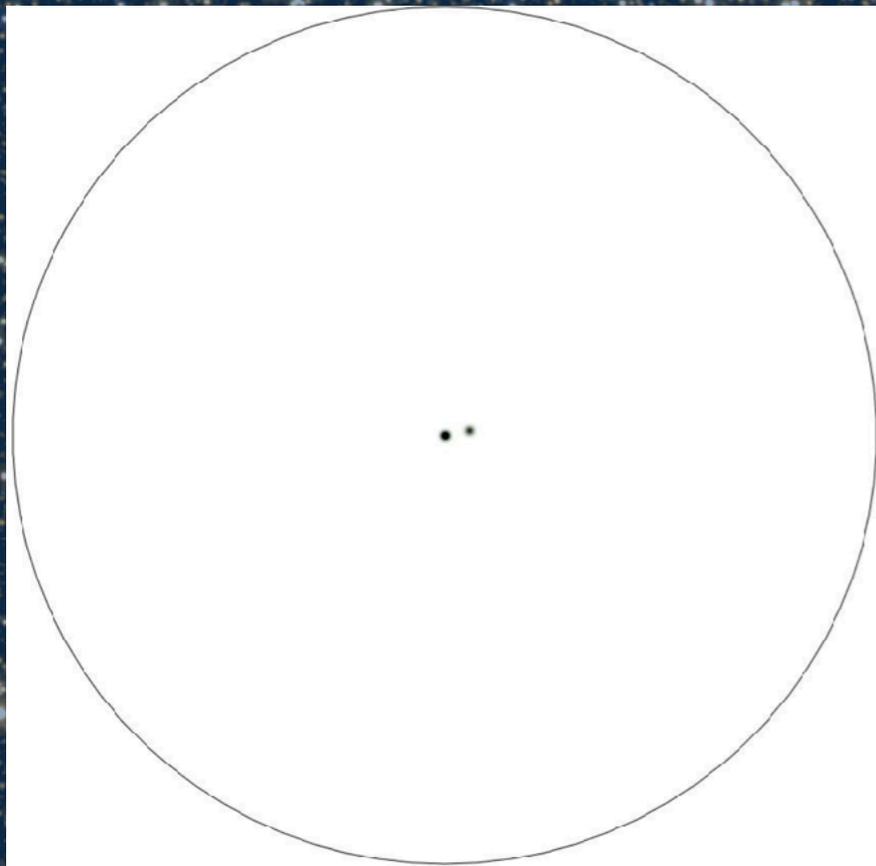
**Epsilon  
Lyrae**

**Two degree  
field**

**6th mag**

**8th mag**

**10th mag**



**naked  
eye**

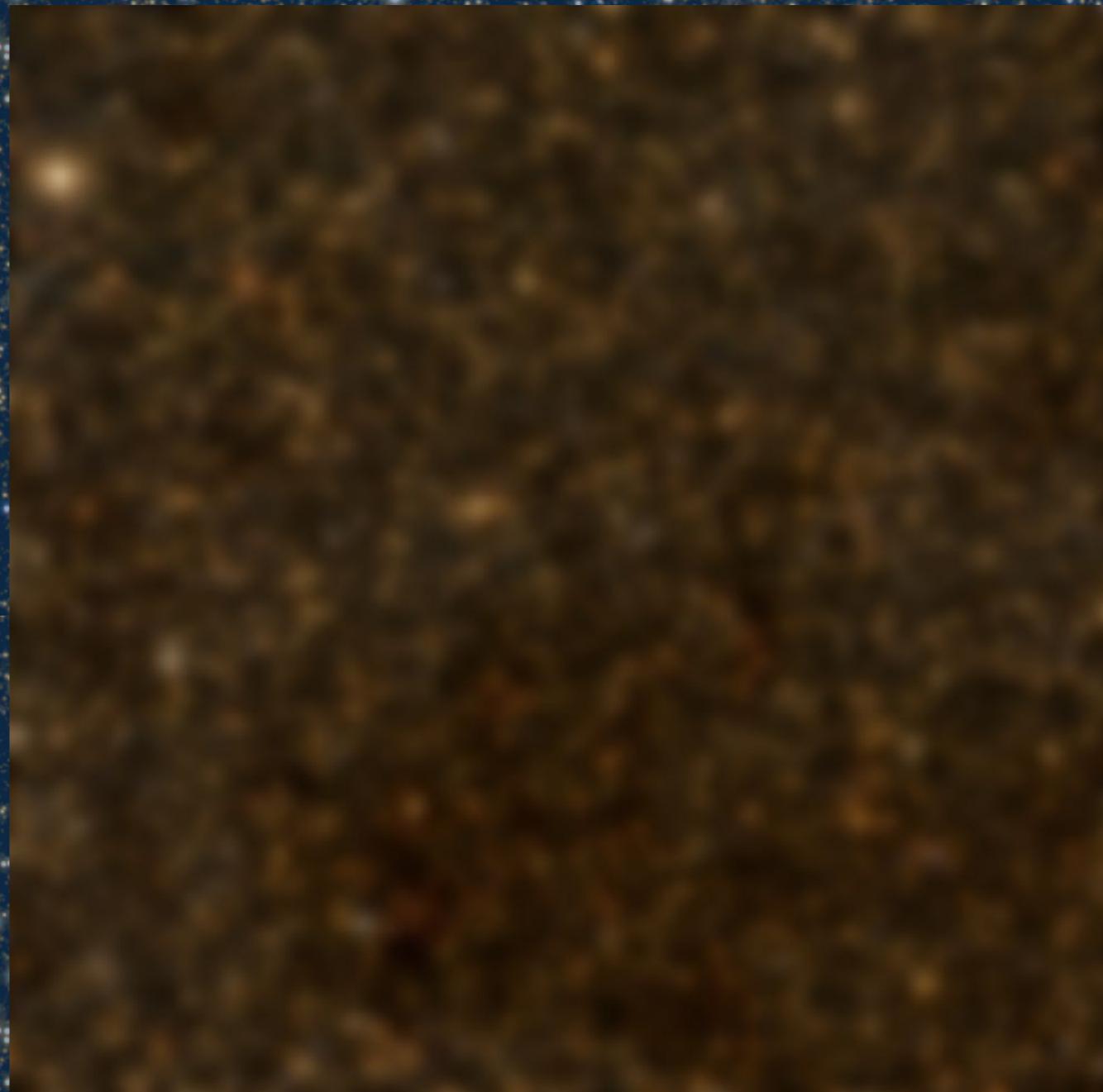
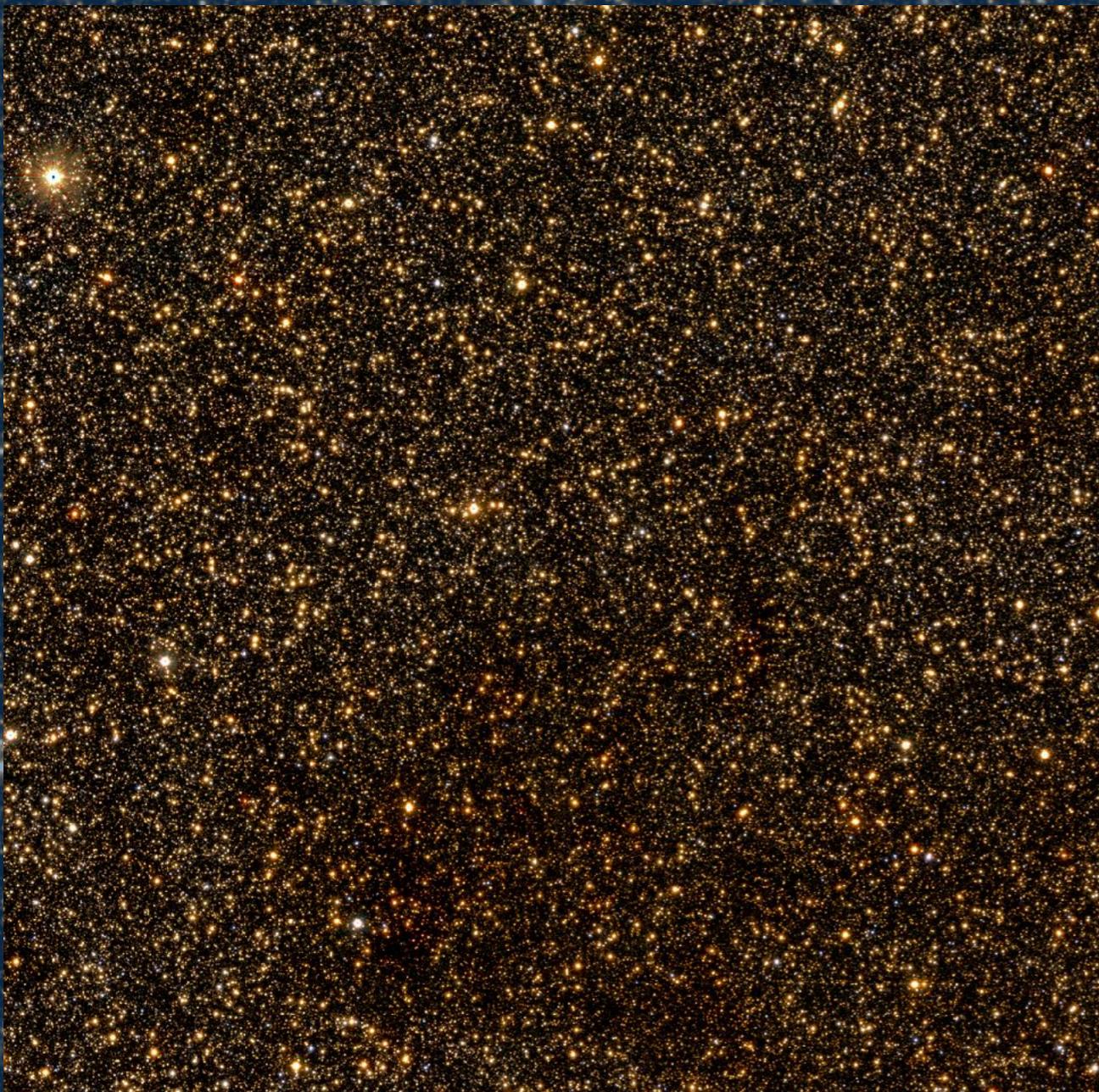
**binoculars**

**3 inch  
telescope**

David Morton/RPI

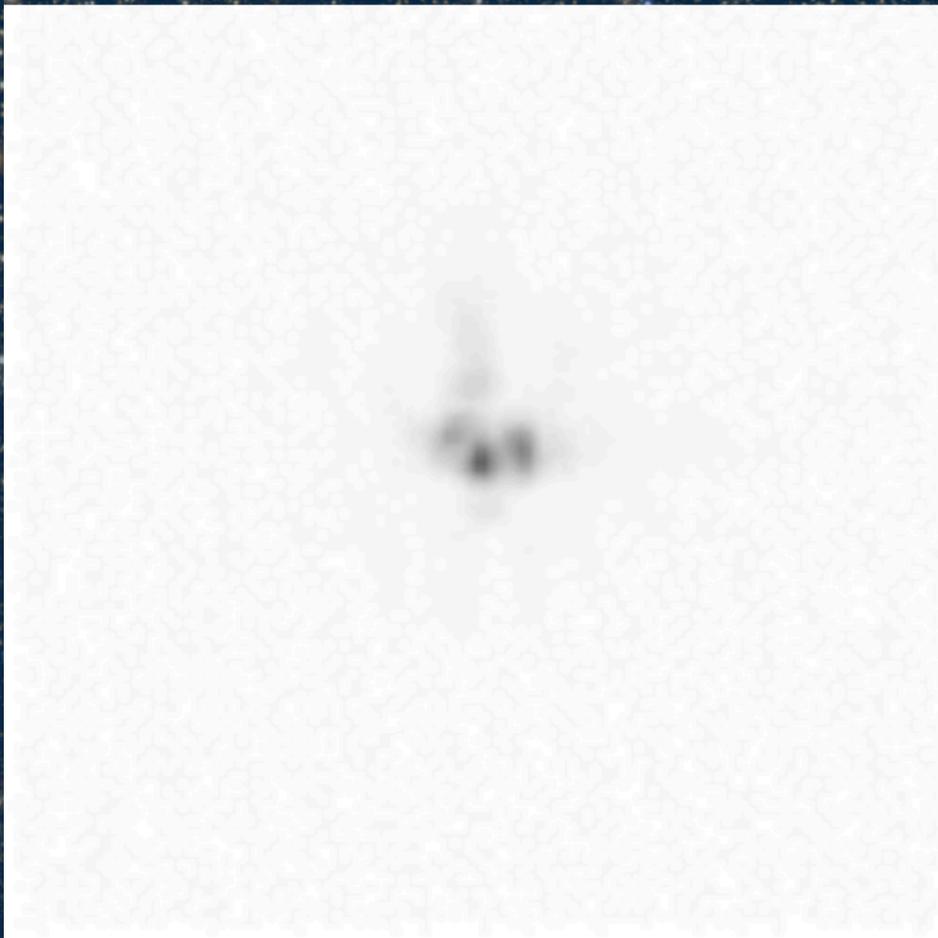
**1 arcsec**

**1 arcmin**



The background of the image is a vast field of stars, appearing as numerous small, bright points of light in various colors (white, yellow, blue) against a dark blue, almost black, sky. The stars are densely packed, creating a rich, textured appearance. In the center of the image, the text "Beating the Atmosphere" is written in a bold, yellow, sans-serif font. The text is centered horizontally and vertically, standing out prominently against the starry background.

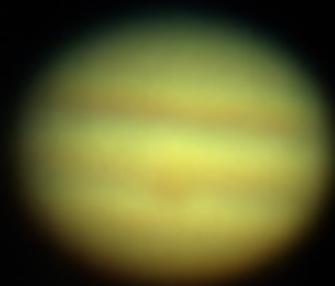
# Beating the Atmosphere



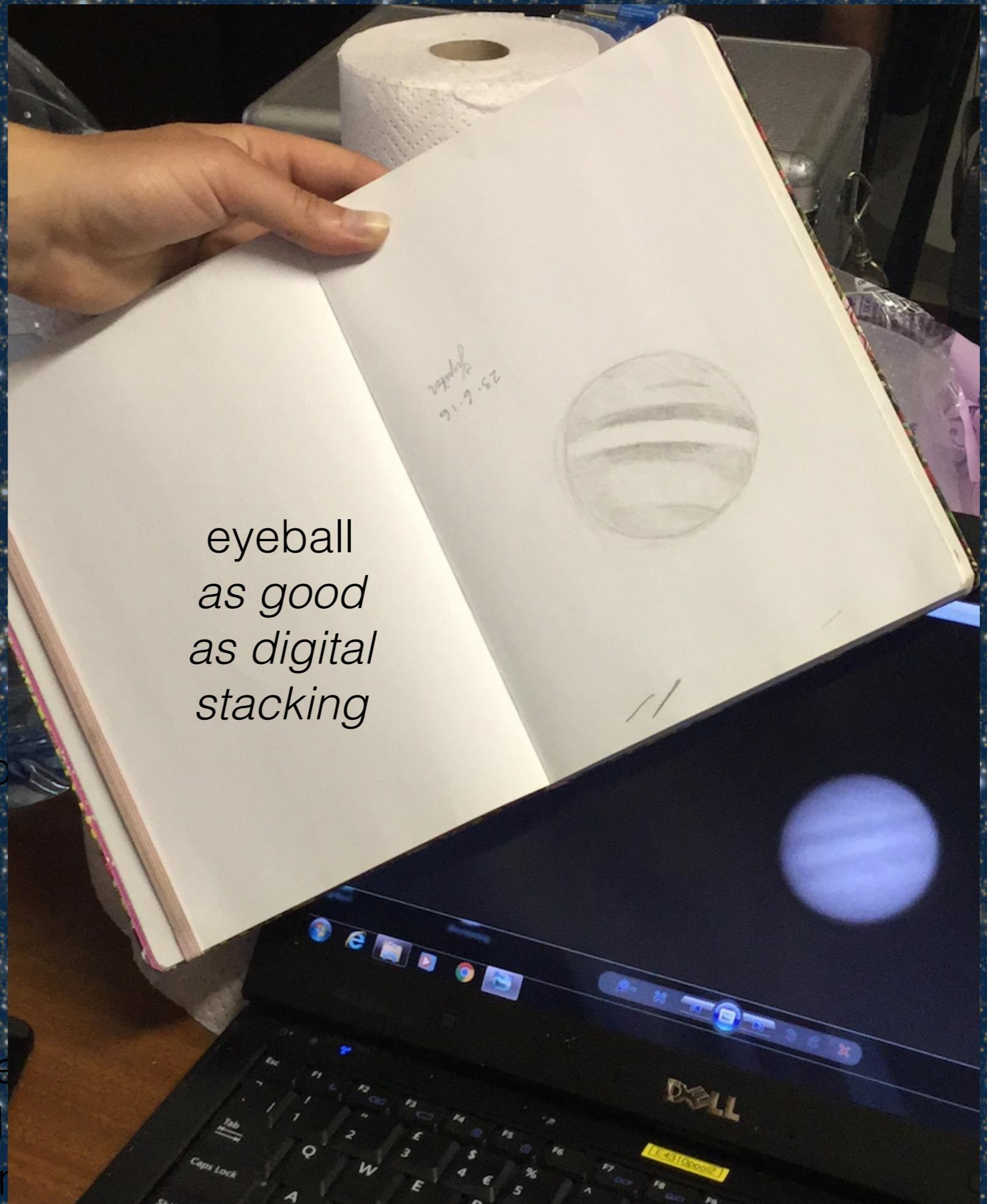
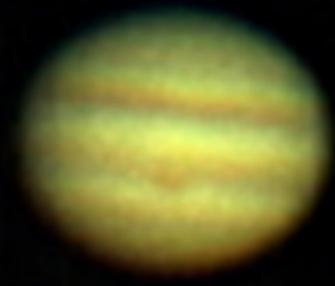
raw



stacked



sharpened



eyeball  
*as good  
as digital  
stacking*

ckeo

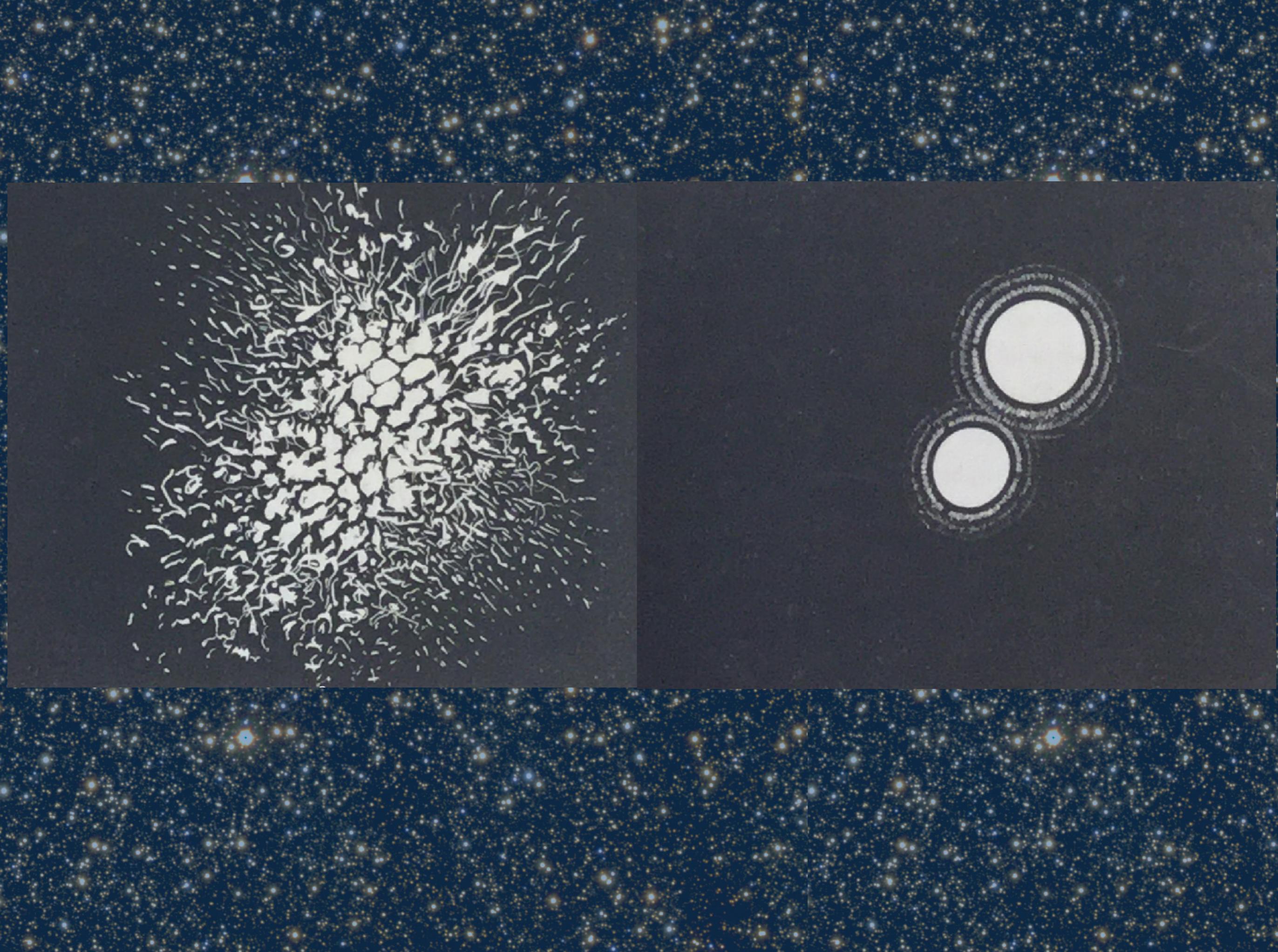
acked  
and  
rper

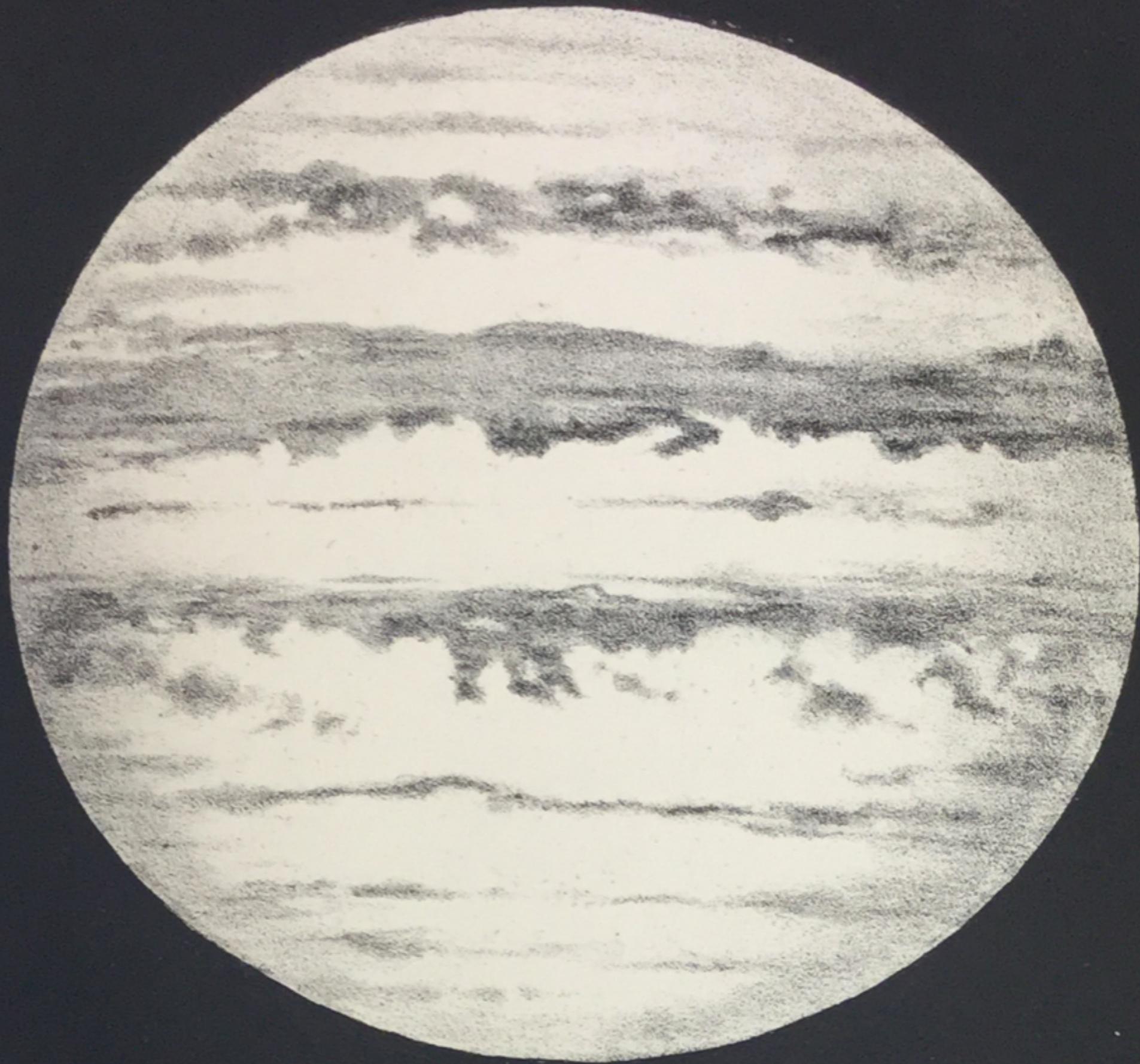


NIGHT, ON THE KARROO DESERT.









ALTA VISTA STATION — JUPITER





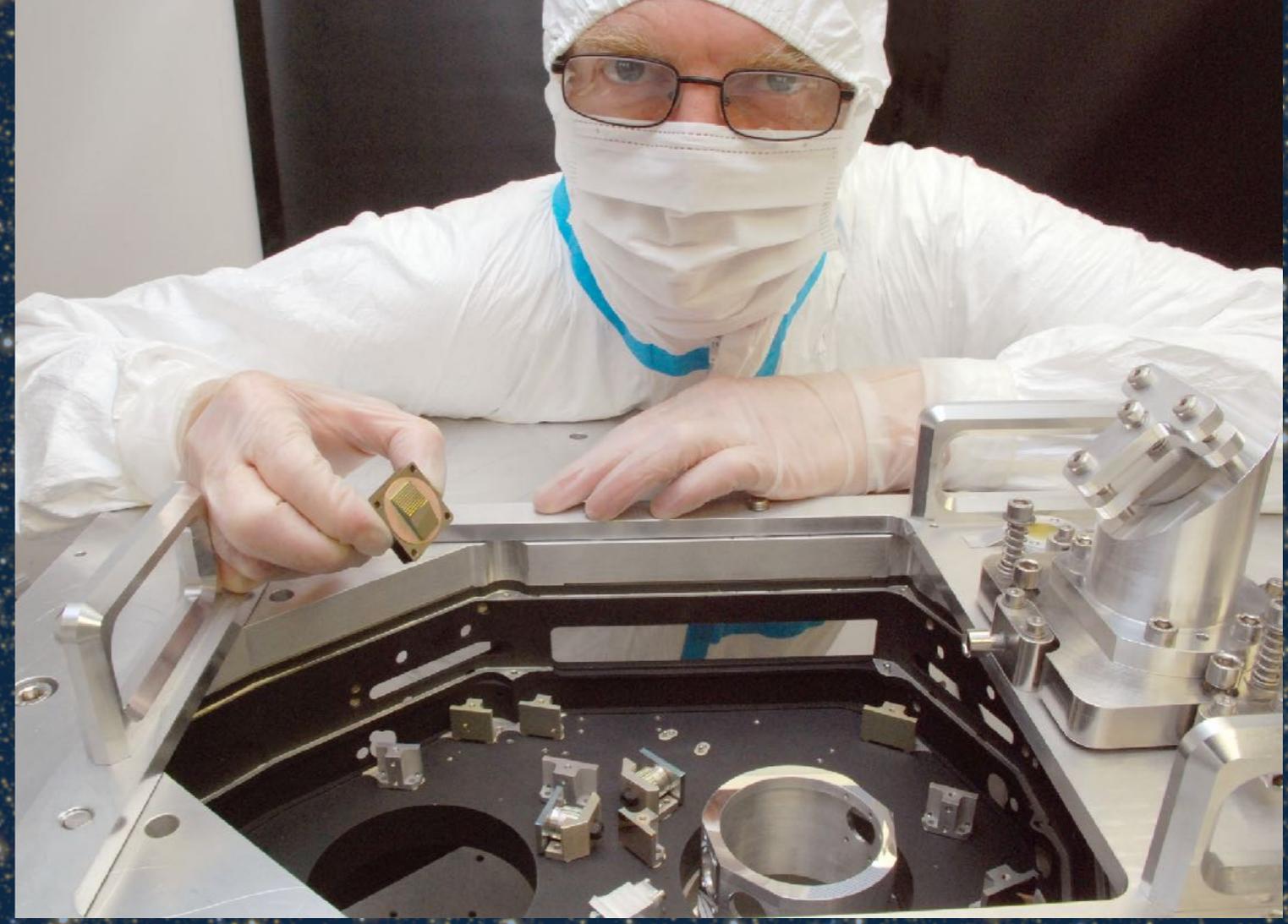




**Colin Humphries  
Skylark**



**Alistair Glasse  
JWST MIRI**



NGC 1309

SN2002fk

Lick Obs. 2002

*HST* ACS 2005

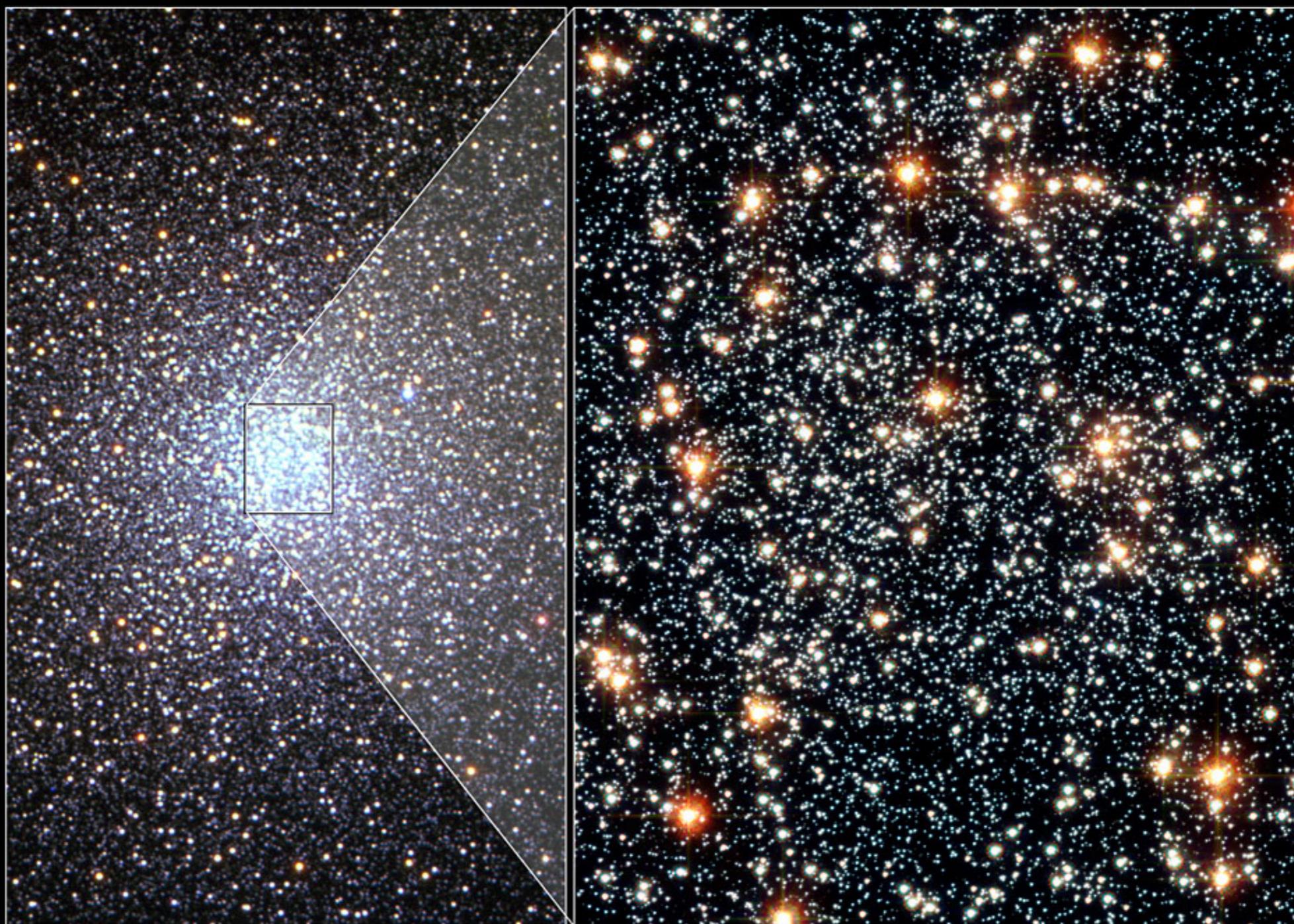


**NEWS RELEASE**

**Hubble yields direct proof of stellar sorting in a globular cluster**



HEIC 0616



**ESO VLT**  
(ground-based)

**ACS**



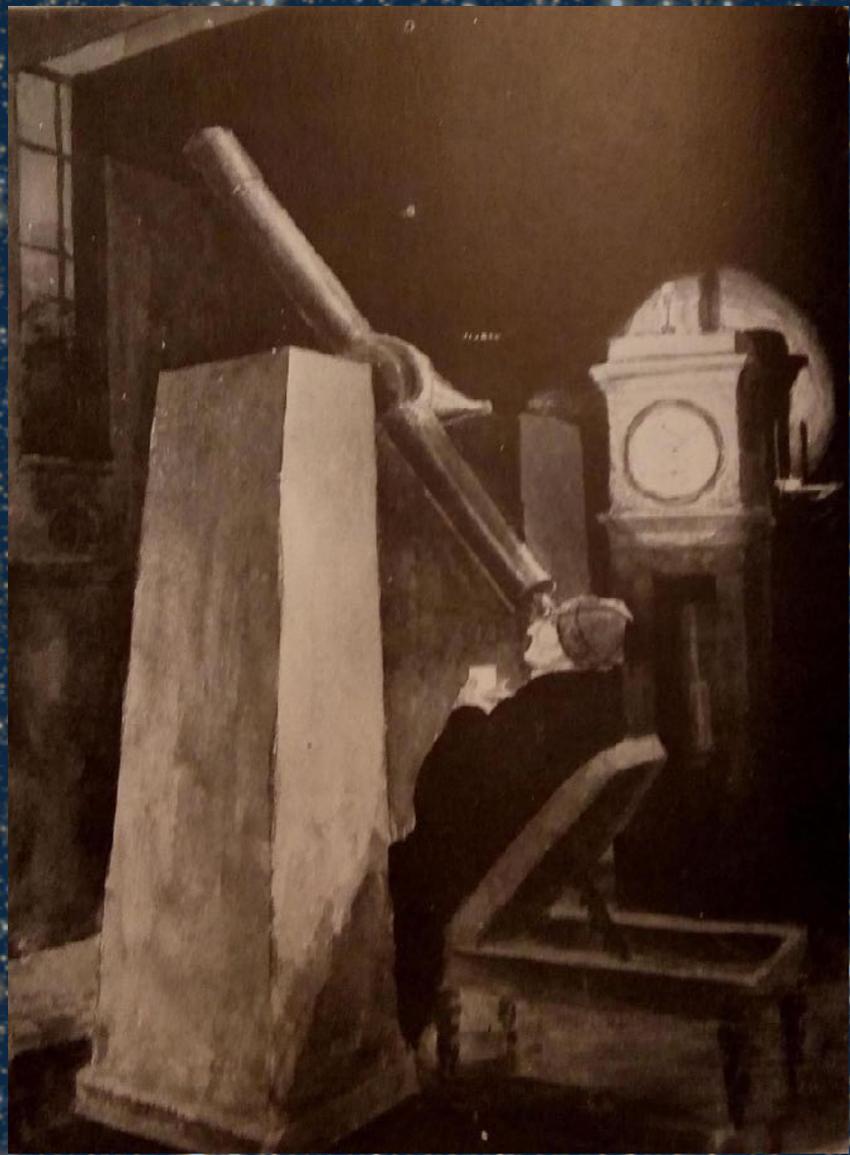
**HUBBLE SPACE TELESCOPE**

NASA, ESA, and G. Meylan (Ecole Polytechnique Federale de Lausanne)





# Mapping the Sky

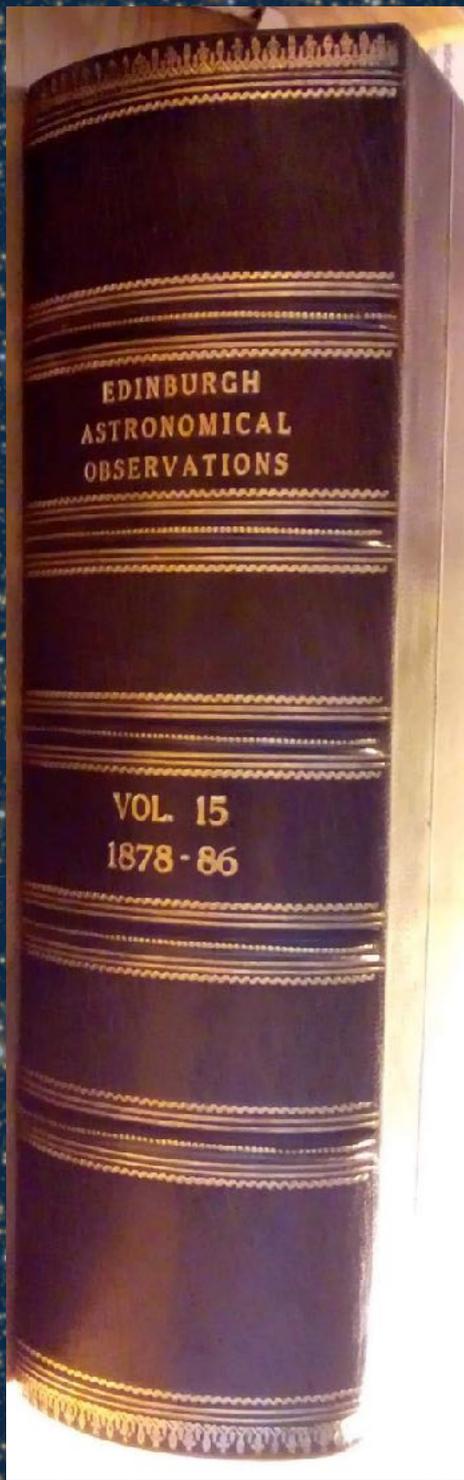


Aug. 8 1860

Hence difference between Mean of 2, 6 ~~measurements~~ <sup>Viewings</sup> for any angle likely to be measured is not probably more than 0.3. ~~and may be neglected~~ at present.

Examination of Endless screw reading, comp'd with Mean of 2 ~~Viewings~~

A =	0°	45°	90°	135°	180°	225°	270°	280°	290°	300°	310°	320°	330°
A	'	'	'	'	'	'	'	'	'	'	'	'	'
B =	4	8.0	6	3	7	5	4	4	4	6	8	7	5
	6	9.0	8	3	8	6	5	6	6	8	10	9	8
Mean	5	8.0	7	3	8	6	4	5	5	8.7	9	8	6
Screw/													
Tooth	56	102	146	192	236	282	326	336	346	356	6	16	26
Lead	1 21	0 30	1 30	0 30	1 42	0 37	1 27	1 26	1 26	1 27	1 28	1 26	1 22
Reading	57 21	102 30	147 30	192 30	237 42	282 37	327 27	337 26	347 26	357 27	<sup>360</sup> 7 28	<sup>360</sup> 17 26	<sup>360</sup> 27 22
Cor = -	57.16	57.22 - 21 57.23 - 21 57.21	57.23	57.27 - 41 57.26	57.34	57.31 - 41 57.30	57 23	57.21	57.21	57.20	57.19	57.18	57.16
	57	2	53	8	4	79							

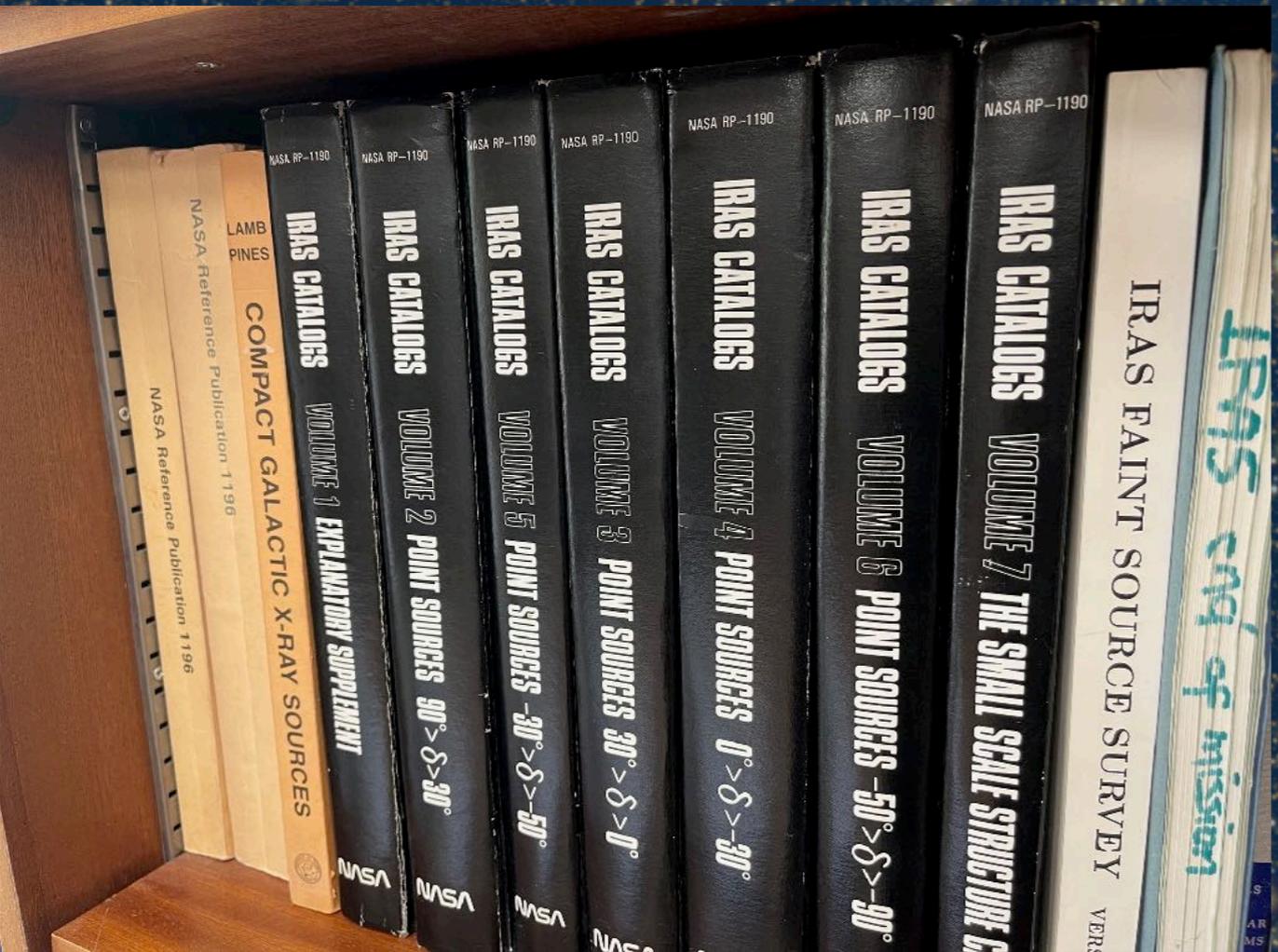
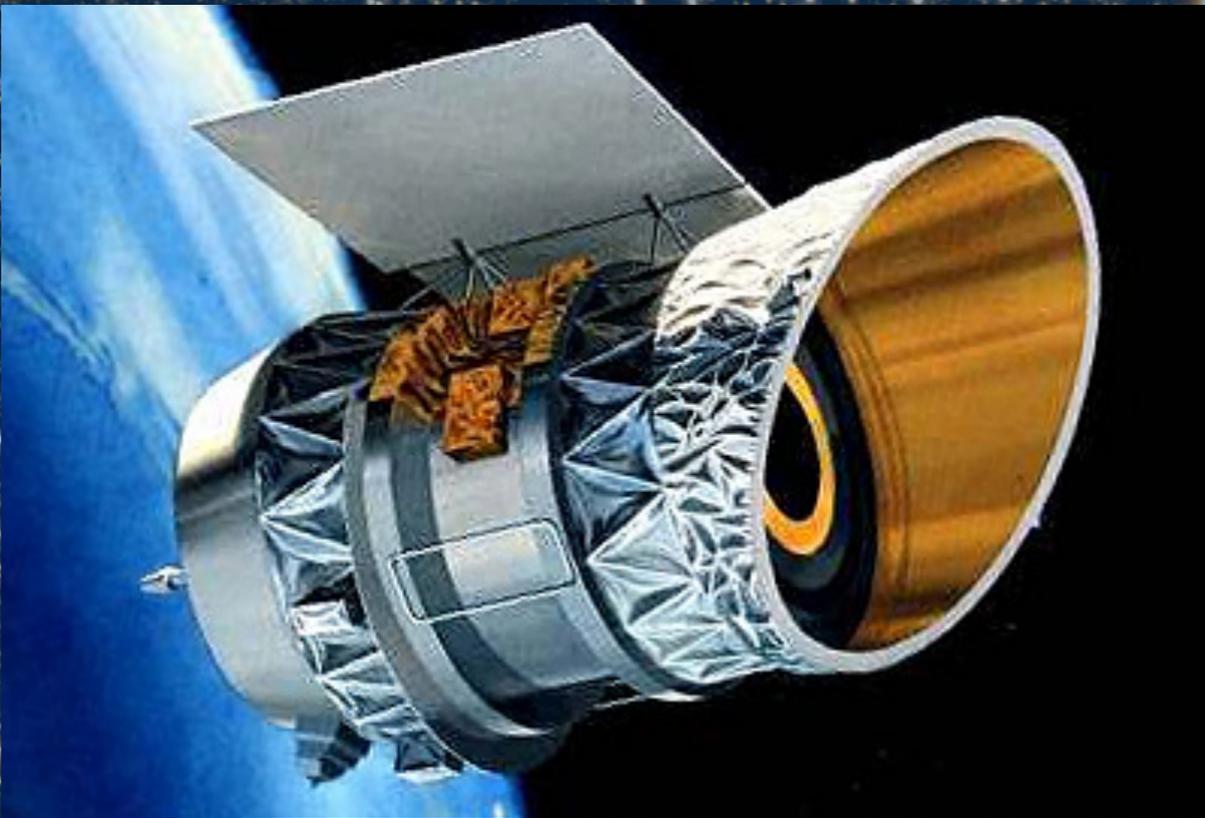


EDINBURGH STAR-PLACE CATALOGUE, DISCUSSION, AND ...

1674

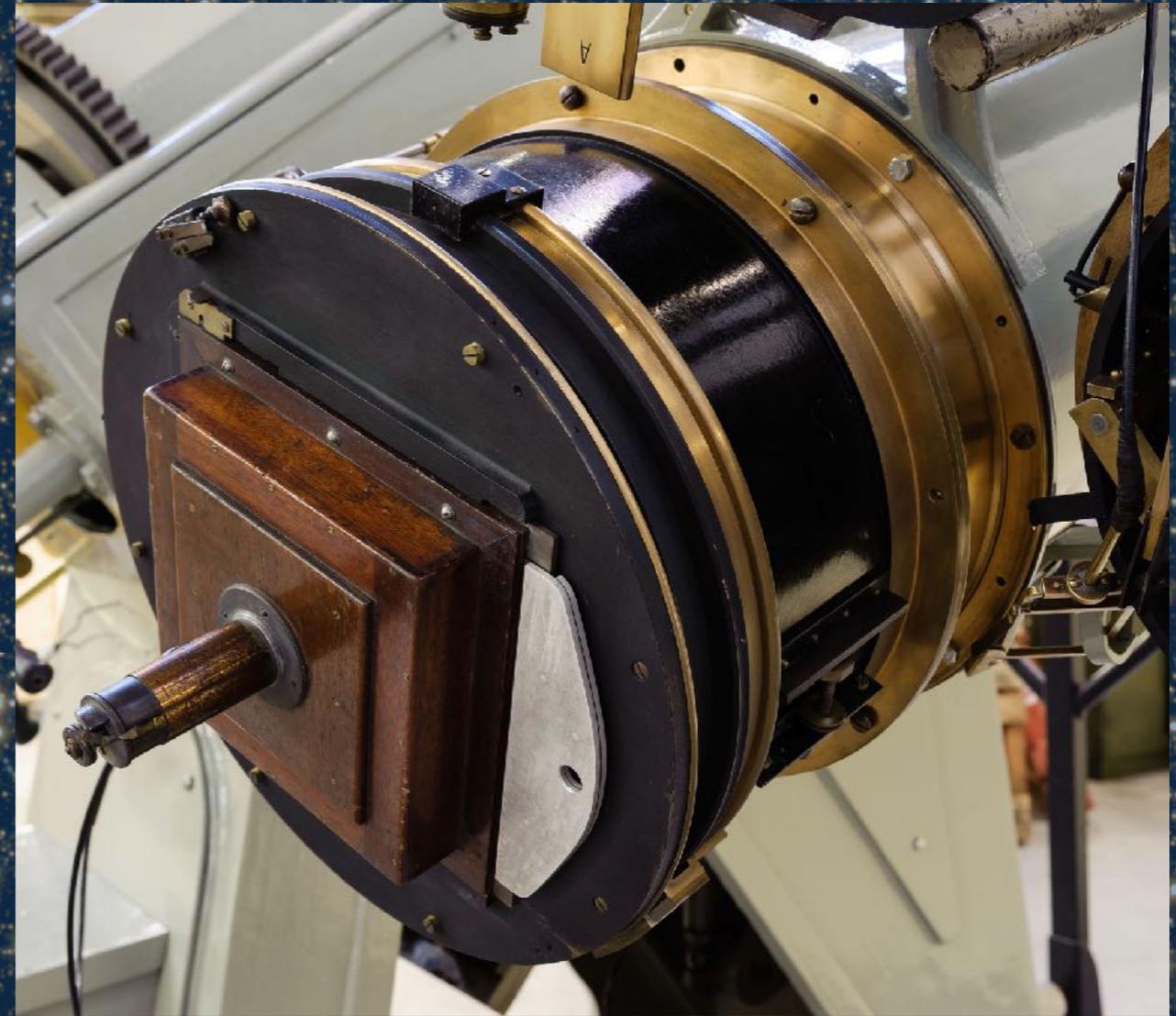
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
		1800+		h. m. sec.		sec.	sec.	sec.	sec.	1800+						
3887	Piscium. Further observations required. Too small for the Instrumental M. measurers.	(8)	1830	(23 58 21.89)	.....	+3.069	...	...	...	1830	(81 3 41.0)	.....	-20.05	.....	.....	.....
		(8)	1850	(23 59 23.28)	.....	+3.070	+0.0032	...	...	1850	(83 57 )	.....	-20.05	-0.001	.....	.....
			54.71	1850	23 59 23.28	.....	...	...	...			.....	.....	.....	.....	.....
			54.71	1854	23 59 35.56	6	...	...	...			.....	.....	.....	.....	.....
		7.8	62.0	1860	23 59 33.86	7 U. St.	+3.072	...	...	54.9	1860	83 54 11.5	2 U. St.	-20.06	.....	.....
			62.0	1870	0 0 24.57	.....	...	...	...	54.9	1870	83 50 51.0	.....	.....	.....	.....
		(8)	1870	(0 0 24.88)	-0.11	+3.071	...	...	...	1870	(83 50 19.0)	+32.0	-20.05	.....	.....	.....
		(8)	1880	(0 0 55.38)	.....	+3.071	...	...	...	1880	(83 45 58.5)	.....	-20.05	.....	.....	.....
		(8)	1890	(0 1 28.09)	.....	+3.071	...	...	...	1890	(83 43 38.0)	.....	-20.05	.....	.....	.....
3888	4 Ceti, 1 of B. A. C. This star is followed at 30 sec. R. A. by the star 5 Ceti, which is 6' to the North. In R. A. the Proper Motion may be, not +0.002 sec., but -0.002 sec. In N. P. D. the Proper Motion may be, not -0.008", but +0.01"; and the Tabular place has come to be largely in error in 1870.	(7)	1830	(23 59 1.60)	.....	+0.09	+3.071	...	(+0.002)	1830	(83 29 40.2)	+24	-20.06	.....	.....	(-0.08)
			37.79	1830	23 59 1.69	.....	...	...	...	37.52	1830	93 29 42.6	.....	.....	.....	.....
		7.0	?	1830	23 59 1.61	7 Wri.	+3.068	...	...			.....	.....	.....	.....	.....
			39.22	1830	23 59 1.85	2 C. G. H.	+3.068	...	...	37.52	1837	93 27 21.6	3	.....	.....	.....
			37.79	1837	23 59 23.20	3	...	...	...	50.9	1840	93 25 23.3	4 Arm.	-20.06	.....	.....
		7	39.21	1840	23 59 32.28	3 Arm.	+3.071	...	...			.....	.....	.....	.....	.....
			42.81	1842	23 59 38.53	3	...	...	...			.....	.....	.....	.....	.....
			39.21	1850	0 0 3.01	.....	...	...	...	50.9	1850	93 23 1.9	.....	.....	.....	.....
			42.81	1850	0 0 3.11	.....	...	...	...			.....	.....	.....	.....	.....
		(7)	1850	(0 0 3.06)	-0.05	+3.071	-0.0018	(+0.002)	.....	1850	(93 22 57.4)	+4.5	-20.06	0.000	(-0.08)	.....
			5.5	69.3	1860	0 0 33.75	2 U. St.	+3.072	...	62.8	1860	93 19 41.9	2 U. St.	-20.06	.....	.....
		6	65.8	1864	0 0 46.02	4 Grn.	+3.072	+0.0002	+0.002	65.8	1864	93 18 21.2	4 Grn.	-20.05	+0.010	-0.08
			69.3	1870	0 1 4.48	.....	...	...	...	62.8	1870	93 16 20.5	.....	.....	.....	.....
			65.8	1870	0 1 4.46	.....	...	...	...	65.8	1870	93 16 20.4	.....	.....	.....	.....
		(7)	1870	(0 1 4.52)	-0.04	+3.071	...	(+0.002)	.....	1870	(93 16 14.6)	+5.9	-20.06	.....	(-0.08)	.....
		(7)	1880	(0 1 35.24)	-0.06	+3.070	...	(+0.002)	.....	1880	(93 12 53.2)	.....	-20.06	.....	(-0.08)	.....
		(7)	1890	(0 2 5.97)	.....	+3.070	...	(+0.002)	.....	1890	(93 9 31.8)	.....	-20.08	.....	(-0.08)	.....
3889	α Andromedæ, or "Sirra," the Chained (Hebrew), 4 of B. A. C. A Nautical Almanac star, 2'0 mag., colour white, with a small companion of mag. 11, purplish in colour. Dia. = 267". epoch 1836. "Cycle" in "Mazzaroth," where the pre-Grecian significations of the names of stars and constellations are attempted to be deduced from Hebrew, Arabic, &c., roots.—Sirra is translated "the chained"; and the names of other stars in the constellation, names supposed to be older than the Greeks, are stated to mean in the same Eastern languages "the stretched out," "the afflicted," "the weak," "the bound," "the from Hades delivered," &c. The whole constellation arranged in Mazzaroth as the third Decan under the Zodiacal sign of Pisces) being equivalent to "The Church released by the Deliverer, who breaks the bonds of death," and is in so far a preliminary to the constellation which we call "Cassiopeia" from the Greeks, but	(1)	1830	(23 59 38.86)	.....	+0.08	+3.070	...	(+0.013)	1830	(61 50 53.0)	+1.6	-20.06	.....	(+0.18)	.....
		2	35.30	1830	23 59 36.94	.....	...	...	...	35.09	1830	61 50 54.6	.....	.....	.....	.....
			?	1830	23 59 36.93	7 Str.	+3.069	...	...	?	1830	61 50 53.9	7 Str.	-20.06	.....	.....
			35.30	1835	23 59 52.36	39	...	...	...	35.09	1835	61 49 15.0	14	.....	.....	.....
			39.49	1838	0 0 1.60	28	...	...	...	37.52	1837	61 48 34.6	14	.....	.....	.....
			39.55	1839	0 0 4.67	28	...	...	...	39.52	1839	61 47 55.4	12	.....	.....	.....
			44.48	1844	0 0 19.99	28	...	...	...	40.25	1840	61 47 35.2	12	.....	.....	.....
			50.78	1850	0 0 38.60	4	...	...	...	44.07	1844	61 46 15.8	5	.....	.....	.....
			44.48	1850	0 0 38.50	.....	...	...	...	44.07	1850	61 44 16.2	.....	.....	.....	.....
		(1)	1850	(0 0 38.55)	+0.05	+3.073	+0.0181	(+0.013)	.....	1850	(61 44 14.4)	+1.8	-20.06	+0.001	(+0.13)	.....
			51.73	1850	0 0 38.58	.....	...	...	...	57.72	1850	61 44 16.4	.....	.....	.....	.....
			51.73	1851	0 0 41.57	6	...	...	...			.....	.....	.....	.....	.....
			57.76	1857	0 1 0.17	17	...	...	...	57.72	1857	61 41 56.9	10	.....	.....	.....
		2.0	59.4	1860	0 1 9.37	12 Rdc.	+3.076	+0.0131	+0.009	59.0	1860	61 40 56.3	7 Rdc.	-20.06	+0.011	+0.15
		2.0	54.4	1860	0 1 9.38	222 U. St.	+3.076	...	...			.....	.....	.....	.....	.....
		2	64.8	1864	0 1 21.76	56 Grn.	+3.076	+0.0131	+0.009	51.9	1860	61 40 56.1	114 U. St.	-20.06	.....	.....
			69.65	1869	0 1 37.19	11	...	...	...	65.2	1864	61 39 38.0	44 Grn.	-20.05	+0.011	.....
			59.4	1870	0 1 40.25	.....	...	...	...	59.0	1870	61 37 37.0	.....	.....	.....	.....
			54.4	1870	0 1 40.26	.....	...	...	...			.....	.....	.....	.....	.....
			64.8	1870	0 1 40.29	.....	...	...	...	51.9	1870	61 37 36.8	.....	.....	.....	.....

3888  
which the author  
Mazzaroth, etc.  
was called by  
Patriarchs before  
days of the  
"the Church  
freed, raised,  
throned".  
Both Tabular  
and Tabular  
Motions of this  
star narrow  
the truth.  
3889  
Further observations  
of this small  
star, which  
have been not  
the Instrumental  
lists.



Right Ascension: 04<sup>h</sup>11<sup>m</sup>16<sup>s</sup>–04<sup>h</sup>42<sup>m</sup>19<sup>s</sup>      Declination: –50°––40°

Name	Position (1950)			Galactic Coords (l, b)	Uncertainty SMT SMN 6 (")	H C C N	Flux Density (Not Color Corrected)			Flux Units	Conf. Flag	I R S 2	C A T	Name	Type	Sep (")
	α	δ	z				12 μm	25 μm	60 μm							
04112-4644	16.0	44	263-46	17	10	81	25L	1.41	2.90	1.00L	DBB	0	1	14	250-G 112 Ga	7
04115-4226	30.4	50	247-47	21	10	82	25L	1.75	2.18	1.00L	BC	0	1	14	303-G 22 Sb	7
04116-4026	53.2	59	244-47	20	5	79	13.46	2.95	1.00L	BBC	0	1	13	216705 G5	12	
04123-4222	20.1	7	247-48	18	4	82	3	54	1.00L	C	0	1	13	216710 K0	7	
04126-4610	39.0	19	282-46	34	10	91	4.6	2.9L	1.00L	C	0	1	13	216716 G5	12	
04128-4101	48.3	6	245-48	16	8	68	4.6	2.9L	1.00L	C	0	1	13	216732 K0	7	
04151-4713	8.0	12	254-45	15	8	86	4.4L	2.9L	1.00L	C	0	1	13	216744 K0	7	
04154-4753	27.6	6	255-45	52	28	101	2.22	2.9L	1.00L	C	0	1	13	216749 K0	7	
04159-4011	56.7	57	244-48	48	8	82	2.5L	2.9L	1.00L	C	0	1	13	216752 K0	7	
04164-4854	27.9	24	250-45	29	8	82	2.5L	2.9L	1.00L	C	0	1	13	216752 K0	7	
04168-4058	52.6	55	245-46	33	10	88	2.5L	2.9L	1.00L	C	0	1	13	216752 K0	7	
04172-4842	13.2	37	256-45	31	8	79	4.4	2.9L	1.00L	C	0	1	13	216752 K0	7	
04176-4741	39.8	13	254-45	18	9	79	3.23	2.9L	1.00L	C	0	1	13	216752 K0	7	
04177-6423	42.2	12	250-45	20	5	81	2.4	2.9L	1.00L	C	0	1	13	216752 K0	7	
04180-4336	5.1	52	248-45	38	8	83	2.4	2.9L	1.00L	C	0	1	13	216752 K0	7	
04182-4359	17.8	26	249-45	35	19	90	1.39	2.9L	1.00L	C	0	1	13	216752 K0	7	
04183-4310	19.0	55	248-45	29	4	79	2.4	2.9L	1.00L	C	0	1	13	216752 K0	7	
04187-4508	42.4	58	251-46	35	8	79	2.4	2.9L	1.00L	C	0	1	13	216752 K0	7	
04193-4832	19.3	8	255-45	38	17	90	2.9L	2.9L	1.00L	C	0	1	13	216752 K0	7	
04200-4821	2.1	26	255-45	61	8	78	2.9L	2.9L	1.00L	C	0	1	13	216752 K0	7	
04201-4254	11.3	14	247-45	26	6	86	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
04206-4630	52.0	11	253-45	24	7	89	2.7	2.9L	1.00L	C	0	1	13	216752 K0	7	
04210-4042	1.5	58	244-45	21	8	83	2.5L	2.9L	1.00L	C	0	1	13	216752 K0	7	
04211-4955	19.3	2	257-44	38	34	84	2.2	2.9L	1.00L	C	0	1	13	216752 K0	7	
04214-4745	24.5	1	254-44	29	8	73	4.4	2.9L	1.00L	C	0	1	13	216752 K0	7	
04216-4121	38.9	51	245-45	68	13	78	3.4	2.9L	1.00L	C	0	1	13	216752 K0	7	
04219-4030	54.2	36	244-45	44	8	75	2.45	2.9L	1.00L	C	0	1	13	216752 K0	7	
04222-4716	35.0	16	254-44	18	8	86	4	2.9L	1.00L	C	0	1	13	216752 K0	7	
04226-4955	37.1	89	257-44	43	8	157	3.2	2.9L	1.00L	C	0	1	13	216752 K0	7	
04231-4406	8.5	95	249-44	48	18	83	2.5L	2.9L	1.00L	C	0	1	13	216752 K0	7	
04237-4416	44.7	19	249-44	35	8	89	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
04244-4322	24.1	58	248-44	37	14	81	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
04245-4202	53.2	25	246-44	27	8	83	2.5L	2.9L	1.00L	C	0	1	13	216752 K0	7	
04249-4920	55.4	38	256-44	33	18	49	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
04256-4703	36.4	23	253-44	33	8	89	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
04257-4913	42.4	30	258-43	33	8	71	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
04257-4738	44.0	20	254-44	37	13	83	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
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04259-4642	55.9	19	253-44	15	5	85	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
04261-4244	6.7	50	247-44	18	8	4	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
04265-4204	31.6	8	248-44	22	6	83	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
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04267-4001	17.0	43	243-44	16	9	81	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
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04331-4207	7.2	53	246-43	17	3	83	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
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04342-4035	12.8	38	244-42	31	16	84	2	2.9L	1.00L	C	0	1	13	216752 K0	7	
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04356-4535	36.4	30	251-42	45	15	90	2	2.9L	1.00L	C	0	1	13	216752 K0	7	
04357-4437	45.2	7	250-42	29	8	85	3	2.9L	1.00L	C	0	1	13	216752 K0	7	
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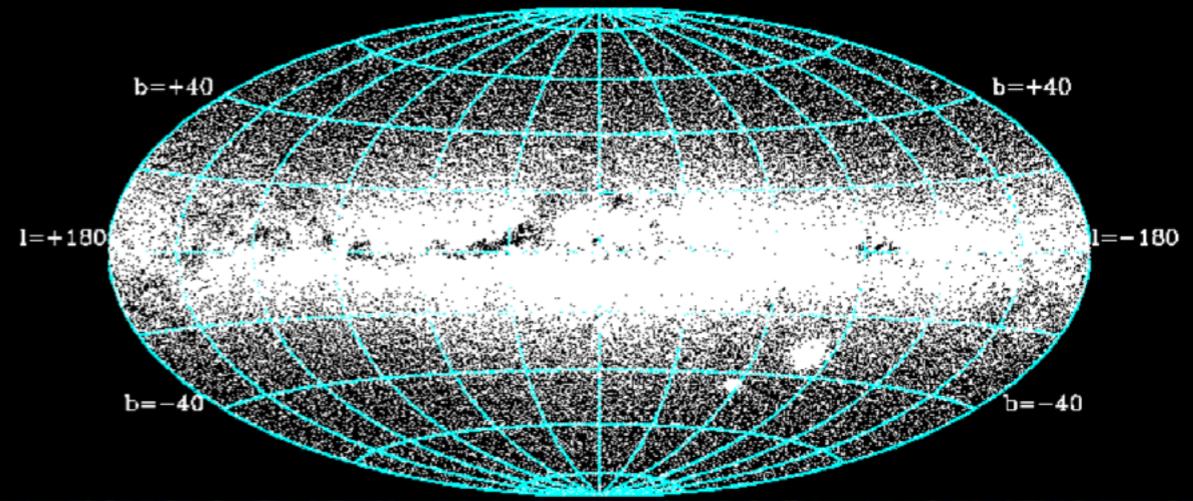
## SSA - SuperCOSMOS Science Archive

**LATEST NEWS:** A new database of ~200 plates in the single survey field no. 287 has been included in the SSA - for more details click on [F287 here](#) or in the navigation bar below left.

The SuperCOSMOS Science archive holds the object catalogue data extracted from scans of photographic Schmidt survey plates.

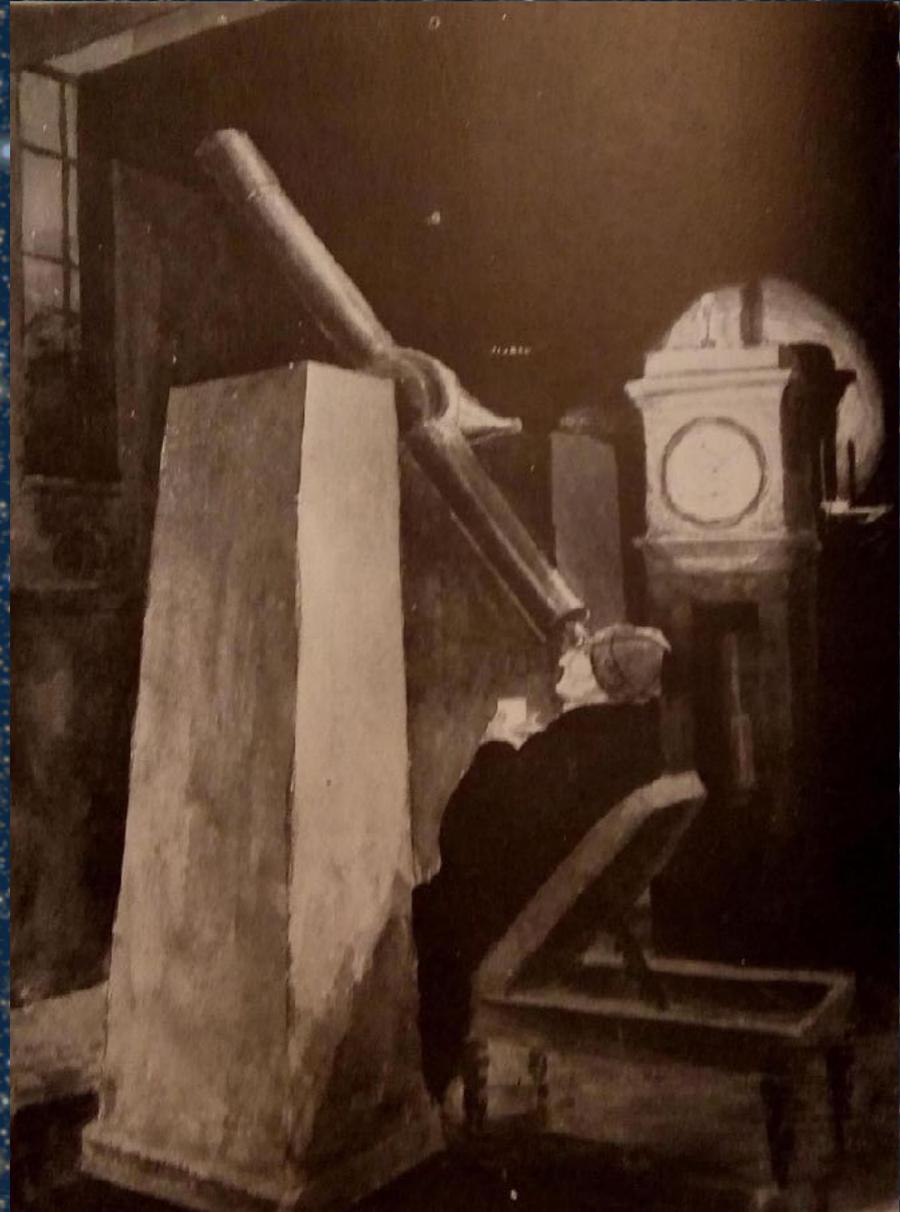
At around 4 terabytes in size, the database contains nearly 6.4 billion individual object detections which are merged into just under 1.9 billion multi-colour, multi-epoch sources and covers the whole sky in three wavebands (BRI), with one colour (R) represented at two epochs.

- [SSA Home](#)
- [Data Overview](#)
- [Schema browser](#)
- [Data access](#)
- [Radial](#)
- [Menu query](#)
- [Freeform SQL](#)
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- [WISExSCOS](#)
- [Personal SSA](#)
- [Q&A](#)
- [Release History](#)
- [Downtime](#)



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2	<input type="checkbox"/>	+232.0048309	-20.0485135	+3.1512679E-005	+2.9793805E-005	+1988.249500	-7.354549	-16.329569	+18.209661	+17.067800	+1.618098	+20.279000	+19.537000	+19.538000
3	<input type="checkbox"/>	+231.9924636	-20.0479141	+1.1459156E-005	+1.0886198E-005	+1987.580100	-8.619000	+2.189369	+7.659247	+6.974475	+0.450170	+18.162000	+17.094000	+17.160000
4	<input type="checkbox"/>	+232.0028886	-20.0448660	+1.2605071E-005	+1.2032114E-005	+1988.207900	-0.282807	-0.249214	+8.904190	+8.156452	+1.361660	+19.298000	+17.328000	+17.442000
5	<input type="checkbox"/>	+231.9998072	-20.0433270	+2.6929016E-005	+2.6356059E-005	+1985.665500	-7.682547	-4.337848	+17.492332	+16.770250	+1.956034	+20.779000	+19.272000	+19.278000
6	<input type="checkbox"/>	+232.0148674	-20.0433139	+2.9793805E-005	+2.8647890E-005	+1987.757400	-29.817959	-35.925373	+18.096004	+17.216108	+2.968688	+21.561000	+19.988000	+19.271000
7	<input type="checkbox"/>	+231.9870102	-20.0369936	+2.9793805E-005	+2.8647890E-005	+1985.788700	+4.178058	+48.555140	+16.520570	+15.838885	+5.143096	+20.726000	+19.672000	+19.782000
8	<input type="checkbox"/>	+232.0260882	-20.0356236	+6.8181978E-005	+6.4744231E-005	+1979.188000	-9.999999E008	-9.999999E008	-9.999999E008	-9.999999E008	-9.999999E008	+22.112000	-99.999990	-99.999990
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11	<input type="checkbox"/>	+231.9628119	-20.0330293	+1.2605071E-005	+1.2032114E-005	+1987.328000	-4.300206	+4.136720	+8.102336	+7.382715	+1.073594	+18.255000	+17.379000	+17.315000
12	<input type="checkbox"/>	+231.9676637	-20.0321223	+9.7402825E-006	+9.7402825E-006	+1988.573500	-4.559088	+3.099412	+6.360740	+6.655508	+1.106826	+16.825000	+15.996000	+15.927000
13	<input type="checkbox"/>	+232.0269093	-20.0321939	+3.8388172E-005	+3.8388172E-005	+1982.447500	-13.867727	-116.633630	+38.066770	+37.944653	-9.999999E008	+21.261000	+20.328000	-99.999990





The background of the image is a vast field of stars, appearing as numerous small, bright points of light in various colors (yellow, white, blue) against a dark blue, almost black, sky. The stars are distributed across the entire frame, creating a sense of depth and a rich, multi-colored stellar population. In the center of this field, the text "Capturing Light" is written in a bold, yellow, sans-serif font. The text is centered horizontally and vertically, standing out prominently against the starry background.

# Capturing Light



*Physical change  
in material*

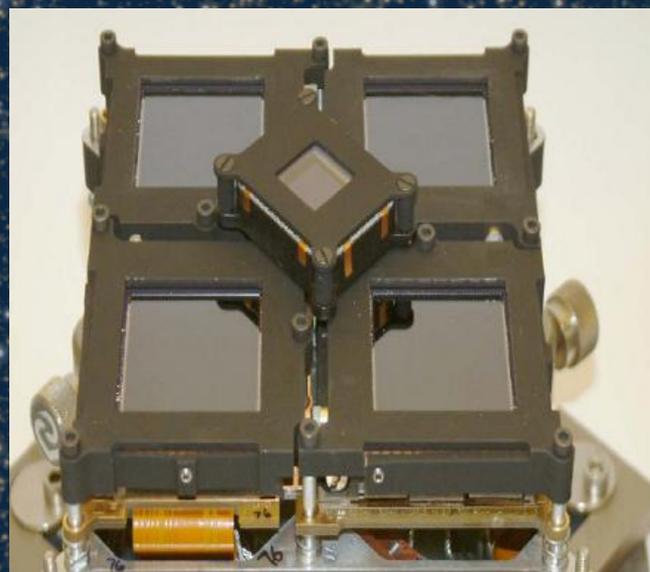


**Integrate → Deeper**

**Permanent**

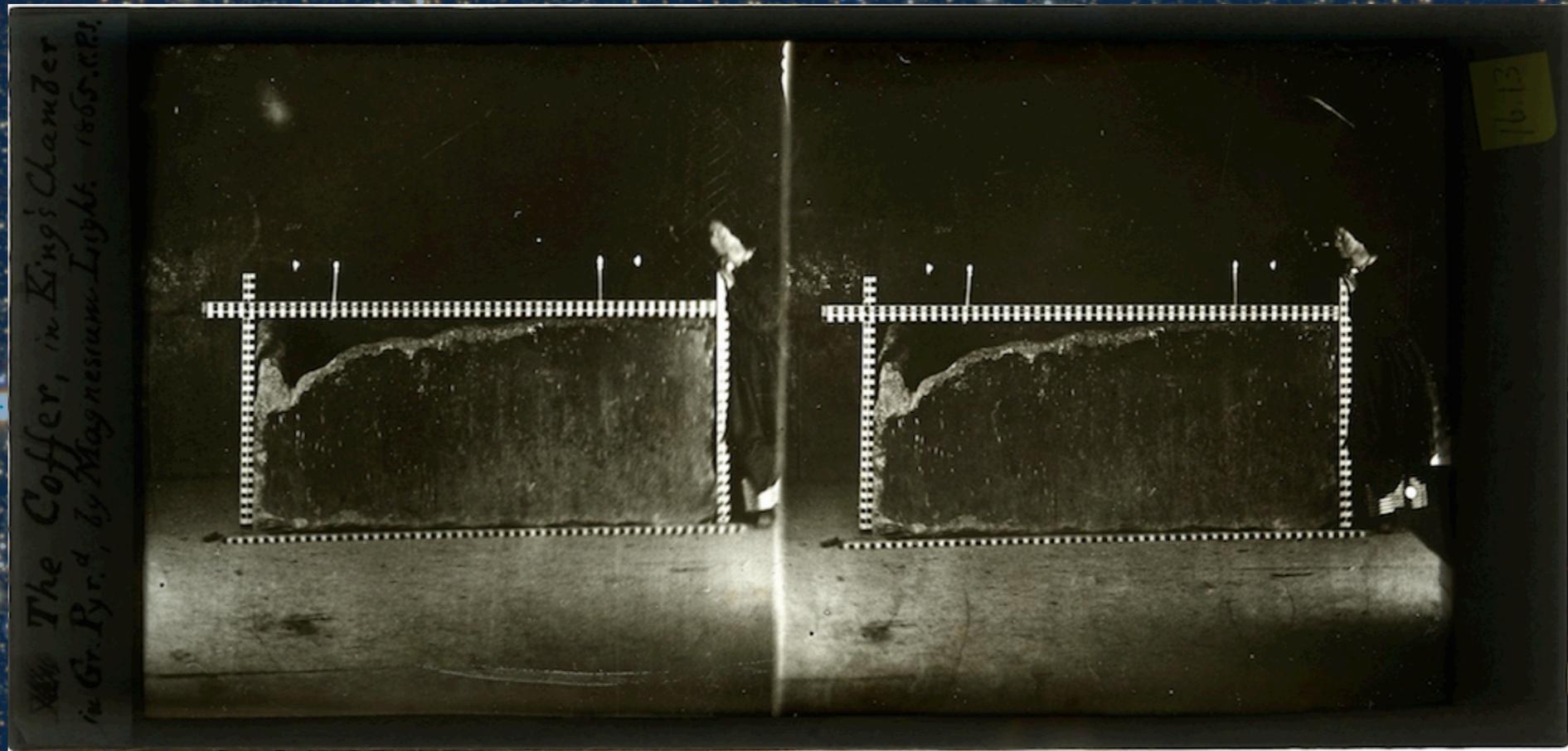
**Objective**

**Measurable**

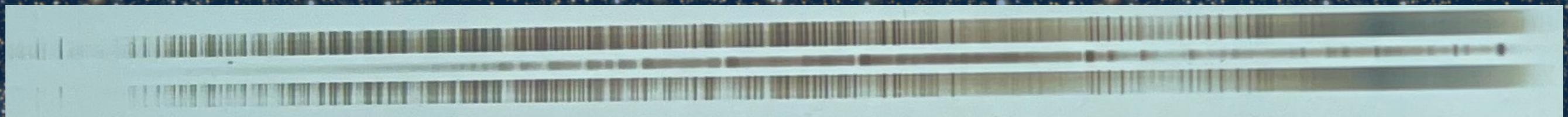
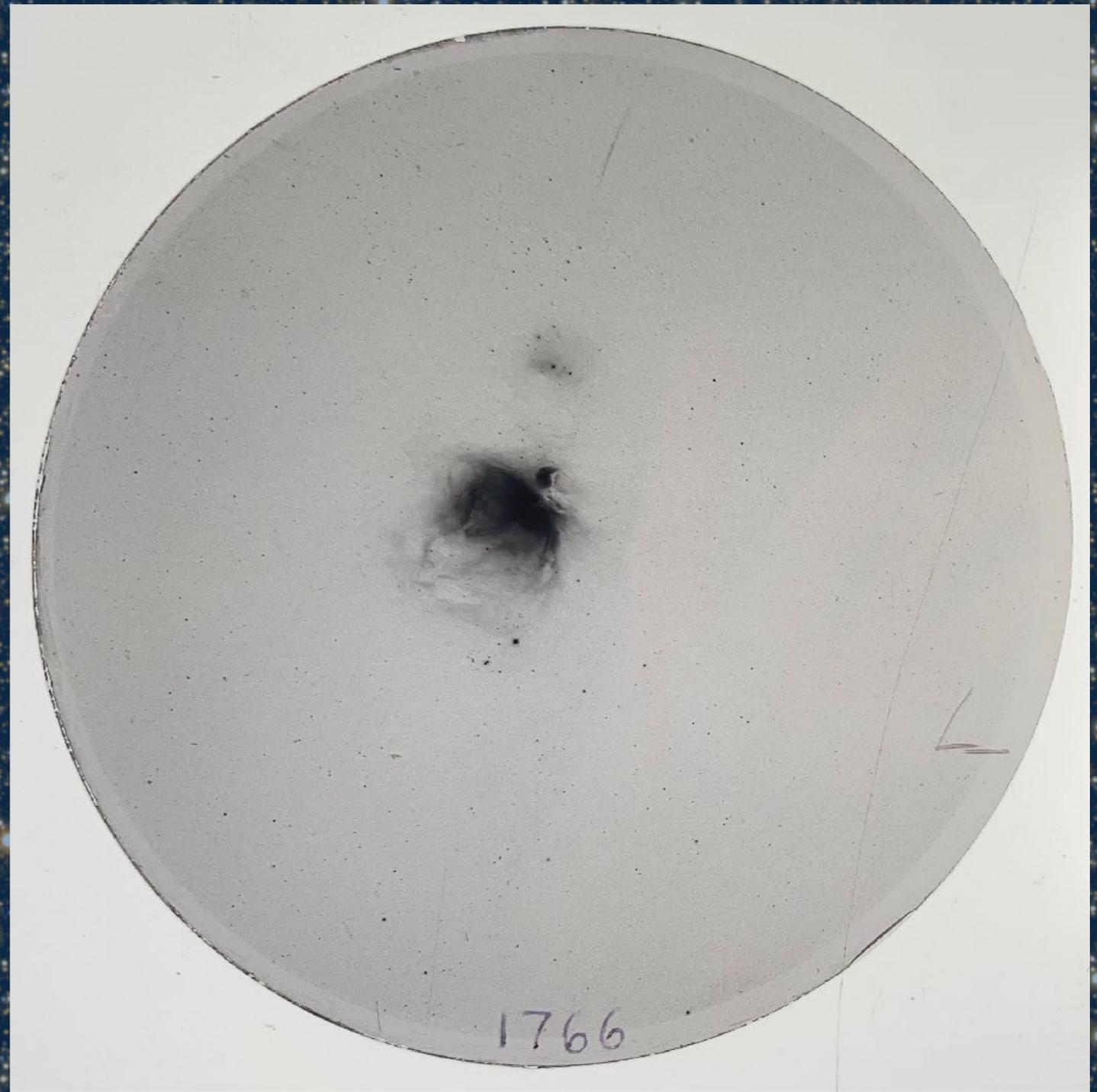


**Other types of light**









**One hour  
per field**



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**A few  
minutes  
per field**



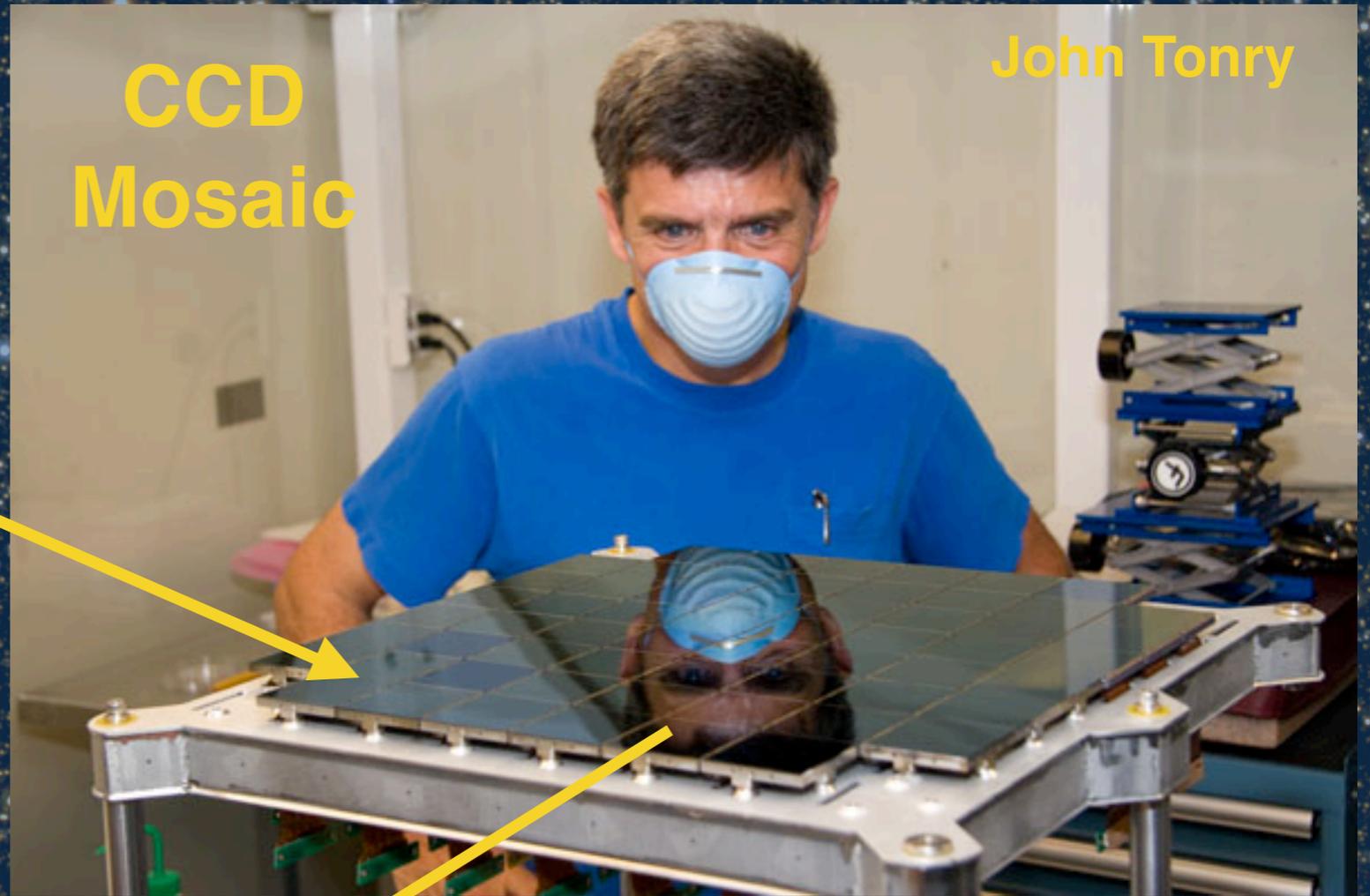
**Survey  
speed  
faster on  
big plate!**



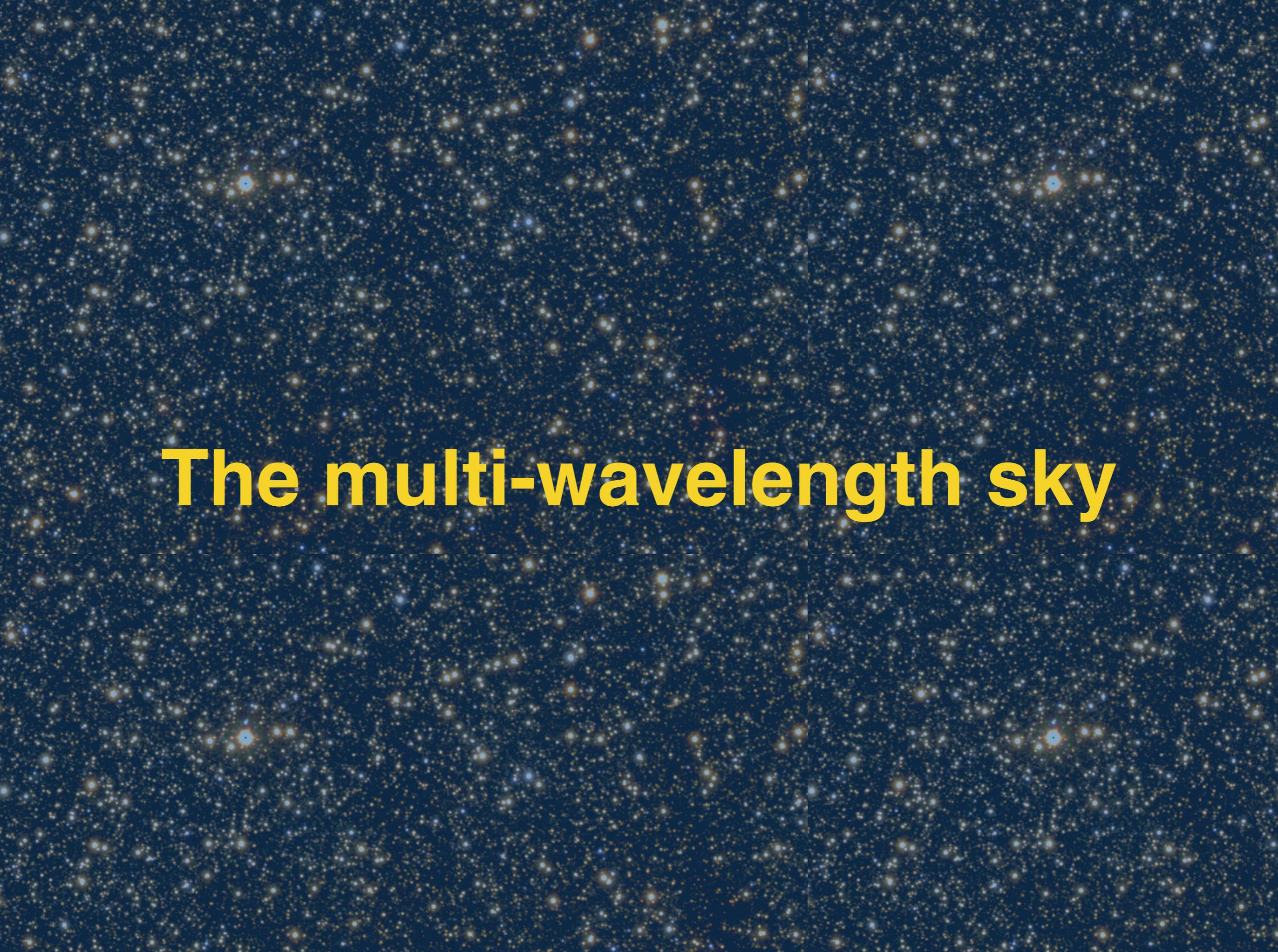


**CCD  
Mosaic**

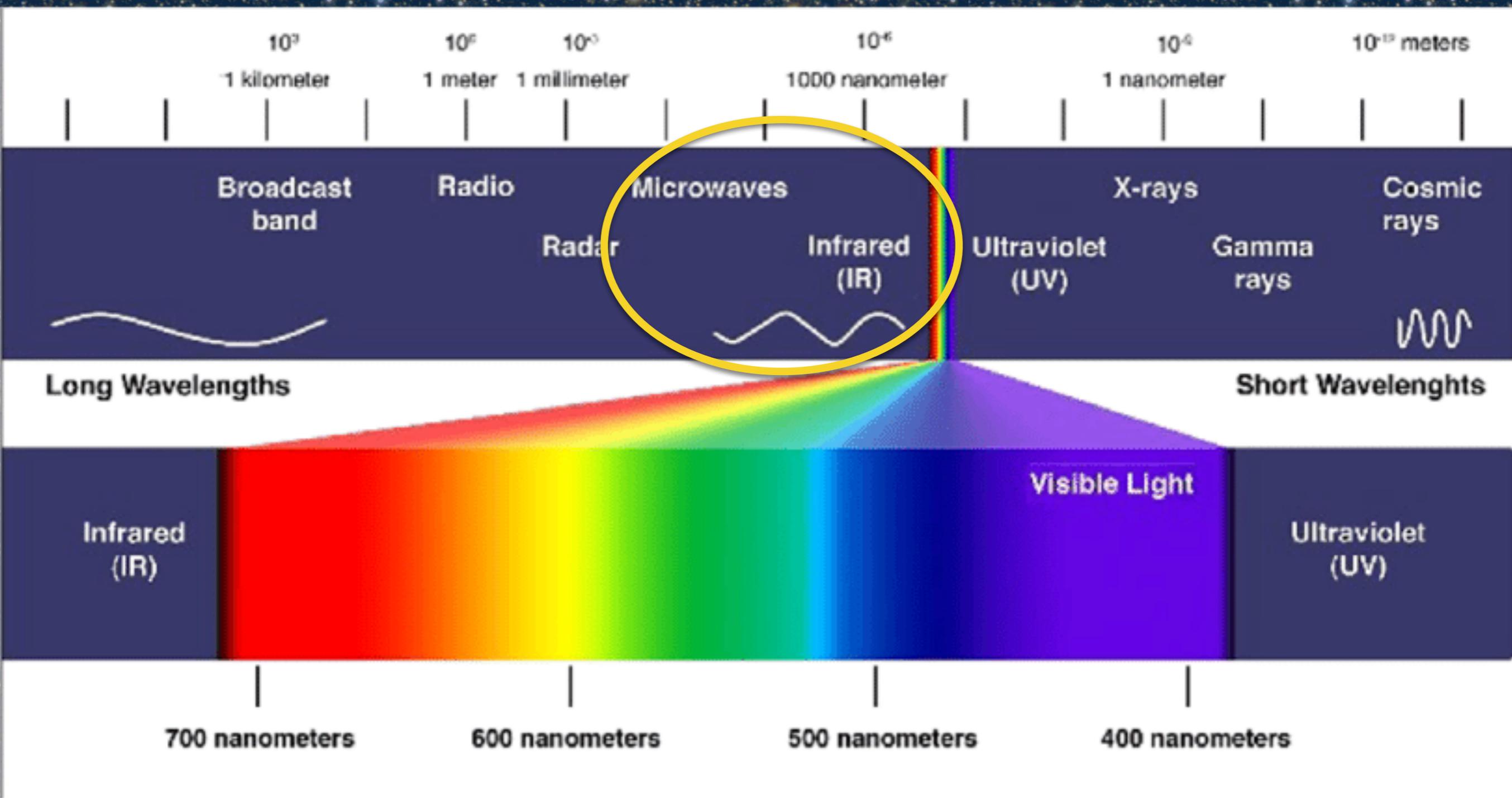
**John Tonry**



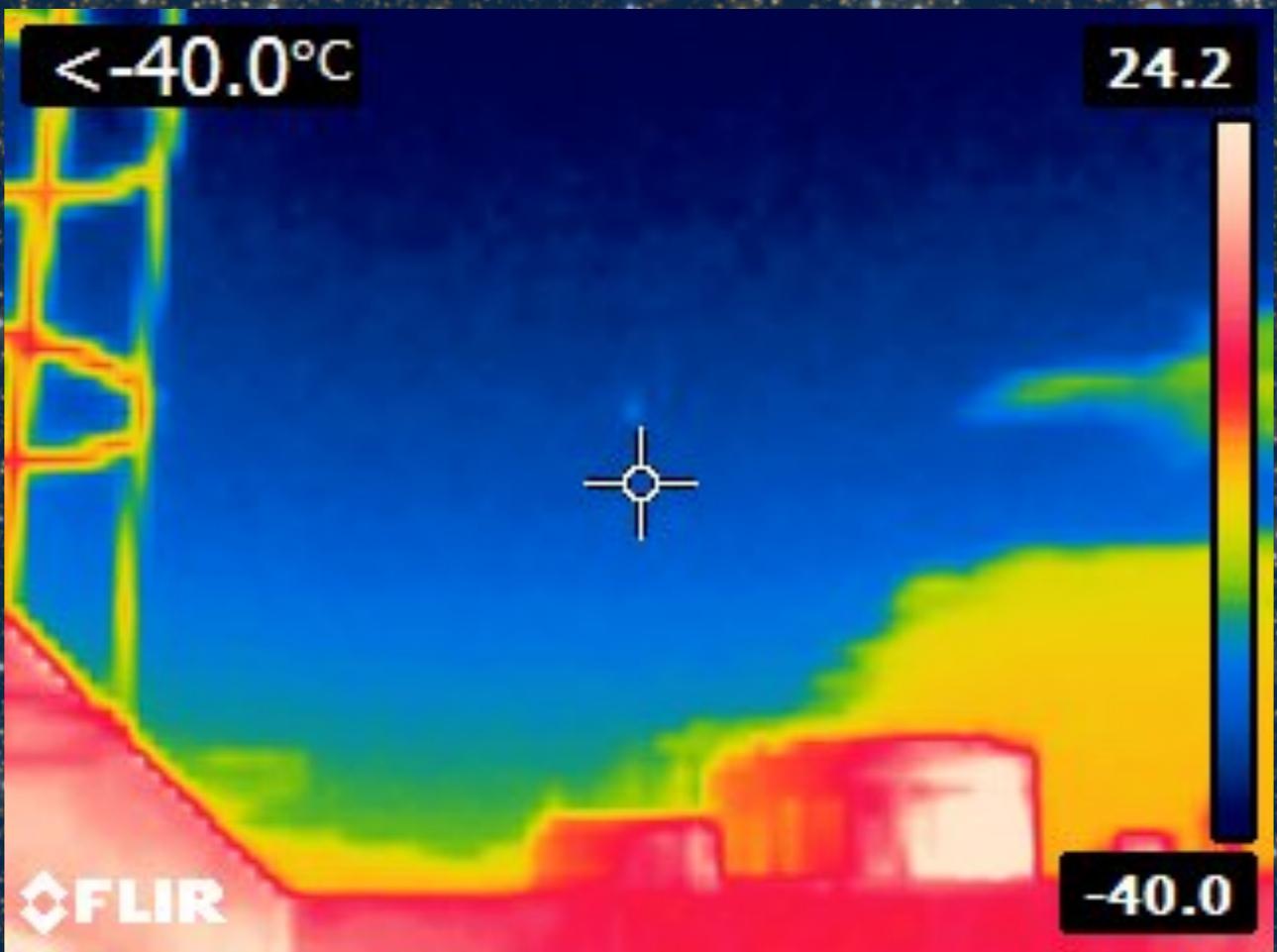
**PanSTARRS**



# The multi-wavelength sky

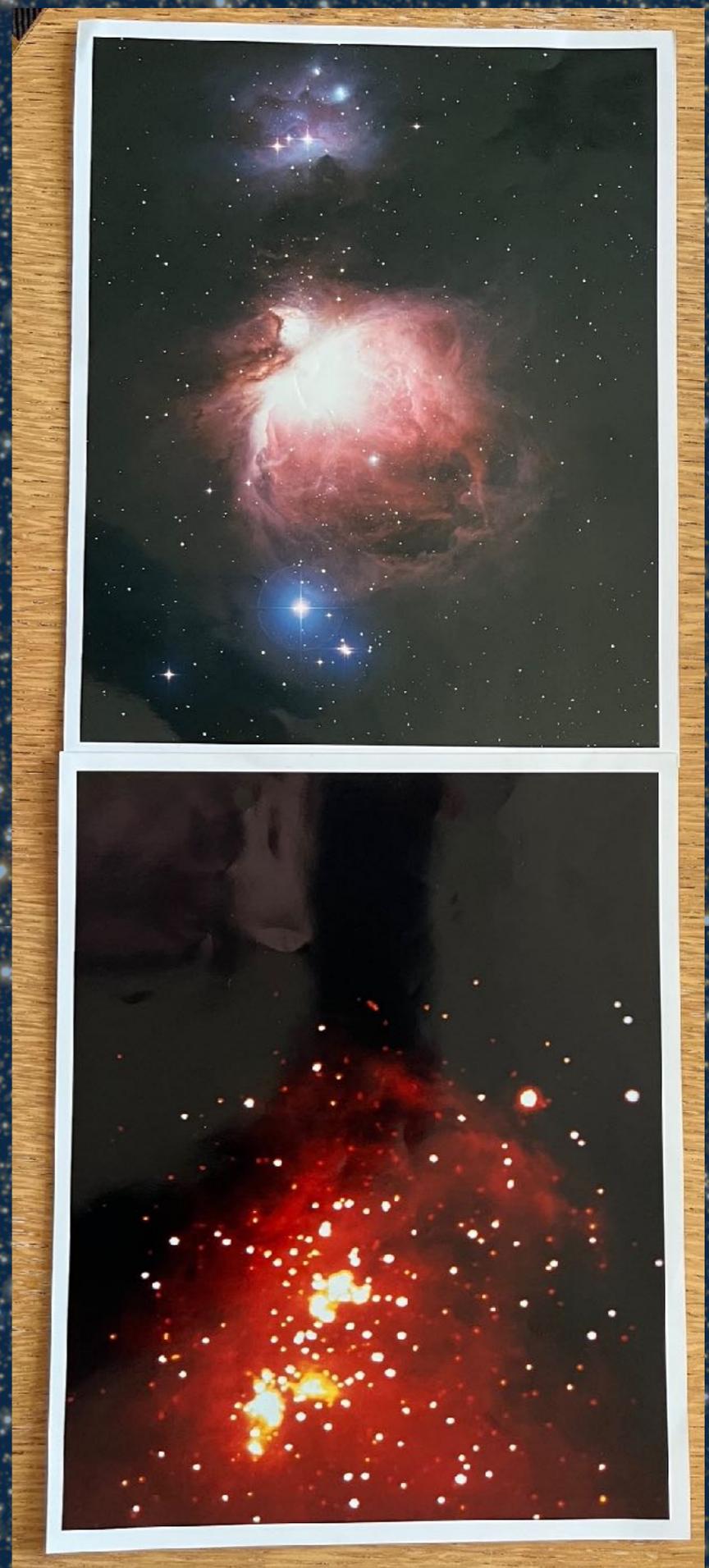


**cold things**  
**hidden things**  
**things at the edge of the universe**

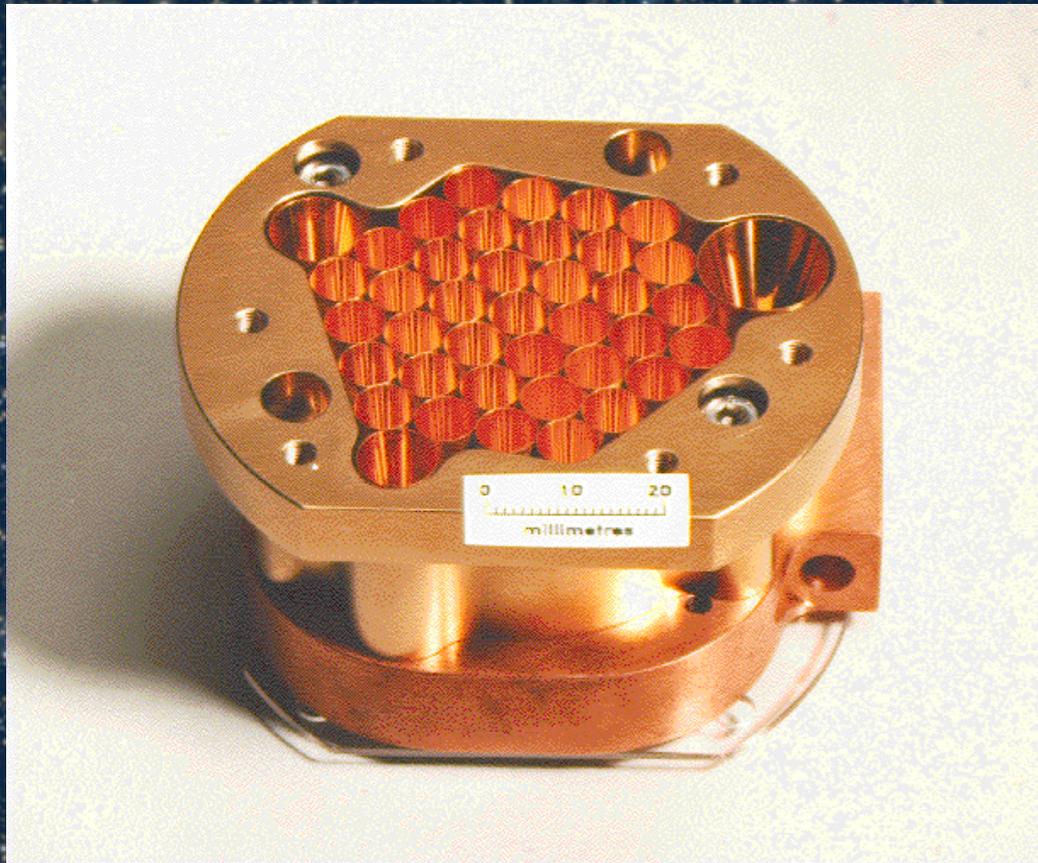




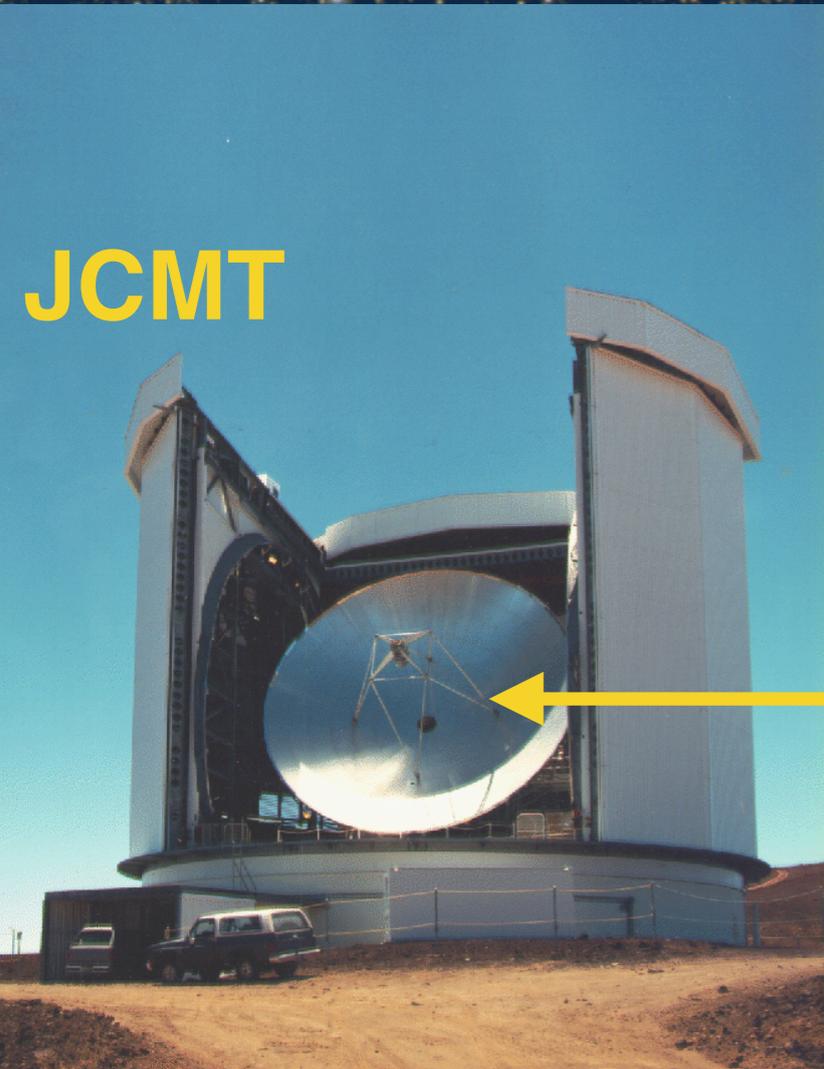
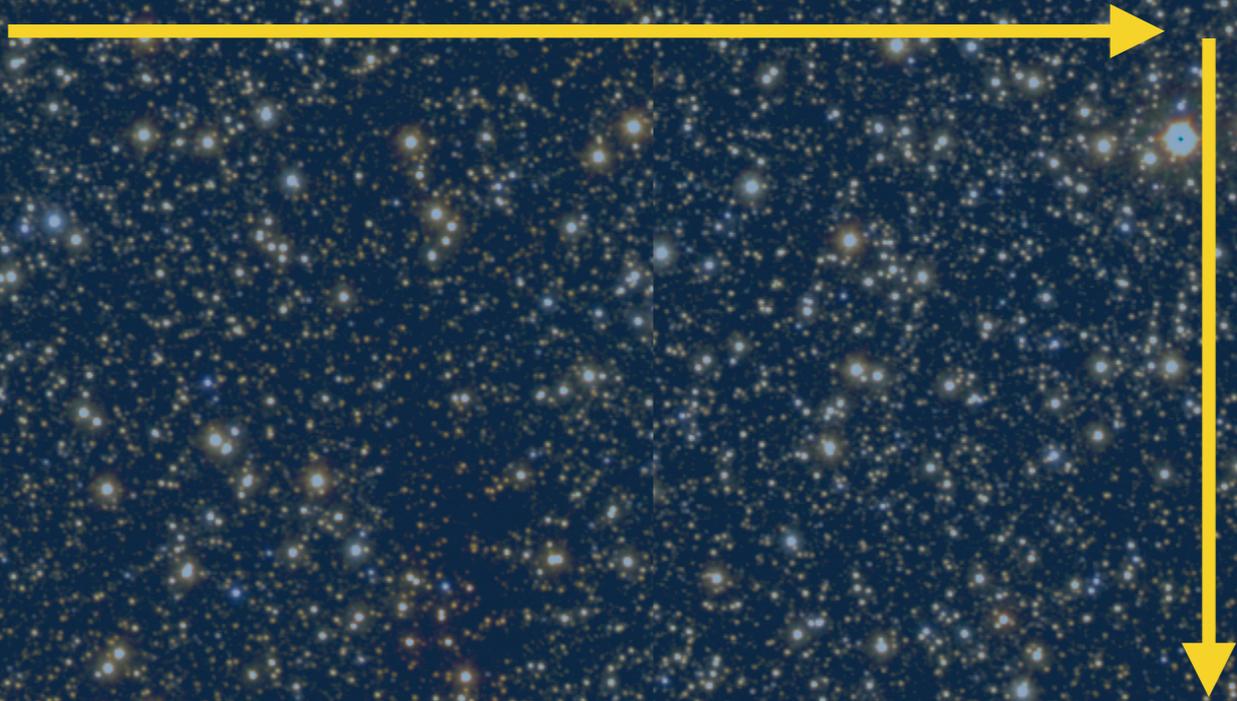
John Davies  
IRCAM



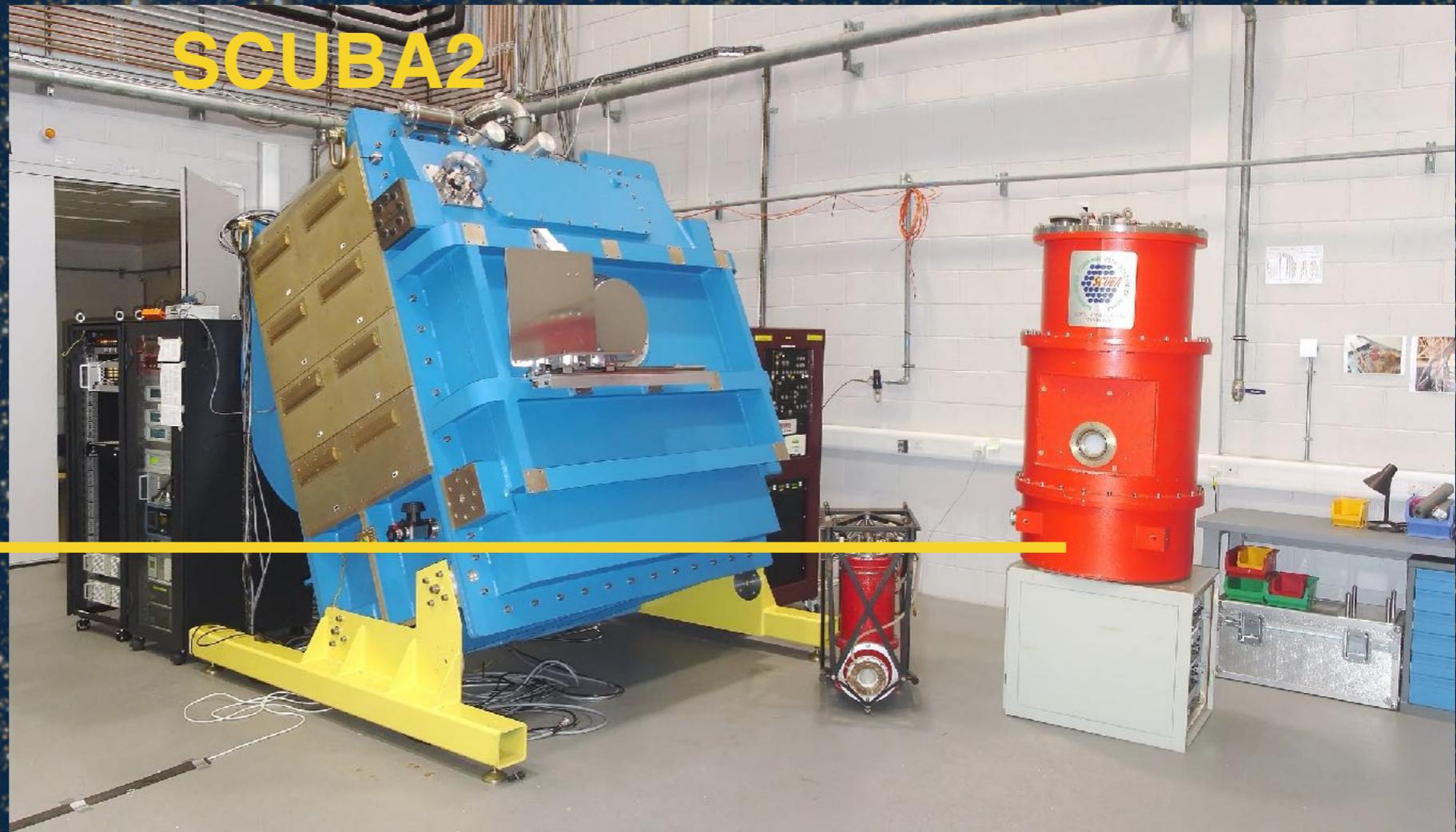
UKIRT



SCUBA



JCMT

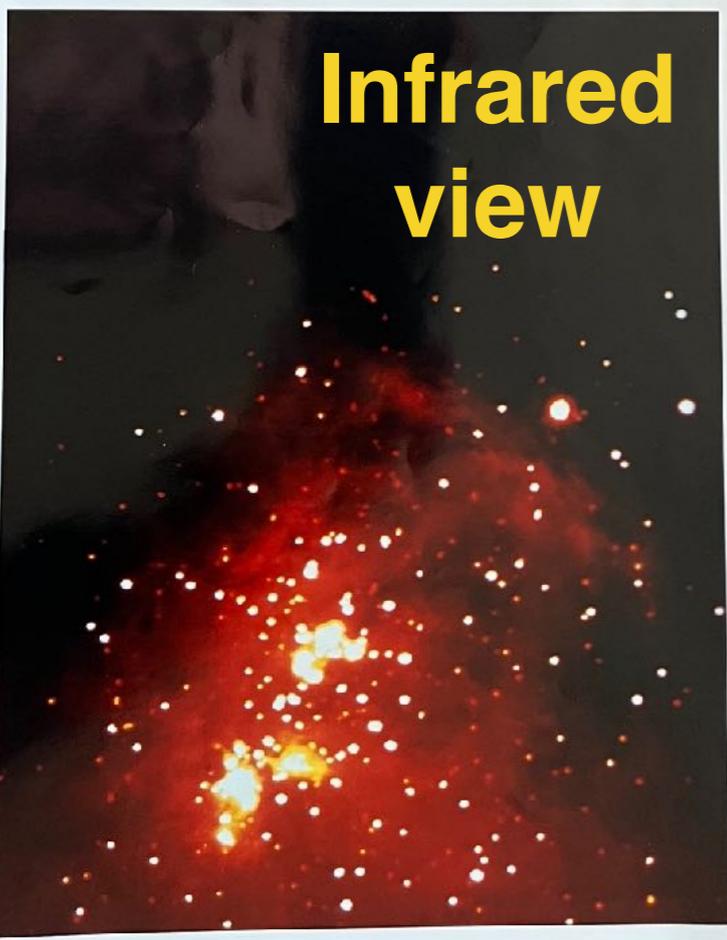


SCUBA2

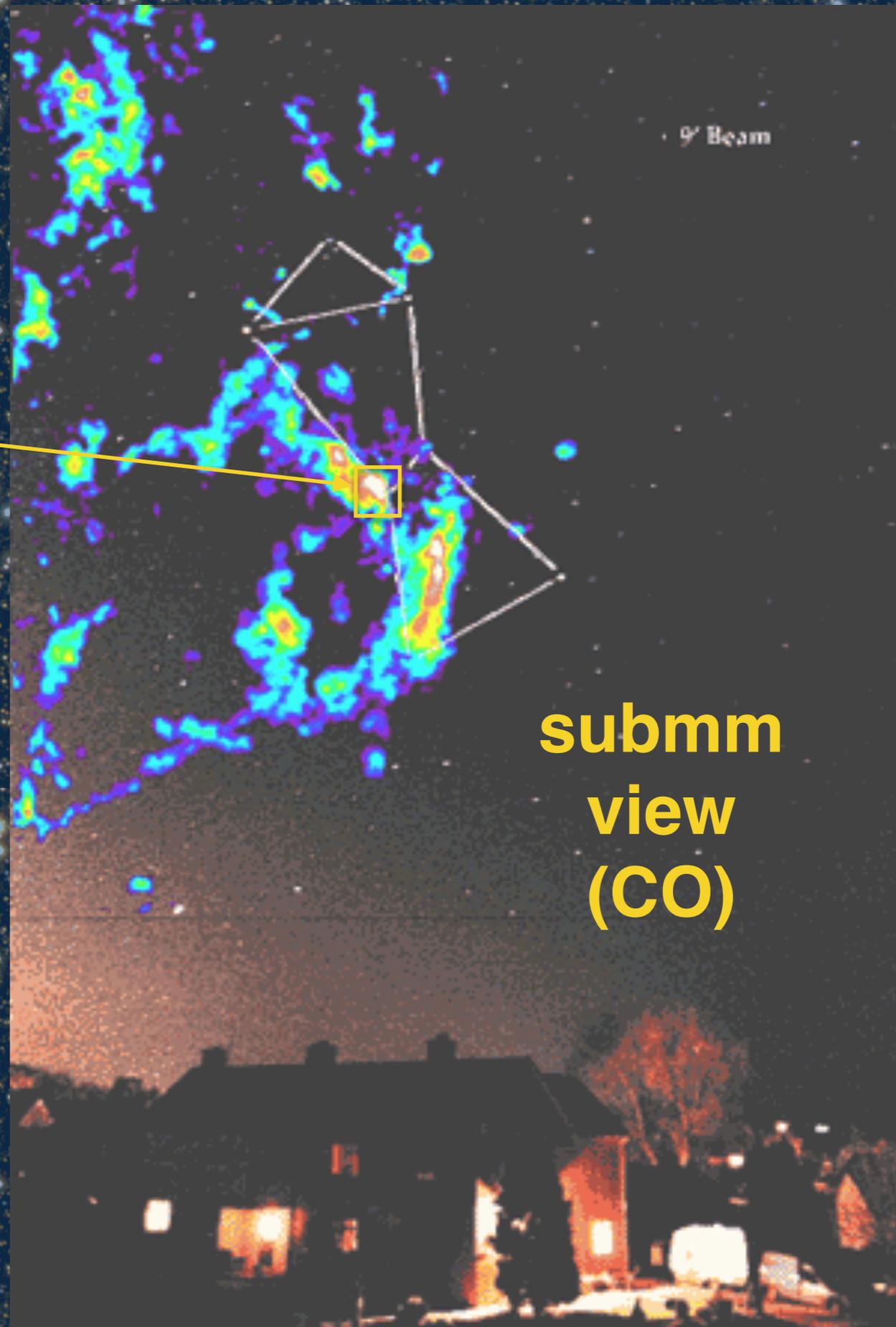




**optical  
view**



**Infrared  
view**



9' Beam

**submm  
view  
(CO)**









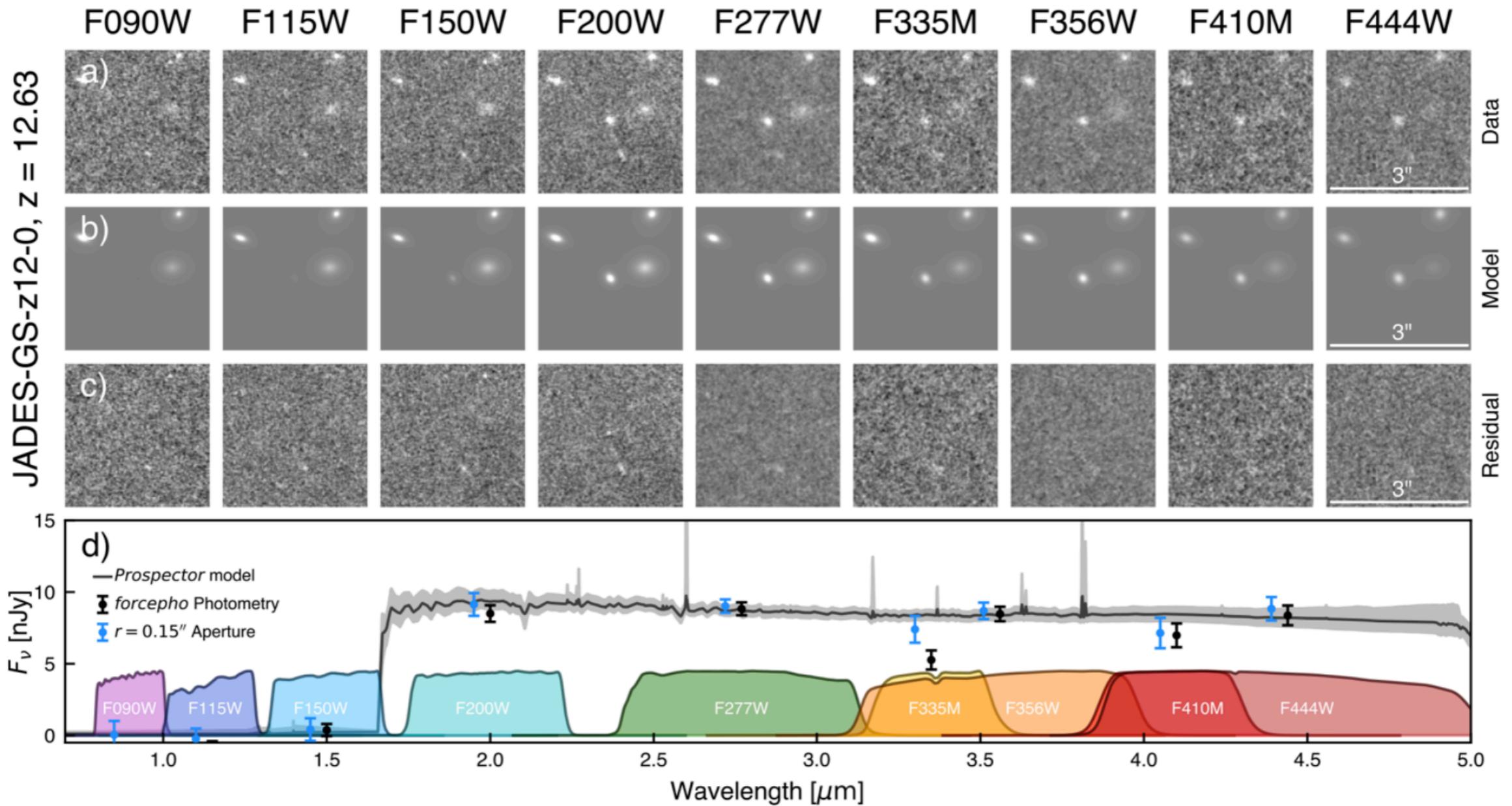


JADES-GS-z12-0  
z=12.63

F200W  
F150W  
F115W

0.5"

Robertson et al 2023



A vibrant, multi-colored nebula or galaxy core. The center is a bright, glowing red sphere. Surrounding it is a thick, turbulent ring of cyan and teal gas. The outer regions are filled with a dense field of stars, many of which are blue or white, set against a dark, starry background. The overall appearance is that of a dynamic, energetic celestial object.

**FIN**