

February 2024

ALPO Comet News

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

T-8 months till Perihelion



Comet C/2023 A3 Tsuchinshan-ATLAS. 24 Jan. 2024, 04:32 UTC.

This image comes from the sigma combination of 10, 180-second exposures, unfiltered, remotely taken with the C14 + Software Bisque Paramount ME + SBIG ST8-XME robotic unit part of the Virtual Telescope Project. The telescope tracked the apparent motion of the comet. The image scale is 0.75"/pixel.

Image by Gianluca Masi, Rome, Italy - MPC code:M50 - The Virtual Telescope Project - www.virtualtelescope.eu



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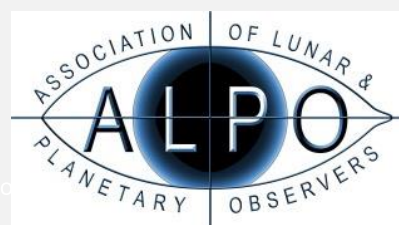


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On the Front Cover:

While 12P/Pons-Brooks is grabbing most of the recent headlines, the big comet event of the second half of 2024 will be C/2023 A3 (Tsuchinshan-ATLAS). Now 8 months from its late September 2024 perihelion at 0.39 au, the comet is already within visual range of large aperture observers. The front cover image of Tsuchinshan-ATLAS was taken remotely on 2024 January 24 by Gianluca Masi with the Virtual Telescope Project's Celestron C14+Paramount ME+SBIG ST8-XME camera. The image is a combination of 10x180-second unfiltered exposures with a scale of 0.75"/pixel.

<https://www.virtualtelescope.eu/2024/01/24/comet-c-2023-a3-tsuchinshan-atlas-an-image-24-jan-2024/>

The monthly ALPO Comet News PDF can be found on the ALPO Comets Section website (<http://www.alpo-astronomy.org/cometblog/> and 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/909203-alpo-comet-news-for-february-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 >.

Summary

The comet of the month continues to be 12P/Pons-Brooks. Returning for the first time since 1954, Pons-Brooks has been delighting observers with a constant series of outbursts. While the object is currently only visible to northern observers, those who can see it will be able to watch it brighten from around magnitude 7.7 to 6.4 in the evening sky. Joining Pons-Brooks in the evening sky is another Halley-type comet, 13P/Olbers, making its first return since 1956. Olbers is also brightening but still faint at 11-12th magnitude this month. Closing out the evening comets is short-period 144P/Kushida, which was predicted to reach 8th magnitude but appears to have peaked at 10th magnitude.

In the morning sky are two comets, which should be at 9th magnitude, 62P/Tsuchinshan and C/2021 S3 (PANSTARRS). Also, in the morning is C/2023 A3 (Tsuchinshan-ATLAS), which could become a bright object later in the year and is now within visual range of large aperture telescopes at 12th magnitude.

Last month, the ALPO Comets Section received 146 images and 102 magnitude estimates of 30 comets: P/2023 S1, C/2023 H5 (Lemmon), C/2023 H2 (Lemmon), C/2023 A3 (Tsuchinshan-ATLAS), C/2022 QE78 (ATLAS), C/2022 L2 (ATLAS), C/2022 E2 (ATLAS), C/2021 S3 (PANSTARRS), C/2021 G2 (ATLAS), C/2020 V2 (ZTF), C/2020 K1 (PANSTARRS), C/2019 U5 (PANSTARRS), C/2017 K2 (PANSTARRS), 227P/Catalina-LINEAR, 226P/Pigott-LINEAR-Kowalski, 216P/LINEAR, 207P/NEAT, 194P/LINEAR, 176P/LINEAR, 170P/Christensen, 150P/LONEOS, 144P/Kushida, 126P/IRAS, 105P/Singer Brewster, 103P/Hartley, 62P/Tsuchinshan, 39P/Oterma, 32P/Comas Sola, 29P/Schwassmann-Wachmann, 13P/Olbers, and 12P/Pons-Brooks.

A big thanks to our recent contributors: Denis Buczynski, Dan Crowson, Michel Deconinck, Jose Guilherme de Souza Aguiar, Juan Jose Gonzalez Suarez, Eliot Herman, Michael Jäger, Christian Harder, Manos Kardasis, John Maikner, Gianluca Masi, Erwin Matys, Martin Mobberley, Karoline Mrazek, Mike Olason, Uwe Pilz, Greg Ruppel, Chris Schur, Gregory T. Shanos, Willian Souza, 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 >.

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 to digital observations. Though we try to keep these lightcurves up to date, observations submitted in the days 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 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 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)

- Feb 02 - Last Quarter Moon
- Feb 09 - New Moon
- Feb 16 - First Quarter Moon
- Feb 24 - Full Moon

Comets at Perihelion

- Feb 04 - 194P/LINEAR [q = 1.80 au, 8.4-yr period, V ~ 18, discovered in 2000, 4th observed return]
- Feb 04 - P/2023 V2 (PANSTARRS) [q = 3.10 au, 19.6-yr period, V ~ 19, first observed return]
- Feb 11 - 2023 TX4 [q = 1.35 au, 26.2-yr period, V ~ 20, brighter if active]
- Feb 13 - 251P/LINEAR [q = 1.71 au, 6.5-yr period, V ~ 18, discovered in 2004, will be 4th observed return]
- Feb 13 - 219P/LINEAR [q = 2.36 au, 7.0-yr period, V ~ 15-16, discovered in 2002, 4th observed return]
- Feb 14 - C/2021 S3 (PANSTARRS) [q = 1.32 au, V ~ 8, more below]
- Feb 17 - C/2022 T1 (Lemmon) [q = 3.44 au, V ~ 15-16]
- Feb 19 - C/2023 H3 (PANSTARRS) [q = 5.23 au, 50-yr period, V ~ 19-20]
- Feb 26 - 47XP/2023 W1 (NEAT) [q = 1.41 au, 22.5-yr period, V ~ 12, discovered in 2001, 2nd observed return]

Photo Opportunities

- Feb 1-12 - 144P/Kushida traverses the Hyades Cluster in Taurus
- Feb 5 - 62P/Tsuchinshan passes ~25' to the north of 12th mag galaxy NGC 4578
- Feb 7 - C/2021 S3 (PANSTARRS) passes in between 10th mag globular cluster NGC 6287 and 10th mag planetary nebula IC 4634 (about 35-40' from each)
- Feb 9 - 62P/Tsuchinshan passes ~15' to the south of 11th mag galaxy NGC 4596
- Feb 12-13 - C/2021 S3 (PANSTARRS) within a triangle made up of 7th mag globular clusters M9, NGC 6356 and 10th mag globular NGC 6342
- Feb 13-20 - 62P/Tsuchinshan spends the period within ~10' of 11th mag galaxy NGC 4608
- Feb 18 - 12P/Pons Brooks passes ~20' to the south of the center of the dusty nebula LBN 438
- Feb 21-22 - 144P/Kushida passes ~30' north of 7th mag open clusters NGC 1807 & 1817
- Feb 23 - 62P/Tsuchinshan passes ~5' to the south of 11th mag galaxy NGC 4596 (again!)
- Feb 26 - C/2021 S3 (PANSTARRS) passes ~30' from 11th mag globular NGC 6517
- Feb 27 - C/2021 S3 (PANSTARRS) passes ~10' from 8th mag globular NGC 6539

Recent Magnitudes Contributed to the ALPO Comets Section

Comet Des	YYYY MM DD.DD (UT)	Mag	SC	APER	FL	POW	COMA Dia DC	TAIL LENG PA	ICQ CODE	Observer Name
						T				
P/2023 S1										
P2023S1	2024 01 03.03	C 18.4	BG	30.5H	4C600				ICQ XX MAI01	John Maikner
C/2023 H2 (Lemmon)										
2023H2	2024 01 06.93	M 12.4	AQ	27 L	5 90		1 3		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023H2	2024 01 04.92	M 12.1	AQ	27 L	5 90		1 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023H2	2024 01 03.43	xS 13.2	AQ	40.0L	4 108		2.2 2		ICQ XX WYA	Christopher Wyatt
C/2023 A3 (Tsuchinshan-ATLAS)										
2023A3	2023 01 29.28	M 13.5	AQ	30 L	5 100		1 5		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023A3	2023 01 24.29	M 13.6	AQ	30 L	5 100		1 4/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023A3	2024 01 21.71	xM 13.9	AQ	40.0L	4 108		0.5 7/		ICQ XX WYA	Christopher Wyatt
2023A3	2024 01 18.68	xM 13.9	AQ	40.0L	4 108		0.6 6		ICQ XX WYA	Christopher Wyatt
2023A3	2023 01 07.29	M 13.7	AQ	30 L	5 100		1 5		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023A3	2024 01 07.26	S 12.7	AQ	20.3T10	133		0.8 6		ICQ XX GON05	Juan Jose Gonzalez Suarez
C/2022 L2 (ATLAS)										
2022L2	2024 01 21.70	xM 15.0	AQ	40.0L	4 261		0.3 4		ICQ XX WYA	Christopher Wyatt
2022L2	2024 01 18.69	xM 15.0	AQ	40.0L	4 261		0.3 3/		ICQ XX WYA	Christopher Wyatt
C/2022 E2 (ATLAS)										
2022E2	2024 01 21.65	xM 12.9	AQ	40.0L	4 108		0.9 6 2 m136		ICQ XX WYA	Christopher Wyatt
2022E2	2024 01 18.63	xM 12.8	AQ	40.0L	4 108		0.7 6 1.5 m135		ICQ XX WYA	Christopher Wyatt
2022E2	2024 01 10.05	S 12.9	TI	29.8L	4 132		0.8 5		ICQ XX HAR11	Christian Harder
2022E2	2024 01 03.24	Z 12.7	GG	5.0R	4a750		1.7		ICQ XX OLAaa	Mike Olason
C/2021 S3 (PANSTARRS)										
2021S3	2023 01 30.28	M 10.2	TK	30 L	5 65		2 4		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 01 29.27	M 10.2	TK	30 L	5 65		3 4		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 01 24.28	M 10.1	TK	30 L	5 65		3 4/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2021S3	2024 01 21.71	xM 10.3	AQ	40.0L	4 59		1.7 6 9 m231		ICQ XX WYA	Christopher Wyatt
2021S3	2024 01 18.70	xM 10.3	AQ	40.0L	6 59		1.8 6 5 m249		ICQ XX WYA	Christopher Wyatt
2021S3	2023 01 11.28	M 10.3	TK	30 L	5 65		2 4		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 01 08.27	M 10.4	TK	30 L	5 65		2 4/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 01 07.28	M 10.4	TK	30 L	5 65		3 4		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2021S3	2024 01 07.21	S 10.0	TK	15.0L	5 37		2 3		ICQ XX SOU01	Willian Souza
C/2021 G2 (ATLAS)										
2021G2	2024 01 21.68	xM 15.0	AQ	40.0L	4 182		0.5 5		ICQ XX WYA	Christopher Wyatt
2021G2	2024 01 18.67	xM 14.0	AQ	40.0L	4 182		0.7 4		ICQ XX WYA	Christopher Wyatt
C/2020 V2 (ZTF)										
2020V2	2024 01 03.42	xM 13.0	AQ	40.0L	4 108		1.5 6		ICQ XX WYA	Christopher Wyatt
C/2020 K1 (PANSTARRS)										
2020K1	2024 01 21.69	xM 14.8	AQ	40.0L	4 182		0.7 4		ICQ XX WYA	Christopher Wyatt
2020K1	2024 01 18.64	xM 14.8	AQ	40.0L	4 182		0.5 4/		ICQ XX WYA	Christopher Wyatt
C/2019 U5 (PANSTARRS)										
2019U5	2024 01 21.68	xM 13.7	AQ	40.0L	4 182		0.7 5/		ICQ XX WYA	Christopher Wyatt
2019U5	2024 01 18.65	xM 14.7	AQ	40.0L	4 108		0.6 6		ICQ XX WYA	Christopher Wyatt
2019U5	2023 12 31.38	Z 14.2	GG	5.0R	4a750		1		ICQ XX OLAaa	Mike Olason
C/2017 K2 (PANSTARRS)										
2017K2	2024 01 28.77	S 12.7	TI	29.8L	4 108		1 3		ICQ XX HAR11	Christian Harder
2017K2	2024 01 21.64	xM 13.0	AQ	40.0L	4 108		1 4/		ICQ XX WYA	Christopher Wyatt
2017K2	2024 01 18.61	xM 13.4	AQ	40.0L	4 182		1 4/		ICQ XX WYA	Christopher Wyatt
2017K2	2024 01 07.04	M 12.9	AQ	30 L	5 100		1 5		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2017K2	2024 01 05.04	M 12.8	AQ	30 L	5 100		1 4/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2017K2	2024 01 03.44	xM 12.7	AQ	40.0L	4 108		1.2 6		ICQ XX WYA	Christopher Wyatt
2017K2	2023 12 31.28	Z 12.2	GG	5.0R	4a600		2		ICQ XX OLAaa	Mike Olason
226P/Pigott-LINEAR-Kowalski										
226	2024 01 09.18	Z 14.6	GG	5.0R	4a750		1.4		ICQ XX OLAaa	Mike Olason
207P/NEAT										
207	2024 01 09.12	Z 15.0	GG	5.0R	4a750		1		ICQ XX OLAaa	Mike Olason
144P/Kushida										
144	2024 01 28.95	M 10.7	TK	27.0L	5 55		1 3		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 28.75	S 9.9	TI	29.8L	4 65		7 2		ICQ XX HAR11	Christian Harder
144	2024 01 27.98	S 10.8	TK	15.0L	5 38		3 4		ICQ XX SOU01	Willian Souza
144	2024 01 27.97	M 10.7	TK	15.0L	5 38		1 4		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 17.94	M 10.5	TK	30.0L	5 65		1 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 16.94	M 10.4	TK	30.0L	5 65		1 3		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 15.95	M 10.4	TK	30.0L	5 65		1 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 10.75	S 10.0:TI	29.8L	4 92			4.5 1/		ICQ XX HAR11	Christian Harder
144	2024 01 09.75	S 10.3	TI	29.8L	4 92		3.5 1/		ICQ XX HAR11	Christian Harder
144	2024 01 09.16	Z 10.6	GG	5.0R	4a150		6		ICQ XX OLAaa	Mike Olason
144	2024 01 08.74	S 10.0	TI	29.8L	4 92		4.5 1/		ICQ XX HAR11	Christian Harder

144	2024 01 08.72	S	11.9	TK	32.0L	5	144	1.8	2		PIL01	Uwe Pilz	
144	2024 01 06.95	M	10.5	TK	27.0L	5	90	2	4	ICQ XX	DES01	Jose Guilherme de Souza Aguiar	
144	2024 01 06.93	S	10.3	TK	20.3T10		100	4	2/	ICQ XX	GON05	Juan Jose Gonzalez Suarez	
144	2024 01 05.95	M	10.6	TK	27.0L	5	90	1	4/	ICQ XX	DES01	Jose Guilherme de Souza Aguiar	
144	2024 01 04.93	M	10.7	AQ	27.0L	5	90	1	4/	ICQ XX	DES01	Jose Guilherme de Souza Aguiar	
144	2024 01 03.45	xS	10.8	AQ	40.0L	4	59	4.7	2	ICQ XX	WYA	Christopher Wyatt	
144	2024 01 01.77	I	11.7	S	25.0C15		288			ICQ XX	DEC	Michel Deconinck	
126P/IRAS													
126	2024 01 02.98	C	17.2	BG	30.5H	4B760				ICQ XX	MAI01	John Maikner	
105P/Singer Brewster													
105	2024 01 05.23	C	20.6	BG	30.5H	4G200				ICQ XX	MAI01	John Maikner	
103P/Hartley													
103	2024 01 21.65	xM	14.5	AQ	40.0L	4	182	0.7	4	ICQ XX	WYA	Christopher Wyatt	
103	2024 01 18.62	xM	14.4	AQ	40.0L	4	182	0.6	4	ICQ XX	WYA	Christopher Wyatt	
103	2024 01 03.26	Z	13.8	GG	5.0R	4a750		2		ICQ XX	OLAaa	Mike Olason	
62P/Tsuchinshan													
62	2024 01 24.26	M	8.8	TK	10.0B		25	4	4	ICQ XX	DES01	Jose Guilherme de Souza Aguiar	
62	2024 01 21.67	xM	8.5	TK	40.0L	4	59	8.5	5	ICQ XX	WYA	Christopher Wyatt	
62	2024 01 18.63	xM	8.2	TK	7.0B		15	13	4	ICQ XX	WYA	Christopher Wyatt	
62	2024 01 16.97	S	8.6:TI		25.2L	4	68	6	3	ICQ XX	HAR11	Christian Harder	
62	2024 01 11.27	M	8.2	TK	10.0B		25	6	4	ICQ XX	DES01	Jose Guilherme de Souza Aguiar	
62	2024 01 10.03	S	8.3	TI	29.8L	4	66	8	3	ICQ XX	HAR11	Christian Harder	
62	2024 01 09.33	Z	8.0	GG	5.0R	4a180		10		ICQ XX	OLAaa	Mike Olason	
62	2024 01 08.99	S	8.8	TK	12.0R	7	45	4	4		PIL01	Uwe Pilz	
62	2024 01 08.97	S	8.1	TI	19.8L	5	40	9	2/	ICQ XX	HAR11	Christian Harder	
62	2024 01 08.26	M	8.1	TK	10.0B		25	4	4/	ICQ XX	DES01	Jose Guilherme de Souza Aguiar	
62	2024 01 07.21	S	8.0	TK	15.0L	5	37	5	4	ICQ XX	SOU01	Willian Souza	
62	2024 01 07.12	M	8.0	TK	10.0B		25	5	4/	ICQ XX	DES01	Jose Guilherme de Souza Aguiar	
62	2024 01 07.04	S	7.6	TK	5.0B		10	10	3/	ICQ XX	GON05	Juan Jose Gonzalez Suarez	
62	2024 01 06.12	M	7.9	TK	10.0B		25	5	4	ICQ XX	DES01	Jose Guilherme de Souza Aguiar	
62	2024 01 05.16	M	8.0	TK	10.0B		25	5	4/	ICQ XX	DES01	Jose Guilherme de Souza Aguiar	
62	2024 01 04.18	M	8.1	TK	10.0B		25	5	4	ICQ XX	DES01	Jose Guilherme de Souza Aguiar	
39P/Oterma													
39	2024 01 05.05	C	21.8	BG	30.5H	4F600				ICQ XX	MAI01	John Maikner	
32P/Comas Sola													
32	2024 01 09.14	Z	13.7	GG	5.0R	4a150		2		ICQ XX	OLAaa	Mike Olason	
29P/Schwassmann-Wachmann													
29	2024 01 21.66	xM	12.5	AQ	40.0L	4	108	3.3	4	ICQ XX	WYA	Christopher Wyatt	
29	2024 01 18.62	xM	12.6	AQ	40.0L	4	108	3	6	ICQ XX	WYA	Christopher Wyatt	
29	2024 01 10.06	S	13.2	TI	29.8L	4	132	1.5	2	ICQ XX	HAR11	Christian Harder	
29	2024 01 06.95	S	10.9	TK	20.3T10		100	2.5	2/	ICQ XX	GON05	Juan Jose Gonzalez Suarez	
29	2024 01 03.22	Z	11.4	GG	5.0R	4a750		3		ICQ XX	OLAaa	Mike Olason	
13P/Olbers													
13	2024 01 15.99	M	13.6	AQ	30	L	5	100	1	6	ICQ XX	DES01	Jose Guilherme de Souza Aguiar
13	2024 01 09.17	Z	14.9	GG	5.0R	4a750		1		ICQ XX	OLAaa	Mike Olason	
12P/Pons-Brooks													
12	2024 01 28.74	S	8.1	TI	29.8L	4	65	5	4	4.5 m 20	ICQ XX	HAR11	Christian Harder
12	2024 01 27.74	S	7.9	TK	7.0B	6	16	5	6		PIL01	Uwe Pilz	
12	2024 01 27.74	S	8.1	TI	25.2L	4	56	5.5	3/	ICQ XX	HAR11	Christian Harder	
12	2024 01 10.73	S	9.2	TI	29.8L	4	92	3.5	3	ICQ XX	HAR11	Christian Harder	
12	2024 01 09.74	S	9.2	TI	29.8L	4	92	3.5	3	ICQ XX	HAR11	Christian Harder	
12	2024 01 09.10	Z	8.9	GG	5.0R	4a150		4		ICQ XX	OLAaa	Mike Olason	
12	2024 01 08.73	S	9.1	TI	29.8L	4	92	3.5	3	ICQ XX	HAR11	Christian Harder	
12	2024 01 08.71	S	9.7	TK	32.0L	5	80	2.5	4		PIL01	Uwe Pilz	
12	2024 01 07.73	S	9.4	TI	29.8L	4	92	3	3	ICQ XX	HAR11	Christian Harder	
12	2024 01 01.78	S	9.7	TI	29.8L	4	79	3	3	ICQ XX	HAR11	Christian Harder	
12	2024 01 01.75	I	11.2	S	12.6B	5	25			ICQ XX	DEC	Michel Deconinck	

Comets News

Looking Ahead to the rest of 2024

The chart below shows those comets expected to become brighter than magnitude 10.0 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), when the comet will only be above the horizon in twilight but still may be bright enough to be observed.

All brightness predictions are just that, predictions, and may be off by many magnitudes. Additionally, C/2023 A3 may become 1 or more magnitudes brighter than shown in early October due to forward scattering by dust.

	01/31/24	02/10/24	02/20/24	03/01/24	03/11/24	03/21/24	03/31/24	04/10/24	04/20/24	04/30/24	05/10/24	05/20/24	05/30/24	06/09/24	06/19/24	06/29/24	07/09/24	07/19/24	07/29/24	08/08/24	08/18/24	08/28/24	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			
Northern Hemisphere																																					
C/2021 S3 (PANSTARRS)	9	9	8	8	8	8	9	9	9																												
62P/Tsuchinshan	8	9	9																																		
12P/Pons-Brooks	7	7	6	6	5	5	4	4																													
144P/Kushida	9																																				
13P/Olbers								9	9	8	8	8	7	7	7	7	7	7	8	8	9	9															
C/2023 A3 (Tsuchinshan-ATLAS)															9	9	9	9	8	8	7	6	5	4	2	1	2	4	6	7	8	9	9				
333P/LINEAR																																			9		
Southern Hemisphere																																					
C/2021 S3 (PANSTARRS)	7	7	7	7	7	7	7	8	8	8	9	9																									
62P/Tsuchinshan	9							4	4	4	5	6	6	7	8	8	9	9																			
12P/Pons-Brooks								5	5	6	7	7	8	8	9	9																					
144P/Kushida	9																																				
13P/Olbers								9												8	8	9	9														
C/2023 A3 (Tsuchinshan-ATLAS)																				9	8	8	7	6	5	4	2	1	2	4	6	7					
333P/LINEAR																																				9	

Figure 1- Observability and brightness of comets expected to become brighter than magnitude 10.0 during the rest of 2024.

Latest Periodic Comet Numberings

472P/2002 T6 = P/2023 RL75 (NEAT-LINEAR)	MPC 167069
471P/2023 KF3 = P/2010 YK3	MPC 164694
470P/2014 W1 = P/2023 O2 (PANSTARRS)	MPC 164694
469P/2015 XG422 (PANSTARRS)	MPC 164694
468P/2004 V3 = P/2023 O1 (Siding Spring)	MPC 164694

New Discoveries

C/2024 A1 (ATLAS) – The first designated comet of 2024 is C/2024 A1 (ATLAS), which was found on January 3 at 18th magnitude in the far southern sky by an ATLAS 0.5-m f/2 Schmidt reflector at Rio Hurtado, Chile. Perihelion isn't until 2025 June 13 at 3.88 au, when it will be visible from both hemispheres at 15th magnitude. [CBET 5333, MPEC 2024-B78]

P/2023 Y3 = P/2017 BQ100 (ATLAS) – ATLAS also found another new 18th magnitude comet with a 0.5-m at Rio Hurtado. P/2023 Y3 (ATLAS), which was found on December 18, is a short-period comet with an orbital period of 7.0 years and perihelion on 2024 May 1 at 2.39 au. Pre-discovery observations by ATLAS, Pan-

STARRS, and the Mount Lemmon Survey were found back to October 12, 2023. The new discovery has also been linked with an apparently asteroidal object that was observed on numerous nights between September 2015 and June 2018 and previously designated 2017 BQ100. P/2023 Y3 has already peaked at a maximum of 17-18th magnitude and should now slowly fade. It is next expected to be a perihelion on 2031 April 25, with a return very similar to the current one. [CBET 5338, MPEC 2024-B139]

P/2023 Y2 (Gibbs) – The 33rd comet to bear the name “Gibbs” was found by Alex Gibbs of the Catalina Sky Survey at the University of Arizona on 2023 December 17 at 19th magnitude with the Mount Lemmon 1.5-m. This was the second comet discovered that night by Alex (the other being P/2023 Y1, which was announced last month). The two were found in images taken 40 minutes apart and were located within X degrees of each other. Pre-discovery observations by Pan-STARRS and Mount Lemmon were found back to October 23, 2022. P/2023 Y2 (Gibbs) is a short-period comet with a 7.2-year orbital period and perihelion on 2023 August 9 at 2.28 au. It passed 0.15 au from Jupiter in February 2020. Prior to that, it had a larger perihelion distance of 3.77 au. In January 1973, it passed even closer to Jupiter at 0.03 au. Prior to that encounter, it had a perihelion distance of 2.63 au. This time around it peaks in brightness around magnitude 19.3 when at opposition in January/February. [CBET 5329, MPEC 2024-A148]

P/2023 X6 = P/2014 A3 (PANSTARRS) – On 2023 December 9, the Pan-STARRS program serendipitously recovered one of their own discoveries at 21st magnitude. The comet is a short-period comet with an orbital period of 9.9 years and perihelion last year on April 22 at 3.47 au. Since the comet is well past perihelion, it is likely as bright as it will get during the current return.

Seiichi Nakano reports on CBET 5342 that this comet has had multiple close encounters with Jupiter and Saturn. The comet passed 0.0017 AU on 1971 May 21 and 0.62 AU on 2006 Sept. 10 from Jupiter, and 0.70 AU from Saturn in December 1942. Prior to the 1971 encounter, PANSTARRS had a larger perihelion distance at 5.21 au. [CBET 5342, MPEC 2024-B170]

P/2023 X5 = P/2017 O4 (Hogan) - Joshua K. Hogan (Catalina Sky Survey, University of Arizona) discovered a 20th magnitude comet on 2023 December with the Mt. Lemmon Survey 1.5-m reflector. The object was originally designated as P/2023 S4 (Hogan), but that was based on “inadvertently attributing a pre-discovery Mt. Lemmon observation from 2023 Sept. 25 (found in the Minor Planet Center's "isolated tracklet file") as the discovery observation.” [CBET 5341] A number of pre-discovery observations were found going back to 2005, including several faint 23rd-magnitude observations by the 3.6-m Canada-France-Hawaii Telescope.

P/2023 X5 (Hogan) appears to be a Main-Belt comet, also called Activated Asteroids, and a member of the Themis asteroid family. Perihelion was on 2023 July 16 at 2.54 au. Due to its asteroid low-eccentricity ($e = 0.19$) orbit, aphelion is only 3.73 au. [CBET 5341, MPEC 2024-B74]

Recent Recoveries

Four short-period comet recoveries were officially announced last month.

P/2023 WM26 = P/2011 NO1 (Elenin) – This object was serendipitously recovered at 22nd magnitude by the Pan-STARRS2 1.8-m telescope at Haleakala on November 18 and designated as asteroid 2023 WM26. Maik Meyer correctly suggested that 2023 WM26 was the returning P/2011 NO1. Perihelion occurs on 2024 May 5, at 1.24 au, when the comet should peak at 13-14th magnitude. It will also be relatively close to Earth at that time (0.62 au in early May). P/Elenin is currently on a 13.3-year orbit and was discovered during its prior return on 2011 July 7 by L. Elenin (Lyubertsy, Russia) and I. Molotov (Moscow, Russia) with a 0.45-m f/2.8 astrograph at the ISON-NM observatory near Mayhill, NM, USA. [CBET 5340, MPEC 2024-B143]

P/2023 W2 = P/2015 HG16 (PANSTARRS) – ALPO contributor John Maikner recovered P/2015 HG16 (PANSTARRS) on 2023 November 17, 19, and 20 at 20th magnitude with his 0.30-m f/3.8 Riccardi-Honders telescope at New Ringgold, PA. The comet was discovered in June 2014. With a 10.5-year orbital period, 2024 is the comet's first return since its discovery. This year, perihelion happens on October 16 at 3.12 au. According to S. Nakano of the Central Bureau on CBET 5337, the comet passed 0.07 AU from Jupiter on 2006 November 12. Prior to the Jupiter encounter, it had a perihelion distance of 4.86 au. W2 will peak in brightness at 19th magnitude next January. [CBET 5337, MPEC 2024-X98]

P/2023 V8 = P/2018 P3 (PANSTARRS) - Takaaki Oribe of Saji, Tottori, Japan recovered P/2018 P3 (PANSTARRS) on 2023 November 15 at 20th magnitude with the Saji Observatory 1.03-m. This is P/2018 P3's first return after its discovery apparition in 2018. Observations made on 2 nights in 2013 have also been identified. This time around, perihelion was on 2023 December 26 at 1.75 au. The comet brightens rapidly prior to perihelion and should currently be around 18th magnitude and fading. [CBET 5336, MPEC 2024-B135]

P/2023 V7 = P/2004 DO29 (Spacewatch-LINEAR) – P/2004 DO29 (Spacewatch-LINEAR) was serendipitously recovered at 19-20th magnitude on 2023 November 25 with the Pan-STARRS2 1.8-m Ritchey-Chretien reflector at Haleakala. Other recoveries were reported by M. Micheli on November 11 with the 1-m f/4.4 reflector at the European Space Agency's Optical Ground Station at Tenerife, F. Ocana on November 13 with the Calar Alto Schmidt telescope, and ALPO contributor M. Jaeger (with E. Prosperi and S. Prosperi) on January 17 with a 0.3-m f/4 reflector at Oed, Martinsberg, Austria.

Perihelion occurs on 2024 June 1 at 4.08 au. A peak brightness around magnitude 19 should occur in March when the comet is at opposition. 2024 is the comet's first return since its discovery in 2004, thanks to its orbital period of 19.8 years. [CBET 5335, MPEC 2024-B93]

Comets Between Magnitude 6 and 10

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-B140)

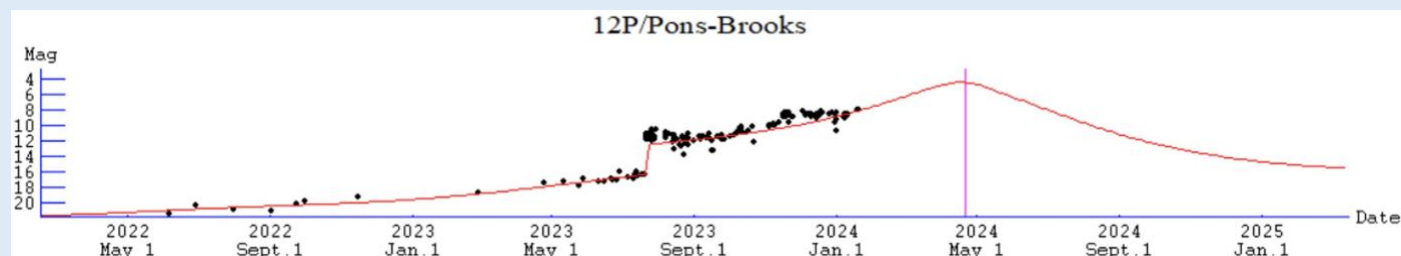
12P/Pons-Brooks
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2024 Apr. 21.13135 TT Rudenko
q 0.7808678 (2000.0) P Q
n 0.01383231 Peri. 198.98763 +0.14512799 -0.32931129
a 17.1872415 Node 255.85495 +0.98565762 +0.13020074
e 0.9545670 Incl. 74.19086 +0.08612162 -0.93520150
P 71.3
From 6392 observations 2023 Feb. 27-2024 Jan. 25, mean residual 0".6.

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

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El (deg)	
								40N	40S
2024-Feb-01	21 22	+38 15	1.593	1.918	56E	Cyg	7.7	23	0
2024-Feb-06	21 43	+38 13	1.527	1.870	54E	Cyg	7.4	22	0
2024-Feb-11	22 05	+38 03	1.460	1.825	52E	Lac	7.2	21	0
2024-Feb-16	22 29	+37 44	1.394	1.783	51E	Lac	7.0	21	0
2024-Feb-21	22 53	+37 14	1.328	1.746	49E	Lac	6.7	21	0
2024-Feb-26	23 18	+36 29	1.263	1.713	46E	And	6.5	20	0
2024-Mar-02	23 43	+35 29	1.199	1.685	44E	And	6.3	20	0

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

$m_1 = 6.8 + 5 \log d + 11.6 \log r$ [between T-684 and T-275 days]
 $m_1 = 4.4 + 5 \log d + 7.2 \log r$ [between T-275 days and perihelion]
 $m_1 = 5.2 + 5 \log d + 15.5 \log r$ [between perihelion and T+30 days]
 $m_1 = 5.1 + 5 \log d + 11.4 \log r$ [after T+30 days]
 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 (UT)	Mag	SC	APER	FL	POW	COMA Dia	DC	TAIL LENG	PA	ICQ CODE	Observer Name
12	2024 01 28.74	S 8.1	TI	29.8L	4	65	5	4	4.5 m	20	ICQ XX HAR11	Christian Harder
12	2024 01 27.74	S 7.9	TK	7.0B	6	16	5	6			PIL01	Uwe Pilz
12	2024 01 27.74	S 8.1	TI	25.2L	4	56	5.5	3/			ICQ XX HAR11	Christian Harder
12	2024 01 10.73	S 9.2	TI	29.8L	4	92	3.5	3			ICQ XX HAR11	Christian Harder
12	2024 01 09.74	S 9.2	TI	29.8L	4	92	3.5	3			ICQ XX HAR11	Christian Harder
12	2024 01 09.10	Z 8.9	GG	5.0R	4a150	4					ICQ XX OLAaa	Mike Olason
12	2024 01 08.73	S 9.1	TI	29.8L	4	92	3.5	3			ICQ XX HAR11	Christian Harder
12	2024 01 08.71	S 9.7	TK	32.0L	5	80	2.5	4			PIL01	Uwe Pilz
12	2024 01 07.73	S 9.4	TI	29.8L	4	92	3	3			ICQ XX HAR11	Christian Harder
12	2024 01 01.78	S 9.7	TI	29.8L	4	79	3	3			ICQ XX HAR11	Christian Harder
12	2024 01 01.75	I 11.2	S	12.6B	5	25					ICQ XX DEC	Michel Deconinck

The comet story of the first half of 2024 should be returning Halley-type comet 12P/Pons-Brooks. The comet is making its first return since 1954 and its sixth or seventh observed return in total after being discovered in 1812, rediscovered in 1883, and seen back in 1457 and 1385, possibly in 245 AD.

This return isn't particularly good. The comet never gets closer to Earth than 1.55 au and will be located at low solar elongations when at its brightest (peak at 4-5th magnitude). Still, 12P will be a faint naked-eye object and, based on past apparitions, should be an interesting object to observe, with many large outbursts, a dynamic coma with lots of features (shells, jets, etc.), and a long(ish) tail.

Pons-Brooks is known as a very outburst-prone object, and it hasn't disappointed. The table below lists some of the significant outbursts of Pons-Brooks during the current apparition and is based on analysis from the BAA and comets-ml (<https://groups.io/g/comets-ml/message/31802>, https://britastro.org/section_news_item/comet-12p-pons-brooks-outburst-continue, https://nickdjames.com/Comets/2024/12P_lightcurve_9arcsec.png). Note that the outburst amplitude is for a small aperture centered on the nucleus and not for the entire coma (hence, not a measure of total magnitude), which is why some of the outbursts aren't obvious in the above lightcurve.

2023 07 20	Amplitude = 5 mag
2023 09 04	Amplitude = <1 mag
2023 09 23	Amplitude = 1 mag
2023 10 05	Amplitude = 4 mag
2023 10 22	Amplitude = <1 mag
2023 10 31	Amplitude = 4 mag
2023 11 01	Amplitude = 2 mag
2023 11 14	Amplitude = 5 mag
2023 11 30	Amplitude = 4 mag
2023 12 14	Amplitude = 3 mag
2024 01 18	Amplitude = 2 mag

Last month, a single digital and 10 visual observations were submitted to the ALPO. During the first 10 days of January, the comet was observed to have a coma of diameter 2.5'-4' and brightness around magnitude 9.0. By the end of the month, and after its most recent outburst, it was brighter (around magnitude 8.0) with a larger coma (5' diameter). The end-of-January observations place the comet close to the brightness predicted based on the 1954 lightcurve.

In February, Pons-Brooks starts at a distance of ~1.6 au from the Sun and 1.9 au from Earth. This is now close enough to the Sun that imagers are detecting the formation of both a dust and gas tail. By the end of the month, these distances will have decreased to ~1.2 and 1.7 au from the Sun and Earth, respectively. It remains a northern-only object in the evening sky, best observed as soon as twilight ends as it moves through Cygnus (Feb 1-9), Lacerta (9-21), and Andromeda (21-29). If it follows the 1954 lightcurve, then it should start February at magnitude 7.7, reach 7.0 by mid-month, and end the month at magnitude 6.4.

Photo Ops:

Feb 18 - 12P/Pons Brooks passes ~20' to the south of the center of the dusty nebula LBN 438



Figure 2- 12P/Pons-Brooks as imaged by Michael Jäger on 2024 January 29.73 UT with a 12" f=4 and Nikon Z6mod. Final image is composed of 5x110 sec exposures.



Figure 3 - 12P/Pons-Brooks from a few nights earlier but in monochrome, by Gianluca Masi.

62P/Tsuchinshan

Discovered photographically on 1965 January 1 at the Purple Mountain (Tsuchinshan) Observatory
Short-period comet

Orbit (from Minor Planet Center, MPEC 2023-B140)

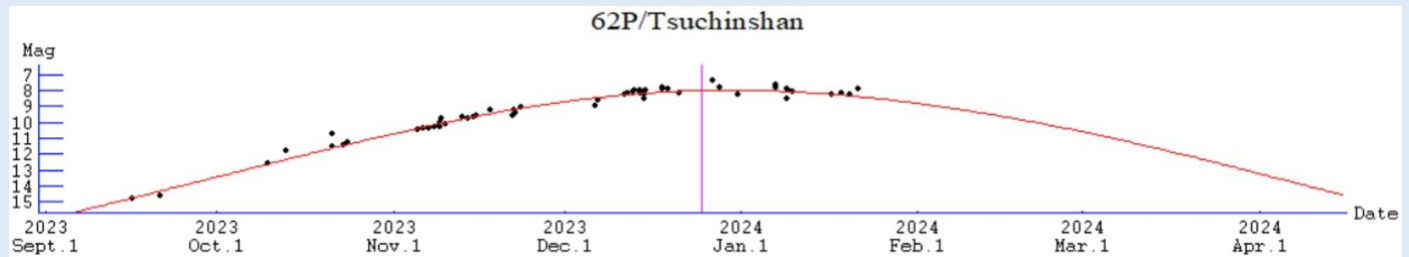
62P/Tsuchinshan
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2023 Dec. 25.10211 TT Rudenko
q 1.2649653 (2000.0) P Q
n 0.15929613 Peri. 47.29010 -0.43540800 -0.89693950
a 3.3702793 Node 68.67010 +0.79992729 -0.42468298
e 0.6246705 Incl. 4.73776 +0.41296031 -0.12306055
P 6.19
From 984 observations 2023 Aug. 29-2024 Jan. 26, mean residual 0".5.
Nongravitational parameters A1 = -0.42, A2 = +0.5346.

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

62P/Tsuchinshan									Max El (deg)	
Date	R.A.	Decl.	r	d	Elong	Const	Mag	40N	40S	
2024-Feb-01	12 33	+10 05	1.344	0.500	126M	Vir	8.8	60	40	
2024-Feb-06	12 37	+09 58	1.365	0.502	130M	Vir	9.1	60	40	
2024-Feb-11	12 40	+09 56	1.388	0.505	134M	Vir	9.3	60	40	
2024-Feb-16	12 41	+09 58	1.413	0.510	139M	Vir	9.6	60	40	
2024-Feb-21	12 40	+10 04	1.440	0.517	144M	Vir	10.0	60	40	
2024-Feb-26	12 38	+10 10	1.468	0.528	149M	Vir	10.3	60	40	
2024-Mar-02	12 35	+10 16	1.497	0.542	154M	Vir	10.7	60	40	

Comet Magnitude Formula (from 2023 ALPO observations)

$m_1 = 5.7 + 5 \log d + 36.0 \log r$
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 (UT)	Mag	SC	APER	FL	POW	COMA Dia DC	TAIL LENG PA	ICQ CODE	Observer Name
62	2024 01 24.26	M 8.8	TK	10.0B	25	4	4		ICQ XX DES01	Jose Guilherme de Souza Aguiar
62	2024 01 21.67	xM 8.5	TK	40.0L	4	59	8.5	5	ICQ XX WYA	Christopher Wyatt
62	2024 01 18.63	xM 8.2	TK	7.0B	15	13	4		ICQ XX WYA	Christopher Wyatt
62	2024 01 16.97	S 8.6	TI	25.2L	4	68	6	3	ICQ XX HAR11	Christian Harder
62	2024 01 11.27	M 8.2	TK	10.0B	25	6	4		ICQ XX DES01	Jose Guilherme de Souza Aguiar
62	2024 01 10.03	S 8.3	TI	29.8L	4	66	8	3	ICQ XX HAR11	Christian Harder
62	2024 01 09.33	Z 8.0	GG	5.0R	4a180	10			ICQ XX OLAaa	Mike Olason
62	2024 01 08.99	S 8.8	TK	12.0R	7	45	4	4	PIL01	Uwe Pilz
62	2024 01 08.97	S 8.1	TI	19.8L	5	40	9	2/	ICQ XX HAR11	Christian Harder
62	2024 01 08.26	M 8.1	TK	10.0B	25	4	4/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
62	2024 01 07.21	S 8.0	TK	15.0L	5	37	5	4	ICQ XX SOU01	Willian Souza
62	2024 01 07.12	M 8.0	TK	10.0B	25	5	4/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
62	2024 01 07.04	S 7.6	TK	5.0B	10	10	3/		ICQ XX GON05	Juan Jose Gonzalez Suarez
62	2024 01 06.12	M 7.9	TK	10.0B	25	5	4		ICQ XX DES01	Jose Guilherme de Souza Aguiar
62	2024 01 05.16	M 8.0	TK	10.0B	25	5	4/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
62	2024 01 04.18	M 8.1	TK	10.0B	25	5	4		ICQ XX DES01	Jose Guilherme de Souza Aguiar

Short-period comet 62P/Tsuchinshan is having its best return between 1900 and 2100. A close approach to 0.15 au of Jupiter in 1960 dropped 62P's perihelion from around 2.0 au to 1.5 au. The discovery apparition of 1965 was the first after the close approach with the comet brightening to 15th magnitude. Surprisingly, during its 1985 return, which was very similar to the one in 1965, 62P reached a brighter 10th magnitude. Additional close

approaches to Jupiter in 2009 and 2020 dropped perihelion to 1.38 and 1.26 au, respectively. At its most recent return in 2017, the comet reached 10th magnitude even though it came no closer than 1.02 au from Earth.

In January, we received 16 photometric observations and 20 images. A common theme of these observations was the large (up to 13') moderately condensed coma (DC = 2.5-5). Though there were no visual tail observations, a dust and gas tails have been imaged.

62P is now past its 2023 December 25 perihelion at 1.26 au, and its closest approach to Earth on 2024 January 29 at 0.50 au. As a result, it has already peaked in brightness. 62P should rapidly fade in February from 8.8 on the 1st to around 10.5 by the end of the month as it moves through the opposition constellation of Virgo.

Photo Ops:

- Feb 5 - 62P/Tsuchinshan passes ~25' to the north of 12th mag galaxy NGC 4578
- Feb 9 - 62P/Tsuchinshan passes ~15' to the south of 11th mag galaxy NGC 4596
- Feb 13-20 - 62P/Tsuchinshan spends the period within ~10' of 11th mag galaxy NGC 4608
- Feb 23 - 62P/Tsuchinshan passes ~5' to the south of 11th mag galaxy NGC 4596 (again!)

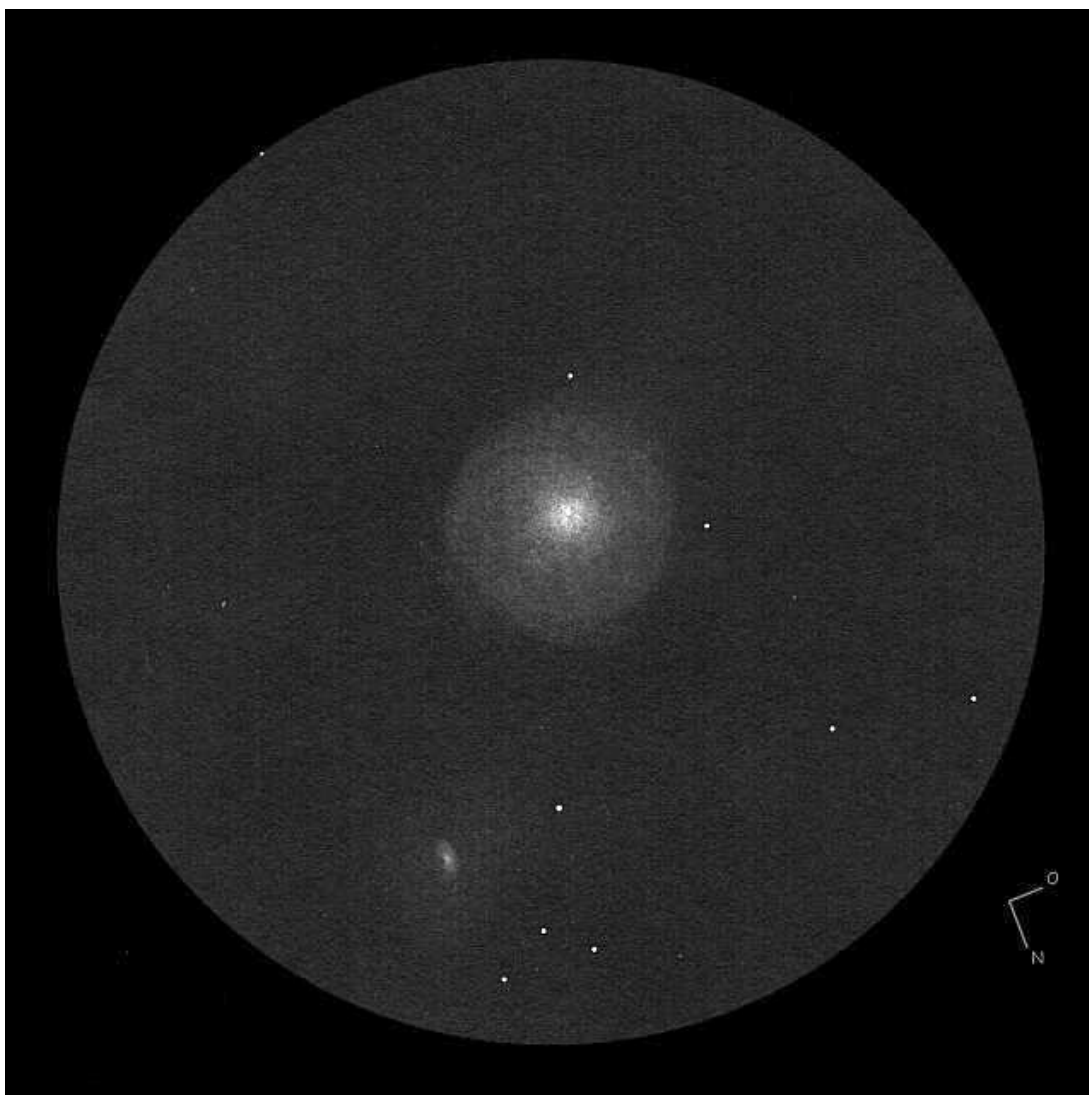


Figure 4 – Christian Harder sketched 62P/Tsuchinshan on a very cold January 10 night (-8°C) at 00:43 UT. Christian used a 12" Dobsonian at 132x. The 11.9 magnitude galaxy NGC 3968 was also in the field (near the bottom of the sketch).



Figure 5 – 62P/Tsuchinshan and galaxy NGC 4178 were imaged on 2024 January 17 at 02:30 UT by Michael Jäger with a 12" f/4 astrograph and QHY600 camera. The image is a LRGB composite with a total exposure of 60 minutes.

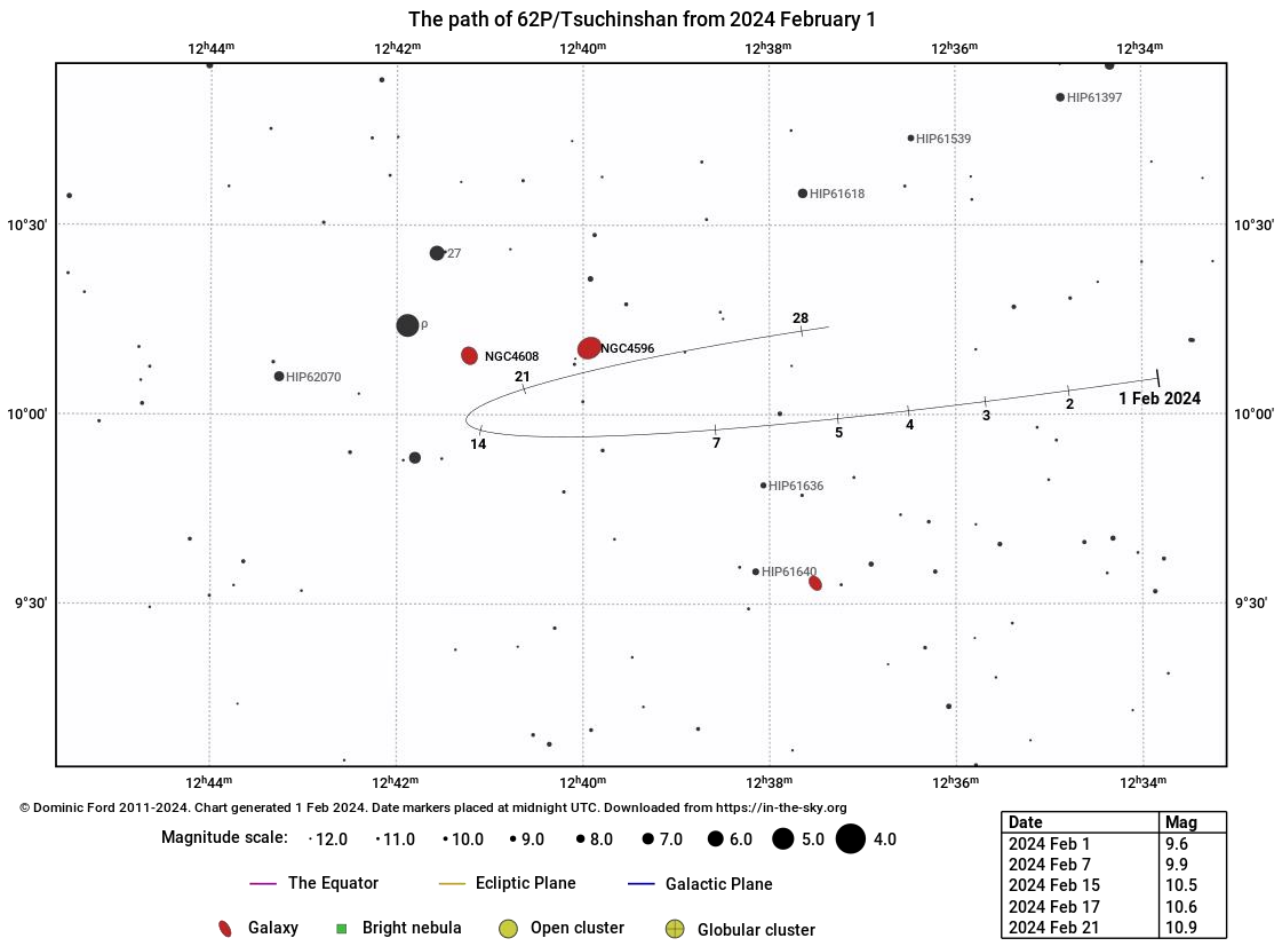


Figure 6 - Star chart of 62P/Tsuchinshan for February showing the comet beginning a retrograde loop close to the galaxies NGC 4596 and 4608. Chart produced at in-the-sky.org.

C/2021 S3 (PANSTARRS)

Discovered 2021 September 24 by PANSTARRS with the Pan-STARRS2 1.8-m Ritchey-Chretien reflector at Haleakala Long-period comet

Orbit (from Minor Planet Center, MPEC 2024-B140)

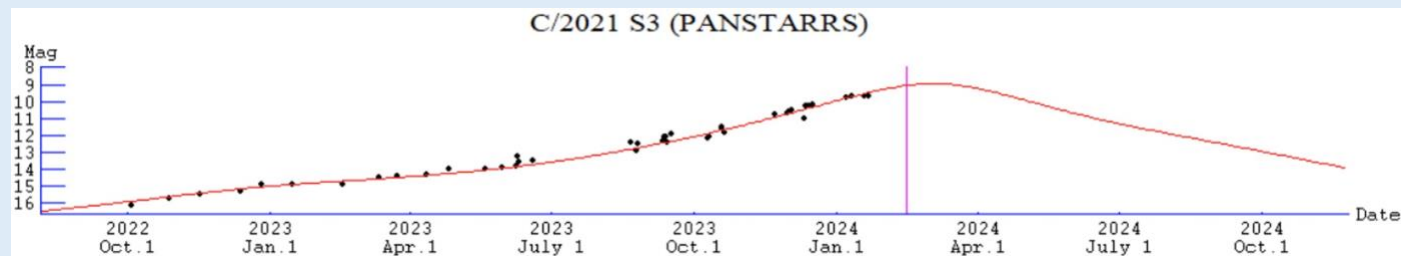
C/2021 S3 (PANSTARRS)
 Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
 T 2024 Feb. 14.71964 TT Rudenko
 q 1.3201432 (2000.0) P Q
 z -0.0001428 Peri. 6.86218 -0.77074355 +0.39896924
 +/-0.0000020 Node 215.62057 -0.61758126 -0.65953283
 e 1.0001885 Incl. 58.53338 -0.15667726 +0.63705571
 From 1081 observations 2020 Dec. 6-2024 Jan. 25, mean residual 0".5.
 1/a(orig) = +0.000144 AU**⁻¹, 1/a(fut) = +0.000059 AU**⁻¹.

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

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El	
								40N	40S
2024-Feb-01	16 40	-26 23	1.336	1.537	59M	Sco	9.3	16	32
2024-Feb-06	16 56	-23 30	1.327	1.490	60M	Oph	9.2	18	33
2024-Feb-11	17 12	-20 18	1.321	1.446	62M	Oph	9.1	21	33
2024-Feb-16	17 28	-16 48	1.320	1.406	64M	Oph	9.0	24	33
2024-Feb-21	17 44	-13 01	1.323	1.372	65M	Ser	9.0	27	33
2024-Feb-26	17 58	-08 60	1.331	1.344	67M	Oph	9.0	30	33
2024-Mar-02	18 13	-04 45	1.342	1.322	69M	Ser	8.9	34	32

Comet Magnitude Formula (from ALPO and COBS data)

$m_1 = 7.6 + 5 \log d + 5.8 \log r$
 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 (UT)	Mag	SC	APER	FL	POW	COMA Dia	TAIL DC	ICQ	CODE	Observer Name
2021S3	2023 01 30.28	M 10.2	TK	30	L	5 65	2	4	ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 01 29.27	M 10.2	TK	30	L	5 65	3	4	ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 01 24.28	M 10.1	TK	30	L	5 65	3	4/	ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2021S3	2024 01 21.71	xM 10.3	AQ	40.0L	4	59	1.7	6 9	ICQ XX	WYA	Christopher Wyatt
2021S3	2024 01 18.70	xM 10.3	AQ	40.0L	6	59	1.8	6 5	ICQ XX	WYA	Christopher Wyatt
2021S3	2023 01 11.28	M 10.3	TK	30	L	5 65	2	4	ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 01 08.27	M 10.4	TK	30	L	5 65	2	4/	ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 01 07.28	M 10.4	TK	30	L	5 65	3	4	ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2021S3	2024 01 07.21	S 10.0	TK	15.0L	5	37	2	3	ICQ XX	SOU01	Willian Souza

C/2021 S3 (PANSTARRS) was discovered back in September 2021 at 8.9 au, with pre-discovery observations back to December 2020 when it was 11.0 au from the Sun. This month sees C/2021 S3 arrive at perihelion on the 14th at 1.32 au and at closest to the Earth next month on March 14 at 1.30 au. As a result, February and March should see the comet at its brightest at around magnitude 9.0 or a few tenths of a magnitude brighter.

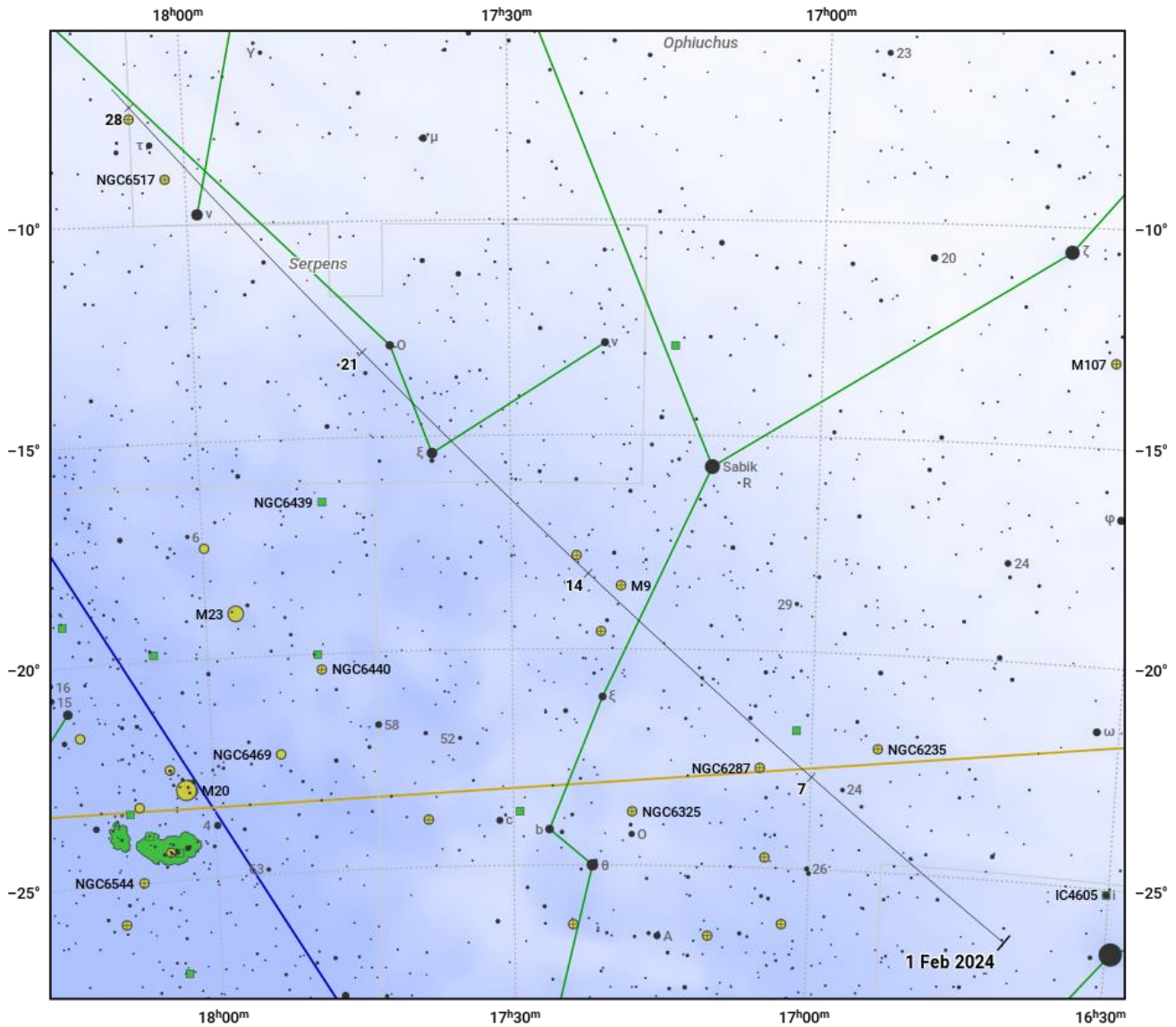
Jose Guilherme de Souza Aguiar, Willian Souza, and Chris Wyatt observed S3 last month at magnitude 10.0 to 10.4 with a small 1.7-3.0' coma. February sees the comet move north and become visible to observers in both

hemispheres as it moves through Scorpius (Feb 1-3), Ophiuchus (3-16), Serpens (16-24), Ophiuchus (24-28), and Serpens (28-29) providing a number of photo opportunities with several globular clusters.

Photo Ops:

- Feb 7 - C/2021 S3 (PANSTARRS) passes in between 10th mag globular cluster NGC 6287 and 10th mag planetary nebula IC 4634 (about 35-40' from each)
- Feb 12-13 - C/2021 S3 (PANSTARRS) within a triangle made up of 7th mag globular clusters M9, NGC 6356 and 10th mag globular NGC 6342
- Feb 26 - C/2021 S3 (PANSTARRS) passes ~30' from 11th mag globular NGC 6517
- Feb 27 - C/2021 S3 (PANSTARRS) passes ~10' from 8th mag globular NGC 6539

The path of C/2021 S3 (PANSTARRS) from 2024 February 1



© Dominic Ford 2011-2024. Chart generated 29 Jan 2024. Date markers placed at midnight UTC. Downloaded from <https://in-the-sky.org>

Magnitude scale: -9.0 -8.0 -7.0 -6.0 -5.0 -4.0 -3.0 -2.0
 1.0

— The Equator — Ecliptic Plane — Galactic Plane

Date	Mag
2024 Feb 1	9.6
2024 Feb 7	9.5
2024 Feb 15	9.4
2024 Feb 21	9.3

Figure 7 - Star chart for C/2021 S3 (PANSTARRS) for February. Chart made at in-the-sky.org.

Comets Between Magnitude 10 and 12

13P/Olbers

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

Orbit (from Minor Planet Center, MPEC 2024-B140)

13P/Olbers
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2024 June 30.03439 TT Rudenko
q 1.1752600 (2000.0) P Q
n 0.01418110 Peri. 64.40144 -0.60892557 -0.37148949
a 16.9042581 Node 85.87509 +0.18565585 -0.92575983
e 0.9304755 Incl. 44.64246 +0.77119489 -0.07045784
P 69.5
From 765 observations 1956 Jan. 13-2024 Jan. 26, mean residual 0".5.
Nongravitational parameters A1 = +0.36, A2 = +0.1087.

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

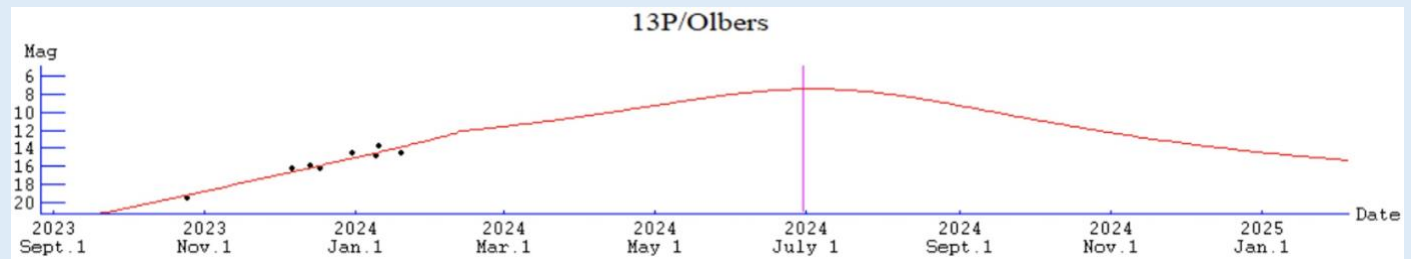
Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El (deg)	
								40N	40S
2024-Feb-01	02 51	-05 56	2.395	2.226	87E	Eri	12.4	43	38
2024-Feb-06	02 52	-04 15	2.342	2.240	83E	Eri	12.3	44	35
2024-Feb-11	02 53	-02 32	2.288	2.254	79E	Eri	12.2	43	32
2024-Feb-16	02 55	-00 48	2.235	2.268	75E	Cet	12.0	42	30
2024-Feb-21	02 58	+00 57	2.182	2.281	71E	Cet	11.9	41	27
2024-Feb-26	03 01	+02 43	2.129	2.292	67E	Cet	11.7	39	24
2024-Mar-02	03 05	+04 29	2.076	2.302	64E	Cet	11.6	37	22

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

$m_1 = -2.8 + 5 \log d + 37.1 \log r$ [Up through T-140 days]

$m_1 = 5.0 + 5 \log d + 15.0 \log r$ [After T-140 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 (UT)	Mag	SC	APER	FL	POW	COMA Dia DC	TAIL LENG PA	ICQ CODE	Observer Name
13	2024 01 15.99	M 13.6	AQ	30	L	5 100	1 6		ICQ XX DES01	Jose Guilherme de Souza Aguiar
13	2024 01 09.17	Z 14.9	GG	5.0R	4a750		1		ICQ XX OLAaa	Mike Olason

Like 12P/Pons-Brooks, 13P/Olbers is a Halley-type comet, albeit with an orbital period of 69 years vs Pons-Brook's 71 years. 13P was discovered by Heinrich Olbers in 1815. That return saw the comet reach 5th magnitude. A peak around 6-7th magnitude was reached at the subsequent two returns in 1887 (when also recovered by, though not named after, Brooks) and in 1956. Alan Hale, discoverer of C/1995 O1 (Hale-Bopp), was the first person to see Olbers this time around when he recovered the comet on 2023 August 13 at 21st mag.

This year, Olbers arrives at perihelion on June 30 at 1.18 au, though it will come no closer to the Earth than 1.90 au (on July 20). Olbers will be an evening object low in the western sky when at its best and even then, visible only from the northern hemisphere. This month sees Olbers brightening from 12th to 11th magnitude in the evening constellations of Eridanus (Feb 1-14) and Cetus (14-29).

144P/Kushida

Discovered photographically on 1994 January 8 by Yoshio Kushida (Yatsugatake South Base Observatory, Japan)
Short-period comet

Orbit (from Minor Planet Center, MPEC 2023-B140)

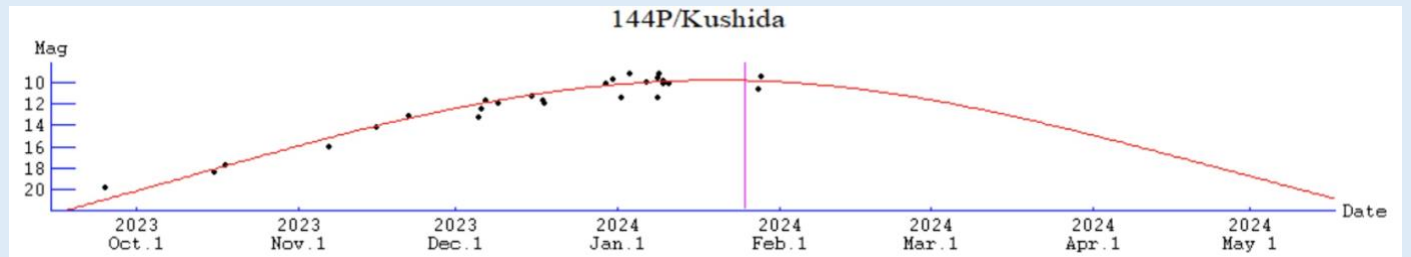
144P/Kushida
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2024 Jan. 25.76804 TT Rudenko
q 1.3987778 (2000.0) P Q
n 0.13135467 Peri. 216.32089 -0.15948988 -0.98531002
a 3.8327078 Node 242.92843 +0.92112486 -0.12628571
e 0.6350419 Incl. 3.93140 +0.35509431 -0.11496119
P 7.50
From 1783 observations 2016 July 31-2024 Jan. 25, mean residual 0".5.
Nongravitational parameters A1 = +0.56, A2 = -0.0518.

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

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El (deg)	
								40N	40S
2024-Feb-01	04 09	+15 34	1.386	0.674	111E	Tau	9.9	66	30
2024-Feb-06	04 23	+15 55	1.391	0.697	110E	Tau	10.1	66	30
2024-Feb-11	04 37	+16 16	1.397	0.722	108E	Tau	10.3	66	30
2024-Feb-16	04 52	+16 36	1.407	0.750	107E	Tau	10.6	67	30
2024-Feb-21	05 08	+16 53	1.418	0.780	105E	Tau	10.9	67	30
2024-Feb-26	05 24	+17 08	1.432	0.813	104E	Tau	11.3	67	30
2024-Mar-02	05 39	+17 18	1.447	0.848	103E	Tau	11.7	67	30

Comet Magnitude Formula (from 2023-2024 ALPO photometry)

$m_1 = 1.0 + 5 \log d + 68.9 \log r$
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)						Dia DC	LENG PA		
144	2024 01 28.95	M 10.7	TK	27.0L	5	55	1 3		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 28.75	S 9.9	TI	29.8L	4	65	7 2		ICQ XX HAR11	Christian Harder
144	2024 01 27.98	S 10.8	TK	15.0L	5	38	3 4		ICQ XX SOU01	Willian Souza
144	2024 01 27.97	M 10.7	TK	15.0L	5	38	1 4		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 17.94	M 10.5	TK	30.0L	5	65	1 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 16.94	M 10.4	TK	30.0L	5	65	1 3		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 15.95	M 10.4	TK	30.0L	5	65	1 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 10.75	S 10.0	TI	29.8L	4	92	4.5 1/		ICQ XX HAR11	Christian Harder
144	2024 01 09.75	S 10.3	TI	29.8L	4	92	3.5 1/		ICQ XX HAR11	Christian Harder
144	2024 01 09.16	Z 10.6	GG	5.0R	4a	150	6		ICQ XX OLAaa	Mike Olason
144	2024 01 08.74	S 10.0	TI	29.8L	4	92	4.5 1/		ICQ XX HAR11	Christian Harder
144	2024 01 08.72	S 11.9	TK	32.0L	5	144	1.8 2		PIL01	Uwe Pilz
144	2024 01 06.95	M 10.5	TK	27.0L	5	90	2 4		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 06.93	S 10.3	TK	20.3T	10	100	4 2/		ICQ XX GON05	Juan Jose Gonzalez Suarez
144	2024 01 05.95	M 10.6	TK	27.0L	5	90	1 4/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 04.93	M 10.7	AQ	27.0L	5	90	1 4/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
144	2024 01 03.45	xS 10.8	AQ	40.0L	4	59	4.7 2		ICQ XX WYA	Christopher Wyatt
144	2024 01 01.77	I 11.7	S	25.0C	15	288			ICQ XX DEC	Michel Deconinck

The Jupiter-family comet 144P/Kushida is currently in an orbit with a 7.5-year orbital period. The 2024 return is its 5th observed return, with the comet being seen at every return since its discovery in 1994 by Japanese seismologist and amateur astronomer Yoshio Kushida. 144P is one of two comets that Kushida discovered. Both comets were photographic discoveries, and both were discovered only a month apart, in December 1994 and January 1994. The other discovery is also a short-period comet, 147P/Kushida-Muramatsu. 144P was the second of Kushida's finds, having been discovered on the night of 1994 January 8 with a 0.10-m f/4 patrol telescope.

The discovery apparition in 1994 saw the comet brighten to 9th magnitude. The return in 2009 was also a good one, with a peak brightness of 8th magnitude. Kushida has its best returns when its perihelion is in December or January. This year's perihelion is on January 25, which makes this a good return with a perihelion distance of 1.40 au and closest approach to Earth a few weeks earlier at 0.57 au. This all suggested that Kushida should have a bright return with a peak brightness of 7-8th magnitude. Unfortunately, like 103P/Hartley last year, which also had a better-than-average return, Kushida is underperforming and may have already peaked at a fainter-than-expected magnitude of 9.5 to 10.0. Hopefully, we're wrong, and 144P will prove to be brighter post-perihelion.

144P passed closest to Earth on December 12 and arrived at perihelion on January 25 at 1.40 AU. As mentioned above, the comet is running fainter than expected, and as a result, brightness predictions for February have become fainter, at around magnitude 10.0 on the 1st to a bit fainter than 11.0 by the end of the month. At least Kushida is well placed for evening viewers as it moves through Taurus, including moving through the bright Hyades star cluster and past a few fainter NGC star clusters.

Photo Ops:

- Feb 1-12 - 144P/Kushida traverses the Hyades Cluster in Taurus
- Feb 21-22 - 144P/Kushida passes ~30' north of 7th mag open clusters NGC 1807 & 1817



Figure 8 - Gregg Ruppel imaged 144P/Kushida on 2024 January 26. The LRGB image is 40 minutes in total.

Fainter Comets of Interest

29P/Schwassmann-Wachmann

Discovered 1927 November 15 by Arnold Schwassmann and Arno Arthur Wachmann at the Hamburg Observatory in Bergedorf, Germany

Centaur comet with orbital period of ~14.9 years

Orbit (from Minor Planet Center, MPEC 2024-B140)

29P/Schwassmann-Wachmann
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2019 Apr. 28.44119 TT Rudenko
q 5.7814783 (2000.0) P Q
n 0.06622395 Peri. 51.58016 +0.98987958 -0.07557354
a 6.0505195 Node 312.40294 +0.00658122 +0.86993785
e 0.0444658 Incl. 9.36142 +0.14175721 +0.48733641
P 14.9
From 18049 observations 2018 June 18-2024 Jan. 24, mean residual 0".6.

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

29P/Schwassmann-Wachmann									Max El	
									(deg)	
Date	R.A.	Decl.	r	d	Elong	Const	Mag	40N	40S	
2024-Feb-01	08 20	+21 16	6.175	5.200	170E	Cnc	11-13	71	29	
2024-Feb-06	08 17	+21 19	6.176	5.217	165E	Cnc	11-13	71	29	
2024-Feb-11	08 15	+21 23	6.177	5.242	159E	Cnc	11-13	71	29	
2024-Feb-16	08 13	+21 26	6.179	5.274	154E	Cnc	11-13	71	29	
2024-Feb-21	08 11	+21 27	6.180	5.314	148E	Cnc	11-13	71	29	
2024-Feb-26	08 09	+21 29	6.181	5.359	143E	Cnc	11-13	71	29	
2024-Mar-02	08 07	+21 29	6.183	5.411	137E	Cnc	11-13	71	29	

Comet Magnitude Formula

None, due to frequent outbursts.

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					
29	2024	01	21.66	xM 12.5	AQ	40.0L	4	108	3.3	4	ICQ XX	WYA	Christopher Wyatt
29	2024	01	18.62	xM 12.6	AQ	40.0L	4	108	3	6	ICQ XX	WYA	Christopher Wyatt
29	2024	01	10.06	S 13.2	TI	29.8L	4	132	1.5	2	ICQ XX	HAR11	Christian Harder
29	2024	01	06.95	S 10.9	TK	20.3T10	100		2.5	2/	ICQ XX	GON05	Juan Jose Gonzalez Suarez
29	2024	01	03.22	Z 11.4	GG	5.0R	4a750		3		ICQ XX	OLAaa	Mike Olason

29P/Schwassmann-Wachmann was discovered photographically on 1927 November 15 by the German observing team of Arnold Schwassmann and Arno Arthur Wachmann. 29P experiences outbursts multiple times yearly, with the largest resulting in a peak brightness of 10th magnitude, though the majority are fainter. Six strong outbursts were seen in December and January: 2 on December 8 and 9 with a combined amplitude of 4 magnitudes, a 2-magnitude outburst on December 14, a 2-magnitude outburst on December 23, a 1-magnitude on January 3 and another 2-magnitude event on January 16. As a result, visual and digital observers have been estimating a brightness between magnitude 11 and 13 over the past two months. It is possible the comet will remain in the 11-13th magnitude range in February. It is well placed in Cancer with opposition back on January 24.

If you image 29P, please consider contributing to two pro-am programs spearheading the effort to understand this amazing object better: the British Astronomical Society's (BAA) Mission 29P monitoring program coordinated by Richard Miles. (<https://britastro.org/node/18562> & <https://britastro.org/node/25120>) and the University of Maryland's 29P Observation campaign (https://wirtanen.astro.umd.edu/29P/29P_obs.shtml).

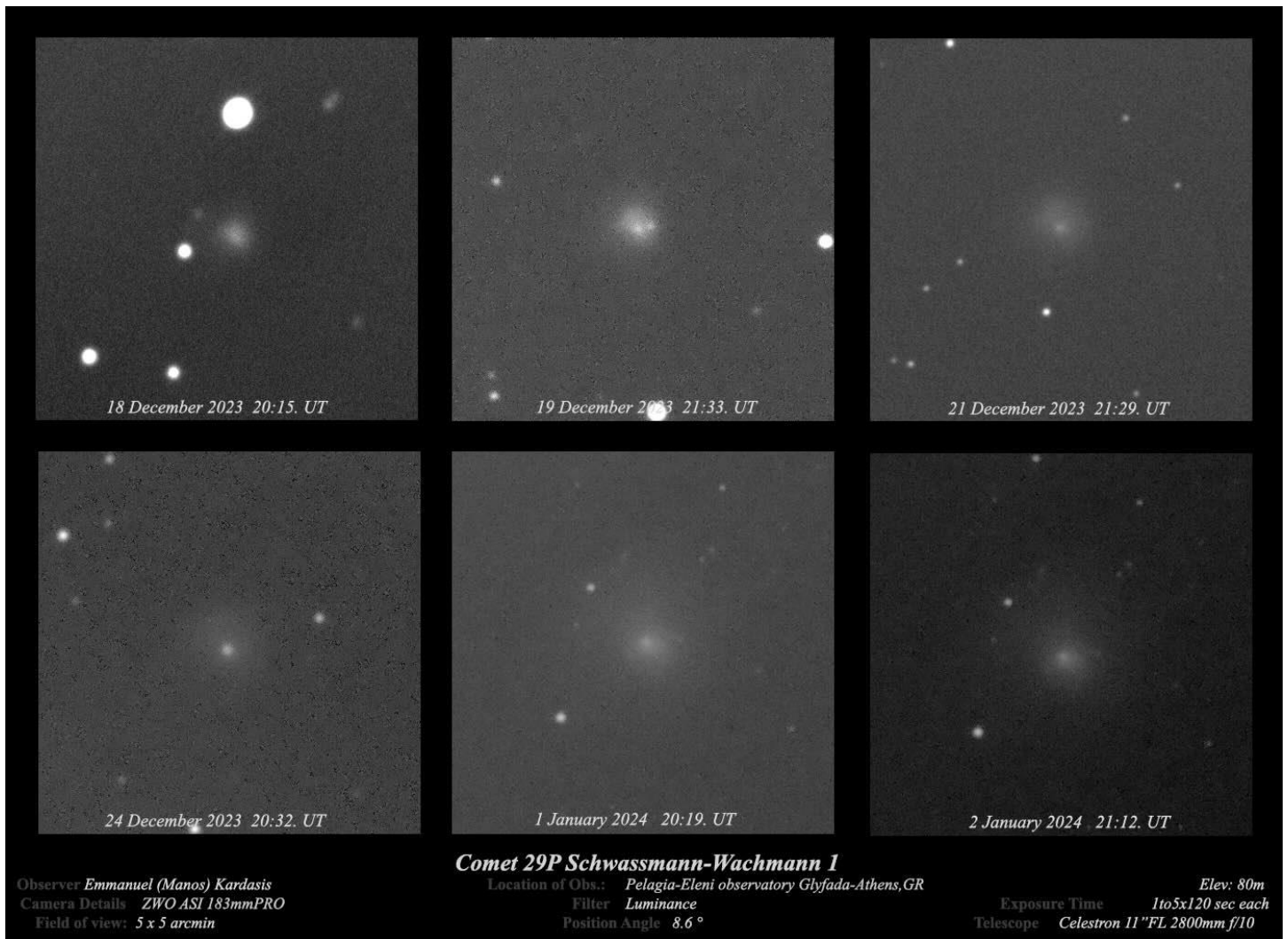


Figure 9 - The ever changing coma of 29P/Schwassmann-Wachmann as imaged by Manos Kardasis on December 18, 19, 21, 24, and January 1 and 2. Manos used a Celestron C11 and ZWO ASI183MM Pro camera.

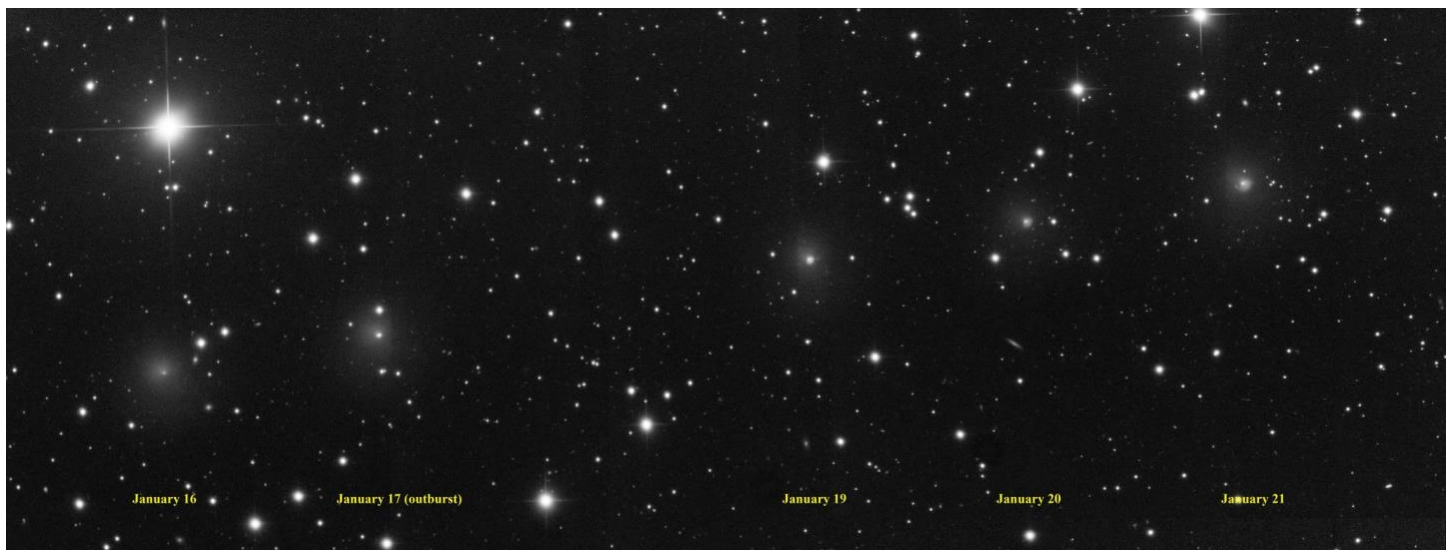


Figure 10 - Another sequence of images showing 29P's dynamic coma. These images were taken between January 16 and 21 by Eliot Herman with the iTelescopes T72 0.5-m f/7 and FLI MLI6200 camera.

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 2022-Y97)

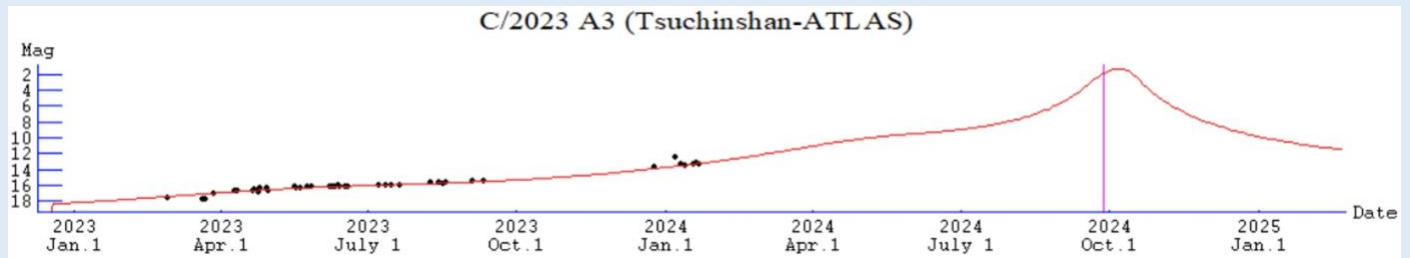
C/2023 A3 (Tsuchinshan-ATLAS)
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5
T 2024 Sept. 27.72324 TT Rudenko
q 0.3914499 (2000.0) P Q
z -0.0003870 Peri. 308.48362 +0.36130947 +0.90090533
+/-0.0000091 Node 21.55649 +0.91859202 -0.29961136
e 1.0001515 Incl. 139.11969 -0.16013800 +0.31401054
From 2318 observations 2022 Apr. 9-2024 Jan. 24, mean residual 0".3.
1/a(orig) = -0.000211 AU**⁻¹, 1/a(fut) = -0.000183 AU**⁻¹.

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

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El	
								40N	40S
2024-Feb-01	15 10	-07 53	3.893	3.872	83M	Lib	13.0	41	38
2024-Feb-06	15 10	-07 53	3.835	3.726	88M	Lib	12.8	41	42
2024-Feb-11	15 10	-07 51	3.776	3.578	93M	Lib	12.7	42	47
2024-Feb-16	15 10	-07 46	3.716	3.431	98M	Lib	12.5	42	51
2024-Feb-21	15 09	-07 39	3.656	3.285	104M	Lib	12.4	42	54
2024-Feb-26	15 07	-07 30	3.596	3.140	109M	Lib	12.2	42	56
2024-Mar-02	15 05	-07 18	3.535	2.997	115M	Lib	12.1	43	57

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

$m_1 = -16.6 + 5 \log d + 35.0 \log r$ [Through T-650 days]
 $m_1 = 1.9 + 5 \log d + 13.1 \log r$ [Between T-650 and T-382 days]
 $m_1 = 3.1 + 5 \log d + 11.5 \log r$ [Between T-382 and T-277 days]
 $m_1 = 5.3 + 5 \log d + 8.0 \log r$ [After T-277 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

Recent Magnitude Measurements in ICQ format:

Comet Des	YYYY MM DD.DD (UT)	Mag	SC	APER	FL	POW	COMA Dia	TAIL DC	ICQ CODE	Observer Name
2023A3	2023 01 29.28	M 13.5	AQ	30	L	5 100	1	5	ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023A3	2023 01 24.29	M 13.6	AQ	30	L	5 100	1	4/	ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023A3	2024 01 21.71	xM 13.9	AQ	40.0L	4	108	0.5	7/	ICQ XX WYA	Christopher Wyatt
2023A3	2024 01 18.68	xM 13.9	AQ	40.0L	4	108	0.6	6	ICQ XX WYA	Christopher Wyatt
2023A3	2023 01 07.29	M 13.7	AQ	30	L	5 100	1	5	ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023A3	2024 01 07.26	S 12.7	AQ	20.3T10	133		0.8	6	ICQ XX GON05	Juan Jose Gonzalez Suarez

While 12P/Pons-Brooks may be the story of the first half of 2024, C/2023 A3 (Tsuchinshan-ATLAS) will likely be the story of the second half of the year. The comet is now within the range of visual observers equipped with large apertures and has been reported mainly between magnitude 13.5 and 13.9, with a single observation at 12.7. Recent images show the development of a short, presumably dust, tail.

We are still 8 months from its September 27 perihelion at 0.39 au from the Sun, with the comet now within 4 au of the Sun. This month, slow-moving C/2023 A3 remains in Libra in the morning sky and should brighten from around magnitude 13.0 to 12.2.