Comet Prospects for 2027

There are several periodic comets that may come within visual range in 2027. 2P/Encke has a particularly good return for northern hemisphere observers and may become visible in binoculars in the evening sky early in the year.

These predictions focus on comets that are likely to be within range of visual observers, though comets often do not behave as expected and can spring surprises. Members are encouraged to make visual or visual equivalent magnitude estimates, particularly of periodic comets, as long term monitoring over many returns helps understand their evolution. Please submit your magnitude estimates in ICQ format, ideally through the COBS portal. Guidance on visual observation and how to submit estimates is given in the BAA Observing Guide to Comets. Drawings are also useful, as the human eye can sometimes discern features that initially elude electronic devices.

Theories on the structure of comets suggest that any comet could fragment at any time, so it is worth keeping an eye on some of the fainter comets, which are often ignored. They would make useful targets for those making electronic observations, especially those with time on instruments such as the Faulkes telescopes. Such observers are encouraged to report electronic visual equivalent magnitude estimates via COBS. When possible use a waveband approximating to Visual or V magnitudes. These estimates can be used to extend the visual light curves, and hence derive more accurate absolute magnitudes. Such observations of periodic comets are particularly valuable as observations over many returns allow investigation into the evolution of comets. In addition to total magnitude estimates there is considerable benefit in making photometric measurements using a standard aperture of 9 arc-seconds. Such observations often show small transient events in the near-nucleus environment much more clearly than do total magnitude estimates.

In addition to the information in the BAA Handbook and on the Section web pages, ephemerides for new and currently observable comets are on the JPL, CBAT and Seiichi Yoshida's web pages. The BAA Observing Guide to Comets is available on the Section web page.

2P/Encke brightens rapidly in January and could reach 5th magnitude at the end of the month. It is conveniently placed in the evening sky. It enters conjunction in February and will pass through the satellite coronograph fields. This is one of the best apparitions for northern hemisphere observers since 2003. The comet passes 8° from globular cluster M2 on January 29 and should be a little brighter than it.

29P/Schwassmann-Wachmann is an annual comet that has outbursts, which over the last few decades seem to have become more frequent, though this could just reflect more intense coverage. Richard Miles has developed a theory that suggests that these outbursts are in fact periodic, and arise from at least four independent active areas on the slowly rotating nucleus. The activity of the active areas evolves with time. The comet is an ideal target for electronic observations and it should be observed at every opportunity, ideally using the methodology established by Richard. The comet spends the first half of the year making a loop through Corvus, then spends most of the rest of the year in the southern part of Virgo. It is in opposition in early April and conjunction in mid October. With its southern declination it is poorly placed for observation from the UK.

45P/Honda-Mrkos-Pajdusakova brightens rapidly during August and there is a short window when it might be an early morning object in binoculars. At perihelion it is a few degrees from M44 in Cancer.

104P/Kowal is one of the better prospects for the year, but it will only reach 10th magnitude. The comet usually shows a linear form of light curve peaking some 15 days after perihelion. It is a morning object and will be brightest in late October. Its “bright” period is initially affected by the waning moon which passes 3 degrees from it, but it will be observable in dark skies at the end of the month.

255P/Levy might reach 9th magnitude when at perihelion in September, but is a morning object. It also passes by M44 and is closest on September 11.

The other periodic and parabolic comets that are at perihelion during 2027 are unlikely to become brighter than 11th magnitude or are poorly placed. Ephemerides for these can be found on the CBAT or other WWW pages. Several D/ comets have predictions for a return, though searches at favourable returns in the intervening period have failed to reveal the comets and the orbits will have been perturbed by Jupiter. There is however always a chance that they will be rediscovered accidentally by one of the Sky Survey patrols.

Looking ahead to 2028, there are potentially two easy binocular comets: 19P/Borrelly and 22P/Kopff. Both could reach 6th magnitude, with the former well placed in December and the latter moderately well placed in June. Some orbits for comets due to return in the future are yet to be published by the MPC.

With more and more discoveries and recoveries of periodic comets being made, the number of expected returns increases every year. A full list of returning comets is given as a supplement, but here only those comets expected to be brighter than 14th magnitude during the year are listed.

Comets brighter than magnitude 14 in 2027

Comet	T	q	P	N	H1	K1	Elong at peak	Peak mag
At perihelion in 2026								
10P/Tempel	Aug 2.1	1.42	5.37	24	6.8	16.6	88	13.4
69P/Taylor	Nov 12.6	2.27	7.64	9	7.3	10.0	172	11.5
78P/Gehrels	Jun 25.1	2.00	7.21	7	4.6	17.1	160	12.4
161P/Hartley-IRAS	Nov 28.6	1.27	21.46	2	8.5	15.0	49	11.8
2024 J3 (ATLAS)	Nov 24.4	3.86			5.0	10.0	69	14.0
At perihelion in 2027								
2P/Encke	Feb 10.2	0.34	3.30	65	11.5	15.0	10	3.6
7P/Pons-Winnecke	Aug 26.0	1.13	6.08	25	10.7	10.0	63	11.5
45P/Honda-Mrkos-Pajdusakova	Aug 31.5	0.56	5.34	14	13.5	20.0	33	8.5
104P/Kowal	Oct 13.1	1.07	5.75	7	9.6	9.9	66	9.8
156P/Russell-LINEAR	Apr 30.7	1.33	6.44	6	9.6	20.0	2	14.0
255P/Levy	Sep 25.5	0.85	5.05	4	9.0	10.0	37	9.0
300P/Catalina	Sep 14.0	0.83	4.43	3	16.0	10.0	75	12.0
315P/LONEOS	Nov 16.5	2.36	10.96	2	8.8	10.0	105	14.0
332P/Ikeya-Murakami	Jan 19.7	1.57	5.42	3	9.0	10.0	138	10.6
2021 Q5 (P/ATLAS)	Jun 21.7	1.23	5.80	1	11.1	10.0	16	13.7
2024 T5 (ATLAS)	May 7.3	3.85			5.5	10.0	138	14.0
At perihelion in 2028								
41P/Tuttle-Giacobini-Kresak	Feb 16.0	1.05	5.43	14	10.0	40.0	74	13.4
73P/Schwassmann-Wachmann	Jan 22.6	0.94	5.39	9	9.0	10.0	21	10.3

The date of perihelion (T), perihelion distance (q), period (P), the number of previously observed returns (N), the magnitude parameters H_1 and K_1, the brightest magnitude (which must be regarded as uncertain) and the approximate elongation at which this occurs are given for each comet. In most cases the comet will be brightest at around the time of perihelion.

Note: $m_1 = H_1 + 5.0 * \log(d) + K_1 * \log(r)$

References and sources

BAA Observing Guide to Comets, 6th edition (2020) at https://britastro.org/wp-content/uploads/2017/05/Comet-Observing-Guide-2020-November-rev-6.pdf (Accessed 2022 October)
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List of all comets predicted to reach perihelion in 2027.

This table will not be created until the end of 2026.

Comet name	T	Q	P	No	H_1	K_1	Elong	Peak mag

The date of perihelion (T), perihelion distance (q), period (P), the number of previously observed returns (N), the magnitude parameters H_1 and K_1 and the brightest magnitude (which must be regarded as uncertain) and the elongation at which it occurs are given for each comet. The magnitudes, orbits, and in particular the time of perihelion of the D/ comets are uncertain. The SOHO comets are only likely to be observed by satellite and some of the linkages are uncertain so that for a few alternative linkages give a different perihelion date.

Note: $m_1 = H_1 + 5.0 * \log(d) + K_1 * \log(r)$