This could be a good year to see the Perseids meteor showers

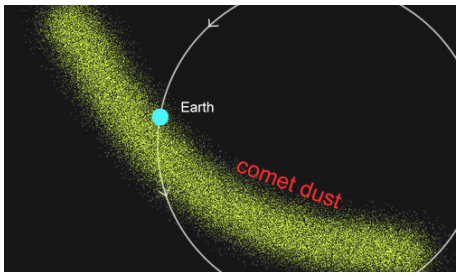
Composite of 12 images acquired on August 13, 2017, by Felix Zai in Toronto.

Annually, the Perseids meteor showers puts on one of the best opportunities for meteor viewing of the entire year. They peak in mid-August when the nights are pleasant for lying outside to view the show. This year the viewing will peak on the mornings and evenings of August 11, 12 and 13. Even outside of this peak time frame, you should be able to spot a few meteors between midnight and dawn any morning the week before or after this date. To see the meteors, situate yourself where the moonlight is blocked by a large object (like a garage, barn, or hill) and look up and to the north.

Have you ever seen a spectacular meteor shower? Sometimes they are phenomenal but often, even though you know when and where to look, the display turns out to be so-so. But when you've seen a great shower, you'll want to try to see another. And you can't predict ahead of time when the shower will be an amazing one.

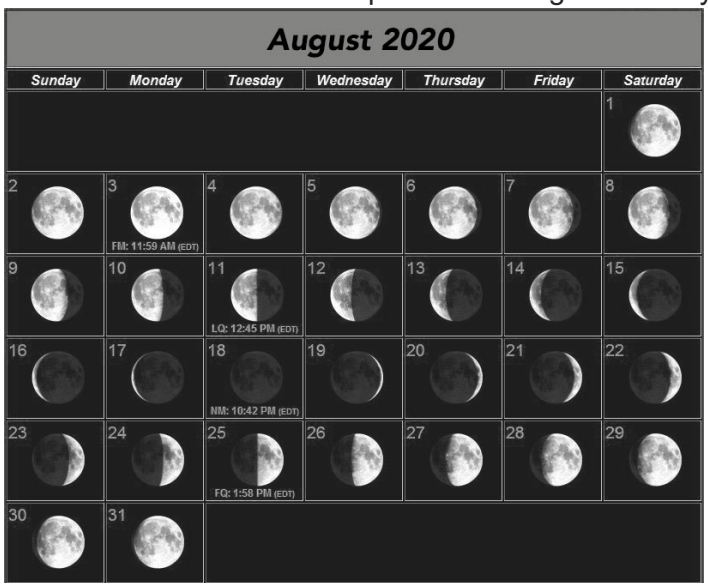
1. What do you think that you'll need to know ahead of time?

We see meteor showers when the orbit of the Earth around the Sun travels through the debris trail of a comet. The Earth's orbit passes through the comet Swift-Tuttle's debris trail to create the Perseids meteor shower from July 17th to August 24th. The peak viewing evenings for this shower (when Earth passes through the densest part Swift-Tuttle's debris) are expected to be in the early mornings of August 11th, 12th and 13th.



2. What do you think that you have to consider when choosing the time to lie outside on a blanket and watch the sky for meteors?

We found this calendar of the summer dates and moon phases for August of this year.



3. Check our schedule of moon phases and predict when you think we could get a good view of the Perseids meteor shower?

More specifically, the moon can be seen above our horizon at predictable hours of the day and night. Here's a table of when the moon is above our horizon and could potentially interfere with our observations of meteor showers.

Phase	Northern Hemisphere	Visibility	Moon rise/moon set
New moon	Not visible	After sunrise	6am/6pm
Waxing crescent moon 	Right side is visible between 1 and 49%.	Afternoon and post-dusk	9am/9pm
First quarter moon 	Right side is 50% visible.	Afternoon and early night	Noon/midnight
Waxing gibbous moon 	Right side is visible between 51 and 99%.	Late afternoon and most of night	3pm/3am
Full moon 	Fully visible	Sunset to sunrise (all night)	6pm/6am
Waning gibbous moon 	Left side is visible between 51 and 99%.	Most of night and early morning	9pm/9am
Third (last) quarter moon 	Left side is 50% visible	Late night and morning	Midnight/noon
Waning crescent moon 	Left side is visible between 1 and 49%.	Pre-dawn and morning	3am/3pm

4. What time should you go out to watch the shower on the 11th, 12th, and 13th?

	Phase of the moon	Optimum viewing
Evening of August 11th		
Evening of August 12th		
Evening of August 13th		

We even know about how fast the meteorites that we can see are traveling across our sky and about how many we might see in an hour.

Meteor Shower	Peak activity meteor count	Meteor Velocity
Perseids	Between 50 and 75 meteors per hour at zenith	58 km (37 miles) per second

5. On average, about how many minutes would you have to wait to see a meteorite during the Perseids shower?

6. In miles per hour, how fast are the Perseids meteorites hitting our atmosphere?

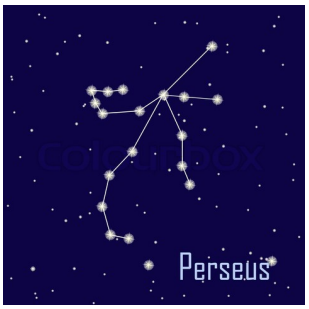
The Perseids meteor shower produces more fireballs than any other annual shower. A fireball is a very bright meteoroid. A fireball's brightness is measured just as a star's brightness is measured ... by apparent magnitude (m). What's weird is that the smaller the magnitude the brighter the star or fireball.
For instance:

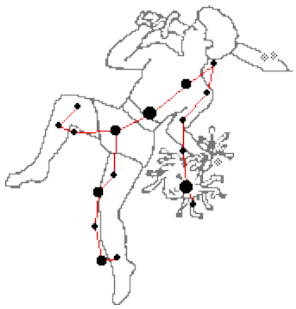
- The planet Venus is brighter than any star in our night sky. It's magnitude ranges from - 3.8 to - 4.6.
- Jupiter is also pretty bright. It's magnitude ranges from - 2.46 to - 2.94.
- The moon is the brightest object in our night sky. When full it has an apparent magnitude of - 12.74.

The dimmest stars that we can still see with our naked eyes have an apparent magnitude of about 6.

7. Take a guess about the range of apparent magnitude for some Perseid's fireballs.

The Perseids meteor shower is named after the constellation from where its meteorites appear to be radiating.





The Perseus constellation is at its zenith in our night sky in the pre-dawn hours. The magnitude of its meteorites can be as bright as -2.7.

8. Was your guess correct?

According to NASA, for every visible fireball, there are dozens of other meteors. Those in rural areas without much light pollution can expect to see around 100 fireballs per hour in the Perseids shower.

The Orinids (radiating from the constellation Orion) are the next major meteor shower to occur after the Perseids. These fireballs are caused by the Earth passing through the debris left by Halley's comet and are expected to peak in activity around mid-October.

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