

How to see the best meteor showers of the year: Tools, tips and 'save the dates'

November 17 2010



A Geminid meteor. Image credit: Jimmy Westlake

There are several major meteor showers to enjoy every year at various times, with some more active than others. For example, April's Lyrids are expected to produce about 15 meteors an hour at their peak for observers viewing in good conditions. Now, if you put the same observer in the same good conditions during a higher-rate shower like August's Perseids or December's Geminids, that person could witness up to 80 meteors an hour during peak activity.

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The 2010 Leonid meteor shower peaks the evening of Wednesday, Nov. 17. While the annual shower has been spectacular in the past, this year's half-full moon will obstruct viewing for most backyard astronomers.

If you're viewing in dark conditions, the best viewing time will be after midnight, in the hours just before dawn. At most, expect to see approximately 15 meteors per hour.

Whether you're watching from a downtown area or the dark countryside, here are some tips to help you enjoy these celestial shows of shooting stars. Those streaks of light are really caused by tiny specks of comet-stuff hitting Earth's atmosphere at very high speed and disintegrating in flashes of light.

First a word about the moon - it is not the meteor watcher's friend. Light reflecting off a bright moon can be just as detrimental to good meteor viewing as those bright lights of the big city. There is nothing you can do except howl at the moon, so you'll have to put up with it or wait until the next favorable shower. However, even though the 2010 Perseids and Geminids share the [night sky](#) with the moon, they are still expected to produce more visible meteor activity than other major showers that don't have an interfering moon.

The best thing you can do to maximize the number of meteors you'll see is to get as far away from urban light pollution as possible and find a location with a clear, unclouded view of the night sky. If you enjoy camping, try planning a trip that coincides with dates of one of the meteor showers listed below. Once you get to your viewing location, search for the darkest patch of sky you can find, as meteors can appear anywhere overhead. The meteors will always travel in a path away from the constellation for which the shower is named. This apparent point of origin is called the "radiant." For example, meteors during a [Leonid meteor shower](#) will appear to originate from the constellation Leo. (Note: the constellation only serves as a helpful guide in the night's sky. The constellation is not the actual source of the meteors. For an overview of what causes meteor showers click on Meteor Showers: Shooting for [Shooting Stars](#))

Whether viewing from your front porch or a mountaintop, be sure to dress for success. This means clothing appropriate for cold overnight temperatures, which might include mittens or gloves, and blankets. This will enable you to settle in without having to abandon the meteor-watching because your fingers are starting to turn colors.

Next, bring something comfortable on which to sit or lie down. While Mother Nature can put on a magnificent celestial display, meteor showers rarely approach anything on the scale of a July 4th fireworks show. Plan to be patient and watch for at least half an hour. A reclining chair or ground pad will make it far more comfortable to keep your gaze on the night sky.

Lastly, put away the telescope or binoculars. Using either reduces the amount of sky you can see at one time, lowering the odds that you'll see anything but darkness. Instead, let your eyes hang loose and don't look in any one specific spot. Relaxed eyes will quickly zone in on any movement up above, and you'll be able to spot more meteors. Avoid looking at your cell phone or any other light. Both destroy night vision. If you have to look at something on Earth, use a red light. Some flashlights have handy interchangeable filters. If you don't have one of those, you can always paint the clear filter with red fingernail polish.

The meteor showers listed below will provide casual meteor observers with the most bang for their buck. They are the easiest to observe and most active. All these showers are best enjoyed in the hours after midnight. Be sure to also check the "Related Links" box for additional information, and for tools to help you determine how many meteors may be visible from your part of the world.

Major Meteor Showers (2010-2011)

Leonids

Comet of Origin: 55P/Tempel-Tuttle

Radiant: constellation Leo

Active: Nov. 7-28, 2010

Peak Activity: Night of Nov. 17-18, 2010

Peak Activity Meteor Count: Approximately 15 per hour

Time of Optimal Viewing: A half-full moon sets after midnight, allowing for a dark sky. Best viewing time will be just before dawn.

Meteor Velocity: 71 kilometers (44 miles) per second

Note: The Leonids have not only produced some of the best meteor showers in history, but they have sometimes achieved the status of meteor storm. During a Leonid meteor storm, many thousands of meteors per hour can shoot across the sky. Scientists believe these storms recur in cycles of about 33 years, though the reason is unknown. The last documented Leonid meteor storm occurred in 2002.

Geminids

Comet of Origin: 3200 Phaethon

Radiant: constellation Gemini

Active: Dec. 4-16, 2010

Peak Activity: Night of Dec 13-14, 2010

Peak Activity Meteor Count: Approximately 50 meteors per hour

Time of Optimal Viewing: 2 a.m.

Meteor Velocity: 35 kilometers (22 miles) per second

Note: Generally, the Geminids or August's Perseids provide the best meteor shower show of the year. Geminids are usually considered the best opportunity for younger viewers because the show gets going around 9 or 10 p.m. Unfortunately the moon does not set until after midnight this year, making for the possibility of drooping eyelids from the pre-teen set.

Quadrantids

Comet of Origin: 2003 EH1

Radiant: constellation Quadrant Murales

Active: Dec. 28, 2010-Jan. 12, 2011

Peak Activity: Jan. 3-4, 2011

Peak Activity Meteor Count: Approximately 40 meteors per hour

Time of Optimal Viewing: 2:30 a.m. to dawn

Meteor Velocity: 41 kilometers (25.5 miles) per second

Note: The alternate name for the Quadrantids is the Bootids.

Constellation Quadrant Murales is now defunct, and the meteors appear to radiate from the modern constellation Bootes. Since the show is usually only a few hours long and often obscured by winter weather, it doesn't have the same celebrated status as the Geminids or Perseids.

[Lyrids](#)

Comet of Origin: C/1861 G1 Thatcher

Radiant: constellation Lyra

Active: April 16-25, 2011

Peak Activity: April 21-22, 2011

Peak Activity Meteor Count: 18-20 meteors per hour

Time of Optimal Viewing: 11 p.m.-dawn

Meteor Velocity: Lyrid meteors hit the atmosphere at a moderate speed of 48 kilometers (30 miles) per second. They often produce luminous dust trains observable for several seconds.

Note: Light from the waning gibbous moon will degrade viewing

Eta Aquarids

Comet of Origin: 1P Halley

Radiant: constellation Aquarius

Active: April 19-May 28, 2011

Peak Activity: Early morning May 5-7, 2011

Peak Activity Meteor Count: Approximately 20 meteors per hour

Time of Optimal Viewing: 3:30-5 a.m.

Meteor Velocity: 66 kilometers (44 miles) per second

Delta Aquarids

Comet of Origin: unknown

Radiant: constellation Aquarius

Active: July 12–Aug. 23, 2011

Peak Activity: July 30, 2011

Peak Activity Meteor Count: Approximately 16 meteors per hour

Meteor Velocity: 41 kilometers (25 miles) per second

Notes: Meteor watchers in the Southern Hemisphere and in the Northern Hemisphere's tropical latitudes enjoy the best views.

Perseids

Comet of Origin: 109P/Swift-Tuttle

Radiant: constellation Perseus

Active: July 17-Aug. 24, 2011

Peak Activity: Aug. 13, 2011

Peak Activity Meteor Count: Approximately 100 meteors per hour

Meteor Velocity: 59 kilometers (37 miles) per second

Notes: The International Meteor Organization calls the 2011 [Perseids](#) "hopelessly moonlit." This will render lackluster what is usually an impressive show.

Orionids

Comet of Origin: 1P/Halley

Radiant: Just to the north of constellation Orion's bright star Betelgeuse

Active: Oct. 2-Nov. 7, 2011

Peak Activity: Oct. 21, 2011

Peak Activity Meteor Count: Approximately 25 meteors per hour

Meteor Velocity: 66 kilometers (41 miles) per second

Note: With the second-fastest entry velocity of the annual meteor showers, meteors from the Orionids produce yellow and green colors and have been known to produce an odd fireball from time to time.

Provided by JPL/NASA

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