

The Night of the Shooting Stars

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During the night of August 11th, a meteor shower called 'Perseids' might put up a memorable show. After the moon sets, which occurs around 1:00 AM local time, it might be possible to see up to 200 'shooting stars' per hour. Below, what you need to know about this astronomical event.

1 What is a shooting star?

Despite their name, shooting stars are actually small rocks (meteoroids) falling towards the Earth due to our planet's gravitational attraction. As they move rapidly through the atmosphere, they reach very high temperatures due to friction with air particles. This makes them burn and become visible to the human eye. The trail they leave is called 'Meteor'. Due to their tiny size, they usually almost completely burn in a fraction of a second. In some very exceptional cases, large meteors can continue the hot descent and hit the ground. If they also survive the crash, they get promoted immediately to the 'meteorites' class. Generally speaking a meteoroid producing a meteor needs to be at least as large as a marble to reach the Earth and eventually become a meteorite. Some Burning facts:

- Average meteorite velocity: 30000 miles/hour (48000 km/h)
- Max temperature: 3000 F (1650 C)
- The [Meteor Crater](#) in Arizona was formed 50000 years ago by an object 160 feet (50 meters) across
- ... yes, impacts like the one that produced the Meteor Crater are extremely rare

2 What is a meteor shower?

Meteor showers occur when the Earth's orbit intercepts the dusty trail of periodic comets. Comets are dirty ice-balls coming from the cold periphery of the Solar system, captured in eccentric orbits around the Sun. When getting closer to our star, they melt slowly, releasing gas and dust which make the comet visible (those beautiful comet tails). The dusty leftover of the comet pave the comet's orbit. When the Earth comes close to one of these dusty cometary highways, the particles can be captured by the planet's gravity and fall towards the surface. This creates the meteor shower, which repeats every time the crossing occurs, that is once per year.

3 Where do the Perseids come from? Why is today showtime?

Meteor showers are usually called from the apparent direction from which the meteors seem to come from, which in this case is the [constellation of Perseus](#). The Perseids occur when the Earth comes close to the dusty



Figure 1: Meteor Crater, Arizona



Figure 2: Perseid meteor shower

trail of a periodic comet known as Swift-Tuttle, which last returned to the inner solar system in 1992. Next time the comet will swing by is in 2125. In the meanwhile, another planet is going to play an important role for this year event. Jupiter. The giant planet recently nudged with its gravity Swift-Tuttle's debris closer to Earth's orbit. This is why astronomers expect this years' shower to be a particularly exciting one, and we could see up to 150/200 meteors per hour the night of August 11/12!

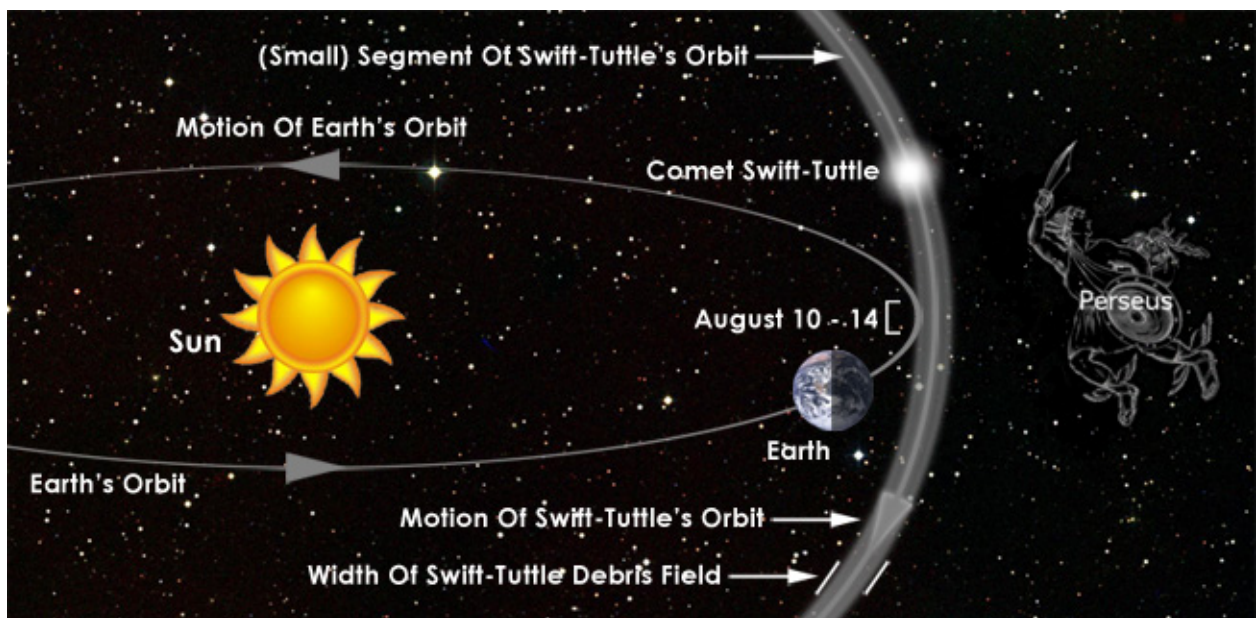


Figure 3: Where do the Perseid come from? Comet Swift-Tuttle! Source: cnyo.org