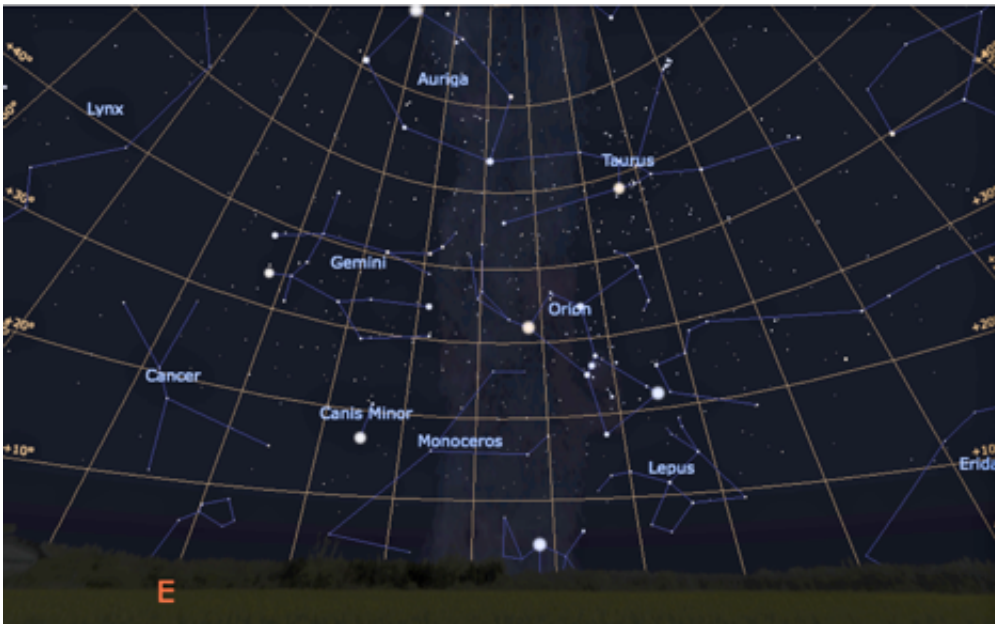


# A good year to view the Geminid meteor shower

November 24 2015

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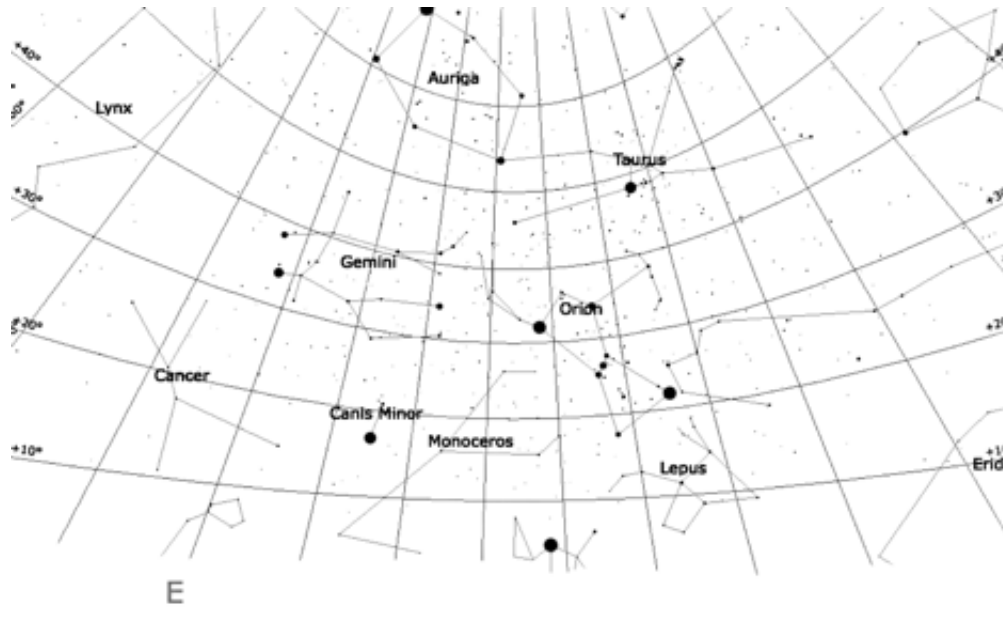
This year's Geminid meteor display, the best of the annual meteor showers, will be visible from approximately the 7th to 17th December, peaking on the evening of the 14th. The meteors, or 'shooting stars', which are best seen any time from late evening onwards, emanate from an area of the sky known as the 'radiant', which lies in the winter constellation Gemini (the 'twins'). This rises after sunset and remains above the horizon all night. For those who have never seen a meteor, this year provides one of the best opportunities, as there will no interfering

moonlight.

The Geminid shower is notable in producing a broad maximum of activity, with large numbers of [meteors](#) potentially visible at maximum, up to 120 an hour in perfect weather conditions with no [light pollution](#). The Geminid display is also famous for containing a relatively high proportion of bright meteors, which are produced by small (millimetre to centimetre size) [dust grains](#) in space called meteoroids. The dust grains run into the Earth's atmosphere at a typical speed of around 35 kilometres per second, or nearly 80,000 mph, and burn up in the mesosphere at typical heights of around 80 kilometres. As they burn up, they produce the well-known meteor phenomenon. The largest dust grains can produce exceptionally bright and sometimes colourful meteors called fireballs.

Unlike most meteor showers, however, which originate from dust grains ejected into space by comets, the Geminid meteors originate from an unusual near-Earth asteroid, namely (3200) Phaethon. This potentially hazardous asteroid was only discovered, by UK astronomers Simon Green and John Davies, as recently as 1983 in data collected by the US/UK/Dutch Infrared Astronomy Satellite (IRAS). Orbital computations revealed that the asteroid was following roughly the same orbit as those of the Geminid meteoroids, and so was the shower's parent body with Geminid meteoroids being debris from Phaethon.

Phaethon has a diameter of approximately 5 kilometres, and orbits the Sun in an elliptical orbit that approaches the Sun's surface at a distance of a little more than 20 million kilometres once every 1.43 years. The asteroid was named after Phaethon, the son of the Greek god Helios, who in Greek mythology drove the solar chariot across the sky.



The sky view at 10.00pm on Monday 14th December 2015. This shows the principal constellations Gemini, Orion and Taurus rising in a roughly ESE direction. The radiant of the Geminid meteor shower lies close to the second brightest star, Castor, of the constellation Gemini. In this view, Castor lies a short distance above his brighter 'twin', Pollux. Credit: Images created using Stellarium

Although Phaethon currently appears to be an asteroid, it is possible, hundreds or thousands of years ago, that it may have been a comet, actively releasing meteoroids into space. If so, then observations of the Geminids may provide new understanding as to how the comet evolved and why it is so inactive today as to be called an asteroid. In modern times the shower has only been recognized since 1862, but in recent years has become more intense as, owing largely to the gravitational effects of Jupiter and Saturn on the orbits of the dust particles, a denser part of the Geminid stream is moving so as to cross the Earth's orbit

In order to observe the Geminids, sky-watchers should obviously first check that the sky is clear, and then find a place as far as possible from

any light pollution. If necessary, drive a few miles out of town into the country. Wrap up well against the freezing cold and make yourself comfortable. Allow plenty of time, that is, at least 20 minutes, for your eyes to become adapted to the dark. The radiant lies in the general direction of the two brightest stars of the Gemini constellation, named after the mythological twins Castor and Pollux of Greek and Roman mythology. Although Geminid meteors appear to emanate from this radiant, which remains above the horizon all night, they can appear anywhere in the sky. It is often best to look at a convenient angle, perhaps 45 or 90 degrees from the radiant, ready to catch the meteors when they appear.

Provided by Armagh Observatory

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