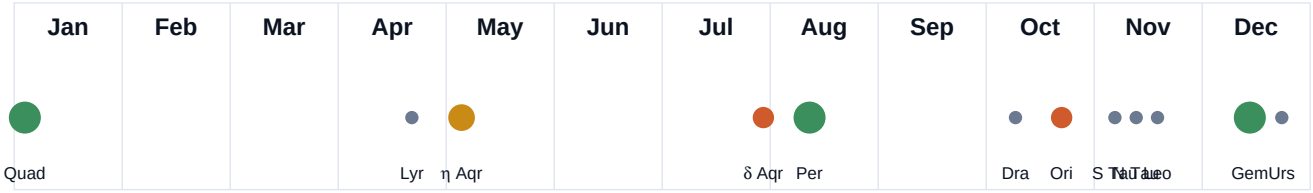
Meteor Shower Annual Calendar

All 12 major showers — peak dates, expected rates, radiants, observing tips

Reference is evergreen — peak dates barely shift year to year. Moon phase varies, of course.

Year at a glance

Dot size = peak rate. Green = strong (100+ ZHR), gold = good (50–100), orange = modest (20–50), grey = low (under 20). Peak dates are nearly identical year to year — the showers come from Earth crossing the same trail of comet debris each orbit.



How to observe

You don't need any equipment. Lie down somewhere dark with a wide view of the sky. Don't look at the radiant — meteors appear all over the sky and you'll see more by looking at a 60–80° altitude region 30–40° away from the radiant. Give your eyes 20+ minutes to dark-adapt; even a glance at a phone resets the process.

Best after midnight for almost every shower. Earth's leading hemisphere faces the incoming meteoroids in the morning hours, sweeping them up at maximum rate. The radiant also rises higher after midnight for most showers. Pre-dawn (3–5 AM) is the magic window.

Moon phase matters more than you'd think. A full Moon during the Perseids drops the visible rate from 100/hour to maybe 20. Check the moon phase for the specific year before deciding whether to make a special trip — a Bortle 3 site with a bright Moon is no better than a Bortle 5 backyard with no Moon.

ZHR is theoretical. The Zenithal Hourly Rate assumes a Bortle 1 sky with the radiant directly overhead. Real-world rates are typically 30–60% of ZHR depending on your sky and the radiant's altitude. A 'ZHR 100' shower from a typical suburban backyard with the radiant at 40° altitude will deliver maybe 25–40 actual meteors per hour.

The 12 major annual showers

Listed in calendar order

Quadrantids

PEAK: JAN 3-4

Peak ZHR **110**/hour

Active Dec 28 - Jan 12 · **Radiant** Boötes (radiant in old Quadrans Muralis) · **Speed** 41 km/s · **Parent** Asteroid (196256) 2003 EH1

One of the year's three best showers but its peak is short — only ~6 hours of high activity. Often spoiled by winter weather. Cold-weather observing required.

Lyrids

PEAK: APR 22-23

Peak ZHR **18**/hour

Active Apr 14-30 · **Radiant** Lyra (near Vega) · **Speed** 49 km/s · **Parent** Comet C/1861 G1 Thatcher

Modest but steady shower with occasional outbursts (the historic 1803 record was 700+ per hour). Known for bright trains. Vega rises late evening.

Eta Aquariids

PEAK: MAY 5-6

Peak ZHR **50**/hour

Active Apr 19 - May 28 · **Radiant** Aquarius (near 'Water Jar') · **Speed** 66 km/s · **Parent** Comet 1P/Halley

Better from southern latitudes — radiant rises only an hour or two before dawn from Canada. Fast meteors with persistent trains. Worth watching pre-dawn.

Delta Aquariids

PEAK: JUL 30

Peak ZHR **25**/hour

Active Jul 12 - Aug 23 · **Radiant** Aquarius · **Speed** 41 km/s · **Parent** Comet 96P/Machholz

Southern shower; radiant is low from Canadian latitudes. Faint slow meteors. Often confused with early Perseids since the active periods overlap.

Perseids

PEAK: AUG 12-13

Peak ZHR **100**/hour

Active Jul 17 - Aug 24 · **Radiant** Perseus (NE sky) · **Speed** 59 km/s · **Parent** Comet 109P/Swift-Tuttle

The most popular shower of the year — warm August nights, high rates, bright meteors with frequent fireballs. Pre-dawn peak with radiant high in the sky. The shower most likely to convert someone to astronomy.

Draconids

PEAK: OCT 8-9

Peak ZHR **10**/hour

Active Oct 6-10 · **Radiant** Draco (near head) · **Speed** 21 km/s · **Parent** Comet 21P/Giacobini-Zinner

Slow-moving meteors. Usually modest, but historic outbursts (1933, 1946 — thousands per hour). Best observed in the evening (radiant high at sunset, not at dawn). Watch for rare but spectacular outburst years.

Orionids

PEAK: OCT 21-22

Peak ZHR **25**/hour

Active Oct 2 - Nov 7 · **Radiant** Orion (above Betelgeuse) · **Speed** 66 km/s · **Parent** Comet 1P/Halley

Halley's other shower (the May Eta Aquariids share the parent comet). Fast meteors. Steady rates over a multi-night peak window — not as sharp as some showers, so several nights are usable.

South Taurids

PEAK: NOV 5-6

Peak ZHR **5**/hour

Active Sep 10 - Nov 20 · **Radiant** Taurus (south of Pleiades) · **Speed** 27 km/s · **Parent** Comet 2P/Encke

Low rate but famous for very bright fireballs — the 'Halloween Fireballs' you sometimes see in news. Fewer meteors, but the ones you do see are often spectacular.

North Taurids

PEAK: NOV 11-12

Peak ZHR **5**/hour

Active Oct 20 - Dec 10 · **Radiant** Taurus (above Hyades) · **Speed** 29 km/s · **Parent** Comet 2P/Encke

Companion to South Taurids; same parent comet, same fireball-rich character. Together with South Taurids the active period spans nearly 3 months.

Leonids

PEAK: NOV 17-18

Peak ZHR **15**/hour

Active Nov 6-30 · **Radiant** Leo (in the Sickle) · **Speed** 71 km/s · **Parent** Comet 55P/Tempel-Tuttle

Famous for the historic 1833, 1866, 1966, 2001 storms — when the parent comet returned, rates briefly hit thousands per hour. Currently in a quiet phase between peaks (next predicted ~2034). Fast meteors with bright trains.

Geminids

PEAK: DEC 13-14

Peak ZHR **150**/hour

Active Dec 4-17 · **Radiant** Gemini (near Castor) · **Speed** 35 km/s · **Parent** Asteroid 3200 Phaethon

The year's strongest reliable shower. Multi-color meteors, slow enough to follow easily. Peak rates rival Perseids but cold weather thins out observers. Radiant high in the sky after midnight from Canadian latitudes.

Ursids

PEAK: DEC 22-23

Peak ZHR **10**/hour

Active Dec 17-26 · **Radiant** Ursa Minor (near Polaris) · **Speed** 33 km/s · **Parent** Comet 8P/Tuttle

Often-overlooked December shower right after Geminids. Modest rates but radiant is circumpolar from Canada — visible all night. Occasional outbursts (1945, 1986).