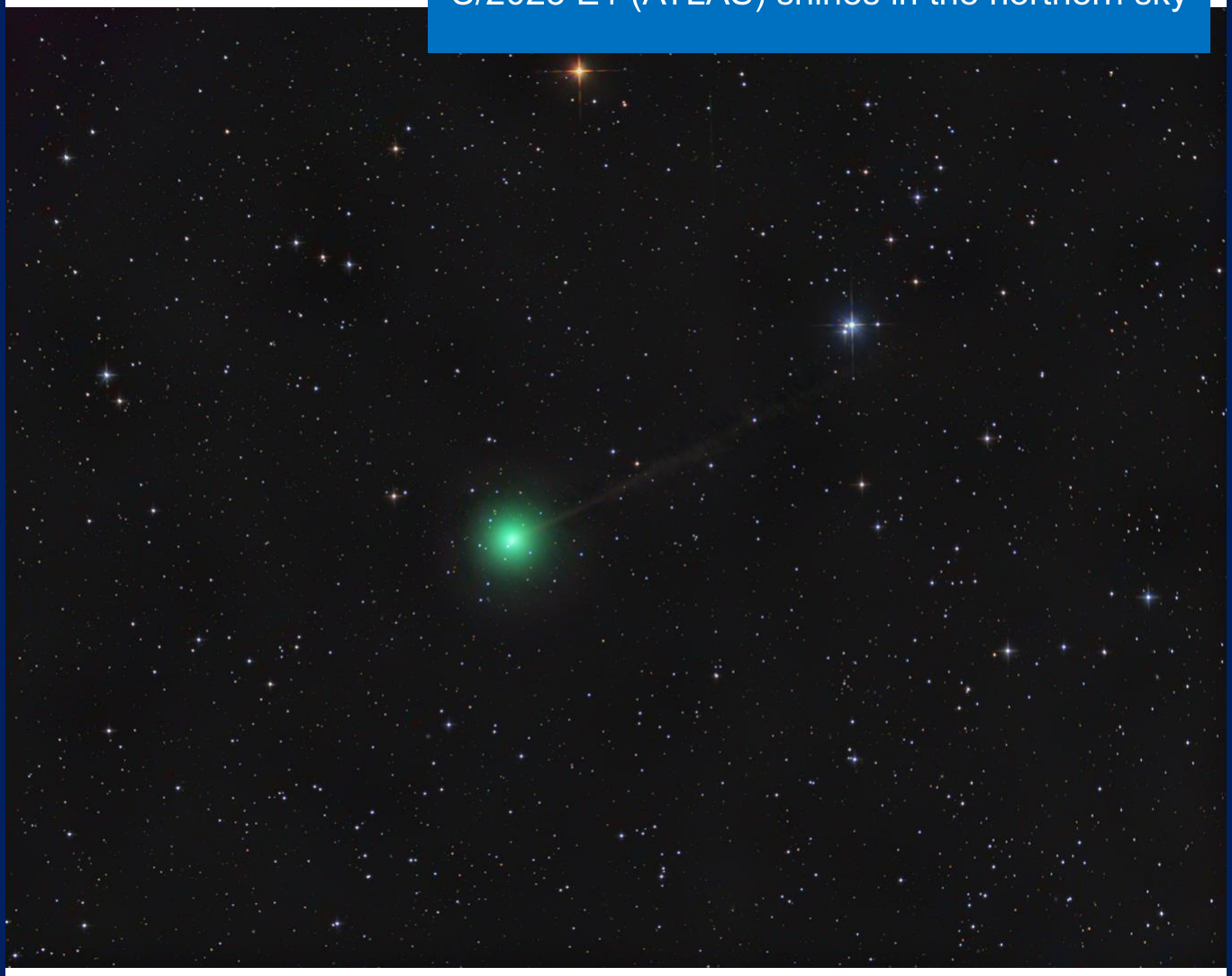
July 2023

ALPO Comet News

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

C/2023 E1 (ATLAS) shines in the northern sky



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On the Front Cover:

C/2023 E1 (ATLAS) was imaged by Chris Schur of Payson, Arizona on 2023 June 22. Chris used a 10" f/3.9 reflector and Atik 16200 CCD camera. The image consists of the following 2x2 binned exposures: L=60s, RGB = 60s. Chris Schur Schur's Web Portal: http://www.schursastrophotography.com

The monthly ALPO Comet News PDF can be found on the ALPO Comets 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/882094-alpo-comet-news-for-july-2023/) All are encouraged to join the discussion over at Cloudy Nights. The ALPO Comets Section welcomes all comet-related articles, observations, images, drawings, magnitude estimates, or spectra. One does not have to be a member of ALPO to submit material, though membership is appreciated.

Please send your observations to the Comets Section at < comets@alpo-astronomy.org >, Coordinator Carl Hergenrother < carl.hergenrother@alpo-astronomy.org >, and/or Acting Assistant Coordinator Michel Deconinck < michel.deconinck@alpo-astronomy.org >.

To learn more about the ALPO, please visit us @ http://www.alpo-astronomy.org.

Summary

July will be a nice month for comet watchers. While there are no "bright" comets, three comets should make nice targets for binoculars or small telescopes. The brightest comet of the month, 7th magnitude C/2021 T4 (Lemmon), will be well placed for southern hemisphere observers as it races from the morning into the evening sky. Northern observers will be able to observe it early in the month though a bright Moon and a decreasing elevation will make it a bit challenging. Northern observers will have 9th magnitude C/2023 E1 (ATLAS) all to themselves as it moves through the northern circumpolar sky. Both hemispheres can observe 9-10th magnitude C/2020 V2 (ZTF) in the morning sky. Imagers are asked to watch one of next year's potential bright objects, C/2023 A3 (Tsuchinshan-ATLAS), at 16th magnitude in the evening sky.

Last month the ALPO Comets Section received 99 magnitude estimates, images, and sketches of comets C/2023 E1 (ATLAS), C/2023 A3 (Tsuchishan-ATLAS), C/2022 E3 (ATLAS), C/2022 A2 (PANSTARRS), C/2021 T4 (Lemmon), C/2021 S3 (PANSTARRS), C/2020 V2 (ZTF), C/2020 K1 (PANSTARRS), C/2019 U5 (PANSTARRS), C/2019 T4 (ATLAS), C/2019 L3 (ATLAS), C/2017 K2 (PANSTARRS), 364P/PANSTARRS, 276P/Vorobjov, 237P/LINEAR, 126P/IRAS, 77P/Longmore, 71P/Clark, and 12P/Pons-Brooks. A big thanks to our June contributors: J. J. Gonzalez, Jose Guilherme de Souza Aguiar, Christian Harder, Carl Hergenrother, Eliot Herman, John Maikner, Uwe Pilz, Michael Rosolina, and Chris Wyatt.

Request for Observations

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 the Comets Section < comets @ alpo-astronomy . org >, Comets Section Coordinator Carl Hergenrother < carl.hergenrother @ alpo-astronomy . org > and/or Comets Section Acting Assistant Coordinator Michel Deconinck < michel.deconinck @ alpo-astronomy . org >.

Photometric Corrections to Magnitude Measurements

We include up-to-date lightcurves for the comets discussed in these reports and apply aperture and personal corrections to the visual observations and only personal corrections to digital observations. All magnitude estimates are affected by many factors, including instrumental (aperture, focal length, magnification, type of optics), environmental (sky brightness due to moonlight, light pollution, twilight, aurora activity, zodiacal light,

etc.), cometary (degree of condensation, coma color, strength and type of gas emission lines, coma-tail interface) and personal (sensitivity to different wavelengths, personal technique, observational biases). The first correction used here corrects for differences in aperture [Charles S. Morris, On Aperture Corrections for Comet Magnitude Estimates. Publ Astron Soc Pac 85, 470, 1973]. Visual observations are corrected to a standard aperture of 6.78 cm by 0.019 magnitudes per centimeter for reflectors and 0.066 magnitudes per centimeter for refractors. After applying the aperture correction and if a sufficient number of visual observations are submitted for a particular comet, we also determine personal corrections for each observer for each comet; for digital observations, only a personal correction is applied. A single observer submitting both visual and digital magnitude measurements may also have separate corrections for each observing method. If the magnitudes shown in the text don't match those plotted in the lightcurves, it is because of the application of these corrections.

Acknowledgments

In addition to observations submitted directly to the ALPO, we occasionally use data from other sources to augment our analysis. Therefore, we acknowledge with thanks observations submitted directly to the ALPO and those submitted initially to the International Comet Quarterly, Minor Planet Center, and COBS Comet Observation Database. In particular, we have been using observations submitted to the COBS site by Thomas Lehmann for our analysis, so we would like to thank Thomas for his COBS observations. We would also like to thank the Jet Propulsion Laboratory for making their Small-Body Browser and Orbit Visualizer available and Seiichi Yoshida for his Comets for Windows programs that produced the lightcurves and orbit diagrams in these pages. And last but not least, we'd like to thank Syuichi Nakano and the Minor Planet Center for their comet orbit elements, the asteroid surveys and dedicated comet hunters for their discoveries, and all of the observers who volunteer their time to add to our knowledge of these fantastic objects.

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

Clear skies!
- Carl Hergenrother

Comets Calendar

Lunar Phases

July 03 - Full Moon
July 09 - Last Quarter Moon
July 17 - New Moon
July 25 - First Quarter Moon

Comets at Perihelion

Jul 01 - C/2023 E1 (ATLAS) [q = 1.03 au, 85-yr period, V ~ 9, more below]
Jul 05 - 287P/Christensen [q = 3.03 au, 8.5-yr period, V ~ 16, found in 2006, 3rd observed return]
Jul 05 - 126P/IRAS [1.71 au, 9.5-yr period, V ~ 13, discovered by IRAS spacecraft in 1983, also seen at 1996 and 2010 returns, not yet seen at current return]
Jul 08 - P/2012 WA34 (Lemmon-PANSTARRS) [q = 3.07 au, 10.1-yr period, V ~ 21, this will be its first return since discovery, close to Sun at perihelion]
Jul 11 - 39P/Oterma [q = 5.71 au, 19.4-yr period, V ~ 21-22, discovered in 1943 when perihelion was at 3.4 au, close approach to Jupiter in 1963 set up current distant orbit, current return is its 5th observed return]
Jul 12 - 180P/NEAR [q = 2.50 au, 7.6-yr period, V ~ 17-18, discovered in 2000, pre-discovery observations from 1955, 5th observed return]
Jul 12 - 185P/Petriew [q = 0.93 au, 5.5-yr period, V ~ 11, visual discovery in 2001, will be 5th observed return]
Jul 20 - 347P/PANSTARRS [q = 2.22 au, 5.0-yr period, V ~ 19-20, found in 2016, pre-discovery observations from 2003 and 2009 returns]
Jul 31 - C/2021 T4 (PANSTARRS) [q = 1.48 au, V ~ 8, more below]

Photo Opportunities

Jul 03-04 - C/2021 T4 (Lemmon) within 1 deg of 9th mag galaxy NGC 7793
Jul 09-10 - C/2021 T4 (Lemmon) within 1.5 deg of the Grus Quartet of galaxies [10-13th mag galaxies NGC 7552, 7582, 7590, 7599]
Jul 11 - C/2021 T4 (Lemmon) within 20' of 10th mag galaxy IC 5267
Jul 14 - C/2021 T4 (Lemmon) passes within a few arc min of 11th mag galaxy NGC 7196 and 13th mag galaxy NGC 7200
Jul 16 - C/2021 T4 (Lemmon) passes within a few arc min of 12th mag galaxy NGC 7064
Jul 25 - C/2021 T4 (Lemmon) within 2 deg of bright 5th mag globular cluster NGC 6397
Jul 26 - C/2021 T4 (Lemmon) within 0.5 deg of bright 7th mag open cluster IC 4651
Jul 29 - C/2021 T4 (Lemmon) within 0.5 deg of 8th mag open cluster NGC 6204
Jul 29 - C/2021 T4 (Lemmon) within 0.5 deg of bright 7th mag open cluster NGC 6178
Jul 30 - C/2021 T4 (Lemmon) within 0.5 deg of bright 6th mag open cluster NGC 6169
Jul 30 - C/2023 E1 (ATLAS) within 1.5 deg of large, bright 6th nebula NGC 7023 [Iris Nebula]
Jul 31 - C/2021 T4 (Lemmon) within 0.5 deg of 12th mag planetary nebula IC 4599

Recent Magnitudes Contributed to the ALPO Comets 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
C/2023 E1 (ATLAS)					T								
2023E1	2023 06 30.45	S	9.4	TK	12.5B		30	6	2			ICQ xx	HER02 Carl Hergenrother
2023E1	2023 06 24.97	S	10.0	TI	35.3L		88	4	3			ICQ XX	HAR11 Christian Harder
2023E1	2023 06 21.44	S	9.7	TK	12.5B		30	5	3			ICQ xx	HER02 Carl Hergenrother
2023E1	2023 06 18.22	S	10.5		35.6T	11	71	3	2			ICQ xx	ROSxx Michael Rosolina
2023E1	2023 06 17.96	S	10.5	TK	32.0L	5	48	4	2				PIL01 Uwe Pilz
2023E1	2023 06 17.96	S	9.8:	TI	35.3L		88	4	2/			ICQ XX	HAR11 Christian Harder
2023E1	2023 06 15.17	M	9.9	TK	12.5B		30	4	2			ICQ xx	HER02 Carl Hergenrother
2023E1	2023 06 13.94	S	9.7	TK	7.0B		15	9	3			ICQ XX	GON05 Juan Jose Gonzalez Suarez
2023E1	2023 06 13.92	S	9.9	TK	20.3T	10	77	7	2/			ICQ XX	GON05 Juan Jose Gonzalez Suarez
2023E1	2023 06 11.97	S	10.5	TI	29.8L	4	79	3.1	2/			ICQ XX	HAR11 Christian Harder
2023E1	2023 06 09.98	S	10.6	TI	29.8L	4	79	3.2	2/			ICQ XX	HAR11 Christian Harder
C/2023 A3 (Tsuchinshan-ATLAS)													
2023A3	2023 06 13.89	V	16.9	U4	50.0Y	7a	600	0.2		0.2	m120	ICQ xx	HER02 Carl Hergenrother
C/2022 E3 (ZTF)													
2022E3	2023 06 10.35	xM	13.1	AQ	40.0L	4	182	1	4			ICQ XX	WYA Christopher Wyatt
C/2022 A2 (PANSTARRS)													
2022A2	2023 06 21.34	M	12.2	AQ	30.0L	5	100	1	3			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2022A2	2023 06 20.34	M	12.1	AQ	30.0L	5	100	1	3			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2022A2	2023 06 18.34	M	12.1	AQ	30.0L	5	100	1	3			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2022A2	2023 06 16.77	xM	11.5	AQ	40.0L	4	59	2.9	3/			ICQ XX	WYA Christopher Wyatt
2022A2	2023 06 14.08	S	10.7	TK	20.3T	10	77	4	2/			ICQ XX	GON05 Juan Jose Gonzalez Suarez
2022A2	2023 06 09.34	M	12.0	AQ	30.0L	5	100	1	3/			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2022A2	2023 06 07.34	M	11.9	AQ	30.0L	5	100	2	4			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2022A2	2023 06 06.34	M	11.9	AQ	30.0L	5	88	2	3/			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
C/2021 T4 (ZTF)													
2021T4	2023 06 30.46	S	10.0	TK	12.5B		30	3	3			ICQ xx	HER02 Carl Hergenrother
2021T4	2023 06 21.44	S	10.3	TK	12.5B		30	3	3			ICQ xx	HER02 Carl Hergenrother
2021T4	2023 06 21.33	M	11.0	TK	30.0L	5	88	3	3			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2021T4	2023 06 20.32	M	11.0	TK	30.0L	5	88	3	3/			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2021T4	2023 06 18.34	M	11.1	TK	30.0L	5	88	3	4			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2021T4	2023 06 16.74	xM	10.2	AQ	40.0L	4	59	4.3	5			ICQ XX	WYA Christopher Wyatt
2021T4	2023 06 06.33	M	11.9	AQ	30.0L	5	88	2	3			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2021T4	2023 06 03.33	M	12.1	AQ	30.0L	5	100	1	4/			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2021T4	2023 05 26.33	M	12.4	AQ	30.0L	5	100	1	4/			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2021T4	2023 05 25.33	M	12.6	AQ	30.0L	5	100	1	3/			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2021T4	2023 05 24.32	M	12.6	AQ	30.0L	5	121	1	3/			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2021T4	2023 05 23.33	M	12.7	AQ	30.0L	5	121	1	4			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
C/2021 S3 (PANSTARRS)													
2021S3	2023 06 19.35	xS	14.1	AQ	40.0L	4	182	0.9	3/			ICQ XX	WYA Christopher Wyatt
2021S3	2023 06 10.36	xM	14.2	AQ	40.0L	4	182	1	5			ICQ XX	WYA Christopher Wyatt
2021S3	2023 06 09.37	xM	13.8	AQ	40.0L	4	182	0.6	3/			ICQ XX	WYA Christopher Wyatt
C/2020 V2 (ZTF)													
2020V2	2023 06 30.46	S	10.5	TK	12.5B		30	2	3			ICQ xx	HER02 Carl Hergenrother
2020V2	2023 06 21.35	M	10.4	TK	30.0L	5	88	2	2/			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2020V2	2023 06 20.34	M	10.3	TK	30.0L	5	88	2	3			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2020V2	2023 06 18.35	xM	10.4	TK	30.0L	5	88	2	4			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2020V2	2023 06 16.79	xM	10.6	AQ	40.0L	4	59	2.5	6			ICQ XX	WYA Christopher Wyatt
2020V2	2023 06 12.35	xM	10.7	TK	27.0L	5	55	2	3/			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
C/2020 K1 (PANSTARRS)													
2020K1	2023 06 19.39	xM	12.8	AQ	40.0L	4	59	1.7	5/			ICQ XX	WYA Christopher Wyatt
2020K1	2023 06 16.74	xM	12.9	AQ	40.0L	4	108	1.4	6			ICQ XX	WYA Christopher Wyatt
2020K1	2023 06 10.40	xM	12.9	AQ	40.0L	4	59	1.5	5			ICQ XX	WYA Christopher Wyatt
2020K1	2023 06 03.31	M	12.4	AQ	30.0L	5	100	1	4			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2020K1	2023 05 25.30	M	12.3	AQ	30.0L	5	100	2	4			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2020K1	2023 05 24.28	M	12.3	AQ	30.0L	5	100	2	3/			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2020K1	2023 05 23.28	M	12.2	AQ	30.0L	5	100	2	3			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
C/2019 U5 (PANSTARRS)													
2019U5	2023 06 19.37	xM	13.8	AQ	40.0L	4	108	0.9	6			ICQ XX	WYA Christopher Wyatt
2019U5	2023 06 13.91	S	12.3	AQ	20.3T	10	133	0.8	5			ICQ XX	GON05 Juan Jose Gonzalez Suarez
2019U5	2023 06 10.38	xM	13.8	AQ	40.0L	4	108	0.5	6			ICQ XX	WYA Christopher Wyatt
2019U5	2023 06 09.40	xM	13.4	AQ	40.0L	4	108	1	5/			ICQ XX	WYA Christopher Wyatt
2019U5	2023 05 23.99	M	13.3	AQ	30.0L	5	121	1	3			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
2019U5	2023 05 22.99	M	13.3	AQ	30.0L	5	121	1	3			ICQ XX	DES01 Jose Guilherme de Souza Aguiar
C/2019 T4 (Lemmon)													
2019T4	2023 06 19.40	xM	13.7	AQ	40.0L	4	108	1.3	6			ICQ XX	WYA Christopher Wyatt
2019T4	2023 06 13.96	S	12.2	AQ	20.3T	10	100	1.3	3/			ICQ XX	GON05 Juan Jose Gonzalez Suarez

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   2019T4  2023 06 10.40 xM 13.6 AQ 40.0L 4 108   1.9  5/          ICQ XX WYA   Christopher Wyatt
   2019T4  2023 06 09.41 xM 13.7 AQ 40.0L 4 108   1.3  6           ICQ XX WYA   Christopher Wyatt
   2019T4  2023 06 19.40 xM 13.7 AQ 40.0L 4 108   1.3  6           ICQ XX WYA   Christopher Wyatt
   2019T4  2023 05 24.24  M 13.6 AQ 30.0L 5 121   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2019T4  2023 05 23.22  M 13.7 AQ 30.0L 5 121   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
C/2019 L3 (ATLAS)
   2019L3  2023 06 19.37 xM 12.9 AQ 40.0L 4 108   1.3  5           ICQ XX WYA   Christopher Wyatt
   2019L3  2023 06 10.38 xM 12.7 AQ 40.0L 4 108   1.1  4/          ICQ XX WYA   Christopher Wyatt
   2019L3  2023 06 09.39 xM 12.8 AQ 40.0L 4 108   2    4           ICQ XX WYA   Christopher Wyatt
   2019L3  2023 05 23.98  M 13.5 AQ 30.0L 5 121   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2019L3  2023 05 22.97  M 13.6 AQ 30.0L 5 121   1    2/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
C/2017 K2 (PANSTARRS)
   2017K2  2023 06 10.34 xM 10.8 AQ 40.0L 4 108   2    5/          ICQ XX WYA   Christopher Wyatt
364P/PANSTARRS
364        2023 06 20.33  M 13.8 AQ 30.0L 5 121   1    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
364        2023 06 18.33  M 13.8 AQ 30.0L 5 121   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
364        2023 06 03.32  M 13.3 AQ 30.0L 5 100   1    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
364        2023 05 26.32  M 13.2 AQ 30.0L 5 100   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
364        2023 05 25.31  M 13.1 AQ 30.0L 5 100   1    2/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
364        2023 05 24.29  M 13.1 AQ 30.0L 5 100   1    2/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
364        2023 05 23.29  M 13.0 AQ 30.0L 5 100   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
276P/Vorobjov
276        2023 06 15.29  C 19.5 BG 30.5H 4A800                   ICQ XX MAIab John Maikner
237P/LINEAR
237        2023 06 24.97  S 12.5 TI 35.3L   144   0.7  3           ICQ XX HAR11 Christian Harder
237        2023 06 18.30  M 12.0 AQ 30.0L 5 100   2    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
237        2023 06 16.73 xM 12.3 AQ 40.0L 4  59   2.2  5/          ICQ XX WYA   Christopher Wyatt
237        2023 06 14.04  S 12.3 AQ 20.3T10 133   3    3           ICQ XX GON05 Juan Jose Gonzalez Suarez
237        2023 06 12.31  M 12.2 AQ 30.0L 5 100   2    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
237        2023 05 25.29  M 12.9 AQ 30.0L 5 121   1    4           ICQ XX DES01 Jose Guilherme de Souza Aguiar
237        2023 05 24.28  M 12.9 AQ 30.0L 5 121   1    4           ICQ XX DES01 Jose Guilherme de Souza Aguiar
237        2023 05 23.28  M 13.1 AQ 30.0L 5 121   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
126P/IRAS
126        2023 06 16.76 xM 14.7 AQ 40.0L 4 182   0.7  4           ICQ XX WYA   Christopher Wyatt
77P/Longmore
 77        2023 06 19.38 xS 14.8 AQ 40.0L 4 261   0.4  3/          ICQ XX WYA   Christopher Wyatt
 77        2023 06 10.39 xM 14.8 AQ 40.0L 4 182   1.5  4           ICQ XX WYA   Christopher Wyatt
 77        2023 06 09.40 xM 15.0 AQ 40.0L 4 182   1.5  6           ICQ XX WYA   Christopher Wyatt71P/Clark
71P/Clark
 71        2023 05 25.32  M 13.8 AQ 30.0L 5 121   1    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
 71        2023 05 24.30  M 13.7 AQ 30.0L 5 121   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
 71        2023 05 23.31  M 13.7 AQ 30.0L 5 121   1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
12P/Pons-Brooks
 12        2023 06 18.15  C 17.1 BG 30.5H 4C600                   ICQ XX MAIab John Maikner
 12        2023 06 15.17  C 17.3 BG 30.5H 4C600                   ICQ XX MAIab John Maikner
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New Discoveries, Recoveries, and Other Comets News

New Discoveries and Recoveries

P/2023 M1 (PANSTARRS) - R. Weryk (University of Western Ontario) reported the discovery of P/2023 M1 on June 16 at 20th magnitude with the Pan-STARRS1 1.8-m Ritchey-Chretien reflector at Haleakala. P/2023 M1 is a short-period comet with an 18-year orbital period. Perihelion was back on 2023 December 14 at 2.83 au. July should see M1 at its peak brightness of 19th magnitude. [MPEC 5273, CBET 2023-M65]

C/2023 L1 = P/2008 L2 (Hill) - R. Kresken, F. Ocana, M. Micheli, and L. Conversi report the recovery of comet P/2008 L2 on CCD images obtained with a 0.56-m f/2.52 astrograph at La Silla, Chile on 2023 June 1, 2, and 8. The comet was reported to be stellar at 18th magnitude. It is already past its 2023 May 9 perihelion at 2.33 au.

With a 14.8-yr orbital period, it was last at perihelion during its 2008 discovery apparition. Our ALPO Solar Section coordinator Rik Hill discovered P/2008 L2 on 2008 June 12 with the 0.68-m Catalina Schmidt telescope. In 2008, it peaked at 15th magnitude. Though it is not expected to get brighter than 17th magnitude this time. [CBET 5270]

C/2023 K1 (ATLAS) – The ATLAS, Asteroid Terrestrial-Impact Last Alert System, 1-m telescope at Sutherland, South Africa, found C/2023 K1 on 2023 May 27 at 17th magnitude. The comet should peak at 16th magnitude this month on its way to a 2023 September 7 perihelion at 2.04 au. [CBET 5268, MPEC 2023-L19]

C/2023 H5 (Lemmon) – The Mount Lemmon Survey discovered C/2023 H5 (Lemmon) as an asteroidal object on 2023 April 19 at 20th magnitude. C/2023 H5 is a distant object ~7.5 au from the Sun at discovery and 2 years from a 2025 June 30 perihelion at 4.31 au. It should be a 16th magnitude object for most of 2025 in the northern circumpolar sky. [CBET 5272, MPEC 2023-M44]

In addition to the above comets, several apparently asteroidal objects on cometary orbits were also found. Here are some of the more interesting recent examples.

2023 MF4 – This 19-20th magnitude object was discovered by the Pan-STARRS1 telescope on 2023 June 19. Pre-discovery observations from 2022 and April, May, and June of this year were also found. A quick look at all photometry submitted to the MPC seems to follow an asteroidal brightening trend suggesting the object is inactive. MF4 is a Damocloid object with perihelion on 2024 April 22, at 2.79 au, and an orbital period of ~160 years. If it remains inactive, a peak brightness at 18-19th magnitude should occur in September 2024. Assuming an albedo of 0.04, its absolute magnitude of 14.4 yields a diameter of 8.8 km.

2023 JW18 – Yet another Pan-STARRS1 find, 2023 JW18 was found on 2023 May 1 at 22nd magnitude. JW18 has an orbital period of ~114 years and a perihelion occurring on 2023 October 13, at 4.53 au. The object is already close to its peak brightness. Assuming an albedo of 0.04, its absolute magnitude of 14.6 yields a diameter of 8.8 km.

2023 JM3 – Keeping with the trend, the Pan-STARRS1telescope also found 2023 JM3. First seen on 2023 May 15, at 21st magnitude, JM3 is still over a year out from its 2024 August 19 perihelion at 4.25 au when it should peak around 20th magnitude. The comet has a ~44-year orbital period. Assuming an albedo of 0.04, its absolute magnitude of 14.5 yields a diameter of 8.4 km.

2023 GC4 – And let's make it 4 asteroidal objects on cometary orbits found by Pan-STARRS1. GC4 was discovered on 2023 April 6, at 21st magnitude. There have only been a few observations of this object submitted to the MPC, but they suggest an object brightening faster than expected for an inactive asteroid. So perhaps GC4 is an active comet. We should know more as it approaches perihelion on 2023 December 24, at 2.68 au.

A/2023 H4 – For A/2023 H4, the 1.8-m Pan-STARRS2 telescope on Haleakala made the discovery; on 2023 April 23 at 21st magnitude. The object will unlikely get much brighter as it is already close to its August 8 perihelion at 2.12 au. [MPEC 2023-L26]

Comets Brighter than Magnitude 10

C/2023 E1 (ATLAS)

Discovered 2023 March 1 by the Asteroid Terrestrial-Impact Last Alert System program from Sutherland, South Africa.
Halley-family comet

Orbit (from Minor Planet Center, MPEC 2023-N01)

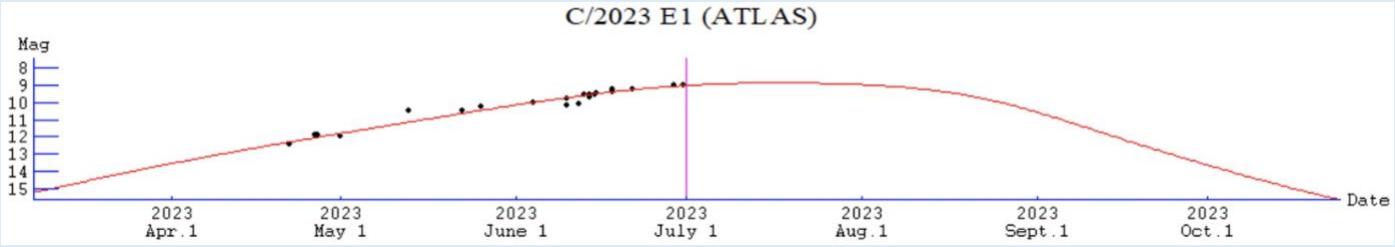
```
    C/2023 E1 (ATLAS)
Epoch 2023 Feb. 25.0 TT = JDT 2460000.5
T 2023 July 1.10689 TT                                  Rudenko
q   1.0265962            (2000.0)            P              Q
n   0.01157920      Peri.  105.89382     +0.06328453     +0.98427854
a  19.3501214       Node   164.57539     -0.97142770     +0.02288262
e   0.9469463       Incl.   38.31471     +0.22874284     -0.17513461
P  85.1
From 1290 observations 2022 Dec. 25-2023 June 29, mean residual 0".5.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
C/2023 E1 (ATLAS)                                                    Max El
                                                                      (deg)
    Date       R.A.    Decl.      r       d     Elong  Const  Mag  40N  40S
2023-Jul-01  14 39  +79 33    1.027   0.646     72E    UMi    9.0   50    0
2023-Jul-06  15 43  +80 32    1.030   0.616     73E    UMi    9.0   49    0
2023-Jul-11  17 04  +80 36    1.039   0.583     75E    UMi    8.9   49    0
2023-Jul-16  18 25  +79 22    1.056   0.548     78E    Dra    8.9   51    0
2023-Jul-21  19 30  +76 42    1.077   0.513     82E    Dra    8.9   53    0
2023-Jul-26  20 16  +72 42    1.105   0.478     87E    Dra    8.9   57    0
2023-Jul-31  20 48  +67 22    1.137   0.444     94M    Cep    9.0   63    0
2023-Aug-05  21 10  +60 38    1.174   0.415    102M    Cep    9.1   70    0
```

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 =  9.8 + 5 log d + 17.0 log r
where "t" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Measurements Contributed to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL     ICQ    CODE  Observer Name
             (UT)                      T         Dia  DC  LENG  PA
   2023E1  2023 06 30.45  S  9.4 TK 12.5B    30   6    2            ICQ xx HER02 Carl Hergenrother
   2023E1  2023 06 28.96  S 10.1 TK 32.0L 5  80   4    3                 PIL01 Uwe Pilz
   2023E1  2023 06 24.97  S 10.0 TI 35.3L    88   4    3            ICQ XX HAR11 Christian Harder
   2023E1  2023 06 21.44  S  9.7 TK 12.5B    30   5    3            ICQ xx HER02 Carl Hergenrother
   2023E1  2023 06 18.22  S 10.5    35.6T11  71   3    2            ICQ xx ROSxx Michael Rosolina
   2023E1  2023 06 17.96  S 10.5 TK 32.0L 5  48   4    2                 PIL01 Uwe Pilz
   2023E1  2023 06 17.96  S  9.8:TI 35.3L    88   4    2/           ICQ XX HAR11 Christian Harder
   2023E1  2023 06 15.17  M  9.9 TK 12.5B    30   4    2            ICQ xx HER02 Carl Hergenrother
   2023E1  2023 06 13.94  S  9.7 TK  7.0B    15   9    3            ICQ XX GON05 Juan Jose Gonzalez Suarez
   2023E1  2023 06 13.92  S  9.9 TK 20.3T10  77   7    2/           ICQ XX GON05 Juan Jose Gonzalez Suarez
   2023E1  2023 06 11.97  S 10.5 TI 29.8L 4  79   3.1  2/           ICQ XX HAR11 Christian Harder
   2023E1  2023 06 09.98  S 10.6 TI 29.8L 4  79   3.2  2/           ICQ XX HAR11 Christian Harder
```

Next year two Halley-family comets return to perihelion, with 12P/Pons-Brooks and 13P/Olbers returning for the first time since 1954 and 1956, respectively. Though only discovered in March of this year with the Asteroid Terrestrial-impact Last Alert System (ATLAS) 0.5-m f/2 Schmidt reflector at Sutherland, South Africa, C/2023 E1 (ATLAS) is making its first return after 85 years, with its last (unseen) perihelion being back in 1937.

E1 is not as bright as next year's 12P and 13P returns at 4th and 7th magnitude. With a perihelion on 2023 July 1 at 1.03 au and a close approach to Earth on August 18 at 0.37 au, E1 should reach its peak brightness this month.

Several visual observers (Juan Jose Gonzalez Suarez, Christian Harder, Carl Hergenrother, Michael Rosolina, and Uwe Pilz) were able to see the comet in June, with most finding the comet between magnitude 9.4 and 10.6. The coma was described as diffuse (DC = 2-3) and relatively large (between 3' and 9' in diameter). Images taken by Dan Bartlett, Eliot Herman, and Chris Schur found a gassy blue-green round coma with a long, thin gas tail. The gas-rich nature of the coma was confirmed visually by Uwe Pilz, who noted it was greatly enhanced when observed with a Swan Comet filter.

As was the case last month, C/2023 E1 is a far northern object and only visible from the northern hemisphere as it moves through Ursa Minor (Jul 1-13), Draco (13-29), and Cepheus (29-31). Since April, a consistent brightening rate of 2.5n ~ 17 has been observed. If this rate continues past perihelion, it suggests the comet may fade quickly. Luckily the comet will be approaching the Earth in July, so any fading due to an increasing Sun-comet distance should be balanced by the decreasing Earth-comet distance, keeping the comet around magnitude 9 all month.

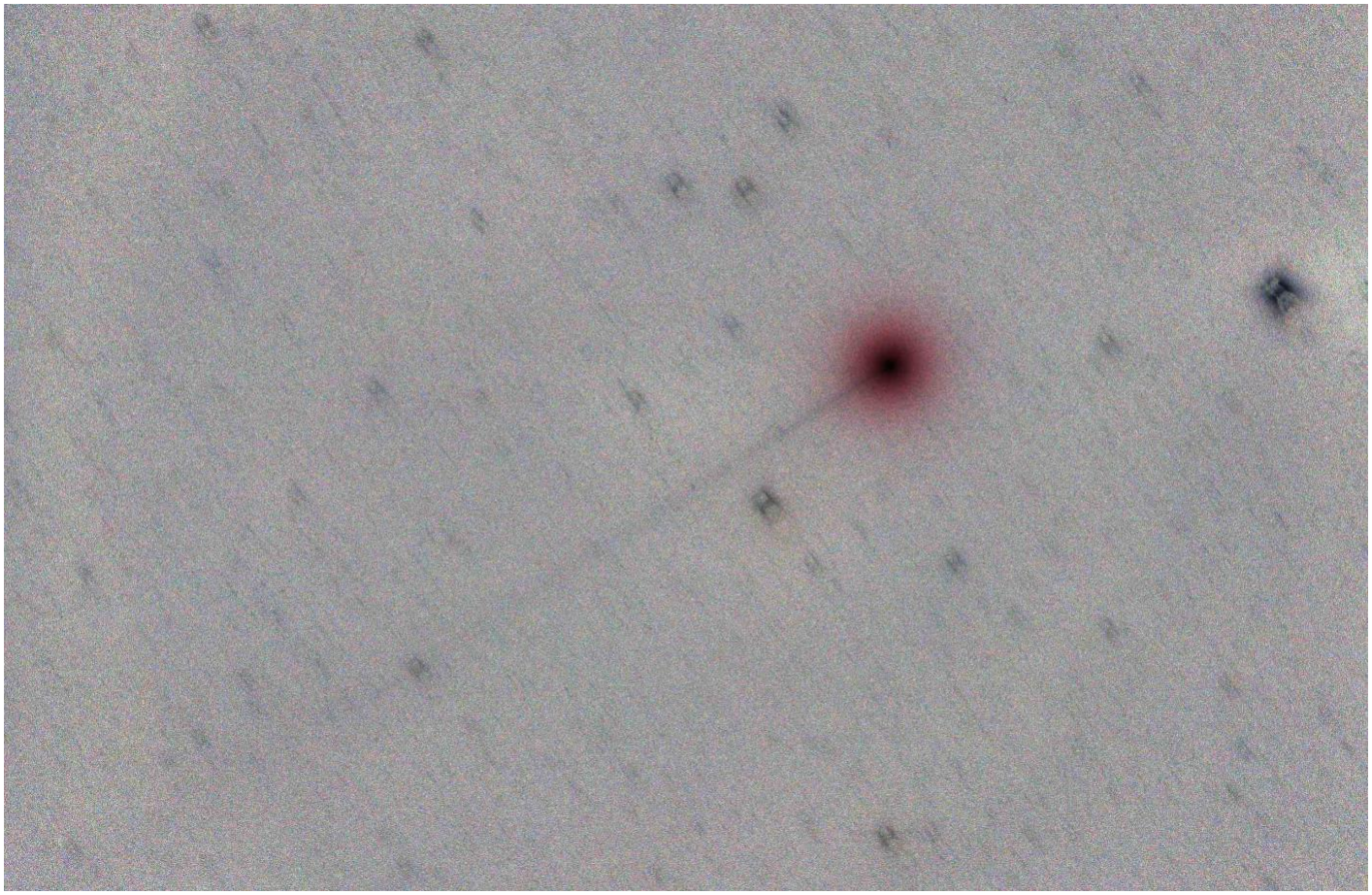


Figure 1: Dan Bartlett (June Lake, CA) created this inverted image of C/2023 E1 (ATLAS) showing off the comet's tail. The image was taken on 2023 June 17 with a Celestron RASA11.

C/2021 T4 (Lemmon)

Discovered 2021 October 7 by the Mount Lemmon Survey
Dynamically new long-period comet

Orbit (from Minor Planet Center, MPEC 2023-N01)

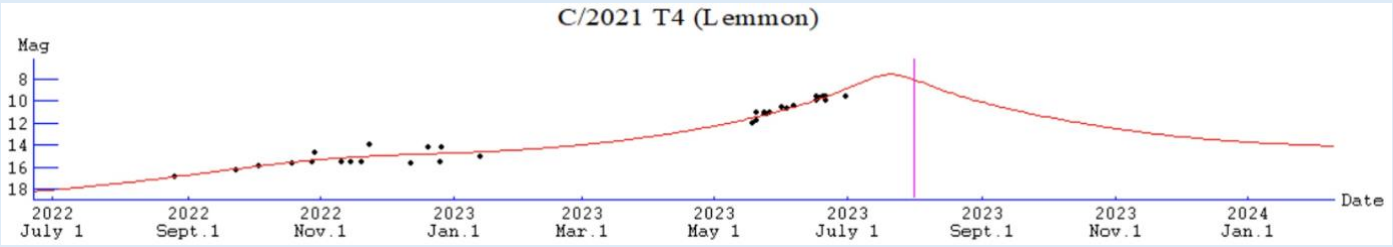
```
    C/2021 T4 (Lemmon)
Epoch 2023 Feb. 25.0 TT = JDT 2460000.5
T 2023 July 31.51639 TT                                  Rudenko
q   1.4833030           (2000.0)            P              Q
z  -0.0000321      Peri.  329.80287     +0.28278202     -0.90355220
 +/-0.0000011      Node   257.87430     -0.80094238     -0.40709191
e   1.0000476      Incl.  160.77621     -0.52775528     +0.13367721
From 1223 observations 2021 Aug. 7-2023 June 21, mean residual 0".6.
1/a(orig) = +0.000007 AU**-1, 1/a(fut) = +0.000949 AU**-1.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
C/2021 T4 (Lemmon)                                                  Max El
                                                                    (deg)
    Date       R.A.    Decl.      r       d     Elong  Const  Mag  40N  40S
2023-Jul-01  00 08  -28 30    1.544   0.903    106M   Scl    8.9   10   79
2023-Jul-06  23 45  -34 35    1.526   0.765    117M   Scl    8.4    9   85
2023-Jul-11  23 04  -42 35    1.511   0.648    129M   Gru    8.0    6   87
2023-Jul-16  21 49  -51 24    1.499   0.567    140M   Ind    7.7    0   78
2023-Jul-21  19 45  -56 00    1.491   0.542    144E   Tel    7.6    0   74
2023-Jul-26  17 42  -51 58    1.485   0.578    135E   Ara    7.7    0   78
2023-Jul-31  16 29  -43 58    1.483   0.666    122E   Nor    8.0    5   86
2023-Aug-05  15 49  -36 40    1.485   0.788    110E   Lup    8.4    9   87
```

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 =  7.1 + 5 log d + 10.5 log r
where "t" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Measurements Contributed to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ    CODE  Observer Name
              (UT)                    T          Dia  DC  LENG  PA
   2021T4  2023 06 30.46  S 10.0 TK 12.5B    30   3    3            ICQ xx HER02 Carl Hergenrother
   2021T4  2023 06 21.44  S 10.3 TK 12.5B    30   3    3            ICQ xx HER02 Carl Hergenrother
   2021T4  2023 06 21.33  M 11.0 TK 30.0L 5  88   3    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 06 20.32  M 11.0 TK 30.0L 5  88   3    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 06 18.34  M 11.1 TK 30.0L 5  88   3    4            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 06 16.74 xM 10.2 AQ 40.0L 4  59   4.3  5            ICQ XX WYA   Christopher Wyatt
   2021T4  2023 06 06.33  M 11.9 AQ 30.0L 5  88   2    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 06 03.33  M 12.1 AQ 30.0L 5 100   1    4/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 05 26.33  M 12.4 AQ 30.0L 5 100   1    4/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 05 25.33  M 12.6 AQ 30.0L 5 100   1    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 05 24.32  M 12.6 AQ 30.0L 5 121   1    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2021T4  2023 05 23.33  M 12.7 AQ 30.0L 5 121   1    4            ICQ XX DES01 Jose Guilherme de Souza Aguiar
```

C/2021 T4 (Lemmon) should be the brightest comet this month. Due to its location at far southern declinations, it will be very well placed for southern hemisphere observers. For those of us up north, it will be hugging the southern horizon as its highly retrograde (160 deg) orbit carries it from the morning sky to opposition to the evening sky through the constellation of Sculptor (July 1-8), Grus (8-15), Indus (15-19), Telescopium (19-24), Ara (24-29), Scorpius (29-30), and Norma (30-31).

For observers in most of Europe and northern North America, it will be below the horizon for the second half of July, unfortunately, when it will be at its brightest. Observers in southern North America might be able to spot it above their southern horizon. However, it will compete against the usual hazy air of summer and the increasingly more common forest fire smoke.

Visual observers (Jose Guilherme de Souza Aguiar, Carl Hergenrother, and Chris Wyatt) watched T4 brighten from magnitude 12.1 to 10.0 throughout June. By the end of the month, the moderately condensed coma (DC = 3-5) reached 3'-4' in diameter.

The combination of its closest approach to Earth on July 20 at 0.54 au and perihelion on July 31 at 1.48 au brings T4 to its brightest in July. With an original semi-major axis of +0.000007 au^{-1}, the comet appears to be making its first approach close to the Sun. Despite being a dynamically new comet, it has brightened at a healthy rate of 2.5n ~ 10.5 over the past 10 months. If this continues, T4 should start the month at magnitude 8.9, reach a maximum brightness around 7.6 at mid-month and then fade to 8.0 by the end of the month.

C/2020 V2 (ZTF)

Discovered 2020 November 2 by the ZTF survey
Dynamically new long-period comet

Orbit (from Minor Planet Center, MPEC 2023-N01)

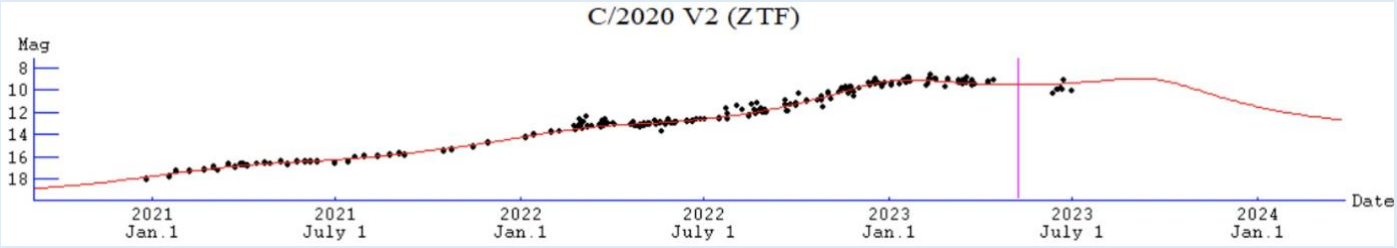
```
    C/2020 V2 (ZTF)
Epoch 2023 Feb. 25.0 TT = JDT 2460000.5
T 2023 May 8.56971 TT                                  Rudenko
q   2.2278428           (2000.0)            P              Q
z  -0.0004177      Peri.  162.43150     +0.69787213     +0.59390410
 +/-0.0000002      Node   212.37212     +0.53387549     -0.05876956
e   1.0009305      Incl.  131.61089     +0.47744261     -0.80238648
From 4350 observations 2020 Apr. 18-2023 June 19, mean residual 0".5.
1/a(orig) = -0.000142 AU**-1, 1/a(fut) = -0.000380 AU**-1.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
C/2020 V2 (ZTF)                                                    Max El
                                                                    (deg)
    Date       R.A.    Decl.      r       d     Elong  Const  Mag  40N  40S
2023-Jul-01  03 09   +14 59    2.311   2.837     49M    Ari   9.4    9   23
2023-Jul-06  03 10   +13 44    2.327   2.767     54M    Ari   9.4   13   26
2023-Jul-11  03 11   +12 22    2.344   2.693     59M    Ari   9.3   16   29
2023-Jul-16  03 12   +10 54    2.362   2.616     64M    Ari   9.3   20   33
2023-Jul-21  03 12   +09 17    2.382   2.537     69M    Cet   9.3   24   36
2023-Jul-26  03 12   +07 31    2.402   2.456     75M    Cet   9.2   28   39
2023-Jul-31  03 10   +05 36    2.424   2.374     80M    Cet   9.2   32   42
2023-Aug-05  03 09   +03 28    2.447   2.293     86M    Cet   9.1   35   45
```

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 = -1.4 + 5 log d + 15.9 log r [up to T-580 days
m1 =  3.2 + 5 log d + 10.1 log r [between T-580 and T-220 days]
m1 =  4.0 + 5 log d +  8.6 log r [T-220 days and onward, assumed]
```



Recent Magnitude Measurements Contributed to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ    CODE  Observer Name
             (UT)                    T         Dia  DC  LENG  PA
   2020V2  2023 06 30.46  S 10.5 TK 12.5B    30   2    3           ICQ xx HER02 Carl Hergenrother
   2020V2  2023 06 21.35  M 10.4 TK 30  L 5  88   2    2/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 06 20.34  M 10.3 TK 30  L 5  88   2    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 06 18.35 xM 10.4 TK 30  L 5  88   2    4           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2020V2  2023 06 16.79 xM 10.6 AQ 40.0L 4  59   2.5  6           ICQ XX WYA   Christopher Wyatt
   2020V2  2023 06 12.35 xM 10.7 TK 27  L 5  55   2    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
```

C/2020 V2 (ZTF) is now once again being observed following solar conjunction in early May. Due to the comet's large perihelion distance of 2.23 au, its brightness isn't as sensitive to the perihelion date (May 8). After peaking around magnitude 9.1 in January, it is expected to reach a second peak around magnitude 9.0 in August/September. The slightly brighter second peak is due to the comet being a little closer to Earth in August/September (1.9 vs 2.1 au). V2 should have been around magnitude 9.5 in June, but most visual observers found it about 1 magnitude fainter. As a result, the above prediction may be too bright. It is now visible from both hemispheres in the morning sky as it moves through Aries (Jul 1-17) and Cetus (17-31).

Comets Between Magnitude 10 and 12

C/2017 K2 (PANSTARRS)

Discovered 2017 May 21 by the Pan-STARRS survey with the Pan-STARRS1 1.8-m on Haleakala
Dynamically new long-period comet

Orbit (from Minor Planet Center, MPEC 2023-H131)

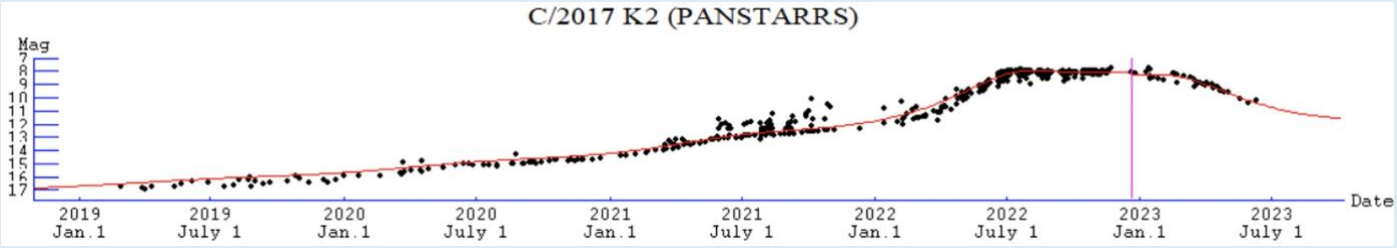
```
    C/2017 K2 (PANSTARRS)
Epoch 2023 Feb. 25.0 TT = JDT 2460000.5
T 2022 Dec. 19.68872 TT                                  Rudenko
q   1.7968936           (2000.0)            P               Q
z  -0.0004373      Peri.  236.20152     +0.01818934     +0.04921873
 +/-0.0000001      Node    88.23602     -0.18087333     +0.98247050
e   1.0007857      Incl.   87.56336     -0.98333819     -0.17980330
From 11224 observations 2015 Nov. 23-2022 Sept. 27, mean residual 0".5.
1/a(orig) = +0.000059 AU**-1, 1/a(fut) = +0.001151 AU**-1.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

C/2017 K2 (PANSTARRS)								Max El (deg)	
Date	R.A.	Decl.	r	d	Elong	Const	Mag	40N	40S
2023-Jul-01	05 59	-11 34	2.957	3.720	35M	Lep	10.7	0	11
2023-Jul-06	06 04	-11 01	3.002	3.761	36M	Lep	10.8	0	14
2023-Jul-11	06 09	-10 31	3.046	3.798	36M	Mon	10.9	0	16
2023-Jul-16	06 14	-10 05	3.091	3.831	37M	Mon	10.9	0	18
2023-Jul-21	06 18	-09 43	3.136	3.858	39M	Mon	11.0	0	21
2023-Jul-26	06 22	-09 23	3.181	3.881	40M	Mon	11.1	0	23
2023-Jul-31	06 26	-09 07	3.226	3.899	42M	Mon	11.1	0	25
2023-Aug-05	06 30	-08 53	3.271	3.912	44M	Mon	11.2	0	27

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 =  4.4 + 5 log d +  6.2 log r [Before perihelion]
m1 =  4.5 + 5 log d +  7.2 log r [After perihelion]
where "t" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Estimates submitted to the ALPO Comets Section

```
Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ CODE Observer Name
               (UT)                    T         Dia  DC  LENG  PA
   2017K2  2023 06 10.34 xM 10.8 AQ 40.0L 4 108   2    5/           ICQ XX WYA   Christopher Wyatt
```

As has been the case for many months, C/2017 K2 (PANSTARRS) is only visible from the southern hemisphere. Now 7 months from a December 2022 perihelion at 1.80 au, K2 is slowly fading as it recedes into the depths of the outer solar system. Surprisingly, its brightening/fading rate has been relatively constant for a comet that has been observed for years. Since perihelion, it has been fading a little faster than it brightened.

Chris Wyatt observed K2 on June 10 at magnitude 10.8 with a moderately condensed 2' coma. July should see a fading to magnitude 11.1 as its moves through the morning constellations of Lepus (Jul 1-6) and Monoceros (6-31).

Fainter Comets of Interest

C/2023 A3 (Tsuchinshan-ATLAS)

Discovered on January 9 at the Purple Mountain Observatory's XuYi Station and on February 22 by ATLAS
Dynamically new long-period comet

Orbit (from Minor Planet Center, MPEC 2022-N01)

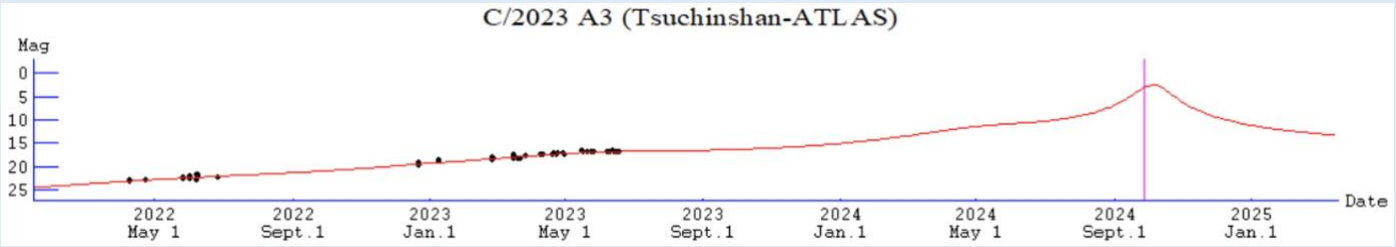
```
    C/2023 A3 (Tsuchinshan-ATLAS)
Epoch 2023 Feb. 25.0 TT = JDT 2460000.5
T 2024 Sept. 27.64391 TT                                  Rudenko
q   0.3911872           (2000.0)            P                Q
z  -0.0004926      Peri.  308.48937     +0.36139360     +0.90086794
 +/-0.0000230      Node    21.55724     +0.91856209     -0.29968943
e   1.0001927      Incl.  139.11850     -0.16011983     +0.31404331
From 1693 observations 2022 Apr. 9-2023 June 30, mean residual 0".3.
1/a(orig) = -0.000228 AU**-1, 1/a(fut) = -0.000200 AU**-1.
```

Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

```
C/2023 A3 (Tsuchinshan-ATLAS)                                          Max El
                                                                        (deg)
    Date      R.A.   Decl.     r       d    Elong  Const  Mag  40N   40S
2023-Jul-01  14 11  +03 09   6.141   5.716   110E   Vir  16.7   45    47
2023-Jul-06  14 09  +03 02   6.093   5.747   105E   Vir  16.7   42    47
2023-Jul-11  14 07  +02 53   6.045   5.781   100E   Vir  16.7   39    47
2023-Jul-16  14 06  +02 43   5.997   5.816    95E   Vir  16.6   37    47
2023-Jul-21  14 05  +02 31   5.949   5.852    90E   Vir  16.6   34    47
2023-Jul-26  14 04  +02 18   5.901   5.888    85E   Vir  16.6   32    47
2023-Jul-31  14 03  +02 04   5.852   5.924    81E   Vir  16.6   29    45
2023-Aug-05  14 03  +01 49   5.804   5.958    76E   Vir  16.6   27    44
```

Comet Magnitude Formula (from ALPO and COBS data)

```
m1 = -16.6 + 5 log d + 35.0 log r [Through T-650 days]
m1 =  -2.3 + 5 log d + 19.0 log r [Between T-650 and T-490 days]
m1 =   6.6 + 5 log d +  8.0 log r [After T-490 days, assumed]
where "t" is the date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au
```



Recent Magnitude Measurements Contributed to the ALPO Comets Section

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Recent Magnitude Measurements in ICQ format:
Comet Des  YYYY MM DD.DD     Mag SC APER FL POW    COMA     TAIL    ICQ    CODE  Observer Name
               (UT)                    T         Dia  DC  LENG  PA
   2023A3  2023 06 13.89  V 16.9 U4 50.0Y 7a600   0.2       0.2m120 ICQ xx HER02 Carl Hergenrother
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2024 is looking to be an exciting year for bright comet observers. In addition to the aforementioned returning Halley-family comets, 12P/Pons-Brooks and 13P/Olbers, the recently discovered long-period comet C/2023 A3 (Tsuchinshan-ATLAS) holds some promise to become a naked eye object in September and October of 2024.

C/2023 A3 (Tsuchinshan-ATLAS) was discovered at 19th magnitude at the Purple Mountain Observatory's XuYi Station in China on 2023 January 9. The IAU traditionally uses the anglicized name "Tsuchinshan" for the Purple Mountain Observatory. After discovery, it was placed on the MPC NEOCP but was removed at the end of January due to a lack of follow-up. The ATLAS program independently discovered the comet on February 22 at 18th magnitude. Hence the name "Tsuchinshan-ATLAS."

Before making predictions about Tsuchinshan-ATLAS and its future behavior, let's start with what we know. Perihelion occurs on 2024 September 28 at a relatively small 0.39 au. At that time, the comet will be close to the Sun in the sky. That means competing with a rapidly brightening dawn sky in the northern hemisphere. Conditions will be better from the Southern hemisphere, with the comet rising a few degrees above the horizon before the start of astronomical twilight. On the date of perihelion, the comet will only be 22 degrees from the Sun and drawing closer to the Sun in the sky, making it a challenging observation from both hemispheres.

On October 10, a minimum solar elongation of 3 degrees will be reached, with the comet being almost directly between the Earth and Sun and observable in SOHO LASCO coronagraph images. Its phase angle will also reach a maximum of 173 degrees, possibly resulting in a few magnitudes of enhanced brightness due to the forward scattering of dust. Two or three days after that, northern observers with flat horizons and clear skies may be able to pick up the comet low in the evening sky. Southern hemisphere observers will need to wait a few more days to see Tsuchinshan-ATLAS against a dark sky. By then, the phase angle will have decreased, so forward scattering will be less of a factor.

Observability around the time of perihelion and at high phase angles is a mixed bag. Working against the comet is its placement against a bright sky close to the horizon [think C/2020 F3 (NEOWISE) during the first days of July 2020]. Working for the comet is its large phase angle [examples include C/2006 P1 (McNaught), C1975 V1 (West), C/1927 X1 (Skjellerup-Maristany), C/1910 A1 (Great January Comet), C/1861 J1 (Great Comet of 1861), 1P/Halley at many of its non-1986 returns]. One major caveat, Tsuchinshan-ATLAS must be a dust-rich object for forward scattering by dust at large phase angles to boost its brightness appreciably.

Working against the comet is the fact that it appears to be dynamically new. Though dynamically new comets can become nice, or even Great, comets [for example, the above-mentioned C/2006 P1 (McNaught)], cometary history is strewn with once-promising dynamically new comets that severely disappointed early predictions [C/1941 (Cunningham), C/1973 E1 (Kohoutek), C/1989 X1 (Austin)]. Being dynamically new also increases the chance of the comet disintegrating [we all remember C/2012 S1 (ISON)].

A combination of photometry submitted to the Minor Planet Center, COBS, and the ALPO found the comet brightening at a rapid rate of 2.5n ~ 35 between April 2022 and January 2023 and 2.5n ~ 19 between January and May 2023. Since May, the rate of brightening seems to have slowed considerably. For the ephemeris above, I assumed a 2.5n = 8.0 rate going forward. This makes the comet a magnitude 16.5 to 17.0 object this month as it moves through Virgo in the evening sky.

We still have a lot of time to watch Tsuchinshan-ATLAS evolve and brighten. Time will tell…

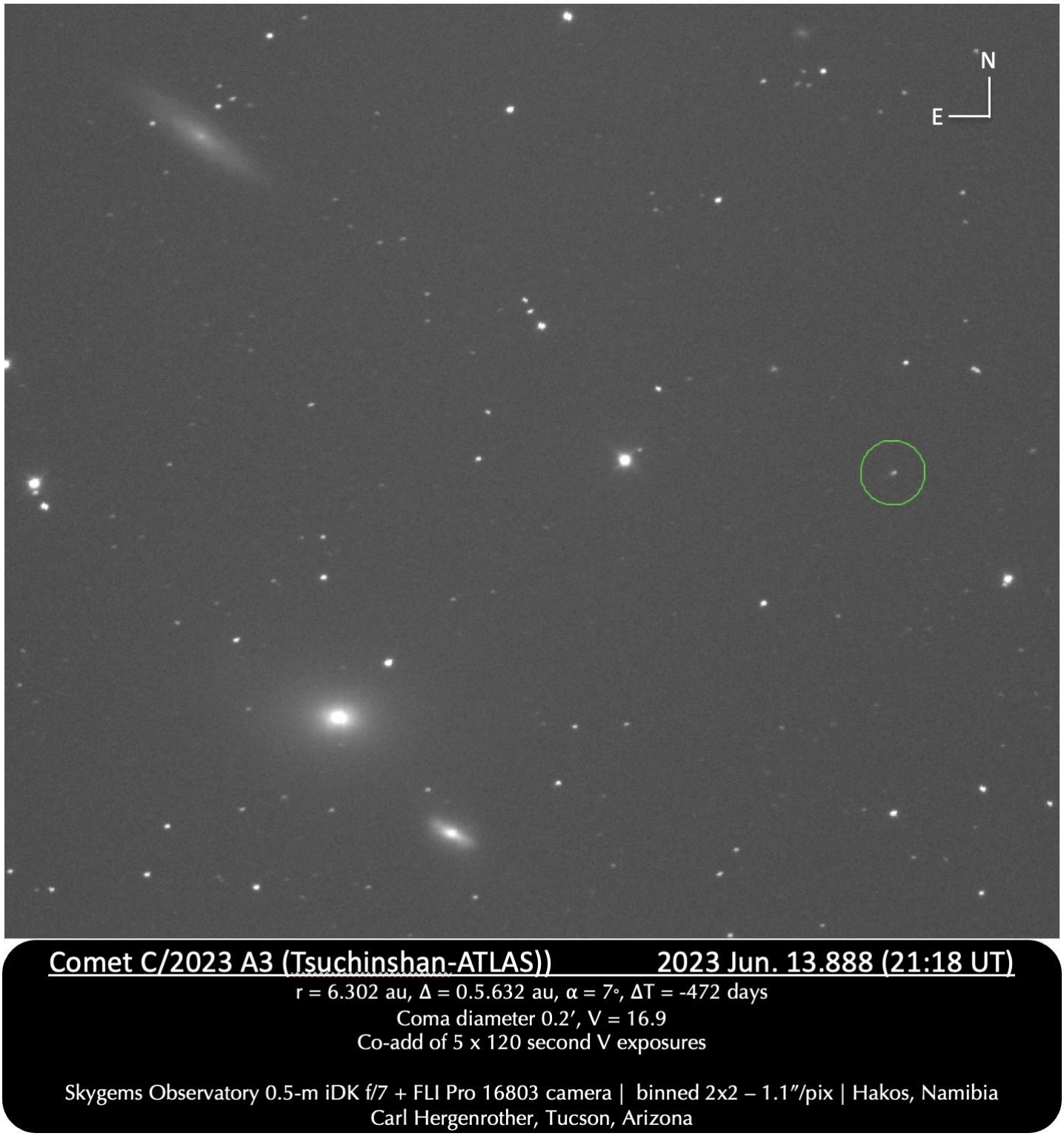

Figure 2 - Your Section coordinator used the 0.5-m at the Skygems Observatory site in Hakos, Namibia, to image C/2023 A3 (Tsuchinshan-ATLAS) as it drifted near the bright galaxy trio of NGC 5574, 5576, and 5577.