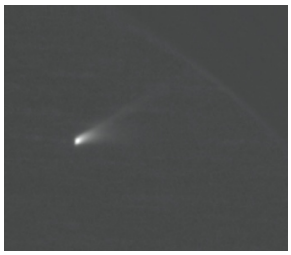

ALPO COMET NEWS FOR JULY 2020

A Publication of the Comet Section of the Association of Lunar and Planetary Observers

By Carl Hergenrother – 2020-July-3

The monthly ALPO Comet News PDF can be found on the ALPO Comet Section website (http://www.alpo-astronomy.org/cometblog/). A shorter version of this report is posted on a dedicated Cloudy Nights forum (https://www.cloudynights.com/topic/715659-alpo-comet-news-for-july-2020/). All are encouraged to join the discussion over at Cloudy Nights. The ALPO Comet Section welcomes all comet related observations, whether textual descriptions, images, drawings, magnitude estimates, or spectra. You do not have to be a member of ALPO to submit material, though membership is encouraged. To learn more about the ALPO, please visit us @ http://www.alpo-astronomy.org.

First there was C/2019 Y4 (ATLAS), the "Great Comet" that couldn't hold itself together. Then along came C/2020 F8 (SWAN), the bright consolation prize that decided to star in its own break-up act. After the back-to-back let downs of ATLAS and SWAN, C/2020 F3 (NEOWISE) is at perihelion and currently as bright as 1st magnitude. Though it isn't the best placed object for observing and will fade as the month progresses, NEOWISE should be a memorable comet and perhaps the best since C/2011 L4 (PANSTARRS), the Really Good Comet of 2013.

In addition to NEOWISE, there are a number of fainter comets within reach of small apertures. In the evening we have C/2019 U6 (Lemmon) at 6th-7th magnitude and 88P/Howell and C/2017 T2 (PANSTARRS) at 9th magnitude. Frequent inner solar system visitor 2P/Encke begins July at 7th-8th magnitude though only for southern hemisphere observers.

In this issue:

Bright Comets (magnitude < 10.0)

C/2020 F3 (NEOWISE) – The comet story of the month is C/2020 F3 (NEOWISE). After comets C/2019 Y4 (ATLAS) and C/2020 F8 (SWAN) broke our hearts, C/2020 F3 has made up for them by becoming the brightest comet since C/2011 L4 (PANSTARRS) in 2013 (not counting any SOHO comets that were never observed from the ground).

The Wide-field Infrared Survey Explorer (WISE) spacecraft was launched in 2009 into low-Earth orbit. The spacecraft spent two years conducted an all-sky infrared survey at four wavelengths (3.4, 4.6, 12, and 22 microns) with a 0.4-m (16") telescope. After its cryogens were depleted, the detector heated up and the spacecraft was decommissioned in 2011. While the two longer wavelength bands were no longer useable, the bands at 3.4 and 4.6 microns were still operational. In 2013, the spacecraft was revived, rebranded as the Near-Earth Object Wide-field Infrared Survey Explorer (NEOWISE), and dedicated to the study and discovery of asteroids and comets. Since its launch, WISE/NEOWISE has discovered 33 comets and over 300 near-Earth asteroids.

C/2020 F3 (NEOWISE) was a 16th magnitude object when discovered on March 27. At that time the comet was 2.1 au from the Sun and 1.7 au from Earth. A 16th magnitude object at such a distance is usually nothing special, but after a rapid bout of brightening the comet reached 10th magnitude in late April. While its brightening slowed down, it was still brightening at a faster than expected 2.5n ~ 11 rate from late April till early June. The last observation submitted to the Comet Section before the comet was lost in the glare of the Sun was made on June 6 at magnitude 7.6 by Chris Wyatt.

CCD observations by Carl Hergenrother on April 13, 28, and May 14 showed a comet that was very dust poor. On those nights, its R magnitude was 2.5-3.1 magnitudes fainter than its V magnitude suggesting the majority of the comet's brightness was due to gas with little contribution from dust. Dust poor comet are usually not expected to put on stunning visual displays.

Figure 1 - Co-add of 36 ~17-second clear images taken with the SOHO LASCO C3 coronagraph. The image is aligned with ecliptic north left and ecliptic east to the bottom. Credit: SOHO/NASA/ESA.

Between June 23 and 27, the comet was visible in the field-of-view of the SOHO LASCO C3 coronagraph. A number of observers, myself included, measured the brightness of the comet in LASCO. On June 23.5 UT I found the comet at magnitude 3.6. By June 27.5 it had brightened to magnitude 2.1. This rate of brightening is actually slightly faster than what was observed between late April and early June.

On the morning of July 1, observers (including your Section Coordinator) were able to observe NEOWISE from the ground even at a small elongation of 11 degrees! Through July 3, many

observers have been able to observe and image NEOWISE. Magnitude estimates published across the internet place the comet between magnitude +0.4 and +2.5. My own estimates placed the comet at +1.0 on July 1 and +1.4 on July 3. The drop in brightness is probably not real but an artifact of difficult observing conditions (very bright sky, high airmass, uncertain atmospheric extinction, few nearby stars for comparison, and a small window to observe between comet rise and a too bright sky). While still located deep in bright twilight, the comet is displaying up to a 0.5-degrees of a dust tail. Note, that even though the comet may be 1st or even 0th magnitude it is not a naked eye object due to the bright sky. That should change as the comet moves higher in the sky though a bright Moon will also affect its visibility.

Figure 2 – This image taken by Chris Schur on the morning of July 3 gives a good impression of what C/NEOWISE looks like in small telescopes and binoculars. It is a 0.5 second exposure with a Canon Xti at ISO400, and Meade Cometraker schmidt newtonian from Payson Arizona.

On July 3, the comet was seen in the 10x50 binoculars until 4:50 am local Tucson time, or ~35 minutes before sunrise, with the comet at an elevation of 7.1 deg and the Sun 6.6 degrees below the horizon. In Vixen 30x125 binoculars, the comet was visible for another 10 minutes till 5:00 am with the comet elevation at 8.9 deg and the Sun 4.7 deg below the horizon. It will be interesting to see if the comet is bright enough for daylight observations.

This month the comet can be found in Taurus (July 1-2), Auriga (2-12), Lynx (12-17), Ursa Major (17-29), and Coma Berenices (29-31). For northern observers (+40N), the comet is a morning object through mid-month with a maximum elevation at the start of nautical twilight (Sun at elevation of -12 degrees) of 8 degrees between June 10-15. The comet jumps into the evening sky around July 23 and rapidly moves away from the Sun. By the end of astronomical twilight on July

31, it is at an elevation of 27 degrees. Down south (-40N), the comet is invisible till the last week of the month.

Perihelion in on July 3 at 0.29 au and closest approach to Earth on July 22 at 0.69 au. The comet also reaches a maximum phase angle of 108 degrees on July 17. We do not know how quickly it will fade as it moves away from the Sun, so the brightness forecast in the ephemeris table below is uncertain.

After the disintegrations of C/2019 Y4 (ATLAS) and C/2020 F8 (SWAN), what is the likelihood that NEOWISE will follow the same path? SWAN was a dynamically new long-period comet meaning it was likely on its first trip through the inner solar system. Such comets are prone to be overly bright when inbound and then fading, brightening more slowly, or even falling apart as they near the Sun. ATLAS was a dynamically old comet and has likely been close to the Sun before. It also shared an orbit with the Great Comet of 1844 and was probably a smaller piece of the comet seen in 1844. The smaller components of split comets often fade from view in weeks or months with some lasting till the next perihelion. That seems to have been the case with ATLAS though we don't know when it split from the 1844 comet (we do know it was not in 1844 but a previous return). NEOWISE is a dynamically old comet which was last at perihelion ~4500 years ago. Dynamically old long-period comets are much less prone to falling apart so there is confidence that it will not share the same fate as ATLAS and SWAN.

Usually the ephemerides in these reports give the maximum elevation between the end of evening and start of morning astronomical twilight. For NEOWISE, the elevations are for the time between the end of evening nautical and start of morning nautical twilight.

C/2020 F3 (NEOWISE)
T = 2020-Jul-03 q = 0.29 au
Dynamically old long period comet

Date	Mag	R.A.	Decl.	r	d	Elong	Const	Max El (deg) 40N	40S
2020-07-01	1.5	05 56	+26 13	0.306	1.240	10	Tau	0	0
2020-07-06	1.2	06 07	+34 07	0.303	1.070	16	Aur	5	0
2020-07-11	1.9	06 45	+41 54	0.372	0.896	21	Aur	8	0
2020-07-16	2.9	08 01	+47 24	0.474	0.764	26	Lyn	11	0
2020-07-21	3.9	09 46	+46 54	0.585	0.698	33	UMa	23	0
2020-07-26	4.8	11 21	+39 28	0.696	0.705	43	UMa	31	1
2020-07-31	5.9	12 23	+29 30	0.806	0.774	51	Com	35	14
2020-08-05	6.8	13 02	+20 34	0.912	0.887	56	Com	35	23

Comet Magnitude Parameters --- H = 7.6, 2.5n = 12.7

C/2019 U6 (Lemmon) – C/2019 U6 (Lemmon) was discovered by Rich Kowalski (University of Arizona) on October 31 with the Mount Lemmon Survey's 1.5-m reflector. Comet Lemmon is a dynamically old comet which last reached perihelion about 10,000 years ago. As is typical of dynamically old comets, Lemmon rapidly brightened. From the beginning of the year through early May, it brightened at a much faster rate than is usually for comets. From early May through mid-June that rate slowed down to a typical 2.5n ~ 7.5-10. Around the middle of June, the comet peaked at magnitude ~6.4 to 6.5. Since then, the comet has actually been fading intrinsically even with little change in its heliocentric and geocentric distances (perihelion on June 18 at 0.91 au and

minimum distance to Earth on July 1at 0.83 au). The most recent observations place the comet at magnitude 7.0 (July 1.92, Willian Souza) and 7.6 (July 3.37, Chris Wyatt).

This month Lemmon is visible from both hemispheres in the evening sky as it moves through Sextans (July 1-4), Leo (4-11), Virgo (11-22), and Coma Berenices (22-31). If the comet continues its recent fading trend it could be significantly fainter than the values shown below. So far, no one has reported any evidence of splitting or disintegration.

C/2019 U6 (Lemmon)
T = 2020-Jun-18 q = 0.91 au

Dynamically old long period comet								Max El (deg)	
Date	Mag	R.A.	Decl.	r	d	Elong	Const	40N	40S
2020-07-01	6.9	10 25	-02 11	0.940	0.828	60	Sext	2	44
2020-07-06	7.0	11 01	+02 02	0.964	0.845	61	Leo	8	42
2020-07-11	7.2	11 34	+06 00	0.996	0.879	62	Leo	14	39
2020-07-16	7.5	12 05	+09 30	1.034	0.927	64	Vir	19	37
2020-07-21	7.7	12 33	+12 29	1.077	0.987	65	Vir	24	34
2020-07-26	8.0	12 58	+14 56	1.125	1.055	65	Com	28	32
2020-07-31	8.3	13 21	+16 54	1.176	1.130	66	Com	31	30
2020-08-05	8.6	13 42	+18 28	1.230	1.209	66	Boo	34	29

Comet Magnitude Parameters --- H = 7.5, 2.5n = 8.0

Figure 3 – Image of C/2019 U6 (Lemmon) taken on 2020 June 17 by Martin Mobberley with an iTelescopes 0.51-m.

2P/Encke – Comet Encke has the shortest known orbital period of any comet (not counting asteroidal objects that appear cometary due to impacts or rotational splitting) at 3.3 years. This year marks Encke's 65th observed return since 1786. Perihelion occurred on June 26 at 0.34 au. Northern summer/southern winter returns of Encke result in very poor placement pre-perihelion and then good placement after perihelion but only for southern hemisphere observers.

Chris Wyatt was the first visual observer of Encke this year. He picked it up at magnitude 7.5 on June 29 at an incredible elongation of 18 degrees! Sure, C/2020 F3 was observed at an elongation of 11 degrees but it was also 6-7 magnitude brighter. Encke should rapidly fade to 10th magnitude by the end of July as it moves through Cancer (July 1-12), Hydra (12-14), Sextens (14-23), Crater (23-30), and Corvus (30-31) in the evening sky.

2P/Encke
T = 2020-Jun-26 q = 0.34 au

Date	Mag	R.A.	Decl.	r	d	Elong	Const	Max El (deg) 40N	40S
2020-07-01	7.3	08 04	+17 44	0.364	1.052	20	Cnc	0	1
2020-07-06	7.6	08 39	+13 18	0.431	0.925	25	Cnc	0	7
2020-07-11	7.8	09 14	+08 19	0.516	0.816	30	Cnc	0	12
2020-07-16	8.2	09 50	+02 45	0.608	0.730	36	Sext	0	19
2020-07-21	9.0	10 29	-03 24	0.700	0.668	43	Sext	0	26
2020-07-26	9.7	11 12	-09 51	0.791	0.632	51	Crt	0	34
2020-07-31	10.4	11 58	-16 04	0.879	0.622	59	Crv	0	42
2020-08-05	11.1	12 45	-21 26	0.964	0.639	66	Crv	0	50

Jupiter-family comet
Comet Magnitude Parameters - H = 10.3, 2.5n = 7.0 (July 1-15, ref. Yoshida)
H = 12.3, 2.5n = 15.7 (July 15-31, ref. Yoshida)

C/2017 T2 (PANSTARRS) – For the past half year C/2017 T2 (PANSTARRS) has been a fixture in the northern evening sky. This month the comet becomes better placed for southern hemisphere observers. Now 2 months passed its May 4th perihelion at 1.62 au, the comet is fading. In fact, its post-perihelion fading seems to be faster than expected. During June visual observations by Michel Deconinck, J. J. Gonzalez, Carl Hergenrother, and Chris Wyatt placed PANSTARRS between magnitude 8.8 and 9.8. PANSTARRS should continue to fade this month as it moves south through the evening constellations of Canes Venatici (July 1-14) and Coma Berenices (July 15-31).

C/2017 T2 (PANSTARRS)
T = 2020-May-04 q = 1.62 au

Date	Mag	R.A.	Decl.	r	d	Elong	Const	Max El (deg) 40N	40S
2020-07-01	9.3	12 31	+41 39	1.787	1.795	73	CVn	49	8
2020-07-06	9.4	12 41	+37 44	1.816	1.841	72	CVn	47	12
2020-07-11	9.6	12 51	+33 56	1.847	1.893	71	CVn	44	16
2020-07-16	9.8	13 00	+30 16	1.880	1.951	70	Com	41	20
2020-07-21	9.9	13 09	+26 45	1.914	2.016	69	Com	39	23
2020-07-26	10.1	13 17	+23 23	1.949	2.085	68	Com	36	25
2020-07-31	10.3	13 25	+20 11	1.986	2.159	66	Com	33	27
2020-08-05	10.5	13 33	+17 09	2.024	2.238	64	Com	31	29

Long-Period comet - dynamically new
Comet Magnitude Parameters --- H = 4.6, 2.5n = 13.5

Figure 4 – Image of C/2017 T2 (PANSTARRS) by Chris Schur. Image taken on June 13 with a 10" f/3.9 Orion Astrograph with Baader MPCC coma corrector and SBIG ST10XME camera.

88P/Howell – Short-period comet 88P/Howell is making its 9th observed return. 88P was discovered on photographic plates taken with the 0.46-m Palomar Schmidt in August 1981 by then Caltech student, and currently my fellow University of Arizona OSIRIS-REx team member, Ellen Howell. In addition to being found in pre-discovery observations from 1955, 88P has been observed at every return since 1981. The comet's perihelion distance has gradually fallen from 1.92 au in 1955, to 1.62 au in 1981, to 1.41 au in 1993 to its current 1.35 au. As a result, comet Howell now often peaks brighter than 10th magnitude. Its brightest return was in 2009 when it peaked at 8th magnitude. This year it comes to perihelion on September 28 and should again peak around 8-9th magnitude.

During June, 88P was observed by Michel Deconinck, J. J. Gonzalez, and Chris Wyatt. The later observed the comet on June 20.94 UT at magnitude 10.7. This month, 88P will continue to brighten and should be a 9th magnitude object by the end of the month. Its location in Virgo near the celestial equator makes it a good target for both hemispheres in the evening sky.

88P/Howell
T = 2020-Sep-28 q = 1.35 au
Jupiter-family comet

Date	Mag	R.A.	Decl.	r	d	Elong	Const	Max El (deg) 40N	40S
2020-07-01	10.7	12 56	-05 32	1.648	1.201	95	Vir	26	56
2020-07-06	10.4	13 02	-06 27	1.620	1.216	92	Vir	24	57
2020-07-11	10.2	13 08	-07 27	1.592	1.230	89	Vir	22	58
2020-07-16	10.0	13 16	-08 30	1.566	1.243	87	Vir	20	58
2020-07-21	9.8	13 24	-09 37	1.540	1.256	84	Vir	18	59
2020-07-26	9.6	13 33	-10 47	1.516	1.268	82	Vir	16	59
2020-07-31	9.4	13 43	-11 59	1.493	1.279	80	Vir	15	59
2020-08-05	9.2	13 54	-13 14	1.471	1.289	78	Vir	14	59

Comet Magnitude Parameters --- H = 3.1, 2.5n = 33

Fainter Comets of Interest (fainter than magnitude 10.0)

58P/Jackson-Neujmin - 58P/Jackson-Neujmin was discovered at 12th magnitude in September 1936 by Cyril Jackson (Union Observatory, South Africa, 3 comet discoveries) and Grigory Neujmin (Simeis Observatory, Crimea, 6 comet discoveries). This year marks the comet's 6th observed return with perihelion on May 27 at 1.38 au. In 1995 the comet passed within 0.43 au of Earth and peaked around magnitude 10.0. This year is not a good apparition and the comet was expected to remain faint. Michael Mattiazzo (Swan Hillm Victoria, Australia), the discoverer of C/2020 F8 (SWAN), noticed 58P in outburst in SWAN data going back to March 20.

The comet has stayed around 10-11th magnitude since March. Chris Wyatt estimated 58P at magnitude 10.9 on June 21.77 UT with a 2.6' coma in 0.25-m reflector (74x). After being solely a southern hemisphere object, 58P finally becomes visible from the northern hemisphere as its moves through Taurus (July 1-23) and Orion (23-31) in the morning sky.

58P/Jackson-Neujmin
T = 2020-May-27 q = 1.38 au
Jupiter-family comet

Date	Mag	R.A.	Decl.	r	d	Elong	Const	Max El (deg) 40N	40S
2020-07-01	10.9	03 38	+12 19	1.437	1.971	44	Tau	3	25
2020-07-06	11.0	03 54	+12 41	1.455	1.971	45	Tau	5	26
2020-07-11	11.2	04 09	+12 58	1.475	1.972	46	Tau	7	26
2020-07-16	11.4	04 23	+13 09	1.496	1.973	47	Tau	9	26
2020-07-21	11.5	04 38	+13 16	1.520	1.974	49	Tau	11	26
2020-07-26	11.7	04 52	+13 18	1.545	1.975	50	Ori	13	27
2020-07-31	11.9	05 05	+13 15	1.571	1.975	52	Ori	16	27
2020-08-05	12.1	05 18	+13 08	1.599	1.974	53	Ori	19	27

Comet Magnitude Parameters --- H = 5.5, 2.5n = 25.0

249P/LINEAR – 249P/LINEAR is making its 4th observed return after returns in 2006, 2011, and 2015. It was discovered in October 2006 by the LINEAR (Lincoln Laboratory Near-Earth Asteroid Research) project with a 1-m telescope based outside of Socorro, New Mexico.

This comet is odd in a few different ways. For starters, its nucleus is slightly blue and resembles a B-type asteroid rather than the highly red, D-type, nuclei of most Jupiter-family comets. Its orbit and nucleus color suggest that it may more closely related to active asteroid in the Main belt rather than comets from the outer Solar System. For its second odd characteristic, 249P is only active when very close to the Sun. In fact, the comet didn't show any sign of activity until late in May when it was already within 1 au of the Sun and even then, it was only around 16th magnitude.

While 249P was out of view from the ground, it finally woke up and was next seen brightening to around magnitude 7.5 in SOHO LASCO C3 images taken between June 16-June 21. 249P was expected to brighten to around magnitude 10 or so at perihelion. As it was passing through the C3 field, it was observed at a phase angle of 171 degrees resulting in ~6 magnitudes of dust forward scattering enhancement. If the comet were at 0 degrees phase angle it would have been magnitude ~13.5 and completely invisible to the LASCO C3 instrument.

Figure 5 – A single SOHO LASCO C3 image taken on June 19 showing 7th magnitude 249P/LINEAR.

Assuming the comet does brighten as it did in past apparitions, the comet could be a 9th-10th magnitude object as in the morning sky at the start of the month. Some of this brightness is the result of modest forward scattering. Unfortunately, it should rapidly fade to 14th magnitude by the end of the month. I attempted to observe 249P on the morning of July 3 but was not able to detect anything fainter than magnitude 8.3. No other observations have been made of 249P since it reappeared for ground-based observers. Perhaps the comet is still significantly fainter than predicted.

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249P/LINEAR
T = 2020-Jun-26  q = 0.50 au                                          Max El
Jupiter-family comet? / Active Asteroid?                               (deg)
    Date      Mag    R.A.   Decl.     r       d    Elong  Const  40N  40S
2020-07-01   8.9   04 57  +28 47   0.498   0.649    23     Aur     1    2
2020-07-06  10.0   04 53  +28 22   0.517   0.749    29     Tau     5    5
2020-07-11  11.1   04 57  +27 57   0.557   0.851    33     Tau     8    7
2020-07-16  12.0   05 05  +27 33   0.611   0.948    36     Tau    10    9
2020-07-21  12.8   05 16  +27 10   0.675   1.036    38     Tau    13   10
2020-07-26  13.7   05 27  +26 47   0.745   1.115    40     Tau    15   11
2020-07-31  14.5   05 39  +26 24   0.818   1.185    42     Tau    18   12
2020-08-05  15.2   05 50  +25 59   0.892   1.245    45     Tau    20   12
Comet Magnitude Parameters --- Post-perihelion: H = 15.5, 2.5n = 16.0
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New Discoveries, Recoveries and Other Comets in the News

Newly Numbered Comets – The following comets were announced as numbered on CBET 4802.

396P/Leonard = P/2020 F1 = P/2002 E4
395P/Catalina-NEAT = P/2005 JD108 = P/2020 H1
394P/PANSTARRS = P/2020 F4 = P/2011 GN5
393P/Spacewatch-Hill = P/2009 SK280 = P/2019 S5
392P/LINEAR = P/2004 WR9 = P/2019
391P/Kowalski = P/2006 F1 = P/2019
390P/Gibbs = P/2006 W1 = P/2019

12P/Pons-Brooks – Earlier this year, Maik Meyer identified previous apparitions of the Halley-family comet 12P/Pons-Brooks in 1385 and 1457. Previously the only known observed apparitions were in 1812, 1883, and 1954. The Meyer linkages must have generated interest in the comet, for a team of comet researchers led my Matthew Knight used the 4.3-m Discovery Telescope at Lowell Observatory to recover 12P on June 10 and 17 at an astonishing ~11.9 au from the Sun and 4 years before perihelion! The new observations have allowed orbit computers S. Nakano and T. Kobayashi to bolster another linkage suggested by Meyer, that of the comet of 245 AD.

The Discovery Telescope observations show evidence of a short tail suggesting that 12P is not only active but has been for some time which is quite surprising for a Halley-type object at that distance. Though active, it was still a faint object with magnitudes ranging from 22.7 to 24.0.

The comet reaches perihelion on 2024 April 21 at 0.78 au. Unfortunately, the 2024 return will be a poor one with the comet getting no closer than 1.6 au to Earth and located at low elevations near perihelion. Still if its brightness follows what was seen in 1954, 12P/Pons-Brooks will peak at 4th-5th magnitude in 2024.

325P/Yang-Gao – Maik Meyer identified poorly observed comet P/1951 K1 with short-period comet 325P/Yang-Gao. P/1951 K1 was discovered on a single photographic plate exposed by Cornelis Johannes van Houten and George van Biesbroeck with the 0.25-m Cooke telescope at McDonald Observatory. The comet was subsequently lost. Meyer was able to identify 2 more images of the comet from the discovery night, 1951 May 28.

Rui Yang and Xing Gao independently discovered 325P in 2009 as a 12th magnitude object with a Canon 350D + 0.11-m f/2.8 lens from Xingming Observatory in China. The comet passed within 0.30 au in 2009 making it as good a return as possible at the time (perihelion distance of 1.30 au in 2009). 325P was observed again at its next perihelion in 2015. Eight perihelion passages were missed between the 1951 and 2009 apparitions. The comet's next perihelion is on 2022 March 29 at 1.43 au.

C/2020 M3 (ATLAS) – The ATLAS 0.5-m f/2 astrograph on Mauna Loa, Hawaii discovered C/2020 M3 on June 27 at ~19th magnitude. The comet comes to perihelion on 2020 October 24 at 1.31 au. This is another one to watch as it will be close to Earth (0.40 au) near the time of perihelion. The current prediction is for C/2020 M3 to brighten to 13-14th magnitude. Here's hoping this one also brightens more than expected.

P/2020 M2 = P/2012 SB6 (Lemmon) – H. Sato recovered this comet on June 29 at 17th magnitude with a 0.51-m f/6.8 iTelescope. The comet was only 10 days passed perihelion (q = 2.28 au). This is the comet's first return since its 2012 discovery apparition. The comet may be outburst as it is 1-2 magnitude brighter than expected.

P/2020 M1 (NEAT) – PANSTARRS discovered this comet on June 17. Pre-discovery observations back to May 24 were also found. The comet was consistently observed around 20th-21st magnitude. It is well passed its 2019 December 21 perihelion at 2.66 au. It is currently fading from its discovery brightness. It is a short-period object on a 11.5-year orbit.

P/2020 K9 (Lemmon-PANSTARRS) – A tag team discovery, P/2020 K9 was seen by the Mount Lemmon Survey and PANSTARRS on two nights in May. After the two nights were recognized as belonging to an object on a cometary orbit, the MPC placed the object on the Possible Comet Confirmation Page. Follow-up observations detected cometary activity by mid-June. The comet comes to perihelion on 2021 February 12 at 2.85 au. The comet will likely get no brighter than 18th magnitude this apparition. It is a short-period object on an 8.6-year orbit.

C/2020 K8 (Catalina-ATLAS) – This object was observed as an apparently asteroidal object on multiple nights in May and June 2020 by both the 0.68-m Catalina and 0.5-m ATLAS schmidt telescopes. C/2020 K8 was 19th magnitude in the earliest observation on May 25.

Though currently faint, K8 has a small perihelion distance of 0.47 au on 2020 September 14. It is predicted to reach 10-11th magnitude. Like C/2020 M3, observers should watch to see if this comet brightens faster than expected.

P/2013 J4 (PANSTARRS) = P/2019 Y2 (Fuls) – Sam Deen suggested that short-period comets P/2013 J4 (PANSTARRS) and P/2019 Y2 (Fuls) were one and the same. The comet was only observed for a week in 2013 so its preliminary orbit was just different enough from reality to delay a linkage till now. The present apparition saw the comet come to perihelion on 2020 January 31 at 2.12 au. Presumably, the comet will be renamed P/PANSTARRS-Fuls.

As always, the Comet Section is happy to receive all comet observations, whether textual descriptions, images, drawings, magnitude estimates, or spectra. Please send your observations via email to < carl.hergenrother @ alpo-astronomy.org >.

Thank you to everyone who contributed to the ALPO Comet Section!

Stay safe and enjoy the sky!
- Carl Hergenrother (ALPO Comet Section Coordinator)

Recent Magnitude Measurements Contributed to the ALPO Comet Section

Comet Des	YYYY MM DD.DD (UT)	Mag	SC	APER	FL	POW	COMA Dia	COMA DC	TAIL LENG	TAIL PA	ICQ CODE	Observer Name
2020F8	2020 06 01.09	&B> 7.4:	TK	12.6B T	5	25					ICQ XX DECaa	Michel Deconinck
2020F3	2020 07 01.49	wS 1.0:	TK	12.5B		30	1	7			ICQ xx HER02	Carl Hergenrother
2020F3	2020 06 06.34	&M 7.6	TK	7.0B		15	5.0	4			ICQ XX WYA	Christopher Wyatt
2020F3	2020 06 05.34	xM 7.5	TK	7.0B		15	4	4			ICQ XX WYA	Christopher Wyatt
2020F3	2020 06 04.34	xM 7.5	TK	7.0B		15	4.4	4/			ICQ XX WYA	Christopher Wyatt
2020F3	2020 06 03.34	xM 7.7	TK	7.0B		15	4.5	4			ICQ XX WYA	Christopher Wyatt
2019Y1	2020 06 20.98	S 11.5	TK	20.3T10		77	2	3			ICQ XX GON05	J. J. Gonzalez
2019U6	2020 07 03.37	xM 7.6	TK	7.0B		15	9.0	4/			ICQ XX WYA	Chris Wyatt
2019U6	2020 07 01.92	M 7.0	TK	7.0B		15	6	6			ICQ XX SOU01	Willian Souza
2019U6	2020 06 30.35	xM 7.1	TK	7.0B		15	8.5	5			ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 30.16	S 6.7	TK	12.5B		10	4	4			ICQ xx HER02	Carl Hergenrother
2019U6	2020 06 29.36	xM 7.1	TK	7.0B		15	9.0	5/			ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 28.16	S 6.8	TK	12.5B		10	4	4			ICQ xx HER02	Carl Hergenrother
2019U6	2020 06 26.35	xM 7.0	TK	7.0B		15	8	5/			ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 26.16	S 6.7	TK	5.0B		10	4	4			ICQ xx HER02	Carl Hergenrother
2019U6	2020 06 24.92	S 6.8	TK	7.0B		15	8	4			ICQ XX SOU01	Willian Souza
2019U6	2020 06 21.91	M 6.6	TK	7.0B		15	9	5			ICQ XX SOU01	Willian Souza
2019U6	2020 06 21.35	xS 6.7	TK	7.0B		15	12	4/	52.0m	125	ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 20.91	M 6.5	TK	7.0B		15	9	4/			ICQ XX SOU01	Willian Souza
2019U6	2020 06 19.91	M 6.5	TK	5.0B		10	8	5			ICQ XX SOU01	Willian Souza
2019U6	2020 06 19.36	xM 6.7	TK	7.0B		15	9	5/	27.0m	130	ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 17.36	xM 6.5	TK	7.0B		15	8	6	26.0m	137	ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 16.35	xM 6.4	TK	7.0B		15	8.5	5	22.0m	136	ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 11.35	xM 6.4	TK	7.0B		15	8.5	6			ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 08.35	xM 6.7	TK	7.0B		15	8.0	5/	15.0m	141	ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 07.91	S 6.2	TK	5.0B		10	5	6			ICQ XX SOU01	Willian Souza
2019U6	2020 06 06.35	xM 6.9	TK	7.0B		15	7.0	6			ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 05.35	xM 6.8	TK	7.0B		15	6.0	5/			ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 04.36	xM 6.8	TK	7.0B		15	6.5	6			ICQ XX WYA	Christopher Wyatt
2019U6	2020 06 03.35	xM 6.5:	TK	7.0B		15	6.3	5/			ICQ XX WYA	Christopher Wyatt
2017T2	2020 06 30.35	&M 9.7	TK	25.0L	5	40	3.1	4			ICQ XX WYA	Christopher Wyatt
2017T2	2020 06 26.37	&M 9.4	TK	25.0L	5	40	4.3	3/			ICQ XX WYA	Christopher Wyatt
2017T2	2020 06 21.00	S 9.1	TK	20.3T10		77	5	4			ICQ XX GON05	J. J. Gonzalez
2017T2	2020 06 20.88	B 9.8	TK	25.0C10		190	2	5	3.5m	15	ICQ XX DECaa	Michel Deconinck
2017T2	2020 06 19.35	&S 9.4	TK	25.0L	5	40	4.0	4			ICQ XX WYA	Christopher Wyatt
2017T2	2020 06 19.16	S 8.8	TK	12.5B		30	4	4			ICQ xx HER02	Carl Hergenrother
2017T2	2020 06 17.34	&S 9.7	TK	25.0L	5	40	5.5	3			ICQ XX WYA	Christopher Wyatt
2017T2	2020 06 16.34	&M 9.8	TK	25.0L	5	74	3	4			ICQ XX WYA	Christopher Wyatt
2017T2	2020 06 15.34	&S 9.8:	TK	25.0L	5	74	2	2/			ICQ XX WYA	Christopher Wyatt
2017T2	2020 06 01.09	B 8.9	TK	12.6B	5	40	& 2.3	4 &	4.5m	75	ICQ XX DECaa	Michel Deconinck
289	2020 06 20.89	-[13.6	TK	25.0C10		62					ICQ XX DECaa	Michel Deconinck
88	2020 06 20.94	S 10.7	TK	20.3T10		100	4	2/			ICQ XX GON05	J. J. Gonzalez
88	2020 06 20.90	B 12.0:	TK	25.0C10		96	> 2	1			ICQ XX DECaa	Michel Deconinck
88	2020 06 17.35	xS 11.8	AQ	25.0L	5	74	4	3			ICQ XX WYA	Christopher Wyatt
88	2020 06 16.37	xS 11.7	AQ	25.0L	5	74	3	3			ICQ XX WYA	Christopher Wyatt
88	2020 06 11.35	xS 11.9	AQ	25.0L	5	74	3	3			ICQ XX WYA	Christopher Wyatt
58	2020 06 21.77	&S 10.9	AQ	25.0L	5	74	2.6	3/			ICQ XX WYA	Christopher Wyatt
29	2020 06 21.78	&S[14.4	AQ	25.0L	5	125					ICQ XX WYA	Christopher Wyatt
2	2020 06 30.34	&M 7.3	TK	25.0L	5	40	0.5	8			ICQ XX WYA	Christopher Wyatt
2	2020 06 29.33	&M 7.5	TK	25.0L	5	40	0.8	8			ICQ XX WYA	Christopher Wyatt

Recent Select Images and Sketches Contributed to the ALPO Comet Section

Image of C/2017 T2 (PANSTARRS) by Darryl Wilson from 2020 May 24

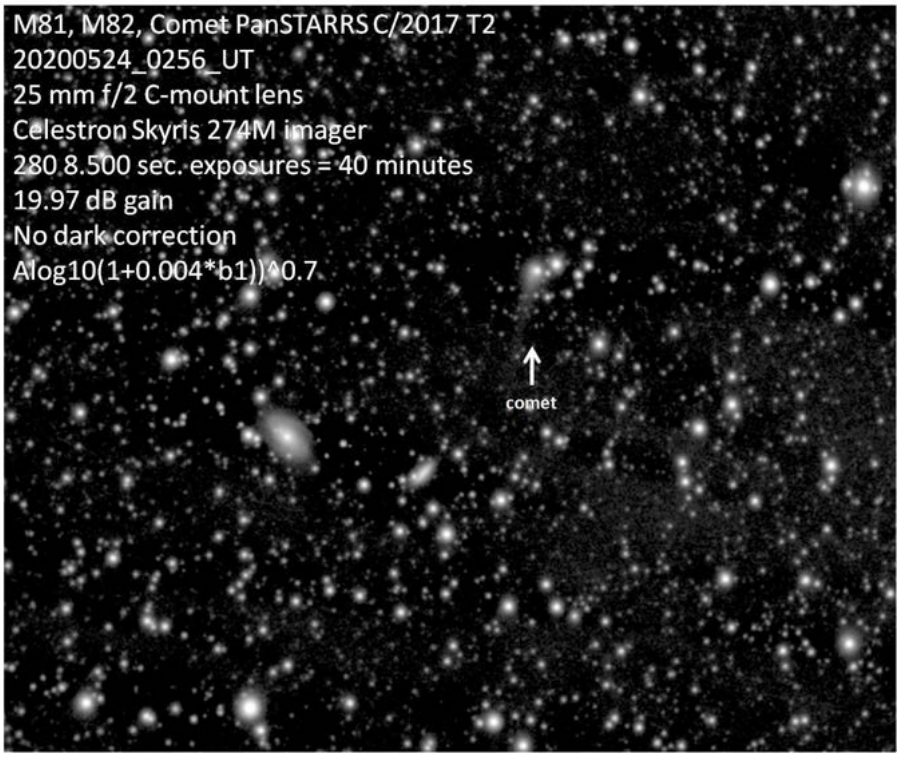


Image of C/2017 T2 (PANSTARRS) by Darryl Wilson from 2020 May 24

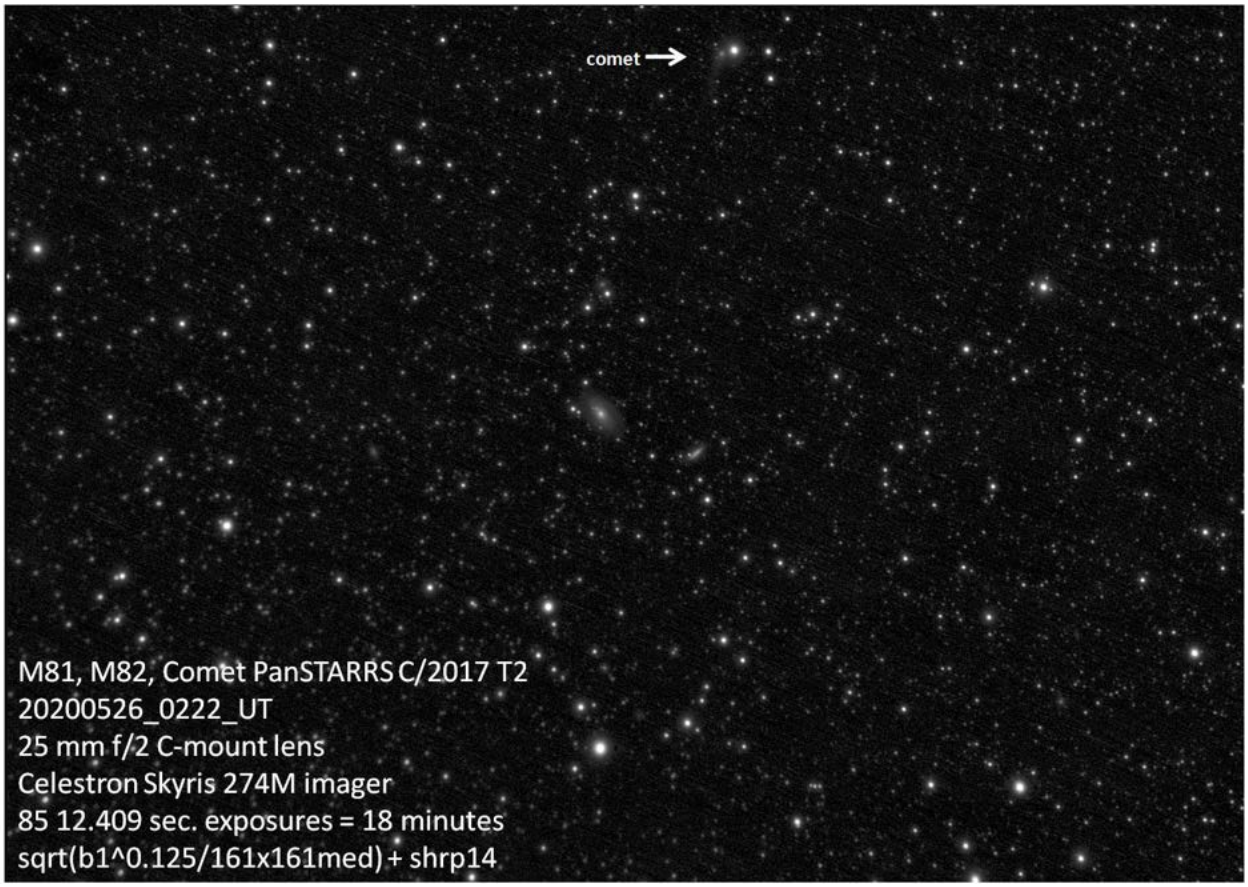


Image of C/2017 T2 (PANSTARRS) by Darryl Wilson from 2020 May 26

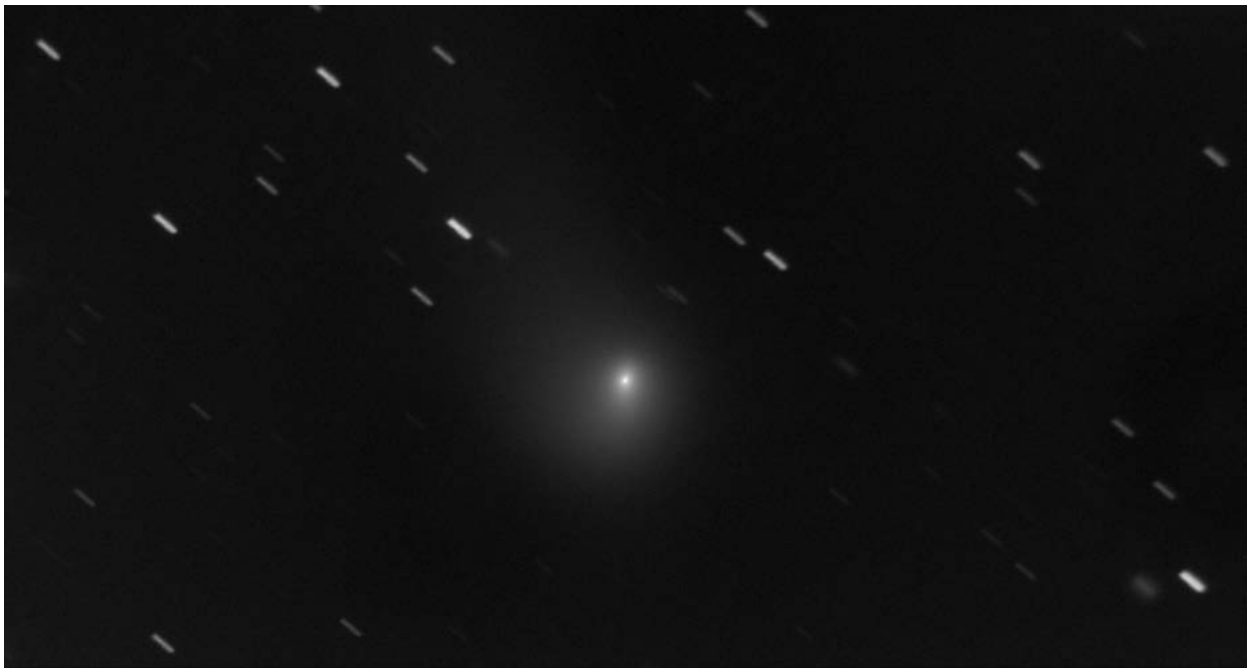
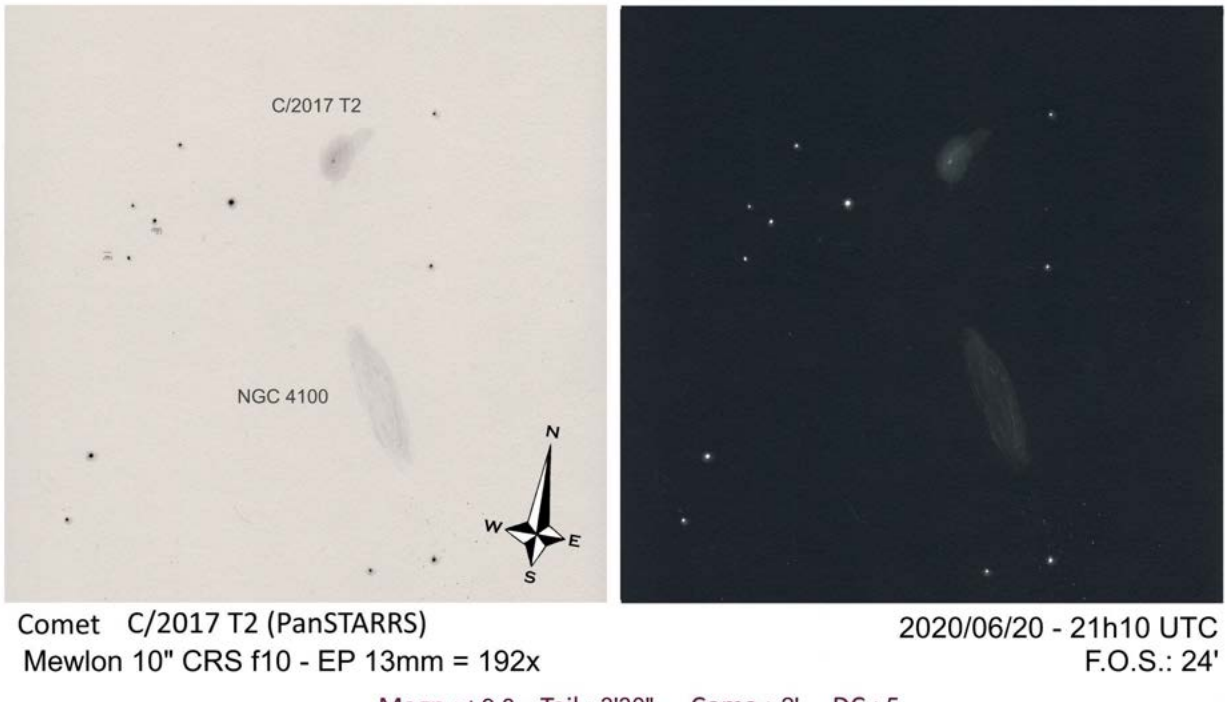


Image of C/2017 T2 (PANSTARRS) by Chris Schur from 2020 June 6

Image of C/2017 T2 (PANSTARRS) by Chris Schur from 2020 June 13

Image of C/2017 T2 (PANSTARRS) by Martin Mobberley from 2020 June 16

Image of C/2017 T2 (PANSTARRS) by Martin Mobberley from 2020 June 17



Sketch of C/2017 T2 (PANSTARRS) by Michel Deconinck from 2020 June 20

Image of C/2017 T2 (PANSTARRS) by Chris Schur from 2020 June 27

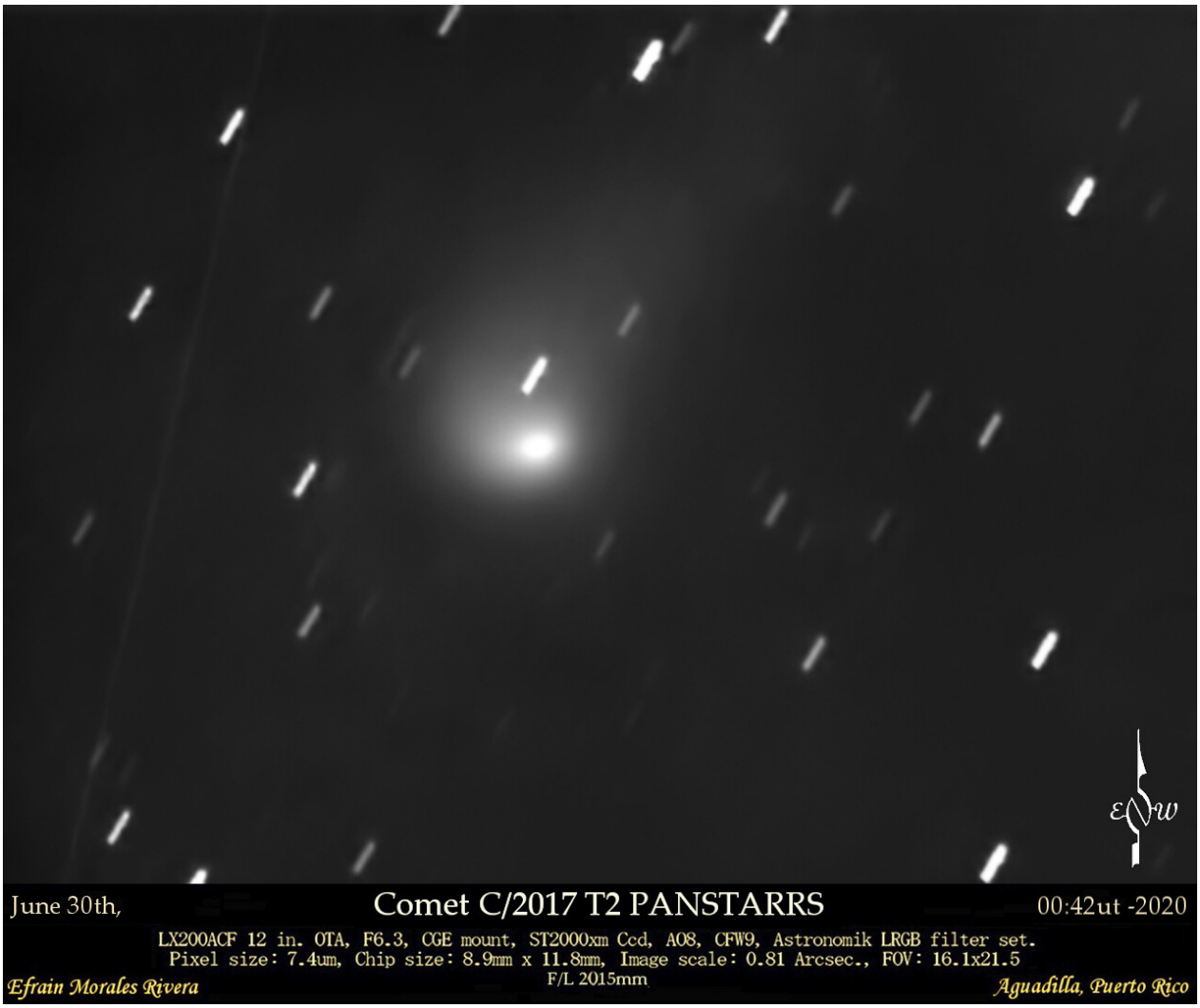


Image of C/2017 T2 (PANSTARRS) by Efrain Morales Rivera from 2020 June 30

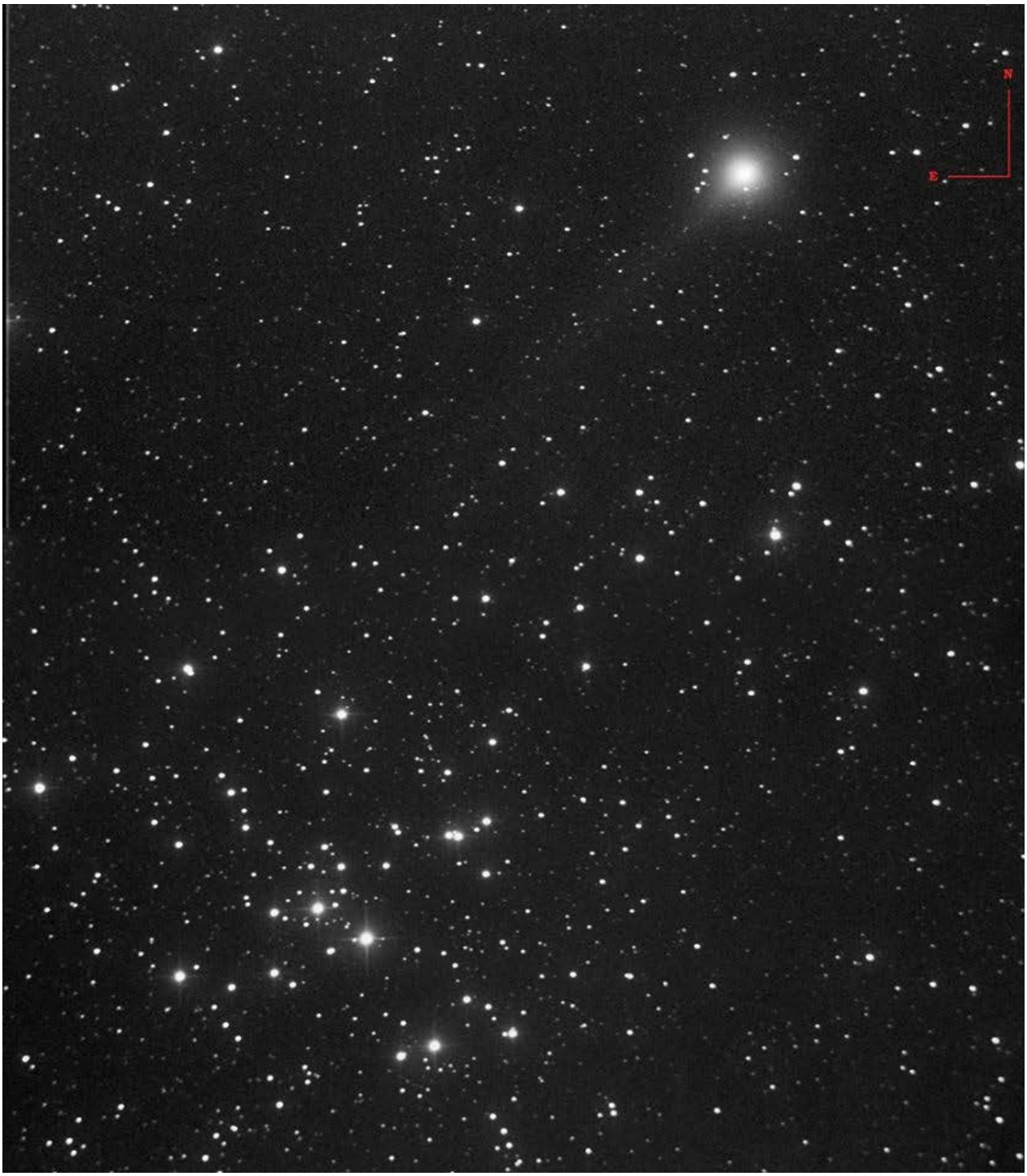


Image of C/2019 U6 (Lemmon) + Open Cluster M41 by Andres Chapman from 2020 May 28

Image of C/2019 U6 (Lemmon) by Martin Mobberley from 2020 June 8

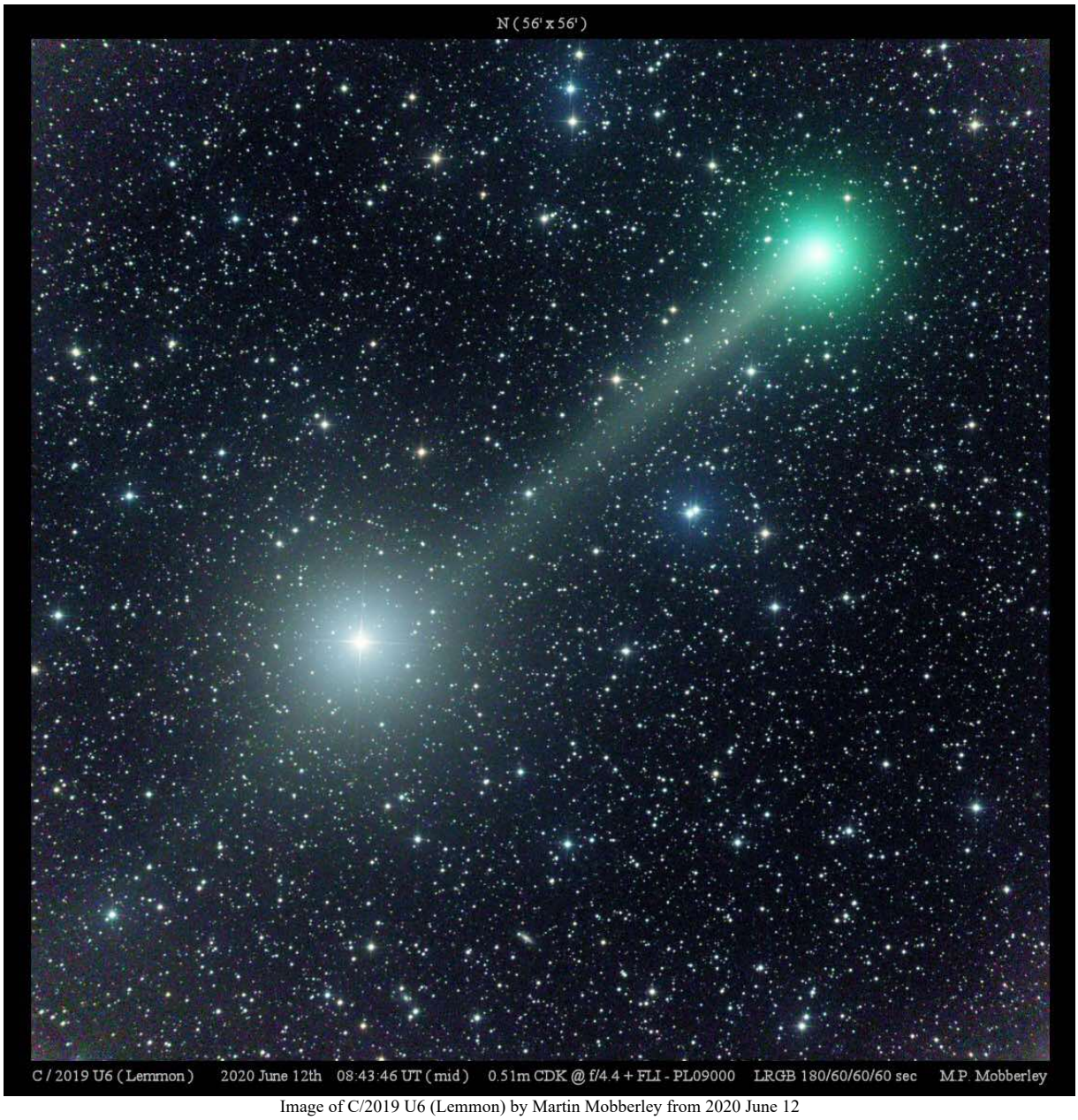


Image of C/2019 U6 (Lemmon) by Martin Mobberley from 2020 June 12

Image of C/2019 U6 (Lemmon) by Martin Mobberley from 2020 June 21

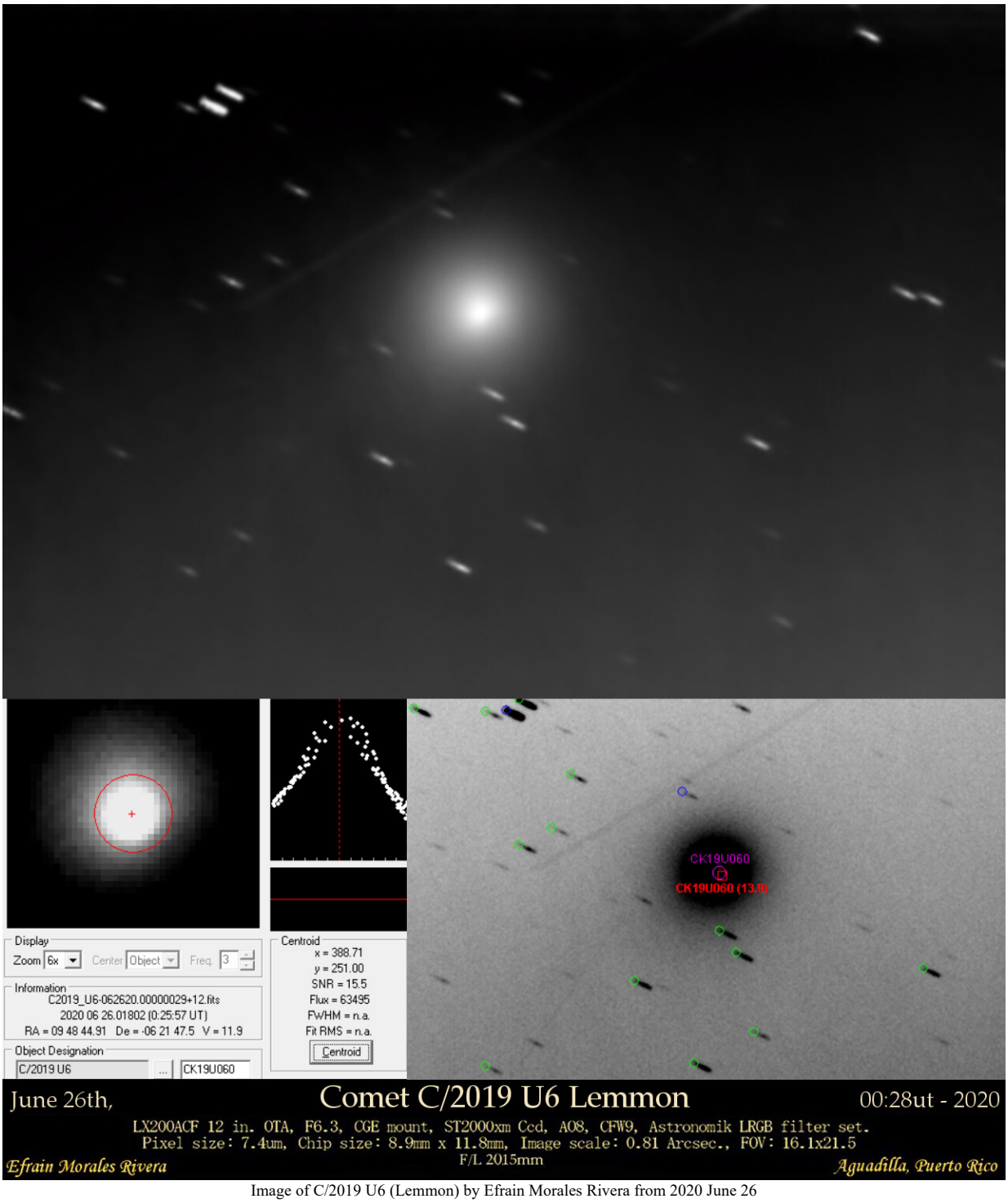


Image of C/2019 U6 (Lemmon) by Efrain Morales Rivera from 2020 June 26

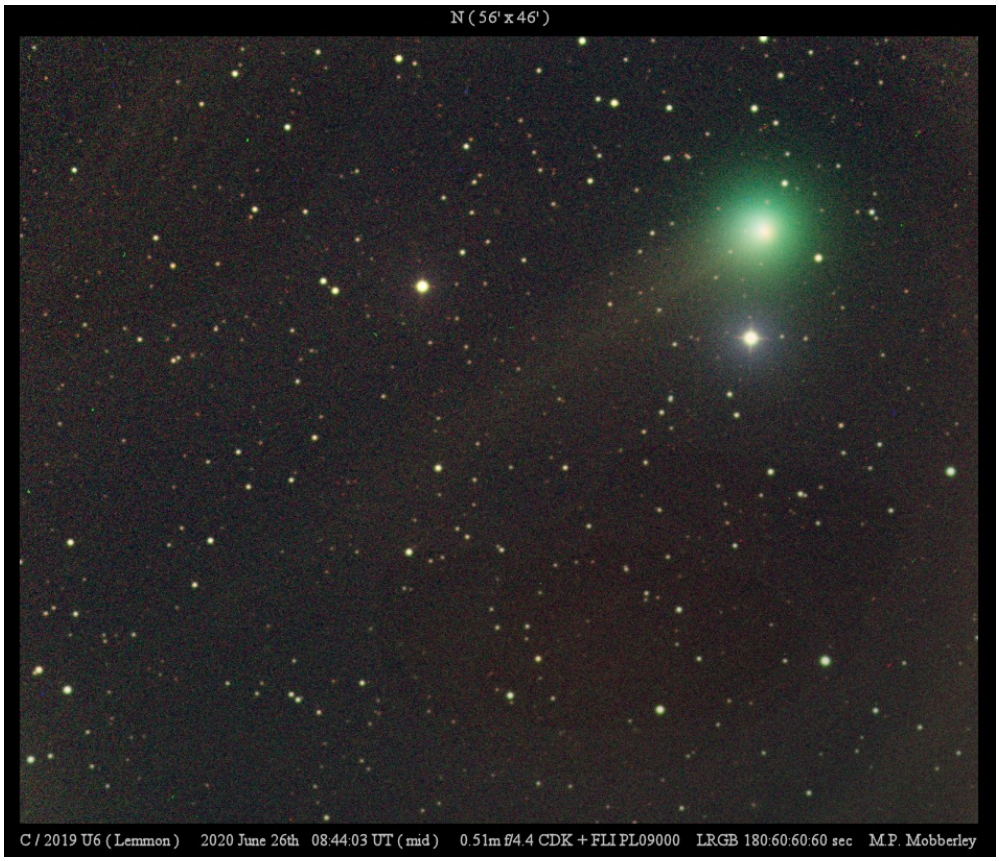


Image of C/2019 U6 (Lemmon) by Martin Mobberley from 2020 June 26

Image of C/2019 U6 (Lemmon) by Efrain Morales Rivera from 2020 June 30

Image of C/2019 U6 (Lemmon) by Andres Chapman from 2020 May 9

Image of C/2019 U6 (Lemmon) by Sergio Babino from 2020 June 15

Image of C/2019 U6 (Lemmon) by Jamie Garcia from 2020 May 17

Image of C/2019 U6 (Lemmon) by Hugo Espina from 2020 June 18

Image of C/2019 U6 (Lemmon) by Hugo Espina from 2020 June 19

Image of C/2019 U6 (Lemmon) by Sergio Babino from 2020 May 28

Image of C/2019 U6 (Lemmon) by Andres Chapman from 2020 May 31

Image of C/2019 U6 (Lemmon) by Andres Chapman from 2020 May 31