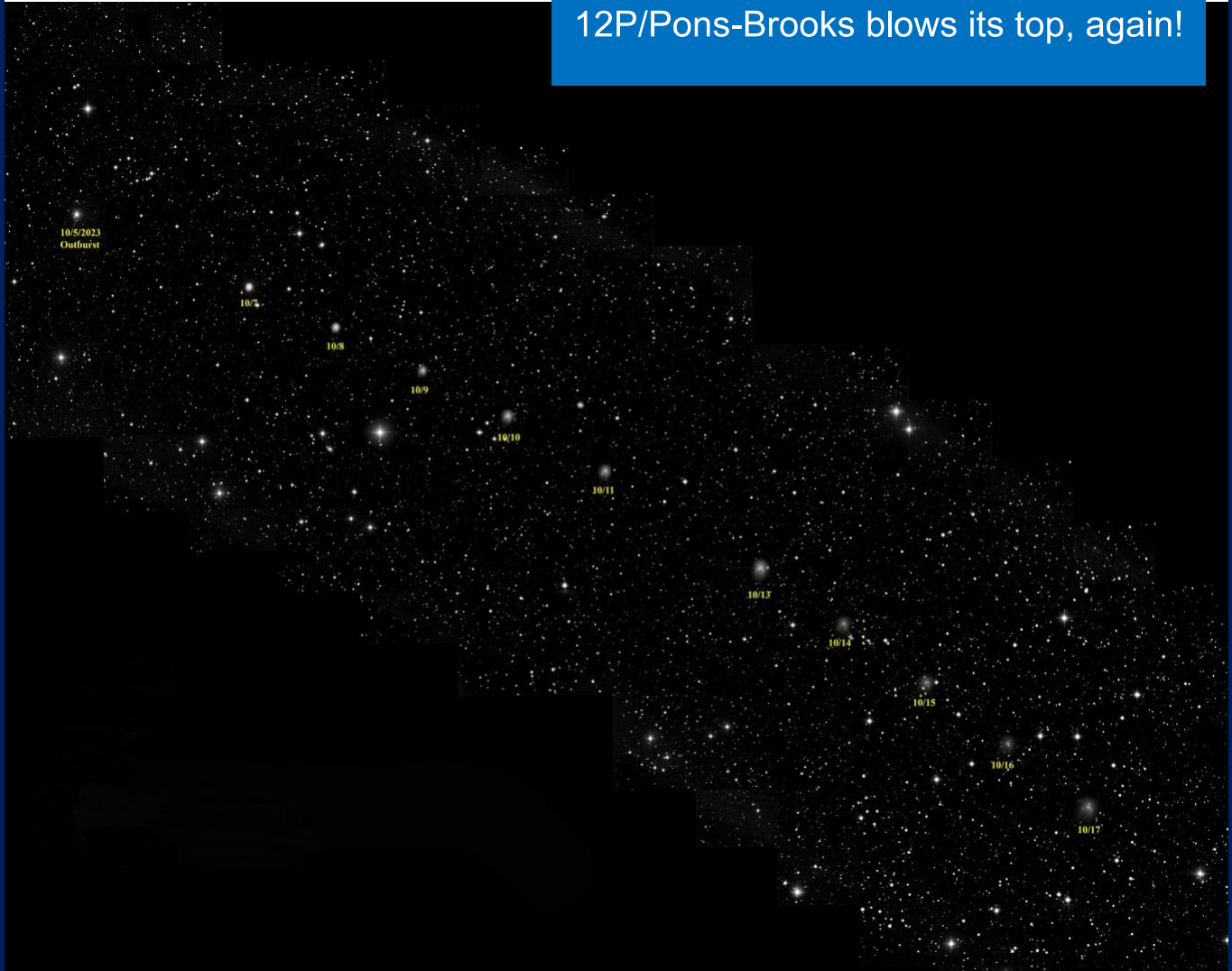


November 2023

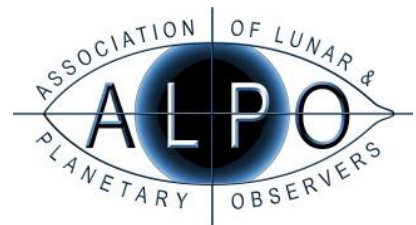
# ALPO Comet News

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

12P/Pons-Brooks blows its top, again!



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## Table of Contents

ON THE FRONT COVER:-----	2
SUMMARY -----	3
REQUEST FOR OBSERVATIONS-----	3
PHOTOMETRIC CORRECTIONS TO MAGNITUDE MEASUREMENTS-----	4
ACKNOWLEDGMENTS -----	4
COMETS CALENDAR -----	5
RECENT MAGNITUDES CONTRIBUTED TO THE ALPO COMETS SECTION-----	6
COMETS NEWS-----	8
COMETS BETWEEN MAGNITUDE 6 AND 10 -----	10
C/2023 H2 (LEMMON) -----	10
62P/TSUCHINSHAN -----	13
103P/HARTLEY-----	15
COMETS BETWEEN MAGNITUDE 10 AND 12-----	17
12P/PONS-BROOKS-----	17
C/2020 V2 (ZTF)-----	20
C/2021 S3 (PANSTARRS)-----	21
C/2023 P1 (NISHIMURA)-----	22
C/2023 S2 (ATLAS)-----	23

### On the Front Cover:

12P/Pons-Brooks is a known outburst-prone comet. Already during this return, the comet has experienced at least 3 major outbursts. The second occurred on 2023 October 5 and was followed over the next two weeks by Eliot Herman with the iTelescope T11 0.50-m f/7 reflector and FLI ProLine PL11002M camera located at the Utah Desert Remote Observatory at Great Basin Desert, Beryl Junction, Utah, USA. The mosaiced image consists of nightly 9 x 60 sec Luminance exposures, each day processed separately and assembled into the mosaic.

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/898065-alpo-comet-news-for-november-2023/>). All are encouraged to join the discussion over at Cloudy Nights. The ALPO Comets Section welcomes all comet-related articles, observations, images, drawings, magnitude estimates, or spectra. One does not have to be a member of ALPO to submit material, though membership is appreciated.

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

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## Summary

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November sees several comets within range of small apertures. C/2023 H2 (Lemmon) will pass 0.19 au from Earth this month, possibly brightening to around 6-7<sup>th</sup> magnitude as it flies across the evening sky from Ursa Major to Grus. In the morning sky, two short-period comets are on display: 62P/Tsuchinshan as it brightens from 10<sup>th</sup> to 8<sup>th</sup> magnitude and 103P/Hartley fading from 8<sup>th</sup> to 9<sup>th</sup> magnitude.

A little fainter is inbound Halley-type comet 12P/Pons-Brooks, now being hyped in the press as the “Devil Comet.” As was the case during its last two returns in 1884 and 1954, Pons-Brooks is experiencing a series of outbursts, with the most recent major outburst occurring on October 31/November 1. November will see this northern evening comet brightening from 11<sup>th</sup> to 10<sup>th</sup> magnitude.

Last month the ALPO Comets Section received 202 observations of comets C/2023 S2 (ATLAS), C/2023 H2 (Lemmon), C/2023 E1 (ATLAS), C/2022 JK5 (PANSTARRS), C/2022 A2 (PANSTARRS), C/2021 X1 (Maury-Attard), C/2021 S4 (Tsuchinshan), C/2021 S3 (PANSTARRS), C/2020 V2 (ZTF), C/2020 K1 (PANSTARRS), C/2018 A6 (Gibbs), C/2017 K2 (PANSTARRS), 471P/2010 YK3, 358P/PANSTARRS, 279P/La Sagra, 225P/LINEAR, 212P/NEAT, 207P/NEAT, 170P/Christensen, 144P/Kushida, 126P/IRAS, 103P/Hartley, 62P/Tsuchinshan, 32P/Comas Sola, 30P/Reinmuth, 30P/Reinmuth, 29P/Schwassmann-Wachmann, 12P/Pons-Brooks, and 2P/Encke. A big thanks to our August contributors: Dan Bartlett, Michel Besson, Denis Buczynski, Dan Crowson, Jose Guilherme de Souza Aguiar, Michel Deconinck, J. J. Gonzalez Suarez, Christian Harder, Carl Hergenrother, Eliot Herman, Michael Jäger, Manos Kardasis, John Maikner, Gianluca Masi, Martin Mobberley, Philippe Morel, Mike Olason, Uwe Pilz, Greg Ruppel, Chris Schur, Tenho Tuomi, and Chris Wyatt.

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## Request for Observations

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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](mailto:comets@alpo-astronomy.org) >, Comets Section Coordinator Carl Hergenrother < [carl.hergenrother@alpo-astronomy.org](mailto:carl.hergenrother@alpo-astronomy.org) > and/or Comets Section Acting Assistant Coordinator Michel Deconinck < [michel.deconinck@alpo-astronomy.org](mailto:michel.deconinck@alpo-astronomy.org) >.

## Photometric Corrections to Magnitude Measurements

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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 a few days before publication may not be included. 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

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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

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## Lunar Phases

- Nov 05 - Last Quarter Moon
- Nov 13 - New Moon
- Nov 20 - First Quarter Moon
- Nov 27 - Full Moon

## Comets at Perihelion

- Nov 01 - C/2022 V2 (ZTF) [q = 2.06 au, V ~ 17]
- Nov 04 - 404P/Bressi [q = 4.13 au, 10.4-yr period, V ~ 18, discovered in 2012, this is 2<sup>nd</sup> observed return, close approach to Jupiter in 2020 dropped perihelion from 4.84 to 4.13 au]
- Nov 10 - 358P/PANSTARRS [q = 2.41 au, 5.6-yr period, V ~ 19-20, found in 2012, also observed at 2001 and 2018 returns]
- Nov 11 - 213P/Van Ness [q = 1.98 au, 6.1-yr period, V ~ 15, found in 2005, also seen at 2011 and 2017 returns, three secondaries observed in 2011 when the main component reached 11-12<sup>th</sup> mag]
- Nov 15 - C/2019 E3 (ATLAS) [q = 10.3 au, V ~ 16-17]
- Nov 17 - P/2007 T2 (Kowalski) [q = 0.70 au, 5.4-yr period, V ~ ?, found in 2007, not seen since having been missed at returns in 2013 and 2018]
- Nov 21 - 468P/Siding Spring [q = 3.95 au, 19.0-yr period, V ~ 18, this is its first return since discovery]

## Photo Opportunities

- Nov 1-30 - 29P/Schwassmann-Wachmann passes just to the north of the Beehive Cluster (M44)
- Nov 02 - C/2023 H2 (Lemmon) within 6' of 12<sup>th</sup> mag galaxy IC 1029
- Nov 09 - C/2023 H2 (Lemmon) very close to 12<sup>th</sup> mag galaxy NGC 6599
- Nov 09 - 62P/Tsuchinshan passes within a few arc minutes of 12<sup>th</sup> mag galaxies NGC 2562 & 2563
- Nov 13 - C/2020 V2 (ZTF) within 7' of 11<sup>th</sup> mag galaxy NGC 7744
- Nov 14-15 - 62P/Tsuchinshan passes just to the north of the Beehive Cluster (M44)
- Nov 15 - 29P/Schwassmann-Wachmann & 62P/Tsuchinshan are within 5' of each other
- Nov 21 - C/2017 K2 (PANSTARRS) passes through Open Cluster NGC 2215
- Nov 22 - C/2023 P1 (Nishimura) passes within 30' of 11<sup>th</sup> mag galaxy NGC 4767
- Nov 25 - C/2021 S3 (PANSTARRS) & C/2023 P1 (Nishimura) pass ~1.5 deg from each other
- Nov 26-27 - C/2023 P1 (Nishimura) passes through a galaxy rich field
- Nov 28 - C/2021 S3 (PANSTARRS) within 10' of 11<sup>th</sup> mag galaxy NGC 4767
- Nov 28 - C/2023 P1 (Nishimura) orbital plane crossing
- Nov 30 - C/2017 K2 (PANSTARRS) closing in on the Angel Nebula (NGC 2170)

# 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					
C/2023 S2 (ATLAS)										
2023S2	2023 10 14.40	xS	12.7	AQ	40.0L	4 108	1 3		ICQ XX WYA	Christopher Wyatt
2023S2	2023 10 11.91	M	11.8	AQ	27.0L	90	1 4		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023S2	2023 10 10.91	M	11.9	AQ	27.0L	90	1 4/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023S2	2023 10 09.80	S	10.3	TK	20.3T10	77	7 2/	0.4 100	ICQ XX GON05	Juan Jose Gonzalez Suarez
2023S2	2023 10 05.80	S	10.6	TK	20.3T10	77	5 2/	0.2 100	ICQ XX GON05	Juan Jose Gonzalez Suarez
2023S2	2023 10 03.91	M	12.1	AQ	27.0L	90	1 5		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023S2	2023 10 03.40	xM	12.6	AQ	40.0L	4 59	2.6 3/		ICQ XX WYA	Christopher Wyatt
2023S2	2023 10 02.89	S	10.9	TK	20.3T10	100	4 2/		ICQ XX GON05	Juan Jose Gonzalez Suarez
C/2023 H2 (Lemmon)										
2023H2	2023 10 27.51	S	8.5	TK	12.5B	30	5 3/		ICQ xx HER02	Carl Hergenrother
2023H2	2023 10 25.11	S	9.4	TI	25.2L	4 68	6 3		ICQ XX HAR11	Christian Harder
2023H2	2023 10 23.13	S	9.7	TI	29.8L	4 79	3.5 3		ICQ XX HAR11	Christian Harder
2023H2	2023 10 21.90	S	9.5	TI	29.8L	4 108	3 3		ICQ XX HAR11	Christian Harder
2023H2	2023 10 21.50	S	9.1	TK	12.5B	30	5 3		ICQ xx HER02	Carl Hergenrother
2023H2	2023 10 21.22	S	7.3	TK	20.3T10	77	18 3		ICQ XX GON05	Juan Jose Gonzalez Suarez
2023H2	2023 10 15.14	S	10.0	TK	7.0B	6 16	4 2		PIL01	Uwe Pilz
2023H2	2023 10 13.50	S	9.6:TK	12.5B	30	3 2			ICQ xx HER02	Carl Hergenrother
2023H2	2023 10 11.50	S	9.6:TK	12.5B	30	3 2			ICQ xx HER02	Carl Hergenrother
2023H2	2023 10 09.81	S	8.4	TK	20.3T10	77	14 2		ICQ XX GON05	Juan Jose Gonzalez Suarez
2023H2	2023 10 05.81	S	8.4	TK	20.3T10	77	14 2/		ICQ XX GON05	Juan Jose Gonzalez Suarez
2023H2	2023 10 02.90	S	8.3	TK	20.3T10	77	14 2		ICQ XX GON05	Juan Jose Gonzalez Suarez
C/2023 E1 (ATLAS)										
2023E1	2023 10 11.92	M	12.5	AQ	30.0L	5 100	1 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023E1	2023 10 10.92	M	12.4	AQ	30.0L	5 100	1 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2023E1	2023 10 03.41	xM	12.3	AQ	40.0L	4 59	4.3 3/		ICQ XX WYA	Christopher Wyatt
C/2022 JK5 (PANSTARRS)										
2022JK5	2023 10 14.41	xM	14.4	AQ	40.0L	4 108	1 5		ICQ XX WYA	Christopher Wyatt
2022JK5	2023 10 03.42	xM	13.9	AQ	40.0L	4 59	1.7 4		ICQ XX WYA	Christopher Wyatt
C/2022 A2 (PANSTARRS)										
2022A2	2023 10 14.41	xM	13.6	AQ	40.0L	4 108	1.4 4/		ICQ XX WYA	Christopher Wyatt
2022A2	2023 10 03.42	xM	13.5	AQ	40.0L	4 108	1.6 3/		ICQ XX WYA	Christopher Wyatt
C/2021 X1 (Mauray-Attard)										
2021X1	2023 10 14.43	xM	14.9	AQ	40.0L	4 182	0.6 6		ICQ XX WYA	Christopher Wyatt
2021X1	2023 10 11.24	M	13.8	AQ	30.0L	5 121	1 3		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2021X1	2023 10 03.43	xM	13.8	AQ	40.0L	4 108	1 4		ICQ XX WYA	Christopher Wyatt
C/2021 T4 (Lemmon)										
2021T4	2023 10 03.39	&S	12.9	AQ	40.0L	4 108	1.5 3		ICQ XX WYA	Christopher Wyatt
C/2021 S3 (PANSTARRS)										
2021S3	2023 10 21.31	M	12.2	AQ	30.0L	5 88	1 2/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 10 19.12	S	12.4	TI	50.8L	150	1 4	3.5 m250	ICQ XX HAR11	Christian Harder
2021S3	2023 10 11.31	M	12.5	AQ	30.0L	5 88	1 2		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 10 10.31	M	12.6	AQ	30.0L	5 100	1 2/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
C/2020 V2 (ZTF)										
2020V2	2023 10 21.28	M	10.9	TK	30.0L	5 88	2 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 20.98	S	10.1	TK	20.3T10	100	3 3/		ICQ XX GON05	Juan Jose Gonzalez Suarez
2020V2	2023 10 18.28	M	10.8	TK	30.0L	5 88	2 3		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 16.29	M	10.6	TK	30.0L	5 88	2 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 14.42	xM	10.7	AQ	40.0L	4 59	2.2 6 19	m 26	ICQ XX WYA	Christopher Wyatt
2020V2	2023 10 12.28	M	10.5	TK	30.0L	5 88	2 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 11.28	M	10.5	TK	30.0L	5 88	2 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 10.28	M	10.4	TK	30.0L	5 88	2 3		ICQ XX DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 10.02	S	9.8	TK	20.3T10	77	3 4		ICQ XX GON05	Juan Jose Gonzalez Suarez
2020V2	2023 10 03.43	xM	10.3:TK	40.0L	4 59		2.2 6 32	m 9	ICQ XX WYA	Christopher Wyatt
C/2020 K1 (PANSTARRS)										
2020K1	2023 10 19.10	S	13.7	TI	50.8L	200	0.6 3		ICQ XX HAR11	Christian Harder
2020K1	2023 10 14.40	xM	14.0	AQ	40.0L	4 182	0.6 4		ICQ XX WYA	Christopher Wyatt
2020K1	2023 10 03.40	xM	14.3	AQ	40.0L	4 182	0.7 3/		ICQ XX WYA	Christopher Wyatt
C/2018 A6 (Gibbs)										
2018A6	2023 10 18.99	C	19.6	BG	30.5H	4B460			ICQ XX MAI01	John Maikner
C/2017 K2 (PANSTARRS)										
2017K2	2023 10 23.12	S	12.7	TI	29.8L	4 132	0.55 3		ICQ XX HAR11	Christian Harder
2017K2	2023 10 11.28	M	13.6	AQ	30.0L	5 100	1 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
358P/PANSTARRS										
358	2023 10 08.11	C	19.2	BG	30.5H	4F000			ICQ XX MAI01	John Maikner
279P/La Sagra										
279	2023 10 24.21	C	20.3	BG	30.5H	4E400			ICQ XX MAI01	John Maikner

225P/LINEAR																					
225	2023	10	12.36	C	20.3	BG	30.5H	4C900										ICQ	XX	MAI01	John Maikner
212P/NEAT																					
212	2023	10	19.18	C	20.1	BG	30.5H	4D500										ICQ	XX	MAI01	John Maikner
126P/IRAS																					
126	2023	10	12.90	Z	15.2	GG	35.0T	6a600	0.75									BUC01	BUC01	Denis Buczynski	
103P/Hartley																					
103	2023	10	27.51	S	8.0	TK	12.5B	30	7	2								ICQ	xx	HER02	Carl Hergenrother
103	2023	10	25.08	S	9.5	TI	25.2L	4 68	5.5	2								ICQ	XX	HAR11	Christian Harder
103	2023	10	23.29	M	9.4	TK	30.0L	5 88	2	4								ICQ	XX	DES01	Jose Guilherme de Souza Aguiar
103	2023	10	23.11	S	8.6	TI	29.8L	4 79	5.5	2								ICQ	XX	HAR11	Christian Harder
103	2023	10	21.50	S	8.3	TK	12.5B	30	7	3								ICQ	xx	HER02	Carl Hergenrother
103	2023	10	21.28	M	9.3	TK	30.0L	5 88	2	4								ICQ	XX	DES01	Jose Guilherme de Souza Aguiar
103	2023	10	21.06	S	9.3	TK	20.3T10	77	7	3								ICQ	XX	GON05	Juan Jose Gonzalez Suarez
103	2023	10	19.07	S	9.8	TI	50.8L	100	4	3								ICQ	XX	HAR11	Christian Harder
103	2023	10	18.29	M	9.0	TK	30.0L	5 88	2	4								ICQ	XX	DES01	Jose Guilherme de Souza Aguiar
103	2023	10	16.29	M	8.9	TK	30.0L	5 88	2	3								ICQ	XX	DES01	Jose Guilherme de Souza Aguiar
103	2023	10	15.13	S	8.8	TK	7.0B	6 16	9	2										PIL01	Uwe Pilz
103	2023	10	14.15	O	8.1	S	25.0C15	144	3	3								ICQ	XX	DEC	Michel Deconinck
103	2023	10	13.51	S	8.1	TK	12.5B	30	6	3								ICQ	xx	HER02	Carl Hergenrother
103	2023	10	12.29	M	8.8	TK	30.0L	5 88	2	3/								ICQ	XX	DES01	Jose Guilherme de Souza Aguiar
103	2023	10	11.49	S	8.1	TK	12.5B	30	5	3								ICQ	xx	HER02	Carl Hergenrother
103	2023	10	11.29	M	9.0	TK	30.0L	5 88	2	3/								ICQ	XX	DES01	Jose Guilherme de Souza Aguiar
103	2023	10	10.30	M	9.2	TK	30.0L	5 88	2	4								ICQ	XX	DES01	Jose Guilherme de Souza Aguiar
103	2023	10	10.04	S	8.2	TK	8.0B	20	8	3/								ICQ	XX	GON05	Juan Jose Gonzalez Suarez
103	2023	10	10.03	S	8.4	TK	20.3T10	77	7	3/								ICQ	XX	GON05	Juan Jose Gonzalez Suarez
62P/Tsuchinshan																					
62	2023	10	23.30	M	12.4	AQ	30.0L	5 100	1	3								ICQ	XX	DES01	Jose Guilherme de Souza Aguiar
62	2023	10	21.29	M	12.5	AQ	30.0L	5 100	1	3/								ICQ	XX	DES01	Jose Guilherme de Souza Aguiar
62	2023	10	21.19	S	11.0	TK	20.3T10	133	4	1/								ICQ	XX	GON05	Juan Jose Gonzalez Suarez
29P/Schwassmann-Wachmann																					
29	2023	10	19.09	S	15.1	TI	50.8L	257	0.4	2								ICQ	XX	HAR11	Christian Harder
29	2023	10	10.17	S	11.2	AQ	20.3T10	77	5	0/								ICQ	XX	GON05	Juan Jose Gonzalez Suarez
12P/Pons-Brooks																					
12	2023	10	21.91	S	12.7	TI	29.8L	4 132	1.2	2								ICQ	XX	HAR11	Christian Harder
12	2023	10	20.84	S	10.5	TK	20.3T10	77	7	2/								ICQ	XX	GON05	Juan Jose Gonzalez Suarez
12	2023	10	12.88	Z	11.4	GG	35.0T	6a660	4.5									BUC01	BUC01	Denis Buczynski	
12	2023	10	10.79	O	11.2	S	61.0L	3 210	2	6	3.5	m110						ICQ	XX	DEC	Michel Deconinck
12	2023	10	09.83	S	10.8	TK	20.3T10	77	7	3/								ICQ	XX	GON05	Juan Jose Gonzalez Suarez
12	2023	10	07.79	S	11.3	S	25.0C15	143	1.1	7	1.5	m120						ICQ	XX	DEC	Michel Deconinck
12	2023	10	06.83	S	11.7	TK	32.0L	5 80	0.2	8								ICQ	XX	PIL01	Uwe Pilz
12	2023	10	05.83	I	11.7	AQ	20.3T10	77		8/								ICQ	XX	GON05	Juan Jose Gonzalez Suarez
2P/Encke																					
2	2023	10	13.52	M	8.4	TK	12.5B	30	1.5	8								ICQ	xx	HER02	Carl Hergenrother
2	2023	10	11.51	M	8.6	TK	12.5B	30	2	8								ICQ	xx	HER02	Carl Hergenrother
2	2023	10	10.21	M	8.1	TK	20.3T10	77	5	6								ICQ	XX	GON05	Juan Jose Gonzalez Suarez

## Comets News

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### New Periodic Comet Numberings

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
467P/2010 TO20 = P/2023 H6 (LINEAR-Grauer)	MPC 164694

### New Discoveries and Recoveries

*C/2023 U1 (Fuls)* – David Carson Fuls of the Catalina Sky Survey discovered this 19<sup>th</sup> magnitude comet on 2023 October 16 with the Mount Lemmon 1.5-m. The comet is around one year from perihelion on 2024 October 13 at 4.97 au. It is expected to peak at 17-18<sup>th</sup> magnitude. [CBET 5308, MPEC 2023-U288]

*C/2023 T3 (Fuls)* – Carson also found another comet. *C/2023 T3* was around 18-19<sup>th</sup> magnitude at discovery on October 15 (only a night before *C/2023 U1*). It was also found with the Mount Lemmon 1.5-m. This one arrives at perihelion on 2025 January 26 at 3.37 au and may peak around 16<sup>th</sup> magnitude. [CBET 5307, MPEC 2023-U290]

*C/2023 T2 (Borisov)* - Gennady Borisov discovered his 19<sup>th</sup> comet on 2023 October 14 at 19<sup>th</sup> magnitude with a 0.50-m f/1.9 astrograph at the MARGO observatory near Nauchnij, Crimea. This long-period comet is at perihelion on 2023 December 21 at 2.01 au, and should peak at 17<sup>th</sup> magnitude in December/January. [CBET 5304, MPEC 2023-U162]

*P/2023 T1 (PANSTARRS)* – On October 9, Pan-STARRS used one of their Haleakala-based 1.8-m telescopes to find *C/2023 T1* at 20<sup>th</sup> magnitude. Pre-discovery observations by Pan-STARRS and the Mount Lemmon Survey extended the observational arc back to July. The comet is currently in an orbit with an orbital period of 8.7 years and a perihelion on 2024 May 22 at 2.82 au. It is expected to peak at 19<sup>th</sup> magnitude. S. Nakano reports in CBET 5302 that *T1* may have experienced two close approaches to Jupiter in 2007 and 2019. Prior to the two close approaches, it was on a 28-year orbit with a perihelion near Jupiter's orbit at 5.05 au. [CBET 5302, MPEC 2023-U53]

*C/2023 S3 (Lemmon)* – A new 29<sup>th</sup> magnitude comet was found by the Mount Lemmon 1.5-m on 2023 September 25. With a 149-year orbital period, it is considered a Halley-type comet. *S3* will pass 0.56 au from Earth on November 10 while still 1.48 au from Earth. Due to a very retrograde inclination of 140 deg, it moves rapidly away from the Earth, so by the time of perihelion at 0.83 au from the Sun on 2024 January 19, it will be 1.70 au from the Earth. Its retrograde motion will bring it close to Earth again on April 16 at 0.82 au, though it will be 1.70 au from the Sun by then. A conservative  $2.5n = 8$  brightening rate results in a peak brightness of only 16<sup>th</sup> magnitude, but we shouldn't be surprised if this object gets a few magnitudes brighter. [CBET 5310, MPEC 2023-V1]

*C/2023 Q2 (PANSTARRS)* – Rob Weryk reported the discovery of a 21<sup>st</sup> magnitude comet on August 23 with the Pan-STARRS2 1.8-m at Haleakala. Pan-STARRS2 pre-discovery observations were found from July 6. *Q2* is expected to peak at 18<sup>th</sup> magnitude around the time of perihelion on 2024 June 24 at 3.21 au. [CBET 5307, MPEC 2023-U285]



*P/2023 RL75 = P/2002 T6 (LINEAR-NEAT)* – On September 9, an apparently asteroidal 21<sup>st</sup> magnitude object was discovered by E. Schwab with the 0.8-m f/3 Schmidt telescope at Calar Alto and designated 2023 RL75. Subsequently, Alessandro Odasso suggested that RL75 and P/2002 T6 were the same object on comets-ml. Mike Rudenko of the MPC confirmed the linkage.

The comet was originally discovered independently by the LINEAR and NEAT surveys in October 2022. A few months later, it peaked at 15<sup>th</sup> magnitude. With a 21.9-year orbital period, its current return is its first since 2002. This time around, perihelion is on 2024 July 15 at 3.39 au. The comet is expected to once again peak at 15<sup>th</sup> magnitude [CBET 5306, MPEC 2023-U279]

# Comets Between Magnitude 6 and 10

## C/2023 H2 (Lemmon)

Discovered 2023 April 23 by the Catalina Sky Survey with the 1.5-m Mount Lemmon reflector

### Orbit (from Minor Planet Center, MPEC 2023-U276)

C/2023 H2 (Lemmon)  
 Epoch 2023 Sept. 13.0 TT = JDT 2460200.5  
 T 2023 Oct. 29.18888 TT  
 Rudenko  
 q 0.8944095 (2000.0) P Q  
 z +0.0040769 Peri. 150.64889 +0.57676606 +0.60274492  
 +/-0.0000007 Node 217.04434 +0.44789906 +0.33115304  
 e 0.9963536 Incl. 113.75377 +0.68317446 -0.72597261  
 From 320 observations 2023 Mar. 26-Oct. 28, mean residual 0".8.  
 1/a(orig) = +0.004321 AU\*\*-1, 1/a(fut) = +0.004203 AU\*\*-1.

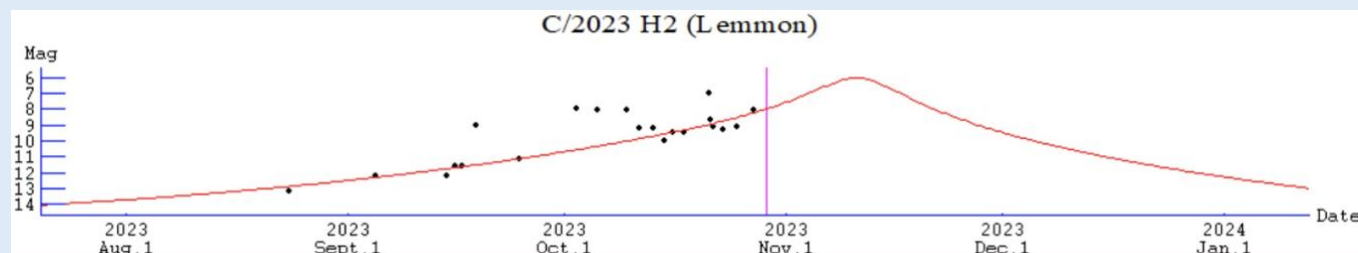
### Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El (deg)	
								40N	40S
2023-Nov-01	14 05	+50 11	0.896	0.410	64M	UMa	7.6	25	0
2023-Nov-06	15 55	+45 43	0.906	0.265	63E	Her	6.7	33	0
2023-Nov-11	18 40	+18 40	0.924	0.193	64E	Her	6.0	47	0
2023-Nov-16	20 33	-14 38	0.951	0.265	73E	Cap	6.8	32	35
2023-Nov-21	21 27	-28 32	0.984	0.409	77E	PsA	7.9	21	48
2023-Nov-26	21 57	-34 24	1.024	0.571	77E	PsA	8.8	15	51
2023-Dec-01	22 16	-37 25	1.069	0.736	75E	Gru	9.5	12	50
2023-Dec-06	22 29	-39 13	1.119	0.899	72E	Gru	10.1	10	48

### Comet Magnitude Formula (from ALPO and COBS data)

$$m_1 = 9.9 + 5 \log d + 8.2 \log r$$

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	ICQ	CODE	Observer Name
2023H2	2023 10 27.51	S 8.5	TK	12.5B	30	5	3/			ICQ xx	HER02	Carl Hergenrother
2023H2	2023 10 25.11	S 9.4	TI	25.2L	4	68	6	3		ICQ XX	HAR11	Christian Harder
2023H2	2023 10 23.13	S 9.7	TI	29.8L	4	79	3.5	3		ICQ XX	HAR11	Christian Harder
2023H2	2023 10 21.90	S 9.5	TI	29.8L	4	108	3	3		ICQ XX	HAR11	Christian Harder
2023H2	2023 10 21.50	S 9.1	TK	12.5B	30	5	3			ICQ xx	HER02	Carl Hergenrother
2023H2	2023 10 21.22	S 7.3	TK	20.3T10	77	18	3			ICQ XX	GON05	Juan Jose Gonzalez Suarez
2023H2	2023 10 15.14	S 10.0	TK	7.0B	6	16	4	2			PIL01	Uwe Pilz
2023H2	2023 10 13.50	S 9.6:TK	12.5B	30	3	2				ICQ xx	HER02	Carl Hergenrother
2023H2	2023 10 11.50	S 9.6:TK	12.5B	30	3	2				ICQ xx	HER02	Carl Hergenrother
2023H2	2023 10 09.81	S 8.4	TK	20.3T10	77	14	2			ICQ XX	GON05	Juan Jose Gonzalez Suarez
2023H2	2023 10 05.81	S 8.4	TK	20.3T10	77	14	2	2/		ICQ XX	GON05	Juan Jose Gonzalez Suarez
2023H2	2023 10 02.90	S 8.3	TK	20.3T10	77	14	2			ICQ XX	GON05	Juan Jose Gonzalez Suarez

C/2023 H2 (Lemmon) is a dynamically old comet that was last at perihelion about 3,500 years ago. Though it was a faint 19-20<sup>th</sup> magnitude at discovery in April 2023 by the Mount Lemmon Survey / Catalina Sky Survey, it brightened to around 8<sup>th</sup> magnitude as it approached its perihelion on October 29 at 0.89 au. This month will

see the comet brighten by possibly another magnitude or two to around magnitude 6.0 when it passes closest to Earth on November 10 at 0.19 au.

Measuring H2's brightness has been difficult with a large scatter in reported magnitudes. Between October 21 and 30, reports to the ALPO had brightness estimates ranging from magnitude 7.3 to 10.7 (aperture and personal offsets bring the range down a little to 7.0 to 9.3). During the same period, submissions to the COBS site had an even larger range (7.3 to 10.4).

This month, the biggest driver in the brightness of H2 will be its distance to Earth. That distance will drop from 0.41 au on the 1<sup>st</sup> to 0.19 au on the 10<sup>th</sup> before increasing to 0.74 au at the end of the month. The decrease in distance between the 1<sup>st</sup> and 10<sup>th</sup> will result in a brightening of ~1.6 magnitudes. If the comet is really at magnitude 7.6 on the 1<sup>st</sup>, then it could be as bright as magnitude 6.0 at closest. There are two caveats, though. The first is the large scatter in reported brightness, meaning the prediction could be off by a magnitude. And second, this is already a gas-rich, dust-poor comet with a large coma. That blue-green coma will only get larger as the comet gets closer and may not even be visible to observers under a bright, light-polluted sky.

H2 starts the month north of the Sun, visible in the northwest at dusk and the northeast at dawn. It will rapidly move to the east north of the Sun and become an evening-only object a few days into November. Though located in the far north, as the month begins, it will swing rapidly south in the evening sky and become visible from the southern hemisphere by mid-month. Highlighting the comet's rapid motion are the constellations it will be traveling through: Ursa Major (Nov 1), Boötes (2-5), Hercules (5-11), Aquila (11-14), Capricornus (14-20), Pisces Austrinus (20-28), and Grus (28-30).



Figure 1 - Eliot Herman caught C/2023 H2 (Lemmon) on 2023 October 31. iTelescopes T02 – Takahashi TOA-150, QHY268C OSC CMOS, 25x60-sec, Utah Desert Remote Observatory, Beryl Junction, Utah, USA.

The path of C/2023 H2 (Lemmon) from 2023 November 1

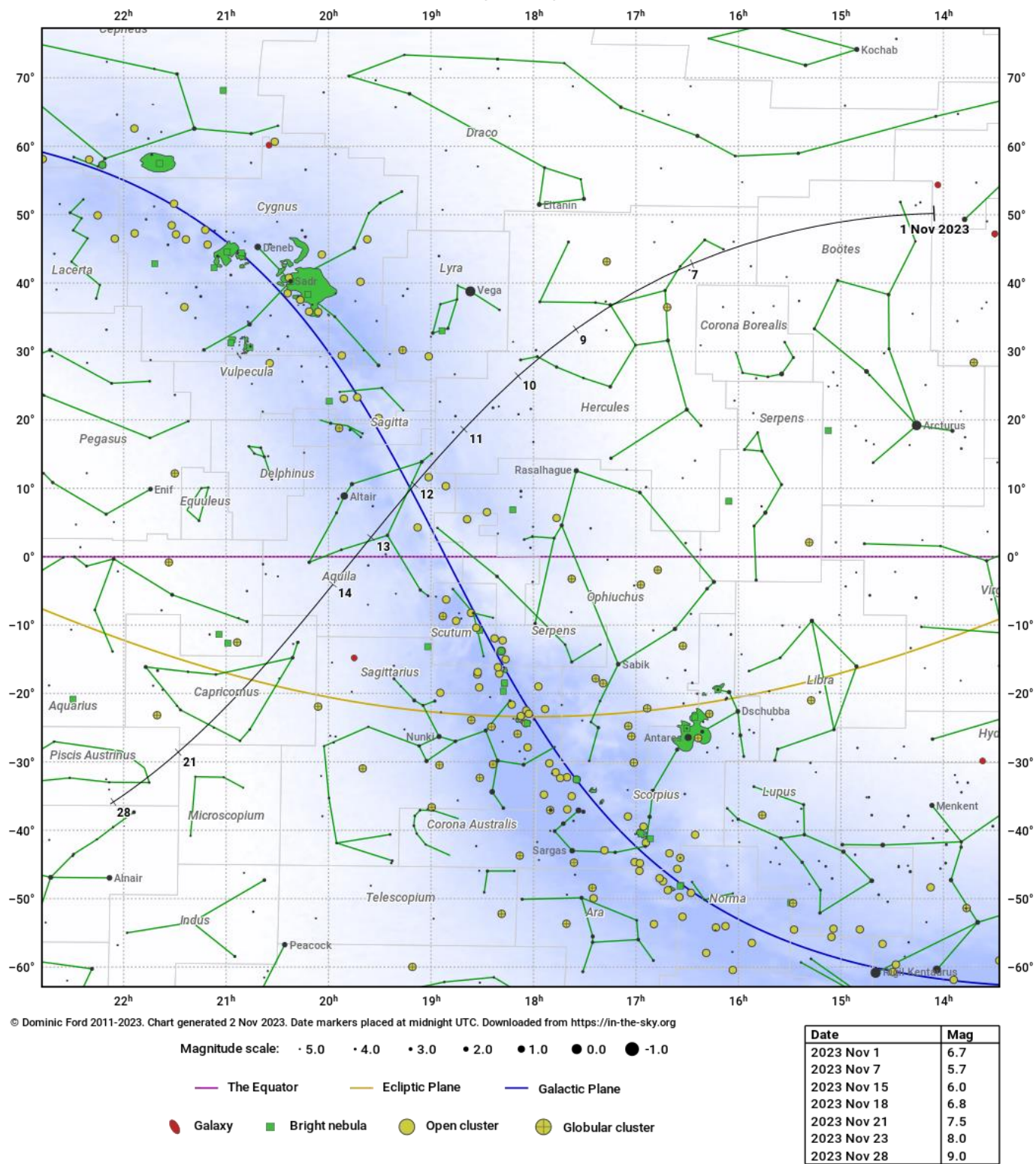


Figure 2 - The path of C/2023 S2 (Lemmon) this November as it rapidly moves from Ursa Major through the summer Milky Way and ends in Grus. The star chart was made at Dominic Ford's In-The-Sky.org site.



## 62P/Tsuchinshan

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

### Orbit (from Minor Planet Center, MPEC 2023-U276)

62P/Tsuchinshan  
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5  
T 2023 Dec. 25.07495 TT Rudenko  
q 1.2650642 (2000.0) P Q  
n 0.15882680 Peri. 47.27654 -0.43525694 -0.89701092  
a 3.3769155 Node 68.67408 +0.79999331 -0.42455706  
e 0.6253788 Incl. 4.73900 +0.41299164 -0.12297445  
P 6.21  
From 208 observations 2023 Aug. 29-Oct. 28, mean residual 0".6.  
Nongravitational parameters A1 = +5.26, A2 = -17.5066.

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

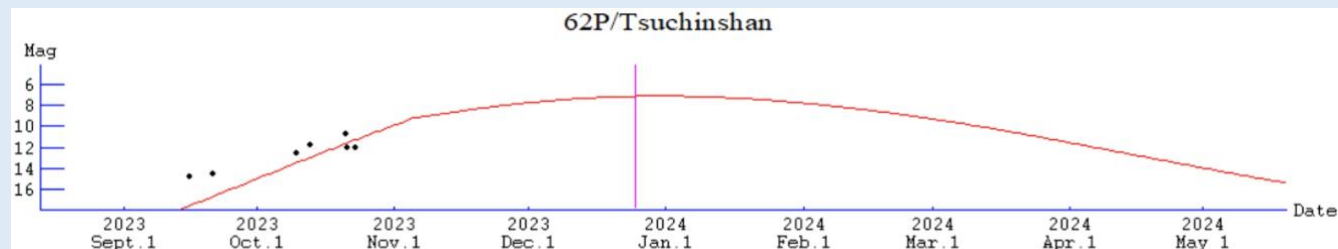
Date	R.A.	Decl.	r	d	Elong	Cont	Mag	Max El (deg)	
								40N	40S
2023-Nov-01	07 46	+21 37	1.419	0.812	103M	Gem	9.9	71	22
2023-Nov-06	08 05	+21 20	1.394	0.769	103M	Cnc	9.2	71	22
2023-Nov-11	08 24	+20 57	1.371	0.731	104M	Cnc	8.8	71	21
2023-Nov-16	08 43	+20 28	1.349	0.695	105M	Cnc	8.5	70	21
2023-Nov-21	09 03	+19 53	1.330	0.664	105M	Cnc	8.2	70	21
2023-Nov-26	09 23	+19 13	1.313	0.636	105M	Leo	8.0	69	21
2023-Dec-01	09 42	+18 28	1.298	0.611	106M	Leo	7.7	68	21
2023-Dec-06	10 02	+17 39	1.286	0.590	106M	Leo	7.5	67	21

### Comet Magnitude Formula (from 2017-2018 ALPO observations)

$m_1 = -2.0 + 5 \log d + 81.2 \log r$  [Before T-50 days]

$m_1 = 5.4 + 5 \log d + 30.1 \log r$  [After T-50 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
62	2023 10 23.30	M 12.4	AQ	30.0L	5	100	1 3		ICQ XX DES01	Jose Guilherme de Souza Aguiar
62	2023 10 21.29	M 12.5	AQ	30.0L	5	100	1 3/		ICQ XX DES01	Jose Guilherme de Souza Aguiar
62	2023 10 21.19	S 11.0	TK	20.3T10	133		4 1/		ICQ XX GON05	Juan Jose Gonzalez Suarez

One of the better comets of the next few months will be short-period comet 62P/Tsuchinshan. The comet is named after the Purple Mountain Observatory, also known as the Zijinshan Astronomical Observatory, located on the Purple Mountain east of Nanjing, China, and anglicized as "Tsuchinshan." This year's sees 62P's 9<sup>th</sup> observed return after having been observed at returns in 1965, 1971, 1978, 1985, 1991, 1998, 2004, and 2017.

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 15<sup>th</sup> magnitude. Surprisingly, during its 1985 return, which was very similar to the one in 1965, 62P reached a brighter 10<sup>th</sup> 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 10<sup>th</sup> magnitude even though it

came no closer than 1.02 au from Earth. This year, the comet will arrive at perihelion on 2023 December 25, at 1.26 au, and have its closest approach to Earth on 2024 January 29, at 0.50 au. This should be 62P's best and brightest apparition between 1900 and 2100.

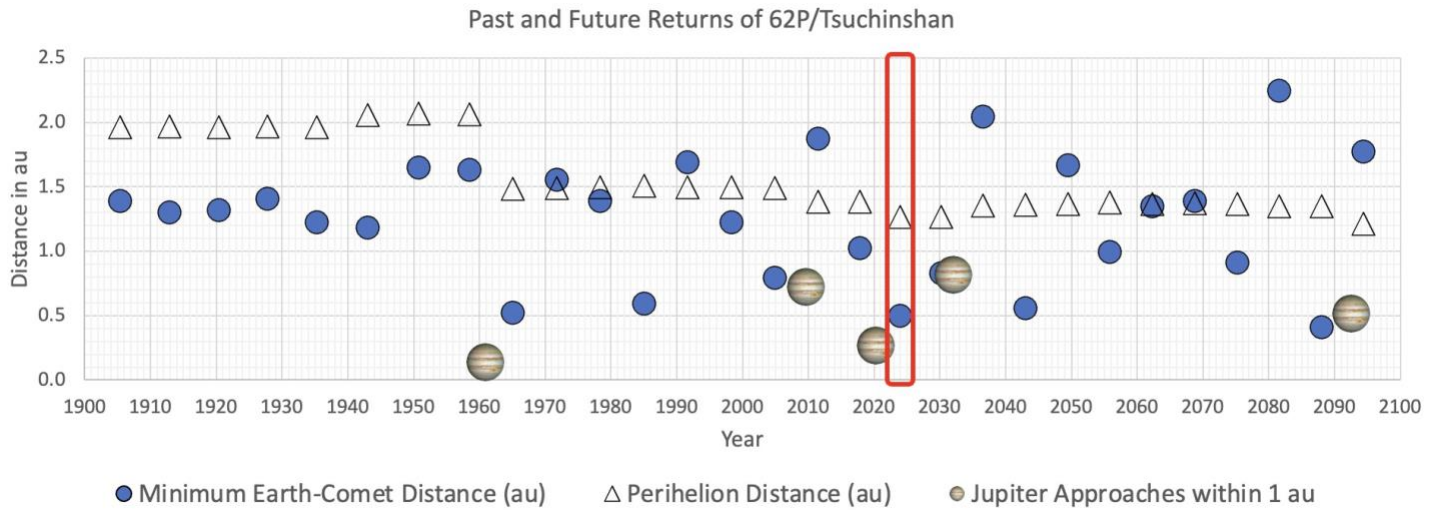


Figure 3 - Orbital evolution of 62P/Tsuchinshan from JPL Horizons data. The current apparition is highlighted in red.

So far, the comet has been closely following a lightcurve based on observations from the 2017 apparition. If this continues to be the case, 62P should start at magnitude 9.9 on the 1<sup>st</sup>, reach 8.5 by mid-month and end the month at 7.7. The comet is a morning object observable from both hemispheres moving through Gemini (Nov 1-4), Cancer (4-25), and Leo (25-30). On November 15, currently 12<sup>th</sup> magnitude 29P/Schwassmann-Wachmann and 62P/Tsuchinshan pass within 5' of each other.



Figure 4 – 62P/Tsuchinshan was imaged by Dan Bartlett (June Lake, CA) on 2023 October 16. Telescope C14 f/2, ZWO ASI 2600mcP, 95 x90-sec.

# 103P/Hartley

Discovered photographically on 1986 March 15 by Malcolm Hartley at Siding Spring Observatory in Australia  
Jupiter-family comet

## Orbit (from Minor Planet Center, MPEC 2023-U276)

103P/Hartley

Epoch 2023 Sept. 13.0 TT = JDT 2460200.5

T 2023 Oct. 12.51238 TT

Rudenko

q	(2000.0)	P	Q
1.0640923			
n	0.15210834	Peri. 181.30119	+0.75453079
a	3.4756340	Node 219.75001	+0.60421666
e	0.6938422	Incl. 13.61044	+0.25613574
P	6.48		+0.07554136

From 8111 observations 2004 Sept. 20-2023 Oct. 28, mean residual 0".6.

Nongravitational parameters A1 = +0.18, A2 = +0.0248.

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

103P/Hartley

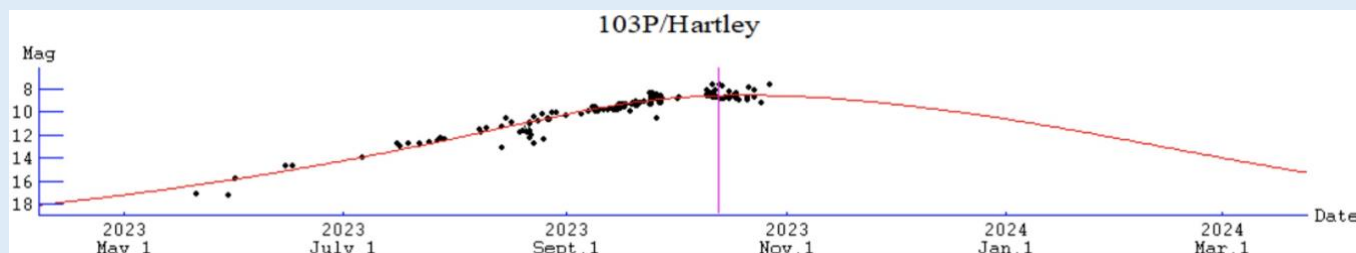
Max El  
(deg)

Date	R.A.	Decl.	r	d	Elong	Const	Mag	40N	40S
2023-Nov-01	08 25	+06 11	1.099	0.457	90M	Hya	8.6	54	31
2023-Nov-06	08 35	+02 56	1.117	0.475	92M	Hya	8.7	52	34
2023-Nov-11	08 43	+00 00	1.139	0.492	94M	Hya	8.8	49	37
2023-Nov-16	08 50	-02 39	1.164	0.509	96M	Hya	8.9	47	40
2023-Nov-21	08 55	-05 02	1.192	0.525	99M	Hya	9.0	45	43
2023-Nov-26	08 59	-07 09	1.223	0.540	102M	Hya	9.2	43	47
2023-Dec-01	09 01	-09 01	1.256	0.554	105M	Hya	9.3	41	50
2023-Dec-06	09 01	-10 38	1.292	0.569	109M	Hya	9.5	39	54

## Comet Magnitude Formula (from 2023 ALPO data)

$$m1 = 9.9 + 5 \log d + 14.3 \log r \quad (T - 24)$$

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
103	2023	10	27.51	S	8.0	TK	12.5B	30	7	2	ICQ xx	HER02 Carl Hergenrother
103	2023	10	25.08	S	9.5	TI	25.2L	4	68	5.5	2	ICQ XX HAR11 Christian Harder
103	2023	10	23.29	M	9.4	TK	30.0L	5	88	2	4	ICQ XX DES01 Jose Guilherme de Souza Aguiar
103	2023	10	23.11	S	8.6	TI	29.8L	4	79	5.5	2	ICQ XX HAR11 Christian Harder
103	2023	10	21.50	S	8.3	TK	12.5B	30	7	3		ICQ xx HER02 Carl Hergenrother
103	2023	10	21.28	M	9.3	TK	30.0L	5	88	2	4	ICQ XX DES01 Jose Guilherme de Souza Aguiar
103	2023	10	21.06	S	9.3	TK	20.3T10	77	7	3		ICQ XX GON05 Juan Jose Gonzalez Suarez
103	2023	10	19.07	S	9.8	TI	50.8L	100	4	3		ICQ XX HAR11 Christian Harder
103	2023	10	18.29	M	9.0	TK	30.0L	5	88	2	4	ICQ XX DES01 Jose Guilherme de Souza Aguiar
103	2023	10	16.29	M	8.9	TK	30.0L	5	88	2	3	ICQ XX DES01 Jose Guilherme de Souza Aguiar
103	2023	10	15.13	S	8.8	TK	7.0B	6	16	9	2	PIL01 Uwe Pilz
103	2023	10	14.15	O	8.1	S	25.0C15	144	3	3		ICQ XX DEC Michel Deconinck
103	2023	10	13.51	S	8.1	TK	12.5B	30	6	3		ICQ xx HER02 Carl Hergenrother
103	2023	10	12.29	M	8.8	TK	30.0L	5	88	2	3/	ICQ XX DES01 Jose Guilherme de Souza Aguiar
103	2023	10	11.49	S	8.1	TK	12.5B	30	5	3		ICQ xx HER02 Carl Hergenrother
103	2023	10	11.29	M	9.0	TK	30.0L	5	88	2	3/	ICQ XX DES01 Jose Guilherme de Souza Aguiar
103	2023	10	10.30	M	9.2	TK	30.0L	5	88	2	4	ICQ XX DES01 Jose Guilherme de Souza Aguiar
103	2023	10	10.04	S	8.2	TK	8.0B	20	8	3/		ICQ XX GON05 Juan Jose Gonzalez Suarez
103	2023	10	10.03	S	8.4	TK	20.3T10	77	7	3/		ICQ XX GON05 Juan Jose Gonzalez Suarez



Hanging out in the morning sky with 62P will be 103P/Hartley. One of the brighter short-period comets of the past 30+ years, bright apparitions were observed in 1991, 1997, and 2010. 103P was discovered in 1986 by Malcolm Hartley at the Siding Spring Observatory in Australia. At its first two predicted returns in 1991 and 1997, the comet brightened to 8th magnitude. In 2010, an approach within 0.12 au of Earth resulted in the comet reaching 5<sup>th</sup> magnitude.

103P is now past its perihelion on October 12 at 1.06 au from the Sun. Closest approach to Earth occurred even further back on September 26 at 0.38 au. While not as good as the 2010 return, the current return is the second-best between 1900 and 2100 in terms of distance to the Earth and Sun. This led to predictions of the comet reaching 7<sup>th</sup> magnitude at its best.

Unfortunately, in 2023, 103P has underperformed its predicted brightness. This has been confirmed by the CARA (Cometary Archive for Afrho) project that measures dust production in comets (see <https://cara.uai.it/103phartley-early-results>). In October, visual observers reported brightnesses between magnitude 8.1 and 9.5 (corrected to 7.6 to 9.2). The large spread, even after corrections, highlights how difficult it has been to measure 103P's brightness. Not only is there a large spread in brightness, but even estimates of the coma size have ranged from 2' to 9'!

Now past perihelion and its closest approach to Earth, 103P should fade from around magnitude 8.6 to 9.3 in November. The comet remains a morning object and will spend all month in Hydra, being well-placed for observers in both hemispheres.



Figure 5 – Martin Mobberley imaged 103P/Hartley as it passed by the Eskimo Nebula on October 12.



# 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 2023-U276)

12P/Pons-Brooks  
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5  
T 2024 Apr. 21.12870 TT Rudenko  
q 0.7808605 (2000.0) P Q  
n 0.01382655 Peri. 198.98705 +0.14512220 -0.32930329  
a 17.1920152 Node 255.85559 +0.98565762 +0.13020697  
e 0.9545800 Incl. 74.19110 +0.08613128 -0.93520345  
P 71.3  
From 4159 observations 2023 Feb. 27-Oct. 28, mean residual 0".6.

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

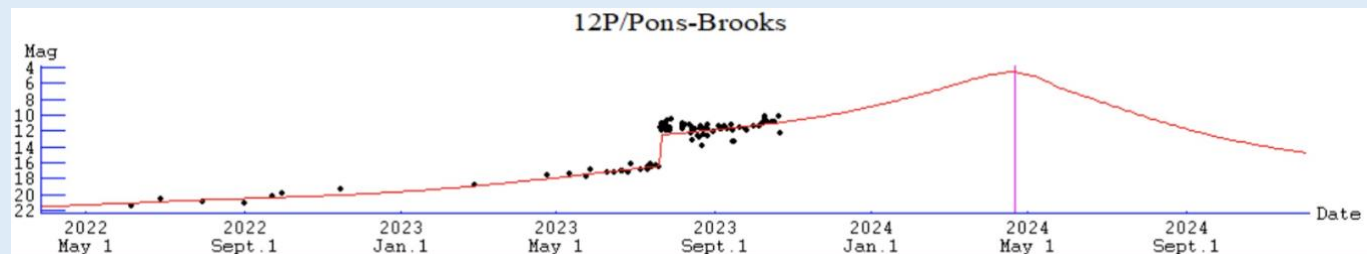
Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El (deg)	
								40N	40S
2023-Nov-01	17 42	+41 49	2.750	2.882	72E	Her	10.7	52	0
2023-Nov-06	17 48	+41 09	2.691	2.840	71E	Her	10.6	50	0
2023-Nov-11	17 54	+40 32	2.632	2.796	70E	Her	10.5	48	0
2023-Nov-16	18 01	+39 59	2.572	2.751	69E	Her	10.3	47	0
2023-Nov-21	18 09	+39 29	2.512	2.703	68E	Her	10.2	45	0
2023-Nov-26	18 17	+39 02	2.451	2.654	67E	Lyr	10.1	43	0
2023-Dec-01	18 26	+38 40	2.390	2.603	66E	Lyr	9.9	41	0
2023-Dec-06	18 35	+38 21	2.328	2.550	65E	Lyr	9.8	39	0

### Comet Magnitude Formula (from ALPO and COBS data)

$m_1 = 4.4 + 5 \log d + 6.2 \log r$  [Before perihelion]

$m_1 = 4.5 + 5 \log d + 7.2 \log r$  [After perihelion]

where "t" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au



### Recent Magnitude 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	2023 10 21.91	S 12.7	TI	29.8L	4	132	1.2	2			ICQ XX HAR11	Christian Harder
12	2023 10 20.84	S 10.5	TK	20.3T10	77		7	2/			ICQ XX GON05	Juan Jose Gonzalez Suarez
12	2023 10 12.88	Z 11.4	GG	35.0T	6a	660	4.5				BUC01 BUC01	Denis Buczynski
12	2023 10 10.79	O 11.2	S	61.0L	3	210	2	6	3.5	m110	ICQ XX DEC	Michel Deconinck
12	2023 10 09.83	S 10.8	TK	20.3T10	77		7	3/			ICQ XX GON05	Juan Jose Gonzalez Suarez
12	2023 10 07.79	S 11.3	S	25.0C15	143		1.1	7	1.5	m120	ICQ XX DEC	Michel Deconinck
12	2023 10 06.83	S 11.7	TK	32.0L	5	80	0.2	8			ICQ XX PIL01	Uwe Pilz
12	2023 10 05.83	I 11.7	AQ	20.3T10	77			8/			ICQ XX GON05	Juan Jose Gonzalez Suarez

Over the past few years, the press has reported on a couple of "Green Comets" and even hyped "Comets of the Century" and "Comets of the Decade"; now we have the "Devil Comet." Sigh...

The "Devil Comet" is 12P/Pons-Brooks, which is a returning Halley-type comet (i.e., a periodic comet with an orbital period between 20 and 200 years). Its current return is its 6<sup>th</sup> or 7<sup>th</sup> observed one with an orbital period of 71 years, it's first since 1954. 12P was discovered on 1812 July 21 by Jean-Louis Pons and reached 4<sup>th</sup>

magnitude with a 3-degree long tail during that return. William R. Brooks at Phelps, New York, re-discovered 12P on 1883 September 2. During that return, it approached within 0.63 au of Earth and brightened to 3<sup>rd</sup> magnitude with a tail up to 20 degrees long. The most recent return in 1954 saw the comet reach 5<sup>th</sup> magnitude. Maik Meyer recently identified comets seen in 1457 and 1385 as previous returns of 12P. It may also have been seen in 245 AD.

The current return is similar to the previous one in 1954, which means it isn't great, with the comet never getting closer to Earth than 1.55 au. That, combined with perihelion on 2024 April 21 at 0.78 au, means it will be located at very low solar elongations when it will be at its brightest (a peak at 4-5<sup>th</sup> magnitude).

So why is 12P a "Devil Comet?" That's due to its appearance after each of its major outbursts when the resulting dust coma takes on the appearance of "horns." Others have likened the appearance to the Millennium Falcon from Star Wars, though to my eyes, the more recent outbursts had the comet looking more like a Reliant-class starship from Star Trek. While the "horns" are obvious in images, visual observations by Michel Deconinck (Oct 10) and Michel Besson (Oct 8) also detected the "horns."

A recent post to comets-ml by Richard Miles lists 7 observed outbursts during the current return (see <https://groups.io/g/comets-ml/message/31802>). Note that the outburst amplitude in magnitudes is for a small aperture centered on the nucleus and not for the entire coma, which is why some of the outbursts aren't obvious in the above lightcurve.

2023 07 20	Amplitude = 5.5 mag
2023 09 04	Amplitude = 0.4 mag
2023 09 23	Amplitude = 0.9 mag
2023 10 05	Amplitude = 5.0 mag
2023 10 22	Amplitude = 0.4 mag
2023 10 31	Amplitude = 2.9 mag
2023 11 01	Amplitude = 2.5 mag

There has been an analysis of the July 20 outburst suggesting that, like the recent double outbursts of October 31 and November 1, there were actually two outbursts, one on July 19 and the other on July 20.

Amazingly, even with all of the outbursts, Pons-Brooks' total magnitude has closely followed the prediction based on its 1954 return. If this continues to be the case, a brightening from around magnitude 10.7 to 9.9 is expected this month. 12P is still a northern object in the evening sky as it moves through Hercules (Nov 1-24) and Lyra (24-30).



Figure 6 - 12P/Pons-Brooks was imaged by Gianluca Masi on October 13 with a C14 and SBIG ST8-XME camera from Rome, Italy.

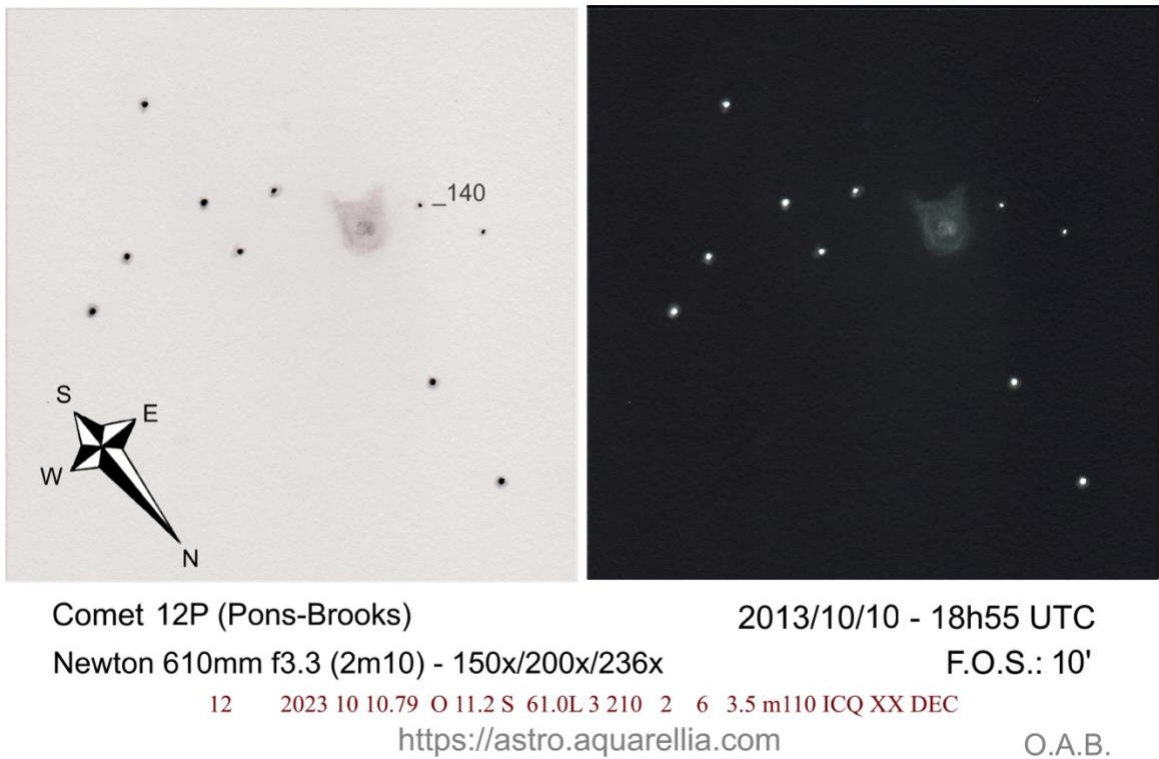


Figure 7 - Michel Deconinck visually detected the "horns" of 12P/Pons-Brooks on October 10 with a 0.61-m f/3.3 reflector.

## C/2020 V2 (ZTF)

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

### Orbit (from Minor Planet Center, MPEC 2023-U159)

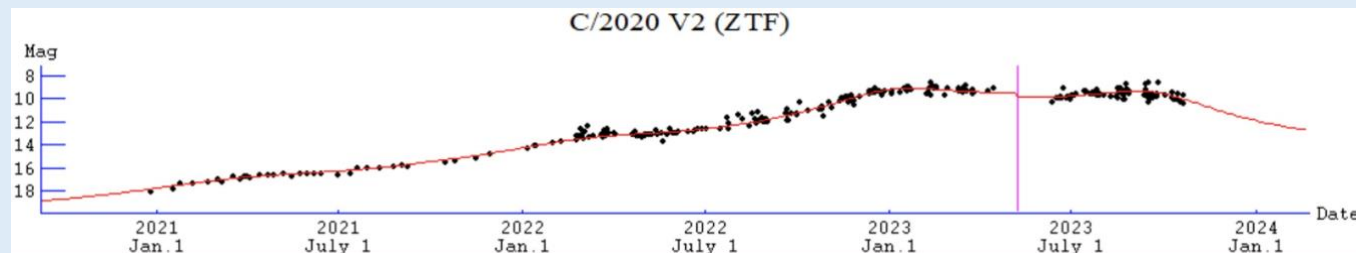
C/2020 V2 (ZTF)  
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5  
T 2023 May 8.50464 TT Rudenko  
q 2.2276729 (2000.0) P Q  
z -0.0005183 Peri. 162.40336 +0.69759175 +0.59424513  
+/-0.0000000 Node 212.37101 +0.53389563 -0.05852963  
e 1.0011546 Incl. 131.61173 +0.47782968 -0.80215149  
From 5057 observations 2020 Apr. 18-2023 Oct. 28, mean residual 0".7.  
1/a(orig) = -0.000146 AU\*\*<sup>-1</sup>, 1/a(fut) = -0.000384 AU\*\*<sup>-1</sup>.

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

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El	
								40N	40S
2023-Nov-01	00 09	-42 03	2.979	2.406	116E	Phe	10.4	8	88
2023-Nov-06	23 59	-42 35	3.014	2.517	110E	Phe	10.5	8	88
2023-Nov-11	23 50	-42 54	3.050	2.633	105E	Phe	10.7	7	87
2023-Nov-16	23 42	-43 03	3.087	2.752	100E	Phe	10.8	7	82
2023-Nov-21	23 35	-43 05	3.123	2.873	95E	Phe	10.9	7	76
2023-Nov-26	23 30	-43 01	3.160	2.995	90E	Phe	11.1	7	70
2023-Dec-01	23 25	-42 53	3.198	3.117	85E	Gru	11.2	7	64
2023-Dec-06	23 22	-42 41	3.235	3.238	81E	Gru	11.3	7	59

### Comet Magnitude Formula (from ALPO and COBS data)

$m_1 = -1.4 + 5 \log d + 15.9 \log r$  [up to T-580 days]  
 $m_1 = 3.2 + 5 \log d + 10.1 \log r$  [between T-580 and T-220 days]  
 $m_1 = 4.0 + 5 \log d + 8.6 \log r$  [T-220 days and onward]  
 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
2020V2	2023 10 21.28	M 10.9	TK	30.0L	5	88	2	3/			ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 20.98	S 10.1	TK	20.3T10		100	3	3/			ICQ XX	GON05	Juan Jose Gonzalez Suarez
2020V2	2023 10 18.28	M 10.8	TK	30.0L	5	88	2	3			ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 16.29	M 10.6	TK	30.0L	5	88	2	3/			ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 14.42	xM 10.7	AQ	40.0L	4	59	2.2	6 19	m 26		ICQ XX	WYA	Christopher Wyatt
2020V2	2023 10 12.28	M 10.5	TK	30.0L	5	88	2	3/			ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 11.28	M 10.5	TK	30.0L	5	88	2	3/			ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 10.28	M 10.4	TK	30.0L	5	88	2	3			ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2020V2	2023 10 10.02	S 9.8	TK	20.3T10		77	3	4			ICQ XX	GON05	Juan Jose Gonzalez Suarez
2020V2	2023 10 03.43	xM 10.3	TK	40.0L	4	59	2.2	6 32	m 9		ICQ XX	WYA	Christopher Wyatt

November marks three years since the discovery of C/2020 V2. The comet is currently well placed for southern hemisphere observers in the evening object as it moves through Phoenix (Nov 1-29) and Grus (29-30). For northern observers, it is a difficult object located close to the southern horizon. Now six months past its May 2023 perihelion, it should fade from around magnitude 10.4 to 11.2.

## C/2021 S3 (PANSTARRS)

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

### Orbit (from Minor Planet Center, MPEC 2023-S276)

C/2021 S3 (PANSTARRS)  
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5  
T 2024 Feb. 14.72149 TT Rudenko  
q 1.3201321 (2000.0) P Q  
z -0.0001367 Peri. 6.86272 -0.77073759 +0.39897715  
+/-0.0000024 Node 215.62077 -0.61758997 -0.65952513  
e 1.0001805 Incl. 58.53345 -0.15667223 +0.63705874  
From 998 observations 2020 Dec. 6-2023 Oct. 21, mean residual 0".4.  
1/a(orig) = +0.000150 AU\*\*<sup>-1</sup>, 1/a(fut) = +0.000065 AU\*\*<sup>-1</sup>.

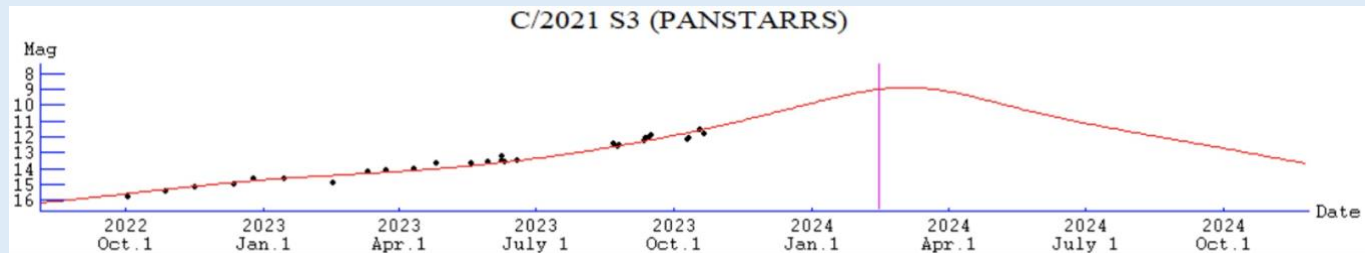
### Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El (deg)	
								40N	40S
2023-Nov-01	11 25	-37 10	2.009	2.577	45M	Cen	11.3	0	26
2023-Nov-06	11 40	-37 49	1.959	2.520	45M	Cen	11.2	0	26
2023-Nov-11	11 55	-38 25	1.910	2.464	45M	Cen	11.1	0	26
2023-Nov-16	12 11	-38 57	1.861	2.407	45M	Cen	11.0	0	26
2023-Nov-21	12 27	-39 23	1.814	2.350	46M	Cen	10.9	0	25
2023-Nov-26	12 43	-39 43	1.767	2.293	46M	Cen	10.7	0	25
2023-Dec-01	13 00	-39 56	1.722	2.236	46M	Cen	10.6	0	25
2023-Dec-06	13 17	-40 01	1.678	2.179	47M	Cen	10.5	0	25

### Comet Magnitude Formula (from ALPO and COBS data)

$$m_1 = 7.6 + 5 \log d + 5.4 \log r$$

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 DC	TAIL LENG PA	ICQ	CODE	Observer Name
2021S3	2023 10 21.31	M 12.2	AQ	30.0L	5	88	1 2/		ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 10 19.12	S 12.4	TI	50.8L		150	1 4	3.5 m250	ICQ XX	HAR11	Christian Harder
2021S3	2023 10 11.31	M 12.5	AQ	30.0L	5	88	1 2		ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2021S3	2023 10 10.31	M 12.6	AQ	30.0L	5	100	1 2/		ICQ XX	DES01	Jose Guilherme de Souza Aguiar

C/2021 S3 (PANSTARRS) was discovered at 19-20<sup>th</sup> magnitude on 2021 September 24 with the Pan-STARRS2 1.8-m Ritchey-Chretien reflector at Haleakala on Maui. The comet is still three months from its best when it will be at perihelion on 2024 February 14, at 1.32 au, and closest to Earth on 2024 March 14, at 1.30 au.

A lightcurve based on visual observations submitted to the ALPO and photometry submitted to COBS by Thomas Lehmann finds C/2021 S3 brightening at a very slow rate (2.5n ~ 5.4). While slow, it isn't too unexpected for a dynamically new comet likely making its first trip through the inner solar system. At this slow rate, the comet should peak around magnitude 8.9 in February and March when it will be observable from both hemispheres in the morning sky. This month, it will be a morning object only observable from the southern hemisphere as it moves through Centaurus. On November 25, C/2021 S3 and C/2023 P1 (Nishimura) will pass about 1.5 deg from each other.

## C/2023 P1 (Nishimura)

Discovered 2023 August 12 by amateur Hideo Nishimura with a DSLR and telephoto lens

### Orbit (from Minor Planet Center, MPEC 2023-S260)

C/2023 P1 (Nishimura)  
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5  
T 2023 Sept. 17.64164 TT  
Rudenko  
q 0.2251519 (2000.0) P Q  
z +0.0174593 Peri. 116.29890 +0.38229178 -0.62774686  
+/-0.0000119 Node 66.83403 -0.85524025 -0.51822609  
e 0.9960690 Incl. 132.47732 +0.34988156 -0.58084043  
From 680 observations 2023 Jan. 19-Sept. 10, mean residual 0".7.

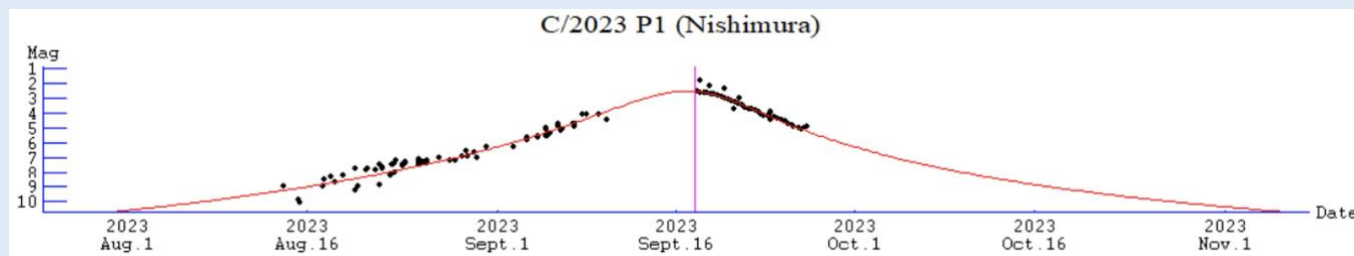
### Ephemerides (produced with Seiichi Yoshida's Comets for Windows program)

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El	
								40N	40S
2023-Nov-01	12 55	-31 32	1.190	1.994	26M	Cen	10.3	0	9
2023-Nov-06	12 54	-33 29	1.288	2.048	29M	Cen	10.7	0	12
2023-Nov-11	12 54	-35 21	1.384	2.094	33M	Cen	11.0	0	15
2023-Nov-16	12 53	-37 12	1.476	2.132	37M	Cen	11.3	0	18
2023-Nov-21	12 51	-39 00	1.567	2.163	41M	Cen	11.5	0	22
2023-Nov-26	12 49	-40 47	1.655	2.188	45M	Cen	11.8	0	25
2023-Dec-01	12 47	-42 33	1.741	2.207	49M	Cen	12.0	0	29
2023-Dec-06	12 43	-44 18	1.826	2.222	53M	Cen	12.2	0	33

### Comet Magnitude Formula (from ALPO and COBS data)

$$m1 = 8.2 + 5 \log d + 8.5 \log r$$

where "t" is date of perihelion, "d" is Comet-Earth distance in au, and "r" is Comet-Sun distance in au



C/2023 P1 (Nishimura) was one of the best comets of 2023. A surprise discovery by 3-time amateur comet discoverer Hideo Nishimura, C/2023 P1 eventually brightened to 2<sup>nd</sup> magnitude, though it was a very difficult observation close to the Sun at that time.

A week or so after perihelion, it was lost to Earth-based observers, though it remained visible to the STEREO-A spacecraft until October 1. Combining the data submitted to the ALPO and the STEREO-A photometry found a fairly steady 2.5n ~ 8.5 brightening and fading rate since discovery.

A few observations were submitted to the COBS site at the end of October. These found the comet between magnitude 9.6 and 10.3, fairly in line with the above prediction.

This month, Nishimura will be visible only from the southern hemisphere as a morning object in Centaurus. It should fade from around magnitude 10.3 to 12.0.

On November 25, Nishimura and C/2021 S3 (PANSTARRS) will pass about 1.5 deg from each other. A few nights later, on November 28, we pass through P1's orbital plane. The viewing geometry should allow the development of an anti-tail.



## C/2023 S2 (ATLAS)

Discovered 2023 September 28 by the "Asteroid Terrestrial-Impact Last Alert System" (ATLAS) search program with a 0.5-m f/2 Schmidt reflector at Rio Hurtado, Chile  
Dynamically old long-period comet

### Orbit (from Minor Planet Center, MPEC 2023-U276)

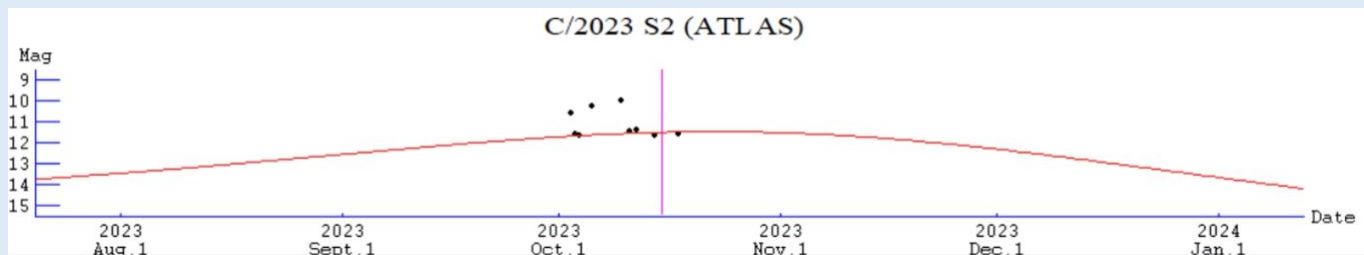
C/2023 S2 (ATLAS)  
Epoch 2023 Sept. 13.0 TT = JDT 2460200.5  
T 2023 Oct. 15.38132 TT Rudenko  
q 1.0673383 (2000.0) P Q  
z +0.0080792 Peri. 78.12429 +0.57747041 +0.77036646  
+/-0.0003010 Node 230.57701 -0.81618190 +0.55260165  
e 0.9913768 Incl. 20.48216 +0.01936581 +0.31806750  
From 326 observations 2023 Sept. 28-Oct. 26, mean residual 0".6.  
1/a(orig) = +0.007668 AU\*\*-1, 1/a(fut) = +0.008396 AU\*\*-1.

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

Date	R.A.	Decl.	r	d	Elong	Const	Mag	Max El (deg)	
								40N	40S
2023-Nov-01	18 21	-04 47	1.102	1.198	59E	Sct	11.5	32	20
2023-Nov-06	18 46	-04 20	1.125	1.195	61E	Sct	11.6	33	19
2023-Nov-11	19 12	-03 49	1.153	1.200	62E	Aql	11.7	35	18
2023-Nov-16	19 38	-03 13	1.187	1.213	64E	Aql	11.8	37	17
2023-Nov-21	20 03	-02 33	1.224	1.234	65E	Aql	12.0	39	16
2023-Nov-26	20 28	-01 50	1.265	1.264	67E	Aql	12.1	40	15
2023-Dec-01	20 53	-01 04	1.309	1.303	68E	Aqr	12.3	42	14
2023-Dec-06	21 16	-00 16	1.356	1.350	68E	Aqr	12.5	43	13

### Comet Magnitude Formula (from ALPO and COBS data)

$m_1 = 10.8 + 5 \log d + 8.0 \log r$  (assumed)  
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	T	COMA Dia	DC	TAIL LENG	PA	ICQ	CODE	Observer Name
2023S2	2023 10 14.40	xS 12.7	AQ	40.0L	4	108		1	3			ICQ XX	WYA	Christopher Wyatt
2023S2	2023 10 11.91	M 11.8	AQ	27.0L		90		1	4			ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2023S2	2023 10 10.91	M 11.9	AQ	27.0L		90		1	4/			ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2023S2	2023 10 09.80	S 10.3	TK	20.3T10		77		7	2/	0.4	100	ICQ XX	GON05	Juan Jose Gonzalez Suarez
2023S2	2023 10 05.80	S 10.6	TK	20.3T10		77		5	2/	0.2	100	ICQ XX	GON05	Juan Jose Gonzalez Suarez
2023S2	2023 10 03.91	M 12.1	AQ	27.0L		90		1	5			ICQ XX	DES01	Jose Guilherme de Souza Aguiar
2023S2	2023 10 03.40	xM 12.6	AQ	40.0L	4	59		2.6	3/			ICQ XX	WYA	Christopher Wyatt
2023S2	2023 10 02.89	S 10.9	TK	20.3T10		100		4	2/			ICQ XX	GON05	Juan Jose Gonzalez Suarez

Like this C/2023 H2 and 103P, there isn't a strong consensus as to this comet's brightness. The prediction above aligns with the majority of observations but could be too faint by a magnitude or more.

C/2023 S2 (ATLAS) was discovered on September 28 with an ATLAS 0.5-m f/2 Schmidt reflector at Rio Hurtado, Chile. The comet is a dynamically old long-period comet last at perihelion around 1500 years ago. With perihelion back on October 15 at 1.07 au and a rather distant closest approach to Earth on November 5 at 1.20 au, C/2023 S2 should fade this month as it moves through Scutum (Nov 1-8), Aquila (8-27), and Aquarius (27-30) in the evening sky.