

Perseid Meteors - All You Need To Know

By [Bruce McClure](#) and [Deborah Byrd](#) in Astronomy Essentials | July 28, 2017

In the Northern Hemisphere, the annual August Perseid meteor shower probably ranks as the all-time favorite meteor shower of the year. But, in 2017, the moon is in the way.



This image perfectly captures what you may see as one of many Perseid Meteors. Note the vibrant colors spread all along the tail. The Perseids are a variable meteor-shower, some years you'll only see a few good ones per hour. Other years produce a cosmic avalanche of dust & pebbles as our Earth's orbit and that of an old comet – destroyed ages ago – intersect.

No matter where you live worldwide, the 2017 Perseid meteor shower will probably produce the greatest number of meteors on the mornings of August 11, 12 and 13. In a dark, moonless sky, this shower often produces 50 or more meteors per hour. But, in 2017, we'll have to contend with the light of a bright waning gibbous moon, which rises at mid-evening and washes the sky during the peak hours of the shower, between midnight and dawn. A good number of Perseid meteors will be bright, so you should be able to see *some* Perseids, despite the moonlit glare. And, although the Perseid numbers are few and far between in the evening hours, you'll have some moon-free viewing time between nightfall

and moonrise. [Click here, checking the moonrise and moonset box, to find out when the moon rises into your sky.](#) Follow the links below to learn more.

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[See it! Photos of 2016's Perseid meteor shower](#)



[View larger and notice the colors.](#) | Early Perseid meteor caught on the morning of July 25, 2016 by Ken Christison.

When and how should I watch the Perseid meteor shower in 2017? The Perseid meteor shower is known to rise to a peak gradually, over several weeks, and then fall off rapidly in the days following the

shower. In 2017, we're recommending that you start your meteor-watching in late July, when the moon is out of the way. Another shower – the [the Delta Aquarid meteor shower](#) – will be peaking around late July. The Delta Aquarids and Perseids overlap. They'll ramble along steadily, with the Perseids growing in numbers, through early August. You'll see the Perseids and Delta Aquarids together.

Considering the Perseids by themselves, the peak mornings will probably be during the predawn hours on August 12 and 13. The morning of August 11 might be worth watching as well. But, remember, by then, the moon will be in the way.

Here's how to watch in bright moonlight. Sit within a moon shadow – the shadow of a building or row of trees – and otherwise enjoy an open view of sky.

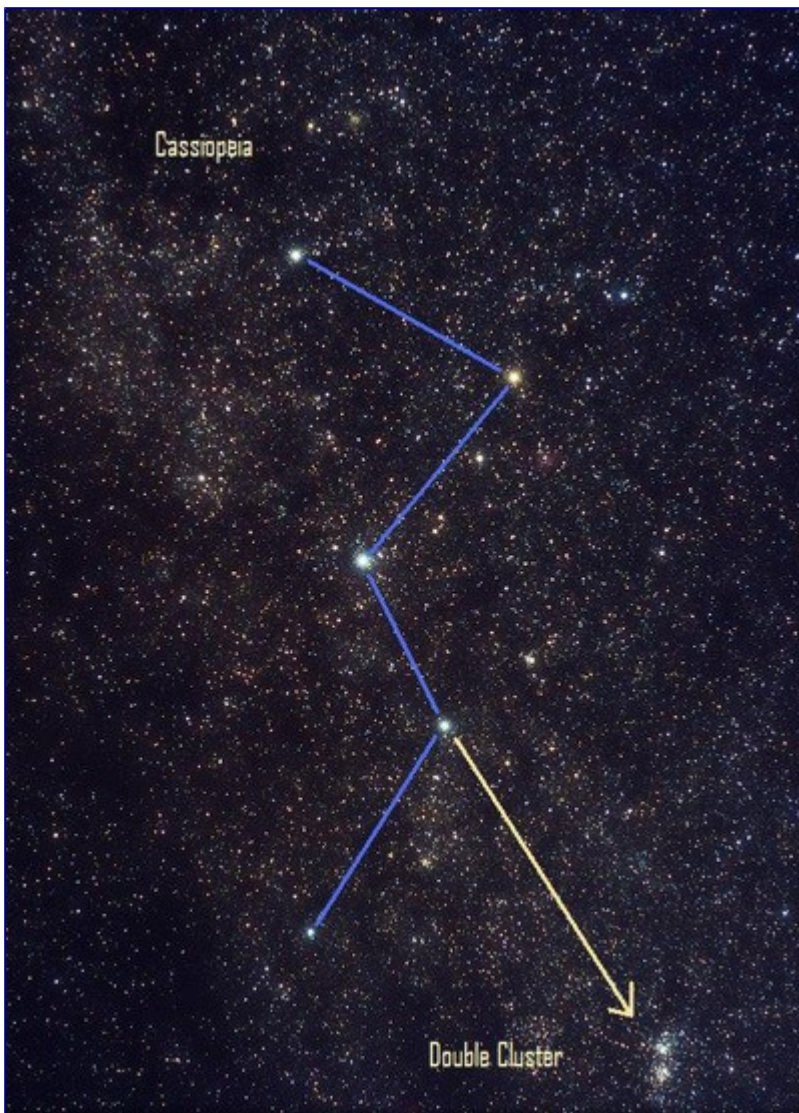
Don't rule out early evenings, either. As a general rule, the Perseid meteors tend to be few and far between at nightfall and early evening. Yet, if fortune smiles upon you, you could catch an *earthgrazer* – a loooooong, slow, colorful meteor traveling horizontally across the evening sky. Earthgrazer meteors are rare but memorable. Perseid earthgrazers can only appear at early to mid-evening, when the radiant point of the shower is close to the horizon.

Perseid numbers typically reach 50 or more meteors per hour around the peak. In a typical year, although the meteor numbers increase after midnight, the Perseid meteors still start to fly at mid-to-late evening from northerly latitudes. South of the equator, the Perseids start to streak the sky around midnight.

[Last year, in 2016, there was an outburst of Perseids](#), with the rate doubling for some observers on Earth. We don't know of any outburst for 2017 – but you really never know for sure unless you watch!



From mid-northern latitudes, the constellation Perseus, the stars Capella and Aldebaran, and the Pleiades cluster light up the northeast sky in the wee hours after midnight on late July and August nights. The meteors radiate from Perseus.



Here's a cool binocular object to look for while you're watching for meteors. The constellation Cassiopeia points out the famous [Double Cluster](#) in northern tip of the constellation Perseus. Plus, the Double Cluster nearly marks the radiant of the Perseid meteor shower. Photo by Flickr user [madmiked](#)

General rules for Perseid-watching. No special equipment, or knowledge of the constellations, needed.

Find a dark, open sky to enjoy the show. An open sky is essential because these meteors fly across the sky in many different directions and in front of numerous constellations.

Give yourself at least an hour of observing time, for these meteors in meteor showers come in spurts and are interspersed with lulls. Remember, your eyes can take as long as 20 minutes to adapt to the darkness of night. So don't rush the process.

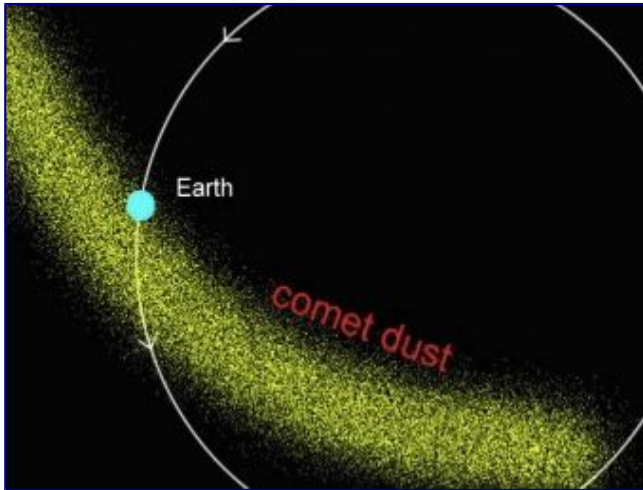
Know that the meteors all come from a single point in the sky. If you trace the paths of the Perseid meteors backwards, you'd find they all come from a point in front of the constellation Perseus. Don't worry about which stars are Perseus. Just enjoying knowing and observing that they all come from one

place on the sky's dome. See meteors coming from two different directions? Some of the meteors you see might be [Delta Aquarids](#), not Perseids.

Enjoy the comfort of a reclining lawn chair. Bring along some other things you might enjoy also, like a thermos filled with a hot drink.

Remember ... all good things come to those who wait. Meteors are part of nature. There's no way to predict exactly how many you'll see on any given night. Find a good spot, watch, wait.

You'll see some.



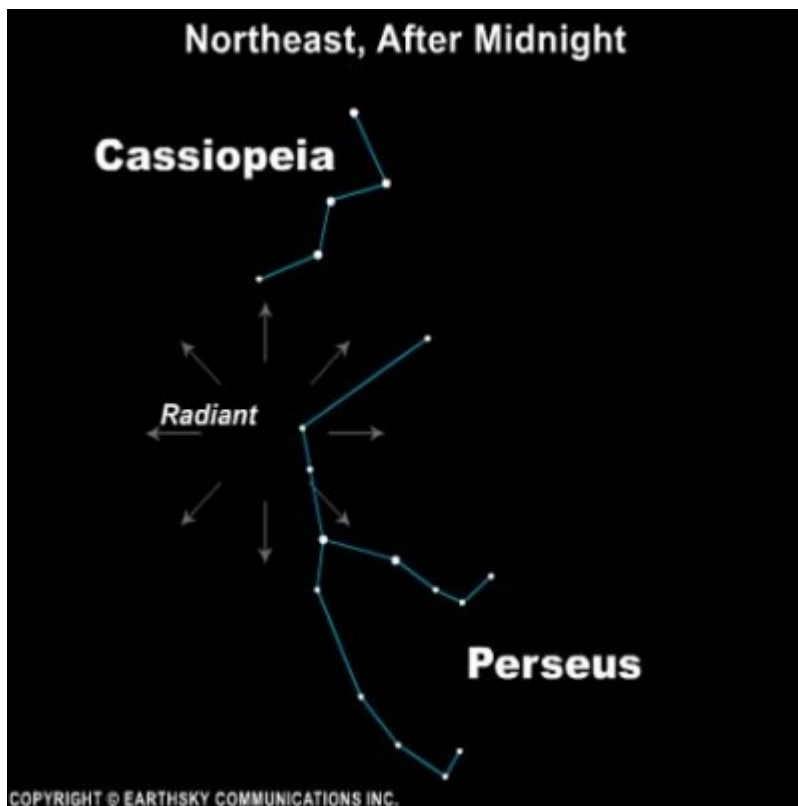
Earth encounters debris from comet, via [AstroBob](#)

What's the source of the Perseid meteor shower? Every year, from around July 17 to August 24, our planet Earth crosses the orbital path of Comet Swift-Tuttle, the parent of the Perseid meteor shower. Debris from this comet litters the comet's orbit, but we don't really get into the thick of the comet rubble until after the first week of August. The bits and pieces from Comet Swift-Tuttle slam into the Earth's upper atmosphere at some 130,000 miles (210,000 km) per hour, lighting up the nighttime with fast-moving Perseid meteors.

If our planet happens to pass through an unusually dense clump of *meteoroids* – comet rubble – we'll see an elevated number of meteors. We can always hope!

Comet Swift-Tuttle has a very *eccentric* – oblong – orbit that takes this comet outside the orbit of Pluto when farthest from the sun, and inside the Earth's orbit when closest to the sun. It orbits the sun in a period of about 133 years. Every time this comet passes through the inner solar system, the sun warms and softens up the ices in the comet, causing it to release fresh comet material into its orbital stream.

Comet Swift-Tuttle last reached *perihelion* – closest point to the sun – in December 1992 and will do so next in July 2126.

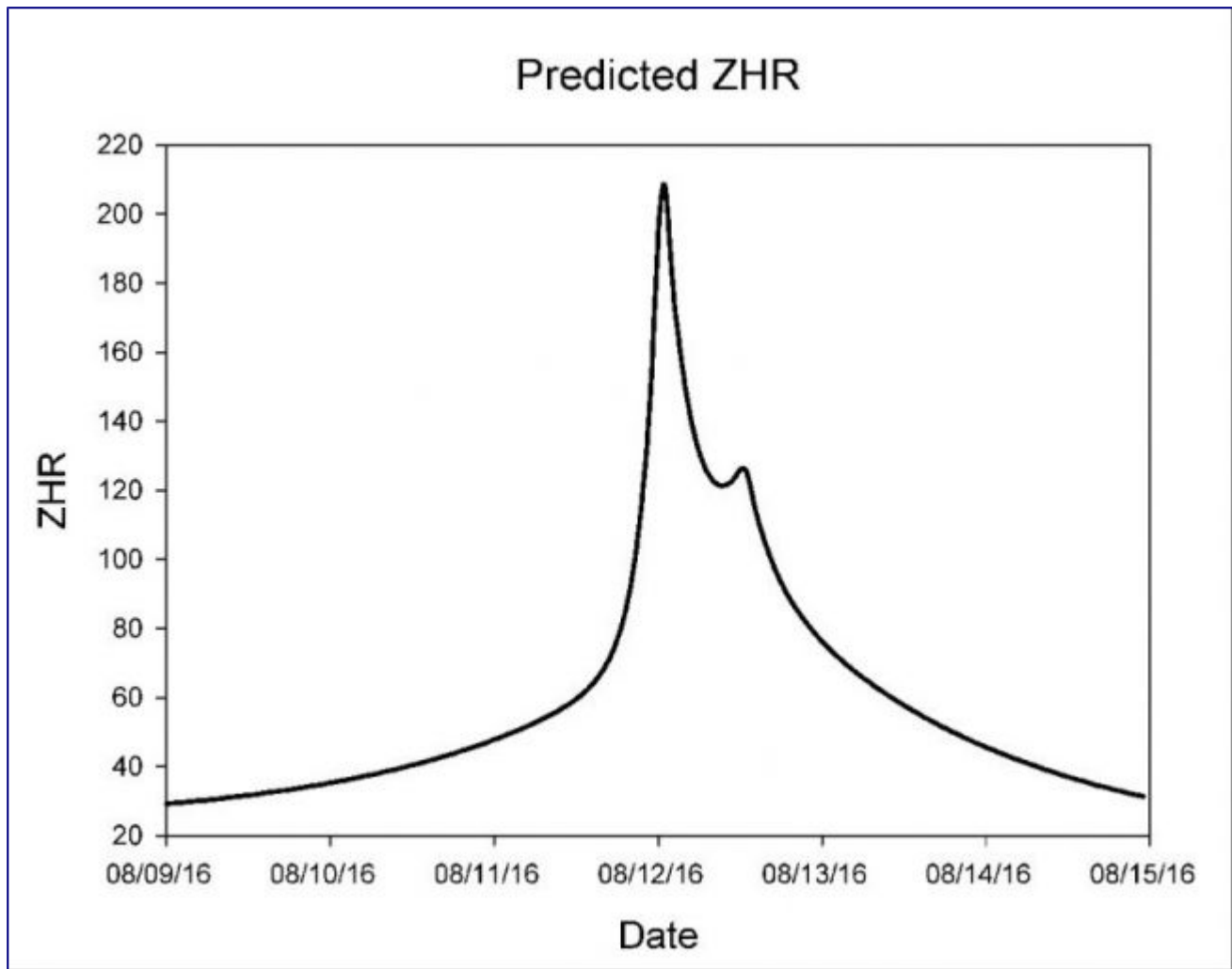


The radiant point for the Perseid meteor shower is in the constellation Perseus. But you don't have to find a shower's radiant point to see meteors. Instead, the meteors will be flying in all parts of the sky.

What is the radiant point for the Perseid meteor shower? If you trace all the Perseid meteors backward, they all seem to come from the constellation Perseus, near the famous Double Cluster. Hence, the meteor shower is named in the honor of the constellation Perseus the Hero.

However, this is a chance alignment of the meteor shower radiant with the constellation Perseus. The stars in Perseus are [light-years](#) distant while these meteors burn up about 100 kilometers (60 miles) above the Earth's surface. If any meteor survives its fiery plunge to hit the ground intact, the remaining portion is called a meteorite. Few – if any – meteors in meteor showers become meteorites, however, because of the flimsy nature of comet debris. Most meteorites are the remains of asteroids.

In ancient Greek star lore, Perseus is the son of the god Zeus and the mortal Danae. It is said that the Perseid shower commemorates the time when Zeus visited Danae, the mother of Perseus, in a shower of gold.



Predicted Zenithal Hourly Rate (ZHR) for Perseids in 2016. The ZHR is the rate of the shower at its peak, when the radiant point is overhead (before dawn from all parts of Earth). Chart via Bill Cooke of NASA's Meteoroid Environment Office. Indeed, the predicted outburst of Perseids in 2016 came to pass.

In 2016, there was a minor outburst of Perseid meteors Prior to the 2016 Perseid meteor shower, [Bill Cooke](#), head of NASA's Meteoroid Environment Office, began saying to expect a Perseid meteor outburst in 2016. He told us:

Every time Swift-Tuttle goes around the sun, it deposits a trail of particles which we call a meteor stream. Over time, the gravitational influence of Jupiter and other giant planets (but mainly Jupiter) changes the particle orbits, and as a result, their close approach distances to Earth will vary.

If the change for a given stream is towards Earth's orbit, we may see greater than normal activity when our planet passes the trail's [nodal crossing](#).

IN 2016, Jupiter's influence has moved the 1079, 1479, and 1862 [meteor] streams closer to Earth, so all forecasters were projecting a Perseid outburst with double double normal rates on the night of August 11-12 [evening of August 11, morning of August 12], 2016.

The peak rates were expected to last about half a day. Predictions varied for the actual time of the peak rates. And we did hear reports of increased Perseid rates in 2016. For example, the Sociedad de Astronomía del Caribe (Astronomical Society of the Caribbean) reported a Perseid outburst seen from La Pitahaya, Cabo Rojo, Puerto Rico on the morning of August 12, 2016.

We saw 506 Perseid meteors in a period of 4.75 hours. But we did see an outburst from 3:40 am to 4:00 am local time. During that short period, we counted 7.5 (7 to 8) meteors per minute, which means we saw 150 meteors in just 20 minutes!

One of the Perseids seen was unforgettable, says [EarthSky contributor Eddie Irizarry](#) of the Sociedad de Astronomía del Caribe:

... after the fast meteor streaked the skies, it left a bright, light blue colored smoke trail that lasted about 45 seconds as seen with the naked eye! The dissipating trail was observed for an additional 60 seconds using binoculars. That was a big one!

Bottom line: The 2017 Perseid meteor shower is expected to produce the most meteors in the predawn hours of August 11, 12, and 13, though under the light of a bright waning gibbous moon.

[Everything you need to know: Delta Aquarid meteor shower](#)

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