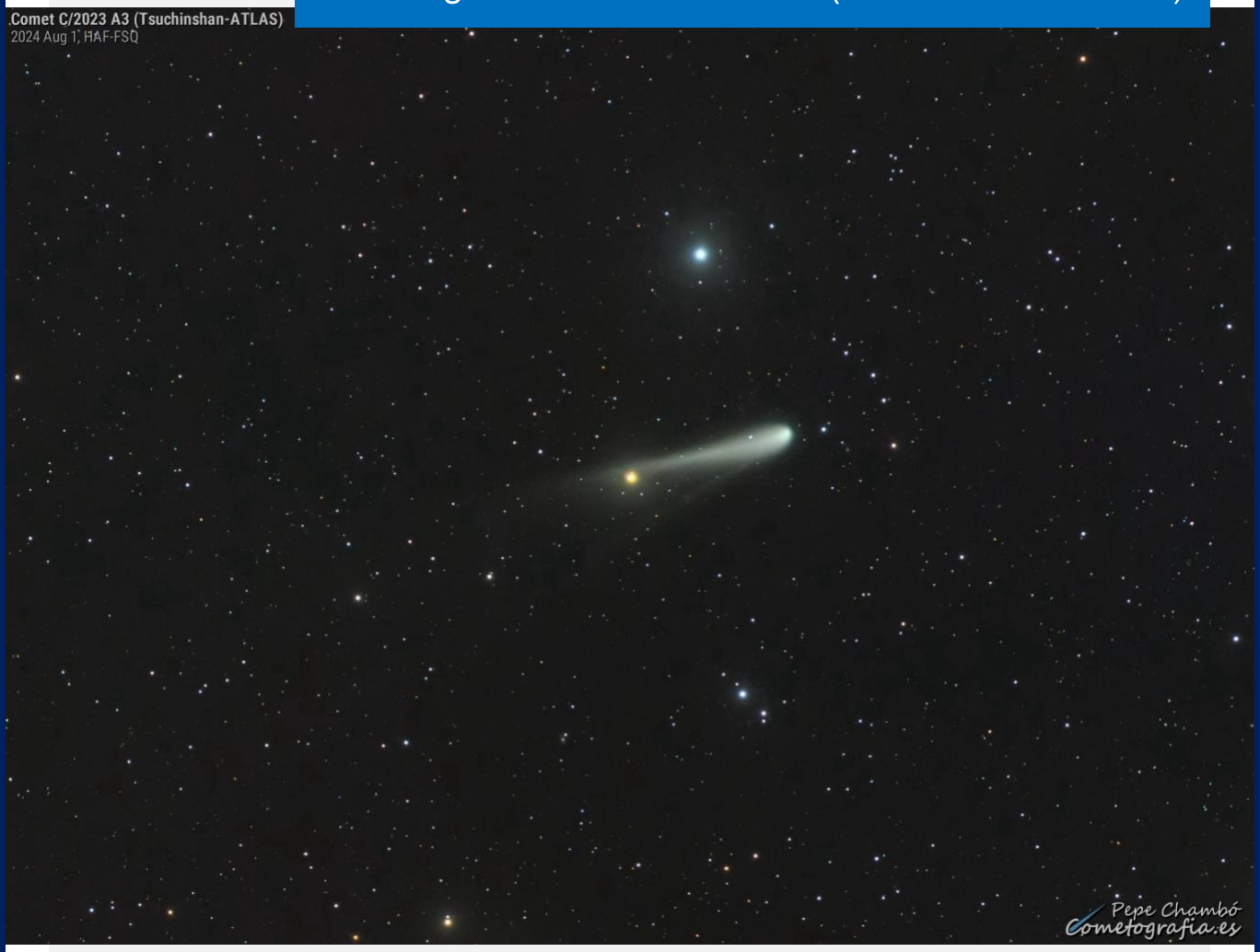
September 2024

ALPO Comet News

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

The stage is set for C/2023 A3 (Tsuchinshan-ATLAS)



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On the Front Cover:

C/2023 A3 (Tsuchinshan-ATLAS) displays both a dust and gas tail in this image by José J. Chambó from 2024 August 1, at 17:52 UT. The image was a 5x180-s composite taken with a Takahashi FSQ106ED f/5.0, and Moravian C3-61000 camera from Farm Hakos (Namibia).

https://cometografia.es
https://cometografia.es/2023a3-tsuchinshan-atlas-2024-08-01/

The monthly ALPO Comet News PDF can be found on the ALPO Comets Section website (in the Comets Section Image Gallery). A shorter version of this report is posted on a dedicated Cloudy Nights forum (https://www.cloudynights.com/topic/935232-alpo-comet-news-for-september-2024/). 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

The stage is set for C/2023 A3 (Tsuchinshan-ATLAS), which will arrive at the perihelion on September 27. In August, the comet continued to slowly brighten, but otherwise, it looked healthy. The STEREO-A spacecraft took the last observations on August 21, with the comet now too close to the Sun to be observed.

Assuming the comet continues to brighten and not disintegrate, it should become observable again during the second half of September, at least for those clear, unobstructed eastern morning horizons. The comet will be competing with a rapidly brightening dawn sky. It should be within range of imagers, but will it be bright enough for visual observations?

The real show will be in October, when the comet may become a short-lived daylight comet from October 8 to 10 and then a nice evening object starting around October 13.

Two other comets are expected to be brighter than 12th magnitude in September. 13P/Olbers is a northern hemisphere object fading from 8th to 9th magnitude in the evening sky. 12P/Pons-Brooks is a southern hemisphere object fading from 10-11th magnitude, also in the evening sky.

Last month, the ALPO Comets Section received 103 images and 167 magnitude estimates of 22 comets: C/2023 V4 (Camarasa-Duszanowicz), C/2023 C2 (ATLAS), C/2023 A3 (Tsuchinshan-ATLAS), C/2022 N2 (PANSTARRS), C/2021 S3 (PANSTARRS), C/2021 G2 (ATLAS), C/2020 V2 (ZTF), C/2020 K1 (PANSTARRS), P/2010 WK (LINEAR), 328P/LONEOS-Tucker, 305P/Skiff, 302P/Lemmon-PANSTARRS, 146P/Shoemaker-Levy, 136P/Mueller, 133P/Elst-Pizarro, 130P/McNaught-Hughes, 125P/Spacewatch, 89P/Russell, 54P/de Vico-Swift-NEAT, 37P/Forbes, 13P/Olbers, and 12P/Pons-Brooks.

A big thanks to our recent contributors: Dan Bartlett, José J. Chambó, Michel Deconinck, Jose Guilherme de Souza Aguiar, Juan Jose Gonzalez Suarez, Christian Harder, Eliot Herman, Michael Jäger, John Maikner, Gianluca Masi, Michael Mattiazzo, Martin Mobberley, Mike Olason, Andrew Pearce, Chris Schur, and Christopher 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 lightcurves for the comets discussed in these reports and apply aperture and personal corrections to the visual observations and only personal corrections are applied to digital observations. Though we try to keep these lightcurves up to date, observations submitted just before publication may not be included in the lightcurves until next month's News. 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 the observations submitted directly to the ALPO and those initially submitted 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 and 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. 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 (UTC)

Sep 03 - New Moon
Sep 11 - First Quarter Moon
Sep 18 - Full Moon
Sep 24 - Last Quarter Moon

Comets at Perihelion

Sep 03 54P/de Vico-Swift-NEAT [q = 2.17 au, 7.4-yr period, V ~ 18, visual discovery by de Vico in 1844 (q = 1.19 au), visual re-discovery by Swift in 1894 (q = 1.39 au), photographic recovery by Klemola in 1965 (q = 1.62 au), CCD re-discovery by NEAT in 2002 (q = 2.14 au), also seen at 2009 return, missed at 2017 return, seen at 6 returns and missed at 23 returns since discovery]

Sep 06 P/2014 MG4 = 2024 K2 (Spacewatch-PANSTARRS) [q = 3.72 au, 11.2-yr period, V ~ 19-20, discovered in 2014, 2024 is 2nd observed return]

Sep 06 C/2024 G5 (Leonard) [q = 2.95 au, V ~ 19]

Sep 09 C/2021 G2 (ATLAS) [q = 4.98 au, V ~ 13-14]

Sep 14 C/2022 E2 (ATLAS) [q = 3.67 au, V ~ 11-12]

Sep 16 C/2023 TD22 (Lemmon) [q = 2.36 au, V ~ 16]

Sep 19 384P/Kowalski [q = 1.11 au, 4.9-yr period, V ~ 18, discovered in 2014, seen at 2019 return, 3 observed returns]

Sep 27 C/2023 A3 (Tsuchinshan-ATLAS) [q = 0.39 au, see much more below]

Sep 28 P/2019 M2 = 2024 C6 (ATLAS) [q = 1.07 au, 5.3-yr period, V ~ 20, discovered in 2019, passed 1.06 au from Earth in 2019, the current return is similar with an approach to 1.07 au of Earth, low activity short-period comet observed at 2 returns]

Photo Opportunities

Sep 01 - 13P/Olbers within a degree or so of the bright globular cluster pair M53 and NGC 5053
Sep 22-23 - 12P/Pons-Brooks passes over the bright Omega Centauri (NGC 5139) globular cluster!
Sep 30 - 13P/Olbers passes within 20' of 10th mag galaxy NGC 5701

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
328P/LONEOS-Tucker												
328	2024 08 01.33	C 17.7	BG	30.5H	4B	100					ICQ XX MAI01	John Maikner
305P/Skiff												
305	2024 08 11.16	C 19.7	BG	30.5H	4C	000					ICQ XX MAI01	John Maikner
305	2024 08 05.25	C 19.7	BG	30.5H	4B	520					ICQ XX MAI01	John Maikner
302P/Lemmon-PANSTARRS												
302	2024 08 24.10	C 17.6	BG	30.5H	4B	160					ICQ XX MAI01	John Maikner
146P/Shoemaker-Levy												
146	2024 08 25.07	C 14.8	AQ	50.0T	6a	240	0.8				ICQ XX PEA	Andrew Pearce
146	2024 08 24.06	C 14.7	AQ	50.0T	6a	120	0.8				ICQ XX PEA	Andrew Pearce
146	2024 08 14.07	C 15.1	AQ	50.0T	6a	120	0.7		0.5m	227	ICQ XX PEA	Andrew Pearce
146	2024 08 13.07	C 15.1	AQ	50.0T	6a	120	0.7				ICQ XX PEA	Andrew Pearce
146	2024 08 13.07	C 15.1	AQ	50.0T	6a	120	0.7				ICQ XX PEA	Andrew Pearce
146	2024 08 10.07	C 15.0	AQ	50.0T	6a	120	0.7				ICQ XX PEA	Andrew Pearce
146	2024 08 09.07	C 15.1	AQ	50.0T	6a	120	0.7				ICQ XX PEA	Andrew Pearce
146	2024 08 08.07	C 15.3	AQ	50.0T	6a	120	0.5		0.6m	240	ICQ XX PEA	Andrew Pearce
146	2024 08 07.08	C 15.2	AQ	50.0T	6a	120	0.7		0.5m	249	ICQ XX PEA	Andrew Pearce
146	2024 08 06.08	C 14.9	AQ	50.0T	6a	120	0.8				ICQ XX PEA	Andrew Pearce
146	2024 08 03.08	C 14.8	AQ	50.0T	6a	120	0.6				ICQ XX PEA	Andrew Pearce
146	2024 08 02.16	C 14.9	AQ	50.0T	6a	120	0.7				ICQ XX PEA	Andrew Pearce
136P/Mueller												
136	2024 08 13.28	C 19.1	BG	30.5H	4C	840					ICQ XX MAI01	John Maikner
136	2024 08 13.28	C 19.1	BG	30.5H	4C	840					ICQ XX MAI01	John Maikner
133P/Elst-Pizarro												
133	2024 08 26.06	C 19.2	BG	30.5H	4C	240					ICQ XX MAI01	John Maikner
130P/McNaught-Hughes												
130	2024 08 26.11	C 15.3	AQ	50.0T	6a	240	0.7		0.4m	235	ICQ XX PEA	Andrew Pearce
130	2024 08 14.00	C 15.8	AQ	50.0T	6a	180	0.7		0.7m	240	ICQ XX PEA	Andrew Pearce
130	2024 08 13.00	C 15.9	AQ	50.0T	6a	180	0.6		1.4m	238	ICQ XX PEA	Andrew Pearce
130	2024 08 09.01	C 15.6	AQ	50.0T	6a	180	0.6		1.4m	245	ICQ XX PEA	Andrew Pearce
130	2024 08 08.01	C 15.4	AQ	50.0T	6a	180	0.7		1.9m	244	ICQ XX PEA	Andrew Pearce
130	2024 08 07.01	C 15.5	AQ	50.0T	6a	180	0.7		1.3m	244	ICQ XX PEA	Andrew Pearce
130	2024 08 06.01	C 15.3	AQ	50.0T	6a	180	0.8		1.5m	245	ICQ XX PEA	Andrew Pearce
130	2024 08 03.04	C 14.7	AQ	50.0T	6a	180	0.8				ICQ XX PEA	Andrew Pearce
125P/Spacewatch												
125	2024 08 25.14	C 18.2	BG	30.5H	4D	320	1	s5	2	m263	ICQ XX MAI01	John Maikner
89P/Russell												
89	2024 08 30.80	C 15.6	AQ	50.0T	6a	240	0.8		0.3m	344	ICQ XX PEA	Andrew Pearce
89	2024 08 29.80	C 16.1	AQ	50.0T	6a	240	0.8		0.2m	327	ICQ XX PEA	Andrew Pearce
89	2024 08 26.82	C 15.6	AQ	50.0T	6a	240	0.8		0.5m	318	ICQ XX PEA	Andrew Pearce
89	2024 08 25.82	C 15.3	AQ	50.0T	6a	240	0.8		0.3m	310	ICQ XX PEA	Andrew Pearce
89	2024 08 24.93	C 15.3	AQ	50.0T	6a	240	0.8		0.2m	309	ICQ XX PEA	Andrew Pearce
89	2024 08 12.86	C 16.6	AQ	50.0T	6a	240	0.6				ICQ XX PEA	Andrew Pearce
89	2024 08 09.96	C 16.4	AQ	50.0T	6a	240	0.7				ICQ XX PEA	Andrew Pearce
89	2024 08 07.93	C 16.6	AQ	50.0T	6a	240	0.6				ICQ XX PEA	Andrew Pearce
89	2024 08 06.92	C 16.6	AQ	50.0T	6a	240	0.6				ICQ XX PEA	Andrew Pearce
89	2024 08 02.95	C 16.8	AQ	50.0T	6a	240	0.6				ICQ XX PEA	Andrew Pearce
54P/de Vico-Swift-NEAT												
54	2024 08 11.31	C 19.1	BG	30.5H	4A	800					ICQ XX MAI01	John Maikner
37P/Forbes												
37	2024 08 30.75	C 14.6	AQ	50.0T	6a	240	0.8		0.4m	124	ICQ XX PEA	Andrew Pearce
37	2024 08 28.75	C 14.7	AQ	50.0T	6a	240	0.8		0.5m	124	ICQ XX PEA	Andrew Pearce
37	2024 08 24.75	C 15.1	AQ	50.0T	6a	240	0.5				ICQ XX PEA	Andrew Pearce
37	2024 08 22.75	C 15.1	AQ	50.0T	6a	360	0.7		0.5m	119	ICQ XX PEA	Andrew Pearce
37	2024 08 10.74	C 14.5	AQ	50.0T	6a	240	0.7				ICQ XX PEA	Andrew Pearce
37	2024 08 08.74	C 15.3	AQ	50.0T	6a	240	0.7				ICQ XX PEA	Andrew Pearce
37	2024 08 03.76	C 15.5	AQ	50.0T	6a	240	0.7				ICQ XX PEA	Andrew Pearce
13P/Olbers												
13	2024 08 29.36	xM 8.3	TK	40.0L	4	59	2.8	5/	4	m 82	ICQ XX WYA	Christopher Wyatt
13	2024 08 28.84	S 8.3	TI	25.2L		62	4.5	4	13	m 25	ICQ XX HAR11	Christian Harder
13	2024 08 26.84	B 8.3:TI		25.2L		68	4	4	12	m 30	ICQ XX HAR11	Christian Harder
13	2024 08 26.14	Z 8.1	GG	5.0R	4a	180	7				ICQ XX OLAaa	Michael Olason
13	2024 08 25.15	Z 8.0	GG	5.0R	4a	180	7				ICQ XX OLAaa	Michael Olason
13	2024 08 23.87	S 6.9	TK	5.0B		10	5	5/	0.6	60	ICQ XX GON05	Juan Jose Gonzalez Suarez
13	2024 08 20.84	C 8.1	AQ	25.0L	2a	120	6.7		25.6m	59	ICQ XX PEA	Andrew Pearce
13	2024 08 18.83	C 8.2	AQ	25.0L	2a	120	6.7		17.3m	66	ICQ XX PEA	Andrew Pearce
13	2024 08 17.85	C 8.1	AQ	25.0L	2a	120	5.7		0.5	68	ICQ XX PEA	Andrew Pearce

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 13        2024 08 16.83  C  8.0 AQ 25.0L 2a120   5.7      18.2m 62 ICQ XX PEA   Andrew Pearce
 13        2024 08 14.84  C  8.3 AQ 25.0L 2a120   5.9      21.8m 64 ICQ XX PEA   Andrew Pearce
 13        2024 08 13.84  C  8.1 AQ 25.0L 2a120   5.3      28.3m 59 ICQ XX PEA   Andrew Pearce
 13        2024 08 12.90  B  7.6:TI 53.1L   113   3    5    10 m 70 ICQ XX HAR11 Christian Harder
 13        2024 08 12.84  C  8.2 AQ 25.0L 2a120   6.7      0.5   66 ICQ XX PEA   Andrew Pearce
 13        2024 08 12.15  Z  7.5 GG  5.0R 4a180   8                  ICQ XX OLAaa Michael Olason
 13        2024 08 11.89  B  7.5 TI 29.8L    65   4    4/  15  m 61 ICQ XX HAR11 Christian Harder
 13        2024 08 10.89 &M  7.6 TK  27 L 5  55   2    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
 13        2024 08 09.90  B  7.3:TI 29.8L    65   3.5  4/   7  m 65 ICQ XX HAR11 Christian Harder
 13        2024 08 08.89  E  7.5 S  10.0R15  62   2    6    3  m    ICQ XX DEC   Michel Deconinck
 13        2024 08 07.89 &M  7.3 TK  27 L 5  55   2    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
 13        2024 08 06.35 xM  7.9 TK 25.0L 5  40   4    6            ICQ XX WYA   Christian Harder
 13        2024 08 05.90  B  7.6:TI 53.1L   113   3    5   12  m 40 ICQ XX HAR11 Christian Harder
 13        2024 08 04.88  B  7.6:TI 53.1L   113   4    4/  12  m 40 ICQ XX HAR11 Christian Harder
 13        2024 08 02.90  S  6.6 TK  5.0B    10   6    5/  0.7   50 ICQ XX GON05 Juan Jose Gonzalez Suarez
 13        2024 08 02.90  B  7.3 TI 30.0L    65   2.8  4/   10 m 40 ICQ XX HAR11 Christian Harder
12P/Pons-Brooks
 12        2024 08 30.73  C 10.7 AQ 10.6R 5a180   7.5      10.9m246 ICQ XX PEA   Andrew Pearce
 12        2024 08 29.37 xM 10.3 AQ 40.0L 4  59   3.1  3/           ICQ XX WYA   Christopher Wyatt
 12        2024 08 21.74  C 10.5 AQ 10.6R 5a180   7.5      14.8m250 ICQ XX PEA   Andrew Pearce
 12        2024 08 20.90  M 10.3 TK  27 L 5  55   1    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
 12        2024 08 19.73  C 10.3 AQ 10.6R 5a180   7        10.2m246 ICQ XX PEA   Andrew Pearce
 12        2024 08 18.73  C 10.2 AQ 10.6R 5a180   6.5      12.5m252 ICQ XX PEA   Andrew Pearce
 12        2024 08 17.73  C 10.1 AQ 10.6R 5a120   7.5      12.7m256 ICQ XX PEA   Andrew Pearce
 12        2024 08 16.73  C 10.1 AQ 10.6R 5a120   6.5      13.4m257 ICQ XX PEA   Andrew Pearce
 12        2024 08 15.90  M 10.1 TK  27 L 5  55   1    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
 12        2024 08 15.73  C 10.1 AQ 10.6R 5a120   7         9.4m253 ICQ XX PEA   Andrew Pearce
 12        2024 08 12.73  C 10.2 AQ 10.6R 5a120   6                 ICQ XX PEA   Andrew Pearce
 12        2024 08 11.73  C 10.2 AQ 10.6R 5a120   6.5       6.4m261 ICQ XX PEA   Andrew Pearce
 12        2024 08 10.90  M  9.7 TK  27 L 5  55   1    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
 12        2024 08 10.73  C 10.3 AQ 10.6R 5a120   7        11.5m266 ICQ XX PEA   Andrew Pearce
 12        2024 08 09.73  C 10.1 AQ 10.6R 5a120   7         9.4m264 ICQ XX PEA   Andrew Pearce
 12        2024 08 07.90  M  9.6 TK  27 L 5  55   1    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
 12        2024 08 06.38 xM  9.8 TK 25.0L 5  40   5.2  4            ICQ XX WYA   Christopher Wyatt
 12        2024 08 05.90  M  9.4 TK  10 B    25   1    4            ICQ XX DES01 Jose Guilherme de Souza Aguiar
 12        2024 08 05.46  V 10.1 AQ  5.0R 5a480   8.8               ICQ XX PEA   Andrew Pearce
 12        2024 08 05.40  S  9.3 TT 10.0B    25   3    3            ICQ XX MAT08 Michael Mattiazzo
 12        2024 08 04.73  C 10.0 AQ 10.6R 5a120   8.5       9.1m267 ICQ XX PEA   Andrew Pearce
 12        2024 08 03.36 xM  9.4 TK 40.0L 4  59   3.3  4   11  m280 ICQ XX WYA   Christopher Wyatt
 12        2024 08 01.90  M  9.1 TK  10 B    25   1    3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
 12        2024 08 01.38 xM  9.3 TK 25.0L 5  40   7.5  3/           ICQ XX WYA   Christopher Wyatt
 12        2024 07 31.90  M  9.0 TK  10 B    25   1    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
P/2010 WK (LINEAR)
  P2010WK  2024 08 13.37  C 19.1 BG 30.5H 4a675                     ICQ XX MAI01 John Maikner
C/2023 V4 (Camarasa-Duszanowicz)
   2023V4  2024 08 12.91  S 13.0:TI 53.1L   162   1.5  2            ICQ XX HAR11 Christian Harder
   2023V4  2024 08 12.19  Z 12.9 GG  5.0R 4a720   2                 ICQ XX OLAaa Michael Olason
   2023V4  2024 08 02.91  S 12.1 AQ 20.3T10 100   1.5  3            ICQ XX GON05 Juan Jose Gonzalez Suarez
C/2023 C2 (ATLAS)
   2023C2  2024 08 30.75  C 13.8 AQ 50.0T 6a120   0.7              ICQ XX PEA   Andrew Pearce
   2023C2  2024 08 29.38 xM 13.1 AQ 40.0L 4 182   0.6  5           ICQ XX WYA   Christopher Wyatt
   2023C2  2024 08 28.75  C 13.8 AQ 50.0T 6a120   0.8              ICQ XX PEA   Andrew Pearce
   2023C2  2024 08 24.75  C 13.9 AQ 50.0T 6a120   0.8              ICQ XX PEA   Andrew Pearce
   2023C2  2024 08 22.75  C 14.0 AQ 50.0T 6a120   0.8              ICQ XX PEA   Andrew Pearce
   2023C2  2024 08 10.92  M 13.7 AQ  30 L 5 121   1    6           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2023C2  2024 08 06.92  C 13.6 AQ 50.0T 6a120   0.6              ICQ XX PEA   Andrew Pearce
   2023C2  2024 08 03.38 xM 13.5 AQ 40.0L 4 182   0.4  5           ICQ XX WYA   Christopher Wyatt
C/2023 A3 (Tsuchinshan-ATLAS)
   2023A3  2024 08 10.90  M  8.6 TK  27 L 5  55   3    5           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2023A3  2024 08 07.90  M  8.7 TK  27 L 5  55   3    5           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2023A3  2024 08 06.37 xM  8.5 TK 25.0L 5  40   1.7  6   30  m 99 ICQ XX WYA   Christopher Wyatt
   2023A3  2024 08 06.36 xM  8.6 TK  7.0B    15   3.1  6   26  m 99 ICQ XX WYA   Christopher Wyatt
   2023A3  2024 08 06.13  Z  8.5 GG  5.0R 4a080   2.1              ICQ XX OLAaa Michael Olason
   2023A3  2024 08 05.45  V  9.4 AQ  5.0R 5a490   4.8      16.6m101 ICQ XX PEA   Andrew Pearce
   2023A3  2024 08 05.39  S  8.5 TT  7.0B    15   3    6    10 m115 ICQ XX MAT08 Michael Mattiazzo
   2023A3  2024 08 03.34 xM  8.8 TK  7.0B    15   3    5/  17  m 98 ICQ XX WYA   Christopher Wyatt
   2023A3  2024 08 02.73  C  9.6 AQ 10.6R 5a120   3.5      16.9m101 ICQ XX PEA   Andrew Pearce
   2023A3  2024 08 01.91  M  9.0 TK  10 B 5  25   3    6           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2023A3  2024 08 01.73  C  9.7 AQ 10.6R 5a120   3.5     21.3 m100 ICQ XX PEA   Andrew Pearce
   2023A3  2024 08 01.36 xM  8.9 TK  7.0B    15   2.5  5/           ICQ XX WYA   Christopher Wyatt
   2023A3  2024 08 01.35 xM  8.9 TK 25.0L 5  40   2.4  6  19   m104 ICQ XX WYA   Christopher Wyatt
   2023A3  2024 07 31.91  M  9.2 TK  27 L 5  55   2    5/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
C/2022 N2 (PANSTARRS)
   2022N2  2024 08 30.78  C 15.0 AQ 50.0T 6a120   0.8       0.7m249 ICQ XX PEA   Andrew Pearce
   2022N2  2024 08 29.79  C 15.1 AQ 50.0T 6a240   0.8       0.6m221 ICQ XX PEA   Andrew Pearce
   2022N2  2024 08 29.40 xM 14.1 AQ 40.0L 4 182   0.6  5/           ICQ XX WYA   Christopher Wyatt
```

```
   2022N2  2024 08 28.79  C 14.8 AQ 50.0T 6a240   0.9       0.8m231 ICQ XX PEA   Andrew Pearce
   2022N2  2024 08 24.80  C 15.0 AQ 50.0T 6a240   0.8       0.8m238 ICQ XX PEA   Andrew Pearce
   2022N2  2024 08 23.98  C 15.1 AQ 50.0T 6a240   0.7       0.3m234 ICQ XX PEA   Andrew Pearce
   2022N2  2024 08 12.27  Z 15.0 GG  5.0R 4a600   1                 ICQ XX OLAaa Michael Olason
   2022N2  2024 08 09.95  C 15.3 AQ 50.0T 6a120   0.7               ICQ XX PEA   Andrew Pearce
   2022N2  2024 08 08.85  C 15.5 AQ 50.0T 6a120   0.7       0.6m231 ICQ XX PEA   Andrew Pearce
   2022N2  2024 08 07.92  C 15.5 AQ 50.0T 6a240   0.6       0.8m235 ICQ XX PEA   Andrew Pearce
   2022N2  2024 08 06.92  C 15.6 AQ 50.0T 6a240   0.6       0.4m230 ICQ XX PEA   Andrew Pearce
   2022N2  2024 08 02.96  C 16.2 AQ 50.0T 6a240   0.6               ICQ XX PEA   Andrew Pearce
   2022N2  2024 08 01.87  C 15.5 AQ 50.0T 6a120   0.6               ICQ XX PEA   Andrew Pearce
C/2021 S3 (PANSTARRS)
   2021S3  2024 08 11.91  S 14.0:TI 29.8L   108   1    3            ICQ XX HAR11 Christian Harder
   2021S3  2024 08 05.92  S 13.8 TI 53.1L   162   0.7  4            ICQ XX HAR11 Christian Harder
   2021S3  2024 08 04.90  S 14.0:TI 53.1L   162   0.8  4            ICQ XX HAR11 Christian Harder
C/2021 G2 (ATLAS)
   2021G2  2024 08 29.37 xM 14.1 AQ 40.0L 4 108   0.6  5/           ICQ XX WYA   Christopher Wyatt
   2021G2  2024 08 13.74  C 14.1 AQ 50.0T 6a120   0.8               ICQ XX PEA   Andrew Pearce
   2021G2  2024 08 10.74  C 14.2 AQ 50.0T 6a120   0.7               ICQ XX PEA   Andrew Pearce
   2021G2  2024 08 08.74  C 14.2 AQ 50.0T 6a120   0.8               ICQ XX PEA   Andrew Pearce
   2021G2  2024 08 05.77  C 14.2 AQ 50.0T 6a120   0.8       4  m241 ICQ XX PEA   Andrew Pearce
   2021G2  2024 08 03.76  C 14.2 AQ 50.0T 6a120   0.7               ICQ XX PEA   Andrew Pearce
   2021G2  2024 08 03.37 xM 14.4 AQ 40.0L 4 182   0.5  5/           ICQ XX WYA   Christopher Wyatt
   2021G2  2024 08 01.81  C 14.3 AQ 50.0T 6a120   0.7               ICQ XX PEA   Andrew Pearce
C/2020 V2 (ZTF)
   2020V2  2024 08 30.76  C 14.2 AQ 50.0T 6a120   0.9               ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 29.39 xS 13.9 AQ 40.0L 4 182   0.6  3            ICQ XX WYA   Christopher Wyatt
   2020V2  2024 08 28.77  C 14.1 AQ 50.0T 6a120   1                 ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 24.79  C 14.2 AQ 50.0T 6a120   0.9               ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 23.97  C 14.1 AQ 50.0T 6a120   0.9               ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 13.84  C 14.2 AQ 50.0T 6a120   0.8               ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 12.84  C 14.3 AQ 50.0T 6a120   0.7               ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 11.85  C 14.1 AQ 50.0T 6a120   0.9               ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 09.95  C 14.3 AQ 50.0T 6a120   0.9               ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 08.86  C 14.0 AQ 50.0T 6a120   1.1               ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 07.90  C 14.3 AQ 50.0T 6a120   0.9               ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 06.91  C 14.2 AQ 50.0T 6a120   0.9               ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 05.88  C 14.2 AQ 50.0T 6a120   0.9               ICQ XX PEA   Andrew Pearce
   2020V2  2024 08 03.39 xM 14.2 AQ 40.0L 4 182   0.4  5            ICQ XX WYA   Christopher Wyatt
   2020V2  2024 08 02.95  C 14.2 AQ 50.0T 6a120   0.8               ICQ XX PEA   Andrew Pearce
C/2020 K1 (PANSTARRS)
   2020K1  2024 08 30.09  C 16.2 AQ 50.0T 6a240   0.7               ICQ XX PEA   Andrew Pearce
   2020K1  2024 08 25.10  C 15.8 AQ 50.0T 6a240   0.8               ICQ XX PEA   Andrew Pearce
   2020K1  2024 08 09.15  C 16.1 AQ 50.0T 6a240   0.6               ICQ XX PEA   Andrew Pearce
   2020K1  2024 08 07.16  C 15.5 AQ 50.0T 6a240   0.4               ICQ XX PEA   Andrew Pearce
   2020K1  2024 08 03.17  C 15.9 AQ 50.0T 6a240   0.5               ICQ XX PEA   Andrew Pearce
```

Comets News

Looking Ahead to the Next 12 Months

The chart below shows those comets expected to become brighter than magnitude 10 in 2024. The number in each date bin is the expected brightness for that date. Magnitudes are only shown for dates when the comet is above the horizon during the dark of night (between the end of astronomical twilight in the evening and the start of astronomical twilight in the morning). The only exceptions are the dates bolded in red for C/2023 A3 (Tsuchinshan-ATLAS) and C/2024 G3 (ATLAS), when the comets will only be above the horizon in bright twilight but may still be bright enough to be observed.

All brightness predictions are just that—predictions and may be off by many magnitudes.

Northern Hemisphere	09/07/24	09/17/24	09/27/24	10/07/24	10/17/24	10/27/24	11/06/24	11/16/24	11/26/24	12/06/24	12/16/24	12/26/24	01/10/25	01/20/25	01/30/25	02/09/25	02/19/25	03/01/25	03/11/25	03/21/25	03/31/25	04/10/25	04/20/25	04/30/25	05/10/25	05/20/25	05/30/25	06/09/25	06/19/25	06/29/25	07/09/25	07/19/25	07/29/25	08/08/25	08/18/25	08/28/25
13P/Olbers	8	9	9																																	
C/2023 A3 (Tsuchinshan-ATLAS)		4	3	-1	2	5	7	8	9	9																										
333P/LINEAR										9																										
C/2024 G3 (ATLAS)																																				
C/2024 E1 (Wierzchos)																	8	8	9																	
Southern Hemisphere																																				
13P/Olbers	8	9	9																																	
C/2023 A3 (Tsuchinshan-ATLAS)		4	3	-1	2	5	7	8	9	9																										
333P/LINEAR										9																										
C/2024 G3 (ATLAS)											9	7	2	8																						
C/2024 E1 (Wierzchos)														7	7	7	8	8	9																	

Figure 1 - Observability and brightness of comets expected to become brighter than magnitude 10 over the next 12 months.

Last 10 Periodic Comet Numberings (from WGSBN Bull. 4, #11)

```
486P/2018 L5 = P/2024 H1 (Leonard)                                  MPC 174198
485P/2022 U6 = P/2006 AH2 (Sheppard-Tholen)                         MPC 172941
484P/2005 XR132 (Spacewatch)                                        MPC 172941
483P/2016 J1 = P/2010 M9 = P/2020 Y6 = P/2021 K5 (PANSTARRS)        MPC 171409
482P/2014 VF40 (PANSTARRS)                                          MPC 171409
481P/2012 WA_34 = P/2024 C5 (Lemmon-PANSTARRS)                      MPC 171409
480P/2014 A3   = P/2023 X6 (PANSTARRS)                              MPC 169139
479P/2011 NO1  = P/2023 WM26 (Elenin)                               MPC 169139
478P/2023 Y3   = P/2017 BQ100 (ATLAS)                               MPC 169139
477P/2018 P3   = P/2023 V8 (PANSTARRS)                              MPC 169139
```

New Recoveries & Discoveries

P/2024 Q1 (PANSTARRS) - The Pan-STARRS asteroid survey found this 20th magnitude comet on 2024 August 27 with one of their 1.8-m reflectors at Haleakala. P/2024 Q1 is a short-period comet with a 6.6-year orbital period. Perihelion was on 2024 June 14, at 1.64 au. The comet is now fading. [CBET 5437, MPEC 2024-Q87]

P/2024 O3 = P/2010 WK = P/2010 PB_57 (LINEAR) – The "Zwicky Transient Facility" (ZTF) picked up an apparently asteroidal object in July and August at 19th magnitude. The object was identified as the returning short-period comet P/2010 WK (LINEAR). It was also linked with the apparent asteroid 2010 PB57. Perihelion was on 2024 July 20, at 1.78 au. Currently, P/2024 O3 is roughly 3 magnitudes fainter in absolute brightness

than it was in 2010. With perihelion in July, the comet should now fade. With a 13-year orbital period, it'll return to perihelion in April 2038. [CBET 5436, MPEC 2024-Q34]

P/2024 O2 (PANSTARRS) – The Pan-STARRS1 1.8-m reflector at Haleakala discovered a 20-21st magnitude short-period comet on 2024 July 28. Pan-STARRS pre-discovery observations were found from 2024 June 30. P/2024 O2 should now fade after its 2024 April 19 perihelion at 3.70 au. The comet has a 20-year orbital period. [CBET 5428, MPEC 2024-P90]

P/2024 N6 = P/2002 QU151 (NEAT-PANSTARRS) – This short-period comet was discovered in 2012 by amateur astronomer Reinder J. Bouma in archival NEAT observations from 2002. Since the object's cometary appearance was "borderline" in the 3 nights of observations from 2002, it wasn't designated as a comet but rather as an asteroid, 2002 QU151. The Pan-STARRS survey serendipitously re-discovered the object as a comet on 2024 July 9 at 20th magnitude with their Pan-STARRS2 1.8-m reflector at Haleakala. Like the previous two discoveries above, P/2024 N6 has passed its perihelion and fading [T = 2024 May 19 at 1.68 au]. With a 7-year orbital period, its next perihelion will be in December 2031. [CBET 5427, MPEC 2024-P41]

P/2024 K2 = P/2014 MG4 (Spacewatch-PANSTARRS) – Rob Weryk reported the recovery of P/2014 MG4 (Spacewatch-PANSTARRS) by the Pan-STARRS1 1.8-m in April and May 2024 images at 21st magnitude. Perihelion will be on 2024 September 6, at 3.72 au, with the comet peaking at 20th magnitude next July. S. Nakano reports in CBET 5431 that the comet passed 0.05 au from Jupiter in 1955. Before close approach with Jupiter, the comet was on a 44.8-year orbit with a perihelion at 5.29 au. The comet's current orbit has an orbital period of 11.2 years. [CBET 5431, MPEC 2024-Q26]

P/2024 C6 = P/2019 M2 (ATLAS) - Rob Weryk also reported the recovery of P/2019 M2 (ATLAS) on images taken by the Pan-STARRS1 and 2 telescopes in February, March, and April of 2024. Though it has a relatively small perihelion distance of 1.07 au (on 2024 September 28), it also appears to be a very low-activity comet and is not expected to become brighter than 20th magnitude. In 2019, it approached to 0.21 au of the Earth but never got brighter than 17-18th magnitude and displayed a very weak coma and tail. With a 5.3-year orbital period, it will be next at perihelion in January 2030. [CBET 5433, MPEC 2024-Q25]

C/2023 TD22 (Lemmon) – The Mount Lemmon Survey used their 1.5-m telescope to discover this apparently asteroidal object on 2023 October 12 at 20th magnitude. Recent observations have found cometary activity resulting in its redesignation as a comet. C/2023 TD22 (Lemmon) is a long-period comet with an orbital period of 334 years. It is currently peaking at 16th magnitude as it approaches a 2024 September 16 perihelion at 2.36 au. [CBET 5429, MPEC 2024-P107]

P/2023 JN16 (Lemmon) – Another apparently asteroidal Mount Lemmon discovery from 2023 has been observed to be active. Discovered on 2023 May 10 at 19th magnitude, P/2023 JN16 is a Main Belt comet or activated asteroid. The recognition of P/2023 JN16 as a comet resulted from a collaboration due to the effort of amateur astronomers on the Minor Planet Mailing List.

On June 1, Peter VanWylen wrote, "I'm not sure if anyone else is looking into 2023 JN16, but it's very bright to have been missed all this time and just now be discovered in 2023. It should be brighter than magnitude 22 every day of the year for many decades (regularly reaching magnitude 18) and was only just discovered. I think there's a real chance it's active or in outburst."

In response to Peter's post, observers identified a cometary activity in images taken between June 2023 and June 2024. Interestingly, the ZTF survey reported that the object was detected in images taken on 2023 April 29 but not in images taken on April 27 or earlier, suggesting an outburst, impact, or break-up event between those dates.

The object is on a typical Main Belt orbit with an orbital period of 4.4 years, perihelion at 2.30 au, semi-major axis of 2.70 au, and inclination of 3.7 degrees. [CBET 5430, MPEC 2024-Q04]

Comets Brighter than Magnitude 6

C/2023 A3 (Tsuchinshan-ATLAS)

Discovered on 2023 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 2024-P125)

```
    C/2023 A3 (Tsuchinshan-ATLAS)
Epoch 2024 Oct. 17.0 TT = JDT 2460600.5
T 2024 Sept. 27.74083 TT                                  Rudenko
q   0.3914103           (2000.0)            P                Q
z  -0.0002358      Peri.  308.49352     +0.36145497     +0.90082653
 +/-0.0000004      Node    21.55948     +0.91852494     -0.29970120
e   1.0000923      Incl.  139.11044     -0.16019439     +0.31415084
From 4947 observations 2022 Apr. 9-2024 Aug. 2, mean residual 0".4.
1/a(orig) = +0.000005 AU**-1, 1/a(fut) = -0.000036 AU**-1.
```

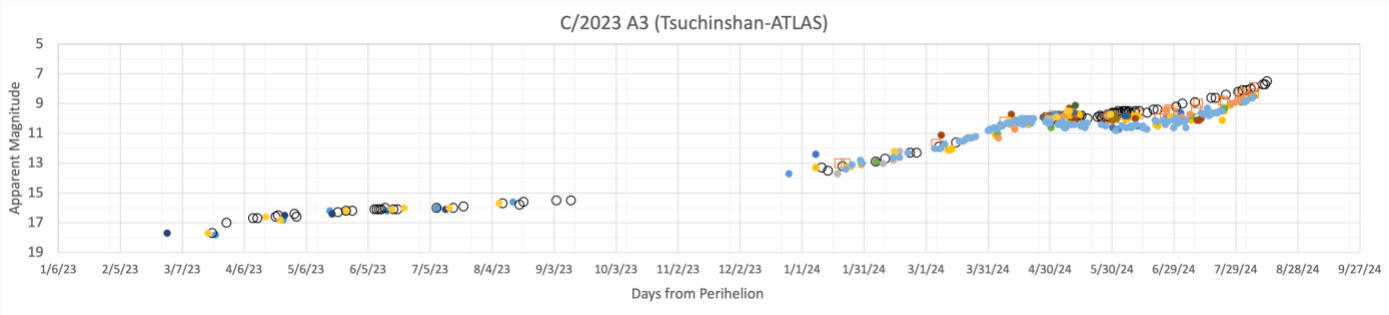
Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

C/2023 A3 (Tsuchinshan-ATLAS)

										Max El (deg)			
										Ast Twi		Nau Twi	
Date	R.A.	Decl.	r	d	Elong	Ph.Ang.	Const	Mag		40N	40S	40N	40S
2024-Sep-01	10 43	-03 17	0.781	1.743	11E	15	Sext	6.5		-25	-9	-19	-3
2024-Sep-06	10 41	-04 01	0.684	1.642	11M	17	Sext	6.0		-21	-7	-15	-1
2024-Sep-11	10 38	-04 44	0.589	1.519	13M	23	Sext	5.5		-17	-4	-10	2
2024-Sep-16	10 36	-05 24	0.502	1.370	16M	35	Sext	5.0		-12	-1	-5	5
2024-Sep-21	10 35	-05 55	0.432	1.191	20M	54	Sext	4.3		-7	1	-1	7
2024-Sep-26	10 42	-06 06	0.394	0.983	22M	81	Sext	3.4		-4	2	2	8
2024-Oct-01	11 04	-05 44	0.402	0.767	21M	114	Leo	2.2		-4	-1	2	5
2024-Oct-06	11 57	-04 31	0.451	0.581	12M	150	Vir	-0.2		-9	-10	-3	-4

Comet Magnitude Formula (from ALPO, COBS, and MPC data)

```
m1 = -16.6 + 5 log d + 35.0 log r [Through T-650 days]
m1 =   0.2 + 5 log d + 15.7 log r [Between T-650 and T-300 days]
m1 =   6.0 + 5 log d +  6.6 log r [Between T-300 days and perihelion]
m1 =   7.4 + 5 log d + 10.0 log r [After perihelion, 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

```
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  2024 08 10.90   M  8.6 TK  27 L 5  55   3    5           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2023A3  2024 08 07.90   M  8.7 TK  27 L 5  55   3    5           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2023A3  2024 08 06.37 xM  8.5 TK 25.0L 5  40   1.7  6   30  m 99 ICQ XX WYA   Christopher Wyatt
   2023A3  2024 08 06.36 xM  8.6 TK  7.0B    15   3.1  6   26  m 99 ICQ XX WYA   Christopher Wyatt
   2023A3  2024 08 06.13   Z  8.5 GG  5.0R 4a080   2.1              ICQ XX OLAaa Michael Olason
   2023A3  2024 08 05.45   V  9.4 AQ  5.0R 5a490   4.8      16.6m101 ICQ XX PEA   Andrew Pearce
   2023A3  2024 08 05.39   S  8.5 TT  7.0B    15   3    6    10 m115 ICQ XX MAT08 Michael Mattiazzo
   2023A3  2024 08 03.34 xM  8.8 TK  7.0B    15   3    5/  17  m 98 ICQ XX WYA   Christopher Wyatt
   2023A3  2024 08 02.73   C  9.6 AQ 10.6R 5a120   3.5      16.9m101 ICQ XX PEA   Andrew Pearce
   2023A3  2024 08 01.91   M  9.0 TK  10 B 5  25   3    6           ICQ XX DES01 Jose Guilherme de Souza Aguiar
   2023A3  2024 08 01.73   C  9.7 AQ 10.6R 5a120   3.5     21.3 m100 ICQ XX PEA   Andrew Pearce
   2023A3  2024 08 01.36 xM  8.9 TK  7.0B    15   2.5  5/          ICQ XX WYA   Christopher Wyatt
```

```
2023A3  2024 08 01.35 xM  8.9 TK 25.0L 5  40   2.4  6  19   m104 ICQ XX WYA   Christopher Wyatt
2023A3  2024 07 31.91  M  9.2 TK  27 L 5  55   2    5/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
```

Like with Mark Twain, the reports of C/2023 A3 (Tsuchinshan-ATLAS)'s demise have been greatly exaggerated. At least until August 21, when the last observations were made, Tsuchinshan-ATLAS was still going strong.

Most northern hemisphere observers lost sight of the comet in July, while southern hemisphere observations continued through August 12. The STEREO-A spacecraft also observed the comet between August 1 and 21.

So, for now, the comet looks healthy and displays a dust and gas tail. The following predictions assume it will continue to brighten at its recent rate, a relatively slow 6.6 log r. We will also assume that it will survive perihelion, which is always a question mark for dynamically new comets (assuming that the comet is dynamically new).

September sees Tsuchinshan-ATLAS start the month at a small solar elongation of 11 degrees, 0.78 au from the Sun, and 1.74 au from Earth. On the 27th, it arrives at perihelion at 0.39 au from the Sun, 0.91 au from Earth, but a solar elongation of 23 degrees.

The following table expands on the one above and shows the comet's altitude at the start of astronomical and nautical twilight in the morning sky from +40 and -40 degrees latitude. It highlights how difficult it will be to observe Tsuchinshan-ATLAS in September, especially from the northern hemisphere. One will need a clear sky with a flat, unobstructed morning eastern horizon. The magnitude predictions include enhanced brightness due to the forward scattering of dust at large-phase angles.

	Max El (deg)								
	40S		40N						
Date	Nau Twi	Ast Twi	Nau Twi	Ast Twi	r	delta	Elong	Ph.Ang.	Mag
2024-Sep-09	1				0.63	1.57	12	20	5.7
2024-Sep-10	1				0.61	1.55	12	21	5.6
2024-Sep-11	2				0.59	1.52	13	23	5.5
2024-Sep-12	2				0.57	1.49	14	25	5.4
2024-Sep-13	3				0.55	1.46	14	27	5.3
2024-Sep-14	4				0.54	1.43	15	30	5.2
2024-Sep-15	4				0.52	1.40	16	32	5.1
2024-Sep-16	5				0.50	1.37	16	35	5.0
2024-Sep-17	5				0.49	1.34	17	38	4.8
2024-Sep-18	6				0.47	1.30	18	42	4.7
2024-Sep-19	6				0.46	1.27	19	46	4.6
2024-Sep-20	7	1			0.44	1.23	19	50	4.5
2024-Sep-21	7	1			0.43	1.19	20	54	4.3
2024-Sep-22	7	1			0.42	1.15	21	59	4.2
2024-Sep-23	8	2			0.41	1.11	21	64	4.0
2024-Sep-24	8	2	1		0.41	1.07	22	69	3.8
2024-Sep-25	8	2	2		0.40	1.03	22	75	3.6
2024-Sep-26	8	2	2		0.39	0.98	22	81	3.4
2024-Sep-27	8	2	2		0.39	0.94	22	87	3.2
2024-Sep-28	7	1	3		0.39	0.90	22	93	3.0
2024-Sep-29	7	1	3		0.39	0.85	22	100	2.7
2024-Sep-30	6		3		0.40	0.81	22	107	2.5
2024-Oct-01	5		2		0.40	0.77	21	114	2.2
2024-Oct-02	4		2		0.41	0.73	20	121	1.9
2024-Oct-03	2		1		0.42	0.69	19	128	1.5
2024-Oct-04	1				0.43	0.65	17	135	1.0

September 1 [0.78 au from the Sun, 1.74 au from Earth, 11 deg solar elongation, 15 deg phase angle]
Tsuchinshan-ATLAS is at magnitude 6.5 but too faint and close to the Sun to be observed from the ground.

September 14 [0.54 au from the Sun, 1.43 au from Earth, 15 deg solar elongation, 30 deg phase angle]
Tsuchinshan-ATLAS may be as bright as magnitude 5.2. Imagers in the southern hemisphere may be able to image the comet during nautical twilight in the morning. It is probably still too faint and close to the Sun for visual observation.

September 20 [0.44 au from the Sun, 1.23 au from Earth, 19 deg solar elongation, 50 deg phase angle]
The comet rises at the start of morning astronomical twilight from mid-latitudes in the southern hemisphere. At magnitude 4.5, it should be visually observable for those with a clear, flat horizon. It won't rise until well into nautical twilight for observers at northern mid-latitudes.

September 25 [0.40 au from the Sun, 1.03 au from Earth, 22 deg solar elongation, 75 deg phase angle]
Tsuchinshan-ATLAS is at its highest in the morning sky for southern mid-latitude observers. Still, "highest" means it will only be 2 degrees above the horizon at the start of astronomical twilight and 8 degrees at the start of nautical twilight. The comet should be around magnitude 3.6.

September 27 [0.39 au from the Sun, 0.94 au from Earth, 22 deg solar elongation, 87 deg phase angle]
Tsuchinshan-ATLAS is at perihelion and magnitude 3.2. Conditions from the southern hemisphere are similar to those on the 20th. The comet should be bright enough to be imaged from the northern hemisphere, but visual observations may still not be possible.

September 29 [0.39 au from the Sun, 0.85 au from Earth, 22 deg solar elongation, 100 deg phase angle]
Tsuchinshan-ATLAS is at its highest in the morning sky for northern mid-latitude observers. Still, it doesn't rise before the start of twilight and is only 3 degrees at the start of nautical twilight. Tsuchinshan-ATLAS is around magnitude 2.7. Though now past perihelion, the comet is rapidly brightening due to a decreasing Earth-comet distance and increasing phase angle. In the next few days, we will see observability as a contest between a lower altitude and brighter sky, but also a brighter comet.

Figure 2 - C/2023 A3 (Tsuchinshan-ATLAS) displaying a dust and gas tail on 2024 August 1 in this image by José J. Chambó.

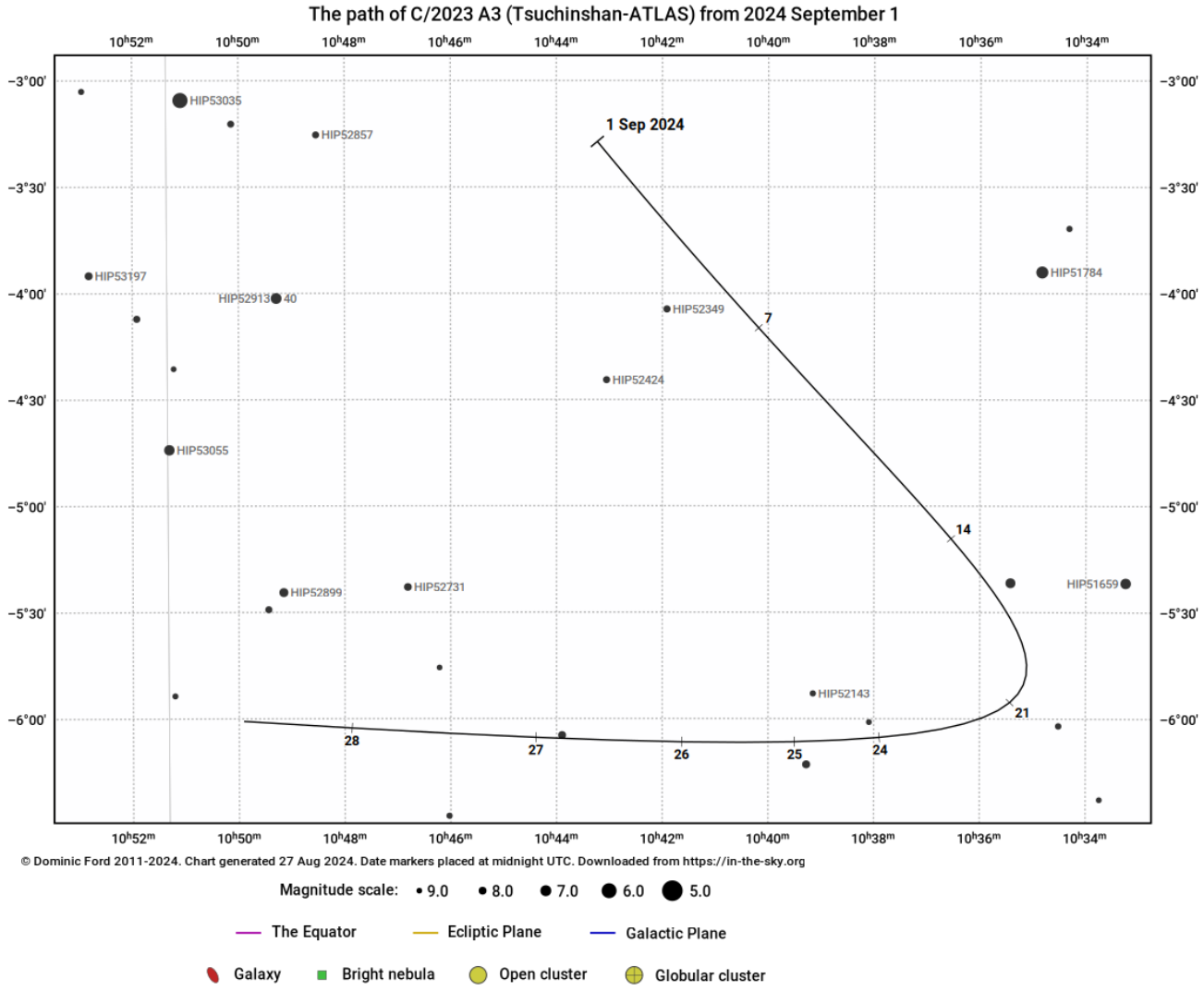


Figure 3 - Star chart for C/2023 A3 in September 2024. Chart produced at in-the-sky.org.

Comets Between Magnitude 6 and 10

13P/Olbers

Discovered visually on 1815 March 6 by Heinrich Olbers in Bremen, Germany
Halley-type comet

Orbit (from Minor Planet Center, MPEC 2024-Q42)

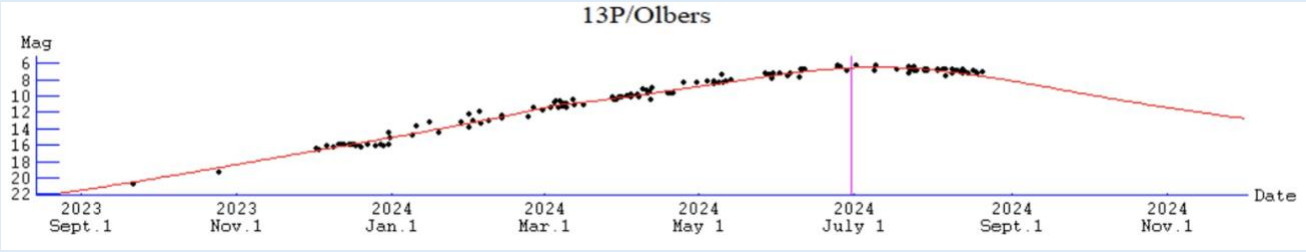
```
  13P/Olbers
Epoch 2024 Oct. 17.0 TT = JDT 2460600.5
T 2024 June 30.04994 TT                                  Rudenko
q   1.1754681           (2000.0)            P               Q
n   0.01423818     Peri.   64.41676     -0.60853213     -0.37163125
a  16.8590520      Node    85.84708     +0.18555929     -0.92570126
e   0.9302767      Incl.   44.66599     +0.77152861     -0.07047968
P  69.2
From 1876 observations 2023 Oct. 8-2024 Aug. 25, mean residual 0".5.
     Nongravitational parameters A1 = +0.65, A2 = -0.3232.
```

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

```
13P/Olbers                                                          Max El
                                                                     (deg)
    Date       R.A.    Decl.      r       d     Elong  Const  Mag  40N  40S
2024-Sep-01  13 18  +18 49    1.505   2.140     39E    Com    8.2   18    5
2024-Sep-06  13 34  +16 15    1.550   2.198     38E    Com    8.4   18    5
2024-Sep-11  13 48  +13 45    1.597   2.260     38E    Boo    8.7   17    5
2024-Sep-16  14 02  +11 22    1.645   2.326     37E    Boo    9.0   16    5
2024-Sep-21  14 15  +09 06    1.694   2.395     36E    Boo    9.3   15    4
2024-Sep-26  14 28  +06 56    1.743   2.467     35E    Vir    9.5   14    3
2024-Oct-01  14 40  +04 54    1.794   2.541     33E    Vir    9.8   13    2
2024-Oct-06  14 51  +02 59    1.845   2.616     31E    Vir   10.1   12    1
```

Comet Magnitude Formula (from 1956 ICQ and 2023 ALPO data)

```
m1 = -0.9 + 5 log d + 32.9 log r [Up through T-120 days]
m1 =  3.9 + 5 log d + 16.6 log r (T - 8)[After T-120 days]
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
 13        2024 08 29.36 xM  8.3 TK 40.0L 4  59   2.8  5/   4  m 82 ICQ XX WYA   Christopher Wyatt
 13        2024 08 28.84  S  8.3 TI 25.2L    62   4.5  4   13  m 25 ICQ XX HAR11 Christian Harder
 13        2024 08 26.84  B  8.3:TI 25.2L    68   4    4   12  m 30 ICQ XX HAR11 Christian Harder
 13        2024 08 26.14  Z  8.1 GG  5.0R 4a180   7                ICQ XX OLAaa Michael Olason
 13        2024 08 25.15  Z  8.0 GG  5.0R 4a180   7                ICQ XX OLAaa Michael Olason
 13        2024 08 23.87  S  6.9 TK  5.0B    10   5    5/  0.6   60 ICQ XX GON05 Juan Jose Gonzalez Suarez
 13        2024 08 20.84  C  8.1 AQ 25.0L 2a120   6.7      25.6m 59 ICQ XX PEA   Andrew Pearce
 13        2024 08 18.83  C  8.2 AQ 25.0L 2a120   6.7      17.3m 66 ICQ XX PEA   Andrew Pearce
 13        2024 08 17.85  C  8.1 AQ 25.0L 2a120   5.7       0.5   68 ICQ XX PEA   Andrew Pearce
 13        2024 08 16.83  C  8.0 AQ 25.0L 2a120   5.7      18.2m 62 ICQ XX PEA   Andrew Pearce
 13        2024 08 14.84  C  8.3 AQ 25.0L 2a120   5.9      21.8m 64 ICQ XX PEA   Andrew Pearce
 13        2024 08 13.84  C  8.1 AQ 25.0L 2a120   5.3      28.3m 59 ICQ XX PEA   Andrew Pearce
 13        2024 08 12.90  B  7.6:TI 53.1L   113   3    5    10 m 70 ICQ XX HAR11 Christian Harder
 13        2024 08 12.84  C  8.2 AQ 25.0L 2a120   6.7       0.5   66 ICQ XX PEA   Andrew Pearce
 13        2024 08 12.15  Z  7.5 GG  5.0R 4a180   8                ICQ XX OLAaa Michael Olason
 13        2024 08 11.89  B  7.5 TI 29.8L    65   4    4/  15  m 61 ICQ XX HAR11 Christian Harder
 13        2024 08 10.89 &M  7.6 TK  27 L 5  55   2    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
 13        2024 08 09.90  B  7.3:TI 29.8L    65   3.5  4/   7  m 65 ICQ XX HAR11 Christian Harder
```

```
13        2024 08 08.89  E  7.5 S  10.0R15  62   2    6    3  m    ICQ XX DEC   Michel Deconinck
13        2024 08 07.89 &M  7.3 TK  27 L 5  55   2    3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
13        2024 08 06.35 xM  7.9 TK 25.0L 5  40   4    6            ICQ XX WYA   Christian Harder
13        2024 08 05.90  B  7.6:TI 53.1L   113   3    5   12  m 40 ICQ XX HAR11 Christian Harder
13        2024 08 04.88  B  7.6:TI 53.1L   113   4    4/  12  m 40 ICQ XX HAR11 Christian Harder
13        2024 08 02.90  S  6.6 TK  5.0B    10   6    5/  0.7   50 ICQ XX GON05 Juan Jose Gonzalez Suarez
13        2024 08 02.90  B  7.3 TI 30.0L    65   2.8  4/   10 m 40 ICQ XX HAR11 Christian Harder
```

13P/Olbers is one of two returning Halley-type comets expected to be brighter than magnitude 12 this month. Last at perihelion in 1956, this year's return saw perihelion on 2024 June 30 at 1.18 au and a peak brightness of magnitude 6.5 reached in July.

September sees Olbers as a low evening object, especially from the southern hemisphere, as it moves through Coma Berenices (Sep 1-6), Boötes (6-24), and Virgo (24-30). Since it is past perihelion, its distance from the Sun and Earth is increasing, resulting in a steady fade from around magnitude 8.2 on the 1st to 9.8 at the end of the month.

<u>Photo Opportunities</u>

Sep 01 - 13P/Olbers within a degree or so of the bright globular cluster pair M53 and NGC 5053

Sep 30 - 13P/Olbers passes within 20' of 10th mag galaxy NGC 5701

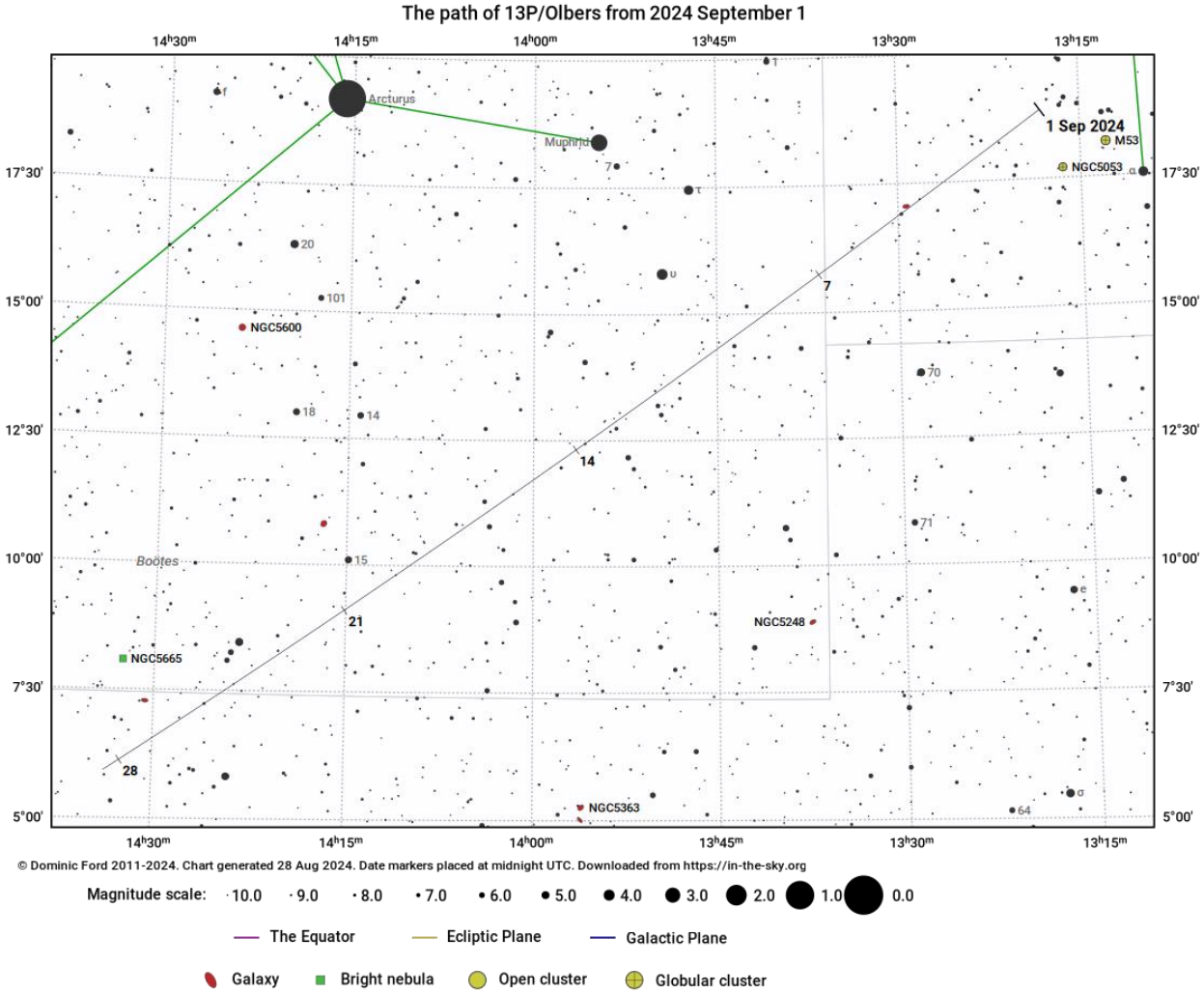


Figure 4 - Finder chart for 13P/Olbers in September 2024 from in-the-sky.org.

Comets Between Magnitude 10 and 12

12P/Pons-Brooks

Discovered visually on 1812 July 12 by Jean-Louis Pons and rediscovered visually on 1883 September 2 by William R. Brooks
Halley-type comet

Orbit (from Minor Planet Center, MPEC 2024-Q42)

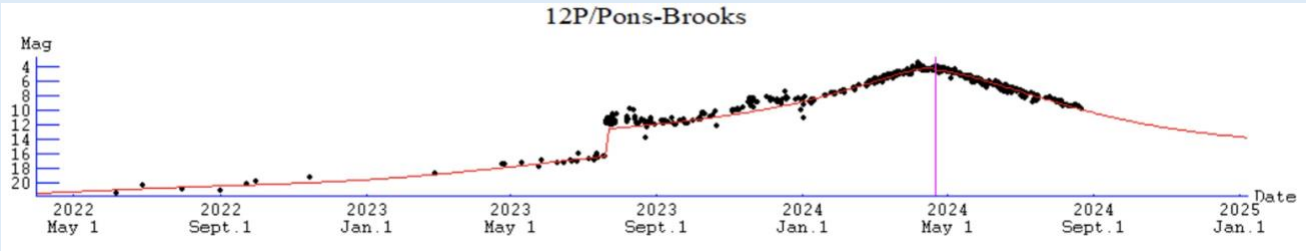
```
  12P/Pons-Brooks
Epoch 2024 Oct. 17.0 TT = JDT 2460600.5
T 2024 Apr. 21.12533 TT                                  Rudenko
q   0.7808584            (2000.0)            P              Q
n   0.01381092     Peri.  198.99348     +0.14509852     -0.32930545
a  17.2049860      Node   255.85512     +0.98567050     +0.13009697
e   0.9546144      Incl.   74.19215     +0.08602381     -0.93521800
P  71.4
From 1242 observations 2024 Feb. 1-Aug. 21, mean residual 0".6.
```

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

```
12P/Pons-Brooks                                                    Max El
                                                                    (deg)
    Date       R.A.    Decl.      r        d     Elong  Const  Mag  40N  40S
2024-Sep-01  12 20   -47 23    2.274    2.607     59E    Cen  10.5    0   34
2024-Sep-06  12 36   -47 28    2.337    2.708     58E    Cen  10.7    0   33
2024-Sep-11  12 52   -47 30    2.398    2.810     56E    Cen  10.9    0   31
2024-Sep-16  13 06   -47 32    2.459    2.912     53E    Cen  11.0    0   30
2024-Sep-21  13 20   -47 32    2.520    3.014     51E    Cen  11.2    0   28
2024-Sep-26  13 33   -47 32    2.580    3.114     49E    Cen  11.4    0   26
2024-Oct-01  13 46   -47 32    2.640    3.214     47E    Cen  11.6    0   24
2024-Oct-06  13 58   -47 32    2.700    3.311     45E    Cen  11.7    0   23
```

Comet Magnitude Formula (from ALPO and COBS data for the 1954 and 2023 returns)

```
m1 =  6.8 + 5 log d + 11.6 log r [between T-684 and T-275 days]
m1 =  4.2 + 5 log d +  9.7 log r [between T-275 days and perihelion]
m1 =  4.7 + 5 log d + 10.3 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 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
 12        2024 08 30.73   C 10.7 AQ 10.6R 5a180   7.5      10.9m246 ICQ XX PEA   Andrew Pearce
 12        2024 08 29.37 xM 10.3 AQ 40.0L 4  59    3.1  3/          ICQ XX WYA   Christopher Wyatt
 12        2024 08 21.74   C 10.5 AQ 10.6R 5a180   7.5      14.8m250 ICQ XX PEA   Andrew Pearce
 12        2024 08 20.90   M 10.3 TK  27 L 5  55    1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
 12        2024 08 19.73   C 10.3 AQ 10.6R 5a180   7        10.2m246 ICQ XX PEA   Andrew Pearce
 12        2024 08 18.73   C 10.2 AQ 10.6R 5a180   6.5      12.5m252 ICQ XX PEA   Andrew Pearce
 12        2024 08 17.73   C 10.1 AQ 10.6R 5a120   7.5      12.7m256 ICQ XX PEA   Andrew Pearce
 12        2024 08 16.73   C 10.1 AQ 10.6R 5a120   6.5      13.4m257 ICQ XX PEA   Andrew Pearce
 12        2024 08 15.90   M 10.1 TK  27 L 5  55    1    3           ICQ XX DES01 Jose Guilherme de Souza Aguiar
 12        2024 08 15.73   C 10.1 AQ 10.6R 5a120   7         9.4m253 ICQ XX PEA   Andrew Pearce
 12        2024 08 12.73   C 10.2 AQ 10.6R 5a120   6                 ICQ XX PEA   Andrew Pearce
 12        2024 08 11.73   C 10.2 AQ 10.6R 5a120   6.5       6.4m261 ICQ XX PEA   Andrew Pearce
 12        2024 08 10.90   M  9.7 TK  27 L 5  55    1    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
 12        2024 08 10.73   C 10.3 AQ 10.6R 5a120   7        11.5m266 ICQ XX PEA   Andrew Pearce
 12        2024 08 09.73   C 10.1 AQ 10.6R 5a120   7         9.4m264 ICQ XX PEA   Andrew Pearce
 12        2024 08 07.90   M  9.6 TK  27 L 5  55    1    3/          ICQ XX DES01 Jose Guilherme de Souza Aguiar
 12        2024 08 06.38 xM  9.8 TK 25.0L 5  40    5.2  4           ICQ XX WYA   Christopher Wyatt
 12        2024 08 05.90   M  9.4 TK  10 B    25    1    4           ICQ XX DES01 Jose Guilherme de Souza Aguiar
 12        2024 08 05.46   V 10.1 AQ  5.0R 5a480   8.8              ICQ XX PEA   Andrew Pearce
```

```
12        2024 08 05.40   S   9.3 TT 10.0B     25    3     3            ICQ XX MAT08 Michael Mattiazzo
12        2024 08 04.73   C 10.0 AQ 10.6R 5a120    8.5         9.1m267 ICQ XX PEA   Andrew Pearce
12        2024 08 03.36 xM   9.4 TK 40.0L 4   59    3.3   4    11   m280 ICQ XX WYA   Christopher Wyatt
12        2024 08 01.90   M   9.1 TK   10 B     25    1     3            ICQ XX DES01 Jose Guilherme de Souza Aguiar
12        2024 08 01.38 xM   9.3 TK 25.0L 5   40    7.5   3/           ICQ XX WYA   Christopher Wyatt
12        2024 07 31.90   M   9.0 TK   10 B     25    1     3/           ICQ XX DES01 Jose Guilherme de Souza Aguiar
```

The other returning Halley-type comet is 12P/Pons-Brooks, which is four months from its perihelion in late April at 0.78 au from the Sun. As September begins, the comet has already receded to a distance of 2.3 au from the Sun and 2.6 au from Earth.

This month, Halley-type comet 12P/Pons-Brooks fades from around magnitude 10.5 to 11.6. The comet is making its first return since 1954. Now past its April perihelion at 0.78 au, Pons-Brooks is receding back into the outer solar system. Its next perihelion will be in 71 years, in 2095.

The comet continues to be a southern-hemisphere-only object in Centaurus. Its path through Centaurus will provide one of the viewing/imaging highlights of the month as Pons-Brooks passes over the magnificent and bright globular cluster Omega Centauri (NGC 5139) on September 22-23.

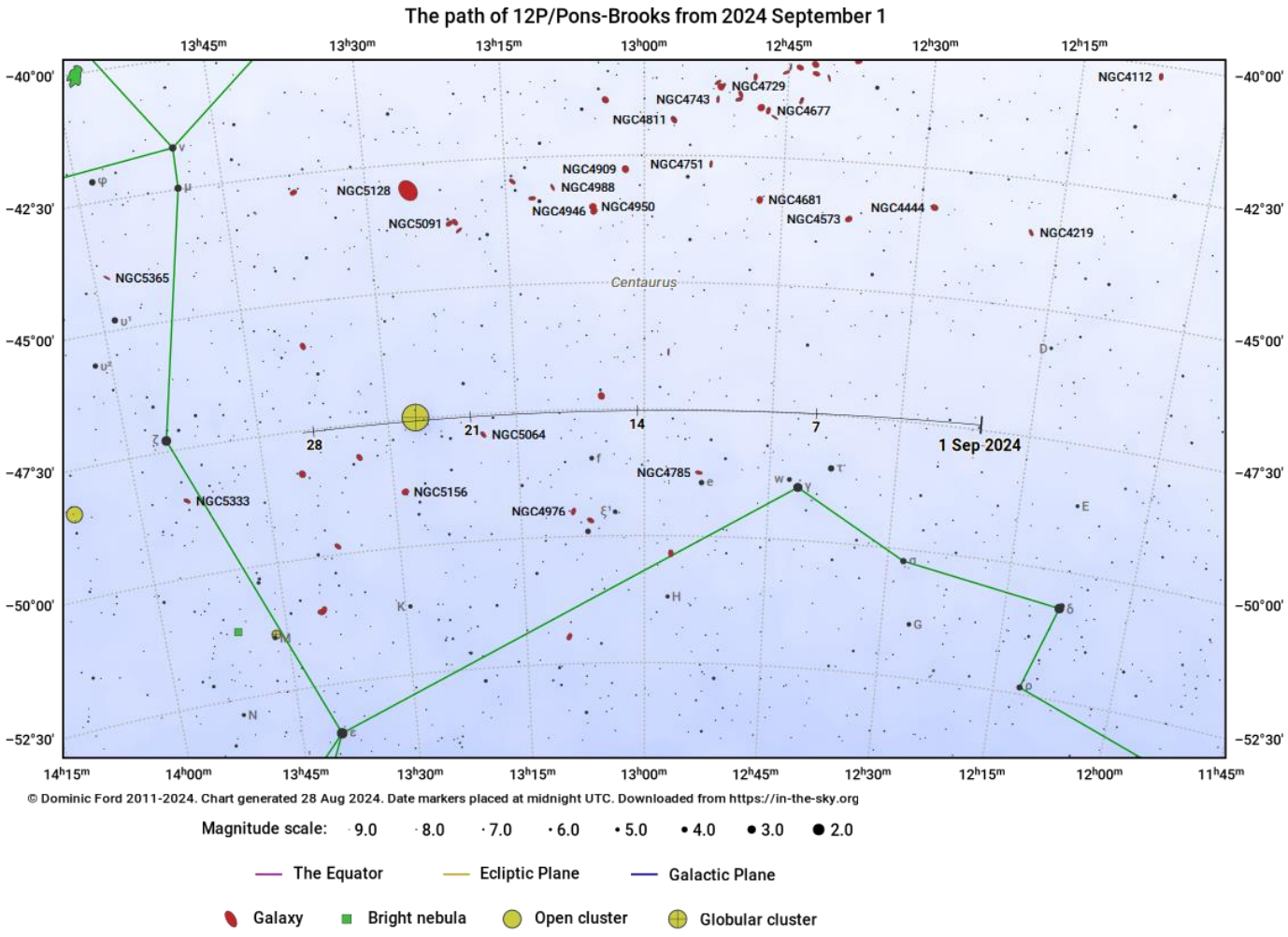


Figure 5 - Finder chart for 12P/Pons-Brooks in September 2024 from in-the-sky.org.