

STARDOME OBSERVATORY & PLANETARIUM

FACTS, RESOURCES AND ACTIVITIES ON...

SHOWERS OF METEORS

Most meteors range in size from a grain of sand to a pea. Sky glow from light pollution in cities makes it difficult to see any but the brighter meteors.

Meteors flash across the sky in all directions for just a few seconds at most. There's no pattern to their trajectory. But sometimes for a few days or weeks some meteors appear to come from a single point in the sky. These are called meteor showers.

As the Earth travels around the Sun it periodically ploughs through the remnants of comets that are also orbiting the Sun. When comets are inside the orbit of Mars the Sun's radiation heats the ices which release large amounts of dust, rocks and gas. We see this material as the comet's

tail, which can be millions of kilometres long.

Any rock or metal fragments reaching the ground from larger meteors are called meteorites.

Meteors vaporise at 50-120km altitude in the mesosphere

After the comet has travelled back out beyond Mars, debris trails behind along its orbit. The Earth passes through some of this orbital debris at the same times during its yearly journey around the Sun. Each time we see an increase in the number of meteors, and they appear to emanate from the same point in the sky, called the 'radiant'.

This is an illusion of perspective, similar to rain in car headlights at night seeming to come towards us from a point in the distance as the car moves forward. Each shower is named from the constellation containing the radiant, e.g. Orionids, Geminids.

LEONIDS: The best shower to observe in New Zealand is the Leonids, which appear during 14-21 November, peaking around 17 November.

Increased numbers of meteors can be seen from about 3am till half an hour before dawn streaming from the radiant which is low in the northeast below the bright star Regulus in the constellation Leo.

DISCUSSION POINTS

What is a meteor storm?

What shapes are comet orbits?

Can we see meteor showers on the Moon?

SCIENCE CONTENT/ CURRICULUM LINK

NATURE OF SCIENCE - INVESTIGATING IN SCIENCE. EXTEND EXPERIENCES AND PERSONAL EXPLANATIONS OF THE NATURAL WORLD.



Meteors in a shower all appear to come from the same point in the sky. Image credit: © 2015 Maurice on the Moon - eBook Series by Daniel Barth

Check out these other resources...

- Table of Southern Meteor Showers - <http://www.rasnz.org.nz/in-the-sky/meteor-showers>
- What is a meteor shower? - <http://www.timeanddate.com/astronomy/meteor-shower/>



ACTIVITY

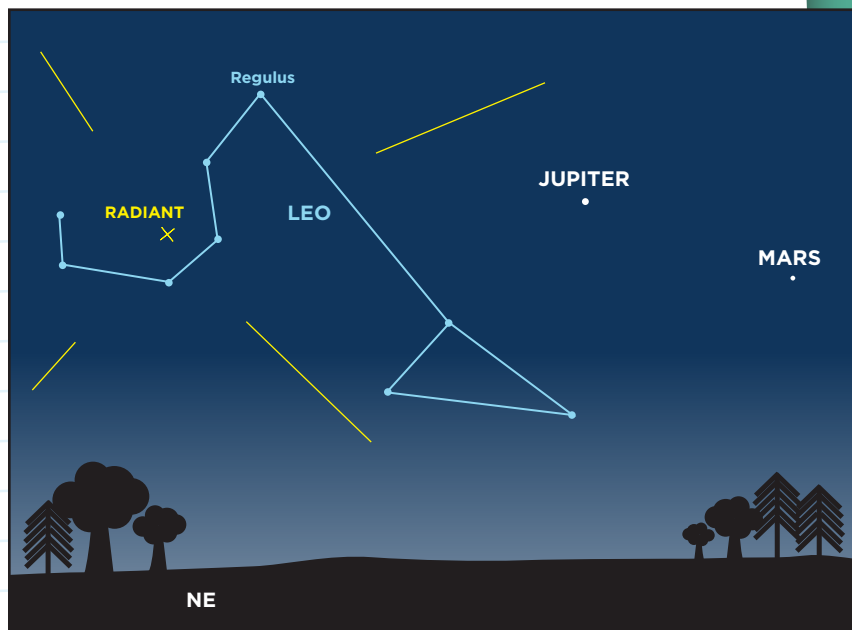
STARDOME OBSERVATORY & PLANETARIUM

OBSERVING METEORS

METEORS EVERY NIGHT

Meteors can appear in any part of the sky and travel in any direction. They flash across the sky in no more than a few seconds, so you can only see them if you happen to be looking in the right direction at the right time. So you need help.

Observing meteors in groups is best. To get full sky coverage, stand or sit back to back in groups of two to four facing the horizon. When a meteor is spotted the observer immediately calls out so all the others in the group can quickly turn to see the trail.



METEOR SHOWERS

With meteor showers you know the direction the expected meteors should emanate from, so with a clear horizon a single observer should be adequate. The Leonid meteor shower has the most bright meteors and overall increase in meteor rate for showers visible in New Zealand.

The Leonids can be seen from 14 to 21 November, with the peak around 17 November. A peak of up to 100 meteors per hour may be seen from a dark site completely devoid of light pollution. In a large city, where the faintest meteors cannot be seen, the peak might be only 20-30 meteors per hour.

The radiant is low in the northeast before sunrise, starting around 3am. The meteors can be seen overhead, low to the west and east, or even coming almost directly toward you. But the trails will all lead back to the zodiac constellation of Leo.

The radiant of the Leonids is below and to the left of Regulus, the brightest star in the constellation Leo. Regulus is seen 26° and 30° above the northeast horizon at 5am and 5:30am.

How to find the Leonids meteor shower (November 2015).

What is the difference between a comet, asteroid, meteor and meteorite?

DID YOU KNOW...
there are 21 meteor showers each year? About 16 are visible from New Zealand.



STARDOME.ORG.NZ
09 624 1246