

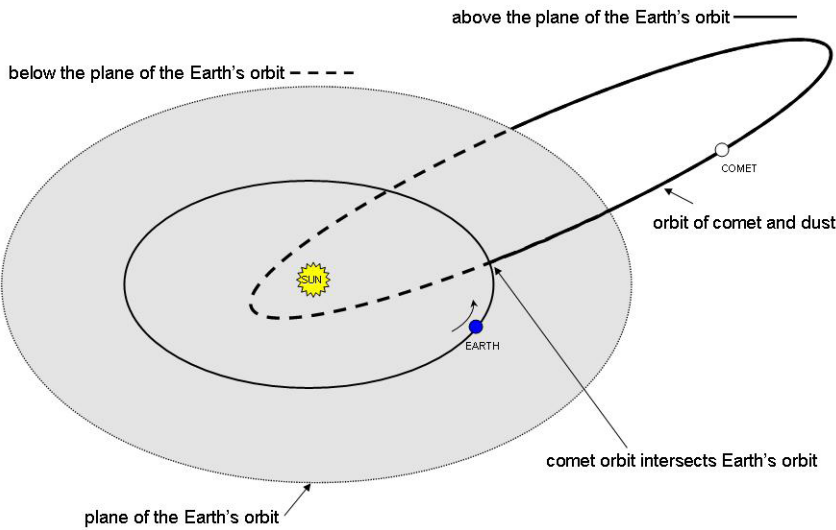
# What's Up?

BY BARRY DECRISTOFANO



Around 8 p.m. now, as the constellations of those warm summer nights (like, Scorpius and Sagittarius) sink slowly in the West, a new set (like, Pegasus, Pisces, and Aries) appear to come up over the eastern horizon and sparkle in our evening hours.

Meanwhile, as some stars disappear and others come into view in an annual rhythm as we continue on our way around the Sun, every once in a while, the Earth encounters a stream of dust that can make our night skies especially magical. When we pass through one of these dust streams we are treated to what we call a *meteor shower* – a nighttime show of shooting stars. Most of us have seen a meteor (also called a ‘shooting star’) at one time or another. A meteor is the result of a bit of space dust entering our atmosphere and burning up as it is heated by friction with the air.



On any given clear night we can see an average of 4 or 5 meteors every hour (in addition to the requirements of clear skies and knowing how best to see them, as the American Meteor Society explains, the time of the night and the time of the year will influence the hourly average; <https://www.amsmeteors.org/meteor-showers/meteor-faq/#4>). These random or “sporadic” meteors are daily occurrences. Showers are different.

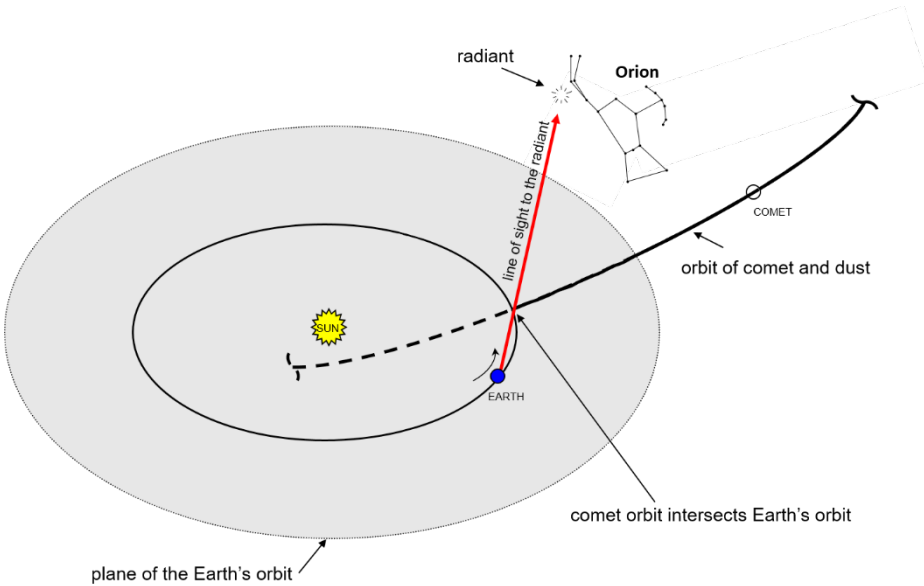
The dust streams that are responsible for our meteor showers are bands of particles left behind by comets as they orbit the Sun. Most of us have heard about comets and some of us have seen them. Comets are bodies of ice and rock that orbit the Sun. As comets travel in their orbits, they go from being very far away from the Sun to being close to it. When they get close to the Sun, they warm up and materials that were frozen, vaporize and flow away from it. It's that vapor that forms part of the bright tail of a comet. Along with that vapor comes a stream of tiny dust particles. These particles, trailing behind the body of the comet, are in an orbit around the Sun too. Orbit after orbit, this stream of dust particles stretches out along the path of the orbit and forms a continuous ring of dust.

Now, the orbits of some comets happen to intersect the Earth's orbit. So, at various times of the year, the Earth crosses through the path of one of these dust rings left behind from a comet. As the Earth moves through the dust, some of it enters our atmosphere. The dust is moving so fast that friction between the dust and our air heats the dust and it burns up. The meteors that we see in the sky are

the light given off as the dust particle burns up in our atmosphere.

There are some meteor showers that many of us will recognize the names of, like the Perseids and maybe the Leonids or the Geminids. How are they named? Well, as we look into space, the constellation that lines up with us and the point where the dust trail intersects the Earth's orbit is the constellation that gives the meteor shower its name. The point in the sky that the meteors seem to come from is called the *radiant*.

We have a meteor shower happening right now, the Orionids. It runs from October 2<sup>nd</sup> until November 7<sup>th</sup> this year, but the peak night of the shower will be the night of October 21<sup>st</sup>-22<sup>nd</sup>. The comet that is responsible for the stream of dust that results in the Orionids is none other than the famous Halley's Comet. From the name, you may have guessed that the meteors will seem to come from the sky near the constellation Orion. At present, the geometry of the Earth, the comet's orbit, and the stars of Orion looks like this:



What's the best way to view a meteor shower? Set up a comfortable chair (one that reclines is best), sit outside in an open area, and look up. At this time of the year, it will also help to have a blanket and a thermos of something warm to drink. That's all there is to it! Now, for the fine print and caveats about viewing a meteor shower:

**When to look:** You can start when it gets dark out, but the best time to view is after midnight. Why? After the middle of the night, we are on the side of the Earth that is moving forward as we orbit the Sun. So, it's like driving into a rainstorm – we get more meteors on our windshield than we do on our rear window.

**Where to look:** Relax your eyes and just scan the sky. Don't look directly towards the radiant, look at the sky away from there – that's where you'll find the meteors. If you are going to be looking for Orionids before 1:00 a.m. or so, look generally from the eastern horizon to straight up. Just slowly scan the sky. We may be able to see about 10 or so per hour from this shower.

**What not to also be looking at: THE MOON.** Fortunately, for this year's Orionids, the Moon won't be too bad, but it won't be great either. The Moon will be near its Third Quarter phase and so will be about one-half of a Full Moon, and will be rising around 1:00 a.m. If you're outside after it rises, just look straight up and see what you can see.

In my last article, I mentioned the upcoming transit of Mercury on November 11<sup>th</sup>. I don't have the room to go into more details about it here, but I will in my next installment – I promise!

Don't forget – I love to get your email with your thoughts and comments! [astroblog@comcast.net](mailto:astroblog@comcast.net)

Keep looking up!

Barry